Grossmont Union High School District

GROSSMONT KITCHEN AND WEIGHT ROOM
MULTI PRIME
CN-2982 THROUGH CN-2991

Addendum No. 2

Date: August 2, 2022

The following changes, additions, deletions or corrections shall become a part of the Contract Documents dated July 19, 2022 for the project named above and all other conditions shall remain the same. The bidders shall be responsible for transmitting this information to all affected subcontractors and suppliers prior to the closing of bids.

Bid Opening:

The bid opening will remain at 2:00 p.m. on Thursday, August 25, 2022.

Please incorporate the attached:

1. Ruhnau Clarke Architects Addendum 01
2. Pre-bid Job-walk Meeting Handout (07.28.22)
3. Pre-bid Job-walk Sign-in Sheets (07.28.22)
4. RFI & Substitution Request Log (08.02.22)
5. Bid Location Map
6. CN-2982 Scope of Work (Version 02)
7. CN-2983 Scope of Work (Version 02)
8. CN-2984 Scope of Work (Version 02)
9. CN-2985 Scope of Work (Version 02)
10. CN-2989 Scope of Work (Version 02)

Additional Information:

1. This is not a PLA or PSA project.
2. Bid location = 924 E Main St., El Cajon, CA 92021
3. RFI numbers that are not shown are Pending RFIs that will be issued in future addenda
4. Section 11.3 of the Front-end Documents (Page GC-80) shall be void. Builder's Risk shall be provided by the District.

THIS ENDS ADDENDUM NO. 2

Dena Johnson, Senior Project Manager – GUHSD

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RUHNAU CLARKE ARCHITECTS

August 2,2022

ADDENDUM NO. 1

TO THE CONTRACT DOCUMENTS

FOR

Grossmont High School New Kitchen and Weight Room

FOR THE
GROSSMONT UNION HIGH SCHOOL DISTRICT
1100 Murray Drive
El Cajon, CA 92020

DSA #04-120895 FILE #37-H4 RCA Job No. 1-30-55

NOTICE TO BIDDERS

This Addendum forms a part of the Contract and modifies the original documents DSA Approved on June 27,2022. It is intended that all work affected by the following modifications shall conform with related provisions and general conditions of the contract of the original drawings and specifications. Modify the following items wherever appearing in any drawing or sections of the specifications. Acknowledge receipt of Addendum No. 1 in the space provided on the Bid Form. Failure to do so may subject bidder to disqualification.

CHANGES TO SPECIFICATIONS

Item No. 1.1 Reference Section 00 01 10 – Table of Contents:
1.1.1 Revised Table of Contents per attached revised Section 00 01 10.

Item No. 1.2 Reference Section 01 57 13- Temporary Erosion and Sediment Control (SWPP)
1.2.1 Replace specification section in its entirety with attached revised section 01 57 13

Item No. 1.3 Reference Section 01 58 13– Temporary Project Signage:
1.3.1 Replace specification section in its entirety with attached revised section 01 58 13

Item No. 1.4 Reference Section 01 60 00 – Product Requirements
1.4.1 Replace specifications section in its entirety with attached revised section 01 60 00

Item No. 1.5 Reference Section 03 10 00 – Concrete Forming and Accessories
1.5.1 Replace specifications section in its entirety with attached revised section 03 10 00

Item No. 1.6 Reference Section 03 35 33 – Stamped Concrete Finishing
1.6.1 Added new specification section 03 35 33

Item No. 1.7 Reference Section 04 20 00 – Unit Masonry
1.7.1 Replace specifications section in its entirety with attached revised section 04 20 00

Item No. 1.8 Reference Section 05 31 00 – Steel Decking
1.8.1 Added new specification section 05 31 00

Item No. 1.9 Reference Section 05 50 00 – Metal Fabrications
1.9.1 Replace specifications section in its entirety with attached revised section 05 50 00

Item No. 1.10 Reference Section 05 52 13 – Pipe and Tube Railings
1.10.1 Added new specifications section 05 52 13

Item No. 1.11 Reference Section 06 20 00 – Finish Carpentry
1.11.1 Replace specifications section in its entirety with attached revised section 06 20 00

Item No. 1.12 Reference Section 07 13 00 – Sheet Waterproofing
1.12.1 Added new specification section 07 13 00

Item No. 1.13 Reference Section 07 21 00 – Thermal Insulation
1.13.1 Replace specifications section in its entirety with attached revised section 07 21 00

Item No. 1.14 Reference Section 07 25 00 – Weather Barriers
1.14.1 Replace specifications section in its entirety with attached revised section 07 25 00

Item No. 1.15 Reference Section 07 72 00 – Roof Accessories
1.15.1 Added new specification section 07 72 00

Item No. 1.16 Reference Section 07 92 00 – Joint Sealants
1.16.1 Replace specifications section in its entirety with attached revised section 07 92 00

Item No. 1.17 Reference Section 08 33 23 – Overhead Coiling Doors
1.17.1 Replace specifications section in its entirety with attached revised section 08 33 23

Item No. 1.18 Reference Section 08 71 00 Door Hardware
1.18.1 Replace specifications section in its entirety with attached revised section 08 71 00

Item No. 1.19 Reference Section 08 80 00 – Glazing
1.19.1 Replace specifications section in its entirety with attached revised section 08 80 00

Item No. 1.20 Reference Section 09 21 16– Gypsum Board Assemblies
1.20.1 Replace specifications section in its entirety with attached revised section 09 21 16

Item No. 1.21 Reference Section 09 30 00 – Tiling
1.21.1 Replace specifications section in its entirety with attached revised section 09 30 00

Item No. 1.22 Reference Section 10 21 13. 19 – Plastic Toilet Compartments
1.22.1 Replace specifications section in its entirety with attached revised section 10 21 13. 19

Item No. 1.23 Reference Section 10 28 00 – Toilet Accessories
1.23.1 Replace specifications section in its entirety with attached revised section 10 28 00

Item No. 1.24 Reference Section 22 05 23 – General Duty Valves for Plumbing Piping
1.24.1 Added new specification section 22 05 23

Item No. 1.25 Reference Section 23 00 10 – Mechanical General Requirement
1.25.1 Replace specifications section in its entirety with attached revised section 23 00 10

Item No. 1.26 Reference Section 23 00 50 – Basic Mechanical Material and Methods
1.26.1 Replace specifications section in its entirety with attached revised section 23 00 50

Item No. 1.27 Reference Section 23 05 48 – Vibration and Seismic Controls for HVAC
1.27.1 Replace specifications section in its entirety with attached revised section 23 05 48

Item No. 1.28 Reference Section 23 07 13 – Duct Insulation
1.28.1 Replace specifications section in its entirety with attached revised section 23 07 13

Item No. 1.29 Reference Section 23 08 00 – Commissioning of HVAC
1.29.1 Replace specifications section in its entirety with attached revised section 23 08 00

Item No. 1.30 Reference Section 27 10 00 – Voice – Data-IP- Intercom Clock Infrastructure
1.30.1 Replace specifications section in its entirety with attached revised section 27 10 00

Item No. 1.31 Reference Section 27 20 00 – Integrated Audio-Visual System
1.31.1 Replace specifications section in its entirety with attached revised section 27 20 00

Item No. 1.32 Reference Section 28 13 00 – Security System
1.32.1 Replace specifications section in its entirety with attached revised section 28 13 00

Item No. 1.33 Reference Section 31 22 00 – Grading
1.33.1 Replace specifications section in its entirety with attached revised section 31 22 00

Item No. 1.34 Reference Section 31 23 16.13 – Trenching
1.34.1 Replace specifications section in its entirety with attached revised section 31 23 16.13

Item No. 1.35 Reference Section 32 12 16 – Asphalt Paving
1.35.1 Replace specifications section in its entirety with attached revised section 32 12 16

Item No. 1.36 Reference Section 32 17 13 – Concrete Wheel Stops
1.36.1 Added new specification section 32 17 13

Item No. 1.37 Reference Section 32 17 23 – Pavement Markings
1.37.1 Added new specification section 32 17 23

Item No. 1.38 Reference Section 32 17 26 – Tactile Warning Surfacing
1.38.1 Added new specification section 32 17 26

Item No. 1.39 Reference Section 33 05 43 – Corrosion Protection
1.39.1 Replace specifications section in its entirety with attached revised section 33 05 43

Item No. 1.40 Reference Section 33 14 16 - Site Water Distribution Piping
1.40.1 Replace specifications section in its entirety with attached revised section 33 14 16

Item No. 1.41 Reference Section 33 31 13 – Site Sanitary Sewerage Piping
1.41.1 Replace specifications section in its entirety with attached revised section 33 31 13

Item No. 1.42 Reference Section 33 41 00– Subdrainage
1.42.1 Added new specification section 33 41 00

Item No. 1.43 Reference Section 33 42 30 – Stormwater Drains
1.43.1 Replace specifications section in its entirety with attached revised section 33 42 30

CHANGES TO DRAWINGS -

Item No. 1.44 Reference Sheet A1-1.0
1.44.1 Revised Gridline E location on Floor plan to match Structural per Sketch ASK-1.1

Item No. 1.45 Reference Sheet A2-1.0
1.45.1 Updated Kitchen RCP to show missing light fixtures at canopy location adjacent to Service Lines 401. See sketch ASK1.2

Item No. 1.46 Reference Sheet A1-7.0
1.46.1 Remove recessed paper towel dispenser and trash combo and replaced with Electric Hand Dryer per sketch ASK-1.3

Item No. 1.47 Reference Sheet A2-7.0
1.47.1 Remove recessed paper towel dispenser and trash combo and replaced with Electric Hand Dryer per sketch ASK-1.4

Item No. 1.48 Reference Sheet AD-1.0
1.48.1 Added Toilet accessory reference added to legend and Hand Dryer added to Accessible elevations per sketch ASK-1.5

Item No. 1.49 Reference Sheet S0-0.3– General Notes
1.49.1 Added Steel Decking notes per attached Sketch SSK-1.1

Item No. 1.50 Reference Sheet S0-1.2– Typical Concrete Details
1.50.1 Revised detail 10/S0-1.2 per attached Sketch SSK-1.2

Item No. 1.51 Reference Sheet M0-0.2- Mechanical Schedules
1.51.1 Replace Sheet M0-0.2 with attached Revised sheet M0-0.2

Item No. 1.52 Reference Sheet M2-2.1- Mechanical Kitchen Floor Plan
1.52.1 Replace Sheet M2-2.1 with attached Revised sheet M2-2.1

Item No. 1.53 Reference Sheet E1.1–Overall Site Plan
1.53.1 Replace Sheet E-1.1 with attached Revised sheet E-1.1

Item No. 1.54 Reference Sheet E2.3- Fixture Schedule
1.54.1 Replace Sheet E2.3 with attached Revised sheet E2.3

Item No. 1.55 Reference Sheet E2.4- Lighting Control Diagram
1.55.1 Replace Sheet E2.4 with attached Revised sheet E2.4

Item No. 1.56 Reference Sheet E2.7- Lighting Details
1.56.1 Replace Sheet E2.7 with attached Revised sheet E2.7

Item No. 1.57 Reference Sheet E3.2- Kitchen Floor Plan- Power
1.57.1 Replace Sheet E3.2 with attached Revised sheet E3.2

Item No. 1.58 Reference Sheet E3.3- Power Details
1.58.1 Replace Sheet E3.3 with attached Revised sheet E3.3

Item No. 1.59 Reference Sheet E4.0- Communications Legend Notes
1.59.1 Replace Sheet E4.0 with attached Revised sheet E4.0

Item No. 1.60 Reference Sheet E4.2- Kitchen Floor Plan - Communications
1.60.1 Replace Sheet E4.2 with attached Revised sheet E4.2

Item No. 1.61 Reference Sheet E4.3- Voice/ Data Riser Diagram and Details
1.61.1 Replace Sheet E4.3 with attached Revised sheet E4.3

Item No. 1.62 Reference Sheet E4.7- Communication Details
1.62.1 Replace Sheet E4.7 with attached Revised sheet E4.7

Item No. 1.63 Reference Sheet E4.9- Audio-Visual Details
1.63.1 Replace Sheet E4.9 with attached Revised sheet E4.9

Item No. 1.64 Reference Sheet E4.10- Audio- Visual Details
1.64.1 Replace Sheet E4.10 with attached Revised sheet E4.10

Item No. 1.65 Reference Sheet K2 – Foodservice Equipment Schedule
1.65.1 Updated Items 11, 12, 55, & 65 to match specification section 11 40 00 per attached Sketch FSSK-1.1

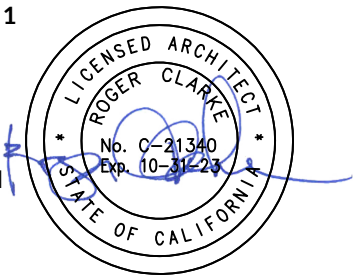
ATTACHMENTS – GHS New Kitchen and Weight Room

Specifications: 00 01 10, 01 57 13, 01 58 13, 01 60 00, 03 10 00, 03 35 33, 04 20 00, 05 31 00, 05 50 00, 05 52 13, 06 20 00, 07 13 00, 07 21 00, 07 25 00, 07 72 00, 07 92 00, 08 33 23, 08 71 00, 08 80 00, 09 21 16, 09 30 00, 10 21 13.19, 10 28 00, 22 05 23, 23 00 10, 23 00 50, 23 05 48, 23 07 13, 23 08 00, 27 10 00, 27 20 00, 28 13 00, 31 22 00, 31 23 16.23, 32 12 16, 32 17 13, 32 17 23, 32 17 26, 33 05 43, 33 14 16, 33 31 13, 33 41 00, 33 42 30

Sketches: ASK-1.1, ASK1.2, ASK1.3, ASK1.4 ASK-1.5, SSK-1.1, SSK1.2, FSSK-1.1

Drawings: M0-0.2, M2-2.1, E1.1, E2.3, E2.4, E2.7, E3.2, E3.3, E4.0, E4.2, E4.3, E4.7, E4.9, E4.10

END OF ADDENDUM 1



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Roger Clarke, Principal

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END OF SECTION

SECTION 03 35 33
STAMPED CONCRETE FINISHING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Stamping of new full-depth concrete.

B. Coloring of stamped concrete.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Concrete mix design; bonding and chemical admixtures; mixing; placement; finishing of concrete surface to tolerance: floating, troweling, and similar operations; frequency and treatment of control joints.

B. Section 32 13 13 - Site Concrete: Concrete mix design; concrete placement; ambient conditions; finishing of concrete surface to tolerance: floating, troweling, and similar operations; frequency and treatment of control joints; expansion joint treatment.

1.03 REFERENCE STANDARDS

A. ASTM C33/C33M - Standard Specification for Concrete Aggregates.

B. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to start of work of this section.

1. Require attendance of parties directly affecting work of this section, including:
    a. Installer.
    b. Contractor's representative.
    c. Architect.
    d. Landscape architect.
    e. Materials manufacturers' representatives.
2. Review mock-ups, material sequence, preparation and application, cleaning, protection and coordination with other work.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used, including:

1. VOC data for each liquid product.
2. Preparation instructions and recommendations.
3. Storage and handling requirements and recommendations.

4. Installation methods.

C. Shop Drawings: Indicate location of construction and control joints.

D. Design Samples: Submit samples for approval; demonstrate pattern, color, and finishing, using specified materials and techniques, applied to plywood.

1. Number of Samples: One of each color and pattern combination specified.
2. Size: 24 by 24 inches.

E. Maintenance Data: Provide data on maintenance and renewal of applied finishes.

F. Certificates: Certify that products of this section meet or exceed specified requirements and are suitable for intended application.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience and approved by owner.

1. Submit installer's list of completed stamped concrete projects, including project name and location, name of Architect, and type and quantity of materials applied.

1.07 MOCK-UPS

A. Construct mock-up(s) of stamped concrete to serve as basis for evaluation of workmanship.

1. Number of Mock-Ups to be Prepared: One.
2. Use same materials and methods for use in the work.
3. Use approved design samples as basis for mock-ups.
4. Record technique, timed procedures and material used.
5. Locate where directed.
6. Minimum Size: 4 by 4 feet.

B. Obtain approval of mock-up by Architect before proceeding with work.

C. Retain mock-up(s) until completion of work for use as quality standard.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Store and handle materials in accordance with manufacturer's instructions.

C. Keep materials in manufacturer's original, unopened containers and packaging until application.

D. Store materials in clean, dry area indoors and out of direct sunlight.

E. Keep materials from freezing.

F. Protect materials during storage, handling, and application to prevent contamination or damage.

1.09 FIELD CONDITIONS

A. Do not install materials when air and surface temperatures are below 55 degrees F or above 80 degrees F.

B. Do not install materials when rain, snow, or excessive moisture is expected during application or within 24 hours after application.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Stamping and Coloring Materials:

1. BRICKFORM: www.brickform.com/sle.
2. Concrete Solutions by Rhino Linings: www.concretesolutions.com.
3. The Bomanite Company: www.bomanite.com.
4. Scofield Systems, LM Scofield Company; Lithotex Pavecrafters: www.scofield.com.
5. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 STAMPED CONCRETE APPLICATIONS

A. Full Depth Stamped Concrete Slab- CONC-1: Patterned new concrete.

1. Application(s): As indicated on drawings.
2. Pattern: To be selected from manufacturer's full line.
3. Color is to be achieved as follows:
   a. Concrete pigment, mixed into concrete prior to placement.
      1) Pigment Color: [_____].
   b. Colored concrete hardener, worked into fresh surface.
      1) Color: [_____].
   c. Pigmented dry form release agent, to be substantially washed off.
   d. Concrete stain, applied after curing.
   e. Concrete stain/sealer, applied after curing.
4. Provide all chemical components from a single manufacturer.

2.03 FULL-DEPTH CONCRETE SLAB MATERIALS

A. See other section(s) for concrete design mix, mixing, forming, and reinforcement.

1. Interior Slabs: See Section 03 30 00.
2. Vehicular Pavements and Non-Vehicular Exterior Slabs: See Section 32 13 13.

B. Slump: 4.0 inches maximum.

C. Do not use calcium chloride or admixtures containing calcium chloride.

D. Aggregates: Use non-reactive fine and coarse aggregates free from deleterious material and complying with ASTM C33/C33M.

2.04 STAMPING MATERIALS

A. Stamping Mats: Mat type imprinting tools for texturing freshly placed concrete, in pattern and texture to achieve required surface profile and design.

1. Pattern: Fractured Slate #700 B (P,S,F).
2. Basis of Design Product: Lithotex Pavecrafters as manufactured by Scofield Systems, LM Scofield Company, or approved equal.

B. Release Agent: Bond breaker compound capable of releasing stamping forms from concrete without creating surface defects or leaving any residue; type as recommended by stamping mat manufacturer; compatible with concrete, form materials and specified coloring agents.

1. Liquid Release Agent: Self-dissipating, colorless liquid type; intended to be used on both stamping mats and on concrete surface.
2. Dry Type Release Agent: Pigmented; for application to concrete surface using broadcast method; intended to be substantially removed using water.

2.05 INTEGRAL COLORING AGENTS

A. Concrete Pigment: Pure, concentrated mineral pigments specifically intended for mixing into concrete and complying with ASTM C979/C979M.

1. Concentration: Base dosage rates on weight of Portland cement, fly ash, silica fume, and other cementitious materials but not aggregate or sand.
2. Packaging: If pigments are to be added to mix at site, furnish pigments in premeasured disintegrating bags to minimize job site waste.
3. Color(s): As specified above.

B. Concrete Hardener: Premixed, pigmented dry powder densifier, for application prior to concrete set using broadcast method.

1. Primary Color(s): As indicated on drawings.

2.06 SURFACE TREATMENTS

A. Concrete Stain: Translucent, penetrating compound for interior or exterior use; must be finished with a topical sealer.

1. Primary Color: [_____], in a formulation to match approved mock-up.

B. Concrete Stain: Translucent penetrating compound for interior or exterior use, intended to be finished with a sealer.

C. Concrete Stain/Sealer: Opaque polymer modified penetrating water-based stain for interior and exterior use.

1. Use manufacturer recommended products compatible with all components of stamped concrete systems.

D. Clear Sealer: Suitable for interior and exterior application.

1. Composition: Acrylic, water-based.
2. VOC: 100 g/L.
3. Do not use in the presence of hydrostatic pressure or on dense surfaces.

4. Sheen: Low sheen, matte.
5. Color: Clear.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine surfaces and areas to receive stamped concrete.

B. Verify that utility penetrations and peripheral work are complete.

C. Notify Architect of conditions that would adversely affect application or subsequent use.

D. Do not begin preparation or application until unacceptable conditions are corrected.

3.02 PREPARATION

A. Protect adjacent surfaces, areas, adjoining walls, and landscaping from overspray, blown dry materials, and damage due to work of this section.

B. Immediately remove dry pigmented materials from surfaces on which they are not intended to be applied.

3.03 FULL-DEPTH CONCRETE SLABS INSTALLATION

A. See other section(s) for concrete forming and placement.

1. Interior Slabs and Non-Vehicular Exterior Slabs: See Section 03 30 00.
2. Vehicular Pavements and Non-Vehicular Exterior Slabs: See Section 32 13 13.

B. Where concrete pigment is indicated, add to concrete mix in accordance with pigment manufacturer's instructions.

C. Where pigmented concrete hardener is indicated, apply to fresh concrete surface in accordance with hardener manufacturer's instructions.

3.04 STAMPING

A. Match approved mock-ups for pattern, color, texture, and workmanship.

B. Use stamping mats to create patterns in concrete as indicated on drawings; comply with manufacturer's recommendations and instructions.

C. Use release agent to prevent damage to concrete surface or creation of bugholes during mat removal.

D. After removal of stamping mats, make minor surface repairs as required.

3.05 CURING

A. Protect recently placed materials from premature drying, excessive hot or cold temperatures and mechanical injury until fully cured.

B. In interior spaces, ventilate to remove excess moisture.

3.06 SURFACE TREATMENTS

A. Match approved mock-ups for pattern, color, texture, and workmanship.

B. Wait at least 28 days before applying any surface treatment materials or mechanical finishing.

C. Clean curing agent residue off surface prior to application of surface treatment materials.

1. Apply concrete cleaner in accordance with manufacturer's instructions to remove excess form release agent, efflorescence, cement scale and curing agents.

D. Staining: Apply stain in accordance with manufacturer's instructions.

1. Remove dirt, dust, debris, oil, grease, sealers, paint, coatings, adhesives, and other contaminates that could prevent stain from penetrating concrete surface.

2. Prepared surface in accordance with stain manufacturer's instructions.

E. Sealer/Coating Application: Apply uniformly over entire surface in accordance with manufacturer's instructions.

3.07 PROTECTION

A. Do not allow traffic on finished surfaces for the following periods after application:

1. Foot Traffic: Minimum 24 hours.

2. Heavy Traffic: Minimum 72 hours.

B. Protect finished work from damage during construction and ensure that, except for normal weathering, work will be without damage or deterioration at time of Final Inspection.

END OF SECTION

SECTION 05 31 00
STEEL DECKING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Roof deck.

B. Supplementary framing for openings up to and including 18 inches.

C. Bearing plates and angles.

1.02 RELATED REQUIREMENTS

A. Section 05 12 00 - Structural Steel Framing: Support framing for openings larger than 18 inches.

B. Section 05 50 00 - Metal Fabrications: Steel angle concrete stops at deck edges.

1.03 REFERENCE STANDARDS

A. ASTM A29/A29M - Standard Specification for General Requirements for Steel Bars, Carbon and Alloy, Hot-Wrought.

B. ASTM A510/A510M - Standard Specification for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel, and Alloy Steel.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

1. Use 2015 as indicated in 2019 CBC Ch 35 Referenced Standards

D. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel.

E. AWS A5.1/A5.1M - Specification for Carbon Steel Electrodes.

F. AWS D1.1/D1.1M - Structural Welding Code - Steel.

1. Use 2015 as indicated in 2019 CBC Ch 35 Referenced Standards

G. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel AC172.

H. ICC-ES AC43 - Acceptance Criteria for Steel Deck Roof and Floor Systems.

I. ICC-ES AC70 - Acceptance Criteria for Fasteners Power Driven into Concrete, Steel and Masonry Elements.

J. SDI (DM) - Publication No.30, Design Manual for Composite Decks, Form Decks, and Roof Decks.

K. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer.

L. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic).

M. UL (FRD) - Fire Resistance Directory.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittals procedures.

B. Product Data: Provide deck profile characteristics, dimensions, structural properties, and finishes.

1. Provide the following data as verified by ICC Evaluation Service Reports:

a. Non-composite flexural effective section moduli and moments of inertia.

b. Composite vertical load carrying capacities (considering the deck spans and concrete where indicated).

c. Composite and non-composite diaphragm capacities, as applicable, considering the concrete, where indicated, and considering the welding or metal fastener attachment indicated.

C. Structural design of the system using the products shown on the Drawings has already been used as a basis of approval by Division of the State Architect and other agencies.

1. If a substitution is proposed, then the Contractor is responsible for the re-approval of the documents in a timely manner within the original project schedule, along with all professional and agency fees related to this substitution.

2. See Section 01 60 00 - Product Requirements.

D. Shop Drawings: Indicate deck plan, support locations, projections, openings, reinforcement, pertinent details, and accessories.

1. Field Measurements: Before starting shop and erection drawings, verify measurements, lines, grades, elevations, locations and details of field conditions and be responsible for correctness, conformance, accuracy and execution of construction to conform to actual conditions.

2. Detail the construction in conformance with the AISC Detailing for Steel Construction, 2nd Edition, except where otherwise indicated.

3. Field Connections and Placement Diagrams: Show field connection and placement diagrams on the erection drawings with complete details, layouts and dimensions.

4. Changes: Minor, non-structural changes from the design drawings may be shown on the shop and erection drawings provided they are clearly indicated as such. Structural changes must have prior approval from the Architect and Division of the State Architect (DSA) Structural Safety Section.

E. Certificates: Certify that products furnished meet or exceed specified requirements.

1. Insurance Certification: Assist the District in preparation and submittal of roof installation acceptance certification as may be necessary in connection with fire and extended coverage insurance.

2. The equivalency of all proposed decking is subject to acceptance by the Architect.

F. Submit manufacturer's installation instructions.

G. Fabricator's Qualification Statement: Provide documentation showing steel fabricator is accredited under IAS AC172.

1.05 QUALITY ASSURANCE

A. Fabricator Qualifications: A qualified steel fabricator that is accredited by the International Accreditation Service (IAS) Fabricator Inspection Program for Structural Steel in accordance with IAS AC172.

B. Installer Qualifications: Company specializing in performing the work of this Section with minimum 5 years of experience.

1.06 REGULATORY REQUIREMENTS

A. Regulatory Requirements: Furnish and install metal deck in accordance with the manufacturer's current ICC Evaluation Service Report and UL listing requirements to obtain diaphragm values and fire ratings indicated.

B. FM Listing: Provide metal roof deck units which have been evaluated by Factory Mutual System and are listed in "Factory Mutual Approval Guide" for "Class I" fire rated construction.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Cut plastic wrap to encourage ventilation.

B. Separate sheets and store deck on dry wood sleepers; slope for positive drainage.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Steel Deck:

1. ASC Steel Deck: www.ascsteeldeck.com.
    a. Structural Roof Evaluation Report: IAPMO ER-0161; 06/30/23.
2. Epic Metals Corporation: www.epicmetals.com.
    a. Evaluation Report: IAPMO ER-0226; 06/30/23.
3. Nucor-Vulcraft Group: www.vulcraft.com/#sle.
    a. Evaluation Report: IAPMO ER-0423; 03/31/23.
4. Verco Manufacturing Company: www.vercodeck.com.
    a. Evaluation Report: IAPMO ER-2018; 07/31/2023.
5. Substitutions: See Section 01 60 00 - Product Requirements.
    a. Substitution may or may not be accepted after Architect and District review with complete evaluation for content and schedule impact.
    b. Substitutions shall include all costs for redesign with consequential changes by other trades along with the Architect and related approvals by governing agencies. Revisions to shop drawings illustrating changes is not considered adequate for DSA review and approval.
    c. Substitutions may be acceptable, based on Architect's review and approval, for submittal to DSA. If substituted manufacturer cannot reproduce DSA design and approval in a timely manner, then they shall be subject to a time and material back

charge for any delays in the project. Architect approval is required prior to DSA submittal and DSA approval is required prior to installation.

2.02 STEEL DECK

A. All Deck Types: As indicated on Drawings.

B. Roof Deck: As indicated on Drawings.

1. Galvanized Steel Sheet: ASTM A653/A653M, Structural Steel (SS) Grade 50 min., with G90/Z275 galvanized coating.
    a. Grade as required to meet performance criteria.
2. Primer: Shop coat of manufacturer's standard primer paint over cleaned and phosphatized substrate.
3. Structural Properties:
    a. Span Design: Two or more.
4. Minimum Base Metal Thickness: As indicated on Drawings.
5. Nominal Height: 1-1/2 inch.
6. Profile: Fluted; SDI WR.
7. Formed Sheet Width: 36 inch.
8. Side Joints: Lock seam.
9. End Joints: Screwed to structure.

2.03 ACCESSORY MATERIALS

A. Furnish accessories required to provide a complete installation including fillers for end panels, friction caps for closing shop fabricated access holes for welding, flashing at columns and closures for cell ends, roof and drain sumps, metal and neoprene partition closures, non-penetrating hanger tabs, and other accessories required.

B. Bearing Plates and Angles: As indicated on Drawings.

C. Powder Actuated Mechanical Fasteners: Steel; with knurled shank and forged ballistic point. Comply with applicable requirements of ICC-ES AC70.

1. Design Requirements: Provide number and type of fasteners that comply with the applicable requirements of SDI (DM) design method for roof deck and floor deck applications and ICC-ES AC43.
2. Material: Steel; ASTM A510/A510M.
    a. Hardness: Rockwell C 54.5, minimum.
    b. Tensile Strength: 285 kips per square inch, minimum.
    c. Shear Strength: 175 kips per square inch, minimum.
    d. Washers:
        1) Exposed Roof Deck Applications: 0.591 inch diameter, minimum.
    e. Corrosion Resistance:

1) Steel Bar Joist Framing Applications: ASTM B633, SC1, Type III zinc electroplate..

2) Exposed Roof Deck Applications: Provide manufacturer's standard stainless steel sealing caps with bonded neoprene washer over each fastener.

D. Mechanical Fasteners: Steel; hex washer head, self-drilling, self-tapping.

1. Design Requirements for Sidelap Connections: Provide number and type of fasteners that comply with the applicable requirements of SDI (DM) design method for roof deck and floor deck applications and ICC-ES AC43.

2. Fasteners for Steel Roof Decks Protected with Waterproofing Membrane: ASTM B633, SC1, Type III zinc electroplate.

3. Fasteners for Exposed Steel Roof Deck Application: Manufacturer's standard stainless steel with bonded neoprene washer.

4. Hex head, stainless steel, self-drilling screws, #12 or larger, with molded washer to create water tight and permanent seal.

E. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

1. Low-Emitting Materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

F. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20 Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

G. Finish Paint: Manufacturer's baked-on, rust-inhibitive prime and finish paint, for application to metal surfaces which have been chemically cleaned and phosphate treated. Finish color as scheduled.

1. Finish field coating system of exposed decking specified in Section 09 91 13 - Exterior Painting.

2.04 FABRICATED DECK ACCESSORIES

A. Sheet Metal Deck Accessories: Metal closure strips, wet concrete stops, and cover plates, 20 gage, 0.0359 inch thick sheet steel; of profile and size as indicated; finished same as deck.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions prior to beginning work.

3.02 INSTALLATION

A. Erect metal deck in accordance with SDI Design Manual and manufacturer's instructions. Align and level.

B. On steel supports provide minimum 2 inch (50 mm) bearing.

C. Fasten deck to steel support members as indicated on Drawings, at ends and intermediate supports at 12 inches on center maximum, parallel with the deck flute and at each transverse flute using methods specified.

D. Fasten side seams by use of Delta Grip tool (ASC) or Punchlok tool (Verco), or button punching as indicated on Drawings. Provide all screw attachments as indicated.

1. Clinch lock seam side laps.
2. At mechanically fastened male/female side laps fasten as indicated on Drawings but not more than 24 inches on center maximum.
3. Drive mechanical sidelap connectors completely through adjacent lapped sheets; positively engage adjacent sheets with minimum three-thread penetration.

E. At deck openings from 6 inches to 18 inches in size, provide 2 1/2 x 2 1/2 x 3/16 inch steel angle reinforcement. Place angles perpendicular to flutes; extend minimum two flutes beyond each side of opening and fusion weld to deck at each flute.

F. At deck openings greater than 18 inches in size, provide steel angle reinforcement. as specified in Section 05 12 00.

3.03 AS ERECTED DRAWINGS

A. After all steel has been erected, correct or revise the shop drawings erection and placement diagrams to correspond with the changes made in the field. Refer to requirements specified in Section 01 78 00 - Closeout Submittals.

3.04 FIELD QUALITY CONTROL

A. Field testing and inspection are specified in Section 01 45 33 - Code-Required Special Inspections.

END OF SECTION

SECTION 05 52 13
PIPE AND TUBE RAILINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Free-standing railings at steps or ramps.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Placement of anchors in concrete.

B. Section 05 50 00 - Metal Fabrications: Embedded items, welding and shop painting. Placement of anchors in concrete.

C. Section 09 21 16 - Gypsum Board Assemblies: Placement of backing plates in stud wall construction.

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design.

B. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

D. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.

E. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination.

F. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification.

G. AWS D1.1/D1.1M - Structural Welding Code - Steel.

H. NAAMM AMP 521 - Pipe Railing Systems Manual.

I. SSPC-PA 1 - Shop, Field, and Maintenance Coating of Metals.

J. SSPC-Paint 20 - Zinc-Rich Coating (Type I - Inorganic, and Type II - Organic).

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.

1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
2. Prepare shop drawings for all railing systems, including attachment.
3. Conform to AISC Standards, except provisions for approval/responsibility for dimensions by Architect and structural engineer shall not apply.

4. Include erection drawings, elevations, and details where applicable.
5. Indicate welded connections using standard AWS welding symbols. Indicate net weld lengths.

C. Welders' Qualification Statement: Welders' certificates in accordance with AWS B2.1/B2.1M and dated within the previous 12 months.

D. Fabricator's Qualification Statement.

1.05 QUALITY ASSURANCE

A. Welder Qualifications: Welding processes and welding operators qualified within previous 12 months.

B. Fabricator Qualifications:

1. A company specializing in manufacturing products specified in this section, with not less than ten years of documented experience.

C. Coordination: Provide templates and sleeves for incorporation of embedded items into the work specified elsewhere herein.

1.06 DELIVERY, STORAGE AND HANDLING

A. Delivery, Storage and Handling, General: Protect products from deformation, marring, discoloration, soiling and corrosion.

B. Storage: Store products in enclosed, well-ventilated spaces, not in contact with soil or vegetation and not subject to inclement weather.

PART 2 PRODUCTS

2.01 RAILINGS - GENERAL REQUIREMENTS

A. Regulatory Requirements: Conform to California Building Code (CBC), Title 24, Part 2, Section 11B-505 and 11B-405.8 as amended and adopted by authorities having jurisdiction.

1. Top of gripping surfaces of handrails shall be 34 inches minimum and 38 inches maximum vertically above walking surfaces, stair nosings, and ramp surfaces. Handrails shall be at a consistent height above such surfaces.
2. Clearance between handrail gripping surfaces and adjacent surfaces shall be 1-1/2 inches minimum.
    a. Handrail may be located in a recess if the recess is 3 inches maximum deep and 18 inches minimum clear above the top of the handrail.
3. Handrail gripping surfaces shall be continuous along their length and shall not be obstructed along their tops or sides. The bottoms of handrail gripping surfaces shall not be obstructed for more than 20% of their length.
    a. Where provided, horizontal projections shall occur 1-1/2 inches minimum below the bottom of the handrail gripping surfaces.
4. Handrail gripping surfaces with a circular cross section shall have an outside diameter of 1-1/4 inch minimum and 2 inches maximum.

5. Handrail gripping surfaces with a non-circular cross section shall have an outside dimension of 4 inches minimum and 6-1/4 inches maximum, and a cross-sectional dimension of 2-1/4 inches maximum.
6. Handrail gripping surfaces and any surfaces adjacent to them shall be free of sharp or abrasive elements and shall have rounded edges.
7. Handrails shall not rotate within their fittings.
8. Handrail gripping surfaces shall extend beyond and in the same direction of stair flights and ramp runs in accordance with CBC Section 11B-505.10.
    a. Such extensions are not required for continuous handrails at the inside turn of switchback or dogleg stairs and ramps.
9. A 2 inch minimum high curb or a barrier shall be provided to prevent the passage of a 4 inch diameter sphere rolling off the sides of a ramp surface.
    a. Such a curb or barrier shall be continuous and uninterrupted along the length of a ramp. CBC Section 11B-405.9.2

B. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of applicable local code.

C. Allow for expansion and contraction of members and building movement without damage to connections or members.

D. Dimensions: See drawings for configurations and heights.
1. Top Rails and Wall Rails: 1-1/2 inches outside diameter, round.
2. Intermediate Rails: 1-1/2 inches diameter, round.

E. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
1. For anchorage to concrete, provide inserts to be cast into concrete, for welding anchors.
2. For anchorage to stud walls, provide backing plates, for bolting anchors.

F. Provide welding fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

2.02 STEEL RAILING SYSTEM

A. Steel Tube: ASTM A500/A500M, Grade B cold-formed welded or seamless structural tubing.

B. Steel Pipe: ASTM A 53/A 53M, Grade B Schedule 40, black and galvanized finish, as indicated, seamless or welded.

C. Welding Fittings: Factory- or shop-welded from matching pipe or tube; seams continuously welded; joints and seams ground smooth.

D. Exposed Fasteners: No exposed bolts or screws.

E. Straight Splice Connectors: Steel concealed spigots.

F. Galvanizing: In accordance with requirements of ASTM A123/A123M.
1. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20 Type I - Inorganic.

2.03 FABRICATION

A. Fabricate railings in accordance with NAAMM AMP 521 and as required for specified design requirements. Provide stock and tubing and manufactured components sized and arranged as indicated on Drawings and specified herein.

B. Accurately form components to suit specific project conditions and for proper connection to building structure.

1. Prior to fabrication, field verify dimensions and details of construction. Immediately report variances in writing to Architect.

C. Fit and shop assemble components in largest practical sizes for delivery to site.

D. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.

E. Welded Joints:

1. Exterior Components (Type 2): Continuously seal joined pieces by continuous welds. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.

2. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius (1/8 inch).

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

B. Coordination: Coordinate fabrication and installation of steel pipe and tube railings so that related Work accurately and properly join.

3.02 PREPARATION

A. Obtain Architect's review prior to site cutting or making adjustments not indicated on shop drawings.

B. Supply items required to be cast into concrete with setting templates, for installation as work of other sections.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.

C. Install railings in compliance with CBC 11B and ADA Standards for accessible design at applicable locations.

D. Anchor railings securely to structure.

E. Field weld anchors as indicated on drawings. Touch-up welds with primer. Grind welds smooth.

F. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

G. Guardrails Installation: Install railings plumb and level, accurately fitted, free from distortion or defects.

1. Plumb posts in each direction.
2. Temporarily install sections and align before securing sections together.
3. Fully weld all joints and grind smooth as for shop welding.
4. Perform field welding in accordance with AWS D1.1/D1.1M.

3.04 TOLERANCES

A. Code required dimensions indicated on Drawings as minimum or maximum are absolute. No tolerances are allowed less or more than this dimension.

B. Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.

C. Maximum Offset From True Alignment: 1/4 inch.

D. Maximum Out-of-Position: 1/4 inch.

3.05 CLEANING AND PROTECTION

A. Galvanizing Repair Compound:

1. If finish is to be painted or is otherwise not visible, field repair with premixed cold galvanizing compound for field touch-up of galvanized coatings.
2. Where the finish is galvanized, resend to galvanizing for reapplication, if practical (e.g.; bolted components) and accepted by Architect.

B. Finish Touch-Up:

1. Immediately after installation, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 requirements for touch-up of field painted surfaces.
2. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils.

C. Cleaning:

1. Clean and dress all field welds, bolted connections, and abraded areas of galvanizing or shop paint on miscellaneous metal.

END OF SECTION

SECTION 06 20 00
FINISH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Finish carpentry items.

B. Hardware and attachment accessories.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Support framing, grounds, and concealed blocking.

B. Section 06 41 00 - Architectural Wood Casework: Shop fabricated custom cabinet work.

C. Section 08 14 16 - Flush Wood Doors.

D. Section 06 41 00 - Architectural Wood Casework: Cabinet hardware.

1.03 REFERENCE STANDARDS

A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards, 2nd Edition.

B. AWPA U1 - Use Category System: User Specification for Treated Wood.

C. BHMA A156.9 - Cabinet Hardware.

D. NEMA LD 3 - High-Pressure Decorative Laminates.

E. WDMA I.S. 4 - Industry Specification for Preservative Treatment for Millwork.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with plumbing rough-in, electrical rough-in, and installation of associated and adjacent components.

B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data:

1. Provide manufacturer's product data, storage and handling instructions for factory-fabricated units.
2. Provide instructions for attachment hardware and finish hardware.

C. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.

1. Scale of Drawings: 1-1/2 inch to 1 foot, minimum.
2. Provide the information required by AWMAC/WI (NAAWS).
3. Include certification program label.

D. Samples: Submit two samples of finish plywood, 6 by 8 inch in size illustrating wood grain and specified finish.

E. Samples: Submit two samples of wood trim 6 inch long.

F. Certificate: Submit labels and certificates required by quality assurance and quality control programs.

1.06 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.

1. Accredited participant in the specified certification program prior to the commencement of fabrication and throughout the duration of the project.

B. Quality Certification:

1. Comply with WI (MCP) woodwork association quality certification service/program in accordance with requirements for work specified in this section www.woodworkinstitute.com/#sle.
2. Provide labels or certificates indicating that the work complies with AWMAC/WI (NAAWS) requirements for grade or grades specified.
3. Provide designated labels on shop drawings as required by certification program.
4. Provide designated labels on installed products as required by certification program.
5. Submit certifications upon completion of installation that verifies this work is in compliance with specified requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store finish carpentry items under cover, elevated above grade, and in a dry, well-ventilated area not exposed to heat or sunlight.

B. Protect from moisture damage.

PART 2 PRODUCTS

2.01 FINISH CARPENTRY ITEMS

A. Quality Standard: Custom Grade, in accordance with AWMAC/WI (NAAWS), unless noted otherwise.

B. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.

C. Interior Woodwork Items:

1. Moldings, Bases, Casings, and Miscellaneous Trim: Any closed-grain hardwood; prepare for paint finish.

2.02 LUMBER MATERIALS

A. Softwood Lumber: Douglas Fir species, S4S sawn, maximum moisture content of 6 percent; with vertical grain, of quality suitable for transparent finish.

B. Hardwood Lumber: Drawing indicated species, S4S sawn, maximum moisture content of 6 percent; with vertical grain, of quality suitable for transparent finish.

2.03 SHEET MATERIALS

A. Softwood Plywood, Not Exposed to View: Any face species, medium density fiberboard core; PS 1 Grade A-B, glue type as recommended for application.

B. Softwood Plywood, Exposed to View: Face species as indicated, plain sawn, medium density fiberboard core; PS 1 Grade A-B, glue type as recommended for application.

C. Hardwood Plywood: Face species as indicated, plain sawn, book matched, medium density fiberboard core; HPVA HP-1 Front Face Grade AA, Back Face Grade 1, glue type as recommended for application.

D. Particleboard: ANSI A208.1 Composed of wood chips, sawdust, or flakes of medium density, made with waterproof resin binders; of grade to suit application; sanded faces.

E. Hardboard: ANSI A135.4 Pressed wood fiber with resin binder, Class 1 - Tempered, 1/4 inch thick, smooth one side (S1S).

2.04 PLASTIC LAMINATE MATERIALS

A. Plastic Laminate: NEMA LD 3, HGS; color as selected by Architect; textured, low gloss finish.

B. Laminate Backing Sheet: NEMA LD 3, BKL; undecorated plastic laminate.

C. Laminate Adhesive: Type recommended by laminate manufacturer to suit application; not containing formaldehyde or other volatile organic compounds.

2.05 FASTENINGS

A. Adhesive for Purposes Other Than Laminate Installation: Suitable for the purpose; not containing formaldehyde or other volatile organic compounds.

B. Fasteners: Of size and type to suit application; blind finish in concealed locations and Architect selected finish in exposed locations.

C. Concealed Joint Fasteners: Threaded steel.

2.06 ACCESSORIES

A. Adhesive: Type recommended by fabricator to suit application.

B. Lumber for Shimming and Blocking: Softwood lumber of indicated species.

C. Plastic Edge Trim: Extruded convex shaped; smooth finish; self locking serrated tongue; of width to match component thickness; color as selected.

D. Primer: Alkyd primer sealer.

E. Wood Filler: Oil base, tinted to match surface finish color.

2.07 HARDWARE

A. Hardware: Comply with BHMA A156.9.

2.08 WOOD TREATMENT

A. Factory-Treated Lumber: Comply with requirements of AWPA U1 - Use Category System for pressure impregnated wood treatments determined by use categories, expected service conditions, and specific applications.

B. Wood Preservative by Pressure Treatment (PT Type): Provide AWPA U1 treatment using waterborne preservative with 0.25 percent retainage.

C. Water Repellent Preservative Treatment by Dipping Method: WDMA I.S. 4, with 0.25 percent retainage.

D. Wood Preservative (Surface Application): Clear, Woodlife Classic type, Tris-2,4,6-(Dimethylaminomethyl) Phenol manufactured by Rust-Oleum Corporation.

E. Shop pressure treat wood materials requiring preservatives to concealed wood blocking.

F. Provide identification on fire retardant treated material.

G. Redry wood after pressure treatment to maximum 19 percent moisture content.

2.09 FABRICATION

A. Shop assemble work for delivery to site, permitting passage through building openings.

B. Fit exposed sheet material edges with 3/8 inch matching hardwood edging. Use one piece for full length only.

C. Cap exposed plastic laminate finish edges with plastic trim.

D. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

E. Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.

F. Apply laminate backing sheet to reverse face of plastic laminate finished surfaces.

2.10 SHOP FINISHING

A. Sand work smooth and set exposed nails and screws.

B. Apply wood filler in exposed nail and screw indentations.

C. On items to receive transparent finishes, use wood filler that matches surrounding surfaces and is of type recommended for the applicable finish.

D. Finish work in accordance with AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:

1. Transparent:
    a. System - 12, Polyurethane, Water-based.
    b. Stain: As selected by Architect.
    c. Sheen: Satin.
2. Opaque:
    a. System - 4, Latex Acrylic, Water-based.

b. Color: As selected by Architect.

c. Sheen: Satin.

E. Back prime woodwork items to be field finished, prior to installation.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify adequacy of backing and support framing.

B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.02 INSTALLATION

A. Install work in accordance with AWMAC/WI (NAAWS) requirements for grade indicated.

B. Install factory-fabricated units in accordance with manufacturer's printed installation instructions.

C. Set and secure materials and components in place, plumb and level.

D. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.

E. Install components with nails at 12 inch on center.

F. Install prefinished paneling with full bed contact adhesive applied to substrate.

G. Install hardware in accordance with manufacturer's written instructions.

3.03 SITE APPLIED WOOD TREATMENT

A. Apply preservative treatment in accordance with manufacturer's instructions.

B. Brush apply one coats of preservative treatment on wood in contact with cementitious materials. Treat site-sawn cuts.

C. Allow preservative to dry prior to erecting members.

3.04 PREPARATION FOR SITE FINISHING

A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.

B. Site Finishing: See Section 09 91 13, and 09 91 23.

C. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

3.05 TOLERANCES

A. Maximum Variation from True Position: 1/16 inch.

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

END OF SECTION

SECTION 07 13 00
SHEET WATERPROOFING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Self-adhered modified bituminous sheet membrane.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Concrete substrate.

B. Section 04 20 00 - Unit Masonry: Masonry joints prepared to receive waterproofing and flashings.

C. Section 07 62 00 - Sheet Metal Flashing and Trim: Metal counterflashing.

D. Section 31 22 00 - Grading: Requirements for backfill.

E. Section 31 23 23 - Fill: Requirements for backfill.

F. Section 33 41 00 - Subdrainage: Foundation drainage.

1.03 REFERENCE STANDARDS

A. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension.

B. ASTM D570 - Standard Test Method for Water Absorption of Plastics.

C. ASTM D882 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting.

D. ASTM D903 - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.

E. ASTM D1970/D1970M - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection.

F. ASTM D5295/D5295M - Standard Guide for Preparation of Concrete Surfaces for Adhered (Bonded) Membrane Waterproofing Systems.

G. ASTM D5385/D5385M - Standard Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes.

H. ASTM D6506/D6506M - Standard Specification for Asphalt Based Protection Board for Below-Grade Waterproofing.

I. NRCA (WM) - The NRCA Waterproofing Manual.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data for membrane, surface conditioner, flexible flashings, joint cover sheet, and joint and crack sealants.

C. Shop Drawings: Indicate special joint or termination conditions and conditions of interface with other materials.

D. Certificate: Certify that products meet or exceed specified requirements.

E. Manufacturer's Installation Instructions: Indicate special procedures.

F. Manufacturer's qualification statement.

G. Installer's qualification statement.

H. Warranty: Submit manufacturer warranty and ensure forms have been completed in District's name and registered with manufacturer.

I. Specimen Warranty.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.06 MOCK-UPS

A. See Section 01 40 00 - Quality Requirements for additional requirements.

B. Construct mock-up consisting of 100 sq ft of vertical waterproofed panel; to represent finished work including internal and external corners.

C. Locate where directed.

D. Mock-up may remain as part of work.

1.07 FIELD CONDITIONS

A. Maintain ambient temperatures above 40 degrees F for 48 hours before and during application and until liquid or mastic accessories have cured.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Extended Warranty: Provide written guarantee from waterproofing membrane manufacturer, and furnish joint written warranty to District from waterproofing applicator and Contractor, covering all membranes, and other elements essential to be watertight.

C. Contractor shall correct defective Work within a five year period after Date of Final Inspection; remove and replace materials concealing waterproofing at no extra cost to District.

D. Provide five year manufacturer warranty for waterproofing failing to resist penetration of water, except where such failures are the result of structural failures of building. Hairline cracking of concrete due to temperature change or shrinkage is not considered a structural failure.

PART 2 PRODUCTS

2.01 SHEET WATERPROOFING APPLICATIONS

A. Self-Adhered Modified Bituminous Sheet Membrane:

1. Location: Planters and retaining walls.

2. Cover with drainage panel.

2.02 SHEET WATERPROOFING MATERIALS

A. Self-Adhered Modified Bituminous Sheet Membrane:

1. Thickness: 60 mil, 0.060 inch, minimum.
2. Sheet Width: 36 inches, minimum.
3. Tensile Strength:
   a. Film: 5,000 psi, minimum, measured in accordance with ASTM D882 and at grip-separation rate of 2 inches per minute.
   b. Membrane: 325 psi, minimum, measured in accordance with ASTM D412 Method A, using die C and at spindle-separation rate of 2 inches per minute.
4. Elongation at Break: 300 percent, minimum, measured in accordance with ASTM D412.
5. Water Vapor Permeance: 0.05 perm, maximum, measured in accordance with ASTM E96/E96M.
6. Low Temperature Flexibility: Unaffected when tested in accordance with ASTM D1970/D1970M at minus 20 degrees F, 180 degree bend on 1 inch mandrel.
7. Water Absorption: 0.1 percent increase in weight, maximum, measured in accordance with ASTM D570, 24 hour immersion.
8. Hydrostatic Pressure Resistance: Membrane resists leakage for at least one hour from pressure equivalent to 200 feet head of water applied in accordance with test method ASTM D5385/D5385M.
9. Adhesives, Sealants, Tapes, and Accessories: As recommended by membrane manufacturer.
10. Products:
    a. Carlisle Coatings & Waterproofing Inc; MiraDRI 860/861: www.carlisleccw.com/#sle.
    b. GCP Applied Technologies; Bituthene 3000: www.gcpat.com/sle.
    c. Henry Company; Blueskin WP 200: www.henry.com/#sle.
    d. W.R. Meadows, Inc; MEL-ROL: www.wrmeadows.com/#sle.
    e. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 ACCESSORIES

A. Attachment Materials:

1. Circular Membrane Discs: 1-1/2 inch diameter with neoprene pads or as recommended by manufacturer.

B. Seaming Materials: As recommended by membrane manufacturer.

C. Membrane Sealant: As recommended by membrane manufacturer.

D. Sealant for Cracks and Joints In Substrates: Resilient elastomeric joint sealant compatible with substrates and waterproofing materials.

E. Protection Board: Provide type capable of preventing damage to waterproofing due to backfilling and construction traffic.

1. Multilayer internally-reinforced asphaltic panels, 1/8 inch thick, nominal, complying with ASTM D6506/D6506M.
2. Products:
    a. W.R. Meadows, Inc; Protection Course: www.wrmeadows.com/#sle.
    b. Substitutions: See Section 01 60 00 - Product Requirements.

F. Drainage Panel: Drainage layer with geotextile filter fabric on earth side. See also Section 33 41 00 - Subdrainage.
1. Composition: Dimpled polystyrene, polyethylene, or polypropylene core; polypropylene filter fabric.
2. Thickness: As indicated on drawings.
    a. Products:
        1) American Wick Drain Corp.; Product Amerdrain 520: www.americanwick.com.
        2) Carlisle Coatings & Waterproofing; Product MiraDRAIN 6000: www.carlisle-ccw.com.
        3) CETCO; Product AquaDrain with Aquadrain 100BD Base Drain: www.cetco.com.
        4) JDR Enterprises, Inc.; Product J-DRain 420: www.j-drain.com.
        5) W.R. Meadows, Inc; Mel-Drain 5012: www.wrmeadows.com/#sle.
        6) Substitutions: See Section 01 60 00 - Product Requirements.

G. Cant Strips: Premolded composition material.

H. Flexible Flashings: Type recommended by membrane manufacturer.

I. Counterflashings: [____]; see Section 07 62 00.

J. Termination Bars: Stainless steel; compatible with membrane and adhesives.

K. Adhesives: As recommended by membrane manufacturer.

L. Thinner and Cleaner: As recommended by adhesive manufacturer, compatible with sheet membrane.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions are acceptable prior to starting work.

B. Verify substrate surfaces are durable; free of matter detrimental to adhesion or application of waterproofing system.

C. Verify that items penetrating surfaces to receive waterproofing are securely installed.

3.02 PREPARATION

A. Protect adjacent surfaces from damage not designated to receive waterproofing.

B. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions; vacuum substrate clean.

C. Do not apply waterproofing to surfaces unacceptable to membrane manufacturer.

D. Fill nonmoving joints and cracks with a filler compatible with waterproofing materials.

E. Seal moving cracks with sealant and nonrigid filler, using procedures recommended by sealant and waterproofing manufacturers.

F. Seal cracks and joints with sealant using depth to width ratio as recommended by sealant manufacturer.

G. Surfaces for Adhesive Bonding: Apply surface conditioner at a rate recommended by manufacturer, and protect conditioner from rain or frost until dry.

H. Concrete Surfaces for Adhesive Bonding: Prepare concrete substrate in accordance with ASTM D5295/D5295M.

1. Remove substances that inhibit adhesion including form release agents, curing compounds admixtures, laitance, moisture, dust, dirt, grease and oil.
2. Repair surface defects including honeycombs, fins, tie holes, bug holes, sharp offsets, rutted cracks, ragged corners, deviations in surface plane, spalling and delaminations, as described in reference standard.
3. Remove and replace areas of defective concrete; see Section 03 30 00.
4. Prepare concrete for adhesive bonded waterproofing using mechanical or chemical methods described in referenced standard.
5. Test concrete surfaces as described in referenced standards, and verify surfaces are ready to receive adhesive bonded waterproofing membrane system.

3.03 INSTALLATION - MEMBRANE

A. Install membrane waterproofing in accordance with manufacturer's instructions and NRCA (WM) applicable requirements.

B. Roll out membrane, and minimize wrinkles and bubbles.

C. Self-Adhering Membrane: Remove release paper layer, and roll out onto substrate with a mechanical roller to provide full contact bond.

D. Overlap edges and ends, minimum 3 inches, seal permanently waterproof by method recommended by manufacturer, and apply uniform bead of sealant to joint edge.

E. Reinforce membrane with multiple thickness of membrane material over joints, whether joints are static or dynamic.

F. Weather lap joints on sloped substrate in direction of drainage, and seal joints and seams.

G. Flexible Flashings: Seal items watertight that penetrate through waterproofing membrane with flexible flashings.

H. Extend membrane over cants and up intersecting surfaces at membrane perimeter minimum 6 inches above horizontal surface for first ply and 4 inches at subsequent plies laid in shingle fashion.

I. Seal membrane and flashings to adjoining surfaces.

1. Install termination bar along edges.
2. Install counterflashing over exposed edges.

3.04 INSTALLATION - DRAINAGE PANEL AND PROTECTION BOARD

A. Place drainage panel directly against membrane, butt joints, place to encourage drainage downward; scribe and cut boards around projections, penetrations, and interruptions.

B. Place protection board directly against drainage panel; butt joints, and scribe and cut boards around projections, penetrations, and interruptions.

C. Adhere protection board to substrate with compatible adhesive.

3.05 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for additional requirements.

B. District will provide testing services, and Contractor to provide temporary construction and materials for testing.

C. Upon completion of horizontal membrane installation, dam installation area in preparation for flood testing.

D. Flood to minimum depth of 1 inch with clean water, and after 48 hours inspect for leaks.

E. If leaking is found, remove water, repair leaking areas with new waterproofing materials as directed by Architect; repeat flood test, and repair damage to building.

F. When area is proven watertight, drain water and remove dam.

3.06 PROTECTION

A. Do not permit traffic over unprotected or uncovered membrane.

END OF SECTION

SECTION 07 21 00
THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Batt insulation and vapor retarder in exterior wall construction.

B. Batt insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.

C. Batt insulation for acoustic applications in interior walls.

1.02 RELATED REQUIREMENTS

A. Section 07 25 00 - Weather Barriers: Separate vapor retarder materials.

B. Section 07 54 00 - Thermoplastic Membrane Roofing: Insulation specified as part of the roofing membrane system.

1.03 REFERENCE STANDARDS

A. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.

B. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

C. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

D. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

E. ASTM E136 - Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750°C.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

1. Manufacturer and product identification for each product specified, including R-Value and fire resistance and surface burning characteristics specified herein.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Compliance Certification: Upon completion of installation of building envelope insulation, a card certifying compliance with requirements of California Code of Regulations (CCR) Title 24 for installation of insulation shall be completed, executed and delivered to local building officials, and one copy conspicuously posted at Project site.

E. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

1.05 FIELD CONDITIONS

A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Fire Performance Characteristics: Where insulation is used within a fire rated wall assembly, provide insulation materials which are identical to those whose fire performance characteristics, as listed for each material or assembly of which insulation is a part, have been determined by testing, in accordance with methods specified below, by UL or other testing and inspecting agency acceptable to State Fire Marshal.

1. Surface Burning Characteristics: ASTM E84.
    a. Class A: Maximum flame-spread 0-25 and smoke developed of 0-450.
    b. Class B: Maximum flame-spread 26-75 and smoke developed of 0-450.
    c. Class C: Maximum flame-spread 76-200 and smoke developed of 0-450.
2. Fire Resistance Ratings: ASTM E119.
3. Combustibility: ASTM E136.

B. Comply with Chapter 12-13 Standards for Insulating Materials, California Reference Standards Code (Part 12, Title 24. CCR) as published by Department of Consumer Affairs, Bureau of Home Furnishings and Thermal Insulation.

C. Comply with California Energy Code:

1. Section 110.8(a): Installed insulating material shall have been certified by the manufacturer to comply with the California Code of Regulations, Title 24, Part 12, Chapters 12-13, Article 3, "Standards for Insulating Material.
2. Section 110.8(c): All Insulating Materials shall be installed in compliance with the flame spread rating and smoke density requirements of CBC Chapters 7 and 26.
3. Section 120.7(b) item 7: The opaque portions of framed demising walls in nonresidential buildings shall be insulated to meet a u-factor of:
    a. Metal Framed Walls: Not greater than 0.151 (R-6 minimum).

D. Certificate: As required by the California Building Code (CBC), Title 24, post a certificate containing the building permit number and the insulation manufacturer's name, material identification and R-value and stating that the insulation has been installed in accordance with the plans and specifications.

E. Performance: Materials shall conform to Section 720, California Building Code.

2.02 APPLICATIONS

A. Insulation in Wood Framed Walls: Batt insulation with no vapor retarder.

B. Insulation in Wood Framed Ceiling Structure: Batt insulation with no vapor retarder.

2.03 MINERAL FIBER BLANKET INSULATION MATERIALS

A. Flexible Glass Fiber Blanket Thermal Insulation: Preformed insulation, complying with ASTM C665; friction fit.

1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
3. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
4. Formaldehyde Content: Zero.
5. Exterior Walls: Two layers.
    a. Thermal Resistance: Each R-value of 19.
    b. Thickness: Each 5-1/2 inch.
6. Underside of Roof:
    a. Thermal Resistance: R-value of 30.
    b. Thickness: 10-1/4 inch.
7. Exposed Facing in Rooms and Enclosed Spaces: FSK (Foil-Scrim-Kraft), one side.
    a. Class C per ASTM E84.
8. Products:
    a. CertainTeed Corporation: www.certainteed.com/#sle.
    b. Johns Manville: www.jm.com/#sle.
    c. Knauf Insulation: www.knauf.com.
    d. Owens Corning Corporation: www.ocbuildingspec.com/#sle.
    e. Substitutions: See Section 01 60 00 - Product Requirements.

B. Mineral Wool Blanket Thermal Insulation: Flexible or semi-rigid preformed insulation, complying with ASTM C665.

1. Typical at interior walls, see section 09 21 16 - Gypsum Board Assemblies.
2. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
3. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
4. Products:
    a. Johns Manville; MinWool Sound Attenuation Fire Batts: www.jm.com/#sle.
    b. Knauf Insulation; EcoBatt Insulation: www.knaufinsulation.com/#sle.
    c. ROCKWOOL; COMFORTBATT: www.rockwool.com/#sle.
    d. Substitutions: See Section 01 60 00 - Product Requirements.

2.04 ACCESSORIES

A. Wire Mesh: Galvanized steel, hexagonal wire mesh.

B. Adhesive: Type recommended by insulation manufacturer for application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.

B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION AT EXTERIOR WALLS

A. Adhere 6 inches wide strip of polyethylene sheet over expansion joints with double beads of adhesive each side of joint.

B. Install boards horizontally on walls.

C. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.03 BATT INSTALLATION

A. Install insulation and vapor retarder in accordance with manufacturer's instructions.

B. Install in exterior wall spaces without gaps or voids.

C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.

D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for additional requirements.

3.05 PROTECTION

A. Do not permit installed insulation to be damaged prior to its concealment.

END OF SECTION

SECTION 07 72 00
ROOF ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Roof hatches.

B. Non-penetrating pedestals.

1.02 RELATED REQUIREMENTS

A. Section 05 50 00 - Metal Fabrications.

B. Division 7 - Thermal and Moisture Protection: Roofing System

1.03 REFERENCE STANDARDS

A. 29 CFR 1910.23 - Ladders.

B. 29 CFR 1910.29 - Fall Protection Systems and Falling Object Protection - Criteria and Practices.

C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

E. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

F. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric).

G. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used.

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.
4. Maintenance requirements.

C. Shop Drawings: Submit detailed layout developed for this project and provide dimensioned location and number for each type of roof accessory.

1. Non-penetrating Rooftop Supports: Submit design calculations for loadings and spacings.
2. Submit shop drawings sealed and signed by a Professional Engineer experienced in design of this type of work and licensed in California.

D. Warranty Documentation:
   1. Submit manufacturer warranty.
   2. Ensure that forms have been completed in District's name and registered with manufacturer.
   3. Submit documentation that roof accessories are acceptable to roofing manufacturer, and do not limit the roofing warranty.

1.05 QUALITY ASSURANCE

A. Pre-Installation Conference: Participate in conference with insulation and built-up roofing manufacturer and applicator as required in roofing section.

1.06 DELIVERY, STORAGE, AND HANDLING

A. See Section 01 74 19 - Construction Waste Management and Disposal for packaging waste requirements.

B. Store products in manufacturer's unopened packaging until ready for installation.

C. Store products under cover and elevated above grade.

1.07 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide 2-year manufacturer warranty for hatches. Complete forms in District's name and register with manufacturer.

C. Extended Correction Period: Correct defective work within 5-year period commencing on Date of Substantial Completion.

1.08 WARRANTY

A. Extended Warranty, Roof Hatches: Manufacturer's standard five year warranty.

PART 2 PRODUCTS

2.01 ROOF HATCHES

A. Roof Hatch Manufacturers:
   1. Activar Construction Products Group - JL Industries: www.activarcpg.com/#sle.
      a. Diamond Series model RHDG-7, without deflector plate.
   2. Acudor Products Inc: www.acudor.com/#sle.
   3. Babcock-Davis: www.babcockdavis.com/#sle.
   4. BILCO Company; Type E - Ladder Access: www.bilco.com/#sle.
   5. Dur-Red Products: www.dur-red.com.
   6. Precision Ladders, LLC; Model PH-A: www.precisionladders.com/#sle.
   7. Substitutions: See Section 01 60 00 - Product Requirements.

B. Roof Hatches: Factory-assembled aluminum frame and cover, complete with operating and release hardware.

1. Basis of Design Product: PH-A2630-C PH-A 2’6” x 3’0”(762 mm x 914 mm) for an aluminum roof hatch. Roof Hatch with Folding Guard Rail System as manufactured by Precision Ladders LLC, or approved equal.
2. Style: Provide flat metal covers unless otherwise indicated.
3. Mounting: Provide frames and curbs suitable for mounting conditions as indicated on drawings.
4. Size: As indicated on drawings; single-leaf style unless otherwise indicated.
    a. For Ladder Access: Single leaf; 30 by 36 inches.

C. Frames and Curbs: One-piece curb and frame with integral cap flashing to receive roof flashings; extended bottom flange to suit mounting.
1. Material: Mill finished aluminum, 11 gauge, 0.0907 inch thick.
2. Insulation: Manufacturer's standard; 1 inch rigid glass fiber, located on outside face of curb.
3. Curb Height: 12 inches from surface of roof deck, minimum.
4. Flange: 3-1/2 inches with pre-drilled holes for attachment to roof deck..

D. Metal Covers: Flush, insulated, hollow metal construction.
1. Capable of supporting 40 psf live load, internal loading of 20 psf (0.96 kPa).
2. Material: Mill finished aluminum; outer cover 11 gauge, 0.0907 inch thick, liner 0.04 inch thick.
3. Insulation: Manufacturer's standard 1 inch rigid glass fiber.
4. Gasket: Neoprene, continuous around cover perimeter.

E. Safety Railing System: Roof hatch safety rail system mounted directly to curb without penetration of roofing system.
1. Railing Size: 30 by 36 inches.
2. Folding Aluminum Guard Rail System shall support a load of 200 lbs applied in any direction.
3. Railing: Comply with 29 CFR 1910.23 for ladder safety, with a safety factor of two.
4. Self-Closing Gate: Comply with 29 CFR 1910.29 for safe egress and fall protection through hatch opening.
5. Posts and Rails: Aluminum tube.
6. Gate: Same material as railing; automatic closing with latch.
7. Finish: Manufacturer's standard, factory applied finish.
8. Gate Hinges and Post Guides: ASTM B221 (ASTM B221M), 6063 alloy, T5 temper aluminum.
9. Mounting Brackets: Hot dipped galvanized steel, 1/4 inch thick, minimum.
10. Fasteners: Stainless steel, Type 316.
11. Products:

a. Basis of Design Product: Folding Guard Rail System as manufactured by Precision Ladders LLC, or approved equal.

b. Activar Construction Products Group, Inc. - JL Industries; RTA Safety Railing, Model RHG Series: www.activarcpg.com/#sle.

c. BILCO Company; Bil-Guard 2.0: www.bilco.com/#sle.

d. Substitutions: See Section 01 60 00 - Product Requirements.

F. Hardware: Steel, zinc coated and chromate sealed, unless otherwise indicated or required by manufacturer.

1. Lifting Mechanisms: Compression or torsion spring operator with shock absorbers that automatically opens upon release of latch; capable of lifting covers despite 10 psf load.

2. Hinges: Heavy duty pintle type.

3. Automatic hold open arm with vinyl-coated handle for manual release.

a. Automatic hold-open arm complete with red or contrasting colored vinyl grip handle to permit easy release and one-hand control of cover to closed and latched position.

4. Latch: Upon closing, engage latch automatically and reset manual release.

5. Manual Release: Pull handle on interior and exterior.

6. Locking: Padlock hasp on interior and exterior.

2.02 NON-PENETRATING ROOFTOP SUPPORTS/ASSEMBLIES

A. Non-Penetrating Rooftop Support/Assemblies: Manufacturer-engineered and factory-fabricated, with pedestal bases that rest on top of roofing membrane, and not requiring any attachment to roof structure and not penetrating roofing assembly.

1. Design Loadings and Configurations: As required by applicable codes.

2. Height: Provide minimum clearance of 6 inches under supported items to top of roofing.

3. Support Spacing and Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.

4. Steel Components: Stainless steel, or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A123/A123M.

5. Hardware, Bolts, Nuts, and Washers: Stainless steel, or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A153/A153M.

6. Products:

a. Metal Roof Innovations, Ltd. S-5! Attachment Solutions; S-5! Utility System: www.s-5.com/#sle.

b. PHP Systems/Design: www.phpsd.com.

c. Portals Plus: www.portalsplus.com/#sle.

d. Substitutions: See Section 01 60 00 - Product Requirements.

B. Pipe Supports: Provide attachment fixtures complying with MSS SP-58 and as indicated.

1. Attachment/Support Fixtures: As recommended by manufacturer, same type as indicated for equivalent indoor hangers and supports; corrosion resistant material.

2. See relevant piping system specification section for additional requirements.

C. Non-Penetrating Pedestals: Steel pedestals with square, round, or rectangular bases.

1. Bases: High density polypropylene.
2. Base Sizes: As required to distribute load sufficiently to prevent indentation of roofing assembly.
3. Steel Components: Stainless steel, or carbon steel hot-dip galvanized after fabrication in accordance with ASTM A123/A123M.
4. Products:
    a. Metal Roof Innovations, Ltd. S-5! Attachment Solutions; S-5! Utility System: www.s-5.com/#sle.
    b. Portals Plus; Pedestal Plus: www.portalsplus.com/#sle.
    c. Substitutions: See Section 01 60 00 - Product Requirements.

D. Ladder Safety Post:

1. Furnish and install where indicated on plans ladder safety post Model LU-1 manufactured by Bilco Company; www.bilco.com, or equal. The ladder safety post shall be pre-assembled from the manufacturer.
    a. Substitutions: See Section 01 6000 - Product Requirements.
2. Performance characteristics:
    a. Tubular post shall lock automatically when fully extended.
    b. Safety post shall have controlled upward and downward movement.
        1) Release lever shall disengage the post to allow it to be returned to its lowered position.
    c. Adjustable Mounting Bracket Spacing: Up to 14 inches on center.
        1) Clamp Bracket Size: 1-1/4 inch in diameter.
3. Post: High strength square tubing. A pull up loop shall be provided at the upper end of the post to facilitate raising the post.
4. Activation: Pull up loop shall be provided at the upper end of the post to facilitate raising the post.
5. Material of construction: Steel (Model LU-1, LU-2).
6. Balancing spring: A stainless steel spring balancing mechanism shall be provided to provide smooth, easy, controlled operation when raising and lowering the safety post.
7. Hardware: All mounting hardware shall be Type 316 stainless steel.
8. Factory Finish: Yellow powder coat steel (Model LU-1).

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

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

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using methods recommended by manufacturer for achieving acceptable results for applicable substrate under project conditions.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions, in manner that maintains roofing system weather-tight integrity.

B. Operational Units: Test and operate units with operable components. Clean and lubricate joints and hardware. Adjust for proper operation.

3.04 CLEANING

A. See Section 01 70 00 - Execution and Closeout Requirements for additional requirements.

B. Clean installed work to like-new condition.

3.05 PROTECTION

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 08 33 23
OVERHEAD COILING DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Exterior coiling doors. STL-1

B. Electric operators and control stations.

C. Wiring from electric circuit disconnect to operators and control stations.

1.02 RELATED REQUIREMENTS

A. Section 07 92 00 - Joint Sealants: Sealing joints between frames and adjacent construction.

B. Section 08 36 13 - Sectional Doors.

C. Division 26 - Electrical:

1. Conduit from electric circuit to operator and from operator to control station.
2. Conduit from fire alarm system.
3. Power to disconnect.

1.03 REFERENCE STANDARDS

A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.

B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

D. CBC - California Building Code.

E. ITS (DIR) - Directory of Listed Products.

F. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

G. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts.

H. NEMA MG 1 - Motors and Generators.

I. CEC - California Electrical Code

1. NFPA 70 - National Electrical Code.

J. UL (DIR) - Online Certifications Directory.

K. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide general construction, electrical equipment, and component connections and details.

C. Shop Drawings: Indicate pertinent dimensioning, anchorage methods, hardware locations, and installation details.

D. Samples: Submit two slats, 2 x 4 inch in size illustrating shape, color and finish texture.

E. Manufacturer's Installation Instructions: Indicate installation sequence and procedures, adjustment and alignment procedures.

F. Manufacturer's qualification statement.

G. Installer's qualification statement.

H. Maintenance Data: Indicate lubrication requirements and frequency and periodic adjustments required.

I. Executed warranties.

J. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in District's name and registered with manufacturer.

K. Project Record Documents: Include as-built electrical diagrams for electrical operation and connection to fire alarm system.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of type specified and with at least three years documented experience.

C. Products Requiring Electrical Connection: Listed and classified by ITS (DIR), UL (DIR), or testing firm acceptable to authorities having jurisdiction as suitable for purpose specified.

1.06 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Manufacturer Warranty: Provide lifetime manufacturer warranty for counterweights and tension springs. Complete forms in District's name and register with manufacturer.

1.07 WARRANTY

A. Standard Warranty: Two years from date of substantial completion against defects in material and workmanship.

B. Maintenance: Submit for District’s consideration and acceptance of a maintenance service agreement for installed products.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS:

A. Provide labeled fire resistive doors meeting the requirements of the California Code of Regulations (CCR), Title 24, Part 2 California Building Code Chapter 7 Fire Resistance - Rated Construction for the fire resistive ratings indicated.

B. Fire resistive doors shall bear labels of Underwriters' Laboratory (UL), Factory Mutual (FM), or other testing agency acceptable to the State Fire Marshal.

C. Comply with CBC Section 715.

2.02 MANUFACTURERS

A. Overhead Coiling Doors:

1. Basis of Design: Overhead Door Corporation; Product Rolling Steel Door, Model 610: www.overheaddoor.com.
2. Clopay Building Products: www.clopaydoor.com/#sle.
3. Cornell Iron Works, Inc: www.cornelliron.com/#sle.
4. The Cookson Company; Thermiser Model ESD20: www.cooksondoor.com/#sle.
5. Overhead Door Corporation: www.overheaddoor.com.
6. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 COILING DOORS

A. Exterior Coiling Doors: Steel slat curtain; insulated; manual operation.

1. Capable of withstanding positive and negative wind loads of 20 psf without undue deflection or damage to components.
2. Nominal Slat Size: 3 inches wide x required length.
3. Finish: Factory painted, color as selected.
4. Guides: Angles; galvanized steel.
5. Hood Enclosure: Manufacturer's standard; galvanized steel.
6. Electric operation.
7. Mounting: As indicated on drawings.
8. Locking Devices: Chain lock keeper on inside.

2.04 MATERIALS AND COMPONENTS

A. Metal Curtain Construction: Interlocking slats.

1. Slat Ends: Each slat fitted with end locks to act as wearing surface in guides and to prevent lateral movement.
2. Curtain Bottom for Slat Curtains: Fitted with angles to provide reinforcement and positive contact in closed position.

3. Weatherstripping for Exterior Doors: Moisture and rot proof, resilient type, located at jamb edges, bottom of curtain, where curtain enters hood enclosure, and UL requirements of doors indicated.
4. Steel Slats: Minimum thickness, 22 gage, 22 inch; ASTM A653/A653M galvanized steel sheet.
    a. Galvanizing: Minimum G90 coating.

B. Guide Construction: Continuous, of profile to retain door in place, mounting brackets of same metal.

C. Guides - Angle: ASTM A36/A36M metal angles, size as indicated.
1. Hot-dip galvanized in compliance with ASTM A123/A123M.
2. Prime painted.

D. Hood Enclosure and Trim: Internally reinforced to maintain rigidity and shape.
1. Prepare for site painted finish.

E. Roller Shaft Counterbalance: Steel pipe and helical steel spring system, capable of producing torque sufficient to ensure smooth operation of curtain from any position and capable of holding position at mid-travel; with adjustable spring tension; requiring 25 lb nominal force to operate.

2.05 ELECTRIC OPERATION

A. Operator, Controls, Actuators, and Safeties: Comply with UL 325; provide products listed by ITS (DIR), UL (DIR), or testing agency acceptable to authorities having jurisdiction.
1. Provide interlock switches on motor operated units.
2. Provide tamperproof operation cycle counter.

B. Electric Operators:
1. Mounting: Side mounted.
2. Motor Enclosure:
    a. Exterior Coiling Doors: NEMA MG 1, Type 4; open drip proof.
3. Motor Rating: 1/2 hp; continuous duty.
4. Motor Voltage: 120 volts, single phase, 60 Hz.
5. Motor Controller: NEMA ICS 2, full voltage, reversing magnetic motor starter.
6. Controller Enclosure: NEMA 250, Type 4.
7. Opening Speed: 12 inches per second.
8. Brake: Manufacturer's standard type, activated by motor controller.
9. Manual override in case of power failure.
10. See Division 26 for electrical connections.

C. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated; enclose terminal lugs in terminal box sized to comply with CEC / NFPA 70.

D. Control Station: Key operated standard three button (OPEN-STOP-CLOSE) momentary control for each operator.
   1. 24 volt circuit.
   2. Surface mounted, at exterior location as indicated on drawings.
   3. Entrapment Protection Devices: Provide sensing devices and safety mechanisms complying with UL 325.
      a. Primary Device: Provide electric sensing edge, wireless sensing, or NEMA 1 photo eye sensors as required with momentary-contact control device.
      b. Secondary Device: Provide electric sensing edge with wireless edge kit or non-monitored safety edge as an option along with continuous-constant control device.

E. Safety Edge: Located at bottom of coiling door, full width, electro-mechanical sensitized type, wired to stop and reverse door direction upon striking object, hollow neoprene covered.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that opening sizes, tolerances and conditions are acceptable.

3.02 INSTALLATION

A. Install units in accordance with manufacturer's instructions.

B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.

C. Securely and rigidly brace components suspended from structure. Secure guides to structural members only.

D. Fit and align assembly including hardware; level and plumb, to provide smooth operation.

E. Coordinate installation of electrical service with Division 26.

F. Complete wiring from disconnect to unit components.

G. Install enclosure and perimeter trim.

3.03 TOLERANCES

A. Maintain dimensional tolerances and alignment with adjacent work.

B. Maximum Variation From Plumb: 1/16 inch.

C. Maximum Variation From Level: 1/16 inch.

D. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch per 10 feet straight edge.

3.04 FIELD QUALITY CONTROL

A. Completed Installation:
   1. Free from warps, twists and other distortions, and operate freely.

B. Demonstration: Upon completion of installation and for Substantial Completion review, demonstrate proper operation of each coiling door.

1. Open and close each motorized coiling door 5 cycles with motor-operator and 1 cycle with manual operator.

3.05 ADJUSTING

A. Adjust operating assemblies for smooth and noiseless operation.

3.06 CLEANING

A. Clean installed components.

B. Remove labels and visible markings.

END OF SECTION

SECTION 08 71 00
DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Hardware for hollow metal doors.
B. Hardware for fire-rated doors.
C. Electrically operated and controlled hardware.
D. Lock cylinders for doors that hardware is specified in other sections.
E. Thresholds.
F. Weatherstripping and gasketing.
G. Replacement hardware for existing doors.
H. Gate hardware as noted.

1.02 RELATED REQUIREMENTS

A. Section 06 41 00 - Architectural Wood Casework: Cabinet hardware.
B. Section 07 92 00 - Joint Sealants: Sealants for setting exterior door thresholds.
C. Section 08 06 71 - Door Hardware Schedule: Schedule of door hardware sets.
D. Section 08 11 13 - Hollow Metal Doors and Frames.
E. Section 08 14 16 - Flush Wood Doors.
F. Section 08 43 13 - Aluminum-Framed Storefronts: Door hardware, except as noted in section.
G. Section 10 14 00 - Signage: Additional signage requirements.
H. Section 10 26 00 - Wall and Door Protection: Door and frame protection.
I. Section 32 31 13 - Chain Link Fences and Gates.

1.03 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design.
B. BHMA (CPD) - Certified Products Directory.
C. BHMA A156.1 - Standard for Butts and Hinges.
D. BHMA A156.3 - Exit Devices.
E. BHMA A156.4 - Door Controls - Closers.
F. BHMA A156.5 - Cylinders and Input Devices for Locks.
G. BHMA A156.6 - Standard for Architectural Door Trim.
H. BHMA A156.7 - Template Hinge Dimensions.
I. BHMA A156.8 - Door Controls - Overhead Stops and Holders.
J. BHMA A156.13 - Mortise Locks & Latches Series 1000.

K. BHMA A156.16 - Auxiliary Hardware.

L. BHMA A156.17 - Self Closing Hinges & Pivots.

M. BHMA A156.20 - Standard for Strap and Tee Hinges, and Hasps.

N. BHMA A156.21 - Thresholds.

O. BHMA A156.22 - Standard for Gasketing.

P. BHMA A156.26 - Standard for Continuous Hinges.

Q. BHMA A156.28 - Standard for Recommended Practices for Mechanical Keying Systems.

R. BHMA A156.115 - Hardware Preparation In Steel Doors And Steel Frames.

S. BHMA A156.115W - Hardware Preparation in Wood Doors with Wood or Steel Frames.

T. DHI (H&S) - Sequence and Format for the Hardware Schedule.

U. DHI (KSN) - Keying Systems and Nomenclature.

V. DHI (LOCS) - Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames.

W. DHI WDHS.3 - Recommended Locations for Architectural Hardware for Flush Wood Doors.

X. ITS (DIR) - Directory of Listed Products.

Y. NFPA 70 - National Electrical Code.

Z. NFPA 80 - Standard for Fire Doors and Other Opening Protectives.

AA. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives.

BB. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies.

CC. UL (DIR) - Online Certifications Directory.

DD. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies.

EE. UL 1784 - Standard for Air Leakage Tests of Door Assemblies.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.

B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

C. Preinstallation Meeting: Convene a preinstallation meeting one week prior to commencing work of this section; attendance is required by affected installers and the following:

1. Architect.
2. Installer's Architectural Hardware Consultant (AHC).
3. Hardware Installer.
4. Owner's Security Consultant.

D. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.

E. Keying Requirements Meeting:

1. Schedule meeting at project site prior to Contractor occupancy.
2. Attendance Required:
    a. Contractor.
    b. District and relevant staff.
    c. Architect.
    d. Installer's Architectural Hardware Consultant (AHC).
    e. Hardware Installer.
    f. Owner's Security Consultant.
3. Agenda:
    a. Establish keying requirements.
    b. Verify locksets and locking hardware are functionally correct for project requirements.
    c. Verify that keying and programming complies with project requirements.
    d. Establish keying submittal schedule and update requirements.
4. Contractor to provide a blank key schedule in excel format for District review and approval prior to formal submittal.
5. Incorporate "Keying Requirements Meeting" decisions into keying submittal upon review of door hardware keying system including, but not limited to, the following:
    a. Access control requirements.
    b. Key control system requirements.
    c. Schematic diagram of preliminary key system.
6. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, District, participants, and those affected by decisions made.
    a. Furnish District's written approval of the system; do not order keys or cylinders without written confirmation of actual requirements from the District.
7. Deliver established keying requirements to manufacturers.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Prior to submittal, carefully inspect existing conditions to verify finish hardware required to complete Work, including sizes, quantities, existing hardware scheduled for re-use, and sill condition material. If conflict between the specified/scheduled hardware and existing conditions, submit request for direction from Architect. Include date of jobsite visit in the submittal.
    1. Submittals prepared without thorough jobsite visit by qualified hardware expert may be rejected as non-compliant.

C. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.

D. Shop Drawings - Door Hardware Schedule: Submit detailed listing that includes each item of hardware to be installed on each door. Use door numbering scheme as included in Contract Documents.
   1. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
   2. Comply with DHI (H&S) using door numbers and hardware set numbers as indicated in construction documents.
      a. Submit in vertical format; see Section 08 0671.
   3. List groups and suffixes in proper sequence.
   4. Provide complete description for each door listed.
   5. Provide manufacturer name, product names, and catalog numbers; include functions, types, styles, sizes and finishes of each item.
   6. Include account of abbreviations and symbols used in schedule.

E. Shop Drawings - Electrified Door Hardware: Submit diagrams for power, signal, and control wiring for electrified door hardware that include details of interface with building safety and security systems. Provide elevations and diagrams for each electrified door opening as follows:
   1. Prepared by or under supervision of Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC).
   2. Elevations: Submit front and back elevations of each door opening showing electrified devices with connections installed and an operations narrative describing how opening operates from either side at any given time.
   3. Diagrams: Submit point-to-point wiring diagram that shows each device in door opening system with related colored wire connections to each device.

F. Samples for Verification:
   1. Submit minimum size of 2 by 4 inch for sheet samples, and minimum length of 4 inch for other products.
   2. Submit one (1) sample of hinge, latchset, lockset, and closer illustrating style, color, and finish.
   3. Return full-size samples to be incorporated into this Work.
   4. Submit product description with samples.

G. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

H. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
   1. Submit manufacturer's parts lists and templates.
   2. Bitting List: List of combinations as furnished.

I. Keying Schedule:
   1. Submit three (3) copies of Keying Schedule in compliance with requirements established during Keying Requirements Meeting unless otherwise indicated.

J. Manufacturer's qualification statement.

K. Installer's qualification statement.

L. Supplier's qualification statement.

M. District Responsibilities for submittal review:

1. Complete keying schedule.
2. Complete keying legend.
3. Provide original letter of authorization allowing hardware supplier to purchase keying hardware and to have the bitting list sent to District.
4. Provide District the locksmith's name, address, phone number and email.
5. Identify how doors are to be keyed.
6. For existing systems, provide the registry number.

N. Manufacturers' certificates that fire-rated hardware meets or exceeds specified requirements.

O. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in District's name and registered with manufacturer.

P. Project Record Documents: Record actual locations of concealed equipment, services, and conduit.

1. Include keying schedule, riser and point-to-point wiring diagrams, manufacturers' installation, adjustment and maintenance information, and supplier's final inspection report

Q. Maintenance Materials and Tools: Furnish the following for District's use in maintenance of project.

1. See Section 01 60 00 - Product Requirements, for additional provisions.
2. Lock Cylinders: Ten for each master keyed group.
3. Temporary Cores: Return to and receipt by Contractor.
4. Tools: Two sets of each special wrench or tool applicable for each different or special hardware component, whether supplied by hardware component manufacturer or not.

1.06 QUALITY ASSURANCE

A. Standards for Fire-Rated Doors: Maintain one copy of each referenced standard on site, for use by Architect and Contractor.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.

C. Installer Qualifications: Company specializing in performing work of the type specified for commercial door hardware with at least three years of documented experience.

D. Supplier Qualifications: Company with certified Architectural Hardware Consultant (AHC) and Electrified Hardware Consultant (EHC) to assist in work of this section.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.

1.08 PROJECT CONDITIONS AND COORDINATION:

A. Where exact types of hardware specified are not adaptable to finished shape or size of members requiring hardware, provide suitable types having as nearly as practical the same operation and quality as type specified, subject to Architect's approval.

B. Coordination:

1. Coordinate hardware with other work.
2. Provide hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated, as necessary for proper installation and function, regardless of omissions or conflicts in the information on the Contract Documents.
3. Furnish related trades with the following information:
    a. Location of embedded and attached items to concrete.
    b. Location of wall-mounted hardware, including wall stops.
    c. Location of finish floor materials and floor-mounted hardware.
    d. Locations for conduit and raceways as needed for electrical, electronic and electro-pneumatic hardware items.
        1) Fire/life-safety system interfacing.
        2) Point-to-point wiring diagrams plus riser diagrams to related trades.
    e. Coordinate: flush top rails of doors at outswinging exteriors, and throughout where adhesive-mounted seals occur.
    f. Manufacturers' templates to door and frame fabricators.

C. Check Shop Drawings for doors and entrances to confirm that adequate provisions will be made for proper hardware installation.

1.09 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Warranty against defects in material and workmanship for period indicated, from Date of Substantial Completion.

1. Mechanical Closers: Thirty years, minimum.
2. Electrical Closers: As indicated, minimum.
3. Mechanical Exit Devices: Three years, minimum.
4. Electrical Exit Devices: One year, minimum.
5. Locksets and Cylinders: Three years, minimum.
6. Other Hardware: Two years, minimum.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.

B. Provide individual items of single type, of same model, and by same manufacturer.

C. Regulatory Requirements:

1. Fire-Rated Openings: Comply with NFPA 80. Provide only hardware tested and listed by UL for the type and size of each door required, which complies with the requirements of the door and frame labels. California State Fire Marshal Standard 12-7-4

    a. Where exit devices are required on fire rated doors, provide supplementary marking on door UL label indicating “Fire Door to be Equipped with Fire Exit Hardware”, and provide UL label on exit device indicating “Fire Exit Hardware”.

2. Comply with State Fire Marshal Standards.

    a. Lever of lever actuated latches or locks shall be curved with a return to within 1/2 inch of the door to prevent catching on the clothing of persons during egress. SFM 12-10-2 Latching/Locking, Section 12-10-202(f).

    b. The cross-bar shall extend across not less than one-half the width of the door/gate. 12-10-3 Exits, Section 12-10-302(a).

    c. The ends of the cross-bar shall be curved, guarded or otherwise designed to prevent catching on the clothing of persons during egress. SFM 12-10-3 Exits, Section 12-10-302(d).

3. Conform to applicable requirements of the CBC Chapter 11B and ADA Standards regarding accessibility requirements for door and entrance hardware including gates.

    a. Doors/doorways as part of an accessible route shall comply with CBC Sections 11B-404.

    b. Doors shall meet California Building Code Sections 11B-206.5, 11b-404.1 and 1010.1.

    c. The clear opening width for a door shall be 32 inches minimum. CBC Section 11B-404.2.3

        1) For a swinging door it shall be measured between the face of the door and the stop, with the door open 90 degrees.

        2) There shall be no projections into it below 34 inches and 4 inches maximum projections into it between 34 inches and 80 inches above the finish floor or ground.

        3) Door closers and stops shall be permitted to be 78 inches minimum above the finish floor or ground.

        4) Exception: Doors not requiring full passage through the opening, that is, to spaces less than 24 inches in depth, may have the clear opening width reduced to 20 inches. Example: shallow closets.

d. Handles, pulls, latches, locks, and other operable parts on accessible doors shall comply with CBC Section 11B-309.4 and shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist.
    1) Operable parts of such hardware shall be 34 inches minimum and 44 inches maximum above finish floor or ground.
    2) Where sliding doors are in the fully open position, operating hardware shall be exposed and usable from both side. CBC Section 11B-404.2.7
e. The force for pushing or pulling open a door shall be as follows : CBC Section 11B-404.2.9.
    1) Interior Hinged Doors, sliding or folding doors, and exterior hinged doors: 5 lbs maximum.
    2) Required Fire Doors: the minimum opening force allowable by the DSA authority, not to exceed 15 lbs..
    3) These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door in a closed position.
    4) The force required to activate any operable parts, such as retracting latch bolts or disengaging other devices, shall be 5 lbs. maximum to comply with CBC Section 11B-309.4.
f. Door closing speed shall be as follows: CBC Section 11B-404.2.8
    1) Closer shall be adjusted so that the required time to move a door from an open position of 90 degrees to a position of 12 degrees from the latch is 5 seconds minimum.
    2) Spring hinges shall be adjusted so that the required time to move a door from an open position of 70 degrees to the closed position is 1.5 seconds minimum.
g. Thresholds shall comply with CBC Section 11B-404.2.5.
h. Floor stops shall not be located in the path of travel and 4 inches maximum from walls.
i. Hardware (including exit devices) shall not be provided with "Night Latch" (NL) function for any accessible doors or gates unless the following conditions are met.
    1) Such hardware has a 'dogging' feature.
    2) It is dogged during the time the facility is open.
    3) Such 'dogging' operation is performed only by employees as their job function (non-public use).
j. Pair of doors: Limit swing of one leaf to 90 degrees so that a clear floor space is provided beyond the arc of the swing for the wall-mounted tactile sign. CBC Section 11B-703.4.2.1

4. Door and door hardware encroachment: when door is swung fully-open into means-of-egress path, the door, including the hardware, may not encroach or project more than 7 inches into the required exit width. California Building Code 1005.7.1.
5. SB 211 - DSA Bulletin 11-05

a. Provide all latching devices that are lockable (including but not limited to door locks and panic/exit devices) that comply with CBC 1010.1.11:
    1) All new construction projects to include locks that allow the doors to be locked from the inside.
    2) The requirement applies to classrooms and any other room with an occupancy of 5 or more persons, but does not include doors that are locked from the outside at all times or student restrooms.

D. Provide door hardware products that comply with the following requirements:
1. Applicable provisions of federal, state, and local codes.
2. Comply with SB 211 (DSA Bulletin 11-05); CBC section 1010.1.11.
3. Accessibility: ADA Standards, CBC Chapter 11B.
4. Fire-Rated Doors: NFPA 80, listed and labeled by qualified testing agency for fire protection ratings indicated, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.
5. Hardware on Fire-Rated Doors: Listed and classified by UL (DIR), ITS (DIR), or testing firm acceptable to authorities having jurisdiction as suitable for application indicated.
    a. Latching hardware, door closers, ball bearing hinges, and seals are required whether listed in the Hardware Schedule or not.
6. Hardware for Smoke and Draft Control Doors (Indicated as "S" on Drawings): Provide door hardware that complies with local codes, and requirements of assemblies tested in accordance with UL 1784.
    a. Air Leakage Rate: Tested in accordance with UL 1784, with air leakage rate not to exceed 3.0 cfm/sf of door opening at 0.10 inch of water for both ambient and elevated temperature tests.
7. Listed and certified compliant with specified standards by BHMA (CPD).
8. Auxiliary Hardware: BHMA A156.16.
9. Straps and Tee Hinges: BHMA A156.20.
10. Hardware Preparation for Steel Doors and Steel Frames: BHMA A156.115.
11. Hardware Preparation for Wood Doors with Wood or Steel Frames: BHMA A156.115W.
12. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified.

E. Electrically Operated and/or Controlled Hardware: Provide necessary power supplies, power transfer hinges, relays, and interfaces as required for proper operation; provide wiring between hardware and control components and to building power connection in compliance with NFPA 70.
1. See Section 28 10 00 for additional access control system requirements.

F. Lock Function: Provide lock and latch function numbers and descriptions of manufacturer's series. See Door Hardware Schedule.
1. Exit Doors: Openable at all times from the inside without the use of a key or any special knowledge or effort.

G. Fasteners:

1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
    a. Aluminum fasteners are not permitted.
    b. Provide phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.
2. Provide machine screws for attachment to reinforced hollow metal and aluminum frames.
    a. Self-drilling (Tek) type screws are not permitted.
3. Provide stainless steel machine screws and lead expansion shields for concrete and masonry substrates.
4. Coordinate With Doors: Ensure provision of proper blocking to support wood screws at wood doors and machine screws at metal doors/frames to mounting panic hardware and door closers.
5. No through-bolts are allowed on any door type.
6. Fire-Rated Applications: Comply with NFPA 80.
    a. Provide wood or machine screws for hinges mortised to doors or frames, strike plates to frames, and closers to doors and frames.
    b. Provide steel through bolts for attachment of surface mounted closers, hinges, or exit devices to door panels unless proper door blocking is provided.
7. Concealed Fasteners: Do not use through or sex bolt type fasteners on door panel sides indicated as concealed fastener locations, unless otherwise indicated.

2.02 HINGES

A. Manufacturers:

1. Basis of Design: Ives.
2. Ives, an Allegion brand: www.allegion.com/us.
3. Bommer Industries, Inc: www.bommer.com.
4. Select Hinges : www.select-hinges.com
5. Substitutions: Not permitted.

B. Hinges: Comply with BHMA A156.1, Grade 1.

1. Self Closing Hinges: Comply with BHMA A156.17.
2. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
    a. Provide hinge width required to clear surrounding trim.
    b. Drawings typically depict doors at 90 degrees, doors will actually swing to maximum allowable.
        1) Use wide-throw conventional or continuous hinges as needed up to 8 inches in width to allow door to stand parallel to wall for true 180-degree opening.
        2) Advise Architect if 8 inch width is insufficient.

c. Conform to manufacturer's published hinge selection standard for door dimensions, weight and frequency, and to hinge selection as scheduled.
    1) Where manufacturer's standard exceeds the scheduled product, furnish the heavier of the two choices, notify Architect of deviation from scheduled hardware.
d. Conventional Hinges: Steel or stainless steel pins and concealed bearings. Hinge open widths minimum, but of sufficient throw to permit maximum door swing.

3. Continuous Hinges: Comply with BHMA A156.26.
    a. Geared-type aluminum.
        1) Use wide-throw units where needed for maximum degree of swing, advise Architect if commonly available hinges are insufficient.
        2) If units are used at storefront openings, color-coordinate hinge finish with storefront color.
            (a) Custom anodizing and custom powdercoat finishes subject to Architect approval.
    b. Pinned steel/stainless steel type: continuous stainless steel, 0.25-inch diameter stainless-steel hinge pin.
        1) Use engineered application-specific wide-throw units as needed to provide maximum swing degree of swing, advise Architect if required width exceeds 8 inches.
4. Provide hinges on every swinging door.
5. Provide five-knuckle full mortise butt hinges unless otherwise indicated.
6. Provide ball-bearing hinges at each door with closer.
7. Provide non-removable pins on exterior outswinging doors.
    a. Out-swinging exterior doors: Non-ferrous with non-removable (NRP) pins and security studs.
    b. Non-ferrous material exteriors and at doors subject to corrosive atmospheric conditions.
8. Provide non-removable pins on interior outswinging doors at locations as indicated in Door Hardware Schedule.
9. Provide power transfer hinges where electrified hardware is mounted in door leaf.
10. Provide following quantity of butt hinges for each door:
    a. Doors up to 60 inches High: Two hinges.
    b. Doors From 60 inches High up to 90 inches High: Three hinges.
    c. Doors 90 inches High up to 120 inches High: Four hinges.

2.03 AUTO FLUSH BOLTS

A. Manufacturers:
    1. Basis of Design: Ives.

2. Ives, an Allegion brand: www.allegion.com/us/#sle.
3. Door Controls International: www.doorcontrols.com.
4. Substitutions: Not permitted.

B. Automatic Flush Bolts: Comply with BHMA A156.16, Grade 1.
1. Flush Bolt Throw: 3/4 inch, minimum.
2. Provides extension bolts in leading edge of door, one bolt into floor, one bolt into top of frame.
a. Pairs of Swing Doors: At inactive leaves, provide flush bolts of type as required to comply with code.
3. Provide dustproof floor strike for bolt into floor, except at metal thresholds.
4. Manual Flush Bolts: Not permitted.
5. Automatic Flush Bolts: Automatically latch upon closing of door; automatic retraction of bolts when active leaf is opened; located on inactive leaf of pair of doors.

2.04 EXIT DEVICES

A. Comply with SB 211 (DSA Bulletin 11-05); CBC section 1010.1.11.

B. Manufacturers:
1. Basis of Design: Von Duprin, District Standard.
2. Von Duprin, an Allegion brand: www.allegion.com/us/#sle.
3. Substitutions: Not permitted.

C. Exit Devices: Comply with BHMA A156.3, Grade 1.
1. Lever design to match lockset trim.
2. Provide cylinder with cylinder dogging or locking trim.
3. Provide exit devices properly sized for door width and height.
4. Provide strike as recommended by manufacturer for application indicated.
5. Releasable in normal operation with 5-lb. maximum operating force per California State CBC Chapter 11B-309.4.
6. Readily openable from egress side with one hand and without tight grasping, tight pinching, or twisting of the wrist to operate.
7. Comply with CBC Section 1010.1.9 and State Fire Marshal Standard 12-10-3 Exits, Section 12-10-302.
a. Mechanical Method: Von Duprin “AX-“ feature, where touchpad directly retracts the latchbolt with 5 lb or less of force. Provide testing lab certification confirming that the mechanical device is independent third-party tested to meet this 5 lb requirement.
8. Trim to meet BHMA A156.3 Trim Security Test.
9. Provide weather-resistant devices when installed on exterior gates.
10. Independent lab-tested 1,000,000 cycles.

11. Provide UL (DIR) listed exit device assemblies for fire-rated doors and panic device assemblies for non-fire-rated doors.
12. For electrical options, provide quick connect plug-in pre-wired connectors.

2.05 LOCK CYLINDERS

A. Manufacturers:
   1. Basis of Design: Schlage, District Standard.
   2. Schlage, an Allegion brand: www.allegion.com/us/#sle.
   3. Substitutions: Not permitted.

B. Lock Cylinders: Provide key access on outside of each lock, unless otherwise indicated.
   1. Provide standard, electronic, conventional, and full size interchangeable core (FSIC) type cylinders, Grade 1, with six-pin core in compliance with BHMA A156.5 at locations indicated.
   2. Provide cylinders from same manufacturer as locking device.
   3. Provide cams and/or tailpieces as required for locking devices.
   4. Furnish keyed at factory of lock manufacturer where permanent records are maintained.
   5. Locks and cylinders by the same manufacturer.
   6. Within specific Door Sections, when provisions for lock cylinder are being referenced to this Section, provide specified lock cylinder and keyed to building keying system, unless otherwise indicated.

2.06 MORTISE LOCKS

A. Comply with SB 211 (DSA Bulletin 11-05); CBC section 1010.1.11.

B. Manufacturers:
   1. Basis of Design: Schlage L series, 03N design, District Standard.
   2. Schlage, an Allegion brand: www.allegion.com/us/#sle.
   3. Substitutions: Not permitted.

C. Mortise Locks: Complying with BHMA A156.13, Grade 1.
   1. Latchbolt Throw: 3/4 inch, minimum.
   2. Deadbolt Throw: 1 inch, minimum.
   3. Backset: 2-3/4 inch unless otherwise indicated.
   4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
      a. Flat-Lip Strikes: Provide for locks with three piece antifriction latchbolts as recommended by manufacturer.
      b. Extra-Long-Lip Strikes: Provide for locks used on frames with applied wood casing trim.

c. Aluminum-Frame Strike Box: Provide strike box fabricated for use with aluminum framing by framing manufacturer.

d. Rabbet Front and Strike: Provide on locksets for use with rabbeted meeting rails.

e. Finish: To match lock or latch.

5. Lever Trim**:** through-bolted, accessible design, cast lever or solid extruded bar type levers as scheduled. Filled hollow tube design unacceptable.

a. Spindles**:** security design independent breakaway. Breakage of outside lever does not allow access to inside lever's hubworks to gain wrongful entry.

b. Inside lever applied by screwless shank mounting – no exposed trim mount screws.

c. Levers rotate up or down for ease of use.

2.07 DOOR PULLS AND PUSH PLATES

A. Manufacturers:

1. Basis of Design: Ives.
2. Ives, an Allegion brand: www.allegion.com/us/#sle.
3. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.
4. Trimco: www.trimcohardware.com/#sle.
5. Substitutions: Not permitted.

B. Anti-Vandal Pull Manufacturers:

1. Basis of Design: Trimco, District Standard.
2. Trimco: www.trimcohardware.com/#sle.
3. Substitutions: Not permitted.

C. Door Pulls and Push Plates: Comply with BHMA A156.6.

1. Pull Type: Straight, unless otherwise indicated.
2. Push Plate Type: Flat, with square corners, unless otherwise indicated.
   a. Edges: Beveled, unless otherwise indicated.
3. Material: Stainless steel, unless otherwise indicated.
4. Provide door pulls and push plates on doors without a lockset, latchset, exit device, or auxiliary lock unless otherwise indicated.
5. On solid doors, provide matching door pull and push plate on opposite faces.
6. On glazed storefront doors, provide matching door pulls/push plates on both faces unless otherwise indicated.

2.08 COORDINATORS

A. Manufacturers:

1. Basis of Design: Ives.
2. Ives, an Allegion brand: www.allegion.com/us/#sle.
3. Door Controls International: www.doorcontrols.com.

4. Substitutions: Not permitted.

B. Coordinators: Provide on doors having closers and self-latching or automatic flush bolts to ensure that inactive door leaf closes before active door leaf.

1. Type: Bar, unless otherwise indicated.
2. Material: Aluminum, unless otherwise indicated.
3. Ensure that coordination of other door hardware affected by placement of coordinators and carry bar is applied properly for completely operable installation.

2.09 CLOSERS

A. Manufacturers; Surface Mounted:

1. Basis of Design: LCN 4040XP / 4041 series, District Standard.
2. LCN, an Allegion brand: www.allegion.com/us/#sle.
3. Substitutions: Not permitted.

B. Closers: Comply with BHMA A156.4, Grade 1.

1. Type: Surface mounted to door.
2. Provide door closer on each exterior door.
3. Provide door closer on each fire-rated and smoke-rated door.
   a. Spring hinges are not an acceptable self-closing device, unless otherwise indicated.
4. Operating Force: Adjustable to maximum 5 lbs operating force. Comply with ADA Standards and CBC Ch. 11B.
5. Where an overlapping astragal is included on pairs of swinging doors, provide coordinator to ensure door leaves close in proper order.
6. At corridor entry doors, mount closer on room side of door.
7. At outswinging exterior doors, mount closer on interior side of door.

2.10 HYDRAULIC GATE CLOSER AND HINGE

A. Basis of Design Product: Mammoth 180 with Dino hinge as manufactured by Loconix, or approved equal.

B. Self Closing Hinges: Comply with BHMA A156.17.

C. Description:

1. 100% mechanical (no electronic components).
2. Closing Speed: Adjusting a valve with an Allen key.
3. Closing Force: Adjustable to maximum 5 lbs operating force. Comply with ADA Standards and CBC Ch. 11B.
4. Allow for a 180 degrees opening angle of the gate.
   a. When opened 180 degrees, the gate closer should self-close over the 180 degrees.
5. Include corresponding bottom hinge.
6. Dampening Mechanism: Hydraulic .

7. The gate closer should have double rubber sealings to avoid oil leakage at all times.
8. Color: Black or silver color, as selected by Architect.

