SPECIFICATION

STRUCTURAL REPAIR
DOT STANHOPE LIGHT MAINTENANCE FACILITY
2 HIGLEN DRIVE
STANHOPE, SUSSEX COUNTY, NJ
PROJECT NO. T0606-07

STATE OF NEW JERSEY

Honorable Phil Murphy, Governor
Sheila Oliver, Lieutenant Governor

DEPARTMENT OF TRANSPORTATION
Diane Gutierrez-Scaccetti, Commissioner

RONALD A. SEBRING ASSOCIATES, LLC, ARCHITECTURE-PLANNING-DESIGN
405 RICHMOND AVENUE, POINT PLEASANT BEACH, NJ 08742
(732) 701-9444 FAX 701-9919 E-Mail architects@rasallc.com

5-HOLE STRUCTURAL ENGINEERING
3 QUAIL RUN. SOUTH BURLINGTON, VT 05403
(802) 338-0233 E-Mail structural5-hole@gmail.com

_____

David A. Clark, R.A.
NEW JERSEY REGISTERED ARCHITECT 17419

March 18, 2019
Permit / Bid May 7, 2019

TABLE OF CONTENTS

SCOPE OF WORK:

The Scope of this Project is for the construction of new tubular steel lintel with tubular steel columns at two (2) overhead door openings at the NJDOT Light Maintenance Facility in Stanhope, New Jersey. The new lintels will support existing sagging steel lintels over the openings. All new steel will be galvanized and all exposed steel shall be painted.

SECTION 01 05 00
CONTRACTOR AND PRIME SUB-CONTRACTOR QUALIFICATIONS

PART 1 – GENERAL

1.1 PREQUALIFICATION

A. The Contractor must be classified by the State of New Jersey, Department of the Treasury, Division of Property Management and Construction (DPMC) in one of the following trades: **General Construction (C008), General Construction / Alterations and Additions (C009), OR Structural Steel (C029).**

B. The names and addresses of the Structural Steel (C029) Sub-Contractor included in this Single Bid proposal shall be listed on the bid proposal in the space provided and must classified with DPMC in accordance with N.J.S.A. 52:35-1 et seq. at the time of the bid due date. If the Single Prime Contractor intends to perform the Structural Steel work, that Single Prime Contractor must be classified in that trade and list themselves in the appropriate Sub-Contractor section of the bid proposal. The Contractor acknowledges the failure to list classified Sub-Contractors as part of Single Bid proposals shall constitute a non-waivable material deviation resulting in a rejection of the bid.

PART 2 – MATERIALS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 11 00
SUMMARY

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including Instructions to Bidders, General Conditions, and other Division 1 Specification Sections, apply to this Section.

1.2 SCOPE OF WORK

A. The Scope of this Project is for the construction of new tubular steel lintel with tubular steel columns at two (2) overhead door openings at the NJDOT Light Maintenance Facility in Stanhope, New Jersey. The new lintels will support existing sagging steel lintels over the openings. All new steel will be galvanized and all exposed steel shall be painted.

B. The construction duration for the Project is sixty (60) calendar days from the issuance of the NTP by the State.

1.3 WORKING HOURS

A. The Project work hours are 7:00 AM to 3:00 PM weekdays. No work will be permitted on weekends or State Holidays.

PART 2 – MATERIALS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including Instructions to Bidders, General Conditions, and other Division 1 Specification Sections, apply to this Section.

1.2 CONFLICTS OR DISCREPANCIES AMONG CONTRACT DOCUMENTS

A. In the event of conflicts or discrepancies among Contract Documents, interpretations will be based on the following priorities:
    1. The Agreement;
    2. Bulletins, with those of later date having precedence over those of earlier date;
    3. The General Conditions of the Contract for Construction; and
    4. Drawings and Specifications

B. In the case of any inconsistency between Drawings and Specifications, or within either document not clarified by Bulletin, the better quality or greater quantity of work shall be provided in accordance with the Architect's interpretation.

1.3 INTERPRETATION OF DRAWINGS AND SPECIFICATIONS

A. The annotated drawings are intended to convey the Scope of Work and indicate the general requirements of work and shall not limit the repairs required.
B. Examine the areas and conditions where work is to be performed and notify the Architect of conditions detrimental to proper and timely completion of the work. Do not proceed with work until detrimental conditions have been corrected.
C. Dimensions on drawings are for design only. Do not scale drawings for dimensions.
D. The Contractor is entirely responsible for field checking and verifying all measurements before commencement of work, and is entirely responsible for the correctness of his measurements.
    1. Before ordering any material, and prior to doing any work, take or verify all measurements at the building as may be required for the proper fitting of work to the building or to other adjoining work.
    2. Satisfactorily correct, without charge, any work which does not fit.

PART 2 – MATERIALS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 32 16
CONSTRUCTION PHASING AND PROGRESS SCHEDULE

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including Instructions to Bidders, General Conditions, and other Division 1 Specification Sections, apply to this Section.

1.2 CONTRACT COMPLETION

The work under this Contract shall be completed within sixty (60) calendar days from the issuance of the Notice to Proceed.

1.3 PROJECT SCHEDULE

A. The Contractor shall submit a Project Construction Schedule (no CPM) meeting the requirements of the General Conditions within seven (7) calendar days of the Notice to Proceed to the Architect, for review and approval.
B. If the Project should fall behind schedule, provide a complete revised recovery schedule when requested by the Project Manager.

