PROJECT MANUAL

Repair and Preventive Maintenance

of the

HAMILTON AVENUE SCHOOL PARKING GARAGE

184 Hamilton Avenue
Greenwich, Connecticut

BID NO. 2529-25

March 2025

Owner:
Greenwich Public Schools
290 Greenwich Avenue
Greenwich, CT 06830

Engineer:
DESMAN
A Division of Desman, Inc.
3 West 35th Street
New York, NY 10001

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BID DOCUMENTS AND SPECIFICATIONS

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Engineer:
D E S M A N
A Division of Desman, Inc.
3 West 35th Street
New York, N.Y. 10001
Phone: (212) 686-5360
Fax: (212) 779-1654

REPAIR AND PREVENTIVE MAINTENANCE
of the
HAMILTON AVENUE SCHOOL PARKING GARAGE
BID NO. 2529-25
184 Hamilton Avenue
Greenwich, Connecticut

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GREENWICH PUBLIC SCHOOLS
Purchasing Department
290 Greenwich Avenue
Greenwich, Connecticut 06830
(203) 625-7411
Fax (203) 625-7677

EUGENE H. WATTS
Manager of School Procurement

April 4, 2025

Dear Sir/Madam:

You are invited to submit a bid for **Repair & Preventative Maintenance of the Hamilton Avenue School Parking Garage Bid for** Greenwich Public Schools. The attached bid specifications detail the requirements we are looking for.

Bidders are urged to read all documents carefully and fill out all information requested. Bids which are incomplete, obscure, or conditional, and which contain irregularities of any kind, will be subject to rejection for failure to comply strictly with these conditions.

Bids must be submitted on the schedule forms attached. All unit prices must be filled in and the cost sheet must be the first page of the submitted bid. Each bid must be submitted and clearly marked with (1) original and six (6) copies of your bid. Faxed emailed or late bids will not be accepted. The original bid and copies must be in a sealed envelope plainly marked with the Vendors name and address and the following information:

Repair & Preventative Maintenance of the Hamilton Avenue School Parking Garage Bid
Opening Date: April 30, 2025
Opening Time: 12:00 p.m.
BID NUMBER: 2529-25

Mandatory Walk-through
Hamilton Avenue School 184 Hamilton Avenue Greenwich, CT 06830
April 14, 2025 @ 10:30 a.m.

The meeting for the bid opening will be held in person at the Greenwich Board of Education 290 Greenwich Avenue, Greenwich, CT 06830 at 12:00 p.m. on April 30, 2025.

Sealed Bids for supplying the above will be received by the Purchasing Department at the above address until 12:00 pm at which time they will be opened and read publicly. All Bidders and other interested people are invited to be present at the opening of these Bids.

Very truly yours,

Eugene H. Watts

Eugene H. Watts

EXHIBIT A

Insurance Requirement Sheet

Insurance Requirements: Before starting and until final completion and acceptance of the work called for in the Contract and expiration of the guarantee period provided for in the Contract, the Contractor and its subcontractors, if any, shall procure and maintain insurance of the types and amounts checked in paragraphs A through F below for all Contract operations.

☒ **A. General Liability, with minimum coverages for combined bodily injury and property damage liability of $2,000,000 general aggregate, $1,000,000 per occurrence including:**

- ☒ **1. Commercial General Liability.**
- ☒ **2. Town as additional insured.**
- ☐ **3. Owners and Contractors Protective Liability (separate policy in the name of the Town).**

☒ **B. Comprehensive Automobile Liability, with minimum coverages of $1,000,000 combined single limit for bodily injury and property damage, including, where applicable, coverage for any vehicle, all owned vehicles, scheduled vehicles, hired vehicles, non-owned vehicles and garage liability.**

☒ **C. Excess Liability, with minimum coverage of $10,000,000 in umbrella form, or such other form as approved by Town Department Head and Risk Management Director.**

☒ **D. Workers' Compensation and Employer's Liability, with minimum coverages as provided by Connecticut State Statutes.**

☐ **E. Professional Liability (for design and other professionals for Errors and Omissions), with minimum coverage of $1,000,000. If the policy is on a claims-made basis, coverage shall be continually renewed or extended for three (3) years after work is completed under the Contract.**

☐ **F. Other (Builder's Risk, etc.):_____.**

☒ **G. CERTIFICATE HOLDER: TOWN OF GREENWICH &The Greenwich Board of Education & Desman, A Division of Desman, Inc.**
((Also fill in on ACORD Certificate of Insurance)
101 Field Point Road, Greenwich, CT 06830.

The **Acord certificate of insurance form** must be executed by your insurance agent/broker and returned to this office. The most current Acord form should be used for insurance documentation purposes. Company name and address must conform on all documents including insurance documentation. It is required that the agent/broker note the individual insurance companies providing coverage, rather than the insurance group, on the Acord form. The Contract number (provided to the awarded Contractor), project name and a brief description must be inserted in the "Description of Operations" field. It must be confirmed on the Acord Form that the Town of Greenwich, The Greenwich Board of Education & Desman, A Division of Desman, Inc. is endorsed as an additional insured by having the appropriate box checked off and stating such in the "Description of Operations" field. **A letter from the awarded vendor's agent/broker certifying that the Town of Greenwich, The Greenwich Board of Education** & Desman, A Division of Desman, Inc. **has been endorsed onto the general liability policy as an additional insured is also mandatory.** This letter **must follow exactly the format provided by the Purchasing Department.** If the insurance coverage required is provided on more than one Acord certificate of insurance, then additional agent/broker letters are also required. Contract development will begin upon receipt of complete, correct insurance documentation.

The Contractor shall be responsible for maintaining the above insurance coverages in force to secure all of the Contractor's obligations under the Contract with an insurance company or companies with an AM Best Rating of A:VII or better, licensed to write such insurance in Connecticut and acceptable to the Risk Manager, Town of Greenwich. For excess liability only, non-admitted insurers are acceptable, provided they are permitted to do business through Connecticut excess line brokers per listing on the current list of Licensed Insurance Companies, Approved Reinsurers, Surplus Lines Insurers and Risk Retention Groups issued by the State of Connecticut Insurance Department.

EXHIBIT A

(SAMPLE ENDORSEMENT LETTER)

AGENT/BROKER
(LETTERHEAD)

(Date)

Eugene H. Watts, Senior Buyer
Purchasing Department
Town of Greenwich/Board of Education
290 Greenwich Avenue – Havemeyer Building
Greenwich, CT 06830

Re: Project Name:_____Contract #_

Dear Mr. Watts:

The undersigned hereby certifies as follows:

(1) I am a duly licensed insurance agent under the laws of the State of **[insert State]** and an authorized representative of all companies affording coverage under the Acord form submitted herewith;

(2) The Town of Greenwich, The Greenwich Board of Education & Desman, A Division of Desman, Inc._has been endorsed as additional insured under the general liability policy no. [insert policy number], issued by **[insert company affording coverage] to [name of insured]**;

(3) The general liability policy referenced in paragraph (2) above meets or exceeds the coverage in Commercial General Liability ISO form CG 00 01 10 01, including contractual liability;

(4) The policies listed in the Acord form submitted to the Town of Greenwich in connection with the above-referenced contract have been issued to the insured in the amounts stated and for the periods indicated in the Acord form; and

(5) The Town of Greenwich shall be given thirty (30) days prior written notice of cancellation, lapse or restrictive amendment (except ten days notice of nonpayment) of the policies listed in the Acord form.

Sincerely,

Authorized Representative for all companies listed in the Acord form

ACORD

CERTIFICATE OF LIABILITY INSURANCE

EXHIBIT A

PRODUCER	THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER, THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.
	INSUREERS AFFORDING COVERAGE
Contract #_____	INSURER A:
	INSURER B:
	INSURER C:
	INSURER D:
	INSURER E:

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OF CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE(MM/DD/YY)	POLICY EXPIRATION DATE(MM/DD/YY)	LIMITS	
	GENERAL LIABILITY				EACH OCCURRENCE	$1,000,000
	COMMERCIAL GENERAL LIABILITY				FIRE DAMAGE (Any one fire)	
	☐ CLAIMS MADE ☒ OCCUR				MED EXP (Any one person)	
	☐_____				PERSONAL & ADV INJURY	
	☐_____				GENERAL AGGRREGATE	$2,000,000
	GENERAL AGGREGATE LIMIT APPLIES PER:				PRODUCTS-COMP/OP AGG	
	☐ POLICY ☐PROJECT ☐ LOC					
	AUTOMOBILE LIABILITY				COMBINED SINGLE LIMIT (Ea accident)	$1,000,000
	☐ ANY AUTO				BODILY INJURY (Per person)	
	ALL OWNED AUTOS					
	ANY PROPRIETOR/PARTNER/EXECUTIVE SCHEDULED AUTOS				BODILY INJURY (Per accident)	
	HIRED AUTOS					
	NON-OWNED AUTOS				PROPERTY DAMAGE (Per accident)	
	☐_____					
	☐					
	GARAGE LIABILITY				AUTO ONLY-EA ACCIDENT	
	☐ ANY AUTO				OTHER THAN AUTO ONLY:	EA ACC
	☐					AGG
	EXCESS LIABILITY				EACH OCCURRENCE	$10,000,000
	☐ OCCUR ☐ CLAIMS MADE				AGGREGATE	$10,000,000
	☐ DEDUCTIBLE					
	☐ RETENTION $					
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY				✕ PER STATUTE	☐ OTHER
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N ☐ (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATION below)				E.L. EACH ACCIDENT	
					E.L. DISEASE-EA EMPLOYEE	
					E.L. DISEASE – POLICY LIMIT	
	Professional Liability					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL PROVISIONS

The Town of Greenwich, The Greenwich Board of Education & Desman, A Division of Desman, Inc._are listed as additional insured for Contract #_____. It is agreed by both parties to Contract #_____that the Contractors insurance will be primary and non-contributory

CERTIFICATE HOLDER	X	**ADDITIONAL INSURED; INSURER LETTER:** __	**CANCELLATION**
Town of Greenwich, The Greenwich Board of Education & Desman, A Division of Desman, Inc. 101 Field Point Road Greenwich, CT 06830			SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OF REPRESENTATIONS

EXHIBIT A

	AUTHORIZED REPRESETNATIVE

Minimum Rates and Classifications
for Building Construction

ID#: 25-3198

Connecticut Department of Labor
Wage and Workplace Standards Division

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number:
Project Town: Greenwich
State#:
FAP#:
Project: Hamilton Avenue School Parking Garage

CLASSIFICATION	Hourly Rate	Benefits
1b) Asbestos/Toxic Waste Removal Laborers: Asbestos removal and encapsulation (except its removal from mechanical systems which are not to be scrapped), toxic waste removers, blasters.**See Laborers Group 7**		
1c) Asbestos Worker/Heat and Frost Insulator	47.06	33.30
2) Boilermaker	48.21	30.01
3a) Bricklayer, Cement Mason, Concrete Finisher (including caulking), Stone Masons	42.61	35.92 + a
3b) Tile Setter	38.81	32.20
3c) Tile and Stone Finishers	32.0	26.69
3d) Marble & Terrazzo Finishers	33.0	25.69
3e) Plasterer	44.52	29.63

As of: March 28, 2025

------LABORERS------

4) Group 1: General laborers, carpenter tenders, concrete specialists, wrecking laborers and fire watchers.	34.5	27.26
4) Group 1a: Acetylene Burners (Hours worked with a torch)	35.5	27.26
4a) Group 2: Mortar mixers, plaster tender, power buggy operators, powdermen, fireproofer/mixer/nozzleman (Person running mixer and spraying fireproof only).	34.75	27.26
4b) Group 3: Jackhammer operators/pavement breaker, mason tender (brick), mason tender (cement/concrete), forklift operators and forklift operators (masonry).	35.0	27.26
4c) **Group 4: Pipelayers (Installation of water, storm drainage or sewage lines outside of the building line with P6, P7 license) (the pipelayer rate shall apply only to one or two employees of the total crew who primary task is to actually perform the mating of pipe sections) P6 and P7 rate is $26.80.	35.5	27.26
4d) Group 5: Air track operator, sand blaster and hydraulic drills.	35.25	27.26
4e) Group 6: Blasters, nuclear and toxic waste removal.	37.5	27.26
4f) Group 7: Asbestos/lead removal and encapsulation (except it's removal from mechanical systems which are not to be scrapped).	37.5	27.26
4g) Group 8: Bottom men on open air caisson, cylindrical work and boring crew.	35.0	27.26
4h) Group 9: Top men on open air caisson, cylindrical work and boring crew.	34.5	27.26

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4i) Group 10: Traffic Control Signalman	20.7	27.26
4j) Group 11: Toxic Waste Removers A or B With PPE	37.5	27.26
5) Carpenter, Acoustical Ceiling Installation, Soft Floor/Carpet Laying, Metal Stud Installation, Form Work and Scaffold Building, Drywall Hanging, Modular-Furniture Systems Installers, Lathers, Piledrivers, Resilient Floor Layers.	39.54	28.68
5a) Millwrights	43.25	29.13
6) Electrical Worker (including low voltage wiring) (Trade License required: E1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	44.0	42.745
7a) Elevator Mechanic (Trade License required: R-1,2,5,6)	66.72	40.035+a+b
-----LINE CONSTRUCTION----		
Groundman	26.5	6.5% + 9.00
Linemen/Cable Splicer	48.19	6.5% + 22.00
8) Glazier (Trade License required: FG-1,2)	41.63	25.80+ a
9) Ironworker, Ornamental, Reinforcing, Structural, and Precast Concrete Erection	45.25	41.27 + a
----OPERATORS----		

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Group 1: Crane Handling or Erecting Structural Steel or Stone; Hoisting Engineer (2 drums or over). (Trade License Required)	55.42	28.80 + a
Group 1a: Front End Loader (7 cubic yards or over); Work Boat 26 ft. and Over	50.79	28.80 + a
Group 2: Cranes (100 ton rate capacity and over); Bauer Drill/Caisson. (Trade License Required)	55.03	28.80 + a
Group 2a: Cranes (under 100 ton rated capacity).	54.09	28.80 + a
Group 2b: Excavator over 2 cubic yards; Pile Driver ($3.00 premium when operator controls hammer)	50.4	28.80 + a
Group 3: Excavator; Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar);Grader Operator; Bulldozer Finegrade. (slopes, shaping, laser or GPS, etc.). (Trade License Required)	49.45	28.80 + a
Group 4: Trenching Machines; Lighter Derrick; CMI Machine or Similar; Koehring Loader (Skooper); Goldhofer.	48.97	28.80 + a
Group 5: Specialty Railroad Equipment; Asphalt Spreader, Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps; Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24 mandrel).	48.22	28.80 + a
Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller.	48.22	28.80 + a
Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer).	47.83	28.80 + a
Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and under mandrel).	47.4	28.80 + a

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Group 8: Mechanic; Grease Truck Operator; Hydroblaster; Barrier Mover; Power Stone Spreader; Welding; Work Boat Under 26 ft.; Transfer Machine; Rigger Foreman.	46.9	28.80 + a
Group 9: Front End Loader (under 3 cubic yards); Skid Steer Loader regardless of attachments; (Bobcat or Similar); Forklift, Power Chipper; Landscape Equipment (including Hydroseeder); Vacuum Excavation Truck and Hydrovac Excavation Truck (27 HG pressure or greater).	46.35	28.80 + a
Group 10: Vibratory hammer; ice machine; diesel and air, hammer, etc.	43.77	28.80 + a
Group 11: Conveyor, earth roller, power pavement breaker (whiphammer), robot demolition equipment.	43.77	28.80 + a
Group 12: Wellpoint Operator.	43.69	28.80 + a
Group 13: Compressor Battery Operator.	42.97	28.80 + a
Group 14: Elevator Operator; Tow Motor Operator (solid tire no rough terrain).	41.52	28.80 + a
Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	41.01	28.80 + a
Group 16: Maintenance Engineer.	40.19	28.80 + a
Group 17: Portable Asphalt Plant Operator; Portable Crusher Plant Operator; Portable Concrete Plant Operator; Portable Grout Plant Operator; Portable Water Filtration Plant Operator.	45.63	28.80 + a
Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (Minimum for any job requiring a CDL license); Rigger; Signalman.	42.57	28.80 + a

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Surveyor: Chief of Party	45.87	28.80 + a
Surveyor: Assistant Chief of Party	42.3	28.80 + a
Surveyor: Instrument Man	40.7	28.80 + a
Surveyor: Rodman or Chainman	35.03	28.80 + a
------PAINTERS (Including Drywall Finishing)------		
10a) Brush and Roller	38.07	25.80
10b) Taping Only/Drywall Finishing	38.82	25.80
10c) Paperhanger and Red Label	38.57	25.80
10e) Blast and Spray	41.07	25.80
11) Plumber (excluding HVAC pipe installation) (Trade License required: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2)	49.58	35.25
12) Well Digger, Pile Testing Machine	37.26	24.05 + a
Roofer: Cole Tar Pitch	45.0	24.85 + a
Roofer: Slate, Tile, Composition, Shingles, Singly Ply and Damp/Waterproofing	43.5	24.85 + a

As of: March 28, 2025

15) Sheetmetal Worker (Trade License required for HVAC and Ductwork: SM-1,SM-2,SM-3,SM-4,SM-5,SM-6)	53.22	46.19
16) Pipefitter (Including HVAC work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4, G-1, G-2, G-8 & G-9)	49.58	35.25
------TRUCK DRIVERS------		
17a) 2 Axle, Helpers	33.16	32.36 + a
17b) 3 Axle, 2 Axle Ready Mix	33.27	32.36 + a
17c) 3 Axle Ready Mix	33.33	32.36 + a
17d) 4 Axle	33.39	32.36 + a
17e) 4 Axle Ready Mix	33.44	32.36 + a
17f) Heavy Duty Trailer (40 Tons and Over)	35.66	32.36 + a
17g) Specialized Earth Moving Equipment (Other Than Conventional Type on-the-Road Trucks and Semi-Trailers, Including Euclids)	33.44	32.36 + a
17h) Heavy Duty Trailer up to 40 tons	34.39	32.36 + a
17i) Snorkle Truck	33.54	32.36 + a
18) Sprinkler Fitter (Trade License required: F-1,2,3,4)	49.98	32.85 + a

As of: March 28, 2025

19) Theatrical Stage Journeyman	25.76	7.34

Welders: Rate for craft to which welding is incidental.

Surveyors: Hazardous material removal: $3.00 per hour premium.

*Note: Hazardous waste removal work receives additional $1.25 per hour for truck drivers.

**Note: Hazardous waste premium $3.00 per hour over classified rate

Crane with 150 ft. boom (including jib) - $1.50 extra

Crane with 200 ft. boom (including jib) - $2.50 extra

Crane with 250 ft. boom (including jib) - $5.00 extra

Crane with 300 ft. boom (including jib) - $7.00 extra

Crane with 400 ft. boom (including jib) - $10.00 extra

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time journeyperson instructing and supervising the work of each apprentice in a specific trade.

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.

Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.

It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.

The annual adjustments will be posted on the Department of Labor's Web page: www.ct.gov/dol. For those without internet access, please contact the division listed below.

The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.

All subsequent annual adjustments will be posted on our Web Site for contractor access.

Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.

Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.

All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

As of: March 28, 2025

~~Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.

As of: March 28, 2025

GREENWICH PUBLIC SCHOOLS

REQUEST FOR BID # 2529-25 DEADLINE: April 30, 2025 12:00 PM.

Repair & Preventative Maintenance of the Hamilton Avenue School Parking Garage Bid
REPLY SHEET (Page 1 of 2)

BIDDER INFORMATION:

STATEMENT OF NON-COLLUSION

In submitting this bid/proposal, the undersigned declares that this is made without any connection with any persons making another bid/proposal on the same contract; that the bid/proposal is in all respects fair and without collusion, fraud, or mental reservation; and that no elected or appointed official of the Town, or any person or entity in the employ of the Town, is directly or indirectly interested in said bid/proposal or in the supplies or work to which it relates, or in any portion of the profits thereof, except as permitted under the Town of Greenwich Code of Ethics.

CODE OF ETHICS

In submitting this bid/proposal, the undersigned further declares and certifies that a) it has not, and will not induce or attempt to induce any Town of Greenwich employee or officer to violate the Town of Greenwich Code of Ethics in connection with its offer to provide goods or services under, or otherwise in the performance of, such contract, and b) if an elected or appointed official or any person in the employ of the Town has a direct or indirect interest in Vendor or any supplier or Subcontractor expected to be involved with the contract, such person or entity is in compliance with the safe harbor procedures established by the Town of Greenwich Board of Ethics or has received an advisory from the Town's Board of Ethics with respect to such involvement. Bidders are hereby notified that the Town's Code of Ethics' definition of a Town Officer includes outside consultants to and agents of the Town in addition to elected and appointed officials and Town employees. The full Code of Ethics can be found on the Town website https://www.greenwichct.gov/682/Board-of-Ethics.

The undersigned further understands that the above declarations are material representations to the Town of Greenwich made as a condition to the acceptance of the bid/proposal. If found to be false, the Town of Greenwich retains the right to reject said bid/proposal and rescind any resulting contract and/or purchase order and notify the undersigned accordingly, thereby declaring as void said bid/proposal and contract or purchase order.

Relevant provisions of the Town's Code of Ethics are:

Section 2. **DEFINITIONS**. (1) Indirect interest, without limiting its generality, shall mean and include the interest of any subcontractor in any prime contract with the Town and the interest of any person or his immediate family in any corporation, firm, or partnership which has a direct or indirect interest in any transaction with the Town. (2) Substantial financial interest shall mean any financial interest, direct or indirect, which is more than nominal, and which is not common to the interest of other citizens of the Town. (3) Town officer shall mean and include any official, employee, agent, consultant, or member, elected or appointed, of any board, department, commission, committee, legislative body, or other agency of the Town. (4) Transaction shall mean and include the offer, sale, or furnishing of any real or personal property, material, supplies, or services by any person, directly or indirectly, as Vendor, prime contractor, subcontractor, or otherwise, for the use and benefit of the Town for a valuable consideration, excepting the services of any person as a Town officer.

Section 3. **GIFTS AND FAVORS**. No Town officer or his immediate family shall accept any valuable gift, thing, favor, loan, or promise that might influence the performance or nonperformance of his official duties.

Section 4. **IMPROPER INFLUENCE**. No Town officer having a substantial financial interest in any transaction with the Town or in any action to be taken by the Town shall use his office to exert his influence or to vote on such transaction or action.

By signing below, the undersigned acknowledges reviewing and understanding the Non-Collusion and Code of Ethics statements contained herein and confirms compliance with the contents:

AUTHORIZED SIGNATURE: _____

PRINT NAME: _____

RESPONDENT'S COMPANY NAME:_____

GREENWICH PUBLIC SCHOOLS

REQUEST FOR BID # 2529-25 DEADLINE: April 30, 2025 12:00 p.m.

Repair & Preventative Maintenance of the Hamilton Avenue School Parking Garage Bid

BIDDER INFORMATION:

BIDDER'S COMPANY NAME _____

ADDRESS _____

_____

TELEPHONE # _____ **FAX #** _____

E-MAIL ADDRESS _____

WEB SITE _____

AUTHORIZED SIGNATURE _____

PRINT NAME _____

TITLE _____

STATE OF CT TAXPAYER ID # _____

FEDERAL TAXPAYER ID # _____

INCORPORATED IN THE STATE OF _____ **Corporate Seal** ☐**Yes** ☐**No**

AWARD/CONTRACT SIGNATURE

The Bidder shall indicate below, the full name, title, and the complete mailing address of the authorized person (i.e., **officer of the company**) who will sign the contract (if applicable) for this procurement:

_____

_____

_____

_____

_____

_____

_____

AUTHORIZATION AGREEMENT FOR DIRECT PAYMENTS (ACH CREDITS)

Vendor Information

Company Name:

Company Tax ID Number:

I (we) hereby authorize Town of Greenwich to initiate ACH credit entries to my (our) account indicated below at the depository financial institution named below, hereafter called DEPOSITORY. I (we) acknowledge that origination of ACH transactions to my (our) account must comply with the provisions of U.S. law.

Bank Details

Bank/Depository Name:

Routing Number:

Account Number:

Remittance Details

Email address for Remittance Advice:

Contact Name for Accounts Receivable:

Telephone Number for Accounts Receivable:

This authorization is to remain in full force and effect until the Town of Greenwich has received written notification from me (or either of us) of its termination in such time and in such manner to afford Town of Greenwich and DEPOSITORY a reasonable time to act on it.

Name(s) Printed:

Date: Signature:

SECTION 00100
INFORMATION TO BIDDERS

Unit 1 - Bid Requirements, Contract Forms, Conditions of Contract, Unit 2 - Technical Specifications and the Drawings compose the Contract Documents.

The following definitions apply to all contract documents:

'**Owner**' shall mean **"Greenwich Public Schools"**

'**Engineer**', '**Architect**' & '**Consultant**' shall mean **Desman** or other Professional Engineering firm/Engineer retained by the owner.

Proposals to be entitled to consideration must be made in accordance with the following instructions:

A. BID PROPOSALS:

1. Bid proposals shall be made upon the form provided herein, and all blank spaces shall be fully filled; numbers shall be stated both in writing and figures; the signature shall be in long hand; and the completed form shall be without interlineations, alteration or erasure.

2. Proposals shall be addressed to and delivered in care of Mr. Eugene H. Watts, Manager of School Procurement, Greenwich Public Schools, 290 Greenwich Avenue, Greenwich, Connecticut 06830 no later than **12:00 P.M. on Wednesday, April 30, 2025,** enclosed in an opaque sealed envelope, marked "**Bid Proposal**", and bearing the title of the work (Repair & Preventive Maintenance of the Hamilton Avenue School Parking Garage, Bid No. 2529-25) and the name of the bidder.

3. **A mandatory pre-bid conference will be held on Monday, April 14, 2025 at 10:30 A.M. at the project site.**

4. Each proposal shall be properly signed as follows:
   When a CORPORATION with the name of the corporation, signature of an officer or other person properly authorized to enter into obligations for it and his title.
   When a PARTNERSHIP with name of partnership and signature of one of the partners.
   When SOLE PROPRIETORSHIP with his signature.

B. SCHEDULE OF CONSTRUCTION:

1. Execution of the Contract Work will involve consideration for allowing the Owner to carry on many of his normal functions. The Contractor shall perform his work within normal working hours of 8AM through 6PM Monday through Friday. Contractor shall coordinate all construction activates with the Owner. Work on weekends and after working hours on weekdays may be allowed at the discretion of the Owner. Normal flow of traffic shall be maintained through the parking garage at all times during construction.

2. The successful Contractor, prior to start of work, shall submit a schedule of activities for each day during the entire repair period for approval by Owner and Engineer. Phasing plans shall also be submitted showing the suggested phasing of the work for the entire duration of the project. The schedule shall include drawings showing each repair area for each phase of the project.

C. STARTING AND COMPLETION TIME:

1. Work shall start within seven days after the notification of the award of the contract.

2. All work as per the contract documents shall be completed as follows within 60 Calendar Days.

D. GENERAL:

1. Should a bidder find discrepancies in, or omissions from the drawings or documents, or should he be in doubt as to their meaning, he should at once notify the Engineer, who will send a written instruction to all bidders. Neither Owner nor Engineer will be responsible for any oral instructions. Lack of such notification to the Engineer will indicate that the bidder considers the documents to be sufficiently complete to prepare a bid for complete installation including all necessary accessory parts.

2. The drawings and specifications shall be considered to be cooperative and anything appearing in the specifications which may not be indicated on the plans, or vice versa, shall be considered as part of the contract and must be executed by the contractor the same as though indicated by both.

3. Before submitting a proposal, bidders should carefully examine the drawings and specifications: Check all schedules, visit the site, fully inform themselves as to all existing conditions and limitations and shall include in the proposal a sum to cover the cost of all items included in that part.

4. Any addenda issued during the time of bidding shall be taken into account in preparing proposals, and shall become a part of the contract documents.

E. MISCELLANEOUS:

1. All (local, state, and federal) laws, codes, ordinances, and regulations pertaining to this class or type of construction shall be obeyed in regard to preparation of bids, letting of contracts, and complete installation of work.

2. Wherever in the contract documents, a particular article, material, device, form of construction, fixtures, etc., is shown or specified, such article, material, device, form of construction, fixture, etc., shall be known as standard. All PROPOSALS SHALL BE BASED ON STANDARDS SPECIFIED, and where two or more are named, bidders may bid on any so named. The Contractor is responsible for any extra cost due to changes required by substitutions or selection of any other than the first named product.

3. SUBSTITUTIONS for standards may be bid ONLY AS ALTERNATES, and written approval secured from the Engineer prior to award of the Contract.

F. CONSTRUCTION CONTRACT ADMINISTRATION:

l. Bidders shall furnish the following information with the submission of the Bid:

   a. List of Sub-Contractors
      1) Division of Work
      2) Amount of Sub-Contract
      3) Firm Name
      4) Address
      5) Telephone Number
      6) Representative

   b. List of Major Material Suppliers:
      1) Division of Work
      2) Amount of Material Purchase Order
      3) Firm Name
      4) Address
      5) Telephone Number
      6) Representative

2. Contract Cost Breakdown:

Successful bidder shall furnish the Cost Breakdown on AIA Form G-703 at the time of the signing the contract.

3. Application for Payment:

a. The Contractor shall furnish, free of charge, the necessary blank copies of AIA Form G-702 and G-703 for his applications for Payment.

b. Partial payments made as the work progresses shall in no way be considered as an acceptance of any portion of the labor or material embraced in the contract.

c. Material delivered at the site and approved by the Engineer and included in a certified estimate for partial payment shall become the property of the Owner and in no case shall such materials be removed from the site. However, if such material is stolen, destroyed or damaged by casualty before being used, the contractor will be required to replace it at his own expense. Storage of materials shall comply with the manufacturer's instructions or recommendations.

d. Contractor's requests for payment shall normally be submitted by the Contractor once a month.

e. During the course of work, a retainage of ten percent (10%) percent will be withheld from work performed.

f. During the course of construction, payment on estimates approved by the Engineer and filed with the Owner shall be made within 30 days.

g. All monies paid on account to any contractor for materials or labor shall be regarded as funds in his trust for payment of any and all obligations relating to his contract and no such amount of monies shall be permitted to accrue to the contractor until all such obligations are satisfied. Evidence, satisfactory to the Owner, may be required to show that all current obligations relating to this work are satisfied before releasing any payment due on the work. Before payment of the final estimate, each contractor shall file an affidavit with the Owner, stating that monetary obligations relating to lienable items in connection with this work have been fulfilled. When the major portion of the project is substantially completed and occupied, or in use, or otherwise accepted and there exists no other reasons to withhold retainage, the retained percentages held in connection with such portion will be released from escrow and paid to the

Contractor, withholding only that amount necessary to assure completion. The balance of funds will be paid to the Contractor within thirty days from the date of completion and after acceptance by the Engineer and Owner. Provided, however, that nothing in this Contract shall be construed to create an obligation or incur a liability against the Owner in excess of the encumbrances issued to support this Contract.

h. Payment for materials stored, but not installed, may require the Engineer to visit the Contractors place of storage for verification of all items on the Contractor's certificate. He shall certify that the items are in agreement with the specifications, and approve their incorporation into the project.

G. PROGRESS SCHEDULE

The progress schedule required by the owner shall be based on starting construction upon receiving the owner's authorization to proceed and completion of the project as stipulated in the Contract. After contract is awarded, a meeting shall be held at the job before work is started, to be attended by representative of the General Contractor and all affected subcontractors, the Engineer, and the Owner's Representative to work out a definite schedule to be followed for starting and completing each Phase of the work and provide information for Progress Schedule.

H. PURPOSE AND INTENT

In order to assist those invited to submit a proposal and their prospective subcontractors, the following sources are available for consultation:

Mr. Jack Caliendo - Desman - Associate Vice President (212) 686-5360

jcaliendo@desman.com

I. BID AND PERFORMANCE BOND

Prior to signing the contract, the Owner requires that the selected contractor secure and post a Performance and Payment Bond in the amount of 100% of the contract price, and in a form approved by the Owner. All such bonds shall be issued by a surety acceptable to the Owner.

The contractor is also required to submit a Five-Year Corrective Certificate (Warranty) for all the work performed under this Contract.

END OF SECTION

SECTION 00200
INSTRUCTION TO BIDDERS

The "Instruction to Bidders", AIA Document A701-2018, is a part of this Contract, and is incorporated herein as fully as if here set-forth.

MODIFICATIONS TO INSTRUCTIONS TO BIDDERS

ARTICLE 2 BIDDER'S REPRESENTATION

Add:

2.1.6 Bidders must visit the site and take such other steps as may be necessary to ascertain the nature and location of the Work, and the general and local conditions which can affect the Work or cost thereof. In addition, bidders shall examine all Contract Documents in relation to the site, the existing structures and conditions of the ground, the obstacles which may be encountered and all other conditions having a bearing upon the performance of the Work, superintendence of the Work, requirements for heat, time of completion and all other relevant matters. Failure to take such steps shall not relieve bidders from responsibility for estimating properly the difficulty or cost of successfully performing the Work. The Owner shall assume no responsibility for any understanding or representations concerning conditions made by any of its agent, representatives or employees prior to the execution of the Contract, unless in the Contract Documents.

2.1.7 The submission of a bid shall be taken as prima facie evidence of compliance with this Article 2. To visit the site during regular business hours, telephone Mr. Daniel Watson, Director of School Facilities at 203-625-7450 and make an appointment. Upon arrival at the site, state purpose before examining existing conditions.

ARTICLE 3 BIDDING DOCUMENTS

3.1.5 Add the following: "However, incomplete sets of bidding documents will be issued upon:

1. Written request in duplicate. Letters must state the portion of the Bidding Documents requested, that all reproduction costs and shipping charges will be borne by the requesting bidder, and that the requesting bidder is responsible for any errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2. Such documents will be returned to Engineer within 10 days after bids are due."

3.2 Interpretation or Correction of Bidding Documents

Change the first sentence of 3.2.3 to read: Any interpretation, correction or change of the Bidding Documents will be made by Addenda, which will be filed with the Drawings and Specifications, and mailed to persons who obtained complete sets of Bidding Documents.

To the end of Article 3.2.3 add the sentence, "The bidder has the responsibility of reviewing the bidding Documents on file prior to submitting a bid to determine what Addenda, interpretations, corrections or changes have been made."

3.3 Substitutions

Delete Paragraph 3.3.1; substitute:
"3.3.1 The materials, products and equipment are identified in the specifications or described on the Drawings by one or more of the following methods:

1. Manufacturer's name
2. Brand Name.
3. Catalog designation.
4. Quality Standards.
5. Performance standards.
6. Generic names to denote accepted standards in trade."

Amend the first sentence of 3.3.2 to read, "No substitutions or equals will be considered prior to receipt of Bids unless...."

Amend the third sentence of 3.3.2 to read, "A statement, signed by an authorized person of the bidder, setting forth any deviations from the item specified, any changes in other materials, equipment or work that incorporation of the substitute or 'equal' would require shall be included."

ARTICLE 6 POST BID INFORMATION

6.3 Submissions

Delete Article 6.3.3 and Substitute:

"6.3.3 Prior to the award of the Contract, the Engineer will notify the Bidder in writing if either the Owner or the Engineer, after due investigation, has reasonable and substantial objection to any person or organization on such list."

END OF SECTION

SECTION 00400
CONTRACTOR'S QUALIFICATION STATEMENT

The Owner requires all prospective contractors to complete this statement in advance of consideration of application to bid or as a qualification statement in advance of award of contract.

The undersigned certifies under oath the truth and correctness of all statement and of all answers to questions made hereinafter.

SUBMITTED TO: **Greenwich Public Schools**
290 Greenwich Avenue
Greenwich, Connecticut 068830

SUBMITTED BY:

Name:

Address:

l. Type of Organization (Check One):
Corporation __ Partnership __ Individual __ Joint Venture __Other.

2. How long has the Organization been in business as a general Contractor?

3. How many years has the organization been in business under its present business name?

4. Under what other or former name(s) has the organization operated?

5. If a corporation answer the following:

a) Date of Incorporation.

b) State of incorporation.

c) President's name.

d) Vice President's name.

e) Secretary's name.

f) Treasurer's name.

6. f individual or partnership answer the following:

a) Date organization.
b) Name and address of all Partners.

7. If other than corporation or partnership, describe organization and name principals:

8. What geographical area does the organization normally do business in?

9. List experience with project the size and nature of the proposed job.

10. What similar projects does the organization currently have under way?

11. List projects completed during the past three to five years.

12. Have you ever failed to complete any work awarded? If so, why?

13. How many Owners have contracted with the firm for repeat business?

14. Has any officer or partner of your organization ever been an officer or partner of another organization fail to complete a construction contract? yes no

    If so, state circumstances:

15. What percentage of work is done with your workforce? %
    List trades below.

16. What is the size of your staff?

17. Does the firm have special in-house experts such as trained personnel in estimating, purchasing and computer services?

18. How are work crews organized?

19. How are your employees trained to perform their duties?

20. Trade References:

21. Bank References:

22. Name of Bonding Company and name and address of agent:

23. Provide two copies of certificates of insurance that evidences protection from claims under Workmen's Compensation and claims for damage which may arise from operations under his control.

24. Attach Statement of Financial Condition; including contractor's latest regularly dated financial statement as balance sheet.

25. Attach License indicating that the Company is registered to do work in the State of Connecticut.

Name of firm preparing statement:

_____

_____

_____

Signature:_____

Title: _____

Date: _____

SECTION 00500
CONTRACT BETWEEN OWNER and CONTRACTOR - AIA DOCUMENT A101

The "Standard Form of Agreement Between Owner and Contractor," AIA Document A101 - 2017, is part of this contract and is incorporated herein as fully as if here set forth.

SECTION 00800
GENERAL CONDITIONS

The General Conditions of this bidding is for the American Institute of Architects' Document A101, "Standard Form of Agreement Between Owner and Contractor", 2017 Edition, Articles 1 through 15 hereinafter referred to as the "AIA Document A201 - General Conditions of the Contract for Construction", and is incorporated herein as if here set forth.

SUPPLEMENT TO THE GENERAL CONDITIONS

1. The Supplementary General Conditions

The supplementary General Conditions contains changes and additions to the AIA General Conditions. Where any part of the AIA General Conditions is modified or voided by the Supplementary General Conditions, the unaltered provisions shall remain in effect.

2. Amendments by the Supplementary General Conditions:

ARTICLE 3 - CONTRACTOR

Add the following paragraph 3.9.4:
The superintendent shall be satisfactory to both the Engineer and the Owner, and shall not be changed except with the consent of the Engineer and Owner, unless the superintendent proves to be unsatisfactory to the Contractor and ceases to be in his employ.

Add the following paragraph 3.11.2:
The Contractor shall maintain one complete set of Drawings (white prints) and specifications, an accurate record of the installation of all materials and systems covered by the Contract. The record shall indicate the exact location and amount of all repair work. If the Drawings do not appear complete, accurate, and up to date, the payment request shall not be accepted by the Engineer. The Contractor's Engineer shall be concerned merely with procedural compliance and shall not check or verify an item or dimension or the Drawings. The completed set of "record" Drawings must be delivered to the Engineer before requesting final payment.

ARTICLE 4 - ARCHITECT

4.2 ADMINISTRATION OF THE CONTRACT

Add the following paragraph to 4.2.3:

The Engineer will have authority to reject Work which does not conform to the Contract Documents. The Engineer will have authority to require special inspection or testing of the Work.

However, neither the Engineer's authority to act under this Subparagraph nor any decision made by him in good faith either to exercise or not to exercise such authority, shall give rise to any duty or responsibility of the Engineer to the Contractor, any Subcontractor, any of their agents or employees, or any other person performing any of the Work. Any Action requiring additional cost to the Owner shall be approved by the Owner prior to taking such action.

ARTICLE 11 – INSURANCE AND BONDS

Add the following to paragraph 11.1.1:
The insurance required by Subparagraph 11.1.1 shall be written for not less than any limits of liability as follows or required by law, whichever is greater:

1. See attached Addendum to General Conditions.

2. The Contractor's insurance certificates must name **Desman** as additionally insured.

ARTICLE 16 OTHER CONDITIONS OR PROVISIONS

16.1 DEFINITIONS

16.1.1 "Approved Equal." Approved by the Engineer.

16.1.2 "Proposal". The form which sets forth a Contract Amount based on unit and Lump sum prices of the work and the alternates, if any.

16.1.3 "Bulletin". Letter or form issued by the Engineer after the award of the Contract requesting a change or amendment of the Contract Documents.

16.1.4 "Subcharge Order". Letter or form issued by the Contractor authorizing changes in the Contract Documents when signed by the Contractor.

16.1.5 "Reasonable Time". Whenever a reasonable time is specified in any of the Contract Documents, the time allowed shall be seventy-two (72) hours, weekends and holidays excluded, unless otherwise specifically

provided.

16.1.6 “Notice”. Any written notice to the Owner shall be delivered by the Contractor to the Owner. Written notice to the Contractor shall be deemed to have been duly served if delivered in person to an officer or any other official of the Contractor or if delivered at or sent by registered or certified mail to the last business address of the Contractor.

16.1.7 “Subsidiary”. A subsidiary is a company whose stock is at least 50 percent owned or controlled by another company.

16.2 OCCUPATIONAL SAFETY AND HEALTH ACT

16.2.1 The Contractor shall comply with all safety and health laws and regulations including, but not limited to, provisions, and requirements of the Occupational Safety and Health Act of 1970, as amended, and/or the Construction Safety Act of 1969, as amended (whichever is applicable) and with all most recent applicable laws, ordinances, rules, regulations and orders of any public authority having jurisdiction and safety of persons or property or to protect them from damage, injury or loss.

He shall erect and maintain, as required by existing conditions and progress of the Work, all reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying owner and users of adjacent utilities. Contractor shall assure that all of his Subcontractors also conform to all health and safety laws and regulations.

16.3 FIRE PROTECTION

The contractor shall provide methods and equipment for protecting the building, all materials and personnel from fire damage prior to starting work. Methods and equipment are subject to approval by the local Fire Department.

16.4 JOB MEETINGS

The Contractor shall schedule job progress meetings between himself, the Engineer and major subcontractors and notify the Owner of the time and place of the meeting.

16.5 TEMPORARY LADDERS, RUNWAYS, HOISTS

16.5.1 The Contractor shall furnish and maintain all equipment such as temporary ladders, ramps, scaffolds, hoists, runways, derricks, etc., as required for the proper execution of their work.

16.5.2 All such apparatus, equipment and construction shall meet all requirements of all laws and regulations, including, but not limited to, labor laws and other State or Local laws applicable thereto.

16.6 BRACING, SHORING AND SHEETING

16.6.1 The Contractor shall provide all shoring, bracing, sheeting required for safety and proper execution of the Work.

16.7 DAMAGE

Any work damaged by failure to provide protection above required shall be removed and replaced with new work at the Contractor's expense.

16.8 SIGNS

No signs shall be permitted on the site without the approval of the Owner.

16.9 FIRE REGULATIONS

Fire protection and prevention during the construction period shall be in accordance with all laws and regulations, including, but not limited to, the latest N.F.P.A. Regulations, OSHA and Town of Greenwich and State of Connecticut requirements.

END OF SECTION

Section 00900

CERTIFICATE OF FIVE-YEAR CORRECTIVE PERIOD

Date of Issuance_____THIS IS TO CERTIFY THAT, In accordance with the terms of a contract executed the _____ _____day of _____, 20_____ by and between _____ Contractor, and _____Owner, for the five year period for correcting work and materials found to be defective or not in accordance with the Contract Documents as stipulated in the Requirements (Part "2m" of Section 01020 - Special Conditions). This contract will expire on the _____day of _____ 20____. The status of account under the above contract is as follows:

Original Contract Sum ..... $_____

Additions ..... $_____

Original Sum plus Additions ..... $_____

Deductions ..... $_____

Final Contract Sum ..... $_____

Total certified to the Owner ..... $_____

Leaving not yet certified ..... $_____

_____
DESMAN INC.

The Contractor, having examined the above Certificate, finds it correct and acknowledges receipt, upon the _____ day of _____ 20_____, of said certificate.

