CITY OF WORCESTER

455 MAIN STREET, WORCESTER, MA 01608

PROJECT MANUAL

DCU CENTER RIGGING GRID UPGRADES

50 FOSTER STREET, WORCESTER MA 01608

DIVISIONS 0 THROUGH 33

12/10/2025

SET NUMBER

SECTION 00 01 10

TABLE OF CONTENTS

DIVISION 12 THROUGH DIVISION 33
NO WORK IN THESE DIVISIONS

END OF SECTION

SECTION 00 01 15

X-0 COVER SHEET

STRUCTURAL

S0-1 GENERAL NOTES
S0-2 RIGGING GUIDELINE PLAN
S0-3 FALL ARREST PLAN
S1-1 BOTTOM CHORD OVERALL PLAN
S1-2 RIGGING GRID OVERALL PLAN
S1-3 TOP CHORD OVERALL PLAN
S2-1 TRUSS ELEVATIONS
S3-1 STEEL DETAILS
S3-2 STEEL DETAILS
SD1-1 DEMO – BOTTOM CHORD OVERALL PLAN

END OF SECTION

THIS PAGE IS LEFT INTENTIONALLY BLANK

SECTION 01 01 00

SUMMARY OF WORK

PART 1 – GENERAL

1.01 GENERAL PROVISIONS

A. All the Contract Documents, including Drawings, General Conditions, Supplementary Conditions, and all Sections of this Project Manual and respective addenda, apply to the Work and requirements of this Project.

1.02 SUBSTANTIAL COMPLETION

A. The Date of Substantial Completion shall be **August 31, 2026** for Contract work.
   1. The Date of Substantial Completion shall remain the same, as stated above, regardless of any alternate(s) chosen to be included in the Contract by the Owner.

B. The Contractor shall obtain a Certificate of Occupancy on or before the Date of Substantial Completion.

1.03 PROJECT DESCRIPTION

A. The project scope consists of the installation of a new steel rigging grid to better accommodate the rigging of concerts, shows, and other events with the DCU Center Arena. This includes selective demolition of the existing rigging grid, and additions to the existing roof structure. The existing system (3M Engineered Fall Protection Systems) will be extended.

1.04 RELATED WORK SPECIFIED ELSEWHERE

A. Carefully examine all the Contract Documents for requirements which affect the Work of this Section.

B. Other Specification Sections which directly relate to the Work of this Section include, but are not limited to, the following:
   1. DIVISION 01 – GENERAL REQUIREMENTS; including all Sections contained therein.
   2. Section 05 12 00 – Steel
   3. Section 11 24 29 – Fall Protection

1.05 RELATED WORK UNDER OTHER CONTRACTS

A. Work by other contractors, which will be under separate contracts, may take place during the work of this contract adjacent to and within the work areas of this site. This work, under another contract, shall be coordinated between the different General Contractors. The security system will be installed by the Owner under separate Contract and the general Contractor shall work with the Owners vendor to coordinate their work with the General contractor’s work.

B. Cooperate fully with separate contractors so that work under those contracts may be carried out smoothly, without interfering with or delaying the work under this contract.

1.06 CONSTRUCTION MANAGEMENT PLAN

POPULOUS

A. The Contractor shall be required to prepare a detailed Construction Management Plan (CMP) which must be approved by the owner prior to the start of construction. The CMP will include all the measures the Contractor determines are necessary to successfully complete the project.

B. The CMP must include, but shall not be limited to, the Contractors proposed procedures for following items: a. Work logistics plan: A description of how of the Work will be phased and sequenced to minimize disruption to individual spaces and sections of the building. i) Work hour limitations:

1. Normal work hours are 7:00AM -5:00PM. Work before or after this will be approved when provided notification via approved construction schedule or as noted in part 2 below. It is essential to complete this project prior to August 31, 2026 to avoid interruption of Arena events being scheduled after this date.
2. Notification procedures regarding weekend, early or late day work:
    a. Provide 48-hour written notification to the Architect, facility contact, and the City of Worcester Project Manager for work performed during Saturday, Sunday, and Holiday hours.
    b. Work performed during late evening hours shall be coordinate in advance when possible. In the event that the contractor needs to continue a days work into late evening hours, outside of expectations, the contractor will notify the Architect, City of Worcester Project Manager, and facility contact as soon as they realize late hours are needed.

1.07 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies; perform demolition work in accordance with applicable rules, regulations, codes, and ordinances of local, state, and federal authorities.

B. Obtain and pay for necessary building permits, licenses and certificates and give notices as required during the performance of the Work.

C. Provide 4 copies of shop drawings and literature for Architects review and approval for the items referenced in the specifications.

D. Provide schedule and work plan within one week of the contract signing.

E. Attend weekly meetings (or as scheduled) with the Architect and Owner’s Representative as scheduled.

F. Provide all Closeout documents including final acceptance, warranties, guaranties, and bonds.

1.08 WORK SEQUENCE SCHEDULING AND COORDINATION

A. The Work shall be sequenced, scheduled, and coordinated to achieve the Date of Substantial Completion.

1. All deliveries must be scheduled for a minimum of 48 hours in advance with the Architect and Owner.
2. All existing utility tie-ins must be scheduled and coordinated at a minimum of 72 hours in advance with the Architect and Owner.
3. Coordination of the delivery of the structural steel and associated materials shall be the responsibility of the contractor to provide appropriate notice per the distributors requirements.

B. The General Contractor and each Sub-Contractor shall establish and increase or decrease as appropriate the workforce, days of work, number of shifts, work hours, materials, tools, and equipment needed to maintain and achieve the Date of Substantial Completion.

C. The General Contractor and each Sub-Contractor shall increase the workforce, days of work, number of shifts, work hours, materials, tools, and equipment needed to maintain the Date of Substantial Completion as necessary to accommodate any additional work authorized by Construction Change Directives and Change Orders modifications.

D. The General Contractor will be responsible for the proper conduct of the work to ensure that all trades work together, and in harmony, to achieve substantial and final completion as specified.

1.09 WORK HOURS

A. Normal working hours are to be Monday through Friday from 7:00 AM to 3:30 PM, except Legal Holidays. Any working hours outside of these times shall be considered “Extended Hours” and treated as described below.

B. Extended work hours shall require prior scheduling and coordination with the Architect and Owner at a minimum of 48 hours in advance. No requests will be reasonably withheld.

C. Any project-related activities may not interfere with the enjoyment and use of abutting areas within the building or adjacent properties during any extended work hours.

1.10 CONTRACTOR USE OF THE PREMISES

A. General Contractor shall have use of the site from date of contract to the Date of Substantial Completion as described above in the Work Hours paragraph.

B. Construction vehicle access and deliveries to the project shall be made during working hours.

C. All contractor personnel shall enter and exit the construction via door 4/4A.

D. Do not close or obstruct the parking lot, driveways, or sidewalks without the proper permit. Conduct operations with minimum traffic interference.

E. The General Contractor shall also be responsible for returning the public areas adjacent to each work area to their original state prior to the start of work in that area.

F. The use of internal combustion engine driven power equipment is prohibited within the building. Alternate power sources, i.e. generators and compressors, may be placed outside the building to provide power to equipment. Placement of any alternate power sources shall be subject to prior Architect and Owner approval.

G. There will be no washing or washing of any vehicles at the project site. The contractor shall make necessary provisions to accommodate this work off site.

H. All cleaning and washing of tools and/or equipment shall be performed in areas designated only by the Architect. This will be strictly enforced.

1.11 CONTRACTOR USE OF CITY STREETS

A. The General Contractor's personnel, and all the other personnel employed on the project, shall limit their parking on the site to within the areas designated for construction parking and as permitted by the General Contractor. Additionally, Contractor personnel may park as legally allowed within City Limits. Parking on street sidewalks is prohibited.

B. Driveway entrances, walks, and yards to abutting properties shall be always kept unobstructed.

1.12 WORK CONDITIONS

POPULOUS

A. Neither the General Contractor, nor Sub-Contractors at any level, nor their employees shall bring illegal substances or alcoholic beverages on the premises.

B. Vulgar, abusive, obscene language or behavior will not be tolerated.

C. The Contractor's personnel engaging in the above shall be removed from the jobsite.

D. Radios or any type of "music" broadcasting systems are not allowed.

E. This site is smoke-free; therefore, smoking is prohibited within the site limits.

1.13 PROJECT MANAGER, SUPERINTENDENTS, FIELD ENGINEER AND FOREMAN

A. The General Contractor shall provide a qualified General Superintendent, who shall be present, full time, on site, daily during all work in progress until the Date of Substantial Completion, and for such an additional time thereafter as the Architect may determine. Only under extenuating circumstances, with the approval of the Architect and Owner, will the Contractor be allowed to substitute for the General Superintendent prior to the date of Final Completion.

B. The General Superintendent shall supervise and direct the activities of other superintendents and foremen on site. He shall not perform the work of foremen, tradesmen, or home office staff.

C. Each subcontractor shall provide a Lead Foreman, responsible to be on site full time during the workday.

D. Each foreman, in addition to his regular duties shall be responsible for establishing, maintaining, and providing record drawings, which are required to be updated prior to submitting the current period's draft Application for Payment.

E. The General Superintendent and Lead Foreman shall not be discharged or changed without prior written consent of the Architect, which will not be unreasonably withheld. The Architect will require that all as-built information be updated and current prior to granting consent.

1.14 DAILY REPORTS AND WEEKLY OUTLINE SCHEDULE

A. The General Superintendent shall provide a "Daily Report" to the Clerk of Works containing the following:

1. Name and manpower of each Contractor and Subcontractor.
2. Equipment used.
3. Delivery of products received on site.
4. Weather conditions at the start and end of each day and any significant changes or events during the day.
5. Significant problems, hazards or accidental injury occurring during each shift.
6. Summary of progress made each day.

B. A photocopy may be made of the same "Daily Report," containing the information above, that is used by the General Superintendent. The General Superintendent may obscure confidential portions of his "Daily Report" if desired. Reports are due the following day.

C. The Superintendent shall provide the Clerk of Works a written (electronic file is permissible) "Two-Week (look ahead) Outline Schedule" of work activities planned at the beginning of each week, for the next two weeks of planned work. The "Two-Week Outline Schedule" may be a simple listing of each trade's activities delineating areas where work is to be scheduled. Note any significant milestones.

1.15 CERTIFICATE OF SUBSTANTIAL COMPLETION

POPULOUS

A. The Architect shall issue a Certificate of Substantial Completion for the work when and if all the following conditions have been met:

1. The work is sufficiently complete to allow the Owner beneficial use of the premises. The work remaining to be done is not a danger to the proposed occupants and is of a minor nature.
2. The work is sufficiently complete so that the Architect may make affidavits to the Building Official as required by Controlled Construction provisions of the Building Code.
3. The mechanical and electrical systems are fully operational. Required inspections and tests have been successfully completed, and the Owner has been provided instructions regarding operation and maintenance of mechanical and electrical systems in the building.
4. The Contractor has made notifications required to pay cost of final billing for utilities and termination of property insurance.
5. The Owner has made notifications required to assume the future cost of utilities and provide property insurance.
6. The Building Official has issued a Certificate of Occupancy without restrictions or conditions relating to the contractor's work.

1.16 CITY OF WORCESTER ORDINANCES, LICENSES, PERMITS, AND FEES

A. All Contractors shall comply with City Ordinances which may affect the work of this contract, and which have not been previously covered in the Contract Documents. Requirements and fees listed are those in effect as of this writing and each Contractor shall be responsible for verifying the requirements and fee cost as currently in effect and throughout the duration of this project. This includes, but is not limited to, the following:

1. Worcester Police Department:
    a. Police Details
        1) Hourly rate for one-half day or full day.
    b. Permits for Sunday and Holiday work.
        1) Fee Required.
2. Department of Public Works, Permits Division
    a. Street Opening Permit Bond
        1) $ 5,000.00
    b. Barricade Placement by DPW
        1) 1st $85 per day
        2) Each additional $ 40 per day
    c. Drainlayers License
        1) New $ 200.00
        2) Annual Renewal $ 100.00
    d. Drain Permit
        1) $ 180.00
    e. Main Inspection
        1) $ 2.90 per Foot
    f. Assessment
        1) To be Determined
    g. Plan Review
        1) $ 100.00

h. Street Obstruction
   1) $ 150.00 each
i. Street Obstruction (Blanket Permit)
   1) $ 1,000.00 per year
j. Street Opening
   1) Pavement older than 5 years $ 156.00
   2) Pavement 5 years old or less $ 300.00
k. Driveway Opening
   1) Permit $ 156.00
l. Wastewater Discharge
   1) Permit $ 250.00
   2) Inspection $ 400.00
   3) Sewer use $ 6.29/CCF
m. Water meter, etc. Contact the Water Department at 508-799-1492.
n. Traffic and Parking. Contact Department at 508-799-1468.

3. Worcester Fire Department
   a. Fire and Smoke Alarm
   b. Automatic Sprinkler and Standpipes
   c. Contact Worcester Fire Department at 508-799-1826.
   d. Compliance with NFPA 241
4. Department of Inspectional Services
   a. Building Permit
      1) Based on total contract price
         a) $12/$1,000 up to the first million dollars.
         b) $9.00 per $1,000.00 over $1,000,000.
      2) Orders of Building Official under Chapter 1, 780 CMR.
      3) Ticket violation under Chapter 33, 780 CMR.
   b. Trash Control
      1) Ticket for Violations
   c. Environmental Control
      1) Air, Water, Noise Pollution - Ticket for Violations
      2) Conservation Commission Enforcement Officer

1.17 UTILITY COMPANY BACKCHARGES

A. Does not apply.

PART 2 – PRODUCTS NOT USED

PART 3 – EXECUTION NOT USED

END OF SECTION

THIS PAGE IS LEFT INTENTIONALLY BLANK

SECTION 01 04 50

CUTTING AND PATCHING

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. All the Contract Documents, including Drawings, General Conditions, Supplementary Conditions, and all Sections of Division 01 - General Requirements, apply to the Work of this Section.

1.02 SUMMARY

A. This Section specifies administrative and procedural requirements for cutting and patching work not specified elsewhere.

B. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1. Requirements of this Section apply to all Sections of the Specifications, including plumbing installations.

C. Any finished new work required to be cut out due to lack of coordination and scheduling will be repaired by the trade causing cutting and patching to be done. This work will be done at no additional cost to the Owner.

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. Carefully examine all the Contract Documents for requirements which affect the Work of this Section.

B. Other Specification Sections which directly relate to the Work of this Section include, but are not limited to, the following:

1. DIVISION 01 – GENERAL REQUIREMENTS; including all Sections contained therein.
2. Section 05 12 00 – Steel
3. Section 11 24 29 – Fall Protection Systems

1.04 SUBMITTALS

A. Cutting and Patching Proposal: Where approval of procedures for cutting and patching is required before proceeding, submit a proposal describing procedures seven (7) days in advance of the time cutting and patching will be performed and request approval to proceed. Include the following information, as applicable, in the proposal:

1. Describe the extent of cutting and patching required. Show how it will be performed and indicate why it cannot be avoided.
2. Describe anticipated results in terms of changes to existing construction; include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
3. List of products to be used and firms or entities that will perform Work.
4. Indicate dates when cutting and patching will be performed.

5. List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
6. Where cutting and patching involves adding reinforcement to structural elements, submitting details and engineering calculations showing integration of reinforcement with the original structure.
7. Approval by the Architect to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of unsatisfactory work.

1.05 QUALITY ASSURANCE

A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.
   1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:
      a. Foundation construction.
      b. Bearing walls.
      c. Structural concrete.
      d. Lintels.
      e. Structural decking.
      f. Miscellaneous structural metals.
      g. Piping, ductwork, and equipment.

B. Operational and Safety Limitations: Do not cut and patch operating elements or safety-related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.
   1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:
      a. Primary operational systems and equipment.
      b. Air or smoke barriers.
      c. Water, moisture, or vapor barriers.
      d. Membranes and flashing.
      e. Control systems.
      f. Communication systems.

C. Visual Requirements: Do not cut and patch construction exposed to the exterior or in occupied spaces in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.
   1. If possible, retain the original installer or fabricator to cut and patch the following categories of exposed Work, or if it is not possible to engage the original installer or fabricator, engage another recognized experienced and specialized firm.

1.06 WARRANTY

A. Existing Warranties: Replace, patch, and repair material and surfaces cut or damaged by methods and with material in such a manner so as not to void any existing warranties.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Use materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that fully match existing adjacent surfaces possible regarding visual effect. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 - EXECUTION

3.01 INSPECTION

A. Before cutting existing surfaces, examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.
   1. Before proceeding, meet at the site with parties involved in cutting and patching. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

B. All cutting and patching by all trades shall be done under the direction and coordination of the General Contractor. Accurately lay out all conduit runs, piping, recessed items, etc.

C. Inspect existing conditions of project, including elements subject to damage or to movement, during cutting and patching.

D. After uncovering work, inspect conditions affecting installation of products, or performance of work.

E. Report unsatisfactory or questionable conditions to the Architect in writing; do not proceed with work until the Architect has provided further instructions.

F. No holes or slots shall be drilled through any structural member. Inspect holes after finishes have been removed to assure that substrate is not structural. No holes to be blindly drilled through walls, ceilings, etc.

3.02 PREPARATION

A. Temporary Support: Provide temporary support for Work to be cut.

B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.

C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Take all necessary precautions to avoid cutting existing pipes, conduit or ductwork serving the building.

E. Provide adequate temporary support as necessary to assure structural value or integrity of affected portion of work.

F. Provide devices and methods to protect other portions of the project from damage.

G. Provide protection from elements for that portion of the project, which may be exposed by cutting and patching work.

3.03 PERFORMANCE

A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.
   1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.

B. Cutting: Cut existing construction using methods that are least likely to damage elements to be retained or adjoining construction.
   1. In general, where cutting is required, use hand or small power tools designed for sawing or grinding, not hammering, and chopping. Cut holes and slots as small as possible, neatly to size required, with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
   2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
   3. Cut through concrete and masonry using a cutting machine, such as a carborundum saw or diamond core drill.
   4. Comply with requirements of applicable Sections of Division 2 where cutting and patching requires excavating and backfilling.

C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
   1. Where feasible, inspect and test patched areas to demonstrate the integrity of the installation.
   2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

D. Execute cutting and demolition by methods, which will prevent damage to other work, and will provide proper surfaces to receive installation of repairs.

E. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances, and finishes.

F. Restore work, which has been cut or removed to match the original adjacent surfaces exactly in color, material, and texture. Include repainting of new work. Install new products to provide completed work in accordance with requirements of Contract Documents.

G. Fit works airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces. All penetrations through separation walls shall be sealed with fire stopping sealant. All penetrations through foundations and exterior walls shall be sealed watertight and shall include proper flashings, drip loops, weatherproof covers, etc. as necessary.

H. Dust and debris from cutting shall be cleaned up immediately after.

3.04 HOLES

A. The General Contractor and subcontractors shall drill all their own holes if sleeves are missed, improperly placed, or not large enough. Holes made by the General Contractor and subcontractors shall be accurate and neat and not just punched out. No long slots shall be made where piping or conduit may be placed in individual holes. No cutting or patching shall be done which, in the opinion of the Architect, will endanger or impair construction or finish.

B. No cores shall be drilled in concrete walls or slabs more than six (6) inches without prior approval from the Structural Engineer. The Structural Engineer must approve any cutting of structural steel.

C. Holes cut in fire-resistive walls and floors shall be neatly made and consistent with listing for firestopping assembly to be used.

3.05 CLEANING

A. Thoroughly and completely clean areas and spaces where cutting and patching are performed or used as access. Remove paint, mortar, oils, putty, and items of similar nature. Thoroughly clean piping, conduit, and similar features before painting or other finish is applied. Restore damaged pipe covering to its original condition.

END OF SECTION

SECTION 01 20 00

PROJECT MEETINGS

PART 1 – GENERAL

1.01 GENERAL PROVISIONS

A. All the Contract Documents, including Drawings, General Conditions, Supplementary Conditions, and all Sections of Division 01 - General Requirements, apply to the Work of this Section.

1.02 SUMMARY

A. This Section specifies administrative and procedural requirements for project meetings, including, but not limited to, the following:

1. Pre-Construction Conference.
2. Pre-Installation Conference.
3. Bi-Weekly Progress Meetings.
4. Coordination Meetings.
5. Project Closeout Conference.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Division 1 Section 01 29 00 – Payment Procedures" for procedures on submitting requisitions.
2. Division 1 Section 01 31 00 - Project Management and Coordination for procedures for coordinating project meetings with other construction activities.
3. Division 1 Section 01 33 00 - Submittal Procedures for submitting the Contractor's Construction Schedule.
4. Division 1 Section 01 77 00 – Closeout Procedures for procedures and issues surrounding Project Completion.

1.03 PRE-CONSTRUCTION CONFERENCE

A. Schedule a pre-construction conference before starting construction, immediately after execution of the Agreement. The conference is to be held at the Project Site, or other agreed upon location, at a time convenient to both the Owner and Architect. Conduct the meeting to review responsibilities and personnel assignments. Submit agenda to Architect and Owner three (3) days prior to meeting date.

B. Attendees: Authorized representatives of the Owner, Architect, and their consultants; the Contractor and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda: Discuss items of significance that could affect progress, including the following:

1. Introduction to All Project Members.
2. Distribution of Contract Documents.
3. Procedures Outlined for Contract Compliance Issues.
4. Tentative Construction Schedule; Making Notes of Critical Dates.
5. Critical Work Sequencing.

6. Pre-Installation Conferences.
7. Work Hours.
8. Use of the Premises.
9. Deliveries.
10. Security Procedures.
11. Parking and Site Access Issues.
12. Office, Work, and Storage Areas.
13. Housekeeping & Cleaning of Construction Areas.
14. Safety Procedures.
15. First Aid.
16. Procedures for Creating Monthly Cash Flow/Schedule.
17. Procedures for processing Draft Application for Payment Periodic Submittals Certification Statement.
18. Procedures for processing Applications for Payment.
19. Procedures for RFI's, SI's, RFP's, COP's, CCD's, CO's, etc.
20. Procedures for Keeping Logs on RFI's, SI's, RFP's, COP's, CCD's, CO's, etc.
21. Project Coordination Procedures & Drawings.
22. Project Meetings & Meeting Minutes.
23. Unit Prices.
24. Procedures for Submittals.
25. Quality Control, Inspections, and Testing.
26. Temporary Facilities.
27. Preparation of Project Closeout Documents.

D. The Contractor shall record and promptly distribute minutes of this meeting to all project members (in attendance or not), including the Architect and Owner, and as additionally directed by the Architect.

1. Meeting Minutes shall be in a standard type-written format to remain consistent for every project meeting and include, but not limited to, the following items:
    a. Detailed notes from all discussions of project business items in chronological order.
    b. Updated Project Contractor, Subcontractor, Vendor List.
    c. Updated Construction Schedule.

1.04 PRE-INSTALLATION CONFERENCES

A. Conduct a pre-installation conference at the Project Site before each construction activity that requires coordination with other construction.

B. Attendees: The Installer and representatives of manufacturers and fabricators involved in or affected by the installation, and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise the Architect of scheduled meeting dates.

1. Review the progress of other construction activities and preparations for the activity under consideration at each pre-installation conference, including requirements for the following:
    a. Contract Documents.
    b. Options.
    c. Related Change Orders.
    d. Purchases.
    e. Deliveries.
    f. Shop Drawings, Product Data, and quality-control samples.

g. Review of mockups or finish samples.
h. Possible conflicts.
i. Compatibility problems.
j. Time schedules.
k. Weather limitations.
l. Manufacturer's recommendations.
m. Warranty requirements.
n. Compatibility of materials.
o. Acceptability of substrates.
p. Temporary facilities.
q. Existing Occupancies.
r. Space and access limitations.
s. Governing regulations.
t. Safety.
u. Inspecting and testing requirements.
v. Required performance results.
w. Recording requirements.
x. Protection.

2. The Contractor shall record significant discussions and agreements and disagreements of each conference, and the approved schedule. The Contractor shall promptly distribute the record of the meeting to everyone concerned, including the Owner and the Architect.
3. Do not proceed with the installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of Work and reconvene the conference at the earliest feasible date.

1.05 PROGRESS MEETINGS

A. Conduct progress meetings at the Project Site weekly. Notify the Owner and the Architect of scheduled meeting dates. Coordinate dates of meetings with preparation of the payment request. General Contractor to record minutes of all meetings.

B. Attendees: In addition to representatives of the Owner and the Architect, each subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the status of the Project.

1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
2. Review the present and future needs of each entity present, including the following:
    a. Interface Requirements.
    b. Time & Project Progress.
    c. Work Hours.
    d. Updated Weekly Look-Ahead Schedule.
    e. Critical Work Sequencing.
    f. Off-Site Fabrication Problems.
    g. Updated Pre-Installation Conference Schedule.
    h. Deliveries.
    i. Use of the Premises.
    j. Security Procedures.
    k. Parking Issues & Snow Removal.
    l. Office, Work, and Storage Areas.
    m. Housekeeping & Cleaning of Construction Areas.
    n. Safety Procedures.
    o. First Aid.
    p. Draft Application for Payment Periodic Submittals Certification Statement (At Appropriately Timed Meeting Each Month).
    q. Updated Submittal, RFI, SI, RFP, COP, CCD, and CO Logs.
    r. New Submittals, RFI's, SI's, RFP's, COP's, CCD's, CO's, etc.
    s. Any Project Coordination Issues or Drawings.
    t. Quality Control, Inspections, and Testing.
    u. Temporary Facilities.
    v. Preparation of Project Closeout Documents.
3. The Contractor shall record and promptly distribute minutes of this meeting to all project members (in attendance or not), including the Architect and Owner, and as additionally directed by the Architect.
    a. Meeting Minutes shall be in a standard type-written format to remain consistent for every project meeting and include, but not limited to, the following items:
        1) Detailed notes from all discussions of project business items in chronological order.
        2) Updated Project Contractor, Subcontractor, Vendor List.
        3) Updated Construction Schedule.
        4) Updated Weekly Look-Ahead Schedule.
        5) Updated Submittal, RFI, SI, RFP, COP, CCD, and CO Logs.

1.06 COORDINATION MEETINGS

A. Conduct coordination meetings with all trades convenient for all parties involved. In addition, conduct coordination meetings when requested by the Architect or Clerk of Works.

1.07 TIME OF PROGRESS AND COORDINATION MEETINGS

A. Conduct both meetings weekly on a day agreeable to all parties, at a designated location at the site, or other agreed upon location.

1.08 PROJECT CLOSEOUT CONFERENCE

A. The Project Close-Out Conference shall be conducted at a time convenient for all parties involved prior to Substantial Completion. Refer to Section 01700 – Project Closeout for additional information for requirements.

PART 2 – PRODUCTS NOT USED

PART 3 – EXECUTION NOT USED

END OF SECTION

SECTION 01 25 00

SUBSTITUTION PROCEEDURES

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. All the Contract Documents, including Drawings, General Conditions, Supplementary Conditions, and all Sections of Division 01 - General Requirements, apply to the Work of this Section.

1.02 SUMMARY

A. This Section includes administrative and procedural requirements for handling requests for substitutions made after award of the Contract.

B. References Standards and Definitions: Refer to Section 014200 "References" for applicability of industry standards to products specified.

1. Requirements for submitting the Contractor's Construction Schedule and the Submittal Schedule are included under Section 013300 “Submittal Procedures”.
2. Procedural requirements governing the Contractor's selection of products and product options are included under Section 016000 “Product Requirements”.

1.03 DEFINITIONS

A. Definitions used in this Article do not change or modify the meaning of other terms used in the Contract Documents.

B. Substitutions: Changes in products, materials, equipment, and methods of construction required by the Contract Documents proposed by the Contractor after award of the Contract are requests for substitutions. The following are not considered to be requests for substitutions:

1. Specified options of products and construction methods included in the Contract Documents.
2. The Contractor's determination of, and compliance with, governing regulations and orders issued by governing authorities.

1.04 SUBMITTALS

A. Substitution Request Submittal: Requests for substitution will be considered if received within two (2) days after commencement of the Work. Requests received more than two (2) days after commencement of the Work may be considered or rejected at the discretion of the Architect.

1. Submit three (3) copies of each request for substitution for consideration. Submit requests in the form and according to 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.
3. 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 and fabrication and installation procedures.
    b. Samples, where applicable or requested.

c. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.

d. Cost information, including a proposal of the net change, if any in the Contract Sum.

e. The Contractor's certification that the proposed substitution conforms to requirements in the Contract Documents in every respect and is appropriate for the applications indicated.

