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Inspections Division
Approved with Conditions
Date: 09/04/15

PROJECT MANUAL
AND SPECIFICATIONS
FOR
GATEWAY PARKING GARAGE
FAÇADE REPAIRS PHASE 1

181 High Street
Portland, ME

Prepared for:

Noyack Medical Partners
New York, NY

STATE OF MAINE
TODD
M.
NEAL
NO.9406
LICENSED
PROFESSIONAL ENGINEER

Prepared by:

Becker Structural Engineers, Inc.
75 York St.
Portland, Maine 04101
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BSE Project No. WO 3521
Engineer: Todd M. Neal, P.E.

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CITY OF PORTLAND, MAINE RESURGAM
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SECTION 00410

BID FORM

To: Noyack Medical Partners
Attn: CJ Follini
6 West 20th Street
5th Floor
New York, NY 10011

From: _____

1. The undersigned, having examined the proposed Contract Documents consisting of Drawings, The Form of Agreement, General Conditions, Supplementary Conditions, Specifications and have examined the site for the proposed work titled:

Gateway Garage Parking Facility
Façade Repairs Phase 1-High St
181 High Street
Portland, Maine

Hereby propose and agrees to furnish all permits, labor, materials, equipment, tools, and appliances, and perform operations necessary to complete the Work as required by the Contract Documents for the stipulated sum as follows:

A. For all Work other than Unit Price Work listed in sections C (including but not limited to all temporary shoring, temporary enclosures and protection, temporary traffic control, signage, heat, and utilities, etc.), a Lump Sum of:

_____ $_____
(words) (numerals)

B. Cost of staging from the condo roofs (Base Bid), a Lump Sum of:

_____ $_____
(words) (numerals)

C. General Conditions

_____ $_____
(words) (numerals)

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D. For all Unit Price Work, based on quantities shown:

UNIT PRICE WORK

Item No.	Description	Unit	Estimated Quantity	Unit Price	Estimated
1	Pavement repairs	sf	4,275		
2	Parking deck restriping	level	5		
3	Demolition of exist CMU/brick/guardrail	bays	39		
4	HSS bumper	bays	39		
5	Cable guardrail	lf	3,050		
6	Vinyl coated fence	lf	770		

TOTAL OF ALL UNIT PRICES

_____ $ _____
(words) (numerals)

E. For a total estimated (Items A+B+C+D) Bid amount of:

_____ $_____
(words) (numerals)

F. **Add Alternate #1** - Cost of staging off of the garage 100% if access and staging cannot be performed from the office condo roofs, a Lump Sum of:

_____ $_____
(words) (numerals)

G Unit Pricing

1. The following unit prices are required for the Owner to evaluate additions to or deductions from the work:

UNIT PRICING

Item No.	Description	Unit	Addition Unit Price	Deductions Unit Price
1	Pavement repairs	sf		
2	Parking deck restriping	level		
3	Demolition of exist CMU/brick/guardrail	bay		
4	HSS bumper	bay		
5	Cable guardrail	lf		
6	Vinyl coated fence	lf		

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2. The undersigned acknowledges the receipt of addenda numbers (if applicable):
   Addendum No: Addendum Date:

3. The Contractor shall provide along with this Bid Form, copies of the following documentation:

   A. Identify Project Manager, Supervisor and Foreman.
   B. List of all subcontractors, including:
      1. Company Name.
      2. Address.
      3. Type of Construction/Supplies.
      4. Percent of contract price.
   B. List of all proposed materials substitutions, including:
      1. Manufacturer.
      2. Proposed use.
      3. Cut sheets for all proposed Materials.
   C. Proof of Insurance: General Liability, Vehicle and Worker's Compensation Insurance as Required by Maine State Law.

4. The undersigned agrees that if he/she is selected as Contractor, he/she will within five days, Saturdays, Sundays, and legal holidays excluded, after presentation thereof by the Awarding Authority, execute the Contract in accordance with the terms of this bid and furnish proof of the capacity of the contractor to furnish a performance bond and also a labor and materials bond, each of a surety company qualified to do business under the laws of the State and satisfactory to the Awarding Authority, and each in the sum of one hundred percent of the Contract Price, the premiums for which are (if bond are required by the Owner) to be paid by the Contractor and are included in the Contract Price.

5. The undersigned agrees that if selected as general contractor, they will promptly confer with Owner on the question of subcontractors; and that the Owner may request a substitute for any subcontractor listed, as noted above.

6. A mandatory prebid meeting will take place on **June 1, 2015 at 2 pm** at the Gateway Parking Garage.

7. Bid documents are to be submitted by **June 12, 2015** by 4pm and addressed to:
   BECKER STRUCTURAL ENGINEERS, INC.
   75 York St
   Portland, Maine 04101
   Phone: 207.879.1838
   Attn: Joshua Martin-McNaughton, P.E.

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8. Commencement and Completion of Work: The undersigned agrees to commence work on the Contract within seven (7) calendar days from **July 1st, 2015** and to thereafter diligently and continuously carry on with the work.

9. The undersigned agrees that the Work will be substantially complete and ready for final payment by **December 31st, 2015**.

10. The undersigned understands that the Owner reserves the right to reject any and all bids.

11. The undersigned certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the word person shall me any natural person, joint venture, partnership, corporation or other business or legal entity.

12. The undersigned agrees that this Bid shall be good and may not be withdrawn for a period of 30 business days after the scheduled bid due date.

Date: _____

Name of Bidder: _____

Signed: _____

By: _____
(Name and title of person signing bid)

Business Address: _____

City and State: _____

Phone Number: _____

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SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. The CONDITIONS OF THE CONTRACT, all Drawings, and all Sections of Division 1 are hereby made a part of this Section.

1.02 WORK INCLUDED

A. This Section specifies administrative and procedural requirements for submittals required for performance of work, including:

1. Product data
2. Shop drawings

B. Administrative Submittals: Refer to requirements specified in other Division 1 Specification Sections, and other Contract Documents, for administrative submittals, including:

1. Permits
2. Applications for payment
3. Performance and payment bonds (where required).
4. Insurance certificates
5. List of subcontractors

1.03 RELATED REQUIREMENTS

A. Examine Contract Documents for requirements that affect Work of this Section. Other Specification Sections that directly relate to Work of this Section include, but are not limited to:

1. Concrete Repair: SECTION 03310
2. Structural Steel: SECTION 05120
3. Cable Guardrail: SECTION 05501
4. Painting: SECTION 09900

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1.04 SUBMITTAL PROCEDURES

A. Coordination of Submittals: Coordinate timing of submittals with construction activities. Transmit submittals well enough in advance of performance of work to avoid delays. Coordinate submittals of related elements of work.

   1. Engineer may reject, or withhold action on submittals requiring coordination with other submittals until related submittals are received.

B. Processing of Submittals: Allow sufficient review time to ensure installation will not be delayed because of time required to process submittals. Minimum processing times are as follows:

   1. Review by Engineer: Allow ten (10) business days for review and processing.

   2. No extension of Contract Time will be authorized due to failure to transmit submittals sufficiently in advance of scheduled performance of work.

C. Contractors Preparation of Submittals: Place permanent label or title block on each submittal for identification. Indicate Project Name, Engineer's Project Number, Specification Section number and title, date of submittal, name and address of Engineer, name and address of Contractor, name and address of subcontractor and/or supplier, name of manufacturer, Drawing number and detail reference.

   1. Contractor's Review and Action Stamp: Provide suitable space on label or title block for Contractor's review and action stamp. Stamp and sign each submittal to show Contractor's review and approval prior to transmittal to Engineer. Submittals not signed and stamped by Contractor will be returned without action.

   2. Engineer's Review and Action Stamp: Provide minimum 6 in. x 4 in. space on drawing for Engineer's review and action stamp. Deliver submittals to Engineer at address listed on cover of Project Manual.

   3. Modify and customize submittals as required to show interface with adjacent work and attachment to building.

D. Transmittal of Submittals: Transmit each item with transmittal form. Identify Project, Contractor, subcontractor, major supplier; identify pertinent Drawing sheet and detail number and Specification section number, as appropriate, on transmittal form.

   1. Source: Submittals received from sources other than Contractor will be returned without action.

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2. Deviations from Contract Documents: When products, materials or systems submitted deviate from Contract Documents, record deviations clearly on transmittal form, or separate attached sheet.