PART 2 – MATERIALS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 35 00
SPECIAL PROJECT PROCEDURES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including Instructions to Bidders, General Conditions, and other Division 1 Specification Sections, apply to this Section.

1.2 CLEAN-UP

A. The Contractor is responsible for all clean-up and debris removal and disposal on a daily basis, including nails, bolts, metal clippings, flakes, and fasteners. Utilize magnets to retrieve any and all nails, screws, and other metal debris. At the end of each workday, and prior to exiting the Facility, the Contractor shall clean-up the grounds below the work areas, screening for, and removing any and all any construction debris.

1.3 SITE PROTECTION

A. Protect adjacent finishes from damage. Repair any damages created by the work.

1.4 SITE ACCESS

A. The Contractor shall coordinate with the Maintenance Yard Supervisor for access to the yard and building throughout the course of the work.

1.5 SITE RESTORATION

A. At the completion of construction, restore any and all walkways, driveways, lawns, or plantings, damaged by construction activity.

1.6 STAGING AND STORAGE

A. Store construction materials and equipment only in locations approved by the Facility. Full dumpsters shall be removed at the end of the work day.

PART 2 – MATERIALS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 41 00
QUALITY REQUIREMENTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including Instructions to Bidders, General Conditions, and other Division 1 Specification Sections, apply to this Section.

1.2 SUPERVISION

A. Provide day-to-day site supervision through an approved Site or Project Superintendent who uses English as their primary language. Work will not be permitted to be performed, including Subcontractor work, without the approved Superintendent present, including any subcontractor work. The Superintendent may participate in the construction work (working Superintendent)
B. Assure that site supervision, crafts-persons, and subcontractors are knowledgeable and experienced in their portion of the work and know and understand the specified requirements and methods needed for performance of the work.

1.3 SITE MAINTENANCE

A. Clean construction and adjoining areas daily and remove debris, legally disposing of all materials.

1.4 WARRANTIES

A. The Contractor warrants to the NJDOT and Architect that materials and equipment furnished under this Contract will be good quality, new, and that the work will be free of defects for a period of one (1) year from the date of final acceptance, and will conform to the requirements of the Contract Documents.
B. All warranties shall be effective from the date of Substantial Completion. Warranties must be signed by an authorized representative of the issuing company.

PART 2 – MATERIALS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 41 13
REGULATORY COMPLIANCE

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including Instructions to Bidders, General Conditions, and other Division 1 Specification Sections, apply to this Section.

1.2 SITE SAFETY

A. The Contractor is solely responsible for all site safety and compliance with OSHA regulations.
B. The Contractor shall inspect and assure compliance with all statutory requirements for worker protection and safety. The Contractor shall provide, inspect, and assure that all workers utilize appropriate worker protective and safety gear.
C. Instruct workers and inspectors in the proper use of all protective and safety equipment.

1.3 CODES, PERMITS, AND INSPECTIONS

A. Codes: The work described by these Contract Documents shall be accomplished in strict accordance with the New Jersey Uniform Construction Code and in full compliance with the following Codes as applicable:

§ INTERNATIONAL BUILDING CODE, NEW JERSEY EDITION 2015

B. Permits: U.C.C. Plan Review has been completed. The Contractor must complete the Sub-Code Technical Sections of the permit application after award of the construction contract and return to the Construction Project Manager. The Construction Permit will be issued by DCA. There will be no costs to the Contractor for these permits.
C. Inspections: All construction inspections will be provided by DCA and shall be coordinated through the Construction Project Manager.

PART 2 – MATERIALS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 61 00
PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including Instructions to Bidders, General Conditions, and other Division 1 Specification Sections, apply to this Section.

1.2 SUBMITTAL PROCEDURES

A. The Contractor shall provide all submittals required by the Specifications. The Contractor shall also supply evidence by separate submittals that materials and equipment to be supplied meet the requirements of the Specifications.

B. DPMC 12/13 or Contractor Transmittal: This form is to be used for submission and approval of all subcontractors, materials to be utilized in the construction, manufacturers/suppliers, and for professional services. A Contractor Transmittal that includes all of the information indicated below is also acceptable. Complete the Contractor Section as follows:

1. ***Submission Type:*** The Contractor is to place a check mark in the appropriate block(s) that applies to the submission.
2. ***Trade:*** The Contractor is to place a check mark in the appropriate block that identifies the trade related to the submission.
3. ***Contractor Name:*** The Prime Contractor submitting the form inserts his company name in the space indicated.
4. ***Description of Submittal:*** The Prime Contractor is to give a brief description of the submittal.
5. ***General Condition, Specification or Drawing section***: The Contractor is to identify the Article, Spec Section or Drawing that represents the submission type, i.e., "*Article 4.11.2 Sleeve & Opening Drawing", or "Specification Section 115575 Condensate Pump", or "Drawing FP2.2 Ames Backflow Preventer".*
6. ***Vendor/Manufacturer/Supplier/Subcontractor:*** The Prime Contractor is to insert the name, address, and telephone number of the vendor/manufacturer/supplier or subcontractor for which he is requesting approval. (When required, insert the license number and registration number in the space provided, attach a copy of said license and certification.)

C. The A/E will prepare and submit a submittal log identifying all required submittals and distribute the log at the pre-construction meeting. Contractor may provide additional submittals in addition to those listed on the log.