4. Architect's Action: Within five (5) days of receipt of a request for substitution the Architect will request additional information or documentation for evaluation necessary for the evaluation of the request. Within five (5) days of receipt of the request, or of receipt of additional information or documentation, whichever is later, the Architect will notify the Contractor of acceptance or rejection of the 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 when a change in the Contract Sum or Contract Time is required; or in the form of the Architect's Supplementary Instructions when no change to the Contract Sum or Time is required.

1.05 WORK CONDITIONS / SEQUENCE

A. If sub-contractors find that conditions are not appropriate for them to begin the work of their trade or if they are directed to perform their work out of sequence by the General Contractor or if the General Contractor directs sub-contractors to start and continue regardless of job conditions, the sub-contractor shall so notify the Architect in writing by certified mail immediately.

PART 2 - PRODUCTS

2.01 SUBSTITUTIONS

A. The Contractor's submittal and the Architect's acceptance of Shop Drawings, Product Data, or Samples that relate to construction activities not complying with the Contract Documents do not constitute an acceptable or valid request for substitution, nor do they constitute approval.

B. Conditions: The Architect will receive and consider the Contractor's request for substitution when one or more of the following conditions are satisfied, as determined by the Architect. If the following conditions are not satisfied, the Architect will return the requests without action except to record non-compliance with these requirements.

1. Extensive revisions to the Contract Documents are not required.
2. Proposed changes are in keeping with the general intent of the Contract Documents.
3. The request is timely, fully documented, and properly submitted.
4. The request is directly related to an "or-equal" clause or similar language in the Contract Documents.
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 cannot be provided in a manner that is 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 method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provides the required warranty.

PART 3 - EXECUTION NOT USED

END OF SECTION

SECTION 01 26 00

CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. All the Contract Documents, including Drawings, General Conditions, Supplementary Conditions, and all Sections of Division 01 - General Requirements, apply to the Work of this Section.

1.02 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

B. Related Sections: The following sections contain requirements that relate to this Section:
   1. Division 1 Section 012900 “Payment Procedures” for administrative procedures governing applications for payment.
   2. Division 1 Section 013300 “Submittal Procedures” for requirements for the Contractor’s Construction Schedule.
   3. Division 1 Section 012500 "Substitution Procedures" for administrative procedures for handling requests for substitutions made after award of the Contract.

1.03 MINOR CHANGES IN THE WORK

A. Supplemental instructions authorizing minor changes in the Work, not involving an adjustment to the Contract Sum or Contract Time, will be issued by the Architect on the City's Form of Supplemental Instructions.

1.04 REQUEST FOR PROPOSAL

A. Owner initiated Request for Proposal: Proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time will be issued by the Architect, with a detailed description of the proposed change and supplemental or revised Drawings and Specifications, if necessary.
   1. Proposal requests issued by the Architect are for information only. Do not consider them an instruction either to stop work in progress, or to execute the proposed change.

1.05 PROPOSED CHANGE ORDER

A. Proposed Change Order: Using the form at the end of this section submit your proposal for the adjustment to the Contract Sum or Contract Time in response to a Request for Proposal or for Contractor initiated request for a change with Proposed Change Order.
   1. Unless otherwise indicated in the Request For Proposal, within twenty (20) days of receipt of the proposal request, submit to the Architect for the Owner's review an estimate of cost necessary to execute the proposed change.
      a. Include a list of quantities of products to be purchased and unit costs, along with the total number of purchases to be made. Where requested, furnish survey data to substantiate quantities.
         1) Indicate delivery charges, equipment rental, and amounts of trade discounts.

2) Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.

B. Contractor initiated request for change with Proposed Change Order: When latent or other unforeseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a request for a change to the Architect.

1. Include a statement outlining the reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and Contract Time.
   a. Include a list of quantities of products to be purchased and unit costs along with the total number of purchases to be made. Where requested, furnish survey data to substantiate quantities.
   b. Indicate delivery charges, equipment rental, and amounts of trade discounts.
   c. Comply with requirements in Section 01 25 00 "Substitution Procedures" if the proposed change in the Work requires the substitution of one product or system for a product or system specified.

1.06 ALLOWANCES

A. Allowance Adjustment: Base each Change Order Proposal Request for an allowance cost adjustment solely on the difference between the actual purchase amount and the allowance, multiplied by the final measurement of work-in-place, with reasonable allowances, where applicable, for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.

1. Include installation costs in the purchase amount only where indicated as part of the allowance.
2. When requested, prepare explanations and documentation to substantiate the margins claimed.
3. The Owner reserves the right to establish the actual quantity of work-in-place by independent quantity survey, measure, or count.

B. Submit claims for increased costs because of a change in scope described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit, within twenty (20) days of receipt of the Change Order or Construction Change Directive authorizing work to proceed. Claims submitted later than twenty (20) days will be rejected.

1. The Change Order cost amount shall not include the Contractor's indirect expense except when it is clearly demonstrated that either the nature or scope of work required was changed from that which could have been foreseen from information in Contract Documents.
2. No change to the Contractor's indirect expense is permitted for selection of higher or lower priced materials or systems of the same scope and nature as originally indicated.

1.07 CONSTRUCTION CHANGE DIRECTIVE

A. A Construction Change Directive shall be issued for all work involving a change in contract cost or time. The Construction Change Directive instructs the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. The Construction Change Directive will contain a complete description of the change in the Work and designate the method to be followed to determine change in the Contract Sum or Contract Time or is for a lump sum amount approved by the Architect.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive, if so, directed by the Architect.

1. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.08 CHANGE ORDER PROCEDURES

A. Upon the Owner's approval of a Change Order Proposal Request, the Architect will issue a Change Order for signatures of the Owner and Contractor.

1.09 OVERHEAD AND PROFIT

A. Overhead and Profit will be as noted elsewhere in these specifications.

1. Labor rates shall not exceed those shown in the contract specifications as set forth by the Department of Labor and Industries.

B. In reviewing Change Orders, the Architect will exercise his right to request a complete breakdown from the contractor showing exact costs for labor and material, as well as delivery slips and invoices from suppliers and other subcontractors.

PART 2 – PRODUCTS NOT USED

PART 3 – EXECUTION NOT USED

END OF SECTION

SECTION 01 29 00

PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. All the Contract Documents, including Drawings, General Conditions, Supplementary Conditions, and all Sections of Division 01 - General Requirements, apply to the Work of this Section

1.02 SUMMARY

A. This Section specifies administrative and procedural requirements governing the Progress Schedule, Schedule of Values, and Contractor's Applications for Payment.
   1. Coordinate the Schedule of Values and Applications for Payment with the Contractor's Construction Schedule, List of Subcontracts, and Submittal Schedule.

B. The Contractor's Construction Schedule and Submittal Schedule are included in Section 013300 "Submittals".

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. Carefully examine all the Contract Documents for requirements which affect the Work of this Section.

B. Other Specification Sections which directly relate to the Work of this Section include, but are not limited to, the following:
   1. DIVISION 01 – GENERAL REQUIREMENTS; including all Sections contained therein.
   2. 05 12 00 – Steel
   3. 11 24 29 – Fall Protection Systems

1.04 PROGRESS SCHEDULE

A. Prepare the Progress Schedule in accordance with Article 8, Paragraphs 8.2.3 and 8.2.4 of the General Conditions for approval by the Architect.
   1. The Progress Schedule shall conform to the requirements in Section 013300, paragraph 1.4, Contractor’s Progress Schedule, and the sample bound in the paragraph.

1.05 SCHEDULE OF VALUES

A. Coordinate preparation of the Schedule of Values with preparation of the Progress Schedule.
   1. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:
      a. Contractor's Progress Schedule.
      b. Application for Payment forms.
      c. List of products.
      d. Schedule of allowances, if any.
      e. Schedule of alternates, if any.
      f. Schedule of unit prices, if any.
      g. List of products.
      h. List of principal suppliers and fabricators.

i. Schedule of submittals.

2. Submit the Schedule of Values to the Architect as soon as possible, but no later than seven (7) days before the date scheduled for submittal of the initial Application for Payment.

B. Format and Content: Use the Project Manual Table of Contents as a guide to establish the format for the Schedule of Values. Provide at least one (1) line item for each Specification Section. Coordinate with the Architect for exact breakdown of major categories of work including but not limited to major equipment and project closeout submittals.

1. Include the following Project identification on the Schedule of Values:
   a. Project name and location.
   b. Name of the Architect.
   c. Project number.
   d. Contractor's name and address.
   e. Date of submittal.
2. Arrange the Schedule of Values in a tabular form with separate columns to indicate the following for each item listed:
   a. Generic name.
   b. Related Specification Section.
   c. Description of Work.
   d. Name of subcontractor.
   e. Name of manufacturer or fabricator.
   f. Name of supplier.
   g. Change Orders (numbers) that have affected value.
   h. Dollar value to nearest dollar.
   i. Percentage of Contract Sum to the nearest percent, adjusted to a total of 100 percent.
3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Breakdown shall be done by sequence. Coordinate with the Project Manual Table of Contents. Break principal subcontract amounts down into several line items, including but not limited to major equipment and project closeout submittals.
4. Do not round the amount off to the nearest whole dollar; carry all amounts out to the two (2) decimal places and the totals shall equal the Contract Sum.
5. 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 the initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
6. Margins of Cost: Show line items for indirect costs, and margins on actual costs, only to the extent that such items will be listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete, including its total cost and proportionate share of general overhead and profit margin for each item.
   a. Temporary facilities, project closeout submittals, and other major cost items that are not direct cost of actual work-in-place shall be shown as separate line items in the Schedule of Values or distributed as general overhead expense, at the Contractor's option.
7. Schedule Updating: Update and resubmit the Schedule of Values prior to the next Application for Payment when Change Orders or Construction Change Directives result in a change to the Contract Sum.

1.06 APPLICATIONS FOR PAYMENT

A. Draft Application Preparation: Submit three (3) **draft** copies of the (current) Application for Payment at the weekly project meeting for Architect's review seven (7) days in advance of the "Payment Application Time" as indicated in the Agreement.

1. Draft Application for Payment transmittal shall include a fully executed Draft Cover Sheet or **Periodic Submittal Certification Statement** on Contractor letterhead (bound at the end of this section hereafter) certifying that the following Periodic Submittals are current for the appropriate period:
    a. Originals of All Waivers of Mechanics Lien & Corresponding Logs Covering Status of All Waivers
    b. Certified payrolls
    c. Contract Compliance Submittals
    d. Insurance and transfer title certificates for any material stored off site
    e. Updated as-built drawings of record reflecting Work for the current Application period

B. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and paid for by the Owner.

1. 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.

D. Payment Application Cover Sheet Form: Complete the enclosed **Application and Certification for Payment Cover Sheet** on Contractor letterhead (bound at the end of this Section hereafter) and transmit with each Payment Application Form submittal.

E. Payment Application Forms: Use AIA Document G 702 and Continuation Sheets G 703 as the form for Application for Payment. **No exceptions will be made.**

F. Application Preparation: Complete every entry on the form, including notarization and execution by a person authorized to sign legal documents on behalf of the Contractor. The Architect will return incomplete applications without action.

1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions have been made.
2. Include only amounts of approved and fully executed Change Orders. Obtain approval from the Architect prior to inclusion into the Application.
3. Each Application for Payment **must** be accompanied by an updated Progress Schedule. The format to which is subject to the Architect’s approval.

G. Payment for materials and/or equipment stored off site shall be considered upon the Owner’s approved submission by the Contractor bill(s) of sale or such other documentation or procedures satisfactory to the Owner to establish the Owner’s clear and legal title to such materials and/or equipment or otherwise provided to protect the Owner’s interest. This shall include applicable insurance and transportation to the project site for those materials and/or equipment suitably stored off site under consideration for payment.

1. Any Contractor making an application for payment pursuant to Section 00200 – General Conditions, paragraph 9.3.2, shall provide the following written documentation to the Architect through the General Contractor as delineated below and as otherwise maybe reasonably requested by the Owner:
    a. Bill of Material, Purchase Order, or Invoice Number.
    b. Product Description Listing.

c. Serial Numbers (If Applicable)

d. Materials and/or Equipment (wares) shall be segregated from all other stock or equipment and clearly labeled and/or marked as City of Worcester Property.

e. Wares shall be always available for inspection and in any event within twenty-four (24) hours after receiving prior notice from the Owner/Architect.

f. Provide written directions from the project site to the location of the stored wares.

g. Name of contact person at the storage site and applicable telephone numbers.

h. Method and mode of transportation from off-site storage location to the job site.

H. Retainage: In accordance with the Supplemental General Conditions, the Awarding Authority (Owner) shall deduct a retainage not exceeding five (5) percent of the approved amount of the periodic payment. The aforesaid five (5) percent retainage deduction by the Owner is the only retainage authorized hereunder. The contractor shall not deduct any amounts from payments received on behalf of subcontractors, except those deductions specifically authorized by M.G.L. Chapter 30, Section 39(1)(a).

1. Upon the initial and any subsequent Application for Payment; requesting or reflecting a “Release of Retainage” provide a Summary cover sheet indicating the derivation arithmetically, by each line item, of the total released to date and the of the current total retainage sum.

I. Transmittal: Upon receipt of the required periodic submittals enumerated above and upon approval of the "Draft Application", submit six (6) fully executed and notarized original copies with Cover Sheet of the current Application for Payment to the Architect by means ensuring receipt within twenty-four (24) hours. One (1) copy shall be complete, including waivers of lien and similar attachments.

1. Transmit each copy with a transmittal form listing attachments, and recording appropriate information related to the application in a manner acceptable to the Architect.
2. With each requisition, after the first requisition, submit one (1) copy of updated as-built drawings for all underground and concealed work, showing locations, depths, or elevations.

J. Waivers of Mechanics Lien: With each Application for Payment, submit waivers of mechanics lien from every entity who may lawfully be entitled to file a mechanics lien arising out of the Contract, and related to the Work covered by the payment.

1. Submit partial waivers on each item for the amount requested, prior to deduction for retainage, on each item.
2. When an application shows completion of an item, submit final or full waivers.
3. The Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Waiver Delays: Submit each Application for Payment with the Contractor's waiver of mechanics lien for the period of construction covered by the previously paid application.
   a. Submit final Application for Payment with, or preceded by, final waivers from every entity involved with performance of Work covered by the application that could lawfully be entitled to a lien.
5. Waiver Forms: Submit waivers of lien on forms, and executed in a manner, acceptable to Owner.

K. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include the following:

1. List of subcontractors; at all tiers.

2. List of principal suppliers and fabricators.
3. Approved Schedule of Values.
4. Approved Contractor's Progress Schedule see Section 01300, Paragraph 1.4.
5. Contractor's Construction Schedule (preliminary if not final).
6. Schedule of principal products.
7. Submittal Schedule (preliminary, if not final).
8. List of Contractor's staff assignments.
9. List of Contractor's principal consultants.
10. Copies of building permits.
11. Copies of authorizations, permits and licenses from governing authorities for performance of the Work.
12. Initial progress report.
13. Report on pre-construction meeting.
14. Schedule of Pre-installation meetings.
15. Certificates of insurance and insurance policies.
16. Performance and payment bonds.
17. Data needed to acquire Owner's insurance.
18. Initial settlement survey and damage report, if required.
19. List of Contractor's personnel names and titles assigned on the project and emergency telephone numbers.

L. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit Application for Payment.

1. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
2. Administrative actions and Submittals that shall precede or coincide with this application include:
    a. Occupancy permits and similar approvals.
    b. Warranties (guarantees) and maintenance agreements.
    c. Test/adjust/balance records.
    d. Maintenance instructions.
    e. Meter readings.
    f. Start-up performance reports.
    g. Changeover information related to Owner's occupancy, use, operation and maintenance.
    h. Final cleaning.
    i. Application for reduction of retainage, and consent of surety
    j. Advice on shifting insurance coverage.
    k. Final progress photographs.
    l. List of incomplete work, recognized as exceptions to Architect's Certificate of Substantial Completion.

M. Final Payment Application: Administrative actions and submittals that must precede or coincide with submittal of the final payment Application for Payment include the following:

1. Completion of Project closeout requirements.
2. Completion of items specified for completion after Substantial Completion
3. Assurance that unsettled claims will be settled.
4. Assurance that incomplete Work and Work not accepted will be completed without undue delay.
5. Transmittal of required Project construction records to the Owner.
6. Certified property survey.
7. Proof that taxes, fees and similar obligations have been paid.

8. Removal of temporary facilities and services.
9. Removal of surplus materials, rubbish and similar elements.
10. Change of door locks to Owner's access.
11. Order of Conditions Certificate of Compliance, if applicable.

PART 2 – PRODUCTS NOT USED

PART 3 – EXECUTION NOT USED

END OF SECTION

CONTRACTOR LETTER HEAD

APPLICATION AND CERTIFICATION FOR PAYMENT COVER SHEET

PROJECT:_____ APPLICATION NO: _____

For
Period
Ending: _____ AMOUNT CERTIFIED: $_____

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief, the Work covered by this Application for Payment has been completed in accordance with the Contract Documents; and the current Payment shown herein is now due.

The Contractor further certifies that the entire amount of all previous Payments received for labor performed and materials furnished have been promptly paid to all Subcontractors whose work was certified for payment on previous applications, less, where applicable, only an amount specified in any court proceeding barring such payment and/or an amount claimed due from the Subcontractor by the Contractor as expressly authorized by M.G. L. Chapter 30, Section 39F (1) (a). No other amounts have been deducted or retained from such payments by the contractor.

Contractor: _____ **STATE OF:** _____

Signed by: _____ **COUNTY OF:** _____

Date: _____ Subscribed and sworn to before me on this
_____ Day of _____ 20__.

Notary public: _____
My Commission Expires: _____

APPROVED FOR PAYMENT:

Signed:_____ Signed:_____
By: James Bedard, Facilities Director By: John Landry, Architect

Date:_____ Date:_____

Signed:_____ Signed:_____
By: By:

Date:_____ Date:_____

CONTRACTOR LETTER HEAD

DRAFT APPLICATION FOR PAYMENT
PERIODIC SUBMITTAL CERTIFICATION STATEMENT

Project Name: Draft Application Date: _____

Draft Application No._____ (Requisition No.)

For Period:
Starting _____
Through Period
Ending _____

_____(Name of Contractor) _____ ,
certifies that the "Draft Application for Payment" as herein submitted with all of the following Periodic Submittals fully and completely executed and current for the appropriate time period(s) as required.
FURNISH THE FOLLOWING PERIODIC SUBMITTALS AND PROVIDE ALL REQUIRED INFORMATION FOR THE APPROPRIATE TIME PERIOD(S) AS REQUESTED. PLEASE SUBMIT ON **SEPARATE** SHEETS:

I. **Original Waivers of Mechanic Lien:** List every entity who may be lawfully entitled to file a lien resulting out of this Contract, including but not limited to; contractors/subcontractors, at all tiers, vendors, and suppliers. Submit current originals of all Waivers covering all WORK completed through the period ending thirty (30) days prior to this periods "Application" date and as further required in I above.

II. **Certified Payrolls:** All payroll reports have been submitted as required by the Contract Compliance Office.

III. **Contract Compliance Reports:** All contract compliance reports have been submitted as required by the Contract Compliance Office.

IV. **Insurance & Title Transfer Certificates** for material stored off site, if applicable.

V. **Updated As-Built Drawings:** Record drawings have been submitted reflecting the work completed up to the time of Application.

This Draft Application for Payment Certification Statement and corresponding Periodic Submittals (attached) shall be reviewed by the Awarding Authority for completeness. Any deficiency, discrepancies or missing items shall cause this Draft Application for Payment to be returned to the Contractor with no action taken.

I, _____ hereby certify, that the Periodic
(Name of contractor)

Submittals indicated herein have been reviewed by the undersigned and are complete and current as required under provisions of this Contract.

_____
_____
(Name of Authorized Person) (Date)

_____
(Title)

THIS PAGE IS LEFT INTENTIONALLY BLANK

SECTION 013100

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. All the Contract Documents, including Drawings, General Conditions, Supplementary Conditions, and all Sections of Division 01 - General Requirements, apply to the Work of this Section

1.02 SUMMARY

A. This Section specifies administrative and supervisory requirements necessary for project coordination including, but not limited to the following:
   1. Coordination and cutting, drilling, and patching.
   2. General installation provisions.
   3. Administrative and supervisory personnel.
   4. Cleaning and protection.

B. Related Sections: The following Sections contain requirements that relate to this Section:
   1. Project meetings, coordination meetings, and pre-installation conferences are included in Section “Project Meetings.”
   2. Requirements for preparing and submitting the Contractor's Construction Schedule are included in Section “Submittals.”

1.03 COORDINATION

A. Coordinate construction operations included in various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the specifications that depend on each other for proper installation, connection, and operation.
   1. Where installation of one part of the Work depends on installation of other components, either before or after its own installation, schedule construction operations in the sequence required to obtain the best results.
   2. Where availability of space is limited coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.
   3. Make provisions to accommodate items scheduled for later installation.
   4. The General Contractor shall as part of his work provide for all cutting, patching, and drilling, not specified to be the work of others.

B. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
   1. Prepare similar memoranda for the Owner and separate contractors where coordination of their work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and assure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of schedules.
2. Installation and removal of temporary facilities.
3. Delivery and processing of submittals.
4. Progress meetings.
5. Project closeout activities.

D. Conservation: Coordinate construction operations to assure that operations are carried out with consideration given to conservation of energy, water, and materials.

1.04 SUBMITTALS

A. Coordination Drawings: Prepare coordination Drawings where careful coordination is needed for installation of products and materials fabricated by separate entities. Prepare coordination drawings where limited space availability necessitates maximum utilization of space for efficient installation of different components.

1. Show the relationship of components shown on separate Shop Drawings.
2. Indicate required installation sequences.
3. Comply with requirements contained in Section 01300 – Submittals.
4. Format to be as directed by the Architect.

B. Staff Names: Within fifteen (15) days of commencement of construction operations, submit a list of the Contractor's principal staff assignments, including the superintendent and other personnel in attendance at the Project Site. Identify individuals and their duties and responsibilities. List their addresses and telephone numbers. Provide twenty-four (24) hour Emergency telephone numbers listed separately.

1. Post copies of the list in the Project meeting room, the temporary field office, and each temporary telephone.
2. The Contractor shall provide a copy of the list, and updates as its changes, to the Worcester Police Department and other City Departments as directed by the Architect.

PART 2 – PRODUCTS NOT USED

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION PROVISIONS

A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.

B. Manufacturer’s Instructions: Comply with manufacturer’s written instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than the requirements contained in Contract Documents.

C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.

D. Provide attachment and connection devices and methods necessary for securing Work. Secure Work true to line and level. Allow for expansion and building movement.

E. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Architect for final decision.

F. Re-check measurements and dimensions, before starting each installation.

G. Install each component during weather conditions that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.

H. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.

I. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decision to the Architect for final decision.

3.02 CLEANING AND PROTECTION

A. During handling and installation clean and protect construction in progress and adjoining materials in place. Apply protective covering where required and as necessary to assure protection from damage or deterioration.

B. Clean and maintain all completed construction as frequently as necessary through the remainder of the construction period.

C. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in-progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:

1. Excessive vibration.
2. Excessive static or dynamic loading.
3. Excessive internal or external pressures.
4. Excessively high or low temperatures.
5. Thermal shock.
6. Excessively high or low humidity.
7. Air contamination or pollution.
8. Air borne debris/dust or construction particulates.
9. Water or ice.
10. Solvents.
11. Chemicals.
12. Light.
13. Puncture.
14. Abrasion.
15. Heavy traffic.
16. Soiling, staining, and corrosion.
17. Bacteria.
18. Rodent and insect infestation.
19. Combustion.
20. Electrical current.
21. High-speed operation.
22. Improper lubrication.
23. Unusual wear or other misuse.
24. Contact between incompatible materials.
25. Destructive testing.
26. Misalignment.
27. Excessive weathering.
28. Unprotected storage.

29. Improper shipping or handling.
30. Theft.
31. Vandalism.

END OF SECTION

SECTION 013300

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. All the Contract Documents, including Drawings, General Conditions, Supplementary Conditions, and all Sections of Division 01 - General Requirements, apply to the Work of this Section.

1. The submittals enumerated below shall require review and/or approval by the Architect.

1.02 SUMMARY

A. This Section includes administrative and procedural requirements for submittals required for the performance of the Work, including:

1. Contractor's Progress Schedule.
2. Major delivery schedule.
3. Existing utility tie-in’s schedule.
4. Submittal schedule.
5. Pre-Installation Conference Schedule (By Specification Section).
6. Daily construction reports.
7. Shop drawings.
8. Product data.
9. Samples.
10. Coordination Drawings.
11. Quality assurance submittals.
12. Submittal of three (3) sets of plans and specifications, complete with all addendums posted to the City of Worcester Building Department to obtain a building permit.

B. Administrative Submittals: Refer to other Division 1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to, the following:

1. Product Substitution.
2. Periodic Submittals.
3. Permits.
4. Applications for Payment.
5. Performance and payment bonds.
6. Insurance Certificates.
7. List of Project Contractors, Subcontractors, Vendors, etc.
8. List of Personnel and Emergency Telephone Numbers.
9. City Ordinance Program Forms.

C. The Schedule of Values submittal is included in Section 012900 "Payment Procedures".

D. "Closeout Procedures", Section 017700, specifies requirements for submittal of Project Record Documents and warranties at project closeout.

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. Carefully examine all the Contract Documents for requirements which affect the Work of this Section.

B. Other Specification Sections which directly relate to the Work of this Section include, but are not limited to, the following:

1. DIVISION 01 – GENERAL REQUIREMENTS; including all Sections contained therein.
2. Section 02 41 13 - Selective Demolition
3. Section 04 20 01 - Masonry Restoration
4. Section 06 10 00 - Rough Carpentry
5. Section 07 92 00 – Joint Sealants
6. Section 26 00 00 – Electrical
7. Section 31 20 00 – Earth Moving
8. DIVISION 32 – EXTERIOR IMPROVEMENTS; including all Sections contained therein.

1.04 SUBMITTAL PROCEDURES/SHOP DRAWINGS

A. Submittal procedures shall be electronic for all submittals for approval and distribution unless otherwise noted. Provide the owner with one copy of all approved submittals in an organized manner with a submittal log. All color samples must be distributed as hard copies, and electronically filed to track. Electronic files shall be clean, clear, and readable. Plan files to be PDF and/or AutoCAD and be to scale as appropriate. Contractor to transmit and update each submittal and process electronically, maintain a log that is distributed and updated weekly. All e-mails to clearly identify the submittal number and shall include the log, Or the contactor to maintain a web-based system used for submittals, and the construction process.

B. Distribution: Distribution of submittals shall be distributed as follows unless otherwise noted:

1. Architect.
2. Clerk of Works.
3. Owner – electronic and paper copy.
4. A minimum of Three (3) copies for the Contractor as necessary for distribution to subcontractors, suppliers, installers, manufacturers, fabricators, and any other applicable parties.

C. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

D. Processing: All Contractors are directed to the timeliness and critical importance of expediting the submittal process. Any lead times, which may impact sequencing, should be prioritized to meet the project schedule. Architects must be notified if any delays arise that will impact on lead times.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.

3. To avoid the need to delay installation because of the time required to process submittals and to allow sufficient time for submittal review, all contractors' submittals shall be submitted for processing and have received final Architect's approval within 45 days from the date of Contract.
    a. Allow ample time for initial review to achieve efficient construction sequencing. Allow additional time if the Architect must delay processing to permit coordination with subsequent submittals.
    b. If an intermediate submittal is necessary, process the same as the initial submittal.
    c. Allow ample time for reprocessing each submittal to achieve efficient construction sequencing.
    d. No extension of Contract Time will be authorized because of the contractor's failure to transmit submittals to the Architect for processing sufficiently in advance of the scheduled Work.

E. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
1. Provide a space approximately 4 by 5 inches on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
2. Include the following information on the label for processing and recording action taken.
    a. Project name.
    b. Date.
    c. Name and address of the Architect.
    d. Name and address of the Contractor.
    e. Name and address of the subcontractor.
    f. Name and address of the supplier.
    g. Name of the manufacturer.
    h. Number and title of appropriate Specification Section.
    i. Drawing number and detail references, as appropriate.

F. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from the Contractor to the Architect using a transmittal form. The Architect will not accept submittals received from sources other than the Contractor.

G. On the transmittal, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.

1.05 CONTRACTOR'S PROGRESS SCHEDULE

A. Bar (Gantt) Chart Schedule: Meeting the requirements of Section 00200 Paragraphs 4.10, 4.10.1, 8.2.3 through 8.2.9. Prepare a fully developed, horizontal bar type of chart titled: "Progress Schedule". A sample is attached at the end of this section, some requirements specified here are not shown in the sample.

B. Time, the horizontal (x) axis in this schedule shall show the start of on-site work through the Date of Substantial Completion, show the time for completion of punch list items, and show the time for general warranty and completion of commissioning.

