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## **Addendum No. 03**

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FEMA HMGP Phase II Safe Room

Barnwell County School District  
Barnwell, SC 29812

Tt Project No. 213-207015-24001  
BCSD No.: BCSD-SAFE ROOM 03

Addendum No. 03  
to  
FEMA HMGP Phase II Safe Room – Contract Documents

October 25, 2024  
.....

To: ALL BIDDERS

This ADDENDUM forms a part of the BIDDING AND CONTRACT DOCUMENTS and modifies the following documents:  
Original DRAWINGS dated September 11, 2024  
Original PROJECT MANUAL dated September 11, 2024

Acknowledge receipt of the ADDENDUM in the space provided on the FORM OF PROPOSAL

This ADDENDUM consists of five (5) page and the following:

### **3.1 GENERAL ADMINISTRATIVE DISCUSSION**

A. Critical Dates:

1. **Bid Due Date: Nov. 07, 2024 2:00pm**
2. Cut off for Substitutions: October 23, 2024
3. Cut off for Questions/Clarifications/or Interpretations: October 29, 2024
4. Last Addendum (for technical content): Nov. 01, 2024

B. Please direct all requests for information/clarifications to [tt-projectadmin@tetrattech.com](mailto:tt-projectadmin@tetrattech.com) and Tabi Heath at [tabi.heath@tetrattech.com](mailto:tabi.heath@tetrattech.com)

### **3.2 PROJECT MANUAL MODIFICATIONS:**

A. Section 00 10 01 Table of Contents:

1. **ADD** the following Specs Sections to the TOC.
  - a. Spec Section 01 22 00 Unit Prices
  - b. Spec Section 01 91 00 Commissioning
  - c. Spec Section 23 08 00 Commissioning of HVAC

B. Replace SE-330 Lump Sum Bid Form Eligible Base Bid and SE-330 Lump Sum Bid Form Ineligible Base Bid, with attach #07 & #08. Use these forms to submit your bid on.

C. AIA Document A701

1. Add the following paragraph to section 4.3 Submission of Bids; “4.3.7 On a separate sheet of paper, provide references from three separate projects of similar contract value. The information provided should help the school district verify the company’s credentials.
  2. Add the following paragraph to section 5. Consideration of Bids; “5.1.4 The Contractor will your bid price for 90 days. If necessary, after 90 days, the contractor can adjust their bidders.
- D. AIA Document A201-2017; delete paragraph 14.1.2
- E. Spec Section 01 22 00; Unit Prices, **ADD** in its entirety. **See Attach #01.**
- F. Spec Section 01 40 00; Quality Requirements, **REPLACE** Spec Section in its entirety with the Revised. **See Attach #04.**
- G. Spec Section 01 91 00 Commissioning **ADD** in its entirety. **See Attach #02**
- H. Spec Section 09 64 66; Wood Athletic Flooring
1. Part 2, Article 2.2.A.1.; Add Aacer’s Power Play Wood Flooring to list of Manufacturer’s.
- I. Spec Section 09 67 23; Resinous Flooring
1. Part 2, Article 2.1.A.2; Add Plexi-Chemie PlexiFlake QBF to list of Manufacturer’s and product.
- J. Spec Section 12 66 00 Telescoping Stands:
1. Add the following item to paragraph 2.2.B.1 “b. Sheridan Seating Bleacher”
- K. Spec Section 23 08 00 Commissioning of HVAC **ADD** in its entirety. **See Attach #03**
- L. Section 28 46 21.11 Addressable Fire-Alarm Systems
1. Part 2, Article 2.2 “Fire-Alarm Control Units (FACU), **ADD** “6. Fike (Honeywell Silent Knight)” to the list of Manufacturer’s.

### **3.3 PROJECT DRAWINGS MODIFICATIONS:**

- A. Sheet S-110 Foundation Plan:
1. . **REPLACE** this drawing with the drawing “S-110 Foundation Plan **Att #04.**”
  2. Add the following note to Foundation Plan Notes, “F. The soil under the front entrance between col. A & C and 1 & 6 remove the existing soil 5’ from the finish floor to remove the unsuitable soil. The quantity of unsuitable soil removal is 1,580 cu yards. Provide truckload tickets to verify the removal of the soil removed. If more soil is needed to be removed or less soil is needed to be removed per the Geotech engineer, an add or credit will be based on the unit price.”
  3. Add the following note to Foundation Plan Notes, “G. Remove 2,000 cu yards of unsuitable under the perimeter dome foundation to 3’ below the finish floor. Provide truckload tickets to verify the removal of the unsuitable soil. If more soil is needed to be removed or less soil is needed to be removed per the Geotech engineer, an add or credit will be based on the unit price.”
- B. Sheet S-111 Foundation Details:
1. . **REPLACE** this drawing with the drawing “S-111 Foundation Details **Att #05.**”
- C. Sheet A-503 Section Details: add the following note to the note “Provide Rigid Insulation Horiz. and Vertical Typ.” Provide 2” thick insulation that will 24” into the building.”
- D. Sheet FP501 Fire Protection Details and Schedules:
1. Add the word “Above Ground” to the “Water Storage Tank Schedule” Fire Alarm Legend, Abbreviation and General Notes:
  2. On the “Water Storage Tank Schedule,” change WT-1 Manufacturer from “Highland/HT-1156” to “Highland/HT-1129”

### 3.4 REQUEST FOR INFORMATION/CLARIFICATIONS (RFI'S):

**Question #01:** “Toilets and Handwashing Facilities” on page 175 are Eligible. “Restroom Fixtures....” on page 176 are Ineligible. Are Toilet Partitions, Urinal Screens, and Toilet Accessories considered Ineligible and only plumbing fixtures Eligible?

**Response:** **The four<sup>th</sup> Column in Table 6, Eligible and Ineligible, should be used to determine the Eligible and Ineligible costs. The shelter is rated for 700 people, so the eligible cost for toilet fixtures is 6 men’s toilets, 11 women’s toilets, associated toilet partitions, 4 lavs per sex, 4 water fountains, and one mop sink. All the concrete sidewalks, and 8 parking spaces shown on drawing on C-200 are eligible costs.**

**Question #02: Question #05:** The Pre-bid Agenda indicates Prevailing Wages are not required and yet the AIA® Document A201® – 2017 General Conditions Draft included in Addendum 1 states “§ 14.1.2 Contractor shall comply with all requirements of the Davis-Bacon Act, including but not limited to providing all required notices and paying the prevailing wages.” Please advise

**Response:** **Contract Provisions Guide 13.4. Davis-Bacon Act This statute requires that contractors must pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in the Secretary of Labor’s wage determination. Additionally, contractors are required to pay wages at least once per week.8 Additional requirements are listed below, and relevant definitions are at 29 C.F.R. § 5.2. NFEs should refer to the applicable NOFO or other program guidance or contact their applicable FEMA grant representative for additional information on how to implement this requirement. 4.1 Applicability When required by the federal program legislation, prime construction contracts over \$2,000 awarded by NFEs must include a provision for compliance with the Davis-Bacon Act.9 The Davis-Bacon Act only applies to the Emergency Management Performance Grant Program,10 Homeland Security Grant Program,11 Nonprofit Security Grant Program,12 Tribal Homeland Security Grant Program,13 Port Security Grant Program,14 Transit Security Grant Program,15 Intercity Passenger Rail Program,16 and Rehabilitation of High Hazard Potential Dams Program.17 Unless otherwise stated in a program’s authorizing statute, it does not apply to other FEMA grant and cooperative agreement programs, including the PA Program. Davis-Bacon Act does not apply to this project.**

**Question #03:** The sign-in sheet for the prebid was issued in Addendum 1. Could you also provide the names and contact information for those who attended virtually and include

- a. Brantley Construction Company, LLC
- b. Christina McAlhaney
- c. 843-552-0150
- d. [christina@brantleyconstruction.com](mailto:christina@brantleyconstruction.com)

**Response:** **Due to the methods of distributing the information for this project, a contractor list will not be accumulated. The ownership does not know who was in the virtual pre-bid meeting because it was just phones and not firm’s names.**

**Question #04:** Soils reports discuss removing and replacing existing soils at borings B4, B4A and B7. Please provide a plan for how to and where to undercut and replace soils.

**Response:** **See 3.1.A.2. & 3. In the body of this addendum for this information.**

**Question #05:** Please clarify eligible and ineligible bid documents.

**Response:** **See response #02**

**Question #06:** Should colored mortar be included for the exterior split faced CMU?

**Response:** **Yes**

**Question #07:** Please let us know which subcontractors we should list, ie. Plumbing Electrical, HVAC?

**Response:** **See Addendum #01 paragraph 1.1.2 & this this addendum item 3.2.B**

**Question #08:** Please clarify Details 2 & 4 A503. Is the insulation shown, perimeter insulation. If so, how wide and how thick is the insulation?

**Response:** See 3.3.C. in this document

**Question #09:** Please confirm what water tank is required. Underground or Above ground. Need specifications on either choice.

**Response:** See 3.3.D. in this document

**Question #10:** I am wanting to clarify to project amount for the above item—On SCBO it states the range is from \$9,000,000 to \$ 111,000,000. I am guessing this is a typo—can you please advise.

**Response:** **The \$111,000,000 figure is a typo it should be \$11,000,000. This range is for the Eligible Cost bid not the ineligible Cost Bid.**

**Question #11:** Is the deadline of 11/18 still accurate ?

**Response:** **We are not sure what deadline you are referring to but the bids are due November 07, 2024 @ 2:00 PM the district office.**

### 3.5 SUBSTITUTION REQUESTS

**Request #1:** Fire Alarm System Substitution Requested; Requested by H. G. Reynolds:

1. Product Substitution Request for the Fire Alarm System: To substitute Fike (Honeywell Silent Knight).

Note: BCSD currently has 2 new fire alarm systems being installed at Guinyard-Butler Middle School and Barnwell High School. These systems are manufactured by Honeywell and private-labeled for Fike Corporation. The Fike 2100-ECS control panel is the Honeywell Silent Knight Farenhyt 2100-ECS. Please see the attached data sheets.

**Response:** **This fire alarm system substitution is approved**

**Request #2:** Metal Locker Substitution Request; requested by Brantley Construction Company:

Lockers MFG Phenolic Locker Series

**Response:** **Metal Lockers are rejected as a substitution for Phenolic Lockers as specified**

**Request #3:** Bleachers Substitution Request;; Requested by Brantley Construction Company

Telescoping Bleachers, request to used Sheridan Seating Bleachers

**Response:** **The Sheridan Seating Bleachers has been approved as a substitution.**

**Request #4:** Resinous Flooring; requested by: H.G. Reynolds

I would like to re-submit my request for a different system – Key Lastic Chip / Flake 100 with a #580 elastomeric base coat and a #615 Chemical Resistant Epoxy topcoat. There is little information on the Stontec QBF data sheet to compare with (copy attached), but my best effort is shown below.

**Response:** **The substitution request to add Key Resin Company epoxy flooring to the approved manufacturer list in spec section 09 67 23 Resinous Flooring is rejected due to a lack of information. If this product is to be considered, the bidder needs to follow the instructions in spec section 01 25 00. The bidder needs to provide a comparison of the speeded product and how this product meets or exceeds the speeded product.**

**Request #5:** Gym Flooring; Requested by Brantley Construction Company.

Aacer's PowerPlay Panel FB flooring system.

**Response:** **The Aacer's Power Play has been approved as a substitution.**

**Request #6:** Resinous Flooring (Plexi-Chemie); requested by Plexi-Chemie

Plexi-Chemie PlexiFlake QBF

**Response:** **The Plexi-Chemie PlexiFlake QBF has been approved as a substitution.has been approved as a substitution.**

**ATTACHMENTS**

1. Spec Section 01 22 00, Unit Prices
2. Spec Section 01 40 00 Quality Requirements
3. Spec Section 01 91 00 Commissioning
4. Spec Section 23 08 00 Commissioning of HVAC
5. S-110 Foundation Plan
6. S-111 Foundation Details
7. SE-330 Lump Sum Bid Form Eligible Base Bid
8. SE-330 Lump Sum Bid Form Ineligible Base Bid

**END OF ADDENDUM No. 03**

## SECTION 01 22 00 - UNIT PRICES

### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

### 1.2 SUMMARY

- A. Section includes administrative and procedural requirements for unit prices.
- B. Related Requirements:
  - 1. Section 01 26 00 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
  - 2. Section 01 40 00 "Quality Requirements" for field testing by an independent testing agency.

### 1.3 DEFINITIONS

- A. Unit price is a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

### 1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
- B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the Part 3 "Schedule of Unit Prices" Article contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

- A. Unit Price No. 1: Removal of unsatisfactory soil and replacement with satisfactory soil material.
1. Description: Unsatisfactory soil excavation and disposal off-site and replacement with satisfactory fill material or engineered fill from off-site, as required, in accordance with Section 31 20 00 "Earth Moving."
  2. Unit of Measurement: 6500 cubic yards of soil excavated, based on in-place surveys of volume before and after removal.

END OF SECTION 01 22 00

## SECTION 01 40 00 - QUALITY REQUIREMENTS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements. It is the Contractor's responsibility to provide the Third-Party Testing Services.
  - 1. Specific quality-assurance and quality-control requirements for individual work results are specified in their respective Specification Sections. Requirements in individual Sections may also cover production of standard products.
  - 2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
  - 3. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

#### 1.2 DEFINITIONS

- A. Experienced: When used with an entity or individual, "experienced," unless otherwise further described, means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.
- B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.
- C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.
  - 1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).
- D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.
- E. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) in accordance with 29 CFR 1910.7, by a testing agency accredited in



accordance with NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

- F. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source (e.g., plant, mill, factory, or shop).
- G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. The term "testing laboratory" has the same meaning as the term "testing agency."
- H. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work, to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- I. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work, to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect.

### 1.3 DELEGATED DESIGN SERVICES

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
  - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated Design Services Statement: Submit a statement signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

### 1.4 CONFLICTING REQUIREMENTS

- A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Architect regarding the conflict and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Architect for clarification before proceeding.
- B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified is the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 INFORMATIONAL SUBMITTALS

- A. Contractor's Quality-Control Plan: For quality-assurance and quality-control activities and responsibilities.
- B. Qualification Data: For Contractor's quality-control personnel.
- C. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work on the following systems:
  - 1. Seismic-force-resisting system, designated seismic system, or component listed in the Statement of Special Inspections.
  - 2. Primary wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspections.
- D. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
- E. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
  - 1. Specification Section number and title.
  - 2. Entity responsible for performing tests and inspections.
  - 3. Description of test and inspection.
  - 4. Identification of applicable standards.
  - 5. Identification of test and inspection methods.
  - 6. Number of tests and inspections required.
  - 7. Time schedule or time span for tests and inspections.
  - 8. Requirements for obtaining samples.
  - 9. Unique characteristics of each quality-control service.
- F. Reports: Prepare and submit certified written reports and documents as specified.
- G. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.6 CONTRACTOR'S QUALITY-CONTROL PLAN

- A. Quality-Control Plan, General: Submit quality-control plan within 20 days of Notice of Award, and not less than 6 days prior to preconstruction conference. Submit in format acceptable to Architect. Identify personnel, procedures, controls, instructions, tests, records, and forms to be used to carry out Contractor's quality-assurance and quality-control responsibilities and to coordinate Owner's quality-assurance and quality-control activities. Coordinate with Contractor's Construction Schedule.

- B. Quality-Control Personnel Qualifications: Engage qualified personnel trained and experienced in managing and executing quality-assurance and quality-control procedures similar in nature and extent to those required for Project.
  - 1. Project quality-control manager may also serve as Project superintendent.
- C. Submittal Procedure: Describe procedures for ensuring compliance with requirements through review and management of submittal process. Indicate qualifications of personnel responsible for submittal review.
- D. Testing and Inspection: In quality-control plan, include a comprehensive schedule of Work requiring testing or inspection, including the following:
  - 1. Contractor-performed tests and inspections, including subcontractor-performed tests and inspections. Include required tests and inspections and Contractor-elected tests and inspections. Distinguish source quality-control tests and inspections from field quality-control tests and inspections.
  - 2. Special inspections required by authorities having jurisdiction and indicated on the Statement of Special Inspections.
- E. Continuous Inspection of Workmanship: Describe process for continuous inspection during construction to identify and correct deficiencies in workmanship in addition to testing and inspection specified. Indicate types of corrective actions to be required to bring the Work into compliance with standards of workmanship established by Contract requirements and approved mockups.
- F. Monitoring and Documentation: Maintain testing and inspection reports, including log of approved and rejected results. Include Work Architect has indicated as nonconforming or defective. Indicate corrective actions taken to bring nonconforming Work into compliance with requirements. Comply with requirements of authorities having jurisdiction.

#### 1.7 REPORTS AND DOCUMENTS

- A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:
  - 1. Date of issue.
  - 2. Project title and number.
  - 3. Name, address, telephone number, and email address of testing agency.
  - 4. Dates and locations of samples and tests or inspections.
  - 5. Names of individuals making tests and inspections.
  - 6. Description of the Work and test and inspection method.
  - 7. Identification of product and Specification Section.
  - 8. Complete test or inspection data.
  - 9. Test and inspection results and an interpretation of test results.
  - 10. Record of temperature and weather conditions at time of sample-taking and testing and inspection.
  - 11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
  - 12. Name and signature of laboratory inspector.

13. Recommendations on retesting and reinspecting.

- B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, telephone number, and email address of technical representative making report.
  2. Statement on condition of substrates and their acceptability for installation of product.
  3. Statement that products at Project site comply with requirements.
  4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
  5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  6. Statement of whether conditions, products, and installation will affect warranty.
  7. Other required items indicated in individual Specification Sections.
- C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:
1. Name, address, telephone number, and email address of factory-authorized service representative making report.
  2. Statement that equipment complies with requirements.
  3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
  4. Statement of whether conditions, products, and installation will affect warranty.
  5. Other required items indicated in individual Specification Sections.

1.8 QUALITY ASSURANCE

- A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.
- C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing

engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that is similar in material, design, and extent to those indicated for this Project.

- F. Specialists: Certain Specification Sections require that specific construction activities be performed by entities who are recognized experts in those operations. Specialists will satisfy qualification requirements indicated and engage in the activities indicated.
  - 1. Requirements of authorities having jurisdiction supersede requirements for specialists.
- G. Testing and Inspecting Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented in accordance with ASTM E329, and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.
- H. Manufacturer's Technical Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect, demonstrate, repair, and perform service on installations of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:
  - 1. Contractor's Responsibilities:
    - a. Provide test specimens representative of proposed products and construction.
    - b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
    - c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
    - d. Build site-assembled test assemblies using installers who will perform same tasks for Project.
  - 2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect, with copy to Contractor. Interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from the Contract Documents.

## 1.9 QUALITY CONTROL

- A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
  2. Payment for these services will be made from testing and inspection allowances specified in Section 01 21 00 "Allowances," as authorized by Change Orders.
  3. Costs for retesting and reinspecting construction that replaces or is necessitated by Work that failed to comply with the Contract Documents will be charged to Contractor.
- B. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.
1. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
  2. Engage a qualified testing agency to perform quality-control services.
    - a. Contractor will not employ same entity engaged by Owner, unless agreed to in writing by Owner.
  3. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
  4. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
  5. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  6. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.
- D. Testing Agency Responsibilities: Cooperate with Architect, Commissioning Authority and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
  2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
  3. Conduct and interpret tests and inspections, and state in each report whether tested and inspected Work complies with or deviates from requirements.
  4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
  5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
  6. Do not perform duties of Contractor.
- E. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including

service connections. Report results in writing as specified in Section 01 33 00 "Submittal Procedures."

- F. **Manufacturer's Technical Services:** Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.
- G. **Contractor's Associated Requirements and Services:** Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
  - 1. Access to the Work.
  - 2. Incidental labor and facilities necessary to facilitate tests and inspections.
  - 3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
  - 4. Facilities for storage and field curing of test samples.
  - 5. Delivery of samples to testing agencies.
  - 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  - 7. Security and protection for samples and for testing and inspection equipment at Project site.
- H. **Coordination:** Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.
  - 1. Schedule times for tests, inspections, obtaining samples, and similar activities.
- I. **Schedule of Tests and Inspections:** Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Coordinate and submit concurrently with Contractor's Construction Schedule. Update and submit with each Application for Payment.
  - 1. **Schedule Contents:** Include tests, inspections, and quality-control services, including Contractor- and Owner-retained services, commissioning activities, and other Project-required services paid for by other entities.
  - 2. **Distribution:** Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

### 3.1 TEST AND INSPECTION LOG

- A. **Test and Inspection Log:** Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
  2. Description of the Work tested or inspected.
  3. Date test or inspection results were transmitted to Architect.
  4. Identification of testing agency or special inspector conducting test or inspection.
- B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.
1. Submit log at Project closeout as part of Project Record Documents.