_____ CONTRACTOR

BY _____

NOTE: Work to be corrected within this period does not cover any normal maintenance work which has been abused or neglected by the Owner or his successor. The issuance of this Certificate and its acceptance are his without prejudice to any other rights of the Owner under their Contract.

SECTION 01010
SUMMARY OF WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 INTENT OF PLANS AND SPECIFICATIONS

A. The intent of the Plans and Specifications is to describe The Work which the Contractor undertakes to do, in full compliance with the Contract, and it is understood that the Contractor will furnish, unless otherwise provided in the Contract, all materials, machinery, equipment, tools, supplies, transportation, labor, and all other incidentals necessary to the satisfactory prosecution and completion of the Work. The Plans and Specifications are complementary, and what is called for by either is as binding as if called for by both.

B. The Special Conditions shall control where in conflict with the Standard Specifications. However, such portions of the Standard Specifications not in conflict or not rendered meaningless by the Special provisions shall remain in full force and effect and be binding on the parties hereto.

C. In the event the Contractor discovers any error or discrepancy in the Contract Documents, he shall immediately call upon the Engineer for his decision. The Engineer shall then make such corrections and interpretations as may be deemed necessary for the fulfillment of the intent of the Specifications, Special Provisions, Plans and other Contract Documents, as construed by him and his decision shall be final.

1.03 SUMMARY OF WORK

A. General Mobilization: This work consists of all labor, materials, tools and equipment required for setting-up general plant, storage/staging areas and facilities required by State Laws and City Ordinances; and the general mobilization of equipment required for the completion of the work shown on the Contract Documents. The cost of this item shall include all permits and fees required to perform the project, unless otherwise noted in the Contract Documents, and all expenses for the demobilization after the work has been

completed. If a building permit is required, it will be the contractor's responsibility to get the necessary permit to perform the repair work, unless noted otherwise in the documents. This work shall also include the following items:

1. Erection and maintenance of pedestrian and sidewalk protection. Safety outriggers will need to be installed along the edges of the bridge.

2. Coordinate and assist the security and property management personnel in respect to the security of the parking facility during the repair work.

Electricity (power) and water required for the completion of the work shall be furnished by the Owner at existing fixtures or outlets. (The Agent will not provide any temporary pipes, cables, etc.) The contractor shall provide temporary lighting in the work areas, as required, during the restoration work. If the existing capacity is insufficient for the contractor's use, the contractor is responsible for supplementing existing capacity as needed.

B. Abbreviated Written Summary: Briefly, without limitation the work can be summarized as follows:

1. Removal of deteriorated concrete.

2. Partial depth and overhead slab repairs.

3. New Reinforcement.

4. Drainage repairs.

5. Electrical Upgrades.

6. Sealant replacement.

7. Stone repairs.

8. Miscellaneous repairs.

The contractor shall furnish, install, maintain, relocate and remove all signs, barricades, cones, warning lights, and other safety control devices and temporary signage required for the proper execution of the project. The Engineer and the Agent shall review the safety control device placement before work begins and also prior to the beginning of work on any subsequent construction stages. Any deficiencies in the location or arrangement of devices shall be corrected by the contractor before starting work.

At other locations of repair areas, the contractor shall provide adequate protection systems, as required, for the existing mechanical, plumbing and electrical installations to remain in-place.

1.04 EXISTING CONDITIONS

A. The Contractor acknowledges that he has inspected the existing site and has familiarized himself with any and all difficulties that may exist.

B. No claim for additional compensation or extension of time will be allowed by the Owner because of lack of Contractor's full knowledge of existing conditions or difficulties attending the execution of this Contract.

C. Contractor shall verify all existing dimensions, elevations and conditions shown on drawings. Notify the Owner in writing of any discrepancies found before proceeding with the work.

1.05 PROTECTION OF PROPERTY

A. Existing Surfaces and Facilities:

1. Take positive action to protect all existing surfaces and facilities from any damage resulting from construction operations unless modifications to the surfaces or facilities are required as part of the contract.

2. Protect all paving, landscaping, and utility facilities from damage caused by mobile and stationery equipment, including vehicles delivering materials to the site.

3. Protect all finished surfaces through which materials are handled against any possible damage resulting from the conduct of the work by all trades.

B. Utilities: Protect existing utilities, including catch basins, and cause no interruptions of service.

C. Detection of Damage: A damage survey will be made prior to the start of work. The survey will be jointly conducted by the Contractor, the Engineer and the Owner.

D. Repair of Damages: As soon as possible after discovery of any damage by construction to surfaces or facilities which are to remain in place, repair such damage. All repairs shall result in conditions equal in strength to the previous conditions. All repaired surfaces shall be identical in color and texture to the adjacent existing materials, except that where materials cannot be matched, refinish the surrounding area to give a uniform appearance acceptable to the Owner.

1.06 CLEANING AND RUBBISH REMOVAL

A. Carry out periodic cleaning and rubbish removal to leave premises free from debris, paper, rubbish and discarded material in excess of a truck load at end of each week. Permit no burying of rubbish, paper and discarded building material.

1.07 FIRE PROTECTION

A. Take adequate precautions against fire throughout all operations. Flammable material shall be kept at an absolute minimum and shall be properly handled and stored. Except as otherwise provided herein, do not permit fires to be built or open salamanders to be used in any part of the work.

B. Construction practices, including cutting and welding and protection during construction, shall be in accordance with the published standards of the Factory Insurance Association and the National Fire Protection Association. Provide approved non-freeze portable fire extinguishers distributed about the project.

C. Store gasoline and other flammable liquids in Underwriter's Laboratories listed safety containers in conformance with the National Board of Fire Underwriter's recommendations. Storage, however, shall not be within the building.

1.08 QUANTITIES

A. Where technical specifications refer to any material, item, assembly, system, component or the like in singular, such reference shall be taken in the plural where required in more than one location and the correct numbers of items shall be provided by the Contractor at each location at no additional cost to the Owner.

1.09 SECURITY

A. The General Contractor shall be solely responsible for the security of all materials used in the work and for all work in progress including all tools and plant.

1.10 ENGINEERING

A. The Contractor, at his own expense, shall do all engineering required for establishing grades, lines, levels, dimensions and reference points for all trades; shall be responsible for maintaining bench marks and other survey marks, and shall replace as directed, any bench marks which have been disturbed or destroyed.

B. The Contractor shall pay for the services of an independent registered land surveyor to do the engineering required to initially lay out the work. The surveyor shall not be a regular employee of the Contractor.

C. The Contractor shall provide the Owner with a certificate, signed by the above surveyor, certifying that the location of the building and the principal lines, levels and dimensions of the building are accurately established in accordance with the Drawings.

D. The Contractor shall compare all grades, lines, levels, and dimensions as shown on the Drawings and actual site conditions, and shall promptly report to the Architect, before commencing work, any inconsistencies he may discover.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01020
SPECIAL CONDITIONS

1. GENERAL

All contract documents apply to work of this section.

2. SPECIAL CONDITIONS

A. Examination of the Site:

All contractors submitting proposals for this work shall first examine the site and all conditions thereon. All proposals shall take into consideration all such conditions as may affect the work under this contract.

B. Grades, Lines, Levels and Surveys:

1. All grades, lines, levels and bench marks shall be established and maintained by the General Contractor who shall be responsible for same.

2. Verify all grades, lines, levels and dimensions, as shown on the drawings, and report any errors or inconsistencies discovered in the above to the Engineer before commencing work.

C. Progress Charts:

1. As soon as practical (not more than 7 days) after the award of the contract, the Contractor shall furnish progress charts to the following:
   a. Owner

   b. Project Manager

   c. Job Superintendent

2. May be bar type or CPM charts

3. Revise charts as work progress deviates from chart schedule or when requested by the Engineer.

D. Field Measurements:

The General Contractor shall take measurements in the field to verify or supplement dimensions indicated on drawings and shall be responsible for accurate fit of specified work.

E. Protection:

1. The Contractor shall install and maintain protection to slab attachments such as sprinkler lines, ventilation ductwork and fans etc. prior to concrete removal.

2. Any electrical conduit and wiring work in the work areas is to be performed by the Contractor.

3. The Contractor will be held responsible for all his work and materials provided for by the plans and specifications until the work is completed and accepted.

F. Ventilation:

1. The General Contractor shall provide effective ventilation of the structure throughout the construction period.

2. The ventilation shall be under control to avoid excessive rates of dust.

G. Lawful Fees:

All contractors shall obtain and pay for all permits, licenses, certificates, inspections or other legal fees both permanent or temporary which are required for the execution of his contract.

H. Weather Protection:

1. All contractors shall at all times provide protection against weather so as to maintain their work, materials, apparatus, and fixtures free from injury or damage. At the end of the day's work, all new work likely to be damaged shall be covered.

2. During cold weather the Contractor shall protect all work from damage.

3. Any work damaged by failure to provide above protection shall be removed and replaced with new work at the Contractor's expense.

4. In cold weather, contractor shall provide cold weather protection and heating for proper installation of waterproofing elements as required by the material manufacturers.

I. Project Sign:

1. No signs or advertisements will be allowed to be displayed without the approval of the Owner.

2. The general contractor may erect one painted sign as approved by the engineer, giving the names and addresses of: (1) the Project, (2) the Owner (3) Operator (4) the Engineer and (5) the Prime Contractors.

3. The Owner shall approve the size, color, lettering and location of the sign.

4. The above sign shall be the only sign or advertisement displayed on the building or site.

J. Work in Existing Garage:

1. The Contractor shall be responsible for all work relating to all trades and shall remove, cutoff and cap, rewire or re-pipe existing electrical, plumbing, heating and ventilating lines and materials as required.

2. The Contractor shall furnish and install all temporary dustproof partitions or barriers, cover all supply and exhaust grilles, and hang dust cloths and drapes as required to protect the garage portions designated for parking, and any and all affected areas of the existing building from construction dirt and debris. The contractor is responsible for preventing the spread of construction dirt and debris into all areas outside the designated construction areas.

3. Wherever demolition and cutting work has occurred, or where existing surfaces and materials of items or equipment have been damaged or disturbed as a result of this contract, the said surfaces and areas shall be carefully closed up, patched and finished, and materials of items or equipment shall be repaired, restored or replaced as required to completely restore all such surfaces, areas, materials, etc. All surfaces patched and restored shall match the existing surrounding surfaces and they shall be completely and properly finished.

4. The contractor is to provide protection between each phase of work and as directed by the Owner. The contractor is to submit shoring plans, stamped by an Engineer licensed in the State of New York to Desman for approval.

K. Restoration:

Where existing properties, streets, paving, curbs, etc. are removed or damaged as a result of work operations, the responsible contractor shall restore the foregoing items to match the original conditions or as required by local authorities.

L. Entry:

The General Contractor shall pay the cost of repair or replacement from theft or damage to existing equipment, material or work due to negligence by the General Contractor in securing the project site and adjacent areas affected by the contractor's operations.

M. Guarantees:

Work guaranteed for a period greater than that described in the General Conditions shall have a written guarantee. The guarantee will be as described in the related specification section governing that work or elsewhere in the specification. The guarantee shall be submitted prior to final payment for the project. Unless otherwise noted all repair work shall be guaranteed free from defects in material and workmanship for a period of <u>five years from the date of final completion</u>.

N. Clean Up:

1. During construction the Contractor shall do the following:

   a. Oversee cleaning and ensure that the building and grounds are maintained free from accumulations of waste materials and rubbish.
   b. At as many intervals as required during the progress of the work, clean up work area and dispose of waste materials, rubbish and debris.

   c. Provide one container for use by each subcontractor for collection of waste materials, rubbish and debris.

d. Do not allow waste materials, rubbish and debris to accumulate and become an unsightly or hazardous condition.

e. Legally dispose of all waste materials in public or private dumping areas.

Schedule cleaning operations so that dust and other contaminants resulting from the cleaning process will not fall on wet, newly installed surfaces and materials.

The Work will be competing with an operational public garage, therefore clean up must be complete at the end of each work day in order to minimize interruption with garage operations.

2. During final cleaning, the Contractor shall do the following:

a. Use experienced workmen, or professional cleaners for final cleaning.

b. At completion of construction and just prior to acceptance or occupancy, conduct a final inspection of exposed interior and exterior surfaces.

c. Remove grease, dust, stains, labels, fingerprints, and other foreign materials from interior and exterior surfaces.

d. Repair, patch, and touch-up marred surfaces to match adjacent finishes.

e. Wash both surfaces of all existing glass.

f. Clean any ductwork, light fixtures or piping exposed to construction dust.

O. Jobsite Safety:

Caution shall be exercised by the Contractor at all times for the protection of persons and property and all safety regulations and other provisions of applicable Federal, State and local laws, Building and Construction codes, including the requirements of the Occupational Safety and Health Administration shall be observed.

The Plans do not include standards or guidelines for construction safety. The Contractor shall be responsible for the adequacy and safety of all construction methods and the safe prosecution of the Work, including but not limited to forms, falsework, scaffolding, protective barricades, protective rails and warning lights. It is expressly stipulated that any examination and/or approval by the Engineer of the contractor's plans for such items as well as for any other items needed for the prosecution of the work will cover only general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Contractor shall assume full and complete responsibility for safe prosecution of the Work at all times and for obtaining satisfactory results.

During the course of the performance of the Work under the Contract, if any operation, practice, or condition is deemed by the Engineer to be unsafe the Contractor, when notified verbally, later confirmed in writing by the Engineer, shall take such corrective action immediately as appropriate.

Nothing in the foregoing paragraphs shall be construed as relieving the Contractor from full responsibility of safe prosecution of the Work at all times. In the event the Owner, the Engineer or his representative are held by court of administrative body to be liable for personal injuries or damages to property arising from deficiencies in the jobsite safety, the Contractor shall promptly indemnify and hold them harmless.

P. Parking:

1. Construction equipment and vehicles are limited to the construction area or off site. Any other required special areas shall be coordinated with the Management.

2. Height limitations, number of spaces required and time of parking shall be coordinated with Management.

Q. Construction Personnel:

1. Sanitary facilities, water fountains and other facilities required for the contractor's employees shall be provided by the contractor and shall be located at a location acceptable to the owner.

END OF SECTION

SECTION 01026
UNIT PRICES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS**:**

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

1.02 SUMMARY:

A. This Section specifies administrative and procedural requirements for unit prices.

1 A unit price is an amount proposed by Bidders and stated on the Bid Form as a price per unit of measurement for materials and/or services that will be added to or deducted from the Contract Sum by Change Order in the event the estimated quantities of Work required by the Contract Documents are increased or decreased.

2 Unit prices include all necessary labor, materials, equipment and incidentals, overhead, profit and applicable taxes.

3. Refer to individual Specification Sections for construction activities requiring the establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

B. Schedule: A "Unit Price Schedule" is included in the Bid Form. Specification Sections referenced in the Schedule contain requirements for materials and methods described under each unit price.

1. The Owner reserves the right to reject the Contractor's measurement of work-in-place that involves use of established unit prices, and to have this Work measured by an independent surveyor acceptable to the Contractor at the Owner's expense.

PART 2 – PRODUCTS (Not Applicable).

PART 3 - EXECUTION

3.01 UNIT PRICE SCHEDULE:

A Unit prices for all items are as shown in the Bid Forms shall be considered an integral part of this Section.

3.02 PAYMENT FOR EXTRA WORK:

A Extra work which results from any of the changes as specified and for which no unit price is provided in the Contract, shall not be started until receipt of a written authorization or work order from the Owner, which authorization shall state the items of work to be

performed and the method of payment for each item. The Contractor shall not be entitled to payment for work performed without such authorization.

B If it is practicable to pay for Extra Work on the unit price, or lump sum basis, a fair and equitable sum shall be fixed by agreement of the parties and shown in an Extra Work Order Agreement. Work to be performed directly by the Contractor should be submitted showing a detailed breakdown of labor and material costs to which a 15 percent markup should be added for overhead and profit.

C Work to be performed by the subcontractor should be submitted showing a detailed breakdown of labor and materials by the subcontractor to which a five percent markup should be added by the Contractor for overhead and profit.

D When the Owner deems it impracticable to handle any Extra Work on the unit price or lump sum basis, or if agreement of the parties cannot be reached, the work may be ordered done and paid for on a Force Account basis, as follows:

1) Labor: The Contractor will be paid the actual amount of wages for all labor and foremen who are actually engaged in such work, to which cost shall be added 10 percent of the sum of such wages. A foreman shall not be used when there are less than three laborers employed, except with the written consent of the Engineer.

2) Welfare and Pension Fund: The Contractor will receive the actual additional amount of contributions paid for regular and uniform health and welfare benefits, pension fund benefits or other benefits, to which 10 percent shall be added, when such amounts are required by collective bargaining agreement or other employment contract generally applicable to the class of labor employed on the Work.

3) Insurance and Tax: The Contractor will receive the actual cost or increase in cost of Contractor's Public Liability and Property Damage insurance, Workmen's Compensation tax, and Social Security tax required for Force Account work. The Contractor shall furnish satisfactory evidence of the cost or rates paid for such insurance and tax.

4) Materials: The Contractor will receive the actual cost for all materials, including freight charges as shown by the original paid invoices, which become an integral part of the finished work, to which shall be added 10 percent of the sum thereof.

The Contractor will be reimbursed for any materials used in the construction of such work as sheeting, falsework, form lumber, etc., which are not an integral part of the finished work. The amount of reimbursement shall be agreed upon in writing before such work is begun, and no percent shall be added. The salvage value of such materials shall be taken into consideration in the reimbursement agreed upon.

5) Equipment: For any machinery or special equipment (other than small tools), the use of which has been authorized by the Engineer, the Contractor will be paid as following:

a) For his own equipment, he will be paid by the monthly rate in accordance with the latest edition of Means Construction Cost Data.

b) For rental equipment, he will be paid for the actual invoice amount as shown by the original paid invoices.

The equipment shall be of a type and size reasonably required to complete the Extra Work. Compensation will not be allowed for transportation to or from The Work or for the time required for setting up and removing the equipment from The Work or for equipment of a type, size or condition unsuitable for The Work.

3.03 CANCELED ITEMS:

A It shall be in the sole judgment and sole discretion of the Engineer or its representatives to cancel or alter any or all portions of the Contract due to circumstances either unknown at the time of bidding or arising after the Contract was entered into. Should such actions result in elimination or non-completion of any portion of the Contract, payment shall be made as follows:

1) For the canceled work completed by the Contractor, payment shall be made to the Contractor for the actual number of units or items completed at the Contract unit or lump sum prices. For canceled work partially completed by the Contractor, payment shall be made to the Contractor for the partially completed units or items as specified in Payment for Extra Work.

2) For materials obtained by the Contractor for the unfinished (uncompleted) portions of the canceled work, that have been inspected, tested and accepted by the Engineer, and that have not been incorporated in the canceled work, payment shall be made to the Contractor for the actual costs for all such materials, including freight charges, as shown by the original paid invoices, to which shall be added 10 percent of the sums thereof. The materials, when so paid for by the Owner, shall become the property of the Owner.

3.04 PARTIAL PAYMENTS:

A. The Engineer shall review the Contractor's pay request for materials in-place and completed, the amount of work performed, and the value thereof, at the Contract Unit Prices. From the amount so determined there shall be deducted ten percent to be retained until after the completion of the entire work to the satisfaction of the Engineer, and the balance certified to the Owner for payment. Notwithstanding the above, after 50 percent or more of the work is completed, the Engineer may certify the remaining partial payments or some of them without any further retention, provided that satisfactory progress is being made in accordance with the Contract requirements and continues to be made, and provided that the amount retained shall not be less than five percent of the total adjusted Contract Price.

B. If stored matter is lost or damaged prior to incorporation in The Work, the materials shall be replaced or satisfactory repaired at the Contractor's expense. Where payment is made for materials in storage and not yet incorporated into The Work, the Contractor shall provide to the Owner, satisfactory evidence of insurance against loss by damage or disappearance. The Contractor shall pay and be responsible for cost of storage, if any, of said materials.

END OF SECTION

SECTION 01027
APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 SUMMARY:

A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.

B. This Section specifies administrative and procedural requirements governing each prime Contractor's Applications for Payment.

1. Coordinate the Schedule of Values and Applications for Payment with the Contractor's Construction Schedule, List of Subcontracts, and Submittal Schedule.

C. The Contractor's Construction Schedule and Submittal Schedule are included in Section "Submittals.@

1.03 SCHEDULE OF VALUES:

A. Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.

B. Each prime Contractor shall coordinate preparation of its Schedule of Values for its part of the Work with preparation of the Contractors' Construction Schedule.

1. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:
   a. Contractor's construction schedule.
   b. Application for Payment form.
   c. List of subcontractors.
   d. Schedule of allowances.
   e. Schedule of alternates.
   f. List of products.

g. List of principal suppliers and fabricators.
h. Schedule of submittals.

2. Submit the Schedule of Values to the Architect at the earliest feasible date, but in no case later than 7 days before the date scheduled for submittal of the initial Application for Payment.

3. Sub-Schedules: Where the Work is separated into phases that require separately phased payments, provide sub-schedules showing values correlated with each phase of payment.

C. Format and Content: Use the Project Manual Table of Contents as a guide to establish the format for the Schedule of Values.

1. Identification: Include the following Project identification on the Schedule of Values:

a. Project name and location.
b. Name of the Architect.
c. Project number.
d. Contractor's name and address.
e. Date of submittal.

2. Arrange the Schedule of Values in a tabular form with separate columns to indicate the following for each item listed:

a. Generic name.
b. Related Specification Section.
c. Name of subcontractor.
d. Name of manufacturer or fabricator.
e. Name of supplier.
f. Change Orders (numbers) that have affected value.
g. Dollar value.
h. Percentage of Contract Sum to the nearest one-hundredth percent, adjusted to total 100 percent.

3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Break principal subcontract amounts down into several line items.

4. Round amounts off to the nearest whole dollar; the total shall equal the Contract Sum.

5. For each part of the Work where an Application for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed, provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

6. Unit Cost Allowances: Show line-item value of unit cost allowances as a product of unit cost times measured quantity as estimated from the best indication in the Contract Documents.

7. Margins of Cost: Show line items for indirect costs, and margins on actual costs, only to the extent that such items will be listed individually in Applications for Payment. Each item in the Schedule of Values and Applications for Payment shall be complete including its total cost and proportionate share of general overhead and profit margin.

    a. At the Contractor's option, temporary facilities and other major cost items that are not direct cost of actual work-in- place may be shown as separate line items in the Schedule of Values or distributed as general overhead expense.

8. Schedule Updating: Update and resubmit the Schedule of Values when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.04 APPLICATIONS FOR PAYMENT:

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

    1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.

B. Payment Application Times: Each progress payment date is as indicated in the Agreement. The period of construction Work covered by each Application or Payment is the period indicated in the Agreement. Payment of invoices will be 60 days from date of submission.

C. Payment Application Times: The date for each progress payment is the 15th day of each month. The period of construction Work covered by each Application for Payment is the period ending 15 days prior to the date for each progress payment and starting the day following the end of the preceding period.

D. Payment Application Forms: Use AIA Document G 702 and Continuation Sheets G 703 as the form for Application for Payment.

E. Payment Application Forms: Use forms provided by the Owner for Applications for Payment; sample copies are included at the end of this Section.

F. Application Preparation: Complete every entry on the form, including notarization and execution by person authorized to sign legal documents on behalf of the Owner. Incomplete applications will be returned without action.

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

2. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.

G. Transmittal: Submit 3 executed copies of each Application for Payment to the Architect by means ensuring receipt within 24 hours; one copy shall be complete, including waivers of lien and similar attachments, when required.

1. Transmit each copy with a transmittal form listing attachments, and recording appropriate information related to the application in a manner acceptable to the Architect.

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

I. Waivers of Mechanics Lien: With each Application for Payment, submit waivers of mechanics liens from subcontractors or sub-subcontractors and suppliers for the construction period covered by the previous application.

1. Submit partial waivers on each item for the amount requested, prior to deduction for retainage, on each item.

2. When an application shows completion of an item, submit final or full waivers.

3. The Owner reserves the right to designate which entities involved in the Work must submit waivers.

4. Waiver Delays: Submit each Application for Payment with the Contractor's waiver of mechanics lien for the period of construction covered by the application.

   a. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of Work covered by the application who could lawfully be entitled to a lien.

5. Waiver Forms: Submit waivers of lien on forms, and executed in a manner, acceptable to Owner.

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

1. List of subcontractors.
2. List of principal suppliers and fabricators.
3. Schedule of Values.
4. Contractor's Construction Schedule (preliminary if not final).
5. Schedule of principal products.
6. Schedule of unit prices.
7. Submittal Schedule (preliminary if not final).
8. List of Contractor's staff assignments.
9. List of Contractor's principal consultants.
10. Copies of building permits
11. Copies of authorizations and licenses from governing authorities for performance of the Work.
12. Initial progress report.
13. Report of pre-construction meeting.
14. Certificates of insurance and insurance policies.
15. Performance and payment bonds (if required).
16. Data needed to acquire Owner's insurance.
17. Initial settlement survey and damage report, if required.

K. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment; this application shall reflect any Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

L. Administrative actions and submittals that shall proceed or coincide with this application include:

1. Occupancy permits and similar approvals.
2. Warranties (guarantees) and maintenance agreements.
3. Test/adjust/balance records.
4. Maintenance instructions.
5. Meter readings.
6. Start-up performance reports.
7. Change-over information related to Owner's occupancy, use, operation and maintenance.
8. Final cleaning.
9. Application for reduction of retainage, and consent of surety.
10. Advice on shifting insurance coverages.
11. Final progress photographs.
12. List of incomplete Work, recognized as exceptions to Architect's Certificate of Substantial Completion.

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

1. Completion of Project closeout requirements.
2. Completion of items specified for completion after Substantial Completion.
3. Assurance that unsettled claims will be settled.
4. Assurance that Work not complete and accepted will be completed without undue delay.
5. Transmittal of required Project construction records to Owner.
6. Proof that taxes, fees and similar obligations have been paid.
7. Removal of temporary facilities and services.
8. Removal of surplus materials, rubbish and similar elements.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01040
PROJECT COORDINATION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 SUMMARY:

A. This Section specifies administrative and supervisory requirements necessary for Project coordination including, but not necessarily limited to:

1. Coordination.
2. Administrative and supervisory personnel.
3. General installation provisions.
4. Cleaning and protection.

B. Requirements for the Contractor's Construction Schedule are included in Section "Submittals".

1.03 COORDINATION:

A. Coordination: Coordinate construction activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.

1. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.

2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.

3. Make adequate provisions to accommodate items scheduled for later installation.

B. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.

1. Prepare similar memoranda for the Owner and separate Contractors where coordination of their Work is required.

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

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

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

1. Salvage materials and equipment involved in performance of, but not actually incorporated in, the Work. Refer to other sections for disposition of salvaged materials that are designated as Owner's property.

1.04 SUBMITTALS

A. Coordination Drawings: Prepare and submit coordination Drawings where close and careful coordination is required for installation of products and materials fabricated off-site by separate entities, and where limited space availability necessitates maximum utilization of space for efficient installation of different components.

1. Show the interrelationship of components shown on separate Shop Drawings.

2. Indicate required installation sequences.

3. Comply with requirements contained in Section "Submittals."

B. Staff Names: Within 15 days of Notice to Proceed, submit a list of the Contractor's principal staff assignments, including the Superintendent and other personnel in attendance at the site; identify individuals, their duties and responsibilities; list their addresses and telephone numbers.

1. Post copies of the list in the Project meeting room, the temporary field office, and each temporary telephone.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION PROVISIONS

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

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

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

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

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

F. Recheck measurements and dimensions, before starting each installation.

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

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

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

3.02 CLEANING AND PROTECTION

A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

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

1. Excessive static or dynamic loading.
2. Excessively high or low temperatures.
3. Air contamination or pollution.
4. Water or ice.
5. Solvents.
6. Chemicals.
7. Puncture.
8. Abrasion.
9. Heavy traffic.
10. Soiling, staining and corrosion.
11. Bacteria.
12. Combustion.
13. Electrical current.
14. Unusual wear or other misuse.
15. Contact between incompatible materials.
16. Destructive testing.

17. Misalignment.
18. Excessive weathering.
19. Unprotected storage.
20. Improper shipping or handling.
21. Theft.
22. Vandalism.

END OF SECTION

SECTION 01045
CUTTING AND PATCHING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 SUMMARY:

A. This Section specifies administrative and procedural requirements for cutting and patching.

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

1. Requirements of this Section apply to existing plumbing and electrical installations.

C. Demolition of selected portions of the building for alterations is included in Section "Selective Demolition."

1.03 SUBMITTALS:

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

1. Describe the extent of cutting and patching required and how it is to be performed; indicate why it cannot be avoided.

2. Describe anticipated results in terms of changes to existing construction; include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.

3. List products to be used and firms or entities that will perform Work.

4. Indicate dates when cutting and patching is to be performed.

5. List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.

6. Where cutting and patching involves addition of reinforcement to structural elements, submit details and engineering calculations to show how reinforcement is integrated with the original structure.

7. Approval by the Consultant to proceed with cutting and patching does not waive the Consultant's right to later require complete removal and replacement of a part of the Work found to be unsatisfactory.

1.04 QUALITY ASSURANCE:

A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.

1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:

a. Foundation construction.
b. Bearing and retaining walls.
c. Structural concrete.
d. Structural steel.
e. Structural decking.
f. Stair systems.
g. Miscellaneous structural metals.
h. Equipment supports.
i. Piping, ductwork, vessels and equipment.

B. Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.

1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:

a. Shoring, bracing, and sheeting.
b. Primary operational systems and equipment.
c. Air or smoke barriers.
d. Water, moisture, or vapor barriers.
e. Membranes and flashings.
f. Fire protection systems.
g. Noise and vibration control elements and systems.
h. Control systems.
i. Communication systems.
j. Conveying systems.
k. Electrical wiring systems.

C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the Consultant's opinion, reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.

1. If possible retain the original installer or fabricator to cut and patch the following categories of exposed Work, or if it is not possible to engage the original installer or fabricator, engage another recognized experienced and specialized firm:

a. Processed concrete finishes.
b. Ornamental metal.
c. Preformed metal panels.
d. Wall covering.
e. HVAC enclosures.

PART 2 - PRODUCTS

2.01 MATERIALS:

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

PART 3 - EXECUTION

3.01 INSPECTION:

A. Before cutting existing surfaces, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding, if unsafe or unsatisfactory conditions are encountered.

1. Before proceeding, meet at the site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.02 PREPARATION:

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

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

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

D. Take all precautions necessary to avoid cutting existing pipe, conduit or ductwork serving the building, but scheduled to be removed or relocated until provisions have been made to bypass them.

3.03 PERFORMANCE

A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.

1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.

B. Cutting: Cut existing construction using methods least likely to damage elements to be retained or adjoining construction. Where possible review proposed procedures with the original installer; comply with the original installer's recommendations.

1. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.

2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.

3. Cut through concrete and masonry using a cutting machine such as a carborundum saw or diamond core drill.

4. Comply with requirements of applicable Sections of Division-2 where cutting and patching requires excavating and backfilling.

5. By-pass utility services such as pipe or conduit, before cutting, where services are shown or required to be removed, relocated or abandoned. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.

C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.

2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

3. Where removal of walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary to achieve uniform color and appearance.

   a. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken containing the patch, after the patched area has received primer and second coat.

4. Patch, repair or rehang existing ceilings as necessary to provide an even plane surface of uniform appearance.

3.04 CLEANING

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

END OF SECTION

SECTION 01095
REFERENCE STANDARDS AND DEFINITIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 DEFINITIONS:

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

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

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

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

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

F. Furnish: The term "furnish" is used to mean "supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations."

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

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

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

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

2. Trades: Use of titles such as "carpentry" is not intended to imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades persons of the corresponding generic name.

3. Assignment of Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in the operations to be performed. The specialists must be engaged for those activities, and assignments are requirements over which the Contractor has no choice or option. Nevertheless, the ultimate responsibility for fulfilling Contract requirements remains with the Contractor.

a. This requirement shall not be interpreted to conflict with enforcement of building codes and similar regulations governing the Work. It is also not intended to interfere with local trade union jurisdictional settlements and similar conventions.

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

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

1.03 SPECIFICATION FORMAT AND CONTENT EXPLANATION:

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

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

1. Abbreviated Language: Language used in Specifications and other Contract Documents is the abbreviated type. Words and meanings shall be interpreted as appropriate. Words that are implied, but not stated shall be interpolated as the sense required. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and the context of the Contract Documents so indicates.

2. Imperative and streamlined language is used generally in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the text, for clarity, subjective language is used to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.

a. The words "shall be" shall be included by inference wherever a colon (:) is used within a sentence or phrase.

1.04 INDUSTRY STANDARDS

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

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

C. Conflicting Requirements: Where compliance with two or more standards is specified, and the standards may establish different or conflicting requirements for minimum quantities or quality levels, refer requirements that are different, but apparently equal, and uncertainties to the Consultant for a decision before proceeding.

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

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

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

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

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

AA Aluminum Association
900 19th St., NW, Suite 300
Washington, DC 20006 (202) 862-5100

AASHTO American Association of State Highway
and Transportation Officials
444 North Capitol St., Suite 225
Washington, DC 20001 (202) 624-5800

ACI American Concrete Institute
P.O. Box 19150
Detroit, MI 48219 (313) 532-2600

ACIL American Council of Independent Laboratories
1725 K St., NW
Washington, DC 20006 (202) 887-5872

AI Asphalt Institute
P.O. Box 14052
Lexington, KY 40512-4052 (606) 288-4960

AIA American Institute of Architects
1735 New York Ave., NW
Washington, DC 20006 (202) 626-7300

APA American Plywood Assoc.
P.O. Box 11700
Tacoma, WA 98411 (206) 565-6600

ARMA Asphalt Roofing Manufacturers Assoc.
6288 Montrose Rd.
Rockville, MD 20852 (301) 231-9050

ASC Adhesive and Sealant Council
1627 K Street, NW, Suite 1000
Washington, DC 20006 (202) 452-1500

ASPE American Society of Plumbing Engineers
3617 Thousand Oaks Blvd., Suite 210
Westlake, CA 91362 (805) 495-7120

ASTM American Society for Testing and Materials
1916 Race St.
Philadelphia, PA 19103 (215) 299-5400

AWS American Welding Society
550 LeJeune Road, NW
P.O. Box 351040
Miami, FL 33135 (305) 443-9353

BANC Brick Association of North Carolina
P.O. Box 13290
Greensboro, NC 27415-3290 (919) 273-5566

BHMA Builders' Hardware Manufacturers Assoc.
355 Lexington Ave., 17th Floor
New York, NY 10017 (212) 661-4261

BIA Brick Institute of America
11490 Commerce Park Drive, Suite 300
Reston, VA 22091 (703) 620-0010

CRSI Concrete Reinforcing Steel Institute
933 Plum Grove Rd.
Schaumburg, IL 60173 (312) 517-1200

EJMA Expansion Joint Manufacturers Assoc.
25 N. Broadway
Tarrytown, NY 10591 (914) 332-0040

HPMA Hardwood Plywood Manufacturers Assoc.
1825 Michael Farraday Drive
P.O. Box 2789
Reston, VA 22090 (703) 435-2900

IEEE Institute of Electrical and
Electronic Engineers
345 E. 47th St.
New York, NY 10017 (212) 705-7900

NAPA National Asphalt Pavement Assoc.
Calvert Building, Suite 620
6811 Kenilworth Ave.
Riverdale, MD 20737 (301) 779-4880

NCMA National Concrete Masonry Assoc.
P.O. Box 781
Herndon, VA 22070 (703) 435-4900

NEC National Electric Code (from NFPA)

NECA National Electrical Contractors Assoc.
7315 Wisconsin Ave.
Bethesda, MD 20814 (301) 657-3110

NFPA National Fire Protection Assoc.
One Batterymarch Park
P.O. Box 9101
Quincy, MA 02269-9101(617) 770-3000

NPCA National Paint and Coatings Assoc.
1500 Rhode Island Ave., NW
Washington, DC 20005 (202) 462-6272

NRCA National Roofing Contractors Assoc.
One O'Hare Centre
6250 River Road, Suite 8030
Rosemont, IL 60018 (708) 318-6722

PCA Portland Cement Assoc.
5420 Old Orchard Road
Skokie, IL 60077 (312) 966-6200

PCI Prestressed Concrete Institute
175 W. Jackson Blvd.
Chicago, IL 60604 (312) 786-0300

PDI Plumbing and Drainage Institute
c/o Sol Baker
1106 W. 77th St., South Dr.
Indianapolis, IN 46260 (317) 251-6970

RMA Rubber Manufacturers Assoc.
1400 K St., NW
Washington DC 20005 (202) 682-4800

SSPC Steel Structures Painting Council
4400 Fifth Ave.
Pittsburgh, PA 15213 (412) 268-3327

WRI Wire Reinforcement Institute
1760 Reston Parkway, Suite 403
Reston, VA 22090 (703) 790-9790

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

CE Corps of Engineers
(U.S. Department of the Army)
Chief of Engineers - Referral
Washington, DC 20314 (202) 272-0660

CFR Code of Federal Regulations
Available from the Government Printing Office
N. Capitol St. between G and H St. NW
Washington, DC 20402 (202) 783-3238
(Material is usually first published
in the "Federal Register")

CPSC Consumer Product Safety Commission
5401 Westbard Ave.
Bethesda, MD 20816 (800) 638-2772

CS Commercial Standard
(U.S. Department of Commerce)
Government Printing Office
Washington, DC 20402 (202) 377-2000

DOC Department of Commerce
14th St. and Constitution Ave., NW
Washington, DC 20230 (202) 377-2000

DOT Department of Transportation
400 Seventh St., SW
Washington, DC 20590 (202) 366-4000

EPA Environmental Protection Agency
401 M St., SW
Washington, DC 20460 (202) 382-2090

FAA Federal Aviation Administration
(U.S. Department of Transportation)
800 Independence Ave., SW
Washington, DC 20590 (202) 366-4000

NIST National Institute of Standards and Technology
(U.S. Department of Commerce)
Gaithersburg, MD 20899 (301) 975-2000

OSHA Occupational Safety and Health Administration
(U.S. Department of Labor)
Government Printing Office
Washington, DC 20402 (202) 523-6091

PS Product Standard of NBS
(U.S. Department of Commerce)
Government Printing Office
Washington, DC 20402 (202) 783-3238

1.05 GOVERNING REGULATIONS/AUTHORITIES:

A. The Consultant has contacted authorities having jurisdiction where necessary to obtain information necessary for preparation of Contract Documents. Contact authorities having jurisdiction directly for information and decisions having a bearing on the Work.

B. Copies of Regulations: Obtain copies of the applicable regulations and retain at the Project Site, available for reference by parties who have a reasonable need for such reference.

1.06 SUBMITTALS:

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

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION

SECTION 01300
SUBMITTALS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 SUMMARY

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

1. Contractor's construction schedule.
2. Submittal schedule.
3. Daily construction reports.
4. Shop Drawings.
5. Product Data.
6. Samples.

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

1. Permits.
2. Applications for payment.
3. Performance and payment bonds.
4. Insurance certificates.
5. List of Subcontractors.

C. The Schedule of Values submittal is included in Section "Applications for Payment."

D. Inspection and test reports are included in Section "Quality Control Services."

1.03 SUBMITTAL PROCEDURES

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

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.

2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.

    a. The Consultant reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

3. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals.

    a. Allow two weeks for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Consultant will promptly advise the Contractor when a submittal being processed must be delayed for coordination.
    b. If an intermediate submittal is necessary, process the same as the initial submittal.
    c. Allow two weeks for reprocessing each submittal.
    d. No extension of Contract Time will be authorized because of failure to transmit submittals to the Consultant sufficiently in advance of the Work to permit processing.

B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.

1. Provide a space approximately 4" x 5" on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.

2. Include the following information on the label for processing and recording action taken.

    a. Project name.
    b. Date.
    c. Name and address of Consultant.
    d. Name and address of Contractor.

e. Name and address of subcontractor.
f. Name and address of supplier.
g. Name of manufacturer.
h. Number and title of appropriate Specification Section.
i. Drawing number and detail references, as appropriate.

C. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Consultant using a transmittal form. Submittals received from sources other than the Contractor will be returned without action.

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

2. Transmittal Form: Use AIA Document G 810.

1.04 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Phasing: Provide notations on the schedule to show how the sequence of the Work is affected by requirements for phased completion to permit Work by separate Contractors and partial occupancy by the Owner prior to Substantial Completion.

B. Work Stages: Indicate important stages of construction for each major portion of the Work, including testing and installation.

C. Distribution: Following response to the initial submittal, print and distribute copies to the Consultant, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.

1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

1.05 SUBMITTAL SCHEDULE

A. After development and acceptance of the Contractor's construction schedule, prepare a complete schedule of submittals. Submit the schedule within 10 days of the date required for establishment of the Contractor's construction schedule.

1. Coordinate submittal schedule with the list of subcontracts, schedule of values and the list of products as well as the Contractor's construction schedule.

2. Prepare the schedule in chronological order; include submittals required during the first 90 days of construction. Provide the following information:

a. Scheduled date for the first submittal.
b. Related Section number.
c. Submittal category.
d. Name of subcontractor.
e. Description of the part of the Work covered.
f. Scheduled date for resubmittal.
g. Scheduled date the Consultant's final release or approval.

B. Distribution: Following response to initial submittal, print and distribute copies to the Consultant's, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.

1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

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

1.06 DAILY CONSTRUCTION REPORTS

A. Prepare a daily construction report, recording the following information concerning events at the site; and submit duplicate copies to the Consultant at weekly intervals:

1. List of subcontractors at the site.
2. Approximate count of personnel at the site.

3. High and low temperatures, general weather conditions.
4. Accidents and unusual events.
5. Meetings and significant decisions.
6. Stoppages, delays, shortages, losses.
7. Meter readings and similar recordings.
8. Emergency procedures.
9. Orders and requests of governing authorities.
10. Change Orders received, implemented.
11. Services connected, disconnected.
12. Equipment or system tests and start-ups.
13. Partial Completions, occupancies.
14. Substantial Completions authorized.

1.07 SHOP DRAWINGS

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

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

1. Dimensions.
2. Identification of products and materials included.
3. Compliance with specified standards.
4. Notation of coordination requirements.
5. Notation of dimensions established by field measurement.
6. Sheet Size: Except for templates, patterns and similar full- size Drawings, submit Shop Drawings on sheets at least 8-1/2" x 11" but no larger than 36" x 48".
7. Initial Submittal: Submit one correctable translucent reproducible print and one blue- or black-line print for the Consultant's review; the reproducible print will be returned.
8. Initial Submittal: Submit 2 blue- or black-line prints for the Consultant's review; one will be returned.
9. Final Submittal: Submit 3 blue- or black-line prints; submit 5 prints where required for maintenance manuals. 2 prints will be retained; the remainder will be returned.

10. Final Submittal: Submit 3 blue- or black-line prints and 2 additional prints where required for maintenance manuals, plus the number of prints needed by the Consultant for distribution. 2 prints will be retained; the remainder returned.

    a. One of the prints returned shall be marked-up and maintained as a "Record Document."

11. Do not use Shop Drawings without an appropriate final stamp indicating action taken in connection with construction.

C. Coordination drawings are a special type of Shop Drawing that show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or function as intended.

1. Preparation of coordination Drawings is specified in section "Project Coordination" and may include components previously shown in detail on Shop Drawings or Product Data.
2. Submit coordination Drawings for integration of different construction elements. Show sequences and relationships of separate components to avoid conflicts in use of space.