D. Performance
1. The gate closer shall be specifically made for outdoor use (IP69).
2. Gates up to 330 lbs and gate width up to 5 feet.
3. The opening pressure of the gate closer shall be between 3 and 5 lbs. maximum over the full 180 degrees.
4. Guarantee the hydraulic dampening to work properly under all temperature circumstances without any summer or winter adjustments, measured at a 90° opening. The viscosity of the oil shall have no impact on the performance of the gate closer.
   a. The closing time shall not be below 10 seconds at 70 degrees Celsius (summer).
   b. The closing time shall not be longer than 30 seconds at -30 degrees Celsius (winter).
5. Tested for 500,000 movements.
6. Maintenance free (no greasing nor oil refill).
7. Manufacturer Warranty: 3 years.

2.11 OVERHEAD STOPS AND HOLDERS

A. Manufacturers:
1. Basis of Design: Glynn-Johnson.
2. Glynn-Johnson, an Allegion brand; [_____]: www.allegion.com/us/#sle.
3. ABH Manufacturing Inc.: www.abhmfg.com.
4. Substitutions: Not permitted.

B. Overhead Stops and Holders (Door Checks): Comply with BHMA A156.8, Grade 1.
1. Provide stop for every swinging door, unless otherwise indicated.
2. Stop is not required if positive stop feature is specified for door closer; positive stop feature of door closer is not an acceptable substitute for a stop, unless otherwise indicated.

2.12 KICK PLATES

A. Manufacturers:
1. Basis of Design: Ives.
2. Ives, an Allegion brand: www.allegion.com/us/#sle.
3. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.
4. Trimco: www.trimcohardware.com/#sle.
5. Substitutions: Not permitted.

B. Kick Plates: Provide along bottom edge of push side of every door with closer, except aluminum storefront and glass entry doors, unless otherwise indicated.
1. Size: 12 inch high by 2 inch less door width (LDW) on push side of door.

2.13 DOOR HOLDERS

A. Manufacturers:
   1. Basis of Design: Ives.
   2. Ives, an Allegion brand: www.allegion.com/us/#sle.
   3. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   4. Trimco: www.trimcohardware.com/#sle.
   5. Substitutions: Not permitted.

B. Door Holders: Comply with BHMA A156.16, Grade 1.
   1. Provide surface mounted door holders when wall or floor stop is not applicable and hold-open device is mounted on door.
   2. Type: Lever, or kick down stop, with rubber bumper at bottom end.
   3. Material: Stainless steel.

2.14 FLOOR STOPS

A. Manufacturers:
   1. Basis of Design: Ives.
   2. Ives, an Allegion brand: www.allegion.com/us/#sle.
   3. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   4. Trimco: www.trimcohardware.com/#sle.
   5. Substitutions: Not permitted.

B. Floor Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
   1. Provide floor stops when wall surface is not available; be cautious not to create a tripping hazard.
   2. Type: Manual hold-open, with pencil floor stop.
   3. Material: Aluminum housing with rubber insert.

2.15 WALL STOPS

A. Manufacturers:
   1. Basis of Design: Ives.
   2. Ives, an Allegion brand: www.allegion.com/us/#sle.
   3. Rockwood; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   4. Trimco: www.trimcohardware.com/#sle.
   5. Substitutions: Not permitted.

B. Wall Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
   1. Provide wall stops to prevent damage to wall surface upon opening door.
   2. Type: Bumper, concave, wall stop.

3. Material: Aluminum housing with rubber insert.

2.16 THRESHOLDS

A. Manufacturers:
   1. Basis of Design: Zero.
   2. Zero International, Inc: www.zerointernational.com/#sle.
   3. Pemko; an Assa Abloy Group company: www.assaabloydss.com/#sle.
   4. National Guard Products, Inc: www.ngpinc.com/#sle.
   5. Substitutions: Not permitted.

B. Thresholds: Comply with BHMA A156.21.
   1. Provide threshold at interior doors for transition between two different floor types, and over building expansion joints, unless otherwise indicated.
   2. Provide threshold at each exterior door, unless otherwise indicated.
   3. Provide threshold with Sound Transmission Class (STC) of 25-30 at locations indicated.
   4. Type: Flat surface.
   5. Material: Aluminum.
   6. Threshold Surface: Fluted horizontal grooves across full width.
   7. Field cut threshold to profile of frame and width of door sill for tight fit.
   8. Provide non-corroding fasteners at exterior locations.

2.17 WEATHERSTRIPPING AND GASKETING

A. Rigid Seals:
   1. Manufacturers:
      a. Basis of Design: Pemko, District Standard.
      b. Pemko; an Assa Abloy Group company: www.assaabloydss.com/#sle.
      c. Substitutions: Not permitted.
   2. Weatherstripping and Gasketing: Comply with BHMA A156.22.
      a. Head and Jamb Type: Adjustable.
      b. Door Sweep Type: Encased in retainer.
      c. Material: Aluminum, with brush weatherstripping.
      d. Provide gasketing for smoke and draft control doors (Indicated as "S" on Drawings) that complies with local codes, requirements of assemblies tested in accordance with UL 1784.
      e. Provide frame-applied intumescent gasketing on wood doors that are labeled as smoke and draft control doors (Indicated as "S" on Drawings), unless otherwise indicated.
      f. See Section 08 1416 when wood door to frame sealing system is applied by door manufacturer.

g. Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated.

h. Provide door bottom sweep on each exterior door, unless otherwise indicated.

i. Provide sound-rated gasketing and automatic door bottom on doors indicated as "Sound-Rated", "Acoustical", or with "Sound Transmission Class (STC) rating"; fabricate as continuous gasketing, do not cut or notch gasketing material.

B. Adhesive Seals and Bottoms:

1. Manufacturers:

a. Basis of Design: Zero International, Inc.

b. Zero International, Inc: www.zerointernational.com/#sle.

c. Pemko; an Assa Abloy Group company: www.assaabloydss.com/#sle.

d. National Guard Products, Inc: www.ngpinc.com/#sle.

e. Substitutions: Not permitted.

2. Weatherstripping and Gasketing: Comply with BHMA A156.22.

a. Head and Jamb Type: Self-adhesive.

b. Door Sweep Type: Encased in retainer.

c. Material: Aluminum, with brush weatherstripping.

d. Provide gasketing for smoke and draft control doors (Indicated as "S" on Drawings) that complies with local codes, requirements of assemblies tested in accordance with UL 1784.

e. Provide frame-applied intumescent gasketing on wood doors that are labeled as smoke and draft control doors (Indicated as "S" on Drawings), unless otherwise indicated.

f. Refer to Section 08 1416 when wood door to frame sealing system is applied by door manufacturer.

g. Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated; .

h. Provide door bottom sweep on each exterior door, unless otherwise indicated.

2.18 PADLOCKS

A. Padlocks: Solid extruded brass case with shackle that locks at heel and toe.

1. Shackle Height: 3/4 inch, and width of opening is 7/8 inch.

2. Shackle Diameter: 1/4 inch.

2.19 SIGNAGE

A. See Section 10 14 00 for additional signage requirements.

2.20 SILENCERS

A. Silencers: Provide at equal locations on door frame to mute sound of door's impact upon closing.

1. Single Door: Provide three on strike jamb of frame.
2. Pair of Doors: Provide two on head of frame, one for each door at latch side.
3. Material: Rubber, gray color.

2.21 KEY CONTROL SYSTEMS

A. Manufacturers:
   1. Basis of Design: Schlage, District Standard.
   2. Schlage, an Allegion brand: www.allegion.com/us/#sle.
   3. Substitutions: Not permitted.

B. Key Control Systems: Comply with guidelines of BHMA A156.28.
   1. Provide keying information in compliance with DHI (KSN) standards.
   2. Keying: Grand master keyed.
   3. Include construction keying and control keying with removable core cylinders.
      a. Provide temporary keyed-alike cores.
      b. Remove at substantial completion and install permanent cylinders/cores in District's presence.
         1) Demonstrate that construction key no longer operates.
   4. Key to existing keying system.
      a. Factory registered master key system.
      b. Restricted keyway, interchangeable core.
      c. Contact District Locksmith with for keying requirements.
      d. Key blanks available only from factory-direct sources, not available from after-market key blank manufacturers.
      e. For estimate use factory GMK charge.
      f. Furnish District's written approval of the system.
   5. Supply keys in following quantities:
      a. 4 each Master keys.
      b. 1 each Grand Master keys.
      c. 6 each Construction Master keys.
      d. 15 each Construction keys.
      e. 2 each Construction Control keys.
      f. 2 each Control keys if new system.
      g. 2 each Extra Cylinder cores.
      h. 2 each Change keys for each keyed core.
   6. Key Management System: For each keyed lock on project, provide one set of consecutively numbered duplicate key tags with hanging hole and snap catch.

7. Security Key Tags: For each keyed lock on project, provide one set of matching key tags for permanent attachment to one key of each set.
8. Provide key collection envelopes, receipt cards, and index cards in quantity suitable to manage number of keys.
9. Deliver keys with identifying tags to District by security shipment direct from hardware supplier.
10. Bitting List: Use secured shipment direct from point of origination to District upon completion.
11. Permanent Keys and Cores: Stamped with applicable key marking for identification. Do not include actual key cuts within visual key control marks or codes. Stamp permanent keys "Do Not Duplicate."

2.22 KEY CABINET

A. Manufacturers:
1. Basis of Design: Lund Equipment.
2. Lund Equipment: www.lundkeycab.net.
3. Telkee: www.telkee.com.
4. Substitutions: Not permitted.

B. Key Cabinet: Sheet steel construction, piano hinged door with key lock; BHMA A156.28.
1. Mounting: Wall-mounted.
2. Capacity: Actual quantity of keys, plus 25 percent additional capacity.
3. Size key hooks to hold 6 keys each.
4. Finish: Baked enamel, manufacturer's standard color.
5. Key cabinet lock to building keying system.

2.23 FIRE DEPARTMENT LOCK BOX

A. Manufacturers:
1. Basis of Design: Knox Company.
2. Knox Company; Knox-Box Rapid Entry System; Model 3227: www.knoxbox.com.
3. Substitutions: See Section 01 60 00 - Product Requirements.

B. Fire Department Lock Box: at Buildings or Site Walls
1. Heavy-duty, recessed, solid stainless-steel box with hinged door and interior gasket seal; single drill resistant lock with dust covers and tamper alarm.
2. Capacity: Holds 10 keys.
3. Finish: Manufacturer's standard dark bronze.
4. Mounted to posts at manual gates (for driveways/roads) and as indicated on Drawings:
   a. Key lock boxes shall be located at driver's side of gate entrance in a visible location as directed by Fire Department.

1) Box shall be welded secure to metal posts. Box shall be 4 to 4-1/2 feet from top of box to finished grade.

b. Obtain approval from Fire Department of mounting location/position and operating standards before installation.

c. Products:

1) Knox Company; Model 3208 or 3166, as applicable.

2) Knox Decal 1001 shall be placed on gate.

3) Substitutions: See Section 01 60 00 - Product Requirements. Only if allowed or required by local Fire Department.

C. Provide Knox Fire Department alert decals on all exterior doors of the facility and on all interior doors that keys have been furnished for within the lock box.

1. If the building/facility is protected with a fire alarm system or burglar alarm system, the lock boxes shall be “tamper” monitoring.

2. The tamper monitoring must include the following:

a. All central stations shall be UL listed.

b. For combination Fire/Burglar Alarm Panels, the Knox Box monitoring shall be through the fire side of the panel.

c. Central stations upon receiving a Knox Box tamper alarm signal shall:

1) Notify and respond to local Police Department (Knox Box tamper).

2) Notify and respond to the local Fire Department (Knox Box tamper).

2.24 POWER SUPPLY

A. Manufacturers:

1. Basis of Design: Von Duprin.

2. Von Duprin, an Allegion brand: www.allegion.com/us/#sle.

3. Substitutions: Not permitted.

B. Power Supply: Hard wired, with multiple zones providing eight (8) breakers for each output panel with individual control switches and LED's; UL (DIR) Class 2 listed.

1. Power: 24 VAC, 10 Amp; with 120 VAC power supply.

2. Operating Temperature: 32 to 110 degrees F.

3. Provide with emergency release terminals that release devices upon activation of fire alarm system.

2.25 FINISHES

A. Finishes: Identified in Section 08 0671 - Door Hardware Schedule.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.

B. Verify that electric power is available to power operated devices and of correct characteristics.

C. Field-verify existing conditions and measurements prior to ordering hardware. Fill existing hardware cut outs not being used by the new hardware.

D. Remove existing hardware not being reused. Tag and bag removed hardware, turn over to District.

3.02 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and applicable codes.

1. Locate hardware per SDI-100 and applicable building, fire, life-safety, accessibility, and security codes.
2. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate for proper installation and operation. Remove and reinstall or replace work deemed defective by Architect.
    a. Gaskets:
        1) Install jamb-applied gaskets before closers, overhead stops, rim strikes, etc; fasten hardware over and through these seals.
        2) Install sweeps across bottoms of doors before astragals, cope sweeps around bottom pivots, trim astragals to tops of sweeps.
    b. When hardware is to be attached to existing metal surface and insufficient reinforcement exists, use RivNuts, NutSerts or similar anchoring device for screws.
    c. Use manufacturers' fasteners furnished with hardware items, or submit Request for Substitution with Architect.
    d. Replace fasteners damaged by power-driven tools.
3. Core concrete for exterior door stop anchors. Set anchors in approved non-shrink grout.
4. Lubricate and adjust existing hardware scheduled to remain. Carefully remove and give to District items not scheduled for reuse.

B. Install hardware on fire-rated doors and frames in accordance with applicable codes and NFPA 80.

C. Install hardware for smoke and draft control doors in accordance with NFPA 105.

D. Existing frames and doors to be retrofitted with new hardware:

1. Field-verify conditions and dimensions prior to ordering hardware. Fill existing hardware cut outs not being reused by the new hardware. Remove existing hardware not being reused, return to Owner unless directed otherwise.
2. Remove existing floor closers not scheduled for reuse, fill cavities with non-shrinking concrete and finish smooth.

3. Cut and weld existing steel frames currently prepared with 2.25 inch height strikes. Cut an approximate 8 inch section from the strike jamb and weld in a reinforced section to accommodate specified hardware's strike.
4. Patch and weld flush filler pieces into existing door hardware preparations in steel doors and frames, leave surfaces smooth.
5. Glue in solid wood block fillers to fill cut outs in existing wood doors, sand surfaces smooth. Alternatively, use an approved epoxy-based wood filler product, submit product data for approval.
6. Where existing wall conditions will not allow door to swing using the scheduled hinges, provide wide-throw hinges and if needed, extended arms on closers.
7. Provide manufacturer's recommended brackets to accommodate the mounting of closers on doors with flush transoms.

E. Use templates provided by hardware item manufacturer.

F. Do not install surface mounted items until application of finishes to substrate are fully completed.

G. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.
1. Comply with California Building Code, Section 1010.1.9.2, 11B-309.4 and 11B-404.2.7.
   a. Refer also to CBC requirements noted in Part 1 of this section.
2. For Steel Doors and Frames: Install in compliance with DHI (LOCS) recommendations.
3. For Steel Doors and Frames: See Section 08 11 13.
4. For Wood Doors: Install in compliance with DHI WDHS.3 recommendations.
5. Flush Wood Doors: See Section 08 14 16.
6. Mounting heights in compliance with ADA Standards and CBC Chapter 11B:
   a. Locksets: 34 to 44 inches.
   b. Push/Pulls: 34 to 44 inches.
   c. Dead Locks: 44 inches.
   d. Exit Devices: 36 (clear) to 44 inches.
   e. Where new hardware is to be installed near existing doors/hardware scheduled to remain, match locations of existing hardware when compliant with codes.

H. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.
1. See Section 07 92 00 for additional requirements.

I. Locate floor stops no more that 4 inches (maximum outside dimension) from walls and not within paths of travel. See Article "Hinges" in Part 2 regarding hinge widths, door should be well clear of point of wall reveal. Point of door contact no closer to the hinge edge than half the door width. Where situation is questionable or difficult, contact Architect for direction.

J. Locate overhead stops for minimum 90 degrees at rest and for maximum allowable degree of swing.

3.03 FIELD QUALITY CONTROL

A. Perform field inspection and testing under provisions of Section 01 40 00 - Quality Requirements.

B. Provide an Architectural Hardware Consultant (AHC) to inspect installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

3.04 ADJUSTING

A. Adjust work under provisions of Section 01 70 00 - Execution and Closeout Requirements.

B. Adjust hardware for smooth operation.

1. Adjust and check for proper operation and function. Replace units, which cannot be adjusted to operate freely and smoothly.
    a. Hardware damaged by improper installation or adjustment methods: repair or replace to District's satisfaction.
    b. Adjust doors to fully latch with no more than 1 pound of pressure.
    c. Adjust delayed-action closers on fire-rated doors to fully close from fully-opened position in no more than 10 seconds.
    d. Adjust door closers per "Commissioning" article below.

C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

D. Fire-rated doors (NFPA 80):

1. Wood Doors: Adjust to 1/8 inch clearance at heads, jambs, and meeting stiles.
2. Steel Doors: Adjust to 1/16 inch minimum to 3/16 inch maximum clearance at heads, jambs, and meeting stiles.
3. Adjust wood and steel doors to 3/4 inch maximum clearance (undercut) above threshold or finish floor material under door.

E. Inspection of fire door assemblies and means-of-egress panic-hardware doors:

1. Per NFPA 80 5.2.1:
    a. Provide an independent third-party inspection service to prepare a report listing these doors, and include a statement that there are zero deficiencies with the fire-rated assemblies and the openings with panic hardware.
    b. Certification, Testing and Quality Control shall be in accordance with Section 01 45 33 - Code-Required Special Inspections.
    c. All doors hardware and installation will be inspected by a third party selected by the Architect/District.

F. Final inspection: Installer to provide letter to District that upon completion installer has visited the Project and has accomplished the following:

1. Has re-adjusted hardware.

2. Has evaluated maintenance procedures and recommend changes or additions, and instructed District's personnel.
3. Has identified items that have deteriorated or failed.
4. Has submitted written report identifying problems.

3.05 COMMISSIONING:

A. Conduct these tests prior to request for certificate of substantial completion:
   1. With installer, access control contractor and electrical contractor present, test electrical, electronic and electro-pneumatic hardware systems for satisfactory operation.
   2. With installer and electrical contractor present, test hardware interfaced with fire/life-safety system for proper operation and release.
   3. Inspection of fire door assemblies and means-of-egress panic-hardware doors:
      a. Contractor shall provide an independent third-party inspection service to prepare a report listing the proper operation and functionality of these doors.
      b. Include a statement that there are zero deficiencies with the fire-rated assemblies and the openings with panic hardware.
   4. With installer present, test door hardware operation for compliance with push and pull force requirements per ADA and CBC.

3.06 CLEANING

A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.
B. Clean adjacent surfaces soiled by hardware installation.
C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.
D. See Section 01 74 19 - Construction Waste Management and Disposal for additional requirements.

3.07 PROTECTION

A. Protect finished Work under provisions of Section 01 70 00 - Execution and Closeout Requirements.
B. Do not permit adjacent work to damage hardware or finish.

3.08 CLOSEOUT

A. Return of temporary cores for return/receipt by Contractor.
B. Final inspection: Installer to provide letter to District that upon completion installer has visited the Project and has accomplished the following:
   1. Has re-adjusted hardware.
   2. Has evaluated maintenance procedures and recommend changes or additions, and instructed District's personnel.
   3. Has identified items that have deteriorated or failed.

4. Has submitted written report identifying problems.

3.09 SCHEDULE OF FINISH HARDWARE

A. See door schedule in drawings for hardware set assignments.

B. No hardware shall be ordered until Finish Hardware has been reviewed and approved by Architect's hardware consultant.

C. Provide Factory order numbers for all products supplied on this project as part of close out documents for Owner's warranty records.

D. See schedule in Section 08 06 71 - Door Hardware Schedule.

END OF SECTION

SECTION 08 80 00
GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Insulating glass units.

B. Glazing units.

C. Plastic films. GF-1

D. Glazing compounds.

1.02 RELATED REQUIREMENTS

A. Section 07 25 00 - Weather Barriers.

B. Section 07 92 00 - Joint Sealants: Sealants for other than glazing purposes.

C. Section 08 11 13 - Hollow Metal Doors and Frames: Glazed lites in doors and borrowed lites.

D. Section 08 43 13 - Aluminum-Framed Storefronts: Glazing provided as part of storefront assembly.

E. Section 10 28 00 - Toilet Accessories: Mirrors.

1.03 REFERENCE STANDARDS

A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials.

B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test.

C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures.

D. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.

E. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.

F. ASTM C1036 - Standard Specification for Flat Glass.

G. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass.

H. ASTM C1193 - Standard Guide for Use of Joint Sealants.

I. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass.

J. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings.

K. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation.

L. CBC - California Building Code.

M. GANA (GM) - GANA Glazing Manual.

N. GANA (SM) - GANA Sealant Manual.

O. GANA (LGRM) - Laminated Glazing Reference Manual.

P. IGMA TM-3000 - North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial & Residential Use.

Q. NFRC 100 - Procedure for Determining Fenestration Product U-factors.

R. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence.

S. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by each of the affected installers.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data on Insulating Glass Unit and Glazing Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.

C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.

D. Certificate: Certify that products of this section meet or exceed specified requirements.

E. Manufacturer's qualification statement.

F. Installer's qualification statement.

G. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in District's name and registered with manufacturer.

H. Maintenance Materials: Furnish the following for District's use in maintenance of project.

1. See Section 01 60 00 - Product Requirements, for additional provisions.

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with GANA (GM), GANA (SM), GANA (LGRM), and IGMA TM-3000 for glazing installation methods. Maintain one copy on site.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1. Provide certified glass products through ANSI accredited certifications that include plant audits and independent laboratory performance testing.

a. Insulating Glass Certification Council (IGCC).

b. Safety Glazing Certification Council (SGCC).

C. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years documented experience.

1. Provide company, field supervisors, and installers that hold active ANSI accredited certifications in appropriate categories for work specified.

a. North American Contractor Certification (NACC) for glazing contractors.

b. Equivalent independent third-party ANSI accredited certification.

D. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

1.07 MOCK-UPS

A. See Section 01 40 00 - Quality Requirements for additional requirements.

B. Provide mock-up of each type of glazing system including glass and air barrier and vapor retarder seal.

C. Provide on-site glazing mock-up with the specified glazing components.

D. Locate where directed.

E. Mock-ups may not remain as part of the Work.

1.08 FIELD CONDITIONS

A. Do not install glazing when ambient temperature is less than 40 degrees F.

B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.09 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Insulating Glass Units: Provide a five (5) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including providing products to replace failed units.

C. Laminated Glass: Provide a five (5) year manufacturer warranty to include coverage for delamination, including providing products to replace failed units.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Comply with the all applicable codes and ordinances, including California Building Code (CBC), Title 24, Part 2, Chapter 24 as amended and adopted by authorities having jurisdiction, and US Consumer Product Safety Commission Standard 16 CFR 1201 CI and CII.

B. Where safety glass is indicated or required, provide glazing materials that conform to ANSI Z97.1 and CPSC 16 CFR 1201 and are so identified in accordance with CBC Section 2406.3.

C. Glass Identification:

1. Per CBC Section 2403.1, each light shall bear the manufacturer's label designating the type and thickness of glass.

a. When approved by the enforcement agency, labels may be omitted from other than safety glazing materials, provided an affidavit is furnished by the glazing contractor certifying that each light is glazed in accordance with approved plans and specifications.

b. Identification of safety glazing material installed in hazardous locations as defined in Section 2406 of this chapter shall be identified by label which will specify the labeler, whether the manufacturer or installer, and state that safety glazing material has been utilized in such installations.

c. The label shall be legible and visible from the inside of the building after installation and shall specify that label shall not be removed.

d. Tempered glass shall have an etched manufacturer's label.

2.02 MANUFACTURERS

A. Glass Fabricators:

1. Glasswerks Inc.: www.glasswerks.com.
2. GlasPro, Inc.: www.glas-pro.com
3. Standard Bent Glass Corp: www.standardbent.com/#sle.
4. Viracon, Inc: www.viracon.com/#sle.
5. Substitutions: See Section 01 60 00 - Product Requirements.

B. Float Glass Manufacturers:

1. AGC Glass North America, Inc: www.agcglass.com/#sle.
2. Cardinal Glass Industries: www.cardinalcorp.com/#sle.
3. GlasPro, Inc.: www.glas-pro.com
4. Guardian Glass, LLC: www.guardianglass.com/#sle.
5. Pilkington North America Inc: www.pilkington.com/na/#sle.
6. Vitro Architectural Glass (formerly PPG Glass): www.vitroglazings.com/#sle.
7. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.

1. Design Pressure: Calculated in accordance with ASCE 7.
   a. Where glass thicknesses are not indicated, provide thickness based on the wind pressures required by the California Building Code (CBC), Title 24, Part 2, 2403 and 2404, wind pressure shall be assumed to have a one minute duration.
   b. Upon first application of design wind load for the specified durations, probability of breakage shall not exceed 8/1000 for vertical glass.
   c. Probability of breakage relative to glass thermal stress shall not exceed 8/1000 for vertical glass.
2. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
3. Seismic Loads: Design and size glazing components to withstand seismic loads and sway displacement in accordance with the requirements of ASCE 7

4. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
5. Glass thicknesses listed are minimum.

B. Weather-Resistive Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure water-resistive barrier, vapor retarder, and/or air barrier.
1. In conjunction with weather barrier related materials described in other sections, as follows:
a. Water-Resistive Barriers: See Section 07 25 00.
2. To utilize inner pane of multiple pane insulating glass units for continuity of vapor retarder and/or air barrier seal.
3. To maintain a continuous vapor retarder and/or air barrier throughout glazed assembly from glass pane to heel bead of glazing sealant.

C. Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
3. Solar Optical Properties: Comply with NFRC 300 test method.

2.04 GLASS MATERIALS

A. Float Glass: Provide float glass based glazing unless otherwise indicated.
1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality - Q3.
2. Kind HS - Heat-Strengthened Type: Complies with ASTM C1048.
3. Kind FT - Fully Tempered Type: Complies with ASTM C1048.
4. Fully Tempered Safety Glass: Complies with ANSI Z97.1 or 16 CFR 1201 criteria for safety glazing used in hazardous locations.
5. Impact Resistant Safety Glass: Complies with ANSI Z97.1 - Class B, or 16 CFR 1201 - Category I criteria.
6. Thicknesses: As indicated; provide greater thickness as required for exterior glazing wind load design.

2.05 INSULATING GLASS UNITS

A. Manufacturers:
1. Glass: Any of the manufacturers specified for float glass.
2. Fabricator certified by glass manufacturer for type of glass, coating, and treatment involved and capable of providing specified warranty.
3. AGC Glass North America, Inc: www.agcglass.com/#sle.
4. Cardinal Glass Industries: www.cardinalcorp.com/#sle.

5. Glasswerks: glasswerks.com.
6. Pilkington North America Inc: www.pilkington.com/na/#sle.Pilkington North America Inc : www.pilkington.com/na/#sle.
7. Viracon, Apogee Enterprises, Inc: www.viracon.com/#sle.
8. Vitro Architectural Glass (formerly PPG Glass): www.vitroglazings.com/#sle.
9. Substitutions: See Section 01 60 00 - Product Requirements.

B. Fabricator: Certified by glass manufacturer for type of glass, coating, and treatment involved and capable of providing specified warranty.

C. Insulating Glass Units: Types as indicated.
1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
3. Metal-Edge Spacers: Aluminum, bent and soldered corners.
4. Spacer Color: Black.
5. Edge Seal:
   a. Single-Sealed System: Provide silicone, polysulfide, or polyurethane sealant as seal applied around perimeter.
   b. Color: Black.
6. Purge interpane space with dry air, hermetically sealed.
7. Capillary Tubes: Provide tubes from air space for insulating glass units without inert type gas that have a change of altitude greater than 2500 feet between point of fabrication and point of installation to permit pressure equalization of air space.
   a. Inert gas may be installed in the field into air space in accordance with insulating glass fabricator's and installer's requirements.

D. Type GL-1T - Insulating Glass Units: Safety glazing.
1. Applications:
   a. Glazed lites in exterior doors.
   b. Glazed sidelights and panels next to doors.
   c. Other locations required by applicable federal, state, and local codes and regulations.
   d. Other locations indicated on drawings.
2. Space between lites filled with air.
3. Glass Type: Same as Type GL-1 except use fully tempered float glass for both outboard and inboard lites.
4. Total Thickness: 1 inch.
5. Metal edge spacer.
6. Glazing Method: Dry glazing method, gasket glazing.

2.06 BASIS OF DESIGN - INSULATING GLASS UNITS

A. Type GL-1 - Insulating Glass Units: Vision glazing, with low-e coating.

1. Applications: Exterior insulating glass glazing unless otherwise indicated.
2. Space between lites filled with air.
3. Total Thickness: 1 inch.
4. Thermal Transmittance (U-Value), Summer - Center of Glass: 0.28, nominal.
5. Visible Light Transmittance (VLT): 64 percent, nominal.
6. Solar Heat Gain Coefficient (SHGC): 0.27, nominal.
7. Visible Light Reflectance, Outside: 12 percent, nominal.
8. Glazing Method: Dry glazing method, gasket glazing.
9. Durability: Certified by an independent testing agency to comply with ASTM E2190.
10. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
11. Metal Edge Spacers: Aluminum, bent and soldered corners.
12. Spacer Color: Black.
13. Edge Seal:
    a. Single-Sealed System: Provide silicone, polysulfide, or polyurethane sealant as seal applied around perimeter.
    b. Color: Black.
14. Purge interpane space with dry air, hermetically sealed.
15. Basis of Design - Vitro Architectural Glass (formerly PPG Glass): www.vitroglazings.com/#sle.
    a. Outboard Lite: Heat-strengthened float glass, 1/4 inch thick, minimum.
        1) Low-E Coating: Vitro Architectural Glass (formerly PPG Glass) Solarban 60 on #2 surface.
        2) Glass: Clear.
    b. Inboard Lite: Heat-strengthened float glass, 1/4 inch thick.
        1) Coating: No coating on inboard lite.
        2) Glass: Clear.
16. Substitution Procedures: See Section 01 60 00 - Product Requirements.
    a. For any product not identified as "Basis of Design", submit information as specified for substitutions.

2.07 GLAZING UNITS

A. Type GL-2 - Monolithic Interior Vision Glazing:

1. Applications: Interior glazing unless otherwise indicated.
2. Glass Type: Annealed float glass.

3. Tint: Clear.
4. Thickness: 1/4 inch, nominal.
5. Glazing Method: Dry glazing method, gasket glazing.

B. Type GL-2T - Monolithic Safety Glazing: Non-fire-rated.
1. Applications:
a. Glazed lites in doors, except fire doors.
b. Glazed sidelights to doors, except in fire-rated walls and partitions.
c. Other locations required by applicable federal, state, and local codes and regulations.
d. Other locations indicated on drawings.
2. Glass Type: Fully tempered safety glass as specified.
3. Tint: Clear.
4. Thickness: 1/4 inch, nominal.
5. Glazing Method: Dry glazing method, gasket glazing.

2.08 PLASTIC FILMS

A. Type GF-1 - Decorative Plastic Film: Polyester type.
1. Application: Locations as indicated on drawings.
2. Series Type: Specialty.
3. Color: As selected by Architect.
4. Thickness Without Liner: 0.002 inch.
5. Width: 48 inch.
6. Manufacturers:
a. 3M Window Film; Fasara, Frost: www.3m.com/windowfilm.
b. Avery Dennison; Design Window Films: www.averydennison.com/#sle.
c. Flexvue Films: www.flexvuefilms.com.
d. Llumar, an Eastman Chemical Company; Decorative Window Film, Llumar: www.llumar.com/#sle.
e. Madico, Inc: www.madico.com.
f. Solyx Films LLC: www.solyxfilms.
g. Substitutions: See Section 01 60 00 - Product Requirements.

2.09 GLAZING COMPOUNDS

A. Type GC-3 - Polysulfide Sealant: Two component; chemical curing, nonsagging type; ASTM C920 Type M, Grade NS, Class 25, Uses M, A, and G; with cured Shore A hardness range of 15 to 25; color as selected.

B. Type GC-5 - Silicone Sealant: Single component; neutral curing; capable of water immersion without loss of properties; nonbleeding, nonstaining; ASTM C920 Type S, Grade NS, Class 25, Uses M, A, and G; with cured Shore A hardness range of 15 to 25; color as selected.

2.10 ACCESSORIES

A. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot of glazing or minimum 4 inch by width of glazing rabbet space minus 1/16 inch by height to suit glazing method and pane weight and area.

B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Minimum 3 inch long by one half the height of the glazing stop by thickness to suit application, self adhesive on one face.

C. Glazing Tape, Back Bedding Mastic Type: Preformed, butyl-based, 100 percent solids compound with integral resilient spacer rod applicable to application indicated; 5 to 30 cured Shore A durometer hardness; coiled on release paper; black color.

1. Width: As required for application.
2. Thickness: As required for application.

D. Glazing Gaskets: Resilient silicone extruded shape to suit glazing channel retaining slot; ASTM C864 Option II; color black.

2.11 SOURCE QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for additional requirements.

B. Provide shop inspection and testing for Type GL-1 glass.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.

B. Verify that the minimum required face and edge clearances are being provided.

C. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

D. Verify that sealing between joints of glass framing members has been completed effectively.

E. Proceed with glazing system installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.03 INSTALLATION, GENERAL

A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.

B. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.

C. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.

D. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.

E. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.

F. Prevent glass from contact with any contaminating substances that may be the result of construction operations such as, and not limited to the following; weld splatter, fire-safing, plastering, mortar droppings, etc.

3.04 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)

A. Application - Exterior and/or Interior Glazed: Set glazing infills from either the exterior or the interior of the building.

B. Place setting blocks at 1/4 points with edge block no more than 6 inch from corners.

C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure on gasket to attain full contact.

D. Install removable stops without displacing glazing gasket; exert pressure for full continuous contact.

3.05 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for additional requirements.

B. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.

C. Monitor and report installation procedures and unacceptable conditions.

3.06 CLEANING

A. See Section 01 74 19 - Construction Waste Management and Disposal, for additional requirements.

B. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.

C. Remove nonpermanent labels immediately after glazing installation is complete.

D. Clean glass and adjacent surfaces after sealants are fully cured.

E. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.07 PROTECTION

A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

3.08 SCHEDULES

A. Aluminum-Framed Storefront Glazing: Glass Type GL-1, install glass using dry method, and with glass thickness as required to comply with performance requirements indicated in Section 08 43 13.

END OF SECTION

SECTION 09 21 16
GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Performance criteria for gypsum board assemblies.

B. Acoustic insulation.

C. Gypsum sheathing.

D. Cementitious backing board.

E. Gypsum wallboard.

F. Joint treatment and accessories.

1.02 RELATED REQUIREMENTS

A. Section 01 61 16 - Volatile Organic Compound (VOC) Content Restrictions.

B. Section 06 10 00 - Rough Carpentry: Building framing and sheathing.

C. Section 06 10 00 - Rough Carpentry: Wood blocking product and execution requirements.

D. Section 07 21 00 - Thermal Insulation: Acoustic insulation.

E. Section 07 92 00 - Joint Sealants: Sealing acoustical gaps in construction other than gypsum board or plaster work.

1.03 REFERENCE STANDARDS

A. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units.

B. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units.

C. ASTM A780/A780M - Standard Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.

D. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.

E. ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board.

F. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.

G. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

H. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board.

I. ASTM C1047 - Standard Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.

J. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.

K. ASTM C1280 - Standard Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing.

L. ASTM C1325 - Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units.

M. ASTM C1396/C1396M - Standard Specification for Gypsum Board.

N. ASTM C1629/C1629M - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels.

O. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

P. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

Q. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

R. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

S. ASTM E413 - Classification for Rating Sound Insulation.

T. GA-216 - Application and Finishing of Gypsum Panel Products.

U. GA-600 - Fire Resistance Design Manual Sound Control.

V. UL (FRD) - Fire Resistance Directory.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on gypsum board, accessories, and joint finishing system.

1. Joint Treatment Materials: Submit manufacturer's product data, indicating VOC content.

C. Application Procedures: Submit a general written description of procedures to be followed where fire-rated work is being done and where alternative assemblies are proposed.

D. Samples: Submit two samples of gypsum board finished with proposed texture application, 12 by 12 inches in size, illustrating finish color and texture.

E. Installer's Qualification Statement.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing steel stud instalation, gypsum board installation and finishing, with minimum five years of experience.

1. Acceptable: Qualified in SFIA, “Contractor Certification Program”.

B. Regulatory Requirements: Conform to California Building Code (CBC), Title 24, Part 2, Chapter 7, Chapter 8,and Chapter 25, as amended and adopted by authorities having jurisdiction.

C. Fire Resistance Rating:

1. Certain partition constructions gypsum wallboard systems are required to meet fire resistive requirements of ASTM E119 and applicable building Codes.

2. Construction which forms component parts of such assemblies shall be constructed to afford the fire resistance required by Code for the location and condition of construction indicated.
3. See required ratings and designs on Drawings.
4. Construction shall conform to requirements of these tested assemblies.
5. Fire Resistive Gypsum Board: Material shall bear the Underwriters' Laboratories, Inc. (UL) label or label of other testing organization acceptable to the State Fire Marshal.

D. Copies of Documents at Site: Maintain at the project site a copy of each referenced document that prescribes execution requirements.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver gypsum board and accessories in manufacturer's original unopened containers, bundles or rolls bearing manufacturer's identification.

B. Store materials inside the building or in other dry weather tight enclosure. Stack gypsum board flat and off the floor. Do not stack long lengths over shorter lengths.

C. Store flammable adhesives away from fire, sparks and smoking areas.

D. Handle gypsum board to prevent damage to edges, ends, and surfaces.

E. Protect cold-formed metal framing from corrosion deformation, and other damage during delivery, storage and handling as required by AISI's "Code of Standard Practice."

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

A. Provide completed assemblies complying with ASTM C840 and GA-216.
1. See PART 3 for finishing requirements.

B. Interior Partitions, Indicated as Acoustic: Provide completed assemblies with the following characteristics:
1. Acoustic Attenuation: STC as indicated calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

C. Fire-Resistance-Rated Assemblies: Provide completed assemblies complying with applicable code.
1. CBC Chapter 7 Item Numbers: Comply with applicable requirements of CBC Chapter 7 Tables for the particular assembly; as indicated on Drawings.
2. Gypsum Association Generic File Numbers: Comply with requirements of GA-600 for the particular assembly; as indicated on Drawings.
3. UL Assembly Numbers: Provide construction equivalent to that listed for the particular assembly in the current UL (FRD); as indicated on Drawings.

2.02 BOARD MATERIALS

A. General: Gypsum board, joint treatment and finishing materials shall be manufactured from asbestos-free materials.

B. Manufacturers - Gypsum-Based Board:
   1. CertainTeed Corporation: www.certainteed.com/#sle.
   2. Georgia-Pacific Gypsum: www.gpgypsum.com/#sle.
   3. National Gypsum Company: www.nationalgypsum.com/#sle.
   4. PABCO Gypsum: www.pabcogypsum.com/#sle.
   5. USG Corporation: www.usg.com/#sle.
   6. Substitutions: See Section 01 60 00 - Product Requirements.

C. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
      a. Mold-resistant board is required whenever board is being installed before the building is enclosed and conditioned.
      b. Mold resistant board is required at all locations.
   3. At Assemblies Indicated with Fire-Resistance Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
   4. Thickness:
      a. Vertical Surfaces: 5/8 inch.
      b. Ceilings: 5/8 inch.
      c. Multi-Layer Assemblies: Thicknesses as indicated on drawings.
   5. Mold Resistant Paper Faced Products:
      a. CertainTeed Corporation; M2Tech 5/8" Type X Moisture & Mold Resistant Drywall: www.certainteed.com/#sle.
      b. CertainTeed Corporation; ProRoc Brand Moisture & Mold Resistant Gypsum Board.
      c. Georgia-Pacific Gypsum; ToughRock Mold-Guard: www.gpgypsum.com/#sle.
      d. Georgia-Pacific Gypsum; ToughRock Fireguard X Mold-Guard: www.gpgypsum.com/#sle.
      e. National Gypsum Company; Gold Bond XP Gypsum Board: www.nationalgypsum.com/#sle.
      f. PABCO Gypsum; MOLD CURB® PLUS Regular Mold and Moisture- Resistant Gypsum Board: www.pabcogypsum.com/#sle.
      g. PABCO Gypsum; MOLD CURB® PLUS Type X Mold and Moisture- Resistant Gypsum Board: www.pabcogypsum.com/#sle.
      h. USG Corporation; USG Sheetrock Brand EcoSmart Panels Mold Tough Firecode X: www.usg.com/#sle.
      i. USG Corporation; Sheetrock Brand Mold Tough Gypsum Panels.
      j. Substitutions: See Section 01 60 00 - Product Requirements.

D. Abuse Resistant Wallboard:

1. Application: High-traffic areas indicated.
    a. Corridors.
    b. Restrooms.
    c. Storage Rooms.
    d. Areas as indicated on Drawings.
    e. Provide up to 96 inches, minimum.
2. Surface Abrasion: Level 2, minimum, when tested in accordance with ASTM C1629/C1629M.
3. Indentation: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
4. Soft Body Impact: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
5. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
6. Paper-Faced Type: Gypsum wallboard, as defined in ASTM C1396/C1396M.
7. Type: Fire-resistance-rated Type X, UL or WH listed.
8. Thickness: 5/8 inch.
9. Edges: Tapered.
10. Paper-Faced Products:
    a. CertainTeed Corporation; Extreme Abuse Resistant Drywall with M2Tech: www.certainteed.com/#sle.
    b. Georgia-Pacific Gypsum; ToughRock Fireguard X Mold Guard Abuse-Resistant: www.gpgypsum.com/#sle.
    c. National Gypsum Company; Gold Bond Hi-Abuse XP Gypsum Board: www.nationalgypsum.com/#sle.
    d. PABCO Gypsum; ABUSE CURB® Type X Gypsum Board : www.pabcogypsum.com/#sle.
    e. USG Corporation; USG Sheetrock Brand Mold Tough AR Firecode X Panels: www.usg.com/#sle.
    f. Substitutions: See Section 01 60 00 - Product Requirements.

E. Impact Resistant Wallboard:
1. Application: High-traffic areas indicated, typical at sports activity rooms unless noted otherwise.
    a. Provide up to 96 inches, minimum.
2. Surface Abrasion: Level 3, minimum, when tested in accordance with ASTM C1629/C1629M.
3. Indentation: Level 1, minimum, when tested in accordance with ASTM C1629/C1629M.
4. Soft Body Impact: Level 3, minimum, when tested in accordance with ASTM C1629/C1629M.

5. Hard Body Impact: Level 3, minimum, when tested in accordance with ASTM C1629/C1629M.
6. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
7. Type: Fire-resistance-rated Type X, UL or WH listed.
8. Thickness: 5/8 inch.
9. Edges: Tapered.
10. Paper-Faced Products:
    a. CertainTeed Corporation; Extreme Impact Resistant Drywall with M2Tech: www.certainteed.com/#sle.
    b. National Gypsum Company; Gold Bond Hi-Impact XP Gypsum Board: www.nationalgypsum.com/#sle.
    c. PABCO Gypsum; PABCO® Impact Resistant Type X Gypsum Board: www.pabcogypsum.com/#sle.
    d. USG Corporation; USG Sheetrock Brand Mold Tough VHI Firecode X Panels: www.usg.com/#sle.

F. Backing Board For Wet Areas:
1. Application: Surfaces behind tile in wet areas including locations where noted.
2. Application: Horizontal surfaces behind tile in wet areas including countertops.
3. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
4. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C1325.
    a. Thickness: 1/2 inch.
    b. Products:
        1) Custom Building Products; Wonderboard: www.custombuildingproducts.com/#sle.
        2) National Gypsum Company; PermaBase Cement Board: www.nationalgypsum.com/#sle.
        3) USG Corporation; Durock Cement Board Next Gen: www.usg.com.
        4) Substitutions: See Section 01 60 00 - Product Requirements.

G. Backing Board For Non-Wet Areas: Water-resistant gypsum backing board as defined in ASTM C1396/C1396M; sizes to minimum joints in place; ends square cut.
1. Application: Vertical surfaces behind thinset tile, except in wet areas.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
3. At Assemblies Indicated with Fire-Resistance Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
4. Type X Thickness: 5/8 inch.
5. Regular Board Thickness: 5/8 inch.

6. Edges: Tapered.
7. Products:
    a. CertainTeed Corporation; ProRoc Brand Moisture & Mold Resistant Gypsum Board.
    b. Georgia-Pacific Gypsum; ToughRock Mold-Guard Gypsum Board: www.gpgypsum.com/#sle.
    c. Lafarge North America Inc; Mold Defense Drywall.
    d. National Gypsum Company; Gold Bond XP Gypsum Board: www.nationalgypsum.com/#sle.
    e. USG Corporation; Sheetrock Brand Mold Tough Gypsum Panels.
    f. Substitutions: See Section 01 60 00 - Product Requirements.

H. Exterior Sheathing Board: Sizes to minimize joints in place; ends square cut.
1. Application: Exterior sheathing, unless otherwise indicated.
    a. Where plywood sheathing is not indicated.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
3. Glass Mat Faced Sheathing: Glass mat faced gypsum substrate as defined in ASTM C1177/C1177M.
4. Core Type: Regular and Type X, as indicated.
5. Type X Thickness: 5/8 inch.
6. Regular Board Thickness: 5/8 inch.
7. Edges: Square, for vertical application or horizontal.
8. Glass Mat Faced Products:
    a. CertainTeed Corporation; GlasRoc Type X Exterior Sheathing: www.certainteed.com/#sle.
    b. CertainTeed Corporation; GlasRoc Brand.
    c. Georgia-Pacific Gypsum; DensGlass Sheathing: www.gpgypsum.com/#sle.
    d. Georgia-Pacific Gypsum; DensGlass Fireguard Sheathing: www.gpgypsum.com/#sle.
    e. National Gypsum Company; Gold Bond eXP Sheathing: www.nationalgypsum.com/#sle.
    f. USG Corporation: Securock Brand Glass Mat Sheathing.
    g. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 GYPSUM WALLBOARD ACCESSORIES

A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced. Thickness: Fill the stud wall cavity.
1. Application:
    a. Partitions with STC Rating:
        1) Insulation fill at gypsum board partition stud framing.
        2) Surround penetrations in gypsum board partitions.

b. Gypsum board ceilings adjacent to sound-rated partitions.

2. Surface Burning Characteristics as per ASTM E84: Flame Spread of 10; Smoke Developed of 10.

3. Products:

a. Owens-Corning; Sound Attenuation Batts: www.owenscorning.com.

b. CertainTeed; "NoiseReducer" Sound Attenuation Batts: www.certainteed.com.

c. Substitutions: See Section 01 60 00 - Product Requirements.

B. Beads, Joint Accessories, and Other Trim: ASTM C1047, galvanized steel or rolled zinc, unless noted otherwise.

1. Manufacturers - Finishing Accessories:

a. Flannery, Inc.: flannerytrim.com.

b. Fry Reglet: fryreglet.com.

c. Phillips Manufacturing Co: www.phillipsmfg.com.

d. Pittcon Industries: www.pittconinsutries.com

e. Trim-tex, Inc.: www.trim-tex.com.

f. CEMCO Products, Inc; www.cemco.com.

g. USG Corporation: www.usg.com

h. Substitutions: See Section 01 60 00 - Product Requirements.

2. Corner Beads: Low profile, for 90 degree outside corners.

a. Cornerbead: USG Sheetrock B1 XW EL, or equal.

b. L Trim: USG Paper-faced "L" trim, B4 or equal.

3. Architectural Reveal Beads:

a. Shapes: As indicated on drawings.

b. Basis of Design Manufacturer: Fry Reglet: fryreglet.com.

1) Reveal molding: Molding to create a vertical or horizontal recessed reveal.

(a) Acceptable product: Number DRM.

2) "F" reveal molding: Trim reveal molding forming wall trim reveal where drywall terminates against sill, jamb, ceiling or other finish material in same plane.

(a) Acceptable product: Number DRMF.

(b) Dimensions: As indicated on drawings.

(c) Radius: As indicated on drawings.

c. Materials and Finish:

1) Interior Aluminum Surfaces: Extruded; Clear medium etched.

(a) Apply one coat of bituminous paint to concealed aluminum surfaces in contact with cementitious or dissimilar materials.

C. Moisture Guard Trim: ASTM C1047, rigid plastic, 48 inch length, applied to bottom edge of gypsum board.

1. Height: 1/2 inch.
2. Depth: 1/2 inch.
3. Products:
    a. Waterguard USA; Waterguard: www.waterguard-usa.com/#sle.
    b. Substitutions: See Section 01 60 00 - Product Requirements.

D. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
1. Fiberglass Tape: 2 inch wide, coated glass fiber tape for joints and corners, except as otherwise indicated.
2. Joint Compound: Drying type, vinyl-based, ready-mixed.
3. Joint Compound: Setting type, field-mixed.

E. High Build Drywall Surfacer: Vinyl acrylic latex-based coating for spray application, designed to take the place of skim coating and separate paint primer in achieving Level 5 finish.

F. Abuse Resistant Finishes:
1. Acrylic, water-based, non-textured, high build, tintable primer and surfacer.

G. Nails for Attachment to Wood Members: ASTM C514, as required for fire-resistive construction.

H. Staples For Attachment of Base Ply of Two-Ply Assembly to Wood Members: Flattened galvanized wire type as specified in ASTM C840.

I. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

J. Adhesive for Attachment to Wood ASTM C557:

K. Adhesives
1. Do not use adhesive containing benzene, carbon tetrachloride, or trichloroethylene.
    a. Adhesive shall contain a maximum VOC content of 50 grams per liter.
    b. Adhesive must meet the requirements of low emitting materials credit.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

B. Beginning of installation means acceptance of substrate.

C. Coordinate gypsum board Work with Work specified in other Sections to properly locate framing members and to provide additional framing and backing as necessary for recessed and built-in components.
1. Verify that framing and furring are securely attached and of sizes and spacing to provide a suitable substrate to receive gypsum board.
2. Maintain a minimum temperature of 50 degrees F for a period extending from 48 hours before installation until the joint compounds have completely dried.

D. Examine substrates which gypsum board wall construction attaches to or abuts, including the following.
   1. Preset hollow metal frames
   2. Piping.
   3. Conduit.
   4. Ductwork.

E. Provide adequate and continuous ventilation to ensure proper drying, setting or curing of taping and finishing compunds. Provide temporary air circulators in enclosed areas lacking natural ventilation. GA-216, article 18.2.

F. Provide fixtures, anchors, sleeves, inserts and miscellaneous items, and provide openings and chases as necessary. Prior to closing in and finishing of drywall Work, ascertain that piping, conduit, ductwork and fixtures which are to be concealed and which penetrate gypsum boards are in place, tested and approved.

G. Scaffolding: Construct, erect and maintain in conformance with applicable laws and ordinances.

H. Fire Protection: Where required, the Work shall comply with the requirements for the protection rating indicated in the governing building code.

I. Fire Sprinkler System: In areas where sprinkler heads occur, exercise care when installing drywall work. Do not damage or obstruct the heads in any way.

3.02 ACOUSTIC ACCESSORIES INSTALLATION

A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

B. Acoustic Sealant: Install in accordance with manufacturer's instructions.
   1. Place one bead continuously on substrate before installation of perimeter framing members.
   2. Place continuous bead at perimeter of each layer of gypsum board.
   3. Seal around all penetrations by conduit, pipe, ducts, and rough-in boxes, except where firestopping is provided.

C. Acoustic Tape: Place on top of all partition walls that do not project above suspended ceiling assemblies. Adhesive side shall be place on top of the wall.

3.03 BOARD INSTALLATION

A. Regulatory Requirements: Install gypsum board products in accordance with applicable Code requirements and requirements of listed assemblies shown on Drawings.

B. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

C. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
   1. Exception: Tapered edges to receive joint treatment at right angles to framing.

2. In wood frame construction, erect panels horizontally only.

D. Double-Layer, Nonrated: Use gypsum board for first layer, placed parallel to framing or furring members, with ends and edges occurring over firm bearing. Use glass mat faced gypsum board at exterior walls and at other locations as indicated. Place second layer perpendicular to framing or furring members. Offset joints of second layer from joints of first layer.

E. Fire-Resistance-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.

1. Single Layer: Install and fasten gypsum board in accordance with CBC Title 24, Part 2, Table 721.1(2) for steel or wood construction. Install gypsum board vertically, with edges and ends occurring over firm bearing.

2. Double Layer: Install and fasten gypsum board in accordance with CBC Title 24, Part 2, Table 721.1(2). Install base layer horizontally with ends occurring over firm bearing. Install face layer vertically with ends and edges occurring over firm bearing. Stagger joints 24 inches each side and opposite sides. Attach with required screws.

F. Exposed Gypsum Board in Interior Wet Areas: Seal joints, cut edges, and holes with water-resistant sealant.

G. Exterior Sheathing: Comply with ASTM C1280. Install sheathing vertically, with edges butted tight and ends occurring over firm bearing.

1. Seal joints, cut edges, and holes with water-resistant sealant.

H. Cementitious Backing Board: Install over wood framing members and plywood substrate where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.

I. Fastener Spacing: Space fasteners in accordance with reference standards and fire rating requirements of wall, partition, floor and ceiling assembly. Maximum spacing of 1-inch screws 8 inches on centers at vertical edges and 12 inches on centers in field and at top and bottom.

J. Installation on Wood Framing: For rated assemblies, comply with requirements of listing authority.

1. Single-Layer Applications: Adhesive application.

2. Double-Layer Application: Install base layer using screws or nails. Install face layer using adhesive.

3.04 INSTALLATION OF TRIM AND ACCESSORIES

A. Use longest practical lengths. Place corner beads at external corners. Place edge trim when gypsum board abuts dissimilar materials. Surfaces indicated to receive non-textured finish and semi-gloss enamels.

B. Control Joints: Place control joints consistent with lines of building spaces and as indicated.

1. Not more than 30 feet apart on walls and ceilings.

2. Maintain fire and sound rating at control joints.

C. Corner Beads: Install at external corners, using longest practical lengths.

D. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.

E. Moisture Guard Trim: Install on bottom edge of gypsum board according to manufacturer's instructions and in locations indicated on drawings.

3.05 JOINT TREATMENT

A. Glass Mat Faced Gypsum Board and Exterior Glass Mat Faced Sheathing: Use fiberglass joint tape, embed and finish with setting type joint compound.

B. Paper Faced Gypsum Board: Use paper joint tape, embed with drying type joint compound and finish with drying type joint compound.

C. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:

1. Level 5: Walls and ceilings to receive, eggshell, semi-gloss or gloss paint finish and other areas specifically indicated. (Including High-Gloss thin wallcovering.)
2. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
3. Level 3: Walls to receive textured wall finish or heavy textured paint.
4. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
5. Level 1: Fire-resistance-rated wall areas above finished ceilings, whether or not accessible in the completed construction.
6. Level 0: Temporary partitions.

D. Tape, fill, and sand all exposed joints, edges, and corners, including inside corners to produce smooth surface ready to receive finishes.

1. Feather coats of joint compound so that camber is maximum 1/32 inch.
2. Tape shall be set over joint and seated into joint compound, leaving sufficient adhesive under tape to provide proper bond.
3. Internal angles, both horizontal and vertical, shall be reinforced and with tape folded to form straight and true angle.
4. Metal external corners shall be cemented in place.
5. Joints shall be allowed to dry according to Gypsum Association Standards based on temperature and humidity. Allow for at least 24 hours between each application of joint compound.
6. The final application of compound and sanding shall leave all surfaces uniformly smooth and in condition to receive specified finish.
7. Taping, filling, and sanding are not required at surfaces behind adhesive applied tile and fixed cabinetry.
8. Taping, filling, and sanding are not required at base layer of double-layer applications.

E. Where Level 5 finish is indicated, spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.

F. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

3.06 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

3.07 REPAIR, CLEAN-UP AND PROTECTION

A. Repair damage to galvanized coatings in conformance with ASTM A780/A780M.

B. Repair fastener pops by driving a new fastener approximately 1-1/2 inches from the fastener pop and reset the popped fastener. When face paper is punctured, install a new fastener approximately 1-1/2 inches from the defective fastener. Fill damaged surfaces with compound.

C. Upon completion of the work, remove from adjacent surfaces, overspray, splatter and daubs of taping and finish compound and textured finishes. Remove tools, equipment, unused material and cuttings and leave the work in a clean orderly manner.

END OF SECTION

SECTION 09 30 00
TILING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Tile for floor applications. T-1, T-7 G-1.

B. Tile for wall applications. T-2 thru T-6, G-2

C. Cementitious backer board as tile substrate.

D. Thresholds.

E. Ceramic trim.

1.02 RELATED REQUIREMENTS

A. Section 07 92 00 - Joint Sealants: Sealing joints between tile work and adjacent construction and fixtures.

B. Section 09 05 61 - Common Work Results for Flooring Preparation: Concrete slab moisture and alkalinity testing and remediation procedures.

1.03 REFERENCE STANDARDS

A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design.

B. ANSI A108/A118/A136 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium).

C. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar.

D. ANSI A108.1b - American National Standard Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar.

E. ANSI A108.1c - Contractor's Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar.

F. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesive or Water Cleanable Tile-Setting Epoxy Adhesive.

G. ANSI A108.5 - American National Standard Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar.

H. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grout Epoxy.

I. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout.

J. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout.

K. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework.

L. ANSI A108.11 - American National Standard Specifications for Interior Installation of Cementitious Backer Units.

M. ANSI A108.12 - American National Standard for Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar.

N. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone.

O. ANSI A108.19 - American National Standard Specifications for Interior Installation of Gauged Porcelain Tiles and Gauged Porcelain Tile Panels/Slabs by the Thin-Bed Method Bonded with Modified Dry-Set Cement Mortar or Improved Modified Dry-Set Cement Mortar.

P. ANSI A118.3 - American National Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive.

Q. ANSI A118.7 - American National Standard Specifications for High Performance Cement Grouts for Tile Installation.

R. ANSI A118.9 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units.

S. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes For Thin-Set Ceramic Tile And Dimension Stone Installation.

T. ANSI A118.12 - American National Standard Specifications for Crack Isolation Membranes for Thin-Set Ceramic Tile and Dimension Stone Installation.

U. ANSI A136.1 - American National Standard for Organic Adhesives for Installation of Ceramic Tile.

V. ANSI A137.1 - American National Standard Specifications for Ceramic Tile.

W. ANSI/NFSI B101.3 - Test Method for Measuring Wet DCOF of Common Hard Surface Floor Materials.

X. ASTM C373 - Standard Test Methods for Determination of Water Absorption and Associated Properties by Vacuum Method for Pressed Ceramic Tiles and Glass Tiles and Boil Method for Extruded Ceramic Tiles and Non-tile Fired Ceramic Whiteware Products.

Y. ASTM D638 - Standard Test Method for Tensile Properties of Plastics.

Z. BAAQMD 8-51 - Bay Area Air Quality Management District Regulation 8, Rule 51, Adhesive and Sealant Products.

AA. CBC - California Building Code.

BB. CBC Ch. 11B - California Building Code-Chapter 11B.

CC. SCAQMD 1168 - Adhesive and Sealant Applications.

DD. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by affected installers.

1.05 SUBMITTALS

A. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.

B. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, and setting details.

C. Samples: Mount tile and apply grout on two plywood panels, minimum 18 by 18 inches in size illustrating pattern, color variations, and grout joint size variations.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Master Grade Certificate: Submit for each type of tile, signed by the tile manufacturer and tile installer.

1. Prior to shipment of tile to jobsite, deliver Master Grade Certificates to Architect, complying with TCNA/ANSI A137.1.

F. Installer's Qualification Statement:

G. Maintenance Data: Include recommended cleaning methods, cleaning materials, and stain removal methods.

H. Maintenance Materials: Furnish the following for District's use in maintenance of project.

1. Extra Tile: One box, minimum of 24 pieces of each size, color, and surface finish combination.

1.06 QUALITY ASSURANCE

A. Maintain one copy of and ANSI A108/A118/A136 and TCNA (HB) on site.

B. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum five years of documented experience.

C. Installer Qualifications:

1. Company specializing in performing tile installation, with minimum of five years of documented experience.

1.07 MOCK-UP

A. Construct tile mock-up where indicated on drawings, incorporating all components specified for the location.

1. Minimum size of mock-up is indicated on drawings.
2. Approved mock-up may remain as part of the Work.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.09 FIELD CONDITIONS

A. Maintain ambient and substrate temperature above 50 degrees F and below 100 degrees F during installation and curing of setting materials.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Requirements for Persons with Disabilities: Provide ceramic tile flooring meeting slip-resistant requirements of California Code of Regulations (CCR), Title 24, Part 2, CBC Chapter 11B and ADA Standards, latest amendment.

1. Tile flooring surface shall be stable, firm, and slip resistant. CBC Ch. 11B 11B-302.1 General.
2. Tile flooring Surface shall demonstrate a dynamic coefficient of friction of at least 0.42 wet per DCOF AcuTest ANSI A137.1 Section 9.6 and ANSI/NFSI B101.3 (using a BOT-3000 testing unit) will be accepted as meeting the intent of slip resistance; CBC Ch. 11B Floor or Ground Surfaces and ADA Standards.
    a. Ramp surface: Provide wet DCOF value of 0.46.

B. California Plumbing Code:

1. Floor Drains:
    a. Inspection of Work - All surfaces prepared by others shall be inspected by the tile installer before starting tile work and all unsatisfactory conditions reported to the Administrative Authority. Starting tile work by the tile installer shall be considered as acceptance of surfaces prepared by others.
    b. Surfaces - All surfaces to receive tile work shall be clean, structurally sound, and slopes shall to conform to CBC.

    Note: No tile work shall proceed until the pan and drain construction has been inspected and approved by the Administrative Authority, where required.
2. Definition:
    a. Receptor: An approved plumbing fixture or device of such material, shape, and capacity as to adequately receive the discharge from indirect waste pipes, so constructed and located as to be readily cleaned. CPC 220.0

2.02 TILE

A. Manufacturers:

1. American Olean Corporation: www.americanolean.com/#sle.
2. Dal-Tile Corporation: www.daltile.com/#sle.

B. Glazed Wall Tile: ANSI A137.1 standard grade.

1. Moisture Absorption: 7.0 to 20.0 percent as tested in accordance with ASTM C373.
2. Size: As indicated on Drawings, nominal.
3. Edges: Cushioned.
4. Surface Finish: High gloss.
5. Color(s): As indicated on drawings.
6. Trim Units: Matching bead, bullnose, cove, and base shapes in sizes coordinated with field tile.

C. Quarry Tile: ANSI A137.1 standard grade.
   1. Moisture Absorption: Over 3.0 but not more than 5.0 percent as tested in accordance with ASTM C373.
   2. Size: As indicated on Drawings, nominal.
   3. Thickness: 1/2 inch, nominal.
   4. Edges: Cushioned.
   5. Surface Finish: Non-slip.
      a. Dynamic Wet Slip Resistance DCOF AcuTest: 0.42
   6. Color(s): As indicated on drawings.
   7. Trim Units: Matching bullnose, cove, cove base, and window sill or step nosing shapes in sizes coordinated with field tile.

D. Porcelain Tile: ANSI A137.1 standard grade.
   1. Moisture Absorption: 0 to 0.5 percent as tested in accordance with ASTM C373.
   2. Size: as indicated on Drawings, nominal.
   3. Edges: Cushioned.
   4. Surface Finish: Non-slip.
      a. Dynamic Wet Slip Resistance DCOF AcuTest: 0.42
   5. Color(s): To be selected by Architect from manufacturer's standard range.
   6. Trim Units: Matching bullnose, double bullnose, cove base, and cove shapes in sizes coordinated with field tile.

2.03 TRIM AND ACCESSORIES

A. Ceramic Trim: Matching bullnose, double bullnose, cove base, and cove ceramic shapes in sizes coordinated with field tile.
   1. Applications:
      a. Open Edges: Bullnose.
      b. Inside Corners: Jointed.
      c. Floor to Wall Joints: Cove base.
   2. Manufacturers: Same as for tile.

B. Thresholds: 2 inches wide by full width of wall or frame opening; beveled edge on both long edges; without holes, cracks, or open seams.
   1. Thickness: 1/2 inch.
   2. Material: Solid surface acrylic resin, mineral filler, and pigments; non-porous, color and pattern consistent throughout thickness.
      a. Solid Polymer Fabricated: ASTM D638.
      b. Color and Pattern: As indicated on drawings.
      c. Manufacturers:
         1) Formica Corporation Product: Signatures: www.formica.com.

2) Avonite Surfaces Product Avonite: www.avonitesurfaces.com.

3) Dupont Product: Corian: www.corian.com.

4) Panolam Industries International, Inc.(Nevamar); Product Fountainhead: www.nevamar.com.

5) Wilsonart International, Inc Product: Gibralter: www.wilsonart.com.

3. Color and Pattern: As indicated on drawings.

4. Applications:

a. At doorways where tile terminates.

2.04 SETTING MATERIALS

A. Interior adhesives, sealants, primers and sealants used as filler must meet the requirements of low emitting materials. Conform to SCAQMD 1168 and BAAQMD 8-51.

B. Manufacturers:

1. Custom Building Products: www.custombuildingproducts.com/#sle.

2. LATICRETE International, Inc: www.laticrete.com/#sle.

3. Mapei Corporation: www.mapei.com.

4. Merkrete, by Parex USA, Inc: www.merkrete.com/#sle.

C. Epoxy Adhesive and Mortar Bond Coat: ANSI A118.3.

1. Applications: Where indicated on drawings.

2. Products:

a. Custom Building Products; EBM-Lite Epoxy Bonding Mortar: www.custombuildingproducts.com/#sle.

b. LATICRETE International, Inc; LATICRETE LATAPOXY 300 Adhesive: www.laticrete.com/#sle.

c. Merkrete, by Parex USA, Inc; Merkrete Pro Epoxy: www.merkrete.com/#sle.

D. Organic Adhesive: ANSI A136.1, thinset mastic type.

1. Use Type I in areas subject to prolonged moisture exposure.

2. Products:

a. ARDEX Engineered Cements; ARDEX D14: www.ardexamericas.com/#sle.

b. Custom Building Products; ReliaBond Ceramic Tile Adhesive - Type 1: www.custombuildingproducts.com/#sle.

c. LATICRETE International, Inc; LATICRETE 15 Premium Mastic: www.laticrete.com/#sle.

d. MAPEI Corporation; Type 1: www.mapei.com.

e. Merkrete, by Parex USA, Inc; Merkrete Merstik: www.merkrete.com/#sle.

f. Substitutions: See Section 01 60 00 - Product Requirements.

2.05 GROUTS

A. Manufacturers:

1. Basis of Design: Custom Building Products: www.custombuildingproducts.com/#sle.
2. ARDEX Engineered Cements: www.ardexamericas.com/#sle.
3. Bonsal American, Inc; ProSpec Sanded Tile Grout 700: www.prospec.com
4. LATICRETE International, Inc; LATICRETE PERMACOLOR Grout: www.laticrete.com/#sle.
5. MAPEI Corporation: www.mapei.com.
6. Merkrete, by Parex USA, Inc; Merkrete Duracolor Non-Sanded Color Grout: www.merkrete.com/#sle.

B. High Performance Polymer Modified Grout: ANSI A118.7 polymer modified cement grout.

1. Applications: Use this type of grout where indicated on exterior over plaster.
2. Use sanded grout for joints 1/8 inch wide and larger; use unsanded grout for joints less than 1/8 inch wide.
3. Color(s): As selected by Architect from manufacturer's full line.
4. Products:
   a. Basis of Design: Custom Building Products; Fusion Pro Single Component Grout: www.custombuildingproducts.com/#sle.
   b. LATICRETE International, Inc; LATICRETE PERMACOLOR Grout: www.laticrete.com/#sle.
   c. Mapei, Inc.; Keracolor S Grout unsanded: www.mapei.com
   d. Merkrete, by Parex USA, Inc; Merkrete Pro Grout: www.merkrete.com/#sle.
   e. TEC, an H.B. Fuller Construction Products Brand; TEC AccuColor Plus Grout: www.tecspecialty.com/#sle.

C. Epoxy Grout: ANSI A118.3 chemical resistant and water-cleanable epoxy grout.

1. Applications: Toilet room floors.
2. Color(s): As selected by Architect from manufacturer's full line.
3. Products:
   a. Basis of Design: Custom Building Products; CEG-Lite 100% Solids Commercial Epoxy Grout: www.custombuildingproducts.com/#sle.
   b. LATICRETE International, Inc; LATICRETE SPECTRALOCK PRO Premium Grout: www.laticrete.com/#sle.
   c. MAPEI Corporation; Kerapoxy Epoxy Grout: www.mapei.com.
   d. Merkrete, by Parex USA, Inc; Merkrete Pro Epoxy: www.merkrete.com/#sle.
   e. TEC, an H.B. Fuller Construction Products Brand; TEC AccuColor EFX Epoxy Special Effects Grout: www.tecspecialty.com/#sle.

D. Stain Resistant Grout Additive: Liquid admixture for sanded and unsanded cement-based grouts; mix with dry grout material in place of water.

1. Applications: Toilet room floors.

2.06 MAINTENANCE MATERIALS

A. Tile Sealant: Gunnable, silicone, siliconized acrylic, or urethane sealant; moisture and mildew resistant type.
   1. Applications: Between tile and plumbing fixtures.
   2. Color(s): As selected by Architect from manufacturer's full line.
   3. Products:
      a. Custom Building Products; Commercial 100% Silicone Caulk: www.custombuildingproducts.com/#sle.
      b. LATICRETE International, Inc; LATICRETE LATASIL: www.laticrete.com/#sle.
      c. MAPEI Corporation; Mapesil Silicone Sealant: www.mapei.com.
      d. Merkrete, by Parex USA, Inc; Merkrete Colored Caulking: www.merkrete.com/#sle.

B. Grout Sealer: Liquid-applied, moisture and stain protection for existing or new Portland cement grout.
   1. Composition: Water-based colorless silicone.
   2. Products:
      a. Specified Manufacturer: Aqua-Mix: www.custombuildingproducts.com; local representative Dale Roberts (951) 255-0243.
      b. Merkrete, by Parex USA, Inc; Merkrete Grout Sealer: www.merkrete.com/#sle.

C. Tile Sealer: Stain protection for ceramic tile and natural stone tile.
   1. Products:
      a. Custom Building Products; Aqua Mix Enrich 'N' Seal: www.custombuildingproducts.com/#sle.
      b. STONETECH, a division of LATICRETE international, Inc; STONETECH Heavy Duty Stone Sealer: www.laticrete.com/#sle.

D. Grout Release: Temporary, water-soluble pre-grout coating.
   1. Products:
      a. Custom Building Products; Aqua Mix Grout Release: www.custombuildingproducts.com/#sle.

2.07 ACCESSORY MATERIALS

A. Concrete Floor Slab Crack Isolation Membrane: Material complying with ANSI A118.12; not intended as waterproofing.
   1. Crack Resistance: No failure at 1/8 inch gap, minimum.
   2. Fluid or Trowel Applied Type:
      a. Material: Synthetic rubber or Acrylic.
      b. Thickness: 20 mils, maximum.
      c. Products:

1) Custom Building Products; Custom 9240 Waterproofing and Anti-Fracture Membrane: www.custombuildingproducts.com.

2) LATICRETE International, Inc; LATICRETE Blue 92 Anti-Fracture Membrane: www.laticrete.com/#sle.

3) MAPEI Corporation; Mapelastic HPG w/Fiberglass Mesh: www.mapei.com.

4) Merkrete, by Parex USA, Inc; Merkrete Fracture Guard: www.merkrete.com/#sle.

5) TEC, an H.B. Fuller Construction Products Brand; TEC HydraFlex Waterproofing Crack Isolation Membrane: www.tecspecialty.com/#sle.

B. Waterproofing Membrane at Floors: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.

1. Crack Resistance: No failure at 1/16 inch gap, minimum; comply with ANSI A118.12.

2. Fluid or Trowel Applied Type:

a. Material: Synthetic rubber or Acrylic.

b. Thickness: 25 mils, minimum, dry film thickness.

c. Products:

1) Custom Building Products; RedGard Crack Prevention and Waterproofing Membrane: www.custombuildingproducts.com/#sle.

2) H.B. Fuller Construction Products, Inc; TEC HydraFlex Waterproofing Crack Isolation Membrane: www.tecspecialty.com/#sle.

3) LATICRETE International, Inc; LATICRETE HYDRO BAN: www.laticrete.com/#sle.

4) Merkrete, by Parex USA, Inc; Merkrete Hydro Guard 2000: www.merkrete.com/#sle.

C. Membrane at Walls:

1. Material: No. 15 asphalt saturated felt.

D. Backer Board: Cementitious type complying with ANSI A118.9; high density, glass fiber reinforced, 1/2 inch thick; 2 inch wide coated glass fiber tape for joints and corners.

1. Products:

a. Custom Building Products; WonderBoard Lite Backerboard: www.custombuildingproducts.com/#sle.

E. Mesh Tape: 2 inch wide self-adhesive fiberglass mesh tape.

PART 3 EXECUTION

3.01 REGULATORY REQUIREMENTS FOR INSTALLATION

A. California Plumbing Code:

1. Floor Drains:

a. Floors shall be sloped maximum 2% to drains. CPC 411.4.

3.02 EXAMINATION

A. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.

1. Walls and floors to be level, plumb and true to within the listed for each applicable TCNA (HB) assembly method used.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.

C. Verify that subfloor surfaces are dust free and free of substances that could impair bonding of setting materials to subfloor surfaces.

D. Cementitious Subfloor Surfaces: Verify that substrates are ready for tiling installation by testing for moisture and alkalinity (pH).

1. Test in accordance with Section 09 05 61.
2. Obtain instructions if test results are not within limits recommended by tiling material manufacturer and setting material manufacturer.
3. Follow moisture and alkalinity remediation procedures in Section 09 05 61.

E. Verify that required floor-mounted utilities are in correct location.

3.03 PREPARATION

A. Protect surrounding work from damage.

B. Shade work from direct sunlight during tile installation as needed to prevent rapid evaporation caused by excessive heat.

C. Vacuum clean surfaces and damp clean.

D. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.

E. Install backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.

F. Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.

3.04 INSTALLATION - GENERAL

A. Waterproof/Anti-Fracture Membrane Application: Comply with manufacturer's written instructions and recommendations for substrate, tile setting method and Project conditions.

B. Install tile and thresholds and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.19 , manufacturer's instructions, and TCNA (HB) recommendations.

C. Expansion Joints: Provide expansion joints at locations and spacings as recommended by TCNA (HB) Detail EJ171 and as indicated on Drawings. Keep joints free of setting bed mix and grout.

D. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.

E. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.

F. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.

G. Form internal angles square and external angles bullnosed.

H. Install thresholds where indicated.

I. Sound tile after setting. Replace hollow sounding units.

J. Keep control and expansion joints free of mortar, grout, and adhesive.

K. Prior to grouting, allow installation to completely cure; minimum of 48 hours.

L. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.

M. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

3.05 INSTALLATION - FLOORS - THIN-SET METHODS

A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F113, dry-set or latex-Portland cement bond coat, with standard grout, unless otherwise indicated.

1. Where waterproofing membrane is indicated, install in accordance with TCNA (HB) Method F122, with latex-Portland cement grout.

3.06 INSTALLATION - WALL TILE

A. Over cementitious backer units on studs, install in accordance with TCNA (HB) Method W244, using membrane at toilet rooms.

3.07 GROUTING

A. Joint Width: As follows unless indicated otherwise on Drawings.

1. Glazed Wall Tile, Unmounted: As determined by spacing lugs.
2. Glazed Floor Tile, Unmounted: 1/8 inch.
3. Porcelain Floor Tile: 1/4 inch.
4. Mounted Tile: As determined by factory-produced spacing.
5. Trim and Accessories: Match adjoining tile units.

B. Wall Tile Grouting: TCNA/ANSI A108.10, latex-portland cement.

C. Floor Tile Grouting: TCNA/ANSI A108.10, latex-portland cement.

D. Do not begin grouting tiles until they are firmly set and a minimum of 48 hours of curing has occurred.

E. Remove spacers, ropes, glue, and similar foreign matter prior to grouting.

F. When using proprietary grout, comply with manufacturer's instructions and recommendations unless otherwise more stringent requirements are specified.

G. Force maximum amount of approved grout into joints in accordance with pertinent recommendations contained in TCNA/ANSI A108.10.

H. Fill joints of cushion-edge tile to depth of cushion; fill joints of square-edge tile flush with tile surface.

I. Fill all gaps and skips.

J. Do not permit mortar or mounting mesh to show through grouted joints.

K. Provide hard finished grout which is uniform in color, smooth, and without voids, pin holes, or low spots.

L. Leave tile clean.

3.08 TOLERANCES

A. Subsurface Guidelines: Refer to TCNA (HB) for a complete guidelines.

Mortar Bed	1/4 inch: 10 feet
Thin Bed w/ cementitious bonding material w/ Tiles <15"	1/4 inch: 10 feet from plane Maximum 1/16 inch variation in 12 inches from high points.
Thin Bed w/ cementitious bonding material w/ Tiles any side >15"	1/8 inch: 10 feet from plane Maximum 1/16 inch variation in 24 inches from high points.
Thin Bed w/ organic adhesive bonding material w/ Tiles any side >15"	1/16 inch in 3 feet No abrupt irregularities >1/32 inch

B. Lippage Guidelines: Refer to TCNA (HB) for a complete guidelines.

Tile Type	**Tile Size (in.)**	**Joint Width (in.)**	**Allowable Lippage (in.)**
Glazed Wall/ Mosaics	1 x 1 to 6 x 6	1/16 to 1/8	1/32
Quarry	6 x 6 to 8 x 8	1/4 or greater	1/16
Pressed Floor and Porcelain Tiles	All	1/16 to less than 1/4	1/32
Pressed Floor and Porcelain Tiles	All	1/4 or greater	1/16

3.09 JOINT SEALANT

A. Apply sealant after tile is grouted, grout is cured and tile field is thoroughly clean and dry.

B. Seal between tile and all penetrating elements.

C. Seal perimeter of tile field where tile base is not provided.

D. Sealant Locations shall include:

1. Around plumbing penetrations.
2. Around door frames and other items set in wall.

E. Refer to Section 07 92 00 - Joint Sealants for additional requirements.

3.10 GROUT SEALER

A. Clean grout and apply sealer in accordance with manufacturer's instructions and recommendations.

3.11 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Provide manufacturer's field representative to inspect waterproofing.

C. Test shower linings with standing water to the top of the rough threshold for a period of minimum 24 hours. CPC 418.1.

1. A test plug shall be so placed that both the upper and under sides of the lining shall be subjected to test at its point of contact with the sub-drain.
    a. When the test plug is removed, all of the test water shall drain out by gravity through the weep holes.
    b. A ring of non-absorbent material must be placed around the weep holes to keep them open when the finish materials are installed.
2. Verify water level has not changed beyond normal evaporation.
3. Inspect floor below and adjacent surfaces for leaks.

D. Repair or remove and reinstall as required.

E. Repeat until a satisfactory result is achieved.

3.12 CLEANING

A. Clean tile and grout surfaces.

3.13 PROTECTION

A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION

SECTION 10 21 13.19
PLASTIC TOILET COMPARTMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Solid plastic toilet compartments. TP-1

B. Urinal screens.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Blocking and supports.

B. Section 10 28 00 - Toilet Accessories.

1.03 REFERENCE STANDARDS

A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines.

B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design.

C. California Building Code (CBC) chapter 11B, disabled accessibility regulations.

D. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

F. CBC - California Building Code.

G. CBC Ch. 11B - California Building Code-Chapter 11B.

H. NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the work with placement of support framing and anchors in walls and ceilings.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on panel construction, hardware, and accessories.

1. If other than specified manufacturer or specified product, submit catalog data.

C. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall supports, door swings.

1. Show plan and elevation views for each room. Indicate types and thicknesses of materials and assemblies.
2. Attachment details.

D. Samples: Submit two samples of partition panels, 2 by 2 inch in size illustrating panel finish, color, and sheen.

E. Manufacturer's Installation Instructions: Indicate special procedures.

1.06 WARRANTY

A. All components shall have a 15 year limited warranty.

1.07 PACKAGING, DELIVERY, STORAGE AND HANDLING

A. Packaging: Maintain factory packaging and protective coverings.

B. Storage: Store panels to prevent impact and moisture damage.

1.08 PROJECT CONDITIONS

A. Field Measurements: Verify field design and field dimensions before submitting shop drawings and before fabrication.

B. Environmental Conditions: Maintain humidity and temperature in ranges required by manufacturer.

1.09 SEQUENCING AND SCHEDULING

A. Complete tile and painting Work before toilet partition installations.

B. Coordinate dimensions and locations of cut-outs and panel reinforcement with approved toilet accessories.

C. Coordinate backing and blocking provisions in walls.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Code compliance of these systems must be verified prior to use. They may be no longer available and are not yet proven to be compliant with NFPA 286, per CBC Sections **803.1.2**, **803.11**, 2604.2.4.

B. Installation shall meet requirements for the physically disabled of the California Code of Regulations (CCR) Title 24 Part 2 and latest amendments to the Americans with Disabilities Act (ADA Standards) Accessibility Guidelines, 36 CFR 1191.

C. California Building Code (CBC) disabled accessibility regulations.

1. Wheelchair accessible compartment shall comply with CBC Ch. 11B-604.8.1.
2. Toe clearance for at least one side partition of a wheelchair accessible compartment shall comply with CBC Figure 11B-604.8.1.4.
    a. It shall be 9 inches high minimum above the finish floor and 6 inches deep minimum beyond the compartment side face of the partition, exclusive of partition support members.
    b. It shall be 12 inches high minimum above the finish floor for children's use.
    c. Partition components at toe clearances shall be smooth without sharp edges or abrasive surfaces.

d. Toe clearance is not required in a compartment greater than 66 inches wide.

3. Ambulatory accessible compartments shall be provided where there are six or more toilet compartments, or where the combination of of urinals and water closets totals six or more fixtures.
   a. Such compartment shall be provided in the same quantity as wheelchair accessible compartments per CBC Ch. 11B-213.3.1 and shall comply with CBC Ch. 11B-604.8.2.
4. Door and door hardware for accessible compartments shall be self-closing and shall comply with CBC Section 11B-404 except that if the approach is on the latch side of an ambulatory compartment door, clearance between the door side of the compartment and any obstruction shall be 44 inches minimum. CBC Ch. 11B Figure 604.8.2.
5. A door pull complying with CBC Ch. 11B-404.2.7 shall be placed on both sides of the accessible compartment door near the latch.
6. Ambulatory Accessible Toilet Compartment doors shall not swing into the clear floor space or clearance required for any fixture or into the minimum required compartment area. CBC Ch. 11B-604.8.2.2.

2.02 MANUFACTURERS

A. Plastic Toilet Partitions:
   1. Basis of Design Product: Hiny Hiders Partitions as manufactured by Scranton Products, or approved equal.
   2. Scranton Products; Hiny Hiders Partitions: www.scrantonproducts.com/#sle.
   3. Substitutions: Section 01 60 00 - Product Requirements.

2.03 PLASTIC TOILET COMPARTMENTS

A. Toilet Compartments: Factory fabricated doors, pilasters, and divider panels made of solid molded high density polyethylene (HDPE), tested in accordance with NFPA 286, floor-mounted headrail-braced.
   1. Color: Single color as selected.
B. Flame Spread Rating (ASTM E84):
   1. Class B flame spread 26-75 and smoke developed of 0-450.
C. Doors:
   1. Thickness: 1 inch.
   2. Width: 24 inch.
   3. Width for Accessible Use: 36 inch, out-swinging.
   4. Comply with CBC Section 11B-604.8.1.2.
   5. Height: 55 inch.
D. Panels:
   1. Thickness: 1 inch.
   2. Height: 55 inch.
   3. Depth: As indicated on drawings.

E. Pilasters:
   1. Thickness: 1 inch.
   2. Width: As required to fit space; minimum 3 inch.

F. Screens: Without doors; to match compartments; mounted to wall with continuous panel brackets .
   1. Urinal Screens: Wall mounted with continuous panel brackets.
      a. Height: 42 inches, mounted 14 inches above floor
      b. Depth: 24 inches.

2.04 FABRICATION

A. Reinforce panels indicated to receive toilet paper holders or grab bars for mounting of the items required.

2.05 ACCESSORIES

A. Do not furnish chrome plated, non-ferrous cast alloy material for hinges, brackets, locks, latches and all fittings and accessories.

B. Pilaster Shoes: Formed ASTM A666, Type 304 stainless steel with satin finish, 4 inch high, concealing floor fastenings.
   1. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster.
      a. Provide 3/8 inch threaded rod, spring washer and locking nut attached to 4 inch expansion anchors embedded in the concrete floor
   2. Size: Manufacturer's standard size.
   3. Fit over tops of pilasters and at headrail brackets with one way sex bolts.

C. Wall and Pilaster Brackets: Stainless steel; continuous type.

D. Attachments, Screws, and Bolts: Stainless steel , tamper proof type.
   1. For attaching panels and pilasters to brackets: Through-bolts and nuts ; tamper proof.

E. Hinges: Stainless steel, manufacturer's standard finish.
   1. Continuous-type hinge, self closing.

F. Door Hardware: Stainless steel, manufacturer's standard finish.
   1. Door Latch: Slide type with exterior emergency access feature.
      a. Configuration: Surface mounted and through bolted to door with one way sex bolts
      b. Material: Cast stainless steel.
      c. SS Door Latch Basis of Design Product: ADA Slide Bolt Latch & Keeper SS, Manufacturer part # 6049, 1002927 as manufactured by Bobrick, or approved equal.
   2. Door Strike and Keeper with Rubber Bumper: Mount on pilaster in alignment with door latch.
      a. Configuration: Wrap around flange surface mounted and through bolted to pilaster with one way sex bolts

b. Material: Cast stainless steel.

c. Strikes: 6 inches long.

d. Door bumper to accommodate projection of all door hardware and toilet accessories.

e. Inswing Keeper Basis of Design Product: Hiny Hider Aluminum 6" Inswing Strike And Keeper For 1" Post as manufactured by Scranton Products, or approved equal.

f. Outswing Keeper Basis of Design Product: Hiny Hider Aluminum 6" Outswing Keeper Bumper For 1" as manufactured by Scranton Products, or approved equal.

3. Provide ADA compliant door pull for swinging doors.

a. Surface mounted U-shaped or wire pulls on both sides of accessible compartment doors.

b. Chrome Plated Double Door Pull 5-1/2", for 1 inch thick doors.

c. Overall width is 6-3/4 inches with 5-7/8 inch hole spacing.

d. Basis of Design Product: Double Door Pull 5-1/2" Stainless Steel part # 610112 as manufactured by Hadrian, or approved equal.

G. Coat Hook: One per compartment, mounted on door.

1. Mount such that no portion is over 47 inches above finish floor.

H. Fasteners, General:

1. Concrete Anchors: Stainless steel expansion or self-threading, as specified in Section 05 50 00 - Metal Fabrications. Lead expansion shields are not acceptable.

2. Fasteners:

a. Provide stainless steel, vandal resistant fasteners throughout, one-way upset head.

b. Molly-type fasteners, chrome plated zamac, toggle bolts and other hollow wall anchors are not acceptable.

c. See general requirements for fasteners specified in Section 05 50 00 - Metal Fabrications.

3. Concealed Fasteners: Galvanized steel or stainless steel.

4. Exposed Fasteners: Stainless steel.

5. Panel-to-Panel Fasteners: Use thru-bolted attachments at panels, doors and pilasters with sex nut bolts through clamp flanges.

6. Metal Framing Anchors: Use self-tapping metal screws through wall finish into metal framing or backing sheets.

PART 3 EXECUTION

3.01 PREPARATION

A. Examination: Prior to application of gypsum board tile backing or other wall finishes, inspect framing at toilet compartments and urinal screens and ensure that necessary and proper backing is provided in wall for anchoring of panels.

3.02 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify correct spacing of and between plumbing fixtures.

C. Verify correct location of built-in framing, anchorage, and bracing.

3.03 INSTALLATION

A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions.

B. Maintain 3/8 inch to 1/2 inch space between wall and panels and between wall and end pilasters.

C. Attach panel brackets securely to walls using anchor devices.

1. Use fasteners as shown on reviewed shop drawings.
    a. Where fasteners to substrate are not indicated, provide fasteners as specified in Section 050519 - Post-Installed Concrete Anchors.
2. Secure divider panels to built-in anchorage devices using concealed fasteners. Level, plumb and tighten installation with devices provided.
3. Anchors to Concrete:
    a. Use stainless steel expansion anchors, or self-threading concrete anchors.
    b. Power-driven fasteners or lead expansion shields are not acceptable.
4. Anchors to Plaster or Gypsum Wallboard (with and without tile finish):
    a. Use sheet metal screws to metal framing or backing, wood screws to wood framing or backing.
    b. Molly-type fasteners are not acceptable.
5. Panel-to-Wall Installation:
    a. Provide clearances of not more than 1 inch between panels and walls.
    b. Secure panels to walls with continuous brackets so that holes for wall anchorage occur in masonry or tile joints.
    c. Secure panels in position with manufacturer's recommended anchoring devices.

D. Attach panels and pilasters to brackets. Locate head rail joints at pilaster center lines.

1. Provide clearances of not more than 1/2 inch between pilasters and panels.
2. Secure panels to pilasters with continuous brackets located to align with continuous brackets at wall.

E. Floor Anchors: Set pilaster units with anchorage as specified herein. Level, plumb, and tighten installation for durable installation.

F. Field touch-up of scratches or damaged finish are not permitted. Replace damaged or scratched materials with new materials.

3.04 TOLERANCES

A. Alignment Tolerance: Plus or minus 1/16 inch, in any direction.

B. Maximum Variation From True Position: 1/4 inch, except at required dimensions at accessible spaces.

C. Maximum Variation From Plumb: 1/8 inch.

3.05 ADJUSTING

A. Operation: Doors shall operate smoothly and evenly.

B. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch.

1. Hang doors and adjust so that tops of doors are parallel with overhead brace when doors are in closed position.

C. Adjust hinges to position doors in partial opening position when unlatched. Return out-swinging doors to closed position.

1. Adjust doors to remain open at approximately 30 degrees.

D. Adjust adjacent components for consistency of line or plane.

E. Field Operation and Alignment Check: Demonstrate compliance with specified tolerance and operation requirements.

1. Should check reveal misalignment, improper operation or inadequate anchorage, realign, adjust and re-anchor the entire installation to Architect's satisfaction.

2. Replace deformed, marred, damaged or dented parts at no change in Contract Time or Sum.

3.06 CLEANING

A. Cleaning After Installation: Clean exposed surfaces of panel systems using materials and methods recommended by manufacturer.

B. Protection: Provide protection as necessary to prevent damage during remainder of construction period.

C. Final Cleaning: Clean partitions to dust-free condition prior to Final Acceptance.

END OF SECTION

SECTION 10 28 00
TOILET ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Commercial toilet accessories.

B. Under-lavatory pipe supply covers.

C. Electric hand/hair dryers.

D. Utility room accessories.

1.02 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Concealed supports, included in wall framing and plates.

B. Section 10 21 13.19 - Plastic Toilet Compartments.

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design.

B. ASME A112.18.9 - Protectors/Insulators for Exposed Waste and Supplies on Accessible Fixtures.

C. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

D. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

E. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.

F. ASTM C1036 - Standard Specification for Flat Glass.

G. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass.

H. ASTM C1503 - Standard Specification for Silvered Flat Glass Mirror.

I. ASTM C1822 - Standard Specification for Insulating Covers on Accessible Lavatory Piping.

J. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

K. ASTM G21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the work with the placement of internal wall reinforcement, concealed ceiling supports, and reinforcement of toilet partitions to receive anchor attachments.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.

C. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

D. Maintenance Materials: Furnish the following for District's use in maintenance of project:

1. See Section 01 60 00 - Product Requirements, for additional provisions.
2. Tools: One each of every special tool required for maintenance of fasteners and operable parts.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Provide toilet accessories meeting the requirements for the physically disabled of the California Building Code (CBC), Title 24 Part 2, and 2010 ADA Standards, as amended.

B. Accessible requirements:

1. Elements of sanitary facilities shall be mounted at locations in compliance with CBC Sections 11B-602 through 11B-612.
2. Grab bars in toilet facilities and bathing facilities shall comply with CBC Section 11B-609.
    a. Grab bars and any wall or other surfaces adjacent to grab bars shall be free of sharp or abrasive elements and shall have rounded edges.
    b. The space around the grab bars shall be as follows:
        1) 1-1/2 inches between the grab bar and the wall. CBC Section 11B-609.3.
        2) 1-1/2 inches minimum between the grab bar and projecting objects below and at the ends.
        3) 12 inches minimum between the grab bar and projecting objects above.
3. Toilet accessories required to be accessible shall be mounted with highest operable part at maximum 40 inches above the finish floor. CBC Section 11B-603.5.
4. The grab bar shall not project more than 3 inches into the 48 inches minimum clear space required required in front of the water closet. CBC 11B-609.3.
5. Toilet tissue dispensers are to be continuous flow type. CBC Section 11B-604.7.
6. All other accessories shall not project more than 4 inches from wall surface, but cannot encroach into any required clear space.

2.02 MANUFACTURERS

A. Commercial Toilet, Shower, and Bath Accessories:

1. ASI - American Specialties, Inc: www.americanspecialties.com.
2. Bobrick Washroom Equipment, Inc.: www.bobrick.com.
3. Bradley Corporation: www.bradleycorp.com.
4. Gamco: www.gamcousa.com.
5. Georgia-Pacific Professional: www.blue-connect.com.

6. Substitutions: Section 01 60 00 - Product Requirements.

B. Provide products of each category type by single manufacturer.

2.03 MATERIALS

A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.

1. Grind welded joints smooth.
2. Fabricate units made of metal sheet of seamless sheets with flat surfaces.

B. Stainless Steel Sheet: ASTM A666, Type 304.

C. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.

D. Mirror Glass: Annealed float glass, ASTM C1036 Type I, Class 1, Quality Q2, with silvering, protective and physical characteristics complying with ASTM C1503.

E. Mirror Glass: Tempered safety glass, ASTM C1048; and ASTM C1036 Type I, Class 1, Quality Q2, with silvering as required.

F. Adhesive: Two component epoxy type, waterproof.

G. Fasteners, Screws, and Bolts: Stainless steel except where fully concealed may be hot dip galvanized; tamper-proof; security type.

H. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.04 FINISHES

A. Stainless Steel: Satin finish, unless otherwise noted.

B. Chrome/Nickel Plating: ASTM B456, SC 2, polished finish, unless otherwise noted.

2.05 COMMERCIAL TOILET ACCESSORIES

A. Toilet Paper Dispenser: Double roll, semi-recessed, stainless steel unit with pivot hinge.

1. Basis of Design Product: B-3888 as manufactured by Bobrick Washroom Equipment, Inc., or approved equal.

B. Toilet Paper Dispenser: Folded tissue type, stainless steel unit, hinged at bottom, surface-mounted , tumbler lock.

1. Capacity: 1330 single-fold tissues, minimum.
2. Basis of Design Product: B-272 as manufactured by Bobrick Washroom Equipment, Inc., or approved equal.

C. Soap Dispenser: Liquid soap dispenser, wall-mounted, surface, with stainless steel cover and horizontal stainless steel tank and working parts; push type soap valve, check valve, and window gage refill indicator.

1. Minimum Capacity: 40 ounces.
2. Basis of Design Product: B-2111 as manufactured by Bobrick Washroom Equipment, Inc., or approved equal.

D. Mirrors: Stainless steel framed, 1/4 inch thick tempered safety glass; ASTM C1048.
   1. Size: 18 by 30 inches.
   2. Frame: 0.05 inchangle shapes, with mitered and welded and ground corners, and tamperproof hanging system; satin finish.
   3. Backing: Full-mirror sized, minimum 0.03 inch galvanized steel sheet and nonabsorptive filler material.
   4. Basis of Design Product: B-2908.1830 as manufactured by Bobrick Washroom Equipment, Inc., or approved equal.

E. Mirrors: Stainless steel framed, 1/4 inch thick annealed float glass; ASTM C1036.
   1. Annealed Float Glass: Silvering, protective and physical characteristics in compliance with ASTM C1503.
   2. Size: 18 by 30 inches.
   3. Frame: 0.05 inchangle shapes, with mitered and welded and ground corners, and tamperproof hanging system; satin finish.
   4. Backing: Full-mirror sized, minimum 0.03 inch galvanized steel sheet and nonabsorptive filler material.
   5. Basis of Design Product: B-165.1830 as manufactured by Bobrick Washroom Equipment, Inc., or approved equal.

F. Seat Cover Dispenser: Stainless steel, surface-mounted, reloading by concealed opening at base.
   1. Minimum capacity: 250 seat covers.
   2. Basis of Design Product: B-221 as manufactured by Bobrick Washroom Equipment, Inc., or approved equal.

G. Seat Cover Dispenser: Stainless steel, recessed, reloading by hinged front panel, tumbler lock.
   1. Minimum capacity: 250 seat covers.
   2. Basis of Design Product: B-301 as manufactured by Bobrick Washroom Equipment, Inc., or approved equal.

H. Grab Bars: Stainless steel, smooth surface.
   1. Standard Duty Grab Bars:
      a. Push/Pull Point Load: 250 pound-force, minimum.
      b. Dimensions: 1-1/2 inch outside diameter, minimum 0.05 inch wall thickness, concealed flange mounting, 1-1/2 inch clearance between wall and inside of grab bar.
      c. Length and Configuration: As indicated on drawings.
         1) Minimum Length for Side Wall of Water Closet: 48 inches.
         2) Minimum Length for Rear Wall of Water Closet: 42 inches.
      d. Basis of Design Product at Student Restrooms: Snap Flange B-6806 Series as manufactured by Bobrick Washroom Equipment, Inc., or approved equal.

I. Clothes Hook and Bumper: Satin stainless steel clothes hook.

1. Mounting: Concealed wall plate.
2. Basis of Design Product: B-2116 as manufactured by Bobrick Washroom Equipment, Inc., or approved equal.

J. Sanitary Napkin Disposal Unit: Stainless steel, surface-mounted, self-closing door, locking bottom panel with full-length stainless steel piano-type hinge, removable receptacle.

1. Basis of Design Product: B-270 Contura Series as manufactured by Bobrick Washroom Equipment, Inc., or approved equal.

2.06 UNDER-LAVATORY PIPE AND SUPPLY COVERS

A. Under-Lavatory Pipe and Supply Covers:

1. Insulate exposed drainage piping, including hot, cold, and tempered water supplies under lavatories or sinks to comply with ADA Standards.
2. Exterior Surfaces: Smooth non-absorbent, non-abrasive surfaces.
3. Construction: 1/8 inch flexible PVC.
    a. Surface Burning Characteristics: Flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
    b. Comply with ASTM C1822, type indicated.
    c. Comply with ASME A112.18.9.
    d. Microbial and Fungal Resistance: Comply with ASTM G21.
4. Color: White.
5. Fasteners: Reusable, snap-locking fasteners with no sharp or abrasive external surfaces.
6. Products:
    a. Bobrick Washroom Equipment, Inc.; www.bobrick.com.
    b. Bradley Corporation : www.bradleycorp.com.
    c. IPS Corporation Lav Guard 2 Undersink Pipe Covers: www.ipscorp.com.
    d. IPS Corporation TrueBro Lav Shield: www.ipscorp.com.
    e. Plumberex Specialty Products, Inc; Plumberex Pro-Extreme: www.plumberex.com/#sle.
    f. Substitutions: See Section 01 60 00 - Product Requirements.

2.07 ELECTRIC HAND/HAIR DRYERS

A. Electric Hand Dryers: Traditional fan-in-case type, with downward fixed nozzle.

1. Operation: Pushbutton on, timer off.
2. Mounting: Semi-recessed.
3. Cover: Stainless steel with polished finish.
    a. Tamper-resistant screw attachment of cover to mounting plate.
4. Supply Voltage: 120 V, single phase, 60 Hz, nominal.
5. Warranty: 3 years.

6. Basis of Design Product: DXRA5-Q973 Hand Dryer, recessed as manufactured by World Dryer, or approved equal.

2.08 UTILITY ROOM ACCESSORIES

A. Mop and Broom Holder: 0.05 inch thick stainless steel, Type 304, hat-shaped channel.

1. Holders: Three spring-loaded rubber cam holders.
2. Length: 36 inches.
3. Basis of Design Product: B-223 as manufactured by Bobrick Washroom Equipment, Inc., or approved equal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify exact location of accessories for installation.

C. Before covering wall framing with gypsum board, examine framing to ensure that backing plates and grab bar mounting kits have been installed behind surface mounted accessories in such positions as to receive all attachment screws.

D. Verify that pipes, vents, conduits and other construction features do not protrude into rough wall opening space required for recessed accessories.

E. For electrically-operated accessories, verify that electrical power connections are ready and in the correct locations.

F. Verify that field measurements are as indicated on drawings.

G. See Section 06 10 00 for installation of blocking, reinforcing plates, and concealed anchors in walls and ceilings.

3.02 PREPARATION

A. Deliver inserts and rough-in frames to site for timely installation.

B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION

A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.

1. Exception: Install surface mounted accessories other than grab bars with screws, molly or toggle bolts only to studs or through backing plates attached directly to studs.
2. At combination units placed behind a grab bar set the perimeter trim tight against the backing board.
    a. Face of this unit shall not project beyond the tile or applied finish face. Maintain the required 1-1/2 inch clearance.
    b. Coordinate surrounding finish trim with bullnose tile, radius, or sloped profile trim.

B. Install plumb and level, securely and rigidly anchored to substrate.

C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.

1. Grab Bars: As indicated on drawings.
    a. Adult mounting height to be between minimum 33 inches to maximum 36 inches to top tangent point. CBC 11B-609.4 Position of Grab Bars.
2. Mirrors: 40 inch maximum , measured to bottom of mirrored surface.
3. Seat Cover Dispenser:
    a. Shall not be located closer than 1-1/2 inches clear of the tangent point of the grab bar.
    b. If surface mounted and located under the grab bar provide a minimum 5 inches clear under unit for refilling.
4. Clothes Bumper/Coat Hook: 40 to 48 inches. CBC 11B-603.4 Coat hooks, shelves and medicine cabinets
5. Other Accessories: As indicated on drawings.

3.04 ADJUSTING AND CLEANING

A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.

B. Clean and polish all exposed surfaces in strict accordance with manufacturer's recommendations after removing temporary labels and protective coatings.

3.05 PROTECTION

A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION

SECTION 22 05 23

GENERAL-DUTY VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Bronze ball valves.
2. Bronze swing check valves.
3. Lubricated plug valves.

B. Related Sections:

1. Section 22 05 53 "Identification for Plumbing Piping and Equipment" for valve tags and schedules.
2. Section 22 11 16 "Domestic Water Piping" for valves applicable only to this piping.
3. Section 22 13 19 "Sanitary Waste Piping Specialties" for valves applicable only to this piping.

1.03 DEFINITIONS

A. CWP: Cold working pressure.

B. EPDM: Ethylene propylene copolymer rubber.

C. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.

D. NRS: Nonrising stem.

E. OS&Y: Outside screw and yoke.

F. RS: Rising stem.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of valve indicated.

1.05 QUALITY ASSURANCE

A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.

B. ASME Compliance:

1. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
2. ASME B31.1 for power piping valves.
3. ASME B31.9 for building services piping valves.

C. NSF Compliance: NSF 61 for valve materials for potable-water service.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Prepare valves for shipping as follows:

1. Protect internal parts against rust and corrosion.
2. Protect threads, flange faces, grooves, and weld ends.
3. Set angle, and globe valves closed to prevent rattling.
4. Set ball and plug valves open to minimize exposure of functional surfaces.
5. Block check valves in either closed or open position.

B. Use the following precautions during storage:

1. Maintain valve end protection.
2. Store valves indoors and maintain at higher than ambient dew point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

C. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS FOR VALVES

A. Refer to valve schedule articles for applications of valves.

B. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

C. Valve Sizes: Same as upstream piping unless otherwise indicated.

D. Valve Actuator Types:

1. Handlever: For quarter-turn valves NPS 6 (DN 150) and smaller except plug valves.
2. Wrench: For plug valves with square heads. Furnish Owner with 1 wrench for every 5 plug valves, for each size square plug-valve head.

E. Valves in Insulated Piping: With 2-inch (50-mm) stem extensions and the following features:

1. Ball Valves: With extended operating handle of non-thermal-conductive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation.

F. Valve-End Connections:

1. Flanged: With flanges according to ASME B16.1 for iron valves.
2. Grooved: With grooves according to AWWA C606.
3. Threaded: With threads according to ASME B1.20.1.

G. Valve Bypass and Drain Connections: MSS SP-45.

2.02 BRONZE BALL VALVES

A. Three-Piece, Full-Port, Bronze Ball Valves with Stainless-Steel Trim:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Conbraco Industries, Inc.; Apollo Valves.

b. Hammond Valve.

c. Milwaukee Valve Company.

d. NIBCO INC.

2. Description:

a. Standard: MSS SP-110.

b. SWP Rating: 150 psig (1035 kPa).

c. CWP Rating: 600 psig (4140 kPa).

d. Body Design: Three piece.

e. Body Material: Bronze.

f. Ends: Threaded.

g. Seats: PTFE or TFE.

h. Stem: Stainless steel.

i. Ball: Stainless steel, vented.

j. Port: Full.

2.03 BRONZE SWING CHECK VALVES

A. Class 150, Bronze Swing Check Valves with Nonmetallic Disc:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Milwaukee Valve Company.

b. NIBCO INC.

c. Watts Regulator Co.; a division of Watts Water Technologies, Inc.

2. Description:

a. Standard: MSS SP-80, Type 4.

b. CWP Rating: 300 psig (2070 kPa).

c. Body Design: Horizontal flow.

d. Body Material: ASTM B 62, bronze.

e. Ends: Threaded.

f. Disc: PTFE or TFE.

2.04 LUBRICATED PLUG VALVES

A. Class 125, Cylindrical, Lubricated Plug Valves with Threaded Ends:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Homestead Valve; a division of Olson Technologies, Inc.

b. Milliken Valve Company.

c. R & M Energy Systems; a unit of Robbins & Myers, Inc.

2. Description:

a. Standard: MSS SP-78, Type IV.

b. CWP Rating: 200 psig (1380 kPa).

c. Body Material: ASTM A 48/A 48M or ASTM A 126, cast iron with lubrication-sealing system.

d. Pattern: Regular or short.

e. Plug: Cast iron or bronze with sealant groove.

B. Class 125, Cylindrical, Lubricated Plug Valves with Flanged Ends:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Homestead Valve; a division of Olson Technologies, Inc.

b. Milliken Valve Company.

c. R & M Energy Systems; a unit of Robbins & Myers, Inc.

2. Description:

a. Standard: MSS SP-78, Type IV.

b. CWP Rating: 200 psig (1380 kPa).

c. Body Material: ASTM A 48/A 48M or ASTM A 126, cast iron with lubrication-sealing system.

d. Pattern: Regular or short.

e. Plug: Cast iron or bronze with sealant groove.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.

B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.

C. Examine threads on valve and mating pipe for form and cleanliness.

D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.