D. All submittals shall be identified by the tracking number on the submittal log.

E. All submittals shall be made electronically. Utilize the electronic version of the DPMC 12/13 form and add additional pages containing the submittal data or drawings in a **single** .PDF file. The file name shall contain the tracking number and the submittal name, i.e. "301 Concrete Design Mix.pdf". Submittals shall be emailed to the A/E. To be considered as "received" by the A/E, **the Subject line of the e-mails shall contain the Project number, submittal tracking number, and submittal description.**

F. A/E approved submittals will be emailed to the Contractor and the Construction Project Manager (CPM).

G. A/E rejected copies will be emailed only to the Contractor.

H. Shop Drawings: Shop drawings and samples shall be dated and marked to show the name of the Project, Architect, Contractor, originating subcontractor, manufacturer or supplier and detailer, if pertinent. Shop drawings shall completely identify Specification section and locations at which materials or equipment is to be installed. Reproduction of the contract drawings is acceptable as shop drawings only when specifically authorized in writing by the Architect. Submission of shop drawings, manufacturer's specifications, installation instructions, material diagrams and samples shall be accompanied by the

Contractor's transmittal form and DPMC form 12/13 as outlined in paragraph B of this section. **Where printed material describes more than one product or model, clearly identify which is to be furnished**. The Contractor is responsible for obtaining and distributing required prints of shop drawings to other prime contractors, subcontractors, and material suppliers after, as well as before, final approval. Prints of reviewed shop drawings shall be made which carries the Architect's appropriate stamp.

I. Product Data:
   1. Submit only pages which are pertinent; mark each copy of standard printed data to specifically identify only pertinent products; identify each submittal by designated submittal reference number. Show standards, performance characteristics, and capacities; wiring and piping diagrams; controls; component parts; finishes; dimensions; and require clearances.
   2. Modify manufacturer's standard schematic drawings and diagrams to supplement standard information and to provide information specifically applicable to work of this project. Delete information not applicable.

J. All submittals shall be made within ten (10) calendar days of the Notice to Proceed.

K. Enforcement of Submittal Requirement:
   1. The Contractor will be required to provide shop drawings, testing, laboratory test reports, product samples and test installations in order to establish acceptable standards of workmanship.
   2. **The requirement for submittal and review of <u>all</u> specified shop drawings, test, product samples and test installations will be <u>rigorously enforced.</u>** General work of each section shall not commence prior to required review. All work conducted prior to the review of required submittals, including test installation, is subject to rejection by the Architect. All rejected work shall be removed and replaced by the Contractor at no additional expense to the Owner.

L. Contractor's Examination of Submittals: Prior to forwarding submittals to the Architect, the Contractor shall:
   1. Review submittals to verify quantities, field measurements, field construction criteria, assembly and installation requirements, manufacturer's catalog numbers, and conformance of submittals with requirements of Contract Documents.
   2. Review each submittal to determine that it is acceptable in terms of the means, methods, techniques, sequences and operations of construction, and in terms of safety precautions, all of which are the contractor's sole responsibility.
   3. Clearly call to the Architect's attention any submittal that varies from what the Contract Documents have called for. Notify the Architect in writing at time of submittal of any deviations from requirements of Contract Documents.
   4. Clearly identify the products or product data which are pertinent to this Project. Clearly mark through or delete all information which is not applicable.
   5. Stamp and sign each submittal to certify that the Contractor has checked for completeness and compliance with requirements of the contract documents and that the submittal has his/her approval.
      a. The stamp shall state: *"I certify that I have reviewed the above submittal and have verified that products, field dimensions, quantities, and field construction criteria comply with and have been coordinated with the requirements of Work and Contract Documents*".
      b. Samples or submittals which in the opinion of the Architect have clearly not been checked for compliance by the Contractor will not be reviewed and it will be the responsibility of the Contractor to arrange for return of such submittals.

   6. Do not fabricate products or begin work which requires submittal review until return of submittal with Architect's acceptance. Work begun or completed prior to the Architect's review of required submittals is subject to rejection. Remove and replace rejected work at no additional cost to the Owner.

M. Architect's Review:
   1. Allow fourteen (14) days for Architect's review of each submittal. Daily allowance is time in possession of Architect and exclusive of delivery from and to Contractor and exclusive of resubmissions.
   2. The Architect's review is limited to aesthetics, general conformance with the project design intent, and general compliance with information contained in Contract Documents. The Architect's review is neither a verification of Contractor's examination nor a substitution of Contractor's responsibilities. Architect may inform Contractor of any conspicuous errors on a submittal without prejudice to being held harmless to Contractor's examinations and responsibilities.
   3. Upon review, any action shown by the Architect is subject to the requirements of the plans and specifications. The Architect's review does not authorize changes in contract requirements unless a separate written directive or change order is issued. The Contractor is responsible for conforming and correlating all quantities and dimensions, selecting fabrication processes and techniques of construction, coordinating his or her work with that of all other trades, and performing all work in a safe and satisfactory manner.
   4. **The Architect will not review:**
      a. Any submittal which is not called for by the contract documents or not requested in writing by the Architect.
      b. Any submittal which does not bear the Contractor's stamp and signature certifying that he has checked the submittal for completeness and compliance with the contract documents and that the submittal has his/her approval.
      c. Any submittal which does not bear the project name and contract number and the contractors, subcontractors, and suppliers names, addresses, and phone numbers.
      d. Any submittal which does not clearly identify pertinent product (if more than one is shown). Clearly mark through all information which is not applicable.