1.08 PRODUCT DATA

A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawings."

1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:

    a. Manufacturer's printed recommendations.
    b. Compliance with recognized trade association standards.
    c. Compliance with recognized testing agency standards.
    d. Application of testing agency labels and seals.

e. Notation of dimensions verified by field measurement.
f. Notation of coordination requirements.

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

3. Preliminary Submittal: Submit a preliminary single-copy of Product Data where selection of options is required.

4. Submittals: Submit 2 copies of each required submittal; submit 4 copies where required for maintenance manuals. The Consultant will retain one, and will return the other marked with action taken and corrections or modifications required.

   a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

5. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.

   a. Do not proceed with installation until an applicable copy of Product Data applicable is in the installer's possession.
   b. Do not permit use of unmarked copies of Product Data in connection with construction.

1.09 SAMPLES

A. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture and pattern.

1. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Prepare Samples to match the Consultant's Sample. Include the following:

   a. Generic description of the Sample.
   b. Sample source.
   c. Product name or name of manufacturer.
   d. Compliance with recognized standards.
   e. Availability and delivery time.

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

    a. Where variation in color, pattern, texture or other characteristics are inherent in the material or product represented, submit multiple units (not less than 3), that show approximate limits of the variations.

    b. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation and similar construction characteristics.

    c. Refer to other Sections for Samples to be returned to the Contractor for incorporation in the Work. Such Samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of Sample submittals.

3. Preliminary submittals: Where Samples are for selection of color, pattern, texture or similar characteristics from a range of standard choices, submit a full set of choices for the material or product.

    a. Preliminary submittals will be reviewed and returned with the Consultant's mark indicating selection and other action.

4. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit 3 sets; one will be returned marked with the action taken.
5. Maintain sets of Samples, as returned, at the Project site, for quality comparisons throughout the course of construction.

    a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

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

B. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.

1. Field Samples specified in individual Sections are special types of Samples. Field Samples are full-size examples erected on site to illustrate finishes, coatings, or finish materials and to establish the standard by which the Work will be judged.

a. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

1.10 ARCHITECT'S ACTION

A. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Consultant will review each submittal, mark to indicate action taken, and return promptly.

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

B. Action Stamp: The Consultant will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:

1. Final Unrestricted Release: Where submittals are marked "Accepted," that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.

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

3. Returned for Resubmittal: When submittal is marked "Not Accepted, Revise and Resubmit," do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.

a. Do not permit submittals marked "Not Accepted, Revise and Resubmit" to be used at the Project site, or elsewhere where Work is in progress.

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

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION (Not Applicable).

END OF SECTION

SECTION 01310
PROSECUTION AND PROGRESS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All contract documents shall apply to work of this section.

1.02 DATE OF COMPLETION

A. The Contractor shall complete The Work on or before the date or within the time specified in the Contract, unless that date or time is duly extended according to the Contract.

B. If the Contract is revised in any material respect, or, in the event, in the sole judgment of the Engineer or his representative, changes become necessary, in the best interests of the project, due to circumstances not known at the time the Contract was entered into or arising thereafter, and the Engineer determines that such revision or revisions will cause a delay in the completion of The Work, the Engineer will extend the completion date by the number of days he determines to be equitable.

C. When a delay occurs due to unforeseen causes beyond the control and without the fault or negligence of the Contractor, the time of completion shall be extended for whatever period is determined by the Engineer to have resulted from such causes. No extension of time on account of a delay due to unforeseen causes will be granted if written application therefore is not filed with the Engineer within ten days of the date of termination of the delay or prior to the completion date of the Contract, whichever shall be sooner. Such request for extension of time, if timely filed, will be considered and ruled on by the Engineer promptly after the satisfactory completion of the Contract.

1.03 DELAYS

A. If Contractor is delayed at any time in the progress of their work by an act or neglect of the Owner or another contractor employed by the Owner or by substantial changes ordered in the contractual scope of work or by other causes beyond Contractor's reasonable control or influence, Contractor's time will be extended for such reasonable time as the Owner may determine. Minor revisions and changes in the contractual scope of work are acceptable and considered part of the progress of construction. No extension of time will be granted for these minor changes. Any change or cause that does warrant an

extension of time to the contract duration must be brought to the attention of the Owner, by written communication, on or before the first day of delay. The first day of delay is the day on which proper notification is provided and received. Notification of the delay must include the cause of the delay, the reason it is a delay to your schedule and precisely what work must be accomplished by others in order for the Contractor to resume their work.

1.04 PROGRESS SCHEDULE

A. The Contractor shall submit to the Engineer for approval by the Owner, within seven (7) calendar days following the award of contract, a progress schedule, showing the order in which the Contractor proposes to carry on the Work, the dates on which he will start controlling items, and the contemplated dates for completing. The Contractor's submission may be a critical path flow chart, bar graph, or other appropriate device of the Contractor's choice, and shall clearly indicate the various types of work to be in progress and show progress of the completed work at any point through the term of the Contract. The Progress Schedule shall show that each of the Stages of the Contract will be substantially completed within the times provided in the Contract Documents.

B. If the Contractor's progress is materially affected by changes in the Plans or in the amount of The Work, or, in the event, in the sole judgment of the Engineer or its representative such changes become necessary in the best interests of the project due to circumstances not known at the time the contract has failed to comply with its approved Progress Schedule, he shall submit a revised Progress Schedule if requested by the Engineer, which schedule shall show how he proposes to prosecute the balance of The Work and the calendar days after the date of the request by the Engineer. The Contractor shall make every effort to comply with the Progress Schedule submitted by him consistent with all Contract requirements, including the order of performance of specified portions of The Work. No payment will be made to the Contractor while he is delinquent in the submission of any Progress Schedule.

1.05 TEMPORARY SUSPENSION OF WORK

A. The Owner shall have the authority to suspend, delay or interrupt all or any part of the work as he may deem necessary, due to conditions which in his opinion warrant such action; or for such time as is necessary by reason of failure on the part of the Contractor to carry out orders given, or to perform in accordance with any or all provisions of the Contract. The Engineer will notify the Contractor in writing of all such suspensions, delays or interruptions.

B. The Owner reserves the right to recover any incurred damages by deducting the amount thereof out of any monies due or that may become due the Contractor, notwithstanding any liens, notices or liens or actions of subcontractors, and if said monies be insufficient to cover said damages, then the Contractor or the Surety shall promptly pay the amounts due.

1.06 DEFAULT ON CONTRACT

A. If the Contractor fails to begin the Work under the Contract within fourteen (14) days after the date of the Notice to Proceed or fails to perform The Work with sufficient workmen, equipment or materials to insure completion of The Work within the specified time or times, or shall perform The Work unsuitably, as determined by the Engineer, or shall neglect or refuse to remove materials or perform anew such work as shall be rejected as defective and unsuitable, or shall discontinue the prosecution of The Work, or if the Contractor shall become insolvent to be declared bankrupt, or shall commit any act of bankruptcy or insolvency, or shall make an assignment for the benefit of creditors, or for any other cause whatsoever shall not carry on The Work in a manner approved by the Engineer, the Engineer shall give notice in writing to the Contractor and his surety of such actions or delinquency, said notice to advise of the corrective measures or action required. If the Contractor, within a period of seven (7) days after said notice, shall not proceed in accordance therewith, the Owner shall, upon written certificate from the Engineer of the fact of such delinquency or improper actions and the Contractor's failure to comply with said notice, have full power and authority to forfeit the rights of the Contractor and at its option to call upon the surety to complete The Work in accordance with the terms of the Contract, or it may take over The Work, including any or all materials and equipment within the work area as may be suitable and acceptable, and may complete The Work by entering into a new Agreement, with or without competitive bidding, for the completion of said Contract according to the terms and provisions thereof, or use such other methods as, in its opinion, shall be required for the completion of said Contract according to the terms and provisions thereof in an acceptable manner. All costs and charges incurred by the Owner, together with the cost of completing The Work under Contract, may be deducted from any monies due or which may become due on such Contract.

1.07 SUBLETTING OR ASSIGNMENT OF CONTRACT

A. Approval in writing of a subcontractor shall be construed as approval for the Contractor's subletting of that portion of The Work to be done by the subcontractor. Subcontractors must be approved by the Engineer before commencing any work. Subcontractors shall be recognized only in the capacity of employees or workmen of the Contractor and shall be subject to the same

requirements as to character and competence as the Contractor. Requests for approval of subcontractors shall show the nature and percentages of The Work to be done by each subcontractor, such percentages to be computed cost of The Work to be subcontracted, based on proposed quantities of Contract work items and unit prices, in relation to the total Contract. The Contractor shall not, under any circumstances, be relieved of his full and complete liability and obligations for the entire work under the contract and the Engineer shall not be required to deal directly with subcontractors.

1.08 LIMITATIONS OF OPERATIONS

A. The contractor shall contact and coordinate with Parking Authority for job site visits prior to submission of the Bid Proposals, for specific requirements of commercial space tenants and garage operations and scheduling purposes.

B. The Contractor shall at all times conduct his work so as to minimize the interference with or inconvenience to the normal operations of the office building. At any time when, in the judgment of the Engineer, the Contractor has obstructed or closed an area of the garage or is carrying on operations causing greater interference or inconvenience than necessary for the proper prosecution of The Work, the Engineer may require the Contractor to finish the section of The Work which is in progress before work is started on any additional section or require the Contractor to take such further actions so as to minimize inconvenience to vehicular or pedestrian traffic.

C. The Contractor shall arrange his work and his material so as not to interfere with the operations of other contractors engaged upon adjacent work, and to join his work to that of other in a proper manner, and in accordance with Plans and Specifications, and to coordinate the sequence of his work in relation to that of other contractors, and as may be directed by the Engineer from time to time as The Work progresses.

D. Each Contractor shall be responsible for any damage done by him or his agents to The Work performed by another Contractor.

1.09 WORKMEN, METHODS AND EQUIPMENT

A. The Contractor shall at all time employ sufficient labor and equipment for prosecuting the several classes of work to full completion in the manner and time required by these Specifications and the Contract.

B. All workmen shall have sufficient skill and experience to properly perform the work assigned to them. Workmen engaged in special work or skilled work shall have sufficient specialized experience in such work and in the operation of the required equipment to perform all work on time in a proper and safe manner.

C. Any person employed by the Contractor or by any subcontractor who, in the opinion of the Engineer, does not perform his work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the Engineer, be removed forthwith by the Contractor or subcontractor employing such person, and shall not be employed again in any portion of The Work without the approval of the Engineer.

D. Should the Contractor fail to remove such person or persons as required above, or fail to furnish suitable skilled and sufficient personnel for the proper prosecution of The Work, the Engineer may suspend The Work by written notice until the Contractor employs proper and sufficient personnel for The Work. All equipment which is proposed to be used on The Work shall be of sufficient size and in such mechanical condition as to meet requirement of the Contract and to produce work that meets to exceed the quality of work required by the Contract. Equipment used on any portion of the project shall be such that no damage to adjacent work areas or property will result from its use.

E. The Contractor shall prosecute The Work for the number of days per week and the number of hours per day as is necessary to complete the Work by the date or dates provided in the Contract. If in the opinion of the Engineer the actual progress on The Work falls behind the estimate progress as outlined in the approved Progress Schedule submitted by the Contractor, or if it becomes apparent that the construction progress is such that The Work will not be completed within the specified time or times, the Contractor shall implement, at the direction and with the approval of the Engineer, any or all of the following at no additional cost to the Owner.

1. Provide additional equipment of The Work.
2. Add necessary additional manpower.
3. Increase working hours including Saturdays, Sundays, and holidays subject to any restrictions which may be set forth in the Special Provisions. When the methods and equipment to be used by the Contractor in performing The Work are not prescribed in the Contract, the Contractor is free to use any reasonable methods of equipment to perform The Work, as long as he demonstrates to the satisfaction of the Engineer that such methods or equipment will accomplish The Work in conformity with the requirements of the Contract.

F. When the Contract specifies that the construction be performed by the use of certain methods and equipment, such methods and equipment shall be used unless others are authorized by the Engineer. If the Contractor desires to use a method or type of equipment other than specified in the Contract, he may request authorization from the Engineer to do so. The request shall be in writing and shall include a full description of the methods and equipment proposed to be used and explanation of the reasons for desiring to make the change.

G. If approval is given, it will be under the condition that the Contractor will be fully responsible for producing construction work in conformity with Contract requirement. If, after use of the substituted methods or equipment, the Engineer determines that the work produced does not meet Contract requirements, the Contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining construction with the specified methods and equipment. The Contractor shall remove any deficient work and replace it with work of specified quality, or take such other corrective action as the Engineer may direct. No change will be made in basis of payment for the construction items involved or in Contract time as a result of authorizing any change in methods or equipment under these provisions.

1.10 TERMINATION OF CONTRACT PRIOR TO COMPLETION

A. The performance of The Work under the Contract may be terminated in whole or, in part from time to time, whenever the Engineer shall determine that such termination is in the best interest of the Owner due to circumstances, or the effect of which was not known to the Owner or Engineer at the time of execution of the Contract. In the event of termination pursuant to this Section, the Contractor shall be entitled to no damages or compensation except as hereinafter provided.

B. Termination of performance of The Work under the Contract, in whole or in part, shall be subject to the conditions herein, and it is the intent of these provisions that a settlement equitable to both the Contractor and the Owner be made in connection with a termination according to this Sub-section.

C. For all Work completed by the Contractor prior to the effective date or dates of termination, payment will be made to the Contractor for the actual number of units or items completed at the Contract unit or lump sum prices. For all work partially completed by the Contractor prior to the effective date or dates of termination, payment shall be made to the Contractor for the partially completed units or items as specified in Sub-section. It is agreed and understood, however, that the Contractor shall, in no event, be entitled to

compensation for the loss of anticipated profits, whether for completed, uncompleted work, nor shall any claims therefore by the Contractor be considered.

D. For all materials obtained by the Contractor for The Work prior to notice of termination, that have been inspected, tested and accepted by the Engineer, and that have not been incorporated in The Work and cannot be returned to the supplier, payment will be made to the Contractor for the actual costs for all such material including freight charges, as shown by original validated bills. The materials, when so paid for by the Owner, shall become the property of the Owner.

E. The Owner, will pay the Contractor for any actual direct expenses sustained by the Contractor by reason of such termination for which the Contractor is not adequately reimbursed by the payments made for completed and partially completed work, and for materials obtained but not incorporated in The Work, as hereinbefore specified. Termination of the performance of The Work under the Contract by the Owner, as hereinbefore specified, shall not relieve the Contractor or his surety of the responsibility for The Work performed as required by the Contract.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01320
MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All contract documents relate to work of this section.

1.02 GENERAL REQUIREMENTS

A. Actual quantities of work completed under the Contract must be reviewed by the Engineer prior to payment. Measurement will be in accordance with United States standards and in compliance with recognized engineering practices. All packaged materials shall be marked plainly, showing the amount and nature of contents and shall be delivered intact.

1.03 SCOPE OF PAYMENT

A. The Contractor agrees to and shall receive and accept the compensation as herein provided, as payment in full for The Work, including but not limited to, furnishing all materials, transportation, labor, tools, and equipment; for performing all work contemplated and embraced under the Contract; for all loss or damage arising out of the nature of The Work or from the action of the elements; for any unforeseen difficulties, obstructions or interferences which may arise or be encountered during the prosecution of The Work until its final acceptance by the Owner as determined by the specifications.

B. In cases where the "Payment" clause in the Specifications related to any unit price cover and be considered compensation for certain work or material essential to the item, the same work or material shall not also be measured or paid for under any other pay item which may appear elsewhere in the Specifications.

C. The partial payment of any portion of The Work certified by the Engineer shall in no way constitute an acknowledgment of the acceptance of The Work, nor in any way prejudice or affect the obligation of the Contractor to repair, correct, renew, or replace at his expense any defects or imperfections in the construction or in the strength or quality of the materials used in or about the construction of The Work under Contract and its appurtenances, nor any damage due to attributable to such defects, which defects, imperfections or damage should have been

covered before or after payment for and acceptance of The Work.

1.04 PAYMENT FOR EXTRA WORK

A. Extra work which results from any of the changes as specified and for which no unit price is provided in the Contract, shall not be started until receipt of a written authorization or work order from the Owner, which authorization shall state the items of work to be performed and the method of payment for each item. The Contractor shall not be entitled to payment for work performed without such order.

B. If it is practicable to pay for Extra Work on the unit price, or lump sum basis, a fair and equitable sum shall be fixed by agreement of the parties and shown in an Extra Work Order Agreement. When the Owner deems it impracticable to handle any Extra Work on the unit price or lump sum basis, or if agreement of the parties cannot be reached, the work may be ordered done and paid for on a Force Account basis, as follows:

1. Labor: The Contractor will be paid the actual amount of wages for all labor and foremen who are actually engaged in such work, to which cost shall be added 15 percent of the sum of such wages. A foreman shall not be used when there are less than two laborers employed, except with the written consent of the Engineer.
2. Welfare and Pension Fund: The Contractor will receive the actual additional amount of contributions paid for regular and uniform health and welfare benefits, pension fund benefits or other benefits, to which 15 percent shall be added, when such amounts are required by collective bargaining agreement or other employment contract generally applicable to the class of labor employed on the Work.

3. Insurance and Tax: The Contractor will receive the actual cost or increase in cost of Contractor's Public Liability and Property Damage insurance, Workmen's Compensation tax, and Social Security tax required for Force Account work. The Contractor shall furnish satisfactory evidence of the cost or rates paid for such insurance and tax.

4. Materials: The Contractor will receive the actual cost for all materials, including freight charges as shown by the original paid invoices, which become an integral part of the finished work, to which shall be added 10 percent of the sum thereof.

The Contractor will be reimbursed for any materials used in the construction of such work as sheeting, falsework, form lumber, etc., which are not an integral part of the finished work. The amount of reimbursement shall be agreed upon in writing before such work is begun, and no percent shall be added. The salvage value of such materials shall be taken into consideration in the reimbursement agreed upon.

5. Equipment. For any machinery or special equipment (other than small tools), the use of which has been authorized by the Engineer, the Contractor will be paid as following:

   a. For his own equipment, he will be paid by the monthly rate in accordance with the latest edition of Means Construction Cost Data.
   b. For rental equipment, he will be paid for the actual invoice amount as shown by the original paid invoices.

C. The equipment shall be of a type and size reasonably required to complete the Extra Work. Compensation will not be allowed for transportation to or from The Work or for the time required for setting up and removing the equipment from The Work or for equipment of a type, size or condition unsuitable for The Work.

1.05 CANCELED ITEMS

A. It shall be in the sole judgment and sole discretion of the Owner or its representatives to cancel or alter any or all portions of the Contract due to circumstances either unknown at the time of bidding or arising after the Contract was entered into. Should such actions result in elimination or non-completion of any portion of the Contract, payment shall be made as follows:

B. For the canceled work completed by the Contractor, payment shall be made to the Contractor for the actual number of units or items completed at the Contract unit or lump sum prices. For canceled work partially completed by the Contractor, payment shall be made to the Contractor for the partially completed units or items as specified in Payment for Extra Work.

C. For materials obtained by the Contractor for the unfinished (uncompleted) portions of the canceled work, that have been inspected, tested and accepted by the Engineer, and that have not been incorporated in the canceled work, payment shall be made to the Contractor for the actual costs for all such materials, including freight charges, as shown by the original paid invoices, to which shall be added 10 percent of the sums thereof. The materials, when so paid for by the Owner, shall become the property of the Owner.

1.06 PARTIAL PAYMENTS

A. The Engineer shall review the Contractors pay request for materials in place and completed, the amount of work performed, and the value thereof, at the Contract Unit Prices. From the amount so determined there shall be deducted ten percent to be retained until after the completion of the entire work to the satisfaction of the Engineer, and the balance certified to the Owner for payment.

B. Notwithstanding the above, after 50 percent or more of the work is completed, the Engineer may certify the remaining partial payments or some of them without any further retention, provided that satisfactory progress is being made in accordance with the Contract requirements and continues to be made, and provided that the amount retained shall not be less than five percent of the total adjusted Contract Price.

C. If stored matter is lost or damaged prior to incorporation in The Work, the materials shall be replaced or satisfactorily repaired at the Contractor's expense. Where payment is made for materials in storage and not yet incorporated into The Work, the Contractor shall provide to the Owner, satisfactory evidence of insurance against loss by damage or disappearance. The Contractor shall pay and be responsible for costs of storage, if any, of said materials.

1.07 ACCEPTANCE AND FINAL PAYMENT

A. Whenever the repairs and preventive maintenance measures provided for by the Contract shall have been completely performed by the Contractor according to the Contract and all parts of The Work have been approved and accepted by the Engineer, the final pay request will be prepared by the Contractor and submitted to the Engineer for approval. Along with the final pay request the Contractor must also submit the following:

1. All guarantees from General Contractor, Sub-contractors and Manufacturers.

2. Final Waiver of Lien from Contractors and Sub-contractors.
3. Complete mark up set of drawings showing amount and location of all work performed.

B. The Engineer will review all submittals, perform necessary measurements and computations and give final recommendation to Owner.

C. The amount of this final estimate, less any sums deductible or retained under the provisions of the Contract, will be paid to the Contractor as soon as practicable after the final acceptance, provided the Contractor has furnished to the Engineer satisfactory evidence that all sums of money due for any labor, materials, apparatus, fixtures or machinery furnished for the purpose of such improvements have been paid, or that the person or persons to whom the same may be due have consented to such final payment.

D. The Engineer shall determine the amount or quantity of all kinds of work herein contracted to be done and decide every question which can or may arise regarding to the execution and performance of this Contract on the part of said Contractor.

E. The acceptance by the Contractor of the final payment shall constitute a release and waiver of any and all rights and privileges under the terms of the Contract; further, the acceptance by the Contractor of final payment shall relieve the Owner from any and all claims or liabilities for anything done or furnished relative to The Work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01400
QUALITY CONTROL SERVICES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. This Section specifies administrative and procedural requirements for quality control services.

B. Quality control services include inspections and tests and related actions including reports, performed by independent agencies, governing authorities, and the Contractor. They do not include contract enforcement activities performed by the Consultant.

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

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

1. Specific quality control requirements for individual construction activities are specified in the Sections that specify those activities. Those requirements, including inspections and tests, cover production of standard products as well as customized fabrication and installation procedures.

2. Inspections, test and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Document requirements.

3. Requirements for the Contractor to provide quality control services required by the Consultant, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.03 RESPONSIBILITIES

A. Contractor Responsibilities: The Contractor shall provide inspections, tests and similar quality control services, specified in individual Specification Sections and required by governing authorities, except where they are specifically indicated to be the Owner's responsibility, or are provided by another identified entity; these services include those specified to be performed by an independent agency and not by the Contractor. Costs for these services shall be included in the Contract Sum.

1. The Contractor shall employ and pay an independent agency, to perform specified quality control services.

2. The Owner will engage and pay for the services of an independent agency to perform inspections and tests specified as the Owner's responsibilities.

a. Where the Owner has engaged a testing agency or other entity for testing and inspection of a part of the Work, and if the Contractor is also required to engage an entity for the same or related element, the Contractor shall not employ the entity engaged by the Owner, unless otherwise agreed in writing with the Owner.

3. Retesting: The Contractor is responsible for retesting where results of required inspections, tests or similar services prove unsatisfactory and do not indicate compliance with Contract Document requirements, regardless of whether the original test was the Contractor's responsibility.

a. Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original construction.

4. Associated Services: The Contractor shall cooperate with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include but are not limited to:

a. Providing access to the Work and furnishing labor and facilities necessary to facilitate inspections and tests.

b. Taking adequate quantities of representative samples of materials that require testing or assisting the agency in taking samples.

c. Providing facilities for storage and curing of test samples, and delivery of samples to testing laboratories.

d. Providing the agency with a preliminary design mix proposed for use for materials mixes that require control by the testing agency.

e. Security and protection of samples and test equipment at the Project site.

B. Owner Responsibilities: The Owner will provide inspections, tests and similar quality control services specified to be performed by independent agencies and not by the Contractor, except where they are specifically indicated as the Contractor's responsibility or are provided by another identified entity.

1. The Owner will employ and pay for the services of an independent agency, testing laboratory or other qualified firm to perform services which are the Owner's responsibility from the allowance set aside for testing in the contract sum.

C. Duties of the Testing Agency: The independent testing agency engaged to perform inspections, sampling and testing of materials and construction specified in individual Specification Sections shall cooperate with the Consultant and Contractor in performance of its duties, and shall provide qualified personnel to perform required inspections and tests.

1. The agency shall notify the Consultant and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

2. The agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.

3. The agency shall not perform any duties of the Contractor.

D. Coordination: The Contractor and each agency engaged to perform inspections, tests and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition the Contractor and each agency shall coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.

1. The Contractor is responsible for scheduling times for inspections, tests, taking samples and similar activities.

1.04 SUBMITTALS:

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

1. Submit additional copies of each written report directly to the governing authority, when the authority so directs.

2. Report Data: Written reports of each inspection test or similar service shall include, but not be limited to:

a. Date of issue.
b. Project title and number.
c. Name, address and telephone number of testing agency.
d. Dates and locations of samples and tests or inspections.
e. Names of individuals making the inspection or test.
f. Designation of the Work and test method.
g. Identification of product and Specification Section.
h. Complete inspection or test data.
i. Test results and an interpretations of test results.
j. Ambient conditions at the time of sample-taking and testing.
k. Comments or professional opinion as to whether inspected or tested Work complies with Contract Document requirements.
l. Name and signature of laboratory inspector.
m. Recommendations on retesting.

1.05 QUALITY ASSURANCE

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

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

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 REPAIR AND PROTECTION

A. General: Upon completion of inspection, testing, sample-taking and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Document requirements for "Cutting and Patching."

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

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

END OF SECTION

SECTION 01600
MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

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

B. The Contractor's Construction Schedule and the Schedule of Submittals are included under Section "Submittals."

C. Standards: Refer to Section "Reference Standards and Definitions" for applicability of industry standards to products specified.

D. Administrative procedures for handling requests for substitutions made after award of the Contract are included under Section "Product Substitutions."

1.03 DEFINITIONS

A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms such are self-explanatory and have well recognized meanings in the construction industry.

1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. Note that some product specifications require job specific purchase of the materials versus use from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

a. "Named Products" are items identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's published product literature, that is current as of the date of the Contract Documents.

2. "Materials" are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

1.04 SUBMITTALS

A. Product List Schedule: Prepare a schedule showing products specified in a tabular form acceptable to the Consultant. Include generic names of products required. Include the manufacturer's name and proprietary product names for each item listed.

1. Coordinate the product list schedule with the Contractor's Construction Schedule and the Schedule of Submittals.

2. Form: Prepare the product listing schedule with information on each item tabulated under the following column headings:

a. Related Specification Section number.
b. Generic name used in Contract Documents.
c. Proprietary name, model number and similar designations.
d. Manufacturer's and name and address.
e. Supplier's name and address.
f. Installer's name and address.
g. Projected delivery date, or time span of delivery period.

3. Initial Submittal: Within 30 days after date of commencement of the Work, submit 3 copies of an initial product list schedule. Provide a written explanation for omissions of data, and for known variations from Contract requirements.

a. At the Contractor's option, the initial submittal may be limited to product selections and designations that must be established early in the Contract period.

4. Completed Schedule: Within 60 days after date of commencement of the Work, submit 3 copies of the completed product list schedule. Provide a written explanation for omissions of data, and for known variations from Contract requirements.

5. Engineer's Action: The Consultant will respond in writing to the Contractor within 2 weeks of receipt of the completed product list schedule. No response within this time period constitutes no objection to listed manufacturers or products, but does not constitute a waiver of the requirement that products comply with Contract Documents. The Engineer's response will include the following:

   a. A list of unacceptable product selections, containing a brief explanation of reasons for this action.

1.05 QUALITY ASSURANCE

A. Source Limitations: To the fullest extent possible, provide products of the same kind, from a single source.

1. When specified products are available only from sources that do not or cannot produce a quantity adequate to complete project requirements in a timely manner,
consult with the Consultant for a determination of the most important product qualities before proceeding. Qualities may include attributes relating to visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources that produce products that possess these qualities, to the fullest extent possible.

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

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.

1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.

2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.

3. Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.

4. Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.

5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.

6. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.

7. Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS

2.01 PRODUCT SELECTION

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

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

2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

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

1. Proprietary Specification Requirements: Where only a single product or manufacturer is named, provide the product indicated. No substitutions will be permitted.

2. Semi-proprietary Specification Requirements: Where two or more products or manufacturers are named, provide one of the products indicated. No substitutions will be permitted.

a. Where products or manufacturers are specified by name, accompanied by the term "or equal," or "or approved equal" comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.

3. Non-Proprietary Specifications: When the Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.

4. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.

5. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated. General overall performance of a product is implied where the product is specified for a specific application.

a. Manufacturer's recommendations may be contained in published product literature, or by the manufacturer's certification of performance.

6. Compliance with Standards, Codes and Regulations: Where the Specifications only require compliance with an imposed code, standard or regulation, select a product that complies with the standards, codes or regulations specified.

7. Visual Matching: Where Specifications require matching an established Sample, the Consultant's decision will be final on whether a proposed product matches satisfactorily.

   a. Where no product available within the specified category matches satisfactorily and also complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category, or for noncompliance with specified requirements.

8. Visual Selection: Where specified product requirements include the phrase"...as selected from manufacturer's standard colors, patterns, textures..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Consultant will select the color, pattern and texture from the product line selected.

9. Allowances: Refer to individual Specification Sections and "Allowance" provisions in Division-1 for allowances that control product selection, and for procedures required for processing such selections.

PART 3 - EXECUTION

3.01 INSTALLATION OF PRODUCTS:

A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.

   1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION

SECTION 01631
PRODUCT SUBSTITUTIONS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

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

B. The Contractor's Construction Schedule and the Schedule of Submittals are included under Section "Submittals."

C. Standards: Refer to Section "Reference Standards and Definitions" applicability of industry standards to products specified.

D. Procedural requirements governing the Contractor's selection of products and product options are included under Section "Materials and Equipment."

1.03 DEFINITIONS

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

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

1. Substitutions requested by Bidders during the bidding period, and accepted prior to award of Contract, are considered as included in the Contract Documents and are not subject to requirements specified in this Section for substitutions.

2. Revisions to Contract Documents requested by the Owner or Consultant.

3. Specified options of products and construction methods included in Contract Documents.

4. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.04 SUBMITTALS

A. Substitution Request Submittal: Requests for substitution will be considered if received within 60 days after commencement of the Work. Requests received more than 60 days after commencement of the Work may be considered or rejected at the discretion of the Consultant.

1. Submit 3 copies of each request for substitution for consideration. Submit requests in the form and in accordance with procedures required for Change Order proposals.

2. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:

a. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.

b. Samples, where applicable or requested.

c. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect.

d. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors that will become necessary to accommodate the proposed substitution.

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

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

g. Certification by the Contractor that the substitution proposed is equal-to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.

3. Consultant's Action: Within one week of receipt of the request for substitution, the Consultant will request additional information or documentation necessary for evaluation of the request. Within 2 weeks of receipt of the request, or one week of receipt of the additional information or documentation, which ever is later, the Consultant will notify the Contractor of acceptance or rejection of the proposed substitution. If a decision on use of a proposed substitute cannot be made or obtained within the time allocated, use the product specified by name. Acceptance will be in the form of a Change Order.

PART 2 - PRODUCTS

2.01 SUBSTITUTIONS

A. Conditions: The Contractor's substitution request will be received and considered by the Consultant when one or more of the following conditions are satisfied, as determined by the Consultant; otherwise requests will be returned without action except to record noncompliance with these requirements.

1. Extensive revisions to Contract Documents are not required.

2. Proposed changes are in keeping with the general intent of Contract Documents.

3. The request is timely, fully documented and properly submitted.

4. The request is directly related to an "or equal" clause or similar language in the Contract Documents.

5. The specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.

6. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.

7. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Consultant for redesign and evaluation services, increased cost of other construction by the Owner or separate Contractors, and similar considerations.

8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.

9. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.

10. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provide the required warranty.

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

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01700
PROJECT CLOSEOUT

PART 1 - GENERAL

1.01 **RELATED DOCUMENTS**:

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

1.02 **SUMMARY**:

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

1. Inspection procedures.
2. Project record document submittal.
3. Operating and maintenance manual submittal.
4. Submittal of warranties.
5. Final cleaning.

B. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions 2 through 9.

1.03 **SUBSTANTIAL COMPLETION**:

A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.

1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.

a. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.

2. Advise Owner of pending insurance change-over requirements.

3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.

4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.

5. Submit record drawings, maintenance manuals, final project photographs, damage or settlement survey, property survey, and similar final record information.

6. Deliver tools, spare parts, extra stock, and similar items.

7. Make final change-over of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of change-over in security provisions.

8. Complete start-up testing of systems, and instruction of the Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.

9. Complete final clean up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.

B. Inspection Procedures: On receipt of a request for inspection, the Consultant will either proceed with inspection or advise the Contractor of unfilled requirements. The Consultant will prepare the Certificate of Substantial Completion following inspection, or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.

1. The Consultant will repeat inspection when requested and assured that the Work has been substantially completed.

2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.04 **FINAL ACCEPTANCE**:

A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.

1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.

2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.

3. Submit a certified copy of the Consultant's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Consultant.

4. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion, or when the Owner took possession of and responsibility for corresponding elements of the Work.

5 Submit consent of surety to final payment.

6. Submit a final liquidated damages settlement statement.

7. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

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

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

2. If necessary, re-inspection will be repeated.

1.05 **RECORD DOCUMENT SUBMITTALS**:

A. General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Consultant's reference during normal working hours.

B. Record Drawings: Maintain a clean, undamaged set of blue or black line white prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

1. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.
2. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.

3. Note related Change Order numbers where applicable.

4. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.

C. Record Specifications: Maintain one complete copy of the Project Manual, including addenda, and one copy of other written construction documents such as Change Orders and modifications issued in printed form during construction. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data.

1. Upon completion of the Work, submit record Specifications to the Consultant for the Owner's records.

D. Record Product Data: Maintain one copy of each Product Data submittal. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site, and from the manufacturer's installation instructions and recommendations. Give particular attention to concealed products and portions of the Work which cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark-up of record drawings and Specifications.

1. Upon completion of mark-up, submit complete set of record Product Data to the Consultant for the Owner's records.

E. Record Sample Submitted: Immediately prior to the date or dates of Substantial Completion, the Contractor will meet at the site with the Consultant and the Owner's personnel to determine which of the submitted Samples that have been maintained during progress of the Work are to be transmitted to the Owner for record purposes. Comply with delivery to the Owner's Sample storage area.

F. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Consultant for the Owner's records.

G. Maintenance Manuals: Organize operating and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual heavy-duty 2-inch, 3-ring vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Include the following types of information:

1. Emergency instructions.
2. Spare parts list.
3. Copies of warranties.
4. Recommended "turn around" cycles.
5. Inspection procedures.
6. Shop Drawings and Product Data.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 **CLOSEOUT PROCEDURES**:

A. Operating and Maintenance Instructions: Arrange for each installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's representatives. Include a detailed review of the following items:

1. Maintenance manuals.
2. Record documents.
3. Spare parts and materials.
4. Identification systems.
5. Control sequences.
6. Hazards.
7. Cleaning.
8. Warranties and bonds.
9. Maintenance agreements and similar continuing commitments.

B. As part of instruction for operating equipment, demonstrate the following procedures:
   1. Start-up.
   2. Shutdown.
   3. Emergency operations.
   4. Noise and vibration adjustments.
   5. Safety procedures.
   6. Economy and efficiency adjustments.
   7. Effective energy utilization.

3.02 **FINAL CLEANING**:

A. General: General cleaning during construction is required by the General Conditions and included in Section "Temporary Facilities".

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

   1. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.

      a. Remove labels that are not permanent labels.

      b. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compound and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.

c. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.

d. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.

e. Clean the site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.

C. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.

D. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

1. Where extra materials of value remaining after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed.

END OF SECTION

SECTION 01740
WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY:

A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturers' standard warranties on products and special warranties.

1. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.

2. General closeout requirements are included in Section "Project Closeout."

3. Specific requirements for warranties for the Work and products and installations that are specified to be warranted are included in the individual Sections of Divisions 2 through 9.

4. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.

B. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.03 DEFINITIONS

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

B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.04 WARRANTY REQUIREMENTS

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

B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or re-building, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.

1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.

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

1.05 SUBMITTALS

A. Submit written warranties to the Consultant prior to the date certified for Substantial Completion. If the Consultant's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Consultant.

1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Consultant within fifteen days of completion of that designated portion of the Work.

B. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner through the Consultant for approval prior to final execution.

C. Forms for special warranties are included at the end of this Section. Prepare a written document utilizing the appropriate form, ready for execution by the Contractor, or the Contractor and subcontractor, supplier or manufacturer. Submit a draft to the Owner through the Consultant for approval prior to final execution.

1. Refer to individual Sections of Divisions 2 through 9 for specific content requirements, and particular requirements for submittal of special warranties.

D. Form of Submittal: At Final Completion compile two copies of each required warranty and bond properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.

E. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.

1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer.

2. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS, the Project title or name, and the name of the Contractor.

3. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 SCHEDULE OF WARRANTIES

A. Schedule: Provide warranties on products and installations as specified below:

1. The General Contractor shall provide a 5-year warranty for all repairs performed to conform to the specifications in addition to specific warranties for individual products.

2. Concrete Work (Division 3)

The general contractor shall provide a 5-year warranty for quality workmanship and materials to conform to specifications.

3. Waterproofing (Division 7)

a) Section 07120 - Traffic bearing waterproofing membrane. The waterproofing membrane shall be jointly warranted by the manufacturer and the installer for a period of 10 years for quality workmanship and materials to conform to the specifications. The product shall be warranted against water leaking, debonding from concrete surface and excessive wearing of the wear course.

a) Section 07920 - Sealants and caulking. The contractor shall provide a single source materials and performance warranty that the crack and joints repaired, including related work in the slab and columns, will not leak water or debond from adjacent concrete for a period of five years.

END OF SECTION

SECTION 02070
SELECTIVE DEMOLITION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. DESCRIPTION

1. Furnish labor, materials, equipment and transportation necessary to do all concrete demolition, as shown on drawings and as specified herein, including but not necessarily limited to the following:

   a. Removal of existing deteriorated concrete as noted on plans or directed by the Engineer.
   b. Removal of existing light poles.
   b. Dust and water control.
   c. Removal and disposal of all debris.
   d. Disconnecting and relocating/reinstalling any existing utility lines on the site which interfere with the repairs.
   e. Protection of all existing electrical systems, mechanical equipment, light fixtures, overhead piping, fire protection system etc. scheduled to remain.

2. Contractor shall provide barricades with warning lights, enclose the construction area and take all precautions necessary to ensure public and employee safety.

3. All work shall be done in accordance with the requirements of all local and state agencies.

B. QUALITY ASSURANCE

1. Demolition Contractor's Qualifications: Minimum of 5 years experience on comparable projects.

2. Comply with all pertinent codes and regulations which apply to this type of work and with requirements of insurance carriers providing coverage for this work. Dispose of debris in a legal manner off site daily. Do not allow to accumulate on site.

C. JOB CONDITIONS

1. Dust and Water Control: Contractor shall contain particular debris generated by his work activities from polluting the atmosphere or waterways.

2. On-site burning shall not be permitted.

3. Use all means necessary to protect existing facilities, utilities, and appurtenances within the project areas.

1.03 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Schedule indicating proposed sequence of operations for selective demolition work to Owner's Representative for review prior to start of work. Include coordination for shutoff, capping, and continuation of utility services as required, together with details for dust and noise control protection.

1. Provide detailed sequence of demolition and removal work to ensure uninterrupted progress of Owner's on-site operations.

2. Coordinate with Owner's continuing use of portions of existing building and/or with Owner's partial occupancy of completed new addition.

C. Photographs of existing conditions of structure surfaces, equipment, and adjacent improvements that might be misconstrued as damage related to removal operations. File with Owner's Representative prior to start of work.

1.04 JOB CONDITIONS

A. Occupancy: Conduct selective demolition work in manner that will minimize need for disruption of Owner's normal operations. Provide minimum of 72 hours advance notice to Owner of demolition activities that will affect Owner's normal operations.

B. Condition of Structures: Owner assumes no responsibility for actual condition of items or structures to be demolished.

1. Conditions existing at time of inspection for bidding purposes will be maintained by Owner insofar as practicable. However, minor variations within structure may occur prior to start of selective demolition work.

C. Demolition and Removal: Items indicated to be removed but of salvageable value to Contractor may be removed from structure as work progresses. Transport salvaged items from site as they are removed.

1. Storage or sale of removed items on site will not be permitted.

D. Protections: Provide temporary barricades and other forms of protection to protect Owner's personnel and general public from injury due to selective demolition work.

1. Provide protective measures as required to provide free and safe passage of Owner's personnel and general public to occupied portions of the project.

2. Erect temporary covered passageways as required by authorities having jurisdiction.

3. Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of structure or element to be demolished and adjacent facilities or work to remain.

4. Protect from damage existing finish work that is to remain in place and becomes exposed during demolition operations.

5. Construct temporary insulated dust resistant partitions where required to separate areas where noisy or extensive dirt or dust operations are performed. Equip partitions with dust resistant doors and security locks.

6. Provide temporary weather protection during interval between demolition and removal of existing construction on exterior surfaces and installation of new construction to ensure that no water leakage or damage occurs to structure or interior areas of existing building.

7. Remove protections at completion of work.

E. Damages: Promptly repair damages caused to adjacent facilities by demolition work.

F. Traffic: Conduct selective demolition operations and debris removal to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.

1. Do not close, block, or otherwise obstruct streets, walks, or other occupied or used facilities without written permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

G. Flame Cutting: Do not use cutting torches for removal until work area is cleared of flammable materials. At concealed spaces, such as interior of ducts and pipe spaces, verify condition of hidden space before starting flame-cutting operations. Maintain portable fire suppression devices during flame-cutting operations.

H. Utility Services: Maintain existing utilities in service and protect them against damage during demolition operations.

1. Do not interrupt utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities.

2. Maintain fire protection services during selective demolition operations.

I. Environmental Controls: Use water sprinkling, temporary enclosures, and other methods to limit dust and dirt migration. Comply with governing regulations pertaining to environmental protection.

1. Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Use appropriate materials and proper equipment to complete the work of this Section. Provide all necessary barricades, warning devices, enclosures, etc. as required to comply with governing safety regulations.

PART 3 - EXECUTION

3.01 PREPARATION

A. General: Provide interior and exterior shoring, bracing, or support to prevent movement, settlement, or collapse of areas to be demolished and adjacent facilities to remain.

1. Cease operations and notify Owner's Representative immediately if safety of structure appears to be endangered. Take precautions to support structure until determination is made for continuing operations.

2. Cover and protect equipment, and fixtures from soilage or damage when demolition work is performed in areas where such items have not been removed.

3. Erect and maintain dust resistant partitions and closures as required to prevent spread of dust or fumes to occupied portions of the building.

   a. Where selective demolition occurs immediately adjacent to occupied portions of the building, construct dust resistant partitions of minimum 4-inch studs and ½-inch fire-retardant plywood on demolition side.

   b. Provide weatherproof closures for exterior openings resulting from demolition work.

4. Locate, identify, stub off, and disconnect utility services that are not indicated to remain.

   a. Provide bypass connections as necessary to maintain continuity of service to occupied areas of building. Provide minimum of 72 hours advance notice to Owner if shutdown of service is necessary during changeover.

3.02 DEMOLITION

A. General: Perform selective demolition work in a systematic manner. Use such methods as required to complete work indicated on Drawings in accordance with demolition schedule and governing regulations.

1. Demolish concrete in small sections. Cut concrete and masonry at junctures with construction to remain using power-driven masonry saw or hand tools; do not use power-driven impact tools.