### 3.2 REPAIR AND PROTECTION

- A. General: On completion of testing, inspection, sample-taking, and similar services, repair damaged construction and restore substrates and finishes.
1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching.
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01 40 00



SECTION 01 91 00 - COMMISSIONING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Commissioning description.
2. Submittals.
3. Qualifications
4. Commissioning services.
5. Commissioning responsibilities.
6. Commissioning meetings.
7. Commissioning reports.
8. Sequencing.
9. Scheduling.
10. Maintenance materials.
11. Test equipment.
12. Verification check and startup procedures.
13. Functional performance test procedures.
14. Function performance test methods.
15. Deficiencies and test approvals.
16. Demonstration.

B. Related Sections:

1. Section 23 08 00 - Commissioning of HVAC: Mechanical systems commissioning requirements.

C. Allowances: Include under provisions of Section 01 20 00 - Price and Payment Procedures. Allowance includes furnishing Commissioning Authority services.

1.2 REFERENCES

A. Associated Air Balance Council (AABC):

1. AABC Commissioning Guideline.

B. American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE):

1. ASHRAE Guideline 1 - The HVAC Commissioning Process.

C. National Environmental Balancing Bureau (NEBB):

1. NEBB - Procedural Standards for Building Systems Commissioning.

### 1.3 COMMISSIONING DESCRIPTION

- A. Commissioning: Systematic process of ensuring systems perform interactively according to design intent and Owner's operational needs. Commissioning process encompasses and coordinates system documentation, equipment startup, control system calibration, testing and balancing, performance testing and training, and verification of actual performance.
- B. Commissioning Intent:
  - 1. Verify equipment and systems are installed according to manufacturer's instructions, industry accepted minimum standards, and Contract Documents.
  - 2. Verify equipment and systems receive adequate operational checkout by Contractor.
  - 3. Verify and document proper performance of equipment and systems.
  - 4. Verify complete operation and maintenance documentation is delivered to Owner.
  - 5. Verify Owner's operating and maintenance personnel are adequately trained.
- C. Equipment and Systems to Be Commissioned: HVAC, plumbing, electrical, lighting controls, and emergency generator.
- D. Commissioning does not relieve Contractor of responsibility to provide finished and fully functioning Project.
- E. Commissioning Process Overview and General Order of Commissioning Tasks:
  - 1. Commissioning begins with initial commissioning meeting.
  - 2. Conduct progress commissioning meetings throughout construction to plan, scope, coordinate, and schedule future activities and to resolve problems.
  - 3. Equipment documentation is submitted to Commissioning Authority during normal submittals with detailed startup procedures.
  - 4. Commissioning Authority works with Contractor and equipment and system installers to develop startup plans and startup documentation formats, including verification checklists to be completed by installers, during verification check and startup process.
  - 5. In general, checkout and performance verification proceed from simple to complex, that is, from component level to equipment to systems and intersystem levels, with verification checklists being completed before functional testing.
  - 6. Equipment and system installers execute and document verification checklists and perform verification check and startup. Commissioning Authority verifies that checklists and startup were completed according to approved plans.
  - 7. Commissioning Authority develops specific equipment and system functional performance test procedures. Equipment and system installers and Contractor review procedures.
  - 8. Equipment and system installers execute procedures under direction of and documentation by Commissioning Authority.
  - 9. Items of noncompliance in material, installation, or setup are corrected at Contractor's expense, and system is retested.
  - 10. Commissioning Authority reviews operation and maintenance documentation for completeness.
  - 11. Commissioning is completed before Substantial Completion.
  - 12. Commissioning Authority reviews, approves, and coordinates training provided by equipment and system installers and verifies training was completed.
  - 13. Deferred testing is conducted as specified.

#### 1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures and Requirements contains requirements for submittals.
- B. Qualification Data: Submit the following prior to start of Work:
  - 1. Commissioning Authority: Firm name, address, and telephone number, and name of responsible officer.
  - 2. Name of full time individual assigned to Project and assuming role as Commission Authority.
  - 3. Detailed description of three commissioning projects completed by full time individual assigned to Project within past five years. Include names and telephone numbers of owner's project manager and Contractor's Site superintendent.

#### 1.5 COMMISSIONING SUBMITTALS

- A. Furnish one copy of Contract Documents including Addenda, Change Orders, requests for interpretation, and meeting minutes, to Commissioning Authority.
- B. Furnish one copy of submittals directly to Commissioning Authority for review and approval according to procedures specified in Section 01 33 00 - Submittal Procedures and requirements.
  - 1. Make submittals for each piece of equipment or system indicated to be commissioned.
  - 2. Make submittals to Commissioning Authority concurrent with submittals to Architect/Engineer.
  - 3. Distribute one copy of approved submittals to Commissioning Authority.
- C. Furnish one copy of preliminary operation and maintenance data manuals to Commissioning Authority for each piece of equipment or system indicated to be commissioned.
  - 1. Submit required manuals within 30 days after submittals for each piece of equipment or system required under Section 01 33 00 - Submittal Procedures are approved.
- D. Make additional submittals requested by Commissioning Authority for each piece of equipment or system indicated to be commissioned. Incorporate requested submittal information into related operation and maintenance manuals. Include the following:
  - 1. Manufacturer's printed, detailed installation and startup, operating, troubleshooting, and maintenance procedures.
  - 2. Equipment performance curves.
  - 3. Factory test reports.
  - 4. Full sequence of operation and control diagrams.
  - 5. Proposed testing, adjusting, and balancing procedures.
  - 6. Complete warranty information, identifying Owner responsibilities to keep warranty in force.
  - 7. Lists of installation and checkout materials shipped with equipment.
  - 8. Manufacturer's field checkout forms to be used by factory or field technicians.
  - 9. Other documentation necessary for commissioning process.

- E. Furnish one copy of verification check and startup plan to Commissioning Authority for review and approval. Include the following at minimum:
  - 1. Commissioning Authority's verification checklists with party responsible for each item indicated.
  - 2. Manufacturer's standard startup procedures copied from installation manuals.
  - 3. Manufacturer's standard field checkout sheets.
  - 4. Supplemental procedures and checklists prepared by equipment and system installers to accommodate Project conditions.
  - 5. Sensor and actuator calibration procedures.
  - 6. Include boxes or lines for recording and documenting checking and inspections of each procedure and summary statement with signature block at end of plan.
  
- F. Submit written training plan to Commissioning Authority for review and approval prior to conducting training including the following:
  - 1. Equipment included in training session.
  - 2. Intended audience.
  - 3. Location of training.
  - 4. Objectives.
  - 5. Subjects covered.
  - 6. Duration of training on each subject.
  - 7. Instructor for each subject.
  - 8. Instructional methods to be used.
  
- G. Commissioning Authority will review and approve submittals for conformance to Contract Documents as related to commissioning process, for primary purpose of aiding development of functional testing procedures and secondary purpose of verifying compliance with equipment Specifications.

#### 1.6 CLOSEOUT SUBMITTALS

- A. Section 01 77 00 - Closeout Procedures contains requirements for closeout submittals.
  
- B. Operation and Maintenance Data: Submit operation and maintenance manuals as specified in individual equipment and system Specifications.
  - 1. Submittals made to Commissioning Authority do not constitute compliance with operation and maintenance manual documentation.
  
- C. Commissioning Record: Commissioning Authority will submit one copy of commissioning record for inclusion in operation and maintenance manuals. Furnish records in following format, arranged by system, with each part separated by tabbed flyleaves:
  - 1. Commissioning plan.
  - 2. Final commissioning report.
  - 3. System 1: Provide the following separated by tabbed flyleaves:
    - a. Design narrative and criteria, sequences, and approvals.

- b. Startup plan and report, approvals, corrections, and blank verification checklists. Separate data for each equipment type with colored separators.
    - c. Completed, functional tests, trending and analysis, approvals and corrections, training plan, record and approvals, blank functional test forms, and recommended re-commissioning schedule.
  4. System 2: As specified for System 1.
- D. Final Commissioning Report: Commissioning Authority will submit one copy of final commissioning report including the following:
  1. Executive summary with list and roles of participants, brief Project description, overview of commissioning and testing scope, and general description of testing and verification methods.
  2. For Each Piece of Commissioned Equipment: Include statement regarding compliance with Contract Documents in the following areas:
    - a. Equipment Specifications.
    - b. Equipment installation.
    - c. Functional performance and efficiency.
    - d. Equipment documentation and design intent.
    - e. Operator training.
  3. Include recommendations for improvement to equipment or operations, future actions, and commissioning process changes.
  4. List outstanding deficiencies referenced to specific functional test, inspection, trend log, or other record where deficiency is documented.
  5. Include brief description of verification method used as well as observations and conclusions from testing for each commissioned piece of equipment and system.

#### 1.7 QUALITY ASSURANCE

- A. Perform Work according to AABC.
- B. Perform Work according to State standard.
- C. Maintain one copy of each document on Site.

#### 1.8 QUALIFICATIONS

- A. Commissioning Authority Firm: Company specializing in performing Work of this Section with minimum 5 years documented experience.
  1. Responsible for successfully commissioning 5 facilities of similar complexity and systems in past five years.
  2. Independent of Owner, Architect/Engineer, and Contractor.
- B. Commissioning Authority: Individual employed by Commissioning Authority firm specializing in performing Work of this Section with minimum 5 years documented experience.

1. Licensed as Professional Engineer in same state as Site, with mechanical and electrical engineering specialty.
2. Experienced in operation and troubleshooting mechanical and electrical systems, energy management control systems, and lighting control systems.
3. Knowledgeable in test and balance of air and water systems.
4. Experienced in monitoring and analyzing system operation using energy management control system trending or standalone data-logging equipment.
5. Excellent verbal and written communication skills, highly organized, and able to work with both management and installers.

#### 1.9 COMMISSIONING SERVICES

- A. Employ and pay for services of an independent firm as Commissioning Authority acceptable to Owner to perform specified commissioning.

#### 1.10 COMMISSIONING RESPONSIBILITIES

- A. Responsibilities indicated for Owner, Architect/Engineer, and Commissioning Authority are provided only to clarify commissioning process.

- B. Architect/Engineer Responsibilities:

1. Perform Site observation of each system immediately before system startup.
2. Furnish design narratives and sequence documentation requested by Commissioning Authority.
3. Clarify operation and control of commissioned equipment when Specifications, control drawings, or equipment documentation is not sufficient for writing detailed testing procedures.
4. Coordinate resolution of design issues affecting system performance identified during commissioning.
5. Coordinate resolution of system deficiencies identified during commissioning, according to Contract Documents.
6. Prepare and submit final design intent documentation reflecting installed conditions for inclusion in operation and maintenance manuals.
7. Review and approve operation and maintenance manuals.
8. Make presentation at one training session for Owner's personnel.
9. [Approve verification checklists for major pieces of equipment.
10. Approve functional test procedure forms for major pieces of equipment.

- C. Commissioning Authority Responsibilities:

1. Basic Responsibilities:

- a. Coordinate, direct, and approve commissioning Work.
- b. Develop and coordinate execution of commissioning plan. Revise commissioning plan to suit Project conditions.
- c. Schedule commissioning Work with Contractor for inclusion in Progress Schedule.
- d. Plan and conduct commissioning meetings.

- e. Request and review commissioning submittals required to perform commissioning tasks.
  - f. Write and distribute verification tests and checklists.
  - g. Develop verification check and startup plan in cooperation with Contractor and equipment and system installers.
  - h. Write functional performance test procedures in cooperation with Contractor and equipment and system installers.
  - i. Review test and balance execution plan.
  - j. Attend Project progress and pre-installation meetings. Review meeting minutes. Resolve potential conflicts with commissioning activities.
  - k. Observe equipment and system installations.
  - l. Document that equipment and systems are installed and perform according to design intent and Contract Documents.
  - m. Notify Owner of deficiencies.
  - n. Coordinate and supervise required seasonal or deferred testing and deficiency corrections.
  - o. Oversee and approve content and adequacy of Owner's personnel training.
  - p. Review and approve operation and maintenance manuals.
  - q. Compile commissioning record and testing data manual.
  - r. Provide final commissioning report.
2. Detailed Responsibilities:
- a. Witness and document each piping, ductwork, and electrical system testing, cleaning, and flushing. Include documentation in operation and maintenance manuals.
  - b. Approve verification tests and checklist completion by reviewing verification checklist reports, Site observation, and spot checking.
  - c. Approve system startup by reviewing startup reports and Site observation.
  - d. Oversee functional testing of control system. Approve control system for use for test and balance operations.
  - e. Approve air and water system balancing by reviewing completed reports, Site observation, and spot testing.
  - f. Analyze functional performance trend logs and monitor data to verify performance.
  - g. Coordinate, witness, and approve manual functional performance tests performed by equipment and system installers.
    - 1) Coordinate retesting until satisfactory performance is achieved.
    - 2) Perform actual functional testing on equipment as specified in Section 23 08 00 - Commissioning of HVAC.
  - h. Maintain deficiency and resolution log and separate testing record. Submit progress reports and test results with recommended actions to Owner.
  - i. Review documentation for factory and performance tests that Commissioning Authority does not oversee. Determine what additional testing and documentation is required to comply with Contract Documents.
  - j. Review equipment warranties to ensure Owner's responsibilities are defined.
  - k. Return to Site minimum of two months before expiration of warranty period.

- 1) Review with Owner's personnel the current equipment and system operation and condition of outstanding issues related to original and seasonal commissioning.
  - 2) Interview Owner's personnel to identify problems or concerns regarding equipment and system operation.
  - 3) Make suggestions for improvements and for recording changes in operation and maintenance manuals.
  - 4) Identify deficiencies covered by warranty or original construction contract.
  - 5) Assist Owner's personnel to develop reports, documents, and requests for services to remedy outstanding problems.
- l. Develop systems manual according to AABC.
  - m. Prepare standard trend logging package of primary parameters, providing operations staff clear indications of system function to identify proper system operation and troubleshoot problems. Include information required to interpret trends.
  - n. Assist in developing preventative maintenance plan, detailed operating plan, energy and resource management plan, and record documents.
3. Commissioning Authority may not:
    - a. Release, revoke, alter, or enlarge on requirements of Contract Documents.
    - b. Approve or accept any portion of the Work.
    - c. Assume duties of Contractor or Architect/Engineer.
    - d. Stop the Work.
- D. Owner Responsibilities:
1. Arrange for Owner's personnel to attend commissioning activities and training sessions according to commissioning plan.
  2. Approve commissioning Work completion.
  3. Ensure seasonal or deferred testing and deficiency issues are addressed.
- E. Contractor Responsibilities:
1. Include requirements for commissioning submittal data, operation and maintenance data, commissioning tasks and training in each purchase order and subcontract for equipment and systems indicated to be commissioned.
  2. Facilitate coordination of commissioning Work by Commissioning Authority.
  3. Attend commissioning meetings.
  4. Cooperate with Commissioning Authority and provide access to the Work and to manufacturers' facilities.
  5. Require equipment and system installers to execute test to review and provide comments on functional test procedures.
  6. Require manufacturers to review commissioning test procedures for equipment installed by manufacturer.
  7. Furnish proprietary test equipment required by manufacturers to complete equipment and system tests.
  8. Provide temporary facilities as specified in Section 01 50 00 - Temporary Facilities and Controls for Commissioning Authority's exclusive use for documentation and instrument storage and preparation of reports.



9. Furnish qualified personnel to assist in completing commissioning.
10. Furnish manufacturer's qualified field representatives as specified in Section 01 40 00 - Quality Requirements and individual Specification Sections to assist in completing commissioning.
11. Ensure equipment and system installers execute commissioning responsibilities according to Contract Documents and Progress Schedule.
12. Coordinate Owner's personnel training.
13. Prepare operation and maintenance manuals specified in Section 01 70 00 - Execution and Closeout Requirements. Update original sequences of operation reflecting actual installation.
14. Ensure equipment and system installers execute seasonal and deferred functional performance testing, witnessed by Commissioning Authority.
15. Ensure equipment and system installers correct deficiencies and make necessary adjustments to operation and maintenance manuals and record documents for issues identified in seasonal testing.

#### 1.11 COMMISSIONING MEETINGS

- A. Commissioning Authority will make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings.
- B. Initial Commissioning Meeting:
  1. Commissioning Authority will schedule meeting within 60 days after Notice of Award.
  2. Attendance Required: Commissioning Authority, Owner, Owner's facility operating personnel, Architect/Engineer, Contractor, Subcontractors, and testing, adjusting, and balancing agency. Require attendance by installers of the following equipment and systems indicated to be commissioned, including:
    - a. Mechanical equipment and systems.
    - b. Plumbing equipment and systems.
    - c. Electrical equipment and systems.
    - d. Temperature control equipment and systems.
  3. Agenda:
    - a. Designation of personnel representing parties for commissioning activities.
    - b. Review commissioning process and responsibilities.
    - c. Review commissioning plan development procedures.
    - d. Review required commissioning submittals.
    - e. Present initial commissioning schedule.
- C. Progress Commissioning Meetings:
  1. Commissioning Authority will schedule meetings throughout progress of the Work at maximum monthly intervals.
    - a. Beginning three months before Substantial Completion, meetings will be scheduled at maximum weekly intervals.

2. Attendance Required: As specified for initial commissioning meeting.
3. Agenda:
  - a. Coordination of commissioning activities.
  - b. Commissioning deficiency resolution.
  - c. Commissioning schedule.
  - d. Planning for future commissioning activities.

D. Commissioning Authority will record meeting minutes and distribute copies within two days after meeting to participants and those affected by decisions made.

#### 1.12 COMMISSIONING REPORTS

A. Commissioning Authority Reports: Submit reports regularly to Owner, Architect/Engineer, and Contractor. Include the following.

1. Progress reports.
2. Scheduling changes.
3. Observation reports of specific commissioning activities.
4. Testing progress and approvals.
5. Deficiencies and deficiency resolution reports.

B. Commissioning Authority Functional Performance Test Procedures: Develop test procedures including forms with following information. Include completed documentation in operation and maintenance manuals.

1. System and equipment or component names.
2. Equipment location and identification number.
3. Unique test identification number and reference to unique verification checklist and startup documentation identification numbers for piece of equipment.
4. Date.
5. Project name.
6. Participating parties.
7. Copy of Specification Section describing test requirements.
8. Copy of specific sequence of operations or other specified parameters being verified.
9. Formulas used in calculations.
10. Required pre-test field measurements.
11. Instructions for setting up test.
12. Special cautions, alarm limits, and safety concerns.
13. Specific step-by-step procedures to execute test, in clear, sequential, and repeatable format.
14. Acceptance criteria of proper performance with "Yes/No" check box to allow for marking whether or not proper performance of each part of test was achieved.
15. Section for comments.
16. Signatures and date block for Commissioning Authority.

#### 1.13 SEQUENCING

A. Section 01 10 00 - Summary contains requirements for sequencing.

- B. Sequence Work to complete commissioning, except for functional testing and Owner's personnel training, before Substantial Completion.
- C. Sequence Work to achieve functional completion before final completion. Complete the following for each piece of equipment and system indicated to be commissioned to achieve functional completion:
  - 1. Complete and sign startup and verification checklist documentation.
  - 2. Submit trend log data.
  - 3. Submit final approved test and balance report.
  - 4. Complete functional testing.
  - 5. Complete training of Owner personnel.
  - 6. Submit approved operation and maintenance data manuals.
  - 7. Correct identified deficiencies or obtain approval by Owner to exclude deficiencies from functional completion.
- D. For equipment or systems requiring seasonal operation, perform commissioning for other season within six months of Substantial Completion.
- E. For equipment or systems where commissioning is delayed by Owner occupancy requirements or unforeseen conditions, perform commissioning as specified for seasonal operation equipment.

#### 1.14 SCHEDULING

- A. Schedule Work to allow adequate time for commissioning activities.
- B. Identify commissioning milestones, activities, and durations on Progress Schedule.
  - 1. Identify the following for each piece of equipment and system including:
    - a. Operation and maintenance manual submittal.
    - b. Verification check and startup.
    - c. Functional performance test.
    - d. Functional completion.
    - e. Demonstration and training sessions.
    - f. Commissioning completion.

#### 1.15 MAINTENANCE MATERIALS

- A. Section 01 78 23 Operation and Maintenance Data contains requirements for maintenance materials.
- B. Furnish one set of manufacturer's proprietary test equipment, tools, and instruments required to complete commissioning.
  - 1. Deliver test equipment to Owner after completion of functional performance test. Obtain signed receipt.