   5. The Architect will not accept and will not review "faxed" submittals or submittals copied from a telefaxed transmission unless previously authorized by the Architect in the interest of the project.

N. The Contractor shall be required to make submittals, revise and resubmit as required and establish compliance with the specified requirements requested in all sections of these Technical Specifications that are a part of this Contract Document. These submittals include but are not limited to shop drawings, manufacturer's literature, samples, colors, mock-ups, inspection reports, certifications, and delivery receipts.

O. It is also the Contractor's responsibility, when so required by the Contract Documents or by written request from the State, to deliver all required proof that the materials or workmanship, or both, meet or exceed the requirements of the specifically named code or industry standard.

P. The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals unless the Contractor has specifically informed the Architect in writing of such deviation at the time of the submittal and the Architect has given approval of the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in the Shop Drawings or similar submittals by the Architect's approval thereof.

1.3 SUBSTITUTIONS

A. Contractor's proposed substitutions shall be made within seven (7) calendar days from the Notice to Proceed. After that time has expired no substitutions will be considered by the State. Substitution submittals that are incomplete will be rejected.
B. Every substitution shall be accompanied with a certification from the Contractor that they have personally investigated the proposed substitution and that it meets or exceeds the specified item.
C. Every substitution must be accompanied with a credit change order.
D. Implied substitutions are not acceptable.

PART 2 – MATERIALS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 78 00
CLOSE OUT SUBMITTALS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including Instructions to Bidders, General Conditions, and other Division 1 Specification Sections, apply to this Section.

1.2 MAINTENANCE MANUALS

A. General Requirements: Submit two (2) bound sets and four (4) CD's with pdf format documents of Maintenance Manuals as hereinafter defined.
B. The Project Maintenance Manual shall have the full Project title displayed on cover and binder edge (case and CD for CD's) and shall be divided into four (4) sections as follows:
    1. Subcontractor, material supplier listings. The names, addresses and telephone numbers shall be listed and indexed for each component or item incorporated into the work.
    2. Warrantees and Guarantees: All required warranties and guarantees shall be placed in this Section. Warrantees shall be fully executed, signed, and dated.
    3. Copies of all approved submittals shall be in this Section.
    4. Shop Drawings: Copies of approved shop drawings delineating all as-built conditions shall be set forth in this Section.

1.3 AS-BUILT DRAWINGS

A. The Contractor is required to maintain an updated set of "as-built" drawings on-site throughout the course of the Project**.** The As-Built drawings shall indicate all deviations in the completed work from that which is shown on the contract drawings.
B. Complete construction As-Built drawings, certified by the Contractor as complete to the best of his knowledge, must be provided at the completion of the Project.

PART 2 – MATERIALS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 05 12 00
STRUCTURAL STEEL

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Extent of structural steel work is shown on drawings, including schedules, notes and details to show size and location of members, typical connections and type of steel required.
B. Products furnished but not installed under this section:
   1. Anchor bolts for installation into concrete
   2. Loose base plates and bearing plates set on concrete

1.3 RELATED WORK

A. Field Painting: Field paint all exposed structural steel in accordance with Section 09 90 00.

1.4 SUBMITTALS

A. Submit the following for formal review and approval by the Architect according to Conditions of the Contract and Division 1 Specification Sections:

   1. Product Data: Submit manufacturer's specifications and installation instructions for the following products:
      a. High-strength bolts (each type), including nuts and washers.
      b. Threaded rod
      c. Galvanization
      d. Shrink resistant non-metallic grout

   2. Shop Drawings: Shop drawings shall be prepared under direct supervision of registered professional engineer, including:
      a. Complete erection drawings, details and schedules for fabrication and shop assembly of members.
      b. Details, schedules, procedures, and diagrams showing sequence of erection.
      c. Indicate profiles, spacing and locations of members, including:
         1) Fabrication details
         2) Size and weight of members
         3) Location of shop and field connections
         4) Locations and details of anchors, base/bearing plates and leveling plates
         5) Details of holes, cuts, camber and splices
         6) Layout and location of composite shear studs
         7) Identify high-strength bolted slip-critical, direct-tension, or tensioned shear/bearing connections.

      c. Indicate welds by standard AWS A2.1 and A2.4 symbols distinguishing between shop and field welds; and show size, length and type of each weld.

d. Provide setting drawings, templates and directions for installation of anchor bolts and other anchorage to be installed as work by other sections.

1.5 PERFORMANCE REQUIREMENTS

A. Interface with other systems:
   1. Provide templates and instructions for installing anchors in other Work.

B. Structural Performance: Engineer structural steel connections required by the Contract Documents to be selected or completed by the fabricator to withstand design loadings indicated.

1.6 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of the latest editions of the following, except as otherwise indicated:
   1. AISC Steel Construction Manual - Thirteenth including the AISC "Code of Standard Practice for Steel Buildings and Bridges."
   2. AISC "Allowable Stress Design Specification for the Design, Fabrication and Erection of Structural Steel for Buildings", including "Commentary" and Supplements thereto as issued.
   3. AISC "Specifications for Architecturally Exposed Structural Steel".
   4. AISC "Specifications for Structural Joints using ASTM A 325 or A 490 Bolts" approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation.
   5. American Welding Society (AWS) D1.1 "Structural Welding Code - Steel".
   6. ASTM A6 “General Requirements for Delivery of Rolled Steel Plates, Shapes, sheet Piling and Bars for Structural Use”.
   7. Hot-dip galvanizing fabrication practices: Conform to the requirements of ASTM A143, A384 and A385 unless otherwise specified.

