CUMBERLAND FIRE DISTRICT

CUMBERLAND, RHODE ISLAND

Cumberland Hill Fire Station Repairs

CUMBERLAND FIRE DISTRICT
TOWN OF CUMBERLAND
COUNTY OF PROVIDENCE
RHODE ISLAND

BID #2026-01

Pare Corporation
8 Blackstone Valley Place
Lincoln, RI 02895
(401) 334-4100

February 2026

INVITATION TO BID
CUMBERLAND FIRE DISTRICT, CUMBERLAND, RHODE ISLAND

BID #2026-01

Notice is hereby given that the Cumberland Fire District will be accepting bids for the:

The Cumberland Fire District will accept sealed bids for **"CUMBERLAND HILL FIRE STATION REPAIRS"** at the Cumberland Hill Fire Station, Attn: Mr. Steven Greenhalgh, 3502 Mendon Road, Cumberland, Rhode Island, 02864, no later than **2:00 PM on March 10, 2026**, at which time bids will be opened and read aloud in a manner accessible to the public in the Station. The project consists of the replacement of the elevated concrete slab-on-deck at the Cumberland Hill Fire Station located at 3502 Mendon Road in Cumberland, Rhode Island. The project includes, but is not limited to, demolition and removal of the existing elevated concrete slab-on-deck in the 1950s apparatus bay, demolition and removal of the existing support framing and foundations, and installation of a new cast-in-place elevated concrete deck and support framing. Existing mechanical, electrical, and plumbing utilities located within space are to be protected and reused or replaced in-kind where reuse is not feasible. All work must be completed on or before March 31, 2027.

Bidding Documents and Contract Specifications will be posted on the RI State Purchasing website at www.ridop.ri.gov.

Prevailing Wage in accordance with Rhode Island General Law 37-13 applies to this project. Refer to the applicable Davis Bacon Wage Determination rate schedule found online at the U.S. System for Award Management (SAM) to determine the prevailing wage rates.

A Bid Bond payable to the Cumberland Fire District in the amount of 5% of the Total Base Bid must be furnished by each bidder. The Proposed Guaranty must be furnished by surety companies authorized/licensed to do business in the State. The Fire District reserves the right to retain the surety of all bidders until the successful bidder enters into the Contract or until such time as the award or cancellation of the Contract is announced at which point Sureties will be returned to all bidders by the Fire District. A **Performance Bond** equal to **100%** of the Total Base Bid, and any selected Alternate Bids, if included, from a satisfactory surety company will be required of the successful bidder prior to commencement of construction. All surety companies must be listed with The Department of the Treasury, Fiscal Services, Circular 570, (Latest Revision published by the Federal Register).

The Contractor shall guarantee all work for a period of one (1) year against any defects in material or workmanship. The cost of all labor, material, shipping charges and other expenses in conjunction with defective work within this period shall be borne by the Contractor.

The contract will be awarded to the lowest, qualified, responsible bidder. The Cumberland Fire District reserves the right to accept or reject, without prejudice, all bids to waive any irregularities therein, or to accept the proposal deemed to be in the best interest of the Cumberland Fire District. The Cumberland Fire District does not discriminate based on age, race, religion, national origin, color, or disability in accordance with applicable laws and regulations.

Bids must be submitted in sealed envelopes with the above noted proper title endorsed thereon, in the form provided with executed copies of Appendices A and B, and addressed and delivered to the Financial Director's

Office of the Cumberland Fire District at the above-referenced address. The bid submittal shall consist of the original bid proposal and three (3) copies of the bid.

Please e-mail an electronic copy of the bid to Mr. Steven Greenhalgh at sgreenhalgh@cumberlandfire.org within 24 hours after the bid opening.

Questions regarding this bid can be made directly to Chad Morrison at cmorrison@parecorp.com or 508-948-3567. Questions regarding bid specifications shall be sent in writing seven (7) days prior to the opening of bids.

A pre-bid meeting will be held on site at 3502 Mendon Road, Cumberland, Rhode Island on **Tuesday, February 24, 2026 at 2:00 PM**. While not mandatory, the District highly encourages attendance by all potential bidders.

Technical Specifications

TECHNICAL SPECIFICATIONS INDEX
CUMBERLAND HILL FIRE STATION REPAIRS
BID # 2026-01
CUMBERLAND, RHODE ISLAND

Section # Description

Division 0

00 41 00 Bid Form
00 61 00 Performance Bond
00 61 50 Payment Bond

Division 1

01 45 33 Code-Required Special Inspections and Procedures
Final Report of Special Inspections
Statement of Special Inspections

Division 3

03 11 00 Concrete Formwork
03 15 10 Concrete Control, Construction, and Expansion Joints
03 20 00 Concrete Reinforcing
03 33 00 Cast-in-Place Concrete
03 35 00 Concrete Finishing
03 60 00 Grouting

Division 5

05 12 00 Structural Steel Framing

Appendix A: Anti-Kickback Acknowledgement
Appendix B: General Terms and Conditions of Purchase
Appendix C: AIA Document A101 Standard Form of Agreement Between Owner and Contractor

BID PROPOSAL
CUMBERLAND HILL FIRE STATION REPAIRS
BID # 2026-01
Cumberland Fire District, Cumberland, Rhode Island

TO: Cumberland Fire District, Attn: Mr. Steven Greenhalgh
3502 Mendon Road, Cumberland, RI 02864

PROJECT: Cumberland Hill Fire Station (Bid # 2026-01), Cumberland, RI
Pare Project No. 23215.00

DATE: _____

1.00 OFFER

Having examined the Place of the Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by Pare Corporation, Engineer for the above-referenced project, we, the undersigned, hereby offer to enter into a Contract to perform the Work, **Cumberland Hill Fire Station Repairs (Bid # 2026-01), Cumberland, RI**, for the Price of:

_____
LUMP SUM BID PRICE IN FIGURES

_____
LUMP SUM BID PRICE IN WORDS

The District is exempt from excise, transportation, and sales tax imposed by the Federal or State Government. Exemption certificates will be furnished upon request. The District reserves the right to reject any and all bids.

Name of Bidder: _____

Address of Bidder: _____Phone Number: _____

Authorized Signature: _____

ALL BIDS DELIVERED TO:	**BID DUE DATE & TIME:**
Cumberland Fire District, Attn: Mr. Steven Greenhalgh 3502 Mendon Road, Cumberland, RI 02864	March 10, 2026; 2:00 PM

2.00 RFI REQUESTS

A. The Contractor shall promptly notify the Engineer of any ambiguity, inconsistency, or error which they may discover upon examination of the Contract Documents, the site, and local conditions.

B. The Contractor requiring clarification or interpretation of the Contract Documents shall make a written request to the Engineer via e-mail and cc: Fire District.

C. Interpretation, correction, or change in the Contract Documents will be made by Addendum which will become part of the Contract Documents. Neither the Fire District nor the Engineer will be held accountable for any oral instructions.

3.00 PERMITS:

A. The Contractor is responsible for obtaining and paying for all permits.

4.00 REPRESENTATION & HOLDING OF SUBMISSION

A. The Bidder has visited the site and is familiar with the local conditions under which the Work has to be performed.

B. Prevailing Wage in accordance with Rhode Island General Law 37-13 applies to this project. Refer to the applicable Davis Bacon Wage Determination rate schedule found online at the U.S. System for Award Management (SAM) to determine the prevailing wage rates.

C. Contract Award: By submitting a general bid for the project, the bidder acknowledges Appendix A (Anti-Kickback Acknowledgement) and Appendix B (General Terms and Conditions of Purchase) contained in the Bid Documents.

5.00 BID REQUIREMENTS:

A Bid Bond payable to the Cumberland Fire District in the amount of 5% of the Total Base Bid must be furnished by each bidder. The Proposed Guaranty must be furnished by surety companies authorized/licensed to do business in the State. The Fire District reserves the right to retain the surety of all bidders until the successful bidder enters into the Contract or until such time as the award or cancellation of the Contract is announced at which point Sureties will be returned to all bidders by the Fire District. A Performance Bond equal to 100% of the Total Base Bid, and any selected Alternate Bids, if included, from a satisfactory surety company will be required of the successful bidder prior to commencement of construction. All surety companies must be listed with The Department of the Treasury, Fiscal Services, Circular 570, (Latest Revision published by the Federal Register).

6.00 INSURANCE REQUIREMENTS:

A. The Contractor shall purchase and maintain insurance which will protect him from claims arising out of or resulting from his activities under this contract, whether those activities are performed by himself, by any Subcontractor or by anyone directly or indirectly employed by any one of them or by anyone whose acts may be liable.

B. Bidders shall submit proof of coverage under the Workers' Compensation insurance system of the State of Rhode Island or other similar benefit acts.

C. Bidders shall submit a valid certificate of insurance naming Cumberland Fire District as additional insured. All coverage shall be on an "Occurrence" form with minimum acceptable coverage as follows:

Commercial General Liability
$ 1,000,000 Each Occurrence
$ 2,000,000 General Aggregate
$ 1,000,000 Products and Completed Operations Aggregate
$ 1,000,000 Personal & Advertising Injury

Business Automobile Insurance
$ 500,000 Combined single Limit Liability Insurance

The company providing insurance and bonds shall be a duly authorized insurance company with a rating of or greater that "A-" as rated by the A. M. Best Co., must be listed on Department of Treasury Circular #570, and which is satisfactory to the Cumberland Fire District (here in called the Fire District) and authorized to do business in the State of Rhode Island.

7.00 REFERENCES:

Please supply at least three references, complete with name of contact and phone number from recent clients that bidder has performed similar work within similar prescribed timeline deadlines. See Reference Form at end of this section.

8.00 WARRANTY:

The Contractor shall guarantee all work for a period of **one (1) year** against any defects in material or workmanship. The cost of all labor, material, shipping charges and other expenses in conjunction with defective work within this period shall be borne by the Contractor.

9.00 ACCEPTANCE

This offer shall be open to acceptance and is irrevocable for ninety (90) calendar days from the Bid closing date.

If this Bid is accepted by the District within the time period stated above, the undersigned Bidder will:

- Execute the Agreement within three (3) days of receipt of Notice of Award. AIA Document A101 Standard Form of Agreement Between Owner and Contractor will be used
- Furnish the required Performance Bond and Labor and Material Payment Bond within three (3) days of receipt of Notice of Award.
- Commence work within ten (10) days of receiving a written Notice to Proceed and fully complete the project on or before **March 31, 2027**.

If this Bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required Bond(s), the security deposit shall be forfeited as damages to the District by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this Bid and the Bid upon which the Contract is signed.

In the event our Bid is not accepted within the time stated above, the required security deposit shall be returned to the

undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

10.00 CONTRACT TIME

If this Bid is accepted, the BIDDER hereby agrees to commence WORK under this Contract within the time stated above and to fully complete the PROJECT on or before **March 31, 2027**.

11.00 ADDENDA

The following Addenda have been received. The modifications to the Contract Documents noted therein have been considered and all costs thereto are included in the Bid Price.

Addendum # _____ Dated
Addendum # _____ Dated
Addendum # _____ Dated

12.00 PRE-BID MEETING

A pre-bid meeting will be held on site at 3502 Mendon Road, Cumberland, Rhode Island on **Tuesday, February 24, 2026 at 2:00 PM**. While not mandatory, the Fire District highly encourages attendance by all potential bidders.

13.00 PAYMENT REQUISITIONS AND RETAINAGE

At the end of each month, the Contractor shall submit draft requisitions for payment for the Engineer's review and approval and revise the requisitions as necessary prior to submission to the Fire District. Payment requisitions shall be prepared using AIA Standard Forms G702 and G703.

The Fire District will withhold a 5% of each progressive request for payment as retainage. The Fire District shall release retainage payments upon final inspection and satisfactory completion of the project.

14.00 COORDINATION WITH CUMBERLAND FIRE DEPARTMENT OPERATIONS

This work must be undertaken in close cooperation and coordination with the Cumberland Fire Department to ensure the least disruption to operations at the 3502 Mendon Road facility during construction. It is the Contractor's responsibility to coordinate with the Fire Department, the District, and the Engineer in prior to and during construction.

15.00 BID FORM SIGNATURE(S)

The Corporate Seal of

_____

(Bidder - please print the full name of your Proprietorship, Partnership, or Corporation)

was hereunto affixed in the presence of:

_____

(Authorized signing officer Title)

(Seal)

_____

(Authorized signing officer Title)

If the Bid is a joint venture or partnership, add additional forms of execution for each member of the joint venture in the appropriate form or forms.

23215.00 **SECTION 00 41 00**
02/26 **BID FORM**

If Bidder is a CORPORATION, complete the following section:
A Corporation organized under the laws of the _____
(enter State where incorporated)

Composed of officers as follows:

_____ _____
President Vice President

_____ _____
Secretary Treasurer

At a duly authorized meeting of the Board of Directors of the

_____ held on _____
(Name of Corporation) (Date)

at which all the Directors were present or waived notice, it was voted that

_____ _____
(Name) *(Officer)*

of this company be and he hereby is authorized to execute bidding documents, contracts and bonds in the name and behalf of said company and affix its corporate seal thereto, and such execution of any contract obligation in this company's name on its behalf by such _____ under seal of the company shall be valid and binding upon this company.

A true copy
ATTEST_____
(Clerk)

Place of business _____

I hereby certify that I am the clerk of the _____, that
_____ is the duly elected _____ of
(Officer)

said company, and that the above vote has not been amended or rescinded and remains in full force and effect as of the date of this contract above.

_____ Corporate
Clerk Seal

If Bidder is a PARTNERSHIP, complete the following sections:

Co-partners trading and doing business under the Firm name and type

of _____, composed of partners as follows:

(List names of all co-partners composing the firm)

_____
_____
_____

The following partner or partners are authorized to sign bid proposals and contracts on behalf of the partnership: (List the names and provide the signatures of all partners so empowered.)

(Signatures)	(Print or type)
_____	_____
_____	_____
_____	_____

DEPARTMENT OF ADMINISTRATION
RI STATE EQUAL OPPORTUNITY OFFICE
EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATE OF COMPLIANCE

The undersigned contractor agrees and certified that it is in compliance with applicable requirements of Federal Executive Order #11246, as amended - Certification of Non-Segregated Facilities, State of Rhode Island General Law 28-5.1-10, and other regulations as issued by the Rhode Island Economic Development Corporation, as set forth below, or will take steps to comply with such requirements prior to acceptance of any contract from the State of Rhode Island.

EQUAL OPPORTUNITY CLAUSE

A. The contractor will not discriminate against any employee or applicant for employment because race, age, handicap/disability, color, religion, sex, national origin or veteran status. The contractor will take affirmative action to ensure that applicants for employment and employees are treated equitably, without regard to their race, age, handicap/disability, color, religion, sex, national origin or veteran status.

B. The contractor will, in all solicitations or advertisements for employees, placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, age, handicap/disability, color, religion, sex, national origin or veteran status.

C. The contractor agrees to obtain Compliance Certifications from proposed subcontractors prior to the award of subcontractors exceeding $10,000.00.

NOTICE TO ALL CONTRACTORS

If it should be determined by the RI State Equal Opportunity Office that any contractor doing business with the State of Rhode Island is guilty of non-compliance with the provisions of this document, said contractor will be given two written warnings, if the said contractor does not comply immediately after the second written notice, then the State Equal Opportunity Office will notify the Rhode Island Economic Development Corporation, who shall have the authority to have the contract revoked and all contractual obligations of the State dealing with the contract in question will be null and void.

SIGNATURE AND TITLE: _____

PRINT NAME: _____

COMPANY: _____ DATE: _____

BID BOND

Any singular reference to Bidder, Surety, District, or other party shall be considered plural where applicable.

BIDDER (Name and Address):

SURETY (Name and Address of Principal Place of Business):

DISTRICT (Name and Address): ***Cumberland Fire District***
3502 Mendon Road
Cumberland, RI 02864

BID
Bid Due Date: ***March 10, 2026***

This project consists of the replacement of the elevated concrete slab-on-deck at the Cumberland Hill Fire Station located at 3502 Mendon Road in Cumberland, Rhode Island. The work performed under this contract shall include all equipment, labor, material, supplies, and incidentals necessary to furnish the work described in the Contract Documents and shall include, but is not limited to: demolition and removal of the existing elevated concrete slab-on-deck in the 1950s apparatus bay, demolition and removal of the existing support framing and foundations, and installation of a new cast-in-place elevated concrete deck, support framing, foundations, and all other incidentals necessary to complete the work. Existing mechanical, electrical, and plumbing utilities located within space are to be protected, removed stored and reused, or replaced in-kind where reuse is not feasible.

BOND
Bond Number:
Date (Not later than Bid due date):
Penal sum _____ _____
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Bid Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

BIDDER	SURETY
_____ (Seal)	_____ (Seal)
Bidder's Name and Corporate Seal	Surety's Name and Corporate Seal
By: _____	By: _____
Signature and Title	Signature and Title (Attach Power of Attorney)
Attest: _____	Attest: _____
Signature and Title	Signature and Title

Note: Above addresses are to be used for giving required notice.

REFERENCE FORM FOR:
CUMBERLAND HILL FIRE STATION REPAIRS

CONTRATOR NAME: _____ CONTACT NAME: _____

ADDRESS: _____ TELEPHONE NO: _____

_____ FAX NO: _____

_____ E-MAIL ADDRESS: _____

NAME AND LOCATION OF SIMILAR PROJECTS (MINIMUM OF 3)	NAME OF SUPERINTENDANT ASSIGNED TO PROJECT	WAS THERE A HARD DEADLINE OR COMPLETION DATE?	WAS THE PROJECT COMPLETED BY THE COMPLETION DATE?	PROVIDE CLIENT/REFERENCE NAME, ADDRESS AND TELEPHONE NO.
1.)				
2.)				
3.)				

END OF SECTION

SECTION 00 61 00
PERFORMANCE BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (*Name and Address*):

SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):
Cumberland Fire District
3502 Mendon Road
Cumberland, RI 02864

CONTRACT
Effective Date of Agreement:
Amount:
Description (*Name and Location*):

BOND
Bond Number:
Date (*Not earlier than Effective Date of Agreement*):
Amount:
Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

_____ (Seal)
Contractor's Name and Corporate Seal

By: _____
Signature

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

SURETY

_____ (Seal)
Surety's Name and Corporate Seal

By: _____
Signature (Attach Power of Attorney)

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

Note: Provide execution by additional parties, such as joint venturers, if necessary.

Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner for the performance of the Contract, which is incorporated herein by reference.

1. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 2.1.

2. If there is no Owner Default, Surety's obligation under this Bond shall arise after:
   2.1 Owner has notified Contractor and Surety, at the addresses described in Paragraph 9 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor, and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and
   2.2 Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in Paragraph 2.1; and
   2.3 Owner has agreed to pay the Balance of the Contract Price to:
      1. Surety in accordance with the terms of the Contract; or
      2. Another contractor selected pursuant to Paragraph 3.3 to perform the Contract.

3. When Owner has satisfied the conditions of Paragraph 2, Surety shall promptly, and at Surety's expense, take one of the following actions:

   3.1 Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or
   3.2 Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or
   3.3 Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 5 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or
   3.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:
      1. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or
      2. Deny liability in whole or in part and notify Owner citing reasons therefor.

4. If Surety does not proceed as provided in Paragraph 3 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 3.4, and Owner refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.

5. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act under Paragraph 3.1, 3.2, or 3.3 above, then the responsibilities of Surety to Owner shall not be greater than those of Contractor under the Contract, and the responsibilities of Owner to Surety shall not be greater than those of Owner under the Contract. To the limit of the amount of this Bond, but subject to commitment by Owner of the Balance of the Contract Price to mitigation of costs and damages on the Contract, Surety is obligated without duplication for:

5.1 The responsibilities of Contractor for correction of defective Work and completion of the Contract;
5.2 Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions of or failure to act of Surety under Paragraph 3; and
5.3 Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

6. Surety shall not be liable to Owner or others for obligations of Contractor that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than Owner or its heirs, executors, administrators, or successors.

7. Surety hereby waives notice of any change, including changes of time, to Contract or to related subcontracts, purchase orders, and other obligations.

8. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located, and shall be instituted within two years after Contractor Default or within two years after Contractor ceased working or within two years after Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

9. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the address shown on the signature page.

10. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

11. Definitions.

11.1 Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.
11.2 Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.
11.3 Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.
11.4 Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or otherwise comply with the other terms thereof.

FOR INFORMATION ONLY – (*Name, Address and Telephone*) Surety Agency or Broker: Owner's Representative (*Engineer or other party*):

REFERENCE FORM FOR:
CUMBERLAND HILL FIRE STATION REPAIRS

CONTRATOR NAME: _____ CONTACT NAME: _____

ADDRESS: _____ TELEPHONE NO: _____
_____ FAX NO: _____
_____ E-MAIL ADDRESS: _____

NAME AND LOCATION OF SIMILAR PROJECTS (MINIMUM OF 3)	NAME OF SUPERINTENDANT ASSIGNED TO PROJECT	WAS THERE A HARD DEADLINE OR COMPLETION DATE?	WAS THE PROJECT COMPLETED BY THE COMPLETION DATE?	PROVIDE CLIENT/REFERENCE NAME, ADDRESS AND TELEPHONE NO.
1.)				
2.)				
3.)				

END OF SECTION

SECTION 00 61 50
PAYMENT BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (*Name and Address*):

SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):
Cumberland Fire District
3502 Mendon Road, Cumberland, RI 02864

CONTRACT
Effective Date of Agreement:
Amount:
Description *(Name and Location)*:

BOND
Bond Number:
Date (*Not earlier than Effective Date of Agreement*):
Amount:
Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

_____ (Seal)
Contractor's Name and Corporate Seal

By: _____
Signature

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

SURETY

_____ (Seal)
Surety's Name and Corporate Seal

By: _____
Signature (Attach Power of Attorney)

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

Note: Provide execution by additional parties, such as joint venturers, if necessary.

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner to pay for labor, materials, and equipment furnished by Claimants for use in the performance of the Contract, which is incorporated herein by reference.

2. With respect to Owner, this obligation shall be null and void if Contractor:

2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants, and

2.2 Defends, indemnifies, and holds harmless Owner from all claims, demands, liens, or suits alleging non-payment by Contractor by any person or entity who furnished labor, materials, or equipment for use in the performance of the Contract, provided Owner has promptly notified Contractor and Surety (at the addresses described in Paragraph 12) of any claims, demands, liens, or suits and tendered defense of such claims, demands, liens, or suits to Contractor and Surety, and provided there is no Owner Default.

3. With respect to Claimants, this obligation shall be null and void if Contractor promptly makes payment, directly or indirectly, for all sums due.

4. Surety shall have no obligation to Claimants under this Bond until:

4.1 Claimants who are employed by or have a direct contract with Contractor have given notice to Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

4.2 Claimants who do not have a direct contract with Contractor:

1. Have furnished written notice to Contractor and sent a copy, or notice thereof, to Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials or equipment were furnished or supplied, or for whom the labor was done or performed; and
2. Have either received a rejection in whole or in part from Contractor, or not received within 30 days of furnishing the above notice any communication from Contractor by which Contractor had indicated the claim will be paid directly or indirectly; and
3. Not having been paid within the above 30 days, have sent a written notice to Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to Contractor.

5. If a notice by a Claimant required by Paragraph 4 is provided by Owner to Contractor or to Surety, that is sufficient compliance.

6. Reserved.

7. Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by Surety.

8. Amounts owed by Owner to Contractor under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any performance bond. By Contractor furnishing and Owner accepting this Bond, they agree that all funds earned by Contractor in the performance of the Contract are dedicated to satisfy obligations of Contractor and Surety under this Bond, subject to Owner's priority to use the funds for the completion of the Work.

9. Surety shall not be liable to Owner, Claimants, or others for obligations of Contractor that are unrelated to the Contract. Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. Surety hereby waives notice of any change, including changes of time, to the Contract or to related subcontracts, purchase orders, and other obligations.

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the Work or part of the Work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Paragraph 4.1 or Paragraph 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the addresses shown on the signature page. Actual receipt of notice by Surety, Owner, or Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory Bond and not as a common law bond.

14. Upon request of any person or entity appearing to be a potential beneficiary of this Bond, Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. Definitions

15.1 Claimant: An individual or entity having a direct contract with Contractor, or with a first-tier subcontractor of Contractor, to furnish labor, materials, or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Contract, architectural and engineering services required for performance of the Work of Contractor and Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

15.2 Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3 Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract, or to perform and complete or otherwise comply with the other terms thereof.

FOR INFORMATION ONLY – (*Name, Address, and Telephone*) Surety Agency or Broker: Owner's Representative (*Engineer or other*):

SECTION 014533
CODE-REQUIRED SPECIAL INSPECTIONS AND PROCEDURES

PART 1.00 – GENERAL

1.01 GENERAL PROVISIONS

A. The Latest Rhode Island State Building Code, under which this project is designed and will be built, requires the structural engineer of record (SER) to provide a program of structural tests and special inspections for this project in accordance with Chapter 17, 2021 International Building Code. The SER is the structural engineer who is in responsible charge of the preparation of the structural drawings and structural specifications for this project and whose Rhode Island professional engineering seal appears on said structural drawings.

B. The SER has prepared a document entitled Statement of Special Inspection, which has been or will be submitted to the building official who has jurisdiction over this project, with the application for a building permit.

C. The program of structural tests and inspections shall not relieve the Contractor or its subcontractors of their responsibilities and obligations for quality control of the work, their other obligations of supervising the work, for any design work which is included in their scope of services, and for full compliance with the requirement of the Contract Documents. Furthermore, the detection of, or failure to detect, deficiencies or defects in the Work during the testing and inspection conducted pursuant to the program shall not relieve the Contractor or its subcontractor of their responsibility to correct all deficiencies or defects, whether detects or undetected, in all parts of the Work, and to otherwise comply with all requirements of the Contract Documents.

D. The program of structural tests and inspection does not apply to the Contractor's equipment, temporary structures used by the Contractor to construct the project, the Contractor's means, methods, and procedures, and job site safety.

E. The structural testing and special inspection required by this Section is in addition to the inspections required by the Building Officials. Special inspection is not a substitute for inspection by a local municipal building inspector. Specially inspected work which is installed or covered without the approval of the Engineer or local municipal building inspector is subject to removal or exposure.

F. The Owner shall employ the Special Inspectors or approved Testing Agencies.

G. Special Inspector shall be an independently established and recognized agency regularly engaged in conducting tests or furnishing professional and inspection services and shall be approved by the Building Official and/or SER. The agency shall disclose all possible conflicts of interest so that objectivity can be confirmed. The agency shall have adequate equipment to perform all required tests. Personnel performing special inspection activities shall have qualifications according to the requirements for special inspector as noted below.

H. Special Inspectors as selected and approved by the Building Official and SER shall:

1. Be a qualified person, who shall have the minimum qualifications indicated in the *Statement of Special Inspection,* and demonstrate competence, to the satisfaction of the Building Official and SER, for inspection of the particular type of construction or operation requiring special inspection.
2. Be under the supervision of a professional engineer registered in the state in which work is under construction.

3. Observe the work assigned for conformance with the approved Drawings and Specifications and shall keep records of inspections or tests. The work inspected or tested shall be clearly identified, deficiencies noted, and resolutions stated.
4. Furnish inspection reports to the Architect, SER, Construction Manager/General Contractor, Owner, and the Building Official. Reports shall indicate that work inspected was done in conformance with approved construction documents. Discrepancies shall be brought to the immediate attention of the Contractor for correction, then, if uncorrected, the attention of the Building Official and SER prior to completion of that phase of work.
5. Submit a final signed report stating the work was in conformance with the approved Drawings and Specifications and the applicable workmanship provisions of the governing state code.

I. Special Inspector shall review this specification and Chapter 17 of the International Building Code. In the event of conflict with this specification and the Building Code, the Code shall govern.

1.02 CONTRACTOR'S RESPONSIBILITIES

A. Where the document *Statement of Special Inspections* indicates that a structural component or system is subject to structural tests and inspections by Chapter 17, 2009 International Building Code and that the SER for the project has not been retained to design said component or system or to prepare a performance specification for said component system, and the Architect has not otherwise provided for the structural design of said component or system, the Contractor shall retain, or require others under his direction to retain, a professional engineer registered in Rhode Island to design said component or system and to provide the required program of structural tests and inspections for said component or system.

B. The Contractor shall provide free and safe access to the Work for the SER and all other individuals who are observing the work or performing structural tests or inspections. The Contractor shall provide all ladders, scaffolding, staging, and up-to-date safety equipment, all in good and safe working order, and qualified personnel to handle and erect them, as may be required for safe access.

C. Retesting: The Contractor is responsible for retesting where results of inspections, tests, or other quality-control services prove unsatisfactory and indicate noncompliance with Contract Document requirements, regardless of whether the original test was the Contractor's responsibility.

1. The cost of retesting construction, revised or replaced by the Contractor, is the Contractor's responsibility where required tests performed on original construction indicated noncompliance with Contract Document requirements.

END OF SECTION

Final Report of Special Inspections

Project: *Cumberland Hill Fire Station*

Location: *3502 Mendon Road, Cumberland, RI 02864*

Owner: *Cumberland Fire District*

Owner's Address: *3502 Mendon Road, Cumberland, RI 02864*

Architect of Record:

Structural Engineer of Record:

To the best of my information, knowledge and belief, the Special Inspections required for this project, and itemized in the *Statement of Special Inspections* submitted for permit, have been performed and all discovered discrepancies have been reported and resolved other than the following:

Comments:

(Attach continuation sheets if required to complete the description of corrections.)

Interim reports submitted prior to this final report form a basis for and are to be considered an integral part of this final report.

Respectfully submitted,
Special Inspector Coordinator

(Type or print name)

Signature Date

Licensed Professional Seal

Final Report of Special Inspections

Agent's Final Report

Project: *Cumberland Hill Fire Station*

Agent:

Special Inspector:

To the best of my information, knowledge and belief, the Special Inspections or testing required for this project, and designated for this Agent in the *Statement of Special Inspections* submitted for permit, have been performed and all discovered discrepancies have been reported and resolved other than the following:

Comments:

(Attach continuation sheets if required to complete the description of corrections.)

Interim reports submitted prior to this final report form a basis for and are to be considered an integral part of this final report.

Respectfully submitted,
Testing Agency

(Type or print name)

Signature Date

Licensed Professional Seal or Certification

Statement of Special Inspections

Project: *Cumberland Hill Fire Station*

Location: *3502 Mendon Road, Cumberland, RI 02864*

Owner: *t)*

Design Professional in Responsible Charge: *Pare Corporation*

This *Statement of Special Inspections* is submitted as a condition for permit issuance in accordance with the Special Inspection and Structural Testing requirements of the Building Code. It includes a schedule of Special Inspection services applicable to this project as well as the name of the Special Inspection Coordinator and the identity of other approved agencies to be retained for conducting these inspections and tests. This *Statement of Special Inspections* encompasses the following disciplines:

☒ Structural ☐ Mechanical/Electrical/Plumbing

☐ Architectural ☐ Other: _____

The Special Inspection Coordinator shall keep records of all inspections and shall furnish inspection reports to the Building Official and the Registered Design Professional in Responsible Charge. Discovered discrepancies shall be brought to the immediate attention of the Contractor for correction. If such discrepancies are not corrected, the discrepancies shall be brought to the attention of the Building Official and the Registered Design Professional in Responsible Charge. The Special Inspection program does not relieve the Contractor of his or her responsibilities.