2. Locate demolition equipment throughout structure and promptly remove debris to avoid imposing excessive loads on supporting walls, floors, or framing.

3. Provide services for effective air and water pollution controls as required by local authorities having jurisdiction.

B. If unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure both nature and extent of the conflict. Submit report to Consultant written, accurate detail. Pending receipt of directive from Owner's Representative, rearrange selective demolition schedule as necessary to continue overall job progress without undue delay.

3.03 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove from building site debris, rubbish, and other materials resulting from demolition operations. Transport and legally dispose off site.

1. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning removal, handling, and protection against exposure or environmental pollution.

2. Burning of removed materials is not permitted on project site.

3.04 CLEANUP AND REPAIR

A. General: Upon completion of demolition work, remove tools, equipment, and demolished materials from site. Remove protections and leave interior areas broom clean.

1. Repair demolition performed in excess of that required. Return elements of construction and surfaces to remain to condition existing prior to start operations. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.

END OF SECTION

SECTION 02580

PAVEMENT MARKING

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. The work includes preparation of surfaces and furnishing and applying paint for pavement and curb markings, traffic striping, directional arrows and messages.

B. New striping and markings shall be installed at the following:

1. On-grade paving
2. Supported deck on new traffic-bearing waterproof membrane.

1.02 QUALITY ASSURANCE

A. Provide paint which is compatible with substrate material.

B. Codes and Standards: Conform to state requirements for volatile organic compound (V.O.C.) contents where applicable.

1.03 SUBMITTALS

A. Submit paint manufacturer's certification of compliance with the specified requirements.

1.04 JOB CONDITIONS

A. Weather: Apply traffic paint only when the ambient air temperature is 40 degrees Fahrenheit or higher and the temperature o the surface to be painted is 45 degrees Fahrenheit or higher. If pavement is wet, allow the surface to dry for a minimum of eight hours after it appears surface dry.

B. Protection of the work: Exercise care to prevent paint from dripping on the pavement, curb and sidewalks, and remove any drippings or spillage before they harden. Protect adjoining surfaces against over-spray or paint splash stains, throughout painting operations.

C. Traffic Maintenance: Furnish, install and maintain traffic cones, barricades, lights and other protective devices required to protect traffic, workmen and completed pavement marking and striping, and remove when marking and striping, including painted sections of curbing and raised traffic bars, have set and hardened to such degree that they will not be damaged.

D. Scheduling of the Work: Schedule marking and striping operations to permit paint to set and harden before the area is to be opened to traffic.

PART 2 - PRODUCTS

2.01 TRAFFIC PAINT

A. Provide materials conforming to the requirements of AASHTO Designation: M248 for ready-mixed Traffic Type II Paints and AASHTO Designation. All traffic paints shall be compatible with the
traffic-bearing waterproof membrane

1. Provide yellow paint for striping on asphalt and concrete.
2. Provide blue paint for handicap stalls and hatching.
3. Provide yellow paint for concrete curb edges and striping on concrete.

B. Block out Paint: Line block out paint by Sealmaster, Inc. or approved equal.

PART 3 - EXECUTION

3.01 EQUIPMENT

A. Use atomizing spray-type equipment, guides, and templates designed for the purpose and which are also designed to apply strips, symbols, and letter of uniform size and cross section, with clear-cut edges and uniform thickness for the coverage specified.

3.02 LAYOUT OF THE WORK

A. Provide sufficient control points to permit application of stripes, directional arrows, messages, crosswalk marking, and parking space delineations as shown on the drawings.

1. Locate and layout marking in a manner that will not interfere with adhesion of point or leave permanent non-specified markings.

3.03 APPLICATION

A. Surface Conditions: Do not apply paint to new bituminous pavement until 24 hours after pavement has been placed. On new Portland Cement concrete pavement, do not apply paint until the pavement has been allowed to cure for a minimum of seven days.

B. Cleaning: Clean the surface of areas to be painted of dust, dirt, laitance, oil, and other foreign substances detrimental to paint adhesion.

C. Painting:

1. Apply paint only during daylight hours. Except for special area and markings requiring hand painting, apply all pavement marking by machine

2. Suspend painting operations when wind conditions are such that blowing of spray-applied paint and deposit of dust on newly applied paint is likely.

3.04 CORRECTIVE MEASURES

A. Repair or remove and reapply any pavement markings that fail to satisfy the requirements indicated. Submit proposed means of cleaning, removing, or obliterating unsatisfactory markings to the Architect for approval prior to commencing corrective work. Use materials for cleaning pavement of spills, spatter, or overspray that will not injure the paved surface.

END OF SECTION

SECTION 03200
CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 DESCRIPTION

A. Furnish, fabricate and install reinforcement and associated items required or indicated on the drawings for cast-in-place concrete, including, but not necessarily limited to, conventional and epoxy-coated bars, welded wire fabric, ties, and supports.

1.03 WORK SPECIFIED ELSEWHERE

A. Furnishing and placement of inserts, anchorages, and other embedded items as specified in other sections.

1.04 QUALITY ASSURANCE

A. Unless otherwise shown or specified, fabrication and placement of all concrete reinforcement and related items shall conform to the following codes and standards:

1. American Concrete Institute, ACI 318, "Building Code Requirement for Reinforced Concrete."

2. American Concrete Institute, ACI 315, "Manual of Standard Practice for Detailing Reinforced Concrete Structures."

3. Concrete Reinforcing Steel Institute, "Manual of Standard Practice."

1.05 SUBMITTALS

A. Shop Drawings: Submit shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with the ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures." Show bar schedule, stirrup spacing, diagrams of bent bars, arrangements and assemblies, for the fabrication and placement of concrete reinforcement.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery: Deliver reinforcement to the Project Site bundled, tagged, and marked. Use metal tags indicating bar size, lengths, and other information corresponding to markings shown on placement diagrams.

Protection: Use all means necessary to protect concrete reinforcement before, during, and after installation and to protect the materials and installed work of all trades. Take all necessary precautions to maintain identification of fabricated bars after bundles are broken.

Storage: Store concrete reinforcement materials at the site to prevent damage and accumulation of dirt or excessive rust. Epoxy-coated reinforcing bars shall be stored on protective cribbing.

Epoxy-coated reinforcing bars: Coating damage due to handling, shipment and placing need not be repaired where the damaged area is 0.1 square inches or smaller; damaged areas larger than 0.1 square inches shall be repaired with Section 2.01 C; the maximum amount of damage including repaired and unrepaired areas shall not exceed 2 percent of the surface area of each bar.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Reinforcing Bars: ASTM A615, Grade 60, deformed.

B. Welded Wire Fabric: ASTM A82 and ASTM A185. (EPOXY COATED)

C. Epoxy-Coated Reinforcing Bars: ASTM A775. When required, damaged epoxy coating shall be repaired with patching material conforming to ASTM A775 and done in accordance with the material manufacturer's recommendations. Reinforcing bars to be coated shall conform to Section 2.01-A.

D. Bar Supports: Bar supports and spacing of same shall be per recommendations set forth by Chapter 3 of the "CRSI Manual of Standard Practice." Epoxy coated reinforcing bars supported from formwork shall rest on coated wire bar supports, or on bar supports made of dielectric material or other acceptable materials. Wire bar supports shall be coated with dielectric material, compatible with concrete, for a minimum distance of 2 inches from the point of contact with epoxy-coated reinforcing bars. Reinforcing bars used as support bars shall be epoxy-coated.

E. Tie Wire: Wire shall be 16 gauge or heavier, black-annealed. Epoxy-coated reinforcing bars shall be tied with plastic coated, epoxy coated, or nylon-coated tie wire or other acceptable materials.

F. For epoxy grouting reinforcing steel use the Hilti “HIT HY 500 System” supplied by Hilti Fastening Systems, or approved equal. Follow manufacturer's directions for installation and required surface preparation.

2.02 FABRICATION

A. General Requirements: Fabricate reinforcing bars to conform to required shapes and dimensions, with fabrication to tolerances complying with CRSI Manual of Standard Practice. In case of fabricating errors, do not rebend or straighten reinforcement in a manner that will injure or weaken the material.

B. Unacceptable Workmanship: Reinforcement with any of the following defects will not be permitted in the work:

1. Bar lengths, depths and bends exceeding specified fabrication tolerances.

2. Bends or kinks not indicated on drawings or final shop drawings.

3. Bars with reduced cross-section due to excessive rusting or other cause.

C. When epoxy-coated reinforcing bars are cut in the field, the ends of the bars shall be coated with the same material used for repair of coating damage.

PART 3 - EXECUTION

3.01 PLACING REINFORCEMENT

A. General Requirements:

1. All reinforcing bars shall be placed in accordance with CRSI "Recommended Practice for Placing Reinforcing Bars."

2. Bars shall be placed to the tolerance specified in ACI 318-99.

3. Place all reinforcement according to the approved placement drawings. Use sufficient bar supports, tie anchors, additional reinforcing bars, if required, and other accessories to hold all bars securely in place.

B. Concrete Coverage: Place reinforcement to obtain the minimum coverages specified on the drawings for concrete protection. Arrange, space, and securely tie bars and bar supports together with 16 gauge wire to hold reinforcement accurately in position during concrete placement operation. Set wire ties so that twisted ends are directed away from exposed concrete surfaces.

C. Cleaning Reinforcement: Steel reinforcement, at the time concrete is placed around it, shall be free from loose rust and mill scale, oil, grease, paint, earth, ice and all coatings, which would reduce or destroy bond between steel and concrete. Clean reinforcement as necessary prior to, during, or after placement to achieve this result. When bars project from construction joints, all cement mortar clinging to the bars from previous concreting shall be removed before the ensuing enveloping concrete is placed.

3.02 REINFORCING BAR LAP SPLICES

A. New slab reinforcing bars may be spliced to existing bars by lapped splices if adequate lengths of exposed existing bars are available. Provide reinforcement lap splices by placing bars in contact and tying with wire tightly. Comply with the requirements of Engineering Data Report Number 45, ‘Tension Development and Lap Splice Lengths of Reinforcing Bars Under ACI 318-99’ for minimum required length of bar for lap splices. Alternatively, the contractor can follow the values provided below for lap splice lengths based on the following guidelines:

LAP SPLICE LENGTHS FOR BARS IN TENSION (IN INCHES)

Bar Size	Uncoated Reinforcement	Epoxy-Coated Reinforcement
3	16	17
4	16	22
5	22	33
6	31	46
7	50	74
8	62	93

Note 1. Based on Class B splice = 1.3 ld (ld = tensile development length)
Normal weight concrete
f'c= 4,000 psi min.
Grade 60 reinforcement
Concrete cover = 1.00 in. or greater
Bars have less than 12 in. concrete cast below them.

Note 2. Lap splice lengths for epoxy-coated steel based on concrete cover equal to or greater than 3 bar diameters and clear spacing between bars equal to or greater than 6 bar diameters.

Note 3. For lightweight aggregate concrete, multiply the tabulated values by 1.3.

B. Do not make splices at points of maximum stress if possible.

C. Stagger top splices, and in horizontal wall reinforcement separate at least five feet longitudinally in alternate bars of opposite tiers.

D. Stubs and dowels required to receive and engage subsequent work shall extend a sufficient length to develop the strength of the bar. Place dowel and stub bars in the forms and secure against displacement during the placing of concrete. Where stub steel and dowels extend through construction joints in walls, they shall be thoroughly cleaned of adhering particles of concrete, before continuing the placing of any subsequent concrete.

E. Where splicing length is insufficient either additional concrete removal or mechanical bar splicing shall be implemented at the direction of the Engineer.

3.03 REINFORCING BAR MECHANICAL SPLICES

A. Bars to be spliced by the mechanical splicing process shall be free of paint, oil, rust, scale or other foreign material. The splice shall be done in accordance with the manufacturer's recommendations which shall be submitted to the Engineer for approval.

The mechanical splice shall meet full tension requirement of 100% of the yield strength (fy). The mechanical splices shall be performed using the Quick Wedge system manufactured by Erico Products, Inc. (800)248-2677, MBT Bar Lock System (800) 755-4888, or approved equal.

Test assemblies shall include the same bars, couplers and anchors. The same equipment shall be used to make these assemblies as to be used on the project.

B. Unskilled operators must be trained and indoctrinated by an authorized representative of the system manufacturer. Upon satisfactory completion of the training, a certificate will be issued by the system manufacturer to show the splicer's name, badge, number/Social Security Number and date certified.

C. Test splices should be made on the size, type and grade of rebar to be used in production. If a change of size, type of grade or rebar occurs, new test results should be obtained.

Minimum rebar deformation heights and spacing within the splice must conform to the requirements of ASTM A625, or ASTM A706 as appropriate. If minimum deformation heights and spacing requirements cannot be satisfied, the system's manufacturer may at its option offer and get an approval for alternate splicing procedure to meet the specified splicing strength requirements.

D. The frequency of test splices shall be as follows:

First Fifty (50) - One Test
Next Fifty (50) - One Test
Thereafter, every one hundred (100) - One Test

The test splice shall be a SISTER SPLICE (removable splice made in-place and in sequence adjacent to production splices by the same operator and under same conditions.)

Separate test frequencies are not necessary to horizontal, vertical and diagonal splices.

E. If any splice used for testing fails to meet the design code strength requirements, two splices in-place shall be cut from the previous lot and tested. If these sister splices fail, the contractor shall at his own expense, test as many splices as directed by the Engineer and re-splice all test and failed splices.

END OF SECTION

SECTION 03300
CONCRETE WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. This Section specifies cast-in-place concrete, including formwork, mix design, placement procedures, and finishes.

1.03 SCOPE OF WORK

A. This work shall consist of full/partial depth removal of concrete topping slabs and partial depth removal at locations indicated on the drawings and as directed by the engineer in the field using chipping hammers and placing new, low water-cement ratio, fiber-reinforced, air-entrained structural concrete, or approved repair material in accordance with the specifications.

1.04 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data for proprietary materials and items, including forming accessories, admixtures, patching compounds, bonding grout/agent, joint systems, curing compounds, and others as requested by Consultant.

C. The Contractor shall submit trial mix proportion with compressive strength test results to the Consultant for approval.

D. The Testing Agency shall submit test results of cylinders for each day's testing.

E. The Contractor shall submit the proposed pouring sequence and construction joint layout for approval by the Consultant.

F. Minutes of pre-construction conference.

1.05 QUALITY ASSURANCE:

A. Codes and Standards: Comply with provisions of following codes, specifications, and standards, except where more stringent requirements are shown or specified:

1. ACI 318-99, "Building Code Requirements for Structural Concrete," or AASHTO specifications.

B. Materials and installed work may require testing and retesting at any time during progress of work. Retesting of rejected materials for installed work, shall be done at Contractor's expense.

C. Pre-Construction Conference: Conduct conference at Project site to comply with requirements of Division 1 Section 01300 - Submittals, and Section 01400 - Quality Control Services.

D. At the onset of the project start or at least 30 days prior to the first concrete pour, the contractor shall conduct a meeting to review the proposed mix designs and to discuss the required methods and procedures necessary to achieve the required concrete quality. The meeting will review requirements for submittals, status of coordinating work, and availability of materials. It will also establish preliminary work progress schedule and procedures for materials inspection, testing, and certifications. Representatives of each entity directly concerned with cast-in-place concrete should attend the meeting, including, but not limited to, the following:

1. Contractor's superintendent.
2. Laboratory responsible for concrete design mixes.
3. Laboratory responsible for field quality control.
4. Ready-mix concrete producer.
5. Concrete subcontractor, if any.
6. Primary admixture manufacturers.
7. Consultant or Owner's representative.

The minutes shall include a statement by the concrete contractor indicating that the proposed mix design and placing techniques will produce the concrete quality required by these specifications.

1.06 APPLICATOR'S QUALIFICATIONS:

A. The Contractor shall have a minimum of five years of experience in performing work similar to that shown in the drawings and specifications.

B. The Contractor may be requested to submit a list of five projects in which similar work to that specified was successfully completed. This list shall contain the following for each of the five projects.

1. Project Name
2. Owner of Project
3. Owner's Representative, Address and Telephone Number
4. Brief Description of Work
5. Cost of Portion of Work Similar to that Specified in this Section
6. Total Restoration Cost of Project
7. Date of Completion

PART 2 - PRODUCTS

2.01 FORM MATERIALS:

A. Forms for Exposed Finish Concrete: N/A

B. Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.

C. Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

D. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off metal form ties, designed to prevent form deflection and to prevent spalling concrete upon removal. Provide units that will leave no metal closer than 1-1/2 inches to exposed surface.

1. Provide ties that, when removed, will leave holes not larger than 1-inch diameter in concrete surface.

2.02 CONCRETE MATERIALS:

A. Portland Cement: ASTM C 150, Type I, non air-entraining, of recent manufacture and free of lumps.

1. Use one brand of cement throughout project unless otherwise acceptable to Consultant.

2. Pozzolanic materials (fly ash or slag) may be substituted for a portion of the cement when reviewed and approved by the Consultant or Owner's representative. Submittals must indicate testing to prove its suitability in combination with the intended cement and aggregate.

3. Additional, sustained moist curing of the concrete is required when pozzolans are used.

B. Normal Weight Aggregates: ASTM C-33 and as herein specified. Provide aggregates from a single source for exposed concrete. Coarse aggregates shall be clean, sound crushed stone or crushed gravel. Maximum size of coarse aggregate shall be 3/4 inch. No chert shall be permitted.

C. Water: Potable water.

D. Sand: ASTM C-33. Sand shall be clean and sharp.

E. Admixtures, General: Provide admixtures for concrete that are free from chloride ions.

F. Air-Entraining Admixture: ASTM C-260, certified by manufacturer to be compatible with other required admixtures.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:

2. Products: Subject to compliance with requirements, provide one of the following:

a. "Air-Mix" or "AEA-92," Euclid Chemical Co.
b. "Darex AEA" or "Daravair," W.R. Grace & Co.
c. "MB-VR" or "Micro-Air," Master Builders, Inc.
d. "Sealtight AEA," W.R. Meadows, Inc.
e. "Sika AER," Sika Corp.

G. Water-Reducing Admixture: ASTM C 494, Type A.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:

2. Products: Subject to compliance with requirements, provide one of the following:

a. "Eucon WR-75," “WAR-91” or “Eucon MR,” Euclid Chemical Co.
b. "WRDA with Hycol," or “Daracem 65,” W.R. Grace & Co.
c. "Pozzolith 322” or “Polyheed 997,” Master Builders, Inc.
d. "Plastocrete 161," Sika Corp.

H. High-Range Water-Reducing Admixture (Super Plasticizer):
ASTM C 494, Type F or Type G.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:

2. Products: Subject to compliance with requirements, provide one of the following:

a. "Eucon 37," “Eucon 1037,” or “Plastol 5000,” Euclid Chemical Co.
b. "WRDA 19" or "Daracem 100," W.R. Grace & Co.
c. "Rheobuild 1000," Master Builders, Inc.
d. "Sikament 300," Sika Corp.

I. Water-Reducing, Retarding Admixture: ASTM C 494, Type D.

1. Available Products: Subject to compliance with requirements, products that may be incorporated in the work include, but are not limited to, the following:

2. Products: Subject to compliance with requirements, provide one of the following:

a. "Eucon Retarder 75," Euclid Chemical Co.
b. "Daratard-17," W.R. Grace & Co.
d. "Pozzolith 100XR," Master Builders, Inc.
e. "Plastiment," Sika Corporation.

J. Certification: Written conformance to the above-mentioned requirements and the chloride ion content of admixtures will be required from the admixture manufacturer prior to mix design review by the Engineer.

2.03 RELATED MATERIALS:

A. Reglets: Where resilient or elastomeric sheet flashing or bituminous membranes are terminated in reglets, fill reglet or cover face opening to prevent intrusion of concrete or debris.

B. Moisture-Retaining Cover: Burlap and plastic complying with ASTM C 171.

C. Moist Curing: Curing shall be accomplished by wet curing only. A curing membrane shall only be used in floor areas if approved in writing by the Consultant or Owner's representative.

D. Liquid Curing and Sealing Compound (VOC compliant, 350 g/l): The compound shall have 30% solids content minimum and will have a maximum moisture loss of 0.039 grams/cm2 when applied at a coverage rate of 250 ft2/gallon. Product shall be "Super Aqua-Cure VOX," or "Super Diamond Clear VOX" by the Euclid Chemical Co.

or

Curing and Sealing Compound (VOC compliant, 700 g/l): Liquid type membrane-forming curing compound, clear styrene acrylate type, complying with ASTM C1315, Type I, Class B, 25% solids content minimum. Moisture loss shall be not more than 0.30 Kg/m2 when applied at 300 sq. ft./gal. Manufacturer's certification is required. Subject to project requirements provide one of the following products: "Super Rez Seal" by the Euclid Chemical Company, "Masterseal 30" by Master Builders or "Kure N Seal 30" by Sonneborn.

2.04 PROPORTIONING AND DESIGN OF MIXES

A. Prepare design mixes for concrete by laboratory trial batch or field experience methods as specified in ACI 301, Section 4.2.3. Use an independent testing facility acceptable to the Consultant for preparing and reporting proposed mix designs. The testing facility shall not be the same as used for field quality control testing.

B. Submit written reports to the Consultant of each proposed mix at least 15 days prior to start of work. Do not begin concrete production until proposed mix designs have been reviewed and approved by the Consultant. All mix designs shall be submitted on a Mix Design Submittal Form.

C. Design mix to provide structural concrete with the following properties;

1. 5000-psi, 28-day compressive strength, structural normal weight 145 pcf; W/C ratio, 0.4 maximum.

2.05 ADMIXTURES

A. Use high-range water-reducing admixture (Superplasticizer) in concrete for placement and workability.

B. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content of 6.0% with a tolerance of plus or minus 1.0 percent.

C. Use admixtures for water reduction and set control in strict compliance with manufacturer's directions.

D. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:

1. 3 inches plus or minus ½ inch, prior to addition of superplasticizing admixture.
2. Not more than 8 inches final slump after addition of superplasticizing admixture.

2.06 CONCRETE MIXING

A. Provide batch ticket for each batch discharged and used in work, indicating project identification name and number, date, mix type, mix time, quantity, and amount of water introduced.

B. Ready-Mix Concrete: Comply with requirements of ASTM C 94, and as specified.

1. When air temperature is between 85 deg F (30 deg C) and 90 deg F (32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.01. PREPARATION

A. Remove concrete members as indicated on the drawing. The removal of concrete shall be performed using approved methods and prepare the concrete surfaces to receive new concrete as shown on plans and as directed by the engineer in the field.

3.02 FORMS

A. General:

1. The Contractor shall submit detailed drawings for form work for examination by the Consultant. If such drawings are not satisfactory to the Consultant, the Contractor shall make such changes in them as may be required, but it is understood that the Consultant's examination of the drawings as submitted or corrected shall in no way relieve the Contractor of responsibility for obtaining satisfactory results.

2. All forms shall be so constructed and maintained that the finished concrete will be true to line and grade and of the shape and dimensions shown on the Plans. The forms shall be constructed so that they can be removed without injury to the concrete.

3. Forms shall be mortar-tight, sufficiently rigid to prevent distortion due to the wet concrete mix and other loads incident to construction operations, including vibration, and so constructed and maintained to prevent warping and opening of the joints due to shrinkage of the form material. Molding strips shall be placed in the corners of forms so as to produce beveled edges on permanently exposed concrete corners.

4. The interior of forms shall be treated with a non-staining form oil before concrete is placed to prevent adhesion of the concrete to the form.

5. All lumber in contact with concrete shall be free from knot holes, loose knots, cracks, splits, warps or any other defects which would mark the appearance of the finished structure. Any lumber which had defects affecting its strength shall not be used.

6. In designing forms, concrete shall be considered as a liquid weighing 150 pounds per cubic foot for vertical loads and for computing the hydrostatic head for horizontal pressure. In addition, a live load allowance of 50 pounds per square foot shall be used on horizontal projections of surfaces. Forms shall be designed so that no member will develop a dead load deflection of more than 1/270th of the span.
7. Spreader blocks and non "stay-in-place" bracing shall be removed from forms before concrete is placed. In no case, shall any portion of wood be left in the concrete.

B. Forms for Permanently Exposed Surfaces:

1. Forms for concrete surfaces that will be permanently exposed to view shall be constructed of plywood or of metal panels. Wood or metal linings for forms shall be of such kind and quality, or shall be so treated or coated, that there will be no chemical deterioration or discoloration of the formed concrete surface. The type and condition of form linings, and the construction of the forms, shall be such that form surfaces will be even and uniform.

2. Plywood sheets less than five-eighth inch in thickness shall be placed against a solid wood backing of three-quarter inch sheathing. Plywood sheets five-eighth inch or more in thickness may be used without backing, provided the forms are constructed to withstand pressure developed during placing of concrete without producing visible waviness between studs. Plywood sheets shall be placed so that joints are tight and with the long dimension horizontal.

3. Metal for forms shall be of such thickness that the forms will remain true to shape. Clamps, pins, or other connecting devices shall be such that they will hold the forms rigidly together in place and allow removal without injury to the concrete. Metal forms which do not present a smooth surface or line up properly shall not be used. All metal forms shall be kept free from rust, grease, or other foreign material which would discolor the concrete.

4. Form panels, either of wood or metal, shall be constructed and assembled so as to result in tight joints between the panels.

C. Form Anchorage:

1. Forms shall be securely tied together with approved rods, and braced in a substantial and unyielding manner. In general, tie rods shall be designed to also act as struts or spreader. Wood struts will not be permitted to remain in the concrete.

2. For concrete surfaces that will be permanently exposed to view, metal ties or anchorages within the forms shall be constructed so as to permit their removal to a depth of at least one and one-half inches from the face without injury to the concrete. The cavities on both sides of the concrete resulting from the removal of the end of form ties shall be filled with dry-pack Portland cement mortar having the same proportions of cement and sand as the mortar in the body of the concrete. The surface of the filling shall be left sound, smooth and even and shall match, insofar as practicable, the color of he surrounding concrete.

3. Devices which, when removed, will leave an opening entirely through the concrete will not be permitted. Wire ties shall not be used. Any parts of metal supports or spacers for reinforcement that are left in place within one and one-half inches of an exposed surface of the concrete shall be of non-rusting metal or have a non-rusting coating. If such parts are galvanized, the weight of zinc coating shall average not less than two ounces per square foot of actual surface.

D. Inspection of Forms:

1. All dimensions of forms in place shall be carefully checked before concrete is placed. Immediately prior to placing concrete, any warpings or bulging shall be corrected and all dirt, sawdust, shavings or other debris removed. In narrow walls where the bottom of the forms are otherwise inaccessible, the lower boards or panels shall be left loose on the back side so that extraneous material can be removed just prior to placing concrete.

2. If during placing of the concrete, the forms show signs of bulging or sagging, they shall be properly realigned and securely braced, and, if necessary to make proper correction, the portion of the concrete affected shall be removed.

3. When forms are unsatisfactory in any way, either before or during the placing of concrete, the placing shall be suspended until the defects are corrected.

4. If the forms develop any defects, such as bulging, sagging, leakage or irregular surfaces after the concrete has been poured, that portion of the work shall be removed, reconstructed or repaired as directed by the Consultant without additional compensation to the Contractor.

3.03 PLACING FINISHING AND CURING:

A. Bonding Grout:

1. After the existing concrete surface has been cleaned, it shall be uniformly saturated by pre-wetting for 2 hours minimum. Surface must be wet to saturated surface dry (SSD) condition, and any freestanding water shall be completely removed prior to placing the bonding grout. Immediately before placing concrete, a thin coating of bonding grout shall be scrubbed into the properly prepared surface of the existing concrete. Proper workmanship shall be exercised to insure that all existing surfaces receive a thorough, even coating and that no excess grout is permitted to collect in pockets. The rate of progress in applying grout shall be limited so that the grout does not become dry before it is covered with new concrete.

2. Bonding grout for patching concrete to existing concrete shall consist of equal parts by weight of Portland Cement and sand mixed in a portable mechanical mixer with sufficient water to form a stiff slurry. The consistency of this slurry shall be such that it can be applied with a stiff brush or broom to the old concrete in a thin, even coating that will not run or puddle in low spots.

3. Should the bonding grout dry before the concrete is placed, the Contractor will remove the dried grout and sandblast clean the grouted surface, at his expense, before placing fresh bonding grout.

4. When the method of concrete removal includes hydromilling or hydrodemolition, the requirements for the use of bonding grout may be waived. Prepared surfaces shall be clean and free of laitance, foreign material and any debris encountered during surface preparation. Do not allow cement to dry and re-adhere on the surfaces. The surface shall be uniformly saturated by wetting for 4 hours (min.) Surface will be saturated surface dry (SSD) condition, and any free standing water shall be completely removed prior to concrete placement. No free moisture or puddles on the surface will be permitted or accepted.

B. Placing and finishing: After the bonding grout has been applied, concrete shall be placed, consolidated by vibration, and shall be finished by screening and bull floating to bring the finished surface to specified elevation. The surface shall then receive a light broom finish, as directed by the Engineer. The reinforcing steel shall have a minimum concrete cover as shown on plans. The finished concrete shall be suitably protected, until the completion of the required curing period. Provide tooled joints between new and existing concrete surfaces.

C. Curing: The recommendations of ACI 308 Standard Practice for Curing Concrete, shall be followed. When water is required to wet the surface of the newly placed concrete, it shall be applied as a fine spray so that it will not mark or pond on the surface. Except where otherwise specified, the curing period shall be at least 72 hours. If high early strength concrete is approved by the Consultant, the curing period may be reduced as directed by the Consultant. If fly ash or slag is approved in the mix by the Consultant, the curing time will be extended. Curing shall be accomplished by wet curing only. The curing and sealing compound shall only be used on floor and slab areas approved by the Consultant.

1. The surface of the newly poured concrete shall be covered with wetted burlap as soon as the concrete has hardened sufficiently to prevent marring of the surface. The burlap shall overlap six inches. At least two layers of wetted burlap shall be placed on the finished surface. The burlap shall be kept saturated by means of a mechanically operated sprinkling system. In place of the sprinkling system, two layers of burlap may be substituted for one layer of burlap and impermeable covering.
   The burlap sheets shall be placed so that they are in contact with the vertical faces of concrete slabs after removal of slab forms, and that portion of the material in contact with those faces shall be kept saturated with water.

2. Membrane Curing Method. Membrane curing will not be permitted unless approved in writing by the Consultant. Concrete at these locations shall be cured by another method as specified above.

   After the concrete has been finished, the surface shall be cured with the specified curing compound. The seal shall be maintained for the specified curing period. The vertical faces of concrete slabs shall, likewise, be sealed immediately after the forms are removed. This high solids curing and sealing compound shall be applied at a maximum coverage rate of 250 square feet per gallon. These applications shall be made with mechanical equipment.

   At locations where the coating is discontinuous or where pin holes show or where the coating is damaged due to any cause and on areas adjacent to sawed joints, immediately after sawing is completed, an additional coating of membrane curing compound shall be applied at the rate of one gallon per 250 square feet.

3. The Consultant may order curing by another method specified herein if unsatisfactory results are obtained with a curing compound. Prior to starting The Work, the Contractor shall have available, at the site of The Work, supply of one of the other approved curing materials sufficient for curing one day's production.

4. The Contractor's construction operations including the management of traffic, shall be such as to avoid damage to the coatings of curing compound for period of not less than the curing period specified. Any curing compound that is damaged or that peels from the concrete surface within the curing period specified, shall be repaired by the Contractor without delay and in an approved manner. No additional compensation will be allowed to the Contractor for performance of this work.

3.04 REMOVAL OF FORMS:

A. General: Formwork may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 72 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form-removal operations, and provided curing and protection operations are maintained.

3.05 REUSE OF FORMS

A. Clean and repair surfaces of forms to be reused in work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-coating compound as specified for new formwork.

B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use "patched" forms for exposed concrete surfaces except as acceptable to Consultant.

3.06 CONCRETE SURFACE REPAIRS

A. Patching Defective Areas: Repair and patch defective areas with bonding grout or proprietary repair products immediately after removal of forms, when acceptable to Consultant.

1. Cut out honeycomb, rock pockets, voids over 1/4 inch in any dimension, and holes left by tie rods and bolts, down to solid concrete but in no case to a depth of less than 1 inch. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with specified bonding agent. Place patching mortar before bonding grout has dried.

2. For exposed-to-view surfaces, blend white portland cement and standard portland cement so that, when dry, patching mortar will match surface texture of surrounding concrete. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

B. Repair of Concrete Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Consultant. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins and other projections on surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes, fill with dry-pack mortar, or precast cement cone plugs secured in place with bonding agent.

1. Repair concealed formed surfaces, where possible, that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.

3.07 QUALITY CONTROL TESTING DURING CONSTRUCTION

A. General: The Owner will employ a testing laboratory to perform tests and to submit test reports.

B. Sampling and testing for quality control during placement of concrete may include the following, as directed by Consultant.

C. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.

1. Slump: ASTM C 143; one test at point of discharge for each truck delivering the concrete; additional tests when concrete consistency seems to have changed.

2. Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM C 231 pressure method for normal weight concrete; one for each truck of air-entrained concrete.

3. Concrete Temperature: Test hourly when air temperature is 40 deg F (4 deg C) and below, when 80 deg F (27 deg C) and above, and each time a set of compression test specimens is made.

4. Compression Test Specimen: ASTM C 31; one set of 6 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory-cured test specimens except when field-cure test specimens are required.

5. Compressive Strength Tests: ASTM C 39; one set for each day's pour exceeding 5 cu. yds. plus additional sets for each 50 cu. yds. more than the first 25 cu. yds. of each concrete class placed in any one day; one specimen tested at 3 days, two specimen tested at 7 days, 2 specimens tested at 28 days, and one specimen retained in reserve for later testing if required.

6. When frequency of testing will provide fewer than 5 strength tests for a given class of concrete, conduct testing from at least 5 randomly selected batches or from each batch if fewer than 5 are used.

7. When total quantity of a given class of concrete is less than 50 cu. yds., Consultant may waive strength test if adequate evidence of satisfactory strength is provided.

8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.

9. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength, and no individual strength test result falls below specified compressive strength by more than 500 psi.

D. Test results will be reported in writing to the Consultant, Ready-Mix Producer, and Contractor within 24 hours after tests. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for 7-day tests and 28-day tests.

E. Nondestructive 3-day Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.

F. Additional Tests: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Consultant. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed. Contractor shall pay for such tests when unacceptable concrete is verified.

END OF SECTION

SECTION 03320
CONCRETE REPAIR USING HIGH STRENGTH, FAST-SETTING MATERIALS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SCOPE OF WORK

A. This work shall consist of the removal of existing delaminated concrete and the installation of a fast-setting, high-strength concrete at locations to be re-opened to traffic the following morning or designated by the Engineer. Materials in this specification may also be appropriate when the scope of concrete work is limited and it is not practical to use ready-mixed concrete.

PART 2 - PRODUCTS

2.01 MATERIALS

A. The fast-setting concrete repairs must achieve a compressive strength of 3,500 psi or safely accept vehicular traffic within 3 hours of placement.

B. The concrete shall resist freeze/thaw damage and scaling in compliance with ASTM Test Procedures C-666 and C-672. The products approved under this section shall be:

1. "10-60 or 10-61 Rapid Mortar" as manufactured by BASF Building Systems (www.buildingsystems.basf.com)

2. "Emaco T415 or T430" as manufactured by BASF Building Systems (www.buildingsystems.basf.com)

3. “SikaQuick 1000 or 2500” as manufactured by Sika Corporation (www.sikausa.com)

Note: Products related to those above with extended working times may be acceptable at the discretion of the Engineer.

PART 3 - EXECUTION

3.01 SURFACE PREPARATION

A. The exact location of spalled concrete to be repaired will be determined in the field by tapping of slab with a sounding rod, chain drag or hammer. An outline of the area to be repaired will be marked with chalk.

B. The areas of the spalled concrete to be removed will be outlined by making a sawcut around the perimeter of the spalled area. The nominal depth of sawcut shall be 1/2 inch. Do not, under any circumstances, cut existing reinforcing bars or post-tensioning strands.

C. All loose unsound concrete shall be removed with pneumatic or electric jack hammer weighing no more than 15 lbs. may be used for removing concrete around mild steel reinforcement. Where unsound concrete is below reinforcement, removal to 3/4 inch below reinforcement is required.

D. All deteriorated reinforcing steel bars which have lost more than 20% (or more) of their cross-sectional areas or selected by the Engineer shall be replaced. New reinforcing steel bars shall be furnished and placed in accordance with Section 03200 of the technical specifications and under the directions of the Engineer.

E. The deck surface shall be blown clean with compressed air to assure that all loose or hollow concrete is removed. The reinforcing steel shall be sand blasted to remove all rust.

3.02 PLACING, FINISHING AND CURING

A. Place and properly mixed concrete into the prepared area from one side to the other. Do not place concrete in lifts. Work the material firmly into the bottom and sides of the patch to assure good bond. Do not re-temper or finish material after initial set.

B. For maximum performance and minimal shrinkage, wet curing shall be performed for a minimum of 3 hours followed by the application of an approved curing compound.

3.03 METHOD OF MEASUREMENT

This work will be measured for payment in square feet. The quantity of repair area will be computed from areas marked by the Contractor and approved by the Engineer.

END OF SECTION

SECTION 03340
CONCRETE REPAIR USING TROWEL APPLIED MORTAR

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

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

1.02 SCOPE OF WORK:

A. This work shall consist of the removal of existing unsound concrete to required depth and the installation of a fast-setting cement mortar at locations indicated on drawings and/or at other locations designated by the Engineer.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Horizontal Repairs: The fast-setting cement mortar shall achieve a minimum Compressive strength of 5,000 psi in 28 days. The products approved under this section are:

1. "Master Emaco T 1060 EX" as manufactured by BASF Inc.

2. “SikaQuick 1000 or 2500” as manufactured by Sika Corporation

3. “Sikacrete 211 SCC” as manufactured by Sika Corporation

B. Vertical and Overhead Repairs:

1. Sikacrete 211 SCC plus as manufactured by Sika Corporation

2. “Sika Monotop 611” (form and pour applications only) as manufactured by Sika Corporation.

3. "Sikatop 123” as manufactured by Sika Corporation

4. "Master Emaco S440" (form and pour applications only) as manufactured by BASF Inc.

PART 3 - EXECUTION

3.01 SURFACE PREPARATIONS:

A. All loose and unsound concrete shall be removed with small chipping hammers. Remove concrete a minimum of 3/4" beyond the reinforcing steel.

B. The surface shall be blown clean with compressed air to assure that all loose and hollow concrete is removed. The reinforcing steel shall be sandblasted to remove all rust.

3.02 PLACING, FINISHING AND CURING (Trowel Applied Mortar):

A. Apply patching material as follows and in accordance with manufacturers' recommendations.

B. Saturate the surface dry with water so that it maintains a dark gray color one half hour before placing.

C. Scratch a base coat firmly into the dampened surface and apply the balance of the patch. Consolidate the mortar for density. For deep patches, add recommended filler and apply the material in lifts, allowing it to stiffen enough between lifts to support its own weight. For repairs over 4 inches deep, steel ties shall be provided to aid in weight support. Maximum filler addition to be 1 part filler to 2 parts by volume. The surface shall be troweled and brushed to match surrounding concrete.

D. The finished patch shall be cured for at least forty eight hours. Keep damp with water or coat with a water-based curing and sealing compound conforming to ASTM C1315 as recommended by the polymer repair mortar manufacturer.

E. In hot weather, the surface shall be kept cool by shading. Use cold liquid for mixing. Work material rapidly since heat accelerates set. Cure immediately. In cold weather, do not make repair if temperature is expected to fall below freezing within 48 hours of placing. The patches must be kept at a minimum of 60 degrees F. for seventy two hours for proper curing.

3.03 TESTING:

A. The patched areas shall be sounded with a chain drag and/or hammer after 7 days after concrete placement; any hollowness detected shall be corrected by the Contractor by removing and replacing the patch at no extra cost to the Owner.

END OF SECTION

SECTION 03360
SURFACE SCALING REPAIR

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. All Contract Documents shall apply to work of this Section.

1.02 SCOPE OF WORK

A. Furnish labor, material, equipment and supervision necessary to scarify scaled surface areas and to place a thin two component ter-polymer system and special blend of hard aggregate as shown on the Contract Drawings or as designated in the field by the Consultant.

1.03 QUALITY ASSURANCE

A. Prepare a site sample approximately 4' x 4'. This sample shall be regarded as the minimum standard of workmanship/finish acceptable for this project.

B. Maintain a record of the batch numbers of all materials supplied on this project.

1.04 SUBMITTALS

A. Provide owner with manufacturer's literature for all products specified.

B. The manufacturer shall provide evidence of field performance and independent test lab report verifying properties of the cured ter-polymer system.

C. Provide written assurance to the Owner that key tradesmen on the site have been factory trained in the product mixing and application procedures prior to commencing work.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the site in an undamaged condition, with the manufacturer's wrappings and labels intact.

B. Store materials in a clean, dry, weather protected facility and within the temperature range of 60°F to 90°F. Insure that materials remain dry and free of contaminants.

1.06 JOB CONDITIONS

A. Protect surrounding surfaces against damage due to work of this trade.

B. Maintain a minimum temperature at 50 degrees F during application and for a minimum of two days after installation.

C. Protect finished surface from accelerated drying.

D. Coordinate work of this section with the work of other trades.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Materials: Two component, 100% solids, flexible ter-polymer system and special blend of hard aggregate and shall produce an uncracked, abrasion and freeze-thaw resistant traffic topping. Aggregate used for all layers shall be sound, durable, non-friable, non-polishing, clean and free from surface moisture. Acceptable products are:

1. “Mark-170.2 Flexodeck II Top Coat” as manufactured by Poly-Carb, Inc., 33095 Bainbridge Road, Solon, OH 44139, (216) 248-1223.

2. “Kelmar –R C as manufactured by Technical Barrier Systems (905) 842-9488.

OR APPROVED EQUAL

PART 3 - EXECUTION

3.01 INSPECTION

A. Inspection surfaces to which repair mortar is to be applied.

B. Report to Owner's representative, in writing, any defects in previously prepared work or unsatisfactory site conditions.

C. Proceed with work under this Section only when such defects have been entirely corrected.

D. Starting work under this section means acceptance of the surface and previously prepared work.

3.02 PREPARATION

A. Outline exact location of repair area shown on the drawings or as specified by the Consultant in the field.

B. Repair area shall be cleaned by shotblasting to remove any oil, dirt, debris or any other potentially detrimental material such as curing compound and laitances which, in the Consultant's opinion, would prevent proper bonding to and curing of the repair material.

1. In areas that shotblasting equipment cannot reach (i.e., along curbs and walls), sandblasting is permitted to an extent satisfactory to the manufacturer and the Consultant.

C. Exposed steel reinforcement must be sandblasted and epoxy rust-proofed.

D. All surfaces to be overlayed shall be dry at the time of application. Immediately before applying the repair material, all prepared surfaces shall be cleaned with compressed air
(or vacuumed) to remove dust and debris.

3.03 PLACEMENT

A. Mix, place and finish the overlay in all repair areas in a strict accordance with manufacturer's instructions and recommendations.

1. After mixing of the components, the resin shall be evenly distributed on the clean, dry deck surface at the rate as recommended by the manufacturer.

2. The number of layers (a minimum of two) and the application rates of each layer shall be as recommended by the manufacturer in order to achieve a minimum overlay thickness.
3. Broadcast the aggregate onto the deck in a uniform manner as directed or otherwise approved by the manufacturer.

B. The ter-polymer manufacturer shall have representative on the jobsite at all times. Manufacturer representative, upon consultation with the Consultant, may suspend any item of work that is suspect and does not meet the requirements of the specification. Resumption of work will occur only after the manufacturer's representative and the Consultant are satisfied that appropriate remedial action has been taken by the Contractor.