1.7 CONNECTION DESIGN AND MEMBER DETAILING

A. Design connections as “Framed Beam Connections: in accordance with Part 4 of the AISC Manual, except as otherwise indicated.
   1. For noncomposite beams, reaction shall be end reaction on member, as defined in the AISC “Uniform Loaded Beam Tables”, or reaction shown on the Drawings, whichever is greater.
   2. For composite beams, use reaction shown on the Drawings.
   3. Single sided connections for spandrel beams are not acceptable.
   4. Bolts: A325 or A490. Connections may be designed using Type N Bolts, except at hanger connections and where other slip-critical connections (designated as SC) are indicated on the Drawings; design slip-critical connections using Type SC bolts.

B. Shop and Field Connections:
   1. Shop connections are to be welded unless indicated otherwise on the Drawings.
   2. Bolt field connections with high-strength bolts except where welded connections or other connections are indicated.
   3. Bolts: 3/4 inch diameter minimum
   4. Fillet welds: 1/4 inch minimum, unless otherwise noted

C. Except where seated connections are shown or required, frame beams and girders into columns. Reinforce beam webs at seated connections for stability and to prevent buckling.

D. Moment Connections:
   1. Where a moment connection is noted on plans, provide a moment connecton at the beam to column connection or supporting beam to beam framing connection.

2. Unless noted otherwise or as a wind moment connection, the moment connection is to develop the full strength of the beam in bending. Use plates, top and bottom of the beam, to accomplish development.
3. Cantilevers require full moment connections “thru” column or supporting beam, unless beam rides over supporting member or column.
4. For moment connections “thru” columns, add beam stiffener plates minimum 3/8 inches thick. When the beam is parallel to the column web, the stiffener plates are to be equal to the flange thickness of the column and installed in line with the column flanges. When the beam is perpendicular to the column web, the stiffener plates are to be equal to the web thickness and installed in line with the column web. In addition, when beam is perpendicular to the column web, install column cap plate stiffeners equal to the column web thickness. The cap plate stiffeners are to be installed on both sides of the column web in line with the beam web.
5. Where a moment connection is indicated at a beam to beam connection, the supporting beam is to be continuous and a full moment and shear connection provided for the terminated beam.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site at such intervals to insure uninterrupted progress of work. Store fasteners in a protected place. Clean and relubricate bolts and nuts that become dry or rusty before use.
B. Deliver anchor bolts and anchorage devices, which are to be embedded in cast-in-place concrete or masonry or attached to other construction, in ample time to not delay work.
C. Store materials to permit easy access for inspection and identification. Keep steel members off the ground, using pallets, platforms, or other supports. Protect steel members and packaged materials from corrosion and deterioration.
D. Do not store materials on the structure in a manner that might cause distortion or damage to members or supporting structures. Repair or replace damaged materials or structures as directed.

1.9 TEMPORARY BRACING

A. The steel erector/contractor is responsible for the design, strength, adequacy, safety and means and methods of construction of shoring and temporary bracing of Structural Steel Work at all stages of erection, until such time that permanent members and construction are in place and final connections are completed.

1.10 PROJECT CONDITIONS

A. Field verify all existing measurements and elevations prior to beginning fabrication process. Architect will not review or take responsibility for any existing dimensions.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Metal Surfaces, General: For fabrication of work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, rust and scale seam marks, roller marks, rolled trade names and roughness in accordance with the AISC “Specifications for Architecturally Exposed Structural Steel”. Remove such blemishes by grinding, or by welding and grinding, prior to cleaning, treating and application of surface finishes.
B. Structural Steel Shapes, Plates and Bars: ASTM A36
C. Structural Steel Tubing:
    1. Cold-Formed: ASTM A500, Grade B
    2. Hot-Formed: ASTM A501

D. Steel Sheet: ASTM A 653 grade 40 galvanized G90 coating.

E. Bolts, Nuts, and Washers:

1. Unheaded Rods: ASTM A 36 (ASTM A 36M)
2. Unheaded Rods: ASTM A 572, Grade 50 (ASTM A 572M, Grade 345)
3. Anchor bolts: ASTM A307, nonheaded type unless otherwise indicated
4. Standard threaded fasteners:
   a. Plain washers: ANSI B27.2, Type A
   b. Beveled washers: ANSI B27.4
   c. Nuts and bolts: ASTM A307, Grade A

5. High-Strength Threaded Fasteners: Quenched and tempered medium-carbon steel.
   a. Bolts: Heavy hexagon ASTM A325
   b. Nuts: Heavy hexagon ASTM A563, Grade DH
   c. Washers: Hardened ASTM F436

6. Direct Tension Indicator Fasteners: Load indicator washers to conform to ASTM F959, or tension control bolts may be used.

F. Electrodes for Welding: Comply with AWS Code. Welding Materials: AWS D1.1; type required for materials being welded.

G. Galvanizing Repair Paint: High zinc dust content paint for regalvanizing welds and repair painting galvanized steel, complying with Military Specifications DOD-P-21035 (Ships) or SSPC-Paint-20.