E. Do not attempt to repair defective valves; replace with new valves.

3.02 VALVE INSTALLATION

A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.

B. Locate valves for easy access and provide separate support where necessary.

C. Install valves in horizontal piping with stem at or above center of pipe.

D. Install valves in position to allow full stem movement.

E. Install check valves for proper direction of flow and as follows:

1. Swing Check Valves: In horizontal position with hinge pin level.

2. Plate-Type Check Valves: In horizontal or vertical position, between flanges.
3. Lift Check Valves: With stem upright and plumb.

3.03 ADJUSTING

A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

3.04 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

A. If valve applications are not indicated, use the following:
1. Shutoff Service: Ball, valves.
2. Throttling Service: Globe or ball valves.
3. Pump-Discharge Check Valves:
a. NPS 2 (DN 50) and Smaller: Bronze swing check valves with disc.
b. NPS 2-1/2 (DN 65) and Larger for Domestic Water: Bronze swing check valve with bronze disc.
c. NPS 2-1/2 (DN 65) and Larger for Sanitary Waste and Storm Drainage: Bronze swing check valve with bronze disc.

B. If valves with specified SWP classes or CWP ratings are not available, the same types of valves with higher SWP classes or CWP ratings may be substituted.

C. Select valves, except wafer types, with the following end connections:
1. For Copper Tubing, NPS 2 (DN 50) and Smaller: Threaded ends except where solder-joint valve-end option is indicated in valve schedules below.
2. For Copper Tubing, NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Flanged ends except where threaded valve-end option is indicated in valve schedules below.
3. For Copper Tubing, NPS 5 (DN 125) and Larger: Flanged ends.

3.05 LOW-PRESSURE, COMPRESSED-AIR VALVE SCHEDULE (150 PSIG (1035 kPa) OR LESS)

A. Pipe NPS 2 (DN 50) and Smaller:
1. Bronze Valves: May be provided with solder-joint ends instead of threaded ends.
2. Ball Valves: Three piece, full port, bronze with stainless-steel trim.
3. Bronze Lift Check Valves: Class 125, bronze disc.
4. Bronze Swing Check Valves: Class 125, bronze disc.

END OF SECTION

SECTION 23 00 10

MECHANICAL GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Work includes, but is not limited to, the following:

1. Labor, material, equipment and transportation to complete the Work as shown on the drawings, specified herein and/or implied thereby.
2. A requirement of the plumbing sections shall be to provide make-up water and drain final connections to systems and equipment.
3. It is the intent of the project that the installation be coordinated to provide a complete and usable facility.

B. Work not included in this division:

1. Painting, except as hereinafter specified. See Division 9 for painting.
2. Electrical, except for controls hereinafter specified. See Division 26 for electrical.

C. Related Sections include the following:

1. Division 1 Section 019100 “General Commissioning Requirements.”
2. Division 23 Section 230980 “Mechanical Commissioning.”
3. Division 23 Section 230050 “Basic Mechanical Materials and Methods.”

1.02 DEFINITIONS

A. Unless otherwise specified, "all clarification from," "field direction by," "submittals to," "approved by," "processed by," "permission from," and like mentioned herein shall mean from/by/to Architect.

B. "Provide" means furnish and install referenced item with all appurtenances.

C. "Shall" indicates a mandatory requirement.

D. "Air conditioning" is defined as the treatment and/or handling of any air to any degree by the systems shown on the drawings and herein specified and is not restricted to refrigerated cooling.

1.03 DELIVERY AND STORAGE OF MATERIALS

A. Provide for the safety and good condition of all materials and equipment until final acceptance by the Owner. Protect all materials and equipment from damage from any cause whatever, and provide adequate and proper storage facilities during the progress of the work. Replace all damaged and defective work, material or equipment prior to filing application for final acceptance. Properly protect all openings to equipment, piping, ductwork, accessories, etc. from dirt, dust, and debris prior to and during installation of the work. Ductwork stored at the jobsite shall be covered to protect from dirt, dust, debris, fire proofing, etc.

1.04 CODES AND STANDARDS

A. Work and materials shall be in full accordance with the latest rules and regulations of the Local Fire Marshal; the National Electric Code (NEC); the California Plumbing Code; California Administrative Code, Title 24, (CAL/OSHA); Local Building Codes; the California Mechanical Code; Vol. II of the Uniform Building Code; Volume I and II of the California Building Code; SMACNA "Guidelines for Seismic Restraints of Mechanical Systems"; and other applicable codes, laws or regulations of bodies lawfully empowered and having jurisdiction over this project. Nothing in the plans or specifications shall be construed to permit work not conforming to these codes. When codes conflict with one another, provide larger, higher or more restrictive standards without additional costs.

1.05 PERMITS

A. Obtain all permits, patent rights, and licenses that are required for the performing of this work by all laws, ordinances, rules and regulations, or orders of any officer and/or body. Provide all notices necessary in connection therewith, and pay all fees relating thereto and all costs and expenses incurred on account thereof. No work shall be covered before inspection by the jurisdictional authorities and observation by the Architect or the owner's designated representatives.

1.06 EXPLANATION AND PRECEDENCE OF DRAWINGS

A. Drawings and specifications are intended to be read together so that any work mentioned in one and not the other shall be executed the same as if mentioned in both.

B. For purposes of clearness and legibility, drawings are essentially diagrammatic. The size and location of equipment is drawn to scale wherever possible. Contractor shall make use of data in the contract documents and shall verify this information at the building site.

C. Where the contract specifications and/or drawings are in conflict, obtain clarification of such during bidding. Where addenda for clarification of such is not timely, base the bid on the higher standards or more restrictive requirements; prior to fabrication, obtain written clarification.

D. The drawings indicate required size and points of termination of pipes, and suggest proper routes to conform to structure, avoid obstructions and preserve clearances. It is not intended that drawings indicate necessary offsets. The Contractor shall make the installation in such a manner as to conform to the structure, avoid obstructions, preserve headroom and keep openings and passageways clear, without further instructions or costs to the Owner.

E. It is intended that apparatus be located symmetrical with architectural elements. Refer to architectural details in completing the correlating work.

F. The Contractor shall study drawings and specifications including, and not limited to, architectural, structural, mechanical, plumbing, fire protection, and electrical to determine conflict with ordinances and statutes. Errors or omissions shall be reported in writing, and changes shall be included in the as-built drawings and the additional work performed at no cost to the Owner.

G. Submittal of bid shall indicate the Contractor has examined the site and drawings and has included required allowances in his bid. No allowance shall be made for any error resulting from Contractor's failure to visit job site and to review drawings and specifications. Bid shall include costs for required drawings and changes as outline above, all at no cost to owner.

1.07 RECORD DRAWINGS

A. In addition for requirements for shop drawings specified elsewhere, provide and maintain on the job one complete set of blue line prints of the record drawings for all the mechanical and plumbing work. Carefully record on this set of prints, work including piping, valves, etc., which is installed differently from that indicated in the specifications and on the drawings; locate dimensionally from fixed points. The depth shall be indicated for all plugged wyes, tees and capped lines.

B. These record drawings shall be continuously kept up-to-date, and shall be available for inspection at all times. Existing lines discovered shall be indicated on these drawings.

C. At completion of work, provide a neat and legible reproducible set of these up-to-date record drawings which shall be individually signed and dated by the Contractor and the job inspector as to their accuracy.

D. Record drawings shall be submitted for acceptance and approval to the Architect and Mechanical Engineer before final certificate of acceptance will be issued.

E. Record drawings shall show the exact location of all control sensor devices.

1.08 CUTTING AND PATCHING

A. Perform all cutting and fitting required for work of this section in rough construction of the building. Obtain permission of the Structural Engineer prior to cutting any structural building elements.

B. All patching of finished construction of building shall be performed under the sections of specifications covering these materials by the trades at no additional cost to the Owner.

C. All cutting of concrete work by Contractor shall be by core drilling or concrete saw. No cutting or coring shall be done without first obtaining the permission of the Architect and Owner.

D. All patching of existing surfaces shall match existing material and finish.

1.09 DAMAGE BY LEAKS

A. Contractor shall be responsible for damage to the grounds, walks, roads, buildings, finishes, surfaces, materials, equipment, piping systems, electrical systems and their equipment and contents, caused by leaks in the piping systems being installed or having been installed herein. He shall repair at his expense all damage so caused. All repair work shall be done as directed by the Architect and Owner.

1.10 EMERGENCY REPAIRS

A. The Owner reserves the right to make emergency repairs as required to keep equipment in operation without voiding the Contractor's guarantee bond nor relieving the Contractor of his responsibilities.

1.11 LOCATIONS

A. Coordinate in advance of the work, requirements for openings, equipment maintenance clearances, recesses and chases in the walls, partitions, equipment housekeeping pads, framing or openings. Should furnishing this information be neglected, delayed or incorrect and additional cutting is found to be required, the cost of same shall be borne by the Contractor. Nothing in this paragraph shall be construed to relieve the Contractor of the responsibility for providing and paying for the required core drilling and openings in existing work.

B. Diagrammatic Indications on Drawings are:

1. Approximate only.
2. At various locations shown distorted for clarity.

C. Exact Locations Shall:

1. Be as required for proper installation in available space.
2. Avoid interference with architectural, electrical and structural features.
3. Be coordinated with the work of other trades toward the general purpose of having the work progress rapidly and smoothly with a minimum interference between one trade and another.
4. Preserve headroom and keep openings and passageways clear.
5. Have a neat arrangement symmetrical to the building lines, light and tile pattern.
6. Be reasonably accessible for hung ceiling areas for maintenance from the floor below. Equipment, valves, and other items requiring maintenance, adjustment and/or observation shall be accessible.

1.12 SUPPORTS, EQUIPMENT PADS, STAGING, ETC.

A. Construction supports required for the proper installation of equipment shall be in accordance with the drawings, manufacturer's requirements, seismic requirements, and applicable codes. Check architectural and structural drawings for equipment pads by others. Provide staging, scaffolds, platforms, ladders or similar facilities required to properly install the work.

1.13 INTERRUPTION OF UTILITIES

A. The Contractor shall schedule and coordinate all interruptions of utilities with the Architect and Owner within 30 days after award of contract. The Contractor shall submit to the Owner a schedule of proposed interruptions. At least 72 hours prior to the interruption, the contractor shall submit a request indicating the proposed date and duration of interruption, the work to be accomplished, the areas which will be affected and a proposed contingency plan to be followed in the event that normal service or facilities cannot be restored on schedule. Do not commence work until the time, date, and contingency have been approved in writing by the Architect and Owner.

B. Provide any labor and materials necessary to restore services on a contingency basis should normal service or facilities not be restored on schedule.

C. Preparatory work associated with each interruption shall be performed during normal work hours. The actual interruption required for tie-in shall be performed between 8 P.M. and 5 A.M. Maximum shutdown during this period of any system shall be 4 hours.

1.14 SUBSTITUTIONS

A. If substitutions of controls or equipment requires any changes in the architectural, structural, mechanical, plumbing or electrical work from that shown on the drawings(including all environmental characteristics), the extra cost of the equipment or architectural, structural, mechanical, plumbing or electrical work shall be responsibility of the Contractor requesting the substitution. All substitutions shall be approved by the Architect before purchase by the contractor.

B. If the Contractor proposes substitutions of any equipment specified herein or on the drawings, it shall be the Contractor's responsibility to obtain approval from the Architect for such equipment as well as approval for anchorage of such equipment from the Architect, Structural Engineer, and governing approval agencies (Department of the State Architects - DSA),. All costs required for such approval shall be the responsibility of the Contractor requesting the substitution.

1.15 PREPARATION OF SUBMITTALS

A. Refer to 01 30 00 Administrative Requirements In addition to these requirements provide the requirements specified herein.

B. Prior to commencement of work and in accordance with the General Requirements, submit for review six copies of proposed equipment and material submittals. The Contractor shall verify the delivery dates are compatible with the specified construction schedule; and verify the equipment is sized to accommodate the conditions specified. Submittals shall include manufacturer's names and model numbers and shall comply with specifications and drawings. The Contractor shall bear the cost of changes necessary to accommodate substitutions if substitution is approved.

C. Provide formal submittal to Architect. Review of the formal submittal is only for general conformance with design concept of project and general compliance with the information given in the contract documents. The Contractor is responsible for confirmation and correlation of the dimensions, quantities and sizes, for information that pertains to fabrication methods or construction techniques, and for coordination of work of all trades. Deviations from Drawings and Specifications shall be clearly and completely indicated (by a separate letter) in the formal submittals. Reviewed Submittals shall not relieve the Contractor of responsibility for errors or deviations.

1. Where specific model numbers and/or manufacturers are specified or shown, it is the intent of the contract documents to procure the specified item(s). Alternate equipment may not be used unless data is submitted for consideration as a substitution in accordance with General Requirements and this section.

2. Model numbers used may not indicate all features or options required for this specific installation. Modify the specified models to comply with the requirements, as specified or shown.

3. Product Data for Proposed Substitutions:

    a. Submit copies of complete data, with drawings and samples as appropriate, including:

        1) Comparison of the qualities of the proposed substitution with that specified.

        2) Changes required in other elements of the work because of the substitution.

        3) Affect on construction schedule.

        4) Cost data comparing the proposed substitution with the product specified.

        5) Availability of maintenance service and source of replacement materials.

        6) Reference to three (3) projects similar to this where such equipment is installed and operating to two (2) or more years.

b. Acceptance of substitutions is entirely at the discretion of the Architect.

D. Formal submittals shall be complete with catalog data and information properly marked to indicate equality of material (where substitution is allowed and desired), adequacy in capacity and performance to meet minimum capacities or performance as specified or indicated. Arrange the submittals in the same sequence as these Specifications and indicate the Section and Paragraph number (in the upper right-hand side with tabs) for which each submittal is intended. Incomplete submittals shall be rejected.

E. Do not fabricate order or deliver materials or equipment until formal submittals have been approved. Where material or equipment is used without such permission, it is deemed that the material or equipment shall be in complete compliance with drawings and specifications, without additional cost where such compliance is lacking and may be required to be altered in the field.

F. Submittals shall be bound and shall include, at a minimum, the following:

1. Complete bill of materials listing equipment furnished.
2. Catalog cut sheets of every component being provided (highlighted).
3. Provide completed blue-line shop drawings of the packaged equipment detailing all field connection points.
4. Dimensions, clearance requirements, weights, and capacities.
5. Wiring diagrams showing control interface as applicable.
6. Warranty sheets.
7. Pressure drops as applicable.

G. Contractor shall incur all costs for time spent by Engineer for review of more than two submittals on each item. Costs shall be based on Engineer's hourly billing rate schedule at the time of review. Rate schedule available upon request. Engineer shall invoice the contractor upon completion of review and shall be paid by the contractor within 30 days of date of invoice. Failure to remit will withdraw approval (if any) of submittals in question.

1.16 SHOP DRAWINGS:

A. Proceed with preparation of shop drawings immediately upon receiving an authorization to proceed for the project. Shop drawings shall be originally prepared by the contractor. Provide minimum 1/4" scale shop drawings in electronic format. Submit a complete set in one package prior to material fabrication, order and installation.

B. Include:

1. Duct and pipe elevations and sizes.
2. Double line ductwork and piping (4” and larger).
3. Actual size of purchased equipment from certified shop drawings.
4. Access panels including ceiling panels.
5. Access clearances for equipment.
6. Actual locations of ceiling diffusers/ supply registers ad return registers.
7. Actual locations of manual volume dampers.
8. Locations of structural penetrations such as beams.

9. Actual location of control panels and power connections to equipment.
10. Color coded duct and piping based on material used.
11. Label and tag schedule for equipment.
12. Duct transitions to clear beams or tight areas.
13. Room temperature sensor locations.
14. Point of connection to utilities outside the building.
15. Sections or 3-dimensional drawings of congested areas.
16. Gridlines.
17. Duct and piping supports on roof.

C. Coordinate with other trades in preparation of shop drawings.

D. Submit a copy of coordinated shop drawings to General Contractor for distribution to other trades, including electrical and fire sprinkler contractor.

E. Submit to commissioning agent for approval to assure design intent is met.

F. Prior to fabrication and upon receiving approval from commissioning agent, submit a complete set of shop drawings at one time to the mechanical engineer.

1.17 ELECTRICAL REQUIREMENTS

A. Coordinate the following items with Division 26:

1. Power wiring
2. Power Supply Voltage Requirements
3. Safety switches
4. Combination controllers
5. Disconnect switches
6. Motor starters
7. Circuit breakers
8. Motor-control equipment forming part of motor control centers or switchgear assemblies
9. Electrical connections of the mechanical equipment to the electrical power source shall be coordinated with and provided under Division 26.

1.18 MOTORS

A. Before order is placed for electrical devices, the Contractor shall check with the Electrical contractor and verify requirements as to type, mounting and current characteristics as well as to any special delivery instructions. Motors provided under Division 23 shall be minimum of 10% normal rating above brake horsepower (BHP) rating of equipment driven.

1.19 TESTS

A. Contractor shall make tests required by legally constituted authorities and as listed below.

1. Tests shall be made in the presence of the Owner or his representative and a duly authorized inspector. The Owner or his representative shall be notified 5 days before tests are made.

2. Concealed work and insulated work shall remain uncovered until required testing has been performed and approved by the Owner. If work to be tested is covered before the approval of the Owner or his authorized representative has been obtained, it shall be uncovered for testing at the Contractor's expense.

3. Obtain required documents of certification indicating approval, acceptance and compliance with the requirements of all administrative authorities having jurisdiction over the work. No final payment shall be made until all such certificates are delivered to the Owner.

4. Furnish labor, materials, instruments and bear other costs in connection with all tests.

5. Piping systems, except as hereinafter noted, shall be given hydrostatic (with water) test of a least 150% of the maximum operating pressure but no less than 150 psig.

6. Before making test, remove or valve off from the system, gauges, traps, and other apparatus or equipment which may be damaged by test pressure.

7. Install a calibrated test pressure gauge in the system to observe any loss in pressure. Maintain the required test pressure for a sufficient length of time to enable an inspection to be made of all joints and connections. Perform tests after installation and prior to acceptance.

8. Final pressures at the end of the test period shall be no more or less than that caused by expansion or contraction of the test medium due to temperature changes.

9. After tests have been made and leaks repaired, clean and flush systems as hereinafter specified. Water piping shall be left under supply main pressure for the balance of the construction period.

10. Tests for mechanical, plumbing, and fire protection systems are specified within their own section. Equipment and ductwork system tests are specified in the test and balance section.

11. Provide necessary provisions and tests for maintaining the operational condition and cleanliness of existing systems.

1.20 LABOR AND MATERIALS

A. Labor shall be carefully skilled for this kind of work, and under the direction of a competent foreman.

B. Materials shall be new, in perfect condition and of domestic manufacturer. Materials for similar uses to be of same type and manufacturer.

C. Equipment shall bear the manufacturer's label showing performance characteristics. Identifying size number shall be given only when it is not practicable or customary to show performance characteristics.

D. Valves, pipe, fittings, etc., shall bear the manufacturer's name or trademark.

E. Unless otherwise specified herein, equipment and fixtures shall be installed in accordance with the manufacturer's recommendations, including recommended service and removal clearances.

1.21 PROTECTION AND CLEAN-UP

A. Protection: Provide for the safety and good condition of materials and equipment until final acceptance of the Architect. Protect materials and equipment from dirt, dust, debris, and

damage from any cause whatever, and provide adequate and proper storage facilities during the progress of the work and replace all damaged and defective material, equipment or work precedent to filing application for final acceptance.

B. Cleaning:

1. Unless a more stringent requirement is specified, thoroughly clean all parts of the piping, ductwork, fixtures, apparatus and equipment. All parts shall be thoroughly cleaned of dirt, dust, debris, cement, plaster and other materials, and all grease and oil spots removed. Such surfaces shall be carefully wiped and all cracks and corners scraped out. Clean all systems, including piping and ductwork prior to test.

2. Exposed rough metal work shall be carefully brushed down with steel brushes to remove rust and other spots and left in clean condition to receive painter's finish. Where factory prime coat has been damaged, this Contractor shall be responsible for restoration of same.

1.22 ACCESS PANELS

A. Access Doors and Panels:

1. Wherever volume dampers, fire dampers, smoke fire dampers, controls, valves or other items or parts of the installation which require periodic inspection or adjustments are concealed by permanent non-removable construction, an access door shall be provided. Rating of access panel shall be determined by rating of wall or ceiling in which panel is installed. Types to be as approved and as appropriate for the surface and construction in which it is installed. Verify all locations with Architect and other trades.

2. Access doors and panels shall be of sufficient size and shall be located properly to assure service to the intended item.

3. Refer to Section 08 31 00 Access Doors and Panels.

1.23 MAINTENANCE, OPERATION INSTRUCTION

A. General: Thoroughly instruct the Owner's operators in every detail of operation of the system. Provide the Owner with a list of all equipment, giving the manufacturer's name, model number, serial number, parts list and complete internal wiring diagrams. All directions for operation furnished by the manufacturer shall be carefully saved and turned over to the Owner, together with written sequence of operation, operating and maintenance instructions for each system and its equipment. Instruction shall consist of a minimum of four 8-hour periods over consecutive days and shall be 30% classroom and 70% at site location. Coordinate scheduling of instruction times with Owner's operators.

B. Specific Data: Submit four complete sets of the following data to the Owner for approval and commissioning agent for review prior to acceptance of the installation, complete and at one time; (partial or separate data will not be accepted) data shall consist of the following:

1. Valve Directory: Indicating valve number, location, function and normal operating position for each.

2. Color code schedule.

3. Equipment: List of name plates, including name plate data.

4. Manufacturer's Literature: Copies of manufacturer's instructions for operation and maintenance of all mechanical equipment, including replacement parts lists and

drawings. Mark or highlight brochure literature indicating the models, sizes, capacities, curve operating points, etc., in a manner to clearly indicate the equipment installed. Remove all pages or sheets from the bulletin and catalogs that do not pertain to equipment installed on the project.

5. Written Instructions: Typewritten instructions for operation and maintenance of the system composed of OPERATING INSTRUCTIONS, MAINTENANCE INSTRUCTIONS and a MAINTENANCE SCHEDULE.

   a. OPERATING INSTRUCTIONS shall contain a brief description of the system. Adjustments requiring the technical knowledge of the service agency personnel shall not be included in the operating instructions. The fact such adjustments are required, however, shall be noted.

   b. MAINTENANCE INSTRUCTIONS shall list each item of equipment requiring inspection, lubrication or service and describe the performance of such maintenance.

   c. MAINTENANCE SCHEDULE shall list each item of equipment requiring maintenance, shall show the exact type of maintenance on every component of each item of equipment, and shall show when each item of equipment should be inspected or services.

6. Instructions: Operating personnel shall be instructed in the operation of the system in accordance with typewritten, approved instructions.

C. Binders: Provide complete sets of the above data in loose-leaf ring-type binders with permanent covers, with identification on front and on spine.

1.24 SPECIAL REQUIREMENTS

A. During the guarantee period and as directed by the Owner, make any additional tests, adjustment, etc., that may be required and correct any defects or deficiencies arising from operation of the systems. Operational tests shall be made during both heating and cooling seasons and on all systems.

B. Completion:

1. The entire mechanical system shall be commissioned in accordance with ASHRAE Guideline 1-1996 and the requirements of this specification. A final commissioning report shall be approved by the Owner, Architect, and Mechanical Engineer prior to final acceptance of the work.

2. When the installation is complete and adjustments specified herein have been made, the system, shall be operated for a period of one week, during which time it shall be demonstrated to the Owner or his representative as being completed and operating in conformance with these specifications. The Contractor shall schedule all work so that this time period, which is to confirm a "bug-free" system, will occur before the total project is accepted for substantial completion by Owner.

3. The work hereunder shall not be reviewed for final acceptance until operating and maintenance data, manufacturer's literature, valve directories, piping identification code directory, and nameplates specified herein have been approved and properly posted in the building.

1.25 WARRANTY/GUARANTEE

A. The contractor shall warranty/guarantee that materials, apparatus, and equipment furnished and installed under the mechanical division of these specifications shall be new and free from all defects. Should any defects develop, within one year (unless a longer period is listed in other sections of the specifications) from the date of final acceptance by the owner or from the date of certificate of substantial completion, whichever is earlier, due to inferior or faulty materials and/or workmanship, the trouble shall be corrected by this Contractor without expense to the Owner. Any defective materials or inferior workmanship noticed at the time of installation or during the guarantee period shall be corrected immediately to the entire satisfaction of the Owner.

B. The work shall be installed of such materials and in such a manner that:

1. The operation of all parts of the system shall be noiseless to the extent that no objectionable sound of operation will be heard outside of the rooms enclosing the apparatus or equipment.
2. Apparatus or equipment shall operate in accordance with detailed specifications covering each item.
3. Contractor shall, at his own expense, make any adjustments or changes required to produce a condition of quietness satisfactory to the Engineer or his representative. Such adjustments or changes shall not reduce the performance or quantities called for on the drawings.
4. Contractor shall guarantee that his installation of all materials and equipment will meet the performance requirements of these specifications and that all equipment will deliver the specified or required capacities.
5. The Owner reserves the right to make temporary or emergency repairs as necessary to keep equipment in operating condition without voiding the guarantee contained herein nor relieving the Contractor of his responsibilities during the guarantee period.
6. Contractor shall be responsible for all damage to any part of the premises caused by leaks or break in pipe lines, fixtures or equipment furnished and installed under his contract for a period of one year after date of acceptance of the project by Owner. He shall replace in kind, at his own expense, any and all items so damaged to the complete satisfaction of the Owner.

END OF SECTION

SECTION 23 00 10

MECHANICAL GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Work includes, but is not limited to, the following:

1. Labor, material, equipment and transportation to complete the Work as shown on the drawings, specified herein and/or implied thereby.
2. A requirement of the plumbing sections shall be to provide make-up water and drain final connections to systems and equipment.
3. It is the intent of the project that the installation be coordinated to provide a complete and usable facility.

B. Work not included in this division:

1. Painting, except as hereinafter specified. See Division 9 for painting.
2. Electrical, except for controls hereinafter specified. See Division 26 for electrical.

C. Related Sections include the following:

1. Division 1 Section 019100 “General Commissioning Requirements.”
2. Division 23 Section 230980 “Mechanical Commissioning.”
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1.02 DEFINITIONS

A. Unless otherwise specified, "all clarification from," "field direction by," "submittals to," "approved by," "processed by," "permission from," and like mentioned herein shall mean from/by/to Architect.

B. "Provide" means furnish and install referenced item with all appurtenances.

C. "Shall" indicates a mandatory requirement.

D. "Air conditioning" is defined as the treatment and/or handling of any air to any degree by the systems shown on the drawings and herein specified and is not restricted to refrigerated cooling.

1.03 DELIVERY AND STORAGE OF MATERIALS

A. Provide for the safety and good condition of all materials and equipment until final acceptance by the Owner. Protect all materials and equipment from damage from any cause whatever, and provide adequate and proper storage facilities during the progress of the work. Replace all damaged and defective work, material or equipment prior to filing application for final acceptance. Properly protect all openings to equipment, piping, ductwork, accessories, etc. from dirt, dust, and debris prior to and during installation of the work. Ductwork stored at the jobsite shall be covered to protect from dirt, dust, debris, fire proofing, etc.

1.04 CODES AND STANDARDS

A. Work and materials shall be in full accordance with the latest rules and regulations of the Local Fire Marshal; the National Electric Code (NEC); the California Plumbing Code; California Administrative Code, Title 24, (CAL/OSHA); Local Building Codes; the California Mechanical Code; Vol. II of the Uniform Building Code; Volume I and II of the California Building Code; SMACNA "Guidelines for Seismic Restraints of Mechanical Systems"; and other applicable codes, laws or regulations of bodies lawfully empowered and having jurisdiction over this project. Nothing in the plans or specifications shall be construed to permit work not conforming to these codes. When codes conflict with one another, provide larger, higher or more restrictive standards without additional costs.

1.05 PERMITS

A. Obtain all permits, patent rights, and licenses that are required for the performing of this work by all laws, ordinances, rules and regulations, or orders of any officer and/or body. Provide all notices necessary in connection therewith, and pay all fees relating thereto and all costs and expenses incurred on account thereof. No work shall be covered before inspection by the jurisdictional authorities and observation by the Architect or the owner's designated representatives.

1.06 EXPLANATION AND PRECEDENCE OF DRAWINGS

A. Drawings and specifications are intended to be read together so that any work mentioned in one and not the other shall be executed the same as if mentioned in both.

B. For purposes of clearness and legibility, drawings are essentially diagrammatic. The size and location of equipment is drawn to scale wherever possible. Contractor shall make use of data in the contract documents and shall verify this information at the building site.

C. Where the contract specifications and/or drawings are in conflict, obtain clarification of such during bidding. Where addenda for clarification of such is not timely, base the bid on the higher standards or more restrictive requirements; prior to fabrication, obtain written clarification.

D. The drawings indicate required size and points of termination of pipes, and suggest proper routes to conform to structure, avoid obstructions and preserve clearances. It is not intended that drawings indicate necessary offsets. The Contractor shall make the installation in such a manner as to conform to the structure, avoid obstructions, preserve headroom and keep openings and passageways clear, without further instructions or costs to the Owner.

E. It is intended that apparatus be located symmetrical with architectural elements. Refer to architectural details in completing the correlating work.

F. The Contractor shall study drawings and specifications including, and not limited to, architectural, structural, mechanical, plumbing, fire protection, and electrical to determine conflict with ordinances and statutes. Errors or omissions shall be reported in writing, and changes shall be included in the as-built drawings and the additional work performed at no cost to the Owner.

G. Submittal of bid shall indicate the Contractor has examined the site and drawings and has included required allowances in his bid. No allowance shall be made for any error resulting from Contractor's failure to visit job site and to review drawings and specifications. Bid shall include costs for required drawings and changes as outline above, all at no cost to owner.

1.07 RECORD DRAWINGS

A. In addition for requirements for shop drawings specified elsewhere, provide and maintain on the job one complete set of blue line prints of the record drawings for all the mechanical and plumbing work. Carefully record on this set of prints, work including piping, valves, etc., which is installed differently from that indicated in the specifications and on the drawings; locate dimensionally from fixed points. The depth shall be indicated for all plugged wyes, tees and capped lines.

B. These record drawings shall be continuously kept up-to-date, and shall be available for inspection at all times. Existing lines discovered shall be indicated on these drawings.

C. At completion of work, provide a neat and legible reproducible set of these up-to-date record drawings which shall be individually signed and dated by the Contractor and the job inspector as to their accuracy.

D. Record drawings shall be submitted for acceptance and approval to the Architect and Mechanical Engineer before final certificate of acceptance will be issued.

E. Record drawings shall show the exact location of all control sensor devices.

1.08 CUTTING AND PATCHING

A. Perform all cutting and fitting required for work of this section in rough construction of the building. Obtain permission of the Structural Engineer prior to cutting any structural building elements.

B. All patching of finished construction of building shall be performed under the sections of specifications covering these materials by the trades at no additional cost to the Owner.

C. All cutting of concrete work by Contractor shall be by core drilling or concrete saw. No cutting or coring shall be done without first obtaining the permission of the Architect and Owner.

D. All patching of existing surfaces shall match existing material and finish.

1.09 DAMAGE BY LEAKS

A. Contractor shall be responsible for damage to the grounds, walks, roads, buildings, finishes, surfaces, materials, equipment, piping systems, electrical systems and their equipment and contents, caused by leaks in the piping systems being installed or having been installed herein. He shall repair at his expense all damage so caused. All repair work shall be done as directed by the Architect and Owner.

1.10 EMERGENCY REPAIRS

A. The Owner reserves the right to make emergency repairs as required to keep equipment in operation without voiding the Contractor's guarantee bond nor relieving the Contractor of his responsibilities.

1.11 LOCATIONS

A. Coordinate in advance of the work, requirements for openings, equipment maintenance clearances, recesses and chases in the walls, partitions, equipment housekeeping pads, framing or openings. Should furnishing this information be neglected, delayed or incorrect and additional cutting is found to be required, the cost of same shall be borne by the Contractor. Nothing in this paragraph shall be construed to relieve the Contractor of the responsibility for providing and paying for the required core drilling and openings in existing work.

B. Diagrammatic Indications on Drawings are:

1. Approximate only.
2. At various locations shown distorted for clarity.

C. Exact Locations Shall:

1. Be as required for proper installation in available space.
2. Avoid interference with architectural, electrical and structural features.
3. Be coordinated with the work of other trades toward the general purpose of having the work progress rapidly and smoothly with a minimum interference between one trade and another.
4. Preserve headroom and keep openings and passageways clear.
5. Have a neat arrangement symmetrical to the building lines, light and tile pattern.
6. Be reasonably accessible for hung ceiling areas for maintenance from the floor below. Equipment, valves, and other items requiring maintenance, adjustment and/or observation shall be accessible.

1.12 SUPPORTS, EQUIPMENT PADS, STAGING, ETC.

A. Construction supports required for the proper installation of equipment shall be in accordance with the drawings, manufacturer's requirements, seismic requirements, and applicable codes. Check architectural and structural drawings for equipment pads by others. Provide staging, scaffolds, platforms, ladders or similar facilities required to properly install the work.

1.13 INTERRUPTION OF UTILITIES

A. The Contractor shall schedule and coordinate all interruptions of utilities with the Architect and Owner within 30 days after award of contract. The Contractor shall submit to the Owner a schedule of proposed interruptions. At least 72 hours prior to the interruption, the contractor shall submit a request indicating the proposed date and duration of interruption, the work to be accomplished, the areas which will be affected and a proposed contingency plan to be followed in the event that normal service or facilities cannot be restored on schedule. Do not commence work until the time, date, and contingency have been approved in writing by the Architect and Owner.

B. Provide any labor and materials necessary to restore services on a contingency basis should normal service or facilities not be restored on schedule.

C. Preparatory work associated with each interruption shall be performed during normal work hours. The actual interruption required for tie-in shall be performed between 8 P.M. and 5 A.M. Maximum shutdown during this period of any system shall be 4 hours.

1.14 SUBSTITUTIONS

A. If substitutions of controls or equipment requires any changes in the architectural, structural, mechanical, plumbing or electrical work from that shown on the drawings(including all environmental characteristics), the extra cost of the equipment or architectural, structural, mechanical, plumbing or electrical work shall be responsibility of the Contractor requesting the substitution. All substitutions shall be approved by the Architect before purchase by the contractor.

B. If the Contractor proposes substitutions of any equipment specified herein or on the drawings, it shall be the Contractor's responsibility to obtain approval from the Architect for such equipment as well as approval for anchorage of such equipment from the Architect, Structural Engineer, and governing approval agencies (Department of the State Architects - DSA),. All costs required for such approval shall be the responsibility of the Contractor requesting the substitution.

1.15 PREPARATION OF SUBMITTALS

A. Refer to 01 30 00 Administrative Requirements In addition to these requirements provide the requirements specified herein.

B. Prior to commencement of work and in accordance with the General Requirements, submit for review six copies of proposed equipment and material submittals. The Contractor shall verify the delivery dates are compatible with the specified construction schedule; and verify the equipment is sized to accommodate the conditions specified. Submittals shall include manufacturer's names and model numbers and shall comply with specifications and drawings. The Contractor shall bear the cost of changes necessary to accommodate substitutions if substitution is approved.

C. Provide formal submittal to Architect. Review of the formal submittal is only for general conformance with design concept of project and general compliance with the information given in the contract documents. The Contractor is responsible for confirmation and correlation of the dimensions, quantities and sizes, for information that pertains to fabrication methods or construction techniques, and for coordination of work of all trades. Deviations from Drawings and Specifications shall be clearly and completely indicated (by a separate letter) in the formal submittals. Reviewed Submittals shall not relieve the Contractor of responsibility for errors or deviations.

1. Where specific model numbers and/or manufacturers are specified or shown, it is the intent of the contract documents to procure the specified item(s). Alternate equipment may not be used unless data is submitted for consideration as a substitution in accordance with General Requirements and this section.

2. Model numbers used may not indicate all features or options required for this specific installation. Modify the specified models to comply with the requirements, as specified or shown.

3. Product Data for Proposed Substitutions:

    a. Submit copies of complete data, with drawings and samples as appropriate, including:

        1) Comparison of the qualities of the proposed substitution with that specified.

        2) Changes required in other elements of the work because of the substitution.

        3) Affect on construction schedule.

        4) Cost data comparing the proposed substitution with the product specified.

        5) Availability of maintenance service and source of replacement materials.

        6) Reference to three (3) projects similar to this where such equipment is installed and operating to two (2) or more years.

b. Acceptance of substitutions is entirely at the discretion of the Architect.

D. Formal submittals shall be complete with catalog data and information properly marked to indicate equality of material (where substitution is allowed and desired), adequacy in capacity and performance to meet minimum capacities or performance as specified or indicated. Arrange the submittals in the same sequence as these Specifications and indicate the Section and Paragraph number (in the upper right-hand side with tabs) for which each submittal is intended. Incomplete submittals shall be rejected.

E. Do not fabricate order or deliver materials or equipment until formal submittals have been approved. Where material or equipment is used without such permission, it is deemed that the material or equipment shall be in complete compliance with drawings and specifications, without additional cost where such compliance is lacking and may be required to be altered in the field.

F. Submittals shall be bound and shall include, at a minimum, the following:

1. Complete bill of materials listing equipment furnished.
2. Catalog cut sheets of every component being provided (highlighted).
3. Provide completed blue-line shop drawings of the packaged equipment detailing all field connection points.
4. Dimensions, clearance requirements, weights, and capacities.
5. Wiring diagrams showing control interface as applicable.
6. Warranty sheets.
7. Pressure drops as applicable.

G. Contractor shall incur all costs for time spent by Engineer for review of more than two submittals on each item. Costs shall be based on Engineer's hourly billing rate schedule at the time of review. Rate schedule available upon request. Engineer shall invoice the contractor upon completion of review and shall be paid by the contractor within 30 days of date of invoice. Failure to remit will withdraw approval (if any) of submittals in question.

1.16 SHOP DRAWINGS:

A. Proceed with preparation of shop drawings immediately upon receiving an authorization to proceed for the project. Shop drawings shall be originally prepared by the contractor. Provide minimum 1/4" scale shop drawings in electronic format. Submit a complete set in one package prior to material fabrication, order and installation.

B. Include:

1. Duct and pipe elevations and sizes.
2. Double line ductwork and piping (4” and larger).
3. Actual size of purchased equipment from certified shop drawings.
4. Access panels including ceiling panels.
5. Access clearances for equipment.
6. Actual locations of ceiling diffusers/ supply registers ad return registers.
7. Actual locations of manual volume dampers.
8. Locations of structural penetrations such as beams.

9. Actual location of control panels and power connections to equipment.
10. Color coded duct and piping based on material used.
11. Label and tag schedule for equipment.
12. Duct transitions to clear beams or tight areas.
13. Room temperature sensor locations.
14. Point of connection to utilities outside the building.
15. Sections or 3-dimensional drawings of congested areas.
16. Gridlines.
17. Duct and piping supports on roof.

C. Coordinate with other trades in preparation of shop drawings.

D. Submit a copy of coordinated shop drawings to General Contractor for distribution to other trades, including electrical and fire sprinkler contractor.

E. Submit to commissioning agent for approval to assure design intent is met.

F. Prior to fabrication and upon receiving approval from commissioning agent, submit a complete set of shop drawings at one time to the mechanical engineer.

1.17 ELECTRICAL REQUIREMENTS

A. Coordinate the following items with Division 26:

1. Power wiring
2. Power Supply Voltage Requirements
3. Safety switches
4. Combination controllers
5. Disconnect switches
6. Motor starters
7. Circuit breakers
8. Motor-control equipment forming part of motor control centers or switchgear assemblies
9. Electrical connections of the mechanical equipment to the electrical power source shall be coordinated with and provided under Division 26.

1.18 MOTORS

A. Before order is placed for electrical devices, the Contractor shall check with the Electrical contractor and verify requirements as to type, mounting and current characteristics as well as to any special delivery instructions. Motors provided under Division 23 shall be minimum of 10% normal rating above brake horsepower (BHP) rating of equipment driven.

1.19 TESTS

A. Contractor shall make tests required by legally constituted authorities and as listed below.

1. Tests shall be made in the presence of the Owner or his representative and a duly authorized inspector. The Owner or his representative shall be notified 5 days before tests are made.

2. Concealed work and insulated work shall remain uncovered until required testing has been performed and approved by the Owner. If work to be tested is covered before the approval of the Owner or his authorized representative has been obtained, it shall be uncovered for testing at the Contractor's expense.

3. Obtain required documents of certification indicating approval, acceptance and compliance with the requirements of all administrative authorities having jurisdiction over the work. No final payment shall be made until all such certificates are delivered to the Owner.

4. Furnish labor, materials, instruments and bear other costs in connection with all tests.

5. Piping systems, except as hereinafter noted, shall be given hydrostatic (with water) test of a least 150% of the maximum operating pressure but no less than 150 psig.

6. Before making test, remove or valve off from the system, gauges, traps, and other apparatus or equipment which may be damaged by test pressure.

7. Install a calibrated test pressure gauge in the system to observe any loss in pressure. Maintain the required test pressure for a sufficient length of time to enable an inspection to be made of all joints and connections. Perform tests after installation and prior to acceptance.

8. Final pressures at the end of the test period shall be no more or less than that caused by expansion or contraction of the test medium due to temperature changes.

9. After tests have been made and leaks repaired, clean and flush systems as hereinafter specified. Water piping shall be left under supply main pressure for the balance of the construction period.

10. Tests for mechanical, plumbing, and fire protection systems are specified within their own section. Equipment and ductwork system tests are specified in the test and balance section.

11. Provide necessary provisions and tests for maintaining the operational condition and cleanliness of existing systems.

1.20 LABOR AND MATERIALS

A. Labor shall be carefully skilled for this kind of work, and under the direction of a competent foreman.

B. Materials shall be new, in perfect condition and of domestic manufacturer. Materials for similar uses to be of same type and manufacturer.

C. Equipment shall bear the manufacturer's label showing performance characteristics. Identifying size number shall be given only when it is not practicable or customary to show performance characteristics.

D. Valves, pipe, fittings, etc., shall bear the manufacturer's name or trademark.

E. Unless otherwise specified herein, equipment and fixtures shall be installed in accordance with the manufacturer's recommendations, including recommended service and removal clearances.

1.21 PROTECTION AND CLEAN-UP

A. Protection: Provide for the safety and good condition of materials and equipment until final acceptance of the Architect. Protect materials and equipment from dirt, dust, debris, and

damage from any cause whatever, and provide adequate and proper storage facilities during the progress of the work and replace all damaged and defective material, equipment or work precedent to filing application for final acceptance.

B. Cleaning:

1. Unless a more stringent requirement is specified, thoroughly clean all parts of the piping, ductwork, fixtures, apparatus and equipment. All parts shall be thoroughly cleaned of dirt, dust, debris, cement, plaster and other materials, and all grease and oil spots removed. Such surfaces shall be carefully wiped and all cracks and corners scraped out. Clean all systems, including piping and ductwork prior to test.

2. Exposed rough metal work shall be carefully brushed down with steel brushes to remove rust and other spots and left in clean condition to receive painter's finish. Where factory prime coat has been damaged, this Contractor shall be responsible for restoration of same.

1.22 ACCESS PANELS

A. Access Doors and Panels:

1. Wherever volume dampers, fire dampers, smoke fire dampers, controls, valves or other items or parts of the installation which require periodic inspection or adjustments are concealed by permanent non-removable construction, an access door shall be provided. Rating of access panel shall be determined by rating of wall or ceiling in which panel is installed. Types to be as approved and as appropriate for the surface and construction in which it is installed. Verify all locations with Architect and other trades.

2. Access doors and panels shall be of sufficient size and shall be located properly to assure service to the intended item.

3. Refer to Section 08 31 00 Access Doors and Panels.

1.23 MAINTENANCE, OPERATION INSTRUCTION

A. General: Thoroughly instruct the Owner's operators in every detail of operation of the system. Provide the Owner with a list of all equipment, giving the manufacturer's name, model number, serial number, parts list and complete internal wiring diagrams. All directions for operation furnished by the manufacturer shall be carefully saved and turned over to the Owner, together with written sequence of operation, operating and maintenance instructions for each system and its equipment. Instruction shall consist of a minimum of four 8-hour periods over consecutive days and shall be 30% classroom and 70% at site location. Coordinate scheduling of instruction times with Owner's operators.

B. Specific Data: Submit four complete sets of the following data to the Owner for approval and commissioning agent for review prior to acceptance of the installation, complete and at one time; (partial or separate data will not be accepted) data shall consist of the following:

1. Valve Directory: Indicating valve number, location, function and normal operating position for each.

2. Color code schedule.

3. Equipment: List of name plates, including name plate data.

4. Manufacturer's Literature: Copies of manufacturer's instructions for operation and maintenance of all mechanical equipment, including replacement parts lists and

drawings. Mark or highlight brochure literature indicating the models, sizes, capacities, curve operating points, etc., in a manner to clearly indicate the equipment installed. Remove all pages or sheets from the bulletin and catalogs that do not pertain to equipment installed on the project.

5. Written Instructions: Typewritten instructions for operation and maintenance of the system composed of OPERATING INSTRUCTIONS, MAINTENANCE INSTRUCTIONS and a MAINTENANCE SCHEDULE.

   a. OPERATING INSTRUCTIONS shall contain a brief description of the system. Adjustments requiring the technical knowledge of the service agency personnel shall not be included in the operating instructions. The fact such adjustments are required, however, shall be noted.

   b. MAINTENANCE INSTRUCTIONS shall list each item of equipment requiring inspection, lubrication or service and describe the performance of such maintenance.

   c. MAINTENANCE SCHEDULE shall list each item of equipment requiring maintenance, shall show the exact type of maintenance on every component of each item of equipment, and shall show when each item of equipment should be inspected or services.

6. Instructions: Operating personnel shall be instructed in the operation of the system in accordance with typewritten, approved instructions.

C. Binders: Provide complete sets of the above data in loose-leaf ring-type binders with permanent covers, with identification on front and on spine.

1.24 SPECIAL REQUIREMENTS

A. During the guarantee period and as directed by the Owner, make any additional tests, adjustment, etc., that may be required and correct any defects or deficiencies arising from operation of the systems. Operational tests shall be made during both heating and cooling seasons and on all systems.

B. Completion:

1. The entire mechanical system shall be commissioned in accordance with ASHRAE Guideline 1-1996 and the requirements of this specification. A final commissioning report shall be approved by the Owner, Architect, and Mechanical Engineer prior to final acceptance of the work.

2. When the installation is complete and adjustments specified herein have been made, the system, shall be operated for a period of one week, during which time it shall be demonstrated to the Owner or his representative as being completed and operating in conformance with these specifications. The Contractor shall schedule all work so that this time period, which is to confirm a "bug-free" system, will occur before the total project is accepted for substantial completion by Owner.

3. The work hereunder shall not be reviewed for final acceptance until operating and maintenance data, manufacturer's literature, valve directories, piping identification code directory, and nameplates specified herein have been approved and properly posted in the building.

1.25 WARRANTY/GUARANTEE

A. The contractor shall warranty/guarantee that materials, apparatus, and equipment furnished and installed under the mechanical division of these specifications shall be new and free from all defects. Should any defects develop, within one year (unless a longer period is listed in other sections of the specifications) from the date of final acceptance by the owner or from the date of certificate of substantial completion, whichever is earlier, due to inferior or faulty materials and/or workmanship, the trouble shall be corrected by this Contractor without expense to the Owner. Any defective materials or inferior workmanship noticed at the time of installation or during the guarantee period shall be corrected immediately to the entire satisfaction of the Owner.

B. The work shall be installed of such materials and in such a manner that:

1. The operation of all parts of the system shall be noiseless to the extent that no objectionable sound of operation will be heard outside of the rooms enclosing the apparatus or equipment.
2. Apparatus or equipment shall operate in accordance with detailed specifications covering each item.
3. Contractor shall, at his own expense, make any adjustments or changes required to produce a condition of quietness satisfactory to the Engineer or his representative. Such adjustments or changes shall not reduce the performance or quantities called for on the drawings.
4. Contractor shall guarantee that his installation of all materials and equipment will meet the performance requirements of these specifications and that all equipment will deliver the specified or required capacities.
5. The Owner reserves the right to make temporary or emergency repairs as necessary to keep equipment in operating condition without voiding the guarantee contained herein nor relieving the Contractor of his responsibilities during the guarantee period.
6. Contractor shall be responsible for all damage to any part of the premises caused by leaks or break in pipe lines, fixtures or equipment furnished and installed under his contract for a period of one year after date of acceptance of the project by Owner. He shall replace in kind, at his own expense, any and all items so damaged to the complete satisfaction of the Owner.

END OF SECTION

SECTION 23 05 48

VIBRATION AND SEISMIC CONTROLS FOR HVAC

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Elastomeric isolation mounts.
2. Housed-restrained-spring isolators.
3. Spring hangers.
4. Snubbers.
5. Restraint cables.
6. Seismic-restraint accessories.
7. Mechanical anchor bolts.
8. Adhesive anchor bolts.

B. Related Requirements:

1. Section 22 05 48 "Vibration and Seismic Controls for Plumbing" for devices for plumbing equipment and systems.

1.02 DEFINITIONS

A. IBC: International Building Code.

B. ICC-ES: ICC-Evaluation Service.

C. OSHPD: Office of Statewide Health Planning & Development (for the State of California).

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include rated load, rated deflection, and overload capacity for each vibration isolation device.
2. Illustrate and indicate style, material, strength, fastening provision, and finish for each type and size of vibration isolation device and seismic-restraint component required.
    a. Tabulate types and sizes of seismic restraints, complete with report numbers and rated strength in tension and shear as evaluated by an agency acceptable to authorities having jurisdiction.
    b. Annotate to indicate application of each product submitted and compliance with requirements.
3. Interlocking Snubbers: Include ratings for horizontal, vertical, and combined loads.

B. Shop Drawings:

1. Detail fabrication and assembly of equipment bases. Detail fabrication including anchorages and attachments to structure and to supported equipment. Include adjustable motor bases, rails, and frames for equipment mounting.

2. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment. Include adjustable motor bases, rails, and frames for equipment mounting.

C. Delegated-Design Submittal: For each vibration isolation and seismic-restraint device.

1. Include design calculations and details for selecting vibration isolators, seismic restraints, and vibration isolation bases complying with performance requirements, design criteria, and analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

2. Design Calculations: Calculate static and dynamic loading due to equipment weight, operation, and seismic forces required to select vibration isolators and seismic and wind restraints and for designing vibration isolation bases.

a. Coordinate design calculations with wind load calculations required for equipment mounted outdoors. Comply with requirements in other Sections for equipment mounted outdoors.

3. Riser Supports: Include riser diagrams and calculations showing anticipated expansion and contraction at each support point, initial and final loads on building structure, spring deflection changes, and seismic loads. Include certification that riser system was examined for excessive stress and that none exists.

4. Seismic Restraint Details:

a. Design Analysis: To support selection and arrangement of seismic restraints. Include calculations of combined tensile and shear loads.

b. Details: Indicate fabrication and arrangement. Detail attachments of restraints to the restrained items and to the structure. Show attachment locations, methods, and spacings. Identify components, list their strengths, and indicate directions and values of forces transmitted to the structure during seismic events. Indicate association with vibration isolation devices.

c. Coordinate seismic-restraint and vibration isolation details with wind-restraint details required for equipment mounted outdoors. Comply with requirements in other Sections for equipment mounted outdoors.

d. Preapproval and Evaluation Documentation: By an agency acceptable to authorities having jurisdiction, showing maximum ratings of restraint items and the basis for approval (tests or calculations).

1.04 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Show coordination of vibration isolation device installation and seismic bracing for HVAC piping and equipment with other systems and equipment in the vicinity, including other supports and restraints, if any.

B. Qualification Data: For professional engineer.

C. Welding certificates.

D. Field quality-control reports.

1.05 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.7 and that is acceptable to authorities having jurisdiction.

B. Comply with seismic-restraint requirements in the IBC unless requirements in this Section are more stringent.

C. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

D. Seismic-restraint devices shall have horizontal and vertical load testing and analysis and shall bear anchorage preapproval OPA number 0349 & 0198 from OSHPD, or preapproval by another agency acceptable to authorities having jurisdiction, showing maximum seismic-restraint ratings. Ratings based on independent testing are preferred to ratings based on calculations. If preapproved ratings are unavailable, submittals based on independent testing are preferred. Calculations (including combining shear and tensile loads) to support seismic-restraint designs must be signed and sealed by a qualified professional engineer.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Seismic-Restraint Loading:

1. Site Class as Defined in the IBC: A.
2. Assigned Seismic Use Group or Building Category as Defined under Structural specifications.
    a. Component Importance Factor: 1.0.
    b. Component Response Modification Factor: 1.5.
    c. Component Amplification Factor: 1.0.
3. Design Spectral Response Acceleration at Short Periods (0.2 Second).
4. Design Spectral Response Acceleration at 1.0-Second Period.
5. Rated strengths, features, and applications shall be as defined in reports by an agency acceptable to authorities having jurisdiction.
    a. Structural Safety Factor: Allowable strength in tension, shear, and pullout force of components shall be at least four times the maximum seismic forces to which they are subjected.

2.02 ELASTOMERIC ISOLATION MOUNTS

A. Double-Deflection, Elastomeric Isolation Mounts:

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
    a. Kinetics Noise Control, Inc.
    b. Mason Industries, Inc.
    c. Vibration Isolation.
2. Mounting Plates:

a. Top Plate: Encapsulated steel load transfer top plates, factory drilled and threaded with threaded studs or bolts.

b. Baseplate: Encapsulated steel bottom plates with holes provided for anchoring to support structure.

3. Elastomeric Material: Molded, oil-resistant rubber, neoprene, or other elastomeric material.

2.03 HOUSED-RESTRAINED-SPRING ISOLATORS

A. Freestanding, Steel, Open-Spring Isolators with Vertical-Limit Stop Restraint in Two-Part Telescoping Housing:

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Kinetics Noise Control, Inc.

b. Mason Industries, Inc.

c. Vibration Eliminator Co., Inc.

2. Two-Part Telescoping Housing: A steel top and bottom frame separated by an elastomeric material and enclosing the spring isolators. Housings are equipped with adjustable snubbers to limit vertical movement.

a. Drilled base housing for bolting to structure with an elastomeric isolator pad attached to the underside. Bases shall limit floor load to 500 psig.

b. Threaded top housing with adjustment bolt and cap screw to fasten and level equipment.

3. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.

4. Minimum Additional Travel: 50 percent of the required deflection at rated load.

5. Lateral Stiffness: More than 80 percent of rated vertical stiffness.

6. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.

2.04 SPRING HANGERS

Combination Coil-Spring and Elastomeric-Insert Hanger with Spring and Insert in Compression:

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Mason Industries, Inc.

b. Vibration Eliminator Co., Inc.

c. Vibration Isolation.

2. Frame: Steel, fabricated for connection to threaded hanger rods and to allow for a maximum of 30 degrees of angular hanger-rod misalignment without binding or reducing isolation efficiency.

3. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.

4. Minimum Additional Travel: 50 percent of the required deflection at rated load.

5. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
6. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
7. Elastomeric Element: Molded, oil-resistant rubber or neoprene. Steel-washer-reinforced cup to support spring and bushing projecting through bottom of frame.
8. Adjustable Vertical Stop: Steel washer with neoprene washer "up-stop" on lower threaded rod.
9. Self-centering hanger-rod cap to ensure concentricity between hanger rod and support spring coil.

2.05 SNUBBERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Insert manufacturer's name; product name or designation or comparable product by one of the following:
   1. Kinetics Noise Control, Inc.
   2. Mason Industries, Inc.
   3. Vibration Mountings & Controls, Inc.

B. Description: Factory fabricated using welded structural-steel shapes and plates, anchor bolts, and replaceable resilient isolation washers and bushings.
   1. Anchor bolts for attaching to concrete shall be seismic-rated, drill-in, and stud-wedge or female-wedge type.
   2. Resilient Isolation Washers and Bushings: Oil- and water-resistant neoprene.
   3. Maximum 1/4-inch air gap, and minimum 1/4-inch- thick resilient cushion.

2.06 RESTRAINT CHANNEL BRACINGS

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
   1. Cooper B-Line, Inc.
   2. Hilti, Inc.
   3. Mason Industries, Inc.
   4. Unistrut.

B. Description: MFMA-4, shop- or field-fabricated bracing assembly made of slotted steel channels with accessories for attachment to braced component at one end and to building structure at the other end and other matching components and with corrosion-resistant coating; rated in tension, compression, and torsion forces.

2.07 RESTRAINT CABLES

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
   1. Kinetics Noise Control, Inc.
   2. Loos & Co., Inc.
   3. Vibration Mountings & Controls, Inc.

B. Restraint Cables: ASTM A 492 stainless-steel cables. End connections made of steel assemblies with thimbles, brackets, swivel, and bolts designed for restraining cable service; with a minimum of two clamping bolts for cable engagement.

2.08 SEISMIC-RESTRAINT ACCESSORIES

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Cooper B-Line, Inc.
2. Mason Industries, Inc.
3. TOLCO.

B. Hanger-Rod Stiffener: Reinforcing steel angle clamped to hanger rod.

C. Hinged and Swivel Brace Attachments: Multifunctional steel connectors for attaching hangers to rigid channel bracings and restraint cables.

D. Bushings for Floor-Mounted Equipment Anchor Bolts: Neoprene bushings designed for rigid equipment mountings, and matched to type and size of anchor bolts and studs.

E. Bushing Assemblies for Wall-Mounted Equipment Anchorage: Assemblies of neoprene elements and steel sleeves designed for rigid equipment mountings, and matched to type and size of attachment devices used.

F. Resilient Isolation Washers and Bushings: One-piece, molded, oil- and water-resistant neoprene, with a flat washer face.

2.09 MECHANICAL ANCHOR BOLTS

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Cooper B-Line, Inc.
2. Hilti, Inc.
3. Kinetics Noise Control, Inc.
4. Mason Industries, Inc.

B. Mechanical Anchor Bolts: Drilled-in and stud-wedge or female-wedge type in zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.

2.10 ADHESIVE ANCHOR BOLTS

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Hilti, Inc.
2. Kinetics Noise Control, Inc.
3. Mason Industries, Inc.

B. Adhesive Anchor Bolts: Drilled-in and capsule anchor system containing PVC or urethane methacrylate-based resin and accelerator, or injected polymer or hybrid mortar adhesive. Provide anchor bolts and hardware with zinc-coated steel for interior applications and

stainless steel for exterior applications. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and equipment to receive vibration isolation and seismic-control devices for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in of reinforcement and cast-in-place anchors to verify actual locations before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 APPLICATIONS

A. Hanger-Rod Stiffeners: Install hanger-rod stiffeners where indicated or scheduled on Drawings to receive them and where required to prevent buckling of hanger rods due to seismic forces.

B. Strength of Support and Seismic-Restraint Assemblies: Where not indicated, select sizes of components so strength is adequate to carry present and future static and seismic loads within specified loading limits.

3.03 VIBRATION CONTROL AND SEISMIC-RESTRAINT DEVICE INSTALLATION

A. Coordinate the location of embedded connection hardware with supported equipment attachment and mounting points and with requirements for concrete reinforcement and formwork specified in Section 03 30 53 "Cast-in-Place Concrete.

B. Installation of vibration isolators must not cause any change of position of equipment, piping, or ductwork resulting in stresses or misalignment.

C. Comply with requirements in Section 07 72 00 "Roof Accessories" for installation of roof curbs, equipment supports, and roof penetrations.

D. Equipment Restraints:

1. Install seismic snubbers on HVAC equipment mounted on vibration isolators. Locate snubbers as close as possible to vibration isolators and bolt to equipment base and supporting structure.

2. Install resilient bolt isolation washers on equipment anchor bolts where clearance between anchor and adjacent surface exceeds 0.125 inch.

3. Install seismic-restraint devices using methods approved by an agency acceptable to authorities having jurisdiction that provides required submittals for component.

E. Install cables so they do not bend across edges of adjacent equipment or building structure.

F. Install seismic-restraint devices using methods approved by an agency acceptable to authorities having jurisdiction that provides required submittals for component.

G. Attachment to Structure: If specific attachment is not indicated, anchor bracing to structure at flanges of beams, at upper truss chords of bar joists, or at concrete members.

H. Drilled-in Anchors:

1. Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcing or embedded items during coring or drilling. Notify the structural engineer if reinforcing steel or other embedded items are encountered during drilling. Locate and avoid prestressed tendons, electrical and telecommunications conduit, and gas lines.
2. Do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.
3. Wedge Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in the structural element to which anchor is to be fastened.
4. Adhesive Anchors: Clean holes to remove loose material and drilling dust prior to installation of adhesive. Place adhesive in holes proceeding from the bottom of the hole and progressing toward the surface in such a manner as to avoid introduction of air pockets in the adhesive.
5. Set anchors to manufacturer's recommended torque, using a torque wrench.
6. Install zinc-coated steel anchors for interior and stainless-steel anchors for exterior applications.

3.04 ACCOMMODATION OF DIFFERENTIAL SEISMIC MOTION

A. Install flexible connections in piping where they cross seismic joints, where adjacent sections or branches are supported by different structural elements, and where the connections terminate with connection to equipment that is anchored to a different structural element from the one supporting the connections as they approach equipment. Comply with requirements in Section 23 21 13 "Hydronic Piping" for piping flexible connections.

3.05 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified testing agency to perform tests and inspections.

B. Perform tests and inspections.

C. Tests and Inspections:

1. Provide evidence of recent calibration of test equipment by a testing agency acceptable to authorities having jurisdiction.
2. Schedule test with Owner, through Architect, before connecting anchorage device to restrained component (unless post connection testing has been approved), and with at least seven days' advance notice.
3. Obtain Architect's approval before transmitting test loads to structure. Provide temporary load-spreading members.
4. Test at least four of each type and size of installed anchors and fasteners selected by Architect.
5. Test to 90 percent of rated proof load of device.
6. Measure isolator restraint clearance.
7. Measure isolator deflection.
8. Verify snubber minimum clearances.
9. Test and adjust restrained-air-spring isolator controls and safeties.

D. Remove and replace malfunctioning units and retest as specified above.

E. Prepare test and inspection reports.

3.06 ADJUSTING

A. Adjust isolators after piping system is at operating weight.

B. Adjust limit stops on restrained-spring isolators to mount equipment at normal operating height. After equipment installation is complete, adjust limit stops so they are out of contact during normal operation.

END OF SECTION

SECTION 23 07 13
DUCT INSULATION

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes semirigid and flexible duct, and plenum, insulation; insulating cements; accessories and attachments; and sealing compounds.

B. Related Sections include the following:

1. Division 23 Insulation Sections for insulation for piping systems.
2. Division 23 Section "Metal Ducts" for duct liner.

1.02 SUBMITTALS

A. Product Data: Identify thermal conductivity, thickness, and jackets (both factory and field applied, if any), for each type of product indicated.

B. Shop Drawings: Show fabrication and installation details for the following:

1. Removable insulation sections at access panels.
2. Application of field-applied jackets.
3. Applications at linkages for control devices.

C. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets with requirements indicated. Include dates of tests.

D. Installer Certificates: Signed by the Contractor certifying that installers comply with requirements.

1.03 QUALITY ASSURANCE

A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the U.S. Department of Labor, Bureau of Apprenticeship and Training.

B. Fire-Test-Response Characteristics: As determined by testing materials identical to those specified in this Section according to ASTM E 84, by a testing and inspecting agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and sealer and cement material containers with appropriate markings of applicable testing and inspecting agency.

1. Insulation Installed Indoors: Flame-spread rating of 25 or less, and smoke-developed rating of 50 or less.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Ship insulation materials in containers marked by manufacturer with appropriate ASTM specification designation, type and grade, and maximum use temperature.

1.05 COORDINATION

A. Coordinate clearance requirements with duct Installer for insulation application.

1.06 SCHEDULING

A. Schedule insulation application after testing duct systems. Insulation application may begin on segments of ducts that have satisfactory test results.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Mineral-Fiber Insulation:

a. CertainTeed Manson.

b. Knauf FiberGlass GmbH.

c. Owens-Corning Fiberglas Corp.

2.02 INSULATION MATERIALS

A. Mineral-Fiber Blanket Thermal Insulation: Glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II, without facing and with all-service jacket manufactured from kraft paper, reinforcing scrim, aluminum foil, and vinyl film.

2.03 ACCESSORIES AND ATTACHMENTS

A. Glass Cloth and Tape: Comply with MIL-C-20079H, Type I for cloth and Type II for tape. Woven glass-fiber fabrics, plain weave, presized a minimum of 8-oz./sq. yd.

1. Tape Width: 4 inches.

B. Bands: 3/4 inch wide, in one of the following materials compatible with jacket:

1. Stainless Steel: ASTM A 666, Type 304; 0.020 inch thick.

2. Galvanized Steel: 0.005 inch thick.

3. Nickel-Copper Alloy: 0.005 inch thick.

C. Wire: 0.080-inch, nickel-copper alloy; 0.062-inch, soft-annealed, stainless steel; or 0.062-inch, soft-annealed, galvanized steel.

D. Adhesive-Attached Anchor Pins and Speed Washers: Galvanized steel plate, pin, and washer manufactured for attachment to duct and plenum with adhesive. Pin length sufficient for insulation thickness indicated.

1. Adhesive: Recommended by the anchor pin manufacturer as appropriate for surface temperatures of ducts and plenums; and to achieve a holding capacity of 100 lb for direct pull perpendicular to the adhered surface.

2.04 VAPOR RETARDERS

A. Mastics: Materials recommended by insulation material manufacturer that are compatible with insulation materials, jackets, and substrates.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation and other conditions affecting performance of insulation application.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

3.03 GENERAL APPLICATION REQUIREMENTS

A. Apply insulation materials, accessories, and finishes according to the manufacturer's written instructions; with smooth, straight, and even surfaces; and free of voids throughout the length of ducts and fittings.

B. Refer to schedules at the end of this Section for materials, forms, jackets, and thicknesses required for each duct system.

C. Use accessories compatible with insulation materials and suitable for the service. Use accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

D. Apply multiple layers of insulation with longitudinal and end seams staggered.

E. Seal joints and seams with vapor-retarder mastic on insulation indicated to receive a vapor retarder.

F. Keep insulation materials dry during application and finishing.

G. Apply insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by the insulation material manufacturer.

H. Apply insulation with the least number of joints practical.

I. Apply insulation over fittings and specialties, with continuous thermal and vapor-retarder integrity, unless otherwise indicated.

J. Hangers and Anchors: Where vapor retarder is indicated, seal penetrations in insulation at hangers, supports, anchors, and other projections with vapor-retarder mastic. Apply insulation continuously through hangers and around anchor attachments.

K. Insulation Terminations: For insulation application where vapor retarders are indicated, seal ends with a compound recommended by the insulation material manufacturer to maintain vapor retarder.

L. Apply insulation with integral jackets as follows:

1. Pull jacket tight and smooth.
2. Joints and Seams: Cover with tape and vapor retarder as recommended by insulation material manufacturer to maintain vapor seal.
3. Vapor-Retarder Mastics: Where vapor retarders are indicated, apply mastic on seams and joints and at ends adjacent to duct flanges and fittings.

M. Cut insulation according to manufacturer's written instructions to prevent compressing insulation to less than 75 percent of its nominal thickness.

N. Install vapor-retarder mastic on ducts and plenums scheduled to receive vapor retarders.

1. Ducts with Vapor Retarders: Overlap insulation facing at seams and seal with vapor-retarder mastic and pressure-sensitive tape having same facing as insulation. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-retarder seal.
2. Ducts without Vapor Retarders: Overlap insulation facing at seams and secure with outward clinching staples and pressure-sensitive tape having same facing as insulation.

O. Roof Penetrations: Apply insulation for interior applications to a point even with top of roof flashing.
1. Seal penetrations with vapor-retarder mastic.
2. Apply insulation for exterior applications tightly joined to interior insulation ends.
3. Seal insulation to roof flashing with vapor-retarder mastic.

P. Interior Wall and Partition Penetrations: Apply insulation continuously through walls and partitions, except fire-rated walls and partitions.

Q. Fire-Rated Wall and Partition Penetrations: Terminate insulation at fire/smoke damper sleeves for fire-rated wall and partition penetrations.

3.04 MINERAL-FIBER INSULATION APPLICATION

A. Blanket Applications for Ducts and Plenums: Secure blanket insulation with adhesive and anchor pins and speed washers.
1. Apply adhesives according to manufacturer's recommended coverage rates per square foot, for 100 percent coverage of duct and plenum surfaces.
2. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.
3. Install anchor pins and speed washers on sides and bottom of horizontal ducts and sides of vertical ducts as follows:
a. On duct sides with dimensions 18 inches and smaller, along longitudinal centerline of duct. Space 3 inches maximum from insulation end joints, and 16 inches o.c.
b. On duct sides with dimensions larger than 18 inches. Space 16 inches o.c. each way, and 3 inches maximum from insulation joints. Apply additional pins and clips to hold insulation tightly against surface at cross bracing.
c. Anchor pins may be omitted from top surface of horizontal, rectangular ducts and plenums.
d. Do not overcompress insulation during installation.
4. Impale insulation over anchors and attach speed washers.
5. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.
6. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from one edge and one end of insulation segment. Secure laps to adjacent insulation segment with 1/2-inch staples, 1 inch o.c., and cover with pressure-sensitive tape having same facing as insulation.

7. Overlap unfaced blankets a minimum of 2 inches on longitudinal seams and end joints. Secure with steel band at end joints and spaced a maximum of 18 inches o.c.
8. Apply insulation on rectangular duct elbows and transitions with a full insulation segment for each surface. Apply insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.
9. Insulate duct stiffeners, hangers, and flanges that protrude beyond the insulation surface with 6-inch- wide strips of the same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with anchor pins spaced 6 inches o.c.
10. Apply vapor-retarder mastic to open joints, breaks, and punctures for insulation indicated to receive vapor retarder.

3.05 FINISHES

A. Glass-Cloth Jacketed Insulation: Paint insulation finished with glass-cloth jacket as specified in Division 09 Painting Sections.

B. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.

3.06 DUCT SYSTEM APPLICATIONS

A. Insulation materials and thicknesses are specified in schedules at the end of this Section.

B. Materials and thicknesses for systems listed below are specified in schedules at the end of this Section.

C. Insulate the following plenums and duct systems:

1. Indoor concealed supply-, return-, and outside-air ductwork.
2. Indoor exposed supply-, return-, and outside-air ductwork.

D. Items Not Insulated: Unless otherwise indicated, do not apply insulation to the following systems, materials, and equipment:

1. Fibrous-glass ducts.
2. Metal ducts with duct liner.
3. Factory-insulated flexible ducts.
4. Factory-insulated plenums, casings, terminal boxes, and filter boxes and sections.
5. Flexible connectors.
6. Vibration-control devices.
7. Testing agency labels and stamps.
8. Nameplates and data plates.
9. Access panels and doors in air-distribution systems.

3.07 ABOVEGROUND, OUTDOOR DUCT AND PLENUM INSULATION SCHEDULE

A. Insulation materials and thicknesses are identified below. If more than one material is listed for a duct system, selection from materials listed is Contractor's option.

B. Concealed, round and rectangular, supply-air duct insulation shall be one of the following:

1. Mineral-Fiber Blanket: 3 inches (75 mm) and 3-lb/cu. ft. (48-kg/cu. m) nominal density.

2. Mineral-Fiber Board: 3 inches (75 mm) thick and 6-lb/cu. ft. (96-kg/cu. m) nominal density.

C. Concealed, round and rectangular, return-air duct insulation shall be one of the following:
   1. Mineral-Fiber Blanket: 3 inches (75 mm) and 3-lb/cu. ft. (48-kg/cu. m) nominal density.
   2. Mineral-Fiber Board: 3 inches (75 mm) thick and 6-lb/cu. ft. (96-kg/cu. m) nominal density.

D. Concealed, supply-air plenum insulation shall be one of the following:
   1. Mineral-Fiber Blanket: 3 inches (75 mm) and 3-lb/cu. ft. (48-kg/cu. m) nominal density.
   2. Mineral-Fiber Board: 3 inches (75 mm) thick and 6-lb/cu. ft. (96-kg/cu. m) nominal density.

E. Concealed, return-air plenum insulation shall be one of the following:
   1. Mineral-Fiber Blanket: 3 inches (75 mm) and 3-lb/cu. ft. (48-kg/cu. m) nominal density.
   2. Mineral-Fiber Board: 3 inches (75 mm) thick 6-lb/cu. ft. (96-kg/cu. m) nominal density.

F. Exposed, round and flat-oval, supply-air duct insulation shall be one of the following:
   1. Mineral-Fiber Blanket: 3 inches (75 mm) and 3-lb/cu. ft. (48-kg/cu. m) nominal density.
   2. Mineral-Fiber Board: 3 inches (75 mm) thick and 6-lb/cu. ft. (96-kg/cu. m) nominal density.
   3. Mineral-Fiber Pipe and Tank: 3 inches (75 mm) thick.

G. Exposed, round and flat-oval, return-air duct insulation shall be one of the following:
   1. Mineral-Fiber Blanket: 3 inches (75 mm) and 3-lb/cu. ft. (48-kg/cu. m) nominal density.
   2. Mineral-Fiber Board: 3 inches (75 mm) thick and 6-lb/cu. ft. (96-kg/cu. m) nominal density.

H. Exposed, rectangular, supply-air duct insulation shall be one of the following:
   1. Mineral-Fiber Blanket: 3 inches (75 mm) and 3-lb/cu. ft. (48-kg/cu. m) nominal density.
   2. Mineral-Fiber Board: 3 inches (75 mm) thick and 6-lb/cu. ft. (96-kg/cu. m) nominal density.

I. Exposed, rectangular, return-air duct insulation shall be one of the following:
   1. Mineral-Fiber Blanket: 3 inches (75 mm) and 3-lb/cu. ft. (48-kg/cu. m) nominal density.
   2. Mineral-Fiber Board: 3 inches (75 mm) thick and 6-lb/cu. ft. (96-kg/cu. m) nominal density.

J. Exposed, supply-air plenum insulation shall be one of the following:
   1. Mineral-Fiber Blanket: 3 inches (75 mm) and 3-lb/cu. ft. (48-kg/cu. m) nominal density.
   2. Mineral-Fiber Board: 3 inches (75 mm) thick and 6-lb/cu. ft. (96-kg/cu. m) nominal density.

K. Exposed, return-air plenum insulation shall be one of the following:
   1. Mineral-Fiber Blanket: 3 inches (75 mm) and 3-lb/cu. ft. (48-kg/cu. m) nominal density.
   2. Mineral-Fiber Board: 3 inches (75 mm) thick and 6-lb/cu. ft. (96-kg/cu. m) nominal density.

END OF SECTION

SECTION 23 08 00
COMMISSIONING OF HVAC

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes commissioning process requirements for HVAC&R systems, assemblies, and equipment.

B. Related Sections:

1. Section 01 91 13 "General Commissioning Requirements" for general commissioning process requirements.

1.02 DEFINITIONS

A. Commissioning Plan: A document that outlines the organization, schedule, allocation of resources, and documentation requirements of the commissioning process.

B. CxA: Commissioning Authority.

C. HVAC&R: Heating, Ventilating, Air Conditioning, and Refrigeration.

D. Systems, Subsystems, Equipment, and Components: Where these terms are used together or separately, they shall mean "as-built" systems, subsystems, equipment, and components.

1.03 INFORMATIONAL SUBMITTALS

A. Certificates of readiness.

B. Certificates of completion of installation, prestart, and startup activities.

1.04 ALLOWANCES

A. Labor, instrumentation, tools, and equipment costs for technicians for the performance of commissioning testing are covered by the "Schedule of Allowances" Article in Section 01 20 00 "Allowances."

1.05 UNIT PRICES

A. Commissioning testing allowance may be adjusted up or down by the "List of Unit Prices" Article in Section 01 20 00 "Price and Payment Procedures" when actual man-hours are computed at the end of commissioning testing.

1.06 CONTRACTOR'S RESPONSIBILITIES

A. Perform commissioning tests at the direction of the CxA.

B. Attend construction phase controls coordination meeting.

C. Attend testing, adjusting, and balancing review and coordination meeting.

D. Participate in HVAC&R systems, assemblies, equipment, and component maintenance orientation and inspection as directed by the CxA.

E. Provide information requested by the CxA for final commissioning documentation.

F. Provide measuring instruments and logging devices to record test data, and provide data acquisition equipment to record data for the complete range of testing for the required test period.

1.07 CxA'S RESPONSIBILITIES

A. Provide Project-specific construction checklists and commissioning process test procedures for actual HVAC&R systems, assemblies, equipment, and components to be furnished and installed as part of the construction contract.

B. Direct commissioning testing.

C. Verify testing, adjusting, and balancing of Work are complete.

D. Provide test data, inspection reports, and certificates in Systems Manual.

1.08 COMMISSIONING DOCUMENTATION

A. Provide the following information to the CxA for inclusion in the commissioning plan:

1. Plan for delivery and review of submittals, systems manuals, and other documents and reports.
2. Identification of installed systems, assemblies, equipment, and components including design changes that occurred during the construction phase.
3. Process and schedule for completing construction checklists and manufacturer's prestart and startup checklists for HVAC&R systems, assemblies, equipment, and components to be verified and tested.
4. Certificate of completion certifying that installation, prestart checks, and startup procedures have been completed.
5. Certificate of readiness certifying that HVAC&R systems, subsystems, equipment, and associated controls are ready for testing.
6. Test and inspection reports and certificates.
7. Corrective action documents.
8. Verification of testing, adjusting, and balancing reports.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 TESTING PREPARATION

A. Certify that HVAC&R systems, subsystems, and equipment have been installed, calibrated, and started and are operating according to the Contract Documents.

B. Certify that HVAC&R instrumentation and control systems have been completed and calibrated, that they are operating according to the Contract Documents, and that pretest set points have been recorded.

C. Certify that testing, adjusting, and balancing procedures have been completed and that testing, adjusting, and balancing reports have been submitted, discrepancies corrected, and corrective work approved.

D. Set systems, subsystems, and equipment into operating mode to be tested (e.g., normal shutdown, normal auto position, normal manual position, unoccupied cycle, emergency power, and alarm conditions).

E. Inspect and verify the position of each device and interlock identified on checklists.

F. Check safety cutouts, alarms, and interlocks with smoke control and life-safety systems during each mode of operation.

G. Testing Instrumentation: Install measuring instruments and logging devices to record test data as directed by the CxA.

3.02 Testing AND BALANCING VERIFICATION

A. Prior to performance of testing and balancing Work, provide copies of reports, sample forms, checklists, and certificates to the CxA.

B. Notify the CxA at least 10 days in advance of testing and balancing Work, and provide access for the CxA to witness testing and balancing Work.

C. Provide technicians, instrumentation, and tools to verify testing and balancing of HVAC&R systems at the direction of the CxA.

1. The CxA will notify testing and balancing Contractor 10 days in advance of the date of field verification. Notice will not include data points to be verified.

2. The testing and balancing Contractor shall use the same instruments (by model and serial number) that were used when original data were collected.

3. Failure of an item includes, other than sound, a deviation of more than 10 percent. Failure of more than 10 percent of selected items shall result in rejection of final testing, adjusting, and balancing report. For sound pressure readings, a deviation of 3 dB shall result in rejection of final testing. Variations in background noise must be considered.

4. Remedy the deficiency and notify the CxA so verification of failed portions can be performed.

3.03 GENERAL TESTING REQUIREMENTS

A. Provide technicians, instrumentation, and tools to perform commissioning test at the direction of the CxA.

B. Scope of HVAC&R testing shall include entire HVAC&R installation, from central equipment for heat generation and refrigeration through distribution systems to each conditioned space. Testing shall include measuring capacities and effectiveness of operational and control functions.

C. Test all operating modes, interlocks, control responses, and responses to abnormal or emergency conditions, and verify proper response of building automation system controllers and sensors.

D. The CxA along with the HVAC&R Contractor, testing and balancing Contractor, and HVAC&R Instrumentation and Control Contractor shall prepare detailed testing plans, procedures, and checklists for HVAC&R systems, subsystems, and equipment.

E. Tests will be performed using design conditions whenever possible.

F. Simulated conditions may need to be imposed using an artificial load when it is not practical to test under design conditions. Before simulating conditions, calibrate testing instruments.

Provide equipment to simulate loads. Set simulated conditions as directed by the CxA and document simulated conditions and methods of simulation. After tests, return settings to normal operating conditions.

G. The CxA may direct that set points be altered when simulating conditions is not practical.

H. The CxA may direct that sensor values be altered with a signal generator when design or simulating conditions and altering set points are not practical.

I. If tests cannot be completed because of a deficiency outside the scope of the HVAC&R system, document the deficiency and report it to the Owner. After deficiencies are resolved, reschedule tests.

J. If the testing plan indicates specific seasonal testing, complete appropriate initial performance tests and documentation and schedule seasonal tests.

3.04 HVAC&R SYSTEMS, SUBSYSTEMS, AND EQUIPMENT TESTING PROCEDURES

A. Boiler Testing and Acceptance Procedures: Testing requirements are specified in HVAC boiler Sections. Provide submittals, test data, inspector record, and boiler certification to the CxA.

B. HVAC&R Instrumentation and Control System Testing: Field testing plans and testing requirements are specified in Section 23 09 00 "Instrumentation and Control for HVAC" and Section 23 09 93 "Sequence and Operations for HVAC Controls." Assist the CxA with preparation of testing plans.

C. Pipe system cleaning, flushing, hydrostatic tests, and chemical treatment requirements are specified in HVAC piping Sections. HVAC&R Contractor shall prepare a pipe system cleaning, flushing, and hydrostatic testing plan. Provide cleaning, flushing, testing, and treating plan and final reports to the CxA. Plan shall include the following:

1. Sequence of testing and testing procedures for each section of pipe to be tested, identified by pipe zone or sector identification marker. Markers shall be keyed to Drawings for each pipe sector, showing the physical location of each designated pipe test section. Drawings keyed to pipe zones or sectors shall be formatted to allow each section of piping to be physically located and identified when referred to in pipe system cleaning, flushing, hydrostatic testing, and chemical treatment plan.
2. Description of equipment for flushing operations.
3. Minimum flushing water velocity.
4. Tracking checklist for managing and ensuring that all pipe sections have been cleaned, flushed, hydrostatically tested, and chemically treated.

D. Energy Supply System Testing: Provide technicians, instrumentation, tools, and equipment to test performance of chilled and hot-water systems and equipment at the direction of the CxA. The CxA shall determine the sequence of testing and testing procedures for each equipment item and pipe section to be tested.

E. Refrigeration System Testing: Provide technicians, instrumentation, tools, and equipment to test performance of chillers, cooling towers, refrigerant compressors and condensers, heat pumps, and other refrigeration systems. The CxA shall determine the sequence of testing and testing procedures for each equipment item and pipe section to be tested.

F. HVAC&R Distribution System Testing: Provide technicians, instrumentation, tools, and equipment to test performance of air, steam, and hydronic distribution systems; special

exhaust; and other distribution systems, including HVAC&R terminal equipment and unitary equipment.

G. Vibration and Sound Tests: Provide technicians, instrumentation, tools, and equipment to test performance of vibration isolation and seismic controls.

END OF SECTION

SECTION 27 10 00

VOICE / DATA / IP INTERCOM-CLOCK INFRASTRUCTURE

PART 1 – GENERAL

1.1 Include all labor, equipment and materials necessary for providing a complete networking infrastructure system as described herein and/or as indicated on the drawings.

1.2 Related specification sections:

1.2.1 Section 26 01 00 - General Provisions

1.2.2 Section 26 05 33 - Conduit and Fittings

1.2.3 Section 26 05 19 - Conductors

1.2.4 Section 26 05 34 – Outlet and Junction Boxes

1.3 Approved Products and minimum contractor certifications

1.3.1 All components shall be manufactured by one of approved manufacturers, the installing contractor must have the accompanying certification from the product manufacturer for installation of a "Warranted System" as required by each manufacturer and as indicated in these specifications. **Acceptable manufacturers are:**

1.3.2 **Commscope**

1.3.2.1 Installing contractor must be **Commscope** certified to install this system

1.3.2.2 **Installing Contractor must be PartnerPro certified to install any of the systems under the Commscope Family of brand names**

1.3.2.3 **The Infrastructure System shall be provided with a 25-Year Warranty**

1.3.2.4 **Pursuant to Public Contract Code Section 3400(b), the materials, products, things or services in this Specifications section are designated by specific brand name or trade name for the purposes of matching other products in existing District projects to establish District-wide uniform, complete and compatible systems in order to facilitate the most technologically competitive and feasible education for school**

children in the District. A copy of the District findings and Resolution in accordance with Public Contract Code Section 3400(b) is available upon written request at the District.

1.3.3 Systems or components as manufactured by any other manufacturers which, are not specifically listed in 1.3.2 are not approved for use on this project. Specified system warranties are to be established between the component manufacturers and the owner, warranties between the cable manufacturer or installing contractor and the owner are not considered equal.

1.3.4 Installing contractor qualifications: Firms and their personnel must be regularly engaged in the installation of data networking cabling and equipment for systems of similar type and scope. The contractor must have a full service office able to respond to emergency callouts during the warranty period. The contractor must also provide complete installation of all wiring and devices or equipment. Subcontracts with electrical contractors or other warranted or non-warranted contractors for supervised installation of any part of this system are not approved. All conduit and standard back boxes will be furnished and installed by the electrical contractor. Specialty boxes will be furnished by the equipment supplier and installed by the electrical contractor.

1.3.5 Equipment qualifications: It is the intent of these specifications that each bidder provides all hardware, components and installation services that are necessary to ensure a fully operational Category-6 wiring system including warranties, proposed in the EIA/TIA Category-6 and the ISO Class E drafts.

1.3.6 **Warranty: Warranty shall be a full "Performance Warranty" installed by a "Certified Contractor" as specified by one of the approved manufacturer's A "Component Warranty" will not be considered equal.** All components, labor, and 'Link Performance Criteria'' shall be warranted by one of the approved manufacturers. Warranty shall be to the customer for 25-years (some warranty programs may be greater, this is a minimum requirement) after Customer acceptance and sign-off of the completed system. **The contractor must provide documentation from one of the approved manufacturers as indicated in Section 1.3.2 indicating their qualifications for installation of this system in compliance with the manufacturers warranty requirements as a warranted contractor.**

1.4 In order to ensure project cohesion, a single point of contact is required to provide a "TURNKEY" solution. The work covered under this section of the specification consists of furnishing all labor; cabling; equipment; supplies; materials, and training. The Contractor will perform all operations necessary for the "TURNKEY" and fully completed installation in accordance with the specifications herein. As such, the successful

contractor must be factory trained on all aspects of system hardware. The successful Contractor shall be a California licensed C7 or C10 premise wiring contractor as defined in this specification. Subcontractors may not be utilized in the implementation of the plant wiring installation or certification process. The contractor shall provide a licensed, qualified electrical contractor for installation of all conduits, outlet and junction boxes, trenching and pull box installations.

1.5 The drawings indicate a schematic routing of cables above ceilings. The Contractor shall field-verify the most appropriate routing of all above-ceiling cable prior to bid. Where cables penetrate through walls a conduit sleeve shall be provided**. Where cables pass through fire rated walls, the conduit sleeve shall be sealed to maintain the rating of the wall assembly.**

1.6 General Submittal Requirements

1.6.1 **Phase I Submittal** shall be made in electronic format within (20) working days after the award of the contract by the District. This submittal shall include the following:

1.6.1.1 Complete Bill of Materials in Excel Spreadsheet format with bills of quantities, including all materials, components, devices, and equipment required for the work. The bills of quantities shall be tabulated respective of each and every system as specified, and shall contain the following information for each Section listed:

1.6.1.2 Description and quantity of each product.

1.6.1.3 Manufacturer's Name and Model Number.

1.6.1.4 Manufacturer's Specification Sheet or Cut Sheet. Material Cut Sheets shall provide detailed product information and shall be original manufacturer product bulletins. Copies of material information from vendor websites shall not be considered equal and will not be excepted.

1.6.1.5 Material Cut Sheet part number provided shall be highlighted or provided with an arrow directed at the corresponding part number.

1.6.1.6 Specification Item Number referenced for each required product or if not shown in the specifications, Drawing Detail Number being referenced. (ie; Spec. 271000 Item 2.1 or DWG E4.15/#1)

1.6.1.7 Include with submittals all warranty information and a description of support and maintenance services to be

provided. Also include all licenses and maintenance agreements required for continued operation of the equipment.

1.6.2 **Phase II Submittal** shall be provided with (20) working days after the approval of the Phase I submittals and prior to any fabrication of field conduit installations. All shop drawings shall be engineered in a CAD Software. Submission shall include electronic print copies to match the contract drawings, and Phase II submittals drawings shall include the following:

1.6.2.1 MDF and IDF equipment rack or cabinet elevations will be required to be provided including cable routing, grounding, support, UPS, network electronics, etc. and position of all components in the rack or cabinet.

1.6.2.2 Provide labeling plan which identifies the proposed scheme for identifying all components including racks, patch panels (fiber and copper), site distribution feed cables, horizontal station cables and site conduit systems (handholes, pullboxes, etc.).

1.6.2.3 Provide shop drawings showing all end device locations, tap values, paging zones and amplifier sizing for each zone for analog speakers and horns, including devices connected to IP-Based zone controllers.

1.6.3 **Common submittal mistakes** which will result in submittals being rejected:

1.6.3.1 Not including the qualifications of the installing contractor.

1.6.3.2 Not including all items listed in the above itemized description.

1.6.3.3 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed, or crossing out the items which are not applicable.

1.6.3.4 Not including actual manufacturer's catalog information of proposed products.

1.6.3.5 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

1.6.4 **Common submittal mistakes** which will result in submittals being rejected:

1.6.4.1 Not including the qualifications of the installing Contractor Company and Contractor's Staff.

1.6.4.2 Not including all items listed in the above itemized description.

1.6.4.3 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlights, underlining or clouding the items to be reviewed (provided for the project) or crossing out the items which are not applicable.

1.6.4.4 Not including actual manufacturer's cut sheets or catalog information of proposed products.

1.6.4.5 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

1.6.4.6 The Contractor shall make a written request directly to Johnson Consulting Engineers for electronic drawing files (CAD). As a part of the written request, please include the following information:

1.6.4.7 Clearly indicate Project Name and Client, Johnson Consulting Job Number (located in the bottom left corner of JCE Engineering Stamp) and each drawing Sheet Number required (i.e. E1.1, E2.1, E4.1 etc.)

1.6.4.8 Identify the Name, Company, Title, phone number, mailing address and e-mail address of the person to receive the files.

1.6.4.9 Detail or Riser diagram sheet, System Schematic drawings or any other drawings other than floor plans or site plans, will not be made available to the Contractor.

1.6.4.10 Files will only be provided in the AutoCAD format in which they were created (i.e. version 2015 or version 2016). Files will not be made available in REVIT format.

1.6.4.11 Requests for files will be processed as soon as possible; a minimum of (7) working days should be the normal processing time. The Contractor shall be completely responsible for requeting the files in time for their use and delays in requesting files will not alleviate the Contractor from submitting required documents within the required timeline.

PART 2 - PRODUCTS

2.1 Equipment racks have been detailed on the drawings and additional component information requirements have been described in the MDF or IDF products sections. The following is a list of approved manufacturers for each type of rack system.

2.1.1 Alternate equipment manufacturers other than those indicated will not be reviewed or approved for use on this project.

2.1.2 (Open Frame) shall be manufactured by Chatsworth Products Inc. (CPI). CPI Model #50120-703 Quadrarack 4-Post equipment rack, 84" High by 29" Deep, black color. See MDF and IDF Room sketches for quantity of racks required.

2.2 Open Frame 4-Post Racks, 19" mounting Width by 84" High by 29" Deep with #12-24 mounting holes as shown in the MDF of IDF Room layouts. Contractor shall be responsible for providing all racks and accessories. Furnish and install with the following:

2.2.1 The racks shall be provided with structural seismic bracing using cable runway to the top of the rack.

2.2.2 Universal 12" cable runway shall be as manufactured by CPI Model 10250-712. The cable runway shall be furnished with the additional adapters, connectors, support components, bends and offsets and extensions as required to fit the room and layout.

2.2.3 Anchor the cable runway to the wall with the appropriate width angle bracket and bolts as manufactured by CPI Model #11421-712.

2.2.4 The cable runway shall also be attached to the top of the rack with the appropriate adapter panel. Cable runway shall be directly attached to the 4-Post racks with J-Hooks.

2.2.5 Cable runway routed along walls, shall be offset from the wall a minimum of 6" and shall be supported with cantilevered wall mount brackets.

2.2.6 Floor mounted racks shall be structurally anchored to the floor with the anchors and bolts.

2.2.7 Provide full length vertical wire managers, CPI Double-Sided Narrow Vertical Manager, Part #12096-703, on each side of each rack. Vertical managers between racks may be substituted with the CPI #11729-703 6" wide double-sided manager. Single narrow vertical managers shall be provided on each end of the group of racks.

2.2.8 Provide (1) adjustable full depth vented shelf for each 4-Post equipment rack as manufactured by CPI #12700-719.

2.2.9 Provide horizontal wire managers between each patch panel or (1) manager per patch panel. Provide (1) spare manager per rack. Provide 2RMU height managers for each 48-Port patch panel and 1RMU height managers for 24-Port patch panels. CPI part #30130-719 and #30139-719.

2.2.10 Rack mounted surge arrest style power distribution units (PDU) shall be Contractor College District furnished and Contractor installed. Coordinate with the District for the final locations of the PDUs in the racks and the type to be provided.

2.2.11 Provide One or Two Rack-Mounted Power Distribution Units per equipment rack as shown on the Detail Drawings. Rack mounted surge-arrest style Power Distribution Unit (PDU), 1RU (Rack Unit) in height, TrippLite Model #PDUMH15NET2 with (8) NEMA 5-15R outlets, built-in SNMP Ethernet interface and NEMA L5-15P input with 5-20P adapter or approved equal by APC. Provide with minimum 10-foot cord for the PDU.

2.2.12 Contractor shall be responsible for neatly routing, storing and connecting the power cords from the PDUs to the electrical outlet or UPS as directed by the District. Power cords shall be dressed separately from the UTP cables or any other low voltage cable and shall be secured to the back of the rack or cable runway with Velcro ties.

2.2.13 Contractor shall be responsible for neatly routing, storing and connecting the power cords from the PDUs to the electrical outlet or UPS as directed by the District. Power cords shall be dressed separately from the UTP cables or any other low voltage cable and shall be secured to the back of the rack or cable runway with Velcro ties.

2.2.14 Furnish grounding to each rack. Each rack shall be provided with a grounding terminal block, #6 Ground wire from the rack to the bus bar and a compression lug on the end of the ground wire at the bus bar. Provide grounding components as manufactured by CPI #40167-001 terminal block and #40162-901 compression lug or approved equal.

2.2.15 Provide (1) ground bus bar kit per MDF Room. Ground Bus Bar Kit as manufactured by CPI #40158-012 or approved equal. Ground Bus Bar and all bonding conductors to the bus bar shall be labeled. Grounding conductors shall be routed to the equipment racks, cable runway and electrical panel

Main Distribution Frame (Existing MPR Building)

2.3 The main Distribution Frame (MDF) Room is existing

2.4 Provide Fiber Optic Feed Cable Patch Panels – Fiber optic termination equipment (rack mounted), including all associated installation hardware. The equipment must have a sufficient number of ports to connect all fibers in every cable terminated at this location. Provide 25% spare capacity for future wiring requirements, including bulkheads in the fiber patch panel. Provide blank fillers for all used portions of the panel. All fiber feed cables shall be terminated in a single fiber optic patch panel up to 144 strands. Additional strands shall be terminated in the largest size required to continue the remaining fibers.

2.4.1 Contractor shall provide a minimum of 6-feet of slack on the fiber feed cable in the fiber optic patch panel. The first 48" of a tight buffered cable or the first 24" of a loose tube cable shall not be stripped back in the patch panel. Each type of cable shall have a minimum of 24" of stripped slack within the patch panel. Total slack within the patch panel shall not be less than 6-feet in length.

2.4.2 All fiber cables shall be secured to the patch panel with the Kevlar strength members at the manufacturer provided anchor point at the rear of the panel.

2.4.3 All fiber optic feed cables routed to the MDF Room shall be provided with 20-feet of slack for a service loop mounted on the backboard behind the existing racks. Contractor shall provide a 24" diameter wall mounted service loop manager for the fiber optic feed cables as manufactured by Leviton #48900-FR

2.4.4 Provide all other items as detailed on the drawings.

Intermediate Distribution Frame

2.5 The Intermediate Distribution Frame shall be a secondary wiring and equipment location for the data networking system. The contractor shall include the following items at this location.

2.5.1 Provide backboard 8'-0" high x ¾" thick, with a minimum 48" width. Refer to the floorplans for the actual layout of the backboard coverage. Plywood mounting backboard shall be flame resistant, painted with fire resistant paint "white" or color to match the room finish. Contractor shall provide minimum one side finish grade plywood. Backboard shall be mounted with finish side out, regardless of location of fire rating stamp. Show proof of fire rating stamp to IOR on Inspector prior to installation.

2.6 Provide Fiber Optic Feed Cable Patch Panels – Fiber optic termination equipment (rack mounted), including all associated installation hardware. The equipment must have a sufficient number of ports to connect all fibers in every cable terminated at this

location. Provide 25% spare capacity for future wiring requirements. Provide blank fillers for all used portions of the panel. All fiber feed cables shall be terminated in a single fiber optic patch panel.

2.6.1 Each IDF location shall be furnished with a minimum 24-Port patch panel, fully loaded with bulkheads. Type of connectors in the bulkheads shall be determined by the type of connectors used for termination of the fiber feed cables.

2.6.2 Contractor shall provide a minimum of 6-feet of slack on the fiber feed cable in the fiber optic patch panel. The first 48" of a tight buffered cable or the first 24" of a loose tube cable shall not be stripped back in the patch panel. Each type of cable shall have a minimum of 24" of stripped slack within the patch panel. Total slack within the patch panel shall not be less than 6-feet in length.

2.6.3 All fiber cables shall be secured to the patch panel with Kevlar strength members at the manufacturer provided anchor point at the rear of the panel.

2.6.4 All fiber optic feed cables routed to the IDF Room shall be provided with 20-feet of slack for a service loop mounted on the backboard behind the rack. Contractor shall provide a 24" diameter wall mounted service loop manager for the fiber optic feed cables as manufactured by Leviton #48900-FR.

2.7 Provide Category-6 Modular Patch Panels (rack mounted) with RJ45 style connectors, for terminating all new twisted pair cable from each Voice, Data, IP-Page Speaker/Horn and Audio-Visual System outlet served from this location. All UTP patch panels shall be 48-port Fully-Loaded minimum. Confirm colors with IT Department prior to ordering. Provide cable support bars at the rear of each patch panel all cables shall be secured to bars with velcro straps.

2.8 Provide all other items as detailed on the drawings.

IDF UPS Requirements

2.9 ***General UPS Requirements – The Contractor shall coordinate with the Division 26 Contractor to properly locate the power outlet connection for the UPS in the IDF Room. The location shown on the floor plans is diagrammatical and does not give the Division 26 Contractor an exact placement. In addition, all UPSs must be furnished with heavy duty mounting bracket kits.***

2.9.1 ***All IDF locations shall be provided with a UPS.***

2.9.2 ***IDF Room UPS; Uninterruptible power supply with mounting brackets and all cables. UPS shall be provided with backplane configuration containing:***

2.9.3 ***Minimum of (3) 15-amp, 120-volt, Non-Locking NEMA 5-15R; (3) 20-amp, 120-volt, Non-Locking NEMA 5-20R; (1) 20-amp, 120-volt, Locking NEMA L5-20R output receptacles.***

2.9.4 ***Input of (1) 20-amp, 120-volt, NEMA 5-20P plug installed on 8'-0" power cord.***

2.9.5 ***APC Smart-UPS X Rack/Tower Convertible Model # SMX2000RMLV2UNC with Network Card and Extended Run Time***

2.9.6 ***Provide each UPS with the Built-In Network Interface card – Model #AP9631 in UPS. Power Management Software to be included with all UPS models. Network Management Card shall be provided with Environmental Sensor connections.***

2.9.7 ***Provide optional Environmental Sensor/Monitor for UPS. Environmental Sensor Unit with Temperature and Humidity monitoring shall be connected to the UPS and mounted to the top of the rack.***

2.9.8 ***All UPS products shall be furnished with a 3-Year Warranty***

Fiber Optic Patch Cords

2.10 Fiber optic patch cords shall be furnished and installed by the Contractor.

2.11 All fiber optic patch cords furnished by the Contractor shall match the grade and glass of the fiber optic feed cable installed for the network infrastructure cabling system. The Contractor shall confirm with the District IT Department the type of connector required at the network equipment prior to ordering or installing the patch cords.

2.12 Multimode Fiber Optic Patch Cords - Patch cords shall be duplex 50/125um, (OM4) Laser-optimized grade Multimode optical glass. Fiber optic patch cords shall be furnished with “SC”-Type connectors at the Fiber Patch Panel end and “LC”-type connectors at the Network Switch end. All Multimode patch cords shall be Aqua in color. Patch cords shall be 6-feet (2-meters) in length. Provide Four (4) 3-Meter (Approx. 9.5 Feet) Multimode Fiber Optic Patch Cords for the existing fiber optic feed cable from the Building ‘200’ MDF Room to the existing Building 1600 (Kitchen/Cafeteria) IDF Cabinet, Two (2) for each end of the cable run.

2.13 Contractor shall be responsible for confirming the network switch connections with the District IT Director prior to ordering or installing the patch cords.

Copper Patch Cables

2.14 Copper Patch cables shall be furnished and installed by the Contractor.

2.15 Provide Patch Cables at the equipment rack location in the following colors related to the function of the data drop.

2.15.1 Color; Blue (Data)

2.15.2 Color; Gray (AV/Projector)

2.15.3 Color; White (Phone/Voice Trunk)

2.15.4 Color; Yellow (IP Speakers/Speaker-Clock Combination)

2.15.5 Color; Orange (Wireless Access Point)

2.15.6 Color; Red (Video Surveillance Camera)

2.16 Patch cords shall be in compliance with the manufacturer's "Channel" warranty requirements

2.17 Provide (Color as Shown) Category-6 (Patch Panel End) Patch Cables with pre-molded boot, provide quantity equal to:

2.17.1 Provide quantity equal to 50% of the total Voice/Data Infrastructure cable drops or ports provided. Allow for 15% of total copper Patch Cables required to be (7) feet in length, and all remaining Patch Cables shall be (4) feet in length.

2.17.2 Provide (color per detail drawings and station insert color) Category-6 (patch panel end) Patch Cables with pre-molded boot, provide quantity equal to 100% of the total IP Clock/Speakers, Wireless Access Points, LCD Projector/Audio-Visual and IP camera cable drops or ports provided. Verify with Customer all ports which will be activated. All Patch Cables to be installed by Contractor. All Patch Cables shall be (4) feet in length, unless otherwise shown in the drawings or specifications.

2.18 Provide Category-6 (Workstation End) Patch Cables with pre-molded boot, provide quantity equal to:

2.18.1 Provide quantity equal to 50% of the total Voice/Data Infrastructure cable drops or ports provided. Provide for 10% of total copper patch cords required to be (15) feet in length and all remaining Patch Cables shall be (10) feet in length.

2.18.2 Provide (color per detail drawings and station insert color) Category-6 (Device Location end) Patch Cables with pre-molded boot, provide quantity equal to 100% of the total IP Clock/Speakers, Wireless Access Points, LCD Projector/Audio-Visual and IP camera cable drops or ports provided. Verify

with Customer all ports which will be activated. All Patch Cables to be installed by Contractor. All Patch Cables shall be (2) feet in length, unless otherwise shown in the drawings or specifications.

2.19 Requirements for all copper patch cords furnished:

2.19.1 Color of patch cords shall be determined by the color code shown in detail drawings.

2.19.2 Patch cords shall as manufactured by Commscope based on the Approved Network Infrastructure System furnished by the Contractor.

2.19.3 Patch cords furnished must be in compliance with the manufacturer's "Channel" warranty requirements. Patch cords not warranted through the selected manufacturer Channel warranty program will not be approved for use with the network infrastructure.

2.20 Provide all other items as detailed on the drawings

Campus Indoor/Outdoor Fiber Optic Feed Cable

2.21 Provide one continuous fiber optic cable routed from the Main Distribution Frame fiber patch panel to each intermediate Distribution Frame fiber patch panel, and/or other locations as shown on the drawings.

2.22 Outdoor Fiber Feed Cable Applications – Fiber optic cable shall be rated for indoor/outdoor riser rated applications. Construction shall consist of, all dielectric, tight buffer with central strength member, flame retardant PVC or PE jacket, rated OFNR, dry water-blocking compound only, and blank fillers are required. Central tube type fiber will not be considered equal.

2.23 Fiber optic feed cables for the data infrastructure must be installed as follows:

2.23.1 Multimode Fiber Optic feed cable runs – Fiber optic feed cable containing only Multimode strands shall be installed as a single feed cable. Provide a 12-strand of multimode fiber optic feed cable in a single jacket, as shown on the riser diagram, to the IDF locations.

2.23.2 Feed cables shall be clearly defined and labeled for each system. Provide color coding designations with a different color marker for the multimode and/or single mode fiber feed terminations in the fiber patch panels.

2.24 Cable shall contain one or all types of fibers listed below:

2.24.1 Provide Multimode 50/125-micron fiber optic glass, (minimum OM4+ laser-optimized grade, extended distance) for dual mode operation at 850 nm and 1300 nm wave lengths.

2.24.1.1 Maximum attenuation at 3.0dB/km @ 850nm and 1.0dB/km @ 1310nm. Minimum 1-gigabit Ethernet distance guarantee of 1110 meters @ 850nm and 600 meters @ 1300nm. Minimum 10-gigabit Ethernet distance guarantee of 550 meters @ 850nm/1300nm. Fiber shall be ISO-TIA OM4 plus rated.

2.24.2 Refer to drawings for cable types required. Refer to acceptable cables section for additional information and approved manufacturers.

2.25 Each fiber optic cable shall contain the quantity of strands of optical fibers as detailed on the drawings.

2.26 All fibers in a multi-fiber cable shall be fully operational within the required performance characteristics. If any individual fiber does not meet the minimum standards, the entire cable must be replaced, end to end, including connectors, without any additional expense to the customer.

2.27 Acceptable cables shall be:

2.27.1 Commscope Multimode –Systimax LazrSpeed 550 OM4

2.28 Above glass types are an example of product names per manufacturer. Confirm requirements for indoor/outdoor, riser and plenum rated cable with riser drawings and site plans. Part numbers for composite style cable will vary greatly. Confirm part numbers with manufacturer

Category-6 Station Cable

2.29 Provide one Category-6, 4-pair, unshielded twisted pair (UTP) cable from the nearest MDF or IDF to each RJ45 data outlet port indicated on the drawings. Dual port outlets will require two such cables. Four port outlets will require four cables.

2.30 Category 6 cables shall be copper wire, individually insulated and color coded. Color for station cabling shall be provided as shown in the drawing details. Confirm color of cable jackets prior to ordering with the District IT Director. Contractor shall be responsible for providing the correct jacket color per the drawings per District Standards.