3. If deviation includes design and/or material change, this shall be accompanied by design calculations stamped by a registered professional Engineer or additional time and fee (payable by Contractor) will be required for submittal review.

E. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified:

1. All field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with the respect thereto;

   a. the suitability of all materials with respect to the intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

   b. all information relative to the Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; and

   c. shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

F. Each Submittal shall bear a stamp or specific written certification that Contactor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review an approval of that submittal.

G. With each Submittal, Contractor shall give Engineer specific written notice of any variations, that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawing's or Sample Submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

H. After Engineer reviews submittal, revise and resubmit as required. Identify recipients to promptly report inability to comply with provisions.

I. Distribute copies of reviewed submittals to concerned persons. Instruct recipients to promptly report inability to comply with provisions.

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1.05 SUBMITTAL SCHEDULE

A. General Contractor shall submit a Submittal Schedule to the Engineer within 7 days after they have received the Owner's Notice to Proceed.

1.06 SHOP DRAWINGS

A. Provide accurately prepared, large scale and detailed shop drawings prepared specifically for this Project on reproducible sheets. Show adjacent conditions and related work. Show accurate field dimensions where appropriate. Identify materials and products shown. Note special coordination required. Standard information prepared without specific reference to Project is not considered shop drawings.

B. Shop drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates, and similar drawings.

C. Show every component of fabricated item, notes regarding manufacturing process, coatings and finishes, identifying numbers conforming to Contract Documents, (i.e. stair numbers, door numbers, etc.) dimensions, and appropriate trade names. Show anchorage and fastening details, include type, size and spacing. Show material gage and thickness. Indicate welding details and joint types.

D. Show Drawing Sheet Size: Except for templates, patterns, and other full-size drawings, submit shop drawings on sheets at least 8-1/2 in. x 11 in., but no larger than 24 in. x 36 in.

E. Submittal Quantities: Submit shop drawings in following quantities:

1. Hardcopy Submittals: Submit three prints. Prints will be reviewed by the Engineer. One marked print will be returned to Contractor for printing and distribution. **Multiple copies will not be marked by the Engineer.**

2. Electronic Submittals:

a. Contractor shall include in the submittal schedule an indication of submittals that are intended to be submitted electronically. Upon receipt of the submittal schedule, the Engineer reserves the right to indicate submittals that will not be accepted electronically. Paper copies of such submittals shall be furnished as referenced in this specification.

b. The Engineer reserves the right to require paper copies of submittals that are received electronically. Provide Engineer one (1) paper copies in addition to the electronic submittal. Paper copy will be retained and

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electronic copy will be returned. Review cycle for such submittals shall not commence until such time that the paper copies are received.

c. Electronic Submittals shall be submitted in Protected Document Format (PDF) compatible with Bluebeam version 12 or later. Electronic files shall not be broken into smaller individual files. File sizes too large to process email or within a file transfer protocol (FTP) site shall be provided on a CD.

d. The submission of submittals electronically does not relieve the contractor of their responsibility to review the submittal prior to transmission to the Engineer. Electronic Submittals shall include contractor comments, and a statement and/or stamp of approval by Contractor, representing that the Contractor has seen and examined the submittal and that all requirements listed in this Section and Division 1 have been complied with. **Electronic submittals without the Contractor's approval will be rejected and returned.**

e. The Engineer assumes no responsibility for the printed reproduction of submittals reviewed electronically, transmission errors or returned electronic submittals that become corrupted or are otherwise not accessible by the Contractor's or Subcontractor's computer hardware and/or software

1.07 PRODUCT DATA

A. Definition: Product data includes manufacturer's standard published literature, such as installation instructions, catalog cuts and color charts. When product data must be prepared specifically because standard published data is not suitable for use, submit as shop drawing.

B. Preparation: Mark each copy of product data to show applicable choices and options. Where published product data includes information on several products and choices, mark copies to clearly indicate information applicable to this Project.

C. Do not submit product data until compliance with requirements of Contract Documents has been confirmed.

D. Submittal Quantities: Submit product data in following quantities:

1. Submit three copies for review. One copy will be returned to Contractor for printing and distribution. Multiple copies will not be marked by Engineer.

E. Installer Copy: Verify that installer of work possesses a current copy of Engineer approved product data prior to installation.

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1.08 ENGINEER'S ACTION

A. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

B. Engineer's review and approval shall not relieve the Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with all requirements of this section, the general and supplementary conditions of the Contract and the Engineer has given approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of paragraph 1.04.

1.09 DISTRIBUTION BY CONTRACTOR

A. Distribution: When submittal is marked "APPROVED" or "APPROVED AS NOTED", make prints and copies and distribute to subcontractors, suppliers, fabricators, and other parties requiring information from submittal for proper coordination and performance of work. Print copies of shop drawings from approved reproducible only.

END OF SECTION

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SECTION 01500

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Drawings, Contract Conditions, and other Technical Specifications Sections apply to work of this Section insofar as applicable.

1.02 WORK INCLUDED

A. This Section specifies construction facilities and temporary controls, including, but not limiting to:

1. Temporary restrictions on construction activity.
2. Temporary utilities.
3. Temporary construction and support facilities.
4. Temporary signage.
5. Security and protection facilities.

B. Contractor shall pay for all costs related to temporary facilities and utility service including but not limited to temporary heat, water and power. If required.

1.03 RELATED REQUIREMENTS

A. Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include, but are not limited to:

1. SECTION 00520: CONTRACT AGREEMENT
2. SECTION 00700: GENERAL CONDITIONS
3. SECTION 00800: SUPPLEMENTAL CONDITIONS
4. SECTION 01300: SUBMITTALS

1.04 QUALITY ASSURANCE

A. Comply with requirements of authorities having jurisdiction, codes, utility companies, OSHA, and industry standards including, but not limiting to:

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1. NFPA 241.

2. NFPA 70.

3. ANSI A10.

4. NECA NJG-6.

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

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

1.05 PROJECT CONDITIONS

A. 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. Do not allow hazardous, dangerous, or unsanitary conditions to develop on site.

PART 2 PRODUCTS

2.01 MATERIALS, GENERAL

A. Materials may be new or used, but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.

B. Lumber and Plywood:

1. Signs and Directory Boards: Provide exterior grade, Medium Density Overlay (MDO) plywood, conforming to USDC PS1, of size and thickness required.

2. Fences, Vision Barriers, and Safety Barriers: Provide exterior grade, C-D veneered plywood.

2.02 TEMPORARY UTILITIES

A. Scope: Temporary utility work includes, but is not limited to:

1. Electric power

2. Telephone Service.

B. Temporary Electric Power and Light:

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1. Power is currently available in the garage and can be used. Not all outlets are currently operational and may not provide easy access to all areas of work. Additional power maybe required and should be provided by the contractor.

2. Provide generator to run any equipment that exceeds the capacity of the existing system.

C. Telephone Service: Provide cell phone contact for project superintendent and project manager for this project.

2.03 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES

A. Scope: Temporary construction and support facilities include, without limitation:

1. Temporary heat.

2. Temporary enclosures.

3. Construction aids.

4. Waste disposal services.

5. Water control.

6. Rodent and pest control.

7. Pollution and dust control.

B. Temporary Heat and Ventilation: Provide temporary heat and ventilation required to maintain adequate environmental conditions to facilitate progress of work, to meet manufacturers' specified minimum installation conditions, and to protect materials and finishes from damage due to temperature and humidity.

1. Ventilate enclosed areas for curing of installed materials, to disperse humidity, and to prevent hazardous accumulations of dust, fumes, vapors and gases.

2. Portable heaters shall be standard approved units with controls.

3. Pay costs of installation, maintenance, operation, removal, and fuel consumed.

C. Contractor's Field Offices and Sheds: Prior to installation of offices and sheds, consult with Engineer and Owner on location, access, and related facilities.

D. Sanitary Facilities: Toilet facilities within the building will not be available.

1. Contractor is required to provide toilet facilities for workers and subcontractors.

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2. Coordinate location with garage management.

3. Maintain washrooms in clean and sanitary condition and supply exhaustible materials such as soap, hand towels, and toilet tissue.