C. Provide a separate time bar for each line in the approved "Schedule of Values" with the incremental value of work in place for each month. Work Completed (in place) must be 99% of

contract value to achieve Substantial Completion. Provide a continuous vertical line to identify the first working day of each month.

D. At the bottom of the progress schedule provide:
   1. a first line showing the total value of the work planned to be completed (in place) for each month,
   2. a second line showing the cumulative total value of the work planned to be completed (in place) to date,
   3. a third line showing the actual total value of the work certified as completed (in place) on the Application and Certificate for Payment for the month, and
   4. a fourth line showing the actual total cumulative value of the work certified as completed (in place) on the Application and Certificate for payment to date.
   5. Refer to Division 1 Section 01027 "Applications for Payment" for cost reporting and payment procedures.

E. Distribution: Following approval of the initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to provide actual work in place and conform to schedule.

F. Revisions: Revisions to values and or time shown in the Progress Schedule may only be made to reflect a Change Order and in accordance with Section 00200 Paragraph 8.2.7. When revisions are made, distribute to the same parties and post at the jobsite. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

G. Progress Schedule Updating: Revise the schedule after each meeting, where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

Progress Schedule (as required by Article 8, Paragraphs 8.2.3 & 8.2.4 of the General Conditions)

(Project Name)	(Architect)	(Date)	(Approved by Architect)
(City of Worcester Dept. or Facility)	(Construction Manager)	(Revision Date)	
(Project Address)	(Contractor)	(Revised Through)	

Section Number	Section or Filed Sub-bid Section	Mar-98 1	Apr-98 2	May-98 3	Jun-98 4	Jul-98 5	Oct-98 6	Nov-98 7	Dec-98 8	Totals
01000	General Requirements	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$4,000	$32,000
02000	Sitework	$10,000	$10,000						$10,000	$30,000
03000	Concrete		$4,000	$12,000			$8,000			$24,000
04000	Masonry			$8,000	$10,000	$12,000				$30,000
05000	Metals			$20,000						$20,000
05500	Metal Fabrications							$7,000		$7,000
06000	Wood & Plastics								$4,000	$4,000
07100	Waterproofing & Caulking				$3,000					$3,000
07600	Roofing & Flashing					$12,000				$12,000
08000	Doors & Windows						$4,000			$4,000
08520	Alum. Windows							$8,000		$8,000
08800	Glass & Glazing								$1,000	$1,000
09250	Gypsum Drywall						$6,000	$5,000		$11,000
09310	Ceramic Tile							$2,000		$2,000
09511	Accoustical Ceilings							$1,000	$1,000	$2,000
09650	Resilient Flooring								$3,000	$3,000
09900	Painting								$2,000	$2,000
10000	Specialties								$14,000	$14,000
14204	Hydraulic Elevators						$8,000	$8,000	$8,000	$24,000
15400	Plumbing			$1,000	$2,000			$3,000	$5,000	$11,000
15600	HVAC					$4,000	$5,000		$4,000	$13,000
16000	Electrical			$1,000	$3,000			$4,000	$4,000	$12,000
	Total Planned to be Completed This Month	$14,000	$18,000	$46,000	$22,000	$32,000	$35,000	$42,000	$60,000	
	Total planned to be Completed To Date	$14,000	$32,000	$78,000	$100,000	$132,000	$167,000	$209,000	$269,000	$269,000
	Actual Total Completed This Month	$11,000	$22,000	$38,000						
	Actual Total Completed To Date	$11,000	$33,000	$71,000	$71,000	$71,000	$71,000	$71,000	$71,000	$470,000

1.06 SUBMITTAL SCHEDULE

A. After development and acceptance of the Contractor's Progress Schedule, prepare a complete Submittal Schedule and promptly submit the schedule to the Architect.

B. Distribution: Following response to the initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with submittal dates.

C. Submittal Schedule Updating: Revise the Submittal Schedule after each meeting or activity where revisions have been recognized or made. Issue the updated project schedule concurrently with each Application for Payment.

1.07 DAILY CONSTRUCTION REPORTS

A. Prepare a daily construction report recording the following information concerning events at the site, and submit copies to the Architect and Clerk of Works at weekly intervals:

1. List of subcontractors at the site.
2. Count of personnel at the site.
3. Accidents and unusual events.
4. Meetings and significant decisions.
5. Stoppages, delays, shortages, and losses.
6. Emergency procedures.
7. Services connected, disconnected.
8. Equipment or system tests and startups.
9. General daily work tasks and progress.

1.08 SHOP DRAWINGS

A. The Contractor's submittal and the Architect's acceptance of Shop Drawings, Product Data, or Samples that relate to construction activities not complying with the Contract Documents do not constitute an acceptable or valid request for substitution, nor do they constitute approval.

B. Submit newly prepared information drawn accurately to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not Shop Drawing.

C. Shop Drawings include fabrication and installation Drawings, setting diagrams, schedules, patterns, templates, and similar Drawings. Include the following information:

1. Dimensions.
2. Identification of products and materials included by sheet and detail number.
3. Compliance with specified standards.
4. Notation of coordination requirements.
5. Notation of dimensions established by field measurement.

1.09 PRODUCT DATA

A. The Contractor's submittal and the Architect's acceptance of Shop Drawings, Product Data, or Samples that relate to construction activities not complying with the Contract Documents do not constitute an acceptable or valid request for substitution, nor do they constitute approval.

B. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves.

1. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as “Shop Drawings”.

2. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information. Include the following information:
   a. Manufacturer's printed recommendations.
   b. Compliance with trade association standards.
   c. Compliance with recognized testing agency standards.
   d. Application of testing agency labels and seals.
   e. Notation of dimensions verified by field measurement.
   f. Notation of coordination requirements.

C. Do not submit Product Data until compliance with the requirements of the Contract Documents has been confirmed.

D. Unless non-compliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

E. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
   1. Do not proceed with installation until a copy of Product Data is in the Installer's possession.
   2. Do not permit use of unmarked copies of Product Data in connection with construction.

1.10 SAMPLES

A. The Contractor's submittal and the Architect's acceptance of Shop Drawings, Product Data, or Samples that relate to construction activities not complying with the Contract Documents do not constitute an acceptable or valid request for substitution, nor do they constitute approval.

B. Mount or display samples in the manner to facilitate review of qualities indicated. Prepare samples to match the Architect's sample. Include the following:
   1. Specification Section number and reference.
   2. Generic description of the sample.
   3. Sample source.
   4. Product name or name of the manufacturer.
   5. Compliance with recognized standards.
   6. Availability and delivery time.

C. Submit samples for review of size, kind, color, pattern, and texture. Submit samples for a final check of these characteristics with other elements and a comparison of these characteristics between the final submittal and the actual component as delivered and installed.

D. Preliminary Submittals: Submit a full set of choices where samples are submitted for selection of color, pattern, texture, or similar characteristics from a range of standard choices.
   1. Preliminary submittals will be reviewed and returned with the Architect's mark, indicating selection and other action.

E. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation, and similar characteristics, submit three (3) sets. One (1) set will be returned marked with the action taken.
   1. Maintain sets of samples, as returned, at the Project Site, for quality comparisons throughout the course of construction.

F. Unless non-compliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

1. Sample sets may be used to obtain final acceptance of the construction associated with each set.

1.11 QUALITY ASSURANCE SUBMITTALS

A. Submit quality-control submittals, including design data, certifications, manufacturer's instructions, manufacturer's field reports, and other quality-control submittals as required under other Sections of the Specifications.

B. Certifications: Where other Sections of the Specifications require certification that a product, material, or installation complies with specified requirements; submit a notarized certification from the manufacturer certifying compliance with specified requirements.

1. Signature: Certification shall be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the company.

1.12 ARCHITECT'S ACTION

A. Except for submittals of record or information, where action and return is required or requested, the Architect will review each submittal, mark to indicate action taken, and return as noted in Paragraph 1.3A.

B. Compliance with specified characteristics is the Contractor's responsibility.

C. Action Stamp: The Architect will stamp each submittal with a uniform, self-explanatory action stamp. The Architect will mark the stamp appropriately to indicate the action taken:

D. Final Unrestricted Release: When submittals are marked "Approved", the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend on that compliance.

1. Final-But-Restricted Release: When submittals are marked "Approved as Noted", that Work covered by the submittal may proceed provided it complies with markings or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.

2. Returned for Resubmittal: When submittal is marked “Approved as Noted - Revise and Resubmit” or “Not Approved, Revise and Resubmit", do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the markings and resubmit without delay. Repeat if necessary to obtain different action mark.

E. The Contractor shall not use or permit to be used submittals marked “Approved as Noted - Revise and Resubmit” or "Not Approved, Revise and Resubmit" at the Project Site or elsewhere where Work is in progress.

F. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned marked "Action Not Required".

1.13 DRAWINGS TO BUILDING DEPARTMENT

A. The Contractor shall submit three (3) sets of fully addendumized plans and specifications to the City of Worcester Building Department upon application for the building permit.

1. Submit drawings to architect prior to permit application for "wet stamping" of architect and engineers professional seal to the drawings. Allow up to three (3) days for this process.

2. Any reduction in addenda plan must be legible.

PART 2 - PRODUCTS NOT USED

PART 3 - EXECUTION NOT USED

END OF SECTION

SECTION 01 35 43

HAZARDOUS MATERIALS PROCEDURES

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. All the Contract Documents, including Drawings, General Conditions, Supplementary Conditions, and all Sections of Division 01 - General Requirements, apply to the Work of this Section.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Carefully examine all the Contract Documents for requirements which effect the Work of this Section.

B. Other Specification Sections which directly relate to the Work of this Section include, but are not limited to, the following:

1. DIVISION 01 - GENERAL REQUIREMENTS; including all Sections containedtherein.
2. DIVISION 05 – METALS; including all Sections contained therein.

1.03 HAZARDOUS MATERIALS PROCEDURES

A. Asbestos:

1. The scope of work consists of the installation of a new steel rigging grid to better accommodate the rigging of concerts, shows, and other events with the DCU Center Arena.
2. Notification: If the Prime Contractor discover or encounter any ACM during the performance of the work, the Prime Contractor shall immediately:
   a. Stop work, notify the Owner and OPM about the presence of suspect ACM and request instructions for proper action, and
   b. Take whatever steps and measures are necessary to reduce, control or eliminate the risk of exposure of workers and the public to the ACM.
3. Responsible Person On-Site: The Prime Contractor shall designate one of its senior on-site employees to oversee coordination between the Architect and all subcontractors

with respect to hazardous materials issues.

4. Responsibility for Hazardous Material Discovery: It is the sole responsibility of the Prime Contractor to undertake whatever measures, methods of procedures are necessary, required or appropriate to safeguard the health and safety of all workers and members of the public with respect to identification and discovery of previously unknown hazardous materials during the work of the Project.
5. Indemnification: To the fullest extent permitted by law, the Prime Contractor shall indemnify and hold harmless the Owner and the Architect and their agents and employees from and against all claims, damages, losses and expenses including, but not limited to, attorneys' fees arising out of or relating to the performance of the Work, including the discovery or identification of any hazardous materials, provided that any such claim, damage, loss or expense if attributable to bodily injury, sickness, disease or death, or to damage to or destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom; and is caused in whole or in part by any negligent act or omission of the Prime Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable regardless of whether or not it is caused in part by a party indemnified hereunder.

B. Lead:

1. The Prime Contractor shall be made aware that Lead Based Paint may exist on painted surfaces throughout the building. No testing was performed.
2. It is the Prime Contractor responsibility to either test painted surfaces or assume that all existing painted surfaces are coated with Lead Paint. All costs for testing shall be the responsibility of the Roofing Contractor at no additional cost to the Owner.
3. All the work of this Contract shall conform to the standard set by all applicable Federal, State and Local laws, regulations, ordinance, and guidelines in such from in which they exist at the time of the work on the Contract and as may be required by subsequent regulations.
4. The Prime Contractor is solely responsible for means and methods, and techniques used for lead control. The Roofing Contractor shall collect, control lead contaminated debris and to properly remove and dispose of lead contaminated soil around the building due to Roofing Contractor's and/or the Roofing Contractor's activities.
5. The Prime Contractor shall at his own cost and expense comply with all laws, ordinance, rules, and regulations of Federal, State, Regional and Local authorities during Demolition, prepping, sanding, cutting, burning, scraping, painting over, grinding and regarding handling, storing, and disposing of lead and lead contaminated waste material.
6. The Prime Contractor shall submit to the Architect prior to commencing of work the following:
    a. Written respiratory and notification program
    b. Written lead compliance program in accordance with OSHA regulationsincluding:
        1) Training requirement certifications.
        2) Supervisor qualifications.
        3) Written compliance program specific to this project
        4) Respirators fit test records.
        5) Medical surveillance certificates.

7. The EPA and the DEP require Demolition debris with lead to be tested in accordance with the Toxicity Characteristic Leaching Procedure (TCLP) to determine the potential for significant amounts of lead to leach out of the waste. If the results are below the DEP standard (5.0 ppm), the waste may be disposed of in a conventional landfill for Demolition debris. If, however, the TCLP results are above the DEP standard, the waste must be disposed of in a DEP approved, hazardous waste landfill. The Roofing Contractor shall at their own cost and expense perform all required testing of waste by TCLP. The Roofing Contractor must submit to the Owner a copy of tests performed and all waste shipment records prior to disposing of debris. The Owner reserves the right to have own TCLP samples collected to verify results. All disposal costs shall be at the Roofing Contractor responsibility.
8. The following references are cited as current applicable publications. This project is subject to compliance with all regulations including but not limited to:
   a. Commonwealth of Massachusetts, Department of Labor Standards.
   b. Commonwealth of Massachusetts, Department of Environmental Protection.
   c. U. S. Department of Labor, Occupational Safety and Health Administration Title 29 CFR 1910.1025 and 29 CFR Part 1926.62.
9. All the above regulations are applicable to this project. Where there is a conflict between this section and the applicable regulations, the more stringent requirement shall prevail.

PART 2 - PRODUCTS NOT USED

PART 3 – EXECUTION NOT USED

END OF SECTION

SECTION 01 40 00

QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. All the Contract Documents, including Drawings, General Conditions, Supplementary Conditions, and all Sections of Division 01 - General Requirements, apply to the Work of this Section.

1.02 SUMMARY

A. This Section includes administrative and procedural requirements for Quality-Control Services.

B. Quality-Control Services include inspections, tests, and related actions, including reports performed by Contractor, by independent agencies, and by governing authorities. They do not include contract enforcement activities performed by Architect.

C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with Contract Document requirements.

D. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.

1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.
2. Specified inspections, tests, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with Contract Document requirements.
3. Requirements for Contractor to provide quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.03 RESPONSIBILITIES

A. Contractor Responsibilities: The Contractor shall provide inspections, tests, and other similar Quality-Control Services specified in individual Specification Sections and as required by governing authorities. Costs for these services are included in the Contract Sum.

1. The Contractor shall employ and pay a qualified independent testing agency to perform specified Quality-Control Services.
2. Where the Owner has engaged an independent testing agency for testing and inspecting part of the Work, and the Contractor is also required to engage a testing entity for the same or related part or element of the Work, the Contractor shall not employ the entity engaged by the Owner, unless agreed to in writing by the Owner.

3. Re-Testing: The Contractor is responsible for retesting where results of inspections, tests, or other quality-control services prove unsatisfactory and indicate noncompliance with Contract Document requirements, regardless of whether the original test was Contractor's responsibility.
    a. The cost of re-testing construction, revised or replaced by the Contractor, is the Contractor's responsibility where required tests performed on original construction.
4. Associated Services: The Contractor shall cooperate with agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include, but are not limited to, the following:
    a. Provide access to the Work and furnish incidental labor, facilities and equipment necessary to facilitate inspections and tests.
    b. Take adequate quantities of representative samples of materials that require testing or assist the agency in taking samples.
    c. Provide facilities for storage and curing of test samples.
    d. Provide security and protection of samples and test equipment at the Project Site.

B. Owner Responsibilities: The Owner will engage and pay for the services of an independent testing agency to perform inspections, tests or other Quality-Control Services specified to be performed by independent testing agencies and not specified as the responsibility of the Contractor and/or are provided for by another identified entity. Costs for these services are not included in the Contract Sum.
    1. The Owner shall employ and pay for the services of a qualified independent testing agency, testing laboratory or other qualified entity to perform Quality-Control Services, which are the Owner’s responsibility.

C. Duties of the Testing Agency: The independent agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual Sections shall cooperate with the Architect and the Contractor in performance of the agency's duties. The testing agency shall provide qualified personnel to perform required inspections and tests.
    1. The agency shall notify the Architect and the Contractor promptly of irregularities or deficiencies observed in the Work during the performance of its services.
    2. The agency is not authorized to release, revoke, alter, or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.
    3. The agency shall not perform any duties of the Contractor.

D. Coordination: Coordinate the sequence of activities to accommodate required services with a minimum of delay. Coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
    1. The Contractor is responsible for scheduling times for inspections, tests, taking samples, and similar activities.

1.04 SUBMITTALS

A. Unless the Contractor is responsible for this service, the independent testing agency shall submit a certified written report, in duplicate, of each inspection, test, or similar service to the Architect. If the Contractor is responsible for the service, submit a certified written report, in duplicate, of each inspection, test, or similar service through the Contractor.

1. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
2. Report Data: Written reports of each inspection, test, or similar service include, but are not limited to, the following:
    a. Date of issue.
    b. Project title and number.
    c. Name, address, and telephone number of testing agency.
    d. Dates and locations of samples and tests or inspections.
    e. Names of individuals making the inspection or test.
    f. Designation of the Work and test method.
    g. Identification of product and Specification Section.
    h. Complete inspection or test data.
    i. Test results and an interpretation of test results.
    j. Ambient conditions at the time of sample taking and testing.
    k. Comments or professional opinion on whether inspected or tested Work complies with Contract Document requirements.
    l. Name and signature of laboratory inspector.
    m. Recommendations on retesting.

1.05 QUALITY ASSURANCE

A. Qualifications for Service Agencies: Engage inspection and testing service agencies, including independent testing laboratories, that are prequalified as complying with the American Council of Independent Laboratories' "Recommended Requirements for Independent Laboratory Qualification" and that specialize in the types of inspections and tests to be performed.

1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the State of Massachusetts.

1.06 WORK CONDITIONS / SEQUENCE

A. If sub-contractors find that conditions are not appropriate for them to begin the work of their trade or if they are directed to perform their work out of sequence by the General Contractor or if the General Contractor directs sub-contractors to start and continue regardless of job conditions, the sub-contractor shall so notify the Architect in writing by certified mail immediately.

PART 2 – PRODUCTS NOT USED

PART 3 - EXECUTION

3.01 REPAIR AND PROTECTION

A. General: Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes.

B. Protect construction exposed by or for quality-control service activities and protect repaired construction.

C. Repair and protection are the Contractor’s responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

END OF SECTION

SECTION 01 42 00

REFERENCES

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. All the Contract Documents, including Drawings, General Conditions, Supplementary Conditions, and all Sections of Division 01 - General Requirements, apply to the Work of this Section.

1.02 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. Indicated: The term indicated refers to graphic representations, notes, or schedules on the Drawings, or other Paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as shown, noted, scheduled, and specified are used to help the reader locate the reference. There is no limitation on location.

C. Directed: Terms such as directed, requested, authorized, selected, approved, required, and permitted mean directed by the Architect, requested by the Architect, and similar phrases.

D. Approved: The term approved, when used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Architect's duties and responsibilities as stated in the Conditions of the Contract.

E. Regulations: The term regulations include laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

F. Furnish: The term furnish means supply and delivery to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations to the location within the project where the product will finally be installed.

G. Install: The term install describes operations at the Project site including the actual unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. Provide: The term provides means to furnish and install, complete and ready for the intended use.

I. Installer: An Installer is the Contractor, or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged in performing.

1. The term experienced, when used with the term Installer, means having a minimum of five (5) previous projects similar in size and scope to this Project, being familiar with the special requirements indicated, and having complied with requirements of the authority having jurisdiction.

2. Trades: Using terms such as carpentry is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as carpenter. It also does not imply that the requirements specified apply exclusively to tradespersons of the corresponding generic name.
3. Assigning Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no choice or option. However, the ultimate responsibility for fulfilling Contract requirements remains with the Contractor.
    a. This requirement shall not be interpreted to conflict with enforcing building codes and similar regulations governing the Work. It is also not intended to interfere with local trade union jurisdictional settlements and similar conventions.

J. Project site is the space available to the Contractor for performing construction activities either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is located.

K. Testing Agencies: A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, and to report on and, if required, to interpret the results of those inspections or tests.

1.03 SPECIFICATION FORMAT AND CONTENT EXPLANATION

A. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's 16 Division format and MASTERFORMAT numbering system.

B. Specification Content: This Specification uses certain conventions regarding the style of language and the intended meaning of certain terms, words, and phrases when used situations or circumstances. These conventions are explained as follows:

1. Abbreviated Language: Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words that are implied, but not stated, shall be interpolated, as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.
2. Imperative and streamlined language is used generally in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.
    a. The words "shall be" are implied wherever a colon (:) is used within a sentence or phrase.

1.04 INDUSTRY STANDARDS

A. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with the standards in effect as of the date of the Contract Documents.

C. Conflicting Requirements: Where compliance with two (2) or more standards is specified and where the standards may establish different or conflicting requirements for minimum quantities or

quality levels, refer requirements that are different but apparently equal and other uncertainties to the Architect for a decision before proceeding.

1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Refer uncertainties to the Architect for a decision before proceeding.

D. Copies of Standards: Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source.

E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards generating organization, authority having jurisdiction, or other entity applicable to the context of the Text provision. Refer to the "Encyclopedia of Associations", published by Gale Research Co., available in most libraries.

F. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. The following acronyms or abbreviations, as referenced in Contract Documents, are defined to mean the associated names. Names and addresses are subject to change and are believed, but not ensured, to be accurate and up to date as of the date of Contract Documents.

AA	**Aluminum Association** **900 19th St., NW, Suite 300** **Washington, DC 20006**	**(202) 862-5100**
AABC	**Associated Air Balance Council** **1518 K St., NW** **Washington, DC 20005**	**(202) 737-0202**
AAMA	**American Architectural Manufacturers Association** **1540 E. Dundee Road, Suite 310** **Palatine, IL 60067**	**(708) 202-1350**
AASHTO	**American Association of State Highway and Transportation Officials** **444 North Capitol St., Suite 225** **Washington, DC 20001**	**(202) 624-5800**

AATCC	**American Association of Textile Chemists and Colorists** **P.O. Box 12215** **Research Triangle Park, NC**	**(919) 549-8141**
ACI	**American Concrete Institute** **P.O. Box 19150** **Detroit, MI 48219**	**(313) 532-2600**
ACIL	**American Council of Independent Laboratories** **1629 K St., NW** **Washington, DC 20006**	**(202) 887-5872**
ACPA	**American Concrete Pipe Association** **8300 Boone Blvd., Suite 400** **Vienna, VA 22182**	**(703) 821-1990**
ADC	**Air Diffusion Council** **One Illinois Center, Suite 200** **111 East Wacker Drive** **Chicago, IL 60601-4298**	**(312) 616-0800**
AFBMA	**Anti-Friction Bearing Manufacturers Association** **1101 Connecticut Ave., NW, Suite 700** **Washington, DC 20036**	**(202) 429-5155**
AGA	**American Gas Association** **1515 Wilson Blvd.** **Arlington, VA 22209**	**(703) 841-8400**
AHA	**American Hardboard Association** **520 North Hicks Road** **Palatine, IL 60067**	**(708) 934-8800**
AHAM	**Association of Home Appliance Manufacturers** **20 North Wacker Drive** **Chicago, IL 60606**	**(312) 984-5800**
AI	**Asphalt Institute** **Research Park Drive** **P.O. Box 14052** **Lexington, KY 40512-4052**	**(606) 288-4960**
AIA	**American Institute of Architects** **1735 New York Ave., NW** **Washington, DC 20006**	**(202) 626-7300**
A.I.A.	**American Insurance Association** **1130 Connecticut Ave., NW, Suite 1000** **Washington, DC 20036**	**(202) 828-7100**

AIHA	**American Industrial Hygiene Association** **P.O. Box 8390** **345 White Pond Drive** **Akron, OH 44320**	**(216) 873-2442**
AISC	**American Institute of Steel Construction** **One East Wacker Drive, Suite 3100** **Chicago, IL 60601-2001**	**(312) 670-2400**
AITC	**American Institute of Timber Construction** **11818 SE Mill Plain Blvd., Suite 415** **Vancouver, WA 98684**	**(206) 254-9132**
ALI	**Associated Laboratories, Inc.** **500 South Vermont Street** **Palatine, IL 60067**	**(708) 358-7400**
ALSC	**American Lumber Standards Committee** **P.O. Box 210** **Germantown, MD 20875**	**(301) 972-1700**
AMCA	**Air Movement and Control Association** **30 W. University Drive** **Arlington Heights, IL 60004-1893**	**(708) 394-0150**
ANSI	**American National Standards Institute** **11 West 42nd Street, 13th Floor** **New York, NY 10036**	**(212) 642-4900**
AOAC	**Association of Official Analytical Chemists** **2200 Wilson Blvd., Suite 400** **Arlington, VA 22201-3301**	**(703) 522-3032**
AOSA	**Association of Official Seed Analysts** **c/o Larry J. Prentice** **268 Plant Science 1ANR-UNL, Box 19281** **Lincoln, NE 68583-0911**	**(402) 472-8649**
APA	**American Plywood Association** **P.O. Box 11700** **Tacoma, WA 98411**	**(206) 565-6600**
API	**American Petroleum Institute** **1220 L St., NW** **Washington, DC 20005**	**(202) 682-8000**
ARI	**Air Conditioning and Refrigeration Institute** **1501 Wilson Blvd., 6th Floor** **Arlington, VA 22209**	**(703) 524-8800**
ARMA	**Asphalt Roofing Manufacturers Association** **6288 Montrose Rd.** **Rockville, MD 20852**	**(301) 231-9050**
ASA	**Acoustical Society of America** **500 Sunnyside Blvd.** **Woodbury, NY 11797**	**(516) 349-7800**

ASC	**Adhesive and Sealant Council** **1627 K Street, NW, Suite 1000** **Washington, DC 20006-1707**	**(202) 452-1500**
ASHRAE	**American Society of Heating, Refrigerating and Air-Conditioning Engineers** **1791 Tullie Circle, NE** **Atlanta, GA 30329**	**(404) 636-8400**
ASME	**American Society of Mechanical Engineers** **345 East 47th St.** **New York, NY 10017**	**(212) 705-7722**
ASPE	**American Society of Plumbing Engineers** **3617 Thousand Oaks Blvd., Suite 210** **Westlake, CA 91362**	**(805) 495-7120**
ASSE	**American Society of Sanitary Engineering** **P.O. Box 40362** **Bay Village, OH 44140**	**(216) 835-3040**
ASTM	**American Society for Testing and Materials** **1916 Race St.** **Philadelphia, PA 19103-1187**	**(215) 977-9679**
ATIS	**Alliance for Telecommunications Industry Solutions** **1200 G Street, NW, Suite 500** **Washington, DC 20005**	**(202) 628-6380**
AWCMA	**American Window Covering Manufacturers Association** **355 Lexington Avenue** **New York, NY 10017**	**(212) 661-4261**
AWI	**Architectural Woodwork Institute** **P.O. Box 1550** **13924 Braddock Rd., Suite 100** **Centreville, VA 22020**	**(703) 222-1100**
AWPA	**American Wood Preservers' Association** **4128-1/2 California Ave. SW, No. 171** **Seattle, WA 98116**	**(206) 937-5338**
AWPB	**American Wood Preservers Bureau** **4 E. Washington Street** **Newnan, GA 30263**	**(404) 254-9877**

