

PROJECT SPECIFICATIONS

GARAGE STRUCTURAL REPAIR DESIGN

Project: 528A7-12-701

for the

Syracuse

Veteran's Administration Medical Center



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A SERVICE DISABLED VETERAN OWNED SMALL BUSINESS

**DEPARTMENT OF VETERANS AFFAIRS
VHA MASTER SPECIFICATIONS**

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SECTION 00 01 15
LIST OF DRAWING SHEETS

The drawings listed below accompanying this specification form a part of
the contract.

<u>Drawing No.</u>	<u>Title</u>
GI001	COVER SHEET
GI002	GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS
STRUCTURAL	
SC101	FIRST LEVEL PLAN
SC101A	FIRST LEVEL REFLECTED CEILING PLAN
SC102	SECOND LEVEL PLAN
SC102A	SECOND LEVEL REFLECTED CEILING PLAN
SC103	THIRD LEVEL PLAN
SC103A	THIRD LEVEL REFLECTED CEILING PLAN
SC104	FOURTH LEVEL PLAN
SC104A	FOURTH LEVEL REFLECTED CEILING PLAN
SC105	FIFTH LEVEL PLAN
SC106	SIXTH LEVEL PLAN
SC107	SEVENTH LEVEL PLAN
SC108	EIGHTH LEVEL PLAN
SC201	NORTH AND SOUTH ELEVATIONS
SC202	EAST AND WEST ELEVATIONS
SC203	STAIR TOWER ELEVATIONS
SC501	TYPICAL CRACK AND JOINT REPAIR DETAILS
SC502	TYPICAL REPAIR DETAILS AND NOTES
PLUMBING	
PP101	PLUMBING FIRST LEVEL PLAN
PP102	PLUMBING SECOND LEVEL PLAN
PP103	PLUMBING THIRD LEVEL PLAN
PP104	PLUMBING FOURTH LEVEL PLAN
PP105	PLUMBING FIFTH LEVEL PLAN

PP106	PLUMBING SIXTH LEVEL PLAN
PP107	PLUMBING SEVENTH LEVEL PLAN
PP108	PLUMBING EIGHTH LEVEL PLAN
P501	PLUMBING DETAIL SHEET

- - - END - - -

00 72 01 - INFECTION CONTROL

PART 1 - GENERAL

- A. GENERAL INTENTION:
1. The Contractor is solely responsible for the health and safety of their employees. The Contractor is also responsible to protect the health and safety of the VA Community (patients, staff, and visitors) from unwanted effects of construction.
 2. The Contractor shall comply with Section 01 00 00 - General Requirements, Paragraph 1.4, Health & Safety.
 3. PRECAUTIONS:
 - a. The Contractor is responsible for taking precautions necessary to minimize infection control risk. Such precautions are defined in this section.
 - b. Each construction activity has been assigned an "Infection Control Precaution Class" (ICP Class), which is determined by:
 - 1) The type of construction work;
 - 2) The duration of construction work;
 - 3) The location of construction work; and
 - 4) The relative risk to the VA Community.
 - c. Each ICP Class lists separate precautions, which must be taken during construction and at the completion of construction. Such precautions are mandatory.
 - d. The VA Infection Control Practitioner (or designee) shall assign an ICP Class for any construction activity, which has not been assigned one.
 - e. When several construction activities occur simultaneously in the Project Area, the highest ICP Class for any one of the activities shall apply to all of the activities.
 4. INFECTION CONTROL PLAN: Contractor shall establish and maintain an Infection Control Plan detailing project-specific measures to be taken. Prior to the start of work, Contractor shall submit this plan for review for compliance with this section in accordance with Section 01 33 23, Shop Drawings, Product Data, and Samples.
- B. SUBMITTALS
1. All submittal shall be in accordance with Section 01 33 23, Shop Drawings, Product Data, and Samples.
 2. Submit complete manufacturer's data and literature on all products.
 3. Submit a complete Infection Control Plan, including:
 - a. Floor plan showing temporary construction, dust mats, exhausts fans, floor protection, and paths of travel (for construction personnel access, construction materials, and debris removal).
 - b. Sequence of operations
 - c. Description of Infection Control procedures
- C. TESTING:
1. Any time that the Contractor is working within the existing building, Contractor shall perform smoke tests each day that there is ICP Class II, III, or IV construction activity.
 2. Perform a minimum of one test, three times a day.
 3. Location and schedule for testing shall be as directed by COTR. COTR and Construction Superintendent shall be present for all tests.
 4. Testing shall determine if there is a "positive" reading (air flow moving from work areas to occupied areas) when ICP Class II, III, or IV activities are being performed, until such activities are complete. If a positive reading is taken, Contractor shall immediately stop construction, correct the situation, and re-test. Construction may not resume until authorized by the COTR.
- D. INFECTION CONTROL PRECAUTION CLASSES (ICP CLASS):
1. Work required in each ICP Class shall be in accordance with the following table:

ICP Class	Work Required During Construction Period 1	Work Required Upon Completion of Project
Class I	<ol style="list-style-type: none"> 1. Execute work by methods to minimize raising dust from construction operations. 2. Immediately replace a ceiling tile displaced for visual inspection. 	
Class II	<ol style="list-style-type: none"> 1. During drilling, grinding, cutting, sanding, and other dust-producing operations, provide active means to minimize dust from dispersing into the atmosphere. These shall consist of vacuum attachments to power tools, industrial strength ("Shop-Vac") vacuum cleaners, or maintaining negative air pressure within the work area utilizing HEPA-filter-equipped air filtration units. 2. Water mist work surfaces to control dust while cutting. 3. For activities within work area, provide temporary construction partitions and seal unused doors and voids at perimeter of work area with duct tape to seal work area from non-work area. 4. Place dust mat at entrances and exits of work area. 5. To prevent contamination of duct system, isolate HVAC system in work area by removing diffusers, grilles and flex duct, and capping ducts airtight. 6. Remove construction waste daily. 	<ol style="list-style-type: none"> 1. Wipe work surfaces with disinfectant. 2. Contain construction waste before transport in tightly covered containers. 3. Wet mop and/or vacuum with HEPA-filtered vacuum before leaving work area. 4. Remove isolation of HVAC system in work area; reinstall removed portions of HVAC system.
Class III	<ol style="list-style-type: none"> 1. To prevent contamination of duct system, isolate HVAC system in work area by removing diffusers, grilles and flex duct, and capping ducts airtight. 2. For activities within work area, provide temporary construction partitions and seal unused doors and voids at perimeter of work area with duct tape to seal work area from non-work area. For activities outside of work area, provide temporary partitions and seal doors as noted above or implement control cube method (cart with plastic covering and sealed connection to work site with HEPA-filtered vacuum for vacuuming prior to exit) before construction begins. 3. Maintain negative air pressure within work area utilizing HEPA-filter-equipped air filtration units. 4. Contain construction waste before transport in tightly covered containers. Remove waste daily. 5. Cover transport containers. Tape covering unless using a solid lid. 6. Provide dust mat at entrances and exits of work area. 	<ol style="list-style-type: none"> 1. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 2. Thoroughly vacuum work area with HEPA-filtered vacuums. 3. Wet mop area with disinfectant. 4. Remove isolation of HVAC system in work area; reinstall removed portions of HVAC system. 5. Do not remove precautions from work area until project is inspected by at least one of the following: the VA Safety Department, Infection Control Department, the COTR, or their designees.

ICP Class	Work Required During Construction Period 1	Work Required Upon Completion of Project
Class IV	<ol style="list-style-type: none"> 1. To prevent contamination of duct system, isolate HVAC system in work area by removing diffusers, grilles and flex duct, and capping ducts airtight. 2. For activities within work area, provide temporary construction partitions and seal unused doors and voids at perimeter of work area with duct tape to seal work area from non-work area. For activities outside of work area, provide temporary partitions and seal doors as noted above or implement control cube method (cart with plastic covering and sealed connection to work site with HEPA-filtered vacuum for vacuuming prior to exit) before construction begins. 3. Maintain negative air pressure within work area utilizing HEPA-filter-equipped air filtration units. 4. Seal holes at pipes, conduits, ducts, and punctures airtight. 5. Construct an air-tight vestibule and require all personnel to pass through this room so they can be vacuumed using a HEPA-filtered vacuum cleaner before leaving work area; or they can wear cloth or paper coveralls that are removed in the temporary vestibule each time they leave the work area. 6. Provide dust mat at entrances and exits of work area. 7. All personnel entering the work area are required to wear shoe covers. Shoe covers must be changed in the temporary vestibule each time personnel exits the work area. 8. Contain construction waste before transport in tightly covered containers. Remove waste daily. 9. Cover transport containers. Tape covering unless using a solid lid. 	<ol style="list-style-type: none"> 1. Remove barrier material carefully to minimize spreading of dirt and debris associated with construction. 2. Thoroughly vacuum work area with HEPA-filtered vacuums. 3. Wet mop area with disinfectant. 4. Remove isolation of HVAC system in work area; reinstall removed portions of HVAC system. 5. Do not remove precautions from work area until project is inspected by at least one of the following: the VA Safety Department, Infection Control Department, the COTR, or their designees.

E. LIST OF INFECTION CONTROL PRECAUTION CLASS (ICP CLASS) FOR EACH CONSTRUCTION ACTIVITY 1:

SECTION #	SECTION NAME	CLASS
Section 02 41 00,	Demolition	Class IV
Section 03 30 53,	Cast-In-Place Concrete	Class II
Section 04 15 13,	Masonry Mortaring	Class II
Section 04 20 00,	Unit Masonry	Class II
Section 05 36 00,	Composite Metal Decking	Class II
Section 05 50 00,	Metal Fabrications	Class II
Section 06 10 00,	Rough Carpentry	Class II
Section 06 20 00,	Finish Carpentry:	Class II
Section 07 21 13,	Thermal Insulation	Class II
Section 07 51 00,	Built-Up Bitumious Roofing	Class II
Section 07 60 00,	Flashing and Sheet Metal	Class I
Section 07 84 00,	Firestopping	Class I
Section 07 92 00,	Joint Sealants	Class I
Section 08 11 13,	Hollow Metal Doors and Frames	Class I
Section 08 14 00,	Interior Wood Doors	Class I
Section 08 31 13,	Access Doors and Frames	Class I
Section 08 41 23,	Fire-Rated Borrowed Lites (Steel Fames & Clear Glass)	Class I
Section 08 56 59,	Service and Teller Window Units	Class I
Section 08 56 66,	Security Window Screens	Class I
Section 08 71 00,	Door Hardware	Class I
Section 08 71 13,	Automatic Door Operators	Class I
Section 08 80 00,	Glazing	Class I
Section 09 22 16,	Non-Structural Metal Framing	Class II
Section 09 24 00,	Portland Cement Plastering	Class II
Section 09 29 00,	Gypsum Board	Class III
Section 09 30 13,	Ceramic/Porcelain Tiling	Class II
Section 09 51 00,	Acoustical Ceilings	Class II
Section 09 65 13,	Resilient Base and Accessories	Class III
Section 09 65 16,	Resilient Sheet Flooring	Class III
Section 09 65 19,	Resilient Tile Flooring	Class III
Section 09 72 16,	Vinyl-Coated Fabric Wall Coverings	Class I
Section 09 91 00,	Painting:	
a.	Sanding & Cleaning	Class IV
b.	Coating Application	Class I
Section 10 14 00,	Signage	Class I
Section 10 26 00,	Wall and Door Protection	Class I
Section 10 28 00,	Toilet Accessories	Class II
Section 10 44 13,	Fire Extinguisher Cabinets	Class I
Section 10 50 00,	Lockers	Class I
Section 10 8200,	Louvered Rooftop Equipment Screens	Class I
Section 12 31 10,	Pharmacy Casework	Class II
Section 12 36 00,	Countertops	Class II
Section 12 50 00,	Storage Shelving	Class I
Section 12 60 00,	Systems Furnishings	Class I
Section 21 05 11,	Common Work Results for Fire Suppression	Class II
Section 21 13 13,	Wet-Pipe Sprinkler Systems	Class I
Section 22 05 11,	Common Work Results for Plumbing	Class II
Section 22 05 23,	General-Duty Valves for Plumbing Piping	Class I
Section 22 11 00,	Facility Water Distribution	Class II
Section 22 13 00,	Facility Sanitary Sewerage	Class II
Section 22 40 00,	Plumbing Fixtures	Class I

Section 23 05 11,	Common Work Results for HVAC & Steam Generation	Class II
Section 23 05 12,	General Motor Requirements for HVAC & Steam Generation Equipment	Class I
Section 23 05 41,	Noise and Vibration Control for HVAC Piping and Equipment	Class I
Section 23 05 92,	Pre-Balancing and Testing for HVAC:	Class I
Section 23 05 93,	Testing, Adjusting, and Balancing for HVAC	Class II
Section 23 07 11,	HVAC, Plumbing, and Boiler Plant Insulation	Class II
Section 23 09 23,	Direct-Digital Control System for HVAC	Class I
Section 23 21 23,	Hydronic Piping	Class II
Section 23 21 23,	Hydronic Pumps	Class I
Section 23 22 13,	Steam and Condensate Heating Piping	Class II
Section 23 25 00,	HVAC Water Treatment	Class I
Section 23 31 00,	HVAC Ducts and Casings	Class II
Section 23 34 00,	HVAC Fans	Class I
Section 23 36 00,	Air Terminal Units	Class I
Section 23 37 00,	Air Outlets and Inlets	Class I
Section 23 37 23.16,	Louvers	Class I
Section 23 40 00,	HVAC Air Cleaning Devices	Class I
Section 23 72 00,	Air-to-Air Energy Recovery Equipment	Class I
Section 23 73 00,	Central-Station Air-Handling Units	Class I
Section 23 74 00,	Outdoor, Central Station Air-Handling Units	Class I
Section 23 82 16,	Air Coils	Class I
Section 26 05 11,	Requirements for Electrical Installations	Class II
Section 26 05 21,	Low-Voltage Electrical Power Conductors and Cables (600 Volts and Below)	Class I
Section 26 05 26,	Grounding and Bonding for Electrical Systems	Class I
Section 26 05 33,	Raceway and Boxes for Electrical Systems	Class II
Section 26 24 16,	Panelboards	Class I
Section 26 27 26,	Wiring Devices	Class I
Section 26 29 11,	Low-Voltage Motor Starters	Class I
Section 26 29 21,	Disconnect Switches	Class I
Section 26 51 00,	Interior Lighting	Class I
Section 27 05 11,	Requirements for Communications Installations	Class I
Section 27 05 26,	Grounding and Bonding for Communications Systems	Class I
Section 27 05 33,	Raceway and Boxes for Communications Systems	Class II
Section 27 10 00,	Structured Cabling	Class I
Section 27 11 00,	Communications Equipment Room Fittings	Class I
Section 27 15 00,	Communications Horizontal Cabling	Class I
Section 28 05 11,	Requirements for Electronic Safety and Security Installations	Class I
Section 28 05 13,	Conductors and Cables for Electronic Safety and Security	Class I
Section 28 05 26,	Grounding and Bonding for Electronic Safety and Security	Class I
Section 28 05 33,	Raceways and Boxes for Electronic Safety and Security	Class I
Section 28 13 11,	Physical Access Control Systems (PACS)	Class I
Section 28 31 00,	Fire Detection and Alarm	Class I

Notes:

1. Precautions listed under "Work Required During Construction Period" are applicable 24 hours a day, 7 days a week, until each activity is complete.

PART 2 - PRODUCTS/DEFINITIONS

- A. Temporary construction materials shall be as shown in the drawings.
- B. DUST MATS: 36" x 36", disposable LDPE adhesive sheets that hold particulate matter on contact, 30 sheets/mat, mounted on manufacturer's 38" x 38" mat base. Lab Safety Supply Inc., Items 1631-5BC (4 tacky mats) and 60428BE (1 mat base), or approved equal. Lab Safety can be contacted at 1-800-356-0783 and at www.labsafety.com.
- C. HEPA (HIGH EFFICIENCY PARTICULATE AIR) FILTER: filters which, when properly installed in HVAC and vacuum systems, capture 95% of 0.3 microns, including pollen, mold spores, and dust particles.
- D. FLOOR MATS: 3' wide x 10' long and 3' wide x 16' long walk-off mats with nylon surface and nitrile backing as provided by Staub Textile Services (Contact Richard Markus @ 1-800-836-0803), or approved equal.
- E. NEGATIVE PRESSURE: Providing an appreciable flow of clean air from the occupied portion of the Medical Center into the work area through the use of HVAC systems, fans, and filters. Exhaust for the work area shall be 20% greater than intake.
- F. Transport containers (for transporting waste through the Medical Center): Plastic, 4-wheel carts, approximately 31" W. x 66" long x 38" H., 1 CY/1000 lb. capacity, as manufactured by Rubbermaid, or approved equal. Provide manufacturer's solid plastic lids for ICP Class III and IV activities.

PART 3 - EXECUTION

- A. TEMPORARY CONSTRUCTION: Construct temporary partitions in accordance with the drawings.
- B. SEQUENCING & SCHEDULING:
 - 1. Prior to starting construction activities within the existing building or open to the existing building, infection control precautions shall be implemented in the following order:
 - a. Install negative air pressure/HEPA filter system (ICP Classes III & IV; Class II when provided).
 - b. Isolate HVAC system (ICP Classes II, III, and IV).
 - c. Construct temporary partitions and seal openings (ICP Classes II, III, and IV).
 - d. Provide all other precautions.
 - 2. At the completion of construction activities, infection control precautions shall be removed in the reverse order from which they were implemented (i.e., start with 1.d and end with 1.a).
 - 3. When VA inspection is required prior to removing precautions (see ICP chart in Part I), notify COTR at least 2 working days prior to inspection.
- C. DUST MATS: Provide a new, clean, sticky surface as required to eliminate tracking of dust from the work area to occupied areas; at a minimum, provide this new surface at the **beginning** of **each** work day and as directed by CO/COTR to maintain clean areas within the occupied building. Install on floor on the occupied side of each door between construction areas and areas occupied by the VA.
- D. HEPA FILTERS: Install in accordance with manufacturer's recommendations as required to produce the specified performance. Change filters and provide pre-filters as necessary to maintain the specified performance.
- E. NEGATIVE PRESSURE: Operate fans and other equipment continuously (24 hours a day, 7 days a week) during construction, to ensure that negative pressure is maintained in the work area. Provide galvanized steel ductwork from fans/filters/ equipment, to the exterior. Provide temporary magnahelic gauges at each door between construction areas and areas occupied by the VA. Provide sensors on both sides of doors. Check readings of magnahelic gauge with COTR a minimum of 4 times a day.

- F. RESTORATION: Remove all precautions after work is complete (See "B" above). Repair or replace any damage due to temporary precautions. Remove all dust, dirt, and debris prior to removing temporary partitions.

END OF SECTION 00 72 01

SECTION 01 00 00
GENERAL REQUIREMENTS

1.1 GENERAL INTENTION

- A. Contractor shall completely prepare site for parking garage operations, including demolition and removal of existing structures, and furnish labor and materials and perform work for Garage Structural Repairs as required by drawings and specifications.
- B. Visits to the site by Bidders may be made only by appointment with the Medical Center Contracting Officer's Representative.
- C. Offices of Everett Engineers, LLC as Architect-Engineers, will render certain technical services during construction. Such services shall be considered as advisory to the Government and shall not be construed as expressing or implying a contractual act of the Government without affirmations by Contracting Officer or his duly authorized representative.
- D. Before placement and installation of work subject to tests by testing laboratory retained by the Contractor, the Contractor shall notify the COR in sufficient time to enable testing laboratory personnel to be present at the site in time for proper taking and testing of specimens and field inspection. Such prior notice shall be not less than three work days unless otherwise designated by the COR.
- E. All employees of general contractor and subcontractors shall comply with VA security management program and obtain permission of the VA police, be identified by project and employer, and restricted from unauthorized access.
- F. Prior to commencing work, general contractor shall provide proof that an OSHA designated "competent person" (CP) (29 CFR 1926.20(b) (2) will maintain a presence at the work site whenever the general or subcontractors are present.
- G. Training:
 - 1. All employees of general contractor or subcontractors shall have the 10-hour or 30-hour OSHA Construction Safety course and other relevant competency training, as determined by COR acting as the Construction

Safety Officer with input from the facility Construction Safety Committee.

2. Submit training records of all such employees for approval before the start of work.

H. VHA Directive 2011-36, Safety and Health during Construction, dated 9/22/2011 in its entirety is made a part of this section

1.2 STATEMENT OF BID ITEM(S)

A. ITEM I, GENERAL CONSTRUCTION: Work includes general construction, garage concrete repairs, and alterations, work. See SECTION 01 11 10 - SUMMARY OF WORK for detailed work scope.

B. ALTERNATE NO.1: None. _____

C. ALTERNATE NO.2: None. _____

1.3 SPECIFICATIONS AND DRAWINGS FOR CONTRACTOR

A. AFTER AWARD OF CONTRACT, an electronic copy of drawings and specifications will be available for download.

1.4 CONSTRUCTION SECURITY REQUIREMENTS

A. Security Plan:

- 1. The security plan defines both physical and administrative security procedures that will remain effective for the entire duration of the project.
- 2. The General Contractor is responsible for assuring that all sub-contractors working on the project and their employees also comply with these regulations.

B. Security Procedures:

- 1. General Contractor's employees shall not enter the project site without appropriate badge. They may also be subject to inspection of their personal effects when entering or leaving the project site.

2. For working outside the "regular hours" as defined in the contract, The General Contractor shall give 5 days notice to the Contracting Officer so that security arrangements can be provided for the employees. This notice is separate from any notices required for utility shutdown described later in this section.
3. No photography of VA premises is allowed without written permission of the Contracting Officer.
4. VA reserves the right to close down or shut down the project site and order General Contractor's employees off the premises in the event of a national emergency. The General Contractor may return to the site only with the written approval of the Contracting Officer.

E. Document Control:

1. Before starting any work, the General Contractor/Sub Contractors shall submit an electronic security memorandum describing the approach to following goals and maintaining confidentiality of "sensitive information".
2. The General Contractor is responsible for safekeeping of all drawings, project manual and other project information. This information shall be shared only with those with a specific need to accomplish the project.
3. Certain documents, sketches, videos or photographs and drawings may be marked "Law Enforcement Sensitive" or "Sensitive Unclassified". Secure such information in separate containers and limit the access to only those who will need it for the project. Return the information to the Contracting Officer upon request.
4. These security documents shall not be removed or transmitted from the project site without the written approval of Contracting Officer.
5. All paper waste or electronic media such as CD's and diskettes shall be shredded and destroyed in a manner acceptable to the VA.
6. Notify Contracting Officer and Site Security Officer immediately when there is a loss or compromise of "sensitive information".
7. All electronic information shall be stored in specified location following VA standards and procedures using an Engineering Document Management Software (EDMS).

- a. Security, access and maintenance of all project drawings, both scanned and electronic shall be performed and tracked through the EDMS system.
- b. "Sensitive information" including drawings and other documents may be attached to e-mail provided all VA encryption procedures are followed.

F. Motor Vehicle Restrictions

- 1. Parking for the Contractor and Subcontractor employees in NOT provided. One parking space for the Contractor's on-site Superintendent shall be made available at a place designated by the COR, as a first come/first serve basis.
- 2. Access shall be restricted to picking up and dropping off materials and supplies.

1.5 FIRE SAFETY

A. Applicable Publications: Publications listed below form part of this Article to extent referenced. Publications are referenced in text by basic designations only.

- 1. American Society for Testing and Materials (ASTM):
 - E84-2009.....Surface Burning Characteristics of Building Materials
- 2. National Fire Protection Association (NFPA):
 - 10-2010.....Standard for Portable Fire Extinguishers
 - 30-2008.....Flammable and Combustible Liquids Code
 - 51B-2009.....Standard for Fire Prevention During Welding, Cutting and Other Hot Work
 - 70-2011.....National Electrical Code
 - 241-2009.....Standard for Safeguarding Construction, Alteration, and Demolition Operations
- 3. Occupational Safety and Health Administration (OSHA):
 - 29 CFR 1926.....Safety and Health Regulations for Construction

- B. Fire Safety Plan: Establish and maintain a fire protection program in accordance with 29 CFR 1926. Prior to start of work, prepare a plan detailing project-specific fire safety measures, including periodic status reports, and submit to the COR for review by the VA for compliance with contract requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES. Prior to any worker for the contractor or subcontractors beginning work, they shall undergo a safety briefing provided by the general contractor's competent person per OSHA requirements. This briefing shall include information on the construction limits, VAMC safety guidelines, means of egress, break areas, work hours, locations of restrooms, use of VAMC equipment, etc. Documentation shall be provided to the COR that individuals have undergone contractor's safety briefing.
- C. Site and Building Access: Maintain free and unobstructed access to facility emergency services and for fire, police and other emergency response forces in accordance with NFPA 241.
- D. There is no space at the facility for storage trailers or sheds.
- G. Means of Egress: Do not block exiting for occupied buildings or parking garage, including paths from exits to roads. Minimize disruptions and coordinate with the COR.
- H. Egress Routes for Construction Workers: Maintain free and unobstructed egress. Inspect daily. Report findings and corrective actions weekly to the COR.
- I. Fire Extinguishers: Provide and maintain extinguishers in construction areas and temporary storage areas in accordance with 29 CFR 1926, NFPA 241 and NFPA 10.
- J. Flammable and Combustible Liquids: Store, dispense and use liquids in accordance with 29 CFR 1926, NFPA 241 and NFPA 30.
- M. Existing Fire Protection: Do not impair automatic sprinklers, smoke and heat detection, and fire alarm systems, except for portions immediately under construction, and temporarily for connections. Provide fire watch for impairments more than 4 hours in a 24-hour period. Request interruptions in accordance with Article, OPERATIONS AND STORAGE AREAS, and coordinate with the COR. All existing or temporary fire protection systems (fire alarms, sprinklers) located in construction areas shall be tested as coordinated with the medical center.

- O. Hot Work: Perform and safeguard hot work operations in accordance with NFPA 241 and NFPA 51B. Coordinate with the COR. Obtain permits from the VA Fire Department at least 4 hours in advance. Designate contractor's responsible project-site fire prevention program manager to permit hot work.
- P. Fire Hazard Prevention and Safety Inspections: Inspect entire construction areas weekly. Coordinate with, and report findings and corrective actions weekly to the COR.
- Q. Smoking: Smoking is prohibited except in designated smoking rest areas. Coordinate smoking rest areas with the COR.
- R. Dispose of waste and debris in accordance with NFPA 241. Remove from buildings daily.
- S. Perform other construction, alteration and demolition operations in accordance with 29 CFR 1926.

1.6 OPERATIONS AND STORAGE AREAS

- A. The Contractor shall confine all operations (including storage of materials) on Government premises to areas authorized or approved by the Contracting Officer. The Contractor shall hold and save the Government, its officers and agents, free and harmless from liability of any nature occasioned by the Contractor's performance.
- B. Temporary Buildings: NOT USED.
- C. The Contractor shall, under regulations prescribed by the Contracting Officer, use only established roadways. When materials are transported in prosecuting the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any Federal, State, or local law or regulation. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, or roads.

(FAR 52.236-10)

- D. Working space and space available for storing materials shall be as determined by the COR.
- E. Workmen are subject to rules of Medical Center applicable to their conduct.

- F. Execute work so as to interfere as little as possible with normal functioning of Medical Center and parking garage as a whole, including operations of utility services, fire protection systems and any existing equipment, and with work being done by others.
1. Do not store materials and equipment in other than assigned areas.
 2. Schedule delivery of materials and equipment to immediate construction working areas within the garage in use by Department of Veterans Affairs in quantities sufficient for not more than two work days. Provide unobstructed access to all Medical Center areas required to remain in operation.
 3. Where access by Medical Center personnel to vacated portions of the garage is not required, storage of Contractor's materials and equipment will be permitted subject to fire and safety requirements.
- G. Phasing: To ensure such executions, Contractor shall furnish the COR with a schedule of approximate dates on which the Contractor intends to accomplish work in each specific area of site, garage or portion thereof. In addition, Contractor shall notify the COR two weeks in advance of the proposed date of starting work in each specific area of site, garage or portion thereof. Arrange such dates to insure accomplishment of this work in successive phases mutually agreeable to the Contracting Officer, COR and Contractor. Coordinate work after 5:00 PM with the COR.
- H. The parking garage will be occupied during performance of work; but immediate areas of alterations will be vacated.
1. Contractor shall take all measures and provide all material necessary for protecting existing equipment and property in affected areas of construction against dust and debris, so that equipment and affected areas to be used in the Medical Centers operations will not be hindered. Contractor shall permit access to Department of Veteran's Affairs personnel and patients through other construction areas which serve as routes of access to such affected areas and equipment. Coordinate alteration work in areas occupied by Department of Veterans Affairs so that Medical Center operations will continue during the construction period.