Interim reports shall be submitted to the Building Official and the Registered Design Professional in Responsible Charge.

A *Final Report of Special Inspections* documenting completion of all required Special Inspections, testing and correction of any discrepancies noted in the inspections shall be submitted prior to issuance of a Certificate of Use and Occupancy.

Job site safety and means and methods of construction are solely the responsibility of the Contractor.

Interim Report Frequency: *Monthly* or ☐ per attached schedule.

Prepared by:

_____
(type or print name)

_____
Signature Date

Design Professional Seal

Owner's Authorization:

_____
Signature Date

Building Official's Acceptance:

_____
Signature Date

Schedule of Inspection and Testing Agencies

This Statement of Special Inspections / Quality Assurance Plan includes the following building systems:

- ☒ Soils and Foundations
- ☒ Cast-in-Place Concrete
- ☐ Precast Concrete
- ☒ Masonry
- ☒ Structural Steel
- ☐ Cold-Formed Steel Framing
- ☐ Spray Fire Resistant Material
- ☐ Wood Construction
- ☐ Exterior Insulation and Finish System
- ☐ Mechanical & Electrical Systems
- ☐ Architectural Systems
- ☐ Special Cases

Special Inspection Agencies	Firm	Address, Telephone, e-mail
1. **Special Inspection Coordinator**	*To Be Determined*	
2. SER – Structural Engineer of Record	*Pare Corporation*	*8 Blackstone Valley Place* *Lincoln, RI* *(401)-334-4100*
3. GE – Geotechnical Engineer	*To Be Determined*	
4. OIAF – Owner's Inspection Agency (Field)	*To Be Determined*	
5. OIAP – Owner's Inspection Agency (Plant)	*To Be Determined*	
6. ARCH – Architect of Record		

Note: The inspectors and testing agencies shall be engaged by the Owner or the Owner's Agent, and not by the Contractor or Subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the Building Official, prior to commencing work.

Quality Assurance Plan

Quality Assurance for Seismic Resistance

Seismic Design Category	*C*
Quality Assurance Plan Required (Y/N)	*No*

Description of seismic force resisting system and designated seismic systems:
(Not Required per IBC 2021 Section 1705.12.1.1, Exception 1)

Quality Assurance for Wind Requirements

Nominal Design Wind Speed, V_{asd} (3 sec. gust)	*105*
Wind Exposure Category	*B*
Quality Assurance Plan Required (Y/N)	*No*

Description of wind force resisting system and designated wind resisting components:
(Not Required per IBC 2021 Section 1705.11, V_{asd} is less than 120 mph in Exposure B)

Statement of Responsibility

Each contractor responsible for the construction or fabrication of a system or component designated above must submit a Statement of Responsibility to the Building Official and Owner prior to the commencement of work on the system or component. The contractor's statement of responsibility shall contain acknowledgement of awareness of the special requirements contained in the statement of special inspection. A sample Statement of Responsibility has been included in the project specifications.

Qualifications of Inspectors and Testing Technicians

The qualifications of all personnel performing Special Inspection and Testing activities are subject to the approval of the Building Official. The credentials of all Inspectors and Testing technicians shall be provided if requested.

Key for Minimum Qualifications of Inspection Agents:

When the Registered Design Professional in Responsible Charge deems it appropriate that the firm* performing a stipulated test or inspection have a specific certification or license as indicated below, such designation shall appear below the *Agency Number* on the Schedule.

PE/SE*	Structural Engineer – under the supervision of, or a licensed SE or PE specializing in the design of building structures
PE/GE*	Geotechnical Engineer – under the supervision of, or a licensed PE specializing in soil mechanics and foundations
EIT	Engineer-In-Training – a graduate engineer who has passed the Fundamentals of Engineering examination

American Concrete Institute (ACI) Certification

ACI-CFTT	Concrete Field Testing Technician – Grade 1
ACI-CCI	Concrete Construction Inspector
ACI-LTT	Laboratory Testing Technician – Grade 1&2
ACI-STT	Strength Testing Technician

American Welding Society (AWS) Certification

AWS-CWI	Certified Welding Inspector
AWS/AISC-SSI	Certified Structural Steel Inspector

American Society of Non-Destructive Testing (ASNT) Certification

ASNT	Non-Destructive Testing Technician – Level II or III.

International Code Council (ICC) Certification

ICC-SMSI	Structural Masonry Special Inspector
ICC-SWSI	Structural Steel and Welding Special Inspector
ICC-SFSI	Spray-Applied Fireproofing Special Inspector
ICC-PCSI	Prestressed Concrete Special Inspector
ICC-RCSI	Reinforced Concrete Special Inspector

National Institute for Certification in Engineering Technologies (NICET)

NICET-CT	Concrete Technician – Levels I, II, III & IV
NICET-ST	Soils Technician - Levels I, II, III & IV
NICET-GET	Geotechnical Engineering Technician - Levels I, II, III & IV

* denoted edits made by Pare Corporation

Other

_____ _____

Soils and Foundations

Item	Agency # (Qualif.)	Scope
1. Shallow Foundations (periodic)	*GE* *(PE/GE)*	*Inspect soils below footings for adequate bearing capacity and consistency with construction documents, specifications, and geotechnical report.* *Inspect removal of unsuitable material and preparation of subgrade prior to placement of fill materials.*
2. Testing of Fill Materials (periodic)	*GE* *OIAF* *(PE/GE)*	*Perform sieve tests (ASTM D6913 & D1140) and modified Proctor tests (ASTM D1557) of each source of fill material for conformance to the specifications. (OIAF)*
3. Placement of Fill Materials (continuous)	*GE* *OIAF* *(PE/GE)*	*Inspect placement, lift thickness, and compaction of fill(OIAF).*
4. Density of Fill Materials (continuous)	*SER* *GE* *OIAF* *(PE/GE)*	*Perform field density tests of the in-place fill in accordance with the construction documents and specifications (GE, OIAF).* *Review test reports for conformance to the construction documents (SER, GE)*

Cast-in-Place Concrete

Item	Agency # (Qualif.)	Scope
1. Mix Design (periodic)	*SER* *OIAF* *(ACI-CCI ICC-RCSI)*	*Review mix designs for all classes of concrete for conformance to specifications Proportioning of materials shall be in accordance with ACI318. (SER)* *Review concrete batch tickets and verify compliance with approved mix design. Verify that water added at the site does not exceed that allowed by the mix design. (OIAF)* *Review OIAF reports (SER).*
2. Material Certification (periodic)	*SER*	*Review material certificates of compliance or other acceptable documentation for all materials used in the concrete mix designs for conformance with the construction documents.*
3. Reinforcement Installation (periodic)	*SER* *OIAF* *(ACI-CCI ICC-RCSI)*	*Inspect size, spacing, cover, positioning and grade of reinforcing steel. Verify that reinforcing bars are free of form oil or other deleterious materials. Inspect bar laps and mechanical splices. Verify that bars are adequately tied and supported on chairs or bolsters. (OIAF)* *Review OIAF reports (SER).*
4. Formwork Geometry (periodic)	*OIAF*	*Inspect formwork for general conformance with the construction documents. Review formwork to insure the finished concrete size and shape for conformance to the construction documents.*
5. Anchor Rods (periodic)	*SER* *OIAF*	*Inspect size, length, positioning and embedment of anchor rods. Inspect concrete placement and consolidation around anchors. (OIAF)* *Review OIAF reports (SER).*
6. Concrete Placement (continuous)	*SER* *OIAF* *(ACI-CCI ICC-RCSI)*	*Review ready mix truck delivery tickets for proper class of concrete and required admixtures. Inspect placement of concrete. Verify conformance to specifications including cold-weather and hot-weather placement procedures. Verify that concrete conveyance and depositing avoids segregation or contamination. Verify that concrete is properly consolidated. (OIAF)* *Review OIAF reports (SER).*
7. Sampling and Testing of Concrete (continuous)	*SER* *OIAF* *(ACI-CFTT ACI-STT)*	*Test concrete compressive strength (ASTM C31 & C39), slump (ASTM C143), air-content (ASTM C231 or C173), lightweight concrete unit weight (ASTM C567), and temperature (ASTM C1064) for conformance with construction documents. (OIAF)* *Review concrete test reports for conformance with the construction documents (SER).*
8. Curing and Protection (periodic)	*PE* *OIAF* *(ACI-CCI ICC-RCSI)*	*Inspect curing, cold weather protection and hot weather protection procedures (OIAF).* *Review OIAF reports (SER).*
9. Post-installed anchors in hardened concrete (periodic) (sustained tension loads, continuous)	*SER* *OIAF* *(ACI-CCI ICC-RCSI)*	*Inspect in accordance with manufacturer's published installation instructions (MPII) and relevant evaluation report (ICC-ES ESR). Verify anchors installed in accordance with manufacturer's requirements including hole-cleaning procedures. Verify anchor size, placement, embedment depths, spacing, and edge distances meet construction document requirements. (OIAF)* *Review OIAF reports. (SER)*

Masonry

Required Inspection Level: ☒ **B** ☐ **C**

Item	Agency # (Qualif.)	Scope
1. Material Certification	*SER*	*Review all material submittals and certificates for each type of structural masonry unit, mortar, grout and admixtures for conformance to construction documents.*
2. Mixing of Mortar and Grout (periodic)	*OIAF* *(ICC-SMSI)*	*Inspect proportioning, mixing and retempering of mortar and grout. Conduct sufficient number of periodic field review of mortar and grout proportioning, mixing and consistency for conformance with ACI 530.1 and the construction documents.*
3. Installation of Masonry (periodic)	*SER* *OIAF* *(ICC-SMSI)*	*Inspect size, layout, bonding and placement of masonry units. Inspection mortar application and grouting procedures for conformance with the construction documents (OIAF).* *Review all reports for conformance with the construction documents (SER).*
4. Mortar Joints (periodic)	*OIAF* *(ICC-SMSI)*	*Inspect construction of mortar joints including tooling and filling of head joints.*
5. Reinforcement Installation (size, type, condition - periodic) (placement, welding – continuous)	*OIAF* *SER* *(ICC-SMSI* *AWS-CWI)*	*Inspect size, quantity, condition, placement, positioning and lapping of reinforcing steel for approved shop drawings and construction documents. Inspect welding of reinforcing steel and inspect welder's certifications.(OIAF)* *Review OIAF test reports. (SER)*
6. Grouting Operations (continuous)	*OIAF* *(ICC-SMSI)*	*Inspect placement and consolidation of grout. Verify grout space is clean. Inspect masonry clean-outs for high-lift grouting.*
7. Weather Protection (periodic)	*OIAF* *(ICC-SMSI)*	*Inspect cold weather protection and hot weather protection procedures. Verify that wall cavities are protected against precipitation.*
8. Evaluation of Masonry Strength (Structural bearing walls only) Compliance with approved frequency (periodic) Preparation of specimens (continuous)	*SER* *OIAF* *(ICC-SMSI)*	*Sample and test the masonry mortar and grout, brick, concrete masonry units, and the concrete prism at the approved frequency for conformance with the construction documents (OIAF).* *Test compressive strength of mortar and grout cube samples (ASTM C780). (OIAF)* *Test compressive strength of masonry prisms (ASTM C1314). (OIAF)* *Review test reports for conformance with the specifications (SER).*
9. Anchors and Ties (size, type, condition - periodic) (installation – continuous)	*OIAF* *(ICC-SMSI)*	*Inspect size, location, spacing and embedment of dowels, anchors and ties.* *Inspect anchorage of masonry to structural members, foundation walls, or other construction, and installation of embedded items for conformance with construction documents.*

Structural Steel

Item	Agency # (Qualif.)	Scope
1. Fabricator Certification/ Quality Control Procedures	*SER* *OIAP* *(AWS/AISC -SSI ICC-SWSI)*	*Review each shop fabrication including fabricator's and welder's certificates and quality control procedures including steel joists and steel deck. Verify whether Fabricator holds a current AISC Category I or II certification, or is a member of the Structural Steel Fabricators. (OIAP).* *Review OIAP reports. (SER)*
2. Material Certification (periodic)	*SER* *OIAF* *(AWS/AISC -SSI ICC-SWSI)*	*Review certified mill test reports for structural steel including steel joists and steel deck. (SER)* *Verify identification markings on wide-flange shapes, high-strength bolts, nuts and welding electrodes. (OIAF)*
3. Bolting (Bearing Type - periodic) (Slip-Critical Type – continuous for turn of the nut or calibrated wrench method)	*SER* *OIAF* *(AWS/AISC -SSI ICC-SWSI)*	*Inspect installation and tightening of high-strength bolts. Verify bolt size and grade and that splines have separated from tension control bolts. Verify proper tightening sequence. Continuous inspection of bolts in slip-critical connections. (OIAF)* *Review reports (SER).*
4. Welding (continuous except periodic for single pass fillet welds < 5/16" or floor and deck welds)	*SER* *OIAF* *(AWS-CWI ASNT)*	*Visually inspect all welds in accordance with construction documents and approved shop drawings. Inspect pre-heat, post-heat and surface preparation between passes. Verify size and length of fillet welds. (OIAF)* *Continuous inspection of ultrasonic testing of all full-penetration welds. (OIAF)* *Review all reports. (SER)*
5. Shear Connectors (periodic)	*PE* *OIAF* *(AWS-AISC-SSI ICC-SWSI*	*Inspect size, number, positioning and welding of shear connectors. Inspect suds for full 360 degree flash. Ring test all shear connectors with a 3 lb hammer. Bend test all questionable studs to 15 degrees (OIAF)* *Review test reports for conformance. (SER).*
6. Structural Framing, Details, and Assemblies (periodic)	*SER* *OIAF* *(PE/SE)*	*Visually inspect steel frame for compliance with structural drawings, approved erection and shop drawings, AISC Code of Standard Practice including bracing, member configuration and connection details. (OIAF)* *Inspect for size, grade of steel, camber, and installation. (OIAF)* *Review test reports for conformance with approved shop drawings and construction documents. (SER)*

PART 1.00 – GENERAL

1.01 GENERAL PROVISIONS

A. All of the Contract Documents, including General and Supplementary Conditions apply to the Work of this Section.

1.02 SCOPE

A. This section specifies requirements for concrete formwork to produce cast-in-place concrete structures as shown on the Drawings and as specified herein. The work shall consist of designing, furnishing, constructing and removing formwork for all cast-in-place concrete structures.

B. Use forms, wherever necessary, to confine the concrete and shape it to the required lines, and to provide the specified finish. Construct forms with sufficient strength to structurally support the work, and withstand the pressure resulting from placement and vibration of the concrete, and maintain forms rigidly in position. Construct forms sufficiently tight to prevent loss of mortar from the concrete.

1.03 REFERENCES

A. American Concrete Institute (ACI):

1. ACI 117: Standard Specification for Tolerances for Concrete Construction and Materials.
2. ACI 301: Standard Specification for Structural Concrete.
3. ACI 347: Guide to Formwork for Concrete.

B. Rhode Island State Building Code.

1.04 DESIGN REQUIREMENTS

A. Design formwork to support vertical loads and lateral pressures resulting from placement and vibration of concrete in accordance with the requirements of ACI 301 and ACI 347, and as specified herein.

B. Camber the formwork to compensate for anticipated deflections due to the weight and pressure of the fresh concrete and due to construction loads.

C. Provide shores and struts with positive means of adjustment capable of taking up formwork settlement during concrete placing operations. Use wedges or jacks, individually or in combination for adjustment.

D. Design forms and falsework to include assumed values of live loads, dead load, weight of moving equipment operated on formwork, concrete mix, height of drop, vibrator frequency, ambient temperature, lateral stability, and other factors pertinent to the safety of the structure during construction.

E. Provide and design forms to conform with expansion and construction joint locations.

1.05 SUBMITTALS

A. Submittals for the following items shall be made in accordance with the requirements as specified. Refer to Section 01 33 00 SUBMITTAL PROCEDURES for provisions and procedures.

B. Submit the following at least 30 days before the first concrete placement:

1. Manufacturer's data and installation instructions for proprietary form accessories, form coatings, pipe sleeves and seals, form ties and manufactured form systems if used.
2. Certification that form coatings comply with the requirements of this Section.

1.06 QUALITY ASSURANCE

A. Provide in accordance with the requirements as specified.

B. Tolerances:

1. Permissible surface irregularities for the various classes of concrete surface finish as specified in Section 03 30 00, Cast-in-Place Concrete, are defined as "finishes", and are to be distinguished from tolerances as specified herein. Deviations from the established lines, grades, and dimensions will be permitted to the extent set forth herein.
2. The tolerance limits specified in this Section and the surface finish irregularities permitted in Section 03 30 00, Cast-in-Place Concrete, are not the limits to which forms may be built or by which damaged from sheathing may be used. These limits are provided only for the occasional slight misalignment or irregularity of surface, which may occur despite a serious effort to build and maintain the forms accurately and securely with an even surface. These limits will be allowed only for inadvertent or relatively infrequent irregularities of the degree mentioned, but practices and form materials will be prohibited which without doubt will result in the creation of additional irregularities, even though these would be within the limits specified.
3. Where specific tolerances are not stated herein or shown on the Drawings for a structure, portion of a structure, or other feature of the work, permissible deviations will be interpreted conforming to the tolerances stated herein for similar construction. Specific maximum or minimum tolerances as shown on the Drawings in connection with any dimension shall be considered as supplemental to the tolerances specified herein and shall govern. Concrete forms shall be set and maintained within the tolerance limits necessary to ensure that the completed work will be within the tolerances specified. Concrete construction that exceeds the tolerance limits specified or as shown on the Drawings shall be remedied or removed and replaced by the Contractor at no cost to the Owner.
4. Tolerances shall be as specified in ACI 117, Standard Specifications for Tolerances for Concrete and Materials.

PART 2.00 - PRODUCTS

2.01 MATERIALS

A. Forms for Exposed Finish Concrete: Construct formwork for exposed concrete surfaces with smooth faced undamaged plywood or metal, metal-framed plywood faced or other acceptable panel-type facing materials approved by Engineer, to provide continuous, straight, smooth as-cast surfaces, and produce a uniform and consistent texture and pattern on the surfaces. Metal patches on forms for these surfaces will not be permitted. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on the drawings.

1. Use overlaid plywood complying with U.S. Product PS-1 “A-C or B-B High Density Overlaid Concrete Form”, Class I.
2. Use plywood complying with U.S. Product Standard PS-1 “B-B (Concrete Form) Plywood”, Class I, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.

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. Tubular Fiber Forms:

1. Provide forms with spirally constructed laminated plies of fiber.
2. Provide forms with wall thickness as recommended by the manufacturer to meet load requirements of the various uses and sizes.
3. Provide forms with wax coated outside surfaces for moisture resistance.
4. Provide forms with inside surface coated with bond-breaker compound.

D. Form Ties:

1. Form Ties: For concrete structures, which will not be in view or buried below finish grade, use carbon steel factory-fabricated, removable or stay in place snap-off type form ties, designed to prevent form deflection and to prevent spalling concrete upon removal. Provide units, which will leave no metal closer than 1-1/2” to surface. Provide ties which, when removed, will leave holes not larger than 1” diameter in concrete surface. Patch all holes with non-shrink grout.
2. Form ties and spreaders for walls in areas exposed to view shall be Stainless Steel Cone–Tight Tyscru by Richmond Screw Anchor Co.; Dayton Sure-Grip and Shore Co.; or substitute approved by Engineer with Plastic cone-tight type cones having a 1” setback and a taper from 1” to 1-1/4”. Tyscru cone holes shall be sealed with plastic set back plugs, color as selected by Engineer from manufacturer’s standard color selection or filled with non-shrink grout. Tyscru ties shall be sized to satisfy loading requirements.
3. In lieu of form ties specified above, fiberglass form tie systems shall be used. Fiberglass form ties shall be standard gray color. The concrete structure shall be finished by grinding the fiberglass form tie flush with the finish surface of the concrete structure.
   a. If tapered architectural holes are required, dummy tapered cones having a 1” setback and a taper from 1” to 1-1/4 shall be fastened to the interior of the formwork to achieve the specified pattern on the finish structure.

E. Form Releasing Agents: Provide commercial formulation form-releasing agents that will not bond with, stain, nor adversely affect concrete surfaces requiring bond or adhesion, nor impede the wetting of surfaces to be cured with water or curing compounds. Volatile organic compound emissions of form coating agent shall not exceed 2.09 pounds per gallon (250 grams per liter).

F. Chamfer Strips: Provide 1-inch triangular fillets, unless noted otherwise on drawings, to form all exposed concrete corners. Material shall be rubber or polyvinyl chloride type, or smooth clear, sealed softwood.

PART 3.00 - EXECUTION

3.01 INSPECTIONS

A. Examine the substrate and conditions under which work of this Section is to be performed, and correct unsatisfactory conditions, which would prevent proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

3.02 FORM CONSTRUCTION

A. General:

1. Construct forms as designed and in accordance with Contractor's approved working drawings conforming to ACI 347, to the exact sizes, shapes, lines, and dimensions shown, and as required to obtain accurate alignment, location, grades, level, and plumb work in finished structures.
2. Provide for openings, offsets, keyways, recesses, moldings, chamfers, blocking, screeds, bulkheads, anchorages, inserts, and other features required. Use selected materials to obtain required finishes.
3. Forms for concrete which accommodate work of other trades, fabricated before the opportunity exists to verify the measurements of adjacent construction, shall be accurately sized and located as dimensioned on the Drawings. In the event that deviation from the Drawing dimensions results in problems in the field, the Contractor shall be responsible for resolution of the conditions as approved by the Engineer, at no cost to the Owner.

B. Fabrication:

1. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage concrete surfaces.
2. Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Brace temporary closures and set tightly to temporary openings on forms in as many inconspicuous locations as possible, commensurate with design requirements. Form intersecting planes to provide true, clean cut corners.

C. Falsework:

1. Erect falsework and support, brace, and maintain it to safely support vertical, lateral, and asymmetrical loads applied until complete structure has attained design strength. Construct falsework so that adjustments can be made for take-up and settlement, and access is provided for inspection.
2. Provide wedges, jacks or chamfer strips to facilitate vertical adjustments. Carefully inspect falsework and formwork during and after concrete placement operations to determine abnormal deflection or signs of failure; make necessary adjustments to product work of required dimensions.

D. Forms for Exposed Concrete:

1. Drill forms to suit ties used and to prevent leakage of concrete mortar around tie holes. Do not splinter forms by driving ties through improperly prepared holes
2. Provide sharp clean corners at intersecting planes, without visible edges or offsets. Back joints with extra studs or grits to maintain true, square intersections.
3. Use extra studs, walers, and bracing to prevent bowing of forms between studs and to avoid bowed appearance in concrete. Do not use narrow strips of form material, which will produce bow.

E. Corner Treatment:

1. Unless shown otherwise, form chamfers with 1-inch by 1-inch strips, accurately formed and surfaced to produce uniformly straight lines and tight edge joints on exposed concrete. Extend terminal edges to required limits and miter chamfer strips at changes in direction.

F. Control Joints: Locate as indicated on the Drawings.

G. Provision for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Verify size and location of openings, recesses and sleeves with the trade requiring such items. Accurately place and securely support items to be built into forms.

H. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove encrusted mortar and grout, chips, wood, sawdust, dirt, and other debris just before concrete is placed. Retighten forms immediately after concrete placement as required to eliminate mortar leaks.

3.03 FORM COATINGS

A. Coat form contact surfaces with form-releasing agent before reinforcement is placed. Do not allow excess form coating material to accumulate in the forms or to come into contact with surfaces that will be bonded to fresh concrete. Apply in strict compliance with manufacturer's instructions.

B. Remove surplus coating on form surfaces before placing concrete.

3.04 INSTALLATION OF EMBEDDED ITEMS

A. Set and build into the forms, anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions and directions provided by suppliers of the items to be attached thereto.

B. Set edge forms or bulkheads and intermediate screed strips for slabs, to obtain required elevation and contours in the finished slab surface. Provide and secure units to support types of screeds required.

3.05 REMOVAL OF FORMS

A. Formwork not supporting concrete, such as sides of walls, columns, and similar parts of the Work, may be removed after cumulatively curing at not less than 50 degrees F for 72 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operation, and provided that curing and protection operations are maintained.

B. Formwork supporting weight of concrete, such as elevated beams, joists, slabs and other structural elements may not be removed until concrete has attained 70% of its design minimum 28-day compressive strength, and has cumulatively cured for no less than 7 days. Concrete shall have sufficient strength to safely support its own weight and construction live loads and lateral pressures. Determine potential compressive strength of in-place concrete testing field-cured specimens representative of the concrete location or members, as specified in Section 03 30 00, Cast-in-Place Concrete.

C. Form facing material may be removed one day after placement, only if shores and other vertical supports have been arranged to permit removal of form facing material without loosening or disturbing shores and supports.

D. Form ties: The concrete structure shall be finished by grinding the fiberglass form ties flush with the finish surface of the concrete structure.

3.06 REUSE OF FORMS

A. Clean and repair surfaces of forms to be reused in the work. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable. When forms are reused for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close all joints. Align and secure joints to avoid offsets. Apply new form releasing agent to all form areas that will be in contact with concrete.

B. Do not reuse forms if there is any evidence of surface wear and tear, splits, fraying, delamination or other damage which would impair the quality of the concrete surface or prevent obtaining the specified concrete finish.

END OF SECTION

SECTION 031510
CONCRETE CONTROL, CONSTRUCTION, AND EXPANSION JOINTS

PART 1.00 – GENERAL

1.01 GENERAL PROVISIONS

A. All of the Contract Documents, including General and Supplementary Conditions apply to the Work of this Section.

1.02 SCOPE

A. Section includes: All work necessary to provide construction joints, expansion joints, and control joints in structural or plain concrete as indicated and specified.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM) Publications:

1. C 920: Specification for Elastomeric Joint Sealants.
2. C1193: Guide for Use of Joint Sealants.
3. D1751: Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).
4. D1752: Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.

1.04 SUBMITTALS

A. Shop Drawings: Submit the following in accordance with the requirements as specified in Section 01 33 00, SUBMITTAL PROCEDURES.

1. Manufacture's printed data and literature for all specified materials and locations where materials are to be used.
2. Manufacturer's printed instruction for:
   a. Treatment of cut surfaces of premolded expansion joint filler.
   b. Preparation of concrete for joint sealant.

B. Samples of joint fillers.

C. Color samples or charts for joint sealants.

1.05 QUALITY ASSURANCE

A. Provide in accordance with the requirements as specified in Section 01 45 00, QUALITY CONTROL.

B. Do not omit control, construction, or expansion joints.

C. Do not add or relocate control, construction, or expansion joints without written authorization from the Engineer.

D. Cast slabs and beams monolithically without horizontal joints.

E. Do not use horizontal joints within foundation mats, base slabs, footings, pile caps, slabs on grade or elevated beams and slabs.

F. Provide control, construction, and expansion joints in concrete fills and toppings at the same location as the control, construction and expansion joints in the supporting concrete.

G. Reject material exceeding expiration date for use.

H. Ensure that concrete surfaces to receive joint sealant are cleaned in accordance with the printed instructions of the joint sealant manufacture.

1.06 DELIVERY AND STORAGE

A. Transport, handle and deliver materials to the job site in the manufacturer's sealed bags, unopened containers or banded pallets.

B. Store materials off the ground on a platform or skids and protect with covers from snow, rain and ground splatter.

C. Store joint sealants in a dry warm location to prevent freezing.

D. Store plastic products under cover in a dry cool location, out of direct sunlight.

PART 2.00 - PRODUCTS

2.01 PREMOLDED JOINT FILLER

A. Provide premolded–joint filler conforming to ASTM D1752, Type I or Type II.

B. Provide Type III self-expanding cork where specifically indicated.

C. Provide joint filler of same thickness as expansion joint width indicated.

D. Provide maximum length filler manufactured to minimize field splicing.

2.02 JOINT SEALANT

A. Horizontal Expansion and Construction Joints: Provide one-component, self-leveling, polyurethane-base joint sealant for expansion joints in horizontal surfaces and surfaces inclined less than 30 degrees from the horizontal. Acceptable products:

1. Sikaflex-1CSL by Sika Corporation
2. Approved equivalent.

B. Provide joint sealant for expansion joints in walls and surfaces inclined greater than 30 degrees from the horizontal conforming to ASTM C920, Type S or M, Grade NS, Class 25.

C. Horizontal Control Joints: Provide 2-component, self-leveling 100% solids, flexible, control joint resin. Acceptable products:

1. Sikadur 51 SL by Sika Corporation
2. Approved equivalent.

D. Provide compatible joint sealants as recommended by manufacturer when they abut each other.

E. Provide sealant intended for continuous submergence in liquid containing structures.

2.03 BOND BREAKER FOR JOINT SEALANTS

A. Provide polyethylene tape, coated tape or metal foil.

2.04 BACK-UP MATERIAL FOR JOINT SEALANTS

A. Provide polyethylene foam or polychloroprene foam rubber.

B. Do not use material impregnated with oil, bitumen or similar substances.

C. Provide back-up material as recommended by joint sealant manufacturer that is compatible with the joint sealant and has the same expansion/contraction capability as joint sealant.

PART 3.00 - EXECUTION

3.01 CONSTRUCTION JOINTS

A. Locate and install construction joints as indicated or, if not indicated, locate so as not to impair the strength and appearance of the structure. Submit proposed construction joint locations for approval.

B. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints.

C. Key groove all construction joints unless otherwise indicated. Wall horizontal joints need not be keyed except where specifically indicated.

D. Key grooves shall be one-third the thickness of the thinner member and 1-1/2-in. deep unless otherwise indicated.

E. Use tapered key groove forms to permit form removal without damage to the groove. Taper not to exceed 2 inches per foot.

F. Center waterstops in construction joints unless otherwise indicated. Secure waterstops in position by tie wire to adjacent reinforcing every 12 inches.

G. Consolidate concrete during placement in the vicinity of key groove without damaging or dislodging waterstop.

H. Remove all key groove forms.

I. Clean key groove of laitance, curing sealant, foreign materials and protrusions of hardened concrete. Roughen by bush hammer or lightly sandblast to expose coarse aggregate. Blow out debris and dust with oil-free compressed air.

J. Protect exposed key groove and waterstop from damage.

3.02 EXPANSION JOINTS

A. Install expansion joints in accordance with the manufacturers printed instructions and as indicated.

B. Center waterstops in expansion joints unless otherwise indicated. Secure waterstops in position by tie wire to adjacent reinforcing every 12 inches.

C. Consolidate concrete during placement in vicinity of expansion joint without damaging premolded joint filler and waterstop.

D. Prepare joint to receive sealant by sand-blasting then blowing out the joint with clean, dry, compressed air.

SECTION 032000
CONCRETE REINFORCING

PART 1.00 - GENERAL

1.01 GENERAL PROVISIONS

A. All of the Contract Documents, including General and Supplementary Conditions apply to the Work of this Section.

1.02 SCOPE

A. This Section specifies all work necessary to provide all concrete reinforcement such as reinforcing steel, welded wire fabric, and concrete inserts as shown on the Drawings and as specified herein.