AWS	**American Welding Society** **550 LeJeune Road, NW** **P.O. Box 351040** **Miami, FL 33135**	**(305) 443-9353**
AWWA	**American Water Works Association** **6666 West Quincy Avenue** **Denver, CO 80235**	**(303) 794-7711**
BHMA	**Builders' Hardware Manufacturers Association** **355 Lexington Ave., 17th Floor** **New York, NY 10017**	**(212) 661-4261**
BIA	**Brick Institute of America** **11490 Commerce Park Drive** **Reston, VA 22091**	**(703) 620-0010**
BIFMA	**Business and Institutional Furniture Manufacturers Assoc.** **2335 Burton Street, SE** **Grand Rapids, MI 49506**	**(616) 243-1681**
CAGI	**Compressed Air and Gas Institute** **c/o John H. Addington** **Thomas Associates, Inc.** **1300 Sumner Avenue** **Cleveland, OH 44115-2851**	**(216) 241-7333**
CAUS	**Color Association of the United States** **409 West 44th Street** **New York, NY 10036**	**(212) 582-6884**
CBM	**Certified Ballast Manufacturers Association** **Hanna Building, No. 772** **1422 Euclid Avenue** **Cleveland, OH 44115-2851**	**(216) 241-0711**
CCC	**Carpet Cushion Council** **P.O. Box 546** **Riverside, CT 06878**	**(203) 637-1312**
CDA	**Copper Development Association** **2 Greenwich Office Park, Box 1840** **Greenwich, CT 06836**	**(203) 625-8210**
CFFA	**Chemical Fabrics & Film Association, Inc.** **c/o Thomas Associates, Inc.** **1300 Sumner Avenue** **Cleveland, OH 44115-2851**	**(216) 241-7333**
CGA	**Compressed Gas Association** **1725 Jefferson Davis Highway, Suite 1004** **Arlington, VA 22202-4100**	**(703) 979-0900**

CISCA	**Ceiling and Interior Systems Construction Association** **5700 Old Orchard Road, 1st Floor** **Skokie, IL 60077**	**(708) 965-2776**
CISPI	**Cast Iron Soil Pipe Institute** **5959 Shallowford Road, Suite 419** **Chattanooga, TN 37421**	**(615) 892-0137**
CRI	**Carpet and Rug Institute** **P.O. Box 2048** **Dalton, GA 30722**	**(404) 278-3176**
CRSI	**Concrete Reinforcing Steel Institute** **933 Plum Grove Road** **Schaumburg, IL 60173**	**(708) 517-1200**
DHI	**Door and Hardware Institute** **14170 New Brook Drive** **Chantilly, VA 22022**	**(703) 222-2010**
DIPRA	**Ductile Iron Pipe Research Association** **245 Riverchase Parkway East, Suite O** **Birmingham, AL 35244**	**(205) 988-9870**
DLPA	**Decorative Laminate Products Association** **600 South Federal Street, Suite 400** **Chicago, IL 60605**	**(312) 922-6222**
ECSA	**Exchange Carriers Standards Association** **5430 Grosvenor Lane, Suite 200** **Bethesda, MD 20814**	**(301) 564-4505**
EIA	**Electronic Industries Association** **2001 Pennsylvania Avenue, NW** **Washington, DC 20006-1813**	**(202) 457-4900**
EIMA	**Exterior Insulation Manufacturers Association** **2759 State Road 580, Suite 112** **Clearwater, FL 34621**	**(813) 726-6477**
EJMA	**Expansion Joint Manufacturers Association** **25 North Broadway** **Tarrytown, NY 10591**	**(914) 332-0040**
ETL	**ETL Testing Laboratories, Inc.** **P.O. Box 2040** **Route 11, Industrial Park** **Cortland, NY 13045**	**(607) 753-6711**
FCI	**Fluid Controls Institute** **P.O. Box 9036** **Morristown, NJ 07960**	**(201) 829-0990**

FCIB	**Floor Covering Installation Board** **310 Holiday Avenue** **Dalton, GA 30720**	**(706) 226-5488**
FGMA	**Flat Glass Marketing Association** **White Lakes Professional Building** **3310 Southwest Harrison** **Topeka, KS 66611-2279**	**(913) 266-7013**
FM	**Factory Mutual Research Organization** **1151 Boston-Providence Turnpike** **P.O. Box 9102** **Norwood, MA 02062**	**(617) 762-4300**
GA	**Gypsum Association** **810 First Street, NE, Suite 510** **Washington, DC 20002**	**(202) 289-5440**
HEI	**Heat Exchange Institute** **c/o John H. Addington** **Thomas Associates, Inc.** **1300 Sumner Avenue** **Cleveland, OH 44115-2851**	**(216) 241-7333**
HI	**Hydronics Institute** **P.O. Box 218** **35 Russo Place** **Berkeley Heights, NJ 07922**	**(908) 464-8200**
H.I.	**Hydraulic Institute** **30200 Detroit Road** **Cleveland, OH 44145-1967**	**(216) 899-0010**
HMA	**Hardwood Manufacturers Assoc.** **400 Penn Center Blvd.** **Pittsburgh, PA 15235**	**(412) 829-0770**
HPMA	**Hardwood Plywood Manufacturers Assoc.** **1825 Michael Farraday Drive** **P.O. Box 2789** **Reston, VA 22090-2789**	**(703) 435-2900**
IBD	**Institute of Business Designers** **341 Merchandise Mart** **Chicago, IL 60654**	**(312) 647-1950**
ICEA	**Insulated Cable Engineers Association, Inc.** **P.O. Box 440** **South Yarmouth, MA 02664**	**(508) 394-4424**

IEC	**International Electrotechnical Commission** **(Available from ANSI)** **1430 Broadway** **New York, NY 10018**	**(212) 354-3300**
IEEE	**Institute of Electrical and Electronic Engineers** **345 East 47th Street** **New York, NY 10017**	**(212) 705-7900**
IESNA	**Illuminating Engineering Society of North America** **345 East 47th Street** **New York, NY 10017**	**(212) 705-7926**
IGCC	**Insulating Glass Certification Council** **c/o ETL Testing Laboratories, Inc.** **P.O. Box 2040** **Route 11, Industrial Park** **Cortland, NY 13045**	**(607) 753-6711**
IMSA	**International Municipal Signal Association** **165 East Union Street** **P.O. Box 539** **Newark, NY 14513**	**(315) 331-2182**
IRI	**Industrial Risk Insurers** **85 Woodland Street** **Hartford, CT 06102**	**(203) 520-7300**
ISA	**Instrument Society of America** **P.O. Box 12277** **67 Alexander Drive** **Research Triangle Park, NC 27709**	**(919) 549-8411**
KCMA	**Kitchen Cabinet Manufacturers Association** **1899 Preston White Drive** **Reston, VA 22091-4326**	**(703) 264-1690**
LIA	**Lead Industries Association, Inc.** **295 Madison Avenue** **New York, NY 10017**	**(212) 578-4750**
LPI	**Lightning Protection Institute** **3365 North Arlington Heights Road, Suite J** **Arlington Heights, IL 60004**	**(708) 255-3003**
MCAA	**Mechanical Contractors Association of America** **1385 Piccard Drive** **Rockville, MD 20850-4329**	**(301) 869-5800**

ML/SFA	**Metal Lath/Steel Framing Association (A Division of the National Association of Architectural Metal Manufacturers) 600 South Federal Street, Suite 400 Chicago, IL 60605**	**(312) 922-6222**
MSS	**Manufacturers Standardization Society of the Valve and Fittings Industry 127 Park Street, NE Vienna, VA 22180**	**(703) 281-6613**
NAAMM	**National Association of Architectural Metal Manufacturers 600 South Federal Street, Suite 400 Chicago, IL 60605**	**(312) 922-6222**
NAIMA	**North American Insulation Manufacturers Association 44 Canal Center Plaza, Suite 310 Alexandria, VA 22314**	**(703) 684-0084**
NBHA	**National Builders Hardware Association (Now DHI)**	
NCMA	**National Concrete Masonry Association P.O. Box 781 Herndon, VA 22070-0781**	**(703) 435-4900**
NCRPM	**National Council on Radiation Protection and Measurements 7910 Woodmont Avenue, Suite 800 Bethesda, MD 20814**	**(301) 657-2652**
NCSPA	**National Corrugated Steel Pipe Association 2011 Eye Street, NW Washington, DC 20006**	**(202) 223-2217**
NEC	**National Electrical Code (from NFPA)**	
NECA	**National Electrical Contractors Association 7315 Wisconsin Avenue Bethesda, MD 20814**	**(301) 657-3110**
NEMA	**National Electrical Manufacturers Association 2101 L Street, NW, Suite 300 Washington, DC 20037**	**(202) 457-8400**
NETA	**International Electrical Testing Association P.O. Box 687 Morrison, CO 80465**	**(303) 467-0526**

NFPA	**National Fire Protection Association** **One Batterymarch Park** **P.O. Box 9101** **Quincy, MA 02269-9101**	**(617) 770-3000** **(800) 344-3555**
N.F.P.A.	**National Forest Products Association** **1250 Connecticut Avenue, NW, Suite 200** **Washington, DC 20036**	**(202) 463-2700**
NHLA	**National Hardwood Lumber Association** **P.O. Box 34518** **Memphis, TN 38184-0518**	**(901) 377-1818**
NKCA	**National Kitchen Cabinet Association** **(Now KCMA)**	
NLGA	**National Lumber Grades Authority** **1055 West Hastings Street, Suite 260** **Vancouver, British Columbia** **Canada V6E 2E9**	**(604) 687-2171**
NOFMA	**National Oak Flooring Manufacturers Association** **P.O. Box 3009** **Memphis, TN 38173-0009**	**(901) 526-5016**
NPA	**National Particleboard Association** **18928 Premiere Court** **Gaithersburg, MD 20879**	**(301) 670-0604**
NPCA	**National Paint and Coatings Association** **1500 Rhode Island Avenue, NW** **Washington, DC 20005**	**(202) 462-6272**
NRCA	**National Roofing Contractors Association** **10255 West Higgins Road, Suite 600** **Rosemont, IL 60018-5607**	**(708) 299-9070**
NSF	**National Sanitation Foundation** **3475 Plymouth Road** **P.O. Box 1468** **Ann Arbor, MI 48106**	**(313) 769-8010**
NWMA	**National Woodwork Manufacturers Association** **(Now NWWDA)**	
NWWDA	**National Wood Window and Door Association** **1400 East Touhy Avenue, #G54** **Des Plaines, IL 60018**	**(708) 299-5200**
PCA	**Portland Cement Association** **5420 Old Orchard Road** **Skokie, IL 60077**	**(708) 966-6200**
PCI	**Precast/Prestressed Concrete Institute** **175 West Jackson Blvd.** **Chicago, IL 60604**	**(312) 786-0300**

PDI	**Plumbing and Drainage Institute** **c/o Sol Baker** **1106 West 77th Street, South Drive** **Indianapolis, IN 46260**	**(317) 251-6970**
PEI	**Porcelain Enamel Institute** **1101 Connecticut Avenue, NW, Suite 700** **Washington, DC 20036**	**(202) 857-1134**
RFCI	**Resilient Floor Covering Institute** **966 Hungerford Drive, Suite 12-B** **Rockville, MD 20805**	**(301) 340-8580**
RIS	**Redwood Inspection Service** **405 Enfrente Drive, Suite 200** **Novato, CA 94949**	**(415) 382-0662**
RMA	**Rubber Manufacturers Association** **1400 K Street, NW** **Washington DC 20005**	**(202) 682-4800**
SDI	**Steel Deck Institute** **P.O. Box 9506** **Canton, OH 44711**	**(216) 493-7886**
S.D.I.	**Steel Door Institute** **30200 Detroit Road** **Cleveland, OH 44145**	**(216) 889-0010**
SGCC	**Safety Glazing Certification Council** **c/o ETL Testing Laboratories** **Route 11, Industrial Park** **Cortland, NY 13045**	**(607) 753-6711**
SHLMA	**Southern Hardwood Lumber Manufacturers Association (Now HMA)**	
SIGMA	**Sealed Insulating Glass Manufacturers Association** **401 North Michigan Avenue** **Chicago, IL 60611**	**(312) 644-6610**
SMA	**Screen Manufacturers Association** **3950 Lake Shore Drive, Suite 502-A** **Chicago, IL 60613-3431**	**(312) 525-2644**
SMACNA	**Sheet Metal and Air Conditioning Contractors National Association** **4201 Lafayette Center Drive** **Chantilly, VA 22021**	**(703) 803-2980**
SPIB	**Southern Pine Inspection Bureau** **4709 Scenic Highway** **Pensacola, FL 32504**	**(904) 434-2611**
SPRI	**Single Ply Roofing Institute** **20 Walnut Street** **Wellesley Hills, MA 02189**	**(617) 237-7879**

SSPC	**Steel Structures Painting Council** **4400 Fifth Avenue** **Pittsburgh, PA 15213-2683**	**(412) 268-3327**
SSPMA	**Sump and Sewage Pump Manufacturers Association** **P.O. Box 298** **Winnetka, IL 60093**	**(708) 835-8911**
SWI	**Steel Window Institute** **c/o Thomas Associates, Inc.** **1300 Sumner Ave,** **Cleveland, OH 44115-2851**	**(216) 241-7333**
SWPA	**Submersible Wastewater Pump Association** **600 South Federal Street, Suite 400** **Chicago, IL 60605**	**(312) 922-6222**
TIMA	**Thermal Insulation Manufacturers Association** **29 Bank Street** **Stamford, CT 06901** **(Standards now issued by NAIMA)**	**(203) 324-7533**
TPI	**Truss Plate Institute** **583 D'Onofrio Drive, Suite 200** **Madison, WI 53719**	**(608) 833-5900**
UFAC	**Upholstered Furniture Action Council** **Box 2436** **High Point, NC 27261**	**(919) 885-5065**
UL	**Underwriters Laboratories, Inc.** **333 Pfingsten Road** **Northbrook, IL 60062**	**(708) 272-8800**
USP	**U.S. Pharmacopoeial Convention** **12601 Twinbrook Parkway** **Rockville, MD 20852**	**(301) 881-0666**
WCLIB	**West Coast Lumber Inspection Bureau** **P.O. Box 23145** **Portland, OR 97223**	**(503) 639-0651**

WCMA	**Wallcovering Manufacturers Association** **355 Lexington Avenue, 17th Floor** **New York, NY 10017** **(WCMA has moved from this location, perhaps to the Chicago area. Address and telephone number not confirmed.)**	**(212) 661-4261**
WIC	**Woodwork Institute of California** **P.O. Box 11428** **Fresno, CA 93773-1428**	**(209) 233-9035**
WRI	**Wire Reinforcement Institute** **1101 Connecticut Avenue NW, Suite 700** **Washington, DC 20036-4303**	**(202) 429-5125**
WSC	**Water Systems Council** **600 South Federal Street, Suite 400** **Chicago, IL 60605**	**(312) 922-6222**
WSFI	**Wood and Synthetic Flooring Institute** **4415 West Harrison Street, Suite 242-C** **Hillside, IL 60162**	**(708) 449-2933**
WLPDIA	**Western Lath, Plaster, Drywall Industries Association** **(Formerly California Lath & Plaster Association)** **8635 Navajo Road** **San Diego, CA 92119**	**(619) 466-9070**
WWPA	**Western Wood Products Association** **Yeon Building** **522 SW 5th Avenue** **Portland, OR 97204-2122**	**(503) 224-3930**
W.W.P.A.	**Woven Wire Products Association** **2515 North Nordica Avenue** **Chicago, IL 60635**	**(312) 637-1359**

G. Federal Government Agencies: Names and titles of federal government standard or Specification-producing agencies are often abbreviated. The following acronyms or abbreviations referenced in the Contract Documents indicate names of standard or Specification-producing agencies of the federal government. Names and addresses are subject to change but are believed to be, but are not assured to be, accurate and up to date as of the date of the Contract Documents.

CE	**Corps of Engineers** **(U.S. Department of the Army)** **Chief of Engineers – Referral** **Washington, DC 20314**	**(202) 272-0660**
CFR	**Code of Federal Regulations** **(Available from the Government Printing Office)** **North Capitol Street between G and H Streets, NW** **Washington, DC 20402** **(Material is usually first published in the "Federal Register")**	**(202) 783-3238**
CPSC	**Consumer Product Safety Commission**	

	5401 Westbard Avenue **Bethesda, MD 20207**	**(301) 492-6580** **(800) 638-2772**
CS	**Commercial Standard** **(U.S. Department of Commerce)** **Washington, DC 20230**	**(202) 482-2000**
DOC	**U.S. Department of Commerce** **14th Street and Constitution Avenue, NW** **Washington, DC 20230**	**(202) 482-2000**
DOT	**Department of Transportation** **400 Seventh Street, SW** **Washington, DC 20590**	**(202) 366-4000**
EPA	**Environmental Protection Agency** **401 M Street, SW** **Washington, DC 20460**	**(202) 382-2090**
FAA	**Federal Aviation Administration** **(U.S. Department of Transportation)** **800 Independence Avenue, SW** **Washington, DC 20590**	**(202) 366-4000**
FCC	**Federal Communications Commission** **1919 M Street, NW** **Washington, DC 20554**	**(202) 632-7000**
FHA	**Federal Housing Administration** **(U.S. Department of Housing and Urban Development)** **Director, Manufactured Housing and Construction Standards Division** **451 Seventh Street, SW, Room 9158** **Washington, DC 20201**	**(202) 755-5210**
FS	**Federal Specification (from GSA)** **Specifications Unit (WFSIS)** **7th and D Streets, SW** **Washington, DC 20407**	**(202) 708-9205**
GSA	**General Services Administration** **F and 18th Streets, NW** **Washington, DC 20405**	**(202) 708-5082**
MIL	**Military Standardization Documents** **(U.S. Department of Defense)** **Naval Publications and Forms Center** **5801 Tabor Avenue** **Philadelphia, PA 19120**	
NIST	**National Institute of Standards and Technology** **(U.S. Department of Commerce)** **Gaithersburg, MD 20899**	**(301) 975-2000**
OSHA	**Occupational Safety and Health Administration** **(U.S. Department of Labor)**	

	N3647 **200 Constitution Avenue, NW** **Washington, DC 20210**	**(202) 219-8148**
PS	**Product Standard of NBS** **(U.S. Department of Commerce)** **Washington, DC 20230**	**(202) 482-2000**
REA	**Rural Electrification Administration** **(U.S. Department of Agriculture)** **14th Street and Independence Avenue, SW** **Washington, DC 20250**	**(202) 447-2791**
USDA	**U.S. Department of Agriculture** **14th Street and Independence Avenue, SW** **Washington, DC 20250**	**(202) 447-2791**
USPS	**U.S. Postal Service** **475 L'Enfant Plaza, SW** **Washington, DC 20260-0010**	**(202) 268-2000**

1.05 GOVERNING REGULATIONS AND AUTHORITIES

A. Copies of Regulations: Obtain copies of governing regulations and retain them at the Project site to be available for reference by parties who have a reasonable need, if requested by the Architect.

1.06 SUBMITTALS

A. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence, and records established in conjunction with standards and regulations bearing upon performance of the Work.

PART 2 – PRODUCTS NOT USED

PART 3 – EXECUTION NOT USED

END OF SECTION

SECTION 014500

QUALITY ASSURANCE: STRUCTURAL TESTING AND INSPECTION

PART 1 - GENERAL

1.1 GENERAL

A. Quality assurance is testing and inspection to assist the Owner in evaluating the Contractor's performance and quality control in the fabrication shop and field. It is not a substitute for the testing and inspection which is required as part of the Contractor's quality control program.

B. Cost: Except as specifically noted otherwise, the testing agency for quality assurance shall be engaged and paid by the Owner.

1. The Owner has negotiated inspection services based upon the assumption that all fabrication work shall be performed at one single fabrication shop. Costs associated with work being performed in additional shops will require reimbursement to the Owner.

C. Definitions:

1. See Section 051200.
2. The term “Testing Agency” in this Specification section is defined as an independent testing and inspection service engaged by the Owner for quality assurance testing and inspection of structural construction in accordance with applicable building code provisions and any additional activities listed in the Contract Documents.

1.2 SCOPE

A. Testing Agency shall provide qualified personnel at the site to test and inspect materials installed by and work performed by the Contractor, for the following structural items as indicated in Part 3 of this Specification section:

1. Section 051200 Structural Steel
2. Section 112429 Fall Protection Systems

B. Refer to the drawings for Special Inspections requirements for the Project. The Special Inspections shown on the drawings may contain additional testing and inspection that is not listed in this specification section.

1.3 TESTING AGENCY QUALIFICATIONS

A. Testing Agency shall be an independent agency with the experience and capability to conduct testing, inspection and sampling as indicated in accordance with ASTM E 329.

B. Testing Agency shall be an agency approved by the local building official to perform Special Inspections and other related services as outlined in the governing project Building Code.

C. Testing, inspection, and sampling shall be done in accordance with the applicable ASTM standards.

D. Personnel performing visual inspection and non-destructive testing of welds shall meet the requirements of AWS D1.1 for weld inspectors and shall have current certification as an AWS Certified Welding Inspector.

1.4 TESTING AGENCY RESPONSIBILITIES

A. Provide qualified personnel at the site to test and inspect structural construction as the work progresses using the most current Contract Documents and approved shop drawings.

B. Provide additional testing and inspection as needed due to the following:

1. Work performed contrary to Drawings and Specifications
2. Work performed with improper supervision
3. Work performed without prior notice

C. Report deficiencies to Contractor, Owner, Design Professionals within 24 hours.

D. Rejection: The Testing Agency has the right to reject any material at any time, when it is determined that the material or workmanship does not conform to the Contract Documents and shall immediately notify the Owner, Design Professionals, and Contractor of deficiencies. Failure to detect any defective work or material shall not prevent later rejection when such a defect is discovered nor shall it obligate Design Professionals for final acceptance.

E. Noncompliance Log: Indicate to the Contractor where remedial work must be performed and maintain a current log of work not in compliance with the Contract Documents. This noncompliance log shall be submitted to the Design Professionals and Owner on a weekly basis.

F. Reports: Prepare daily inspection, observation, and/or test reports as required herein and provide an evaluation statement in each report stating whether or not the work conforms to requirements of Specifications and Drawings and shall specifically note deviations from them. The daily reports shall be collected and submitted for record to the Design Professionals and Owner weekly.

G. Certification: Upon completion of work and resolution of remedial items, certify in a letter to the Design Professionals and Owner, that the installation is in accordance with the requirements of the Drawings and Specifications.

1.5 CONTRACTOR RESPONSIBILITIES

A. The Contractor shall have sole responsibility for coordinating their work with the Testing Agency to assure that all test and inspection procedures required by the Contract Documents and Public Agencies are provided. The Contractor shall

cooperate fully with the Testing Agency in the performance of their work and shall provide the following:

1. Information as to time and place of starting shop fabrication and field construction/erection, at least one week prior to the beginning of the work.
2. The most up to date construction schedule.
3. At least 24 hours advance notice of work requiring testing and inspection.
4. Access to areas as required for testing and inspection.
5. Site File: At least one copy of the most current Contract Documents and approved shop drawings shall be kept available in the contractor's field office. Drawings not bearing evidence of approval and release for construction by the Design Professionals shall not be kept on the job. Provide drawings for the work to be performed in the shop or field one week prior to the start of work.
6. Representative material samples requested by the Testing Agency for testing, if necessary.
7. Full and ample means of assistance for testing and inspection of material.
8. Facilities for proper storage of material samples as required.
9. Proper facilities, including scaffolding, temporary work platforms, safety equipment etc., for inspection of the work in shop and field.

B. Immediately notify the Owner's Testing Agency and Design Professionals in writing of conditions that will adversely affect the work.

C. Materials and installed work may require testing and retesting at any time during progress of work, as directed by Design Professionals. Tests, including retesting of rejected materials for installed work will be done at Contractor's expense.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 GENERAL

A. Testing Agency shall provide qualified personnel at site to test and inspect structural construction using the latest Contract Documents and approved submittals as indicated in the following sections.

3.2 STRUCTURAL STEEL

A. Quality Assurance:

1. Shop inspection shall include alignment and straightness of members, camber, preparation for connections, dimensional checks, testing of shop bolts, witnessing of welding procedures, testing of cuts, weld access holes and copes of Heavy Sections as defined in this Specification, examination and testing of completed welds, headed studs and deformed bar anchors, cutting of Heavy Sections, finishing of column ends, cleaning, painting and storage of material. All shop fabrication shall be inspected in the shop. Camber shall be verified in a minimum of 10% of

all members requiring camber. If, in the opinion of the SER and Testing Agency this testing discloses a large ratio (10% or more) of unacceptable cambers, the required percentage of tested cambers may be increased by the SER to 100% at no expense to the Owner. Where testing is required for less than 100% of locations, select test locations at random and throughout the project.

2. Field inspection shall include connections, proper tensioning of bolts, levelness, plumbness and alignment of the frame, conformance to AWS welding methods, examination of surface before welding, examination and testing of completed welds, headed studs and deformed bar anchors and field painting, including touch-up. Where testing is required for less than 100% of locations, select test locations at random and throughout the project.
3. Review the following items in the shop and field:

    a) Welding certificates, procedures, and personnel
    b) Stud welding setup and operators; bolting procedure and crew
    c) Bolting procedure and crew
    d) Mill certifications for compliance with the Contract Documents.

4. Inspect high strength bolted construction in accordance with RCSC "Specification for Structural Joints using ASTM A 325 or A 490 Bolts," including but not limited to:

    a) Surface preparation and bolt type conforms to plans and Specifications prior to start of bolting operations.
    b) Proper bolt storage and handling procedures per codes and standards referenced by this Specification are being followed.
    c) Visually inspect all bolted connections.
    d) For all bolted connections that are indicated as snug tight, connections are properly compacted and brought to the snug tight condition progressing outward from the most rigid part.
    e) For all bolted connections that are indicated as pretensioned or slip critical, pre-installation verification testing is performed by the inspector in cooperation with the contractor in accordance with RCSC section 9.2 and section 7.
    f) For all bolted connections that are indicated as pretensioned or slip critical, through routine observation, as defined in RCSC 9.2.1, 9.2.3 or 9.2.4, that the pretensioning methods of RCSC 8.2.1, 8.2.3, or 8.2.4, as appropriate, are performed.

        i. "Routine observation" is defined as observation of 10 bolts for every 100 bolts with a minimum of 2 bolts per connection.

    g) Retest bolted connections that fail initial inspection after correction by the Fabricator or Erector.

5. Test and inspect welding and welded construction including but not limited to:

    a) Review of submittals:

i. Review all Welding Procedures prepared by the Contractor's Engineer or Certified Welding Engineer. Verify the accuracy of all essential variables of the Welding Procedure including but not limited to confirmation that weldability and heat induction for Heavy Sections and high restraint welds comply with AWS requirements.
ii. Review of welding procedures including prequalification, qualifications test and, for Heavy Sections and High Restraint Welds, the welding procedure prepared by the Contractor's Engineer or Welding Consultant
iii. Submit for record a report indicating that the Welding Procedures have been reviewed as indicated above to the Design Professionals.

b) Test all complete joint penetration welds for soundness by means of either radiographic or ultrasonic testing in accordance with AWS D1.1 and ASTM E164 procedures. All flaws in plate or flange material revealed during such tests shall be repaired and retested by the Contractor at the Contractor's expense.
c) Test all partial joint penetration welds for soundness by means of visual and magnetic particle inspection, unless other methods are specified in the Contract Documents. All flaws in plate or flange material revealed during such tests shall be repaired and retested by the Contractor at the Contractor's expense.
d) Testing of welds at Heavy Sections and High Restraint Welds shall be performed not less than 48 hours after the weld has been completed.
e) Visually inspect all fillet welds. In addition test ten percent (10%) of all fillet welds using a non-destructive method, such as dye penetrant or magnetic particle. Select test locations randomly throughout the structure, but test at least one weld in each location with 6 or more welds per connection. If, in the opinion of the SER and Testing Agency this testing discloses a large ratio (10% or more) of unacceptable welds, the required percentage of tested welds may be increased by the SER to 100%, all at the Contractor's expense.
f) Inspection and Testing by the Testing Agency of High Restraint Welds and where Heavy Sections are to be joined by partial or complete joint penetration welds in tension:

i. Joint Preparation: Monitor fit up and joint preparation (bevel angle, etc.) for conformance to the submitted welding procedures including preheat and interpass temperature. Monitor base metal temperature during welding operations.
ii. Test Complete Joint Penetration Welds in accordance to the requirements of this Specification section, ultrasonically in accordance with AWS D1.1 procedures. On T or corner joints, pay careful attention to the heat affected zone and base metal where the weld shrinkage stresses are in the through thickness direction.

iii. Test Partial Joint Penetration Butt Joints in accordance with this Specification section by the magnetic particle method. At T or corner joints, in addition to the magnetic particle testing, ultrasonically scan the heat affected zone and adjacent base metal from face "C" per AWS D1.1 Table 6.7 and Annex Q7 to detect lamellar tears and shall be done with a compression wave. The Testing Agency shall submit a testing procedure that includes evaluation (acceptance criterion) procedures to the Design Professionals for review.

g) At Heavy Sections and High Restraint Welds: provide pre-production sample testing of heat treatment, observe fabrication, welding and heat treatment of the samples for conformance with submitted welding procedures. Establish locations of testing coupons following AWS procedures. Test coupons following AWS procedures to verify satisfactory results using the welding procedure and heat treatment.

