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Exhibit ‘D’ Equal Employment Opportunity Certification
Exhibit ‘E’ Smoking Policy
Exhibit ‘F’ Green Policy
Exhibit ‘G’ Sidewalk Vehicle Access Pass

DETAILS

A-1 Typical Landing, Stair & Porch Replacement Details
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Facilities Work Order Desk  
Customer Service  
Tel: (860) 685-3400

The Facilities Office is located at:  
170 Long Lane  
Middletown, CT 06457
SCOPE OF WORK
MM FY15 – MINIMUM STANDARD REQUIREMENTS FOR WORK PERFORMED

PART 1 – GENERAL

1.1 RELATED INFORMATION AND DOCUMENTS

1. This document shall be used to ensure that all work is performed to the minimum standards noted and shall supplement the scope of work as shown on the sketches provided.

   A. REFERENCE THE PROJECT SPECIFIC DRAWINGS/SKETCHES/PHOTOS FOR EACH INDIVIDUAL PROJECT.  ALL REQUIRED WORK TO BE COMPLETED FOR EACH PROJECT SHALL BE IDENTIFIED ON THESE DOCUMENTS.

   B. THIS DOCUMENT SHALL SUPPLEMENT THESE DOCUMENTS

2. All work items noted on the documents shall, at a minimum, be inclusive of the requirements noted on this document, and shall also be inclusive of all other documents that are part of the MM FY14 Project Manual.

3. The Owner shall obtain the building permit for MM FY15 projects as identified with the exception of sidewalk, road or site work permits/bonds. Building permit number shall be provided to the awarded contractor. Contractor shall purchase any Department of Water and Sewer permits. Contractor shall provide to the Owner certified copies of all contractor and subcontractor licenses. Licenses shall be current and correspond to the type of work being performed by the specific individuals. Contractor shall not be allowed to start work without these copies. Contractor shall schedule and notify Owner of all inspections with the City of Middletown. Owner must be present at inspections.

4. Drawings, photos and general provisions of the Contract, including General and Supplementary Conditions and all other Specification Sections apply to this section.

1.2 HAZARDOUS MATERIAL COORDINATION

1. All painted surfaces are to be treated as positive for lead containing paint due to the construction of the building prior to 1978. Federal, State, Local and OSHA requirements are to be strictly adhered to for all lead removal. Contractor shall wrap lead waste in 6-mil plastic and dispose of in Owner supplied lead dumpster. Owner shall dispose of lead waste.

2. All contractor personnel working on the project shall be certified by the U.S. Environmental Protection Agency (EPA) for lead based paint activities.

3. Contractor shall provide current blood test results for ALL employees working on Wesleyan properties before the start of any work. Monthly reports shall be provided thereafter and also upon completion of the project. See Section 01015.

1.3 SCHEDULE

1. General Project Schedule – As noted for each specific project

1.4 GENERAL PROJECT REQUIREMENTS

1. Contractor shall adhere to the project manual.

2. Contractor to assume all paint is lead containing. Reference the Hazardous Assessment materials report available for viewing at the Owner’s office located at 170 Long Lane.

3. Coordinate all work with Owner’s Representative.
4. There will be occupied and unoccupied residential, Academic and Administrative buildings. Surrounding private residences and Academic and Administrative buildings are occupied year round. Contractor shall be cognizant and respectful of the surrounding occupancies.
5. The general contractor will be responsible to ensure each subcontractor is responsible for daily clean up of individual’s work. Project site must be kept clean and free from tripping hazards.
6. Conduct construction waste management activities in accordance with the State of Connecticut EPA, Middletown Municipal Code and all other applicable laws and ordinances. Removal of non-lead based debris is to be disposed of in contractor supplied dumpsters at a location agreed to by the Owner and Contractor. Contractor shall submit construction waste management forms to the Owner every 2 weeks.
7. Coordinate all work with work of other trades.
8. Contractor shall provide dust barriers to all surrounding spaces within building.
9. After review of site, contractors are responsible for any required temporary protection during the work.
10. Contractor to comply with all State and Federal Codes, City of Middletown Ordinances, OSHA requirements and Wesleyan University General Project Requirements and Closeout Procedures.
11. Provide as-built condition drawings for all work performed in this building.
12. After review of site, contractors are responsible for any required temporary protection during the work.
13. Prior to the start of any exterior work, contractor shall contact CL&P to ensure that protective safety boots are installed at all overhead service wiring locations.
14. Any overtime required to complete the project MUST be brought to Owner’s attention prior to submission of bid.
15. Contractor shall provide traffic barricades, signage, flagpersons and all other traffic control methods required to complete the work.
16. Doors to facilities must be kept locked at all times; any propped doors will be closed by Wesleyan University facility operations staff or public safety, no complaints or exceptions. If doors are to be propped the door shall be watched by a representative of this contractor.
17. Upon completion of all specified work, the contractor shall thoroughly clean the unit for move-in condition. Cleaning shall also include the interior of all windows within the work areas.

TYPICAL FOR ALL PROJECTS

DIVISION 2 – SITEWORK / DEMOLITION

SITEWORK, GENERAL
1. Contractor shall coordinate the use of motorized lifts and/or heavy equipment with the Owner. Contractor shall protect existing turf, concrete walks and pavement as required. Damaged turf, concrete walks and pavement shall be repaired by the contractor at no cost to the Owner.
2. Excavation of new waterline trenches shall be in accordance with specification requirements and City of Middletown requirements (Reference most current City of Middletown Public Works Department detail sheets on file with the City of Middletown) and State of Connecticut detail sheets at the office of the State Building Inspector/Public Works for Washington Street excavations.
3. Contractor shall return to repave trench section due to settlement or failure. Contractor shall return in 1 year to inspect trench section. If trench section settled or failed, contractor shall repave trench section.
4. Contractor shall neatly sawcut the existing asphalt and/or concrete sidewalk and curbing using wet methods prior to the start of excavation.
5. Upon completion of all backfill activities, Contractor shall re-pave the trench section in accordance with the City of Middletown paving standards (Reference most current City of Middletown Public Works Department detail sheets on file with the City of Middletown) and State of Connecticut detail sheets at the office of the State Building Inspector/Public Works.
DEMOLITION:

Note: Contractor shall perform all demolition activities in accordance with Wesleyan University’s Construction Waste Management guidelines outlined in section 01505.

GENERAL:
1. For all projects, Contractor shall remove, protect and store existing shades and mini blinds within the project area as required to complete the work. Contractor shall clean and reinstall shades and blinds upon completion of the project. Contractor shall provide any additional hardware and fasteners required for reinstalling the existing window treatment.
2. Disconnect all electrical and mechanical connections in the demolition area.
3. Protect wood floors to remain.

DEMOLITION – WINDOWS; TYPICAL FOR ALL WINDOW REMOVAL PROJECTS:
1. Contractor shall remove and recycle the existing storm windows and windows in accordance with Wesleyan University’s Construction Waste Management guidelines outlined in section 01505.
2. Contractor shall replace all windows unless otherwise noted.
3. Contractor shall remove sash weights.
4. Contractor shall remove and salvage window treatments. Reinstall after completion of work.

1. Remove kitchen cabinets in toto for installation of new cabinets.
2. Remove countertop and back splash in toto.
3. Contractor shall remove and recycle sink and faucet.
4. Contractor shall demo hot and cold water supply lines, shutoff valves, to accommodate the installation of the new sink and faucet.
5. Salvage appliances for reuse.
6. Disconnect electrical as required for relocation and installation of new.
7. Salvage existing fire extinguisher and wall mounting bracket. Reinstall in kitchen upon completion of the project.

Bathroom
1. Bathrooms to be relocated or new bathrooms require relocation of sanitary line in basement and venting to exterior.
2. Salvage cast iron radiators for reuse.
3. Disconnect electrical as required for relocation and installation of new.
4. Provide support shoring as required where walls are demolished until the new wall is constructed.
5. Remove existing sheet vinyl flooring and all layers of flooring and underlayment below.
6. Prep existing subfloor as required to allow for the installation of new wood flooring to match the finish floor height of the existing wood flooring.

Bedroom
1. Protect wood floors to remain.
2. Provide support shoring as required where walls are demolished until the new wall is constructed.
3. Disconnect electrical as required for relocation and installation of new.

DIVISION 3 – CONCRETE
1. Contractor shall install new concrete footings for the new stairs and landings.
2. Contractor shall install a new concrete pad at the base of the new stairs. Concrete pad thickness shall be 5”. Width shall match stair width and length shall be a minimum of 36”.

DIVISION 4 – MASONRY
1. Repair/parge masonry walls as directed.
DIVISION 5 – METALS
1. Contractor shall wrap wood trim at all locations where new windows are installed with pre-finished break metal. Contractor shall also wrap wood trim at doors. Color shall be White unless otherwise noted.

DIVISION 6 – WOOD AND PLASTICS

Exterior
1. Install new roof sheathing as required. Notify Owner. Include in bid as an add/alternate.
2. Provide blocking and infill framing/sheathing as required due to removal of chimney.
3. Provide framing for new window openings. Coordinate window location with Owner. Relocate interior electrical wiring if required.
4. Contractor shall install new composite landing - clear landing size shall be minimum 4’ x 4’.
   Install new treads, risers, stringers, railings, posts, composite square lattice, composite fascia boards and all associated pressure treated framing for the east elevation stairs. Refer to sketch A-1 and the specifications for standard material, fastener and detail requirements.
5. Contractor shall install new composite columns as identified.

Kitchen
1. Provide all required blocking for new cabinet and window installation.
2. Install framing for new wall/door installation.
3. Infill floor as required from wall/cabinet removal.
4. Install underlayment for new floor installation.
5. Install new wood wall base trim to match the existing base trim height, profile, species, stain, finish in locations noted.
6. Install new laminate countertop, 4” backsplash and full height laminate back splash to upper cabinets.

Bathroom
1. Install new wall/door framing for new wall installation.
2. Install underlayment for new bathroom sheet vinyl.
3. Provide all required blocking for shower/cabinet installation.
4. Install new wood wall base trim to match the existing base trim height, profile, species, stain, finish in locations noted.

DIVISION 7 – THERMAL AND MOISTURE PROTECTION

General
1. All exposed exterior walls and attic crawl space areas to be insulated with batt insulation; total R-60 minimum.
2. Contractor shall ensure that all penetrations are fire caulked properly.
3. Contractor shall fill any through-wall penetrations uncovered or created from cabinet removal with insulation.
4. Contractor shall fill any through-wall penetrations uncovered or created from wall removal with insulation.
5. Contractor shall provide insulation as noted for special wall construction.

EXTERIOR SIDING
1. Contractor shall caulk all cracks, gaps and all other exterior surfaces and/or joints that are susceptible to water infiltration. Caulking installation shall be as required based on the areas where work is being performed.
2. Contractor shall photograph and document all existing siding details. All documentation shall be submitted to the Owner for record. Documentation shall include but not be limited to all exterior trim details, window trim details, soffit details, porch and railing details, decorative siding details, etc.
3. Contractor shall install ½” FOAMULAR insulating sheathing over all exterior walls to create an insulating envelope over the entire structure prior to installing siding.
4. Contractor shall install new Certainteed Monogram 46 (46L) double 4” clapboard vinyl siding over all locations where horizontal wood siding currently exists unless otherwise noted.
5. Colors as identified by location.
6. Contractor shall install new vinyl soffits compatible with the specified siding system.
7. Contractor shall install new CertainTeed beadboard panel ceiling. Installation shall be in accordance with manufacturer’s installation instructions. Provide all finish carpentry work, trim pieces and perimeter caulking as required for a complete installation.
8. Contractor shall maintain the look of all decorative details, trim, fascia and band boards that are currently present on the house. Contractor shall provide vinyl or composite material trim pieces as specified that are compatible with the siding system to replicate the existing look. Contractor shall submit shop drawings and product cut sheets to the Owner for approval showing the proposed products and materials to be installed over all existing exterior surfaces.
9. Contractor shall wrap all exterior door trim, window trim and stops. New window trim wrap shall be bent to provide a 3 dimensional decorative profile (see photo sheet for example) or as directed on drawings.
10. Contractor shall install Traditional corner trim pieces at all outside corners unless otherwise noted.
11. Contractor shall provide siding accessories for exterior vents, hose bibs, gable vents, vinyl skirts, gable trim, lighting blocks, etc.
12. Contractor shall extend oil pipe inlet as required to provide ready access for oil nozzle.
13. Contractor shall extend hose bib outlet as required to provide access.
14. Contractor shall install new gutters and gutter leaders to replace gutters removed. Properly slope to drain and provide splash blocks. Provide mounting hardware.

ASPHALT ROOF
1. Contractor shall protect exterior building facade from damage for the duration of the project. Contractor shall utilize protective coverings.
2. Contractor shall protect interior of attic prior to initiation of demolition.
3. Contractor shall meet or exceed all OSHA fall protection requirements. Contractor shall also adhere to all Wesleyan University fall protection requirements as outlined in the project manual.
4. Contractor shall protect exposed roof surfaces at the end of the work day as required to prevent water from entering the interior of the building. Contractor shall be responsible to restore the interior surfaces to their original condition should damage occur.
5. Contractor shall remove and dispose of the existing asphalt roof system down to the existing roof substrate. Note: Contractor shall perform all demolition activities in accordance with Wesleyan University’s Construction Waste Management guidelines outlined in section 01505.
6. Contractor shall notify Owner immediately if rotted or deteriorated sheathing is uncovered during the removal process. Contractor shall provide a unit price on the designated space in Proposal Form 00300 to furnish and install new 1/2” exterior grade plywood roof sheathing (Note: Locations and sheet quantities must be approved by the Owner prior to installation. Unit price shall be for one (1) 4’x8’ sheet of 1/2” exterior grade plywood sheathing).
7. Contractor shall furnish and install self adhering sheet underlayment at all low slope roofs, hips, eaves, confined rake edge, rake edges and valleys (Reference Figure 1 for location clarifications at the end of this section).
8. Contractor shall install new 30 year architectural shingles as noted in the specifications. Submit manufacturer’s standard colors for Owner selection.
9. Starter shingle course shall extend ½” over drip edge. First row of shingle course shall also extend ½” over drip edge. Starter shingles shall also be installed along the full length of all rake edges and shall extend ½” over the rake.

10. Contractor shall provide base and step flashing to the underside of the existing wood siding. Remove and reinstall siding as required to complete this work to provide a watertight installation.

11. Prior to the start of work, Contractor shall protect attic space with plastic. Upon completion of all work, Contractor shall dispose of plastic and broom clean entire area.

12. Contractor shall use a complete roofing system utilizing all components by a single source Manufacturer.

13. Contractor shall furnish and install a ridge vent on the main roof. Contractor shall cut roof as required to allow for proper ventilation.

14. Contractor shall furnish and install new metal flashing at all chimneys. Contractor shall saw cut into mortar joints for proper termination.

15. Contractor shall flash all roof penetrations and vents.

16. Where identified, Contractor shall remove existing roof hatch, patch opening, and install new roofing system.

Figure 1

Kitchen/Bathroom:
1. Contractor shall caulk around the new 4” backsplash, full height laminate and countertop installed.
2. Contractor shall caulk around the new stainless steel sink.
3. Contractor shall insulate the hot water supply piping in the basement from the hot water tank to the underside of the 1st floor for kitchen and bathroom.
4. Caulk perimeter of sheet vinyl in bathroom to create a water tight installation.
5. Contractor shall caulk all seams/joints of shower/sink/toilet for all new installations and existing units.

Window Installation:

Major Maintenance FY 15
Project No. 2015000000
00200-6
1/20/2014
1. Prior to installing new windows, Contractor shall remove existing sash, sash weights and sash cords. Contractor shall fill sash weight pockets with non-fiberglass batt insulation, apply sealant to head and jambs of existing sash stops and then install new window(s). Contractor shall fill voids between old and new with expanding foam, trim interior with new trim pieces as required and seal perimeter interior with clear caulk to eliminate the potential for any air infiltration.

2. Contractor shall wrap wood trim at all locations where new windows are installed with pre-finished break metal. Contractor shall also wrap wood trim at attic windows. Provide color deck with color options to Owner for selection.

3. Contractor shall caulk around the interior and exterior perimeter of all new windows installed.

4. Contractor shall caulk around the perimeter exterior break metal installed.

Bedrooms
1. Contractor shall install sound attenuating insulation in new wall construction between bedroom, bathroom and kitchen.

DIVISION 8 – DOORS AND WINDOWS

1. Contractor shall install new exterior entry doors as identified. Reuse hardware as identified. Provide entry hardware as identified. WESU lock shop to provide new KABA cores on street master.

2. Contractor shall replace all windows in the house unless noted otherwise.

3. Divided lite configuration for new windows shall be as noted on the drawings.

4. Provide obscure glass for bathroom windows.

5. Contractor shall install windows as specified unless noted otherwise.

6. Contractor shall submit door and window shop drawings to Owner for approval prior to ordering windows.

DIVISION 9 – FINISHES

1. Contractor shall prep all new and existing surfaces in accordance with the requirements outlined in specification section 09910. Contractor shall clean building surfaces upon completion of all prep work to remove all residues.

2. Contractor shall patch, prep, paint, stain and re-finish all surfaces including all walls, trim, doors, ceilings, stairs, railings, exposed conduit and piping.

3. Contractor shall install new GWB at all locations as required due to new wall layouts and demolition work required to accommodate new layouts.

4. Contractor shall box out new structural beam with GWB. Prep, prime and paint to match ceiling.

5. Contractor shall tape and apply 3-coats of joint compound, sanding between coats, followed by priming and painting for all new wall/ceiling installations.

6. Prep, stain and finish new infilled wood floors to match existing.

7. Screen all existing wood floors and apply 3 coats finish.

8. Install new sheet vinyl in bathroom and kitchen, as identified. Prep floor surface as required.

9. Provide all thresholds and transition strips.

**INTERIOR FINISH SCHEDULE:**

***Reference scope by location for paint manufacturer and finish schedule.***

Where finishes are not noted on the drawings, the following finishes schedule shall be used:

SHERWIN WILLIAMS PROMAR 200:  Interior Trim, Doors: Wesleyan White #2532 semi gloss
Wesleyan University

SHERWIN WILLIAMS PROMAR 200: Kitchen / Bathroom (Walls & Ceilings): Wesleyan White #2532 semi gloss

PPG BREAKTHROUGH: Kitchen Cabinets: White, Satin Finish

SHERWIN WILLIAMS PROMAR 200: All other rooms (Walls): Wesleyan White #2532 eggshell

SHERWIN WILLIAMS PROMAR 200: All other rooms (Ceilings): White, flat

EXTERIOR FINISH SCHEDULE

SHERWIN WILLIAMS DURATION: Doors: Color to match BM Cottage Red
SHERWIN WILLIAMS DURATION: Trim/Columns/Gables/Soffits: Color to Match BM Navajo White
SHERWIN WILLIAMS DURATION: Porch Ceilings: Color to match BM April Sky
SHERWIN WILLIAMS DURATION: Basement security straps / foundations: Color to match BM Tudor Brown.
SHERWIN WILLIAMS DURATION: Metal Basement Hatchways: DTM; Color to match BM Tudor Brown

DIVISION 10 – SPECIALTIES

1. Contractor shall reuse existing house numbers on plaques. Install new house numbers on plaque and mount on front of house only if existing are unusable.

DIVISION 11 – EQUIPMENT

1. Contractor shall provide new non-ducted hood fan over stove unless otherwise noted.

DIVISION 12 – FURNISHINGS

GENERAL:
1. Contractor shall remove, protect and store existing shades and mini blinds within the project area. Contractor shall clean and reinstall shades and blinds upon completion of the project. Contractor shall provide any additional hardware and fasteners required for reinstalling the existing window treatment.
2. Contractor shall install new base and upper cabinets with all required fillers. Submit cabinet layout to Owner for review and approval.
3. Contractor shall install new upper cabinet for hood fan installation over stove
4. Contractor shall install new laminated countertop. Prep and cut opening in countertop as required to mount new stainless steel sink.
5. Contractor shall install new full height wall applied laminate to the underside of the upper cabinets. Provide stainless steel edge bands at transitions between new laminate and existing wall.
6. Contractor shall install new 4” high x 7/8” thick continuous laminated backsplash.
7. Install new shower base and surround with doors shall be standard or bi-fold as noted on the drawings.
8. Install new bathroom vanity. Install new composite counter with integral sink.
9. Install new 1.2 gallon water saver commode where noted and new toilet seat.
11. Provide new towel bar, hook, and toilet paper holder.

**DIVISION 15 – MECHANICAL**

**General:**
1. Contractor shall install new thermostats as noted. Coordinate with electrician.

**Kitchen:**
1. Contractor shall install new stainless steel sink.
2. Contractor shall install a new kitchen faucet (no sprayer).
3. Contractor shall install new hot and cold water supply lines to the new faucet. Provide new shutoff valves beneath the cabinet. Provide new drain, drain pipes to sanitary line.
4. Contractor shall insulate the hot water supply piping in the basement from the hot water tank to the new shutoff valve beneath the cabinet.
5. Contractor shall install new drain line and p-trap to the sink drain.
6. Contractor shall verify vent piping is as required by Code.

**Bathroom:**
1. Contractor shall install new composite counter with integral sink and faucet.
2. Contractor shall install new shutoff valves, hot and cold water supply lines, drain, drain piping and proper vent connection for new bathroom.
3. Contractor shall insulate the hot water supply piping in the basement from the hot water tank to the new shutoff valve beneath the cabinet.
4. Install new 1.2 gal commode, seat, provide new seals, receptor, connection to sanitary drain.
5. Install new shower unit, receptor, drain, hot/cold water supplies, diverter, water saving aerator, surround and bi-fold or standard door as noted. Coordinator with general contractor.

**DIVISION 16 - ELECTRICAL**

1. Contractor shall review all specified renovation work and ensure that all electrical work is completed per code requirements.
2. Contractor shall install new thermostat wiring.
3. Contractor shall replace existing non-grounded receptacles with new grounded receptacles and related wiring.
4. Contractor shall install new ceiling light fixtures and switches in rooms as noted.
5. Contractor shall install new 100 CFM ceiling fan with light in bathrooms. Provide all associated ductwork and accessories to vent to the exterior. Coordinate with siding installation specific to location.
6. Install new over range hood fan.
7. Reinstall or install new heat detector in kitchen as noted.
8. Contractor shall install and hardwire C.O detectors, one on each sleeping floor and one in the basement as noted.
9. Contractor shall install new fire alarm devices as noted.
10. Contractor shall install new GFCI outlets per code in the kitchen and bathroom. All locations shall be per code requirements.
11. Provide grounded outlet on own breaker for new location of refrigerator in kitchen.
12. Contractor shall install a minimum of 1 new receptacle in each bedroom as noted in the location specific scope documents.
13. Contractor shall install new exterior light fixtures as noted in the location specific scope documents.
14. Install motion detector in entry halls and to second floor corridor.
15. Contractor shall install new arc fault breakers for each bedroom.
16. Contractor shall install new telephone, data and CATV in one single gang box in each bedroom. Terminate ends. Contractor shall terminate all connections to new Hubbell data jack installed and shall provide final connection to CATV. Provide 10’ excess data/telephone cable in basement for connection by Westel.
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ARTICLE 1  GENERAL PROVISIONS

§ 1.1  BASIC DEFINITIONS

§ 1.1.1  THE CONTRACT DOCUMENTS

The Contract Documents consist of the Agreement between Owner and Contractor (hereinafter the Agreement), Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include other documents such as bidding requirements (advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or portions of Addenda relating to bidding requirements).

§ 1.1.2  THE CONTRACT

The Contract 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 written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Architect and Contractor, (2) between the Owner and a Subcontractor or Sub-subcontractor, (3) between the Owner and Architect or (4) between any persons or entities other than the Owner and Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3  THE WORK

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment and services provided or to be provided by the Contractor to fulfill the Contractor's 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 Contract Documents may be the whole or a part and which may include construction by the Owner or by separate contractors.

§ 1.1.5  THE DRAWINGS

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.

§ 1.1.6  THE SPECIFICATIONS

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7  THE PROJECT MANUAL

The Project Manual is a volume assembled for the Work which may include the bidding requirements, sample forms, Conditions of the Contract and Specifications.

§ 1.2  CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

§ 1.2.1  The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.2  Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3  Unless otherwise stated in the Contract Documents, words which have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.
§ 1.3 CAPITALIZATION

Terms capitalized in these General Conditions include those which are (1) specifically defined, (2) the titles of numbered articles or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 INTERPRETATION

In the interest of brevity the Contract 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 EXECUTION OF CONTRACT DOCUMENTS

The Contract Documents shall be signed by the Owner and Contractor. If either the Owner or Contractor or both do not sign all the Contract Documents, the Architect shall identify such unsigned Documents upon request.

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

§ 1.6 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE

The Drawings, Specifications and other documents, including those in electronic form, prepared by the Architect and the Architect's consultants are Instruments of Service through which the Work to be executed by the Contractor is described. The Contractor may retain one record set. Neither the Contractor nor any Subcontractor, Sub-subcontractor or material or equipment supplier shall own or claim a copyright in the Drawings, Specifications and other documents prepared by the Architect or the Architect's consultants, and unless otherwise indicated the Architect and the Architect's consultants shall be deemed the authors of them and will retain all common law, statutory and other reserved rights, in addition to the copyrights. All copies of Instruments of Service, except the Contractor's record set, shall be returned or suitably accounted for to the Architect, on request, upon completion of the Work. The Drawings, Specifications and other documents prepared by the Architect and the Architect's consultants, and copies thereof furnished to the Contractor, are for use solely with respect to this Project. They are not to be used by the Contractor or 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 the specific written consent of the Owner, Architect and the Architect's consultants. The Contractor, Subcontractors, Sub-subcontractors and material or equipment suppliers are authorized to use and reproduce applicable portions of the Drawings, Specifications and other documents prepared by the Architect and the Architect's consultants appropriate to and for use in the execution of their Work under the Contract Documents. All copies made under this authorization shall bear the statutory copyright notice, if any, shown on the Drawings, Specifications and other documents prepared by the Architect and the Architect's consultants. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with this Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' copyrights or other reserved rights.

ARTICLE 2 OWNER

§ 2.1 GENERAL

The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

The Owner shall, at the written request of the Contractor, prior to commencement of the Work and thereafter, furnish to the Contractor reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. Furnishing of such evidence shall be a condition precedent to commencement or continuation of the Work. After such evidence has been furnished, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.
§ 2.2.2 Except for permits and fees, including those required under Section 3.7.1, which are the responsibility of the Contractor under the Contract Documents, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.2.3 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.2.4 Information or services required of the Owner by the Contract Documents shall be furnished by the Owner with reasonable promptness. Any other information or services relevant to the Contractor's performance of the Work under the Owner's control shall be furnished by the Owner after receipt from the Contractor of a written request for such information or services.

§ 2.2.5 Unless otherwise provided in the Contract Documents, the Contractor will be furnished, free of charge, such copies of Drawings and Project Manuals as are reasonably necessary for execution of the Work.

§ 2.3 OWNER’S RIGHT TO STOP THE WORK
§ 2.3.1 If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or persistently fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.4 OWNER’S RIGHT TO CARRY OUT THE WORK
§ 2.4.1 If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a seven-day period after receipt of written notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may after such seven-day period give the Contractor a second written notice to correct such deficiencies within a three-day period. If the Contractor within such three-day period after receipt of such second notice fails to commence and continue to correct any deficiencies, the Owner may, without prejudice to other remedies the Owner may have, correct such deficiencies. In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due the Contractor the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect or failure. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect. If payments then or thereafter due the Contractor are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner.

ARTICLE 3  CONTRACTOR
§ 3.1 GENERAL
§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred throughout the Contract Documents as if singular in number. The term "Contractor" means the Contractor or the Contractor’s authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect’s administration of the Contract, or by tests, inspections or approvals required or performed by persons other than the Contractor.

§ 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR
§ 3.2.1 Since the Contract Documents are complementary, before starting each portion of the Work, the Contractor shall carefully study and compare the various Drawings and other Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.2.3, shall take field measurements of any existing conditions related to that portion of the Work and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating construction by the Contractor and are not for the purpose of
discovering errors, omissions, or inconsistencies in the Contract Documents; however, any errors, inconsistencies or
omissions discovered by the Contractor shall be reported promptly to the Architect as a request for information in
such form as the Architect may require.

§ 3.2.2 Any design errors or omissions noted by the Contractor during this review shall be reported promptly to the
Architect, but it is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and
not as a licensed design professional unless otherwise specifically provided in the Contract Documents. The
Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes,
ordinances, building codes, and rules and regulations, but any nonconformity discovered by or made known to the
Contractor shall be reported promptly to the Architect.

§ 3.2.3 If the Contractor believes that additional cost or time is involved because of clarifications or instructions
issued by the Architect in response to the Contractor's notices or requests for information pursuant to Sections 3.2.1
and 3.2.2, the Contractor shall make Claims as provided in Sections 4.3.6 and 4.3.7. If the Contractor fails to
perform the obligations of Sections 3.2.1 and 3.2.2, the Contractor shall pay such costs and damages to the Owner as
would have been avoided if the Contractor had performed such obligations. The Contractor shall not be liable to the
Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents or
for differences between field measurements or conditions and the Contract Documents unless the Contractor
recognized such error, inconsistency, omission or difference and knowingly failed to report it to the Architect.

§ 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The
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 Contract Documents
give other specific instructions concerning these matters. If the Contract Documents give specific instructions
concerning construction means, methods, techniques, sequences or procedures, the Contractor shall evaluate the
jobsite safety thereof and, except as stated below, shall be fully and solely responsible for the jobsite safety of such
means, methods, techniques, sequences or procedures. If the Contractor determines that such means, methods,
techniques, sequences or procedures may not be safe, the Contractor shall give timely written notice to the Owner
and Architect and shall not proceed with that portion of the Work without further written instructions from the
Architect. If the Contractor is then instructed to proceed with the required means, methods, techniques, sequences
or procedures without acceptance of changes proposed by the Contractor, the Owner shall be solely responsible for any
resulting loss or damage.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees,
Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for or
on behalf of the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that
such portions are in proper condition to receive subsequent Work.

§ 3.4 LABOR AND MATERIALS

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor,
materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, 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.

§ 3.4.2 The Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect
and in accordance with a Change Order.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other
persons carrying out the Contract. The Contractor shall not permit employment of unfit persons or persons not
skilled in tasks assigned to them.

§ 3.5 WARRANTY

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the
Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the
Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform to
the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions
not properly approved and authorized, may be considered defective. The Contractor's warranty excludes remedy for
damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient
maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the
Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.6 TAXES
§ 3.6.1 The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor
which are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely
scheduled to go into effect.

§ 3.7 PERMITS, FEES AND NOTICES
§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building
permit and other permits and governmental fees, licenses and inspections necessary for proper execution and
completion of the Work which are customarily secured after execution of the Contract and which are legally
required when bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and lawful
orders of public authorities applicable to performance of the Work.

§ 3.7.3 It is not the Contractor's responsibility to ascertain that the Contract Documents are in accordance with
applicable laws, statutes, ordinances, building codes, and rules and regulations. However, if the Contractor observes
that portions of the Contract Documents are at variance therewith, the Contractor shall promptly notify the Architect
and Owner in writing, and necessary changes shall be accomplished by appropriate Modification.

§ 3.7.4 If the Contractor performs Work knowing it to be contrary to laws, statutes, ordinances, building codes, and
rules and regulations without such notice to the Architect and Owner, the Contractor shall assume appropriate
responsibility for such Work and shall bear the costs attributable to correction.

§ 3.8 ALLOWANCES
§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items
covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct,
but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable
objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents:

.1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and
all required taxes, less applicable trade discounts;

.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and
other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but
not in the allowances;

.3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly
by Change Order. The amount of the Change Order shall reflect (1) the difference between actual
costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section
3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner in sufficient time to avoid delay
in the Work.

§ 3.9 SUPERINTENDENT
§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance
at the Project site during performance of the Work. The superintendent shall represent the Contractor, and
communications given to the superintendent shall be as binding as if given to the Contractor. Important
communications shall be confirmed in writing. Other communications shall be similarly confirmed on written
request in each case.
§ 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

§ 3.10.2 The Contractor shall prepare and keep current, for the Architect's approval, a schedule of submittals which is coordinated with the Contractor's construction schedule and allows the Architect reasonable time to review submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 DOCUMENTS AND SAMPLES AT THE SITE

§ 3.11.1 The Contractor shall maintain at the site for the Owner one record copy of the Drawings, Specifications, Addenda, Change Orders and other Modifications, in good order and marked currently to record field changes and selections made during construction, and one record copy of approved Shop Drawings, Product Data, Samples and similar required submittals. These shall be available to the Architect and shall be delivered to the Architect for submittal to the Owner 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 specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the 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 Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required by the Contract Documents the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals which are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve and submit to the Architect Shop Drawings, Product Data, Samples and similar submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of separate contractors. Submittals which are not marked as reviewed for compliance with the Contract Documents and approved by the Contractor may be returned by the Architect without action.

§ 3.12.6 By approving and submitting Shop Drawings, Product Data, Samples and similar submittals, the Contractor represents that the Contractor has determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples or similar submittals until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect...
in writing of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof.

§ 3.12.9 The 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 the Architect on previous submittals. In the absence of such written notice the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services which constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. The Contractor shall not be required to provide professional services in violation of applicable law. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall cause such services or certifications to be provided by a properly licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided the Owner and Architect have specified to the Contractor all performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review, approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

§ 3.13 USE OF SITE
§ 3.13.1 The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 CUTTING AND PATCHING
§ 3.14.1 The Contractor shall be responsible for cutting, fitting or patching required to complete the Work or to make its parts fit together properly.

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

§ 3.15 CLEANING UP
§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove from and about the Project waste materials, rubbish, the Contractor's tools, construction equipment, machinery and surplus materials.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost thereof shall be charged to the Contractor.

§ 3.16 ACCESS TO WORK
§ 3.16.1 The Contractor shall provide the Owner and Architect access to the Work in preparation and progress wherever located.
§ 3.17 ROYALTIES, PATENTS AND COPYRIGHTS
§ 3.17.1 The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from 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 Contract Documents or where the copyright violations are contained in Drawings, Specifications or other documents prepared by the Owner or Architect. However, if the Contractor has reason to believe that the required design, process or product is an infringement of a copyright or a patent, the Contractor shall be responsible for such loss unless such information is promptly furnished to the Architect.

§ 3.18 INDEMNIFICATION
§ 3.18.1 To the fullest extent permitted by law and to the extent claims, damages, losses or expenses are not covered by Project Management Protective Liability insurance purchased by the Contractor in accordance with Section 11.3, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts or other employee benefit acts.

ARTICLE 4 ADMINISTRATION OF THE CONTRACT
§ 4.1 ARCHITECT
§ 4.1.1 The Architect is the person lawfully licensed to practice architecture or an entity lawfully practicing architecture identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Architect" means the Architect or the Architect's authorized representative.

§ 4.1.2 Duties, responsibilities and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified or extended without written consent of the Owner, Contractor and Architect. Consent shall not be unreasonably withheld.

§ 4.1.3 If the employment of the Architect is terminated, the Owner shall employ a new Architect against whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the former Architect.

§ 4.2 ARCHITECT'S ADMINISTRATION OF THE CONTRACT
§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents, and will be an Owner's representative (1) during construction, (2) until final payment is due and (3) with the Owner's concurrence, from time to time during the one-year period for correction of Work described in Section 12.2. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents, unless otherwise modified in writing in accordance with other provisions of the Contract.

§ 4.2.2 The Architect, as a representative of the Owner, will visit the site at intervals appropriate to the stage of the Contractor's operations (1) to become generally familiar with and to keep the Owner informed about the progress and quality of the portion of the Work completed, (2) to endeavor to guard the Owner against defects and deficiencies in the Work, and (3) to determine in general if the Work is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will neither have control over or charge of, nor be responsible for, the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since
§ 4.2.3 The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of and will not be responsible for acts or omissions of the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications Facilitating Contract Administration. Except as otherwise provided in the Contract Documents or when direct communications have been specially authorized, the Owner and Contractor shall endeavor to communicate with each other through the Architect about matters arising out of or relating to the Contract. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and material suppliers shall be through the Contractor. Communications by and with separate contractors shall be through the Owner.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect will have authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.5.2 and 13.5.3, whether or not such Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, material and equipment suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken with such reasonable promptness as to cause no delay in the Work or in the activities of the Owner, Contractor or separate contractors, while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals 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 the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5 and 3.12. The Architect's review shall not constitute approval of safety precautions or, unless otherwise specifically stated by the Architect, of any construction means, methods, techniques, sequences or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may authorize minor changes in the Work as provided in Section 7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion, will receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor, and will issue a final Certificate for Payment upon compliance with the requirements of the Contract Documents.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more project representatives to assist in carrying out the Architect's responsibilities at the site. The duties, responsibilities and limitations of authority of such project representatives shall be as set forth in an exhibit to be incorporated in the Contract Documents.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If no agreement is made concerning the time within which interpretations required of the Architect shall be furnished in compliance with this Section 4.2, then delay shall not be recognized on account of failure by the Architect to furnish such interpretations until 15 days after written request is made for them.
§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and initial decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either and will not be liable for results of interpretations or decisions so rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.3 CLAIMS AND DISPUTES

§ 4.3.1 Definition. 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, 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 the Owner and Contractor arising out of or relating to the Contract. Claims must be initiated by written notice. The responsibility to substantiate Claims shall rest with the party making the Claim.

§ 4.3.2 Time Limits on Claims. Claims by either party must be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later. Claims must be initiated by written notice to the Architect and the other party.

§ 4.3.3 Continuing Contract Performance. Pending final resolution of a Claim except as otherwise agreed in writing or as provided in Section 9.7.1 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 4.3.4 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 Contract 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 Contract Documents, then notice by the observing party shall be given to the other party promptly before conditions are disturbed and in no event later than 21 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in the 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 the Architect 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, the Architect shall so notify the Owner and Contractor in writing, stating the reasons. Claims by either party in opposition to such determination must be made within 21 days after the Architect has given notice of the decision. If the conditions encountered are materially different, the Contract Sum and Contract Time shall be equitably adjusted, but if the Owner and Contractor cannot agree on an adjustment in the Contract Sum or Contract Time, the adjustment shall be referred to the Architect for initial determination, subject to further proceedings pursuant to Section 4.4.

§ 4.3.5 Claims for Additional Cost. If the 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. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.6.

§ 4.3.6 If the Contractor believes additional cost is involved for reasons including but not limited to (1) a written interpretation from the Architect, (2) an order by the Owner to stop the Work where the Contractor was not at fault, (3) a written order for a minor change in the Work issued by the Architect, (4) failure of payment by the Owner, (5) termination of the Contract by the Owner, (6) Owner's suspension or (7) other reasonable grounds, Claim shall be filed in accordance with this Section 4.3.

§ 4.3.7 Claims for Additional Time

§ 4.3.7.1 If the Contractor wishes to make Claim for an increase in the Contract Time, written notice as provided herein shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay only one Claim is necessary.
§ 4.3.7.2 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, could not have been reasonably anticipated and had an adverse effect on the scheduled construction.

§ 4.3.8 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 of others for whose acts such party is legally responsible, written notice of such injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 4.3.9 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed in a proposed Change Order or Construction Change Directive so that application of such unit prices to quantities of Work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 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 Section 4.3.10 shall be deemed to preclude an award of liquidated direct damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 4.4 Resolution of Claims and Disputes

§ 4.4.1 Decision of Architect. Claims, including those alleging an error or omission by the Architect but excluding those arising under Sections 10.3 through 10.5, shall be referred initially to the Architect for decision. An initial decision by the Architect shall be required as a condition precedent to mediation, arbitration or litigation of all Claims between the Contractor and Owner arising prior to the date final payment is due, unless 30 days have passed after the Claim has been referred to the Architect with no decision having been rendered by the Architect. The Architect will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 4.4.2 The Architect will review Claims and within ten days of the receipt of the Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Architect is unable to resolve the Claim if the Architect lacks sufficient information to evaluate the merits of the Claim or if the Architect concludes that, in the Architect's sole discretion, it would be inappropriate for the Architect to resolve the Claim.

§ 4.4.3 In evaluating Claims, the Architect may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Architect in rendering a decision. The Architect may request the Owner to authorize retention of such persons at the Owner's expense.

§ 4.4.4 If the Architect requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of such request, and shall either provide a response on the requested supporting data, advise the Architect when the response or supporting data will be furnished or advise the Architect that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Architect will either reject or approve the Claim in whole or in part.

§ 4.4.5 The Architect will approve or reject Claims by written decision, which shall state the reasons therefor and which shall notify the parties of any change in the Contract Sum or Contract Time or both. The approval or rejection of a Claim by the Architect shall be final and binding on the parties but subject to mediation and arbitration.
§ 4.4.6 When a written decision of the Architect states that (1) the decision is final but subject to mediation and arbitration and (2) a demand for arbitration of a Claim covered by such decision must be made within 30 days after the date on which the party making the demand receives the final written decision, then failure to demand arbitration within said 30 days' period shall result in the Architect's decision becoming final and binding upon the Owner and Contractor. If the Architect renders a decision after arbitration proceedings have been initiated, such decision may be entered as evidence, but shall not supersede arbitration proceedings unless the decision is acceptable to all parties concerned.

§ 4.4.7 Upon receipt of a Claim against the Contractor or at any time thereafter, the Architect or the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Architect or the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 4.4.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines prior to resolution of the Claim by the Architect, by mediation or by arbitration.

§ 4.5 MEDIATION

§ 4.5.1 Any Claim arising out of or related to the Contract, except Claims relating to aesthetic effect and except those waived as provided for in Sections 4.3.10, 9.10.4 and 9.10.5 shall, after initial decision by the Architect or 30 days after submission of the Claim to the Architect, be subject to mediation as a condition precedent to arbitration or the institution of legal or equitable proceedings by either party.

§ 4.5.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be in accordance with the Construction Industry Mediation Rules of the American Arbitration Association currently in effect. Request for mediation shall be filed in writing with the other party to the Contract and with the American Arbitration Association. The request may be made concurrently with the filing of a demand for arbitration but, in such event, mediation shall proceed in advance of arbitration or legal or equitable proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order.

§ 4.5.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 4.6 ARBITRATION

§ 4.6.1 Any Claim arising out of or related to the Contract, except Claims relating to aesthetic effect and except those waived as provided for in Sections 4.3.10, 9.10.4 and 9.10.5, shall, after decision by the Architect or 30 days after submission of the Claim to the Architect, be subject to arbitration. Prior to arbitration, the parties shall endeavor to resolve disputes by mediation in accordance with the provisions of Section 4.5.

§ 4.6.2 Claims not resolved by mediation shall be decided by arbitration which, unless the parties mutually agree otherwise, shall be in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association currently in effect. The demand for arbitration shall be filed in writing with the other party to the Contract and with the American Arbitration Association, and a copy shall be filed with the Architect.

§ 4.6.3 A demand for arbitration shall be made within the time limits specified in Sections 4.4.6 and 4.6.1 as applicable, and in other cases within a reasonable time after the Claim has arisen, and in no event shall it be made after the date when institution of legal or equitable proceedings based on such Claim would be barred by the applicable statute of limitations as determined pursuant to Section 13.7.

§ 4.6.4 Limitation on Consolidation or Joinder. No arbitration arising out of or relating to the Contract shall include, by consolidation or joinder or in any other manner, the Architect, the Architect's employees or consultants, except by written consent containing specific reference to the Agreement and signed by the Architect, Owner, Contractor and any other person or entity sought to be joined. No arbitration shall include, by consolidation or joinder or in any other manner, parties other than the Owner, Contractor, a separate contractor as described in Article 6 and other persons substantially involved in a common question of fact or law whose presence is required if complete relief is to be accorded in arbitration. No person or entity other than the Owner, Contractor or a separate contractor as
described in Article 6 shall be included as an original third party or additional third party to an arbitration whose interest or responsibility is insubstantial. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of a Claim not described therein or with a person or entity not named or described therein. The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 4.6.5 Claims and Timely Assertion of Claims. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 4.6.6 Judgment on Final Award. The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 DEFINITIONS

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract 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 who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

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

§ 5.2.1 Unless otherwise stated in the Contract Documents or the bidding requirements, the Contractor, as soon as practicable after award of the Contract, shall furnish in writing to the Owner through the Architect the names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each principal portion of the Work. The Architect will promptly reply to the Contractor in writing stating whether or not the Owner or the Architect, after due investigation, has reasonable objection to any such proposed person or entity. Failure of the Owner or Architect to reply promptly shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not change a Subcontractor, person or entity previously selected if the Owner or Architect makes reasonable objection to such substitute.

§ 5.3 SUBCONTRACTUAL RELATIONS

§ 5.3.1 By appropriate agreement, written where legally required for validity, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work, which the Contractor, by these Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies and redress against the
Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement which may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS
§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner provided that:

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements which the Owner accepts by notifying the Subcontractor and Contractor in writing; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS
§ 6.1 OWNER'S RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS
§ 6.1.1 The Owner reserves the right to perform construction or operations related to the Project with the Owner'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 Conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation. If the Contractor claims that delay or additional cost is involved because of such action by the Owner, the Contractor shall make such Claim as provided in Section 4.3.

§ 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 Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with other separate contractors and the Owner in reviewing their construction schedules when directed to do so. The Contractor shall make any revisions to the construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, separate contractors and the Owner until subsequently revised.

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

§ 6.2 MUTUAL RESPONSIBILITY
§ 6.2.1 The Contractor shall afford the Owner and separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

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

§ 6.2.3 The Owner shall be reimbursed by the Contractor for costs incurred by the Owner which are payable to a separate contractor because of delays, improperly timed activities or defective construction of the Contractor.
Owner shall be responsible to the Contractor for costs incurred by the Contractor because of delays, improperly
timed activities, damage to the Work or defective construction of a separate contractor.

§ 6.2.4 The Contractor shall promptly remedy damage wrongfully caused by the Contractor to completed or partially
completed construction or to property of the Owner or separate contractors as provided in Section 10.2.5.

§ 6.2.5 The Owner and each separate contractor shall have the same responsibilities for cutting and patching as are
described for the Contractor in Section 3.14.

§ 6.3 OWNER'S RIGHT TO CLEAN UP

§ 6.3.1 If a dispute arises among the Contractor, separate contractors and the Owner as to the responsibility under
their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish,
the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7   CHANGES IN THE WORK

§ 7.1 GENERAL

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the
Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the
limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor and Architect; a Construction
Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the
Contractor; an order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents, and the
Contractor shall proceed promptly, unless otherwise provided in the Change Order, Construction Change Directive
or order for a minor change in the Work.

§ 7.2 CHANGE ORDERS

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor and
Architect, stating their agreement upon all of the following:

.1 change in the Work;
.2 the amount of the adjustment, if any, in the Contract Sum; and
.3 the extent of the adjustment, if any, in the Contract Time.

§ 7.2.2 Methods used in determining adjustments to the Contract Sum may include those listed in Section 7.3.3.

§ 7.3 CONSTRUCTION CHANGE DIRECTIVES

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and
Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract
Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes
in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the
Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change
Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be
based on one of the following methods:

.1 mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to
   permit evaluation;
.2 unit prices stated in the Contract Documents or subsequently agreed upon;
.3 cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or
   percentage fee; or
.4 as provided in Section 7.3.6.

§ 7.3.4 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in
the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any,
provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.5 A Construction Change Directive signed by the Contractor indicates the agreement of the Contractor therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.6 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the method and the adjustment shall be determined by the Architect on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, a reasonable allowance for overhead and profit. In such case, and also under Section 7.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.6 shall be limited to the following:

1. costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and workers' compensation insurance;
2. costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
3. rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
4. costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and
5. additional costs of supervision and field office personnel directly attributable to the change.

§ 7.3.7 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.8 Pending final determination of the total cost of a Construction Change Directive to the Owner, amounts not in dispute for such changes in the Work shall be included in Applications for Payment accompanied by a Change Order indicating the parties' agreement with part or all of such costs. For any portion of such cost that remains in dispute, the Architect will make an interim determination for purposes of monthly certification for payment for those costs. That determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a claim in accordance with Article 4.

§ 7.3.9 When the Owner and Contractor agree with the determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and shall be recorded by preparation and execution of an appropriate Change Order.

§ 7.4 MINOR CHANGES IN THE WORK
§ 7.4.1 The Architect will have authority to order minor changes in the Work not involving adjustment in the Contract Sum or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly.

ARTICLE 8 TIME
§ 8.1 DEFINITIONS
§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.
§ 8.2 PROGRESS AND COMPLETION
§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, prematurely commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 to be furnished by the Contractor and Owner. The date of commencement of the Work shall not be changed by the effective date of such insurance. Unless the date of commencement is established by the Contract Documents or a notice to proceed given by the Owner, the Contractor shall notify the Owner in writing not less than five days or other agreed period before commencing the Work to permit the timely filing of mortgages, mechanic's liens and other security interests.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 DELAYS AND EXTENSIONS OF TIME
§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner, or by changes ordered in the Work, or by labor disputes, fire, unusual delay in deliveries, unavoidable casualties or other causes beyond the Contractor's control, or by delay authorized by the Owner pending mediation and arbitration, or by other causes which the Architect determines may justify delay, then the Contract Time shall be extended by Change Order for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Section 4.3.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION
§ 9.1 CONTRACT SUM
§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.2 SCHEDULE OF VALUES
§ 9.2.1 Before the first Application for Payment, the Contractor shall submit to the Architect a schedule of values allocated to various portions of the Work, prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 9.3 APPLICATIONS FOR PAYMENT
§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment for operations completed in accordance with the schedule of values. Such application shall be notarized, if required, and supported by such data substantiating the Contractor's right to payment as the Owner or Architect may require, such as copies of requisitions from Subcontractors and material suppliers, and reflecting retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.8, such applications may include requests for payment on account of changes in the Work which have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Such applications may not include requests for payment for portions of the Work for which the Contractor does not intend to pay to a Subcontractor or material supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location...
agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage and transportation to the site for such materials and equipment stored off the site.

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

§ 9.4 CERTIFICATES FOR PAYMENT

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either issue to the Owner a Certificate for Payment, with a copy to the Contractor, for such amount as the Architect determines is properly due, or notify the Contractor and Owner in writing of the Architect's reasons for withholding certification in whole or in part as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data comprising the Application for Payment, that the Work has progressed to the point indicated and that, to the best of the Architect's knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion and to specific qualifications expressed by the Architect. The issuance of a Certificate for Payment will further constitute a representation that the Contractor is entitled to payment in the amount certified. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work, (2) reviewed construction means, methods, techniques, sequences or procedures, (3) reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by the Owner to substantiate the Contractor's right to payment, or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 DECISIONS TO WITHHOLD CERTIFICATION

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of:

1. defective Work not remedied;
2. third party claims filed or reasonable evidence indicating probable filing of such claims unless security acceptable to the Owner is provided by the Contractor;
3. failure of the Contractor to make payments properly to Subcontractors or 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 the Owner 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; or
7. persistent failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When the above reasons for withholding certification are removed, certification will be made for amounts previously withheld.
§ 9.6 PROGRESS PAYMENTS
§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall promptly pay each Subcontractor, upon receipt of payment from the Owner, out of the amount paid to the 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 the 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 a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 Neither the Owner nor Architect 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.

§ 9.6.5 Payment to material suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors and suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, shall create any fiduciary liability or tort liability on the part of the Contractor for breach of trust or shall entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.7 FAILURE OF PAYMENT
§ 9.7.1 If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents the amount certified by the Architect or awarded by arbitration, then the Contractor may, upon seven additional days' written notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shut-down, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 SUBSTANTIAL COMPLETION
§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.
§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion which shall establish the date of Substantial Completion, shall establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance, and shall fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate. Upon such acceptance and consent of surety, if any, the Owner shall make payment of retainage applying to such Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 PARTIAL OCCUPANCY OR USE
§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer as required under Section 11.4.1.5 and authorized by public authorities having jurisdiction over the Work. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 FINAL COMPLETION AND FINAL PAYMENT
§ 9.10.1 Upon receipt of written notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection and, when the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with terms and conditions of the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payroll, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner, (3) a written statement that the Contractor knows of no substantial reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment and (5), if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.
§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from:

.1 liens, Claims, security interests or encumbrances arising out of the Contract and unsettled;
.2 failure of the Work to comply with the requirements of the Contract Documents; or
.3 terms of special warranties required by the Contract Documents.

§ 9.10.5 Acceptance of final payment by the Contractor, a 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 Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY
§ 10.1 SAFETY PRECAUTIONS AND PROGRAMS

§ 10.1.1 The Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 SAFETY OF PERSONS AND PROPERTY

§ 10.2.1 The 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 may be 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; and
.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

§ 10.2.2 The Contractor 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 The Contractor shall erect and maintain, as required by existing conditions 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 sites and utilities.

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

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly 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 Sections 10.2.1.2 and 10.2.1.3, except damage or loss attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.
§ 10.2.7 The Contractor shall not load or permit any part of the construction or site to be loaded so as to endanger its safety.

§ 10.3 HAZARDOUS MATERIALS

§ 10.3.1 If reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and report the condition to the Owner and Architect in writing.

§ 10.3.2 The Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to verify that it has been rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. The Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay and start-up, which adjustments shall be accomplished as provided in Article 7.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants and agents and employees of any of them from and against claims, damages, losses and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) and provided that such damage, loss or expense is not due to the sole negligence of a party seeking indemnity.

§ 10.4 The Owner shall not be responsible under Section 10.3 for materials and substances brought to the site by the Contractor unless such materials or substances were required by the Contract Documents.

§ 10.5 If, without negligence on the part of the Contractor, the Contractor is held liable for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred.

§ 10.6 EMERGENCIES

§ 10.6.1 In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Section 4.3 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 CONTRACTOR'S LIABILITY INSURANCE

§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor's operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

.1 claims under workers' compensation, disability benefit and other similar employee benefit acts which are applicable to the Work to be performed;

.2 claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor's employees;

.3 claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor's employees;
§ 11.1.1 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from date of commencement of the Work until date of final payment and termination of any coverage required to be maintained after final payment.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from date of commencement of the Work until date of final payment and termination of any coverage required to be maintained after final payment.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner. If any of the foregoing insurance coverages are required to remain in force after final payment and are reasonably available, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment as required by Section 9.10.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

§ 11.2 OWNER'S LIABILITY INSURANCE

§ 11.2.1 The Owner shall be responsible for purchasing and maintaining the Owner's usual liability insurance.

§ 11.3 PROJECT MANAGEMENT PROTECTIVE LIABILITY INSURANCE

§ 11.3.1 Optionally, the Owner may require the Contractor to purchase and maintain Project Management Protective Liability insurance from the Contractor's usual sources as primary coverage for the Owner's, Contractor's and Architect's vicarious liability for construction operations under the Contract. Unless otherwise required by the Contract Documents, the Owner shall reimburse the Contractor by increasing the Contract Sum to pay the cost of purchasing and maintaining such optional insurance coverage, and the Contractor shall not be responsible for purchasing any other liability insurance on behalf of the Owner. The minimum limits of liability purchased with such coverage shall be equal to the aggregate of the limits required for Contractor's Liability Insurance under Sections 11.1.1.2 through 11.1.1.5.

§ 11.3.2 To the extent damages are covered by Project Management Protective Liability insurance, the Owner, Contractor and Architect waive all rights against each other for damages, except such rights as they may have to the proceeds of such insurance. The policy shall provide for such waivers of subrogation by endorsement or otherwise.

§ 11.3.3 The Owner shall not require the Contractor to include the Owner, Architect or other persons or entities as additional insureds on the Contractor's Liability Insurance coverage under Section 11.1.

§ 11.4 PROPERTY INSURANCE

§ 11.4.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.4 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

§ 11.4.1.1 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsehood,
testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

§ 11.4.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance which will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.

§ 11.4.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductibles.

§ 11.4.1.4 This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit.

§ 11.4.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

§ 11.4.2 Boiler and Machinery Insurance. The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

§ 11.4.3 Loss of Use Insurance. The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner's property due to fire or other hazards, however caused. The Owner waives all rights of action against the Contractor for loss of use of the Owner's property, including consequential losses due to fire or other hazards however caused.

§ 11.4.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.4.5 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.4.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

§ 11.4.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.4. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days' prior written notice has been given to the Contractor.

§ 11.4.7 Waivers of Subrogation. The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect's consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section 11.4 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect's consultants, separate contractors described in Article 6, if any, and the
subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.4.8 A loss insured under Owner's property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.4.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.4.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner's duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or in accordance with an arbitration award in which case the procedure shall be as provided in Section 4.6. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

§ 11.4.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner's exercise of this power; if such objection is made, the dispute shall be resolved as provided in Sections 4.5 and 4.6. The Owner as fiduciary shall, in the case of arbitration, make settlement with insurers in accordance with directions of the arbitrators. If distribution of insurance proceeds by arbitration is required, the arbitrators will direct such distribution.

§ 11.5 PERFORMANCE BOND AND PAYMENT BOND

§ 11.5.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

§ 11.5.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall permit a copy to be made.

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 the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if required in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered which the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense. If such Work is not in accordance with the Contract Documents, correction shall be at the Contractor's expense unless the condition was caused by the Owner or a separate contractor in which event the Owner shall be responsible for payment of such costs.

§ 12.2 CORRECTION OF WORK

§ 12.2.1 BEFORE OR AFTER SUBSTANTIAL COMPLETION

§ 12.2.1.1 The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, whether discovered before or after Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.
§ 12.2.2 AFTER SUBSTANTIAL COMPLETION

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work which are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

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

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations which the Contractor might have under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 ACCEPTANCE OF NONCONFORMING WORK

§ 12.3.1 If the Owner prefers to accept Work which is not in accordance with the requirements of the Contract Documents, the Owner 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 law of the place where the Project is located.

§ 13.2 SUCCESSORS AND ASSIGNS

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns and legal representatives to the other party hereto and to partners, successors, assigns and legal representatives of such other party in respect to covenants, agreements and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to an institutional lender providing construction financing for the Project. In such event, the lender shall assume the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate such assignment.
§ 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 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 Contract Documents and rights and remedies available thereunder 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 the Owner, Architect 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 thereunder, except as may be specifically agreed in writing.

§ 13.5 TESTS AND INSPECTIONS
§ 13.5.1 Tests, inspections and approvals of portions of the Work required by the Contract Documents or by laws, ordinances, rules, regulations or orders of public authorities having jurisdiction shall be made at an appropriate time. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections or approvals which do not become requirements until after bids are received or negotiations concluded.

§ 13.5.2 If the Architect, Owner or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection or approval not included under Section 13.5.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.5.3, shall be at the Owner's expense.

§ 13.5.3 If such procedures for testing, inspection or approval under Sections 13.5.1 and 13.5.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures and compensation for the Architect's services and expenses shall be at the Contractor's expense.

§ 13.5.4 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.5.5 If the Architect is to observe tests, inspections or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.5.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.6 INTEREST
§ 13.6.1 Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at such rate as the parties may agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

§ 13.7 COMMENCEMENT OF STATUTORY LIMITATION PERIOD
§ 13.7.1 As between the Owner 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 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; and

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 the Contractor pursuant to any Warranty provided under Section 3.5, the date of any correction of the Work or failure to correct the Work by the Contractor under Section 12.2, or the date of actual commission of any other act or failure to perform any duty or obligation by the Contractor or Owner, whichever occurs last.

ARTICLE 14   TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 TERMINATION BY THE CONTRACTOR

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

.1 issuance of an order of a court or other public authority having jurisdiction which requires all Work to be stopped;
.2 an act of government, such as a declaration of national emergency which requires all Work to be stopped;
.3 because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
.4 the Owner has failed to furnish to the Contractor promptly, upon the Contractor's request, reasonable evidence as required by Section 2.2.1.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor or a Subcontractor, Sub-subcontractor or their agents or employees or any other persons performing portions of the Work under direct or indirect contract with the Contractor, repeated suspensions, delays or interruptions of the entire Work by the Owner as described in Section 14.3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' written notice to the Owner and Architect, terminate the Contract and recover from the Owner 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.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with the Contractor because the Owner has persistently failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' written notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 TERMINATION BY THE OWNER FOR CAUSE

§ 14.2.1 The Owner may terminate the Contract if the Contractor:

.1 persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
.2 fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;
.3 persistently disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction; or
.4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the above reasons exist, the Owner, upon certification by the Architect that sufficient cause exists to justify such action, may without prejudice to any other rights or remedies of the Owner and after giving the
Contractor and the Contractor's surety, if any, seven days' written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

1. take possession of the site and of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
2. accept assignment of subcontracts pursuant to Section 5.4; and
3. finish the Work by whatever reasonable method the Owner may deem expedient. Upon request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the 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 of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Architect, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 SUSPENSION BY THE OWNER FOR CONVENIENCE
§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay or interruption as described in Section 14.3.1. Adjustment of the Contract Sum shall include profit. 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 the Contractor is responsible; or
2. that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 TERMINATION BY THE OWNER FOR CONVENIENCE
§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of written notice from the Owner of such termination for the Owner's convenience, the Contractor shall:
1. cease operations as directed by the Owner in the notice;
2. take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
3. except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Contractor shall be entitled to receive payment for Work executed, and costs incurred by reason of such termination, along with reasonable overhead and profit on the Work not executed.
SECTION 00800 - SUPPLEMENTARY CONDITIONS

GENERAL


B. Where a portion of the General Conditions is modified or deleted by these Supplementary Conditions, the unaltered portions of the General Conditions shall remain in effect, but only to the extent that they are not inconsistent with these Supplementary Conditions.

ARTICLE 1 - GENERAL PROVISIONS

1.1 Basic Definitions

MODIFY as follows:

1.1.1 First line, ADD the following after the words "The Contract Documents consist of":

the Invitation to Bid (if any), Notice and Instructions to Bidders (if any), Bid Proposal, but only to the extent accepted by the Owner, Performance and Payment Bonds,

DELETE the last sentence.

ADD the following:

1.1.1.1 Wherever the words “directed”, “required”, “ordered”, “designated”, “prescribed”, or words of like import are used, it shall be understood that the “direction”, “requirement”, “order”, “designation”, or “prescription” of the Owner’s Representative is intended and similarly the words “approved”, “acceptable”, “satisfactory”, or words of like import shall mean “approved by”, or “accepted to”, or “satisfactory to” the Owner’s Representative, unless otherwise expressly stated.

1.1.1.2 Where “as shown”, “as indicated”, “as detailed”, or words of similar import are used, it shall be understood that the reference is made to the Contract Documents accompanying this Contract unless stated otherwise. The word “provide” as used herein with respect to the work shall be understood to mean “provide complete in place”, that is, “furnished and installed."
1.1.3 All personal pronouns and titles used in this Contract, whether used in the masculine, feminine, or neuter gender, shall include all other genders; and the singular shall include the plural and vice versa as applicable. Titles of Articles, Paragraphs, and Subparagraphs are for convenience only, and neither limit nor amplify the provisions of this Contract in itself. The use herein of the word “including” with respect to the work, when following any general statement, term, or matter, shall not be construed to limit such statement, term, or matter to the specific items or matters, set forth immediately following such word or to similar items or matters, whether or not non-limiting language (such words as “without limitation”, or ‘but not limited to”, or words of similar import) is used with reference thereto, but rather shall be deemed to refer to all items or matters that could reasonably fall within the scope of such general statement, term or matter.

1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

ADD the following to Subparagraph 1.2.1:

In the event of conflicts or discrepancies among the Contract Documents, interpretations will be based on the following priorities.

.1 The Agreement.
.2 Addenda, with those of later date having precedence over those of earlier date.
.3 The Supplementary Conditions.
.4 The General Conditions of the Contract for Construction.
.5 Drawings and Specifications.

In the case of an inconsistency between Drawings and Specifications or within either Document not clarified by addendum (1) the better quality and greater quantity of work shall be provided in accordance with the Architect's interpretation and (2) comply with the more stringent requirement; either or both in accordance with the Architect's interpretation. The terms and conditions of this Subparagraph 1.2.1, however, shall not relieve the Contractor of any of the obligations set forth in Paragraphs 3.2 and 3.7. In addition, the Contractor agrees that

.1 On the Drawings, large scale drawings shall take precedence over small scale drawings.

.2 Before ordering any materials or doing any Work, the Contractor and each Subcontractor shall verify measurements at the project site and shall be responsible for the correctness of such measurements. Any difference which may be found shall be submitted to the Architect for resolution before proceeding with the Work.
.3 If any change in the Work is found necessary due to actual field conditions, the Contractor shall submit detailed information (Request for Information “RFI”) describing such departure for approval by the Architect before making the change.

ADD the following Subparagraph to Paragraph 1.2:

1.2.4 The Sections of Division 1 - General Requirements of the Specifications govern the execution of work of all Sections of the Specifications.

ADD the following Subparagraph to Paragraph 1.2:

1.2.5 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, informed himself fully of the nature and conditions and peculiarities relating to the construction site and the conditions under which the Work is now or shall be performed and correlated personal observations with requirements of the Contract Documents.

1.6 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE.

ADD the following subparagraph to Paragraph 1.6.1:

1.6.1.1 The Contractor may obtain electronic copies of the Drawings for his use, only for this project. In accepting and utilizing any drawings or other data on any form of electronic media generated and provided by the Architect, the Contractor and its agents covenant and agree that all such drawings and data are instruments of service of the Architect, who shall be deemed the author of the drawings and data, and shall retain the common law, statutory law and other rights, including copyrights. The Contractor and its agents further agree not to use these drawings and data, in whole or in part for any purpose or project other than the project indicated. The Contractor and its agents agree to waive all claims against the Architect, resulting in damage, liability or costs, or loss of any kind, from any unauthorized changes or reuse of the drawings and data for this project or any other project, by anyone other than the Architect. In addition, the Contractor and its agents agrees to the fullest extent permitted by law to indemnify and hold the Architect and Owner harmless from any damage, liability or costs, including reasonable attorneys fees and costs of defense arising from any changes made by anyone other than the Architect or from any reuse of the drawings and data without prior written consent of the Architect.

The cost of providing electronic drawings for this project is $20.00 per sheet.
ADD the following Paragraph:

1.7 Compliance With Laws

1.7.1 In performing its obligations under this Contract, the Contractor shall comply with all applicable statutes, laws, ordinances, regulations, codes, rules or orders of, or issued by, any governmental body having jurisdiction over the Work, location of the Work, or the Contract.

1.7.2 Whenever the requirements of the Contract Documents exceed the standards imposed under any laws, ordinances, rules, regulations, and order of any governmental body having jurisdiction over the Work, the Contract Documents shall take precedence.

1.7.3 During the performance of this contract, the Contractor agrees as follows:

.1 The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

.2 The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.

.3 The Contractor will send to each labor union or representative of workers with whom a collective bargaining agreement or other contract or understanding has been entered into, a notice, to be provided, advising said labor union or workers' representative of the Contractor's commitments under any applicable nondiscrimination laws, and shall post copies of the notice in conspicuous places
available to employees and applicants for employment.

.4 The Contractor will comply with all provisions of any applicable nondiscrimination laws and the regulations and relevant orders of the United States Secretary of Labor and the State Commission on Human Rights and Opportunities (the "Commission").

.5 In the event of the Contractor's non-compliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be canceled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further Authority assisted construction contracts and such other sanctions may be imposed and remedies invoked as provided by regulations, or as otherwise provided by laws.

.6 The Contractor will include the provisions of Paragraphs (1) through (5) in every subcontract or purchase order unless exempted; so that such provisions will be binding upon each Subcontractor or vendor.

ARTICLE 2 - OWNER

2.1 Definition

ADD the following:

2.1.1.1 The terms “Owner” or “University” refer to Wesleyan University of Middletown, Connecticut.

2.1.1.2 The Owner’s Representative shall be the Associate VP of Facilities, or his or her designee. All contact and communication with the Owner shall be through the Associate VP of Facilities or his or her designee. The Owner on certain projects, may also retain the services of an outside Construction Administrator, who may be authorized to exercise certain contractual powers of the Owner’s Representative and/or the Architect. Should this occur, the Contractor shall be advised in writing, as appropriate, of the scope and nature of this Construction Administrator’s role pursuant to these Contract Documents.

MODIFY as follows:

2.1.2 DELETE this Subparagraph.
2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER

MODIFY as follows:

2.2.1 DELETE this Subparagraph.

2.2.2 DELETE this Subparagraph.

ADD the following Clause to Subparagraph 2.2.3:

2.2.3.1 Data concerning site, size, access to site, staging and storing, present obstructions on or near the site, conditions of existing adjacent structures, locations and depths of sewers, conduits or pipes, gas lines, position of sidewalks, curbs and pavements, and other data concerning site conditions, has been obtained and made available to Contractor to the extent reasonably available and from sources Owner believes reliable. Accuracy reliability or completeness of such data, however, is not guaranteed and is furnished solely for accommodation of Contractor. Use of such data is made at Contractor's sole risk and expense.

DELETE Subparagraph 2.2.5 and substitute the following:

2.2.5 The Contractor will be furnished free of charge 1 electronic copy of Drawings and Project Manuals. Printed sets will be furnished upon special request.

ARTICLE 3 - CONTRACTOR

3.1 General

MODIFY as follows:

ADD the following:

3.1.4 The Contractor shall purchase and shall maintain on site the latest code manuals applicable to the work. At a minimum the Contractor shall purchase and shall maintain the 2003 IBC, 2005 CT State Fire Code, 2003 ICC Fire Code, NFPA 101 Life Safety Code, NFPA-1 Integrated Code, 2005 CT Building Code, 2009 amendments to the 2005 State Building Code, the latest version of NECA, and the latest version of the IMC. These manuals shall become the property of the owner at the completion of the project.

3.2 Review of Contract Documents and Field Conditions by Contractor

MODIFY as follows:

3.2.1 Lines nine and ten after the word “Architect” ADD “and Owner.”
3.2.2 Line two, after the word “Architect” ADD “and Owner.”

ADD the following:

3.2.4 After any error, inconsistency or omission in the Contract Documents is reported by Contractor to Architect and Owner or is discovered by Architect or Owner, the Contractor shall not proceed with any portion of the Work so affected without the Owner’s written approval of the Architect’s modification of that portion of the Contract Documents.

3.2.5 In the event of a conflict between portions of the Contract Documents, Contractor shall ask for a written decision from the Owner resolving the conflict. The Owner may delegate to the Architect the responsibility for preparation of such a decision, in which event the Owner must approve the Architect’s decision in writing prior to the Contractor proceeding in reliance thereon.

3.4 LABOR AND MATERIALS

DELETE Subparagraph 3.4.2 and substitute the following Subparagraphs:

3.4.2 After the Contract has been executed, the Architect and Owner will consider a formal request for the substitution of products in place of those specified only under the conditions set forth in the General Requirements, Division 1 of the Specifications. By making requests for substitutions, the Contractor:

3.4.2.1 represents that the Contractor has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;

3.4.2.2 represents that the Contractor will provide the same warranty for the substitution that the Contractor would have provided for that specified;

3.4.2.3 certifies that the cost data presented is complete and includes all related costs under this Contract except the Architect’s redesign costs, and waives all claims for additional costs related to the substitution which subsequently become apparent; and,

3.4.2.4 shall coordinate the installation of the accepted substitution, making such changes as may be required for the Work to be complete in all respects.

3.4.2.4 shall make requests for substitutions, if any are to be requested, within 45 days of execution of contract.

3.4.2.5 agrees that no substitutes shall be considered except upon written approval by the Owner. No time extension shall be allowed nor any responsibility assumed by the Owner when the Contractor submits a request for a substitution, whether such request is approved or denied. Approval by the Owner of any such substitution shall not relieve the Contractor requesting the substitution of any responsibility for additional time, liability or costs incurred by other trades for changes made
necessary to accommodate the substituted item.

3.4 Labor and Materials

ADD the following:

3.4.3.1 Smoking is strictly prohibited inside or adjoining any building or structure and within any work area. Smoking is prohibited within 25 feet of the perimeter of all University buildings. At the sole discretion of Wesleyan University a smoking area may be designated on particular projects. The introduction or use of drugs, spirituous or intoxicating liquors, on or about the Work embraced in this Contract or on any of the Owner's properties is strictly prohibited and shall be grounds for termination.

3.4.3.2 The Contractor shall be fully responsible to the Owner for the acts of his Subcontractors or vendors, and of persons either directly or indirectly employed by them, as the Contractor is for the acts of persons directly employed by the Contractor.

3.4.3.3 Privacy: The Contractor shall conduct all work of the Contract with the maximum effort to maintain the privacy of the Owner’s operations, students and staff. When working in occupied areas the Contractor shall not permit workers to peer into other University areas which may be visible from the work area. Invasion of privacy is a major infraction of the work rules.

3.4.3.4 General Conduct and Demeanor: All construction workers shall treat all other construction workers, Owner’s staff, students and the public professionally and with respect and courtesy.

3.4.3.5 Physical Appearance: The Contractor shall require each worker to dress appropriately in a clean, neat and professional manner.

3.4.3.6 Radios and Television: The use of entertainment devices including personal devices with headphones or earphones is strictly prohibited at all times. The Contractor shall control the volume of communication radios and loudspeakers to avoid creating a nuisance.

3.4.3.7 Language: The use of foul, abusive or sexually suggestive language is strictly prohibited.
3.4.3.8 Loud Conduct: Screaming, yelling and unnecessary loud conduct is strictly prohibited.

3.4.3.9 Physical Actions: Running, horseplay, fighting and other unprofessional conduct is strictly prohibited. Fighting is a major infraction of the work rules.

3.4.3.10 Stealing: Stealing of materials, objects, furnishings, equipment, fixtures, supplies or other items is prohibited and a major infraction of the work rules.

3.4.3.11 Sexual Harassment: All forms of physical and verbal sexual harassment including, without limitation: touching, whistling, sexually explicit jokes, drawings, photos, and representations; exhibitionism; and all other sexually oriented offensive behavior is strictly prohibited and a major infraction of the work rules.

3.4.3.12 Warnings and Dismissal: For minor infractions of the rules, the Owner may issue a warning. One warning will be allowed per worker, and the second infraction shall result in the immediate dismissal of the worker from the Owner’s property. For major infractions such as invasion of privacy, the worker shall be dismissed immediately without warning and possibly subject to criminal prosecution.

3.4.3.13 Notification of Workers: The Contractor shall clearly notify and educate each worker about these Work Rules and the requirements for worker appearance and conduct. The Contractor shall document that all persons on site have been notified of these rules and shall transmit this documentation to the Owner.

3.5 WARRANTY

ADD the following Clause to 3.5.1:

3.5.1.1 The Contractor shall submit, prior to the Application for Payment of that item, statements from materials and systems manufacturer’s, that the materials and systems manufacturer’s accept the conditions and requirements for warranties for their product or system. Failure to submit to the Owner the manufacturer’s acceptance of any special conditions required by the Architect or Contract shall justify the withholding of, approval for payment for those materials or systems, including all labor to install or related overhead or profit charges.
ADD the following Subparagraphs 3.5.2 and 3.5.3:

3.5.2 The Contractor shall obtain written warranties from the manufacturer and installer and deliver them to the Architect and Owner no later than the time at which the work covered by the warranty was delivered and installed.

3.5.3 Unless otherwise specified, the Contractor shall warrant (guaranty) all Work against defects resulting from the use of material, workmanship, or equipment which is inferior, defective or not in accordance with the terms of the Contract. This warranty shall be in effect for one year from the date of issuance of the Certificate of Substantial Completion for the Project or designated portions thereof and shall be in addition to, and not a substitute for, any other rights of Owner under the Contract Documents or existing in law. All other or additional manufacturer's or installer's warranties shall be passed through to the Owner.

3.6 Taxes

DELETE Subparagraph 3.6.1 and SUBSTITUTE the following:

3.6.1 Wesleyan University is a tax-exempt institution of higher education. The Contractor shall become familiar with the current regulations of the Department of Revenue Service. The tax on materials or supplies exempted by such regulations shall not be included as part of the price for any work performed. A Sales Tax Certificate is available from the Owner upon written request.

3.7 PERMITS, FEES, AND NOTICES

MODIFY as follows:

3.7.3 First sentence, ADD the following to the end of the sentence:

“unless such laws, statutes, ordinances, building codes and rules and regulations bear upon the proper performance of the Work.”

ADD the following:

3.7.5 If any governmental body having jurisdiction over the Work requires licenses or registrations for the performance of the Work, or any part thereof, the Contractor shall obtain and hold such valid licenses or registrations as may be required by law to prosecute the Work to completion. If any part of the Work for which such a license or registration is required is to be performed by Subcontractors of any tier, the Contractor shall ensure that any such Subcontractor obtains and holds such valid licenses or registrations as may be required by law to prosecute said Work to
3.7.6 The Contractor must apply and bear the cost for all applicable building permits from boards and agencies of the City of Middletown.

3.7.7 Before commencing the Work, the Contractor must submit a letter stating that the Contractor has obtained all required permits, and listing such permits. The cost of obtaining such permits shall be included by the Contractor in its lump sum bid.

3.8 ALLOWANCES

Add the following to the end of Subparagraph 3.8.2.2:

"... except when installation is specified as part of the allowance in the General Requirements, Division 1, of the Specifications."

3.9 SUPERINTENDENT

ADD the following Subparagraph:

3.9.2 The Contractor's site representatives shall be subject to approval by the Owner, based upon credentials to be submitted by Contractor, and such representatives shall be changed only with consent of Owner. If for any reason Contractor's representatives are unsatisfactory, and upon request of Owner, other qualified representatives shall be substituted by the Contractor without any additional Charges.

ADD the following:

3.9.3 The Superintendent, who shall be subject to approval by the Owner, may not be replaced before completion of the Work without concurrence from the Owner.

3.9.4 As used in this entire Paragraph, “Superintendent” includes the project manager as well as the superintendent.

3.10 Contractor’s Construction Schedules

MODIFY as follows:

3.10.1 First sentence, DELETE the words “promptly after being awarded the Contract,” and SUBSTITUTE “within 15 days of the Contract Award or at the Preconstruction Meeting, whichever occurs first,”

3.10.2 Line one, after the word “Architect's” ADD “and Owner’s.” Line three,
after the word “Architect” **ADD** the words “and Owner.”

**ADD** the following:

**3.10.4** The Contractor shall submit, prior to the first Application for Payment, the Contractor’s Construction Schedule.

**3.11** Documents and Samples at the Site

**ADD** the following:

**3.11.2** In addition, the Contractor shall indicate on the drawings all new pipe, ductwork and conduit runs which are concealed in the floor slabs, walls, ceilings, etc. In addition, the Contractor shall indicate on the as built drawings all existing pipes, ductwork and conduits that have been reused to the extent the locations can be reasonably determined in the field.

The Contractor shall indicate on the drawings the electrical distribution panel and circuit number supplying each item installed or reconnected, with diagrammatic lines showing sequence of connections.

**3.12** Shop Drawings, Product Data and Samples

**MODIFY** as follows:

**3.12.2** Line two, after the word “brochures” **ADD** “Materials Safety Data Sheets (MSDS) or Global Harmonization System (GHS) Material Data Sheets.

**3.12.4** Line five, six, and eight, **ADD** “and Owner” after “Architect.”

**3.12.5** Line two and six, after “Architect” **ADD** “and Owner.”

**3.12.7** Line three, after “Architect” **ADD** “and Owner.”

**3.12.8** Lines three and nine after “Architect’s” **ADD** “or Owner’s.” Lines four and five after “Architect” **ADD** “and Owner.”

**3.12.9** Line three, after “Architect” **ADD** “or Owner.” Line three after “Architect’s” **ADD** “or Owner’s.”

**3.12.10** Line fourteen, after “Architect” **ADD** “and Owner.”

**ADD** the following:

**3.12.5.1** The Contractor shall certify, by stamping, signing and dating all
submittals, that it has reviewed the submittals to assure conformance to the Contract Documents. Submittals made to the Architect without evidence of the Contractor’s review for conformance may be returned for resubmission.

3.13 Use of Site

ADD the following:

3.13.2 Nothing contained in the Contract Documents shall be interpreted as giving the Contractor exclusive use of the site or premises where the Work is to be performed.

3.13.3 The Work in this Contract must not interfere with the Owner’s normal, continuous and safe operation of the buildings and site. If interference appears possible because of new connections to existing work or other reasons, the Work involved must be done at a time and in a manner directed by the Architect or Owner’s Representative as a part of the Contract.

This Project shall be executed in a series of phases. The Contractor shall incorporate the needs of the Owner into the phasing plans. The parties will endeavor to identify all interferences prior to completion of the phasing plans. If interference appears possible because of new connections to existing work or other reasons, the Work involved will be done at a time and in a manner directed by the Architect or Owner’s Representative.

The Contractor shall execute the work in such a manner as to minimize disruption to surrounding businesses. The Contractor shall work with the Owner to determine parking and work strategies so as to minimize disruption.

3.13.4 The Contractor shall comply with the following procedures when working in occupied areas including, dormitories, classrooms, hallways and office spaces:

.1 Notification: The Contractor shall notify the Owner at least five (5) business days prior to commencing work in an occupied office, classroom and other areas. This notification shall include a detailed description of proposed work and suggestions for minimizing or eliminating any impact on educational activities.

.2 Overhead Work: There shall be no overhead work (e.g. demolition, HVAC ductwork, electrical) performed directly over occupied spaces without Owner's express consent.
3.13.5 The Contractor shall produce a site mobilization plan for the Owner’s review and approval before beginning operations on site.

3.14 Cutting and Patching

ADD the following:

3.14.3 Written permission shall be obtained from the Architect/Engineer before cutting beams, arches, lintels or other structural members not already indicated to be modified in the Contract Documents.

3.15 Cleaning Up

MODIFY as follows:

3.15.1 Line one, after “shall” ADD “on a daily basis.”

ADD the following:

3.15.3 Burning of rubbish at the Project site or in the surrounding area is prohibited. The Contractor shall provide for removal of rubbish at least once per week, at its own cost and expense. The Contractor shall maintain the premises in a debris-free condition at the end of each day.

3.17 ROYALTIES, PATENTS AND COPYRIGHTS

ADD the following to the end of Subparagraph 3.17.1:

"... In the event of legal action arising out of such infringement for which the Contractor is responsible and which action has the effect of stopping the Work, the Owner may require the Contractor to substitute other products of like kind as will make it possible to pursue and complete the Work. Costs and expenses caused thereby shall be borne by the Contractor."

3.18 Indemnification

DELETE Subparagraph 3.18 and SUBSTITUTE the following:

3.18.1 To the fullest extent permitted by law, Contractor shall indemnify, defend and hold harmless Owner and its consultants, agents, and employees from and against all claims, damages, losses, liabilities, obligations, settlements or costs, whether direct, indirect or consequential (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals and all court and arbitration costs incurred by Owner) arising out of or resulting from any failure to perform the Work or
any breach of the Agreement or Contract or any breach of a duty imposed by law on Contractor, provided that any such claim, damage, loss or expense is caused in whole or in part by any act or omission of the Contractor, or any person or organization directly or indirectly employed by the Contractor to perform or furnish any of the Work, or by anyone for whose acts Contractor may be legally liable, regardless of whether or not it is caused in part by a party indemnified hereunder (with the exception only for any negligence of the Owner, or those for whom the Owner is liable, that is prohibited from the scope of this clause by Conn. Gen. Stat. § 52-572k as it may be amended from time-to-time.)