2. Immediate areas of alterations not mentioned in preceding Subparagraph 1 will be temporarily vacated while alterations are performed.

- I. Construction Fence: Before construction operations begin, Contractor shall provide a chain link construction fence, five feet minimum height, around the construction area where contract work is being performed and as indicated on the drawings. Provide gates as required for access with necessary hardware, including hasps and padlocks. Fasten fence fabric to terminal posts with tension bands and to line posts and top and bottom rails with tie wires spaced at maximum 375mm (15 inches). Bottom of fences shall extend to 25mm (one inch) above grade. Remove the fence when directed by COR.
- K. Utilities Services: Maintain existing utility services for Medical Center at all times. Provide temporary facilities, labor, materials, equipment, connections, and utilities to assure uninterrupted services. Where necessary to cut existing water, steam, gases, sewer or air pipes, or conduits, wires, cables, etc. of utility services or of fire protection systems and communications systems (including telephone), they shall be cut and capped at suitable places where shown; or, in absence of such indication, where directed by COR.
1. No utility service such as water, gas, steam, sewers or electricity, or fire protection systems and communications systems may be interrupted without prior approval of the COR.
 2. Contractor shall submit a request to interrupt any such services to COR, in writing, 48 hours in advance of proposed interruption. Request shall state reason, date, exact time of, and approximate duration of such interruption.
 3. Contractor will be advised (in writing) of approval of request, or of which other date and/or time such interruption will cause least inconvenience to operations of Medical Center. Interruption time approved by Medical Center may occur at other than Contractor's normal working hours.
 4. Major interruptions of any system must be requested, in writing, at least 15 calendar days prior to the desired time and shall be performed as directed by the COR.

5. In case of a contract construction emergency, service will be interrupted on approval of COR. Such approval will be confirmed in writing as soon as practical.
 6. Whenever it is required that a connection fee be paid to a public utility provider for new permanent service to the construction project, for such items as water, sewer, electricity, gas or steam, payment of such fee shall be the responsibility of the Government and not the Contractor.
- L. Abandoned Lines: All service lines such as wires, cables, conduits, ducts, pipes and the like, and their hangers or supports, which are to be abandoned but are not required to be entirely removed, shall be sealed, capped or plugged. The lines shall not be capped in finished areas, but shall be removed and sealed, capped or plugged in ceilings, within furred spaces, in unfinished areas, or within walls or partitions; so that they are completely behind the finished surfaces.
- M. To minimize interference of construction activities with flow of Medical Center traffic, comply with the following:
1. Keep roads, walks and entrances to grounds, to parking and to occupied areas of buildings clear of construction materials, debris and standing construction equipment and vehicles.
 2. Method and scheduling of required cutting, altering and removal of existing roads, walks and entrances must be approved by the COR.
- N. Coordinate the work for this contract with other construction operations as directed by COR. This includes the scheduling of traffic and the use of roadways, as specified in Article, USE OF ROADWAYS.

1.7 ALTERATIONS

- A. Survey: Before any work is started, the Contractor shall make a thorough survey with the COR areas of the garage in which alterations occur and areas which are anticipated routes of access, and furnish a report, signed by both, to the Contracting Officer. This report shall list by garage floor:
1. Existing conditions of areas not required to be altered throughout affected areas of the garage.

2. NOT USED.
 3. Shall note any discrepancies between drawings and existing conditions at site.
 4. Shall designate areas for working space, materials storage and routes of access to areas within buildings where alterations occur and which have been agreed upon by the Contractor and COR.
- B. Any items required by drawings to be either reused or relocated or both, found during this survey to be nonexistent, or in opinion of COR /, to be in such condition that their use is impossible or impractical, shall be furnished and/or replaced by Contractor with new items in accordance with specifications which will be furnished by Government. Provided the contract work is changed by reason of this subparagraph B, the contract will be modified accordingly, under provisions of clause entitled "DIFFERING SITE CONDITIONS" (FAR 52.236-2) and "CHANGES" (FAR 52.243-4 and VAAR 852.236-88).
- C. Re-Survey: Thirty days before expected partial or final inspection date, the Contractor and COR together shall make a thorough re-survey of the areas of the garage involved. They shall furnish a report on conditions then existing as compared with conditions of same as noted in first condition survey report:
1. Re-survey report shall also list any damage caused by Contractor despite protection measures; and, will form basis for determining extent of repair work required of Contractor to restore damage caused by Contractor's workmen in executing work of this contract.
- D. Protection: Provide the following protective measures:
1. Temporary protection against damage for portions of existing structures and grounds where work is to be done, materials handled and equipment moved and/or relocated.

1.8 INFECTION PREVENTION MEASURES

- A. Implement the requirements of VAMC's Infection Control Risk Assessment (ICRA) team. ICRA Group may monitor dust in the vicinity of the construction work and require the Contractor to take corrective action immediately if the safe levels are exceeded.

B. Establish and maintain a dust control program as part of the contractor's infection preventive measures in accordance with the guidelines provided by ICRA Group. Prior to start of work, prepare a plan detailing project-specific dust protection measures, including periodic status reports, and submit to the COR for review for compliance with contract requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.

1. All personnel involved in the construction or renovation activity shall be educated and trained in infection prevention measures established by the medical center.
2. In case of any problem, the medical center, along with the assistance from the Contractor, shall conduct an environmental assessment to find and eliminate the source of excessive dust or fume conditions.

D. In general, following preventive measures shall be adopted during construction to keep down dust and prevent migration of fumes.

1. Dampen debris to keep down dust and provide temporary construction partitions in existing structures where directed by COR.

E. Final Cleanup:

1. Daily and upon completion of project remove all construction debris from areas that have been part of the construction.
2. Sweep all surfaces in the construction area.

1.9 DISPOSAL AND RETENTION

A. Materials and equipment accruing from work removed and from demolition shall be disposed of as follows:

1. Items not reserved shall become property of the Contractor and be removed by Contractor from Medical Center.

1.10 PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS

A. The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site, which are not to be removed and which do not unreasonably interfere with the work required under this contract.

- B. The Contractor shall protect from damage all existing improvements and utilities at or near the work site and on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. The Contractor shall repair any damage to those facilities, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.

1.11 RESTORATION

- A. Remove, cut, alter, replace, patch and repair existing work as necessary to install new work. Except as otherwise shown or specified, do not cut, alter or remove any structural work, and do not disturb any ducts, plumbing, steam, gas, or electric work without approval of the COR. Existing work to be altered or extended and that is found to be defective in any way, shall be reported to the COR before it is disturbed. Materials and workmanship used in restoring work, shall conform in type and quality to that of original existing construction, except as otherwise shown or specified.
- B. Upon completion of contract, deliver work complete and undamaged. Existing work (walls, ceilings, partitions, floors, mechanical and electrical work, lawns, paving, roads, walks, etc.) disturbed or removed as a result of performing required new work, shall be patched, repaired, reinstalled, or replaced with new work, and refinished and left in as good condition as existed before commencing work.
- C. At Contractor's own expense, Contractor shall immediately restore to service and repair any damage caused by Contractor's workmen to existing piping and conduits, wires, cables, etc., of utility services or of fire protection systems and communications systems (including telephone) which are indicated on drawings and which are not scheduled for discontinuance or abandonment.
- D. Expense of repairs to such utilities and systems not shown on drawings or locations of which are unknown will be covered by adjustment to contract time and price in accordance with clause entitled "CHANGES" (FAR 52.243-4 and VAAR 852.236-88) and "DIFFERING SITE CONDITIONS" (FAR 52.236-2).

1.12 PHYSICAL DATA: NOT USED**1.13 PROFESSIONAL SURVEY: NOT USED.****1.14 LAYOUT OF WORK: NOT USED.****1.15 AS-BUILT DRAWINGS**

- A. The contractor shall maintain two full size sets of as-built drawings which will be kept current during construction of the project, to include all contract changes, modifications and clarifications.
- B. All variations shall be shown in the same general detail as used in the contract drawings. To insure compliance, as-built drawings shall be made available for the COR's review, as often as requested.
- C. Contractor shall deliver two approved completed sets of as-built drawings to the COR within 15 calendar days after each completed phase and after the acceptance of the project by the COR.
- D. Paragraphs A, B, & C shall also apply to all shop drawings.

1.16 USE OF ROADWAYS

- A. For deliveries, use only established public roads and roads on Medical Center property and, when authorized by the COR, such temporary roads which are necessary in the performance of contract work. Temporary roads shall be constructed by the Contractor at Contractor's expense. When necessary to cross curbing, sidewalks, or similar construction, they must be protected by well-constructed bridges.

1.17 RESIDENT'S OFFICE: NOT USED.**1.18 TEMPORARY USE OF MECHANICAL EQUIPMENT: NOT USED.****1.19 TEMPORARY USE OF EXISTING ELEVATORS**

- A. Contractor will be allowed the use of existing garage elevators for personnel only.
- B. Contractor vehicles shall be used by Contractor for transporting materials and equipment to areas of work within the garage.

1.21 TEMPORARY TOILETS

- A. Provide where directed, (for use of all Contractor's workmen) suitable dry closets where directed. Keep such places clean and free from flies, and all connections and appliances connected therewith are to be removed prior to completion of contract, and premises left perfectly clean.

1.22 AVAILABILITY AND USE OF UTILITY SERVICES

- A. The Government shall make all reasonably required amounts of utilities available to the Contractor from existing 110VAC outlets and supplies, as specified in the contract.
- B. The Contractor, at Contractor's expense and in a workmanlike manner satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines, and all meters required to measure the amount of electricity used for the purpose of determining charges. Before final acceptance of the work by the Government, the Contractor shall remove all the temporary connections, distribution lines, meters, and associated paraphernalia.
- C. Contractor shall install meters at Contractor's expense and furnish the Medical Center a monthly record of the Contractor's usage of electricity as hereinafter specified.
- D. Heat: NOT USED.
- E. Electricity (for Construction and Testing): Furnish all temporary electric services not readily available at the site.
 - 1. Obtain electricity by connecting to the Medical Center electrical distribution system. Electricity for all Contract use is available at no cost to the Contractor.
- F. Water (for Construction and Testing):
 - 1. Obtain water by connecting to the garage water distribution system. Provide reduced pressure backflow preventer at each connection. Water is available at no cost to the Contractor.
 - 2. Maintain connections, pipe, fittings and fixtures and conserve water-use so none is wasted. Failure to stop leakage or other wastes will be cause for revocation (at COR's discretion) of use of water from Medical Center's system.
- G. Steam: NOT USED.
- H. Natural Gas: NOT USED.

1.23 TELEPHONE EQUIPMENT MOVES: NOT USED.**1.24 TESTS**

- A. Conduct test required in various sections of specifications in presence of the COR. Contractor shall furnish all labor, materials, equipment, instruments, and forms, to conduct and record such tests. Provide 72 hours' notice to the COR prior to testing.

1.25 INSTRUCTIONS

- A. Contractor shall furnish Maintenance and Repair manuals (hard copies and electronic) and verbal instructions when required by the various sections of the specifications and as hereinafter specified.
- B. Manuals: Maintenance and operating manuals (two copies of each) and one compact disc (one electronic copy each) shall be delivered to the COR 30 days prior to completion of the work. Manuals shall be complete, detailed guides for the maintenance of areas of repair. They shall include complete information necessary for maintaining the repairs in continuous operation for long periods of time. Manuals shall include an index covering all repair component parts clearly cross-referenced to diagrams and illustrations. Illustrations shall include "exploded" views showing and identifying each separate item. Emphasis shall be placed on the use of special tools and instruments. All necessary precautions for the maintenance of the repairs and the reason for each precaution shall be clearly set forth. Manuals must reference the exact repair system being furnished. Manuals referencing similar elements to but of a different model, style, and size than that furnished will not be accepted.
- C. Instructions: Contractor shall provide qualified representatives to give detailed instructions to assigned Department of Veteran's Affairs personnel in the operation and complete maintenance for each repair. All such training will be at the job site. These requirements are more specifically detailed in the various technical sections. Instructions for different repair elements shall be given in an integrated, progressive manner. All instructors for each element shall be available until instructions for all items included in the system have been completed. All instruction periods shall be at such times as scheduled by the COR and shall be considered concluded only when the COR is satisfied in regard to complete and thorough coverage. The Department of Veterans Affairs reserves the right to request the removal of, and substitution for, any instructor who, in the opinion of the COR, does

not demonstrate sufficient qualifications in accordance with requirements for instructors above.

1.26 GOVERNMENT-FURNISHED PROPERTY: NOT USED.

1.27 RELOCATED/REMOVED ITEMS: NOT USED.

1.28 STORAGE SPACE FOR DEPARTMENT OF VETERANS AFFAIRS EQUIPMENT: NOT USED.

1.29 SAFETY SIGN: NOT USED.

1.30 CONSTRUCTION SIGN: NOT USED.

1.31 PHOTOGRAPHIC DOCUMENTATION: NOT USED.

1.32 FINAL ELEVATION DIGITAL IMAGES: NOT USED.

1.33 HISTORIC PRESERVATION

Where the Contractor or any of the Contractor's employees, prior to, or during the construction work, are advised of or discover any possible archeological, historical and/or cultural resources, the Contractor shall immediately notify the COR verbally, and then with a written follow up.

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SECTION 01 00 61
OSHA REQUIREMENTS AND SAFETY & HEALTH REGULATIONS

- A. The Contractor and any of its subcontractors are directly responsible for the health and safety of their employees and the protection of the work environment. All contractor and subcontractor personnel are responsible for compliance with applicable local, state and federal safety and health regulations, including those specifically incorporated into this Section 01 00 61;
- B. Prior to beginning work, the Prime Contractor, upon request by the VA Contracting Officer, must provide documentation of experience and training that its superintendent is qualified to properly supervise and maintain a safe job site.

PART 1 - OSHA REQUIREMENTS

1.1 GENERAL

- A. Contractors are required to comply with the Occupational Safety and Health Act of 1970. This will include the safety and health standard found in CFR 1910 and 1926. Copies of those standards can be acquired from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20420
- B. In addition, Contractor will be required to comply with other applicable Medical Center policies and safety regulations. These policies and regulations will be presented to the Contractor at the pre-construction meeting. Each of the Contractor's employees will be required to read the statement of policies and regulations and sign an acknowledgment that such policies and regulations are understood. Signed acknowledgment will be returned to the Contracting Officer.
- C. Contractors involved with the removal, alteration, or disturbance of asbestos type insulation or materials will be required to comply strictly with the regulations found in CFR 1910.1001 and the appropriate EPA regulations regarding disposal of asbestos. Assistance in identifying asbestos can be requested from the Medical Center's Industrial Hygienist and the Project Engineer.
- D. Contractors entering locations of asbestos contamination (i.e. pipe basements) shall be responsible for providing respiratory protection to their employees and ensuring respirators are worn in accordance with OSHA (CFR 1910.1001 (g)). Asbestos contaminated areas shall be defined on project drawings. The minimum equipment requirements will be a half-mask air-purifying respirator equipped with high efficiency filters and disposable coveralls.
- E. Contractor, along with other submittals, and at least two weeks prior to bringing any materials on-site, must submit a complete list of chemicals the Contractor will use and MSDS for all hazardous materials as defined in OSHA 1910.1200 (d) Hazard Determination. Contracting Officer shall have final approval of all materials brought on site.
- F. The contractor will be held solely responsible for the safety and health of their employees. The contractor will also be held responsible to protect the health and safety of the VA Community (patients, staff, and visitors) from the unwanted effects of construction. VA staff will monitor the contractor's performance in complying with all safety and health aspects of the project. Severe or constant violations may result in an immediate work stoppage or request for a Compliance Officer from the Occupational Safety and Health Administration.
- G. During all phases of demolition, construction and alterations, Contractors are required to understand and strictly follow NFPA 241 "Standard for Safeguarding Construction, Alteration and Demolition Operations". The Medical Center's Safety and Occupational Health Specialist, and Industrial Hygienist will closely monitor the work area for compliance. Appropriate action will be taken for non-compliance. **Any work on Rooftops will require OSHA approved temporary fall protection be secured in place until all contract work on the roof has been completed.**

PART 2 - SPECIFIC VA MEDICAL CENTER FIRE & SAFETY POLICIES, PROCEDURES & REGULATIONS (ALSO SEE SECTION 01010, GENERAL REQUIREMENTS, ARTICLE NO. 1.4 FIRE SAFETY PRECAUTIONS)

2.1 INTRODUCTION

- A. The safety and fire protection of patients, employees, members of the public and government is one of continuous concern to this Medical Center.
- B. Contractors, their supervisors and employees are required to comply with Medical Center policies to ensure the occupational safety and health of all. Failure to comply may result in work stoppage.
- C. While working at this Medical Center, Contractors are responsible for the occupational safety and health of their employees. Contractors are required to comply with the applicable OSHA standards found in 29 CFR 1910 for general industry and 29 CFR 1926 for construction. Failure to comply with these standards may result in work stoppage and a request to the Area Director of OSHA for a Compliance Officer to inspect your work site.
- D. Contractors are to comply with the requirements found in the National Fire Protection Association (NFPA) #241, "Building Construction and Demolition Operation" and NFPA #51B, "Fire Prevention in Use of Cutting and Welding Processes".

E. Questions regarding occupational safety and health issues can be addressed to the Contracting Officer's Technical Representative (COTR). The Medical Center Safety and Occupational Health Specialist (ext.53765) or Industrial Hygienist (ext.53761) will advise the COTR when requested.

F. Smoking is not permitted on VA Medical Center property. (Note: This includes interior posted patient smoking areas, if applicable). Compliance with this policy by your direct and subcontracted labor force is required.

2.2 HAZARD COMMUNICATION

A. Contractors shall comply with OSHA Standard 29 CFR 1926.59 "Hazard Communication".

B. Contractors shall submit to the VA Safety and Occupational Health Specialist, copies of Material Safety Data Sheets covering all hazardous materials to which the Contractor and VA employees are exposed.

C. Copies of Material Safety Data Sheets covering all hazardous materials to be used by the contractor shall be submitted to the COTR prior to bringing them on VA property.

D. Contractors shall inform the COTR of the hazards to which VA personnel and patients may be exposed.

E. Contractors shall have a written Hazard Communication Program available at the construction site, which details how the Contractor will comply with 29 CFR 1926.59.

2.3 FIRES

All fires must be reported. In the event of a fire in your work area, use the nearest pull box station and also notify Medical Center staff in the immediate area. Emergency notification can also be accomplished by dialing ext.55555.

Be sure to give the exact location from where you are calling and the nature of the emergency. If a Contractor experiences a fire that was rapidly extinguished by your staff, you still must notify the COTR within an hour of the event such that an investigation of the fire can be accomplished.

2.4 FIRE ALARMS, SMOKE DETECTION AND SPRINKLER SYSTEM

If the nature of your work requires the deactivation of the fire alarm, smoke detection or sprinkler system, you must notify the COTR. Notification must be made well in advance such that ample time can be allowed to deactivate the system and provide alternative measures for fire protection. Under no circumstance is a Contractor allowed to deactivate any of the fire protection systems in this Medical Center.

2.5 SMOKE DETECTORS

False alarms will not be tolerated. You are required to be familiar with the location of the smoke detectors in your work area. When performing cutting, burning or welding or any other operations that may cause smoke or dust, you must take steps to temporarily cover smoke detectors in order to prevent false alarms. Failure to take the appropriate action will result in the Contracting Officer assessing actual costs for government response for each false alarm that is preventable. Prior to covering the smoke detectors, the Contractor will notify the COTR, who will also be notified when the covers are removed.

2.6 HOT WORK PERMIT

A. Hot work is defined as operations including, but not limited to, cutting, welding, thermal welding, brazing, soldering, grinding, thermal spraying, thawing pipes, or any similar situation. If such work is required, the Contractor must notify the COTR no less than one day in advance of such work. The COTR will inspect the work area and issue a "Hot Work Permit" authorizing the performance of such work.

B. All hot work will be performed in compliance with the Medical Center's policy regarding Hot Work Permits and NFPA 241, Safeguarding Construction, Alternation, and Demolition Operations, and NFPA 51B, Fire Prevention in Use of Cutting and Welding Processes, and applicable OSHA standard. A hot work permit will only be issued to individuals familiar with these regulations.

C. A hot work permit will only be issued when the following conditions are met:

1. Combustible materials are located a minimum of 25 feet from the work site, or protected by flameproof covers or shielded with metal or fire-resistant guards or curtains.

2. Openings or cracks in walls, floors, or ducts within 25 feet of the site are covered to prevent the passage of sparks to adjacent areas.

3. Where cutting or welding is done near walls, partitions, ceiling, or roof of combustible construction, fire resistant guards or shields are provided to prevent ignition.

4. Cutting or welding on pipes or other metal in contact with combustible walls, ceilings or roofs is not undertaken if the work is close enough to cause ignition by conduction.

5. Fully charged and operable fire extinguishers, appropriate for the type of possible fire, are available at the work area.

6. When cutting or welding is done in close proximity to a sprinkler head, a wet rag is laid over the head during operation.

7. Assure that nearby personnel are protected against heat, sparks, cut off, etc.

8. Assure that a fire watch is at the site. Make a final check-up 30 minutes after completion of operations to detect and extinguish any smoldering fires.

D. A fire watch shall be provided by the Contractor whenever cutting, welding, or performing other hot work. Fire watcher(s) shall:

1. Have fire-extinguishing equipment readily available and be trained in its use.

2. Be familiar with facilities and procedures for sounding an alarm in the event of fire.

3. Watch for fires in all exposed areas, sound the fire alarm immediately, and try to extinguish only within the capability of the portable extinguishing equipment available. In all cases if a fire is detected the alarm shall be activated even if the fire is extinguished.

4. Maintain the watch for at least a half-hour after completion of operations to detect and extinguish smoldering fires.

E. A "Hot Work Permit" will be issued only for the period necessary to perform such work. In the event the time necessary will exceed one day, a "Hot Work Permit" may be issued for the period needed; however, the COTR will inspect the area daily. Hot work permit will apply only to the location identified on the permit. If additional areas involve hot work, then additional permits must be requested.

F. Contractors will not be allowed to perform hot work processes without the appropriate permit.

G. Any work involving the Medical Center's fire protection system will require 24 hour notification to the COTR notification. Under no circumstances will the Contractor or employee attempt to alter or tamper with the existing fire protection system.

H. The COTR will be notified within 30 minutes of the completion of all hot work to perform an inspection of the area to confirm that sparks or drops of hot metal are not present.

2.7 TEMPORARY ENCLOSURES

Only non-combustible materials will be used to construct temporary enclosures or barriers at this Medical Center. Plastic materials and fabrics used to construct dust barriers must conform to NFPA #701, Standard Methods of Fire Tests for Flame-Resistant Textiles and Films.

2.8 FLAMMABLE LIQUIDS

All flammable liquids will be kept in approved safety containers. Only the amount necessary for your immediate work will be allowed in the building. Flammable liquids must be removed from the building at the end of each day.

2.9 COMPRESSED GAS CYLINDERS

Compressed gas shall be secured in an upright position at all times. A suitable cylinder cart will be used to transport compressed gas cylinders. Only those compressed gas cylinders necessary for immediate work will be allowed in occupied buildings. All other compressed gas cylinders will be stored outside of buildings in a designated area. Contractor will comply with applicable standards compressed gas cylinders found in 29 CFR 1910 and 1926 (OSHA).

2.10 INTERNAL COMBUSTION ENGINE-POWERED EQUIPMENT

Equipment powered by an internal combustion engine such as saws, compressors, generators and etc. will not be used in an occupied building. Special consideration may be given for unoccupied buildings only if the OSHA and NFPA requirements have been met.

2.11 POWDER ACTIVATED TOOLS

The operator of powder activated tools must be trained and certified to use them. Powder activated tools will be kept in a secured manner at all times. When not in use, the tools will be locked up. When in use, the operator will have the tool under his immediate control.

2.12 TOOLS

A. Under no circumstances are equipment, tools and other items of work to be left unattended for any reason. All tools, equipment and items of work must be under the immediate control of your employee.

B. If for some reason a work area must be left unattended, then it will be required that tools and other equipment be placed in an appropriate box or container and locked. All tool boxes, containers or any other device used for the storage of

tool and equipment, will be provided with a latch and padlock. All tool boxes, containers or any other device used for the storage of tools and equipment, will be locked at all times except for putting in and removing tools.

C. All doors to work areas will be closed and locked when rooms are left unattended. Failure to comply with this directive will be considered a violation of VA Regulations 1.218 (b), "Failure to comply with signs of a directive and restrictive nature posted for safety purposes," subject to a \$50.00 fine. Subsequent similar violations may result in both imposition of such a fine as well as the Contracting Officer taking action under the Contract's "Accident Prevention Clause" (FAR 52.236-13) to suspend all contract work until violations such may be satisfactorily resolved or under FAR 52.236-5 "Material and Workmanship Clause" to remove from the work site any personnel deemed by the Contracting Officer to be careless to the point of jeopardizing the welfare of Facility patients or staff.

D. You must report to the VA Police Department, Ext. 53333, any tools or equipment that are missing.

E. Tools and equipment found unattended will be confiscated and removed from the work area.

2.13 LADDERS

It is required that ladders not be left unattended in an upright position. Ladders must be attended at all times or taken down and chained securely to a stationary object.

2.14 SCAFFOLDS

All scaffolds will be attended at all times. When not in use, an effective barricade (fence) will be erected around the scaffold to prevent use by unauthorized personnel. (Reference OSHA 1926. Subpart L)

2.15 EXCAVATIONS

The contractor shall comply with OSHA 1926 Subpart P. An OSHA "competent person" must be on site during the excavation. The contractor shall coordinate with the COTR and utility companies prior to the excavation to identify underground utilities tanks etc. All excavations left unattended will be provided with a barricade suitable to prevent entry by unauthorized persons.

2.16 STORAGE

You must make prior arrangements with the VA Project Engineer for the storage of building materials. Storage will not be allowed to accumulate in the Medical Center buildings.

2.17 TRASH AND DEBRIS

You must remove all trash and debris from the work area on a daily basis. Trash and debris will not be allowed to accumulate inside or outside of the buildings. You are responsible for making arrangements for removal of trash from the Medical Center facility.

2.18 PROTECTION OF FLOORS

It may be necessary at times to take steps to protect floors from dirt, debris, paint, etc. A tarp or other protective covering may be used. However, you must maintain a certain amount of floor space for the safe passage of pedestrian traffic. Common sense must be used in this matter.

2.19 SIGNS

Signs must be placed at the entrance to work areas warning people of your work. Signs must be suitable for the condition of the work. Small pieces of paper with printing or writing are not acceptable. The VAMC Safety Officer can be consulted in this matter.

2.20 ACCIDENTS AND INJURIES

Contractors must report all accidents and injuries involving your employees. The Contractor may use the VAMC Health Center, located in the basement of Building #1, for emergency care.

2.21 CONFINED SPACE ENTRY

- A. Contractor will be informed that the workplace contains permit required confined space and that permit space entry is allowed only through compliance with a permit space program meeting the requirements of 29 CFR 1910.146 and 1926.21 (b)(6).
- B. Contractor will be apprised of the elements including the hazards identified and the Medical Center's (last employer) experience with the space that makes the space in question a permit space.
- C. Contractor will be apprised of any precautions or procedures that the Medical Center has implemented for the protection of employees in or near permit space where Contractor personnel will be working.
- D. Medical Center and Contractor will coordinate entry operations when both Medical Center personnel and Contractor personnel will be working in or near permit spaces as required by 29 CFR 1910.146 (d)(ii) and 1926.21 (b)(6).
- E. Contractor will obtain any available information regarding permit space hazards and entry operation from the Medical Center.
- F. At the conclusion of the entry operations the Medical Center and Contractor will discuss any hazards confronted or created in permit spaces.
- G. The Contractor is responsible for complying with 29 CFR 1910.246 (d) through (g) and 1926.21 (b)(6). The Medical Center, upon request, will provide rescue and emergency services required by 29 CFR 1910.246 (k) and 1926.21 (b)(6).