END OF SECTION

SECTION 05120
MISCELLANEOUS METALS

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. The extent of Miscellaneous Metal items are typically shown on the drawings or called for in the specifications.

1.02 RELATED DOCUMENTS

A. Carefully read all Sections of this specification and examine all Drawings to determine the extent and nature of Miscellaneous Metal Items that are required.

1.03 QUALITY ASSURANCE

A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible. Do not delay job progress; allow for trimming and fitting wherever taking field measurements before fabrication might delay work.

B. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations.

1.04 SUBMITTALS

A. Manufacturer's Data: Submit manufacturer's specifications, anchor details and installation instruction for products to be used in the fabrication of miscellaneous metal work, including painting products.

B. Shop Drawings: Submit shop drawings for fabrication and erection of miscellaneous metal fabrications. Include plans, elevations, and details of sections and connections. Show anchorage and accessory items. Provide templates for anchor bolt installation.

PART 2 - PRODUCTS

2.01 MATERIALS AND COMPONENTS

A. Metal Surfaces, General: For fabrication of miscellaneous metal work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, rolled trade names and roughness.

B. Steel Plates: ASTM A36.

C. Steel Angles at Expansion Joint shall be hot-dip galvanized: ASTM A153.

D. Steel Plates to be Bent or Cold Formed: ASTM A283, Grade C.

E. Concrete Inserts: Threaded type, galvanized ferrous castings, either malleable iron ASTM A47 or cast steel ASTM A27. Provide bolts, washers and shims as required, hot-dip galvanized, ASTM A153.

F. Nonshrink Nonferrous Grout: Five-Star Non-Shrink Grout, or approved equal.

G. All Miscellaneous metal components shall be factory hot-dipped galvanized and any abrasions shall be field corrected.

2.02 FASTENERS

A. General: Provide zinc-coated fasteners unless otherwise noted. Select fasteners for the type, grade and class required.

B. Bolts and Nuts: Regular hexagon head type, ASTM A307-86a, Grade A.

C. Lag Bolts: Square head type, FS FF-B-561C-70.

D. Machine Screws: Cadmium plated steel, FS FF-S-92B-75B-75.

E. Plain Washers: Round, carbon steel, FS FF-W-92B-74B-74.

F. Toggle Bolts: Tumble-wing type, FS FF-B-588C-74, type, class and style as required.

G. Lock Washers: Helical spring type carbon steel, FS FF-W-84A-69.

2.03 PAINT

A. Metal Primer Paint: Tnemec No. 4-55 Versare, Dupont No. 67-746, PPG No. 6-20, or approved equal. Primer selected must be compatible with finish coats of paint. Coordinate selection of metal primer with finish paint requirements specified in Division 9.

B. Galvanizing Repair and Primer Paint: Zinc dust, zinc oxide, alkyd paint conforming to FS TT-P-641, Type II.

2.04 FABRICATION, GENERAL

A. Workmanship:

1. Use materials of size and thickness shown or, if not shown, of required size and thickness to produce strength and durability in finished product. Work to dimensions shown or accepted on shop drawings, using proven details of fabrication and support. Use type of materials shown or specified for various components of work.

2. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32 inch unless otherwise shown. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

3. Weld corners and seams continuously, complying with AWS recommendations. At exposed connections grind exposed welds smooth and flush to match and blend with adjoining surfaces.

4. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type shown or, if not shown, Phillips flat-head (countersunk) screws or bolts.

a. Provide for anchorage of type shown, coordinated with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use.

b. Cut, reinforce, drill and tap miscellaneous metal work as indicated to receive finish hardware and similar items.

B. Galvanizing:

1. Provide a zinc coating for those items shown or specified to be galvanized, as follows:

   a. ASTM A153 for galvanizing iron and steel hardware.

   b. ASTM 123 for galvanizing rolled, pressed and forged steel shapes, plates, bars and strip 1/8 thick and heavier.

   c. ASTM A386 for galvanizing assembled steel products.

C. Shop Painting:

1. Shop paint miscellaneous metal work except surfaces and edges to be field welded and members or portions of members to be embedded in concrete or masonry which are galvanized, unless otherwise specified.

2. Remove scale, rust and other deleterious materials before applying shop coat. Clean in accordance with SSPC SP-3-63 “Power Tool Cleaning” to remove all scale, rust, and foreign matter after first solvent cleaning to remove all oil and grease.

3. Remove oil, grease and similar contaminants in accordance with SSPC SP-1 63 "Solvent Cleaning".

4. Immediately after surface preparation, brush or spray on primer in accordance with manufacturer's instructions, and at a rate to provide uniform dry film thickness of 2 to 4 mils for each coat. Use painting methods which will result in full coverage of joints, corners, edges and exposed surfaces.

5. Apply one shop coat to fabricated metal items, except apply two coats of paint to surfaces inaccessible after assembly or erection. Change color of second coat to distinguish it from the first.

2.05 MISCELLANEOUS METAL FABRICATIONS

A. Rough Hardware:

1. Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels and other miscellaneous steel shapes as required.

2. Manufacture or fabricate items of sizes, shapes and dimensions required.

PART 3 - EXECUTION

3.01 PREPARATION

A. Furnish setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, such as concrete inserts, anchor bolts and miscellaneous items having integral anchors, which are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.

3.02 INSTALLATION

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction; including, threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, and other connectors as required.

B. Cutting, Fitting and Placement: Perform cutting, drilling and fitting required for installation of miscellaneous metal fabrications. Set work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Provide temporary bracing or anchors in formwork for items which are to be built into concrete, masonry or similar construction.

C. Fit exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Grind exposed joints smooth and touch-up shop paint coat. Do not weld, cut or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrications, and are intended for bolted or screwed field connections.

D. Field Welding: Comply with AWS Code for procedures of manual shielded metal arc-welding, appearance and quality of welds made, and methods used in correcting welding work.

E. Touch-up Painting: Cleaning and touch-up painting of field welds, bolted connections and abraded areas of the shop paint on miscellaneous metal is specified in Section 9A of these specifications.

END OF SECTION

SECTION 07120

TRAFFIC BEARING WATERPROOFING MEMBRANE

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Evaluation/Preparation of Substrate to Receive Vehicular Traffic Coating

B. Epoxy Primer Application

C. Poly(methyl methacrylate)-based (PMMA) Primer Application

D. Poly(methyl methacrylate)-based (PMMA) Vehicular Traffic Coating Application

1.02 RELATED SECTIONS.

A. Section 03300 – Concrete

B. Section 05120 – Metals

C. Section 07920 –Sealants

D. Section 15000 – Drainage

1.03 REFERENCE STANDARDS.
Agencies that may be used as references throughout this specification section include:

NIOSH National Institute for Occupational Safety & Health
Atlanta, GA

OSHA Occupational Safety and Health Administrations
Washington, DC

ICRI International Concrete Repair Institute
Sterling, VA

ACI American Concrete Institute
Farmington Hills, MI

ASTM American Society for Testing and Materials
Philadelphia, PA

SSPC The Society for Protective Coatings
Pittsburgh, PA

1.04 SUBMITTALS

All submittals which do not conform to the following requirements will be rejected.

* NOTE:	Coordinate submittal requirements with general provisions. Modify submittals to suit specific project requirements.

A. Submittals Prior to Contract Award Shall Include:

1. Letter from the proposed primary system manufacturer confirming that the bidder is an acceptable contractor authorized to install the proposed system.

2. Letter from the primary system manufacturer stating that the proposed application will comply with the manufacturer's requirements in order to qualify the project for the specified warranty.

1.05 QUALITY ASSURANCE

A. Acceptable Contractor: The contractor shall be certified in writing by the traffic coating materials manufacturer to install the specified products.

B. Project Acceptance: Submit a completed manufacturer's application for warranty form along with a project plan with drawings of the area to be coated, showing all dimensions, and details. The project must receive approval by the traffic coating manufacturer, through this process, prior to shipment of materials to the project site.

C. Scope of Work: The work to be performed under this specification shall include but is not limited to the following: Attend necessary job meetings and furnish competent and full-time supervision, experienced application mechanics, all materials, tools, and equipment necessary to complete, in an acceptable manner, the coating system installation in accordance with this specification. Comply with the latest written application instructions of the manufacturer of the traffic coating products.

D. Local Regulations: Conform to regulations of public agencies, including any specific requirements of the city and/or state of jurisdiction.

E. Manufacturer Requirements: The traffic coating system manufacturer shall provide directly trained company personnel to attend necessary job meetings, perform periodic inspections as necessary, and conduct a final inspection upon successful completion of the project.

F. Product Quality Assurance Program: Primary traffic coating materials shall be manufactured under a quality management system that is monitored regularly by a third-party auditor under the ISO 9001 audit process.

1.06 PRODUCT DELIVERY STORAGE AND HANDLING

A. Delivery: Deliver materials in the manufacturer's original sealed and labeled containers and in quantities required to allow continuity of application.

B. Storage: Store closed containers in a cool, dry, well ventilated area away from heat, direct sunlight, oxidizing agents, strong acids, and strong alkalis. Keep products away from open fire, flame or any ignition source. Store temperature sensitive products at temperatures recommended by the manufacturer.

C. Damaged Material: Any materials that are found to be damaged or stored in any manner other than stated above will be rejected, removed and replaced at the Contractor's expense.

D. Handling: Handle all materials in such a manner as to preclude damage and contamination with moisture or foreign matter. Keep away from open fire, flame, or any ignition source. Vapors may form explosive mixtures with air. Avoid skin and eye contact with this material. Avoid breathing fumes. Do not eat, drink, or smoke in the application area. Workers shall wear long sleeve shirts, long pants and work boots. Workers shall wear butyl rubber or nitrile gloves when mixing or applying this product. Safety glasses with side shields shall be used for eye protection. Use local exhaust ventilation to maintain worker exposure below TLV as listed on MSDS for respective products. If the airborne concentration poses a health hazard, becomes irritating or exceeds recommended limits, use a NIOSH approved respirator in accordance with OSHA Respirator Protection requirements under 29 CFR 1910.134. The specific type of respirator will depend on the airborne concentration. A filtering facepiece or dust mask is not acceptable for use with this product if TLV filtering levels have been exceeded.

1.07 PROJECT/SITE CONDITIONS

A. Requirements Prior to Job Start

1. Notification: Give a minimum of 5 days notice to the Owner and manufacturer prior to commencing any work and notify both parties on a daily basis of any change in work schedule.

2. Permits: Obtain all permits required by local agencies and pay all fees which may be required for the performance of the work.

3. Safety: Familiarize every member of the application crew with safety regulations recommended by OSHA and other industry or local governmental groups.

B. Environmental Requirements

1. Precipitation: Do not apply materials during precipitation or in the event there is a probability of precipitation during application. Take adequate precautions to ensure that materials and applied coating are protected from possible moisture damage or contamination.

2. Temperature Restrictions – Epoxy and PMMA-based Materials: Do not apply resin materials if there is a threat of inclement weather. Follow the resin manufacturer's specifications for minimum and maximum ambient, material, and substrate temperatures. Do not apply resin materials unless ambient and substrate surface temperatures fall within the resin manufacturer's published range.

C. Protection Requirements

1. Protection: Provide protection against staining and mechanical damage for newly applied coating and adjacent surfaces throughout this project.

2. Limited Access: Prevent access by the public to materials, tools, and equipment during the course of the project.

3. Debris Removal: Remove all debris daily from the project site and dispose of at a legal dumping area authorized to receive such materials.

4. Site Condition: Complete, to the Owner's satisfaction, all job site clean-up including building exterior and landscaping in areas affected by the construction.

1.08 WARRANTY

A. Guarantee: Upon successful completion of the project, and after all post installation procedures have been completed, furnish the Owner with the manufacturer's **10-year materials warranty.**

> 10-year PMMA Surfacing Materials Warranty

PART 2 PRODUCTS

2.01 VEHICULAR TRAFFIC COATING

A. Liquid Applied Vehicular Traffic Coating: A pre-pigmented, fluid-applied, fast curing, anti-skid PMMA-based traffic coating for use over concrete and polished asphalt surfaces to receive vehicular traffic. The color of the coating shall be selected by owner/specifier from the manufacturer's standard palette of colors and pre blended into the material during the manufacturing process.

   a) Solids Content: >99% (ASTM D1644)
   b) Density: 0.06 lb/in³ (1.9g/cm³)
   c) Water Absorption (24 hours at 73°F) [23°C]: <0.25% (ASTM D570 Method I)
   d) Shore Hardness: 65 – 70 A (ASTM D2240)
   e) VOC Content: < 50 g/l (catalyzed)
   f) Elongation at Break: >300% (ASTM D638)
   g) Tensile: > 2.0 MPa (ASTM D638)
   h) Consumption: 0.371 kg/ft² (4.00 kg/m²) minimum
   i) Dry time to recoat at 68°F (20°C): approximately 45 minutes
   j) Rain Proof at 68°F (20°C): approximately 30 minutes
   k) Stress Resistant at 68°F (20°C): approximately 2 hours
   l) Ambient and Substrate Temperature: 32°F (0°C) - 95°F (35°C) See manufacturers mixing chart for detailed temperature ranges.

   > Terapro 250 Resin/Aggregate Vehicular Traffic Coating by Siplast; Dallas, TX

B. Catalyst: A peroxide-based reactive agent used to induce curing of PMMA-based resins.

   > Pro Catalyst Powder by Siplast; Dallas, TX

2.03 TRAFFIC COATING ACCESSORIES

A. Epoxy Primer: A high-density, two-component, single-coat, liquid applied, epoxy-based primer for use over concrete in horizontal and vertical applications.

   > Pro Primer E by Siplast; Dallas, TX

B. PMMA Primer: A PMMA-based primer for use over concrete in vertical applications, concrete repair materials, masonry, wood and plywood.

   > Pro Primer W by Siplast; Dallas, TX

C. PMMA Primer: A PMMA-based primer for use over horizontal concrete substrates.

> Pro Primer T by Siplast; Dallas, TX

C. PMMA Primer for New Polished Asphalt Surfaces: A PMMA-based primer for use over asphalt surfaces as a bleed blocker prior to application of the pavement coating.

> Pro Primer R by Siplast; Dallas, TX

D. Cleaning Solution/Solvent: A clear solvent used to clean and prepare transition areas of in-place catalyzed resin to receive subsequent coats of resin and to clean substrate materials to receive resin.

> Pro Prep by Siplast; Dallas, TX

E. Flashing Resin: A thixotropic, flexible, acrylic, PMMA-based resin for use in combination with a fleece fabric to form a monolithic, reinforced flashing membrane used in conjunction with a reinforced or unreinforced waterproofing system.

> Terapro Flashing Resin by Siplast; Dallas, TX

F. Flashing Reinforcement: A non-woven, needle-punched polyester fabric used as a reinforcement in PMMA-based flashing membrane systems.

a) Nominal Thickness: 40 mils (1 mm)
b) Weight: 110 grams per square meter

> Pro Fleece by Siplast; Dallas, TX

G. Field Reinforcement: A coated fiberglass scrim reinforcement used to reinforce PMMA-based field membrane systems.

> Pro Grid Reinforcement by Siplast; Irving, TX

H. Joint Tape: A filament-reinforced tape used to facilitate the create color breaks or joints between sections of the wearing layer of the waterproofing system.

> Pro Grout Tape by Siplast; Dallas, TX

I. Spray Primer for Stainless Steel, Aluminum and Copper Substrates: An enamel spray primer for metal substrates to receive PMMA-based flashings.

> Rust-Oleum™ High Performance V2100 System Enamel Spray Primer by Rust-Oleum™, Vernon Hills, IL

PART 3 EXECUTION

3.01 EXAMINATION

A. General: Ensure that surfaces are free from gross irregularities, loose, unsound or foreign material such as dirt, ice, snow, water, grease, oil, bituminous products, release agents, laitance, paint, loose particles/friable matter, rust, de-icing materials, chemical residue or any other material that would be detrimental to adhesion of the coating to the traffic surface. Protect areas using plastic sheeting, tarps, coating shields, as necessary to protect adjacent surfaces.

3.02 SUBSTRATE EXAMINATION

A. General: Verify that the substrate is suitable to receive work. Notify the general contractor and/or specifier in writing of conditions detrimental to the proper and timely completion of work. Bring substrate deficiencies into an acceptable condition prior to commencing work.

B. Concrete Substrate Requirements: Structural concrete shall have a minimum compressive strength of 3,500 psi (24 N/mm^2) and have a moisture content that conforms with the waterproofing system manufacturer's requirements prior to commencement of work.

* NOTE: The Contractor must carefully verify the suitability of a concrete substrate. High moisture content or a substandard surface condition may result in inadequate adhesion of the waterproofing system.

C. Moisture Content Evaluation: Evaluate the level of moisture in the concrete substrate to determine that the moisture content is acceptable for application of the specified waterproofing system and to determine primer application rates. Concrete substrates to receive PMMA-based primers shall have a maximum internal relative humidity of 75% when tested in in accordance with ASTM F1869 and release a maximum of 3 lb of moisture 1000 ft^2 of surface area per 24-hour period when tested in in accordance with ASTM F2170.

D. Adhesion Testing for Concrete Substrates to Receive Resin Materials: Test the concrete substrate using a device conforming to ASTM D7234 (50 mm dolly) adhered with the specified catalyzed PMMA-based primer. Utilize the same concrete preparation methods as that which will be used prior to application of the waterproofing for areas to be evaluated for adhesion. Ensure that a minimum adhesion value of 220 psi is obtained before application of the PMMA-based primer. If multiple areas or substrates are involved in the scope of work, evaluate each to determine suitability. Maintain testing/evaluation records.

3.02 SURFACE PREPARATION

A. Protection: Provide protection to prevent dust/debris accumulation, spillage and resin overruns.

B. Taping: Utilize masking tape at perimeters and joints of the area to be coated to provide neat terminations.

C. Masonry/Concrete Walls: Shot-blast or grind concrete or masonry wall surfaces to provide a sound substrate free from laitance and all residue from bitumen, coal tar, primer, coatings, adhesives, sealer or any material that may inhibit adhesion of the primer. Following application of the specified primer, but prior to application of the waterproofing system, fill cracks, voids, fractures, depressions, small indentations, and low areas in the substrate using the specified paste. The use of paste or sealant is not an acceptable alternative to repointing mortar joints. Do not apply waterproofing materials over soft or scaling brick or masonry, faulty mortar joints, or walls with broken, damaged or leaking coping components.

D. Preparation of Existing Concrete/Masonry Substrates to Receive PMMA-based Primer: Existing concrete substrates shall have a minimum compressive strength of 3,500 psi (24 N/mm^2). Following evaluation for moisture content and confirmation that the moisture content is at an acceptable level, shot blast or scarify/shot-blast concrete or masonry surfaces to provide a sound substrate free from laitance, carbonated concrete, residue from bitumen, coal tar, primer, coatings, adhesives, sealer or any material that may inhibit adhesion of the specified primer. Generate a concrete surface profile of CSP-2 to CSP-4 as defined by the ICRI. Grinding may be used as a preparation method for localized areas that cannot be reached by shot blasting equipment provided that a surface profile of CSP-2 to CSP-4 can be generated.

E. Repair and Leveling of Concrete to Receive Resin Materials: Before application of the waterproofing membrane, and after priming, fill all joints, cracks, voids, fractures, depressions, small indentations, and low areas in the substrate using the specified paste or repair mortar.

F. Concrete Substrate Repair: Prime areas of the prepared concrete substrate intended for repair using the specified PMMA-based primer. Fill the areas using the specified paste or repair mortar and allow to cure. Follow the paste or repair mortar manufacturer's published minimum and maximum product thickness limitations per lift.

G. New Asphalt Pavement Preparation: Apply the specified PMMA primer resin to prepared polished asphalt surfaces using a roller or brush at the minimum rate specified by the primer manufacturer. Do not allow resin to pool or pond. Do not over-apply primers as this may interfere with proper primer catalyzation. When calculating application rates, make allowances for saturation of roller covers and application equipment.

H. Existing Coatings: Remove any existing surface markings by sandblasting, pressure-washing, grinding, or other mechanical methods, as approved by the Owner or Owner's representative.

I. Preparation of Steel Substrates: Grind to generate a "white-metal" surface and remove loose particles. Extend the preparation area a minimum of 1/2-inch (13 mm) beyond the termination of the waterproofing/flashing system. Notch steel surfaces to provide a rust-stop where detailed.

* NOTE:	Consider the use of primer and paint to treat the prepared area not covered with resin to prevent corrosion of steel surfaces.

J. Preparation of Stainless Steel, Aluminum and Copper Substrates: Hand tool (SSPC-SP-2) or power tool (SSPC-SP-3) clean to remove loose rust, mill scale, and deteriorated previous coatings as well as to generate a tooth. Protect surrounding surfaces from overspray. Shake the can for one minute after the mixing ball is heard. Hold can 10-14 inches from the surface. Apply several light coats a few minutes apart to avoid drips and runs. Recoat within 1 hour or after 24 hours; allow more time in cooler temperatures. Monitor ambient and substrate temperatures/conditions to ensure that they are within the paint manufacturer's acceptable range.

L. Crack Preparation: Follow manufacturer's details for crack preparation prior to waterproofing system application.

* NOTE:	If there is any doubt regarding whether a crack or joint is static or dynamic, the condition should be treated as dynamic.

* NOTE:	Contact Siplast for further information regarding dynamic crack and joint evaluation/treatment options as well as interface of the Terapro System with mechanical expansion joint components.

3.03 PMMA PRIMER MIXING AND APPLICATION

A. Mixing Epoxy Primer: Pierce a hole through the rubber membrane in the lid and continue through the bottom of the lid-well. Ensure that the liquid in the upper reservoir fully drains into the lower reservoir. Remove the upper reservoir and stir mixture for 5 minutes using a Jiffy Mixer at approx. 300 rpm to generate a homogenous, streak-free consistency. Keep the mixer blades fully submerged to avoid trapping air. Ensure that the bottom and sides of the container are fully scraped to disperse any materials that may have settled. Pour the mixed material into a clean, secondary container and mix again for an additional 30 seconds.

B. Application of Epoxy Primer: Wet the qualified and prepared concrete using potable water and ensure that the substrate is in a saturated-surface-dry condition. No standing water should be present at the time of epoxy application. Apply the properly mixed epoxy using a squeegee or 3/8" nap roller using methods provided by, and at the rate specified by, the supplier/manufacturer. Scrub the epoxy into the open concrete surface using a brush recommended by the supplier/manufacturer. Cross-hatch using a 3/8" nap roller to generate full, even coverage. Vertical or sloped substrates may require a second coat. Apply primer while substrate and ambient temperatures are falling rather than rising to minimize the potential for pinhole formation. Allow the epoxy system to cure for a minimum of 12-hours. Inspect the cured primer surface to ensure that coverage is full and free from dry spots and pinholing. Do not proceed with application of the waterproofing system if pinholing or dry areas are observed. Dry areas will require an additional layer of epoxy and pinholing should be investigated to determine a cause and remedy. The epoxy system must be overlaid with the PMMA waterproofing/surfacing system within 48-hours of application. When calculating application rates, make allowances for saturation of roller covers and application equipment.

C. Mixing and Catalyzing PMMA Primers: Thoroughly mix the entire drum of uncatalyzed resin for 2-minutes if pouring the resin into a second container when batch mixing. Catalyze only the amount of material that can be used within its pot life. Add pre-measured catalyst to the resin component and stir for 2-minutes using a slow-speed mechanical agitator or mixing stir stick. The amount of catalyst added is based on the weight of the resin used. Refer to the waterproofing system manufacturer's literature for mixing ratios.

D. Application of PMMA Primer: Using the appropriate primer, apply using a 1/2" nap roller at the rate specified by the primer manufacturer to qualified/prepared substrates. Apply primer when ambient and substrate temperatures are falling rather than rising to minimize the potential for pinhole formation. Apply and allow to cure for a minimum of 45 minutes. Increase application rates over absorbent substrates. Inspect the cured primer surface to ensure that coverage is full and free from dry spots and pinholing. Do not let the resin pool or pond. Do not over-apply primers as this may interfere with proper primer catalyzation. When calculating application rates, make allowances for saturation of roller covers and application equipment.

3.04 VEHICULAR TRAFFIC COATING INSTALLATION

A. Mixing and Catalyzing of Resins: Thoroughly mix the entire drum of uncatalyzed resins for 5 minutes if pouring the resin into a second container when batch mixing. Catalyze only the amount of material that can be used within its pot life. Add pre-measured catalyst to the resin component and stir for 2-minutes using a slow-speed mechanical agitator or mixing stir stick. The amount of catalyst added is based on the weight of the resin used. Refer to the pavement coating manufacturer's literature for mixing ratios.

B. Vehicular Traffic Coating Application

1. Loose lay a layer of fiberglass grid reinforcement over the prepared substrate. Prime the prepared concrete substrate and grid reinforcement using the specified catalyzed PMMA primer at the rate specified by the resin manufacturer. Allow to cure for a minimum of 45 minutes before application of the wearing layer of resin.

2. Apply a layer of catalyzed traffic coating resin using a squeegee at the minimum rate specified by the traffic coating manufacturer. Use a resin saturated nap roller to even the application of the pavement coating resin.

3. If work is interrupted for more than 12 hours, or the surface of a catalyzed resin layer becomes dirty or contaminated from exposure to the elements, thoroughly clean the area with the specified cleaner/solvent. Allow a minimum of 20 minutes for the solvent to evaporate before continuing work. Complete the next application procedure within 60 minutes following the evaporation of the cleaner/solvent.

3.05 FIELD QUALITY CONTROL AND INSPECTIONS

A. Site Condition. All areas around the job site shall be free of debris, coating materials, equipment, and related items after completion of the job.

B. Notification Of Completion: Contractor shall notify the manufacturer using the manufacturer's printed Notification of Completion form when the job is complete to commence the warranty issuance process.

C. Issuance Of The Warranty. Complete all post installation procedures and meet the manufacturer's final endorsement for issuance of the specified warranty.

END OF SECTION

SECTION 07905
PRESSURE EPOXY INJECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 DESCRIPTION

A. The Contractor shall provide all necessary materials, equipment, and labor required to epoxy injects cracks at locations shown on drawings or as directed by the Consultant.

1.03 APPLICATOR QUALIFICATIONS

A. The Contractor shall have a minimum of three years of experience performing work similar to that shown in the drawings and specifications.

B. The Contractor shall submit a list of five projects in which similar work to that specified herein was successfully completed. The list shall contain the following for each of the five projects:

1. Project Name
2. Owner of Project
3. Owner's Representative, Address and Telephone Number
4. Brief Description of Work
5. Cost of Portion of Work Similar to that specified in this Section
6. Total Restoration Cost of Project
7. Date of Completion of Work

C. The sum of the costs of the five projects provided in B.5 above shall be a minimum of $50,000.

D. A full-time on-site supervisor shall be provided by the Contractor for the entire duration of the epoxy injection work. The supervisor shall have had a minimum of 2 years of documented supervisory experience with the products to be used. If the supervisor does not have that experience, the supplier or manufacturer of the materials shall provide a full-time qualified, certified by the manufacturer, field inspector on jobsite during the entire period of material application. The Installation Contractor shall submit with his bid to the Consultant a proof of obtaining licenses or permits as required.

1.04 QUALITY CONTROL

A. The materials supplier shall provide the following test data for each production run or batch of epoxy formulation to be used:

1. Tensile strength by ASTM D638
2. Elongation at break by ASTM D638
3. Flexural strength of ASTM D790
4. Flexural modulus by ASTM D790
5. Compressive yield strength by ASTM D695
6. Compressive modulus by ASTM D695
7. Heat deflection temperature by ASTM D648
8. Slant shear strength by AASHTO-237

1.05 SUBMITTALS

A. The Contractor shall submit the following to the Consultant:

1. Documentation showing compliance with the Applicator Qualifications as specified hereinbefore.

2. Technical data sheets published by the material manufacturers for each epoxy product or formulation to be used showing that his products meet the requirements of the specifications. Technical data shall include the following:

a. Intended use
b. Pot life (neat)
c. Initial cure time (1000 psi)
d. Tack free (thin film)
e. Final cure (75% ultimate strength)
f. Tensile strengths by ASTM D638-76 (14 days)
g. Tensile elongation by ASTM D638-76 modified (14 days)

h. Flexural strength and modules per ASTM D790-71 at 24 hours, 3 days, and 7 days at 77 degrees F.

i. 24-hr. compressive strength by ASTM C109 modified (1 part epoxy to 3-1/4 parts aggregate)

3. Submit safety data sheets for each product.

1.06 PRODUCT DELIVERY

A. The product shall be delivered and handled strictly according to the manufacturer's recommendations. Any containers of the material to be used which have been opened previously shall not be accepted.

1.07 JOB CONDITIONS

A. Existing and environmental conditions: The Installation Contractor shall examine the condition of surfaces into which the epoxy is to be injected. He shall follow the recommendations of the manufacturer with regard to limitations of the materials in various moisture and temperature levels.

PART 2 - PRODUCTS

2.01 MATERIALS

A. The epoxy injection materials shall be a two-component, 100% solids, low viscosity, high strength epoxy resin adhesive.

One of the following approved products shall be used:

1. “Sikadur 35, Hi-Mod LV or LPL” as manufactured by the Sika Corporation 800-933-SIKA

2. “Concresive Standard LVI” as manufactured by Master Builders Technologies 800-227-3350

3. “Eucopoxy Injection Resin” as manufactured by the Euclid Chemical Company 800-321-7628

0r approved equal.

B. One of the following approved products shall be used to seal injection ports and cracks for injection grouting:

1. "Sikadur Injection Gel" as manufactured by the Sika Corporation.

2. "Concresive Paste SPL" as manufactured by Master Builders Technologies.

3. "Euco #452 or #620 Gel" as manufactured by the Euclid Chemical Company.

or approved equal.

C. Aggregate:

1. Aggregate shall be clean, dry, graded, and bagged

2. Well-rounded or spherical-shaped sand is recommended for flowability

3. Aggregate may be graded as follows by volume:

2 parts, 12 mesh to 1 part, 80 mesh, or
3 parts, 16 mesh to 1 part, 90 mesh

4. If the above sand is not used, 30-mesh silica sand shall be used.

2.02 MIXES

A. Where approved by the Consultant, the Contractor may use a pre-placed aggregate technique. The ratio of binder to aggregate by volume shall be 0.8 or greater. Test data shall be submitted for conformance with the following:

1. Compressive strength by ASTM D695-76-8000 psi minimum
2. Compressive modulus by ASTM D695-76-2.75 x 10^6 minimum

2.03 EQUIPMENT

A. The equipment used to inject the epoxy shall meet all of the following performance requirements:

1. Automatic proportioning of materials within the mix ratio tolerances set by the manufacturer of the epoxy material.

2. Mix the epoxy automatically and completely in line (batch mixing will not be permitted).

3. Inject the material under pressures recommended by the materials supplier.

PART 3 - EXECUTION

3.01 SURFACE PREPARATION, INJECTION, AND DELIVERY SYSTEM

A. The epoxy shall be injected into the cracks or joints only from the lower elevations of the members. The bottom, side, and top surfaces of cracked members must be sealed with a gel-consistency epoxy prior to injection, and must contain appropriate injection ports.

B. The Contractor shall notify the Consultant of the start of the first injected cracks. In the event that unsound concrete is located in a zone along a crack, and this prevents the complete injection of the cracks, then the unsound concrete shall be removed prior to injection.

C. The epoxy material injected into the cracks or joints shall be highly suited for this usage. The pressure injection system shall be capable of filling cracks as small as 0.002 inches in width.

D. Where cracks to be injected have any existing sealant, waterproofing materials, or other debris in the cracks, these cracks shall be cleaned using low-pressure hot water or high-pressure water jet, as appropriate.

E. The Contractor shall clean surfaces of excess epoxy by grinding or other appropriate means so that only the edge thickness of completed epoxy-injected cracks is noticeable. Injection ports shall not extend beyond the plane of the surfaces of the existing concrete.

3.02 PREPACKING LARGE CRACKS

A. Where required in cracks of large thickness, the Contractor shall prepack the cracks with fine aggregates to minimize the effects of exotherm, or reduce tensile stresses caused by volume reduction during cooling of the injected epoxy.

3.03 FIELD QUALITY ASSURANCE

A. The Contractor shall supply samples of the injection epoxy, non-sag epoxy, and epoxy mortar to the Testing Laboratory for the purpose of performing compression tests.

B. A minimum of three samples per day of each epoxy formulation or use shall be made.

C. Samples shall be made by placing epoxy into 3/8-in. inside diameter test tubes. The height of the sample shall be approximately 1 in. so that after trimming a cylinder of 3/8 in. diameter and 3/4" length can be obtained.

D. The Contractor shall be responsible for drilling and removing two 1-in. diameter by 2-in. long cores into the side of injected members at the direction of the Consultant to determine whether the crack injection is complete. The contractor also shall provide samples of mixed epoxy for testing. If injection is incomplete (less than 90% of the injected crack filled), reinjection and additional cores may be required at the direction of the Consultant at no extra cost to the Owner.

END OF SECTION

SECTION 07920
SEALANTS AND CAULKING

PART 1 - GENERAL

1.01 **RELATED DOCUMENTS**:

A. All contract documents shall apply to work of this section.

1.02 **SCOPE OF WORK**:

A. Furnish labor, materials and equipment for new sealant installation and sealing surfaces or cracks as designated by Engineer. The sealant shall be compatible with the adjacent material.

1.03 **JOB CONDITIONS**:

A. In the case of repair of existing cracks which are sealed or filled with other materials, the existing sealant material shall be raked out and the exposed concrete cleaned by sandblasting or grinding at those locations designated for repair.

B. A silicon sealant shall be installed wherever glazing or metal is in contact with similar or masonry material. In the case of replacement rake out old glazing compound to a depth that will assure proper bedding for new sealant.

1.04 **FULL RESPONSIBILITY**:

A. The contractor shall inform the system manufacturer that they will have the full responsibility for: (1) Instructing the Contractor on the required configuration of joints and (2) Reviewing and approving tooled joints constructed as a part of surface preparation prior to installing the sealant.

1.05 **GUARANTEE**:

A. The sealant system shall not leak water or debond from adjacent surface for a 5-year period starting from the date of substantial completion. Any repairs required during the guarantee period starting from the date of substantial completion shall be performed by the Contractor at no additional cost to the Owner.

1.06 **APPLICATOR QUALIFICATIONS**:

A. The Contractor shall have a minimum of three years of experience in performing work similar to that shown in the drawings and specifications.

PART 2 - PRODUCTS

2.01 **MATERIALS**:

A. At concrete surfaces the joint sealant to be used for cracks and construction joints shall be two component polyurethane sealants of the chemically curing type containing no asphalt, coal tar, or plasticizers. The sealant shall be used with a compatible primer specified by the manufacturer. One of the following sealants shall be used:

1. "Vulkem 245/255 or THC-900" as manufactured by Tremco (www.tremcosealants.com)

2. “Sikaflex - 2C-SL,” as manufactured by Sika Corporation (www.sikausa.com)

B. At concrete surfaces the cove sealant to be used shall be a non-sag, two component polyurethane sealants of the chemically curing type containing no asphalt, coal tar, or plasticizers. The cove joint sealant shall comply with Federal Specification TT-S-00227E, Type II, Class A, Corporation of Engineers CRD-C-506-72; ASTM C-920-79, Type M, Grade NS, Class 25. Approved Sealants are as follows:

1. "THC-901" as manufactured by Tremco (www.tremcosealants.com)

2. “Sikaflex - 2C-NS,” as manufactured by Sika Corporation (www.sikausa.com)

C. At all glazing-to-metal, metal-to-metal, metal-to-masonry connections a silicone sealant shall be used. The sealant shall comply with Federal Specification TT-S-001543A, Type II, Class A, Corporation of Engineers ASTM C-920, Type S, Grade NS, Class 25. The sealant shall be used with a compatible primer specified by the manufacturer. One of the following sealants shall be used:

1. "Sikasil WS 292" as manufactured by by Sika Corporation (www.sikausa.com)

2. DOW 795" manufactured by Dow Corning Corporation, (www.dowcorning.com)

   or approved equal.

D. The polyurethane sealant to be used shall meet or exceed the requirements of Interim Federal Specification TT-S0027-#, Sealants Class A, Type I and II. The sealant shall not debond or fail while elongated 25 percent in a water immersion test, according to Federal Specification TT-S-0027-E. When tested according to Paragraph 4.3.5. of Federal Specification TT-S-0027-E, weight loss shall not be greater than 5 percent.

D. The manufacturer of the sealant system used in this project shall assume contractual responsibility for all sealant work and related work in slab restoration.

PART 3 - EXECUTION

3.01 **TYPICAL SURFACE PREPARATION**:

A. Clean surfaces immediately prior to installation in accordance with manufactures printed instructions, except where more stringent requirements are shown or specified and except where manufacturer=s technical representative directs otherwise.

B. Two-Component Polyurethane Sealant:

1. The Contractor shall either grind the surface of all cracks and construction joints designated for repair with sealant to the shape of 2" x 2" v-groove, or saw cut a square 2" x 2" groove, grind sharp corner of groove and apply bond breaker to bottom horizontal surface. Edges of cracks or joints to be sealed shall be of sound concrete. Prior to installing sealant, surfaces shall be cleaned of foreign materials and debris, V-groove ground and primed.

C. Silicone Sealant:

1. Do not proceed with the installation of sealant over surfaces which have been painted, lacquered, waterproofed or treated with water repellant or other treatments or coating unless a laboratory test for durability (adhesion), in compliance with paragraph 4.3.9 of FS TT-S-00227E-70 has successfully demonstrated the sealant bond is not impaired by the coating

or treatment.

2. If sealant is applied to a concrete/masonry surface, the contractor will be required to etch the surface to remove excess alkalinity, unless the sealant manufacturer's printed instructions indicate that alkalinity does not interfere with sealant bond and performance. Etch with 5-percent solution of muriatic acid; neutralize with diluted ammonia solution, rinse thoroughly with water and allow to dry prior to installing sealant.

3.02 **SEALANT APPLICATION**:

A. Comply with sealant manufacturer=s printed instructions, except where more stringent requirements are shown or specified and except where manufacturer=s technical representative directs otherwise.

B. Prime and/or seal the surfaces wherever shown or recommended by the sealant manufacturer. Do not allow the primer/sealant to spill or migrate onto adjoining surfaces.

C. Employ only proven installation techniques, which will ensure that sealant will be deposited in uniform, continuous ribbons without gaps or air pockets, with complete Awetting@ of the joint bond surface equally on opposite sides.

D. Spillage: do not allow sealants or compounds to overflow or spill onto adjoining surfaces. Use masking tape or other precautionary devices to prevent staining.

E. Cure sealant in compliance with the manufacturer=s instructions and recommendations to obtain high early bond strength, internal cohesive strength and surface durability.

END OF SECTION

SECTION 09900
PAINTING

PART 1 - GENERAL

1.01 GENERAL

A. Provide painting as shown on plans or as directed in the field.

1.02 QUALITY ASSURANCE

A. Applicator Qualifications: Minimum of 5 years experience on comparable projects.

B. No claim by the applicator as to the unsuitability or unavailability of any material specified or his unwillingness to use same, or his inability to produce first class work with same, will be entertained unless such claims are made in writing and submitted with his bid.

C. Requirements of Regulatory Agencies: Store painting materials and apply painting work to meet requirements of governing codes and ordinances.

1.03 SUBMITTALS

A. Submit list of proposed materials including manufacturer's name and trade names.

B. Obtain Consultant's approval prior to purchase and delivery.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver paints ready-mixed to job site.

B. Paints, enamels, and similar materials must be delivered in their original containers with the seals unbroken and labels intact.

C. All materials to be used on the job shall be stored in a single place. Storage place shall be kept neat and clean and all damage thereto or to its surroundings shall be repaired or cleaned good. Any oily rags, waste, etc., must be removed from the garage every night and every precaution taken to avoid danger of fire. Paints shall be stored, mixed or applied strictly according to the manufacturer's recommendations in respect to methods of protection. Used containers shall have labels cancelled and shall be clearly marked as to contents.

D. Gasoline, benzene or other materials not specified in this specification shall not be brought in the job.

1.05 JOB CONDITIONS

A. Furnish and lay drop cloths for protection of floors and finish from damage during execution of the work specified herein. Where it shall become necessary to remove temporary coverings from any type of work in order to execute work, replace same in a proper manner. In case the covering cannot be replaced, protect the work in some other satisfactory manner.

B. Post wet paint signs immediately after paint application.

C. Exterior painting shall not be applied in damp weather or when the temperature is below 60 degrees Fahrenheit nor when satisfactory results cannot be obtained due to high humidity or excessive temperatures. Avoid painting surfaces while they are exposed to hot sun. Do not apply in areas where dust is being generated.

PART 2 - PRODUCTS

2.01 **MATERIALS**

A. Acceptable Manufacturers:

Tnemec
Sherwin Williams
Devoe
Pratt & Lambert
Glidden
Benjamin Moore
Pittsburgh Paint
Or approved equal.

B. All colors will be selected and approved by the Consultant, Parking Garage Management and Owner.

C. Base coats and undercoats of paint and enamel shall be tinted or shaded different colors than the finish coats.

D. Use only primers and under-coaters that are suitable for each surface to be covered and that are compatible with the finish coat required.

E. Use products of the same manufacturer for succeeding coats.

1. Where shop primed materials are to be finish painted and/or prime coat materials are by a different manufacturer than the finish coat materials, confirm compatibility of the primers with the manufacturer of the finish coat paints.

2. Where existing previously painted surfaces are to be finish painted, confirm compatibility of existing painted surfaces with the manufacturer of the succeeding new paints.

2.02 METAL PRIMERS

A. General:

1. For new metal surfaces not otherwise specified for shop prime painting and for touch-up painting of shop prime coats, provide one of the following metal primers as appropriate for the surface condition and finish coats of the metal.

a. Field touch-up painting shall be in accordance with SSPC-PA 1-64 and shall be of the same kinds and number of coats as applied in the shop.

B. Ferrous Metal Primers:

1. Hot rolled steel surfaces to receive alkyd or acrylic latex finish coats shall be primed with one of the following primers:

a. Tnemec No. 4_55 Versare, DuPont No. 67_746,
PPG No. 6_20, or approved equal.

2.04 FINISH PAINTS

A. High Gloss Alkyd Enamel

1. Effecto Enamel; Pratt & Lambert.
2. Glid_Guard Alkyd Industrial Enamel; Glidden_Durkee.
3. Industrial Enamel; Sherwin Williams.
4. Mirrolac Gloss Enamel; Devoe Paint Division.

2.05 PAINT SYSTEMS

A. Provide the following paint systems for the various substrates, as indicated.

B. Ferrous Metal:
1. Gloss Finish.

a. 1st Coat _ Red lead pigmented primer (TT_P_86, Type II).

b. 2nd Coat _ High gloss alkyd enamel.

c. 3rd Coat _ High gloss alkyd enamel.

d. First coat not required on items delivered shop primed.

e. Not less than 4.0 mils dry film thickness including primer.

PART 3 - EXECUTION

3.01 INSPECTION

A. Examine surfaces scheduled to receive paint and finishes for conditions that will adversely affect execution, performance or quality of work and which cannot be put into an acceptable condition through preparatory work. Report in writing to the Consultant any unsatisfactory conditions, errors, or deficiencies prior to proceeding with work.

B. Do not proceed with surface preparation or coating application until conditions are suitable.

C. The application of paint or finish to a given surface shall constitute acceptance of the surfaces.

3.02 PREPARATORY WORK

A. All surfaces to be painted shall be dry and cleaned free of loose dirt and dust before painting is started. Do necessary preparatory work in areas; to receive paint and touch-up shop coats damaged by welding or abrasion as required.

3.03 WORKMANSHIP

A. The workmanship shall be of the very best. All materials shall be thoroughly mixed immediately before application of paint. Only skilled mechanics shall be employed.