## PART 2 - PRODUCTS

### 2.1 TEST EQUIPMENT

- A. Testing Equipment: Calibrated within last year; of sufficient quality and accuracy to test and measure system performance within the following tolerances unless otherwise specified for individual equipment or systems.
  - 1. Temperature Sensors and Digital Thermometers: 0.5 degrees F accuracy and plus or minus 0.1 degrees F resolution.
  - 2. Pressure Sensors: Accuracy of plus or minus 2.0 percent of measured value range.
- B. Recalibrate test equipment according to manufacturer's recommended intervals and when dropped or damaged.
  - 1. Affix calibration tags to test equipment or furnish certificates upon request.
- C. Equipment Furnished by Contractor and Remaining Property of Contractor:
  - 1. Standard testing equipment required to perform verification check and startup and required functional performance testing.
  - 2. Two-way radios for personnel performing commissioning.
- D. Equipment furnished by Commissioning Authority and remaining property of Commissioning Authority:
  - 1. Data-logging equipment and software.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify equipment and systems are installed according to individual Specification Sections.
- B. Verify utility and power connections are complete and services operational.

### 3.2 VERIFICATION CHECK AND STARTUP PROCEDURES

- A. Notify Commissioning Authority and schedule verification check and startup activities with each party required to complete verification check and startup a minimum of four weeks in advance.
- B. Allow Commissioning Authority to witness verification check and startup.
  - 1. Primary Equipment: Commissioning Authority will witness procedures for each piece of equipment. For multiple units, Commissioning Authority will witness procedures on 20 percent, but not less than four, of each type unit.

2. Secondary Equipment: Commissioning Authority will witness sampling of each type unit as specified in commissioning plan.

C. Verification Check and Startup:

1. Perform verification check and startup according to approved verification check and startup plan.
2. Complete entire plan for each piece of equipment or system indicated to be commissioned.
3. Complete each procedure in sequence performed by party assigned to each procedure.
4. Record completion of each procedure. Indicate results of procedure where required. Sign and date plan by individual performing procedure.
5. Identify items not completed successfully.
6. Sign and date plan indicating completion of entire plan.
7. Submit executed plan to Commissioning Authority within two days of completion.

D. Deficiencies and Approvals:

1. Commissioning Authority will review verification check and startup reports and issue deficiency report or approval.
2. Correct deficiencies and resubmit updated verification check and startup report with statement indicating corrections made for Commissioning Authority approval.
3. Repeat process until verification check and startup report are approved.
4. Costs for incomplete verification check and startup items that later cause deficiencies or delays during functional tests will be charged to party responsible for incomplete item.

### 3.3 FUNCTIONAL PERFORMANCE TEST PROCEDURES

A. Complete the following before performing functional tests:

1. Verification check and startup.
2. Control system testing with approval by Commissioning Authority for use for test and balance operations.
3. Air system balancing and water system balancing.

B. Notify Commissioning Authority of completion of verification check and startup activities.

C. Commissioning Authority will direct, witness, and document results of functional performance tests.

D. Conduct functional performance tests as specified in Section 23 08 00 - Commissioning of HVAC.

E. Demonstrate that each piece of equipment and system is operating according to documented design intent and Contract Documents.

1. Conduct testing proceeding from components, to subsystems, to systems.
2. Bring equipment and systems to condition capable full dynamic operation.
3. Verify performance of individual components and systems.
4. Verify performance of interactions between systems.

5. Identify and correct areas of deficient performance.
- F. Operate each piece of equipment and system through each specified mode of operation including seasonal, occupied, unoccupied, warmup, cool-down, partial load, and full load conditions.
1. Verify each sequence in sequences of operation.
  2. Test for proper responses to power failure, freezing, overheating, low oil pressure, no flow, equipment failure, and other abnormal conditions.

### 3.4 FUNCTIONAL PERFORMANCE TEST METHODS

- A. Perform testing and verification by using manual testing or by monitoring performance and analyzing results using control system trend log capabilities or by standalone data loggers as specified for each piece of equipment or system.
1. Commissioning Authority may require alternate or additional method other than specified method.
  2. Commissioning Authority will determine test method when method is not specified.
- B. Simulated Conditions: Simulating conditions, not by overwritten values, is permitted. Timing tests to use real conditions is encouraged wherever practical.
- C. Overwritten Values: Overwriting sensor values to simulate conditions may be used with caution and avoided when possible.
- D. Simulated Signals: Using signal generator to create simulated signals to test and calibrate transducers automatic temperature controls is generally recommended over using sensors as signal generators with simulated conditions or overwritten values.
- E. Altering Setpoints: Rather than overwriting sensor values, and when simulating conditions is difficult, altering setpoints to test specific sequence is acceptable. Reset setpoint after completing test.
- F. Indirect Indicators: Using indirect indicators for responses or performance is permitted only after visually and directly verifying and documenting indirect readings through control system representing actual conditions and responses over tested parameter range.
- G. Perform each function and test under conditions simulating actual conditions as close as is practically possible.
1. Provide materials, system modifications, and other items or steps necessary to produce flows, pressures, temperatures, and other responses to execute test according to specified conditions.
  2. At completion of test, return modified equipment and systems to pretest condition.
- H. Sampling:

1. Multiple identical pieces of equipment or equipment with only small size or capacity differences may be functionally tested using sampling strategy when permitted by other Section according to following rules:
  - a. xx is defined as percentage of group of identical equipment included in each sample.
  - b. yy is defined as percentage of sample failing that will require another sample to be tested.
  - c. First Sample: Randomly test at least xx percent, but at least three, of each group of identical equipment.
  - d. Second Sample: If yy percent of units in first sample fail, test another xx percent of group.
  - e. If yy percent of units in second sample fail, test remaining units in group.
2. Do not use sampling strategy for equipment with significant differences in application or sequence of operation differences.
3. Refer to Section 23 08 00 - Commissioning of HVAC for equipment sampling and failure rates.
4. If frequent failures occur, Commissioning Authority may stop testing and require responsible party to perform and document checkout of remaining units, prior to continuing with functional performance testing.

### 3.5 DEFICIENCIES AND TEST APPROVALS

#### A. Deficiencies:

1. Commissioning Authority will record and report deficiencies to Owner.
2. Minor deficiencies may be corrected during tests at Commissioning Authority's discretion. Deficiency and resolution will be documented on procedure form.
3. Failure to attend scheduled verification check, startup, or functional performance test will be considered deficiency.
4. When deficiency is identified, Commissioning Authority will discuss issue with party executing test.
  - a. When party executing test accepts responsibility to correct deficiency:
    - 1) Commissioning Authority documents deficiency and executing party's response.
    - 2) Commissioning Authority submits deficiency report to Owner, Contractor, and party executing test.
    - 3) Party executing test corrects deficiency, signs statement of correction on deficiency form certifying equipment is ready for retesting and submits form to Commissioning Authority.
    - 4) Commissioning Authority reschedules test, and test is repeated until satisfactory performance is achieved.
  - b. When party executing test disputes deficiency or responsibility for deficiency:
    - 1) Commissioning Authority documents deficiency and executing party's response.

- 2) Commissioning Authority submits deficiency report to Owner, Contractor, party executing test, and party believed to be responsible for deficiency.
- 3) Commissioning Authority negotiates resolution with parties involved and refers continuing disputes to Architect/Engineer for resolution according to Contract Documents.
- 4) Commissioning Authority documents resolution process.
- 5) When resolution is decided, appropriate party corrects deficiency, signs statement of correction on deficiency form certifying equipment is ready for retesting and submits form to Commissioning Authority.
- 6) Commissioning Authority reschedules test, and test is repeated until satisfactory performance is achieved.

B. Retesting Costs:

1. When verification check and startup or functional performance test deficiency is discovered requiring rescheduling or retesting:
  - a. Owner will compensate Commissioning Authority, Architect/Engineer, and for attending and directing additional testing.
  - b. Owner will deduct additional testing compensation from final payment due to Contractor.

C. Provide written report to Commissioning Authority before each scheduled commissioning meeting concerning status of each deficiency. Include explanations of disagreements with resolution proposals for each discrepancy.

1. Commissioning Authority will retain original deficiency forms until end of Project.

D. Manufacturing Defects: When ten percent but not less than three identical pieces of equipment or equipment with only small size or capacity differences fail to perform to Contract Document requirements due to manufacturing defect, all identical units may be considered defective by Owner.

1. Within one week of notice from Owner, examine all other identical units and record findings. Submit findings to Owner within two weeks of original notice.
2. Within two weeks of original notification, provide signed and dated written explanation of problem, cause of defect, and proposed solutions meeting Contract Document requirements. Include equipment submittals supporting solution.
3. Owner will determine whether replacement or repair of all identical units is required.
4. Install two examples of proposed solution. Owner will test installations for up to one week before deciding solution is acceptable.
5. Upon acceptance, replace or repair all identical items, at Contractor's expense. Extend warranty accordingly, when original equipment warranty had begun.
6. Complete repairs or replacements with reasonable speed beginning within one week from when parts can be obtained.

E. Test Approval: Commissioning Authority notes each satisfactorily demonstrated function on functional performance test form.

1. Commissioning Authority recommends acceptance of each test to Owner using standard form.



2. Owner gives final approval for each test using same form, providing signed copy to Commissioning Authority and Contractor.

### 3.6 DEMONSTRATION

- A. Section 01 77 00 Closeout Procedures contains requirements for demonstration and training.
- B. Demonstrate equipment and systems and train Owner's personnel as specified in individual equipment and system Specifications.
  1. Commissioning Authority will interview Owner's personnel to determine special needs and areas where training will be most valuable.
  2. Owner and Commissioning Authority will determine type and extent of training for each commissioned piece of equipment and system.
  3. Commissioning Authority will communicate training requirements to Contractor for benefit of equipment and system installers and manufacturers with training responsibilities.
- C. Commissioning Authority will develop criteria for determining training was satisfactorily completed, including attending some training sessions.
  1. Commissioning Authority will make recommendation to Owner regarding approval of training.
- D. Initial Mechanical, Electrical, and Plumbing Equipment Training Session:
  1. Contractor will make four hour long presentation of overall system design concept and design concept of each equipment section.
  2. Presentation will include review of the following systems using simplified system schematics:
    - a. HVAC system.
    - b. Electrical system.
    - c. Plumbing system.
- E. For primary mechanical, electrical, and plumbing equipment training:
  1. Require controls contractor to provide short discussion of equipment control as part of training session.
- F. At one training session, Commissioning Authority will make two hour-long presentation discussing use of blank functional test forms for re-commissioning equipment.
- G. Commissioning Authority will make video recording of training sessions, catalog recordings, and furnish one set of recordings for inclusion with operation and maintenance manuals.

END OF SECTION 01 91 00

## SECTION 23 08 00 - COMMISSIONING OF HVAC

### PART 1 - GENERAL

#### 1.1 SUMMARY

A. Section Includes:

1. HVAC commissioning description.
2. HVAC commissioning responsibilities.

B. Related Sections:

1. Section 23 05 93 - Testing, Adjusting, and Balancing for HVAC: For requirements and procedures concerning testing, adjusting, and balancing of mechanical systems.
2. Section 23 09 23 - Direct-Digital Control System for HVAC: Submittal, training, and programming requirements.
3. Section 23 33 00 - Air Duct Accessories: Product requirements for ductwork test holes.
4. Section 25 50 00 - Integrated Automation Facility Controls: Submittal, training, and programming requirements.

#### 1.2 REFERENCES

A. American Society of Heating, Refrigerating and Air-Conditioning Engineers:

1. ASHRAE Guideline 1 - The HVAC Commissioning Process.

B. Building Commissioning Association:

1. BCA - Commissioning Handbook.

C. National Environmental Balancing Bureau:

1. NEBB - Procedural Standards for Building Systems Commissioning.

D. Testing Adjusting and Balancing Bureau:

1. TABB - Commissioning Manual.

#### 1.3 COMMISSIONING DESCRIPTION

A. HVAC commissioning process includes the following tasks:

1. Testing and startup of HVAC equipment and systems.
2. Equipment and system verification checks.
3. Assistance in functional performance testing to verify testing and balancing, and equipment and system performance.

4. Provide qualified personnel to assist in commissioning tests, including seasonal testing.
5. Complete and endorse functional performance test checklists provided by Commissioning Authority to assure equipment and systems are fully operational and ready for functional performance testing.
6. Provide equipment, materials, and labor necessary to correct deficiencies found during commissioning process to fulfill contract and warranty requirements.
7. Provide operation and maintenance information and record drawings to Commissioning Authority for review verification and organization, prior to distribution.
8. Provide assistance to Commissioning Authority to develop, edit, and document system operation descriptions.
9. Provide training for systems specified in this Section with coordination by Commissioning Authority.

B. Equipment and Systems to Be Commissioned:

1. HVAC systems that were installed under this Contract.

C. Perform seasonal function performance tests for the following equipment and systems:

1. Heating equipment during heating season.
2. Cooling equipment during cooling season.

#### 1.4 COMMISSIONING SUBMITTALS

- A. Draft Forms: Submit draft of system verification form and functional performance test checklist.
- B. Test Reports: Indicate data on system verification form for each piece of equipment and system as specified. Use AABC forms as guidelines.
- C. Field Reports: Indicate deficiencies preventing completion of equipment or system verification checks equipment or system to achieve specified performance.

#### 1.5 CLOSEOUT SUBMITTALS

- A. Section 01 77 00 – Closeout Procedure: Requirements for submittals.
- B. Project Record Documents: Record revisions to equipment and system documentation necessitated by commissioning.
- C. Operation and Maintenance Data: Submit revisions to operation and maintenance manuals when necessary revisions are discovered during commissioning.

#### 1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with ASHRAE Guideline 1 requirements.
- B. Perform Work in accordance with State standard.

- C. Maintain one copy of each document on site.

## 1.7 COMMISSIONING RESPONSIBILITIES

### A. Equipment or System Installer Commissioning Responsibilities:

1. Attend commissioning meetings.
2. Ensure temperature controls installer performs assigned commissioning responsibilities as specified below.
3. Ensure testing, adjusting, and balancing agency performs assigned commissioning responsibilities as specified.
4. Provide instructions and demonstrations for Owner's personnel.
5. Ensure subcontractors perform assigned commissioning responsibilities.
6. Ensure participation of equipment manufacturers in appropriate startup, testing, and training activities when required by individual equipment specifications.
7. Develop startup and initial checkout plan using manufacturers startup procedures and functional performance checklists for equipment and systems to be commissioned.
8. During verification check and startup process, execute HVAC related portions of checklists for equipment and systems to be commissioned.
9. Perform and document completed startup and system operational checkout procedures, providing copy to Commissioning Authority.
10. Provide manufacturers representatives to execute starting of equipment. Ensure representatives are available and present during agreed upon schedules and are in attendance for duration to complete tests, adjustments and problem-solving.
11. Coordinate with equipment manufacturers to determine specific requirements to maintain validity of warranties.
12. Provide personnel to assist Commissioning Authority during equipment or system verification checks and functional performance tests.
13. Prior to functional performance tests, review test procedures to ensure feasibility, safety and equipment protection and provide necessary written alarm limits to be used during tests.
14. Prior to startup, inspect, check, and verify correct and complete installation of equipment and system components for verification checks included in commissioning plan. When deficient or incomplete work is discovered, ensure corrective action is taken and re-check until equipment or system is ready for startup.
15. Provide factory supervised startup services for equipment and systems specified. Coordinate work with manufacturer and Commissioning Authority.
16. Perform verification checks and startup on equipment and systems as specified.
17. Assist Commissioning Authority in performing functional performance tests on equipment and systems as specified.
18. Perform operation and maintenance training sessions scheduled by Commissioning Authority.
19. Conduct HVAC system orientation and inspection.

### B. Temperature Controls Installer Commissioning Responsibilities:

1. Attend commissioning meetings.
2. Review design for ability of systems to be controlled including the following:

- a. Confirm proper hardware requirements exists to perform functional performance testing.
  - b. Confirm proper safeties and interlocks are included in design.
  - c. Confirm proper sizing of system control valves and actuators and control valve operation will result capacity control identified in Contract Documents.
  - d. Confirm proper sizing of system control dampers and actuators and damper operation will result in proper damper positioning.
  - e. Confirm sensors selected are within device ranges.
  - f. Review sequences of operation and obtain clarification from Architect/Engineer.
  - g. Indicate delineation of control between packaged controls and building automation system, listing BAS monitor points and BAS adjustable control points.
  - h. Provide written sequences of operation for packaged controlled equipment. Equipment manufacturers' stock sequences may be included, when accompanied by additional narrative to reflect Project conditions.
3. Inspect, check, and confirm proper operation and performance of control hardware and software provided in other HVAC sections.
  4. Submit proposed procedures for performing automatic temperature control system point-to-point checks to Commissioning Authority and Architect/Engineer.
  5. Inspect check and confirm correct installation and operation of automatic temperature control system input and output device operation through point-to-point checks.
  6. Perform training sessions to instruct Owner's personnel in hardware operation, software operation, programming, and application in accordance with commissioning plan and requirements.
  7. Demonstrate system performance and operation to Commissioning Authority during functional performance tests including each mode of operation.
  8. Provide control system technician to assist during Commissioning Authority verification check and functional performance testing.
  9. Provide control system technician to assist testing, adjusting, and balancing agency during performance of testing, adjusting, and balancing work.
  10. Assist in performing operation and maintenance training sessions scheduled by Commissioning Authority.
- C. Testing, Adjusting, and Balancing Agency Commissioning Responsibilities:
1. Attend commissioning meetings.
  2. Participate in verification of testing, adjusting, and balancing report for verification or diagnostic purposes. Repeat sample of percent of measurements contained in testing, adjusting, and balancing report as indicated in commissioning plan.
  3. Assist in performing operation and maintenance training sessions scheduled by Commissioning Authority.

## 1.8 COMMISSIONING MEETINGS

- A. Section 01 91 00 - Commissioning: Requirements for commissioning meetings.
- B. Attend initial commissioning meeting and progress commissioning meetings as required by Commissioning Authority.

### 1.9 SCHEDULING

- A. Prepare schedule indicating anticipated start dates for the following:
  - 1. Piping system pressure testing.
  - 2. Piping system flushing and cleaning.
  - 3. Ductwork cleaning.
  - 4. Ductwork pressure testing.
  - 5. Equipment and system startups.
  - 6. Automatic temperature control system checkout.
  - 7. Testing, adjusting, and balancing.
  - 8. HVAC system orientation and inspections.
  - 9. Operation and maintenance manual submittals.
  - 10. Training sessions.
- B. Schedule seasonal tests of equipment and systems during peak weather conditions to observe full-load performance.
- C. Schedule occupancy sensitive tests of equipment and systems during conditions of both minimum and maximum occupancy or use.

### 1.10 COORDINATION

- A. Notify Commissioning Authority minimum of four weeks in advance of the following:
  - 1. Scheduled equipment and system startups.
  - 2. Scheduled automatic temperature control system checkout.
  - 3. Scheduled start of testing, adjusting, and balancing work.
- B. Coordinate programming of automatic temperature control system with construction and commissioning schedules.

## PART 2 - PRODUCTS (NOT USED)

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install additional balancing dampers, balancing valves, access doors, test ports, and pressure and temperature taps required to meet performance requirements.
- B. Place HVAC systems and equipment into full operation and continue operation during each working day of commissioning.
- C. Install replacement sheaves and belts to obtain system performance, as requested by Commissioning Authority.