2.22 CONTRACTOR PARKING & MATERIAL DELIVERY

Contractor's parking and the delivery of building materials tools etc. must be prearranged with the COTR.

INTERIM LIFE SAFETY MEASURES MATRIX

Existing Deficiencies/Conditions	Interim Life Safety Measures													
	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Code Deficiencies														
1) Patient room door latching problem														
2) Lacking a code complying barrier														
3) Fire exit stairs discharge improper														
4) Excessive distance to exit														
5) Lack of two remote exits														
6) Nonconforming building const														
7) Vertical openings not protected														
8) Large openings in fire barriers														
9) Corridor walls open at top														
10) Hazardous areas not protected														
Construction Related Issues														
11) Blocking off an exit														
12) Rerouting emergency room traffic														
13) Renovation of occupied floor														
14) Replacing fire alarm system														
15) Installing sprinkler system														
16) Modifying smoke/fire barriers														
17) Adding an addition														
Maintenance and Testing														
18) Taking fire alarm system off-line														
19) Taking sprinkler system off-line														
20) Disconnecting alarm devices														

Interim Life Safety Measures

- A. Ensuring egress
- B. Emergency forces access
- C. Emergency forces notification
- D. Ensuring operational life safety systems
- E. Temporary construction
- F. Additional fire fighting equipment
- G. Prohibiting smoking
- H. Controlling combustible loading
- I. Conducting 2 fire drills per shift in all areas
- J. Conducting 2 fire drills per shift in local area
- K. Increased hazard surveillance
- L. Compartmentation training of personnel
- M. Conducting organizational training on life safety
- N. Conducting additional training on incident response

END OF SECTION 01 00 61

SECTION 01 11 10
SUMMARY OF WORK

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

- A. The general conditions and general requirements (division 1) of the contract for construction are hereby made part of this section.

1.2 SCOPE OF WORK

- A. Where work is described, but not specifically located and/or shown the drawings, the contractor shall be responsible for determining the exact location and extent of the work.

B. Schedule and Phasing

1. Sequence work of the following sections so installation occurs when seasonal conditions are within limits of the manufacturer's written instructions:
 - a. SECTION 07 18 00 - VEHICULAR-TRAFFIC COATING
 - b. SECTION 07 19 00 - WATER REPELLANTS (PENETRATING SEALERS)
 - c. SECTION 07 90 00 - PREFORMED JOINT SEALERS (COMPRESSION SEALS)
 - d. SECTION 07 92 00 - JOINT SEALANTS
2. All work that causes noise disturbances to the building occupants above the garage may require shifts to complete. The Owner will approve night shift work with a minimum of 72 hours advance notice. Work that causes noise disturbances includes, but is not limited to, concrete demolition, saw cutting, drilling, and grinding of the existing surfaces.
3. The work contemplated by the Contract Documents includes the work of all trades required and all labor, equipment, material, access, and supervision necessary and incidental to the work indicated. The following descriptions of the work represent a brief summary of the project. For additional and more complete information, refer to the Drawings and Specifications.
4. Project Mobilization
 - a. This work includes general contractor and subcontractor mobilization cost. Include permits, temporary offices, bonding costs, etc.
 - b. Project General Requirements
 - 1) This work includes all miscellaneous work associated with the completion of the work in accordance with the construction documents. This includes, but is not limited to, incidental shoring, barricades, cleanup, dust and fume control, layout, equipment, waste disposal, documentation obstruction removal and replacement, temporary heat, monthly and final as-built documents, closeout documents, and temporary water and utilities.

C. CONCRETE REPAIR

1. Repair areas of spalled and/or delaminated concrete at the following locations:
 - a. Columns, beams, expansion joints, curbs and at connections of precast wall panels to parking decks and columns.
 - b. Topside and underside of the elevated parking deck (levels 1-8).
 - c. Topside of the slab on grade (level 1).

D. VEHICULAR TRAFFIC COATING

1. Install vehicular traffic coating on the 4th floor in the driving areas.

E. WATER REPELLANT (PENETRATING SEALER)

1. Install water repellant system on levels 1, 2, 3, 5 and 6.

F. JOINT SEALANTS

1. Remove and replace sealants at the perimeter joints of the eight level.
2. Route and seal control joints that are without sealants on the 7th level.
3. Rout and seal new cracks on the top side of the parking deck.
4. Rout and seal new cracks on previously patched spalls on the top side of the parking deck.

G. EXPANSION JOINTS

1. Remove and replace the compression seals of all the expansion joints that are 2 inches or wider between the 1st and 5th level.
2. Saw-cut, remove and replace expansion joints that are less than 2 inches wide between 1st and 5th level.
3. Repair damaged expansion joints at the 7th and 8th level.

H. PRECAST PANEL CONNECTIONS

1. Between the first and 6th levels, Prepare surface and paint and corroded steel connections between precast wall panels and concrete slabs and columns.

I. GUARD RAILS

1. Prepare surfaces and paint corroded steel guard rails between the 1st and 6th Level along Grid line C between Grids 8E and 8W.

J. STAIRS

1. Prepare surface and paint corroded steel stair towers 1 and 2 between first and 6th level
2. Prepare surface and paint steel Hand rails and at stair towers 1 and 2 between first and 6th level.

K. PLUMBING

1. Repair leaks at the drains between 6th and eight levels.
2. Repair leaking plumbing components, sediment buckets, grates, and accessories as shown on the drawings.
3. Install new drains as shown on the drawings.
4. Clean all existing floor drains and plumbing lines to separators after all repair work is complete.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 32 16.15
PROJECT SCHEDULES
(SMALL PROJECTS - DESIGN/BID/BUILD)

PART 1- GENERAL

1.1 DESCRIPTION:

- A. The Contractor shall develop a Critical Path Method (CPM) plan and schedule demonstrating fulfillment of the contract requirements (Project Schedule), and shall keep the Project Schedule up-to-date in accordance with the requirements of this section and shall utilize the plan for scheduling, coordinating and monitoring work under this contract (including all activities of subcontractors, equipment vendors and suppliers). Conventional Critical Path Method (CPM) technique shall be utilized to satisfy both time and cost applications.

1.2 CONTRACTOR'S REPRESENTATIVE:

- A. The Contractor shall designate an authorized representative responsible for the Project Schedule including preparation, review and progress reporting with and to the Contracting Officer's Representative (COR).
- B. The Contractor's representative shall have direct project control and complete authority to act on behalf of the Contractor in fulfilling the requirements of this specification section.
- C. The Contractor's representative shall have the option of developing the project schedule within their organization or to engage the services of an outside consultant. If an outside scheduling consultant is utilized, Section 1.3 of this specification will apply.

1.3 CONTRACTOR'S CONSULTANT:

- A. The Contractor shall submit a qualification proposal to the COR, within 10 days of bid acceptance. The qualification proposal shall include:
1. The name and address of the proposed consultant.
 2. Information to show that the proposed consultant has the qualifications to meet the requirements specified in the preceding paragraph.
 3. A representative sample of prior construction projects, which the proposed consultant has performed complete project scheduling services. These representative samples shall be of similar size and scope.
- B. The Contracting Officer has the right to approve or disapprove the proposed consultant, and will notify the Contractor of the VA decision within seven calendar days from receipt of the qualification proposal. In case of disapproval, the Contractor shall resubmit another consultant

within 10 calendar days for renewed consideration. The Contractor shall have their scheduling consultant approved prior to submitting any schedule for approval.

1.4 COMPUTER PRODUCED SCHEDULES

- A. The contractor shall provide monthly, to the Department of Veterans Affairs (VA), all computer-produced time/cost schedules and reports generated from monthly project updates. This monthly computer service will include: three copies of up to five different reports (inclusive of all pages) available within the user defined reports of the scheduling software approved by the Contracting Officer; a hard copy listing of all project schedule changes, and associated data, made at the update and an electronic file of this data; and the resulting monthly updated schedule in PDM format. These must be submitted with and substantively support the contractor's monthly payment request and the signed look ahead report. The COR shall identify the five different report formats that the contractor shall provide.
- B. The contractor shall be responsible for the correctness and timeliness of the computer-produced reports. The Contractor shall also be responsible for the accurate and timely submittal of the updated project schedule and all CPM data necessary to produce the computer reports and payment request that is specified.
- C. The VA will report errors in computer-produced reports to the Contractor's representative within ten calendar days from receipt of reports. The Contractor shall reprocess the computer-produced reports and associated diskette(s), when requested by the COR, to correct errors which affect the payment and schedule for the project.

1.5 THE COMPLETE PROJECT SCHEDULE SUBMITTAL

- A. Within 45 calendar days after receipt of Notice to Proceed, the Contractor shall submit for the Contracting Officer's review; three blue line copies of the interim schedule on sheets of paper 765 x 1070 mm (30 x 42 inches) and an electronic file in the previously approved CPM schedule program. The submittal shall also include three copies of a computer-produced activity/event ID schedule showing project duration; phase completion dates; and other data, including event cost. Each activity/event on the computer-produced schedule shall contain as a minimum, but not limited to, activity/event ID, activity/event description, duration, budget amount, early start date, early finish date, late start date, late finish date and total float. Work activity/event relationships shall be restricted to finish-to-start or start-to-start without lead or lag constraints. Activity/event date

constraints, not required by the contract, will not be accepted unless submitted to and approved by the Contracting Officer. The contractor shall make a separate written detailed request to the Contracting Officer identifying these date constraints and secure the Contracting Officer's written approval before incorporating them into the network diagram. The Contracting Officer's separate approval of the Project Schedule shall not excuse the contractor of this requirement. Logic events (non-work) will be permitted where necessary to reflect proper logic among work events, but must have zero duration. The complete working schedule shall reflect the Contractor's approach to scheduling the complete project. **The final Project Schedule in its original form shall contain no contract changes or delays which may have been incurred during the final network diagram development period and shall reflect the entire contract duration as defined in the bid documents.** These changes/delays shall be entered at the first update after the final Project Schedule has been approved. The Contractor should provide their requests for time and supporting time extension analysis for contract time as a result of contract changes/delays, after this update, and in accordance with Article, ADJUSTMENT OF CONTRACT COMPLETION.

- B. Within 30 calendar days after receipt of the complete project interim Project Schedule and the complete final Project Schedule, the Contracting Officer or his representative, will do one or both of the following:
1. Notify the Contractor concerning his actions, opinions, and objections.
 2. A meeting with the Contractor at or near the job site for joint review, correction or adjustment of the proposed plan will be scheduled if required. Within 14 calendar days after the joint review, the Contractor shall revise and shall submit three blue line copies of the revised Project Schedule, three copies of the revised computer-produced activity/event ID schedule and a revised electronic file as specified by the Contracting Officer. The revised submission will be reviewed by the Contracting Officer and, if found to be as previously agreed upon, will be approved.
- C. The approved baseline schedule and the computer-produced schedule(s) generated there from shall constitute the approved baseline schedule until subsequently revised in accordance with the requirements of this section.
- D. The Complete Project Schedule shall contain approximately 20 work activities/events.

1.6 WORK ACTIVITY/EVENT COST DATA

- A. The Contractor shall cost load all work activities/events except procurement activities. The cumulative amount of all cost loaded work activities/events (including alternates) shall equal the total contract price. Prorate overhead, profit and general conditions on all work activities/events for the entire project length. The contractor shall generate from this information cash flow curves indicating graphically the total percentage of work activity/event dollar value scheduled to be in place on early finish, late finish. These cash flow curves will be used by the Contracting Officer to assist him in determining approval or disapproval of the cost loading. Negative work activity/event cost data will not be acceptable, except on VA issued contract changes.
- B. The Contractor shall cost load work activities/events for guarantee period services, test, balance and adjust various systems in accordance with the provisions in Article, FAR 52.232 - 5 (PAYMENT UNDER FIXED-PRICE CONSTRUCTION CONTRACTS) and VAAR 852.236 - 83 (PAYMENT UNDER FIXED-PRICE CONSTRUCTION CONTRACTS).
- C. In accordance with FAR 52.236 - 1 (PERFORMANCE OF WORK BY THE CONTRACTOR) and VAAR 852.236 - 72 (PERFORMANCE OF WORK BY THE CONTRACTOR), the Contractor shall submit, simultaneously with the cost per work activity/event of the construction schedule required by this Section, a responsibility code for all activities/events of the project for which the Contractor's forces will perform the work.
- D. The Contractor shall cost load work activities/events for all BID ITEMS. The sum of each BID ITEM work shall equal the value of the bid item in the Contractors' bid.

1.7 PROJECT SCHEDULE REQUIREMENTS

- A. Show on the project schedule the sequence of work activities/events required for complete performance of all items of work. The Contractor Shall:
 - 1. Show activities/events as:
 - a. Contractor's time required for submittal of shop drawings, templates, fabrication, delivery and similar pre-construction work.
 - b. Contracting Officer's and Architect-Engineer's review and approval of shop drawings, equipment schedules, samples, template, or similar items.
 - c. Interruption of VA Facilities utilities, delivery of Government furnished equipment, and rough-in drawings, project phasing and any other specification requirements.

- d. Test, balance and adjust various systems and pieces of equipment, maintenance and operation manuals, instructions and preventive maintenance tasks.
 - e. VA inspection and acceptance activity/event with a minimum duration of five work days at the end of each phase and immediately preceding any VA move activity/event required by the contract phasing for that phase.
2. Show not only the activities/events for actual construction work for each trade category of the project, but also trade relationships to indicate the movement of trades from one area, floor, or building, to another area, floor, or building, for at least five trades who are performing major work under this contract.
 3. Break up the work into activities/events of a duration no longer than 20 work days each or one reporting period, except as to non-construction activities/events (i.e., procurement of materials, delivery of equipment, concrete and asphalt curing) and any other activities/events for which the COR may approve the showing of a longer duration. The duration for VA approval of any required submittal, shop drawing, or other submittals will not be less than 20 work days.
 4. Describe work activities/events clearly, so the work is readily identifiable for assessment of completion. Activities/events labeled "start," "continue," or "completion," are not specific and will not be allowed. Lead and lag time activities will not be acceptable.
 5. The schedule shall be generally numbered in such a way to reflect either discipline, phase or location of the work.
- B. The Contractor shall submit the following supporting data in addition to the project schedule:
1. The appropriate project calendar including working days and holidays.
 2. The planned number of shifts per day.
 3. The number of hours per shift.
- Failure of the Contractor to include this data shall delay the review of the submittal until the Contracting Officer is in receipt of the missing data.
- C. To the extent that the Project Schedule or any revised Project Schedule shows anything not jointly agreed upon, it shall not be deemed to have been approved by the COR. Failure to include any element of work required for the performance of this contract shall not excuse the Contractor from completing all work required within any applicable

completion date of each phase regardless of the COR's approval of the Project Schedule.

- D. Compact Disk Requirements and CPM Activity/Event Record Specifications: Submit to the VA an electronic file(s) containing one file of the data required to produce a schedule, reflecting all the activities/events of the complete project schedule being submitted.

1.8 PAYMENT TO THE CONTRACTOR:

- A. Monthly, the contractor shall submit the AIA application and certificate for payment documents G702 & G703 reflecting updated schedule activities and cost data in accordance with the provisions of the following Article, PAYMENT AND PROGRESS REPORTING, as the basis upon which progress payments will be made pursuant to Article, FAR 52.232 - 5 (PAYMENT UNDER FIXED-PRICE CONSTRUCTION CONTRACTS) and VAAR 852.236 - 83 (PAYMENT UNDER FIXED-PRICE CONSTRUCTION CONTRACTS). The Contractor shall be entitled to a monthly progress payment upon approval of estimates as determined from the currently approved updated project schedule. Monthly payment requests shall include: a listing of all agreed upon project schedule changes and associated data; and an electronic file (s) of the resulting monthly updated schedule.
- B. Approval of the Contractor's monthly Application for Payment shall be contingent, among other factors, on the submittal of a satisfactory monthly update of the project schedule.

1.9 PAYMENT AND PROGRESS REPORTING

- A. Monthly schedule update meetings will be held on dates mutually agreed to by the COR and the Contractor. Contractor and their CPM consultant (if applicable) shall attend all monthly schedule update meetings. The Contractor shall accurately update the Project Schedule and all other data required and provide this information to the COR three work days in advance of the schedule update meeting. Job progress will be reviewed to verify:
1. Actual start and/or finish dates for updated/completed activities/events.
 2. Remaining duration for each activity/event started, or scheduled to start, but not completed.
 3. Logic, time and cost data for change orders, and supplemental agreements that are to be incorporated into the Project Schedule.
 4. Changes in activity/event sequence and/or duration which have been made, pursuant to the provisions of following Article, ADJUSTMENT OF CONTRACT COMPLETION.

5. Completion percentage for all completed and partially completed activities/events.
 6. Logic and duration revisions required by this section of the specifications.
 7. Activity/event duration and percent complete shall be updated independently.
- B. After completion of the joint review, the contractor shall generate an updated computer-produced calendar-dated schedule and supply the Contracting Officer's representative with reports in accordance with the Article, COMPUTER PRODUCED SCHEDULES, specified.
- C. After completing the monthly schedule update, the contractor's representative or scheduling consultant shall rerun all current period contract change(s) against the prior approved monthly project schedule. The analysis shall only include original workday durations and schedule logic agreed upon by the contractor and COR for the contract change(s). When there is a disagreement on logic and/or durations, the Contractor shall use the schedule logic and/or durations provided and approved by the COR. After each rerun update, the resulting electronic project schedule data file shall be appropriately identified and submitted to the VA in accordance to the requirements listed in articles 1.4 and 1.7. This electronic submission is separate from the regular monthly project schedule update requirements and shall be submitted to the COR within fourteen (14) calendar days of completing the regular schedule update. **Before inserting the contract changes durations, care must be taken to ensure that only the original durations will be used for the analysis, not the reported durations after progress. In addition, once the final network diagram is approved, the contractor must recreate all manual progress payment updates on this approved network diagram and associated reruns for contract changes in each of these update periods as outlined above for regular update periods. This will require detailed record keeping for each of the manual progress payment updates.**
- D. Following approval of the CPM schedule, the VA, the General Contractor, its approved CPM Consultant, RE office representatives, and all subcontractors needed, as determined by the SRE, shall meet to discuss the monthly updated schedule. The main emphasis shall be to address work activities to avoid slippage of project schedule and to identify any necessary actions required to maintain project schedule during the reporting period. The Government representatives and the Contractor should conclude the meeting with a clear understanding of those work and

administrative actions necessary to maintain project schedule status during the reporting period. This schedule coordination meeting will occur after each monthly project schedule update meeting utilizing the resulting schedule reports from that schedule update. If the project is behind schedule, discussions should include ways to prevent further slippage as well as ways to improve the project schedule status, when appropriate.

1.10 RESPONSIBILITY FOR COMPLETION

- A. If it becomes apparent from the current revised monthly progress schedule that phasing or contract completion dates will not be met, the Contractor shall execute some or all of the following remedial actions:
1. Increase construction manpower in such quantities and crafts as necessary to eliminate the backlog of work.
 2. Increase the number of working hours per shift, shifts per working day, working days per week, the amount of construction equipment, or any combination of the foregoing to eliminate the backlog of work.
 3. Reschedule the work in conformance with the specification requirements.
- B. Prior to proceeding with any of the above actions, the Contractor shall notify and obtain approval from the COR for the proposed schedule changes. If such actions are approved, the representative schedule revisions shall be incorporated by the Contractor into the Project Schedule before the next update, at no additional cost to the Government.

1.11 CHANGES TO THE SCHEDULE

- A. Within 30 calendar days after VA acceptance and approval of any updated project schedule, the Contractor shall submit a revised electronic file (s) and a list of any activity/event changes including predecessors and successors for any of the following reasons:
1. Delay in completion of any activity/event or group of activities/events, which may be involved with contract changes, strikes, unusual weather, and other delays will not relieve the Contractor from the requirements specified unless the conditions are shown on the CPM as the direct cause for delaying the project beyond the acceptable limits.
 2. Delays in submittals, or deliveries, or work stoppage are encountered which make rescheduling of the work necessary.
 3. The schedule does not represent the actual prosecution and progress of the project.

4. When there is, or has been, a substantial revision to the activity/event costs regardless of the cause for these revisions.
- B. CPM revisions made under this paragraph which affect the previously approved computer-produced schedules for Government furnished equipment, vacating of areas by the VA Facility, contract phase(s) and sub phase(s), utilities furnished by the Government to the Contractor, or any other previously contracted item, shall be furnished in writing to the Contracting Officer for approval.
- C. Contracting Officer's approval for the revised project schedule and all relevant data is contingent upon compliance with all other paragraphs of this section and any other previous agreements by the Contracting Officer or the VA representative.
- D. The cost of revisions to the project schedule resulting from contract changes will be included in the proposal for changes in work as specified in FAR 52.243 - 4 (Changes) and VAAR 852.236 - 88 (Changes - Supplemental), and will be based on the complexity of the revision or contract change, man hours expended in analyzing the change, and the total cost of the change.
- E. The cost of revisions to the Project Schedule not resulting from contract changes is the responsibility of the Contractor.

1.12 ADJUSTMENT OF CONTRACT COMPLETION

- A. The contract completion time will be adjusted only for causes specified in this contract. Request for an extension of the contract completion date by the Contractor shall be supported with a justification, CPM data and supporting evidence as the COR may deem necessary for determination as to whether or not the Contractor is entitled to an extension of time under the provisions of the contract. Submission of proof based on revised activity/event logic, durations (in work days) and costs is obligatory to any approvals. The schedule must clearly display that the Contractor has used, in full, all the float time available for the work involved in this request. The Contracting Officer's determination as to the total number of days of contract extension will be based upon the current computer-produced calendar-dated schedule for the time period in question and all other relevant information.
- B. Actual delays in activities/events which, according to the computer-produced calendar-dated schedule, do not affect the extended and predicted contract completion dates shown by the critical path in the network, will not be the basis for a change to the contract completion date. The Contracting Officer will within a reasonable time after receipt of such justification and supporting evidence, review the facts

and advise the Contractor in writing of the Contracting Officer's decision.

- C. The Contractor shall submit each request for a change in the contract completion date to the Contracting Officer in accordance with the provisions specified under FAR 52.243 - 4 (Changes) and VAAR 852.236 - 88 (Changes - Supplemental). The Contractor shall include, as a part of each change order proposal, a sketch showing all CPM logic revisions, duration (in work days) changes, and cost changes, for work in question and its relationship to other activities on the approved network diagram.
- D. All delays due to non-work activities/events such as RFI's, WEATHER, STRIKES, and similar non-work activities/events shall be analyzed on a month by month basis.

- - - E N D - - -

SECTION 01 33 23
SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

- 1-1. Refer to Articles titled SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION (FAR 52.236-21) and, SPECIAL NOTES (VAAR 852.236-91), in GENERAL CONDITIONS.
- 1-2. For the purposes of this contract, samples (including laboratory samples to be tested), test reports, certificates, and manufacturers' literature and data shall also be subject to the previously referenced requirements. The following text refers to all items collectively as SUBMITTALS.
- 1-3. Submit for approval, all of the items specifically mentioned under the separate sections of the specification, with information sufficient to evidence full compliance with contract requirements. Materials, fabricated articles and the like to be installed in permanent work shall equal those of approved submittals. After an item has been approved, no change in brand or make will be permitted unless:
 - A. Satisfactory written evidence is presented to, and approved by Contracting Officer, that manufacturer cannot make scheduled delivery of approved item or;
 - B. Item delivered has been rejected and substitution of a suitable item is an urgent necessity or;
 - C. Other conditions become apparent which indicates approval of such substitute item to be in best interest of the Government.
- 1-4. Forward submittals in sufficient time to permit proper consideration and approval action by Government. Time submission to assure adequate lead time for procurement of contract - required items. Delays attributable to untimely and rejected submittals (including any laboratory samples to be tested) will not serve as a basis for extending contract time for completion.
- 1-5. Submittals will be reviewed for compliance with contract requirements by Architect-Engineer, and action thereon will be taken by COR on behalf of the Contracting Officer.
- 1-6. Upon receipt of submittals, Architect-Engineer will assign a file number thereto. Contractor, in any subsequent correspondence, shall refer to this file and identification number to expedite replies relative to previously approved or disapproved submittals.
- 1-7. The Government reserves the right to require additional submittals, whether or not particularly mentioned in this contract. If additional submittals beyond those required by the contract are furnished pursuant

to request therefor by Contracting Officer, adjustment in contract price and time will be made in accordance with Articles titled CHANGES (FAR 52.243-4) and CHANGES - SUPPLEMENT (VAAR 852.236-88) of the GENERAL CONDITIONS.

- 1-8. Schedules called for in specifications and shown on shop drawings shall be submitted for use and information of Department of Veterans Affairs and Architect-Engineer. However, the Contractor shall assume responsibility for coordinating and verifying schedules. The Contracting Officer and Architect-Engineer assumes no responsibility for checking schedules or layout drawings for exact sizes, exact numbers and detailed positioning of items.
- 1-9. Submittals must be submitted by Contractor only and shipped prepaid. Contracting Officer assumes no responsibility for checking quantities or exact numbers included in such submittals.
 - A. Submit shop drawings, schedules, manufacturers' literature and data, and certificates in quadruplicate, except where a greater number is specified.
 - B. Submittals will receive consideration only when covered by a transmittal letter signed by Contractor. Letter shall be sent via first class mail or electronically by email and shall contain the list of items, name of Medical Center, name of Contractor, contract number, applicable specification paragraph numbers, applicable drawing numbers (and other information required for exact identification of location for each item), manufacturer and brand, ASTM or Federal Specification Number (if any) and such additional information as may be required by specifications for particular item being furnished. In addition, catalogs shall be marked to indicate specific items submitted for approval.
 1. A copy of letter must be enclosed with items, and any items received without identification letter will be considered "unclaimed goods" and held for a limited time only.
 2. Each sample, certificate, manufacturers' literature and data shall be labeled to indicate the name and location of the Medical Center, name of Contractor, manufacturer, brand, contract number and ASTM or Federal Specification Number as applicable and location(s) on project.
 3. Required certificates shall be signed by an authorized representative of manufacturer or supplier of material, and by Contractor.

- C. In addition to complying with the applicable requirements specified in preceding Article 1.9, samples which are required to have Laboratory Tests (those preceded by symbol "LT" under the separate sections of the specification shall be tested, at the expense of Contractor, in a commercial laboratory approved by Contracting Officer.
1. Laboratory shall furnish Contracting Officer with a certificate stating that it is fully equipped and qualified to perform intended work, is fully acquainted with specification requirements and intended use of materials and is an independent establishment in no way connected with organization of Contractor or with manufacturer or supplier of materials to be tested.
 2. Certificates shall also set forth a list of comparable projects upon which laboratory have performed similar functions during past five years.
 3. Samples and laboratory tests shall be sent directly to the approved commercial testing laboratory.
 4. Contractor shall send a copy of transmittal letter to both COR and to Architect-Engineer simultaneously with submission of material to a commercial testing laboratory.
 5. Laboratory test reports shall be sent directly to the Architect/Engineer and COTR for appropriate action.
 6. Laboratory reports shall list contract specification test requirements and a comparative list of the laboratory test results. When tests show that the material meets specification requirements, the laboratory shall so certify on test report.
 7. Laboratory test reports shall also include a recommendation for approval or disapproval of tested item.
- F. Submittal drawings (shop, erection or setting drawings) and schedules, required for work of various trades, shall be checked before submission by technically qualified employees of Contractor for accuracy, completeness and compliance with contract requirements. These drawings and schedules shall be stamped and signed by Contractor certifying to such check.
1. For each drawing required, submit one legible photographic paper or vellum reproducible.
 2. Reproducible shall be full size.
 3. Each drawing shall have marked thereon, proper descriptive title, including Medical Center location, project number, manufacturer's number, reference to contract drawing number, detail Section Number, and Specification Section Number.