H. Cement Grout: Portland cement, ASTM C 150, Type I; and clean, natural sand, ASTM C 404, Size No. 2. Mix at ratio of 1 part cement to 2-1/2 parts sand, by volume, with minimum water required for placement and hydration.

I. Nonmetallic, Shrinkage-Resistant Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout containing selected silica sands, portland cement, shrinkage compensating agents, plasticizing and water-reducing agents, complying with ASTM C 1107, of consistency suitable for application, and a 30-minute working time.
   1. Pre-mixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing additives.
   2. Acceptable products:
      a. Euco N.S. by Euclid Chemical Co.
      b. Five Star Grout by Five Star Grout Corp.
      c. Masterflow 713 by Master Builders
      d. Or approved equal

2.2 FABRICATION

A. Shop Fabrication and Assembly: Fabricate and assemble structural assemblies in shop to greatest extent possible. Fabricate items of structural steel in accordance with AISC Specifications and as indicated on final approved shop drawings. Provide camber in structural members where indicated.

B. Properly mark and match-mark materials for field assembly. Fabricate for delivery sequence which will expedite erection and minimize field handling of materials.

C. Where finishing is required, complete structural steel assemblies, including welding of units, before starting shop-priming of finishing operations. Provide finish surfaces of members exposed in final structure free of markings, burrs and other defects.

D. Fabricate architecturally exposed structural steel with exposed surfaces smooth, square, and free of surface blemishes, including pitting, rust and scale seam marks, roller marks, rolled trade names, and roughness.
   1. Remove blemishes by filling, grinding, or by welding and grinding, prior to cleaning, and treating.
   2. Comploy with fabrication requirements, including tolerance limits, of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for architecturally exposed structural steel.

E. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible. Plane thermally cut edges to be welded.

F. Finishing: Accurately mill ends of columns and other members trnasmitting loads in bearing.

G. Shear Connectors: Perpare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1 and manufacturer's printed instructions.

H. Connections:

1. Welded Connections: Comply with AWS D1.1 Code for procedures, appearance and quality of welds and methods used in correcting welding work.
   a. Join members with continuous welds, except where bolted connections are indicated.
   b. Stress relieve welded assemblies by heat treatment.
   c. Assemble and weld built-up sections by methods which will produce true alignment of axes without warp.
   d. Grind welds smooth.

2. Verify that weld sizes, fabrication sequence, and equipment used for architecturally exposed structural steel will limit distortions to allowable tolerances. Prevent surface bleeding of back-side welding on exposed steel surfaces. Grind smooth exposed fillet welds 1/2 inch and larger. Grind flush butt welds. Dress exposed welds.
3. Bolted connections: Install high-strength threaded fasteners in accordance with AISC "Specifications for Structural Joints Using ASTM A325 or A490 Bolts" (RCRBSJ).
   a. Shear-bearing connections: Bolts in connections not within slip-critical category, nor subject to tension loads, nor required to be fully tensioned bearing type connections shall be installed in properly aligned holes, tightened to snug-tight condition. Snug-tight condition is defined as tightness that exists when all plies in a joint are in firm contact. This may be attained by a few impacts of an impact wrench or full effort of a man using an ordinary spud wrench.
   b. Slip-critical Connections: Connections subject to direct tension, and fully pretensioned bearing connections, fasteners, together with washers of size and quality specified, shall be installed in properly aligned holes and tightened by one of methods described in Subsections 8(d) (1) through 8(d) (4), of referenced standard, to at least minimum tension specified when all fasteners are tight.

I. Bolt field connections, except where welded connections or other connections are indicated.

1. Provide high-strength threaded fasteners for all bolted connections, except where unfinished bolts are indicated.

J. Holes for Bolted Connections and Other Work:

1. Provide holes required for securing other work to structural steel framing, and for passage of other work through steel framing members, as shown on final shop drawings.
2. Cut, drill, or punch holes perpendicular to metal surfaces. Do not flame cut holes or enlarge holes by burning.
3. Drill holes in bearing plates.
4. Provide threaded nuts welded to framing, and other specialty items as indicated to receive other work.

2.3 GALVANIZING

A. All Steel shall have a Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel indicated for galvanizing according to ASTM A 123.

B. Fabricate structural steel in accordance with Class I, II, or III guidelines as described in AGA's Recommended Details for Galvanized Structures.

C. Use fabrication practices for products in accordance with applicable portions of ASTM A143, A384 and A385, except as specified herein. Avoid fabrication techniques which could cause distortion or embrittlement of steel.
D. Consult Architect regarding potential warpage problems or potential handling problems during the galvanizing process which may require modification of design before fabrication proceeds.
E. Remove welding slag and burrs prior to delivery for galvanizing.
F. Provide holes and/or lifting lugs to facilitate handling during the galvanizing process that are suitable to Architect and fabricator.
G. Remove, by blast cleaning or other methods, surface contaminants and coatings which would not be removable by normal chemical cleaning process in galvanizing operation.
H. Application of Coating:
    1. All exterior exposed structural steel shall be galvanized including all exterior wall lintels.
    2. Steel members, fabrications and assemblies: Comply with ASTM A123.
    3. Bolts, nuts and washers and iron and steel hardware components: Comply with ASTM A153.
    4. Coating weight: Conform with paragraph 5.1 or ASTM A123 or Table 1 of ASTM A153, as appropriate.
    5. Provide post-galvanizing treatments as recommended by AGA for conditions applicable to Work.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine substrates and adjoining construction, and conditions under which Work is to be installed. Before erection proceeds, and with the steel erector present, verify elevations of concrete and masonry bearing surfaces and locations of anchorages for compliance with requirements. Do not proceed with Work until unsatisfactory conditions are corrected.