E. Temporary Enclosures: Provide temporary weathertight enclosures of exterior walls as Work progresses. Design and construct temporary enclosures to provide acceptable working conditions, to provide weather protection for materials, to allow effective temporary heating, and to prevent entry of unauthorized persons.

1. Provide temporary exterior doors with self-closing hardware and padlocks.

2. Design enclosures to be removable to allow handling of materials.

F. Construction Aids: Provide construction aids and equipment required by personnel to facilitate execution of the work; scaffolds, staging, ladders, stairs, ramps, runways, platforms, railings, hoists, cranes, chutes, and other such facilities and equipment.

1. Refer to respective sections for particular requirements for each trade.

G. Use of Elevator: Will not be permitted for construction use.

H. Waste Disposal: Maintain all areas under Contractor's control free of debris. Initiate and maintain a specific program to prevent accumulation of debris at construction area, storage and parking areas.

1. Provide containers for deposit of debris.

2. Schedule daily collection and weekly disposal of debris.

3. Provide additional collections and disposals of debris whenever the weekly schedule is inadequate to prevent accumulation.

I. Water Control: Provide methods to control surface water to prevent damage to Project, site, and adjoining properties.

J. Dispose of drainage water in a manner to prevent flooding, erosion, or other damage to any portion of the site or to adjoining areas and properties.

K. Pollution Control: Provide methods, means, and facilities required to prevent contamination of soil, water, or atmosphere by the discharge of noxious substances from construction operations. Provide equipment and personnel, perform emergency measures required to contain any spillage and to remove contaminated soils or liquids.

1. Take special measures to prevent harmful substances from entering public waters.

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2. Prevent disposal of wastes, effluents, chemicals, or other such substances in sanitary or storm sewers.

3. Provide systems for control of atmospheric pollutants.

4. Prevent toxic concentrations of chemicals.

5. Prevent harmful dispersal of pollutants to atmosphere.

L. Dust Control: Provide positive methods and apply dust control materials to minimize raising dust from construction/demolition operations. Provide positive means to prevent air-borne dust from dispersing into the atmosphere.

2.04 TEMPORARY SIGNAGE

A. Scope: Temporary signage includes, but is not limited to:

1. Traffic.

2. Pedestrian.

3. Means of Egress.

4. Other signage as required in the Contract Documents.

B. Sign Structure and Framing: New or used, wood or metal, in sound condition structurally adequate to work and suitable for specified finish.

C. Rough Hardware: Galvanized steel or cadmium plated.

D. Paint: Exterior quality.

2.05 SECURITY AND PROTECTION FACILITIES

A. Scope: Security and protection facilities includes, but is not limited to:

1. Temporary fire protection.

2. Barricades, warning signs, lights.

3. Temporary traffic control.

4. Temporary access routes.

5. Security procedures.

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B. Temporary Fire Protection: Provide and maintain suitable fire protection equipment and services. Establish procedures for fire protection for welding and other potentially hazardous construction operations. Ascertain and comply with requirements of Project insurance carrier, City of Portland Fire Department and the State of Maine Fire Marshal. Permanent fire protection system may be activated to meet these requirements. Replace fusible link heads and other expended or discharged components at time of Substantial Completion.

   1. Locate temporary portable fire extinguishers in convenient locations, not less than one extinguisher per floor.

   2. Store combustible materials in containers in fire-safe locations.

   3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways, and other access routes.

C. Barricades, Warning Signs, and Lights: Provide and maintain barricades, warning signs, warning lights, railings, walkways, and the like. Paint signs and barricades with appropriate colors, graphics, and warnings to inform public and job-site personnel of hazards.

D. Construction Parking Control: Control vehicular parking to preclude interference with public traffic or parking, access by emergency vehicles, Owner's operations, or construction operations. Monitor parking of construction personnel's private vehicles:

   1. Maintain free vehicular access to parking spaces and through parking garage.

   2. Prohibit parking on or adjacent to access roads, or in non-designated areas.

   3. Contractor has been provided with **30 spaces** to complete work and for storage and contractor parking.

E. Safety Controls and Safety Signing:

   1. Detour signs shall have breakaway post assemblies conforming to the applicable provisions of MDOT Specifications.

PART 3 EXECUTION

3.01 MAINTENANCE, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. Limit waste and abuse.

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B. Maintenance: Maintain temporary facilities in operating conditions; repair damages 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 otherwise requested by Engineer, remove each temporary facilities when no longer useful, or when replaced by permanent facility. Clean and renovate permanent facilities that have been used during construction period.

END OF SECTION

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SECTION 01710
CLEANING

PART 1 GENERAL

1.01 DESCRIPTION

A. Work included: Throughout the construction period, maintain the buildings and site in a standard of cleanliness as described in this Section.

B. Provide waste storage containers.

C. Related work: In addition to standards described in this Section, comply with requirements for cleaning as described in pertinent other Sections of these Specifications.

1.02 QUALITY ASSURANCE

A. Conduct inspections to verify that requirements for cleanliness are being met.

PART 2 PRODUCTS

2.01 CLEANING MATERIALS AND EQUIPMENT

A. Provide required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.

2.02 COMPATIBILITY

A. Use only the cleaning materials and equipment which are compatible with the surface being cleaned, as recommended by the manufacturer of the material.

2.03 WASTE STORAGE CONTAINER

A. The Contractor is responsible for providing a suitable waste storage container of sufficient size or numbers for the temporary storage of wastes generated by the work of this Section and other Sections of these Specifications.

B. The Contractor is responsible for the proper and timely transfer of stored wastes to a proper off-site disposal.

C. Demolition debris shall not be stored on site.

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PART 3 EXECUTION

3.01 PROGRESS CLEANING

A. General:

1. Retain stored items in an orderly arrangement, in designated areas allowing maximum access, not impeding traffic or drainage, and providing required protection of materials.

2. Do not allow accumulation of scrap, debris, waste material, and other items not required for construction of this work, except in proper waste container(s).

3. Provide adequate storage for all debris and trash awaiting removal from the job site, observing requirements for fire protection and protection of the ecology.

4. Waste containers shall be emptied, off site, a minimum of once per week.

B. Site:

1. Continuously inspect the site and pick up all scrap, debris, and waste material. Remove such items to the container(s) designated for their storage.

2. Daily and more often if necessary, inspect all arrangements of construction materials stored on the site. Restack, organize neatly, tidy or otherwise service arrangements to meet requirements of subparagraph 3.01-A-1 above.

C. Building:

1. Daily, and more often if necessary, inspect and pick up all scrap, debris, and waste material. Remove such items to the container(s) designated for their storage.

2. As required preparatory to installation of succeeding materials, clean the surfaces to the degree of cleanliness recommended by the manufacturer of the succeeding material, using equipment and materials required to achieve the necessary cleanliness.

3.02 FINAL CLEANING

A. Prior to completion of the work, remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste. Conduct final progress cleaning as described in Article 3.01 above.

B. Site:

1. Broom clean paved areas and slab used by construction.

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2. Rake grass and garden areas to remove construction debris.

3. Completely remove resultant debris.

C. Building:

1. Exterior:

   a. Visually inspect exterior building surfaces and remove all traces of soil, waste materials, smudges, and other foreign matter caused by the work.

   b. Remove all traces of splashed materials from adjacent surfaces.

2. Interior:

   a. Visually inspect interior of building and remove all traces of soil, waste material, smudges, and other foreign matter caused by the work.

   b. Remove all unused construction material.

   c. Remove all temporary protection and shoring.

   d. Wash down all parking decks where work has been completed and/or affected by the work.

END OF SECTION

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SECTION 02070

SELECTIVE DEMOLITION

PART 1 GENERAL

1.01 DESCRIPTION

A. Work included: Remove precast cap, CMU back up wall, brick masonry façade and steel plates.

1. Removal of materials and debris includes proper site storage and off-site disposal. Should contractor discover, upon removal of damaged concrete, damage or deterioration of the embedded structural steel connections or reinforcement, they shall, immediately and prior to performing any repairs to these surfaces, inform the Engineer of encountered conditions. The Engineer will promptly review these conditions. As appropriate, the Engineer will provide the contractor with recommendations for repair of these conditions as described on the plans and in the specifications. Conform to all Federal, State and local safety requirements.

1.02 SUBMITTALS

Request for Engineer's consent:

1. Should conditions of the work, or schedule, indicate a required change of materials or methods for cutting and patching, so notify the Engineer and secure his written permission and the required Change Order prior to proceeding.