2.31 The cables shall be UL or ETL rated and UL verified in compliance with proposed Category-6.

2.31.1 Commscope — CS37R

2.32 Manufacturer names and part numbers are shown as a point of reference and do not specifically designate required packaging or color for the cable. Contractor shall verify colors and packaging all options shall be determined by District preferences.

2.33 Where data cables are indicated to run underground, contractor shall use a Category-6 flooded cable: Comm Scope - Ultra Media Series - #6NF4

IDF to MDF Voice Feed Cables

2.34 ***Provide multi-pair UTP Category-3 cable from each IDF to the MDF, unless otherwise shown on the drawings. Cable must be 24 AWG, 22 AWG conductors will not be approved as an acceptable equal. Refer to the Riser Diagram for size of feed cables to be provided. Cables shall be 25-Pair to each of the IDF locations unless otherwise shown on Riser diagram.***

2.35 ***The outside plant cable shall have an aluminum shield, conductors surrounded by FLEXGEL III filling compound (or other water-blocking compound) and have a black polyethylene jacket.***

2.36 ***For voice feed cables, terminate all pairs on both ends of the cable on 66-Type termination blocks. Follow standard voice color codes for termination. Refer to the Voice/Data Riser Diagram for additional requirements.***

2.37 ***Feed cables shall be terminated on 66-Type Termination Blocks at the MPOE Backboard in the MDF Room as shown in the Riser Diagram. Contractor shall provide cross-connects from the MPOE Entrance Blocks to the Voice Feed 66-Blocks for the Voice Trunk connections to the IDF Voice Trunk Patch Panels.***

2.38 ***Feed cables shall be terminated on 66-Type Termination Blocks at the Communications Backboard in the IDF Room as shown in the Riser Diagram. Contractor shall provide at Voice Trunk Patch Panel in the IDF Equipment Rack for Voice Trunk connections. The 24-Port Voice Trunk Patch Panel shall be provided with a Female RJ21 50-Pin Amphenol Telco Connector on the back on a circuit board wired to (24) RJ45 ports on the front of the panel. Each RJ45 Port shall be wired with only Pins #4 and #5 Active. Voice Trunk Patch Panel shall be as manufactured by Panduit Model #VP24382TV25Y (Or Approved Equal). Female RJ21 50-Pin Amphenol Telco Connector on the back shall be provided with a Male 25-Pair Tail, length as required, routed to the 66-Type Termination Block on the backboard. Terminate cable spliced straight through on the block with the 25-Pair Voice Feed cable from the MPOE Backboard. See drawing details for additional requirements.***

2.39 ***All voice feed cables will be tagged on the incoming cable with a typed permanent label with information as to its origin, house pair count, and cable destination. All termination blocks shall be labeled with type written labels that fit between the termination blocks (e.g. clear snap-on covers, adhesive labels and holders). Pairs shall be identified a minimum of every 5 pair on the block.***

2.40 ***Provide distribution rings for the termination blocks mounted at the MDF and IDF locations.***

2.41 ***Ground and bond feed cables at one end of cable to aluminum shield with approved "bullet bond" type ground lug and #10 AWG green ground wire. Connect ground wire to closet ground buss bar.***

2.42 ***Acceptable manufacturers shall be: Superior Essex or equal, for outdoor riser cable applications.***

2.43 ***Data Contractor is responsible for providing the District with detailed feed cable documentation as well as identifying all of the physical cable in the MDF and IDF locations. Contractor shall have all installation, termination and documentation of voice feed cable completed and released to the telephone equipment vendor, a minimum of three weeks prior to the cut-over date set by the District.***

2.44 ***Data Contractor is responsible for testing connectivity from the punch blocks in the IDF closets to the main feed cable blocks in the MDF Room. Test all pairs for continuity and polarity. All testing must be completed a minimum of three weeks prior to the cut-over date set by the District***

Category-6 Outlets

2.45 Unshielded twisted pair Category-6 outlets shall be an RJ45 Enhanced performance type 8-position / 8 conductor modular jacks, and shall comply with Category-6 performance requirements. Provide single port, dual port, four port or quantity as indicated on the floor plans at each outlet location. All outlets shall be wired in an EIA/TIA 568B configuration.

2.46 Provide Category-6 inserts, wired for EIA 568B. Provide installation kits for all locations furnished with Category-6 UTP cabling.

2.47 Refer to the detail drawings for color of the Category-6 outlets required. Contractor shall be responsible for confirming all color requirements prior to ordering.

2.48 Provide the following Category-6 UTP data connector per Network Infrastructure warranty requirements;

2.48.1 Commscope - USL Series USL600

Outlet Faceplates

2.49 Provide a two-port faceplate for all one and two port outlet locations. Provide blanks for all unused openings.

2.50 Provide a four-port faceplate for all three and four port outlet locations. Provide blanks for all unused openings.

2.51 All fax/modem locations shall be provided as single port outlets. Requirements shall be the same as a single port data outlet as shown on the Technology Legend.

2.52 For single port voice outlet locations intended for wall telephone connections, a wall telephone type faceplate with attachment studs shall be provided. The wall telephone jack shall be 8-pin, RJ45 type and use IDC wire terminations only. Provide Category-6 insert, within stainless steel wall plate faceplate. Provide faceplate from the approved manufacturers listed in the specifications.

2.53 Wireless Access Point data connections for ceiling mounted WAPs shall be terminated above the accessible ceiling at the wireless access point (WAP) location. Refer to the drawing details for additional requirements.

2.54 Wireless Access Point – Provide data connections for WAPs terminated at the WAP location as shown in the drawing details. Provide surface mount box by Commscope Series 2-Port #M102SMB-B-262. Label the cables and faceplate the same as standard data outlets.

2.55 IP Clock/Speakers - Provide single port, small surface mounted box Commscope Series 1-Port #M101SMB-B-262, in White, for IP Clock/Speaker data outlets. Mount data outlet in back of IP Speaker enclosure. Label the cables and faceplate the same as standard data outlets.

2.56 IP Cameras - Provide data connections for IP-Based Camera Outlets terminated at the Camera location as shown in the drawing details. Provide surface mount box by Commscope Series 2-Port #M102SMB-B-262. Label the cables and faceplate the same as standard data outlets. The location shall also be furnished with a blank weather-tight faceplate to protect the data termination until the cameras are installed.

2.57 Audio-Visual/Projector Locations - Provide data connections for IP-Based Audio-Visual Outlets terminated at the AV/Projector location requiring a surface mount box type connection as shown in the drawing details. Provide surface mount box by Commscope Series 2-Port #M102SMB-B-262. Label the cables and faceplate the same as standard data outlets.

2.58 All faceplates and surface mount outlet boxes shall be furnished with label windows. All labeling shall be installed within the label window.

2.59 Confirm color of all faceplates prior to ordering. All data outlet faceplates shall have a unique sequential identification number applied to faceplate. Hand written labels are not permitted. All color schemes shall be approved by the customer prior to installation.

2.60 Colored inserts are required for this project. Refer to the detail drawings for the exact color scheme to be provided. Inserts submitted that do not follow the color and identification requirements will be rejected. Inserts installed that do not follow the color coding as shown in the detail drawings will be replaced at the Contractor's expense.

2.61 All labels will be installed under label windows. Labels adhered to the surface of the faceplate will not be accepted. Contractor must provide clear laminating type of cover material over the surface mounted labels where used.

2.62 Reference the drawings for special outlet configurations or plate requirements

2.63 All data outlet faceplates shall have a unique sequential identification number applied to faceplate. Refer to the detail drawings for labeling requirements. Hand written labels are not permitted. Faceplates, with the exception of wall telephone outlets, shall include color coded port inserts. All color schemes shall be approved by the District prior to installation.

2.64 Reference the drawings for special outlet configurations or plate requirements

Wireless Access Points

2.65 ***The District will provide all Wireless Access Point units and programming will be by the District IT Department. Coordinate with the District IT Department which Exterior WAP data drop locations will be provided with an Exterior WAP Device. Not all locations shown on the drawings will be provided with a WAP. Unused Exterior WAP locations shall be provided with a blank weatherproof gasketed wallplate.***

2.66 ***The Interior WAPs being installed inside the buildings will be furnished and installed by the District.***

2.67 ***The Exterior WAPs being installed on the outside of the buildings will be District Furnished and Contractor installed. Exterior WAPs installation shall be based on the Aruba APEX Model #577. Each Wireless Access Point is required to be provided with the wall mounting bracket and Category-6 patch cord for installation by the Contractor. The Contractor shall provide a key sheet list including the nearest room number, building location and MAC address of each device installed to the District IT Department.***

2.68 ***Provide minimum 10' Service Loop on the cable at each WAP location stored inside the accessible ceiling above the Exterior WAP location on J-Hooks as shown in the detail drawings. Locations in areas without accessible ceiling shall have the slack stored in the ceiling at the point where the run transitions to conduit from the nearest accessible ceiling space. Full conduit runs to the IDF Closet do not require a Service Loop.***

2.69 ***Refer to drawing details for installation requirements for WAP locations. The Contractor shall furnish and install all mounting brackets for the WAP locations in the accessible ceiling and for the wall mounted locations.***

Paging Speakers and Horns

2.70 Atlas/IED existing Speaker/Horn Standard on Campus (No Approved Equal). The IP-based Interior/Exterior Intercom Speakers and Horns shall be furnished by the District and installed by the Contractor. All Enclosures and Backboxes shall be Furnished and Installed by the Contractor. All programming of the IP-Based speakers shall be completed by the District.

2.71 All Analog Exterior Horns shall be furnished and installed by the 27 10 00 Contractor. The Contractor shall furnish and install the IP-Based Zone Controllers and Analog Amplifiers. Install equipment per the detail drawings and specifications.

2.72 The Contractor shall install the IP-Based Speaker/Digital Clock combinations in the classrooms where shown on the floor plans.

2.73 Data Contractor shall be responsible for providing enclosures for all speakers and horns. Contractor shall provide vandal resistant screws with all enclosures for attachment of the speaker/horn baffle. Exterior locations shall be provided with stainless steel vandal resistant screws.

2.74 Flush mount enclosures shall be furnished by the 27 10 00 Contractor and installed by the Division 26 Electrical Contractor as shown in the floor plans. 27 10 00 Contractor shall deliver enclosures to the Electrical Contractor in a timely fashion so as not to adversely impact the project schedule. Coordinate with Electrical Contractor and Construction Manager as long lead times are typical for this product.

2.75 Surface mounted enclosures shall be furnished and installed with vandal resistant screws for attachment of the speaker/horn baffle to the enclosure. If enclosure is located on the exterior of the building, the enclosure shall be provided with stainless steel vandal resistant screws.

2.76 Contractor responsible for proper paging coverage and tap settings at the speakers/horns.

2.77 All exterior loudspeaker circuits shall operate balanced to ground. Bonding shall be provided to assure equal potential measurement between the chassis of all amplifiers, power supplies, etc. Bond to the ground bus bar.

2.78 Each Analog Speaker/Horn location cable shall be home run to the IDF rack/cabinet. Provide 1-pair, 18-gauge CMR rated speaker cable to each horn location. Terminate speaker cable on terminal strips only. Punch Blocks will be rejected and are not an acceptable form of terminating the specified cable.

2.79 Contractor shall run a speaker cable from the amplifier to the page interrupter for the audio-visual system in each room. The connection will serve to cut off the audio from the AV system when the paging system is engaged. Coordinate the connection with the 27 21 00 Contractor and the 27 20 00 Contractor. Speaker connections to the AV system may be looped, but the Contractor is responsible for insuring that the signal strength is sufficient to allow the interrupter to operate properly.

2.80 Recessed flush mount IP Speaker/ Clock combination; Provide flush mount enclosure installed in gypboard wall with District furnished ***Atlas/IED PoE+ Indoor Wall Mount IP Endpoint Speaker with LED Display, Talkback Microphone, and LED Flashers Model #IP-8SCMF***. Enclosure shall be as manufactured by Atlas Model ***#IP-FEST-SD***.

2.81 Surface mount IP Speaker/Clock combination; Provide surface mount ***slanted*** enclosure installed on gypboard wall with District furnished ***Atlas/IED PoE+ Indoor Wall Mount IP Endpoint Speaker with LED Display, Talkback Microphone, and LED Flashers Model #IP-8SCMF***. Enclosure shall be as manufactured by Atlas Model ***#IP-SEA-SD***.

2.82 ***Recessed flush mount IP Speaker; Provide flush mount enclosure installed in gypboard wall with Contractor furnished IP Speaker with Talkback Microphone Atlas/IED Model # IP-SM. Enclosure shall be as manufactured by Atlas Model #IP-FEST-SD.***

2.83 Surface mount exterior horn; Provide Atlas Sound Part #APF-15T with surface mount vandal resistant enclosure Part # SE161-R6 and Part #VP161-APF baffle grille. Unit must be weather resistant.

2.84 Provide a (2) foot long, CAT-6, UTP patch cord, gray in color, for each speaker location to connect to the ethernet drop located in the enclosure. Provide patch cords for 100% of IP Speaker/clock locations. Provide (3) spare patch cords, deliver all Patch cords to the District IT Department.

2.85 The District shall be responsible for providing licensing requirements and Informacast software to drive speakers and program tones, bell schedules and announcement controls.

2.86 Programming of speakers/clock for page coverage zones, tones, time schedules, pass class bell and VoIP interface to be completed by the District IT Department and is also responsible for providing IP addressing and identification of individual speakers.

2.87 Provide Atlas IED IP-ZCM2RMK for even quantities or IP-ZCM1RMK (for single zone needs) at the IDF locations. The quantity of zone controllers to be furnished at each closet location shall be dependent on the number of zones shown on the floor plans and the number of buildings serviced by the IDF closet. Contractor shall coordinate the zoning for the campus with the District IT Director.

2.88 Provide amplifiers for the analog paging speakers and horns connected to the zone controllers. Amplifiers shall be rack mounted in the MDF or IDF equipment rack or

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cabinet. Provide rack mount adapter bracket as required to mount one or two amplifiers in a single rack unit. Provide quantity of amplifiers to service the quantity of horns and speakers as shown on the drawings. A separate amplifier must be provided for each IP zone controller output. Size of amplifier shall be determined by the load, plus 25% expansion capacity. Larger amplifier may be required for a single zone depending on quantity of horns and speakers requiring amplification. Contractor is responsible for providing sufficient power amplification to service all speakers and horns. Contractor is responsible for connecting the amplifiers to the IP zone controllers and insuring proper operation between the zone controller and amplifiers.

2.89 Provide amplifier choice based on load: Approved Models; JBL CSA series, 280Z/2120Z or approved equal by Ashly. Total amplifier wattage on each channel shall allow for 20% headroom with speakers tapped according to the specifications. Contractor MUST submit a line diagram showing all locations and tap values with amp load as part of the Phase II submittals, see section 1 for more information.

2.90 Provide rack mount adapter bracket, one bracket for each pair of amplifiers provided. If there is a single amplifier to be installed at the rack, the amplifier would still require the rack mount bracket. Provide optional Level Control Security Covers for all models.

2.91 Contractor shall be responsible for testing all paging speakers and horns and insuring the proper volume levels are set on the paging devices and amplifiers. Provide (4) man hours (not including travel time) for re-adjustment of the paging speakers and horns volume levels per the District's requirements 4 weeks from the final sign-off of the modernization project. Travel time to and from the site shall be included in the service.

PART 3 - INSTALLATION

3.1 Upon completion of 10% of the cabling installation, the Contractor shall notify the Project Engineer for an inspection of the methods and types of materials used on the project. The Contractor shall give a minimum of 72 hours notification to the Project Engineer for the scheduling of the inspection. The Contractor will be given a written review of the findings, so if adjustments are required, they can be done before the project proceeds. The Contractor shall be responsible for adhering to the findings and a follow-up inspection will not be provided.

3.2 Pull strings shall be provided with all cable runs including but not limited to: conduit stub ups, conduit sleeves, cable trays, open wiring routes, innerduct and point-to-point conduits. Pull strings shall be free from cable bundles in open wiring routes. Pull strings shall not be substituted for pull ropes for the exterior site conduits.

3.3 Velcro cable management straps are required on all Category-6 cable bundles, the last 20 feet or upon entry into equipment closet, a maximum of 12" apart. Cable bundles shall also be routed through cable managements or "D" rings in the equipment closet.

3.4 Data Contractor shall supply protective bushings or slide on rings at the ends of all exposed conduits used for data system cabling. This is to include all conduits installed for any future data cabling requirements. Contractor shall submit planned protection bushings prior to installation of cabling for approval.

3.5 Velcro cable management straps are required on the cabling in the rear section of the vertical managers in the equipment racks. Straps shall be a maximum of 12" apart. At a minimum, Velcro straps shall be provided at each point the cables are routed to the patch panels from the main bundle.

3.6 Every fiber in every fiber optic cable must be terminated at both ends of a fiber patch panel in the MDF/IDF closet or cabinet location. Termination shall be accomplished using the correct style of connectors as directed by the specifications with a strain relief boot. All connectors shall be of the same manufacture to ensure compatibility. Polarity of fiber strands must be observed at all times.

3.7 Labeling

3.7.1.1 Each cable run shall be permanently labeled at each end with a unique sequential number which corresponds to a similar number provided for each data outlet and patch panel point. A printed label shall be placed at each of the following locations:

3.7.1.2 On the cable at the rear of the patch panel or termination block. Requires the use of a self-laminating wrap around label. Brady Label self-laminating 1.2" by 1.5" wrap around label Part #29689 (NO ACCEPTALE EQUAL).

3.7.1.3 On each cable in the j-box behind the faceplate location. Requires the use of a self-laminating wrap around label. Brady Label self-laminating 1.2" by 1.5" wrap around label Part #29689 (NO ACCEPTALE EQUAL).

3.7.1.4 On the cable at the terminal strip prior to termination point. Requires the use of a self-laminating wrap around label. Brady Label self-laminating 1.2" by 1.5" wrap around label Part #29689 (NO ACCEPTALE EQUAL).

3.7.1.5 On the face of the patch panel, provide a ¾" by ¾" label with a letter or number identifying the patch panel designation. For special purpose data connections such as WAP, Audio-Visual, IP Page and IP Camera ports, the label shall be designated with colored label icon or marker.

3.7.1.6 On the face of the faceplate in the label holder window. The label shall be clearly defined with a minimum #10 font size.

3.7.1.7 Handwritten labels are not permitted. Where cable ID includes room number identification, the Contractor shall obtain written verification of final room numbers prior to beginning labeling (numbers on plans do not always match final room numbers). Cable pulling cross reference lists will not be accepted with final documentation.

3.7.1.8 Each patch panel port shall be identified with a unique sequential labeling scheme. Port identification labeling pattern shall be consistent throughout the project.

3.7.1.9 All faceplates shall be identified with permanent printed labels. Labels must not be subject to removal by incidental contact. Contractor shall be responsible for replacing defective labeling for a period of one year from date of final sign-off of project.

3.7.1.10 All fiber optic and UTP feed cables shall be identified with permanent, water resistant, printed labels. Labeling information shall include closet identifications, quantity of conductors (UTP) or strands (fiber) and house pair designations (UTP). Cables shall be labeled in the IDF/MDF closets at the site conduit entrance point, riser conduit entrance point and prior to entering either punch blocks or patch panels. Labels for fiber and copper feeds shall include both the name of the origination point and the destination point, house pair or house fiber strand count, cable composition (i.e., 12-Strand MM 50/125 LO; 6-Stand SM). See details for additional requirements.

3.7.1.11 Labeling will follow recommended EIA/TIA standards or as requested by the customer. Contractor will confirm labeling pattern prior to final identification or testing. All test results will be identified by the final labeling scheme. Contractor shall be required to have the labeling scheme approved in writing by the District IT Director prior to manufacture or installation of the labeling.

3.7.1.12 All fiber optic cables and/or innerduct shall be tagged with fiber optic warning tags in every manhole or pullbox. Fiber warning tags shall also be placed at each end of the cable in the termination closets in clear view. A minimum of (3) tags are required at each end, with a label tag on each cable in the service loop. Fiber warning tags shall be placed on fiber optic cable and/or innerduct routed through open ceiling environments at increments no less than 15 feet apart.

3.7.1.13 Refer to detail drawings for additional labeling requirements.

3.8 Where open wiring cables are run through the ceiling space (only permitted where specifically noted on the drawings), the wire shall be bundled together and supported above the ceiling.

3.9 All cables must be fastened to the building structure via “j-hooks” or an approved Category 6 suspension system, and not directly in contact with ceiling system. For “j-hooks” maximum fill capacity is as follows: 1-5/16” hooks – 35 cables; 2” hooks – 60 cables; 4” hooks – 120 cables. For quantities beyond 120 cables, use a sling support system such as “Erico Cable Cat” or equal. Maximum fill capacity 200 cables. D-rings, “Caddy #WMX cable hangar”, “Caddy Bridle Rings”, drive rings or any other type of wire ring support is not allowed.

3.10 Where cables pass through a fire-resistant portion of the structure, conduit sleeves shall be provided to maintain the rating of wall penetrated. Sealing of all penetrations with an approved fire barrier is required. Conduits and sleeves must remain accessible for future use. Permanent sealants may not be used to seal sleeves and conduits.

3.10.1.1 The 27 10 00 Contractor shall be responsible for fire-stopping all unused conduit sleeves in the ceiling or through rated walls. The Electrical Contractor shall be responsible for fire-stopping around the conduit or sleeve, unless the sleeve is installed by the 27 10 00 Contractor, in which case, the 27 10 00 Contractor shall be responsible for all fire-stopping requirements.

3.10.1.2 Expanding foam is not an acceptable sealant for any conduit opening. Contractor shall be responsible for complete replacement of the conduit and cabling in any conduit filled with expanding foam used as a sealant.

3.11 Fiber optic feed cables connecting to equipment racks from the MDF Room or from an adjacent IDF location, shall be installed with not less than a 20-foot service loop between the rack and mounted on the backboard. See drawings for fiber optic service loop requirements.

3.12 Provide 6 inches of cable slack at computer data system outlets inside conduit box.

3.13 In an accessible ceiling area, provide a 10-foot (stored in a Figure-8 configuration) service loop above the all data/voice outlet locations. Service loop must be securely tied up off of ceiling tiles or ceiling surface and supported at two opposite points. Neatly coil cable without exceeding minimum bend radius limitations. Do not provide length in excess of 15 feet, as it may cause improper test results and errors.

3.14 Do not provide a service loop in the MDF/IDF Room on the UTP cables, unless otherwise noted. Cables shall be neatly routed around the perimeter of the room to the cable runway from the point of entrance into the room.

3.15 The minimum bending radius for all cables and the maximum pulling tension shall not exceed manufacturer’s recommendations.

3.16 Cables installed in manholes and pullboxes shall be supported with Velcro ties or loosely fitted UV rated tie wraps, on wall mounted cable support racks. The cables shall be clearly labeled in the manhole or pullbox.

3.17 Provide a full 360-degree loop of slack cable around manhole and pullbox interiors. Cables entering handholes from the bottom, shall not be allowed to touch the bottom of the cover when closed and shall not be pinched or crushed in any way.

3.18 Cable pulling shall use a split mesh grip over the cable jacket. Connection directly to optical fibers and copper wire conductors shall not occur.

3.19 When pulled through conduits, cable pulling lubricants shall be continuously applied to all cables and be specifically approved by the manufacturer.

3.20 Where cables are pulled through or pulled from a center run, pull without splices or terminations, lead out the cables at all manholes, pullboxes, and conduits, taking care to feed them in again by hand for the next run.

3.21 For each cable pull where a cable direction change is required, flexible feed-in tubes, pullout devices, multi-segmented sheaves, etc., shall be used to ensure proper cable pulling tension and side wall pressures. Cables shall not be pulled directly around a short right-angle bend. Any device or surface the cable comes in contact with when under pull-in tension shall have a minimum radius 50% greater than the final specified minimum installed cable bending radius. The maximum possible size radius sheaves and feed-in tubes, usable in the available working space shall be provided in all situations, to ensure the minimum possible cable sidewall pulling pressure. Do not use devices with multi-segment “roller” type sheaves.

3.22 Cable lengths over 250 feet shall be machine pulled, not hand pulled. Cables shall be pulled in a continuous, smooth operation without jerking or stop-start motion after initiation of pull. Maximum cable pulling speed shall be less than 50 feet per minute. Minimum pulling speed shall be greater than 15 feet per minute.

3.23 A pull string shall be placed with all UTP and paging station cables at the time of installation. Conduit runs and surface raceway for station cabling shall be furnished with a minimum 2-Ply spiral wrap style, pull string rated for 240 ft/lbs. pulling strength, such as manufactured by Greelee #431 or approved equal. Includes all conduit stubs and cables routed through open ceiling and cable trays. Pull strings shall be tied off in the junction box and in the ceiling. Provision for the installation of the pulls string shall apply to all empty and spare conduits as well. Single ply type pull string will not be accepted as a substitute for the 2-ply pull string.

3.24 A measuring pull tape shall be placed with all feed cables at the time of installation. Indoor riser and outdoor conduit runs between buildings designated for feed cabling, in excess of 150 feet shall be provided with a minimum ½” polyaramid style, measuring true tape pull string annotated with footage increments rated for 2500 ft/lbs. pulling

strength, such as manufactured by Greenlee #39245 or approved equal. Conduit runs less than 150 feet shall be furnished with a ¼" polyaramid style, measuring true tape pull string annotated with footage increments rated for 1250 ft/lbs. pulling strength, such as manufactured by Greenlee #39243 or approved equal. Provision for the installation of the measuring pull tape shall apply to all empty and spare conduits as well. Standard twine style pull strings and standard nylon or polypropylene style pull ropes will not be accepted as a substitute for the polyaramid measuring tape pull string.

3.25 When pulling cable through conduit, cables shall be pulled straight into or out of the raceway without bends at the raceway entrance or exit. Pull in cable from the end having the sharpest bend (i.e., bend shall be closest to the reel). Keep pulling tension to minimum by liberal use of lubricant, hand turning of reel, and slack feeding of cable into duct entrance. Employ not less than one man at reel and one at manhole or pullbox during this operation. Cables shall be pulled directly from cable reels.

3.26 All cables shall be new and extend continuous from each MDF or IDF backboard or rack to all outlet locations.

3.27 Where cables are not installed in a conduit or other raceway system, they shall not be routed parallel with other line voltage equipment or wiring (120 volt and above) with 36" or within 12" of line voltage equipment or wiring where crossing.

3.28 Where OSP-Rated UTP cables or OSP-Rated fiber optic cables are routed exposed through ceiling for more than 50'-0", Contractor shall install the cable in innerduct or EMT conduit in the ceiling. Innerduct installed in the accessible ceiling space shall be a minimum of riser rated and minimum of 1" in diameter. Innderduct shall be supported minimum of every 3-feet to the structural members.

PART 4 TESTING

4.1 All Category-6 cables shall be point to point (link) tested after installation/termination and verified to operate at minimum 1000Mbps. Performance of installed cables shall satisfy all current addendums to the EIA/TIA 568A standard for Category-6 wiring. In addition, testing shall satisfy all proposed amendments to the existing ISO/IEC requirements. The wiring shall support all specified communication protocols. Testing shall support the Category-6 requirements by the EIA/TIA.

4.2 All Category-6A cables shall be point to point (link) tested after installation/termination and verified to operate at minimum 10Gbps. Performance of installed cables shall satisfy all current addendums to the EIA/TIA 568A standard for Category-6a wiring. In addition, testing shall satisfy all proposed amendments to the existing ISO/IEC requirements. The wiring shall support all specified communication protocols. Testing shall support the Category-6 requirements by the EIA/TIA.

4.3 Upon completion of testing cable links for both copper and fiber optic cabling, the Contractor shall supply a copy of the original database files downloaded from the tester

in original format on a USB Flash Drive. Contractor shall provide with the testing database files, an original copy of the tester's manufacturer software program (included in original cost) for record management and archiving, in a Windows format (i.e., Fluke Linkware software program).

4.4 The manufacturer's software program will be used by the Project Engineer to review all test results, and then turned over to the District to keep as their record copy with the final approved test results. Provide (3) copies of tests on USB Flash Drives. Do not submit test results for review in Excel or PDF file formats, as the submittal will be rejected and not reviewed.

4.4.1.1 Contractor will repair or replace cable runs or connecting hardware that do not meet specified criteria.

4.5 Multimode fiber optic cables shall be tested bi-directionally at 850nm and 1300nm. All fiber strands shall be tested with an OTDR (Optical Time Domain Reflectometer). All fiber test results shall contain final source and destination information that matches IDF or MDF labeling shown on the fiber optic patch panels and final documentation. OTDR tests results shall be included with the copper test results and submitted with the tester's software for review. Do not submit test results for review in Excel or PDF file formats, as the submittal will be rejected and not reviewed.

4.5.1.1 Test procedures shall comply with EIA/TIA 526-14 Method B. Test results shall meet the minimum following criteria:

4.6 Fiber optic test results shall not exceed 2db total attenuation loss in addition to inherent loss published by manufacturer tested at minimum 2000 Mhz for 805nm and 500 Mhz for 1300nm for the fiber optic cable.

4.7 End to end attenuation Fiber Optic feed cabling testing shall be performed with a temporary test jumper cable at each end of the installed fiber cable. The test jumper utilized shall be the same fiber core size and grade of glass as the installed cable. The measured attenuation of the test jumpers, test connectors, and test interconnection sleeve between the two test jumpers shall be less than 1dB as calibrated at the time of the test at indicated wave lengths and frequencies. Test jumpers shall be "zeroed out" before testing of fiber stands begins.

4.8 Final As-Built Drawing Submittals – Provide (1) hard bound copy of "E-size" As-Built drawings and (3) copies on USB Flash Drive in AutoCad (2019 or newer version) format. A Hand marked-up copy of the original construction drawings will not be accepted as the final As-Built drawing submittal. Final As-Builts shall include copies of the floor plan drawings of each building, detailed elevations of each MDF or IDF locating all equipment, quantities outlets and speaker locations, locations of all sleeves and identification of all final cable routes. In addition, the drawings shall include all outlet locations with cable identification numbers.

SECTION 27 20 00

INTEGRATED AUDIO/VISUAL SYSTEM

PART 1 – GENERAL

SUMMARY

1.1 The Contractor shall furnish all labor, project management, materials, tools, equipment, and resources necessary for the installation, startup, and testing of the system shown on the plans and described in the specifications.

1.2 Related Specification Sections:

1.2.1 Section 26 01 00 -General Provisions
1.2.2 Section 26 05 33 -Conduit and Fitting
1.2.3 Section 26 05 19 -Conductors
1.2.4 Section 26 05 34 -Outlet and Junction Boxes

1.3 The Contractor shall furnish and install the system as defined by the plans and specifications. The Contractor must demonstrate to the Owner that the system is complete and complies with all operational requirements set forth in the plans and specifications.

1.4 The work covered under this section of the specifications consists of furnishing all labor, equipment, supplies and materials, and in performing all operations necessary for the turnkey and fully completed installation of an audio/ video system in accordance with the specifications and accompanying drawings, except as specifically noted otherwise.

1.5 Cables for the system shall be pulled through the conduit systems furnished by the building contractor. The 27 20 00 Contractor shall be responsible for providing all cables required and for coordinating and supervising the cable installation. The 27 20 00 Contractor shall be responsible for ensuring the integrity of the cables before and after installation.

1.6 Work Excluded:

1.6.1 Excluded from this work shall be any and all general construction services regarding masonry and general carpentry services. Those services are to be provided and installed by the general contractor.

1.6.2 Conduit/raceways, sleeves, cable trays, electrical boxes, hand holes, pullboxes, etc. required for the system shall be furnished and installed by the Electrical Contractor. The conduit/raceways and electrical boxes furnished and installed under Electrical Contractor shall conform with the requirements of the drawings and specifications for the system.

1.7 In order to ensure project cohesion a single point of contact is required to provide a "TURNKEY" solution. The work covered under this section of the specification consists of furnishing all labor; cabling; equipment; software; supplies; materials and training. The contractor will perform all operations necessary for the "TURNKEY" and fully completed installation in accordance with the specifications herein. As such, the successful contractor must be factory trained on all aspects of system hardware. The successful contractor shall be a California licensed C7 or 10 premise wiring contractor as defined in this specification. Subcontractors may not be utilized in the implementation of the plant wiring installation.

1.8 Approval to bid shall not release the Contractor from full specification compliance requirements. Final system acceptance testing shall govern final system acceptance and compliance with the specifications.

1.9 Failure to provide a functional equivalent shall result in the removal of the alternate system at the contractor's expense.

1.10 These specifications contain statements which may be more definitive or more restrictive than those contained in the General Conditions. Where these statements occur, they shall take precedence over the General Conditions.

1.11 Where the words 'provide' or 'provision' is used, it shall be definitely interpreted as 'furnishing and installing complete in operating condition'. Where the words 'as indicated' or 'as shown' are used, it shall mean as shown on contract drawings.

1.12 Where items are specified in the singular, this division shall provide the quantity as shown on drawings plus any spares or extras mentioned on drawings or specifications. All specified and supplied equipment shall be new.

DEFINITIONS

1.13 Concealed: Hidden from sight, as in trenches, chases, hollow construction, or above furred spaces, hung ceilings - acoustical or plastic type, or exposed to view only in tunnels, attics, shafts, crawl spaces, unfinished spaces, or other areas solely for maintenance and repair.

1.14 Exposed, Non-Concealed, Unfinished Space: A room or space that is ordinarily accessible only to building maintenance personnel, a room noted on the 'finish schedule' with exposed and unpainted construction for walls, floors, or ceilings or specifically mentioned as 'unfinished'.

1.15 Finish Space: Any space ordinarily visible, including exterior areas.

Contractor Qualifications

1.16 The successful bidder shall be a California licensed C7 or C10 premise wiring contractor as defined in this specification. Subcontractors may not be utilized in the implementation of the installation or programming.

1.17 The successful bidder shall have design staff with CTS certification and Extron Advanced A/V Certifications.

1.18 The successful bidder shall have installation staff with CTS certification and Extron Advanced A/V Certifications.

1.19 All bidders must provide a listing of two similar size projects having the same scope of work using the proposed information delivery equipment. This listing shall be complete with facility names, completion dates, names of contacts, and their telephone numbers. Referenced projects must have been completed in the past 18 months.

1.20 The bidder shall have a factory trained service department the service department shall be on call 24 hours a day, 365 days a year, to arrive and initiate onsite service the specified equipment upon (24) hours notice.

1.21 The Contractor shall employ factory-trained technical/service personnel for service and maintenance of the system. Their résumés will be required. The factory-trained technical/service personnel shall have a minimum of two years experience installing the proposed system. The Bidder shall submit the names and copies of the certificates issued by the factory. The bidder shall instruct the Owner's technical personnel in the operation, care, and maintenance of the system.

CODE COMPLIANCE

1.22 All material and equipment shall be clearly listed, labeled, or certified by Underwriters Laboratories, Inc. All power supplies and computers shall be clearly UL Listed. Any system which is not UL Listed at time of bid will be rejected.

1.23 All acceptable systems shall be approved under Part 15, Subpart B, Section 15.107b of the FCC Rules and Regulations. Bidders must provide the FCC Registration Number of the proposed system. Systems that are not in compliance with the FCC will not be considered. Any system that is not FCC compliant at time of bid will be rejected. All equipment must be clearly labeled with FCC compliance stickers.

1.24 The system shall be installed in accordance with local and national electrical codes.

1.25 The manufacturer and contractor shall provide the Owner with a release for use of all copyright materials, corporate logos, and corporate trademarks at time of bid.

SUBMITTALS

1.26 Index all submittals and reference to these specifications. All submittal items shall be assembled and submitted in a single complete binder per submittal group. Partial submittals will not be reviewed. Submit items in groups as indicated below: All submittals, warranty information, close - out documents, and as built documents must be submitted independently for owner, in order to provide record documentation for the project owner.

1.27 Group # 1 Submittal shall be made within (20) working days after the award of the contract. This submittal shall include the following:

1.27.1 Complete bills of quantities, including all materials, components, devices, and equipment required for this work. The bills of quantities shall be tabulated respective of each and every system as specified, and shall contain the following information for each item listed:

1.27.1.1 Quantity of each type of equipment item
1.27.1.2 Description of each item
1.27.1.3 Manufacturer's Name and Model Number
1.27.1.4 Manufacturer's Specification Sheet
1.27.1.5 Equipment items which have individual components will require that all component parts be listed individually.
1.27.1.6 Description of any specialty backbox requirements
1.27.1.7 All wiring types required for installation of this system
1.27.1.8 Copy of equipment warranty
1.27.1.9 Spare parts shall be listed individually to verify proposed quantity

1.28 Group # 2 Submittal shall be provided within (20) working days after the approval of the Group # 1 submittals and prior to any fabrication or field conduit installations. All shop drawings shall be engineered and drawn on a CAD System. Contractor shall make the request for drawings in writing directly to Johnson Consulting Engineers, confirmation of the request and a release form will be forwarded to the contractor to include a signed copy with payment prior to release of files. Detail or riser diagram sheets or any other drawings other than floor or site plans, will not be made available to the contractor. Phase II Submittals drawings shall include the following:

1.28.1 Furnish complete shop drawings for all systems specified. Each drawing shall have a descriptive title and all sub parts of each drawing shall be completely described. All drawings shall have the name of the project, architect, consultant, and electronics contractor in the title block.

1.28.2 Furnish complete scaled drawings of all equipment racks, consoles, special assemblies, etc. Each drawing shall show all equipment with its manufacturer and model number.

1.28.3 Furnish complete scaled installation drawings detailing locations of all equipment such as control panels, plug panels, video monitors, video projectors, equipment racks, speakers, etc. All conduits with cable quantities and types and all terminal block locations shall be shown also.

1.28.4 Provide single line riser diagrams of all racks, consoles, control panels, speaker assemblies, etc. Each drawing shall delineate circuit numbers for all cables and terminal connections. Provide typical wiring termination for all devices.

1.29 All equipment items referenced by manufacturer name and model number shall be the only approved product to be furnished for use on this project. Where alternate items are acceptable (or approved alternate) will be noted with the product description.

1.30 Products as manufactured by “Extron” have been specified to coordinate with an existing facility and other contracts to be issued for this project. Alternate products will not be approved.

SEISMIC ANCHORING

1.31 All sound systems, A/V equipment or enclosures shall be anchored to the structure. Where details have not been provided on the drawings, anchorage shall comply with CBC Section1632A and Table 16-A0. The contractor shall submit drawings signed by the contractor’s registered structural engineer indicating method of compliance prior installation.

CLEANUP

1.32 In addition to cleanup specified under other sections, thoroughly clean all parts of the equipment. Where exposed parts are to be painted, thoroughly clean off any spattered construction materials and remove all oil and grease spots. Wipe the surface carefully and scrape out all cracks and corners.

1.33 Use steel brushes on exposed metal work to carefully remove rust, etc., and leave smooth and clean.

1.34 During the progress of the work, keep the premises clean and free of debris.

GENERAL COORDINATION

1.35 The A/V drawings may reference components by manufacturer which conflict with the written specification requirements, where this occurs the written specifications shall be followed.

PART 2 — PRODUCTS

Standard Classroom Projection System

2.1 Contractor shall furnish and install all components as shown. Refer to detail drawings for exact installation configuration. All Laptops and/or Computer shall be furnished by the District and installed by the District.

2.2 Contractor shall furnish and install a new Projector and Projection Screen in the Classrooms or other spaces shown on the drawings. Refer to the Detail AV Diagrams for additional information.

2.3 Contractor shall furnish and install all projection system components as shown in the A/V system details and specifications. System shall consist of components that will use the projector as the audio-visual switch. All video inputs shall be directly wired to the

projector. Audio shall be routed as shown in the AV Wiring Diagrams, in the detail drawings, to allow the Amplified Speaker System to serve as a system-wide amplification device. Refer to the detail drawings for additional installation configuration requirements, mounting systems and additional parts.

2.4 Provide installation of projection screens for the Classroom Audio-Visual Systems. The projection screens will be manual, non-tensioned, surface mounted type. Projection screens shall be located per the drawings.

2.4.1 Contractor shall install projections screens to the height shown on the floor plans. Screen height shown is to the top of the screen case.

2.4.2 Contractor shall provide all hardware and structural support including, but not limited to brackets and hardware. All screens must be installed to comply with local codes and seismic requirements.

2.4.3 All new projection screens will require a structural support mechanism to the building structure. The basic requirements will be shown in the detail drawings, but the exact requirements must be field verified by the Contractor. Contractor shall refer to the drawing details for the type of structural support system to be provided based on the type of screen used and the building conditions. The Contractor shall furnish and install all support.

2.4.4 Coordinate the screen's location with the installation of the projectors. The location of both the projector and screen must be properly coordinated to insure the proper image size and orientation. Projector and screen locations shown on the floor plans are diagrammatical. Exact locations must be field verified by the Contractor prior to the installation of either component.

2.5 Provide Manual Wall Mounted Projection Screens in the Classrooms with the following;

2.5.1 Da-Lite Model "C" with CSR Projection Screen with White Metal Case

2.5.2 50" H x 80" W or 94" Diagonal at 16:10 Aspect Ratio

2.5.3 High Contrast Matte White Screen Material with a Half Angle of 50˚ and a Viewing Cone of 100˚, Gain of 1.1

2.5.4 Da-Lite Wall Mount Floating Brackets Option #77027, White Color. Refer to the drawing details for mounting requirements.

2.5.5 Provide optional 38" Long Pull Rod #74689 for all screens. Refer to the floor plans for quantity of screens.

2.6 Provide Manual Recessed Ceiling Mounted Projection Screens in Hard Lid in the Classrooms with the following;

2.6.1 Draper Model Access Fit M with Auto Return Projection Screen with White Metal Case;

2.6.2 50” H x 80” W or 94” Diagonal at 16:10 Aspect Ratio

2.6.3 Contrast White Screen Material XH1100E with a Half Angle of 90˚ and a Viewing Cone of 180˚, Gain of 1.1.

2.6.4 Provide (1) Additional Set of Draper Mounting Brackets Option for a total of (4) Mounting Brackets being used for screen. Refer to the drawing details for mounting requirements.

2.6.5 Provide optional Aluminum 6-Foot Long Pull Rod #227010 for Manual Recessed Ceiling Mounted Projection Screens in Hard Lid. Refer to the floor plans for quantity of screens.

2.7 Provide installation of projectors with audio/video components, mounting systems and all local wiring as shown in the drawing details. Projectors shall be located per the drawings and specifications.

2.7.1 Projectors shall be furnished and installed by the Contractor. Projector must be able to fill a 94” diagonal size screen (16:10 aspect ratio) from a distance not greater than ***4’0” from the screen surface, based on the specified projector. If the projector model changes, the distance will vary and must be field verified prior to installation***. Projectors shall be the non-interactive type. Contractor shall be responsible for furnishing and installing the all software, tools and control systems as required for proper operation. Each of the projection system must be properly calibrated during the installation process to allow for the images and inputs to be presented properly.

2.7.2 The Contractor shall install the projector using the complete manufacturer installation instructions in the installation manual. The Contractor shall follow all the steps shown for complete calibration of the image size and position on the screen. Projectors shall be leveled to insure a proper image shape. Projectors may not be tilted or skewed to align the image with the projection area on the screen. Do not make the adjustments to the image size with the keystone functions.

2.7.3 The Contractor shall be responsible for the image size and proper operation of the projector until the project is signed off by the District Project Manager and the Project Engineer. Changes in the orientation of the projector due to incidental contact during construction shall be resolved by the Contractor

2.8 Provide (1) Epson PowerLite L200W 3LCD Long Throw Laser Projector in each Classroom or other Room shown on the drawings. Provide a Total quantity of (5) Epson PowerLite L200W 3LCD Long Throw Laser Projectors.

2.8.1 Contractor must field verify the throw distance of the projection image prior to installing the projector in case the actual field layout has changed. The projector’s location on the drawings is diagrammatical.

2.8.2 Projector shall meet the following minimum requirements;

2.8.2.1 4200 Lumen Brightness 3LCD Laser Diode Light Source

2.8.2.2 WXGA (1280X800) Resolution, 16:10 Aspect Ratio

2.8.2.3 Light Source (Lamp) Life Up to 20,000 hours (Normal Mode)

2.8.2.4 Focal Length 18.2mm-29.2mm/F-Number 1.51-1.99/Manual Optical Zoom 1-1.62 and Manual Focus

2.8.2.5 Minimum Inputs/Outputs; 2X HDMI IN; 2X VGA IN; 1 Composite Video IN; 1X VGA OUT; 1X Stereo Audio IN; 2X 3.5mm Audio IN; 1X 3.5mm Audio OUT; 1X 3.5mm Mic IN; 1X RS-232 Control; 1X USB-A; 1X USB-B; 1X RJ-45 Ethernet LAN

2.8.2.6 Remote Control

2.8.2.7 Provide Optional Wireless LAN Module #ELPAP11

2.9 Projector mounted in the accessible ceiling shall each be provided with the following;

2.9.1 (1) PEERLESS CMJ455 2' x 2' PROJECTOR MOUNTING PLATE (Or Approved Equal)

2.9.2 (1) 1.5" NPT THREADED EXTENSION POLE (Adjustable or Fixed Length Pipe) field verify correct length

2.9.3 (1) ACC455 HANGAR BRACKET KIT-FIELD with steel braided cables and all necessary mounting hardware. See drawing details for installation and anchorage requirements

2.9.4 (1) Universal Fine-Tune Projector Mount by Premier Mounts model #RPAUW in white (Or Approved Equal).

2.9.5 Structural support and anchorage as shown in the Electrical and Architectural Drawings and Details.

2.10 Structural support and anchorage as shown in the Electrical and Architectural Drawings and Details

2.11 Teachers Audio-Visual Interface Wallplate; The “2P/LO” Wallplate shown on the drawings will serve as interconnection device to the Classroom AV System. Provide all patch cables for the system. See Classroom AV System Diagram for Wallplate in the Detail Drawings requirements. Provide the following interface at the Laptop Wallplate;

2.11.1 Provide Single Input HDMI Pass-Through Wallplate with Audio at Laptop (2P/LO) locations shown on the floorplans. Wallplate shall consist of (1) HDMI Pass-Through Input with 3.5mm Audio. Provide (1) Extron WPD-110A HDMI with Audio Decora Style wallplate per location in a dual gang box.

2.11.2 All Wallplates shall be white in color, unless otherwise noted, Extron Decora style, with color matched screws. Each Input wallplate location requires a dual

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gang box and trim ring. Provide (1) Dual Gang Decora Style Faceplate and (1) Single Gang Decora Blank Insert to be installed with the HDMI Input Wallplate.

2.11.3 Provide Fiber Optic/Copper Hybrid HDMI Cable from the Extron #WPD-110A HDMI Wallplate to the Ceiling Mounted Projector's HDMI Input #1 where shown on the floor plans. The slack from the Fiber Optic/Copper Hybrid HDMI Cable shall be neatly dressed and stored in the ceiling above the Projector. Provide J-Hooks above the ceiling to properly support cable.

2.11.4 Contractor shall furnish and install (1) 12-Foot High Speed 90˚ Swivel-Type HDMI patch cable to the Instructor's Laptop or PC. The 90˚ HDMI end of the patch cable shall be connected to the faceplate to allow the cable to drop straight down along the wall. Refer to the patch cable section for the exact patch cable requirements.

2.11.5 Contractor shall furnish and install (1) 12-Foot 3.5mm Audio patch cable is for the "ALS Audio Output" and not for playback of local devices. Refer to the patch cable section for the exact patch cable requirements.

2.12 Provide all cabling as shown in the Classroom AV System Diagram wiring diagrams. Contractor shall provide all patch cables required in the wiring diagram and as required to provide a fully operational system.

2.13 Video and Audio outputs from the District Provided Laptop Computer shall be connected to the Local Origination (LO) Wallplate as shown in the detail drawings.

2.14 Each "2P/LO" Input wallplate shall be furnished with a 2-Port Data Outlet furnished by the 27 10 00 Contractor. Coordinate with the 27 10 00 Contractor for Data Outlet location requirements.

2.15 Provide Self-Amplified Three-Input Speaker Package for the Classroom AV System as manufactured by OWI #2X2-HD-IW83 (No Approved Equal) with HD Amplifier in each Classroom shown on the Floor Plans. Self-Amplified Speaker Package shall be provided with the following;

2.15.1 8" 3-Way Speaker with Drop-In Tile Type Full 2'X2' Grill, 40W HD 8-Ohm Amplifier, 3-Source Inputs (Balanced Line Level, 3.5mm Stereo and Proprietary RJ45), Balanced Audio Output, Proprietary RJ45 Audio Output, (3) Speaker Outputs, and 25/70V Transformer Power Supply. Page Interrupter shall be provided separately and is not provided with the Self-Amplified Speaker Package.

2.15.2 The Self-Amplified Three-Input 8" 3-Way Speaker shall serve as the Main Audio Source/Controller for the Classroom AV System. Contractor shall furnish and install all cabling and components associated with the Speaker System shown on the Classroom AV System Diagram and in these specifications. Volume Control for the Speaker System shall be provided by the Projector Remote Control Unit.

2.15.3 Provide OWI #AMPPOP1 Priority Page Module Interrupter/Controller at 8" 3-Way Speaker location for muting of the AV System Speakers when the Classroom receives a page notification on the Campus Intercom system. Priority Page Module shall be wired from Priority Page Module to the IP-Based Intercom Speaker in the Classroom. Connect to the audio contact closure for page shunting of local audio. This shall be installed in the AV vault

2.15.4 Provide (1) OWI #2X2-IW83 8-Ohm 6.5" Coaxial Non-Amplified Speaker with Drop-In Tile Type Full 2'X2' Grill Secondary Speaker for the Classroom AV System. Install Speaker where shown on the floor plans.

2.15.5 Audio-Visual System Speakers symbols shown on the floor plans do not differentiate which Speaker is the Self-Amplified Three-Input 8" 3-Way Speaker and which Speaker is the Non-Amplified Secondary Speaker. Contractor shall determine the locations of each type of Speakers in the field.

2.15.6 Speakers shall be positioned to provide the maximum coverage for the Classroom or Designated Room space. Coordinate placement of the speakers with the Architectural, Mechanical and Electrical drawings to avoid lighting, HVAC and fire alarm devices. Color shall be white. Volume shall be set by contractor and controlled via the Projector Remote Control and Input Source audio controls.

2.15.7 Self-Amplified Three-Input Speaker shall be provided with Master Volume, Bass, Treble, Gain, Priority Page/Trigger Level and Speaker/Line Level Controls.

2.15.8 Provide OWI 2X2 Suspended Ceiling Plate and Speaker Back-can for the Speakers. Contractor shall provide structural support for the Spaekers as shown in the Detail Drawings.

2.15.9 Provide Self-Amplified Three-Input Speaker power supply shall be plugged into the electrical outlet located at the Projector. Provide a 2-Conductor cable from the 15VDC Power Supply to the Self-Amplified Speaker. Connect the cable to the power input terminals on the Main Circuit Board.

2.15.10 Provide Balanced Audio Out cable connection to the 3.5mm Connector on the Extron WPD-110A HDMI Input Wallplate. The Audio Output shall be used for connection to the Portable ADA Assistive Listening System. Contractor shall label the 3.5mm Mini Connector on the Wallplate with "ALS Audio OUT" to identify the port.

2.16 Provide additional items as shown on the A/V wiring details and diagrams.

Flat Panel Audio-Visual System

2.17 Provide installation of Flat Panel Audio-Visual System in the Coaches Office Room #909 with audio/video components and all local wiring. Flat Panel Displays shall be located per the drawings and provided with components per the specifications. Refer to the drawing details for the flat panel mounting requirements and refer to the floor plans.

2.18 Document Cameras, Laptops, and Personal Computers shall be furnished by the District and installed by the District. Provide cable loom wrap around all patch cables from devices to the wallplates.

2.19 Provide lump sum of ***$17,000*** ~~$6,500~~ for the purchase of (1) 75" LED Flat Panel Monitor for the Coaches Office Room #909 ***AND (4) 65" LED Flat Panel Monitors for the Kitchen Menu Boards*** with advance replacement service contract. Lump sum amount shall cover the Flat Panel Display and Service Contract invoice costs only plus tax. Shipping, Contractor mark-up, installation & programming set-up, all mounting hardware, labor costs shall be included as part of the contractor bid and not part of the lump sum. Actual make and model of Flat Panel Displays will be determined prior to installation.

2.19.1 **Lump sum amount shall cover Flat Panel Monitors invoice cost only plus tax**. Shipping, Contractor mark-up, profit and overhead, installation, patch cables, programming and set-up, all mounting hardware and labor costs shall be included as part of the Contractor bid and not part of the lump sum amount. Actual make, model and final size of Flat Panel Monitors will be determined prior to installation and shall be approved by the Project Engineer and District Project Manager prior to purchase.

2.19.2 Contractor shall submit an itemized spreadsheet to the Project Engineer, Architect, Construction Manager and District Project Manager for the monitors being proposed for purchase including the following information; Make, Model, Size (Diagonal), Native Resolution, Invoice Cost and Tax. The submittal shall include manufacturer cut sheets for each type and size of each model submitted, with proper part numbers highlighted. The itemized spreadsheet shall detail each location with Room Number and the associated Flat Panels (and sizes) for that room. The spreadsheet shall be provided to the Construction Team a minimum of 12 weeks prior to the first proposed purchase date to allow enough time for approval, purchase and delivery of the Flat Panels. The Contractor shall not proceed with purchase or warehousing of the equipment without written approval.

2.19.3 The specified 75" Larger Flat Panel shall be installed on the East wall directly where shown on the drawings. Local Input Wallplate shall be Installed below the Flat Panel on the wall. Refer to the Electrical and Architectural floor plans for additional information on the location of the Flat Panel.

2.19.4 ***The specified 65" Flat Panels for the Kitchen Menu Boards shall be installed on the East and West walls of the Kitchen Speed Line Room ceiling mounted high between the doors where shown on the drawings. Local Input Wallplate shall be Installed in the Kitchen Manager's Office. Refer to the Electrical and Architectural floor plans for additional information on the location of the Flat Panel***.

2.19.5 Flat Panel specifications based on Samsung 75" Model #QM85F ***and Samsung Model #QM65R*** Commercial Grade Professional Displays. Any suggested Flat Panel equivalent must contain all input/output connections; display shall

provide as good or better minimum brightness, contrast ratio, native resolution and maximum display colors as the specified Flat Panel. Models not currently in production (discontinued) at the time of the submittal, will not be considered. **Flat Panels must have a minimum of (2) HDMI and (1) DisplayPort Inputs**

2.19.6 All LCD LED Flat Panels shall be commercial grade monitors and shall be provided with a minimum four (4) year manufacturer warranty Plus any pre-specified Service Contract. Consumer grade flat panels will not be acceptable as an alternate.

2.20 Color of plates is to be confirmed by the Contractor prior to installation. Refer to the AV wiring diagram for input locations and wallplate requirements.

2.21 Contractor shall provide and install all wiring and components required per the detail drawings and specifications.

2.22 Flat Panel shall be provided with a 2-Port data connection installed by Division 27 10 00 Contractor behind the Flat Panel. Coordinate location of data outlet with 27 10 00 Contractor. Refer to the Detail Drawings for additional requirements.

2.22.1 Contractor shall furnish and install Category-6 data patch cable from the Flat Panel Data Outlet to the Flat Panel Ethernet Port. See AV Patch Cables section for requirements.

Coaches Office Flat Panel Audio-Visual System

2.23 Contractor shall furnish and install a commercial grade Large Flat Panel Display with Soundbar in ***Coaches Office Room #909*** and components as shown in the A/V system details and specifications. System shall consist of components that will use the Flat Panel as the audio-visual switch. All video inputs shall be directly wired to the Flat Panel. Audio shall be routed as shown in the AV Wiring Diagrams, in the detail drawings, to allow the Amplified Soundbar to serve as a system-wide audio amplification device. Refer to the detail drawings for additional installation configuration requirements, mounting systems and additional parts.

2.23.1 The Flat Panel mounting height shall be as shown in the drawing details must be field verified by the Contractor prior to the rough-in stage of the project. No flat panel mounts may be roughed-in until the locations and heights are confirmed.

2.23.2 The Large LED Flat Panel Display shall be mounted on the wall at the location shown on the floor plans and the Amplified Soundbar shall be suspended below the Flat Panel Display. The Soundbar shall move with the Flat Panel when adjusted away from the wall. Field verify the exact position of the Flat Panel Display and Soundbar with the District Project Manager prior to installation.

2.23.3 Provide Flat Panel Displays with a Recessed type wall mount by Chief Model #PNRIWUB mount with Model #PAC501B backbox, dual arm support as shown on the drawing details. Refer to the detail drawings for the flat panel mounting,

outlet requirements and conduit requirements. Contractor shall furnish the adapter plate from Chief to mount to the model of flat panel provided.

2.23.4 The backbox for the recessed Flat Panel mount shall be furnished by the 27 20 00 Contractor and installed by the Division 26 Contractor. The backbox must be framed into the wall. The height of the backbox shall be installed as shown in the detail drawings. Flat Panel Monitor heights must be shown on the shop drawing submittal by the Contractor. Exact height of the flat panels must be field verified by the 27 20 00 Contractor prior to rough-in.

2.23.5 The 27 20 00 Contractor must coordinate with the Division 26 Contractor for the proper timing of the ordering and delivery of the backboxes (Chief PAC501B) for the recessed Flat Panel mounts. The Audio-Visual Contractor must provide the backbox to the Electrical Contractor during the rough-in phase of the construction project, with delivery to the job site no later than two weeks before the Rough-In date shown in the Construction Schedule. Coordinate the provision of the backboxes with the Construction Manager and the Electrical Contractor.

2.23.6 The final location of the Soundbar shall be determined by any clearance required to access any controls or connections on the Soundbar and clearances required to make adjustments (Pan, Tilt and Extension) to the Flat Panel. The Soundbar shall be located as close to the bottom of the panel as possible to lessen the exposed cable connections.

2.24 Provide an Amplified Soundbar System ***in Coaches Office Room #909*** at the LED Flat Panel Display for audio support. See the detail drawings and diagrams for additional requirements. The Amplified Soundbar System shall be provided the following;

2.24.1 The Soundbar shall be hung from the VESA wall mount bracket on the back of the Flat Panel, directly below the flat panel display. Provide a Universal Soundbar adapter bracket to hang the Soundbar. Refer to the manufacturer's installation instructions for requirements for mounting the soundbar. The soundbar shall be mounted with enough clearance to allow the full vertical adjustment of the wall mount bracket and for access to the connection ports on the Soundbar. The Soundbar shall be securely attached to move with the Flat Panel when it is adjusted out or away from the wall. Provide Universal Soundbar Bracket Model #OCSBA (Or Approved Equal).

2.24.2 Connect the Flat Panel Display 3.5mm Stereo Audio Output to the 3.5mm Audio Input on the soundbar. Provide 3.5mm stereo audio connection patch cable to the Soundbar.

2.24.3 Soundbar shall be provided with built-in Subwoofers, Rated Output 100 Watts (2X20W Front L/R; 60W Built-in Sub); Bluetooth Input Technology, HDMI Input with ARC, 3.5mm Audio Input, (2) Optical Audio In; Less than 4" in Depth.

2.24.4 The Soundbar shall be as manufactured by Yamaha Model #SR-C20A (or Approved Equal) The Soundbar's volume shall be controlled with the original Yamaha remote control supplied with the Soundbar.

2.24.5 Install the Yamaha MusiCast APP for the Soundbar on the Coach's Computer and/or Tablet/Smart Phone device. The Soundbar's Bluetooth connectivity shall be programmed by the Contractor.

2.25 Provide surge suppressor installed behind the flat panel location for the TV and devices installed at the flat panel. Surge suppressor shall be rated for 15A, six outlets, and shall have outlet sections that swivel. Provide Cyber Power Model #CSB600WS.

2.26 Passive Local Origination Wall Plate; The wallplate will serve as the Main Input location to ***the Coaches Office Room #909*** ~~Conference Room Flat Panel system and the Floor Box will serve as the Secondary Input location~~. Provide all patch cables for the system. See Passive Flat Panel A/V Diagram for wall plate requirements. Provide the following interfaces at the wallplate location;

2.26.1 Provide (1) Single Gang wallplate at the Input location (Shown as the "LO" symbol on the drawings). Provide (1) HDMI with audio passive feed-through digital input wallplate Extron Model #WPD-110A on a Single Gang Decora Style faceplate at Interface (LO) Input wallplate location. Refer to the AV Wiring Diagrams for additional requirements.

2.26.2 Provide (1) Single Dual Gang wallplate at the Flat Panel location (Shown as the "FP" symbol on the drawings). Provide (1) HDMI with audio passive feed-through digital input wallplate wallplates Extron Model #WPD-110A on a Single Dual Gang Decora Style faceplate at Flat Panel (FP) wallplate location. Refer to the AV Wiring Diagrams for additional requirements.

2.26.3 Provide (1) HDMI Cable and (1) 3.5mm Unbalanced Audio Cable from the Passive HDMI Input Wallplate at the "2P/LO" location to the Passive HDMI Output wallplate behind the Flat Panel "FP/2P" as shown on the Flat Panel AV System Diagram.

2.26.4 Provide (1) HDMI Patch Cable and (1) 3.5mm Unbalanced Audio Patch Cable from the pass through HDMI Output wallplate to the Flat Panel's Inputs on the back of the display. The HDMI Cable shall be directly connected to HDMI Input #1 on the Flat Panel and 3.5mm audio cable shall be directly connected to the 3.5mm Audio Input #1 on the Flat Panel. Provide cables as shown in the patch cables section of this specification.

2.26.5 Contractor shall furnish and install (1) 12-Foot High Speed 90˚ Swivel-Type HDMI patch cable to the Instructor's Laptop or PC. The 90˚ HDMI end of the patch cable shall be connected to the faceplate to allow the cable to drop straight down along the wall. Refer to the patch cable section for the exact patch cable requirements.

2.26.6 Contractor shall furnish and install (1) 12-Foot 3.5mm Audio patch cable to the Instructor's Laptop or PC. Refer to the patch cable section for the exact patch cable requirements. Audio patch cable is for playback of local devices.

2.26.7 Provide an HDMI (Female) to DisplayPort (Male) adapter for the Flat Panel System. The adapter shall be provided with the HDMI and Audio patch cable assemblies.

2.26.8 All wallplates shall be the Extron Decora style. Color of plates is to be confirmed by the Contractor prior to installation

Kitchen Menu Boards Flat Panel Audio-Visual System

2.27 ***Contractor shall furnish and install a (4) commercial grade Flat Panel Displays for Kitchen Menu Boards and components as shown in the A/V system details and specifications. System shall consist of components that will use the Flat Panel as the audio-visual switch. All video inputs shall be directly wired to the Flat Panel. Audio will not be used for the Menu Board locations. Refer to the detail drawings for additional installation configuration requirements, mounting systems and additional parts.***

2.27.1 ***The Menu Board Software is existing for the Kitchen Menu Board System and is already owned by the District. Contractor shall coordinate with the District Health Services Department or District IT Department for programming and required accessories for the Kitchen Menu Board System. Set up Menu Boards for operation displaying content from the Menu Board Software.***

2.27.2 ***In addition, the Kitchen Manager shall have the ability to connect from the Manager's PC or Laptop to the Kitchen Menu Boards and display content from the computer. Control of the Flat Panel's operation and Input selection shall be completed with the Falt Panel's provided Remote Control. Contractor shall program all Falt Panels to be operated from a single Remote Control.***

2.27.3 ***The Flat Panel mounting height shall be as shown in the drawing details must be field verified by the Contractor prior to the rough-in stage of the project. No flat panel mounts may be roughed-in until the locations and heights are confirmed.***

2.27.4 ***The 65" LED Flat Panel Displays shall be ceiling mounted at the location shown on the floor plans. Field verify the exact position of the Flat Panel Display with the District Project Manager prior to installation.***

2.27.5 ***Provide Flat Panel Displays with a Adjustable Flat Panel Mount by Chief Fusion Model #LCM1U mount with Chief CMS Series Adjustable NPT 1.5" Column, length as required, attached to the deck above with the Chief Model #115 Ceiling Plate as shown on the drawing details. The Contractor shall provide Unistrut Bracing in (2) directions as shown in the Detail drawings. The Fusion Mount shall be attached to the Flat Panels using the VESA 400mm X 300mm mounting pattern. Contractor shall furnish and install any adapters for the flat panel mounting. Contractor shall provide a 1-1/2" Beauty Ring in the***

accessible ceiling where the column penetrates the ceiling tiles. All cabling shall be routed through the column to the Flat Panel Inputs. Refer to the detail drawings for the flat panel mounting, outlet requirements and conduit requirements. Contractor shall furnish the adapter plate from Chief to mount to the model of flat panel provided.

2.28 ***Provide surge suppressor installed behind the flat panel location for the TV and devices installed at the flat panel. Surge suppressor shall be rated for 15A, six outlets, and shall have outlet sections that swivel. Provide Cyber Power Model #CSB600WS.***

2.29 ***Passive Local Origination Wall Plate; The wallplate will serve as the Main Input location to the Kitchen Menu Boards. The system will use a HDMI Distribution Amplifier for distribution of the Input to all Flat Panels. Provide all patch cables for the system. See Passive Flat Panel A/V Diagram for wall plate requirements. Provide the following interfaces at the wallplate location;***

2.29.1 ***Provide (1) Single Gang wallplate at the Input location (Shown as the "LO" symbol on the drawings). Provide (1) HDMI with audio passive feed-through digital input wallplate Extron Model #WPD-110A on a Single Gang Decora Style faceplate at Interface (LO) Input wallplate location in the Kitchen Managers Office Room #410. Refer to the AV Wiring Diagrams for additional requirements.***

2.29.2 ***Provide (1) Single Dual Gang wallplate at each Flat Panel location (Shown as the "FP" symbol on the drawings). Provide (1) HDMI with audio passive feed-through digital input wallplate wallplates Extron Model #WPD-110A on a Single Dual Gang Decora Style faceplate at each Flat Panel (FP) wallplate location above the accessible ceiling. Refer to the AV Wiring Diagrams for additional requirements. Wallplate is not required at Menu Board #1 location as the HDMI Patch Cable from the HDMI DA can be plugged directly into HDMI Input on the Flat Panel.***

2.29.3 ***Provide (1) Fiber Optic/Copper Hybrid HDMI Cable from the Passive HDMI Input Wallplate in the Manager's Office at the "2P/LO" location to the 4-Port HDMI DA installed behind Menu Board Flat Panel #1 "FP/2P" as shown on the Flat Panel AV System Diagram.***

2.29.4 ***Provide (1) Extron Model #DA HD 4K Plus HDMI Distribution Amplifier (DA) at Menu Board Flat Panel #1 (as designated on the drawings) for distribution of the HDMI Input from the Kitchen Manager's Office to all of the Flat Panel Menu Boards. Contractor shall install the DA behind Flat Panel #1 on a Pole Mount Adapter Extron Model #PMK 155 (Color to match Column). Attach DA to adapter. Connect the HDMI Input Cable from the Kitchen Manager's Office to the HDMI Input on the DA. Provide HDMI Patch Cables from the DA to the HDMI Inputs on each of the (4) Flat Panel Menu Boards, length as required. Refer to the Kitchen Menu Board AV Diagram. Neatly dress and store any cable slack above the ceiling. Power for the DA will be connected to the surge suppressor at the Flat Panels.***

2.29.5 ***Contractor shall furnish and install (1) 12-Foot High Speed 90˚ Swivel-Type HDMI patch cable to the Kitchen Manager's Laptop or PC. The 90˚ HDMI end of the patch cable shall be connected to the faceplate to allow the cable to drop straight down along the wall. Refer to the patch cable section for the exact patch cable requirements.***

2.29.6 ***Provide an HDMI (Female) to DisplayPort (Male) adapter for the Flat Panel System. The adapter shall be provided with the HDMI and Audio patch cable assemblies.***

2.29.7 ***All wallplates shall be the Extron Decora style. Color of plates is to be confirmed by the Contractor prior to installation***

Portable ADA Assistive Listening System

2.30 The Assisted Listening System shall be furnished and installed to meet CBC Section 11B-219 and comply with CBC Section 11B-706 and the ADA requirements for hard-of-hearing. Contractor shall furnish (1) Portable ADA Assistive Listening Systems Kit that may be used for Classrooms or other meeting spaces.

2.30.1 Per ADA Assistive Listening System CBC Section 11B-706.3 – "The minimum number of receivers to be provided shall be equal to 4% of the total number of seats, but in no case less than two. 25% minimum of receivers provided, but no fewer than two, shall be hearing aid compatible."

2.30.2 The Grossmont UHSD has determined that a portable ADA Assistive Listening System shall be provided for the installed Audio-Visual Systems. Contractor shall provide the ADA Systems as shown in the project specifications.

2.30.3 Provide for each Kit; A self-contained portable wireless FM transmitter and receivers inside a self-contained carrying case. Portable ADA Assistive Listening system shall be as manufactured by Williams Sound Corporation, Phone 1-800-843-3544. Provide self-contained FM based system Model #FM ADA Kit 37 RCH ***with rechargeable batteries***.

2.30.4 Kit Contains; (1) PPA T46 transmitter, (4) PPA R37 receivers, (4) HED 027 headphones, (1) MIC 090 Mini Lavalier microphone, (1) MIC 049 conference microphone, (1) CCS 029 carrying case, (1) NKL 001 neck loop receiver, (1) ADA wall plaque and (5) BAT 026-2 "AA" batteries.

Audio/Video Patch Cables

2.31 All patch cables must be factory manufactured. All patch cables shall be in a length as required to provide the proper operation of the equipment, unless otherwise noted. Contractor is responsible for confirming all connector gender requirements prior to ordering.

2.32 Audio Patch Cables 2-feet to 25-feet in length for Installation Connections; All 3.5mm stereo audio cable assemblies shall be a male to male cable fully shielded cable with

3.5mm bayonet style connectors. Extron Mini Audio Cables Series (Or Approved Equal). Provide minimum length of 2 feet.

2.33 Audio Patch Cables 12 feet in length for Input Wallplate Connections; All 3.5mm stereo audio cable assemblies shall be a male to male cable fully shielded cable with 3.5mm bayonet style connectors. Extron Mini Audio Cables Series (Or Approved Equal). See the AV System Diagrams in the drawings and AV Input Wallplate requirements in the specifications for further instructions.

2.34 HDMI Cable Assemblies ***3- feet to*** 12 feet in length for Input Wallplate Connections ***and HDMI Device connections***; All HDMI patch cables must be 4K/30 verified and must conform to the HDMI Premium and High Speed cable standards. Cables shall be furnished with 90º swivel head design, Vanco Pro Digital High Speed HDMI Swivel Cable Model #299012 (Or Approved Equal), UL and CL3 rated. See the AV System Diagrams in the drawings and AV Input Wallplate requirements in the specifications for further instructions.

2.35 HDMI Patch Cables 1.5-feet to 15-feet in length for Installation Connections; All HDMI patch cables must be 4K verified, ultra-flexible construction and must conform to the HDMI High Speed cable standards. Patch cable shall be Extron HDMI Ultra Series High Speed patch cable assemblies (Or Approved Equal). Length of patch cable shall be as required for proper operation.

2.36 Fiber Optic/Copper Hybrid HDMI Cable Assemblies 33-feet to 66-feet in length for Installation Connections; All HDMI patch cables must be 4K/30 verified and must conform to the HDMI Premium and High Speed cable standards. HDMI cable assemblies must be a Fiber Optic/Copper Hybrid construction with detachable ends. Cables shall be Hall Research CHD-DE* 4K Javelin™ Active HDMI Cable w/Detachable Ends or Kramer CP-AOCH Series High Speed. Length of patch cable shall be as required for proper operation.

2.36.1 HDMI cable assembly must be installed with the manufacturer furnished “cable pulling sock”. Damaged or inoperable cable assemblies due to improper installation procedures shall be replaced by the Contractor at no expense to the District. Please note Manufacturer’s Cautionary Warning on product specification sheet – “DAMAGED DUE TO CONNECTOR BEING PULLED HARDER THAN 20 kg, IS NOT COVERED BY WARRANTY - To pull cable through conduits or tight spaces, never grab the connector, as it is easy to exceed the force limit on the connector, instead, remove the detachable end, protect the connector using a cable pulling sock and make sure the force is applied directly to the cable jacket.”

2.37 Category-6 Patch Cables 25-feet or Less; Category-6 UTP patch cables shall be as manufactured by Commscope in the color as shown on the Color Chart in the Detail Drawings.

2.38 All patch cables shall be provided for each type of connection required to provide a complete and operational system. All patch cables shall be factory manufactured).

2.39 All patch cables shall be provided for each type of connection required to provide a complete and operational system. All patch cables shall be factory manufactured.

Training

2.40 Portable Equipment shall be furnished and spares supplied to the designated representative of the Client, along with complete documentation of the materials provided. Where applicable, deliver portable equipment in the original manufacturer's supplied packaging.

2.41 **Contractor will provide a minimum of 4 clock hours of on-site training for site staff on the Classroom A/V systems.** Training for personnel shall be provided by certified technology specialists. The scope of training shall encompass system operation and procedures. Technician training should include an integrated information overview, media retrieval procedures as well as operation procedures for local control configurations. The contractor shall provide a detailed written outline clearly describing the proposed plan for all training, for approval by the Engineer and Owner's representative.

2.41.1 Training for staff will include basic system concepts. Faculty and staff will need to know how to power on/off the system, and how to access one or more media resources via remote control. Training should include use and operation of audio/video devices and techniques and trouble-shooting tips. Trainers should incorporate hands-on techniques to maximize staff opportunity to incorporate and develop curriculum that is both meaningful and targeted for their student needs. Clearly written support materials should be provided to all training participants. Manual describing operation and use of the system shall also be provided.

PART 3 - INSTALLATION AND EXECUTION

3.1 Verify that all electrical requirements including junction boxes, empty conduit and power circuits and receptacles are in place as shown on the drawings.

3.2 Receive, check, unload, handle, store, and adequately protect equipment and materials to be installed as part of the contract. Store in areas as directed by the owner's representative. Include delivery, unloading, setting in place, fastening to walls, floors, ceilings, or other structures where required, interconnecting wiring of system components, equipment alignment and adjustment, and other related work whether or not expressly defined herein.

3.3 Installation practices shall follow "standard broadcast wiring" and installation practices, as excerpted from "Recommended Wiring Practices, "Sound System Engineering", (2nd Edition) D. Davis, and Performed to the highest standards of acknowledged industry practices. Upon request the A/V contractor shall furnish all equipment and labor to verify the compliance with the following:

Optical:

3.3.1 Center to corner light fall off shall be less than 50% for video/data projectors.

3.3.2 Center to corner light fall off shall be less than 35% for optical projectors.

3.3.3 Images shall be level and square with the appropriate aspect ratio.

3.3.4 Image shall be free from visible vibration.

Audio System:

3.3.5 Signal-to-noise ratio (including crosstalk): 55-dB minimum.

3.3.6 Total harmonic distortion: 0.1% maximum from 30 Hz to 15,000 Hz.

3.3.7 System frequency response: ±1.0 dB, 20 Hz to 20,000 Hz.

3.3.8 Program reproduction system with point-source loudspeakers: Flat response from 63 Hz to 2.5 kHz ± 2-dB, decreasing uniformly from a relative level of 0-dB at 2.5 kHz to a relative level of –10-dB at 10 kHz as measured on axis of loudspeaker.

3.3.9 Sound output capability: Program levels of not less than 100 dB without objectionable distortion, rattles, or buzzes.

3.3.10 Hum and noise is inaudible (below the background noise level of the space) under normal operation and as observed in normal seat locations.

Video System:

3.3.11 Signal-to-noise ratio (peak to RMS, unweighted DC to 4.2 MHz): 55-dB minimum.

3.3.12 Crosstalk (unweighted DC to 4.2 MHz): 45-dB minimum.

3.3.13 Frequency response: ± 0.5 dB to 4.2 Mhz.

3.3.14 Line and field tilt: 2% minimum.

3.3.15 Differential gain: 3% maximum.

3.3.16 Differential phase: 2□ maximum.

3.3.17 System timing sync coincidence: within 50 nanoseconds.

3.3.18 Color timing: ± 2□at 3.58 Mhz.

Radio Frequency (RF) System:

3.3.19 Visual Carrier level: +0 dBmV minimum and +16 dBmV maximum at system outlets for utilized channels.

3.3.20 Adjacent Channel Visual Carrier: 3-dB maximum differential at system outlets.

3.3.21 Non-adjacent Channel Visual Carrier: 0-dB maximum differential at system outlets.

3.3.22 Carrier-to-Noise Ratio: 42-dB minimum

3.3.23 Amplitude Response: Flat ± 1.0 Db

3.3.24 Signal-to-Noise Ratio: 45-dB minimum for the maximum level of the signal and the interference resulting from cross modulation from other signals on the system, after demodulation.

3.3.25 Outlet-to-Outlet Isolation: 25-dB minimum.

3.4 Adhere to manufacturer's published specifications for pulling tension, minimum bend radii, and sidewall pressure when installing cables.

3.5 Where manufacturer does not provide bending radius information, minimum bending radius shall be 10 times cable diameter. Arrange and mount equipment and materials in a manner acceptable to the engineer and the owner.

3.6 Attach cables to permanent structure with suitable attachments at intervals of 48 to 60 inches. Support cables installed above removable ceilings. Install adequate support structures for 10 foot cable service loops at each TC.

3.7 Mark all cables and patch cords or jumpers with permanent, non-handwritten number or letter cable markers within six inches of both ends. All cables shall be marked. Cable marking codes shall correspond to run sheets.

3.8 All faceplates shall be labeled with type-written permanent labels securely attached to the faceplates identifying all A/V connections. (ie; Doc Cam, PC, DVD, etc.) Cables at the projector and A/V switch shall be also be labeled to match the faceplates.

3.9 Furnish screw-type terminal blocks, boards, strips or connectors for cables that interface with racks, cabinets, consoles or equipment modules. Attach wires terminating at screw-type terminals with crimp-on lugs. “Telephone-style” punch down blocks are not acceptable for signal or data wiring.

3.10 Group cables according to signals being carried. To reduce signal contamination, form separate groups for the following:

3.10.1 Power cables.
3.10.2 Control cables.
3.10.3 Video cables.
3.10.4 Camera cables.
3.10.5 Audio cables for signals less than minus 20 dBm.
3.10.6 Audio cables for signals between minus 20 dBm and plus 30 dBm.
3.10.7 Audio cables for signals above plus 30 dBm.

3.10.8 Broadband RF cables.

3.11 Run power cables, control cables, and high level cables on the left side of an equipment rack as viewed frm the back. Run other cables on the right side of an equipment rack.

3.12 Cut cables (except video, camera and RGBS cables, which must be cut to electrical length) to the length required by the run. All wire and cable shall be continuous and splice-free for the entire length of run. For equipment mounted in drawers or on slides, provide the interconnecting cables with a service loop of appropriate length.

3.13 Install no cable with a bend radius less than that recommended by the manufacturer.

3.14 Provide strain relief for cables. Provide connectors with metal shell/casings. Provide a minimum of three feet of free cable coiled in a floor pocket. Use spiral wrap to group similar cable types.

3.15 All shielded cables shall be insulated. Do not permit shields to contact conduit, raceway, boxes, panels, or equipment enclosures. Tin all terminated shield drain wires and insulate with heat-shrink tubing.

3.16 Land all field loudspeaker wiring entering each rack at terminal devices prior to connection to equipment or devices. Land loudspeaker level control cables at screw or tubular clamp type barrier blocks on the left side of the equipment rack as viewed from the rear. Make all connections to screw-type barrier blocks with insulated crimp-on spade lugs. Size all lugs properly to assure low-resistance connections.

3.17 Separately dress, route and land microphone and line level cables directly to equipment.

3.18 Use only rosin core 60/40 tin/lead solder for all solder connections.

3.19 All cables shall be neatly labeled with wrap around type written labels.

3.19.1 On the cable at the rear of the faceplate or termination location at the control location. Requires the use of a self laminating wrap around label. Brady Label self laminating 1.2" by 1.5" wrap around label Part # 29689 (NO ACCEPTABLE EQUAL)

3.20 Lace, tie or harness wire or cable in accordance with accepted professional practice. Dress, lace or harness all wire and cable to prevent mechanical stress on electrical connections; no wire or cable shall be supported by a connection point. Provide service loops where harness of different classes cross or where hinged panels are to be interconnected.

3.21 Upon completion of the work, remove all refuse and rubbish from and about the premises, and leave the relevant areas and equipment clean and in an operational state.

3.22 During the installation, and up to the date of final acceptance, protect finished and unfinished work against damage and loss. In the event of such damage or loss, replace or repair such work at no cost to the owner.

3.23 Prior to final acceptance, provide minimum of three complete sets of drawings showing all cable numbers and construction details in accordance with the actual system installation. Revise the device layout drawings to represent actual installation locations and coordinate these with the electrical contractor. The operation manual shall contain all instructions necessary for the proper operation of the installed system and manufacturer's instructions. The maintenance manual shall contain all information required for the "proof of performance" as required and all manufacturers' maintenance information.

Inspection and Test upon Completion

3.24 Check out and final connections to the system shall be made by the Contractor of the products installed. Technicians shall demonstrate operation of the complete system and each major component to the Owner.

3.25 System field wiring diagrams shall be provided to the owner by the system Installer (Contractor) prior to completion of the installation.

3.26 All materials and installation shall be guaranteed to be free of defects in material and workmanship for two years after final acceptance of installation and test.

3.27 Upon completion of the installation, four (4) copies of complete operational instructions shall be furnished, complete with record drawings. Instructions shall include part numbers and names, addresses, and telephone numbers of parts source. Final payment shall not be made until operational and maintenance manuals have been received.

3.28 The Contractor shall be responsible to provide service within 24 hours (or by mutual consent) after notification by the Owner or his representative, within the hours of 8:00 AM to 5:00 PM from Monday through Friday. Service request forms shall be supplied by the Contractor and the faxing or mailing of such a request form shall constitute notification by the Owner of a service request.

3.29 The Contractor shall provide two "preventative maintenance" service calls, spaced six months apart, for cleaning of all source devices and overall inspection of the system.

PROJECT CLOSEOUT

3.30 Prior to completion of project, compile a complete equipment maintenance manual for all equipment supplied under sections of this division, in accordance with these specifications and as described below.

3.31 Equipment Lists and Maintenance Manuals:

3.31.1 Prior to completion of job, contractor shall compile a complete equipment list and maintenance manuals. The equipment list shall include the following items for every piece of material equipment supplied under this section of the specifications:

3.31.1.1 Name, model, and manufacturer.

3.31.1.2 Complete parts drawings and lists.

3.31.1.3 Local supply for parts and replacement and telephone number.

3.31.1.4 All tags, inspection slips, instruction packages, etc., removed from equipment as shipped from the factory, properly identified as to the piece of equipment it was taken from.

3.32 Maintenance manuals shall be furnished for each applicable section of the specifications and shall be suitably bound with hard covers and shall include all available manufacturers' operating and maintenance instructions, together with "as-built" drawings to properly operate and maintain the equipment. The equipment lists and maintenance manuals shall be submitted in duplicate to the Architect for approval not less than 10 days prior to the completion of the job. The maintenance manuals shall also include the name, address, and phone numbers of all subcontractors involved in any of the work specified herein. Four copies of the maintenance manuals bound in single volumes shall be provided.

RECORD DRAWINGS

3.33 The contractor shall maintain record drawings as specified in accordance with these specifications, and as noted below.

3.34 Drawings shall show locations of all concealed and exposed conduit runs, giving the number and size of conduit wires. Underground ducts shall be shown with cross section elevations and shall be dimensioned in relation to permanent structures to indicate their exact location. Drawing changes shall not be identified only with referencing CORs and RFIs, the drawings shall reflect all the actual changes made.

3.35 One set of record drawings shall be delivered to the Engineer in accordance with these specifications.

END OF SECTION

SECTION 28 13 00

SECURITY SYSTEM

PART 1 – GENERAL

1.1 Furnish all materials, equipment and labor, and perform all operations in connection with systems work as indicated on the drawing, as specified herein and required to complete the work.

1.2 Related Specification Sections:

1.2.1 Division 26 05 33 – Conduit and Fittings

1.2.2 Division 26 05 19 or 26 05 13 – Conductors

1.2.3 Division 26 05 34 – Outlet and Junction Boxes

1.3 All security system components shall be manufactured by and wiring shall be furnished and installed by a factory authorized contractor and distributor. The Contractor shall hold a license from the State of California for the purpose of installing security systems.

1.4 The contractor shall be regularly engaged in the installation and repair of the type of equipment to be installed.

1.5 The conduit, outlets, terminal cabinets, device backboxes, etc., which form a part of the rough-in work, shall be furnished and installed complete by the Contractor. Security system components as listed under products shall be furnished and installed by the authorized subcontractor.

1.6 The subcontractor shall furnish all equipment, accessories and material required for the complete installation of a security system in accordance with specifications and as shown on the drawings. Any material and/or equipment necessary for the proper operation of the system not specified or described herein shall be deemed part of this specification. The distributor must also provide complete installation of all wiring and devices or equipment. Supervised installation for the wiring and devices shall be permitted with the following conditions:

1.6.1 A letter will be required from the security system manufacturer's representative certifying that the cable installation was completed in compliance with the manufacturer's recommended installation requirements.

1.6.2 The cables shall be tested in the presence of the manufacturer's representative. These tests will then be submitted to the electrical engineer.

1.6.3 The security system shall be warranted by the manufacturer's representative per the contract agreement.

1.7 General Submittal Requirements

1.7.1 Phase I Submittal shall be made in electronic format within (20) working days after the award of the contract by the District. This submittal shall include the following:

1.7.1.1 Complete Bill of Materials in Excel Spreadsheet format with bills of quantities, including all materials, components, devices, and equipment required for the work. The bills of quantities shall be tabulated respective of each and every system as specified, and shall contain the following information for each Section listed:

1.7.1.2 Description and quantity of each product.

1.7.1.3 Manufacturer's Name and Model Number.

1.7.1.4 Material Cut Sheets shall provide detailed product information and shall be original manufacturer product bulletins. Copies of material information from vendor websites shall not be considered equal and will not be accepted.

1.7.1.5 Material Cut Sheet part number provided shall be highlighted or provided with an arrow directed at the corresponding part number.

1.7.1.6 Specification Item Number referenced for each required product or if not shown in the specifications, Drawing Detail Number being referenced. (ie; Spec. 281300 Item 2.1 or DWG E4.15/#1)

1.7.1.7 Include with submittals all warranty information and a description of support and maintenance services to be provided. Also include all licenses and maintenance agreements required for continued operation of the equipment.

1.7.2 Phase II Submittal shall be provided within (20) working days after the approval of the Phase I submittals and prior to any fabrication or field conduit installations. All shop drawings shall be engineered in a CAD Software. Submission shall include electronic print copies to match the contract drawings, and Phase II submittals drawings shall include the following.

1.7.2.1 Complete floor plans showing the locations throughout the project of all receptacles, conduits, wireways, tray, pullboxes, junction boxes, equipment locations, and other devices.

1.7.2.2 Typical system riser diagrams, specialty equipment or rack elevations will be required to be provided.

1.7.2.3 The contractor shall provide as part of this contract additional ceiling motion sensors, wall motion sensors, security door and roof hatch contacts to equal 10% of the total quantity of devices shown on the drawings or a minimum of three (3) for each type, whichever is greater. Installation of conduit, boxes and wiring of these devices shall be

included, and required locations coordinated with final approved shop drawings. Any deices not required to be included during construction shall be delivered to the District at the completion of the project. The quantities of these devices shall be listed as a part of the Phase 1 submittals.

1.7.3 Common submittal mistakes which will result in submittals being rejected:

1.7.3.1 Not including the qualifications of the installing Contractor Company and Contractor's Staff.

1.7.3.2 Not including all items listed in the above itemized description.

1.7.3.3 Including catalog cut sheets which have several items on a page, and not clearly identifying by highlighting, underlining or clouding the items to be reviewed (provided for the project) or crossing out the items which are not applicable.

1.7.3.4 Not including actual manufacturer's cut sheets or catalog information of proposed products.

1.7.3.5 Do not include multiple manufacturers for similar products and do not indicate "or approved equal" statements, or "to be determined later" statements. The products being submitted must be the products installed.

1.7.4 The Contractor shall make a written request directly to Johnson Consulting Engineers for electronic drawing files (CAD). As a part of the written request, please include the following information:

1.7.4.1 Clearly indicate Project Name and Client, Johnson Consulting Job Number (located in bottom left corner of JCE Engineering Stamp) and each drawing Sheet Number required (i.e., E1.1, E2.1, E4.1 etc.).

1.7.4.2 Identify the name, Company, Title, phone number, mailing address and e-mail address of the person to receive the files.

1.7.4.3 Detail or Riser diagram sheets, System Schematic drawings or any other drawings other than floor plans or site plans, will not be made available to the Contractor.

1.7.4.4 Files will only be provided in the AutoCAD format in which they were created (i.e., version 2015 or version 2016). Files will not be made available in REVIT format.

1.7.4.5 Requests for files will be processed as soon as possible; a minimum of 7 working days should be the normal processing time. The Contractor shall be completely responsible for requesting the files in time for their use and

delays in requesting files will not alleviate the Contractor from submitting required documents within the required timeline.

PART 2 – PRODUCTS

Building Security System – Control Panel

2.1 Control Panel in the location shown in the specifications and the drawing details. The existing Security System on the campus is as manufactured by **Digital Monitoring Products (DMP)**.

2.2 The Control/Communicator panel shall be a multiplex micro processed based system as manufactured by **DMP Model XR550N**. Provide Control Panel in **IDF Closets IDF '900" and IDF "400"**. Control Panels shall be set up to act as an expansion panels for the existing Security System with the existing Main Security Control Panel in the existing MDF Room in Old Gym Building serving as the Master Security Control Panel. Refer to the floor plans for the location of the panel.

2.3 Contractor shall replace the existing Main Security Panel in the existing MDF Room in the Old Gymnasium/Auditorium Building. Furnish and install a **DMP XR-550NL-G Security Control Panel** with both Network and Celullar communications capabilities. Existing Main Control Panel shall be demoed by the Contractor. Provide the new Control Panel with all of the options required in addition to the options in the specified panel. Provide the additional services with the replacement of the existing Main Security Panel;

2.3.1 Identify all of the existing devices and connections including any Door Contacts, Motion Detectors, Gate Connections, Keypads and Secondary Control Panels currently connected to the existing Main Security Panel in the existing MDF Room. Label each of the connections prior to demo of the existing Control Panel. Devices may be existing in any of the buildings surrounding the Old Gym/Auditorium and within the building itself. The Contractor shall coordinate access to the buildings and document locations of the devices connected to the Main Panel.

2.3.2 Identify and copy (if possible) the existing Main Security Panel's programming for the Secondary Control Panels, Keypads, Motion Detectors, Door Contacts and any other devices currently connected to the Panel. Contractor shall program the new Security Panel to provide the proper zoning, areas, Keypad Access codes, Sub-Panel controls, etc., for all of the existing devices and any new Panels and device programming for the two new Buildings 400 and 900. The existing Security System operational modes of programming for the existing Buildings connected to the existing Main Security Panel shall be maintained during construction of the new buildings. The Contractor shall meet with the High School Facilities, Administration and Security Departments to gather the information on the existing programming for the system.

2.3.3 Disconnect all existing devices and connections including any Keypads and Secondary Control Panels from old existing Control Panel in the MDF Room. Extend any cables that are not long enough to make the connections to the new Control Panel.

2.3.4 Reconnect all of the existing connections to the new Main Security Panel. Once all connections have been reconnected, the Contractor shall program the new Main security Panel.

2.3.5 Test each device, Keypad and Secondary Control Panel after reconnecting to the New Control Panel. The existing locations of the connections for all of these devices must be identified prior to demo of the existing Main Security Panel. Devices may be existing in any of the buildings surrounding the Old Gym/Auditorium and within the building itself.

2.4 The system must be able to provide the following minimum functions:

2.4.1 Provide capacity for 574 individual zones.

2.4.2 Up to 16 independent Access Control Door locations (Wiegand).

2.4.3 Minimum capacity of (16) Supervised keypads from one control panel.

2.4.4 Up to 500 wired or wireless LX Bus devices

2.4.5 Fully supervised 10/100 Ethernet network and CDMA/HSPA+ cellular communications capabilities.

2.4.5.1 Control Panel shall be provided with 10/100Mbps Ethernet Card Option

2.4.5.2 Provide 263LTE-FN FIRSTNET READY™ Cellular Communicator Option.

2.4.5.3 When using the 263LTE-FN with the XR150/XR550 Series Control Panels, provide a Model #381 cable for connection from the cell module SMA connector to the panel enclosure knockout.

2.4.6 Central Station reporting via ethernet connection (IP) and simultaneous digital dialer for multiple central station receivers.

2.4.7 Interface with the district central monitoring system to report all addressable devices individually (by site, building and room) and to be remotely programmable from the district central system for maintenance and changes to the system.

2.4.8 U.L. listed for Burglary and access control

2.4.9 Battery backup included

2.4.10 Capability to extend keypad or sensor wiring bus lengths to a minimum of 15,000 ft.

2.4.11 Systems or components as manufactured by Bosch, Honeywell, Radionics or any other manufacturer's which are not specifically listed in 2.1, are not approved for use on this project

2.5 Provide a complete and operable supervised intrusion detection system including, but not limited to; control panel, keypad stations, motion detectors, door contacts, zone expanders and repeaters and a digital communicator.

2.5.1 The new Security Control Panels shall be tied in with the existing Main Security Control Panel in the existing MDF Room in the MPR Building.

2.5.2 Upon detection of an intruder by initiation of any device in the system, the system shall cause alarm information to be sent by (IP) to the district central station and by digital dialer to an independent alarm monitoring agency. Each motion sensor and or door contact shall have a distinct address and each address shall report to the monitoring agency including the site name, building name, and room number identifications associated with each device. The installing contractor must submit a list of all devices and their reporting identifications to the district for review and approval prior to any programming. Naming and room numbers must be consistent with actual facility identifications, which may vary from identifications included in the bid construction documents. An operational test of each installed system must be able to confirm compliance with the above requirements for each device installed, before the system will be considered complete and operational.

2.5.3 Coordinate with the District Facilities Department for integration with the existing campus security system for access to the Administrative Level software for system programming.

2.5.4 Upon detection of an intruder by any initiation device in the system, the system shall cause a prerecorded message to be played over the campus intercom system. The intercom system shall play the message over all INTERIOR only speakers. The message shall repeat (2) times “An unauthorized entry to the facility has been detected, authorities have been contacted “in both English and Spanish.

2.6 Systems shall detect the entry and/or the motion of a body taking not more than four steps in an area secured with motion detection equipment where entry doors or windows are possible access.

2.7 New Buildings shall be zoned and controlled separately and each sensor individually addressable so that portions of the facility may be secured while others remain unsecured. All zones for the New Buildings shall be able to be armed or disarmed from a new keypads where shown on the drawings.

2.8 Existing Master Keypad location in the Administration Building. Program Keypad to add the additional Zones for Universal Arm/Disarm of the campus..

2.9 Provide Keypads as shown on the drawings.

2.9.1 When staff arrives, they would present their code to the keypad. This would disarm the building in which the staff works, and the not armed indicator light at the annunciator will be triggered.

2.9.2 When staff is leaving, (and presumably is the last one from their building leaving) they would press the "Command" button, then select "Arm", then select "All". The building would arm, and the armed indicator light at the annunciator will be triggered

Building Security System – System Devices

2.10 Provide the Security System Devices as shown on the project floor plans. Every type of device described below may or may not be shown on the floor plans.

2.11 Keypads - Keypads shall be alpha numeric LCD display series capable of displaying system status and controlling the alarm system. Unit shall receive its operating power from the control panel.

2.11.1 All zones shall have the ability to be controlled by the existing Master Keypad located in the Administration Building.

2.11.2 Provide keypads at locations where on drawings for coverage of the zones as required by District. Each building or zone shall be furnished with a keypad, unless otherwise noted on the drawings or in these specifications. Provide two-line Alphanumeric 32-character LCD display keypad with two-button panic and four zones by DMP Model # 7073A Aqualite Series Keypads (No Approved Equal).

2.12 Motion Sensors - Motion sensors shall be passive infrared with microwave Doppler radar detection. Sensor coverage patterns shall be as required for optimum coverage at each individual location. Sensor shall be wall mounted at the locations as shown on the drawings.

2.12.1 Wall Mounted Motion Sensors – Classrooms – DMP Model #Optex DX-60 Plus (No Approved Equal). Dual Tech PIR and Microwave wall mounted sensor with a minimum coverage pattern capability of 60-feet by 60-feet. Larger non-classroom spaces shall also be provided with this model of sensor.

2.12.2 Wall Mounted Motion Sensors – Offices, Workrooms or other similar smaller rooms - DMP Model #Optex DX-40 Plus (No Approved Equal). Dual Tech PIR and Microwave wall mounted sensor with a minimum coverage pattern capability of 40-feet by 40-feet.

2.12.3 Contractor shall furnish and install the wall mount brackets for the wall mounted motion sensors by DMP Optex Model #FA-1W or Model #FA-3 (No Approved Equal). Type of bracket provided shall be based on desired coverage for the sensor.

2.12.4 Ceiling Mounted Motion Sensors in Rooms with Accessible Ceilings – DMP Model #Optex FX-360 (No Approved Equal). Rooms with accessible ceiling, between 8-12 feet in height, shown with ceiling mounted sensors shown on the floor plans, shall be furnished with a PIR Technology ceiling mounted sensor with a minimum coverage pattern capability of 25-feet to 40-feet in diameter.

2.13 Door Contacts – Door contacts shall be provided at all exterior doors and at all roof hatches. Contractor shall refer to the drawings for the locations of the doors and roof hatches. In addition, all roll-up type garage doors or security shutters shall be provided with door contacts.

2.13.1 Door contacts for standard doors at drywall walls or accessible walls shall be installed as recessed contacts. Provide DMP Model #1076C Magnetic Terminal Contacts (No Approved Equal).

2.13.2 Door contacts for standard doors at concrete or CMU walls or non-accessible walls shall be installed as surface mounted contacts. Provide DMP Model #Sentrol 1085TW Magnetic Wide Gap Terminal Contacts (No Approved Equal).

2.13.3 Door contacts for Store Front glass doors shall be installed as miniature size recessed contacts. Provide DMP Model #STB-10 Magnetic Terminal Contacts (No Approved Equal).

2.13.4 Door contacts for overhead roll-up garage doors or security shutters shall be surface mounted heavy-duty, industrial wide gap type with 36" armored cable by DMP Model #Sentrol 2505A Magnetic Terminal Contacts (No Approved Equal).

2.13.5 Door contacts must be installed using the screws and the adhesive contact sheet provided with the door contact or with the screws alone. Installation using the adhesive contact sheet alone is not allowed.

2.13.6 Cable splice connections for the armored cable provided with overhead roll-up garage door contacts shall be provided inside a dual gang junction box in an accessible location for future maintenance. The junction box shall be provided with a blank cover labeled with a permanent type-written label showing the unique device number and any zone information or door number.

Building Security System – System Cable

2.14 Wire and Cable - Cabling shall be as required for system operation or as shown in the specifications and detail drawings. Refer to the floor plans for additional requirements.

2.14.1 Interior Riser Rated Keypad Cable - Provide (4) conductor, 18-AWG, Polypropylene coated stranded bare copper conductors with PVC jacketed, Riser-rated cable for keypad locations within a building. Provide Honeywell Part #2115 or West Penn Part #244.

2.14.2 Exterior Riser Rated Keypad Cable - Provide (4) conductor, 18-AWG, stranded bare copper conductors with PVC jacketed, Outdoor-rated, direct burial type cable for keypad locations between buildings. Cable shall be used for all exterior cable runs. Provide Honeywell Part #4157 or West Penn Part #AQ244.

2.14.3 Interior Riser Rated Motion Detector Cable - Provide (4) conductor, 22-AWG, Polypropylene coated stranded bare copper conductors with PVC jacketed, Riser-rated cable for motion detector locations within a building. Provide Honeywell Part #2104 or West Penn Part #241.

2.14.4 Interior Riser Rated Door Contact Cable - Provide (2) conductor, 22-AWG, Polypropylene coated stranded bare copper conductors with PVC jacketed, Riser-rated

cable for door contact locations within a building. Provide Honeywell Part #2102 or West Penn Part #221.

2.14.5 All cables shall be permanently labeled with a permanent type-written label showing a unique cable number a minimum of two locations, one within 6" and one 24" from the point of termination at the end of the cable.

2.15 Provide other items as shown in the drawings or specifications.

PART 3 – EXECUTION

3.1 All connections throughout the system shall be soldered, crimped by means of AMP lugs, fastened with screw type terminals, made by spring tension clip "punch block" terminals or made by standard plugs and receptacles. All conductors in terminal cabinets shall be neatly routed and dressed with Velcro style cable ties in a workmanlike manner. The cable ties shall not cover any labeling at the ends of the cables.

3.2 All security system cabling shall be installed in conduit where indicated on the drawings or where routed exposed and shall be open wiring where routed above accessible ceilings or in walls.

3.3 Locate motion sensors on walls to provide optimum coverage of the space and to not conflict with the architectural aesthetics of the building. Locations of motion sensors as shown on the electrical plans are diagrammatic only.

3.4 Keypads shall be wired not to exceed 1000 ft cable run from the main control panel and no more than two (2) keypads per 1000-foot cable run. Provide #18AWG minimum. All Cables routed underground shall be suitable for wet location provided with UL listed wet location insulation or flooded type cable construction.

3.5 All wet location cables routed through handholes or manholes shall be provided with a service loop inside the handhole or manhole. The cable shall be provided with a minimum of one entire loop around the inside of the perimeter of the handhole.

3.6 Pull strings shall be provided with all cable runs including but not limited to; conduit stub ups, conduit sleeves, cable trays, open wiring routes and point-to-point conduits. Pull strings shall be free from cable bundles in open wiring routes. Pull strings shall not be substituted for pull ropes for the exterior site conduits.

3.7 Velcro cable management straps are required on all Security System cable bundles the last 20 feet or upon entry into equipment closet a maximum of 12" apart. Cable bundles shall also be routed through cable management or "D" rings in the equipment closet to the Security System backboard location shown on the floor plans.

3.8 The 28 13 00 Contractor shall supply protective bushings or slide on rings at the ends of all exposed conduits used for the security system cabling. This is to include all conduits installed for any future data cabling requirements. Contractor shall submit planned protection bushings prior to installation of cabling for approval.

3.9 Where open wiring cables are run through the ceiling space the wire shall be bundled together and supported above the ceiling.

3.10 The 28 13 00 Contractor may not use the cable suspension system installed by the 27 10 00 Contractor (for data cabling) for the security cabling. The 28 13 00 Contractor shall furnish and install a separate suspension system for the security system cabling.

3.10.1 All cables must be fastened to the building structure via “j-hooks” or an approved suspension system, and not directly in contact with ceiling system. For “j-hooks” follow the maximum fill capacity as recommended by the manufacturer based on the outside diameter of the security cables. For large quantities of cables, use a sling support system such as “Erico Cable Cat” or equal. D-rings, “Caddy #WMX cable hangar”, “Caddy Bridle Rings”, drive rings or any other type of wire ring support is not allowed.

3.11 Where cables pass through a fire-resistant portion of the structure, conduit sleeves shall be provided to maintain the rating of the wall penetrated. Sealing of all penetrations with an approved fire barrier is required. Conduits and sleeves must remain accessible for future use. Permanent sealants may not be used to seal sleeves and conduits.

3.11.1 The 28 13 00 Contractor shall coordinate with the 27 10 00 Contractor, 27 20 00 Contractor, 28 23 00 Contractor and any other Low Voltage Contractor working on the project, for use of the sleeve penetrations shown on the drawings.

3.11.2 The 28 13 00 Contractor shall be responsible for replacing the fire-stopping materials on any sleeve penetration used that was previously sealed. The firestopping material used for the replacement must match the existing materials.

3.11.3 If there are no existing conduit sleeves through the rated walls that must be penetrated, the 28 13 00 Contractor shall be responsible for providing the conduit sleeve and the fire-stopping materials as shown in the drawing details.

3.11.4 Expanding foam is not an acceptable sealant for any conduit opening. Contractor shall be responsible for complete replacement of the conduit and cabling in any conduit filled with expanding foam used as a sealant.

3.12 The minimum bending radius for all cables and the maximum pulling tension shall not exceed manufacturer's recommendations.

3.13 Provide a full 360-degree loop of slack cable around pullbox interiors. Cables entering pullboxes from the bottom, shall not be allowed to touch the bottom of the cover when closed and shall not be pinched or crushed in any way.

3.14 When pulled through conduits, cable pulling lubricants shall be continuously applied to all cables and be specifically approved by the manufacturer.

3.15 Where cables are pulled through or pulled from a center of run, pull without splices or terminations, lead out the cables at all manholes, pullboxes, and conduits, taking care to feed them in again by hand for the next run.

3.16 A pull string shall be placed with all security device cables at the time of installation. Conduit runs and surface raceway for station cabling shall be furnished with a minimum 2-Ply spiral wrap style, pull string rated for 240 ft/lbs. pulling strength, such as manufactured by Greenlee #431 or approved equal. Includes all conduit stubs and cables routed through open ceilings and cable trays. Pull strings shall be tied off in the junction box and in the ceiling. Provision for the installation of the pull string shall apply to all empty and spare conduits as well. Single ply type pull string will not be accepted as a substitute for the 2-ply pull string.

3.17 A measuring pull tape shall be placed with all OSP-Rated Site Security cables at the time of installation. Outdoor conduit runs between buildings designated for feed cabling, in excess of 150 feet shall be provided with a minimum ½" polyaramid style, measuring true tape pull string annotated with footage increments rated for 2500 ft/lbs. pulling strength, such as manufactured by Greenlee #39245 or approved equal. Conduit runs less than 150 feet shall be furnished with a ¼" polyaramid style, measuring true tape pull string annotated with footage increments rated for 1250 ft/lbs. pulling strength, such as manufactured by Greenlee #39243 or approved equal. Provision for the installation of the measuring pull tape shall apply to all empty and spare conduits as well. Standard twine style pull strings and standard nylon or polypropylene style pull ropes will not be accepted as a substitute for the polyaramid measuring tape type pull string.

3.18 All cables shall be new and extend continuous from each MDF Closet Security backboard or IDF Closet Security backboard to all outlet locations.

3.19 Where cables are not installed in a conduit or other raceway system, they shall not be routed parallel with other line voltage equipment or wiring (120 volt and above) within 36" or within 12" of line voltage equipment or wiring where crossing.

3.20 Labeling

3.20.1 Each cable run shall be permanently labeled at each end with a unique sequential number which corresponds to a similar number provided for each security device. A printed label shall be placed at each of the following locations;

3.20.1.1 On the cable at the point of termination or termination block. Requires the use of a self-laminating wrap around label. Brady Label self-laminating 1.2" by 1.5" wrap around label Part #29689 (NO ACCEPTABLE EQUAL).

3.20.1.2 On each cable in the j-box behind the device location or on the cable before the point of termination at the device, for devices without a j-box. Requires the use of a self-laminating wrap around label. Brady Label self-laminating 1.2" by 1.5" wrap around label Part #29689 (NO ACCEPTABLE EQUAL).