4. A space 120 mm by 125 mm (4-3/4 by 5 inches) shall be reserved on each drawing to accommodate approval or disapproval stamp.
 5. Submit drawings, ROLLED WITHIN A MAILING TUBE, fully protected for shipment.
 6. One reproducible print of approved or disapproved shop drawings will be forwarded to Contractor.
 7. When work is directly related and involves more than one trade, shop drawings shall be submitted to Architect-Engineer under one cover.
- 1-10. Shop drawings, test reports, certificates and manufacturers' literature and data, shall be submitted for approval to:
- Everett Engineers, LLC
1740 Massachusetts Ave., Suite D
Boxborough, MA 01719
- 1-11. At the time of transmittal to the Architect-Engineer, the Contractor shall also send a copy of the transmittal letter directly to the COR.

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SECTION 01 42 19
REFERENCE STANDARDS

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies the availability and source of references and standards specified in the project manual under paragraphs APPLICABLE PUBLICATIONS and/or shown on the drawings.

1.2 AVAILABILITY OF SPECIFICATIONS LISTED IN THE GSA INDEX OF FEDERAL SPECIFICATIONS, STANDARDS AND COMMERCIAL ITEM DESCRIPTIONS FPMR PART 101-29 (FAR 52.211-1) (AUG 1998)

- A. The GSA Index of Federal Specifications, Standards and Commercial Item Descriptions, FPMR Part 101-29 and copies of specifications, standards, and commercial item descriptions cited in the solicitation may be obtained for a fee by submitting a request to - GSA Federal Supply Service, Specifications Section, Suite 8100, 470 East L'Enfant Plaza, SW, Washington, DC 20407, Telephone (202) 619-8925, Facsimile (202) 619-8978.
- B. If the General Services Administration, Department of Agriculture, or Department of Veterans Affairs issued this solicitation, a single copy of specifications, standards, and commercial item descriptions cited in this solicitation may be obtained free of charge by submitting a request to the addressee in paragraph (a) of this provision. Additional copies will be issued for a fee.

1.3 AVAILABILITY FOR EXAMINATION OF SPECIFICATIONS NOT LISTED IN THE GSA INDEX OF FEDERAL SPECIFICATIONS, STANDARDS AND COMMERCIAL ITEM DESCRIPTIONS (FAR 52.211-4) (JUN 1988)

The specifications and standards cited in this solicitation can be examined at the following location:

DEPARTMENT OF VETERANS AFFAIRS
Office of Construction & Facilities Management
Facilities Quality Service (00CFM1A)
425 Eye Street N.W, (sixth floor)
Washington, DC 20001
Telephone Numbers: (202) 632-5249 or (202) 632-5178
Between 9:00 AM - 3:00 PM

1.4 AVAILABILITY OF SPECIFICATIONS NOT LISTED IN THE GSA INDEX OF FEDERAL SPECIFICATIONS, STANDARDS AND COMMERCIAL ITEM DESCRIPTIONS (FAR 52.211-3) (JUN 1988)

The specifications cited in this solicitation may be obtained from the associations or organizations listed below.

AA Aluminum Association Inc.
<http://www.aluminum.org>

AABC Associated Air Balance Council
<http://www.aabchg.com>

AAMA American Architectural Manufacturer's Association
<http://www.aamanet.org>

AAN American Nursery and Landscape Association
<http://www.anla.org>

AASHTO American Association of State Highway and Transportation Officials
<http://www.aashto.org>

AATCC American Association of Textile Chemists and Colorists
<http://www.aatcc.org>

ACGIH American Conference of Governmental Industrial Hygienists
<http://www.acgih.org>

ACI American Concrete Institute
<http://www.aci-int.net>

ACPA American Concrete Pipe Association
<http://www.concrete-pipe.org>

ACPPA American Concrete Pressure Pipe Association
<http://www.acppa.org>

ADC Air Diffusion Council
<http://flexibleduct.org>

AGA American Gas Association
<http://www.aga.org>

AGC Associated General Contractors of America
<http://www.agc.org>

AGMA American Gear Manufacturers Association, Inc.
<http://www.agma.org>

AHAM Association of Home Appliance Manufacturers
<http://www.aham.org>

AISC American Institute of Steel Construction
<http://www.aisc.org>

AISI American Iron and Steel Institute
<http://www.steel.org>

AITC American Institute of Timber Construction
<http://www.aitc-glulam.org>

AMCA Air Movement and Control Association, Inc.
<http://www.amca.org>

ANLA American Nursery & Landscape Association
<http://www.anla.org>

ANSI American National Standards Institute, Inc.
<http://www.ansi.org>

APA The Engineered Wood Association
<http://www.apawood.org>

ARI Air-Conditioning and Refrigeration Institute
<http://www.ari.org>

ASAE American Society of Agricultural Engineers
<http://www.asae.org>

ASCE American Society of Civil Engineers
<http://www.asce.org>

ASHRAE American Society of Heating, Refrigerating, and
Air-Conditioning Engineers
<http://www.ashrae.org>

ASME American Society of Mechanical Engineers
<http://www.asme.org>

ASSE American Society of Sanitary Engineering
<http://www.asse-plumbing.org>

ASTM American Society for Testing and Materials
<http://www.astm.org>

AWI Architectural Woodwork Institute
<http://www.awinet.org>

AWS American Welding Society
<http://www.aws.org>

AWWA American Water Works Association
<http://www.awwa.org>

BHMA Builders Hardware Manufacturers Association
<http://www.buildershardware.com>

BIA Brick Institute of America
<http://www.bia.org>

CAGI Compressed Air and Gas Institute
<http://www.cagi.org>

CGA Compressed Gas Association, Inc.
<http://www.cganet.com>

CI The Chlorine Institute, Inc.
<http://www.chlorineinstitute.org>

CISCA Ceilings and Interior Systems Construction Association
<http://www.cisca.org>

CISPI Cast Iron Soil Pipe Institute
<http://www.cispi.org>

CLFMI Chain Link Fence Manufacturers Institute
<http://www.chainlinkinfo.org>

CPMB Concrete Plant Manufacturers Bureau
<http://www.cpmb.org>

CRA California Redwood Association
<http://www.calredwood.org>

CRSI Concrete Reinforcing Steel Institute
<http://www.crsi.org>

CTI Cooling Technology Institute
<http://www.cti.org>

DHI Door and Hardware Institute
<http://www.dhi.org>

EGSA Electrical Generating Systems Association
<http://www.egsa.org>

EEI Edison Electric Institute
<http://www.eei.org>

EPA Environmental Protection Agency
<http://www.epa.gov>

ETL ETL Testing Laboratories, Inc.
<http://www.etl.com>

FAA Federal Aviation Administration
<http://www.faa.gov>

FCC Federal Communications Commission
<http://www.fcc.gov>

FPS The Forest Products Society
<http://www.forestprod.org>

GANNA Glass Association of North America
<http://www.cssinfo.com/info/gana.html/>

FM Factory Mutual Insurance
<http://www.fmglobal.com>

GA Gypsum Association
<http://www.gypsum.org>

GSA General Services Administration
<http://www.gsa.gov>

HI Hydraulic Institute
<http://www.pumps.org>

HPVA Hardwood Plywood & Veneer Association
<http://www.hpva.org>

ICBO International Conference of Building Officials
<http://www.icbo.org>

ICEA Insulated Cable Engineers Association Inc.
<http://www.icea.net>

\ICAC Institute of Clean Air Companies
<http://www.icac.com>

IEEE Institute of Electrical and Electronics Engineers
<http://www.ieee.org>

IMSA International Municipal Signal Association
<http://www.imsasafety.org>

IPCEA Insulated Power Cable Engineers Association

NBMA Metal Buildings Manufacturers Association
<http://www.mbma.com>

MSS Manufacturers Standardization Society of the Valve and Fittings Industry Inc.
<http://www.mss-hq.com>

NAAMM National Association of Architectural Metal Manufacturers
<http://www.naamm.org>

NAPHCC Plumbing-Heating-Cooling Contractors Association
<http://www.phccweb.org.org>

NBS National Bureau of Standards
See - NIST

NBBPVI National Board of Boiler and Pressure Vessel Inspectors
<http://www.nationboard.org>

NEC National Electric Code
See - NFPA National Fire Protection Association

NEMA National Electrical Manufacturers Association
<http://www.nema.org>

NFPA National Fire Protection Association
<http://www.nfpa.org>

NHLA National Hardwood Lumber Association
<http://www.natlhardwood.org>

NIH National Institute of Health
<http://www.nih.gov>

NIST National Institute of Standards and Technology
<http://www.nist.gov>

NLMA Northeastern Lumber Manufacturers Association, Inc.
<http://www.nelma.org>

NPA National Particleboard Association
18928 Premiere Court
Gaithersburg, MD 20879
(301) 670-0604

NSF National Sanitation Foundation
<http://www.nsf.org>

NWWDA Window and Door Manufacturers Association
<http://www.nwwda.org>

OSHA Occupational Safety and Health Administration
Department of Labor
<http://www.osha.gov>

PCA Portland Cement Association
<http://www.portcement.org>

PCI Precast Prestressed Concrete Institute
<http://www.pci.org>

PPI The Plastic Pipe Institute
<http://www.plasticpipe.org>

PEI Porcelain Enamel Institute, Inc.
<http://www.porcelainenamel.com>

PTI Post-Tensioning Institute
<http://www.post-tensioning.org>

RFCI The Resilient Floor Covering Institute
<http://www.rfci.com>

RIS Redwood Inspection Service
See - CRA

RMA Rubber Manufacturers Association, Inc.
<http://www.rma.org>

SCMA Southern Cypress Manufacturers Association
<http://www.cypressinfo.org>

SDI Steel Door Institute
<http://www.steeldoor.org>

IGMA Insulating Glass Manufacturers Alliance
<http://www.igmaonline.org>

SJI Steel Joist Institute
<http://www.steeljoist.org>

SMACNA Sheet Metal and Air-Conditioning Contractors
National Association, Inc.
<http://www.smacna.org>

SSPC The Society for Protective Coatings
<http://www.sspc.org>

STI Steel Tank Institute
<http://www.steeltank.com>

SWI Steel Window Institute
<http://www.steelwindows.com>

TCA Tile Council of America, Inc.
<http://www.tileusa.com>

TEMA Tubular Exchange Manufacturers Association
<http://www.tema.org>

TPI Truss Plate Institute, Inc.
583 D'Onofrio Drive; Suite 200
Madison, WI 53719
(608) 833-5900

UBC The Uniform Building Code
See ICBO

UL Underwriters' Laboratories Incorporated
<http://www.ul.com>

ULC Underwriters' Laboratories of Canada
<http://www.ulc.ca>

WCLIB West Coast Lumber Inspection Bureau
6980 SW Varns Road, P.O. Box 23145
Portland, OR 97223
(503) 639-0651

WRCLA Western Red Cedar Lumber Association
P.O. Box 120786
New Brighton, MN 55112
(612) 633-4334

WWPA Western Wood Products Association
<http://www.wwpa.org>

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SECTION 01 45 29
TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.1 DESCRIPTION:

This section specifies materials testing activities and inspection services required during project construction to be provided by a Testing Laboratory retained by Contractor.

1.2 APPLICABLE PUBLICATIONS:

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.
- B. American Association of State Highway and Transportation Officials (AASHTO):
 - T27-11.....Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates
 - T96-02 (R2006).....Standard Method of Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
 - T99-10.....Standard Method of Test for Moisture-Density Relations of Soils Using a 2.5 Kg (5.5 lb.) Rammer and a 305 mm (12 in.) Drop
 - T104-99 (R2007).....Standard Method of Test for Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate
 - T180-10.....Standard Method of Test for Moisture-Density Relations of Soils using a 4.54 kg (10 lb.) Rammer and a 457 mm (18 in.) Drop
 - T191-02 (R2006).....Standard Method of Test for Density of Soil In-Place by the Sand-Cone Method
- C. American Concrete Institute (ACI):
 - 506.4R-94 (R2004).....Guide for the Evaluation of Shotcrete
- D. American Society for Testing and Materials (ASTM):
 - A325-10.....Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
 - A370-12.....Standard Test Methods and Definitions for Mechanical Testing of Steel Products

A490-12.....Standard Specification for Heat Treated Steel
Structural Bolts, 150 ksi Minimum Tensile
Strength

C31/C31M-10.....Standard Practice for Making and Curing Concrete
Test Specimens in the Field

C33/C33M-11a.....Standard Specification for Concrete Aggregates

C39/C39M-12.....Standard Test Method for Compressive Strength of
Cylindrical Concrete Specimens

C109/C109M-11b.....Standard Test Method for Compressive Strength of
Hydraulic Cement Mortars

C136-06.....Standard Test Method for Sieve Analysis of Fine
and Coarse Aggregates

C138/C138M-10b.....Standard Test Method for Density (Unit Weight),
Yield, and Air Content (Gravimetric) of Concrete

C140-12.....Standard Test Methods for Sampling and Testing
Concrete Masonry Units and Related Units

C143/C143M-10a.....Standard Test Method for Slump of Hydraulic
Cement Concrete

C172/C172M-10.....Standard Practice for Sampling Freshly Mixed
Concrete

C173/C173M-10b.....Standard Test Method for Air Content of freshly
Mixed Concrete by the Volumetric Method

C330/C330M-09.....Standard Specification for Lightweight
Aggregates for Structural Concrete

C567/C567M-11.....Standard Test Method for Density Structural
Lightweight Concrete

C780-11.....Standard Test Method for Pre-construction and
Construction Evaluation of Mortars for Plain and
Reinforced Unit Masonry

C1019-11.....Standard Test Method for Sampling and Testing
Grout

C1064/C1064M-11.....Standard Test Method for Temperature of Freshly
Mixed Portland Cement Concrete

C1077-11c.....Standard Practice for Agencies Testing Concrete
and Concrete Aggregates for Use in Construction
and Criteria for Testing Agency Evaluation

C1314-11a.....Standard Test Method for Compressive Strength of
Masonry Prisms

D422-63(2007).....Standard Test Method for Particle-Size Analysis
of Soils

D698-07e1.....	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort
D1140-00 (2006).....	Standard Test Methods for Amount of Material in Soils Finer than No. 200 Sieve
D1143/D1143M-07e1.....	Standard Test Methods for Deep Foundations Under Static Axial Compressive Load
D1188-07e1.....	Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples
D2974-07a.....	Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils
E94-04 (2010).....	Standard Guide for Radiographic Examination
E164-08.....	Standard Practice for Contact Ultrasonic Testing of Weldments
E329-11c.....	Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection
E543-09.....	Standard Specification for Agencies Performing Non-Destructive Testing
E605-93 (R2011).....	Standard Test Methods for Thickness and Density of Sprayed Fire Resistive Material (SFRM) Applied to Structural Members
E709-08.....	Standard Guide for Magnetic Particle Examination
E1155-96 (R2008).....	Determining FF Floor Flatness and FL Floor Levelness Numbers
E. American Welding Society (AWS):	
D1.D1.1M-10.....	Structural Welding Code-Steel

1.3 REQUIREMENTS:

- A. Accreditation Requirements: Construction materials testing laboratories must be accredited by a laboratory accreditation authority and will be required to submit a copy of the Certificate of Accreditation and Scope of Accreditation. The laboratory's scope of accreditation must include the appropriate ASTM standards (i.e.; E329, C1077, D3666, D3740, A880, E543) listed in the technical sections of the specifications. Laboratories engaged in Hazardous Materials Testing shall meet the requirements of OSHA and EPA. The policy applies to the specific laboratory performing the actual testing, not just the "Corporate Office."
- B. Inspection and Testing: Testing laboratory shall inspect materials and workmanship and perform tests described herein and additional tests

requested by COR. When it appears materials furnished, or work performed by the Contractor fails to meet construction contract requirements, Testing Laboratory shall direct attention of COR to such failure.

- C. Written Reports: Testing laboratory shall submit test reports to COR, Contractor, unless other arrangements are agreed to in writing by the COR. Submit reports of tests that fail to meet construction contract requirements on colored paper.
- D. Verbal Reports: Give verbal notification to COR immediately of any irregularity.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 SITE WORK CONCRETE:

Test site work concrete including materials for concrete as required in Article CONCRETE of this section.

3.2 CONCRETE:

- A. Field Inspection and Materials Testing:
 - 1. Provide a technician at site of placement at all times to perform concrete sampling and testing.
 - 2. Review the delivery tickets of the ready-mix concrete trucks arriving on-site. Notify the Contractor if the concrete cannot be placed within the specified time limits or if the type of concrete delivered is incorrect. Reject any loads that do not comply with the Specification requirements. Rejected loads are to be removed from the site at the Contractor's expense. Any rejected concrete that is placed will be subject to removal.
 - 3. Take concrete samples at point of placement in accordance with ASTM C172. Mold and cure compression test cylinders in accordance with ASTM C31. Make at least three cylinders for each 40 m³ (50 cubic yards) or less of each concrete type, and at least three cylinders for any one day's pour for each concrete type. // After good concrete quality control has been established and maintained as determined by COR make three cylinders for each 80 m³ (100 cubic yards) or less of each concrete type, and at least three cylinders from any one day's pour for each concrete type. // Label each cylinder with an identification number. COR may require additional cylinders to be molded and cured under job conditions.
 - 4. Perform slump tests in accordance with ASTM C143. Test the first truck each day, and every time test cylinders are made. Test pumped concrete at the hopper and at the discharge end of the hose at the

- beginning of each day's pumping operations to determine change in slump.
5. Determine the air content of concrete per ASTM C173. For concrete required to be air-entrained, test the first truck and every 20 m³ (25 cubic yards) thereafter each day. For concrete not required to be air-entrained, test every 80 m³ (100 cubic yards) at random. For pumped concrete, initially test concrete at both the hopper and the discharge end of the hose to determine change in air content.
 6. If slump or air content fall outside specified limits, make another test immediately from another portion of same batch.
 7. Perform unit weight tests in compliance with ASTM C138 for normal weight concrete and ASTM C567 for lightweight concrete. Test the first truck and each time cylinders are made.
 8. Notify laboratory technician at batch plant of mix irregularities and request materials and proportioning check.
 9. Verify that specified mixing has been accomplished.
 10. Environmental Conditions: Determine the temperature per ASTM C1064 for each truckload of concrete during hot weather and cold weather concreting operations:
 - a. When ambient air temperature falls below 4.4 degrees C (40 degrees F), record maximum and minimum air temperatures in each 24 hour period; record air temperature inside protective enclosure; record minimum temperature of surface of hardened concrete.
 - b. When ambient air temperature rises above 29.4 degrees C (85 degrees F), record maximum and minimum air temperature in each 24 hour period; record minimum relative humidity; record maximum wind velocity; record maximum temperature of surface of hardened concrete.
 11. Inspect the reinforcing steel placement, including bar size, bar spacing, top and bottom concrete cover, proper tie into the chairs, and grade of steel prior to concrete placement. Submit detailed report of observations.
 12. Observe conveying, placement, and consolidation of concrete for conformance to specifications.
 13. Observe condition of formed surfaces upon removal of formwork prior to repair of surface defects and observe repair of surface defects.
 14. Observe curing procedures for conformance with specifications, record dates of concrete placement, start of preliminary curing, start of final curing, end of curing period.
 15. Observe preparations for placement of concrete:

- a. Inspect handling, conveying, and placing equipment, inspect vibrating and compaction equipment.
 - b. Inspect preparation of construction, expansion, and isolation joints.
16. Observe preparations for protection from hot weather, cold weather, sun, and rain, and preparations for curing.
17. Observe concrete mixing:
- a. Monitor and record amount of water added at project site.
 - b. Observe minimum and maximum mixing times.
18. Measure concrete flatwork for levelness and flatness as follows:
- a. Perform Floor Tolerance Measurements F_F and F_L in accordance with ASTM E1155. Calculate the actual overall F- numbers using the inferior/superior area method.
 - b. Perform all floor tolerance measurements within 48 hours after slab installation and prior to removal of shoring and formwork.
 - c. Provide the Contractor and the COR with the results of all profile tests, including a running tabulation of the overall F_F and F_L values for all slabs installed to date, within 72 hours after each slab installation.
- C. Laboratory Tests of Field Samples:
1. Test compression test cylinders for strength in accordance with ASTM C39. For each test series, test one cylinder at 7 days and one cylinder at 28 days. Use remaining cylinder as a spare tested as directed by COR. Compile laboratory test reports as follows:
Compressive strength test shall be result of one cylinder, except when one cylinder shows evidence of improper sampling, molding or testing, in which case it shall be discarded and strength of spare cylinder shall be used.
 2. Make weight tests of hardened lightweight structural concrete in accordance with ASTM C567.
 3. Furnish certified compression test reports (duplicate) to COR. In test report, indicate the following information:
 - a. Cylinder identification number and date cast.
 - b. Specific location at which test samples were taken.
 - c. Type of concrete, slump, and percent air.
 - d. Compressive strength of concrete in MPa (psi).
 - e. Weight of lightweight structural concrete in kg/m^3 (pounds per cubic feet).
 - f. Weather conditions during placing.

- g. Temperature of concrete in each test cylinder when test cylinder was molded.
- h. Maximum and minimum ambient temperature during placing.
- i. Ambient temperature when concrete sample in test cylinder was taken.
- j. Date delivered to laboratory and date tested.

3.3 REINFORCEMENT:

- A. Make one tensile and one bend test in accordance with ASTM A370 from each pair of samples obtained.
- B. Written report shall include, in addition to test results, heat number, manufacturer, type and grade of steel, and bar size.
- C. Perform tension tests of mechanical and welded splices in accordance with ASTM A370.

3.4 MASONRY:

- A. Mortar Tests:
 - 1. Laboratory compressive strength test:
 - a. Comply with ASTM C780.
 - b. Obtain samples during or immediately after discharge from batch mixer.
 - c. Furnish molds with 50 mm (2 inch), 3 compartment gang cube.
 - d. Test one sample at 7 days and 2 samples at 28 days.
 - 2. Two tests during first week of operation; one test per week after initial test until masonry completion.
- B. Grout Tests:
 - 1. Laboratory compressive strength test:
 - a. Comply with ASTM C1019.
 - b. Test one sample at 7 days and 2 samples at 28 days.
 - c. Perform test for each 230 m² (2500 square feet) of masonry.
- C. Masonry Unit Tests:
 - 1. Laboratory Compressive Strength Test:
 - a. Comply with ASTM C140.
 - b. Test 3 samples for each 460 m² (5000 square feet) of wall area.

3.5 TYPE OF TEST:

Approximate Number of Tests Required

- A. Concrete:
 - Making and Curing Concrete Test Cylinders (ASTM C31) _____
 - Compressive Strength, Test Cylinders (ASTM C39) _____
 - Concrete Slump Test (ASTM C143) _____

Concrete Air Content Test (ASTM C173) _____
 Unit Weight, Lightweight Concrete (ASTM C567) _____
 Aggregate, Normal Weight: Gradation (ASTM C33) _____
 Deleterious Substances (ASTM C33) _____
 Soundness (ASTM C33) _____
 Abrasion (ASTM C33) _____
 Aggregate, Lightweight Gradation (ASTM C330) _____
 Deleterious Substances (ASTM C330) _____
 Unit Weight (ASTM C330) _____
 Flatness and Levelness Readings (ASTM E1155) (number of days) _____

B. Reinforcing Steel:

Tensile Test (ASTM A370) _____
 Bend Test (ASTM A370) _____
 Mechanical Splice (ASTM A370) _____
 Welded Splice Test (ASTM A370) _____

C. Masonry:

Making and Curing Test Cubes (ASTM C109) _____
 Compressive Strength, Test Cubes (ASTM C109) _____
 Sampling and Testing Mortar, Comp. Strength (ASTM C780) _____
 Sampling and Testing Grout, Comp. Strength (ASTM C1019) _____
 Masonry Unit, Compressive Strength (ASTM C140) _____

D. Technical Personnel: (Minimum _____ months)

1. Technicians to perform tests and inspection listed above. Laboratory will be equipped with concrete cylinder storage facilities, compression machine, cube molds, proctor molds, balances, scales, moisture ovens, slump cones, air meter, and all necessary equipment for compaction control.

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SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies the requirements for the management of non-hazardous building construction and demolition waste.
- B. Waste disposal in landfills shall be minimized to the greatest extent possible. Of the inevitable waste that is generated, as much of the waste material as economically feasible shall be salvaged, recycled or reused.
- C. Contractor shall use all reasonable means to divert construction and demolition waste from landfills and incinerators, and facilitate their salvage and recycle not limited to the following:
 - 1. Waste Management Plan development and implementation.
 - 2. Techniques to minimize waste generation.
 - 3. Sorting and separating of waste materials.
 - 4. Salvage of existing materials and items for reuse or resale.
 - 5. Recycling of materials that cannot be reused or sold.
- D. At a minimum the following waste categories shall be diverted from landfills:
 - 2. Inerts (eg, concrete, masonry and asphalt).
 - 6. Metal products (eg, steel, wire, beverage containers, copper, etc).
 - 7. Cardboard, paper and packaging.

1.2 RELATED WORK

- A. Section 02 41 00, DEMOLITION.
- B. Section 01 00 00, GENERAL REQUIREMENTS.

1.3 QUALITY ASSURANCE

- A. Contractor shall practice efficient waste management when sizing, cutting and installing building products. Processes shall be employed to ensure the generation of as little waste as possible. Construction /Demolition waste includes products of the following:
 - 1. Excess or unusable construction materials.
 - 2. Packaging used for construction products.
 - 3. Poor planning and/or layout.
 - 4. Construction error.
 - 5. Over ordering.
 - 6. Weather damage.
 - 7. Contamination.

- 8. Mishandling.
- 9. Breakage.
- B. Establish and maintain the management of non-hazardous building construction and demolition waste set forth herein. Conduct a site assessment to estimate the types of materials that will be generated by demolition and construction.
- C. Contractor shall develop and implement procedures to recycle construction and demolition waste to a minimum of 50 percent.
- D. Contractor shall be responsible for implementation of any special programs involving rebates or similar incentives related to recycling. Any revenues or savings obtained from salvage or recycling shall accrue to the contractor.
- E. Contractor shall provide all demolition, removal and legal disposal of materials. Contractor shall ensure that facilities used for recycling, reuse and disposal shall be permitted for the intended use to the extent required by local, state, federal regulations. The Whole Building Design Guide website <http://www.cwm.wbdg.org> provides a Construction Waste Management Database that contains information on companies that haul, collect, and process recyclable debris from construction projects.
- F. Contractor shall assign a specific area to facilitate separation of materials for reuse, salvage, recycling, and return. Such areas are to be kept neat and clean and clearly marked in order to avoid contamination or mixing of materials.
- G. Contractor shall provide on-site instructions and supervision of separation, handling, salvaging, recycling, reuse and return methods to be used by all parties during waste generating stages.
- H. Record on daily reports any problems in complying with laws, regulations and ordinances with corrective action taken.

1.4 TERMINOLOGY

- A. Class III Landfill: A landfill that accepts non-hazardous resources such as household, commercial and industrial waste resulting from construction, remodeling, repair and demolition operations.
- B. Clean: Untreated and unpainted; uncontaminated with adhesives, oils, solvents, mastics and like products.
- C. Construction and Demolition Waste: Includes all non-hazardous resources resulting from construction, remodeling, alterations, repair and demolition operations.

- D. Dismantle: The process of parting out a building in such a way as to preserve the usefulness of its materials and components.
- E. Disposal: Acceptance of solid wastes at a legally operating facility for the purpose of land filling (includes Class III landfills and inert fills).
- F. Inert Backfill Site: A location, other than inert fill or other disposal facility, to which inert materials are taken for the purpose of filling an excavation, shoring or other soil engineering operation.
- G. Inert Fill: A facility that can legally accept inert waste, such as asphalt and concrete exclusively for the purpose of disposal.
- H. Inert Solids/Inert Waste: Non-liquid solid resources including, but not limited to, soil and concrete that does not contain hazardous waste or soluble pollutants at concentrations in excess of water-quality objectives established by a regional water board, and does not contain significant quantities of decomposable solid resources.
- I. Mixed Debris: Loads that include commingled recyclable and non-recyclable materials generated at the construction site.
- J. Mixed Debris Recycling Facility: A solid resource processing facility that accepts loads of mixed construction and demolition debris for the purpose of recovering re-usable and recyclable materials and disposing non-recyclable materials.
- K. Permitted Waste Hauler: A company that holds a valid permit to collect and transport solid wastes from individuals or businesses for the purpose of recycling or disposal.
- L. Recycling: The process of sorting, cleansing, treating, and reconstituting materials for the purpose of using the altered form in the manufacture of a new product. Recycling does not include burning, incinerating or thermally destroying solid waste.
 - 1. On-site Recycling - Materials that are sorted and processed on site for use in an altered state in the work, i.e. concrete crushed for use as a sub-base in paving.
 - 2. Off-site Recycling - Materials hauled to a location and used in an altered form in the manufacture of new products.
- M. Recycling Facility: An operation that can legally accept materials for the purpose of processing the materials into an altered form for the manufacture of new products. Depending on the types of materials accepted and operating procedures, a recycling facility may or may not

be required to have a solid waste facilities permit or be regulated by the local enforcement agency.