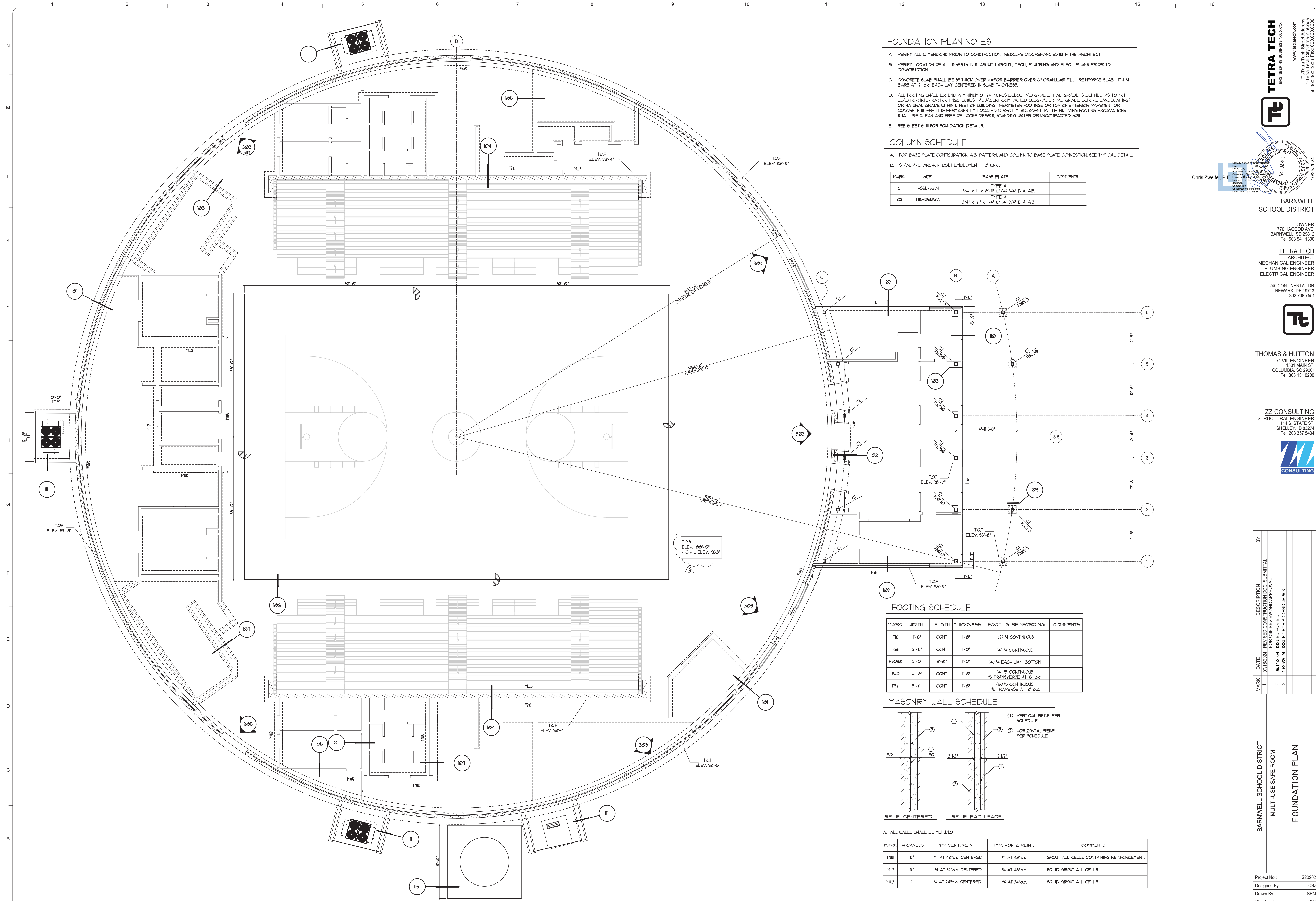
- D. Install test holes in ductwork and plenums as requested by Commissioning Authority for taking air measurements.
- E. Prior to start of functional performance test, install replacement filters in equipment as specified in individual section.

### 3.2 FIELD TESTS AND INSPECTIONS

- A. Seasonal Sensitive Functional Performance Tests:
  - 1. Test heating equipment at winter design temperatures.
  - 2. Test cooling equipment at summer design temperatures with fully occupied building.
  - 3. Participate in testing delayed beyond Final Completion to test performance at peak seasonal conditions.
- B. Be responsible to participate in initial and alternate peak season test of systems required to demonstrate performance.
- C. Occupancy Sensitive Functional Performance Tests:
  - 1. Test equipment and systems affected by occupancy variations at minimum and peak loads to observe system performance.
  - 2. Participate in testing delayed beyond Final Completion to test performance with actual occupancy conditions.

END OF SECTION 23 08 00





**FOUNDATION PLAN NOTES**

- A. VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION. RESOLVE DISCREPANCIES WITH THE ARCHITECT.
- B. VERIFY LOCATION OF ALL INSERTS IN SLAB WITH ARCH'L, MECH, PLUMBING AND ELEC. PLANS PRIOR TO CONSTRUCTION.
- C. CONCRETE SLAB SHALL BE 5" THICK OVER VAPOR BARRIER OVER 6" GRANULAR FILL. REINFORCE SLAB WITH #4 BARS AT 12" o.c. EACH WAY CENTERED IN SLAB THICKNESS.
- D. ALL FOOTING SHALL EXTEND A MINIMUM OF 24 INCHES BELOW PAD GRADE. PAD GRADE IS DEFINED AS TOP OF SLAB FOR INTERIOR FOOTINGS; LOWEST ADJACENT COMPACTED SUBGRADE (PAD GRADE BEFORE LANDSCAPING) OR NATURAL GRADE WITHIN 3 FEET OF BUILDING. PERIMETER FOOTINGS ON TOP OF EXTERIOR PAVEMENT OR CONCRETE WHERE IT IS PERMANENTLY LOCATED DIRECTLY ADJACENT TO THE BUILDING FOOTING EXCAVATIONS SHALL BE CLEAN AND FREE OF LOOSE DEBRIS, STANDING WATER OR UNCOMPACTED SOIL.
- E. SEE SHEET S-III FOR FOUNDATION DETAILS.

**COLUMN SCHEDULE**

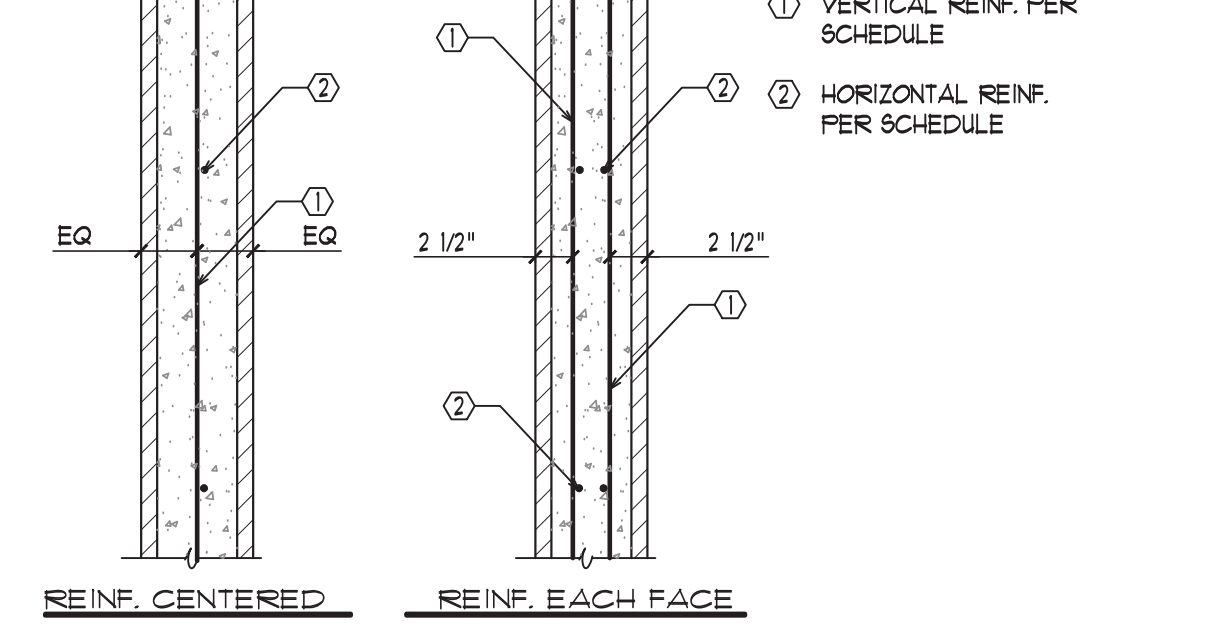
- A. FOR BASE PLATE CONFIGURATION, AB, PATTERN, AND COLUMN TO BASE PLATE CONNECTION, SEE TYPICAL DETAIL.
- B. STANDARD ANCHOR BOLT EMBEDMENT = 9" UNO.

MARK	SIZE	BASE PLATE	COMMENTS
C1	H85x5x1/4	TYPE A 3/4" x 11" x 0'-11" w/ (4) 3/4" DIA. A.B.	
C2	H55x10x1/2	TYPE A 3/4" x 16" x 1'-4" w/ (4) 3/4" DIA. A.B.	

**FOOTING SCHEDULE**

MARK	WIDTH	LENGTH	THICKNESS	FOOTING REINFORCING	COMMENTS
F16	1'-6"	CONT.	1'-0"	(2) #4 CONTINUOUS	
F26	2'-6"	CONT.	1'-0"	(4) #4 CONTINUOUS	
F3030	3'-0"	3'-0"	1'-0"	(4) #4 EACH WAY, BOTTOM	
F40	4'-0"	CONT.	1'-0"	(4) #5 CONTINUOUS #5 TRANSVERSE AT 18" o.c.	
F56	5'-6"	CONT.	1'-0"	(6) #5 CONTINUOUS #5 TRAVERSE AT 18" o.c.	

**MASONRY WALL SCHEDULE**



A. ALL WALLS SHALL BE MU UNO

MARK	THICKNESS	TYP. VERT. REINF.	TYP. HORIZ. REINF.	COMMENTS
MU1	8"	#4 AT 48" o.c. CENTERED	#4 AT 48" o.c.	GROUT ALL CELLS CONTAINING REINFORCEMENT.
MU2	8"	#4 AT 32" o.c. CENTERED	#4 AT 48" o.c.	SOLID GROUT ALL CELLS.
MU3	12"	#4 AT 24" o.c. CENTERED	#4 AT 24" o.c.	SOLID GROUT ALL CELLS.

**FOUNDATION PLAN**  
SCALE: 1/8" = 1'-0"

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Chris Zweifel, P.E.  
Professional Engineer  
No. 3499  
10/25/2024

**BARNWELL SCHOOL DISTRICT**

OWNER  
770 HAGOOD AVE.  
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**TETRA TECH**  
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ELECTRICAL ENGINEER  
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**ZZ CONSULTING**  
STRUCTURAL ENGINEER  
114 S. STATE ST.  
SHELLEY, ID 83274  
Tel: 208.357.5404

BY: \_\_\_\_\_

DESCRIPTION: REVISED CONSTRUCTION DOC. SUBMITTAL FOR REVIEW AND APPROVAL  
ISSUED FOR ADDENDUM #03

MARK	DATE	DESCRIPTION
1	07/19/2024	REVISED CONSTRUCTION DOC. SUBMITTAL FOR REVIEW AND APPROVAL
2	08/11/2024	ISSUED FOR ADDENDUM #03
3	10/25/2024	ISSUED FOR ADDENDUM #03

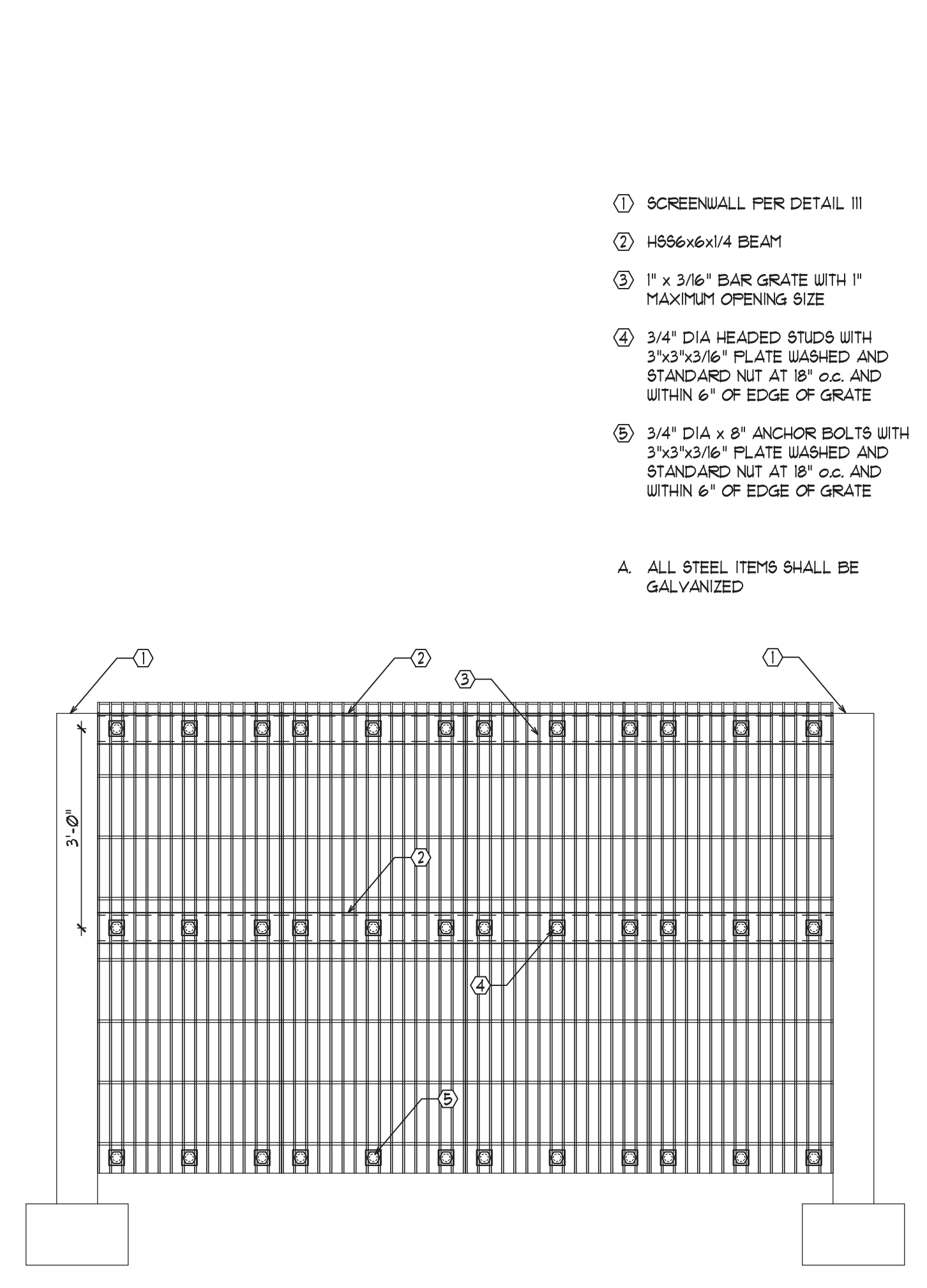
**BARNWELL SCHOOL DISTRICT**  
MULTI-USE SAFE ROOM  
**FOUNDATION PLAN**

Project No.: S20202  
Designed By: CSZ  
Drawn By: SRM  
Checked By: CSZ

**S-110**

Copyright: Tetra Tech

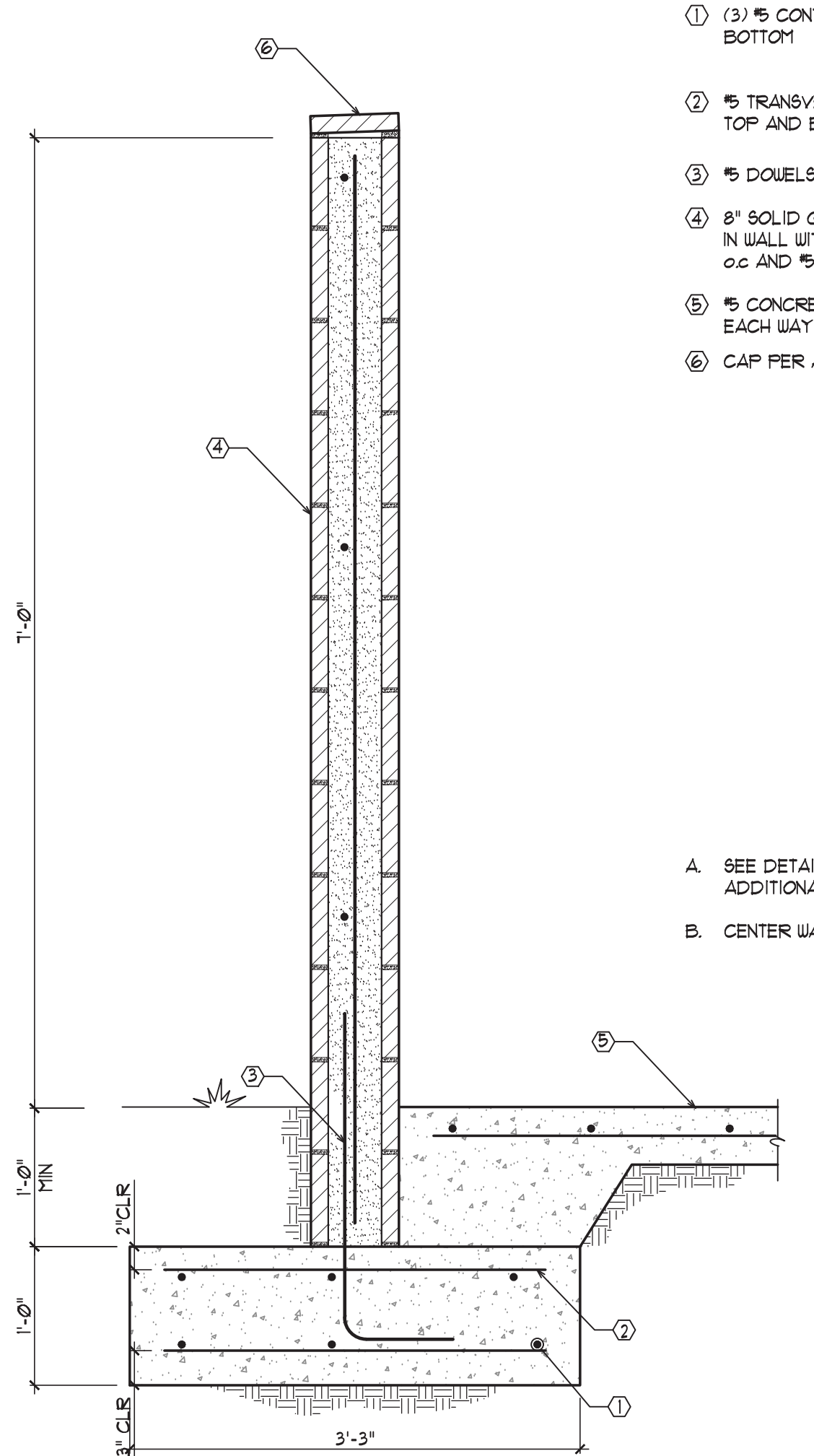




114 MECHANICAL UNIT PROTECTION FRONT  
14-5102/02 NO SCALE

- 1 SCREENWALL PER DETAIL III
- 2 H596x6x1/4 BEAM
- 3 1" x 3/16" BAR GRATE WITH 1" MAXIMUM OPENING SIZE
- 4 3/4" DIA HEADED STUDS WITH 3"x3"x3/16" PLATE WASHER AND STANDARD NUT AT 18" o.c. AND WITHIN 6" OF EDGE OF GRATE
- 5 3/4" DIA x 8" ANCHOR BOLTS WITH 3"x3"x3/16" PLATE WASHER AND STANDARD NUT AT 18" o.c. AND WITHIN 6" OF EDGE OF GRATE