Surfaces shall be thoroughly dry before applying succeeding coats.

B. Finished work shall be uniform and of approved color and shall be smooth and free from runs, sags, and defective application. Edges of paint adjoining other materials or colors shall be sharp and clean, without overlapping. Before applying succeeding coats, primers and undercoats shall be completely integral and performing the function for which they are specified. All scratches, abrasions or any other disfigurement shall be properly prepared and touched up, and any foreign matter removed before proceeding with the following coat.

C. Remove existing applied metal and plastic signage, switch and receptacle plates for painting walls. Replace after completion of painting work. Keep hardware and signage clean of paint.

D. All work where a coat of material has been applied must be inspected and approved by the Consultant before application of the succeeding specified coat; otherwise, no credit for the coat applied will be given and the installer shall automatically assume the responsibility to recoat the work in question. Inform the Consultant of the coat applied when completed for inspection and approval to comply with the above.

E. The provisions under which spray painting will be allowed include, but are not necessarily limited to, the following:

1. Same mil thickness shall be applied as brush or roller would provide.
2. No thinning of paint or coatings allowed.
3. Airless spray shall be used.
4. Same separate, adequately dried, number of coats shall be applied as specified for brush or roller application. Passes with the spray gun will not be accepted as separate coats.

3.04 CLEAN UP

A. Just prior to final completion and acceptance, examine all painted surfaces and retouch or refinish as necessary and required to leave all surfaces in perfect condition.

B. Upon completion of work, remove all paint and varnish spots from floors with waterproofing, glass and other surface, and remove all rubbish and accumulated materials or whatever nature not caused by other trades from premises and leave work in a clean, orderly and acceptable condition.

END OF SECTION

SECTION 15000
DRAINAGE

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. The work under this Division of the Contract shall include all labor, materials, scaffolding, equipment and services necessary for the installation of work related to drainage systems. The work in general shall include, but not be limited to the following:

1. Testing all work.
2. All drains, piping, hangers and flashing for piping.
3. All cutting required for installation of all plumbing work.
4. Guarantee all systems.

1.02 RELATED DOCUMENTS

A. Each Bidder shall examine all existing architectural, structural, plumbing and electrical construction documents relating to this work and shall verify all governing conditions at the site and shall become fully informed as to the extent and character of the work in the building. No consideration will be granted for any alleged misunderstanding of the work to be done, it being understood that the submission of a proposal is an agreement to all items and conditions referred to herein or indicated on the accompanying Drawings.

1.03 REQUIREMENTS OF REGULATORY AGENCIES

A. The following codes and specifications shall govern. In cases of conflict, the more stringent of the requirements shall be adhered to.

1. National Standard Plumbing Code

B. This Contractor shall secure and pay for any necessary approvals, permits, inspections, etc., before commencing any work so as to avoid all delays during construction and he shall turn over the official records of the granting of permits to the Owner. This shall be done without additional cost to the Owner.

1.04 SUBMITTALS

A. The Plumbing Contractor shall submit shop drawings and manufacturer's data for all equipment and fixtures before work is fabricated and installed.

B. The Contractor shall submit a list of names of manufacturers of the various types of pipe, fittings, valves, appurtenances and equipment properly indicating the specific service for which each item is to be used. After approval of the manufacturers' names, Contractor shall submit complete catalog data or Shop Drawings containing exact description of items to be furnished. Data of a general nature will not be accepted.

C. Certificates: Submit certificates from product manufacturers indicating materials comply with the referenced standards.

1.05 SUPERVISION

A. This Contractor shall provide a competent supervisor who shall be constantly on the premises while job is in progress, and who shall familiarize himself with the requirements of all other Contracts, in order that the work may be coordinated and proceed in an efficient manner.

PART 2 - PRODUCTS

2.01 MATERIALS

A. All materials shall be the best of the respective kinds, suitable for the conditions and duties imposed upon them in service. They shall be the latest standard catalog products of the manufacturers indicated. Where two or more items of the same type of materials or equipment are required, they shall be the product of a single manufacturer.

B. Where the approval of manufactured article is by catalog number, it shall be construed as applying only to the article proper. All trimmings and fittings required shall be in strict conformity with the specification requirements.

C. It is hereby distinctly provided that the materials or appliances furnished shall comply with all requirements of the insurance underwriters and local inspection authorities and shall be provided, in all cases, with the necessary auxiliary or incidental trimmings required to make same complete.

2.02 HANGERS AND SUPPORTS

A. Furnish and install suitable hangers and supports for all piping lines. Hangers and supports shall be Grinnell, Crane or Grabler. Provide supports which in each case will be amply strong and rigid for the load, and which shall not weaken or unduly stress the building construction.

B. Hangers shall be of heavy construction suitable for the size of pipe to be supported. All materials shall be wrought or malleable iron or steel. Hangers shall be swivel ring, split ring, wrought pipe clamp or adjustable wrought clevis type.

C. Vertical risers shall be supported by heavy duty hangers installed close to the base of the pipe risers and by riser clamps at each floor level. Risers shall have extension clamps resting on floor slabs.

D. Support horizontal piping in accordance with the following schedule.

Pipe	Max. Hanger Spacing
Cast Iron Pipe	5'-0"
Steel Pipe	12'-0"

E. Provide minimum one hanger at each pipe fitting.

2.03 DRAINAGE SYSTEMS

A. Pipe and Fittings:

1. Black iron piping with no hub joints.

B. Drains:

1. Floor Drains: J.R. Smith Model No. 2131, or approved equal.

2. Trench Drains: J.R. Smith Model No. 2970, or approved equal.

C. Cleanouts:

1. Cleanout fittings shall be extra heavy pattern with cast brass screw jointed cleanout plug.

2. In piping larger than 4 inches in diameter, 4 inch cleanout plugs are to be used.

3. Cleanouts on leaders shall be manufactured by Zorn/Josam or approved equal.

PART 3 - EXECUTION

3.01 INSTALLATIONS

A. Piping:

1. All piping at ceilings shall be hung from the construction above and as close as possible to the bottom of beams, slabs, etc.

2. Horizontal storm piping shall be installed at a uniform grade of not less than 1/8 inch per foot.

3. All risers shall be plumb and true, neatly spaced and parallel with walls and other pipes. Horizontal piping shall be straight and direct as possible, running at right angles with or parallel to walls and beams.

4. Protect all piping from entrance of dirt or other foreign materials during the construction period.

5. Piping shall be cut accurately to measurements established at the site and worked into place without springing or forcing. All cut pipe must have ends reamed and be free from burrs. Install piping to permit free expansion and contraction without damage.

6. Coordinate piping installations with structure, lighting, electrical conduit, and all other materials and equipment. Cutting or other weakening of building structure to facilitate piping installation is not permitted.

7. Provide necessary temporary connections, valves, oversize flushing connections, pumps, etc. as required to properly clean and test systems.

B. Supports & Sleeves:

1. Approved supports shall be installed and sized as required to carry the weight of the pipe and contents.

2. Provide cored hole for all pipes passing through floors and any other building construction, of adequate diameter to allow a minimum of 3/4 inch clearance all around.

3. Anchors shall consist of rigid members clamped or welded to the pipe to prevent pipe movement at that point. Attach anchors to structural members of building.

4. Support all risers at each floor level by means of clamp rests.

C. Joints:

1. Any leaking joints shall be completely disassembled and remade with new materials.

D. Accessibility:

1. All equipment shall be so arranged as to be accessible for repairs and replacement without disturbing adjacent work.

3.02 MECHANICAL CUTTING AND PATCHING

A. Contractor shall be responsible for all cutting, fitting, or patching of his Work which may be required to make its several parts come together properly. Cutting of structural members shall not be done without written approval of the Consultant.

B. Do all cutting and patching required for the installation of the Work. Any damage caused to the building by this cutting and patching, shall be corrected at no additional cost to the Owner.

C. Patching of all openings for new installations and all openings resulting from the removal of relocation of any installations shall be done by craftsmen skilled in the particular trade affected, with materials of like type.

3.03 DRAINAGE SYSTEMS

A. General:

1. Furnish and install additional floor drains including connections to existing storm drainage system.

3.04 CLEANING

A. All piping, equipment and appurtenances installed under this Section shall be thoroughly cleaned and properly protected during construction, and put in first class operating condition before being offered for acceptance.

B. In general, all painting will be done by others. All equipment shall be delivered to the job site with manufacturers standard shop finish. All equipment furnished under this Section shall be thoroughly cleaned and left ready for finished painting.

3.05 TESTS

A. Upon completion of the several portions of the Work, the various pieces of apparatus and equipment shall be tested to demonstrate that the same fulfills the specifications and requirements. The systems shall be tested in accordance with Local Code and in no case less than the following:

1. The entire system of piping shall be thoroughly blown out for the purpose of removing dirt and grease. This shall be continued for as long a period of time as is necessary to thoroughly clean the installations. The Contractor shall make good for any defects in the equipment which may result from pumping water containing any foreign matter.

2. Drainage Systems: The entire system existing and new portions of storm piping shall be tested by the Plumbing Contractor under a water test. The water test shall include the entire system from the lowest point to the highest pipe above the roofs. Water tests shall be made in accordance with all the local requirements.

   Every portion of the system shall be tested to a hydrostatic pressure equivalent to at least a ten foot head of water. After filling, the Contractor shall shut off water supply and shall allow it to stand fifteen (15) minutes, under test, during which time there shall be no loss of leakage. Any defects in materials or workmanship found to exist and cause leakage, shall be repaired or replaced with new material as may be required by the Consultant, and the test repeated until work is shown to be watertight.

B. This Contractor shall furnish and pay for all devices, materials, supplies, labor attendance and power required in connection with all test. All tests shall be made in the presence and to the satisfaction of the Plumbing and other Inspectors of the local authorities.

C. Defects disclosed by the test shall be repaired or if required by the Consultant; defective work shall be replaced with new work without extra charge to the Owner. Test shall be repeated and directed until all work is proven satisfactory.

D. The Plumbing Contractor shall notify the Consultant and others having jurisdiction at least forty-eight (48) hours in advance of making the required tests so that arrangements may be made for their presence to witness the tests.

END OF SECTION

REPAIR AND PREVENTIVE MAINTENANCE
OF THE
HAMILTON AVENUE SCHOOL
PARKING GARAGE
184 HAMILTON AVENUE
GREENWICH, CT
MARCH 2025

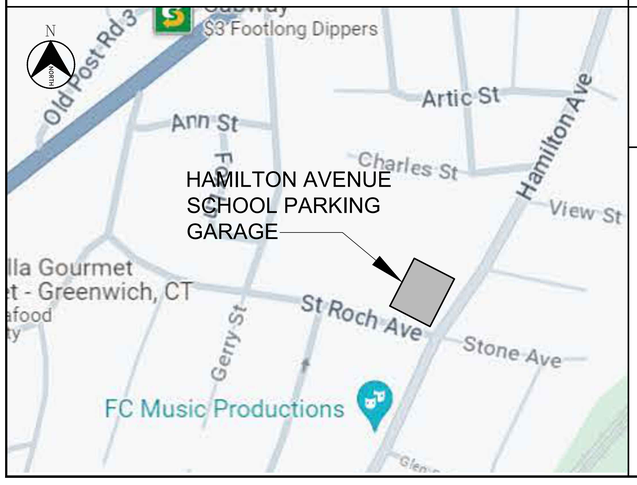
OWNER: **GREENWICH PUBLIC SCHOOLS**
290 GREENWICH AVE.
GREENWICH, CT 06830

ENGINEER: DESMAN
3 WEST 35th STREET
NEW YORK, NEW YORK 10001

SCOPE OF WORK (Summary)

1. FULL DEPTH EXISTING CONCRETE TOP REMOVAL.
2. EXISTING WATERPROOFING SYSTEM TO BE REMOVED.
3. PARTIAL DEPTH CONCRETE SLAB REPAIRS.
4. OVERHEAD CONCRETE REPAIRS.
5. SURFACE SCALING REPAIRS.
6. CONCRETE CRACKS REPAIRS.
7. NEW DRAINS AND PIPING.
8. INSTALL NEW CONCRETE TOPING.
9. NEW TRAFFIC BEARING MEMBRANE INSTALLATION.
10. MISCELLANEOUS WORK.

KEY PLAN



DRAWING INDEX

T-001.00	TITLE SHEET
DM-001.00	GARAGE SURFACE LEVEL DEMOLITION PLAN
A-001.00	GARAGE SURFACE LEVEL REPAIR PLAN (OPTION-1)
A-001A.00	GARAGE SURFACE LEVEL REPAIR PLAN (OPTION-2)
A-002.00	GARAGE LOWER LEVEL REPAIR PLAN
A-003.00	GARAGE SURFACE AND LOWER LEVELS STRIPING PLANS
A-004.00	GARAGE SURFACE LEVEL NEW TOP REINFORCEMENT AND DOWELS PLAN (OPTION-1)
A-005.00	TYPICAL STRIPING DETAILS
A-006.00	TYPICAL REPAIR SECTIONS AND DETAILS (OPTION-1)
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A-008.00	MISCELLANEOUS REPAIR DETAILS AND SECTIONS
A-009.00	TYPICAL NEW LIGHT POLES
A-010.00	NEW CONCRETE SIDEWALK TYPICAL SECTIONS

LIST OF REQUIRED INSPECTIONS:

1. Concrete cast-in-place controlled inspection.
2. Doweling and re-inforcement

ENERGY COMPLIANCE STATEMENT:

To the best of my knowledge belief and professional judgement these plans and specifications are in compliance with the energy conservation code of Connecticut

GENERAL NOTES

GENERAL NOTES:

The following notes shell apply unless noted otherwise on plans or specifications:

1. All design and construction shall be in accordance with the most recent edition of the applicable local and state building codes.

2. Contractor is instructed not to scale drawings.

3. Contractor is responsible for verifying all conditions and dimensions shown on the drawings with existing conditions prior to commencing work.

4. Contractor shall report immediately to the engineer any discrepancies or incorrect information with respect to the drawings based on existing conditions. After reporting these discrepancies verbally the contractor shall submit a written report (with drawings/sketches, as required) immediately for the engineers review. Contractor shall be directed by the engineer regarding the changes, further action if and as required.

5. The contractor shall provide all necessary methods and equipment for protecting the parking garage, adjacent buildings, equipment, materials and personnel from fire damage. These measures shall be in place prior to start of work. Methods and equipment are subject to approval by the local fire department. Fire protection and prevention during the construction period shall be in accordance with all laws and regulations including, but not limited to, the latest N.F.P.A. Regulations, 0SHA requirements, the state of Connecticut and local regulations and ordinances.

6. The contractor shall comply with all safety and health laws and regulations including, but not limited to, the provisions and requirements of the occupational safety and health act of 1970 (as amended) or the construction safety act of 1969 (as amended); whichever is applicable. The contractor shall also comply with all the most recent applicable laws, ordinances, rules, regulations and orders of any public authority having jurisdiction over the project in order to protect persons and/or property from damage, injury or loss. The contractor shall erect and maintain, as required by existing conditions and progress of the work, all reasonable safeguards for safety and protection; including posting danger signs and other warnings against hazards, promulgating safety regulations and notifying the owner, tenants, patrons and users of adjacent facilities. The contractor shall also assure that all his subcontractors conform to all health and safety laws and regulations.

7. The contractor shall provide all shoring, bracing and sheeting required for safety and proper execution of the work.

8. The contractor shall not attempt to bring any construction equipment weighing more than 6,000 lbs or other specialized vehicle or equipment onto the parking decks without prior approved submittals from the engineer (DESMAN). The detailed calculation shall be submitted and stamped by a professional engineer registered in the state of Connecticut . Any specialized vehicle or equipment to be used inside the parking facility shall also be subject to approval by the engineer (DESMAN).

9. Contractor is responsible for preparation of shop drawings for any specialized shoring which may be required and/or specified in the contract documents. Shoring must be designed and stamped by a Professional Engineer registered in the state of Connecticut . Shop drawings shall be submitted to the engineer for approval.

10. When plans and specifications include information pertaining to surface observations, material testing and other preliminary investigations, such information represents only the opinion of the engineer as to the locations, character, or quantity of the materials or conditions encountered and is only included for the convenience of the bidder. The owner/engineer assumes no responsibility whatsoever with respect to the sufficiency or accuracy of the information, and there is no guarantee, either expressed or implied, that the conditions indicated are representative of those existing throughout the work, or that unanticipated developments may not occur and/or exist. Said information shall not be considered by the parties involved as a basis for the contract award amount.

11. Any extra work beyond the scheduled quantities requiring extra cost to the owner shall be approved by the owner prior to commencing said work. Claims for extra work which have not been authorized in writing by the owner and approved by the owner and the engineer will be rejected and the contractor shall not be entitled to payment.

12. The plans may be supplemented by standard and working drawings as are necessary to adequately describe the work. In the event, in the sole judgment of the engineer, a change becomes necessary in the best interest of the project, due to circumstances not know at the time the condition survey was performed and/or arising thereafter, the engineer may alter the plans, as may be necessary, to increase or decrease the quantities of work to be performed in accordance with such changes.

13. The contractor shall review all existing conditions to determine all services (electrical and mechanical) which might be affected by the repair work. He shall make necessary temporary connections to maintain existing services to all areas of the parking deck or other areas not in the contract affected by the work. Upon completion of repairs the contractor shall make permanent connections to all services which had been temporarily maintained.

14. Any utility lines abandoned or no longer in service that would interfere with the project shall be identified by the contractor and removed from the repair areas by the owner, unless noted otherwise, prior to the start of work by the contractor.

15. All details, sections and notes shown on the drawings are intended to be typical and shall apply to similar situations elsewhere, unless otherwise shown.

DESMAN
Design Management
3 WEST 35th STREET NEW YORK, NY 10001 TEL: 212-686-5560
NEW YORK · NEW JERSEY · CONNECTICUT · PENNSYLVANIA · MARYLAND
HARTFORD FT. LAUDERDALE DENVER

REPAIR AND PREVENTIVE MAINTENANCE
OF THE
HAMILTON AVENUE SCHOOL PARKING GARAGE
184 HAMILTON AVENUE
GREENWICH, CONNECTICUT

NO.	DATE	BY

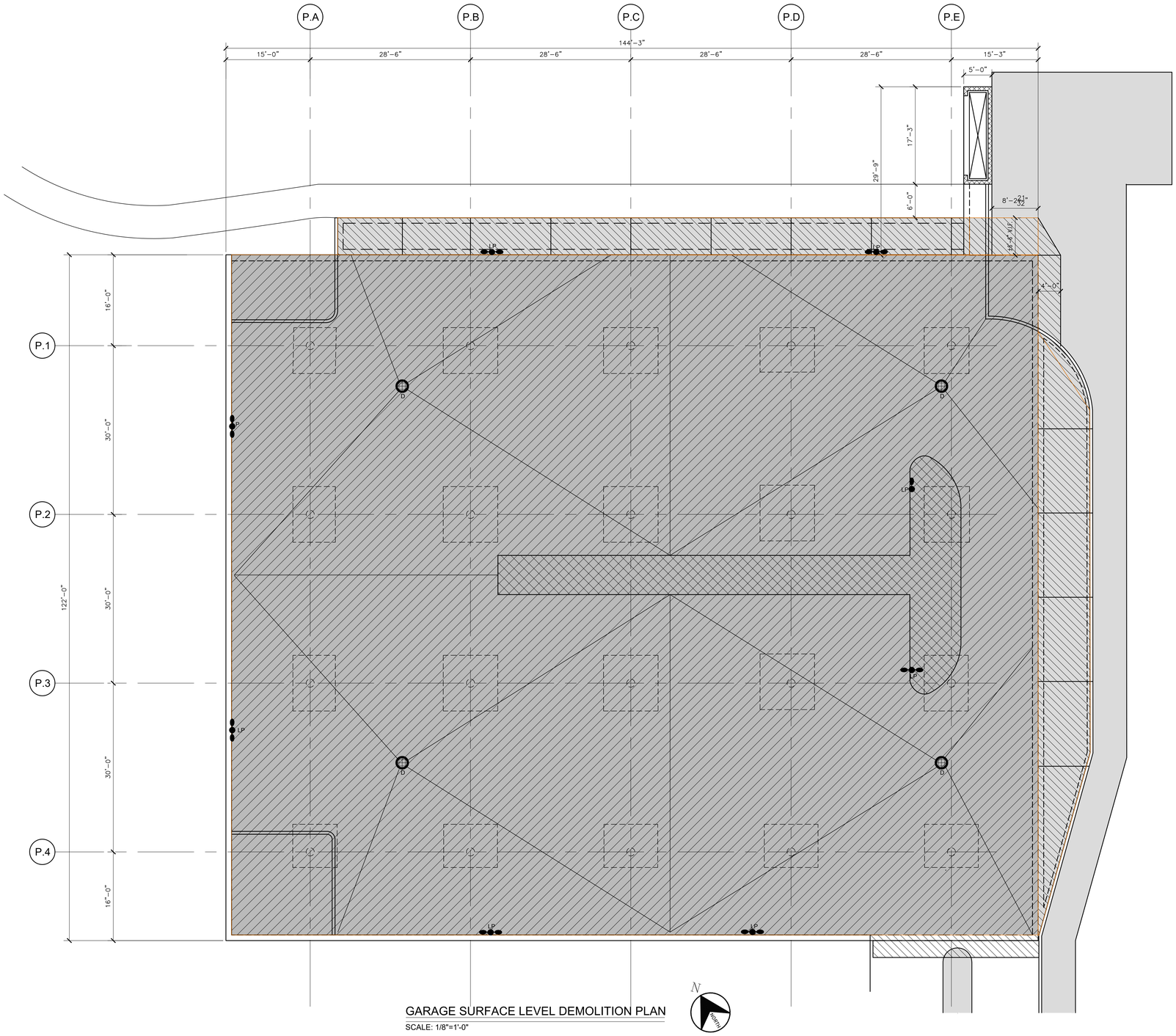
REVISIONS

PROJECT
GARAGE REPAIR AND
PREVENTIVE MAINTENANCE

TITLE SHEET

SEAL & SIGNATURE

DATE: MARCH 2025
PROJECT 10-23120.00-2
DRAWN BY: L.E.
CH'KD BY: J.C.
DWG No:
T-001.00
CADD FILE No:



GARAGE SURFACE LEVEL DEMOLITION PLAN

SCALE: 1/8"=1'-0"

DOWELS INSTALLATION LEGEND

- EXISTING 6" THICK CONCRETE TOP TO BE REMOVED
- EXISTING 6" THICK CONCRETE CURB TO BE REMOVED
- EXISTING WATERPROOFING MEMBRANE TO BE REMOVED
- EXISTING CONCRETE CURB TO BE REMOVED
- EXISTING 6" CONCRETE SIDEWALK (SLAB ON GRADE) TO BE REMOVED
- EXISTING LIGHTING POLE TO BE REMOVED
- EXISTING DRAIN TO BE REMOVED

DESMAN
Design Management
3 WEST 35th STREET NEW YORK, NY 10001 TEL. 212-686-5360
NEW YORK CHICAGO WASHINGTON, DC BOSTON CLEVELAND
HARTFORD FT. LAUDERDALE DENVER

REPAIR AND PREVENTIVE MAINTENANCE OF THE HAMILTON AVENUE SCHOOL PARKING GARAGE

184 HAMILTON AVENUE
GREENWICH, CONNECTICUT

NO.	DATE	BY

REVISIONS

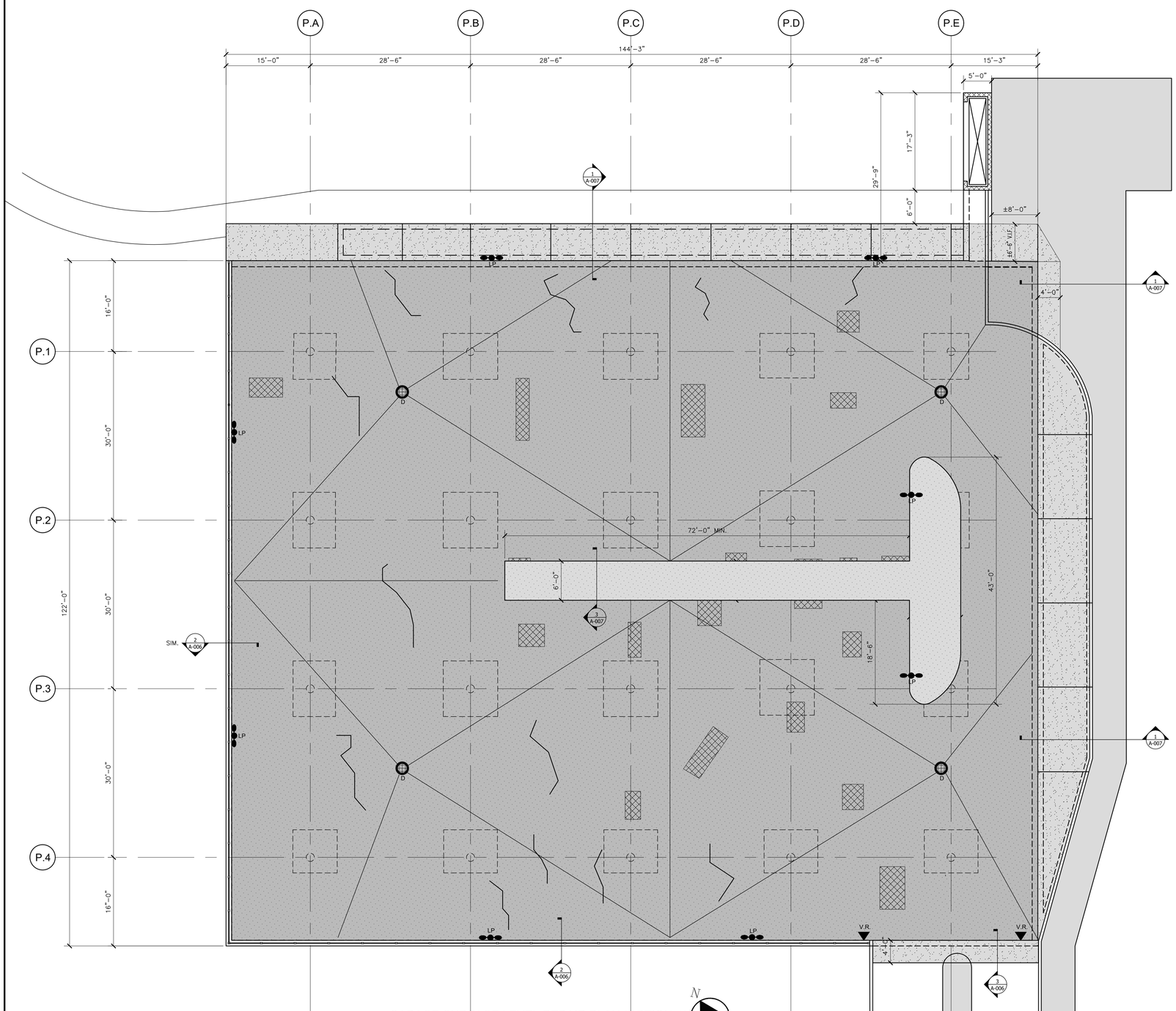
PROJECT

GARAGE REPAIR AND PREVENTIVE MAINTENANCE

GARAGE SURFACE LEVEL DEMOLITION PLAN

SEAL & SIGNATURE

DATE: MARCH 2025
PROJECT 10-23120.00-2
DRAWN BY: L.E.
CH'KD BY: J.C.
DWG No:
DM-001.00
CADO FILE No:



GARAGE SURFACE LEVEL REPAIR PLAN (OPTION-1)

SCALE: 1/8"=1'-0"

LEGEND

- NEW 6" THICK CONCRETE TOP AS PER DETAIL 1/A-006
- CONCRETE SLAB OVERHEAD REPAIR AS PER DETAIL 6/A-008
- V.R. — VERTICAL CONCRETE WALL REPAIR AS PER DETAIL 4/A-008
- CONCRETE SLAB OVERHEAD CRACKS REPAIR AS PER DETAIL 3/A-008
- NEW WATERPROOFING MEMBRANE AS PER DETAIL 1/A-008
- NEW CONCRETE SIDEWALK (CONCRETE SLAB ON GRADE) AS PER DETAILS AT A-010
- EXISTING 6" CONCRETE SIDEWALK (SLAB ON GRADE) TO REMAIN
- D — NEW DRAIN AS PER DETAIL X/A-00
- LP — NEW LIGHTING POLE AS PER DETAIL 1/A-009 AND 2/A-009
- NEW 36"X6'-0" VINYL OR WOOD PICKET FENCE WITH POST AS PER DETAIL 2/A-007

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REPAIR AND PREVENTIVE MAINTENANCE OF THE HAMILTON AVENUE SCHOOL PARKING GARAGE

184 HAMILTON AVENUE
GREENWICH, CONNECTICUT

NO.	DATE	BY
REVISIONS		

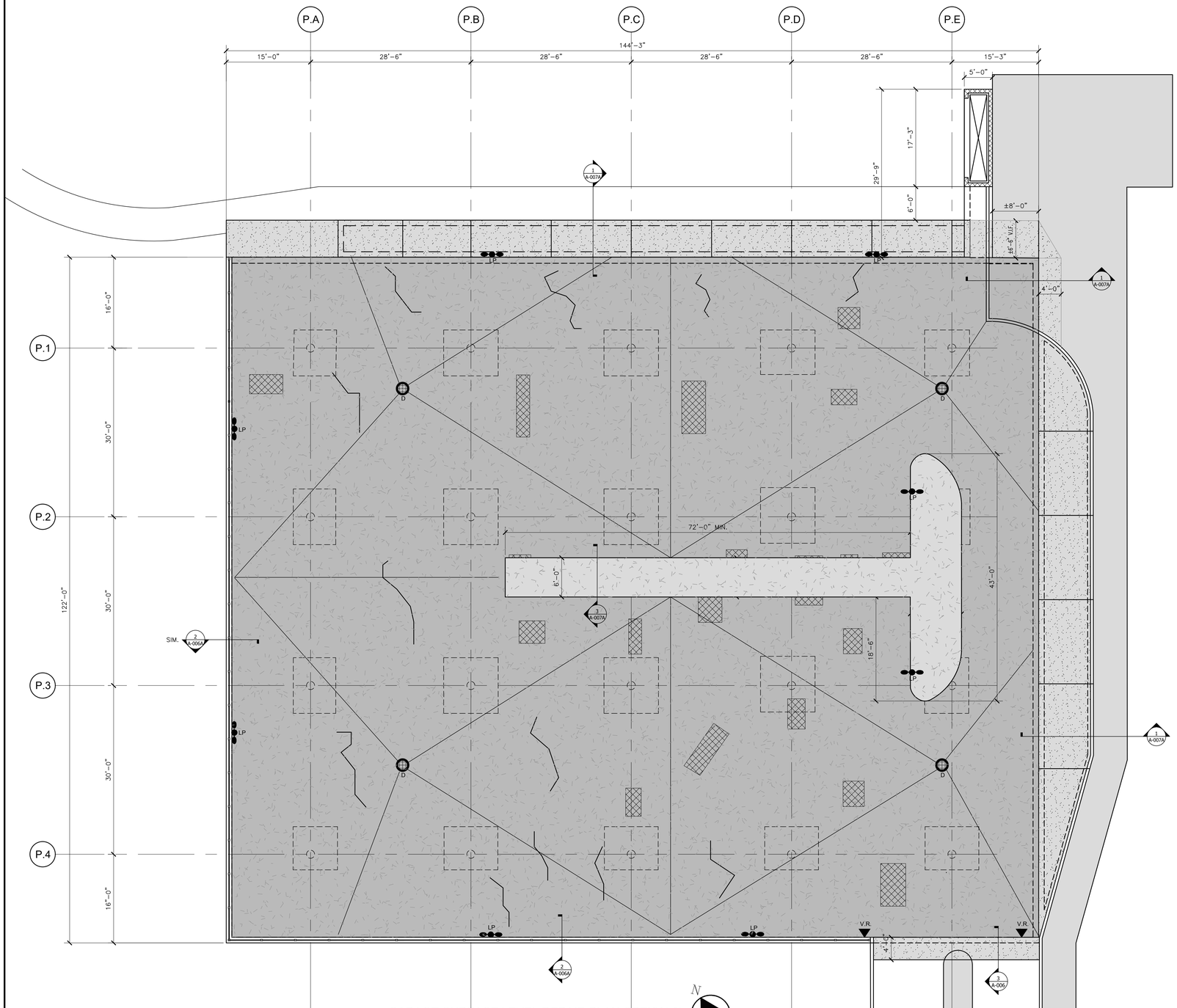
PROJECT

GARAGE REPAIR AND PREVENTIVE MAINTENANCE

GARAGE SURFACE LEVEL REPAIR PLAN (OPTION -1)

SEAL & SIGNATURE

DATE: MARCH 2025
PROJECT 10-23120.00-2
DRAWN BY: L.E.
CH'KD BY: J.C.
DWG No: A-001.00
CADO FILE No:



GARAGE SURFACE LEVEL REPAIR PLAN OPTION-2)

SCALE: 1/8"=1'-0"

LEGEND

- NEW 6" THICK CONCRETE TOP AS PER DETAIL 1/A-006A
- CONCRETE SLAB OVERHEAD REPAIR AS PER DETAIL 6/A-008
- V.R. VERTICAL CONCRETE WALL REPAIR AS PER DETAIL 4/A-008
- CONCRETE SLAB OVERHEAD CRACKS REPAIR AS PER DETAIL 3/A-008
- NEW WATERPROOFING MEMBRANE AS PER DETAIL 1/A-008
- NEW CONCRETE SIDEWALK (CONCRETE SLAB ON GRADE) AS PER DETAILS AT A-010
- EXISTING 6" CONCRETE SIDEWALK (SLAB ON GRADE) TO REMAIN
- D NEW DRAIN AS PER DETAIL X/A-00
- LP NEW LIGHTING POLE AS PER DETAIL 1/A-009 AND 2/A-009
- NEW 36"X6'-0" VINYL OR WOOD PICKET FENCE WITH POST AS PER DETAIL 2/A-007

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REPAIR AND PREVENTIVE MAINTENANCE OF THE HAMILTON AVENUE SCHOOL PARKING GARAGE

184 HAMILTON AVENUE
GREENWICH, CONNECTICUT

NO.	DATE	BY
REVISIONS		

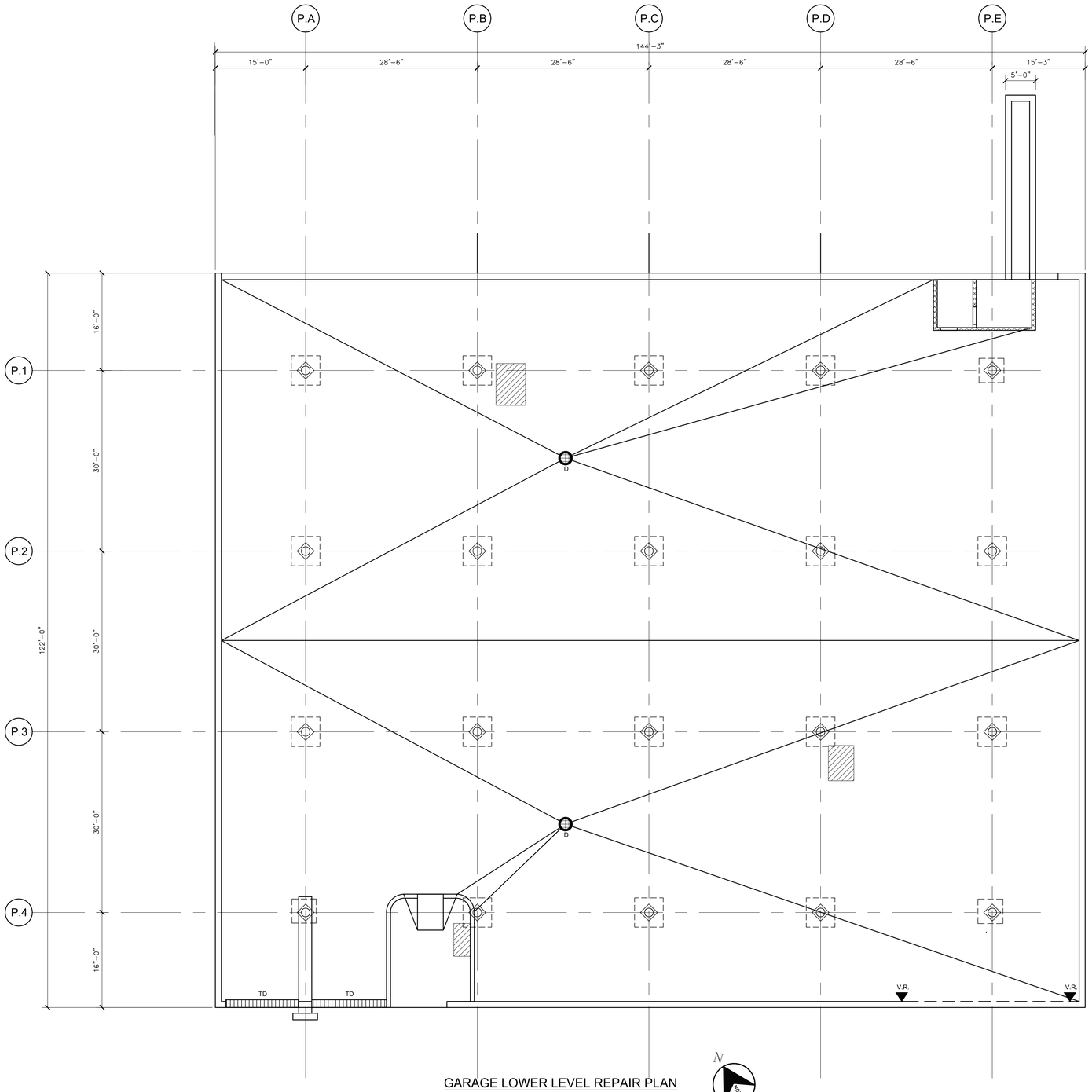
PROJECT

GARAGE REPAIR AND PREVENTIVE MAINTENANCE

GARAGE SURFACE LEVEL REPAIR PLAN (OPTION-2)

SEAL & SIGNATURE

DATE: MARCH 2025
PROJECT 10-23120.00-2
DRAWN BY: L.E.
CH'KD BY: J.C.
DWG No:
A-001A.00
CADO FILE No:



GARAGE LOWER LEVEL REPAIR PLAN

SCALE: 1/8"=1'-0"

LEGEND

	EXISTING SLAB ON GRADE TO REPAIR AS PER DETAIL 8/A-008
V.R.	VERTICAL CONCRETE WALL REPAIR AS PER DETAIL 4/A-008
D	EXISTING DRAIN TO REMAIN
TD	EXISTING TRENCH DRAIN TO REMAIN

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HAMILTON AVENUE SCHOOL PARKING GARAGE

184 HAMILTON AVENUE
GREENWICH, CONNECTICUT

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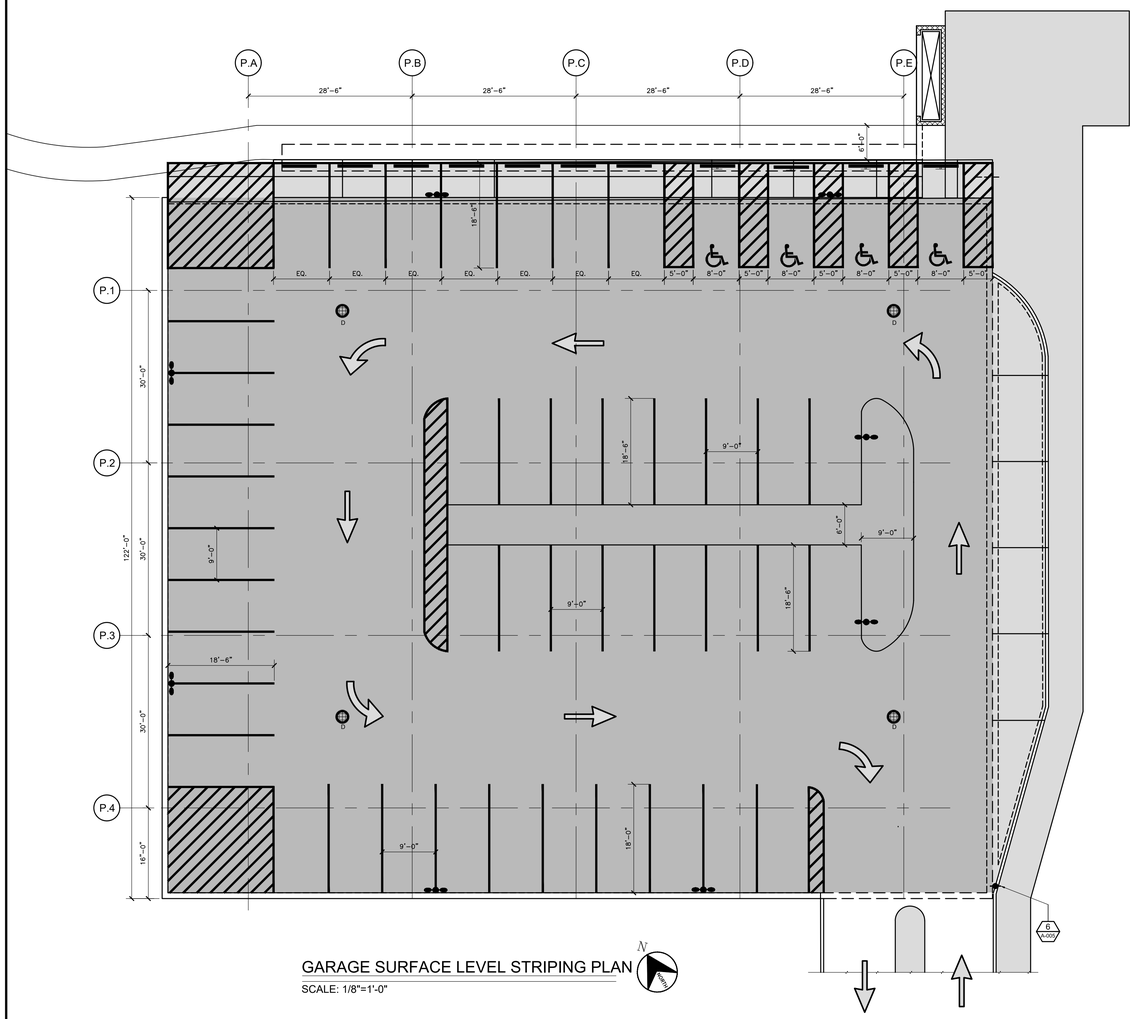
GARAGE REPAIR AND PREVENTIVE MAINTENANCE

GARAGE LOWER LEVEL REPAIR PLAN

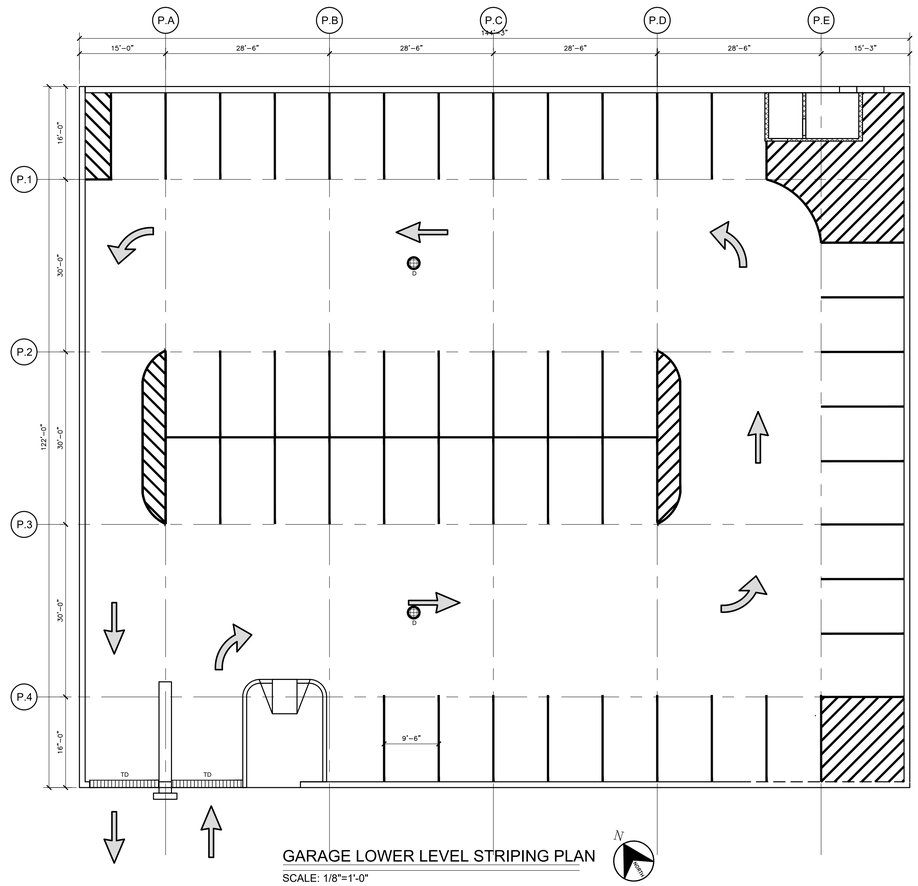
SEAL & SIGNATURE

DATE: MARCH 2025
PROJECT 10-23120.00-2
DRAWN BY: L.E.
CH'KD BY: J.C.
DWG No: A-002.00
CADO FILE No:



GARAGE SURFACE LEVEL STRIPING PLAN

SCALE: 1/8"=1'-0"



GARAGE LOWER LEVEL STRIPING PLAN

SCALE: 1/8"=1'-0"

LEGEND	
	TRAFFIC DIRECTION ARROW AS PER DETAIL 3/A-005
6 A-005	TYPICAL WEIGHT LIMIT SIGN DETAIL ON BOLLARD @ GRADE AS PER DETAIL 6/A-005
	TYPICAL WEIGHT LIMIT SIGN DETAIL ON BOLLARD @ GRADE AS PER DETAIL 6/A-005
16'-6" 9'-6"	NEW PARKING STALL STRIPING AS PER DETAILS 1/A-005 AND 2/A-005
	TYPICAL CAR WHEEL STOP DETAILS AS PER DETAIL 4/A-005 WITH TYPICAL H.C. STALL SIGN AS PER 5/A-005 DETAIL

NOTE:

NUMBERS OF PARKING STALL REMAIN THE SAME AS EXISTING NUMBERS.