PART 2 PRODUCTS

2.01 TOOLS AND EQUIPMENT

A. Provide the adequate tools and equipment necessary to carry out the work of this Section.

B. Do not use tools, products and/or equipment which could damage the portions of the building which are to remain.

C. Any repairs that are caused to sound material by the use of improper equipment shall be the responsibility of the contractor.

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PART 3 EXECUTION

3.01 SURFACE CONDITIONS

A. Inspections:

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

2. After uncovering the work, inspect conditions affecting installation of new work.

3. Visually examine all areas of the project to determine actual conditions.

B. Discrepancies:

1. If uncovered conditions are not as indicated, immediately notify the Engineer and secure needed directions prior to proceeding.

2. Do not proceed until written directions are obtained from the Engineer.

3.02 PREPARATION PRIOR TO CUTTING

A. Contractor shall sound all concrete surfaces and confirm extent of repair area within locations marked on plan. The Engineer should be immediately notified of any discrepancies in quantities.

B. Provide required protection including, but not necessarily limited to, shoring, bracing and support to maintain structural integrity of the work and existing members.

C. Contractor shall construct barriers and other methods of protecting people and property prior to demolition.

1. Vehicle barriers will be required until work is complete.

2. Barriers and other methods shall be constructed in a manner that is acceptable to the Owner and the Building Inspector.

D. Barriers and other methods shall be maintained throughout construction.

1. As a minimum, all portions of deck areas where demolition or construction is taking place shall be completely closed to public access.

3.03 PERFORMANCE

A. Perform required cutting and patching as required under other Sections of these Specifications.

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1. Perform cutting and demolition by methods which will prevent damage.

END OF SECTION

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SECTION 03310

CONCRETE REPAIR

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. The drawings, the contract and other Division 1 Specification sections apply to work of this section.

B. Examine all other sections of the Specifications for requirements that affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 DESCRIPTION OF WORK:

A. Work included: Provide labor, materials, and equipment necessary to complete the work of this Section and, without limiting the generality thereof:

1. Repair of concrete curb.

2. Miscellaneous Concrete Repairs

1.03 QUALITY ASSURANCE:

A. Codes and Standards: Comply with provisions of the latest edition of the following except where more stringent requirements are shown or specified:

1. ACI 362.1 “Guide for the Design of Durable Parking Structures.”

2. ACI 546 "Concrete Repair Guide."

3. ICRI Technical Guideline No. 03731 “Guide for Selecting Application Methods for the Repair of Concrete Surfaces.”

4. ICRI Technical Guideline No. 03730 “Guide for Surface Preparation for the Repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion”

5. ICRI Technical Guideline No. 03732 “Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays.”

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6. "Code of Federal Regulations, Part 1926" per the Occupational Safety and Health Administration (OSHA), Department of Labor (Latest Revision).

B. Materials and installed work may require testing and retesting, as directed by the Engineer, at any time during progress of work. Allow free access to material stockpiles and facilities. Tests not specifically indicated to be done at Owner's expense, including retesting of rejected materials and installed work, shall be done at Contractor's expense.

1.04 SUBMITTALS

A. Unless otherwise specified, submittals required in this section shall be submitted for review. Submittals shall be prepared and submitted in accordance with Division 1.

B. All submittals shall be reviewed and returned to the Contractor within 10 working days.

C. **Incomplete submittals will not be reviewed**.

D. Submittals not reviewed by the General Contractor prior to submission to the Engineer will not be reviewed. Include on the submittal statement or stamp of approval by Contractor, representing that the Contractor has seen and examined the submittal and that all requirements listed in this Section and Division 1 have been complied with.

E. Engineer will review submittals a maximum of two review cycles as part of their normal services. If submittals are incomplete or otherwise unacceptable and re-submitted, General Contractor shall compensate the owner for Engineer's for additional review(s) cycles.

F. Product Data: Submit producer's or manufacturer's specifications and installation instructions for the following products. Include laboratory test reports and other data to show compliance with specifications (including specified standards).

1. One Component, Early Strength Gaining, Cementitious Repair Material .

2. Admixtures.

3. Primers/Bonding Agents.

G. Contraction/Construction Joints: Reference Section 07920.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver materials to site in manufacturer's original unopened containers and packaging bearing labels as to type and names of products and manufacturers.

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B. Deliver and store restoration material in manufacturer's original, unopened containers with the grade, batch and production data shown on the container or packaging.

C. Protect restoration material during storage and construction from rain, ground water, and other sources of moisture and from staining or intermixture with soils or other types of material.

D. Protect grout, mortar and other materials from deterioration by moisture and temperature. Store in a dry location or in waterproof containers. Keep containers tightly closed and away from open flames. Protect liquid components from freezing. Comply with manufacturer's recommendations for minimum and maximum temperature requirements for storage.

E. Damaged Material: Remove any damaged or contaminated materials from job site immediately, including materials in broken packages or packages containing water marks or other evidence of damage, unless Engineer specifically authorizes correction and use on project.

1.06 PROTECTION/SITE CONDITIONS:

A. Protect pedestrians, vehicles, building site and surrounding buildings from injury resulting from concrete restoration work.

B. Clean surfaces only when air temperatures are above 40 degrees F and will remain so until concrete has cured.

C. Do not perform any repair work if precipitation is expected. In case of unexpected precipitation, work shall cease and all uncured material shall be adequately protected with an impermeable polyethylene sheet.

D. Do not perform any patching unless the air temperatures are between 40 degrees F and 86 degrees F and will remain a minimum of 40 degrees F for at least 48 hours after completion of work.

E. If the ambient or subsurface temperature is expected to rise above 86 degrees F during curing then the hot weather requirements of ACI 305R hot weather concreting shall be followed.

F. If the ambient or subsurface temperature is expected to fall below 40 degrees F during curing then the cold weather requirements of ACI 306R cold weather concreting shall be followed.

G. Prevent patching materials from staining the face of other surfaces to be exposed to view. Immediately remove all patching materials that come into contact with such surfaces.

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H. Do not apply any material to frozen surfaces.

I. If materials are installed and cured in temperatures outside of the range noted above or per the manufacturer's recommendations. Written approval and modified installation instructions must be provided from the manufacturer and submitted for record to the Engineer. This installation shall not void the warranty.

PART 2 PRODUCTS

2.01 FORM MATERIALS:

A. Forms for Exposed Finish Concrete: Unless otherwise indicated, construct formwork for exposed concrete surfaces with plywood, metal, metal-framed plywood faced or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings. Provide form material with sufficient thickness to withstand pressure of newly-placed concrete without bow or deflection.

B. Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain nor adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces.

2.02 REINFORCING MATERIALS:

A. Reinforcing Bars: ASTM A 615, Grade 60, deformed and ASTM A 706, Grade 60, deformed, weldable.

B. Welded Wire Fabric: ASTM A 185, welded steel wire fabric. Provide welded wire fabric in flat sheets.

C. Supports for Reinforcement: Provide supports for reinforcement including bolsters, chairs, spacers, and other devices for spacing, supporting and fastening reinforcing bars and welded wire fabric in place. Use plastic or wire bar type supports complying with CRSI recommendations, unless otherwise specified. **Wood, concrete block, clay brick and other unspecified devices are not acceptable.**

2.03 REPAIR MATERIALS:

A. All concrete repair materials shall be compatible with each other and with existing concrete. If possible all primers, repair material, and other products should be from the same manufacturer.

B. All materials shall be compatible with chloride contents of 1.0 lbs/cy or greater.

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C. All pre-mixed concrete repair products shall be one-component cemetitious products specifically noted for use in parking structures with a corrosion inhibitor.

D. All materials shall be resistant to stresses resulting from automobile traffic and freeze/thaw cycles, de-icing salts, continuous presence of moisture, and a temperature range of –30 to 100 degrees F.

E. For small repairs areas, prepackaged bag mix is approved as follows:

1. One-component, early strength gaining cementititious repair material with the following properties:

a. Minimum 28 day compressive strength: 5000 psi.

b. **Maximum water cement ratio: 0.40**

2. Product shall be recommended for vertical application in garages in ACI Exposure Zone III. (Reference ACI 362 – latest edition.