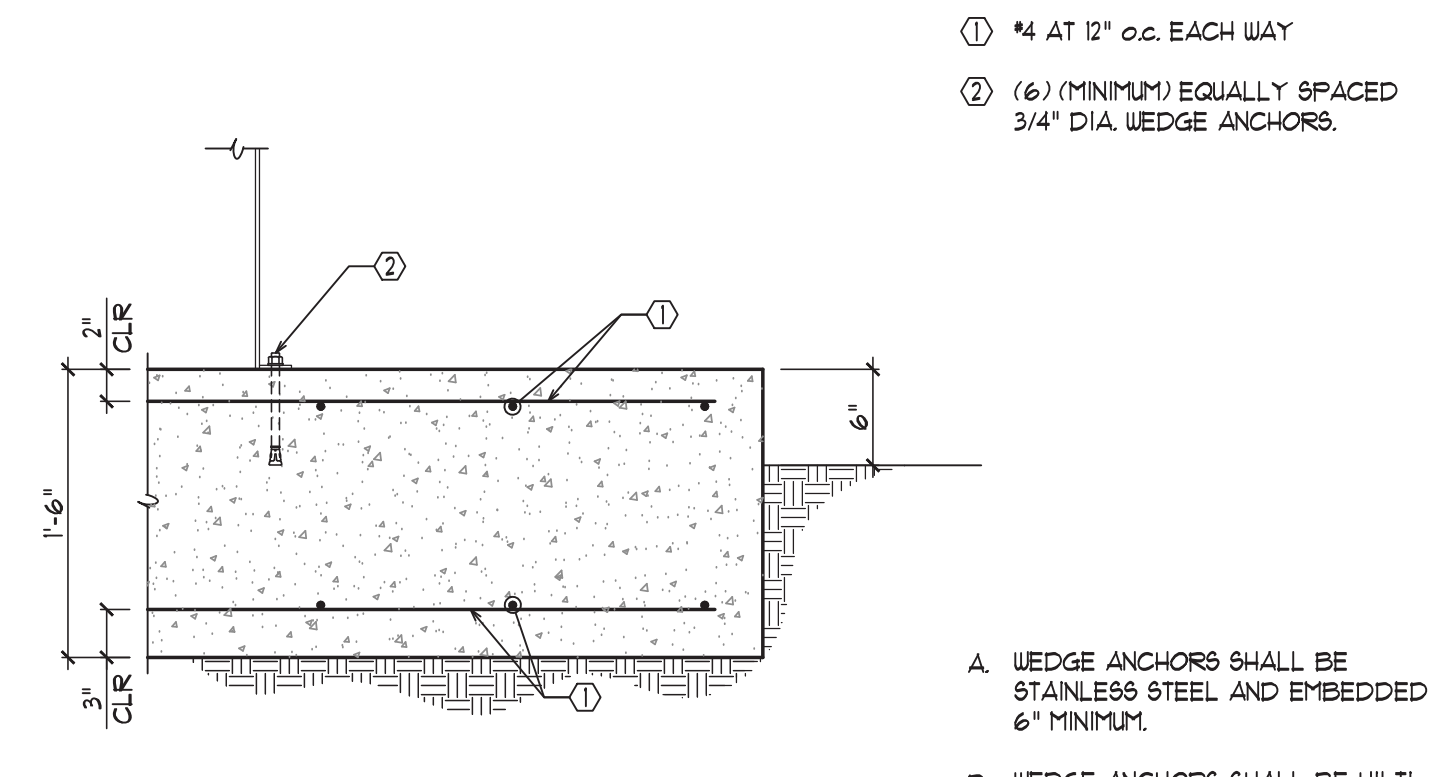
A. ALL STEEL ITEMS SHALL BE GALVANIZED



111 SCREEN WALL AT MECHANICAL UNIT  
11-5102/02 NO SCALE

- 1 (3) #5 CONTINUOUS TOP AND BOTTOM
- 2 #5 TRANSVERSE BARS AT 18" o.c. TOP AND BOTTOM
- 3 #5 DOUELS AT 24" o.c.
- 4 8" SOLID GROUTED CMU CENTERED IN WALL WITH #5 VERTICAL AT 24" o.c. AND #5 HORIZONTAL AT 32" o.c.
- 5 #5 CONCRETE WITH #4 AT 12" o.c. EACH WAY CENTERED IN SLAB
- 6 CAP PER ARCHITECTURAL

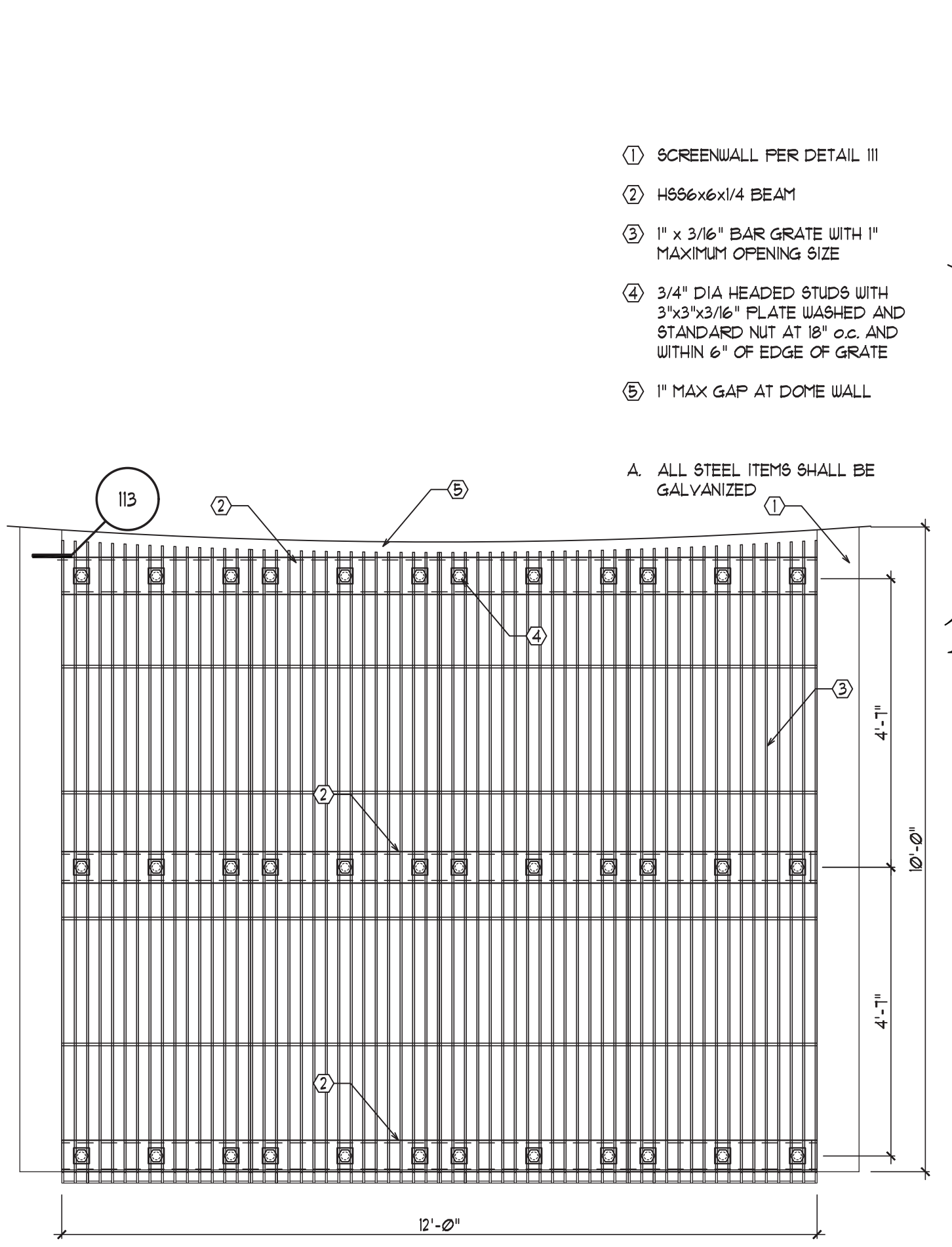
A. SEE DETAILS 112 AND 114 FOR ADDITIONAL FRAMING INFORMATION.  
B. CENTER WALL ON FOOTING.



115 PAD FOR WATER STORAGE TANK  
14-5102/02 NO SCALE

- 1 #4 AT 12" o.c. EACH WAY
- 2 (6) (MINIMUM) EQUALLY SPACED 3/4" DIA. WEDGE ANCHORS

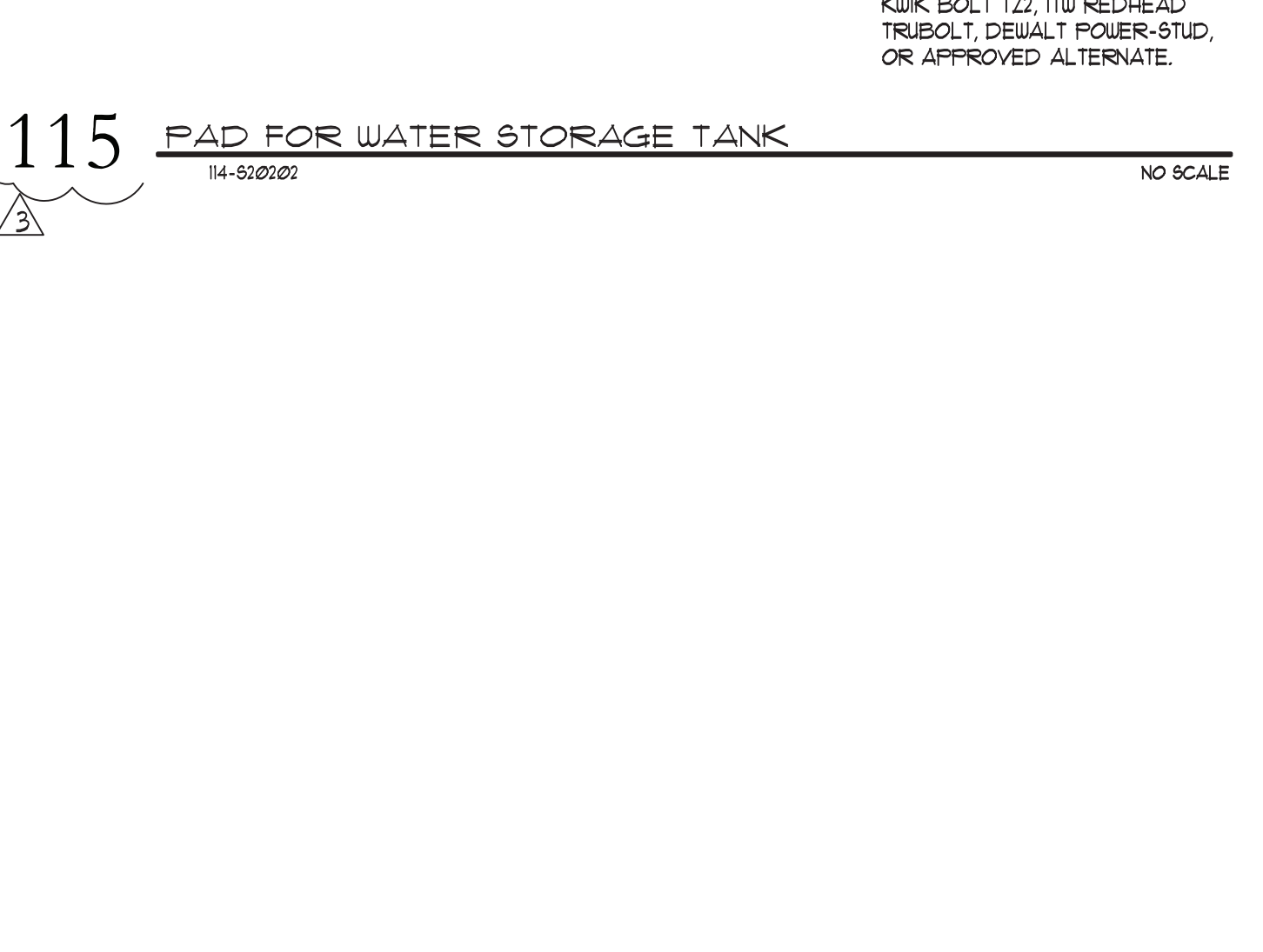
A. WEDGE ANCHORS SHALL BE STAINLESS STEEL AND EMBEDDED 6" MINIMUM.  
B. WEDGE ANCHORS SHALL BE HILTI KLIK BOLT T22, TRU RED-HEAD TRIBOLT, DENALI POWER-STUD, OR APPROVED ALTERNATE.



112 MECHANICAL UNIT PROTECTION ROOF  
12-5102/02 NO SCALE

- 1 SCREENWALL PER DETAIL III
- 2 H596x6x1/4 BEAM
- 3 1" x 3/16" BAR GRATE WITH 1" MAXIMUM OPENING SIZE
- 4 3/4" DIA HEADED STUDS WITH 3"x3"x3/16" PLATE WASHER AND STANDARD NUT AT 18" o.c. AND WITHIN 6" OF EDGE OF GRATE
- 5 1" MAX GAP AT DOPE WALL

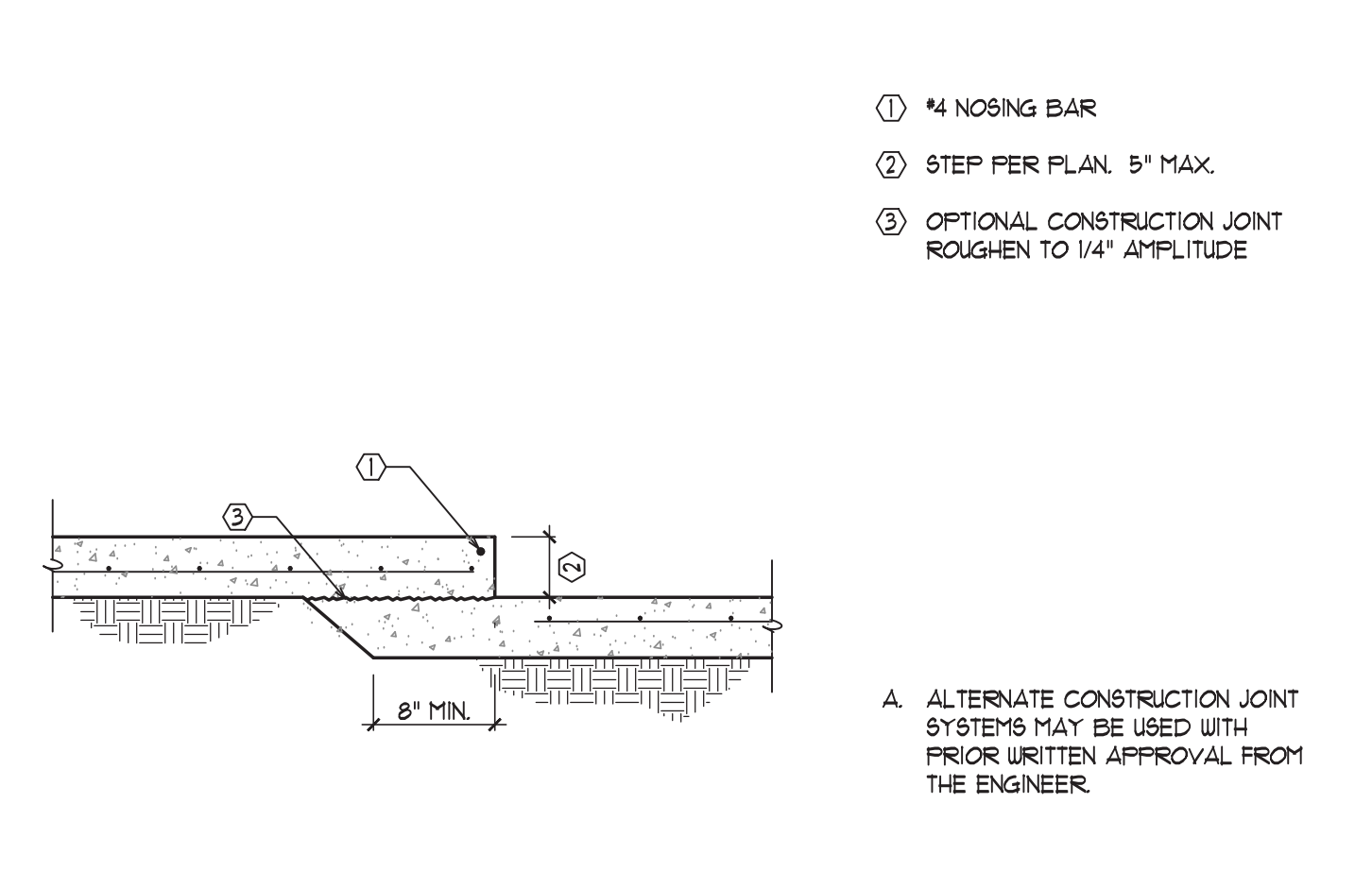
A. ALL STEEL ITEMS SHALL BE GALVANIZED



113 STEEL TRUSS AT MASONRY WALL  
13-5102/02 NO SCALE

- 1 FLATE 1/2"x10"x10" WITH (4) 1/2" DIA x6" HEADED STUDS
- 2 FLATE 1/2"x4"x6" WITH 3/4" DIA THRU BOLT
- 3 H59 6x6x1/4" SLOT BOTTOM AS REQUIRED FOR ERECTION
- 4 1"x3/16" BAR GRATE WITH 1" MAXIMUM OPENING SIZE
- 5 3/4" DIA HEADED STUDS WITH 3"x3"x3/16" PLATE WASHER AT 18" o.c. AND WITHIN 6" OF EDGE OF GRATE