3.20.1.3 On the cable at the terminal strip or pop-it prior to termination point. Requires the use of a self-laminating wrap around label. Brady Label self-

laminating 1.2" by 1.5" wrap around label Part #29689 (NO ACCEPTABLE EQUAL).

3.20.1.4 The label shall be clearly defined with a minimum #10 font size.

3.20.2 Hand written labels are not permitted. Where cable ID includes room number identification, the Contractor shall obtain written verification of final room numbers prior to beginning labeling (numbers on plans do not always match final room numbers). Cable pulling cross reference lists will not be accepted with final documentation.

3.20.3 Labeling will follow recommended identification standards or District Standards as directed by the customer. Contractor will confirm labeling pattern prior to final identification or testing. All device identification designations shall match the final identification information shown on the Final As-Built Drawings. Contractor shall be required to have the labeling scheme approved in writing by the District Facilities Director prior to manufacture or installation of the labeling.

3.20.4 All OSP-rated cables routed through underground conduits shall be tagged with waterproof label tags in every manhole or pullbox. Waterproof label tags shall also be placed at each end of the cable in the termination closets or terminal cabinets in clear view at the point where the conduit transitions up out of the slab or where the conduit enters the terminal cabinet. A minimum of (2) tags are required in each handhole or manhole.

3.20.5 Refer to detail drawings for additional labeling requirements

3.21 Final System Acceptance

3.21.1 The system will be accepted only after a satisfactory test of the entire system has been accomplished by a Factory-Trained Contractor in the presence of the Owner's Representative. This contractor shall provide all personnel, ladders and testing equipment to assist in completing this test. Actuate each device and verify that the system performs as specified.

3.21.2 Once the system has been tested, the contract shall not be considered complete until after District training has been completed. The Contractor shall notify in writing their intent to provide the training for the system. This notification shall be given to the Architect and the Project Engineer a minimum of two weeks prior to the scheduled training session. The 28 13 00 Contractor shall be responsible for notifying the District to confirm that the appropriate District personnel will be made available for this training session. If the District does not receive confirmation that the training session can be performed on the proposed date, than another time shall be provided. The training shall consist of the following:

3.21.2.1 Provide a minimum of one (1) two-to-four-hour training period located at the project site, to instruct District personnel in proper operation of all systems.

END OF SECTION

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SECTION 31 22 00
GRADING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Coordinate work of this Section to compliment and coordinate with field conditions and Civil Drawing noted specific referenced requirements. Utilize the most stringent requirements.

B. Removal of topsoil.

C. Rough grading and consolidation/compaction the site for site structures.

1. Preparation for excavation, trenching, backfilling and compacting Work.

D. Excavation of subsoil, stockpiling for later reuse, and removal of excess from the site.

E. Preparing of subgrade for walks, pavements and site retaining walls.

F. Excavating, backfilling and compaction for wet utility lines.

G. Finish grading for planting.

1.02 RELATED REQUIREMENTS

A. Section 01 40 00 - Quality Requirements.

B. Section 01 45 33 - Code-Required Special Inspections.

C. Section 01 70 00 - Execution and Closeout Requirements.

D. Section 31 10 00 - Site Clearing.

E. Section 31 23 16 - Excavation.

F. Section 31 23 23 - Fill: Filling and compaction.

G. Section 32 11 23 - Aggregate Base Courses

H. Section 32 12 16 - Asphalt Paving.

I. Section 32 13 13 - Site Concrete.

1.03 SUBMITTALS

A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

1. Accurately record location of all changes in finish elevations and gradients which materially affect drainage.

1.04 QUALITY ASSURANCE

A. Regulatory Requirements: For conditions not covered in this Section, refer to applicable provisions of the California Building Code (CBC), Chapter 18A - Soils and Foundations, as amended and adopted by authorities having jurisdiction.

B. Perform Work in accordance with locally adopted {\rs\#1} standards.

1. Maintain one copy on site.

1.05 PROTECTION

A. Dust Control: Comply with requirements specified in Section 01 50 00 - Temporary Facilities and Controls.

B. Protection:

1. Comply with general requirements specified in Section 01 50 00 - Temporary Facilities and Controls.
2. Provide protection for walks, curbs, drains, and trees and boxing around corners of existing buildings to prevent damage.
3. Keep adjacent roads, streets and drives clear of dirt and debris from earthwork operations.

C. Underground Utilities:

1. Buried utility lines may exist.
2. If such are encountered, notify Construction Manager, Architect and District and for directions to be followed for preservation, relocation or demolition of utilities.

PART 2 PRODUCTS

2.01 MATERIALS

A. Topsoil: Topsoil excavated on-site.

1. Graded.
2. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds and foreign matter.

B. Shoring and Bracing: Provide all materials and services necessary to properly engineer and construct shoring for excavations. Selection of materials and design of shoring, underpinning and bracing of new and existing structures shall be solely the responsibility of the Contractor.

1. Shoring design shall comply with State of California Trenching and Shoring Manual issued by Offices of Structure Construction; 2011.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that survey bench mark and intended elevations for the Work are as indicated.

B. Verify the absence of standing or ponding water.

C. Upon discovery of unknown utility or concealed conditions, discontinue affected Work and notify DSA, Architect and District for direction. Unforeseen conditions shall be resolved in accordance with the General Conditions.

3.02 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Stake and flag locations of known utilities.

C. Locate, identify, and protect from damage above- and below-grade utilities to remain.

1. Maintain and protect existing utilities remaining which pass through Project area.

D. Notify utility company to remove and relocate utilities, as required.

E. Provide temporary means and methods to remove all standing or ponding water from areas prior to grading.

F. Protect site features to remain, including but not limited to bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs, from damage by grading equipment and vehicular traffic.

G. Protect trees to remain by providing substantial fencing around entire tree at the outer tips of its branches; no grading is to be performed inside this line.

H. Protect plants, lawns, and other features to remain as a portion of final landscaping.

3.03 ROUGH GRADING

A. Eliminate uneven areas and low spots. Remove debris, roots, branches, stones, in excess of 1 inch in size.

B. Remove topsoil from areas to be further excavated, re-landscaped, or re-graded, without mixing with foreign materials.

1. Coordinate topsoil with Section 31 10 00 - Site Clearing and Grubbing.

C. Do not remove topsoil when wet.

D. Remove subsoil from areas to be further excavated, re-landscaped, or re-graded.

E. Do not remove wet subsoil , unless it is subsequently processed to obtain optimum moisture content.

F. When excavating through roots, perform work by hand and cut roots with sharp axe.

G. See Section 31 23 23 for filling procedures.

H. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.

I. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack surface water control.

J. Grade top perimeter of excavations to prevent surface water from draining into excavation.

1. Provide dewatering of excavations as required to ensure suitable conditions for concrete and backfilling operations.

K. Uniformly grade areas as shown on Drawings to tolerances specified in this Section..

1. Evenly grade between points where elevations are shown or between points of Work and existing grades.

L. Slope rough grade away from building perimeter at gradient indicated.

1. Upaved area slope for a distance of 10 feet from the building: Not less than one unit vertical in 20 units horizontal or 5 percent.

a. CBC Section 1804A.4.

2. When supported by soil conditions and climate; slope not less than 1:48 or 2 percent in unpaved areas.

a. CBC Section 1804A.4, Exception.

M. Make grade changes gradual. Blend slopes into level areas.

3.04 SOIL REMOVAL AND STOCKPILING

A. Stockpile topsoil to be re-used on site; remove remainder from site.
   1. Topsoil and vegetation layers, root zones, and similar surface materials should be stripped and stockpiled for either reuse in landscape surface areas or removed from the site.

B. Stockpile subsoil on site for backfill, if soil is appropriate.
   1. Stockpile subsoil to depth not exceeding 8 feet.

C. Remove all lumped subsoil, boulders and rock in excess of 3 inches in greatest dimension.

D. Stockpile subsoil to be re-used on site; remove remainder from site.

E. Stockpiles: Use areas designated on site; pile depth not to exceed 8 feet; cover to protect from erosion.

3.05 FINISH GRADING

A. Before Finish Grading:
   1. Verify building and trench backfilling have been inspected.
   2. Verify subgrade has been contoured and compacted.

B. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove soil contaminated with petroleum products.
   1. Comply with CBC Section 1804A.3.

C. Where topsoil is to be placed, scarify surface to depth of 6 inches.

D. In areas where vehicles or equipment have compacted soil, scarify surface to depth of 6 inches.

E. Place topsoil in areas indicated.

F. Place topsoil where required to level finish grade.

G. Place topsoil during dry weather.

H. Remove roots, weeds, rocks, and foreign material while spreading.

I. Near plants spread topsoil manually to prevent damage.

J. Fine grade topsoil to eliminate uneven areas and low spots. Maintain profiles and contour of subgrade.

K. Lightly compact placed topsoil.

L. Maintain stability of topsoil during inclement weather. Replace topsoil in areas where surface water has eroded thickness below specifications.

3.06 TOLERANCES

A. Top Surface of Subgrade: Plus or minus 0.10 foot (1-3/16 inches) from required elevation.

B. Top Surface of Finish Grade: Plus or minus 0.04 foot (1/2 inch).

C. Top Surface Under Paving: Plus or minus 0.04 foot (1/2 inch) from required elevation.

3.07 REPAIR AND RESTORATION

A. Existing Facilities, Utilities, and Site Features to Remain: If damaged due to this work, repair or replace to original condition.

B. Trees to Remain: If damaged due to this work, trim broken branches and repair bark wounds; if root damage has occurred, obtain instructions from Architect as to remedy.

C. Other Existing Vegetation to Remain: If damaged due to this work, replace with vegetation of equivalent species and size.

3.08 FIELD QUALITY CONTROL

A. See Section 31 23 23 for compaction density testing.

B. Field Quality Control:

1. Field inspections and testing shall be performed in accordance with requirements specified in Section 01 40 00 and 01 45 33.
2. Make required quality control submittals in accordance with requirements specified.

C. Non-compliance: Should grade elevations, tests of fill or backfill indicate non-compliance with required elevations or density, Contractor shall over-excavate, recompact and retest until specified grade or density is obtained.

1. Costs and Time associated with remedial Work and retesting shall be in accordance with provisions of the General Conditions.
2. Retesting to demonstrate compliance shall be by a testing laboratory acceptable to District and shall be at Contractor's expense.

3.09 CLEANING

A. Remove unused stockpiled topsoil and subsoil. Grade stockpile area to prevent standing water.

B. Leave site clean and raked, ready to receive landscaping.

3.10 PROTECTION

A. Protect completed grading from erosion from weather and traffic.

B. Over-excavate and recompact areas damaged by construction activities and weather.

END OF SECTION

SECTION 31 23 16.13
TRENCHING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Backfilling and compacting for utilities from 5 FEET outside the building to connection point on-site, where indicated on Drawings.

1.02 RELATED REQUIREMENTS

A. 00 31 00 - Available Project Information: Geotechnical report; bore hole locations and findings of subsurface materials.

B. Section 01 41 00 - Regulatory Requirements: Code Compliance.

C. Section 31 22 00 - Grading: Site grading.

D. Section 31 23 16 - Excavation: Building and foundation excavating.

E. Section 31 23 23 - Fill: Backfilling at building and foundations.

F. Section 33 14 16 - Site Water Distribution Piping: Potable Water Systems.

G. Section 33 31 13 - Site Sanitary Sewerage Piping: Sewer piping from building to municipal sewer.

H. Section 33 42 11 - Stormwater Gravity Piping: Storm drainage piping from building to on-site or off-site storm drain system.

1.03 DEFINITIONS

A. Finish Grade Elevations: Indicated on drawings.

B. Subgrade Elevations: Indicated on drawings.

1.04 REFERENCES

A. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18 in.) Drop.

B. ASTM C136/C136M - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

C. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Comply with the requirements listed in Section 31 23 23 - Fill.

C. Fill Composition Test Reports: Results of laboratory tests on proposed and actual materials used.

D. Compaction Density Test Reports.

1.06 COORDINATION OF SPECIFICATION REQUIREMENTS

A. Coordinate these Specification Section requirements with specifications included on Drawings. Comply with more stringent requirements and with those requirements of the authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

A. When necessary, store materials on site in advance of need.

B. When fill materials need to be stored on site, locate stockpiles where designated.

1. Separate differing materials with dividers or stockpile separately to prevent intermixing.
2. Prevent contamination.
3. Protect stockpiles from erosion and deterioration of materials.

PART 2 PRODUCTS

2.01 FILL MATERIALS

A. For fill materials see Section 31 23 23 - Fill.

B. For bed materials see Section 31 23 23 - Fill.

C. General Fill: Subsoil excavated on-site.

D. Structural Fill: Subsoil excavated on-site.

1. Free of lumps larger than 3 inches, rocks larger than 2 inches, and debris.

E. Concrete for Fill: Lean concrete.

F. Granular Fill - Gravel: Pit run washed stone; free of shale, clay, friable material and debris.

1. Graded in accordance with ASTM C136/C136M, within the following limits:
    a. 3/4 inch sieve: 95 to 100 percent passing.

G. Granular Fill - Pea Gravel: Natural stone; washed, free of clay, shale, organic matter.

1. Grade in accordance with ASTM D2487 Group Symbol GM.

H. Sand: Natural river or bank sand; washed; free of silt, clay, loam, friable or soluble materials, and organic matter.

1. Grade in accordance with ASTM D2487 Group Symbol SW.

I. Topsoil: Topsoil excavated on-site.

1. Select.
2. Graded.
3. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds and foreign matter.
4. Acidity range (pH) of 5.5 to 7.5.
5. Containing a minimum of 4 percent and a maximum of 25 percent inorganic matter.
6. Complying with ASTM D2487 Group Symbol OH.

2.02 SOURCE QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for general requirements for testing and analysis of soil material.

B. Where fill materials are specified by reference to a specific standard, test and analyze samples for compliance before delivery to site.

C. If tests indicate materials do not meet specified requirements, change material and retest.

D. Provide materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.01 DIG ALERT NOTIFICATION

A. Before any excavation in or near the public right-of-way, contact the Underground Service Alert of Southern California (Dig Alert) at 811 for information on buried utilities and pipelines.

B. Delineation of the proposed excavation site is mandatory. Mark the area to be excavated with water soluble or chalk based white paint on paved surfaces or with other suitable markings such as flags or stakes on unpaved areas.

C. Call at least Two (2) full working days prior to digging.

D. If the members (utility companies) have facilities within the work area, they will mark them prior to the start of your excavation and if not, they will let you know there is no conflict. A different color is used for each utility type (electricity is marked in red, gas in yellow, water in blue, sewer in green, telephone and cable TV in orange).

E. The Law requires to hand expose to the point of no conflict 24 inches on either side of the underground facility, to know its exact location before using power equipment.

F. If caught digging without a Dig Alert ticket fines can be as much as $50,000 per California government code 4216.

3.02 EXAMINATION

A. Verify that survey bench marks and intended elevations for the work are as indicated.

3.03 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

B. Locate, identify, and protect utilities that remain and protect from damage.

C. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

D. Protect plants, lawns, rock outcroppings, and other features to remain.

E. Grade top perimeter of trenching area to prevent surface water from draining into trench. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by the Architect.

3.04 TRENCHING

A. Excavate subsoil required for conduits, storm drain, sanitary sewer, water and gas piping to municipal utilities.

B. Notify Architect of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.

C. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.

D. Trenches Parallel to Footings: Do not place the trench below a 1 vertical to 2 horizontal from 9 inches above the bottom edge of the footing and no closer than 18 inches from the face of footing. CBC Section 1809A.14.

E. Do not interfere with 45 degree bearing splay of foundations.

F. Cut trenches wide enough to allow inspection of installed utilities.

G. Hand trim excavations. Remove loose matter.

1. Hand trim for bell and spigot pipe joints.

H. Remove large stones and other hard matter that could damage piping or impede consistent backfilling or compaction.

I. Remove lumped subsoil, boulders, and rock up to 1/3 cubic yard measured by volume.

J. Remove excavated material that is unsuitable for re-use from site.

K. Stockpile excavated material to be re-used in area designated in Section 31 22 00.

L. Remove excess excavated material from site.

M. Provide temporary means and methods, as required, to remove all water from trenching until directed by the Architect. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.

N. Determine the prevailing groundwater level prior to trenching. If the proposed trench extends less than 1 foot into the prevailing groundwater, control groundwater intrusion with perimeter drains routed to sump pumps, or as directed by the Architect.

3.05 PREPARATION FOR UTILITY PLACEMENT

A. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.

B. Compact subgrade to density equal to or greater than requirements for subsequent fill material.

C. Until ready to backfill, maintain excavations and prevent loose soil from falling into excavation.

D. Support pipe and conduit during placement and compaction of bedding fill.

3.06 BACKFILLING

A. Backfill to contours and elevations indicated using unfrozen materials.

B. Fill up to subgrade elevations unless otherwise indicated.

C. Employ a placement method that does not disturb or damage installed piping and conduits, or other work.

D. Systematically fill and compact as as to achieve 90 percent relative compaction without damaging conduit or pipe. Do not fill over porous, wet, frozen or spongy subgrade surfaces.

E. Maintain optimum moisture content of fill materials to attain required compaction density.

F. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.

G. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth or as directed by the Geotechnical Report.

H. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.

I. Correct areas that are over-excavated.

1. Thrust bearing surfaces: Fill with concrete.
2. Other areas: Use general fill, flush to required elevation, compacted to minimum 90 or 95 percent of maximum dry density as applicable for the fill area.

J. Compaction Density Unless Otherwise Specified or Indicated:

1. Under paving and similar construction: 95 percent of maximum dry density.
2. At other locations: 90 percent of maximum dry density.

K. Reshape and re-compact fills subjected to vehicular traffic.

3.07 BEDDING AND FILL AT SPECIFIC LOCATIONS

A. Use general fill unless otherwise specified or indicated.

B. Utility Piping, Conduits, and Duct Bank and [_____]:

1. Bedding: Use Fill Type SP or SW (ASTM D2487) or SM with sand equivalent of 30 or greater per ASTM D2419, 3 inches thick, compacted to 90 percent..
2. Cover with Fill Type SP, SW, SM, GM per ASTM D2487.
3. Fill up to subgrade elevation.
4. Compact in maximum 8 inch lifts to 95 percent of maximum dry density.
5. Gas Piping: As required by the Gas Company.

3.08 TOLERANCES

A. Top Surface of General Backfilling: Plus or minus 1.2 inch from required elevations.

B. Top Surface of Backfilling Under Paved Areas: Plus or minus 1.2 inch from required elevations.

3.09 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Control, for general requirements for field inspection and testing.

B. Perform compaction density testing on compacted fill in accordance with ASTM D1556 or ASTM D6938.

C. See Section 31 23 23 for compaction density testing.

D. Correct unauthorized excavation at no cost to District.

E. Evaluate results in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D1557 ("modified Proctor"), AASHTO T 180, or ASTM D698 ("standard Proctor").

F. If tests indicate work does not meet specified requirements, remove work, replace and retest at no additional cost to District.

G. Correct areas over excavated by error in accordance with Section 31 23 23 - Fill.

H. Frequency of Tests: See Section 31 22 00 - Grading.

3.10 CLEANING

A. Leave unused materials in a neat, compact stockpile.

B. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.

C. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

3.11 PROTECTION OF FINISHED WORK

A. Protect finished Work under provisions of Section 01 50 00 - Temporary Construction Facilities and Controls.

B. Recompact fills subjected to vehicular traffic.

END OF SECTION

SECTION 32 12 16
ASPHALT PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Single course bituminous concrete paving.

B. Double course bituminous concrete paving.

C. Surface sealer.

D. This section compliments and shall be coordinated with Civil Drawing specifications / requirements. The most stringent requirements shall be utilized.

E. Asphaltic concrete paving for vehicular traffic and curbs, including necessary patching and repair of damaged new and existing paving.

F. Patching and repair of existing asphaltic concrete paving for previous damage, for underground utility work and where damaged by new construction.

1. Bituminous Surfacing Repair: Areas removed for utility trenches, heaved by tree roots, cracked areas, protruding areas where pavement meets hard surfaces, depressed areas, holes and areas around new structures, and raveled bituminous pavement.
2. Areas heaved by tree roots, cracked areas, holes, and trenches.

1.02 RELATED REQUIREMENTS

A. Section 02 41 00 - Demolition: Selective demolition, site demolition, structure removal.

B. Section 31 22 00 - Grading: Preparation of site for paving and base.

C. Section 31 23 23 - Fill: Compacted subgrade for paving.

D. Section 32 11 23 - Aggregate Base Courses: Aggregate base course.

E. Section 32 13 13 - Site Concrete: Concrete curbs.

F. Section 32 17 13 - Concrete Wheel Stops: Concrete bumpers.

G. Section 32 17 23 - Pavement Markings.

1.03 REFERENCE STANDARDS

A. AI MS-19 - Basic Asphalt Emulsion Manual.

B. ASTM D946 - Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction.

C. SSPWC (Greenbook) - Standard Specifications for Public Works Construction.

1.04 SUBMITTALS

A. Materials List: List source and quality standard for all asphaltic concrete materials.

B. Mix Design:

1. Formulate a job-mix formula using the Hveem method in accordance with SSPWC (Greenbook) Section 203-6.2 and submit for approval.
2. Submit designs for asphaltic concrete prepared by a materials laboratory under direct supervision of a Civil Engineer licensed in the State of California or a standard mix design proven in actual performance.
3. Resultant Mixture: Hveem properties conforming to SSPWC (Greenbook) Section 203-6.4.4.

C. Certifications:
1. Weighmaster's Certificates or certified delivery tickets for each truckload of bituminous material delivered to site.
2. Certificates of Conformance: Asphalt, aggregate and sterilant materials.
a. 20 days prior to the delivery of aggregates, asphalt materials, and paving mixes to the project site, submit certificates and test results of compliance of such materials with these specifications.
b. Submit certificates of compliance from the supplier for bituminous materials for paint binder, asphaltic concrete, and seal coat.
c. Submit weigh master's certificates or certified delivery tickets for each truck load of asphaltic material delivered to the project site.
d. Upon completion of the weed control treatment, and as a condition for final acceptance, furnish a written certificate stating the brand name of the sterilant and the manufacturer, and that the sterilant used had at least the minimum required concentration, and that the rate and method of application complied in every respect with the conditions and standards contained herein.

D. Samples:
1. Prior to the delivery of specified aggregate to the site, submit samples of the material for the Inspector's acceptance in accordance with SSPWC (Greenbook) Section 4-1.4. Samples shall be typical of materials to be furnished from the proposed source and in conformance with the specified requirements.
2. Provide aggregate base gradation and quality certifications, dated within 30 days of submittal.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with locally adopted SSPWC (Greenbook).

B. Mixing Plant: Conform to Locally adopted SSPWC (Greenbook).
1. Asphaltic Concrete Producers Qualifications: Use only materials furnished by a bulk asphaltic concrete producer regularly engaged in production of hot mix, hot laid bituminous concrete.
2. Applicator Qualifications: Paving machine and roller operators shall be fully trained and experienced in the installation of asphaltic concrete paving on projects of similar size and complexity.

C. Testing and analysis of granular base material and asphaltic concrete paving mix shall be performed under provisions of Division 01.

D. Obtain materials from same source throughout.

1.06 FIELD CONDITIONS

A. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen; or when rain is imminent.

1. Tack Coats: Minimum surface temperature of 60 deg F.
2. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.
3. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.

B. Place bitumen mixture when temperature is not more than 15 F degrees below bitumen supplier's bill of lading and not more than maximum specified temperature.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Comply with applicable code for paving work on public property.

B. Where reference is made to SSPWC (Greenbook), the following shall apply.

1. For conditions not indicated otherwise on Contract Drawings, conform to Standard Details adopted by authorities having jurisdiction, including Standard Details for Public Works Construction, as amended and adopted by those authorities.
2. Perform on-site Work as indicated and referenced on Contract Drawings and as specified herein.

C. The quantity of volatile organic compounds (VOC) used in weed killer, seal coat, tack coat, primer, and other materials shall not exceed limits permitted under current regulations of local Air Quality Management District (AQMD).

2.02 MATERIALS

A. General: Aggregate base, prime coat paint binder, bituminous surface course and other materials shall be as noted on the Contract Drawings and shall comply with requirements of authorities having jurisdiction.

B. Asphalt Cement: ASTM D 946.

C. Asphalt Concrete Materials: SSPWC (Greenbook), Subsection 203-6.

D. Aggregate for Base Course: See Section 32 11 23 - Aggregate Base Course.

E. Aggregate for Binder Course : Angular crushed washed stone; free of shale, clay, friable material and debris.

1. Graded in accordance with ASTM D2487 Group Symbol GW.

F. Mineral Filler: Finely ground particles of limestone, hydrated lime or other mineral dust, free of foreign matter.

G. Fiber Reinforcement: Synthetic fibers shown to have long-term resistance to deterioration when in contact with alkalis and moisture; 1/2 inch length.

H. Geotextile Fabric: Non-biodegradable, non-wovenPetromat Enviro manufactured by Propex Operating Company, LLC.

1. Geotextile Construction: Needle-punched nonwoven geotextile composed of 100% polypropylene or polypropylene / recycled polyester blend, staple fiber and heat calendered on one side.

I. Crack Filler:

1. Cracks less than 1/2 inch in width: GuardTop Crackfiller or equal.
2. Cracks 1/2 inch or greater in width: #4 Sheet mix asphalt.

J. Primer: In accordance with locally adopted SSPWC (Greenbook).

K. Tack Coat: Homogeneous, medium curing, liquid asphalt.

L. Seal Coat: AI MS-19, slurry type.

1. Asphalt Emulsion, www.aema.org, SS1-h, per SSPWC (Greenbook) Section 203-9.
2. Acceptable Manufacturers:
   a. Blue Diamond Asphalt; Satin Seal: www.bluediamondasphalt.com.
   b. Diversified Asphalt Product; Over Kote: www.diversifiedasphalt.com.
   c. Gold Star Asphalt Products: goldstarsphalt.com
   d. SealMaster Pavement Products & Equipment; MasterSeal: sealmaster.net.
   e. Vulcan Materials Company; GuardTop: www.vulcanmaterials.com.
   f. Western Colloid Products; Park Top: www.westerncolloid.com.
   g. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 ASPHALT PAVING MIXES AND MIX DESIGN

A. Asphalt Surfacing Materials: Provide asphalt surfacing meeting the following requirement, furnished from a commercial asphalt central mixing plant.

B. Use dry material to avoid foaming. Mix uniformly.

C. Base Course: 4.5 to 5.8 percent of asphalt cement by weight in mixture in accordance with SSPWC (Greenbook) Section 203-6.4.4, Type B.

D. Binder Course: 4.5 to 6 percent of asphalt cement by weight in mixture in accordance with AI MS-2.

1. CSS-1 h and conform to the requirements of SSPWC (Greenbook), Section 203-3 Emulsified Asphalt.

E. Parking Lot Wearing Course: 4.6 to 6.0 percent of asphalt cement by weight in mixture in accordance with SSPWC (Greenbook) Section 203-6.4.3, Type C2.

1. Provide at least two courses of asphalt when Type C2 asphalt pavement is greater than 3 inches.
2. Surface Course Minimum Thickness: 1 inch and a maximum of 2 inches.

F. Submit proposed mix design of each class of mix for review prior to beginning of work.

2.04 SOURCE QUALITY CONTROL

A. Test mix design and samples in accordance with AI MS-2.

B. Submit asphaltic concrete mix design proposed by the Contractor to the Engineer for review.

C. Proposed mix to be tested for conformance with the specifications, including grading, asphalt content and stability.

2.05 ACCESSORIES

A. Headers and Stakes:

1. 2 x 6 inch nominal Redwood, Construction Heart Grade, or preservative treated Douglas Fir (PTDF), except at curves provide laminated 1 x 6 inch nominal PTD., unless indicated otherwise on Drawings

2. Stakes: 2 x 4 x 18 inch long Redwood, or 2 x 3 x 18 inch long PTDF; at 48 inch on center maximum.

3. Nails: Common, use hot dipped galvanized only, 12d minimum.

B. Pavement Reinforcing Fabric: Non-woven polypropylene fabric conforming to SSPWC (Greenbook), Subsection 213-1.

1. Basis of Design Product: Petromat as manufactured by Propex Fabrics inc.; www.geotextile.com, or approved equal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that compacted subgrade and granular base is dry and ready to support paving and imposed loads.

B. Verify gradients and elevations of base are correct.

C. Fine grading, checking, shaping, and compacting of subgrade shall be complete before start of asphaltic concrete Work.

D. Soil Sterilant: Sterilize soil areas to receive asphaltic concrete paving. Apply soil sterilant in accordance with manufacturer's instructions and applicable environmental regulations. Take care to confine application to the areas to be paved. See Section 32 11 23 - Aggregate Base Courses for product information.

E. Curbs and Gutters: Gutters shall be in place and cured prior to start of asphaltic concrete Work. Provide lumber ramping at all locations where rolling equipment or vehicles cross new concrete paving, curbs and gutters.

F. Headers: Place headers with tops flush with finish asphaltic concrete surfaces. Back headers with stakes.

1. Install headers along edge of bituminous surfacing abutting turf, earth, or planting area, unless indicated otherwise.

2. Install headers so the bottom surface has continuous bearing on solid grade. Where excavation for headers is undercut, thoroughly tamp soil under the header. Compact backfill on both sides of header to the density of adjacent undisturbed earth.
3. Fasten headers in place with redwood or Douglas fir stakes of length necessary to extend into solid grade a minimum of 12 inches. Stakes shall be of sound material, neatly pointed, driven vertically, and securely nailed to headers. Space stakes, not to exceed 4 feet on centers with top of stakes set one inch below top of header. Provide a minimum of 2-12d galvanized common nails through each stake.
4. Remove existing headers where new surfacing is installed adjacent to existing surfacing.
5. Install temporary headers at transverse joints of paving where continuous paving operations are not maintained.
6. Provide additional stakes and anchorage as required to fasten headers in place

G. Do not asphalt concrete on any surface, which contains ponded water or excessive moisture in the opinion of the Architect or consulting engineer.
1. If paving operations are in progress and rain or fog forces a shut down, loaded trucks in transit shall return to the plant, and no compensation will be allowed therefore.
2. Provide canvas tarpaulins to cover all loads of asphalt from the time that the mixture is loaded until it is discharged from the delivery vehicle, unless otherwise directed in writing.

3.02 PAVEMENT REPAIR REMOVAL

A. Remove bituminous and concrete pavement in accordance with applicable provisions of SSPWC (Greenbook) Section 300 - Earthwork.

B. Pavement Heaved By Roots:
1. Remove pavement to limits of distortion and expose roots.
2. Trim roots to provide at least 12 inch clearance to pavement.

C. Remove protruding bituminous surfaces flush with the surrounding grade using a suitable tool or equipment so that adjacent finishes are not blackened.

D. Remove raveled and depressed bituminous pavement to limits indicated or required.

E. Saw cut existing improvements, trim holes and trenches in bituminous and concrete pavement to permit mechanical hand tampers to compact the fill.

F. Remove broken concrete by saw cutting. If the required cut line is within 30 inches of a score or joint line or edge, cut and remove to the score, joint line, or edge.

3.03 EXCAVATING, BACKFILLING AND COMPACTING FOR REPAIR

A. Conform to requirements in Section 31 23 16 - Excavation or 31 23 23 - Fill, as required.

B. Where subgrade or base is deemed to be unstable or otherwise unsuitable, excavate such materials to firm earth, and replace with a required material. Install and compact fill materials in accordance with the requirements of related Specification sections.

3.04 HEADERS

A. Install headers along edge of bituminous surfacing abutting turf, earth, or planting area, unless indicated otherwise.

B. Install headers so the bottom surface has continuous bearing on solid grade.

1. Where excavation for headers is undercut, thoroughly tamp soil under the header.
2. Compact backfill on both sides of header to the density of the adjacent undisturbed grade.

C. Fasten headers in place with redwood or Douglas fir stakes of length necessary to extend into solid earth a minimum of 12 inches.

1. Stakes shall be of sound material, neatly pointed, driven vertically, and securely nailed to headers.
2. Space stakes, not to exceed 4 feet on centers with top of stakes set one inch below top of header.
3. Provide a minimum of two 12d galvanized common nails through each stake.

D. Remove existing headers where new surfacing is installed adjacent to existing surfacing.

E. Install temporary headers at transverse joints of paving where continuous paving operations are not maintained.

F. Provide additional stakes and devices as required to fasten headers.

3.05 RESURFACING

A. Holes and Trenches:

1. Remove loose dirt and backfill with cement-sand slurry allowing for surfacing one inch thicker than existing.
2. Resurface flush with existing adjoining pavement installing the same type of materials and section provided in existing improvements.

B. Other Areas:

1. Other surface improvements damaged or removed shall be cut to a neat even line and excavated one inch below the bottom of the existing pavement.
2. Resurface by following the original grades and installing the same type of materials provided in existing improvements.

C. Where bituminous surfacing abuts concrete, masonry, walks or paving, tamp joint smooth, if necessary, as described above to obtain a uniformly even joint, true to line and grade. Tamp and smooth materials before asphalt cools.

3.06 AGGREGATE BASE COURSE

A. See Section 32 11 23.

B. Unless otherwise indicated, base course shall be crushed aggregate base, fine grade, 3 inches thick or equal to thickness of the existing base, whichever is greater.

C. Inspector will examine the base before the paving has begun. Correct any deficiencies before the paving is started.

D. Wherever asphaltic pavement does not terminate against a curb, gutter, or another pavement, provide and install a redwood or pressure treated Douglas fir header at the line of termination.

3.07 PREPARATION - PRIMER

A. Apply primer in accordance with manufacturer's instructions.

B. Apply primer on aggregate base or subbase at uniform rate of 0.25 gal/sq yd.

C. Apply primer to contact surfaces of curbs, gutters.

D. Use clean sand to blot excess primer.

3.08 PREPARATION - TACK COAT

A. Apply tack coat in accordance with SSPWC (Greenbook) Section 302-5.4.

B. Apply tack coat on asphalt or concrete surfaces over subgrade surface at uniform rate of 0.10 gal/sq yd.

C. Apply tack coat to contact surfaces of curbs, gutters and previously placed or existing paving.

D. Joining Pavement: Expose, cut and clean edges of existing pavement to straight, vertical surfaces for full depth of existing pavement.

1. Paint edge with asphalt emulsion before placing new asphaltic concrete.
2. Joints in New Paving: In accordance with SSPWC (Greenbook).

3.09 PLACING ASPHALT PAVEMENT - SINGLE COURSE

A. Install Work in accordance with SSPWC (Greenbook) Subsection 302-5.

B. Asphalt concrete of the class indicated in Part 2 shall be laid in courses conforming to SSPWC (Greenbook) Table 302-5.5(A), unless otherwise stated herein.

C. Place asphalt within 24 hours of applying primer or tack coat.

D. Place thickness as indicated on Civil Drawings to minimum 1 inch compacted thickness.

1. Asphalt concrete work shall include full depth patching and variable thick asphalt concrete transition areas.
2. Provide daily the Inspector, with copies of certificates of weight for all materials delivered to the job site and/or incorporated in the work.
3. At no time shall the coarse aggregate that has segregated from the mix be scattered across the paved mat.

E. Install gutter drainage grilles and frames and manhole frames in correct position and elevation.

F. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position.

1. Compact (roll) asphaltic concrete in accordance with SSPWC (Greenbook), Subsection 302-5.6, using machine rollers.
    a. Compaction by vehicular traffic is prohibited.
    b. Compact areas inaccessible to rolling equipment with machine-powered tamper.

G. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

3.10 PLACING ASPHALT PAVEMENT - DOUBLE COURSE

A. Provide at least two courses of asphalt when Type D2 asphalt pavement is greater then 1-1/2 inches. The surface course shall be a minimum thickness of 1 inch and a maximum of 1-1/2 inches.

B. Provide at least two courses of asphalt when Type C2 asphalt pavement is greater then 3 inches. The surface course shall be a minimum thickness of 1 inch and a maximum of 2 inches.

C. Install Work in accordance with SSPWC (Greenbook) Subsection 302-5.

D. Place asphalt binder course within 24 hours of applying primer or tack coat.

E. Place binder course to thickness as indicated on Civil Drawings, minimum 1 inch compacted thickness.

F. Place asphalt wearing course within two hours of placing and compacting binder course.

G. Place wearing course to thickness as indicated on Civil Drawings, minimum 1 inch compacted thickness.

H. Install gutter drainage grilles and frames and manhole frames in correct position and elevation.

I. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position.

1. Compact (roll) asphaltic concrete in accordance with SSPWC (Greenbook), Subsection 302-5.6, using machine rollers.
    a. Compaction by vehicular traffic is prohibited.
    b. Compact areas inaccessible to rolling equipment with machine-powered tamper.

J. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.11 SEAL COAT

A. Apply seal coat after surface course application, in accordance with manufacturer's recommendations.

B. Apply seal coat to surface course and asphalt curbs in accordance with SSPWC (Greenbook), Subsection 302-8.2.

C. Add water to specified seal coat material. When air temperatures of 90 degrees F or more are encountered during application, consult manufacturer for recommendations.

D. If pavement surface exhibits imperfections of roller marks, rock pockets, ridges or depressions as determined by the Architect, the addition of sand aggregate to seal coat, and amounts thereof, shall be as recommended by the manufacturer.

E. A second application shall be made after first coat has dried to the touch. When sand is added to the first seal coat, two additional coats without extra sand shall be applied.

F. Allow seal coat to dry before permitting traffic or striping.

3.12 PAVEMENT REPAIR AND PAVING

A. Preparation of existing pavement: Where indicated, remove loose asphaltic concrete, cleanout "pot holes" and cracks, remove dirt, oil and other foreign materials.

B. Repair holes with full paving section as specified. Repair "alligatoring" with asphalt "skin-patch". Fill all cracks larger than 1/4 inch wide with asphalt emulsion slurry.

C. Repair of Existing Surfacing:

1. Fill cracks 1/2 inch wide and less with RS-1 emulsion and silica sand or other required material.
2. Cracks larger than 1/2 inch wide shall be filled with Type C2 Asphalt Concrete as specified.
    a. Cracks shall be filled to the level of adjacent surfacing.
3. Where low areas, holes, or depressions occur in existing surfacing, repair with emulsified asphalt.
    a. Install material, strike off the emulsified asphalt with a straightedge flush with adjoining surfacing.
    b. Finish with a steel trowel, and after dehydration, compact by rolling or tamping.

D. Tack Coat: Apply asphalt oil AR-4000 or AR-8000, as required for jobsite condition, at metered application rate of no less than a range from 0.2 to 0.3 gallons per square yard of fabric or as directed by manufacturer and to provide 100 percent fabric saturation and ample bonding for paving section.

E. Fabric Reinforcement: Place fabric smooth side up in tack coat with 2 to 4 inch overlap. Hand-broom to remove wrinkles. Apply addition tack coat to joints and between overlapped fabric layers.

F. Overlay Asphalt: Place single course asphalt, 1-1/2 inch compacted thickness, in conformance with specified standards in this section.

3.13 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.

B. Compacted Thickness: Within 1/4 inch of specified or indicated thickness.

C. Variation from True Elevation: Within 1/2 inch.

3.14 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for general requirements for quality control.

B. Provide field inspection and testing. Take samples and perform tests in accordance with AI MS-2.

1. Flood test entire area in presence of the Project Inspector.
2. Test entire area to verify it is free of standing water or puddles.

C. Pavement at all longitudinal joints shall have a Field Density of 95%, as described in SSPWC (Greenbook), Section 302-5.6.2.

1. When the test results of the field cores are less than 95% Relative Compaction, remove a 1 foot wide section on each side of the longitudinal joint.
2. Replace the removed pavement with an asphalt mix that meets the job specification at no additional cost to the District.

D. Test: Flood test all paving to demonstrate positive drainage.

1. Before acceptance, water test all pavements to ensure proper drainage as directed by the Inspector.
2. Flooding Method: By water tank truck.
3. Fill depressions where the water ponds to a depth of more than 1/8 inch; or the slope corrected to provide proper drainage.
4. The edges of the fill shall be feathered and smoothed so that the joint between the fill and the original surface is invisible.
5. No standing water shall remain 1-hour after test.

3.15 PROTECTION

A. Immediately after placement, protect pavement from mechanical injury for 2 days or until surface temperature is less than 140 degrees F.

1. After final rolling, prohibit all traffic on asphaltic concrete until mix has fully cooled and set. Minimum time, in all cases shall be 6 hours.

3.16 CLEANING

A. After completion of paving operations, clean all existing and new improvements that have been soiled, especially by oil tracking from asphalt tanks or placement in general.

B. For Substantial Completion review, broom clean and wash paving with hoses. Clean residue from landscaping installation.

END OF SECTION

SECTION 32 17 13
CONCRETE WHEEL STOPS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Precast concrete parking bumpers and anchorage.

1.02 RELATED REQUIREMENTS

A. Section 32 17 23 - Pavement Markings.

1.03 REFERENCE STANDARDS

A. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.

B. ASTM C150/C150M - Standard Specification for Portland Cement.

C. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete.

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

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide unit configuration, dimensions.

PART 2 PRODUCTS

2.01 MATERIALS

A. Parking Bumpers: Precast concrete, complying with the following:

1. Profile: Manufacturer's standard.
2. Cement: ASTM C150/C150M, Portland Type I - Normal; white color.
3. Concrete Materials: ASTM C330/C330M aggregate, water, and sand.
4. Reinforcing Steel: ASTM A615/A615M, deformed steel bars; unfinished, strength and size commensurate with precast unit design.
5. Air Entrainment Admixture: ASTM C260/C260M.
6. Concrete Mix: Minimum 5,000 psi compressive strength after 28 days, air entrained to 5 to 7 percent.
7. Use rigid molds, constructed to maintain precast units uniform in shape, size and finish. Maintain consistent quality during manufacture.
8. Embed reinforcing steel, and drill or sleeve for two dowels.
9. Cure units to develop concrete quality, and to minimize appearance blemishes such as non-uniformity, staining, or surface cracking.

10. Minor patching in plant is acceptable, providing appearance of units is not impaired.

B. Dowels: Cut reinforcing steel, 1/2 inch diameter, 1 inch long, pointed tip.

C. Adhesive: Epoxy type.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install units without damage to shape or finish. Replace or repair damaged units.

B. Install units in alignment with adjacent work.

C. Fasten units in place with 2 dowels per unit.

END OF SECTION

SECTION 32 17 23
PAVEMENT MARKINGS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Painted pavement markings.
   1. Accessible Parking Spaces.
   2. Existing Striping: Confirm compliance at all accessible parking spaces on site and path of travel with California Building Code and Access requirements.
      a. Remove non-compliant and provide all striping and modifications necessary for compliance.

B. Raised pavement markings.

1.02 RELATED REQUIREMENTS

A. Section 32 12 16 - Asphalt Paving.

B. Section 32 13 13 - Site Concrete.

C. Section 32 17 13 - Concrete Wheel Stops.

D. Section 32 17 26 - Tactile Warning Surfacing.

1.03 REFERENCE STANDARDS

A. AASHTO M 237 - Standard Specification for Epoxy Resin Adhesives for Bonding Traffic Markers to Hardened Portland Cement and Asphalt Concrete.

B. AASHTO M 247 - Standard Specification for Glass Beads Used in Pavement Markings.

C. AASHTO MP 24 - Standard Specification for Waterborne White and Yellow Traffic Paints.

D. ADA Standards - 2010 ADA Standards for Accessible Design.

E. CBC Ch. 11B - California Building Code-Chapter 11B.

F. FS TT-B-1325 - Beads (Glass Spheres) Retro-Reflective.

G. FS TT-P-1952 - Paint, Traffic and Airfield Marking, Waterborne.

H. SAE AMS-STD-595 - Colors Used in Government Procurement.

I. SAE AMS-STD-595A - Colors Used in Government Procurement.

J. SCAQMD 1113 - Architectural Coatings.

K. SSPWC (Greenbook) - Standard Specifications for Public Works Construction.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the work of this section with adjoining work.

B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by affected installers.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Manufacturer's data sheets on each product to be used.

C. Certificates: Submit for each batch stating compliance with specified requirements.

1. Painted pavement markings.
2. Raised pavement markings.

D. Manufacturer's Instructions:

1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

E. Manufacturer's qualification statement.

F. Installer's qualification statement.

G. Maintenance Materials: Furnish the following for District's use in maintenance of project.

1. See Section 01 60 00 - Product Requirements for additional provisions.
2. Extra Paint: 2 containers, 1 gallon size, of each type and color.
3. Extra Markers: 5 percent, of each type and color.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver paint in containers of at least 5 gallons accompanied by batch certificate.

B. Deliver glass beads in containers suitable for handling and strong enough to prevent loss during shipment, accompanied by batch certificate.

C. Store products in manufacturer's unopened packaging until ready for installation.

D. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.08 FIELD CONDITIONS

A. Do not install products under environmental conditions outside manufacturer's absolute limits.

B. Do not apply paint if temperature of surface to be painted or the atmosphere is less than 50 degrees F or more than 95 degrees F.

1. Do not apply marking paint when weather is foggy or rainy, or when such conditions are anticipated within eight hours of application.
2. Do not apply marking paint when wind velocity causes uncontrollable overspray or excessively rapid drying.

C. Sequence and Schedule: Apply pavement markings after asphaltic concrete and portland cement concrete and interlocking concrete paving Work are complete and properly cured and, if applicable, sealer has been applied to asphaltic concrete and landscaping Work is complete.

1. Allow new pavement surfaces to cure for a period of not less than 14 days before application of marking materials.

1.09 SEQUENCING

A. Allow new pavement surfaces to cure for a period of not less than 14 days before application of markings.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS:

A. Comply with CalGreen requirements.

1. Comply at time of installation with Air Quality standards of:

a. South Coast Air Quality Management District, SCAQMD 1113.

b. California Air Resources Board (CARB).

B. For accessibility markings see Part 3 Article "Installation".

C. Conform to State of California, Department of Transportation (CALTRANS) Standard Specifications, Section 84, Traffic Control Markings, as amended and adopted by authorities having jurisdiction.

D. Where reference is made to Standard Specifications, the following shall apply.

1. Perform off-site Work in public rights-of-way in accordance with requirements of authorities having jurisdiction. For conditions not indicated otherwise on Contract Drawings, conform to Standard Details adopted by authorities having jurisdiction, including SSPWC (Greenbook).

2. Perform on-site Work as indicated and referenced on the Contract Drawings and as specified herein.

2.02 MANUFACTURERS

A. Painted Pavement Markings:

1. Vista Paint Corporation; 6700 100%Acrylic Traffic Marking Paint: www.vistapaint.com.

2. Behr: www.behr.com.

3. Dunn Edwards: www.dunnedwards.com.

4. Sherwin Williams; 2 Coats of SW Armorseal 8100 with Armorseal High Wear Additive in second coat: www.sherwin.com.

5. Substitutions: Or equal.

B. Raised Pavement Markings:

1. Traffice Signs Corporation: www.trafficsigns.com.

2. Substitutions: Or equal.

2.03 PAINTED PAVEMENT MARKINGS

A. General: Provide standard factory-mixed, quick drying and non-bleeding colors, conforming to Standard Specifications, as amended and adopted by the AHJ, City, and County, as applicable.

B. Painted Pavement Markings: As indicated on drawings.

1. Marking Paint: In accordance with AASHTO MP 24.
    a. Parking Lots: Color(s) as indicated.
        1) Fast-dry type. If required by authorities having jurisdiction for Work in public rights-of-way, include reflective material in paint. Paint for marking curbs shall not require reflective material. See Color Schedule in Part 3.
    b. Symbols and Text: Color(s) as indicated.
        1) Accessibility Symbols: Provide blue and white, per CBC Ch. 11B-503 and CBC Ch. 11B-703.7.2.
            (a) Blue shall conform to Color No. 15090; SAE AMS-STD-595A (formerly 595C).
2. Reflective Glass Beads at Accessible Parking Spaces: Type 1 (low index of refraction), Gradation A (coarse, drop-on); with silicone or other suitable waterproofing coating to ensure free flow, in accordance with AASHTO MP 24 or FS TT-P-1952.
    a. Comply with CBC Section 11B-502.6.4 Marking.
3. Obliterating Paint: Type I, in accordance with AASHTO MP 24 or FS TT-P-1952.
    a. Bituminous Pavement: Black.
    b. Concrete Pavement: Gray.

C. Temporary Marking Tape: Preformed, reflective, pressure sensitive adhesive tape in color(s) required; Contractor is responsible for selection of material of sufficient durability as to perform satisfactorily during period for which its use is required.

2.04 RAISED PAVEMENT MARKINGS

A. Surface Reflectors: Bidirectional, visible to approaching traffic; capable of withstanding pavement-rated loading.

1. For on-site fire hydrant locations, placed as required by local fire department.
2. Housing: Plastic, blue.
3. Lens: Prismatic, acrylic, blue.
    a. Optical Performance: Reflective intensity of reflecting surface at 1/5 degree divergence angle shall be not less than the following when the incident light is parallel.

Horiz. Eng. Angle	**Blue**
0 Degrees	3.0
20 Degrees	1.5

4. Dimensions: 4 inches by 4 inches (102 mm by 102 mm).
5. Mounting Adhesive: Type I, in accordance with AASHTO M 237.
6. Pavement Projection: 1/2 inch (12 mm).

PART 3 EXECUTION

3.01 EXAMINATION

A. Identify existing markings for removal.

B. Verification of Conditions: Verify that pavement is dry and ready for installation.

C. Notify Architect of unsatisfactory conditions before proceeding.

3.02 PREPARATION

A. Establish survey control points for locating and dimensioning of markings.

1. Lay out markings as shown on Drawings. Use guide lines, templates and forms for precise edges and spacings.

a. At off-site and on-site public rights-of-way, obtain review and approval of layout by authorities having jurisdiction.

B. Clean surfaces prior to installation.

1. Remove dust, dirt, and other debris.

2. Remove rubber deposits, existing paint markings, and other coatings.

C. Temporary Markings: Apply as directed by Architect.

D. Apply paint stencils by type and color at necessary intervals.

3.03 INSTALLATION

A. Regulatory Accessibility Requirements for Installation:

1. Pavement markings for disability requirements shall meet requirements of California Building Code (CBC), Title 24, Part 2, CBC Ch. 11B and ADA Standards, per latest amendments.

a. Accessible parking spaces serving a particular building or facility shall be located on the shortest accessible route to an entrance complying with CBC Ch. 11B-208.3.1.

b. Accessible parking spaces serving more than one accessible entrance shall be dispersed and located on the shortest accessible route to the accessible entrances.

c. Accessible parking spaces in a parking facility not serving a particular building or facility shall be located on the shortest accessible route to an accessible pedestrian entrance of the parking facility. CBC Ch. 11B-208.3.1

d. Minimum number of required accessible parking spaces shall be provided in accordance with CBC Ch. 11B Table 11B-208.2 for each parking facility provided on a site.

e. For every six or fraction of six accessible parking spaces, at least one shall be an accessible van parking space. CBC Ch. 11B-208.2.4

f. Accessible parking spaces and access aisles shall comply with CBC Ch. 11B-502 and shall be dimensioned to the centerline of the marked lines as follows:

1) Parking spaces and access aisles shall be marked according to CBC Ch. 11B Figures 11B-502.2, 11B-502.3, and 11B-502.3.3.

(a) Their surfaces shall comply with CBC Ch. 11B-302 and shall be at the same level with slopes not steeper than 1:48 in any direction. CBC Ch. 11B-502.4.

2) Parking spaces shall be 9 x 18 feet minimum and van parking spaces shall be 12 x 18 feet minimum with an adjacent access aisle of 5 x 18 feet minimum.
   (a) Access aisles shall be placed on either side of the parking spaces except be located on the passenger side for van parking spaces.
   (b) Van parking spaces shall be permitted to be 9 x 18 feet minimum where the access aisle is 8 x 18 feet minimum.

3) Access aisles shall be marked by a blue painted borderline around their perimeter.
   (a) The area within the blue borderlines shall be marked with hatched lines a maximum of 36 inches on center in a color contrasting with that of the aisle surface, preferably blue or white.
   (b) Access aisle markings may extend beyond the minimum required length. CBC Ch. 11B-502.3.3
   (c) At drive aisle provide minimum 12 inch high white letters with the text "NO PARKING" per CBC Ch. 11B Figure 11B-502.3.3.

4) Access aisles (parking spaces as well- similar application) shall not overlap the vehicular way. CBC Ch. 11B-502.3.4

5) A vertical clearance of 98 inches minimum shall be provided for accessible parking spaces, access aisles, and vehicular routes serving them. CBC Ch. 11B-502.5

B. General:
   1. Position pavement markings as indicated on drawings.
   2. Field location adjustments require approval of Architect.

C. Painted Pavement Markings:
   1. Apply in accordance with manufacturer's instructions.
   2. Obliterating Paint: Apply as necessary to cover existing markings completely.
   3. Marking Paint: Apply uniformly, with sharp edges.
      a. Applications: One coat.
      b. Wet Film Thickness: 0.015 inch, minimum.
      c. Stencils: Lay flat against pavement, align with striping, remove after application.
      d. Glass Beads: Apply directly to paint, 10 second lag time, 6 lbs/gal of paint, uniform thickness and coverage.
      e. Length Tolerance: Plus or minus 3 inches.
      f. Width Tolerance: Plus or minus 1/8 inch.
   4. Curbs: Paint full vertical face and first 6-inches of horizontal plane at top of curb or combination curb/paving. Provide minimum 2 coats paint.
      a. Provide stenciled text in the height, spacing and typeface as indicated on Drawings.

5. Parking Lots: Apply parking space lines, entrance and exit arrows, painted curbs, and other markings indicated on drawings.
    a. Mark the International Symbol of Accessibility at indicated parking spaces.
        1) Accessibility Logo: Provide minimum of 2 coats paint.
            (a) Comply with CBC Ch. 11B Figure 703.7.2.1.
        2) Stall Marking:
            (a) Use single-line style striping between parking stalls, unless otherwise indicated.
            (b) Comply with local agency regulatory requirements.
            (c) Accessible Stalls: Comply with ADA Standards, CBC Ch. 11B, and local agency regulatory requirements.
                (1) Painted lines and markings on pavement shall be minimum 3 inches wide, color as indicated on Drawings
                (2) Tactile warning lines shall comply with CBC Ch. 11B-705.1.2.5 Hazardous Vehicular Areas.
                (3) Tactile warning devices shall comply with CBC Ch. 11B, see Section 32 17 26 - Tactile Warning Surfacing.
        3) Hatching: Provide hatching in parking areas, including accessible parking stalls, as indicated on Contract Drawings or as required by Standard Details. Should Contract Drawings and Standard Details conflict, comply with the more stringent.
    b. Hand application by pneumatic spray is acceptable.
6. Symbols: Use a suitable template that will provide a pavement marking with true, sharp edges and ends, of the design and size indicated.

D. Raised Pavement Markings:
1. Install in accordance with manufacturer's instructions in manner necessary to maintain manufacturer's warranty.
2. Surface Reflectors:
    a. Cut pavement and remove depth equal to height of reflector.
    b. Partially fill area with road marker epoxy adhesive.
    c. Press reflector into adhesive and apply pressure.

3.04 TOLERANCES

A. Maximum Variation From True Position: 3 inches (76 mm).

B. Maximum Offset From True Alignment: 3 inches (76 mm).

3.05 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for additional requirements.

B. Perform field inspection for deviations from true alignment or material irregularities.

C. If inspections indicate work does not meet specified requirements, rework and reinspect at no cost to District.

D. Allow the pavement marking to set at least the minimum time recommended by manufacturer.

3.06 CLOSEOUT ACTIVITIES

A. Temporary Markings: Remove without damaging surfaces.

3.07 PROTECTION

A. Replace damaged or removed markings at no additional cost to District.

B. Preserve survey control points until pavement marking acceptance.

3.08 COLOR SCHEDULE

A. Parking and On-Site Roadways

Location	**Color**	**Reflectance****
Driving lane striping	White	82%
Parking space striping	White	82%
Accessibile Parking, field behind ISA, and zone markings	Blue No. 15090 per SAE AMS-STD-595A (formerly FED-STD-595C)	52%
Accessible Parking ISA, loading and cross-hatching	A. White with Blue perimeter at Asphalt Paving. B. Blue at Concrete Paving*	82% / 52% 52%
12 inch high Text: "NO PARKING", "LOADING ZONE", and "FIRE LANE", etc.	White	82%
Firelanes / No Parking zone markings Special Use Markings	Red No. 31350 per SAE AMS-STD-595A (formerly FED-STD-595C)	52%
Loading zone markings	Orange Yellow No. 33538 perSAE AMS-STD-595A (formerly FED-STD-595C)	52%
Directional arrows	White	82%
Speed Bumps	Orange Yellow No. 33538 per SAE AMS-STD-595A (formerly FED-STD-595C)	52%
Black special-use pavement markings, if indicated on Drawings	Black No. 37038 per SAE AMS-STD-595A (formerly FED-STD-595C)	NA

*Contrasting color per CBC.

a. See also Division of the State Architect IR 11B-7.

**Daylight directional reflectance (without glass beads) , when tested in accordance with Federal Test Method Standard 141A, Method 612.

END OF SECTION

SECTION 32 17 26
TACTILE WARNING SURFACING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Wet-Set precast concrete detectable warning pavers for pedestrian walking surfaces.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Concrete for sidewalks and platforms.

B. Section 32 13 13 - Site Concrete: Concrete sidewalks.

C. Section 32 17 23 - Pavement Markings.

1.03 REFERENCE STANDARDS

A. ASTM C140/C140M - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.

B. ADA Standards - 2010 ADA Standards for Accessible Design.

C. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar.

D. ANSI A108.1b - American National Standard Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar.

E. ANSI A108.1c - Contractor's Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar.

F. ANSI A118.7 - American National Standard Specifications for High Performance Cement Grouts for Tile Installation.

G. ATBCB PROWAG - Proposed Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way.

H. CBC Ch. 11B - California Building Code-Chapter 11B.

I. SAE AMS-STD-595A - Colors Used in Government Procurement.

J. California Department of General Services, Division of the State Architect, Interpretation of Regulations Document:

1. IR A-5 - Acceptance of Products, Materials and Evaluation Reports; Revised 1/27/17.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Submit manufacturer's product data, standard details, details specific to this project; written installation and maintenance instructions.

C. Samples: For each product specified provide two samples, 8 inches square, minimum; show actual product, color, and patterns.

D. Shop Drawings: Submit plan and detail drawings. Indicate:
   1. Locations on project site. Demonstrate compliance with referenced accessibility standards.
   2. Sizes and layout.
   3. Pattern spacing and orientation.
   4. Attachment and fastener details, if applicable
E. Installer's Qualification Statement.
F. Warranty: Submit manufacturer warranty; complete forms in District's name and register with manufacturer.
G. Certification: Manufacturers certification that product meets ADA for tactile warning surfaces.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years documented experience.
B. Installer Qualifications: Company certified in writing by product manufacturer as having successfully completed work substantially similar to the work of this section.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver to project site in manufacturer's protective wrapping and in manufacturer's unopened packaging.
B. Store covered and elevated above grade and in manufacturer's unopened packaging until ready for installation. Maintain at ambient temperature between 40 and 90 degrees F.

1.07 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
B. Provide manufacturer's standard five year warranty against manufacturing defects, breakage or deformation.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Detectable warnings shall comply with California Building Code, CBC Ch. 11B-705.1 requirements, CBC Ch. 11B-705.1.2 Locations and CBC Ch. 11B-705.1.2.5 Blended Transitions, for special warnings for disabled persons.
B. Nominal dimensions meeting CBC Ch. 11B-705.1.2 Locations.
C. Color contrast requirements meeting CBC Ch. 11B-705.1.1.3 Contrast.
D. Detectable warning surfaces at transit boarding platform edges, bus tops, vehicle areas, reflecting pools, and track crossings shall be yellow and approximate Federal Color No. 33538 as shown in SAE AMS-STD-595A (Table IV of Federal Standard No. 595A).

E. Detectable warning surfaces shall differ from adjoining surfaces in resiliency or sound-on-cane contact. Such constraint shall not be required for detectable warning surfaces at curb ramps, islands, or cut-through medians. CBC Ch. 11B-705.1.1.4 Resiliency.

F. Color yellow for detectable warning surface is required at all crossing vehicle locations and shall conform to Federal Color No. 33538 as shown in SAE AMS-STD-595A (Table IV of Federal Standard No. 595A). CBC Ch. 11B-705.1.1.3 Color and Contrast.

G. Truncated dome pattern in-line, not staggered.

2.02 MANUFACTURERS

A. Precast Concrete Detectable Warning Surface Pavers:

1. Wausau Tile; Detectable Warning Pavers: www.wausautile.com.
2. Armor-Tile: www.armortiletransit.com.
3. Hanover Architectural Products: www.hanoverpavers.com.
4. Stepstone Inc.; Truncated Dome Pavers: www.stepstone.com
5. Tile Tech Pavers, Inc.; Detectable Warning Pavers: www.tiletechpavers.com
6. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 TACTILE AND DETECTABLE WARNING DEVICES

A. Wet-Set Detectable Warning Surface Pavers ASTM C140/C140M : Precast concrete.

1. Compressive Strength: Minimum of 8,000 psi.
2. Absorption: 5 percent average, with maximum of 7 percent.
3. Dome Spacing: 2.3 to 2.4 inches per CBC Section 11B-705.1.1.2.
4. Pattern: In-line pattern of truncated domes complying with ADA Standards.
5. Size: 24 by 24 inches.
   a. Option: Contractor may use full 36 inch wide panels where appropriate and where approved by Architect.
6. Thickness: 2 inches.
7. Setting Type: Mortar Set.
8. Color: SAE AMS-STD-595A , Table IV, Federal Yellow No. 33538.
9. Basis of Design Product: Terra-Pavers ADA Warning Pavers, Truncated Dome as manufactured by Terra-Paving Division,Wausau Tile, Inc., or approved equal.

2.04 INSTALLATION MATERIALS

A. Mortar Setting Bed Method:

1. Portland Cement Mortar Mix: Approved mortar mix for Thick Bed (1 1/4 to 2 inches) Mortar Mix. Basis of Design: ANSI A108.1a, ANSI A108.1b, or ANSI A108.1c. May be a Pre-Blended Mortar Mix.
2. Reinforcing Mesh: 2 by 2 inch size weave of 16/16 wire size; welded fabric, galvanized.
3. Water: Clean and free of deleterious acids, alkalies or organic materials.
4. Grout: ANSI A118.7 High performance cement grout.

a. Use sanded grout for joints 1/8 inch wide and larger; use unsanded grout for joints less than 1/8 inch wide.

b. Color(s): As selected by Architect from manufacturer's full line.

c. Basis of Design Product: Prism Ultimate Performance Grout as manufactured by Custom Building Products, www.custombuildingproducts.com, or approved equal.

2.05 ACCESSORIES

A. Adhesive: Type recommended and approved by surfacing tile manufacturer.

B. Sealant, Back-up and Bond Breaker: As specified in Section 07 92 00 - Joint Sealants.

C. Sealant: Elastomeric sealant of color to match adjacent surfaces; approved by surfacing tile manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. When installation location is near site boundary or property line, verify required location using property survey.

B. Verify that work area is ready to receive work:

1. Examine work area with installer present.
2. If existing conditions are not as required to properly complete the work of this section, notify Architect.
3. Do not proceed with installation until deficiencies in existing conditions have been corrected.

C. Verify that dimensions, tolerances, and attachment methods for work in this section are properly coordinated with other work on site.

3.02 INSTALLATION, GENERAL

A. Install in accordance with manufacturer's written instructions.

1. Do not install damaged, warped, bowed, dented, abraded, or otherwise defective units.
2. Do not install when ambient or substrate temperature has been below 40 degrees F during the preceding 8 daylight hours.

B. Field Adjustment:

1. Cut units to size and configuration shown on drawings.
2. Do not cut tiles to less than 9 inches wide in any direction.
3. Locate relative to curb line in compliance with ATBCB PROWAG, Sections 304 and 305.
4. Orient so dome pattern is aligned with the direction of ramp.
5. Align truncated dome pattern between adjacent units.

C. Install units fully seated to substrate, square to straight edges and flat to required slope.

D. Align units so that tops of adjacent units are flush and joints between units are uniform in width.

3.03 INSTALLATION, PRECAST TILES

A. Concrete Substrate:

1. See Section 32 13 13 - Concrete Paving.
2. Slump: 4 to 7 percent.

B. Over exterior concrete substrates, install in accordance with TCNA (HB) Method F101, bonded, with standard grout.

C. When installing multiple adjacent units, leave a 3/16 inch gap between units to allow for expansion.

D. Tamp and vibrate units as recommended by manufacturer.

E. Place and position weights on units while concrete cures as recommended by manufacturer. Ensure no voids or air pockets exist between top surface of concrete and underside of units.

3.04 PROTECTION

A. Protect installed units from traffic, subsequent construction operations or other imposed loads until concrete is fully cured.

B. Touch-up, repair or replace damaged products prior to Date of Substantial Completion.

END OF SECTION

SECTION 33 05 43
CORROSION PROTECTION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Protection of all underground utilities from corrosion.

1.02 RELATED REQUIREMENTS

A. Section 01 30 00 - Administrative Requirements: Submittal procedures, reports, coordination.

B. Section 33 14 16 - Site Water Distribution Piping.

C. Section 33 31 13 - Site Sanitary Sewerage Piping.

D. Section 33 41 00 - Subdrainage.

E. Section 33 42 11 - Stormwater Gravity Piping.

1.03 REFERENCE STANDARDS

A. ASTM B280 - Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service.

B. ASTM B88 - Standard Specification for Seamless Copper Water Tube.

C. AWWA C200 - Steel Water Pipe, 6 In. (150 mm) and Larger.

D. AWWA C222 - Polyurethane Coatings for the Interior and Exterior of Steel Water Pipe and Fittings.

E. AWWA C215 - Extruded Polyolefin Coatings for Steel Pipe.

F. AWWA C214 - Tape Coating Systems for the Exterior of Steel Water Pipelines.

G. AWWA C203 - Coal-Tar Protective Coatings and Linings for Steel Water Pipe.

H. AWWA C213 - Fusion-Bonded Epoxy Coatings and Linings for Steel Water Pipe and Fittings.

I. AWWA C205 - Cement–Mortar Protective Lining and Coating for Steel Water Pipe—4 In. (100 mm) and Larger—Shop Applied.

J. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems.

K. AWWA C217 - Microcrystalline Wax and Petrolatum Tape Coating Systems for Steel Water Pipe and Fittings.

L. ACI 318 - Building Code Requirements for Structural Concrete.

M. NACE SP0169 - Control of External Corrosion on Underground or Submerged Metallic Piping Systems.

N. NACE SP0286 - Electrical Isolation of Cathodically Protected Pipelines.

O. SSPC-SP 6 - Commercial Blast Cleaning.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the installation of corrosion protection with size, location and installation of service utilities.

B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.

C. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's product literature, component dimensions, describe components within assembly, anchorage and fasteners, and special installation requirements.

C. Test Reports: Indicate electrical continuity.

D. Manufacturer's Field Reports: Indicate procedures followed and supplementary instructions given.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.

B. Installer Qualifications: Company specializing in performing work of the type specified and with minimum three years of documented experience.

C. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

D. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document that prescribes execution requirements.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to project site in unopened packaging until ready for installation.

B. Store components under a dry covered area and elevated above grade.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

PART 2 PRODUCTS

2.01 APPLICATIONS / SYSTEM DESCRIPTION

A. Steel Pipe or Valve Assemblies:

1. Implement all the following measures:

a. Underground steel pipe with rubber gasketed, mechanical, grooved end, or other nonconductive type joints should be bonded for electrical continuity. Electrical continuity is necessary for corrosion monitoring and cathodic protection.

b. To prevent dissimilar metal corrosion cells and to facilitate the application of cathodic protection, electrically isolate each buried steel pipeline per NACE SP0286 from:

1) Dissimilar metals.

2) Dissimilar coated piping (cement-mortar vs. dielectric).

3) Above ground steel pipe.

4) All existing piping.

c. Choose one of the following corrosion control options:

OPTION 1

1) Apply a suitable dielectric coating intended for underground use such as:

(a) Polyurethane per AWWA C222; or

(b) Extruded polyethylene per AWWA C215; or

(c) A tape coating system per AWWA C214; or

(d) Hot applied coal tar enamel per AWWA C203; or

(e) Fusion bonded epoxy per AWWA C213.

2) Apply cathodic protection to steel piping as per NACE SP0169.

OPTION 2

3) As an alternative to dielectric coating and cathodic protection, apply a 3 inch cement mortar coating per AWWA C205 or encase in Type V - Sulfate Resistant concrete 3 inches thick, using any type of cement. Joint bonds, test stations, and insulated joints are still required for these alternatives.

2. NOTE: Some steel piping systems, such as for oil, gas, and high-pressure piping systems, have special corrosion and cathodic protection requirements that must be evaluated for each specific application.

B. Iron Pipe or Valve Assemblies:

1. Implement all the following measures:

a. Choose one of the following corrosion control options:

OPTION 1

1) Apply a suitable coating intended for underground use such as:

(a) Polyethylene encasement per AWWA C105/A21.5; or

(b) Epoxy coating; or

(c) Polyurethane; or

(d) Wax tape.

2) NOTE: The thin factory-applied asphaltic coating applied to ductile iron pipe for transportation and aesthetic purposes does not constitute a corrosion control coating.

3) Apply cathodic protection to cast and ductile iron piping as per NACE SP0169.

OPTION 2

4) As an alternative to coating systems described in Option 1 and cathodic protection, Type V - Sulfate Resistant concrete encase all buried portions of metallic piping so that there is a minimum of 3 inches of concrete cover provided over and around surfaces of pipe, fittings, and valves using any type of cement.

C. Copper Tubing:

1. Protect buried copper tubing by one of the following measures:
    a. Installation of a factory-coated copper pipe with a minimum 25-mil thickness. The coating must be continuous with no cuts or defects.
    b. Installation of 12-mil polyethylene pipe wrapping tape with butyl rubber mastic over a suitable primer. Protect wrapped copper tubing by applying cathodic protection per NACE SP0169.

2.02 MATERIALS

A. Factory Coated Potable Water Copper Piping:

1. Coating: Polyethylene.
2. Thickness: 25 mils on 5/8 inch pipe.
3. Copper Pipe: Type as indicated in Division 22 and 33.
4. Manufacturers:
    a. Kamco Products Limited; Aqua Shield™,: www.kamcoproducts.com.
    b. Mueller Industries; Streamline Protec™: www.muellerindustries.com.
    c. Substitutions: See Section 01 60 00 - Product Requirements.

B. Factory Coated Natural Gas and LP Gas Copper Piping:

1. Coating: Linear Low Density Polyethylene LLDPE Extrusion Resin.
    a. Additional Outer Sleeve Option: Black HDPE Outer Sleeve.
2. Thickness: 25 mils on 5/8 inch pipe.
3. Copper Pipe: Type as indicated in Division 22, 23, and 33.
    a. Type L, ASTM B88.
    b. REF Type, ASTM B280.
4. Manufacturers:
    a. Kamco Products Limited; Gas-Tec™: www.kamcoproducts.com.
    b. Mueller Industries; Streamline Protec™: www.muellerindustries.com.
    c. Substitutions: See Section 01 60 00 - Product Requirements.

C. Tape Coating System:

1. Basis of Design: Polyken manufacture by Berry Plastics Corporation, www.berryplastics.com or approved equal..
2. Provide straight pipe sections with a four layer polyethylene tape system, where not factory coated:

a. Products:

1) Primer: 1027 Butyl Liquid Adhesive and Primer
2) Filler tape: 939
3) Weld stripping tape: 933-25 black
4) Inner layer tape: 989-20 black
5) Middle layer tape: 955-30 gray
6) Outer layer tape: 956-30 white

b. Primer layer.

c. Filler tape, extruded butyl rubber compound compatible with the primer and tape.

d. Weld stripping tape, if required (25 mils).

e. Inner layer, corrosion protection tape (20 mils).

f. Middle layer, mechanical protection tape (30 mils).

g. Outer layer, mechanical protection tape (30 mils) with ultraviolet light stabilizers.

h. Total system thickness shall be at least 80 mils.

i. Provide coating materials supplied by a single manufacturer, and shall have a successful application and service history on pipe fabricated in accordance with AWWA C200.

3. Provide fittings, specials, and field joints with a three layer polyethylene tape system:

a. Products:

1) Primer: 1027 Butyl Liquid Adhesive and Primer
2) Filler tape: 939
3) Inner layer tape: 930-50 black
4) Outer layer tape: 955-30 white

b. Primer layer

c. Filler tape, extruded butyl rubber compound compatible with the primer and tape.

d. Inner layer, corrosion protection tape (50 mils).

e. Outer layer, mechanical and ultraviolet light protection tape (30 mils).

f. Total system thickness shall be at least 80 mils.

g. The coating materials shall be supplied by the same manufacturer as the materials for straight pipe.

4. Storage of Materials: Store materials within the temperature ranges specified for application, using heated storage areas if necessary. Tape shall be stored at a minimum temperature of 70 degrees F

D. Mortar Coating:

1. Thickness: 1 inch thick reinforced mortar coating over the tape coat system.

2. Mortar Coating: Comply with AWWA C205.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions: Verify that piping is installed correctly and tested.

3.02 CORROSION PROTECTIVE COATING APPLICATION

A. Comply with NACE SP0169.

B. Steel Pipe or Valve Assemblies:

1. Implement all the following measures:

a. Install corrosion monitoring test stations to facilitate corrosion monitoring and the application of cathodic protection:

1) At each end of the pipeline.

2) At each end of all casings.

3) Other locations as necessary so the interval between test stations does not exceed 1,200 feet.

b. To prevent dissimilar metal corrosion cells and to facilitate the application of cathodic protection, electrically isolate each buried steel pipeline per NACE SP0286 from:

1) Dissimilar metals.

2) Dissimilar coated piping (cement-mortar vs. dielectric).

3) Above ground steel pipe.

4) All existing piping.

C. Iron Pipe or Valve Assemblies:

1. Implement all the following measures:

a. Electrically insulate underground iron pipe from dissimilar metals and from above ground iron pipe with insulating joints per NACE SP0286. (e.g.; Flange Isolation Joint Kits. This is especially important for fire risers.)

b. Bond all nonconductive type joints for electrical continuity. Electrical continuity is necessary for corrosion monitoring and cathodic protection.

c. Install corrosion monitoring test stations to facilitate corrosion monitoring and the application of cathodic protection:

1) At each end of the pipeline.

2) At each end of any casings.

3) Other locations as necessary so the interval between test stations does not exceed 1,200 feet.

D. Copper Tubing:

1. Protect buried copper tubing by one of the following measures:

a. Prevention of soil contact. Soil contact may be prevented by placing the tubing above ground or encasing the tubing using PVC pipe with solvent-welded joints.

b. Installation of a factory-coated copper pipe with a minimum 25-mil thickness. The coating must be continuous with no cuts or defects.

c. Installation of 12-mil polyethylene pipe wrapping tape with butyl rubber mastic over a suitable primer. Protect wrapped copper tubing by applying cathodic protection per NACE SP0169.

E. Plastic and Vitrified Clay Pipe

1. No special precautions are required for plastic and vitrified clay piping placed underground from a corrosion viewpoint.

2. Protect all metallic fittings and valves with wax tape per AWWA C217 or epoxy.

F. All Pipe or Valve Assemblies:

1. On all pipes, appurtenances, and fittings not protected by cathodic protection, coat bare metal such as valves, bolts, flange joints, joint harnesses, and flexible couplings with wax tape per AWWA C217 after assembly.

2. Where metallic pipelines penetrate concrete structures such as building floors, vault walls, and thrust blocks use plastic sleeves, rubber seals, or other dielectric material to prevent pipe contact with the concrete and reinforcing steel.

G. Concrete

1. From a corrosion standpoint, any type of cement may be used for concrete structures and pipe because the sulfate concentration is negligible, 0 to 0.1 percent. ACI 318, Table 19.3.2.1.

2. Standard concrete cover over reinforcing steel may be used for concrete structures and pipe in contact with these soils due to the low chloride concentration found on-site. (Design Manual 303: Concrete Cylinder Pipe. Ameron. p.65)

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Tape Application:

1. Tape coating materials shall be applied in accordance with this Section, the product application instructions of the tape manufacturer, and the field technical support instructions from the manufacturer.

2. Weld Surface Preparation:

a. To provide for an effective, long-term bond between the tape coating system and the substrate, the following pipe weld surface preparation shall be provided.

1) Weld surfaces with a reinforcement greater than 1/32-inch and all longitudinal and coil splice welds shall be ground to provide a smooth surface with a reinforcement not exceeding 1/32-inch. The resulting weld surface shall have a cross-section shape that is free of discontinuities, abrupt changes in curvature, with no ridges or valleys that may promote bridging or disbondment of the tape from the substrate.

b. Weld Stripping Tape: Provide weld stripping tape, 6 inches wide, if any of the following conditions are present. Apply tape with the center of the tape at the weld.

1) If elected to use stripping tape in lieu of grinding or part of the grinding required above. In such a case, the weld reinforcement is not to exceed 3/32-inch, and the weld surface shall have a cross-section shape that is free of discontinuities, abrupt changes in curvature, with no ridges or valleys that may promote bridging or disbondment of the tape from the substrate.

2) If the initial pipe sections taped have indications that the inner tape layer is not bonding completely to the pipe at the welds.

3) If the tape bond to the welds or adjacent surfaces is less than the tape bond to the pipe surface away from the welds.

c. Welds that have been prepared with a reinforcement not exceeding 1/32-inch, and a cross- section slope that is free of discontinuities, abrupt changes in curvature, with no ridges or valleys that may promote bridging or disbondment of the tape from the substrate require no additional preparation.

3. Pipe Surface Preparation:

a. Detergent clean surfaces to be coated in accordance with SSPC-SP1 prior to abrasive blasting.

b. Remove all burrs, sharp edges, and weld splatter prior to abrasive blasting.

c. Abrasive blast immediately before application of the primer.

1) Use sand, metallurgical slag, or a combination of steel grit and shot to produce a surface in conformance with SSPC-SP 6.

2) Steel grit shall comprise at least 60 percent of the working mix of abrasive, if a centrifugal wheel abrasive blaster is used.

3) The prepared surface shall have a surface profile not exceeding 2 mils.

d. Apply abrasive blasting and primer application when the substrate surface is at least 5 degrees F above the dew point.

1) Provide abrasive blasting, priming, and inner layer tape application during the same working day for each pipe section.

4. Pipe End Preparation:

a. Coating cut-backs at the pipe ends: 6 inches, with the cuts parallel to the pipe ends.

1) Protect exposed substrate surfaces with a storage primer applied immediately after taping and before flash rusting of the surface.

b. Spiral or longitudinal pipe welds within two feet of the pipe ends shall be ground flush prior to abrasive blast cleaning.

c. Pipe ends that will be connected with sleeve-type couplings shall be epoxy coated for immersion service.

1) Cut-Backs: Minimum 6 inches at couplings to provide clearance between the coupling and tape.

2) Epoxy Coating: Extend minimum 6 inches beyond each side of the sleeve coupling on the outside surface of the pipe.

5. Application of Tape:

a. Maintain pipe shell temperature within a range of 45 degrees F to 100 degrees F during application of the tape system.

b. Maintain inner layer tapes a minimum temperature of 70 degrees F during application.

1) Maintain middle and outer layer tapes at a minimum temperature of 90 degrees F during application.

c. Tape Application Tension: Maintained at a value that produces a tape width reduction equal to 1.0 to 2.0 percent of the tape width during application, as recommended by the tape manufacturer. Maintain width reduction simultaneously with the minimum tape temperature.

d. At the point of tape application, all tape, including weld stripping tape, press onto the pipe with a pressure roller that maintains a constant pressure. Use enough pressure to fully bond the tape at all welds.

e. Filler tape shall be used at lap joints, weld step-downs, and other discontinuities.

f. The tape application equipment and materials shall result in a fully bonded tape coating system, without blisters, voids, wrinkles or any areas that have a lack of bond to the pipe.

g. Succeeding layers of tape shall be applied so that the laps are staggered by at least two inches.

h. Before tape application, the primer shall be dried sufficiently so that the primer is in a tacky to dry condition.

i. Primer: Apply while it is in a temperature range of 50 degrees F to 80 degrees F, using airless spray equipment and a drum agitator. Application shall be of uniform thickness on all pipe surfaces.

6. Repair Patches

a. Repair patches shall be applied by wrapping tape completely around the pipe, using the tape system for joints.

7. Tape Application to Fittings, Specials:

a. Filler tape shall be used to fill voids on fittings, specials, welds, and pipe joints.

b. All bell and spigot joints, lap joints, and other locations where voids will otherwise exist: Provide specially shaped, filler tape applied after priming.

c. Field pipe joints shall be prepared as required by the paragraph entitled "Pipe Surface Preparation," except that shop blasted surfaces that have been coated with a storage primer or an epoxy coating may be power tool cleaned instead of abrasive blast cleaned. The power tool cleaning shall be done in accordance with SSPC-SP2. Pipe ends not effectively protected with a storage primer shall be abrasive blasted to SSPC-SP6.

3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Test for electrical continuity in accordance with NACE SP0286.

3.05 CLOSEOUT ACTIVITIES

A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.

3.06 PROTECTION

A. Protect installed coatings from subsequent construction operations.

END OF SECTION

SECTION 33 14 16
SITE WATER DISTRIBUTION PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Water pipe for site conveyance lines.

B. Pipe valves.

C. Fire hydrants.

D. Site water lines up to approximately 5 feet from the building perimeter. See individual building systems for continuation.

1.02 RELATED REQUIREMENTS

A. Division 22 - Plumbing: Underground water line extension into the building.

B. Section 31 23 16.13 - Trenching: Excavating, bedding, and backfilling.

C. Section 33 01 10.58 - Disinfecting of Site Water Distribution Piping: Disinfection of site service utility water piping.

D. Section 33 05 43 - Corrosion Protection: Reducing exposure of metal parts in sulfate containing soils.

1.03 REFERENCE STANDARDS

A. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.

B. ASTM A506 - Standard Specification for Alloy and Structural Alloy Steel, Sheet and Strip, Hot-Rolled and Cold-Rolled.

C. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength.

D. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.

E. ASTM D2855 - Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets.

F. ASTM D3139 - Standard Specification for Joints for Plastic Pressure Pipes using Flexible Elastomeric Seals.

G. ASTM F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.

H. ASTM F594 - Standard Specification for Stainless Steel Nuts.

I. AWWA C105/A21.5 - Polyethylene Encasement for Ductile-Iron Pipe Systems.

J. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

K. AWWA C500 - Metal-Seated Gate Valves for Water Supply Service.

L. AWWA C504 - Rubber-Seated Butterfly Valves.

M. AWWA C508 - Swing-Check Valves for Waterworks Service, 2-In. Through 48-In. (50-mm Through 1,200-mm) NPS.

N. AWWA C600 - Installation of Ductile-Iron Mains and Their Appurtenances.

O. AWWA C606 - Grooved and Shouldered Joints.

P. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. Through 60 In. (100 mm Through 1,500 mm).

Q. NFPA 24 - Standard for the Installation of Private Fire Service Mains and Their Appurtenances.

R. SSPWC (Greenbook) - Standard Specifications for Public Works Construction.

S. UL 246 - Hydrants for Fire-Protection Service.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.

B. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on pipe materials, pipe fittings, joints, couplings, valves and accessories.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1. Submit a certificate stating that the meters have been tested and that the accuracy and capacity meet the requirements of AWWA C700 when tested in accordance with AWWA Standards according to type installed.

D. Shop Drawings: Submit shop drawings for potable water system, showing piping materials, size, locations, and elevations. Include details of underground structures, connections, thrust blocks, and anchors. Show interface and spatial relationship between piping and proximate structures.

E. Certificates: Provide a NFPA 24 Certificate of installation with copies for District, Architect, local fire officials, and DSA.

F. Project Record Documents:

1. Record actual locations of piping mains, valves, connections, thrust restraints, and invert elevations.

2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

3. On a set of Contractor Drawings, kept at the site during construction, mark construction that is installed differently from that indicated.

a. Locate materials installed underground by dimensions from fixed identifiable points whether installed as indicated or not.

G. Maintenance Data:

1. Submit maintenance data and parts list for potable water system materials and products.
2. Include this data, product data, shop drawings, and record drawings in maintenance manual; in accordance with requirements of Section 01 78 00 - Closeout Submittals.

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with utility company requirements.

B. Manufacturer's Qualification: Firms regularly engaged in manufacture of potable water system materials and products, of types and sizes required, whose products have been in satisfactory use in similar service for not less than 5 years.

C. Installer's Qualifications: Firm with at least 3 years of successful installation experience on projects with potable water piping work similar to that required for project.

1.07 REGULATORY REQUIREMENTS

A. Materials and installation: Comply with the following documents hereinafter referred to as the "SSPWC (Greenbook)".

B. Install in accordance with County of Los Angeles Fire Department Regulation 8.

C. Comply with NFPA 24 as adopted by authority having jurisdiction.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store valves in shipping containers with labeling in place.

B. Do not store materials directly on the ground. Support the pipe uniformly during shipping and storage.

1. Do not stack higher than 4 feet nor stack with weight on bells.
2. Cover plastic pipe to protect it from sunlight.
3. Keep inside of pipe and fittings free of dirt and debris.
4. Avoid scratching the pipe surface.

C. Do not install pipe that is cracked, broken, gouged, scratched or forming a clear depression. Remove damaged pipe from the site.

D. Do not install pipe contaminated with a petroleum product or any other toxic material whether inside or outside of pipe.

E. Take special care to avoid injury to coatings and linings on pipe and fittings; make satisfactory repairs if coatings or linings are damaged.

1. Hoist pipe with mechanical equipment using a cloth belt sling or a continuous fiber rope which avoids scratching the pipe.
2. Pipes may be lowered by rolling on two ropes controlled by snubbing.

1.09 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Correct defective Work within a five year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 SITE FIRE LINE SYSTEM DESCRIPTION

A. CFC 507 and 901 with NFPA Compliance: NFPA 24.

1. Coordinate installation with sprinkler risers at building to match requirements with NFPA 13.

B. Local Fire Department/Fire Marshal Regulations: Comply with governing regulations pertaining to hydrants, including hose unit threading and similar matching of connections.

C. UL Compliance: Provide fire hydrants that comply with UL 246, and are listed by UL, and approved by the authorities having jurisdiction.

2.02 WATER PIPE

A. General:

1. Provide piping materials and factory-fabricated piping products of size, type, pressure ratings, and capacities as indicated.
2. Where not indicated, provide proper selection as determined by Installer to comply with installation requirements.
3. Provide size and types matching piping and equipment connections; provide fittings of materials which match pipe materials used in potable water systems.
4. Where more than one type of materials or products are indicated, selection is Installer's option.

B. Piping:

1. Provide pipes of one of the following materials, of weight/class indicated.
2. Provide pipe fittings and accessories of same material and weight/class as pipes, with joining method as indicated.

C. Ductile Iron Pipe: AWWA C151/A21.51:

1. Fittings: Ductile iron, standard thickness.
2. Joints: AWWA C111/A21.11, rubber gasket with rods.
3. Jackets: AWWA C105/A21.5 polyethylene jacket.

D. PVC Pipe: ASTM D 1785, Schedule 80 for sizes 1/2 inch through 3 inches.

1. Fittings: ASTM D2466, PVC, socket type, solvent cement joints; or elastomeric gaskets joints.
2. Joints: ASTM D2855, solvent weld.

E. PVC Pipe: AWWA C900 FM approved, Class 305 (formerly 200): for sizes 4 inches through 12 inches; UL Listed.

1. Dimension Ratio: DR 25.
2. Fittings: AWWA C111/A21.11, ductile-iron, cement lined, with rubber gaskets.
3. Joints: ASTM D3139 compression gasket ring, bell and spigot.

F. Trace Wire: Magnetic detectable conductor, clear plastic covering, imprinted with "Water Service" in large letters.

2.03 VALVES

A. Valves: Manufacturer's name and pressure rating marked on valve body.

B. Gate Valves Up To 3 Inches:

1. Brass or Bronze body, non-rising stem, inside screw, single wedge or disc, compression ends, with control rod, post indicator, valve key, and extension box.

C. Gate Valves 3 Inches and Over:

1. Manufacturers:
   a. Mueller Co.
   b. Decatur
   c. Illinois
   d. Kennedy Valve Div.
   e. Substitutions: See Section 01 60 00 - Product Requirements.
2. AWWA C500, iron body, bronze trim, non-rising stem with square nut, single wedge, flanged ends, control rod, post indicator, valve key, and extension box.

D. Ball Valves Up To 2 Inches:

1. Brass body, Teflon coated brass ball, rubber seats and stem seals, Tee stem pre-drilled for control rod, AWWA inlet end, compression outlet with electrical ground connector, with control rod, valve key, and extension box.

E. Swing Check Valves From 2 Inches to 24 Inches:

1. Manufacturers:
   a. Clow Corp.
   b. Fairbanks Co.
   c. Kennedy Valve Div.
   d. Substitutions: See Section 01 60 00 - Product Requirements.
2. AWWA C508, iron body, bronze trim, 45 degree swing disc, renewable disc and seat, flanged ends.

F. Butterfly Valves From 2 Inches to 24 Inches:

1. AWWA C504, iron body, bronze disc, resilient replaceable seat, water or lug ends, ten position lever handle.

G. Valve Ends: Provide flanged, threaded, hub or sleeve type mechanical joint ends designed to suit pipe or tapping sleeves connections.

2.04 HYDRANTS

A. Hydrants: Type as required by local Fire Department or utility company.

1. Fire Service Hydrant:
   a. Outlets:

1) 4 inch diameter: One.

2) 2-1/2 inch diameter: One.

B. Hydrant Extensions: Fabricate in multiples of 6 inches with rod and coupling to increase barrel length.

C. Hose and Streamer Connection: Match sizes with utility company, two hose nozzles , one pumper nozzle.

D. Fire Department Connections: As required by Fire Department having jurisdiction and responsibility for serving site.

E. Finish: Primer and two coats of enamel in color required by local Fire Department or utility company.

2.05 BEDDING AND COVER MATERIALS

A. Bedding: As specified in Section 31 23 23.

B. Cover: As specified in Section 31 23 23.

2.06 ACCESSORIES

A. Bolts and Nuts for Flanges: Provide type 316 stainless steel (UNS s31600 / AISI 316 / ASTM A240/A240M) for all bolts, nuts washers and rods used for the installation of underground piping, valves and fittings.

1. Bolts: Conform to ASTM F593, Alloy Group 2, Condition CW1 (1/4 to 5/8 inch) and CW2 (3/4 to 1-1/2 inch).

2. Nuts: Conform to ASTM F594, Alloy Group 2, Condition CW1 (1/4 to 5/8 inch) and CW2 (3/4 to 1-1/2 inch).

B. Restraint Devices: Provide wedging action type mechanical restraint devices at all pipe joints.

1. Rods, Nuts and Washers: Stainless Steel per ASTM F593 and ASTM F594.

2. Products:

a. EBAA Iron Sales, Inc.: ebaa.com.

b. Uni-flange type.

c. Substitutions: See Section 01 60 00 - Product Requirements.

C. Anchorages: Provide anchorages for tees, wyes, crosses, plugs, caps, bends, valves, and hydrants. After installation, apply full coat of asphalt or other acceptable corrosion-retarding material to surfaces of ferrous anchorages.

1. Clamps, Straps, and Washers: Stainless Steel, ASTM F594.

2. Rods: Stainless Steel, ASTM F593.

3. Bolts: Stainless Steel, ASTM F593.

D. Concrete: Ready-mixed, complying with ASTM C94/C94M; Type V - Sulfate Resistant Portland cement; 3,000 psi strength at 28 days, 3 inch slump; 3/4 inch nominal size aggregate.

E. Backflow Preventer: Detector check assembly

1. Reduced-pressure-principle assembly consisting of shutoff valves on inlet and outlet and strainer on inlet. Assemblies shall include test cocks and pressure-differential relief valve

located between 2 positive seating check valves and comply with requirements of ASSE 1013. Assemblies shall have approval of Health Department having jurisdiction.

2. Manufacturer: Subject to compliance with requirements, provide identification markers of one of the following (pending approval of local water authority having jurisdiction):
   a. Cla-Val Co.
   b. Febco
   c. Hersey Products, Inc.
   d. Watts Regulator Co.
   e. Basis of Design: Zurn Industries Inc. Wilkins Regulators Div.: Wilkins Model 375ADA Reduced Pressure Detector Assembly: www.zurn.com.
3. Substitutions: See Section 01 60 00 - Product Requirements.

F. Meter:
1. Comply with AWWA C700. Acceptable manufacturers, or equal.
2. Acceptable manufacturers:
   a. Western Water Meter Inc.
   b. Rockwell International Corp.
   c. Hersey Products Inc.
   d. Substitutions: See Section 01 60 00 - Product Requirements.
3. Water meter shall be:
   a. Flanged multijet turbine type.
   b. Meet requirements of local water department.
4. The meter housing shall be bronze with brass case and lid.
5. Meter chamber shall be molded and corrosion resistant and shall have a sapphire rotor bearing. The meter register shall be vacuum sealed in copper housing with magnetic coupling. It shall have a leak indicator and heat tempered glass.
6. Concrete Meter Box: Meter boxes shall be Brooks Concrete Works Series 3 through 37 meter box, standard meter vault or 300 Series meter vault, or equal, as required by local water department.

G. Identification
1. Underground-Type Plastic Line Marker: Manufacturer's standard permanent, bright-colored, continuous-printed plastic tape, intended for direct-burial service; not less than 6 inches wide x 4 mils thick. Provide blue tape with black printing reading "CAUTION WATER LINE BURIED BELOW".
   a. Manufacturer: Subject to compliance with requirements, provide identification markers of one of the following:
      1) Allen Systems Inc.
      2) Seton Name Plate Corp.
   b. Substitutions: See Section 01 60 00 - Product Requirements.

2. Nonmetallic Piping Label: If nonmetallic piping is used for water service, provide engraved plastic laminate, label permanently affixed to main electrical meter panel stating "THIS STRUCTURE HAS A NONMETALLIC WATER SERVICE".

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that building service connection and municipal utility water main size, location, and invert are as indicated.

B. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.02 PREPARATION

A. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.

B. Remove scale and dirt on inside and outside before assembly.

C. Prepare pipe connections to equipment with flanges or unions.

3.03 TRENCHING

A. See the sections on excavation and fill for additional requirements.

B. Hand trim excavation for accurate placement of pipe to elevations indicated.

C. Form and place concrete for pipe (larger than 4 inches) thrust restraints at each change of pipe direction. Place concrete to permit full access to pipe and pipe accessories. Provide 4 sq ft thrust restraint bearing on subsoil.

D. Do not backfill until installation has been approved and as-built drawings are up to date. Promptly install all piping after excavation or cutting for same has been done, so as to keep the excavations open as short a time as possible.

E. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

3.04 INSTALLATION - PIPE

A. General: During back-filling/topsoiling of underground potable water piping, install continuous underground-type plastic line markers located directly over buried lines at 6 to 8 inches below finished grade.

B. Maintain separation of water main from sewer piping in accordance with plumbing code.

C. Group piping with other site piping work whenever practical.

D. Establish elevations of buried piping to ensure not less than 2 ft of cover.

E. Install pipe to indicated elevation to within tolerance of 5/8 inches.

F. Comply with Section 33 05 43 - Corrosion Protection.

G. Install ductile iron piping and fittings to AWWA C600.

H. Install grooved and shouldered pipe joints to AWWA C606.

I. Polyvinyl Chloride Pipe: Install in accordance with manufacturer's installation instructions.

1. Pressure water lines (4 inch and larger): Install in accordance with pipe manufacturers recommendations, or as shown in J-M Installation Guide "Ring-Tite PVC Pipe". Provide thrust blocks as required by "J-M Installation Guide".

J. Route pipe in straight line.

K. Install pipe to allow for expansion and contraction without stressing pipe or joints.

L. Install access fittings to permit disinfection of water system performed under Section 33 01 10.58.

M. Slope water pipe and position drains at low points.

N. Install trace wire 6 inches above top of pipe; coordinate with Section 31 23 16.13.

O. Provide and install 14 gauge copper "Tracer" wire, continuous for entire length, for all underground non-metallic piping. Secure to piping at alternate joints, at each fitting and at each valve. Locate "Tracer" wire along side pipe, but not under pipe.

P. Installation of identification: During backfilling/top-soiling of underground water piping systems, install continuous underground-type plastic line marker, located directly over buried line at 6 to 8 inches below finished grade.

3.05 INSTALLATION - VALVES AND HYDRANTS

A. Check operation of all valves before installing. Install valves true to line and grade. Install valves in accordance with AWWA C600 and manufacturer's written instructions. Wrap all buried, ferrous metal valves with polyethylene film in conformance with Section 5-4 of AWWA C105/A21.5.

B. Set valves on solid bearing.

C. Install valves as indicated with stems pointing up. Provide valve box over underground valves.

D. Center and plumb valve box over valve. Set box cover flush with finished grade.

E. Set hydrants plumb; locate pumper nozzle perpendicular to and facing roadway in accordance with Section 21 11 00.

F. Set hydrants to grade, with nozzles at least 20 inches above ground in accordance with Section 21 11 00.

G. Locate control valve 4 inches away from hydrant.

H. Provide a drainage pit 36 inches square by 24 inches deep filled with 2 inches washed gravel. Encase elbow of hydrant in gravel to 6 inches above drain opening. Do not connect drain opening to sewer.

I. Fire Department Connections: Install in accordance with AWWA C600 and manufacturers written instructions.

3.06 INSTALLATION OF WATER METERS

A. Install water meter in accordance with AWWA C600 and/or utility company's installation instructions and requirements. Check operation of all meters before operation. Install in meter boxes where indicated.

B. Size meter and arrange piping and specialties to comply with utility company's requirements.

C. Set meter on concrete pad as indicated. Refer to Division 32 for concrete, formwork, and reinforcing material requirements.

D. Mount meter on wall brackets as indicated.

3.07 ROUGH-IN FOR WATER METER

A. Install rough-in piping and specialties for water meter installation in accordance with utility company's instructions and requirements.

3.08 ANCHORAGE INSTALLATION

A. Provide anchorages for tees, plugs and caps, bends, crosses, valves, and hydrant branches.

3.09 INSTALLATION OF BACKFLOW PREVENTER

A. Install backflow preventers at each connection to mechanical equipment and systems and in compliance with the plumbing code and authority having jurisdiction. Install air cap fitting and pipe relief outlet drain without valves to nearest floor drain. Identify all piping downstream of backflow preventers as "industrial water".

B. Install pressure-regulating valves with inlet and outlet shutoff valves and balance cock bypass. Install pressure gage on valve outlet.

3.10 CORROSION PROTECTIVE COATING APPLICATION

A. See Section 330543 - Corrosion Protection.

B. Comply with NACE SP0169.

3.11 IDENTIFICATION INSTALLATION

A. During backfilling/top-soiling of underground water piping systems, install continuous underground-type plastic line marker, located directly over buried line at 6 to 9 inches below finished grade.

B. Attach nonmetallic piping label permanently to main electrical meter panel.

3.12 SERVICE CONNECTIONS

A. Provide water service to utility company requirements with reduced pressure backflow preventer and water meter with bypass valves and sand strainer.

B. Tap water main with size and in location as indicated, in accordance with requirements of City standards.

C. Connections to Plumbing Systems: Make connections of service laterals to plumbing facilities at a location 5 feet outside the building line as indicated. Connections shall be made utilizing standard prefabricated adapters installed in accordance with the pipe manufacturer's recommendations.

3.13 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements, for additional requirements.

B. Perform field inspection and testing in accordance with Section 01 40 00.

C. Test valves for leakage and alignment prior to backfilling.

D. Conduct piping tests before joints are covered, and after thrust blocks have sufficiently hardened. Fill pipeline 24 hours prior to testing, and apply test pressure to stabilize system. Use only potable water.

E. Pressure test water piping to 200 pounds per square inch.

1. PVC Water Pipelines: Test all water lines in accordance with manufacturers recommendations.

2. Increase pressure in 50 psi increments and inspect each joint between increments. Hold at test pressure for one hour, decrease to 0 psi. Slowly increase again to test pressure and hold for one more hour.

3. Test fails if leakage exceeds 2-qts per hour per 100 gaskets or joints, irrespective of pipe diameter.

F. Pressure test fire line water piping to 200 psi, or 50 psi in excess system working pressure, NFPA 24.

1. Increase pressure in 50 psi increments and inspect each joint between increments. Hold at test pressure within +/- 5 psi for two hours, decrease to 0 psi. Slowly increase again to test pressure and hold for one more hour.

G. Fire Department Connections: On-site fire department connections shall be tested by the Contractor as directed by the Fire Department having jurisdiction. Perform all tests in the presence assigned Inspector.

H. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to District.

I. Submit the completed and approved NFPA 24 Certificate as indicated under Submittals in this section.

3.14 CLEANING

A. Clean and disinfect water-distribution piping as indicatedin Section 33 01 10.58 - Disinfecting of Site Water Distribution Piping.

END OF SECTION

SECTION 33 31 13
SITE SANITARY SEWERAGE PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sanitary sewerage system piping and appurtenances from a point 5 feet outside the building to the point of disposal.

B. Sanitary sewerage drainage piping, fittings, and accessories.

C. Connection of building sanitary drainage system to existing on-site.

D. Cleanout access.

1.02 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION

A. Supply of connection devices to building piping for placement by this Section.

1.03 RELATED REQUIREMENTS

A. Section 31 23 16 - Excavation: Excavating of trenches.

B. Section 31 23 16.13 - Trenching: Excavating, bedding, and backfilling.

C. Section 31 23 23 - Fill: Bedding and backfilling.

D. Section 33 05 43 - Corrosion Protection: Reducing exposure of metal parts in sulfate containing soils.

1.04 DEFINITIONS

A. Bedding: Fill placed under, beside and directly over pipe, prior to subsequent backfill operations.

1.05 REFERENCE STANDARDS

A. ASTM A536 - Standard Specification for Ductile Iron Castings.

B. ASTM C478 - Standard Specification for Circular Precast Reinforced Concrete Manhole Sections.

C. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.

D. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.

E. ASTM C891 - Standard Practice for Installation of Underground Precast Concrete Utility Structures.

F. ASTM C923 - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes, and Laterals.

G. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.

H. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems.

I. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

J. ASTM D3212 - Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

K. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

L. SSPWC (Greenbook) - Standard Specifications for Public Works Construction.

M. City requirements.

1.06 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate the installation of sewrwe line with size, location and installation of service utilities.

B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by all affected installers.

C. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.07 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data indicating pipe, pipe accessories.

C. Shop Drawings:

1. For pre-cast concrete sanitary manholes, including frames and covers.
2. Coordination profile drawings showing sanitary sewerage system piping in elevation . Draw profiles at a horizontal scale of not less than 1 inch equals 50 feet and vertical scale of not less than 1 inch equals 5 feet. Indicate pipe and underground structures. Show types, sizes, materials, and elevations of other utilities crossing sewerage system piping.

D. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.

E. Project Record Documents:

1. Submit documents under provisions of Section 01 78 00 - Closeout Submittals.
2. Record location of pipe runs, connections, manholes, cleanouts, and invert elevations.
3. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.08 REGULATORY REQUIREMENTS

A. Conform to applicable code for materials and installation of the Work of this section.

B. Comply with requirements of Local Plumbing Code, Health Department, and Authorities having jurisdiction.

C. Utility Compliance: Comply with local utility regulations and standards pertaining to sanitary sewerage systems.

D. Environmental Compliance: Comply with applicable portions of local environmental agency regulations pertaining to sanitary sewerage systems.

E. Permits: Obtain all required permits in name of Owner.

1.09 PROJECT CONDITIONS

A. Site Information: Perform site survey, research public utility records, and verify existing utility locations. Verify that storm sewerage system piping may be installed in compliance with original design and referenced standards.

1. Locate existing sanitary sewerage system piping and structures that are to be abandoned and closed.

1.10 SEQUENCING AND SCHEDULING

A. Coordinate connection to public sewer with utility company.

B. Coordinate with interior building sanitary drainage piping.

C. Coordinate with other utility work.

PART 2 PRODUCTS

2.01 SEWER PIPE MATERIALS

A. Provide products that comply with applicable code(s).

B. General: Provide pipe and pipe fitting materials compatible with each other. Where more than one type of materials or products is indicated, selection is Installer's option.

C. Plastic Pipe: ASTM D3034, Type SDR35, Poly(Vinyl Chloride) (PVC) material; inside nominal diameter of 4 to 8 inches, bell and spigot style solvent sealed joint end.

1. Solvent Cement: ASTM D2564.
2. Gaskets: ASTM F477, elastomeric seal.
3. Pipe Joints: ASTM D3212.

D. Joint Seals: Mechanical clamp ring type, stainless steel expanding and contracting sleeve, neoprene ribbed gasket for positive seal.

E. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required wyes, bends, cleanouts, reducers, traps and other configurations required.

2.02 PIPE ACCESSORIES

A. Cleanouts: Provide cast-iron ferrule and countersunk brass cleanout plug, with round cast-iron access frame and heavy-duty, secured, scoriated cast-iron cover.

1. Acceptable Manufacturers:
   a. Ancon, Inc.
   b. Josam Co.

c. Smith (Jay R.) Mfg. Co.

d. Wade Div.; Tyler Pipe.

e. Zurn Industries, Inc.; Hydromechanics Div.

f. Substitutions: See Section 01 60 00 - Product Requirements.

B. Trace Wire: Magnetic detectable conductor, clear plastic covering, imprinted with "Sewer Service" in large letters.

C. Underground Warning Tapes: Polyethylene plastic tape with metallic core, 6 inches wide by 4 mils thick, solid green in color with continuously printed caption in black letters "CAUTION - SEWER LINE BURIED BELOW."

1. Allen Systems, Inc.; Reef Industries, Inc.
2. Brady (W.H.) Co.; Signmark Div.
3. Calpico, Inc.
4. Carlton Industries, Inc.
5. EMED Co., Inc.
6. Seton Name Plate Co.

D. Couplings: Rubber or elastomeric compression gasket, made to match pipe inside diameter or hub, and adjoining pipe outside diameter.

1. Gaskets: ASTM C425, rubber for vitrified clay pipe; ASTM C443, rubber for concrete pipe; ASTM C564, rubber for cast-iron soil pipe; and ASTM F477, elastomeric seal for plastic pipe. Gaskets for dissimilar or other pipe materials shall be compatible with pipe materials being jointed.

E. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required wyes, bends, cleanouts, reducers, traps and other configurations required.

F. Corrosivity Protection: All underground metallic pipe and fittings shall be protected from corrosive soils by 8 mil minimum polyethylene sheet.

2.03 CLEANOUT MANHOLE

A. Manholes shall conform to City Standard Drawing and the SSPWC (Greenbook).

B. Manhole Frames and Covers: ASTM A536, Grade 60-40-18, heavy-duty, ductile iron, 24-inch inside diameter by 7- to 9-inch riser with 4-inch minimum width flange, and 26-inch-diameter cover, indented top design, with lettering "SANITARY SEWER" cast into cover.

C. Pre-cast Concrete Manholes: ASTM C478 pre-cast reinforced concrete, of depth indicated with provision for rubber gasket joints.