3. Manufacturers:

a. Sika
b. BASF
c. Mapei
d. Approved equal (must be submitted with bid)

2.04 RELATED MATERIALS:

A. Moisture-Retaining Cover: One of the following, complying with ANSI/ASTM C 171.

1. Waterproof paper.

2. Polyethylene film.

3. Polyethylene-coated burlap.

B. Liquid Membrane-Forming Curing Compound: Not permitted.

C. Slab Joint Filler: Multi-component polyurethane sealant (self-leveling type). Reference Section 07920.

2.05 CONCRETE MIXING:

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A. Mixing shall be in strict conformance with manufacturer's recommendations.

PART 3 EXECUTION

3.01 FORMS:

A. Design, erect, support, brace and maintain formwork to support vertical and lateral loads that might be applied until such loads can be supported by concrete structure. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation and position.

B. Design, construct, erect, maintain, and remove forms for cast-in-place concrete work in compliance with ACI 347.

C. Design formwork to be readily removable without impact, shock or damage to existing and new concrete surfaces and adjacent materials.

D. Chamfer exposed corners and edges as indicated or to match existing, using wood, metal, PVC or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

E. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt or other debris just before concrete is placed. Retighten forms and bracing after concrete placement as required to eliminate mortar leaks and maintain proper alignment.

3.02 PLACING REINFORCEMENT:

A. Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars", for details and methods of reinforcement placement and supports, and as herein specified.

1. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials which reduce or destroy bond with concrete.

2. Accurately position, support and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers and hangers, as required.

3. Install welded wire fabric in flat sheets in as long lengths as practicable. Lap adjoining pieces at least two full mesh and lace splices with wire. Offset end laps in adjacent widths to prevent continuous laps in either direction.

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3.03 PREPARATION OF FORM SURFACES

A. Prior to repairing, all surfaces must be prepared in accordance with this section of the specification and the manufacturers recommendations.

B. Sawcut perimeter of damage area to a depth of 1/2"+/- (unless note otherwise on Drawings). Do not cut reinforcement. Remove, by hand, a section to confirm depth of reinforcement and adjust depth as required. Do not overcut perimeter at corners.

C. The removal of all unsound concrete, using lightweight demolition hammers, not to exceed **15 pounds is recommended** with 30 pound max. All removals to be performed with ICRI Guidelines, which shall be a part of these specifications, with regard to removal geometry, exposure, undercutting and cleaning of embedded reinforcement, and conditioning of edges and surfaces. **Damage caused as a result of using larger hammers will be repaired at the Contractors expense.**

D. Steel reinforcement shall be thoroughly prepared by mechanical cleaning to remove all traces of rust.

E. Pressure wash all surfaces, including reinforcement using 3000 to 4000 psi water blast, as required to remove all dust and dirt. The surface shall be saturate surface dry (SSD) with no standing water during application

F. The result of this preparation shall render an exposed aggregate surface with a minimum surface profile of +/- 1/8". The surface shall be clean, meaning having complete exposure of sound original material without any deposits of contaminants, foreign matter or loose material, which could affect the bond or long term durability of the surface and the repair material.

3.04 INSPECTION:

A. Inspect all concrete surfaces prior to application of primers/adhesives to insure proper preparation and surface drying.

B. Conform to all manufacturers' preparation instructions.

C. Inspect reinforcement for section loss at locations of deterioration. If loss exceeds 25% notify Engineer prior to proceeding with the repair.

3.05 PRIMING OF REINFORCING STEEL

A. Any reinforcement exposed in the course of removing unsound materials shall be cleaned and prepared in accordance with the above specifications.

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B. All exposed reinforcement shall be primed with an approved bonding agent compatible with the repair materials. Coat all exposed surfaces in accordance with the manufacturer's instructions. Care must be taken to create a continuous coating on the full surface, including the underside of the undercut reinforcement. Observe manufacturer's minimum and maximum timing window for repair after application of primer.

C. Primer shall have corrosion inhibiting properties.

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3.06 CONCRETE REPAIR

A. Following preparation, as specified above, contractor shall maintain work area in a clean condition, including materials, equipment and workers' footwear, to avoid tracking in of contaminants, dirt, dust, mud or other materials which may interfere with adhesion and durability of repairs.

B. Prior to installation, all repair areas shall be kept continuously wet for at least 20 minutes prior to application of patching compound. Before placing repair material, excess water shall be blown, vacuumed or otherwise removed from the surface, leaving the surface damp or saturated/surface dry.

C. Vigorously brush apply a thin primer coat of acrylic latex bonding agent with added 10% neat Type 1 portland cement into all cavity surfaces. Unless noted otherwise in manufacturer’s installation instructions. All primers shall be compatible with repair material.

D. Within specified time frame of primer application, mix and place repair compound in accordance with manufacturer's instructions.

E. Mix the precisely measured quantity of water specified by the manufacturer with full bags of repair compound only. Mix using slow speed drill (450 rom maximum) with mud or paddle mixer. Motorized mortar mixers may be used for mixing larger quantities. Mix to a uniform consistency, free of lumps or dry material. Do not whip air into the mix. Do not overmix.

F. When placing the repair material, care shall be taken to assure that all corners and gaps under reinforcing steel and entire cavity profile is completely filled and properly compacted to prevent formation of voids or unbonded areas. "Work" the material into corners and gaps, and onto cavity sidewalls using pressure on the trowel to assure good contact between patch and substrates.

G. Patches deeper than 1" (25 mm) may be extended by coarse aggregate addition. 20 pounds of clean, washed, 3/8" pea stone suitable in composition and surface profile for use as a concrete aggregate, may be added to each 50 pound bag of patching compound.

H. Do not re-temper material which has begun to set. Discard any unused material after 20 minutes. Do not excessively wet repair surfaces after placement or as an aid to trowelling. Limit surface water addition to light misting and do not wet or rework repeatedly.

I. Observe the curing requirements for each day's working conditions, as specified herein. Do not open to traffic or expose to weather until adequate strength has been reached, as affected by working and curing conditions.

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J. Finish: Provide finish to match existing or as required for membrane application.

3.07 CRACK REPAIR:

A. Preparation:

1. Remove all existing joint sealant.

2. Center routed groove on crack.

3. Remove all loose and deteriorated material.

4. All joint wall surfaces must be clean, sound, and frost free. Joint walls must be free of oils, grease, curing compound residues, and any other foreign matter that might prevent bond. This should be accomplished by blast cleaning or equivalent mechanical means.

5. Conform to all manufacturers' preparation requirements.

B. Sealant Installation:

1. Sealant shall conform to specification Section 07900; Joint Sealant.

2. Install as per manufacturer's requirements.

3. Install sealant evenly and recess 1/8" below surface. DO NOT OVERFILL JOINT.

3.08 MONOLITHIC REPAIR FINISHES:

A. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as hereinafter specified, and slab surfaces which are to be covered with membrane or elastic waterproofing, and as otherwise indicated.

B. Trowel Finish: Apply trowel finish to monolithic slab surfaces indicated, including slab surfaces to be covered with carpet, resilient flooring, paint or other thin-film finish coating system.

C. Slab finishes for floor coverings not indicated shall be coordinated with the Engineer prior to slab placement.

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3.09 CONCRETE CURING AND PROTECTION:

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with the requirements of ACI 306 as herein specified.

B. Curing Methods: Perform curing of concrete by moist curing, by moisture-retaining cover curing. **Slab repairs shall be cured by moist curing methods for a minimum of 3 days.**

C. Protection From Mechanical Injury: During the curing period, the concrete shall be protected from damaging mechanical disturbances, such as load stresses, heavy shock, and excessive vibration. All finished concrete surfaces shall be protected from damage by construction equipment, materials, or methods, by application of curing procedures, and by rain or running water. Self-supporting structures shall not be loaded in such a way as to overstress the concrete.

3.10 QUALITY CONTROL TESTING DURING CONSTRUCTION:

A. Engineer shall verify reinforcement, including slab reinforcement (WWF or reinforcing bar).

3.11 CLEANING:

A. Clean off excess material adjacent to work in progress by methods and with cleaning materials approved by manufacturer of patch materials.

END OF SECTION

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SECTION 05120

STRUCTURAL STEEL

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. The drawings and general conditions of the contract including General and Supplementary Conditions and other Division 1 Specification sections apply to work of this section.