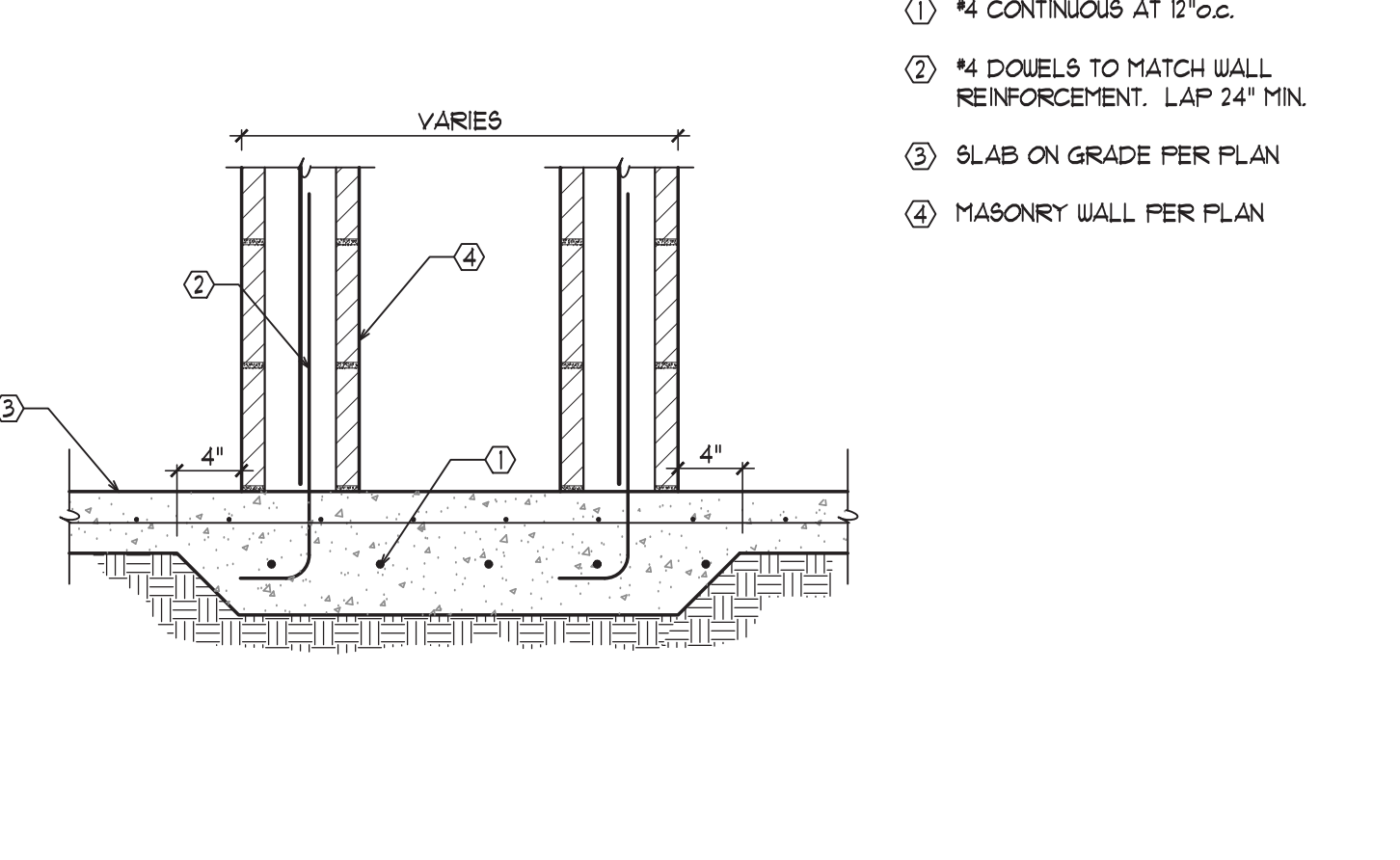
A. ALL STEEL ITEMS SHALL BE GALVANIZED



106 STEP IN SLAB AT GYM FLOOR  
5102/1-106 NO SCALE

- 1 #4 NOBING BAR
- 2 STEP PER PLAN, 5" MAX.
- 3 OPTIONAL CONSTRUCTION JOINT ROUGHEN TO 1/4" AMPLITUDE

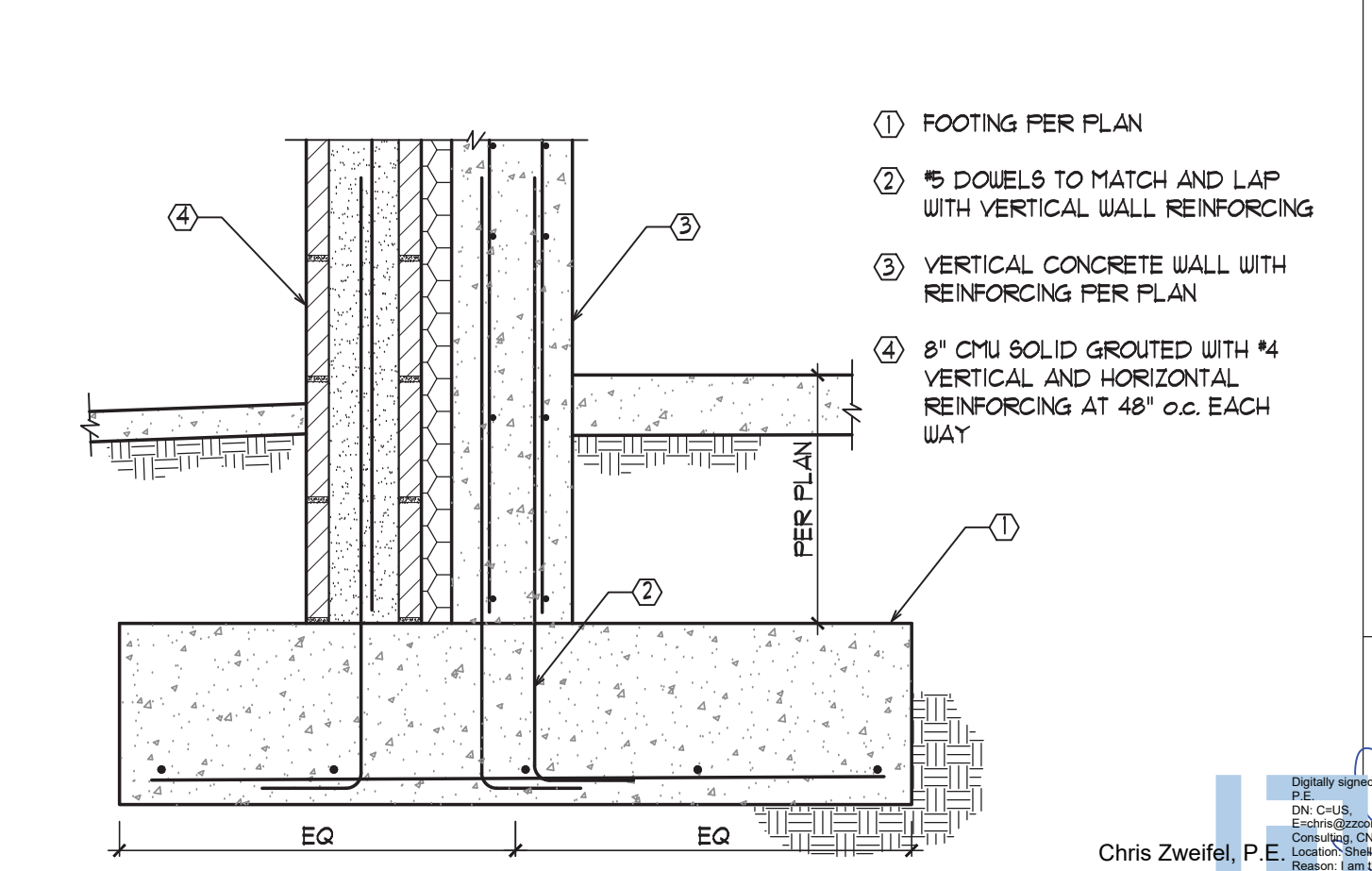
A. ALTERNATE CONSTRUCTION JOINT SYSTEMS MAY BE USED WITH PRIOR WRITTEN APPROVAL FROM THE ENGINEER



107 DOUBLE MASONRY WALL AT SLAB  
101-5102/02 NO SCALE

- 1 #4 CONTINUOUS AT 12" o.c.
- 2 #4 DOUELS TO MATCH WALL REINFORCEMENT, LAP 24" MIN.
- 3 SLAB ON GRADE PER PLAN
- 4 MASONRY WALL PER PLAN

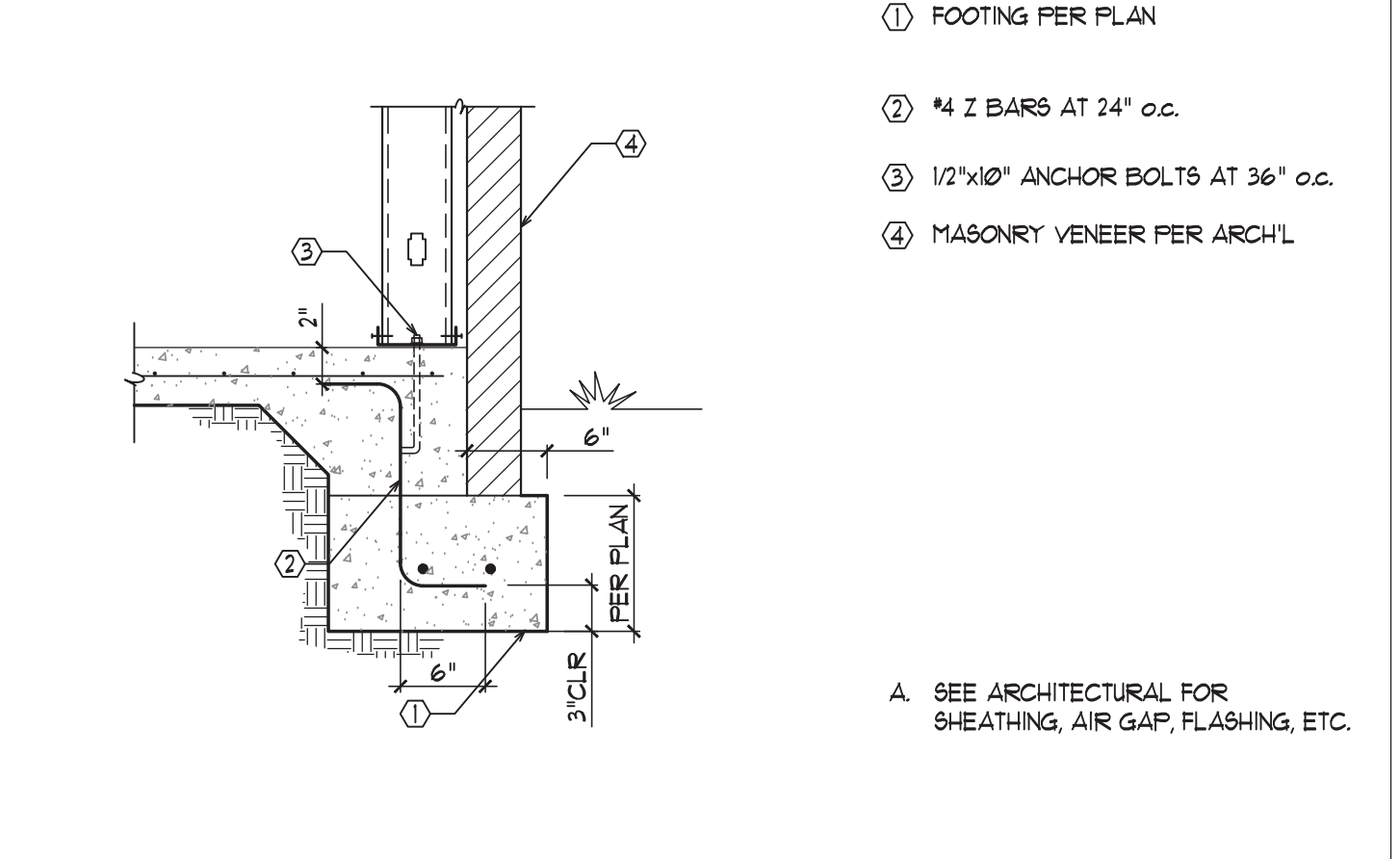
A. SEE DETAIL 101 FOR ADDITIONAL INFORMATION



101 VERTICAL DOME WALL AT FOOTING  
101-5102/02 NO SCALE

- 1 FOOTING PER PLAN
- 2 #5 DOUELS TO MATCH AND LAP WITH VERTICAL WALL REINFORCING
- 3 VERTICAL CONCRETE WALL WITH REINFORCING PER PLAN
- 4 8" CMU SOLID GROUTED WITH #4 VERTICAL AND HORIZONTAL REINFORCING AT 48" o.c. EACH WAY

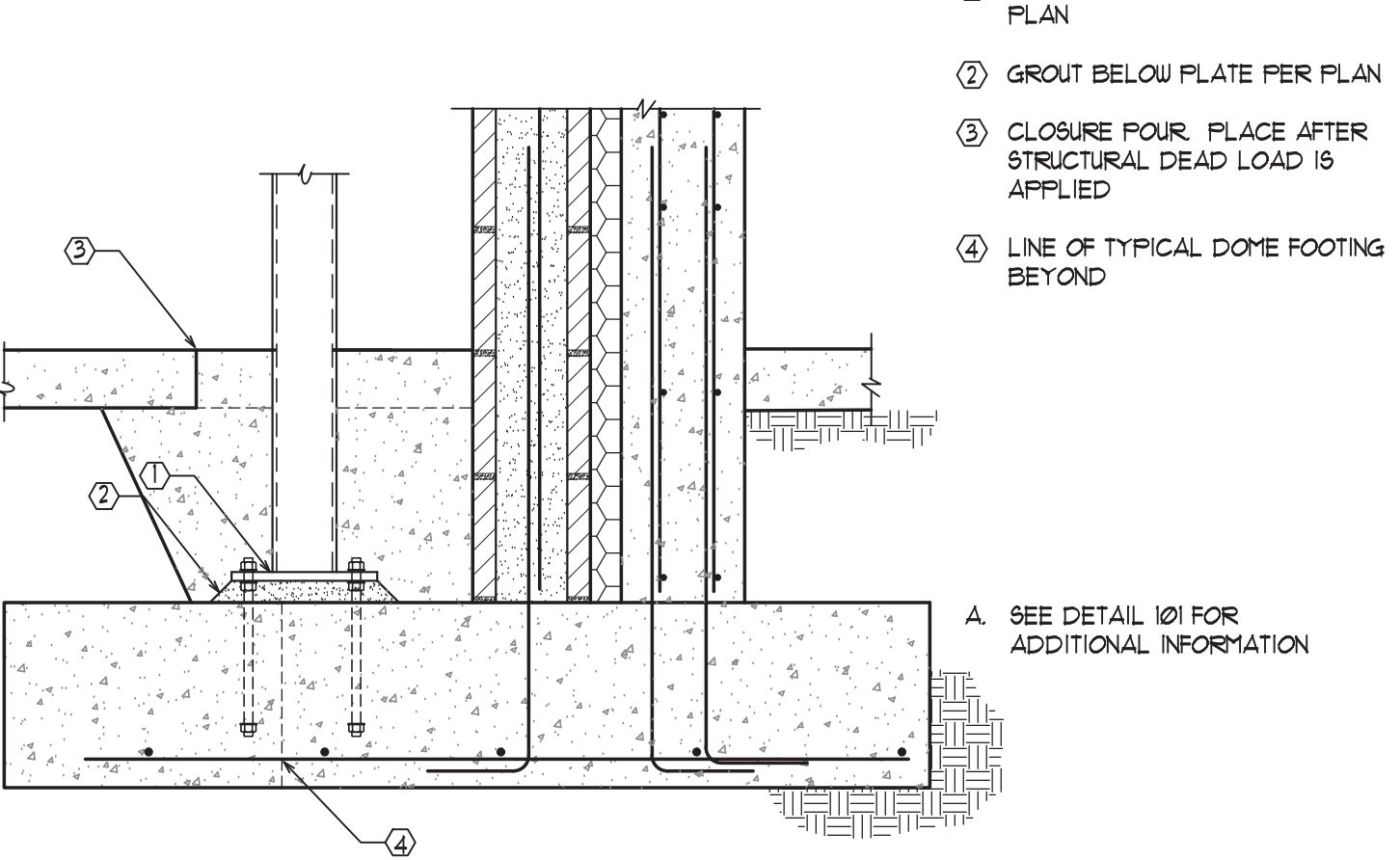
A. SEE ARCHITECTURAL FOR SHEATHING, AIR GAP, FLASHING, ETC.



102 STEEL STUD FRAMING AT FOUNDATION  
102-5102/02 NO SCALE

- 1 BASE PLATE W/AB. BOLTS PER PLAN
- 2 GROUT BELOW PLATE PER PLAN
- 3 CLOSURE POUR, PLACE AFTER STRUCTURAL DEAD LOAD IS APPLIED
- 4 REINFORCING PER PLAN

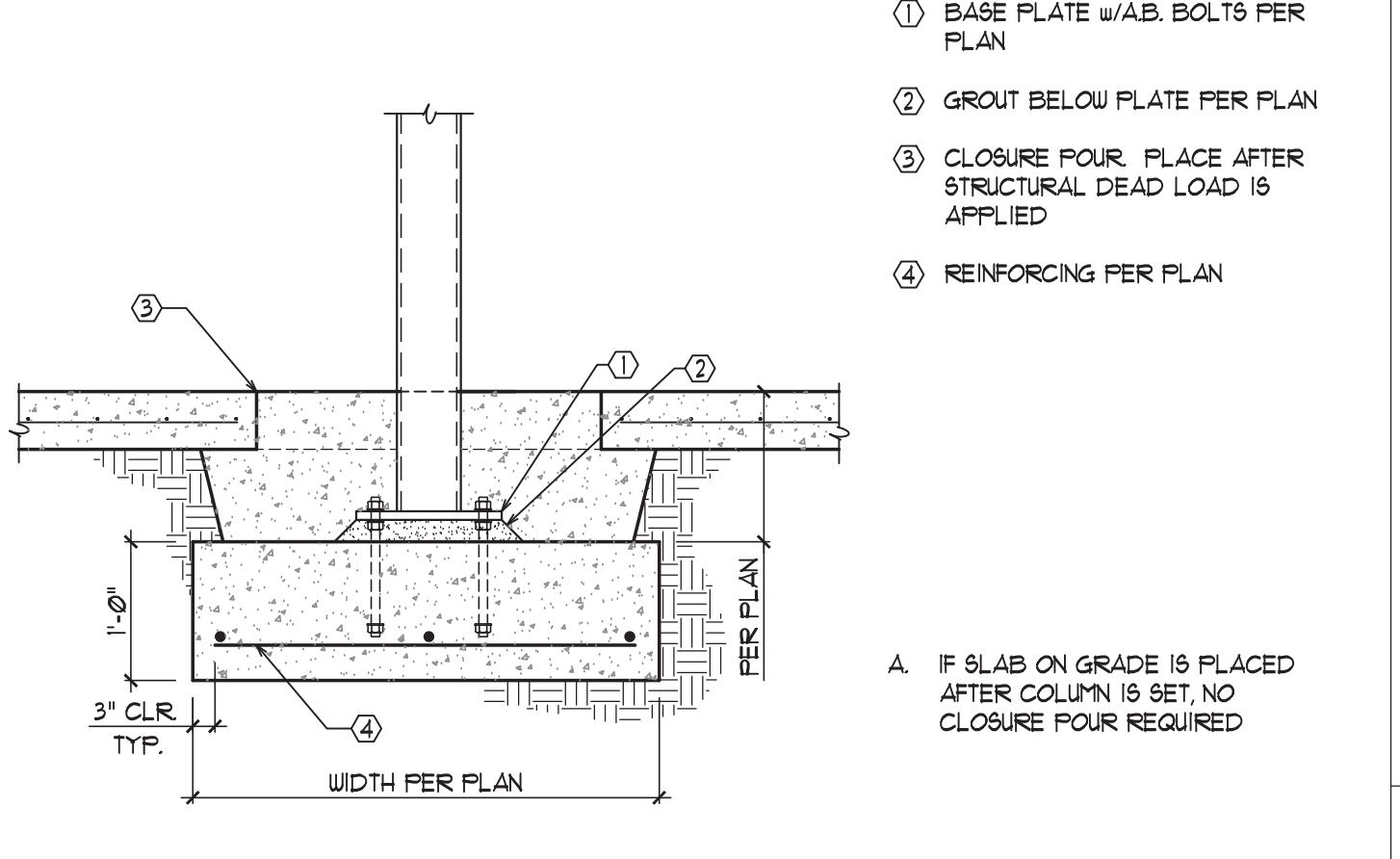
A. IF SLAB ON GRADE IS PLACED AFTER COLUMN IS SET, NO CLOSURE POUR REQUIRED



108 COLUMN AT DOME WALL AT FOOTING  
108-5102/02 NO SCALE

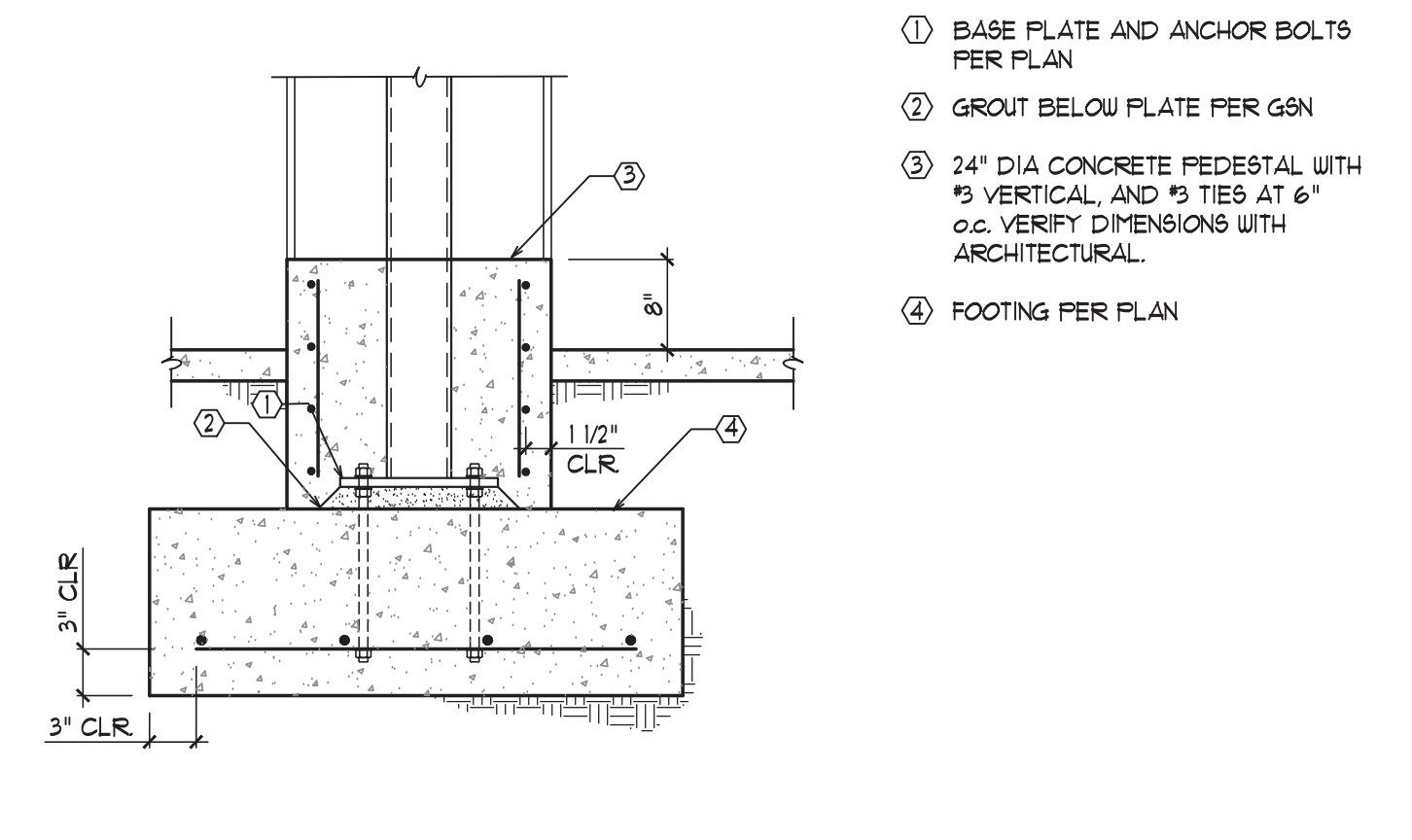
- 1 BASE PLATE W/AB. BOLTS PER PLAN
- 2 GROUT BELOW PLATE PER PLAN
- 3 CLOSURE POUR, PLACE AFTER STRUCTURAL DEAD LOAD IS APPLIED
- 4 LINE OF TYPICAL DOME FOOTING BEYOND