- N. Reuse: Materials that are recovered for use in the same form, on-site or off-site.
- O. Return: To give back reusable items or unused products to vendors for credit.
- P. Salvage: To remove waste materials from the site for resale or re-use by a third party.
- Q. Source-Separated Materials: Materials that are sorted by type at the site for the purpose of reuse and recycling.
- R. Solid Waste: Materials that have been designated as non-recyclable and are discarded for the purposes of disposal.
- S. Transfer Station: A facility that can legally accept solid waste for the purpose of temporarily storing the materials for re-loading onto other trucks and transporting them to a landfill for disposal, or recovering some materials for re-use or recycling.

1.5 SUBMITTALS

- A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, and SAMPLES, furnish the following:
- B. Prepare and submit to the COR a written demolition debris management plan. The plan shall include, but not be limited to, the following information:
 - 1. Procedures to be used for debris management.
 - 2. Techniques to be used to minimize waste generation.
 - 3. Analysis of the estimated job site waste to be generated:
 - a. List of each material and quantity to be salvaged, reused, recycled.
 - b. List of each material and quantity proposed to be taken to a landfill.
 - 4. Detailed description of the Means/Methods to be used for material handling.
 - a. On site: Material separation, storage, protection where applicable.
 - b. Off site: Transportation means and destination. Include list of materials.
 - 1) Description of materials to be site-separated and self-hauled to designated facilities.

- 2) Description of mixed materials to be collected by designated waste haulers and removed from the site.
- c. The names and locations of mixed debris reuse and recycling facilities or sites.
- d. The names and locations of trash disposal landfill facilities or sites.
- e. Documentation that the facilities or sites are approved to receive the materials.
- C. Designated Manager responsible for instructing personnel, supervising, documenting and administer over meetings relevant to the Waste Management Plan.
- D. Monthly summary of construction and demolition debris diversion and disposal, quantifying all materials generated at the work site and disposed of or diverted from disposal through recycling.

1.6 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced by the basic designation only. In the event that criteria requirements conflict, the most stringent requirements shall be met.
- B. U.S. Green Building Council (USGBC):
LEED Green Building Rating System for New Construction

1.7 RECORDS

Maintain records to document the quantity of waste generated; the quantity of waste diverted through sale, reuse, or recycling; and the quantity of waste disposed by landfill or incineration. Records shall be kept in accordance with the LEED Reference Guide and LEED Template.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. List of each material and quantity to be salvaged, recycled, reused.
- B. List of each material and quantity proposed to be taken to a landfill.
- C. Material tracking data: Receiving parties, dates removed, transportation costs, weight tickets, tipping fees, manifests, invoices, net total costs or savings.

PART 3 - EXECUTION

3.1 COLLECTION

- A. Provide all necessary containers, bins and storage areas to facilitate effective waste management.

- B. Clearly identify containers, bins and storage areas so that recyclable materials are separated from trash and can be transported to respective recycling facility for processing.
- C. Hazardous wastes shall be separated, stored, disposed of according to local, state, federal regulations.

3.2 DISPOSAL

- A. Contractor shall be responsible for transporting and disposing of materials that cannot be delivered to a source-separated or mixed materials recycling facility to a transfer station or disposal facility that can accept the materials in accordance with state and federal regulations.
- B. Construction or demolition materials with no practical reuse or that cannot be salvaged or recycled shall be disposed of at a landfill or incinerator.

3.3 REPORT

- A. With each application for progress payment, submit a summary of construction and demolition debris diversion and disposal including beginning and ending dates of period covered.
- B. Quantify all materials diverted from landfill disposal through salvage or recycling during the period with the receiving parties, dates removed, transportation costs, weight tickets, manifests, invoices. Include the net total costs or savings for each salvaged or recycled material.
- C. Quantify all materials disposed of during the period with the receiving parties, dates removed, transportation costs, weight tickets, tipping fees, manifests, invoices. Include the net total costs for each disposal.

- - - E N D - - -

SECTION 02 40 00
SHORING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Provide all labor, materials, equipment, and supervision necessary to design, provide, and install shoring to support safely the existing structure during the Work, including, but not limited to, that shoring described in Paras. 1.02.B through 1.02.C.
- B. Demolition for concrete repairs will temporarily weaken the structural members. The Contractor is responsible for providing shoring to support safely the existing structural elements during concrete demolition and concrete repairs. The configuration of the shoring must accommodate the installation of formwork for the various concrete repairs.

1.2 RELATED WORK

- A. Work related to this Section includes, but is not limited to, the following:
 - 1. Section 01500 - Construction Facilities and Temporary Controls
 - 2. Section 03732 - Concrete Repair

1.3 REFERENCES

- A. The following references are incorporated into these Specifications. These written Specifications take precedence over incorporated references. The Contractor shall have the following references at the project site at all times and shall be familiar with the reference contents.
 - 1. SEI/ASCE 37-02 - Design Loads on Structures during Construction
 - 2. Scaffolding, Shoring and Forming Institute Inc. - Codes of Safe Practices

1.4 SUBMITTALS

- A. Refer to Section 01 30 00 - Submittals - for requirements.
- B. Submit manufacturer's product data with application and installation instructions, including load-capacity ratings.
- C. Submit shop drawings to the Engineer for review. The shop drawings shall bear the seal of the professional engineer licensed to practice in the State of New York who is responsible for the design of the shoring system. The shop drawings shall conform to the requirements of Section 01 30 00 and include, without limitation, the shoring system layout and details.

- D. Submit procedures indicating the methods, such as wedging or jacking that will be used to ensure that the shores are supporting the intended loads.
- E. Submit copies of all safety and precautionary measure regulations applicable to the installation and utilization of shores referred to in Para. 3.02.
- F. The submittals described herein are for information only and not for approval. Review by the Engineer does not relieve the Contractor of his responsibility for designing and implementing a safe shoring system.

1.5 QUALITY CONTROL AND QUALITY ASSURANCE

- A. The Contractor shall conduct a quality control program that includes, but is not limited to, the following:
 - 1. Inspection of all existing conditions to ensure familiarity with the contract requirements.
 - 2. Establishment of procedures for executing the work.
 - 3. Inspection of all work in progress to ensure that the work is being done in accordance with established procedures, manufacturer's instructions, specific Engineer instructions, if given, or recommended practices as given in the references of Para. 1.04.
 - 4. Inspection of all work completed, including visual examination of all shoring in place and correction of all defective or deficient shoring.
- B. Qualifications
 - 1. The Contractor and its site superintendent shall have at least 5- yrs' experience supervising the installation of temporary structural shoring.
- C. Pre-installation Conference
 - 1. Attend a pre-installation conference to be held with a representative of the Owner, Contractor's field superintendent, foreman, and other trades involved to discuss the conduct of the work of this Section.

1.6 GENERAL PROCEDURES

- A. The Contractor shall become familiar with the intended usage of the shores and shoring systems and with the existing conditions as they affect transportation of materials, layout work, traffic control, and other conditions that may affect the installation of the shores.

B. No work shall start until the Engineer has reviewed the submitted shop drawings.

1.7 COORDINATION

A. Shores shall be arranged and provided in coordination with the work of other trades affected by or dependent upon shoring.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Shores and shore-assembly components supplied by the Contractor, including cribbing, base frames, base plates, cap plates, head screw jacks, "U" heads, and cross-bracing and frame spacers, shall be a manufactured or custom-fabricated steel product.
- B. All shore assembly components shall be free of structural damage and in good working order. In particular, the screw jacks shall be free of rust and grime and lubricated so as to have smooth operation during height adjustment of the head.
- C. Shore-assembly components shall be examined by the Contractor immediately after delivery. Components not meeting the criteria of Para. 2.01.B shall be removed from the Project site. The Contractor shall replace the rejected shore components without any additional costs to the Owner.

PART 3 - EXECUTION

3.1 DESIGN AND CONSTRUCTION

- A. The Contractor's Engineer responsible for design of the shoring shall determine where shoring is required and shall design the shoring.
- B. The shoring shall be designed and constructed by the Contractor so that it supports the dead weight of existing structure, superimposed dead loads, and the construction loads with a minimum factor of safety (ultimate capacity divided by working load) of 2.5 on shoring and so as not to overload the existing floors and construction on which it bears. Compatibility of deformations shall be considered in the shoring design.
- C. The shoring shall extend to the slab-on-grade at the basement level of the garage.
- D. The arrangement of the shoring shall be in conformance to the approved shop drawings.
- E. All shores shall be checked and adjusted where required prior to, during, and after each demolition and concreting operation.
- F. All shores shall be maintained with a tight fit.
- G. Shoring shall remain in place for a period of seven days minimum after concrete placement and until such time as it is no longer required for construction loading, irrespective of concrete strength. Thereafter, the shoring may be removed after concrete attains 75% of specified

twenty-eight-day compressive strength. The Contractor shall determine compressive strength of concrete prior to shore removal.

3. 2 GENERAL SAFETY REQUIREMENTS

- A. The erection and operation of shores shall conform to all safety and precautionary measures as recommended by the Scaffolding and Shoring Institute and in accordance with all state, local, and federal codes, ordinances, and regulations.

END OF SECTION

SECTION 02 41 00
DEMOLITION

PART 1 - GENERAL

1.1 DESCRIPTION:

This section specifies demolition and removal of concrete debris from garage repair and vertical steel screens from garage openings.

1.2 RELATED WORK:

- A. Safety Requirements: GENERAL CONDITIONS Article, ACCIDENT PREVENTION.
- B. Construction Waste Management: Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT.
- C. Infectious Control: Section 01 00 00, GENERAL REQUIREMENTS, Article 1.7, INFECTION PREVENTION MEASURES.

1.3 PROTECTION:

- A. Perform demolition in such manner as to eliminate hazards to persons and property; to minimize interference with use of adjacent areas and structures or interruption of use of such structures; and to provide free passage to and from such adjacent areas of structures. Comply with requirements of GENERAL CONDITIONS Article, ACCIDENT PREVENTION.
- B. Provide safeguards, including warning signs, barricades, temporary fences, warning lights, and other similar items that are required for protection of all personnel during demolition and removal operations. Comply with requirements of Section 01 00 00, GENERAL REQUIREMENTS, Article PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS.
- C. Maintain fences, barricades, lights, and other similar items around exposed excavations until such excavations have been completely filled.
- D. Provide enclosed dust chutes with control gates from each floor to carry debris to truck beds and govern flow of material into truck. Provide overhead bridges of tight board or prefabricated metal construction at dust chutes to protect persons and property from falling debris.
- E. Prevent spread of flying particles and dust. Sprinkle rubbish and debris with water to keep dust to a minimum. Do not use water if it results in hazardous or objectionable condition such as, but not limited to; ice, flooding, or pollution. Vacuum and dust the work area daily.
- F. Before beginning any demolition work, the Contractor shall survey the site and examine the drawings and specifications to determine the extent of the work. The contractor shall take necessary precautions to avoid damages to existing items to remain in place, to be reused, or to remain the property of the Medical Center; any damaged items shall be repaired

or replaced as approved by the COR. The Contractor shall coordinate the work of this section with all other work and shall construct and maintain shoring, bracing, and supports as required. The Contractor shall ensure that structural elements are not overloaded and shall be responsible for increasing structural supports or adding new supports as may be required as a result of any cutting, removal, or demolition work performed under this contract. Do not overload structural elements. Provide new supports and reinforcement for existing construction weakened by demolition or removal works. Repairs, reinforcement, or structural replacement must have COR's approval.

- G. The work shall comply with the requirements of Section 01 00 00, GENERAL REQUIREMENTS and Article 1.7 INFECTION PREVENTION MEASURES.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 DEMOLITION:

- A. Debris, including brick, concrete, stone, metals and similar materials shall become property of Contractor and shall be disposed of by him daily, off the Medical Center to avoid accumulation at the demolition site. Materials that cannot be removed daily shall be stored in areas specified by the COR. Contractor shall dispose debris in compliance with applicable federal, state or local permits, rules and/or regulations.
- B. Remove and legally dispose of all materials, other than earth to remain as part of project work, from any trash dumps shown. Materials removed shall become property of contractor and shall be disposed of in compliance with applicable federal, state or local permits, rules and/or regulations.

3.2 CLEAN-UP:

On completion of work of this section and after removal of all debris, leave site in clean condition satisfactory to COR. Clean-up shall include off the Medical Center disposal of all items and materials not required to remain property of the Government as well as all debris and rubbish resulting from demolition operations.

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**SECTION 03 70 00
CONCRETE REPAIRS**

PART 1- GENERAL

1.1 DESCRIPTION

- A. This work consists of all labor, materials and equipment necessary for the repair of spalled, delaminated, and cracked concrete on deck, columns, and overhead.
- B. Repair delaminated and/or spalled concrete over corroded reinforcement on the topside of the post-tensioned slab, on the underside the post-tensioned slab, on beams, on columns, and on walls (repair of exterior face of exterior garage walls is excluded)

1.2 RELATED WORK

The following items of related work are specified and included in other Sections of the Specifications or are furnished by others:

- A. Section 02 40 00, SHORING
- B. Section 02 05 00, DEMOLITION
- C. Section 04 91 00, MASONRY REPAIR
- D. Section 07 18 00, VEHICULAR TRAFFIC COATING
- E. Section 07 19 00, WATER REPELLENTS
- F. Section 07 90 00, PREFORMED JOINT SEALERS

1.3 SUBMITTALS

- A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES, furnish the following:
 - 1. Manufacturer's Literature and Data.
 - 2. Samples of, and manufacturer's data sheets for, all materials to be used, each properly labeled.
 - 3. Manufacturer's MSDS for all materials to be used.
 - 4. Certifications (in time to prevent delay in the work) by the producers of the materials that all materials supplied comply with all the requirements of the appropriate ASTM and ACI Standards.
 - 5. Schedule of time showing areas of work.
 - 6. Subcontractor's Qualifications.

1.4 APPLICABLE PUBLICATIONS

- A. The construction shall conform to the requirements of all Federal, State, and local codes as well as to the following:
1. Requirements of the Materials Manufacturer.
 2. American Concrete Institute. "Specifications for Structural Concrete for Buildings." (ACI 301-2010).
 3. ICRI Guide No. 310.1 - Guide for Surface Preparation for the repair of Deteriorated Concrete Resulting from Reinforcing Steel Corrosion
 4. ICRI Guide No. 310.2 - Selection and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays
 6. "Building Code Requirements for Reinforced Concrete" (ACI 318-2011).
 7. Where referred to, standard specifications of technical societies, manufacturer's associations and federal agencies shall include all amendments current as of the date of issue of these specifications.
 8. Abbreviations used refer to the following agencies:
 - a. ASTM-The American Society for Testing Materials.
 - b. ACI-American Concrete Institute.
 - c. PCI - Pre-cast Concrete Institute

1.5 COORDINATION

- A. It is the responsibility of the Contractor to coordinate the work of this section with all other work on the project.

1.6 REVIEW AND TESTING

- A. The COR reserves the right to review all construction materials and procedures and to test the final product.
- B. Any defect or non-compliances discovered by this review shall be reported to the Contractor who shall promptly remedy the defect and/or promptly remove any defective material from the site.
- C. The COR and Engineer reserve the right to review the work or part of it as he chooses. The Contractor shall allow such access when requested at no additional cost to the COR. His failure to review the work in progress shall not relieve the Contractor of the responsibility for properly executing the Contractor work, nor shall it impair the COR's right to reject deficiencies he may subsequently discover.

1.7 JOB CONDITIONS

- A. Materials shall be applied to properly prepared, primed, and clean dry surfaces only.
- B. Materials shall be applied within the range specified by the manufacturer.
- C. The temperature of the surface to be repaired shall be within the range specified by the manufacturer.
- D. The air temperature shall be within the range specified by the manufacturer for the application of the material and for the time required for the initial cure.

1.8 GUARANTEE

- A. The Contractor shall furnish to the COR a written guarantee covering all defects of materials and workmanship of work of this Section that occur within a period of one (1) year from the date of final acceptance of the work. Should any defects in materials or workmanship develop within this time, all necessary repairs and replacements shall be made at no additional cost to the COR.

1.9 QUALITY CONTROL

- A. The Contractor shall conduct a quality control program that includes, but is not limited to, the following:
 - 1. Inspection of all materials to ensure conformity to contract requirements and that all materials are new and undamaged.
 - 2. Establishment of procedures for executing the work.
 - 3. Inspecting all surface preparation prior to repair material application.
 - 4. Inspecting all reinforcement for placement in plan and elevation.
 - 5. Inspection of work in progress to ensure that work is being done in accordance with established procedures, manufacturer's instructions, specific Engineer instructions, if given, or recommended practices as given in the references of Para. 1.4.
 - 6. Performing in situ tests of the repair material in place to demonstrate that it has reached the strength required for removal of shores. Test procedures shall be approved by the Engineer.
 - 7. Inspection of all work completed including visually examining all repairs for cracking and sounding all repairs to check for de-bonding and correction of all defective work.
- B. Qualifications

1. The Contractor and its site superintendent shall have at least 5- yrs' experience supervising the installation of similar concrete repairs at existing deteriorated parking garage structures.

C. Pre-installation Conference

1. Attend a pre-installation conference to be held with a representative of the COR, Contractor's field superintendent, foreman, and other trades involved to discuss the conduct of the work of this Section.

D. The Independent Testing Agency might conduct the following quality assurance tests:

1. Sampling of fresh concrete and testing for slump, air content, and compressive strength.
2. Sampling and testing of specialty repair concrete.
3. Examining repairs for cracking and sounding repairs to check for de-bonding.

1.10 GENERAL PROCEDURES

- A. Work only in areas permitted by the COR-approved schedule.
- B. Remove all tools, buckets, and materials from work areas and store neatly at a central location daily at the end of work.
- C. Do not stockpile materials, debris, or equipment on deck.
- D. Construction loads shall not exceed the design loads shown on the design drawings for the original construction. If the drawings do not show design loads, the construction loads shall not exceed 40 psf.
- E. Deliver materials clearly marked with legible and intact labels with manufacturer's name and brand name, and identifying contents of containers.
- F. Store materials in areas where temperatures conform to manufacturer's recommendations and instructions.
- G. Protect the building and its contents from all risks associated with the work in this Section. Schedule and execute all work without exposing adjacent building areas to water, dust and debris, or materials used by this Contractor. Protect adjacent areas from damage and stains with appropriate barriers and masking. Repair all damage as a result of the work of this Section to its condition at the start of work, or if such cannot be determined, to its original condition. Clean all stains by approved means.
- H. Protect the work from damage such as impact, marring of the surfaces, and other damage.

- I. Compliance with OSHA and all other safety laws and regulations is the exclusive responsibility of the Contractor, his subcontractors, suppliers, and consultants.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Concrete
 1. Cast in place formed concrete (28 day strength equal to 6,000 psi).
 2. Portland Cement: ASTM C 150, Type I. Type II or Type III cement may be used only with Engineer's approval.
 3. Air Entrainment: Concrete exposed to weather and ambient temperatures shall contain air entrainment.
- B. Admixtures:
 1. Use admixtures only with the prior written approval of the Engineer. Admixtures submitted for approval shall be certified in writing by the manufacturer to be in compliance with ASTM C 494 or ASTM C 260. Provide manufacturer's guarantee that admixtures will perform in accordance with specified requirements. Calcium chloride or products in part made of calcium chloride will not be permitted.
- C. Water: Conform to ASTM C94.
- D. Aggregate:
 1. Fine aggregate shall conform to ASTM C33.
- E. Coarse aggregates shall conform to ASTM C33, size as limited by standards.
- F. Ready-mixed Concrete:
 1. Assume full responsibility for the strength, consistency, water-cement ratio, and handling of concrete. Design the mix for concrete in accordance with ACI-613.
 2. Use the minimum amount of water necessary to produce a mix that can be worked readily into the corners of the forms and around the reinforcement. Do not permit segregation of the materials or free water to collect on the surfaces.
 3. Adjust the consistency of any mix to allow for specific placing conditions. Where concrete must fill small, thin, complicated forms, the slump shall be greater than for large masses. The degree of

slump shall be governed according to the least dimension of the form.

4. Materials for concrete shall be measured by weighing. Each size of aggregate and the cement shall be weighed separately. Weights of each size of aggregate and of cement shall be accurate within one percent.

G. Pre-bagged Cementitious Repair Mortar:

1. Compressive strength:

1 day	3,500 psi
7 days	6,000 psi
28 days	7,000 psi

2. Cementitious materials for repairs $\frac{3}{8}$ " thick or greater:

- a. Two-component, polymer-modified, Portland cement, fast-setting, non-sag mortar with a penetrating corrosion inhibitor.
- b. Non-flammable and non-toxic.
- c. Yield: 0.39 cubic feet per unit.
- d. Color: Concrete gray.
- e. Density (wet mix): 132 lbs per cubic foot.
- f. Flexural Strength at 28-days to be 2,000 psi at 28-days.
- g. Bond Strength: 2,200 psi at 28 days.
- h. Permeability: 500 Coulombs. Electrical resistivity 27,000 ohm-cm.

H. Bonding Agent and Reinforcement Protection:

1. 3-component, solvent-free, moisture-tolerant, epoxy-modified, cementitious bonding agent and an anti-corrosion coating.
2. Color: Concrete gray.
3. Density (Mixed): 125 lbs per cubic foot.
4. Compressive Strength:

3 days	4,500 psi
7 days	6,500 psi
28 days	8,500 psi
5. Flexural Strength: 1,250 psi at 28 days.
6. Corrosion Protective Coating
 - a. Water Permeability at 145 psig: 8.92×10^{-15} ft/sec.
 - b. Control: 7.32×10^{-15} ft/sec.
 - c. Water Vapor Diffusion Coefficient (μ H₂O): 14,000.
7. Bonding Agent
 - a. Bond Strength:
 - i. Wet on Wet 2,800 psi at 14 days.

ii. 24 hour Open Time: 2,600 psi at 14 days.

I. Specialty Concrete for Repairs at Bottom of concrete beams, at Vertical Surfaces of concrete beams, at Column, and Wall Repairs:

1. One-component, polymer-modified, silica fume enhanced, cementitious, non-sag mortar.
2. Color: Concrete gray.
3. Density (wet mix): 104 lbs per cubic foot.
4. Flexural Strength: 1,000 psi at 28-days.
5. Bond Strength: 1,000 psi at 28-days.
6. Compressive Strength:
 - 1 day 1,500 psi
 - 7 days 3,500 psi
 - 28 days 4,300 psi
7. CO₂ Diffusion Coefficient (μ CO₂): 1,300.
8. H₂O Diffusion Coefficient (μ H₂O): 300.

J. Specialty Concrete for Repairs at Topside of post-tension slabs and for Curb Repairs:

1. One-component, rapid hardening, early strength gaining, cementitious, patching material.
2. Color: Concrete gray.
3. Compressive Strength:
 - 3 hour 1,250 psi
 - 1 day 1,750 psi
 - 7 days 2,000 psi
 - 28 days 2,500 psi
4. Flexural Strength
 - 1 day 1,750 psi
 - 7 days 2,000 psi
 - 28 days 2,500 psi
5. Bond Strength:
 - 1 day 1,750 psi
 - 7 days 2,000 psi
 - 28 days 2,500 psi
6. Drying Shrinkage (%): 0.06 at 28 days.
7. Modulus of Elasticity: 4.6×10^6 psi.
8. Scaling Resistance at 50 cycles: 0.080.
9. Abrasion Resistance: 0.026 inches of wear at 28 days.

K. Aggregate:

1. 20-30 Silica Sand (portioned as directed by manufacturer's written instructions).
2. 3/8 in. Pea Stone (portioned as directed by manufacturer's written instructions).

L. Anchors:

1. Stainless steel helical anchors (8 mm), 8 in. long.

M. Steel Reinforcement

1. Welded wire fabric shall conform to ASTM A185-85, epoxy coated in accordance to ASTM A884-88.
2. Reinforcing bars shall conform to ASTM A615-86, Grade 60, epoxy coated in accordance with ASTM A775.

N. Accessories

1. Wire bar supports conforming to the requirements of the Concrete Reinforcing Steel Institute, epoxy coated.

O. Tie wire shall be #16 AWG annealed, plastic coated.

P. Protective Coating for Reinforcement and Bonding Agent for Existing Reinforcement, other Embedded Metals, and Concrete

Q. Bonding Agent and Reinforcement Protection:

1. 3-component, solvent-free, moisture-tolerant, epoxy-modified, cementitious bonding agent and an anti-corrosion coating.

2. Color: Concrete gray.

3. Density (Mixed): 125 lbs per cubic foot.

4. Compressive Strength:

3 days 4,500 psi

7 days 6,500 psi

28 days 8,500 psi

5. Flexural Strength: 1,250 psi at 28 days.

6. Corrosion Protective Coating

a. Water Permeability at 145 psig: 8.92×10^{-15} ft/sec.

b. Control: 7.32×10^{-15} ft/sec.

c. Water Vapor Diffusion Coefficient (μ H₂O): 14,000.

7. Bonding Agent

a. Bond Strength:

i. Wet on Wet 2,800 psi at 14 days.

ii. 24 hour Open Time: 2,600 psi at 14 days.

R. Penetrating Corrosion Inhibitor

1. Water based corrosion inhibiting coating for hardened concrete surfaces.

2. Color: Pale yellow.

3. Viscosity: 15 centipose per second.

4. Density: 9.4 lbs per gallon.

5. pH: 11 +/- 1.

2.2 MIX PROPORTIONS

A. Specialty Concrete

1. Proportion and mix specialty concrete in accordance with the manufacturer's recommendations.
2. Extend specialty concrete with aggregate approved by the material manufacturer and certified by the aggregate supplier to meet ASTM C33 to be nonreactive.

2.3 EQUIPMENT

A. Demolition Equipment

1. Use concrete saws, chipping hammers, and other demolition equipment and cutting tools appropriate for the work and approved by the Engineer.
2. Do not use chipping hammers heavier than nominal 30 lb. class. Refer to 3.3.

PART 3 - EXECUTION

3.1 LOCATION OF REPAIR AREAS

- #### A.
- The contractor is responsible for visually inspecting and sounding all concrete surfaces as required to discover and repair all deteriorated concrete as directed by the Engineer and in accordance with the Drawings and Specifications.

3.2 SHORING

- #### A.
- Refer to Section 020400 - Shoring
- #### B.
- DEMOLITION AND SURFACE PREPARATION FOR PARTIAL-DEPTH CONCRETE REPAIRS OF SLAB TOPSIDE AND BOTTOM OF Slabs: Provide 3/4 in. deep saw-cut edges around the perimeter of the repair area, normal to the face of the surrounding concrete. The saw cuts shall form polygons that have 90° corners and enclose the deteriorated area. Make saw cuts after sufficient concrete is removed to locate and determine actual concrete cover over reinforcement. Do not cut into reinforcement. Reduce depth of saw cut over reinforcement as required.
- #### C.
- Remove all loose and unsound concrete in the area to be repaired. Remove concrete to such additional breadth and depth as required to expose un-corroded reinforcing bars (longitudinal bars or stirrups), tendons, and a surface of sound uncontaminated concrete. Remove concrete to a minimum depth of 3/4 in. beyond the innermost layer of reinforcement. Do not exceed depth and area limits shown on the Drawings. Contact COR for evaluation if a larger extent of concrete removal is required. Roughen concrete surface to a minimum amplitude of

1/8 in. Conduct concrete removal in a manner to prevent cutting, nicking, bending, or otherwise damaging the reinforcement. Repair or replace accidentally damaged reinforcement at no cost to the COR.

- D. Remove all abandoned electrical conduit exposed during the demolition.
- E. Remove all loose particles and deleterious materials from the exposed sound concrete, exposed reinforcing bars, and accessories by sandblasting. Clean all steel reinforcement to SSPC-6, commercial blast-finish, or better.
- F. Apply penetrating corrosion inhibitor to the prepared concrete surfaces in accordance with the manufacturer's written instructions.