B. Examine all other sections of the Specifications for requirements which affect work of this Section whether or not such work is specifically mentioned in this Section.

C. Coordinate work with that of all trades affecting or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.02 DESCRIPTION OF WORK:

A. Extent of structural steel work is shown on drawings, including removal of four existing beams and installation of four new beams using existing connections.

B. Structural steel is that work defined in AISC "Code of Standard Practice" and as otherwise shown on drawings.

1.03 QUALITY ASSURANCE:

A. Codes and Standards: Comply with latest provisions of the following, except as otherwise indicated:

1. AISC "Code of Standard Practice for Steel Buildings and Bridges", Latest Edition.

2. AISC "Specification for Structural Steel Buildings", including "Commentary" and Supplements issued thereto.

3. AISC "*Specifications for Structural Joints using ASTM A 325 or A 490 Bolts"* approved by the Research Council on Structural Connections of the Engineering Foundation.

4. AWS D1.1 - "Structural Welding Code" - Steel.

5. AWS D1.3 - "Structural Welding Code" - Sheet Steel.

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6. ASTM A6 "General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling and Bars for Structural Use."

7. "Code of Federal Regulations, Part 1926" per the Occupational Safety and Health Administration (OSHA), Department of Labor (Latest Revision).

B. Qualifications for Welding Work: Qualify welding processes and welding operators in accordance with AWS D1.1 "Standard Qualification Procedure."

1. Provide certification that welders to be employed in work have satisfactorily passed AWS D1.1 qualification tests and maintained a current certification. Current certification and/or continuity log shall be submitted and be available in the field.

2. If re-certification of welders is required, retesting will be the Contractor's responsibility.

C. Fabricator Qualifications: N/A.

1.04 SUBMITTALS

A. Unless otherwise specified, submittals required in this section shall be submitted for review. Submittals shall be prepared and submitted in accordance with this section and 01300.

B. All submittals shall be reviewed and returned to the contractor within 10 working days.

C. INCOMPLETE SUBMITTALS WILL NOT BE REVIEWED.

D. Submittals not reviewed by the General Contractor prior to submission to the Engineer will not be reviewed. Include on the submittal statement or stamp of approval by Contractor, representing that the Contractor has seen and examined the submittal and that all requirements listed in Division 1 have been complied with.

E. Engineer will review submittals a maximum of two review cycles as part of their normal services. If submittals are incomplete or otherwise unacceptable and re-submitted, General Contractor shall compensate Engineer for additional review cycles.

F. Hardcopy Submittals: Submit three prints. Prints will be reviewed by the Engineer. One marked print will be returned to Contractor for printing and distribution. Multiple copies will not be marked by the Engineer.

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G. Product Data: Submit producer's or manufacturer's specifications and installation instructions for the following products. Include laboratory test reports and other data to show compliance with specifications (including specified standards).

1. Structural steel certified mill reports for each grade of steel covering chemical and physical properties and yield strengths.

2. High-strength bolts (each type), including nuts and washers.

3. Structural steel primer paint.

4. Structural steel top coat paint or add painting into this specification.

H. Shop Drawings:

1. Shop Drawing Review: Electronic files of structural drawings will not be provided to the contractor for preparation of shop drawings. Reproduction of any portion of the Construction Documents for use as Shop drawings and/or Erection Drawings is prohibited. Shop drawings and/or Erection drawings created from reproduced Construction Documents will be returned without review.

a. Review of the shop drawings will be made for the size and arrangement of the members and strength of the connections. Conformance of the Shop Drawings to the Contract Drawings remains the responsibility of the General Contractor. Engineer's review in no way relieves the General Contractor of this responsibility.

b. Shop drawings will not be reviewed as partial submittals. A complete submittal shall be provided and shall include; erection and piece drawings indicating all members, braced frames, moment frames and connections. <u>Incomplete submittals will not be reviewed.</u>

1.05 DELIVERY, STORAGE AND HANDLING:

A. Deliver materials to site at such intervals to insure uninterrupted progress of work.

B. Store materials to permit easy access for inspection and identification. Keep steel members off ground, using pallets, platforms, or other supports. Protect steel members and packaged materials from corrosion and deterioration.

C. Do not store materials on structure in a manner that might cause distortion or damage to members or supporting structures. Steel materials shall be stored in a manner to avoid ponding of precipitation on members. Repair or replace damaged materials or structures as directed.

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PART 2 PRODUCTS

2.01 MATERIALS:

A. Structural Steel Shapes, Plates and Bars (U.N.O): ASTM A 36 minimum, higher strength steel is acceptable.

B. Structural Steel Hot Rolled Wide Flange Shapes: ASTM A 992 Grade 50 (ASTM A572 Grade 50 with special requirements per AISC Technical Bulletin #3, dated March 1997)

C. Unfinished Threaded Fasteners: ASTM A 307, Grade A, regular low-carbon steel bolts and nuts. Provide hexagonal heads and nuts for all connections.

D. Steel Tube: ASTM A 500, Grade B, Fy = 46 ksi.

E. Anchor Bolts: ASTM A 307, headed type unless otherwise indicated.

F. Unfinished Threaded Fasteners: ASTM A 307, Grade A, regular low-carbon steel bolts and nuts. Provide hexagonal heads and nuts for all connections.

G. High-Strength Threaded Fasteners: Heavy hexagon structural bolts, heavy hexagon nuts, and hardened washers, as follows:

1. Quenched and tempered medium-carbon steel bolts, nuts and washers, complying with ASTM A325, ¾” diameter.

2. Direct tension indicator washers or bolts may be used at contractors options

3. Galvanized.

H. Steel Coatings for Exterior Exposed Steel: Hot dipped galvanized per ASTM A123/A123M (latest edition). Galvanizing shall be applied in a manner to provide Class C fraying surfaces for slip critical connections.

I. Electrodes for Welding:

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1. Minimum 70 ksi electrodes. Filler material shall meet the grouping requirements per AWS D1.1 Table 3.1 for matching strength of connected materials.

2. All filler metal used welding shall meet the following Charpy V-Notch (CVN) requirements.

   a. 20 ft-lb at 0 degrees Fahrenheit unless noted otherwise.

   b. 20 ft-lb at -20 degrees Fahrenheit and 40 ft-lb at 70 degrees Fahrenheit at all complete joint penetration (CJP) groove welds.

J. Structural Steel Paint Coatings shall be as specified in the Structural Steel Coatings section of this specification, and as specified in Division 9.

2.02 FABRICATION:

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

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

   2. Where finishing is required, complete assembly, including welding of units, before start of finishing operations. Provide finish surfaces of members exposed in final structure free of markings, burrs and other defects.

B. Connections: Weld or bolt shop connections, as indicated.

   1. Provide field bolted connections, except where welded connections or other connections are indicated.

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

C. High-Strength Bolted Connection: Install high-strength threaded fasteners in accordance with AISC "Specification for Structural Joints using ASTM A 325 or A 490 Bolts". Unless otherwise indicated, all bolted connections are to be tightened to the snug tight condition as defined by AISC.

D. Welded Construction: Comply with AWS Codes for procedures, appearance and quality of welds, and methods used in correcting welding work.

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E. Holes for Other Work: Provide holes required for securing other work to structural steel framing, and for passage of other work through steel framing members, as shown on final shop drawings.

F. Cut, drill, or punch holes perpendicular to metal surfaces. Do not flame cut holes or enlarge holes by burning. Drill holes in bearing plates.

G. Fabricator, Erector and General Contractor shall coordinate safety requirements for the project, in accordance with OSHA Part 1926. Provide all necessary pieces and fabrications as required to safely erect and access the structure for the duration of project construction.

2.03 STRUCTURAL STEEL COATINGS

A. Coordinate coating requirements with Division 9 of the specifications.

B. To the greatest extent possible, structural steel coatings shall be shop applied.

C. Galvanizing, priming and painting for structural steel permanently exposed to view shall meet the requirements of Section 10 of the Code of Standard Practice, "Architecturally Exposed Structural Steel".

D. Provide venting/drainage holes in tubular members to be hot-dipped galvanized. Holes shall be provided in a location hidden from view in the final condition and in a manner that will not reduce the strength of the member. Hole locations shall be clearly indicated on the Shop Drawings and are subject to review by the Engineer.