1.03 REFERENCES

A. American Concrete Institute (ACI)

1. ACI 315: Details and Detailing of Concrete Reinforcement
2. ACI 315R: Manual of Engineering and Placing Drawings for Reinforced Concrete Structures

B. American Society for Testing and Materials (ASTM):

1. A1064: Specification for Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement
2. A 615: Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
3. A 706/A 706M: Specification for Low-Alloy Steel Deformed Bars for Concrete Reinforcement

C. American Welding Society (AWS):

1. AWS D1.4: American Welding Society, Structural Welding Code, and Reinforcing Steel.

D. Rhode Island State Building Code

1.04 SUBMITTALS

A. Submittal for the following items shall be made in accordance with the requirements as specified.

B. Shop Drawings:

1. Shop drawings for reinforced concrete structures shall be submitted after the concrete pour sequences, construction joint locations, and placement schedules have been approved by the Engineer.
2. At least 30 days before each scheduled concrete placement, submit shop drawings covering the reinforcing steel details, bar lists, support bars and details, locations of reinforcing bar cut-offs, splices, development lengths and placement details. Prepare shop drawings in accordance with ACI 315 and 315R from reinforcement details shown on the drawings.
3. Mill Certificates: Accompanying the shop drawings, submit steel producer’s certification of mill analysis, tensile, and bend tests for reinforcing steel.
4. Welder’s certification in conformance with AWS D1.4, when welding is indicated or specified. Testing of welds shall be conducted and witnessed by an independent testing laboratory prior to welding of reinforcement. Maintain qualification and certification records at the job site, readily available for examination of test results.

C. Manufacture's literature, including installation instructions for the following.

1. Supports

1.05 QUALITY ASSURANCE

A. Provide in accordance with the requirements of the Quality Control section and as specified.

B. Do not fabricate reinforcement until shop and placement drawings have been approved by the Engineer.

C. Tolerances:

1. Tolerances shall be as specified in ACI 315R.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver reinforcement to the job site bundled, tagged, and marked. Use metal tags indicating bar size, lengths, and other information corresponding to markings shown on shop drawings.

B. Storage: Store reinforcement at the job site in a manner to prevent damage and accumulation of dirt and excessive rust.

PART 2.00 - PRODUCTS

2.01 MATERIALS

A. Reinforcing bars shall be newly rolled deformed bars conforming to ASTM A615 Grade 60, unless otherwise indicated on the Drawings.

1. Galvanized reinforcement shall meet ASTM A767, Class 1, zinc-coated after fabrication and bending.
2. Bars to be welded shall conform to ASTM A706 deformed, Grade 60.
3. Provide mill bent reinforcing bars, bent cold to the dimensions indicated and conforming to the requirements of ACI SP-66.

B. Welded wire fabric shall conform to ASTM A 1064, with a minimum ultimate tensile strength of 70,000 psi. Provide in sizes indicated. Provide support bars and reinforcing bar supports as specified to obtain the concrete cover.

C. Bar support and accessories shall be galvanized or plastic coated and shall conform to ACI 315. Provide minimum size number 5 support bars.

D. Provide 3-in. by 3-in. plain precast concrete blocks and precast concrete doweled blocks for reinforcing bar supports in foundation mats, base slabs, footings, pile caps, grade beams and slabs on grade. Provide block thickness to produce concrete cover of reinforcement as indicated. Provide blocks of Type II cement with 3000 psi minimum compressive strength in conformance with the Section 03 30 00, Cast-in-Place Concrete.

E. Wire for tying reinforcement in place shall be No. 16 AWG or heavier black soft-annealed wire

2.02 FABRICATION

A. Fabricate reinforcement only after shop drawings have been returned by the Engineer marked "Approved".

B. Provide reinforcing bars that have been cut and bent before shipment. If bars must be bent on site, bend reinforcing steel cold, and do not straighten or rebend in a manner which will damage the material. Bend in conformance with requirements of ACI SP-66 or with ASTM A767 when reinforcement is to be galvanized.

C. Splices:

1. Provide standard reinforcement splices by lapping ends, placing bars in contact, and tightly wire tying for the full length of the splice. All lap splices shall be ACI 318, Class B, unless indicated otherwise on the Drawings.
2. Adjacent splices shall be staggered whenever possible.

PART 3.00 - EXECUTION

3.01 GENERAL

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

3.02 PLACEMENT

A. Comply with the specified standards for details and methods of reinforcement placement and supports, and as herein specified. Comply with concrete protective cover requirement indicated on the Drawings.

B. Clean reinforcement to remove loose rust and mill scale, earth, and other materials that would reduce or destroy bond with concrete.

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

D. Place reinforcement to obtain the specified coverage for concrete protection. Arrange, space, and securely tie bars and bar supports together with 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.

E. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh.

F. Provide supports of sufficient numbers and strengths to carry reinforcement. Do not place reinforcing bars more than 2 inches beyond the last leg of any continuous bar support. Do not use supports as bases for runways for conveying equipment and similar construction loads.

G. Bars may be moved as necessary to avoid interference with other reinforcing steel, conduits or embedded items. Bars moved more than three inches are subject to approval of Engineer. Place required number of bars.

H. Position dowels accurately, rigidly support, and securely tie. Align dowels normal to concrete surface before concrete placement. Setting dowels into wet concrete is prohibited.

I. Provide and place safety caps on all exposed ends of vertical reinforcement.

J. Tie a minimum of 25 percent of all intersecting bars in foundation mats, base slabs, footings, pile caps, slabs on grade and elevated slabs.

K. Do not splice reinforcement steel in foundation mats, base slabs, beams, girders, slabs and walls at points of maximum stress unless otherwise indicated.

L. Lap splice welded wire fabric reinforcement at least one full mesh. Stagger splices to avoid continuous laps in either direction and wire tightly together. Straighten rolled welded wire fabric reinforcement into flat sheets before use.

M. Provide continuous reinforcement through construction joints.

N. After installation and prior to placing concrete, touch-up galvanized reinforcing with damaged or missing coatings. Galvanizing repair paint shall be SSPC-Paint 20; MIL-P-21035B; or engineer-approved equivalent with dry film containing a minimum of 94 percent zinc dust by weight.

END OF SECTION

3.03 PREMOLDED JOINT FILLER

A. Treat cut surface of premolded joint filler in conformance with manufacturer's printed instructions.

B. Place premolded joint filler against the bulkhead form and fasten to the inside of the form with noncorrosive fasteners. Remove all fasteners when bulkhead form is removed.

C. Prevent disturbance of or damage to premolded joint filler.

D. Fill expansion joint completely with premolded joint filler, except as specified below.

E. Secure wood strips to expansion joint surfaces, which are to receive joint sealant.

F. Use tapered wood strips with the smaller width being the same width as the expansion joint and of depth necessary to install the joint sealant and back-up materials.

G. Use materials to secure the premolded joint filler and wood strips that will not harm concrete or affect the joint sealant bond to concrete.

H. Do not remove wood strips until forms are removed as specified in the Concrete Formwork section.

I. Clean groove of laitance, curing sealant, foreign materials and protrusions of hardened concrete. Blow out debris and dust with oil-free compressed air.

3.04 CONTROL JOINTS

A. Saw-cut control joints at locations indicated on the Drawings or at locations approved by the Engineer of Record if not shown on the Drawings.

B. Saw cut joints to ¼ of the depth of the slab or concrete member immediately after slab finishing.

C. All control joints shall be made within 8 hours of concrete placement.

D. Prepare all control joints to receive sealant by high-pressure washing after saw-cutting, sand-blasting after the joints are dry, and then blowing out the joints with clean, dry, compressed air.

3.05 JOINT SEALING

A. Seal the dry clean concrete in joints in conformance with manufacturer's printed instruction.

B. Install back-up and bond breaker materials where required or recommended by the manufacturer.

C. Prime concrete, fill flush with joint sealant to required thickness, tool to concave shape and seal in conformance with manufacturer's printed instructions and ASTM C1193.

D. Prevent spilling joint sealant over adjoining surfaces. Use tape adjacent to joint as required. Remove all tape completely from concrete surface after installing joint.

E. Do not prime concrete or install joint sealant when sealant, air or concrete temperature is less than 40 deg. F. or as required by manufacturer.

END OF SECTION

SECTION 032000
CONCRETE REINFORCING

PART 1.00 - GENERAL

1.01 GENERAL PROVISIONS

A. All of the Contract Documents, including General and Supplementary Conditions apply to the Work of this Section.

1.02 SCOPE

A. This Section specifies all work necessary to provide all concrete reinforcement such as reinforcing steel, welded wire fabric, and concrete inserts as shown on the Drawings and as specified herein.

1.03 REFERENCES

A. American Concrete Institute (ACI)

1. ACI 315: Details and Detailing of Concrete Reinforcement
2. ACI 315R: Manual of Engineering and Placing Drawings for Reinforced Concrete Structures

B. American Society for Testing and Materials (ASTM):

1. A1064: Specification for Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement
2. A 615: Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
3. A 706/A 706M: Specification for Low-Alloy Steel Deformed Bars for Concrete Reinforcement

C. American Welding Society (AWS):

1. AWS D1.4: American Welding Society, Structural Welding Code, and Reinforcing Steel.

D. Rhode Island State Building Code

1.04 SUBMITTALS

A. Submittal for the following items shall be made in accordance with the requirements as specified.

B. Shop Drawings:

1. Shop drawings for reinforced concrete structures shall be submitted after the concrete pour sequences, construction joint locations, and placement schedules have been approved by the Engineer.
2. At least 30 days before each scheduled concrete placement, submit shop drawings covering the reinforcing steel details, bar lists, support bars and details, locations of reinforcing bar cut-offs, splices, development lengths and placement details. Prepare shop drawings in accordance with ACI 315 and 315R from reinforcement details shown on the drawings.
3. Mill Certificates: Accompanying the shop drawings, submit steel producer’s certification of mill analysis, tensile, and bend tests for reinforcing steel.
4. Welder’s certification in conformance with AWS D1.4, when welding is indicated or specified. Testing of welds shall be conducted and witnessed by an independent testing laboratory prior to welding of reinforcement. Maintain qualification and certification records at the job site, readily available for examination of test results.

C. Manufacture's literature, including installation instructions for the following.

1. Supports

1.05 QUALITY ASSURANCE

A. Provide in accordance with the requirements of the Quality Control section and as specified.

B. Do not fabricate reinforcement until shop and placement drawings have been approved by the Engineer.

C. Tolerances:

1. Tolerances shall be as specified in ACI 315R.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver reinforcement to the job site bundled, tagged, and marked. Use metal tags indicating bar size, lengths, and other information corresponding to markings shown on shop drawings.

B. Storage: Store reinforcement at the job site in a manner to prevent damage and accumulation of dirt and excessive rust.

PART 2.00 - PRODUCTS

2.01 MATERIALS

A. Reinforcing bars shall be newly rolled deformed bars conforming to ASTM A615 Grade 60, unless otherwise indicated on the Drawings.

1. Galvanized reinforcement shall meet ASTM A767, Class 1, zinc-coated after fabrication and bending.
2. Bars to be welded shall conform to ASTM A706 deformed, Grade 60.
3. Provide mill bent reinforcing bars, bent cold to the dimensions indicated and conforming to the requirements of ACI SP-66.

B. Welded wire fabric shall conform to ASTM A 1064, with a minimum ultimate tensile strength of 70,000 psi. Provide in sizes indicated. Provide support bars and reinforcing bar supports as specified to obtain the concrete cover.

C. Bar support and accessories shall be galvanized or plastic coated and shall conform to ACI 315. Provide minimum size number 5 support bars.

D. Provide 3-in. by 3-in. plain precast concrete blocks and precast concrete doweled blocks for reinforcing bar supports in foundation mats, base slabs, footings, pile caps, grade beams and slabs on grade. Provide block thickness to produce concrete cover of reinforcement as indicated. Provide blocks of Type II cement with 3000 psi minimum compressive strength in conformance with the Section 03 30 00, Cast-in-Place Concrete.

E. Wire for tying reinforcement in place shall be No. 16 AWG or heavier black soft-annealed wire

2.02 FABRICATION

A. Fabricate reinforcement only after shop drawings have been returned by the Engineer marked "Approved".

B. Provide reinforcing bars that have been cut and bent before shipment. If bars must be bent on site, bend reinforcing steel cold, and do not straighten or rebend in a manner which will damage the material. Bend in conformance with requirements of ACI SP-66 or with ASTM A767 when reinforcement is to be galvanized.

C. Splices:

1. Provide standard reinforcement splices by lapping ends, placing bars in contact, and tightly wire tying for the full length of the splice. All lap splices shall be ACI 318, Class B, unless indicated otherwise on the Drawings.
2. Adjacent splices shall be staggered whenever possible.

PART 3.00 - EXECUTION

3.01 GENERAL

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

3.02 PLACEMENT

A. Comply with the specified standards for details and methods of reinforcement placement and supports, and as herein specified. Comply with concrete protective cover requirement indicated on the Drawings.

B. Clean reinforcement to remove loose rust and mill scale, earth, and other materials that would reduce or destroy bond with concrete.

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

D. Place reinforcement to obtain the specified coverage for concrete protection. Arrange, space, and securely tie bars and bar supports together with 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.

E. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh.

F. Provide supports of sufficient numbers and strengths to carry reinforcement. Do not place reinforcing bars more than 2 inches beyond the last leg of any continuous bar support. Do not use supports as bases for runways for conveying equipment and similar construction loads.

G. Bars may be moved as necessary to avoid interference with other reinforcing steel, conduits or embedded items. Bars moved more than three inches are subject to approval of Engineer. Place required number of bars.

H. Position dowels accurately, rigidly support, and securely tie. Align dowels normal to concrete surface before concrete placement. Setting dowels into wet concrete is prohibited.

I. Provide and place safety caps on all exposed ends of vertical reinforcement.

J. Tie a minimum of 25 percent of all intersecting bars in foundation mats, base slabs, footings, pile caps, slabs on grade and elevated slabs.

K. Do not splice reinforcement steel in foundation mats, base slabs, beams, girders, slabs and walls at points of maximum stress unless otherwise indicated.

L. Lap splice welded wire fabric reinforcement at least one full mesh. Stagger splices to avoid continuous laps in either direction and wire tightly together. Straighten rolled welded wire fabric reinforcement into flat sheets before use.

M. Provide continuous reinforcement through construction joints.

N. After installation and prior to placing concrete, touch-up galvanized reinforcing with damaged or missing coatings. Galvanizing repair paint shall be SSPC-Paint 20; MIL-P-21035B; or engineer-approved equivalent with dry film containing a minimum of 94 percent zinc dust by weight.

END OF SECTION

SECTION 033000
CAST-IN-PLACE CONCRETE

PART 1.00 - GENERAL

1.01 GENERAL PROVISIONS

A. All of the Contract Documents, including General and Supplementary Conditions apply to the Work of this Section.

1.02 SCOPE

A. This Section specifies requirements for furnishing, placement, finishing, curing and protecting of all concrete, plain and reinforced as shown on the Drawings and as specified herein. Review and approval of the Contractor's Working drawings by the Engineer does not relieve the Contractor of the responsibility for the adequacy of Work.

1.03 REFERENCES

A. General: Where the language in any of the documents referred to herein be in the form of a recommendation or suggestion, such recommendations or suggestions shall be deemed to be mandatory for these Specifications.

B. American Concrete Institute (ACI):

1. ACI 117: Standard Tolerances for Concrete Construction and Materials (except as modified in this Specification Section for anchor rod placement).
2. ACI 211.2: Standard Practice for Selecting Proportions for Structural Lightweight Concrete
3. ACI 213: Guide for Structural Lightweight Aggregate Concrete
4. ACI 301: Specifications for Structural Concrete
5. ACI 302: Guide for Concrete Floor and Slab Construction
6. ACI 304R: Guide for Measuring, Mixing, Transporting and Placing Concrete.
7. ACI 305R: Hot Weather Concreting
8. ACI 306: Cold Weather Concreting
9. ACI 308: Standard Practice for Curing Concrete
10. ACI 309R: Guide for Consolidation of Concrete
11. ACI 318: Building Code Requirements for Structural Concrete

C. American Society for Testing and Materials (ASTM):

1. C31 Making and Curing Concrete Compression and Flexural Strength Test-Specimens in the Field
2. C33 Specification for Concrete Aggregates
3. C39 Test Method for Compressive Strength of Cylindrical Concrete Specimens
4. C94 Specifications for Ready Mixed Concrete
5. C127 Standard test method for Density, Relative Density (Specific Gravity) and Absorption of Coarse Aggregate
6. C136 Sieve Analysis of Fine and Coarse Aggregate
7. C138 Unit Weight, Yield, and Air Content of Concrete
8. C143 Test for Slump of Portland Cement Concrete
9. C150 Specification for Portland Cement
10. C171 Sheet Materials for Curing Concrete
11. C172 Sampling Fresh Concrete
12. C173 Standard test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
13. C595 Standard Specifications for Portland Blast Furnace Slag Cement
14. C231 Test for Air Content of Freshly Mixed Concrete by the Pressure Method
15. C260 Specification for Air-Entraining Admixtures for Concrete

16. C309 Specification for Liquid Membrane Forming Compounds for Curing Concrete
17. C330 Specification for Lightweight Aggregates for Structural Concrete
18. C340 Standard Specifications for Portland-Pozzolan Cement
19. C494 Specification for Chemical Admixtures for Concrete
20. C618 Standard Specifications for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
21. C827 "Test Method for Change in Height at Early Ages of Cylindrical Specimens from Cementitious Mixtures
22. C845 Standard Specifications for Expansive Hydraulic Cement
23. C989 Specification for Ground Iron Blast-Furnace Slag for Use in Concrete and Mortars
24. C1017 Standard Specifications for Chemical Admixtures for Use in Producing flowing Concrete
25. C1064 Test Method for Temperature of Freshly Mixed Portland-Cement Concrete
26. C1107 Specification for Packaged Dry, hydraulic Cement Grout (Non-Shrink)
27. C1157 Standard Performance Specifications for Silica Fume in Cementitious Mixtures
28. C1240 Standard Specification for Silica Fume for Use in Hydraulic-Cement Concrete
29. D1751 Specification for Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
30. E154 Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover

D. Federal Specifications (Fed. Spec.):

1. TT-S-00230: Sealing Compound: Elastomeric Type, Single Component (for Caulking, Sealing, and Glazing in Buildings and Other Structures)

1.04 DESIGN REQUIREMENTS

A. Codes: Building concrete shall be in conformance with the requirements of ACI 318, and the Rhode Island State Building Code.

B. Coordinate use of curing compounds with the floor coatings, sealers, and hardeners.

C. Air-entrain all exterior exposed concrete and lightweight concrete.

1.05 SUBMITTALS

A. Product Data: Submit design mix including color additives as applicable. Submit manufacturer's product data with application and installation instructions for proprietary materials and items, including reinforcement and forming accessories, synthetic fibers, admixtures, color additives, patching compounds, waterstops, joint systems, curing compound, and others as requested by the Engineer.

B. Shop Drawings: Submittals included in the Section shall be in accordance with the requirements specified. Submit Working drawings for all Work under this Section to the Engineer for approval. Show location of joints, concrete pouring sequence, schedule dates, rate of placement and methods. All concrete mix designs shall conform to ACI-318, Chapter 5 and as specified. All concrete mix designs and concrete material tests shall be signed and sealed by a Professional Engineer in the State of Rhode Island.

C. Samples: Submit samples of materials as specified, including names, sources and descriptions.

D. Laboratory Test Reports: Submit laboratory test reports for concrete, concrete materials, and mix design tests.

E. Material Certificates: Provide materials certificates in lieu of materials laboratory test reports when permitted. Material certificates shall be signed by manufacturer and Contractor, certifying that each material item complies with, or exceeds, specified requirements.

F. Submit prior to start of Work written reports of each proposed mix for each class of concrete. Do not begin concrete production until mixes have been approved by the Engineer.

G. Batch Ticket Information: Provide concrete delivery tickets showing job name and location, date and time of delivery, quantity of concrete, quality and type of concrete, admixtures, amount of water added, and all other relevant information as described in ASTM C-94. Submit original batch tickets and 2 copies at the end of each week.

1.06 QUALITY ASSURANCE

A. Provide in accordance with the requirements as specified.

B. Concrete Testing Service: The Contractor shall employ and pay an independent testing laboratory to perform material evaluation tests and to design concrete mixes and provide copies of recently made material tests and mix designs.

C. Materials and installed Work may require testing and retesting at any time during progress of Work. Allow free access to material stockpiles and facilities. All tests, including retesting of rejected materials and installed Work, shall be done at Contractor's expense.

D. Workmanship: The Contractor is responsible for correction of corrected Work that does not conform to the specified requirements, including strength, tolerances and finishes. Correct deficient concrete as directed at no additional cost to the Owner.

1.07 DELIVERY, STORAGE AND HANDLING

A. Order concrete from batching plant so that trucks arrive at discharge locations when concrete is required. Avoid excessive mixing of concrete or delays in placing successive layers of concrete in forms.

B. Deliver concrete to discharge locations in watertight agitator or mixer trucks without altering the water-cement ratio, slump, air entrainment, temperature and homogeneity.

C. Concrete not conforming to specification, unsuitable for placement, exceeding the time or temperature limitations or not having a complete delivery batch ticket will be rejected.

1.08 JOB SITE

A. Weather: Protect concrete from damage and reduced strength or performance due to weather extremes during mixing, placing and curing.

B. Cold Weather: Unless special precautions are taken to protect concrete, do not Work when temperatures are below 40°F or when temperatures are expected to fall below 40°F within 72 hours after placing concrete.

1. Comply with ACI 306 in cold weather.
2. Maintain concrete temperature of at least 60°F. Reinforcement, forms and ground in contact with concrete shall be free of frost.
3. Keep concrete and formwork at least 50°F for at least 96 hours after placing concrete.
4. The use of calcium chloride in any form is not permitted. Non-chloride accelerator shall be used when ambient temperature is below 50°F.

5. Admixture manufacturer shall provide technical assistance at no additional cost. A manufacturer's representative shall be available for consultation by phone or on site upon 72-hour notice.

C. Hot Weather: Concrete, when deposited, shall be less than 85°F. Cool the mix in a manner acceptable to the Engineer if the concrete temperature is higher.

1. Comply with ACI 305 in hot weather.
2. Retarder shall be used when ambient temperature exceeds 80°F.

D. Schedule delivery of colored concrete to provide consistent mix times from batching until discharge.

PART 2.00 - PRODUCTS

2.01 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type II for all Work unless otherwise specified. Use one brand of cement throughout project.

B. Fly Ash and Ground Granulated Blast-Furnace Slag: Fly Ash shall conform with ASTM C 618, Type F or C. Ground Granulated Blast-Furnace Slag shall conform with ASTM C 989, Grade 100 or 120. Products used shall be of the same type, brand, and source throughout the Project. Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Fly Ash: 25 percent.
2. Ground Granulated Blast-Furnace Slag: 50 percent.
3. Combined Fly Ash and Ground Granulated Blast-Furnace Slag: 50 percent portland cement minimum, with fly ash not exceeding 25 percent.

C. Normal Weight Aggregates: ASTM C 33, and as herein specified. Use ¾" maximum size for all concrete, except for slabs-on-grade use 1-1/2" maximum. Provide aggregates from a single source for exposed concrete.

D. Lightweight Aggregates: ASTM C 330, ¾" nominal maximum aggregate size.

E. Water: Clean, potable and free from foreign materials such as oils, acids, alkalis, and organic materials in amounts harmful to concrete and embedded steel. Provide water which meets ACI/ASTM requirements for concrete mix water.

F. Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other required admixtures.

1. Products: Subject to compliance with requirements, products which may be incorporated in the Work include the following
   a. "Air-Mix"; Euclid Chemical Co.
   b. "Sika AeA-14"; Sika Corp.
   c. "MasterAir VR 10 or MasterAir AE 90"; Master Builders
   d. "Darex AEA" or "Daravair"; W.R. Grace
   e. Or equal.

G. Water Reducing Admixture: ASTM C 494, Type A, and containing not more than 0.1% chloride ions. Follow manufacturer's recommendations for amount of admixture to be added to the concrete. Admixture shall be compatible with air-entraining admixtures.

1. "WRDA with Hycol"; W. R. Grace.
2. "Eucon WR-75"; Euclid Chemical Co.
3. "Master Pozzolith" Master Builders
4. "Sikament 686"; Sika Chemical Corp.
5. Or equal.

H. High-Range Water Reducing Admixture (SuperPlasticizer): ASTM C 494, Type F or Type G and containing not more than 0.1% chloride ions. Follow manufacturer's recommendations.

1. Products: Subject to compliance with requirements, products which may be incorporated in the Work include the following:
   a. "ADVA CAST 585"; W. R. Grace.
   b. "Super P"; Anti-Hydro.
   c. "Sikament 686"; Sika Chemical Corp.
   d. "Master Rheobuild 1000"; Master Builders.
   e. Or equal.

I. Water Reducing, Non-Chloride Accelerator Admixture: ASTM C 494, Type E or C, and containing not more than 0.1% chloride ions.

1. Products: Subject to compliance with requirements, provide one of the following:
   a. "Accelguard 80"; Euclid Chemical Co.
   b. "MasterSet FP 20"; Master Builders, Inc.
   c. "PolarSet"; Grace Construction Products.
   d. Or equal.

J. Water Reducing, Retarding Admixture: ASTM C 494 Type D, and containing not more than 0.1% chloride ions.

1. Products: Subject to compliance with requirements, products that may be incorporated in the Work include the following:

   a. "MasterPozzolith-80"; Master Builders.
   b. "Eucon Retarder 75"; Euclid Chemical Co.
   c. "Daratard 17"; W. R. Grace.
   d. "Plastiment"; Sika Chemical Co.
   e. Or equal.

K. Prohibited Admixtures: Calcium chloride thyocyanates or admixtures containing more than 0.1% chloride ions are not permitted.

2.02 RELATED MATERIALS

A. Reglets: Where resilient or elastomeric sheet flashing or bituminous membranes are terminated in reglets, provide reglets of not less than 26 gauge galvanized sheet steel. Fill reglet or cover face opening to prevent intrusion of concrete or debris.

B. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz. Per sq. yd., complying with AASHTO M 182, Class 2.

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

1. Waterproof paper.
2. Polyethylene film.
3. Polyethylene-coated burlap.

D. Joint Sealants shall be provided in color to match color of concrete.

E. Liquid Membrane-Forming Curing Compound: Liquid type membrane-forming curing compound complying with ASTM C 309, Type I, Class A. Moisture loss not more than 0.055 gr./sq. cm. when applied at 200 sq. ft./gal.

1. Products: Subject to compliance with requirements, products which may be incorporated in the Work include, but are not limited to, the following:
   a. "MasterKure"; Master Builders.
   b. "A-H 3 Way Sealer WB"; Anti-Hydro Waterproofing Co.
   c. "Kurez DR VOX"; Euclid Chemical Co.
   d. "Clear Seal": A.C. Horn, Inc.
   e. "Sealco 309"; Gifford-Hill/American Admixtures.
   f. "Cure & Seal LV 25% J20UV"; Dayton Superior.

F. Underlayment Compound: Free flowing, self-leveling, pumpable cementitious base compound.

1. Products: Subject to compliance with requirements, products which may be incorporated in the Work include, but are not limited to, the following:
   a. "Ardex K-15"; Ardex Engineered Cements.
   b. "Silflo 230"; Silpro Masonry Systems.
   c. "Ultraplan"; Mapei.

G. Bonding Compound: Polyvinyl acetate or acrylic base.

1. Products: Subject to compliance with requirements, products which may be incorporated in the Work include, but are not limited to, the following:
   a. Acrylic or Styrene Butadiene:
      1) "J-40 Bonding Agent"; Dayton Superior Corp.
      2) "Everbond"; L & M Construction Chemicals.
      3) "Hornweld"; A. C. Horn, Inc.
      4) "Daraweld C"; W. R. Grace.

H. Adjustable inserts: Adjustable inserts shall be hot-dip galvanized in conformance with ASTM A123 and A153. Adjustable insets shall be:

1. Ductile iron wedges inserts, Type F-7 manufactured by Dayton Sure-Grip & Shore Co.
2. Malleable iron peerless wedge inserts, insert as manufactured by Richmond Screw, Anchor Co., Inc.
3. Malleable iron wedge inserts, Type HW as manufactured by Hohmann & Barnard Inc.

I. Vapor barrier shall be Stego Wrap Vapor Barrier (15 mil) or equivalent, in accordance with ASTM E 1745. Use caution to avoid perforations in the vapor barrier material. Install barrier in accordance with ASTM E 1643 and ASTM F 710 guidelines.

2.03 PROPORTIONING AND DESIGN OF MIXES

A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301. If trial batch method is used, use an independent testing facility acceptable to the Engineer 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 for review of design mix for specified strength of concrete within 15 days prior to start of Work. Do not begin concrete production until mixes have been reviewed.

C. Normal weight concrete mixes: Provide normal weight concrete having the following minimum compressive strength at 28 days.

Class 5000 – 3/4" normal weight concrete

The concrete quality, mixing and placing shall conform to ACI-318, Chapter 5.
Design mixes to provide normal weight concrete with the following properties, as indicated:

Minimum Design Compressive Strength	Minimum Strength fc 7 days	Laboratory Testing Age 28 day	Minimum ** Cement Content/cu.yd.	Maximum* W/C Ratio
5,000 (3/4") psi	3,500 psi	5,000 psi	705	0.40

*Maximum: Decrease if possible
**Minimum: Increase as necessary to meet all other stated requirements.

D. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant; at no additional cost to Owner and as accepted by the Engineer. Laboratory test data for revised mix design and strength results must be submitted to and accepted by the Engineer before using in Work.

E. Admixtures:

1. Use water-reducing admixture or high range water reducing admixture (super plasticizer) in all concrete in strict accordance with the manufacturer's printed instructions.
2. Use non-chloride accelerating admixture in concrete slabs placed at ambient temperatures below 50°F in strict accordance with the manufacturer's printed instructions.
3. Use high-range water-reducing admixture in pumped concrete required to be watertight, and concrete with water/cement ratios below 0.40.
4. Use air-entraining admixture in all concrete, unless otherwise indicated. Do not air-entrain interior slabs that utilize normal weight concrete. Lightweight concrete slabs shall be air-entrained. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content as follows:
   a. ¾" aggregate normal weight concrete: 6.0% with a tolerance of ±1%

F. Consistency:

1. The consistency shall be uniformly maintained within the allowable range of slump for the job materials. Ordinarily the slump shall not be less than 1-1/2" inch nor more than 4 inches, unless in the opinion of the Engineer, job conditions warrant exceeding these limits. The consistency shall be determined by the AASHTO Method T-119. This range of slump is to be maintained for all concrete including pumped concrete.
2. Concrete containing HRWR admixture (super-plasticizer): Not more than 7" after addition of HRWR to site-verified 1-1/2" to 4" slump concrete.
3. Ramps, slabs and sloping surfaces: Not more than 3 inches, except lightweight slabs not more than 5 inches.
4. Reinforced foundation systems: Not less than 1-1/2" inch nor more than 4 inches.

2.04 CONCRETE MIXING

A. Ready-Mix Concrete: Comply with requirements of ASTM C 94, and as herein specified. Delete references for allowing additional water to be added to batch for material with insufficient slump. Addition of water to the batch will not be permitted.

1. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C94 may be required. When air temperature is between 85°F (30° C) and 90°F (32° C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90°F (32°C), reduce mixing and delivery time to 60 minutes.
2. During cold weather heat water, sand and cement materials per recommendations of ACI 306.

B. High Early Strength Concrete: Follow manufacture's product specific installation guidelines. Cement shall be added to a pre-measured amount of water that does not exceed the manufacturer's maximum recommended water content. Material can be extended up to 60% using pea gravel.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Batch, mix and deliver Portland cement concrete in conformance with ASTM C 94. Batch all constituents at central batching or mixing plant. Produce concrete in conformance with ACI 301 and as specified.

B. Seasonal Conditions:

1. Conform to ACI 305R and as specified for hot weather concreting. Do not add retarder admixture to any concrete.
2. Conform to ACI 306R and as specified for cold weather concreting. Do not add accelerator admixture to any concrete.

3.02 INSTALLATION OF EMBEDDED ITEMS

A. Set and build into Work, anchorage devices and other embedded items required for other Work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached thereto. Embedded items, including column anchor rods and concrete reinforcement, shall be set prior to the placement of concrete. Embedded items shall not be "wet-set" without prior written approval from the Engineer of Record.

B. Install anchor rods, accurately located, to elevation required and complying with the following tolerances (acceptable deviation from rod locations shown on the Drawings):

1. 3/4" and 7/8" diameter rods: +/- 1/4"
2. 1", 1-1/4", and 1-1/2" diameter rods: +/- 3/8"
3. 1-3/4", 2", and 2-1/2" diameter rods: +/- 1/2"

C. Clean embedded items of oil, ice, dirt and all other foreign items.

D. For embedded pipes, complete all necessary testing requirements prior to placing concrete.

3.03 PLACING CONCRETE

A. General:

1. Concrete formwork shall satisfy the requirements of Section 03 11 00, Concrete Formwork. Do not place concrete until the depth, character and adequacy of forms, falsework, embedments, and the placing of the steel reinforcement have been approved by

the Engineer. The method and manner of placing the concrete shall be such as to avoid segregation of aggregate and displacement of the reinforcement. Troughs, pipes and chutes may be used as aids in placing concrete when necessary. Dropping the concrete a distance of more than five feet, or depositing a large quantity at one point, will not be permitted. Concrete shall be placed upon clean, damp surfaces, free from running water, or upon properly consolidated soil.

2. Do not add water to concrete during delivery, at the Project site, or during placement, unless approved by the Engineer of Record. Amount of water to be added at the project site shall be indicated on the mix design and batch tickets submitted by the contractor. Water shall be added prior to on-site testing of the concrete mix.
3. Before placing concrete, and if agreed upon by the Engineer of Record, water may be added at the Project site, subject to the limitations of ACI 301.
    a. Do not add water to concrete after adding high-range water-reducing admixtures.
4. Retempering of concrete by adding water or any other material shall not be permitted.
5. Concrete placement, finishing and curing, and all other pertinent construction practices shall be in accordance with ACI 117 and ACI 301. In addition to the requirements of ACI 117 and ACI 301, the following shall apply:
    a. Concrete shall be placed so that a uniform appearance of surfaces will be obtained.
    b. Concrete shall be placed and consolidated free of rock pockets, honeycombs, and voids.
    c. Concrete shall be deposited as nearly as practicable in its final position, to avoid segregation due to rehandling or flowing, and shall not be subjected to any procedure that will cause segregation.
    d. Concrete shall be placed and consolidated in walls in approximately 18-inch layers, proceeding at a uniform rate or per the form designer's recommendation.
    e. Subgrade shall be slightly moist when the concrete is placed for floor slabs, to prevent excessive loss of water from the concrete mix.

B. Consolidating:

1. Consolidate concrete with suitable mechanical vibrators operating within concrete. When necessary, vibrating shall be supplemented by hand spading with suitable tools to assure proper and adequate consolidation. Vibrators shall be manipulated so as to Work the concrete thoroughly around the reinforcement and embedded fixtures and into corners and angles of the forms. The vibration at any joint shall be of sufficient duration to accomplish consolidation but shall not be prolonged to the point where segregation occurs.
2. Employ as many vibrators and tampers as necessary to secure the desired results. For every two vibrators required for the job, an additional standby vibrator shall be kept on the site. Do not place subsequent layers of concrete until the previous layer has been consolidated as specified. Internal vibrators shall have a minimum frequency of 8000 vibrations per minute when immersed in concrete and shall have sufficient amplitude to effectively consolidate the concrete.
3. Prevent the following practices:
    a. Pushing of concrete with vibrator.
    b. External vibration of forms.
    c. Allowing vibrator to vibrate against reinforcing steel where steel projects into green concrete.
    d. Allowing vibrator to vibrate against the contact faces of forms.

C. Cold Weather: Do not place concrete when the ambient temperature is below 40°F, unless specifically authorized by the Engineer. Conform to the requirements of ACI 306R during cold weather.

D. Hot Weather: Do not place concrete with a mix temperature exceeding 90°F, unless specifically authorized by the Engineer. Conform to the requirements of ACI 305R during hot weather.

E. Construction Joints:

1. When the placing of concrete is suspended, necessary provisions shall be made for joining future Work before the placed concrete takes its initial set. For the proper bonding of old and new concrete, such provisions shall be made for grooves, steps, keys, dovetails, reinforcing bars or other devices as may be prescribed. Before depositing new concrete against concrete which has hardened, the surface of the hardened concrete shall be cleaned by a heavy steel broom, roughened slightly, wetted, and covered with a neat coating of cement paste or grout. Install joint sealant where shown on the Drawings, in accordance with manufacturer's instructions.
2. Joints shall be perpendicular to the main reinforcement.
3. Construction joints in floors shall be located within the middle third spans of slabs, beams, and girders.

F. Expansion and Control Joints: Expansion and control joints shall be constructed in the locations and to the dimensions and details shown on the Drawings.

G. Defective Work:

1. All defective Work disclosed after the forms have been removed shall be immediately removed and replaced. If dimensions are deficient, or if the surface of the concrete is bulged, uneven, or shows honeycomb, which in the opinion of the Engineer cannot be repaired satisfactorily, the entire Section shall be removed and replaced at no cost to the Owner.
2. Other Work considered to be defective includes, but is not limited to, the following:
   a. Concrete in which defective or inadequate steel reinforcement has been placed.
   b. Concrete incorrectly formed, or not conforming to details and dimensions on the Drawings or with the intent of these documents, or the concrete surfaces of which are out of plumb or level beyond specified tolerances.
   c. Concrete below specified strength.
   d. Concrete containing wood, cloth, or other foreign matter, rock pockets, voids, honeycombs, cracks or cold joints not scheduled or indicated on the Drawings.

3.04 CONCRETE FINISHING

A. Exposed concrete surfaces shall be true, smooth, and free from open or rough spaces, depressions, or projections. The concrete in horizontal plane surfaces shall be brought flush with the finished top surface at the proper elevation and shall be struck off with a straightedge and floated. Mortar finishing will not be permitted, nor shall dry cement or sand-cement mortar be spread over the concrete during the finishing of horizontal plane surfaces.

B. Following placement of concrete for slabs and floors, tamp to force coarse aggregate away from surface, bull float, and steel trowel. Floor areas designated to receive a floor coating shall receive a finish as recommended by the coating manufacturer. Steel trowel finish shall be provided for surfaces that will receive flooring and all exposed floor areas.

C. Overall conformance to design grade shall be within ¾" of design elevation.

D. The following requirements shall govern concrete finishes so indicated on the Drawings.

1. Float Finish: Force coarse aggregate away from surface; float to a smooth and even surface.
2. Trowel Finish:
   a. After floating, begin the first trowel finish operation using a power-driven trowel; begin final troweling when the surface produces a ringing sound as the trowel is moved over the surface.

b. Do not over-trowel or start troweling late.
c. Consolidate the concrete surface by the final hand troweling operation, free from trowel marks, uniform in texture and appearance, and with a surface plane tolerance not exceeding 1/8" in 10'-0" when tested with a 10'-0" straight–edge.

3. Apply nonslip broom finish to exterior concrete as specified, immediately after trowel finishing; roughen the concrete surface by brooming in the direction perpendicular to the main traffic route.
   a. Use a fiber bristle broom.
   b. Frequently clean broom to avoid deep brooming.
4. Finishing Formed Surface:
   a. Rough-Formed Finish: Provide a rough-formed finish on formed concrete surfaces not exposed to view in the finished Work or Concealed by other construction. This is the concrete surface having texture imparted by form-facing material used, with tie holes and defective areas repaired and patched, and fins and other projections exceeding ¼ inch in height rubbed down or chipped off.
   b. Smooth-Formed Finish: Provide a smooth-formed finish on formed concrete surfaces exposed to view or to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, dampprooofing, veneer plaster, painting, or another similar system. This is an as-cast concrete surface obtained with selected form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch defective areas with fins and other projects, completely removed and smoothed.
   c. Smooth-Rubbed Finish: Provide smooth-rubbed finish on scheduled concrete surfaces that have received smooth-formed finish treatment not later than one (1) day after form removal.
      1) Moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
   d. Grout-Cleaned Finish: Provide grout-cleaned finish on scheduled concrete surfaces that have received smooth-formed finish treatment.
      1) Combine one part Portland Cement to one and one-half parts fine sand by volume, and a 50:50 mixture of acrylic or styrene butadiene-based bonding admixture and water to form the consistency of thick paint. Blend standard Portland Cement and white Portland Cement in amounts determined by trial patches so that final color of dry grout will match adjacent surfaces.
      2) Thoroughly wet concrete surfaces, apply grout to coat surfaces, and fill small holes. Remove excess grout by scraping and rubbing with clean burlap. Keep damp by fog spray for at least thirty-six (36) hours after rubbing.
   e. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar uniformed surfaces adjacent to formed surfaces, strike-off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent uniformed surfaces unless otherwise indicated.

E. Monolithic Slab Finishes: Apply finishes as indicated below. Finish surface FF and FL tolerances indicated below shall be considered minimum requirements. Where more stringent tolerances are provided in the specifications or construction documents for floor coverings and coatings or required by the manufacturer/installer of the floor covering or coating, the more stringent tolerance shall govern.

1. Scratch Finish: Apply scratch finish to monolithic slab surfaces to receive concrete floor topping or mortar setting beds for tile, portland cement terrazzo, and other bonded applied cementitious finish flooring material, and where indicated.
   a. After placing slabs, finish surface to tolerances of F(F) 15 (floor flatness) and F(L) 13 (floor levelness) measured according to ASTM E 1155. Slope surfaces uniformly to

drains where required. After leveling, roughen surface before final set with stiff brushes, brooms, or rakes.

2. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as specified; slab surfaces to be covered with membrane or elastic waterproofing, membrane or elastic roofing, or sand-bed terrazzo; and where indicated.
   a. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating, using gloat blades or float shoes only, when surface water has disappeared, or when concrete has stiffened sufficiently to permit operation of power-driven floats or by hand-floating if area is small or inaccessible to power units. Finish surfaces to tolerances of F(F) 18 (floor flatness) and F(L) 15 (floor levelness) measured according to ASTM E 1155. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.
3. Trowel Finish: Apply a trowel finish to monolithic slab surfaces exposed to view and slab surfaces to be covered with resilient flooring, carpet, ceramic or thinset quarry tile, paint, or another thin film-finish coating system.
   a. After floating, begin first trowel-finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-toweling operation, free of trowel marks, uniform in texture and appearance, and finish surfaces to tolerances of F(F) 30 (floor flatness) and F(L) 25 (Floor levelness) measured according to ASTM E 1155. Grind smooth any surface defects that would telegraph through applied floor covering system.
4. Trowel and Fine Broom Finish: Where ceramic or quarry tile is to be installed with thin-set mortar, apply a trowel finish as specified, then immediately flow by slightly scarifying the surface with a fine broom.
5. Non-slip Broom Finish: Apply a non-slip broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
   a. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Engineer before application.
6. Non-slip Aggregate Finish: Apply non-slip aggregate finish to concrete stair treads, platforms, ramps, sloped walks.
   a. After completing float finishing and before starting trowel finish, uniformly spread 25 lbs. Of dampened non-slip aggregate per 100 sq. ft. of surface. Tamp aggregate flush with surface using a steel trowel, but do not force below surface. After broadcasting and tamping, apply trowel finishing as specified.
   b. After curing, lightly work surface with a steel wire brush or an abrasive stone, and water to expose non-slip aggregate.

3.05 CURING AND PROTECTION

A. Initial Curing: All concrete shall be properly cured and protected in accordance with ACI 308. Maintain concrete above 50 degrees F during first seven days after placing. The Work shall be protected from the elements, flowing water, and from defacement of any nature, during construction. The concrete shall be cured as soon as it has sufficiently hardened, by covering with an approved material. Water-absorptive coverings shall be thoroughly saturated when placed, and kept saturated for a period of at least seven days. Curing mats or blankets shall be sufficiently weighted or tied down to keep the concrete surface covered and to prevent the surface from being exposed to air currents. Where wooden forms are used, they shall be kept wet at all time until removed, to prevent the opening of joints and drying out of the concrete. Membrane curing compounds shall be coordinated with the surface to be painted, covered with plaster, covered with sealer, and other surfaces which curing compound would adversely affect subsequent construction.

B. Duration of Curing: The final curing shall continue until the cumulative number of days or fractions thereof, not necessarily consecutive, during which the temperature of the air in contact with the concrete is above 50°F, has totaled 7 days beyond the initial curing period.

1. If high-early strength concrete has been used, the final curing shall continue for a total of 3 days beyond the initial curing period.
2. Rapid drying at the end of the curing period shall be prevented.

C. Formed Surfaces: Steel forms heated by the sun and all wood forms in contact with the concrete during the curing period shall be kept wet.

1. If forms are to be removed during the curing period, one of the specified curing materials or methods shall be employed immediately.
2. Such curing shall be continued for the remainder of the curing period.

3.06 CONCRETE SURFACE REPAIRS

A. General: Any defective Work disclosed after removal of forms shall be immediately removed and replaced. If in the opinion of the Engineer, the surface of the concrete cannot be repaired satisfactorily, the entire Section shall be removed and replaced at no additional expense to the Owner.

B. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to the Engineer.

1. Cut out honeycomb, rock pockets, voids over 1" 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". 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 after bonding compound has dried.

C. For exposed-to-view surfaces, blend white Portland cement and standard Portland cement so that, when dry, patching mortar will match color surrounding. 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.

D. Repair of Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to the satisfaction of the Engineer. Surface defects, as such, include color and texture irregularities, bulges, uneven surfaces, 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.

E. Repair concealed formed surfaces, where possible, that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.

F. Repair of Unformed Surfaces: Test unformed surfaces, such as monolithic labs, for smoothness and verify surface plane to tolerances specified for each surface and finish. Correct low and high areas as herein specified. Test unformed surfaces sloped to drain for trueness of slope, in addition to smoothness using a template having required slope.

G. Repair defective areas, except random cracks and single holes not exceeding 1" diameter, by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts and expose reinforcing steel with at least ¾" clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding compound. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place,

compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

H. Repair isolated random cracks and single holes not over 1" in diameter by dry-pack method. Groove top of cracks and cutout holes to sound concrete and clean of dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Mix dry-pack, consisting of one part Portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing. Place dry pack after bonding compound has dried. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for not less than 72 hours.

I. Perform structural repairs with prior approval of the Engineer for method and procedure, using specified epoxy adhesive and mortar.

J. Repair methods not specified above may be used, subject to acceptance of the Engineer.

3.07 QUALITY CONTROL TESTING DURING CONSTRUCTION

A. A statement of special inspections will be established by the Registered design professional in responsible charge who will prepare a schedule of tests to be carried out by an independent testing agency. All costs for inspection and testing shall be borne by the Owner. Materials and workmanship shall be subjected to inspection and testing in mill, shop, and/or filed by the Registered design professional in responsible charge and/or Testing Agency. Such inspection and testing shall not relieve the Contractor of his responsibility to provide his own inspection, testing, and quality control as necessary to furnish materials and workmanship in accordance with requirements of Contract Documents.

B. The General Contractor shall notify the Registered design professional in responsible charge and the Testing Agency prior to start of any phase of concrete work so as to afford them reasonable opportunity to inspect the work. Such notification shall be made at least 24 hours in advance.

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 day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.
2. Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; one for each day's pour of each type of air-entrained concrete.
3. Concrete Temperature: Test hourly when air temperature is 40°F and when 80°F and above; and each time a set of compression test specimens are required.
4. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
5. Compressive Strength Tests: ASTM C39; one set for each day's pour exceeding 5 cu. yds. plus additional sets for each 50 cu. yds. over and above the first 25 cu. yds. of each concrete class placed in any one day; one specimen tested at 7 days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required.
   a. When frequency of testing will provide less than 5 strength tests for a given class of concrete, conduct testing from at least 5 randomly selected batches if fewer than 5 are used.
   b. When total quantity of a given class of concrete is less than 50 cu. yds, strength test may be waived by the Engineer if, in his judgment, adequate evidence of satisfactory strength is provided.
   c. 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.

d. Strength level of concrete will be considered satisfactory if both of the following requirements are met:
   1) Every arithmetic average of any three consecutive strength tests equals or exceeds the specified 28-day compressive strength (f'c).
   2) No individual strength test results falls below the specified 28-day compressive strength (f'c) by more than 500 psi when f'c is 5000 psi or less; or by more than 0.1 x f'c when f'c is greater than 5000 psi.

D. Test results will be reported in writing to the Engineer 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 and 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 both 7-day tests and 28-day tests.

E. Nondestructive 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 Contractor's Independent testing service shall 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 the Engineer. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42, or by other methods as directed.

END OF SECTION

SECTION 033500
CONCRETE FINISHING

PART 1.00 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Single application cure-seal-hardener for new concrete floors.
2. Precautions for avoiding staining concrete before and after application.

B. Related Section:

1. Cast-In-Place Concrete: Division 03 Cast-In-Place Concrete sections.

1.02 REFERENCES

A. ASTM International (ASTM):

1. ASTM C39: Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
2. ASTM C779: Standard Test Method for Abrasion Resistance of Horizontal Concrete Surfaces.
3. ASTM C805: Standard Test Method for Rebound Number of Hardened Concrete.
4. ASTM C1028: Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method.
5. ASTM D3359: Standard Test Methods for Measuring Adhesion by Tape Test.
6. ASTM G152: Practice for Operating Light-Exposure Apparatus (Carbon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials (Withdrawn 2000).

1.03 SUBMITTALS

A. General: Submit listed submittals in accordance with Conditions of the Contract and Section 01 10 00 – GENERAL REQUIREMENTS.

B. Product Data: Submit product data, including manufacturer’s data sheet, installation instructions and technical bulletins for specified products.

C. Certificates: Manufacturer’s certification that the installer is acceptable.

D. Maintenance Data: Maintenance instructions, including precautions for avoiding staining after application.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: Acceptable to the manufacturer.

B. Regulatory Requirements: All applicable federal, state, and municipal regulations shall be followed.

1.05 DELIVERY, STORAGE & HANDLING

A. General: Comply with Division 01 Product Requirements section.

B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

C. Storage and Protection: Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.

D. Handling: Protect materials from dirt, corrosion, oil, grease and other contaminants.

PART 2.00 - PRODUCTS

2.01 MATERIAL

A. Manufacturer:

1. Curecrete Distribution, Inc. Contact: 1203 W. Spring Creek Place, Springville, UT 84663-0551; Telephone: (800) 998-5664, (801) 489-5663; Fax: (801) 489-3307; website: www.ashfordformula.com.
2. Approved equivalent.

B. Basis of Design Cure-Seal-Hardener: Ashford Formula, a water-based chemically reactive penetrating sealer and hardener that seals.

1. Abrasion Resistance to Revolving Disks: At least a 32.5% improvement over untreated samples when tested in accordance with ASTM C779.
2. Surface Adhesion: At least a 22% increase in adhesion for epoxy when tested in accordance with ASTM D3359.
3. Hardening: As follows when tested in accordance with ASTM C39:
   a. After 7 Days: An increase of at least 40% over untreated samples.
   b. After 28 Days: An increase of at least 38% over untreated samples.
4. Coefficient of Friction: 0.86 dry, 0.69 wet when tested in accordance with ASTM C1028.
5. Rebound Number: An increase of at least 13.3% over untreated samples when tested in accordance with ASTM C805.
6. Light Exposure Degradation: No evidence of adverse effects on treated samples when tested in accordance with ASTM G152.

2.02 PRODUCT SUBSTITUTIONS

A. Substitutions: Substitutions in accordance with Section 01 10 00 – GENERAL REQUIREMENTS and Section 01 62 00 SUBSTITUTION REQUEST FORM.

PART 3.00 - EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions for installation.

3.02 EXAMINATION

A. Do not begin installation until substrates have been properly prepared and are suitable for application of product.

B. If substrate preparation is the responsibility of another installer, notify Engineer of unsatisfactory preparation before proceeding.

3.03 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Do not use frozen material. Thaw and agitate prior to use.

D. If construction equipment must be used for application, diaper all components that might drip oil, hydraulic fluid or other liquids.

3.04 INSTALLATION.

A. All work must be performed by an applicator certified by the manufacturer. Certification credentials are required.

B. New Concrete: Apply cure-seal-hardener to new concrete as soon as the concrete is firm enough to work on after troweling; with colored concrete, wait a minimum of 30 days before application.

1. Spray on at rate of 200 ft^2/gal (5 m^2/L).
2. Keep surface wet with cure-seal-hardener for a minimum soak-in period of 30 minutes without allowing it to dry out or become slippery. In hot weather, slipperiness may appear before the 30 minute time period has elapsed. If that occurs, apply additional cure-seal-hardener as needed to keep the entire surface in a non-slippery state for the first 15 minutes. For the remaining 15 minutes, mist the surface as needed with water to keep the material in a non-slippery state. In hot weather conditions, follow manufacturer’s special application procedures.
3. When the treated surface becomes slippery after this period, lightly mist with water until slipperiness disappears.
4. Wait for surface to become slippery again, and then flush entire surface with water to remove all cure-seal-hardener residue.
5. Squeegee surface completely dry, flushing any remaining slippery areas until no residue remains.
6. Wet vacuum or scrubbing machines can be used in accordance with manufacturer’s instructions to remove residue.

3.05 PROTECTION

A. Protect installed floors for at least 3 months until chemical reaction process is complete.

1. Do not allow traffic on floors for 3 hours after application.
2. Do not allow parking of vehicles on concrete slab.
3. If vehicles must be temporarily parked on slab, place drop cloths under vehicles during entire time parked.

4. Do not allow pipe cutting using pipe cutting machinery on concrete slab.
5. Do not allow temporary placement and storage of steel members on concrete slabs.
6. Clean up spills immediately and spot-treat stains with degreaser or oil emulsifier.
7. Clean floor regularly in accordance with manufacturer's recommendations.

END OF SECTION

SECTION 036000
GROUTING

PART 1.00 - GENERAL

1.01 GENERAL PROVISIONS

A. All of the Contract Documents, including General and Supplementary Conditions apply to the Work of this Section.

1.02 SCOPE

A. This Section specifies the furnishing and installing non-shrink grout for pump, motor, and equipment base plates or bedplates; column base plates and miscellaneous base plates; and other uses of non-shrink grout as indicated on the Drawings. Unless otherwise specified, all grouting shall be done with non-shrinking grout.

B. This section also specifies furnishing and installing two-component epoxy-based adhesive anchoring systems for anchor bolts, threaded rod anchors, and reinforcing bars to be installed in hardened concrete and masonry.

1.03 SUBMITTALS

A. Submit Certificate of Compliance of products with these specifications.

B. Submit the following in accordance with the requirements as specified in Section 01 33 00, SUBMITTAL PROCEDURES.

1. Manufacturer’s printed data and literature for all specified materials and locations where materials are to be used.

2. Manufacturer’s installation/application instructions.

1.04 QUALITY ASSURANCE

A. Provide in accordance with the requirements as specified in Section 01 45 00, QUALITY CONTROL.

B. Ensure surfaces to be grouted are clean and sound and are not feathered at edges.

C. Handle grout as concrete with regard to temperature and curing as specified in Section 03 30 00, Cast-in-Place Concrete.

D. Observe safety precautions as outlined in the manufacturer’s literature and as printed on containers and labels.

PART 2.00 - PRODUCTS

2.01 NON-SHRINK CEMENT

A. Provide non-shrink, non-metallic cement-based grout requiring only addition of water with a minimum 28-day compressive strength of 8,000 psi.

B. Provide shrinkage and compensation characteristics in both the plastic and hardened states, conforming to ASTM C-1107, Grade C.

C. Grout shall exhibit small but predictable amount of expansion sufficient to counteract the normal shrinkage of cement.

D. The expansion shall occur after initial set to ensure maximum contact between grout and base plates, beams, concrete, masonry, or other surfaces.

E. Manufactured by:

1. "Five Star Grout" by Five Star Products Inc.
2. "Sika Grout 212" as manufactured by Sika Corporation.
3. "Masterflow 928" by Master Builders, Inc.
4. Or approved equal.

2.02 EPOXY ADHESIVE FOR REINFORCING BARS AND THREADED ROD ANCHORS

A. Epoxy adhesive shall be a multi-purpose 2 component, 100% solids, moisture tolerant structural epoxy-based adhesive.

B. Manufactured by:

1. "HIT-HY 200" (concrete) and "HIT-HY 270" (masonry) by Hilti, Inc.
2. "SET-3G" by Simpson Strong-Tie Company, Inc.
3. Or approved equal.

PART 3.00 - EXECUTION

3.01 NON-SHRINKING GROUT

A. Non-shrinking grout shall be furnished factory premixed so that only water is added at the jobsite. Grout shall be mixed in a mechanical mixer. No more water shall be used than is necessary to produce a flowable grout.

B. Preparation

1. The concrete or masonry surfaces to receive non-shrinking grout shall be saturated with water for at least 12 hours preceding grouting unless additional time is required by the grout manufacturer. Remove all standing water or puddles prior to application of grout.
2. Remove dust, laitance, grease, curing compounds, impregnations, waxes, foreign particles and disintegrated materials by mechanical abrasion methods such as sandblasting. Sandblast structural and reinforcing steel to remove loose material and expose sound metal.
3. Construct appropriate sturdy forms to contain grout at the fluidity level at which it will be used.

C. Placement

1. Unless otherwise specified or indicated on the drawings, grout under base plates shall be ¾-inches thick.
2. Grout shall be placed in strict accordance with the directions of the manufacturer so that all spaces and cavities below the top of base plates and bedplates are completely filled, without voids.
3. Forms shall be provided where structural components of base plates or bedplates will not confine the grout.
4. Place grout only from one side of base plates to avoid entrapping air. Provide adequate air vent holes in large base plates. Work or flow into place, filling all cavities.
5. Reinforce grout pads or applications three inches or more in thickness with wire mesh or reinforcement bars.
6. Excessive means of vibration may cause segregation of aggregates and will not be permitted.

D. Edge Finishing

1. In all locations where the edge of the grout will be exposed to view, the grout shall be finished smooth after it has reached its initial set. Except where shown to be finished on a slope, the edges of grout shall be cut off flush at the base plates, bedplates, members, or pieces of equipment.

E. Curing

1. Nonshrinking grout shall be protected against rapid loss of moisture by covering with wet cloths or polyethylene sheets. After edge finishing is completed, the grout shall be wet cured for at least 3 days and then an acceptable membrane-curing compound shall be applied.

3.02 EPOXY ADHESIVE

A. Epoxy adhesive shall consist of a two-component liquid epoxy adhesive of viscosity appropriate to the location and application, and an inert aggregate filler component, if recommended by the adhesive manufacturer. Components shall be packaged separately at the factory and shall be mixed immediately before use. Proportioning and mixing of the components shall be done in accordance with the manufacturer's printed instructions and recommendations.

B. Preparation

1. Where indicated on the drawings, anchor bolts, threaded rod anchors, and reinforcing bars shall be anchored in holes drilled into hardened concrete and masonry using epoxy adhesive. Diameters of holes shall be in accordance with the Manufacturer's Printed Installation Instructions (MPII) included with each adhesive package.
2. The embedment depth for anchor bolts, threaded rod anchors, and reinforcing bars shall be as indicated on the Drawings.
3. Holes shall be prepared and cleaned in accordance with the Manufacturer's Printed Installation Instructions (MPII) included with each adhesive package.

C. Installation

1. Anchor bolts, threaded rod anchors, and reinforcing bars shall be clean, dry, and free of grease and other foreign matter when installed.
2. The bolts, rods, and bars shall be set and positioned and the adhesive shall be placed and finished in accordance with the recommendations of the manufacturer.
3. Care shall be taken to ensure that all spaces and cavities are filled with adhesive, without voids.
4. During assembly of all threaded stainless steel components, anti-seize thread lubricant shall be liberally applied to the threaded portion not embedded in concrete.

END OF SECTION

SECTION 051200
STRUCTURAL STEEL FRAMING

PART 1.00 - GENERAL

1.01 GENERAL PROVISIONS

A. All of the Contract Documents, including General and Supplementary Conditions apply to the Work of this Section.

1.02 SCOPE

A. Provide structural steel and related appurtenances as indicated and specified. The term "Structural Steel" is used as defined in accordance with the AISC Code of Standard Practice. For steel decking systems, refer to the steel decking specification.

1.03 REFERENCES

A. American Institute of Steel Construction AISC:

1. Specification for Structural Steel Buildings
2. AISC Manual of Steel Construction, Allowable Strength Design.
3. AISC Code of Standard Practice for Steel Buildings and Bridges
4. AISC Specification for Structural Joints using High Strength Bolts approved by the Research Council on Structural Connections.
5. AISC Structural Steel Detailing Manual

B. American Welding Society AWS.

1. AWS D1.1: Structural Welding Code - Steel

C. Steel Structures Painting Council (SSPC) Surface Preparation Specifications

D. American Society for Testing and Materials (ASTM) Publications:

1.	A 6/A 6M:	Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling.
2.	A 36/A36M:	Specification for Carbon Structural Steel.
3.	A 194/A 194M:	Specification for Carbon and Alloy-Steel Nuts for Bolts for High-Pressure and High-Temperature Service
4.	A 307:	Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
5.	F3125:	Specification for High Strength Structural Bolts, Steel Heat Treated, 120/150 ksi Minimum Tensile Strength
6.	A 449:	Specification for Quenched and Tempered Steel Bolts and Studs
7.	A 563:	Specification for Carbon and Alloy Steel Nuts
8.	F 436:	Specification for Hardened Steel Washers

1.04 DESIGN REQUIREMENTS

A. Structural Performance: Engineer structural steel connections required by the Contract Documents to be selected or completed by the fabricator to withstand design loadings indicated. Engineering Responsibility: Engage a fabricator who utilizes a qualified professional engineer registered in the State of Rhode Island to prepare calculations, Shop Drawings, and other structural data for structural steel connections. Calculations shall be sealed by a professional engineer registered in the state of the project's location.

B. In accordance with the Code of Standard Practice, the Engineer in Responsible Charge of designing connections shall review and confirm in writing that the shop and erection drawings properly incorporate the connection designs, and the Fabricator shall provide a clear means by which the connection information is referenced to the related connections on the shop and erection drawings.