3.18.2 Contractor further agrees to indemnify, defend and hold harmless Owner and its consultants, agents and employees from all claims, damages, losses, liabilities, obligations, settlements or costs, whether direct, indirect or consequential (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals and all court and arbitration costs incurred by Owner) arising out of or resulting from Contractor's handling, generation or disposal of any hazardous or toxic substances or materials, or for any violations of any laws, regulations or standards pertaining to safety, health or the environment.

3.18.3 As to any and all claims against Owner or any of its consultants, agents or employees by any employee of Contractor, by any person or organization directly or indirectly employed by Contractor to perform or furnish any of the Work or to perform any part of the Agreement or Contract, or by anyone for whose acts Contractor may be liable, the indemnification obligations of Contractor under this clause 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 under worker's or workman's compensation acts, disability benefit acts or other employee benefit acts or insurance contracts. The Contractor further agrees to obtain, and maintain at its sole expense such general liability insurance coverage as will insure the provisions of this Indemnification clause and any other contractual indemnity obligations assumed by the Contractor in this Contract. Any claims by Owner for indemnification shall survive the termination of this Contract.

ARTICLE 4 - ADMINISTRATION OF THE CONTRACT

4.1 Architect

DELETE Subparagraph 4.1.1 and SUBSTITUTE the following:

4.1.1 The “Architect” shall be the Design Professional designated by the Owner with such qualifications as the Owner deems proper. The term “Architect” shall also include the Design Professional's authorized representative.
MODIFY as follows:

4.1.2 Fourth line, DELETE the word “Contractor.”

4.1.3 DELETE the words “against whom the Contractor makes no reasonable objection and.”

4.2 ARCHITECT’S ADMINISTRATION OF THE CONTRACT

Add the following Clause to Subparagraph 4.2.2:

4.2.2.1 Where it is provided in the Contract Documents or is otherwise required that the Contractor shall pay for services of the Architect, such payment shall be at a rate of two and one half (2.5) times the Architect's Direct Personnel Expense plus any expenses incurred in providing such services. Direct Personnel Expense is defined as the direct salaries of the Architect's personnel engaged on the Project and the portion of the cost of their mandatory and customary contributions and benefits related thereto, such as employment taxes and other statutory employee benefits, insurance, sick leave, holidays, vacations, pensions and similar contributions and benefits.

ADD the following to Subparagraph 4.2.4:

In all events, the Owner shall make the final decision on whether to make payment to the Contractor in accordance with the Contractor's Applications for Payment.

DELETE Subparagraph 4.2.6 and SUBSTITUTE the following:

4.2.6 The Owner shall have authority to reject Work which does not conform to the Contract Documents. Whenever the Owner considers it necessary or advisable for implementation of the intent of the Contract Documents, the Owner shall have authority to require additional inspection or testing of the Work in accordance with Subparagraphs 13.5.2 and 13.5.3, whether or not such work is fabricated, installed or completed. The Architect shall advise and assist the Owner in performing any of the functions set forth in this Subparagraph. The Owner shall advise the Architect of any instruction or interpretations which Owner may give to the Contractor.

MODIFY as follows:

4.2.7 First and thirteenth lines, after “Architect” ADD “and Owner.”
Fourth, Sixth, eleventh, twelfth, fourteenth, after “Architect’s” ADD
“and Owner’s.”

4.2.8  ADD a period after the word “Directives” and DELETE the rest of the sentence.

4.2.9  Last line, DELETE the period and ADD “but in all events, the Owner shall make the final decision on whether to make payment to the Contractor in accordance with the Final Certificate of Payment.”

4.2.10 DELETE this Subparagraph.

4.2.13  DELETE the words “The Architect’s decisions” and SUBSTITUTE “The decisions of the Owner, with the advice and consultation of the Architect.”

4.3 CLAIMS AND DISPUTES

ADD the following Clause to 4.3.7.2:

"... There shall be no extension of the Contract time for adverse weather conditions unless the number of days of severe weather is substantially greater or conditions substantially more severe than the average for the same calendar period over the preceding five years as recorded by a recognized weather observation agency."

ADD the following Clauses to Subparagraph 4.3.7:

4.3.7.3  No extension of the Contract Time shall be granted unless Contractor can demonstrate to Architect’s and Owner’s satisfaction, that work delayed is on the critical path of the Work.

4.3.7.4  The Architect and Owner shall have the right to defer his decision on any claim, made pursuant to the provisions of the Contract, until the actual effect which forms the basis of the claim may be fully assessed.

4.4 RESOLUTION OF CLAIMS AND DISPUTES

ADD the phrase “meetings of the principles” prior to the word “mediation” in the last sentence of this paragraph.

DELETE the portion of the first and second sentence beginning with “(1)” and ending with “and” and ADD the following Clause to 4.4.6:

“... (1) the decision is final but subject to a meeting of the principles of the parties involved then a meeting shall be held promptly between the parties attended by individuals with decision-making authority regarding the dispute,
to attempt in good faith to negotiate a resolution of the dispute. If, within 30
days and after at least three such meetings, the parties have not succeeded
in negotiating a resolution of the dispute, they agree to submit the dispute to
mediation and arbitration and . . ."

4.6 ARBITRATION

MODIFY as follows:

DELETE Paragraph 4.6 in its entirety and SUBSTITUTE the following:

Add the following:

4.6.1 In addition to mediation and arbitration and prior to mediation and
arbitration a meeting shall be held promptly between the parties attended
by individuals with decision-making authority regarding the dispute, to
attempt in good faith to negotiate a resolution of the dispute. If, within 30
days and after at least three such meetings, the parties have not
succeeded in negotiating a resolution of the dispute, they agree to submit
the dispute to non-binding mediation in accordance with the Construction
addition and prior to any arbitration, the parties shall endeavor to settle
disputes by mediation under the Construction Industry Mediation Rules of
the American Arbitration Association currently in effect. Mediation shall
commence, unless otherwise agreed, within the same time limits
stipulated in Subparagraphs 4.4.6 and 4.5.1 for the filing of a notice of a
claim in arbitration. Such time limits shall then be extended for arbitration
by ten days and the duration of the mediation process."

4.6.2 All disputes and claims shall initially be referred to the Architect for
decision in writing. After the Architect has rendered its decision, or, if
the Architect fails to render a decision within 45 days after receipt of a
submission of a dispute, the Owner, at its sole discretion and option,
may choose to have all claims, disputes and other matters in question
under the terms of this Contract be decided by arbitration in
accordance with the Construction Industry Arbitration Rules of the
American Arbitration Association then pertaining as administered by the
American Arbitration Association or a similar alternative dispute
resolution service selected by the Owner, unless the parties mutually
agree otherwise. The Contractor hereby consents that arbitration
arising out of or relating to this Contract shall include, by consolidation,
joinder or in any other manner, additional persons not a party to this
Contract, whose dispute or claim is in any manner related to the
underlying dispute or claim between the parties to this Contract.

4.6.3 If the Owner consents to arbitration, notice of demand for
arbitration shall be filed in writing with the other party to this
Agreement and with the alternative dispute resolution service selected by the Owner. The demand shall be filed within sixty (60) days after the claim, dispute or other matter in question has been decided by the Architect, and the Owner has formally consented in writing to arbitration. In no event shall the demand for arbitration be made after the date required by this Contract, or when institution of legal or equitable proceedings based on such claim, dispute or other matter in question would be barred by the applicable statute of limitations or by laches, whichever is earlier. In addition, if the Contractor fails to timely and properly file its demand in accordance with this paragraph, Contractor hereby waives any right to pursue in any manner any such claim, dispute or other matter in question.

4.6.4 The venue for arbitration shall be at a locale in the Greater Hartford area, or at such other location as the Owner may agree. If the Owner consents to arbitration, the award rendered by the arbitrators shall be final and binding, and not subject to appeal, and judgment may be entered upon it in accordance with the laws of the State of Connecticut.

4.6.5 If the Owner does not consent to arbitration, all disputes and claims, shall, after initial submission to and determination of the Architect in accordance with Paragraph 4.5.1, be subject to determination by a court of competent jurisdiction. The venue for such action shall be in Middletown, Connecticut or such other location within this State if required by law. If the Contractor fails to timely and properly commence such an action within sixty (60) days after the claim, dispute or other matter in question has been decided by the Architect, and if the Owner has not consented in writing to arbitration, then Contractor hereby waives any right to pursue in any manner any such claim, dispute or other matter in question.

ARTICLE 5 - SUBCONTRACTORS

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

ADD the following to Subparagraph 5.2.1:

5.2.1 Substitution of a Subcontractor for one named in the Bid Documents, or substitution of a Subcontractor for any designated subtrade work bid to be performed by the Contractor’s own forces, shall not be permitted, unless approved in writing by Owner in advance.

Add the following Clause to Subparagraph 5.2.1:
5.2.1.1 Prior to commencement of the Work, the Contractor shall submit to the Owner a complete list of Subcontractors, and each such Subcontractor shall submit to the Owner (through the Contractor) evidence satisfactory to the Owner that such Subcontractor is bondable to the extent required by the scope of such Subcontractor’s portion of the Work. To facilitate and expedite the investigations of proposed Subcontractors, Sub-Subcontractors, fabricators and suppliers of materials and equipment, the Contractor, at the request of the Owner, shall submit a statement in writing in sufficient detail to establish that each has the capability, experience, reliability and uncommitted productive capacity to carry out the Work to be performed pursuant to each such proposed subcontract, sub-subcontract or procurement contract, in a manner consistent with the requirement of this Contract for Construction. All such submittals shall include a fully detailed analysis of principal personnel and organization, financial condition, construction plant, equipment and facilities. Submit a completed AIA Document A305, Contractors Qualification Statement.

MODIFY as follows:

5.2.2 First line, ADD the following after the word ‘entity”:

who is not listed in the Bid Proposal Form and

5.2.3 DELETE second and third sentences and SUBSTITUTE the following:

The Contractor shall not award any subcontract or any other contract for a portion of the Work to any entity which does not meet the Owner’s, the Architect’s, or the Contractor’s reasonable criteria including, but not limited to, such entities’ ability to provide acceptable bid and/or performance bonds and certificates of insurance, such entities’ prior experience on projects of similar size and scope, and the existence of any prior or current litigation between such entity and the Owner, the Contractor, or the Architect, or any prior projects.

ARTICLE 6 - CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.1.5 ADD the following new subparagraph 6.1.5:

“The Contractor accepts assignment of, and liability for, all purchase orders and other agreements for procurement of materials and equipment that are identified as part of the Contract Documents. The Contractor shall be responsible for such prepurchased items, if any, as if the Contractor were the original purchaser. The Contract Sum includes, without limitation, all
costs and expenses in connection with delivery, storage, insurance, installation, and testing of items covered in any assigned purchase orders or agreements. All warranty and correction of the Work obligations under the Contract Documents shall also apply to any prepurchased items, unless the Contract Documents specifically provide otherwise."

6.2 MUTUAL RESPONSIBILITY

Add the following Clause to Subparagraph 6.2.5:

6.2.5.1 If a separate Contractor sues or initiates an arbitration proceeding against the Owner on account of any damage alleged to have been caused by the Contractor, the Owner shall notify the Contractor who shall defend such proceedings at the Contractor's expense, and if any judgment or award against the Owner arises therefrom the Contractor shall pay or satisfy it and shall reimburse the Owner for all attorney's fees and court or arbitration costs which the Owner has incurred.

ARTICLE 7 - CHANGES IN THE WORK

7.1 CHANGES

Add the following to end of Subparagraph 7.1.1:

". . . The Contractor's proposal for a change in the Work shall be itemized completely and shall include material costs and quantities; labor wages, time, insurance and pensions; equipment rental, other than small tools. There shall be no extension in the Contract time unless the Contractor can effectively demonstrate that the work delayed is on the critical path of the Project Schedule."

DELETE Subparagraph 7.1.2 and SUBSTITUTE the following:

7.1.2 A Change Order shall be based upon agreement by the Owner and Contractor; a Construction Change Directive may be issued without the agreement of the Contractor. All changes to the Work shall be approved by the Owner's Representative with the advice of the Architect. Except as permitted in Paragraph 7.3, a change in the Contract Sum or the Contract Time shall be accomplished only by Change Order. Accordingly, no course of conduct or dealings between the parties, nor express or implied acceptance of alterations or additions to the Work, and no claim that the Owner has been unjustly enriched by any alteration or additional to the Work, whether or not there is, in fact, any unjust enrichment to the work, shall be the basis of any claim to an increase in any amounts due under the Contract Documents or a change in any time period provided for in the Contract Documents outside of the Change Order or Construction Change Directive process described in the Contract.
7.2 Change Orders

DELETE Subparagraph 7.2.1 and SUBSTITUTE the following:

7.2.1 A Change Order is a written instrument signed by the Owner, Contractor and Architect, stating the agreement of the Owner and Contractor upon all of the following:

.1 A change in the Work.

.2 The amount of the adjustment in the Contract Sum, if any; and

.3 The extent of the adjustment in the Contract Time, if any.

The signature of the Architect signifies that he has reviewed and recommends the change. However, the Architect’s signature is not necessary in order for the Change Order to constitute a modification to the Contract which binds the Owner and Contractor.

ADD the following phrase to Subparagraph 7.2.2:

"and 7.3.6 and must include those listed in 7.3.10."

ADD the following paragraph at the end of the Article:

7.2.3 Agreement on any Change Order shall constitute a final settlement of all matters relating to the change in the Work which is the subject of the Change Order, including, but not limited to, all direct and indirect costs associated with such change and any and all adjustments to the Contract Sum and the construction schedule. In the event a Change Order increases the Contract Sum, Contractor shall include the Work covered by such Change Orders in Applications for Payment as if such Work were originally part of the Contract Documents. The Contractor's proposal for a change in the Work shall be completely itemized and shall include all material costs and quantities; labor wages, time, insurance and pensions; and equipment rental, other than small tools. Additional material, labor, equipment, overhead and profit or other items not originally included with the Contractor’s Proposal shall not be reviewed by the Architect nor accepted by the Owner after the Proposal has been accepted and a Change Order issued for the Work. There shall be no extension in the Contract time unless the Contractor can effectively demonstrate that the scope of work included in the Change has a quantifiable effect (either positively or negatively) on the critical path of the Project Schedule. The Change Order will include all of the costs associated with the change in the Work and will include the following language on the Change Order form:
THE CONTRACTOR AGREES THAT THIS CHANGE ORDER ADJUSTS THE CONTRACT PRICE AND TIME TO REFLECT FAIRLY ALL OVERHEAD, PROFIT, CHARGES, COSTS, EXPENSES, DELAYS, DAMAGES AND OTHER PAYMENTS THAT MAY BE CLAIMED DUE AND OWING TO THE CONTRACTOR AS OF THE ABOVE STATED DATE, AND AGREES THAT THE ACCEPTANCE OF THIS CHANGE ORDER BY THE OWNER SHALL CONSTITUTE A COMPLETE AND FINAL ACCORD AND SETTLEMENT OF CONTRACTOR'S CLAIM AGAINST THE OWNER ON ACCOUNT OF THIS OR ANY PRIOR CHANGE IN THE WORK.

7.3 CONSTRUCTION CHANGE DIRECTIVES

MODIFY as follows:

7.3.1 ADD the following to the end:

The signature of the Architect signifies that he has reviewed and recommends the change. However, the Architect’s signature is not necessary in order for the Change Directive to be valid.

7.3.6 First sentence, DELETE the word “Architect” and SUBSTITUTE “Owner with the advice of the Architect.” First sentence, DELETE the words “a reasonable allowance for overhead and profit” and SUBSTITUTE “an allowance for overhead and profit in accordance with Clauses 7.3.10.1 through 7.3.10.7 below.” Second sentence, DELETE the words “as the Architect” and SUBSTITUTE “as the Owner with the advice of the Architect.”

7.3.7 DELETE the first sentence.

ADD the following:

7.3.10 In Subparagraph 7.3.6, the allowance for the combined overhead and profit included in the total cost to the Owner shall be based on the total direct material, labor, and equipment cost. Utilizing the appropriate section below for the type of work and allowable percentage based upon the reasonable total direct cost of the change, calculate the appropriate overhead/profit allowance from the schedules below: (combined not compounded)

.1 For the Contractor, for Work performed by the Contractor’s own forces:

<table>
<thead>
<tr>
<th>Cost Range</th>
<th>Allowance Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0 to 25,000</td>
<td>10% overhead, 5% profit</td>
</tr>
<tr>
<td>25,001 to 50,000</td>
<td>12% combined overhead and profit</td>
</tr>
</tbody>
</table>
Wesleyan University

50,001 and up 7% combined overhead and profit

.2 For the Contractor, for Work performed by the Contractor's Subcontractor:

$0 to 15,000 8% combined overhead and profit
15,001 to 25,000 6% combined overhead and profit
25,001 and up 4% combined overhead and profit

.3 For each Subcontractor involved, for Work performed by that Subcontractor's own forces:

$0 to 25,000 10% overhead, 5% profit
25,001 to 50,000 12% combined overhead and profit
50,001 and up 7% combined overhead and profit

.4 For each Subcontractor involved, for Work performed by that Subcontractor's Subcontractor:

$0 to 15,000 8% combined
15,001 to 25,000 6% combined
25,001 and up 4% combined

.5 Cost to which overhead and profit is to be applied shall be determined in accordance with Subparagraph 7.3.6.

.6 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of all costs including labor, materials, unit prices and Subcontracts. Subcontract proposals included in any work shall also be itemized. This will require submission to the Owner of all bid estimate documentation and backup to substantiate what was base contract costs versus costs for the additional work, and all other documentation necessary for the Owner to assess the costs claimed.

.7 Overtime, when specifically authorized by the Owner and not as an Extraordinary Measure, shall be paid for by the Owner on the basis of premium payment only, plus the cost of insurance and taxes based on the premium payment period. Overhead and profit shall not be paid by the Owner for Overtime.

.8 Proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and
Subcontracts. Labor and materials shall be itemized in the manner prescribed above. Include invoices and quotations from material suppliers. Where major cost items are Subcontracts, they shall be itemized also. In no case will a change involving over $500 be approved without such itemization.

7.4 Minor Changes in the Work

MODIFY as follows:

7.4.1 First line, DELETE the word “Architect” and SUBSTITUTE “Architect, subject to the approval of the Owner.”

ARTICLE 8 - TIME

8.2 Progress and Completion

MODIFY as follows:

8.2.2 Eighth line, DELETE the words “mortgages, mechanic’s liens and other” and SUBSTITUTE “appropriate and lawful.”

ADD the following:

8.2.3.1 If, in the opinion of the Owner, the Contractor falls behind the approved schedule, the Contractor shall take all steps necessary to improve its progress, including those that may be required by the Architect or Owner, without additional cost to the Owner. In these circumstances, the Architect or Owner may require the Contractor to increase the number of shifts, overtime operations, days of work, and/or the amount of construction planned, and to submit for approval any supplementary schedule or schedules in such detail and form as the Architect or Owner deems necessary to demonstrate how the approved rate of progress shall be regained.

Add the following Subparagraph to Paragraph 8.2:

8.2.4 Except in the event of emergency, no substantial field operations shall be performed outside of regular working hours without the prior approval of the Architect and the Owner. The Contractor shall not be entitled to additional compensation for work performed outside of regular working hours.
ADD the following:

8.2.5 Before executing the Agreement, the Contractor shall provide to Owner a Project Schedule that includes a precedence outline (in the form prescribed by the Owner) and chart. The Project Schedule shall clearly indicate significant milestones in the Work and the critical path for completion of the Work in such detail as Owner requires. Schedule shall include time for normal seasonal weather impacting site activities.

8.3 DELAYS AND EXTENSIONS OF TIME

MODIFY as follows:

8.3.1 Last sentence, DELETE the words “which the Architect determines” and “as the Architect” and SUBSTITUTE “which the Owner with the advice of the Architect determines” and "as the Owner with the advice of the Architect."

Add the following Clauses to Subparagraph 8.3.2:

8.3.2.1 Claims of delay and requests for extension of time shall set forth in detail the circumstances of such claim, the dates upon which claimed delay began and ended, and the number of days’ extension of time requested. The Contractor shall provide supporting documentation as the Architect and Owner may require, including a revised CPM Construction Schedule indicating the affect of the circumstances which form the basis for the claim.

8.3.2.2 The Contractor shall not be entitled to an extension of time for each and every one of a number of causes which have a concurrent and interrelated effect on the progress of the Work.

8.3.2.3 Claims for extension of time arising out of authorized changes in the Work shall be made in writing prior to or concurrent with the submission of the Contractor's proposal for such change. No extension of time arising out of changes in the Work will be granted after the date upon which the Contractor is authorized to proceed with such change unless specific provision for an extension of time has been incorporated in the authorization.

8.3.2.4 Any additional cost to the Contractor arising from such change shall be included in the amended Contract Sum set forth in such Change Order. No claim for damages for delay, arising from such change in the Work, shall be recognized or be deemed valid.

DELETE Subparagraph 8.3.3 and SUBSTITUTE the following:

8.3.3 Contractor shall be reimbursed for all direct and actual costs incurred due to delays to the Project Schedule directly caused by the Owner or any
other entities controlled by the Owner. In no event, however, shall the Owner be responsible for any Eichleay-type delay damages, or any allocated portions of indirect or general overhead expenses, incurred by Contractor or anyone claiming through the Contractor.

8.3.3.1 Extension of the Contract Time shall be the Contractor's sole and exclusive remedy for delay of any kind. The Contractor expressly waives any and all right to claim damages for any delay.

8.4 LIQUIDATED DAMAGES – NONE

ARTICLE 9 - PAYMENTS AND COMPLETION

9.2 Schedule of Values

MODIFY as follows:

9.2.1 DELETE the following

“Before the first Application for Payment.”

ADD the following:

9.2.1.1 Submission of the Schedule of Values shall be made within fifteen (15) days of acceptance by the Owner.

9.2.1.2 The Schedule of Values shall be submitted (typewritten) on a AIA Document G702 form and should be broken down into a minimum of 16 divisions based on the Construction Specifications Institute (CSI) guidelines.

9.2.1.3 The contractor shall distribute the lump sum cost of the work over the 16 divisions based on the CSI guidelines. The contractor shall develop a schedule of values that allows the Owner, Architect, and Contractor to judge the true and accurate cost of the work in place, separated by building (Butterfield A/B/C). As part of the schedule of values developed by the contractor, the contractor must indicate the following activities on its schedule of values and must assign reasonable costs to these activities which must be approved by the owner prior to approval of the first payment application: mobilization, de-mobilization (in no event shall mobilization exceed de-mobilization), as-built document preparation and updating, schedule updating, operation and maintenance manual acceptance, division 14 training, division 15 training, division 16 training, all equipment training, attic stock, spare parts, division 15 start up, division 16 start up, manufactures site
inspections of work (showers/windows/hardware/AHUs/ERVs/lighting systems/etc), final cleaning.

9.2.1.4 In no event shall the contractor request payment for or shall the Owner make payment for general shop drawings, submittal preparation, submission, or approval.

9.3 APPLICATIONS FOR PAYMENT

ADD the following sentence to 9.3.1:

The form of Application for Payment shall be a notarized AIA Document G702, Application and Certification for Payment, supported by AIA Document G703, Continuation Sheet.

9.3.1.1 DELETE this Clause.

ADD the following Clauses:

9.3.1.3 Whenever the Owner has designated a separate section for a class of work, the Contractor shall, when applicable, state as part of its application for partial payment that it considers the work required to be done under any such separate section to be fully completed in accordance with the terms of the Contract. The Owner, through the Owner’s Representative, shall thereupon conduct an inspection of the work in such class, and if it finds that such work has been fully completed in accordance with the terms of the Contract, it shall issue a statement certifying that such work is accepted as fully completed, and shall pay the Contractor in full for such work subject to whatever credits, backcharges or rights of retainage the Owner may have.

DELETE Subparagraph 9.3.2 and substitute the following:

"Unless otherwise specifically approved, the Owner will consider payment only for material and equipment delivered and incorporated in the Work. If approved in advance by the Owner, payment may be similarly made for material and equipment suitably stored on site at a location agreed upon in writing. Payment for materials stored will apply only to materials delivered and properly stored on site and not to materials stored off site of any kind. Payment will be made in the amount of 80% of the submitted and substantiated invoice value. Transfer of title and insurance for the full replacement of the material, including all submittal, fabrication, procurement, delivery, and escalation costs, must accompany any request for payment. In no event does the Owner or Architect assume any risk or responsibility for the size, quantity, quality, storage condition, safety, protection, security, or any other aspect of the materials delivered and
stored at the site for future use. For the purposes of this paragraph and for payment, materials considered for payment will not include those common to multiple projects, but rather, payment will only be considered for materials that can be specifically used on this project. Examples of materials that may be considered for payment include:

a. structural steel fabricated and delivered to the site specifically for this project as indicated on approved shop drawings and bearing piece marks that can be correlated with the shop drawings.
b. food service equipment delivered to the site fabricated specifically for this project as indicated on approved shop drawings and bearing piece marks that can be correlated with the shop drawings.
c. special lighting fixtures specifically intended for use on this project as indicated on approved shop drawings and bearing piece marks that can be correlated with the shop drawings.
d. pumps, motors, air handling equipment, and VFD's as indicated on approved shop drawings and bearing piece marks that can be correlated with the shop drawings.

Examples of materials that will NOT be considered for payment include:

a. site materials such as manholes, catch basins, equipment pads, piping for utilities, stone, sand, fill of any kind, landscaping and plant materials and conduits of any nature.
b. common building components such as concrete masonry units, brick, waterproofing membranes, miscellaneous steel not piece marked and shown on approved shop drawings, gypsum wall board, acoustical ceiling tile, stone flooring, rubber base, steel studs, insulation, paint, carpeting, etc.
c. reinforcing bar such as rebar or welded wire mesh.”

ADD the following Clauses to Subparagraph 9.3.2:

9.3.2.1 In addition, for consideration of payment for stored products:

(a) Storage shall be agreed upon in advance, prior to shipment.
(b) Location of storage shall be agreed upon in advance.
(c) Contractor shall be responsible for, and pay costs of, the verification and inspection of storage.
(d) Insurance certificate required for stored items.
(e) Bill of sale from supplier to verify transfer of title to goods to the Owner.

9.3.2.2 Schedule of Values and Construction Schedule will be considered by the Owner making in its sole discretion the decision on any specific request for payment for storage.

9.3.2.3 Payment for material and equipment delivered and stored shall not relieve Contractor of responsibility for furnishing equipment and material required
for the Work in the same manner as if such payment were not made.

ADD the following Clause to 9.3.3:

9.3.3.1 The Contractor shall submit with each Application for Payment, to the extent permitted by law, partial lien waivers from the Contractor, Subcontractors, material suppliers and other persons or entities who were due payment based on the previous Application for Payment.

9.3.3.2 At the completion of the Work and prior to submission of the final Application for Payment, the Contractor shall certify that the Work is complete and in accordance with the Contract Document and approved Shop Drawings. The Certificate for Payment may be adjusted by the Owner if the aggregate amount of lien waiver amounts do not agree with previous Application for Payment amounts.

ADD the following Subparagraph and Clauses to 9.3:

9.3.4 If payment for stored products is approved by the Owner, Contractor shall furnish with Application for Payment an invoice establishing the value of material and equipment stored along with a statement of amount to be paid vendor. The Owner will pay a maximum of 80% of this invoice value.

9.3.4.1 Such stored items are subject to prior approval for storage and to inspection by Architect and Owner before payment is recommended.

9.3.4.2 Contractor shall give Owner Certificates of Insurance in accordance with Contract Documents for the full value of the items stored. Insurance to be maintained until items are incorporated in the Work.

9.5 Decision to Withhold Certification

MODIFY as follows:

9.5.1 First and eighth lines, DELETE the word “Architect” and SUBSTITUTE “Owner, with the advice of the Architect”

DELETE Clause 9.5.1.5 and SUBSTITUTE the following:

9.5.1.5 injury to persons or damage to the Work or property of the Owner, including any economic damages or losses incurred by the Owner other Contractors, or others covered by the breach of contract or neglect of the Contractor or any of his Subcontractors.
ADD the following:

9.5.1.8 failure to submit Construction Schedules, recovery schedules, or updates in the time prescribed or failure to prosecute the Work in accordance with the Construction Schedule approved by Owner.

ADD the following:

9.5.3 The Owner shall have the right to apply any such amounts so withheld in such manner as the Owner may deem proper to satisfy such claims or to secure such protection. Such application of such money shall be deemed payments for the accounts of the Contractor.

9.6 PROGRESS PAYMENTS

DELETE Subparagraph 9.6.1 and SUBSTITUTE the following:

9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall review the Certificate of Payment and decide within the time provided in the Contract Documents whether to make payment in accordance with their Certificate of Payment, and shall notify the Architect. In the event payment is approved by the Owner, Owner shall make payment as soon as practicable after making its decision.

ADD the following Clause to Subparagraph 9.6.2:

9.6.2.1 Contractor shall furnish with Application for Payment satisfactory evidence of payment to vendors of products placed in approved storage. This shall be done within 30 days after date of progress payment which includes payment for such stored items. Satisfactory evidence of payment, as determined by the Owner, shall be one or more of the following:

(a) Contractor's canceled check in correct amount with identification of invoices paid.
(b) Fully executed Lien Waiver.
(c) Bill of Sale conveying unencumbered title to the Owner.

9.7 FAILURE OF PAYMENT

DELETE Article 9.7 in its entirety and ADD the following:

9.7 The Contractor is obligated to continue Work while all payments and claims are pending and shall not be entitled to stop Work.

9.8 Substantial Completion
MODIFY as follows:

9.8.2 Third line, after the word “Architect” ADD “and Owner.”
9.8.5 ADD the following sentence to the end of this paragraph “Unless specifically agreed otherwise and approved by the Owner, the Contractor shall complete all responsibilities associated with the substantial completion of the Work within 45 days of the issuance of the Substantial Completion Certificate. During the substantial completion period the Contractor shall provide all cleaning services required in support of its work, including points of ingress and egress, which are impacted as a result of the Contractor’s activities on site. If the Contractor has failed to complete all of the activities required by the Substantial Completion Certificate within 45 days of issuance and the Owner judges that the Contractor is not working diligently toward completion, the Owner reserves the right to supplement the Contractor’s forces at the Contractor’s expense.”

9.9 Partial Occupancy or Use

MODIFY as follows:

9.9.1 Eleventh line, after the word “Architect” ADD “and Owner.”

9.10 Final Completion and Final Payment

MODIFY as follows:

9.10.1 At the end of the last sentence, ADD the following:

“In all events, Owner shall make the final decision on whether to make payment to the Contractor in accordance with the final Certificate of Payment. In no event shall final payment be made to the Contractor until all as-builts are submitted and approved by the Owner and the Architect, Operation and Maintenance Manuals and all required copies are submitted an approved, all training is complete and accepted, all testing and balancing is complete and accepted, final cleaning is accepted, and turnover from the Contractor to the Owner is accepted by the Owner’s Operations Staff including the Owner’s Cleaning Staff. Unless otherwise agreed, the Contractor must complete all work required by the Substantial Completion Certificate prior to Final Completion within 45 days. If the Contractor has failed to complete all of the activities required by the Substantial Completion Certificate within 45 days of issuance and the Owner judges that the Contractor is not working diligently toward completion, the Owner reserves the right to supplement the Contractor’s forces at the Contractor’s expense.”
9.10.3 Fourth line, **DELETE** the words “and certification by the Architect” and **SUBSTITUTE** “and the written approval of the Owner’s Representative.” **DELETE** the last sentence.

9.10.5 **DELETE** the balance of the sentence after the word “payee”.

**ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY**

10.1 Safety Precautions and Programs

10.1.1 **ADD** the following:

Prior to, and as a condition of mobilization on site, the Contractor shall submit a satisfactory Safety Plan to the Architect and Owner for their review. This safety plan shall include written safety programs as are required by local, state, or federal OSHA requirements or by Wesleyan’s Safety Manual. Wesleyan’s Safety Manual or other Safety Programs, as have been developed and amended from time to time, are available upon written request.

10.1.2 **ADD** the following:

Thirty days prior to, and as a condition of the commencement of any work activity on site, the Contractor shall prepare and submit for the Owner’s review an activity specific work hazard analysis document. This document shall identify all potential hazards relating each portion of a specific Work activity and shall describe the methods that the Contractor will employ to verify full compliance with all applicable local, state, and federal safety requirements. Further, the Contractor shall refer to Wesleyan’s Safety Manual, as applicable, to verify that all Work is completed in accordance with Wesleyan’s Safety Requirements but only to the extent that they are not inconsistent with the Contractor’s Safety Programs, or local, state, or federal requirements. In any event, the more strict requirement shall apply.

10.2 **SAFETY OF PERSONS AND PROPERTY**

**MODIFY** as follows:

10.2.3 **ADD** the following:

Additionally, the Contractor shall maintain all passageways, guard fences, lights and other facilities for protection.
10.2.4.1 When there are indications that the use of explosives or other hazardous materials, equipment or unusual methods is necessary, the Contractor shall give the Owner reasonable advance notice of the conditions.

10.2.4.2 The Contractor shall be solely responsible for the handling, storage, and use of explosive or other hazardous materials when their use is permitted.

10.2.4.3 The Contractor shall not bring explosives onto the site or use in the Work without the prior written permission of the Architect and Owner. For such use, the Contractor shall obtain necessary permits with copies to the Architect. Contractor shall furnish Owner and Architect with certificates indicating proper and adequate insurance.

ADD the following:

10.2.5.1 The Contractor shall repair or replace any such damage at no additional cost to the Owner. Such repair or replacement shall be completed within one week of the damage or as directed by the Owner’s Representative. If the Contractor fails or refuses to repair the damage promptly, the Owner may have the necessary Work performed and charge the cost to the Contractor.

ADD the following:

10.2.8 All materials furnished and all work installed shall comply with the rules and recommendations of the National Board of Fire Underwriters; with all applicable State and local codes, laws, ordinances, rules and regulations; with all requirements of local utility companies and with the recommendations of the Insurance Rating Organization having jurisdiction.

10.2.9 All apparatus, equipment and construction such as ladders, scaffolds, chutes, etc., shall comply with the recommendations of the manual of Accident Prevention in Construction published by the Associated General Contractors of America.

10.2.10 The Contractor shall protect all work and material from damage by water and weather and shall be responsible for the adequate strength and safety of all scaffolding, staging and hoisting equipment and for temporary shoring, bracing and tying.

10.2.11 The Contractor shall furnish approved hard hats, other personal protective equipment as required, approved first aid supplies, name of first aid attendant and a posted list of emergency facilities as necessary to provide a safe work environment.

10.2.12 The Contractor shall take immediate action to correct any
hazardous conditions reported.

10.2.13 No unauthorized visitors shall be allowed on the work site without permission from the Owner’s Representative.

10.2.14 The Contractor shall comply with the requirements of the Occupational Safety and Health Act and the Construction Safety Act of 1970, as amended and supplemented, including all standards and regulations which have been promulgated by the governmental authorities which administer such acts; and said requirements, standards and regulations are incorporated herein by reference. The Contractor shall also comply with Wesleyan’s Safety Manual.

The Contractor shall be directly responsible for compliance therewith on the part of its agents, employees, materialmen and Subcontractors and shall directly receive and be responsible for all citations, assessments, fines or penalties which may be incurred by reason of its agent, employees, materialmen and Subcontractors, to so comply.

The Contractor shall defend, indemnify and hold harmless the Owner and the Architect and their officers, agents, servants and employees from and against any and all suits, claims, damages, losses, litigation costs and expenses, including fines and reasonable attorney’s fees incurred by the Owner and the Architect by reason of the real or alleged violation of such laws, ordinances, regulations and directives, Federal, State and Local, which are currently in effect or which become effective in the future, by the Contractor, its Subcontractors or materialmen.

10.3 Hazardous Materials

MODIFY as follows:

10.1 DELETE the words, “Asbestos or polychlorinated biphenyl (PCB)” throughout Paragraph 10.1 and SUBSTITUTE “hazardous materials, including but not limited to Asbestos and/or polychlorinated biphenyl (PCB).”
10.3.2 ADD the following:

The term “rendered harmless” shall be interpreted to mean that levels of hazardous materials including, but not limited to asbestos and polychlorinated biphenyl, are less than any applicable exposure standards set forth in OSHA regulations. In no event, however, shall the Owner have any responsibility for any substance or material that is brought to the Project site by the Contractor, any Subcontractor, any materialman or supplier or any entity for whom any of them is responsible. The Contractor agrees not to use, unless specifically mandated by the Contract Documents, any fills or other materials to be incorporated into the Work which are hazardous, toxic or comprised of any items that are hazardous or toxic.

10.3.3.1 ADD the following:

The Contractor shall be responsible for the abatement or removal of any asbestos, PCB’s, paint containing lead, or other hazardous materials which are encountered during the execution of the Work and identified in the Contract Documents. Removal or abatement of materials not specifically identified in the Contract Documents, or otherwise assumed as the responsibility of the Contractor, shall be treated as a Change in the Work pursuant to Article 7.

10.6 EMERGENCIES

Add the following Clause to Subparagraph 10.6.1:

10.6.1.1 The Contractor shall promptly notify its insurers and those of its Subcontractors and suppliers, as applicable, the Architect and the Owner of the nature of the emergency. Immediately thereafter, the Contractor shall submit to the Architect and Owner a written report including a full and detailed description of the causes, effects, and circumstances of the emergency and details of all actions taken.

ADD the following Paragraph:

10.7 Asbestos

10.7.1 Some buildings of the University may have some Asbestos Containing Materials (ACM) used as building products. Any known ACM has been identified on the Plans and Specifications of this Contract, see referenced/applicable attachment.

10.7.2 Every effort has been made to identify ACM, however, there may
be additional ACM present in the area of work. This suspected ACM may become apparent especially during the demolition phases of contracts.

10.7.3 The Contractor shall accomplish work in such a manner as to not disturb ACM or suspected ACM unless specifically incorporated as part of this Contract.

10.7.4 The Contractor shall bring to the immediate attention of the Owner’s Representative the location of suspected ACM that shall be disturbed by work required under this Contract. No work shall be attempted that could result in a release of ACM to the environment.

ADD the following Paragraph:

10.8 Lead Paint

10.8.1 Exposure levels for lead in the construction industry are regulated by 29 CFR 1926.62, as amended and supplemented. Construction activities disturbing surfaces containing paint or other materials containing lead which are likely to be employed, such as sanding, grinding, welding, cutting and burning, have been known to expose workers to levels of lead in excess of the Permissible Exposure Limit (PEL). The Contractor shall conduct all work specified in the Contract Documents in conformance with these regulations. In addition, construction debris/waste may be classified as hazardous waste. Disposal of hazardous waste material shall be in accordance with 40 CFR Parts 260 through 271 and Connecticut Hazardous Waste Management Regulations Section 22a-2091; 22a-2098(c)-11; and 22a-449(c)100 through 110, as amended and supplemented, and Wesleyan’s Safety Manual.

10.8.2 Where a child under the age of six resides, the work shall also be in accordance with Connecticut Regulations Section 19a-111-1 through 11, as amended and supplemented.

ADD the following:

10.9 Lockout/Tagout Procedures Required by OSHA

10.9.1 OSHA regulation 29 CFR 1910.147, as amended and supplemented, (The Control of Hazardous Energy) requires employers to develop procedures for the lockout or tagout of machines or equipment. The purpose is to prevent injuries by ensuring that hazardous forms of energy are isolated (locked or tagged out) before employees perform any servicing or
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maintenance activities which could result in the unexpected energization, start-up or release of stored energy. This includes electrical, mechanical, hydraulic, pneumatic, chemical, thermal or other energy sources.

10.9.2 Prior to commencing any work under this Contract that shall or may involve exposure to potentially hazardous energy, the Contractor shall notify the Owner’s Representative of the lockout/tagout procedures to be used and shall verify compliance with Wesleyan’s procedures. Lockout/tagout procedures shall be exchanged between the Contractor and the Owner’s Representative at the Pre-Construction Conference.

10.9.3 All work carried out under this Contract that shall or may involve exposure to potentially hazardous energy shall be carried out in accordance with all applicable Federal, State and local rules and regulations, including OSHA regulations 29 CFR 1910.147 (The Control of Hazardous Energy) and 1926.417 (Locking and Tagging of Circuits), as amended and supplemented, and Wesleyan’s Safety Manual.

ADD the following Paragraph:

10.10 Use of Solvent-Based Products

10.10.1 The use of solvent-based products, including paints and adhesives within occupied areas of buildings shall not be allowed as part of this project, unless specifically directed in other provisions of the Contract Documents. If solvent-based products are to be used, then work shall only be accomplished on nights or weekends. The Contractor’s Representative shall notify the Owner’s Representative two (2) days prior to the intended date of such work.

ADD the following Paragraph:

10.11 Confined Space Entry

10.11 Any work carried out under this Contract that shall require entry into a confined space shall be carried out in accordance with all applicable Federal, State and local rules and regulations, including OSHA regulations 29 CFR 1910.146 (Permit-Required Confined Spaces), 1926.21 (b) (6) (Safety Training & Education-Employer Responsibility (Confined Spaces)), 1926.352(g) (Fire Prevention in Enclosed Spaces) & 1926.353(b) (Welding, Cutting and Heating in Confined Spaces), as amended and supplemented, and Wesleyan’s Safety Manual.
ADD the following Paragraph:

10.12 Excavation and Trenching

10.12.1 Any work carried out under this Contract that shall require excavation or trenching shall be carried out in accordance with all applicable Federal, State and local rules and regulations, including OSHA regulation 29 CFR 1926, Subpart P (Excavations), as amended and supplemented, and Wesleyan’s Safety Manual.

ARTICLE 11 - INSURANCE AND BONDS

DELETE Paragraph 11.1 and SUBSTITUTE the following:

11.1 Contractor's Liability Insurance

11.1.1 The Contractor shall purchase and maintain insurance for protection from claims under workers' or workmen's compensation acts; claims for damages because of bodily injury, including personal injury, sickness, disease or death of any of the Contractor's employees or of any person; from claims for damages because of injury to or destruction of tangible property including loss of use resulting therefrom; and from claims arising out of the performance of this Agreement and caused by negligent acts for which the Contractor is legally liable. The Owner shall be a named additional insured on all the Contractor's policies. All insurance required under this Article shall contain a waiver of subrogation against the Owner and the Contractor. Certificates of Insurance, as well as copies of the policies, shall be delivered to the Owner prior to the commencement of construction. The Certificates as well as the policies shall contain a provision that coverage shall not be canceled, altered or allowed to expire until at least thirty (30) days prior written notice has been given to the Owner. The Contractor shall furnish to the Owner copies of any endorsements that are subsequently issued amending coverage limits.

11.1.1.1 The Contractor, shall provide the following described insurance on policies and with insurers acceptable to the Owner.

These insurance requirements shall not relieve or limit the liability of the Contractor. The Owner does not in any way represent that these types of amounts of insurance are sufficient or adequate to protect the Contractor's interest or liabilities, but are required solely for the Owner's protection.
The Contractor’s insurance policies shall be endorsed, as appropriate, to name the Owner as an insured to the extent of the Owner’s interests arising from this contract or agreement; to waive subrogation against the Owner; to expand coverage as required herein and to provide that any failure of the other party to comply with any of the policy provisions shall not void coverage for the Owner.

The Contractor’s policies, when the Owner is an additional named insured, shall include or be endorsed to include a severability of interests provision in order that the Owner shall be treated as if a separate policy were in existence without increasing the policy limits of liability.

The Contractor’s deductibles/self-insured retentions, must be approved by the Owner and may be reduced or eliminated at the option of the Owner.

11.1.1.2 Liability Coverages: General

The Contractor shall purchase and maintain coverage on forms no more restrictive than the latest editions of the Comprehensive General Liability or Commercial General Liability and Business Auto policies filed by the Insurance Services Office.

The Commercial General Liability coverage shall be in “occurrence form,” and shall provide:

The minimum limits of liability shall be $1,000,000 Each Occurrence and $2,000,000 as an Annual Aggregate. The Aggregate shall be “per location,” to apply separately to each job site. This insurance shall be primary and non-contributory as regards to the Owner and its agents and employees.

Coverage A shall include premises, operations, products and completed operations for a minimum of three years beyond organization acceptance of renovation or construction projects, independent Contractors, contractual liability covering this agreement or contract, fire legal liability and broad form property damage coverages.

Coverage B shall include personal injury and advertising injury.

Business Automobile Liability coverage is to include bodily injury and property damage arising out of operation,
maintenance or use of any auto, including owned, non-owned, hired, leased and borrowed automobiles with employees as additional insureds.

The minimum limit of liability shall be $1,000,000 per accident. The insurance shall be primary and non-contributory as regards the Owner and its agents and employees.

11.1.2 Workers Compensation Coverage

The Contractor shall purchase and maintain Workers Compensation insurance for all Workers Compensation obligations imposed by state law and Employers Liability limits of at least $500,000 each accident and $500,000 each employee/$500,000 policy limit for disease.

11.1.3 Excess or Umbrella Liability

Contractor shall also maintain Umbrella Liability Insurance. Said insurance shall not be more restrictive than the underlying insurance policy coverage’s, including but not limited to the coverage trigger, defense, notice of occurrence/accident/circumstances, notice of claim and extended reporting period. The minimum limit of liability shall be $5,000,000.00. The Excess Umbrella Policy will follow form and shall provide coverage that is as broad as the primary policy(ies).

11.1.4 Owners Protective Liability

The Contractor shall provide for the Owner an Owners Protective Liability Insurance policy (preferably through the Contractor’s insurer) in the name of the Owner. The minimum limits of liability shall be $1,000,000 per occurrence, and $2,000,000 aggregate.

DELETE Paragraph 11.2, Owner’s Liability Insurance, in its entirety, and SUBSTITUTE the following:

11.2 Builder’s Risk Insurance

11.2 The Contractor shall purchase and maintain Builders Risk Coverage. This coverage shall apply only to property stored on the site of the Work and shall not apply to any property in transit or stored off of the site of the Work. The deductible amount for Builders Risk Coverage shall not exceed $5,000.00. All losses defined which are not recoverable by virtue of the $5,000.00
deductible clause shall be absorbed by the Contractor. Equipment and tools of the trade are at the risk of the Contractor. Other losses not covered by this policy shall be absorbed by the Contractor.

11.3 PROJECT MANAGEMENT PROTECTIVE LIABILITY INSURANCE

Delete Subparagraph 11.3.3 in its entirety.

11.5 PERFORMANCE BOND AND PAYMENT BOND

Delete Subparagraph 11.5.1 and substitute the following:

11.5.1 The Contractor shall furnish bonds covering faithful performance of the Contract and payment of all obligations arising thereunder. Bonds may be obtained through the Contractor's usual source and the cost thereof shall be included in the Contract Sum. The amount of each bond shall be equal to 100 percent of the Contract Sum.

11.5.1.1 The Contractor shall deliver the required bonds, bid (if any), performance, and payment, to the Owner not later than three days following the date the Agreement is entered into, or if the Work is to be commenced prior thereto in response to a letter of intent, the Contractor shall, prior to the commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished.

11.5.1.2 The Contractor shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.

ADD the following Subparagraph:

11.4.3 The above Bonds shall be provided by a Surety Company or Companies which are acceptable to the Owner and authorized to transact business within the State of Connecticut, and are named in the current list of “Surety Companies Acceptable on Federal Bonds” as published in the “Treasury Department Circular 570, and the attorney-in-fact who executes the Bonds on behalf of the Surety Company shall affix to the Bonds a certified and current copy of his power of attorney.

ARTICLE 12 - UNCOVERING AND CORRECTION OF WORK

12.1 Uncovering of Work

MODIFY as follows:

12.1.1 First line after “Architect's” ADD “or Owner's” Third line, after
“Architect” ADD “or Owner”, and after “Architect’s” ADD “and Owner’s.”

12.1.2  First line after “Architect” ADD “or Owner” Second line, DELETE the words “the Architect” and SUBSTITUTE “the Owner’s Representative, with the advice of the Architect.”

12.2  Correction of Work

MODIFY as follows:

12.2.1  First line, DELETE the words “by the Architect” and SUBSTITUTE “by the Owner’s Representative with the advice of the Architect.” ADD the following to the end:

If prior to the date of Substantial Completion, the Contractor, a Subcontractor or anyone for whom either is responsible uses or damages any portion of the Work, including, without limitation, mechanical, electrical, plumbing and other building systems, machinery, equipment or other mechanical devices, the Contractor shall cause such item to be restored to “like new” condition at no expense to the Owner.

ARTICLE 13 - MISCELLANEOUS PROVISIONS

13.5  TESTS AND INSPECTIONS

MODIFY as follows:

13.5.1  Sixth and seventh lines, after “Architect” ADD “and Owner.”

13.5.2  Fifth and sixth lines, after “Architect” ADD “and Owner.”

13.5.3  ADD, at the end thereof, “The Contractor agrees that the cost of testing services required for the convenience of the Contractor in his scheduling and performance of the Work, and the cost of testing services related to remedial operations performed to correct deficiencies in the Work, shall be borne by the Contractor.”

13.5.4  Third line, after “Architect” ADD “and Owner.”

Add the following Clause to Subparagraph 13.5.4:

13.5.4.1  If Architect’s or Owner’s observation or if inspection or testing undertaken pursuant to this Paragraph reveals that in any one of a number of identical or similar elements, incorporated in the Work, fails to comply with the requirements of the Contract Documents or the regulations or orders of
any public authority having jurisdiction, the Architect and Owner will have the authority to order inspection and testing of any or all such representative elements as he may consider necessary. The Contractor shall bear costs of testing, correction of the Work and the Architect's additional services made necessary thereby."

13.6 Interest

**MODIFY** as follows:

13.6.1 **DELETE** this Subparagraph.

13.7 Commencement of Statutory Limitation Period

**MODIFY** as follows:

13.7.1 **DELETE** this Subparagraph.

Add the following new Paragraph 13.8 to Article 13:

### 13.8 EQUAL OPPORTUNITY

13.8.1 The Contractor shall maintain policies of employment as follows:

The following equal opportunity clause shall be included in each contract and subcontract. During the performance of this contract, the contractor agrees as follows:

13.8.1.1 The contractor will not discriminate against any employee or applicant for employment because of race, creed, color or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

13.8.1.2 The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.
13.8.1.3 The contractor will send to each labor union or representative of workers with whom a collective bargaining agreement or other contract or understanding has been entered into, a notice, to be provided, advising said labor union or workers' representative of the contractor's commitments under any applicable nondiscrimination laws, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

13.8.1.4 The contractor will comply with all provisions of any applicable nondiscrimination laws and the regulations and relevant orders of the United States Secretary of Labor and the State Commission on Human Rights and Opportunities (the "Commission").

13.8.1.5 In the event of the contractor's non-compliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be canceled, terminated or suspended in whole or in part and the contractor may be declared ineligible for further Authority assisted construction contracts and such other sanctions may be imposed and remedies invoked as provided by regulations, or as otherwise provided by laws.

13.8.1.6 The contractor will include the provisions of Paragraphs (1) through (5) in every subcontract or purchase order unless exempted; so that such provisions will be binding upon each subcontractor or vendor.

13.8.1.7 The following contracts shall be exempt from the requirements of paragraph 13.8.1.6:

- (1) Loans, mortgages, contracts and subcontracts not exceeding $50,000;
- (2) Contracts and subcontracts not exceeding $100,000 for standard commercial supplies or raw materials;
- (3) Contracts and subcontracts under which work is to be or has been performed outside of the State of Connecticut and where no recruitment of workers within the State of Connecticut is involved. To the extent that work pursuant to such contracts is done within the State of Connecticut, the EEO Clause shall be applicable;
(4) Contracts for the sale or acquisition of property where no appreciable amount of work is involved; and

(5) Contracts and subcontracts for an indefinite quantity which are not to extend for more than one year if the purchaser determines that the amounts to be ordered under any such contract or subcontract are not reasonably expected to exceed $100,000 in the case of contracts or subcontracts for standard commercial supplies and raw materials, or $50,000 in the case of all other contracts or subcontracts.

13.9 **ADD** the following Paragraphs:

13.9.1 If any provision of this Contract is found to be invalid or illegal by a court of competent jurisdiction, the remaining provisions shall remain in full force and effect, and the parties agree to substitute for the invalid provision another which most closely effectuates the legal and economic intent of the invalid provision within the bounds of the law.

13.9.2 This Contract represents the entire and integrated agreement between the Owner and the Contractor and supersedes all prior negotiations, representations or agreements, either written or oral. This Contract may be amended only by written instrument signed by both the Owner and the Contractor.

13.9.3 Nothing contained herein shall be deemed to create any contractual relationship between the Contractor and the Architect or any of the Subcontractors or material suppliers on the Project; nor shall anything contained in this Agreement be deemed to give any third party any claim or right of action against the Owner which does not otherwise exist without regard to this Contract.

13.10 **Examining and Copying Contractor's Records**

13.10.1 The Contractor shall permit the Owner or its duly authorized representative to examine and copy all files, computerized records, bid files, and any other books and records of the Contractor and its Subcontractors and suppliers relative to charges for extra work, extra payments, alleged breaches of contract, settlement of claims, or any other matter involving the Contractor's request for additional time or for added compensation from the Owner. The Contractor shall also permit such examination and copying of all such records of the Contractor (and its Subcontractors and suppliers) as the
Owner may deem necessary in order to determine that the Contractor has complied with all laws, regulations and requirements pertaining to the Contract.

13.10.2 The Contractor further agrees that it and its Subcontractors and suppliers shall keep all records relating to this Contract until the expiration of three (3) years after final payment under this Contract is made, or six (6) months after settlement of any disputes, whichever may be later.

13.10.3 The Contractor further agrees that it and its Subcontractors and suppliers shall permit the Owner, at its own expense, by its duly authorized representatives, to inspect and audit all their data, records and files pertaining to this Contract. Contractor agrees to expressly incorporate all the obligations in this Article into its subcontracts and purchase orders on this project for the benefit of the Owner.

13.11 Wesleyan University’s Community and Minority Participation Program

13.11.1 The contractor and the contractor’s subcontractors and so forth for all sub tiers are required to meet or exceed the following Goals.

A. Workforce - A combined total of 25% of the work hours performed shall be by:

1. Local workers residing within a 25-mile radius of Wesleyan University, proof of residence required.
2. Minority workers as described in the Equal Employment Opportunity Certification document,
3. Women Owned Businesses

B. Contracts (Sub-Contractors) – A combined total of 25% of contractors on a project shall be:

1. Local Businesses (residing within a 25-mile radius of Wesleyan University)
2. Minority Owned Businesses ("Minority Business Enterprise" (MBE) shall mean a business that is owned, operated and controlled by one or more Minority persons. For the purpose of this definition the term "owned" shall mean that one or more Minority persons own 51% or more of each class of stock and are entitled to receive 51% or more of the net profits (or losses) of the business. For the purposes of this definition, the term "operated and controlled" shall mean that one or more Minority persons have the day-to-day responsibility for running and making all-important decisions affecting the
3. Women Owned Businesses ("Women-owned Business Enterprise (WBE) shall mean a business that is owned, operated and controlled by one or more women. For the purpose of this definition the term "owned" shall mean that one or more women own 51% or more of each class of stock and are entitled to receive 51% or more of the net profits (or losses) of the business. For the purposes of this definition, the term "operated and controlled" shall mean that one or more women have the day-to-day responsibility for running and making all-important decisions affecting the business enterprise.

The contractor and each subcontractor will be required to fill out a weekly utilization report, and also track and monitor individual subcontractor dollar amounts. These reports will be tracked by the General Contractor and shall be submitted monthly to Owner’s Project Manager and monitored for conformance. Any variance from these goals shall result in disciplinary actions as described in 13.8.1.5.

The contractor shall submit certified payroll monthly (wage compliance certificate), with each requisition, for all the Contractor’s Work on site and for that of each subcontractor on site including all sub-tiers.

13.12 Conflicts of Interest.

Contractor represents, warrants and covenants to and with Owner that: (a) neither Contractor nor any of its affiliates, direct or indirect owners and principals, officers, directors, partners, shareholders, members or employees (collectively the “Contractor Parties”) have any direct or indirect financial or familial relationship with the Owner and any of its officers, directors, employees, Owner’s site representatives, or the Architect (collectively the “Owner Parties” and each an “Owner Party”); (b) no Owner Party has received or will receive any consideration from any of the Contractor Parties in connection with the Work or the Contract Documents; and (c) all subcontractor contracts shall contain similar representations and covenants. At the request of Owner, Contractor Parties and any subcontractor shall execute and deliver to Owner an affidavit affirming the above.

ARTICLE 14 - TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 Termination by the Contractor

MODIFY as follows:
14.1.1 DELETE the words “30 days” and SUBSTITUTE “60 days.”

14.1.1.3 DELETE this Clause.

14.1.1.4 DELETE this Clause.

14.1.3 Third line, DELETE the remainder of this Subparagraph after the word “executed” and SUBSTITUTE: “The Contractor hereby waives all other claims for payment and damages, including, without limitation, anticipated profits.”

14.2 Termination by the Owner for Cause

MODIFY as follows:

14.2.1 ADD the following:

.5 fails to furnish the Owner with assurances satisfactory to the Owner evidencing the Contractor’s ability to complete the Work in compliance with all requirements of the Contract Documents.

.6 refuses or fails to prosecute the work or any separable part, with the diligence that shall ensure its completion within the time specified in this Contract including any, duly authorized extension, or fails to complete the work within said period.

14.2.2 First and second lines, DELETE the words “upon certification by the Architect” and SUBSTITUTE “with the advice of the Architect, may determine.”

ADD the following:

14.2.2.4 Terminate the Contractor’s right to proceed with a separate part of the Work, if the Owner so elects.

14.3 Suspension by the Owner for Convenience

DELETE Subparagraph 14.3.2 and SUBSTITUTE the following:

14.3.2 Upon receipt of a notice of suspension for convenience, the Contractor shall immediately, in accordance with instructions from the Owner, proceed with performance of the following duties regardless of delay in determining or adjusting amounts due under the Subparagraph:
.1 Suspend operations as specified in the notice;

.2 Place no further orders and enter into no further Subcontracts for materials, labor, services or facilities except as necessary to complete continued portions of the Contract;

.3 Suspend all Subcontracts and orders to the extent they relate to the Work suspended;

.4 Proceed to complete the performance of Work not suspended; and

.5 Take all actions that may be necessary, or that the Owner may direct, for the protection and preservation of the suspended Work.

**ADD** the following Subparagraph:

14.3.3 An adjustment may be made for any increases or decreases in the cost of the Contract that are directly caused by the Owner’s suspension, delay, or interruption under this Article. 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 the Contractor is responsible; or

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

**ADD** the following Subparagraph:

14.3.4 Adjustments made in the cost of performance may have a mutually agreed fixed or percentage fee for the benefit of the Contractor.

**DELETE** paragraph 14.4 in its entirety and replace it with the following:

**14.4 Termination by the Owner for Convenience**

14.4.1 The Owner may, at any time, terminate the Contract, in whole or in part, for the Owner’s convenience and without cause. Termination by the Owner under this Subparagraph shall be by a notice of termination delivered to the Contractor specifying the extent of termination and the effective date.

14.4.2 Upon receipt of a notice of termination for convenience, the
Contractor shall immediately, in accordance with instructions from the Owner, proceed with performance of the following duties regardless of delay in determining or adjusting amounts due under the Paragraph:

1. Cease operations as specified in the notice;

2. Place no further orders and enter into no further Subcontracts for materials, labor, services or facilities except as necessary to complete continued portions of the Contract;

3. Terminate all Subcontracts and orders to the extent they relate to the Work terminated;

4. Proceed to complete the performance of Work not terminated; and,

5. Take all actions that may be necessary, or that the Owner may direct, for the protection and preservation of the terminated Work.

14.4.3 Upon such termination, the Contractor shall recover as its sole remedy, payment for Work executed prior to the effective date of termination and for items properly and timely fabricated off the Project site, delivered and stored in accordance with the Owner’s instructions. The Contractor hereby waives all other claims for payment and damages, including, without limitation, anticipated profits.

14.4.4 The Owner shall be credited for (1) payment previously made to the Contractor for the terminated portion of the Work, (2) claims which the Owner has against the Contractor under the Contract and (3) the value of the materials, supplies, equipment or other items that are to be disposed of by the Contractor that are part of the Contract Sum.

14.4.5 The payment to the Contractor pursuant to this Subparagraph may not exceed the total Contract Sum as reduced by:

1. the amount of payments previously made and

2. the Contract Price of work not terminated.

END OF
SUPPLEMENTARY CONDITIONS
The general conditions and the supplemental general conditions are hereby made a part of this section.

1.01 SUMMARY OF WORK
1.02 AGENCY REPRESENTATIVE
1.03 CONTRACTUAL ARRANGEMENTS
1.04 EXAMINATION OF SITE
1.05 INTENT OF DOCUMENTS
1.06 USE OF PREMISES, SPECIAL WORKING CONDITIONS
1.07 ALLOWANCES
1.08 ACCIDENT PREVENTION
1.09 APPLICATION FOR PAYMENT
1.10 MAINTENANCE OF TRAFFIC WAYS
1.11 PLANS AND SPECIFICATIONS AT THE SITE
1.12 CONSTRUCTION EQUIPMENT
1.13 PROTECTION
1.14 IDENTIFICATION BADGES FOR CONTRACTOR’S PERSONNEL
1.15 OPENINGS, CHASES, INSERTS, ETC.
1.16 DIMENSIONS AND MEASUREMENTS
1.17 SURVEY AND LAYOUT
1.18 SALVAGEABLE MATERIALS
1.19 MANUFACTURERS DIRECTIONS
1.20 FIRE EXTINGUISHERS
1.21 SPECIAL CLEANING AND MAINTENANCE
1.22 EXISTING EQUIPMENT AND MATERIALS TO BE REUSED
1.23 EXISTING EQUIPMENT AND MATERIALS NOT TO BE REUSED
1.24 TIME AND MANNER
1.25 CODES AND SPECIFICATIONS
1.26 ADDENDA ISSUED DURING BIDDING PERIOD
1.27 SUPERVISORY PERSONNEL
1.28 PROJECT SCHEDULE AND EQUIPMENT SHUTDOWN
1.29 SIGNS
1.30 ERRORS AND OMISSIONS
1.31 MATERIAL SUBSTITUTIONS
1.32 INSTALLATION
1.33 TAX EXEMPTION
1.34 HOT WORK PERMITS
1.35 HAZARDOUS MATERIALS COORDINATION
1.36 FALL PROTECTION
1.37 CONTRACT DOCUMENTS
Wesleyan University

SECTION 01015 - GENERAL PROJECT REQUIREMENTS

1.01 SUMMARY OF WORK

Scope and Location:

The contract in connection with this project includes the proposed complete work designated as

Wesleyan University Major Maintenance FY15

The projects will impact the campus at large due to location and limited onsite parking. It shall be assumed that numerous projects will occur concurrently in the vicinity which will further impact parking demand. Contractors must coordinate with Wesleyan University personnel on a daily basis to avoid disruption of functions. Contractors including but not limited to any single source trade, (herein referred to as ‘Contractor’) shall provide all labor, materials, supervision, tools, equipment, surveying, layout, staging, handling, unloading, transportation, fees and licenses, services, and all other appurtenances for the satisfactory completion of the work described in the Project Manual, on the Project Drawings and Sketches, and in the Project Scopes.

A. Sustainability: Wesleyan University is committed to sustainability and environmental stewardship to reduce its carbon footprint to zero by 2050. Emphasis has been placed on waste reduction, recycling, environmentally preferable purchasing, energy conservation/efficiencies, reduced carbon footprint, reuse of materials on job and the use of materials that are either harvested with sustainable methods or made from recyclable materials. Contractor shall submit to the Owner sustainable material options with add/deduct costs. The contractor shall Reference Exhibit F for Green Building Policy and Procedure and the Wesleyan University website at http://www.wesleyan.edu/sustainability to review Wesleyan’s Sustainability Advisory Group for Environmental Stewardship.

B. Any materials provided and installed to complete the work shall be free of any asbestos, PCB’s, lead containing materials, sulfur and any other hazardous materials. Material Safety Data Sheet (MSDS) sheets to be provided for all materials prior to acceptance and installation. Worker training on the Global Harmonization System (GHS) Material Data Sheets to be completed by December 1, 2013. The final rule requires product manufacturers to adopt the standard by June 1, 2015 and product distributors to adopt the standard by December 1, 2015.

C. Contractor shall be responsible to adhere to recycling requirements of Wesleyan University and the city of Middletown. Contractor shall recycle all corrugated cardboard, glass, plastic, metals, woods and other material identified in the specifications, Section 01505. Recycling identified recyclables shall be separated by type.

D. Public Safety shall not be contacted to gain access to any facility.

E. Contractor shall put in place methods to provide dust control and noise control prior to the start of work. Dust and noise control measures shall be reviewed with the Owner prior to the start of construction. Additional dust control measures shall be put in place as directed by the Owner prior to or during construction. Surrounding areas must be protected with poly or luan as required to isolate the project and all floors shall be protected and covered as required – specific work plan shall be submitted on how Freeman corridor will be protected during construction activities (safety and material protection). All existing or new equipment, furniture, fixtures, cabinets, casework, etc. shall be covered and protected as required.
F. At locations where furniture is noted to be removed from the building, contractor shall furnish temporary storage pods as required to store all furniture while work is being performed. Storage pod locations shall be coordinated with the Owner. Contractor shall also provide all labor to move all furniture from the building to the storage pod. Upon completion of the work, contractor shall provide all labor to move all furniture back into the building, all furniture shall be cleaned to move in condition and the Owner’s satisfaction.

G. Contractor shall document existing furniture locations prior to the start of work and shall set all furniture in the same locations upon completion of the work. Furniture damaged during the moving process shall be replaced at the expense of the contractor. Care shall be taken when setting storage pods in place. Lawn or paved areas damaged by pod placement shall be repaired at the expense of the contractor.

H. At locations where furniture is noted to remain in the building during construction, tarps shall be used for coverage and protection. Upon completion of the project, tarps shall be removed and furniture shall be thoroughly cleaned to move in condition. It shall be the Contractor’s responsibility to relocate and protect existing furniture as required if it interferes with the completion of the specified work. All relocated furniture shall be returned to its original location upon completion of the work.

I. The Contractor shall be responsible to provide barricades, safety protection, safety and informational signage, temporary protection of adjacent area, remove daily debris, daily cleaning and final cleaning. Contractor shall coordinate all work with other trades working in the building. Contractor shall strictly adhere to all OSHA standards, Wesleyan University General Project Requirements, project manual and Closeout Procedures. Coordinate all work with Agency Representative. The contractor shall be responsible to remove any and all furnishings, including musical instruments from the building and store all furnishings/instruments/equipment in contractor supplied storage containers, as directed.

J. Final cleaning shall be to move in standards and shall include but not be limited to removing all debris, dusting and polishing the entire project area including all walls, countertops, sills, doors, hardware, furniture, plumbing fixtures, electrical fixtures, equipment, and any other items located within or around the project area, removing all stickers and labels from new equipment and fixtures, vacuuming carpeting, washing / polishing floors, washing interior and exterior of windows, etc. for a move in condition. Broom clean is not acceptable. Dry film or residue left on any surface shall not be accepted and shall be cleaned as required until the film or residue is gone. Final payment shall not be released until the project area is cleaned as noted above and approved by the Owner. If the area is not cleaned as noted above, the Owner shall hire an outside cleaning company to complete the work and the Contractor shall be backcharged for the cost required to clean the project site as noted above (Windows (interior and exterior) and window treatment to be included in final cleaning).

K. To assist the contractor in identifying a cleaning contractor for final cleaning, Wesleyan University employs the following cleaning service. Sun Services LLC, 25 Controls Drive, Shelton, CT 06484-6111. Luis Palaez, Senior Area Operations Manager, Office Voicemail: (203) 925-6124 Cell: (203) 223-7239

L. The Contractor shall protect all new floors upon completion of installation. Contractor shall also protect all floors that have been previously cleaned and waxed. Any damaged floors shall be replaced at the expense of the Contractor. Any floors that have been soiled or marked up after final cleaning shall be cleaned again at the expense of the Contractor.
M. The Contractor shall be responsible for the protection of attic space prior to the start of any roof replacement project. Protection shall include but not be limited to placing tarps in the attic space to collect all debris generated from stripping the existing roof shingles, underlayment or substrate. Upon completion of the work, all tarps and debris shall be removed from the attic space and shall be properly disposed of and the space broom cleaned. The attic space shall be inspected by the Owner upon completion to ensure that the condition of the space meets or exceeds the condition prior to the start of construction.

N. Contractor shall be responsible for the containment, lawful removal and disposal of used materials, residues, dirt, containers and debris. Disposal shall be in accordance with federal regulations, the laws of the State of Connecticut and the provisions of the City of Middletown. Costs for disposal of contaminated materials shall be incurred by the contractor.

O. All work pertaining to the project shall be in accordance with the provisions of the Contract Documents, as defined in the General Conditions.

P. Contractor shall collect and remove waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner.

Q. Prior to the start of work, Contractor shall identify the volume of water scheduled to be discharged into the City of Middletown storm sewer system. Contractor shall notify the City of Middletown Water and Sewer Department with total volume of water scheduled to be discharged into the storm sewer system. Any special discharge provisions as required by the City of Middletown shall be adhered to at no additional cost to the Owner.

R. Contractor will provide all necessary overtime / shift-work costs or provide and maintain manpower necessary to support the project schedule.

S. Contractor shall include all costs associated with submitting and obtaining all building permits required to complete the work, unless directed otherwise by the Owner.

T. The successful bidder shall complete all his work by the date identified by the Owner. This deadline shall include any and all reviews and/or approvals required by State, local or Federal agencies necessary.

U. Due to the nature of this institution, it is required that the academic schedule must be maintained. The construction work may be affected by the Summer Program Schedule of the University. The University Project Manager shall inform the Contractor of potential days when construction activity may not be permitted.

1. Construction activities shall be kept to a minimum on the following days – May 22 and May 23.
2. Construction activities shall cease on the following days – May 2245 and May 25

V. Final completion as defined in the Contract Documents must be achieved no later than a date mutually agreed upon between the Contractor and the Owner and will be documented in the
1.02 AGENCY REPRESENTATIVE

A. The Agency is Wesleyan University. The Agency representatives for construction, once the contract for the base bids have been awarded are:

B. Mr. Alan Rubacha, Director Physical Plant, Facilities, (860) 685-3746, arubacha@wesleyan.edu
C. Ms. Roseann Sillasen, Associate Director/Project Manager, Physical Plant, Facilities (860) 685-3476 Office / (860) 918-3605 Cell, rsillasen@wesleyan.edu
D. Ms. Brandi Hood, Senior Project Coordinator, Physical Plant, Facilities (860) 685-3759 Office, bhood@wesleyan.edu
E. Mr. Steven Formica, Project Coordinator, Physical Plant, Facilities (860) 685-3778 Office, sformica@wesleyan.edu
F. Mr. Thomas Policki, Assistant Director of Building Trades, Physical Plant, Facilities (860) 685-2154 Office, tpolicki@wesleyan.edu
G. Mr. Michael Conte, Assistant Director Mechanical Trades, Physical Plant, Facilities (860) 685-2792 Office, mconte@wesleyan.edu
H. Jeffrey Sweet, Associate Director, Physical Plant, Facilities (860) 685-3763 Office, jsweet@wesleyan.edu
I. Debra Holman, Facilities Manager, Physical Plant, Facilities (860) 685-3517 Office, djholman@wesleyan.edu
J. Mario Velasquez, Facilities Manager, Physical Plant, Facilities (860) 685-3262 Office, mvelasquez@wesleyan.edu

1.03 CONTRACTUAL ARRANGEMENTS

A. The Contractor for this project shall be totally responsible for the entire project and shall employ the services of such subcontractors as may be required to complete the designated work. The Contractor shall furnish from its firm complete field supervision, project management, and construction services and scheduling of the work. Field supervision mandatory during any and all construction activities.

1.04 EXAMINATION OF SITE

A. Contractor is to verify all existing conditions. All contractors are advised to visit and examine the site with Agency Representative prior to submitting bids. Failure to visit the site and note all conditions will in no way relieve the Contractor from completing the work as required.

B. Contractor is responsible to protect turf, concrete walks and pavement as required. Damaged turf, concrete walks and pavement shall be repaired by the contractor at no cost to the Owner.

C. Contractor shall submit photographs, video or any other applicable documentation in the form of a submittal recording site conditions - new to existing material connections, potential areas which will see construction traffic, lay down areas, parking areas, etc.

1.05 INTENT OF DOCUMENTS

1. The General Conditions of the Contract, the Supplementary Conditions, and Division 1 General Requirements are a part of each Section of the Specifications.
2. The project scope and/or specifications, if required, are intended to describe and illustrate the materials and labor necessary to complete the work of this project. Illustrate existing conditions in general.

3. Before submitting a bid, the Contractor shall perform his/her own inspection and become thoroughly familiar with the existing conditions under which the work will be performed.

4. It is not the intent of the Contract Documents to show all existing conditions, and it shall be the responsibility of the Contractor and sub-contractors to verify all existing conditions applicable to this project, and to include in his bid all requirements necessary for the completion of the work, based on the existing conditions.

5. It is mutually agreed that work under each Section has included the cost of all required items for the accepted, satisfactory, functioning of the entire system without extra compensation.

6. The Contractor will be held responsible for any assumptions, omissions or errors made as a result of failure to become familiar with the site and the contract documents.

7. A typical representative detail indicated on the Drawings shall constitute the standard for workmanship and material throughout corresponding parts of the work. Where necessary, and where reasonably inferable from the documents, the Contractor shall adapt such representative detail for application to such corresponding parts of the work. The details of such adaptation shall be subject to prior approval by the Owner.

8. The layout of mechanical and electrical systems, equipment, fixtures, piping, ductwork, conduit, specialty items, and accessories indicated on the Drawings is diagrammatic, and all variations in alignment, elevation, and detail required to avoid interference and satisfy architectural and structural limitations are not necessarily shown. Actual layout of the work shall be carried out without affecting the architectural and structural integrity and limitations of the work and shall be performed in such sequence and manner as to avoid conflicts, provide clear access to all control points, including valves, strainers, control devices, and specialty items of every nature related to such systems and equipment, obtain maximum headroom, and provide adequate clearances as required for operation and maintenance.

9. The drawings shall not be scaled for dimensions. If figured dimensions are not given on the drawings, the Contractor shall request same from the Owner, giving reasonable advance notice and shall deliver same to the Contractor.

10. Where codes, standards, requirements and publications of public and private bodies are referred to in the Specifications, references shall be understood to be the latest revision prior to the date of receiving bids, except where otherwise indicated.

11. Where no explicit quality or standards for materials or workmanship are established for work, such work is to be of best quality for the intended use and consistent with the quality of the surrounding work and of the construction of the Project generally.

1.06 USE OF PREMISES, SPECIAL WORKING CONDITIONS

A. The Contractor shall confine his apparatus, storage of materials, supplies, equipment and operations to the areas bounded by the contract and as directed by the Owner, within the project limits. Except as authorized by the Owner, at the Owner’s sole discretion.
B. Buildings will be occupied and engaged in critical functions during construction. Contractor must coordinate with Wesleyan University personnel on a daily basis to avoid disruption of functions. Contractor must begin only what he can finish in one day.

C. Maintain the existing building in a weather tight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions to protect the building and its occupants during the construction period. No windows may be left open at the end of day and no temporary closures will be permitted. All areas must be secured at the end of each work day.

D. Contractor and subcontractors shall be allowed the reasonable use of the site and parking shall be allowed for fully insured on site management vehicles and those fully insured marked vehicles required for the construction of the project, see campus plan for designated parking. All other vehicles and personal vehicles shall be parked at Vine Street parking lot V. Transportation to and from the project site shall be the responsibility of the contractor and subcontractors. Driving or parking shall not be on University sidewalks unless contractor has obtained pre-approved sidewalk parking pass. In no event shall the contractor or subcontractors park in a University lot designated for Students, Staff, or Faculty unless pre-approved. Alternate parking locations to be identified by Owner. Contractors awarded work in the woodframe houses shall have access to the driveway specific to the woodframe. Legal off street parking is allowed.

E. All exits shall be maintained in a safe fashion Section 805 (BOCA) 1984 and Chapter 31 CFSC (NFPA 101-10-985).

F. Alterations or repairs shall not cause an existing structure to become unsafe or adversely affect the performance of the building.

G. The Contractor shall be responsible for keeping the premises clean and shall pick up rubbish and debris daily. The rubbish and debris shall be removed from the site daily. Contractor is not to use University dumpsters. Do not dispose of any material on site by burial or burning.

H. Due to the fact that the operation of Wesleyan University must continue during the progress of this work, the Contractor shall confer with the proper established authority so the arrangements can be made to carry out the duties of Wesleyan University along with those of the Contractor without undue or unnecessary interference to each other's routine.

I. The Contractor and sub-contractors shall cooperate with other Contractors who may also be doing work in the same area on other projects, so that there is no conflict or confusion.

J. Doors must remain locked at all times.

1.07 ALLOWANCES

A. Contractor to provide allowances and/or value engineering as requested in the scopes of work submitted.

1.08 ACCIDENT PREVENTION

A. Precaution must be exercised at all times for the protection of persons and property. The safety provisions of applicable laws, building and construction codes must be observed; Contractor shall take or cause to be taken such additional safety and health measures as Wesleyan University may determine to be reasonably necessary. Any Special Safety requirements pertaining to
laboratories, laboratory equipment and supplies and health care facilities must be strictly observed. Machinery, equipment and other hazards shall be guarded in accordance with the safety provisions of the Manual of Accident Prevention in Construction, published by the Associated General Contractors of America, to the extent that such provisions are not in contradiction of applicable laws.

1.09 APPLICATIONS FOR PAYMENT

A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.

1. An Application for Payment will be submitted for each project awarded to the contractor. Under no circumstances shall projects be combined on a single application for payment unless prior approval is received.

2. Round amounts off to the nearest whole dollar; the total shall equal the Contract Sum. Each Application for Payment shall be consistent with previous applications and payments as certified by Wesleyan University.

3. Each division shall be identified on the Schedule of Values. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:

   - General Contractor's construction schedule.
   - Application for Payment form.
   - Schedule of submittals.

4. Submit the Schedule of Values to Wesleyan University upon intent to award and prior to the start of any on site construction activity, but in no case later than 7 days before the date scheduled for submittal of the initial Application for Payment.

5. Arrange the Schedule of Values (see sections 00700 and 00800 for more detail and specifics) in a tabular form with separate columns to indicate the following for each item listed:

   - Generic name.
   - Dollar value.
   - Breakdown in sufficient detail as required to identify each sequence number that was part of the original bid package. The sum of all sequence numbers shall match the contract value amount.
   - Percentage of Contract Sum to the nearest percent, adjusted to total 100 percent.
   - Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports.
   - Break principal subcontract amounts down into several line items.
   - For each part of the Work where an Application for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed, provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

6. Each Application for Payment shall be consistent with previous applications and payments as certified by Wesleyan University.
7. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.

C. Payment Application Times: Each progress payment date is as indicated in the Agreement. The period of construction work covered by each Application for Payment is the period indicated in the Agreement. Submit documentation requests or stored materials requests, i.e.: Invoice, packing slips, inventory photos.

D. Payment Application Forms: Use AIA Document G702 and Continuation Sheets G703 as the form for Application for Payment.

E. Application Preparation: Complete every entry on the form, including notarization and execution by person authorized to sign legal documents on behalf of the Owner. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application. Incomplete applications will be returned without action. Cost for each sequence items should all be tracked individually on one application for payments.

F. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions have been made.

G. Every payment requisition shall include a partial waiver of lien for work completed, statement showing the status of all pending change directives, and pending change orders to the original contract or subcontract. Such statement shall identify the pending change directives and pending change orders and include the date initiated, the costs associated with performance, and a description of the work. Pay application shall also include (sub)contractor information sheets current for all contractors onsite and updated community participation matrix, template will be provided by WU Construction Services.

H. Transmittal: Submit one (1) executed certified copy of each Application for Payment to Wesleyan University, Project Manager; including waivers of lien and similar attachments, when required. Transmit copy with a transmittal form listing attachments, and recording appropriate information related to the application in a manner acceptable to Wesleyan University.

I. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include the following:
   - Construction schedule
   - Submittal schedule
   - Schedule of Values
   - Partial Waiver of Lien

J. Application for Payment at Substantial Completion: this application shall reflect any Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work. Administrative actions and submittals that shall proceed or coincide with this application include:
   - Architect/Engineer certificate of substantial completion.
   - Warranties (guarantees) and maintenance agreements.
   - Maintenance instructions.
   - Final cleaning.
   - List of incomplete Work, recognized as exceptions to Wesleyan University’s Certificate of Substantial Completion.
Partial Waiver of Lien.

K. Final Payment Application: Administrative actions and submittals which must precede or coincide with submittal of the final payment Application for Payment include the following:
   Architect/Engineer certificate of final completion.
   Completion of Project close-out requirements.
   Completion of items specified for completion after Substantial Completion.
   Assurance that unsettled claims will be settled.
   Removal of surplus materials, rubbish and similar elements.
   Excessive static or dynamic loading; water or ice; soiling, staining and corrosion; combustion; destructive testing; misalignment; unprotected storage; improper shipping or handling; theft and vandalism.
   Final Waiver of Lien.

1.10 MAINTENANCE OF TRAFFIC WAYS

A. The Contractor will be granted the use of paved roads and parking areas but shall not infringe on use of same, or access thereto, for passage over the property. Roadways shall not be blocked by standing trucks, parked cars, material storage, dumpsters, and construction operations or in any other manner.

B. Sidewalk, road and parking areas on the Owner’s property shall be kept free from scrap or other material, due to construction operations, and any damage to their surface caused by use by the Contractor shall be reimbursed to the satisfaction of Wesleyan University. Contractor shall provide direction signs as needed or identified by the Owner to redirect pedestrian traffic.

C. Parking on sidewalks is prohibited. Contractor shall obtain “Temporary Sidewalk Vehicle Access Pass” 24 hours prior to need for access. Pass must be signed by an authorized representative of the University. Pass shall be prominently displayed on vehicle dashboard. See Exhibit G.

1.11 PLANS AND SPECIFICATIONS AT THE SITE

A. The Contractor shall maintain at the site of the work one copy of all Drawings, Specifications, Addenda, approved Shop Drawings, Change Orders, and other Modifications, Schedules and Instructions in order and marked to record all changes made during construction. These shall be available at all times to the Owner or their authorized representatives.

1.12 CONSTRUCTION EQUIPMENT

A. The Contractor shall furnish and maintain, at his own cost and risk, all tools, apparatus and appliances, hoists and/or cranes and power for same, scaffolding runways, ladders, temporary supports and bracing and all other similar work or material necessary to insure speed, conveniences and safety in the execution of his Contract.

B. All such items shall be subject to approval by the Agency representative as to general stability, type, and location; but responsibility for proper design, strength and safety shall remain the responsibility of the Contractor. All such items shall comply with OSHA regulations and all other applicable local, state, and federal codes, statutes, rules and regulations.

1.13 PROTECTION

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A. Fire Protection: The Contractor shall, during the progress of the work, assume all responsibility for loss or damage by fire to the work included in his contract until completion of the work. No flammable materials shall be stored in the structures in excess of amounts allowed by authorities having jurisdiction. No gasoline shall be stored in or near the work at any time, and none shall be left on site outside of working hours.

B. Barricades and Warning Signs: Provide barricades and warning signs for the duration of the construction activity. Wesleyan University approved warning signs shall be located in public areas outside of the work area. Six foot tall chain link fencing shall be used to enclose project work area. Location and layout shall be specific to the project site. Fencing and gates shall also be installed to enclose any area of parking lot used for lay-down or any construction related activities. Barricades shall be located to impede pedestrian traffic from accessing the work area. Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics and warning signs to inform personnel and the public of the hazard being protected against.

C. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

D. Environmental Protection: Where work will be performed in occupied areas, provide 1HR fire rated dust barriers and approved track mats at all work area access points for the duration of the demolition and construction activity. Track mats shall be cleaned and/or replaced as required to maintain their effectiveness.

E. Avoid use of tools and equipment which produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site. Noisy work shall not start prior to 9:00am in occupied areas or prior to 8:30 am in adjacent occupied areas, coordinate with Owner.

F. Protection: the Contractor shall provide and maintain items required for the protection of existing building structure and finishes such as:
   - Floor materials; Lighting and associated controls; Fire Alarm System; Wall surfaces;
   - Acoustic panels; Door openings and thresholds
Damage incurred shall be rectified by the Contractor at no expense to Wesleyan University.

G. Contractor shall install protection before starting any demolition or alteration work. Protect all attic spaces when roof placements are performed.

H. Protection from theft or vandalism: The Contractor shall be solely responsible for damage, loss or liability due to theft or vandalism at all times during the construction period whether work is in progress or not. The Contractor may, if he chooses, or if it is found necessary or advisable, employ a watchman, at no additional cost to the Owner.

I. Precaution must be exercised at all times for the protection of persons and property. Contractor shall take or cause to be taken such additional safety and health measures Wesleyan University may determine to be reasonably necessary. Hardhats and shirts shall be worn at all times. Machinery, equipment and other hazards shall be guarded in accordance with the safety provisions of the Manual Accident Prevention in Construction, published by the Associated General Contractors of America, to the extent that such provisions are not in conflict with other applicable laws.
The Contractor shall confer with Wesleyan University Physical Plant, EHS&S and the Project Manager to determine if any chemical or biological hazards are present in a mechanical system before implementing ductwork inspections or revisions to the system. The Contractor shall take all measures necessary to protect the health of workmen involved with the inspection or revision.

J. Streets, Curbs and Sidewalks - Protect from damage all streets, roads, curbs, sidewalks, and other existing items not removed. Repair and replace, without cost to the Owner, portions which may become damaged as a result of work under this Contract. This work to be done in strict compliance with regulations of authorities having jurisdiction.

J. The Buildings may be occupied and used during the course of construction. Install protection before starting any demolition or alteration work. Use only new materials in construction of all protection. If wood is called for, all framing members shall be of fire retardant treated wood. No cutting of materials shall be done within occupied spaces.

1.14 IDENTIFICATION BADGES FOR CONTRACTOR'S PERSONNEL

A. The Contractor shall require that each person working at the site on this project wear a contractor identified shirt and an approved identification badge

B. Badges are to be worn on outer garment where visible, and shall be returned to the Contractor's field office at the end of each day and picked up there each morning.

C. The Contractor shall provide a list of names of all subcontractors who shall be on site to perform the work to the Owner upon final award of the work.

1.15 OPENINGS, CHASES, INSERTS, ETC.

A. It shall be the responsibility of the Contractor to examine the Mechanical and Electrical drawings and consult with the subcontractors, and to provide all such chases, channels or openings as required. These may not be shown on the construction drawings.

B. The Contractor, the subcontractors and others shall furnish, properly locate and install all sleeves, inserts, hanger, etc. required for the installation of their work. Additional hangers may be required for exposed installations.

C. After the installation and completion of the work for which openings, channels, chases, etc. have been provided, the Contractor shall properly close and finish all openings, channels, chases, etc., as required to complete the work.

D. Positive instruction shall be obtained from the Contractor and Owner before cutting beams, arches, lintels or other structural members, and all contractors shall be guided by such instructions.

E. No chases or slots shall be formed or cut closer than 8" from jambs of openings or intersections of walls so as not to pass through any beams, lintels or other bearings.

1.16 DIMENSIONS AND MEASUREMENTS

A. The Contractor and each subcontractor shall verify all dimensions for all built-in work or work adjoining that of other trades before ordering any material or doing any work and shall be
responsible for connections of same. Any differences which may be found shall be submitted to
the Project Manager for consideration before proceeding with the work.

1.17 SURVEY AND LAYOUT
A. The Contractor shall verify all grades, lines, leveling and dimensions as shown on-the drawings,
and shall report any errors or inconsistencies in the above to the Project Manager before
commencing work.

1.18 SALVAGEABLE MATERIALS
A. Salvageable materials shall be protected from damage, removed from the site and turned over to
Wesleyan University or disposed of as directed by Wesleyan University. Perform a site walk
with Owner to identify salvageable material prior to the start of work. Contractor shall relocate to
Owner’s storage location at no additional cost to Owner.

1.19 MANUFACTURER’S DIRECTIONS
A. All manufactured articles, material and equipment shall be applied, installed, connected, erected,
used, cleaned and conditioned as directed by the manufacturers unless herein specified to the
contrary.

1.20 FIRE EXTINGUISHERS
A. Provide and place one 2-1/2 gallon gas cartridge type antifreeze, Underwriters' Laboratory
approved fire extinguisher for each 1,500 sq. ft. or fraction thereof of altered floor area in each
story of the building as-soon as flammable materials are on site and wherever flammable
materials are stored. Hang extinguishers on plywood backboards painted red, strapped to
columns with center six feet above floor. Do not place materials or equipment to obstruct access
to fire extinguishers.
B. Inspect each extinguisher at least once a month during construction period and affix dated tag
certifying adequacy of charge and workability of extinguisher.
C. Extinguishers shall remain property of Contractor and shall be removed at completion of
Contract. Do not use Owner's present fire extinguishers to satisfy requirements of specifications.
D. In area where exposed electrical or telephone equipment occurs, the fire extinguishers shall be of
dry chemical type for Class B and C fires.

1.21 SPECIAL CLEANING AND MAINTENANCE
A. Employ every available method to reduce noise during construction to a minimum and handle
materials and rubbish to produce the least amount of dust. All rubbish shall be wetted before
being handled, and shall be removed from premises by means of dustproof containers or
approved dustproof chutes.

1.22 EXISTING EQUIPMENT AND MATERIALS TO BE REUSED
A. Existing equipment and materials to be re-used, shall be disconnected, removed, stored, repaired,
altered as necessary, cleaned thoroughly, and if wood or ferrous metal surfaces, inaccessible after
installation, shall be primed in same manner as for new work.
B. The terms shall also include handling of the work, preparation of other work to receive reset work, reinstallation of the work in same or other location and adjustments required after reinstallation to assure functioning in a manner satisfactory to Owner.

C. Contractor shall salvage all interior doors for possible reuse, dispose of doors properly at end of project. Reference hazardous materials report to determine proper disposal.

D. Contractor shall inventory all salvaged items and submit list to Owner.

1.23 EXISTING EQUIPMENT AND MATERIALS NOT TO BE REUSED

A. Equipment and materials to be disconnected and removed and not required to be reused, as determined by the Project Manager or specified, nor shown on drawings to be reset, relocated or retained by Owner shall be removed from the premises and properly disposed of by the Contractor, per section 01501. Removed surplus serviceable materials, to be retained by Owner, shall be turned over and delivered to storage at locations as directed.

1.24 TIME AND MANNER

A. It shall be the specific responsibility of the Contractor to advise subcontractors what responsibility each has for scheduling and performing work to conform to established progress schedule and contract completion date approved by the Project Manager.

1.25 CODES AND SPECIFICATIONS

A. All references to Standard Specifications and codes made throughout the specifications refer to the latest editions in effect at the time of the proposal. Such references include current addenda and errata, if any, and shall be considered an integral part of the work.

B. Codes: The Codes and Standards listed below apply to all new and renovated construction. Wherever Codes and/or Standards are mentioned in these specifications or drawings, the latest applicable edition or revision shall be followed, including but not limited to:

- State Building Code
- International Building Code
- International Residential Code
- International Existing Building Code
- International Mechanical Code
- International Plumbing Code
- International Energy Conservation Code
- National Electrical Code NFPA 70
- ICC/ANSI A117.1-2003
- Connecticut State Fire Safety Code
- International Fire Code
- CT Amendments State Fire Safety Code
- Connecticut State Elevator Code
- ASME A17.1 Safety Code for Elevators and Escalators & Amendments
- Connecticut Supplement
- NFPA, ANSI, OSHA, ADA
- Utility Company Regulations
- Wesleyan University Public Safety Regulations
- Environmental Protection Agency
- ASHRAE, SMACNA
- Wesleyan Health and Safety Regulations
C. All materials furnished and all work installed shall comply with the requirements of the local utility companies and all Governmental departments having jurisdiction.

D. The Contractor shall include in the work, without extra cost to the Owner, any labor, materials, services, apparatus and drawings in order to comply with all applicable laws, ordinances, rules and regulations, whether shown on the drawings and/or specified or not.

1.26 ADDENDA ISSUED DURING BIDDING PERIOD

A. Oral interpretations cannot be given during bidding period. The Bidder may notify the Project Manager in writing of any important items requiring clarification and a written addendum will be sent all to bidders explaining correction or clarification.

1.27 SUPERVISORY PERSONNEL

A. The Contractor shall provide designated supervisory personnel whenever any workmen are on the site. Designated supervisory personnel may also be a working foreperson.

B. The Contractor shall provide an internal communications system for all supervisory personnel.

1.28 PROJECT SCHEDULE AND EQUIPMENT SHUTDOWN

A. A proposed project schedule is to be prepared and submitted to the Project Manager for approval 5 days after intent to award and prior to starting any work.

B. The schedule of shutdowns is to be approved by and coordinated with the Project Manager prior to this work occurring. 72 hour notice shall be provided.

C. Electrical shutdown(s) will be required for installation of the new switch in the 480V Main Distribution Switchgear. It shall be assumed the shutdown(s) will be off hours on a holiday.

1.29 SIGNS

A. No signs or advertisements are allowed to be displayed without the approval of the Owner.

1.30 ERRORS AND OMISSIONS

A. If any errors or omissions are discovered in the drawings or specifications by the Contractor, the Contractor shall notify the Project Manager in writing of such omissions or errors before proceeding with the work.

1.31 MATERIALS SUBSTITUTIONS

A. Wherever the words "approved by", "satisfactory to", "inspected by", or similar phrases are used in this specification, they shall be understood to mean that the material or item referred to shall be approved by, satisfactory to, as directed by, submitted to, inspected by, the Project Manager.

1.32 INSTALLATION

A. The schedule of installation is to be approved by the Project Manager.

1.33 TAX EXEMPTION

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A. This project is tax exempt. The Owner will provide the successful bidder with appropriate information and documentation upon request and/or prior to the signature of the contract for construction.

1.34 HOT WORK PERMIT

A. Contractor shall apply for hot work permits 48 hours prior to the start of work.

B. Contractor shall provide fire watch for all torch cutting and/or welding and coordinate with all local authorities having jurisdiction.

C. Contractor shall protect all areas below and adjacent to work areas with Fire Blankets.

D. How Work Permit shall be obtained from the office of Environmental Health, Safety and Sustainability.

1.35 HAZARDOUS MATERIAL COORDINATION

A. Contractor to obtain hazardous investigation report from Owner prior to proceeding with demolition at any awarded location.

B. All painted surfaces prior to 1978 construction shall be considered to be positive for lead containing paint.

C. Removal of lead containing materials from Wesleyan University to be coordinated with the office of Environmental Health, Safety and Sustainability and the Project Manager.

D. Contractor shall be responsible for transporting all lead containing material from the project site to a lead dumpster. Lead dumpster shall be provided by the Owner and shall be located on campus. The exact location will be determined by the owner prior to the start of construction.

E. If required, bag lead paint for disposal to Wesleyan University designated lead dumpster.

F. Federal, State, Local and OSHA requirements to be strictly adhered to for all lead abatement.

G. Contractor is responsible for disposal of lead containing materials to Wesleyan University designated lead dumpster.

H. Any contractor involved with renovation repair and painting projects shall provide current blood test results for ALL employees working on Wesleyan properties before start of any work and monthly thereafter. Post blood work will be required at completion of the project.

I. Any presence of suspected asbestos containing material shall immediately be brought to the attention of the Project Manager.

J. Asbestos abatement coordination to be through Project Manager and the office of Environmental Health, Safety and Sustainability.

K. Manifest for any hazardous materials may only be signed by Wesleyan University Health, Safety and Sustainability Officer, William Nelligan, or authorized Wesleyan designee.
L. Materials in ductwork or elevator shafts are to be tested for hazardous materials prior to any suctioning of the ductwork or elevator shaft.

M. All PCB equipment/oil needs to be turned in to Environmental Health, Safety and Sustainability (860-685-2771) for proper disposal.

1.36 FALL PROTECTION
A. Wesleyan University has a zero-tolerance policy. Contractor shall be removed from the site and contract shall be terminated for non-compliance.

B. Contractor shall meet or exceed all OSHA fall protection requirements. Failure to do so will result in immediate cease and desist and contract termination. Contractor shall provide minimum 10 hour OSHA Training Certification for workman and minimum 30 hour OSHA Training Certification for Working Foreperson or Supervisor to Owner prior to start of work. Fall protection systems shall apply but not be limited to excavations, hoist areas, holes, leading edges, protection from falling objects, low-slope roofs, steep roofs, window washing, wall openings, etc. Contractor shall incorporate controlled access zones, covers, guardrail systems, personal fall arrest systems, positioning device systems, safety monitoring systems, safety net systems, warning line systems, canopies, toeboards, etc.

C. Contractors on an unguarded walking / working surface which is six (6) feet or more above a lower level shall be protected from falling by the use of a fall protection system(s) 100% OF THE TIME.

D. A site specific fall protection plan shall be developed by the contractor for all jobs where fall hazards exist if not previously addressed in a site specific safety plan.

1.37 CONTRACT DOCUMENTS

The Contract Documents for the Work are Documents prepared by/for Wesleyan University.

END OF SECTION
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for Alternates.

B. Definition: An Alternate is an amount proposed by Bidders and stated on the Bid Form for certain construction activities defined in the Bidding Requirements that may be added to or deducted from Base Bid amount if the Owner decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems or installation methods described in Contract Documents.

C. Coordination: Coordinate related Work and modify or adjust adjacent Work as necessary to ensure that Work affected by each accepted Alternate is complete and fully integrated into the project.

D. Notification: Immediately following the award of the Contract, prepare and distribute to each party involved, notification of the status of each Alternate. Indicate whether Alternates have been accepted, rejected or deferred for consideration at a later date. Include a complete description of negotiated modifications to Alternates.

E. Schedule: A "Schedule of Alternates" is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials and methods necessary to achieve the Work described under each Alternate.

1. Include as part of each Alternate, miscellaneous devices, accessory objects and similar items incidental to or required for a complete installation whether or not mentioned as part of the Alternate.

PART 2 - PRODUCTS – Refer to applicable section

PART 3 - EXECUTION – Refer to applicable section

PART 4 - SCHEDULES

4.1 SCHEDULE OF ALTERNATES

Alternate No. 1:
BP#3: 84 Home Avenue – Interior/Exterior Renovations
Contractor to provide material and labor for new electrical service cable from the panel to the meter and from the meter to the weatherhead.

ADD:(Material)$_____________ (Labor)$_____________ (Total)$ ________________
Alternate No. 2:
BP#7 – Water Service/Fire Alarm/Fire Sprinkler;
Installation of a 4” sprinkler water feed in lieu of 2” sprinkler feed (by Site Contractor).

ADD:(Material)$_____________ (Labor)$_____________(Total)$ _________________
Materials to be installed:___________________________________________________.

Alternate No. 3:
BP #12 - 237 Church St.; Shanklin Lab – Perimeter Parapet Repairs / Exterior Painting
Provide material and labor costs for the replacement of perimeter rubber roofing that transitions into built-in gutter, metal flashing and 2 courses of slate roofing per Addendum #2.

ADD:(Material)$_____________ (Labor)$_____________(Total)$ _________________
Materials to be installed:___________________________________________________.

Alternate No. 4:
BID PACKAGE #18:
221 High St. - Memorial Chapel; Window Repairs / Exterior Painting
Provide cost to install scaffolding on the south elevation for the performance of the work in lieu of using a lift on the elevation of the building.

ADD:(Material)$_____________ (Labor)$_____________(Total)$ _________________
Scaffolding contractor to used:______________________________________________.

Alternate No. 5:
Add_____________________________________ dollars  ($_______________)

Alternate No. 6:
Add_____________________________________ dollars  ($_______________)

Alternate No. 7:
Add_____________________________________ dollars  ($_______________)

END OF SECTION
SECTION 01040 - COORDINATION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Minimum administrative and supervisory requirements necessary for coordination of work on the project to be fulfilled by the Contractor include but are not necessarily limited to the following:

1. Coordination and meetings.
2. Pre-installation conferences, quality control during installation
3. Administrative and supervisory personnel.
4. Records and reports.
5. Limitations for use of site and site utility hook-ups.
6. Special reports.
7. General installation provisions.
8. Cleaning and protection.
9. Coordination with the City of Middletown, including all inspections.

B. Each Subcontractor must participate, where applicable, even though certain items of work may be assigned to a specific Subcontractor, and even though the Contractor may provide certain general work for overall coordination purposes.

1.02 COORDINATION AND MEETINGS

A. General: Prepare a written memorandum on required coordination activities. Include such items as required notices, reports and attendance at meetings. Distribute this memorandum to each entity performing work at the project. Prepare similar memorandum for separate contractors where interfacing of their work is required.

B. Coordination Drawings: In addition to Composite Drawings, prepare coordination drawings where work by separate entities requires fabrication offsite of products and materials which must accurately interface. Coordination drawings shall indicate how work shown by separate shop drawings will interface, and shall indicate installation sequence. Comply with all requirements of Composite Drawings.

C. Coordination Meetings: The Contractor shall schedule general project coordination meetings as required based upon the stage of construction; at regularly scheduled times convenient for the attendance of the parties involved. These meetings are in addition to specific meetings held for other purposes, such as regular project meetings and special pre-installation meetings. At a minimum pre-installation meetings shall be held for the following – planting removals, all concrete, all asphalt, wall layout, HVAC equipment rigging and layout, pole lighting install, electrical work, etc. Required attendance includes each entity identified by any Contractor as being currently involved in coordination or planning for the work of the entire project. Conduct meetings in a manner that resolve coordination problems. The Contractor shall preside at each meeting, and shall record meeting results. The Contractor shall record and distribute copies of the meeting results to everyone in attendance and to others affected by decisions or actions resulting from each meeting.
1.03 ADMINISTRATIVE/SUPERVISORY PERSONNEL

A. Contractor shall provide full time, on site supervisory personnel for the proper execution of the work.

1.04 LAYOUT

A. The Contractor’s licensed land surveyor shall establish and the Contractor shall maintain, bench marks and other dependable markers. Establish bench marks and markers to set lines and levels for work as needed to properly locate each element of the project. Each Subcontractor shall calculate and measure required dimensions as shown within recognized tolerances. Advise entities performing work, of marked lines and levels provided for their use.

1. Construction limits will vary during the life of the Contract. Provide additional survey and layout requirements as required to coordinate with the changing construction limits.

B. Before proceeding with the layout of actual work, Contractor shall verify and coordinate the layout information shown on the drawings, in relation to existing bench marks. Do not scale drawings. Recheck measurements and dimensions, before starting each installation. Report discrepancies to the Owner prior to proceeding with that work.

C. The Contractor shall establish the building column, wall, and partition lines required by the various subcontractors in laying out their work. The Contractor shall locate and verify all utilities and utility tie-in locations.

D. The Contractor shall coordinate and supervise the work performed by Subcontractors to the end that the work is carried out without conflict between trades and so that no trade, at any time, causes delay to the general progress of the Work. The Contractor shall at all times afford each trade, any separate contractor, and the Owner, every reasonable opportunity for the installation of work and the storage of materials, so long as no material delay to the general progress of the work results.

1.05 LIMITATIONS ON USE OF THE SITE

A. General: Administer allocation of available space equitably among the Subcontractors and other entities needing access and space, so as to produce the best overall efficiency in performance of the total work of the project. Schedule deliveries so as to minimize space and time requirements for storage of materials and equipment on site.

1. Contractor shall be responsible to not limit access to all primary and secondary roads and walkways within the site and the entire campus as a result of the Contractor’s operations.

2. Parking on sidewalks is prohibited. Contractor shall obtain “Temporary Sidewalk Vehicle Access Pass” 24 hours prior to need for access. Pass must be signed by an authorized representative of the University. Pass shall be prominently displayed on vehicle dashboard. See Exhibit G.

3. Contractor’s vehicles and deliveries are restricted. Owner’s Representative will determine the location of site access.

A. Variations in the above requirements may be permitted provided the Owner is notified at least one week in advance and the Owner agrees to the proposed exceptions.
B. Staging areas, access to site and Contractor’s parking areas shall be addressed during the pre-bid meeting and pre-construction meeting. No change in the Contract Sum will be permitted as a result of the Owner’s decisions in this matter.

C. The Contractor shall coordinate his activities with significant events on Wesleyan’s academic calendar, including, but not limited to Commencement, Homecoming, Summer Projects, Summer Conferences, Art activities within the CFA, Student Arrival, and Student Departure. The Contractor’s use of the site may be restricted or denied on these days.

A. The site has other buildings that are in use and will be in continuous operation during the performance of the Work. The Work shall be completed without interruption of or change in the regular schedule of operations of the other buildings. No access is permitted to the existing buildings without prior written approval of the Owner’s Representative.

B. Existing utilities and services affected by the Work shall be kept in active service at all times unless permitted otherwise. Be responsible for any damage done to existing construction, work in place, facilities, utilities, services and equipment, resulting from the Contractor’s operations in connection with the Work. Damage to facilities, services, connections, etc., shall be repaired immediately by competent skilled mechanics acceptable to the Owner.

C. Live circuits or working plumbing, heating, ventilating or air conditioning plant or equipment, mechanical piping, installations and connections, and/or plant and equipment related to other operating buildings shall not be disturbed without specific direction and approval.

1. Whenever such work is contemplated, the Contractor shall submit to the Owner a written request for scheduling such work. This written request shall be received ten (10) working days prior to the date on which the proposed work will be performed and addressed at the Project Meeting prior to the required shutdown.

2. The shutting off and turning on of electric current, active services, etc., in live circuits or active plumbing and mechanical piping, water, steam, serving lines, plant, equipment, etc., of the existing facility will be done by or under supervision of the authorized representatives of the occupants of the existing facility buildings.

E. Construction Parking and Staging

1. Construction parking, trailer and staging areas are limited to an area that will be determined by the Owner’s Representative.

PARKING – Contractor and subcontractors shall be allowed the reasonable use of the site and parking shall be allowed for fully insured on site management vehicles and those fully insured marked vehicles required for the construction of the project. All other vehicles and personal vehicles shall be parked at the Vine Street parking lot, Lot V. Transportation to and from the project site shall be the responsibility of the contractor and subcontractors. In no event shall the contractor or subcontractors park in a University lot designated for Students, Staff, or Faculty. Alternate parking locations to be identified by Owner.

2. Contractor shall furnish all labor required for loading and unloading of materials.
3. The Contractor shall provide a field office trailer. Place trailers/field offices in an approved construction parking, staging area. Provide all facilities for field offices and trailers, such as office equipment, computers with internet access, telephone, fax, power, heat etc.

4. Contractor shall keep access routes and parking areas used for the work clean of debris and other obstructions resulting from the work.

5. Make repairs to site that is damaged as a result of the Contractor’s operations. Repairs shall be to the satisfaction of the Owner.

1.06 SPECIAL REPORTS

A. Reporting Unusual Events: When an event of an unusual and significant nature occurs at the site, the Contractor shall prepare and submit a special report. The report shall list chain of events, persons participating, the response by the personnel of the Contractors, an evaluation of the results or effects and similar pertinent information.

1. Submit special reports directly to the Owner's Representative within one day of an occurrence.

PART 2 - SUBMITTALS

2.01 SUBMITTALS

A. Coordination Drawings: Before construction work can begin, the respective Contractors shall submit to the Owner computer-drawn (CAD) coordination drawings in the form of (a) reproducible (sepia or mylar) transparencies at not less than ¼ inch scale and (b) CAD files of the coordination drawings. Such drawings will be required throughout all areas for trades as described below. These drawings would show resolutions of trade conflicts in congested areas. The Owner will supply base drawings, including floor plans and reflected ceiling plans, in the form of electronic CAD files, using the AutoCAD release edition specified with the files, to all trade contractors referenced in this section. Each trade contractor shall create separate layers within the CAD files to show the work of their trade.

B. Prepare Coordination Drawings as follows:

1. The HVAC subcontractor shall prepare the CAD coordination drawings showing all ductwork, all pertinent heating piping, and equipment. These drawings may be the same as the required ductwork shop drawings. The drawings shall be prepared with due regard to lighting fixtures, sprinklers, air diffusers, other ceiling-mounted items, ceiling heights, structural work, ease of maintenance, electric code clearance, and other contract requirements. Review appearance of each installation with Owner's Representative. Also, prepare with due regard to reflected ceiling plans.

2. HVAC Contractor shall have sepia transparencies made therefrom, and shall submit these transparencies and associated CAD coordination files to all major trade Contractors.

3. The Plumbing/Fire Protection Subcontractor shall add layers to the CAD coordination drawing files, indicating the plumbing/fire protection work, and shall indicate areas of conflict by highlighting all locations of conflicting piping and equipment.
4. The Electrical Subcontractor shall add layers to the CAD coordination drawing files, and shall indicate areas of conflict by highlighting all locations of equipment, lighting fixtures, cable trays and major conduit.

5. The Ceiling Subcontractor shall utilize the CAD drawing files to prepare acoustic panel ceiling drawings, and shall indicate areas of conflict with the work of other trades by drafting the location of grids, panels, and tiles.

6. The General Construction Contractor shall indicate Architectural/Structural conflicts or obstacles and coordinate to suit the overall construction schedule.

7. The General Construction Contractor shall expedite all drawing work and coordinate to suit the construction schedule. The General Construction Contractor shall then review these drawings and compare them with the Architectural, Structural, Equipment and other drawings and determine that all of the Work can be installed without undue interference. In the case of unresolved interference’s, the General Construction Contractor shall notify Owner, who shall direct the various Contractors as to how to revise their Work on the drawings to avoid such interference’s and shall then submit a revised copy of the CAD coordination drawings to Owner with an accompanying memo stating that all interference’s have been corrected and that the Work can be installed as shown on the Drawings without interference.

8. Trades Work in a given bay or area should not proceed until all trades foremen agree on the exact arrangements for each room or area. If a given trade proceeds prior to trades’ approval, then, if necessary, that trade shall revise the Work at no extra cost in order to permit others to proceed.

C. Staff Names: Within 15 days of Notice to Proceed, submit a list of the Contractor’s principal staff assignments, including the Superintendent and other personnel in attendance at the site; identify individuals, their duties and responsibilities; list their addresses, telephone numbers and include a copy of their resumes.

1. Comply with requirements contained in Section 01301, Submittals.

2. Post copies of the list in the Project Meeting Room, the temporary field office, and each temporary telephone.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION PROVISIONS

A. Pre-installation Conferences: Schedule and hold a preinstallation meeting at the project site well before installation of each unit of work which requires coordination with other units of work. Contractors involved in the unit of work as well as the Installer and representatives of the manufacturers and fabricators who are involved in or affected by that unit of work, and with its coordination or integration with other work that has preceded or will follow shall attend this meeting.

1. Record significant discussions of each conference, and record agreements and disagreements, along with the final plan of action and completion dates. Distribute the record of the meeting promptly to everyone concerned, including the Owner.
2. Do not proceed with the unit of work if the pre-installation conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the work and reconvene pre-installation conference at the earliest feasible date.

B. Installer's Inspection of Conditions: Require the Installer of each major unit of work to inspect the substrate to receive work and conditions under which the work is to be performed. The Installer shall report all unsatisfactory conditions in writing to the Contractor. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

C. Manufacturer's Instructions: Where installations include manufactured products, comply with the manufacturer's applicable instructions and recommendations for installation, to the extent that these instructions and recommendations are more explicit or more stringent than requirements indicated in the Contract Documents.

D. Inspect each item of materials or equipment immediately prior to installation. Reject damaged and defective items.

E. Provide attachment and connection devices and methods for securing work properly. Secure work true to line and level and within recognized industry tolerances. Allow for expansion and building movement. Provide uniform joint width in exposed work.

   1. Conditions producing questionable visual effects or effects not shown or described in the Contract Documents shall be referred to the Owner for evaluation.

F. Recheck measurements and dimensions of the work, as an integral step of starting each installation.

G. Install each unit of work during weather conditions and project status which will ensure the best possible results in coordination with the entire work. Isolate each unit of work from incompatible work as necessary to prevent deterioration.

H. Enclosure of the Work: Contractor shall coordinate the closing in of the work with required inspections and tests, so as to minimize the necessity of uncovering work for that purpose.

I. Mounting Heights: Where mounting heights are not indicated, mount individual units of work at industry recognized standard mounting heights for the particular application indicated. The Owner shall review and approve the mounting heights of all work not specifically shown or described in the Contract Documents prior to installation.

J. Noise and Vibration Control: Due to the nature of the Owner’s activities at the site the Contractor is required to exercise due diligence in controlling noise and vibration resulting from construction operations. No radio playing on site is permitted by the Contractor.

   1. Comply with all applicable state and local laws, ordinances, and regulations relative to noise control.

   2. Equipment to be employed on this site shall not produce a noise level exceeding the 86 Db(A) at a distance of 50 feet from the equipment under test.
3.02 CLEANING AND PROTECTION

A. General: During handling and installation of work at the project site, clean and protect work in progress and adjoining work on the basis of continuous maintenance. Apply protective covering on travel ways to the work site and on installed work where it is required to ensure freedom from damage or deterioration at time of substantial completion.

B. Protect all furnishings/equipment not removed from the project site.

C. Clean and perform maintenance on installed work as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

D. Limiting Exposures of Work: To the extent possible through reasonable control and protection methods, supervise performance of the work in such a manner and by such means which will ensure that none of the work, whether completed or in progress, will be subjected to harmful, dangerous, damaging or otherwise deleterious exposure during the construction period.

END OF SECTION
PART 1 - GENERAL

1.01 DESCRIPTION OF REQUIREMENTS

A. Definition: "Cutting and patching" includes cutting into new or existing construction to provide for the installation or performance of other work and subsequent fitting and patching required to restore surfaces to their original condition.

1. "Cutting and patching" is performed for coordination of the work, to uncover work for access or inspection, to obtain samples for testing, to permit alterations to be performed or for other similar purposes.

2. Cutting and patching performed during the manufacture of products, or during the initial fabrication, erection or installation processes is not considered to be "cutting and patching" under this definition. Drilling of holes to install fasteners and similar operations are also not considered to be "cutting and patching".

B. Contractor shall be certified and use lead safe work practices in all buildings constructed pre-1978.

C. Refer to other sections of these specifications for specific cutting and patching requirements and limitations applicable to individual units of work.

1.02 QUALITY ASSURANCE

A. Requirements for Structural Work: Do not cut and patch structural work in a manner that would result in a reduction of load-carrying capacity or of load-deflection ratio.

B. Operational and Safety Limitations: Do not cut and patch operational elements or safety related components in a manner that would result in a reduction of their capacity to perform in the manner intended, including energy performance, or that would result in increased maintenance, or decreased operational life or decreased safety.

C. Visual Requirements: Do not cut and patch work exposed on the building's exterior or in its occupied spaces, in a manner that would, in the Owner’s opinion, result in lessening the building's aesthetic qualities. Do not cut and patch work in a manner that would result in substantial visual evidence of cut and patch work. Remove and replace work judged by the Owner to be cut and patched in a visually unsatisfactory manner.

1.03 SUBMITTAL

A. Procedural Proposal for Cutting and Patching: Where prior approval of cutting and patching is required, submit proposed procedures for this work well in advance of the time work will be performed and request approval to proceed. Include the following information, as applicable,
in the submittal:

1. Describe nature of the work and how it is to be performed, indicating why cutting and patching cannot be avoided. Describe anticipated results of the work in terms of changes to work, including structural, operational and visual changes as well as other significant elements.

2. List products to be used and firms that will perform work.

3. Give dates when work is expected to be performed.

4. List utilities that will be disturbed or otherwise be affected by work, including those that will be relocated and those that will be out-of-service temporarily. Indicate how long utility service will be disrupted.

5. Where cutting and patching of structural work involves the addition of reinforcement, submit details and engineering calculations to show how that reinforcement is integrated with original structure to satisfy requirements.

6. Approval by the Owner to proceed with cutting and patching work does not waive the Owner right to later require complete removal and replacement of work found to be cut and patched in an unsatisfactory manner.

7. Submit a complete set of photos recording all existing conditions and recording the quality of the conditions. Include a report with the photos to identify any areas of potential concern.

**PART 2 - PRODUCTS**

2.01 MATERIALS

A. General: Except as otherwise indicated, or as directed by the Owner, use materials for cutting and patching that are identical. If identical materials are not available, or cannot be used, subject to requirements in the Contract Documents for substitutions, use materials that match adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials for cutting and patching that will result in equal or better performance characteristics.

**PART 3 - EXECUTION**

3.01 INSPECTION

A. Before cutting, examine the surfaces to be cut and patched and the conditions under which the work is to be performed. If unsafe or otherwise unsatisfactory conditions are encountered, take corrective action before proceeding with the work.

B. Before the start of cutting work, meet at the work site with all parties involved in cutting and
patching, including mechanical and electrical trades. Review areas of potential interference and conflict between the various trades. Coordinate layout of the work and resolve potential conflicts before proceeding with the work.

3.02 PREPARATION

A. Temporary Support: To prevent failure, provide temporary support of work to be cut.

B. Protection: Protect other work during cutting and patching to prevent damage. Provide protection from adverse weather conditions for that part of the project that may be exposed during cutting and patching operations.

1. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

C. Protect all surfaces in the space in a manner to ensure they remain in like new condition.

3.03 PERFORMANCE

A. General: Use lead safe work practices in all buildings constructed pre-1978. Employ skilled workers to perform cutting and patching work. Except as otherwise indicated or as approved by the Owner proceed with cutting and patching at the earliest feasible time and complete without delay.

B. It shall be the responsibility of the Contractor to examine the Mechanical and Electrical drawings and consult with the Subcontractors, and to provide all such chases, channels or openings as required. These may not be shown on the construction drawings.

C. The Contractor, the subcontractors and others shall furnish, properly locate and install all sleeves, inserts, hanger, etc. required for the installation of their work.

B. Cutting: Cut the work using methods that are least likely to damage work to be retained or adjoining work. Where possible review proposed procedures with the original installer; comply with original installer's recommendations.

1. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut through concrete and masonry using a cutting machine such as a Carborundum saw or core drill to ensure a neat hole. Cut holes and slots neatly to size required with minimum disturbance of adjacent work. To avoid marring finished surfaces, cut or drill from the exposed or finished side into concealed surfaces. Materials and equipment used to complete work shall be of the highest quality and sound working condition. Temporarily cover openings when not in use.

2. By pass utility services such as pipe and conduit, before cutting, where such utility services are shown or required to be removed, relocated or abandoned. Cut-off conduit and pipe in walls or partitions to be removed. After by pass and cutting, cap, valve or
plug and seal tight remaining portion of pipe and conduit to prevent entrance of moisture or other foreign matter.

3. No chases or slots shall be formed or cut closer than 8” from jambs of openings or intersections of walls so as not to pass through any beams, lintels or other bearings.

C. Patching: Patch with seams which are durable and as invisible as possible. Comply with specified tolerances for the work.
   1. Where feasible, inspect and test patched areas to demonstrate integrity of work.
   2. Restore exposed finishes of patched areas and where necessary extend finish restoration into retained adjoining work in a manner which will eliminate evidence of patching and refinishing.
   3. Where removal of walls or partitions extends one finished area into another finished area, patch and repair floor and wall surfaces to provide an even surface of uniform color and appearance. If necessary to achieve uniform color and appearance, remove floor and wall coverings and replace with new materials.
      a. Where patch occurs in a smooth painted surface, extend final paint coat over entire unbroken surface to intersecting corner containing patch, after patched area has received prime and base coat.

3.04 CLEANING

A. Thoroughly clean areas and spaces where work is performed or used as access to work. Lead safe work practices to be followed in buildings constructed pre-1978. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

END OF SECTION
SECTION 01200 - PROJECT MEETINGS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section specifies administrative and procedural requirements for project meetings, including, but not limited to, the following:

1. Progress meetings.
2. Pre-installation conferences
3. Coordination meetings.
4. Scheduling.

B. Related Sections:

1. Section 01301 - Submittals.

1.2 COORDINATION, GENERAL

A. Contractor shall provide close administrative and procedural coordination of scheduling and reporting requests with those of other Contractors. Contractor shall be responsive to overall coordination responsibilities of the Project. Contractor shall coordinate both the listing and timing of reports and other activities required by the provisions of this and other sections, so as to provide consistency and logical coordination between the reports. Maintain coordination and correlation between separate reports by updating at time intervals required.

1.3 PRELIMINARY PROGRESS SCHEDULES

A. Bar - Chart Schedule: Unless otherwise noted, not more than 10 days after the Date of Notice to Proceed, the Contractor shall submit a bar - chart type progress schedule. On the schedule, indicate a time bar for each major category of work to be performed at site, properly sequenced and coordinated with other elements of the work. Show completion of the work sufficiently in advance of the date established for substantial completion of the work. If schedule adjustments are necessary for proper sequencing and coordinating of work, the Contractor shall schedule a meeting of Subcontractors at the earliest reasonable date, and shall direct necessary adjustments to the bar - charts. See 01301 for additional scheduling requirements.

1.4 SUBMITTAL SCHEDULE

A. General: Not later than 10 days after the Date of Notice of Award, Contractor shall prepare a complete schedule of work - related submittals for each Contract. Correlate each submittal schedule with the listing of principal subcontractors, as required by the General Conditions, and with the "listing of products" as specified in "Substitutions" sections and elsewhere in Contract Documents.

B. Form: Prepare submittal schedule in chronological sequence of submittals. Show category of
submittal, name of subcontractor, generic description of work covered, related section numbers, the activity or event number on the CPM progress schedule, the scheduled date for the first submittal, resubmittal, and the final release by Owner.

C. The Contractor shall revise the master submittal schedules at least once every two weeks. Show current status of submittals. Note Owner's activities that affect the work. Distribute updates to all affected parties.

D. The Contractor shall prepare a weekly status letter to the Owner, containing the following:

1. A list of shop drawings, product data, samples, etc., which have been sent to but not returned by the Owner giving name of the Contractor, subcontractor (if any), drawing, product data, sample, etc., submittal number, title and date of submission.

2. An indication of the desired priority of the return, if necessary. This procedure shall be maintained throughout the active submittal period of construction.

3. Provide a summary of the past 2 weeks activities and the proposed activities for the coming two weeks.

1.5 PROGRESS MEETINGS, REPORTING

A. General: In addition to specific coordination and pre-installation meetings for each element of work, and other regular project meetings held for other purposes, the Contractor shall schedule and hold a general progress meeting each week. Contractor and each other entity then involved in planning, coordination or performance of work is required to be properly represented at each meeting. At each meeting, review each entity's present and future needs, change orders, and documentation of information for payment requests. Discuss the status of each element of work pertaining to schedule; and updated progress schedule accordingly. Discuss whether schedule revisions are required to ensure that current work and subsequent work will be completed within Contract Time.

1. Reporting: Within 2 days after each progress meeting date, the Contractor shall distribute copies of minutes-of-the-meeting to each entity present and to others who should have been present.

2. Schedule Updating: Immediately following each progress meeting, where revisions to progress schedule have been made or recognized, the Contractor shall revise the integrated progress schedule and reissue revised schedule concurrently with report of each meeting.

B. Weekly Reports: Contractor shall prepare a weekly report recording information concerning events at the site. Submit to the Owner by the end of the following day on which the Contractor's Work is being performed.

C. Daily Construction Reports: Contractor shall prepare a daily construction report recording the following information concerning events at the site, and submit duplicate copies to the Owner at weekly intervals:
1. List of subcontractors at the site.
2. Count of personnel at the site.
3. High and low temperatures, general weather conditions.
4. Accidents and unusual events.
5. Meetings and significant decisions.
7. Meter readings and similar recordings.
8. Emergency procedures.
9. Orders and requests of governing authorities.
10. Change Orders received, implemented.
11. Services connected, disconnected.
12. Equipment or system tests and startups.
13. Partial Completions, occupancies.
15. Inspections performed – owner, contractor, material supplier, manufacturer, special inspector, surveyor, city, etc.

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

**PART 3 – EXECUTION** (Not Applicable)

END OF SECTION
SECTION 01301 - SUBMITTALS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. This Section specifies general requirements and procedures for preparing and submitting shop drawings, product data, and samples.

B. Submittal requirements specified in this Section apply to shop drawings, schedules, working drawings, certifications, calculations, test data, samples, product data and any other supplementary data required to amplify the Contract Drawings, show arrangements and details, and/or provide comprehensive descriptions of the Work to be performed.

1. Shop Drawings are drawings, diagrams, schedules and other data specially prepared for the Work by the Contractor or any Sub-contractor, manufacturer, supplier or distributor to illustrate some portion of the Work.

2. Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished by the Contractor to illustrate a material, product or system for some portion of the Work.

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

C. Submittal of shop drawings, product data, samples, etc., specially prepared for the Work by any Subcontractor, manufacturer, supplier, or distributor shall be made through the Contractor.

D. Calculations as submitted shall be certified by a Professional Engineer registered in the Jurisdiction of Project location and shall convey, or be accompanied by sufficient information to completely explain the structure, machine or system described and its intended manner of use.

E. Pertinent submittal requirements are specified in the several Sections of the Specifications. Specific requirements set forth in the Specifications for furnishing submittals for any particular portion of the Work shall not limit the obligation of the Contractor to furnish submittals for any other portion when so required.

F. Submittal of shop drawings, product data and samples by the Contractor shall allow enough time for a maximum 2 full review and revision cycles to ensure an adequate allowance of time for the submittal process. A cycle is made up of the separate review/revision periods of the Contractor and the Architect.

G. Refer to individual Specification Sections, to the General Conditions, and to other Sections in Division 1 for specific requirements on submittal of closeout information.

H. No portion of the Work requiring submission of shop drawings, product data, samples, etc., shall be commenced until the submittal has been reviewed, acted on, and satisfactorily
completed. All such portions of the Work shall be completed in accordance with the accepted submittal, or submittals and the Contract Documents.

I. The Contractor shall be responsible for, and bear all cost of damages which may result from the ordering of any material or from proceeding with any part of the Work prior to acceptance, of the necessary submittals.

J. Review all submittals, forwarding to the Owner those submittals which meet the requirements of this section and returning for resubmission those submittals which require modification or adjustment.

K. Failure of the Owner to note unacceptable submissions or specific portions thereof shall not be deemed to relieve the Contractor of his responsibility for completing the Work in accordance with the requirements expressed in the Contract Documents.

L. The Contractor shall prepare and submit a Construction Progress Schedule prior to the submission of the Contractor’s first Application for Payment.

M. No extension of time will be granted, nor will any consideration be given to claims arising out of the Contractor’s failure to submit Shop Drawings, Product Data, Samples, or related submittals which do not allow adequate lead time for review by the Owner and its Consultants, and also do not allow ample time for revision and subsequent review, as required.

N. The Owner review of Contractor’s submittals will be limited to examination of an initial submittal and two (2) resubmittals.

1.2 SUBMITTAL REQUIREMENTS

A. Contractor shall prepare and process a submittal, with reasonable promptness and in orderly sequence so as to cause no delay in the Work or in the work of the Owner or any separate contractor, submittals required by the Contract Documents or subsequently by the Architect, or the Owner, to more fully explain or illustrate some portion of the Work. Sequence submission of shop drawings, product data, samples, etc., such that all information is available for reviewing each submittal when it is received. Partial or piecemeal submittals or submittal not adequately reviewed by the Contractor are not acceptable and will be returned without action or time extensions.

B. Contractor shall not make submittals which are incomplete or which do not comply with the Contract Documents.

C. Coordinate and effectively sequence different categories of submittals for the same work and for interfacing units of the Work, so that one will not be delayed for lack of coordination with another.

D. Submittals shall indicate compliance with called for standards and codes, and identify materials. Coordination details shall be clearly noted. Include complete information for making necessary connections with related and adjoining Work. Submittals not containing the Contractor's approval stamp shall be returned as not an acceptable submission.

E. By approving and submitting shop drawings, product data, samples, etc., the Contractor
represents: (i) that he has determined and verified materials, quantities, dimensions, specified performance criteria, catalog numbers, field measurements, field construction criteria, installation requirements, and similar data related thereto, or will do so with reasonable promptness; and, (ii) that he has checked, reviewed, and coordinated the information contained within each such submittal with other submittals and with the requirements of the Work and with the requirements appearing in the Contract Documents.

1. Data shown on submittals shall be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to permit the Architect to review the information.

2. At the time of each submission, the Contractor shall give the Owner specific written notice of each variation that the submittal may have from the Contract Documents.

3. The Contractor shall note on resubmissions revisions other than the revisions or corrections on previous submittals.

4. Submittals which do not conform to the requirements stated in the Contract Documents will be considered unacceptable, unless otherwise determined acceptable under the provisions of Paragraph "REVIEW".

5. If the Contractor fails to describe such variations, he shall not be relieved of the responsibility for executing the Work in accordance with the requirements contained in the Contract Documents, even though submittals have been reviewed and accepted.

F. Deliver three (3) copies + one (1) email copy; unless directed otherwise, of each submittal via courier service, hand conveyance, post paid express mail, United Parcel Service or other equally good and sufficient prepaid delivery. Electronic copy may be submitted prior to, in addition to, hard copy submission in the essence of time.

1. Delivery time is part of the review and revision period of the Contractor or Owner initiating the delivery.

2. Charges in connection with the delivery of submittals to Owner’s office or where directed by the Owner shall be paid by Contractor.

3. Submittals received after 3:00 P.M. will be logged in and considered received the next business day.

4. Submittals going to the Owner’s consultants shall be sent directly to the respective consultant with a copy of the transmittal and submittal to the Owner. Owner shall determine which consultants shall receive direct submittals.

5. Submittals will be reviewed at weekly meetings as time permits to ensure entire team is coordinating effectively. Submittals may be hand delivered at weekly meetings.

G. The Contractor shall initiate the submittal process for each submittal as noted on the approved/reviewed submittal schedule. Submittals shall be transposed to ensure a timely and orderly sequence of construction without delay of the work. Contractors shall review and comprehend submittals prior to submission.
H. A Submittal cycle begins the day the Owner receives the submittal from the Contractor.

I. Once the submittal process is initiated, comply with the following maximum times allotted for complete review/revision/delivery periods to run consecutively without interruption.

<table>
<thead>
<tr>
<th>Cycle 1</th>
<th>Cycle 2</th>
<th>Cycle 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractor:</td>
<td>3 days</td>
<td>3 days</td>
</tr>
<tr>
<td>Owner/Engineer:</td>
<td>3-5 days</td>
<td>3 days</td>
</tr>
</tbody>
</table>

For each party a period begins the day a submittal is received and ends one day prior to the day it is received by the next reviewing party.

J. If two review/revision/delivery periods have been completed without an acceptance of the submittal, the Contractor and the Owner will hold a coordinated meeting after the Contractor has reviewed the Owner’s latest comments. This meeting shall take place during the Contractors allotted review period and in no way suspends the time allotted for the submittal process.

1. The Contractor shall reimburse the Owner the cost for additional review time of their Consultants for reviews after the 2nd submission.

K. Submittals shall be accompanied by a letter of transmittal from the Contractor; number transmittals consecutively for each specification section. Indicate if submittal is original or resubmittal. On resubmittals, note the Architect's file number and project identification.

(Example:)

04200-1-1 = Submittal # 1, First Submission
04200-1-2 = Submittal # 1, Second Submission
04200-2-1 = Submittal # 2, First Submission

L. Provide each submittal and letter of transmittal with the following data in a title or reference block or on an attached tag or label. Example:

1. NA
2. Date of submittal, drawing number, revision number, and date of each revision, if any.
3. Name and location of Project.
4. Name of Contractor, subcontractor, or manufacturer.
5. Specification Section title and number under which the Work is to be performed and the Contract Drawing number and detail that relate to the submittal.
6. Space for Owner and/or Engineer's stamps.
7. Owner’s name and project number.

M. Maintain one (1) complete set of final submittals at project site for reference. Maintain one (1) complete set of final submittals at plant or shop office and at the project site for reference.

N. Provide additional submittals for distribution to subcontractors, materialmen, suppliers, fabricators, governing authorities and others as necessary for proper performance of the Work. Include such additional copies in transmittal where required before final distribution. Record
distribution on transmittal forms.

O. Each transmittal shall have a dated transmittal number (whether first, second, third, etc.) and each transmittal after the first shall be clear of previous stamps.

P. Review each submittal and if it is acceptable, meeting the requirements of this section and showing the correct scope of work, certify in writing on the submittal and forward the submittal to the Architect and all other appropriate consultants for their review and action. Distribution to consultants shall be determined by the Owner. Transmittal cover shall have a section/box specifically identifying if the submittal meets project plans and specifications.

1.3 SHOP DRAWING REQUIREMENTS

A. Provide shop drawings with graphic data accurately scaled and dimensioned. List reference Contract Drawing numbers and shop drawing numbers for related work by subcontractors, materialmen, sub-subcontractors, and fabricators.

B. Symbols and numbers used on the Contract Drawings and in the Schedules shall be used on shop drawings or shall be shown in parenthesis. Items shown on shop drawings shall be clearly identified with their location in the Work, or by sheet or detail number in which they appear.

C. Contract Drawings shall not be reproduced or used for shop drawings or erection purposes.

D. Number shop drawings consecutively.

E. Drawings, the original design for which is the responsibility of the Contractor, shall bear the seal of a Professional Engineer registered in the jurisdiction of Project location.

F. Shop drawings shall show design, dimensions, kinds of materials, connections, and other details necessary to insure that requirements appearing in the Contract Documents are accurately interpreted. Shop drawings shall show proper connections with adjoining work in detail. Where adjoining work requires shop drawings, such drawings shall be submitted for review at the same time so that connections can be accurately checked.

G. Shop drawings shall: (i) establish the actual detail of manufactured or fabricated items and indicate proper relation to adjoining work; (ii) incorporate minor changes of design or construction details to suit actual conditions; and, (iii) supplement the Contract Drawings by correctly reflecting field conditions and incorporating required field measurements. Identify and verify where field dimensions are required and obtain required field dimensions.

H. Where separate Sections are involved, shop drawings shall be coordinated and where required by the Owner shall be submitted in composite form clearly designating Section, subcontractor, or trade, and compliance responsibility. The words "work by others" will not be accepted.

1.4 COMPOSITE DRAWINGS

A. In the interest of coordination and expediting the Work in all areas, the Contractor shall prepare and submit composite drawings embodying the Work of the various trades and/or subcontractors involved.
B. After review, the Contractor shall distribute prints of reviewed composite drawings to affected trades and/or subcontractors. Require that involved trades and/or subcontractors cooperate in preparation of the composite drawings to assure proper coordination between trades and/or subcontractors. Participating trades shall indicate their approval on these composite drawings.

C. Prepare composite drawings and installation layouts when required to solve field conditions. Such drawings shall include dimensioned plans, sections and elevations, shall indicate layout and dimensions of ductwork with relationship to plumbing, heating, and chilled water piping, and shall give complete information, particularly size and location of sleeves, inserts, attachments, openings, and structural interferences.

D. Prepare composite drawings at a scale of not less than 1/4 in. = 1 ft. 0 in. Show components at verified field locations. Insure allocation of adequate space for clearance, connection, maintenance, and accessibility.

E. On composite drawings, include the following:
   1. Building structure, finishes and access doors.
   2. Piping systems, including valves and hangers.
   3. Ductwork, including dampers and hangers.
   4. Electrical distribution, including pull boxes.
   5. Mechanical and electrical equipment.
   6. Note the sequence of installation when necessary.
   7. Composite drawings and field installation layouts shall be coordinated in the field by designated Contractor and subcontractors for consistency and proper installation relationships based on field conditions. They shall be checked for accuracy and approved by affected subcontractors, trades, etc., before submission.

1.5 DRAWING SUBMITTAL PROCEDURES

A. Submit one (1) electronic/email and four (4) black or blue line prints of shop drawings to the Owner. Distribution to consultants will be determined by the Owner.

B. Review the drawings to ensure and certify that they comply with requirements of Contract Documents before delivering them to the Owner. The Contractor shall stamp drawings prior to submitting to the Owner.

1.6 REVIEW

A. The Owner will review submittals with reasonable promptness. Review will be only for conformance with the design concept of the Project and with the information given in the Contract Documents and will not extend to means, methods, techniques, sequences or procedures of construction (except where specific means, methods, techniques, sequences or procedures of construction are required by the Contract Documents). The review and
acceptance of a separate item as such will not indicate acceptance of the assembly in which the item functions. Contractor shall make corrections required and shall return the required number of corrected copies of shop drawings and submit as required new product data and samples for review and acceptance.

B. Review and acceptance of submittal samples shall not relieve Contractor from responsibility for any variation from the requirements appearing in the Contract Documents unless Contractor has in writing called the attention to each such variation at the time of submission and the Owner has given written acceptance of each such variation by a specific written notation thereof incorporated in or accompanying the shop drawing, product data, or sample acceptance; nor will any acceptance relieve the Contractor from responsibility for errors or omissions in the submittal from responsibility for proper fitting of the Work, nor from the necessity of furnishing all work required by the Contract Documents.

C. Following review, Owner will note one (1) of the following actions. The actions are:

1. “Reviewed”: Means the submission is in general conformance with design concept. Construction, fabrication and/or manufacture can proceed subject to the provision that the work shall be in accordance with the requirements of the Contract Documents. Final acceptance of the work shall be contingent upon such compliance.

2. “Furnish as Corrected”: Means the submission is in general conformance with the design concept subject to notations on the returned Shop Drawings. Construction, fabrication and/or manufacturer can proceed subject to the provision that the work shall be carried out in compliance with all annotations and/or corrections indicated on the returned Shop Drawings and Product Data and in accordance with the requirements of the Contract Documents. Final acceptance of the work shall be contingent upon such compliance.

3. “Revise and Resubmit” and “Resubmit for Record Only”: Means that the Contractor shall revise and resubmit the Shop Drawings and Product Data in accordance with all annotations and/or corrections indicated therein. If construction, fabrication and/or manufacture proceeds it is at the Contractor's risk. Shop Drawings and Product Data bearing stamp shall not be permitted on the Project Site.

4. “Rejected” and “Submit Specified Item”: Means that the submission is rejected for nonconformance with the construction documents and the Contractor shall make a new submittal which shall comply with the requirements of the Contract Documents. If construction, fabrication and/or manufacture proceeds it is at the Contractor's risk. Shop Drawings and Product Data bearing stamp shall not be permitted on the Project Site.

D. Contractor shall make corrections required and shall promptly resubmit the required number of corrected copies of shop drawings and product data until "Reviewed", or "Furnish As Corrected"

E. Resubmittals shall be handled in the same manner as first submittals.

F. One (1) reproducible, which will give the Contractor necessary instructions for correction of same, will be returned to the Contractor.

G. Contractor shall be responsible for correctness of dimensions other than principal controlling dimensions and properties described on the Contract Drawings, and shall call the attention of the
Owner to errors or discrepancies that he may discover therein.

H. Contractor shall have no claim for damages that may result from following an error except for an error in principal controlling dimensions and properties shown on the Contract Drawings.

I. Contractor is similarly responsible for: (i) confirming and correlating quantities and dimensions; (ii) selecting fabrication processes, manufacturing details and workmanship, and techniques of construction; and, (iii) properly coordinating and synchronizing the Work in accordance with requirements expressed in the Contract Documents.

J. Actions which change Contract Price, or Prices, under any Pay Item, or Items, or time for completing performance, shall be brought to Owner’s attention before proceeding.

1. Carrying out of the Work or ordering of materials before such acceptance may constitute a cause for rejection of the Work or materials.

K. Contractor shall be responsible, and bear all cost of damages which may result from the ordering of any material or from proceeding with any part of the Work prior to review and acceptance of required submittals.

L. Shop drawings and other submittals, shall not be issued to the field or used in the Work without Owner's or required consultants' stamp of acceptance.

1.7 PRODUCT DATA

A. Product data called for by the Contract Documents or subsequently by the Owner shall be properly provided as specified.

B. The Contractor shall make any corrections required and shall resubmit the required number of corrected copies of product data until acceptance, as required for shop drawings.

C. Submit three (3) copies, together with a letter of transmittal, to the Owner. Owner shall make required distribution to other consultants.

D. Highlight product data or note to indicate the specific characteristics of the product.

E. All product data shall be labeled identifying the Contractor or subcontractor and the work for which the product is submitted.

1.8 SAMPLES

A. Samples called for by the Contract Documents shall be properly provided by the Contractor as specified, or as the Owner may subsequently require.

B. Submit three (3) samples, unless otherwise indicated, together with a letter of transmittal, directly to the Owner. Contractor shall make required distribution to other consultants when directed by the Owner.

C. Samples shall be of sufficient size to show the quality, type, range of color, finish and texture of the material. Samples are for review and confirmation of color, pattern, texture, "kind" and
other specified characteristics. Compliance with other requirements is the exclusive responsibility of the Contractor.

D. Each sample shall be labeled, both on the outside packing and on the samples themselves, giving the descriptive name and quality of the item, the Contractor's name, Subcontractor name, date, Contract and Project, and the Specification or Drawing reference related to the samples submitted and the name and address of the manufacturer of the sample, or samples, submitted.

E. Each label or tag shall have sufficient clear space to permit application of the Contractor's approval stamp and the Owner's Action Stamp.

F. Samples required for a particular Specification Section shall be submitted together. Samples shall be submitted from the same source which will supply the actual job.

G. Samples of materials or products which are normally furnished in containers or packages, which bear descriptive labels and/or application or installation instructions, shall be submitted with such labels and/or instructions.

H. Number sample transmittals consecutively in sequence with shop drawing and product data transmittals. Where appropriate, test data and/or manufacturers' certificates shall be referenced in and forwarded with letters of transmittal.

I. Samples without accompanying certificates or test data will be returned without action.

J. In the event that a range of variations in texture, graining, color or other characteristics may be anticipated in furnished materials, assemblies, or elements of the Work, a sufficient number of samples of such materials or products shall be submitted to indicate the full range of characteristics which will be present in the materials or products proposed for the Work.

K. If examination discloses that the sample is not submitted to their satisfaction, the Owner shall give the Contractor the necessary instructions for correction. Upon correction, the Contractor shall resubmit the sample, or samples, and another review will be made. This procedure shall be repeated until the Contractor submits samples that are accepted.

L. Consideration and review of samples will only be made for the characteristic, color, texture, strength, or other feature of the material named in the Owner's finding of acceptability, and no other.

M. Valuable samples such as hardware, plumbing, and electrical equipment, parts, fixtures, controls, operating devices, not destroyed by inspection or test, will be returned to the Contractor and may be incorporated into the Work, providing suitable permanent records are made as to location of the samples.

N. When samples are accepted, supply one (1) piece to materialman's, fabricator's, manufacturer's, etc., shop, and retain one (1) sample in a suitable place at the Project site for use by all concerned as the standard for color, pattern, texture, kind, characteristic, etc., represented.

O. The Contractor shall both retain samples marked "Reviewed", "Furnish As Corrected" intact to ensure that the Work is completed in accordance with these samples.
1.9 CERTIFICATES OF COMPLIANCE

A. When required Contractor shall furnish authoritative evidence in the form of manufacturer's certificates of compliance that materials to be used in the Work have been manufactured and tested in conformity with the requirements appearing in the Contract Documents and are certified acceptable.

B. Certificates shall include copies of the results of physical tests and chemical analyses, where necessary, that have been made directly on the product, or on similar products, being fabricated by the manufacturer.

1. Certificates shall be delivered to the Owner prior to installation of material or equipment to which they refer.

2. Certificates of compliance shall contain the following information:
   a. Name of Project to which material is consigned and Contractor to whom material is supplied.
   b. Kind and quantity of material represented by the certificates.
   c. Shipment identification, label or seal marking.
   d. Date and method of shipment and means of identifying the consignment.
   e. Statement that the material has been tested and found in conformity with the pertinent contractual requirements stated in the certificate.
   f. Signature of a person having legal authority to bind the supplier.

C. Certificates of specific manufactured products shall be accompanied with appropriate manufacturer's literature and shall state required information relating to the material being supplied.

D. Certifications shall simply state that the items offered meet contractual requirements.

1.10 CONTRACTOR’S CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule for Projects of Smaller Scope and Cost: Prepare a fully developed, Critical Path Method (CPM) bar-chart type Contractor's construction schedule. The schedule shall be a Critical Path Method (CPM) schedule prepared with the latest version of Microsoft Project Software. Submit one copy on flash drive or CD and two printed hard copies of the schedule to the University Representative within 5 days after the Contract Award.

B. Bar-Chart Schedule for Critical Path Method: Prepare a fully developed, horizontal bar-chart type Contractor's construction schedule. The schedule shall be a Critical Path Method (CPM) schedule prepared with the latest version of Microsoft Project Software. Submit one copy on flash drive or CD and two printed hard copies of the schedule to the University Representative within 5 days after the Contract Award.
1. The Schedule shall be of sufficient detail to indicate all significant construction activities. The level of detail should be such that no activity exceeds 20 working days. Where similar activities continue beyond the 20-day limit, these activities should be broken into subgroups, areas, or phases so that the 20-day maximum duration is maintained. Consult with the University regarding general activity detail.

2. The Detailed Construction Schedule (DCS) shall be a cost and resource loaded schedule with each activity being assigned a job hour value and a cost. Each activity in the DCS shall include:
   a. A description that clearly identifies the activity and location of work.
   b. The duration, expressed in full workdays, not to exceed 20 working days. Except in the case of non-construction activities such as procurement, fabrication, and delivery of equipment.
   c. An activity code, which shall identify the various work areas, as well as the CSI/Specification division of work.
   d. A responsibility code, which shall individually and singularly denote the Contractor or subcontractor responsible for the work. No activity shall have more than one responsible entity.
   e. The number of job hours budgeted to perform the work. The number of job hours shall be shown as a resource.
   f. The approved lump sum line item amount for the work, in hundreds of dollars, complete in place, and for the specified material as approved by the Owner. The total of all line item values shall equal the Contract amount.
   g. The quantity of units to be installed. The quantity of units to be installed. The quantity of units shall be shown as a resource.
   h. The ability to show the percent complete, using integers, to represent the installed progress as of the status date.
   i. The actual start and finish dates for each activity.

3. The DCS shall show a clear and definable critical path for the work as a whole as well as each of the definable work areas. All imposed or constrained dates shall be clearly identified. The Contractor shall submit an updated DCS on the fifth of each month reflecting the progress through the last day of the preceding month. The printed updates shall show progress bars for each activity as well as be printed on sheets of sufficient width to show the data for the entire construction period. Each monthly update should include the submission of two hard copies as well as the updated flash drive or CD.

4. Once reviewed, found to be reasonable, and approved, the DCS and its lump sum values for each work activity shall become the Schedule of Values to be utilized for progress payments and progress reporting. Should any activity’s value significantly differ from
normal industry standards value for such work, the Owner will defer approval of that item pending submission of further documentation to support the abnormal value and pay for work installed based on the values in the current Means Estimating Manual for such work in the area.

5. Coordinate the DCS with the submittal schedule, regulatory agency permits/approvals/reviews, as well as the requirements for Owner supplied materials/approvals. The DCS should indicate need dates for such Owner provided materials/approvals and provide a separate monthly report updating need dates. Mock-ups shall be identified on the DCS.

6. Provide completion dates for each work area that sufficiently allows time for area commissioning, Architect’s review and certification of Substantial Completion, as well as punch list, close out, and final completion requirements.

7. Phasing: Provide notations on the schedule to show how the sequence of the Work is affected by the requirements for phased completion to permit Work by separate Contractors and partial occupancy by the Owner prior to Substantial Completion.

C. Work Stages: Indicate important work stages of construction for each major portion of the Work, including testing and installation.

D. Distribution: Following response to the initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.

   1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

E. Schedule Updating: Revise the schedule after each meeting or activity, when revisions have been recognized or made at a minimum, but never less than once per week. When meetings or activities do not require updating the schedule for a time, the contractor shall still revise and update no less than monthly, issuing it on the 15th of each month. Issue the updated schedule concurrently with report of each meeting, which involves or causes changes to the schedule.

F. Recovery Schedules: If, in the opinion of the Owner, the Contractor’s actual dates vary from scheduled dates the contractor shall show reason. If the completion date varies from its original schedule the Owner may require the Contractor to provide recovery schedules which detail modifications of activities to maintain the originally scheduled completion date.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION
SECTION 01380 - CONSTRUCTION PHOTOGRAPHS

PART 1 - GENERAL

1.1 SUMMARY

A. General: This Section specifies administrative and procedural requirements for construction photographs.

1.2 SUBMITTALS

A. Digital Photographs: The Owner may elect to allow the majority of construction progress photos to be recorded on a digital camera and submitted to the Owner on a CD.

PART 2 - PRODUCTS

2.1 PHOTOGRAPHIC COPIES

A. Identification: Label each CD on the front or the back in the bottom margin with project name and date the photograph was taken. On the back of each CD case provide an applied label with the following information:

1. Name of the Project.
2. Name of the Contractor.
3. Date the photograph was taken.
4. Description of vantage point, in terms of location, direction (by compass point), and elevation or story of construction.

PART 3 - EXECUTION

3.1 PRE-CONSTRUCTION PHOTOGRAPHS

A. Before starting construction, take photographs of the site and surrounding properties from different points of view as selected by the Owner.

1. Take photographs in sufficient number to show existing conditions adjacent to the property before starting Work. See section 01015 for additional information.

3.2 PHOTOGRAPHIC REQUIREMENTS

A. The Owner will instruct the photographer as to number and frequency of photographs, and general directions regarding vantage points.

1. Vantage Points: Following suggestions by the Owner, the photographer shall select vantage points.
   a. Frequency photos shall be taken weekly at the same location, elevation, time, etc.
2. Assembly photos – Contractor shall photograph complete progress assemblies for the following:
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a. Removal of data, audio, mechanical and electrical materials/equipment.

b. All buried utilities

c. Drainage systems

d. Specialty products

B. Additional Photographs: From time to time the Owner may issue requests for additional photographs, in addition to periodic photographs specified.

1. The Owner will give the photographer 3 days notice, where feasible.

2. In emergency situations, the photographer shall take additional photographs within 24 hours of the Owner’s request.

3. Circumstances that could require additional photographs include, but are not limited to:

   a. Substantial Completion of a major phase or component of Work.

   b. Immediate follow-up when on-site events result in construction damage or losses.

END OF SECTION
SECTION 01400 - QUALITY CONTROL SERVICES

PART 1 - GENERAL

NOTE – See specific specification sections for unique requirements

1.1 DESCRIPTION OF REQUIREMENTS

A. General: Required inspection and testing services are intended to assist in the determination of probable compliance of the work with requirements specified or indicated. These required services do not relieve the Contractor of responsibility for compliance with these requirements or for compliance with requirements of the Contract Documents.

B. Definitions: The requirements of this section relate primarily to customized fabrication and installation procedures, not to production of standard products. Quality control services include inspections and tests and related actions including reports, performed by independent agencies and governing authorities, as well as directly by the Contractor. These services do not include Contract enforcement activities performed directly by the Owner.

1. Specific quality control requirements for individual units of work are specified in the sections of these specifications that specify the individual element of the work. These requirements, including inspections and tests, cover both production of standard products, and fabrication of customized work. These requirements also cover quality control of the installation procedures.

2. Inspections, tests and related actions specified in this section and elsewhere in the Contract Documents are not intended to limit the Contractor's own quality control procedures which facilitate overall compliance with requirements of the Contract Documents.

3. Requirements for the Contractor to provide quality control services as required by the Engineer, the Owner, governing authorities or other authorized entities are not limited by the provisions of this section.

1.2 RESPONSIBILITIES

A. Contractor Responsibilities: Where inspections, tests and similar quality control services are the designated Contractor's responsibility, employ and pay an approved independent agency, testing laboratory or other qualified firm to perform quality control services specified; cost for these services shall be included in the Contract Sum.

B. Responsibility for Associated Services: The Contractor is required to cooperate with the independent agencies performing required inspections, tests and similar services. Including the City of Middletown. Provide such auxiliary services as are reasonably requested. Notify the testing agency and City of Middletown sufficiently in advance of operations to permit assignment of personnel. These auxiliary services include but are not necessarily limited to the following:

1. Maintaining and the project site copies of all approved submittals.
2. Providing a copy of all approved submittals as required to the testing agent or independent inspector.
3. Providing access to the work.
4. Taking samples or assistance with taking samples.
5. Delivery of samples to test laboratories.
6. Security and protection of samples and test equipment at the project site.

C. Coordination: The Contractor and each independent agency engaged to perform inspections, tests and similar services for the project shall coordinate the sequence of their activities so as to accommodate required services with a minimum of delay in the progress of the work. In addition, the Contractor and each independent testing agency shall coordinate their work so as to avoid the necessity of removing and replacing work to accommodate inspections and tests. The Contractor is responsible for scheduling times for inspections, tests, taking of samples and similar activities.

D. The Contractor shall locate all utilities and utility tie-in connections.

1.3 QUALITY ASSURANCE

A. Qualification for Service Agencies: Where Contractor testing is required to be performed, except as otherwise indicated, engage inspection and test service agencies, including independent testing laboratories, which are pre-qualified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories, and which are recognized in the industry as specialized in the types of inspections and tests to be performed.

B. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by Owner.
2. Notify Owner seven days in advance of dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain Owner's approval of mockups before starting work, fabrication, or construction.
5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
6. Demolish and remove mockups when directed, unless otherwise indicated.

1.4 SUBMITTALS

A. General: Refer to Division 1 section on "Submittals" for the general requirements on submittals. Submit a certified written report of each inspection, test or similar service, to the Architect.

1. Report Data: Written reports of each inspection, test or similar service shall include, but not be limited to the following:
a. Name of testing agency or test laboratory.
b. Dates and locations of samples and tests or inspections.
c. Names of individuals making the inspection or test.
d. Designation of the work and test method.
e. Complete inspection or test data.
f. Test results.
g. Interpretations of test results.
h. Notation of significant ambient conditions at the time of sample taking and testing.
i. Comments or professional opinion as to whether inspected or tested work complies with requirements of the Contract Documents.
j. Recommendations on retesting, if applicable.

PART 2 – PRODUCTS (see specific specification sections for unique requirements)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

A. Upon completion of inspection, testing, sample-taking and similar services performed on the work, repair damaged work and restore substrates and finishes to eliminate deficiencies, including deficiencies in the visual qualities of exposed finishes. Comply with the Contract Document requirements for "Cutting and Patching". Protect work exposed by or for quality control service activities, and protect repaired work. Repair and protection is the designated Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

B. Care shall be taken when working on existing University grounds with heavy lifting and hoisting equipment so as to not disturb or damage existing underground utilities/structures. Documents reflecting existing conditions are available at Wesleyan University, Facilities Office, 170 Long Lane, Middletown, CT.

END OF SECTION
SECTION 01500 – CONSTRUCTION FACILITIES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes requirements for construction facilities and temporary controls, including temporary utilities, support facilities, and security and protection.

B. Temporary utilities include, but are not limited to, the following:

1. Water service.
2. Water distribution.
3. Temporary electric, power and light.
4. Ventilation.
5. Chilled water.
6. Telephone and fax service.
7. Sanitary facilities, including drinking water.

C. Support facilities include, but are not limited to, the following:

1. Field offices and storage sheds, as required.
2. Waste disposal services.
3. Construction aids and miscellaneous services and facilities.

D. Security and protection facilities include, but are not limited to, the following:

1. Temporary fire protection.
2. Barricades, warning signs, and lights.
3. Temporary access ways for vehicular and pedestrian traffic.

1.2 SUBMITTALS

A. Reports and Permits: During the progress of the Work, submit copies of reports and permits required by governing authorities or necessary for the installation and efficient operation of temporary services and facilities.

1. Submit copies of reports of tests, inspections, meter readings and similar procedures performed on temporary utilities before, during and after performance of work. Submit copies of permits, and similar documentation necessary for installation, use and operation of temporary utility services.

1.3 QUALITY ASSURANCE

A. Regulations: Comply with industry standards and applicable laws and regulations of Authorities having jurisdiction including, but not limited to, the following:

1. Building code requirements.
2. Health and safety regulations.
3. Utility company regulations.
4. Police, fire department, and rescue squad rules.
5. Environmental protection regulations.


1. Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70 "National Electric Code."

C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.4 PROJECT CONDITIONS

A. Temporary Utilities: Prepare a schedule indicating dates for implementation and termination of each temporary utility. At the earliest feasible time, when acceptable to the Owner, change over from use of temporary service to use of permanent service.

B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Relocate temporary services and facilities as the Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: The Contractor shall provide new materials as required for installation and furnishing of all temporary construction facilities and temporary improvements required for performance of the Work. The Contractor may use undamaged, previously used suitable and adequate materials in serviceable condition. Provide materials suitable for use intended.

B. Lumber and Plywood: Comply with requirements in Division 6 Section "Rough Carpentry."

1. For safety barriers, temporary partitions and similar uses, provide minimum 5/8-inch thick exterior plywood.

C. Tarpaulins: Provide waterproof, fire-resistant, UL-labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.

D. Water: Provide potable water approved by local health authorities.

2.2 EQUIPMENT

A. General: The Contractor shall provide equipment as required for installation of all temporary construction facilities and temporary improvements required for performance of the Work. Provide new equipment. The Contractor may use undamaged, previously used suitable and
adequate equipment in serviceable condition. Provide equipment suitable for use intended.

B. Water Hoses: Provide heavy-duty, abrasion-resistant, flexible rubber hoses of required length and size, with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.

C. Electrical Panels and Outlets: Provide all required labor, material and equipment required for the installation of temporary power required on site for completion of the project. Provide properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-Volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.

D. Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

E. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered-glass enclosures where exposed to potential breakage. Provide exterior fixtures where exposed to moisture.

F. Heating Units: The Contractor shall provide all labor, material and equipment required to provide temporary heating. This includes all heating required for installation of project elements during months from November through May. Provide temporary heating units that have been tested and labeled by UL, FM, or another recognized trade association related to the type of fuel being consumed.

G. Temporary Offices: As required, provide prefabricated or mobile units or similar job-built construction with lockable entrances, operable windows, and serviceable finishes. Provide heated units on foundations adequate for normal loading. Coordinate with Owner.

H. Temporary Toilet Units: Provide self-contained, single-occupant toilet units of the chemical, aerated recirculation, or combustion type. Provide units properly vented and fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.

I. Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.

1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

I. First aid kit.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the
Work. Relocate and modify facilities as required. Obtain Owner approval for location of temporary facilities.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. Water Service

1. General: The Owner currently has available water from the existing site. The Contractor is to provide a hose hook-ups at point or points selected by the Owner’s Representative. Install water service with temporary meters and distribution piping of sizes and pressures adequate for temporary construction purposes during the construction period and until permanent service is in use, including but not limited to the following uses:

   Construction processes.
   Drinking water.
   Sanitary facilities.
   Cleaning.

2. Provide distribution piping for temporary water to each location of use.

3. Maintain hose connections and outlet valves in leak proof condition.

4. Sterilization: Except piping of non-potable water, sterilize temporary water piping prior to use. Refer to Division -15 sections for procedures.

B. The local utility company currently has available electric power service at the site: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload-protected disconnects, automatic ground-fault interrupters, and main distribution switch gear as/if required.

   1. Power Distribution System: Install wiring overhead and rise vertically where least exposed to damage. Where permitted, wiring circuits not exceeding 125 Volts, ac 20 Ampere rating, and lighting circuits may be nonmetallic sheathed cable where overhead and exposed for surveillance.

   2. Provide additional temporary power as required for construction operations at no additional cost to the Owner.

C. Temporary Lighting: Install and operate temporary lighting that will fulfill security and protection requirements without operating the entire system. Provide temporary lighting that will provide adequate illumination for construction operations and traffic conditions. Temporary lighting to be full cut off lighting or fixtures with shield to prevent light pollution and light trespass.

D. Temporary Computer and Telephone: Provide temporary telephone during the construction
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period for all personnel engaged in construction activities. Install telephone on a separate line for each temporary office and first-aid station. Provide computer facilities with internet service as specified below.

1. At each telephone, post a list of important telephone numbers.

2. NA

3. The Contractor shall have a computer, in its project office (on-site and in main office), with internet access.

E. Sanitary facilities include temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for the type, number, location, operation, and maintenance of fixtures and facilities. Install where facilities will best serve the Project's needs.

1. Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Provide covered waste containers for used material.

2. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.

3. Provide separate facilities for male and female personnel.

3.3 SUPPORT FACILITIES INSTALLATION

A. An area will be designated for field offices and staging areas.

1. Maintain support facilities until Final Completion. Remove at Final Completion.

B. Field Offices: Provide insulated, weather tight temporary offices of sufficient size to accommodate required office personnel at the Project Site. Keep the office clean and orderly for use for small progress meetings. Furnish and equip offices as follows:

1. Furnish with conference table for site job meetings with Owner, those required to attend, chairs, a 4-drawer file cabinet, and plan table.

2. Equip with a water cooler.

C. When feasible, the contractor shall be allowed to occupy vacant space within the project area.

D. Storage and Fabrication Sheds: Install storage and fabrication sheds sized, furnished, and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces within the building or elsewhere on-site. Obtain Owner approval for sited locations. Provide water and weather tight storage to protect building materials from damage.

E. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by
containerizing properly. Dispose of material lawfully.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 10 "Standard for Portable Fire Extinguishers" and NFPA 241 "Standard for Safeguarding Construction, Alterations, and Demolition Operations."

1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
2. Store combustible materials in containers in fire-safe locations.
3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for fighting fires.
4. Smoking is prohibited on the grounds of the facility.

B. Permanent Fire Protection: At the earliest feasible date in each area of the Project, complete installation of the permanent fire-protection facility, including connected services, and place into operation and use. Instruct key personnel on use of facilities.

C. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting, including flashing red or amber lights.

D. Security and Lockup: Install substantial temporary security measures as required to secure the site and protect workers, public and tools. Provide locking entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

E. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility of contamination or pollution. Avoid use of tools and equipment that produce harmful noise. Restrict use of noise-making tools and equipment to hours that will minimize complaints from persons or firms near the site.

F. Temporary Access: Provide paved, lighted access ways for vehicles and pedestrians as required for safe access and egress to the site and as directed by the Owner’s Representative.

3.5 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

2. Protection: Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

C. Termination and Removal: Unless the Owner requests that it be maintained longer, or unless specified otherwise, remove each temporary facility when the need has ended, when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are the Contractor's property.

2. At Substantial Completion, clean and renovate permanent facilities used during the construction period including, but not limited to, the following:
   a. Replace air filters and clean inside of duct work and housings.
   b. Replace significantly worn parts and parts subject to unusual operating conditions.
   c. Replace lamps burned out or noticeably dimmed by hours of use.

END OF SECTION
SECTION 01505 - CONSTRUCTION WASTE MANAGEMENT

PART 1 – GENERAL

1.1 SUMMARY

A. Section includes: Administrative and procedural requirements for construction waste
management activities.

B. Related sections: all sections in the project manual noted in Divisions 2, 3, 4, 5, 6, 7, 8, 9, 10,
11, 12, 13, 14, 15, 16, 17, _33

1.2 DEFINITIONS

A. Construction, Demolition, and Land clearing (CDL) Waste: Includes all non-hazardous solid
wastes resulting from construction, remodeling, alterations, repair, demolition and
landclearing. Includes material that is recycled, reused, salvaged or disposed as garbage.
Contractor shall provide a credit to the Owner in their bid price for materials recycled for
cash. See Section 3.2.

B. Salvage: Recovery of materials for on-site reuse, or offsite sale or donation to a third party.

C. Reuse: Making use of a material without altering its form. Materials can be reused on-site or
reused on other projects off-site. Examples include, but are not limited to the following:
Grinding of concrete for use as subbase material; Chipping of landclearing debris for use as
mulch.

D. Recycling: The process of sorting, cleaning, treating, and reconstituting materials for the
purpose of using the material in the manufacture of a new product. Contractor shall identify
in their bid credit to the Owner for recycled materials.

E. Source-Separated CDL Recycling: The process of separating recyclable materials in separate
containers as they are generated on the job-site. The separated materials are hauled directly to
a recycling facility or transfer station.

F. Co-mingled CDL Recycling: The process of collecting mixed recyclable materials in one
container on-site. The container is taken to a material recovery facility where materials are
separated for recycling.

G. Approved Recycling Facility: Any of the following:

1. A facility that can legally accept CDL waste materials for the purpose of processing
the materials into an altered form for the use of recycling.

2. Material Recovery Facility: A general term used to describe a waste-sorting facility.

   a) Mechanical, hand-separation, or a combination of both procedures, are used
to recover recyclable materials.

   b) Co-mingled containers are to be taken to a material recovery facility with at
least a 50% co-mingled recycling rate.
1.3 SUBMITTALS

A. Waste Management Plan: Submit plan within seven days of date established for the Notice to Proceed.

B. Waste Management Report: Submit report concurrent with the final Application for Payment.

1.4 PERFORMANCE REQUIREMENTS

A. General: Material from demolition projects shall be recycled or reused whenever practicable. Divert a minimum of 50% CDL waste, by weight, from the landfill by one, or a combination of the following activities:
   1. Salvage
   2. Reuse
   3. Source-Separated CDL Recycling
   4. Co-mingled CDL Recycling

B. CDL waste materials that can be salvaged, reused or recycled include, but are not limited to, the following:
   1. Asphalt
   2. Asphalt shingles
   3. Concrete
   4. Metals
   5. Window glass
   6. Wood
   7. Field office waste, including office paper, aluminum cans, glass, plastic, and office cardboard.

C. See section 02050 for salvage detail.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements: Conduct construction waste management activities in accordance with the State of Connecticut EPA, Middletown Municipal Code and all other applicable laws and ordinances.

B. Preconstruction Conference: Review methods and procedures related to waste management including, but not limited to, the following:
   1. Review and discuss waste management plan including responsibilities of Waste Management Coordinator.
   2. Review requirements for documenting quantities of each type of materials that will be salvaged, recycled or disposed of as waste.
   3. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
   4. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
   5. Review waste management requirements for each trade.
   6. Review and distribution of the following publications and programs. For additional information on collection procedures and recycling regulations, contact the Middletown Sanitation Main Office at (860) 638-4850:
1.6 WASTE MANAGEMENT PLAN

A. General: Develop plan consisting of waste types, quantity by weight, methods of disposal, handling and transportation procedures. Include separate sections in plan for demolition and construction waste.

B. Organize the waste management plan in accordance with the sample plan included at end of Part 3, including the following information:
   1. Types and estimated quantities, by weight, of CDL waste expected to be generated during demolition and construction.
   2. Proposed methods for CDL waste salvage, reuse, recycling and disposal during demolition including, but not limited to, one or more of the following:
      a) Contracting with a deconstruction specialist to salvage materials generated,
      b) Selective salvage as part of demolition contractor’s work,
      c) Reuse of materials on-site or off-site sale or donation to a third party.
   3. Proposed methods for salvage, reuse, recycling and disposal during construction including, but not limited to, one or more of the following:
      a) Requiring subcontractors to take their CDL waste to a recycling facility,
      b) Contracting with a recycling hauler to haul recyclable CDL waste to an approved recycling or material recovery facility,
      c) Processing and reusing materials on-site
      d) Self-hauling to a recycling or material recovery facility.
      e) Name of recycling or material recovery facility receiving each of the CDL wastes.
      f) Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.