A. SEE DETAIL 101 FOR ADDITIONAL INFORMATION



103 STEEL COLUMN AT FOOTING  
103-5102/02 NO SCALE

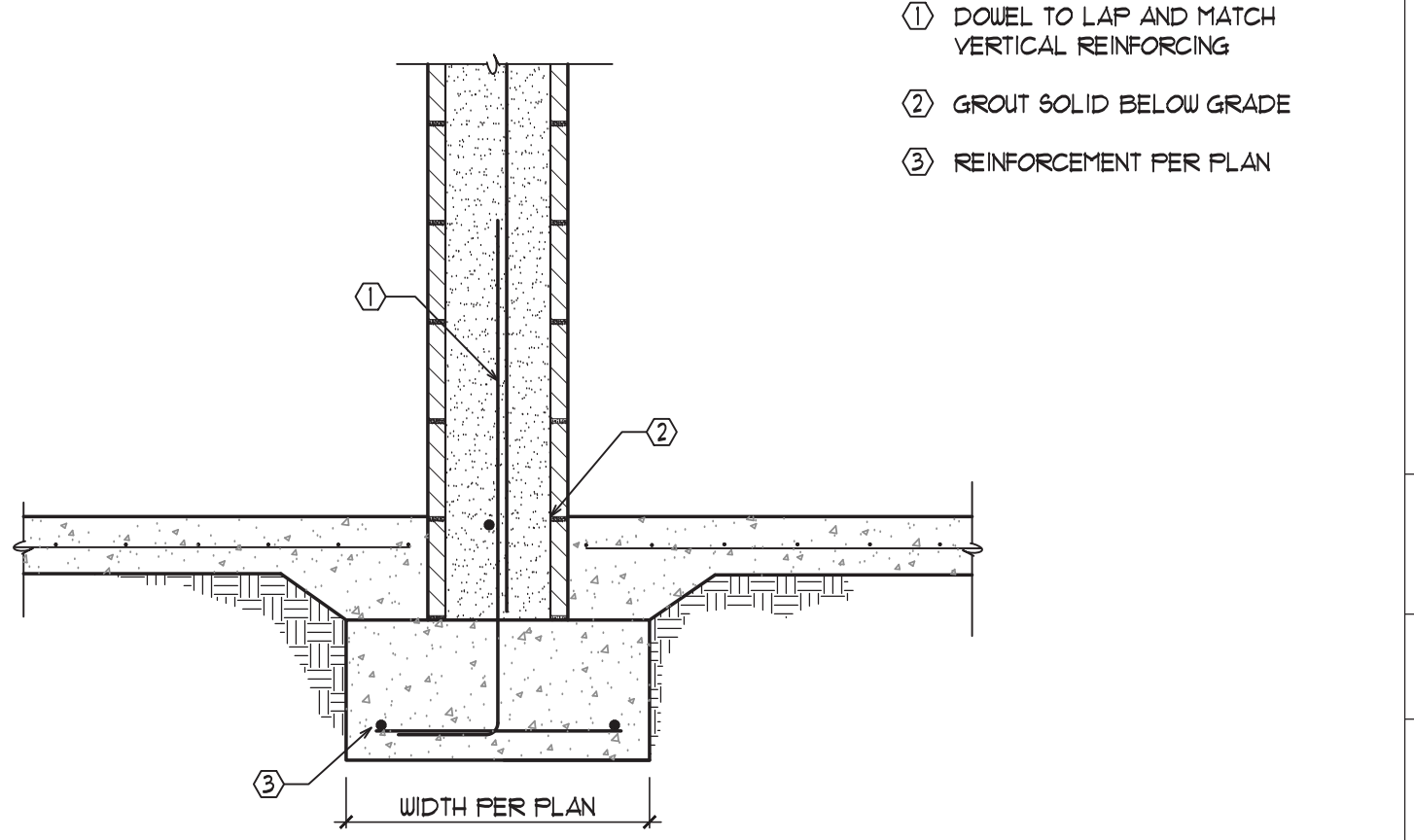
- 1 DOUEL TO LAP AND MATCH VERTICAL REINFORCING
- 2 GROUT SOLID BELOW GRADE
- 3 REINFORCEMENT PER PLAN



109 STEEL COLUMN AT FOOTING  
109-5102/02 NO SCALE

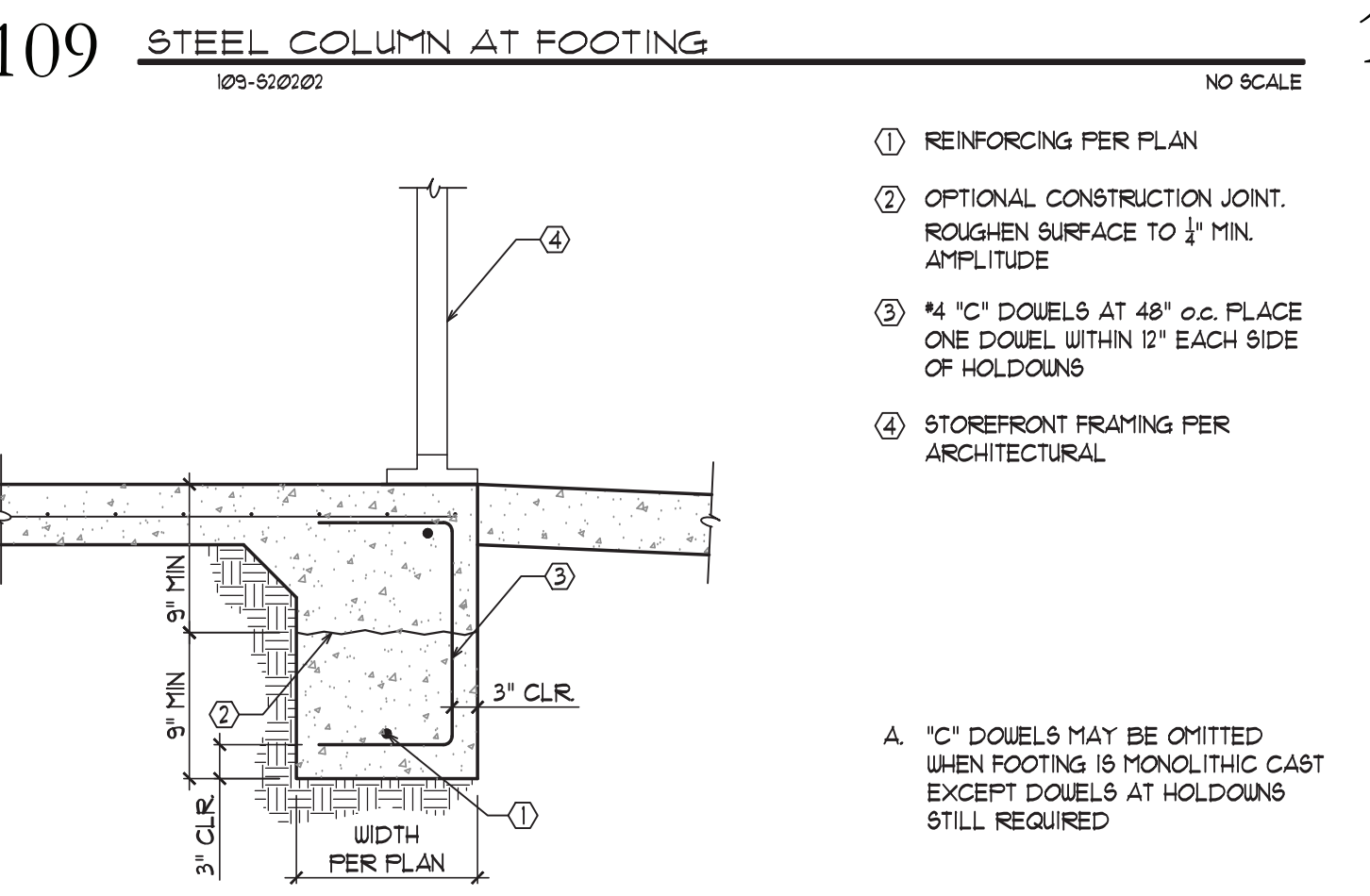
- 1 BASE PLATE AND ANCHOR BOLTS PER PLAN
- 2 GROUT BELOW PLATE PER PLAN
- 3 24" DIA CONCRETE PEDESTAL WITH #5 VERTICAL AND #5 TIES AT 6" o.c. VERIFY DIMENSIONS WITH ARCHITECTURAL
- 4 FOOTING PER PLAN

A. 10" DOUELS MAY BE OMITTED WHEN FOOTING IS MONOLITHIC CAST EXCEPT DOUELS AT HOLDINGS STILL REQUIRED



104 MASONRY WALL AT FOOTING  
104-5102/02 NO SCALE

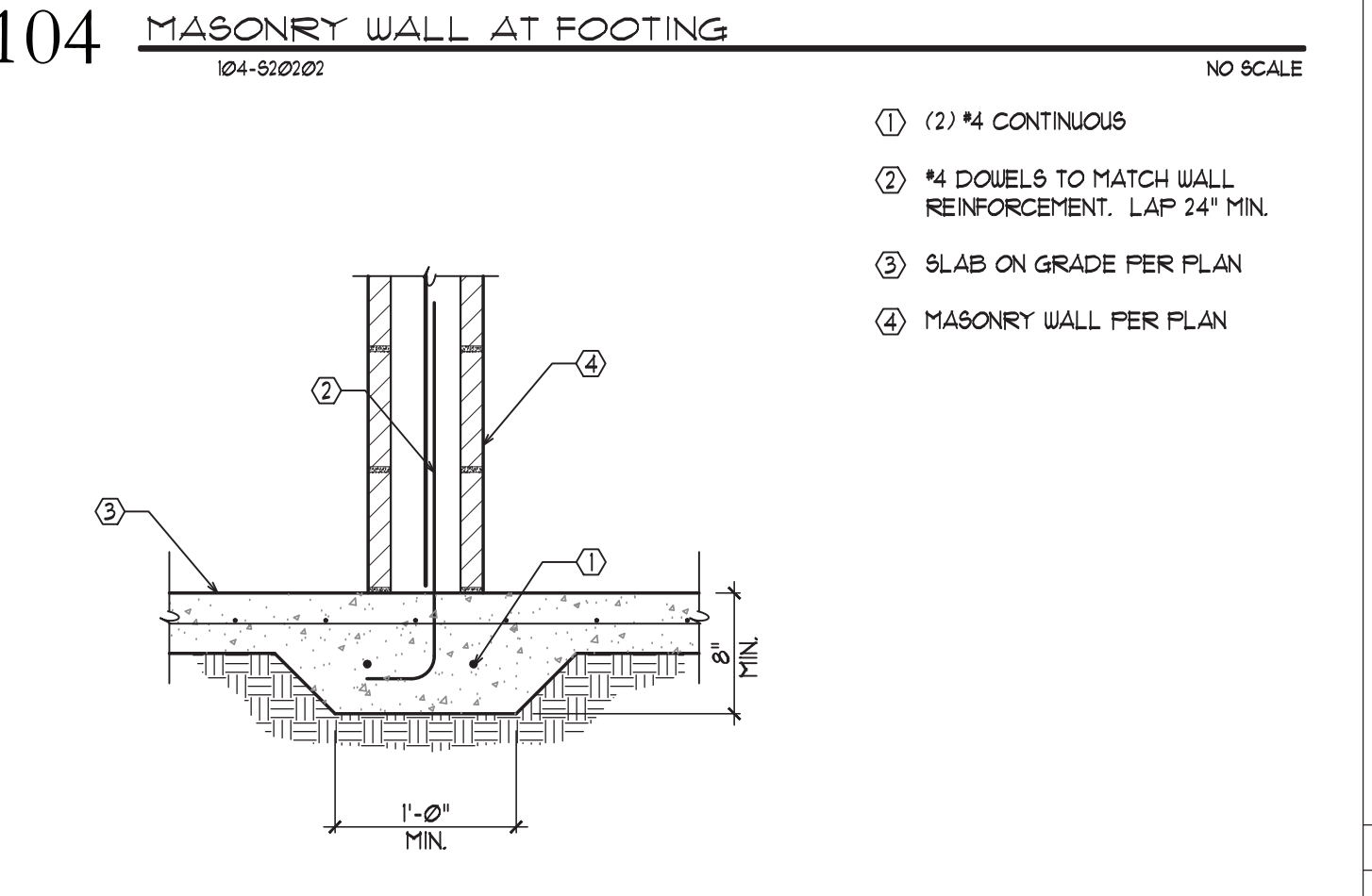
- 1 (2) #4 CONTINUOUS
- 2 #4 DOUELS TO MATCH WALL REINFORCEMENT, LAP 24" MIN.
- 3 SLAB ON GRADE PER PLAN
- 4 MASONRY WALL PER PLAN



110 TYPICAL TURNED DOWN EDGE FOOTING  
10-5102/02 NO SCALE

- 1 REINFORCING PER PLAN
- 2 OPTIONAL CONSTRUCTION JOINT, ROUGHEN SURFACE TO 1" MIN. AMPLITUDE
- 3 #4 "C" DOUELS AT 48" o.c. PLACE ONE DOUEL WITHIN 12" EACH SIDE OF HOLDINGS
- 4 STOREFRONT FRAMING PER ARCHITECTURAL

A. 10" DOUELS MAY BE OMITTED WHEN FOOTING IS MONOLITHIC CAST EXCEPT DOUELS AT HOLDINGS STILL REQUIRED



105 MASONRY WALL AT SLAB  
105-5102/02 NO SCALE

- 1 #4 CONTINUOUS
- 2 #4 DOUELS TO MATCH WALL REINFORCEMENT, LAP 24" MIN.
- 3 SLAB ON GRADE PER PLAN
- 4 MASONRY WALL PER PLAN

**TETRA TECH**  
ENGINEERING BUSINESS NO. XXXX  
www.tetrattech.com  
T-1 Tetra Tech Street Address  
T-2 Tetra Tech Street Address  
Tel: 000.000.0000 Fax: 000.000.0000

**Chris Zweifel, P.E.**  
Professional Engineer  
No. 3499  
CHRISTOPHER SCOTT  
10/25/2024

**BARNWELL SCHOOL DISTRICT**

OWNER  
770 HAGOOD AVE.  
BARNWELL, SD 59812  
Tel: 503.541.1300

**TETRA TECH**  
ARCHITECT  
MECHANICAL ENGINEER  
PLUMBING ENGINEER  
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240 CONTINENTAL DR.  
NEWARK, DE 19713  
302.738.7551

**THOMAS & HUTTON**  
CIVIL ENGINEER  
1501 MAIN ST.  
COLUMBIA, SC 29201  
Tel: 803.451.0200

**ZZ CONSULTING**  
STRUCTURAL ENGINEER  
114 S. STATE ST.  
SHELLEY, ID 83274  
Tel: 208.357.5404

**M CONSULTING**

MARK	DATE	DESCRIPTION
1	07/16/2024	REVISED CONSTRUCTION DOCUMENTS FOR REVIEW AND APPROVAL
2	08/11/2024	ISSUED FOR PERMITS
3	10/25/2024	ISSUED FOR ADDENDUM #03

**BARNWELL SCHOOL DISTRICT**  
MULTI-USE SAFE ROOM  
FOUNDATION DETAILS

Project No.:	S20202
Designed By:	CSZ
Drawn By:	SRM
Checked By:	CSZ

# SE-330 LUMP SUM BID FORM

*Bidders shall submit bids on only Bid Form SE-330.*

**BID SUBMITTED BY:** \_\_\_\_\_  
(Bidder's Name)

**BID SUBMITTED TO:** \_\_\_\_\_  
(Agency's Name)

**FOR: PROJECT NAME:** Barnwell County School District - FEMA HMGP Phase II Safe Room  
**PROJECT NUMBER:** BCSD - Safe Room 03

## **OFFER**

- § 1. In response to the Invitation for Construction Services and in compliance with the Instructions to Bidders for the above-named Project, the undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into a Contract with the Agency on the terms included in the Bidding Documents, and to perform all Work as specified or indicated in the Bidding Documents, for the prices and within the time frames indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.
- § 2. Pursuant to SC Code § 11-35-3030(1), Bidder has submitted Bid Security in the amount and form required by the Bidding Documents.
- § 3. Bidder acknowledges the receipt of the following Addenda to the Bidding Documents and has incorporated the effects of said Addenda into this Bid:  
(Bidder, check all that apply. Note, there may be more boxes than actual addenda. Do not check boxes that do not apply)
- ADDENDA:**             #1             #2             #3             #4             #5
- § 4. Bidder accepts all terms and conditions of the Invitation for Bids, including, without limitation, those dealing with the disposition of Bid Security. Bidder agrees that this Bid, including all Bid Alternates, if any, may not be revoked or withdrawn after the opening of bids, and shall remain open for acceptance for a period of **60** Days following the Bid Date, or for such longer period of time that Bidder may agree to in writing upon request of the Agency.
- § 5. Bidder herewith offers to provide all labor, materials, equipment, tools of trades and labor, accessories, appliances, warranties and guarantees, and to pay all royalties, fees, permits, licenses and applicable taxes necessary to complete the following items of construction work:
- § 6.1 **BASE BID WORK** (as indicated in the Bidding Documents and generally described as follows): Eligible Base Bid

**\$** \_\_\_\_\_, which sum is hereafter called the Base Bid.  
(Bidder to insert Base Bid Amount on line above)

**SE-330**  
**LUMP SUM BID FORM**

*Bidders shall submit bids on only Bid Form SE-330.*

§ 6.2 **BID ALTERNATES** as indicated in the Bidding Documents and generally described as follows:

**ALTERNATE # 1** (Brief Description): #04 Permanent Generator

**ADD TO** or  **DEDUCT FROM BASE BID: \$** \_\_\_\_\_

*(Bidder to mark appropriate box to clearly indicate the price adjustment offered for each Alternate)*

**ALTERNATE # 2** (Brief Description): \_\_\_\_\_

**ADD TO** or  **DEDUCT FROM BASE BID: \$** \_\_\_\_\_

*(Bidder to mark appropriate box to clearly indicate the price adjustment offered for each Alternate)*

**ALTERNATE # 3** (Brief Description): \_\_\_\_\_

**ADD TO** or  **DEDUCT FROM BASE BID: \$** \_\_\_\_\_

*(Bidder to mark appropriate box to clearly indicate the price adjustment offered for each Alternate)*

§ 6.3 **UNIT PRICES:**

**BIDDER** offers for the Agency’s consideration and use, the following **UNIT PRICES**. The **UNIT PRICES** offered by **BIDDER** indicate the amount to be added to or deducted from the **CONTRACT SUM** for each item-unit combination. **UNIT PRICES** include all costs to the Agency, including those for materials, labor, equipment, tools of trades and labor, fees, taxes, insurance, bonding, overhead, profit, etc. The Agency reserves the right to include or not to include any of the following **UNIT PRICES** in the Contract and to negotiate the **UNIT PRICES** with **BIDDER** prior to including in the Contract.

<u>No.</u>	<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>ADD</u>	<u>DEDUCT</u>
<u>1.</u>	<u>Removal of unsatisfactory soil &amp; replac. with soil</u>	_____	<u>\$</u> _____	<u>\$</u> _____
<u>2.</u>	_____	_____	<u>\$</u> _____	<u>\$</u> _____
<u>3.</u>	_____	_____	<u>\$</u> _____	<u>\$</u> _____
<u>4.</u>	_____	_____	<u>\$</u> _____	<u>\$</u> _____
<u>5.</u>	_____	_____	<u>\$</u> _____	<u>\$</u> _____
<u>6.</u>	_____	_____	<u>\$</u> _____	<u>\$</u> _____

**SE-330  
LUMP SUM BID FORM**

**§ 7. LISTING OF PROPOSED SUBCONTRACTORS PURSUANT TO SECTION 3020(b)(i), CHAPTER 35, TITLE 11 OF THE SOUTH CAROLINA CODE OF LAWS, AS AMENDED**  
*(See Instructions on the following page BF-2A)*

Bidder shall use the below-listed Subcontractors in the performance of the Subcontractor Classification work listed:

<b>(A) SUBCONTRACTOR LICENSE CLASSIFICATION or SUBCLASSIFICATION NAME</b> <i>(Completed by Agency)</i>	<b>(B) LICENSE CLASSIFICATION or SUBCLASSIFICATION ABBREVIATION</b> <i>(Completed by Agency)</i>	<b>(C) SUBCONTRACTOR and/or PRIME CONTRACTOR</b> <i>(Required - must be completed by Bidder)</i>	<b>(D) SUBCONTRACTOR'S and/or PRIME CONTRACTOR'S SC LICENSE NUMBER</b> <i>(Requested, but not Required)</i>
<b>BASE BID</b>			
CT	5		
AC	4		
HT	4		
ET	4		
<b>ALTERNATE #1</b>			
ET	4		
<b>ALTERNATE #2</b>			
NA			
<b>ALTERNATE #3</b>			
NA			

If a Bid Alternate is accepted, Subcontractors listed for the Bid Alternate shall be used for the work of both the Alternate and the Base Bid work.