6. Visually inspect all headed studs and deformed bar anchors for complete fusion and full 360-degree weld flash (or fillet).

a) Check all studs with incomplete fusion, and at random five studs at each of six beams per floor, by bending to an angle of 15 degrees from its original axis (away from any missing flash). If more than twenty percent of studs fail on one member, check all studs on member. In addition, for each member with any defective studs, test an additional member.
b) Contractor to replace any studs that crack or break. Contractor to only straighten studs that would foul other work or have less than 1 inch (25mm) cover in bent position.

7. Cleaning & Painting:

a) Prior to shop painting, examine fabricated pieces to verify proper cleaning in accordance with this Specification.
b) Examine shop painting to verify conformance with this Specification.
c) Examine loading and unloading of steel to visually observe that damage does not occur during shipping and handling.

3.3 STRUCTURAL STEEL ADDITIONAL SEISMIC REQUIREMENTS

A. The testing and inspection requirements of this section apply to all structural steel members and connections denoted as part of the Seismic Force-Resisting System on the Drawings. These requirements are in addition to the requirements of the STRUCTURAL STEEL section of this specification.

B. Quality Assurance:

1. Written practice for Testing Agencies shall include welding inspection procedures to meet the requirements of AWS D1.8.

2. Perform weld inspection tasks necessary to meet the requirements of AWS D1.8, AISC 341, and the requirements of the Contract Documents.
3. Perform non-destructive testing of welded joints as follows:

    a) Visually inspect all welds.
    b) Non-destructive testing shall be conducted at locations required by AWS D1.8 and AISC 341. Frequency of testing shall be as required by AISC 341 Chapter J and Table 1-1 of this Specification section.
    c) Magnetic Particle Testing (MT) shall be performed in accordance with AWS D1.1, and AWS D1.8.
    d) Ultrasonic testing (UT) shall be performed in accordance with AWS D1.1 and AWS D1.8.
    e) Weld Acceptance Criteria shall be in accordance with AWS D1.1 and AWS D1.8. Regions of welds that cannot be inspected shall be identified and recorded, and the Design Professionals shall be notified.
    f) K-Area Welding Inspection: A minimum of 48 hours after completion of welding, test column webs for cracking using liquid penetrant (PT) or magnetic particle testing (MT) over a zone 3” above and below each weld.

5. Inspect structural steel to verify that the Protected Zones of members of the Seismic Force-Resisting System are free of damage and attachments not approved by the Design Professionals.

Table 1-1: Nondestructive Testing (NDT) Requirements

Weld Category	**Nondestructive Testing Requirements**	
	Complete-Joint-Penetration Welds[1]	Partial-Joint-Penetration Welds and Fillet Welds
SFRS welds not described below	MT 25% of joints, full length[2] and UT 100% of joints, full length[2]	MT 25% of fillet welds, 6" length at random[2] MT 100% of partial-joint penetration welds[2]
Top-flange joints at cantilever beam connections[3] Splices in beam flanges	MT 100% of joints, full length and UT 100% of joints, full length	MT 100% of joints, full length
Demand Critical Welds; Butt joints in SFRS column splices	MT 100% of joints, full length[2] and UT 100% of joints, full length[2]	MT 100% of joints, full length[2]

Notes:

1. UT is required only when the weld thickness is $^{5}/_{16}$" or greater.
2. Reduction of the rate of UT and MT testing per AISC 341 Section J6, items (2g) and (2h) is permissible if approved by SER.
3. Test joint on each side of cantilever beam or column support.

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. All the Contract Documents, including Drawings, General Conditions, Supplementary Conditions, and all Sections of Division 01 - General Requirements, apply to the Work of this Section.

1.02 SUMMARY

A. This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security, and protection.

B. Temporary construction and support facilities required include, but are not limited to:

1. Waste disposal services – a location on or inside our premises will be identified by Owner, if the Contractor requires a dumpster.
2. Temporary yard and storage on and off-site.
3. Construction aids and miscellaneous services and facilities.
4. Sweeping compound.
5. Emergency portable generators of size required if permanent power is temporarily unavailable.
6. Water service and distribution if water supply to adjacent occupied spaces is temporarily unavailable.
7. Parking- Parking is limited to (2) vehicles per contractor outside of the work area, unless the Owner is able to accommodate for additional vehicles. Contractor will need to identify alternative parking for workers when onsite parking is not available. The City makes no assumptions that parking can be made available during this project but will not deny reasonable request to accommodate parking when available.

C. Security and protection facilities required include, but are not limited to:

1. Temporary weather protection, enclosures, and covers.
2. Temporary fire protection and fire watch if required by Worcester Fire Department.
3. Barricades, warning signs, lights.
4. Temporary partitions between occupied areas and construction areas, STC 48 or better.

D. Where a distinction is made in this specification section between temporary services to be provided by a General Contractor and those to be provided by a Subcontractor, the purpose is only to clarify which costs are to be included by the applicable parties for inclusion in the applicable bids and contracts that would follow. These distinctions have no bearing upon the Contract between the Owner and General Contractor and do not limit in any way the General Contractor's responsibility to provide all such temporary services without additional cost to the Owner. For the sake of clarity in this specification section, the term General Contractor has been used for the person called the Contractor in other specification sections, when the intent is that that person shall provide a service directly at his own expense rather than at the expense of one of the Subcontractors from whom the Owner has taken filed sub-bids.

E. The temporary services described in this specification section may not be adequate to provide for all the needs of the General Contractor. The General Contractor requiring additional temporary services for the proper execution of his work or because of climatic conditions shall arrange for and obtain such services at his own expense without further compensation by the Owner.

F. The Contractor shall be responsible for restoring all landscaped areas affected by the work of this project to their original "like-new" state that existed prior to work commencing. This restoration work shall include, but not be limited to, planting beds with mulch, trees, shrubs, and lawn areas. Great care should be taken during the work not to damage nor destroy any landscaping impacted by this work. Any landscaping disturbed, damaged, or destroyed shall be restored, repaired, or replaced in-kind at no cost to the Owner.

G. Rubbish Removal

1. The General Contractor shall remove and dispose daily of all waste and debris caused by the Work of this Contract and legally dispose off-site to avoid large accumulations of construction and demolition waste.
2. The General Contractor shall provide dumpsters and waste barrels at designated drop-off areas within the construction site.
3. Burning or on-site disposal of waste and debris are not allowed.

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. Carefully examine all the Contract Documents for requirements which affect the Work of this Section.

B. Other Specification Sections which directly relate to the Work of this Section include, but are not limited to, the following:

1. DIVISION 01 – GENERAL REQUIREMENTS; including all Sections contained therein.
2. Section 05 12 00 – Steel
3. Section 11 24 29 – Fall Protection Systems

1.04 SUBMITTALS

A. Schedule: Submit a schedule indicating implementation and termination of each temporary utility within fifteen (15) days of the date established for Commencement of the Work.

1.05 QUALITY ASSURANCE

A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including but not limited to:

1. Commonwealth of Massachusetts State Building Code requirements; 10th Edition.
2. Federal, State and City Health and safety regulations.
3. Utility company regulations.
4. Police, Fire Department and Rescue Squad rules.
5. Environmental protection regulations.

B. Standards: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including but not limited to:

1. NFPA Code 241.
2. NFPA 70.
3. ANSI A10.
4. NECA NJG-6.

C. Electric Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70.

D. Inspections: Arrange for authorities having jurisdiction to inspect and test temporary utilities prior to use. Obtain required certifications and permits.

1.06 PROJECT CONDITIONS

A. Temporary Utilities: At the earliest feasible time, when acceptable to the Owner, change from use of temporary service to use of permanent service.

B. Conditions of Use: Maintain temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload temporary facilities or permit them to interfere with progress. Do not allow hazardous, dangerous, unsanitary conditions, or public nuisances to develop or persist on the site.

C. Always maintain the continuity of all utility services across all Phases of the Construction Project, unless otherwise directed by the Architect or Owner.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Provide new materials suitable for the use intended, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.

2.02 TEMPORARY WATER

A. Definitions:

1. Water Access Point: A point, within the Project area, at which water is available during construction.

B. Charges: The General Contractor shall pay for all facilities to provide water during construction, while the Owner will supply and pay for water during the construction. The General Contractors shall pay for the backflow preventer if utilizing Owners Hydrant for water.

1. The furnishing of water by the Owner shall be conditional upon all contractors being conservative and prudent in its use. In the event of any contractor is repeatedly wasteful in the use of water thus provided, the Owner reserves the right to charge the General Contractor for wasteful usage at an equitable rate for the additional portion of water used.

C. Temporary Water: The General Contractor shall be responsible for all facilities to provide water during construction as defined above and further specified as follows:

1. Except under unusual circumstances, when otherwise specified or approved by the Architect, all water shall be of potable quality.
2. The General Contractor shall provide all necessary piping, valving, hose bibbs, hosing, etc. to provide temporary water during construction from a water access point determined by the Owner’s Representative. Any facilities running within the building are required not to leak. Any damage incurred due to leaks shall be repaired at the expense of the General Contractor.
3. The General Contractor shall pay for and be responsible for the protection of Temporary Water, which he installs, from freezing and other damage.

2.03 TEMPORARY HEAT

A. Definitions:

1. Temporary Heating & Ventilating: The General Contractor shall provide temporary heat and ventilation, as needed, to work areas outside the building to maintain the minimum temperatures described below. The General Contractor shall also provide temporary heat and ventilation, as needed, to work areas inside the building to maintain an indoor temperature of 68 degrees Fahrenheit during the winter months and 75 degrees Fahrenheit during the summer months.

B. Charges: The General Contractor shall pay for all temporary heat and ventilation as defined above. The General Contractor shall pay for all fuel required for Temporary Heat and Ventilation. The Owner shall pay for all electrical energy use charges.

2. The furnishing of electrical energy by the Owner shall be conditional upon being conservative and prudent in its use. If any contractor is repeatedly wasteful in the use of electrical energy thus provided, the Owner reserves the right to charge the General Contractor at an equitable rate for the additional portion of electrical energy used.

C. Temporary Heating: Portable heating units shall be of sufficient capacity and number and shall be located so that damage to any part of the project from low temperature will be prevented and that concrete, masonry, and other components requiring curing shall be properly cured.

1. Heaters for temporary heat shall be temporary steam generators, forced air heaters, or other type heaters located outside the building or vented to the outside of the building. Type(s) shall be such as to not damage or stain construction or any part of the existing building. Heaters must be UL approved.
2. At no time will oil-burning “salamander” type heaters be used, nor will non-vented, open flame heaters be used inside the building.
3. Propane-type heaters shall not be used at any time within the area of the building or near stockpiles of combustible materials.
4. Temporary heating shall apply to winter conditions.

D. Temporary Ventilation: Portable ventilation units shall be of sufficient capacity and number and shall be located so that damage to any part of the project from excess humidity will be prevented and that concrete, masonry, and other components requiring curing shall be properly cured.

2.04 TEMPORARY POWER AND LIGHTING

A. Definitions:

1. Temporary Electric: The furnishing, installing, maintenance, and removal of all wiring, fusing, switches, outlets, lamps, and accessory electrical devices required to provide lighting and power needed by all construction trades for the duration of construction.

B. Charges: The General Contractor shall pay for all facilities for Temporary Electric. The Owner shall pay for all use charges for electrical energy.

1. The furnishing of electrical energy by the Owner shall be conditional upon all contractors being conservative and prudent in its use. If any contractor is repeatedly wasteful in the use of electrical energy thus provided, the Owner reserves the right to charge the General Contractor at an equitable rate for the additional portion of energy consumed.

C. Temporary Electricity: The General Contractor shall pay for and be responsible for Temporary Electric as defined above and further specified as follows:

1. The General Contractor shall provide temporary electricity during construction from an electrical service access point determined by the Owner's Representative.
2. The Temporary Electricity is expected to be used during normal working hours, as defined in Section 010100 – Summary of Work. No additional charge shall be made by the General Contractor for switching the system on and off to meet this time requirement.
3. Responsibility of compliance with local, state, and national codes for installation of the Temporary Electric service shall be borne by the General Contractor.
4. The General Contractor shall be responsible for servicing and maintaining all temporary lighting during the construction.
5. The General Contractor shall be responsible for paying for the following Temporary Electricity. This schedule will not necessarily provide for all the requirements of all contractors. The General Contractor or any Subcontractor having requirements for power, lighting, or service other than those provided herein, shall make the necessary arrangements to obtain such power, lighting, or service at his own expense.
    a. The General Contractor shall obtain all necessary permits, shall furnish, and install the temporary electrical power and lighting systems, and shall pay for all labor, materials, and equipment required for this work. All such temporary electrical work shall meet the requirements of the Massachusetts Electrical Code and OSHA.
    b. The Electrical Subcontractor shall furnish and install a feeder, or feeders, of sufficient capacity to provide additional lighting to the work areas, as required, to properly carry out the work. Temporary lighting shall be based on the following requirements:
        1) Rooms or spaces under 250 square feet: Two (2) 100-watt lamps.
        2) Rooms or spaces over 250 square feet and under 500 square feet: Four (4) 100-watt lamps.
        3) Rooms or spaces over 500 square feet and under 1,000 square feet: Two (2) 200-watt lamps.
        4) Rooms or spaces over 1,000 square feet: Two (2) 200-watt lamps for every 1,000 square feet or fraction thereof.
        5) Sufficient additional wiring outlets and lamps shall be installed to ensure proper lighting in stairwells, corridors, and passage areas.
        6) Temporary power, in addition to the lighting requirements, shall be provided throughout the building for electrically operated tools, based on a minimum of 0.50 watts per square foot.

7) Outlets shall be located at convenient points so that extension cords not over 50 feet in length will reach all work requiring light or power.
8) All Electrical Outlets shall be properly configured NEMA polarized outlets to prevent insertion of 110-120 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.
9) All Electrical Power Cords shall be grounded extension cords that are "hard-service" type 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.

a. All necessary cables, load centers, switches, and accessories required for the temporary light and power installation shall be provided and installed by the General Contractor.
b. The General Contractor shall furnish and install all lamps, both initial and replacement, before the Date of Substantial Completion.
c. Temporary light and power requirements herein required are for the use of all trades working at the site.
d. All Contractors and Subcontractors shall, individually, furnish all extension cords and lamps, sockets, motors, and accessories required for their work.
    1) All Electrical Power Cords shall be grounded extension cords that are "hard-service" type 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.
e. Any of the Contractors or Subcontractors shall reimburse the General Contractor for any of the following:
    1) Any temporary wiring of a special nature, other than that specified above, required for their work.
    2) Any temporary wiring of construction offices and buildings used by them.
    3) Any temporary wiring for protective night lighting.
f. The General Contractor shall be responsible for removing all temporary wiring, service equipment, and accessories when and as directed to by the General Contractor.
g. The provisions of the Massachusetts Electrical Code shall be strictly complied to, with special respect to Article 305 of said code, and the following precautions shall be taken:
    1) Open conductors shall be fastened to the ceiling height at minimum of 10 feet intervals. Conductors may not be laid on the floor, and receptacles or fixed equipment circuits shall contain a separate equipment-grounding conductor if run as open wiring. Receptacles shall be of the grounding type. Branch circuits shall also be of the grounding type, unless installed in a complete metallic conductor and receptacles electrically connected to the grounding conductor. Neither bare conductors nor earth returns shall be used for wiring of any temporary circuits. Grounding circuits shall never be interrupted.
    2) All 15 and 20-amp receptacle outlets on single phase circuits which are used for construction purposes shall be equipped with ground-fault circuit interrupters, reset button, and pilot lights as required by Article 210 of the Massachusetts Electrical Code.
    3) All outlets shall be properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets.

2.05 TEMPORARY SANITARY FACILTIES

A. The General Contractor shall be provided access for use of toilet facilities in the building by Owner.

1. At no time shall any Contractor Personnel use toilet facilities outside the work areas or in any Owner-occupied parts of the building, other than that approved by the Owner..
2. In the event that the Owner determines the contractor personnel misuses or leaves the provided toilet facilities in an unacceptable state of uncleanliness, the Owner may require the contractor to professional clean the toilet facilities and/or require the contractor to provide their own temporary toilet facilities within their work area for the remaining portion of the project.

2.06 TEMPORARY WEATHER PROTECTION

A. Definitions:

1. Weather Protection: The furnishing, installing, maintenance, and removal of temporary closures, covers, shields, and any other weather protection devices as required to protect work in place and permit construction to proceed during cold or inclement weather.

B. Weather Protection Standard: The following weather protection standards pursuant to Chapter 597 of the Acts of 1980, modifying Sections 44F and G of Chapter 149 of the General Laws, are hereby incorporated into this specification, and shall be considered supplementary to the temporary heating and temporary enclosure requirements. Under the provisions of Chapter 149, Section 44F(I) and Section 44G, Paragraph D, of the General Laws, General Contractors are required to provide weather protection to allow building construction to be carried on during the months of November through March. These standards do not require enclosures for heat for operations that are not economically feasible to protect in the judgment of the Awarding Authority, including for example, site work, excavation, pile driving, steel erection, erection of certain exterior panels, roofing, and the like.

1. The General Contractor shall provide and install weather protection.
2. Weather protection shall be provided during the months of November through March.
3. The temperature at the working surface shall be at least forty degrees Fahrenheit (40° F). This provision does not supersede any specific greater requirements for the methods of construction or curing of materials.
4. Weather protection materials, equipment, and the installation thereof, shall comply with all safety rules and regulations including the provisions for adequate ventilation and fire protection devices.
5. At completion of work, the General Contractor shall remove temporary weather protection and restore all surfaces to first class condition.
6. The General Contractor may choose, if the Awarding Authority approves, to use the permanent heating system for temporary heat after the building is enclosed and the system has been tested and is ready to operate.
    a. The General Contractor shall thoroughly clean and restore to first class condition, acceptable to the Awarding Authority, all portions of the permanent heating system that are used for heating during construction.
    b. Use of the permanent heating system for weather protection shall not affect any heating system guarantee that may be due to the Awarding Authority; such guarantee shall begin to run only when the Awarding Authority accepts the building.
7. Reporting Requirements:

a. Within thirty (30) calendar days after the Contract Award the General Contractor shall submit, in writing to the Awarding Authority for approval, its proposed plan for weather protection. Refer to Section 01300 – Submittals for additional information regarding the appropriate procedure in preparing this submittal.

b. The General Contractor shall furnish and install accurate Fahrenheit thermometers at places designated by the Awarding Authority to determine whether the required temperature is being maintained.

C. Temporary Covers and Enclosures:

1. Except as otherwise specified herein below, all costs of closing openings in new construction and the exterior of the existing buildings open to the weather, including temporary covers and enclosures, shall be borne by the General Contractor. Enclosures must be built around various portions of the new construction and new exterior openings in the existing building as the work progresses if, and as necessary to totally insure against the intrusion of rain, snow, and other moisture which might damage the new or existing materials or finishes and as necessary to maintain the minimum temperatures specified.

   a. Where roofs, exterior walls, windows, or other elements of new or existing buildings or structures providing weather protection are to be temporarily opened to the weather, they shall be fully enclosed or covered with securely attached and well-draining enclosures whenever inclement weather is occurring or is threatening, to assure absolute weather protection. All damage to the new or existing buildings or structures, including all materials and finishes thereon, caused by inadequate protection shall be made good by the General Contractor without further cost to the Owner.

2. All such weather tight enclosures shall provide a reasonable open area to permit drying of new wet materials while at the same time making it possible to maintain the required interior temperatures. The General Contractor shall provide sufficient continuous ventilation until the time that the “wet” work of the project has dried sufficiently to receive finished woodwork and other materials subject to moisture damage, at which time the ventilation shall be maintained at approximately the anticipated conditions of final use of the project.

3. The permanent doors and frames shall not be used as temporary enclosures prior to the time of delivery of finished woodwork or acoustical materials. Temporary wood or plywood doors with wood frames and proper hardware to make the doors self-closing shall be provided, instead, at the door openings.

4. As parts of the temporary enclosures, the permanent doors, windows, and fixed glass may be used, provided sufficient ventilation area is available and that extreme care is taken to prevent damage to the same. Where available ventilation area is limited, intake and discharge fans may be used to increase air movement through the construction areas. Before delivery of finished woodwork or other materials subject to moisture damage, the permanent windows, roof accessories, fixed glass, doors, and entrances must be in place. Spark-proof fans shall also be provided to remove toxic or obnoxious fumes from enclosed areas as may be required.
5. Once temporary enclosures are in place, a temperature of at least 55 degrees Fahrenheit shall be maintained within all interior workspaces. From the time of delivery of the first shipment of finished woodwork or other finished materials subject to moisture damage, a temperature of at least 60 degrees Fahrenheit shall be maintained within all interior spaces. Temperatures shall be maintained at this level until the time of substantial completion of the project or occupancy by the Owner, whichever is sooner, and shall not be discontinued until definite arrangements for same have been made by the Owner.

D. Weather Protection by Subcontractors: The General Contractor shall provide at his own expense all Weather Protection as defined above except as follows:

1. Each Subcontractor shall pay for and be responsible for the weather protection of his tools, devices, equipment, appliances, and appurtenances to use in the accomplishment of his work and for weather protection of materials furnished by him until such materials are incorporated as a physical part of the Project.
2. Protection and heating of aggregates and water for concrete and mortars shall be the responsibility and at the expense of the respective Subcontractors furnishing concrete and mortars.
3. Construction Water Facilities, furnished and installed by the General Contractor, shall be protected against freezing by the Contractor at his own expense.
4. Hoses, piping, and accessory devices installed and connected by others to the water facilities furnished by the Contractor shall be protected against freezing by the installer at his own expense.

2.07 TEMPORARY FIRE PROTECTION

A. The General Contractor shall take all necessary precautions for the prevention of fire during construction. He shall be responsible for ensuring that the area within the contract limits is kept orderly and clean and that combustible rubbish is promptly removed from the site. Combustible materials shall be stored on site in a manner and at locations approved by the Architect. The General Contractor shall comply with all suggestions regarding fire protection made by the Insurance Company with which the Owner maintains his fire insurance.

B. The General Contractor shall provide and maintain in good working order, under all conditions, readily available to all portions of the site and work, suitable and adequate fire protection equipment, and services. Such facilities shall include, but are not limited to, the furnishing and maintaining in good working order a minimum of two (2) standards, Underwriters' Laboratories labeled, 2-1/2-gallon capacity fire extinguishers per floor.

C. Smoking shall be prohibited on the premises and signs to this effect shall be posted conspicuously.

D. Fires shall not be built on the premises.

2.08 TEMPORARY CRANES, LIFTS, DERRICKS, AND HOISTING SERVICES

A. The General Contractor shall furnish, install, operate, and maintain in safe condition all crane services outside of the building for his own use and for the use of all Subcontractors on the project to properly carry out and complete the work, except as may otherwise be specifically provided for in any of the trade sections of the Specifications.

B. All crane services shall be provided at no cost to the Subcontractors for their work.

C. Each Subcontractor shall, however, provide their own lifts, derricks, hoisting services, etc. (excluding crane services outside the building) for their own work outside and inside the building to properly complete their work.

D. All cranes, lifts, derricks, and hoisting equipment, machinery, and operation shall comply in all respects to the governing laws and codes.

2.09 TEMPORARY STAGING AND SCAFFOLDING

A. The General Contractor shall furnish, erect, and maintain in safe condition all exterior and interior staging and scaffolding required for his own use.

B. Each of the Subcontractors shall furnish, erect, and maintain in safe condition all exterior and interior staging and scaffolding for their own use.

C. All staging and scaffolding shall be enclosed at the ground by a temporary construction fence as defined elsewhere in this Section.

D. Staging and scaffolding shall comply in all respects to the governing laws and codes.

2.10 TEMPORARY BRACING, SHORING, SHEETING, AND TIE-DOWNS

A. The General Contractor shall take all precautions to protect the Work against collapse or other damage by earth or construction loads, high winds, snow and rain loads, damage by adverse weather conditions or geological disturbances, or other cause, by temporary bracing shoring, sheeting, guying, lacing, covering, weighting, and other reasonable and prudent means.

2.11 TEMPORARY STAIRS, LADDERS, RAMPS, PLATFORMS, ETC.

A. The General Contractor shall provide and maintain all necessary temporary stairs, ladders, ramps, platforms, and other temporary construction required for the proper execution of the work, all of which shall comply with the requirements of the governing laws and codes and/or as required by local building officials.

B. As soon as the permanent ladders and hatches are installed, the General Contractor shall provide temporary protective measures acceptable to the Architect to maintain their new condition until substantial completion, so to assure that such items will not be damaged as the remaining work progresses.

2.12 TEMPORARY FENCING, BARRIERS, AND PARTITIONS

A. Protection: The General Contractor shall be fully responsible for the security of the work areas of the site and for patrolling and protecting the work under construction and his and the Owner's materials stored or otherwise located on the site.

B. Temporary Barricading: In addition, the General Contractor shall provide other temporary fencing, barricading, and overhead protection of substantial nature to protect workmen, other personnel, and the public against various hazards and attendant nuisances that come about as the work progresses such as, but not necessarily limited to, falling materials, dangerous excavations, dangerous projections, or obstructions, stored or stockpiled materials, etc. Comply fully with recommendations of the Association of General Contractors and provisions of the governing laws and codes.

Note: As part of requirement for overhead protection, include substantial, well-constructed, walkways cover sufficient to assure pedestrian safety, in accordance with recommendations of the Association of General Contractors and provisions of the governing laws and codes.

C. In addition, the General Contractor shall provide all necessary protective barriers within the existing building as required to assure the safety of persons and property wherever work of this Contract is being carried out. Include substantial, well-constructed, protective barriers at all construction work-limit-lines separating Contract work areas from areas occupied by the Owner. Also include flameproof dust-curtaining and block or filter mechanical return air systems in a safe manner, in cooperation with Mechanical trade, between areas where dust effusive work is being carried out and other interior areas of the new addition and existing building to prevent passage of dirt and dust. Barriers, curtaining, etc., must be self-supporting, and must not depend on building construction for primary structure or anchorage. Locations and quantities of barriers and dust curtaining shall always be subject to Owner's and Architect's approval, but such approval, or lack of inspection or approval, by the Owner or the Architect, shall not be construed as relieving the Contractor of any of his responsibilities under the Contract.

2.13 TEMPORARY STORAGE FACILITIES

A. Space for storage of materials shall be confined to the construction areas outside the building and as designated and/or approved by the Architect.

B. Locations where construction equipment may be stored during non-working hours shall be as acceptable to the Owner. Construction equipment shall not present a hazard when stored.

2.14 NOISE, DUST, AND POLLUTION CONTROL

A. All work performed under the Contract shall conform to the requirements of Chapter III, Section 31C and Section 142D of the General Laws, Commonwealth of Massachusetts and Rules and Regulations adopted thereto by the Commonwealth of Massachusetts, Department of Public Health, and the requirements of local noise, dust, and pollution control laws, ordinances, and regulative agencies applicable to the work.

B. The General Contractor shall provide temporary partitions to prevent noise, dust, pollution or order from entering occupied spaces. Temporary partitions shall have STC of 50. Submit location plan and type of construction for temporary partitions for approval.

C. Control of airborne dust or pollution from the site with spray or otherwise may be necessary to prevent the migration of any dust or pollutants.

D. Dust Control: Use water mist, temporary enclosures, and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations.

1. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, or pollution.
2. Vacuum equipment shall be equipped with HEPA filters.
3. Vacuum carpeted areas.
4. Wet mop floors to eliminate trackable dirt.
5. Sweeping shall be allowed only with the use of a non-oil based sweeping compound followed by vacuuming any remaining residue.
6. Wipe down walls and doors of demolition enclosure.

E. Disposal: Remove and transport debris, in a manner that will prevent spillage on adjacent surfaces and areas, to the construction dumpster(s).

F. Cleaning: Clean areas adjacent to the work area of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

2.15 WATER CONTROL

A. The General Contractor shall be responsible for site drainage and snow removal within the limit-of-work lines and shall maintain such drainage and removal during the life of the Contract in a manner approved by the Owner and Architect, and so as not to adversely affect the adjacent areas.

B. Water from the Work of this Project shall be disposed of in such a manner as not to be a threat to public health nor cause damage to public or private property. It shall not be disposed of over surfaces of roads, walks, and streets, nor be permitted to cause any interference with the normal use of the same.

C. Removal of snow and ice from within the limit-of-work lines at the site as required to maintain the continual progress of the work, including that required to keep work areas, access roads, and storage areas clear, free, and in use, and as required to prevent damage to existing construction and new work in places.

2.16 CONSTRUCTION CLEANING AND CONSTRUCTION DUMPSTERS

A. The General Contractor shall provide and pay for temporary dumpster type trash containers outside the building for use by all Subcontractors, and shall have the containers replaced, hauled away, and the contents legally disposed of at sufficient intervals to always maintain them in sufficiently empty condition so that they are ready to receive trash and debris.