1.7 WASTE MANAGEMENT REPORT

A. Waste Management Report: Submit a cumulative waste management report on the form included at end of Part 3 with the final Application for Payment with the following attachments:
   1. A record of the type and quantity, by weight, of each material salvaged, reused, recycled or disposed.
   2. Total quantity of waste recycled as a percentage of total waste.
   3. Disposal Receipts: Copy of receipts issued by a disposal facility for CDL waste that is disposed in a landfill.
   4. Recycling Receipts: Copy of receipts issued by approved recycling facilities for co-mingled materials. Include weight tickets from the recycling hauler or material recovery facility and verification of the recycling rate for co-mingled loads at the facility.
   5. Salvaged Materials Documentation: Types and quantities, by weight, for materials salvaged for reuse on site, sold or donated to a third party.

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION

3.1 CONSTRUCTION WASTE MANAGEMENT, GENERAL

A. Provide containers for CDL waste that is to be recycled clearly labeled as such with a list of acceptable and unacceptable materials. The list of acceptable materials must be the same as the materials recycled at the receiving material recovery facility or recycling processor.

B. The collection containers for recyclable CDL waste must contain no more than 5% on-recyclable material by volume.

C. Provide containers for CDL waste that is disposed in a landfill clearly labeled as such.

D. Use detailed material estimates to reduce risk of unplanned and potentially wasteful cuts.

E. To the greatest extent possible, include in material purchasing agreements a waste reduction provision requesting that materials and equipment be delivered in packaging made of recyclable material, that they reduce the amount of packaging, that packaging be taken back for reuse or recycling, and to take back all unused product. Insure that subcontractors require the same provisions in their purchase agreements.

F. Conduct regular visual inspections of dumpsters and recycling bins to remove contaminants.

3.2 SOURCE SEPARATION

A. General: Separate recyclable materials from CDL waste to the maximum extent possible. Separate recyclable materials by type.
   1. Provide containers, clearly labeled, by type of separated materials or provide other storage method for managing recyclable materials until they are removed from Project site.
   2. For recyclables to be credited to the Owner, separate items as listed and provide additional containers as required:
      a. Copper
      b. Brass
      c. Stainless steel
      d. Aluminum
3. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
4. Stockpile materials away from demolition area. Do not store within drip line of remaining trees.
5. Store components off the ground and protect from weather.

3.3 CO-MINGLED RECYCLING

   A. General: Do not put CDL waste that will be disposed in a landfill into a co-mingled CDL waste recycling container.

3.4 REMOVAL OF CONSTRUCTION WASTE MATERIALS

   A. Remove CDL waste materials from project site on a regular basis. Do not allow CDL waste to accumulate on-site.
   B. Transport CDL waste materials off Owner's property and legally dispose of them.
   C. Disposal companies other than Dainty Waste Disposal must be prequalified by WESU.
   D. Disposal company must be DEP approved.
   E. Burning of CDL waste is not permitted.

END OF SECTION
Wesleyan University

Waste Management Plan Checklist

☐ Analyze project waste
 ☐ Estimate types and quantities of waste the project will generate at different stages

☐ Check to see what can be recycled/reused onsite (wood, soil, rock, concrete, etc.)

☐ Decide how you will recycle
 ☐ Can you arrange the job site to accommodate several containers?
 ☐ Do you have the equipment to self haul?
 ☐ How often might you need your containers picked up?

☐ Research recycling options
 ☐ Check out the Construction Recycling Directory
 ☐ Call recyclers and ask them:
    ☐ What materials do you accept?
    ☐ Is co-mingled recycling available?
    ☐ What are my collection options & costs?
    ☐ If I self-haul, can I drop off, and if so, what about tipping fees?
    ☐ Do you provide receipts to track recyclables?
    ☐ Do you set up and provide training?

☐ Decide what you will recycle at the jobsite

☐ Determine your costs
 ☐ Compare the cost of disposing waste with the cost of recycling

☐ Write out the waste management plan
 ☐ Which materials will be salvaged or reused on site
 ☐ Which materials will be recycled
 ☐ How materials will get to the recycler
 ☐ Names of responsible crew member/team
 ☐ Your projected savings

☐ Set up and monitor
 ☐ Clearly designate recycling bins
 ☐ Post list of what is recyclable and what is not
 ☐ Keep bins close to where waste is generated but not in traffic pattern
 ☐ Provide hauler and crew with site plan
 ☐ Check recycling bins daily for contamination
 ☐ Check garbage dumpsters daily for misplaced recyclables
 ☐ Call for pick-up before boxes are full
 ☐ Require quantity and cost tickets to track results and savings
Make your program work

- Start early: Incorporate a recycling program from the start to guarantee success
- Communicate your waste management plans to crews, subs and suppliers as they come on-site
- Include recycling requirements in all subcontracts and purchase orders
- Post quantities of materials reused and recycled
- Track your savings
- Encourage suggestions from supervisors and crew
- Reward employees
- Make use of available resources and directories
WESLEYAN UNIVERSITY

WASTE MANAGEMENT PLAN

Company:
Project:

Designated Recycling Coordinator:

Waste Management Goals:

☐☐This project will recycle or salvage for reuse ___% [e.g. 75%] by weight of the waste generated on-site.

Communication Plan:

☐☐__________________________________________________________________________

☐☐__________________________________________________________________________

☐☐__________________________________________________________________________

☐☐__________________________________________________________________________

Expected Project Waste, Disposal, and Handling:
The following charts identify waste materials expected on this project, their disposal method, and handling procedures.

Deconstruction/Demolition Phase

<table>
<thead>
<tr>
<th>Material</th>
<th>Quantity</th>
<th>Disposal Method</th>
<th>Handling Procedure</th>
</tr>
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<tbody>
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Construction Phase

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<tr>
<th>Material</th>
<th>Quantity</th>
<th>Disposal Method</th>
<th>Handling Procedure</th>
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</table>

Major Maintenance FY 2015
Project No. 2015000000

01505-8
1/20/2014
# Waste Management Progress Report

<table>
<thead>
<tr>
<th>MATERIAL CATEGORY</th>
<th>DISPOSED IN MUNICIPAL SOLID WASTE LANDFILL</th>
<th>DIVERTED FROM LANDFILL BY RECYCLING, SALVAGE OR REUSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Asphalt (cu yds)</td>
<td></td>
<td>RECYCLED</td>
</tr>
<tr>
<td>2. Concrete (cu yds)</td>
<td></td>
<td>SALVAGED</td>
</tr>
<tr>
<td>3. Porcelain Plumbing Fixtures (lbs)</td>
<td></td>
<td>REUSED</td>
</tr>
<tr>
<td>4. Ferrous Metals (lbs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Non-Ferrous Metals (lbs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Wood (lbs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Glass (lbs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Clay Brick (lbs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Bond Paper (lbs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Newsprint (lbs)</td>
<td></td>
<td></td>
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<td>11. Cardboard (lbs)</td>
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<td>12. Plastic (lbs)</td>
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<td></td>
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<td>13. Gypsum (lbs)</td>
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<td>14. Paint (gal)</td>
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<td>15. Insulation (lbs)</td>
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<td></td>
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<td>16. Other (insert description)</td>
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<tr>
<td>17. Other (insert description)</td>
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<tr>
<td><strong>Total disposed in Landfill (In Weight)</strong></td>
<td></td>
<td><strong>(Total of all above values - in weight)</strong></td>
</tr>
<tr>
<td><strong>Percentage of Waste Diverted (Total waste divided by total diverted)</strong></td>
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<td></td>
</tr>
</tbody>
</table>
SECTION 01600 – MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: This Section specifies requirements governing the Contractor's selection of products for use in the Project.

1.2 DEFINITIONS

A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms which have well recognized meanings in the construction industry.

B. "Products" are items purchased for use in the Work. The term "product" includes the terms "material", "equipment", "system", and terms of similar intent.

1. "Named Products" are items identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's current published product literature.

C. "Materials" are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

D. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires wiring or piping connections.

1.3 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.

1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.

2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.

3. Deliver products in the manufacturer's original sealed container or other packaging, complete with labels and instructions for handling, storing, unpacking, protecting and installing.

B. Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.

C. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
1. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.

2. Store products subject to damage above ground, under cover in a ventilated weather tight enclosure. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, unused at the time of installation.

1. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.

2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

B. Product Selection Procedures: Comply with Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include the following:

1. Proprietary Specification Requirements: Where only a single product or manufacturer is named, provide the product indicated. No substitutions will be permitted.

2. Semi proprietary Specification Requirements: Where two or more products or manufacturers are named, provide one of the products indicated. No substitutions will be permitted.
   a. Where products or manufacturers are named, accompanied by the term “or approved equivalent”, or “approved equal”, comply with the Contract Document provisions for "substitutions" to obtain approval for use of an unnamed product. These terms are not implied and can only be used where specifically specified.

3. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.

4. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated.
   a. Manufacturer's recommendations may be in published product data, or by the manufacturer's certification of performance.
5. Compliance with Standards, Codes and Regulations: Where the Specifications only require compliance with an imposed code, standard or regulation, select a product that complies with applicable standards, codes or regulations.

6. Visual Matching: Where Specifications require matching an established Sample, the Owner's decision will be final on whether a proposed product matches satisfactorily.
   a. Where no product in the specified category matches and also complies with specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category, or for noncompliance with specified requirements.

7. Visual Selection: Where specified product requirements include the phrase "...as selected from manufacturer's standard colors, patterns, textures..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Owner will select the color, pattern and texture from the product line selected.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

   A. Comply with manufacturer's instructions and recommendations for installation of products. Anchor each product securely in place, accurately located and aligned with other Work.

   1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

   2. Comply with additional Drawing and Specification requirements.

END OF SECTION
SECTION 01631 – PRODUCT SUBSTITUTIONS

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: This Section specifies requirements for handling requests for substitutions made after award of the Contract. Substitutions will not be considered after the award of the Contract unless the Contractor has met the requirements for substitutions.

1.2 DEFINITIONS

A. Definitions used in this Article are not intended to change or modify the meaning of other terms used in the Contract Documents.

B. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed after award of the Contract are considered requests for "substitutions." The following are not considered substitutions:

1. Products proposed by Bidders on the Bid Form, and accepted prior to award of Contract, are considered as included in the Contract Documents and are not subject to requirements specified in this Section.

2. Products specified in revisions to Contract Documents requested by the Owner or Owner.


4. Products required for compliance with governing regulations and orders issued by governing authorities.

C. General Substitution Requirements

1. The products, materials and equipment of manufacturers referred to in the Specifications and on the Drawings establish the standard of quality and design required by the Owner.

2. The term "or equivalent" or similar terms is not implied after products, materials and equipment referred to in the Specifications or on the Drawings, except as otherwise indicated in Section 01600-Materials and Equipment.

3. The Owner will be the sole judge of equivalency of proposed substitutions. The Owner will then issue written approval or rejection of the substitution.

4. To use a substitute item, make application to the Owner in writing in sufficient time and fully identify the proposed substitute, cost changes (if any), and submit substantiating data, samples, brochures, etc. of item proposed. It is the Contractor's responsibility to furnish sufficient evidence to support any request for approval of substitutions.
5. Prior to proposing any substitute item, the Contractor shall satisfy himself that the item he proposes is, in fact, equal to that specified, that it will fit into the space allocated, that it affords comparable ease of operation, maintenance and service, that its appearance, longevity and suitability for the climate and use are comparable to that specified, and that the substitution is in the Owner's interest.

6. The burden of proof that a proposed substitution is equal to a specified item shall be upon the Contractor, who shall furnish sufficient data to permit the Owner to make a fair and equitable decision on the merits of the proposal. Any manufacturer, brand name, model number or generic species other than those cited in the Contract Documents will be considered a substitution.

7. Materials and methods proposed as substitutions for specified items shall be supported by certification of their acceptance for use by any authority, person or persons having jurisdiction over the use of the specified material or method.

8. Acceptance of substitutions shall not relieve the Contractor from responsibility for compliance with the Contract Documents. The Contractor shall be responsible for any changes in other parts of the work or the work of other Contractors caused by his substitutions, including cost of all design and redesign services related thereto incurred by the Owner and his Consultants.

9. The Contract completion time shall not be extended by any circumstance resulting from a proposed substitution, nor shall the Contractor be entitled to any compensation for any delay caused thereby or related thereto.

10. All costs and any additional professional fees paid by the Owner for the evaluation of proposed substitutions, whether accepted or not, shall be borne by the Contractor.

1.3 SUBMITTALS

A. Substitution Request Submittal: Requests for substitution will be considered if received, during the bidding period, according to the Contract as voluntary alternate consideration. Requests for voluntary substitutions received after acceptance of the Bids will not be considered. Substitutions will be considered or rejected at the discretion of the Owner.

1. Submit 3 copies of each request for substitution for consideration. Submit requests in accordance with procedures required for Change Order proposals.

2. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
   a. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.
   b. Samples, where applicable or requested.
   c. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified, including size, weight, durability, performance and
visual effect.

d. Coordination information, including a list of changes to other parts of the Work and to construction performed by the Owner and separate Contractors, that will become necessary to accommodate the proposed substitution.

e. A statement indicating the substitution's effect on the Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.

f. Cost information, including a proposal of the net change, if any in the Contract Sum.

g. Certification by the Contractor that the substitution proposed is equal to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the Contractor's waiver of rights to additional payment or time that may become necessary because of the failure of the substitution to perform adequately.

B. Owner's Action: Within 7 days of receipt of the request for substitution, the Owner may request additional information or documentation necessary for evaluation of the request. Within 14 days of receipt of the additional information or documentation, the Owner will notify the Contractor of acceptance or rejection of the proposed substitution. If a decision on use of a proposed substitute cannot be made or obtained within the time allocated, use the product specified by name. Acceptance will be in the form of a Change Order.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Conditions: Proposed substitutions will be considered when one or more of the following conditions apply, as determined by the Owner.

1. Extensive revisions to Contract Documents are not required.

2. Proposed changes are in keeping with the general intent of Contract Documents.

3. The request is timely, fully documented and properly submitted.

4. The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.

5. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.

6. The specified product or method of construction is not compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.
7. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.

8. The specified product or construction cannot provide a required warranty and where the Contractor certifies that the proposed substitution will provide the required warranty.

9. The specified product is not part of the alternate agreement within the subcontract.

B. The Contractor's submittal and Owner's acceptance of Shop Drawings, Product Data or Samples not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

PART 3 – EXECUTION (Not Applicable)

END OF SECTION
SECTION 01700 – PROJECT CLOSEOUT

PART 1 - GENERAL

1.1 SUMMARY

A. Work Included: This Section specifies administrative and procedural requirements for project closeout.

B. Related Sections: Closeout requirements for specific activities are included in the appropriate sections in Divisions 2 through 17. Provide change hard copy and (1) one electronic copy of all closeout documents.

1.2 RECORD DOCUMENT SUBMITTALS

A. General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistant location; provide access to record documents for the Owner's reference during normal working hours. Written confirmation that the record documents are "up-to-date" shall be required by the Owner before approval of monthly requisitions will be considered.

1. The Contractor shall maintain all approved permit drawings in a manner so as to make them accessible to governmental inspectors and other authorized agencies. All approved drawings shall be wrapped, marked, and delivered to the Owner within thirty (30) days of final completion of the Work.

B. Record Drawings (As Builts): Maintain a clean, undamaged, continually updated set of black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark which ever drawing best shows conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

1. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.

2. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.

3. Note related Change Order numbers where applicable.

4. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.

5. Upon 30 days of completion of the Contractor's work, submit Record Drawings to the Owner for review. Upon acceptance of these record drawings, the Contractor shall submit, at his own cost, one set of Xerox copies and an electronic copy on CD or flash drive.

6. Contractor shall stamp and sign a certification statement on each drawing and page thereof that the drawings as submitted are true and complete.

C. Record Specifications: Maintain one complete copy of the Project Manual, including
addenda, and one copy of other construction documents such as Change Orders and modifications issued during construction. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data.

1. Upon completion of the Work, submit record Specifications to the Owner for the Owner's records.

D. Record Product Data: Maintain one copy of each Product Data submittal. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered, and from the manufacturer's installation instructions. Give particular attention to concealed products and portions of the Work which cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark up of record drawings and Specifications.

1. Upon completion of mark up, submit complete set of record Product Data to the Owner for the Owner's records.

E. Record Sample Submitted: Immediately prior to Substantial Completion, the Contractor will meet at the site with the Owner and the Owner's personnel to determine which of the submitted Samples are to be transmitted to the Owner. Comply with delivery to the Owner's Sample storage area.

F. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record keeping and submittals for performance of the Work. Immediately prior to Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Owner for the Owner's records.

   1. Subcontractor’s Listing: Submit a list of each subcontractor used on this project with there names, addresses, telephone number and contact person.
   2. Subcontract closeout checklist, as may be amended from time to time.

G. Maintenance Manuals: Provide operating and maintenance manual for each item of equipment. Organize operating and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual heavy-duty 2-inch, 3-ring vinyl covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Include the following types of information. Provide 1 set of each manual.

   1. Emergency instructions.
   2. Spare parts list.
   4. Wiring diagrams.
   5. Recommended "turn around" cycles. Recommended specialty maintenance (track cleaning, turf grooming, lighting operation, netting system lubrication, etc)
   6. Inspection procedures.
   7. Shop Drawings and Product Data.
   8. Fixture lamping schedule.
   9. Establish a Warranty log containing: Building location, equipment type, location, make/model, size/capacity, equipment serial number, warranty information, provider of warranty, contact information including address, phone, fax, and email. Log shall also
include filter size, belt size, belt serial number/unique descriptor, belt tension requirements – if applicable. Warranty log shall include all materials on the project for all specification sections. Warranty log shall be in a format capable of interpretation by someone completely unfamiliar with the project. Log shall be submitted in ONM and in electronic format. All warranties in excess of one year shall be transferred to the owner as per section 00800, 3.5.2.

3 Record of Electronic Documentation: Provide two (2) copies of compact disks or flash drive, containing the following information:

1. Warranties
2. Project progress photos.
3. Final as-built schedule on software approved in section 01301.
4. Copy of final schedule of values.
5. List of all project contacts, including, but not limited to, subcontractors and suppliers, with the following information:
   - Name/Address
   - Phone and Fax Number
   - License Number
   - Email Address
   - State Tax ID No.
   - Federal Tax ID No.
   - Type of Work performed

PART 2 – PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 CLOSEOUT PROCEDURES

A. Operating and Maintenance Instructions: Arrange for each installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's representatives. Include a detailed review of the maintenance manuals, record documents, lubricants, identification systems, control sequences, cleaning and warranties.

B. As part of instruction for operating equipment, demonstrate the start-up/shutdown, emergency operation/safety and adjustment procedures.

3.2 FINAL CLEANING

A. General: General cleaning during construction is required by the General Conditions and included in Section 01500 - Construction Facilities and Temporary Controls.

B. Cleaning: The Contractor shall employ experienced workers to clean each surface or unit to the condition expected in move in condition cleaning. Comply with manufacturer's instructions. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.

1. Remove labels that are not permanent labels.

2. Clean transparent materials, including mirrors and glass in doors and windows, interior and exterior. Remove glazing compound and other substances that are noticeable
vision-obscuring materials. Replace damaged glass.

3. Clean exposed finishes to a dust-free condition, free of stains, films and similar foreign substances. Leave concrete floors a dust clean. Vacuum carpeted surfaces.

4. Shampoo common area carpeted surfaces that are deemed necessary by the Owner due to construction activities.

5. Strip, wash, seal and wax tile floors in all areas where flooring is not replaced.

6. Clean all furnishings interior and exterior to dust-free condition, free of stains, films and similar foreign substances.


8. Space shall receive a final cleaning by an independent cleaning contractor so that the space is ready for use and occupancy. FYI - The university vendor is Sun Services LLC, 25 Controls Drive, Shelton, CT 06484-6111. Luis Palaez, Senior Area Operations Manager, Office Voicemail: (203) 925-6124 Cell: (203) 223-7239

C. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.

D. Compliance: Comply with authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

1. Where extra materials of value remaining after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed.

E. Extra Stock: The Contractor shall provide 5% extra stock for all finish materials provided, unless otherwise specified. In addition provide 3% additional stock for all items of finish hardware. Where extra stock is a fractional unit round off to the next highest unit of supply, i.e., full box. Deliver extra stock to place designated by the Owner.

3.3 FINAL COMPLETION

A. Prior to the issuance of a Certificate for Final Completion, the Contractor shall furnish to the Owner, the Record Document Submittals, including Record Drawings, which accurately and completely documents the as-built conditions for the Work and a set of reproducible vellum originals.

B. Final payment will not be issued until all of the Project Closeout document requirements are submitted.

3.4 SPARE PARTS

As described in the Specifications.

END OF SECTION
SECTION 01732 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Items indicated to be removed and salvaged remain Owner's property. Remove, clean, and deliver to Owner's designated storage area.

B. Comply with EPA regulations and hauling and disposal regulations of authorities having jurisdiction.

C. Owner may occupy portions of building immediately adjacent to selective demolition area. Prior to the start of any demolition activities, review demolition scope with Owner and coordinate work as required to minimize disruptions. All demolition work shall be scheduled through the Owner.

D. It is not expected that hazardous materials will be encountered in the Work. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Owner. Owner will remove asbestos containing material under a separate contract. Coordination of the work shall be required with the contractor.

E. Call before you dig: Connecticut Call Before You Dig telephone number 1-800-922-4455 not fewer than seven (7) working days before the start of construction. Utility companies will provide permanent markers consisting of paint and identified stakes. Maintain markers and stakes in place throughout construction. In addition provide and maintain protective tapes, barriers and warning signs necessary to protect the installation from damage.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 DEMOLITION

A. Maintain services/systems indicated to remain and protect them against damage during selective demolition operations. Before proceeding with demolition, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of the building. Utilities requiring interruption, capping or removal shall include but not be limited to electrical, data, telecom, plumbing, heating, HVAC and controls. Prior to the start of demolition, coordinate all shutdowns / system bypasses with the Owner.

B. Locate, identify, shut off, disconnect, and cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.

C. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
D. Provide and maintain shoring, bracing, and structural supports as required preserving stability and preventing movement, settlement, or collapse of construction and finishes to remain or construction being demolished.

E. Provide temporary weather protection to prevent water leakage and damage to structure and interior areas.

F. Protect walls, ceilings, floors, and other existing finish work that are to remain. Erect and maintain dustproof partitions. Cover and protect furniture, furnishings, and equipment that have not been removed.

G. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction.

H. Promptly remove demolished materials from Owner's property and legally dispose of them. Do not burn demolished materials.

I. If any items not scheduled to be demolished are damaged during the demolition process, repairs or replacement to the item or items shall be made at no cost to the Owner.

J. Any items scheduled to be removed and reinstalled shall be cleaned, repaired, crated, stored and reinstalled as required. NOTE special precaution shall be taken to not damage items to be reused (ceiling tile, concrete pavers, etc)

END OF SECTION
SECTION 01740 – WARRANTY

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturers’ standard warranties on products and special warranties.

1. Refer to the General Conditions for terms of the Contractor’s special warranty of workmanship and materials.

2. General closeout requirements are included in Section 01700, Project Closeout.

3. Specific requirements for warranties for the Work and products and installations that are specified to be warranted are included in the individual Sections of Divisions 2 through 17.

4. Certifications and other commitments and agreements for continuing services to the Owner are specified elsewhere in the Contract Documents.

B. Disclaimers and Limitations: Manufacturer’s disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.3 DEFINITIONS

A. Standard Product Warranties: Preprinted written warranties published by individual manufacturers for particular products specifically endorsed by the manufacturer to the Owner.

B. Special Warranties: Written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.4 WARRANTY REQUIREMENTS

A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty.

C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through portions of its anticipated useful service life.

D. Owner’s Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.

   1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections of products with warranties not in conflict with the requirements of the Contract Documents.

E. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitment are willing to do so.

1.5 SUBMITTALS

A. Submit written warranties to the Owner prior to the date certified for Substantial Completion. If the Certificate of Substantial completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Owner.

   1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Owner within fifteen days of completion of that designated portion of the work.

B. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner through the Owner for approval prior to final execution. Clearly identify owner requirements and owner required maintenance for special warranty.

C. Bind warranties and bonds in heavy duty, commercial quality, and durable 3-ring vinyl covered loose leaf binders, thickness as necessary to accommodate contents, and sized to receive 8 ½” x 11” paper.

   1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address, and telephone number of the installer. Provide an index in the
binder of all guarantees/warranties/bonds contained therein. Provide certification that all required guarantees/warranties/bonds have been provided.

2. Identify each binder on the front and the spine with the typed or printed title “Warranties and Bonds”, the project name and/or title, and the name of the Contractor.

3. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

1.6 FORM OF GUARANTEE/WARRANTIES

A. The General Contractor will furnish to the Office of Construction Services the foregoing documents in the following manner:

1. Address to: Robert Schmidt, Senior Project Manager, Wesleyan University, Construction Services, 170 Long Lane, Middletown, CT 06457.

2. All guarantees/warranties shall reference the project name and number as indicated in the Contract Documents.

3. All required guarantees/warranties will be by the respective company made out to Wesleyan University.

4. All guarantees/warranties supplied by subcontractors or manufacturers shall be countersigned by the General Contractor.

B. All work/workmanship shall be covered by the Standard one (1) year guarantee as set forth in the General Conditions. Guarantees in excess of one (1) year are acceptable. The Contractor shall visit the project site at 11 months into the guarantee period to determine the scope of any required guarantee work.

C. The Contractor shall contact the University Representative prior to this visit so that the University Representative may attend.

PART 2 – PRODUCTS (Not Applicable)

PART 3 – EXECUTION (Not Applicable)

END OF SECTION
SECTION 02230  SITE CLEARING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Protecting existing trees, shrubs, groundcovers, plants, and grass to remain.

2. Removing existing trees, shrubs, groundcovers, plants, and grass.

3. Clearing and grubbing, including selective clearing in designated areas.

4. Stripping and stockpiling topsoil.

5. Removing above- and below-grade site improvements.

6. Disconnecting, capping or sealing, abandoning site utilities in place, and removing site utilities.

1.2 DEFINITIONS

A. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches (50 mm) in diameter; and free of subsoil and weeds, roots, toxic materials, or other nonsoil materials.

B. Tree Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and defined by the drip line of individual trees or the perimeter drip line of groups of trees, unless otherwise indicated.

C. Grubbing: Removal of vegetation and other organic matter including stumps, buried logs, and roots.

1.3 MATERIAL OWNERSHIP

A. Except for excess stripped topsoil or other materials indicated to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.4 SUBMITTALS

A. Photographs or videotape, sufficiently detailed, of existing conditions of trees and plantings, adjoining construction, and site improvements that might be misconstrued as damage caused by site clearing.

B. Record drawings, according to Section "Project Record Documents," identifying and accurately locating capped utilities and other subsurface structural, electrical, and mechanical conditions.
1.5 QUALITY ASSURANCE

A. Stake limits of clearing, grubbing, and stripping, prior to commencing of work.

1.6 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
   1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
   2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction. Detour routes shall be identified by adequate signs in accordance with the MUTCD.

B. Protect areas outside limits of disturbance from encroachment by construction personnel or equipment, regardless of property Ownership. Access shall be by specific, written permission or easement only.

C. Salvageable Improvements: Carefully remove items indicated to be salvaged and deliver to storage location defined on the plans or specified here in.

D. Utility Locator Service: Properly notify utility locator service for area where Project is located before site clearing in accordance with local protocol.

E. Do not commence site clearing operations until temporary erosion and sedimentation control measures are in place.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PREPARATION

A. Cut branches and roots, if required, with sharp pruning instruments; do not break or chop.

B. Protect existing site improvements to remain from damage during construction.
   1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TREE PROTECTION

A. Erect and maintain temporary fencing around tree drip line before starting site clearing. Remove fence when construction is complete.
   1. Do not store construction materials, debris, or excavated material within fenced area.
   2. Do not permit vehicles, equipment, or foot traffic within fenced area.
   3. Maintain fenced area free of weeds and trash.

B. Do not machine excavate within tree drip line.
C. Where excavation for new construction is required within tree drip line, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.

D. Do not allow exposed roots to dry out before permanent backfill is placed; provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in moist condition and temporarily support and protect from damage until permanently relocated and covered with earth.

1. Temporarily support and protect roots from damage until they are permanently redirected and covered with soil.

2. Coat cut faces of roots more than 1-1/2 inches (38 mm) in diameter with an emulsified asphalt or other approved coating formulated for use on damaged plant tissues.

3. Backfill with soil as soon as possible.

4. Where trenching for utilities is required within drip line, tunnel under or around roots by hand digging. Do not cut main lateral roots or tap roots; cut only smaller roots that interfere with installation of new work. Cut roots with sharp pruning instruments; do not break or chop.

E. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by the owner

3.3 UTILITIES

A. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed.

1. Arrange with utility companies to shut off indicated utilities.

B. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Owner’s Representative and owner not less than two days in advance of proposed utility interruptions.

2. Do not proceed with utility interruptions without Owner’s Representative written permission.

3.4 CLEARING AND GRUBBING

A. Completely remove obstructions, trees, shrubs, stumps, roots, grass, and other vegetation to permit installation of new construction.

1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.

2. Use only hand methods for grubbing within tree protection zone.
3. Chip removed tree branches and dispose of off-site.

B. Fill depressions caused by clearing and grubbing operations in accordance with Section “Earthwork,” unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches (200 mm), and compact each layer to a density equal to adjacent original ground.

3.5 TOPSOIL STRIPPING

A. Remove all roots/stumps before stripping topsoil.

B. Where trees are designated to remain, stop topsoil stripping and adequate distance from the trees to prevent damage to the main root system.

C. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.

1. Remove subsoil and nonsoil materials from topsoil, including trash, debris, weeds, roots, and other waste materials.

D. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust. Haul all excess topsoil not required for reuse to the on campus ‘Potato Field’. Neatly stockpile as directed by the Owner.

1. Limit height of topsoil stockpiles to 72 inches (1800 mm).

2. Do not stockpile topsoil within tree protection zones.

3.6 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.

B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.

1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut length of existing pavement to remain before removing existing pavement. Saw-cut faces vertically.

3.7 DISPOSAL

A. Burning of debris onsite is not permitted.

B. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

END OF SECTION
SECTION 02300 - EARTHWORK

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Related Work Specified Elsewhere:
   1. Division 1 – General Requirements is made a part of this section.
   2. Section 02920 – Lawns and Grasses is made a part of this section.
   3. Division 5 – Metals is made a part of this section.

1.2 SECTION REQUIREMENTS

A. For all soils removed from the site, soil classification testing must be performed by an independent testing facility.

B. Unit prices for rock excavation shall be provided by the contractor.

C. Unauthorized excavation consists of excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Owner. Unauthorized excavation, as well as remedial work directed by Owner, shall be without additional compensation.

D. Do not interrupt existing utilities serving facilities occupied by Owner or others unless permitted in writing by Owner and then only after arranging to provide temporary utility services according to requirements indicated.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Satisfactory Soil: ASTM D2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM; free of rock or gravel larger than 2 inches (50 mm) in any dimension, debris, waste, frozen materials, vegetation, or other deleterious matter.


C. Backfill and Fill: Satisfactory soil materials.

D. Subbase Material: Unless otherwise noted on the contract drawings, naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D2940; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.

E. Bedding Course: Unless otherwise noted on the contract drawings, naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand;
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ASTM D2940; except with 100 percent passing a 1-inch (25-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.

F. Drainage Course: Unless otherwise noted on the contract drawings, narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch (37.5-mm) sieve and 0 to 5 percent passing a No. 8 (2.36-mm) sieve.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Protect and maintain erosion and sedimentation controls during earthwork operations.

B. Protect subgrades and foundation soils from softening and damage by water, freezing temperatures, or frost.

C. Explosives: Do not use explosives.

D. Excavate to subgrade elevations regardless of character of materials and obstructions encountered.

E. Excavate to subgrade elevations. Material to be excavated will be classified as earth and rock. Do not excavate rock until it has been classified and cross sectioned by Owner. The Contract Sum will be adjusted for rock excavation according to unit prices included in the Contract Documents.

F. Excavate for pavements, and walkways. Trim subgrades to required lines and grades.

G. Utility Trenches: Excavate trenches to indicated slopes, lines, depths, and invert elevations. Maintain 12 inches (300 mm) of working clearance on each side of pipe or conduit.

1. Place, compact, and shape bedding course to provide continuous support for pipes and conduits over rock and other unyielding bearing surfaces and to fill unauthorized excavations.

2. Place and compact initial backfill of satisfactory soil material or subbase material, free of particles larger than 1 inch (25 mm), to a height of 12 inches (300 mm) over the utility pipe or conduit. Place and compact final backfill of satisfactory soil material to final subgrade.

H. Plow strip or break up sloped surfaces steeper than 1 vertical to 4 horizontal to receive fill.

I. When subgrade or existing ground surface to receive fill has a density less than that required for fill, break up ground surface, pulverize, moisture-condition or aerate soil, and recompact.

J. Place backfill and fill in layers not more than 8 inches (200 mm) in loose depth at optimum moisture content. Compact each layer under structures, building slabs, pavements, and walkways to 95 percent of maximum dry unit weight according to ASTM D 698; elsewhere to 90 percent.
K. Grade areas to a smooth surface to cross sections, lines, and elevations indicated. Grade lawns, walkways, and unpaved subgrades to tolerances of plus or minus 1 inch (25 mm) and pavements and areas within building lines to plus or minus 1/2 inch (13 mm).

L. Under pavements and walkways, place subbase course material on prepared subgrades and compact at optimum moisture content to required grades, lines, cross sections, and thicknesses.

M. Under slabs-on-grade, place drainage course on prepared subgrade and compact to required cross section and thickness.

N. Allow testing agency to inspect and test each subgrade and each fill or backfill layer and verify compliance with requirements.

O. Consult with Owner prior to removing any surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris. Legally dispose of it off Owner's property. Disposal procedures shall be in accordance with Wesleyan University Environmental Health and Safety requirements.

END OF SECTION 02300
SECTION 02333 TRENCHING AND BACKFILLING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the excavation of trenching, backfilling, compacting, excavation support and disposal, as shown on the Contract Drawings, and as herein specified.

B. The Engineer will determine the suitability of materials that are to be used in the work and should any materials encountered be unsatisfactory for the purpose intended, they shall be removed from the site at the Contractor's expense.

1.2 QUALITY ASSURANCE

A. Reference Standards:

1. The latest edition of the following standards, as referenced herein, shall be applicable.
   b. "Standard Specifications for Highway Materials and Methods of Sampling and Testing, American Association of State Highway and Transportation Officials (AASHTO)."
   d. National Electric Code (NEC)

B. The Contractor shall comply with the requirements for soil erosion and sedimentation control and other requirements of governmental authorities having jurisdiction, including the State.

C. Field Testing and Inspection Services: Owner shall retain the services of an independent soil testing laboratory to provide soil testing during construction.

1.3 SUBMITTALS

A. Samples:

1. The Contractor shall furnish representative earth materials to the testing laboratory for analysis and report, as directed by the Engineer, or as outlined in the specifications.

B. Test Results:

1. The testing laboratory shall submit written reports of all tests, investigations, findings and recommendations to the Contractor and the Engineer.
1.4 PROJECT REQUIREMENTS

   A. Notify the Engineer of any unexpected subsurface condition.

   B. Protect excavations by shoring, bracing, sheet piling, or by other methods, as required to ensure the stability of the excavation. Comply with OSHA requirements.

   C. Underpin or otherwise support structures adjacent to the excavation which may be damaged by the excavation. This includes service lines.

   D. Protection of Existing Utilities:

      1. Locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of support and protection during earthwork operations. Comply with OSHA requirements.

      2. Coordinate interruption and/or termination of utilities with the utility companies and the Owner.

      3. Provide a minimum of forty-eight (48) hours notice to the Owner and receive written notice to proceed before interrupting any utility.

   E. Repair any damaged utilities as acceptable to the Owner, Engineer, and utility company at no additional cost to the Owner.

   F. Contractor shall comply with maintenance and protection requirements as approved by the authority having jurisdiction.

   G. Protection of Persons and Property:

      1. Barricade open excavations occurring as part of this work and post with warning lights, if required.

      2. Operate warning lights as recommended by authorities having jurisdiction.

      3. Protect structures, utilities, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

      4. Perform excavation within drip-line of trees to remain by hand, and protect the root system from damage or dryout to the greatest extent possible. Maintain moist conditions for root system and cover exposed roots with burlap. Paint cut roots of 1" diameter and larger with emulsified asphalt tree paint.

PART 2 - PRODUCTS

2.1 MATERIALS

   A. Pipe Zone Bedding: Select mixture of graded crushed stone, free from organic, frozen or other deleterious materials, and meeting the following gradation requirements:
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<table>
<thead>
<tr>
<th>Sieve</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1&quot;</td>
<td>100</td>
</tr>
<tr>
<td>3/4&quot;</td>
<td>90 - 100</td>
</tr>
<tr>
<td>1/2&quot;</td>
<td>10 - 50</td>
</tr>
<tr>
<td>3/8&quot;</td>
<td>0 - 20</td>
</tr>
<tr>
<td>No. 4</td>
<td>0 - 5</td>
</tr>
</tbody>
</table>

B. Pipe Zone Backfill: Sound, durable sand, gravel, stone or blends of these materials, free from organic, frozen or other deleterious materials, and meeting the following gradation requirements:

<table>
<thead>
<tr>
<th>Sieve</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2&quot;</td>
<td>100</td>
</tr>
<tr>
<td>1/4&quot;</td>
<td>30 - 65</td>
</tr>
<tr>
<td>No. 40</td>
<td>5 - 40</td>
</tr>
<tr>
<td>No. 200</td>
<td>0 - 10</td>
</tr>
</tbody>
</table>

C. Suitable Material: Sound, durable sand, gravel, stone or blends of these materials, free from organic, frozen or other deleterious materials, conforming to the requirements of CONNDOT Article M.02.06 Grading B (See Section 312000, 2.1 B “Selected Fill”).

Run-of-trench material, meeting the above criteria, shall be considered suitable material and shall be used for trench backfill only after tested in accordance with Section "Quality Requirements" and approved by the Engineer. The Contractor shall pay for all additional testing required to determine the conformance of run-of-trench material, if at any time during the Work this material appears to be in non-conformance in the opinion of the Engineer.

PART 3 - EXECUTION

3.1 PRECONSTRUCTION MATERIAL QUALIFICATION TESTING

A. Owner shall employ and pay for a qualified independent soil testing laboratory to perform soil testing services for source qualifications.

B. General:

1. Sufficient size samples shall be obtained from the potential borrow source to allow completion of tests listed in paragraph B below. Samples may be obtained from test borings, test pits, or from borrow pit faces provided that surficial dry or wet soil is removed to expose undisturbed earth. Tests listed below shall be performed on each sample obtained. A minimum of three (3) representative samples from each potential borrow source shall be furnished to the testing laboratory for prequalification testing. Test data shall be provided to the Engineer a minimum of 2 weeks prior to construction for approval of borrow source. Three test reports completed within three months prior to construction may be submitted for commercial earth borrow sources or suppliers of stone products (crushed stone or graded stone products) in lieu of prequalification tests as approved by the Engineer.

C. Material Tests:
1. Particle Size Analysis:
   a. Method: ASTM D422
   b. Number of Tests: One (1) per sample; three (3) per potential source.
   c. Acceptance Criteria: Gradation within specified limits.

2. Maximum Density Determination:
   a. Method: ASTM D1557 - Modified Proctor
   b. Number of Tests: One (1) per sample; three (3) per potential source.

3. Re-establish gradation and maximum density of fill material if source is changed during construction.

3.2 PREPARATION
   A. Establish required lines, levels, contours and datum.
   B. Maintain benchmarks and other elevation control points; re-establish if disturbed or destroyed, at no additional cost to the Owner.
   C. Establish location and extent of existing utilities prior to commencement of excavation.

3.3 EXCAVATION
   A. All excavation shall be made to such depth as required and of the width shown on the Contract Drawings to provide suitable room for building the structures and laying the pipe(s) they are to contain and for sheeting, shoring, pumping and draining as necessary, and for removing peat, silt, or any other materials which the Engineer may deem unsuitable. Hand trench excavation may be required to protect existing utilities and structures.
   B. Trench excavation for pipes shall be made by open cut to accommodate the pipe or structure at the depths indicated on the Contract Drawings. Excavation shall be made to such a depth and to the width indicated on the Contract Drawings so as to allow a minimum of six (6) inches of pipe zone bedding to be placed beneath the bottom of all structures and barrels, bells or couplings of all pipes installed unless otherwise specified on the drawings.
   C. The bottom of the trench shall be accurately graded to provide a uniform layer of bedding material, as required, for each section of pipe. Trim and shape trench bottoms and leave free of irregularities, lumps, and projections.
   D. Stockpile excavated subsoil for reuse where directed or approved.
   E. Over excavation/under cut: If, in the opinion of the Engineer, existing material below the trench grade is unsuitable for properly placing bedding material and laying pipe, the Contractor shall excavate and remove the unsuitable material and replace the same with an approved pipe zone bedding material properly compacted.
   F. Stability of Excavation: Slope sides of excavations shall comply with local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated. Maintain sides and slopes of excavation in safe condition until

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completion of backfilling.

G. Removal of materials beyond the indicated subgrade elevations, without authorization by the Engineer, shall be classified as unauthorized excavation and shall be performed at no additional cost to the Owner.

3.4 DEWATERING

A. The Contractor shall remove all water from the excavation promptly and continuously throughout the progress of the work and shall keep the excavation dry at all times until the work is completed and excavation is backfilled or have sufficient weight to resist uplift pressures. Groundwater levels shall be depressed to a minimum of 2 feet below excavation subgrade. No pipe or structure is to be laid in water and water shall not be allowed to rise on or flow over any pipe or structure until such time as approved by the Engineer.

B. Provide a suitable point of discharge from dewatering operations shall be conveyed in a non erosive manner satisfactory to the Engineer.

C. Precautions shall be taken to protect uncompleted work from flooding during storms or from other causes. All pipe lines or structures not stable against uplift during construction or prior to completion shall be thoroughly braced or otherwise protected.

3.5 BEDDING AND BACKFILLING

A. All pipe trenches backfill (pipe zone bedding, pipe zone backfill and trench backfill) shall be compacted by tamping or rolling to achieve a minimum dry density of 90 percent of the modified Proctor maximum dry density of the material used (ASTM D1557). Backfill in pipe trenches to be covered with pavement shall be compacted to a minimum of 95 percent of modified Proctor maximum dry density. Backfill materials shall be placed with water content within plus or minus 4 percent of optimum moisture content per the modified Proctor method (ASTM D1557). Any water used for compaction shall be provided by the Contractor at his own expense. The Contractor is responsible for the repair of any trench settlement at no expense to the owner.

B. Bedding and backfilling shall be accomplished in three stages unless otherwise specified on the Contract Drawings. The first stage shall involve placement of "pipe zone bedding" as a layer(s) of selected material required to support, or to stabilize unsound or unsatisfactory foundation conditions. The second stage shall involve placement of "pipe zone backfill" from the top of the bedding material up to one (1) foot above the pipe. The third stage involves the placement of "trench backfill" in the remainder of the trench up to the surface of the ground or the bottom of any special surface treatment subgrade elevation.

C. The bedding material shall be placed in the trench after the trench has been excavated a minimum of six (6) inches below the bell of the pipe to permit the placing of not less than six (6) inches of bedding material unless otherwise specified on the Contract Drawings. Where, in the opinion of the Engineer, more than six (6) inches of bedding material shall be required, the excavation shall be performed and bedding placed to the depth ordered by the Engineer.

D. Provide uniform bearing and support for each section of pipe at every point along the entire length, except where necessary to excavate for bell holes, pipe joints, or other required connections. Dig bell holes and depressions for joints after trench bottom has been graded. Dig no deeper, longer, or wider than needed to make the joint connection properly.
E. The bedding material shall be placed to the full width of trench. The bedding material shall be placed in loose lifts not exceeding six (6) inches to the elevation shown on the Contract Drawings or directed by the Engineer. The bedding material shall be tamped and compacted to form a firm and even bearing surface.

F. Pipe zone backfill shall be placed to the elevation shown on the Contract Drawings in loose lifts not to exceed six (6) inches in thickness, before compaction. The backfill shall be placed on both sides of the pipe at the same time and to approximately the same elevation. Any pipe that is damaged or moved out of alignment, regardless of cause, shall be replaced or realigned at the Contractor's expense. Each layer shall be thoroughly compacted by hand-tamping or mechanical means being careful not to damage the pipe. When the pipe zone backfill reaches one (1) foot over the top of the pipe, the entire surface shall be compacted by mechanical means.

G. The remainder, if any, of the trench above the pipe zone backfill shall be backfilled with suitable material in loose lifts not exceeding six (6) inches in thickness before compaction. Each layer shall be thoroughly compacted by mechanical means.

3.6 BACKFILLING AROUND STRUCTURES

A. The Contractor shall not place backfill against any structure without obtaining the approval of the Engineer. No dumping shall be allowed where materials would flow against or around such structures. Backfill material shall be deposited in horizontal layers not exceeding 6 inches in loose thickness or as shown on the Contract Drawings and thoroughly compacted by hand or by mechanical means to the satisfaction of the Engineer.

3.7 SUSPENSION OF WORK

A. Whenever the work is suspended, excavations shall be protected and the roadways, if any, left unobstructed. Within or adjacent to private property, material shall be stored at such locations as will not unduly interfere with traffic of any nature and in no case shall materials be stored in locations which will cause damage to existing improvements.

3.8 DISPOSAL OF MATERIAL

A. Excess and unsuitable materials shall be disposed of by the Contractor on the site in an area approved by the Engineer or legally disposed of off-site at the Contractors expense.

3.9 FIELD QUALITY CONTROL

A. Notify the Engineer at least three (3) working days in advance of all phases of filling and backfilling operations.

B. In-place density testing shall be performed to ascertain the compacted density of the fill and backfill materials in accordance with the following methods:

1. In-place relative density:
   a. Method: AASHTO T238, Nuclear Method

C. Perform initial density testing to verify that contractors proposed compaction effort will obtain the minimum required densities.
D. In-place density tests on trench backfills shall be provided for every 500 cubic yards of fill and in vertical lifts not exceeding 12", and at least once daily.

E. One particle size analysis (ASTM D422) and one modified Proctor compaction test (ASTM D1557) shall be competed for every 1,000 cubic yards of material placed.

F. The owner may direct additional tests to establish gradation, maximum density, and in-place density as required by working conditions, at the Contractor's expense.

G. Acceptance Criteria: The criteria for acceptability of in-place fill shall be in-situ dry density and moisture content. If a test fails to qualify, the fill shall be further compacted and re-tested. Subsequent test failures shall be followed by removal and replacement of the material.

END OF SECTION
SECTION 02510 - WATER DISTRIBUTION

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 – General Requirements is made a part of this section.

B. Summary: This Section includes water system piping for potable-water service and fire-protection service, outside the building.

1. This Section does not include tapping of utility company water main by utility company and charging directly to Owner.


D. Comply with NSF 61 for materials for water-service piping and specialties for domestic water.

PART 2 - PRODUCTS

2.1 GENERAL

A. Comply with City of Middletown Water Department (860 638-3500) requirements for products provided in this section. If discrepancies between specifications and local authority exists comply with requirements of local authority.

2.2 PIPE AND FITTINGS

A. Soft Copper Tube: ASTM B 88, Type K (ASTM B 88M, Type A) water tube, annealed temper.

3. Solder Filler Metal: ASTM B 32, lead-free type with 0.20 percent maximum lead content.

B. Mechanical-Joint, Ductile-Iron Pipe: AWWA C151, with mechanical-joint, bell- and plain-spigot end unless grooved or flanged ends are indicated.

1. Ductile-Iron Fittings: AWWA C110, ductile- or gray-iron standard pattern or AWWA C153, ductile-iron compact pattern.
2. Glands, Gaskets, and Bolts for Mechanical Joints: AWWA C111, ductile- or gray-iron glands, rubber gaskets, and steel bolts.
2.3 VALVES

A. Nonrising-Stem, Resilient-Seated Gate Valves, NPS 3 (DN 80) and Larger: AWWA C509, gray- or ductile-iron body and bonnet; with bronze or gray- or ductile-iron gate, resilient seats, bronze stem, and stem nut. Include 200-psig (1380-kPa) minimum working-pressure design, interior coating according to AWWA C550, and mechanical-joint ends.

B. Nonrising-Stem Gate Valves: UL 262, FMG-approved iron body and bonnet with flange for indicator post, bronze seating material, and inside screw; 175-psig (1200-kPa) working pressure, and flanged end connections.

C. Valve Boxes: Cast-iron box with top section and cover with lettering "WATER"; bottom section with base of size to fit over valve and barrel approximately 5 inches (125 mm) in diameter, and adjustable cast-iron extension of length required for depth of bury of valve.

D. Indicator Posts: UL 789, FMG-approved, vertical-type, cast-iron body with operating wrench, extension rod, and adjustable cast-iron barrel of length required for depth of bury of valve.

E. Curb Valves: Comply with AWWA C800. Include bronze body, ground-key plug or ball, and wide tee head, with inlet and outlet matching service piping material.

2.4 SPECIALTIES

A. Fire Hydrants: UL 246, FMG-approved, cast-iron body, compression-type valve opening against pressure and closing with pressure; 150-psig (1035-kPa) minimum working-pressure design, with NPS 6 (DN 150) mechanical-joint inlet and with external hose thread used by local fire department. Include cast-iron caps with steel chains.

B. Backflow Prevention Devices: ASSE standard backflow preventers, bronze body, 150-psig (1035-kPa) working pressure, of size indicated for maximum flow rate and maximum pressure loss indicated.

C. Plastic Underground Warning Tapes: Polyethylene plastic tape, 6 inches (150 mm) wide by 4 mils (0.1 mm) thick, solid blue in color with metallic core and continuously printed black-letter caption "CAUTION--WATER LINE BURIED BELOW."

PART 3 - EXECUTION

3.1 INSTALLATION

A. Connect water system piping and water-supply source and building water-distribution and fire-protection systems through the building wall and into the basement in optimal locations and in accordance with pipe sizes required. Coordinate fire-protection systems location with Sprinkler Contractor.

B. Install restrained joints for buried piping within 60 inches (1500 mm) of building. Use restrained-joint pipe and fittings, thrust blocks, anchors, tie rods and clamps, and other supports at vertical and horizontal offsets.
C. Install fittings for changes in direction and branch connections.

D. Comply with NFPA 24 for fire-service-main piping materials and installation.

E. Install ductile-iron, water-service piping according to AWWA C600 and AWWA M41.

F. Install copper tube and fittings according to CDA's "Copper Tube Handbook."

G. Bury piping with depth of cover over top of pipe to finish grade of at least 42 inches to provide maximum frost / freezing protection.

H. Install continuous underground detectable warning tape during backfilling of trench for underground water-service piping. Locate below finished grade, 12” over piping.

I. Clean and disinfect water distribution piping according to authorities having jurisdiction.

END OF SECTION 02510
SECTION 02621 POLYVINYL CHLORIDE PIPE

PART 1 - GENERAL

1.1 SUMMARY
A. This section includes the installation of polyvinyl chloride piping systems.
B. All piping, fittings, and appurtenances shall be new, clean and in accordance with material specifications. In no instance will second-hand or damaged materials be acceptable.

1.2 REFERENCES
A. American Water Works Association (AWWA).
C. National Sanitation Foundation (NSF).

1.3 QUALITY ASSURANCE
A. Product Markings: Plainly and permanently mark each pipe length with the following information:
   1. Nominal pipe size.
   2. Plastic pipe material designation.
   4. Pressure rating.
   5. ASTM designation.
   6. Manufacturers name or trademark and date of manufacture.
   7. Potable water pipe marking or seal, if applicable.

1.4 SUBMITTALS
A. Product Data:
   1. Submit manufacturer's catalog cuts, specifications and installation instructions.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING
A. Delivery and Storage:
   1. Deliver and store pipe, fittings, specials, appurtenances and accessories and within the work limits as shown on the Drawings.
   2. Exercise special care during delivery and storage to avoid damage to the products.
   3. Store products in locations where unnecessary handling is avoided and where they will not interfere with the Owner's operations, construction operations or public travel.

B. Handling:
1. Handle pipe, fittings, specials appurtenances and accessories carefully with approved handling devices in strict conformance with the manufacturer's recommendations.

2. Do not drop or roll products off trucks, or otherwise drag, roll or skid products.

C. Products cracked, gouged, chipped, dented or otherwise damaged will not be approved and are to be removed and replaced at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Pipe and Fittings:

1. Pressure Pipe for Water Distribution: 4 inch through 12 inch conforming to AWWA C900. DR Series made from Class 12454-A or Class 12454-B virgin compounds in accordance with ASTM D1784.

2. Pressure Rated Sewer Pipe: 4 inch through 15 inch conform to ASTM D-2241 made from Class 12454-B virgin compounds in accordance with ASTM D1784, SDR 26.

3. Gravity Sewer: 4 inch through 15 inches conforming to ASTM D-3034 Type PSM. SDR 35.


B. Joints:

1. Join pipe joints, including fittings, shall be joined with an integral bell and spigot type rubber gasketed joint.

2. Conform to ASTM F-477 for gaskets and mark to indicate nominal pipe size and proper insertion direction.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect all pipe and fittings prior to laying in the trench. Remove defective pipe and fittings from the site.

B. Do not backfill until inspection by the Engineer, unless otherwise approved by the Engineer.
3.2 INSTALLATION
   A. Conform to Section "Trenching and Backfilling."
   B. Conform to Section "Buried Pipe Installation."

3.3 TESTING
   A. Conform to Section "Buried Pipe Installation."

END OF SECTION
SECTION 02740  PAVEMENT SUBBASE

PART 1 - GENERAL

1.1 SUMMARY
A. This Section includes provisions for prepared subbase courses for under walks and pavements.
B. Proof rolling of subgrade for walks and pavements is included in this Section.

1.2 REFERENCES
A. "State of Connecticut Department of Transportation Standard Specifications."
B. “Standard Specifications for Highway Materials and Methods of Sampling and Testing, American Association of State Highway and Transportation Officials (AASHTO).”
C. “American Society for Testing and Materials (ASTM).”

1.3 SUBMITTALS
A. Source Quality Control Test Reports: Submit samples directly to owner for all required material tests.

1.4 QUALITY ASSURANCE
A. Field Testing and Inspection Service: Owner shall retain the services of an independent soil testing laboratory to provide soil testing during pavement subbase installation.

PART 2 - PRODUCTS

2.1 SOURCE QUALIFICATION TESTING
A. Owner shall employ and pay for a qualified independent soil testing laboratory to perform soil testing services for source qualification.

1. Obtain a 100-pound minimum representative sample from each potential aggregate source. Obtain samples for each different material gradation known to exist in the pit. Mix each sample thoroughly in accordance with AASHTO T87, and submit to the testing laboratory for reduction to specimen size. The laboratory shall perform the following tests in the order shown. Each material shall pass all tests in order to qualify.

a. Particle Size Analysis:
   Method: ASTM D422
   Number of Tests: Two (2) per potential source.
   Acceptance Criteria: Gradation within specified limits.

b. Plasticity Index Determination:
   Method: ASTM D424
Number of Tests: One (1) particle size analysis on material passing no 40 mesh.

Acceptance Criteria: Plasticity Index within specified limits.

c. Maximum Density Determination:

Method: ASTM D1557 Modified Proctor
Number of Tests: Two (2) per potential source.

d. Magnesium Sulfate Soundness Loss Test:

Method: AASHTO Method T 104.
Number of Tests: Two (2) per potential source.
Acceptance Criteria: Five cycle loss within specified limits.

Re-establish subbase material properties if source is changed during construction.

2.2 MATERIALS

A. Processed Aggregate Base: Materials shall consist of sound, durable stone, sand, gravel or blends of these materials, conforming to the requirements of CONNDOT Section M.05.01 as follows:

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1. Magnesium Sulfate soundness shall show a loss of not more than 15% at the end of five cycles, per AASHTO Method T104.

2. Plasticity Index shall conform to the requirements of CONNDOT M.02.06-2.

3. Not more than 30 percent, by weight, of the particles retained on a ½ inch sieve shall consist of flat or elongated particles. A flat or elongated particle is defined as one which has its greatest dimension more than 3 times its least dimension.

4. All material shall meet the specified gradation prior to placement. All processing shall be completed at the source.

PART 3 - EXECUTION

3.1 PREPARATION

A. Establish required lines, levels, contours, and datum.

B. Maintain benchmarks and other elevation control points. Re-establish, if disturbed or destroyed, at no additional cost to Owner.
C. Proof-roll existing subgrade to the satisfaction of the Engineer. Should the subbase course become unstable at any time prior to the placement of the overlying course(s), correct the unstable condition to the satisfaction of the Engineer. Replace unstable or weak subgrade materials with suitable material as provided in the Specifications.

3.2 INSTALLATION

A. Place subbase material in uniform horizontal layers, with a maximum compacted thickness of 8 inches.

B. Place subbase in a manner to avoid segregation. Uncontrolled spreading shall not be permitted.

3.3 COMPACTION

A. Where subbase courses must be moisture-conditioned before compaction, uniformly apply water to the surface. Prevent free water from appearing on the surface during or subsequent to compaction operations.

B. Compact all portions of each layer to a density not less than 95 percent of the maximum density.

C. Final tolerances for the top surface of the subbase course requires that the surface does not extend more than ¼ inch above nor more than ¼ inch below the specified grade at any location.

3.4 TRAFFIC ON SUBBASE

A. The movement of vehicular traffic over the final surface of the subbase may be permitted at locations designated by, and under such restrictions as ordered by the Engineer, provided such movements take place prior to the final finishing of this course to the specified tolerance. The movement of construction equipment on this course may be permitted, at locations designated by and under such restrictions as ordered by the Engineer at locations where permission is granted for such movement, the temporary surface of the course upon which the construction traffic is running, shall be placed and maintained for at least 2 inches above the final surface of this course. Just prior to paving, and after all construction traffic not required for the removal has ceased, remove the 2 inch protective layer, prepare the exposed surface of the course, and compact to the specified tolerance.

B. Should the subbase become mixed with the subgrade or any other material, through any cause whatsoever, remove such mixture and replace it with the specified subbase material.

3.5 FIELD QUALITY CONTROL

A. Notify the Engineer at least one (1) working day in advance of all phases of subbase installation.

B. Comply with the requirements of this Section for in-place relative density testing.

1. In-place relative density:
   Method: AASHTO T238, Nuclear Method
   Number of Tests: One (1) per specified interval.
   Acceptance Criteria: ± Two (2) percent of specified percent compactions.

2. Compaction tests shall be provided for every 1000 SY of subbase placement. A minimum of three for each lift is required.
3. The Engineer may direct additional tests to establish gradation, maximum density, and in-place density as required by working conditions.

4. Acceptance Criteria: The sole criterion for acceptability of in-place subbase shall be in situ dry density. Minimum dry density for all subbase shall be 95 percent of the maximum dry density. If a test fails to qualify, the fill shall be further compacted and re-tested. Subsequent test failures shall be followed by removal and replacement of the material.

END OF SECTION
SECTION 02741 ASPHALT PAVING

PART 1 - GENERAL

1.1 SUMMARY
   A. This section includes provisions for hot-mixed asphalt concrete paving over prepared subbase.

1.2 REFERENCES
   B. “Standard Specifications for Highway Materials and Methods of Sampling and Testing, American Association of State Highway and Transportation Officials (AASHTO).”
   C. “American Society For Testing and Materials (ASTM).”

1.3 SUBMITTALS
   A. Material Certificates signed by material producer and Contractor, certifying that each material item complies with or exceeds specified requirements.
   B. Field Test Reports: Submit results of field testing directly to the owner.

1.4 SITE CONDITIONS
   A. Weather Limitations: Apply tack coats when ambient temperature is above 50°F (10°C) and when temperature has not been below 35°F (1°C) for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess of moisture.
   B. Construct hot-mixed asphalt concrete surface course when atmospheric temperature is above 40°F (4°C) and when base is dry. Base course may be placed when air temperature is above 30°F (minus 1°C) and rising.
   C. Grade Control: Establish and maintain required lines and elevations.
   D. In no instance shall the materials and thicknesses of pavement and subbase courses replaced be less than that removed, unless approved by the Engineer.

1.5 SEQUENCING AND SCHEDULING
   A. Coordinate the placement of asphalt concrete pavement with the completion of underground work by other trades.

PART 2 - PRODUCTS

2.1 MATERIALS
   A. General: Asphalt concrete and all related items shall meet the requirements of Form 816 M.04.01.
B. Binder Course: Form 816, M.04.03 Class 1.

C. Top Course: Form 816, M.04.03 Class 2.

D. Tack Coat: Emulsified asphalt, ASTM D977.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

A. General: Remove loose material from compacted subbase surface immediately before commencing paving operations.

B. Proof-roll prepared subbase surface with a ten-ton static, steel-wheel roller to check for unstable areas and areas requiring additional compaction, witnessed by the Engineer at least forty-eight (48) hours prior to scheduled paving operations.

C. Do not begin paving work until deficient subbase areas have been corrected and are ready to receive paving.

D. Sawcut edges of existing pavement to achieve straight line transitions between old and new pavement. Make a second sawcut through the top course of existing pavement, 18 inches from the first cut to provide a staggered joint.

E. Tack Coat: Apply to contact surfaces of previously constructed asphalt or Portland cement concrete and surfaces abutting or projecting into asphalt concrete pavement. Distribute at rate of 0.03 to 0.07 gallons per square yard of surface.

F. Allow to dry until at proper condition to receive paving.

G. Exercise care in applying bituminous materials to avoid smearing of adjoining surfaces. Remove and clean damaged surfaces.

H. Do not commence pavement replacement operations until all buried work beneath pavement repair has been completed to the satisfaction of the Engineer.

I. Where trench dimensions preclude the use of proof rolling equipment, demonstrate the stability of the subgrade and subbase through other means, as acceptable to the Engineer.

3.2 PLACING AND COMPACTING MIX

A. General: Place and compact asphalt pavement courses in accordance with Form 816, unless otherwise specified.

B. Place inaccessible and small areas by hand, and compact with hot hand tampers or vibrating plate compactors.

C. Slope/Chamfer exposed edges of walks at 45° angle where walks do not abut curb.

D. Joints: Make joints between old and new pavements, or between successive days' work, to ensure
continuous bond between adjoining work. Construct joints to have same texture, density, and smoothness as other sections of asphalt concrete course. Clean contact surfaces and apply tack coat.

E. Place tack coat between successive courses if more than forty-eight (48) hours have elapsed after placing the preceding course. Apply tack coat at a rate of 0.03 to 0.07 gallons per square yard of surface.

F. Compaction: Compact asphalt pavement courses with a static steel wheel roller only, unless otherwise approved by the Engineer, based upon work conditions.

G. Remove and patch areas of any asphalt concrete course deemed unsatisfactory by the Engineer, at the Contractor’s expense. Remove hardened or set asphalt by saw cutting.

H. Adhere to Form 816 compaction requirements. This, however, shall not relieve the Contractor of his responsibility to provide a well densified pavement. It shall be the Contractor’s obligation to recognize difficulties in compacting the mix, and to make appropriate corrections.

I. Roll and compact the asphalt concrete course until the finished surface is free from depressions, waves or other defects that would prevent proper drainage. The finished surface shall be uniform in texture and appearance.

J. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

K. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.3 FIELD QUALITY CONTROL

A. General: Testing in-place asphalt concrete courses for compliance with requirements for thickness and surface smoothness will be done by Owner’s testing laboratory. Repair or remove and replace unacceptable paving as directed by Engineer.

B. Thickness: In-place compacted thickness tested in accordance with ASTM D 3549 will not be acceptable if exceeding following allowable variations:

1. Base Course: Plus or minus 1/2 inch.
2. Surface Course: Plus or minus 1/4 inch.
3. Cumulative Thickness Tolerances: Plus or minus 1/4 inch for nominal cumulative thicknesses less than or equal to 4 inches. Plus or minus 1/2 inch for nominal cumulative thicknesses greater than 4 inches.

C. Surface Smoothness: Test finished surface of each asphalt concrete course for smoothness, using 10-foot straightedge applied parallel with and at right angles to centerline of paved area. Surfaces will not be acceptable if exceeding the following tolerances for smoothness:

1. Base Course Surfaces: 1/4 inch.
2. Wearing Course Surface: 3/16 inch.
3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

D. Check surface areas at intervals as directed by Engineer.

E. Scuff Resistance: If, in the opinion of the Engineer, the pavement does not demonstrate reasonable resistance to deformation by punching loads and scuffing under horizontally applied shearing loads, after the pavement has cooled and hardened, the Engineer may require laboratory testing of cored pavement samples to determine the properties of the pavement; including aggregate gradation, asphalt content, air void ratio, density and any others deemed appropriate. If laboratory testing indicates that any parameters substantially deviate from the design mix tolerances specified, replace the affected areas of pavement at no additional cost, and reimburse the Owner for all costs incurred in procurement and testing of cores.

END OF SECTION
SECTION 02920 - LAWNS AND GRASSES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 – General Requirements is made a part of this section.

B. Submittals: Product certificates and planting schedule.

C. Sod: Comply with TPI's "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" in its "Guideline Specifications to Turfgrass Sodding."

D. Maintenance: Water, fertilize, weed, mow, trim, and establish lawns. Replant non-uniform, bare, or eroded grassed areas and remulch. Maintain for not less than 30 days.

E. CONN-DOT 816: Standard Specifications for Roads, Bridges and Incidental Construction

PART 2 - PRODUCTS

2.1 GRASSES

A. Seed Species: State-certified seed of grass species, as follows:

1. Seed Mixture:
   a. Sun and shade mix
      
      | PERC   | Fine Textured Grasses         | Germ |
      |--------|------------------------------|------|
      | 39.5%  | Accent Perennial Rye         | 90%  |
      | 39.43% | Aberdeen Creeping Red Fescue | 88%  |
      | 19.57% | Brooklawn Kentucky Bluegrass | 85%  |

   b. Submit seed mixture to Owner for approval.

2. Per Owner’s direction, the use of drought resistant, hard, red and chewing fescues. varieties in appropriate new locations identified on campus shall be planted.

B. Turfgrass Sod: Certified Number 1 Quality/Premium, including limitations on thatch, weeds, diseases, nematodes, and insects complying with TPI's "Specifications for Turfgrass Sod Materials" in its "Guideline Specifications to Turfgrass Sodding."

1. Species: Submit species to Owner for approval.

2.2 SOILS AND AMENDMENTS

A. Topsoil: ASTM D5268, free of stones 1 inch or larger.
B. Lime: ASTM C602, Class T, agricultural limestone.
C. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8.
D. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture, free of chips, stones, sticks, soil, or toxic materials.
E. Commercial Fertilizer: Organic grade fertilizer formula including corn gluten and soybean.
F. Grub, Crabgrass, Broadleaf Weeds and Insect Control: Contact Dave Hall @ 860-685-3764 for product requirements.
G. Straw Mulch: Clean, mildew- and seed-free salt hay or threshed straw.

PART 3 - EXECUTION

3.1 PREPARATION

A. Loosen subgrade, remove stones, sticks, existing grass, vegetation, and other extraneous materials.
   1. At newly graded subgrades, spread planting soil mixture to a depth of 4 inches but not less than required to meet finish grades.
   2. At unchanged grades, apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top 4 inches of soil. Till soil to a homogeneous mixture of fine texture.

B. Grade lawn areas to a smooth, even surface with loose, uniformly fine texture. Moisten before planting.

3.2 PLANTING

A. Seeding Lawns: Evenly distribute seed by sowing with a spreader or a seeding machine. Rake seed lightly into top 1/8 inch of topsoil, roll lightly, and water with fine spray. Protect seeded areas by spreading straw mulch 1-1/2 inches in loose depth. During the first 3 weeks, water 3 times daily.
   1. Seeding Rate: 3 to 4 lb/1000 sq. ft.

B. Sodding Lawns: Lay sod with tightly fitted joints, offsetting joints in adjacent courses. Tamp and roll lightly to form a smooth surface. Fill minor cracks between pieces of sod with soil or sand. Anchor sod on slopes exceeding 1:6 with wood pegs. Saturate sod with fine water spray within two hours of planting. During first week, water daily.

C. Disposal: Remove surplus soil and waste material and legally dispose of off Owner's property. Adhere to Urban fill policies related to potential soil contaminants.

D. END OF SECTION 02920
SECTION 03300 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

SECTION REQUIREMENTS

A. Division 1 – General Requirements is made a part of this section.

B. Submittals: Product Data and concrete mix designs.

C. Ready-Mixed Concrete Producer Qualifications: ASTM C 94/C 94M.


TESTING

A. Sampling and testing for quality assurance during placement of concrete includes the following:
   1. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.
   2. Slump: ASTM C 143; one test for each concrete load at point of discharge from truck, and one test for each set of compressive strength test specimens.
   3. Air Content: ASTM C 231 pressure for normal weight concrete, ASTM C173 volumetric method for light weight concrete; one for each set of compressive strength test specimens.
   4. Concrete Temperature: Test hourly when air temperature is 40 degrees F. (4 degrees C.) and below, and when 80 degrees F (27 degrees C), and above; and each time a set of compressive test specimens are made.
   5. Compression Test Specimen: ASTM C 31; one set of 4 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field cure test specimens are required.
   6. Compressive Strength Tests: ASTM C 39; one set for each 50 cu. yds. or fraction thereof, of each concrete class placed in any one day or for each 5,000 sq. ft. of surface area placed; 1 specimen tested at 7 days, 2 specimens tested at 28 days, and one specimen retained in reserve for later testing if required.
      a. When frequency of testing will provide less than 5 strength tests for a given class of concrete, conduct testing from at least 5 randomly selected batches or from each batch if fewer than 5 are used.
      b. When strength of field-cured cylinders is less than 85% of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
   7. Test results will be reported to Engineer and Contractor on same day that tests are made. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, name of concrete supplier, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, air content, slump, concrete temperature, compressive breaking strength and type of break for both 7-day tests and 28 day tests.
8. Additional Tests: The testing service will make additional tests of in place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Engineer. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed. Contractor shall pay for such tests conducted, and any other additional testing as may be required, when concrete placed does not conform to the specified limits of the Contract Documents or when unacceptable concrete is verified.

B. Mock-ups: Provide samples of smooth formed, rubbed and light broom finishes to demonstrate typical joints, surface finish, color, texture, tolerances and standard of workmanship.

C. Additional Tests: The testing service will make additional tests of in place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure as directed by the Engineer. Contractor shall pay for such tests conducted, and any other additional testing as may be required, when concrete placed does not conform to the specified limits of the Contract Documents or when unacceptable concrete is verified.

SUBMITTALS

A. Product Data: Submit manufacturer's product data with application and installation instructions for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, joint systems, curing compounds, moisture barrier and others as requested by the Owner.

B. Shop Drawings; Reinforcement: Submit shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with ACI Detailing Manual - 1988, Publication SP-66, showing bar schedules, stirrup spacing, diagrams of bent bars, placing plans and wall elevations showing arrangement of concrete reinforcement. Reproduction of the Owner’s Contract Drawings are not acceptable for use as shop drawings.

C. Certificates of Compliance: Provide the Special Inspector with Certificates of Compliance for welded wire fabric, cement, air-entraining agent, water-reducing agent, and vapor barrier.

D. In addition provide mill test reports for reinforcement bars used for this project.

E. Batch Tickets: The General Contractor shall furnish to the Special Inspector tester with each batch of concrete and before unloading at the site, a delivery ticket on which is printed, stamped, and or written, information concerning said concrete as follows:

- Name of ready-mix batch plant,
- Serial number of ticket,
- Date,
- Truck number,
- Name of purchaser,
- Specific designation of job (name and location),
- Specific class or designation of concrete in conformance with that required by job specifications,
- Amount of concrete in cubic yards,
- Time loaded or of first mixing of cement and aggregates,
- Quantity of water added by receiver of concrete and his initials,
- Type and brand, and amount of cement,
- Type and brand, and amount of admixtures,
- Total water content by producer (or W/C ratio),
- Maximum size of aggregate,
- Weights of fine and coarse aggregate,
- Signature or initials of ready-mix representative.

F. Test Reports: Submit for review laboratory test reports for concrete materials and mix design test as specified.

PART 2 - PRODUCTS

ACCEPTABLE SUPPLIERS:

A. SUZIO
B. TILCON
C. Approved equal

MATERIALS

FORM MATERIALS

A. Forms for Exposed Finish Concrete: Unless otherwise indicated, construct formwork for exposed concrete surfaces with plywood, metal, metal-framed plywood faced or other acceptable panel-type materials, to provide continuous, straight, smooth exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings. Provide form material with sufficient thickness to withstand pressure of newly-place concrete without bow or deflection.
   1. Design formwork to be readily removable without impact, shock or damage to cast-in-place concrete surfaces and adjacent materials.
   2. Provide Class A tolerances for concrete exposed to view.

B. Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain nor adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces.
   1. Unitex Farm Fresh Vegetable Oil Form Release

C. Reinforcing Bars: ASTM A615 Grade 60, deformed.

D. Plain Steel Wire: ASTM A82, plane, cold-drawn steel.

E. Plain-Steel Welded Wire Reinforcement: ASTM A185, fabricated from as-drawn steel wire into flat sheets. Size and weight as noted on the drawings.

F. Joint Dowel Systems at patio entries:
1. Expansion Joints: Diamond Dowel System: ¼” thick stainless steel plate, 4.5” x 4.5” square at 24 inches on center with Diamond Dowel pocket former as manufactured by PNA Construction Technologies.

2. Control Joints: Square Dowel Basket Assemblies: ¾” x 14” stainless steel square dowel at 14” on center. Side frame supports fabricated from ¼” diameter cold drawn wire per ASTM A108 grade 1010-1020. Square dowel clips extend at least 2” past center of the dowel. PNA clip with foam on each side of dowel extending to within +/- 3/16” of 2/3 length of the dowel to allow for horizontal movement. System as manufactured by PNA Construction Technologies.

G. Joint Dowel System at street line sidewalk:
1. #5 epoxy painted rebar dowels shall be cast-in place 12” O.C. with an 18” leg sheath. Expansion joint filler and joint sealant shall be as specified. Concrete joints between expansion joints shall be tooled.

CONCRETE MATERIALS

A. Portland Cement: ASTM C150, Type I unless otherwise acceptable to the Owner. Use one brand of cement throughout project, unless acceptable to Engineer/Owner. Select cement color acceptable to the Owner.

B. Pozzolonic materials which will darken the concrete surface, such as fly-ash and microsilica are not permitted.


FIBER REINFORCEMENT

A. Synthetic Fiber: ASTM C1116, Type III, polypropylene fibers, 1/2 to 1-1/2 inches long.

B. Water: Potable.

C. Water-Reducing Admixture: ASTM C494, Type A and not containing more chloride ions than are present in municipal drinking water.


E. Waterproofing Membrane: Bituthene 3000 self-adhesive rubberized asphalt/polyethylene waterproofing membrane adjacent to the building structure by Grace Construction Products www.graceconstruction.com or approved equal. Contractor shall apply WP 3000 or Primer B2 prior to installing the waterproofing membrane.

F. WaterStop: Continuous bentonite waterstop along the abutting building structures – provide 3” of coverage.
1. Waterstop shall be Volclay RX-101RH and adhered to the building structure with Volclay WB adhesive.
2. Waterstop shall be installed below the expansion joint filler.
G. Vapor Retarder: Clear 12-mil thick polyethylene sheet or reinforced polyethylene sheet, ASTM E 1745, Class C.

H. Expansion joint filler shall be Sealight® Fibre Expansion Joint by W.R. Meadows, Inc., www.wrmeadows.com – 1-800-342-5976 or approved equal. Thickness shall be ½”. Expansion joint filler shall also be placed against abutting building structures, columns, curbs and at all interrupting objects. Expansion joints shall be set ½” below the concrete surface and filled with the appropriate specified joint sealant.

I. Contractor shall install joint sealant over all expansion joint filler installed. Joint sealant shall be DynaTred® non-sag, traffic-grade polyurethane sealant by Pecora Corporation www.pecora.com – 1-800-523-6688 or approved equal. Submit manufacturer’s standard color options to Owner for review and selection.

CONCRETE REPAIR MATERIALS

A. Bonding Agent / Primer: Ardex Bonding & Anti Corrosion Agent, Silpro C-21 All Acrylic Bonding Agent / Primer or approved equal.

B. Concrete Patch Material: Ardex CP Concrete Patch, Silpro Easy Patch or approved equal.

C. Concrete Resurfacing Material: Ardex CD Concrete, Silpro Fasterete or approved equal.

http://www.ardex.com/default.asp

http://www.silpro.com/

CURING AND SEALING COMPOUND

A. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C1315, Type 1, Class A.

B. Concrete Color Admixture: Submit color samples for Owner approval.

C. Sidewalks
   1. Concrete for sidewalks and aprons shall conform to the requirements of Section 9.21 and M.03 of the State of Connecticut Department of Transportation “Standard Specifications for Roads, Bridges and Incidental Construction”, Form 814A, including current supplemental. Higher compressive strengths may be required by the Owner.
   2. The gravel or reclaimed miscellaneous aggregate base shall be placed in layers not less than 8 inches in depth and to such a depth that after compaction it shall be at the specified depth below the finished grade of the walk. The base shall be wetted and rolled or tamped after the spreading of each layer.
   3. The sidewalk expansion joints at the street line (EJ@SL) shall be at a maximum of 20’-0”. #5 epoxy painted rebar dowels shall be cast-in place 12” O.C. with an 18” leg sheath. Expansion joint filler and joint sealant shall be as specified. Concrete joints between expansion joints shall be tooled.
   4. Expansion joint filler shall be Sealight® Fibre Expansion Joint by W.R. Meadows, Inc., www.wrmeadows.com – 1-800-342-5976 or approved equal. Thickness shall be ½”.

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Expansion joint filler shall also be placed against abutting building structures, columns, curbs and at all interrupting objects. Expansion joints shall be set ½” below the concrete surface and filled with the appropriate specified joint sealant.

5. Contractor shall install joint sealant over all expansion joint filler installed. Joint sealant shall be DynaTred® non-sag, traffic-grade polyurethane sealant by Pecora Corporation www.pecora.com – 1-800-523-6688 or approved equal. Submit manufacturer’s standard color options to Owner for review and selection.

6. Expansion joint filler shall be installed against the existing concrete curb and sealed with the specified joint sealant.

PROPORTIONING AND DESIGN OF MIXES

Prepare design mixes for each type and strength of concrete in accordance with ACI 318 Section 5.3 "Proportioning on the Basis of Previous Field Experience or Trial Mixtures", as indicated on drawings.

Use an independent testing facility acceptable to Engineer for preparing and reporting proposed mix design. The testing facility shall not be the same as used for field quality assurance testing unless otherwise acceptable to Engineer.

Submit written reports to Engineer for each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed and approved by Engineer.

Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job condition, weather test results, or other circumstances warrant; at no additional cost to Owner and as accepted by Engineer. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Engineer before using in work.

Water Cement Ratio: All concrete to have a water to cementitious materials ratio of not more than 0.45.

Strength: All concrete to have a twenty-eight day compressive strength (f'c) of not less than 4000 psi unless otherwise noted.

Slump Limits: The concrete shall be proportioned and produced to have a slump of 2 inches to 4 inches. Concrete of lower slump may be used provided it is properly placed and consolidated.

Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, as accepted by Engineer. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Engineer/Owner before using in Work.

Air Content: Maintain within range permitted by ACI 301. Do not allow air content of floor slabs to receive troweled finishes to exceed 3 percent.

CONCRETE MIXING

Delete references for allowing additional water to be added to batch for material with insufficient slump. Addition of water to the batch will not be permitted.

During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C 94 may be required.

When outdoor air temperature is between 85 degrees F (30 degrees C) and 90 degrees F (32 degrees C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 degrees F (32 degrees C), reduce mixing and delivery time to 60 minutes. Select strength from options in subparagraph below or revise to suit Project.

7. PART 3 – EXECUTION

3.1 FORMS

Design, erect, support, brace and maintain formwork to support vertical and lateral loads that might be applied until such loads can be supported by concrete structures.

Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation and position. The Contractor is solely responsible for the safe design and installation of formwork and supports.

Design Formwork to be readily removable without impact, shock or damage to cast-in-place concrete surfaces and adjacent materials.

Construct forms complying with ACI 347, "Recommended Practice for Concrete Formwork", to sizes, shapes, lines and dimensions shown, and to obtain accurate alignment, location, grades, level and plumb work in finished structures.

Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in work. Use selected materials to obtain required finishes.

Solidly butt joints and provide back-up at joints to prevent leakage of cement paste. Provide Class A tolerances for concrete exposed to view.

Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, to prevent swelling and for easy removal.

Provide temporary openings where interior area of formwork is inaccessible for clean out, for inspection before concrete placement, and for placement of concrete. Securely brace temporary openings and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings on forms at inconspicuous locations.

Chamfer exposed corners and edges unless otherwise specified, using wood, metal, PVC or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

Form Ties: Factory-fabricated, adjustable-length, removable or snap-off metal form ties, designed to prevent form deflection, and to prevent spalling concrete surfaces upon removal. Unless otherwise indicated, provide ties so portion remaining within concrete after removal is at least 1-1/2" inside concrete.
Unless otherwise shown, provide form ties which will not leave holes larger than 1” diameter in concrete surface.

Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses and chases from trades providing such items. Accurately place and securely support items built into forms.

Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt or other debris just before concrete is placed. Re-tighten forms and bracing after concrete placement if required to eliminate mortar leaks and maintain proper alignment.

3.2 PLACING REINFORCEMENT

Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars", for details and methods of reinforcement placement and supports, and as herein specified. Clean reinforcement of loose rust and mill scale, old concrete, earth, ice, and other materials which reduce or destroy bond with concrete.

Accurately position, support and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required.

Place reinforcement to obtain at least minimum coverages indicated on the Contract drawings for concrete protection. Arrange, space and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces. All reinforcement must be completely supported and secured against possible displacement prior to placing concrete in any portion of the scheduled placement.

Install welded wire fabric in as long lengths as practicable. Lap adjoining pieces at least one full mesh and lap splices with wire. Offset end laps in adjacent widths to prevent continuous laps in either direction.

Concrete reinforcement shall be erected from shop drawings displaying the Engineer's stamp of acceptance only. In the event a conflict exists between the accepted shop drawing and the Contract Documents the conflict shall be brought to the immediate attention of the Engineer for resolution.

3.3 JOINTS

A. Construction Joints: Locate and install construction joints, which are not shown on drawings, so as not to impair strength and appearance of the structure, as acceptable to Engineer/Owner. Provide keyways at least 1-1/2” deep in construction joints in walls, slabs, and between walls and footings; accepted bulkheads designed for this purpose may be used for slabs. Place construction joints perpendicular to the main reinforcement. Continue reinforcement across construction joints. Reference design drawings.

B. Isolation Joints in Slabs-on-Ground: Construct isolation joints in slabs-on-ground at points of contact between slabs on ground and vertical surfaces, such as column pedestals, foundation walls, grade beams and elsewhere as indicated. Joint filler and sealant materials are specified in Division 7.
C. Control Joints in Slabs-on-Ground: Construct control joints in slabs-on-ground to form panels or patterns as shown. Use inserts or saw-cut 1/4" wide x 1/5 to 1/4 of the slab depth, unless otherwise indicated.