3.2 PREPARATION

A. Temporary Shoring and Bracing:
    1. The steel structure is a self-supporting steel frame and is dependent upon diaphragm action of the metal roof deck and an attachment to a series of moment frames for stability and for resistance to wind and seismic forces.
    2. Provide temporary supports required for stability and for resistance to wind and seismic forces until these elements are complete and are capable of providing this support.
    3. Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads.
    4. Do not remove temporary members and connections until permanent members are in place, final connections are made and concrete slabs are cured.
    5. Provide temporary guy lines to achieve proper alignment of structures as erection proceeds.

B. Setting Base and Leveling/Bearing Plates:
    1. Clean concrete and masonry bearing surfaces of bond-reducing materials and roughen to improve bond to surfaces.
    2. Clean bottom surface of base and bearing plates.
    3. Set loose and attached base plates and bearing plates for structural members on wedges, shims, or setting nuts, or other adjusting devices.
    4. Tighten anchor bolts after supported members are positioned and plumbed.
    5. Do not remove wedges or shims, but if protruding, cut off flush with edge of base or leveling/bearing plate prior to packing with grout.

6. Pack non-shrink grout solidly between bearing surfaces and bases or plates so that no voids remain. Comply with grout manufacturer's instructions.

3.3 ERECTION

A. Field Assembly:
   1. Set structural frames accurately to lines and elevations indicated.
   2. Align and adjust various members forming part of complete frame or structure before permanently fastening.
   3. Clean bearing surfaces and other surfaces which will be in permanent contact before assembly.
   4. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
   5. Level and plumb individual members of structure within specified AISC tolerances.
   6. Establish required leveling and plumbing measurements on mean operating temperature of structure. Make allowances for difference between temperature at time of erection and mean temperature at which structure will be when completed and in service.
   7. Splice members only where indicated and accepted on final approved shop drawings.
   8. Complete field connections prior to loading member.
   9. On exposed welded construction, remove erection bolts, fill holes with plug welds and grind smooth at exposed surfaces.
   10. Do not enlarge unfair holes in members by burning or by use of drift pins, except in secondary bracing members. Ream holes that must be enlarged to admit bolts.
   11. Gas Cutting: Do not use gas thermal cutting torches in field during erection for correcting fabrication errors in primary structural framing. Cutting will be permitted only on secondary members which are not under stress, as acceptable to the Architect. Finish gas-cut sections equal to a sheared appearance when permitted.
   12. Direct Tension Indicator: Bolts shall be installed in all holes of the connection and brought to snug tight condition. All fasteners shall then be tightened, progressing systematically from the most rigid part of the connection to the free edges in a manner that will minimize relaxation of previously tightened fasteners prior to final twist-off or yielding of the control or indicator element of the individual devices. Proper tensioning of the bolts may require more than a single cycle of systematic tightening.

B. Comply with AISC Specifications for bearing, adequacy of temporary connections, alighment and removal of paint on surfaces adjacent to field welds.
C. Field Painting: Field paint all exposed structural steel in accordance with Section 09 90 00.
D. Touch-Up Galvanizing: Clean field welds, bolted connections and abraded areas and apply galvanizing repair paint to comply with ASTM A780.

END OF SECTION

SECTION 09 90 00
PAINTING AND COATING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of the Contract, including Instructions to Bidders and General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work under this Section includes coatings and painting of:
    1. Structural steel columns, lintel, plates and exposed bolts and washers.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's technical information including paint label analysis and application instructions for each material proposed for use. Provide MSD sheets for all products.
B. Selection Samples: Submit a complete set of color chips that represent the full range of manufacturers color samples available.

1.4 DELIVERY AND STORAGE

Deliver materials to job site in original, new and unopened packages and containers bearing manufacturer's name and label, and the following:

Name and title of material
Federal Specifications Number, if applicable
Manufacturer's stock number and date of manufacturer
Manufacturer's name
Contents by volume, for major pigment and vehicle constituents
Thinning instructions
Application instructions
Color name and number

1.5 REFERENCES

A. SSPC-SP 1 - Solvent Cleaning.
B. SSPC-SP 2 - Hand Tool Cleaning.
C. SSPC-SP 3 - Power Tool Cleaning.
D. SSPC-SP 13 / NACE No. 6 Surface Preparation for Concrete.
E. EPA - Method 24

PART 2 – PRODUCTS

2.1 COLORS AND FINISHES

A. General:
    1. Paint colors shall be as directed by Architect
    2. Surfaces treatments and finishes shall be as scheduled

B. Color pigments: Pure, non-fading, applicable types to suit substrates and service indicated. Lead content in pigment is limited to contain not more than 0.5% lead, as lead metal based on the total non-volatile (dry film) of paint by weight.
C. Paint coordination: Provide finish coats, which are compatible with prime coats, used. Provide barrier coats over incompatible primers and remove and re-prime as required. Notify C in writing of any anticipated problems using specified coating systems with substrates primed by others.
D. Single manufacturer: Provide undercoat paint produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer, and use only within recommended limits.