3.4 DEMOLITION AND SURFACE PREPARATION FOR SHALLOW CONCRETE REPAIRS OF COLUMNS, WALLS,

- A. Install shoring before proceeding with the removal of deteriorated concrete on underside of tee stems near supports.
- B. Provide 3/4 in. deep saw-cut edges around the perimeter of the repair area, normal to the face of the surrounding concrete. The saw cuts shall form polygons that have 90° corners and enclose the deteriorated area. Make saw cuts after sufficient concrete is removed to locate and determine actual concrete cover over reinforcement. Do not cut into reinforcement. Reduce depth of saw cut over reinforcement as required.
- C. Remove all loose and unsound concrete in the area to be repaired. Remove concrete to such additional breadth and depth as required to expose un-corroded steel reinforcement and a surface of sound uncontaminated concrete. Do not remove concrete beyond the innermost layer of reinforcement. Contact COR for evaluation if a larger extent of concrete removal is required. Roughen concrete surface to a minimum amplitude of 1/8 in. Conduct concrete removal in a manner prevent cutting, nicking, bending, or otherwise damaging the reinforcement. Repair or replace accidentally damaged reinforcement at no cost to the COR.
- D. Remove all loose particles and deleterious materials from the exposed sound concrete, exposed reinforcing bars, tendons, and accessories by sandblasting. Clean steel reinforcement to SSPC-6, commercial blast finish, or better.
- E. Install helical anchors as shown on the Drawings and in accordance with the manufacturer's written instructions. Gradually bend the anchors about a small-diameter steel bar to obtain the specified bent angle and concrete cover.

- F. Apply the penetrating corrosion inhibitor to the prepared concrete surfaces in accordance with the manufacturer's written instructions.

3.5 DEMOLITION EQUIPMENT AND PROCEDURES LIMITATIONS

- A. Use concrete saws, chipping hammers, and other demolition equipment and cutting tools appropriate for the work and approved by the COR.
- B. Use only hand tools and electric chipping hammers for removal of concrete at areas of spalled and delaminated concrete. Do not use chipping hammers heavier than nominal 15 lb class.

3.6 SUPPLEMENTAL REINFORCEMENT, SUPPLEMENTAL ACCESSORIES, AND COATING OF EXISTING REINFORCEMENT AND ACCESSORIES

- A. Reinforcing bars with metal loss greater than 15% of the original bar cross-section shall be brought to the attention of the COR for strength evaluation prior to continuing repair work.
- B. Coat all exposed reinforcement and accessories with protective coating in accordance with the manufacturers written instructions. Existing reinforcement and accessories that are completely detached from the concrete during demolition may be replaced with new epoxy-coated reinforcement and accessories instead of applying protective coating.

3.7 FORMWORK

- A. Provide formwork for bottom slabs
- B. Provide impermeable forms to form the repair to match the configuration of existing member or the configuration shown on the Drawings.
- C. Provide watertight forms for placement of specialty concrete for underside repairs, and wall repairs. Tape the boundaries of the forms with two-sided rubberized asphalt tape. Provide a secondary seal around the perimeter of the form with silicone sealant. Keep Bentonite-impregnated oakum on the job for emergency patching of form edges. Provide a chute at the top for introduction of the repair concrete and release of air from the form and a drain port at the bottom.
- D. Alternatively, provide a valved port for introduction of the concrete at one side of bottom of the repair and a minimum of two valved ports to vent air at the top of the repair.

3.8 PLACEMENT OF SPECIALTY CONCRETE FOR FLANGE TOPSIDE REPAIRS, COLUMN REPAIRS, AND WALL REPAIRS

- A. Provide adequate labor, equipment, and materials to ensure that the specialty concrete for each repair is placed within the manufacturer's limit on time between mixing and placing of repair material. If time between mixing and placing exceeds the manufacturer's time limit, construct a bulkhead to achieve a proper construction joint.

- B. Remove dust and debris from the previously prepared surfaces of sound concrete by sweeping and blowing with compressed air.
- C. Place specialty concrete in accordance with the manufacturer's written instructions. The repair material shall be spread and vibrated internally. It shall then be screeded to restore the original member profile or to a profile directed by the COR. For topside flange repairs the concrete profile shall be increased (crowned) as required to provide required cover over reinforcing steel (3/4 in., minimum).
- D. For, column repairs, and wall repairs, the finished surface shall match the finish of similar existing members. For topside slab repairs, finish the concrete surface with a hair broom finish.

3.9 PRE-CAST CONCRETE WALL PANELS TO SLAB CONNECTIONS PAINTING

- A. Refer to Section 09900 - Steel Painting.

3.10 CURING SPECIALTY CONCRETE REPAIRS

- A. Cure specialty mortar/concrete/grout in accordance with the material manufacturer's written instruction for wet curing.
- B. Curing compounds are prohibited.
- C. Appearance of plastic shrinkage cracks due to inadequate finishing and curing shall be cause for rejecting the work so affected. Surface concrete in the rejected area shall be removed and replaced at no additional cost to the COR or his representatives
- D. During the curing period, the concrete shall be protected from damage due to mechanical disturbances such as shock and vibration due to adjacent construction activity. All finished concrete surfaces shall be protected from damage.

3.11 REMOVAL OF SURFACE DEPOSITS

- A. Stains, efflorescence, fins, and other surface deposits resulting from the work of this Section that are objectionable to the COR or Engineer shall be removed by methods acceptable to the COR or Engineer, as applicable.

END OF SECTION

SECTION 04 91 00
MASONRY REPAIRS

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. The Scope of Work, without limiting the generality thereof, consists of furnishing all labor, material, and equipment necessary to complete the repair of concrete block walls, including replacing cracked block, cutting and pointing, and installing control joints where indicated on drawings.

1.2 RELATED WORK:

Section 02220, DEMOLITION

1.3 COORDINATION:

- A. It is the responsibility of the Contractor to coordinate the work of this section with all other work on the project.

1.4 REQUIREMENTS OF REGULATORY AGENCIES

- A. The construction shall conform to the requirements of all Federal, State, and local codes as well as to the following:
 - 1. Requirements of the Materials Manufacturer;
 - 2. New York State Building Code;
 - 3. Brick Institute of America.

1.5 REVIEW AND TESTING

- A. The Owner reserves the right to inspect and test all construction operations and materials.
- B. Any defect or non-compliance's discovered by inspection shall be reported to the Contractor who shall promptly remedy the defect and promptly remove any defective material from the site.
- C. The Owner reserves the right to inspect the work or part of it as he chooses. His failure to inspect the work in progress shall not relieve the Contractor of the responsibility for properly executing the contractor work, nor shall it impair the Owner's right to reject deficiencies he may subsequently discover.

1.6 JOB CONDITIONS

- A. Materials shall be applied to properly prepare dry areas unless otherwise noted.
- B. Materials which have a temperature other than the application temperatures of the manufacturer shall not be applied.

- C. Any adjacent building or site conditions damaged during construction solely as a result of Reconstruction Contractor's actions shall be replaced or restored by the Contractor at no expense to the Owner.
- D. The requirements of the recommended practices for cold weather masonry construction as recommended by the All-Weather Council of the International Masonry Institute shall be followed as applicable.
- E. Anti-freeze mixtures will not be allowed in the mortar.
- F. Units having frost film on its surface shall not be laid in the work.
- G. No frozen work shall be built upon and any such work shall be removed.
- H. Facing material is to be protected from staining by keeping newly laid work sufficiently covered with non-staining covering at night, during showers and during prolonged periods of work stoppage. When the work is resumed, top surface of work shall be cleaned of all loose mortar and in drying weather, thoroughly wet.
- I. Any damage to the contents of the building, its occupants or their possessions done by the Contractor shall be his responsibility. The Contractor shall perform all necessary corrective measures and/or make payments to have the damaged materials replaced.
- J. No masonry shall be laid when the temperature is below 40° Fahrenheit unless suitable means are provided to heat the masonry materials and protect the completed work from freezing.
- K. During freezing or near freezing weather, provide adequate equipment and/or cover to maintain minimum temperature of 40° F. (10° C.) and to protect masonry work completed or in progress.
- L. Contractor shall provide all necessary temporary protection and barriers to segregate the work to prevent damage to adjacent areas.
- M. Liquid materials, such as solvents and adhesives, shall be stored away from open flames, sparks, and excessive heat.
- N. Staging: All staging shall be provided by the contractor.
- O. Hot weather (above 80°F): Protect the masonry and mortar from direct sunlight and exposure to wind, to avoid rapid evaporation of water in the mortar before, during, and after masonry construction. The contractor will submit a protection plan at the pre-construction meeting
- P. Saw-cut all mortar joints between units scheduled to be removed and units scheduled to remain before attempting to remove any of the existing units. Do not saw-cut beyond immediate area of unit removal. Do not break bond between mortar and units scheduled to remain, or

crack masonry in areas to remain. Do not twist, bend, or damage existing veneer anchors scheduled to remain.

- Q. All existing sealants removed in the context of the work shall be removed entirely (grinding, scraping, solvent wash, etc.), from surfaces to be resealed.

1.7 DIMENSIONS AND QUANTITIES

- A. Dimensions, locations and quantities of the work shall be determined by the Contractor.
- B. It is the Contractor's responsibility to verify the condition shown and to immediately notify the Engineer of any discrepancy.

1.8 PERMITS

- A. The Contractor shall obtain all specialty permits required by governing authorities, including any required for disposal of demolition debris or for use or blockage of streets or sidewalks.

1.9 SEQUENCE OF OPERATIONS

- A. The Contractor shall submit for approval the complete sequence of operations for operations and show how it is coordinated with all other aspects of the job. Work shall not begin until the schedule has been approved by the Engineer and Owner.
- B. Work in corporation with the other trades by the timely performance of work. Coordinate with other trades to maximize efficient use of scaffolding.

1.10 QUALITY ASSURANCE

- A. Masonry workmanship is to comply with all applicable recommendations of the Brick Institute of America and the Indiana Limestone Institute, except as modified below or shown on the Drawings. Report any damages to new work to Engineer, and provide for repairs by appropriately skilled mechanics, at no charge to the Owner.

1.11 SAMPLES AND TECHNICAL DATA

- A. Submit samples, complete manufacturer's technical data of all materials and systems listed, to the Engineer for approval.
- B. Manufacturer's representative shall visit the project site and consulted with as to the application of their materials as indicated herein. Any resulting recommendations made by such representative shall be forwarded, in writing, to the Engineer for approval prior to implementation.
- C. Submit samples of pointing mortars.
- D. Submit product data for all sealant types.

- E. Provide 15 lineal feet of sample mortar joint.
- F. Contractor shall prepare one sample of each type of cosmetic repair, technique for approval by Engineer. Area, size and location of sample to be designate solely by Engineer. Approved samples will be used as a standard of comparison for all similar work. The test samples are required to verify the Contractor's ability to achieve proper results using approved procedures.

1.12 GUARANTEE

- A. The Contractor shall furnish to the Owner a written guarantee covering all defects of materials and workmanship of work of this Section that occur within a period of five (5) years from the date of final completion of the building. Should any defects in materials or workmanship develop within this time, all necessary repairs and replacements shall be made at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Mortar—Use of manufactured aggregates to match color and texture shall be allowed.
 - 1. New mortar for repointing, setting block, or rebuilding walls shall conform to ASTM C-270 Type N masonry cement specifications.
 - 2. Cement for mortar shall be Type I or II Portland Cement conforming to ASTM specification C150-65 with not more than 0.60 percent alkali or not less than 0.15 percent water soluble alkali.
 - 3. Sand shall be clean, sharp, washed mason's sand conforming to ASTM specification C144-62T, and shall be supplied by a local reputable quarry with samples pre-approved by the COTR.
 - 4. Hydrated Lime: ASTM C207, Type "S".
 - 5. Water shall be clean and free from oil, acids, alkalites and injurious quantities of vegetable matter or other impurities.
 - 6. Mortar shall be freshly mixed. Re-tempering will only be allowed with COTR's approval. The ingredients for each batch shall be accurately measured and combined in the proportions specified, all parts being measured by volume. Mortar shall be mixed in a batch mixer or by hand and shall be of uniform color and consistency. Mixer drums shall be entirely emptied of a batch before succeeding batch is started. Mortar shall be mixed in strict conformance with ratios established by COTR approved test samples.

7. Brands of cementitious materials and the source of supply of sand shall remain the same throughout the entire job and shall not be changed except by written permission by the COTR.
 8. Water retention shall be a minimum of 75%.
 9. The maximum air content shall be 18%.
 10. Mortar coloring material: inert, non-fading, finely ground, alkali-fast mineral oxides, made especially for cement/lime mortars. Limit coloring additive to 1% by weight of the cementitious material.
- B. Cleaning materials for final wash down of spot repair masonry work areas shall be water and stiff bristle brush.
- C. Unit Masonry
1. New concrete block shall match existing. Meet ASTM C90-96a, Type 1, Class 1, normal weight block. Contractor shall cut block as required to match original in coursing and size. The bond shall match existing.

PART 3 - EXECUTION

3.1 MASONRY—GENERAL

- A. All materials shall be verified by the Contractor to be proper for each intended use, and the entire work of this Section shall be done in such a manner that each installation will perform its intended purpose, as applicable, in the finished work.
- B. Unless otherwise directed all products shall be utilized in strict accordance with the manufacturer's established practices.
- C. All masonry walls shall be laid in the bond to match existing masonry and as indicated on plans. All masonry shall be built straight and level, unless indicated otherwise on the plans.
- D. All block shall be laid in such a manner that joints are completely filled with mortar. End joints must be filled by shoving the unit into place with sufficient mortar to squeeze out on both sides. "Slushing" end joints after unit is in place is not acceptable. The bed joint must also be completely filled.
- E. All collar joints shall be completely filled with mortar as the wall progresses.
- F. The mortar shall be "set-up" enough to have no surface liquid showing, but still be in a somewhat plastic state when tooled
- G. Masonry work in freezing weather shall be protected as necessary to provide a strong watertight, first-class construction. Mixing water,

sand or masonry units shall be enclosed and heated as conditions warrant. All protection shall be done in a manner approved by the Engineer. In no case shall uncured masonry be exposed to freezing temperatures. Any such uncured masonry exposed to freezing temperatures shall be removed and replaced.

- H. Existing damaged brick units shall be removed to the nearest whole block so that whole new units can be reinstalled with the associated mortar.
- I. Contractor shall provide proper dust protection for the interior of the building, parked cars, bushes and adjacent buildings. Proper shrouds and vacuums should be used on grinders to diminish or eliminate the spread of dust during the grinding operation.

3.2 CUTTING AND POINTING

A. The Contractor shall prepare all existing mortar joints for repointing as indicated herein.

- 1. A defective mortar joint is defined as follows:
 - (1) A mortar joint void, in any way, of mortar.
 - (2) A mortar joint where existing mortar is cracked.
 - (3) A mortar joint where existing mortar has spalled to a depth of $\frac{1}{4}$ " into the joint.
 - (4) A mortar joint where vegetation growth is presented.
- 2. All horizontal mortar joints to be repointed shall be raked out, saw cut or chiseled to a depth of two times their width but not less than 1" and thoroughly cleaned of all dust, dirt or other debris by means of blowing, vacuuming or brushing. All mortar fins $3/16$ " and larger shall be removed.
- 3. The Contractor is cautioned that the use of power chiseling tools to remove old mortar will not be allowed. Power saw tools to cut centers of mortar joints will be allowed only if used with the narrowest saw blade available and if it can be demonstrated to the Engineer that the edges of adjacent materials are not damaged in any way whatsoever by the use of such tools and that the existing joint width is not enlarged.
- 4. All vertical mortar joints shall be raked out or chilled to a depth of 2 times their width but not less than horizontal joint depths as indicated.
- 5. Final pointing shall be tooled to match existing original tooling, as approved in test patches. Compact mortar against

the sides of the joint to obtain a full bond between the mortar and the brick or stone.

6. No excess slopped-over mortar shall be left on the face of exposed masonry.
7. Repointing shall be done in a careful and workmanship-like manner.
8. Wet joints thoroughly before applying fresh mortar. Allow water to soak in so that there is no free-standing water. Engineer must approve completed joint preparation prior to repointing with mortar.
9. Fill all joints to uniform depth and place remaining pointing mortar in three (3) layers with each of the first and second layers filling approximately $2/5$ of joint depth and third layer the remaining $1/5$. Fully compact each layer and allow to become thumbprint-hard before applying next layer. Take care not to spread mortar over edges onto exposed masonry surfaces, or to feather edge mortar.
10. All new mortar 30' from grade level is to be stripped as necessary to give the new surfaces the worn appearance of the surrounding existing surfaces.
11. When mortar is thumbprint hard, tool joints to match original appearance of joints. Remove excess mortar from edge of joint by brushing.
12. Cure mortar in a damp condition for a minimum of 72 hours.
13. Allow mortar to cure a minimum of 7 days before proceeding with final cleaning operations unless otherwise approved by Engineer.
14. Mix mortar using quantity of water to insure good workability. For each batch, measure cement and lime in bags; sand by weight or measure in suitable calibrated containers, with allowance made for moisture content, bulking, and consolidation. Use volumetric dispenser for color admix. Do not use split sacks. Do not use shovel measurements of sand, cement or lime. Keep mortar in metal pans. Mix by machine only, for at least 3 minutes, but not more than 5 minutes. Use mortar within 2 hours of mixing at temperatures over 74°F, and 2½ hours at temperatures between 50°F and 74°F. Do not re-temper mortar. Discard hardening mortar.

15. Against all steel beams, channel and pressed metal door frames, around strap anchors and anchor bolts, against columns and bracing located in masonry walls, fill solidly with pieces of masonry units and mortar.
16. Lay bed mortar only a few blocks ahead of the work to prevent drying out. Use only soft and plastic mortar. Do not scoop up bed joint mortar onto end of block to form head joint. After spreading the mortar, bevel the bed with flat or trowel to slope mortar toward the cavity (so that the cavity side of the bed joint is thinner than the outer side of the bed joint). "Roll" block into place, to reduce amount of mortar oozing from bed joint into cavity. Strike bed and head joints on inner face of wythe flush with brick surface where accessible, and scoop up excess mortar with trowel or parge across inner face to prevent mortar from falling into cavity. Place bricks with full joints, each unit pressed down into a full bed of mortar to produce well compacted joints of full width, front to back.

3.3 BLOCK REPLACEMENT

- A. Block replacement shall be performed as follows:
 1. Remove spalled or cracked block, where called for, and surrounding mortar.
 2. Flush cavity with water, blow out with compressed air, or brush.
 3. Apply mortar to surrounding block and surfaces of replacement block.
 4. Push into place.
 5. Tuck point joints to produce master joints matching surrounding masonry.
- B. All holes due to nails, pins, temporary bracing or the like shall be carefully filled with matching materials and, if appropriate, painted to match adjacent existing surfaces.
- C. The work also consists of the removal of all mortar and miscellaneous materials from joints between window sills/lintels and stone masonry.
- D. All joints between block and dissimilar materials shall be cut with hand tools to depth not less than $\frac{3}{4}$ " from the face of block,

and thoroughly cleaned of all dust, dirt or other debris by means of vacuuming or brushing.

- E. Keep mortar bed damp for at least 30 minutes following installation, using water mist, or cover with polyethylene sheet. Do not re-temper bed materials.

END OF SECTION

05 50 00
METAL FABRICATIONS AND REPAIR

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. Modify existing guardrails at ends of expansion joints to allow movement on one side.
- B. At deck expansion joints on floors 2-6, prepare existing steel angles to receive new preformed joint seals.
- C. Other new steel is not anticipated, but in the event that demolition uncovers rusted steel, it shall be replaced on a time and expense basis.

1.2 RELATED WORK:

- A. The following items of related work are specified and included in other Sections of the Specifications or are furnished by others.
 - 1. Section 02 22 00 - DEMOLITION.
 - 2. Section 04 91 00 - MASONRY REPAIRS.
 - 3. Section 07 90 00 - PREFORMED JOINT SEALS.

1.3 QUALITY ASSURANCE

- A. Reference Standards: Conform to governing laws, building codes, and the following standards:
 - 1. American Iron and Steel Institute applicable standards.
 - 2. American Institute of Steel Construction: "Code of Standard Practice for Steel Buildings and Bridges"; and "Specifications for the Design, Fabrications and Erection of Structural Steel for Buildings"; in 1980 "Manual of Steel Construction" (eighth edition).
 - 3. National Association of Architectural and Metal Manufacturers (NAAMM), applicable publications.
 - 4. American Welding Society Code: Standard Code for Arc and Gas Welding in Building Construction.
 - 5. American Society of Testing and Materials applicable publications.

1.4 SUBMITTALS

- A. Shop Drawings: Submit shop drawings of all miscellaneous metal items to the Designer for review in accordance with General Requirements showing sizes and thicknesses of all members, types of materials, welds, methods of connection and assembly complete dimensions, clearances, anchorage, relationship to surrounding work by other trades, finishes, shop paint and protective coatings and other pertinent details of fabrication and installation.
- B. The Contractor shall check the shop drawings and indicate in suitable colored pencil his corrections, holes, brackets, attachments, etc. for other trades and necessary field dimensions before forwarding them to the Designer for review.
- C. Provide notarized certification on fabricator's letterhead that materials and finishes furnished are as herein specified.
- D. Samples: When requested by the Designer, submit duplicate samples of materials to be furnished under this Section.
- E. Do not order materials or begin fabrication until the Designer's acceptance of submittals has been obtained.

1.5 PRODUCT HANDLING AND STORAGE

- A. All materials shall be carefully handled and stored under cover in a manner to prevent deformation and damage to the materials and to shop finishes, and to prevent rusting and the accumulation of foreign matter on the metal work. All such work shall be assured to be free of defects and cleaned prior to erection.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. All materials shall be new stock, free from defects impairing strength, durability or appearance and of best commercial quality for each intended purpose.
- B. Unless otherwise specifically called for, carbon steel work of this Section shall be fabricated of structural steel conforming to ASTM A-36.
- C. Non-ferrous metals shall be as specified under descriptions of specific items, this Section.
- E. Provide all anchors, bolts, sockets, sleeves and other parts required for securing each item of work of this Section to the construction.

- F. All exposed fastenings shall be of the same material and finish as the metal to which applied, unless otherwise noted.
- G. Welding rods, if required, shall conform to AWS Standards and the recommendation of the welding rod manufacturer.

2.2 MATERIALS FOR EXISTING ANGLES

A. Primer:

1. Resin Type: Oil modified alkyd.
2. Pigment Type: Iron Oxide.
3. Solvents: Mineral Spirits.
4. Weight per Gallon: 12.0 lbs.
5. Solids by Weight: 77.1%
6. Volatile Organic Compounds: <3.50 lbs./gal.
7. Dry Film Thickness: 1.5 - 2.5 mils.

B. Finish Paint:

1. Resin Type: Modified alkyd.
2. Solvents: Aliphatic hydrocarbons.
3. Weight per Gallon: 7.6-8.9 lbs.
4. Solids by Weight: 56.1-62.8%.
5. Volatile Organic Compounds: 3.33 lbs./gal.
6. Dry Film Thickness: 1.5-2.5 mils.

2.3 FABRICATION AND WORKMANSHIP

- A. Take field measurements before starting fabrication. Metal surfaces shall be clean and free from mill scale, flake, rust and rust pitting and shall be well formed and finished to shape and size, true to details with straight, sharp lines and angles and smooth surfaces. Curved work shall be to true radii. Exposed sheared edges shall be eased. Joints shall be neatly framed, square or mitered true, and strongly welded or bolted as required.
- B. Weld all permanent connections. Weld shall be continuous on all exposed surfaces and where required for strength on concealed surfaces. Exposed welds shall be ground flush and smooth. Do not use screws or bolts where they can be avoided. Where used, heads shall be countersunk, screwed up tight and threads nicked to prevent loosening.

- C. Fastenings shall be concealed where practicable. Thickness of metal and details of assembly and supports shall give ample strength and stiffness. Joints exposed to weather shall be formed to exclude water. All miscellaneous metal work shall be complete with all necessary bolts, nuts, plates, fastenings and fittings.
- D. Do all cutting, punching, drilling, tapping, metal working and reinforcing required for attachment of hardware and of work by other trades.
- E. Live loads shall be not less than the minimum required by the governing laws and building code, without failure or permanent deformation, and with deflection not to exceed 1/360 of length of any member. In addition, handrails and railings shall withstand 200 pounds applied at any point along the top rail in any direction.
- F. All items shall be plainly marked to show their location in the building.

2.4 SHOP COATINGS

A. Galvanizing

- 1. All ferrous metal under this Section for exterior use, or in exterior face of walls or at expansion joints, shall be hot-dip galvanized, including all bolts, nuts, washers, and other related ferrous metal items used therewith.
- 2. Hot-dip galvanizing process shall comply with ASTM A-123, A-153, A-385, and A-386 as applicable. After galvanizing, processed items shall be straightened to remove all warpage and distortion caused by the process.
- 3. Furnish to Engineer certified statement that galvanizing complies fully with this Specification. Statement to be signed and countersigned as verified by galvanizer, fabricator and Contractor.

B. Galvanizing Plant Coating over Hot-Dip Galvanizing

- 1. Material shall be solvent-cleaned per SSPC-SP-1 if necessary.
- 2. A metal conditioner conforming to MIL-15328B shall be applied by brush, airless, or conventional spray to a dry film thickness of no more than 0.5 mil.
- 3. A top coat of high-build vinyl acetate/vinyl chloride copolymer paint shall be applied, utilizing an airless electrostatic spray, to a dry film thickness of 3 to 5 mils.

4. No material shall be applied when temperature of either the air, steel, or paint is below 50°F or when the relative humidity exceeds 70 percent.
5. Appropriate care shall be taken of this finish by all parties to minimize damage to the coating. Minor field damage shall be repaired utilizing aerosol cans containing identical coating obtained from the galvanizer.
6. Galvanizer shall provide a notarized certificate of compliance with these specifications countersigned by the fabricator and Contractor.

2.5 DESCRIPTION OF SPECIFIC ITEMS

- A. The items described below constitute the major part of the work of this Section, but are not intended or implied to cover each and every item or special items that may be required to properly complete the work. Carefully review the Drawings to determine the full extent of the miscellaneous metal work required, and carefully review the other trade Sections of the Specifications, to determine the extent of metal work to be done by those trades. All miscellaneous metal work not specifically specified to be provided under other Section(s) but shown on the Drawings or reasonably inferred therefrom, shall be furnished and installed as part of the work of this Section.
- B. Loose Steel Lintels:
 1. Furnish loose steel lintels for all masonry openings required to support masonry throughout the project to masonry trade for installation. Steel lintels welded or otherwise fastened to structural steel framing will be provided by structural steel trade.
 2. Steel lintels shall be of sizes and configurations indicated on the Drawings, or, in lieu of such designation, as directed by the Designer. Lintels shall be adequate to carry the imposed loads with maximum deflection of 1/600 span. Unless otherwise indicated, lengths of lintels shall be size of opening plus 16".
 3. All openings through masonry walls shall have lintels whether specified, shown, or not shown.

PART 3 - EXECUTION

3.1 PREPARATION

- A. After joint seals or concrete are removed to expose steel, notify Engineer or owner's representative if existing conditions require additional repair than anticipated
- B. Remove rust from embedded angles by wire brushing, grinding, or sand blasting.
- C. Remove dust by compressed air and wiping with mineral solvents.

3.2 PAINTING OF EXISTING METAL

- A. After cleaning, apply Rusty Metal primer, followed by two coats of finish paint.

3.3 INSTALLATION

- A. Accurately erect work square, plumb, level and true, accurately fitted, and with tight joints and intersections. Securely fasten in place. Set in conformity with its use in the structure and as indicated on the Drawings. Furnish loose, all anchors, inserts and other members to be set in concrete or masonry to the appropriate trades for installation. Later cutting or drilling shall be avoided wherever possible.
- B. All metal work shall be rigidly braced and secured to surrounding construction, and shall be tight and free of rattle, vibration, or noticeable deflection after installed.