B. All construction dumpsters shall be in the parking lot within the construction staging area and were permitted by the Owner.

C. Each Contractor on the project shall be responsible for removing their own trash and debris from the building to the construction dumpster(s).

D. Waste materials and rubbish, which might otherwise raise dust, shall be sprinkled during handling and loading to minimize this effect. Debris shall be carried out of the structure in containers or dropped in fully enclosed chutes and shall not be passed through, or thrown from, windows or other wall openings, and in no case shall the debris or trash be permitted to drop freely from the openings.

E. The Work Areas shall be inspected daily and all debris, waste, rubbish, etc. shall be removed and placed in a dumpster.

F. All waste materials and rubbish shall be disposed of legally, off site.

2.17 TEMPORARY RODENT AND PEST CONTROL

A. Rodent and Pest Control: Provide rodent control as necessary to prevent infestation of construction and storage areas. Employ methods and use materials, which will not adversely affect conditions at the site or on adjoining properties. Should rodenticides be considered necessary submit copies of proposed program to Owner and Architect. Use of rodenticide shall comply with manufacturer's published instructions and recommendations. Clearly indicate:

1. Area or areas to be treated.
2. Rodenticides to be used.
3. Manufacturer's printed instructions.
4. Pollution preventive measures to be employed.

2.18 WATCHMEN, FLAGMEN, AND POLICE DETAILS

A. The General Contractor shall provide the services of flagmen, traffic directors, and police details as necessary and as required by authorities having jurisdiction. Please refer to Section 01010 – Summary of Work for additional information regarding the police details and the appropriate pay rates.

2.19 PARKING

A. Parking will be permitted on site or as directed by the owner. See 1.02 B 7. above for more details.

PART 3 - EXECUTION

3.01 OPERATION, TERMINATION AND REMOVAL

A. Supervision: Enforce strict discipline in the 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. If damage occurs, repair it immediately upon discovery. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour per day basis.

C. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended. Clean and renovate permanent facilities that have been used during construction period, including:

1. Replace air filters and clean the inside of ductwork and housing.
2. Replace worn parts.
3. Replace lamps.

END OF SECTION

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. All the Contract Documents, including Drawings, General Conditions, Supplementary Conditions, and all Sections of Division 01 - General Requirements, apply to the Work of this Section.

1.02 SUMMARY

A. This Section specifies administrative and procedural requirements governing the Contractor's selection of products for use in the Project.

B. Reference Standards and Definitions: Refer to Section 014200 “References” for the applicability of industry standards to products specified.

C. The Contractor’s Construction Schedule and the Submittal Schedule are specified under Section 013300 “Submittals Procedures”.

D. Administration procedures for handling requests for substitutions made after award of the Contract are specified under Section 012500 “Substitution Procedures”.

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. Carefully examine all the Contract Documents for requirements which affect the Work of this Section.

B. Other Specification Sections which directly relate to the Work of this Section include, but are not limited to, the following:

1. DIVISION 01 – GENERAL REQUIREMENTS; including all Sections contained therein.
2. Section 05 12 00 – Steel
3. Section 11 24 29 – Fall Protection Systems

1.04 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. Such terms are self-explanatory and have well-recognized meanings in the construction industry.

1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material", "equipment", "system", and terms of similar intent.
   a. "Named Products" are items identified by the manufacturer's product name, including make or model number or other designation, shown or listed in the manufacturer's published product literature that is current as of the date of the Contract Documents.
2. "Materials" are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
3. "Equipment" is a product with operational parts, whether motorized or manually operated, that require service connections, such as wiring or piping.

1.05 SUBMITTALS

A. Product List: Prepare a schedule in tabular form showing each product listed. Include the manufacturer's name and proprietary product names for each item listed.
   1. Coordinate product list with the Contractor's Construction Schedule and the Schedule of Submittals.
   2. Form: Prepare product list with information on each item tabulated under the following column headings:
      a. Related Specification Section number.
      b. Generic name is used in Contract Documents.
      c. Proprietary name, model number, and similar designations.
      d. Manufacturer's name and address.
      e. Supplier's name and address.
      f. Installer's name and address.
      g. Projected delivery date or time span of delivery period.
      h. Specific Product “Material Safety Data Sheet” reference.
   3. Submittal: Within twenty (20) days after the date of commencement of the Work, submit four (4) copies of an initial product list. Provide a written explanation for omissions of data and for known variations from Contract requirements.
      a. At the Contractor's option, the initial submittal may be limited to product selections and designations that must be established early in the Contract period.
   4. Architect's Action: The Architect will respond in writing to Contractor. No response constitutes no objection to listed manufacturers or products but does not constitute a waiver of the requirement that products comply with Contract Documents. The Architect's response will include the following:
      a. A list of unacceptable product selections containing a brief explanation of reasons for this action.

1.06 MATERIAL SAFETY DATA SHEETS MANUAL

A. Within ten (10) days after submission of Product List Schedule and before materials may be delivered to jobsite, submit one (1) or more 8 ½ x 11 paper size three (3) ring binder with the Product List Schedule and Material Safety Data Sheet for each product. Using the Product List Schedule as table of contents arrange Materials Safety Data Sheets in table of contents order.

B. Submit one (1) copy of materials Safety Data Sheet Manual to Clerk of the Works and Architect.
   1. Provide one (1) copy of Material Safety Data Sheets for insertion in the Manual for products listed on additional Product List Schedules.

C. This requirement is in addition to any obligation the Contractor must maintain Material Safety Data Sheets at job site or elsewhere.

1.07 QUALITY ASSURANCE

A. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.
   1. When specified products are available only from sources that do not, or cannot, produce a quantity adequate to complete project requirements in a timely manner, consult with the Architect to determine the most important product qualities before proceeding. Qualities may include attributes, such as visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources producing products that possess these qualities, to the fullest extent possible.

B. Compatibility of Options: When the Contractor is given the option of selecting between two (2) or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

1.08 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products according to 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.
   2. Coordinate delivery with installation time.
   3. Deliver products to the site in an undamaged condition in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
   4. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
   5. Store products at the site in a manner that will facilitate inspection.
   6. Store and maintain products within acceptable environmental ranges and conditions required by manufacturer’s instructions.

1.09 WORK CONDITIONS / SEQUENCE

A. If sub-contractors find that conditions are not appropriate for them to begin the work of their trade or if they are directed to perform their work out of sequence by the General Contractor or if the General Contractor directs sub-contractors to start and continue regardless of job conditions, the sub-contractor shall so notify the Architect in writing by certified mail immediately.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.

1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.

B. Product Selection Procedures: Product Selection is governed by the Contract Documents and governing regulations; not by previous project experience. Procedures governing product selection include the following:

1. Where products or manufacturers are specified by name, accompanied by the term "or equal" or "or approved equal", comply with the Contract Document provisions concerning "substitutions" to obtain approval for the use of an unnamed product.
2. Non-proprietary Specifications: When Specifications list products or manufacturers that are available and may be incorporated in the Work, they do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
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. The general overall performance of a Product is implied where the product is specified for a specific application.
    a. Manufacturers' recommendations may be contained in published product literature 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 the standards, codes, or regulations specified.
6. Visual Matching: Where Specifications require matching an established Sample, the Architect's decision will be final on whether a proposed product matches satisfactorily.
    a. Where no product available within the specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category, or for non-compliance 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 Architect will select the color, pattern, and texture from the product line selected.

PART 3 - EXECUTION

3.01 INSTALLATION OF PRODUCTS

A. Comply with manufacturers' instructions and recommendations for installation of products in the applications indicated. 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.

END OF SECTION

SECTION 01 74 00

WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. All the Contract Documents, including Drawings, General Conditions, Supplementary Conditions, and all Sections of Division 01 - General Requirements, apply to the Work of this Section.

1.02 SUMMARY

A. This Section includes administrative and procedural requirements for warranties required by the Contract Documents, including manufacturer’s standard warranties on products and special warranties.
   1. Refer to the General Conditions for terms of the Contractor's special warranty on workmanship and materials.

B. General Closeout requirements and procedures are included in Section 017000 “Project Closeout”.
   1. Specific requirements for warranties on products and installations specified to be warranted are included in the individual Sections of Divisions 2 through 16.
   2. Certifications and other commitments and agreements for continuing services to the Owner are specified elsewhere in the Contract Documents.

C. 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.

D. Separate Prime Contracts: Each prime contractor is responsible for warranties related to its own contract.

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. Carefully examine all the Contract Documents for requirements which affect the Work of this Section.

B. Other Specification Sections which directly relate to the Work of this Section include, but are not limited to, the following:
   1. DIVISION 01 – GENERAL REQUIREMENTS; including all Sections contained therein.
   2. Section 05 12 00 – Steel
   3. Section 11 24 29 – Fall Protection Systems

1.04 DEFINITIONS

A. Standard Product Warranties are pre-printed written warranties published by individual manufacturers for products and are specifically endorsed by the manufacturer to the Owner.

B. Special Warranties are 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.

1.05 WARRANTY REQUIREMENTS

A. Related Damages and Losses: When correcting warranted Work that has failed, remove, and replace construction that has been damaged because of such failure or must be removed and replaced to provide access for correction of warranted construction.

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 with an equitable adjustment for depreciation, as determined by the Architect.

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 a portion 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 selection of products with warranties not in conflict with the requirements of the Contract Documents.

E. The Owner reserves the right to refuse to accept the Work for the Project where a special warranty, certification or similar commitment to the Work or part of the Work is required, until the Contractor presents evidence that entities required to countersign such commitments are willing to do so.

1.06 SUBMITTALS

A. Submit written warranties to the Architect bound in the Project Closeout Manual as described in Section 017700 – Closeout Procedures. If the Architect's 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 Architect.

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 Architect within ten (10) 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 Architect, for approval prior to final execution.

C. Prepare a written document utilizing the appropriate form, ready for execution by the Contractor, or by the Contractor and subcontractor, supplier, or manufacturer. Submit a draft to the Architect for approval prior to final execution.

1. Refer to individual Sections of Divisions 2 through 23 for specific content requirements and particular requirements for submitting special warranties.

PART 2 – PRODUCTS NOT USED

PART 3 - EXECUTION

3.01 WARRANTIES

A. Schedule: Provide warranties on products and installations as specified in the appropriate Sections of the Specification.

1. When products, equipment, or materials fail and/or continue to be a repetitive source of problems, with no satisfactory resolution (e.g. HVAC Equipment) during the warranty period, the Owner reserves the right to extend the period of the initial warranty period. If no satisfactory resolution can be reached during this resolution period, then the Owner reserves the right to demand the full replacement of the item in question, including all associated work required to execute this replacement at no cost to the Owner.

END OF SECTION

SECTION 017700

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 GENERAL PROVISIONS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections are hereby made a part of this Section.

1.02 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout including, but not limited to, the following:

1. Inspection procedures.
2. Contractor's monetized punch list.
3. Project Record Document Submittal.
4. Project Closeout Manual Submittal.
5. Final cleaning.

B. Close out requirements for specific construction activities are included in the appropriate Sections in Divisions 2 through 22.

1.03 RELATED WORK SPECIFIED ELSEWHERE

A. Carefully examine all the Contract Documents for requirements which affect the Work of this Section.

B. Other Specification Sections which directly relate to the Work of this Section include, but are not limited to, the following:

1. DIVISION 01 – GENERAL REQUIREMENTS; including all Sections contained therein.
2. Section 05 12 00 – Steel
3. Section 11 24 29 – Fall Protection Systems

1.04 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request for which the architect shall review and/or approve.

1. The contractor shall prepare and submit a monetized punch list. No exceptions will be considered.
2. In the Application for Payment that coincides with, or first allows, the date Substantial Completion is claimed to show 100 percent completion for the portion of the Work claimed as substantially complete.
    a. If 100 percent completion cannot be shown, the contractor shall provide his monetized punch list including, but not limited to, the following:
        1) A list of incomplete items.
        2) The value of each incomplete item.
        3) A Reason each item is not complete.
3. Advise the Owner of pending insurance changeover requirements.

4. Submit application for reduction of retainage.
5. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents, as further described below.
6. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
7. Submit record drawings (red line asbuilt drawings and final CAD drawings reflecting the red-line drawing markups), maintenance manuals, damage or settlement surveys, and similar final record information, as further described below.
8. Deliver tools, spare parts, extra stock, and similar items.
9. Make final changeover of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of changeover in security provisions.
10. Complete startup testing of systems and instruction of the Owner's operation and maintenance personnel. Discontinue and remove temporary facilities from the site, along with mockups, construction tools, and similar elements.
11. Complete final cleanup requirements, including touch-up painting.
12. Touch-up and otherwise repair and restore, marred, exposed finishes.

B. Inspection Procedures: On receipt of a request for inspection, the Architect will either proceed with inspection or advise the Contractor of unfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.
   1. The Architect will repeat inspection when requested and assured that the Work has been substantially completed.
   2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.05 FINAL ACCEPTANCE

A. Preliminary procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.
   1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted.
   2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.

3. Submit a certified copy of the Architect's final inspection list of items to be completed or corrected, endorsed, and dated by the Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by the Architect.
4. Submit consent to surety of final payment.
5. Submit a final liquidated damages settlement statement.
6. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Re-inspection Procedure: The Architect will re-inspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to the Architect.

1. Upon completion of re-inspection, the Architect will prepare a certificate of final acceptance. If the Work is incomplete, the Architect will advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
2. If necessary, the re-inspection will be repeated.

1.06 RECORD DOCUMENTS

A. General: Maintain a complete set of Record Documents at the site. Do not use Record Documents for construction purposes. Provide access to Record Documents for Architect and Owner's reference. Generally, without limitation, Record Documents shall include the following:

1. Record Drawings: Maintain a clean set of Contract Drawings and shop drawings, updated weekly to show actual installation. Give particular attention to concealed items.
2. Record Project Manual: Maintain a clean Project Manual, including Addenda, Change Orders, Architect Field Orders, and other modifications, updated weekly to show changes in actual work performed. Give particular attention to substitutions, selection of options, and similar information.
3. Record Product Data: Maintain one copy of each approved Product Data submittal, updated weekly to show changes from products delivered, work performed, and from manufacturer's recommended installation instructions.
4. Record Samples: Maintain one copy of each approved Sample submitted.
5. Record Field Test Reports: Maintain one copy of each Field Test Report.
6. Daily Progress Reports: Maintain one copy of each Daily Progress Report.

B. Maintenance of Documents and Samples: Store documents and samples in Contractor's field office apart from documents used for construction. Provide files and racks for document storage. Provide locked cabinet or secure storage space for storage of samples. File documents and samples in accordance with CSI format. Maintain documents in clean, dry, legible condition and in good order. Do not use Record Documents for construction purposes. Always make documents and samples available for inspection by Architect.

C. Recording: Label each document "PROJECT RECORD" in neat large, printed letters. Record all information concurrently with the progress of construction. Do not conceal any work until the required information is recorded.

D. Drawings: Legibly update all Drawings to record actual construction (and subsequently update CAD files accordingly), including the following:
   1. Field changes of dimension and detail.
   2. Changes made by Field Order or Change Order.
   3. Details not in original Contract Documents.

E. Specifications and Addenda: Legibly mark each Section to record:
   1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment installed.
   2. Changes made by Field Order or by Change Order.

F. Submittal: At Contract Closeout, deliver Record Documents to Architect. Accompany submittal with transmittal letter in duplicate, indicating the date, Project title and number, Contractor's name and address, title and number of Record Document, and signature of Contractor or his authorized representative.

1.07 PROJECT CLOSEOUT MANUAL

A. General: Prepare and submit Project Closeout Manual as specified in this Section and as approved by the Architect for format. Organize data into suitable sets, bound and indexed using the specification's Table of Contents as a guide. Mark appropriate identification on front and spine of each binder. Include the following types of information:
   1. Contact Persons' Names
   2. Telephone Numbers
   3. Pager or Beeper Numbers
   4. Cellular Phone Numbers
   5. Description of each warranty item covered.
   6. Instructions Describing Protocol for Requesting Warranty Service.
   7. Emergency Numbers – 911, Fire, Rescue, Police.
   8. Utility Company Contacts.

B. Instruct Owner's personnel in the use and layout of manual.

C. Format of Data: Prepare data in form of user's guide-type manual for use by Owner's personnel. Format shall be 8-1/2 in. x 11 in., 20-pound minimum, white, typed pages. Text shall be printed or neatly typewritten. Drawings shall be bound with text, with reinforced punched binder tabs. Fold larger drawings to the size of text pages. Provide flyleaf for each separate section. Provide typed descriptions of each product and piece of major equipment. Provide indexed tabs to divide sections. Provide reference in each section to other binders for actual Operating and Maintenance Data. Coordinate Project Closeout Manual with Operating and Maintenance Data.
   1. Binders: Provide commercial quality three-ring binders with durable and cleanable plastic covers, with maximum ring size of three (3) inches. Only use one (1) binder for this manual.
   2. Binder Cover: Identify each volume with typed or printed title "PROJECT CLOSEOUT MANUAL". List title of Project, identity of separate structure as applicable, and identity of general subject matter covered in the manual.

D. Submittal of Project Closeout Manual: Submit two copies of preliminary draft of proposed formats and outlines of contents prior to start of Work.
   1. The Architect will review the draft and return one copy with comments.
   2. Submit one copy of complete data in final form 15 days prior to final inspection or acceptance. The copy will be returned after final inspection or acceptance, with comments.

3. Submit three copies of approved data in final form ten days after final inspection or acceptance.

1.08 OPERATING AND MAINTENANCE DATA

A. General: Prepare and submit Operating and Maintenance Data as specified in this Section and referenced in other pertinent Sections of Specifications. Organize Operating and Maintenance Data into suitable sets, bound and indexed. Mark appropriate identification on front and spine of each binder. Include the following types of information:

1. Emergency instructions.
2. Spare parts list.
3. Copies of warranties.
4. Wiring diagrams.
5. Inspection procedures.

B. Instruct Owner's personnel in maintenance of products and in operation of equipment and systems.

C. Preparation of data shall be done by personnel trained and experienced in maintenance and operation of described products.

D. Format of Data: Prepare data in the form of instructional manual for use by Owner's personnel. Format shall be 8-1/2 in. x 11 in., 20-pound minimum, white, typed pages. Text shall be manufacturer's printed data, or neatly typewritten. Drawings shall be bound with text, with reinforced punched binder tabs. Fold larger drawings to the size of text pages. Provide flyleaf for each separate product or each piece of operating equipment. Provide typed description of product and major component parts of equipment. Provide indexed tabs.

1. Binders: Provide commercial quality three-ring binders with durable and cleanable plastic covers, with maximum ring size of two (2) inches. When multiple binders are used, correlate the data into related consistent groupings.
2. Binder Cover: Identify each volume with typed or printed title "OPERATING AND MAINTENANCE INSTRUCTIONS". List title of Project, identity of separate structure as applicable, and identity of general subject matter covered in the manual.

E. Content of Manual: Neatly typewritten table of contents for each volume, arranged in systematic order, indicating Contractor name and address, and a list of each product, indexed to content of the volume. Provide a separate list with each product, name, address, and telephone number of subcontractor or installer, and local source of supply for parts and replacement.

1. Provide in each volume a copy of each warranty, bond, and service contract issued.

F. Submittal of Maintenance and Operating Manual: Submit two copies of preliminary draft of proposed formats and outlines of contents prior to start of Work.

1. The Architect will review the draft and return one copy with comments.
2. Submit one copy of complete data in final form 15 days prior to final inspection or acceptance. The copy will be returned after final inspection or acceptance, with comments.
3. Submit three copies of approved data in final form ten days after final inspection or acceptance.

1.09 INSTRUCTION OF OWNER'S PERSONNEL

A. Prior to final inspection or acceptance, fully instruct Owner's designated operating and maintenance personnel in the operation, adjustment and maintenance of products, equipment and systems.

B. The operating and maintenance manual shall constitute the basis of instruction.
   1. Review contents of manual with personnel in full detail to explain all aspects of operation and maintenance.

1.10 WARRANTIES AND BONDS

A. General: Assemble warranties, bonds, and service and maintenance contracts, executed by each of the respective manufacturers, suppliers, and subcontractors into the Project Closeout Manual.

B. Refer to Section 01 74 00 – Warranties and Bonds for additional requirements.

1.11 FINAL CLEANING

A. General: General cleaning during construction operations is specified as Work of Section 01 50 00 – Temporary Facilities & Controls.

B. Employ experienced workers or professional cleaners for Final Cleaning. Clean each surface to the condition expected in a normal building cleaning and maintenance program. Comply with manufacturer's instructions and recommendations.

PART 2 – PRODUCTS

2.01 CLEANING MATERIALS

A. General: Provide cleaning materials that will not create hazards to health or property and will not damage surfaces or finishes.

B. Use cleaning materials and methods recommended by the manufacturer of surface to be cleaned.

C. Use cleaning materials only on surfaces recommended by cleaning material manufacturers.

2.02 FINAL CLEANING

A. Employ skilled workers for final cleaning.

B. Clean and restore general work areas and adjoining surfaces and other work soiled or damaged during installation; replace work damaged beyond successful restoration. Where performance of subsequent work could result in damage to complete unit or element, provide protective covering and other provisions to minimize potential for damage.

C. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed interior and exterior surfaces.

D. Special Cleaning for Windows: New glass installed as part of this project shall be thoroughly cleaned inside and out by professional window cleaners at the conclusion of all other work and prior substantial completion. All damaged, broken, or scratched items shall be replaced without costs to Owner, as described under the appropriate Trade Section(s).

E. Complete the following cleaning operations prior to requesting inspection for Certification of Substantial Completion:
   1. Concrete and masonry shall be cleaned free of all foreign matters. If, in the opinion of the Architect, further cleaning of specific areas is required they shall be scrubbed with water or other cleaning agents. Acid cleaners shall not be used, except as may otherwise specifically be permitted in the trade sections.
   2. Metal surfaces, hardware, fixtures, appliances, equipment, and similar items shall be cleaned free of all foreign matters and, if necessary, shall be lightly scrubbed at specific stains with

clean water, mild soap, and soft rags, thoroughly rinsed and wiped with clean, soft white rags. Abrasive cleaners shall not be used.

3. Architectural woodwork shall be thoroughly dusted and cleaned of all stains, spots, etc., using methods and cleaning agents, which will not damage the various finishes.
4. Ceramic tile, porcelain, and other surfaces with integral finishes, shall be washed with clean water, mild soap, and soft rags, thoroughly rinsed, and then wiped with clean, soft white rags. Abrasive cleaners shall not be used.
5. Resilient flooring shall be given final cleaning and buffing.
6. Carpeting shall be vacuum cleaned and shall have all spots and stains removed.
7. Painted surfaces shall be cleaned free of all foreign matters, and if necessary, shall be lightly scrubbed at specific stains with clean water, mild soap, and soft rags, thoroughly rinsed, and wiped with clean, soft white rags.
8. All advertising matters and temporary instructional material shall be removed from exposed surfaces throughout.
9. Remove labels that are not permanent.
10. Clean interior and exterior finishes to a clean, dust-free condition. Remove stains, films, and similar foreign substances.
11. Vacuum and mop hard floor surfaces.
12. Clean plumbing fixtures to a sanitary condition.
13. Clean site areas of rubbish, litter, and other foreign substances.
14. Sweep paved areas broom clean, rake ground surfaces clean.

F. Before final completion and Owner-occupancy, inspect sight-exposed interior and exterior surfaces and work areas to verify that Work is clean.

END OF SECTION

SECTION 051200

STRUCTURAL STEEL

PART 1 - GENERAL

1.1 GENERAL

Work of this Section shall conform to requirements of Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections.

1.2 SCOPE

The work covered by this Section shall include all labor, material, equipment, permits, engineering and other services necessary for the fabrication and installation of structural steel and related work, complete, in accordance with the Drawings and as specified herein.

1.3 RELATED WORK SPECIFIED IN OTHER SECTIONS

Submittals	Division 1
Quality Control	Division 1
Quality Assurance: Structural Testing and Inspection	Section 014500

1.4 CODES AND STANDARDS

A. Building Code: Structural steel work shall conform to the requirements of the Building Code identified on the Structural General Notes, and OSHA requirements, except where more stringent conditions or criteria occur in the standards referenced below and on the Drawings.

B. Standards:

1. American Institute of Steel Construction (ANSI/AISC 360) "Specification for Structural Steel Buildings" per Structural General Notes.

2. American Institute of Steel Construction (AISC 303), "Code of Standard Practice" (COSP). The 2022 version of the COSP shall apply in lieu of any other version of the COSP referenced by the steel code referenced by the Authority Having Jurisdiction (AHJ).

   a) Where a conflict exists between the Code of Standard Practice and the Contract Documents, the Contract Documents shall govern.
   b) For item 1.4, the 2D design drawings govern unless stated otherwise in an executed digital model exchange agreement.
   c) Item 4.4 shall be replaced with the requirements of the project Specifications.

d) The first sentence of item 4.5 shall be revised from "…fabrication and erection documents shall be delivered to the fabricator in a timely manner" to "…fabrication and erection documents shall be delivered to the fabricator under the terms of the agreement for that work as specified in the contract documents".
e) The second paragraph of item 7.10.3 shall be revised from "… ODRD or the ODRC" to "ODRC or as indicated in the Contract Documents"
f)

3. American Welding Society, AWS D1.1, "Structural Welding Code".
4. Research Council on Structural Connections (RCSC) - "Specification for Structural Joints Using High Strength Bolts".
5. American Society for Testing and Materials "ASTM Standards in Building Codes", various standards as referenced herein.
6. The Society for Protective Coatings (formerly Steel Structures Painting Council, "SSPC") "Steel Structures Painting Manual".

C. Definitions:

1. The term "Contract Documents" in this Specification is defined as the design Drawings and the Specifications.
2. The term "SER" in this Specification is defined as the Structural Engineer of Record for the structure in its final condition.
3. The term "Design Professionals" in this Specification is defined as the Owner's Architect and SER.
4. The term "Contractor" in this Specification is defined to include any of the following: General Contractor and their sub-contractors, Construction Manager, Structural Steel Fabricator or Structural Steel Erector.
5. The term "Heavy Sections" in this Specification is defined to include hot rolled steel shapes with flanges exceeding 1 1/2 inches (38mm) in thickness and built up cross sections with plates exceeding 2 inches (50mm) in total thickness.
6. The term "High Restraint Weld" describes welds in which there is almost no freedom of movement for members joined due to geometry or material thickness.
7. The term "Testing Agency" in this Specification is defined as an independent testing and inspection service engaged by the Owner for quality assurance testing and inspection of structural construction in accordance with applicable building code provisions and any additional activities listed in the Contract Documents.
8. The terms "for record" and "submit for record" in this Specification are defined as Contractor submittals that do not require a response from the Design Professionals.
9. The term "Working Days" in this Specification is defined as Monday through Friday, except for federal or state holidays.
10. The term "Delegated Design" in this Specification is defined as a scope of work that meets performance and design criteria established in the Contract Documents and is to be completed by the Contractor's licensed engineer.

1.5 CONTRACTOR QUALIFICATIONS

A. Qualification Data: Submit for record qualification data (personnel and firm resumes, and project lists with references) for the Structural Steel Fabricator ("Fabricator"), Structural Steel Detailer ("Detailer"), Contractor's Engineer(s) and Structural Steel Erector ("Erector").

B. The Fabricator shall have 10 years of comparable experience in installations of this type and shall employ labor and supervisory personnel familiar with the type of installation, experienced in fabrication and erection of structural steel for projects of similar size and complexity. At the time of bid the Fabricator shall be AISC certified to the Standard for Steel Building Structures (BU) and must submit proof of these qualifications. The Fabricator's qualifications shall be subject to review by the Design Professionals and Owner.

C. The Detailer shall have 10 years experience preparing detailed steel shop drawings and CNC downloads for structures of this type and complexity. The detailer's qualifications shall be subject to review by the Design Professionals and Owner.

D. The Contractor's Engineer(s) shall be qualified to perform the type of work required by the project. The Engineer shall be a Professional Engineer licensed in the state where the project is located. The Contractor's Engineer(s) shall have 10 years of experience being in responsible charge of work of this nature. The proposed Engineer(s) shall be subject to approval of Design Professionals and Owner.

E. The Erector shall have 10 years of successful experience erecting structural steel for structures of this type and complexity in the region of the project. At the time of bid the Erector shall be an AISC Certified Erector (CSE) and must submit documentation of this qualification.

F. Welding: Qualify the welding procedures, shop welders, field welders, welding operators and tackers in accordance with AWS D1.1 and for the following periods of effectiveness of certification:

1. Certification and qualification, including period of effectiveness of welding personnel shall be as specified by AWS D1.1. Certification shall remain in effect for duration of work provided welders are continuously engaged in performing the type of welding for which they are certified, unless welders fail to perform acceptable welding, as determined by the Testing Agency. Certification and re-certification of welding personnel is subject to verification by the Testing Agency. Re-testing for re-certification will be the Contractor's responsibility.