3.4 INSTALLATION OF EMBEDDED ITEMS

A. General: Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instruction and directions provided by suppliers of items to be attached thereto.

B. Edge Forms and Screed Strips for Slabs: Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in finished slab surface. Provide and secure units sufficiently strong to support types of screed strips by use of strike-off templates or accepted compacting type screeds.

3.5 PREPARATION OF FORM SURFACES

A. Coat contact surfaces of forms with a form-coating compound before reinforcement is placed.

B. Thin form-coating compounds only with thinning agent of type, and in amount, and under conditions of form-coating compound manufacturer's directions. Do not allow excess form-coating material to accumulate in forms or to come into contact with concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.

C. Coat steel forms with a non-staining, rust-preventative material. Rust-stained steel formwork is not acceptable.

3.6 CONCRETE PLACEMENT

A. Pre-placement Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel and items to be embedded or cast-in. Notify other crafts to permit installation of their work. Cooperate with other trades in setting such work. Coat forms with sealer as specified in Section 2.01 of these specifications.

B. Notify testing/inspection agency of intent to place concrete at least 48 hours prior to placement. Perform complete pre-placement inspection of formwork, reinforcement and condition of base prior to arrival of inspector. For each placement Contractor will provide the Special Inspector with a written record of the quality control inspection performed by and signed by the Contractor.

C. Coordinate the installation of joint materials and moisture barriers with placement of forms and reinforcing steel.

D. General: Comply with ACI 304, "Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete", and as herein specified. Deposit concrete continuously or in layers of such thickness that in concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as herein specified. Deposit concrete as nearly as practicable to its final location to avoid segregation.

E. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers not deeper than 24" and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.

F. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI recommended practices.
G. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to rapidly penetrate placed layer and at least 6" into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion limit duration of vibration to time necessary to consolidate without causing segregation of mix.

H. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of a panel or section is completed.

I. Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.

J. Bring slab surfaces to correct level with straightedge and strike off. Use bull floats or darbies to smooth surface, free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.

K. Maintain reinforcing in proper position during concrete placement operations. Do not use calcium chloride, salt and other materials containing anti-freeze agents or chemical accelerators, unless otherwise accepted in mix designs.

3.7 FINISH OF SURFACES

A. Rough Form Finish (RfFm-Fn): For formed concrete surfaces not exposed-to-view in the finish work or by other construction, unless otherwise indicated. This is the concrete surface having texture imparted by form facing material used, with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4" in height rubbed down or chipped off.

B. Smooth Form Finish (SmFm-Fn): For formed concrete surfaces exposed-to-view, or that are to be covered with a coating material applied directly to concrete, such as waterproofing, dampproofing, painting or other similar system. This is as-cast concrete surface obtained with selected form facing material, arranged orderly and symmetrically with a minimum of seams. Repair and patch defective areas with fins or other projections completely removed and smoothed.

C. Smooth-Rubbed Finish (SmRbd-Fn): Provide smooth rubbed finish (SmRbd-Fn) to scheduled concrete surfaces exposed-to-view, which have received smooth form finish (SmFm-Fn) treatment, not later than one day after form removal. Moisten concrete surfaces and rub with Carborundum brick or other abrasive until a uniform color and texture is produced. Do not apply cement grout other than that created by the rubbing process.

3.8 MONOLITHIC SLAB FINISHES

A. Scratch Finish (Scr-Fn): Apply scratch finish to monolithic slab surfaces that are to receive concrete floor topping or mortar setting beds for tiles, portland cement terrazzo, and other bonded applied cementitious finish flooring material, and as otherwise indicated. After placing slabs, plane surface to a tolerance not exceeding 1/4" in 2'-0" when tested with a 2’ straightedge. Slope surfaces uniformly to drains where required. After leveling, roughen surface before final set, with stiff brushes, brooms or rakes.

B. Floated Finish (Flt-Fn): Apply floated finish to monolithic slab surfaces to receive light broom finish as hereinafter specified, and slab surfaces which are to be covered with membrane or elastic waterproofing, membrane or elastic roofing, or sand-bed terrazzo, and as otherwise indicated.

C. After screeding and consolidating concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of power driven floats, or both. Consolidate surface with power driven floats, or by hand- floating if area is small or inaccessible to power units. Check and level surface plane to a tolerance not exceeding 1/4" in 10" when testing with a 10’ straight edge. Cut down high spots
and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth granular texture.

D. Light Broom Finish: Apply light broom finish to platforms, steps, landings, and for exterior or interior pedestrian ramps. After completion of float finishing, lightly draw broom over concrete surface and apply chemical-hardener finish at platform as specified above.

3.9 CONCRETE CURING AND PROTECTION

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Begin final curing procedures immediately following initial curing and before concrete has dried. Continue final curing for at least 7 days in accordance with ACI 301 procedures. Avoid rapid drying at end of final curing period.

B. Curing Methods: Perform curing of concrete by moist curing, by

1. Keep concrete surface continuously wet by covering with water a minimum of 7 days.
2. Continuous water-Fog Spray.

C. Surfaces shall be kept continuously moist for not less than 7 - days after finishing.
3. Covering concrete surface with non-staining absorptive cover, thoroughly saturating cover with water and keeping continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4" lap over adjacent absorptive covers.
   a. Ultra Care wet curing blankets or approved equal.

D. Curing Formed Surfaces: Cure formed concrete surfaces, including undersides of beams, supported slabs and other similar surfaces by moist curing with forms in place for full curing period or until forms are removed. If forms are removed, continue curing by methods specified above as applicable.

3.10 SHORES AND SUPPORTS

A. For shoring and reshoring comply with ACI 347 "Recommended Practice of Concrete Formwork", and as herein specified.

B. Remove shores and restore in a planned sequence to avoid damage to partially cured concrete. Locate and provide adequate reshoring to safely support work without excessive stress or deflection.

C. Keep reshores in place until concrete has attained its required 28-day strength and heavy loads due to construction operations have been removed.

3.11 REMOVAL OF FORMS

A. Formwork such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50 degrees for 24 hours after placing concrete, except as noted below, provided concrete is sufficiently hard to not be damaged by form removal operations, and provided curing and protection operations are maintained.

B. Formwork for concrete to receive a rubbed finish shall be removed within 24 hours of placement to allow proper finishing.

C. Formwork supporting weight of concrete, such as beam soffits, joints, slabs and other structural elements, when removed for finishing, must immediately be replaced with shoring. Shoring shall remain in place until concrete has achieved its design strength.
3.12 RE-USE OF FORMS

A. Clean and repair surfaces of forms to be re-used in work. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable for exposed surfaces. Apply new form coating compound as specified for new formwork.

B. When forms are extended for successive concrete placement, thoroughly clean surface, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use "patched" forms for exposed concrete surfaces, except as acceptable to Architect.

3.13 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place, and cure concrete as specified to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete Work.

3.14 CONCRETE SURFACE REPAIRS

A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to Engineer.

B. Cut out honeycomb, rock pockets, voids over 1/4" in any dimension, and holes left by tie rods and bolts, down to solid concrete, but in no case to a depth of less than 1". Make edges of cuts perpendicular to the concrete surface. Before placing cement mortar or proprietary agent, brush-coat the area to be patched with neat cement grout or proprietary bonding agent.

C. For exposed-to-view surfaces, blend white Portland cement and standard portland cement so that when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixtures and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surfaces.

D. Repair of formed Surfaces: Flush out form tie holes, fill with dry pack mortar, or precast cement cone plugs secured in place with bonding agent.

E. Repair concealed formed surfaces, where possible, that contain defects that affect the reliability of concrete. If defects cannot be repaired, remove and replace concrete.

F. Repair of Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface plane to tolerances specified for each surface and finish. Correct low and high areas as herein specified. Test unformed surfaces sloped to drain for trueness of slope, in addition to smoothness, using a template having required slope.

G. Repair finished unformed surfaces that contain defects which affect durability of concrete. Surface defects, as such, include crazing, cracks in excess of 0.01" wide or which penetrate to reinforcement or completely through non-reinforced sections regardless of width, spalling, pop-outs, honeycomb, rock pockets, and other objectionable conditions.

H. Correct high areas in unformed surfaces by grinding, after concrete has cured at least 14 days.

I. Correct low areas in unformed surfaces during or immediately after completion of surface finishing operations by cutting out low areas and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete. Proprietary patching compounds may be used when acceptable to Engineer.

J. Repair defective areas, except random cracks and single holes not exceeding 1” diameter, by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts and expose reinforcing steel with at least 3/4” clearance all around. Dampen concrete surfaces in contact with patching concrete and brush with a neat cement grout, or apply concrete of same type or class as original concrete. Place, compact and finish to blend with adjacent finished concrete. Cure in the same manner as adjacent concrete.
K. Repair isolated random cracks and single holes not over 1" in diameter by dry-pack method. Groove top of cracks and cut-out holes to sound concrete and clean of dust, dirt and loose particles. Dampen cleaned concrete surfaces and brush with neat cement grout, or apply concrete bonding agent. Mix dry-pack, consisting of one part Portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for not less than 72 hours.

L. Use epoxy-based mortar, approved by the Engineer, for structural repairs. Structural repairs include, but are not limited to, areas of unsound (honeycombed or spalled) concrete with a surface area greater than 9 square inches and/or with a depth greater than 1.5 inches, areas where reinforcement is exposed or areas with cracks greater than 1/16 inch in width. All areas requiring a structural patch shall be approved by the Engineer prior to commencing patching operations.

M. Concrete Sealer: Contractor shall apply low gloss, surface sealer at after concrete has cured for 28 days. Surface sealer shall be applied to patio entry surfaces, sidewalks and stamped concrete.

N. Patio Sidewalk: Contractor shall apply a compatible sealer over the concrete 28-days after concrete placement.

O. Street Line Sidewalks: Contractor shall apply a compatible sealer over the concrete 28-days after concrete placement.

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Integrally colored Portland cement concrete paving with imprinted pattern, stain and cure/sealer.

B. Integrally colored and color-hardened Portland cement concrete paving with imprinted pattern and stain/sealer treatments.

1.2 RELATED SECTIONS

A. Section 02300 - Earthwork: Preparation of site for paving.

B. Section 02740 - Asphaltic Concrete Paving: Asphaltic paving.

C. Section 02765 - Pavement Marking: Pavement marking.

D. Section 07920 - Joint Sealants: Sealant for joints.

1.3 REFERENCES

A. ACI 301 - Specifications for Structural Concrete for Buildings.

B. ACI 302 - Guide for Concrete Floor and Slab Construction.

C. ACI 303 - Guide to Cast-in-Place Architectural Concrete Practice.

D. ACI 305R - Hot Weather Concreting.

E. ACI 306R - Cold Weather Concreting.

F. ACI 308 - Standard Practice for Curing Concrete.

G. ACI 309 - Standard Practice for Consolidation of Concrete.
H. ACI 347 - Guide to Formwork for Concrete.
I. ACI 503 - Standard Specification for Bonding Plastic Concrete to Hardened Concrete with a Multi-Component Epoxy Adhesive.
J. ASTM C33 - Standard Specifications for Concrete Aggregates.
N. ASTM C494 - Standard Specifications for Chemical Admixtures for Concrete.
O. ASTM C618 - Standard Specifications for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.
R. ASTM A615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
X. ASTM C1059 - Standard Specification for Latex Agents for Bonding Fresh To Hardened Concrete.


1.4 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer’s data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

C. Testing:
   1. Perform testing and analysis under provisions of Section 01400.
   2. Submit proposed mix design for each class of concrete for review prior to commencement of work.
   3. Testing firm will take cylinders and perform slump and air entrainment tests in accordance with ACI 301.
   4. Four concrete test cylinders will be taken for each class of concrete placed each day.
   5. One slump test will be taken for each set of test cylinders taken.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications:

B. Installer Qualifications:
   1. The Installer shall provide a qualified foreman or supervisor who has a minimum of three years experience with imprinted and textured concrete, and who has successfully completed at least five Bomanite imprinted concrete installations of high quality and similar in scope to that required.
   2. The concrete is cast in place, on the job site, by trained and experienced workmen who shall be employed by a firm that is a licensed and certified Bomanite Imprint Licensed Contractor
   3. Perform work in accordance with ACI 301, 302, 303.
   4. Obtain materials from same source throughout.
   5. Conform to applicable codes and regulations for paving work performed within the public right of way.

C. Ready-Mixed Supplier Qualifications: Supplier of ready-mixed concrete products shall comply with ASTM C 94 requirements for production facilities and equipment. Supplier shall be certified according to NCRMA’s “Certification of Ready Mixed Concrete Production Facilities Quality Control Manuals.”

D. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.
E. Mock-Up: Provide field samples of surface colors, textures, and patterns specified for architect approval prior to beginning work, 48 inches by 48 inches (1219 mm by 1219 mm) in size illustrating paving finishes.
   1. Finish areas designated by Architect.
   2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
   3. Refinish mock-up area as required to produce acceptable work.

1.6 DELIVERY, STORAGE, AND HANDLING
A. Store products in manufacturer's unopened packaging until ready for installation.
B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.7 PROJECT CONDITIONS
A. Do not place pavement when base surface or ambient temperature is less than 40 degrees F (4 degrees C) or if base surface is wet or frozen.
B. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 WARRANTY
A. All materials manufactured by The Bomanite Company are warranted to be of uniform quality within manufacturing tolerances.
B. Since control is not exercised over their use, no warranty, expressed or implied, is made as to the effects of such use. The Bomanite Company's obligation under this warranty shall be limited to refunding the purchase price of that portion of the material proven to be defective.

PART 2  PRODUCTS

2.1 MANUFACTURERS
B. Substitutions: Not permitted.
C. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 SYSTEM
A. Supporting Structure:
   1. Mix Design:
      a. Mix and deliver concrete in accordance with ASTM C94, Alternate 2. Refer to Drawings for concrete strength requirements.
      b. Use accelerating admixtures containing no calcium chloride in cold weather only when approved by testing laboratory. Use of admixtures will not relax cold weather placement requirements.
      c. Use set retarding admixtures during hot weather only when approved by testing laboratory.
      d. Add air entraining agent to concrete mix for concrete work exposed to exterior, in amounts of 4 to 7 percent of total concrete volume or as otherwise recommended by testing laboratory.
      e. Add coloring admixture where scheduled in quantities recommended by coloring admixture manufacturer to achieve selected color.
      f. Add polypropylene fiber reinforcement at point of concrete batching at rate scheduled.
      g. Maintain water cement ratio to produce a minimum of 3 to maximum of 5 inch slump.
      h. Use of calcium chloride is strictly prohibited.
   2. Subgrade:
      a. Refer to Section 02300 for subgrade preparation.
      b. Refer to drawings for scope of subgrade preparation.
   3. Reinforcement:
      a. Fiber Reinforcement: ASTM C948, collated, fibrillated, 3/4 inch (19 mm) long virgin polypropylene fibers, equal to BOMANITE Fibers by The Bomanite Company.
      b. Reinforcing Steel: ASTM A615; Grade 60; deformed billet steel bars, uncoated finish.
      c. Welded Steel Wire Fabric: Plain type, ANSI/ASTM A185; in flat sheets; uncoated finish.

B. Color:
   1. Integral Color:
         1) Type A, cement dispersing/water reducing.
         2) Type D, set retarding/water reducing.
         3) Color to match Architect's sample.
   2. Color Hardener:
      a. Bomanite Color Hardener: The concrete shall be colored with Bomanite Color Hardener. Color(s) as scheduled. Refer to Drawings.

C. Tools Selection:
   1. Imprinting Tools:
      a. Mat type imprinting tools for texturing freshly placed concrete, in pattern/texture as selected by Architect or as scheduled.
      b. Imprinting tools used in the execution of this project shall be manufactured by The Bomanite Company.
   2. Bomanite Patterns: Design(s) as scheduled. Refer to Drawings.
   3. Bomacron Textures and Patterns: Design(s) as scheduled. Refer to Drawings.
D. Release Agent Selection:
   1. Powdered Release Agent. Color(s) as scheduled. Refer to Drawings.
      a. Bomanite Release Agent.

E. Secondary Antique or Coloration:
   1. Topical Stain: Color(s) as scheduled. Refer to Drawings.
      a. Bomanite Topical Stain.
   2. Chemical Stain: Color(s) as scheduled. Refer to Drawings.
      a. Bomanite Chemical Stain.

F. Cure Agent:
   1. Membrane Color Cure: Color(s) as scheduled. Refer to Drawings.
         1) BOMANITE Color Cure by The Bomanite Company.
         2) BOMANITE Clear Cure by The Bomanite Company.
         3) BOMANITE Clear Cure Matte Finish by The Bomanite Company.
   2. Silicate Cure & Densifier:
      a. The concrete shall receive a cure treatment utilizing Bomanite Con Shield.

G. Sealing and Finish Coatings:
   1. Colorwax by The Bomanite Company.
   2. Hydrolock by The Bomanite Company.
   3. VOC II by The Bomanite Company.

2.3 RELATED MATERIALS

A. Cement: ASTM C150, type 1, Portland cement, gray color.


C. Water: Clean and not detrimental to concrete.

D. Form Material: Conform to ACI 301. If using metal, material shall be free from deformities.
   If using wood, use construction grade lumber, sound and free of warp, minimum 2 inches
   (51 mm) nominal thickness, except where short radii of curves require thinner forms.

E. Contraction Joint Devices: Galvanized sheet metal, keyed profile, with knock-outs for
   reinforcing and dowel steel.

F. Tie Wire: Annealed steel, minimum 16 gage (1.519 mm) size.

G. Dowels: ASTM A615; Grade 40, plain steel, uncoated finish.

H. Miscellaneous Reinforcing Accessories: Spacers, chairs, ties, and other devices necessary
   for properly placing, spacing, supporting, and fastening reinforcement in place.
I. Form release agent: As acceptable to concrete colorant manufacturer, non-staining, dissipative type.

J. Vapor Retarding Membrane: 10 mil (.2540 mm) reinforced polyethylene.

K. Air-Entraining Admixture: ASTM C 206. Air Entrained Concrete shall be used wherever concrete is exposed to the freezing weather. Proportions of entrained air, as determined by ASTM C233, and C260, shall be as follows:
   1. Aggregate: 3/8 inch (9.5 mm) maximum size aggregate 6-8 percent entrained air.
   2. Aggregate: 3/4 inch (19 mm) maximum size aggregate 5-7 percent entrained air.

L. Joint Fillers:
   1. Redwood Boards: Construction heart grade redwood, sound and free of checks, splits or other defects, 3/4 inch (19 mm) thick.
   2. Asphaltic Joint Filler: Asphalt impregnated fiberboard, ASTM D1751, 1/2 inch (12 mm) thick.
   3. Non-Asphaltic Joint Fillers: ASTM D1752, Type I.

M. Sealants: Two part polyurethane sealants, of grade as required to suit application, meeting ASTM C920, in manufacturer's custom colors.
   1. Urethane, SL grade, as specified in Section 07920.
   2. Urethane, SL-TB grade as specified in Section 07920.

N. Bonding-Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene rubber.

O. Epoxy-Bonding Adhesive: ASTM C 881, two component epoxy resin, capable of humid curing and bonding to damp surface, of class and grade to suit requirements if required, and as follows: Types I and II, non-load bearing, for bonding hardened of freshly mixed concrete to hardened concrete.

PART 3 EXECUTION

3.1 INSPECTION

A. Verify compacted subgrade is ready to support paving and imposed loads, free of frost, smooth and properly compacted.

B. Verify gradients and elevations of base are correct, and proper drainage has been provided so water does not stand in the area to receive paving.

C. Beginning of installation means acceptance of existing conditions.

3.2 PREPARATION

A. If vapor retarding membrane is not used, moisten base to minimize absorption of water from fresh concrete.
B. Notify Architect and testing laboratory, minimum 24 hours prior to commencement of
concreting operations.

3.3 FORMING
A. Construct and remove forms in accordance with ACI 347.
B. Place and secure forms to correct location, dimension, and profile. Adequately brace to
withstand loads applied during concrete placement.
C. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
D. Place joint fillers vertical in position, in straight lines. Secure to formwork during concrete
placement.

3.4 INSERTS AND ACCESSORIES
A. Make provisions for installation of inserts, accessories, anchors, and sleeves.
B. Place vapor retarder continuously over subgrade. Overlap joints a minimum of 12 inches
(305 mm) and seal with a joint tape of same permeance as sheeting material.

3.5 REINFORCEMENT
A. Accurately place reinforcement in middle of slabs-on-grade.
B. Discontinue every other bar of reinforcement at control and expansion joints.
C. Place reinforcement to achieve slab and curb alignment as detailed.
D. Steel shall be free of rust, mill scale, dirt and oil.
E. Provide doweled joints at interruptions of concrete with one end of dowel set in capped
sleeve to allow longitudinal movement. Provide support at both ends of dowels.
F. Support reinforcing on bar chairs. Securely saddle tie at intersections. Rigidly secure in
place to minimize displacement during concrete pour.

3.6 JOINTS
A. Intentional stoppage of concrete placing shall be at planned location of either an expansion
joint or contraction joint.
B. When stoppage occurs at an expansion joint, install joint assembly with a bulkhead of
sufficient section drilled to accommodate required dowels. Provide expansion joints at
maximum 40 feet (12 m) o.c.e.w. in parking lots, 40 feet (12 m) o.c. for curbs and maximum
20 feet (6 m) o.c.e.w. at pedestrian paving.
C. When stoppage occurs at a contraction joint, install sheet metal joint assembly of sufficient section to prevent deflection, shaped to concrete section. Drill bulkhead to permit continuation of longitudinal reinforcing steel through construction joint.

D. Stoppage at Unintentional Location:
1. Immediately upon unintended stoppage of concrete placing, place available concrete to a line and install bulkhead perpendicular to surface of pavement and at required elevation. Place and finish concrete to this bulkhead. Remove and dispose of concrete remaining on subgrade ahead of bulkhead.
2. When placing of concrete is resumed before concrete has set to extent that concrete will stand on removal of bulkhead, new concrete shall be rodded with the first; otherwise, carefully preserve joint face.
3. Provide a joint seal space at edges created by a construction joint of this type shall have a joint seal space as detailed on Drawings.

E. Provide sawed contraction joints in vehicular paving and curbs spaced as detailed on Drawings, but in no case greater than 20 feet (6 m) o.c. spacing.
1. Saw joints after completion of finishing operations as soon as concrete has hardened to extent necessary to prevent revealing of joint or damage to adjacent concrete surfaces.
2. Saw joints same day that concrete is placed except that sawing of joints in concrete placed late in day may be delayed until morning of following day.
3. In any event, saw joints within 18 hours after placing concrete.
4. Use a power-driven concrete saw made especially for sawing concrete and maintain in good operating condition.
5. Saw cut shall be to a depth equal to 1/4 of slab thickness, minimum one inch (25 mm) depth.
6. Align joints in vehicular paving with joints in adjacent pedestrian paving.
7. Cut joints through curbs at right angles to back of curb.

F. Place joint filler between paving components and building or other appurtenances.

G. Provide scored joints in sidewalks and plazas to a depth of 1/4 the slab thickness, and at intervals as indicated, but in no case spaced greater than width of walk.

3.7 PLACING CONCRETE

A. Place concrete in accordance with ACI 301, 302, and 304. Deposit concrete so that specified slab thickness will be obtained after vibrating and finishing operations. Minimize handling to prevent segregation. Consolidate concrete by suitable means to prevent formation of voids or honeycombs. Exercise care to prevent disturbance of forms and reinforcing and damage to vapor retarder. Place concrete to lines and levels shown, properly sloped to drain as designed.
3. Ensure reinforcement, inserts, embedded parts, and formed joints are not disturbed during concrete placement.
4. Place concrete continuously between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.
B. After consolidating and screeding, float concrete to gradients indicated. Use a straight edge
to level and test surface in longitudinal direction to required grade. Finish edges to provide a
smooth dense surface with 1/8 inch (3 mm) radius.

C. Apply Bomanite Color Hardener prior to application of pattern. Apply at rate recommended
by manufacturer, evenly to the surface of the fresh concrete by the dry-shake method.
Applied in two or more shakes, floated after each shake and troweled only after the final
floating.

D. While concrete is still in its plastic state, apply the tool/texture pattern to the surface of the
concrete. Properly tamp tools into the surface to achieve the required texture, with
uniformity of pattern and depth of stamping. Utilize bond breaker to keep tools from
sticking to fresh concrete.
   1. Release material shall be applied to the troweled surface prior to imprinting.

E. Place curing compound on exposed concrete surfaces immediately after finishing. Apply in
accordance with manufacturer's instructions.

F. Apply secondary stain treatment per approved mock-up or as scheduled to achieve design.

G. Apply finish sealer per approved mock-up or as specified to achieve design required.

3.8 FIELD QUALITY CONTROL

   A. Field inspection and testing will be performed under provisions of Section 01400.

   B. Maintain records of placed concrete items. Record date, location of pour, quantity, air
temperature, and test samples taken.

3.9 PROTECTION

   A. Immediately after placement, protect concrete under provisions of Section 01500 from
premature drying, excessive hot or cold temperatures, and mechanical injury.

END OF SECTION
SECTION 05500 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 – General Requirements is made a part of this section.

B. Submittals: Shop Drawings showing details of fabrication and installation.

C. Submittal shop drawings shall be based upon completed field layout and field drilling of all holes to ensure fabricated steel is accurate.

D. Professional Engineer’s stamp is required on shop drawings for railings and stairs.

PART 2 - PRODUCTS

2.1 METALS

A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

B. Steel Tubing: Cold-formed steel tubing complying with ASTM A 500.


D. Academic / Administrative Buildings: Standard Steel Handrails, Railings, Cast Flanges and Fittings (hot dipped galvanized):

1. Provide products by J.G. Braun or approved equal
2. Top Handrail: J.G. Braun steel handrail #1256 (1 ½” x ½” x 1/8”) or approved equal
3. Posts: Square steel tube (stainless or composite) 200 # force minimum: 1 ¼” square steel tube @ 4'-0” O.C. (Typ.)
4. Ballusters: ½” square steel tube every 4” O.C. (Typ.)
5. Bottom Rail: 1 ½” x ½” x 1/8” steel bottom rail.
6. Malleable Iron Floor Flange: J.G. Braun #8163 flange at all Posts (Typ.) or approved equal
7. Handrail: 1 ¼” diameter, custom fabricated.
8. Handrail termination: Bending of handrail at starting and ending termination points shall be detailed and submitted for approval. Coordinate details with Owner and University standards.
9. Fabrication: All rails shall be shop fabricated.

E. Woodframe Houses: Standard Steel Handrails, Railings and Fittings (hot dipped galvanized):

1. Top Handrail: 1 ½” x ½” x 1/8” (submit top rail profile to Owner for approval).
2. Posts - Square steel tube 200 # force: minimum 1 ¼” square steel tube @ 4'-0” O.C. (Typ.)
3. Ballusters: ½” square steel tube every 4” O.C. (Typ.)
4. Bottom Rail: 1 ½” x ½” x 1/8” steel bottom rail.
5. Floor Flange / Plate: 4” x 4” or sized as required based on field conditions. Only required for precast concrete stair installations or at any other location that cannot be cored and grouted.
6. Handrail: 1 ¼” diameter, custom fabricated.
7. Handrail termination: Bending of handrail at starting and ending termination points shall be detailed and submitted for approval. Coordinate details with Owner and University standards.

8. Fabrication: All rails shall be shop fabricated.

F. Perforated aluminum panel
   1. 0.020” thick aluminum
   2. 1/8” circles, staggered

2.2 GROUT
   A. Non-shrink, Nonmetallic Grout: ASTM C 1107; recommended by manufacturer for exterior applications.

2.3 ACCEPTABLE FABRICATOR
   A. AISC Certified Fabricator

2.4 FABRICATION
   A. Contractor shall submit recycled use content and recycling program.
   B. General: Shear and punch metals cleanly and accurately. Remove burrs and ease exposed edges. Form bent-metal corners to smallest radius possible without impairing work. Shop fabrication shall not commence until field template and hole drilling are complete and approved by the structural engineer.
   C. Field joints shall not be allowed.
   D. Welding: Weld corners and seams continuously. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals. At exposed connections, finish welds and surfaces smooth with contour of welded surface matching those adjacent.
   E. On units indicated to be cast into concrete or built into masonry, core, with a minimum 6-inch embedment. Crown/slope grout.
   F. Fabricate nosings from cast iron with an integral abrasive finish.
      1. Apply bituminous paint to concealed surfaces of units set into concrete.
   G. Fabricate nosings from extruded aluminum with abrasive filler consisting of aluminum-oxide or silicon-carbide grits, or a combination of both, in an epoxy-resin binder.
      1. Ribbed-type units.
      2. Apply clear lacquer to concealed surfaces of units set into concrete.

2.5 STEEL AND IRON FINISHES
   A. Hot-dip galvanized steel fabrications at exterior locations.
   B. Prepare uncoated ferrous metal surfaces to comply with SSPC-SP 6, "Chemical Bath Cleaning," and paint with a fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79. Apply two coats of exterior final finish paint in the shop. Touch up as required in the field. Final color shall be coordinated with the Owner.
PART 3 - EXECUTION

3.1 INSTALLATION

A. Field measure as required to obtain dimensions needed for fabrication. Fabrication dimensions shall meet or exceed all required code requirements based on installation location.

B. Provide center rail for all widths greater than 6’-0”.

C. Perform cutting, drilling, and fitting required for installing miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack.

D. Slope all posts in epoxy. Embedment shall be minimum 6 inches. Slope epoxy as required to eliminate water ponding.

E. Fit exposed connections accurately together to form hairline joints.

F. Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint.

END OF SECTION 05500
SECTION 06100 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1: General Requirements are made apart of this requirement.

B. Submittals: Model code evaluation reports for treated wood, engineered wood products, foam-plastic sheathing and building wrap, product data sheets for all products being used, samples of all products being used, shop drawings.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. All wood products shall be certified by the Forest Stewardship Council.

B. Lumber: Provide dressed lumber, S4S, 19 percent maximum moisture content for 38-mm actual thickness or less, marked with grade stamp of inspection agency.

C. Engineered Wood Products: Acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.

D. Wood Structural Panels: DOC PS 2. Provide plywood complying with DOC PS 1, where plywood is indicated.


2.2 TREATED MATERIALS

A. Preservative-Treated Materials: AWPA C2 lumber and AWPA C9 plywood, labeled by an inspection agency approved by ALSC's Board of Review. After treatment, kiln-dry lumber and plywood to 19 and 15 percent moisture content, respectively. Treat indicated items and the following:

1. Wood members in connection with roofing, flashing, vapor barriers, and waterproofing.

2. Concealed members in contact with masonry or concrete.

3. Wood framing members less than 460 mm above grade.

4. Wood floor plates installed over concrete slabs directly in contact with earth.

B. Fire-Retardant-Treated Materials: Comply with performance requirements in AWPA C20 lumber, labeled by a testing and inspecting agency acceptable to authorities having jurisdiction.

1. Use treatment for which chemical manufacturer publishes physical properties of treated wood after exposure to elevated temperatures, when tested by a qualified independent testing agency according to ASTM D 5664, for lumber. Moisture Content: no greater than 19% for lumber and no greater than 15% for plywood.

2. Use Interior Type A High Temperature (HT), unless otherwise indicated.
2.3 LUMBER

A. Dimension Lumber: The following grades are per inspection agency indicated:
   1. Non-Load-Bearing Interior Partitions: Construction, Stud, or No. 3: Eastern softwoods: NELMA; Northern species: NLGA;
   2. Framing Other Than Non-Load-Bearing Partitions: No. 2: Hem-fir: NLGA, WCLIB, or WWPA;
   3. Exposed Framing: No. 2, hand selected: Hem-fir: NLGA, WCLIB, or WWPA; Spruce-pine-fir: NELMA, NLGA, WCLIB, or WWPA;

B. Concealed Boards: 19 percent maximum moisture content: Northern species: No. 2 Common per NLGA rules;

C. Miscellaneous Lumber: Construction, Stud, or No. 3 grade of any species for nailers, blocking, and similar members.

2.4 ENGINEERED WOOD PRODUCTS

A. Engineered wood products with allowable design stresses, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be demonstrated by comprehensive testing.

B. Laminated-Veneer Lumber: Manufactured with exterior-type adhesive complying with ASTM D 2559. Allowable design values determined according to ASTM D 5456.
   1. Extreme Fiber Stress in Bending, Edgewise: 17.9 MPa for 286-mm actual-depth members.

C. Wood I-Joists: Prefabricated units complying with APA PRI-400 with timber flanges; depths and performance ratings not less than those indicated.
   1. Web Material: Either oriented strand board or plywood, Exposure 1.
   2. Structural Capacities: Establish and monitor structural capacities according to ASTM D 5055.

   1. Thickness and Grade: 28-mm rim board
   2. Trademark: Factory mark with APA trademark indicating thickness, grade, and compliance with APA standard.

2.5 PANEL PRODUCTS

A. Wall Sheathing:
1. Plywood: Exterior, Structural I.

2. Polyisocyanurate-Foam: ASTM C 1289, Type I, Class 2; with aluminum foil facings. Foam-plastic core and facings shall have flame spread of 25 or less, when tested individually.

B. Roof Sheathing:
   1. Plywood: Exterior, Structural I.
      a. Sheet size: 4’ x 8’
      b. Thickness: 5/8”

C. Combination Subfloor-Underlayment:
   1. Plywood: DOC PS 1, Exposure 1, Structural I, Underlayment single-floor panels.
   2. Oriented Stand Board: Exposure 1 single-floor panels.

D. Underlayment:
   1. Plywood for Resilient Flooring: 3/8” thick, DOC PS 1, Exposure 1, Multi-ply Underlayment with fully sanded face.
   2. Plywood for Ceramic Tile: 3/8” thick, DOC PS 1, Exterior, C-C Plugged, 15.9 mm thick, for ceramic tile set in organic adhesive.
   3. Plywood for Carpet: 3/8” thick, DOC PS 1, Exposure 1 Underlayment.

E. Telephone and Electrical Equipment Backing Panels: Plywood, Exposure 1, C-D Plugged, fire-retardant treated, not less than 19 mm thick.

2.6 MISCELLANEOUS PRODUCTS

A. Fasteners: Size and type indicated. Where rough carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M except Type 304 stainless steel with treated lumber.


   2. Bolts: Steel bolts complying with ASTM F 568, Property Class 4.6; with ASTM A 563M hex nuts and, where indicated, flat washers.

   3. Fire Retardant Materials: hot-dipped zinc-coated galvanized steel, stainless steel, silicon bronze or copper fasteners with all pressure-preservative or fire-retardant treated wood products. The coating weight weights for zinc-coated fasteners shall be in accordance with ASTM A-153. Stainless steel fasteners shall be type 304 or 306.

B. Building Wrap: Air-retarder sheeting made from polyolefins; cross-laminated films, woven strands, or spun-bonded fibers; coated or uncoated; with or without perforations; and complying with ASTM E 1677, Type I.

   1. Available Products:
a. Tyvek or approved equal.

C. Adhesives for Field Gluing Panels to Framing: APA AFG-01.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.

B. Securely attach rough carpentry to substrates, complying with the following:
   1. CABO NER-272 for power-driven fasteners.
   2. Published requirements of metal framing anchor manufacturer.

C. Fastening Methods: Comply with recommendations and "Code Plus" provisions in APA Form No. E30K and the following:
   1. Combination Subflooring-Underlayment: Glue and nail to framing.
   2. Subflooring: Glue and nail to framing.
   3. Sheathing: Nail to framing.
   4. Underlayment: Nail or screw to subflooring.

END OF SECTION 06100
SECTION 06200 - FINISH CARPENTRY

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 – General Requirements is made a part of this section.
B. Section 06158 - Over-deck-joist water diversion system.
C. Submittals: Shop drawings, product data sheets and samples of all products being used. Submittal shall include a schedule of the size, type and species of wood being used for all finish carpentry products required.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

1. Certified and stamped by the Forestry Stewardship Council.

B. Lumber:
   1. DOC PS 20 and grading rules of inspection agencies certified by American Lumber Standards Committee Board of Review.


D. Hardwood Plywood: HPVA HP-1.

2.2 EXTERIOR FINISH CARPENTRY

A. Exterior Finish Trim:
   1. AZEK® rigid poly-vinyl-chloride trimboards - www.azek.com
   2. Approved equal.

B. Decking: Wood-polymer composite decking with 100% recycled content.
   1. AZEK Porch or approved equal: Used on all second floor decking. Tongue and groove, Vertigrain pattern. Color shall be selected by owner from manufacturer’s standard color selections.
   2. TimberTech TwinFinish: Sizes in 4” and 6” widths based on installation. Color shall be selected by owner from manufacturer’s standard color selections.
   3. Trex Accents: Sizes in 4” and 6” widths based on installation. Color shall be selected by owner from manufacturer’s standard color selections.
   4. Approved equal.

2.3 INTERIOR STANDING AND RUNNING TRIM

A. Interior Softwood Lumber Trim:
   1. C Select (Choice), eastern white, Idaho white, lodgepole, ponderosa, or sugar pine or Premium Grade white woods.
   2. MDO
a. Door trim - match existing width, thickness and profile.
b. Window trim – match existing width, thickness and profile.
c. Base trim – match existing width, thickness and profile.
d. Wood floor quarter round molding – match existing width, thickness and profile.

B. Wood Molding Patterns: Made to patterns in WMMPA WM 7 from kiln-dried stock graded under WMMPA WM 4.
   1. Moldings for Painted Finish: P-Grade eastern white, Idaho white, lodgepole, ponderosa, or sugar pine.
      a. Match existing profiles.

2.4 CLOSETS, SHELVING AND CLOTHES RODS
   A. Vertical Closet Partition: 1-inch Baltic Birch finish boards (width as specified).
   B. Shelving: 3/4-inch Baltic Birch finish boards as specified for interior softwood trim or MDO if approved by Owner.
   C. Clothes Rods: Steel 1-1/2”. Provide intermediate supports as noted.

2.5 STAIRS AND RAILINGS
   A. Interior Treads: 1-1/16-inch, clear, kiln-dried, edge-glued, poplar stepping with half-round nosing unless otherwise noted.
   B. Interior Risers: 3/4-inch finish boards as specified for interior softwood trim unless otherwise noted.
   C. Interior Railings: Clear, kiln-dried, hard-maple or yellow-poplar railing stock unless otherwise noted.
   D. Exterior Treads: 1-1/4-inch TimberTech, Trex Origins™ or approved equal, unless otherwise noted.
   E. Exterior Risers: 3/4-inch AZEK® rigid poly-vinyl-chloride trim boards or approved equal, unless otherwise noted.
   F. Exterior Fascia Boards: 3/4-inch AZEK® rigid poly-vinyl-chloride trim boards or approved equal, unless otherwise noted.
   G. Exterior Railings: CertainTeed Composite Deck & Railing System
         a. Provide metal core in railing system.
      2. Balusters: Traditional Square Balusters.
         a. Reinforce composite railing system as required to ensure that lateral load requirements meet or exceed 300 pound static load. Provide structural engineer’s stamp.
         b. Provide metal handrails fastened to posts at 36” or 42” high in accordance with code requirements. Handrails shall be 1 ½” diameter custom fabricated.
Fabrication shall be based upon field measurements of newly installed railing system. Reference specification section 05500.

2.6 MISCELLANEOUS MATERIALS


B. Fasteners for Trex Decking: SplitStop™ — Star Drive Titan 3 Composite Screw, Dexxter™ Composite Screw, FastenMaster® TrapEase® II Composite Screw, or approved equal.

C. Fasteners for Monarch Decking: 21/2" conventional decking screws in stainless or ceramic are recommended for porch decking installation.

D. Fasteners for Azek Trim Boards: Stainless-steel trim head screws, 2 ¼” minimum lengths. Manufacturer’s approved fillers over screw heads.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Condition finish carpentry in installation areas for 24 hours before installing.

B. Prime and back prime lumber for painted finish exposed on the exterior.

C. Install finish carpentry level, plumb, true, and aligned with adjacent materials. Scribe and cut to fit adjoining work. Finger joints are acceptable. Refinish and seal cuts.

D. Install standing and running trim with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Stagger joints in adjacent and related trim. Cope at returns and miter at corners.

E. Select and arrange paneling for best match of adjacent units. Install with uniform tight joints.

F. Install over-deck-joist water diversion system on all second floor or greater decks, reference Section 06158.

END OF SECTION 06200
SECTION 06402 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1: General Requirements is made a part of this section.

B. Submittals: Product Data for solid-surfacing materials, Shop Drawings and Samples showing the full range of colors, textures, and patterns available for each type of finish.


D. Environmental Limitations: Do not deliver or install woodwork until building is enclosed, wet work is completed, and HVAC system is operating.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Medium-Density Fiberboard: ANSI A208.2, Grade MD, made with binder containing no urea formaldehyde.

B. Particleboard: ANSI A208.1, Grade M-2.

C. High-Pressure Decorative Laminate: NEMA LD 3.

1. Products:

   a. Student Occupancies: Kitchen Countertops and Full-Height Backsplash:
      1) Wilsonart; 4166-60 Pampas or color as specified by the Owner. Submit manufacturer’s standard color samples for review and final selection.
      2) Nevamar. Submit manufacturer’s standard color samples for review and final selection.
      3) Formica. Submit manufacturer’s standard color samples for review and final selection.

   b. Faculty/Staff Occupancies: See plan/scope of work for specific details.

D. Solid-Surfacing Material: Homogeneous solid sheets of filled plastic resin complying with ISSFA-2.

   1. Available Products:

      a. Corian
      b. Transolid
      c. Sorel
      d. Fountainhead
      e. Approved equal.
2.2 INTERIOR WOODWORK

A. Complete fabrication before shipping to Project site to maximum extent possible. Disassemble only as needed for shipping and installing. Where necessary for fitting at Project site, provide for scribing and trimming.

B. Plastic-Laminate Countertops and Full-Height Backsplash: Premium grade.
   1. Laminate Grade: HGS for flat countertops, HGP for post-formed countertops.
   2. Grain Direction: Parallel to cabinet fronts.
   3. Edge Treatment: Same as laminate cladding on horizontal surfaces.
   4. Backsplash, 4” minimum.

C. Solid-Surfacing Material Countertops: Premium grade.
   1. Fabricate tops in one piece with shop-applied backsplashes and edges.
   2. Solid-Surfacing Material Thickness: 1/2 inch.
   3. Integral sink bowls: ADA compliant bowl.
   4. Apron around perimeter of counter, width to meet ADA requirements, minimum 6”.
   5. Backsplash, 4” minimum.

D. Bathroom Cubbies
   1. High pressure laminate
   2. Transolid
   3. Phenolic

E. Laminate Shelving; unless noted otherwise on drawings:
   1. Fabricate with Medium-Density Fiberboard: ANSI A208.2, Grade MD
   2. Cut cubbies / shelving sections to required sizes.
   3. Laminate all flat surfaces and all edges prior to assembling cubbies or installing shelving.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Island counter tops shall have steel frame.

B. Exposed side of bar cabinets shall be treated with kitchen cabinet façade material. Coordinate with Owner in the field.

C. Condition woodwork to prevailing conditions before installing.

D. Install woodwork to comply with referenced quality standard for grade specified.

E. Shop fabricated countertops. No field lamination.
F. All outside corners to have a 5” radius.

G. Minimize number of joints.

H. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install to a tolerance of 1/8 inch in 96 inches for level and plumb.

I. Provide 4” backsplash.

J. Scribe and cut woodwork to fit adjoining work, seal cut surfaces, and repair damaged finish at cuts.

K. Install trim with minimum number of joints possible, using full-length pieces to greatest extent possible. Stagger joints in adjacent and related members.

L. Anchor countertops securely to base units. Seal space between backsplash and wall.

END OF SECTION 06402
SECTION 06900 – WOOD RESTORATION

PART 1 - GENERAL

1.1 - DESCRIPTION

A. Related Work Specified Elsewhere:
   1. The General Conditions state that the Contract Documents are complementary, refer to Wesleyan Universities Major Maintenance General Requirements.
   2. Temporary facilities and controls are specified in Division 1. Cooperate in ensuring adequate protection.
   3. General material, equipment, and workmanship standards are specified in Division 1.
   4. Paint is specified in Section 09900.

1.2 - DESCRIPTION OF WORK

A. Restoring will include the use of epoxy consolidants, replacing portions of trim pieces, cutting out and providing dutchman.
   1. Removal of exterior finish systems at areas of wood restoration or repair
   2. Preservation and sealing of seams and joints
   3. Removal of decayed and contaminated wood
   4. Installation of borate wood preservatives
   5. Installation of wood repair compound materials

1.3 - REFERENCE STANDARD

A. The Secretary of the Interiors “Standards for Rehabilitation” will be used as a reference standard.

1.4 - QUALITY ASSURANCE

A. Qualifications:
   1. Carpenters/woodworkers: Work must be performed by firms and individuals having not less than five years successful experience in comparable wood restoration projects and employing personnel skilled in the restoration processes and operations indicated.

B. Source of materials: Obtain the materials specified in this section from sources or vendors who are thoroughly familiar with the use and quality of their products.

C. Regulatory requirements: Manufacturer’s materials and products specified in this section must certify that they meet or exceed all applicable regulatory and safety rules and
guidelines for handling and using their materials and products.

B. Field Mock-ups

1. Wood Restoration: following the requirements of the Section, perform a mock-up of each type of wood repair system specified to demonstrate materials and methods intended to be used in the finished work.

   a) perform mock-ups in areas indicated by the Owner.
   b) obtain the Owner’s written approval of each mock-up before proceeding with the work of the Section
   c) protect the approved mock-ups until the completion of all the work
   d) Approved mock-up shall represent the minimum acceptable standard for each type and detail of the restoration work.

C. Manufacturer: Obtain primary repair materials from a single manufacturer. Provide secondary materials as recommended by the manufacturer of the primary materials.

1.5 - SUBMITTALS

A. Submittals Requirements and Procedures are specified in Division 1.

B. Submit documentation from the suppliers as to the origin of the specific wood, species and moisture content. Wood found not to be suitable because of general appearance, quality, species or improper moisture content will be rejected.

C. Submit manufacturer’s data, specifications, and instructions for use and handling for all epoxy products and total wood protection products.

D. Restoration Schedule: Submit schedule for each window or area of wood trim to be restored, outlining in detail proposed restoration work to be performed on each component. Obtain written approval from Owner prior to commencement of repair work.

E. Certification that materials comply with local VOC limitations.

F. Qualification data for firms and persons specified in the” Quality Assurance” article to demonstrate their capabilities and experience. Include a list of completed projects with project name, address, names of Owner and information specified.

   1. Five (5) business days after bid opening, submit a written qualification and experience of all lead personnel for work on the Project. List project manager or foreman’s name and experience relative to this Project.
   2. All work shall be performed by persons whose qualifications have been submitted and approved.

1.6 - ENVIRONMENTAL CONDITIONS

A. Lead: Existing paint may contain lead. Take all necessary precautions to ensure the safety of all persons engaged in removing lead-based paint and dispose of all residues generated from lead-based paint stripping in a legal manner in accordance with all local, state and federal codes.
B. Coordination: Coordinate wood repair with paint stripping so that the effected surfaces are exposed for a minimal time to avoid further damage to bare wood. Coordinate with painting so that all restored surfaces are primed as soon as possible after repair.

C. Weather: Proceed with the work of this section only when existing and foreseen weather conditions permit the work to be performed in accordance with the manufacturer’s recommendations for temperature and humidity range, minimum and maximum.

D. Substrate Conditions: Do not proceed with product applications until substrates have been inspected and are determined to be in satisfactory conditions. Substrate moisture content shall not be in excess of 18°/0 during preparation and application

1. Remove all decayed wood to a clean, sound, unaffected substrate

2. Remove all built up paints, and other debris to a clean sound substrate.

3. Remove all wood sawdust to a clean sound substrate.

E. Follow manufacturer’s instructions for precautions and effects of products and procedures on adjacent building materials, components and surrounding vegetation and soil.

1.7 - DELIVERY AND HANDLING

A. Deliver materials to site in manufacturer’s original and unopened containers and packaging, bearing labels as to type and names of products and manufacturers.

B. Handle materials in accordance with manufacturer’s recommendations and safety guidelines.

1.8 - STORAGE AND PROTECTION

A. Every effort must be made to use and reuse materials that are original to the structure. When removed from their rightful place, these materials must be stored under cover inside the building where they cannot be damaged.

B. If many pieces are to be removed, they must be marked inconspicuously in a consistent manner as to their original location.

C. New material must be kept dry during delivery, storage and handling. Do not allow them to be stored in contact with damp surfaces.

D. Use all necessary means to protect interior of building from all damage caused by precipitation and other environmental conditions during the work of the Section

E. Protect all adjacent building surfaces from damage, staining or deterioration resulting from wood restoration work.

E. Protect the restoration work in progress to prevent further deterioration exposed wood surfaces. Protect the completed work until the time of final inspection and acceptance by the Owner.
F. Safety: General Contractor shall use all means necessary to ensure that no person (whether involved in the work of the Section or not) is harmed or injured due to the work of this Section. Comply with all applicable laws codes and regulations.

G. Security: Coordinate work with the owners project manager to ensure that the building is secured at the end of each work period. Review security procedures with the Owner prior to proceeding with the work in this Section.

PART 2 - PRODUCTS

2.1 GENERAL

A. Compatibility: provide products recommended by the manufacturers to be fully compatible with indicated substrate.

2.2 EPOXY REPAIR PRODUCTS

A. Epoxy repair materials shall consist of 2 separate systems, a 2 part low viscosity epoxy primer/coupling agent and a 2 part thixotropic paste meeting the criteria of Table A and B.

2.3 MANUFACTURER OF REPAIR PRODUCTS AND EQUIPMENT

A. Non-structural framing:

1. Native, seasoned (19% moisture content max.) wood to match and replicate existing members in size and shape. If existing wood species cannot be matched, use mahogany if existing is a hardwood and clear cedar if existing is a softwood.

B. Epoxy:

1. Epoxy materials of a type recommended for use in the restoration of wood products.
   
   a. Epoxy consolidant.
   b. Epoxy adhesive.
   c. Epoxy filler or patching material for general use.

2. Approved manufacturers, subject to compliance with the requirements, provide product of the following or approved equal.

   a. Advanced Repair Technology, Cherry Valley, NY

   b. West System
      102 Patterson Ave.
      P.O. Box 665
      Bay City, MI 48707-0665
      (866)-937-8797 / 989-684-7286 / Fax 989-684-1374

      Manufacturers of West System 105 epoxy resin, 205 fast hardener, 404 High Density gap filler,
2.4 PAINT REMOVAL
A. Scrape paint using lead safe practices.

2.5 REPAIR PRODUCTS
1. Low viscosity epoxy coupling/bonding agent
2. Epoxy repair compound
3. Injectable Borate gel
4. Borate rods

PART 3 - EXECUTION
3.1 - PREPARATION
A. Take care to minimize any damage to the entire structure, inside and out. If pieces and parts must be removed on a temporary basis, remove such pieces in such a way so that they can be put back in place with minimum visual impact.

B. Historic structure precautions:
1. No smoking is allowed by all personnel around historic structures.
2. If historic materials cannot be saved, the replacement piece must be an accurate duplicate of the original and installed using the exact manner as the original. If the original manner of installation is unknown, follow recognized standards.
3. All materials that are removed should be inconspicuously marked with the date and a symbol designating repair or maintenance.
4. Concealed carpentry need to duplicate the concealed historic material but must be of similar thickness to provide equivalent support, durability, and strength. If the historic work has a unique feature in the concealed carpentry, duplicate it.

C. Protection:
1. Protect all adjacent surfaces from spills with plastic sheeting. If any epoxy happens to spill, wipe it up immediately before it sets or it will not come up.
2. All workers must be protected from the effects of dusts and chemicals during the cleaning operations. The supervisor should ensure that all workers wear adequate, approved protective clothing and are provided with protective equipment during these operations and as required at other times.
3. Provide masking or covering on adjacent surfaces and permanent equipment. Secure coverings without the use of adhesive type tape or nails. Impervious sheeting which produces condensation should not be used.

D. Surface preparation for epoxy:

1. Dry affected wood member completely. Be prepared to use several means and methods and time to dry out wood members. If this precaution is not taken, the epoxy can actually trap moisture in wood fibers and accelerate the decay process.

2. Organization and cleanliness are keys to proper epoxy repair. Have all materials at hand before the mixing process begins.

3.2 - ERECTION, INSTALLATION, APPLICATION

A. Execute non-structural and finish carpentry according to established good practice.

1. Anchor work firmly to structure.

2. Use adhesive as well as fasteners whenever possible and when appropriate.

3. Replicate existing joinery details where appropriate.


5. Use non-corrosive fasteners - see Section 01600.


7. Contractor is at liberty to introduce other means and methods to accomplish any and all tasks but must first present such other means and methods to the Architect and Owner for approval before execution. All means and methods must comply with the “Standards for Rehabilitation”.

B. Fabrication and replacement “Dutchmen” may be done in a woodshop or on-site. Remove original wood piece or component from structure and use as guide for replication. Fasten “Dutchmen” to original architectural component using non-corrosive fasteners, epoxy adhesives, dowels, or a combination of methods and or other approved methods.

3.3 Preventative Systems

A. Preservation and Sealing of seams and joints. Repair of wood” checking” due to weathering.

1. Open or failed seams and checks shall be dilated to a width of 3/16” and depth of 1/2”

2. Remove all decayed, soft and weathered wood.

3. Check the moisture content and hardness of wood at and around the repair, maximum allowable moisture content 18°/0.

4. Sand bare wood to remove all loose fibers, paint, compounds. Remove all sawdust and dirt.
5. Pre-treat bare and sanded wood thoroughly with low viscosity epoxy coupling/bonding agent

6. Allow coupling agent to penetrate wood surface for a minimum of 10 minutes and maximum of 30 minutes, or as recommended by the manufacturer. Avoid applying in direct sunlight

7. Remove any excess bonding agent with absorbing paper

8. Apply epoxy repair compound over epoxy bonding agent while still tacky.

9. Epoxy compound shall have optimal contact with wood

10. Avoid inclusion of air pockets during application

11. Fill joints fill, even and smooth in one application

12. Allow full cure time as specified by manufacturer before application of paint or varnish.

13. After curing, sand surface even and smooth. Transitions and irregularities between wood and epoxy shall not be visible after sanding


3.4 CURATIVE SYSTEMS

A. Preservation and Repair of Damaged/Decayed Wood:

1. Remove all paint and other coatings from area to be repaired.

2. Remove all decayed soft and discolored wood, to sound bright unaffected material

3. Check area of removal to determine complete elimination of decayed material.
   a) Remaining wood should be even color without red-brown and/or gray spots.
   b) No soft wood, existing brittle compound, or other previous repair materials should remain.

4. Check moisture content and hardness of the wood in and around the repair area
   a) Moisture content of wood to be 18°/0 or less

5. Sand bare wood to remove all loose fibers, paint, compounds. Remove all sawdust and dirt.

6. Drill holes in effected area to receive borate gel and rods. Follow manufacturer’s dose recommendations for dimensional lumber.

7. Inject recommended dose of borate gel. Gel should not come in contact with exposed wood surface.

8. Install borate rod in same hole as gel. Gel should not come in contact with exposed wood surface.

9. Pre-treat bare and sanded wood thoroughly with low viscosity epoxy coupling/bonding agent.
a) Allow coupling/bonding agent to penetrate wood surface for a minimum of 10 minutes and maximum of 30 minutes, or as recommended by the manufacturer. Avoid applying in direct sunlight.

b) Remove any excess bonding agent with absorbing paper.

10. Apply epoxy repair compound over the uncured epoxy coupling agent.
   a) Epoxy fill shall have optimal contact with wood
   b) Avoid inclusion of air pockets during application
   c) Fill joints fill, even and smooth in one application
   d) Allow full cure time as specified by manufacturer before preparing for finishes.

11. After curing, sand surface even and smooth. Transitions and irregularities between wood and epoxy shall not be visible after sanding.

12. If required, smooth any remaining irregularities with an additional application of epoxy repair compound. Always sand between coats.

END OF SECTION 06900
SECTION 07210 - BUILDING INSULATION

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 - General Requirements is made a part of this section.

B. Submittals: Product Data, schedule outlining location, area and type of insulation being installed

C. Surface-Burning Characteristics: ASTM E 84, and as follows:
   1. Flame-Spread Index: 25 or less where exposed; otherwise, as indicated in Part 2 "Insulation Products" Article.
   2. Smoke-Developed Index: 450 or less.

PART 2 - PRODUCTS

2.1 INSULATION PRODUCTS

A. Cellulosic-Fiber Loose-Fill Insulation: ASTM C 739; chemically treated for flame-resistance, processing, and handling characteristics.

B. Natural Cotton Fiber Insulation: ASTM E-84, UL-723; ASTM C 739; Ultra Touch natural cotton fiber building insulation with flame spread 5 (Class 1) as manufactured by Bonded Logic, Inc.

C. SafeTouch Fiberglass-Free Insulation: thermo-acoustic quilt manufactured from polyester fibers.

D. Self-Supported, Spray-Applied, Cellulosic Insulation: ASTM C 1149, wood-based cellulosic fiber, Type II, applied with dry adhesive activated by water during installation); chemically treated for flame-resistance, processing, and handling characteristics.

E. Foam-in-place Insulation: Self-expanding foam Icynene with no CFC content.


G. Board Insulation: Foam board insulation under vinyl siding, 1” thickness.

2.2 ACCESSORIES

A. Vapor Retarder: Reinforced polyethylene, 8 mils thick.

B. Eave Ventilation Troughs: Preformed, rigid fiberboard or plastic sheets designed to fit between roof framing members and to provide cross-ventilation between attic spaces and vented eaves.

C. Attic Hatch Weather Stripping: Self-adhesive foam weatherstrip tape or approved equal as required based on differing attic hatch conditions.

PART 3 - EXECUTION

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3.1 GENERAL INSTALLATION

A. Install insulation in areas and in thicknesses indicated or required to produce R-values indicated. Install foam and place insulation tightly around obstructions and fill voids.

B. Place loose-fill insulation to comply with ASTM C 1015.

C. Extend vapor retarder to extremities of areas to be protected from vapor transmission. Secure in place with adhesives or other anchorage. Locate seams at framing members, overlap, and seal with tape.

D. Acoustical fire batts: provide thicknesses to meet required acoustical performance.

3.2 ATTIC AREA INSTALLATION

A. All open joisted areas shall be blown with class 1 cellulose blown-in insulation, R-60 minimum.

B. All floorboard attic areas shall be insulated with Class 1 cellulose blown-in insulation below floorboards to prevent heat loss and air infiltration, R-38 minimum and provide batt insulation on top of floor boards for a total R-value of 60.

C. Attic area floorboards shall be removed as required to fill the cavity below with blown cellulose. Floorboards shall be re-installed with screws upon completion of the work.

D. All floorboard attic areas shall have cotton batt insulation installed on top of floorboards, for a total R-value of 60.

E. All attic hatches, kneewall doors and entrances shall be covered with R-38 cotton batting over and around the opening area. Securely fasten batting to attic hatches, kneewall doors and entrances as required.

F. Install self adhesive foam weatherstripping tape or approved weatherstripping style required to accommodate the various opening field conditions. Install weatherstripping around the perimeter of all attic hatch openings, kneewall doors and walk-up door entrances.

G. All sprinkler pipes shall be wrapped with foil-backed duct wrap insulation, in order to capture heat from conditioned space as well as insulate from unheated space.

H. All kneewalls shall be insulated with R-38 cotton batting, stapled in place.

I. Avoid disturbing existing insulation - especially loose-fill. Moving it around can create gaps where air can leak through.

J. When adding batts or blankets, install them at right angles to the first layer.

3.3 EXTERIOR WALL INSTALLATION

A. Remove two rows of siding high and low around the perimeter of each house, two rows per floor (excluding attic area walls).
B. Drill two holes per bay (one high and low) on each bay center as required for insulating.

C. Furnish and install class 1 cellulose.

D. Plug holes with insulated foam plugs.

E. Reinstall siding with #6 galvanized nails for clapboard, galvanized shake nails for asbestos and cedar shakes or galvanized 1 ½” nails for aluminum and vinyl.

F. Caulk siding as required, clean up insulation debris and remove from site. Rake ground of wood chips and insulation, sweep steps and walks.

G. All work areas shall be flagged with caution tape or barricaded as required to maintain a safe work site.

END OF SECTION 07210
Wesleyan University

SECTION 07311 - ASPHALT SHINGLES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 - General Requirements are made a part of this section.

B. Submittals: Product Data and Samples.

C. Identify each bundle of shingles with appropriate markings of UL or another testing and inspecting agency acceptable to authorities having jurisdiction.
   1. Exterior Fire-Test Exposure: ASTM E 108 or UL 790, Class A.

D. Warranties: Provide standard manufacturer's written warranty, signed by manufacturer agreeing to promptly repair or replace asphalt shingles that fail in materials or workmanship within 30 years from date of Substantial Completion, prorated, with first 5 years non-prorated. Provide transferrable warranty times one.

PART 2 - PRODUCTS

2.1 ASPHALT SHINGLES

A. Fiberglass Shingles: Architectural shingles complying with ASTM specifications E 108 Class A or UL 790 Class A, D 3462, D3161 or UL 997, D3018 Type I, ASTM D228.

B. Available Products:
   1. Owens Corning; Duration Shingles with SureNail Technology
      a. 30 Year Limited Warranty
      b. Algae Resistance Limited Warranty
      c. Wind Resistance 110 mph
   2. GAF; Timberline Cool Series
      a. Fiberglass Asphalt Construction
      b. Lifetime Ltd. Warranty
      c. 10 Yr. Smart Choice Protection
      d. 130 mph Ltd. Wind Warranty**
      e. Listed Class A fire—UL 790
      f. ASTM D3161 Type 1, Class F
      g. ASTM D3018 Type 1
      h. ASTM D3462***
      i. CSA 123.5-98
      j. Approx. 64 Pieces/Sq.\n      k. Approx. 4 Bundles/Sq.
      l. Approx. 256 Nails/
3. Flat tab shingles as may be identified in specific scope drawings based on existing conditions.

2.2 ACCESSORIES

A. Felts: ASTM D 226, Type I, asphalt-saturated organic felts.

B. Self-Adhering Sheet Underlayment (Ice and Water): ASTM D 1970, SBS-modified asphalt; mineral-granule or slip-resisting-polyethylene surfaced; with release paper backing; cold applied.

C. Ridge Vent: Rigid UV-stabilized plastic ridge vent with nonwoven geotextile filter strips with external deflector baffles; for use under ridge shingles.

D. Valley Flashing: ‘W’ Valley Metal

E. Asphalt Roofing Cement: ASTM D 4586, Type II, asbestos free.

F. Roofing Nails: Aluminum, stainless-steel, or hot-dip galvanized steel shingle nails, minimum 0.120-inch diameter, of sufficient length to penetrate 3/4 inch into solid wood decking or extend at least 1/8 inch through OSB or plywood sheathing.

G. Sheet Metal Flashing and Trim: Comply with requirements in Division 7 Section "Manufactured Roof Specialties"

1. Sheet Metal: Aluminum with baked enamel finish where exposed.

2. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual."

3. Drip Edge: Pre-formed sheet metal with at least a 3-inch roof deck flange and a 1-1/2-inch fascia flange with a 3/8-inch drip at lower edge.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Protect all exterior elevations of building from damage or staining. Contractor to provide tarps in sufficient sizes.


C. Apply ice and water self-adhering sheet underlayment at eaves and rakes from edges of roof to at least 36 inches inside exterior wall line including confined rake edges, low slope areas, ridge, hip, dormers, chimneys, skylights, roof hatches. See detail below (H.).

D. Apply ice and water self-adhering sheet underlayment at valleys extending 18 inches on each side.

E. Install W metal valleys complying with ARMA and NRCA instructions. Rolled roofing is not acceptable in valleys.
F. Install metal flashings and other sheet metal to comply with requirements in Division 7 Section "Manufactured Roof Specialties," recommendations in ARMA's "Residential Asphalt Roofing Manual," and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."

G. Install drip edge on top of ice and water in all locations.

H. Install first and remaining courses of asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.

I. Contractor shall meet or exceed all fall protection requirements as specified in the project manual. Failure to do so will result in contract termination.

H. Required Ice and Water installation locations.
SECTION 07460 – VINYL SIDING

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 - General Requirements are made a part of this section.

B. Submittals: Product Data and Samples.

1. Product Data, schedule and shop drawings outlining building elevations, type, size and details of siding to be installed. All details must match the existing siding and trim profile details with no exception. Custom trim/siding details may be required based upon the existing house details.

2. Contractor shall photograph and document all existing siding details for each house. All documentation shall be submitted to the Owner for record. Documentation shall include but not be limited to all exterior trim details, window trim details, soffit details, watertable details, porch and railing details, decorative half-round siding details, attic louver details, shutter details, siding details, etc.

3. Contractor shall submit shop drawings for each house along with product cut sheets and samples to the Owner for review and approval. All siding and trim details must match the existing. No materials shall be ordered until reviewed and approved by the Owner.

4. Submit research/evaluation reports from a model code organization acceptable to authorities having jurisdiction.

C. Warranties: Manufacturer’s standard from in which siding manufacturer agrees to repair or replace siding that fails in materials or workmanship within 20 years. Failures include, but are not limited to, cracking, deforming, fading, or otherwise deteriorating beyond normal weathering.

PART 2 - PRODUCTS

2.1 SIDING


B. Products:

1. CertainTeed CedarBoards Insulated Siding or approved equal to match existing siding and trim details. (Custom details may be required).
   a. 044” thickness.
   b. Straight even face with flat surface for look of wide board wood siding.
   c. Custom contoured foam to provide strength and rigidity for outstanding impact resistance.
   d. Energy Star rated.
Wesleyan University

e. 60% recycled content.
f. TrueTexture™ rough cedar finish molded from real cedar boards.
g. Patented STUDfinder™ designed for accurate and secure installation.
h. Sound Absorption for reduced exterior noise infiltration.
i. DuraLock® post-formed lock design.
j. 3/4" panel projection.
k. Lifetime limited warranty.
l. Color: Submit manufactures standard colors for Owner review and final color selection.
m. Exposure: Double 4” clapboard unless otherwise noted.

2. CertainTeed Monogram 46 and/or 46L Classic Style Siding or approved equal to match existing:
a. Heavy-Duty .046” thickness.
b. TrueTexture™ rough cedar finish molded from real cedar boards.
c. Patented STUDfinder™ designed for accurate and secure installation.
d. RigidForm™ 220 Technology tested to withstand wind load pressures up to 220 mph.
e. CertiLock™ self-aligning, post-formed positive lock system.
f. 3/4" panel projection.
g. Maintenance free material.
h. Class 1(A) fire rating.
i. Lifetime limited warranty.
j. Works with Monogram® 46L longer length siding.
k. Color: Submit manufactures standard colors for Owner review and final color selection.
l. Exposure: Double 4” clapboard unless otherwise noted.

3. CertainTeed Cedar Impressions Perfection Shingles or approved equal to match existing:
a. Patented PanelThermometer™ for precise installation.
b. TrueTexture™ finish.
c. Designed and tested to withstand hurricane force winds.
d. Made of injection molded, durable polymer.
e. 3/4” Panel Projection.
f. .100” Thick.
g. Molded Perimeter Lock™ to create a virtually seamless appearance.
h. Maintenance free material.
i. Lifetime limited warranty.

j. Color: Submit manufactures standard colors for Owner review and final color selection.
k. Exposure: Double 7” straight Edge unless otherwise noted.

2.2 SOFFIT
A. Vinyl Soffit: ASTM D 4477, integrally colored.
B. Products:

1. CertainTeed Soffit or approved equal (To be selected to match existing soffit details):
   a. Beaded Triple 2:
   b. Triple 3; 1/2” Invisivent
   c. Ironmax Double 5”
   d. Universal Triple 4”

2. Provide siding manufacturer's standard products as required to maintain siding system warranty (Soffit must match existing details – Review with Owner).
3. Pattern: As selected from manufacturer’s full range. (Soffit must match existing details – Review with Owner).
4. Ventilation: Provide unperforated soffit, unless otherwise indicated. (Soffit must match existing details – Review with Owner).

2.3 TRIM & DECORATIVE DETAILS
A. Products:

1. Certainteed Restoration Millwork, Azek or approved equal:
a. Provide siding manufacturers trim pieces for all gable, accent, corner, window and door details. Custom fabricate break metal as required for all existing wood trim that cannot be covered with manufacturers standard trim pieces. Coordinate all details with Owner prior to the start of work.

2.4 SPECIALTY SHAPES

A. Products:
   1. Mid-America Siding Components or approved equal:
      a. Provide specialty shapes to match existing shapes as closely as possible. Specialty shapes shall be selected from the manufacture’s six classic shapes as follows.
         1) Hexagon
         2) Mitered Corner
         3) Fish Scale
         4) Octagon
         5) Half Cove
         6) Round

      Shapes selection shall be project specific and reviewed with the Owner to match existing shapes as close as possible.

      b. Color: Submit manufactures standard colors for Owner review and final color selection.

2.5 SPECIALTY VENTS

A. Products:
   1. American Louver and Vent Company (www.alvcompany.com) or approved equal:
      a. Provide specialty gable vents to be installed at locations specified or to match existing vents removed. Review vent selection options with Owner for each specific project.

      b. Provide foundation / crawlspace vents at locations specified.

      c. Color: Submit manufactures standard colors for Owner review and final color selection.

2.6 INSULATION

A. Rigid Foam Insulation. 1” FOAMULAR insulating sheathing or ½” FOAMULAR insulating sheathing, as noted on the drawings.
3.1 INSTALLATION

A. Prior to the start of installation, contractor shall schedule a meeting with the Owner to review approved shop drawing details and all University construction standards and safety requirements.

B. Contractor shall install FOAMULAR insulating sheathing over all exterior walls to create an insulating envelope over the entire structure prior to installing siding. Thickness shall be ½” or 1” as noted on the drawings.

C. Contractor shall install vinyl siding, soffit, and all accessories in accordance with the manufacturers installation manual and ASTM D 4756 requirements.

D. Contractor shall meet or exceed all fall protection requirements as specified in the project manual. Failure to do so will result in contract termination.

END OF SECTION 07460
SECTION 07531 - EPDM MEMBRANE ROOFING

PART 1 - GENERAL

1.1 PERFORMANCE REQUIREMENTS

A. Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.

B. Design Uplift and Factored Design Uplift Pressure shall be per SPRI’s “Wind load design guide for Fully Adhered and Mechanically Fastened Roofing Systems” after multiplication by a safety factor.
   1. Material Compatibility: Provide roofing materials that are compatible with one another under the conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.
   2. FMG listing: All materials to comply with FMG 4450, 4470. Identify such with FMG markings, class 1 noncombustible construction.
   3. Fire/Windstorm Classification: 1A-90.
   4. Hail Resistance: MH
   5. Complete 30-plus year NDL manufacturer’s warranty, three inspections with full reports at 6 month intervals.
   6. System design shall comply with Connecticut State Building Code for corner, perimeter, and field of roof uplift pressure.
   7. System design shall comply with Connecticut State Building Code for insulation R value.

C. All materials provided shall be asbestos-free.

1.2 SUBMITTALS

A. Product data: For each type of product indicated.

B. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing system. Contractor and each individual working on installation of new roof must be certified.

C. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with the requirements specified in “Performance Requirements.”
   1. Submit evidence of meeting performance requirements.

D. Shop drawings: For roofing system. Include plans, sections, elevations, details, and attachments to other work.
   1. Termination bar / counter flashing reglet detail at parapet walls.
   2. Base flashing, cants and membrane terminations.
   3. Tapered insulation, including slopes.
   4. Crickets, saddles, and tapered edge strips, including slopes.
5. Fastening details for all materials.

C. Samples:
   1. 12 x 12 – inch square of EPDM ply sheet
   2. 12 x 12 – inch square roofing with seam
   3. 12 x 12 – inch square flashing sheet (all types)
   4. 12 x 12 – inch square of roof insulation
   5. 12 x 12 – inch square of walkway pad
   6. All fastener types
   7. Termination bars, counter-flashing, anchors, laps, joinery, etc

D. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of roofing system.
   1. Indicate that bulk roofing asphalt materials delivered to Project comply with requirements. Include quantity and statistical and descriptive data for each product. Submit certificate with each load before it is used.
   2. Include continuous log showing time and temperature for each load of bulk asphalt, indicating date obtained from manufacturer, where held, and how transported before final heating and application on roof.

E. Maintenance Data: For roofing system to include maintenance manuals.

F. Inspection Report: Copy of roofing system manufacturer’s inspection report of completed roofing installation.

G. Warranties:
   1. Manufacturer’s standard form, without monetary limitation for all components, signed by roofing manufacturer agreeing to repair leaks due to defects in materials or workmanship for a period of 30 years from the date of substantial completion.
   2. Roofing installer’s warranty: Full warranty with out monetary limitation for all components, 2 years from substantial completion. Warranty to include all roofing materials, metals, sealants, etc.

H. Substrate shall be signed off by manufacturer and certified installer prior to installing membrane. Substrate shall be inspected by roofing installer and manufacturer prior to the application of any new roofing products.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: A qualified firm that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer’s product and that is eligible to receive manufacturer’s warranty. Provide documentation to Owner.

B. Source Limitations: Obtain components for roofing system approved by roofing system manufacturer.

C. All products shall be protected from the weather. Wet insulation board will not be accepted.
D. Pre-Installation Conference: Prior to the start of work, all methods and procedures relating to the roofing system shall be reviewed to include, but not be limited to the following:

1. Meet with Owner, testing and inspection agency (if applicable), roofing installer, roofing system manufacturer’s representative, and installers whose work interfaces with or affects roofing including installers of roof accessories and roof mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer’s written instructions.
3. All manufacturers’ details applicable to the conditions of the respective roof shall be submitted for review. All unique details shall be reviewed during this conference.
4. Review and finalize construction schedule and verify availability of materials, Installer’s personnel, equipment and facilities needed to make progress and avoid delays.
5. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
6. Review structural loading limitations of roof deck prior to use of any machinery on the roof.
7. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

E. Substrate shall be signed off by manufacturer and certified installer prior to installing membrane.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer’s name, product brand name and type, date of manufacture, and directions for storage.

B. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location, provide storage container if necessary, wet insulation will not be permitted on roof. Comply with insulation manufacturer’s written instructions for handling, storing, and protecting during installation.

C. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.5 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer’s written instructions and warranty requirements.

B. Contractor to submit detailed mobilization plan for each roof location including but not limited to – material load/unload, material staging, equipment staging/parking, crane set up, restroom facilities, employee parking.
PART 2 - PRODUCTS

2.1 ROOFING MATERIALS

A. EPDM Sheet: ASTM D 4637, 60 mils thick; Color shall be White.

1. Products:
   a. Firestone
   b. Carlisle SynTec
   c. Johns Manville
   d. Sarnafil
   e. Tremco
   f. Garland

B. Auxiliary Materials: Recommended by roofing system manufacturer for intended use and as follows:

   1. Sheet Flashing: EPDM thickness shall be as required to comply with 60 mil EPDM system requirements to satisfy warranty conditions.
   2. Seaming Material: Synthetic-rubber-polymer primer and 3-inch- wide minimum, butyl splice tape with release film or as specified in accordance with manufacturer system requirements.
   3. Curb Flashing: Flashing required for roof curbs per manufacturers recommendation to maintain warranty.
   4. Corner Flashing: Flashing for inside and outside corners per manufacturer’s recommendation to maintain warranty.
   5. Pipe Flashing: Pre-molded pipe / conduit flashing required for round penetrations per manufacturers recommendation to maintain warranty.

C. Cover Board: ASTM C208, Type II, Grade 2 cellulostic-fiber insulation board. ASTM C 1177, Type X, glass-mat, water-resistant gypsum substrate; 1/2 inch thick.

D. Walkway Pads: 30”x 30” x .300 thick slip resistant rubber polymer.

2.2 ROOF INSULATION

A. Cant Strip: Non-flammable perlite cants with 45° face slope and minimum 5” face dimension or as recommended by the roofing manufacturer.

B. Polyisocyanurate Board Insulation: ASTM C 1289, Type II.

C. Fabricate tapered insulation with slope of 1/4 inch per 12 inches, unless otherwise indicated. Submit complete tapered insulation plan for approval.

D. Insulation Accessories: Corrosion resistance FM4470

2.3 ASPHALT MATERIALS (if applicable)

A. Asphalt for insulation and EPDM roofing: ASTM D312, Type III or IV
PART 3 - EXECUTION

3.1 EXAMINATION

A. During the bid process and prior to the start of work, contractor shall examine all existing field conditions to incorporate all work required for a complete installation for each building noted.

B. Verify that substrate is visibly dry and free from moisture. Test for moisture in accordance with manufacturer’s installation requirements.

C. Substrate shall be signed off by manufacturer and certified installer prior to installing membrane.

3.2 INSTALLATION

A. Protect all exterior elevations of building from damage or staining. Contractor to provide tarps in sufficient sizes.

B. Clean substrate of dust, debris, moisture and other substances detrimental to roofing installation according to roofing system manufacturer’s written instructions. Remove all sharp projections.

C. Prior to the start of new work, manufacturer’s representative shall review and inspect the existing deck prior to installing the insulation. Manufacturer’s representative shall also review and inspect the entire system throughout the installation process, to include but not be limited to the tapered insulation, coverboard, EPDM membrane, flashing at all penetrations, curbs, corners, counter flashing, and all other roofing system components.

D. No insulation shall be left exposed at the end of a work day, both on the roof and on the ground. All insulation to stay covered at all times.

E. Stagger joints between rows of insulation; fill all gaps in excess of ¼”. Cut all insulation within ¼” of all terminations, nailers, projections etc.

F. Adhere insulation to wood deck in accordance with manufacturer’s requirements.

G. Adhere cover board to tapered insulation in accordance with manufacturer’s requirements. Required installation layout pattern shall comply with manufacturer requirements.

H. Install EPDM sheets in accordance with roofing system manufacturer's written instructions and as follows:

   1. Adhered Roofing Membrane Installation:
      a. Install in strict accordance with manufacturers written instructions.
      b. Installation shall not commence without the presence of the manufacturer’s technical personnel.
      c. Bonding adhesive shall be applied at rate required by roofing manufacturer.
d. Apply roofing membrane with side laps shingled with slope of roof deck, plan layout accordingly.

I. Seams: Clean and prime splices areas, applying splice tape, and firmly roll side and end laps of overlapping sheets. Seal exposed edges of sheet terminations.

J. Install sheet flashings and preformed flashing accessories and adhere to substrates. Protect roofing from damage and wear during remainder of construction period.

K. Walkway pads shall be installed at all access points (ladders, hatches, doorways, etc.) to the roof. Pads shall also be installed around all mechanical equipment which will require maintenance. Installation spacing shall comply with manufacturer requirements.

L. Correct deficiencies in or remove and reinstall roofing and sheet flashing that does not comply with requirements.

END OF SECTION 07531
SECTION 07710 - MANUFACTURED ROOF SPECIALTIES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1- General Requirements are made a part of this section.

B. Submittals: Product Data, Shop Drawings, and color Samples.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Copper Sheet: ASTM B 370, Temper H00 or H01, cold rolled, mill finished; as approved by Owner.

B. Aluminum Sheet: ASTM B 209, alloy and temper as recommended by manufacturer for use intended and finish indicated.

C. Aluminum Extrusions: ASTM B 221, alloy and temper as recommended by manufacturer for use intended and finish indicated.

D. Aluminum Finish: Complying with AAMA 611 Class I, color anodic finish. Coordinate finish requirements with Owner based upon specific project requirements.

E. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304, No. 2B (bright, reflective), 3 (directional satin), 4 (fine directional satin) finish. Final finish shall be as directed by the Owner.

F. Pre Painted, Zinc-Coated Steel Sheet: ASTM A 653/A 653M, G90 coating designation, structural quality, and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.

1. Finish: High-performance organic; three-coat fluoropolymer system with finish coats containing at least 70 percent polyvinylidene fluoride resin by weight.

2.2 ROOF SPECIALTIES

A. General: Provide materials and types of fasteners, protective coatings, separators, sealants, and other miscellaneous items required by manufacturer for a complete installation.

B. Copings: Manufactured coping system consisting of formed-metal coping cap, concealed anchorage, concealed splice plates, mitered corner units, and end-cap units. Fabricate from exposed metal indicated below.

1. Products: To meet or exceed the following:

   a. Copper: 20 oz./sq. ft.

   b. Aluminum: 0.080 inch thick.

   c. Pre Painted, Zinc-Coated Steel: 0.034 inch thick.
C. Fascia: Manufactured, two-piece fascia consisting of metal fascia cover and a continuous galvanized steel cant dam with integral drip-edge cleat to engage fascia cover. Provide mitered and welded corner units. Fabricate from exposed metal indicated below.

1. Products: To meet or exceed the following:
   a. Aluminum: 0.080 inch thick.
   b. Prepainted, Zinc-Coated Steel: 0.034 inch thick.

D. Gravel Stops: Manufactured, one-piece, formed-metal gravel stop, with a horizontal flange and vertical leg fascia terminating in a drip edge, continuous hold-down cleat, and concealed splice plates. Provide mitered and welded or soldered corner units. Fabricate from exposed metal indicated below.

1. Products: To meet or exceed the following:
   a. Copper: 16 oz./sq. ft.
   b. Aluminum: 0.050 inch thick.
   c. Stainless Steel: 0.0250 inch thick.
   d. Prepainted, Zinc-Coated Steel: 0.034 inch thick.

E. Gutters, Gutter Guards and Downspouts:

1. Gutters: To meet or exceed the following - Manufactured formed gutter, with mitered and welded or soldered corner units, end caps, outlet tubes, and other accessories. Elevate back edge at least 1 inch above front gutter rim. Based on specific site conditions, furnish with gutter brackets or flat-stock gutter straps and gutter support brackets and expansion joints and expansion-joint covers fabricated from same metal as gutters. Fabricate from exposed metal indicated below. Coordinate with Owner type of securing hardware to be used at each location.
   a. Gutter Style: Rectangular, Half round or Ogee – Coordinate with Owner based on existing conditions.
   b. Aluminum: 0.032 inch thick.
   c. Prepainted, Zinc-Coated Steel: 0.034 inch thick.
   d. Copper: 20 oz./sq. ft.

2. Gutter Guards: Continuous cover that allows water to flow freely while debris is lifted away from gutters with a slight breeze. Independent testing shall be submitted showing that the system being provided is 100% effective against leaves, twigs, pine needles and small debris. Gutter guard shall also be completely weather & pest resistant, fit all standard gutters, and shall never clog and or overflow.

3. Downspouts: Rectangular closed-face with mitered elbows, manufactured from the following exposed metal. Furnish wall brackets of same material and finish as downspouts, with anchors. All downspouts tied in to storm system shall have cleanouts with covers.
a. Formed Aluminum: 0.032 inch thick.

b. Extruded Aluminum: 0.032 inch thick.

c. Prepainted, Zinc-Coated Steel: 0.034 inch thick.

d. Copper: 16 oz./sq. ft.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Coordinate with installation of roof decks and other substrates to produce a watertight assembly capable of withstanding inward and outward loading pressures, and thermal and lateral loads.

B. Coat back side of aluminum roof specialties with bituminous coating where they will contact wood, ferrous metal, or cementitious construction.