E. Follow manufacturer's installation and safety instructions when applying coatings. Adhere to recoat time recommendations set forth by manufacturer.

F. General: Shop priming of structural steel is not required for heated, interior steel not exposed to view unless noted otherwise.

G. Coatings: All exterior steel and/or steel permanently exposed to view shall receive a coating. Unless noted otherwise, refer to Division 9 specifications for products and surface preparation requirements.

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H. Unheated structural steel to be enclosed with architectural finishes, including but not by limitation, canopy members and/or roof pop-up members shall be primed with rust inhibitive alkyd primer, Tnemec Series 349 unless noted otherwise. Follow manufacturer's instructions for surface preparation and application. Substitution shall be equal to the above specified products, and shall be submitted for review.

I. Field Touch-up: Touch-up all paint and galvanizing damage, including but not by limitation, damage caused during shipping, erection, construction damage, and field welded steel. See Division 9 specifications for additional requirements.

PART 3 EXECUTION

3.01 ERECTION:

A. General: Comply with AISC Specifications for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds.

B. Erection Procedures: Comply with "Code of Federal Regulations, Part 1926" per the Occupational Safety and Health Administration (OSHA), Department of Labor (Latest Revision).

C. Temporary Shoring and Bracing: This is the sole responsibility of the Contractor. Provide temporary shoring and bracing members with connections of sufficient strength to support imposed loads. Remove temporary members and connections when all permanent members are in place, and all final connections are made, including the floor and roof diaphragms. Provide temporary guy lines to achieve proper alignment of structures as erection proceeds. Comply with OSHA Standard referenced previous. Retain the services of a Specialty Structural Engineer (Not the Engineer of Record) to design specialty shoring and bracing.

D. Field Assembly:

1. Set structural members accurately to lines and elevations indicated.

2. Align, adjust, level and plumb members of complete frame in to the tolerances indicated in the AISC Code of Standard Practice and in accordance with OSHA regulations.

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.

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5. 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.

E. Erection bolts: Remove erection bolts. On exposed welded construction and at all braced frame members fill holes with plug welds and grind smooth at exposed surface.

F. Gas Cutting: Do not use gas cutting torches in field for correcting fabrication errors in primary structural framing. Cutting will be permitted only on secondary members which are not under stress, as accepted by the Engineer of Record. Finish gas-cut sections equal to a sheared appearance when permitted.

G. Coating Damage: Touch up shop applied paint or galvanizing whenever damaged or bare. See "Coatings" sections for additional requirements.

H. Welders shall have current evidence of passing and maintaining the AWS D1.1 Qualifications test available in the field.

I. Welding electrodes, welding process, minimum preheat and interpass temperatures shall be in accordance with AISC and AWS specifications. Any structural steel damaged in welding shall be replaced.

3.02 QUALITY CONTROL:

A. General: Contractor is responsible for maintaining quality control in the field and for providing a structure that is in strict compliance with the Contract Documents.

1. Required inspection intended to assist the Contractor in complying with the Contract Documents. These specified services, however, do not relieve the Contractor of his responsibility for compliance, nor are they intended to limit the Contractor's quality control efforts in the field.

B. Nonconforming Work: Contractor shall be responsible for correcting deficiencies in structural steel work which inspections laboratory test reports have indicated to be not in compliance with requirements. Additional tests and/or surveys shall be performed, at the Contractor's expense, as may be necessary to show compliance of corrected work. Any costs associated with the Engineer's review and disposition of faulty works shall be borne by the Contractor.

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SECTION 05501

CABLE GUARDRAIL

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. This Section includes the following metal fabrications:

1. Strand for pedestrian guardrail.

1.3 SUBMITTALS

A. Shop drawings detailing fabrication and erection of each fabrication. Include plans, elevations, sections and details of fabrication and their connection. Show anchorage and accessory items. Provide templates for anchors and bolts.

B. Unless otherwise specified, submittals required in this section shall be submitted for review. Submittals shall be prepared and submitted in accordance with this section and Division 1.

C. General Contractor shall submit a Submittal Schedule to the Engineer within 7 days after they have received the Owner's Notice to Proceed.

D. All submittals shall be reviewed and returned within 10 working days.

E. INCOMPLETE SUBMITTALS WILL NOT BE REVIEWED.

F. Submittals not reviewed by the General Contractor prior to submission to the Engineer will not be reviewed. Include on the submittal statement or stamp of approval by Contractor, representing that the Contractor has been and examined the submittal and that all requirements listed in Division 1 have been complied with.

G. Engineer will review submittals a maximum of two review cycles as part of their normal services. If submittals are incomplete or otherwise unacceptable and re-submitted, General Contractor shall compensate Engineer for additional review cycles.

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H. Hardcopy Submittals: Submit three prints. Prints will be reviewed by the engineer. One marked print will be returned to Contractor for printing and distribution. Multiple copies will not be marked by the engineer.

I. Product Data: Submit producers or manufacturer's specifications and installation instructions for the following products. Include laboratory test reports and other data to show compliance with specifications (including specified standards).

1. Stressing procedures and jacking forces to result in the final effective forces.

2. Provide the following information:
   a. Name and certifications of installer and inspector.
   b. Jack and gage calibration certification.
   c. Jack and gage Serial or identification number.
   d. Gage pressure to achieve required stressing force per supplied calibration chart.
   e. Calculated strand elongation and actual elongations.
   f. Actual gage pressure.

I. Hardware and accessory data sheets.

J. Operation and Maintenance Manual. The system installer shall provide a system maintenance and operations guide to the Owner provide at a minimum the following data:

a. Recommended inspection periodicity and procedures.
b. Maintenance and repair procedures for minor damage (coating repair, etc.)
c. Action plan in case of major damage impairing the system functionality.

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: Firm experienced in producing guardrail strand fabrications similar to those indicated for this Project with a record of successful in-service performance, and with sufficient production capacity to produce required units without delaying the Work.

B. Installation shall be performed by PTI certified installer or qualified technician with minimum of (3) three years' experience and (5) five projects of similar size and scope.

C. Proper calibrated stressing equipment shall be supplied for the particular application and/or barrier cable system that are necessary to perform the work.

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REFERENCES

A. American Institute of Steel Construction (AISC):
   1. AISC, "Code of Standard Practice for Steel Buildings and Bridges."
   2. AISC, "Manual of Steel Construction."
   3. AISC, "Specification for the Design, Fabrication and Erection of Structural steel for Buildings."

B. American Society for Testing and Materials (ASTM):
   1. ASTM A36, "Specification for Structural Steel."
   2. ASTM A123, "Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and steel Products."
   3. ASTM A164, "Specification for Electro deposited Coatings of Zinc on Steel."
   4. ASTM A386, "Specification for Zinc Coating (Hot-Dip) on Assembled Steel Products."
   5. ASTM A416, "Specification for Steel Strand, Uncoated Seven-Wire Stress-Relieved, for Prestressed Concrete."
   6. ASTM A475, "Specification for Zinc-Coated Steel Wire Strand."
   7. ASTM A882, "Standard Specification for Epoxy-Coated Seven-Wire Prestressing Steel Strand."
   8. ASTM B454, "Specification for Mechanically Deposited Coatings of Cadmium and Zinc on Ferrous Metals."

C. Post-Tensioning Institute
   1. "Specification for Seven Wire Strand Barrier Cable Applications."

1.6 PROJECT CONDITIONS

A. Field Measurements: Check actual locations of walls and other construction to which strand guardrails must fit by accurate field measurements before fabrication. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 PRODUCTS

2.1 FERROUS METALS

A. General: Comply with Post-Tensioning Institute's "Specification for Seven Wire Steel Strand Barrier Cable Applications."

B. Guardrail Strand and Prestressing/Post-Tensioning Anchors:
   1. Seven-wire steel strand, 0.5 in. diameter, galvanized stress-relieved prestressing strand, with minimum ultimate tensile strength of 250,000 psi. All strands shall be manufactured by single source inside United States of America.

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2. Strand to have continuous hot-dip galvanizing coating. Minimum weight of zinc coating shall be 0.90 oz./sq.ft.
3. Anchor bodies shall be galvanized (wedge grippers shall be electrogalvanized) and compatible with strand system furnished. Anchor bodies shall comply with Post-Tensioning Institute "Specification for Unbonded Single strand Tendons." Environment: Corrosive.