1.05 SUBMITTALS

A. Submit the following shop drawings:

1. Manufacturer's Literature: Provide manufacturer's literature describing standard items.
2. Shop drawings prepared under the supervision of a licensed Structural Engineer registered in Rhode Island, showing materials, sizes, finishes, locations, attached hardware and fittings, designs of connections not specifically shown on the drawings, and details for manufactured items and fabricated metalwork, including field erection details showing cuts, copes, connections, holes, thread fasteners and welds. Indicate welds, both shop and field, by symbols conforming to AWS standards. Indicate coatings or other protection against corrosion.
3. Setting diagrams, erection plans, templates, and directions for installation of backing plates, anchors, and other similar items.
4. Material compliance certification with standards designated.
5. Samples of materials proposed for use.
6. Test reports conducted on shop and field bolted and welded connections. Include data on type(s) of tests conducted and test results.
7. Certified copy of each survey conducted by a licensed Land Surveyor showing elevations and locations of base plates and anchor bolts to receive structural steel and final elevations and locations of major structural elements. Indicate discrepancies between actual installation and contract drawings.
8. Mill Certificates: Provide certificates signed by manufacturers certifying compliance of materials with standards designated.
9. Welding Certificates: Submit copies of certificates for welding personnel and procedure for each type of weld prior to welding.
10. The Contractor shall maintain records of test results of welding procedures and records of welders employed, date of qualification, and identification symbol or mark. Such records shall be available for examination by the Structural Engineer of Record and testing agency or submit certified copies.

1.06 QUALITY ASSURANCE

A. Tolerances:

1. Maintain tolerances conforming to AISC Code of Standard Practice.
2. Permissible variation tolerances conforming to ASTM A 6.

B. Tension Calibrator:

1. Employ an independent testing laboratory to calibrate and confirm the accuracy of the tension-measuring device when slip-critical connections and connections subject to direct tension are being used.
2. The calibrating device for setting calibrated torque wrenches shall be checked for accuracy by quality personnel not more than 30 days prior to its first use on the project, and at intervals not more than six months thereafter.
3. If the Engineer has reason to question the accuracy of the calibrating device, he may require that it be returned to the manufacturer for certification of its accuracy.

4. Provide tension calibrator measuring device at the job site when high-strength bolts in slip-critical connections and connections subject to direct tension are being installed and tightened.
5. Frequency and number of confirmation tests to be performed and the test procedure to be employed to conform to the AISC/RCSC Specification for Structural Joints using High Strength Bolts.
6. Return tension calibrator measuring device to the independent laboratory for certification if the Engineer questions its accuracy.
7. Use the tension calibrator-measuring device to tighten high-strength bolts in slip-critical connections and connections subject to direct tension in conformance with Table 051200-1 (Section 8 AISC/RCSC Specification for Structural Joints using High Strength Bolts).

Table 051200-1.
Fastener Tension Required for Slip-Critical Connections and Connections Subject to Direct Tension

	Minimum Tension	
Nominal Bolt Size (inches)	Grade A325 Bolts (kips)	Grade A490 Bolts (kips)
½	12	15
5/8	19	24
¾	28	35
7/8	39	49
1	51	64
1 1/8	56	80
1 ¼	71	102
1 3/8	85	121
1 ½	103	148

C. Fabricator Qualifications:

1. Engage a firm experienced in fabricating structural steel similar to that indicated for this project and with a record of successful in-service performance, as well as, sufficient production capacity to fabricate structural steel without delaying the work.
2. Fabricator must participate in the AISC Quality Certification Program and be designated an AISC-Certified Plant as follows:
   a. Category: Standard for Steel Building Structures (STD).
   b. Fabricator shall be registered with and approved by authorities having jurisdiction.

D. Welding Qualification and Certification

1. Furnish written welding procedure for all welds in conformance with AWS Structural Welding Code.
2. Each welder, tacker and welding operator shall be certified by test within the past six months to perform type of work required in conformance with AWS Structural Welding Code. Testing shall be conducted and witnessed by an independent testing laboratory.
3. Maintain duplicate qualification and certifications records at the job site readily available for examination.

E. Test and Inspection

1. Inspection, Testing and Quality Control: A statement of special inspections will be established by the registered design professional in responsible charge who will prepare a schedule of tests to be carried out by an independent testing agency. All costs for inspection and testing shall be borne by the Owner.

2. The materials and workmanship to be finished under this Section shall be subject to inspection and testing in the mill, shop, and field by the Registered design professional in responsible charge and/or Testing Agency. Such inspection and testing shall not relieve the contractor of his responsibility to perform his own inspection and quality control and to furnish materials and workmanship in accordance with the requirements of the contract documents.
3. The Contractor and Testing Agency shall examine the contract documents and become thoroughly acquainted with detailed inspection and testing requirements as outlined by the Registered design professional in responsible charge.
4. The Contractor shall cooperate with and facilitate inspection and testing by the Registered design professional in responsible charge and/or Testing Agency. The Contractor shall, at his own expense, furnish the registered design professional in responsible charge and/or the Testing Agency upon request, with the following:
   a. A complete set of reviewed erection drawings, detailed shop drawings, schedules, and corrective work procedures at the fabricating shop or shops in the field.
   b. Cutting list, order lists, material bills, and shipping lists.
   c. Information as to time and place of all rollings and shipment of material to shops.
   d. Representative sample pieces requested for testing.
   e. Assistance for testing materials and proper facilities for inspection of the work, in the mill, shop, and field.
5. The Testing Agency shall inspect and test, as required by the registered design professional in responsible charge, all welded and bolted work.
   a. Shop-Bolted Connections: Inspect or test in accordance with AISC Specifications.
   b. Shop Welding: Inspect and test during fabrication of structural steel assembled, as follows:
      1) Certify welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.
      2) Perform visual inspections of all welds.
      3) Perform test welds as follows. Inspection procedures listed are to be used at Contractor's option.
         a) Liquid Penetrate Inspection: ASTM E 165
         b) Magnetic particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not acceptable.
         c) Radiographic Inspection: ASTM E94; minimum qualify level "2-2T."
         d) Ultrasonic Inspection ASTM E 164.
6. Weldments and bolted connections that are required by the registered design professional in responsible charge and/or the Testing Agency to be corrected shall be corrected without delay at the Contractor's expense and to the satisfaction of the registered design professional in responsible charge of the Testing Agency shall require drawings showing proposed corrective work to be submitted for review.
7. Any material or workmanship which is rejected by the registered design professional in responsible charge and/or the Testing Agency either in the mill, shop, or field shall be replaced promptly by the Contractor to the satisfaction of the registered design professional in responsible charge and/or the Testing Agency.
8. The fact that steel work has been accepted at the shop shall not prevent its final rejection at the job site, even after it has been erected, if found to be defective in any way.

1.07 DELIVERY, STORAGE AND HANDLING

A. Provide in accordance with the general equipment stipulations section and as specified herein.

B. The General Contractor, Sub-Contractors, and suppliers are all individually to furnish their own staging, scaffolding, and hoisting equipment necessary to get workers, materials, and equipment

from the point of delivery at the project site to the point of use or installation within the building and project site. All crane and rigging services are the responsibility of each individual trade.

C. Identify and match-mark, materials, items and fabrications, for installation and field assembly.

D. Deliver items to job site as complete units, wherever practicable, ready for installation or erection, with anchors, hangers, fasteners and miscellaneous metal items required for installation. Items shall be delivered at such intervals to ensure uninterrupted progress of work.

E. Carefully handle and store materials, protected from weather, high heat, rusting corrosion and other damage.

F. Store material off the ground using pallets, platforms, or other useable supports with webs of flanged shapes vertical. Materials shall be stored to allow easy access for inspection and identification. Cover and protect steel from erosion and deterioration from snow, rain, and ground splatter.

G. Ship small parts, such as rivets, bolts, nuts, washers, pins, fillers, and small connecting plates and anchors, in boxes crates, or barrels. Pack separately each length and diameter of bolt and each size of nut and washer. Plainly mark and itemized list and description of the contents on the outside of each container. If bolts and nuts become dry and rusty, clean and relubricate before use.

PART 2.00 - PRODUCTS

2.01 STRUCTURAL STEEL

A. Structural Steel Shapes:

1. High-Strength, Low-Alloy Steel: ASTM A 992 (ASTM A992M), Grade 50.

B. Miscellaneous Plates and Bars:

1. Carbon Steel: ASTM A 36 (ASTM A36M).

C. Cold-Formed Steel Tubing: ASTM A500, Grade B.

1. Items to be galvanized shall be hot-dip galvanized after fabrication in accordance with ASTM A123 or ASTM A153 as applicable.

2.02 FASTENERS

A. Carbon Steel Bolts, Nuts and Washers: ASTM A 307, Grade A.

B. High-Strength Carbon Steel Bolts, Nuts and Washers: ASTM F3125, Grade A325, Type 1.

C. Hot-Dipped Galvanized Bolts, Nuts, and Washers in conformance with ASTM A 153 and A 385.

1. High-strength carbon steel bolts, Type 1.
2. Grade DH, ASTM A 563 or Grade 2H, ASTM A 194 nuts.
3. Hardened washers in conformance with ASTM F 436.
4. Bees wax lubrication for threaded parts of bolts and nuts.
5. Purchase bolts, nuts and washers from a single supplier.

D. Do not use high-strength tension control bolts when bolts are galvanized.

2.03 WELDING

A. Class E70XX electrodes.

B. Provide equipment for welding, electrodes, welding wire and fluxes capable of producing indicated welds when used by certified welders under AWS welding procedures. Provide welding materials that comply with requirements of AWS Structural Welding Code.

2.04 PRIMERS

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' recommendations to ensure that shop primers and topcoats are compatible with one another. GC shall submit certification demonstrating compatibility.

B. Primer: Comply with Division 9 painting Sections. Apply in accordance with manufacturer's written instructions and recommendations.

2.05 GALVANIZING REPAIR PAINT

A. Galvanizing Repair Paint: SSPC-Paint 20 or MIL-P-21035B, with dry film containing a minimum of 94 percent zinc dust by weight.

PART 3.00 - EXECUTION

3.01 FABRICATION

A. Fabricate each element and connection as indicated on the fabrication shop drawings approved by the Engineer. Fabricate and shop assemble work to the greatest extent practical in conformance with the following publications:

1. AISC Manual
2. AISC Specification for Structural Joints
3. AISC Detailing Manual
4. AWS Structural Welding Code

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

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

D. Ensure that shearing, manual flame cutting with mechanically guided torch and chipping will not induce residual stress in metal being cut the Radii of re-entrant corners shall not be less than ¾ inch and perform flame cutting so that metal being cut is not carrying stress. Finish exposed edges.

E. Fabricate bearing stiffeners and stiffeners intended as supports for concentrated loads as indicated. Mill or grind bearing surfaces at stiffener ends.

F. Ensure full cross section bearing on milled ends of columns, crane rails, monorails and bearing stiffeners.

G. Connections: Weld or bolt shop connections, as indicated. Bolt field connections, except where welded connections or other connections are indicated.

1. Provide high strength threaded fasteners for principal bolted connections, except where unfinished bolts are indicated.
2. Provide unfinished threaded fasteners for only bolted connections of secondary framing members to primary members (including purlins, girts, and other framing members taking only nominal stresses) and for temporary bracing to facilitate erection.

H. Connect all members with ASTM F3125 Grade A325 high strength bolts unless otherwise indicated or specified. Install in accordance with AISC/RCSC "Specification for Structural Joints using High Strength Bolts". Provide holes without torn or ragged edges and remove all outside burrs.

I. Welded Connections:

1. Connections indicated or specified shall be welded in accordance with AWS D1.1.
2. Provide complete weather seal weldments made with 1/16-inch minimum continuous fillets to all members having Type S and E service and to all welded connections that will be galvanized.

J. Weld or bolt shop connections in conformance with specified AWS Structural Welding Code and AISC publications.

K. Provide ASTM A 36 anchor bolts with washer and heavy hex nuts. Provide hot-dip galvanized anchor bolts, washers and heavy hex nuts with galvanized steel.

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

M. Provide threaded nuts welded to framing and other specialty items as indicated to receive other work.

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

O. Corrective Work: Structural steel members or assemblages having fabrication errors, which exceed permissible tolerances, shall be corrected only if permitted by the SER. All corrective work shall be in accordance with AISC and AWS requirements. When requested by the SER or Testing Agency, the Contractor shall submit to the SER for approval, drawings showing details of proposed corrective work and shall receive approved drawing prior to performing the corrective work. All corrective work shall be solely at the Contractor's expense.

3.02 ERECTION

A. Survey: GC shall employ a licensed Land Surveyor for accurate erection of structural steel. Check elevations of concrete and masonry bearing surfaces, and locations of anchor bolts and similar devices, before erection work proceed. Report any discrepancies to the Engineer and do not proceed with erection until corrections have been made or until adjustments to the structural steel work has been agreed upon by the Engineer.

B. Prior to setting column bases and bearing plates, clean concrete and masonry bearing surfaces of bond-reducing materials and roughen to improve bond to surfaces. Clean bottom surface of base and bearing plates. Align column bases and bearing plates for beams and similar structural members with steel wedges or shims. Tighten anchor bolts after alignment and positioning members and fill entire area under bearing plates with non-shrink, non-metallic grout in accordance with grout section. Do not remove steel wedges or shims but if protruding, cut off flush with edge of base or bearing plate prior to grounding voids solids.

C. Provide anchor bolts and anchors with templates for correct placement into concrete, masonry or other supporting materials.

D. Hold steelwork securely in place with temporary bracing and stays to resist all vertical and lateral loads, until members are permanently fastened and floors and roofs completed. Provide temporary guy lines to achieve proper alignment of structures as erection proceeds. Provide temporary planking or working platforms as necessary to effectively complete the work.

E. Use only calibrated wrenches for tensioning high-strength bolts for slip-critical joints and connections subjected to direct tension.

F. Inspect and torque test field-assembled bolted construction in conformance with AISC Specification for Structural Joints.

G. High-strength tension control bolting may be substituted for calibrated wrench bolting of slip-critical joints and connections subject to direct tension. Do not use high-strength tension control bolts when bolts are galvanized.

H. Set structural frames accurately to lines and elevations indicated. Align and adjust members forming parts of a complete assembly before permanent fastening. Clean bearing surfaces and other surfaces that will be in permanent contact before assembly. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

I. Fasten splices (only where indicated and accepted on shop drawings) of compression members and members having milled ends after the abutting surfaces have been brought completely into contact.

J. Report errors in shop fabrication or deformation resulting from handling or transpiration immediately to Engineer. Replace and remove from job site incorrect fabricated or deformed material at no additional cost to the Owner.

K. Perform temporary bracing and bolting of work to support construction live load and combined dead, wind, earthquake and erection loads as erection progresses. Comply with AISC Specifications for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds. Leave bracing in place as long as necessary to provide safety.

L. Ensure that holes are not enlarged and that metal in vicinity of holes is not damaged by drift pins during assembly.

M. Enlarge holes to admit bolts for connections only if approved in writing by the Engineer. Make enlargements only by drilling, avoid burning or hand reaming. Refinish enlarged holes with paint to match the shop coat. Use specific galvanize touch-up for galvanized members.

N. Flame cut bolt holes are not permitted.

O. Where erection bolts are abandoned in place, remove bolts, completely plug weld holes, grind smooth with adjacent surfaces and paint to match shop coat.

3.03 HIGH STRENGTH BOLTING

A. Provide workmanship and techniques for bolted construction in conformance with requirements of AISC/RCSC “Specifications for Structural Joints using High Strength Bolts” and as indicated or specified.

B. Install ASTM F3125 Grade A325 bolts with hardened washer under element being turned in tightening. Install plate washers in both outer plies when using oversize and slotted holes. Install galvanized washer under bolt head and nut when using galvanized bolts.

C. Do not reuse high-strength bolts, nuts and washers.

3.04 WELDING

A. Provide workmanship and techniques for welded construction to conform to requirements of AWS Structural Welding Code and as indicated or specified.

B. No field welding permitted unless indicated on Engineer approved fabrication shop drawings.

C. No field welding permitted on galvanized steel.

3.05 REPAIRS AND PROTECTION

A. Touchup Painting: Immediately after erection, clean exposed areas where primer is damaged or missing and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.

B. Touchup Painting: Cleaning and touchup painting are specified in Division 09 painting Sections. Use specific galvanize touch-up for galvanized members.

END OF SECTION

Appendix A

Appendix A

ANTI-KICKBACK ACKNOWLEDGMENT

ALL BIDDERS/OFFERORS MUST ATTEST TO THE FOLLOWING:

The vendor acknowledges, under the pains and penalties of perjury, that he/she has not been offered, paid, or solicited for any contribution or compensation, nor has he/she been granted a gift, gratuity, or other consideration, either directly or indirectly by any officer, employee or member of the Cumberland Fire District who exercises any functions or responsibilities in connection with either the award or execution of the project to which this contract pertains.

Further, the vendor acknowledges, under the pains and penalties of perjury, that he/she has not offered, paid, or solicited by way of any contribution or compensation, nor has he/she granted a gift, gratuity or other consideration either directly or indirectly to any officer, employee, or member of the of the Cumberland Fire District who exercises any functions or responsibilities in connection with either the award or execution of the project to which this project or contract pertains.

Signature of Officer	Date
Title	Company
Title of RFP	

ORIGINAL: OCTOBER 2018 *REVISED: N/A*

Appendix B

CUMBERLAND FIRE DISTRICT

GENERAL TERMS AND CONDITIONS OF PURCHASE

The Cumberland Fire District's Finance Office may, from time to time, make amendments to the General Terms and Conditions when the Cumberland Fire District's Finance Director determines that such amendments are in the best interest of the Cumberland Fire District. Amendments shall be made available for public inspection located in the Cumberland Hill Fire Station and online at https://www.ridop.ri.gov but shall not require formal public notice and hearing. Copies of the Terms and Conditions shall be provided to any individual or firm requesting them.

CUMBERLAND FIRE DISTRICT'S PURCHASING OFFICE GENERAL CONDITIONS OF PURCHASE

All Cumberland Fire District purchase orders, contracts, solicitations, delivery orders and service requests shall incorporate and be subject to the provisions of Rhode Island General Laws 8-15-4 and the Cumberland Fire District purchasing rules and regulations adopted pursuant thereto, all other applicable provisions of the Rhode Island General Laws, specific requirements described in the Request or Contract, and the following General Conditions of Purchase:

1. GENERAL

All purchase orders, contracts, solicitations, delivery orders, and service requests are for specified goods and services, in accordance with express terms and conditions of purchase, as defined herein. For the purposes of this document, the terms "bidder" and "contractor" refer to any individual, firm, corporation, or other entity presenting a proposal indicating a desire to enter into contracts with the Cumberland Fire District, or with whom a contract is executed by the Cumberland Fire District's Finance Director, and the term "contractor" shall have the same meaning as "vendor".

2. ENTIRE AGREEMENT

The Cumberland Fire District's Purchase Order, or other Cumberland Fire District contract endorsed by the Cumberland Fire District Finance Office, shall constitute the entire and exclusive agreement between the Cumberland Fire District and any contractor receiving an award. In the event any conflict between the bidder's standard terms of sale, these conditions or more specific provisions contained in the solicitation shall govern.

All communication between the Cumberland Fire District and any contractor pertaining to any award or contract shall be accomplished in writing.

A) Each proposal will be received with the understanding that the acceptance, in writing, by contract or Purchase Order by the Cumberland Fire District Finance Director of the offer to do work or to furnish any or all the materials, equipment, supplies or services described therein shall constitute a contract between the bidder and the Cumberland Fire District. This shall bind the bidder on his

Appendix B

part to furnish and deliver at the prices and in accordance with the conditions of said accepted proposal and detailed specifications and the Cumberland Fire District on its part to order from such contractor (except in case of emergency) and to pay for at the agreed prices, all materials, equipment, supplies or services specified and delivered. A contract shall be deemed executory only to the extent of funds available for payment of the amounts shown on Purchase Orders issued by the Cumberland Fire District to the contractors.

B) No alterations or variations of the terms of the contract shall be valid or binding upon the Cumberland Fire District unless submitted in writing and accepted by the Cumberland Fire District Finance Director. All orders and changes thereof must emanate from the Cumberland Fire District Purchasing Office: no oral agreement or arrangement made by a contractor with a department or employee will be considered to be binding on the Cumberland Fire District Finance Director, and may be disregarded.

C) Contracts will remain in force for the contract period specified or until all articles or services ordered before date of termination shall have been satisfactorily delivered or rendered and accepted and thereafter until all terms and conditions have been met, unless:

   i) terminated prior to expiration date by satisfactory delivery against orders of entire quantities, or
   ii) extended upon written authorization of the Cumberland Fire District Finance Director and accepted by the contractor, to permit ordering of the unordered balances or additional quantities at the contract price and in accordance with the contract terms, or
   iii) canceled by the Cumberland Fire District in accordance with other provisions stated herein.

D) It is mutually understood and agreed that the contractor shall not assign, transfer, convey, sublet or otherwise dispose of this contract or his right, title or interest therein, or his power to execute such contract, to any other person, company or corporation, without the previous consent, in writing, of the Cumberland Fire District Finance Director.

E) If, subsequent to the submission of an offer or issuance of a purchase order or execution of a contract, the bidder or contractor shall merge with or be acquired by another entity, the contract may be terminated, except as a corporate resolution prepared by the contractor and the new entity ratifying acceptance of the original bid or contract terms, condition, and pricing is submitted to the Cumberland Fire District Purchasing Office, and expressly accepted.

F) The contractor or bidder further warrants by submission of an offer or acceptance of a purchase order or other contract that he has no knowledge at the time of such action of any outstanding and delinquent or otherwise unsettled debt owed by him to the Cumberland Fire District, and agrees that later discovery by the Cumberland Fire District Finance Director that this warranty was given in spite of such knowledge, except where the matter is pending in hearing or from any appeal therefrom, shall form reasonable grounds for termination of the contract.

3. RELATIONSHIP OF PARTIES

The contractor or bidder warrants, by submission of an offer or acceptance of a purchase order or other contract, that he is not an employee, agent, or servant of the Cumberland Fire District, and that he is fully qualified and capable in all material regards to provide the specified goods and services. Nothing herein shall be construed as creating any contractual relationship or obligation between the Cumberland Fire District and any sub-bidder, subcontractor, supplier, or employee of the contractor or offeror.

4. COSTS OF PREPARATION

All costs associated with the preparation, development, or submission of bids or other offers will be borne by the offeror. The Cumberland Fire District will not reimburse any offeror for such costs.

5. SPECIFIED QUANTITY REQUIREMENT

Except where expressly specified to the contrary, all solicitations and contracts are predicated on a specified quantity of goods or services, or for a specified level of funding.

A) The Cumberland Fire District reserves the right to modify the quantity, scope of service, date of delivery or completion, or funding of any contract, with no penalty or charge, by written notice to the contractor, except where alternate terms have been expressly made a part of the contract.

B) The Cumberland Fire District shall not accept quantities in excess of the specified quantity except where the item is normally sold by weight (where sold by weight, the Cumberland Fire District will not accept quantities greater than ten per cent [10%] of the specified quantity), or where the Request or Contract provides for awards for other than exact quantities.

C) Purchase Orders or other contracts may be increased in quantity or extended in term without subsequent solicit with the mutual consent of the contractor and the Cumberland Fire District, where determined by the Cumberland Fire District Finance Director to be in the Cumberland Fire District's best interest.

6. DELIVERY/COMPLETION

Delivery must be made as ordered and/or projects completed in accordance with the proposal. If delivery qualifications do not appear on the bidder's proposal, it will be interpreted to mean that goods are in stock and that shipment will be made within seven (7) calendar days. If the project completion date is not specified in the proposal, the date shall be determined by the Cumberland Fire District Finance Director. The decision of the Cumberland Fire District Finance Director, as to reasonable compliance with the delivery terms, and date of completion shall be final. Burden of proof of delay in receipt of order shall rest with the contractor. No delivery charges shall be added to invoices except when authorized on the Purchase Order.

7. FOREIGN CORPORATIONS

In accordance with Title 7 Chapter 1.1 (“Business Corporations”) of the General Laws of Rhode Island, no foreign corporation shall have the right to transact business in this state until it shall have procured a certificate of authority so to do from the Secretary of State.

8. PRICING

All pricing offered or extended to the Cumberland Fire District is considered to be firm and fixed unless expressly provided for to the contrary. All prices shall be quoted F.O.B. Destination with freight costs included in the unit cost to be paid by the Cumberland Fire District, except, where the Request or Contract permits, offers reflecting F.O.B. Shipping Point will be considered, and freight costs may then be prepaid and added to the invoice.

9. COLLUSION

Bidder or contractor warrants that he has not, directly or indirectly, entered into any agree participated in any collusion or otherwise taken any action in restraint of full competitive bidding. In special circumstances, an executed affidavit will be required as a part of the bid.

10. PROHIBITION AGAINST CONTINGENT FEES AND GRATUITIES

Bidder or contractor warrants that he has not paid, and agrees not to pay, any bonus, commission, fee, or gratuity to any employee or official of the Cumberland Fire District for the purpose of obtaining any contract or award issued by the Cumberland Fire District. Bidder or contractor further warrants that no commission or other payment has been or will be received from or paid to any third party contingent on the award of any contract by the Cumberland Fire District, except as shall have been expressly communicated to the Cumberland Fire District Finance Director in writing prior to acceptance of the contract or award in question. Subsequent discovery by the Cumberland Fire District of non-compliance with these provisions shall constitute sufficient cause for immediate termination of all outstanding contracts and suspension or debarment of the bidder(s) or contractor(s) involved.

11. AWARDS

Awards will be made with reasonable promptness and by written notice to the successful bidder (only); bids are considered to be irrevocable for a period of ninety (90) days following the bid opening unless expressly provided for to the contrary in the Request, and may not be withdrawn during this period without the express permission of the Cumberland Fire District Finance Director.

A) Awards shall be made to the bidder(s) whose offer(s) constitutes the lowest responsive price offer (or lowest responsive price offer on an evaluated basis) for the item(s) in question or for the Request as a whole, at the option of the Cumberland Fire District. The Cumberland Fire District reserves the right to determine those offers which are responsive to the Request, or which otherwise serve its best interests.

B) The Cumberland Fire District reserves the right, before making award, to initiate investigations as to whether or not the materials, equipment, supplies, qualifications or facilities offered by the bidder meet the requirements set forth in the proposal and specification, and are ample and sufficient to insure the proper performance of the contract in the event of award. If upon such examination it is found that the conditions of the proposal are not complied with or that articles or equipment proposed to be furnished do not meet the requirements called for, or that the qualifications or facilities are not satisfactory, the Cumberland Fire District may reject such a bid. It is distinctly understood, however, that nothing in the foregoing shall mean or imply that it is

obligatory upon theCumberland Fire District to make any examinations before awarding a contract; and it is further understood that if such examination is made, it in no way relieves the contractor from fulfilling all requirements and conditions of the contract.

C) Qualified or conditional offers which impose limitations of the bidder's liability or modify the requirements of the bid, offers for alternate specifications, or which are made subject to different terms and conditions than those specified by the Cumberland Fire District may, at the option of the Cumberland Fire District, be
   i) rejected as being non-responsive, or
   ii) set aside in favor of the Cumberland Fire District's terms and conditions (with the consent of the bidder), or
   iii) accepted, where the Cumberland Fire District Finance Director determines that such acceptance best serves the interests of the Cumberland Fire District.

   Acceptance or rejection of alternate or counter-offers by the Cumberland Fire District shall not constitute a precedent which shall be considered to be binding on successive solicitations or procurements.

D) Bids submitted in pencil, or which do not bear an original signature, in ink, by an owner or authorized agent thereof, will not be accepted.

E) Bids must be extended in the unit of measure specified in the Request. In the event of any discrepancy between unit prices and their extensions, the unit price will govern.

F) The Cumberland Fire District Finance Director reserves the right to determine the responsibility of any bidder for a particular procurement.

G) The Cumberland Fire District Finance Director reserves the right to reject any and all bids in whole or in part, to waive technical defects, irregularities, and omissions, and to give consideration to past performance of the offerors where, in his judgment the best interests of the Cumberland Fire District will be served by so doing.

H) The Cumberland Fire District Finance Director reserves the right to make awards by items, group of items or on the total low bid for all the items specified as indicated in the detailed specification, unless the bidder specifically indicates otherwise in his bid.

I) Preference may be given to bids on products raised or manufactured in the State of Rhode Island, other things being equal.

J) The impact of discounted payment terms shall not be considered in evaluating responses to any Request.

K) The Cumberland Fire District Finance Director reserves the right to act in the Cumberland Fire District's best interests regarding awards caused by clerical errors by the e Cumberland Fire District Purchasing Office.

12. SUSPENSION AND DEBARMENT

The Cumberland Fire District Finance Director may suspend or debar any vendor or potential bidder, for good cause shown:

A) A debarment or suspension against a part of a corporate entity constitutes debarment or suspension of all of its divisions and all other organizational elements, except where the action has been specifically limited in scope and application, and may include all known corporate affiliates of a contractor, when such offense or act occurred in connection with the affiliate's performance of duties for or on behalf of the contractor, or with the knowledge, approval, or acquiescence of the contractor or one or more of its principals or directors (or where the contractor otherwise participated in, knew of, or had reason to know of the acts).

B) The fraudulent, criminal or other serious improper conduct of any officer, director, shareholder, partner, employee, or any other individual associated with a contractor may be imputed to the contractor when the conduct occurred in connection with the individual's performance of duties for or on behalf of the contractor, or with the contractor's knowledge, approval or acquiescence. The contractor's acceptance of benefits derived from the conduct shall be evidence of such knowledge, approval, or acquiescence.

C) A vendor or contractor who knowingly engages as a subcontractor for a contract awarded by the Cumberland Fire District to a vendor or contractor then under a ruling of suspension or debarment by the Cumberland Fire District shall be subject to disallowance of cost, annulment or termination of award, issuance of a stop work order, or debarment or suspension, as may be judged to be appropriate by the Cumberland Fire District’s Finance Director.

13. PUBLIC RECORDS

Contractors and bidders are advised that certain documents, correspondence, and other submissions to the Cumberland Fire District’s Purchasing Office may be voluntarily made public by the Cumberland Fire District absent specific notice that portions of such submittals may contain confidential or proprietary information, such that public access to those items should be withheld.

14. PRODUCT EVALUATION

In all specifications, the words "or equal" are understood after each article when manufacturer's name or catalog are referenced. If bidding on items other than those specified, the bidder must, in every instance, give the trade designation of the article, manufacturer's name and detailed specifications of the item the bidder proposes to furnish; otherwise, the bid will be construed as submitted on the identical commodity described in the detailed specifications. The Cumberland Fire District’s Finance Director reserves the right to determine whether or not the item submitted is the approved equal the detailed specifications.

A) Any objections to specifications must be filed by a bidder, in writing, with the Cumberland Fire District's Finance Director at least 96 hours before the time of bid opening to enable the Cumberland Fire District's Purchasing Office to properly investigate the objections.

B) All standards are minimum standards except as otherwise provided for in the Request or Contract.