1.6 SUBMITTALS

A. Required Submittals - Where the SUBMITTALS section of this Specification is in conflict with Division 1 Submittals, the more stringent requirements for the Contractor apply. Required submittal items are listed here; see below for detailed requirements. Do not submit items not requested. Reproduction of structural drawings for shop drawings is not permitted.

(1) Submittal Schedule
(2) Shop Drawings and Erection Drawings
(3) Submittal Letters
(4) Pre-construction Survey
(5) Quality Control Program
(6) Product Data
(7) Samples
(8) Welding Procedures Specification (WPS)
(9) Welder Certifications
(10) Mill Reports
(11) As-built surveys

1. **Submittal Schedule**: The contractor shall submit for action a typical connection design calculation and shop drawing submission schedule at least twenty (20) working days prior to commencing submission of shop drawings.

   a) This schedule shall include a list, in order of date to be submitted, of all drawings and other required submittal items scheduled to be submitted. The schedule shall list the proposed submittals for each week, including but not limited to the number of calculation sheets, erection drawings, and piece drawings, as well as their formats. Once shop drawing submissions have commenced any modification or addition to this schedule must be submitted for action at least twenty (20) working days before the modification or addition is proposed to take place.
   b) If at any time the total number of connection design calculations, erection drawings and shop drawings received in any one week period exceeds the amount in the approved schedule by more than 10% for that week, the Design Professionals have the right to add two days to the average turnaround time for each 20% increment in excess of the scheduled quantity for that week's submissions. For example if the weekly total exceeds the schedule by 10% to 20%, two days may be added; if it is exceeded by 21% to 40%, four days may be added. The return dates for subsequent submittals may be extended based on the additional review time stated above.
   c) For the purposes of developing a schedule, assume the following review rates:
      Calculations – 100 – 8 ½' x 11" sheets per week
      Shop drawings – 300 pieces per week

2. **Shop Drawings and Erection Drawings** (including Field Work drawings): Submit for action required **[connection calculations,]** shop drawings and erection drawings for all structural steel indicated on the Contract Documents.

   a) Material shall not be fabricated or delivered before the shop and erection drawings have been approved or approved as noted by the Design Professionals and returned to the Contractor.

b) Structural Steel Shop Drawings: Submitted shop drawings shall include layouts and details for each member showing the steel type and grade, size, connections, cuts, copes, holes, bolts, welds, surface treatments (cleaning, shop paint, etc.) and provisions for the connection of other work. Steel type, grade and size for all attached elements shall also be shown.

c) Shop and erection drawings shall contain complete dimensional and geometric information, based on established dimensions shown on Contract Documents, and shall not be scaled from Contract Documents. The shop drawings shall clearly distinguish between shop and field welds and bolts, identify pretensioned high strength bolts and identify surface preparation requirements at slip critical connections.

d) Welds: All welds shall be indicated by standard welding symbols in "AWS A2.4 “Standard Symbols For Welding, Brazing, And Nondestructive Examination" or as accepted by the SER. Shop and erection drawings shall show the size, length, and type of each weld, including the electrode type to be used.

e) Bolts: Details for bolt assemblies shall indicate bolt size, length, type and the presence, type and location of washers where required as part of the assembly; distinguish between N and X bolts, distinguish between slip-critical and bearing bolts; specify approved slip critical coatings; and distinguish between shop and field bolts. Also, indicate bolt orientation where required by the Contract Documents.

f) Erection Drawings: The erection drawings shall include plans showing exact locations of base and bearing plates, and/or anchor rods and other embedded items. All field connections not specifically shown on shop drawings shall be shown on erection drawings, including field bolt size, type, number, location and any special installation requirements, and field weld size, type, length and location.

3. **Preconstruction Survey**: Submit for record. Where interface with existing construction occurs, before related shop drawings are prepared survey the existing construction and submit the survey prepared by a professional surveyor employed by the Contractor to the Design Professionals. For all steel construction, before steel erection commences, perform and submit to the Design Professionals a complete survey for position and alignment at all points where construction by other trades will support steel elements, including but not limited to pockets, embedded plates, anchor rods and base plates. Include plan location positions relative to the building gridlines and elevations of bearing surfaces and tops of bolts relative to building Datum elevation. Immediately notify the SER of elements that are not within tolerance.
4. **Quality Control Program**: Submit for record complete details of the Contractor's quality control program including the names of the personnel responsible for this work.
5. **Product Data**: Submit for action manufacturers' specifications, test reports and applicable standards for all products listed under Part 2: Products. Standard literature shall be edited to suit job conditions.

6. **Samples**: Submit for record (2) samples each, (2) of shop painted products and (2) of field touch-up painted products. Samples shall be steel material.
7. **Welding Procedures:** Submit for record all Welding Procedure Specifications (WPS) and Procedure Qualification Records (PQR):

    a) All Welding Procedures shall be Signed and Sealed by the Contractor's Engineer or Certified Welding Engineer, confirming all essential variables meet design requirements as applicable on the Contract Documents and weld electrode manufacturer's recommendations.
    b) The Contractor's Engineer or Certified Welding Engineer shall develop all Special Welding Procedures for Heavy Sections and High Restraint Welds. Special Procedures shall be Signed and Sealed by the Contractor's Engineer or Certified Welding Engineer. Use of AWS D1.1, Annex E forms are recommended for Special Procedure submittals.

8. **Welder Certification**: Submit for record certification that the welders have passed qualification tests acceptable to the governing authority using AWS procedures.

    a) A certification shall be submitted in standard AWS format.
    b) Each certification shall state that the welder has been doing satisfactory welding of the required type within the six-month period prior to the subject work.

    For any welder whose period of certification effectiveness has lapsed or whose workmanship is subject to question in the opinion of the Design Professionals or Testing Agency, immediate testing for recertification will be required. Tests, when required, shall be conducted at the sole expense of the Contractor.
9. **Mill Reports**: Submit for record certified copies of all mill reports to the Design Professionals and to the Testing Agency, covering the chemical and physical properties of all structural steel and accessories (as defined in this Specification) for the project. Where required on the Contract Documents or by the AISC Code, reports shall include results of Charpy V-notch tests.

    a) Such certificates shall be obtained from the mills producing the steel and shall certify in a cover letter submitted with the certificates, that the steel meets the minimum requirements as to physical properties, inspection, marking and tests for structural steel as defined by the current edition of the relevant ASTM Standard Specifications. Any steel that does not meet the ASTM requirements must be clearly identified in a cover letter submitted with the certificates.
    b) Prior to commencing steel erection, the contractor shall deliver certificates to the Owner in number and form as may be required by the local Building Department or other local and State agencies having jurisdiction.

10. **As-Built Surveys**: Execute and submit for record a comprehensive survey of steel structure at each level adequate to assess if the structure has been built within the tolerances specified in the Contract Documents. Each certified survey, performed by a professional surveyor employed by the Contractor, shall be submitted to the Contractor's Engineer for their approval before proceeding to the next stage of erection. If deviations from the tolerances are discovered, the Contractor shall present corrective measures to the Design Professionals within 48 hours of completion of that stage of erection. Upon completion of steel erection, submit the complete package of steel surveys for record to the Design Professionals and the Owner.

B. Submittal Process

1. Submittal of shop and erection drawings and other submittals by the Contractor shall constitute Contractor's representation that the Contractor has verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each drawing with other Drawings and other trades. The Contractor shall place their shop drawing stamp on all submittals confirming the above.
2. Shop and erection drawings: Submit in complete packages so that individual parts and the assembled unit may be reviewed together. This Specification Section and the applicable drawings used in the development of the shop and erection drawings shall be referenced on each shop and erection drawing to facilitate checking. Unless the piece marks are self-indexing, furnish index sheets with the shop drawings, relating piece marks for all beam, girder and column details to the sheet numbers on which they are located.
3. The Contractor shall submit to the Design Professionals one (1) electronic copy for shop drawing review. The naming convention of each drawing must follow the submittal numbering system and include the submittal #, specification #, revision # and drawing # in the prefix of the drawing name.
4. The Contractor shall allow at least ten (10) working days between receipt and release by the SER for the review of shop and erection drawings and submittals other than connection design calculations. The Contractor shall allow at least fifteen (15) working days between receipt and release by the SER for the review of connection design calculations.
5. All modifications or revisions to submittals, shop drawings, connection design calculations and erection drawings must be clouded, with an appropriate revision number clearly indicated. The following shall automatically be considered cause for rejection of the modification or revision whether or not the drawing has been approved by the Design Professionals:

    a) Failure to specifically cloud modifications
    b) Failure to submit calculations for the modifications
    c) Unapproved revisions to previous submittals
    d) Unapproved departure from Contract Documents

6. The Contractor shall deliver to the Design Professionals at the completion of the job two (2) electronic versions of the final as-built shop drawings on a CD-ROM or other media acceptable to the Design Professionals.
7. Resubmittals: Completely address previous comments prior to resubmitting a drawing. Resubmit only those drawings that require resubmittal.
8. Resubmittals Compensation: The Contractor shall compensate the Design Professionals for submittals that must be reviewed more than twice due to contractors' errors. The Contractor shall compensate the Design Professionals at the standard billing rates plus out-of-pocket expenses incurred at cost + 10%.

C. SER Submittal Review

1. The review of connection design and the review and approval of shop and erection drawings and other submittals by the Design Professionals shall be for general conformance with the design intent of the work and with the information given in the Contract Documents only and will not in any way relieve the Contractor or the Contractor's Engineer from:

   a) Responsibility for all required detailing.
   b) Responsibility for the proper fitting of construction work in strict conformance with the contract requirements.
   c) The necessity of furnishing material and workmanship required by contract Drawings and Specifications which may not be indicated on the shop and erection drawings.
   d) Conforming to the Contract Documents.
   e) Coordination with other trades.
   f) Control or charge of construction means, methods, techniques, sequences or procedures, for safety precautions and programs in connection with the work.

2. TYPE 1 – Structural Submittal Review Stamp: For shop drawings for building elements designed by the SER, the responses on the shop drawing review stamp used by the SER require one of the following actions:

   a) APPROVED indicates that the SER has found that the information presented on the shop or erection drawing appears to conform to the requirements of the Contract Documents. Fabrication, manufacture or construction of the elements of work shown in the shop drawing may proceed, provided that work is in compliance with the Contract Documents.
   b) APPROVED AS NOTED indicates that the SER requires the shop or erection drawing to be corrected to reflect the notes and comments shown. Fabrication, manufacture or construction of the elements of work shown in the shop drawing may proceed, provided that work is in compliance with the notations shown on the shop drawings and the Contract Documents. Promptly resubmit the corrected shop or erection drawing for record.

c) REVISE and RESUBMIT indicates that the SER requires resubmission of the shop or erection drawing after correction per notes and comments. None of the elements of work shown on the shop drawing shall be fabricated, manufactured or constructed until the Contractor has received a returned shop drawing marked Approved or Approved as Noted.

d) NOT APPROVED indicates that the shop or erection drawing does not conform to the Contract Documents and must be extensively revised before re-submittal. None of the elements of work shown on the shop drawing shall be fabricated, manufactured or constructed until the Contractor has received a returned shop drawing marked Approved or Approved as Noted.

3. TYPE 2 – Delegated Design Review Stamp: For submittals for building elements which are not designed by the SER but are delegated design items, or for items that do not form part of the completed structural system but impose loads on the structure, or for construction items or activities which have an effect on the final structure. The responses on the stamp used by the SER require one of the following actions:

a) NO EXCEPTIONS indicates that the SER has found that the information presented on the submittal appears to conform to the requirements of the Contract Documents. Fabrication, manufacture or construction of the elements of work shown in the shop drawing may proceed, provided that work is in compliance with the Contract Documents.

b) EXCEPTIONS NOTED indicates that the SER requires the submittal be corrected to reflect the notes and comments shown. Fabrication, manufacture or construction of the elements of work shown in the shop drawing may proceed, provided that work is in compliance with the notations shown on the shop drawings and the Contract Documents. Promptly resubmit the corrected document for record.

c) REJECTED indicates that the SER requires resubmission of the submittal after correction per notes and comments. None of the elements of work shown on the shop drawing shall be fabricated, manufactured or constructed. Contractor to revise and resubmit until SER response of No Exceptions or Exceptions Noted is received.

D. Substitution Request

1. Requests for any departure from Contract Documents must be submitted in writing by the Contractor and accepted in writing by the Design Professionals, prior to receipt of submittals.
2. All substitutions must be requested using the structural substitution request form included at the end of this section. Acceptance using the structural substitution request form indicates acceptability of the structural concept only. Contractor must submit shop drawings reflecting accepted substitutions for review in accordance with this Specification. The

structural substitution request form, even if accepted, does not constitute a change order.

3. Such substitutions or modifications, if acceptable to the Design Professionals shall be coordinated and incorporated in the work at the sole expense of the Contractor.
4. The acceptance by the Design Professionals of a specific and isolated request by the contractor to deviate from these requirements does not constitute a waiving of that requirement for other elements of, or locations in the project, unless specifically addressed as such and permitted by the Design Professionals in writing.
5. Compensation for Additional Services: Should additional work by Design Professionals such as design, documentation, meetings and/or site visits be required which are necessitated for the review and/or incorporation of the Contractor-requested substitution, including indirect effects on other portions of the work, the Contractor is responsible for paying for additional work performed by the Design Professionals at the standard billing rates plus out-of-pocket expenses incurred at cost + 10%. Additional costs for testing and inspection by the Owner shall also be compensated by the Contractor.
6. Contractor is responsible for means and methods and any impacts on other portions of the work that may arise from this substitution.

E. Request for Information (RFI)

1. RFI shall originate with the Contractor. RFI submitted by entities other than that Contractor will be returned with no response.
2. Limit RFI to one subject.
3. Submit RFI immediately upon discovery of the need for interpretation or clarification of the Contract Documents. Submit RFI within timeframe so as not to delay the Construction Schedule while allowing the full response time described below.
4. The response time for answering an RFI depends on the category in which it is assigned.

    a) Upon receipt by the SER, each RFI will be assigned to one of the following categories:

        i. No cost clarification
        ii. Shown in Contract Documents
        iii. Change to be issued in future bulletin
        iv. Previously answered
        v. Information needs to be provided by others.
        vi. Request for corrective field work
        vii. Request for substitution

    b) RFIs in the first five categories listed above will be turned around by the SER on average of five (5) working days.
    c) RFIs in the last two categories listed above will be immediately rejected and must be submitted as submittals or requests for substitution.

1.7 TEMPORARY SUPPORT OF STRUCTURAL STEEL FRAME

The structure as shown on the Contract Documents is designed to withstand the design loads only when all structural elements are installed and fully connected. The contractor shall be responsible for the analysis of all components and assemblies for stresses and displacements that may be imposed by fabrication, shipping, handling, erection, temporary conditions, construction loads, etc. The analysis of such shall be performed by the Contractor's Engineer.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Unload all structural steel promptly upon arrival and store in an area designated and approved by the Owner at the site of the work. The Contractor shall be responsible for any charges from failure to unload material promptly.

B. Storage: Store structural steel to drain properly. Provide weep holes and clean out as required to keep steel free from water. Provide adequate protection and shoring to prevent distortion and other damage. Store structural steel on timber; do not lay on mud, directly on ground or cinders, or otherwise handle in a manner that damages finishes. Stored sections shall be readily accessible for inspection.

C. Store fasteners in a protected place.

D. Welding materials to be in moisture resistant, undamaged package. Maintain packages effectively sealed until electrode is required for use. Storage and handling shall be per AWS D1.1.

1.9 CONNECTION DESIGN AND DETAILING CONFERENCE

A. At least 20 working days prior to starting connection design and detailing, the Fabricator shall hold a meeting to verify all connection design assumptions and procedures and shop drawing preparation and submittal procedures.

B. The Contractor shall prepare an agenda and require responsible representatives of every party who is concerned with the connection design and detailing to attend this meeting, including but not limited to:

1. General Contractor
2. Fabricator
3. Detailer
4. Design Professionals
5. Erector

C. The Fabricator shall prepare an agenda prior to the meeting, and shall distribute meeting minutes to all parties within 5 working days of the meeting.

1.10 STRUCTURAL STEEL PRE-ERECTION CONFERENCE:

A. At least twenty (20) working days prior to the commencing of steel erection the Contractor shall hold a meeting to review the detailed requirements of the steel erection.

B. The Contractor shall prepare an agenda and require responsible representatives of every party who is concerned with the steel erection to attend the conference, including but not limited to the following:

1. General Contractor/Construction Manager
2. Steel Erector / Steel Fabricator
3. Erector's Surveyor
4. Roof Deck Contractor
5. All Testing and Inspection Agencies
6. Design Professionals
7. Owner
8. Precast or Cladding Contractor as appropriate.

C. Minutes of the meeting shall be recorded, typed and distributed by the Contractor to all parties listed above within 5 working days of the meeting.

D. The minutes shall include a detailed outline of the erection procedure including a schedule of milestone dates for surveys and sign-offs on erection stages which represents an agreement reached by all parties involved. It shall also include the surveying program and submission schedule for approval.

E. Notwithstanding any provision of the Specification, the SER shall not be responsible for and not have charge over any safety programs or precautions at the site of the Project.

1.11 QUALITY ASSURANCE BY OWNER'S TESTING AGENCY

A. See Section 014500.

1.12 QUALITY CONTROL BY CONTRACTOR

A. The Contractor shall provide a program of quality control to ensure that the minimum standards specified herein are attained.

B. The Owner's general review during construction and activities of the Testing Agency are undertaken to inform the Owner of performance by the Contractor but shall in no way replace or augment the Contractor's quality control program or relieve the Contractor of total responsibility for quality control.

C. The Contractor shall immediately notify the Design Professionals of any deficiencies in the work which are departures from the Contract Documents which may occur during construction. The Contractor shall propose corrective actions and their recommendations in writing and submit them for review by the Design Professionals. After proposed corrective action is accepted by the Design Professionals and Owner, the Contractor shall correct the deficiency at no cost to the Owner. Where the Contractor requests that the Design Professionals develop the corrective actions or review corrective actions developed by others, the Design Professional shall be compensated as outlined in the OBSERVATIONS AND CORRECTIONS BY DESIGN PROFESSIONALS section of this Specification.

1.13 OBSERVATIONS AND CORRECTIONS BY DESIGN PROFESSIONALS

A. Observations: The Design Professionals will observe the construction for general compliance with the provisions of the Contract Documents during various phases of construction.

B. Corrections by Design Professionals: See Part 3 - CORRECTIVE MEASURES section of this Specification.

1.14 PERMITS AND WARRANTY

A. Permits: The Contractor shall apply for, procure, renew, maintain, and pay for all permits required by City, State, or other governing authorities, necessary to execute work under this Contract. Contractor shall furnish copies of all permits to the Owner and Design Professionals.

B. Warranty: Comply with General Conditions, agreeing to repair or replace specified materials or work that has failed within the warranty period.

PART 2 - PRODUCTS

2.1 STRUCTURAL STEEL

A. Structural steel shall conform to the requirements listed on the Structural General Notes.

2.2 SHOP COATINGS

A. Standard Primer: Rust inhibitive, universal phenolic alkyd metal primer 2-4mls. Color to be determined by Architect. Primer shall be compatible with, and from the same manufacturer as, top coats specified in Division 9 specification.

B. Zinc Rich Primer: SSPC-Paint 20, Type I or Type II, Zinc rich primer utilizing either an organic or inorganic binder with a minimum zinc content of 80 percent by weight in the dry film. The primer shall provide a surface meeting AISC Slip Critical Class B (slip coefficient =0.50 min) requirements. Color to be determined by Architect. Primer shall be compatible with, and from the same manufacturer as, top coats specified in Division 9 specification.

2.3 ACCESSORIES

A. High Strength Bolts: Conform to the provisions of the Research Council on Structural Connections (RCSC) "Specification for Structural Joints Using High-Strength Bolts" except that nuts shall be ASTM A563 Grades DH or DH3 (hardened) for both Grade A325 and A490 bolts. Twist-off type bolts (Tension Control bolts) shall conform to ASTM F3125.

B. All bolts shall be new, and not re-used.

C. Where Grade A325 galvanized bolts nuts and washers are required, they shall be in accordance with ASTM F2329 and ASTM A153, Class C. Where A588 steel is used, bolts, nuts and washers shall be Type 3.

D. Direct Tension Indicators: Meet requirements of ASTM F959.

E. Anchor Rods: Per structural General Notes.

F. Washers:

1. Round washers shall conform to American Standard B 27.2 type b
2. Washers in contact with high-strength bolt heads and nuts shall be hardened in accordance with ASTM Standard F436.
3. Beveled washers shall be square, smooth and sloped so that contact surfaces of the bolt head and nut are parallel.
4. The diameter of the hole of square beveled washers shall be 1/16 inch (1.5mm) greater than the bolt size for bolts smaller than one inch (25mm), and shall be 1/8 inch (3.0mm) greater than the bolt size for bolts larger than one inch (25mm).
5. Comply with requirements of RCSC for all washers including thickness, size and hardness, depending on connection details.

G. Welding Electrodes: Electrodes shall be low hydrogen type and shall have material strength matching characteristics (E70, E80, or E90) as selected from AWS D1.1, Table 3.2.

1. Shielded Metal-Arc Welding (SMAW): Welding electrodes for manual SMAW shall have a maximum H4 series level of diffusible hydrogen and conform to the Specification for Carbon Steel Electrodes; AWS A5.1, or the Specification for Low-Alloy Steel Electrodes; AWS A5.5.
2. Gas Metal-Arc Welding (GMAW): Welding electrodes for semiautomatic GMAW shall have a maximum H4 series level of diffusible hydrogen and conform to the Specification for Carbon Steel Electrodes and Rods; AWS A5.18, or the Specification for Low-Alloy Steel Electrodes and Rods; AWS A5.28
3. Flux Core-Arc Welding-Gas Shielding (FCAW-G): Welding electrodes for semiautomatic FCAW-G shall have a maximum H8 series level of diffusible hydrogen and conform to the Specification for Low-Alloy Steel Electrodes; AWS A5.29
4. Flux Core-Arc Welding-Self Shielding (FCAW-S): Welding electrodes for semiautomatic FCAW-S shall have a maximum H16 series level of diffusible hydrogen and conform to the Specification for Carbon Steel Electrodes; AWS A5.20
5. Submerged-Arc Welding (SAW): Bare electrodes and granular flux used in submerged-arc welding shall conform to F70 or F80 AWS flux classifications of the specification for Gare Mild Steel Electrodes and Fluxes for submerged-arc Welding, AWS A5.17.
6. Intermixing of welding processes shall not be permitted unless clearly indicated in Contractor’s WPS submission. Contractor shall coordinate and submit for record all shop/field welding procedures, which overlap different welding process fusion zones
7. Alternate non-prequalified welding processes shall be considered based on Contractor qualifying test result submissions of Welding Procedure Specifications (WPS) and Procedure Qualification Records (PQR)

PART 3 - EXECUTION

3.1 PREPARATION

A. Work by Others: Examine all work prepared by others to receive work of this Section and report any defects affecting installation to Design Professionals. Commencement of work will be construed as complete acceptance of preparatory work by others. The Contractor alone shall be responsible for checking the dimensions and coordination of the structural steel work with other trades.

B. Anchor Rods: At least 20 working days prior to the start of the structural steel erection, the Contractor shall ascertain by accurate survey the existing location, alignment, and elevation of the anchor rods embedded in the concrete by others. The Contractor shall immediately notify the Design Professionals of any discrepancies observed between the Contract Documents and the as-built conditions. Steel erection shall not start until corrective measures, if required, have been performed.

3.2 FABRICATION

A. Fabricate and assemble structural steel in the shop to the greatest extent possible.

B. Tolerances:

1. Conform to the tolerances of the AISC "Code of Standard Practice," compensate for the difference between the temperature at time of fabrication and the mean temperature in service.
2. Elevator shafts used for temporary hoists shall conform to the detailed requirements of the hoist manufacturer.

C. Holes: Holes shall be provided in members to permit connections to the work of other trades or contracts, and for passage through the member of work of other trades. All holes shall be accurately drilled, cut, or punched at right angles to the surface of the metal in accordance with AISC Specifications. Thermally cut or water jet cut holes made with CNC equipment and that meet the requirements per both AISC and RCSC specifications are permitted. Thermally cut or water jet cut holes shall meet the surface roughness requirements of ASME B46.1. Burning or drifting unfair holes will not be permitted. Holes that must be enlarged shall be reamed. Drift pins will be allowed only to bring together the several parts for connection. Holes in base plates are permitted to be drilled or thermally cut. Thermally cut holes in base plates shall meet the requirements of the AISC specification section M2.2. Holes shall be clean-cut without torn or ragged edges. Outside burrs resulting from drilling operations shall be removed with a suitable tool.

D. Camber: Provide camber as indicated on the Contract Documents. Where no camber is indicated, provide natural camber up.

E. Cutting: Manual oxyfuel or plasma cutting processes in the shop may be used only if automatic or semi-automatic methods are not possible. If manual shop cutting is required, it shall be done only with a mechanically guided torch, except that an unguided torch may be used where the cut is more than 1/2 inch (12mm) from the finished dimension and final removal is completed by means such as chipping or grinding to produce a gouge-free surface of quality equal to that of the base metal. At restrained joints and as indicated elsewhere, weld access holes shall be ground smooth to a bright metal finish.

F. Cutting of Heavy Sections: Where Heavy Sections are to be joined by partial or complete joint penetration welds in tension or require slots, copes, or blocking for connections, preheating shall be required for all thermal cutting operations except at holes and slots to receive bolts. Preheat shall be sufficient to prevent cracking but in no case less than 150 degrees F (65°C). Weld access holes, weld termination holes, blocks, and copes shall be ground to a bright metal finish and a smooth radius after cutting and tested for cracks by the magnetic particle method. All cut edges shall be free of sharp notches and gouges.

G. Anchor Rods: Rigid steel templates and anchor rods shall be furnished, labeled and shipped in sets indicating sizes and locations of columns, together with instructions for setting of anchor rods. Plate washers per Typical Details shall be provided.

H. Bolting: Bolts shall be driven accurately into the holes without damaging the threads. Bolt heads shall be protected from damage during driving. Bolt heads and nuts shall rest squarely against the metal. Where bolts are to be used on beveled surfaces having slopes greater than 1 in 20 with a plane normal to the bolt axis, beveled washers shall be provided to give full bearing under the head or nut.

I. Bolts indicated as “finger tight” on the Contract Documents shall be prevented from backing off by using lock nuts, thread compound or deformed threads.

J. Installation of High Strength Bolts:

1. Except where "snug tight" installation is specifically permitted on design Drawings, all high strength bolts shall be installed with full pretension using Turn-of-Nut Pretensioning, Twist-Off Type Tension Control Bolt Pretensioning or Direct-Tension-Indicator (DTI) Pretensioning in accordance with the "Specification for Structural Joints Using High-Strength Bolts".
2. Comply with special washer requirements of the RCSC, such as those related to slotted and oversize holes, and tapered flanges. DTI "washers" shall not be substituted for such required washers.
3. All high strength bolt assemblies (including Tension Control bolts and DTI’s) used in pretensioned connections shall be verified in accordance with the Pre-Installation Verification section of the RCSC.
4. Clean and re-lubricate bolts and nuts that become dry or rusty before use, except Tension Control bolts must be re-lubricated by manufacturer.