C. Expansion Provisions: Install running lengths not exceeding 12 feet, to allow controlled expansion for movement of metal components, and to prevent water leakage, deformation, or damage.

D. Furnish and install cleanouts at all downspout locations that tie into existing underground drainage pipe. Connect all downspouts to cleanouts.

E. Furnish and install downspout extensions and splash blocks at all locations where gutter downspouts are not tied into underground drainage.

END OF SECTION 07710
SECTION 07841 - THROUGH-PENETRATION FIRESTOP SYSTEMS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 – General Requirements is made a part of this section.

B. Submittals: Product Data and product certificates signed by manufacturer certifying that products furnished comply with requirements.

C. Provide firestopping systems with fire-resistance ratings indicated by reference to UL designations as listed in its "Fire Resistance Directory," or to designations of another testing agency acceptable to authorities having jurisdiction.

D. Provide through-penetration firestopping systems with F-ratings indicated, as determined according to ASTM E 814, but not less than fire-resistance rating of construction penetrated.

1. Provide through-penetration firestopping systems with T-ratings as well as F-ratings, as determined according to ASTM E 814, where indicated.

E. For exposed firestopping, provide products with flame-spread indexes of less than 25 and smoke-developed indexes of less than 450, as determined according to ASTM E 84.

PART 2 - PRODUCTS

2.1 FIRESTOP SYSTEMS

A. Any through-penetration firestop system that is classified by UL or listed by ITS for the application and with F-rating and T-rating indicated may be used.

B. UL-classified systems shall be submitted for the following:

C. Firestop Systems with No Penetrating Items

D. Firestop Systems for Metallic Pipes, Tubing, or Conduit

E. Firestop Systems Nonmetallic Pipes, Tubing, or Conduit

F. Firestop Systems Insulated Pipes

G. Firestop Systems for Electrical Cables

H. Firestop Systems for Air Ducts
2.2 MATERIALS
A. Fire Barrier Devices: Factory-assembled devices formed from galvanized steel and lined with intumescent material sized to fit specific opening in the substrate.

2.3 MANUFACTURED UNITS
A. Where scheduled, provide the following UL classified fire barrier device. Device consists of a metal enclosure with intumescent materials, factory-painted red, foam inserts, and mounting brackets, in the size(s) appropriate for the installation.
   B. Metal Enclosure: 0.0276 inch zintec-coated steel.
      1. Enclosure Finish: Manufacturer's standard powder coating of lead-free epoxy-polyester.
   C. Foam Inserts: Flexible polyurethane, Class O Non-Flammable foam treated with water-based latex, properly sized by device manufacturer base on size of device.
   D. Mounting Brackets: 0.0472 inch galvanized steel.

PART 3 - EXECUTION
3.1 INSTALLATION
A. Install firestopping systems to comply with requirements listed in testing agency's directory for indicated fire-resistance rating and per manufacturer's written instructions.
B. In existing conditions, open device, fit around the penetrants and then slide into the opening.
C. In new construction, prepare opening by cutting correct size hole. Remove foam visual/smoke seals and safely store until time for their installation. Slide device into opening
D. Dependent upon installation, secure device with manufacturer's standard mounting brackets, stud brackets, or manufacturer's recommended fire barrier sealant. Install penetrants as specified and secure per local codes. Install foam visual/smoke seals flush with device ends.

3.2 EXAMINATION
A. Examine substrates and conditions for compliance and ratings. Requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of Work.

3.3 THROUGH-PENETRATION FIRE BARRIER SYSTEM INSTALLATION
A. General: Install fire barrier systems and fire barrier products to comply with Part 1 "Performance Requirements" Article and with fire barrier products manufacturer's written installation instructions and published drawings for products and applications indicated.

3.4 IDENTIFICATION OF OPENINGS
A. Identify fire barrier penetrations with preprinted paper labels. Attach labels permanently to surfaces attached to or within 6 inches of edge of fire barrier products so that labels will be visible to anyone seeking to remove fire barrier product(s). Use appropriate fastening methods for labels. For paper plastic or metal labels that are self made, use adhesive that will result in partial destruction of label if removal is attempted. Include the following information on labels:
1. The words "Warning - Through-Penetration Firestop System - Do Not Disturb. Notify Building Management of Any Damage."
2. Contractor's name, address, and phone number.
3. Through-penetration fire barrier system designation of applicable testing and inspecting agency.
4. Date of installation.
5. Through-penetration fire barrier system manufacturer's name.
6. Installer's name.

3.5 FIELD QUALITY CONTROL
A. Inspecting Agency: Engage a qualified local building inspector or independent inspecting agency to inspect through-penetration fire barrier installations. Independent inspecting agency shall comply with ASTM E2174 requirements including those related to qualifications, conducting inspections, and preparing test reports.
B. Repair, update or replace fire barrier systems that are deficient so they comply with requirements.
C. Proceed with enclosing fire barrier systems with other construction only after inspection reports are issued and fire barrier system installations comply with requirements.

3.6 CLEANING
A. After installation, remove left over material and debris from work area.

3.7 PROTECTING
A. Protect fire barrier materials and maintain conditions during and after installation that ensure that through-penetration fire barrier systems are without damage or deterioration at time of substantial completion. Cut out and remove damaged or deteriorated through-penetration fire barrier systems immediately and install new materials to produce systems complying with specified requirements.

END OF SECTION 07841
SECTION 07920 - JOINT SEALANTS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 - General Requirements is made a part of this section.

B. Submittals: Product Data and color Samples.

C. Environmental Limitations: Do not proceed with installation of joint sealants when ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 40 deg F.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS

A. Compatibility: Provide joint sealants, joint fillers, and other related materials that are compatible with one another and with joint substrates under service and application conditions.

B. Sealant for General Exterior Use Where Another Type Is Not Specified:

1. Single-component, neutral-curing silicone sealant, ASTM C 920, Type S; Grade NS; Class 25; Uses T, NT, M, G, A, and O.

C. Sealants for masonry to masonry and masonry to metal – Dow Corning 790 (or approved equal). Color to be selected by Owner from standard color chart.

1. Contractor shall install the appropriate backer rod per the window manufacture’s requirements between the aluminum window frames and brick surround.

D. Sealants for metal to metal metal – Dow Corning 795 (or approved equal). Color to be selected by Owner from standard color chart.

1. Contractor shall install the appropriate backer rod per the window manufacture’s requirements between the aluminum window frames and brick surround.

E. Sealant for Exterior Limestone (CFA Buildings):

1. Product:

   a. Dow Corning 795 – Silicone Building Sealant

2. Color: Limestone

F. Sealant for Exterior Traffic-Bearing Joints:

1. DynaTred non-sag, traffic grade polyurethane sealant by Pecora Corporation.

G. Sealant for Use in Interior Joints in Ceramic Tile and Other Hard Surfaces in Kitchens and Toilet Rooms and Around Plumbing Fixtures:

1. Product:
a. Lexel all purpose super elastomeric, mildew resistant, scrubbable, paintable caulk or approved equal.

2. Color: Submit standard colors for approval

3. Single-component, mildew-resistant silicone sealant, ASTM C 920, Type S; Grade NS; Class 25; Uses NT, G, A, and O; formulated with fungicide.

H. Sealant for Interior Use at Perimeters of Door and Window Frames:

1. Product:
   a. Lexel all purpose super elastomeric, mildew resistant, scrubbable, paintable caulk or approved equal.

2. Color: Submit standard colors for approval

3. Latex sealant, single-component, non-sag, mildew-resistant, paintable, acrylic-emulsion sealant complying with ASTM C 834.

I. Acoustical Sealant for Exposed Interior and Concealed Joints:

1. Product:

J. Sealant for furnace/boiler vents to chimney:

1. Remove dried, cracked, chipped mortar sealant at furnace/boiler vents and replace with new ceramic flue sealant specifically designed for this application. Submit material to be used to Owner for review and approval.

2.2 JOINT-SEALANT BACKING

A. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer.

B. Cylindrical Sealant Backings: ASTM C 1330, of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint.

PART 3 - EXECUTION

3.1 GENERAL
A. Inspect field conditions prior to application of joint sealants. Prepare joints to receive sealants and coordinate installation with other work.

3.2 INSTALLATION

A. Comply with ASTM C 1193.

B. Comply with ASTM C 919 for use of joint sealants in acoustical applications.

C. Install sealants in continuous uniform bead. Mask adjacent surfaces where necessary for neat installation.

D. Prime all joints as required prior to installing sealant in accordance with manufacturer’s written instructions.

E. Installations may be rejected solely on the basis of visual appearance by the Owner’s representative.

END OF SECTION 07920
SECTION 08110 – STANDARD STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED WORK SPECIFIED ELSEWHERE:

A. Temporary facilities and controls are specified in Section 01500. Cooperate in ensuring adequate protection.
B. General material, equipment and workmanship standards are specified in Section 01600.
C. Wood doors are specified in Section 08550.
D. Hardware is specified in Section 08710.
E. Glazing is specified in 08800.

1.2 SUBMITTALS

A. Submittal requirements and procedures are specified in Section 01301.
B. Submit shop drawings for work specified in this section. Indicate types of anchorage. Indicate method used to seal tops of exterior doors.
C. Submit product data showing conformity with requirements stated below. Indicate metals, corrosion protection, types of primers used and other data.

1.3 CODE COMPLIANCE

A. Exterior doors shall comply with the requirements of the State of Connecticut Basic Building Code. Doors shall be certified to meet required air infiltration limits.

PART 2 - MATERIALS

2.1 MATERIALS

A. Hot-Rolled Steel Sheets: ASTM A 1011.
B. Cold-Rolled Steel Sheets: ASTM A 1008 or ASTM A 620, annealed, and free from scale, pitting rust and other defects.
C. Galvanized Steel Sheets: ASTM A 653/A 653M, A60 or G60 coating. All parts of exterior doors and frames shall be galvanized, mill-phosphatized stock bearing. Used galvanized material for interior doors and frames where scheduled for same.

1. If interior parts of galvanized doors and frames are not galvanized, they shall be primed with rust-resistant primer, as specified below. If doors and frames scheduled to be galvanized contain parts which are not corrosion-protected by galvanizing or primer, they will be rejected by the Owner.

2.2 STEEL DOORS AND FRAMES

A. Products:

B. Steel Doors: Complying with ANSI 250.8 for level and model and ANSI A250.4 for physical-endurance level indicated, 1-3/4-inch-thick, unless otherwise indicated.

   a. Exterior doors shall have a “POLYSTYRENE” core providing a “U” factor of 0.26 and an “R” value of 3.75 or better.
   b. Provide steel doors that closely match the style and raised panel layout of the doors being replaced. Provide flush doors at locations where flush doors are being replaced, unless otherwise noted.

C. Hatchway Replacement Doors:
   1. Products:
      a. Gordon Corporation Replacement Door or approved equal. (www.gordoncelladoor.com)

C. Hatchway Replacement Doors:
   1. Products:
      a. Gordon Corporation Replacement Door or approved equal. (www.gordoncelladoor.com)
         1) Model RD or Model CD depending upon existing conditions.
         2) Foundation Plates: As required based upon existing conditions.
         3) Extensions: As required based upon existing conditions.

D. Frames: ANSI A250.8; conceal fastenings, unless otherwise indicated.

1. Exterior frames shall be fabricated of 14 gauge, zinc coated carbon steel sheets of commercial quality, mill phosphate hot dipped galvanized conforming to ASTM A526 with designation ZF275 (A60).

2. All frame corners shall be mitered or coped and continuously welded. All welds shall be ground smooth and finished with a coat of zinc rich primer.

E. Gauges:

1. Interior frames: 16 gauge.
2. Exterior frames: 14 gauge.
3. Interior doors: 18 gauge.
5. Reinforcement for surface applied hardware: 12 gauge plate or 14 gauge formed section.
6. Lock, strike and flush blot reinforcement: 12 gauge plate or 14 gauge formed section.
9. Louvers: 18 gauge frame and 20 gauge blades.

F. Glazing: For UL rated doors: UL approved ¼” clear polished wire glass with square or diamond pattern wire reinforcement. Provide UL labels on both doors and frames where indicated. Unless otherwise scheduled, “B labels” shall mean “1-1/2 hour B label”. Cores shall be as required for UL label. Doors and frames shall conform to the requirements of ASTM E 152-81A, including time-temperature curve performance.

G. Glazing Stops: Non-removable stops on outside of exterior doors and on secure side of interior doors; screw-applied, removable, glazing stops on inside. If screw type, grease screws to prevent rusting and mortar embedment.
H. Door Silencers: Three on strike jambs of single-door frames and two on heads of double-door frames.

I. Plaster Guards: Provide where mortar might obstruct hardware operation.

J. Supports and Anchors: Not less than 0.042-inch- thick galvanized steel sheet. Provide frame anchors of the proper type for adjoining construction.

K. Prepare doors and frames to receive mortised and concealed hardware according to ANSI A250.6 and ANSI A115 Series standards.

L. Reinforce doors and frames to receive surface-applied hardware.

M. Prime Finish: For non-galvanized steel, manufacturer's standard, factory-applied coat of rust-inhibiting primer complying with ANSI A250.10 for acceptance criteria. For galvanized steel, primer shall be zinc dust-zinc oxide primer or other primer certified by manufacturer for excellent adhesion to galvanized steel.

2.3 FINISHING

A. Thoroughly clean all contaminants from surface by washing with clean “Green label” solvent and wiping with clean cloths.

B. Treat with phosphate pretreatment.

C. Prime with specified primer. Cover all surfaces, including edges. Apply primer so that it penetrates seams.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Anchor work securely to adjacent construction.

B. Set frames accurately, plumb, and square. Brace until attached to permanent adjacent construction.

C. Fill frames with solid mortar where they are installed in masonry walls or partitions.

D. Place steel frames to comply with SDI 105.
   1. Fire-Rated Frames: Install according to NFPA 80.

E. Install doors to comply with ANSI A250.8. Provide galvanized shims as necessary to comply with SDI 122 and ANSI/DHI A115.1G.
   1. Fire-Rated Doors: Install with clearances specified in NFPA 80.
   2. Smoke-Control Doors: Comply with NFPA 105.

F. After installation, remove protective wrappings from doors and frames and touch up prime coat with compatible air-drying primer. Apply finish coats in accordance with Division 9 specifications.

END OF SECTION 08110
SECTION 08212 - STILE AND RAIL WOOD DOORS

PART 1 - GENERAL

1.1 PROJECT CONDITIONS
A. This Section specifies products for renovation projects. The intent is to provide doors that closely match the style of existing doors. Some products specified in Part 2 may not be applicable to all installations. Matching of custom doors is not part of the work in this Section.

1.2 SECTION REQUIREMENTS
A. Division 1 – General Requirements shall be made a part of this section.  
B. Hardware is specified in Section 08710. 
C. Finish painting is specified in Section 09910. 
D. Submittals: Product Data, Shop Drawings, door schedule including details of construction. 
F. Fire-Rated Wood Doors: Labeled by a testing and inspecting agency acceptable to authorities having jurisdiction based on testing per NFPA 252. Test at atmospheric pressure NFPA 252. After 5 minutes, the neutral pressure level shall be 40 inches or less above the sill.

PART 2 - PRODUCTS

2.1 STILE AND RAIL DOORS
A. Interior Doors: WDMA Premium or Select grade made from Idaho white, lodgepole, ponderosa, or sugar pine with raised or flat panels. All interior raised panel doors shall match the existing door panel layout and shall be submitted to the Owner for review and approval.  
1. Quality grade: Custom.  
2. Doors shall have solid stiles and rails.  
3. Face veneer: Grad B hardwood for painted finish.  
4. Coordinate peep hole requirements with Owner. 
B. Interior Fire-Rated Doors: WDMA Premium or Select grade made from Idaho white, lodgepole, ponderosa, or sugar pine with 1-3/4-inch- thick stiles and rails and 1-3/8-inch- thick raised panels. All interior raised panel doors shall match the existing door panel layout and shall be submitted to the Owner for review and approval.  
1. Core type: AWI Type FD ¾, with ¾ hour label. Doors and frames shall conform to the requirements of ASTM E 152-81A, including time-temperature curve performance. Fire rated doors shall have hinge inserts allowing full strength for full mortise hinges.
2.2 FABRICATION AND FINISHING

A. Factory fit doors to suit frame-opening sizes and to comply with referenced quality standard.
   1. Provide 1/8-inch clearance at jambs, heads, and meeting stiles and 1/2 inch at bottom. At thresholds, provide 3/8-inch clearance.
   2. Comply with NFPA 80 for fire-resistance-rated doors.

B. Factory machine doors for hardware that is not surface applied. Prep for thru-bolting on fire rated doors if recommended by door manufacturer.

C. Glaze doors and sidelights at factory.

D. Factory prime doors, including all surfaces, according to AWI.

E. Ship doors individually wrapped in protective packages.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install fire-rated wood door frames level, plumb, true, and aligned with adjacent materials. Countersink fasteners, fill surface flush, and sand smooth.

B. Install fire-rated doors to comply with NFPA 80.

C. Align and fit doors in frames with uniform clearances and bevels indicated below. Machine doors for hardware. Seal cut surfaces after fitting and machining.
   1. Provide 1/8-inch clearance at jambs, heads, and meeting stiles and 1/8 inch at bottom. At thresholds, provide 1/4-inch clearance from bottom of door.

D. Align factory-fitted doors in frames for uniform clearances.

E. Repair, refinish, or replace factory-finished doors damaged during installation as directed by Owner’s representative.

F. After installation, remove protective wrappings from doors and frames and touch up prime coat with compatible air-drying primer. Apply finish coats in accordance with Division 9 specifications.

END OF SECTION 08212
SECTION 08311 - ACCESS DOORS AND FRAMES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 - General Requirements shall be made a part of this section.

B. Submittals: Product Data.

C. Fire-Rated Access Doors and Frames: Labeled by a testing and inspecting agency acceptable to authorities having jurisdiction based on testing per the following:

1. Vertical Access Doors: NFPA 252 or UL 10B.


PART 2 - PRODUCTS

2.1 MATERIALS

A. Hot-Rolled Steel Sheets: ASTM A 1011/A 1011M.

B. Cold-Rolled Steel Sheets: ASTM A 1008/A 1008M or ASTM A 620/A 620M.

C. Stainless-Steel Sheets: ASTM A 666, Type 304.

2.2 ACCESS DOORS AND PANELS

A. General: Provide Stainless steel access doors in areas with showers.

B. Flush, Insulated, Fire-Rated Access Doors: Prime-painted or Stainless-steel, self-latching units with automatic closer, with trimless frame.

C. Flush Access Doors with Exposed Trim: Prime-painted or Stainless-steel units.

D. Trimless, Flush Access Doors for Gypsum Board: Prime-painted steel or Stainless-steel units.

E. Locks: Flush to finished surface, key operated.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install access doors and panels accurately in position. Adjust hardware and door and panels for proper operation.

B. Install fire-rated access doors and panels according to NFPA 80.

C. After installation, remove protective wrappings from doors and frames and touch up prime coat with compatible air-drying primer. Apply finish coats in accordance with Division 9 specifications.

END OF SECTION 08311
WESLEYAN UNIVERSITY
GUIDE SPECIFICATION - SECTION 08511  ALUMINUM WINDOWS
WAUSAU 2250i INvent™ SERIES  Fixed, Projected, and Casement

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. All exterior Architectural Performance Class (AW) windows furnished and installed as shown on drawings, specified in this section and designated in AAMA/WDMA/CSA 101/I.S.2/A440.
   2. All labor, materials, tools, equipment and services needed to furnish and install AW Class windows.
   3. Components furnished with installed windows.
   4. Installation accessories furnished and installed.

1.02 REFERENCE

A. Refer to AAMA/WDMA/CSA 101/I.S.2/A440 for a complete list of references and industry standards.

1.03 SYSTEM DESCRIPTION AND PERFORMANCE REQUIREMENTS

A. Design Wind Loads
   a. The design wind pressure for the project will be per local building codes
   2. All structural components, including meeting rails, mullions and anchors shall be designed accordingly, complying with deflection and stress requirements of Paragraph 1.03.B.

B. Air, Water and Structural Performance Requirements
   1. When tested in accordance with cited test procedures, windows shall meet or exceed the following performance criteria, as well as those indicated in AAMA/WDMA/CSA 101/I.S.2/A440 for Architectural AW Performance Class windows, Performance Grade 100 (AW100) unless otherwise noted herein.
      a. Test units shall not be smaller in either width or height than the “Gateway Test Size” specified in AAMA/WDMA/CSA 101/I.S.2/A440 for AW Performance Class.
      b. “Downsize” testing to meet Optional Performance Class requirements specified herein shall not be permitted.
      c. Test units shall employ manufacturer’s standard sealing, lock spacing and anchorage.
   2. Air Test Performance Requirements
      a. Air infiltration maximum 0.1 cfm per square foot at 6.24 psf pressure differential when tested in accord with ASTM E283.
   3. Water Test Performance Requirements
      a. No uncontrolled water leakage at 15.00 psf static pressure differential, with water application rate of 5 gallons/hr/sq ft when tested in accord with both ASTM E331 and ASTM E547.
      b. Complete successful Category 10 pulsed pressure differential testing at 14 psf to 42 psf, with water application rate of 5 gallons/hr/sq ft when tested in accord with ASTM 2268 and AAMA 520.
   4. Structural Test Performance Requirements
      a. Uniform Load Deflection Test
         i. No deflection of any unsupported span L of test unit (framing rails, muntins, mullions, etc.) in excess of L/175 at both a positive and negative load of 100 psf (design test pressure) when tested in accord with ASTM E330.
      b. Uniform Load Structural Test
i. Unit to be tested at 1.5 x design test pressure, both positive and negative, acting normal to plane of wall in accord with ASTM E330.

ii. No glass breakage; permanent damage to fasteners, hardware parts, or anchors; damage to make windows inoperable; or permanent deformation of any main frame or ventilator member in excess of 0.2% of its clear span.

C. Life Cycle Testing
1. When tested in accordance with AAMA 910, there is to be no damage to fasteners, hardware parts, support arms, activating mechanisms or any other damage that would cause the window to be inoperable at the conclusion of testing.
   a. Air infiltration and water resistance tests shall meet the primary performance requirements specified after completion of cycling.

D. Condensation Resistance and Thermal Transmittance Performance
1. Perform thermal tests in accordance with NFRC 102 and AAMA 1503, or provide finite element computer thermal modeling and calculations per NFRC 100 or AAMA 507, using DOE/LBL THERM 5.2 and WINDOW 5.2 software.
   a. Thermal Transmittance (U-Factor) for the overall window area shall be less than or equal to 0.45 BTU/hr-ft²-°F.
   b. Condensation Resistance Factor (CRF) requirements: CRF minimum 58 (Frame) and CRF minimum 65 (Glass).
   c. Solar Heat Gain Coefficient (SHGC) for the overall window area shall not exceed 0.47

<table>
<thead>
<tr>
<th>Thermal Performance Summary</th>
<th>NFRC U-Factor BTU/hr-ft²-°F</th>
<th>SHGC Range</th>
<th>AAMA U-Factor BTU/hr-ft²-°F</th>
<th>CRF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tested</td>
<td>Modeled Range</td>
<td>Range</td>
<td>Tested</td>
<td></td>
</tr>
<tr>
<td>2250i Awning or Project-Out Casement</td>
<td>0.45</td>
<td>0.48 to 0.64</td>
<td>0.26 to 0.47</td>
<td>0.45</td>
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</table>

Unless noted, tested performance data listed is based on Viracon 1” overall VE1-2M double insulating glass (Low-E on surface #2), ½” argon with stainless steel spacer. Modeled NFRC performance data range listed is based on various clear substrate glass configurations, with validation test per NFRC requirements. Contact WAUSAU for project-specific thermal performance modeling. Unless specifically noted, results do not apply to dual- or triple-glazed products with between-glass blinds. Contact WAUSAU for test data on these products.

E. Acoustic Performance Requirements
1. Perform acoustical tests in accordance with ASTM E90 and ASTM E1425 on the glass type(s) specified in 08 80 00, rigidly supported in aluminum framing of the same product family.
2. “Glass-only” test results shall not be acceptable.
3. Sound Transmission Class (STC) shall not be less than STC31.
4. Outdoor-Indoor Transmission Class (OITC) shall not be less than OITC 25.

F. Sustainable Design Requirements
1. The products provided under this section may affect LEED® certification for the project. Provide documentation in accordance with USGBC’s “LEED® for New Construction and Major Renovation Version 2.2”, verifying that the components, processes and/or assemblies specified herein conform to the following requirements
   a. EA Credit 1: Optimize Energy Performance
i. Area-weighted overall U-Factor not to exceed that specified in 1.03.
ii. Area-weighted center-of-glass or overall SHGC less than or equal to that specified in 1.03.
b. EA Credit 2: On-Site Renewable Energy
   i. Design framing to accept façade-integrated PV modules and associated NEC-compliant wiring where shown on drawings.
   ii. Obtain UL 1703 listing for laminate support.
c. MR Credit 4.1 and 4.2: Recycled Content
   i. Provide window assemblies (aluminum framing, glass and other components) containing no less than ___% (Specify up to 15%) combined recycled content by assembly weight.
   ii. Combined content to be calculated as post-consumer plus one-half pre-consumer recycled content by weight.
   iii. Report pre- and post-consumer recycled content separately.
   iv. All recycled secondary aluminum billet must meet Aluminum Association content requirements for the alloy used.
d. EQ Credit 2: Increased Ventilation
   i. Provide operable windows with occupant-enabled hardware.
   ii. Window sizes and configurations as shown on drawings.
e. EQ Credit 4.1: Low-Emitting Materials – Adhesives and Sealants
   i. All interior primers, structural glazing adhesives and metal-to-metal sealants used on site must meet applicable South Coast Air Quality Management District (SCAQMD) Rule #1168 VOC limits.
f. EQ Credit 6.2: Controllability of Systems
   i. Provide operable windows with occupant-enabled hardware.
   ii. Window sizes and configurations as shown on drawings.
g. EQ Credit 7.2: Thermal Comfort- Design
   i. Provide thermal barrier framing and insulating glass edge construction as specified herein and in 08 80 00 Glazing.
h. EQ Credit 8.1 and 8.2: Daylight and Views
   i. Area-weighted overall VT not less than 0 per NFRC 200.
   ii. Window sizes and configurations as shown on drawings.

1.04 SUBMITTALS

A. General Requirements
   1. Provide all submittals in a timely manner to meet the required construction completion schedule.

B. Shop Drawings
   1. Shop drawings must be prepared wholly by the window manufacturer, or a qualified engineering services firm under the direction of the manufacturer. Shop drawings for pre-engineered configurations may be prepared by authorized installers.
   2. Provide design details along with bid proposals to define system aesthetic and functional characteristics.
   3. Provide up to three photocopied sets of shop drawings, including half size details of all necessary conditions.

C. Samples
   1. Components: Submit samples of anchors, fasteners, hardware, assembled corner sections and other materials and components as requested by Architect.
   2. Finish: Submit color samples for Architect's approval as requested.

D. Test Reports and Calculations
   1. Submit certified independent laboratory test reports verifying compliance with all test requirements of 1.03.
2. Submit structural calculations prepared by a Registered Professional Engineer indicating adequacy of all materials furnished under this section, to meet the uniform and structural load requirements as specified in 1.03.

1.05 QUALITY ASSURANCE

A. Qualifications: Upon request, the window manufacturer shall provide written confirmation that the installer is authorized to install window products to be used on this project.

B. In-Plant Testing: Conduct detailed quality audits and ASTM E331 static water infiltration testing on a minimum of 4% of factory-glazed windows prior to shipping, subject to reasonable unit size restrictions.
   1. Each tested unit shall be identified with a removable sticker on the inside glass face.
   2. Provide detailed documentation of in-plant testing upon request.

1.06 DELIVERY, STORAGE AND HANDLING

A. Packing, Shipping, Handling and Unloading
   1. Materials will be packed, loaded, shipped, unloaded, stored and protected in accordance with AAMA CW-10.

1.07 WARRANTY

A. Aluminum Window Warranty
   1. Products: Submit a written warranty, executed by the window manufacturer, for a period of 10 years from the date of manufacture, against defective materials or workmanship, including substantial non-compliance with applicable specification requirements and industry standards, which result in premature failure of the windows, finish, factory-glazed glass, or parts, outside of normal wear.
   2. In the event that windows or components are found defective, manufacturer will repair or provide replacements without charge at manufacturer’s option.
   3. Warranty for all components must be direct from the manufacturer (non pass-through) and non pro-rated for the entire term. Warranty must be assignable to the non-residential owner, and transferable to subsequent owners through its length.

B. Installation: Submit a written warranty, executed by the window installer, for a period of 5 years from the date of substantial completion, against defective materials or workmanship, including substantial non-compliance with applicable specification requirements, which result in premature failure.
   1. In the event that installation of windows or components is found to be defective, installer will repair or provide replacements without charge at the installer’s option.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturer
   1. Drawings and specification are based on:
      a. Wausau Window and Wall Systems – 2250i INvent™ Series Fixed, Projected and/or Casement Windows.
      b. Base bid will be Wausau Window and Wall Systems or approved equal.
   2. Substitutions
      a. Other manufacturers’ products that meet or exceed specified design requirements may be considered. Submit the following information with request for substitutions at least ten (10) working days prior to bid date.
         i. Test reports specified in 1.03.
         ii. Full proposal details and samples specified in 1.04.
iii. Copy of manufacturer's warranty specified in 1.07.
iv. Proof of at least 10 years experience in the design and fabrication of AW Performance Class windows.

v. Other information as requested for evaluation

3. Substitute products not pre-approved by the Architect via addenda will not be considered.
4. Clear preference will be given to products produced in LEED®-certified manufacturing facilities.

2.02 MATERIALS

A. Aluminum Framing Members
   1. Extruded aluminum billet, 6063-T5 or T6 alloy for primary components; 6063-T5 or T6, 6005-T5, 6105-T5 or 6061-T6 for structural components; all meeting the requirements of ASTM B221.
   2. Aluminum sheet alloy 5005-H32 (for anodic finishing), or alloy 3003-H14 (for painted or unfinished sheet) meeting the requirements of ASTM B209.
   3. Principal window frame and sash ventilator members will be a minimum 0.125" in thickness at hardware mounting locations.
   4. Extruded or formed trim components will be a minimum 0.060" in thickness.
   5. Frame depth 2 ½ " minimum.
   6. Sash ventilator sections must be tubular, and close flush with adjoining frame surfaces at interior and exterior.
      a. Overlap sash ventilators will not be accepted.

2.03 COMPONENTS

A. Hardware
   1. All steel components including attachment fasteners to be stainless steel except as noted.
   2. Extruded aluminum components 6063-T5 or -T6.
   3. Locking handles, bases and strikes to be die cast, white bronze.
   4. Thermo-plastic or thermo-set plastic caps, housings and other components to be injection-molded nylon, extruded PVC, or other suitable compound.
   5. Hardware to be occupant-operated and include: extruded aluminum butt hinges, locking cam handles, single-handle multi-lock, rotary operators, concealed friction adjusters.

B. Sealants
   1. All sealants shall comply with applicable provisions of AAMA 800 and/or Federal Specifications FS-TT-001 and 002 Series.
   2. Frame joinery sealants shall be suitable for application specified and as tested and approved by window manufacturer.

C. Glass
   1. Provide in accordance with Section 08 80 00.
   2. Sealed insulated glass shall be tested and certified in accord with ASTM E2190.

D. Glazing
   1. Provide in general accordance with Section 08 80 00.
   2. Glazing method shall be in general accordance with the GANA Glazing Manual for specified glass type, or as approved by the glass fabricator.
   3. Provide windows factory-glazed wherever practical.

E. Glazing Materials
   1. Setting Blocks/Edge Blocking: Provide in sizes and locations recommended by GANA Glazing Manual. Setting blocks used in conjunction with soft-coat low-e glass shall be silicone.
   2. Back-bedding tapes, expanded cellular glazing tapes, toe beads, heel beads and cap beads shall meet the requirements of applicable specifications cited in AAMA 800.
3. Glazing gaskets shall be non-shrinking, weather-resistant, and compatible with all materials in contact.
4. Structural silicone sealant where used shall meet the requirements of ASTM C1184.
5. Spacer tape in continuous contact with structural silicone shall be tested for compatibility and approved by the sealant manufacturer for the intended application.
6. Gaskets in continuous contact with structural silicone shall be extruded silicone or compatible material.

F. Steel Components
1. Provide steel reinforcements as necessary to meet the performance requirements of 1.03.
2. Concealed steel anchors and reinforcing shall be factory painted after fabrication with TGIC powder coating, or rust-inhibitive primer complying with Federal Specification TT-P-645B.

G. Muntins:
1. Provide muntin grids as shown.
2. Finish to match window frames.

H. Panning:
1. Provide extruded aluminum panning to receive replacement windows as shown on architectural drawings.
2. Panning shall be pre-assembled and all joinery back sealed prior to installation.
3. Finish to match window frames.

I. Receptors:
1. Provide extruded aluminum receptors to receive windows, as shown on architectural drawings.
2. Finish to match window frames.

J. Insect Screens:
1. Tubular extruded aluminum frames shall meet the requirements of ANSI/SMA 1004.
2. Screen frame finish to match window frames.
3. Aluminum cloth shall comply with GSA-FS-RR-W-365 and USDC-CS-138 with 18 x 16 mesh.
4. Cloth mesh color shall be charcoal mesh

K. Dual Glazed Access Panel: (Optional)
1. Hinged (lift-off) access panel (Select one) provided with Allen hex locks for custodial operation.
2. Finish to match window frames.

2.04 FABRICATION

A. General:
1. Finish, fabricate and shop assemble frame and sash ventilator members into complete windows under the responsibility of one manufacturer.
2. No bolts, screws or fastenings shall impair independent frame movement, or bridge the thermal barrier, unless such bridging was also present in thermal test units and thermal models.
3. Fabricate to allow for thermal movement of materials when subjected to a temperature differential from -30 °F to +180 °F.

B. Frames:
1. Cope and mechanically fasten each corner, or miter then mechanically stake over a solid extruded aluminum corner block or weld each corner; then seal weather tight.
2. Make provisions for continuity of frame joinery seals at extrusion webs.

C. Main Sash Ventilator

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1. Miter all corners and mechanically stake over a solid extruded aluminum corner block, set and sealed in epoxy, leaving hairline joinery, then sealed weather tight.
2. Make provisions for continuity of sash ventilator joinery seals at extrusion webs.

D. Glass Drainage: (field glazed units only)
1. Provision shall be made to insure that water will not accumulate and remain in contact with the perimeter area of sealed insulated glass.

E. Hardware:
1. Concealed Hinges
   a. Provide two stainless steel concealed four-bar adjustable friction hinges per vent meeting AAMA 904.1.
2. Locks
   a. E-coated white bronze locks, strikes and/or keepers for manual operation shall secure sash in closed position.
   b. Provide locks for ventilators at maximum 40" spacing; 50" for single operator multi-lock hardware.
   c. Provide double grip hardware activated by a lower device for locks exceeding 6'-0" from floor.
3. Exposed Hinges
   a. Provide two (2) five-knuckle aluminum nylon-bushed hinges with coated stainless steel pins.
   b. Provide three (3) hinges on units over 4'-0" high.
   c. Finish of extruded aluminum hinge leaves and covers shall match window finish.
4. Egress Provisions and Egress Hardware (Optional)
   a. Make provisions for egress in case of emergency at windows as indicated on drawings
   b. Affix aluminum egress tags to windows indicated.

F. Thermal Break Construction:
1. Continuous extruded polyamide with 25% glass fiber reinforcing, mechanically crimped into cross-knurled cavities.
2. Minimum thermal separation ¼".
3. Quality assurance records must be maintained and available as requested.

G. Weather-stripping:
1. Bulb- or fin-type neoprene, polypropylene, TPE, or other suitable material as tested and approved by the window manufacturer.
2. Miter, crowd, stake or join at corners. Provide drainage to exterior as necessary.
3. Weather-stripping shall provide an effective pressure-equalization seal at the interior face of the sash ventilator.

2.05 FINISHES

A. Finish of Aluminum Components
1. Finish of all exposed areas of aluminum windows and components shall be done in accord with the appropriate AAMA Voluntary Guide Specification shown.

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PART 3 EXECUTION

3.01 EXAMINATION

A. Site Verification of Conditions
1. Verify that building substrates permit installation of windows according to the manufacturer's instructions, approved shop drawings, calculations and contract documents.
2. Do not install windows until unsatisfactory conditions are corrected.

3.02 INSTALLATION

A. Erection of Aluminum Windows
1. Install all windows with skilled workers in accordance with approved shop drawings, installation instructions, specifications, and the AAMA Commercial Window and Door Installation Manual.
2. Vent windows must be installed, and remain, plumb, square and level, to one-half of the unit shimming tolerances cited in the AAMA Commercial Window and Door Installation Manual, for proper weathering and operation. Installer to make necessary final hardware adjustments on site.
3. Aluminum that is not organically coated shall be insulated from direct contact with steel, masonry, concrete or other dissimilar metals by bituminous paint, rust-inhibiting primer, non-conductive shims or other suitable insulating material.
SECTION 08520 – ALUMINUM WINDOWS

PART 1 - GENERAL

1:01 GENERAL PROVISIONS:
A. The conditions of the contract and all sections of Division 1 are hereby made a part of this section.
B. Coordinate work with that of all construction contractors affecting or affected by work of this contract. Cooperate with such contractors to assure the steady progress of the work.

1:02 DESCRIPTION OF WORK:
A. Work included: Provide labor, materials and equipment necessary to complete the work of the window contract and without limiting the generality thereof include:
   1. Removal of existing work as required for the proper installation and operation of the units.
   2. Removal from site and legal disposal of all removed materials and debris.
   3. Provide new factory glazed, thermally broken aluminum windows, types as specified herein, together with necessary operating hardware, installation hardware and all other materials as required for complete installation of the windows.
   4. Provide treated wood blocking, fillers and nailers as required to provide a secure installation.

1:03 QUALITY ASSURANCE:
A. Standards: Except as otherwise indicated, requirements for aluminum windows, terminology and standards of performance and fabrication of workmanship are those specified and recommended in ANSI/AAMA and applicable general recommendations published by AAMA 101-93.
B. Test Procedures and Performances:
   1. Windows shall conform to all ANSI/AAMA 101-93 requirements for the window type referenced. In addition the following specific tests must be met.
   2. Air Infiltration Test: With ventilators closed and locked, test unit in accordance with ASTM E283-91 at a static air pressure difference of 6.24. Air infiltration shall not exceed .10 cfm per foot of perimeter crack length.
   3. Water Resistance Test: With ventilators closed and locked, test unit in accordance with ASTM E331-96 at a static air pressure of 10.0 psf. There shall be no water leakage.
4. Uniform Load Deflection Test: With ventilators closed and locked, test unit in accordance with ASTM E330-90 at a static air pressure of +/- 65.0 psf. There shall be no glass breakage, permanent damage to fasteners, hardware parts, nor any damage that would cause the window to be inoperable.

5. Life Cycle Test: In accordance with AAMA 910-93, there shall be no damage which would render the unit inoperable and supplemental air and water tests shall not exceed primary requirements.

6. Provide a Condensation Resistance Rating "CRF" of at least 54 when tested in accordance with AAMA 1502.7.

7. Provide U-Value of no more than .58 btu/hr ft F when tested in accordance with AAMA 1503.1 and subjected to a 15 mph positive wind load during testing.

1:04 SUBMITTALS:

A. Product Data: Submit manufacturer's specifications, recommendations and standard details for aluminum window units, including certified test laboratory reports as necessary to show compliance with requirements.

B. Shop Drawings: Submit shop drawings, including location floor plans or exterior wall elevations showing all window openings (if applicable and/or available), typical unit elevations at -1/2" or -3/4" = 1" scale, and full size detail sections of every typical composite member. Show anchors, hardware, operators and other components not included in manufacturer's standard data. Include glazing details and standards for factory glazed units.

C. Samples: One sample of each required aluminum finish on 4" long sections of extrusions.

1:05 PRODUCT DELIVERY, STORAGE AND HANDLING:

A. Materials shall be packed, loaded, shipped, unloaded, stored, and protected in a manner which will avoid abuse, damage, and defacement in accordance with the recommendations contained in the AAMA Aluminum Curtain Wall Manual, Volume #10 entitled "Care and Handling of Architectural Aluminum from Shop to Site."

B. Remove all paper wrappings and inter-leavings that are wet or which could become wet when unloading and storing materials.

C. Store inside, if possible, in a clean, well drained and well ventilated area free of dust and corrosive fumes. In the event that it is not possible to store material inside, stack vertically or on edge, in accordance with the manufacturers instructions, so that water cannot accumulate on or within materials. Use wood or plastic shims between components to provide water drainage and air circulation and prevent contaminants from contacting aluminum.
D. The Contractor will be responsible for taking the steps necessary to protect stored materials from lime, mortar, run-off from concrete, copper and other corrosive materials, careless handling of tools, weld splatter, acids, roofing tar, solvents, abrasive cleaners and other items that could damage the finish or window components.

E. Items which become damaged because of non-compliance with these conditions will be cause for rejection and such items shall be replaced by the Contractor without additional costs to the owner.

1:06 WARRANTIES:

A. Provide a written warranty from the window manufacturer agreeing to repair or replace any defective units or materials, to the satisfaction of and at no cost to the owner, which fail due to unsatisfactory materials or workmanship within the first 2 years of the date of the manufacture.

B. Provide a written warranty from the window installer agreeing to repair or replace window units which fail due to improper installation within the first 2 years of the date of completion. Failure includes, but is not limited to, water leakage, excessive air infiltration and improper operation of the window units due to unsatisfactory installation techniques. This warranty shall also certify that the perimeter sealant materials are suitable for each specific application and have been applied in accordance with the sealant manufacturer's recommendations for joint size, width, depth, priming, joint movement, weather conditions, bond breakers, etc.

C. Provide a written warranty from the insulated glass manufacturer agreeing to replace, at no cost to the Owner, any sealed insulating glass units which fail within the first 5 years of manufacture. Failure shall include, but is not limited to, fog, mist, condensation, or dust which appears on the #2 or #3 surfaces of the insulated glass unit.

PART 2 - PRODUCTS

2:01 ACCEPTABLE MANUFACTURERS:

A. Aluminum windows shall be
   a. Wausau Window and Wall Systems, 7800 International Drive, Wausau, WI
   b. Win-Vent Architectural Windows, 2401 South Main Street, PO Box 430, Fort Scott, Kansas 66701, 800-295-3113, fax 620-223-1139
   c. EFCO Corporation, a Pella Company
   d. Kawneer, an Alcoa Company
   e. Approved equal

2:02 MATERIALS:

A. Aluminum Extrusions: Wall thicknesses shall be not less than .125" at any location for frame and sash members and not less than .062 at the glazing bead.
B. Thermal Barrier: Fabricate window units with an integrally concealed low conductance thermal barrier. Material shall be poured-in-place, two-part chemically curing structural polyurethane equal to PRC (Product Research and Chemical Corporation) PR-453M. No hardware or other appurtenances shall bridge the thermal barrier in any way.

C. Fasteners: Aluminum, non-magnetic stainless steel or other material warranted by the window manufacturer to be non-corrosive and compatible with the aluminum window members, trim, hardware, anchors and other components of the window units. Do not use exposed fasteners except where unavoidable for application of operating hardware. Provide only exposed fasteners that match the finish of the hardware being used. Exposed fasteners shall be Phillips, flat, or pan-head machine screws.

D. Anchors, Clips and Window Accessories: Depending on strength and corrosion inhibiting requirements, fabricate accessories of aluminum, non-magnetic stainless steel or hot-dip zinc coated steel or iron complying with ASTM A386.

E. Compression Glazing Gaskets and Weatherstripping: At the manufacturers option, provide extruded neoprene gaskets complying with ASTM D2000 - 2BC415 to 3BC620, molded PVC gaskets complying with ASTM D2287 or molded expanded neoprene gaskets complying with ASTM C509, grade #4.

F. Window Assembly Sealant: Unless otherwise indicated, for sealants required within the fabricated window units use the type recommended by the manufacturer for joint size and movement, to remain permanently elastic, non-shrinking and non-migrating.
   1. Sealants for masonry to masonry and masonry to metal – Dow Corning 790 (or approved equal). Color to be selected by Owner from standard color chart.
   2. Sealants for metal to metal metal – Dow Corning 795 (or approved equal). Color to be selected by Owner from standard color chart

G. Perimeter Weather Seals: Provide a sealant which matches in color the finish of the window members. Use primers, back up material, bond breakers and cleaning agents as recommended by the sealant manufacturer. Provide product complying with AAMA Specification 803 and 808.

2:03 FABRICATED COMPONENTS:

A. Frames: All window members, sash members and muntin bars shall be 2-1/4" in depth of one part construction (incorporating a thermal barrier as previously defined in this section). The sash shall lie flush within the main frame when closed. Windows with overlapping sash and main frame will not be acceptable. The four corners of the frames shall be neatly mitered and joined with reinforcing clips set in epoxy then hydraulically crimped to insure a permanent bond. Cross rails and muntin bars shall be coped and mechanically fastened to the abutting frame sections. Butyl, narrow joint seam sealer as previously specified in this section shall be applied to all intersections so as to provide a
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permanent and weather-tight joint. All window sections located beneath operating sash shall utilize weep holes or slots of adequate size to provide a means of drainage for water, which may accumulate.

B. Standard Sash Hardware: Ventilators shall be balanced on concealed heavy duty stainless steel four bar hinges, which shall include a positive stop and an adjustable friction shoe that will hold the sash open in any position up to approximately 50 degrees. Operating sash shall be equipped with cam locking handles and keepers made of high quality USD25D white bronze. All sash over 3'6" wide shall be equipped with two cam locking handles at quarter points.

C. Emergency Egress Sash Hardware: Side hinged egress sash shall operate on one pair of 333SS or 222SS egress hinges which allow the sash to open to a full 90 degrees, or on one pair of extruded, 5-knuckle butt hinges with stainless steel pins and one friction adjustor at the head of the window. All egress sash shall be equipped with casement locking handles and one sash pull handle. All sash over 3'6" tall shall be equipped with two-point casement locking devices mounted approximately one-fourth of the way up the jamb of the window.

D. Insect Screens: Screen frames shall be fabricated from solid extruded shapes finished to match the window members. Roll formed screen frames will not be acceptable. Screen cloth shall be 16 X 18 aluminum wire mesh and installed in a manner as to be easily replaceable.

E. Panning: Metal for perimeter trim and center mullions. Submit profiles to Owner for final selection. Color and finish to match windows.

2:04 FINISH:

A. All exposed surfaces of window, screen and trim members shall be cleaned of all Oils and be free of serious surface defects before finishing. All aluminum shall be finished to meet the following specifications as defined in the Aluminum Association (AA) publication titled, "Designation System for Aluminum Finishes".

1. AA M10 C22 A31, Architectural Class II Clear Anodized Coating, 204R1
2. AA M10 C22 A41, Architectural Class I Clear Anodized Coating 215R1
3. AA M10 C22 A3 2, Architectural Class II Anodic coating with integral color.
4. AA M10 C22 A34, Architectural Class II Anodic Coating with electrolytically deposited color.
5. AA M10 C22 A42, Architectural Class I Anodic Coating with integral color.
6. AA M10 C22 A44, Architectural Class I Anodic Coating with electrolytically Deposited.
7. AA M10 C41 RIX, High performance fluoropolymer thermal setting resin system, 1.5-3.0 mil dry film thickness, and shall conform with AAMA 2603, 2604, and
III EXECUTION

3:01 PREPARATION:

A. The installation contractor shall carefully remove all applicable items of the existing sash, stops, mullions, screens, storm windows and trim as shown on the drawings and as required for proper installation of the new windows. Avoid damage to the existing work that remains.

B. Surfaces, which affect the installation of the new replacement window, shall become the responsibility of the installation contractor who shall remove and legally dispose of same at no additional cost to the owner.

C. No window shall be removed unless it can be replaced, or the opening properly barricaded by the end of the workday. Nor shall it be removed until the opening size is confirmed to the window dimension by the General Contractor to insure the proper fit. Insofar as practical, the existing window parts shall be removed and the replacement window shall be installed in one continuous operation. Any barricades installed shall provide security against unlawful entry as well as complete weather protection.

E. Contractor shall prepare openings and provide all required new framing to reconstruct the openings to accept the new aluminum windows. This shall include removal and or repair as appropriate head, jambs, sills and center mullions. Provide all blocking as required to accept new panning.

F. Contractor shall repair/replace any deteriorated or rotted exterior window sills, trim, heads or jambs to remain. Coordinate replacements and repairs with the window installation contractor.

G. Comply with all applicable laws, rules and regulations as detailed in applicable sections, Division 1 of this specification.

3.02 INSTALLATION:

A. The installation contractor and his representative shall be totally responsible for the installation of the window units.

B. Use only skilled tradesmen and complete all work in strict accordance with the manufacturers specifications and recommendations for the installation of window units, hardware, operators and other components as well as the approved project shop drawings and these project specifications.

C. Set units plumb, level and true to line without warp or rack of frames or sash. Compress fiberglass insulation between frames of new windows and
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construction that remains, as applicable.

D. Insulate all aluminum from direct contact with steel, masonry, concrete or other non-compatible materials with treated wood or plastic shims, or with bituminous paint or zinc chromate primer.

E. Seal all exterior perimeter joints between windows and surrounding construction in accordance with the project specifications. Joints and other surfaces that are to receive sealants shall be clean, free from loose debris or construction stains and totally dry. In all, prepare surfaces that are to receive sealant and apply sealant according to that manufacturer's instructions.

3.03 ADJUSTMENTS, PROTECTING AND CLEANING:

A. Adjust operating sash and sash hardware to provide smooth operation and a tight fit at all contact points and at the full perimeter of weather-stripping.

B. Adjust the sash hardware so that the sash is perfectly square in the primary frame member. Lubricate hardware and all moving parts as necessary.

C. Clean aluminum surfaces promptly after installation of window units.

D. Clean interior and exterior surfaces of glass promptly after installation of window units.

E. Protect glass and window materials from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come in contact with the glass or window, remove said substances as recommended by the window manufacturer.

F. The Contractor shall be responsible for protection of the work from damage by other trades.

G. Final cleaning of all windows and interior and exterior surfaces of the glass shall take place not more than 5 days before the scheduled inspections intended to establish the date of final and substantial completion in each area of the project.

END OF SECTION
SECTION 08541 – FIBERGLASS WINDOWS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Integrity from Marvin All Ultrex® Series windows complete with hardware, glazing, weather strip, insect screen and half screen, grilles-between-the glass, jamb extension, sheet rock return, j-channel, and standard or specified anchors, trim and attachments.

B. Pella Impervia Duracast Windows complete with hardware, glazing, weather strip, insect screen and half screen, grilles-between-the glass, jamb extension, sheet rock return, j-channel, and standard or specified anchors, trim and attachments.

1.2 RELATED SECTIONS

A. Section 01301—Submittal Procedures: Shop Drawings, Product Data, and Samples.

B. Section 01505—Construction Waste Management

C. Section 01631—Substitutions

D. Section 01740—Warranty

E. Section 06200—Millwork: Wood trim other than furnished by window manufacturer

F. Section 07920—Joint Sealants: Sill sealant and perimeter caulking

G. Section 09900—Painting: Paint or stain other than factory applied finish

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM):

B. Sealed Insulating Glass Manufactures Association / Insulating Glass Certification Council (SIGMA / IGCC).

C. American Architectural Manufacturers Association / Window and Door Manufacturers Association (AAMA / WDMA):

D. Window and Door Manufacturers Association (WDMA): Hallmark Certification Program.


1.4 SYSTEM DESCRIPTION

A. Design and Performance Requirements:
   1. Window units shall be designed to comply with ANSI / AAMA / NWWDA 101 / I.S.2-97 and 101 / I.S. 2/ NAFS-02
      a. Double Hung: H-LC50
      b. Transom: TR-C50
      c. Picture: F-C50
   2. Air leakage shall not exceed the following when tested at 1.57 according to ASTM E 283: .0.3 cfm per square foot of frame.
   3. No water penetration shall occur when units are tested at the following pressure according to ASTM E 547:
      a. Double Hung: H-LC50 – 7.5 psf
      b. Transom: TR-C50-7.5 psf
      c. Picture: F-C50-7.5 psf
   4. Units shall be designed to comply with ASTM E330 for structural performance when tested at the following pressures:
      a. Double Hung: H-LC50 - 75 psf
      b. Transom: TR-C50-75 psf
      c. Picture: F-C50-75 psf

1.5 SUBMITTALS

A. Shop Drawings: Submit shop drawings under provisions of Section 01301.

B. Product Data: Submit catalog data under provisions of Section 01301.

C. Samples:
   1. Submit corner section under provisions of Section 01301.
   2. Include glazing system, quality of construction, and specified finish.

D. Quality Control Submittals: Submit manufacturer’s certifications indicating compliance with specified performance and design requirements under provisions of Section 01301.

1.6 QUALITY ASSURANCE


1.7 DELIVERY

A. Deliver in original packaging and protect from weather.

1.8 STORAGE AND HANDLING
A. Prime or seal wood surfaces, including surface to be concealed by wall construction, if more than thirty (30) days will expire between delivery and installation.

B. Store window units in an upright position in a clean and dry storage area above ground and protect from weather.

1.9 WARRANTY

A. Windows shall be warranted to be free from defects in manufacturing, materials, and workmanship for a period of ten (10) years from purchase date.

B. Window glass shall be warranted to be free from defects in manufacturing, materials and workmanship for period of twenty (20) years from the purchase date.

PART 2 PRODUCTS

2.1 MANUFACTURED UNITS

A. Integrity from Marvin All Ultrex® Series Double Hung (horizontal sliding and related stationary or picture units) as manufactured by Integrity Windows and Doors, Fargo, North Dakota or approved equal. Operating sash tilt to interior for cleaning or removal.

B. Pella Duracast® replacement windows come in single/double hung, fixed frame, sliders and special shapes.

C. Approved equal

2.2 FRAME DESCRIPTION

A. Interior: Pultruded reinforced fiberglass (Ultrex®), 0.065 – 0.070 inch (2 mm) thick.

B. Frame width: 3 3/32 inches (79 mm).

C. Jamb depth: 2 inches (51 mm).

2.3 SASH DESCRIPTION

A. Pultruded reinforced fiberglass (Ultrex®), 0.065 – 0.070 inch (2 mm) thick.

B. Composite sash thickness: 15/16” inches (24 mm).

2.4 GLAZING

A. Select quality complying with ASTM C 1036. Insulating glass SIGMA/IGCC certified to performance level CBA when tested in accordance with ASTM E 774.

B. Glazing method: 3/4 inch (19 mm) Insulated glass.

C. Glass type: Low E³ 366™ – Argon gas.

D. Glazing seal: Silicone bedding at exterior and interior.
E. Obscure Glass: Contractor shall provide obscure glass for all bathroom windows.

F. Tempered Glass: Contractor shall provide tempered glass per code requirements for site specific areas related to window height above the finish floor or windows located in the travel path at stairs.

2.5 FINISH

A. Factory baked on acrylic urethane.

B. Color: Verify color selection with Owner. Options include: Stone White exterior with Stone White interior, standard color; Pebble Gray exterior with Stone White interior; Bronze exterior with Stone White interior; Evergreen exterior with Stone White interior; Cashmere exterior with Stone White interior; Ebony exterior with Stone White interior.

2.6 HARDWARE

A. Balance System: Coil spring block and tackle with nylon cord and glass filled nylon shoe and steel locking shoe.

B. Jamb Track: Pultrusion.

C. Lock: High pressure zinc die-cast cam lock and keeper.

D. Sash Limiter: Sash limiter maximum shall be set to 6” for all 1st floor undergraduate housing. Sash limiter maximum shall be set to 8” for all 1st floor graduate housing.

2.7 WEATHER STRIP

A. Sill weather strip is foam filled vinyl bulb. The bottom sash is sealed to the jambs using rigid vinyl with flexible seals. The top stationary sash seal is foam tape. The checkrails are sealed using rigid vinyl with flexible seals.

2.8 JAMB EXTENSION

A. Standard: 2”. Contractor shall order factory installed jamb extensions at 4-9/16” or 6-9/16” based on existing field conditions.

2.9 INSECT FULL SCREEN

A. Factory installed full screen. Screen mesh: Charcoal fiberglass.

B. Aluminum frame finish: Stone White, standard color; Pebble Gray; Bronze; Evergreen; Cashmere; Ebony.

2.10 GRILLES-BETWEEN-THE-GLASS (GBG)

A. Manufactured from aluminum in an 11/16” (17mm) wide contoured profile placed between the two panes of glass. Available in rectangular, prairie lite cut, 2w2h, and 2w1h patterns. Verify with Owner lite pattern for specific installation location.
B. To preserve the architectural and historic integrity of the buildings on campus, all new and replacement windows being installed must match the existing divided light pattern and color.

   a. Prior to ordering any windows, window shop drawings showing all relevant details and the divided light pattern, product data and samples must be submitted to and approved by the Owner for each specific project.

C. Colors: Verify color selection with Owner. Options include: Stone White exterior with Stone White interior; Pebble Gray exterior with Stone White interior; Bronze exterior with Stone White interior; Evergreen exterior with Stone White interior; Cashmere exterior with Stone White interior; Ebony exterior with Stone White interior.

2.11 ACCESSORIES AND TRIM

A. Installation Accessories:
   1. Factory installed vinyl folding nailing fin at head, sill and side jambs.
   2. Installation brackets: Brackets for 4-9/16 inch (116 mm); 6-9/16 inch (167 mm) jambs.
   3. Sheet rock return.
   4. J-channel.
   5. Mullion kit: Standard mullion kit for field assembly of related units available in horizontal, vertical and 2-wide and/or 2-high configurations. Kit includes: Instructions, interior and exterior mull covers, mull plugs and brackets.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Before Installation, verify openings are plumb, square, and of proper dimension. Report frame defects or unsuitable conditions to the General Contractor before proceeding.

B. Acceptance of Conditions: Beginning of installation confirms acceptance of existing conditions.

3.2 INSTALLATION

A. Prior to installing new windows, Contractor shall remove existing sash, sash weights and sash cords. Contractor shall fill sash weight pockets with cotton batt insulation, apply sealant to head and jambs of existing sash stops and then install new window(s). Contractor shall fill voids between old and new with expanding foam, trim interior with new trim pieces as required and seal perimeter interior with clear paintable caulk to eliminate the potential for any air infiltration.

B. Assemble and install window unit according to manufacturer’s instructions and reviewed shop drawings.

C. Set units level, plumb, and true to line, without warp or rack of frames and panels and anchor securely in place.

D. Set sill members in bed of sealant or with gaskets, as indicated, to provide weathertight construction.

E. Adjust operating panels, screens, and hardware for smooth operation and weathertight closure. Lubricate hardware and moving parts.
F. Install accessory items as required.
G. Use finish nails to apply wood trim and moldings.
H. Completely caulk around the exterior perimeter of all new windows installed.
I. Touch up damaged paint on window trim to match existing finish color. Paint all new window trim to match existing.
J. Install window shade hardware. Cut existing window shades to fit new opening. Provide new window shades where missing or damaged.
K. At no additional cost to owner, repair or replace window units not meeting specified performance requirements.

3.3 CLEANING
A. Remove visible labels and adhesive residue according to manufacturer’s instructions.
B. Clean interior and exterior windows and glass and leave in a clean condition upon completion of the project.

3.4 PROTECTING INSTALLED CONSTRUCTION
A. Protect windows from damage by chemicals, solvents, paint, or other construction operations that may cause damage.

END OF SECTION
SECTION 08550 - WOOD WINDOWS

PART 1 - GENERAL
1.1 SECTION REQUIREMENTS

A. Division 1 - General Requirements shall be made a part of this section.

B. Submittals: Product Data, Shop Drawings, and color Samples.


PART 2 - PRODUCTS
2.1 WOOD WINDOWS

1. Manufacturer: Marvin, Trimline, Eagle Window & Door, Inc., or approved equal.

2. Basis of design is as follows:

WINDOWS – For all locations, carefully salvage and reuse existing interior and exterior trim or provide new trim to match existing based on the condition of the trim at each window location. All rotted trim material shall be removed and replaced. Trim material and profiles shall match existing and must be submitted to and approved by the Owner prior to installation.


b. Exterior Color: Submit manufacturer’s standard colors for approval.

c. Interior Finish: Primed, ready for field painting by contractor or primed with factory applied topcoat.

d. Interior Color: Submit manufacturer’s standard colors for approval.

e. Wood Species: Pine

f. Glass: Low-E Maximizer Plus insulating glass with argon gas filling.

g. Sash Locks: Two (2) locks with concealed tilt mechanisms. Provide standard colors for approval.

h. Sash Lifts: Submit manufacturer’s standard sash lifts for approval. Crank handle for casements.

i. Security travel stops: maximum 6” opening (first floor only). In addition, provide vinyl snap in inserts in track to allow maximum window opening of 6”.

j. Hardware Finish: Submit manufacturer’s standard finishes for approval.

k. Window Sizes: Field measure as required for each individual project.

l. Screens: Half size, with fiberglass mesh and aluminum frame. Full screens for casements. Color to be selected from manufacturer’s standard colors.
m. Cleaning: Top and bottom sash shall tilt inward 90° for easy cleaning.

n. Modern Divided Lights: Available in 7/8”, 1 1/8” or 1 ½” profiles. Adhered interior and exterior bars; spacers between glass.

1) To preserve the architectural and historic integrity of the buildings on campus, all new windows being installed must match the existing divided light pattern and color.

a) Prior to ordering any windows, window shop drawings showing all relevant details and the divided light pattern, product data and samples must be submitted to and approved by the Owner for each specific project.

3. Interior Trim: Provide new trim as required. Trim material and profiles shall match existing and must be submitted to and approved by the Owner prior to installation.

4. Exterior Trim: Wrap window stops and trim with sheet aluminum. Provide receptors and panning. Mull on site as required based on window size. Provide manufacturer’s color selection for Owner’s approval.

5. Thermal Transmittance: Provide units with a whole-window R-value of 2.5 or greater at 15 MPH exterior wind velocity per AAMA 1503.

6. Provide simulated or true divided lites where indicated.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Set units level, plumb, and true to line, without warp or rack of frames and panels and anchor securely in place.

B. Remove existing sash and sash weights. Fill sash weight pockets with approved insulation materials in the frame cavity on the interior portion of the window frame, area adjacent to exterior of window frame remaining uninsulated.

1. Exercise caution to avoid overlapping insulation materials across thermal barrier connectors.

2. Exercise caution to avoid bridging of the two separated frame members.

C. Trim interior with new trim pieces as required.

D. Set sill members in bed of sealant or with gaskets, as indicated, to provide weathertight construction. Apply calking at all points between exterior building materials and outer frame; apply in a manner to ensure airtight and watertight continuous perimeter seal so as to prohibit seepage of cold air into the insulated cavity.

E. Touch up damaged paint on window trim to match existing finish color. Paint all new and replaced window trim to match existing.

F. Install window shade hardware. Cut existing window shades to fit new opening. Provide new window shades where missing or damaged.
G. Adjust operating panels, screens, and hardware for smooth operation and weathertight closure. Lubricate hardware and moving parts.

H. At no additional cost to owner, repair or replace window units not meeting specified performance requirements.

0.1 CLEANING

A. After installation, remove all sealants, calking, labels and other misplaced materials from all surfaces, including adjacent work.

B. Thoroughly clean window frames, casings, and glass using materials and methods recommended by the window and glass manufacturer that do not cause defacement of work.

END OF SECTION 08550
SECTION 08561 - VINYL WINDOWS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings, and color Samples.


PART 2 - PRODUCTS

2.1 VINYL WINDOWS

A. Products: Harvey Vinyl Windows, BR Rich Cabernet R-5 Greenshield, Pella or approved equal
   1. Classic
   2. Signature
   3. Slimline
   4. Or approved equal
   5. Style:
      a. Double-Hung Window
      b. Rolling Window
      c. Picture Window
      d. Hopper Window
      e. Awning

B. Provide AAMA-certified vinyl windows with an attached label.

C. Provide Energy Star certified vinyl windows with an attached label.

D. Provide units labeled and certified according to NFRC's Product Certification Program for Energy Performance Standards and Ratings with U-factor of 0.56 Btu/sq. ft. x h x deg F as determined according to NFRC 100 for U-factor (thermal transmission); NFRC 200 for SHGC (Solar Heat Gain) and VT (Visible Transmittance); NFRC 400 for Air Leakage; and NFRC 500 for Condensation Resistance. Ratings shall be in conformance and meet or exceed State Building Code requirements.

E. Sash Locks: Two (2) locks with concealed tilt mechanisms.

F. Sash Lifts: Submit manufacture’s standard sash lifts for approval.

G. Undergraduate Houses: Security travel stops - maximum 6” opening (first floor only). In addition, provide vinyl snap in inserts in track to allow maximum window opening of 6”.

H. Graduate Houses: Security travel stops - maximum 8” opening (first floor only). In addition, provide vinyl snap in inserts in track to allow maximum window opening of 8”.
I. Faculty/Staff: Standard travel stop.

J. Hardware Finish: Submit manufacturer’s standard finishes for approval.

K. Window Sizes: Field measure as required for each individual project.

L. Screens: Half size, with fiberglass mesh insect screens and aluminum frame. White.

M. Cleaning: Top and bottom sash shall tilt inward 90° for easy cleaning.

N. To preserve the architectural and historic integrity of the buildings on campus, all new and replacement windows being installed must match the existing divided light pattern and color, unless directed differently by the Owner.

1. Prior to ordering any windows, window shop drawings showing all relevant details and the divided light pattern, product data and samples must be submitted to and approved by the Owner for each specific project.

O. Window Color: Submit manufacturer’s standard colors to Owner for approval.

P. Glaze units with clear, low-e coated, argon-filled, sealed insulating glass.

Q. Provide replacement parts 4 each of following.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Set units level, plumb, and true to line, without warp or rack of frames and panels and anchor securely in place.

B. Prior to installing new windows, Contractor shall remove existing sash, sash weights and sash cords. Contractor shall fill sash weight pockets with cotton batt insulation, apply sealant to head and jambs of existing sash stops and then install new window(s). Contractor shall fill voids between old and new with expanding foam, trim interior with new trim pieces as required and seal perimeter interior with clear paintable caulk to eliminate the potential for any air infiltration.

C. Set sill members in bed of sealant or with gaskets, as indicated, to provide weathertight construction.

D. Adjust operating panels, screens, and hardware for smooth operation and weathertight closure. Lubricate hardware and moving parts.

E. Touch up damaged paint or stain on window trim to match existing finish color. Paint or stain and polyurethane all new window trim to match existing finish.

F. Install window shade hardware. Cut existing window shades to fit new opening. Provide new window shades where missing or damaged. Provide new shade hardware as required.
G. At no additional cost to owner, repair or replace window units not meeting specified performance requirements.

H. Install accessory items as required.

I. Use finish nails to apply wood trim and mouldings.

J. Completely caulk around the exterior perimeter of all new windows installed.

3.2 CLEANING

A. After installation, remove all sealants, caulking, labels and other misplaced materials from all surfaces, including adjacent work.

B. Thoroughly clean window frames, casings, and glass, interior and exterior, using materials and methods recommended by the window and glass manufacturer that do not cause defacement of work.

3.3 PROTECTING

A. Protect windows from damage by chemicals, solvents, paint, or other construction operations that may cause damage.

END OF SECTION 08561
SECTION 08585 – SLIMLINE SECURITY SCREENS – LEVEL 5

PART 1 – GENERAL

1.1 Description
The screen shown on the plans and herein specified is manufactured by Avant Guards. The manufacturer's name and products have been used to establish the standard of construction and quality of workmanship required for this project. Manufacturers bidding on this project must be actively engaged in the fabrication of specified items for 3 years.

1.2 Submittals
Submit shop drawings to the Owner for review prior to the start of fabrication. Include details of attachment to surrounding materials and elevations showing the quantities and location of each screen required for the project.

1.3 Quality Assurance
Items provided in the section shall be manufactured and fabricated by firms with 3 years experience in type of work specified. Performance and testing must comply with sag, impact, and forced entry resistance tests of ANSI/SMA 6001-1990, American National Standard. Specifications for Protection Screens must meet the performance requirements for a Heavy Rating.

1.4 Delivery, Storage, and Handling
Before and during shipment to site, adequately protect products. Products should be stored in conditions that protect from damage. Installation shall be by installers experienced in type of work specified for respective item.

1.5 Inspection
Verify that openings fit allowable tolerances are plumb, level, provide a solid anchoring surface and comply with approved shop drawings. Plumb and align faces in a single plane and erect doors square and true adequately anchored. After completion of installation, screens shall be in working order and clean.

1.6 Warranty
Manufacturer will supply a written one-year warranty on all products.

1.7 References

1.8 3 ½” x 2 ¼” Installation, adjusting, and Clean up
Field measure all windows scheduled to receive security screens. Coordinate all fastening details and requirements with the manufacturer based on existing field conditions. Install in accordance with approved shop drawings and specifications. Erect guards and other work of this section, rigid, straight, and plumb with horizontal lines level. Secure connections and attachment. Adjust guards and hardware and leave in working order where applicable. Clean work of this section upon completion. Remove debris resulting from work of this section.

PART 2 – PRODUCT

2.1 Acceptable Manufacturers

Avant Guards Manufacturing
219 Cook Street
2.2 Slimline Security Screen Materials
The mainframe is 1" x 1" x 1/8" aluminum tubing. The corners of the mainframe shall be pneumatically inserted into the frame ends with an interference fit. The removable interlocking concealment plate extruded aluminum 1/16" thick shall be attached to the mainframe using tamper-resistant stainless steel screws. A brace is required for guards over 52" high. Scribe angles or channels are optional as per specification.

Infill Requirement:
18 gauge stainless perforated panel, black infill.

2.3 Fabrication
Welding shall comply with requirements of AWS. Grind welds smooth. Window guards, unless otherwise shown, shall cover entire window opening. Provide frame and accessories of size and construction as shown on drawings. Window guards over 5' wide or 8' high will be fabricated in two sections.

2.4 Paint and Finish
All interior and exterior surfaces of the mainframe and shall be thoroughly cleaned in a three-step bonderizing process. The surfaces shall receive an electro-statically applied thermoplastic polyester powder coating, which shall be applied and baked to a hard mar-resistant finish in a standard or custom color. Provide color samples to Owner for selection.

2.5 Locks and Hardware
Concealed 3 ½” x 2 ¼” F.P. butts brass pin hinges, to have 2 hinges for guards under 5', and 3 hinges per guard 5' and over. The infill hardware consists of bolts, clevises, stainless steel pins, oil tempered coil springs, washers, and full tempered steel 1/8” x 3/8” shock distributing bars.

Lock Options:
- Lift Quick
- Panic Push
- Push Down

END OF SECTION 08585
SECTION 08710 – DOOR HARDWARE – ACADEMIC/ADMINISTRATIVE BUILDINGS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general conditions of contract, including general and supplementary conditions and Division 1 specification sections, apply to the work of this Section.

1.2 DESCRIPTION OF WORK

A. Definition: “Door Hardware” includes items known commercially as Builders Hardware which are required for swing, sliding, and folding doors, except special types of unique and non-matching hardware specified in the same section as the door and door frame. The work of this Section includes the furnishing of all Finish Hardware as required by the plans and Specifications. Types or items in this section include (but are not necessarily limited to):

1. Hinges
2. Lock Cylinders and Keys
3. Lock and Latch Bolts
4. Closers
5. Auxiliary Hardware
6. Weatherstripping
7. Thresholds
8. Electric Hardware, including wiring by this Section up to termination above ceiling by Division 16.

1.3 RELATED WORK SPECIFIED ELSEWHERE

A. Carefully examine all of the Contract Documents for requirements which affect the work of this Section.

1.4 QUALITY ASSURANCE

A. Manufacturers: Obtain each kind of hardware (hinges, lock and latch sets, closers, etc.) from only one manufacturer. For standardization and to match University standards, provide all products without further substitution. The numbers listed in the hardware schedule have been taken from catalogs of the following manufacturers:

1. McKinney Mfg.
2. CorbinRuswin
3. Sargent & Company
4. Door Control International
5. Rockwood Manufacturing
6. Pemko Weatherstripping
7. HES
B. Fire-Rates Openings: Provide hardware for fire-rated openings in compliance with NFPA Standard No. 80. Provide only hardware which has been tested and listed by UL, FM, WH for types and sizes of doors required and complies with requirements of door and door frame labels.

1.5 SUBMITTALS

A. Hardware Schedule: Submit final hardware schedule in manner indicated below. Hardware schedules are intended for coordination of work.

B. Final Hardware Schedule Content: Based on Builders Hardware indicated, organize hardware schedule into “Hardware Sets” indicating complete designations of every item required for each door opening. Include the following information.
   1. Type, style, function, size and finish of each hardware item.
   2. Name of manufacturer of each item.
   3. Fastenings and other pertinent information.
   4. Location of hardware set cross-referenced to indications on drawings both on floor plans and in door and frame schedule.
   5. Explanation of all abbreviations, symbol, codes, etc, contained in schedule.
   6. Mounting locations for hardware.
   7. Door and frame sizes and materials.

C. Submittal Sequence: Submit schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work (e.g. Hollow Metal Frames) which is critical in the project construction schedule. Include with schedule the product data, samples, shop drawings, and other information essential to the coordinated review of hardware schedule.

D. Keying: All cylinders shall be CorbinRusswin Patented Removable Core type cylinders and shall be provided with master keyed brass construction cores. Three keys to be provided per cylinder, 20 each new master keys, and two each Grand Master keys. Permanent cores shall be provided directly to the owner by CorbinRusswin. No substitutions.

1.6 JOB CONDITIONS

A. Coordination: Coordinate hardware with other work. In a timely fashion, furnish information as may be required by other trades. Tag each item or package separately, with identification related to the final hardware schedule, and include basic installation instructions in the package. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated, as necessary for proper times to the proper locations (shop or project site) for installation.

B. Templates: Furnish hardware templates to each fabricator of doors, frames and other work to be factory prepared for the installation of hardware.
C. Deliver materials and products in sealed and labeled packages. Store and handle in strict compliance with manufacturer’s instructions and recommendations. Protect from damage.

PART 2 – PRODUCTS

2.1 SCHEDULE HARDWARE

A. Requirements for design, function, finish, size and other distinctive qualities of each type of Builders Hardware are indicated in the Builders Hardware Data Sheet and Hardware Schedule at the end of this section. Products are identified by using hardware designation numbers of the following:

1. Finish shall be 626-630-610-613 unless otherwise noted.

B. Door Butt Hinges / Continuous Hinges – McKinney

1. All exterior doors and high use doors shall have heavy-duty continuous hinges.
   a. Field verification is required on any existing openings. Hinges to be full surface, where applicable, on these openings.
   b. Acceptable Manufactures are: McKinney, Pemko, Markar, and Select.

2. Interior hinges where needed shall be heavy duty non-ferrous hinges. All other doors shall have full mortise hinges Type TA2714TB – 4 ½”. Heavy Weight hinges Type T4A3786 as noted “HW” on high use doors not exceeding 3’6” in width. Size and quantity of hinges is as follows:
   a. 3 Hinges per doors to 7’6” high.
   b. 1 Added hinge for each added 2’6” in height.

3. Equivalent items by Stanley (*No Hagar/PBB*) acceptable.

C. Flush Bolts – Rockwood

1. Flush Bolts shall be self latching combination 1845/1945 or automatic 1842/1942 as scheduled. Manual Flush Bolts shall be 550 – 12” for wood doors and 555 – 12” for metal doors. Dust Proof Strikes shall be 570 Series.


D. Locksets – CorbinRusswin

1. All locksets are Mortise type and must conform to ANSI A156.13, Series 1000, and Operational Grade 1.

2. All locksets and latchsets shall have self-aligning thru bolted trim.

3. Lever handle trim with hollow cavities are not acceptable.

5. All cylinders must be manufactured by CorbinRusswin.
6. Any levers designated for hazardous areas to have engraved knurling, no substitution.
7. Provide extended Curved lip strikes as required.

E. Panic Bolts – Sargent & Company

1. Panic Bolts shall be Sargent heavy duty touch bar type 80 series with chassis mounted unit construction. Panic bolts shall have high impact lexan touch bar on rail assembly. Rail and chassis cover shall be of heavy gauge stainless steel. All springs shall be of stainless steel. Rails and chassis cover of Aluminum or Zinc are not acceptable.
2. Panic Bolts for fire doors with rating of 20 minutes or more shall have stainless steel chassis and have UL “Fire Exit Hardware” metal label permanently affixed to the chassis cover (12 prefix). Through bolts shall be provided on all devices.
3. All exit devices shall be by “less dogging feature”. If dogging is required, it shall be cylinder dogging.
4. Functions of devices shall be “storeroom” 746 with ETJ (or matching lockset trim) trim unless otherwise noted.
5. Rim devices to be used and mullions at pairs of doors are preferred.
6. Where card access is required, exit devices shall be “EL” function.
7. CorbinRusswin ED5000/4000 device with P957 Trim or Precision Manufacturing 2000 series devices will be an acceptable substitute.
8. In general, no exit devices shall be concealed in the door.
9. Finish shall be 630 US32D or as noted by architect.

F. Electric Strikes – HES

1. Alternate Model 1006 Series with Smart-Pac power controller and latch bolt monitor as manufactured by HES.

G. Door Closers – LCN

1. Door Closers shall be 4110 series with adjustable spring and cover. Closing and latching speed shall be fully adjustable by means of two individual valves. Backcheck shall be controlled by a fully adjustable backcheck valve. Door closer shall be sized in accordance with manufacturer’s recommendation. Closers shall meet ANSI Grade 1.

H. Kick Plates & Armor Plates – Rockwood

1. Kick Plates and Armor Plates shall be stainless steel (630). Size shall be 16” x 2” LTDW, except 1” LTDW for pairs of doors.

I. Wall Bumpers and Door Stops – Rockwood

1. Wall Bumpers shall be type 409. Provide wherever possible.
2. Where it is impossible to mount on wall, provide door stop 440 or 442 as required.
3. Roller Bumper shall be Type 456.

J. Thresholds and Weatherstripping – Pemko

1. Provide aluminum thresholds as detailed on the drawings. Weatherstripping shall be 315DN sill type and S88D head and jamb type for all exterior doors. Meeting stile weatherstripping shall be 305DN. Thresholds shall be type 271B x ESMS or as detailed. Drop seals Type 434 APKL.

1.2 MATERIAL AND FABRICATION

A. General:

B. Hand of Door: The drawings show the direction of slide, swing, or hand of each door leaf. Furnish each item of hardware for proper installation and operation of the door movement as shown.

C. Base Metals: Produce hardware units of the basic metal and forming method indicated, using the manufacturer’s standard metal allow, composition, temper, and hardness, but in no case of lesser (commercially recognized) quality than specified for the applicable hardware units FS FF-H-106, FS FF-6-111, FS FF-H-116, do not furnish “optional” materials or forming methods for those indicated, except as otherwise specified.

D. Fasteners: Manufacturer’s hardware to conform to published templates, generally prepared for machine screw installation. Do not provide hardware which has been prepared for self-tapping sheet metal screws, except as specifically indicated.

E. Furnish Screws: for installation with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition screws to match the hardware finish, or, if exposed in surfaces of other work, to match the finish of such other work as closely as possible, including “prepared for paint” in surfaces to receive painted finish.

PART 3 – EXECUTION

Trade Contractor is to receive, checks, and store all material. Any discrepancies or shortages are to be reported in writing to the supplier within two weeks of receipt of material.

3.1 INSTALLATION

A. Mount hardware units as heights indicated in “Recommended Locations for Builders Hardware for standard steel doors and frames” by the Door and Hardware Institute, except as specifically indicated or required to comply with governing regulations, and except as may be otherwise directed by the Owner.

B. Strictly comply with manufacturer’s instructions and recommendations, except where more restrictive requirements are specified in the Section. Beginning work means installer accepts substrates and conditions.
C. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

D. Drill and countersink units which are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

E. Completely wire all electrified hardware, including connecting from power transfer hinges to electric locks, strikes and the like, and including connecting all of same to power provided above ceiling by Division 16 except for work by security/access system by another contract.

3.2 ADJUST AND CLEAN

A. Adjust and check each operation item of hardware and each door to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.

Schedule of Sets T.B.D.

END OF SECTION 08710
SECTION 08710w - DOOR HARDWARE-Student Housing

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Deliver keys to Owner.

B. For fire-rated openings provide hardware tested and listed by UL or FMG (NFPA 80). On exit devices provide UL or FMG label indicating "Fire Exit Hardware."

C. Obtain Hardware Schedule from Wesleyan University Lock Shop.

1.2 DESCRIPTION OF WORK

A. Definition: “Door Hardware” includes items known commercially as Builders Hardware which are required for swing, sliding, and folding doors, except special types of unique and non-matching hardware specified in the same section as the door and door frame. The work of this Section includes the furnishing of all Finish Hardware as required by the plans and Specifications. Types or items in this section include (but are not necessarily limited to):

1. Hinges
2. Lock Cylinders and Keys
3. Lock and Latch Bolts
4. Closers
5. Auxiliary Hardware
6. Weatherstripping
7. Thresholds
8. Door Viewers

B. Electric Hardware, including wiring by this Section up to termination above ceiling by Division 16.

1.3 RELATED WORK SPECIFIED ELSEWHERE

A. Carefully examine all of the Contract Documents for requirements which affect the work of this Section.

1.4 QUALITY ASSURANCE

A. Manufacturers: Obtain each kind of hardware (hinges, lock and latch sets, closers, etc.) from only one manufacturer. For standardization and to match University standards, provide all products without further substitution. The numbers listed in the hardware schedule have been taken from catalogs of the following manufacturers:

1. McKinney Mfg.
2. Pemko
3. Arrow Lock
4. KABA
5. Door Control International
6. Rockwood Manufacturing
7. Pemko Weatherstripping

B. Fire-Rates Openings: Provide hardware for fire-rated openings in compliance with NFPA Standard No. 80. Provide only hardware which has been tested and listed by UL, FM, WH for types and sizes of doors required and complies with requirements of door and door frame labels.

1.5 SUBMITTALS

A. Hardware Schedule: Submit final hardware schedule in manner indicated below. Hardware schedules are intended for coordination of work.

Final Hardware Schedule Content: Based on Builders Hardware indicated, organize hardware schedule into “Hardware Sets” indicating complete designations of every item required for each door opening. Include the following information.
- Type, style, function, size and finish of each hardware item.
- Name of manufacturer of each item.
- Fastenings and other pertinent information.
- Location of hardware set cross-referenced to indications on drawings both on floor plans and in door and frame schedule.
- Explanation of all abbreviations, symbol, codes, etc, contained in schedule.
- Mounting locations for hardware.
- Door and frame sizes and materials.

C. Submittal Sequence: Submit schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work (e.g. Hollow Metal Frames) which is critical in the project construction schedule. Include with schedule the product data, samples, shop drawings, and other information essential to the coordinated review of hardware schedule.

D. Keying: All cylinders shall be KABA interchangeable core type for EXTERIOR(Kaba 6840) and CONVENTIONAL (3400) on interior locks. Cylinder to be master keyed to owners existing Patented Key System. All keys, bitting lists, and cores will be shipped directly to the University for inspection and installation.

1.6 JOB CONDITIONS

A. Coordination: Coordinate hardware with other work. In a timely fashion, furnish information as may be required by other trades. Tag each item or package separately, with identification related to the final hardware schedule, and include basic installation instructions in the package. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated, as necessary for proper times to the proper locations (shop or project site) for installation.
B. Templates: Furnish hardware templates to each fabricator of doors, frames and other work to be factory prepared for the installation of hardware.