NOTE:

TYPICAL STRIPING AND SIGN DETAILS AS PER DRAWING A-005

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184 HAMILTON AVENUE
GREENWICH, CONNECTICUT

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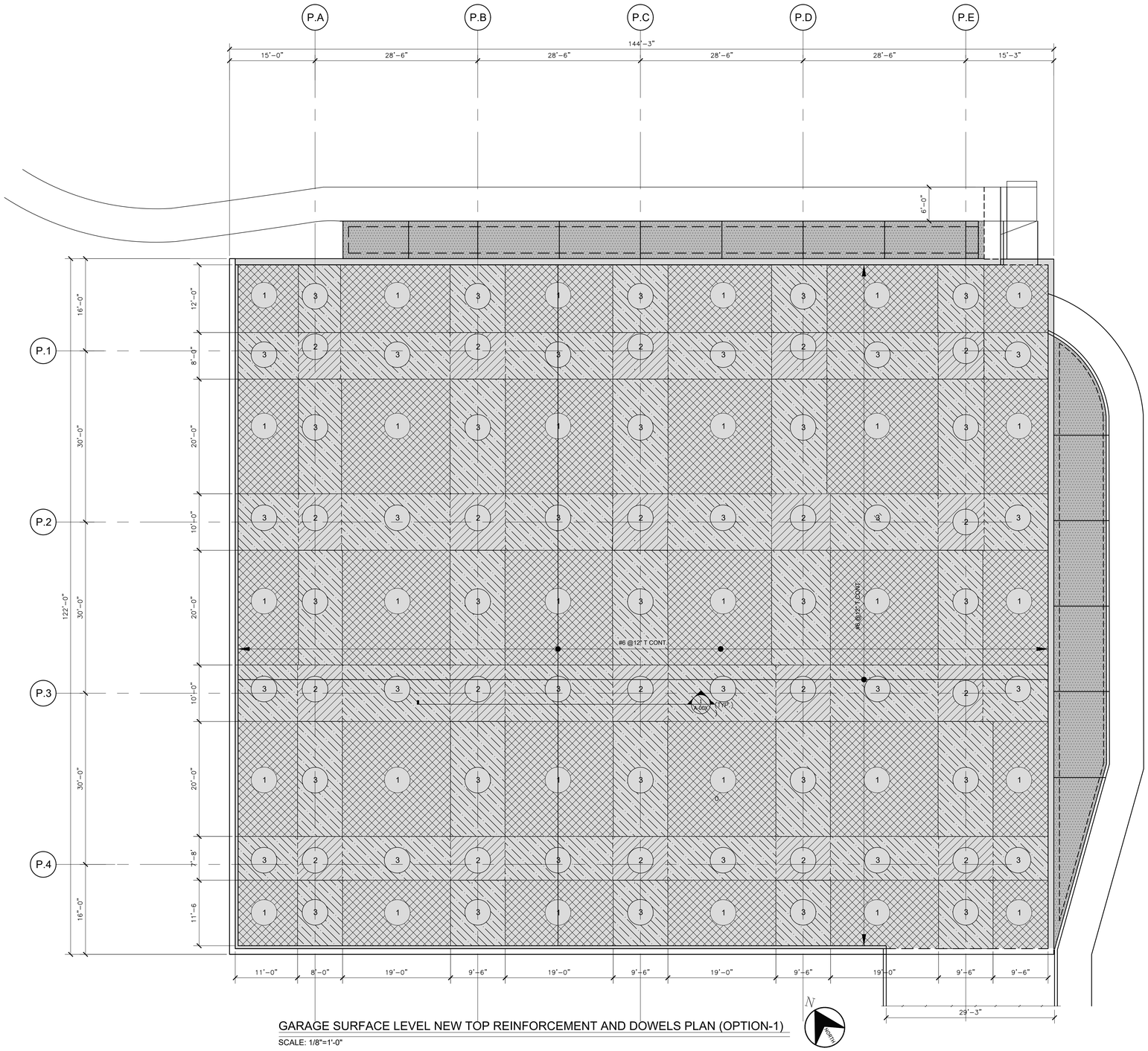
GARAGE REPAIR AND PREVENTIVE MAINTENANCE

GARAGE SURFACE AND LOWER LEVELS STRIPING PLANS

SEAL & SIGNATURE

DATE: MARCH 2025
PROJECT: 10-23120.00-2
DRAWN BY: L.E.
CH'KD BY: J.C.
DWG No:
A-003.00
CADD FILE No:



GARAGE SURFACE LEVEL NEW TOP REINFORCEMENT AND DOWELS PLAN (OPTION-1)

SCALE: 1/8"=1'-0"

DOWELS INSTALLATION LEGEND	
1	#4 DOWELS @24" EW WITH 4" EMBEDMENT USING PURE200+ADHESIVE BY DEWALT WITHIN MIDDLE STRIPS (TYP.)
2	#5 DOWELS @12" EW WITH 5" EMBEDMENT USING PURE200+ADHESIVE BY DEWALT WITHIN COLUMN DROP PANELS STRIPS (TYP.)
3	#5 DOWELS @18" EW WITH 5" EMBEDMENT USING PURE200+ADHESIVE BY DEWALT BETWEEN COLUMN PANELS STRIPS (TYP.)
	EXISTING CONCRETE SLAB TO REMAIN
	NEW 6" CONCRETE SIDEWALK (SLAB ON GRADE)

NOTES:

1. EXISTING PLAN SHOWN WITHOUT CONCRETE TOP.
2. EXISTING PLAN SHOWN WITHOUT EXISTING MEMBRANE.
3. PRIOR REINFORCEMENT INSTALLATION EXISTING STRUCTURAL CONCRETE SLAB TOP SURFACE TO BE ROUGHEN TO FULL AMPLITUDE OF ¼" DEEP.

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184 HAMILTON AVENUE
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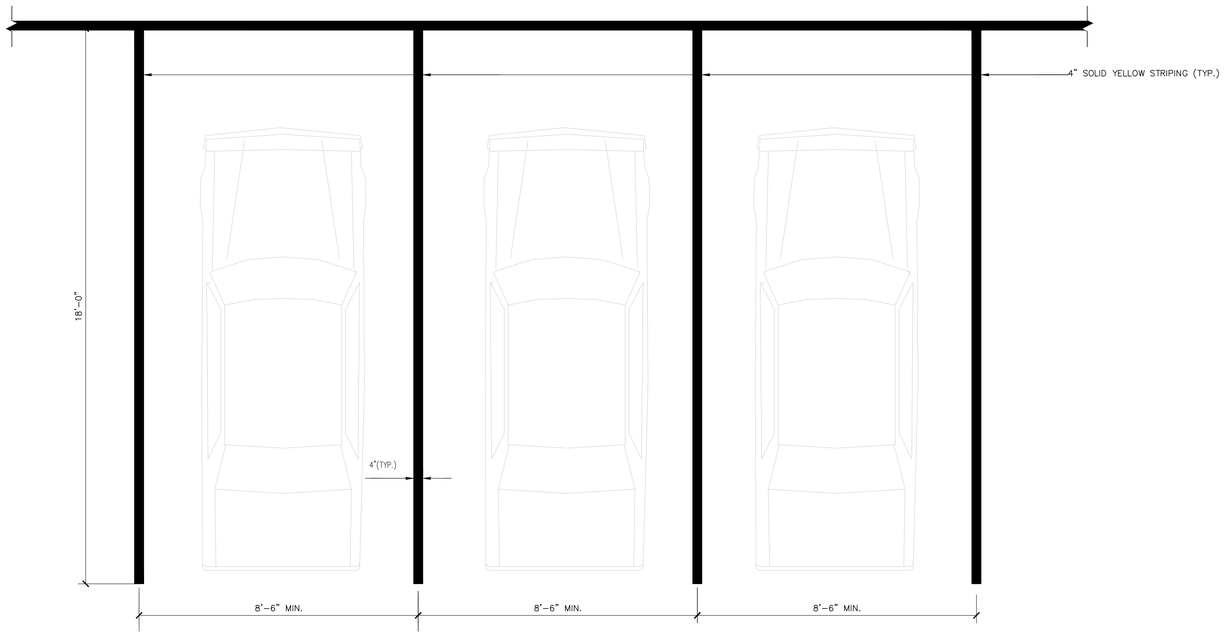
GARAGE REPAIR AND PREVENTIVE MAINTENANCE

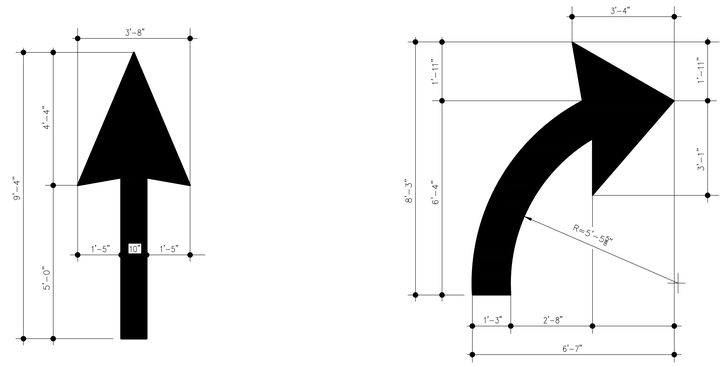
GARAGE SURFACE LEVEL NEW TOP REINFORCEMENT AND DOWELS PLAN (OPTION-1)

SEAL & SIGNATURE

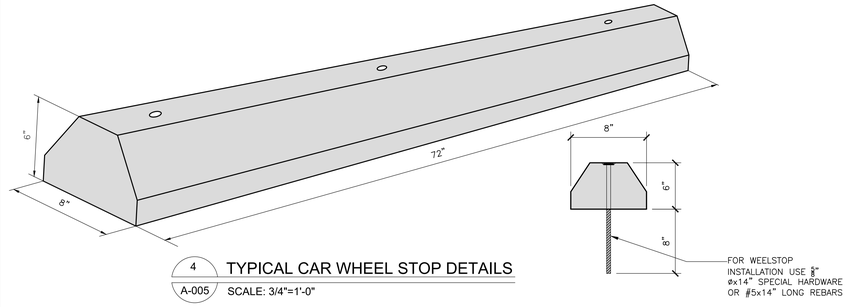
DATE: MARCH 2025
PROJECT 10-23120.00-2
DRAWN BY: L.E.
CH.KD. BY: J.G.
DWG No:
A-004.00
CADD FILE No:



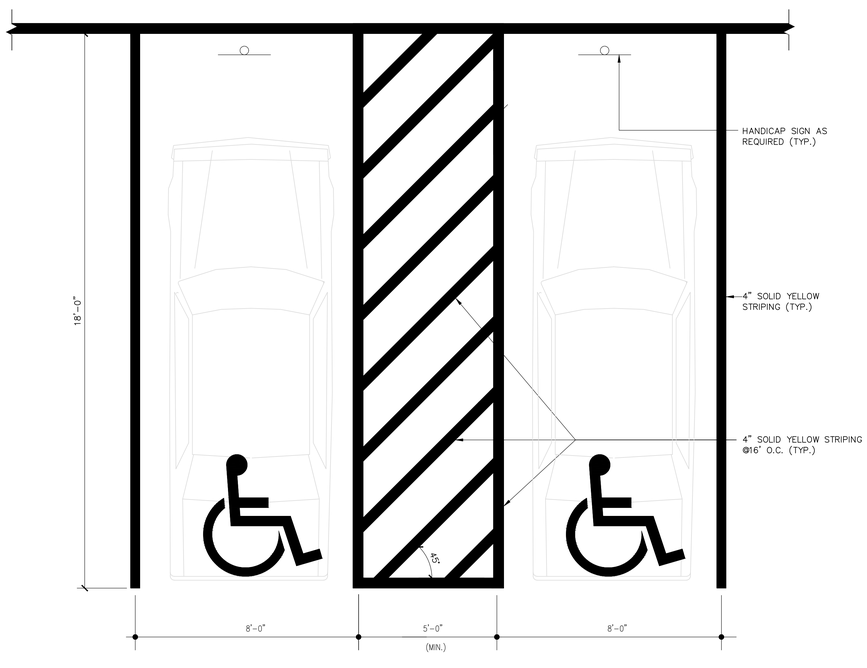
1 TYPICAL STRIPING STALLS DETAILS
A-005 SCALE: N.I.S.



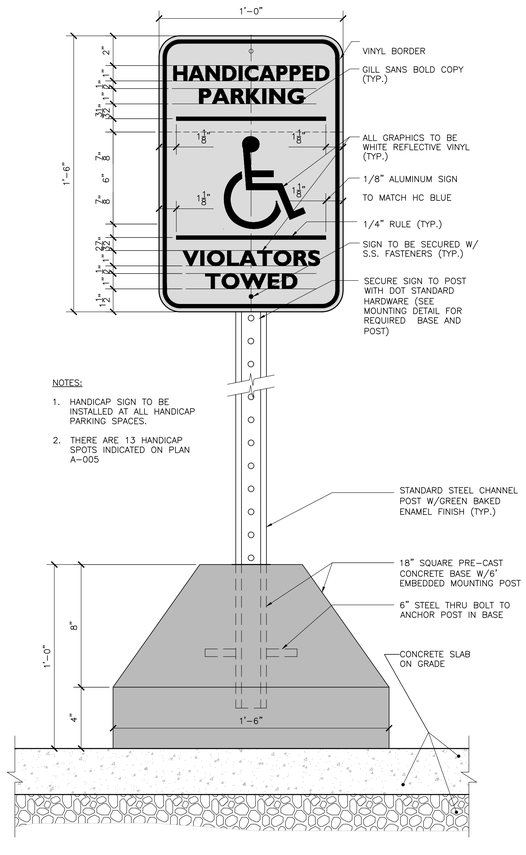
3 TYPICAL DIRECTION ARROW DETAIL
A-005 SCALE: N.I.S.



4 TYPICAL CAR WHEEL STOP DETAILS
A-005 SCALE: 3/4"=1'-0"



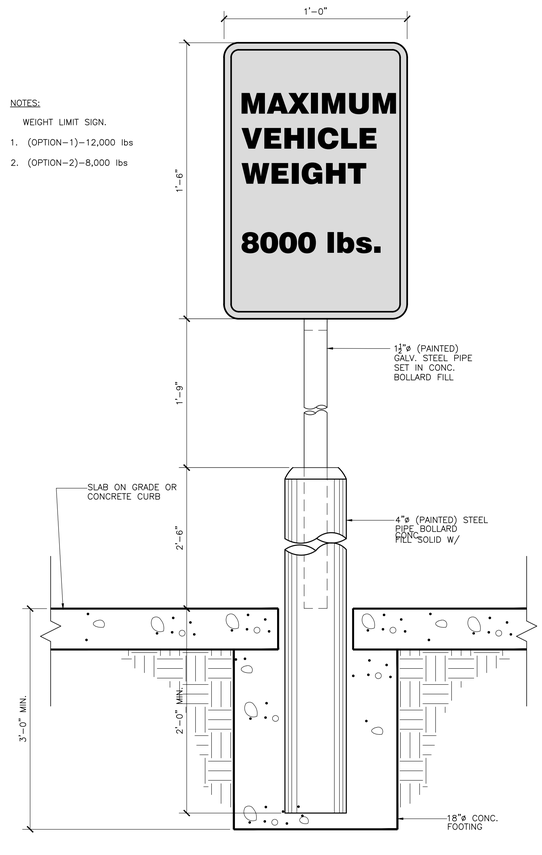
2 TYPICAL HANDICAP STALLS DETAIL
A-005 SCALE: N.I.S.



NOTES:
1. HANDICAP SIGN TO BE INSTALLED AT ALL HANDICAP PARKING SPACES.
2. THERE ARE 13 HANDICAP SPOTS INDICATED ON PLAN A-005

5 TYPICAL H.C. STALL SIGN DETAIL
A-005 SCALE: N.I.S.

NOTES:
WEIGHT LIMIT SIGN.
1. (OPTION-1)-12,000 lbs
2. (OPTION-2)-8,000 lbs



6 TYPICAL WEIGHT LIMIT SIGN DETAIL ON BOLLARD @ GRADE
A-005 SCALE: N.I.S.

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REPAIR AND PREVENTIVE MAINTENANCE
OF THE
HAMILTON AVENUE SCHOOL PARKING GARAGE
184 HAMILTON AVENUE
GREENWICH, CONNECTICUT

NO.	DATE	BY

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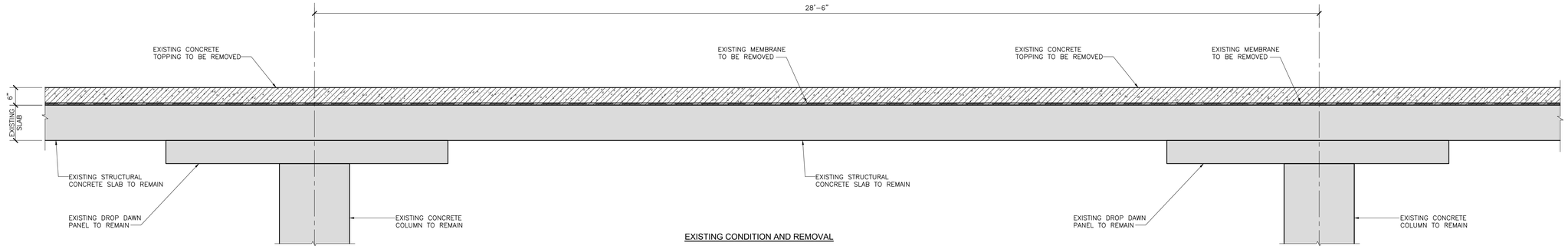
GARAGE REPAIR AND PREVENTIVE MAINTENANCE

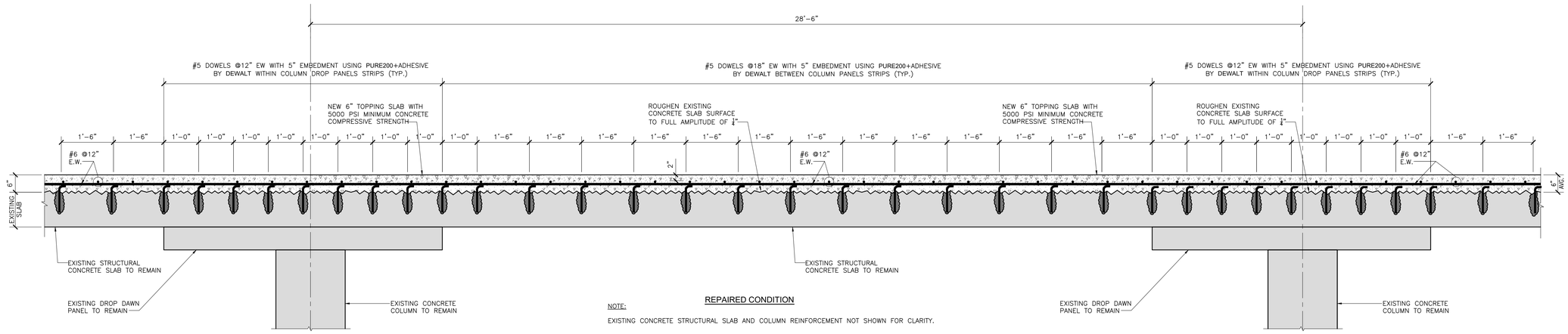
TYPICAL STRIPING AND SING DETAILS

SEAL & SIGNATURE

DATE: MARCH 2025
PROJECT 10-23120.00-2
DRAWN BY: L.E.
CH'KD BY: J.C.
DWG No:
A-005.00
CADO FILE No:



EXISTING CONDITION AND REMOVAL



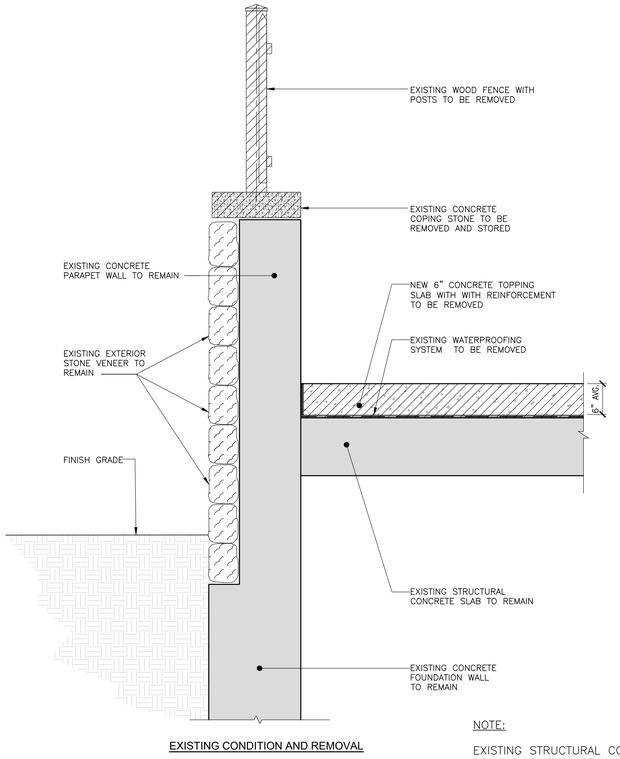
REPAIRED CONDITION

NOTE:

EXISTING CONCRETE STRUCTURAL SLAB AND COLUMN REINFORCEMENT NOT SHOWN FOR CLARITY.

1 / A-006 NEW CONCRETE TOP TYPICAL SECTION

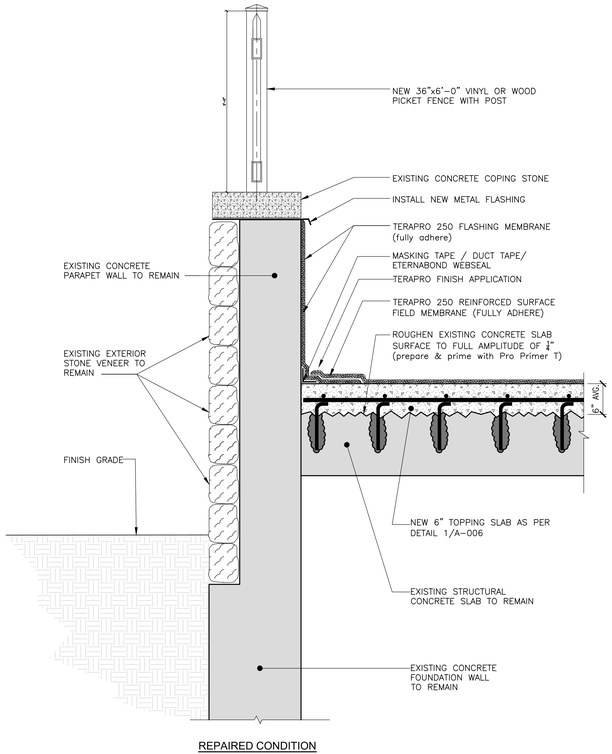
SCALE: N.T.S.



EXISTING CONDITION AND REMOVAL

NOTE:

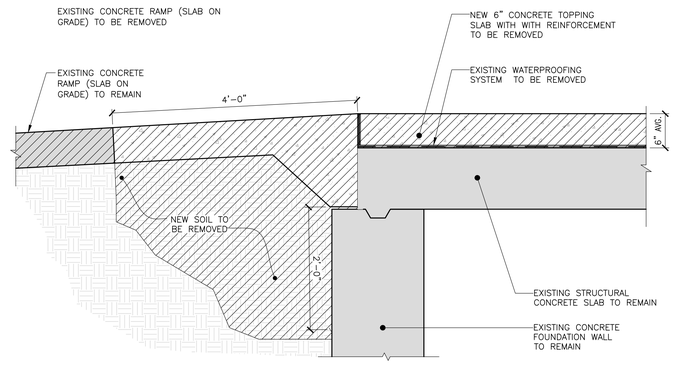
EXISTING STRUCTURAL CONCRETE REINFORCEMENT NOT SHOWN FOR CLARITY.



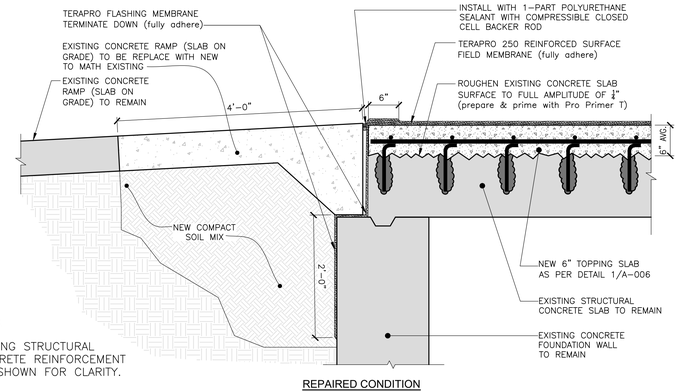
REPAIRED CONDITION

2 / A-006 TYPICAL WATERPROOFING AND REPAIR SECTION AT PARAPET WALL

SCALE: N.I.S.



EXISTING CONDITION AND REMOVAL



NOTE:

EXISTING STRUCTURAL CONCRETE REINFORCEMENT NOT SHOWN FOR CLARITY.

REPAIRED CONDITION

3 / A-006 TYPICAL WATERPROOFING AND REPAIR SECTION AT ENTRANCE RAMP

SCALE: N.I.S.

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REPAIR AND PREVENTIVE MAINTENANCE OF THE HAMILTON AVENUE SCHOOL PARKING GARAGE

184 HAMILTON AVENUE
GREENWICH, CONNECTICUT

NO.	DATE	BY

REVISIONS

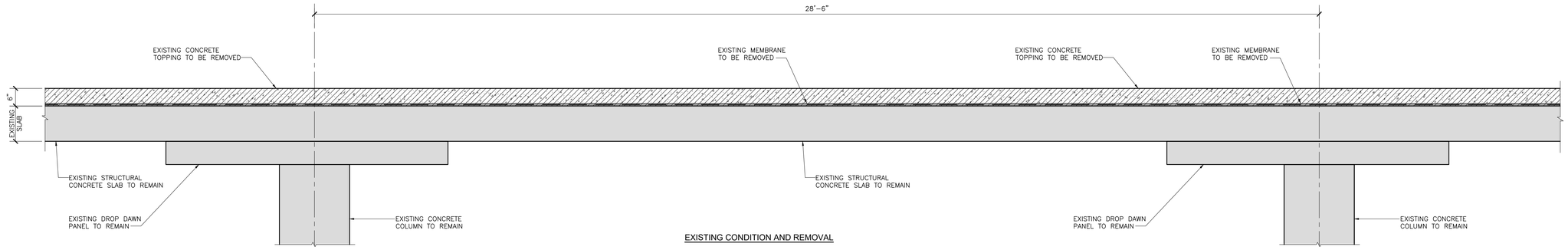
PROJECT

GARAGE REPAIR AND PREVENTIVE MAINTENANCE

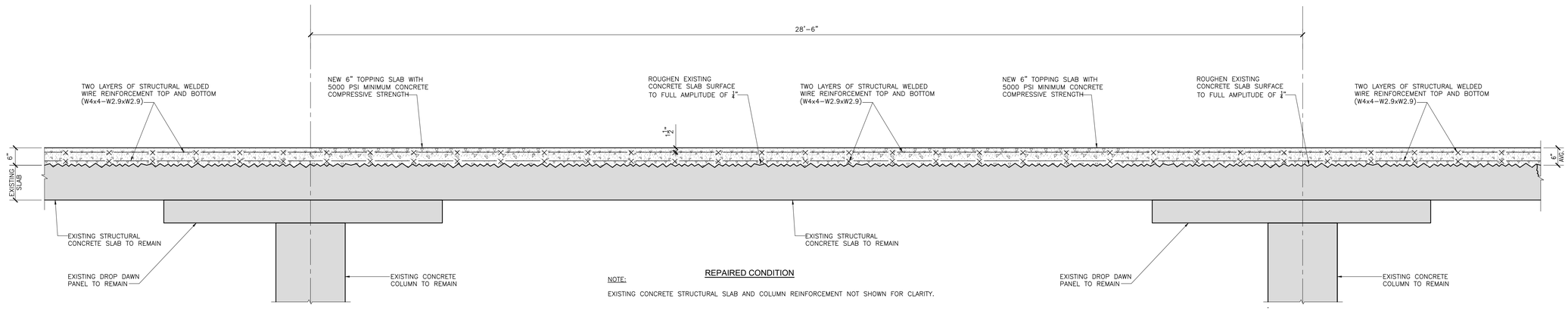
TYPICAL REPAIR DETAILS AND SECTIONS (OPTION-1)

SEAL & SIGNATURE

DATE: MARCH 2025
PROJECT 10-23120.00-2
DRAWN BY: L.E.
CH'KD BY: J.C.
DWG No: A-006.00
CADO FILE No:



EXISTING CONDITION AND REMOVAL



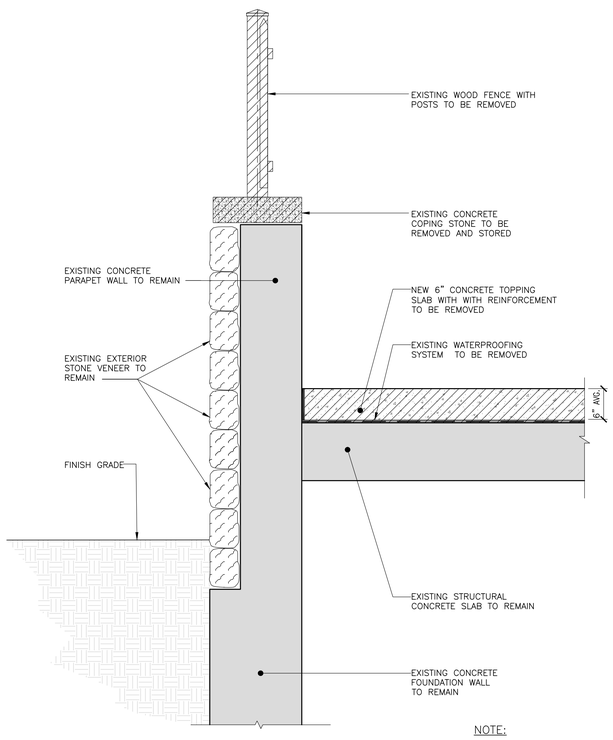
REPAIRED CONDITION

NOTE:

EXISTING CONCRETE STRUCTURAL SLAB AND COLUMN REINFORCEMENT NOT SHOWN FOR CLARITY.

1 / A-006A — NEW CONCRETE TOP TYPICAL SECTION

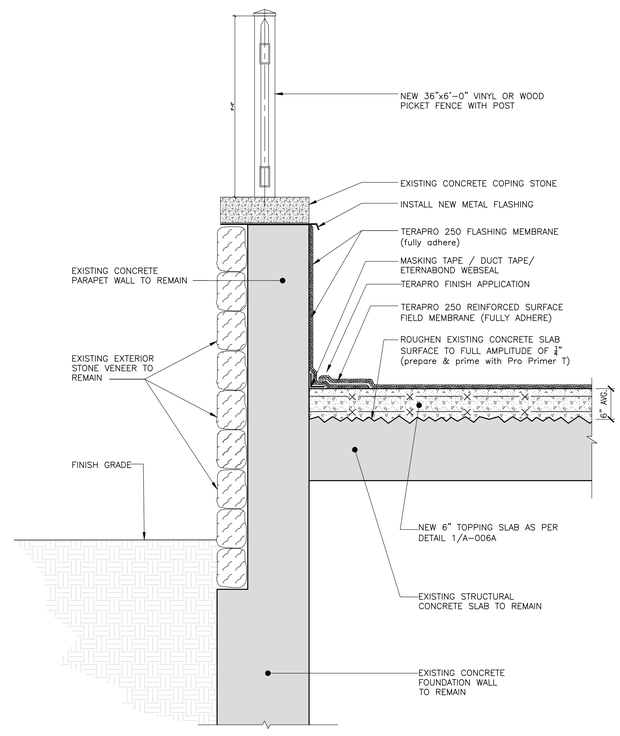
SCALE: N.T.S.



EXISTING CONDITION AND REMOVAL

NOTE:

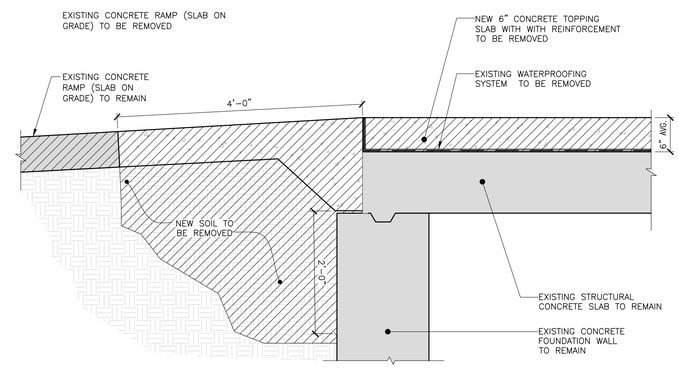
EXISTING STRUCTURAL CONCRETE REINFORCEMENT NOT SHOWN FOR CLARITY.



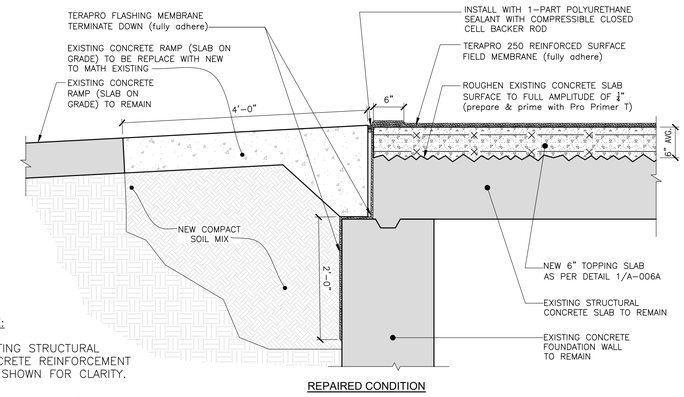
REPAIRED CONDITION

2 / A-006A — TYPICAL WATERPROOFING AND REPAIR SECTION AT PARAPET WALL

SCALE: N.I.S.



EXISTING CONDITION AND REMOVAL



NOTE:

EXISTING STRUCTURAL CONCRETE REINFORCEMENT NOT SHOWN FOR CLARITY.

REPAIRED CONDITION

3 / A-006A — TYPICAL WATERPROOFING AND REPAIR SECTION AT ENTRANCE RAMP

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REPAIR AND PREVENTIVE MAINTENANCE OF THE HAMILTON AVENUE SCHOOL PARKING GARAGE

184 HAMILTON AVENUE
GREENWICH, CONNECTICUT

NO.	DATE	BY

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GARAGE REPAIR AND PREVENTIVE MAINTENANCE

TYPICAL REPAIR DETAILS AND SECTIONS (OPTION-2)

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DATE: MARCH 2025
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DWG No:
A-006A.00
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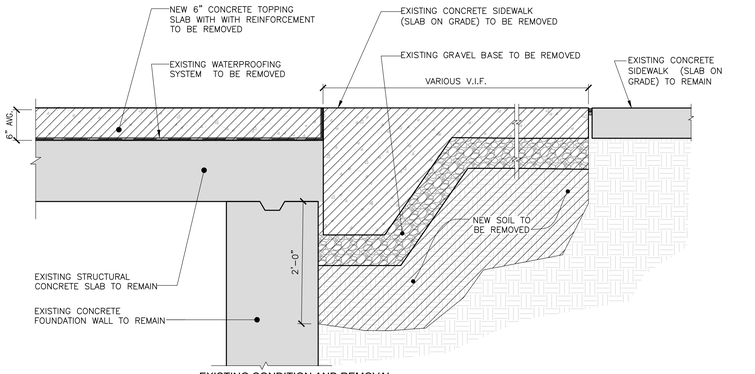
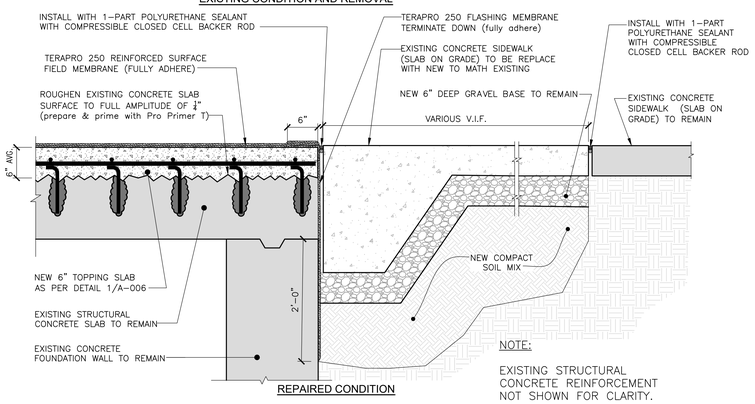


EXISTING CONDITION AND REMOVAL



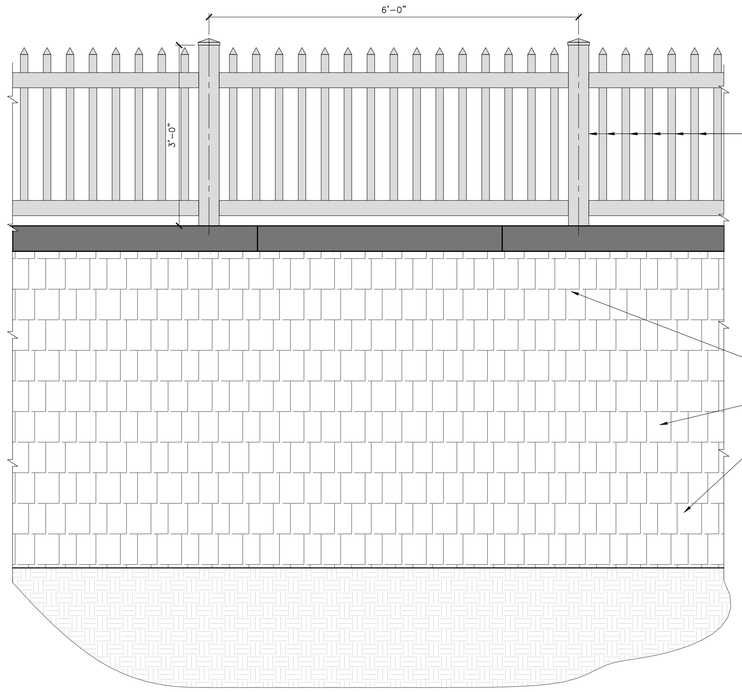
REPAIRED CONDITION

NOTE:

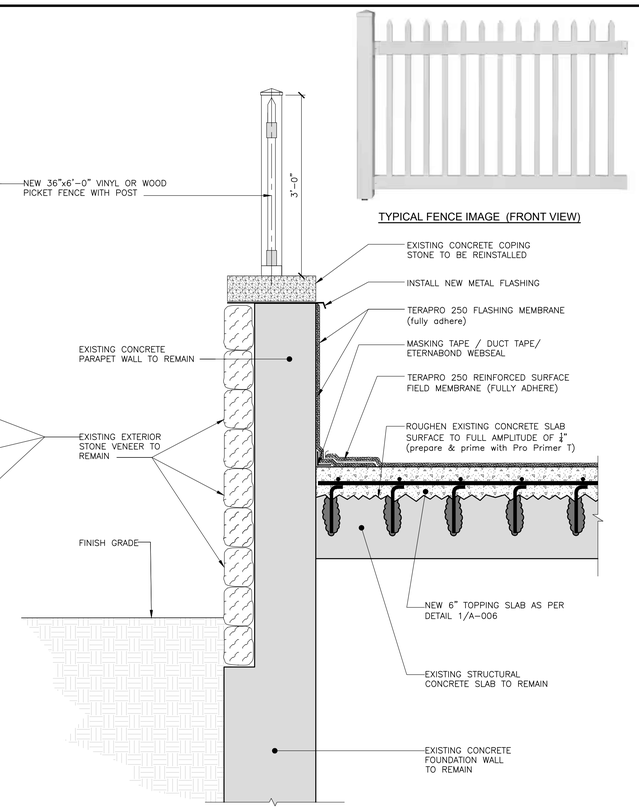
EXISTING STRUCTURAL CONCRETE REINFORCEMENT NOT SHOWN FOR CLARITY.

1 / A-007 TYPICAL WATERPROOFING AND REPAIR SECTION

SCALE: N.I.S.



REPAIRED CONDITION (FRONT VIEW)

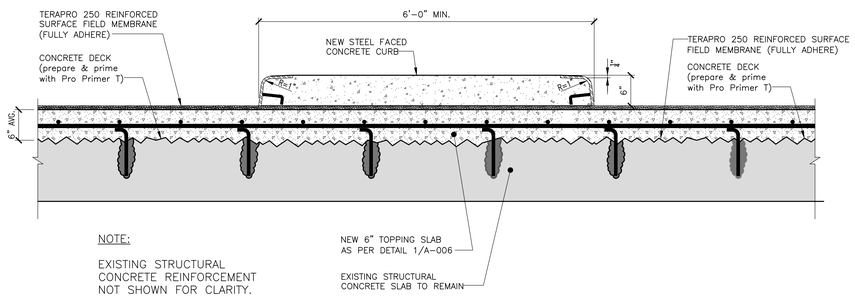


TYPICAL FENCE IMAGE (FRONT VIEW)

REPAIRED CONDITION (TYPICAL SECTION)

2 / A-007 TYPICAL NEW FENCE

SCALE: N.I.S.