C) Samples must be submitted to the Cumberland Fire District's Purchasing Office in accordance with the terms of the proposals and detailed specifications. Samples must be furnished free of charge and must be accompanied by descriptive memorandum invoices indicating whether or not the bidder desires their return and specifying the address to which they are to be returned (at the bidder's risk and expense), provided they have not been used or made useless by tests; and absent instructions, the samples shall be considered to be abandoned. Award samples may be held for comparison with deliveries.

D) All samples submitted are subject to test by any laboratory the Cumberland Fire District's Finance Director may designate.

15. PRODUCT ACCEPTANCE

All merchandise offered or otherwise provided shall be new, of prime manufacture, and of first quality unless otherwise specified by the Cumberland Fire District. The Cumberland Fire District reserves the right to reject all nonconforming goods, and to cause their return for credit or replacement, at the Cumberland Fire District's option. Contract deliverables specified for procurements of services shall be construed to be work products, and subject to the provisions of this section.

A) Failure by the Cumberland Fire District to discover latent defect(s) or concealed damage or non-conformance shall not foreclose the Cumberland Fire District's right to subsequently reject the goods in question.

B) Formal or informal acceptance by the Cumberland Fire District of non-conforming goods shall not constitute a precedent for successive receipts or procurements.

C) Where the contractor fails to promptly cure the defect or replace the goods, the Cumberland Fire District reserves the right to cancel the Purchase Order, contract with a different contractor, and to invoice the original contractor for any differential in price over the original contract price.

D) When materials, equipment or supplies are rejected, the same must be removed by the contractor from the premises of the Cumberland Fire District within forty-eight (48) hours of notification. Rejected items left longer than two days will be regarded as abandoned and the Cumberland Fire District shall have the right to dispose of them as its own property.

16. PRODUCT WARRANTIES

All product or service warranties normally offered by the contractor or bidder shall accrue to the Cumberland Fire District's benefit, in addition to any sp ecial requirements which may be imposed by the Cumberland Fire District. Every unit delivered must be g uaranteed against faulty material and

workmanship for a period of one year unless otherwise specified, and the Cumberland Fire District may, in the event of failure, order its replacement, repair, or return for full credit, at its sole option.

17. PAYMENT

Unless otherwise provided for by the Request or Contract, payment shall not be made until delivery has been made, or services performed, in full, and accepted. Payment shall not be due prior to thirty (30) working days following the latest of completion, acceptance, or the rendering of a properly submitted invoice. Payments will be released ONLY upon the completion of all certified payrolls incurred during the project and all required close out reports.

A) Payment terms other than the foregoing may be rejected as being nonresponsive.

B) No partial shipments, or partial completion will be accepted, unless provided for by the Request or Contract.

C) Where a question of quality is involved, or failure to complete a project by the specified due date, payment in whole or part against which to charge back any adjustment required, shall be withheld at the direction of the Cumberland Fire District Finance Director. In the event a cash discount is stipulated, the withholding of payments, as herein described, will not deprive the Cumberland Fire District from taking such discount.

D) Payments for used portion of inferior delivery or late delivery will be made by the Cumberland Fire District on an adjusted price basis.

E) Payments on contracts under architectural or engineering supervision must be accompanied by a Certificate of Payment and Statement of Account signed by the architect or engineer and submitted to the Cumberland Fire District Purchasing Office for approval.

18. THIRD-PARTY PAYMENTS

The Cumberland Fire District recognizes no assigned or collateral rights to any purchase agreement except as may be expressly provided for in the bid or contract documents, and will not accede to any request for third party or joint payment(s), except as provided for in specific orders by a court of competent jurisdiction, or by express written permission of the Cumberland Fire District's Finance Director. Where an offer is contingent upon such payment(s), the offeror is obligated to serve affirmative notice in his bid submission.

19. SET-OFF AGAINST PAYMENTS

Payments due the contractor may be subject to reduction equal to the amount of unpaid and delinquent state taxes (or other just debt owed to the State), except where notice of delinquency has not been served or while the matter is pending in hearing or from any appeal therefrom.

20. MINORITY BUSINESS ENTERPRISES

Pursuant to the provisions of Title 37 Chapter 14.1 of the General Laws, the Cumberland Fire District reserves the right to apply additional consideration to offers, and to direct awards to bidders other than the responsive bid representing the lowest price where:

A) the offer is fully responsive to the terms and conditions of the Request, and

B) the price offer is determined to be within a competitive range (not to exceed 5% higher than the lowest responsive price offer) for the product or service, and

C) the firm making the offer has been certified by the R.I. Department of Economic Development to be a small business concern meeting the criteria established to be considered a Minority Business Enterprise.

21. EQUAL OPPORTUNITY COMPLIANCE, HANDICAPPED ACCESS AND AFFIRMATIVE ACTION

Contractors of the Cumberland Fire District are required to demonstrate the same commitment to equal opportunity as prevails under federal contracts controlled by Federal Executive Orders 11246, 11625, 11375 and 11830, and Title 28 Chapter 5.1 of the General Laws of Rhode Island.

Affirmative action plans shall be submitted by the contractor for review by the State Equal Opportunity Office. A contractor's failure to abide by the rules, regulations, contract terms and compliance reporting provisions as established shall be grounds for forfeiture and penalties as shall be established, including but not limited to suspension.

22. TAXES

The Cumberland Fire District is exempt from payment of excise, transportation and sales tax imposed by the Federal or State Government. These taxes should not be included in the proposal price. Exemption Certificates will be furnished upon request.

23. BID SURETY

When requested, a bidder must furnish a Bid Bond or Certified Check for 5% of his bid, or for the stated amount shown in the solicitation. Bid Bonds must be executed by a reliable Surety Company authorized to do business in the State of Rhode Island. Failure to provide Bid Surety with bid may be cause for rejection of bid. The Bid Surety of any three bidders in contention will be held until an award has been made according to the specifications of each proposal. All others will be returned by mail within 48 hours following the bid opening. Upon award of a contract, the remaining sureties will be returned by mail unless instructed to do otherwise.

24. SUSPENSION, DEFAULT AND TERMINATION

A) Suspension of a Contract by the Cumberland Fire District
The Cumberland Fire District reserves the right at any time and for any reason to suspend all or part of this contract, for a reasonable period, not to exceed sixty days, unless the parties agree to a longer period. The Cumberland Fire District shall provide the contractor with written notice of the suspension order signed by the Finance Director or his or her designee, which shall set forth the date upon which the suspension shall take effect, the date of its expiration, and all applicable

instructions. Upon receipt of said order, the contractor shall immediately comply with the order and suspend all work under this contract as specified in the order. The contractor shall take all reasonable steps to mitigate costs and adverse impact to the work specified in the contract during the suspension period. Before the order expires, the Cumberland Fire District shall either:

i. cancel the suspension order;

ii. extend the suspension order for a specified time period not to exceed thirty (30) days; or

iii. terminate the contract as provided herein.

The contractor shall resume performance once a suspension order issued under this section is canceled or expires. If as a result of the suspension of performance, there is a financial or schedule impact upon the contract, an appropriate adjustment may be made by, or with the approval of, the Cumberland Fire District's Finance Director. Any adjustment shall be set forth in writing. After a suspension order has been canceled or expires, the contractor shall provide any request for adjustment to the Cumberland Fire District's Finance Director within thirty (30) days after resuming work performance.

i. Termination of a Contract by the Cumberland Fire District
Termination for Default or Nonperformance

If, for any reason, the contractor breaches the contract by failing to satisfactorily fulfill or perform any obligations, promises, terms, or conditions, and having been given reasonable notice of and opportunity to cure such default, fails to take satisfactory corrective action within the time specified by the Cumberland Fire District, the Cumberland Fire District may terminate the contract, in whole or in part, the termination of all outstanding contracts or sub-contracts held by the contractor, and the suspension or debarment of the contractor from future procurements by giving written notice to the contractor specifying the date for termination. The Cumberland Fire District shall endeavor to provide such notice at least seven (7) calendar days before the effective date of the termination.

A contractor who fails to commence within the time specified or complete an award made for repairs, alterations, construction, or any other service will be considered in default of contract. If contractor consistently fails to deliver quantities or otherwise perform as specified, the Cumberland Fire District's Finance Director reserves the right to terminate the contract and contract for completion of the work with another contractor and seek recourse from the defaulting contractor or his surety. In the event of a termination for default or nonperformance, in whole or in part, the Cumberland Fire District may procure similar goods or services in a manner and upon terms it deems appropriate, and the contractor shall be liable for the excess costs incurred by the Cumberland Fire District as a result of the contractor's default. The contractor, or its surety, agrees to promptly reimburse the Cumberland Fire District for the excess costs, but shall have no claim to the difference should the replacement cost be less.

ii. Termination Without Cause

The Cumberland Fire District may terminate the contract in whole or in part without cause at any time by giving written notice to the contractor of such termination at least thirty (30) days before the effective date of such termination. The notice shall specify the part(s) of the contract being terminated and the effective termination date.

Within thirty (30) days of the effective date of the termination of the contract the contractor shall compile and submit to the Cumberland Fire District an accounting of the work performed up to the date of termination. The Cumberland Fire District may consider the following claims in determining reasonable compensation owed to the contractor for work performed up to the date of termination:

a. contract prices for goods or services accepted under the contract;
b. costs incurred in preparing to perform and performing the terminated portion of the contract; or
c. any other reasonable costs incurred by the contractor as a result of the termination.

The total sum to be paid to the contractor shall not exceed the total contract price, less any payments previously made to the contractor, the proceeds from any sales of goods or manufacturing materials, and the contract price for work not terminated.

iii. Contractor's Obligations in the Event of Termination

If the contract is terminated for any reason, or expires pursuant to its terms, the contractor shall transfer and deliver to the Cumberland Fire District in the manner and to the extent directed by the Cumberland Fire District:

a. all finished or unfinished material prepared by the contractor; and
b. all material, if any, provided to the contractor by the Cumberland Fire District.

For the purposes of the contract, "material" shall include, but is not limited to, goods, supplies, parts, tools, machinery, equipment, furniture, fixtures, information, data, reports, summaries, tables, maps, charts, photographs, studies, recommendations, files, audiotapes, videotapes, records, keys, security badges, and documents.

If the contract is terminated for cause, the contractor shall not be relieved of liability to the Cumberland Fire District for damages sustained because of any breach by the contractor. In such event, the Cumberland Fire District may retain any amounts which may be due and owing to the contractor until such time as the exact amount of damages due the Cumberland Fire District from the contractor has been determined by the Cumberland Fire District Finance Director. The Cumberland Fire District may also set off any damages so determined against the amounts retained.

Upon termination of the contract, the contractor shall stop performance on the date specified, terminate any outstanding orders and subcontracts applicable to the terminated portion of the

contract, and shall incur no further commitments or obligations in connection with the terminated performance. The contractor shall settle all liabilities and claims arising out of the termination of subcontracts and order generating from the terminated performance. The Cumberland Fire District may direct the contractor to assign the contractor's right, title and interest under terminated orders or subcontracts to the Cumberland Fire District or a third party.

Terminations of Purchase Order Contracts or Master Pricing Agreements shall require the signature of the Cumberland Fire District Finance Director or his designee. Notice of termination by either party shall be submitted in writing to the other party in accordance with the termination clause of the contract, or where no specific termination clause is included, written notice shall be provided no later than thirty (30) days before the expiration of the contract.

25. INDEMNITY

The contractor guarantees:

A) To save the Cumberland Fire District, its agents and employees, harmless from any liability imposed upon the Cumberland Fire District arising from the negligence, either active or passive, of the contractor, as well as for the use of any copyrighted or uncopyrighted composition, secret process, patented or unpatented invention, article or appliance furnished or used in the performance of the contract of which the contractor is not the patentee, assignee or licensee.

B) To pay for all permits, licenses and fees and give all notices and comply with all laws, ordinances, rules and regulations of the Cumberland Fire District and of the State of Rhode Island.

C) That the equipment offered is standard new equipment, latest model of regular stock product with all parts regularly used with the type of equipment offered; also, that no attachment or part has been substituted or applied contrary to manufacturer's recommendations and standard practice.

26. FORCE MAJEURE

All orders shall be filled by the contractor with reasonable promptness, but the contractor shall not be held responsible for any losses resulting if the fulfillment of the terms of the contract shall be delayed or prevented by wars, acts of public enemies, strikes, fires, floods, acts of God, or for any other acts not within the control of the contractor and which by the exercise of reasonable diligence, the contractor is unable to prevent.

The below authorized representative agrees to all General Terms and Conditions of Purchase contained in Appendix B.

Signature of Officer	Date

Title	Company

Title of RFP

Appendix C

[AIA Document A101 Standard Form of Agreement Between Owner and Contractor to be inserted here]

A. GENERAL STRUCTURAL REQUIREMENTS

1. ALL METHODS OF CONSTRUCTION, DETAILS, NOTES, ETC., INDICATED ON THE DRAWINGS ARE TO BE CONSIDERED TYPICAL FOR ALL SIMILAR CONDITIONS.
2. CONSTRUCTION SHALL BE MADE FROM APPROVED SHOP DRAWINGS ONLY.
3. ANY DISCREPANCIES ON THESE PLANS WITH REGARD TO DIMENSIONS OR CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH THE AFFECTED PORTION OF WORK.
4. ALL APPLICABLE FEDERAL, STATE, AND MUNICIPAL REGULATIONS SHALL BE FOLLOWED, INCLUDING THE FEDERAL DEPARTMENT OF LABOR OCCUPATIONAL SAFETY AND HEALTH ACT AND THE RHODE ISLAND STATE BUILDING CODE.
5. THE LATEST EDITION OF THE FOLLOWING LISTED CODES SHALL APPLY. IN CASE OF CONFLICT, THE MORE RIGID REQUIREMENTS AND CODES SHALL GOVERN.
   A. RHODE ISLAND STATE BUILDING CODE (STATE CODE): INTERNATIONAL BUILDING CODE, 2021 EDITION AND ITS APPLICABLE REFERENCED STANDARDS.
   B. AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPECIFICATIONS AND ITS CODE OF STANDARD PRACTICE (AISC).
   C. AMERICAN CONCRETE INSTITUTE BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE, ACI 318.
   D. AMERICAN CONCRETE INSTITUTE BUILDING CODE REQUIREMENTS FOR CONCRETE MASONRY STRUCTURES, ACI 530 AND ACI 530.1.
6. THE DESIGN LOADS ARE RESISTED BY THE COMPLETED STRUCTURE ACTING AS A UNIT. THE CONTRACTOR SHALL DESIGN AND PROVIDE ANY AND ALL TEMPORARY BRACING, SHORING, OR ADDITIONAL REINFORCEMENT NECESSARY TO RESIST LOADS IMPOSED ON ANY PORTION OF THE STRUCTURE THROUGHOUT ALL STAGES OF CONSTRUCTION. THE SHORING SHALL BE DESIGNED TO RESIST ALL DEAD LOADS AND ANY APPLICABLE CONSTRUCTION LOADS.
7. ALL SHORING DESIGNS AND PLANS SHALL BE STAMPED BY A RHODE ISLAND REGISTERED PROFESSIONAL ENGINEER.
8. NOTES AND TYPICAL DETAILS APPLY TO ALL STRUCTURAL WORK UNLESS OTHERWISE NOTED. FOR CONDITIONS NOT SPECIFICALLY SHOWN PROVIDE DETAILS OF SIMILAR NATURE. VERIFY APPLICABILITY BY SUBMITTING SHOP DRAWINGS FOR REVIEW.
9. PLANS SHALL NOT BE SCALED FOR DIMENSIONS.

B. DESIGN LOADS

1. GENERAL
   A. BUILDING RISK CATEGORY ____ IV
2. LIVE LOADS
   A. GARAGE ____ 125 psf, H-15 AASHTO TRUCK (24K AXLE)
3. WIND LOADS
   A. ULTIMATE WIND DESIGN SPEED (Vult) ____ 136 mph
   B. NOMINAL DESIGN WIND SPEED (Vasd) ____ 105 mph
   C. EXPOSURE CATEGORY ____ B
   D. ENCLOSED BUILDING (Gcpi) ____ +/-0.18 (TYP.)
4. EARTHQUAKE LOADS
   A. IMPORTANCE FACTOR ____ 1.5
   B. MAPPED SPECTRAL RESPONSE ACCELERATIONS (Ss, S1) ____ 0.178, 0.063
   C. SITE CLASS ____ D (ASSUMED)
   D. DESIGN SPECTRAL COEFFICIENTS (Sds, Sd1) ____ 0.190, 0.101
   E. SEISMIC DESIGN CATEGORY ____ C
   F. DESIGN PROCEDURE ____ EQUIVALENT LATERAL FORCE PROCEDURE
   G. LATERAL FORCE RESISTING SYSTEM ____ CONCRETE AND MASONRY SHEAR WALLS

C. FOUNDATIONS

1. NEW FOUNDATIONS HAVE BEEN DESIGNED BASED UPON A PRESUMED ALLOWABLE BEARING PRESSURE OF 3KSF. PARE WILL PERFORM EXPLORATORY BORINGS ON SITE TO CONFIRM SOIL CAPACITY, FOUNDATIONS MAY BE ADJUSTED AS REQUIRED.
2. NO FOOTING OR SLAB SHALL BE PLACED ON FROZEN SOIL OR IN WATER.
3. IMPORTED MATERIAL SUPPORTING FOUNDATIONS OR SLABS-ON-GRADE SHALL REST ONLY ON SUITABLE UNDISTURBED PROOF-ROLLED OR COMPACTED BEARING MATERIAL (TO BE VERIFIED BY GEOTECHNICAL ENGINEER) UNLESS NOTED OTHERWISE. IMPORTED MATERIAL SHALL CONFORM TO THE FOLLOWING STANDARDS UNLESS NOTED OTHERWISE, "RIDOT" REFERS TO RHODE ISLAND DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AMENDED 2018:
   * COMPACTED STRUCTURAL FILL SHALL CONFORM TO RIDOT STANDARD SPECIFICATION M.01.02, GRADATION M.01.09 TABLE I COLUMN IB.
   * CRUSHED STONE SHALL CONFORM TO RIDOT STANDARD SPECIFICATION M.01.09 TABLE I TYPE II.
4. UNSUITABLE BEARING MATERIALS, SUCH AS "FILL", "SUBSOIL", AND "TOPSOIL" MAY BE PRESENT BELOW PROPOSED FOOTINGS AND SLABS. EXISTING UNSUITABLE MATERIAL WITHIN THE BUILDING FOOTPRINT SHALL BE OVER EXCAVATED AND REPLACED WITH COMPACTED STRUCTURAL FILL.
5. ALL SURFACE WATER SHALL BE DIVERTED AWAY FROM EXCAVATION BY THE CONTRACTOR. CONTRACTOR SHALL MAINTAIN CONTINUOUS CONTROL OF SURFACE AND SUBSURFACE WATER DURING CONSTRUCTION SO THAT WORK IS DONE UNDER DRY CONDITIONS.
6. SHORING AND BRACING FOR THE LATERAL SUPPORT OF EXCAVATION SHALL REMAIN IN PLACE UNTIL ALL PERMANENT STRUCTURAL SYSTEMS ARE COMPLETE.
7. PERCENT COMPACTION IS DEFINED AS THE RATIO OF THE FIELD DRY DENSITY, DETERMINED BY ASTM D-6938, TO THE MAXIMUM DRY DENSITY, DETERMINED BY ASTM D-1557 (MODIFIED PROCTOR).
8. COMPACT SUITABLE IN-SITU SOIL OR BACKFILL UNDER FOUNDATION FOOTINGS AND SLABS ON GRADE TO A MINIMUM OF 95 PERCENT OF MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D-1557, UNLESS OTHERWISE INDICATED OR SPECIFIED
9. ANY BOULDER OR OTHER OBSTRUCTION LOCATED WITHIN THE BUILDING AREA SHALL BE REMOVED TO A DEPTH OF AT LEAST 12" (MIN.) BELOW THE FOUNDATION. VOIDS SHALL BE BACKFILLED WITH COMPACTED STRUCTURAL FILL APPROVED BY THE GEOTECHNICAL ENGINEER.
10. ANY BEDROCK EXCAVATION FOR FOOTINGS OR SLABS SHALL BE OVER EXCAVATED TO ALLOW FOR THE PLACEMENT OF A 6" (MIN.) STRUCTURAL FILL BELOW.
11. PROVIDE 6" (MIN.) OF WELL-COMPACTED STRUCTURAL FILL APPROVED BY THE GEOTECHNICAL ENGINEER, AND VAPOR BARRIER UNDER ALL SLABS ON GRADE.
12. PROVIDE 6" (MIN.) OF CRUSHED STONE WRAPPED IN GEOTEXTILE FILTER FABRIC APPROVED BY THE GEOTECHNICAL ENGINEER UNDER ALL NEW FOOTINGS AND FOUNDATION WALLS.
13. ALL FOUNDATION/FOOTING AND SLAB SUBGRADE PREPARATION SHALL BE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND SHALL BE VERIFIED BY THE GEOTECHNICAL ENGINEER.
14. FOOTINGS SHALL BE STEPPED AT A MAXIMUM SLOPE OF 2 HORIZONTAL TO 1 VERTICAL, UNLESS NOTED OTHERWISE. (SEE TYPICAL DETAILS).

D. MASONRY

1. CONCRETE MASONRY UNITS SHALL BE ASTM C90, TYPE I, NORMAL WEIGHT HOLLOW LOAD BEARING UNITS, UNLESS NOTED OTHERWISE. THE AVERAGE ASTM C1314 PRISM STRENGTH SHALL BE A MINIMUM OF 1,500 PSI.
2. REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60.
3. MORTAR SHALL BE ASTM C270, TYPE M OR S PORTLAND CEMENT MORTAR (LOAD BEARING WALLS) AND TYPE N PORTLAND CEMENT MORTAR (NON-LOAD BEARING WALLS). DO NOT USE CALCIUM CHLORIDE IN MORTAR OR GROUT.
4. MASONRY SHALL BE SET ON FULL MORTAR BED.
5. GROUT FILL FOR MASONRY CELLS, LINTELS, AND BOND BEAMS SHALL CONFORM TO ASTM C476 AND HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 2,500 PSI.
6. ALL REINFORCING SHALL BE GROUTED SOLID CONTINUOUSLY IN 4" OR WIDER CELLS OR BOND BEAMS.
7. ALL MASONRY WALLS SHALL BE LATERALLY BRACED AGAINST FAILURE OR COLLAPSE UNTIL ANCHORED BY THE STRUCTURE.
8. SPECIAL INSPECTOR SHALL INSPECT ALL GROUTING OPERATIONS AND THE INSTALLATION OF REINFORCING IN LOAD BEARING CONCRETE MASONRY WALLS.

E. CAST-IN-PLACE CONCRETE

1. CONCRETE WORK SHALL CONFORM TO THE LATEST EDITIONS OF THE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" (ACI 318) AND THE STATE CODE.
2. CONCRETE SHALL BE PROPORTIONED, MIXED, AND PLACED UNDER THE SUPERVISION OF THE APPROVED TESTING AGENCY.
3. UNLESS NOTED OTHERWISE, CONCRETE SHALL BE NORMAL WEIGHT, WITH TYPE II CEMENT, AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS AS FOLLOWS:

   A. 5,000 PSI 3/4" AGGREGATE-TYPICAL, U.N.O.
4. ALL CONCRETE, EXCEPT INTERIOR SLABS, SHALL BE AIR-ENTRAINED WITH AN AIR CONTENT OF 6%± 1%. INTERIOR SLABS SHALL NOT BE AIR-ENTRAINED.
5. CALCIUM CHLORIDE SHALL NOT BE USED.
6. ALL SHORING SHALL REMAIN IN PLACE UNTIL CONCRETE HAS ATTAINED ITS SPECIFIED 28-DAY MINIMUM COMPRESSIVE STRENGTH.
7. ALL CONSTRUCTION JOINT LOCATIONS MUST BE SHOWN ON SHOP DRAWINGS AND APPROVED BY THE ENGINEER. CONSTRUCTION JOINTS NOT SHOWN ON THE DRAWINGS SHALL BE LOCATED SO AS TO LEAST IMPAIR THE STRENGTH OF THE STRUCTURE AND SHOULD GENERALLY BE LOCATED AT MIDSPAN OR AT POINTS OF MINIMUM SHEAR.
8. ALL TYPES OF SLABS AND WALLS SHALL BE PLACED WITHOUT HORIZONTAL CONSTRUCTION JOINTS UNLESS SPECIFICALLY SHOWN ON THE DRAWINGS OR APPROVED IN WRITING BY THE ENGINEER. ALL CONSTRUCTION JOINTS SHALL BE FORMED WITH A STANDARD KEY OR WITH A ROUGHENED SURFACE, UNLESS SHOWN OTHERWISE.
9. PROVIDE A SMOOTH RUBBED SURFACE, FREE FROM BURRS, TIE HOLES, HONEYCOMBING, ETC. ON EXPOSED CONCRETE SURFACES.
10. PROVIDE A STEEL TROWELED FINISH FOR INTERIOR SLABS.
11. ALL EXPOSED EDGES SHALL BE CHAMFERED 1" UNLESS NOTED OTHERWISE.
12. WHEN CONCRETE IS PLACED AGAINST PREVIOUSLY HARDENED CONCRETE, THE INTERFACE SHALL BE CLEAN, FREE OF LAITANCE, AND INTENTIONALLY ROUGHENED TO FULL AMPLITUDE OF APPROXIMATELY 1/4 INCH.
13. AT ALL CONSTRUCTION JOINTS NOT DESIGNATED TO BE CONTROL JOINTS, NEW CONCRETE SHALL BE EPOXY BONDED TO HARDENED CONCRETE WITH SIKADUR 32 H1-MOD LPL MANUFACTURED BY SIKA CORP. OR ENGINEER APPROVED EQUAL. APPLY PER MANUFACTURER'S RECOMMENDATIONS.
14. ELASTOMERIC JOINT SEALANT FOR SLAB EXPANSION AND CONSTRUCTION JOINTS SHALL BE "SIKAFLEX 1CSL" BY SIKA CORP. OR ENGINEER APPROVED EQUAL. SEMI-RIGID EPOXY JOINT SEALANT FOR SLAB CONTROL JOINTS (OR SAWN JOINTS) SHALL BE "SIKADUR 51 SL" AS MANUFACTURED BY SIKA CORP. OR ENGINEER APPROVED EQUAL.
15. ALL CONCRETE SHALL BE PLACED IN THE DRY.
16. PROVIDE POUR STOPS AT THE EDGES OF CONCRETE SLAB POURS WHERE NOT OTHERWISE CONTAINED.
17. PROVIDE NON-SHRINK, NON-METALLIC GROUT UNDER ALL BASE PLATES. PROVIDE MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 8,000 PSI FOR GROUT.

F. REINFORCING STEEL

1. REINFORCING BARS SHALL BE DETAILED IN ACCORDANCE WITH ACI 315 MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES AND THE STATE CODE.
2. COMPLETE SHOP DRAWINGS AND SCHEDULES OF ALL REINFORCING STEEL SHALL BE PREPARED BY THE CONTRACTOR AND SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO COMMENCEMENT OF THAT PORTION OF THE WORK. ALL ACCESSORIES MUST BE SHOWN ON THE SHOP DRAWINGS.
3. REINFORCING BARS SHALL CONFORM TO ASTM A615 OR A706 (WELDABLE) GRADE 60.
4. REINFORCING STEEL SHALL BE UNCOATED, UNLESS NOTED OTHERWISE. HOWEVER, ALL SUPPORTS SUCH AS CHAIRS, BOLSTERS, SPACERS, BLOCKS AND HANGERS SHALL BE OF NON-CORROSIVE MATERIAL. PROVIDE MINIMUM #5 SUPPORT BAR.
5. UNLESS NOTED ON THE DRAWINGS, THE MINIMUM CONCRETE PROTECTION (CLEAR COVER) FOR CAST-IN-PLACE CONCRETE COVER SHALL BE AS FOLLOWS:

   A. CONCRETE PLACED AGAINST EARTH ____ 3"
   B. FORMED CONCRETE EXPOSED TO EARTH OR WATER ____ 2"
   C. INTERIOR CONCRETE NOT EXPOSED TO WEATHER OR GROUND ____ 1"
6. ALL REINFORCEMENT SHALL BE CONTINUOUS THROUGH CONSTRUCTION JOINTS.
7. UNLESS NOTED OTHERWISE, BARS SHALL BE CONTINUOUS AND SHALL RUN CONTINUOUSLY AROUND CORNERS AND LAPPED AT NECESSARY SPLICES OR HOOKED AT DISCONTINUOUS ENDS. SPLICES SHALL GENERALLY OCCUR AT MID-SPAN FOR TOP AND MIDDLE BARS, AT SUPPORT FOR BOTTOM BARS AND SHALL BE STAGGERED WHEREVER POSSIBLE.
8. BARS SHALL NOT BE CUT OR OMITTED FOR SLEEVE OR OPENINGS IN FLOORS. BARS MAY BE MOVED LATERALLY WITHOUT CHANGING THE DISTANCE FROM THE FACE OF CONCRETE. NO BARS SHALL BE BENT IN FIELD WITHOUT APPROVAL OF THE ENGINEER.
9. MINIMUM REINFORCEMENT DEVELOPMENT LENGTH AND LAP SPLICE LENGTHS SHALL BE IN ACCORDANCE WITH ACI 318 FOR CLASS B LAPS UNLESS OTHERWISE NOTED ON THE DRAWINGS.
10. PROVIDE ADDITIONAL #5 BAR REINFORCEMENT ALONG EACH SIDE OF OPENINGS (AND EACH FACE), UNLESS NOTED OTHERWISE. BARS SHALL EXTEND AT LEAST 1'-0" BEYOND THE OPENING PERIMETER.

G. POST-INSTALLED CONCRETE ANCHORS

1. EXPANSION TYPE ANCHORS SHALL CONFORM TO THE REQUIREMENTS OF ASTM E488, "STANDARD TEST METHODS FOR STRENGTH OF ANCHORS IN CONCRETE AND MASONRY ELEMENTS" AND ICBO ES AC-01, ACCEPTANCE CRITERIA FOR ADHESIVE ANCHORS IN CONCRETE AND MASONRY ELEMENTS.
2. ADHESIVE TYPE ANCHORS SHALL FURTHER CONFORM TO THE REQUIREMENTS OF ASTM E1512, "STANDARD TEST METHODS FOR TESTING BOND PERFORMANCE OF ADHESIVE-BONDED ANCHORS" AND ICBO ES AC-01, "ACCEPTANCE CRITERIA FOR ADHESIVE ANCHORS IN CONCRETE AND MASONRY ELEMENTS".
3. PROVIDE SIZE, TYPE, AND EMBEDMENT OF ANCHOR INDICATED INSTALLED TO DEVELOP THE MAXIMUM CAPACITY FOR THE EMBEDMENT, TYPE AND ANCHOR SIZE WITH A MINIMUM SAFETY FACTOR OF FOUR.
4. DRILL AND EPOXY ANCHORAGES SHALL BE HILTI "HIT-HY 200 ADHESIVE SYSTEM" WITH STANDARD "HAS" RODS, OR APPROVED EQUAL. DRILL AND EPOXY ANCHORAGE FOR MASONRY SHALL BE HILTI "HIT-HY 270 ADHESIVE SYSTEM" OR APPROVED EQUAL. ROD EMBEDMENT LENGTH AND DIAMETER SHALL BE AS INDICATED ON DRAWINGS.
5. ANCHOR INSTALLATION SHALL CONFORM TO THE MANUFACTURER'S CURRENT PRINTED INSTRUCTIONS. FOR CORRESPONDING HOLE DIAMETER, REFER TO MANUFACTURER'S PRINTED INSTALLATION INSTRUCTIONS (MPII) AS INCLUDED WITH EACH ADHESIVE PACKAGE.
6. A QUALIFIED MANUFACTURER'S REPRESENTATIVE SHALL BE PRESENT DURING FIRST INSTALLATION TO ENSURE CORRECT PROCEDURE.
7. REMOVE DUST AND DEBRIS FROM DRILLED HOLES USING COMPRESSED AIR OR VACUUM AT BOTTOM OF HOLE. IMMEDIATELY REMOVE STANDING WATER FROM HOLES TO RECEIVE ADHESIVE ANCHORS.
8. DO NOT HAMMER IN ANCHOR BOLTS. INSTALL ANCHOR BOLTS USING A WET DIAMOND DRILLING PROCESS WITH EXTENSION BITS ADDED AS REQUIRED. DO NOT HAMMER DRILL.
9. USE ONLY DRILL TYPE AND BIT TYPE AND DIAMETER RECOMMENDED BY ANCHOR MANUFACTURER.
10. WHEN EMBEDDED STEEL OR REBAR IS ENCOUNTERED IN THE DRILL PATH, SLANT DRILL TO CLEAR OBSTRUCTION. IF DRILL MUST BE SLANTED MORE THAN 10 DEGREES TO CLEAR OBSTRUCTION, NOTIFY ENGINEER FOR DIRECTION ON HOW TO PROCEED.