C. Deliver materials and products in sealed and labeled packages. Store and handle in strict compliance with manufacturer’s instructions and recommendations. Protect from damage.

PART 2 – PRODUCTS

2.1 SCHEDULE HARDWARE

A. Requirements for design, function, finish, size and other distinctive qualities of each type of Builders Hardware are indicated in the Builders Hardware Data Sheet and Hardware Schedule at the end of this section. Products are identified by using hardware designation numbers of the following:

B. Finish shall be 630, 605 or 626 where noted. Verify finish by location with Owner.

C. Door Butt Hinges / Continuous Hinges – McKinney
1. Interior hinges where needed shall be a standard weight either 3.5”, 4” or 4.5” as dictated by door/fame condition.
2. All exterior doors shall have standard weight, 2 ball bearing 4.5” high (minimum) full mortise hinges. If butt hinges can not work then a continuous hinge maybe used, if applicable.
   a. 3 Hinges per doors to 7’6” high.
      b. Add 1 hinge for each additional 2’6” of height.
      c. If door exceeds 36” in width, height of hinge to be 5.”
3. Self closing hinges shall be manufactured by McKinney.

D. Flush Bolts – Rockwood
1. Flush Bolts shall be self latching combination 1845/1945 or automatic 1842/1942 as scheduled. Manual Flush Bolts shall be 550 – 12” for wood doors and 555 – 12” for metal doors. Dust Proof Strikes shall be 570 Series.

E. Locksets – Arrow Lock
1. Exterior:
   a. All Exterior locksets are heavy duty cylindrical and must conform to ANSI A156.2, Series 4000, Operational Grade 1.
   b. All locksets and latchsets shall have self-aligning thru bolted trim.
   c. Lever handle trim with hollow cavities are not acceptable.
   d. Exterior locks shall be Arrow Q-12-BR-R-605-2.75” BS x ASA - IC. No Substitute.
2. Suite Entry Door(s):
   a. All Exterior locksets are heavy duty cylindrical and must conform to ANSI A156.2, Series 4000, Operational Grade 1.
   b. All locksets and latchsets shall have self-aligning thru bolted trim.
   c. Lever handle trim with hollow cavities are not acceptable.
   d. Exterior locks shall be Arrow Q-12-BR-R-605-2.75” BS x ASA - IC. No Substitute.
3. Interior:
   a. All Interior locks to be standard-duty cylindrical
   c. Interior Privacy locks to be RK-02-TA-626-306-121/124 No Substitute.

4. All cylinders must be manufactured by “KABA”.
   a. ALL permanent keyed cylinders will be supplied and installed By Owner. Any construction or temporary cylinders will be at the contactor’s expense.

5. Provide extended Curved lip strikes as required.
6. Provide 4 cut keys per keyset.
7. Provide 20 each Kaba key blanks.

A. Closers:
   1. Mount closers on interior side (room side) of door opening. Provide regular-arm, parallel-arm, or top-jamb-mounted closers as necessary.
   2. Adjustable delayed opening (accessible to people with disabilities) feature on closers.

B. Provide wall stops or floor stops for doors without closers.
   1. Rockwood high dome door stop, Model #442 or approved equal

C. Door Viewer:

D. 1. 190 Degree, Mc Kinney Mfg. No. DV3 or approved equal. To be provided for all new doors installed.

PART 2 - PART 3 - EXECUTION

Trade Contractor is to receive, check, and store all material. Any discrepancies or shortages are to be reported in writing to the supplier within two weeks of receipt of material.

3.1 INSTALLATION

A. Letter to manufacturer from Owner is required. Coordinate cylinder allocation with Owner. Contractor to carry costs of all hardware.

B. Mount hardware units as heights indicated in “Recommended Locations for Builders Hardware for standard steel doors and frames” by the Door and Hardware Institute, except as specifically indicated or required to comply with governing regulations, and except as may be otherwise directed by the Owner.

C. Strictly comply with manufacturer’s instructions and recommendations, except where more restrictive requirements are specified in the Section. Beginning work means installer accepts substrates and conditions.

D. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

E. Drill and countersink units which are not factory prepared for anchorage fasteners.

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fasteners and anchors in accordance with industry standards.

F. Completely wire all electrified hardware, including connecting from power transfer hinges to electric locks, strikes and the like, and including connecting all of same to power provided above ceiling by Division 16 except for work by security/access system by another contract.

3.2 ADJUST AND CLEAN

A. Adjust and check each operation item of hardware and each door to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.

Schedule of sets TBD - Reference Scope of Work

END OF SECTION 08710
SECTION 08720 – WEATHERSTRIPPING & SEALS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 - General Requirements is made a part of this section.

B. Product Data: Submit manufacturer’s product data and installation instructions.

PART 2 - PRODUCTS

2.1 Perimeter Gasketing

A. Manufacturers

1. Pemko Manufacturing Company or approved equal.

   PO Box 3780, 4226 Transport Street, Ventura, CA 93003; Telephone: (800) 283-9988, (805) 642-2600; Fax: (805) 642-4109; E-mail: pemkosales@pemko.com; website: www.pemko.com.

   a. Material / Finish: clear anodized aluminum or dark bronze anodized aluminum (Material/finish to be selected by Owner based on existing field conditions).

   b. Manufacturer Model Number: Pemko 29310CV or approved equal based on existing field conditions.

2.2 Brush Weatherstrewing – Exterior Doors

1. Pemko Model #29326CP or approved equal based on existing field conditions.

   a. Material / Finish: clear anodized aluminum or dark bronze anodized aluminum (Material/finish to be selected by Owner based on existing field conditions).

2. Memtech Inc: Brush Door Seals or approved equal based on existing field conditions.

   a. 9033 General Drive, Plymouth, MI 48170. Telephone: 800-634-4471. Fax: 800-634-4472. Email: salesinfo@memtechbrush.com

3.2 Acoustic Weatherstrewing

1. Pemko weatherstrewing, compression: type 379CR, sizes as required for specific location.

2. Pembko door bottom compression: Type 4131CRL, size as required for specific location.

PART 3 – EXECUTION

3.1 Site Verification of Conditions:

A. Verify that site conditions are acceptable for installation of perimeter gasketing and brush weatherstrip.

B. Examine doors and frames for compliance with requirements for door and frame manufacturer’s installation tolerances, labeled fire door assembly construction, wall and floor construction and other conditions affecting performance.

C. Do not proceed with installation of perimeter gasketing or brush weatherstrip until unacceptable conditions are corrected.

3.2 Wood Door Preparation:

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A. Comply with ANSI/WDMA I.S.1-A.
B. Comply with door manufacturer’s positive pressure installation instructions.
C. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
D. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

3.3 Steel Door and Frame Preparation:
A. Drill and tap doors and frames for hardware per manufacturer’s positive pressure installation instructions.
B. Ensure doors and frames are properly sized, plumb and square.
C. Comply with ANSI A250.8/SDI-100.
D. Mounting Location: Comply with the following requirements, unless otherwise indicated:
   1. Comply with manufacturer’s positive pressure installation instructions.
   2. Comply with ANSI A250.8/SDI-100.

3.4 Adjusting:
A. Perform adjustments required to ensure that perimeter gasketing and brush weatherstrip function in compliance with manufacturer’s performance criteria prior to acceptance by Owner.

3.5 Cleaning:
A. Remove any protective films and clean components as necessary following manufacturer’s recommended procedures.

3.6 Protection:
A. Protect installed work from damage due to subsequent construction activity on the site.

3.7 Warranty:
A. Guaranteed by manufacturer against defects in materials or workmanship for 3 years.

END OF SECTION 08720
SECTION 08800 - GLAZING

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals: Product Data and 12-inch square Samples.

B. Fire-Resistance-Rated Assemblies: Products identical to those tested per NFPA 252 for doors and NFPA 257 for window assemblies; both labeled and listed by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.


D. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated.
   4. Flat Glass Manufacturer’s Association Publication.

E. Insulating-Glass Certification Program: Permanently marked with certification label of Insulating Glass Certification Council (IGCC) and/or Insulating Glass. Manufacturers Alliance (IGMA).

F. The following glass manufacturers are approved:
   1. Ford Motor Co., Glass Division.
   2. Guardian Industries Corp.
   3. Libby-Owens-Ford Co.
   4. PPG Industries.

G. Insulating glass shall be manufactured by a member of SIGMA or one of the manufacturers listed above.

PART 2 - PRODUCTS

2.1 GLASS

A. Glass for UL labeled doors and frames and other places where wire glass is indicated: UL approved for fire-resistant clear polished ¼” clear wire glass with pattern chosen by Owner. Provide samples for Owner selection.

B. Safety glass: One of the following conforming to the reference listed above and also ANSI Z97.1 and CPSC 16 CFR Part 1201; 42 FR 148:
1. Laminated safety glass for exterior doors, sidelights and transoms within 18” of floor and where indicated on the drawings; ¼” standard 2-ply conforming to reference listed above and ANSI Z97.1 and 16 CFR 1201, Category II.

2. Tempered glass for exterior doors, sidelights and transoms within 18” of floor and where indicated: ¼” clear tempered polished plate or float glass, conforming to reference listed above and also ANSI Z97.1 1972 or current. Glass shall bear visible, permanent labels.

C. Wired Glass: ASTM C 1036, Type II, Class 1, Quality q8; Form I polished with m1 diamond 0.25 inch thick.

D. Insulating glass: Sealed edge insulating glass composed of ¼” sheet of clear flat Glasson the inside face and ¼” float, PPG Solex Green, Low-E or equal on the outside and ½” dry airspace. Tempered glass for insulating glass shall conform to paragraph above. Seal shall consist of inner seal of polyisobutylene sealant and outer seal of silicone glazing sealant.

E. Mirror Glass: ASTM C 1036, Type 1, Class 1, Quality q1 or q2, silver coated per FS DDM411C, 6.0 mm thick, with edges beveled polished.


F. All other glass: Float glass, glazing or commercial quality. If thickness not indicated, it shall be determined from BOCA Basic National Building Code and glass manufacturer’s tables for sizes, wind load, and exposures where used. Owner will verify thicknesses.

2.2 FABRICATED GLASS PRODUCTS

A. Laminated Glass: Two sheets of ¼-inch thick glass, with urethane acrylate resin interlayer. Comply with ASTM C 1172.

B. Sealed Insulating-Glass Units: Preassembled units complying with ASTM E 2190 for Class CBA units, with two ¼-inch thick sheets of glass separated by a 1/2-inch dehydrated space filled with argon.

2.3 GLAZING

A. Elastic glazing compound: FS TT-G 410E (1) or as recommended by Flat Glass marketing Association. Owner will choose colors. Provide color samples.

B. Glazing sealant:
   1. For topping: Silicone glazing sealant; FS TT-S-1543A.
   2. For heel bead and metal joints: One part acrylic sealant, FS TT-S-00230.
   3. Color: As chosen by Owner. Provide color samples.

C. Glazing tape: Polyisobutylene-butyl tape, self shimming.

D. Interior tape: Closed cell sponge neoprene.

E. Shims: Silicone with durometer hardness of 40-60.

F. Setting blocks: Silicone with durometer hardness of 70-90.
PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with published recommendations of glass product manufacturers and organizations listed above, unless more stringent requirements are indicated. Notify Owner and proceed as directed by Owner.

B. Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.

C. Install interior glass with glazing compound or felt.

D. If glazing gaskets are specified with entrance system, glaze entrance and storefront system according to entrance system manufacturer’s recommendations.

E. Clean and protect glass and plastics as recommended by manufacturer and Flat Glass Marketing Association.

END OF SECTION 08800
SECTION 09260 - GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 - General Requirements is made a part of this section.

B. Division 6 – Wood and Plastics is made a part of this section.

C. Division 10 – Specialties is made a part of this section.

D. Submittals: Product Data, certification stating that all gypsum board products being provided contain no asbestos containing material.

E. Fire-Resistance-Rated Assemblies: Provide materials and construction identical to those tested in assemblies per ASTM E 119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

F. STC-Rated Assemblies: Provide materials and construction identical to those tested in assemblies per ASTM E 90 and classified per ASTM E 413 by a qualified independent testing and inspecting agency.

G. Any materials provided and installed to complete the work shall be free of any asbestos, PCB’s, lead containing materials, sulfur and any other hazardous materials. MSDS sheets to be provided for all materials prior to acceptance and installation.

1.2 PRODUCTS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the Work include, but are not limited to, the following:

1. Steel Framing and Furring:
   - Incor, Inc.
   - Marino Industries Corp.
   - United States Gypsum Co.

2. Gypsum Boards and Related Products
   - United States Gypsum Co.
   - Gold Bond Building Products Div., National Gypsum Co.

1.3 METAL FRAMING AND SUPPORTS

A. Steel Framing Members, General: ASTM C 754.

1. Steel Sheet Components: ASTM C 645, with manufacturer's standard corrosion-resistant zinc coating.
B. Suspended Ceiling and Soffit Framing:
   1. Grid Suspension System for Interior Ceilings: Interlocking, direct-hung system, 15/16” width unless noted otherwise.

C. Partitions, closet partitions and soffit framing:
   1. Studs and Runners: In depth indicated and 0.0179 inch thick, unless otherwise indicated.
   2. Flat Strap and Backing: 0.0179 inch thick.
   3. Rigid Hat-Shaped Furring Channels: In depth indicated and 0.0179 inch thick.
   4. Resilient Furring Channels: 1/2 inch deep, with single- or double-leg configuration.

1.4 PANEL PRODUCTS

A. Provide in maximum lengths available to minimize end-to-end butt joints and minimize the need for trimming

B. Gypsum Wallboard: ASTM C 36, in thickness indicated, with manufacturer's standard edges. Regular type, unless otherwise indicated except Type X where required for specific fire-resistance-rated assemblies.

C. Water-Resistant Gypsum Backing Board: ASTM C 630, in thickness indicated. Regular type, except Type X where required for fire-resistance-rated assemblies. Resists the growth of mold per ASTM G21 with a score of 0 and D 3273 with a score of 10.

D. Acoustically Enhanced Gypsum Wallboard: 5/8” thick gypsum board consisting of a layer of viscoelastic damping polymer sandwiched between two pieces of high density mold resistant gypsum board, providing constrained layer damping for high STC rated areas. Pass full scale ASTM E90 test procedure.

E. Glass-Mat, Water-Resistant Gypsum Backing Board: ASTM C 1178, of thickness indicated. Regular type, except Type X where required for fire-resistance-rated assemblies.
   1. Product: "Dens-Shield Tile Backer" manufactured by Georgia-Pacific Corp.

1.5 ACCESSORIES

A. Trim Accessories: ASTM C 1047, formed from galvanized or aluminum-coated steel sheet or rolled zinc. Provide plastic trim accessories at bathrooms with showers
   1. Provide corner bead at outside corners, unless otherwise indicated.
   2. Provide LC-bead (J-bead) at exposed panel edges.
   3. Provide L-bead with tear away strip at dissimilar finishes.
   4. Provide control joints where indicated.

   1. Joint Tape: Paper, unless otherwise recommended by panel manufacturer.
2. Joint Compounds: Setting-type taping compound and drying-type, ready-mixed, compounds for topping.

C. Green Glue Noise Proofing Compound: Apply between 1st and 2nd layers of GWB at rate of 2 tubes per 4 x 8 sheet. Contact: Green Glue Sales: 866-435-8893.


E. Sound-Attenuation Blankets: Reference Section 07210 Building Insulation.

F. Miscellaneous Materials: Auxiliary materials for gypsum board construction that comply with referenced standards.

PART 2 - EXECUTION

2.1 INSTALLATION

A. Install steel framing to comply with ASTM C 754 and with ASTM C 840 requirements that apply to framing installation and with United States Gypsum's "Gypsum Construction Handbook."

B. Isolate steel framing from building structure, except at floor, to prevent transfer of loading imposed by structural movement.

C. Install and finish gypsum panels to comply with ASTM C 840 and GA-216.
   1. Isolate gypsum board assemblies from abutting structural and masonry work. Provide edge trim and acoustical sealant.
   3. Multilayer Fastening Methods: Fasten base layers and face layer separately to supports with screws.

D. STC-Rated Assemblies: Comply with ASTM C 919 for location of edge trim and closing off sound-flanking paths around or through gypsum board assemblies.

E. Fire-Resistance-Rated Assemblies: Comply with requirements of listed assemblies.

F. Finishing Gypsum Board Assemblies:
   1. Unless otherwise indicated, provide Level 4 finish: Embed tape and apply separate first, fill, and finish coats of joint compound to tape, fasteners, and trim flanges.
   2. At concealed areas, unless a higher level of finish is required for fire-resistance-rated assemblies, provide Level 1 finish: Embed tape at joints.
   3. At substrates for tile, provide Level 2 finish: Embed tape and apply separate first coat of joint compound to tape, fasteners, and trim flanges.

G. Plaster Repair: At all plaster wall areas that are noted to be patched or repaired, cracked or damaged areas shall be cut out as required and patched with GWB. Joints shall be taped and three coats of joint compound shall be applied. Sand between each coat. Skim coat surrounding area with joint compound as required blending in patch and concealing all other
imperfections. All patched areas shall be review and approved by the Owner prior to applying primer and topcoat.

END OF SECTION 09260
SECTION 09290 - FIBERGLASS COLUMNS

1.0 GENERAL

1.1 DESCRIPTION:

A. Columns shall be Fiberglass Columns based on the design.

B. Column design shall have the correct proportions based on Orders of Architecture, except when cut to a specific overall length.

C. Columns are manufactured from highly advanced fiberglass reinforced polymers (FRP).

D. All shafts shall be 100% sanded.

E. All shafts shall be classified as NFPA Class A and UBC Class 1, with a smoke density rating below 450 according to ASTM E84-01 testing criteria.

F. Caps shall be Polyurethane.

G. Bases shall be Polyurethane.

H. Plinths shall be Polyurethane.

1.2 SUBMITALS

A. Submit product data and shop drawings clearly marked to show column requirements.

2.0 PRODUCTS

2.1 ACCEPTABLE MANUFACTURER:

A. Resinart East, Inc.
201 Old Airport Rd.
Fletcher, NC 28732
Tel: 800.497.4376 Fax: 828.687.0182

B. First Class Building Products, Inc
3600 Dallas Highway Suite 230-387
Marietta, Georgia 30064
Tel: 770-514-8141 Fax: 770-514-0731

C. Hartmann-Sanders Manufacturing Company
1700 West Grand Avenue
B. Approved Equal.

2.2 MATERIALS

A. All fiberglass columns shall be manufactured from advanced fiberglass reinforced polymers (FRP).

B. Column shall be Fire Rated in accordance with test method ASTM/E84.

C. Columns will need to be cleaned and painted on site by the installer.

D. FPR composite columns are load bearing. See literature for load bearing capacities for various column sizes.

2.3 FABRICATION

A. Components to be constructed utilizing precision molds to ensure parts conform to dimensions and allowable tolerances.

B. The Contractor must erect FRP components true, plumb and level within the allowable tolerances.

3.0 EXECUTION

3.1 INSTALLATION

A. Follow manufacturer’s detailed installation procedures.

1. Determine the position of the plinth by dropping a plumb line from the center of the soffit beam to the floor. Mark this point on the floor with a "X". This mark is where you will center the plinth so that the top of the shaft will align with the soffit.

2. Measure the overall height. Raise the soffit or porch slightly with brace for easy installation of the columns.

3. Trim column shaft on the bottom end only. Trim with an abrasive saw. Finish both top and bottom of shaft with a rasp to ensure an even load distribution around the entire circumference.

4. Slide cap over top of column shaft. Let cap slide down to rest on neck mold temporarily until shaft is correctly positioned. (If installing a square column, slide
neck mould over top of shaft to desired location. Fasten neck mould to shaft. Caulk between neck mould and shaft.)

5. Slide base/plinth onto column shaft from bottom.

6. Place column in a vertical position with load centered over column shaft with even distribution around bearing surfaces.

7. If installation requires that column be secured in place prior to bearing load, use small L brackets. Be careful to ensure L brackets do not interfere with seating of cap and base. Note: To secure bracket to column, drill hole in shaft and use through bolts. Do not use screws.

8. Remove brace to allow load to bear on column shaft.

9. Slide cap up to soffit and attach to soffit using corrosion resistant type screws. Attach base/plinth to floor using appropriate fasteners.

10. Caulk between the cap and the soffit, the cap and shaft, and the base and the shaft for a finished appearance.

3.2 PAINTING/FINISHING

A. Make sure all surfaces are clean prior to painting. Use mineral spirits if oil or alkyd products are used. Warm soapy water should be used if latex products are utilized.

B. It is necessary to sand the column and caps and base/plinths prior to priming and painting. Some filling may be required. Note: The surface on polyurethane caps and base/plinths must be thoroughly scuff sanded with 120 grit sand paper and wiped clean prior to priming and painting.

C. Alkyd or oil based primer and paint are recommended. Latex products can be used, but additional sanding is required. Only alkyd or oil based primer and paint must be used on DuraWound columns, caps, and base/plinths.

D. Use a good, high quality exterior paint. At least one coat of primer and two coats of paint should be applied.

E. Follow paint manufacturer’s instructions concerning use within temperature ranges for best results.

F. Do not use paint or solvents containing acetone.

3.3 WARRANTY
A. All fiberglass columns and polyurethane, fiberglass components, and decorative capitals have a Limited Lifetime Warranty.

END OF SECTION 09290
SECTION 09642 - WOOD FLOOR REFINISHING

PART 1 - GENERAL

1.1 SUMMARY
A. Section Includes
   1. Finishing requirements for the following types of wood floors.
      a. New and existing wood strip flooring.
      b. New and existing wood parquet flooring.

1.2 SECTION REQUIREMENTS
A. The Conditions state that the Contract Documents are complementary.
B. Temporary facilities and controls are specified in Section 01500. Cooperate in ensuring adequate protection.
C. General material, equipment, and workmanship standards are specified in Section 01600.
D. Painting is specified in Section 09910.

1.3 SUBMITTALS
A. Submit product data on finishing products and systems.
B. Submit record of moisture readings.

1.4 ENVIRONMENTAL CONDITIONS
A. At time of wood flooring refinishing, building shall be dry and closed in. Temperature during and after installation shall be between 70° and 90° F. Flooring moisture content at time of installation shall have reached equilibrium. Take moisture readings of typical wood flooring and submit record for Architect's review.

PART 2 - PRODUCTS

2.1 SEALING AND FINISHING MATERIALS
A. Urethane Finish System; Acceptable Manufacturers:
   1. LEED EQc4: Low-Emitting Materials:
a. Finish must not exceed the VOC and chemical component limits set forth by Green Seal's Standard GS11.

2. Emulsion by Basics; gloss or semi-gloss finish as specified by location.

3. Waterborne Urethane by Benjamin Moore; gloss or semi-gloss finish as specified by location.

B. Finish Coats: Formulated for multicoat application on wood flooring. Apply three coats on new wood floor installations or existing wood floors that are screened or sanded in accordance with manufacturer's instructions, buffing after each coat.

1. Allow finish to cure for 7 days prior to subjecting to traffic.

C. Apply three coats minimum on existing wood floors that are screened in accordance with manufacturer's instructions, buffing after each coat.

1. Allow finish to cure for 7 days prior to subjecting to traffic.

D. Stain: Penetrating type which is nonfading wood stain of the color required to match Owner’s selection from manufacturer’s samples.

1. LEED EQc4: Low Emitting Materials

2. Stain must not exceed the VOC and chemical component limits must not exceed the Green Seal Standard GS11 requirements.

E. Wood Filler: Formulated to fill and repair seams, defects, and open-grain hardwood floors; compatible with finish system components and recommended by filler and finish manufacturers for use indicated. If required to match approved samples, provide pigmented filler.

PART 3 - EXECUTION

3.1 PREPARATION

A. Examine wood flooring to be refinished. Report defects which are likely to have adverse effects on flooring to Owner in writing.

B. Remove surface mounted fasteners, other residual remains of previous floor coverings over original wood flooring.

C. Replace missing floor boards salvaged material matching original patterns, species, and sizes. Conceal fastenings as required. Refasten loose boards where necessary. Plug abandoned holes where piping or conduit was removed. Apply wood filler if required to repair minor defects.

D. Sand/screen flooring level and smooth. Finish sanding with #120 grit. Vacuum floor, and request inspection by Architect. Do not proceed without Owner's written approval.

E. If finishing is delayed after sanding is complete, cover sanded/screened and prepared floors with 1/8" masonite hardboard protection course, with joints and edges taped until all other trades have completed work in the spaces and they can be safely finished for Owner's use.

3.2 SANDING AND FINISHING

A. Sand flooring with drum sander, edger, butter and hand scraper.
B. Use coarse, medium and fine grade sandpaper.

C. After sanding with drum sander, buff entire floor using 100 grit screen back or equal grit sandpaper, with a heavy duty buffing machine. Screen with 120 to 150 grit screen.

D. Vacuum or tack floor before first coat of finish.

E. Floor shall present a smooth surface without drum stop marks, gouges, streaks or shiners.

F. Apply stain if needed. Owner to select color from manufacturer’s samples.

G. Apply floor sealer (1 coat) in accordance with manufacturer's instructions, including machine buffing.

H. Apply floor finish in 3 coats in accordance with manufacturer's instructions, buffing after each coat.

I. Allow finish to cure for 7 days prior to subjecting to traffic.

J. Clean up all unused materials and debris and remove same from the premises.

3.3 SCREENING AND FINISHING

A. Machine-screen entire floor area to remove all surface dirt, grease, wax, etc. Follow ‘Urethane Finish System’ surface preparation requirements. Vacuum and tack with a clean cloth immediately before applying finish.

B. Apply stain if needed to match existing floor.

C. Apply floor finish components in two coats, minimum, and follow all recommendations by finish manufacturer for application indicated.

3.4 PROTECTION

A. Protect wood flooring during remainder of construction period to allow finish to cure and to ensure that flooring and finish are without damage or deterioration at time of project turnover.

B. Clean up all unused materials and debris and remove same from the premises.
SECTION 09651 - RESILIENT FLOOR TILE

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1:- General Requirements is made a part of this section.

B. Other Division 9 sections for floor finishes related to this section but not the work of this section.

C. Division 3 Concrete; not the work of this section.

D. Division 6 Wood and Plastics; not the work of this section.

E. Division 7 Thermal and Moisture Protection; not the work of this section.

F. Submittals: Product Data and Samples.

G. Fire Test Response: Resilient tile has critical radiant flux classification of Class I, not less than 0.45 W/sq. cm per ASTM E 648.

PART 2 - PRODUCTS

2.1 VINYL COMPOSITION FLOOR TILE

A. Products:

1. Contractor shall provide pricing for StoneWalk and Essentials flooring.

2. The Mohawk Group StoneWalk Non-PVC Tile:
   b. ASTM F 1066, Class 2 (modified for NONE vinyl compound)
   c. Thickness: 0.080”
   d. Size: 12” x 12”
   e. VOC: None
   g. Smoke Development: ASTM E 662, Class 1.
   h. Static Load Limit: ASTM F 970, 2000 PSI.
   i. Resistance to chemicals: ASTM F 925.
   j. 10% preconsumer recycled content
   k. Limited Wear Warranty: 5 Years.

3. Mannington Commercial Essentials Vinyl Composition Tile with Recycled Vinyl Content:
   a. Color and Pattern: #127 Warm Beige (Submit manufacturers standard color selection for review and final approval).
   b. ASTM F 1066, Class 2 (through-pattern tile).
   c. Thickness: 0.125 inch.
   d. 85% limestone from Canaan, CT
   e. Size: 12” x 12”

4. Armstrong Commercial Flooring; Migrations with BioStride BioBased Tile
Wesleyan University

a. Color: Natural Beige T-3510. Color selected from the range currently available from Armstrong World Industries, Inc.
b. Thickness: Having a nominal total thickness of 0.125".
c. Size: 12 in. x 12 in. composed of polyester resin binder, fillers and pigments with colors and texture dispersed uniformly throughout its thickness.
d. ASTM F 1066, Class 2 through-pattern
e. Thickness: 0.125 inch.
f. Size: 12" x 12"
g. 10% preconsumer recycled content

5. Approved Equal.

B. Trowelable Leveling and Patching Compounds: Provide USGBC approved latex-modified, portland cement- or blended hydraulic cement-based formulation provided by flooring manufacturer for applications indicated.

C. Adhesives: Provide USGBC approved water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

D. Provide transition/reducing strips tapered to meet abutting materials.

E. Metal Edge Strips: Extruded aluminum in mill finish unless otherwise specified. Provide in maximum available lengths to minimize joints and of required thickness to protect exposed edges of the flooring. Use butt-type metal edge strips for concealed anchorage, or overlap-type metal edge strips for exposed anchorage.

F. Thresholds: Wood, metal, and/or marble to match existing or as directed by Owner.

G. Sealer and Wax: Contractor to submit cut sheets of Zinc Free Floor Finish by EcoLab, Inc.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Prepare concrete substrates according to ASTM F 710. Verify that substrates are dry and free of curing compounds, sealers, and hardeners. Ensure that surface is smooth, level and free from defects. Flash patch substrate as required to ensure a smooth, level surface.

B. Lay out tiles so tile widths at opposite edges of room are equal and are at least one-half of a tile.

C. Match tiles for color and pattern by selecting tiles from cartons in same sequence as manufactured and packaged. Lay tiles as directed by the owner either with grain running in one direction or in basket-weave pattern with grain direction alternating in adjacent tiles. Obtain owner approval prior to the start of work.

3.2 CLEANING AND PROTECTION

A. Prior to cleaning and sealing newly installed floors, ensure that adhesives have cured properly in accordance with the manufacturer’s written instructions.

B. Seal and wax floors with three (3) coats Zinc Free Floor Finish by EcoLab, Inc.

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END OF SECTION 09651
SECTION 09652 - SHEET VINYL FLOOR COVERINGS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS
   A. Division 1 - General Requirements is made a part of this section.

1.2 Submittals: Product Data and Samples.

PART 2 - PRODUCTS

2.1 SHEET VINYL FLOOR COVERING
   A. Products:

      1. Mannington Realities Brazilian Cherry– Bedrooms
         a. Product Number: 5634
         b. Colorway Name: Natural
         c. Pattern Type: Wood
         d. Pattern Scale: Small
         e. Gloss Level: Low
         f. Nature Form: Yes
         g. Guardian Protection: Yes
         h. Never Yellow: Yes
         i. Recycled Content: Yes
         j. FloorScore Certified: Yes
         k. Installation Type: Full spread, Loose lay (no glue) or Perimeter (glue only perimeter)

         a. Product Number: 71101
         b. Colorway Name: Porcelain
         c. Pattern Scale: Medium
         d. Repeat Length: 36
         e. Repeat Width: 36
         f. Nature Form: Yes
         g. Never Yellow: Yes
         h. Guardian Protection: Yes
         i. Scratchresist: Yes
         j. Recycled Content: Yes
         k. FloorScore Certified: Yes
         l. Installation Type: Full spread, Loose lay (no glue) or Perimeter (glue only perimeter)

      3. Mannington Aurora Costa Maya - Bathrooms
         a. Product Number: 41244
         b. Colorway Name: Pumice
         c. Pattern Scale: Medium
         d. Repeat Length: 36
         e. Repeat Width: 36
         f. Nature Form: Yes
         g. Never Yellow: Yes
         h. Scratchresist: Yes
i. Recycled Content: Yes
j. FloorScore Certified: Yes
k. Installation Type: Full spread, Loose lay (no glue) or Perimeter (glue only perimeter)

4. Approved Equal.

2.2 INSTALLATION ACCESSORIES

A. Trowelable Leveling and Patching Compounds: Low VOC, solvent free adhesive. Latex-modified, portland cement- or blended hydraulic cement-based formulation provided or approved by flooring manufacturer for applications indicated.

B. Adhesives: Low VOC, solvent free adhesive. Water-resistant type recommended by manufacturer to suit sheet vinyl floor covering and substrate conditions indicated.

C. Metal Edge Strips Thresholds: Extruded aluminum in maximum available lengths to minimize joints.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Prepare concrete substrates according to ASTM F 710. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.

B. Flash patch all cracks, voids, seams and depressions as required to obtain a smooth, even substrate.

C. Laying the underlayment panels should begin in one corner of the room. Lay all underlayment panels in the same direction. Underlayment panel edges and subfloor edges should be offset at least 8”. A space of 1/4” to 3/8” shall be left between the panels and the wall around the perimeter of the room. Stagger panel joints so that four corners do not meet. Cross joints should be staggered at least 16”. The panel edges shall be lightly butted together.

D. New underlayment should not be installed over heavily cushioned flooring. These may not provide a firm base for underlayment board application resulting in an up and down or scissoring action at the seams. Telegraphing of underlayment joints and nail pops may also occur.

E. Nails: Cement coated or resin coated fasteners can stain resilient flooring. Use non-coated ring-shank or screw type underlay flooring nails. The length of the nail shall not exceed the total thickness of the subfloor and underlayment. Space nails 2” to 4” on center at panel edges and 6” on center throughout the field.

F. Staples: Stapling underlayment panels using a staple with a divergent chisel point is recommended. Staples should be spaced 1”-2” along the edge and 3”-4” on center throughout the field.

G. Begin fastening at one corner of underlayment panels and work diagonally across panels (fan nail). Fasteners shall be set flush or just slightly below the surface of the underlayment.
H. The underlayment must be dry, clean, smooth, level and structurally sound. The underlayment shall be swept and/or vacuumed to remove any dust and debris. Any surface materials present such as paint, wax, grease, oil, adhesive residues, crayon, pen marking, etc. that may prevent a proper bond or migrate to the surface of the flooring causing discoloration, must be removed.

I. Fill and level underlayment joints and all other irregularities with a high quality, non-shrinking, latex fortified, hydraulic cement patching compound.

J. Note: Tarkett does not recommend or warrant the use of any products containing gypsum as a satisfactory patching compound for the installation of Tarkett resilient floorings. Tarkett will not accept responsibility for flooring failures related to the use of gypsum type patching compounds.

K. Maintain uniformity of sheet vinyl floor covering direction, and match edges for color shading at seams.

L. Minimize number of seams; place seams in inconspicuous and low-traffic areas, at least 6 inches away from parallel joints in substrates.

M. Installation shall meet or exceed all manufacturers’ requirements.

END OF SECTION 09652
SECTION 09653 - RESILIENT WALL BASE AND ACCESSORIES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 - General Requirements is made a part of this section.

B. Submittals: Product Data and Samples.

PART 2 - PRODUCTS

2.1 WALL BASE

A. Products:

1. Johnsonite Rubber Wall Base (DC):
   a. Color and Pattern: Provide sample of manufacturer’s standard colors for final selection and approval.
   b. ASTM F-1861, Type TP, Group 1 (solid) Standard Specification for Resilient Wall Base
   c. Style: Cove (with top-set toe) unless otherwise noted as straight
   d. Minimum Thickness: 0.125 inch.
   e. Height: 4 inches unless otherwise noted as 6 inches
   f. Lengths:
      1) 4” Height: Cut lengths 48 inches long or 120 foot coils.
      2) 6” Height: Packaged in 100’ lengths.
   g. Inside and outside corners with 4” returns.
   h. Product Performance and Technical Data
      1) Hardness: ASTM D 2240: 85 Shore A.
      2) Flexibility: Will not crack, break, or show any signs of fatigue when bent around a 1/4" diameter cylinder.

2. Johnsonite Vinyl Wall Base (CB or CBT for toeless):
   a. Color and Pattern: Provide sample of manufacturer’s standard colors for final selection and approval.
   b. ASTM F-1861, Type TP, Group 1 (solid) Standard Specification for Resilient Wall Base
   c. Style: Cove (with top-set toe) unless otherwise noted as straight
   d. Minimum Thickness: 0.125 inch.
   e. Height: 4 inches unless otherwise noted as 6 inches
   f. Lengths:
      1) 4” Height: Cut lengths 48 inches long or 120 foot coils.
      2) 6” Height: Packaged in 100’ lengths.
   g. Inside and outside corners with 4” returns.
### 2.2 RESILIENT STAIR ACCESSORIES

**A. Products:**

1. Johnsonite Vinyl Stair Treads

**B. Color and Pattern:** VIHT (Visually Impaired) - Safe-T-Rib Vinyl Stair Treads, 2" hinged square nose (Sq) configuration or 1-5/8" diameter round nose (Rd) configuration 1/4" to 1/8" tapered 12-1/4" tread depth, 2" wide (VI) contrasting color grit tape insert. Color shall be black unless specified otherwise.

1. Provide samples of manufacturer’s standard colors for final approval.
2. Size: Lengths and depths to fit each stair tread in one piece or as specified.

**C. Product Performance and Technical Data**

1. Hardness: ASTM D 2240 - Not less than 85 Shore A.
2. Abrasion Resistance: ASTM D 3389 - 0.22 mg/cycle.
4. Standards and ADA recommendations of .6 for flat surfaces.

### 2.3 INSTALLATION ACCESSORIES

**A. Trowelable Leveling and Patching Compounds:** Latex-modified, Portland cement- or blended hydraulic cement-based formulation provided or approved by flooring manufacturer for applications indicated.

**B. Adhesives:** Water-based type recommended by manufacturer to suit products and substrate conditions.

### PART 3 - EXECUTION

**3.1 INSTALLATION**

**A.** Prepare concrete substrates according to ASTM F 710. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.

**B.** Adhesively install resilient wall base and accessories.

**C.** Install wall base in maximum lengths possible. Apply to walls, columns, pilasters, casework, and other permanent fixtures in rooms or areas where base is required.
D. Sand stair treads and risers as required removing the existing surface finish. Refinish treads and risers as specified prior to installing vinyl stair treads. Obtain owner approval of refinished treads and risers prior to vinyl tread installation.

E. Install reducer strips at edges of floor coverings that would otherwise be exposed.

END OF SECTION 09653
SECTION 09680 - CARPET

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1: General Requirements are apart of this section.

B. Submittals: Product Data, Samples.

C. Comply with CRI 104, Section 6.1, "Site Conditions; Temperature and Humidity."

PART 2 - PRODUCTS

2.1 Vestibule / Entry Carpet

A. InterfaceFLOR Entry Level
   2. Modular: 50 cm x 50 cm
   3. Backing System: GlasBac Tile
   4. Yarn System: Invista Type 6,6 Nylon with InterfaceFLOR approved Type 6,6 Nylon
   5. Color System: 100% Solution Dye
   6. Construction: Tufted Textured Loop
   7. Lifetime Antimicrobial: intersept
   8. Soil/Stain Protection: Protekt² with Zonyl 8779 Fluorochemical
   9. Yarn Weight: 28 oz
   10. Total Recycled Content: 40% - 43%
   11. CRI Green Label Plus: GLP8020
   12. Installation Method: Non-directional

B. Lees Step Up DD763
   1. Gauge: 5/32”
   2. Face Yarn: Fortis Nylon 6,6 scraper yarn
   3. Dye System: Yarn dyed
   4. Fiber Technology: Sentry Soil Protection
   5. Backing Material: Fiberglass Reinforced Thermoplastic
   6. Face Yarn Weight: 38 oz/sy
   7. Modular: 24” x 24”
   8. Installation Method: Quarter Turn or Monolithic
   9. IAQ Green Label Plus: 1098

2.2 COMMON AREA CARPET – As Identified in the Scope of Work.

A. Products:
   1. InterfaceFlor Carpet Squares
2. Shaw Broadloom

3. Approved Equal (Carpet shall be constructed of first quality materials and tested to comply fully with the requirements and be certified by the CRI Green Label indoor air quality carpet testing program for volatile organic compounds. The commercial carpet must contain at least 25% recycled content and be recycled).

B. Yarn Weight: 28 oz. – 32 oz.

C. Broadloom Surface Appearance: Textured Heathered Loop

D. Carpet Square Surface Appearance: Tufted Cut and Loop

E. Broadloom Carpet Primary Backing: Woven Polypropylene

F. Broadloom Carpet Secondary Backing: Woven Polypropylene

G. Carpet Square Backing: Glasbac RE

H. Broadloom Width: 12’

I. Carpet Squares: Per selected Product.

2.3 CARPET CUSHION (compatible with double glue installation)

A. Traffic Classification: CCC Class II, heavy traffic.

B. Fiber Cushion:

   1. Resinated recycled textile.
   2. Weight: 32 oz./sq. yd.
   3. Submit compatible foam cushion to Owner for approval

PART 3 - EXECUTION

3.1 INSTALLATION

A. Vestibule/Entry carpets to be installed at all main entrances, vestibules and halls as noted for each project scope. Common Area carpet shall be installed at all common areas as noted on the contract drawings and as outlined in each project scope.

B. Comply with CRI 104, Section 8:

   1. Direct Glue-Down method for vestibule entry locations.
   2. Double Glue-Down method for common area locations.

C. Use manufacturers approved adhesives for carpet and transition strips. TacTiles to be used for InterfaceFlor carpet squares.

D. Install transition strips at the end of the carpet runs and at each doorway or entryway location.
E. Maintain uniformity of carpet direction and lay of pile. At doorways, center seams or transition strips under door in closed position.

F. Install pattern parallel to walls and borders.

END OF SECTION 09680
SECTION 09681 – CARPET CLEANING

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals: Cleaning Solution Product Data

PART 2 - PRODUCTS

2.1 CARPET CLEANING SOLUTION

A. Products:

1. Cleaning product shall be Revitalize Carpet Shampoo “Green” cleaning product by EcoLab.

2. Proposed cleaning solution and procedure shall be submitted to the Owner for review and approval.

PART 3 - EXECUTION

3.1 CLEANING METHODS

A. Remove all moveable items and furnishings from room to perform cleaning. Ensure items are secure. Reinstall all items after carpet has dried.

B. Vacuum room prior to cleaning.

C. Inspect existing carpet and remove stains by applying Revitalize Carpet Shampoo “Green” cleaning agent directly to the stained area. Hot water extraction methods shall be used to remove the stains. Retreat as required to remove stain.

D. Hot water extraction cleaning methods shall be employed to clean the carpets noted. Revitalize Carpet and Upholstery Extraction Cleaner shall be applied per manufacturer’s recommendations. Extraction equipment shall be portable.

E. Upon completion of the cleaning methods noted above, ensure that the carpet has a clean, uniform appearance. Retreat stains if required.

END OF SECTION 09681
SECTION 09770 – SPECIAL WALL SURFACES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 - General Requirements is made a part of this section.

B. Submittals: Product Data

PART 2 - PRODUCTS

2.1 FIBERGLASS REINFORCED PLASTIC (FRP) PANELS

A. Products:
   1. Kemlite Company, Inc. Glasbord-FSI panels
   2. Marlite FRP Wall Panels
   3. Approved equal

B. Size: Manufacturer’s standard sizes. Sizes shall be selected based on individual project requirements as required to minimize joints.

C. Finish: Textured

D. Nominal Panel Thickness: 0.075”

E. Color: As noted

F. Flame Spread / Smoke Development Rating: Class A

G. Attachment Devices:
   1. Greenguard approved FRP adhesive
   2. Nylon drive rivets

H. Accessories:
   1. Vinyl accessory moldings for installing FRP.

2.2 FABRICATION

A. Fabricate panels with a continuous laminating process to obtain a smooth finish and continuous color throughout.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Patch and repair any wall or ceiling section that is uneven and ensure that the wall or ceiling surfaces are structurally sound prior to applying the FRP panels.
B. Prepare any repaired or patched wall/ceiling surface in accordance with the manufacturer’s recommendation.

C. Install panels level and aligned at top and bottom, vertical and plumb.

D. FRP panels shall be installed and fastened in accordance with the manufacturers specifications.

E. Use vinyl accessory moldings to obtain a finished look and proper top and corner terminations.

END OF SECTION 09770
SECTION 09910 - PAINTING

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 – General Requirements is made a part of this section.

B. House / Village Color Schemes study entitled “Exterior Paint Study and Building Analysis – The Village at Wesleyan University” prepared by Elizabeth Randall dated April 20, 1998 is made a part of this section and is available for review at the Office of Construction Services, 170 Long Lane, Middletown, CT 06459.

C. Summary: Paint exposed surfaces, new and existing, unless otherwise indicated.

1. Do not paint prefinished items, items with an integral finish, operating parts, and labels, unless otherwise indicated.

D. Use KILZ general purpose primer to cover any stains or surface imperfections that may bleed through the finish coat.

E. Submittals: Submit paint finish schedule for each project, color samples and product cut sheets to Owner prior to the start of work.

F. Mockups: Full-coat finish sample of each type of coating, color, and substrate, applied where directed.

G. Obtain block fillers and primers for each coating system from same manufacturer as finish coats.

H. Extra Materials: Deliver to Owner 1 gal. of each color and type of finish coat paint used on Project, in containers, properly labeled and sealed.

PART 2 - PRODUCTS

2.1 PAINT

A. Products:

Note: Sherwin William Supplier – National Paint & Wallpaper, 32 Washington Street, Middletown, CT, Ph. 860-346-7705 or approved equal

1. Sherwin Williams (Interior)
   a. Promar 200 Interior Latex Wall Primer
   b. Promar 200 (Flat, Eggshell, Semi-gloss – As Noted)
   c. Builder’s Solution Interior Matte Latex

2. Muralo
   a. Superfinish Premium Acrylic Ceramic (Eggshell, Semi-gloss – As Noted)

3. KILZ® (Interior / Exterior)
a. General Purpose Primer

4. Zinsser (Exterior)
   a. Peel Stop® Clear Binding Primer

5. Sherwin Williams (Exterior)
   a. Emerald Satin: house field
   b. Duration Gloss: doors/trim
   c. DTM: metals

6. Benjamin Moore (Exterior)
   a. Fresh Start® All-Purpose 100% Acrylic Primer 023 (tinted to match approximate shade of topcoat color).
   b. MoorGard® N103 – 100% Acrylic Low Lustre Latex House Paint (field).
   d. DTM-M04, DTM-M29, DTM-M28 based on finish selected.

7. Colors: As selected by the Owner.

B. Material Compatibility: Provide materials that are compatible with one another and with substrates.

C. Material Quality: Manufacturer's best-quality paint material of coating types specified that are formulated and recommended by manufacturer for application indicated.

PART 3 - EXECUTION

3.1 PREPARATION

A. Remove hardware, lighting fixtures, wall plates, and similar items that are not to be painted. Mask items that cannot be removed. Reinstall items in each area after painting is complete.

B. Contractor shall assume that all paint contains lead and shall abide by all local, state, federal and OSHA guidelines and shall meet or exceed Wesleyan University requirements outlined in the project manual.

C. Clean and prepare all surfaces in an area before beginning painting in that area. Cleaning solution shall be submitted to the Owner for approval prior to the start of work. Schedule painting so cleaning operations will not damage newly painted surfaces. Surfaces must be clean and free of grease, wax, mold and mildew. Remove excessive chalk and loose or scaling paint. Glossy surfaces must be dulled. Unweathered areas such as eaves, ceilings, and overhangs should be washed with an environmentally friendly detergent solution and/or rinsed to remove contaminants that can interfere with proper adhesion. Wait a minimum of three days prior to applying paint products to ensure that all surfaces are dry and free of moisture. For metal surfaces, remove rust. Wipe down with paint thinner to remove surface oils. Scrape, sand and remove old paint. Wear a NIOSH approved respirator to control dust exposure. Carefully clean up with a HEPA vacuum and a wet mop.

D. Upon completing all required prep work, contact Owner to review surfaces prior to applying paint products. Provide additional prep work as required based on review comments from Owner.
3.2 APPLICATION

A. Apply coatings by brush, roller, spray or other applicators according to coating manufacturer's written instructions.

1. Use brushes only for exterior painting and where the use of other applicators is not practical.

2. Use rollers for finish coat on interior walls and ceilings.

B. Pigmented (Opaque) Finishes: Completely cover surfaces to provide a smooth, opaque surface of uniform appearance. Provide a finish free of cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections.

C. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.

3.3 EXTERIOR PAINT APPLICATION SCHEDULE

A. Concrete, Stucco, and Masonry:

1. Low-Luster Acrylic: One coat Peel Stop® Clear Binding Primer, one coat Fresh Start® All-Purpose 100% Acrylic Primer 023 (tinted to match approximate shade of topcoat color), one coat MoorGard® N103 – 100% Acrylic Low Lustre Latex House Paint.


B. Concrete Masonry Units:

1. Low-Luster Acrylic: One coat Peel Stop® Clear Binding Primer, one coat Fresh Start® All-Purpose 100% Acrylic Primer 023 (tinted to match approximate shade of topcoat color), one coat MoorGard® N103 – 100% Acrylic Low Lustre Latex House Paint.


C. Student Woodframe House Standards:

1. Doors: Color to match BM Cottage Red
2. Trim/Columns/Gables/Soffits: Color to Match BM Navajo White
3. Porch Ceilings: Color to match BM April Sky
5. Metal Basement Hatchways: DTM; Color to match BM Tudor Brown

D. Wood Siding, Shakes:

1. Satin Acrylic: One coat Peel Stop® Clear Binding Primer, one coat Duration – 100% Acrylic Satin Latex House Paint (prime as required)

2. Low-Luster Acrylic: One coat Peel Stop® Clear Binding Primer, one coat Fresh Start® All-Purpose 100% Acrylic Primer 023 (tinted to match approximate shade of topcoat color), one coat MoorGard® N103 – 100% Acrylic Low Lustre Latex House Paint.

3. Where wood siding, shakes are stained, coordinate with Owner materials to be used. In all cases, multiple coats of finish will be required.
E. Wood Trim:
1. Gloss Acrylic: One coat Peel Stop® Clear Binding Primer, one coat Duration – 100% Acrylic Satin Latex House Paint (prime as required)
2. Semi gloss, Acrylic Enamel: One coat Peel Stop® Clear Binding Primer, one coat Fresh Start® All-Purpose 100% Acrylic Primer 023 (tinted to match approximate shade of topcoat color), one coat Moorcraft® Super Spec Latex House & Trim Paint 170.

F. Exterior Doors:
1. Gloss Acrylic: One coat Peel Stop® Clear Binding Primer, one coat Duration – 100% Acrylic Gloss Latex House Paint (prime as required)
2. Semi gloss, Acrylic Enamel: One coat Peel Stop® Clear Binding Primer, One coat Fresh Start® All- Purpose 100% Acrylic Primer 023 (tinted to match approximate shade of topcoat color), one coat Moorcraft® Super Spec Latex House & Trim Paint 170.

G. Exterior Wood Decks/Porches:
1. Benjamin Moore Floor and Deck Enamel. Apply two (2) coats. Provide manufacturer’s standard color options.

H. Exterior Wood Finishes:

I. Ferrous Metal:
1. Low-Luster Acrylic: Two coats over rust-inhibitive primer.
2. Semi gloss, Acrylic Enamel: Two coats over rust-inhibitive primer.
3. Full-Gloss, Alkyd Enamel: Two coats over rust-inhibitive primer.

J. Zinc-Coated Metal:
1. Low-Luster Acrylic: Two coats over galvanized metal primer.
2. Semi gloss, Acrylic Enamel: Two coats over galvanized metal primer.
3. Full-Gloss, Alkyd Enamel: Two coats over galvanized metal primer.

K. Aluminum:
1. Semi gloss, Acrylic Enamel: Two coats over primer.
2. Full-Gloss, Alkyd Enamel: Two coats over primer.

L. Center for the Arts
1. Exterior Metal Railings
   a. Off-white oil gloss used for exterior metal surfaces such as railings. Pittsburgh base # 54-410 w/ the colorants B-1, C-1Y4, L-16, M-6

M. Van Vleck Observatory Domes
3.4 INTERIOR PAINT APPLICATION SCHEDULE

A. Concrete and Masonry (Other Than Concrete Unit Masonry):
   1. Flat Acrylic: Two coats over primer.
   2. Low-Luster, Acrylic Enamel: Two coats over primer.

B. Concrete Masonry Units:
   1. Flat Acrylic: Two coats over block filler.
   2. Semi gloss, Acrylic Enamel: One coat over block filler.

C. New Gypsum Board:
   1. Flat Acrylic: Two coats over primer.
   2. Eggshell Acrylic: Two coats over primer.

D. Existing Gypsum Board:
   1. Flat Acrylic: Two top coats, patch and prime as required.
   2. Eggshell Acrylic: Two top coats, patch and prime as required.
   3. Semi gloss, Acrylic: Two top coat, patch and prime as required.

E. Wood Frame Standards – Sherwin Williams Promar 200 #2532; Submit paint finish schedule for each project, color samples and product cut sheets to Owner prior to the start of work. Where specifically noted; provide Sherwin Williams Builder’s Solution interior matte latex-reference the drawings.
   1. Flat Acrylic (Ceilings): Two topcoats for existing ceilings – patch and spot prime as required. Two top coats over 100% primer for new ceilings. Color: White
   2. Eggshell Acrylic/Low Luster (all rooms except Kitchen and Bathrooms): Two topcoats for existing ceilings and walls – patch and spot prime as required. Two top coats over 100% primer for new ceilings and walls.
   3. Semi gloss Acrylic (Kitchens & Bathrooms): Two topcoats for existing ceilings and walls – patch and spot prime as required. Two top coats over 100% primer for new ceilings and walls.
   4. Semi gloss Acrylic (Trim & Doors): Two topcoats for existing trim and doors – patch and spot prime as required. Two topcoats over 100% primer for new trim and doors.

F. Kitchen Cabinets: White, Satin Finish, PPG BREAKTHROUGH:

G. Sprinkler Pipe:
   1. Two top coats over primer
H. Existing Plaster:
   1. Flat Acrylic: Two top coats, spot prime as required.
   2. Eggshell / Velvet: Two top coats, spot prime as required.
   3. Semi gloss, Acrylic Enamel: Two top coats, spot prime as required.

I. New Woodwork and Hardboard:
   1. Semi gloss Acrylic Enamel: Two coats over primer.

J. Existing Wood Floors:
   2. Satin finishes: Vermont Natural Coatings PolyWhey Floor Finish: Two finish coats.

K. Existing Woodwork and Hardboard:
   1. Semi gloss Acrylic Enamel: Two finish coats, spot prime as required.

L. Stained Woodwork:
   1. Alkyd-Based, Satin Varnish: Two coats over sealer and wood stain.
   2. Waterborne, Satin Varnish: Two coats over sealer and waterborne wood stain.
   4. Alkyd-Based Stain, Wax-Polished Finish: Two coats paste wax over sealer and wood stain.

M. Natural-Finish Woodwork:
   1. Alkyd-Based, Satin Varnish: Two coats over sealer.
   2. Waterborne, Satin Varnish: Two coats over sealer.
   4. Wax-Polished Finish: Two coats paste wax over sealer.

N. Ferrous Metal:
   1. Flat Acrylic: One coat over ferrous metal primer.
   2. Semi gloss, Acrylic Enamel: One coat over ferrous metal primer.
   3. Full-Gloss, Alkyd Enamel: One coat over ferrous metal primer.

O. Zinc-Coated Metal:
   1. Flat Acrylic: One coat over galvanized metal primer.
   2. Semi gloss, Acrylic Enamel: One coat over galvanized metal primer.
P. Center for the Arts

1. Interior Walls
   a. Interior off-white latex (eggshell finish) used on sheet-rocked walls & interior non-metal surfaces. Pittsburgh base is # 6-411 w/ L-24, C-16, B-4, M-2, W-1Y (based on mixing one gallon). Two coats, patch and spot prime as required.

2. Interior Metal Surfaces:
   a. Off-white acrylic/latex semi-gloss used for the interior doors & metal surfaces. Pittsburgh base is Pit-Tech DTM w/ the following colorants: B10, C-1Y4, L-16, M-6. Two coats.

3. Exterior Metal Surfaces
   a. Off-white acrylic/latex gloss used for the exterior railing surfaces. Pittsburgh base is Pit-Tech DTM w/ the following colorants: B10, C-1Y4, L-16, M-6. Two coats.

4. Exterior Metal Doors and Metal Enclosures:
   a. Pittsburgh base # 54-200 & the colorants are Pittsburgh standard custom formula # 4756. Two coats.

END OF SECTION 09910
SECTION 11451 - RESIDENTIAL APPLIANCES

PART 1 - GENERAL
1.1 SECTION REQUIREMENTS
   A. Division 1 - General Requirements is made a part of this section.
   B. Submittals: Product Data.
   C. Regulatory Requirements: Comply with provisions of the following product certifications:
      1. NFPA: Provide electrical appliances listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
      2. UL and NEMA: Provide electrical components required as part of residential appliances that are listed and labeled by UL and that comply with applicable NEMA standards.
   D. 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)." ANSI A117.1.
   E. Energy Ratings: Provide appliances that qualify for the EPA/DOE ENERGY STAR product labeling program.

PART 2 - PRODUCTS
2.1 RESIDENTIAL APPLIANCES
   A. Electric range and refrigerator, and hood fans specified may be purchased and delivered by Portland Electric, 275 Main St., Portland CT (860) 342-3993 Contact Person: Mike Botti.
   B. Alternate location for the purchase and delivery of appliances is from Gene’s TV & Appliances
      1. 15 Rome Avenue
         Middletown, CT 06457-2236
         (860) 347-1134
      2. genestvandappliance.com
   C. Alternate location for the purchase and delivery of appliances is from Contractors Home Appliances, Inc.
      1. 9 So. Main St. (corner of rte 20 and 187)
      2. East Granby, CT 06026
      3. (860) 653-8266 – voice
       4. (860) 653-3155 – fax
       5. sales@contractorshomeappliances.com
   D. Electric Range: 30-inch wide freestanding range with 4 burners (2) 6” & (2) 8” coils and standard cleaning oven with broiler unit. 24-inch freestanding range with 4 burners (3) 6” & (1) 8” coil and standard cleaning oven with broiler unit.
      1. Products:
         a. Magic Chef
         b. General Electric
c. Approved equal

2. Color: White

E. Refrigerator/Freezer: Freestanding, frost-free, two-door refrigerator with top-mounted freezer. Must be Energy Star certified.

1. Products:
   a. Frigidaire
      1) 12 cubic foot: FFPT12F0KW
      2) 15 cubic foot: FRT15HB3JW
      3) 17 cubic foot: FRT17HB3JW
      4) 18 cubic foot: FRT18HS6JW
      5) 21 cubic foot: FRT21HS6JW
   b. Danby
      1) 11.4 cubic foot: DFF1144W
   c. Approved equal. Requires approval of Owner prior to purchase.

2. Capacity:
   a. Woodframe Residences: 18 Cubic Feet
   b. High Rise: 11.4 or 12 cubic feet
   c. As identified for each individual project.
   d. Coordinate final size requirements with Owner.

3. Color: White

F. Exhaust Hood

1. Exterior Wall Locations: 30-inch under-cabinet exterior venting exhaust hood with fan and 75-watt light. Include all required ductwork, filter, and accessories for a complete installation. Provide as identified for each individual project based on site location and as identified in scope. Coordinate final size requirements with Owner.

2. Interior Wall Locations: 24- inch or 30-inch under-cabinet non-ducted exhaust hood with fan and 75-watt light. Include filter and accessories for a complete installation. Provide as identified for each individual project based on site location and as identified in scope. Coordinate final size requirements with Owner.

3. Products:
   a. Woodframe Projects (Ducted Models):
      1) Broan 43000 Series 4-way convertible range hood; model numbers 433001 (30” white) or 433601 (36” white).
      2) Enclosed light and fan/filter assembly.
      3) Two speed, rocker-type fan control
      4) Includes 3-1/4” x 10” damper/adapter and built-in 7” round adapter, vertical or horizontal installation.
      5) Sides shall be mitered and bottom edge hemmed, with no sharp edges.
      6) Air delivery shall be no less than 160 CFM and sound levels no greater than 7.0 sones (3-1/4” x 10” horizontal discharge), 190 CFM, 7.0 Sone (3-1/4” x 10” vertical discharge) or 220 CFM, 8.0 Sone (7” round discharge) performance.
      7) All air and sound ratings shall be HVI Certified.
      8) Provide all related filters, ductwork, duct tape, wall cap, damper, adapters, etc. for a full and complete installation based on field conditions.
      9) Provide owner with wall cap options.
      10) Range hood shall be UL listed.
   b. Woodframe Projects (Non-Ducted Models):
1) Broan Series 41000 range hood two-speed non-ducted; model numbers 413001 (30” white) or 413601 (36” white) or 412401 (24” white).
2) Enclosed light and fan/filter assembly.
3) Two speed, rocker-type fan control
4) Sides shall be mitered and bottom edge hemmed, with no sharp edges.
5) All air and sound ratings shall be HVI Certified.
6) Provide all related filters, damper, adapters, etc. for a full and complete installation based on field conditions.
7) Range hood shall be UL listed.

c. Approved Equal


5. Fan Control: Hood-mounted switch, with separate light switch.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Freestanding Appliances: Place in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.

B. Coordinate refrigerator door swings requirements with specific project layout requirements. Change swing as required.

C. Exhaust fans shall be installed by the Contractor. Securely anchor to supporting cabinetry with concealed fasteners. Provide all required blocking as required for a complete and proper installation.

D. Verify that clearances are adequate for proper functioning and rough openings are completely concealed.

E. Exterior vented exhaust fans:
   1. Through wall ducting shall be insulated and fire caulked.
   2. Duct directly through the wall for range hoods mounted on an exterior wall.
   3. If a wall cap is used directly off the back of the hood, special care must be taken to make sure that the damper in the damper/duct connector on the hood and damper in the wall cap do not interfere with each other when the hood is operating. This could result in either inadequate air delivery or back drafts.

F. Hood fans shall not be installed more than 30” or less than 24” from range top.

G. Test each item of residential appliances to verify proper operation. Make necessary adjustments.

H. Verify that accessories required have been furnished and installed.

END OF SECTION 11451
SECTION 12356 - RESIDENTIAL CASEWORK

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 - General Requirements is made a part of this section.

B. Division 6 – Woods and Plastics.

C. Submittals: Product Data and dimensioned layout Shop Drawings.

D. Verify dimensions by field measurements prior to ordering cabinets. Measure for countertops after base cabinet has been installed. Field measurements shall be made immediately upon award of contract to eliminate lead time issues.

PART 2 - PRODUCTS

2.1 CASEWORK

A. Kitchen Cabinets (upper/lower):

1. Products:
   a. Kraftmaid Cabinetry
      1) Woodframe Houses (unless otherwise noted in the scope document): Cabinet Style / Species / Finish: Square Recessed Panel – Solid (DRHM) / Maple / Honey Spice

B. Drawers: ¾” thick, solid hardwood drawer cores with dovetail joinery and 3/16” plywood bottom. Full extension Whisper touch drawer runners – No substitutions allowed.

C. Cabinet boxes shall have plywood end construction.

D. Shelving: ¾” full depth with natural birch wood grain laminate.

E. Hinges: Concealed whisper touch.

F. Plastic-Laminate Countertops and Full Height Back and Side Splashes (Kitchen Only):

1. Substrate: Exterior plywood, PS 1, Grade C-C Plugged, touch sanded.

2. Manufacturer / Color #: Wilsonart Laminate / 4166-60 Pampas or as specified by Owner. Provide standard laminate color selection.

G. Countertop Configuration:

1. Front Style: Square

2. Backsplash / Endsplash: Square with Full-height laminate on wall to underside of upper cabinet.

H. Bathroom Vanity

1. Products:
a. St. Paul Chelsea 26 1/2 inch vanity in nutmeg with porcelain vanity top in white with white basin. Model No: CH24EUP2COM-N.

b. Kraftmaid Cabinetry
   1) Cabinet Style / Species / Finish: Square Recessed Panel – Solid (DRHM) / Maple / Honey Spice
   2) Size: As noted. Construction to match kitchen cabinets.

I. Drawer / Door Pulls: Knob style. Provide manufacturers standard finish palate for Owner selection.

J. Vanity Top: Integral lavatory and countertop with backsplash. Size shall be coordinated with vanity base.
   1. Products:
      a. Cultured marble or solid surface material by Corian, Transolid, Nevamar, Vermax or approved equal.
      b. Color: To be selected by the Owner from manufacturer’s standard colors.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install cabinets with no variations in flushness of adjoining surfaces by using concealed shims. Where casework abuts other finished work, scribe and cut for accurate fit. Provide filler strips, scribe strips, and moldings in finish to match casework face.

B. Install cabinets without distortion so doors and drawers fit openings properly and are aligned.

C. Install level and plumb to a tolerance of 1/8 inch in 8 feet.

D. Fasten each cabinet to adjacent unit and to structural members of wall construction. Fasten wall cabinets through back, near top and bottom, at ends and not less than 24 inches on center.

E. Fasten plastic-laminate countertops by screwing through corner blocks in base units into underside of countertop. Align adjacent surfaces. Spline and glue joints in countertops and use concealed mechanical clamps. Form seams 1/8 inch wide and adhere with manufacturer's recommended joint adhesive in color to match countertop. Dress joints smooth, remove surface scratches, and clean entire surface.

F. Furnish and install full height laminate onto the wall, from the top of the kitchen countertop to the underside of the upper cabinets – typical for all kitchens. When range is installed in line with base cabinets, extend full height laminate onto the wall and provide finished edge – typical for all kitchens.

G. Plastic Laminate Islands: Fasten plastic-laminate islands to wall with steel L-bracket width of island. Provide round steel support leg with rubber foot to protect floor and provide a non-slip installation.

END OF SECTION 12356
SECTION 12500 - WINDOW TREATMENT

PART 1 - GENERAL
1.1 SECTION REQUIREMENTS
   A. Division 1: General Requirements are made apart of this section.
   B. Submittals: Product Data, Samples, Shop Drawings.

1.2 QUALITY ASSURANCE
   1. Flame Resistance: Provide shades identical to those tested and passed for flame resistance per applicable test of NFPA 701 by UL or another testing and inspecting agency acceptable to authorities having jurisdiction.

1.3 PROJECT CONDITIONS
   1. Field Measurements: Verify openings by field measurements before fabrication

PART 2 - PRODUCTS
2.1 Window Shades: (Locations as identified by the Owner)
   A. Products:
         a. Color: White (Submit manufacturer’s standard colors to Owner for final approval)
      2. Mecho blackout shade cloth, Thermoveil Series 0700
         a. Color: White (Submit manufacturer’s standard colors to Owner for final approval)
      3. Approved Equal
   B. Light Filtering Shade cloth: Draper Style 4400 / Mecho Thermoveil Series 1300, Color: To be selected by the owner
   C. Black-out Shade cloth: Draper SunBloc Series SB9000-9100 / Mecho Thermoveil Series 0700. Color: To be selected by the owner
   D. Accessories: Brackets, head boxes, chain pulls, end caps where needed.
   E. Fascia shall be provided in academic and administrative facilities unless otherwise directed. Fascia shall not be provided in woodframe, program or apartment houses. Coordinate fascia requirements with Owner.
   F. Provide shade units with Lift Assistance at all locations.

2.2 Roller Shades: (Woodframes and other locations as identified by the Owner).
   A. White, 12 mill, room darkening vinyl roller shades
2.3 Horizontal Window Blinds: (Woodframes and other locations as identified by the Owner)

A. Products:

1. 1” mini blinds by Levelor, Bali or approved equal
   a. Material: Vinyl
   b. Color: White (Submit manufacturer’s standard colors to Owner for final approval)

2.3 Vertical Window Blinds:

A. Products:

1. 2” slats blinds by Levelor, Bali or approved equal
   a. Material: Vinyl
   b. Color: White (Submit manufacturer’s standard colors to Owner for final approval)
   c. Coordinate mounting location with Owner.

2.4 Window Film:

A. Products:

1. Gila
2. 3-M
3. Approved equal
   a. Privacy Adhesive Window Tint
      1) Material: Vinyl, plastic
      2) Color: Frosted/Opaque White (Submit manufacturer’s standard colors/films to Owner for final approval)

PART 3 - EXECUTION

3.1 INSTALLATION

A. Isolate metal parts of window treatment hardware from concrete or mortar to prevent galvanic action. Use tape or another method recommended by manufacturer.

END OF SECTION 12500
SECTION 13080: SOUND CONTROL ACCESS SYSTEMS NOISE-LOCK DOORS

PART 1 - GENERAL

1.01 SUMMARY

A. Provide sound control door and frame assemblies where shown on the Drawings, as specified herein, and listed on the Door Schedule. The work includes door and frame assemblies complete with acoustical seals, cam-lift hinges, vision lites, and all finish hardware factory supplied and installed. Door leaf and frame factory assembled and shipped complete as one unit.

B. Related Sections:
   1. Section 04200: Concrete Unit Masonry.
   2. Section 08710: Finish Hardware.
   3. Section 08810: Glazing
   4. Section 09110: Metal Stud System.
   5. Section 09260: Gypsum Wallboard System.
   6. Section 09900: Painting.

1.02 SYSTEM PERFORMANCE REQUIREMENTS

A. Sound Rating: Provide door and frame assemblies that have been fabricated as sound-retardant units, tested according to ASTM E 90 and have the following certified Sound Transmission Class (STC) rating as determined according to ASTM E 413.

   STC Rating 51

1.03 SUBMITTALS

A. Comply with pertinent provisions of the Contract and Division 1.

B. Product Data: Within 30 calendar days after the Contractor has received the Owner’s Notice to Proceed, submit:

   1. Material lists of items provided under this Section.
   2. Manufacturer’s specifications and other data needed to prove compliance with the specified requirements.
3. Shop Drawings showing details of each frame type, elevations of door designs, details of openings, and details of construction, installation and anchorage.

4. Manufacturer’s recommended installation procedures which, when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the work.

5. Test Reports from a qualified independent testing agency indicating and interpreting test results from Part 3 of this Section relative to compliance of sound ratings with the indicated requirements.

1.04 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

B. Acoustical Performance

1. The acoustical door manufacturer will be required to submit acoustical performance data in the form of up-to-date test reports from an independent testing laboratory indicating the doors to be provided will have the required Sound Transmission Class Rating (ASTM E-90-90).

2. Door and Frame Assembly be rated STC 51.

3. Owner may at his option order performance tests of installed door assemblies by an independent consultant to verify compliance with the specifications. Any discrepancies shall be repaired or replaced without cost to the Owner.

C. Single-Source Responsibility: Provide sound control doors and frames, including gaskets, hinges and other hardware items essential for sound control as an assembly and by a single firm specializing in producing this type of work for a minimum of ten (10) years.

1.05 DELIVERY, STORAGE AND HANDLING

A. Use all means necessary to protect the materials of this section before, during and after installation and to protect the installed work and materials of all other trades.

1.06 WARRANTY

A. Acoustic door materials and hardware shall be guaranteed against defective workmanship for one (1) year from date of shipment.

PART 2 - PRODUCTS
2.01 MANUFACTURERS

A. Provide “Noise Lock” acoustic door(s) and frame(s) with cam lift hinges and split frames as manufactured by Industrial Acoustics Co, Inc (IAC), c/o QuietStar Industries, 7216 Bergenline Ave North Bergen, NJ 07047 Attn: Steve Dutton or Craig D’Anna, Tel: 201-868-5600. Equivalent products will be considered, when submitted for approval prior to the bid opening, and meet or exceed the requirements of this specification.

2.02 MANUFACTURED ASSEMBLIES (NOISE LOCK DOORS)

A. Door leaf(s) minimum thickness:

   STC 51 Rating, 2 ½” (64 mm) with a guaranteed NIC 45

   Door leaf(s) and door stiffeners are to be fabricated from 14 gauge (2 mm) cold rolled, galvannealed steel with an A60 coating weight, and filled with 6 lb density, sound absorbing, and damping elements.

B. Frame(s) shall be fabricated from 14 gauge cold rolled, galvannealed steel with an A60 coating weight and furnished “split” in two (2) pieces, inside and outside, that are mitered and welded together allowing for easy installation into either existing or new construction openings.

C. Acoustic seals: Doorjambs, meeting stiles of double doors and at the head of the door and frame shall receive self-aligning magnetic seals. Door(s) to be held in closed position by magnetic force of perimeter seals.

   Acoustic labyrinth shall be created when door is in closed position. Bottom of door leaf shall contain continuous, adjustable, gravity-activated seal that shall compress against the floor as the door is closed. Raised sills and threshold drop seals will not be acceptable.

   Acoustic Seal assemblies as follows:

   STC 51 Rating, Double magnetic type

D. Jamb anchors: Provide jamb anchors as determined by wall construction. Anchors are to be spaced at 12” (305 mm) on center (max) and are to be of a corrosion resistant material.

E. Hardware

   Hinges: 1 pair IAC, cam-lift, butt-type, hinges, US26D finish (Hinge manufacturer to furnish laboratory test data certifying that hinges of identical design have been cycled a minimum of 125,000 times while supporting a door leaf weighing a minimum of 350 lbs.)

   Mortise Lock Set:
1. Corbin Russwin to match existing hardware. Bright chrome lever handle. Mortise cylinder with removable construction core. Coordinate ordering of proprietary core with Owner.

2. Best 45HQ Prox Reader mortise lockset and deadbolt & LCN 4040 door closer.

3. Von Duprin exit devices on each side door leaf and Dorma closer / coordinator assembly – no mullion. Dog down feature required.

Threshold: ¼” Aluminum threshold, 4” wide – Length proper to support door frame.

Latchsets/Locksets: Provided and installed by door supplier. Refer to finish hardware section for manufacturer, type and details.

F. Hardware Reinforcement

1. Hinges: Minimum of ¼” (6 mm) thick x 2” (51 mm) wide x 7 ½” (191 mm) lg.

2. Frames: Minimum of 3/16” (5 mm) thick for strikes and #11 (3 mm) gauge for closers.

3. Doors: Minimum of #11 (3 mm) gauge for lock boxes and closers.

G. Glazing

Provide factory-installed, aluminum extruded stops and moldings with true mitered corners for double, glazed assemblies. Size of vision lite is to be 22” x 66. Manufacturer to supply and factory install (2) lites of laminated safety glass as required to maintain the specified sound transmission class rating.

2.03 PRE-HUNG

A. Assembly and adjustment of door leaf, frame, acoustic seals, hinges and associated finish hardware shall take place at the factory to insure ease of installation, reliable operation and acoustic performance. The entire manufactured assembly shall be shipped to the job site ready to install and operate.

2.04 FABRICATION

A. General: Fabricate units to be rigid, neat in appearance and free from defects, warp or buckle. Accurately form metal to required sizes and profiles. Wherever practical, fit and assemble units in the manufacturer’s plant. Identify work that is not permanently factory-assembled before shipment to ensure proper assembly at the Project site. Weld exposed joints continuously: grind, fill dress and make smooth flush and invisible.

2.05 FINISHES (FACTORY)
A. Doors and frames shall receive a shop coat of a powder coat primer. The primer shall be applied over properly prepared metal, in accordance with the manufacturer’s standard shop prime coat procedure.

B. Others, as required, will perform finish painting, staining and/or varnish, under the painting section 09910 of this Specification.

3.01 MANUFACTURER'S INSTRUCTIONS

A. Compliance: Comply with manufacturer’s product data, including product technical bulletins, product catalog installation instructions and product carton instructions.

3.02 PREPARATION

Owner to be responsible for removing existing doors and preparing walls properly for installation by door manufacturer.

A. Adjacent Surfaces Protection: Protect adjacent work areas and finish surfaces from damage during product installation.

B. Adjacent Construction: Coordinate door assembly details with details of adjacent work to ensure proper attachments and clean junctions.

3.03 INSTALLATION

A. Install work coordinated and supplied by the manufacturer in accordance with reviewed shop drawings and these specifications using only factory-trained personnel as required by the Manufacturer and approved by the Architect.

1. Hang doors and adjust for free swinging operation without binding, sticking, sagging or excessive clearances.

2. During installation, solidly pack acoustic insulation around frames that are installed in stud and gypsum-wallboard partitions.

3. Caulk exterior joint prior to painting.

4. Install sound control door assemblies during finish phase of construction to protect units from damage.

5. When installation is otherwise complete, adjust operating hardware for proper operation and function.

3.04 FIELD QUALITY CONTROL

A. Upon completion of this portion of work, and prior to its acceptance by the Owner, secure a visit to the job site by a qualified representative of the manufacturer of the acoustical door system(s) to confirm that installation is in conformance with the manufacturer’s recommendations.
3.06 DEMONSTRATION

A. Instruct the Owner’s maintenance personnel regarding operation and maintenance of all acoustic doors.
SECTION 15050 - BASIC MECHANICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Summary: General requirements for motors, hangers and supports, vibration isolation and seismic restraints, valves, and meters and gages.

B. Submittals: Product data for materials and equipment specified in this section.

PART 2 - PRODUCTS

2.1 MOTORS

A. Motor Characteristics:

1. Motors 1/2 HP and Larger: Three phase unless otherwise noted.
2. Motors Smaller Than 1/2 HP: Single phase unless otherwise noted.
3. Frequency Rating: 60 Hz unless otherwise noted.
4. Voltage Rating: NEMA standard voltage selected to operate on nominal circuit voltage to which motor is connected.
5. Service Factor: 1.15 for open drip proof motors; 1.0 for totally enclosed motors.
6. Duty: Continuous duty at ambient temperature of 105 deg F and at altitude of 3300 feet above sea level.
7. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.
8. Enclosure: Unless otherwise indicated, open drip proof.
9. Motors Used with Variable Frequency Controllers: Ratings, characteristics, and features coordinated with and approved by controller manufacturer.

2.2 HANGERS AND SUPPORTS

A. Hanger and Pipe Attachments: Factory fabricated with galvanized coatings; nonmetallic coated for hangers in direct contact with copper tubing.

B. Building Attachments: Powder-actuated-type, drive-pin attachments with pullout and shear capacities appropriate for supported loads and building materials.

C. Mechanical-Expansion Anchors: Insert wedge-type attachments with pullout and shear capacities appropriate for supported loads and building materials.

2.3 VIBRATION ISOLATION AND SEISMIC CONTROL DEVICES
A. Vibration Supports:
   1. Restrained or Elastomeric Mounts: Double-deflection type, with molded, oil-resistant rubber or neoprene isolator elements with factory-drilled, encapsulated top plate for bolting to equipment and baseplate for bolting to structure. Provide isolator with minimum 0.5-inch static deflection.
   2. Spring Isolators: Freestanding, laterally stable, restrained or open-spring isolators. Provide isolator with minimum 1-inch static deflection.

B. Vibration Hangers:
   1. Elastomeric Hangers: Double-deflection type, with molded, oil-resistant rubber or neoprene isolator elements bonded to steel housings with threaded connections for hanger rods. Provide isolator with minimum 0.5 inch static deflection.
   2. Spring Hangers: Combination coil-spring and elastomeric-insert hanger with spring and insert in compression. Provide isolator with minimum 1 inch static deflection.

C. Seismic Restraints:
   1. Resilient Isolation Washers and Bushings: 1-piece, molded, bridge-bearing neoprene complying with AASHTO M 251 and having a durometer hardness of 50 unless otherwise noted, plus or minus 5, with a flat washer face.
   2. Restraining Cables: Galvanized steel cables with end connections made of steel assemblies that swivel to final installation angle and utilize two clamping bolts for cable engagement.
   3. Anchor Bolts: Seismic-rated, drill-in, and stud-wedge or female-wedge type. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488/E 488M.

2.4 PRESSURE GAGES AND TEST PLUGS

A. Pressure Gages: Direct-Mounting, indicating-dial type complying with ASME B40.100. Dry metal case, minimum 2-1/2 inch diameter with red pointer on white face, and plastic window. Minimum accuracy 3 percent of middle half of range. Range two times operating pressure.

B. Test Plug: Corrosion-resistant brass or stainless-steel body with two self-sealing rubber core inserts and gasketed and threaded cap, with extended stem for units to be installed in insulated piping. Minimum pressure and temperature rating 500 psig at 200 deg F.

PART 3 - EXECUTION

3.1 MOTOR INSTALLATION

A. Anchor motor assembly to base, adjustable rails, or other support, arranged and sized according to manufacturer's written instructions.

3.2 GENERAL PIPING INSTALLATIONS
A. Install piping free of sags and bends.

B. Install fittings for changes in direction and branch connections.

C. Install sleeves for pipes passing through concrete and masonry walls, gypsum-board partitions, and concrete floor and roof slabs.

D. Exterior Wall, Pipe Penetrations: Mechanical sleeve seals installed in steel or cast-iron pipes for wall sleeves.

E. Fire-Barrier Penetrations: Seal pipe penetrations with through-penetration firestop systems specified in Division 7.

F. Install unions at final connection to each piece of equipment.

G. Install dielectric unions and flanges to connect piping materials of dissimilar metals in gas piping.

H. Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals in water piping.

3.3 GENERAL EQUIPMENT INSTALLATIONS

A. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.

B. Install equipment level and plumb, parallel and perpendicular to other building systems and components, unless otherwise indicated.

C. Install mechanical equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.

D. Install equipment to allow right of way for piping installed at required slope.

3.4 CONCRETE BASES

A. Anchor equipment to concrete base according to equipment manufacturer's written instructions and according to seismic codes at Project.

B. Construct concrete bases of dimensions indicated, but not less than 4 inches larger in both directions than supported unit.

C. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of the base to connect concrete base to concrete floor.

D. Install epoxy-coated anchor bolts for supported equipment that extend through concrete base, and anchor into structural concrete floor.
E. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

F. Install anchor bolts to elevations required for proper attachment to supported equipment.

G. Use 3000-psi, 28-day compressive-strength concrete and reinforcement as specified in Division 3 Section "Cast-in-Place Concrete."

3.5 HANGERS AND SUPPORTS

A. Comply with MSS SP-69 and MSS SP-89. Install building attachments within concrete or to structural steel.

B. Install hangers and supports to allow controlled thermal and seismic movement of piping systems.

C. Install powder-actuated drive-pin fasteners in concrete after concrete is cured. Do not use in lightweight concrete or in slabs less than 4 inches thick.

D. Install mechanical-expansion anchors in concrete after concrete is cured. Do not use in lightweight concrete or in slabs less than 4 inches thick.

E. See Division 13 Section "Fire Suppression Piping" for support of fire-protection system piping.

F. Load Distribution: Install hangers and supports so piping live and dead loading and stresses from movement will not be transmitted to connected equipment.

G. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Specification Sections, install the following types:

1. Adjustable Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated stationary pipes, NPS 1/2 to NPS 30.
2. Pipe Hangers (MSS Type 5): For suspension of pipes, NPS 1/2 to NPS 4, to allow off-center closure for hanger installation before pipe erection.
3. Adjustable Steel Band Hangers (MSS Type 7): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 8.
4. Adjustable Band Hangers (MSS Type 9): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 8.
5. Adjustable Swivel-Ring Band Hangers (MSS Type 10): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 2.

H. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Specification Sections, install the following types:

1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers, NPS 3/4 to NPS 20.
2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers, NPS 3/4 to NPS 20, if longer ends are required for riser clamps.

3.6 VIBRATION ISOLATION AND SEISMIC CONTROL DEVICE INSTALLATION
A. Adjust vibration isolators to allow free movement of equipment limited by restraints.

B. Install resilient bolt isolation washers on equipment anchor bolts.

C. Install cables so they do not bend across sharp edges of adjacent equipment or building structure.

3.7 PRESSURE GAGES AND TEST PLUGS

A. Install pressure gages at suction and discharge of each pump.

B. Install test plugs at supply and return for hydronic terminals, and boilers.

END OF SECTION 15050
SECTION 15325 – FIRE SPRINKLER SYSTEMS

PART 1 - GENERAL

1.1 General Requirements

A. The Fire Sprinkler Contractor (hereinafter referred to as “The Contractor”) shall furnish all labor, equipment and materials and perform all operations required to install complete fire protection sprinkler systems for Wesleyan University at locations as identified. Each location shall be priced separately and the cost for each shall be identified in the appropriate space on the bid proposal form.