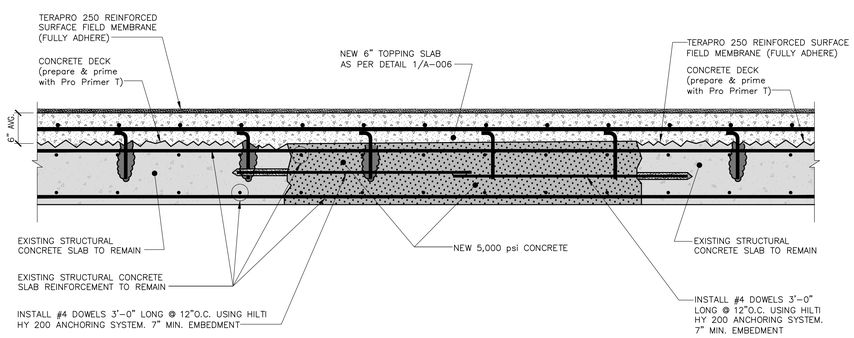


NOTE:

EXISTING STRUCTURAL CONCRETE REINFORCEMENT NOT SHOWN FOR CLARITY.

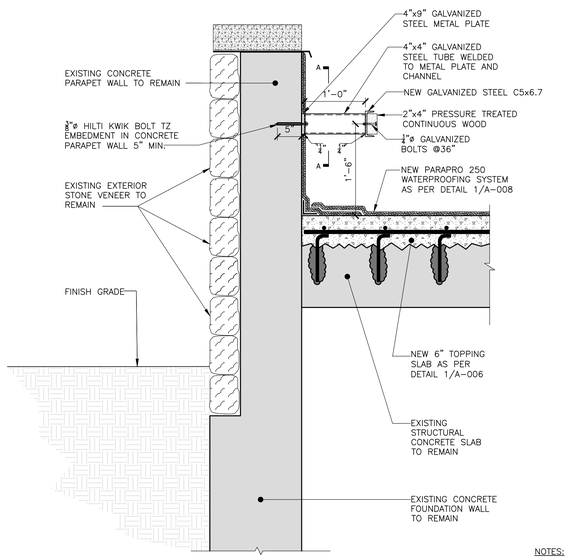
3 / A-007 CONCRETE CURB TYPICAL SECTION

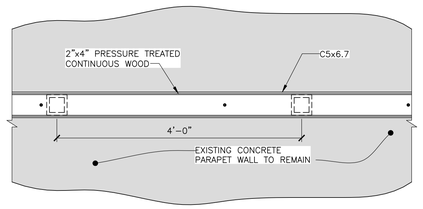
SCALE: N.I.S.

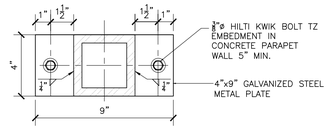


4 / A-007 FULL DEPTH CONCTRETE SLAB REPAIR

SCALE: N.I.S.







SECTION A-A

NOTES:

1. NEW FENCE ON TOP OF THE WALL NOT SHOWN FOR CLARITY.
2. NEW 4"X4" GALVANIZED STEEL TUBE WELDED WITH METAL PLATE ATTACHE TO TO THE WALL @ 4'-0".

5 / A-007 PARAPET WALL TYPICAL CAR BUMPER STOP

SCALE: N.I.S.

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HARTFORD FT. LAUDERDALE DENVER

REPAIR AND PREVENTIVE MAINTENANCE OF THE HAMILTON AVENUE SCHOOL PARKING GARAGE

184 HAMILTON AVENUE
GREENWICH, CONNECTICUT

NO.	DATE	BY

REVISIONS

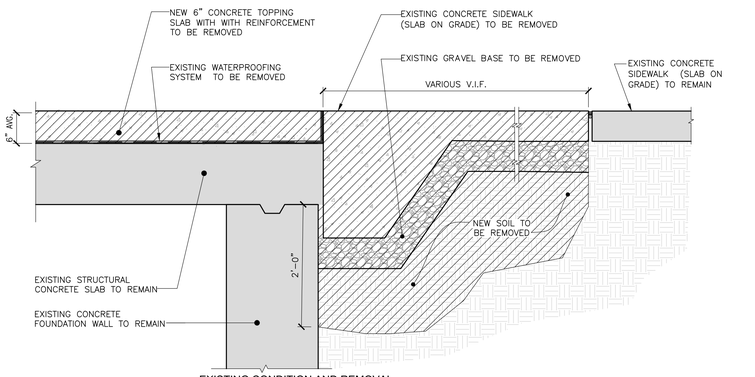
PROJECT

GARAGE REPAIR AND PREVENTIVE MAINTENANCE

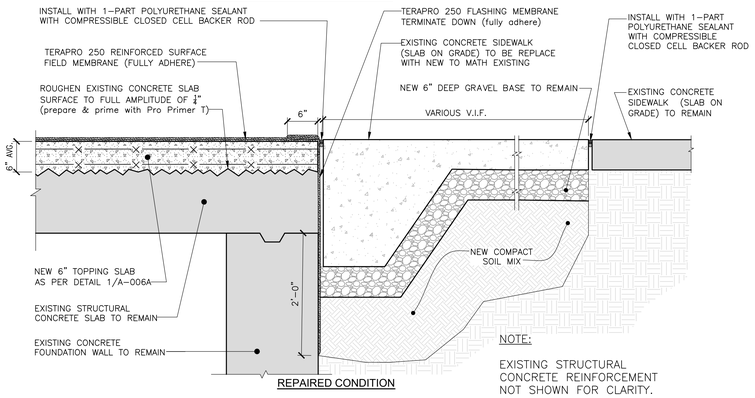
TYPICAL REPAIR DETAILS AND SECTIONS (OPTION-1)

SEAL & SIGNATURE

DATE: MARCH 2025
PROJECT 10-23120.00-2
DRAWN BY: L.E.
CHK'D BY: J.C.
DWG No:
A-007.00
CADO FILE No:



EXISTING CONDITION AND REMOVAL



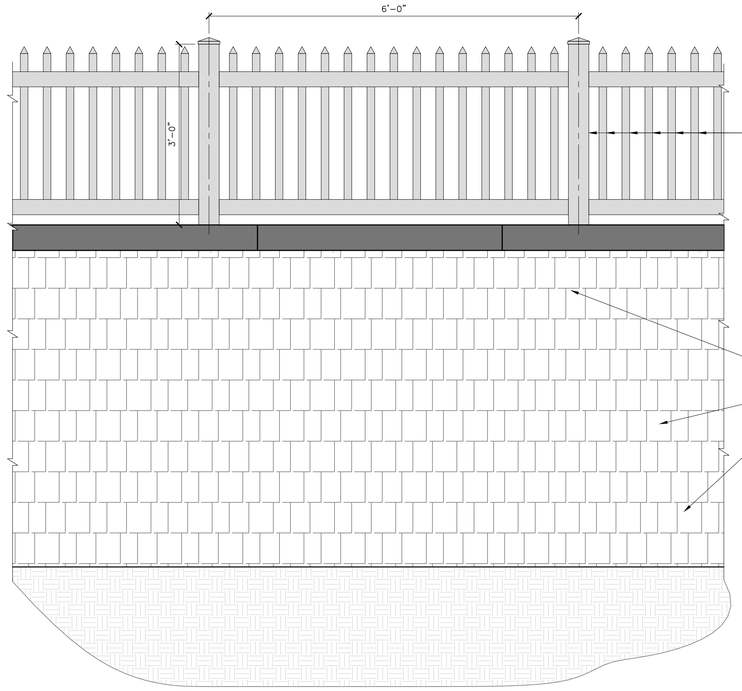
REPAIRED CONDITION

NOTE:

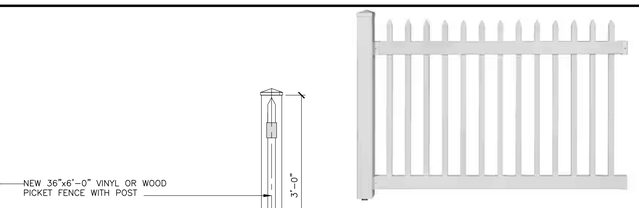
EXISTING STRUCTURAL CONCRETE REINFORCEMENT NOT SHOWN FOR CLARITY.

1 / A-007A TYPICAL WATERPROOFING AND REPAIR SECTION

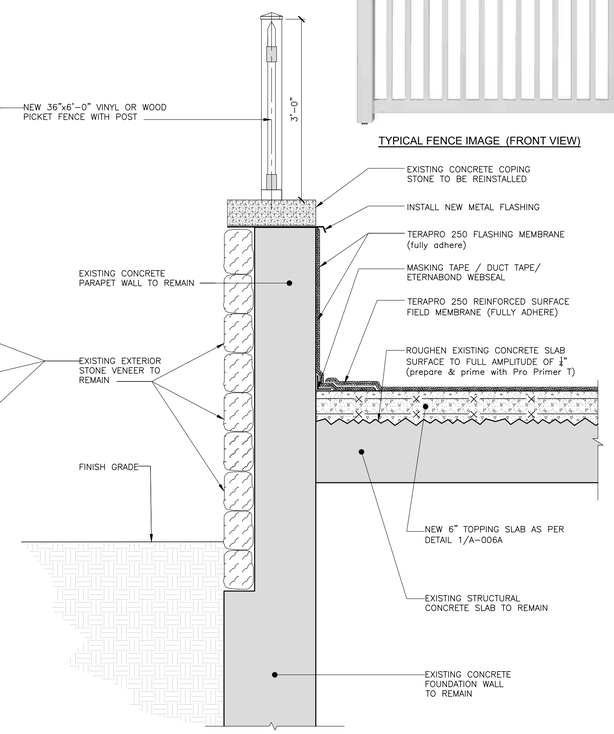
SCALE: N.I.S.



REPAIRED CONDITION (FRONT VIEW)



TYPICAL FENCE IMAGE (FRONT VIEW)



REPAIRED CONDITION (TYPICAL SECTION)

2 / A-007A TYPICAL NEW FENCE

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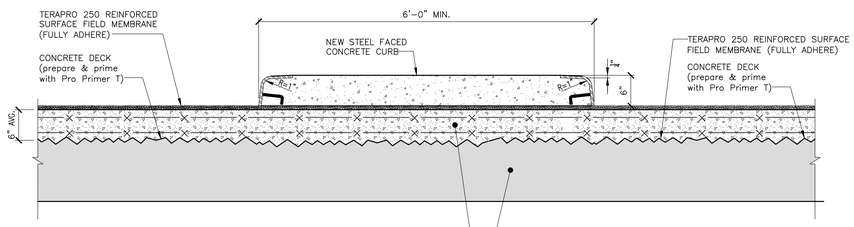
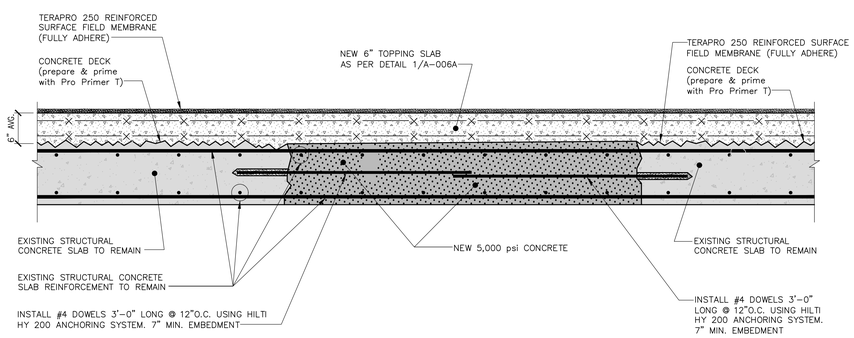


NOTE:

EXISTING STRUCTURAL CONCRETE REINFORCEMENT NOT SHOWN FOR CLARITY.

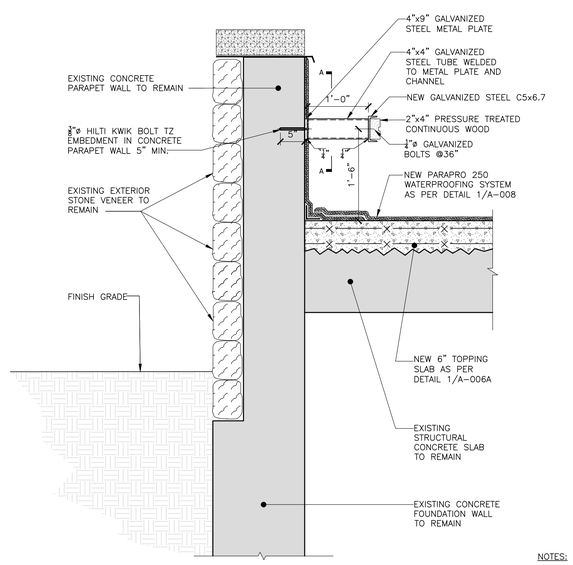
3 / A-007A CONCRETE CURB TYPICAL SECTION

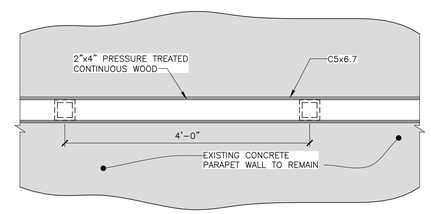
SCALE: N.I.S.

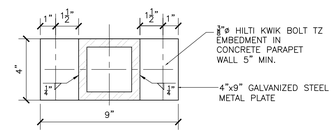


4 / A-007A FULL DEPTH CONCTRETE SLAB REPAIR

SCALE: N.I.S.







SECTION A-A

NOTES:

1. NEW FENCE ON TOP OF THE WALL NOT SHOWN FOR CLARITY.
2. NEW 4"X4" GALVANIZED STEEL TUBE WELDED WITH METAL PLATE ATTACHE TO TO THE WALL @ 4'-0".

5 / A-007A PARAPET WALL TYPICAL CAR BUMPER STOP

SCALE: N.I.S.

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REPAIR AND PREVENTIVE MAINTENANCE OF THE HAMILTON AVENUE SCHOOL PARKING GARAGE

184 HAMILTON AVENUE
GREENWICH, CONNECTICUT

NO.	DATE	BY

REVISIONS

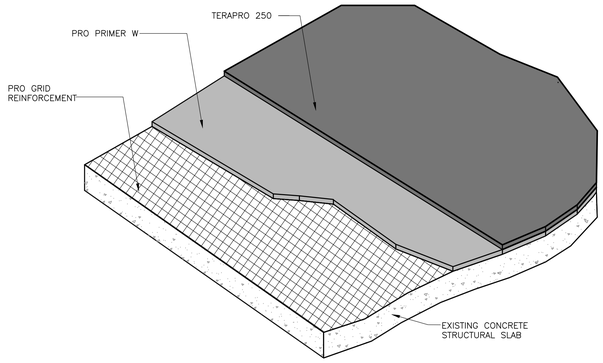
PROJECT

GARAGE REPAIR AND PREVENTIVE MAINTENANCE

TYPICAL REPAIR DETAILS AND SECTIONS (OPTION-2)

SEAL & SIGNATURE

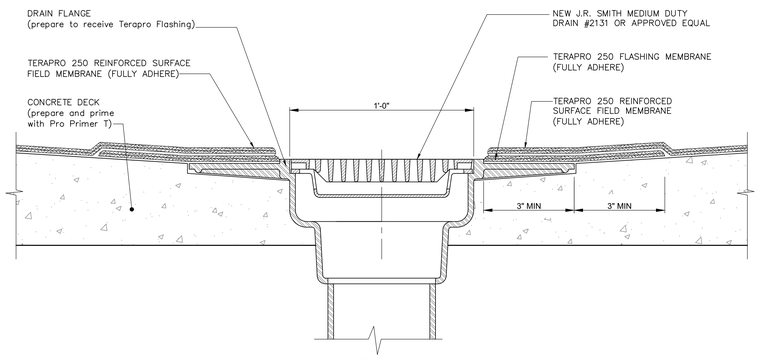
DATE: MARCH 2025
PROJECT 10-23120.00-2
DRAWN BY: L.E.
CHK'D BY: J.C.
DWG No:
A-007A.00
CADO FILE No:



REPAIR PROCEDURE:

1. THE GENERAL CONTRACTOR AND COATING APPLICATOR SHALL CAREFULLY REVIEW THE FACILITY VENTILATION PRIOR TO INSTALLATION OF WATERPROOFING MEMBRANE. ADDITIONAL VENTILATION SHALL BE PROVIDED AS REQUIRED TO SAFELY REMOVE ALL FUMES GENERATED FROM THE COATING DURING APPLICATION.
2. AFTER ANY REQUIRED CONCRETE REPAIRS HAVE PROPERLY CURED, SHOTBLAST CLEAN HORIZONTAL SURFACES AND SANDBLAST CLEAN VERTICAL SURFACES SCHEDULED TO RECEIVE HEAVY DUTY WATERPROOFING MEMBRANE. OIL STAINS, PAINT AND OTHER CONTAMINANTS SHALL BE REMOVED AS RECOMMENDED BY THE SYSTEM MANUFACTURER. SURFACE PREPARATION SHALL ALSO INCLUDE GRINDING HIGH RIDGES IN THE EXISTING CONCRETE SURFACES AND NEWLY REPAIRED AREAS WHICH MAY BE DETRIMENTAL TO SYSTEM PERFORMANCE. SYSTEM MANUFACTURER WILL BE EXPECTED TO SIGN OFF ON FINAL DECK PREPARATION PRIOR TO MEMBRANE APPLICATION.
3. ALL CRACKS GREATER THAN $\frac{1}{16}$" SHALL BE ROUTED AND SEALED. ALL CRACKS LESS THAN $\frac{1}{16}$" SHALL BE PREPARED AS PER MANUFACTURER'S RECOMMENDED PROCEDURE. ALL CONSTRUCTION JOINTS SHALL BE ROUTED AND SEALED. SEE DETAIL 6/A-003. PROVIDE 1/2"x1/2" COVE JOINTS AT WALLS, CURBS AND COLUMNS. SEE DETAIL 8/A-003. CRACKS AND JOINTS TO BE DETAILED PER MANUFACTURER. INSTALL NEW REINFORCED FLEECE OVER CRACKS AND JOINTS, 6" MIN EITHER SIDE OF THE CRACK/JOINT..
4. TURN MEMBRANE UP 6" HIGH (MIN) AT VERTICAL SURFACES.
5. THE SYSTEM MANUFACTURER AND COATING APPLICATOR SHALL PERFORM THE FOLLOWING TO ASSURE SYSTEM PERFORMANCE.
   A. VERIFY MOISTURE CONTENT OF EXISTING CONCRETE AND NEW CONCRETE REPAIR AREAS.
   B. PERFORM ADHESION TESTING ON EXISTING CONCRETE AND NEW CONCRETE REPAIR AREAS TO VERIFY COMPLIANCE WITH SYSTEM PERFORMANCE. DECK PREPARATION SHALL BE PER SPECIFICATION IN ALL TEST AREAS.
   C. THE SYSTEM MANUFACTURER AND COATING APPLICATOR SHALL SUBMIT A JOINT LETTER STATING THAT THE ABOVE TESTING WAS PERFORMED, THAT THE SURFACE PREPARATION IS ACCEPTABLE AND THAT THE SYSTEM WILL PERFORM PER SPECIFICATION, AS APPLIED ON CONCRETE SLAB.
6. MATERIAL THICKNESS OF MEMBRANE LAYERS SHALL BE PER MANUFACTURER'S RECOMMENDATIONS OR PER THE PROJECT SPECIFICATIONS, WHICHEVER IS GREATER.
7. ALL MEMBRANE PRODUCT APPLICATIONS SHALL BE UV RESISTANT.

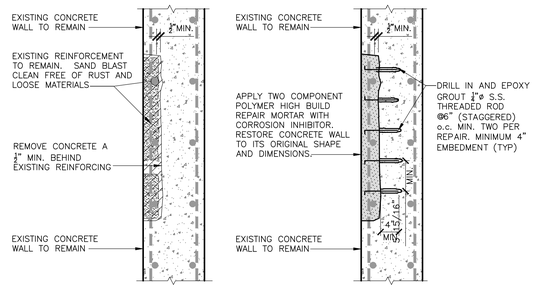
1 / A-008 NEW PARAPRO 250 TRAFFIC WATERPROOFING SYSTEM (REIFORCED)
SCALE: N.I.S.



REPAIR PROCEDURE:

1. AT LOCATION SPECIFIED BY ENGINEER, THE CONTRACTOR SHALL USE A PACHOMETER TO DETERMINE EXACT LOCATION OF DRAIN OPENING IN ORDER NOT TO INTERFERE WITH EXISTING REINFORCEMENT.
2. CORE DRILL NEW OPENING THROUGH SLAB AT LOCATION OF DRAIN.
3. CONTRACTOR SHALL USE CHIPPING HAMMERS TO PROVIDE A POCKET FOR SETTING THE DRAIN AS SHOWN.
4. SET THE DRAIN IN PLACE SO THAT THE TOP OF THE DRAIN IS $\frac{1}{4}$" BELOW TO OF EXISTING SLAB.
5. FILL WITH AS APPROVED GROUT AS SHOWN.
6. SEAL AROUND EDGE OF DRAIN AND PATCH USING A SEALANT COMPATIBLE WITH THE WATERPROOFING MEMBRANE (IF APPLICABLE.
7. THE CONTRACTOR SHALL INCLUDE IN HIS PRICE ANY MISCELLANEOUS METALS, ETC. REQUIRED TO SUPPORT THE DRAIN BODY WITHIN THE SLAB.

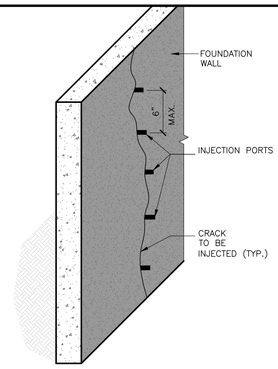
2 / A-008 NEW FLOOR DRAIN DETAIL
N.T.S.



REPAIR PROCEDURE:

1. SAWCUT A SQUARE EDGE AROUND REPAIR AREA TO A DEPTH OF AT LEAST $\frac{3}{4}$". REMOVE UNSOUND AND SOUND CONCRETE AS DIRECTED BY THE ENGINEER TO A DEPTH OF $\frac{3}{4}$" BEHIND EXISTING REINFORCING USING CHIPPING HAMMERS.
2. CLEAN THE REPAIR AREA SURFACE FREE OF DUST, CONTAMINATED MATERIAL, OIL, PAINT, GREASE OR CORROSION DEPOSITS.
3. SANDBLAST CLEAN EXPOSED STEEL. COAT THE PREPARED REINFORCING STEEL WITH ZINCRICH REBAR PRIMER.
4. SUPPLEMENT EXISTING REINFORCING BARS THAT HAVE LOST MORE THAN 20% OF THEIR ORIGINAL CROSS SECTION WITH NEW EPOXY COATED REINFORCING BARS. NEW REINFORCING SHALL BE PROPERLY LAP SPLICED TO EXISTING.
5. SATURATE SUBSTRATE SURFACE DRY, AND SCRUB A THIN COAT OF MIXED MATERIAL THOROUGHLY INTO THE SURFACE TO ENSURE SUFFICIENT BONDING.
6. BEFORE BOND COAT DRIES APPLY NON SAG REPAIR MORTAR IN LAYERS AS PER MANUFACTURER'S REPAIR PROCEDURE. LAYERS SHALL BE LIMITED IN THICKNESS. IF THE MATERIAL SAGS DURING APPLICATION COMPLETELY REMOVE THE REPAIR MORTAR AND REAPPLY AT REDUCED THICKNESS.
7. CURE IMMEDIATELY AND PROTECT FINISHED REPAIR IN ACCORDANCE WITH GOOD CONCRETE PRACTICES.
8. SUCCESSFULLY COMPLETED REPAIR AREAS TO MATCH EXISTING INCLUDING ARCHITECTURAL FINISH, TEXTURE, SHAPE, AND ELEVATIONS.
9. MINIMUM REPAIR AREA SIZE SHALL BE 0.5sf.

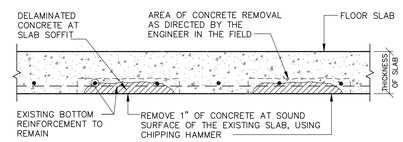
4 / A-008 VERTICAL CONCRETE WALL REPAIR DETAIL
SCALE: N.T.S.



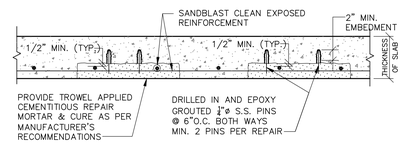
REPAIR PROCEDURE:

1. DRILL $\frac{3}{8}$" INJECTION PORT HOLES AT 45° ANGLE, SUCH THAT THE PORT HOLE INTERSECTS THE CRACK TAP PORTS INTO PLACE AND TIGHTEN WITH SOCKET WRENCH. PORT SHALL BE SET A MINIMUM OF 2" DEEP.
2. COVER CRACKS WITH APPROVED EPOXY/GROUT TO PREVENT INJECTION MATERIAL FROM LEAKING.
3. INJECT CRACK AS FOLLOWS.
   A.VERTICAL CRACKS: INJECT LOW VISCOSITY URETHANE GROUT STARTING AT THE LOWEST PORT UNTIL GROUT MATERIAL RETURNS FROM NEXT HIGHER PORT. PLUG FIRST PORT AND CONTINUE INJECTION AT THE NEXT PORT. CONTINUE UNTIL THE ENTIRE CRACK IS SEALED.
   B. HORIZONTAL CRACKS: THE INJECTION SHALL PROCEED FROM ONE END OF THE CRACK TO THE OTHER SIMILAR TO THE PROCEDURE FOR VERTICAL CRACKS.
4. AFTER INJECTION IS COMPLETE, REMOVE INJECTION PORTS AND GRIND SURFACE CLEAN TO REMOVE ALL MATERIAL OUTSIDE OF THE CRACK.

5 / A-008 EPOXY/CHEMICAL INJECTION OF CONCRETE FOUNDATION WALL CRACKS
SCALE: N.I.S.



EXISTING CONDITION AND DEMOLITION

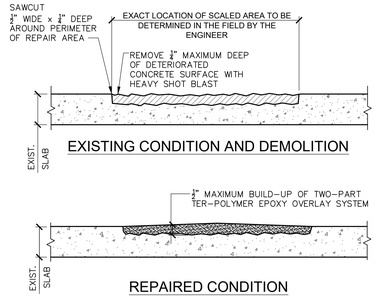


REPAIRED CONDITION

REPAIR PROCEDURE

1. REMOVE ALL UNSOUND OR DELAMINATED CONCRETE AND SANDBLAST CLEAN EXPOSED REINFORCING STEEL.
2. SUPPLEMENT EXISTING REINFORCING BARS WHICH HAVE LOST MORE THAN 20% OF THEIR CROSS SECTIONAL AREA. NEW REINFORCING BAR SHALL BE PROPERLY LAP SPLICED TO EXISTING BARS.
3. PROVIDE STAINLESS STEEL PINS (1/4" DIA.) AS SHOWN IN DRAWING.
4. PROVIDE TROWEL APPLIED MORTAR IN LAYERS. LAYERS SHALL BE LIMITED IN THICKNESS. EXISTING CONCRETE SURFACE SHALL BE PREWET PRIOR TO APPLICATION.
5. CURE AND PROTECT FINISHED REPAIR.

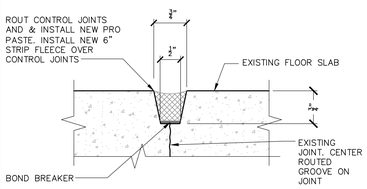
6 / A-008 OVERHEAD SLAB CONCRETE REPAIR
SCALE: N.T.S.



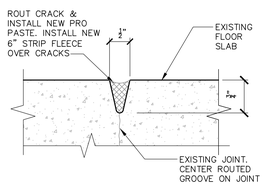
REPAIR PROCEDURE:

1. THE REPAIR AREA SHALL BE CLEANED BY SHOTBLASTING TO REMOVE ANY OIL, DIRT, RUBBER OR ANY OTHER POTENTIALLY DETRIMENTAL MATERIAL SUCH AS CURING COMPOUND AND LATENCIES, WHICH, IN THE OPINION OF THE ENGINEER, WOULD PREVENT PROPER BONDING AND CURING OF THE REPAIR MATERIAL.
2. THE REPAIRS AREA SHALL BE DRY AT THE TIME OF APPLICATION. IMMEDIATELY BEFORE APPLYING THE REPAIR MATERIAL, ALL PREPARED SURFACES SHALL BE CLEANED WITH COMPRESSED AIR TO REMOVE DUST AND DEBRIS.
3. APPLY AND CURE THE REPAIR MATERIAL IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. THE REPAIR MATERIAL MANUFACTURER MUST HAVE A REPRESENTATIVE ON THE SITE AT TIME OF APPLICATION.
4. BROADCAST AGGREGATE AS DIRECTED BY THE MANUFACTURER.

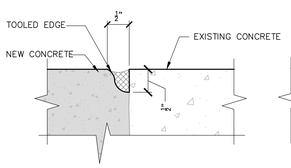
7 / A-008 SCALING REPAIR DETAIL
SCALE: N.T.S.



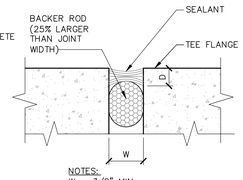
A - CONTROL/TOOLED JOINT SEAL DETAIL



B - CRACK SEAL DETAIL



C - TOOLED EDGE DETAIL



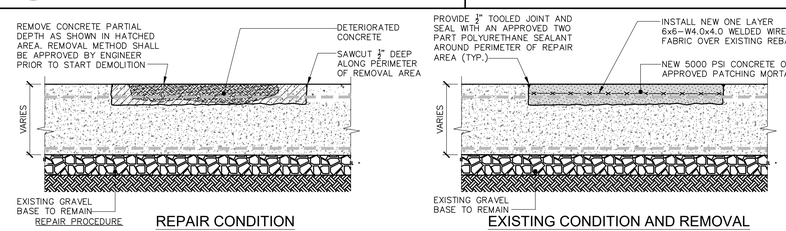
NOTES:
W = 3/8" MIN.
D = W/2 (1/4" MIN./ 1/2" MAX.)

D – CONTROL JOINT SEAL DETAIL

REPAIR PROCEDURE:

1. ROUT AND CLEAN CRACKS/CONTROL JOINTS USING COMPRESSED AIR OR OTHER APPROVED MEANS TO REMOVE DUST OR OTHER FOREIGN MATERIALS.
2. PRIME ENTIRE SURFACE OF CONTROL JOINT AND GROOVE WITH SIPLAST "W" PRIMER, ALLOW FOR PRIMER TO CURE PROPERLY PRIOR TO INSTALLING PRO PASTE
3. AFTER PRIMER HAS CURED PROPERLY, INSTALL NEW PRO PASTE FOR REMEDIATION OF DEPRESSIONS IN SUBSTRATE SURFACES OR OTHER SURFACE IRREGULARITIES. FOLLOW MANUFACTURER INSTRUCTIONS FOR APPLICATION
4. INSTALL NEW 6" STRIP FLEECE OVER CRACKS AND JOINTS
5. INSTALL NEW PARAPRO MEMBRANE SYSTEM

3 / A-008 CRACKS AND CONTROL JOINTS
SCALE: N.T.S.



REPAIR CONDITION — EXISTING CONDITION AND REMOVAL

REPAIR PROCEDURE

1. DETERMINE EXACT LOCATIONS OF DETERIORATED/UNSOUND CONCRETE BY SOUNDING FLOOR SLAB WITH THE USE OF HAMMERS/CHAIN, AS DIRECTED BY THE DIRECTOR'S REPRESENTATIVE IN THE FIELD.
2. PROVIDE $\frac{1}{2}$" DEEP SAWCUT ALONG PERIMETER OF CONCRETE TO BE REMOVED.
3. REMOVE CONCRETE WITH CHIPPING HAMMERS (30 LB.) TO AN AVERAGE DEPTH 3/4" BELOW DEPTH OF REINFORCING BARS. CONCRETE SHALL BE REMOVED TO A SUFFICIENT DEPTH ALONG PERIMETER TO FORM BUTT JOINT. CONTRACTOR SHALL EXERCISE EXTREME CARE NOT TO DAMAGE EXISTING REINFORCING
4. SANDBLAST CLEAN EXISTING REINFORCING TO REMOVE CORROSION DEPOSITS. SUPPLEMENT EXISTING REINFORCEMENT WHERE LOSS IN CROSS-SECTIONAL AREA EXCEEDS 20% AND LAP WITH EXISTING.
5. CLEAN SURFACE OF REPAIR AREA FREE OF LOOSE MATERIAL AND DEBRIS. APPLY BONDING GROUT OVER EXISTING SURFACE PRIOR PLACEMENT OF CONCRETE.
6. POUR AND CURE NEW LOW W/C RATIO 5,000 psi FIBER REINFORCED CONCRETE

8 / A-008 TYPICAL CONCRETE SLAB ON GRADE REPAIR DETAIL
SCALE: 1"=1'-0"

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3 WEST 35th STREET NEW YORK, NY 10001 TEL: 212-686-5560
NEW YORK CHARLOTTE CHICAGO DALLAS HOUSTON OAKLAND
HARTFORD FT. LAUDERDALE DENVER

REPAIR AND PREVENTIVE MAINTENANCE OF THE HAMILTON AVENUE SCHOOL PARKING GARAGE

184 HAMILTON AVENUE
GREENWICH, CONNECTICUT

NO.	DATE	BY

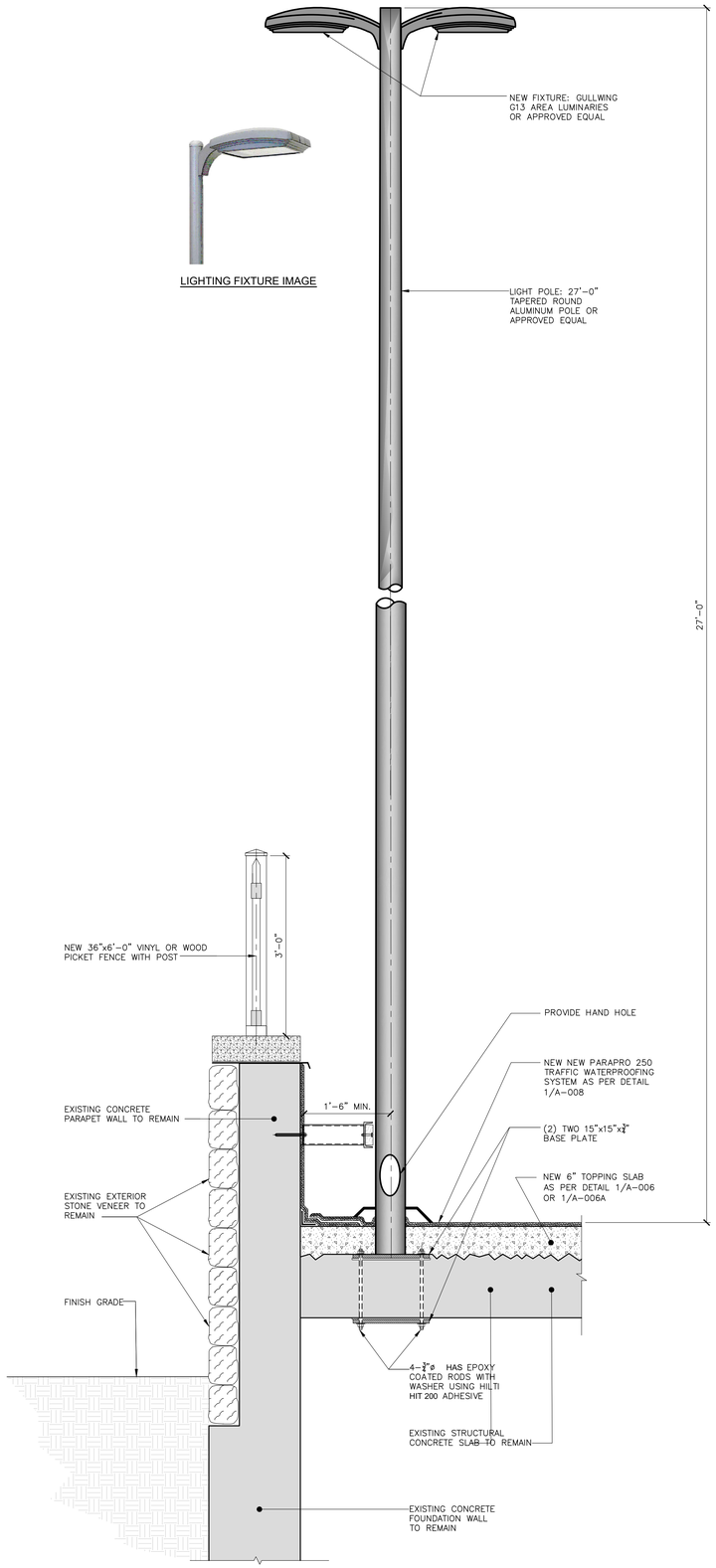
REVISIONS

PROJECT
GARAGE REPAIR AND PREVENTIVE MAINTENANCE

MISCELLANEOUS REPAIR DETAILS AND SECTIONS

SEAL & SIGNATURE

DATE: MARCH 2025
PROJECT 10-23120.00-2
DRAWN BY: L.E.
CHK'D BY: J.C.
DWG No:
A-008.00
CADD FILE No:



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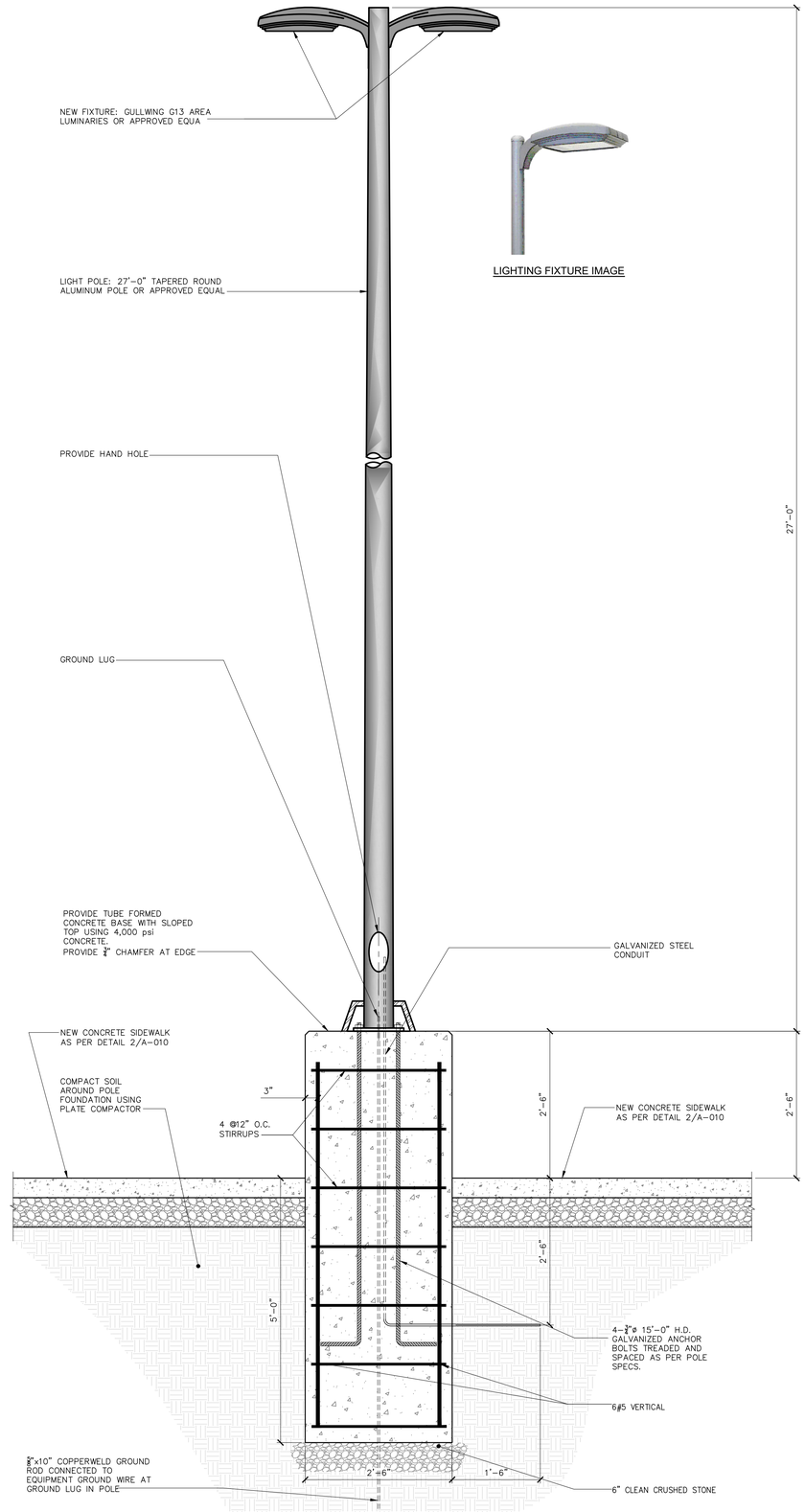
A-009 SCALE: N.I.S.



2 TYPICAL NEW LIGHT POLE DETAIL (TYPE-2)
A-009 SCALE: N.I.S.

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REPAIR AND PREVENTIVE MAINTENANCE
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HAMILTON AVENUE SCHOOL PARKING GARAGE
184 HAMILTON AVENUE
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TYPICAL NEW LIGHT POLES

SEAL & SIGNATURE

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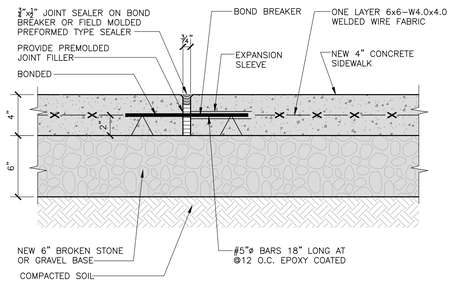
CH'KD BY: J.C.
DWG No: A-009.00
CADO FILE No:



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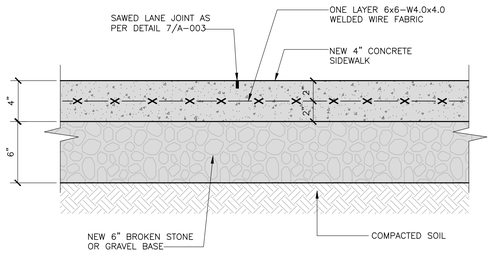
SCALE: N.I.S.



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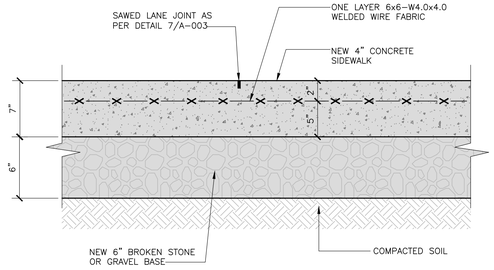
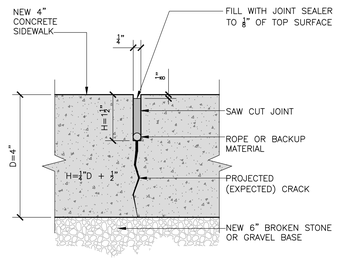


3 A-010 TYPICAL CONCRETE SIDEWALK IN DRIWAY AND PEDESTRIAN RAMP SECTION
SCALE: N.I.S.



4 A-010 TYPICAL CONCRETE SIDEWALK SAWED LINE JOINT
SCALE: N.I.S.

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NEW CONCRETE SIDEWALK TYPICAL SECTIONS

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