H. FLOOR SYSTEMS

1. THE CONTRACTOR SHALL INCLUDE SUFFICIENT CONCRETE AND SHALL ARRANGE HIS PLACING AND FINISHING OPERATIONS TO ACHIEVE LEVEL FLOORS CONSIDERING THE DEFLECTION OF THE FRAMING AND FORM WORK UNDER THE LOAD OF ANY NEWLY PLACED CONCRETE. THE SLAB THICKNESS GIVEN ON THE DRAWING IS THE MINIMUM THICKNESS. NOTE THAT ELEVATED SLAB IS TO BE PITCHED TO DRAIN, REFER TO DRAWINGS AND DETAILS.
2. THE CONTRACTOR SHALL FINISH FLOORS WITH FLOOR HARDENER AND SEALANT. FLOOR FINISH SHALL BE ASHFORD FORMULA OR APPROVED EQUAL.

I. DEMOLITION NOTES

1. REFER TO PLANS AND DETAILS FOR THE NEW WORK TO DETERMINE REMOVAL REQUIREMENTS AND LIMITS.
2. EXISTING CONDITIONS SHOWN ON THE PLANS ARE BASED UPON LIMITED VISUAL OBSERVATIONS IN THE FIELD AND EXISTING PLANS PROVIDED BY THE OWNER. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS AS THEY RELATE TO THE WORK AND REPORT TO THE ENGINEER ALL OBSERVATIONS AND DISCREPANCIES BEFORE PROCEEDING WITH ANY WORK.
3. THE CONTRACTOR SHALL PROVIDE ADEQUATE TEMPORARY SHORING TO SUPPORT THE EXISTING STRUCTURE FOR NEW WORK AND AS REQUIRED DURING DEMOLITION. ALL SHORING SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF RHODE ISLAND. SUBMIT STAMPED SHORING CALCULATIONS, PROCEDURES, AND PLANS FOR REVIEW.
4. STRUCTURAL PLANS AND NOTES ARE INTENDED TO CONVEY LIMITS OF STRUCTURAL DEMOLITION ONLY. WHILE SOME OBSERVED MEP'S HAVE BEEN NOTED ON THIS DRAWING. IT IS THE CONTRACTORS RESPONSIBILITY TO DETERMINE MEP DEMOLITION LIMITS REQUIRED TO PERFORM THE PROPOSED STRUCTURAL WORK.
5. STRUCTURE SCHEDULED TO REMAIN SHALL BE PROTECTED DURING ALL DEMOLITION OPERATIONS. THE CONTRACTOR SHALL EXERCISE PROPER CARE WHEN REMOVING STRUCTURE SCHEDULED FOR DEMOLITION TO AVOID DAMAGING EXISTING CONSTRUCTION THAT IS SCHEDULED TO REMAIN. ANY STRUCTURE SCHEDULED TO REMAIN THAT IS DAMAGED BY THE CONTRACTOR SHALL BE REPAIRED AT NO ADDITIONAL EXPENSE TO THE OWNER. THE ENGINEER SHALL HAVE SOLE DISCRETION IN DETERMINING REPAIR REQUIREMENTS.
6. THE CONTRACTOR SHALL EXERCISE CAUTION WHEN DEMOLISHING OR SAWCUTTING EXISTING WALLS, SLABS, ETC. AS LIVE ELECTRICAL LINES, ACTIVE UTILITIES, ETC. MAY EXIST WITHIN EXISTING CONSTRUCTION. THE CONTRACTOR SHALL UTILIZE GROUND PENETRATING RADAR (GPR), EXPLORATORY DEMOLITION, OR SIMILAR METHODS (INCLUDING COMBINATIONS OF THESE METHODS) PRIOR TO PERFORMING THEIR WORK.

J. STRUCTURAL STEEL

1. DESIGN FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH AISC SPECIFICATION FOR BUILDINGS.
2. NEW STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING:

A. STRUCTURAL STEEL	A572 OR A992 GR. 50	Fy=50 KSI
B. TYPICAL PLATES AND ANGLES	ASTM A36	Fy=36 KSI
C. STRUCTURAL TUBING	ASTM A500, GR. B	Fy=46 KSI
D. HIGH STRENGTH BOLTS	ASTM F3125 (GR. A325 TYPE I)	Fy=92 KSI
E. CAST-IN-PLACE ANCHOR RODS	F1554 (GRADE 36)	Fy=36 KSI
F. HEADED STUDS	A108 GR. 50	Fy=50 KSI
G. DRILL & EPOXY ANCHOR RODS	A449	Fy=92 KSI

3. SHAPES NOTED "GALV." ON DRAWINGS SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123.
4. ALL STRUCTURAL STEEL CONNECTIONS NOT SPECIFICALLY DETAILED ON THE PLANS SHALL BE DESIGNED BY THE CONTRACTOR IN ACCORDANCE WITH THE CURRENT EDITION OF THE AISC "MANUAL OF STEEL CONSTRUCTION - ALLOWABLE STRENGTH DESIGN (ASD)". DESIGN FOR ALL CONNECTIONS SHALL BE STAMPED BY A RHODE ISLAND PROFESSIONAL ENGINEER ENGAGED BY THE CONTRACTOR AND SUBMITTED TO THE ARCHITECT/ENGINEER FOR REVIEW PRIOR TO FABRICATION. CONNECTIONS SHALL BE DESIGNED TO DEVELOP (1/2) OF MEMBER'S TOTAL UNIFORM LOAD CAPACITY, TYPICAL UNLESS NOTED OTHERWISE.
5. ALL BOLTED CONNECTIONS SHALL USE 3/4" DIA., A-325-N TYPE I BOLTS, UNLESS NOTED OTHERWISE.
6. ALL NEW STRUCTURAL STEEL SHALL BE GIVEN ONE COAT OF AN APPROVED SHOP PRIMER APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, UNLESS NOTED OTHERWISE. DO NOT PAINT TOP FLANGES OF BEAMS THAT RECEIVE SHEAR STUDS. PREPARATION OF STRUCTURAL STEEL SHALL CONFORM TO SSPC-SP2 (INTERIOR SURFACES) OR PAINT WITH A SUITABLE TOP-COAT FOR INTERIOR APPLICATION THAT IS COMPATIBLE WITH THE PRIMER. TOUCH UP PAINT AFTER INSTALLATION OF CONCRETE DECK. OWNER TO SELECT COLOR, SUBMIT PAINT SYSTEM FOR REVIEW.
7. AFTER ERECTION IS COMPLETE, TOUCH-UP ALL PAINT DAMAGED DURING TRANSPORT AND ERECTION, AND PRIME ALL FIELD WELDS USING THE SAME PAINT USED FOR SHOP PRIMING.
8. ALL EXPOSED STRUCTURAL STEEL AND CONNECTORS SHALL BE PRIMED AND PAINTED WITH AN APPROVED PAINT SYSTEM.
9. HIGH STRENGTH BOLTS SHALL BE TORQUED TO 70% OF THE MINIMUM TENSILE STRENGTH OF THE BOLT IN CONFORMANCE WITH AISC SPECIFICATION FOR STRUCTURAL JOINTS USING A-325-N TYPE I BOLTS. PROVIDE ONE HARDENED WASHER UNDER THE ELEMENT TURNED IN TIGHTENING.
10. WELDS SHALL BE MADE ONLY BY OPERATORS CERTIFIED BY THE STANDARD QUALIFICATION PROCEDURE OF THE AMERICAN WELDING SOCIETY. TOUCH UP ALL WELDS WITH THE APPROVED PAINT SYSTEM.
11. WELDING: IN ACCORDANCE WITH LATEST EDITION OF AWS D1.1 CODE FOR WELDING IN BUILDING CONSTRUCTION. USE E70 SERIES ELECTRODES UNLESS NOTED OTHERWISE.
12. FIELD WELDING OF STRUCTURAL MEMBERS IS NOT PERMITTED UNLESS SPECIFICALLY INDICATED.
13. FURNISH AND INSTALL ONE WASHER AND ONE HEAVY HEX NUT WITH ASTM F1554 ANCHOR BOLTS UNLESS OTHERWISE INDICATED.
14. PROVIDE FITTED WELDED 3/8" WEB STIFFENER PLATES ON EACH SIDE OF ALL BEAMS SEATED ON WALLS OR COLUMNS UNLESS NOTED OTHERWISE.
15. FIELD CUTTING OR MODIFICATION OF STRUCTURAL STEEL IS PROHIBITED UNLESS PRIOR WRITTEN APPROVAL IS RECEIVED FROM THE ENGINEER.
16. MINIMUM FILLET WELD (LEG) SIZE SHALL BE 3/16", UNLESS NOTED OTHERWISE.
17. PROVIDE ALL NECESSARY TEMPORARY GUYING, STAYS, AND BRACING REQUIRED TO ERECT AND HOLD NEW STRUCTURE TO RESIST VERTICAL AND LATERAL LOADS. ALL LATERAL LOAD RESISTANCE AND STABILITY OF THE BUILDING IN THE COMPLETED STRUCTURE IS PROVIDED BY SHEAR WALLS, IN EACH ORTHOGONAL DIRECTION. CONCRETE FLOORS SERVE AS HORIZONTAL DIAPHRAGMS THAT DISTRIBUTE THE LATERAL LOADS HORIZONTALLY TO THE SHEAR WALLS. THE SHEAR WALLS CARRY THE APPLIED LATERAL LOADS TO THE BUILDING FOUNDATION. PROVIDE TEMPORARY SUPPORTS UNTIL ALL ELEMENTS REQUIRED FOR THE STABILITY OF THE STRUCTURE ARE COMPLETED.

ABBREVIATIONS

ADD'L	ADDITIONAL	LG.	LONG
ALT	ALTERNATE	LONG.	LONGITUDINAL
A.B.	ANCHOR BOLT	LLV	LONG LEG VERTICAL
ARCH	ARCHITECT	L.W.	LONG WAY
BOT.	BOTTOM	L.W.C.	LIGHT WEIGHT CONCRETE
BEW	BOTTOM EACH WAY	MAX.	MAXIMUM
BM	BEAM	MECH	MECHANICAL
BOF	BOTTOM OF FOOTING	M.M.	MISCELLANEOUS METAL
BRG	BEARING	MIN.	MINIMUM
BS	BOTH SIDES	MTL	METAL
C	CAMBER	NF	NEAR FACE
CFMF	COLD FORMED METAL FRAMING	N-S	NON SHRINK
CIP	CAST-IN-PLACE	NTS	NOT TO SCALE
CLR	CLEAR	O.C.	ON CENTER
COL	COLUMN	PL	PLATE
COMP. DK.	COMPOSITE DECK	OPNG	OPENING
CONC.	CONCRETE	R & D	REMOVE AND DISPOSE
CMU	CONCRETE MASONRY UNIT	REINF.	REINFORCING
CJ	CONTROL JOINT	SC	SHEAR CONNECTOR
CONST. JT.	CONSTRUCTION JOINT	SLV	SHORT LEG VERTICAL
CONT.	CONTINUOUS	SOG	SLAB ON GRADE
DIA or Ø	DIAMETER	S.S.	STAINLESS STEEL
DWL'S	DOWELS	STIFF	STIFFENER
DWG	DRAWING	STL	STEEL
EA.	EACH	SJ	SAWN JOINT
E.F.	EACH FACE	T	TOP
E.W.	EACH WAY	TCX	TOP CHORD EXTENSION
EL.	ELEVATION	THK	THICK
E.J.	EXPANSION JOINT	TOC	TOP OF CONCRETE
EQ.	EQUAL	TOF	TOP OF FOOTING
EX. or EXIST.	EXISTING	TOW	TOP OF WALL
F.F.	FAR ACE	TRANS.	TRANSVERSE
FFE	FINISH FLOOR ELEVATION	TSL	TOP OF SLAB
FND	FOUNDATION	TST	TOP OF STEEL
FTG	FOOTING	TYP.	TYPICAL
EX.	GAUGE	U.N.O.	UNLESS NOTED OTHERWISE
GALV.	GALVANIZED	VERT.	VERTICAL
G.C.	GENERAL CONTRACTOR	V.I.F.	VERIFY IN FIELD
HORIZ.	HORIZONTAL	WWF	WELDED WIRE FABRIC
HSS	HOLLOW STRUCTURAL SHAPE	W/	WITH
I.F.	INSIDE FACE	W.P.	WORKING POINT
JBE	JOIST BEARING ELEVATION		

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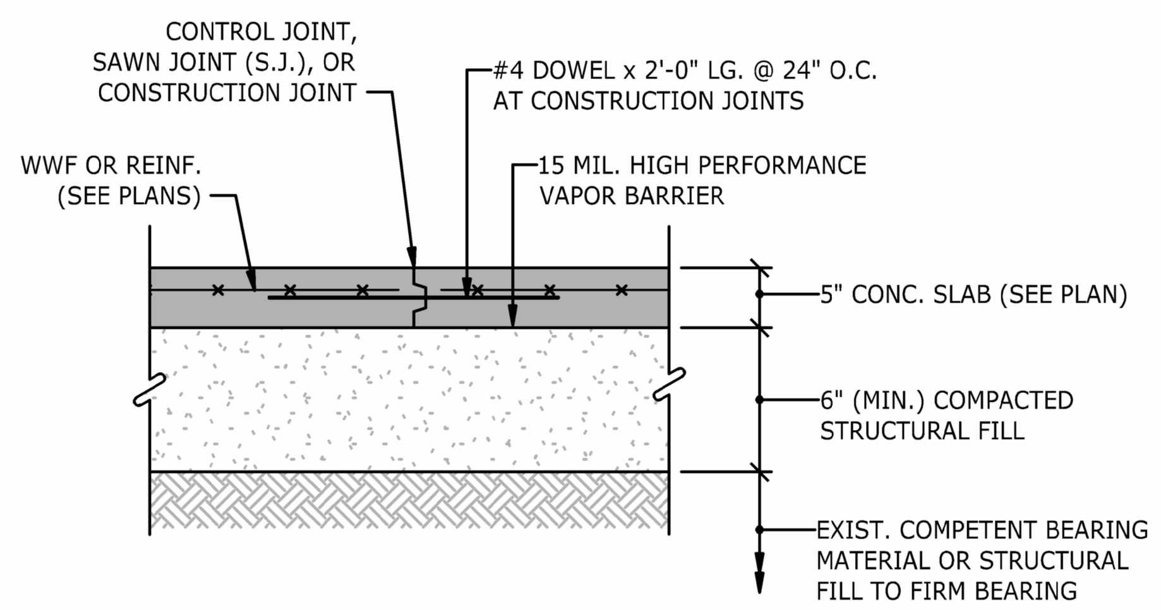
STRUCTURAL NOTES

DRAWING NO.:
S0.1

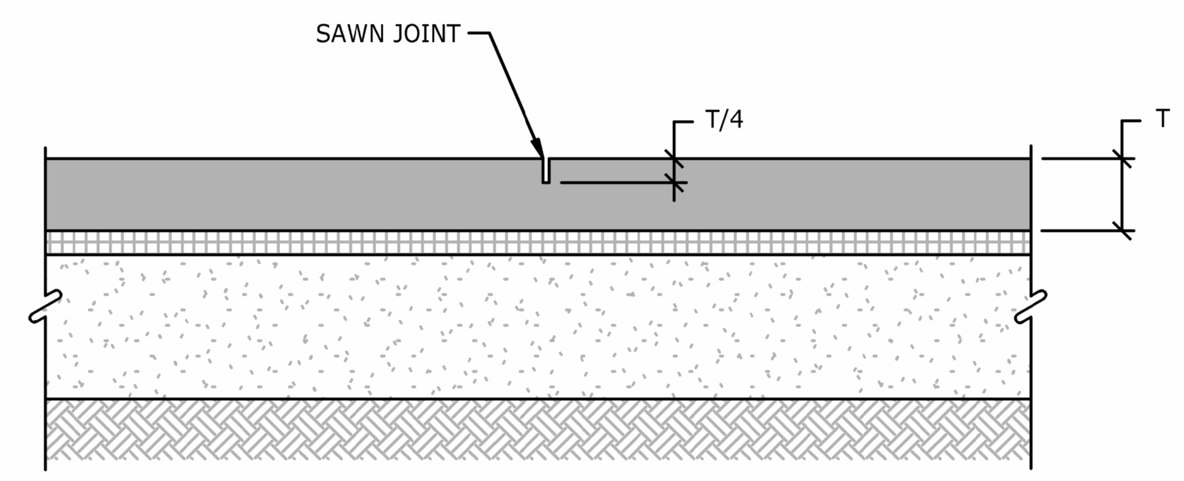
SHEET NO. 1 OF 4



NOTE:
REFER TO GEOTECHNICAL REPORT (PENDING) PREPARED BY PARE CORPORATION FOR MORE INFORMATION REGARDING SUBGRADE PREPARATION AND OVER-EXCAVATION REQUIREMENTS

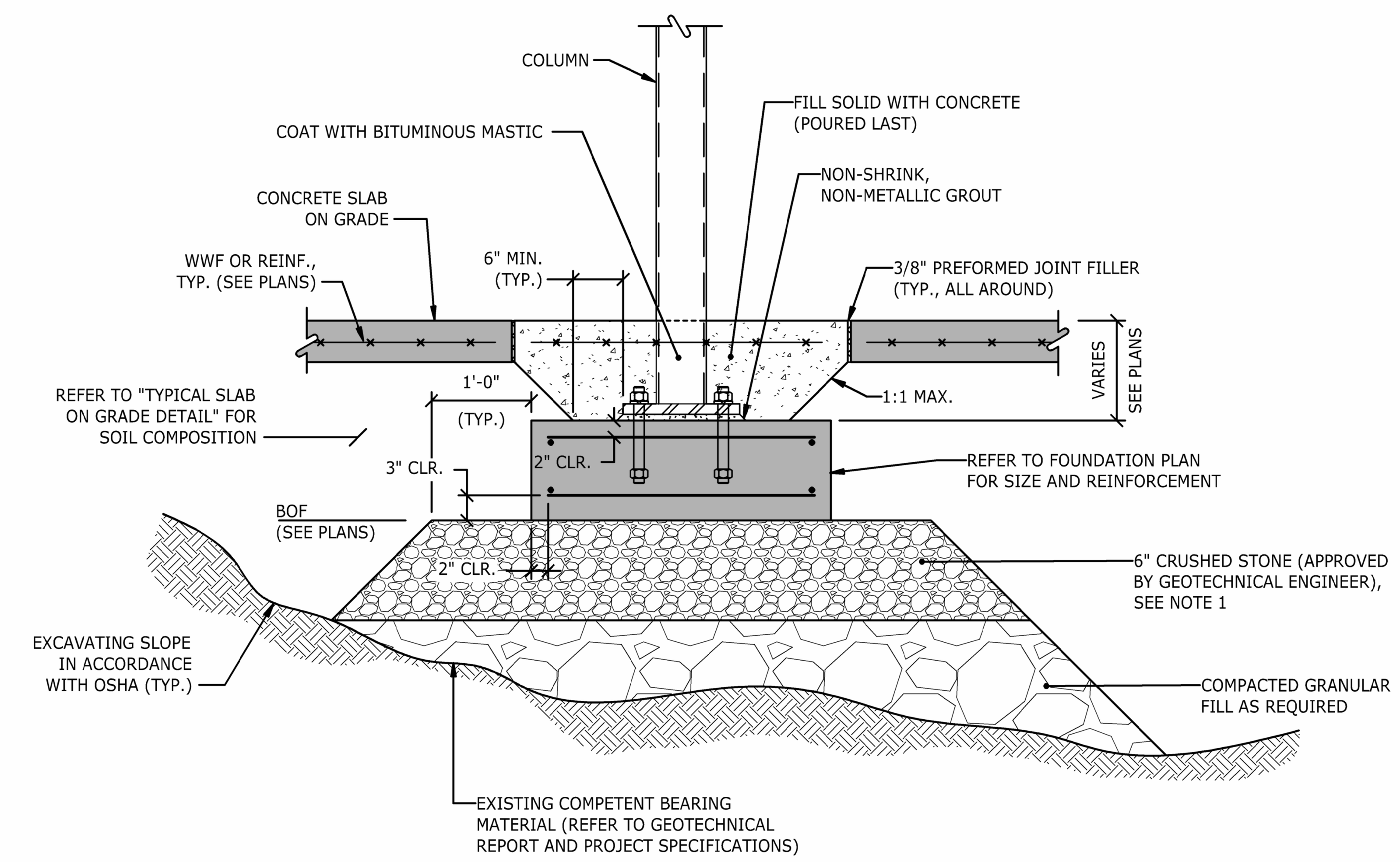
TYPICAL SLAB-ON-GRADE DETAIL
NOT TO SCALE

SLAB THICKNESS "T" (IN.)	MAX. JOINT SPACING (FT.)
5	15



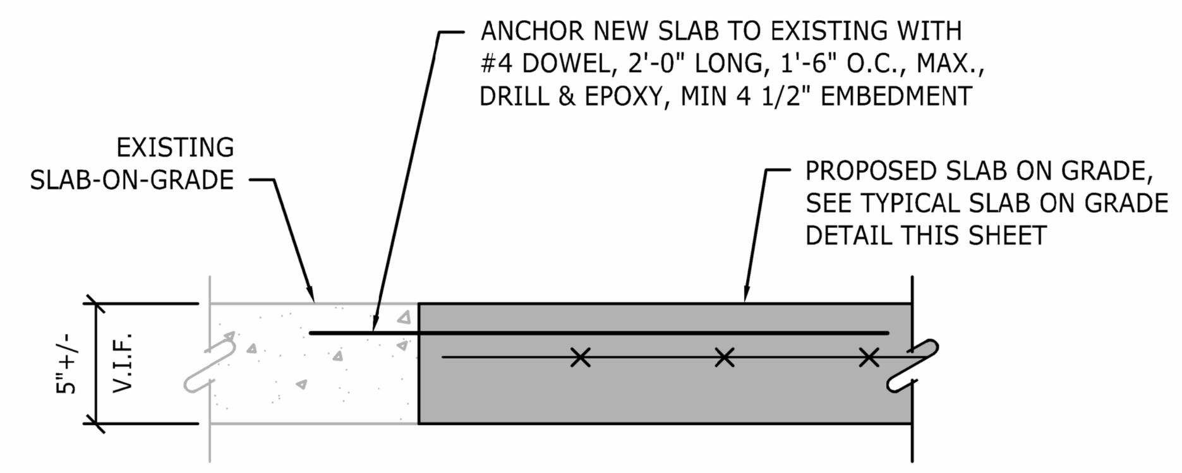
NOTES:
1. EXTEND JOINTS BY HAND TOOL WHERE VERTICAL SURFACES OBSTRUCT SAW CUTTING.
2. SAW CUT MINIMUM 1/4T" DEEP JOINT WITH EARLY ENTRY SAW AS SOON AS POSSIBLE AFTER FINISHING SLAB (4 TO 8 HOURS MAX. - PROPER TIMING IS DICTATED BY THE RATE OF CONCRETE HARDENING).
3. MAXIMUM SPACING OF JOINTS IN EACH DIRECTION IN FEET IS 3-TIMES THE SLAB THICKNESS IN INCHES (SEE CHART).
4. LOCATE CONTROL JOINTS ON A RECTANGULAR GRID AND SUBMIT LAYOUT OF CONTROL JOINTS FOR APPROVAL UNLESS JOINT LOCATIONS ARE OTHERWISE SPECIFIED. NO RE-ENTRANT CORNERS ARE PERMITTED.
5. ALTERNATE CONCRETE PLACEMENTS ALLOWING 36 HOURS BETWEEN ADJACENT POURS.
6. PREPARE ALL CONTROL JOINTS TO RECEIVE SEALANT BY HIGH PRESSURE WASHING AFTER SAW CUTTING, SAND BLASTING AFTER THE JOINTS ARE DRY AND THEN BLOWING OUT THE JOINTS WITH CLEAN, DRY COMPRESSED AIR.
7. FILL JOINTS IN EXPOSED SLABS WITH A FLEXIBLE EPOXY CONTROL JOINT RESIN (SIKADUR 51 SL OR EQUIVALENT. INSTALL 60-90 DAYS AFTER CONCRETE PLACEMENT.

TYPICAL SLAB-ON-GRADE CONTROL JOINT DETAIL
NOT TO SCALE



NOTES:
1. WHERE CRUSHED STONE IS USED, IT SHALL BE WRAPPED IN GEOTEXTILE FABRIC APPROVED BY THE GEOTECHNICAL ENGINEER. PROVIDE FABRIC ALONG THE SIDES AND BOTTOM OF THIS LAYER. DO NOT INSTALL FABRIC AT THE INTERFACE OF THE BOTTOM OF FOOTING AND THE STONE LAYER.
2. REFER TO DRAWING S0.1, GEOTECHNICAL REPORT (PENDING), AND PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION REGARDING SUBGRADE PREPARATION AND OVER EXCAVATION REQUIREMENTS.

TYPICAL COLUMN FOOTING DETAIL
NOT TO SCALE



TYPICAL REPLACEMENT SLAB-ON-GRADE DETAIL
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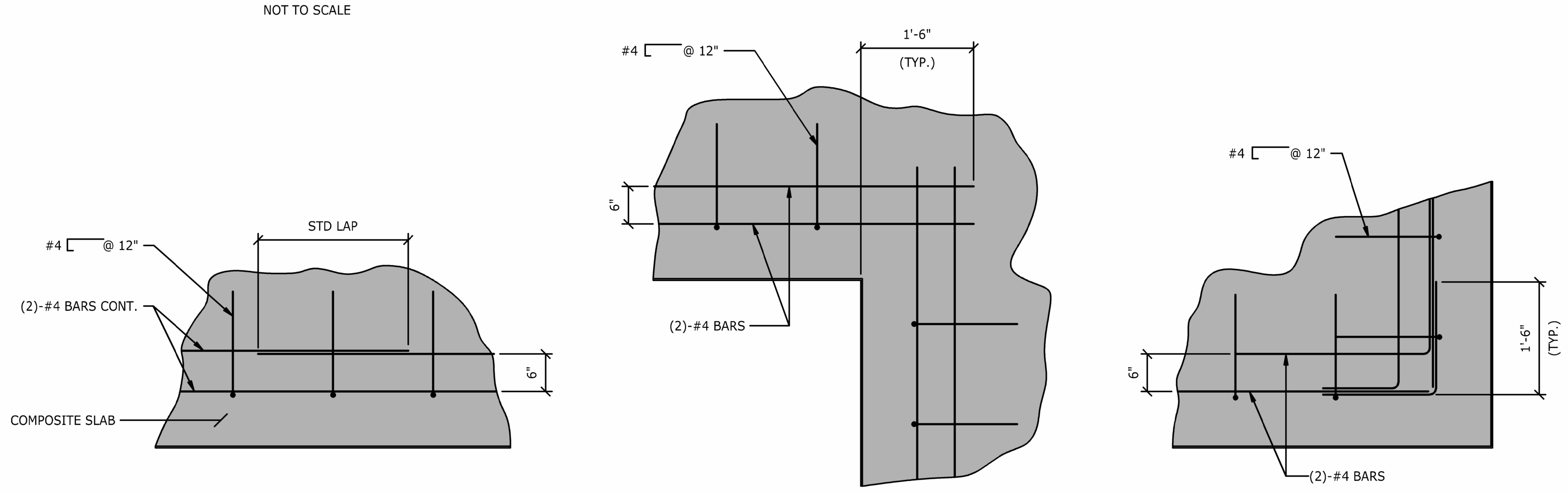
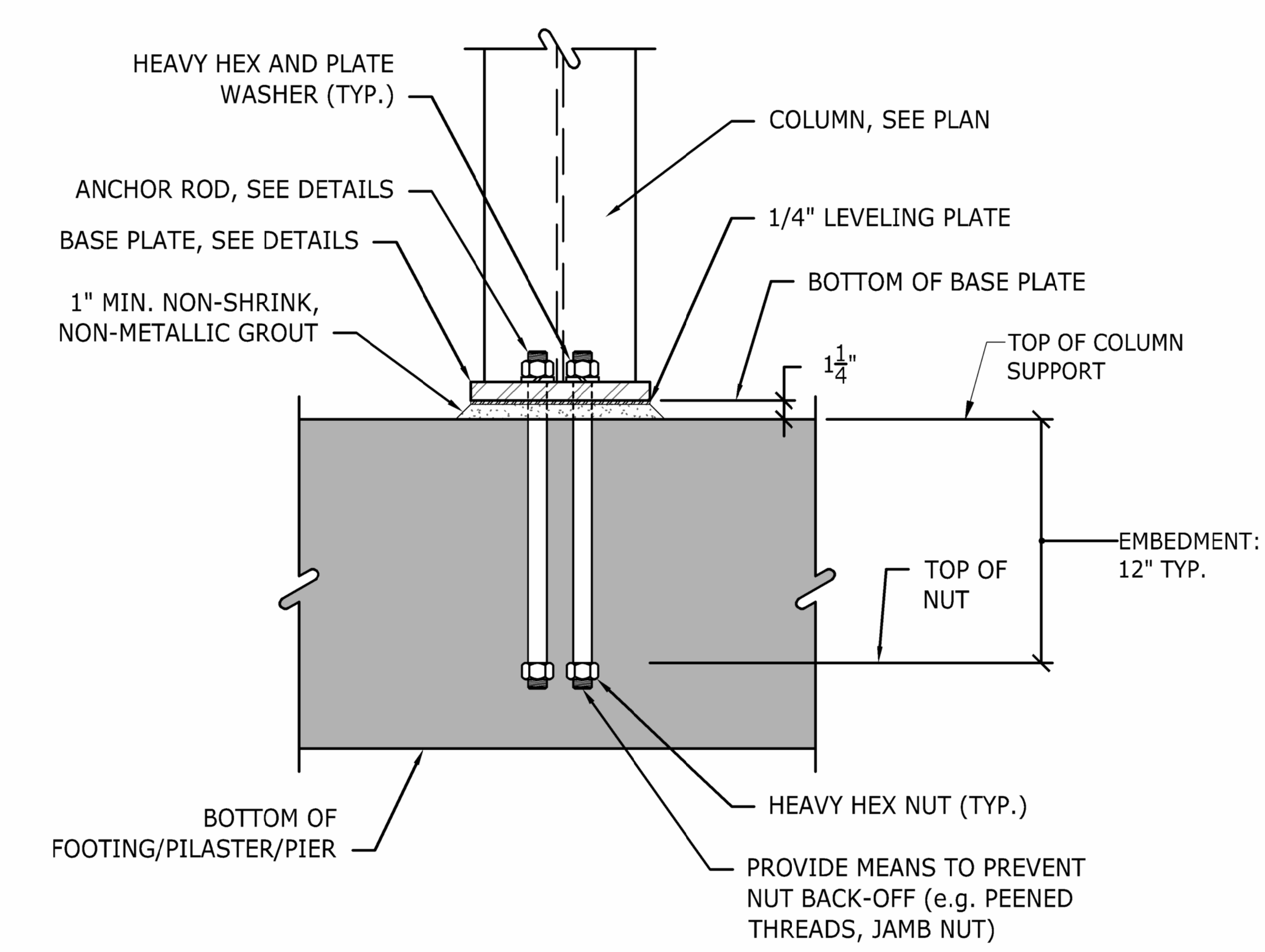
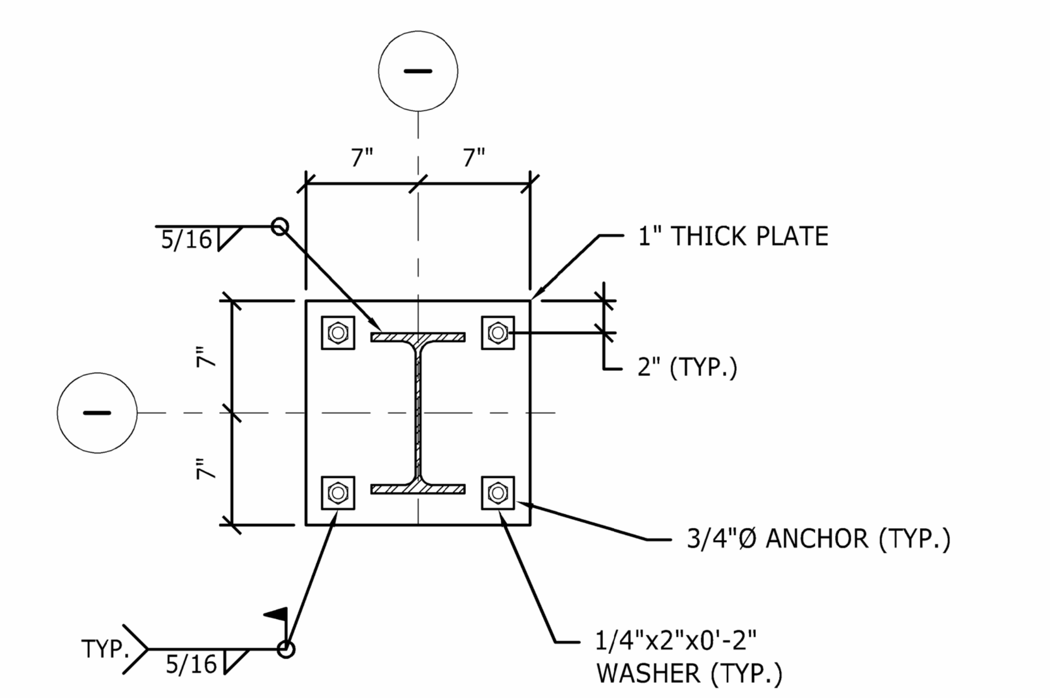