2.2 FABRICATION, GENERAL

A. Form strand guardrail from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements indicated. Work to dimensions, indicated or accepted on shop drawings, using proven details of fabrication and support. Use type of materials indicated or specified for various components of each metal fabrication.

B. Allow for thermal movement resulting from the following maximum change (range) in ambient temperature in the design, fabrication, and installation of installed strand guardrail assemblies to prevent over stressing. Base design calculations on actual surface temperatures of metals due to both solar heat gain and nighttime sky heat loss.
   1. Temperature Change (Range): 100 deg. F

C. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space anchoring devices to secure strand guardrails rigidly in place and to support indicated loads.

D. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

E. Fabricate joints that will be exposed to weather in a manner to exclude water.

PART 3 EXECUTION

3.1 PREPARATION

A. Coordinate and furnish anchorages, setting drawings, diagrams, templates instructions, and directions for installing anchorages. Coordinate delivery of such items to Project site.

3.2 INSTALLATION, GENERAL

A. Fastening to In-Place Construction: Provide anchor bolts where necessary for securing miscellaneous metal fabrications to in-place construction.

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B. If guardrail strands are required to be post-tensioned:
   1. Provide a minimum prestressing force of 3,000 pounds to each strand.
   2. Backstress after the guardrail strand has been prestressed. Backstress all fixed and stressing anchorages.
   3. Backstress the guardrail strand to a force equal to 80% of the minimum ultimate tensile strength (MUTS) of the strand.
   4. Prevent damage to the column or other member to which the guardrail strand is anchored.
   5. For related procedures refer to the PTI Guide Specification.

C. Barrier cable tails shall be removed within 1 inch from the face of the anchor using a metal cut off saw. Do not use a torch. Provide galvanized metal screw on covers.

3.3 ADJUSTING AND CLEANING

A. For galvanized surfaces, clean welds, bolted connection, and abraded areas, and apply galvanizing repair paint to comply with ASTM A 780.

B. Galvanized coatings damaged during installation, including backstressing operations or tail cutting shall be repaired with a cold galvanizing spray.

C. When cables tension is questioned or suspected, tension verification will be performed by means of an approved cable tension gage without removing or damaging the cables.

3.4 WARRANTY

A. At the completion of the project and prior to the final payment, the system supplier will provide a written warranty letter for a minimum period of (5) five years on all materials, components and installation.

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SECTION 09900

PAINTING

PART 1 GENERAL

1.00 GENERAL PROVISIONS:

A. The CONDITIONS OF THE CONTRACT and all Sections of Division 1 are hereby made a part of this Section.

1.01 DESCRIPTION OF WORK:

B. Removal of existing deterioration, prepare surface, and re-paint existing structural steel as indicated in the contract documents.

C. Related Work: Examine Contract Documents for requirements that affect work of this Section. Other Specification Sections that directly relate to work of this Section include but are not limited to:

1. Selective Demolition: SECTION 02070.

2. Structural Steel: SECTION 05210

1.02 QUALITY ASSURANCE:

D. Applicator Qualifications: Engage an experienced applicator who has a minimum of successful years experience with high performance coating systems and their application in renovation.

B Source Limitations: Obtain primers and undercoat materials for each coating system from the same manufacturer as the finish coats.

C Sample: Provide a full coat benchmark finish sample on existing steel member for color approval.

1. Color to match existing.
2. Final approval of colors will be from sample.

D. Standards: Comply with applicable recommendations made by following:

1. SSPC Painting Manual – current edition.

1.03 SUBMITTALS:

A. General: Comply with requirements of SECTION 01300-SUBMITTALS.

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B. Product Data:

1. Submit manufacturer's printed product data, specifications, use limitations and recommendations for each material used. Provide certifications that the materials and systems comply with specified requirements.

C. Certification by manufacturer that product supplied comply with requirements indicated that limit the amount of VOC's in coating products.

D. Qualification Data:

1. Include list of completed projects with names and addresses of project, owner, and general contractor (if applicable).

1.04 TESTS:

A. Owner may employ an independent testing agency to perform test, evaluations, and certifications of products used. Cooperate and permit samples of material to be taken as they are needed.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING:

A. Deliver materials in manufacturer's original, unopened packages and containers bearing manufacturer's name and label.

B. Store materials in fully sealed containers in a well ventilated area at a minimum ambient temperature of 45 deg F (7 deg C).

1. Remove oily rags and waste daily.

2. Protect materials from freezing.

3. Each space containing stored paint materials shall be provided with a UL labeled fire extinguisher of suitable type, class, and capacity.

1.06 JOB CONDITIONS, PROTECTION:

A. Apply coatings only when temperature of surfaces to be coated and surrounding air temperatures are between 45 and 95 deg F (7 and 35 deg C). Unless otherwise indicated and warranted by manufacturer.

B. Do not apply coatings in snow, rain, fog, or mist: when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

C. Post wet paint signs immediately after application and maintain until paint has cured.

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1.07 WARRANTY

A. Provide 5 year written guarantee that re-painted areas will be free of defects related to workmanship, material, deficiency and exposure.

PART 2 PRODUCTS AND EXPOSURE

2.00 Provide sample warranty for review by owner prior to commencing work.

2.01 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide one of the products indicated in the coating system descriptions.

B. Manufacturers' Names: The following manufacturers are referred to in the coating system descriptions by shortened versions of their names shown in parenthesis:

1. International Protective Coatings (IPC)/Devoe High Performance Coatings, Bar-Rust System.

2. Approved equal

C. Obtain owner's approval prior to purchase and delivery.

2.02 COATING MATERIALS, GENERAL:

A. Assume full responsibility for proper performance of materials, for method of application, and for compatibility of materials applied over other coats previously applied, including but not limited to primers, sealers, preservative treatments, etc. Select primers which have been verified to be appropriate for each of the substrates and finishes encountered.

B. Material Quality: Provide manufacturer's highest grade of the various high-performance coatings specified. Materials not displaying manufacturer's product identification are not acceptable.

C. Provide two-component high build, high solids surface tolerant epoxy coating for industrial applications.

D. VOC Classification: Provide high-performance coating materials, including primers, undercoats and finish coats that have a VOC classification of 450 g/L or less.

2.03 COLOR:

A. Color: Match existing.

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PART 3 EXECUTION

3.00 EXAMINATION:

A. Inspect all surfaces to receive finishes to ensure they are in proper condition to receive work under this Section.

1. Apply coatings only after unsatisfactory conditions have been corrected and surfaces to receive coatings are thoroughly dry.

2. Start of application is construed as acceptance of the surface as being satisfactory to the Applicator.

3.01 PREPARATION:

A. Prepare surfaces to receive work of this Section in strict accordance with the manufacturer's instructions applicable to each material, condition and finish.

B. Existing Ferrous Metal:

1. SSPC-SP6/NACE 3 Commercial Blast Cleaning: Removal of all visible oil, grease, dust, dirt, mill scale, rust, paint oxides, corrosion products and other foreign matter by compressed air nozzle blasting, centrifugal wheels or other specified method. The minimum standard is SSP1-SSP2 for previously coated steel

2. Remove all dust and blast products from surface by high pressure air, vacuum cleaning or brushing.

3.02 APPLICATION:

A. Apply high-performance paints in strict accordance with manufacturer's instructions. Use applicators and techniques best suited for substrates and types of materials being applied. No material shall be thinned in any way except as directed by manufacturer.

B. Apply high performance paints at coverage rates and dry film thickness (DFT) as indicated:

1. Primer: Epoxy primer applied at spreading rate recommended by manufacturer.
2. Stripe/Brush Coat: Epoxy intermediate coat applied to all steel edges.
3. Intermediate Coat: Epoxy intermediate coat applied at spreading rate recommended by manufacturer.
4. Top Coat: Semigloss top coat applied at spreading rate recommended by manufacturer

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C. Drying Time: Allow manufacturer's recommended drying time between successive coats. Ensure each coat has thoroughly dried prior to application of subsequent coat.

3.03 COMPLETION:

A. Cleaning: At completion of work of this Section, remove paint, oil, grease, and other stains caused by this work form the exposed surfaces. Leave finishes in satisfactory condition.

B. At completion of work of this Section, remove masking materials and other debris. Reinstall or replace fixtures, plates etc., removed to facilitate application of paint.

END OF SECTION