2.2 PROPRIETARY NAMES

A. Proprietary names: When used to designate colors or materials are not intended to imply that products of named manufacturers are required to exclusion of equivalent products of other manufacturers.
B. Federal Specifications: Are used to establish minimum acceptable quality for paint materials. Provide written certification from paint manufacturer that materials provided meet or exceed these minimums.
C. Substitutions: Manufacturer's products, which comply with coating qualitative requirements of applicable Federal Specifications, yet differ in quantitative requirements, may be considered for use when acceptable to the Architect. Furnish material data and manufacturer's certificate of performance to Architect for any proposed substitutions.

2.3 MATERIAL QUALITY

Utilize finishes manufactured by the following manufacturers:

1. Sherwin Williams Company (SW)
2. Benjamin Moore and Company (BM)
3. Devoe Coatings (DC)
4. Pittsburgh Paint Company (PP)
5. Approved equal

2.4 MATERIALS

A. Exterior Metal Primer: Equal to SW DTM Acrylic Primer/Finish, B66W1
B. Exterior Metal Finish: Equal to SW DTM Acrylic Coating, B66 Series

PART 3 – EXECUTION

3.1 INSPECTION

A. General: Applicator must examine areas and conditions under which painting work is to be applied and notify Contractor in writing of conditions detrimental to proper and timely completion of the work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Applicator. Starting of painting work will be construed as Applicator's acceptance of surfaces and conditions within any particular area.
B. Surface conditions: Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces or conditions otherwise detrimental to formation of a durable paint film.

3.2 SURFACE PREPARATION

A. General: Perform preparation and cleaning procedures in accordance with paint manufacturer's instructions and as herein specified for each particular substrate condition.

1. Related work: Surface preparation, priming and coats of paint specified are in addition to shop-priming and surface treatment specified under other sections of the work.
2. Items not scheduled: Paint exposed surfaces whether or not colors are designated in "schedules" except where natural finish of material is specifically noted as a surface not to be painted. Where items or surfaces are not specifically mentioned, paint same as adjacent similar materials or areas. If color or finish is not designated Architect will select these from standard colors available for materials systems specified.
3. Remove hardware and hardware accessories, machined surfaces, plates, lighting fixtures and similar in-place items not to be finished painted or, provide surface applied protection prior to surface preparation and painting operations. Remove, if necessary, for complete painting of items and adjacent surfaces. Following completion of painting of each space or area, reinstall removed items.
4. Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease prior to mechanical cleaning. Program cleaning and painting so that contaminants from cleaning process will not fall onto wet, newly painted surfaces.
5. Do not paint over any code required labels, such as Underwriters' Laboratory, Factory Mutual, or any equipment identification, performance rating, name or nomenclature plates.

B. Ferrous metals: Clean ferrous surfaces which are not galvanized or shop coated, of oil, dirt, and loose mill scale and other foreign substances by solvent or mechanical cleaning.
C. Galvanized surfaces: Clean free of oil and surface contaminants with non-petroleum based solvent.

3.3 MATERIALS PREPARATION

A. Mix and prepare painting materials in accordance with manufacturer's directions. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.

3.4 APPLICATION

A. General: Apply paint in accordance with manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.

1. Apply additional coats when undercoats, stains or other conditions show through final coats of paint, until paint film is of uniform finish, color and appearance. Ensure that surfaces including, edges, corners, crevices, welds and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Paint surfaces behind permanently fixed equipment or furniture with prime coat before installation of equipment.
3. Finish interior doors on tops, bottoms and side edges same as faces, unless otherwise indicated.
4. Sand lightly between each succeeding coat of enamel or varnish.

B. Scheduling painting: Apply first coat material to surfaces that have been cleaned, pretreated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration. Allow sufficient time between coatings to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat does not cause lifting or loss of adhesion of the undercoat.
C. Minimum coating thickness: Apply materials at not less than manufacturers recommended spreading rate, to establish a total dry film thickness as indicated or recommended by coating manufacturer.
D. Prime coats: Apply prime coat of material, which is required to be painted or finished, and which

has not been prime coated by others. Recoat primed and sealed surfaces where there is evidence of suction spots or unsealed areas.

E. Pigmented (opaque) finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage. Cloudiness, "holidays" spotting, laps, brush marks, runs, sags and other surface imperfections will not be acceptable.

3.5 CLEAN-UP AND PROTECTION

A. Clean-up: During progress of work, remove from size discarded paint materials, rubbish, cans and rags at the end of each day's work. Upon completion of painting work, clean window glass and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scrapping. Use care not to scratch or damage finished surfaces.

B. Protection: Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting as acceptable to the Architect and at no additional charge to the Owner.

C. Completion: At the completion of the work of other trades, touch-up and restore all damaged or defaced painted surfaces.

3.6 COATING SCHEDULE

A. Galvanized Exterior Metal (Semi-Gloss Finish)
Primer: Primer/Finish-SW DTM Acrylic Primer-Finish, B66W1
Finish: 2 top coats- SW DTM Acrylic Coating, B66 Series
Total Dry Mils: 7.5-13.0

3.7 GUARANTEE

A. Refinish any areas where finishes have failed within one (1) year from date of acceptance by the Owner. Failure from vandalism, abnormal structural movement, or other causes not inherent in the finish system except normal wear and maintenance, will not be considered failure of the finish.

3.8 PAINT FOR TOUCH-UP

Provide one (1) gallon of each type and color paint or finish used for touch-up.

END OF SECTION