END OF SECTION

07 18 00
VEHICULAR TRAFFIC COATINGS

PART 1 GENERAL

1.1 SCOPE

- A. Furnish urethane traffic bearing membrane in limited locations including: along expansion joints and around deck drains.
- B. Use fast cure, 100% solids system. Furnish standard grade at stalls and heavy duty at travel lanes.

1.2 RELATED WORK

- A. Section 03 70 00 - CONCRETE REPAIRS.

1.3 COORDINATION

- A. It is the responsibility of the Contractor to coordinate the work of this section with all other work on the project.

1.4 REQUIREMENTS OF REGULATORY AGENCIES

- A. The construction shall conform to the requirements of all Federal, State, and local codes as well as to the following:
 - 1. Requirements of the Materials Manufacturer;

1.5 REVIEW AND TESTING

- A. The Owner reserves the right to inspect and test all construction operations and materials.
- B. Any defect or non-compliance's discovered by inspection shall be reported to the Contractor who shall promptly remedy the defect and promptly remove any defective material from the site.
- C. The Owner reserves the right to inspect the work or part of it as he chooses. His failure to inspect the work in progress shall not relieve the Contractor of the responsibility for properly executing the contractor work, nor shall it impair the Owner's right to reject deficiencies he may subsequently discover.

1.6 JOB CONDITIONS

- A. Materials shall be applied to properly prepared dry areas unless otherwise noted.
- B. Materials which have a temperature other than the application temperatures of the manufacturer shall not be applied.
- C. Any damage to the contents of the building, its occupants or their possessions done by the Contractor shall be his responsibility. The Contractor shall perform all necessary corrective measures and/or make payments to have the damaged materials replaced.
- D. No masonry shall be laid when the temperature is below 40° Fahrenheit unless suitable means are provided to heat the masonry materials and protect the completed work from freezing.

1.7 SEQUENCE OF OPERATIONS

- A. The Contractor shall submit for approval the complete sequence of operations for operations and show how it is coordinated with all other aspects of the job. Work shall not begin until the schedule has been approved by the Engineer and Owner.
- B. Work in corporation with the other trades by the timely performance of work. Coordinate with other trades to maximize efficient use of scaffolding.

1.8 QUALITY ASSURANCE

- A. Masonry workmanship is to comply with all applicable recommendations of the Brick Institute of America except as modified below or shown on the Drawings. Report any damages to new work to COTR, and provide for repairs by appropriately skilled mechanics, at no charge to the Government.

1.9 SAMPLES AND TECHNICAL DATA

- A. Submit samples, complete manufacturer's technical data of all materials and systems listed, to the Engineer for approval.
- B. Manufacturer's representative shall visit the project site and consulted with as to the application of their materials as indicated herein. Any resulting recommendations made by such representative shall be forwarded, in writing, to the Engineer for approval prior to implementation.

1.10 GUARANTEE

- A. The Contractor shall furnish to the COTR a written guarantee covering all defects of materials and workmanship of work of this Section that occur within a period of ten (10) years from the date of final completion of the building. Should any defects in materials or workmanship develop within this time, all necessary repairs and replacements shall be made at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Primer:

1. Two-component, polyamide epoxy primer for use on concrete and metal surface.
2. Color: Clear.
3. Weight per Gallon (mixed): 8.5.
4. Weight by Solids (mixed): 66%.
5. Volume Solids (mixed): 59%.
6. Volatile Organic Compounds: 336 grams/liter.
7. Adhesion (mixed): 300 psi.

B. Flashing Tape:

1. 100% solids formulation of synthetics resins, thermoplastics, and non-curing rubber with a built-in primer, bonded to a woven polyester backing.
2. Total Thickness: 30 mils.
3. Adhesion: 19 lbs/inch width.
4. Water Vapor Test (ASTM E96B): 0.005 grams/100 in²/24 hours/100°F.
5. Permanence: 0.001 perms, maximum.

C. Aggregate:

1. Uniform graded (12-20 mesh) silica (quartz) hard aggregate having a minimum hardness of greater than 7.0 on the Moh's Hardness Scale.
2. Grain Shape: Round.
3. Moisture Content: 0.01%.
4. Specific Gravity: 2.65 grams per cm³.
5. Bulk Density (Loose/Compacted): 92-95/98-100 lbs per ft³.

D. Elastomeric Base Coat:

1. Two-component fast-cure polyurethane.
2. Color: Gray.
3. Tensile Strength: 1,500 psi.
4. Elongation: 500%.
5. Permanent Set: <20%.
6. Water Resistance: 1% @ 7 days.
7. Shore A Hardness: 74-79.
8. Weight per Gallon (mixed): 9.7 lbs.
9. Weight by Solids (mixed): 99% @ 12 Hours.
10. Volatile Organic Compounds (mixed): <5 grams per liter.
11. FC7500/FC7960 polyurethane coating.

E. Elastomeric Wear Coat:

1. Two-component fast-cure polyurethane topcoat.
2. Tensile Strength: 2,200 psi.
3. Elongation: 80%.
4. Permanent Set: <10%.
5. Water Resistance: <1% @ 7 days.
6. Shore A Hardness: 84-90.
7. Weight per Gallon (mixed): 11.5 lbs.
8. Weight by Solids (mixed): 99% @ 12 Hours.

F. Sealant:

1. One-component, construction grade, smooth polyurethane sealant capable of dynamic joint movement totaling 50% of original joint geometry (+/- 25%).
2. Tensile Strength: 133 psi.
3. Elongation at Break: 685%.
4. Modulus @ 100% Elongation: 65 psi.
5. Modulus @ 25% Elongation: 45 psi.
6. UV Resistance: Pass in conformance with ASTM C793.
7. Volatile Organic Compounds: 2.8%.
8. 70991 or other polyurethane sealant approved by NEOGARD.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that concrete deck surface is ready to receive waterproofing.

3.2 PREPARATION/SURFACE PREPARATION

- A. Cleaning: Surfaces contaminated with oil or grease shall be vigorously scrubbed with a power broom and a strong non-sudsing detergent. Thoroughly wash, clean, and dry. Areas where oil or other contaminants penetrate deep into the concrete may require removal by mechanical methods.
- B. Prepare surface by shot-blasting.
- C. Cracks and cold joints: visible hairline cracks (up to 1/16") in concrete and cold joints shall be cleaned, primed as required and treated.

3.3 APPLICATION

- A. Strictly follow manufacturer's specification. Furnish standard coating at parking stalls and heavy duty coating at travel lanes.

3.4 STRIPING

- A. Apply compatible striping and number parking spaces.

3.5 PROTECTION

- A. After completion of application, do not allow traffic on coated surfaces for a period of at least 24-36 hours at 75°F or until completely cured.

3.6 CLEANING

- A. Remove debris resulting from completion of coating operation from the project site.

END OF SECTION

SECTION 07 19 00
WATER REPELLENTS

PART 1 GENERAL

1.1 GENERAL

- A. Apply clear water repellent to parking garage horizontal concrete surfaces, including curbs and sidewalks.

1.2 SUBMITTALS

- A. Product Data: Manufacturer's specifications and technical data including the following:
 - 1. Detailed specification of construction and fabrication.
 - 2. Manufacturer's installation instructions.
 - 3. Certified test reports indicating compliance with performance requirements specified herein.
- B. Quality Control Submittals:
 - 1. Statement of qualifications.
 - 2. Statement of compliance with Regulatory Requirements.
 - 3. Field Quality Control Submittals as specified in Part 3.
 - 4. Manufacturer's field reports.

1.3 QUALITY ASSURANCE

- A. Manufacturer's Qualification: Not less than 5 years of experience in the actual production of specified products.
- B. Installer's Qualifications: Firm experienced in installation or application of systems similar in complexity to those required for this Project, plus the following:
 - 1. Acceptable to or licensed by manufacturer.
 - 2. Not less than 3 years of experience with systems.
 - 3. Successfully completed not less than 5 comparable scale projects using this system.

Note: All testing must be performed by an independent laboratory approved by the COTR.

- C. Regulatory Requirements: Products shall comply with State and local regulations concerning AIM (Architectural, Industrial and Maintenance) coatings regarding Volatile Organic Content (VOC).

1. The use of 1,1,1 trichloroethane shall not be allowed.

1.4 DELIVERY STORAGE AND HANDLING

- A. Packing and Shipping: Deliver products in original unopened packaging with legible manufacturer's identification.
- B. Storage and Protection: Comply with manufacturer's recommendations.

1.5 PROJECT CONDITIONS

- A. Environmental Requirements:
 1. Maintain ambient temperature above 40°F during and 24 hours after installation.
 2. Do not proceed with application on materials if ice or frost is covering the substrate.
 3. Do not proceed with application if ambient temperature of surface exceeds 100°F.
 4. Do not proceed with the application of materials in rainy conditions or if heavy rain is anticipated with 4 hours after application.
- B. Sealer Coordination:
 1. Verify compatibility with curing compounds, patching materials, repair mortar, paints, sealants, etc. to be used on masonry surfaces to ensure compatibility with the water repellent.

1.6 SPECIAL WARRANTIES

- A. Manufacturer shall stand behind installed system for period of 5 years from Date of Substantial Completion against all the conditions indicated below. When notified in writing from Owner, Manufacturer shall, promptly and without inconvenience and cost to Owner correct said deficiencies.
 1. Loss of repellency:
 - a. Concrete: 1.0 mil/20 minutes or greater using RILEM method.
- B. All defective areas shall be retreated by the system manufacture as determined by the Engineer. The required written warranty shall be provided by the system manufacturer.
- C. The Sealer Manufacturer shall be responsible for providing labor and material to reseal areas of the parking deck where sealer effectiveness does not meet the specified limits.

PART 2 PRODUCTS

2.1 MATERIALS

A. Acceptable manufacturers and products for concrete deck surfaces:

1. 100% active silane sealer to protect concrete from water alkalis, acid rain, and staining.
2. Color: Water white
3. Active Ingredient: alkyltrialkoxo silane
4. VOC Content: 400g/l or less
5. Dimer or Trimer Content: less than 0.2%
6. Surface Appearance - No change in the surface appearance to texture.
7. NCHRP #244 Series II - minimum 86.4% reduction in water absorption
8. Minimum 88% reduction in chloride ion intrusion
9. NCHRP #244 Series IV - minimum 99% reduction in chloride ion intrusion
10. Alberta DOT type 1b Penetrating Sealer Test-84.6 % reduction in Water Absorption before Abrasion. 86.1 % reduction in Water Absorption after Abrasion
11. Resistance to automotive fluids and oils for a minimum of 7 days.
12. Will not alter slip or skid resistance of concrete in wet and dry conditions.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verification of Conditions: Examine areas and conditions under which Work is to be performed and identify conditions detrimental to proper or timely completion.

1. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protection: Install coverings to protect adjacent surfaces.

B. Surface Preparation:

1. Surfaces to receive sealer shall be cleaned of dirt, oil, grease, laitance, and other contaminants. Oil, grease and other automotive contaminants shall be removed with degreasers. All other surfaces shall be cleaned by high pressure water (3000 psi). High pressure

water is the minimum cleaning that will be accepted, other methods, such as blastracking, mobile power scrubbing and sandblasting may be submitted.

2. Remove dirt, dust and materials that will interfere with the proper and effective application of the penetrating sealer. It is the responsibility of the Contractor to prepare the surfaces of the concrete to a condition acceptable to the Owner.
3. Equipment during floor slab cleaning shall not exceed the height limitation of the facility and shall not exceed a 3,000 pound axle load or vehicle gross weight of 6,000 pounds.
4. Check the compatibility of all caulking, patching, and traffic marking materials to be used with the penetrating sealer.
5. Sealants, patching materials, and expansion joints shall have been installed and approved by the engineer.

3.3 FIELD QUALITY CONTROL

A. Manufacturer's Field Services:

1. Furnish written certification that surface preparation method and final condition has manufacturer's approval and comply with the warranty.
2. Test area: Furnish results of test area absorption on each type of substrate. Test results shall determine application rate.

B. Test Area:

1. Before a sealer application the following field evaluation will be done. The cost of the field testing will be the responsibility of the Water and Stain Repellent Manufacturer.
2. Prepare a five by five area to be sprayed with the water repellent. The area will be determined by the Engineer. Apply the water and stain repellent at the specified rate to the test area.
3. Acceptable minimum results are as stated in the warranty provisions. Coverage rate used to pass this test section must be used on entire project.

3.4 APPLICATION

- A. Product shall be applied as supplied by the manufacturer without dilution or alteration.
- B. Apply with a low-pressure (15 psi) airless spray equipment with a fan spray coarse nozzle, flooding the surface to obtain uniform coverage unless otherwise recommended by the manufacturer.

- C. Apply at a rate of not less than 175 square foot/gallon unless the field tests determine that a heavier rate of application is necessary to meet the performance requirements.
- D. Apply at temperature and weather conditions recommended by the manufacturer or written in this specification.
- E. Follow manufacturer's recommendations concerning protection of glass, metal and other non-porous substrates. Contractor will be responsible to clean all surfaces that are contaminated by the water repellent.
- F. Follow manufacturer's recommendation concerning protection of plants, grass and other vegetation. Contractor will be responsible for replacing all plants, grass or vegetation damaged by the water repellent.

3.5 CLEANING

- A. As Work Progresses: Clean spillage and overspray from adjacent surfaces using materials and methods as recommended by water repellent manufacturer.
- B. Remove protective coverings from adjacent surfaces when no longer needed.

3.6 COMPLETION

- A. Work that does not conform to specified requirements shall be corrected and/or replaced as directed by the Owners Representative at contractor's expense without extension of time.

END OF SECTION

07 90 00

PREFORMED JOINT SEALERS

PART 1 GENERAL

1.1 WORK INCLUDED

- A. Work in this section includes the installation of expansion joint systems in areas indicated on drawings.
- B. Related Work
 - 1. Section 03 70 00, CONCRETE REPAIRS
 - 2. Section 05 50 00, METALS FABRICATIONS AND REPAIRS
 - 3. Section 07 18 00, VEHICULAR TRAFFIC COATINGS

1.02 SUBMITTALS

- A. Samples - Submit one (1) sample at least 152mm (6") long, of each profile type, for approval of the Engineer

1.03 PRODUCT DELIVERY/STORAGE AND HANDLING

- A. Deliver materials in the original, intact manufacturer labeled containers.
- B. Store materials between 40° to 90°F in such a way as to prevent damage to containers or product.

1.04 ACCEPTABLE MANUFACTURERS

- A. All joints shall be as designed and manufactured by Watson Bowman Acme Corp., 95 Pineview Drive, Amherst, NY 14228.
- B. Alternate manufacturers and their products will be considered, provided they meet the design concept and are produced of materials that are equal to or superior to those called for in the base product specification.
- C. Any proposed alternate systems must be submitted and receive approval 21 days prior to the bid. All post bid submissions will not be considered. This submission shall be in accordance with MATERIALS AND SUBSTITUTIONS. Any manufacture wishing to submit for prior approval must provide the following:
 - 1. A working 6 inch sample of the proposed system with a letter describing how the system is considered superior to the specified system.

2. A project proposal drawing illustrating the recommended alternate system installed in the application, specific to the project.
3. Verifiable list of prior installations showing prior and successful experience with the proposed system.
4. Any substitution products not adhering to all specification requirements within, will not be considered.

1.05 Quality Assurance

- A. Manufacturer: Shall be ISO-9001:2008, RC14001:2008 certified and shall provide written confirmation that a formal Quality Management System and Quality Processes have been adopted in the areas of, (but not limited to) engineering, manufacturing, quality control and customer service for all processes, products and their components. Alternate manufacturers will be considered provided they submit written proof that they are ISO 9001:2008, RC14001:2008 certified prior to the project bid date. Manufacturers in the process of obtaining certification will not be considered.
- B. Warranty: The expansion control system shall be warranted when installed by the manufacturer's factory trained installer. Installation shall be in strict accordance with manufacturer's technical specifications, details, installation instructions and general procedures in effect for normal intended usage and suitable applications under specific design movements and loading conditions.
- C. Manufacturer: Shall have a minimum ten (10) years' of experience specializing in the design and manufacture of expansion control systems.
- D. Products: Expansion control systems shall be installed with manufacturer's blockout repair and infill materials.
- E. Application: The specified expansion control system(s) shall be installed by the manufacturer's factory trained installer.

PART 2 - PRODUCT

2.01 GENERAL

- A. The expansion joint system shall be a complete system designed by the manufacturer to withstand structural movement and harsh environmental conditions. The system consists of a preformed neoprene profile, installed using the same dimensions as the joint gap at mid-range temperature, bonded with a two-component epoxy adhesive, and pressurized during the adhesive cure time. It shall be installed by WBA

Approved Installers. In addition, it shall be designed for application on the specified type of surface indicated on the project drawings.

2.02 COMPONENTS AND MATERIALS

- A. Profile - Polychloroprene (neoprene) elastomer, preformed by extrusion and vulcanized into its definitive shape, which is supplied in several configurations and dimensions, ranging from 1/4" to 5".

The profile shall have the following properties:

PROPERTY	ASTM METHOD	REQUIREMENT
Tensile Strength, min	D-412	2000 psi (13.8 MPa)
Elongation at Break, min	D-412	250%
Hardness, Shore A	D-2240	65 +/- 5
Oven Aging, 70hrs at 212°F Tensile Strength, max loss Elongation at Break, max loss Change in Hardness	D-573	20% 20% 0 - 10 points
Oil Swell, 70hrs at 212°F Weight Change, max	D-471	45%
Ozone Resistance, 70hrs at 104°F	D-1149	No Cracks
Low Temperature Stiffing, 7 days at 14F Change in Hardness	D-2240	0 - 15 points

Adhesive - Two-component, thixotropic, epoxy-based adhesive, which is mixed at the job site. The adhesive shall have the following properties:

PHYSICAL PROPERTY	ASTM TEST METHOD	REQUIREMENTS
Tensile Strength	D 638	3500 to 4000 psi min
Axial Compression	D 695	8000 psi min
Pot Life	D 2471	40 minutes min @ 77°F (25°C)
Flash Point	D 56	> 150°F (65.5°C)
Tensile Strength, 24 hr	ASTM D638	3000 psi min
Axial Compression, 24 hr	ASTM D695	6500 psi, min

Note: If the ambient air temperature is between 40°F and 60°F, an alternate cold weather epoxy shall be utilized

- B. Pressurization is done through a valve with cap system. The profile is pressurized during installation and curing time of adhesive to assure

complete bonding throughout gap/profile surfaces. Air pressure will bleed itself with time or air valve can be released at any time after 24 hours of installation.

PART 3 - EXECUTION

3.01 PROJECT CONDITIONS

- A. Coordinate the installation of the joint system with related work. Protect installed units until completion of entire project.
- B. Ambient temperature shall not be lower than 4°C (40°F) during installation. Note that gap size will change with cold and hot temperature extremes. Gap measurement should optimally be carried out at the mid-point of the average temperature range for the area of installation.
- C. The environment should be free of dust, oil, grease, wax, moisture, and frost. The gap wall surfaces must be thoroughly cleaned.
- D. No installation may be performed in rainy weather, or when rain is expected within one hour before installation. All surfaces must be completely dry prior to applying adhesive.
- E. Personnel shall read the Material Safety Data Sheet for all components before beginning the installation.
- F. Upon completion of this work, remove trash and debris on the site caused by work under this section.

3.02 INSPECTION

- A. Verify that work done under other sections meets requirements. Notify Engineer/Engineer in writing of any conditions requiring change order for additional treatment prior to application. A survey should be taken on the status of each gap, especially on rehabilitation work.

3.03 PREPARATION

- A. All foreign materials must be totally removed from the gap. The heads must first be cleaned out by disc grinding or sandblasting and then vacuumed or blown with dry, oil free, compressed air before the two component epoxy adhesive is mixed and applied.

3.04 INSTALLATION

- A. Expansion joint system is to be installed in strict accordance with the manufacturer's instructions by Watson Bowman Acme Approved Installers or under the supervision of Watson Bowman Acme Technicians.
- B. Non-durable and unsound concrete at the joint gap edge must be removed and the concrete must be totally repaired per the joint manufacturer. All cracks shall be repaired.
- C. The profile shall be cut to the correct length of the appropriate gap for installation, without pulling or exerting excess tension.
- D. Seal both ends of the profile (air tight) and install air valve. Inflate profile to assure there are no leaks in the profile. Deflate before installation.
- E. Clean and abrade sides of profile per the manufacturer's instruction.
- F. Mix adhesive according to manufacturer's directions only after all preparation of gap and profile are complete.
- G. Apply adhesive to the inner gap walls in an even manner. In the same even fashion, apply adhesive to outer rigid sidewalls of profile.
- H. Profile should be gradually inserted into the gap, without stress or compression. The installer should maintain the profile at the depth desired, by hand or by any convenient means. Clean away excess adhesive.
- I. Pressurization should be done through the air valve with a heavy pump. Pressurization should be applied slowly so as not to cause the joint to squeeze adhesive out of the flanges on the sides of the joint.
- J. Clean all excess adhesive around the edges and top of the joint with a trowel or scraping tool.
- K. Allow epoxy adhesive to cure (usually 24 hours) and remove valve to bleed off air pressure.

3.05 CLEAN AND PROTECT

- A. Protect the Jeene® Structural Sealing Joint System during construction. Heavy construction vehicles will not be permitted to cross the joint without specific and written permission by the Engineer. Subsequential damage to the system shall be repaired at the contractor's expense.

END OF SECTION

SECTION 07 92 00
JOINT SEALANTS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. The General Conditions of the Contract for Construction and the General Requirements (Division 1) are hereby made part of this Section.

1.2 SCOPE OF WORK

- A. Work includes, but is not limited to, providing all labor, materials, equipment, and supervision to accomplish the following sealant work in accordance with the Drawings and Specifications:
1. Remove and replace sealant in the perimeter joints on the eighth level.
 2. Add sealants to the control joints that are without sealants on the 7th level.
 3. Rout and seal cracks in the concrete topping on the topside of levels 1 through 8.
 4. Apply sealant to cracks in CMU at the stair towers.

1.3 RELATED WORK

- A. Work related to this includes, but is not limited to, the following:
1. Section 03 70 00 - CONCRETE REPAIR
 2. Section 04 91 00 - MASONRY REPAIR
 3. Section 07 18 10 - VEHICULAR-TRAFFIC-COATING
- B. Materials shall be compatible with the materials of related work with which they come into contact and with the materials covered by other Sections of the Specifications.

1.4 SUBMITTALS

- A. Subcontractor's qualifications.
- B. Certification that each of the items below is compatible with all of the products with which it will come into contact.
- C. Manufacturer's Spec Data Sheets for each specified material and related chemicals to be used on site.
- D. Samples of specified materials.
- E. Color charts for all sealants.
- F. A copy of the proposed warranty language for each system or product below.
- G. Explanation of date codes for all sealants specified.

- H. Results of a sealant adhesion pull test for review by the Engineer before sealant is installed.
- I. Repair-sequence plans showing the proposed sequence of repairs on the deck(s). Show areas of work, include a schedule of time, and consider and be coordinated with other proposed repair work in the Garage.
- J. Traffic management plan showing the proposed temporary detour required to accomplish and protect the repairs until the repairs are ready for vehicular traffic.

1.5 QUALITY CONTROL AND QUALITY ASSURANCE

- A. Conduct a quality control program that includes, but is not limited to, the following:
 - 1. Inspection of all materials to ensure conformity to Contract requirements and that all materials are new and undamaged.
 - 2. Establishment of procedures for executing the work.
 - 3. Inspection of work in progress to ensure that work is performed in accordance with established procedures, manufacturer's instructions, and specific Engineer instructions, if given.
 - 4. Inspection of all work completed and correction of all defective work prior to any sealer application.
- B. Qualifications
 - 1. The Contractor's project superintendents shall have a minimum of 5- yrs' experience with sealants on similar projects.
- C. Preconstruction Conference:
 - 1. Attend a preconstruction conference to be held with a representative of the Owner, Engineer, Contractor's field superintendent, foreman, and other trades involved to discuss the conduct of the work of this Section.

1.6 WARRANTY

- A. Provide a 5-yr warranty by the manufacturer and Installer, the form of which is equivalent to the standard warranty published and provided by the manufacturers named in this Specification at the date of this Contract. The Owner shall be the sole judge of equivalency, without recourse by the Contractor, of any unnamed manufacturer.
- B. Provide the manufacturer's extended warranty for review and selection by the Owner.
- C. Warranty time will start at the end of the final sub-phase of the work for that given phase, not at the end of each sub-phase.

1.7 TECHNICAL SUPPORT

- A. The Contractor shall arrange with the materials manufacturer or distributor to have the services of a competent field representative at the work site prior to any mixing of components to instruct the work crews in the proper mixing and application procedures. The field

representative shall remain at the jobsite after work commences and continue to instruct until the field representative, the Contractor, and the Owner are satisfied that the crew has mastered the technique of installing the systems successfully.

1. The manufacturer's field representative must be fully qualified to perform the work and shall be subject to the approval of the Owner.
2. The Contractor shall be completely responsible for the expense of the services of the required manufacturer's field representative, and the Contract price shall include full compensation for all costs in connection therewith.
3. Provide written certification to the Engineer prior to start of construction that the system installer is approved by the manufacturer of the sealant system components.
4. Each manufacturer of products used in this Section shall certify compatibility of its product with other products of this Section and all other Sections with which they may come into contact.
5. Upon request, the manufacturer shall furnish a sample of the materials to be used on this project to the Owner for chemical analysis.
6. The Contractor shall review and approve details prior to construction.

B. Adhesion Testing:

1. Perform adhesion testing of the specified liquid-applied sealants on all substrates.
2. The Contractor shall retain the services of all sealants' manufacturers to conduct/direct adhesion testing.
3. Provide samples of each sealant applied with and without primers to each substrate. Apply samples so that peel testing can be conducted.
4. Allow adhesion test samples to cure for twenty-one days.
5. Notify the Engineer two days prior to sample application and testing.
6. Provide a written report of the test results and manufacturer's recommendations for sealant use to the Engineer.
7. Do not begin general sealant installation until testing is complete and approved.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. All materials are to be delivered in the original, unopened, undamaged containers, properly labeled. Remove all damaged materials from the site.
- B. All materials are to be new and of recent manufacture. Sealants are to be a maximum of six-months old. Provide key for the sealant manufacturer's date coding on the sealant containers.
- C. Store temperature-sensitive materials indoors at the temperatures recommended by the manufacturers. If materials are exposed to temperatures outside the range recommended by the manufacturers, provide heated/cooled storage space sufficient to store enough materials for each day's work so that the materials will be at the correct working temperatures.

1.9 GENERAL PROCEDURES

- A. Work only in areas permitted by Owner-approved schedule and sequence plan.

- B. Remove all tools, buckets, and materials from work areas and store neatly at a central location daily at the end of work.
- C. Do not stockpile materials, debris, or equipment outside the zone of any given sub-phase.
- D. Construction loads shall not exceed 40 psf.
- E. Deliver materials clearly marked with legible and intact labels with manufacturer's name and brand name, date of manufacture, and identification of contents of containers.
- F. Store materials in areas where temperatures conform to manufacturer's recommendations and instructions.
- G. Protect the building and its contents from all risks associated with the work in this Section. Schedule and execute all work without exposing adjacent building areas to water, dust and debris, or materials used by this Contractor. Protect adjacent areas from damage. Repair all damage as a result of the work of this Section to its condition at the start of work or, if such cannot be determined, to its original condition. Clean all stains by approved means.
- H. Protect the work from damage, such as impact, marring of the surfaces, and other damage.
- I. Compliance with OSHA and all other safety laws and regulations is the exclusive responsibility of the Contractor, his subcontractors, suppliers, consultants, and servants.

1.10 BASIS OF PAYMENT

- A. All sealant work associated with vehicular-traffic-bearing waterproofing shall be included in the contract lump-sum price for the work items identified in Section 07 18 00 VEHICULAR TRAFFIC COATING.
- B. All other work of this Section will be paid for at the Contract unit prices, unless otherwise noted, multiplied by the actual work quantities.
 - 1. Measure sealant joint installation at existing cracks in linear feet.
 - 2. Measure the removal and replacement of existing sealant joints in linear feet.
 - 3. Measure the replacement of sealant at guardrail post bases in items, with the sealant joint at one post base being one item.

PART 2 - PRODUCTS

2.1 CRACK SEALANTS

- A. Sikaflex-2c NS, by Sika Corporation, Lyndhurst, New Jersey or equal. Color to be selected by the Owner.