1. Base Section: 12-inch minimum thickness for floor slab and 4.125-inch minimum thickness for walls and base riser section, and having a separate base slab or base section with integral floor.
2. Riser Sections: 4.125-inch minimum thickness; 48-inch diameter, and lengths to provide depth indicated.
3. Top Section: Eccentric cone type, unless concentric cone or flat-slab-top type is indicated. Top of cone to match grade rings.

4. Grade Rings: Provide 2 or 3 reinforced concrete rings, of 6 to 9 inches total thickness and match 24-inch diameter frame and cover.
5. Gaskets: ASTM C443, rubber.
6. Steps: Cast into base, riser, and top sections sidewall at 12- to 16-inch intervals.
7. Pipe Connectors: ASTM C923, resilient, of size required, for each pipe connecting to base section.
8. Channel and Bench: Concrete.

D. Base Pad: Levelled top surface to receive concrete shaft sections, sleeved to receive sanitary sewer pipe sections.
1. Concrete: Ready-mixed, complying with ASTM C94/C94M; Type V - Sulfate Resistant Portland cement; 3,000 psi strength at 28 days, 3 inch slump; 3/4 inch nominal size aggregate.

2.04 BEDDING AND COVER MATERIALS

A. Pipe Bedding Material: As specified in Division 31 - Earthwork and applicable City or County Standards.

B. Pipe Cover Material: As specified in Division 31 - Earthwork and applicable City or County Standards.

PART 3 EXECUTION

3.01 GENERAL

A. Perform work in accordance with applicable code(s).

B. Comply with Section 33 05 43 - Corrosion Protection.

C. General Locations and Arrangements: Drawings (plans and details) indicate the general location and arrangement of the underground sanitary sewerage system piping. Location and arrangement of piping layout take into account many design considerations. Install the piping as indicated, to the extent practical.

D. Install piping beginning at low point of systems, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings in accordance with manufacturer's recommendations for use of lubricants, cements, and other installation requirements.

E. Use fittings for branch connections, except where direct tap into existing sewer or manhole is indicated.

F. Use proper size increasers and couplings, where different size or material of pipes and fittings are connected. Reduction of the size of piping in the direction of flow is prohibited.

G. Install piping pitched down in direction of flow, at minimum slope of 2 percent, except where indicated otherwise.
1. Place bell ends of piping facing upstream.

H. Tunneling: Install pipe under streets or other obstructions that cannot be disturbed, by tunneling, jacking, or a combination of both.

I. No pipe shall be laid in water and all costs for drainage and/or dewatering trenches during construction shall be borne by the Contractor.

3.02 TRENCHING

A. See Division 31 - Earthwork for additional requirements.

B. Hand trim excavation for accurate placement of pipe to elevations indicated.

1. Correct over excavation in accordance with the Section in Division 31.
2. Remove large stones or other hard matter which could damage pipe or impede consistent backfilling or compaction.

C. Backfill around sides and to top of pipe with cover fill, tamp in place and compact, then complete backfilling.

D. If during the installation of pipe, the trench material, backfill material is found to be unsuitable, as determined by the Engineer, it shall be removed and replaced by crushed rock as defined by SSPWC (Greenbook) 200-2.2 or 200-2.3 except that minimum sand equivalent value shall be 30. Any excess material that is generated by this process shall be disposed of by the Contractor at no additional cost to the District.

E. Bedding:

1. Excavate pipe trench in accordance with the Section in Division 31 for work of this Section. Hand trim excavation for accurate placement of pipe to elevations indicated.
2. Place bedding material at trench bottom, level materials in continuous layer not exceeding 6 inches compacted depth, compact to 95 percent.
3. Maintain optimum moisture content of bedding material to attain required compaction density.

3.03 EXAMINATION

A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.

B. Inspect piping before installation to detect apparent defects. Mark defective materials with white paint and promptly remove from site.

C. Unless specified otherwise, all buried piping shall have coverage of at least three feet between top of pipe and finished grade.

3.04 INSTALLATION - PIPE

A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.

B. Pipe Applications For Underground Sanitary Sewers

1. Pipe Sizes 15 inches and Smaller: PVC gasket joint sewer pipe and fittings.
2. Pipe Sizes 1-1/2 to 10 Inches: Hubless cast-iron soil pipe and fittings.

C. Install pipe, fittings, and accessories in accordance with manufacturer's instructions. Seal watertight.

1. Plastic Pipe: Also comply with ASTM D2321.

2. Pipe shall be assembled by hand or by use of a bar and block or by lever puller. No swinging or stabbing shall be permitted. The "popping-on" of joints is expressly forbidden. All bell and spigot type connection shall be marked on the spigot end to indicate full insertion.

D. Lay pipe to slope gradients noted on layout drawings; with maximum variation from true slope of 1/8 inch in 10 feet.

E. Connect to building sanitary sewer outlet and municipal sewer system , through installed sleeves.

F. Install trace wire 6 inches above top of pipe; coordinate with the Section in Dvision 31 - Earthwork.

3.05 PIPE JOINT CONSTRUCTION AND INSTALLATION

A. Join and install hubless cast iron soil pipe and fittings, with "Best" or "MG" cast-iron couplings with neoprene gaskets. Stainless steel couplings not acceptable below grade.

B. Join and install PVC pipe as follows:

1. Pipe and gasketed fittings, joining with elastomeric seals.
2. Installation in accordance with ASTM D2321.

C. Join different types of pipe with standard manufactured couplings and fittings intended for that purpose.

3.06 INSTALLATION MANHOLES

A. Install manholes complete with accessories as indicated. Form continuous concrete or split pipe section channels and benches between inlets and outlet. Set tops of frames and covers flush with finish surface where manholes occur in pavements. Elsewhere, set tops 3 inches above finish surface, unless otherwise indicated.

B. Place pre-cast concrete manhole sections as indicated, and install in accordance with ASTM C891.

C. Provide rubber joint gasket complying with ASTM C443 at joints of sections.

D. Apply bituminous mastic coating at joints of sections.

3.07 INSTALLATION - CLEANOUTS

A. Install cleanouts and extension from sewer pipe to cleanout at grade as indicated. Set cleanout frame and cover in concrete block 18 by 18 by 12 inches deep, except where location is in concrete paving. Set top of cleanout 1 inch above surrounding earth grade or flush with grade when installing in paving.

1. Provide as shown on plans and as required by Plumbing Code.

B. Form bottom of excavation clean and smooth to correct elevation.

C. Form and place cast-in-place concrete base pad, with provision for sanitary sewer pipe end sections.

D. Establish elevations and pipe inverts for inlets and outlets as indicated.

E. Mount lid and frame level in grout, secured to top cone section to elevation indicated.

3.08 TAP CONNECTIONS

A. Make connections to existing piping and underground structures so that finished work will conform as nearly as practicable to the requirements specified for new work.

B. Use commercially manufactured wye fittings for piping branch connections. Remove section of existing pipe, install wye fitting into existing piping, and encase entire wye fitting plus 6-inch overlap, with not less than 6 inches of 3000 psi 28-day compressive-strength concrete.

C. Protect existing piping and structures to prevent concrete or debris from entering while making tap connections. Remove debris, concrete, or other extraneous material that may accumulate.

3.09 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Section 01 40 00.

B. Perform testing of completed piping in accordance with local authorities having jurisdiction.

C. Request inspection prior to and immediately after placing bedding.

D. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to District.

E. Interior Inspection: Inspect piping to determine whether line displacement or other damage has occurred.

1. Make inspections after pipe between manholes and manhole locations has been installed and approximately 2 feet of backfill is in place, and again at completion of project.
2. All sewer mains constructed and to become part of the public sewer system shall be digitally recorded by the City prior to acceptance of the sewer system for maintenance by the City.
3. If inspection indicates poor alignment, debris, displaced pipe, infiltration or other defects correct such defects, and reinspect.
4. If requested by local utility, provide video recording of visual interior inspection.
5. Reinspect after any corrections.

3.10 CLEANING

A. Cleaning: Clear interior of piping and structures of dirt and other superfluous material as work progresses. Maintain swab or drag in piping and pull past each joint as it is completed.

1. Place plugs in ends of uncompleted pipe at end of day or whenever work stops.
2. Flush piping between manholes, if required by local authority, to remove collected debris.

3.11 PROTECTION

A. Protect finished installation under provisions of Section 01 50 00 - Temporary Facilities and Controls.

B. Protect pipe and bedding cover from damage or displacement until backfilling operation is in progress.

END OF SECTION

SECTION 33 41 00
SUBDRAINAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Retaining Wall Drainage Systems.
   1. Drainage system at vertical waterproofed walls, as complete designed working drainage system channeling water to subdrainage system piping, or to wall face.
   2. Geotextile pipe wrap.
   3. Subdrainage piping system, complete with necessary couplings and accessories.

B. Filter aggregate and fabric and bedding.

1.02 RELATED REQUIREMENTS

A. Section 07 13 00 - Sheet Waterproofing: Below grade waterproofing and protection board.

B. Section 31 22 00 - Grading: Excavating, bedding, and backfilling.

C. Section 31 23 16 - Excavation: Excavating for subdrainage system piping and surrounding filter aggregate.

D. Section 31 23 23 - Fill: Backfilling over filter aggregate, up to subgrade elevation.

1.03 REFERENCE STANDARDS

A. ASTM D2729 - Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

1.04 DEFINITIONS

A. Geotextile: Any permeable textile used with foundation, soil, rock, earth, or any other geotechnical material, as an integral part of man-made product, structure, or system.

B. Normal Direction: Direction perpendicular to the plane of a geotextile.

C. Permittivity: Volumetric flow rate of water per unit cross sectional area per unit head under laminar flow conditions, in the normal direction through a geotextile.

D. Permeability: Rate of flow of a liquid under a differential pressure through a material.

E. Transmissivity: Flow or amount of liquid water per foot of material width passing through composite system at certain maximum soil pressure against geotextile at defined hydraulic gradient.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on pipe drainage products, pipe accessories, and connectors.

C. Shop Drawings: Indicate dimensions, layout of piping, high and low points of pipe inverts, gradient of slope between corners and intersections, and depths of footings.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Project Record Documents: Record location of pipe runs, connections, cleanouts and principal invert elevations.

1.06 PRE-INSTALLATION MEETING

A. Pre-Installation Conference: Include subdrainage system conference with conference scheduled for waterproofing materials.

1.07 SEQUENCING AND SCHEDULING

A. Schedule subdrainage material installation after waterproofing installation and curing and protection board placement, and just prior to backfilling operations.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS

A. Comply with applicable code for materials and installation of the work of this section.

2.02 PIPE MATERIALS

A. Polyvinyl Chloride Pipe: ASTM D2729; plain end, 4 inch inside diameter; with required fittings.

B. Use perforated pipe at subdrainage system; unperforated through sleeved walls.

1. Foundation drainage:
    a. Provide perforated drainage pipe at footings and below grade walls.
    b. Shop perforate pipe with 1/4 inch minimum to 3/8 inch maximum holes or nominal 1/4 by 4 inch long slots.
    c. Perforations shall occur within maximum arc of 160 degrees.
2. Drain lines: Provide solid drainage pipe to conduct water from footings and below grade walls, to storm drain lateral, outlet, or curb face as indicated.

2.03 AGGREGATE AND BEDDING

A. Filter Aggregate and Bedding Material: Granular fill as specified in Section 31 23 23.

B. Filter Sand and Bedding Material: Sand as specified in Section 31 23 23.

C. Impervious Fill Material: Type as specified in Section 31 23 23.

2.04 ACCESSORIES

A. Pipe Couplings: Solid plastic.

B. Joint Covers: 10 mil thick polyethylene.

C. Filter Fabric: Water pervious type, black polyolefin.

D. Furring strips: Pressure treated lumber specified in Rough Carpentry section.

E. Sleeve: Unperforated PVC type for foundation wall.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on layout drawings.

B. Verification of Conditions: Verify that waterproofing protection board is in place, if specified in applicable waterproofing Section. Verify one percent minimum slope to underslab collection pipes.

C. Substrate: Examine substrates to determine suitability in accordance with manufacturer's instructions and recommendations. Correct all deficiencies before proceeding with subdrainage system installation.

3.02 PREPARATION

A. Excavate trenches to lines and grades required for pipe positions and slopes to drain.

B. Hand trim excavations to required elevations. Correct over-excavation with bedding aggregate.

C. Remove large stones or other hard matter that could damage drainage piping or impede consistent backfilling or compaction.

D. Bedding: Place bedding aggregate to depths and arrangements shown on Drawings, taking care to provide uniform and solid bearing for full length of each pipe segment.

3.03 INSTALLATION

A. Install and join pipe and pipe fittings in accordance with pipe manufacturer's instructions.

1. Form piping into a continuous system, using such fittings and accessories as are recommended by manufacturer of pipe or tile materials, starting at highest required drainage elevation and continuing to point of approved discharge.

B. Place drainage pipe on clean cut subsoil.

C. Lay pipe to slope gradients noted on drawings; with maximum variation from true slope of 1/8 inch in 10 feet.

D. Loosely butt pipe ends. Place joint cover strip 12 inches wide, around pipe diameter centered over joint.

E. Take care to prevent potential blockage of system through inadvertent soil or debris intrusions.

F. Place pipe with perforations facing down. Mechanically join pipe ends.

G. Install pipe couplings.

H. Install filter aggregate at sides, over joint covers and top of pipe. Provide top cover compacted thickness of 12 inches.

I. Provide cleanouts to grade at ends of each run for system cleaning and checking.

J. Place filter fabric over levelled top surface of aggregate cover prior to subsequent backfilling operations.

1. Install geotextile as detailed on Drawings in "taco" fashion, as referred to in construction trade, with sides brought together and attached to wall with wood furring strip. Lap end joints of geotextile fabric in accordance with manufacturer's installation instructions.

K. Place aggregate in maximum 4 inch lifts, consolidating each lift.

1. Install aggregate backfill shown on Drawings and in accordance with Section 31 22 00 - Grading, taking care to prevent crushing of pipe.
2. Provide protection over subdrainage piping until placement of next succeeding layer or increment of construction.

L. Refer to Section 31 23 23 for compaction requirements. Do not displace or damage pipe when compacting.

M. Place impervious fill over drainage pipe aggregate cover and compact.

N. Connect to storm drain system with unperforated pipe , through installed sleeves.

O. Coordinate the Work with connection to on site storm drain system, and trenching.

3.04 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Field inspection and testing.

B. Request inspection prior to and immediately after placing aggregate cover over pipe.

3.05 PROTECTION

A. Protect pipe and aggregate cover from damage or displacement until backfilling operation begins.

END OF SECTION

SECTION 33 42 30
STORMWATER DRAINS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Precast concrete catch basins.

B. Cast-in-place concrete catch basins.

C. Cast-in-place concrete base pad.

D. Frames and grates.

1.02 RELATED REQUIREMENTS

A. Section 03 10 00 - Concrete Forming and Accessories.

B. Section 03 30 00 - Cast-in-Place Concrete.

C. Section 31 23 23 - Fill.

D. Section 33 42 11 - Stormwater Gravity Piping.

1.03 REFERENCE STANDARDS

A. AASHTO HB - Standard Specifications for Highway Bridges.

B. ACI 301 - Specifications for Concrete Construction.

C. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete.

D. ACI 305R - Guide to Hot Weather Concreting.

E. ACI 306R - Guide to Cold Weather Concreting.

F. ACI 318 - Building Code Requirements for Structural Concrete.

G. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design.

H. ASTM C33/C33M - Standard Specification for Concrete Aggregates.

I. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.

J. ASTM C150/C150M - Standard Specification for Portland Cement.

K. ASTM C478/C478M - Standard Specification for Circular Precast Reinforced Concrete Manhole Sections.

L. ASTM C990 - Standard Specification for Joints for Concrete Pipe, Manholes and Precast Box Sections Using Preformed Flexible Joint Sealants.

M. EPA (NPDES) - National Pollutant Discharge Elimination System (NPDES), Construction General Permit.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Installation of stormwater drains with piping and other structures.

1. See Section 33 42 11 for stormwater gravity piping.

B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section; require attendance by affected installers.

C. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Weight rating for catch basins, drop inlets, trench drains, and frame and grates.

C. Shop Drawings: Indicate stack assembly, invert elevations, opening sizes, and pipe angles.

D. Manufacturer's Installation Instructions: Indicate special procedures for assembly.

E. Manufacturer's qualification statement.

F. Installer's qualification statement.

G. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

H. Field Quality Control Submittals: Document results of field quality control testing.

I. Project Record Documents:

1. Record invert elevations of catch basins and trench drains.
2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with at least three years of documented experience.

B. Installer Qualifications: Company specializing in installing work of the type specified in this section, and with at least three years of documented experience and approved by manufacturer.

C. Documents at Project Site: Maintain one copy of manufacturer's instructions, assembly drawings, and shop drawings at the project site.

D. Perform work of this section in accordance with ACI 301 and ACI 318.

1. Maintain one copy of each document on site.

E. Follow recommendations of ACI 305R when concreting during hot weather.

F. Follow recommendations of ACI 306R when concreting during cold weather.

PART 2 PRODUCTS

2.01 CATCH BASINS

A. Weight Rating: H 10 according to AASHTO HB.

B. Precast Concrete Catch Basins: Comply with ASTM C478/C478M, reinforced.

1. Wall Thickness: 6 inches (152 mm).
2. Base Thickness: 12 inches (305 mm).

3. Joint Sealant: Comply with ASTM C990.
4. Basis of Design Product: CBXXXX Series as manufactured by J&R Concrete Products; www.jrconcreteproducts.com, or approved equal.

C. Cast-In-Place Concrete Catch Basins: Comply with ASTM C94/C94M, reinforced.
1. Wall Thickness: 6 inches (152 mm).

D. Cast-In-Place Concrete Materials:
1. Cement: ASTM C150/C150M, Type II.
2. Sand: ASTM C33/C33M, fine aggregate.
3. Crushed Gravel: ASTM C33/C33M, coarse aggregate.
4. Reinforcement: Formed steel wire, galvanized finish, wire diameter as indicated on drawings.
5. Water: Potable.
6. Form Materials: Wood, profiled to suit conditions.

E. Frames and Grates: Steel, pattern as indicated.
1. Lids and Drain Covers: Cast iron; extra heavy duty proof load; lockable; hinged.
a. Basis of Design Product: CBXXXX Series as manufactured by J&R Concrete Products; www.jrconcreteproducts.com, or approved equal.
b. At pedestrian areas provide ADA Standards compliant grates with maximum 1/2 inch wide openings. Place linear openings perpendicular to path of travel.
c. At vehicle traffic areas provide AASHTO HB, H-20 load rating.
d. Catch Basin:
1) Lid Design: Linear grate.
2) Nominal Lid and Frame Size: As indicated on Drawings..
e. Cleanout:
1) Lid Design: Linear grate.
2) Nominal Lid and Frame Size: As indicated on Drawings.
f. Area Drain:
1) Lid Design: Linear grate.
2) Nominal Lid and Frame Size: As indicated on Drawings.

2.02 ACCESSORIES

A. Sediment Filter: Provide sediment filter compliant with BMP practice for EPA (NPDES) II, as indicated on Drawings.
1. Product: Storm Water Sediment Control Grate Insert manufactured by Transpo Industries, Inc.: www.transpo.com

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify items provided by other sections of work are properly sized and located.

B. Verify built-in items are in proper location and ready for roughing into work.

C. Verify excavation location and depth are correct.

3.02 EXCAVATION AND FILL

A. Hand trim excavation for accurate placement to indicated elevations.

B. Backfill with cover fill, tamp in place and compact, then complete backfilling.

3.03 INSTALLATION

A. Establish elevations and pipe inverts for inlets and outlets as indicated in drawings.

B. Precast Concrete Catch Basins:

1. Place base section plumb and level.
2. Install joint sealant uniformly around section lip.

C. Cast-In-Place Concrete Catch Basins:

1. Form catch basin according to Section 03 30 00.
2. Form catch basin on excavation bottom plumb and level.
3. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
4. Place concrete in accordance with ACI 304R.
5. Float catch basin top surface level.

D. Frames and Grates:

1. Place frame plumb and level.
2. Place grate in frame securely.

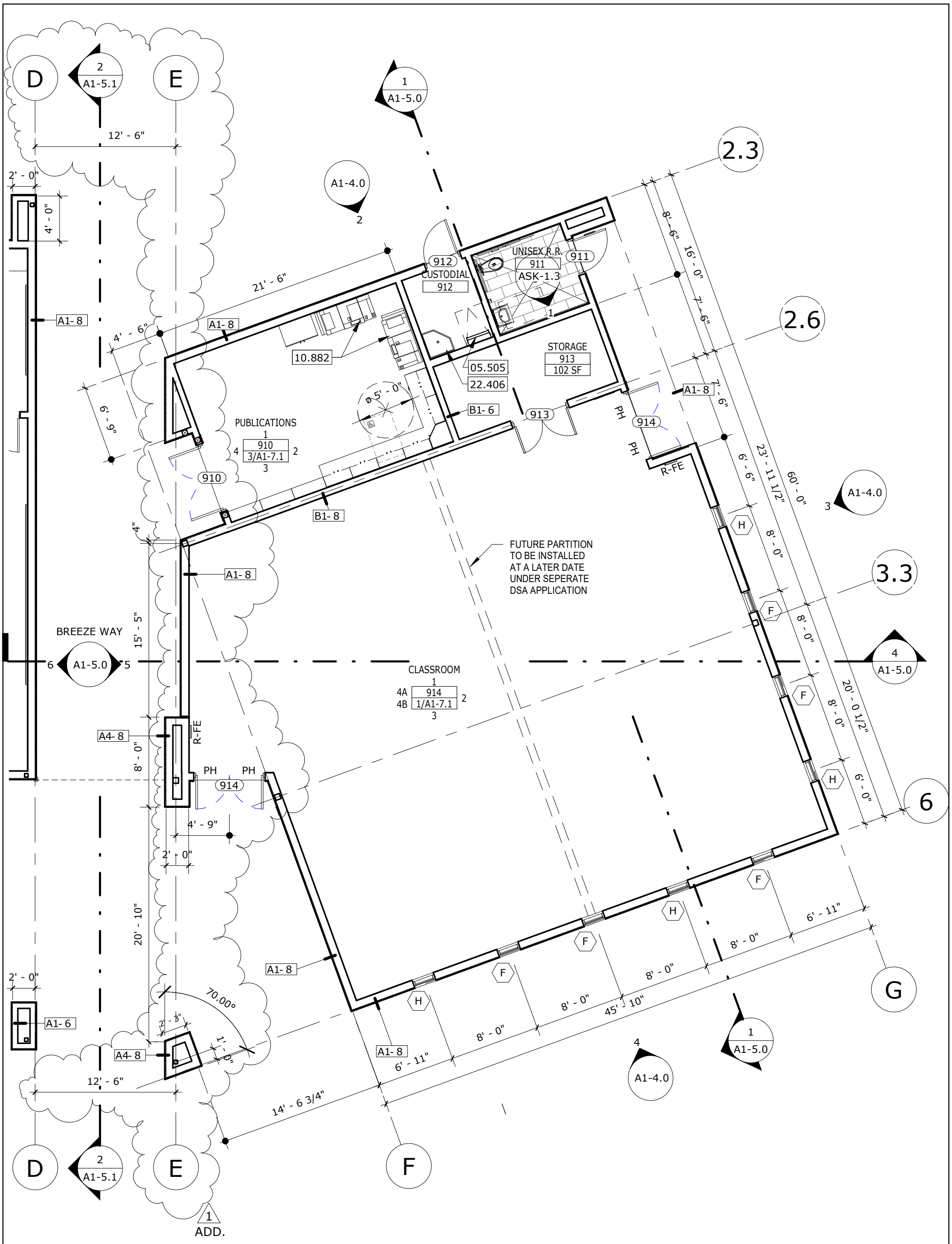
3.04 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for additional requirements.

B. Perform field inspection for pipe invert elevations.

C. If inspections indicate work does not meet specified requirements, adjust work and reinspect at no cost to District.

END OF SECTION



REFERENCE: BUILDING 900 FLOOR PLAN 1/A1-1.0

Description :

REVISED PARTIAL BUILDING 900 FLOOR PLAN

Scale:

1/8" = 1'-0"

GROSSMONT HIGH SCHOOL

GHS KITCHEN & WEIGHTROOM
GROSSMONT UNION HIGH SCHOOL

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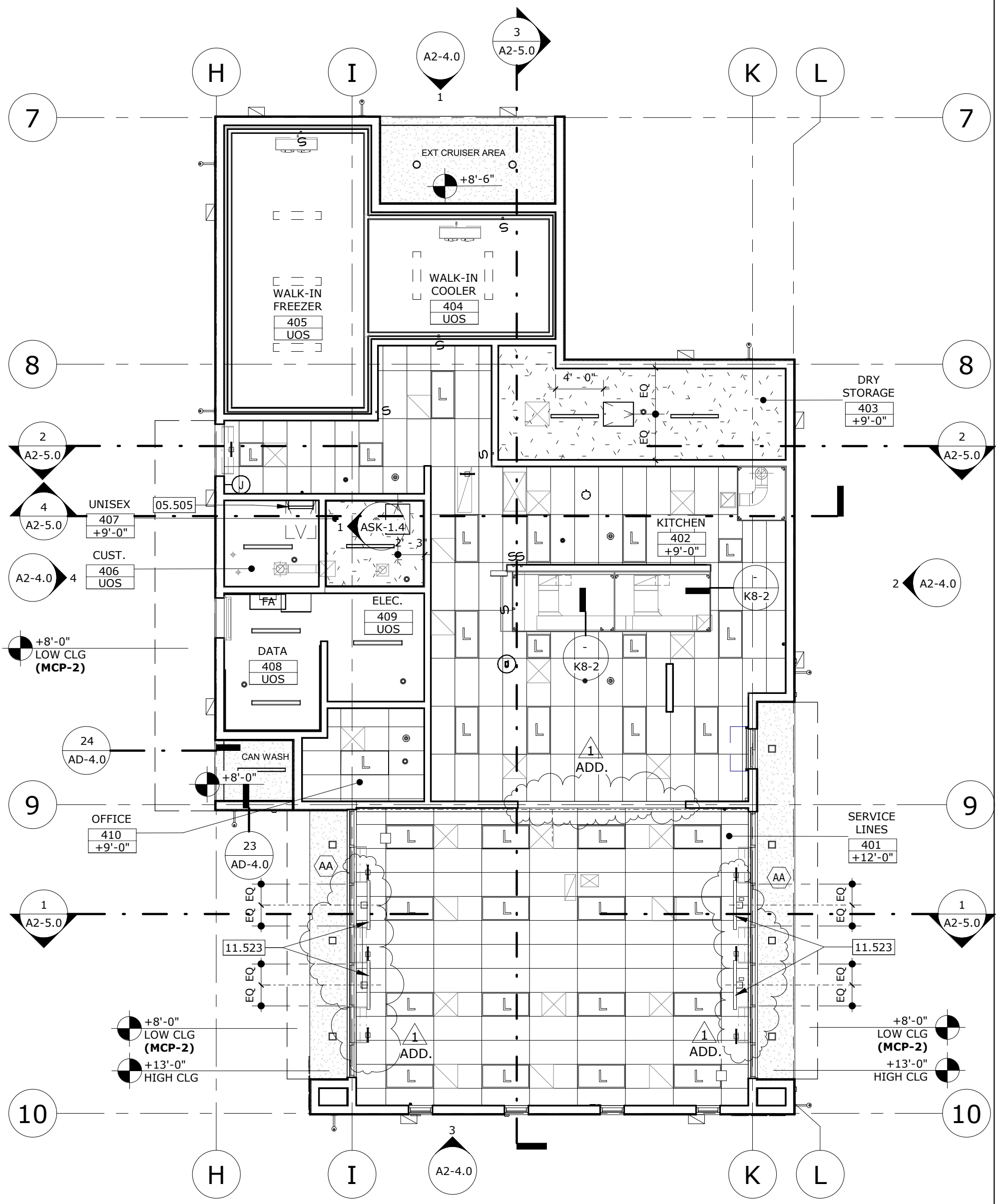
DSA APN #: 04-120895
DSA File #: 37-H4
Date: 08-02-2022
Project #: 1-30-55
Sheet #: **ASK-1.1**

LICENSED ARCHITECT
ROGER CLARKE
No. C-21340
Exp. 10-31-23
STATE OF CALIFORNIA



REFERENCE: BUILDING 400 NEW FOOD SERVICE REFLECTED CEILING PLAN PLAN 2/A2-1.0

Description :

REVISED KITCHEN REFLECTED CEILING PLAN

Scale:

1/8" = 1'-0"

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DSA APN #: 04-120895

DSA File #: 37-H4

Date: 08-02-22

Project #: 1-30-55

Sheet #: **ASK-1.2**

Stamp:

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No. C-21340
Exp. 10-31-23
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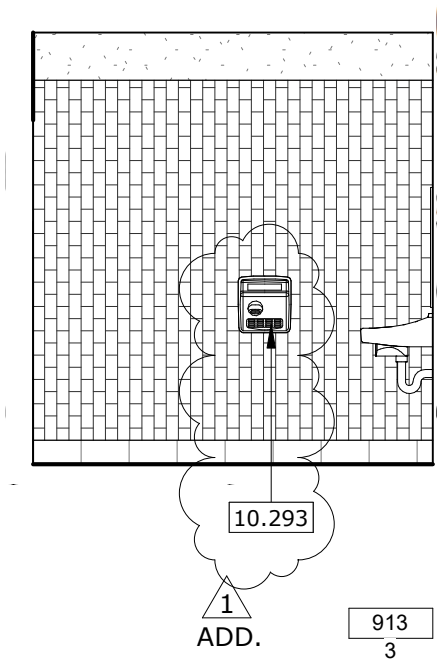
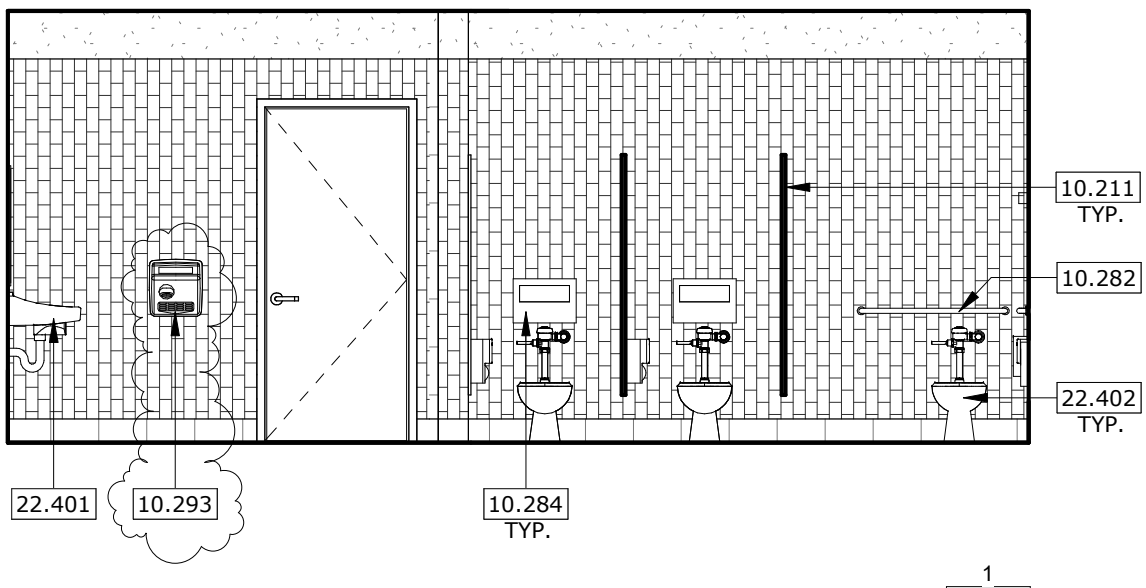
KEYNOTES

09.731	CERAMIC WALL TILE, REFER TO FINISH SCHEDULE IN SHEET ID-1.0
09.921	EXPOSED GYP. BD. TO BE PAINTED, LEVEL 4 FINISH, FOR PAINT COLOR, REFER TO FINISH SCHEDULE IN SHEET ID-1.0
10.211	TOILET PARTITION PER 10/AD-2.1
10.282	REAR GRAB BAR, 36" LONG MIN, PER 16/AD-1.0
10.284	TOILET SEAT COVER DISPENSER
10.293	ELECTRICAL HAND DRYER PER ELECTRICAL DWGS
22.401	LAVATORY PER PLUMBING FLOOR PLAN SHEET 2/P1-2.2 (BLDG 900) / PLUMBING FLOOR PLAN SHEET 1/P2-2.2 (BLDG 400) & DETAIL 23/AD-1.0
22.402	WATER CLOSET PER PLUMBING FLOOR PLAN SHEET 2/P1-2.2 (BLDG 900) / PLUMBING FLOOR PLAN SHEET 1/P2-2.2 (BLDG 400) & DETAIL 23/AD-1.0
22.403	URINAL PER PLUMBING FLOOR PLAN SHEET 2/P1-2.2 (BLDG 900) / PLUMBING FLOOR PLAN SHEET 1/P2-2.2 (BLDG 400) & DETAIL 23/AD-1.0



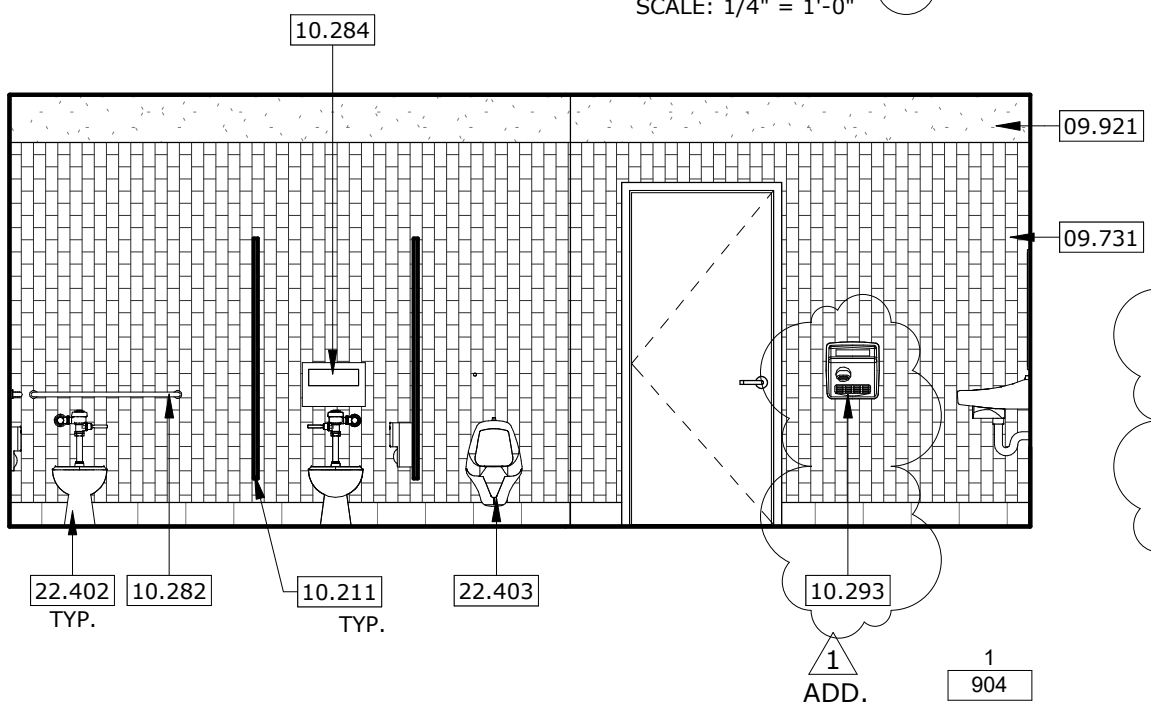
UNISEX #911 - INTERIOR ELEVATION (1)

SCALE: 1/4" = 1'-0"



GIRLS RESTROOM #905 - INTERIOR ELEVATION (2)

SCALE: 1/4" = 1'-0"



NOTE:
ADULT MOUNTING HEIGHTS. FOR PLUMBING FIXTURE MOUNTING HEIGHTS, ACCESSORY MOUNTING HEIGHTS & ACCESSORY FLOOR PLAN LOCATING DIMENSIONS, REFER TO DETAILS: 23/AD-1.0 1/ASK-1.5

1
ADD.

BOYS RESTROOM #904 - INTERIOR ELEVATION (3)

SCALE: 1/4" = 1'-0"

REFERENCE: BUILDING 900 ENLARGED RESTROOM ELEVATIONS ON SHEET A1-7.0

Description :

REVISED RESTROOM ELEVATIONS

Scale:

1/4" = 1'-0"

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Date: 08-02-22
Project #: 1-30-55
Sheet #: **ASK-1.3**

LICENSED ARCHITECT
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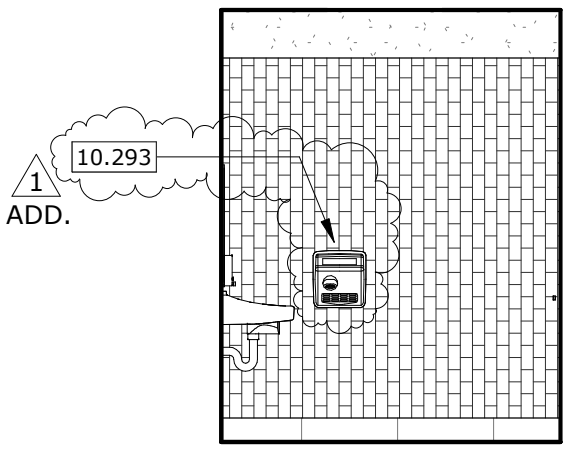
KEYNOTES

10.293	ELECTRICAL HAND DRYER PER ELECTRICAL DWGS



4 407

NOTE:
ADULT MOUNTING HEIGHTS. FOR PLUMBING FIXTURE MOUNTING HEIGHTS, ACCESSORY MOUNTING HEIGHTS & ACCESSORY FLOOR PLAN LOCATING DIMENSIONS, REFER TO DETAIL: 23/AD-1.0 1/ASK-1.5

1
ADD.

INTERIOR ELEVATION - UNISEX # 407 (1)

SCALE: 1/4" = 1'-0"

REFERENCE: INTERIOR ELEVATIONS - UNISEX #407 6/A2-7.0

Description :

BUILDING 400 REVISED INTERIOR ELEVATION

Scale:

1/4" = 1'-0"

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Date: 08-02-22
Project #: 1-30-55
Sheet #: **ASK-1.4**

Stamp:

LICENSED ARCHITECT
ROGER CLARKE
No. C-21340
Exp. 10-31-23
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1 ADD.

ACCESSORY AND EQUIPMENT KEYNOTES

ACCESSORIES

BOBRICK B-165 — 1 — NEW 18" X 30" TEMPERED GLASS MIRROR

BOBRICK B-2111 — 2 — NEW SURFACE MOUNTED SOAP DISPENSER FOR LIQUID SOAP - INSTALLED AT 40" A.F.F. (OVER OBSTRUCTION)

WORLD DRYER DRXRA5-Q973 — 3 — SEMI RECESSED HAND DRYER, ADA COMPLIANT

BOBRICK B-2116 — 4 — NEW CLOTHES HOOK W/ CONCEALED MOUNTING, CENTERED ON DOOR. ACCESSIBLE HOOK INSTALLED @ 40" A.F.F. TO HIGHEST OPERABLE PART, NON-ACCESSIBLE HOOK INSTALLED @ 48" A.F.F. TO CENTER

BOBRICK B-221 — 5 — NEW SURFACE MOUNTED TOILET SEAT COVER DISPENSER

BOBRICK B-6806 — 6 — NEW GRAB BARS (SIDE = 48" L. X 1-1/4" DIA., REAR = 36" L. X 1-1/4" DIA.). (16 / AD-1.0)

BOBRICK B-3888 — 7 — NEW SEMI RECESSED MULTI-ROLL TOILET TISSUE DISPENSER (4" MAX. PROJECTION FROM FIN. FACE OF WALL)

BOBRICK B-270 — 8 — NEW SURFACE MOUNTED FEMININE NAPKIN DISPOSAL (@ WOMENS/GIRLS ONLY).

BOBRICK B-272 — 9 — NEW SURFACE MOUNTED MULTI-ROLL TOILET TISSUE DISPENSER

10

MECHANICAL / PLUMBING

11 — INSULATE DRAIN AND ALL WATER PIPING TO PREVENT CONTACT. THERE SHALL BE NO SHARP OR ABRASIVE SURFACES UNDER THE LAVATORY PER CBC 11B-606.5 AND HAVE THE FOLLOWING BURN CHARACTERISTICS: FLAME SPREAD OF 15 OR LESS SMOKE GENERATION OF 50 OR LESS.

EQUIPMENT

12 — NEW ACCESSIBLE WATER CLOSET.

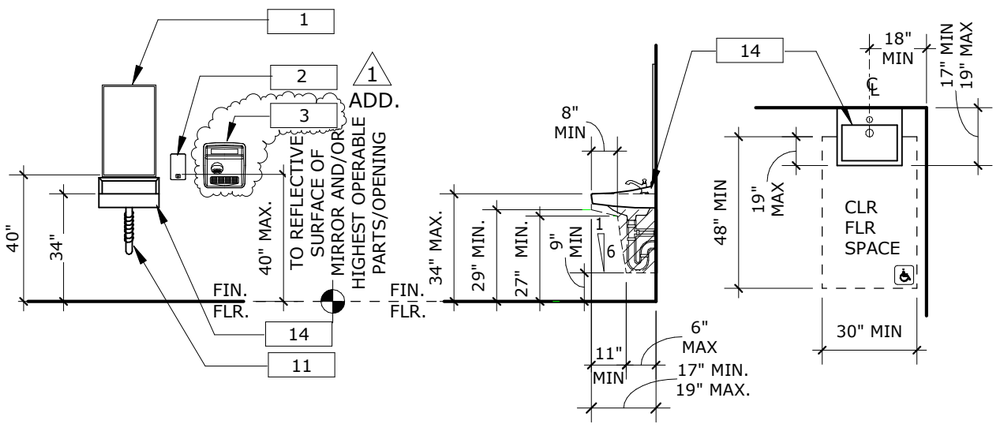
13 — NEW ACCESSIBLE URINAL.

14 — NEW ACCESSIBLE LAVATORY.

15 — NEW TOILET PARTITION (10 / AD-2.1)

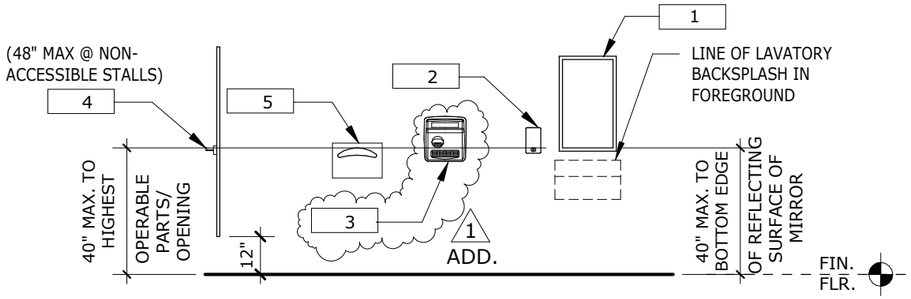
GENERAL NOTES:

FAUCET CONTROLS & OPERATING MECHANISMS SHALL BE OPERABLE W/ ONE HAND & SHALL NOT REQUIRE TIGHT GRASPING, PINCHING OR TWISTING OF THE WRIST. THE FORCE REQUIRED TO ACTIVATE CONTROLS SHALL BE NO MORE THAN 5 LBS. LEVER OPERATED, PUSH TYPE & ELECTRONICALLY CONTROLLED MECHANISMS ARE ACCECPTABLE. SELF-CLOSING VALVES ARE ALLOWED IF THE FAUCET REMAINS OPEN FOR AT LEAST 10 SECONDS.



FRONT ELEVATION — SIDE ELEVATION — PLAN VIEW

ACCESSIBLE LAVATORY STATION (ADULT HEIGHT)



ACCESSIBLE TOILET ROOM ACCESSORIES (TYP. U.N.O.)

NOTE:
FOR THE REMAINDER OF FIXTURE ACCESSORY CLEARANCES
REFERENCE DETAIL 23/ AD1.0

REFERENCE:DETAIL 23/ AD-1.0

Description :

REVISED FIXTURE & ACCESSORY CLEARANCE

Scale:

1/4" = 1'-0"

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GHS KITCHEN & WEIGHTROOM
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Project #: 1-30-55
Sheet #: **ASK-1.5**

Stamp:

LICENSED ARCHITECT * DAVID RUHNAU * No. C-20662 Exp. 3-31-21 STATE OF CALIFORNIA

STEEL DECKING

1. SEE STRUCTURAL STEEL AND MISCELLANEOUS METAL NOTES FOR ADDITIONAL INFORMATION.

2. STEEL DECKING SHALL BE OF THE TYPE AND GAUGE AS NOTED ON THE DRAWINGS. DECKING AND ALL ACCESSORIES SHALL BE GALVANIZED AND SHALL CONFORM TO ASTM A-653 SS, GRADE 50 MINIMUM. GALVANIZING SHALL CONFORM TO COATING DESIGNATION G90, UNLESS NOTED OTHERWISE.

3. DECK UNITS SHALL BE CONTINUOUS OVER TWO OR MORE SPANS. PROVIDE SHORING AS REQUIRED BY MANUFACTURER'S CURRENT EVALUATION REPORT FOR NUMBER AND LENGTHS OF SPANS, AND AS REQUIRED BY MANUFACTURER TO SUIT JOB CONDITIONS.

4. MINIMUM BEARING OF DECKING ON SUPPORTS SHALL BE 2 INCHES. SHEETS SHALL BE ATTACHED TO ALL SUPPORTING STEEL MEMBERS (INCLUDING MEMBERS PARALLEL TO DECK UNDER UP-FLUTES) BY SCREWS AS INDICATED ON DRAWINGS AND IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. ADD METAL PLATE TO MATCH DECK THICKNESS, AS REQUIRED TO FACILITATE ATTACHMENT WHERE DECK DOWN FLUTES DO NOT LAND ON PARALLEL SUPPORTING MEMBERS.

5. SEE ARCHITECTURAL, MECHANICAL, ELECTRICAL DRAWINGS, ETC., FOR SIZE AND LOCATION OF REQUIRED OPENINGS.

6. PROVIDE CLOSURE PLATES AT ALL DECK EDGES, AND OPENINGS. STEEL DECKING SUBCONTRACTOR SHALL SUPPLY ALL CLOSURES AND ALL SUPPORT FRAMING WHERE NECESSARY FOR SUCH OPENINGS.

7. STEEL DECKING SHOP DRAWINGS SHALL BE SUBMITTED TO THE ARCHITECT FOR REVIEW AND APPROVAL PRIOR TO FABRICATION. SHOP DRAWINGS SHALL INDICATE LOCATION, GAUGE AND SIZE OF EACH PIECE OF DECKING. SHOP DRAWINGS SHALL ALSO SHOW ALL CLOSURE CONDITIONS, SCREWS TO SUPPORTS AND SIDE LAP DETAILS.

1

CONSULTANT

KNA STRUCTURAL ENGINEERS
9931 Muirlands Boulevard, Irvine, CA 92618
Tel (949) 462-3200 • Fax (949) 462-3201
www.KNAstructural.com
KNA JOB NO.: 203.564

REGISTERED PROFESSIONAL ENGINEER
LARRY R. KAPPELMAN
No. 2795
Exp. 9-30-23
STRUCTURAL
STATE OF CALIFORNIA

ADDENDUM #1

Description :

STEEL DECKING GENERAL NOTES - S0-0.3

Scale:

1" = 1'-0"

GHS KITCHEN & WEIGHTROOM MOD.

GROSSMONT HIGH SCHOOL
1100 MURRAY DR, EL CAJON, CA 92020
Grossmont Union High School District

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DSA File #: 37-H4
Date: 08-02-2022
Project #: 1-30-55
Sheet #: **SSK-1.1**

Stamp:

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No. C-21340
Exp. 10-31-23
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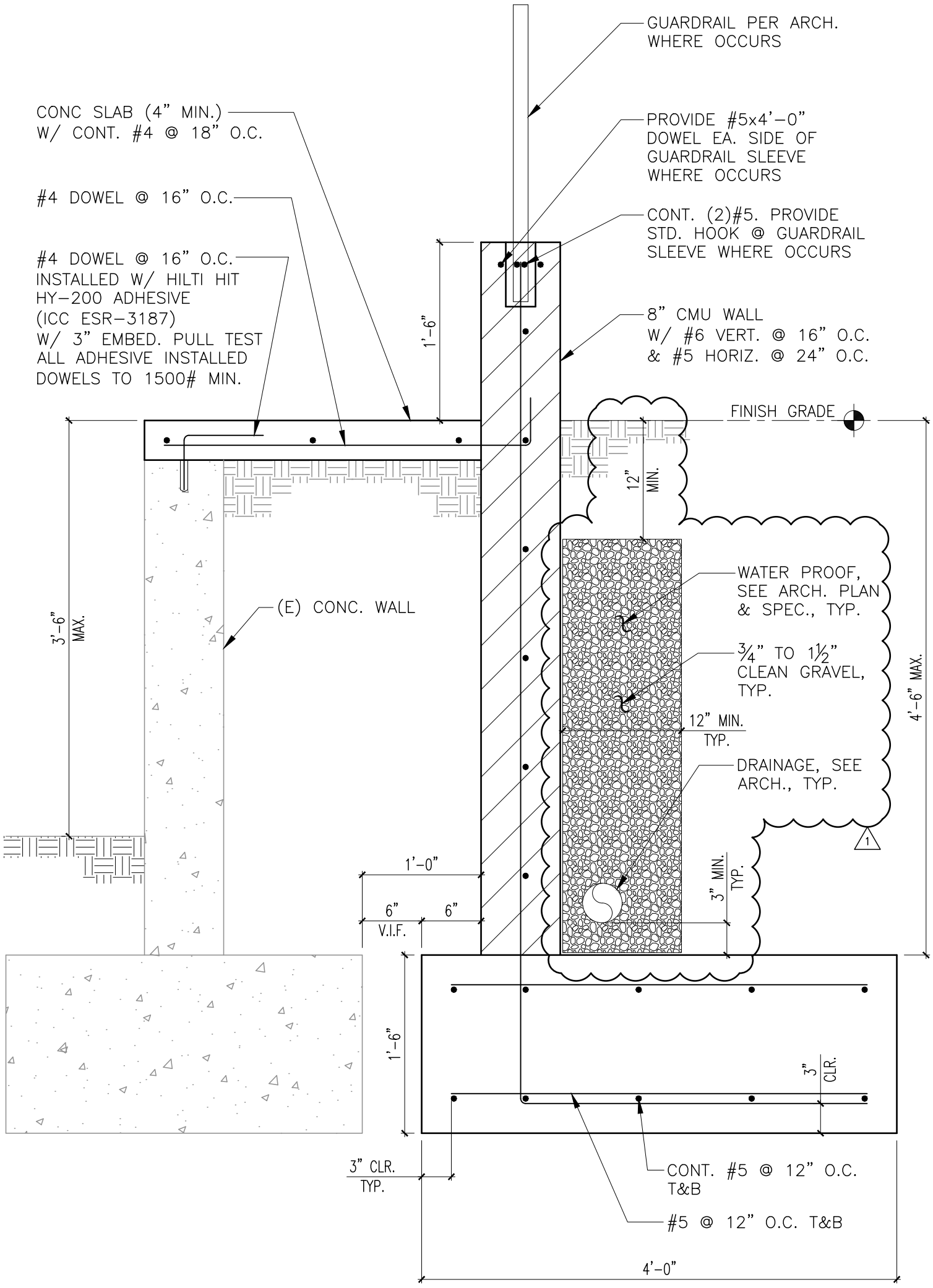

BLEACHER RETAINING WALL

CONSULTANT

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KNA JOB NO: 203.654

REGISTERED PROFESSIONAL ENGINEER
LARRY R. KAPPELLIAN
No. 2795
Exp. 9-30-23
STRUCTURAL
STATE OF CALIFORNIA

ADDENDUM #1

Description :

REVISED DETAIL 10/S0-1.2

Scale:

1" = 1'-0"

GHS KITCHEN & WEIGHTROOM MOD.

GROSSMONT HIGH SCHOOL
1100 MURRAY DR, EL CAJON, CA 92020
GROSSMONT UNION HIGH SCHOOL

DSA APN #: 04-120895

DSA File #: 37-H4

Date: 08-02-2022

Project #: 1-30-55

Sheet #: **SSK-1.2**

Stamp:

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RUHNAU CLARKE ARCHITECTS

ITEM #	QTY	EQUIPMENT CATEGORY	MANUFACTURER	MODEL	AMPS	HP	VOLTS	PHASE	CONNECTION	COLD WATER SIZE (IN)	HOT WATER SIZE (IN)	DIRECT DRAIN SIZE (IN)	INDIRECT DRAIN SIZE (IN)	GAS SIZE (IN)	BTU/H
11	1	WALK-IN COOLER EVAPORATOR COIL (FAN) W/KE2 CONTROL	RDT	BEL0095	1.8 A		115 V	1	DIRECT				3/4"		
12	1	REFRIGERATION RACK	RDT	ZS1-02Z-CT3-AST	30.6 A		208 V	3	DIRECT						
55	1	TILTING SKILLET, GAS	GROEN	BPM-30GC	5 A		115 V	1	DIRECT	1/2"	1/2"			1/2"	104,000 Btu/h
65	1	QUICK GAS DISCONNECT	T&S BRASS												

1

REFERENCE:

ADDENDUM #1

Description :

FOODSERVICE EQUIPMENT SCHEDULE - K2

Scale:

GHS KITCHEN & WEIGHTROOM MOD: MARCH 1st DSA Submittal
1100 MURRAY DR, EL CAJON, CA 92020

7/25/2022 3:34:26 PM

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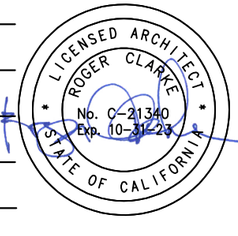
RUHNAU CLARKE ARCHITECTS

DSA APN #: 04-120895
DSA File #: 37-H4
Date: 08/02/22
Project #: 1-30-55
#:
Sketch #: **FSSK- 1.1**

Stamp:



PACKAGE ROOF TOP UNIT SCHEDULE

SYMBOL	DESCRIPTION	AREA SERVED	BLDG SERVED	EVAPORATOR FAN				COOLING CAPACITY					HEATING COIL		ELECTRICAL				MIN. OSA CFM	FILTERS		MAX. OPER. WT. (LBS)	SCCR (min. RMS)	REMARKS
				CFM	E.S.P.	DRIVE	H.P.	AMB (°F)	EDB (°F)	EWB (°F)	TOTAL CAP. (MBH)	SENSIBLE CAP. (MBH)	INPUT MBH	MIN. AFUE/TE	MCA	MOCP	V	PH.		TK.	MERV			
RTU K-1	CAPTIVEAIRE CASRTV2-1.200-18-10T-DOAS	KITCHEN	KITCHEN	4000	0.5	BELT	5.0	95	80	67	74.01	57.94	50/72	82	33.8	40	460	3	720	2"	13	1922	10kA	1 3 5 7 9 12 13 16 1 ADD
RTU K-2	CARRIER 48GCLM05	KITCHEN SERVICE LINES	KITCHEN	1600	0.5	BELT	1.0	95	80	67	49.96	37.06	60.0	81	11	15	480	3	480	2"	13	1450	5kA	1 3 4 5 6 8 11 15
RTU M-1	CARRIER 48LCD007	MUSEUM	MUSEUM ROOM	2400	0.5	BELT	1.0	95	80	67	74.01	57.94	50 / 72	82	20	25	480	3	720	2"	13	2200	10kA	1 2 3 4 5 6 7 8 9 14
RTU W-1	CARRIER 48GCLM05	P.E. ATTENDANT, STORAGE	WEIGHT ROOM	1600	0.5	BELT	1.0	95	80	67	49.96	37.06	60.0	81	11	15	480	3	480	2"	13	1450	5kA	1 3 4 5 6 8 11 15
RTU W-2	CARRIER 48GCLM05	SPORTS MEDICINE	WEIGHT ROOM	1600	0.5	BELT	1.0	95	80	67	49.96	37.06	60.0	81	11	15	480	3	480	2"	13	1450	5kA	1 2 3 4 5 6 8 11 15
RTU W-3	CARRIER 48LCD09	WEIGHT ROOM	WEIGHT ROOM	3400	0.5	BELT	1.0	95	80	67	104.19	78.2	120/150	80	25	30	480	3	1020	2"	13	2900	10kA	1 3 4 5 6 7 8 9 10
RTU W-4	CARRIER 48GCLM05	COACHES OFFICE, REFLECTION ROOM AND PUBLICATIONS	WEIGHT ROOM	925	0.5	BELT	1.0	95	80	67	49.96	37.06	60	81	11	15	480	3	480	2"	13	1450	5kA	1 3 4 5 6 8 11

1 PROVIDE COIL GUARDS 2 CONTROLS CONTRACTOR SHALL PROVIDE AND INSTALL ROOM CO2 SENSORS AND IMPLEMENT DCV 3 PROVIDE VFD 4 PROVIDE WITH MICROMETL ISOLATOR ROOF CURB 5 PROVIDE WITH POST MANUFACTURERED COATED COILS 6 PROVIDE SEPARATE POWER SUPPLY AND DISCONNECT FOR MODULATING POWER EXHAUST WITH ECONOMIZER

7 PROVIDE SMOKE DETECTOR TO BE LOCATED IN SUPPLY AIR DUCT. 8 SUPPLY AND RETURN AIR DUCTWORK SHALL BE LINED PER 23311 3 9 ARI EER 13.0 / IEER 20.6 10 ARI EER 12.8 / IEER 19.4 11 ARI SEER 16.1 12 INTERLOCK EF-K-1 WITH RTU-K-1 13 IEER 18.6 14 1 HP MODULATING POWER EXHAUST 2.5 FLA, 3.1 MCA, 5.6 MOCP, 480V/3 PHASE 15 1 HP MODULATING POWER EXHAUST 2.5 FLA, 3.1 MCA, 5.6 MOCP, 480V/3 PHASE

16 CAPTIVE AIR UNIT HAS A RETURN AIR DAMPER TO BE CLOSED WHEN KITCHEN HOOD AND DISHWASHER FANS ARE "ON". THE DAMPER WILL OPEN WITH THE KICHEN IS IN UNOCCUPIED MODE OR WHEN KITCHEN HOOD AND DISHWASHER FANS ARE "OFF" AND RTU-K-1 WILL OPERATE AT LOW SPEED (2000 CFM). 1 ADD

DUCTLESS SPLIT SYSTEM SCHEDULE

SYMBOL	DESCRIPTION	BUILDING SERVED	SERVICE	INDOOR FAN SECTION						OUTDOOR SECTION								COMBINED CAPACITY						REFRIGERANT TYPE	REMARKS
				INDOOR FAN		ELECTRICAL DATA				SYMBOL	DESCRIPTION	ELECTRICAL DATA					OPER. WT. LBS.	COOLING					SEER		
				CFM	DRIVE	V	PH	Hz	OPER WT. LBS.			MCA	MOCP	V	PH	Hz		TOTAL CAP. MBH	SENSIBLE CAP. MBH	AMB °F	ENT DB °F	ENT WB °F			
DFC K-1	CARRIER 40MAQB09B-3	KITCHEN	DATA ROOM #127	360 HIGH SPD	DIRECT	208	1	60	30	DCU K-1	CARRIER 38MAQB09R-3	9	15	208	1	60	115	3-13 MBH	--	95	75	65	25.0	R410A	1 2 3 4 5 6
DFC W-1	CARRIER 40MAQB09B-3	WEIGHT ROOM	ELECTRICAL ROOM #151	360 HIGH SPD	DIRECT	208	1	60	30	DCU W-1	CARRIER 38MAQB09R-3	9	15	208	1	60	115	3-13 MBH	--	95	75	65	25.0	R410A	1 2 3 4 5 6
DFC W-2	CARRIER 40MAQB09B-3	WEIGHT ROOM	DATA ROOM #148	360 HIGH SPD	DIRECT	208	1	60	30	DCU W-2	CARRIER 38MAQB09R-3	9	15	208	1	60	115	3-13 MBH	--	95	75	65	25.0	R410A	1 2 3 4 5 6
DFC M-1	CARRIER 40MAQB09B-3	MUSEUM	PUBLICATIONS ROOM #901	360 HIGH SPD	DIRECT	208	1	60	30	DCU M-1	CARRIER 38MAQB09R-3	9	15	208	1	60	115	3-13 MBH	--	95	75	65	25.0	R410A	1 2 3 4 5 6

1 INDOOR UNIT POWERED BY OUTDOOR UNIT 2 REMOTE CONTROLLER MOUNTED ON WALL 3 UNIT CFM RATED AT HIGH SPEED 4 PROVIDE INTEGRAL CONDENSATE PUMP 5 PROVIDE WITH CONDENSER COIL GUARDS AND COATING 6 1" MERV 13 FILTER

EXHAUST FAN SCHEDULE

SYMBOL	DESCRIPTION	SERVES	LOCATION	CFM	ESP	DRIVE	RPM	MIN. WHEEL DIA.	MOTOR				MAX. OPER WT. (LBS.)	REMARKS
									BHP.	MAX HP.	VOLTAGE	PHASE		
EF W-1	L. COOK ACE-D 135C17D	WEIGHT ROOM TOILETS	ROOF	600	1.25	DIRECT	1497	17"	0.332	0.5	480	3	45	1 2
EF M-1	L. COOK ACE-D 90C15DL	MUSEUM TOILET ROOM	ROOF	100	0.75	DIRECT	1600	15"	70.3w	0.125	120	1	30	1 3
EF M-2	L. COOK ACE-D 90C15DL	MUSEUM CUSTODIAL RM.	ROOF	100	0.75	DIRECT	1600	15"	70.3w	0.125	120	1	30	1 3
EF M-3	L. COOK ACE-D 90C15DL	MUSEUM PUBLICATIONS RM.	ROOF	100	0.75	DIRECT	1600	15"	70.3w	0.125	120	1	30	1 3
EF K-1	CAPTIVEAIRE DU18HF-A	KITCHEN TYPE 1 HOODS	ROOF	3420	1.5	DIRECT	1389	--	1.89	3.0	480	3	320	4 5 7
EF K-2	CAPTIVEAIRE DU12HF-A	KITCHEN DISHWASHER	ROOF	500	0.5	DIRECT	1232	--	0.073	0.25	208	1	65	6
EF K-3	L. COOK ACE-D 90C15DH	KITCHEN BLDG TOILET, CUST	ROOF	200	0.5	DIRECT	1550	15"	76.8w	0.125	120	1	30	1 2

1 PROVIDE BACKDRAFT DAMPER AND SOUND ATTENUATING ROOF CURB 2 INTERLOCK WITH BMS SYSTEM 3 INTERLOCK WITH LIGHT SWITCH 4 INTERLOCK EF-K-1 WITH RTU-K-1 5 WITH VENTED ROOF CURB 6 INTERLOCK WITH SWITCH ON WALL 7 SEE ANCHORAGE DETAIL 1/M0-5.2

AIR DISTRIBUTION SCHEDULE

SYMBOL	TYPE	NECK SIZE	CFM RANGE	MODEL	ACCESSORIES	STYLE
A	SUPPLY AIR	6"	0-140	FOR INSTALLATION IN LAY-IN CEILING: TITUS PAS-AA PERFORATED FACE. -FOR INSTALLATION IN HARD CEILING: 6"Ø: 12X12 FACE 8"Ø & 10"Ø: 16X16 FACE 12"Ø & ABOVE: 24X24 FACE	OPPOSED BLADE DAMPER	MODULAR CORE
		8"	141-210			
		10"	211-275			
		12"	276-400			
		14"	401-450			
		16"	451-570			
SYMBOL	TYPE	NECK SIZE	CFM RANGE	MODEL	ACCESSORIES	STYLE
B	RETURN, EXHAUST AIR	6"	0-155	FOR INSTALLATION IN LAY-1N CEILING: TITUS PAR-AA PERFORATED FACE FOR INSTALLATION IN HARD CEILING: 6"Ø: 12X12 FACE 8"Ø & ABOVE: 24X24 FACE	OPPOSED BLADE DAMPER	RETURN, EXHAUST, OR TRANSFER AIR GRILLE
		8"	156-250			
		10"	251-375			
		12"	376-475			
		14"	476-640			
C	SUPPLY AIR	12X6	250	TITUS 300RL DOUBLE DEFLECTION.	OPPOSED BLADE DAMPER	SIDEWALL SUPPLY AIR
		30X6	500			
		18X8	535			
		36X8	800			
		46X6	800			
D	RETURN AIR	30X12	1000	TITUS 350RL DOUBLE DEFLECTION.	OPPOSED BLADE DAMPER	SIDEWALL RETURN AIR
		30X16	1500			
		48X12	1800			

NOTE: REFER TO ARCHITECTURAL REFLECTED CEILING PLAN FOR FINAL LOCATIONS AND CEILING TYPE

REGISTERED PROFESSIONAL ENGINEER — JEFF C. CAMPBELL — No. M 025811 — Exp. 6-30-23 — MECHANICAL — STATE OF CALIFORNIA

LICENSED ARCHITECT — ROGER CLARKE — No. C-31360 — Exp. 12-31-2023 — STATE OF CALIFORNIA

STAMPS

AGENCY APPROVAL
File No.: ########-########

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RUHNAU CLARKE ARCHITECTS

GHS KITCHEN & WEIGHTROOM: 06/13/2022 DSA SUBMITTAL

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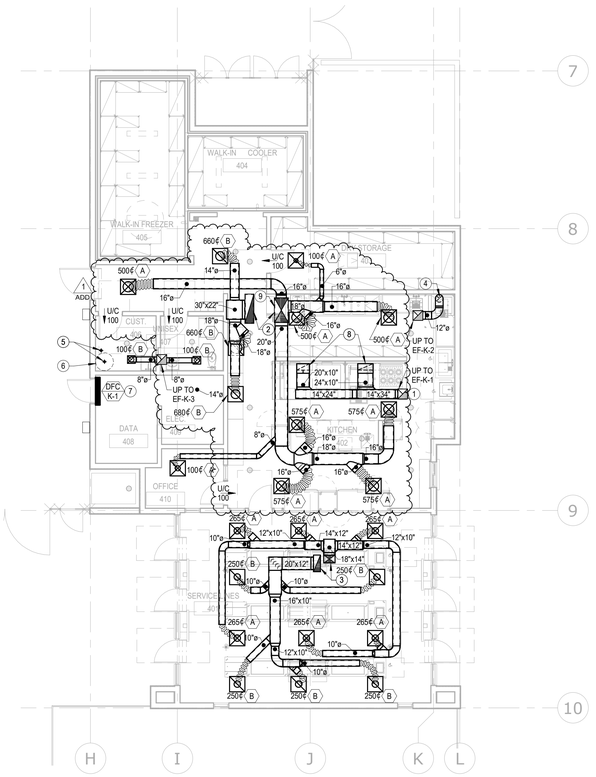

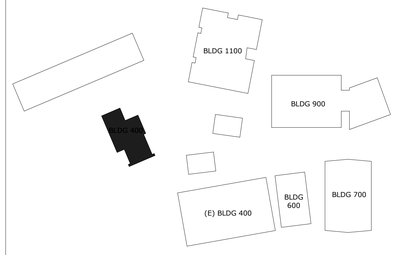

KEY PLAN NTS

KITCHEN FLOOR PLAN | SCALE: 1/8" = 1'-0" | 1

KEY NOTES:

#	
1	KITCHEN EXHAUST DUCTWORK SHALL BE WELDED BLACK IRON SHEETMETAL. REFER TO DETAIL 1/MD-5.2.
2	SA AND RA DUCT UP TO RTU-K-1
3	SA AND RA DUCT UP TO RTU-K-2
4	8"Ø EXHAUST CONNECTION TO DISHWASHER. REFER TO KITCHEN EQUIPMENT DRAWINGS FOR ADDITIONAL INFORMATION (500 CFM)
5	(2) 3"Ø PVC FLUES FOR CONDENSING WATER HEATER. COORDINATE CONNECTION TO WATER HEATER WITH PLUMBING.
6	WATER HEATER PER PLUMBING DRAWINGS.SHOWN FOR REFERENCE ONLY.
7	REFER TO DETAIL 4/MD-5.1(TYP.)
8	1710 CFM EXHAUST. REFER TO KITCHEN EQUIPMENT DRAWINGS.
9	CAPTIVE AIR UNIT HAS A RETURN AIR DAMPER TO BE CLOSED WHEN KITCHEN HOOD AND DISHWASHER FANS ARE "ON". THE DAMPER WILL OPEN WITH THE KITCHEN IS IN UNOCCUPIED MODE OR WHEN KITCHEN HOOD AND DISHWASHER FANS ARE "OFF" AND RTU-K-1 WILL OPERATE AT LOW SPEED (2000 CFM).

1 ADD

GENERAL NOTES:

STAMPS

REGISTERED PROFESSIONAL ENGINEER — Ryl Clarke — No. M 025611 — Exp. 6-30-23 — MECHANICAL — STATE OF CALIFORNIA

LICENSED ARCHITECT — ROGER CLARKE — No. C-31340 — Exp. 10-31-2023 — STATE OF CALIFORNIA

AGENCY APPROVAL
File No.: ########-########

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RUHNAU CLARKE ARCHITECTS

GHS KITCHEN & WEIGHTROOM: 06/13/2022 DSA SUBMITTAL

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DESCRIPTION:_____
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GHS KITCHEN & WEIGHTROOM
GROSSMONT HIGH SCHOOL
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GROSSMONT UNION HIGH SCHOOL

MECHANICAL KITCHEN FLOOR PLAN

M2-2.1

1-30-55

OVERALL SITE PLAN — SCALE: 1" = 20'-0" — REF.: / — 1

PROJECT No. :1-30-55
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1100 MURRAY DR, EL CAJON, CA 92020
GROSSMONT UNION HIGH SCHOOL

REGISTERED PROFESSIONAL ENGINEER — JOSEPH E. CLARKE — No. E 14781 — Exp. 6-30-2023 — STATE OF CALIFORNIA
LICENSED ARCHITECT — JOSEPH E. CLARKE — No. C-31341 — Exp. 10-31-2023 — STATE OF CALIFORNIA

#21087 STAMPS
8/1/2022 3:49:59 PM

AGENCY APPROVAL File No.: n.a.

JOHNSON CONSULTING ENGINEERS, INC.
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CONSULTANT BRANDING

RUHNAU CLARKE ARCHITECTS

GENERAL NOTES:
1. FURNISH AND INSTALL ALL UTILITY CO. SERVICES TO THE SITE TO COMPLY WITH LOCAL UTILITY CO. REQUIREMENTS. VERIFY ALL REQUIREMENTS PRIOR TO INSTALLATION.

KEY NOTES:
1. PROVIDE CONDUIT FOR FUTURE NEW PRESS BOX. STUB AND CAP CONDUITS BELOW GRADE.
2. SEE FLOOR PLANS FOR EQUIPMENT/IDF ROOM REQUIREMENTS
3. REPLACE EXISTING MAIN SECURITY CONTROL PANEL IN THE EXISTING CAMPUS MDF ROOM IN OLD GYM/AUDITORIUM. REFER TO THE SPECIFICATIONS FOR REQUIREMENTS. CAMPUS SECURITY IN AREAS CONNECTED TO SECURITY CONTROL PANEL SHALL NOT LOSE PROTECTION AT ANY TIME AFTER SCHOOL HOURS.
4. PROVIDE (2) 20A/1P CIRCUIT BREAKERS IN EXISTING SPACES 10,12 IN PANELBOARD. (1 ADD)

GHS KITCHEN & WEIGHTROOM MOD:

OVERALL SITE PLAN — **E1.1**

1-30-55

LIGHTING FIXTURE SCHEDULE

Mark	Approved Manufacturer's (See Key Note No. 1)	Catalog Series Type (See Key Note No. 2)	FIXTURE: Incandescent	Fluorescent	Metal Halide	High Pressure Sodium	Low Pressure Sodium	LED	Volts	Lamps Watts / Fixture Watts	LAMP: No.	Type	MOUNTING: Recessed / Ceiling	Surface / Ceiling	Wall	Recessed / Wall	Surface / Wall	Pole	Description
S5	LITHONIA LIGHTING	WST LED SERIES	☐	☐	☐	☐	☐	■	■120	30w			☐	☐	☐	☐	■	☐	TRAPEZOIDAL WALL SCONCE WITH INTEGRAL PHOTOCELL MIN. 3000 LUMENS
	HUBBELL	GEOPAK SERIES TRP2							☐208										
	MCGRAW EDISON	IST SERIES							■277										
	VISIONR	PGAS SERIES																	
	GARDCO	101 SERIES							☐480										
S5													☐ Provide Emergency Ballast Type 'EM'		☐ Provide Custom Color Finish, to be selected at time submittal				☐ See Detail
SP	LIGMAN LIGHTING	ANDERSON SERIES	☐	☐	☐	☐	☐	■	■120	41			☐	☐	☐	☐	☐	■	POST TOP POLE MOUNTED FIXTURE, 26" DIAMETER FLAT HEAD WITH 3 ARMS RISING UP TO HEAD FROM POLE AND METAL BAND BETWEEN BASE AND TOP, MINIMUM 2,997 LUMEN, 4000 KELVIN, 0-10v DIMMING TYPE 5, CAST ALUMINUM, MOUNTED ON 12'-0" ALUMINUM POLE DESIGNED FOR 115 MPH WIND SPEED WITH MOTION SENSOR, VERIFY FINISH WITH ARCHITECT, FIXTURE TO MATCH EXISTING POST TOP FIXTURES AT NEW BUILDINGS, FIELD VERIFY EXACT POLE HEIGHT.
	OR EQUAL								☐208										
									■277										
									☐480										
SP													☐ Provide Emergency Ballast Type 'EM'		☐ Provide Custom Color Finish, to be selected at time submittal				■ See Detail (1 / E2.7)
ADD SW	ELECTRIX	MHIGH SERIES	☐	☐	☐	☐	☐	■	■120	23w			☐	☐	☐	☐	■	☐	RECTANGULAR WALL WASH SCONCE, MIN. 1500 LUMENS, 4000K COLOR TEMPERATURE, VERIFY COLOR WITH ARCHITECT.
	OR EQUAL								☐208										
									■277										
									☐480										
SW													☐ Provide Emergency Ballast Type 'EM'		☐ Provide Custom Color Finish, to be selected at time submittal				☐ See Detail
X	LIGHT OLIER	TE SERIES	☐	☐	☐	☐	☐	■	■120	N/A			☐	■	☐	☐	☐	☐	SELF LUMINOUS EXIT SIGN WITH GREEN LETTERING. NUMBER OF FACES AS REQUIRED. SURFACE MOUNT ABOVE DOOR OR CEILING MOUNT AS REQUIRED. 20 YR LIFE AND PLASTIC WHITE FRAME
	ISOLITE	SLX-60 SERIES							☐208										
	MERIT	P180 SERIES							■277										
	LIGHTOLIER	TE SERIES							☐480										
	EVENLITE	LIFELINE LEX SERIES											☐ Provide Emergency Ballast Type 'EM'		☐ Provide Custom Color Finish, to be selected at time submittal				☐ See Detail
X																			

LIGHTING FIXTURE SCHEDULE KEY NOTES:

1. ALTERNATE MANUFACTURER'S TO THOSE SPECIFIED MAY BE SUBMITTED FOR APPROVAL. ALTERNATE MANUFACTURER'S MUST MEET THE MINIMUM CRITERIA INDICATED IN THE DESCRIPTION AND OPTIONS COLUMNS OF THIS SCHEDULE, AND MUST BE EQUAL TO THE SPECIFIED FIXTURE AS DETERMINED BY THE SPECIFYING ENGINEER. (ALTERNATE FIXTURES MUST BE APPROVED PRIOR TO BID, ALLOW 72 HOURS FOR ENGINEER REVIEW AND APPROVED). WHERE 'NO KNOWN EQUAL' IS INDICATED THE FIXTURE DOES NOT HAVE AN EQUAL TO MEET THE PROJECT REQUIREMENTS, AND ALTERNATE SELECTIONS WILL NOT BE ACCEPTED.
2. COMPLETE CATALOG NUMBERS HAVE NOT BEEN PROVIDED, REFERENCE THE DESCRIPTION AND OPTIONS COLUMNS OF THIS SCHEDULE FOR COMPLETE FIXTURE REQUIREMENTS.
3. EMERGENCY POWER FOR LIGHTING IS SUPPLIED BY EM GENERATOR.

LIGHTING FIXTURE SCHEDULE

Mark	Approved Manufacturer's (See Key Note No. 1)	Catalog Series Type (See Key Note No. 2)	FIXTURE: Incandescent	Fluorescent	Metal Halide	High Pressure Sodium	Low Pressure Sodium	LED	Volts	Lamps Watts / Fixture Watts	LAMP: No.	Type	MOUNTING: Recessed / Ceiling	Surface / Ceiling	Wall	Recessed / Wall	Pendant	Surface / Wall	Pole	Description
A1	DAY-BRITE	EVO GRID 2X4	☐	☐	☐	☐	☐	■	■120	42w			■	☐	☐	☐	☐	☐	☐	Provide Ballast Type
	COLUMBIA	LTGR24							☐208											2'X4' T-GRID FIXTURE WITH CENTER BASKET/CURVED DIFFUSER. MINIMUM 5000 LUMENS AT A CCT OF 4000 KELVIN. DRIVER VOLTAGE UNIVERSAL. 0-10v DIMMING.
	LITHONIA	2BLT							■277											
	CRUZE	ST							☐480											
A1													☐ Provide Emergency Ballast Type 'EM'		☐ Provide Custom Color Finish, to be selected at time submittal					☐ See Detail
C2	PINNACLE ARCH. LIGHTING	EDGE EV3A SERIES	☐	☐	☐	☐	☐	■	■120	34.4w			☐	☐	☐	☐	☐	☐	☐	LINEAR FLANGED FIXTURE. 3"W X 5 1/8"D X 47"L. MINIMUM 2568 LUMENS AT A CCT OF 4000 KELVIN. MATTE WHITE FINISH. 0-10v DIM.
	PHILIPS LEDALITE	TRUGROOVE STANDALONE							☐208											
	LUMENWERX	VIA 3 LED (RECESSED)							■277											
	AXIS LIGHTING	BEAM3 LED SERIES							☐480											
	NEO-RAY	DEFINE 3 RECESSED											☐ Provide Emergency Ballast Type 'EM'		☐ Provide Custom Color Finish, to be selected at time submittal					☐ See Detail
C2																				
D	LITHONIA LIGHTING	ZL1N SERIES	☐	☐	☐	☐	☐	■	■120	45w			☐	☐	■	☐	☐	☐	☐	LINEAR SURFACE STRIP FIXTURE. 3 3/8"W X 3 1/4"H X 48 1/8"L. MINIMUM 5000 LUMENS AT A CCT OF 5000 KELVIN. 0-10v DIM.
	DAY-BRITE	FLUXSTREAM							☐208											
	COLUMBIA	LCL SERIES							■277											
	WILLIAMS	7S LED SERIES							☐480											
	METALUX	SNLED											☐ Provide Emergency Ballast Type 'EM'		☐ Provide Custom Color Finish, to be selected at time submittal					☐ See Detail
D																				
D4	CORONET	LS1 LED UP/DN SERIES	☐	☐	☐	☐	☐	■	■120	40			☐	☐	☐	☐	■	☐	☐	LINEAR PENDANT FIXTURE WITH UP AND DOWNLIGHT, 4.135"H X 1.895"W, SEE FLOOR PLANS FOR EXACT LENGTH, 5 WATTS PER FOOT UPLIGHT, 5 WATTS PER FOOT DOWNLIGHT, 430 LM/FT DOWNLIGHT, 380 LM/FT UPLIGHT, 4000 KELVIN. WHITE FINISH. 0-10v DIMMING
	BIRCHWOOD	BW165 SERIES							☐208											
									■277											
									☐480											
													☐ Provide Emergency Ballast Type 'EM'		☐ Provide Custom Color Finish, to be selected at time submittal					■ See Detail (7 / E2.6)
D4																				
G2	GOTHAM	6" EVO SERIES	☐	☐	☐	☐	☐	■	■120	30w			■	☐	☐	☐	☐	☐	☐	6 INCH DIAMETER MINIMUM 3000 LUMENS AT A CCT OF 400 KELVIN. WET LOCATION LISTED. VANDAL RESISITANT PRISMATIC POLYCARBONATE LENS.
	COVENTRY	6LB79VWL SERIES							☐208											
	PHILIPS LIGHTOLIER	CALCULITE LED GEN3							■277											
	FAIL-SAFE	LD6B							☐480											
													☐ Provide Emergency Ballast Type 'EM'		☐ Provide Custom Color Finish, to be selected at time submittal					☐ See Detail
G2																				
G6	ALPHABET	NU6" SERIES	☐	☐	☐	☐	☐	■	■120	17w			■	☐	☐	☐	☐	☐	☐	6 INCH SQUARE DOWNLIGHT, MINIMUM 1500 LUMENS AT A CCT OF 4000 KELVIN. WET LOCATION LISTED. VANDAL RESISITANT SMOOTH CLEAR LENS, WHITE FINISH.
									☐208											
	PHILIPS LIGHTOLIER	P6S SERIES							■277											
									☐480											
													☐ Provide Emergency Ballast Type 'EM'		☐ Provide Custom Color Finish, to be selected at time submittal					☐ See Detail
G6																				
G7	3G LIGHTING	3G-PDL45RF	☐	☐	☐	☐	☐	■	■120	17w			■	☐	☐	☐	☐	☐	☐	4.5 INCH DIAMETER PENDANT CYLINDER, 7" HIGH, MINIMUM 1500 LUMENS AT A CCT OF 4000 KELVIN, WHITE FINISH.
	NAL	EC-HLC SERIES							☐208											
									■277											
									☐480											
													☐ Provide Emergency Ballast Type 'EM'		☐ Provide Custom Color Finish, to be selected at time submittal					■ See Detail (5 / E2.6)
G7																				
K1	KURTZON	WL RECESSED 2'X4'	☐	☐	☐	☐	☐	■	■120	50			■	☐	☐	☐	☐	☐	☐	ENCLOSED AND GASKETED 2'X4' RECESSED MOUNT FIXTURE. .125" PRISMATIC ACRYLIC LENS (INVERTED) AND FLUSH ALUMINUM WHITE DOOR FRAME, PROVIDE LENS AND FRAME NEOPRENE GASKETING, MINIMUM 5000 LUMENS AT A CCT OF 5000 KELVIN. DRIVER VOLTAGE UNIVERSAL. 0-10v DIMMING.
	KENALL	CSED024 SERIES							☐208											
	FAIL-SAFE	GRW							■277											
	LA LTG	GWL320							☐480											
	NEWSTAR	57R SERIES											☐ Provide Emergency Ballast Type 'EM'		☐ Provide Custom Color Finish, to be selected at time submittal					☐ See Detail
K1																				
K2	KURTZON	WL RECESSED 2'X2'	☐	☐	☐	☐	☐	■	■120	50			■	☐	☐	☐	☐	☐	☐	ENCLOSED AND GASKETED 2'X2' RECESSED MOUNT FIXTURE. .125" PRISMATIC ACRYLIC LENS (INVERTED) AND FLUSH ALUMINUM WHITE DOOR FRAME, PROVIDE LENS AND FRAME NEOPRENE GASKETING, MINIMUM 5000 LUMENS AT A CCT OF 5000 KELVIN. DRIVER VOLTAGE UNIVERSAL. 0-10v DIMMING.
	KENALL	CSED022 SERIES							☐208											
	FAIL-SAFE	GRW							■277											
	LA LTG	GWL320							☐480											
	NEWSTAR	57R SERIES											☐ Provide Emergency Ballast Type 'EM'		☐ Provide Custom Color Finish, to be selected at time submittal					☐ See Detail
K2																				

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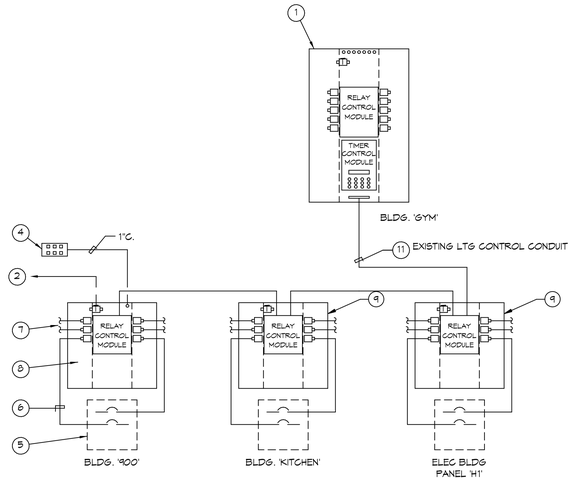

KEY NOTES:

1. EXISTING MASTER LIGHTING CONTROLLER.
2. 120 VOLT POWER CONNECTION TO CONTROL POWER TRANSFORMER.
3. PHOTOCELL MOUNTED ON ROOF, NUMBER OF CONDUCTORS AS REQUIRED BY MANUFACTURER.
4. REMOTE OVERRIDE CONTROL STATION SEE SCHEDULE FOR QUANTITY AND LOCATION.
5. BUILDING ELECTRICAL PANELBOARD.
6. PROVIDE (1) 3/4"C. AND WIRING AS REQUIRED BY MANUFACTURER FOR EVERY (3) CIRCUITS CONTROLLED FROM EACH PANEL. SEE ZONE SCHEDULE FOR QUANTITY.
7. SEE ZONE SCHEDULE FOR QUANTITY OF RELAYS REQUIRED.
8. REMOTE BUILDING LIGHTING CONTROL PANEL.
9. SEE BUILDING '900' FOR TYPICAL REMOTE BUILDING NOTES AND REQUIREMENTS.
10. PROGRAMMABLE CONTROLLER WITH PUSH BUTTON KEY PAD AND LCD ALPHANUMERIC DISPLAY. ALL RELAYS TO BE INDIVIDUALLY OR GROUP TIME SCHEDULED PER DISTRICT PROVIDED SCHEDULE. INCLUDE ASTRONOMICAL, HOLIDAY SCHEDULING AND DAYLIGHT SAVINGS PROGRAMMING.
11. PROVIDE CONTROL WIRING AS REQUIRED BY MANUFACTURER.
12. 3/4"C. AND WIRING AS REQUIRED BY MANUFACTURER TO TELEPHONE SYSTEM.
13. PROVIDE TELEPHONE INTERFACE MODULE.
14. DURING 'OFF' TIME PERIODS THE OVERRIDE STATION WHEN PUSHED WILL TURN ON THE ZONE FOR A PERIOD OF 5 HOURS.
15. PROVIDE ENGRAVED ZONE DESCRIPTION IDENTIFICATIONS FOR EACH SWITCH TO MATCH DESCRIPTION SHOWN IN ZONE SCHEDULE.'
16. PROVIDE 1"C. AND 2 # 18 FOR EACH ZONE CONTROL SWITCH PLUS 1 # 12 COMMON FOR EVERY (6) ZONE CONTROL SWITCHES. VERIFY EXACT NUMBER OF CONDUCTORS AT TIME OF SUBMITTAL. ABC = (3) ZONES AND (3) SEPARATE ON-OFF SWITCHES, AB = (2) ZONES AND (2) SEPARATE ON-OFF SWITCHES, ETC-
17. PROVIDE IN FLUSH MOUNTED BOX WITH KEY LOCKING COVER.

MASTER LIGHTING CONTROL ZONE SCHEDULE

ZONE	ZONE DESCRIPTION	BLDG. 900	BLDG. KITCHEN	PANEL H1								
		PANELBOARD CIRCUITS CONTROLLED										
A	EXTERIOR LIGHTING	DPHX-2 HWA-1	HKL-2									
B	EXTERIOR LIGHTING	DPHX-4 HWA-3	HKL-4									
C	STUDENT RESTROOMS											
D	WALKWAY LIGHTS	HAL-6		H1-10								
E	WALKWAY LIGHTS			H1-12								

AUX

REMOTE OVERRIDE CONTROL STATION

BLDG.	SWITCH LOCATED IN	ZONES CONTROLLED	CONDUIT / WIRE TO CONTROL PANEL	SWITCH IDENTIFICATION
BLDG '11'	CUSTODIAN ROOM	ALL ZONES INDIVIDUALLY	SEE NOTE 14 15 16 17	SLV-11
		A,B,C,D,E,F,G,H,S,T		

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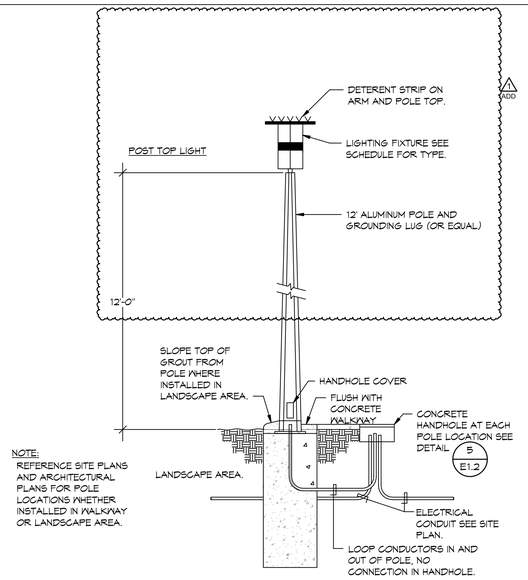
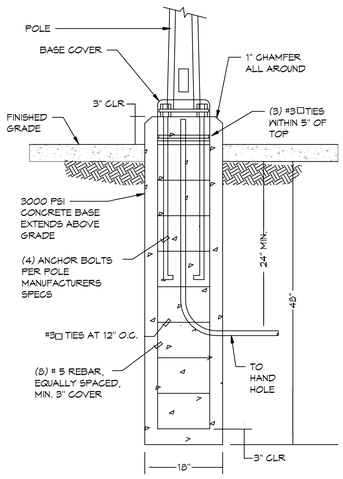
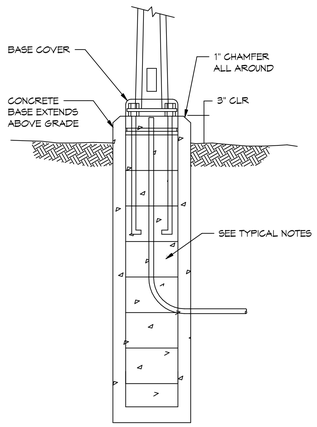




INSTALLATION AT FLATWORK



INSTALLATION AT LANDSCAPING

ALUMINUM POLE DETAIL (NOT FOR DSA REVIEW)

NO SCALE

1 / E2.7

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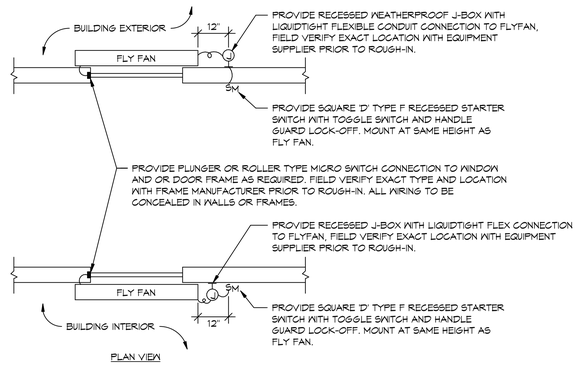


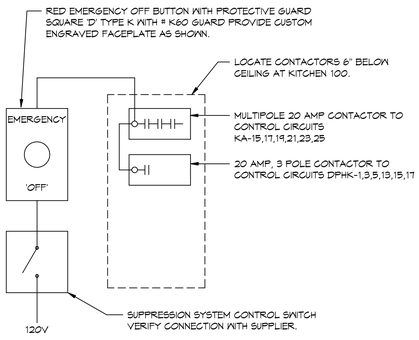
PLAN VIEW

NOTES:
1. REFERENCE KITCHEN AND OR MECHANICAL PLANS FOR FAN LOCATIONS, AND REFERENCE ARCHITECTURAL PLANS FOR DOOR OR WINDOW TYPE.

FLY FAN CONNECTION DETAIL

NO SCALE

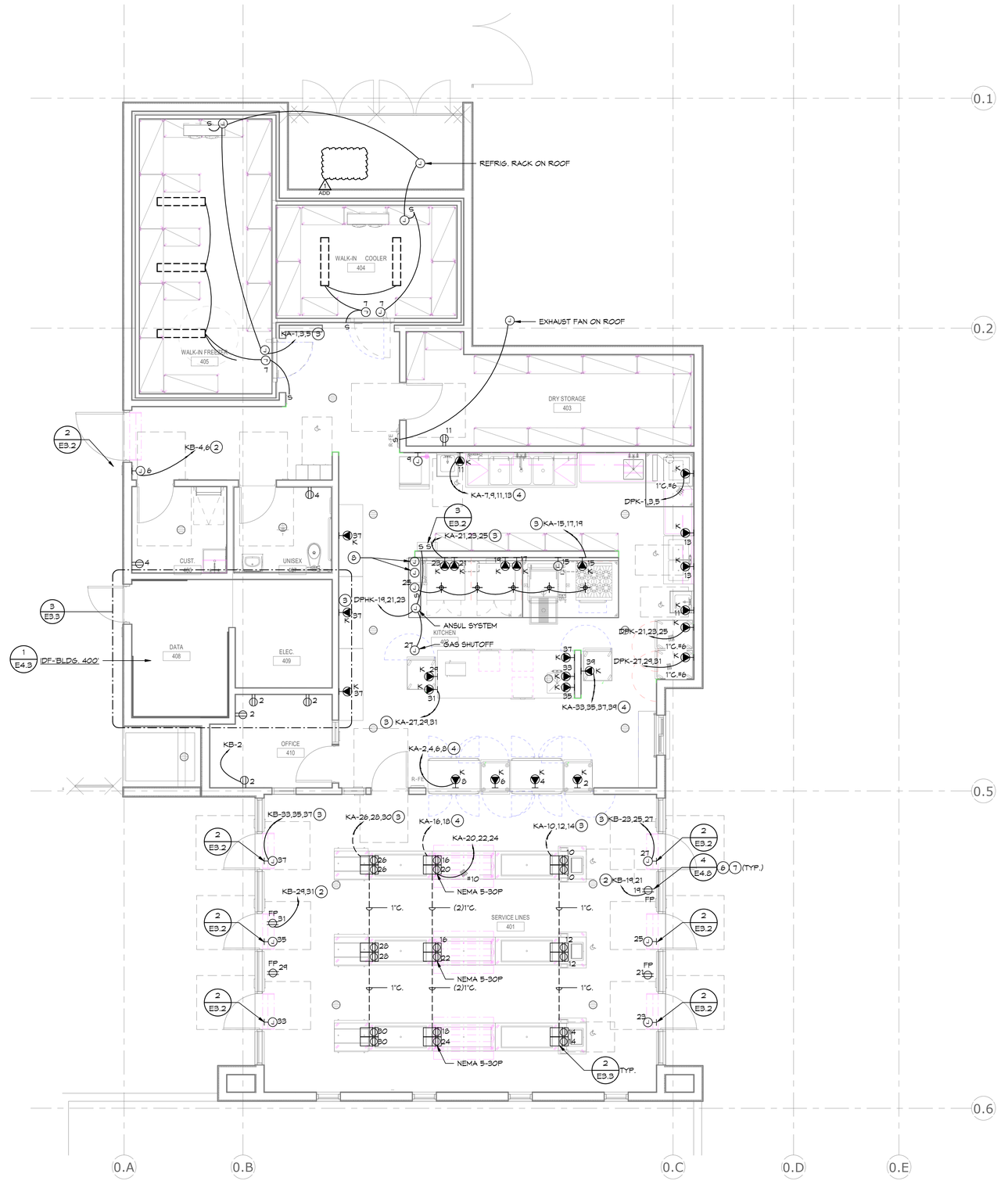
2 / E3.2



KITCHEN EMERGENCY SHUTOFF DIAGRAM HOOD

NO SCALE

3 / E3.2



GENERAL NOTES:

1. REFERENCE FOODSERVICE DRAWINGS FOR ALL DEVICE HEIGHTS.
2. ALL GENERAL USE RECEPTACLES SHALL BE GFCI TYPE IN KITCHEN AREAS.
3. VERIFY ALL LOCATIONS AND REQUIREMENTS WITH FOODSERVICE DRAWINGS.
4. REFER TO FOODSERVICE DRAWINGS FOR ADDITIONAL ELECTRICAL REQUIREMENTS.
5. REFERENCE ARCHITECTURAL INTERIOR ELEVATIONS FOR EXACT LOCATION OF ALL WALL MOUNTED POWER DEVICES WHERE INDICATED AT MOUNTING HEIGHTS OTHER THAN +15".
6. REFERENCE SHEET E6 SERIES SHEETS FOR MECHANICAL EQUIPMENT SCHEDULE.
7. REFERENCE E3 AND E8 SERIES SHEETS FOR TYPICAL CONDUIT AND BACKBOX INSTALLATION DETAILS.
8. NUMBERS ADJACENT TO EACH POWER DEVICE INDICATES THE CIRCUIT NUMBER TO WHICH THE DEVICE IS TO BE CONNECTED.
9. CIRCUIT HOMERUNS ARE INDICATED TO SHOW THE LOCATION AND NUMBER OF CIRCUITS TO BE GROUPED TOGETHER.
10. PROVIDE MINIMUM 3/4" CONDUIT AND #12 CIRCUIT CONDUCTORS AS REQUIRED TO CONNECT EACH POWER DEVICE TO THEIR INDICATED CIRCUIT (U.O.N.).

KEY NOTES:

1. FIELD VERIFY EXACT LOCATION PRIOR TO ROUGH-IN.
2. 2 #12 (HOT), 1 #10 (NEUTRAL), 1 #12 (GND), 3/4"C.
3. 3 #12 (HOT), 1 #10 (NEUTRAL), 1 #12 (GND), 3/4"C.
4. 4 #12 (HOT), 2 #10 (NEUTRAL), 1 #12 (GND), 3/4"C.
5. FIELD VERIFY EXACT ROUTING LOCATION FOR CONCEALED CONDUITS AND RECEPTACLES PRIOR TO ROUGH-IN.
6. PROVIDE RECEPTACLE MOUNTED FLUSH IN CEILING.
7. REFER TO MENU BOARD FLAT PANEL DETAIL FOR ELECTRICAL OUTLET REQUIREMENTS AT CEILING MOUNTED FLAT PANEL — 4 / E4.8
8. PROVIDE POWER CONNECTION UP TO ROOF FOR EXHAUST FAN AND MUA. EXHAUST & MUA TO BE INTERLOCKED TO TURN ON WITH A SINGLE SWITCH. SEE ROOF PLANS FOR CIRCUITING INFORMATION FOR EXHAUST FAN AND MUA.

KITCHEN FLOOR PLAN - POWER

SCALE: 1/4" = 1'-0" | REF: / | 1

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GHS KITCHEN & WEIGHTROOM MOD
GROSSMONT HIGH SCHOOL
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GROSSMONT UNION HIGH SCHOOL

KITCHEN FLOOR PLAN - POWER

E3.2

1-30-55

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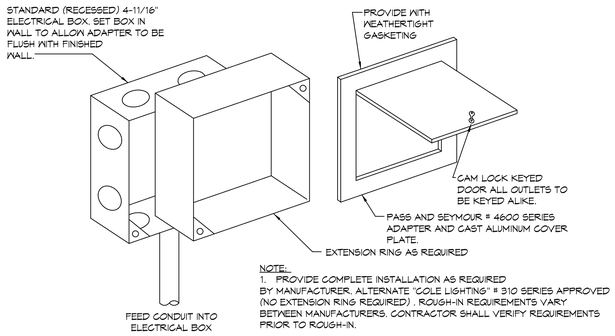
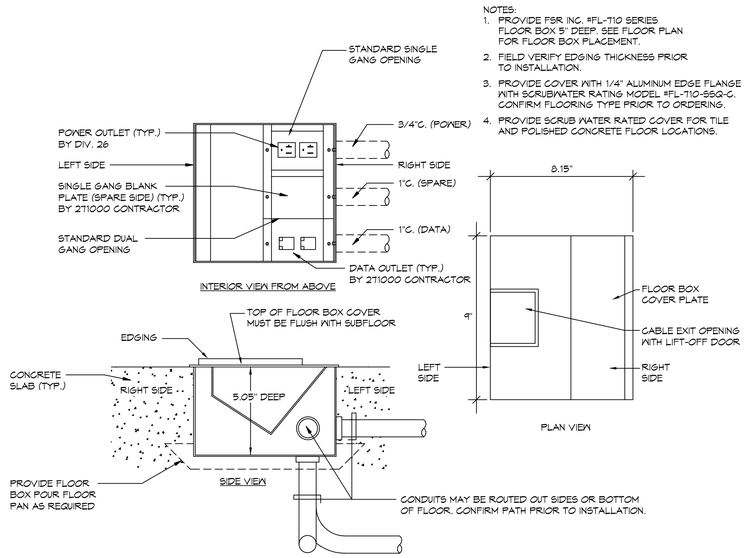


TYPICAL WEATHERPROOF/LOCKING RECEPTACLE COVER

NO SCALE

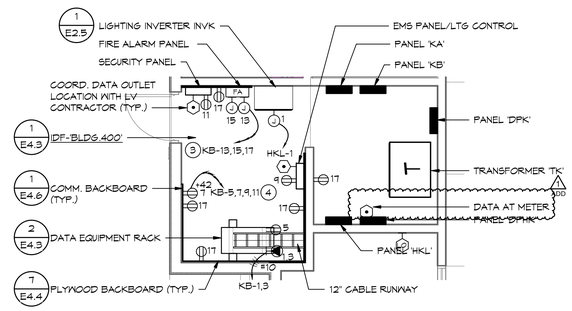
1 / E3.3



TYPICAL FLOOR BOX

NO SCALE

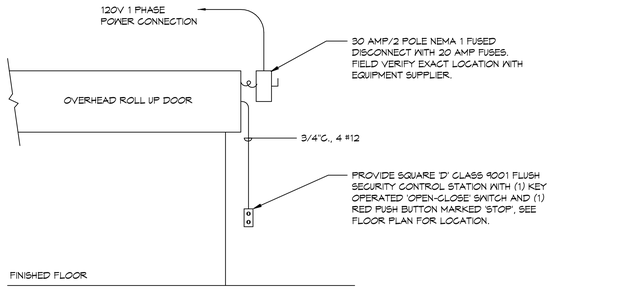
2 / E3.3



ENLARGED FLOOR PLAN - KITCHEN IDF/ELECTRICAL ROOMS

SCALE: 1/4" = 1'-0"
REF.: 1/E3.2

3



ROLL-UP WIRING DIAGRAM

NO SCALE

4 / E3.3

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BACKBOX AND RING LEGEND

TYPE	DESCRIPTION
'B1'	4 11/16" square 2 1/8" deep box with single gang ring.
'B2'	4 11/16" square 2 1/8" deep box with dual gang ring.
'B3'	4" square 1 1/2" deep box with single gang ring.
'B4'	Single gang box, 2 1/8" deep.
'B5'	4-11/16" Square 3" deep box with dual gang ring.

'C1'	Provided by 27 10 00 contractor.
'C3'	Provided by 27 20 00 contractor.
'C5'	Provided by 28 13 00 contractor.
'C6'	Provided by 28 23 00 contractor.
'CT'	Provided by xx xx xx contractor.

FACEPLATE LEGEND

TYPE	DESCRIPTION
'AR'	As required to accommodate the number of ports designated.
'BP'	Blank faceplate.
'BP/WP'	Blank faceplate - weather-proof with gasket.

'C1'	Provided by 27 10 00 contractor.
'C3'	Provided by 27 20 00 contractor.
'C5'	Provided by 28 13 00 contractor.
'C6'	Provided by 28 23 00 contractor.
'CT'	Provided by xx xx xx contractor.

CONDUIT / RACEWAY LEGEND

TYPE	DESCRIPTION
'3/4-S'	3/4" conduit stubbed from box into accessible ceiling space, unless detailed otherwise on drawings.
'1-S'	1" conduit stubbed from box into accessible ceiling space, unless detailed otherwise on drawings.
'1 1/4-S'	1 1/4" conduit stubbed from box into accessible ceiling space, unless detailed otherwise on drawings.