B. At the time of bid, all exceptions taken to, all variances from, and all substitutions of operating capabilities or equipment called for in these specifications shall be listed in writing and forwarded to the Project Manager. Any such exceptions, variances, or substitutions which were not listed at the time of bid and are identified in the submittal shall be grounds for disapproval without comment.

1.2 Quality Assurance

A. This specification identifies the essential performance requirements of the automatic fire sprinkler systems designed to protect the selected buildings at Wesleyan University. All equipment furnished and system configurations as installed shall meet or exceed the functional intent of this specification.

B. Sprinklers, valves, water flow alarms, and supervisory devices shall be Underwriters' Laboratories, Inc. (UL) listed or Factory Mutual Research Corporation (FM) approved.

C. All materials and equipment furnished and installed shall be new, unused and first class without defects; in continuous production and providing satisfactory service in commercial applications for at least one year; and designed to function properly in that portion of the work for which they are intended. Obsolete equipment shall not be used.

1.3 Scope of Work

A. The work covered by this specification includes the installation of a complete fire sprinkler system in various buildings on the Wesleyan University campus.

B. The Contractor shall provide all labor, materials, tools, equipment, supervision, services and testing required to provide complete, code compliant operating systems which interface properly with the fire alarm system (by others) and are acceptable in all respects to the authorities having jurisdiction.

C. It is the responsibility of the Contractor to visit the site, evaluate the existing conditions, perform calculations, create shop drawings, and determine both the quantities of materials required and suitable locations for sprinklers, piping, hangers, and seismic bracing supports in accordance with applicable codes and standards.

1.4 Qualifications of Bidders

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A. The Contractor shall provide a statement of qualifications for both the company and the individual foreman assigned to this project in terms of installing fire sprinkler systems.

B. All Contractors shall document their record of complete, satisfactory installation of fire sprinkler systems.

1.5 Codes and Standards

A. The systems installed, without exception, shall comply with all applicable state and local codes, variances and regulations and shall be approved by the authorities having jurisdiction.

B. All equipment furnished shall be listed by Underwriters Laboratories, Inc., under the following applicable standards:

UL 193 Alarm valves for fire protection service
UL 260 Dry pipe and deluge valves for fire protection service
UL 312 Check valves for fire protection service
UL 753 Alarm accessories for automatic water supply control valves for fire protection service
UL 393 Indicating pressure gauges for fire protection service
UL 213 Rubber gasketed fittings for fire protection service
UL 1486 Quick opening devices for dry pipe valves for fire protection service
UL 199 Automatic sprinklers for fire protection service
UL 1091 Butterfly valves for fire protection service
UL 262 Gate valves for fire protection service
UL 203 Pipe hanger equipment for fire protection service
UL 203A Seismic bracing for fire protection service
UL 405 Fire department connections
UL 508 Industrial control equipment
UL 1479 Fire tests of through-penetration firestops

C. The following manufacturing standards and specification are applicable to fire sprinkler systems and are referenced within this specification.

ANSI/ASME B36.10M Welded and seamless wrought steel pipe
ANSI/ASME B1.20.1 Pipe threads, general purpose
ANSI/ASME B16.4 Cast iron threaded fittings
ANSI/ASME B16.3 Malleable iron threaded fittings
ASTM A53 Standard specification for pipe, steel, black and hot-dipped, zinc-coated, welded, and seamless
ASTM A47 Specification for malleable iron castings
ASTM A135 Standard specification for electric-resistance welded steel pipe
ASTM A148 Specification for steel castings for high-strength, structural purposes
ASTM B633 Specification for electrodeposited coatings of zinc on iron and steel
ASTM A165 Specification for electrodeposited coatings of cadmium on steel
ASTM A536 Specification for ductile iron castings
D. If a UL Listing is unavailable, approval by Factory Mutual is acceptable.

E. Installation shall be made in accordance with the applicable provisions of the edition of the code or standard accepted by the local authority having jurisdiction. Applicable reference standards include:

- NFPA 13 *Installation of Sprinkler Systems*
- NFPA 13R *Installation of Sprinkler Systems in Residential Occupancies*
- NFPA 13D *Installation of Sprinkler Systems in One and Two Family Dwellings*
- NFPA 24 *Installation of Private Fire Service Mains*
- NFPA 70 *National Electric Code* (as amended by Connecticut codes)
- NFPA 72 *National Fire Alarm Code*

E. Equipment installation and acceptance testing shall be in accordance with the manufacturer's guidelines.

G. Systems shall be acceptance tested in accordance with the applicable provisions of the edition of the standards listed below which are accepted by the authority having jurisdiction:

- NFPA 13 *Installation of Sprinkler Systems*
- NFPA 13R *Installation of Sprinkler Systems in Residential Occupancies*
- NFPA 13D *Installation of Sprinkler Systems in One and Two Family Dwellings*
- NFPA 25 *Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*
- NFPA 72 *National Fire Alarm Code*

1.6 Order of Precedence

A. Where conflicts arise from discrepancies between referenced documents, the more stringent requirement shall apply. Where the degree of stringency cannot be determined, discrepancies shall be resolved as follows:

1. State and local codes, variances and regulations shall take precedence over this specification.

2. The National Fire Protection Association standards shall take precedence over this specification.

3. This specification shall take precedence over any drawings.

1.7 Related Work

A. The Contractor shall coordinate work in this specification with all related trades.
B. The Contractor shall verify and coordinate the location of the water service with the site contractor. The water service supply line shall be 2”. If a larger water service supply is required based on sprinkler calculations and pressure in the street, Sprinkler Contractor shall notify Owner promptly. Site Contractor shall provide and add/alternate cost for a 3” water service supply line.

C. The Contractor’s foreman shall participate in weekly project meetings with the Project Manager.

D. The Contractor shall seal all penetrations with a listed through-penetration seal system tested by a nationally recognized testing laboratory.

E. The Contractor shall be responsible for priming and painting all exposed sprinkler pipe and fittings upon completion of the installation.

F. The Contractor shall be responsible for patching, priming and painting all wall and ceiling areas that have been penetrated or disturbed due to the sprinkler piping installation.

1.8 Submittals

A. The Contractor shall submit to the Project Manager sufficient information to describe his/her qualifications, the work efforts to be performed, and the materials to be provided. The Contractor shall certify that he/she has reviewed the documentation to verify: dimensions; quantities; installation and fabrication techniques, procedures, and sequences; good workmanship and safety precautions; and that they are in conformance with this specification.

1. These reviews are not the responsibility of the Project Manager. The Project Manager will only review these documents for the limited purposes of checking for general compliance with the information provided in the contract documents and general conformance with the design concept of this part of the project, and not to determine accuracy or completeness of other details such as dimensions and quantities. The Project Manager will not approve means, methods or procedures of construction or installation nor will they review for safety precautions. Accuracy and process are the responsibility of the Contractor.

C. The Contractor shall submit to the Project Manager the names of all subcontractors and their qualifications, indicating years in business and prior experience with installations of this type, and includes the type of equipment and service that will be supplied.

D. The awarded Contractor shall submit three (3) copies of the following documents prior to performing any work:

1. A schedule indicating the installation sequence for all systems and equipment and the time frame required to complete each phase of the work. Projected dates of delivery of the equipment to be supplied, installation completion, demonstration test, and final test/acceptance dates shall be included.

2. Submittals shall include original manufacturer’s specification and installation instruction sheets; sprinkler fabrication drawings and hydraulic calculations; piping, hangers and appurtenances; sprinkler heads and cabinets; backflow preventer; valves; seismic bracing. All equipment and devices on the shop drawings to be furnished under this contract shall
be clearly marked in the specification sheets. If any equipment and/or devices required in the system are not so marked, the Project Manager will return the submittal for correction and clarification.

3. Shop drawings shall be prepared using AutoCAD or a compatible program that will open with AutoCAD version 2006. Contractor shall field measure all houses to create floor plans for each individual project location. Sprinkler layouts shall be designed based on existing field dimensions, layout conditions and identified Add-A-Bed locations.

4. Sufficient information shall be submitted so that the exact function of each installed device is known.

5. It is the responsibility of the contractor to determine how the pipe will be located and provide all required information for sizing the seismic braces in the shop drawing submittal. All seismic brace locations, based on actual field condition, shall be shown on the shop drawing.

E. The Contractor shall not order any equipment nor perform any installations prior to completion of review of the submittals by the Project Manager and receipt of written authority to proceed to the next milestone from the Owner.

PART 2 PRODUCTS

2.1 General Systems Descriptions

A. The new automatic fire sprinkler system shall be connected to the new water supply, starting at the flange connection inside the building. The system when completed shall include at least the following components:

1. A DEP approved and UL Listed double check valve backflow prevention device.
2. Alarm check valves and trim, and inspectors’ test stations.
3. Sprinklers of the temperature ratings and orifice sizes as required.
4. Sprinkler piping and fittings of the materials, schedules, types and configurations as specified herein and as required.
5. All other required system components as specified herein and as required per code.
6. All water flow alarms and supervisory switches and the electrical contacts required to connect them to the fire alarm control panel.
7. All core drilling, cutting,patching, sealing and painting required to install the system and restore floor, wall and ceiling penetrations to a sound, tight condition and neat appearance.
8. Fire department connection with fittings compatible with the equipment used by the local fire department.

2.2 Sprinkler Pipe, Fittings, Hangers, and Supports
A. General

1. All pipe, fittings, hangers, and supports shall be prepared and installed in accordance with all applicable requirements of NFPA 13, 13D and/or 13R, and the manufacturer's published installation instructions including: material, size, wall thickness, and joining methods.

**NOTE:** CPVC and PB Piping (plastic) materials shall not be used for any fire sprinkler projects on campus – no exceptions.

B. Steel Pipe

1. 2-1/2 inch nominal size and larger pipe shall be Schedule 10 steel pipe with roll grooved ends, UL Listed for use in fire protection systems and shall be 175 psi rated.

2. 2 inch nominal size and smaller piping shall be Schedule 40 pipe, UL Listed for use in fire protection systems and shall be 175 psi rated.

D. Fittings

1. Mechanical couplings for steel pipe: couplings shall consist of a one piece or multiple piece ductile iron (ASTM A536) or malleable iron (ASTM A47) cast housing, a synthetic rubber gasket or a central cavity pressure responsive design with the unit secured by nuts, bolts, locking toggle, or lugs.

2. Fittings for grooved steel sprinkler pipe: fittings shall be full flow designed to accept mechanical groove couplings. Fittings shall be cast iron (ASTM A536) alkyd enamel painted, zinc electroplated (ASTM B633) or cadmium plated (ASTM A165).


E. Hangers and Supports


2. Threaded pipe and fittings: provide at least one hanger for each pipe length greater than 5 feet. Maximum hanger spacing shall not exceed 10 feet for nominal pipe sizes 1-1/4 inches and smaller or 10 feet for nominal pipe sizes 1-1/2 through 6 inches.

3. Grooved pipe and fittings: where full linear movement is required for nominal pipe sizes from 2-1/2 through 4 inches provide one hanger for each 5 feet of pipe supported. For nominal pipe sizes of 6 and 8 inches, provide one hanger for each 10 feet of pipe supported.

F. Seismic Bracing

1. General: The requirements of NFPA 13, Section 4-14.4.3, *Protection of Piping Against Damage Where Subject to Earthquakes* shall govern.
2. Seismic bracing shall be provided for all sprinkler piping in the buildings for pipe greater than or equal to 2-1/2 inches in diameter. All feeder mains, regardless of size, shall be braced.

3. All seismic braces shall be listed for tension and compression service.

4. All braces shall utilize ordinary black steel piping as the prime support member.

5. Structural connection: All bracing shall be connected to the building’s structural members and all means of connection to the building’s structure and sprinkler pipe shall be listed for the intended use.

6. At a minimum, the bracing shall be provided per NFPA 13 requirements or per manufacturer’s recommendations.

G. Pipe Sleeves and Clearances

1. Proper clearances between penetrating sprinkler system piping, including drains and fire department connections, and any barrier shall be provided.

2. Piping passing through floors, walls, and ceilings shall be provided with steel pipe sleeves.

3. Fill the space between the pipe and the sleeve with a listed flexible 2 hour-rated fire stop system. See SECTION 07841 - THROUGH-PENETRATION FIRESTOP SYSTEMS.

2.3 Valves

A. General: Indicating type valves shall be OS&Y, UL Listed or FM Approved for fire protection systems.

1. Sizes 2-1/2 inches and larger: 175 psi rated, flanged ends.

2. 2 inches and smaller: 175 psi rated, screwed ends.

B. In lieu of 2 inches and smaller OS&Y gate valves at flow control stations, the Contractor may install Milwaukee Valve Co.’s grooved-end butterfly valve with factory installed internal tamper switch, UL Listed and FM approved.

C. Automatic Drain (Ball Drip) Valves: Bronze body (ASTM B584), steel inlet spring loaded ball mechanism with stainless steel or brass ball and beryllium copper spring.

D. Alarm Check Valves: UL listed and/or FM approved valves, with appropriate trim, 175 psi rated.

E. Check Valves: Butterfly type, wafer check valves; O-ring sealed clapper, torsion spring loaded, suitable for vertical or horizontal installation. Bronze seat rings (ASTM B584), aluminum bronze clappers (ASTM B148), EPDM O-ring seals, stainless steel hinge pins (ASTM A582), rated at 175 psi. Provide accessory kits for flange fittings as required; stud bolts and heavy hex nuts of carbon steel zinc, or cadmium plated.

F. Ball Valves: Standard port, end entry, 175 psi rated; bronze body, adjustable packing gland, reinforced Teflon seats, non-blowout stem design, chrome plated brass ball, cadmium plated vinyl insulated handle. When used for manual drains provide pressure gauge and inspector’s test plug at drains per NFPA 13R.
G. Air Vent and Release Valves: Cast iron body and cover primed with red oxide exterior primer, brass internal parts, stainless steel float and needle, 175 psi rated.

2.4 Automatic Sprinklers
A. Sprinklers of the temperature rating and orifice size as required by NFPA 13R shall be installed.
B. Provide a reserve supply cabinet of spot welded low carbon steel construction at least 0.042 inch thick, bright red enamel painted inside and out. Provide spare sprinklers and suitable sprinkler wrenches for each sprinkler type and temperature rating installed in the systems.
C. The Contractor shall coordinate and verify the cap color of all sprinklers specified as concealed sprinklers. Each area shall be coordinated with the Owner separately. The cap color shall be a factory-applied finish, meeting the requirements of the listing agency.
D. The Response Time Index (RTI) shall be supplied by the manufacturer for each sprinkler supplied. The Contractor shall supply this information to the Project Manager in the equipment submittal package.

2.5 Alarms and Supervisory Devices
A. General: Wherever monitor modules exist for the purpose of fire alarm supervision, the sprinkler Contractor shall connect the sprinkler system device to these modules.
B. Waterflow Detectors: Vane-type waterflow detectors designed for vertical or horizontal mounting. NEMA Type 1 enclosure; UL Listed and FM Approved.
C. Monitor switches for OS&Y Valves: Potter Electric model PCVS or approved equal with dual set of contacts; Plunger operated SPDT electrical switching device for supervision of the open position of OS&Y gate valves. UL and FM Approved; NEMA type 2 drip tight indoor rated housing.

PART 3 EXECUTION

3.1 Installation
A. The Contractor shall provide and install all required equipment and accessories necessary for the proper operation of the system. The entire system shall be installed in a workman-like manner and all work shall be performed in accordance with the best and most modern practices of the trade. The final installation shall present a neat appearance.
B. The Contractor shall coordinate the work of this specification with all related work of other trades.
C. Piping Installation
   1. The Contractor shall place pipe runs to minimize obstruction to other work.
   2. The Contractor shall, where possible, center sprinklers in ceiling tiles or, at a minimum, align all sprinklers in each space or area.
   3. The Contractor shall install all piping in accordance with applicable provisions of NFPA 13, NFPA 13R or NFPA 13D.
   4. The Contractor shall remove all burrs and ream all pipe and tube ends to full inside diameter.
5. The Contractor shall remove all scale and foreign matter from the inside and the outside of all pipe and apply joint compound or tape to all threaded pipe ends.

6. The Contractor shall install mechanical grooved systems in full accord with the manufacturer's instructions.

7. The Contractor shall not permit piping to penetrate building structural members.

8. All pipe shall be properly pitched in order to drain.

D. Valve Installation

1. The Contractor shall install all valves with stems upright or horizontal; not inverted.

2. The Contractor shall provide drain valves at main shut-off valves, at all piping low points and at all apparatus.

3.2 Scheduling

A. The Contractor shall, each week, provide a revised schedule indicating the work remaining to be done and the estimated time required to complete the work.

3.3 Final Acceptance Tests

A. At the time as-built drawings and manuals are submitted, the Contractor shall submit a test plan which shall describe how the system will be acceptance tested. This shall include a step-by-step description of all tests and shall indicate type and location of test apparatus to be employed. The tests shall demonstrate that the operating and installation requirements of this specification have been met.

B. A pre-final test shall be conducted to verify proper system operation prior to final acceptance testing to be witnessed by the Fire Department. This pre-test shall include all of the same functions specified for the final acceptance test.

C. Before the fire suppression systems installations are considered complete and acceptable to the Owner and the authority having jurisdiction, acceptance tests shall be conducted on the systems by the Contractor's job foreman in the presence of representatives of the Owner and the fire department. The fire department shall receive notification of the date and time of the tests at least one week prior to the test date.

D. The Contractor shall provide all personnel and equipment required to conduct the tests.

E. The Contractor shall perform the following tests:

1. A two hour hydrostatic test at 200 psi, or as recommended by manufacturer, of all fire sprinkler and standpipe piping in accordance with NFPA 13, 13R or 13D.

2. Main drain tests, inspectors tests (of the water flow alarms) and dry pipe valve trip tests.

F. Upon completion of the tests, the Contractor shall leave the fire sprinkler systems in full working order and, without additional expense to the Owner, shall replace any defective materials, devices, or equipment provided by him under this contract within one (1) year from the date of final systems acceptance by the Owner.
3.4 As-Built Drawings

A. The Contractor shall submit a complete set of as-built drawings to the Project Manager. The Project Manager will only review these drawings for the limited purpose of checking for general compliance with accepted drawing practices and conformance with the design concept and not to determine accuracy or completeness of the design. If for any reason at the discretion of Project Manager the drawings must be resubmitted, the Contractor will correct the drawings at no charge and retention will not be released until corrections are complete.

B. Once the drawings are returned with “No Exceptions Taken” the Contractor shall deliver a complete set of reproducible as-built drawings, two (2) print copies and a AutoCAD disk of the as-built drawings to the Owner upon completion of the system. The AutoCAD drawings shall be compatible with AutoCAD version 2006.

3.5 Training Requirements

A. Prior to final acceptance, the Contractor shall provide operation training to each shift of the Owner's personnel. Each training session shall be of duration acceptable to the Owner, and shall be conducted on shift or at a time acceptable to the Owner. Each session shall include an overview of the system and the devices connected to it, emergency procedures, and safety requirements. Each session shall include a complete demonstration of the system. Dates and times of each training period shall be coordinated through the Owner, not less than two (2) weeks prior to the training session.

3.6 Operating Instructions

A. The Contractor shall provide Operating and User Instruction Manuals prior to testing of the system. Two (2) complete sets of operating and instruction manuals shall be delivered to the Owner upon completion.

3.7 Testing Instructions

A. Upon completion of the installation, the Contractor shall deliver to the Owner complete, simple, comprehensive, step-by-step testing instructions giving recommended and required testing frequency of all equipment, and methods for testing each individual piece of equipment.

1. At a minimum, the instructions must include all applicable sections of NFPA 25 and any relevant information provided by the equipment manufacturer.

3.8 Maintenance Instructions

A. Prior to final acceptance, the Contractor shall provide two (2) complete sets of maintenance instructions to the Owner.

B. Maintenance instructions shall be complete, easy to read, understandable, and shall provide the following information:

1. Applicable sections of NFPA 25 covering maintenance of automatic sprinkler systems, deluge systems, and fire department standpipe and hose systems.

2. Maintenance instructions provided by manufacturers of the equipment and devices installed.
3.9 One Year Maintenance Contract

A. The Contractor shall include as an add alternate, a one (1) year maintenance proposal covering the automatic fire sprinkler system and the fire department standpipe system. Inspection, testing, and maintenance shall be carried out in accordance with the applicable provisions of NFPA 25.

B. The proposal shall include quarterly test/inspections for the entire system including the backflow preventer; the preparation and submittal of required test reports to local authorities and the payment of all fees associated with the filing of such reports; and required service, maintenance, and adjustment to systems components and equipment.

C. The proposal shall include coordination with the fire alarm company and the City of Middletown Alarm Division with respect to the required testing of waterflow alarm and supervisory signals for control valves.

3.1 Warranty

A. The Contractor shall warrant all systems components and equipment free from defects in materials and workmanship for a period of one (1) year from the date of final systems acceptance by the Owner and the authority having jurisdiction.

END OF SECTION 15325
SECTION 15410 - PLUMBING FIXTURES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 - General Requirements is made a part of this section.

B. Submittals: Product Data for each type of plumbing fixture.


D. Comply with applicable standards below:


PART 2 - PRODUCTS

2.1 Toilet

A. Toilet Bowl: Comfort height two-piece elongated toilet or comparable wall mount.

1. Products:
   a. Kohler Wellworth
      1) 30" x 18" x 29-1/4"
      2) 2-1/8" fully glazed trapway
      3) Class Five® flushing technology
      4) DryLock™ attachment plate
      5) KOHLER Comfort Height™
      6) 1.28 gpf High-Efficiency Toilets
      7) Meet strict flushing performance guidelines established by the EPA's (Environmental Protection Agency) WaterSense program
      8) Model # K-3998 (hand appropriate for install)
      9) Elongated bowl
      10) Provide Kohler Stronghold commercial toilet seat KL-4731-C
   b. Kohler Wellworth
      1) 28-1/4" x 14-7/8" x 15"
      2) 1-1/2" top spud
      3) 10" rough in
      4) 2-1/4" passageway
      5) 1.28 gpf High-Efficiency Toilets
      6) Model # K-4406
      7) Elongated bowl
      8) Provide Kohler Stronghold commercial toilet seat K-4731-C
   c. Kohler Kingston - ADA
      1) 26-1/2"L x 16-1/2"W x 13-3/4"H
2) Wall mount
3) Siphon jet
4) 1-1/2” rear spud
5) 1.28 gpf High-Efficiency Toilets
6) Meet strict flushing performance guidelines established by the EPA's (Environmental Protection Agency) WaterSense program
7) Model # K-4323
8) Elongated bowl
9) Provide Kohler Stronghold commercial toilet seat K-4731-C
d. Kohler Kingston
   1) 26-1/2"L x 16-1/2"W x 13-3/4"H
   2) Wall mount
   3) Siphon jet
   4) 1-1/2” top spud
   5) 1.28 gpf High-Efficiency Toilets
   6) Meet strict flushing performance guidelines established by the EPA's (Environmental Protection Agency) WaterSense program
   7) Model # K-4325
   8) Elongated bowl
   9) Provide Kohler Stronghold commercial toilet seat K-4731-C
e. Crane Flormont Round Front Back Outlet Toilet
   1) 1.6 gal low-consumption
   2) Round front bowl
   3) Gravity fed siphon jet flush action
   4) Fully glazed 1-7/8” trapway
   5) Polished chrome trip lever
   6) 4 bolt caps included
   7) 3930N
   8) Provide toilet seat
f. Kohler Bardon 1/8th GPF
   1) Vitreous china
   2) Washout
   3) ¾” top spud
   4) 14” extended rim
   5) 0.125 gpf
   6) Model # K-4904-ET

B. Toilet Seat: Kohler Stronghold:
   1. Commercial toilet seat.
      a. Solid polypropylene plastic
      b. Elongated open front with cover, bumpers and hardware,
      c. Check hinge
      d. ADA compliant
      e. Model # K-4731-C

C. Flushometer: Valves & Float Valves:
   1. Products:
      a. Royal Model Flushometer: 111-1.28
      b. Royal Model Flushometer: 186-0.25
c. Kohler Float Valve Kit, Model #30672 (Verify compatibility with existing toilets) or approved equal.

D. Toilet flush balls / flappers
   1. Kohler flapper kit or approved equal.

2.2 Lavatory

A. Plastic Lavatory: Integral lavatory and countertop with backsplash - size as noted.
   1. Products:
      a. Cultured marble or solid surface material by Nevamar, Vermax or approved equal.
      b. Color: To be selected by the Owner from manufacturer’s standard colors.

B. Wall Mounted Vitreous China:
   1. Products:
      a. American Standard Comrade 0124.024
         1) 20” x 18-1/4”
         2) Centers: 4” faucet centers
         3) Bowl: 15” x 10-7/8” bowl
         4) Soap Dish: One integral self-draining soap dish
         5) Rear Overflow
         6) Fast aligning one-piece wall hanger
      b. Gerber Model #12-314 PLYMOUTH ‘Ledge Type’
         1) Size: 19” x 17” or size required to fit specific location.
         2) Centers: 4” faucet centers
         3) Bowl: 15” x 10 ¾” bowl
         4) Soap Dishes: Two integral self-draining soap dishes
         5) Back Overflow
         6) Fast aligning one-piece wall hanger

2.3 Faucets:

A. ASME A112.18.1M; Polished chrome finish, unless otherwise indicated. Maximum 2.5-gpm flow rate.
   1. Provide PCA Spray faucet attachment for all faucets installed:
      a. Neoperl PCA Spray faucet attachment, vandal proof, B9.66F3.1-kitchens
      b. Provide Neoperl PCA Spray faucet attachment, vandal proof, B9.65F3.1-bathrooms
   2. Products:
      a. Kitchen Faucets: Delta 120 single handle with no spray, 10” long spout ½” I.P.S.
         shanks 2.2 gpm V.R aerator
         1) Type: Widespread with inlets on 6-inch centers.
         2) Handle(s): Dual lever.
         3) Drain: Grid strainer.
         4) Trap: Chrome-plated, with slip-joint inlet and wall flange.
      b. Bathroom Faucets: Delta HDF series Model #515-LFHDF: 4 ½” long spout
         1) Type: 3-hole installation – 4” center set.
2.4 Tub / Shower:

A. Plastic Shower Enclosure: ANSI Z124.2 and ANSI Z124.2a;
   1. Product: Sterling or approved equal
      1) Size: To be determined based on field conditions.
      2) Style: Neo-angle corner shower unit (Field Measure to Verify)
      3) Style: Square shower unit (Field Measure to Verify)
      4) Color: White

B. Shower Doors:
   1. Products:
      a. Door: Sterling or approved equal - Neo-Angle Deluxe Shower Doors (Pivot Hinge)
      b. Door: Basco pivot hinge shower door
      c. Door: Dreamline or approved equal bifold shower door
         1) Finish: Silver
         2) Glass: Tempered
         3) Glass Texture: Pebbled
         4) Size (Coordinate size with available space in bathroom and shower floor base)

C. Mixing-Valve Faucet and Miscellaneous Fittings: Single-lever antiscald-type faucet; maximum 1.5-gpm flow rate; and polished, chrome-plated finish; unless otherwise indicated.
   1. Products for Woodframe houses:
      a. Symmons 96-2X Temptrol tub and shower system. (S962X)
         1) Drain: Compatible w/ Temptrol tub and shower system.
         2) Temptrol Pressure-Balancing mixing valve with combination integral diverter and volume control
         3) Adjustable stop screw to limit handle turn
         4) Tub spout
         5) Clear-Flo shower head, arm and flange
         6) Internal service stops
         7) Flow-Control Fitting: 1.5 gpm (5.7 L/min) flow restrictor
      b. Symmons 96-1X Temptrol valve shower w/stop (S961X)
         1) Pressure-Balancing mixing valve with integral volume control
         2) Integral service stops
         3) Adjustable stop screw to limit handle turn
         4) Clear-Flo shower head with arm and flange
         5) Flow-Control Fitting: 1.5 gpm (5.7 L/min) flow restrictor
   2. Products for Dormitory use:
      a. Symmons Safety Mix Model 1-100X with internal stops.

D. Shower Floor Base: Swanstone Veritek Retrofit Shower Floor (Size based on field measurements and available space in bathroom – coordinate with shower door size).
2.5 Kitchen Sinks:

A. Stainless-Steel Sink: Counter-mounting, self-rimming type – 20 gauge stainless steel.
   1. Products:
      a. Woodframe Houses: Elkay Pacemaker Model PSR3322 double bowl sink (No sprayer).
      b. Drain(s): Stainless steel strainer bucket.

2.6 Accessories:

1. Products:
   a. Apollo Valves
      1) Provide hot and cold water shut off valves on all supply piping
   b. Provide wall escutcheons at all penetrations through wall.

PART 3 - EXECUTION

3.1 INSTALLATIONS

A. Install fitting insulation kits on fixtures for people with disabilities.
B. Install fixtures with flanges and gasket seals.
C. Install flushometer valves for accessible water closets with handle mounted on wide side of compartment. Install other actuators in locations that are easy for people with disabilities to reach.
D. Install tanks for accessible, tank-type water closets with lever handle mounted on wide side of compartment.
E. Fasten wall-hanging plumbing fixtures securely to supports attached to building substrate when supports are specified, and to building wall construction where no support is indicated.
F. Fasten floor-mounted fixtures to substrate. Fasten fixtures having holes for securing fixture to wall construction, to reinforcement built into walls.
G. Fasten wall-mounted fittings to reinforcement built into walls.
H. Fasten counter-mounting plumbing fixtures to casework.
I. Secure supplies to supports or substrate within pipe space behind fixture.
J. Set shower receptors and mop basins in leveling bed of cement grout.
K. Install individual supply inlets, supply stops, supply risers, and tubular brass traps with cleanouts at fixture.
L. Install water-supply stop valves in accessible locations.
M. Install traps on fixture outlets. Omit traps on fixtures having integral traps. Omit traps on indirect wastes, unless otherwise indicated.
N. Install escutcheons at wall, floor, and ceiling penetrations in exposed, finished locations and within cabinets and millwork. Use deep-pattern escutcheons where required to conceal protruding pipe fittings.

O. Seal joints between fixtures and walls, floors, and counters using sanitary-type, one-part, mildew-resistant, silicone sealant. Match sealant color to fixture color.

P. Install piping connections between plumbing fixtures and piping systems and plumbing equipment. Install insulation on supplies and drains of fixtures for people with disabilities.

Q. Ground equipment. Tighten electrical connectors and terminals according to UL 486A and UL 486B.

END OF SECTION 15410
SECTION 15830 - FANS

PART 1 - GENERAL
1.1 SECTION REQUIREMENTS

A. Division 1 - General Requirements is made a part of this section.

B. Submit Product Data including certified test data to Owner prior to purchasing.

C. Submit vent and duct routing locations for approval.

PART 2 - PRODUCTS

2.1 FANS

A. Bathroom Exhaust Fan:

1. Products:
   a. NuTone
      1) Ultra Silent Series Fan/Light
      2) Model QTREN110FLT
      3) 110 CFM
      4) 1.3 Sones
      5) 4” ducting
      6) Energy Star qualified and Title 24 Compliant
      7) 42 W Fluorescent lighting – bulb included
      8) 4W nightlight (bulb sold separately – Contractor to provide)
      9) UL Listed for use over tub/shower with GFCI circuit
     10) Grille Dimension: 13” x 14”
   b. NuTone
      1) Ultra Silent Series Fan
      2) Model TREN110
      3) 110 CFM
      4) 1.3 Sones
      5) 4” ducting
      6) Energy Star qualified and Title 24 Compliant
      7) UL Listed for use over tub/shower with GFCI circuit
     8) Grille Dimension: 13” x 14”
   c. Panasonic
   d. Broan
   e. Approved equal.

2. Must be Energy Star rated.

3. Housing Material: Cold rolled steel, galvanized.

4. Sones: 2.0 or less.

5. CFM: 100 or greater; sized appropriately for location or as specified.
7. Exterior Grille Finish: Bronzetone or as specified by Owner and building exterior finish.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Replace existing fan with new fan. Provide additional framing as required for proper installation. Provide duct fittings as required for proper connection. Patch & paint upon completion of installation. Provide all required electrical work for a complete installation. If not vented to exterior, provide all materials necessary to vent through wall or roof depending upon existing field conditions. Verify venting location and routing with owner prior to the start of work.

B. For new fan installation, coordinate location and installation with duct installation and installation of other ceiling and wall-mounted items. Vent to exterior through wall or roof depending upon existing field conditions. Verify venting location and routing with owner prior to the start of work.

C. Installation shall include all required ducts, transitions and elbows. Roof, wall and eave caps shall also be included. All accessories noted shall be by manufacturer selected or equal manufacturer.

D. Provide all required electrical work for a complete installation.

E. All ducting must comply with local and national building codes.

END OF SECTION 15830
SECTION 15900 - INSTRUMENTATION AND CONTROLS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Summary: Electric/electronic controls for HVAC systems and equipment.

B. Submittals: Product Data for setback thermostats.

PART 2 - PRODUCTS

A. Automated Logic, 29 No. Plains Hwy - #17, Wallingford, CT 06492, Joseph Furman, (203) 284-0100.

   1. Coordinate compatibility with heating system to be installed. Jerry Drew is contact. Jerry Drew [jdrew@networkthermostat.com] (jdrew@networkthermostat.com)
      a. Thermostats shall be purchased, installed and programmed by Wesleyan University in-house staff.
      b. If heating system is configured with the use of zone valves, thermostat shall be ordered with resistors to ensure proper wiring configuration. Contractor to inspect existing system to ensure proper ordering of equipment

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install control wiring concealed, except in mechanical rooms.

B. Verify existing heating system wiring prior to ordering to ensure proper thermostat control:
   1. Primary control
   2. Zone valves

C. Coordinate installation of thermostats in quantities and locations noted for each individual project site with Mike Conte.

END OF SECTION 15900
SECTION 16050 - BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Submittals: Product Data, Shop Drawings, Samples

B. Coordinate Arrangement, Mounting, and Support of Electrical Equipment:
   1. Allow maximum possible headroom unless specific mounting heights that reduce
      headroom are indicated.
   2. Provide for ease of disconnecting the equipment with minimum interference to other
      installations.
   3. Allow right of way for piping and conduit installed at required slope.
   4. Ensure that connecting raceways, cables, wireways, cable trays, and busways are clear of
      obstructions and of the working and access space of other equipment.

C. Coordinate installation of required supporting devices and set sleeves in cast-in-place concrete,
   masonry walls, and other structural components as they are constructed.

D. Coordinate location of access panels and doors for electrical items that are behind finished
   surfaces or otherwise concealed. Access doors and panels are specified in Division 8 Section
   "Access Doors and Frames."

PART 2 - PRODUCTS

2.1 RACEWAYS AND CONDUCTORS

A. Raceways:
   1. EMT: ANSI C80.3, zinc-coated steel, with set-screw or compression fittings.
   2. FMC: Zinc-coated steel.
   3. IMC: ANSI C80.6, zinc-coated steel, with threaded fittings.
   4. LFMC: Zinc-coated steel with sunlight-resistant and mineral-oil-resistant plastic jacket.
   5. RNC: NEMA TC 2, Schedule 40 PVC, with NEMA TC3 fittings.
   6. Raceway Fittings: Specifically designed for raceway type used in Project.

B. Conductors:
   1. Conductors, No. 10 AWG and Smaller: Solid or stranded copper.
   2. Conductors, Larger Than No. 10 AWG: Stranded copper.
   3. Insulation: Thermoplastic, rated at 75 deg C minimum.
   4. Wire Connectors and Splices: Units of size, ampacity rating, material, type, and class
      suitable for service indicated.

2.2 ELECTRICAL IDENTIFICATION MATERIALS

A. Raceway Identification Materials:
1. Snap-around, color-coding bands; flexible, pre-printed, color-coded acrylic.

B. Conductor Identification Materials:

C. Underground-Line Warning Tape: Permanent, bright-colored, continuous-printed, polyethylene tape with continuous metallic strip or core.

D. Tape Markers for Wire: Vinyl, self-adhesive, wraparound type with pre-printed numbers and letters.

E. Warning Labels and Signs: Baked-enamel, pre-printed signs, punched or drilled for fasteners; with colors, legend, and size required for application.

F. Equipment Identification Labels: Engraved, laminated acrylic or melamine label; punched or drilled for screw mounting. White letters on a dark-gray background; red letters for emergency systems.
1. Fasteners: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

2.3 SUPPORT AND ANCHORAGE COMPONENTS

A. Steel Slotted Support Systems: MFMA-3, factory-fabricated components for field assembly.

B. Raceway and Cable Supports: As described in NECA 1.

C. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and fittings.

D. Pipe Sleeves: Schedule 40, galvanized steel, plain ends.

E. Mounting, Anchoring, and Attachment Components:
2. Expansion Anchors: Steel, insert-wedge type, for use in concrete.
3. Concrete Inserts: Steel or malleable-iron slotted-support-system units.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
5. Through Bolts: Structural type, hex head, high strength; comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.

2.4 SEISMIC-RESTRAINT COMPONENTS

A. Rated Strength, Features, and Application Requirements for Restraint Components: As defined in reports by an agency acceptable to authorities having jurisdiction.
1. Structural Safety Factor: Strength in tension, shear, and pullout force of components used shall be at least five times the maximum seismic forces to which they will be subjected.

B. Angle and Channel-Type Brace Assemblies: Steel angles or steel slotted-support-system components; with accessories for attachment to braced component at one end and to building structure at the other end.

C. Cable Restraints: ASTM A 603, zinc-coated, steel wire rope attached to steel or stainless-steel thimbles, brackets, swivels, and bolts designed for restraining cable service.

1. Seismic Mountings, Anchors, and Attachments: Select to resist seismic forces.
2. Hanger Rod Stiffener: Steel slotted-channel support clamped to hanger rod.

D. Sleeve Seals: Modular, to fill annular space between sleeve and raceway or cable; EPDM interlocking links with pressure plates, and connecting bolts and nuts.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Sleeve and Sleeve Seals: Use type and number of sealing elements recommended by manufacturer; comply with NECA 1.

B. Woodframe bedrooms: Circuit breakers shall be 20 amp, arc fault. Maximum 2 receptacles per breaker.

C. Kitchens/Bathrooms/Dining Rooms: Circuit breakers shall be 20 amp, receptacles shall be GFI.

3.2 RACEWAY APPLICATION

A. Outdoor Installations:

1. Exposed or Concealed: IMC.
2. Underground, Single Run: RNC.
3. Connection to Vibrating Equipment: LFMC.
4. Boxes and Enclosures: Metallic, NEMA 250, Type 3R or Type 4.

B. Indoor Installations:

1. Exposed or Concealed: EMT.
2. Fire Alarm Wiring: Conduit or metal raceway
3. Connection to Vibrating Equipment: FMC; in wet or damp locations, use LFMC.
4. Damp or Wet Locations: IMC.
5. Boxes and Enclosures: Metallic, NEMA 250, Type 1, unless otherwise indicated.

3.3 RACEWAY AND CABLE INSTALLATION
A. Conceal raceways and cables, unless otherwise indicated, within finished walls, ceilings, and floors.

B. Install raceways and cables at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Locate horizontal raceway runs above water and steam piping.

C. Install raceways embedded in slabs in middle third of slab thickness where practical, and leave at least 1-inch-thick concrete cover.
   1. Secure raceways to reinforcing rods to prevent sagging or shifting during concrete placement.
   2. Space raceways laterally to prevent voids in concrete.
   3. Install conduit larger than 1-inch trade size parallel to or at right angles to main reinforcement. Where conduit is at right angles to reinforcement, place conduit close to slab support.
   4. Transition from nonmetallic tubing to Schedule 80 nonmetallic conduit, rigid steel conduit, or IMC before rising above floor.

D. Install pull wires in empty raceways.

E. Install telephone and signal system raceways, 2-inch trade size and smaller, in maximum lengths of 150 feet and with a maximum of two 90-degree bends or equivalent.

F. Connect motors and equipment subject to vibration, noise transmission, or movement with a 72-inch maximum length of flexible conduit. Install LFMC in wet or damp locations.

3.4 WIRING METHODS FOR POWER, LIGHTING, AND CONTROL CIRCUITS

A. Feeders: Type THHN/THWN insulated conductors in raceway.

B. Underground Feeders and Branch Circuits: Type THWN or single-wire, Type UF insulated conductors in raceway.

C. Branch Circuits: Type THHN/THWN insulated conductors in raceway.

D. Branch Circuits: Type THW or THHN/THWN insulated conductors in raceway where exposed. Metal-clad cable where concealed in ceilings and gypsum board partitions.

E. Branch Circuits: Type THW or THHN/THWN insulated conductors in raceway where exposed. Armored or nonmetallic sheathed cable where permitted by authorities having jurisdiction and where concealed in ceilings and gypsum board partitions.

F. Remote-Control Signaling and Power-Limited Circuits: Type THHN/THWN insulated conductors in raceway for Classes 1, 2, and 3, unless otherwise indicated.

3.5 APPLICATION OF IDENTIFICATION MATERIALS

A. Accessible Raceways and Cables of Auxiliary Systems: Identify the following systems with color-coded, self-adhesive color coding tape-in bands:
1. Fire Alarm System: Red.
3. Telecommunication System: Green and yellow.

B. Power-Circuit Conductor Identification: For No. 3 AWG conductors and larger, at each location where observable, identify phase using color-coding conductor tape.

C. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring.

D. Warning Labels for Enclosures for Power and Lighting: Comply with 29 CFR 1910.145; identify system voltage with black letters on an orange background. Apply to exterior of door, cover, or other access.

E. Equipment Identification Labels:
   1. Labeling Instructions: Provide a single line of text with 1/2-inch-high letters on 1-1/2-inch-high label.
   2. Equipment to Be Labeled:
      a. Panelboards.
      b. Electrical switchboards.
      c. Transformers.
      d. Motor starters.
      e. Push-button stations.
      f. Contactors.
      g. Terminals, racks, and patch panels for voice and data communication and for signal and control functions.
         1) Data Outlets shall be Hubbel
            a) 3 Cat6 wires, no Coax.
            b) One of the Cat 6 wires to be white, 2 to be blue.
            c) Blue wires get terminated with Orange hubble cat6 jacks, white gets terminated with white or Ivory hubble cat6 jack

3.6 INSTALLATION OF IDENTIFICATION MATERIALS

A. Verify identity of each item before installing identification products.

B. System Identification Color Banding for Raceways and Cables: At 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.

C. Color-Coding for Phase and Voltage Level Identification, 600 V and Less: Ungrounded service, feeder, and branch-circuit conductors.
   1. 208/120-V Circuits:
      a. Phase A: Black.
      b. Phase B: Red.
      c. Phase C: Blue.
2. 480/277-V Circuits:
   b. Phase B: Orange.
   c. Phase C: Yellow.

3. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum
distance of 6 inches from terminal points.

D. Underground-Line Warning Tape: Continuous underground-line warning tape directly above
line at 6 to 8 inches below finished grade.

3.7 INSTALLATION OF SUPPORTS

A. Multiple Raceways or Cables: Install on trapeze-type supports fabricated with steel slotted
channel.

B. Install seismic-restraint components using methods approved by the evaluation service
providing required submittals for component.

C. Strength of Support and Seismic-Restraint Assemblies: Where not indicated, select sizes of
components so strength will be adequate to carry present and future static and seismic loads
within specified loading limits.

3.8 SEISMIC REQUIREMENTS

A. Installation Of Seismic-Restraint Components:
   1. Install bushing assemblies for anchor bolts for wall- and floor-mounted equipment,
      arranged to provide resilient media between anchor bolt and mounting hole in substrate.
   2. Attachment to Structure: If specific attachment is not indicated, anchor bracing to
      structure at flanges of beams, upper truss chords of bar joists, or at concrete members.

B. Accommodation of Differential Seismic Motion: Make flexible connections in runs of
raceways, cables, wireways, cable trays, and busways where they cross expansion and seismic-
control joints, where adjacent sections or branches are supported by different structural
elements, and where they terminate with connection to electrical equipment that is anchored to a
different structural element than the one supporting them as they approach equipment.

3.9 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore
original fire-resistance rating of assembly. Firestopping materials and installation requirements
are specified in Division 7 Section "Through-Penetration Firestop Systems."

END OF SECTION 16050
SECTION 16140 - WIRING DEVICES

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 - General Requirements is made a part of this section.

B. Submittals: Product Data, Samples.

C. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 DEVICES

A. General: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Color: Ivory, Brown, Gray, or White. Submit color options to Owner for review and final color selection for each project.

C. Receptacles: Heavy or General-Duty grade, NEMA WD 1, NEMA WD 6, DSCC W-C-596G, and UL 498 depending upon service and code requirements or as noted on the drawings or scope of work.

D. Ground-Fault Circuit Interrupter Receptacles: GFCI with integral duplex receptacle complying with UL 498 and UL 943; for installation in a 2-3/4-inch-deep outlet box without an adapter.

E. Arc-Fault Circuit Interrupter Breakers: To be installed for all circuits feeding the bedrooms in accordance with the requirements outlined in the National Electric Code.

F. Dimmer Switches: Modular, full-wave, solid-state units with integral, quiet on/off switches and audible frequency and EMI/RFI filters.

   1. Control: Continuously adjustable slider; with single-pole or three-way switching to suit connections.
   2. Incandescent Lamp Dimmers: Modular, 120 V, 60 Hz with continuously adjustable rotary knob, toggle switch, or slider; single pole with soft tap or other quiet switch; EMI/RFI filter to eliminate interference; and 5-inch wire connecting leads.
   3. Fluorescent Lamp Dimmer Switches: Modular; compatible with dimmer ballasts; trim potentiometer to adjust low-end dimming; dimmer-ballast combination capable of consistent dimming with low end not greater than 20 percent of full brightness.

G. Automatic Wall Switch (motion sensors)

   1. Shall be installed in all common corridors and at top of stairs where fixtures are installed.
   2. Products:
a. The Wattstopper – Model shall be selected based on location and appropriate function (ceiling or wall mounted as required);

b. Model #WS-200, CW-100, CI-200, DT 200, DT 300 appropriate for the installation and as approved by Owner (www.wattstopper.com).

H. Wall Plates, Finished Areas: Smooth, high-impact thermoplastic, Ribbed plastic, Satin-finish stainless steel, Brushed brass, lacquered or Polished brass, lacquered; fastened with metal screws having heads matching plate color. Submit color options to Owner for review and final color selection for each project.

I. Wall Plates, Unfinished Areas: Smooth, high-impact thermoplastic with metal screws.

J. Wall Plates, Wet Locations: Thermoplastic or Cast aluminum with spring-loaded lift cover, and listed and labeled for use in wet locations. Submit options to Owner for review and final approval.

K. Floor Service Fittings

1. Modular, flush-type, dual-service units suitable for wiring method used.
2. Service Plate: Rectangular or Round, die-cast aluminum with satin finish. Review options with Owner for final approval.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install devices and assemblies plumb, level, and square with building lines.

B. Install unshared neutral conductors on line and load side of dimmers.

C. Mount devices flush, with long dimension vertical, and grounding terminal of receptacles on top, unless otherwise indicated. Group adjacent devices under single, multi-gang wall plates.

D. Install in entry halls and common corridor fixtures. May require installation of 2 units to provide sufficient coverage.

END OF SECTION 16140
SECTION 16500 - LIGHTING

PART 1 - GENERAL

1.1 SECTION REQUIREMENTS

A. Division 1 - General Requirements is made a part of this section.

B. Submittals: Product Data for each luminaire, including lamps.

C. Fixtures, Emergency Lighting Units, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

D. Coordinate ceiling-mounted luminaires with ceiling construction, mechanical work, and security and fire-prevention features mounted in ceiling space and on ceiling.

E. Program houses with 7 or more occupant must have emergency lighting installed.

PART 2 - PRODUCTS

2.1 LUMINAIRES

A. Fixture:

   1. Products, Interior Lighting: Reference drawings for all lighting and fixtures.

      LOCATION: Bedrooms, Common Rooms, Dining Rooms, Living Rooms, Kitchens
      unless otherwise noted/directed by Owner.

      a. Incon Lighting – Model #11911-26LED; 19” Diameter. (www.inconlighting.com)
         Ph. #800-393-5630, New England Lighting Incorporated – 119 Series or approved equal.
         1) Wattage: 26W LED; lamps included
         2) Ballast: Electronic
         3) Lens Type: UV stabilized white translucent acrylic
         4) Housing/Finish: Steel spun powder coated white

      LOCATION: Kitchens / Areas with 2’ x 2’ drop in ceiling
      unless otherwise noted/directed by Owner.

      b. Incon Lighting – Model #11911-26LED; 19” Diameter. (www.inconlighting.com)
         Ph. #800-393-5630, New England Lighting Incorporated – 119 Series or approved equal.
         1) Wattage: 26W LED; lamps included
         2) Ballast: Electronic
         3) Lens Type: UV stabilized white translucent acrylic
         4) Housing/Finish: Steel spun powder coated white

      LOCATION: Woodframe Corridors (or as noted/directed by Owner)

      c. Lithonia Lighting – Acuity LED troffer Model #2GTL2 LP840; 24” x 24” x 3-1/4”, or Approved Equal.
         1) Wattage: 43W LED; lamps included
         2) Color Temp: 4000K
         3) Lens Type: white translucent acrylic
         4) Housing/Finish: Steel spun powder coated white
LOCATION: Bathroom Ceilings (or as noted/directed by Owner)
d. Incon Lighting – Model #11411-18LED; 14” Diameter. (www.inconlighting.com)
Ph. #800-393-5630, New England Lighting Incorporated - 114 Series or Approved Equal.
1) Wattage: 18W LED; lamps included
2) Ballast: Electronic
3) Lens Type: UV stabilized white translucent acrylic
4) Housing/Finish: Steel spun powder coated white

LOCATION: As noted/directed by Owner
e. Incon Lighting – Model #11111-13LED; 11” Diameter. (www.inconlighting.com)
Ph. #800-393-5630, New England Lighting Incorporated - 114 Series or Approved Equal.
1) Wattage: 13W LED; lamps included
2) Ballast: Electronic
3) Lens Type: UV stabilized white translucent acrylic
4) Housing/Finish: Steel spun powder coated white

LOCATION: Above bathroom medicine cabinets
f. Incon 520 Series or approved equal.
1) Housing/Finish: White finished cold rolled steel with white end caps
2) Length: 24.25” or 48.25” as required for the installation
3) Lamps: (2) 17W T8 electronic, contractor to provide
4) Ballast: 120 V, normal power factor, Class P
5) Lens: Smooth white UV stabilized acrylic
6) Options: Energy Star
7) Wire to wall switch

LOCATION: Under Cabinet (or as noted/directed by Owner)
g. Simkar Corporation – Series UW Task Lighting, Post Painted, Electronic Start.
(www.simkar.com) Ph. #800-523-3602
1) Lamps: (1) 17W 24” T8
2) Ballast: Electronic T8, high ballast factor
3) Option: LA
4) Wire to wall switch

LOCATION: Closets
h. N-Vision
1) 17W - Compact Fluorescent Light Bulb – Dome Cover
2) Energy Star
3) Wire to wall switch

LOCATION: Basement (or as noted/directed by the owner)
i. 17W - Compact Fluorescent Light Bulb with Dome Cover

LOCATION: HIGH MOISTURE SHOWER ROOMS:
j. Columbia Model FNPV
1) Length: 4'-0"
2) Lamps: (2) 32W T8
3) Ballast: Electronic T8
5) Voltage: 120V
6) Lens: TBD, (review w/ Owner per location).
7) Accessories: As required based on location.

k. LOCATION: Judd Hall Stairwells
1) ETi 22 watt 1700 lumen LED round flush mount fixture
2) 22 Watt Low Power and High Performance
3) 1700 Lumens
4) Non-Dimmable
5) UV, IR and Mercury-free
6) Rated Lifetime: 35,000 hours
7) 82 CRI
8) UL-Damp & Dry Location
9) 4000K
10) 22W = 150W
11) 100-277 VAC
12) Provide motion sensor at each entry landing

2. Products, Exterior Lighting:

a. LOCATION: Exterior Porch Lights for Woodframes: (style dependent upon installation application)

INCON LIGHTING:
Series 3259 – Model Number 32515-26QE-ES PE: Black hood, white lens, 35K lamp included, wet location listed, insect resistant, photo cell, Energy Star.

INCON LIGHTING:
Series 304 – Model Number 30415-13QE-ES PE: Black hood, white lens, lamp included, damp location listed, photo cell, Energy Star.

INCON LIGHTING: Ceiling Mounted

Designers Edge:
Model #L-80-13W-BR - One-light downward wall sconce, bronze with acrylic prismatic lens globe, electronic ballast, lamp included, dusk to dawn photocell

b. LOCATION: Building Mounted; Woodframes
1) Lithonia TWR1 LED1 Wall Pack as identified in the scope of work
2) Lithonia TWR LED3 Wall Pack as identified in the scope of work

c. Pole Light Fixtures
1) Architectural Area Lighting
2) EEL Sansi LED Street Light Series

PART 3 - EXECUTION
3.1 INSTALLATION
A. Set units level, plumb, and square with ceiling and walls, and secure.

B. Lamping: Where specific lamp designations are not indicated, lamp units according to manufacturer's written instructions.

C. Clean and relamp existing fixtures.

D. Any ceiling with a pull string shall be wired for switch at entry, includes but not limited to bedrooms, basements etc.

E. Contractor to provide concrete bases where required when installing exterior pole light fixtures.

END OF SECTION 16500
SECTION 16722: WOODFRAMES - INTELLIGENT REPORTING FIRE DETECTION SYSTEM

PART 1 – GENERAL

1.1 DESCRIPTION

A. This section of the specifications includes the furnishing, installation, and connection of the microprocessor controlled, intelligent reporting fire alarm equipment required to form a complete coordinated system ready for operation. It shall include, but not be limited to, alarm initiating devices, alarm notification appliances and wiring as specified herein.

B. The fire alarm system shall comply with requirements of National Fire Protection (NFPA) Standard No. 72 for protected premises signaling systems except as modified and supplemented by this specification. The system shall be electrically supervised and monitor the integrity of all conductors.

C. The system shall be an active/interrogative type system where each transponder and/or addressable device is repetitively scanned, causing a signal to be transmitted to the main fire alarm control panel (FACP) indicating that the device and its associated circuit wiring is functional. Loss of this signal at the main FACP shall result in a trouble indication as specified hereinafter for the particular input.

D. The FACP and peripheral devices shall be manufactured 100% by a single U.S. manufacturer (or division thereof).

E. The system as specified shall be supplied, installed, tested and approved by the Owner, Owner’s Insurance Co. and the office of the Middletown Fire Marshal (Authority Having Jurisdiction), and turned over to the owner in an operational condition.

1.2 SCOPE OF WORK

A. A new intelligent reporting, microprocessor controlled fire detection system shall be installed in accordance with the specifications and drawings.

B. Basic Performance

1. Alarm, trouble and supervisory signals from all intelligent reporting devices shall be encoded onto an NFPA Style 4 (Class B) Signaling Line Circuit (SLC).

2. Initiation device circuits shall be wired Class B (NFPA Style B).

3. Notification Appliance Circuits shall be wired Class B (NFPA Style Y).

4. Digitized electronic signals shall employ check digits or multiple polling.

5. A single ground or open on any system signaling line circuit, initiating device circuit, or notification appliance circuit shall not cause system malfunction, loss of operating power or the ability to report an alarm.

6. Alarm signals arriving at the main FACP shall not be lost following a power failure (or outage) until the alarm signal is processed and recorded.
7. Manufacturer’s Representative
   a. Contractor’s personnel shall have a minimum of 2 year’s experience in service and maintenance of fire detection, and alarm systems.
   b. Equipment shall be supplied by Siemens Fire Safety Division, 104 Sebethe Drive, Cromwell, CT 06416, or approved equal.

1.3 BASIC SYSTEM FUNCTIONAL OPERATION

1. Activation of any system fire, security, supervisory, trouble, or status initiating device shall cause the following actions and indications at all network Person Machine Interfaces using basic graphics and multiple detail screens. The specifications and standards listed below form a part of this specification. The system shall fully comply with the latest issue of these standards.

2. All door holdback devices to de-energize to cause all associated fire doors to close.

3. PMI displays on main fire alarm control and all secondary panels with LCD displays shall display alarm condition, device initiating the alarm and location of device.

4. Transmit alarm condition to central alarm monitoring company via addressable digital dialer (DACT). Coordinate with Owner for exact requirements and provisions necessary for a complete interface.

5. Activation of any smoke detector, pull station, heat detector or water flow device shall cause all of the above to occur, plus it shall cause its integral alarm lamp to be energized until the alarm condition of the detector has been reset.

6. Activation of any smoke detector, pull station, heat detector or water flow device shall activate audible bases in all bedrooms as well as all notification appliances.

7. Sprinkler Supervisory Devices and Carbon Monoxide detectors: The activation of any sprinkler supervisory tamper switch or carbon monoxide detectors shall activate the system supervisory service audible signal and cause a discrete LCD readout to indicate supervisory condition at the control panel. Differentiation between valve - tamper activation or carbon monoxide detector activation and opens and/or grounds on the initiation circuit shall be provided. Pressing the supervisory service acknowledge key shall silence the supervisory audible signal while maintaining the supervisory discrete LCD display indication condition. Restoring the valve to the normal position or resetting the carbon monoxide detector shall cause restoration of the fire alarm system to normal.

8. Any alarms shall be displayed on an 80 character LCD display. The top line of 40 characters shall be the point label and the second line shall be the device type identifier. The system alarm LED shall flash on the control panel until the alarm has been acknowledged. Once acknowledged, this same LED shall latch on.
subsequent alarm received from another zone shall flash the system alarm LED on the control panel.

9. The LCD display shall show the alarm information. The remote status panel shall mimic the control panel operation.

10. Each building will be programmed for selective building activation.

B. Shop Drawings: Indicate and provide system wiring diagram showing each device and wiring connection required, as well as a complete parts list of required equipment.

C. Software Modifications

1. Provide the services of a factory trained and authorized technician to perform all system software modifications, upgrades or changes. Response time of the technician to the site shall not exceed 4 hours for a fire/life safety emergency, or within 24 hours for a system trouble.

2. Provide all hardware, software, programming tools and documentation necessary to modify the existing fire alarm system communications device on site to the new face. Modification includes addition and deletion of devices, circuits, zones and changes to system operation and custom label changes for devices or zones. The system structure and software shall place no limit on the type or extent of software modifications on-site. Modification of software shall not require power-down of the system or loss of system fire protection while modifications are being made.

D. Battery calculations for each complete system, including all fire alarm control panel components and peripheral devices.

E. Three (3) sets of catalog cut sheet information and a detailed riser drawing.

1. Power supply rating justification showing power requirements for each of the system power supplies. Power supplies shall be sized to furnish the total connected load in a worst-case condition plus 25% spare capacity.

2. Complete drawings covering the following shall be submitted by the contractor for the proposed system:
   a. The submittals shall include drawings (in CAD compatible format) showing a schematic arrangement of the system including the main control unit and all peripherals The drawing shall show the type, quantity and arrangement of all modular components within the control unit and shall indicate overall cabinet dimensions. The drawings shall show explicit details regarding the positioning and placement of all detection system components. The drawing shall also include building floor plans drawn to a minimum scale of 1/8” = 1’-0”.
   b. Floor plans shall show all equipment and raceways, marked for size, conductor count with type and size, showing the percentage of allowable National Electric Code fill used.
3. Installation drawings, shop drawings, and as-built drawings shall be prepared by an individual who is experienced with the work specified herein.

F. Certifications

1. Together with the shop drawing submittal, submit a certification from the major equipment manufacturer indicating that the proposed supervisor of installation and the proposed performer of contract maintenance is an authorized representative of the major equipment manufacturer. Include names and addresses in the certification.

1.4 GUARANTEE

A. All work performed and all material and equipment furnished under this contract shall be free from defects and shall remain so for a period of at least one (1) year from the date of acceptance. The full cost of maintenance, labor and materials required to correct any defect during this one year period shall be included in the submittal bid.

1.5 APPLICABLE PUBLICATIONS

The publications listed below form a part of this specification. The publications are referenced in text by the basic designation only. The project is governed by the edition of the code that has been adopted at the time of the commencement of the project.

A. National Fire Protection Association (NFPA):

1. No. 70 National Electric Code (NEC)
2. No. 72 National Fire Alarm Code

B. Underwriters Laboratories Inc. (UL):

1. No. 50 Cabinets and Boxes
2. No. 268 Smoke Detectors for Fire Protective Signaling Systems
3. No. 268A Smoke Detectors (HVAC).
4. No. 864 Control Units for Fire Protective Signaling Systems
5. No. 521 Heat Detectors for Fire Protective Signaling Systems
6. No. 228 Door Closers-Holders for Fire Protective Signaling Systems
7. No. 464 Audible Signaling Appliances
8. No. 38 Manually Actuated Signaling Boxes
9. No. 346 Waterflow Indicators for Fire Protective Signaling Systems
10. No. 1481 Power supplies for Fire Protective Signaling Systems
11. No. 1971 Visual Notification Appliances

C. Local and State Building Codes
D. All requirements of the Owner, Owner’s insurance company and the City of Middletown Fire Marshal’s office (Authority Having Jurisdiction).

1.6 RELATED SECTIONS – if used on this project

A. Section 01015: General Project Requirements
B. Section 01700: Project Closeout
C. Section 01740: Warranties and Bonds
D. Section 15325: Fire Sprinkler Systems
E. Section 16050: Basic Electrical Materials and Methods

PART 2 - PRODUCTS

1.7 EQUIPMENT AND MATERIAL, GENERAL

A. All equipment and components shall be new, and the manufacturer’s current model. The materials, appliances, equipment and devices shall be tested and listed by a nationally recognized approval agency for use as part of a protected premises protective signaling (fire alarm) system. The authorized representative of the manufacturer of the major equipment, such as control panels, shall be responsible for the satisfactory installation of the complete system.

B. All equipment and components shall be installed in strict compliance with the manufacturer’s recommendations. Consult the manufacturer's installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc., before beginning system installation. Refer to the Riser/Connection diagram for all specific system installation/termination/wiring data.

C. All equipment shall be attached to walls and ceiling/floor assemblies and shall be held firmly in place (e.g., detectors shall not be supported solely by suspended ceilings). Fasteners and supports shall be adequate to support the required load.

1.8 CONTROL PANEL

A. The control panel shall be modular in construction and shall include, but not limited to; the hardware, software and firmware required to perform the following major system functions:

1. Steel, satin black, baked enamel cabinet with indicator viewing window, removable hinged outer door with cylinder lock and dead front construction with the outer door open. The inner dead front doors shall be hinged for ease of system operation by firefighters and access by technicians for testing and maintenance modes.

2. System power supplies, including necessary transformers rectifiers, regulators, filters and surge protection required for system operation, with the capacity to power the system in a worst case condition with all devices in alarm and all local indicating appliances active without exceeding the listed ratings. All system
devices shall display normal and alarm conditions consistently whether operating from normal power or reserve (standby) power.

3. Surge protection shall be supplied at the power input to each cabinet. The surge suppression shall be of the phase to neutral (normal mode suppression). Phase to ground devices, MOV based devices and pure inductive devices shall not be considered acceptable. Protection shall also be furnished for SLC and NAC circuits where exiting and entering any structure, connected prior to any system devices within the structure.

4. System 16 bit core processor, with internal operating system to process incoming alarm signals and issue output commands required as a result of the alarm reception, by system programming or by manual commands. Total system response time shall not exceed 10 seconds on a system configured to the 240 maximum input address maximum capacity. All system processors shall be supervised by individual watchdog circuitry furnishing automatic restart after loss of activity. Systems with a single watchdog circuits for all processors shall not be acceptable unless supplied with a "hot" standby CPU.

5. Capability shall exist within the system to extend the network at any node to the systems maximum capacity.

6. Selective historical log, up to 800 events of all types, shall be stored in flash memory and displayed, printed or downloaded by classification for selective event reports.
   a. The system shall allow selection of events to be logged, including inputs such as: alarms, troubles, supervisory signals, status changes, walk tests and device verification; and such outputs as: audible control and output activation; and actions such as: resets, sensitivity adjustments, arm/disarm, overrides, time and date setting and acknowledgements.
   b. Data format for downloading shall be adaptable to a data base management program allowing custom report generation to track alarms, troubles and maintenance.
   c. Audible and visual indications shall be generated when memory is 80% and 90% full to allow downloading of data.
   d. Systems not supporting downloading of event history or requiring segregated storage for classifications of event history shall include a PC based, dedicated historical logging terminal together with hard drive storage and necessary software for system performance analysis and report generation.

7. System display/keyboard shall be usable at any network node and shall have the following capabilities, capacities, indicators and controls:
   a. An 80-character back lighted alphanumeric super twist LCD display readable at any angle.
   b. Thirty-two character user defined custom messages shall describe the location of the active device.
c. Display shall indicate desired message in a sequence, including; English, English/Spanish. Either of the selected languages shall be selectable as the primary display.

d. Systems unable to perform to this level shall supply PC based terminals displaying the required messages.

e. The system shall be capable of programming to allow troubles occurring and restored in the system to be automatically removed from the display queue.

f. As a minimum, an LED display for "ALARM", "AUDIBLES SILENCED", "SUPERVISORY", "TROUBLE", "SECURITY", "POWER ON" and "PARTIAL SYSTEM DISABLED".

g. Touch activated, audible feedback, membrane switches for "ALARM ACKNOWLEDGE", "AUDIBLE SILENCE", "SUPERVISORY ACKNOWLEDGE", "TROUBLE ACKNOWLEDGE", "SECURITY ACKNOWLEDGE", "RESET", "DISPLAY HOLD" and "DISPLAY NEXT".

h. Touch activated, audible feedback, membrane switch functions, programmable to perform a minimum of twelve custom designed and programmed functions such as drill, disable, bypass automatic control commands or other special functions as required by the system user.

i. The membrane switches shall also be used for the entry of multiple key sequences to be used for pass code protection inputs into logic strings, preventing un-authorized command entry.

j. Ten-digit keypad for pass code entry to perform programming and maintenance functions.

8. The system shall have capabilities allowing vectored reporting of Alarms, Supervisory, Security, Troubles and Status, to dedicated alphanumeric radio pagers. The information displayed on the pager shall identify the system, the device address, and the state of the device and the alphanumeric description of the device location. The system shall have capabilities of up to eight classifications of remote reports.

1.9 POWER SUPPLY

A. System power supply, including necessary transformers rectifiers, regulators, filters and surge protection required for system operation, with the capacity to power the system in a worst case condition with all devices in alarm and all local indicating appliances active without exceeding the listed ratings. All system devices shall display normal and alarm conditions consistently whether operating from normal power or reserve (standby) power.

B. Surge protection shall be supplied at the power input to each cabinet. The surge suppression shall be of the phase to neutral (normal mode suppression). Phase to ground devices, MOV based devices and pure inductive devices shall not be considered
acceptable. Protection shall also be furnished for SLC and NAC circuits where exiting and entering any structure, connected prior to any system devices within the structure.

C. Standby power source shall meet the requirements for standby capacity as detailed in NFPA 72, i.e. supervisory for 24 hours and sufficient power to provide the required discharge, control and notification.

D. Transfer from AC to battery power shall be instantaneous when AC voltage drops to a point where it is not sufficient for normal operation.

E. Transfer to battery standby shall be indicated by display and recorded in the history file with time and date. Indication shall be “AC POWER FAILURE”. During battery operation, system shall process all inputs. However, LCD display shall provide five (5) seconds of backlighting for each new input condition, and then turn off LCD backlight to conserve battery power. System charger shall provide recharge of batteries to full capacity in 48 hours.

1.10 SYSTEM ENCLOSURES

A. Provide the enclosure needed to hold all the cards and modules as specified with at least spare capacity for two cards. The enclosures shall be black. The outer doors shall be capable of being a left hand open or a right hand open. The inner door shall have a left hand opening. System enclosure doors shall provide ventilation for the modules or cards in the enclosure where required.

1.11 CONDUIT AND WIRE

A. Conduit and Metal Raceway

1. Conduit shall be in accordance with the National Electrical Code (NEC), local and state requirements, including City of Middletown Fire Prevention Ordinance.

2. All wiring shall be installed in conduit or metal raceway. Conduit fill shall not exceed 40% of interior cross sectional area where three or more cables are contained within a single conduit.

3. Cable must be separated from any open conductors of Power, or Class 1 circuits, and shall not be placed in any conduit, junction box or raceway containing these conductors, as per NEC Article 760-29.

4. Wiring for 24 volt control, alarm notification, emergency communication and similar power-limited auxiliary functions may be run in the same conduit as initiating and signaling line circuits. All circuits shall be provided with transient suppression devices and the system shall be designed to permit simultaneous operation of all circuits without interference or loss of signals.

5. Conduit shall not enter the fire alarm control panel, or any other remotely mounted control panel equipment or backboxes, except where conduit entry is specified by the fire alarm control panel manufacturer.

6. Conduit shall be 3/4” (19.1 mm) minimum. Metal raceway shall be sized according to the number of required conductors.
B. Wire

1. All fire alarm system wiring must be new.

2. Wiring shall be in accordance with local, state and national codes (e.g., NFPA 70, NEC Article 760) and as recommended by the manufacturer of the fire alarm system. Number and size of conductors shall be as recommended by the fire alarm system manufacturer, but not less than 18 AWG (1.02 mm) for initiating device circuits and signaling line circuits, and 14 AWG (1.63 mm) for notification appliance circuits.

3. All wire and cable shall be listed and/or approved by a recognized testing agency for use with a protective signaling system.

4. Wire and cable not installed in conduit shall have a fire resistance rating suitable for the installation as indicated in NFPA 70 (e.g., FPLR).

5. Wiring used for the multiplex communication loop shall be twisted and shielded and installed in conduit unless specifically approved by the fire alarm equipment manufacturer. The system should permit use of IDC and NAC wiring in the same conduit with the communication loop.

6. All field wiring shall be completely supervised. In the event of a primary power failure, disconnected standby battery, removal of any internal modules, or any open circuits in the field wiring; a trouble signal will be activated until the system and its associated field wiring are restored to normal condition.

7. The Fire Alarm Control panel shall be capable of T-Tapping Class B (NFPA Style 4) Signaling Line Circuits. Systems which do not allow, have restrictions to, for example, the amount of T-Taps, length of T-Taps etc., are not acceptable.

C. Terminal Boxes and Junction Boxes

1. All boxes and cabinets shall be UL listed for their use and purpose.

1.12 MAIN FIRE ALARM CONTROL PANEL

A. The main FACP is either existing to be upgraded and expanded, or if a replacement is specified, the new equipment shall be Siemens FS-250, no substitutions.

1.13 SYSTEM COMPONENTS

A. Strobe Lights:

1. Shall meet the requirements of the ADA as defined in UL standard 1971 and shall meet the following criteria:

   a. The maximum pulse duration shall be 2/10 of one second.

   b. Candela intensity shall meet the requirements of UL 1971.

   c. The flash rate shall meet the requirements of UL 1971.
d. The appliance shall be placed 80 in (2,030 mm) above the highest floor level within the space, or 6 in (152 mm) below the ceiling, which ever is lower.

2. Provide flush or semi-flush mounted visual units.

B. Audible/Visual Combination Devices:

1. Shall meet the applicable requirements of Section A listed above for audibility.

2. Shall meet the requirements of Section A listed above for visibility.

3. Provide flush or semi-flush mounted audio/visual units.

C. Addressable Devices - General

1. Addressable devices shall provide an address-setting means using rotary decimal switches or a programmer provided by the fire alarm control panel manufacturer.

2. Detectors shall be Intelligent and Addressable, and shall connect with two wires to the fire alarm control panel Signaling Line Circuits. Thermal detectors shall be of the Fixed Temperature type. Rate of Rise is NOT acceptable.

3. Addressable smoke and thermal detectors shall provide dual (2) alarm and power LEDs. Both LEDs shall flash under normal conditions, indicating that the detector is operational and in regular communication with the control panel, and both LEDs shall be placed into steady illumination by the control panel, indicating that an alarm condition has been detected. If required, the flashing mode operation of the detector LEDs shall be optional through the system field program. An output connection shall also be provided in the base to connect an external remote alarm LED.

4. Smoke detector sensitivity shall be set through the Fire Alarm Control Panel and shall be adjustable in the field through the field programming of the system. Sensitivity may be automatically adjusted by the panel on a time-of-day basis.

5. Using software in the FACP, detectors shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance. The detectors shall be listed by UL as meeting the calibrated sensitivity test requirements of NFPA Standard 72, Chapter 7.

6. The detectors shall be ceiling or wall mountable and shall include a separate twist-lock base which includes a tamper proof feature. An optional base shall be available with a built-in sounder rated at 85 dBA minimum.

7. The detectors shall provide a test means whereby they will simulate an alarm condition and report that condition to the control panel. Such a test may be initiated at the detector itself (by activating a magnetic switch) or initiated remotely on command from the control panel.

8. Detectors shall also store an internal identifying type code that the control panel shall use to identify the type of device (ION, PHOTO, THERMAL).
D. Addressable Pull Box (manual station)
   1. Addressable Pull Boxes shall, on command from the control panel, send data to
      the panel representing the state of the manual switch. They shall use a key
      operated test-reset lock, and shall be designed so that after actual emergency
      operation, they cannot be restored to normal use except by the use of a key.
   2. All operated stations shall have a positive, visual indication of operation and
      utilize a key type reset.
   3. Manual Stations shall be constructed of Lexan or metal with clearly visible
      operating instructions provided on the cover. The word FIRE shall appear on the
      front of the stations in raised letters, 1.75 inches or larger.
   4. Stations shall be suitable for surface mounting or semi-flush mounting as shown
      on the plans, and shall be installed not less than 42 inches, nor more than 48
      inches above the finished floor.
   5. Addressable pull station shall be by Siemens, or approved equal.

E. Intelligent Ionization Smoke Detector
   1. The detectors shall use the dual-chamber ionization principal to measure
      products of combustion and shall, on command from the control panel, send data
      to the panel representing the analog level of products of combustion.
   2. Intelligent photoelectric smoke detector shall be by Siemens, or approved equal.
   3. Thermal Detectors shall be intelligent addressable devices rated at 1350°F
      (580°C) and shall be a programmable fixed temperature rated at 135°F. It shall
      connect via two wires to the Fire Alarm Control Panel Signaling Line Circuit.
      Up to 99 intelligent heat detectors may connect to one SLC loop.
   4. The detectors shall use an electronic sensor to measure thermal conditions
      caused by a fire and shall, on command from the control panel, send data to the
      panel representing the analog level of such thermal measurements.
   5. Intelligent photoelectric smoke detector shall be by Siemens, or approved equal.

F. Carbon Monoxide Detector
   1. The carbon monoxide detectors shall be manufactured by Ultraguard or System
      Sensor and shall, on command from the control panel, send data to the panel
      representing the multiple levels of carbon monoxide based on time weighted
      averages of the gas present.
   2. Carbon Monoxide detectors shall be installed in the basement and one on each
      sleeping floor, as close to the sleeping rooms as possible. Device location to be
      verified by Owner.

G. Addressable Dry Contact Monitor Module
1. Addressable Monitor Modules shall be provided to connect one supervised IDC zone of conventional Alarm Initiating Devices (any N.O. dry contact device) to one of the Fire Alarm Control Panel Signaling Line Circuit (SLC) Loops.

2. The Monitor Module shall mount in a 4-inch square, 2-1/8" deep electrical box.

3. The IDC zone may be wired for Style D or Style B operation. An LED shall be provided that shall flash under normal conditions, indicating that the Monitor Module is operational and in regular communication with the control panel.

4. For difficult to reach areas, the Monitor Module shall be available in a miniature package and shall be no larger than 2-3/4" x 1-1/4" x 1/2". This version need not include Style D or an LED.

H. Two Wire Detector Monitor Module

1. Addressable Monitor modules shall be provided to connect one supervised IDC zone of conventional 2-wire smoke detectors or alarm initiating devices (any N.O. dry contact device).

2. The Two-Wire Monitor Module shall mount in a 4" square, 2-1/8" deep electrical box or with an optional surface backbox.

3. The IDC zone may be wired for Class A or B (Style D or Style B) operation. An LED shall be provided that shall flash under normal conditions, indicating that the Monitor module is operational and in regular communication with the control panel.

I. Addressable Control Module

1. Addressable Control Modules shall be provided to supervise and control the operation of one conventional Notification Appliance Circuit (NAC) of compatible, 24 VDC powered, polarized Audio/Visual Notification Appliances. For fan shutdown and other auxiliary control functions, the control module may be set to operate as a dry contract relay.

2. The Control Module shall mount in a standard 4-inch square, 2-1/8" deep electrical box, or to a surface mounted backbox.

3. The control module NAC circuit may be wired for Style Z or Style Y (Class A/B) with up to 1 Amp of inductive A/V signal, or 2 Amps of resistive A/V signal operation, or as a dry contact (Form C) relay. The relay coil shall be magnetically latched to reduce wiring connection requirements, and to insure that 100% of all auxiliary relay or NACs may be energized at the same time on the same pair of wires.

4. The Control Module shall provide address-setting means using decimal switches and shall also store an internal identifying code that the control panel shall use to identify the type of device. An LED shall be provided that shall flash under normal conditions, indicating that the control module is operational and is in regular communication with the control panel.
5. A magnetic test switch shall be provided to test the module without opening or shorting its NAC wiring.

6. The control module shall be suitable for pilot duty applications and rated for a minimum of .6 amps at 30 VDC.

J. Isolator Module

1. Isolator Modules shall be provided to automatically isolate wire-to-wire short circuits on an SLC loop. The Isolator Module shall limit the number of modules or detectors that may be rendered inoperative by a short circuit fault on the SLC Loop. At least one isolator module shall be provided for each floor or protected zone of the building.

2. If a wire-to-wire short occurs, the Isolator Module shall automatically open-circuit (disconnect) the SLC loop. When the short circuit condition is corrected, the Isolator Module shall automatically reconnect the isolated section.

3. The Isolator Module shall not require any address-setting, and its operations shall be totally automatic. It shall not be necessary to replace or reset an Isolator Module after its normal operation.

4. The Isolator Module shall mount in a standard 4-inch deep electrical box or in a surface mounted backbox. It shall provide a single LED that shall flash to indicate that the Isolator is operational and shall illuminate steadily to indicate that a short circuit condition has been detected and isolated.

1.14 BATTERIES AND EXTERNAL CHARGER

A. Battery

1. Shall be 12 volt, Gell-Cell type.

2. Battery shall have sufficient capacity to power the fire alarm system for not less than four twenty-four hours plus 5 minutes of alarm upon a normal AC power failure.

3. The batteries are to be completely maintenance free. No liquids are required. Fluid level checks refilling, spills and leakage shall not be required.

B. External Battery Charger:

1. Shall be completely automatic, with constant potential charger maintaining battery fully charges under all service conditions. Charger shall operate from a 120volt, 60hz power source.

2. Shall be fully rated for fully charging a completely discharged battery within 48 hours while simultaneously supplying any loads connected to the batteries.

3. Shall have protection to prevent discharge through charger.

4. Shall have protection for overloads and short circuits on both AC and DC sides.
PART 2 EXECUTION

2.1 INSTALLATION

A. Installation shall be in accordance with the NEC, NFPA 72, local and state and codes and ordinances, as shown on the drawings, and as recommended by the equipment manufacturer.

B. All conduit, junction boxes, conduit supports and hangers shall be concealed in finished areas and may be exposed in unfinished areas. Smoke detectors shall not be installed prior to the system programming and test period. If construction is ongoing during this period, measures shall be taken to protect smoke detectors from contamination and physical damage.

C. All fire detection and alarm system devices, control panels and remote annunciators shall be flush mounted when located in finished areas and may be surface mounted when located in unfinished areas.

2.2 BOXES, ENCLOSURES AND WIRING DEVICES

A. Boxes shall be installed plumb, level and secured firmly in position.

2.3 CONDUCTORS

A. Each conductor shall be identified as shown on the drawings at each end with wire markers at terminal points. Attach permanent wire markers within 2 inches of the wire termination. Marker legends shall be visible.

B. Permanently label or mark each conductor at both ends with permanent alphanumeric wire markers.

C. Use a consistent color code for fire alarm system conductors throughout the installation.

2.4 ACCEPTANCE TESTING

A. System on and off-site reporting functions shall be demonstrated as follows:

1. Correct zone transmitted for each alarm input

2. Trouble signals received for disconnection of devices

B. Secondary power capabilities shall be demonstrated as follows:

1. System primary power shall be disconnected for a period of time as specified herein. At the end of that period, an alarm condition shall be created and the system shall perform as specified for a period as specified.

2. System primary power shall be restored for forty-eight hours and system-charging current shall be normal trickle charge for a fully charged battery bank.

3. System battery voltages and charging currents shall be checked at the fire alarm control panel.
2.5 DOCUMENTATION

A. System documentation shall be furnished to the owner and shall include but not be limited to the following: (2) Operation & Maintenance Manuals containing a copy of the custom software program, catalog cut sheets of the devices supplied and an "as-built" drawing.

1. System operation, installation and maintenance manuals.
2. System matrix showing interaction of all input signals with output commands.
3. Documentation of system voltage, current and resistance readings taken during the installation, testing and ATP phases of the system installation.
4. System program showing system functions, controls and labeling of equipment and devices.

2.6 TYPICAL OPERATION

A. Actuation of any manual pull station, smoke detector, heat detector or water flow switch shall cause the following operations to occur unless otherwise specified:

1. Activate all programmed notification circuits until silenced.
2. Actuate all strobe units until the panel is reset.
3. Annunciate the active initiating devices and zones.
4. Release all magnetic door holders to doors
5. Activation of any carbon monoxide detectors, sprinkler system low pressure switch, or valve tamper switch shall cause a system supervisory alarm indication.

2.7 TEST

A. Provide the service of a competent, factory-trained engineer or technician authorized by the manufacturer of the fire alarm equipment to technically supervise and participate during all of the adjustments and tests for the system.

B. Systems acceptance test shall be coordinated with the Owner and City of Middletown fire marshal. A test of 100% of devices is required. Test smoke shall be used to test smoke detectors and a heating appliance is required to test addressable heat detectors.

C. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation.

D. Close each sprinkler system flow valve and verify proper supervisory alarm at the FACP.

E. Verify activation of all flow switches.

F. Open initiating device circuits and verify that the trouble signal actuates.

G. Open signaling line circuits and verify that the trouble signal actuates.
H. Open and short notification appliance circuits and verify that trouble signal actuates.
I. Ground initiating device circuits and verify response of trouble signals.
J. Ground signaling line circuits and verify response of trouble signals.
K. Ground notification appliance circuits and verify response of trouble signals.
L. Check presence and audibility of tone at all alarm notification devices.
M. Check installation, supervision, and operation of all intelligent smoke detectors during a walk test.
N. Each of the alarm conditions that the system is required to detect should be introduced on the system. Verify the proper receipt and the proper processing of the signal at the FACP and the correct activation of the control points.
O. When the system is equipped with optional features, the manufacturers’ manual should be consulted to determine the proper testing procedures. This is intended to address such items as verifying controls performed by individually addressed or grouped devices, sensitivity monitoring, verification functionality and similar.

2.8 FINAL INSPECTION

A. At the final inspection a factory trained representative of the manufacturer of the equipment shall demonstrate that the system functions properly in every respect.

2.9 INSTRUCTION

A. Provide instruction as required for operating the system. Hands-on demonstrations of the operation of all system components and the entire system including program changes and functions shall be provided.

B. The contractor and/or the system manufacturers’ representatives shall provide a typewritten "sequence of operation" to the owner.

END OF SECTION 16722