# SE-330 LUMP SUM BID FORM

## INSTRUCTIONS FOR SUBCONTRACTOR LISTING

1. Section 7 of the Bid Form sets forth an Agency-developed list of subcontractor license classifications or subclassifications for which Bidder is required to identify the entity (subcontractor(s) and/or himself) Bidder will use to perform this work.
  - a. **Columns A & B:** The Agency fills out these columns to identify the subcontractor license classification / subclassification and related license abbreviation for which the Bidder must list either a subcontractor or himself as the entity that will perform this work. In Column A, the subcontractor license classification/subclassification is identified by name and in Column B, the related contractor license abbreviation (per Title 40 of the SC Code of Laws) is listed. Abbreviations of licenses can be found at: <https://llr.sc.gov/clb/PDFFiles/CLBClassificationAbbreviations.pdf>. If the Agency has not identified a subcontractor license classification/subclassification, the Bidder does not list a subcontractor.
  - b. **Columns C and D:** In these columns, the Bidder identifies the subcontractors it will use for the work of each license listed by the Agency in Columns A & B. Bidder must identify only the subcontractor(s) who will perform the work and no others. Bidders must make sure that their identification of each subcontractor is clear and unambiguous. A listing that could be any number of different entities may be cause for rejection of the bid as non-responsive. For example, a listing of M&M without additional information may be problematic if there are multiple different licensed contractors in South Carolina whose names start with M&M.
2. **Subcontractor Defined:** For purposes of subcontractor listing, a subcontractor is an entity who will perform work or render service to the prime contractor to or about the construction site pursuant to a contract with the prime contractor. Bidder should not identify sub-subcontractors in the spaces provided on the bid form but only those entities with which Bidder will contract directly. Likewise, do not identify material suppliers, manufacturers, and fabricators that will not perform physical work at the site of the project but will only supply materials or equipment to the Bidder or proposed subcontractor(s).
3. **Subcontractor Qualifications:** Bidder must only list subcontractors who possess a South Carolina contractor's license that includes the license classification and/or subclassification identified by the Agency in Columns A & B. The subcontractor license must also be within the appropriate license group for the work. If Bidder lists a subcontractor who is not qualified to perform the work, the Bidder will be rejected as non-responsive.
4. **Use of Own forces:** If, under the terms of the Bidding Documents and SC Contractor Licensing laws, Bidder is qualified to perform the work of a listed subcontractor classification or subclassification and Bidder does not intend to subcontract such work but to use Bidder's own employees to perform such work, the Bidder must insert itself in the space provided.
5. **Use of Multiple Subcontractors:**
  - a. If Bidder intends to use multiple subcontractors to perform the work of a single license classification/subclassification, Bidder must insert the name of each subcontractor Bidder will use, preferably separating the name of each by the word "and". If Bidder intends to use both his own employees to perform a part of the work of a single license classification/subclassification and to use one or more subcontractors to perform the remaining work, Bidder must insert itself and each subcontractor, preferably separating them with the word "and". Bidder must use each entity listed for the work of a single license classification/subclassification in the performance of that work.
  - b. **Optional Listing Prohibited:** Bidder may not list multiple subcontractors for a license classification/subclassification in a form that provides the Bidder the option, after bid opening or award, to choose one or more but not all the listed subcontractors to perform the work for which they are listed. A listing, which on its face requires subsequent explanation to determine whether it is an optional listing, is non-responsive. If Bidder intends to use multiple entities to perform the work for a single listing, Bidder must clearly set forth on the bid form such intent. Bidder may accomplish this by simply inserting the word "and" between the names of each entity listed. Agency will reject as non-responsive a listing that contains the names of multiple subcontractors separated by a blank space, the word "or", a virgule (that is a /), or any separator that the Agency may reasonably interpret as an optional listing.
6. If Bidder is awarded the contract, Bidder must, except with the approval of the Agency for good cause shown, use the listed entities to perform the work for which they are listed.
7. If Bidder is awarded the contract, Bidder will not be allowed to substitute another entity as subcontractor in place of a subcontractor listed in Section 7 of the Bid except for one or more of the reasons allowed by the SC Code of Laws.
8. Bidder's failure to identify an entity (subcontractor or himself) to perform the work of a subcontractor listed in Columns A & B will render the Bid non-responsive.

## SE-330 LUMP SUM BID FORM

### § 8. LIST OF MANUFACTURERS, MATERIAL SUPPLIERS, AND SUBCONTRACTORS OTHER THAN SUBCONTRACTORS LISTED IN SECTION 7 ABOVE (*FOR INFORMATION ONLY*):

Pursuant to instructions in the Invitation for Construction Services, if any, Bidder will provide to Agency upon the Agency's request and within 24 hours of such request, a listing of manufacturers, material suppliers, and subcontractors, other than those listed in Section 7 above, that Bidder intends to use on the project. Bidder acknowledges and agrees that this list is provided for purposes of determining responsibility and not pursuant to the subcontractor listing requirements of SC Code § 11-35-3020(b)(i).

### § 9. TIME OF CONTRACT PERFORMANCE AND LIQUIDATED DAMAGES

#### a) CONTRACT TIME

Bidder agrees that the Date of Commencement of the Work shall be established in a Notice to Proceed to be issued by the Agency. Bidder agrees to substantially complete the Work within 300 Calendar Days from the Date of Commencement, subject to adjustments as provided in the Contract Documents.

#### b) LIQUIDATED DAMAGES

Bidder further agrees that from the compensation to be paid, the Agency shall retain as Liquidated Damages the amount of \$ 0.00 for each Calendar Day the actual construction time required to achieve Substantial Completion exceeds the specified or adjusted time for Substantial Completion as provided in the Contract Documents. This amount is intended by the parties as the predetermined measure of compensation for actual damages, not as a penalty for nonperformance.

### § 10. AGREEMENTS

- a) Bidder agrees that this bid is subject to the requirements of the laws of the State of South Carolina.
- b) Bidder agrees that at any time prior to the issuance of the Notice to Proceed for this Project, this Project may be canceled for the convenience of, and without cost to, the State.
- c) Bidder agrees that neither the State of South Carolina nor any of its agencies, employees or agents shall be responsible for any bid preparation costs, or any costs or charges of any type, should all bids be rejected or the Project canceled for any reason prior to the issuance of the Notice to Proceed.

### § 11. ELECTRONIC BID BOND

By signing below, the Principal is affirming that the identified electronic bid bond has been executed and that the Principal and Surety are firmly bound unto the State of South Carolina under the terms and conditions of the AIA Document A310, Bid Bond, referenced in the Bidding Documents.

**ELECTRONIC BID BOND NUMBER:** \_\_\_\_\_

**SIGNATURE AND TITLE:** \_\_\_\_\_

**SE-330  
LUMP SUM BID FORM**

**CONTRACTOR'S CLASSIFICATIONS AND SUBCLASSIFICATIONS WITH LIMITATION**

**SC Contractor's License Number(s):** \_\_\_\_\_

**Classification(s) & Limits:** \_\_\_\_\_

**Subclassification(s) & Limits:** \_\_\_\_\_

**By signing this Bid, the person signing reaffirms all representation and certification made by both the person signing and the Bidder, including without limitation, those appearing in Article 2 of the SCOSE Version of the AIA Document A701, Instructions to Bidders, is expressly incorporated by reference.**

**BIDDER'S LEGAL NAME:** \_\_\_\_\_

**ADDRESS:** \_\_\_\_\_

\_\_\_\_\_

**TELEPHONE:** \_\_\_\_\_

**EMAIL:** \_\_\_\_\_

**SIGNATURE:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

**PRINT NAME:** \_\_\_\_\_

**TITLE:** \_\_\_\_\_

# SE-330 LUMP SUM BID FORM

*Bidders shall submit bids on only Bid Form SE-330.*

**BID SUBMITTED BY:** \_\_\_\_\_  
(Bidder's Name)

**BID SUBMITTED TO:** \_\_\_\_\_  
(Agency's Name)

**FOR: PROJECT NAME:** Barnwell County School District - FEMA HMGP Phase II Safe Room  
**PROJECT NUMBER:** BCSD - Safe Room 03

## **OFFER**

§ 1. In response to the Invitation for Construction Services and in compliance with the Instructions to Bidders for the above-named Project, the undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into a Contract with the Agency on the terms included in the Bidding Documents, and to perform all Work as specified or indicated in the Bidding Documents, for the prices and within the time frames indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

§ 2. Pursuant to SC Code § 11-35-3030(1), Bidder has submitted Bid Security in the amount and form required by the Bidding Documents.

§ 3. Bidder acknowledges the receipt of the following Addenda to the Bidding Documents and has incorporated the effects of said Addenda into this Bid:

*(Bidder, check all that apply. Note, there may be more boxes than actual addenda. Do not check boxes that do not apply)*

**ADDENDA:**             #1             #2             #3             #4             #5

§ 4. Bidder accepts all terms and conditions of the Invitation for Bids, including, without limitation, those dealing with the disposition of Bid Security. Bidder agrees that this Bid, including all Bid Alternates, if any, may not be revoked or withdrawn after the opening of bids, and shall remain open for acceptance for a period of **60** Days following the Bid Date, or for such longer period of time that Bidder may agree to in writing upon request of the Agency.

§ 5. Bidder herewith offers to provide all labor, materials, equipment, tools of trades and labor, accessories, appliances, warranties and guarantees, and to pay all royalties, fees, permits, licenses and applicable taxes necessary to complete the following items of construction work:

§ 6.1 **BASE BID WORK** (as indicated in the Bidding Documents and generally described as follows): Ineligible Base Bid

**\$** \_\_\_\_\_, which sum is hereafter called the Base Bid.

*(Bidder to insert Base Bid Amount on line above)*



**SE-330**  
**LUMP SUM BID FORM**

*Bidders shall submit bids on only Bid Form SE-330.*

§ 6.2 **BID ALTERNATES** as indicated in the Bidding Documents and generally described as follows:

**ALTERNATE # 1** (Brief Description): #01 Bleachers

**ADD TO** or  **DEDUCT FROM BASE BID: \$** \_\_\_\_\_

*(Bidder to mark appropriate box to clearly indicate the price adjustment offered for each Alternate)*

**ALTERNATE # 2** (Brief Description): #02 Gymnasium Equipment

**ADD TO** or  **DEDUCT FROM BASE BID: \$** \_\_\_\_\_

*(Bidder to mark appropriate box to clearly indicate the price adjustment offered for each Alternate)*

**ALTERNATE # 3** (Brief Description): #03 Custom Phenolic Lockers

**ADD TO** or  **DEDUCT FROM BASE BID: \$** \_\_\_\_\_

*(Bidder to mark appropriate box to clearly indicate the price adjustment offered for each Alternate)*

§ 6.3 **UNIT PRICES:**

**BIDDER** offers for the Agency’s consideration and use, the following **UNIT PRICES**. The **UNIT PRICES** offered by **BIDDER** indicate the amount to be added to or deducted from the **CONTRACT SUM** for each item-unit combination. **UNIT PRICES** include all costs to the Agency, including those for materials, labor, equipment, tools of trades and labor, fees, taxes, insurance, bonding, overhead, profit, etc. The Agency reserves the right to include or not to include any of the following **UNIT PRICES** in the Contract and to negotiate the **UNIT PRICES** with **BIDDER** prior to including in the Contract.

<u>No.</u>	<u>ITEM</u>	<u>UNIT OF MEASURE</u>	<u>ADD</u>	<u>DEDUCT</u>
<u>1.</u>	_____	_____	<u>\$</u> _____	<u>\$</u> _____
<u>2.</u>	_____	_____	<u>\$</u> _____	<u>\$</u> _____
<u>3.</u>	_____	_____	<u>\$</u> _____	<u>\$</u> _____
<u>4.</u>	_____	_____	<u>\$</u> _____	<u>\$</u> _____
<u>5.</u>	_____	_____	<u>\$</u> _____	<u>\$</u> _____
<u>6.</u>	_____	_____	<u>\$</u> _____	<u>\$</u> _____

**SE-330  
LUMP SUM BID FORM**

**§ 7. LISTING OF PROPOSED SUBCONTRACTORS PURSUANT TO SECTION 3020(b)(i), CHAPTER 35, TITLE 11 OF THE SOUTH CAROLINA CODE OF LAWS, AS AMENDED**  
*(See Instructions on the following page BF-2A)*

Bidder shall use the below-listed Subcontractors in the performance of the Subcontractor Classification work listed:

<b>(A) SUBCONTRACTOR LICENSE CLASSIFICATION or SUBCLASSIFICATION NAME</b> <i>(Completed by Agency)</i>	<b>(B) LICENSE CLASSIFICATION or SUBCLASSIFICATION ABBREVIATION</b> <i>(Completed by Agency)</i>	<b>(C) SUBCONTRACTOR and/or PRIME CONTRACTOR</b> <i>(Required - must be completed by Bidder)</i>	<b>(D) SUBCONTRACTOR'S and/or PRIME CONTRACTOR'S SC LICENSE NUMBER</b> <i>(Requested, but not Required)</i>
<b>BASE BID</b>			
BD	5		
<b>ALTERNATE #1</b>			
NA			
<b>ALTERNATE #2</b>			
NA			
<b>ALTERNATE #3</b>			
NA			

If a Bid Alternate is accepted, Subcontractors listed for the Bid Alternate shall be used for the work of both the Alternate and the Base Bid work.

# SE-330 LUMP SUM BID FORM

## INSTRUCTIONS FOR SUBCONTRACTOR LISTING

1. Section 7 of the Bid Form sets forth an Agency-developed list of subcontractor license classifications or subclassifications for which Bidder is required to identify the entity (subcontractor(s) and/or himself) Bidder will use to perform this work.
  - a. **Columns A & B:** The Agency fills out these columns to identify the subcontractor license classification / subclassification and related license abbreviation for which the Bidder must list either a subcontractor or himself as the entity that will perform this work. In Column A, the subcontractor license classification/subclassification is identified by name and in Column B, the related contractor license abbreviation (per Title 40 of the SC Code of Laws) is listed. Abbreviations of licenses can be found at: <https://llr.sc.gov/clb/PDFFiles/CLBClassificationAbbreviations.pdf>. If the Agency has not identified a subcontractor license classification/subclassification, the Bidder does not list a subcontractor.
  - b. **Columns C and D:** In these columns, the Bidder identifies the subcontractors it will use for the work of each license listed by the Agency in Columns A & B. Bidder must identify only the subcontractor(s) who will perform the work and no others. Bidders must make sure that their identification of each subcontractor is clear and unambiguous. A listing that could be any number of different entities may be cause for rejection of the bid as non-responsive. For example, a listing of M&M without additional information may be problematic if there are multiple different licensed contractors in South Carolina whose names start with M&M.
2. **Subcontractor Defined:** For purposes of subcontractor listing, a subcontractor is an entity who will perform work or render service to the prime contractor to or about the construction site pursuant to a contract with the prime contractor. Bidder should not identify sub-subcontractors in the spaces provided on the bid form but only those entities with which Bidder will contract directly. Likewise, do not identify material suppliers, manufacturers, and fabricators that will not perform physical work at the site of the project but will only supply materials or equipment to the Bidder or proposed subcontractor(s).
3. **Subcontractor Qualifications:** Bidder must only list subcontractors who possess a South Carolina contractor's license that includes the license classification and/or subclassification identified by the Agency in Columns A & B. The subcontractor license must also be within the appropriate license group for the work. If Bidder lists a subcontractor who is not qualified to perform the work, the Bidder will be rejected as non-responsive.
4. **Use of Own forces:** If, under the terms of the Bidding Documents and SC Contractor Licensing laws, Bidder is qualified to perform the work of a listed subcontractor classification or subclassification and Bidder does not intend to subcontract such work but to use Bidder's own employees to perform such work, the Bidder must insert itself in the space provided.
5. **Use of Multiple Subcontractors:**
  - a. If Bidder intends to use multiple subcontractors to perform the work of a single license classification/subclassification, Bidder must insert the name of each subcontractor Bidder will use, preferably separating the name of each by the word "and". If Bidder intends to use both his own employees to perform a part of the work of a single license classification/subclassification and to use one or more subcontractors to perform the remaining work, Bidder must insert itself and each subcontractor, preferably separating them with the word "and". Bidder must use each entity listed for the work of a single license classification/subclassification in the performance of that work.
  - b. **Optional Listing Prohibited:** Bidder may not list multiple subcontractors for a license classification/subclassification in a form that provides the Bidder the option, after bid opening or award, to choose one or more but not all the listed subcontractors to perform the work for which they are listed. A listing, which on its face requires subsequent explanation to determine whether it is an optional listing, is non-responsive. If Bidder intends to use multiple entities to perform the work for a single listing, Bidder must clearly set forth on the bid form such intent. Bidder may accomplish this by simply inserting the word "and" between the names of each entity listed. Agency will reject as non-responsive a listing that contains the names of multiple subcontractors separated by a blank space, the word "or", a virgule (that is a /), or any separator that the Agency may reasonably interpret as an optional listing.
6. If Bidder is awarded the contract, Bidder must, except with the approval of the Agency for good cause shown, use the listed entities to perform the work for which they are listed.
7. If Bidder is awarded the contract, Bidder will not be allowed to substitute another entity as subcontractor in place of a subcontractor listed in Section 7 of the Bid except for one or more of the reasons allowed by the SC Code of Laws.
8. Bidder's failure to identify an entity (subcontractor or himself) to perform the work of a subcontractor listed in Columns A & B will render the Bid non-responsive.

## SE-330 LUMP SUM BID FORM

### § 8. LIST OF MANUFACTURERS, MATERIAL SUPPLIERS, AND SUBCONTRACTORS OTHER THAN SUBCONTRACTORS LISTED IN SECTION 7 ABOVE (*FOR INFORMATION ONLY*):

Pursuant to instructions in the Invitation for Construction Services, if any, Bidder will provide to Agency upon the Agency's request and within 24 hours of such request, a listing of manufacturers, material suppliers, and subcontractors, other than those listed in Section 7 above, that Bidder intends to use on the project. Bidder acknowledges and agrees that this list is provided for purposes of determining responsibility and not pursuant to the subcontractor listing requirements of SC Code § 11-35-3020(b)(i).

### § 9. TIME OF CONTRACT PERFORMANCE AND LIQUIDATED DAMAGES

#### a) CONTRACT TIME

Bidder agrees that the Date of Commencement of the Work shall be established in a Notice to Proceed to be issued by the Agency. Bidder agrees to substantially complete the Work within 300 Calendar Days from the Date of Commencement, subject to adjustments as provided in the Contract Documents.

#### b) LIQUIDATED DAMAGES

Bidder further agrees that from the compensation to be paid, the Agency shall retain as Liquidated Damages the amount of \$ 0.00 for each Calendar Day the actual construction time required to achieve Substantial Completion exceeds the specified or adjusted time for Substantial Completion as provided in the Contract Documents. This amount is intended by the parties as the predetermined measure of compensation for actual damages, not as a penalty for nonperformance.

### § 10. AGREEMENTS

- a) Bidder agrees that this bid is subject to the requirements of the laws of the State of South Carolina.
- b) Bidder agrees that at any time prior to the issuance of the Notice to Proceed for this Project, this Project may be canceled for the convenience of, and without cost to, the State.
- c) Bidder agrees that neither the State of South Carolina nor any of its agencies, employees or agents shall be responsible for any bid preparation costs, or any costs or charges of any type, should all bids be rejected or the Project canceled for any reason prior to the issuance of the Notice to Proceed.

### § 11. ELECTRONIC BID BOND

By signing below, the Principal is affirming that the identified electronic bid bond has been executed and that the Principal and Surety are firmly bound unto the State of South Carolina under the terms and conditions of the AIA Document A310, Bid Bond, referenced in the Bidding Documents.

**ELECTRONIC BID BOND NUMBER:** \_\_\_\_\_

**SIGNATURE AND TITLE:** \_\_\_\_\_

**SE-330  
LUMP SUM BID FORM**

**CONTRACTOR'S CLASSIFICATIONS AND SUBCLASSIFICATIONS WITH LIMITATION**

**SC Contractor's License Number(s):** \_\_\_\_\_

**Classification(s) & Limits:** \_\_\_\_\_

**Subclassification(s) & Limits:** \_\_\_\_\_

**By signing this Bid, the person signing reaffirms all representation and certification made by both the person signing and the Bidder, including without limitation, those appearing in Article 2 of the SCOSE Version of the AIA Document A701, Instructions to Bidders, is expressly incorporated by reference.**

**BIDDER'S LEGAL NAME:** \_\_\_\_\_

**ADDRESS:** \_\_\_\_\_

\_\_\_\_\_

**TELEPHONE:** \_\_\_\_\_

**EMAIL:** \_\_\_\_\_

**SIGNATURE:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

**PRINT NAME:** \_\_\_\_\_

**TITLE:** \_\_\_\_\_