TECHNOLOGY SYMBOL LEGEND

SYMBOL	DESCRIPTION	BACKBOX & RING	FACE PLATE	CONDUIT / RACEWAY
	Single port data outlet, +18" A.F.F. *(U.O.N.)*	Type 'B1'	Type 'AR'	Type '1-S'
2P	Dual port data outlet, +18" A.F.F. *(U.O.N.)*	Type 'B1'	Type 'AR'	Type '1-S'
3P	Triple port data outlet, +18" A.F.F. *(U.O.N.)*	Type 'B1'	Type 'AR'	Type '1-S'
4P	Quad port data outlet, +18" A.F.F. *(U.O.N.)*	Type 'B1'	Type 'AR'	Type '1-S'
2P (2)	Audio-visual local origination (AV) with dual port data outlet (D) @+18" A.F.F. *(U.O.N.)*	Type 'B1' (D/V) Type 'B5' (LO) side by side. (1)	Type 'AR' (D/V) Type 'C3' (LO)	Type '1-S' (D/V) Type '1 1/4-S' (LO)
	Same device as required on legend, mounted +6" above backsplash *(U.O.N.)*	Same as required for device indicated on legend.	Same as required for device indicated on legend.	Same as required for device indicated on legend.
S	Same device as required on legend, except surface mounted box.	Same as required for device indicated on legend.	Same as required for device indicated on legend.	Same as required for device indicated on legend.
2P LCD	Dual port data outlet, mounted in ceiling at projector location.	Type 'B1' Provide Box with Ceiling Grid Hangar.	Type 'AR'	Type '1-S' Not required in accessible ceiling.
2P AV	Dual port data outlet for Audio-Visual equipment in accessible ceiling.	Type 'B1' Provide Box with Ceiling Grid Hangar	Type 'C1'	Type '3/4-S'
2P AV	Dual port data outlet for Audio-Visual Equipment. Wall mounted. See AV Details for outlet location.	Type 'B1'	Type 'C1'	Type '1-S'
AR 2P	Dual port data outlet at wireless access point location mounted in accessible ceiling *(U.O.N.)* ADD 7	Type 'C1' See Detail 1 E4.7	Type 'C1' See Detail 1 E4.7 ADD 7	Not required in accessible ceiling.
AR 2P	Dual port data outlet at wireless access point wall mounted @+8'-0" AFF *(U.O.N.)* ADD 7	Type 'B1' See Detail 1 E4.7	Type 'C1' ADD 7	Type '1-S'
2P WAP AR (2)	Dual port data outlet for exterior WAP Location & height per floor plans. See detail for additional requirements. ADD 6	Type 'B1' See Detail 3 E4.7	Type 'C1' See Detail 3 E4.7 ADD 6	Type '1-S' Not required in accessible ceiling.
(2)	Audio-Visual Control Panel outlet with single port data outlet @+48" A.F.F. *(U.O.N.)* Refer to Drawing Details.	Type 'B1'	Type 'C3'	Type '1-S'
2P FP (2)	Wall mounted flat panel monitor location with dual port data outlet and AV wall plate @ height per detail drawings.	See Detail 2 E4.8	See Detail 2 E4.8	Type '1-S' (D) Type '1-1/4S' (A/V)
2P FP (2)	Ceiling mounted flat panel monitor location with dual port data outlet. See detail for additional requirements.	See Detail 4 E4.8	See Detail 4 E4.8	Type '1-S' (D) Type '1-1/4S' (A/V)
S AV	Audio-visual system speaker ceiling mounted	Not Required	Type 'C3'	Type '3/4-S' Not required in accessible ceilings.
S AV	Audio-visual system speakers wall mounted @+8'-0" AFF *(U.O.N.)*	Type 'B1'	Type 'C3'	Type '3/4-S'
LCD	Ceiling mounted projector per drawing details. See Details For accessible and non-accessible ceilings. 2 E4.9 1 E4.10	Type 'B2' Not required in accessible ceiling	Type 'C3'	Type '1-1/4-S' Not required in accessible ceiling

COMMUNICATION / SECURITY SYMBOL LEGEND

SYMBOL	DESCRIPTION	BACKBOX & RING	FACE PLATE	CONDUIT / RACEWAY
W (2)	Telephone outlet with staff type phone, +18" A.F.F. *(U.O.N.)* *(W indicates wall mount at +48" A.F.F.)* Height per detail 1/E1.0	Type 'B3'	Type 'C1'	Type '3/4-S'
W FM (2)	Direct Phone Trunk outlet, +18" A.F.F. *(U.O.N.)* *(W indicates wall mount at +48" A.F.F.)*	Type 'B3'	Type 'C1'	Type '3/4-S'
S A	IP-based Intercom Speaker recessed in ceiling. A=Page Zone	Type 'C1' (3)	Type 'C1' (3)	Type '3/4-S'
S A	IP-based Intercom Speaker recessed in wall, +8'-0" A.F.F *(U.O.N.)* A=Page Zone	Type 'C1', installed by electrical contractor. ADD 3	Type 'C1'	Type '3/4-S'
S A	IP-based Intercom Speaker, surface mount on interior wall, +8'-0" A.F.F *(U.O.N.)* A=Page Zone	Type 'B3' (3)	Type 'C1' (3)	Type '3/4-S'
B S	Analog Intercom Horn recessed in exterior wall @ +8'-0" AFF *(U.O.N.)* B=Page Zone	Type 'C1' (4)	Type 'C1' (4)	Type '3/4-S'
VC	Volume control for intercom system, mounted at +48" A.F.F. *(U.O.N.)* Minimum Height per detail 1/E1.0	Type 'B3'	Type 'C4'	Type '3/4-S'
C WG	Clock wall mounted at, +8'-0" A.F.F *(U.O.N.)*. *(WG indicates wiregaurd)*	Not required.	Not required.	Not required.
A S C WG (2)	IP-based Clock/Speaker combination recessed in wall +8'-0" A.F.F *(U.O.N.)*. *(WG indicates wiregaurd)* A=Page Zone	Type 'C1' installed by electrical contractor. See Detail 6 E4.7 (4)	Type 'C1' (4)	Type '3/4-S'
A	Sound system speaker surface mounted, height per plans *(U.O.N.)*. ('A' equals speaker type, see specifications for complete description)	Type 'B1'	Type 'C3'	Type '1-S'
A	Sound system speaker ceiling mounted, ('A' equals speaker type, see specifications for complete description)	Type 'C3'	Type 'C3'	Type '1-S'
M WP 2	Microphone outlet wall mounted at +18" A.F.F.*(U.O.N.)*. Number indicates quantity of outlets. 'WP' indicates weatherproof enclosure.	Type 'B1'	Type 'C3'	Type '1-S'
M F 2	Same device as required on legend, except in floor box. Number indicates quantity of outlets.	Floorbox per E9 series drawings.	Same as required for device indicated on legend.	Same as required for device indicated on legend.
M C 2	Same device as required on legend, except mounted in ceiling. Number indicates quantity of outlets.	Same as required for device indicated on legend.	Same as required for device indicated on legend.	Same as required for device indicated on legend.
K A	Security keypad wall mounted at +48" A.F.F *(U.O.N.)* Height per detail 1/E1.0 A=Letter Equals Zone	Type 'B2'	Type 'C5'	Type '3/4-S'
A	Security motion sensor ceiling mounted. A=Letter Equals Zone	Type 'B3'	Type 'C5'	Type '3/4-S'
A	Security motion sensor wall mounted at 6" below ceiling, or +10'-0" A.F.F. *(U.O.N. whichever is lower.* A=Letter Equals Zone	Type 'B3'	Type 'C5'	Type '3/4-S'
A	Security door contact. A=Letter Equals Zone	Type 'B3'	Type 'C5'	Type '3/4-S'
(5)	Wall mounted exterior security camera with dual port data outlet. Height per floor plans.	Type 'B1'	Type 'BP/WP' by 282300 contractor	Type '1-S'
C (5)	Ceiling mounted interior security camera with dual port data outlet. Height per floor plans.	Type 'B1'	Type 'C1'	Type '1-S'
C (5)	Wall mounted security camera with dual port data outlet. Height as shown on floor plans.	Type 'B1'	Type 'C1'	Type '1-S'
J	J-Box for Future Low-Voltage Devices @+18" AFF *(U.O.N.)*	Type 'B1'	Blank Plate Color to Match	Type '1-S'
	Conduit sleeve through wall, above accessible ceiling. 7 E4.6 8 E4.6	Not required.	Not required.	(1) 3"C. for open low voltage wiring.
2"C.	Conduit sleeve through wall, above accessible ceiling. 7 E4.6 8 E4.6	Not required.	Not required.	(1) Conduit for open low voltage wiring, size as indicated.
(2) 2"C.	Conduit sleeve through wall, above accessible ceiling. 7 E4.6 8 E4.6	Not required.	Not required.	Multiple Conduits for open low voltage wiring, size and quantity as indicated.
	Conduit stubbed above accessible ceiling.	Not required.	Not required.	Conduit for open low voltage wiring. Refer to legend for size.
1 1/2"C.	Conduit stubbed above accessible ceiling.	Not required.	Not required.	(1) conduit for open low voltage wiring. size as indicated.
(2) 1"C.	Conduit stubbed above accessible ceiling.	Not required.	Not required.	Conduit for open low voltage wiring. size and quantity as indicated.

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GENERAL NOTES:

1. ALL CONDUITS WHICH ARE REQUIRED AS A PART OF SYSTEMS SPECIFIED FOR COMMUNICATIONS, TELEPHONE, INTERCOM, CLOCK FIRE ALARM, SECURITY, SOUND SYSTEMS, DATA NETWORKING, OR AUDIO-VISUAL SYSTEMS SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR.
2. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL CONDUIT REQUIREMENTS WITH EACH SYSTEM SUPPLIER PRIOR TO BID TO DETERMINE SPECIAL CONDUIT SYSTEM REQUIREMENTS.
3. THE ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUIT SLEEVES FOR ALL OPEN CABLE INSTALLATIONS THROUGH RATED WALLS, BLOCK WALLS AND WHERE SHOWN ON THE DRAWINGS. PROVIDE CONDUIT FROM EACH BUILDING MAIN TERMINATION CABINET OR BACKBOARD TO THE NEAREST ACCESSIBLE CEILING FOR ACCESS INTO ALL ELECTRICAL OR COMMUNICATIONS ROOMS.
4. ALL CONDUIT, BOXES, AND RINGS SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR.
5. ALL BLANK PLATES SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR. (UNLESS OTHERWISE NOTED)
6. ALL CONDUITS SHALL BE FURNISHED WITH PULL STRINGS BY ELECTRICAL CONTRACTOR. COMMUNICATION CONTRACTOR TO PROVIDE POLYARAMID PULL TAPE WITH NEW CABLING INTO ALL CONDUITS BETWEEN BUILDINGS. SEE SPECIFICATIONS FOR REQUIREMENTS.
7. CONTRACTOR TO REVIEW ARCHITECTURAL CEILING PLANS TO DETERMINE LOCATIONS OF ACCESSIBLE CEILINGS PRIOR TO BID.
8. (271000) NUMBERS INDICATE MATCHING SPECIFICATION SECTION RESPONSIBLE FOR THIS WORK.
9. IN ADDITION TO THE ABOVE REQUIREMENTS, THE FOLLOWING REQUIREMENTS SHALL APPLY TO ALL DATA/VOICE, PAGING, AUDIO-VISUAL, SECURITY AND CLOCK CONDUITS:
10. FLEXIBLE METAL CONDUIT MAY BE USED ONLY WHERE REQUIRED AT BUILDING SEISMIC AND/OR EXPANSION JOINTS.
11. ALL UNDERGROUND CONDUITS SHALL BE PROVIDED WITH MINIMUM 24" RADIUS ELBOWS.
12. NO LENGTH OF CONDUIT SHALL BE INSTALLED TO EXCEED 150 FEET BETWEEN PULL BOXES, OR POINTS OF CONNECTION, UNLESS WHERE SPECIFICALLY DETAILED ON THE DRAWINGS.
13. NO LENGTH OF CONDUIT SHALL BE INSTALLED TO EXCEED TWO 90 DEGREE BENDS BETWEEN PULL BOXES, OR POINTS OF CONNECTION, UNLESS WHERE SPECIFICALLY DETAILED ON THE DRAWINGS.

KEY NOTES:

1. JUNCTION BOXES FOR VOICE/DATA AND AUDIO-VISUAL CONNECTIONS MUST BE SEPARATE. AUDIO-VISUAL JUNCTION BOX OR BOXES SHALL BE FURNISHED AS SHOWN IN THE DRAWING DETAILS. PROVIDE (1) OR (2) TYPE 'B2' PER DETAILS.
2. VOICE/DATA CABLING AND FACEPLATE FOR SYMBOL FURNISHED AND INSTALLED BY 271000 CONTRACTOR.

ADD
3. SPEAKER BACKBOX AND DEVICE TO BE FURNISHED BY 271000 CONTRACTOR. BACKBOX INSTALLED AS NOTED.
4. SPEAKER, SPEAKER/CLOCK OR HORN BACKBOX TO BE FURNISHED BY 271000 CONTRACTOR. BACKBOX TO BE INSTALLED AS NOTED. IP-CLOCK/SPEAKER DISTRICT FURNISHED AND INSTALLED.

ADD
5. CAMERA LOCATIONS SHALL BE FURNISHED WITH (2) DATA CABLES TERMINATED ON SURFACE MOUNT JACK INSTALLED IN JUNCTION BOX. DATA CONNECTIONS FURNISHED AND INSTALLED BY 271000 CONTRACTOR. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

ADD
6. EXTERIOR WAP FURNISHED BY DISTRICT, INSTALLED BY 271000 CONTRACTOR.
7. INTERIOR WAP FURNISHED AND INSTALLED BY DISTRICT. PROVIDE DATA OUTLET ABOVE CEILING BY 271000 CONTRACTOR.

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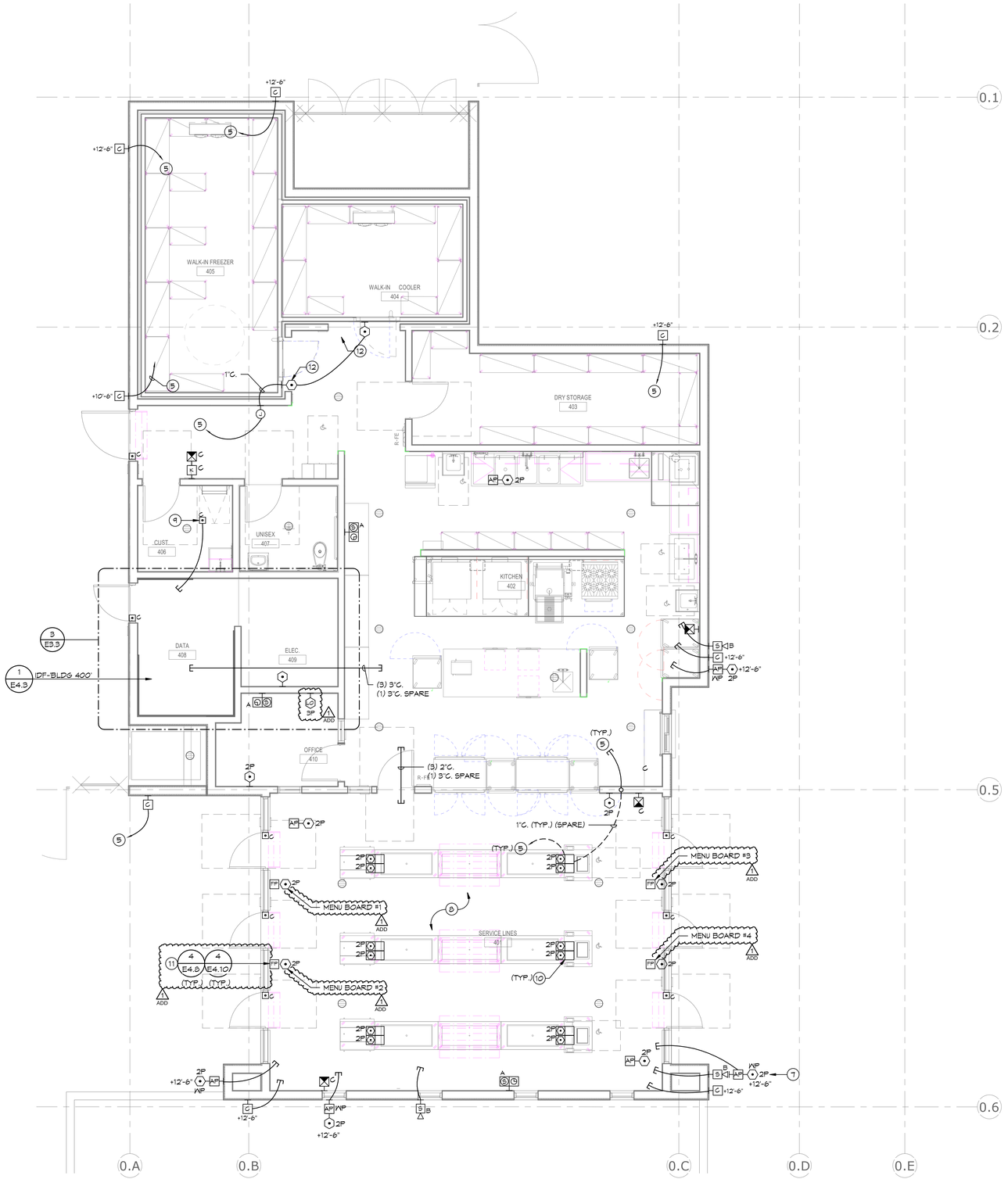

KITCHEN FLOOR PLAN - COMMUNICATIONS

SCALE: 1/4" = 1'-0"
REF: /
1

NORTH

GENERAL NOTES:

1. REFERENCE ARCHITECTURAL INTERIOR ELEVATIONS FOR EXACT LOCATION OF ALL WALL MOUNTED DEVICES.
2. REFERENCE E4 AND E8 SERIES SHEETS FOR TYPICAL CONDUIT AND BACKBOX INSTALLATION DETAILS.
3. REFERENCE E4 SERIES SHEETS FOR TYPICAL COMMUNICATION SYSTEMS RISER DIAGRAM.
4. REFERENCE RISER DIAGRAMS FOR TYPICAL CONDUIT SIZES AND ROUTINGS.
5. LOCATION OF PROJECTOR AND OTHER AUDIO-VISUAL EQUIPMENT IS DIAGRAMMATICAL. EXACT LOCATION OF EQUIPMENT TO BE FIELD VERIFIED PRIOR TO INSTALLATION. LOCATION OF PROJECTOR AND PROJECTOR MOUNT TO BE COORDINATED WITH LOCATION OF SCREEN.
6. REFER TO AUDIO-VISUAL SYSTEM DIAGRAMS FOR ADDITIONAL REQUIREMENTS, FOR JUNCTION BOX LOCATIONS, TYPES AND SIZES.

KEY NOTES:

1. 3/4"C. TO BUILDING COMMUNICATIONS BACKBOARD.
2. 1"C. TO BUILDING COMMUNICATIONS BACKBOARD.
3. 1 1/4"C. TO BUILDING COMMUNICATIONS BACKBOARD.
4. 3/4"C. TO BUILDING 'IDF' LOCATION.
5. 1"C. TO BUILDING 'IDF' LOCATION.
6. 1 1/4"C. TO BUILDING 'IDF' LOCATION.
7. MOUNT EXTERIOR WAP ABOVE EXTERIOR SPEAKER AT HEIGHT NOTED.
8. DRESS CABLES UP TIGHT TO BOTTOM OF ROOF JOIST DECK IN OPEN GRID CEILING AREA - SERVICE LINES ROOM #401.
9. DOOR CONTACT AT ROOF HATCH.
10. FLOOR BOX FOR POS CONNECTION ON SERVING LINES. REFER TO FOOD SERVICE FLOOR PLANS FOR SERVICE LINE EQUIPMENT. ROUTE DATA CONDUIT TO IDF CLOSET AND SPARE CONDUIT TO NEAREST ACCESSIBLE CEILING. REFER TO FLOOR BOX DETAIL FOR ADDITIONAL REQUIREMENTS.
11. CEILING MOUNTED MENU BOARD. PROVIDE FLAT PANEL MOUNT AND SUPPORT POST TO DECK ABOVE. REFER TO DRAWING DETAILS AND SPECIFICATIONS FOR REQUIREMENTS.
12. DATA OUTLET FOR TEMP/ENVIRONMENTAL SENSOR FOR FREEZER/COOLER MONITORING SYSTEM. CONFIRM EXACT LOCATION PRIOR TO INSTALLATION WITH CONSTRUCTION MANAGER. DATA MAY BE EITHER INSIDE OR OUTSIDE FREEZER/COOLER.

REGISTERED PROFESSIONAL ENGINEER — JEFFREY L. JOHNSON — No. E 14781 — Exp. 6-30-2023 — ELECTRICAL — STATE OF CALIFORNIA

LICENSED ARCHITECT — ROGER "CLARKE" RUHNAU — No. C-30784 — Exp. 10-31-2023 — STATE OF CALIFORNIA

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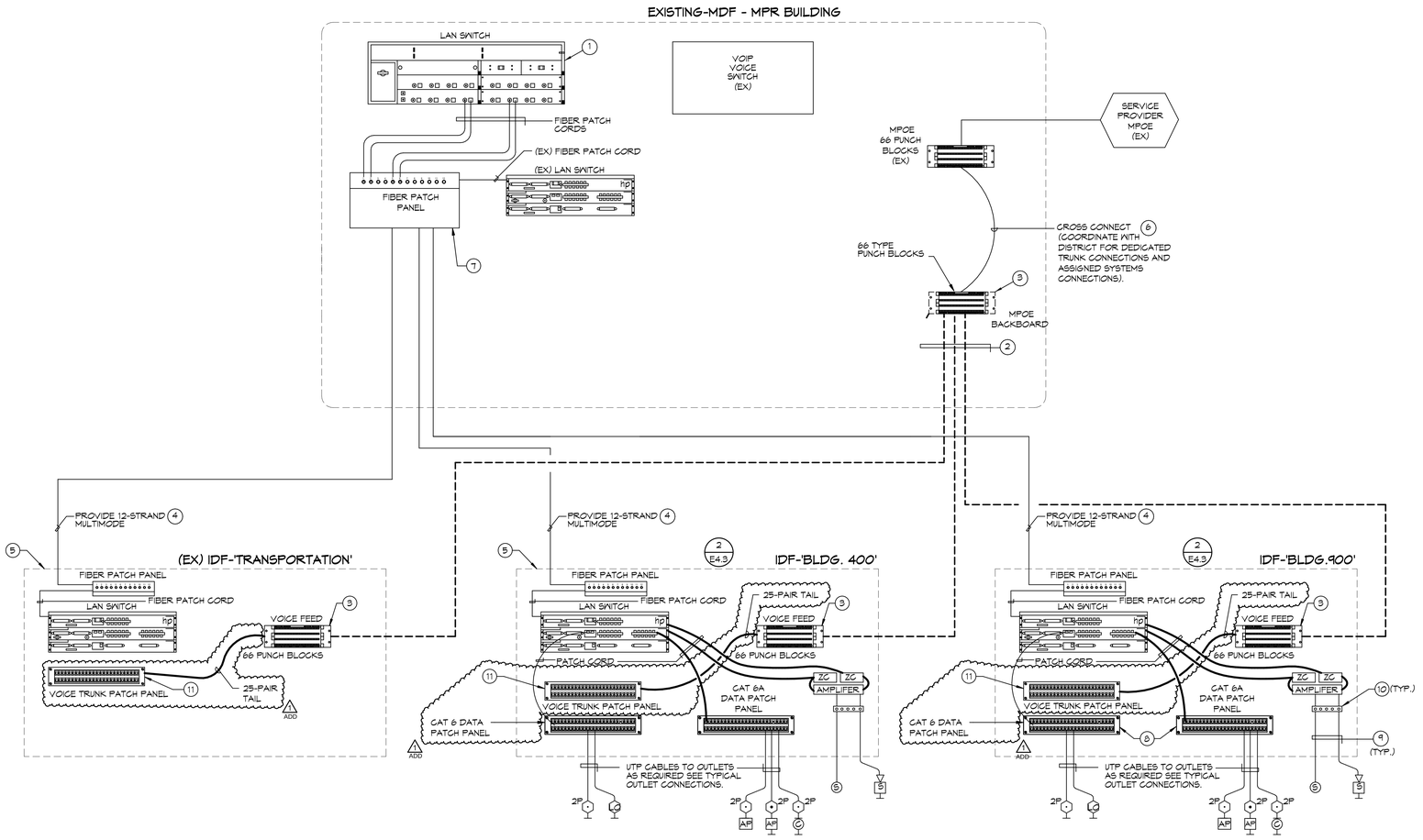
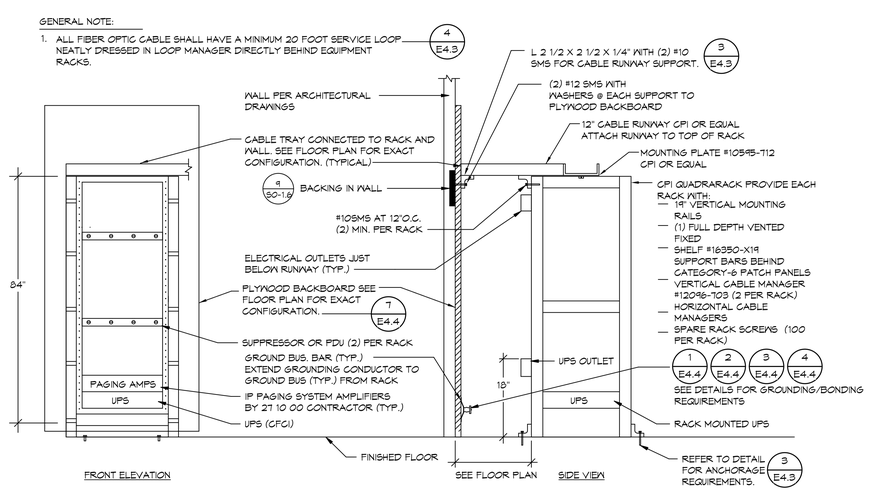
KITCHEN FLOOR PLAN - COMMUNICATIONS

E4.2

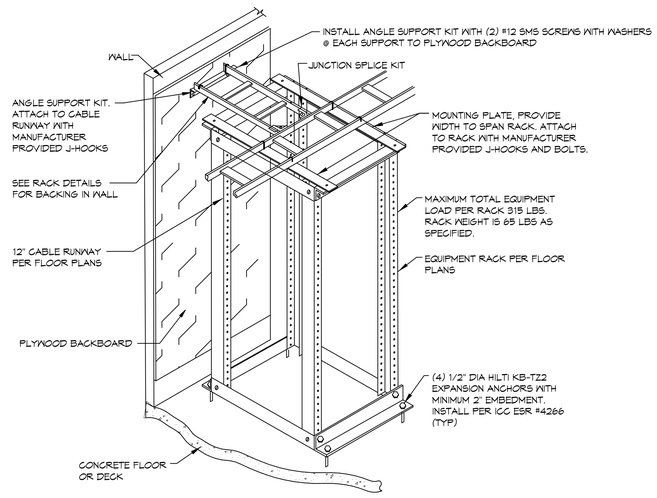
1-30-55



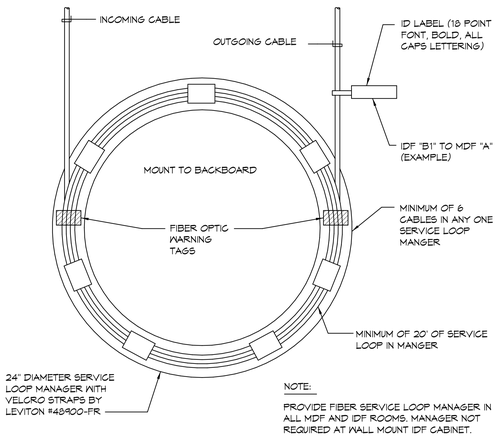
VOICE/DATA INFRASTRUCTURE RISER DIAGRAM (1 / E4.3)
NO SCALE



DATA DISTRIBUTION FRAME DETAIL - IDF ROOM SINGLE RACK DETAIL (2 / E4.3)
NO SCALE



4-POST EQUIPMENT RACK ANCHORAGE DETAIL (3 / E4.3)
NO SCALE



TYPICAL FIBER OPTIC FEED SERVICE LOOP DETAIL (4 / E4.3)
NO SCALE

GENERAL NOTES:

1. UNLESS OTHERWISE NOTED ALL ITEMS ARE TO BE FURNISHED AND INSTALLED BY 271500 CONTRACTOR.
2. ALL CONDUITS, POWER OUTLETS AND GROUNDING CONNECTIONS, BACKBOARDS TO BE PROVIDED BY ELECTRICAL CONTRACTOR.
3. REFERENCE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS, AND FLOOR PLANS FOR ADDITIONAL EQUIPMENT ITEMS REQUIRED, AND THEIR LOCATIONS.
4. WHERE OPEN CONDUCTORS ARE INSTALLED ABOVE ACCESSIBLE CEILINGS, ALL CONDUCTORS SHALL BE NEATLY BUNDLED TOGETHER AND SUPPORTED FROM ROOF STRUCTURE. WHERE BUNDLED WITH OTHER COMMUNICATION SYSTEMS, IDENTIFYING TAGS SHALL BE PROVIDED TO IDENTIFY THESE CONDUCTORS FROM OTHER SYSTEMS.
5. CONTRACTOR TO COORDINATE QUANTITY, SIZE AND LOCATION OF CONDUIT SLEEVES THRU RATED WALLS WITH ELECTRICAL CONTRACTOR PRIOR TO BID. ELECTRICAL CONTRACTOR SHALL PROVIDE CONDUIT SLEEVES AND FIRE PENETRATION SEAL AFTER CABLES ARE INSTALLED.

KEY NOTES:

1. DISTRICT FURNISHED AND INSTALLED.
2. PROVIDE 25-PAIR OSP-RATED VOICE FEED CABLE.
3. TERMINATE VOICE FEED CABLE AT COMMUNICATIONS BACKBOARD OR COMMUNICATIONS CABINET. REFER TO FLOOR PLANS FOR ADDITIONAL INFORMATION.
4. PROVIDE MULTIMODE 50/125UM, LASER OPTIMIZED, OM4 FIBER OPTIC FEED CABLE. TERMINATE ALL FIBERS IN PATCH PANEL. PROVIDE QUANTITY AS NOTED. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
5. SEE BLDG. 900 FOR TYPICAL NOTES.
6. CONTRACTOR SHALL FURNISH ALL TRUNK CROSS CONNECTIONS AND CABLING TO SYSTEMS AND LOCATIONS REQUIRING DIRECT TRUNK LINES. CONNECTIONS SHALL BE PROVIDED TO FIRE ALARM, SEGURITY, ELEVATORS, ETC.
7. PROVIDE NEW FIBER OPTIC PATCH PANELS IN MDF TO ACCOMODATE NEW FIBER OPTIC FEED CABLING.
8. PROVIDE RACK MOUNTED 48-PORT CATEGORY-6 AND 6A PATCH PANEL INSIDE IDF/MDF COMMUNICATIONS RACK AS NEEDED. SEE RACK DETAIL DRAWING FOR ADDITIONAL REQUIREMENTS. PROVIDE 20% SPARE PORT.
9. PROVIDE CABLING FROM AUDIO AMPLIFIERS TO PAGING SYSTEM SPEAKER.
10. PROVIDE SPEAKER TERMINAL STRIP FOR ANALOG SPEAKER.
11. PROVIDE 1-PAIR RJ45 VOICE TRUNK PATCH PANEL IN IDF RACK. PROVIDE MALE 25-PAIR AMPHENOL TAIL FROM PATCH PANEL TO 66 BLOCK FOR VOICE FEED CABLE. SEE DETAIL 3/E4.10. SEE SPECIFIC LOCATIONS FOR ADDITIONAL REQUIREMENTS. ADD

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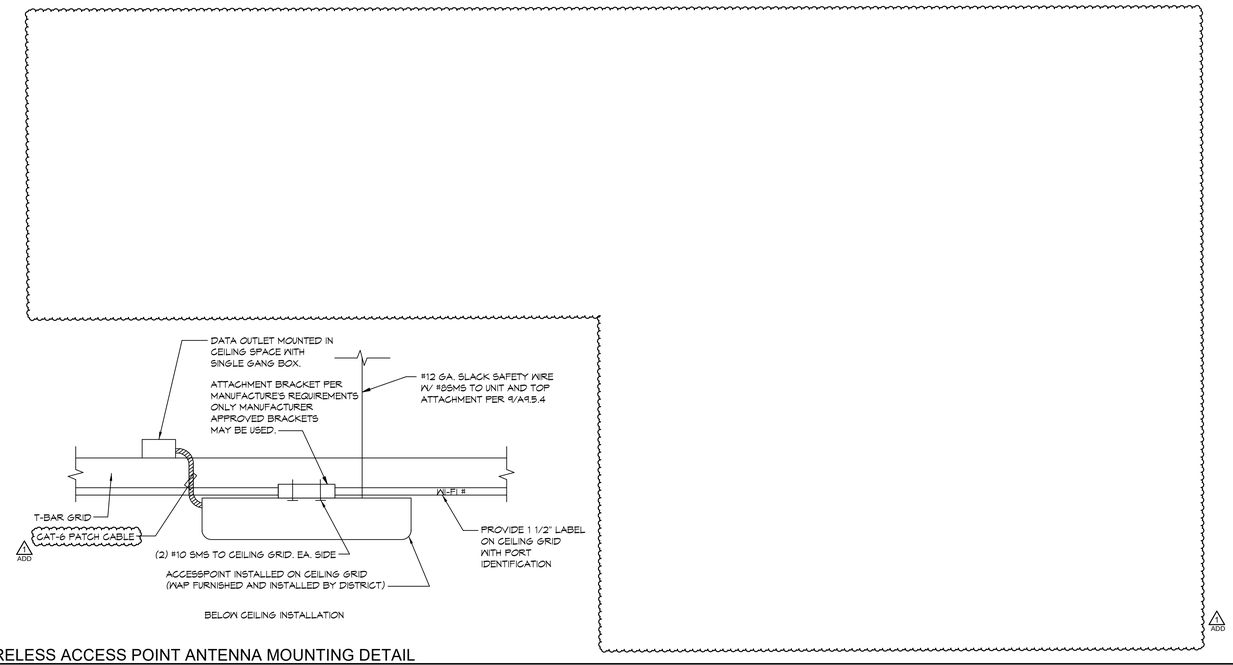
VOICE/DATA RISER DIAGRAM AND DETAILS

E4.3

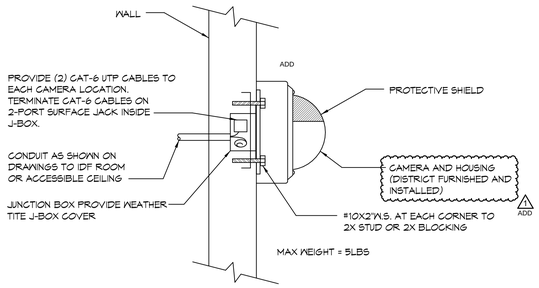
1-30-55



WIRELESS ACCESS POINT ANTENNA MOUNTING DETAIL

NO SCALE

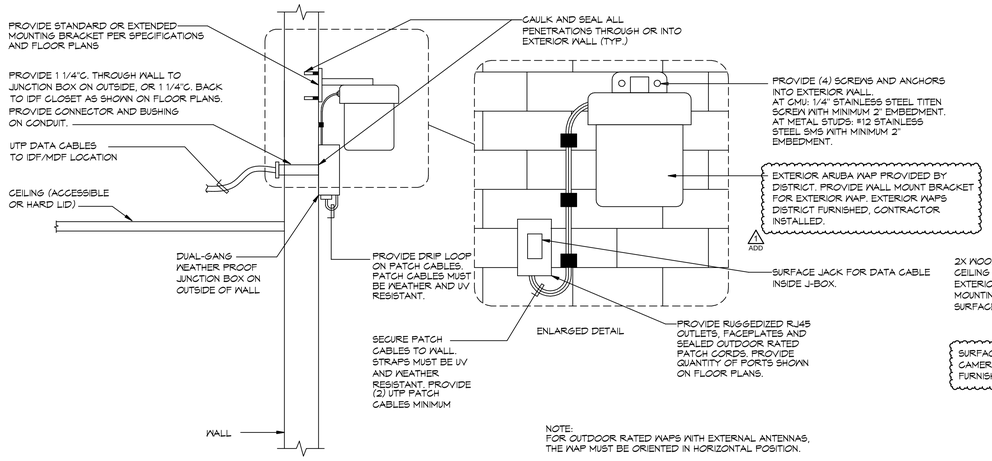
1 E4.7



WALL MOUNTED CAMERA DETAIL - DOME CAMERA

NO SCALE

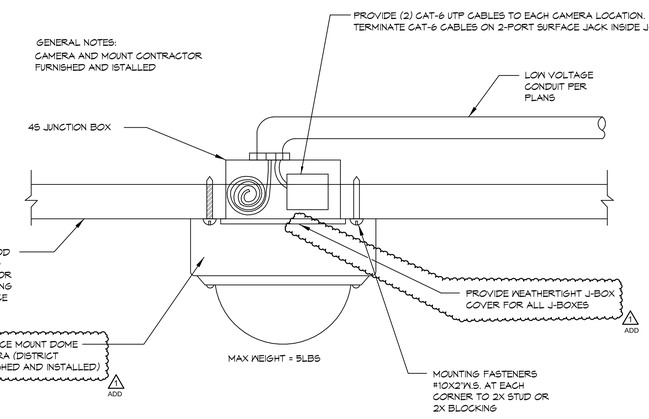
2 E4.7



EXTERIOR OUTDOOR RATED WIRELESS ACCESS POINT MOUNTING DETAILS

NO SCALE

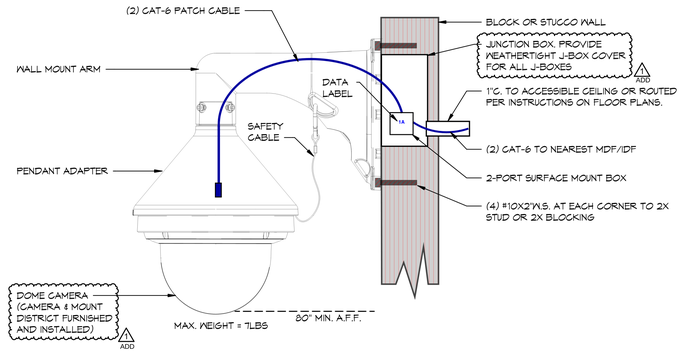
3 E4.7



SURFACE MOUNTED INTERIOR/EXTERIOR CEILING MOUNT CAMERA

NO SCALE

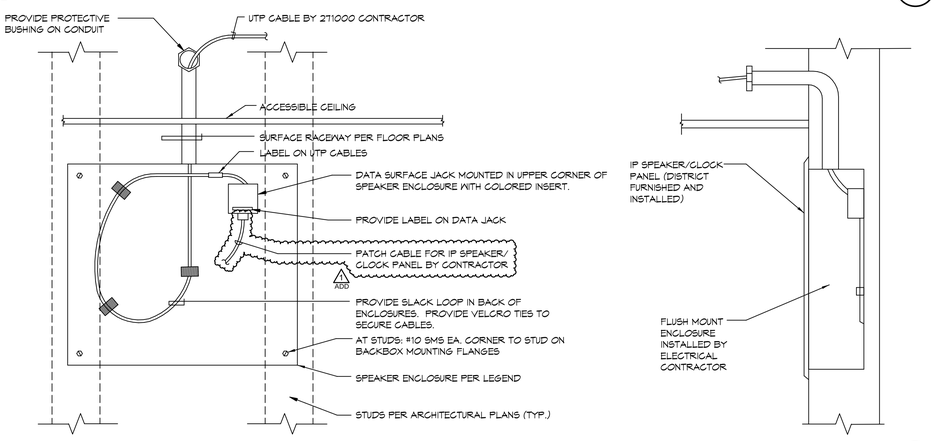
4 E4.7



TYPICAL DOME CAMERA WALL MOUNT

NO SCALE

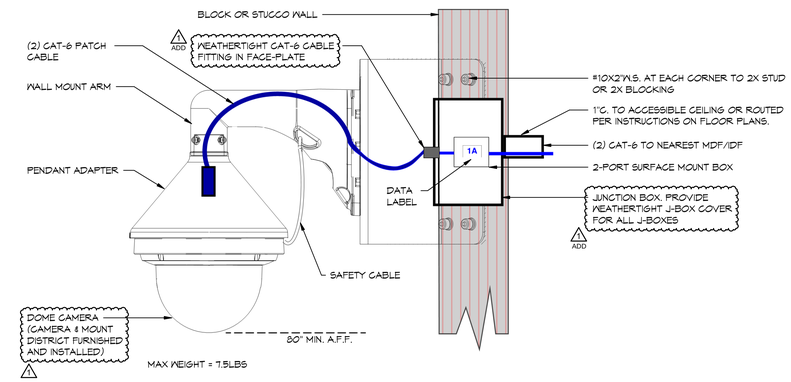
5 E4.7



FLUSH MOUNTED IP SPEAKER/CLOCK

NO SCALE

6 E4.7



TYPICAL DOME CAMERA CORNER MOUNT

NO SCALE

7 E4.7

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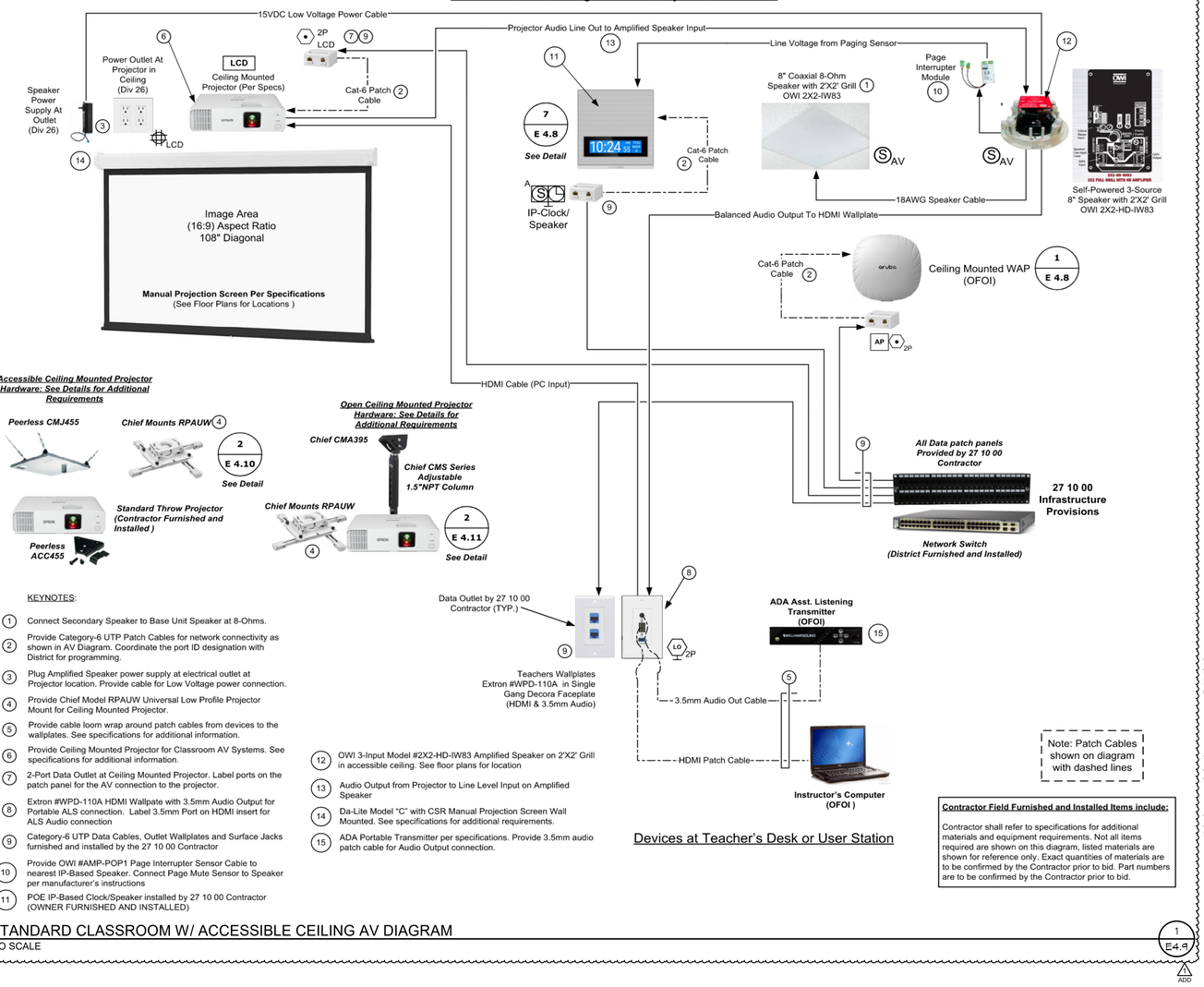
Classroom with Ceiling Mounted Projector Installation



Accessible Ceiling Mounted Projector Hardware: See Details for Additional Requirements

Peerless CMJ455

Chief Mounts RPAUW (4)

2 / E 4.10 — ***See Detail***

Standard Throw Projector (Contractor Furnished and Installed)

Peerless ACC455

Open Ceiling Mounted Projector Hardware: See Details for Additional Requirements

Chief CMA395

Chief CMS Series Adjustable 1.5"NPT Column

Chief Mounts RPAUW (4)

2 / E 4.11 — ***See Detail***

27 10 00 Infrastructure Provisions

Note: Patch Cables shown on diagram with dashed lines

Devices at Teacher's Desk or User Station

KEYNOTES:

1. Connect Secondary Speaker to Base Unit Speaker at 8-Ohms.
2. Provide Category-6 UTP Patch Cables for network connectivity as shown in AV Diagram. Coordinate the port ID designation with District for programming.
3. Plug Amplified Speaker power supply at electrical outlet at Projector location. Provide cable for Low Voltage power connection.
4. Provide Chief Model RPAUW Universal Low Profile Projector Mount for Ceiling Mounted Projector.
5. Provide cable loom wrap around patch cables from devices to the wallplates. See specifications for additional information.
6. Provide Ceiling Mounted Projector for Classroom AV Systems. See specifications for additional information.
7. 2-Port Data Outlet at Ceiling Mounted Projector. Label ports on the patch panel for the AV connection to the projector.
8. Extron #WPD-110A HDMI Wallplate with 3.5mm Audio Output for Portable ALS connection. Label 3.5mm Port on HDMI insert for ALS Audio connection
9. Category-6 UTP Data Cables, Outlet Wallplates and Surface Jacks furnished and installed by the 27 10 00 Contractor
10. Provide OWI #AMP-POP1 Page Interrupter Sensor Cable to nearest IP-Based Speaker. Connect Page Mute Sensor to Speaker per manufacturer's instructions
11. POE IP-Based Clock/Speaker installed by 27 10 00 Contractor (OWNER FURNISHED AND INSTALLED)
12. OWI 3-Input Model #2X2-HD-IW83 Amplified Speaker on 2'X2' Grill in accessible ceiling. See floor plans for location
13. Audio Output from Projector to Line Level Input on Amplified Speaker
14. Da-Lite Model "C" with CSR Manual Projection Screen Wall Mounted. See specifications for additional requirements.
15. ADA Portable Transmitter per specifications. Provide 3.5mm audio patch cable for Audio Output connection.

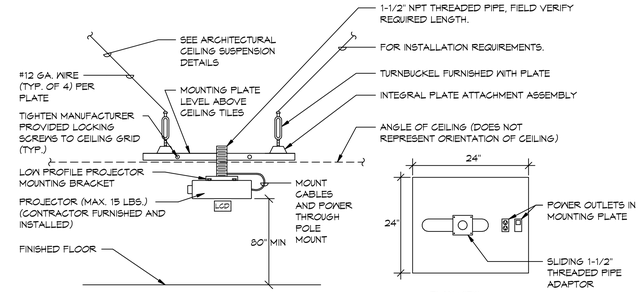
Contractor Field Furnished and Installed Items include:

Contractor shall refer to specifications for additional materials and equipment requirements. Not all items required are shown on this diagram, listed materials are shown for reference only. Exact quantities of materials are to be confirmed by the Contractor prior to bid. Part numbers are to be confirmed by the Contractor prior to bid.

STANDARD CLASSROOM W/ ACCESSIBLE CEILING AV DIAGRAM

NO SCALE — 1 / E4.9

ADD

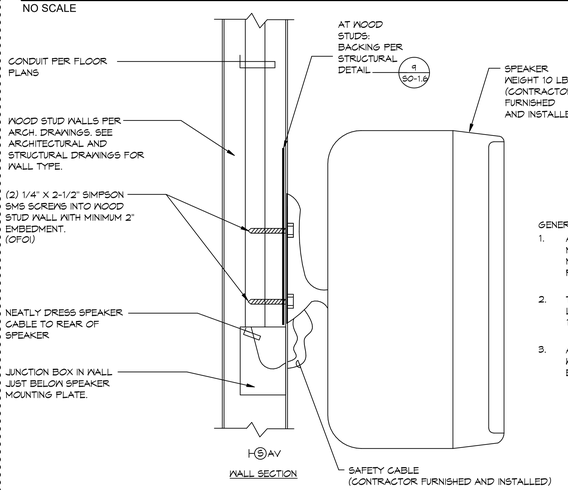


GENERAL NOTES:

1. AUDIO / VISUAL CONTRACTOR (272000) TO FURNISH AND INSTALL
2. ALL COMPONENTS UNLESS OTHERWISE NOTED.
3. COORDINATE WITH ELECTRICAL AND MECHANICAL CONTRACTORS EXACT
4. PLACEMENT OF PROJECTOR MOUNT.
5. MOUNTING PLATE DOES NOT REST IN CEILING TILE. MOUNTING PLATE IS SECURED TO CEILING
6. GRID PER MANUFACTURER'S INSTRUCTIONS. ONLY POLE PENETRATES THROUGH CEILING TILE.
7. SEE SPECIFICAIONS FOR CHIEF #RPAUW UNIVERSAL PROJECTOR MOUNT. PROJECTOR MOUNT SHALL BE ADJUSTED TO FIT FINAL PROJECTOR PROVIDED.
8. PROJECTOR SHALL BE CONTRACTOR FURNISHED AND INSTALLED. PROVIDE MOUNTING ASSEMBLY ONLY PER DRAWINGS AND SPECIFICATIONS.

CEILING PROJECTOR MOUNTING DETAIL

NO SCALE — 2 / E4.9

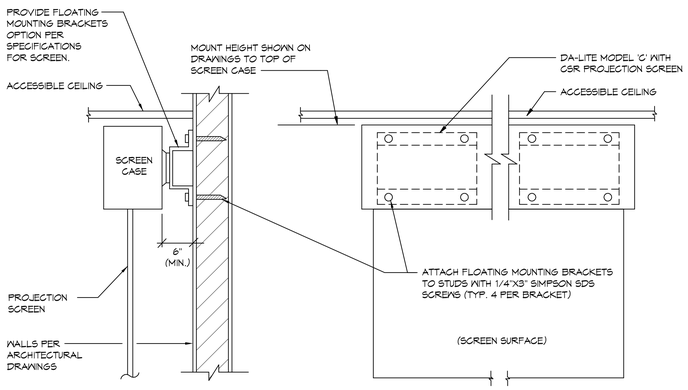


GENERAL NOTES:

1. ATTACH SPEAKER MOUNT TO MOUNTING BRACKET PER MANUFACTURER'S RECOMMENDATIONS.
2. TOTAL WORKING LOAD LIMIT SHALL NOT EXCEED 10 LBS.
3. ATTACH SAFETY CABLE TO WALL FOR SPEAKER BELOW SPEAKER.

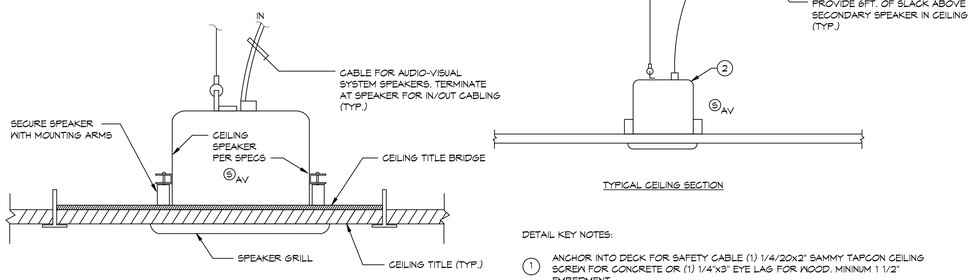
WALL MOUNTED SPEAKER DETAIL - SMALL AV SYSTEM

NO SCALE — 3 / E4.9



WALL MOUNTED PROJECTION SCREEN DETAIL

NO SCALE — 4 / E4.9



DETAIL KEY NOTES:

1. ANCHOR INTO DECK FOR SAFETY CABLE (1) 1/4/20x2" SAMMY TAPCON CEILING SCREW FOR CONCRETE OR (1) 1/4"x3" EYE LAG FOR WOOD. MINIMUM 1 1/2" EMBEDMENT.
2. NEATLY DRESS ALL CABLING FROM AMPLIFIED SPEAKER ABOVE CEILING. PROVIDE A MINIMUM OF 3 FEET OF SLACK ON ALL CABLES ABOVE AMPLIFIED SPEAKER.

AUDIO-VISUAL SYSTEM CEILING SPEAKER MOUNTING DETAIL

NO SCALE — 5 / E4.9

#21087
STAMPS
8/1/2022 3:50:54 PM

AGENCY APPROVAL
File No.: 5.0

JOHNSON CONSULTING ENGINEERS, INC.
Power | Lighting | Multimedia
Communications | Data Networking
12875 Brookprinter Place, Suite 300
Poway, CA 92064
P 858.679.4030 | F 858.513.0559
www.jce-inc.com
CONSULTANT BRANDING

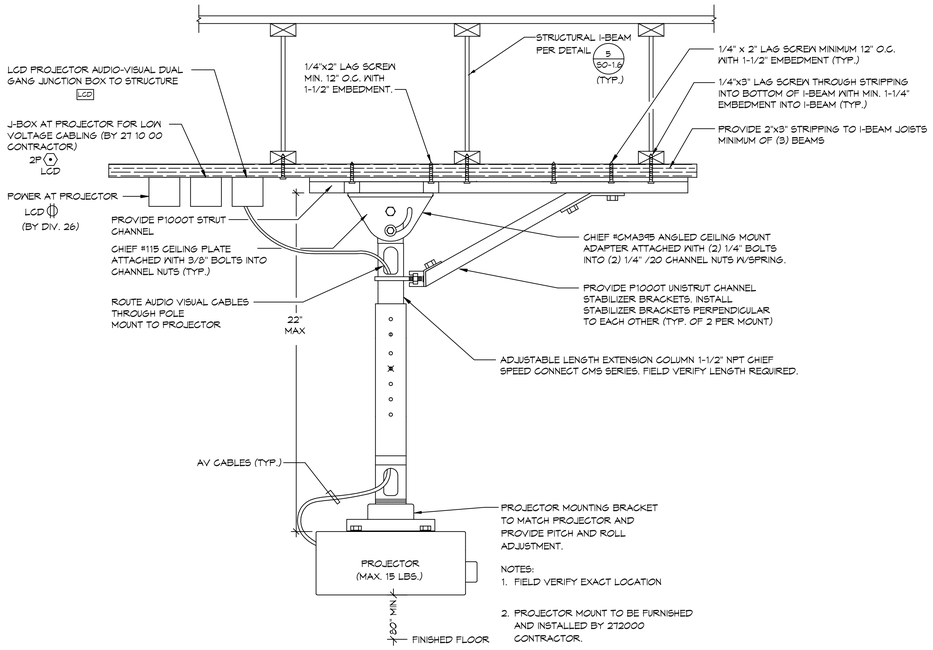
RUHNAU CLARKE ARCHITECTS

PROJECT No. :1-30-55
8/1/2022 3:50:54 PM

DRAWN BY: CHECKED BY:

ISSUE No.:_____ DATE:_____ DESCRIPTION:_____
ISSUE No.:_____ DATE:_____ DESCRIPTION:_____
ISSUE No.:_____ DATE:_____ DESCRIPTION:_____

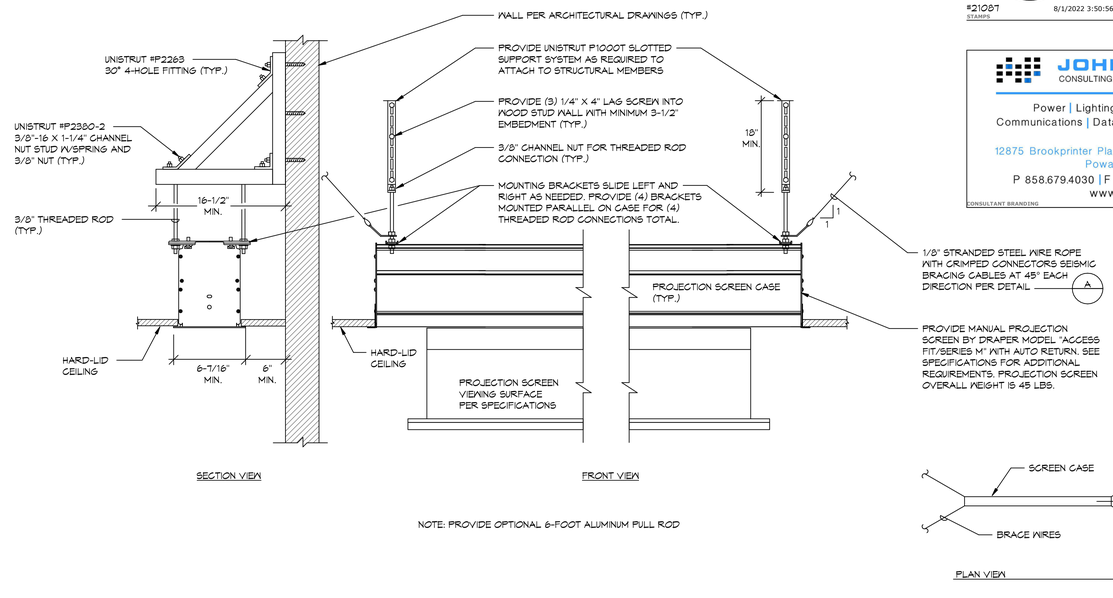
REVISION No.:1 DATE:08/02/2022 DESCRIPTION:Addendum #1
REVISION No.:_____ DATE:_____ DESCRIPTION:_____
REVISION No.:_____ DATE:_____ DESCRIPTION:_____



CEILING MOUNTED PROJECTOR DETAIL - NON ACCESSIBLE CEILING

NO SCALE

1 / E4.10

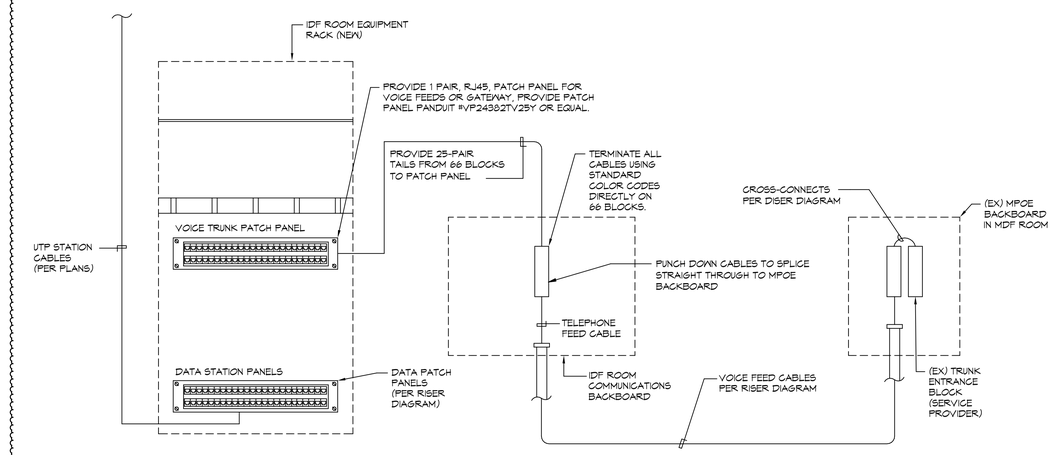


NOTE: PROVIDE OPTIONAL 6-FOOT ALUMINUM PULL ROD

RECESSED NON-TENSIONED MANUAL SCREEN MOUNTING DETAIL

NO SCALE

2 / E4.10

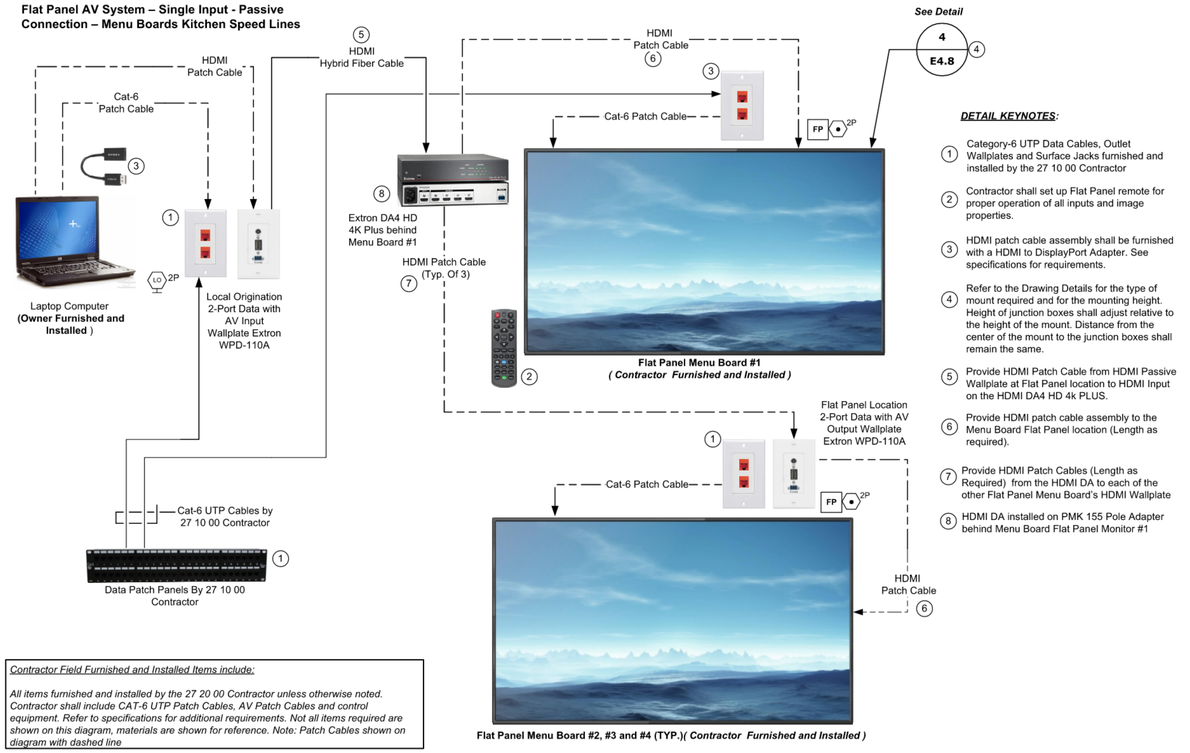


VOICE DISTRIBUTION DETAIL CAMPUS VOICE TRUNK REQUIREMENTS

NO SCALE

3 / E4.10

ADD



DETAIL KEYNOTES:

1. Category-6 UTP Data Cables, Outlet Wallplates and Surface Jacks furnished and installed by the 27 10 00 Contractor
2. Contractor shall set up Flat Panel remote for proper operation of all inputs and image properties.
3. HDMI patch cable assembly shall be furnished with a HDMI to DisplayPort Adapter. See specifications for requirements.
4. Refer to the Drawing Details for the type of mount required and for the mounting height. Height of junction boxes shall adjust relative to the height of the mount. Distance from the center of the mount to the junction boxes shall remain the same.
5. Provide HDMI Patch Cable from HDMI Passive Wallplate at Flat Panel location to HDMI Input on the HDMI DA4 HD 4k PLUS.
6. Provide HDMI patch cable assembly to the Menu Board Flat Panel location (Length as required).
7. Provide HDMI Patch Cables (Length as Required) from the HDMI DA to each of the other Flat Panel Menu Board's HDMI Wallplate
8. HDMI DA installed on PMK 155 Pole Adapter behind Menu Board Flat Panel Monitor #1

Contractor Field Furnished and Installed Items include:

All items furnished and installed by the 27 20 00 Contractor unless otherwise noted. Contractor shall include CAT-6 UTP Patch Cables, AV Patch Cables and control equipment. Refer to specifications for additional requirements. Not all items required are shown on this diagram, materials are shown for reference. Note: Patch Cables shown on diagram with dashed line

MENU BOARDS PASSIVE FLAT PANEL AV DIAGRAM

NO SCALE

4 / E4.10

JOHNSON CONSULTING ENGINEERS, INC.
Power | Lighting | Multimedia
Communications | Data Networking
12875 Brookprinter Place, Suite 300
Poway, CA 92064
P 858.679.4030 | F 858.513.0559
www.jce-inc.com
CONSULTANT BRANDING

RUHNAU CLARKE ARCHITECTS

#21087 STAMPS 8/1/2022 3:50:56 PM

AGENCY APPROVAL File No.: n.a.

PROJECT No. :1-30-55
8/1/2022 3:50:56 PM

DRAWN BY: CHECKED BY:

ISSUE No.	DATE	DESCRIPTION
REVISION No. 1	DATE 08/02/2022	DESCRIPTION Addendum #1

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MANDATORY PRE-BID MEETING NOTES
GROSSMONT UNION HIGH SCHOOL DISTRICT

GROSSMONT HIGH SCHOOL KITCHEN AND WEIGHT ROOM
Multi-Prime
July 28th, 2022 at 10:00 AM – 1:00 PM
Job-walk Location: Grossmont High School Flagpole, 1100 Murray Drive, 92020

It is the responsibility of the bidder to read the bid documents in their entirety. Failure to do so will not relieve successful bidder from any contractual obligations entered into under this bid.

1. Schedule:

Advertising Dates		July 19 and 26, 2022
Mandatory Pre-bid Conference & Sitewalk		July 28, 2022 at 10:00 am
Prequalification Due		August 12, 2022
Substitution Requests Due		August 8, 2022
Questions due from Bidders		August 8, 2022
FINAL Addendum to Bidders		August 19, 2022
Open Bids		**August 25, 2022 at 2:00 pm**
Protest Period Ends		September 1, 2022
Preliminary Notice of Award		September 2, 2022
Governing Board – Bid Award		**September 13, 2022**
Contract Submittals due to District		September 13, 2022
Preconstruction/LCP Meeting		TBD
Technical Submittals due to Architect		As requested by CM
Notice to Proceed		September 15, 2022
Start Date:		**September 19, 2022**
Project Completion Date:		**December 22, 2023**
Estimate:		$10,500,000 (See Attached)

2. Request for Information:

Submit all questions by email or mail to the following not later than date above to:

Grossmont Union High School District
1100 Murray Drive
El Cajon, CA 92020

Attn. Rian Pinson, Director of Purchasing
rpinson@guhsd.net

With a copy to the following:

C.W. Driver
Construction Manager
cedging@cwdriver.com

Attn: Catalino Rombaoa
crombaoa@cwdriver.com

We will not answer questions received beyond the above specified date and time

3. Public Works Project:

Prevailing Wage applies. DIR # required, LCP Tracker required, Prequalification, and see Special Conditions.

4. Prequalification:

This project total is over $1 million dollars. California Assembly Bill 1565, which went into effect on January 1, 2014, states all A/B and MEP licensed contractors, including subs, must be prequalified by the date listed in the bid schedule. Please go to http://www.guhsd.net/Departments/Business-Services/Purchasing/Prequalification/index.html to prequalify now and see more information. As a reminder, all subcontractors holding one of the licenses stated in AB1565 must be prequalified, no matter the work being performed. All Bidders must be prequalified.

CN-2982	**Demo/Abatement/Grading: License A, B, or (C-12 and C-21 and C-22)**	**$ 950,000**
CN-2983	**Structural/Site Concrete: License B or (C8, C13, C29 and C50)**	**$ 1,400,000**
CN-2984	**Rough Carpentry/Structural Steel: License B or (C5 and C51)**	**$ 1,200,000**
CN-2985	**Finishes: License B**	**$ 2,600,000**
CN-2986	**Specialties: License B or C61**	**$ 110,000**
CN-2987	**Food Service Equipment: License B or (C61/D34) or C43**	**$ 350,000**
CN-2988	**Bleachers/Press Box: License A or B**	**$ 1,000,000**
CN-2989	**Plumbing/Site Utilities: License A, B, or (C34 and C36)**	**$ 850,000**
CN-2990	**HVAC/Controls: License C20**	**$ 550,000**
CN-2991	**Electrical/Low-Voltage: License C10**	**$1,490,000**

5. Substitutions

Whenever in specifications any materials, process, or article is indicated or specified by grade, patent, or proprietary name or by name of manufacturer, such specification shall be deemed to be used for the purpose of facilitating description of material, process, or article desired and shall be deemed to be followed by the words "or equal."

In accordance with Public Contract Code section 3400, district must provide for "submission of data substantiating a request for a substitution of 'an equal' item." Therefore**, by August 8, 2022,** as specified in Article 18 of the Information for Bidders, if the Contractor is requesting substitution of "an equal" item or product or work, the make and grade of the item, product or work, which is to be substituted shall be provided to the District representative. Substitutions will not be considered after this date.

6. Bid Submittals:

It is crucial that the appropriate documents be included with the bid, all items requiring notarization completed properly, and **ALL** subs listed:

a. Bid Security Form (bid bond) or Bid Guarantee Form (no bid bond) - 00410
b. Proposed Subcontractors Form (for listing subcontractors) – 00430
c. List Of Proposed Prequalified MEP Or A/B Subcontractors Under ½ of 1% - 00430A
d. Non-Collusion Affidavit – 00480
e. Information Required of Bidder – 00490
f. Iran Contract Form – 00750A
g. Certification of Compliance with DVBE Policy (if applicable)- 00751
h. Bidder's Acknowledgment of Project Schedule and Phasing - 00752
i. Site Visit Certification - 00753
j. Acknowledgment of Bidding Practices Regarding Indemnity – 00754
k. DVBE and/or GFE – Attachment B

7. Labor Compliance:

Contractor is to retain all certified payrolls for a period of no less than (5) five years from date of completion as noted in the General Conditions. The District contracts with LCP Tracker, all documents regarding Labor Compliance must be uploaded to this system.

8. Contract Submittals and Technical Submittals:

It is imperative that the successful bidder provide submittals in a timely basis. Please be aware of the submittals dates noted in the Special Conditions and in this document. There are liquated damages attached the submittals should they be late.

9. Special Conditions and Division 1 General Requirements:

The Special Conditions may modify the General Conditions and Information to Bidders. Please read these carefully.

Please note: if there should exist a conflict between the Special Conditions and/or Division 1 General Requirements and the General Conditions/Information to Bidders, the language in the Special Conditions and/or Division 1 sections shall supersede.

10. Fingerprinting:

Fingerprinting and background checks ARE required of Supervisory Staff for the contractor and/or subcontractors on the job site when there is limited contact with students. Your company must have an ORI number from the Department of Justice for fingerprinting. The CM or Project Manager may determine that a job requires all employees to be fingerprinted if there might be direct contact with students. ORI numbers shall be obtained immediately after receiving a PNOA for your project.

11. Subcontracting:

Contractor must list all subs. All subs under ½ of 1% must be listed on form 430A if they had to be prequalified, meaning they hold a MEP license.

12. Senate Bill 854:

All contractors and subcontractors (any tier) must be registered with the DIR. Number must be provided within 24 hours of the bid. Please visit the following website for more information: http://www.dir.ca.gov/Public-Works/PublicWorks.html

This project is subject to the requirements under SB 854, which include registration of all contractors, and the submission of certified payroll to the State of California. Additionally, GUHSD requires all contractors to submit their certified payroll into LCP Tracker software monthly, for District purposes.

13. Builders Risk Insurance

Builder's Risk will be provided by the District.

14. Bid Location

Submit bids at 924 E Main St, El Cajon, CA 92021

SIGN IN SHEET, ADDENDAS AND BID RESULTS WILL BE POSTED ONLINE AT:

http://www.guhsd.net/Departments/Business-Services/Purchasing/Solicitations/Construction-Bids/index.html

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PRE-BID SIGN IN SHEET

GROSSMONT UNION HIGH SCHOOL DISTRICT
GROSSMONT HS KITCHEN AND WEIGHT ROOM
CN-2982 - DEMOLITION/ABATEMENT/GRADING
JULY 28, 2022 @ 10:00 AM

PLEASE PRINT LEGIBLY

LICENSE INFORMATION IS REQUIRED FOR BOARD REPORT

	COMPANY	CONTACT	LICENSE CLASS	PHONE	FAX / EMAIL
1	ANTONS	Steve	A, B, C21	619/971-9067	619/749-5597
2	EC CONSTRUCTORS	DAVE GAZZANEO	A, B, C8	619/440/7181	619/440/7180
3	M.A Stevens Const	mark stevens	A, B	619/477-7893	477-7895
4	BTS EQUIPMENT UNLIMITED	JORDAN JAMES	A, B, C21	619-324-7665	JJAMES@BTSEQUIPMENTUNLIMITED.COM 619-443-6448
5	ASE contracting	Tim Belcher	A C21	619-258-7290	619-258-7289
6	ABLE HEATING	VICTOR MUNOZ	C20	619 8649650	619 409 9100
7	Whillock Contracting	Chris Moore	A, B, C12, C21 022 HAZ, ASB	619 579 0700	619-579-0955 estimating@whillockcontracting.com
8	SOUTHERN CALIFORNIA GRADING	JONATHAN RATHMANN	A, C-12	949-551-6655	estimating@socalgrading.com

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PRE-BID SIGN IN SHEET

GROSSMONT UNION HIGH SCHOOL DISTRICT
GROSSMONT HS KITCHEN AND WEIGHT ROOM
CN-2982 - DEMOLITION/ABATEMENT/GRADING
JULY 28, 2022 @ 10:00 AM

PLEASE PRINT LEGIBLY **LICENSE INFORMATION IS REQUIRED FOR BOARD REPORT**

	COMPANY	CONTACT	LICENSE CLASS	PHONE	FAX / EMAIL
9	Clauss Construction	Matt Gillogly Dan Stokes	A, B, C21, C22, HAZ	619-390-4940	estimator@clausscontruction.com
10	TRI SPAN INC	JOE DeLosSANTOS	C-22	562-292-7504	JOEDLS@TRISPANINC.COM
11	ADEP Precision	Michael Mena	B, C-21 C-22	949 401 6693	mmena@ADEPPrecision.com
12	Fordyce Construction Inc	Brian Fordyce	A, B	619 449 4277	estimating@fordyceconstruction.com
13	Central Valley Environmental	Rodolfo Real	A, C-57 Demo	619 223-6730	RodolfoR@CVECORP.com
14	Watkins environmental	Bryan Butolph	A, B HAZ Demo	619 316 2562	BRYN@watkinsenv.com
15	Janus Corp	Jim Denton	AB HAZ ASB	619 571 6097	JIMD@JanusCorp.com
16	Nexgen Building Group	Matt Brudo	A, B	619-670-4466	estimating@nexgenbuilding.com

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GROSSMONT UNION HIGH SCHOOL DISTRICT
GROSSMONT HS KITCHEN AND WEIGHT ROOM
CN-2982 - DEMOLITION/ABATEMENT/GRADING
JULY 28, 2022 @ 10:00 AM

PLEASE PRINT LEGIBLY **LICENSE INFORMATION IS REQUIRED FOR BOARD REPORT**

	COMPANY	CONTACT	LICENSE CLASS	PHONE	FAX / EMAIL
17	Interpipe Contracting	Gary. H	C-36 /	619. 596-7733	info@interpipecontg.com.
18					
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PRE-BID SIGN IN SHEET

GROSSMONT UNION HIGH SCHOOL DISTRICT
GROSSMONT HS KITCHEN AND WEIGHT ROOM
CN-2983 - STRUCTURAL/SITE CONCRETE
JULY 28, 2022 @ 10:00 AM

PLEASE PRINT LEGIBLY **LICENSE INFORMATION IS REQUIRED FOR BOARD REPORT**

	COMPANY	CONTACT	LICENSE CLASS	PHONE	FAX / EMAIL
1	Conan Construction	Shannon Maurer	B, C8	760.707.2520	smaurer@conanconstruction.com
2	M.A. stevens const	mark stevens	A, B	619-477-7893	619-477-7895
3	EC CONSTRUCTORS	DAVE G	A, B-C8	619-440-7181	619-440-7180
4	ROCKY COAST BUILDER	DOUG LADERBUSH	A.B. C5-C8	760 489 7770	DL@ RCBCORP.COM
5	MAGNesite Specialtis	GARY English	B	858-578-4186	gary@magnesitespecialties.com
6	MSCC Builders	Steven Bengtson	A, B-C8	760-802-4058	sbengtson@mscbuilders.com
7	Team C Construction	Alan	B-C8	(619) 579-6572	alan@teamcinc.com
8	EDWARDS CONSTRUCTION	BRETT WILLIAMS	A, B	858-405-0582	bw@edwardscongroup.com

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PRE-BID SIGN IN SHEET

GROSSMONT UNION HIGH SCHOOL DISTRICT
GROSSMONT HS KITCHEN AND WEIGHT ROOM
CN-2983 - STRUCTURAL/SITE CONCRETE
JULY 28, 2022 @ 10:00 AM

PLEASE PRINT LEGIBLY **LICENSE INFORMATION IS REQUIRED FOR BOARD REPORT**

	COMPANY	CONTACT	LICENSE CLASS	PHONE	FAX / EMAIL
9	Fordyce Construction llc	Brian Fordyce	A B	619 449 4272	estimating @ fordyceconstruction.com
10	Nexgen Building Group	Matt Bruder	A, B	619-670-4466	estimating@nexgenbuilding.com
11	Kelar Pacific	Tony Wheeler		619 735-6658	Tony.wheeler @ kelarpacific
12					
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GROSSMONT UNION HIGH SCHOOL DISTRICT
GROSSMONT HS KITCHEN AND WEIGHT ROOM
CN-2984 - ROUGH CARPENTRY / STRUCTURAL STEEL
JULY 28, 2022 @ 10:00 AM

PLEASE PRINT LEGIBLY

LICENSE INFORMATION IS REQUIRED FOR BOARD REPORT

	COMPANY	CONTACT	LICENSE CLASS	PHONE	FAX / EMAIL
1	EC CONSTRUCTORS	DAVE G	A, B, C8	619-440-7181	619 440 7180
2	M.A. STEVENS CONST	MARK STEVENS	A, B	619-477-2893	477-7895
3	ROCKY COAST BUILDERS	DOUG LADDERBUSH	A · B · C5 · C8	760 489-7770	DL@RCBCORP.COM
4	SWCS INC	Dan Smith	B	Cell-258-9944	estimating@swcsinc.com
5	Nexgen Building Group	Matt Bruder	A, B	619-670-4466	estimating@nexgenbuilding.com
6	Fordyce Construction Inc	Brian Fordyce	A B	619 449 4272	eshimating @ fordyce construction.com
7	KELAR PACIFIC	Tony Wheeler		619 735 6688	Tony.wheeler @kelarpacific.com
8	CONAN CONSTRUCTION INC	SHANNON MATURESE	B C8	760-707-2520	smaurese@conanconstruction.com

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PRE-BID SIGN IN SHEET

GROSSMONT UNION HIGH SCHOOL DISTRICT
GROSSMONT HS KITCHEN AND WEIGHT ROOM
CN-2985 - FINISHES / ROOFING / FLOORING
JULY 28, 2022 @ 10:00 AM

PLEASE PRINT LEGIBLY

LICENSE INFORMATION IS REQUIRED FOR BOARD REPORT

	COMPANY	CONTACT	LICENSE CLASS	PHONE	FAX / EMAIL
1	CONAN CONSTRUCTION	SHANNON MAURER	B C-8	760.707.2520	smaurer@conanconstruction.com
2	EC CONSTRUCTORS	DAVE G.	A, B, C-8	619-440-7181	619-440-7180
3	CM. A. Stevens	mark stevens	A B	619-477-7890	619-477-7895
4	Long Glazing	Kevin Shea	C-17	619 456-9997	
5	Brady SoCal	Stacey Coughlon	B	619.462.2600	scoughlon@bradysocal.com
6	HAMEL CONTRACTING	JAMIE RAMIREZ	B	951-479-6105	ESTIMATING@HAMELINC.COM
7	A&S FLOORING STEVE HARMON	STEVE HARMON	C-15	619-585-8057	STEVE@ASFLOORING.COM
8	Preman Roofing	Eddie Stoponi	C-39, B	(619) 994-2448	Eddie@PremanRoofing.com

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PRE-BID SIGN IN SHEET

GROSSMONT UNION HIGH SCHOOL DISTRICT
GROSSMONT HS KITCHEN AND WEIGHT ROOM
CN-2985 - FINISHES / ROOFING / FLOORING
JULY 28, 2022 @ 10:00 AM

PLEASE PRINT LEGIBLY **LICENSE INFORMATION IS REQUIRED FOR BOARD REPORT**

	COMPANY	CONTACT	LICENSE CLASS	PHONE	FAX / EMAIL
9	Root Construction	Mike Martinez	C-39	909-346-7831	Mike@roofconstruction.com
10	Nexgen Building Group	Matt Bruder	A, B	619-670-4466	estimating@nexgenbuilding.com
11	E.L. Hobbs Inc.	Erick Hobbs	B	619-454-8879	ehobbs@elhobbsinc.com
12	Fordyce Construction Inc	Brian Fordyce	A B	619 464 4272	estimating @ fordyce construction.com
13					
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PRE-BID SIGN IN SHEET

GROSSMONT UNION HIGH SCHOOL DISTRICT
GROSSMONT HS KITCHEN AND WEIGHT ROOM
CN-2986 - SPECIALTIES
JULY 28, 2022 @ 10:00 AM

PLEASE PRINT LEGIBLY **LICENSE INFORMATION IS REQUIRED FOR BOARD REPORT**

	COMPANY	CONTACT	LICENSE CLASS	PHONE	FAX / EMAIL
1	EC CONSTRUCTORS	DAVE G	A,B,C-8	619-440-7181	619-440-7180
2	HAMEL CONTRACTING	JAMIE RANGEL	B	951-479-6105	ESTIMATING@HAMELINC.COM
3	SWCS Inc	Dan Smith	B	619 258-9444	estimating@swcs-inc.
4	DIG Contractors Inc	BRYAN GRANT	B	619-456-2992	BRYAN.DIGcontractors@gmail.com
5	~~EBL~~ Fordyce Construction Inc	Brian Fordyce	A,B	619 449 4272	estimating@fordyceconstruction.com
6	Nexgen Building	Matt Bruder	A,B	619-670-4466	estimating@nexgenbuilding.com
7					
8					

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PRE-BID SIGN IN SHEET

GROSSMONT UNION HIGH SCHOOL DISTRICT
GROSSMONT HS KITCHEN AND WEIGHT ROOM
CN-2987 - FOOD SERVICE EQUIPMENT
JULY 28, 2022 @ 10:00 AM

PLEASE PRINT LEGIBLY **LICENSE INFORMATION IS REQUIRED FOR BOARD REPORT**

	COMPANY	CONTACT	LICENSE CLASS	PHONE	FAX / EMAIL
1	TRIMARK	Jim schaefer	A·B	858-627-9133	Jim.schaefer@chefstoys.com
2	Georg FSE INC	George Bolton	B, C43	619-696-1699	MARlene@FSEsd.com
3	Fordyce Construction Inc	Brian Fordyce	A,B	619 449-4272	estimating@fordyce construction.com
4	Nexgen Building	Matt Bruder	A,B	619-670-4466	estimating@nexgenbuilding.com
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PRE-BID SIGN IN SHEET

GROSSMONT UNION HIGH SCHOOL DISTRICT
GROSSMONT HS KITCHEN AND WEIGHT ROOM
CN-2988 - BLEACHERS / PRESS BOX
JULY 28, 2022 @ 10:00 AM

PLEASE PRINT LEGIBLY **LICENSE INFORMATION IS REQUIRED FOR BOARD REPORT**

	COMPANY	CONTACT	LICENSE CLASS	PHONE	FAX / EMAIL
1	CONAN CONSTRUCTION INC.	SHANNON MARKEY	B C-8	760.707.2520	SMarkey@conanconstruction.com
2	EC CONSTRUCTORS	DAVE C	A, B, C-8	619-440-7181	619-440-7180
3	SWCS INC	Dan Smith	B	619-258-9944	estimating@swcs-inc.ca
4	Byrom-Davey Inc	Steve Davey	A, B	858-513-7194	estimating@byrom-davey.com
5	GEM Industrial Inc	Doug MacLachlan	A B	858 486 7758	info@gemindustrial inc.com
6	Southern Bleacher CO.	Ryan Hoy	A	916 817 9349	ryan@avenueseating solutions.com
7	Fordyce Construction Inc	Brian Fordyce	A B	619 449 4272	estimating@fordyce construction.com
8	Nexgen Building Group	Matt Bruder	A, B	619-670-4466	estimating@nexgenbuilding.com

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PRE-BID SIGN IN SHEET

GROSSMONT UNION HIGH SCHOOL DISTRICT
GROSSMONT HS KITCHEN AND WEIGHT ROOM
CN-2988 - BLEACHERS / PRESS BOX
JULY 28, 2022 @ 10:00 AM

PLEASE PRINT LEGIBLY **LICENSE INFORMATION IS REQUIRED FOR BOARD REPORT**

	COMPANY	CONTACT	LICENSE CLASS	PHONE	FAX / EMAIL
9	M. A. Stevens	mark Stevens	A, B	619-477-7893	477-7895
10					
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PRE-BID SIGN IN SHEET

GROSSMONT UNION HIGH SCHOOL DISTRICT
GROSSMONT HS KITCHEN AND WEIGHT ROOM
CN-2989 - PLUMBING / SITE UTILITIES
JULY 28, 2022 @ 10:00 AM

PLEASE PRINT LEGIBLY **LICENSE INFORMATION IS REQUIRED FOR BOARD REPORT**

	COMPANY	CONTACT	LICENSE CLASS	PHONE	FAX / EMAIL
1	Scott Michael Inc	Robert	C 36 A	760-801-4486	Scottmichaelinc@sbcglobal.net
2	D2 Plumbing	Dan Baldwin	C36	619-820-0555	dan@D2plumbing.co
3	Advance Plumbing Co	Jason Adams	C-34/C-36	619.871.3514	JasonC Advanceplumbing.NET
4	Paradigm Mech	Alton Rawlings	C-36	7604404774	Alton@TMCcontractors
5	Ahrens mech	Greg Ahrens	C-34/C-36 A B	619 487-9036	estimating@ahrensmech.com
6	JPI Development	Estimating	A, B, C2, C8, C16, C36, C34	951-973-7680	estimating@jpidevelopment.com
7	Interpipe Contracting	RJ Smith/Gary	C-34/36	619-596-7733	info@interpipecontracting.com
8	HPS Mechanical, Inc.	Estimating	C36	858-537-5110	Planroom@hpsmechanical.com

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PRE-BID SIGN IN SHEET

GROSSMONT UNION HIGH SCHOOL DISTRICT
GROSSMONT HS KITCHEN AND WEIGHT ROOM
CN-2989 - PLUMBING / SITE UTILITIES
JULY 28, 2022 @ 10:00 AM

PLEASE PRINT LEGIBLY **LICENSE INFORMATION IS REQUIRED FOR BOARD REPORT**

	COMPANY	CONTACT	LICENSE CLASS	PHONE	FAX / EMAIL
9	Peltzer Plumbing Inc.	Colton or Vern Peltzer	A, C-34, C-36	760-751-9865	Vern@PeltzerPlumbing.com Colton@PeltzerPlumbing.com
10	Nexgen Building Group	Matt Brader	A, B	619-670-4466	estimating@nexgenbuilding.com
11	Kelar Pacific	Tony Wheeler		619 735 6600	Tony.Wheeler@kelarpacific.com
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PRE-BID SIGN IN SHEET

GROSSMONT UNION HIGH SCHOOL DISTRICT
GROSSMONT HS KITCHEN AND WEIGHT ROOM
CN-2990 - HVAC / CONTROLS
JULY 28, 2022 @ 10:00 AM

PLEASE PRINT LEGIBLY **LICENSE INFORMATION IS REQUIRED FOR BOARD REPORT**

	COMPANY	CONTACT	LICENSE CLASS	PHONE	FAX / EMAIL
1	PARADIGM MECH	RYAN - 619-807-2896	947447-C20 ~~C-36~~	619-807-2896	RYAN.CROFT@PMCCONTRACTING.COM
2	R&R Controls	DUANE PEJCHL 619 517-1878	C-10	619-517-1878	dpejchl@RRCONTROLS.com
3	WRROBINS CO	Sean Ryan 760 842 8800	C-20	619-243 9736	S.Ryan@WRRobins.com
4	Bay City Mechincal	Humberto Trejo 760-224-1950		760-224 1950	humbertot@baycitymech...
5	SWCS Inc	Dan Smith	C-20	619-258-9944	estimating@swcsinc.com
6	Kelar Pacific	Tony Wheeler		619-735-6698	Tony.Wheeler@KelarPacific
7	Nexgen Building	Matt Bruder	A, B	619-670-4466	estimating@nexgenbuilding.com
8					

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PRE-BID SIGN IN SHEET

GROSSMONT UNION HIGH SCHOOL DISTRICT
GROSSMONT HS KITCHEN AND WEIGHT ROOM
CN-2991 - ELECTRICAL / LOW-VOLTAGE / FIRE ALARM
JULY 28, 2022 @ 10:00 AM

PLEASE PRINT LEGIBLY

LICENSE INFORMATION IS REQUIRED FOR BOARD REPORT

	COMPANY	CONTACT	LICENSE CLASS	PHONE	FAX / EMAIL
1	ACE ELECTRIC	CRAIG SMALL	C10, A	619 814 4762	craig.s@aceelectricinc.com
2	Fuller Electric	Shawn Swearingen	C10	6192765411 x112	estimating@fullerelectric.com
3	NEW	RJ Free	C10	6199159082	RFree@nationalElectricWorks.com
4	SOUTHLAND ELECTRIC	DEREK SPIKER	C10	619-540-7640	dereks@southlandelectricinc.com
5	Precision Electric	Melanie Bisher	C7 C46 C10	619 966-9671	Estimating@PECSD.com
6	PATRIOT GENERAL INC	ARLEN WOTS	A	619-772-0323	ARLEN@PATRIOTGEN.COM
7	SWCS Inc	Dan Smith	B	619-258-9444	estimating@swcs-inc.com
8	Kelar Pacific	Tony Wheeler		619 735 6698	Tony.Wheeler @kelarpacific.com

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PRE-BID SIGN IN SHEET

GROSSMONT UNION HIGH SCHOOL DISTRICT
GROSSMONT HS KITCHEN AND WEIGHT ROOM
CN-2991 - ELECTRICAL / LOW-VOLTAGE / FIRE ALARM
JULY 28, 2022 @ 10:00 AM

PLEASE PRINT LEGIBLY **LICENSE INFORMATION IS REQUIRED FOR BOARD REPORT**

	COMPANY	CONTACT	LICENSE CLASS	PHONE	FAX / EMAIL
9	Nexgen Building	Matt Brady	A, B	619-670-4466	estimating@nexgenbuilding.com
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C.W. Driver
BUILDERS SINCE 1919

Grossmont HS Kitchen and Weight Room Issue Date: 08/02/22

RFI #	Question	Response
1	The license listed for the food service bids do not have C43. Kitcor holds a C43 license for food service equipment contractor. Can contractors with a C43 license bid the CN-2987 package	Yes contractors with a C43 license can bid the CN-2987 package
2	Will the 3/8" aluminum panels at the electrical yard fence be by the signage sub or section 055920? See 26/ASD-2.0 and 11&12/ASD-3.0	The Decorative Electrical yard fence shall be furnished and installed by CN-2984. CN-2983 shall furnish and install the fence footings. Reference Bid Addendum #2 Scope of Work Revisions for further clarification
3	Please clarify the exact location of the project. The plans show a different address than the bid location.	The project is located on the Grossmont High School Campus - The school address is 1100 Murray Dr., El Cajon, CA 92020. However, per Attachment J - Logistics Plan, the site must be accessed from Washington Street, not Murray Dr. The Bid location is 924 East Main St., El Cajon, CA 92021.
5	A1-1.0. Location of Gridline E does not match Foundation Plan, Sheet S1-1.1. Please advise	Architect drawing has been revised to match Structural Sheet S1-1.1
8	A1-3.0. Where is roof access hatch addressed in specifications?	Spec. Section 07 72 00 added in RCA Addendum 1
11	Keynote 10.284. Toilet seat cover dispenser is missing from Specification Section 10 28 00 - 2.05. Please advise	Added to Sepcficiation Section
12	Keynote 10.290. Soap dispenser is missing from Specification Section 10 28 00 - 2.05. Please advise	Added to Sepcficiation Section
14	A2-1.0. Walk-In Cooler 404. Confirm slab depression not required per Sheet K5. See comments on Sheet S2-1.0.	Walk-in Cooler does not need a slab depression all drawings are coordinated to show no depression
16	A2-1.0. East exterior soffit. Light fixture in exterior soffit is missing. See Sheet E2.2. Typical at west exterior soffit. Please advise	A2-1.0 sheet has been revised to show missing light fixtures
19	A2-6.0. Detail 21/AD-2.0 (Assembly A4) does not appear applicable at this location (Assembly A1-8 per Plan 1/A2-1.0). Typical this sheet where referenced. Please advise	Detail 21/AD-2.0 is not being referenced on Sheet A2-6.0 in the DSA Approved Set.
21	S1-1.1. Location of Gridline E does not match Plan 1/A1-1.0.	Architectural Plan 1A1-1.0 has been revised Gridline E now matches S1-1.1
22	M0-0.2 RTU-K-1. 4000 CFM does not match Sheet M2-2.1 indicating 3000 CFM total supply air distribution. Please advise	Schedule has been updated and added note 16 to RTU K-1 and Sheet M2-2.1 has been revised to match.
37	E2.1. Light fixture is missing from Plan 2/A1-1.0. Please advise	Architectural Plan has been revised to match E2.1
40	K 2. Item #14. Quantity 5 does not match Specification Section 11 40 00 - 2.09 indicating 3. please advise	Spec. Section to match K2
42	Specs Section numbers listed in the Table of Contents do not match the (actual section number) for the following specification sections: 27 10 00 (27 01 00). Please advise	Table of Contents has been updated in Addendum 1
43	03 10 00 - 1.02.D Section 05 31 00 Steel Decking is missing from the Project Manual.	Steel Decking spec. section has been added
44	04 20 00 - 2.04.E.1 Section 07 19 00 Water Repellents is missing from the Project Manual.	Paragraph to be deleted
45	05 50 00 - 2.04.D.5.c Section 32 31 19 Decorative Metal Fences and Gates is missing from the Project Manual.	Revised Paragraph
46	06 20 00 - 3.04.B Section 09 93 00 is missing from the Project Manual.	Revised Paragraph
47	07 21 00 - 2.04.A Section 07 26 00 is missing from the Project Manual.	Paragraph to be deleted
48	07 25 00 - 3.03.C.9 Section 07 90 05 Joint Sealers is missing from the Project Manual.	Revised Paragraph
49	07 54 00 - 1.02.B Section 07 72 00 Roof Accessories is missing from the Project Manual.	Added Section
50	07 92 00 - 1.02.D Section 23 31 00 HVAC Piping Insulation is missing from the Project Manual.	Paragraph to be deleted
51	08 33 23 - 1.02.B Section 08 36 13 Sectional Doors is missing from the Project Manual.	Section has been added
52	08 33 23 - 1.02.D Section 28 46 00 Fire Detection and Alarm is missing from the Project Manual.	Paragraph to be deleted
53	08 33 23 - 2.04.D Gauge and dimensions are missing.	Paragraph to be deleted
54	08 33 23 - 2.05.B.10 Section 26 05 83 is missing from the Project Manual.	Revised
55	08 71 00 - 1.02.I Section 28 10 00 Access Control is missing from the Project Manual.	Access control have been removed from this spec. section.
56	08 80 00 - 2.09.B Color is missing.	Note has been added to state color as selected
57	09 21 16 - 1.02.B Section 05 40 00 Cold-Formed Metal Framing is missing from the Project Manual.	Paragraph to be deleted
58	09 30 00 - 1.02.C Section 22 40 00 Plumbing Fixtures is missing from the Project Manual.	Paragraph to be deleted
59	10 14 53 - 1.02.C Section 32 17 23.13 is missing from the Project Manual.	Section Deleted
60	10 21 13.19 - 2.05.H.1 Section 05 05 19 Post-Installed Concrete Anchors is missing from the Project Manual.	Revised Paragraph
61	10 28 00 - 1.02.C Section number is missing.	Removed

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Grossmont HS Kitchen and Weight Room Issue Date: 08/02/22

RFI #	Question	Response
62	10 28 00 - 2.05.D Combination toilet paper dispenser/sanitary napkin disposal unit does not match Keynotes 10.286 & 10.288, Sheet A1-7.0, indicating individual recessed and surface mounted sanitary napkin disposal.	Section has been revised 205.D is now the Stainless Steel framed Mirror. All accessories have been updated to match drawings.
63	10 28 00 - 2.05.D Semi-recessed toilet paper dispenser is missing from Keynotes, Sheet A1-7.0. Verify use.	all accessories have been updated to match drawings.
66	10 28 00 - 2.05.D Electric hand dryer is missing from Keynotes, Sheet A1-7.0. Verify use.	Electric hand dryers will be used Sheet A1-7.0 has been revised to reflect this change
67	11 40 00 - 1.02.A.4 Division 06 Section "Interior Architectural Woodwork" is missing from the Project Manual.	See 06 20 00
72	11 40 00 - 2.09 Item No. 3. John Boos Model OB-MH-3 does not match Equipment Schedule, Sheet K2, indicating T&S Brass Model B-0653.	Spec. Section to match K2
73	11 40 00 - 2.09 Item No. 11. RDT Model BEL095 does not match Equipment Schedule, Sheet K2, indicating RDT Model BEL0084.	See revised partial Foodservice Equipment Schedule on FSSK-1.1
74	11 40 00 - 2.09 Item No. 12. RDT Model ZS1-02Z-CT3-AST does not match Equipment Schedule, Sheet K2, indicating RDT Model ZS1-02A-CTS-AST.	See revised partial Foodservice Equipment Schedule on FSSK-1.1
75	11 40 00 - 2.09 Item No. 55. Groen Model BPM-30GC does not match Equipment Schedule, Sheet K2, indicating Groen Model -30G.	See revised partial Foodservice Equipment Schedule on FSSK-1.1
76	11 40 00 - 2.09 Item No. 65. T&S Brass does not match Equipment Schedule, Sheet K2, indicating Krowne.	See revised partial Foodservice Equipment Schedule on FSSK-1.1
79	11 51 23 - 1.02.A Section 09 68 00 Carpeting is missing from the Project Manual.	Section is deleted
80	22 05 17 - 3.01.E Section 07 84 13 Penetration Firestopping is missing from the Project Manual.	Spec Section has been updated and remove the reference
96	23 00 50 - 3.03.A Division 09 Section "Painting" is missing from the Project Manual.	Section reference has been update to 09 91 23 "Interior Painting"
97	23 05 48 - 3.03.A Section 03 30 53 Miscellaneous Cast-in-Place Concrete is missing from the Project Manual.	Spec section title has been revised to Cast In Place Concrete
99	23 07 13 - 1.01.B.2 Division 23 Section "HVAC Equipment Insulation" is missing from the Project Manual.	Has been revised to Division 23 Insultation Sections
103	23 08 00 - 1.11 Section 01 33 00 Submittal Procedures is missing from the Project Manual.	Section 1.11 has been removed
104	31 23 16.13 - 3.04.I Section 31 23 16.26 is missing from the Project Manual.	Paragraph to be deleted
105	32 12 16 - 1.02.F & G Section 32 17 13 Concrete Wheel Stops and 32 17 23 Pavement Markings are missing from the Project Manual.	Paragraph to be deleted
106	32 12 16 - 1.05.A Should "{\rs\#1}" be "SSPWC (Green book)"?	Corrected to state SSPWC (Green Book)
107	32 12 16 - 2.02.J Should "{\rs\#1}" be "SSPWC (Green book)"?	Corrected to state SSPWC (Green Book)
108	32 12 16 - 3.09.A Should "{\rs\#1}" be "SSPWC (Green book)"?	Corrected to state SSPWC (Green Book)
109	32 12 16 - 3.11.B Should "{\rs\#1}" be "SSPWC (Green book)"?	Corrected to state SSPWC (Green Book)
110	32 13 13 - 1.02.H Section 32 17 26 Tactile Warning Surfacing is missing from the Project Manual.	Paragraph to be deleted
111	32 84 00 - 1.01.B.1 Division 31 Section "Trenching and Backfilling" is missing from the Project Manual.	Revised Paragraph
112	32 84 00 - 1.01.B.3 Division 32 Section "Curbs, Gutters, and Sidewalks" is missing from the Project Manual.	Revised
113	33 05 43 - 1.02.D Section 33 41 00 Subdrainage is missing from the Project Manual.	Paragraph to be deleted
114	33 05 43 - 1.02.F Section 33 52 16 Gas Hydrocarbon Piping is missing from the Project Manual.	Paragraph to be deleted
116	33 14 16 - 1.02.F Section 21 11 00 Facility Fire-Suppression Water-Service Piping and 21 13 13 Wet-Pipe Sprinkler Systems are missing from the Project Manual.	Paragraph to be deleted
117	33 14 16 - 3.04.F Section number and title are missing.	Has been corrected to 33 05 43 -Corrosion Protection
118	33 31 13 - 1.03.D Section number and title are missing.	Has been corrected to 33 05 43 -Corrosion Protection
119	33 31 13 - 3.01.A Section number and title are missing.	Has been corrected to 33 05 43 -Corrosion Protection
120	33 42 30 - 1.02.D Section 33 05 61 Concrete Manholes is missing from the Project Manual.	Paragraph to be deleted
124	4/AD-3.0 Coordinate with S-sheets. Platform is not shown in structural. Please advise or correct details	Details on the Architectural sheets have been coordinated with Structural and will only be shown on Arch Sheets
147	084313 Section 1.05-B Notes that the structure and energy design of the system if the basis of design for the set stamped by DSA. However, Section 1.05G calls for engineered calcs on the system that has already been designed and theoretically calculated. Please confirm additional calculations via another licenses engineer is not required for the aluminum framed storefronts.	Another engineer is not required. No Spans exceeds 10 feet.
153	S3-1.1 Please provide a specification for the metal decking at the shade Canopy	Metal Deck Section to be added

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BUILDERS SINCE 1919

Grossmont HS Kitchen and Weight Room Issue Date: 08/02/22

RFI #	Question	Response
155	#331416A #331416A appears to discuss fire sprinkler info but this project does not have fire sprinkler scope. Please confirm this spec is N/A	The form can be deleted as no hydrants are now involved
159	Please reference Bid Package CN-2989 Plumbing and Site Utilities, Item 44d. Please confirm that trade contractor CN-2989 will not be required to receive offload and install equipment supplied by the food service scope CN2897.	CN-2989 Prime Contractor is expected to receive District Furnished, Contractor Installed (DFCI) items that CN-2989 Prime Contractor is responsible for installing. District Food Service Department will transport District furnished equipment and offload the equipment off truck/cart for CN-2989 Prime Contractor, as applicable
160	Please reference Bid Package CN-2989 Plumbing and Site Utilities. Please provide Appendix Z.	Appendix Z is provided in Attachment H -Scopes of Work - Reference 2nd page after 'Page 17 of 17' in the CN-2989 Scope of Work Package.
161	CN-2986: Will there be any relocation needed prior to construction or is that also included in the specialty package.	In a general sense, relocation of items is not required prior to construction.
162	Attachment F - Geotechnical Report: Boring Log #1 is the only log that shows a concrete section beneath the asphalt paving. Please confirm that is correct.	Correct. Boring 'B-1' shows concrete beneath the asphalt concrete section.
163	Reviewing the demolition plan AS-1.0 and comparing to AS-1.0 to the grading and drainage plan C-1.0 that all of the new piping will be installed in areas where demolition is scheduled. With the exception of one section of pipe approximately 40 lineal feet that is installed in an existing landscape area. Please advise which trade will be responsible to replace or repair the landscape.	For bidding purposes, assume bidder has asked about the storm drain line plan-west of the kitchen and the trash enclosure and runs east-west. Reference RFI #143 response.
164	On the GHS Kitchen Front-End Docs_FINAL - NTB-3 - Page 7, it says there's a mandatory site visit. For our trade, Food Service Equipment, are we exempted from this?	No - ALL Prime Contractors are required to comply with the mandatory pre-bid job-walk requirements.
165	CN-2989 page 16/17, item #18: It is not possible to quantify where or even if required temporary services would be needed to be installed. Please provide a drawing showing where and what will need to be temporarily connected.	Item #18 is void. Reference Bid Addendum #2 Scope of Work Version #02.
166	Do we need to register for the job-walk?	There is no registration.
167	We are inquiring about the mandatory job walk for the Grossmont H.S. project. Our business is located in the Los Angeles area and we are requesting that the job walk [shall] not be mandatory for CN – 2987 Food Service Equipment.	Request denied. The job walk remains mandatory for ALL bid packages.
169	Refer to Appendix Z, Equipment Item 5, Air Curtain(s). Confirm that CN-2991 – Electrical is to install the air curtains.	CN-2991 provides infrastructure and final electrical connection
170	Confirm that CN-2983 – Concrete is responsible for the 6 pole light bases and 2 power pedestal bases.	Confirmed. CN-2983 provides all light pole bases and power pedestal bases
174	SOW for Bid Package CN-2982: Under section 38 it says that the contractor is responsible for removing all hazardous material identified, regardless of quantities listed. How does the additional 30 hours of abatement work apply if Sec. 38 classifies nothing as 'additional'? Are we expected to only bid according to what's listed in the haz reports, and use the additional abatement hours for items not listed?	The additional 30 abatement hours are reserved for unforeseen conditions that are not documented in the Attachment E - Hazardous Material Report and Specifications. The 30 hours are treated similar to an allowance.
175	Is the Project PLA/Union Labor project?	See Notice to Bidders and General Conditions
176	Is there performance/payment bonding required?	See Notice to Bidders and General Conditions
177	Are there any prequalifications that need to be met?	See Notice to Bidders and General Conditions
178	Are there any unforeseen condition allowances required?	See Notice to Bidders and General Conditions
179	Are there any specifics we should be aware of?	See Notice to Bidders and General Conditions
180	Please advise on job start/project completion date?	See Notice to Bidders and General Conditions
188	Can the District/CM provide additional clarification or allow an allowance for items removed not indicated on the plans. - Bidder added the following to their question 'Attachment H Bid Package CN-2982; General Requirements #21'	No additional allowance shall be provided for the specific concern outlined in this pre-bid RFI. Reference CN-2982 allowances accordingly. Prime Contractor shall bid the Contract Documents in their entirety
189	Please clarify CN-2982 scope inclusions Section #2, Item #3, Section #2, item #52 and Exclusions #5	Item #52 of Section #2 has been revised. Reference Bid Addendum #2 Scope of Work Revision.
192	Will the District/CM provide a salvage list or plan for items to be salvaged?	No. There is no salvage list to provide
193	What if any existing FFE will be removed by the District? During the prebid walk, the District was removing trophies and other various items in the weight room building.	The museum items will be and are being removed by the District/others. The Contractor's observation was correct. The only items in the process of moving/removing were the museum items only. All other items within the kitchen building and weight room building are expected to be removed/demolished with the building.
	End RFIs	

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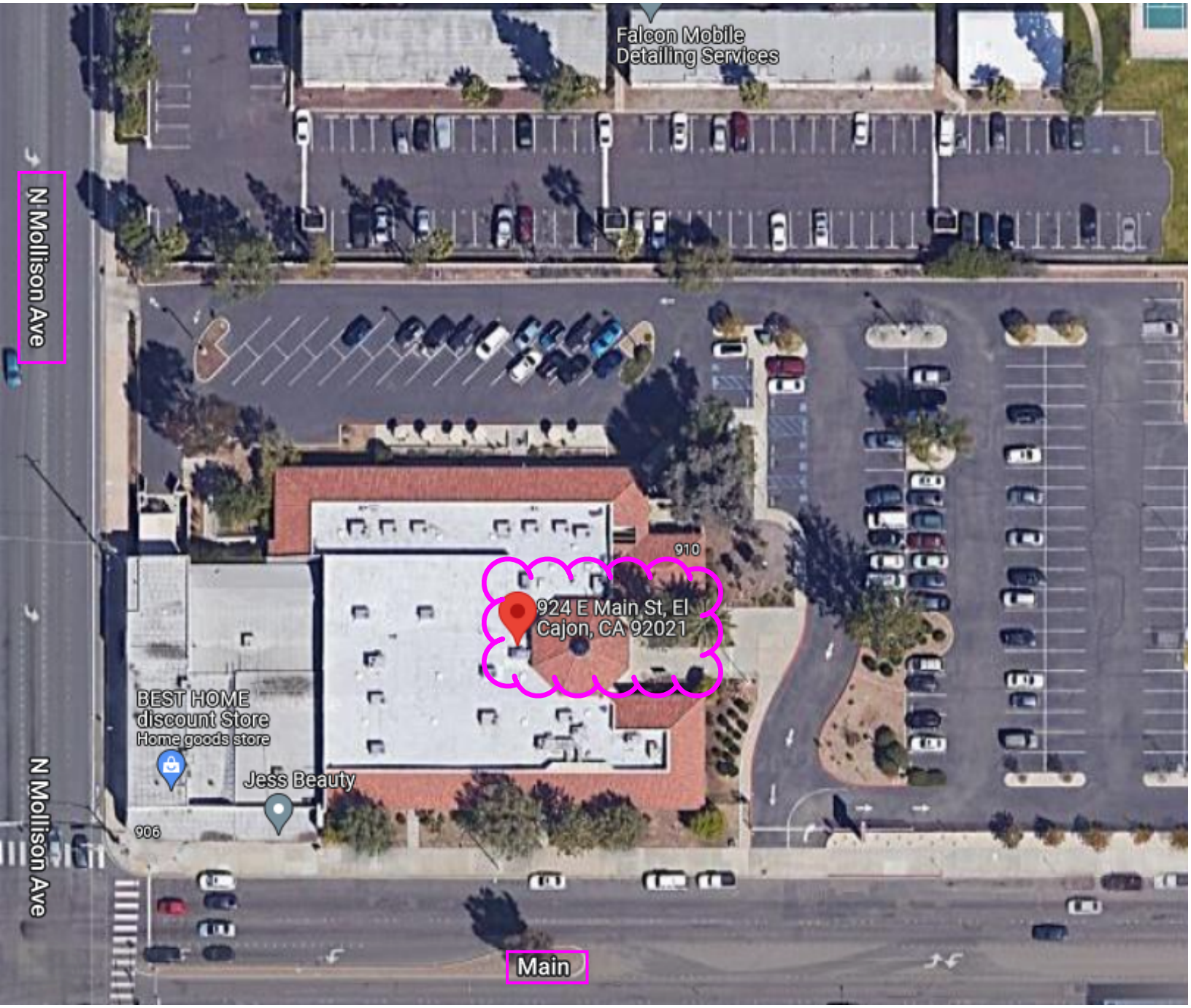
BID LOCATION (8/25/22 @ 2PM)

East County Regional Education Center (ECREC)



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GROSSMONT UNION HIGH SCHOOL DISTRICT

GROSSMONT HS KITCHEN AND WEIGHT ROOM

MULTI-PRIME

ATTACHMENT H
BID PACKAGE

CN-2982

DEMOLITION, ABATEMENT AND GRADING

TRADE CONTRACTOR SPECIFIC PROVISIONS
BID PACKAGE—CN-2982
DEMOLITION, ABATEMENT AND GRADING

VERSION 02

DEMOLITION, ABATEMENT AND GRADING – VERSION 02

The following clarifies certain inclusions, exclusions, and other information. This list is not inclusive of all work and is not limiting in any manner. This Exhibit shall supplement all General and Special Conditions in this Contract unless specifically noted herein to supersede them. This exhibit shall supersede all other conditions in the Contract and Contract Documents in the event of specific conflicts between the Documents.