K. Welding of Structural Steel:

1. Pre-Weld Inspection: The surface to be welded and the filler material to be used shall be subject to inspection before welding is performed.
2. Welds indicated on the Contract Documents or the approved shop or erection drawings shall be created by electric arc welding processes that comply in all respects with the codes and specifications herein noted covering the design, fabrication, and inspection of welded structures and the qualifications of welders and supervisors. Control the heat input, weld length, weld sequence and cooling process to prevent distortion of the completed assembly.
3. Each welder's work shall be traceable.
4. Special Requirements: For High Restraint welds and welds at Heavy Sections, follow approved welding procedures for weld process, sequence, pre-heating and cooling. Use stress relieving techniques where shown in the approved procedure developed by the Contractor's Welding Consultant.

    a) Special Procedures: Prior to the start of production welding, the contractor shall demonstrate to the Testing Agency that preheat can be maintained without relying on heat from the arc. For field welding, the contractor shall provide a shelter to protect each joint from inclement weather (rain, snow, etc.), from start until completion of the joint.
    b) Preheat and Postheat: Preheat shall be sufficient to prevent cracking, but in no case less than required by AWS D1.1. The Contractor shall prepare a written welding sequence and distortion control plan to be included in the welding procedures submittal. Assembly sequence of adjoining parts shall balance applied induced heat from preheat and welding processes to minimize distortion and shrinkage. Assemblies shall include special considerations to minimize significant shrinkage stress restraint in accordance with AWS D1.1, Annex H provisions. Under conditions of severe external shrinkage restraint, preheat temperature limitations for making welds shall be in accordance with AWS D1.1, Annex H, Table H2. Under conditions of severe external restraint, reduction of induced heat and cooling rate shall be monitored under the provisions of the Hydrogen Control/HAZ Hardness Control methods of AWS D1.1, Annex H. The preheat shall be maintained throughout the thickness of the material for a distance equal to twice the material thickness on both sides of the joint at a minimum. Where different thicknesses of steel are being joined, the greater thickness shall govern. Preheat shall be measured on the face opposite the side of the heat application. Preheat shall be applied uniformly in a manner that does not harm the surface of the material nor cause surface temperatures to exceed 1100 degrees F (600^{o}C). Should stress relief heat treatment be required, the contractor shall submit a written procedure.
    c) Prior to heat treatment on a production weld, prepare and treat a test sample per the Contractor's written procedure for tensile tests in accordance with ASTM requirements.

5. Welded Joint Details:

    a) Welding Backing: The use of weld backing shall be in accordance with AWS D1.1. Weld backing shall be removed where required by the Contract Documents or for the WPS by AWS D1.1.
    b) Weld Tabs:

        i. Use of Weld Tabs: Welds shall be terminated at the end of a joint in a manner that will ensure sound welds in accordance with AWS D1.1. Whenever necessary, this shall be done by use of weld tabs.
        ii. Heavy Section Joint Weld Tab Removal and Finish: All welded tension splices in Heavy Sections shall have the weld tabs removed and ground smooth.

    c) Weld Access Holes:

        i. Weld access holes shall meet the dimensional, surface finish, and testing requirements of AISC 360 Chapter J1.6 and AWS D1.1, except as otherwise required by the Contract Documents.
        ii. Weld access holes are defined for this project as any hole created in order to access a weld joint, facilitate the welding process, or relieve stresses due to weld shrinkage in a web, flange, or any other element of a steel shape.

    d) Welding for moment connections shall be sequenced so as to minimize residual stress in the joint.
    e) Weld Termination Holes:

        i. Weld termination holes are defined for this project as any hole created in order to allow for weld termination or to relieve stresses due to weld shrinkage as part of the welding process.
        ii. Re-entrant corners and/or internal radii of weld termination holes shall have a minimum radius of ½" or the thickness of the material divided by two, whichever is greater.

6. Deficient Welds: Welds found deficient in dimensions but not in quality may be enlarged by additional welding. Any weld found deficient in quality shall be removed by grinding or melting and the weld shall be remade.
7. Surface Roughness: Surfaces of weld access holes and weld termination holes in Heavy Sections shall be ground to a bright metal finish and inspected by Magnetic Particle Testing (MT) per the requirements of this specification.

L. Bearing:

1. Bearing ends of columns shall be milled or sawn square perpendicular to axis of the column, or at slope indicated in the Contract Documents.
2. Finish bearing areas of base plates per AISC M2.8.

M. Stiffeners: Fitted stiffeners shall be ground to fit closely against flanges.

N. Cleaning and Preparation of Steel Surfaces:

1. Clean all steel work in accordance with the Society for Protective Coatings (SSPC) Method specified herein that corresponds to its location and exposure. Steel work to be painted shall be painted within the same day that it is cleaned.

   a) Interior, Not Exposed to View (above suspended ceilings, under sprayed-on fireproofing, steel to be encased in concrete): SSPC-SP-2, Hand Tool Cleaning.
   b) Interior, Exposed in the Finished Building: SSPC-SP-6, Commercial Blast Cleaning, unless noted otherwise on the Drawings.
   c) Exterior (exposed to weather or in unconditioned space): SSPC-SP-6, Commercial Blast Cleaning, unless noted otherwise on the Drawings.
   d) Members to be Hot Dipped Galvanized: SSPC-SP3, Power Tool Cleaning, before galvanizing.

O. Shop Coating:

1. Where painting is specified, paint all steel work in accordance with the Society for Protective Coatings (SSPC) Method specified herein that corresponds to its location and exposure and in accordance with manufacturer's written instructions. Paint steel work the same day that it is cleaned.

   a) Interior, Not Exposed to View (above suspended ceilings, under sprayed-on fireproofing, steel to be encased in concrete): No Paint.
   b) Interior, Exposed in the Finished Building: SSPC – Paint 25
   c) Exterior (exposed to weather or in unconditioned space): SSPC – Paint 20

2. Protect finished bearing surfaces with a rust-inhibiting coating which is to be removed immediately prior to erection.
3. Do not paint:

   a) Surfaces within six (6) inches (150mm) of field welds
   b) Surfaces to be encased in concrete or to receive cementitious fireproofing
   c) Contact surfaces of high-strength bolted Slip Critical connections (unless surface prep and paint has been specifically prequalified by the contractor or approved for use in this location by the SER)
   d) Surfaces required for testing and preheat, until all testing and preheat has been performed
   e) Finished bearing surfaces (use removable rust-inhibiting coating)
   f) Top flange of the beam where steel deck or headed studs are to be attached

4. Paint shall be applied thoroughly and evenly to dry surfaces only when surface temperatures are above dew-point, in strict accordance with manufacturer's instructions.
5. Surfaces of exterior members which are inaccessible after assembly or erection shall receive their second coat of the approved paint, in a different shade, in the shop.
6. Hot-dip galvanize the following steel members:

    a) All angles, steel plates and shims supporting exterior masonry or exposed to the weather, including shelf, arch and relieving angles
    b) All connections between the above angles and steel plates and the supporting structural member, including clip angles and hardware
    c) Any other steel members indicated as “Galvanized” on the Contract Documents.
    d) All miscellaneous metal, angles, clips, etc. on exterior masonry walls.

3.3 ERECTION

A. Tolerances: Erect all work plumb, square and true to lines and levels in strict accordance with the structural requirements of the building within tolerances of the AISC Code of Standard Practice, unless otherwise indicated on the Contract Documents. Compensate for the difference between the temperature at time of erection and the mean temperature in service.

B. Bracing: Brace the frame during erection in accordance with the Contractor’s erection procedure.

C. Errors: Immediately notify the Design Professionals of any errors in shop fabrication, deformations resulting from handling and transportation, and improper erection that affects the assembly and fitting of parts. Prepare details for corrective work and obtain approval of the method of correction. Approved corrections shall be made expeditiously at the sole expense of the Contractor.

D. Bolting and Welding of Structural Steel: See Section on "Fabrication".

E. Bearing Surface: Clean bearing surfaces and surfaces that will be in permanent contact before the members are assembled.

F. Splices: Splices will be permitted only where indicated on the Contract Drawings or the reviewed shop drawings. Fasten splices of compression members only after surfaces are cleaned and abutting surfaces have been brought completely into contact. Fill any remaining gaps with steel shims driven into place and cut flush. Tack weld shims to each other and to members. Use runoff tabs at bevel weld splices. Cut off runoff tabs and ground smooth after weld completion.

G. Driftpins: Driftpins may be used only to bring together the several parts, and shall not be used in such a manner as to distort or damage the metal. Correct poor matching of holes by drilling to the next larger size and using a larger size bolt. Plug welding and redrilling will not be permitted, unless a specific instance arises and is approved by the SER.

H. Erection bolts: On exposed welded construction, remove erection bolts, fill holes with plug welds and grind smooth at exposed surfaces. On non-exposed welded construction, remove erection bolts.

I. Hammering: Hammering which may damage or distort the members will not be permitted.

J. Do not use cutting torches in the field without the specific approval of the SER for each application. Where cutting torch use is permitted, all the requirements of the Section on "Fabrication" shall apply.

K. Additional Material and Labor: If the Contractor furnishes additional material and labor for the purpose of erection or if the erection method requires that material be added to certain members, the required modifications shall be at the sole expense of the Contractor.

L. Alignment: Following erection, accurately align, level, and adjust all members prior to final fastening. Conform to AISC standard tolerances unless otherwise noted in the Contract Documents.

M. Touch-Up and Field Applied Paint: After erection, clean all damaged areas in the shop coat, exposed surfaces of bolts, bolt heads, nuts and washers and all field welds and unpainted areas adjacent to field welds according to manufacturers recommendations and paint with the same paint used for the shop coat. Match the touch up and field applied paint color to the as-built paint color. After touch up, at exterior (exposed to the weather or in unconditioned space) steel members apply a full coat of the specified paint in a different shade than the shop applied coat.

N. After erection, clean all damaged galvanized areas, welds and areas adjacent to welds and paint with the specified galvanizing repair paint.

O. Clean all steel members of mud and debris and construction residue prior to erection.

3.4 CORRECTIVE MEASURES

A. Conflicts: The Contractor shall be solely responsible for errors of detailing, fabrication, and erection of structural steel, and steel deck.

B. Compensation for Additional Services: Should additional work by Design Professionals such as design, documentation, meetings and/or site visits be required which are necessitated by failure of the Contractor to perform the work in accordance with the Contract Documents either developing corrective actions or reviewing corrective actions developed by others, the Contractor is responsible for paying for additional work performed by the Design Professionals at their standard firm-wide billing rates plus out-of-pocket expenses incurred at cost + 10%. Additional costs for testing and inspection by the Owner shall also be compensated by the Contractor.

[Balance of page blank; see form on next page]

Structural Substitution Request Form – to be completed by Contractor

Project:		
Date:		Substitution Request #
Requesting Contractor:		Pages Attached (including this form)

1. Description of Requested Substitution:

2. Related Drawings and Specification Sections:

3. Rationale or Benefit Anticipated:

4. Effect on Construction Schedule[1] (check one): ☐ NONE ☐ See Attached

5. Effect on Owner's Cost[2] attach data (check one): ☐ CREDIT TO OWNER ☐ EXTRA

6. Effect on Construction Documents[3] (design work anticipated): ☐ NONE ☐ See Attached

7. Requesting Contractor Agrees to Pay for Design Changes (check): ☐ YES ☐ NO ☐ NOT APPLICABLE

8. Effect on Other Trades[4]:

9. Effect of Substitution on Manufacturer's Warranty (check): ☐ NONE ☐ See Attachment

Signature[5]: Date:

Company:

General Contractor Signature[5]: Date:

Notes:

1. Contractor is responsible for means and methods and any problems that may arise from making the requested substitution.
2. This is **NOT A CHANGE ORDER FORM**. A separate form is required to adjust costs and/or schedules.
3. Contractor is responsible for any design impacts that may arise from this substitution, including redesign efforts.
4. Contractor is responsible for effects on other trades from this substitution;
   General Contractor must review and agree effects on other trades are fairly represented in items 4-9.
5. Signature by a person having authority to legally bind his/her company to the above terms. Otherwise this request is void
6. All items in form must be completed for substitution request to be considered.

Request Review Responses (completed by Architect and/or Engineer(s)):

ACCEPTED	ACCEPTED AS NOTED	REJECTED	INSUFFICIENT DATA TO SUPPORT REQUEST	ENGINEER / ARCH / MEP SIGNATURE	DATE

Engineer/Architect Comments:

END OF SECTION

SECTION 11 2429 – FALL PROTECTION SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Specification for the design, fabrication, supply, and installation of fall protection systems, including the following components:

1. Tieback Anchors
2. Horizontal Lifelines (HLL)

1.3 RELATED SECTIONS

A. Section 05 1000 – Structural Metal Framing

B. Section 07 – Thermal and Moisture Protection

1.4 DEFINITIONS

A. The following terms appear capitalized throughout this document and shall be interpreted as follows:

1. Architect – The Architect of record who is responsible for the overall project design
2. Contract – The contract formed between the Owner and the Contractor for the project.
3. Contract Documents – The design documents provided by the Architect
4. Contractor – The general contractor responsible for project construction
5. Consultant – Thornton Tomasetti
6. Installer – The company responsible for the on-site installation of the fall protection system
7. Manufacturer – The company responsible for the detailed design and fabrication of the fall protection system
8. Owner – The building owner, owner’s representative, leasing agent, property management company, or another representative for the building on which the Project is to be performed
9. System Drawings – The shop drawing package prepared by the Manufacturer that outlines the specifics of the fall protection system

1.5 REFERENCES

A. Regulatory Requirements

1. OSHA 1910 Subpart D – Walking and Working Surfaces
2. OSHA 1910 Subpart I – Personal Protective Equipment

B. Fall Protection Standards

1. ANSI A10.32 – Personal Fall Protection Used in Construction and Demolition Operations
2. ANSI Z359 – Fall Protection and Fall Restraint Standards

C. Material and Construction Standards

1. AA ADM-1 – Aluminum Design Manual
2. ACI 318 – Building Code Requirements for Structural Concrete
3. AISC – Steel Construction Manual (LRFD)
4. ASCE 7 – Minimum Design Loads and Associated Criteria for Buildings and Other Structures
5. AWS D1.1 – Structural Welding Code – Steel
6. AWS D1.2 – Structural Welding Code – Aluminum

D. American Society for Testing and Materials (ASTM)

1. ASTM A36 – Specification for Carbon Structural Steel
2. ASTM A53 – Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
3. ASTM A123 – Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
4. ASTM A193 – Specification for Alloy-Steel and Stainless-Steel Bolting Materials
5. ASTM A276 – Standard Specification for Stainless Steel Bars and Shapes
6. ASTM A492 – Specification for Stainless Steel Rope Wire
7. ASTM A500 – Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
8. ASTM A666 – Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar
9. ASTM A747 – Specification for Steel Castings, Stainless, Precipitation Hardening
10. ASTM B209 – Specification for Aluminum and Aluminum-Alloy Sheet and Plate
11. ASTM B221 – Specification for Aluminum and Aluminum-Alloy Extruded Bars, Wire, Shapes, and Tubes
12. ASTM E488 – Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements
13. ASTM F1554 – Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength
14. ASTM F3125 – Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi and 150 ksi Minimum Tensile Strength

1.6 ADMINISTRATIVE REQUIREMENTS

A. Contract Documents Design Intent

1. The Contract Documents indicate a performance-based design, and the final design shall be the sole responsibility of the Manufacturer. Deviation from the Contract Documents requires the approval from the Architect and Owner.
2. The Contract Documents indicate design intent for products and systems and do not necessarily specify the total work required. The Contract Documents shall not be construed as an engineered design or ready for construction.
3. The Manufacturer shall employ a qualified Professional Engineer to provide engineering for products and systems, including attachment to building structure required to meet the design intent of Contract Documents.
4. Preparation of structural analysis data, including engineering calculations, shop drawings, and other submittals signed and sealed by the Professional Engineer.
5. The Manufacturer shall furnish and install all work required for a complete installation.

B. Coordination of Work

1. Product Variations: In the event of minor differences between products and systems of acceptable or available manufacturers, the Contractor shall notify the Architect of such differences and resolve conflicts in a timely manner. Failure of the Contractor to provide notification shall be construed as acceptance of conditions indicated, and changes caused by minor differences between products and Contract Documents shall be included in the Work at no additional cost to the Owner.
2. Allowable Adjustments: Minor dimension and profile adjustments may be made in the interest of fabrication or erection methods or techniques or ability to satisfy design intent, provided design intent is maintained as determined by Architect. Proposed deviations shall include a detailed analysis of the impact to adjacent substrates or other building systems, including related design or construction cost impacts. If accepted by Architect, deviations causing changes in materials, constructability, substrates, or conditions shall be included in the Work at no additional cost to the Owner.

1.7 CONTRACT SUBMITTALS

A. General

1. Contract submittals shall be submitted to the Architect and the Consultant in digital format using the Project's preferred management software.
2. Contract submittals shall be reviewed and stamped by the Contractor prior to submitting to the Consultant. Submittals not reviewed by the Contractor prior to submittal will require a resubmittal.

B. Drawings

1. Provide set of drawings with plans, elevations, and section details showing the complete fall protection systems, including components and accessories.
2. Indicate equipment dimensions, locations, materials, structural attachments, fastening hardware, etc.
3. Indicate operational information such as drop locations, platform transfers, equipment transportation, etc. Use written descriptions to provide clarity.
4. Include installation and rigging instructions, and necessary Restrictive and Non-

Restrictive Working Usage Notes and General Safety Notes.
5. Provide product datasheets for each product used
6. Provide replacement parts list
7. Shop drawings to be stamped by a licensed Professional Engineer.

C. Calculations

1. Calculations for the equipment shall be submitted for the Owner's and Consultant's record and be stamped by a licensed Professional Engineer.
2. Calculations shall be clear and concise detailing all necessary analysis and steps taken to complete the proper design of each piece of equipment.
3. Calculations shall include load reactions to the building's structural components and seismic considerations.

D. Test Reports

1. Submit test reports for completed factory testing and post-install field testing as described in Part 3 of this specification.
2. Submit weld test reports provided by a CWI (Certified Weld Inspector) registered with AWS.
3. Submit embedment test reports for embedded anchorages from a third-party testing agency.
4. Submit adhesive anchor test reports from a third-party testing agency as required by ANSI A120.1 2021.

E. Closeout Documents

1. As-built drawings showing the location of all equipment with associated identification numbers. Drawings to include dimensioned layouts in plan and elevation, final equipment reactions, and rated loading for each type of equipment.
2. Certificate of Compliance signed by the Manufacturer certifying the system complies with this specification and the applicable standards and regulations.
3. Laminated signs shall be provided for each roof or balcony level access door/hatch showing the locations and intended use of the equipment that may be accessed by that door/hatch.
4. Proof of AWS certification for workers performing welding either in the factory or on-site.
5. Mill certificates for steel and aluminum.
6. Inspection logbook with "Initial Inspection – Certification for Use" and "Inspection Sign-Off" forms completed.
7. Three (3) copies of the warranty documents specified.
8. Operation and Maintenance Manuals: Submit three (3) sets of the Operation and Maintenance Manuals that are bound and neatly labeled describing the operation and maintenance of all equipment installed, including:
    a. Clear and concise procedures for operating/using equipment
    b. Methods for maintaining installed products
    c. Precautions against cleaning materials and methods detrimental to finishes and performance
    d. A detailed rescue plan

1.8 QUALITY ASSURANCE

A. Single Source: Obtain all materials and equipment required by this section from a single supplier.

B. The performance, use, inspection, testing, and maintenance of the fall protection systems shall comply with the most stringent requirements of applicable standards and regulations.

C. Manufacturer Qualifications: Specializing in the design, fabrication, and installation of fall protection systems with a minimum of five (5) years of documented experience.

D. Insurance: Manufacturer to carry specific liability insurance (products and completed operations) in the amount of five million dollars ($5,000,000) to protect against product/system failure and professional liability in the amount of five million dollars ($5,000,000) to cover the design of the fall protection systems.

E. Installer Qualifications: Qualified by the Manufacturer to perform the installation for the specific fall protection systems. The Manufacturer or the Manufacturer's provided documentation shall specifically identify the methods and techniques for installation.

F. Welding: Perform welding using AWS-certified welders in accordance with AWS D1.1 and D1.2.

1.9 WARRANTY

A. Manufacturer shall warranty the fall protection systems including labor and materials for a minimum of one (1) year from the date of the final acceptance certification letter.

PART 2 - PRODCUTS

2.1 MANUFACTURER REQUIREMENTS

A. The DCU Center requires the manufacturer for the new fall protection systems to match the manufacturer for the existing systems. Manufacturer of the existing systems includes 3M, and others to be field verified by the contractor.

B. The DCU Center requires the engineering, installation, and future annual inspections (not in scope) to be provided by the current provider of these services (Evan Corporation / Evan Fall Protection)

2.2 PERFORMANCE REQUIREMENTS

A. Provide equipment designed and constructed in accordance with the contract documents and applicable regulations & standards to suit the building configuration.

B. Manufacturer must coordinate with the Contractor and associated trades to provide a complete fall protection system.

C. Project work including design, manufacturing, installation, performance, use, inspection,

testing, and maintenance of the fall protection system shall comply with the most stringent requirements and most recent amendments of the regulations and standards referenced in this section.

D. System design shall conform to proper engineering principles and be designed by a licensed Professional Engineer qualified in the design of fall protection equipment, its application, and safety requirements.

E. Equipment shall be designed to operate without failure under outdoor temperatures between 0 and 120 degrees Fahrenheit and up to 90% humidity.

F. Embeds shall be corrosion-resistant and shall be supplied with installation instructions by the Contractor.

G. Hollow Structural Sections (HSS) that are permanently fixed to the building structure and subject to collecting water shall be foam filled.

H. System design shall be qualified by the Manufacturer with three (3) working examples that have been commissioned. The Architect and Consultant will evaluate products and may disqualify them based on findings.

2.3 MATERIALS

A. General

1. All structural components shall be constructed of stainless steel metal, hot dip galvanized carbon steel, or structural-grade aluminum.
2. All exposed components shall be constructed of materials appropriate to withstand weathering and environmental effects.
3. All attachment hardware shall be constructed of stainless steel.
4. Dissimilar metals shall be protected from galvanic attack.
5. All materials shall have an ASTM designation or the equivalent standard designation.

B. Steel

1. All steel sections shall conform to one of the ASTM standards listed in section 1.5 of this document.
2. All carbon steel components having an exterior exposure shall be hot-dip galvanized in accordance with ASTM A123 having a minimum G75 coating grade.
3. All carbon steel components having an interior exposure shall receive one coat of standard shop primer from the fabricator.
4. All welding shall use electrodes with a strength greater than or equal to 70,000 psi.

C. Aluminum

1. All aluminum sections shall conform to one of the ASTM standards listed in section 1.5 of this document.
2. All aluminum components shall have a yield strength greater than or equal to

35,000 psi and shall have an ultimate strength greater than or equal to 38,000 psi.

3. All welding to aluminum components shall consider the weakening effects of the welding process or shall be properly heat-treated to restore the original material properties.
4. Consideration shall be given to the effects of any cold working of aluminum sections.

D. Fasteners

1. Load-carrying threaded fasteners shall be new, clean, free of corrosion or pitting, and conform to ASTM A325.
2. Bolts shall have material designation markings on the cap of the bolt.
3. Pins and fittings subject to removal by workers shall be secured against loss by wire rope lanyards.

2.4 COMPONENTS

A. Tie-back Anchors

1. Supply quantity of tieback anchors and related components as needed to provide fall protection for the davit system.
2. Anchors shall be designed for minimum 5000 lbs. ultimate load applied in any direction.
3. Anchor assembly to be permanently attached to building structure.
4. Minimum eye opening of 2” diameter with rounded edges to prevent rope abrasion
5. Support post height to be a minimum 8” above waterproofed surface or as required for waterproofing.
6. Connection to structure including embed requirements must be coordinated with the Architect and Contractor.

B. Horizontal Lifeline (HLL)

1. HLL shall be designed, installed, and used under the supervision of a qualified person, as part of a complete personal fall arrest system that maintains a safety factor of at least two (2).
2. HLL shall be designed for fall arrest for a maximum of two (2) users per length of wire rope.
3. HLL shall be the Hands-Free type that allows workers to bypass intermediate supports passively.
4. Lanyard Cable Runner: For each length of wire rope, provide one (1) runner per worker for continuous "hands-free" operation that can be attached or removed anywhere on the wire rope.
5. Intermediate supports shall have stainless steel brackets with reinforcing end caps for securing the wire rope and shall be designed to allow the lanyard cable runner to bypass the support without user input.
6. Components shall be made of corrosion-resistant material/finish and sized to suit the application.
7. Wire rope terminations shall be lab tested to demonstrate a minimum of 80% efficiency of the wire rope breaking strength.
8. Redirecting or bending wire rope shall have a bending radius of no less than six

(6) times that of the wire rope diameter.

9. HLL system entry points to be equipped with prominently displayed non-corrosive data plate clearly stating Maximum Service Capacity and Number of Users.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine all working surfaces and areas necessary to complete the Project. Communicate any of the following conditions to the Owner:

1. Unsafe conditions.
2. Conditions that may disrupt the project schedule.
3. Conditions that do not match the approved shop drawings.
4. Corridors, doorways, stairways, or elevators that do not provide adequate access to the working areas and surfaces.

B. Verify the accuracy of existing site dimensions as related to the work.

C. Commencement of work will imply acceptance of all working areas and surfaces, and the acceptance of the access provided to those working areas and surfaces. Issues that arise due to acceptance of unsatisfactory conditions shall be corrected with no impact or cost to the Owner.

3.2 PREPARATION

A. Delivery: Materials shall be delivered to the building per the Owner’s schedule and at the locations specified by the Owner.

B. Handling: Materials shall be transported by hand or by carts to the work areas using the corridors, stairwells, and elevators designated by the Owner. The Contractor shall be responsible for all manpower required during equipment hoisting and shall also be responsible for coordinating the location of equipment on the roof to not interfere with other construction.

C. Storage: Materials shall be stored at the Owner’s designated locations, but shall not be stored in a fashion that would allow the following to occur:

1. Overloading of floor structures
2. Exposure to inclement weather
3. Damage to any of the products to be installed

3.3 INSTALLATION

A. Obtain permits, licenses, and pay inspection fees necessary to complete installation as required.

B. Comply with requirements of authorities having jurisdiction as to loading and safety procedures.

C. Install equipment in accordance with approved shop drawings and Manufacturer's recommendations.

D. Install equipment true, level, tightly fitted, and flush with adjacent surfaces as required.

E. Fastening

1. All threaded fasteners shall be tightened to a minimum of a "snug-tight" condition if a tightening torque has not been specified. Never exceed the torque recommendations of the Manufacturer.
2. All threaded fasteners shall be provided with one of the following means to lock the fastener and prevent loosening:
   a. Locking nuts
   b. Self-locking washers
   c. Cotter pins
   d. Mechanical disabling/deforming of threads
   e. Tack welding

F. Structural steel to receive equipment attachment shall have an adequate bearing surface as indicated on shop drawings and/or ensure 100% weld.

G. Manufacturer shall provide onsite supervision of the installation.

H. Supply personnel and equipment to perform tests and final review as required by Governing Authority.

3.4 FIELD QUALITY CONTROL

A. 100% of permanently installed equipment shall be subjected to post-installation testing.

B. Anchorages and suspension equipment shall be tested to twice the rated load.

C. Hoists shall be tested to a maximum of 125% of the rated load.

D. The load testing procedure shall be prescribed, in writing, by a licensed Professional Engineer and submitted to the Owner and Consultant at least three weeks prior to execution. The owner and Consultant must provide approval of the procedures prior to proceeding.

E. Load Testing shall be performed under the supervision of a Professional Engineer experienced in fall protection equipment. Load testing report shall be stamped by a licensed Professional Engineer.

F. Equipment that is attached to the building using adhesive anchors shall be tested in accordance with ASME A120-2021 (section 3.1.7) and ASTM E488-03, and at a proof load of not less than 55% of their ultimate capacity nor more than 65% of their rated ultimate capacity.

3.5 FINAL ADJUSTING

A. Clean equipment components as recommended by the Manufacturer. Do not use

materials or methods which may damage finished surfaces or surrounding construction.

B. Keep work areas orderly and free from debris during the progress of the project. Remove packaging materials daily.

C. Remove loose materials and filings resulting from work.

D. Clean rooftop and equipment storage room.

E. Adjust installation as needed to leave the equipment in clean, proper working order.

F. Touch Up: After installation of equipment, enamel painted areas shall be touched up as necessary to eliminate scratches and abrasions.

G. Complete the “Initial Inspection - Certification for Use” form included in Equipment Manual & Inspection Logbook.

3.6 DEMONSTRATION

A. Contractor shall complete each requirement listed below prior to the final demonstration to ensure the system is fully operational and will be successfully commissioned.

B. Contractor shall perform the following demonstrations in the presence of the Owner and Consultant:

1. Verify workmanship and equipment furnished and installed complies with the specifications.
2. Verify operation of working limits and safety devices.
3. Demonstrate maneuverability to work positions.

C. The Contractor shall provide a minimum of three weeks’ notice to the Owner and Consultant prior to scheduling the demonstration.

3.7 TRAINING

A. The manufacturer shall provide two (2) hours of training to the Owner’s operation team and building maintenance contractor(s).

3.8 SPARE PARTS

A. The Manufacturer shall provide a list of spare parts and consumable items with pricing and availability to the Owner and Consultant.

B. Any proprietary parts must be identified (gears, wire rope terminations, etc.) and the Manufacturer must agree to sell parts to Owner at market price.

3.9 SERVICE CONTRACT

A. Provide a cost for a five (5) year maintenance agreement with renewal options and define what is provided on a monthly/quarterly/yearly basis.

B. Contractor shall permit open-source maintenance contracts to other vendors.

END OF SECTION