2.2 BACKER ROD AND ACCESSORIES

- A. Closed-cell backer rod as recommended by the manufacturer.

PART 3 - EXECUTION

3.1 GENERAL WORKMANSHIP FOR CRACK SEALANTS

- A. Comply with all recommendations of the manufacturer of the sealant system for surface preparation and installation of sealants.
- B. Use containers to hold or transport coatings, primers, or sealants that are clean and in good condition.
- C. Do not dilute primers or sealants. Keep containers closed, except when removing materials from them. Do not allow contact between various materials through mixing or remains, or dual use of transporting or application equipment. Do not use equipment with remains of previous materials.
- D. Do not apply materials until the concrete and air temperatures are above 40°F and rising. Temperatures must remain above 40°F during curing.

3.2 ROUTING OF CRACKS

- A. Cracks in the existing concrete should be routed to between 1/4 in. minimum and 1/2 in. maximum depth. The width of the routed channel shall be equal to twice its depth.
- B. Inspect newly exposed surfaces of the concrete to receive the work and report immediately in writing to the Engineer as required in the General Conditions any deficiencies in the surface that render it unsuitable for proper execution of this work. Do not proceed with work until unsatisfactory conditions have been corrected in an acceptable manner. Commencement of work implies acceptance of related work.
- C. Correct unsatisfactory conditions in a manner acceptable to the installer before installation of the sealant system.
- D. Dry and thoroughly clean all surfaces that are to receive sealant of all loose particles, laitance, dirt, dust, oil, grease, or other foreign matter. Remove all existing contaminants from the surface. Follow manufacturer's recommendation for proper method of cleaning.
- E. Check preparation of substrate to ensure adhesion of sealant.

3.3 INSTALL SEALANT

- A. Inspect each cartridge or container of sealant before use and verify that the production date is within six months of the date of application. Remove from the site all sealant more than six-months old. Understand the method of coding the production date of the cartridge.
- B. Apply sealant only to clean, dry surfaces at ambient temperatures above 40°F.
- C. Fill all routed cracks solidly and continuously with sealant, neatly applied with a standard caulking gun in a continuous motion, using slight pressure. "Push" the sealant bead ahead of the nozzle; do not "drag" the nozzle.

- D. Within 5 min. of sealant application and before skin develops on sealant, dry tool the surface with a concave tool to ensure intimate contact with substrate and to eliminate air bubbles. Do not use any liquid for tooling. Provide a smooth, uniform finished surface.
- E. Avoid contaminating adjacent surfaces with excess sealant. Remove all traces of smears and droppings promptly using a solvent that is recommended by the sealant manufacturer and that will not damage or discolor the surrounding concrete surface.
- F. Coordinate work with other work on the Garage to prevent contamination of fresh sealant by dust or other debris.

3.4 CLEANUP

- A. Remove all excess sealant and masking materials from the structure.

END OF SECTION

SECTION 07 95 00
TRAFFIC-BEARING EXPANSION JOINTS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

- A. The General Conditions of the Contract for Construction and the General Requirements (Division 1) are hereby made part of this Section.

1.2 SCOPE OF WORK

- A. Work includes furnishing all labor, materials, equipment, and supervision to accomplish the following expansion joint work in accordance with the Drawings and Specifications.
 - 1. Furnish and install traffic-bearing expansion joints as shown on the Drawings.

1.3 RELATED WORK

- A. Work related to this Section includes, but is not limited to, the following:
 - 1. Section 03 70 00 - CONCRETE REPAIR
 - 2. Section 07 18 00 - VEHICULAR TRAFFIC COATING

1.4 SUBMITTALS

- A. Submit manufacturer's literature completely describing all materials, standard instructions, and any special instructions and/or precautions applicable to this project. Prior to development of final shop drawings, prepare a preliminary drawing of the joint system for approval.
- B. Submit detailed shop drawings of all expansion joints, including details and joint terminations and intersections.
- C. Schedule of time showing areas of work.

1.5 QUALITY CONTROL AND QUALITY ASSURANCE

- A. Conduct a quality control program that includes, but is not limited to, the following:
 - 1. Inspection of all materials to ensure conformity with contract requirements and that all materials are new and undamaged.
 - 2. Establishment of procedures for executing the work.
 - 3. Inspecting all surface preparation prior to material application.
 - 4. Inspection of work in progress to ensure work is being done in accordance with established procedures and manufacturer's instructions.
 - 5. Inspection of all work completed and correction of all defective work.
- B. Qualifications:
 - 1. The expansion joint installer shall be licensed by the manufacturer of the products to be used on the project with a minimum of 5-yrs' experience in

the application of the product system.

2. The Contractor's site superintendent shall have at least 5-yrs' experience supervising the installation of expansion joint sealing systems.

C. Pre-installation Conference:

1. Attend a pre-installation conference to be held with a representative of the Owner, Engineer, the Contractor's field superintendent, foreman, and other trades involved to discuss the conduct of the work of this Section.

1.6 GUARANTEE

- A. Guarantee all work under this Section in a document stating that if, within 5 yrs after the Date of Substantial Completion of the Work, any of the work of this Section is found to be defective or not in accordance with the Contract Documents, the Contractor shall correct it promptly after receipt of a written notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. Also, the Contractor shall bear all costs incurred by the Owner, including reasonable attorney's fees, to enforce compliance with the obligations of this Guarantee. The obligations of this Guarantee shall run directly to the Owner and may be enforced by the Owner against the Contractor, shall survive the termination of the Contract, and shall not be limited by conditions other than this Contract.

1.7 WARRANTY

- A. Provide a 5-yr manufacturer's warranty, the form of which is equivalent to the standard warranty published and provided by the manufacturers named in this Specification at the date of this Contract. The Owner shall be the sole judge of equivalency, without recourse by the Contractor, of any unnamed manufacturer.
- B. Include a manufacturer's Maintenance Manual specifically prepared for this project and coordinated with warranty requirements (two copies). Include, as a minimum, instructions for repairing and plowing.

1.8 TECHNICAL SUPPORT

- A. The Contractor shall arrange with the materials manufacturer or distributor to have the services of a competent field representative at the work site prior to any mixing of components to instruct the work crews in the proper mixing and application procedures. The representative shall remain at the jobsite after work commence and continue to instruct until the representative, the Contractor, and the Owner are satisfied that the crew has mastered the technique of installing the systems successfully.
 1. The manufacturer's field representative must be fully qualified to perform the work and shall be subject to the approval of the Owner.
 2. The Contractor shall be completely responsible for the expense of the services of the required manufacturer's field representative, and the Contract price shall include full compensation for all costs in connection therewith.

1.9 GENERAL PROCEDURES

- A. Work only in areas permitted by the Owner and as detailed on the approved schedule.

- B. Construction loads shall not exceed 40 psf.
- C. Remove all tools, buckets, and materials from work areas and store neatly at a central location daily at the end of work. Move equipment and storage areas as work progresses to avoid abuse of new work.
- D. Do not stockpile materials, debris, or equipment on the parking deck.
- E. Deliver all materials to the jobsite in sealed, undamaged containers properly labeled with product descriptions, including date of manufacture, lot number, and shelf life.
- F. Comply with all recommendations of the material manufacturers for storage and handling of materials. Store materials on pallets. Store liquids at 75°F for at least 24 hrs before application. Handle materials to prevent damage.
- G. Protect the building and its contents from all risks associated with the work in this Section. Schedule and execute all work without exposing adjacent building areas to water, dust and debris, or materials used by this Contractor. Protect adjacent areas from damage and stains with appropriate barriers and masking. Repair all damage as a result of the work of this Section to its condition at the start of work or, if such cannot be determined, to its original condition. Clean all stains by approved means.
- H. Protect the work from damage such as impact, marring of the surfaces, and other damage.

1.10 BASIS OF PAYMENT

- A. All work of this Section will be paid for at the Contract unit prices multiplied by the actual work quantities. Base actual work quantities on the following units of measurement.
 - 1. Measure new expansion joints in linear feet of expansion joint (including gland and nosings where applicable).
 - 2. Measure repair of damaged existing expansion joints in linear feet.

PART 2 - PRODUCT

2.1 MATERIALS

- A. Expansion Joint System:
 - 1. Traffic-Bearing Expansion Joint System: Watertight deck-expansion-joint system comprised of a heat-weldable, Santoprene, thermoplastic-rubber, double-celled extrusion with perforated flanges embedded in a cold-applied elastomeric concrete nosing reinforced with aggregates not to exceed 30 mesh and an aggregate loading ratio by weight of liquid resin to aggregate not to exceed 1:2. Expansion joint system shall be a complete system of compatible materials designed by the manufacturer to produce a waterproof traffic-bearing expansion joint system.
 - a. Thermaflex TM Series by Emseal Joint Systems, Ltd., Westborough, Massachusetts, or approved equal.
- B. Expansion Joint Nosing:

1. Cold-applied elastomeric concrete nosing reinforced with aggregates not to exceed 30 mesh and an aggregate loading ratio by weight of liquid resin to aggregate not to exceed 1:2.
- C. Primers, blockout fillers, and miscellaneous materials required for installation shall be in accordance with the requirements of the expansion joint system manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Prepare concrete surfaces to be suitable for the installation of the expansion joint system.
- B. Install the expansion joint system in strict accordance with the manufacturer's written instructions.

END OF SECTION

SECTION 09 90 00

STEEL PAINTING

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. The Contract Requirements documents and the General Requirements are hereby made part of this Section.

1.02 SCOPE OF WORK

- A. Provide surface preparation and field application of coatings on steel precast member connections identified on the drawings.

1.03 RELATED WORK

- A. Work related to this Section includes, but is not limited to, the following:
 1. Section 03 70 00 - CONCRETE REPAIR
 2. Section 32 17 23 - PAVEMENT MARKINGS

1.04 REFERENCES

- A. The following references are incorporated into these Specifications. These written Specifications take precedence over incorporated references.
 1. ASTM D16 - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.
 2. NACE (National Association of Corrosion Engineers) - Industrial Maintenance Painting.
 3. NPCA (National Paint and Coatings Association) - Guide to U.S. Government Paint Specifications.
 4. PDCA (Painting and Decorating Contractors of America) - Painting - Architectural Specifications Manual.
 5. SSPC (Steel Structures Painting Council) - Steel Structures Painting Manual.

1.05 DEFINITIONS

- A. Conform to ASTM D16 for interpretation of terms used in this Section.

1.06 SUBMITTALS

- A. Product Data: Provide data on all finishing products.
- B. Samples: Submit two sets of samples, illustrating range of colors and textures available for each surface finishing product scheduled.
- C. Manufacturer's Instructions: Indicate special surface preparation procedures for substrate conditions requiring special attention.

1.07 QUALIFICATIONS

- A. Applicator: Company specializing in performing the work of this Section with minimum 5-yrs' documented experience and approved by the paint manufacturer.

1.08 REGULATORY REQUIREMENTS

- A. Conform to all applicable codes for flame and smoke rating requirements for finishes.

1.09 FIELD SAMPLES

- A. Provide field sample panel, 4 ft long by 4 ft wide, illustrating each coating color, texture, and finish.
- B. Locate where directed by architect.
- C. Accepted sample may remain as part of the Work.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver all material to the site in the manufacturer's labeled, unbroken containers. Keep materials dry at all times. Store all materials on wooden pallets in a well-ventilated place. Cover all materials with a canvas tarpaulin, not plastic, on top and all sides, to the ground. Store all materials away from sparks and flames.
- B. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
- C. Container label to include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
- D. Store paint materials at minimum ambient temperature of 45°F (7°C) and a maximum of 90°F (32°C), in ventilated area, and as required by manufacturer's instructions.

1.11 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Do not apply exterior coatings during rain or snow, or when relative humidity ranges exceed requirements of the paint product manufacturer.
- C. Minimum Application Temperatures for Latex Paints: 45°F for interiors; 50°F for exterior; unless required otherwise by manufacturer's instructions.
- D. Minimum Applications Temperature for Alkyd Finishes: 65°F (18°C) for interior or exterior, unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80 ft candles measured mid-height at substrate surface during surface preparation work.

1.12 EXTRA MATERIALS

- A. Provide 4 gal of each color, type, and surface texture to COTR.
- B. Label each container with color, type, texture, room locations, and date in addition to the manufacturer's label.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A3.06 PAINT SYSTEMS

- A. Precast Member Connections

1. Bare Metal Primer:
 - a. One coat consisting of:
 1. Aromatic polyurethane, one-component, moisture-cured, micaceous iron oxide and zinc filled primer.
 2. Color: Grayish-green.
 3. UL 263 (ASTM E119) classified.
 4. Complies with ASTM E736 adhesion test.
 - b. Top Coats:
 1. Polyamidoamine epoxy.
 2. Two coats.
 3. Color: To match existing.
 4. Dry Film Thickness: 4.0-6.0 mils per coat.
 5. Finish: Satin.
2. Painted Metal:
 - a. Primer:
 1. Polyamide epoxy.
 2. One coat.
 3. Volatile Organic Compunds: <2.8 lbs/gal.
 4. Finish: Flat.
 - b. Top Coats:
 1. Polyamidoamine epoxy.
 2. One coats.
 3. Color: To match existing.
 4. Dry Film Thickness: 3.0 mils per coat.
 5. Finish: Flat.

2.02 MATERIALS

- A. Coatings: Ready mixed. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating; good flow and brushing properties; capable of drying or curing free of streaks or sags.
- B. Accessory Materials: Other materials not specifically indicated but required to achieve the finishes specified, of commercial quality conforming to the written recommendations of the paint manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that substrate conditions of items are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

- C. Test shop applied primer for compatibility with subsequent cover materials.
- D. Beginning of painting work means that the contractor accepts existing conditions.

3.02 PREPARATION

- A. Correct defects and clean surfaces which affect the work of this Section. Remove existing coatings that exhibit loose surface defects.
- B. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
- C. Uncoated and Corroded Steel Surfaces: Remove rust and other contaminants. Where heavy rust is evident, remove by sandblasting to SSPC-SP #6; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring that weld joints, bolts, and nuts are similarly cleaned.
- D. Painted Steel Surfaces: Remove all loose paint and other deleterious materials; sand entire surface to remove all uneven surfaces and gloss finish.

3.03 APPLICATION

- A. Apply products in accordance with manufacturer's instructions.
- B. Apply each coat to uniform finish.
- C. Sand lightly between coats to achieve required finish, where recommended by paint manufacturer.
- D. Vacuum clean surfaces free of loose particles. Use tack cloth just prior to applying next coat.
- E. Allow applied coat to dry before next coat is applied. Use slightly lighter tint of paint for the first coat, to distinguish the first coat from the second coat.

3.04 CLEANING

- A. Collect waste material which may constitute a fire hazard, place in closed metal containers, and remove daily from site.

END OF SECTION

**SECTION 22 10 00
PLUMBING**

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. The Contract Requirements documents and the General Requirements are hereby made a part of this Section.

1.02 SCOPE OF WORK

- A. Work includes, but is not limited to, providing all labor, materials, equipment, and supervision to accomplish the following plumbing work in accordance with the Drawings and Specifications.
 - 1. Install piping to replace existing piping to tie drains into existing drainage system.
 - 2. Cleaning all existing drains.
 - 3. Clear existing garage floor drain piping by hydroblasting at 2,000 psig all existing piping from drain to the vertical riser.
 - 4. Install flexible gutter expansion joint drains on 7th and 8th floor and connection to existing drain piping.

1.03 RELATED WORK

- A. Work related to this Section includes, but is not limited to, the following:
 - 1. Section 03 70 00 - CONCRETE REPAIRS

1.04 SUBMITTALS

- A. Submit Shop Drawings for review by the Engineer. Do not order materials or commence work prior to the Engineer's approval of Shop Drawings.
- B. Submit technical information for the following:
 - 1. Piping.
 - 2. Fittings.
 - 3. Hydroblasting equipment and procedures.
 - 4. Flexible gutter drains.
 - a. Submit typical expansion joint cross-section(s) indicating pertinent dimensioning, general construction, blockout dimensions and product data information. Approved Installers shall prepare and submit details of all special conditions to the manufacturer for review and approval prior to installation.
- C. Provide to the Engineer a notarized certification that the approved new layout and details conform in all respects to the applicable Plumbing Code, and arrange for inspection by the local authorities. Perform any work required for this approval at no additional cost to the Owner.

1.05 QUALITY CONTROL AND QUALITY ASSURANCE

- A. The Contractor shall conduct a quality control program that includes, but is not limited to, the following:
 - 1. Inspection of all materials to ensure conformity to contract requirements and that all materials are new and undamaged.

2. Establishment of procedures for executing the work.
3. Inspection of work in progress to ensure that work is being done in accordance with established procedures, manufacturer's instructions, specific Engineer instructions, if given, or recommended practices.
4. Inspection of all work completed and correction of all defective work.

B. Qualifications

1. The Contractor and its site superintendent shall have at least 5-yrs' experience supervising the installation of similar plumbing work in parking decks.

C. Pre-installation Conference

1. Attend a pre-installation conference to be held with a representative of the Owner, Engineer, Contractor's field superintendent, foreman, and other trades involved to discuss the conduct of the work of this Section.

1.06 GENERAL PROCEDURES

- A. Work only in areas permitted by the Owner-approved schedule.
- B. Remove all tools, buckets, and materials from work areas and store neatly at a central location daily at the end of work.
- C. Do not stockpile materials, debris, or equipment on deck.
- D. Construction loads shall not exceed the design loads shown on the design drawings for the original construction.
- E. Deliver materials clearly marked with legible and intact labels with manufacturer's name and brand name, and identifying contents of containers.
- F. Store materials in areas where temperatures conform to manufacturer's recommendations and instructions.
- G. Protect the building and its contents from all risks associated with the work in this Section. Schedule and execute all work without exposing adjacent building areas to water, dust and debris, or materials used by this Contractor. Protect adjacent areas from damage and stains with appropriate barriers and masking. Repair all damage as a result of the work of this Section to its condition at the start of work or, if such cannot be determined, to its original condition. Clean all stains by approved means.
- H. Protect the work from damage such as impact, marring of the surfaces, and other damage.
- I. Compliance with OSHA and all other safety laws and regulations is the exclusive responsibility of the Contractor, his subcontractors, suppliers, consultants, and servants.

1.07 REFERENCES

- A. ANSI A112.21.1M-1991 (R1998), Floor Drains.
- B. ASTM A48/A48M-03-2012, Standard Specification for Gray Iron Castings.
- C. ASTM A74-13a, Standard Specification for Cast Iron Soil Pipe and Fittings.

- D. ASTM A888-13a, Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications.
- E. ASTM C1277-12, Standard Specification for Shielded Couplings Joining Cast Iron Soil Pipe and Fittings.
- F. ASTM F1554-07ae1, Standard Specification for Anchor Bolts, Steel, 36, 55 and 105-ksi.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Cast Iron Parking Structure Drain:
 - 1. 17 in. by 17 in. square heavy duty (5,000-7,499 lbs.) floor drain with anti-ponding top with no hub 4 in. pipe attachment at bottom, epoxy-coated cast-iron deep sediment sump with bottom outlet, seepage pan and combination membrane flashing clamp and frame for heavy duty cast iron deep flange grate. Other type drains may be used if approved by the Engineer; if they require cutting or larger holes, locate reinforcement prior to coring the concrete slab.
 - 2. Tensile Strength (PSI): 30,000
- B. Piping:
 - 1. Floor Drains: hubless service weight cast-iron soil pipe, 4 in. dia. minimum, and 6 in dia. where pipe services more than one drain.
 - 2. Expansion Joint Drain Flexible tubing: 2 in dia., flexible vinyl tubing, ¼-inch wall thickness.
- C. Fittings:
 - 1. Complete with approved elastomeric sealing sleeves and 300 series stainless steel clamps; clamping screws; expansion joints; and all hangers, anchors, etc., for proper installation of entire system.
- D. Saddles:
 - 1. At hangers shall be 14 ga galvanized steel, 12 in. long, 180° arc.
- E. Anchors:
 - 1. Expansion type, 304 stainless steel, suitable for all installation directions, externally threaded head configuration.
- F. Flexible Gutter and Drain Tube Assembly
 - 1. Gutter Profile - Provide 0.062" thick single ply fabric reinforced Neoprene sheet in accordance with the following properties.
 - a. Fabric Type: 4 ounce polyester cloth
 - b. Temperature Range: -30F to +200F
 - c. Hardness (Shore A): 70 +/-5
 - d. Tensile (PSI): 1000
 - e. Elongation (%): 250
 - f. Tear (Die C, PPI): 150
 - 2. Drain Tube: Provide 1½" I.D. x 1/8" wall, clear PVC flexible tubing. Length shall be sufficient to connect to existing drain.

3. Transition Element: Provide pre-molded 0.060" thick EPDM tapered profile with pre-taped flange and adhesive for proper bonding to underside of gutter profile.
4. Retainer Profile: Provide an extruded aluminum 10-foot retainers fabricated from 6061-T6 alloy to receive a continuous bead of edge sealant with standard finish (mill with no color).
5. Edge Sealant: Utilize a one part polyurethane moisture cure sealant conforming to federal specification TT-S-00230C Type II Class A NON-SAG.
6. Anchors: Provide manufacturers standard ¼" dia. x 1 ¾" lg. CSK. flathead concrete screw anchor. Carbon steel anchor shall receive factory fluoropolymer coating.
7. Assemble transition element and drain tube utilizing RTV5818-12C silicone adhesive and allow for curing of adhesive prior to shipment.

PART 3 - EXECUTION

3.01 SHOP DRAWINGS

- A. Locations of new drains as indicated on Contract Drawings.
- B. After review of the Drawings for new drains and an inspection of the garage, prepare Shop Drawings showing all details of materials, slopes, fittings, cleanouts, supports, and connections. Show intended method of penetrating or bypassing existing slabs, walls, partitions, equipment, and fixtures.

3.02 WORKMANSHIP

- A. Comply with all recommendations of the drain and pipe manufacturer and of applicable technical reports of the Cast Iron Soil Pipe Institute for handling and installation, all as required to produce smooth water flow and minimum interference with the existing building.
- B. Furnish drain bodies with deck clamps for installation.
- C. Set drains in mortar setting bed.
- D. Do not run pipes with slope less than 1/8 in./ft. Locate new piping to include as few bends as possible. Do not overload any existing pipe and drain, but ensure balanced disposal of all rainwater. Make adequate provisions for thermal movement of all piping.
- E. Provide cleanouts at elbows under each drain, at tops and bottoms of each vertical run, at connection to existing storm sewer, as called for by the Plumbing Code, and as required to make sure that drainage system can be cleaned out anywhere if needed. Provide and install access panels if required for service cleanouts.
- F. Support all piping with hangers attached to the concrete slab, where approved by the Engineer, by approved anchors. Do not use powder-actuated fasteners.
- G. Where new work joins old, provide all necessary materials, repairs, changes, and associated work as needed for proper connections. Break into existing storm drain system as required, replacing pipes, fittings, and appurtenances where needed.

- H. Make all connections watertight: Use Teflon tape in all cleanout plate threads.
- I. Water test entire new system when installation is complete. Repair or replace any parts that are not watertight, as shown by actual evidence of water leakage or by drawdown of the test water level.
- J. Notify Owner of any previously existing damage to the drainage system observed during the course of work.
- K. Gutter drain profile shall be continuous along length of joint. Follow manufacturer's recommendations for end caps.

END OF SECTION

**SECTION 32 17 23
PAVEMENT MARKINGS**

PART 1 - GENERAL

1.1 DESCRIPTION

This work shall consist of furnishing and applying paint on concrete surfaces, in the form of traffic lanes, parking bays, areas restricted to handicapped persons, crosswalks, and other detail pavement markings, in accordance with the details as shown or as prescribed by the COR. Conform to the Manual on Uniform Traffic Control Devices for Streets and Highways, published by the U.S. Department of Transportation, Federal Highway Administration, for details not shown.

1.2 SUBMITTALS

- A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES, furnish Manufacturer's Certificates and Data certifying that the following materials conform to the requirements specified.
- B. Paint.

1.3 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.
- B. Federal Specifications (Fed. Spec.):
TT-P-1952D.....Paint, Traffic Black, and Airfield Marking,
Waterborne
- C. Master Painters Institute (MPI):
Approved Product List - 2010

PART 2 - PRODUCTS

2.1 PAINT

Paint for marking pavement (parking lot and zone marking) shall conform to MPI No. 97, color as shown. Paint for obliterating existing markings shall conform to Fed. Spec. TT-P-1952D. Paint shall be in containers of at least 18 L (5 gallons). A certificate shall accompany each batch of paint stating compliance with the applicable publication.

2.2 PAINT APPLICATOR

Apply all marking by approved mechanical equipment. The equipment shall provide constant agitation of paint and travel at controlled speeds. Synchronize one or more paint "guns" to automatically begin and cut off paint flow in the case of skip lines. The equipment shall have manual control to apply continuous lines of varying length and marking widths

as shown. Provide pneumatic spray guns for hand application of paint in areas where a mobile paint applicator cannot be used. An experienced technician that is thoroughly familiar with equipment, materials, and marking layouts shall control all painting equipment and operations.

2.4 SANDBLASTING EQUIPMENT

Sandblasting equipment shall include an air compressor, hoses, and nozzles of proper size and capacity as required for cleaning surfaces to be painted. The compressor shall furnish not less than 0.08 m³/s (150 cfm) of air at a pressure of not less than 625 kPa (90 psi) at each nozzle used.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

- A. Allow new concrete surfaces to cure for a period of not less than 14 days before application of marking materials.
- B. Thoroughly clean all surfaces to be marked before application of paint. Remove dust, dirt, and other granular surface deposits by sweeping, blowing with compressed air, rinsing with water, or a combination of these methods. Completely remove rubber deposits, existing paint markings, and other coatings adhering to the pavement with scrapers, wire brushings, sandblasting, mechanical abrasion, or approved chemicals as directed by the COR. Apply the black paint in as many coats as necessary to completely obliterate the existing markings. Where oil or grease are present on old pavements to be marked, scrub affected areas with several applications of trisodium phosphate solution or other approved detergent or degreaser, and rinse thoroughly after each application. After cleaning, seal oil-soaked areas with cut shellac to prevent bleeding through the new paint. Pavement marking shall follow as closely as practicable after the surface has been cleaned and dried, but do not begin any marking until the COR has inspected the surface and gives permission to proceed. The Contractor shall establish control points for marking and provide templates to control paint application by type and color at necessary intervals. The Contractor is responsible to preserve and apply marking in conformance with the established control points.

3.2 APPLICATION

Apply uniformly painted concrete marking of required color(s), length, and width with true, sharp edges and ends on properly cured, prepared, and dried surfaces in conformance with the details as shown and established control points. The length and width of lines shall conform within a tolerance of plus or minus 75 mm (3 inches) and plus or minus 3

mm (1/8 inch), respectively, in the case of skip markings. The length of intervals shall not exceed the line length tolerance. Temperature of the surface to be painted and the atmosphere shall be above 10°C (50°F) and less than 35°C (95°F). Apply the paint at a wet film thickness of 0.4 mm (0.015 inch). Apply paint in one coat. At the direction of the COR, markings showing light spots may receive additional coats. The maximum drying time requirements of the paint specifications will be strictly enforced, to prevent pick-up, displacement, or discoloration by tires of traffic. If there is a deficiency in drying of the marking, discontinue paint operations until cause of the slow drying is determined and corrected. Remove and replace marking that is applied at less than minimum material rates; deviates from true alignment; exceeds stipulated length and width tolerances; or shows light spots, smears, or other deficiencies or irregularities. Use carefully controlled sand blasting, approved grinding equipment, or other approved method to remove marking so that the surface to which the marking was applied will not be damaged.

3.3 PROTECTION

Conduct operations in such a manner that necessary traffic can move without hindrance. Protect the newly painted markings so that, insofar as possible, the tires of passing vehicles will not pick up paint. Place warning signs at the beginning of the wet line, and at points well in advance of the marking equipment for alerting approaching traffic from both directions. Place small flags or other similarly effective small objects near freshly applied markings at frequent intervals to reduce crossing by traffic. Efface and replace damaged portions of markings at no additional cost to the Government.

3.6 FINAL CLEAN-UP

Remove all debris, rubbish and excess material from the Station.

- - - E N D - - -