TYPICAL **INSIDE CORNER** **OUTSIDE CORNER**

TYPICAL ELEVATED SLAB EDGE REINFORCEMENT
NOT TO SCALE



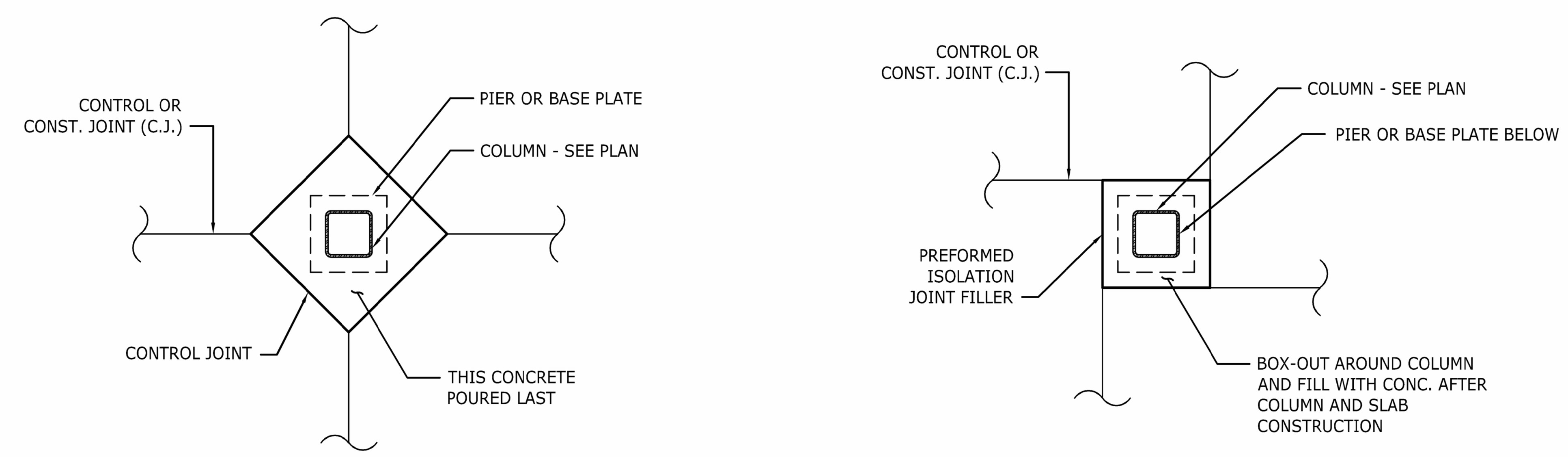
TYPICAL BASE PLATE ANCHORAGE



BASE PLATES NOTES:
1. REFER TO THE FOUNDATION/FRAMING PLANS FOR COLUMN SHAPES AND ORIENTATION.
2. PROVIDE OVERSIZED HOLES IN BASE PLATES AS FOLLOWS:

   A. 3/4"Ø ROD : 1 5/16"Ø HOLE
3. SETTING/LEVELING PLATES SHALL BE USED AS AN ANCHOR ROD TEMPLATE AND SHALL BE FABRICATED WITH STANDARD HOLES (ROD DIAMETER + 1/16")
4. PLATE WASHERS SHALL BE WELDED TO BASE PLATES AT THE EXTERIOR PERIMETER OF THE BUILDING AND AT BRACED FRAMES.
5. ANCHORS SHALL CONFORM TO ASTM F1554 GR. 36 UNLESS NOTED OTHERWISE.
6. PLATE WASHERS SHALL CONFORM TO ASTM A36.
7. HEAVY HEX NUTS SHALL CONFORM TO ASTM A563 GRADE A.

TYPICAL BASE PLATE DETAILS
NOT TO SCALE



INTERIOR COLUMN

INTERIOR COLUMN - PINWHEEL PATTERN

NOTES:
1. REMOVE TOP INCH OF PREFORMED ISOLATION JOINT FILLER AND SEAL JOINT AS REQUIRED FOR CONTROL JOINTS.
2. AT PINWHEEL PATTERN, CONTRACTOR HAS THE OPTION OF PLACING ISOLATION JOINT TIGHT TO COLUMN AND SAW CUT PINWHEEL PATTERN.

TYPICAL COLUMN AT SLAB ON GRADE ISOLATION JOINT DETAILS
NOT TO SCALE

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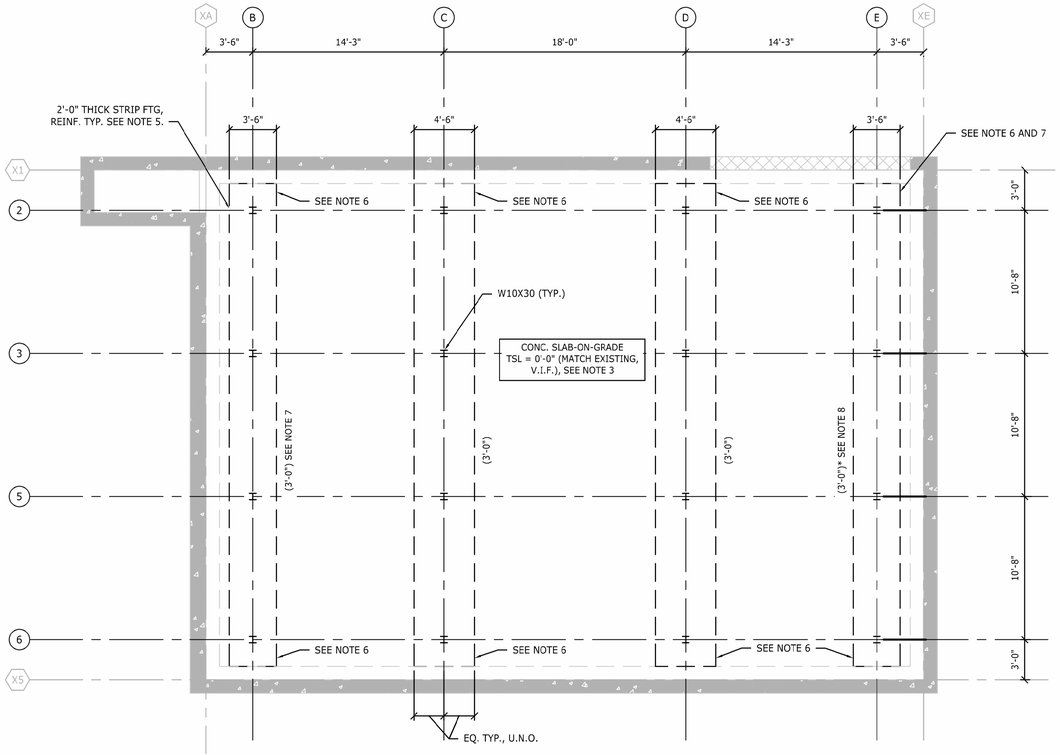


PROPOSED FOUNDATION PLAN

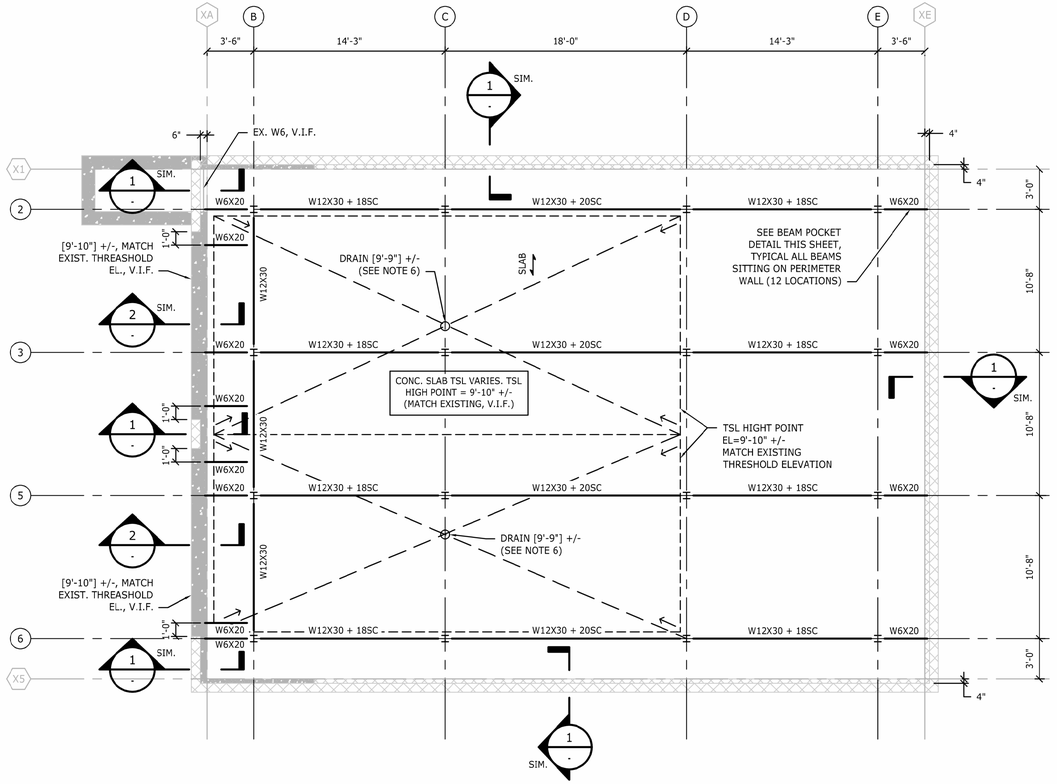
SCALE: 3/16"=1'-0"

FOUNDATION NOTES:

1. REFER TO DRAWING S0.1 FOR STRUCTURAL NOTES AND STRUCTURAL DETAIL DRAWINGS FOR TYPICAL DETAILS.
2. REFER TO PLAN FOR BOTTOM OF FOOTING (BOF) ELEVATIONS.
3. 5" CONCRETE SLAB-ON-GRADE SHALL BE REINFORCED WITH 6x6 W2.9xW2.9 WELDED WIRE FABRIC (WWF), TYPICAL UNLESS NOTED OTHERWISE. INSTALL AT MID-DEPTH PER TYPICAL SLAB-ON-GRADE DETAIL.
4. PROVIDE SLAB CONTROL JOINTS PER TYPICAL DETAIL.
5. STRIP FOOTING WIDTH VARIES, SEE PLAN. PROVIDE #6 @ 12" O.C., T&B, E. W.
6. STEP PROPOSED FOUNDATION TO MATCH EXISTING BOF ELEVATION. INFORM SER IF EXISTING BOF ELEVATION IS DEEPER THAN 4'-0" BELOW FFE OR HIGHER THAN 3'-0" BELOW FFE.
7. PROVIDE SHORING FOR FOUNDATION/PARTITION WALL FOOTING AS REQ'D. DO NOT UNDERMINE EXISTING FOUNDATIONS DURING PROPOSED FOOTING INSTALLATION.
8. VERIFY ADJACENT EXISTING BOF ELEVATION AND PROXIMITY TO PROPOSED FOOTING. IF EXISTING FOOTING BEARING IS WITHIN A 1:1 INFLUENCE ZONE FROM PROPOSED FOOTING, INFORM SER PRIOR TO PROCEEDING.

LEGEND:

(X'-X")	INDICATES BOTTOM OF FOOTING (BOF) ELEVATION



PROPOSED FRAMING PLAN

SCALE: 3/16"=1'-0"

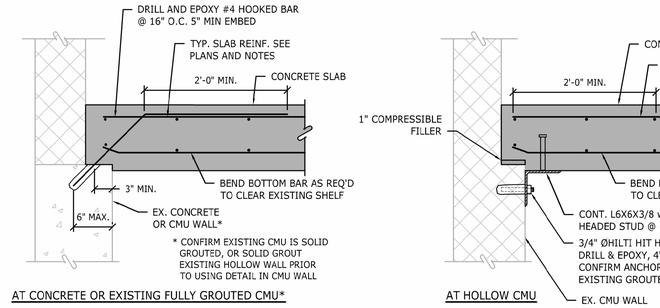
FRAMING NOTES:

1. REFER TO DRAWING S0.1 FOR STRUCTURAL NOTES AND STRUCTURAL DETAIL DRAWINGS FOR TYPICAL DETAILS.
2. TOP OF STEEL (TST) = 8'-11" +/- ABOVE BASEMENT FFEb, V.I.F., TYP., U.N.O. GARAGE FLOOR HIGH POINT FFEg=9'-10" +/- ABOVE BASEMENT FFEb (MATCH EXISTING EL AT GARAGE OH DOOR), V.I.F.
3. SLAB ⇄ INDICATES SPAN DIRECTION OF NEW CAST-IN-PLACE ELEVATED SLAB. SLAB THICKNESS WILL VARY BASED UPON SLOPING AND MATCHING EXISTING ELEVATIONS, 10" MINIMUM SLAB THICKNESS. REINFORCE WITH #8 @ 6" O.C., T & B, #8 BARS SHALL BE ORIENTED IN DIRECTION OF SLAB ARROW. PROVIDE #4 @ 12" O.C. T & B PERPENDICULAR TO #8 BAR DIRECTION. ALL REINFORCEMENT SHALL BE HOT-DIPPED GALVANIZED. PROVIDE 2" COVER FOR TOP MAT AND 1" COVER FOR BOTTOM MAT.
4. [X] DENOTES CONNECTION DESIGN FORCES (SERVICE LOADS IN ASD) IN KIPS. FORCES ARE VERTICAL UNLESS NOTED OTHERWISE AS FOLLOWS:
   (H) = HORIZONTAL
   (A) = AXIAL
   (M) = BENDING MOMENT IN STRONG DIRECTION (K*FT)
5. "X" SC INDICATES THE NUMBER OF 3/4" DIAMETER, 6" LONG SHEAR STUDS SPACED EVENLY ALONG THE BEAM UNLESS NOTED OTHERWISE.
6. ↑ INDICATES SLOPE OF SLAB TO DRAIN. INTENT IS FOR DRAIN TO BE SET 1" DOWN FROM SLAB HIGH POINT (TSL AT OH DOOR THRESHOLD)
7. REPLACE CONCRETE STEP AT EXISTING MAN DOORS TO MAIN BUILDING IN-KIND AFTER NEW DECK IS INSTALLED. VERIFY EXISTING STEPS IN FIELD PRIOR TO DEMOLITION.

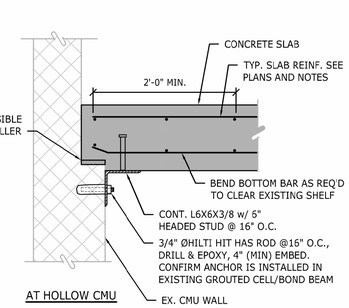
CONCRETE SLAB TO EXISTING WALL CONNECTION DETAIL

1 / -

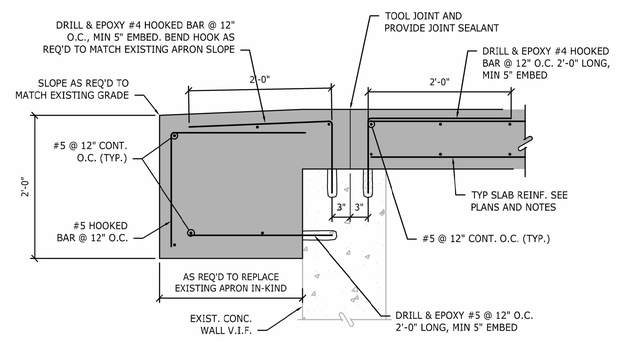
NOT TO SCALE



AT CONCRETE OR EXISTING FULLY GROUTED CMU*



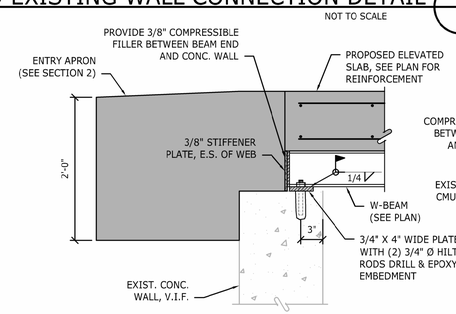
AT HOLLOW CMU



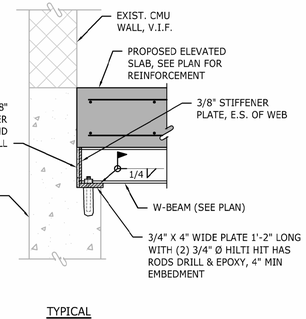
CONCRETE SLAB AND APRON AT OVERHEAD DOOR

2 / -

NOT TO SCALE



AT OVERHEAD DOORS

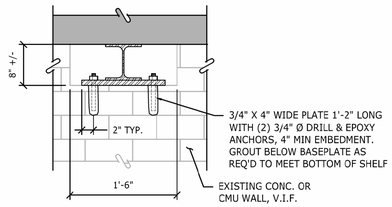


TYPICAL

NOTE:
DETERMINE BOTTOM OF BEAM POCKET BASED ON EXISTING TSL AT THRESHOLD, LESS MAX ELEVATED SLAB THICKNESS + BEAM DEPTH+ BEARING PLATE AND GROUT.

BEAM POCKET DETAIL

NOT TO SCALE



ELEVATION

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NORTH ARROW

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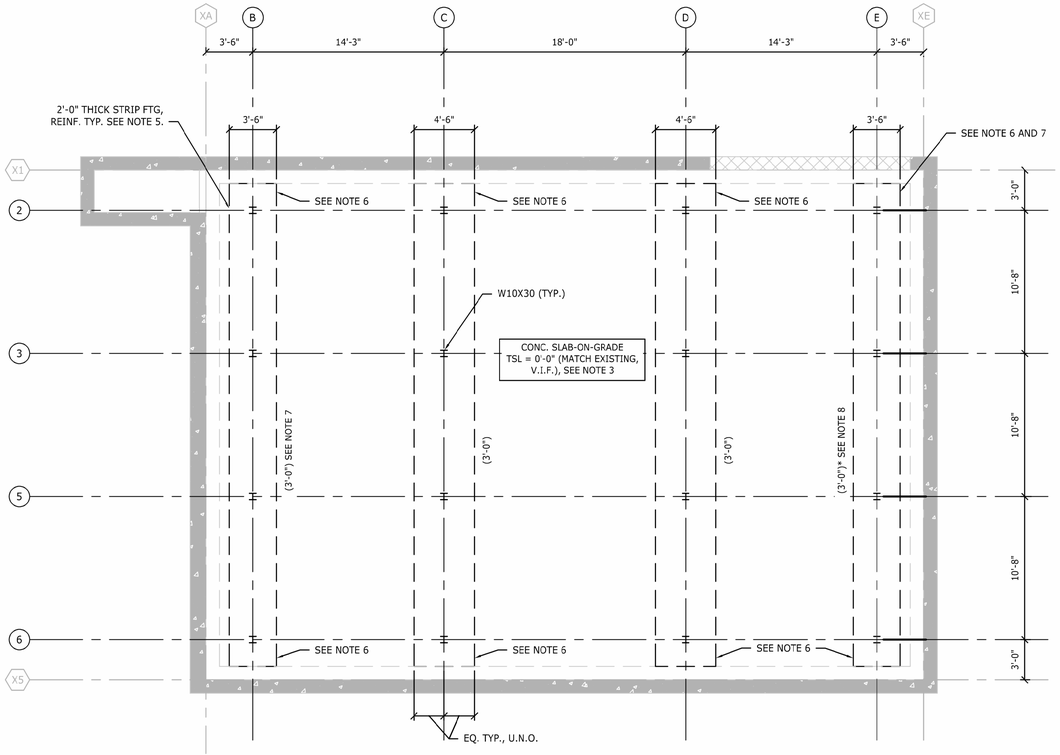
DRAWING NO.:
S1.0

SHEET NO. 4 OF 4



PROPOSED FOUNDATION PLAN

SCALE: 3/16"=1'-0"

LEGEND:

(X'-X") INDICATES BOTTOM OF FOOTING (BOF) ELEVATION

FOUNDATION NOTES:

1. REFER TO DRAWING S0.1 FOR STRUCTURAL NOTES AND STRUCTURAL DETAIL DRAWINGS FOR TYPICAL DETAILS.
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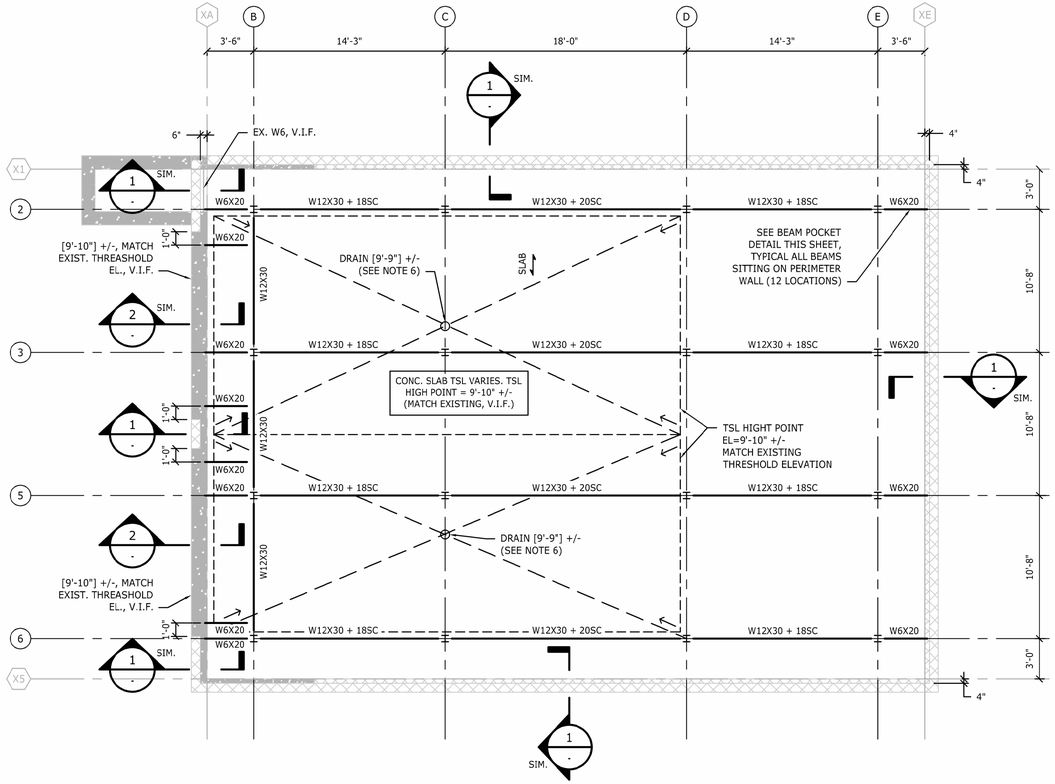

PROPOSED FRAMING PLAN

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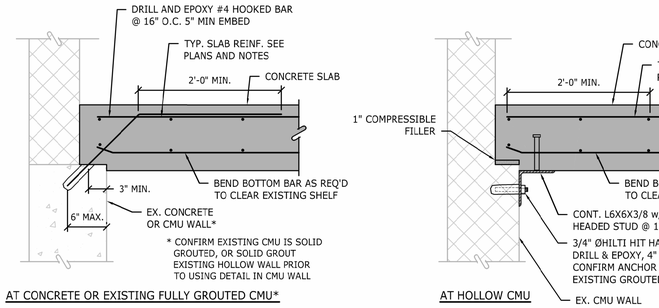
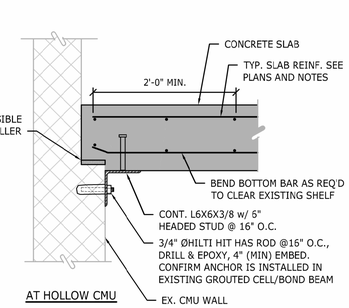
7. REPLACE CONCRETE STEP AT EXISTING MAN DOORS TO MAIN BUILDING IN-KIND AFTER NEW DECK IS INSTALLED. VERIFY EXISTING STEPS IN FIELD PRIOR TO DEMOLITION.

CONCRETE SLAB TO EXISTING WALL CONNECTION DETAIL

1 / - NOT TO SCALE



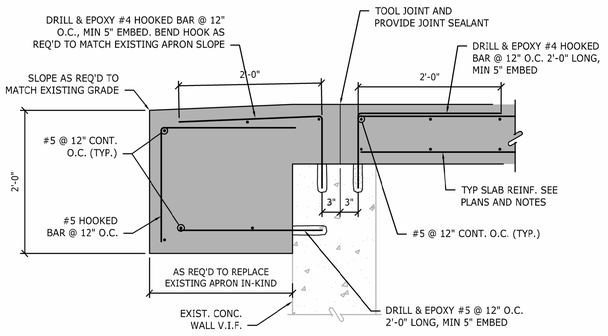
AT CONCRETE OR EXISTING FULLY GROUTED CMU*

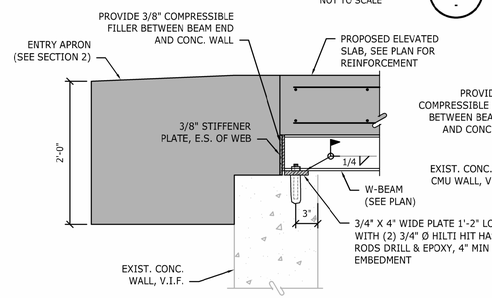


AT HOLLOW CMU

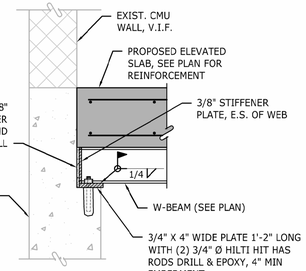
CONCRETE SLAB AND APRON AT OVERHEAD DOOR

2 / - NOT TO SCALE





AT OVERHEAD DOORS

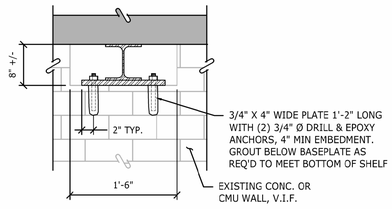


TYPICAL

NOTE:
DETERMINE BOTTOM OF BEAM POCKET BASED ON EXISTING TSL AT THRESHOLD, LESS MAX ELEVATED SLAB THICKNESS + BEAM DEPTH+ BEARING PLATE AND GROUT.

BEAM POCKET DETAIL

NOT TO SCALE



ELEVATION

PARE
PARE CORPORATION
ENGINEERS - SCIENTISTS - PLANNERS
8 BLACKSTONE VALLEY PLACE
LINCOLN, RI 02865
401-334-4100

NORTH ARROW

SCALE ADJUSTMENT GUIDE
0" 1"
BAR IS ONE INCH ON ORIGINAL DRAWING

CUMBERLAND HILL FIRE STATION
CUMBERLAND, RHODE ISLAND

REVISIONS:

0	08 NOV24	ISSUED FOR BID

PROJECT NO.:	23215.00
DATE:	NOVEMBER 2024
SCALE:	AS NOTED
DESIGNED BY:	SRS
CHECKED BY:	DDM
DRAWN BY:	MSS
APPROVED BY:	MGM

DRAWING TITLE:
STRUCTURAL PLANS AND DETAILS

DRAWING NO.: S1.0

SHEET NO. 4 OF 4

Z:\JOBS\23 Jobs\23215.00 Cumberland-Cumberland Hill Fire Sta-BV\DWGS\S0.1 and S1.0.dwg