I. **GENERAL REQUIREMENTS:** The following general requirements apply to all work included in this contract:

1. Full compliance and scope coverage with Specification Section(s):

   - DIVISION 00
   - DIVISION 01
   - 02 41 00 – Demolition
   - 31 10 00 – Site Clearing
   - 31 22 00 – Grading
   - 31 23 16 – Excavation
   - 31 23 16.13 – Trenching
   - 31 23 23 – Fill
   - Section 1 – Asbestos: Asbestos Abatement and Disturbance and Asbestos-Related Work (Via Attachment E – Hazardous Material Report)

   Full compliance and scope coverage with all other Project Scope and Specification Sections that interface with and require services related to this scope of work.

2. Prime Contractor and its subcontractors and/or lower tier contractors shall be a licensed contractor pursuant to the California Contractors License Law required for the performance of work in the appropriate classification(s) of contractor's license(s) for the work bid upon, and must maintain the license(s) throughout the duration of the Contract. License required for this work shall be A, or B, or C12 and C21 and C22.

3. Schedule of shop drawings, submittals, and dimension verifications: The following groups of shop drawings and submittals are not all-inclusive and are supplemental to requirements found elsewhere in the documents. These submittals shall be delivered to the Construction Manager not later than the below listed dates:

   a. Dust / Noise Control Plan: **Due: 5 Days after NTP**

   b. Staging Plan: **Due: 5 Days after NTP**

c. Haul Routes/Signage: **Due: 5 Days after NTP**

d. Material Test Reports: **Due: 5 Days after NTP**

e. Import Samples for Lab Analysis **Due: 5 days after NTP**

f. Documentation of existing conditions **Due: 5 days after NTP**

g. All Asbestos Abatement Submittals **Due: 5 days after NTP**

These due dates take precedence over other due dates found elsewhere in the Contract Documents. NTP = Notice to Proceed

4. Prime Contractor has reviewed the Project and is aware of existing conditions.

5. All work must be performed in strict accordance and complete compliance with all applicable Federal, State and local regulations, standards, and codes governing asbestos and hazardous materials abatement. The most recent edition of any relevant regulation, standard, document, or code shall be in effect. Where conflict among the requirements or with these regulations exists, the most stringent shall apply. Such governing agencies include but are not limited to the following:

   - U.S. Department of Labor, Occupational Safety and Health Administration (OSHA)
   - California Division of Occupational Safety and Health (DOSH)
   - U.S. Environmental Protection Agency (USEPA)
   - National Emissions Standard for Hazardous Air Pollutants (NESHAP)
   - Air Quality Management District (AQMD)
   - American National Standards Institute (ANSI)

6. All equipment as required to accomplish a complete scope of earthwork including hoisting, saw cutting, haul off of debris from site and dump fees.

7. Schedule: Prime Contractor shall issue to the Construction Manager a detailed Construction Schedule for this trade's work as it pertains to this Project. The work shall proceed in accordance with the Master Construction Schedule issued with the Construction Documents. This schedule shall be modified from time to time in order to properly coordinate and sequence the work; however, the Prime Contractor is responsible to supply sufficient manpower, equipment and material necessary to ensure the duration of time established for the Prime Contractor's work is maintained.

8. Prime Contractor shall coordinate all Fire Control requirements with the governing agency and include those costs in the base price of this contract. Maintain fire department access requirements, emergency access for District personnel and construction personnel.

9. Continuously clean all on and off-site roadways during earthwork/demolition, and ground improvement operations. Provide continuous cleanup of the streets and sidewalks during the haul off and import phases of the work. The Prime contractor shall have street cleaning equipment on site each day prior to starting the haul off and import operation. The Prime Contractor will not be permitted to start the haul off operation until the proper equipment is on site. Dispose of materials collected by the street sweeper in a proper manner off site.

10. Obtain and comply with all AQMD permits and CAL/OSHA safety requirements.

11. Provide dust and water control for demo, earthwork, and ground improvement operations. Site is to be sufficiently wetted at end of shift to prevent the need for off-hours dust control. Protect existing structures and surrounding areas from water damage due to dust control.

12. Include all necessary precautions (including potholing and/or exposing of each utility in the excavation zone) to prevent disturbing of known or unknown existing underground utilities and/or structures, which are not to be removed in this scope of work.

13. Provide protection of existing finishes to remain including installation and maintenance of dust and weather barriers for existing buildings. Special attention to protect existing hydrants, backflow preventers, meters, etc. shall be made.

14. Provide flagmen as required. It is understood that the work will take place within an operating campus and that the Prime contractor is solely responsible to protect the public and maintain un-interrupted access to the campus by the general public. Provide all barricades, etc. as required to achieve this.

15. Prime Contractor will be responsible for collateral damage to areas or finishes not scheduled for demolition as a result of his/her operations. Daily clean-up of all debris related to the Work of this Prime Contractor is required. All debris generated by this Prime Contractor shall be legally removed daily and disposed of offsite by this Prime Contractor.

16. It is understood that all scope inclusions contained in this bid package shall be provided by the Prime Contractor regardless of similar or identical inclusions found in other bid packages or trade contracts.

17. It is understood that the Trade Contractor Specific Provisions contained in the Contract Documents are a material element of this Contract and scope of work. It is specifically noted that the Prime Contractor shall be responsible for all requirements and clauses contained in these Trade Contractor Specific Provisions.

18. Include all necessary precautions to prevent disturbing of known or unknown existing underground utilities and/or structures which are not to be removed in this scope of work. Prior to any demo or grading, Prime Contractor shall develop a hazard plan highlighting existing utility locations including any as-built information that can be obtained. Prime Contractor shall provide their digital as-builts of located utilities. Shut-off valve and switch locations are to be identified in the plan. In addition, valve and switch locations are to be identified in the field and labeled for quick shutdowns in the event of a utility strike. The hazard plan shall be posted in the Construction Site Office for quick reference. Proper utility shut off keys are to be accessible at all times.

19. Provide all necessary railings, barricades and safety devices related to demolition work in compliance with all Local, State and Federal inspection agencies including temporary shoring and structural bracing. Remove all temporary items when no longer required.

20. Field verify existing conditions prior to start of any demolition/hazmat abatement.

21. Prime Contractor shall coordinate with the full set of Contract Documents and other trades to ensure that the limits of demolition are compatible with the requirements of all new installations. Prime Contractor has walked the project and has included all items for removal whether indicated on the plans or not. Coordinate opening sizes, locations, and edge conditions as required with CW Driver and other trades. Demolition of mechanical, electrical and plumbing components shown on the architectural and structural drawings will be performed by the Demolition Prime Contractor. The respective mechanical, electrical and plumbing (MEP) Prime Contractors will be responsible to cut, cap, safe-off, and disconnect the MEP components scheduled for demolition. Prime Contractor shall coordinate and mark out the MEP systems that are to be demolished with the MEP subcontractors in order to prevent removal of systems shown to remain.

22. Prime contractor acknowledges that there are existing mechanical, electrical and plumbing systems contained within the project boundaries that are scheduled to remain and will be in use during the course of construction. Not all electrical, plumbing and mechanical systems will be turned off and coordination and caution must be taken to ensure the safety

of all occupants and employees. Prime contractor must also make necessary provisions to ensure the pool and associated equipment room remains functional for the school's use.

23. It is understood that all the Crane, Trucks, erection equipment, grading equipment and any other heavy equipment must be staged within the project site boundaries.

24. Provide, erect and dismantle all ladders and scaffolding required to perform work. Provide all required rigging and hoisting necessary to perform this scope of work. All lifts and material handling required to perform this scope of work shall be provided by this Contractor.

25. Prime Contractor shall maintain and record as-built information of his/her work in a current condition. Prime Contractor shall transfer all as-built information onto the record set of drawings located at the Construction Manager's Field Office. All transferred information shall be neat, legible and in accordance with the guidelines set forth in the contract documents. Failure to provide as-built information in a timely manner will result in progress payments being withheld.

26. This Prime Contractor acknowledges and includes the cost for all required off-hour, overtime and weekend work schedules as required to perform the work included in this contract and also coordinate this contract work with all other related trades. This contractor shall provide manpower and shift schedules (in advance of the actual work being performed) to the Construction Manager so that it can be analyzed against the Project's schedule requirements.

27. Daily clean-up of all debris related to the Work of this Bid Package Contractor is required. All debris generated by this Bid Package Contractor shall be legally removed daily and disposed of offsite by this Bid Package. All Bid Package Contractors, while on site, will provide a clean-up laborer to be included in the weekly clean-up effort for the duration of the project. For bidding purposes, Prime Contractor shall provide 2 hours per week of clean-up labor for 64 total weeks.

28. Prime Contractor shall coordinate with all subtrades/Primes as it relates to this scope of work. Verify dimensional requirements, locations, paths of travel, structural connections and any other scope as it relates to site conditions and other Prime Contractor's work. This coordination process shall occur prior to or concurrent with detailing to avoid conflicts and field coordination.

29. Prime Contractor shall supply all hoisting equipment, operators and support personnel necessary to safely erect and/or install all of the

material or equipment included in this agreement.

30. Prime Contractor is required to properly staff the Project to maintain the Project's schedule and to ensure proper sequencing with other prime Contractors as required by the Construction Manager.

31. Prime Contractor acknowledges that space for storing materials within the worksite is limited. All delivery and storage of materials shall be scheduled and coordinated with the Construction Manager prior to shipping. Prime Contractor is responsible to assure that stocking of building materials does not overload the building structure or unreasonably impede the work of other trades. Prime Contractor shall promptly relocate stored and stockpiled materials when directed by Prime Contractor.

32. Prime Contractor is responsible to promptly remove from the project all surplus material and debris associated with its work.

33. Prime Contractor is responsible for scheduling and coordinating all deliveries required for this scope of work with the Construction Manager and other Prime Contractors. Prime Contractor to provide adequate flagmen, street closures, sidewalk closures, permits, traffic control, etc. for deliveries, transporting on site, pick-ups as required by the project schedule, specifications, job conditions and governing agencies within the jobsite limits. Prime Contractor shall adhere to OSHA safety standards while on the project site and shall engage their designated safety professional to make periodic jobsite walks for safety compliance. Any noted issues or concerns shall be reported to Construction Manager's Superintendent at the time of visit. Prime Contractor is responsible to maintain/repair/replace any temporary barricades. Prime Contractor acknowledges that parking space within the project boundaries is extremely limited. The only trucks in immediate use (Loading/Offloading, welding rigs, rigging, etc.) will be allowed to stage near work areas. Worker parking will be designated by the Construction Manager. Penalties for failure to comply with this requirement are the responsibility of the individual vehicle owner.

34. In the event of conflicts not clarified prior to bidding deadline, Prime Contractor shall assume the most stringent, higher quality and greater quantity of work for bidding purposes. If Prime Contractor still requires clarification after awarded the project, Prime Contractor shall generate an RFI. If appropriate, a deductive change order shall be issued if the clarification results in a reduced scope.

35. Prime Contractor understands that parking will not be permitted within the limits of work, staff parking, student parking or public parking spaces on campus, unless specifically allowed in the Contract Documents or agreed

upon by the District. Prime Contractor acknowledges that food trucks are prohibited from entry to the construction limits of work and Valhalla High School campus. This General Requirement supersedes parking provisions outlined elsewhere in the Contract Documents.

36. Prime Contractor has reviewed all documents, including Southern Bleacher's & Orness Design Group's Drawings.

II. <u>INCLUSIONS — DEMOLITION, ABATEMENT AND GRADING</u>: The following items are specifically included in the scope of this contract:

2. The intent of this contract is to provide all demolition, abatement, grading, trenching and fill work as required by the Contact Documents and as required to provide clear, unobstructed areas for new structures, utilities and work to be constructed. Provide miscellaneous "exploratory" demolition as required to complete coordination efforts included in this scope of work. Demolition should be performed in such a manner as to permit new work to begin without issue.

3. Prime Contractor has included all excavation, trenching and back fill as per the contract documents including any removals and import – Underground MEP trenching/backfill is the exception. Any import shall be DTSC approved. Should there be any conflicts, the most stringent requirement shall apply. MEP Prime Contractors shall layout saw-cut and demo limits for concrete, asphalt or any other hardscape in the areas of new underground points of connection or underground MEP work. This Prime Contractor shall coordinate with appropriate MEP Prime Contractors, provide saw-cutting, per MEP Prime Contractor layout and demo/remove (including hauling debris) the associated hardscape that was saw-cut. MEP Prime Contractors shall provide trenching, shoring, underground utility installation, backfill material (per plans/specs)/import (per plans/specs) and compaction necessary to meet grade requirements for Concrete Prime Contractor. Concrete Prime Contractor shall cover necessary fine grading for new hardscape.

4. Continuously clean all on and off-site roadways during demolition hauling operations. Dirt, debris or any other material cannot be left in a roadway over-night.

5. Prime Contractor shall provide power for its own equipment. Temporary power may not be available when Prime Contractor's work starts.

6. Provide protection of existing finishes to remain including installation and maintenance of dust and weather barriers. Prime Contractor shall protect existing finishes to remain and includes necessary means of protecting

said finishes. Special attention to protect existing hydrants, backflow preventers, meters, etc. shall be made.

7. Prime Contractor acknowledges that space for storing materials within the job site is extremely limited and that the security of all Prime Contractor's equipment is the responsibility of the Prime Contractor.

8. Prime Contractor shall provide all overtime/shift work as required to achieve the durations in the construction schedule.

9. Prime Contractor shall saw-cut and remove concrete decks, floors and walls as needed for installation of ductwork, conduit and piping as shown in the DSA approved drawings. Layout will be by others.

10. Remove and dispose of all electrical fixtures, devices equipment, etc. not scheduled to remain. Specific areas of each building will be isolated to temporary power shutdowns in order for this Prime Contractor to complete demolition scope. Power will be de-energized by the Electrical Prime Contractor. Prime Contractor to coordinate said power shut downs with Electrical Prime Contractor in order to make areas safe to work.

11. Remove drywall ceilings, walls and misc. items required to install new work. Coordinate exact limits of removal with other subtrades as required. This specifically includes, but is not limited to, framing and drywall at the center elevator bank which is not explicitly shown on the drawings but required for new work.

12. Remove all site items as indicated and required to construct the new work. This includes but is not limited to: asphalt/AC paving, concrete paving, shrubs, trees, fencing, light poles, parking signs, bollards, CMU, fencing, outdoor showers, drinking fountains and similar.

13. Remove all flooring and setting materials. Remove all existing carpet, tack strips, nails, etc.

14. Remove all abandoned piping and conduits if within the depth of the new sub grade design for new foundations and/or paving.

15. Remove all building items as indicated and required to construct the new work. This includes but is not limited to: interior/exterior walls, ceiling, flooring, soffits, doors/frames, windows, sheet metal, millwork/finish carpentry, lockers, fixtures, roofing, skylights, and/or plaster on walls.

16. Sawcut exterior walls/openings as noted in structural. Do not notch, cut, or remove any posts. Consult with architect/engineer if field conditions differ from those shown as noted in plans.

17. Sawcut and removal of existing structural slab as pertaining to new foundations, new and/or existing plumbing, depressed slabs and other similar work.

18. Remove/haul off existing MEP. MEP Contractors to mark-out and safe-off all items including but not limited to: equipment, exhaust fans, ductwork, piping, supports, conduit, devices, and/or other miscellaneous accessories.

19. Provide all required setup, equipment, PPE for all asbestos abatement and lead removal.

20. Remove all asbestos and lead in all areas of demolition as noted in Hazardous Materials Survey Reports by Titan Environmental Solutions. Prime Contractor includes all Titan Environmental Solutions' Conclusions and Recommendations, including but not limited to the notes, "Any materials that have not been identified in this report should be considered suspect ACM/ACCM and handled as ACM unless sampled and proven to be non-ACM by a DOSH Certified Asbestos Consultant" and "Any paints/coatings that have not been identified in this report should be considered presumed LBP and handled as LBP unless sampled and proven to be non-LBP by a CDPH Certified Lead Inspector/Assessor."

21. Provide APCD notification as required and coordinate with Construction Manager.

22. Perform all necessary grading work per Soils Report by Leighton Consulting, Inc., i.e. site clearing rough grade, excavation, cut, fill, remove and recompact, export, import, and finish grade. Prime Contractor includes industry standard equipment or equipment recommended to perform the work described in the Geotechnical Report. Prime Contractor acknowledges the presence of cobble, gravel, and Stadium Conglomerate and includes provisions for removal, as necessary to complete this Prime Contractor's scope. Provisions for removal include, but are not limited to screening, breaking, utilizing appropriate heavy equipment, etc. Prime Contractor has reviewed the boring logs and acknowledges the presence of concrete sections beneath asphalt paving. Prime Contractor shall assume concrete identified in boring data to be present in a minimum of two hundred (200) square feet surrounding the associated boring location.

23. Include haul-off and disposal of all debris, existing fill materials, spoils and surplus soil/cobbles/boulders.

24. The building pads subgrade shall be prepared per the recommendations of the Geotechnical Report.

25. Hardscape and AC pavement areas subgrade shall be prepared per the recommendations of the Geotechnical Report.

26. Prime Contractor shall include all required import/export and laydown per contract documents and Geotechnical Report. If import is required, DTSC testing of import material to be included.

27. A mockup will be constructed by others that includes all building finishes and flatwork samples. Include minor grading (if needed) the demo and haul away of this mockup. Include 20 yards of material to be hauled off. This will require a separate mobilization for the demo and removal.

28. Grade all areas to plus +/- .1' (+/- 1/10').

29. Regrade all work areas after other Prime Contractors have completed utility installation.

30. Prime Contractor shall include eighty (80) additional demolition journeyman labor hours. The Construction Manager/District may authorize the use of these hours only.

31. Prime Contractor shall include thirty (30) additional abatement journeyman labor hours. The Construction Manager/District may authorize the use of these hours only.

32. Prime Contractor shall include fifty (50) additional grading journeyman labor hours. The Construction Manager/District may authorize the use of these hours only. This signifies labor hours only

33. Prime Contractor includes any temporary trash chute required for demolition/abatement activities.

34. Utility Shut-down requests must be submitted to the Construction Manager 72-hours in advance.

35. Jack hammering, cranes, excavators, saw-cutting and any other heavy equipment use shall be coordinated with the Construction Manager.

36. Prime Contractor shall include provisions for staffing the project with an ON-SITE Project Manager or Superintendent capable of making financial decisions & manpower decisions while contract scope or added scope is being performed. Prime Contractor shall account for this scope by explicitly including this item on the Prime Contractor's Schedule of values (SOV). This individual is prohibited from performing any work. The intent is for this individual to manage and supervise this Prime Contractor's scope while the Prime Contractor is performing scope on the project.

37. Prime Contractor shall coordinate with GUHSD for salvaging of existing equipment/site components prior to demo/abatement Prime Contractor includes salvaging all other equipment/material explicitly called out to be salvaged/saved in the Contract Documents, unless specifically noted otherwise.
38. Prime Contractor shall completely remove all hazardous material identified in the Hazmat Report (Attachment E), regardless of quantities provided within the report.

39. MEP, Fire Alarm & Utility Primes will mark-out demolition of existing equipment/systems. Prime Contractor shall coordinate via site demo mark-out meetings/job-walks with MEP, Fire Alarm & utility primes before and after abatement. Prime Contractor has reviewed all Contract Documents and has included demolition on sheets other than those explicitly named “Demolition” sheets.

40. Prime Contractor includes one hundred (100) additional labor hours. This item is intended to be inclusive of journeyman labor hours without equipment. The Construction Manager/District may authorize the use of these hours only.

41. Include additional concrete slab cutting and removal. For bidding purposes, assume one thousand (1,000) square feet and 8-inch-thick concrete slab. For bidding purposes, assume a section of 2 feet wide by 500 feet long. The Construction Manager/District may authorize the use of these hours only.

42. Prime Contractor has included multiple mobilizations to achieve the requirements of the contract. For bidding purposes, include six (6) mobilizations. A mobilization is defined as removal and return of equipment and materials. A crew leaving the site is not a demobilization.

43. Prime Contractor includes testing existing irrigation system with GUHSD and Landscape Prime Contractor prior to start of demolition activities, and at the end of the project.

44. In the event that the Prime Contractor is scheduled to perform work by the Construction Manager and the Prime Contractor does not arrive on-site or mutually agree upon a date of scope completion within 48-hours of a notice, the Construction Manager shall select an alternative Contractor to perform the work and shall back-charge the responsible Prime Contractor for the scope they did not perform.

45. Include temporarily capping any plumbing pipe where demolition of water fountains, showers, or any other plumbing-related equipment is scheduled to be removed.

46. Include resources to achieve the requirements of ALL “Demolition General Notes” shown on the Contract Drawings.

47. Include X-ray investigation of any existing concrete wall or structural wall that requires saw-cutting and removal of a portion of the wall. Contractor to submit X-ray results to Construction Manager & Structural Engineer prior to saw-cutting and removal portions of concrete walls or structural walls.

48. Prime Contractor includes all dumpsters, trash bins, hauling trucks, hazardous waste disposal, etc. to complete Prime Contractor’s scope. Dumpsters, trash bins, haul trucks, hazard waste bins/trucks, etc. will not be provided for this Prime Contractor.

49. Prime Contractor shall participate in an abatement kick-off meeting with the hazardous abatement consultant within seven (7) of NTP.

50. Prime Contractor includes an additional two hundred (200) cubic yards of DTSC certified import soil, suitable for back-fill

51. Prime Contractor includes scope addressed in General Demolition Note #1 on E1.0.

52. Prime Contractor includes provisions to demo hardscape~~,~~ and haul-off debris~~, trench and backfill~~ for underground electrical conduit shown on E1.1.

53. Prime Contractor includes demolition and removal of asphalt five (5) feet wide around the base of the existing Eucalyptus tree in the quad – by hand. No heavy equipment can be used for this removal/demolition. Prime Contractor includes coordination with the project Arborist in order to carefully remove the asphalt without damaging the root structure of the tree.

54. Prime Contractor has reviewed Attachment J – Logistics Plan and understands that a portion of the demolition work is in close proximity to the existing pool and pool deck. Prime Contractor shall include additional poly-sheeting and fabric mesh at the adjacent fence in order to prevent any collateral damage and/or debris falling on the pool deck. Prime Contractor shall include walking the pool deck at the conclusion of each day while performing demolition tasks adjacent to the pool deck fence in order to ensure foreign debris does not fall in the pool or on the pool deck.

55. Prime Contractor understands that the intent of the project is to abate both buildings at the same time. Prime Contractor shall sufficiently staff the project in order to facilitate abatement on both buildings at the same time as well as meeting the contractual durations provided in the Master Construction Schedule.

56. Prime Contractor includes demolition of all existing hardscape and existing concrete footings at existing bleachers. Prime Contractor shall assume existing concrete footings/caissons are the same size as the newly designed footings/caisson in Southern Bleacher's drawings. In addition to demolition and removal, Prime Contractor shall rough grade the bleacher site accordingly for the new hardscape underneath the new bleachers.

IV. ALLOWANCES: The following allowances are included in this scope of work. The Construction Manager must agree to the price, type and extent of additional scope before work is started. Field Time and Material tickets must be signed by Construction Manager's superintendent on a daily basis to account for the time, material, and equipment used from these allowances. All time, material, and equipment used from these allowances will be billed against these allowances and any portion of the original allowance amount not used will be credited back to the Owner at the end of this Contract's scope of work as a deductive change order. This Article is separate and exclusive from all other Work required by the Contract.

CN-2982 Allowance #1: Unforeseen Demolition/Abatement = $50,000.00

V. ALTERNATES: N/A

VI. EXCLUSIONS:

1. Electrical safe off (by Electrical Contractor)

2. Cutting and capping of gas and wet utilities (by Site Utility Contractor)

3. Survey (Provided by GUHSD)

4. Demolition and removal of existing below grade wet utilities (by Site Utility/Electrical Prime Contractor)

5. Trenching and backfill for site electrical utilities (by Electrical Prime Contractor)

GROSSMONT UNION HIGH SCHOOL DISTRICT

GROSSMONT HS KITCHEN AND WEIGHT ROOM
MULTI-PRIME

ATTACHMENT H
BID PACKAGE

CN-2983

STRUCTURAL/SITE CONCRETE

TRADE CONTRACTOR SPECIFIC PROVISIONS
BID PACKAGE—CN-2983
STRUCTURAL/SITE CONCRETE

VERSION 02

STRUCTURAL/SITE CONCRETE – VERSION 02

The following clarifies certain inclusions, exclusions, and other information. This list is not inclusive of all work and is not limiting in any manner. This Exhibit shall supplement all General and Special Conditions in this Contract unless specifically noted herein to supersede them. This exhibit shall supersede all other conditions in the Contract and Contract Documents in the event of specific conflicts between the Documents.

I. **GENERAL REQUIREMENTS:** The following General Requirements apply to all work included in this Contract:

1. Full compliance and scope coverage with Specification Section(s):

   - DIVISION 00
   - DIVISION 01
   - 03 10 00 – Concrete Forming and Accessories
   - 03 20 00 – Concrete Reinforcing
   - 03 30 00 – Cast-In-Place Concrete
   - 03 35 11 – Concrete Floor Finishes
   - 05 11 – Masonry Mortaring and Grouting
   - 04 20 00 – Unit Masonry
   - 07 92 00 – Joint Sealants
   - 09 05 61 – Common Works Results for Flooring Preparation (For this Prime)
   - 09 67 00 – Fluid-Applied Flooring
   - 32 11 23 – Aggregate Base Courses
   - 32 12 16 – Asphalt Paving
   - 32 13 13 – Site Concrete
   - 32 31 13 – Chain Link Fences and Gates
   - 32 84 00 – Irrigation
   - 32 93 00 - Planting

   Full compliance and scope coverage with all other Project Scope and Specification Sections that interface with and require services related to this scope of work.

2. Prime Contractor and its subcontractors and/or lower tier contractors shall be a licensed contractor pursuant to the California Contractors License Law required for the performance of work in the appropriate classification(s) of contractor's license(s) for the work bid upon, and must maintain the license(s) throughout the duration of the Contract. License required for this work shall be B, or (C8 and C13 and C29 and C50)

3. Schedule of shop drawings, submittals, and dimension verifications: The following groups of shop drawings and submittals are not all-inclusive and are supplemental to requirements found elsewhere in the Contract Documents. These submittals shall be delivered to the Construction Manager not later than the below listed dates:

a. Concrete and Formwork Product Data. Including but not limited to: all Forming Systems; Concrete Product Data including Mix Designs for all mixes, Base and Sand Gradations and Data, Vapor Barriers, Curing Blankets, Curing Compounds, Sealers, Formwork Shop Drawings, Joint Layout Drawings, Material Certificates, Inserts, and Embeds, etc.

i. Due: 14 Calendar Days after Notice to Proceed

b. Rebar Shop Drawings for all Foundations and Slab on Grade

ii. Due: 14 Calendar Days after Notice to Proceed

c. #040511 – Masonry Mortaring & Grout and #042000 – Unit Masonry

iii. Due: 10 Calendar Days from Notice to Proceed

d. #033511 – Concrete Floor Finishes & #096700 – Fluid-Applied Flooring

iv. Due: 14 Calendar Days after Notice to Proceed

e. Meeting Minutes from Pre-Installation Meeting

v. Due: 1 week after meeting is held

f. ALL other contractual submittals

vi. Due: 28 Calendar Days from Notice to Proceed

vii. These due dates take precedence over other dates found elsewhere in the Contract Documents.

4. Prepare any coordination drawings required to show the interface between work provided by this Contract and others.

5. Procurement of Critical Long Lead Items: Prime Contractor shall be responsible to ensure that the following critical long lead items are delivered to the project site by the noted delivery date regardless of approval status.

6. Prime Contractor has included provisions to store fabricated material off-site until required installation date.

7. Schedule: Prime Contractor shall issue to the Construction Manager a detailed Construction Schedule for this trade's work as it pertains to this Project. The work shall proceed in accordance with the Master Construction Schedule issued with the Construction Documents. This schedule shall be modified from time to time in order to properly coordinate and sequence the work; however, the Prime Contractor is responsible to supply sufficient manpower, equipment and material necessary to ensure the duration of time established for the Prime Contractor's work is maintained as per the Construction**.**

8. Prime Contractor has reviewed the Project and is aware of existing conditions.

9. Provide flagmen as required. It is understood that the work will take place within an operating Campus and that the Prime Contractor is solely responsible to protect

the public and maintain uninterrupted access to the campus by the general public. Provide all barricades, etc to achieve this. Perform during off-hours as required to avoid disruption of campus operations.

10. Comply with all City, County and State requirements, prepare haul route and obtain permits as required.

11. Prime Contractor will be responsible for collateral damage to areas or finishes not scheduled for demolition as a result of his operations.

12. CalOSHA compliant safety eye protection is required at all times for all personnel, workers, and visitors on the construction site in accordance with District Standards.

13. Include all work as referenced by notations: “by Concrete Contractor”, “by General Contractor” (as it applies to the scope contained herein), or similar that may be noted throughout the entire set.

14. Prime Contractor shall provide protection of existing finishes to remain including installation and maintenance of dust and weather barrier.

15. It is understood that all scope inclusions contained in this bid package shall be provided by the Prime Contractor regardless of similar or identical inclusions found in other bid packages or trade contracts.

16. It is understood that the Trade Contractor Specific Provisions contained in the Contract Documents are a material element of this Contract and scope of work. It is specifically noted that the Prime Contractor shall be responsible for all requirements and clauses contained in these Trade Contractor Specific Provisions.

17. It is understood that all crane, trucks, concrete pumping equipment, wash outs, etc. must be staged within the project site boundaries. Prime Contractor must visit the site and prepare a pump plan prior to scheduling concrete pumping equipment

18. Provide, erect and dismantle all ladders and scaffolding required to perform work. Provide all required rigging and hoisting necessary to perform this scope of work. All lifts and material handling required to perform this scope of work shall be provided by the Concrete Contractor.

19. Prime Contractor shall maintain and record as-built information of his work in a current condition. The Prime Contractor shall transfer all as-built information onto the record set of drawings located at the Construction Manager’s Field Office. All transferred information shall be neat, legible and in accordance with the guidelines set forth in the contract documents. Failure to provide as-built information in a timely manner will result in progress payments being withheld.

20. Daily clean-up of all debris related to the work of this Bid Package Contractor is required. All debris generated by this Bid Package Contractor shall be legally removed daily and disposed of off-site by this Bid Package Contractor. All Bid Package Contractors, while on site, will provide a clean-up laborer to be

included in a weekly clean-up effort for the duration of the project. For bidding purposes, Prime Contractor shall provide 2 hours of clean-up labor for 65 total weeks.

21. Directly coordinate with all subtrades/Primes as it relates to this scope of work. Verify dimensional requirements, locations, paths of travel, structural connections and required sleeving and/or penetrations. Coordinate, framing, MEP trades, special equipment, interior finishes, etc. This coordination process shall occur prior to or concurrent with detailing to avoid conflicts and field coordination problems.

22. Prime Contractor shall supply all hoisting equipment, operators and support personnel necessary to safely erect and/or install all of the material or equipment included in this agreement.

23. Give 48-hour written notice to both Construction Manager and Inspector of Record prior to the initial start and all subsequent phases of shop fabrication.

24. Prime Contractor will have all required local and state licenses and certifications as to allow shop fabrication without deputy inspection. Prime Contractor's field welders will have all required licenses /certifications as required by the Contract Documents and Local Authorities. Where local/state welding requirements are more stringent than the specified welding requirements; the most stringent shall govern.

25. Prime Contractor is required to properly staff the Project to maintain the Project's schedule and to ensure proper sequencing with other prime Contractors as required by the Construction Manager.

26. This Prime Contractor acknowledges and includes the cost for all required off-hour, overtime and weekend work schedules as required to perform the work included in this contract and coordinate this contract work with all other related trades. This Prime contractor shall provide manpower and shift schedules (in advance of the actual work being performed) to the Construction Manager so that it can be analyzed against the Project's schedule requirements.

27. Prime Contractor is responsible to provide all layout for its work from survey control points and lines, including all building corners, grid lines, offsets, elevations, etc.

28. Provide all necessary protection for new work and adjacent finishes from Prime Contract work operations. Include steel plates, plywood, plastic and masking protection as required. Prime Contractor is responsible to maintain/repair/replace any temporary barricades that are moved or damaged by its work. Prime Contractor is responsible to protect all existing structures/MEPs/benchmarks/miscellaneous items as required by the Contract Documents during this Prime Contractor's work.

29. Prime Contractor acknowledges that space for storing materials within the worksite is limited. All delivery and storage of materials shall be scheduled and coordinated with the Construction Manager prior to shipping. Prime Contractor is responsible to assure that stocking of building materials does not overload the building structure or unreasonably impede the work of other trades. Prime Contractor shall promptly relocate stored and stockpiled materials when directed by Prime Contractor.

30. Prime Contractor is responsible to promptly remove from the project all surplus material and debris associated with its work.

31. Prime Contractor is responsible for scheduling and coordinating all deliveries required for this scope of work with the Construction Manager and other Prime Contractors. Prime Contractor to provide adequate flagmen, street closures, sidewalk closures, permits, traffic control, etc. for deliveries, transporting on site, pick-ups as required by the project schedule, specifications, job conditions and governing agencies within the jobsite limits.

32. Prime Contractor shall adhere to OSHA safety standards while on the project site and shall engage their designated safety professional to make periodic jobsite walks for safety compliance. Any noted issues or concerns shall be reported to Construction Manager's Superintendent at the time of visit. Prime Contractor is responsible to maintain/repair/replace any temporary barricades.

33. Prime Contractor acknowledges that parking space within the project boundaries is extremely limited. The only trucks in immediate use (Loading/Offloading, welding rigs, rigging, etc.) will be allowed to stage near work areas. Worker parking will be designated by the Construction Manager. Penalties for failure to comply with this requirement are the responsibility of the individual vehicle owner.

34. In the event of conflicts not clarified prior to bidding deadline, Prime Contractor shall assume the most stringent, higher quality and greater quantity of work for bidding purposes. If Prime Contractor still requires clarification after awarded the project, Prime Contractor shall generate an RFI. If appropriate, a deductive change order shall be issued if the clarification results in a reduced scope.

35. Prime Contractor shall furnish and install all mock-ups required by specifications found within this Prime Contractor's scope.

36. Prime Contractor shall include provisions to comply with all delegated-design submittal requirements found within their respective specification sections.

37. Prime Contractor shall comply with and include all General Notes shown on S0-0.1 S0-0.2 & S0-0.3

38. Prime Contractor understands that parking will not be permitted within the limits of work, staff parking, student parking or public parking spaces on campus, unless specifically allowed in the Contract Documents or agreed upon by the District. Prime Contractor acknowledges that food trucks are prohibited from entry to the construction limits of work and Grossmont High School campus. This General Requirement supersedes parking provisions outlined elsewhere in the Contract Documents. The general site wide storm water pollution prevention plan (SWPPP) or water Pollution Control Program (WPCP) will be prepared and implemented by this Prime Contractor. Prime Contractor shall assume full responsibility to maintain, monitor and modify the SWPPP/WPCP as required by state law and through the entire construction duration. Furnish, install, modify & maintain all SWPPP/WPCP improvements for the project duration, and remove when directed by the Construction Manager. This includes but is not limited to:

    a. 4 ea. Rumble plates/shaker plates the full width of the construction entries

    b. Fiber rolls around entire site.

    c. All other SWPPP/WPCP improvements noted in the Contract Documents and required by law.

    d. Keep SWPPP/WPCP plan located in Construction Managers Field Office current.

    e. Include forty (40) man hours of labor to augment SWPPP/WPCP as directed by Construction Manager.

    f. Include an additional twenty (20) hours of street sweeping. Hours to be used in four-hour blocks. This is in addition to the Prime Contractor's requirements and may only be used as directed by the Construction Manager. This may include street sweeping after Contractor has demobilized from the site.

II. **REINFORCING STEEL INCLUSIONS:** The following items are specifically included in the Reinforcing Steel scope of this Contract:

1. Prime Contractor to furnish and install all reinforcing steel and related accessories for concrete work including but not limited to: footings, grade beams, stem walls, slab on grade, thickened slab edges, walls, curbs, equipment pads, housekeeping pads, masonry walls, patch-back, slab infills, etc. Include chairing/spacers of mesh if required by the Contract Documents.

2. All handling and off-loading of materials.

3. All hoisting for Contract work and material placement as required by schedule and access considerations.

4. Coordinate all shop fabrication / field inspection. (Costs of inspection by others.) Become completely familiar with testing requirements and coordination of mill certificates, labeling, tagging, and stamping of steel during the fabrication process, shipment to jobsite and erection. No unidentified steel shall be used. All steel will have mill certifications and be properly identified (source, heat or melt number, etc.). If required, the Inspection Firm will take steel samples and will perform destructive tests. Accordingly, purchase steel in such quantity, length, size, etc. to allow steel samples to be taken from the actual elements to be used in construction. Coordinate this "couponing" of the steel and provide the samples required by the Testing Laboratory. Provide adequate access for Inspectors to all elements of work. Means of access include ladders, lifts, scaffolds, etc. Costs for re-inspection of any work as a result of previous failed inspection will be the responsibility of this Prime Contractor.

5. Coordinate locations/placement of all reinforcing with all other building elements i.e., structural steel, embeds for other trades, electrical work, blockouts, sleeves, forming systems, etc. reposition reinforcing as required to provide proper clearances.

6. All material shall be clean of all scale, rust, oils, dirt, foreign matter etc., immediately prior to concrete placement.

7. Bracing/guying of all reinforcing work as required including columns, pilaster, walls, etc.

8. Directly coordinate with the Construction Manager and for all schedule and specific job requirements, as follows:

   i. Delivery, stockpiling, staging and distribution of materials.
   ii. Minor revisions in fabrication and dimensions to reinforcing steel/mesh due to actual field conditions, stepped footings, elevation changes, etc.

9. Remove all surplus reinforcing materials and debris from Project as directed by the Construction Manager.

10. Furnish and install all chairing and spacers for work as required. All rebar mats for SOG will be dobied (pulling is not acceptable).

11. Supply sufficient personnel during concrete placement (Pour Watch) to ensure reinforcement is maintained within the required tolerances.

12. Furnish, install, and maintain rebar dowel protectors in accordance with OSHA requirements.

13. Straighten/replace rebar/mesh that is temporarily removed, bent, and/or adjusted by other trades.

14. Welding of reinforcing steel as required per the Contract Documents. Welders must be certified by applicable organizations. Welding Certificates shall be furnished to Construction Manager as required per Specifications.

III. <u>CONCRETE FLOOR FINISHES & FLUID-APPLIED FLOORING INCLUSIONS</u>: The following items are specifically included in the Structural & Site Concrete scope of this Contract:

1. Include Concrete Floor Finishing noted as CONC-1 on the Color, Materials & Finishes Legend shown on ID-1.0 and all building Finish Plans and other such locations. Prime Contractor includes all concrete floor finishes applications noted in specification #033511 – Concrete Floor Finishes. In addition to the requirements outlined in the specifications, Prime Contractor shall provide a record of material (gallons) used on the project via daily reports and invoices, as well as a record of cure time between coats. If the Prime Contractor proposes to use multiple manufacturer's for concrete sealing and/or epoxy products, Prime Contractor must provide a letter from the manufacturers that states their products are compatible with one another and that the manufacturers will maintain their respective warranties.

2. Prime Contractor shall furnish and install liquid densifier/hardener at all concrete floors/surfaces, per the Contract Documents (#033511-2.04A1,A2 & A3). Prime Contractor shall install products per the manufacturer's instructions and in coordination with the full extents of the plans and specifications.

3. Prime Contractor shall furnish and install clear concrete sealer with a slip-resistant coating applicable to the clear sealer product at all CONC-1 areas. Prime Contractor shall install products per the manufacturer's instructions and in coordination with the full extents of the plans and specifications.

4. Prime Contractor shall furnish and install all Fluid-Applied Flooring per #096700 and per plans. Prime Contractor shall prepare substrates per the manufacturer's instructions, per #096700 and per #090561-Common Work Results for Flooring Preparation.

5. Prime Contractor includes moisture vapor emission testing, internal relative humidity testing and alkalinity (pH) tests at all areas where concrete sealer or fluid-applied flooring is schedule to be installed if the concrete sealer and/or the fluid-applied flooring manufacturer requires certain moisture content, relative humidity or pH levels prior to applying their product. Prime Contractor shall follow specific remediations per #090561-3.01C, as applicable.

6. This Prime Contractor provides both the new concrete and the concrete sealer and fluid-applied flooring; therefore Prime Contractor is responsible for coordinating it's own work and ensuring that the concrete substrate meets the requirements of the concrete floor sealing and fluid-applied flooring manufacturer's substrate and preparation requirements.

7. Prime Contractor shall furnish and install floor protection at all concrete sealer & fluid-applied flooring areas. Floor protection shall be 'Skudo' type or better. Prime

Contractor shall include removal of said floor protection.

IV. STRUCTURAL & SITE CONCRETE INCLUSIONS: The following items are specifically included in the Structural & Site Concrete scope of this Contract:

1. Furnish and install all Structural/CIP Concrete and Site Concrete including, but not limited to foundations, slabs on grade, thickened slab edges, curbs, footings for CMU/masonry, equipment pads, elevator pits, patch-back, slab infills, curbs at building walls where indicated, driveways, sidewalks, curb and gutter, flatwork, caulking or joint filling at exterior concrete, etc.

2. Include depressed slabs as indicated on Foundation Plans, architectural plans, plumbing plans and other such locations.

3. Furnish and install all Site Concrete including, but not limited to concrete paving, concrete steps/ stairs, curbs, sawcut and isolation joints, dowels, and all exterior joint sealants.

4. Include truncated domes where indicated in plans (if applicable).

5. Include interior and exterior housekeeping pads for all equipment and enclosures as required.

6. Prior to starting any work, check for ADA compliance as required to match and join adjacent surfaces.

7. Include patch-back of removed structural slab required for new foundations, plumbing, depressed slabs and other similar work. Include all work pertaining to patch-back including but not limited to doweling, drilling, epoxy, reinforcing.

8. Include aggregate base as required by Contract Document requirements. This includes but is not limited to the recommendations of the Geotechnical Report.

9. Obtain and pay for all concrete mix designs required for project. Mix designs shall comply with all Contract Document requirements.

10. Directly coordinate with all trades that require sleeves in concrete work. Verify dimensions, locations and special requirements of openings, penetrations, sleeves, and blockouts in concrete work with other trades prior to pours. Install sleeves and block-outs and infill later.

11. At buildings, install all metal stud anchor bolts and structural embeds in concrete. Framing Prime Contractor will provide the anchor bolts for Concrete Prime Contractor's installation. They will provide either a layout drawing or layout in the field. Concrete Prime contractor will complete the installation. Coordinate directly with other Prime Contractors that have embedded items in concrete.

12. It is the responsibility of this Prime Contractor to coordinate and schedule all required testing and inspections for this scope of work. Construction Manager shall be notified of any and all such inspections and tests. Costs of inspection and testing will be by other except for re-inspection or premium time costs.

13. Install all concrete equipment pads, pits, depressions, keyways, sumps and curbing for all electrical, mechanical and plumbing items that are included in all Contract Documents. Verify the quantity, size and location with each respective trade; see Mech., Elec., Plumbing, Fire Protection and Architectural drawings for more specific information. Prime Contractor shall assume all floor mounted water heaters, transformers and lighting inverters require a concrete pad with a minimum distance of 8" from the edge of the pad to the centerline of the anchorage point of the equipment, unless a specific detail is referenced in the plans.

14. All exposed concrete walls and columns shall be constructed to the ACI standards for Architectural Concrete. This specifically includes form lumber and plywood, tie spacing, form liners, the use of fiberglass forms, form releases, patch and sack, pour rates, etc. All concrete textures and finishing of all concrete work, including sub slabs, as well as curing compounds and sealers shall be compatible with all other building components and finishes, i.e., waterproofing, roofing, tile flooring, flooring, adhesives, paint, etc.

15. Furnish and install construction joint slip dowels and smooth round bar as required.

16. Provide all cold joints, construction joints, expansion joints, control joints, keyways, saw-cut joints, pre-formed joint fillers, etc., as required by the Contract Documents. If applicable, include foam or other separation materials at special conditions. Reference typical details throughout the Drawings. All joints shall be square and true using good equipment with sharp blades to accomplish cuts without spalling.

17. Install all embeds, inserts, anchor bolts, sleeves, reglets, handrail/guard rail sleeves etc., (furnished by others unless noted otherwise) in concrete work. Provide templates, racks, etc., as required to secure items during pouring operations.

18. Include all necessary patching, grinding, infill and sacking to any concrete work performed by the Prime Contractor.

19. This Prime Contractor is responsible for:

    a. Keeping all streets and roads free of debris and repairing any damage caused by work operations.
    b. Controlling dust during work operations.
    c. Ensuring all work areas are adequately drained and bermed to prevent inundation by surface water.
    d. Protecting designated areas or items from damage by work operations.
    e. Flagmen, barricades, traffic control during work operations.

20. At the conclusion of all work and when directed by Construction Manager, power wash all exterior sidewalks and clean-up all sidewalk areas.

21. Place concrete fill around sleeves and penetrations below and around footings. This work will be exclusive, review all Contract Documents.

22. Building and Structural Grading: Concrete Contractor shall accept building pads and rough grading from Earthwork Contractor at +/- 0.5'. Prime Contractor will be responsible to provide all cut and fill (to balance) required to bring the building and immediately surrounding

site to final subgrades. This Contract specifically includes all excavation and backfill of pits, walls, depressions, etc. for the project. Prime Contractor includes removal of their own spoils generated

23. Remove all surplus spoils. Prime Contractor is aware of the non-suitability of existing on-site soils that are not to be used as structural fill. All import soils must be certified free from health hazard contaminants in accordance with DTSC requirements. Prime Contractor is responsible for all costs associated with testing, research, and certification of the import site or materials plant to ensure import materials are in complete compliance.

24. All spoils generated by the work included in this Contract shall be removed from the site and disposed of in a legal manner by this Prime Contractor.

25. Include all necessary fine grading under and surrounding all concrete work.

26. Furnish and install crushed rock base materials below structural concrete work as required by the Contract Documents. Furnish and install all vapor barriers below slabs. Do not puncture vapor barrier with form stakes, screed pins or any other item. Seal all pipe and conduit penetrations in accordance with manufacturer's recommendations.

27. Provide block outs for all building materials/components/utilities, etc. as required. Include patching/infill of blockouts as required. Coordinate the sizes and locations with respective trades. (This includes column diamonds, wall blockouts, etc.)

28. Form both sides of all concrete structures below grade, i.e. retaining walls, stairs, etc. so that an acceptable surface for waterproofing is achieved. Prime Contractor includes all underground waterproofing at locations where this Prime Contractor has installed below-grade concrete or as shown on drawings.

29. Clean, patch, grind all concrete areas to receive waterproofing as acceptable to the waterproofing manufacturer. This includes tops and faces of footings.

30. Immediately and continuously de-water and pump out to appropriate drainage receptacle; all footings, pits, structural excavations, etc., as required by water ponding and weather conditions. Automatic pumps shall be used during all off-hour periods of construction. Immediately clean, "muck-out", remove soft/muddy soils from all foundation and pit excavations as required by Inspector or Soils Engineer so that work may continue. If required, remove/replace formwork, reinforcing steel, embeds, etc., as required to clean out foundations/pits. Reference Supplemental Conditions for further rain damage prevention responsibilities.

31. Clean out of all concrete conveying equipment shall be performed at a location designated by the Construction Manager. Remove all debris, form materials, surplus materials, concrete, etc. from the site at regular intervals determined by Construction Manager. Protect all storm drains from contamination. Provide a SWPPP compliant contained washout area.

32. Provide and maintain rebar protection in accordance with CalOSHA approved methods.

33. Furnish and install all curing/hardener/sealer compounds. Verify and assure that all

compounds are fully compatible with future flooring/finish applications.

34. Dobie all reinforcing on slabs during the concrete placing operations to insure proper coverage and location.

35. Install all required slab depressions and proper sloping of structural slabs for architectural concrete topping slabs, ceramic/quarry tile, special flooring, cast stone, thresholds, kitchen equipment, etc. Verify all dimensions and specific requirements with the respective trades. If a discrepancy occurs between the Contract Drawings, specifications and/or finish schedule, the Construction Manager shall be notified immediately. If a depression was not provided, or incorrectly placed, then make all required corrections.

36. Pre-saturate soils (if required).

37. Install all concrete within the required tolerances. For slab on grade, place slabs to achieve the specified Floor Flatness (FF) and Floor Levelness (FL) as required.

38. Include drilling and epoxy grouting for rebar dowels.

39. Install all structural steel anchor bolts (furnished by Structural Steel Contractor) that are installed in concrete walls, decks, foundations, etc. Construct templates as required for proper bolt placement and alignment. Level one nut to proper elevation in each bolt pattern for the Structural Steel Contractor.

40. Grout/dry-pack under structural steel columns, base plates, beam seats, wood sills, etc.

41. Protect all in slab/below slab embeds during and after concrete placement. This specifically includes but is not limited to electrical raceways, floor boxes, floor drains, etc.

42. Slope all floor slabs to drains as required by the Contract Documents.

43. The Concrete Contractor shall grade the area directly outside and inside the building.

    a. To allow installation of concrete.
    b. Backfill level to allow installation of scaffolding.
    Re-contoured to final grades after scaffolding is removed.

44. All interior (non-sloping) slabs shall have a maximum deviation of 1/8” in 10’ from design elevation. Correct all non-complying slabs.

45. Install all embeds, sleeves, inserts, ledger angles, bent plate, weld plates, beam seats, bearing plates, deck bearing angles and bent plates, beam shear plates, column anchor bolt clusters, anchor bolts and hooked bolts for framing, steel and all other attachment hardware that is embedded in concrete work as required. Fully coordinate requirements and locations of these embedded items with the affected trades. Protect and clean these embed items to allow removal, replacement and tightening of nuts.

46. At all anchor bolts and other embedded items, properly coat and clean all threads as required to allow tightening of bolts without further cleaning action. Install all washers and nuts on embeds.

47. Civil and Landscape Plans shall be referenced, as well as the architectural plans for the site work portion of concrete work.

48. Include flatwork joint sealant.

49. Prime Contractor shall install all reinforcing for site work concrete.

50. Prime Contractor shall dig all thickened edges for site work concrete, including but not limited to ramps, sidewalks, raised curb sections, etc.

51. Prime Contractor shall furnish and install base and subgrade preparation per concrete paving details and elevations shown in the Contract Documents.

52. Prime Contractor shall install all concrete control joints per plans and specs.

53. Prime Contractor shall utilize smooth face form boards for all exposed concrete forming such as the retaining wall.

54. Remove all spoils form the site.

55. Include all required concrete patch work in areas where new utilities are shown in areas of existing concrete. Patch work includes but is not limited to finish grading, base & other fill (as specified), doweling, epoxying, & new concrete section.

56. Include 10 ea. 40 CY trash dumpsters for all trades to use to dispose of non-hazardous debris. (Concrete wash out is not to be placed in these dumpsters).

57. Prime Contractor includes power washing all of its scope once completed.

58. Prime Contractor includes one hundred and twenty (120) additional journeyman labor hours. The Construction Manager/District may authorize the use of these hours only

59. Prime Contractor shall provide concrete joint (all types) layout shop drawings prior to pouring concrete. Concrete joints shall be installed per specifications and ACI standards.

60. Prime Contractor has included multiple mobilizations to achieve the requirements of the contract. For bidding purposes, include a minimum of seven (7) mobilizations. A mobilization is defined as removal and return of equipment and materials. A crew leaving the site is not a demobilization.

61. Prime Contractor will provide the resources necessary to achieve the multi-placement details required to achieve seat walls and benches. This may include, but is not limited to, cleaning of already placed footings, chipping and grinding to achieve sufficient amplitude for the cold joints and removing and replacing formwork so other trades can complete their incorporated scope.

62. Prime contractor will provide a mock-up of hardscape within 15 days of contract execution.

63. Prime Contractor includes all equipment pads required by the electrical

drawings/specifications.

64. Prime Contractor has reviewed Attachment L - DEHQ-FHD Approval and Conditions and shall comply with item #6.

65. Prime Contractor includes all concrete hardscape and reinforcement around and underneath the new bleachers at the sports stadium. All concrete foundations (i.e. footings, caissons, etc.) are by the Bleacher Prime Contractor.

66. Prime Contractor shall provide the concrete footings for the Decorative Perforated Aluminum Metal Panel (MWP-1) with the additional graphics, per AS-1.2, 1,13-15, 26, 28-30/ASD-2.0, 9&10/ASD-1.0 and 11&12/ASD-3.0. Prime Contractor shall provide it's own excavation, fine grading (as needed), forming, reinforcing, pouring, finishing and location (x, y, z coordinates) coordination with CN-2984. CN-2984 Prime Contractor shall provide footing layout and in-person coordination with CN-2983 in order to facilitate accurate installation.

67. Prime Contractor shall furnish and install ALL light pole bases and power pedestals bases, per the plans and specifications. Coordinate with Electrical Prime Contractor for conduit rough-in. Reference E1.1, E2.3 & 1/E2.7 for locations of light poles. Prime Contractor shall provide it's own excavation, fine grading (as needed), export, etc. as needed to complete installation.

V. **ASPHALT PAVING INCLUSIONS:** The following items are specifically included in the Asphalt Paving scope of this Contract:

1. Contractor shall furnish and install all asphalt paving including subgrade preparation (scarification and re-compaction), aggregate base, asphalt curbs, asphalt swales, striping, HC striping, HC symbols, signage , and parking bumpers, etc., for a complete scope of work as required by the Contract Documents. Provide paving sections as detailed. Compact subgrade and pavement base to specified levels of compaction. Paving sections greater than what is considered an overlay may be required to achieve the new grade elevations required by the contract documents. Contractor must include sufficient resources (labor, materials and associated methods (multiple lifts, alternative sections, etc.)) as needed to achieve the grades and elevations indicated on the contract documents.

2. Contractor shall verify existing conditions related to this scope of work prior to starting. Notify Construction Manager immediately in writing of any discrepancies between Contract Documents and existing conditions.

3. Prepare subgrade in accordance with the Soils report and specifications. Remove minor irregularities by fine grading prior to placing aggregate base. Subcontractor shall flood test paving areas at the completion of work and correct any defects prior to striping.

4. Include grinding, overlaying, striping, parking bumpers, signage, etc. as required by the Contract Documents.

5. Contractor shall coordinate with the Site Utility Contractor to adjust valve cans,

cleanouts, and manhole covers, etc. as required to match finish grades.

6. Include all required asphalt patch work in areas where new utilities are shown in areas of existing asphalt. Patch work includes but is not limited to finish grading, base & other fill (as specified), asphalt paving section and striping (if applicable).

7. Contractor shall include grinding and removal of leading edge of asphalt paving where new paving meets existing paving section.

8. Contractor shall verify exact locations of all utilities that may be encountered during constructions.

9. Contractor acknowledges that others will provide initial survey and staking only once. This Contractor will protect all stakes and hubs during constructions. If stakes are destroyed by this Contractor during construction, any additional surveying shall be the responsibility of this Contractor.

10. Contractor shall provide dust control during all work operations until all areas are 100% paved.

11. Contractor shall provide daily cleanup of streets and sidewalks during work operations.

12. Back fill curb cuts.

13. Sub grade will be left mostly at +/- .1'. However paving contractor will repair areas disturbed by traffic and other trades up to +/- .5'.

14. Prior to installing any work, verify ADA compliance with adjoining surfaces.

15. At all adjoining edges, sawcut and remove 1' of asphalt due to spalling, etc.

16. Include weed killer to subgrade prior to any new asphalt placement. Public School industry standard shall be assumed if a product is not specified.

17. Include patch and repair for landscape and irritation as required.

18. Prime Contractor includes resetting all existing vaults, pull-boxes and any other utility box scheduled to remain and those that are embedded in the existing asphalt or concrete surfaces schedule to be overlaid, resurfaced or replaced. If resetting the box is unfeasible, Prime Contractor includes full replacement of the vault/utility box. *Blending* or *feathering* the asphalt is not acceptable.

19. Prime Contractor includes sealing all new sections of asphalt paving and grind & overlay asphalt paving areas. Sealing shall adhere to the design requirements of Specification #321216.

20. Prime Contractor includes Petromat (Propex Fabrics Inc.) at all areas where new asphalt paving is shown.

21. Prime Contractor includes all pavement markings, as included in the Contract Documents.

22. Prime Contractor includes repainting any fire lane pavement markings removed in areas where asphalt is replaced or ground-down and overlaid.

23. Prime Contractor includes three thousand (3,000) additional square feet of asphalt grinding and overlay. Overlay includes a seal coat.

24. Prime Contractor includes eighty (80) additional journeyman labor hours for miscellaneous asphalt paving work. The Construction Manager/District may authorize the use of the these hours only.

25. Prime Contractor includes provisions for cure time of asphalt prior to sealing asphalt. Provisions include but are not limited to multiple mobilizations for sealing and striping/painting.

26. Prime Contractor to flood testing all AC paving surfaces. Correct any surface defects and ponding for compliance with the Contract Documents.

27. All asphalt paving sections shall comply with the specifications in addition to the recommendations found in the Geotechnical Report.

28. Prime Contractor has reviewed the existing site asphalt conditions, as well as the existing condition of the existing vault covers/lids. Prime Contractor shall include replacing eight (8) vault covers/lids at the size of 4'x8'. This scope item is inclusive of furnishing and installing said vault cover replacements.

29. Prime Contractor is solely responsible for assuring that finished pavement surfaces are in compliance with ADA maximum slopes, including cross slopes.

VI. **MASONRY INCLUSIONS:** The following items are specifically included in the Masonry scope of this Contract:

1. Contractor to furnish and install all new Concrete Masonry Units (CMU) per plans and specifications – Interior, Exterior & Site.

2. Contractor to furnish and install all masonry steel reinforcement and related accessories. Provide dowels as required.

3. Prime Contractor includes all grout and mortar mix designs. Mix designs shall fully comply with all project requirements.

4. All footing and slab preparation ahead of installation.

5. Block anchors, wall ties and related hardware.

6. Furnish and install masonry lintels and lintel angles as required.

7. Hoist and install all embeds, pipe sleeves, inserts, frames, lintel angle, deformed

bars, anchor bolts, joist bearing plates, deck bearing plates, beam bearing plates, bent plate, wall boxes, reinforcing steel, etc., FOB jobsite by others, as required. Fully coordinate all embed and attachment requirements with each Prime Contractor, including Rough Carpentry, Steel, Misc. Metals, Sheet Metal, Concrete, Plumbing, Electrical and Mechanical Prime Contractors. Each subtrade will provide layout of embedded items per approved shop drawings. Subcontractor shall grout solid all embed types in CMU walls. The other Prime Contractors shall offload, stock and transport embeds to coordinated location on site with the Construction Manager.

8. Install weep holes as required.

9. Fully grout all structural block outs for steel and other structural work including base plates.

10. Coordinate all masonry openings, details, layout and embedded items with related sub trades. In the event of inconsistencies between Contract Documents or shop drawings, provide written notification to the Construction Manager.

11. Set and grout door frames and window frames installed in masonry walls.

12. Control joints.

13. Grouting in CMU cavities.

14. Engineer and provide temporary shoring for CMU walls and openings (as required). Install and remove bucks required for masonry work including openings, doors, windows, bond beams, etc.

15. Rough bucks for all openings in masonry.

16. All scaffolding, hoisting required for masonry work.

17. Layout for initial building control.

18. Cleaning of masonry walls.

19. Provide vertical rebar layout for dowels placed in foundations and other concrete structure that is associated with the masonry scope of work.

20. Coordinate all testing and inspections required for this scope of work. Provide access for inspection of work. Testing and inspections will be by others except for costs incurred as a result of remedial work and as described in the General Conditions.

21. Contractor to supply all reinforcing steel as a related to their scope of work.

22. Provide and maintain rebar protection in accordance with OSHA requirements for all rebar placed by this Contractor.

23. Contractor shall make a concerted effort to prevent grout, mortar, and soil from staining any exposed masonry surfaces that will be left raw masonry or painted in the future. This includes protection of base of walls from splashed mud, etc., protecting sills, ledges and other projections from mortar droppings.

24. Furnish, maintain and remove all scaffolding required for this scope of work. All scaffolding shall be OSHA compliant at all times. Contractor shall have a certified scaffolding "Competent Person" on site at all times during scaffold use. Contractor shall obtain OSHA permits for scaffold operations. Bridge over all primary building entry points and utility connections. Contractor shall permit other Trade Contractors to use their scaffolding if other Trade Contractors need to incorporate their work into the masonry scope of work. If Contractor wishes to issue a release of liability form for other Contractor's to sign, Construction Manager will ensure forms are signed prior to others using Mason's scaffolding.

25. Clean masonry and remove all efflorescence at the conclusion of all work when directed by Construction Manager.

26. All associated accessories, clips, reinforcing and anchors are a part of this work.

27. Include backer rod and sealant (color to be approve by architect) at control joints.

28. Masonry walls will be installed via high lift or low lift method at Construction Manager's discretion

29. Coordinate all masonry openings, details, layout and embedded items with related Prime Contractors.

30. Prime Contractor shall submit a staging plan to the Construction Manager for approval prior to commencing the Masonry scope.

31. Prime Contractor includes installation of mortar fill at locations where the CMU units change size. Create a smooth step transition to facilitate waterproofing application.

32. Properly break shell for flow of grout at masonry wall intersections

VII. **CHAIN LINK FENCES & GATES INCLUSIONS:** The following items are specifically included in the Masonry scope of this Contract:

1. Furnish and install all chain link fences & gates as required by Contract Documents for complete installation. This includes all footings, reinforcement, and other miscellaneous accessories as necessary.

2. Prime Contractor is responsible for drilling holes or hand excavation for posts to diameters and spacings indicated in the specifications and drawings. Scope includes furnish, placement of concrete for fence post footings. Includes final grading and touch up at fence posts.

3. Prime Contractor shall field measure all openings and coordinate gate locations prior to fabrication.

4. Furnish and install mesh, slats, metal kick plates, tube steel headers, masonry sleeves, hollow metal mounting plates for all hardware and as shown on the plans, etc. as indicated in the Contract Documents.

5. Furnish, install and adjust all gate hardware per specifications. Scope includes hinges, padlock hardware, etc.

6. Prime Contractor to observe all accessibility general details for code compliant installations as shown in the Contract Documents. Re-work caused due to non-code compliant installations will be the Subcontractor's responsibility. Submit an RFI prior to completing the work in the event the design intent / layout will not comply with the ADA code requirements.

VIII. **LANDSCAPE AND IRRIGATION:** The following items are specifically included in the Landscape and Irrigation scope of this Contract:

1. Landscape Irrigation System
2. Landscape & Tree Plantings
3. Existing Plants & Planting Area Removal/Demolition
4. Existing Irrigation Safe-Off, Cut/Cap
5. Existing Irrigation Box, Vault, Valve Removal/Relocation
6. Existing Irrigation Boxes, Controller, Lines, etc. Protection
7. Pothole For Existing & New Irrigation and Landscape Items
8. Provide & Maintain Temporary Irrigation System
9. Tree & Plant Protection in Place with Scheduled Maintenance
10. Installation and Maintenance of Tree Protection Fencing at Trees to Remain
11. Protect Existing Utilities, Hardscape & Landscape Items to Remain
12. Excavation, Trenching and backfilling for irrigation systems
13. Fine grading (as needed)
14. Soil Amendment & Fertilizer
15. Rototilling, per spec
16. Weed Barrier Fabric
17. Gravel, Rubble & Bark Mulch
18. Seeding, Hydroseeding, & Pesticides
19. Root Barriers
20. Edging
21. Scheduled Maintenance During and Post Construction
22. Pruning, Weeding, Debris & Rock Removal
23. Tree Guying, Tree Stabilization, & Plant Tablets
24. Tree Watering and Observation Devices
25. Prime Contractor includes testing existing irrigation system with GUHSD prior to start of demolition activities, and at the end of the project. Prime Contractor includes capping any irrigation lines abandoned in-place as a result of demolition/grading for new flatwork.
26. Prime Contractor includes forty (40) additional journeyman labor hours for

miscellaneous landscape & irrigation work. The Construction Manager/District may authorize the use of these hours only.

27. Prime Contractor shall monitor the existing Eucalyptus tree in the quad (reference Attachment J – Logistics Plan) and notify the District of any health issues. GUHSD has contracted with an arborist for monitoring the Eucalyptus tree throughout the project, to provide a deep root fertilizer and to provide a grow regulator tree treatment. Prime Contractor shall coordinate it's landscaping & irrigation scope with the project Arborist accordingly.
28. Prime Contractor includes removal of 15,000 square feet (SF) of existing grass, preparing 15,000 SF of soil and installing 15,000 SF of sod. Prime Contractor is responsible for repairing any sprinkler heads damaged during the course of existing grass removal or fine grading.

IX. **ALLOWANCES:** The following allowances are included in this scope of work. The Construction Manager must agree to the price, type and extent of additional scope before work is started. Field tickets must be signed by Construction Manager's Superintendent on a daily basis to account for the time, material, and equipment used from these allowances. All time, material, and equipment used from these allowances will be billed against these allowances and any portion of the original allowance amount not used will be credited back to the Owner at the end of this Contract's scope of work as a deductive change order. This Article is separate and exclusive from all other Work required by the Contract.

a) CN-2983 Allowance #1: Unforeseen Condition = $20,000.00

X. **ALTERNATES:** N/A

XI. **EXCLUSIONS:** N/A

GROSSMONT UNION HIGH SCHOOL DISTRICT

GROSSMONT HS KITCHEN AND WEIGHT ROOM
MULTI-PRIME

ATTACHMENT H
BID PACKAGE

CN-2984

ROUGH CARPENTRY/ STRUCTURAL STEEL / MISC. METALS

TRADE CONTRACTOR SPECIFIC PROVISIONS

BID PACKAGE—CN-2984

ROUGH CARPENTRY / STRUCTURAL STEEL / MISC. METALS

VERSION 02

ROUGH CARPENTRY / STRUCTURAL STEEL / MISC. METALS – VERSION 02

The following clarifies certain inclusions, exclusions, and other information. This list is not inclusive of all work and is not limiting in any manner. This Exhibit shall supplement all General and Special Conditions in this Contract unless specifically noted herein to supersede them. This exhibit shall supersede all other conditions in the Contract and Contract Documents in the event of specific conflicts between the Documents.

I. **GENERAL REQUIREMENTS:** The following General Requirements apply to all work included in this Contract:

1. Full compliance and scope coverage with Specification Section(s):

   - DIVISION 00
   - DIVISION 01
   - 05 12 00 – Structural Steel Framing
   - 05 50 00 – Metal Fabrications
   - 05 52 13 – Pipe and Tube Railings
   - 06 05 73 – Wood Treatment
   - 06 10 00 – Rough Carpentry
   - 06 17 33 – Wood I-Joists
   - 06 18 00 – Glue-Laminated Construction

   Full compliance and scope coverage with all other Project Scope and Specification Sections that interface with and require services related to this scope of work.

2. Prime Contractor and its subcontractors and/or lower tier contractors shall be a licensed contractor pursuant to the California Contractors License Law required for the performance of work in the appropriate classification(s) of contractor's license(s) for the work bid upon, and must maintain the license(s) throughout the duration of the Contract. License required for this work shall be B, or (C5 and C51).

3. Schedule of shop drawings, submittals, and dimension verifications: The following groups of shop drawings and submittals are not all-inclusive and are supplemental to requirements found elsewhere in the Documents. These submittals shall be delivered to the Construction Manager no later than the below listed dates:

   a. #051200 – Structural Steel Framing (Including embeds)

      Due: 10 Calendar Days after NTP is issued

   b. #060573 – Wood Treatment

      Due: 15 Calendar Days after NTP is issued

   c. #061000 – Rough Carpentry

Due: 15 Calendar Days after NTP is issued

d. #061733 – Wood I-Joists

Due: 15 Calendar Days after NTP is issued

e. #061800 – Glue-Laminated Construction

Due: 10 Calendar Days after NTP is issued

f. Metal Decking

Due: 10 Calendar Days after NTP is issued

g. #ALL Other Contractual Submittals

Due: 30 Calendar Days after NTP is issued

These due dates take precedence over other dates found elsewhere in the Contract Documents.

4. Prepare any coordination drawings required to show the interface between work provided by this Contract and others.

5. Procurement of Critical Long Lead Items: Prime Contractor shall be responsible to ensure that the following critical long lead items are delivered to the project site by the noted delivery date.

6. Prime Contractor has reviewed the Project and is aware of existing conditions.

7. Schedule: Prime Contractor shall issue to the Construction Manager a detailed Construction Schedule for this trade's work as it pertains to this Project. The work shall proceed in accordance with the Master Construction Schedule issued with the Construction Documents. This schedule shall be modified from time to time in order to properly coordinate and sequence the work; however, the Prime Contractor is responsible to supply sufficient manpower, equipment and material necessary to ensure the duration of time established for the Prime Contractor's work is maintained as per the Construction**.**

8. Prime Contractor has included provisions to store fabricated material off-site until required erection date.

9. Provide flagmen as required. It is understood that the work will take place within an operating Campus and that the Prime Contractor is solely responsible to protect the public and maintain uninterrupted access to the campus by the general public. Provide all barricades, etc. to achieve this. Perform during off-hours as required to avoid disruption of campus operations.

10. Comply with all City, County and State requirements, prepare haul route and obtain permits as required.

11. Prime Contractor will be responsible for collateral damage to areas or finishes not scheduled for demolition as a result of his operations.

12. CalOSHA compliant safety eye protection is required at all times for all personnel, workers, and visitors on the construction site in accordance with District Standards.

13. Include all work as referenced by notations: “by Steel Contractor”, “by Rough Carpentry Contractor”, “Misc. Metals Contractor,” or similar notations that may be noted throughout the entire set.

14. It is understood that all scope inclusions contained in this bid package shall be provided by the Prime Contractor regardless of similar or identical inclusions found in other bid packages or trade Contracts.

15. It is understood that the Trade Contractor Specific Provisions contained in the Contract Documents are a material element of this Contract and scope of work. It is specifically noted that the Prime Contractor shall be responsible for all requirements and clauses contained in these Trade Contractor Specific Provisions.

16. It is understood that all the crane, trucks, erection equipment, grading equipment and any other heavy equipment must be staged within the project site boundaries.

17. Provide, erect and dismantle all ladders and scaffolding required to perform work. Provide all required rigging and hoisting necessary to perform this scope of work. All lifts and material handling required to perform this scope of work shall be provided by this Prime Contractor.

18. Prime Contractor shall maintain and record as-built information of their work in a current condition. Prime Contractor shall transfer all as-built information onto the record set of drawings located at the Construction Manager’s Field Office. All transferred information shall be neat, legible and in accordance with the guidelines set forth in the contract documents. Failure to provide as-built information in a timely manner will result in progress payments being withheld.

19. This Prime Contractor acknowledges and includes the cost for all required off-hour, overtime and weekend work schedules as required to perform the work included in this contract and coordinate this contract work with all other related trades. This Prime contractor shall provide manpower and shift schedules (in advance of the actual work being performed) to the Construction Manager so that it can be analyzed against the Project’s schedule requirements.

20. Daily clean-up of all debris related to the Work of this Bid Package Contractor is required. All debris generated by this Bid Package Contractor shall be legally removed daily and disposed of offsite by this Bid Package. All Bid Package Contractors, while on site, will provide a clean-up laborer to be included in the weekly clean-up effort for the duration of the project. For bidding purposes, Prime Contractor shall provide a 2 hours of clean-up labor for 45 total weeks.

21. All Prime Contractors are responsible for covering of roof openings for a weather tight system prior to rain and rain clean-up. This Prime Contractor to consider the allotted rain days in the project schedule for budgeting purposes.

22. Prime Contractor shall coordinate with all subtrades/Primes as it relates to this scope of work. Verify dimensional requirements, locations, paths of travel, structural connections and any other scope as it relates to site conditions and other Prime Contractor's work. This coordination process shall occur prior to or concurrent with detailing to avoid conflicts and field coordination.

23. Prime Contractor shall supply all hoisting equipment, operators and support personnel necessary to safely erect and/or install all of the material or equipment included in this agreement.

24. Prime Contractor to give 48-hour written notice to both Construction Manager and Inspector of Record prior to the initial start and all subsequent phases of shop fabrication.

25. Prime Contractor will have all required local and state licenses and certifications as to allow shop fabrication without deputy inspection. Prime Contractor's field welders will have all required licenses /certifications as required by the Contract Documents and Local Authorities. Where local/state welding requirements are more stringent than the specified welding requirements; the most stringent shall govern.

26. Prime Contractor is required to properly staff the Project to maintain the Project's schedule and to ensure proper sequencing with other Prime Contractors as required by the Construction Manager.

27. Prime Contractor is responsible to provide all layout for its work from survey control points and lines, including all building corners, grid lines, offsets, elevations, etc.

28. Provide all necessary protection for new work and adjacent finishes from Prime Contract work operations. Include steel plates, plywood, plastic and masking protection as required. Prime Contractor is responsible to maintain/repair/replace any temporary barricades that are moved or damaged by its work. Prime Contractor is responsible to protect all existing structures/MEPs/benchmarks/miscellaneous items as required by the Contract Documents during this Prime Contractor's work.

29. Prime Contractor acknowledges that space for storing materials within the worksite is limited. All delivery and storage of materials shall be scheduled and coordinated with the Construction Manager prior to shipping. Prime Contractor is responsible to assure that stocking of building materials does not overload the building structure or unreasonably impede the work of other trades. Prime Contractor shall promptly relocate stored and stockpiled materials when directed by Prime Contractor.

30. Prime Contractor is responsible to promptly remove from the project all surplus material and debris associated with its work.

31. Prime Contractor is responsible for scheduling and coordinating all deliveries required for this scope of work with the Construction Manager and other Prime Contractors. Prime Contractor to provide adequate flagmen, street closures, sidewalk closures, permits, traffic control, etc. for deliveries, transporting on site, pick-ups as required by the project schedule, specifications, job conditions and governing agencies within the jobsite limits.

32. Prime Contractor shall adhere to OSHA safety standards while on the project site and shall engage their designated safety professional to make periodic jobsite walks for safety compliance. Any noted issues or concerns shall be reported to Construction Manager's Superintendent at the time of visit. Prime Contractor is responsible to maintain/repair/replace any temporary barricades.

33. The general site wide storm water pollution prevention plan (SWPPP) will be prepared and implemented by others. Subcontractor shall assume full responsibility to replace any broken sandbags or any other SWPPP type materials damaged by this Subcontractor during the course of this Subcontractor's work.

34. Prime Contractor acknowledges that parking space within the project boundaries is extremely limited. The only trucks in immediate use (Loading/Offloading, welding rigs, rigging, etc.) will be allowed to stage near work areas. Worker parking will be designated by the Construction Manager. Penalties for failure to comply with this requirement are the responsibility of the individual vehicle owner.

35. In the event of conflicts not clarified prior to bidding deadline, Prime Contractor shall assume the most stringent, higher quality and greater quantity of work for bidding purposes. If Prime Contractor still requires clarification after awarded the project, Prime Contractor shall generate an RFI. If appropriate, a deductive change order shall be issued if the clarification results in a reduced scope.

36. Prime Contractor shall furnish and install all mock-ups required by specifications found within this Prime Contractor's scope.

37. Prime Contractor shall include provisions to comply with all delegated-design submittal requirements found within their respective specification sections.

38. Prime Contractor understands that parking will not be permitted within the limits of work, staff parking, student parking or public parking spaces on campus, unless specifically allowed in the Contract Documents or agreed upon by the District. Prime Contractor acknowledges that food trucks are prohibited from entry to the construction limits of work and Grossmont High School campus. This General Requirement supersedes parking provisions outlined elsewhere in the Contract Documents.

39. Prime Contractor has reviewed all documents, including Food Service plans.

40. Finish Prime Contractor includes all in-wall flat-strap backing and rough carpentry Prime Contractor includes all in-wall and above ceiling structural wood-framed backing. Prime Contractor shall coordinate accordingly and layout backing where required for this Prime Contractor's scope.

41. Prime Contractor includes two hundred and fifty (250) additional journeyman labor hours for use by the Construction Manager. The Construction Manager/District may authorize the use of these hours only.

II. **INCLUSIONS FOR ROUGH CARPENTRY AND EXTERIOR SHEATHING:** The following items are specifically included in the Rough Carpentry and Exterior Sheathing scope of this Contract:

1. Include all work which is consistent with the defined scope of work in this Contract and that may be required by the entire set of drawings and specifications.

2. Furnish and install all interior and exterior wood framing, components & accessories including, but not limited to, glued-laminated beams, prefabricated wood shapes, engineered wood products, shear wall panels, blocking, cants, nailers, furring, grounds, framing hardware, wood studs, structural composite lumber, glued-laminated beams, wood I-joists, web stiffeners, rafters, double joists, trusses, purlins, ledgers, cross bridging, struts, headers, sills, plywood infills, blocking, furring, stripping, double top plates, sill plates, shear plates, knee braces, trimmers, cripples, straps, strong-ties, hinge connectors, hangers, wood post bases, lag bolts, lag screws, end post bolting, nails at new building structure as required for a complete installation. Observe and include provisions to execute the general and structural notes for requirements regarding prefabricated wood lumber, glued laminated timbers and anchorage. Refer to structural drawing notes for required special inspections. Prime Contractor to notify Construction Manager 48 hours in advance on inspection requests.

3. Prime Contractor is aware of the high level of quality control that this project demands. Prime Contractor shall replace and/or "power plane" all wood members throughout the project that exceed acceptable and specified tolerances. This includes all rough framing, moldings, sheathing, etc.

4. Prime Contractor is responsible for furnishing and install of all framed-wall types indicated in the Contract Documents, in order to provide a complete scope of work. In the event that a wall is shown, but not identified with a wall type or stud size, Prime Contractor shall assume the most stringent wall type. Reference General Requirements of this scope for further explanation.

5. Furnish and install all exterior rated/treated wood sheathing as required by the Contract Documents. Furnish and install all roof and parapet sheathing.

6. Furnish and install all wood furring, blocking, in-wall backing, in-ceiling backing, and frame outs for all building components mounted to walls. This specifically

includes but is not limited to equipment, roof ladder, fixtures, signage, wall grab bars, mirror units, air-dryers, diaper-changing stations, metal toilet compartments, wall-mounted dispensers in restrooms, wall-mounted lavatories, utility shelving, lockers, casework, mop & broom holders, tack boards, AV equipment, wall-mount devices, etc., as shown on the drawings, details, and as specified. Take specific care to include the wood blocking and backing required by the details in the mechanical, electrical and plumbing drawings. Prime Contractor has accounted for direct coordination with Construction Manager and other Prime Contractors and other vendors to accomplish accurate layouts for backing. Provide fire-rated wood blocking where required by the Contract Documents.

7. Some blocking may appear unquantifiable at this time. For bidding purposes, assume the blocking supports for pipe runs, duct runs, mechanical support frames, roof mounted equipment and suspended equipment will occur every 4' for each system run. Blocking and backing for equipment is quantifiable based on the information provided in the equipment schedule and details. No change orders will be issued for blocking or backing for any scope of work included within the contract documents for the project.

8. Provide all framing cutouts, notching, openings, soffits, recessed/dropped ceiling areas, chases, reinforcing of framing, etc. shown on the drawings and as required by actual conditions for various architectural items, access panels, ceiling diffusers, plumbing/electrical/HVAC items, i.e., ductwork, equipment and piping. Coordinate directly with the respective trades and reference the MEP drawings for coordination purposes and details. Modify soffit framing dimensions as required to accommodate the designed duct sizes. Scope includes double joists at roof openings for mechanical equipment/duct, etc.

9. Prime Contractor shall furnish and install a 10' x 10' mock-up of a framed exterior wall exhibiting a typical framed condition (including window framing and sheathing) in addition to the specified mock-ups shown in specifications associated with this Prime Contractor's scope.

10. Prime Contractor is responsible for approved moisture content of materials to be installed in accordance with the project schedule. Prime Contractor is not permitted to stage wood products directly on soil.

11. Prime Contractor includes additional framing at any new MEP penetrations in existing or new walls and shall follow the applicable framed opening details in the structural drawings.

12. All work pertaining to wood framing at existing buildings and new construction as shown on in the Contract Documents. Prime Contractor includes all blocking shown in the Drawings in addition to what is shown in the structural drawings. This includes but is not limited to joists, beams, columns, plywood, seismic bracing and supports as required.

13. All plywood sheathing over framing as shown in drawings. Provide all wood nailers, wood backing, wood sheathing as shown on the Contract Documents. Wood

backing supports for but not limited to doors, toilets accessories, projection screens, visual display boards, and areas for other miscellaneous items not specifically indicated but necessary. Flat strap backing by Finish Package.

14. Mechanical Platforms: Prime Contractor includes all support framing for roof top mechanical equipment, including but not limited to AC units, condensing units and exhaust fans regardless of what is shown on architectural, structural and mechanical plans. Prime Contractor includes the most stringent support framing requirements shown on 2, 3,4/AD-3.0, 17, 18, 19/S0-1.5, 15 &16/S0-1.7. Prime Contractor includes all plywood required at roof top equipment platforms. If height of platform is not specifically indicated in the plans, Prime Contractor shall include a platform height that is a minimum of eight (8) inches high from the level platform surface to the finish surface of the roofing system (not roof sheathing). Prime Contractor includes all necessary coordination between HVAC Prime Contractor and Finishes (Roofing) Prime Contractor in order to provide a complete and warrantable system. Finish Prime Contractor shall provide vertical shimming/backing at pre-fabricated isolation curbs in order to provide themselves with an unobstructed 8" minimum vertical surface at roofing upturn locations.

15. Verify and coordinate dimensions for alcoves, walls and opening dimensions for equipment furnished by others. Particular attention to code mandated exiting clearance and handicap clearance dimensions is required. All work shall fully comply with current handicap codes (even if contrary to the Contract Documents and submittal approvals). This Prime Contractor shall request specific written direction from the Construction Manager before proceeding with any work that is non-compliant.

16. It is expressly understood that the framing details are diagrammatic in nature and that this Prime Contractor will be responsible for a complete installation. The details shown should be regarded as minimum parameters to perform the work.

17. Furnish all anchor bolts for framing that are embedded in new concrete / masonry, or screw anchors where applicable. Provide quantity survey and layout as required. Verify all layouts prior to concrete placement by concrete prime contractor. Provide layout drawings as needed.

18. Include all framing accessories as applicable to this Contract's scope of work, i.e., straps, bent plates, clips, "stickers", shims, angles fasteners, as shown on plans and required to attach/support framing to building structure. Framing accessories shall be installed as required to provide "true and straight" work especially where this Contract work is attached to other building components, Particular attention shall be paid to openings for windows, doors, and close tolerance conditions, etc.

19. All fire/smoke rated construction shall maintain continuous required ratings at all areas as required by the Contract Documents.

20. Prime Contractor includes one hundred (100) additional journeyman framing hours. The Construction Manager/District may authorize the use of these hours only.

21. Where furring or framing systems are scheduled to be attached to an existing surface which is rough, uneven, not true or level, provide reconditioning of existing surfaces, shimming, building out and adjustments to the framing system as required to compensate for the substandard substrate.

22. All Prime Contractors are responsible for covering of roof openings for a weather tight system prior to rain and rain clean-up. Prime Contractor to consider the allotted rain days in the project schedule for budgeting purposes.

23. Prime Contractor has included multiple mobilizations to achieve the requirements of the contract. For bidding purposes, include six (6) mobilizations. A mobilization is defined as removal and return of equipment and materials. A crew leaving the site is not a demobilization.

24. Prime Contractor includes all structural framing, curbs and/or blocking required for exhaust fans, air-conditioning units, condensing units and any other new rooftop equipment requiring structural framing and/or blocking.

25. Prime Contractor includes all headers, bracing and associated rough framing associated with window head conditions regardless of the detail explicitly being called out at each condition.

26. Prime Contractor includes all necessary wall bracing, unless noted otherwise and regardless of the detail explicitly being called out at each location.

27. Prime Contractor includes stripped blocking to complete A1 head-wall condition at existing metal fascia in order to provide positive attachment for plaster 'J' Mold screed, Prime Contractor includes this typical condition regardless of the detail explicitly being called out at each location.

28. Prime Contractor includes provisions to provide backing for signage, when signage location is at a wood framed wall, regardless of the detail explicitly being called out at each condition.

III. <u>INCLUSIONS FOR STRUCTURAL STEEL, METAL DECKING & MISCELLANEOUS METALS:</u> The following items are specifically included in the Structural Steel, Metal Decking & Miscellaneous Metals scope of this Contract:

1. Furnish and Install all Structural steel, metal decking and Misc. Steel for the project.

2. Prepare surfaces and set all anchors in existing concrete structures. This includes all surface preparation, drilling, expansion anchors, epoxy anchors, and other means for scope included in this contract.

3. Prepare surfaces and install all connections where new steel connects to existing steel. This includes removal of existing paints/coatings, adjusting, coping and reconfiguring existing steel. Installing shear plates and other attachments, etc.

4. Furnish and install all structural steel columns, posts, beams, headers as shown on Foundation and Framing Plans and other such locations.

5. Furnish templates and anchor bolts for structural steel.

6. Furnish embeds and ledger angles. Provide layout of embeds to CMU/Concrete Prime Contractor, as it relates to CMU. CMU/Concrete Prime Contractor to set/install embeds. This Prime Contractor shall coordinate and be present during install to ensure embeds are set properly.

7. Include resources to level, cut, adjust and weld on the countertop support brackets as needed by site conditions. This will permit the initial brackets to be built long and cut to length based on final field conditions.

8. Furnish and install structural supports required for projection screens.

9. Furnish and install structural supports required for coiling counter doors, sectional overhead doors and similar. Structural supports include but are not limited to steel headers, vertical HSS jamb posts/columns, 'L' angle iron, plates and all associated anchorage and welding of said structural supports. Break metal at the coiling doors is by others.

10. Furnish and install metal decking for all shade structures, per Details 2,3,4,5 on sheet AS-1.3, per structural sheets and specifications.

11. Furnish and install all other miscellaneous metals items including but not limited to: plates, clips, steel pipe, bent plates, channels, angle iron, railings, exterior steel site handrail/guardrails, partition supports, ladders, ladder tie downs, steel assemblies, metal angles, countertop steel, steel at storefront jambs, brackets, supports, angles, etc. Include all required bolts, fasteners, inserts, sleeves etc.

12. Furnish and install handrails and guardrails at concrete stairs and ramps, per Details 8,18,19,20,23,25,28,29 and 30 on sheet ASD-3.0 and other such locations.

13. Furnish and install metal service gate and associated hardware as shown in 4/AS-1.3 and 10/ASD-1.0. Embedded steel to be provided by this Prime Contractor and installed by others.

14. Furnish and install aluminum checker-plate in Weight Room 907 as shown on 1/A1-7.2 and other such locations.

15. Cost of preparation and printing of all shop drawings for base Contract work items, including all revisions to shop drawings during the approval process and up until payment of retention.

16. Coordinate this scope of work with all other related trades such as, MEP trades, special equipment, interior finishes, etc. Coordinate/Verify slope of steel and top of steel elevations with roof slope/drainage plan. Notify construction manager of any inconsistencies prior to fabrication. This coordination process shall occur prior to

or concurrent with detailing to avoid conflicts and field coordination problems.

17. Prime Contractor shall notify Construction Manager in writing of all inconsistencies in the project drawings/specifications and subsequent shop drawings prior to fabrication.

18. Prime Contractor is responsible for obtaining answers to unanswered questions on returned shop drawings from the Architect/Engineer through the Construction Manager. Prime Contractor will directly coordinate with other trades to ensure proper sizing and dimensioning of openings, etc. are detailed.

19. Give proper written notice to both Construction Manager and Testing Laboratory prior to the initial start and all subsequent phases of shop fabrication.

20. Prime Contractor will have all required local and state licenses. Prime Contractor's field welders will have all required licenses /certifications as required by the Contract Documents and Local Authorities.

21. Coordinate all shop fabrication / field inspection (for costs relating to inspection see General Conditions). Become completely familiar with testing requirements and coordination of mill certificates, labeling, tagging, and stamping of steel during the fabrication process, shipment to jobsite and erection. No unidentified steel shall be used. All steel will have mill certifications and be properly identified (source, heat or melt number, etc.). If required, the Inspection Firm will take steel samples and will perform destructive tests. Accordingly, purchase steel in such quantity, length, size, etc. to allow steel samples to be taken from the actual elements to be used in construction. Coordinate this and provide the samples required by the Testing Laboratory. Provide adequate access for Inspectors to all elements of work. Means of access include ladders, lifts, scaffolds, etc. Costs for re-inspection of any work as a result of previous failed inspection will be the responsibility of this Prime Contractor.

22. Verify and accept elevations and placement of anchor bolts and embedded items prior to each erection sequence of work. Construction Manager shall be notified immediately of any problems so that such problems can be corrected before the steel is onsite ready for installation. This verification does not qualify as a mobilization.

23. Prime paint steel as required by Contract Documents. Include touch up as required by job conditions.

24. Galvanize steel as required by Contract Documents. Include touch up as required by job conditions. Unless specifically noted otherwise, Prime Contractor shall galvanize all exposed metal that has been installed by this Prime Contractor.

25. Protect all floor and roof openings during erection per OSHA and local requirements. Prime Contractor shall immediately replace all opening protection removed for installation of work.

26. Supply all electrical power for welding.

27. All work including railings shall dimensionally comply with all applicable building codes including ADA. Proper vertical and horizontal distance and clearance in stairs shall be detailed and verified before fabrication and erection. Maintain proper clearances between stair framing and wall construction so that fire ratings can be maintained, (i.e., multiple layers of drywall, fireproofing material, etc. if applicable to this Project).

28. Fabricate and assemble misc./structural steel which attaches to concrete work, i.e., beam pockets/pilasters so that adequate adjustment and alignment of embedded items (i.e., anchor bolts) is allowed for. Field measure all conditions where possible before fabrication. Enlarge holes in steel and/or add necessary weld plate washers where required by conditions of miss-aligned embedded items and/or the Contract Documents.

29. All structural steel edge and closure angles shall be installed true, level and within concrete form work/finish tolerances in areas where concrete is poured against edge and closure angles. Where a steel deck closure is not specifically shown. Steel Contractor will provide a deck closure consistent with the details found on the Contract Documents. Where the deck is flush with supporting steel the closure shall be gauge metal unless otherwise noted. Where the deck cantilevers the supporting steel; the closure shall be bent plate.

    Special attention shall be made to coordinating height of closure angles with height of concrete, particularly in sloped areas.

30. The minimum height of all steel closure angles that retain concrete shall be the total thickness of concrete at each location. If applicable, this clause corrects the condition where the drawings indicate a closure angle that is less than the concrete thickness. Reduce the height of angles for conditions of depressions /block outs i.e., areas of expansion joints.

31. Obtain all permits for cranes and equipment as required by Local Authorities.

32. Include all metal 1/8” or heavier, including 10 gauge, unless specifically modified by this Exhibit/Scope of Work.

33. Prime Contractor has reviewed the site conditions and includes all items as may be needed to complete the work in and around existing jobsite obstructions. Cranes will not be allowed beyond the site perimeter.

34. Where local/state welding requirements are more stringent than the specified welding requirements; the most stringent shall govern.

35. Immediately after all steel work is complete, clean all exposed steel to be painted from oils, scale, piece marks and other elements detrimental to applying finish paint.

36. After completion of all steel work, provide as-built information including connection details, beam and column size changes, and elevation information. Construction Manager shall approve format of as-built information.

37. Prime Contractor includes all angle iron required to support metal decking.

38. Prime Contractor includes eighty (80) additional journeyman labor hours for miscellaneous steel work. The Construction Manager/District may authorize the use of these hours only.

39. Prime Contractor shall furnish and install the decorative fence, G7 gate (with associated hardware) and 3/8" Decorative Perforated Aluminum Metal Panel (MWP-1) with the additional graphics, per AS-1.2, 1,13-15, 26, 28-30/ASD-2.0, 9&10/ASD-1.0, 11&12/ASD-3.0 and ID-1.0. CN-2983 is responsible for furnishing and installing the fence post footings. CN-2984 Prime Contractor shall provide footing layout and in-person coordination with CN-2983 in order to facilitate accurate installation.

IV. ALLOWANCES: The following allowances are included in this scope of work. The Construction Manager must agree to the price, type and extent of additional scope before work is started. Field tickets must be signed by Construction Manager's Superintendent on a daily basis to account for the time, material, and equipment used from these allowances. All time, material, and equipment used from these allowances will be billed against these allowances and any portion of the original allowance amount not used will be credited back to the Owner at the end of this Contract's scope of work as a deductive change order. This Article is separate and exclusive from all other Work required by the Contract.

- CN-2984 Allowance #1: Unforeseen Conditions = $10,000.00

VII. ALTERNATES: N/A

VIII. EXCLUSIONS:

- Flat-strap metal backing – Finish Prime Contractor

GROSSMONT UNION HIGH SCHOOL DISTRICT

GROSSMONT HS KITCHEN AND WEIGHT ROOM
MULTI-PRIME

ATTACHMENT H
BID PACKAGE

CN-2989

PLUMBING AND SITE UTILITIES

TRADE CONTRACTOR SPECIFIC PROVISIONS
BID PACKAGE: CN-2989
PLUMBING AND SITE UTILITIES
VERSION 02

PLUMBING AND SITE UTILITIES – VERSION 02

The following clarifies certain inclusions, exclusions, and other information. This list is not inclusive of all work and is not limiting in any manner. This Exhibit shall supplement all General and Special Conditions in this Contract unless specifically noted herein to supersede them. This exhibit shall supersede all other conditions in the Contract and Contract Documents in the event of specific conflicts between the Documents.

I. **GENERAL REQUIREMENTS:** The following General Requirements apply to all work included in this contract:

1. Full compliance and scope coverage with Specification Section(s):

   - DIVISION 00
   - DIVISION 01
   - 07 92 00 – Joint Sealants
   - 08 31 00 – Access Doors (For this Prime Only)
   - 11 40 00 – Foodservice Equipment (For this Prime Only)
   - DIVISION 22 – In its entirety
   - 23 11 23 – Facility Natural Gas Piping
   - 23 51 23 – Gas Vents
   - 31 23 16.13 – Trenching (For this Prime Only)
   - 31 23 23 – Fill (For this Prime Only)
   - 33 01 10.58 – Disinfecting of Site Water Distribution Piping
   - 33 05 43 – Corrosion Protection
   - 33 14 16 – Site Water Distribution Piping
   - 33 31 13 – Site Sanitary Sewer Piping
   - 33 42 11 – Stormwater Gravity Piping
   - 33 42 30 – Stormwater Drains

   Full compliance and scope coverage with all other Project Scope and Specification Sections that interface with and require services related to this scope of work.

2. Prime Contractor shall have a current California Contractor's License Classification as listed on the Notice to Bidders and shall keep same current through-out the duration of the project. License required for this work shall be A, or B, or (C34 and C36).

3. Schedule of shop drawings, submittals, and dimension verifications: The following groups of shop drawings and submittals are not all-inclusive and are supplemental to requirements found elsewhere in the documents. These submittals shall be delivered to the Project Manager not later than the below listed dates:

   a. #223300 – Electric, Domestic Water-Heaters

      Due: 15 Calendar Days after Notice to Proceed

   b. #223400 – Fuel-Fired, Domestic Water-Heaters

Due: 15 Calendar Days after Notice to Proceed

c. #224100 – Commercial Plumbing Fixtures

Due: 15 Calendar Days after Notice to Proceed

d. #224213.13 – Commercial Water Closets

Due: 15 Calendar Days after Notice to Proceed

e. #224213.16 – Commercial Urinals

Due: 15 Calendar Days after Notice to Proceed

f. #224216.13 – Commercial Lavatories

Due: 15 Calendar Days after Notice to Proceed

g. #224216.16 – Commercial Sinks

Due: 15 Calendar Days after Notice to Proceed

h. #224713 – Drinking Fountains

Due: 20 Calendar Days after Notice to Proceed

i. Division 33 Submittals

Due: 15 Calendar Days after Notice to Proceed

j. ALL Remaining Contractual Submittals

Due: 30 Calendar Days after Notice to Proceed

These due dates take precedence over other dates found elsewhere in the Contract Documents.

4. Prepare any coordination drawings required to show the interface between work provided by this contract and others. This includes but is not limited to:

a. Plumbing Equipment Layout Drawings

b. Above Ceiling Coordination Drawings

c. Through Wall Piping Penetration Drawings

d. Underground Piping Coordination Drawings

e. Equipment or Mechanical Room Layout Coordination Drawings

5. Procurement of Critical Long Lead Items: Prime Contractor shall be responsible to ensure that critical long lead items are delivered to the project site as required to meet the Master Project Schedule.

6. Prime Contractor has included the costs for off site storage of project materials.

7. Schedule: Prime Contractor shall issue to the Construction Manager a detailed Construction Schedule for this trade's work as it pertains to this Project. The work shall proceed in accordance with the Master Construction Schedule issued with the Construction Documents. This schedule shall be modified from time to time in order to properly coordinate and sequence the work; however, the Prime Contractor is responsible to supply sufficient manpower, equipment and material necessary to ensure the duration of time established for the Prime Contractor's work is maintained as per the Construction**.**

8. Prime Contractor has reviewed the Project and is aware of existing conditions.

9. Prime Contractor has reviewed the on-site soils conditions and fully understands and acknowledges the quality of the existing soil. For bidding purposes Prime Contractor shall include export of all excavated soils and import of select material for fill and backfill in complete compliance with the Contract Documents for all existing utility backfill and grading areas. Include haul-off and disposal of all debris, existing fill materials, spoils and surplus soil/cobbles/boulders. Prime Contractor includes industry standard equipment or equipment recommended to perform the work described in the Geotechnical Report. Prime Contractor acknowledges the presence of cobble, gravel, and Stadium Conglomerate and includes provisions for removal, as necessary to complete this Prime Contractor's scope. Provisions for removal include, but are not limited to screening, breaking, utilizing appropriate heavy equipment, etc. Prime Contractor has reviewed the boring logs and acknowledges the presence of concrete sections beneath asphalt paving. Prime Contractor shall assume concrete identified in boring data to be present in a minimum of two hundred (200) square feet surrounding the associated boring location.

10. Provide flagmen as required. It is understood that the work will take place within an operating Campus and that the Prime Contractor is solely responsible to protect the public and maintain uninterrupted access to the campus by the general public. Provide all barricades, etc to achieve this. Perform during off-hours as required to avoid disruption of campus operations.

11. Any required utility shutdowns shall be coordinated with the Construction Manager and the District 14 days in advance. It is understood that the operations of a functioning campus shall not be interrupted. Therefore, shutdowns may need to occur after hours and on weekends. Prime Contractor has included the costs for this off-hour work.

12. Prime Contractor will be responsible for collateral damage to areas or finishes not scheduled for demolition as a result of their operations.

13. Include all work as referenced by notations: “by Plumbing or Utility Contractor,” or similar notations that may be noted throughout the entire set.

14. It is understood that all scope inclusions contained in this bid package shall be provided by the Prime Contractor regardless of similar or identical inclusions found in other bid packages or trade contracts.

15. It is understood that the Trade Contractor Specific Provisions contained in the contract documents are a material element of this Contract and scope of work. It is specifically noted that the Prime Contractor shall be responsible for all requirements and clauses contained in the Trade Contractor Specific Provisions

16. Prime Contractor shall maintain and record as-built information of his work in a current condition. The Prime Contractor shall transfer all as-built information onto the record set of drawings located at the Construction Manager’s Field Office. All transferred information shall be neat, legible and in accordance with the guidelines set forth in the contract documents. Failure to provide as-built information in a timely manner will result in progress payments being withheld.

17. Properly coordinate the locations and dimensional requirements (including specific dimensions shown on the plans) of all contract work items with all other trade work items so that conflicts, incorrect locations, inadequate space/clearance, and similar types of circumstances are avoided. Prime Contractor shall verify that all work items will fit within the designed wall cavities, ceiling spaces, furred areas, etc., before any affected building elements are constructed (i.e. foundations, slab on grade, elevated deck, etc.

18. This Prime contractor acknowledges and includes the cost for all required off-hour, overtime and weekend work schedules as required to perform the work included in this contract and also coordinate this contract work with all other related trades. This contractor shall provide manpower and shift schedules (in advance of the actual work being performed) to the Construction Manager so that it can be analyzed against the Project’s schedule requirements.

19. Prime Contractor is required to properly staff the Project to maintain the Project’s schedule and to ensure proper sequencing with other Prime Contractors as required by the Construction Manager.

20. Prime Contractor is responsible to provide all layout for its work from survey control points and lines, including all building corners, grid lines, offsets, elevations, etc.

21. Provide all necessary protection for new work and adjacent finishes from Prime Contract work operations. Include steel plates, plywood, plastic and masking protection as required. Prime Contractor is responsible to maintain/repair/replace any temporary barricades that are moved or damaged by its work. Prime Contractor is responsible to protect all existing structures/MEPs/benchmarks/miscellaneous items as required by the Contract Documents during this Prime Contractor’s work.

22. Prime Contractor acknowledges that space for storing materials within the worksite is limited. All delivery and storage of materials shall be scheduled and coordinated with the Construction Manager prior to shipping. Prime Contractor is responsible to assure that stocking of building materials does not overload the building structure or unreasonably impede the work of other trades. Prime Contractor shall promptly relocate stored and stockpiled materials when directed by Prime Contractor.

23. Prime Contractor is responsible to promptly remove from the project all surplus material and debris associated with its work.

24. Prime Contractor is responsible for scheduling and coordinating all deliveries required for this scope of work with the Construction Manager and other Prime Contractors. Prime Contractor to provide adequate flagmen, street closures, sidewalk closures, permits, traffic control, etc. for deliveries, transporting on site, pick-ups as required by the project schedule, specifications, job conditions and governing agencies within the jobsite limits.

25. Prime Contractor shall adhere to OSHA safety standards while on the project site and shall engage their designated safety professional to make periodic jobsite walks for safety compliance. Any noted issues or concerns shall be reported to Construction Manager's Superintendent at the time of visit. Prime Contractor is responsible to maintain/repair/replace any temporary barricades.

26. The general site wide storm water pollution prevention plan (SWPPP) will be prepared and implemented by others. Prime Contractor shall assume full responsibility to replace any broken sandbags or any other SWPPP type materials damaged by this Prime Contractor during the course of this Subcontractors work.

27. Prime Contractor acknowledges that parking space within the project boundaries is extremely limited. The only trucks in immediate use (Loading/Offloading, welding rigs, rigging, etc.) will be allowed to stage near work areas. Worker parking will be designated by the Construction Manager. Penalties for failure to comply with this requirement are the responsibility of the individual vehicle owner.

28. In the event of conflicts not clarified prior to bidding deadline, Prime Contractor shall assume the most stringent, higher quality and greater quantity of work for bidding purposes. If Prime Contractor still requires clarification after awarded the project, Prime Contractor shall generate an RFI. If appropriate, a deductive change order shall be issued if the clarification results in a reduced scope.

29. Prime Contractor shall furnish and install all mock-ups required by specifications found within this Prime Contractor's scope.

30. Prime Contractor shall include provisions to comply with all delegated-design submittal requirements found within their respective specification sections.

31. Prime Contractor understands that parking will not be permitted within the limits of work, staff parking, student parking or public parking spaces on campus, unless specifically allowed in the Contract Documents or agreed upon by the District. Prime Contractor acknowledges that food trucks are prohibited from entry to the construction limits of work and Valhalla High School campus. This General Requirement supersedes parking provisions outlined elsewhere in the Contract Documents.

32. Perform all coring and sleeving (as required by actual Project requirements) for all contract work. If required, include proper types of steel sleeves at penetrations. Prime Contractor includes X-ray or pachometer investigation before coring into concrete.

33. Provide Fire, Smoke, Sound and/or Architectural caulking and sealants at all plumbing penetrations as required by the contract documents. The intent of this general inclusion is for each Prime Trade Contractor to be responsible for their own penetrations as it relates to their scope of work.

34. Furnish and install all necessary Unistrut, angles, channels, brackets, backing, threaded rod, miscellaneous steel fasteners, etc. as required to install all fixtures and piping work included in this contract, including seismic supports and sway bracing. All work shall comply with applicable codes and Contract Documents.

35. Furnish and install proper support under piping and similar items that run horizontally on the roof membrane.

36. Furnish and install all items as required to properly seal all piping penetrations on the roof. Each piping penetration shall be a minimum of 18” from raised platforms, curbs, and adjacent penetrations. Roof penetrations shall not interfere with the operation or servicing of equipment (i.e. piping shall not be located in front of equipment access doors).

37. The locations, configuration, sizes and height of roof penetrations shall be fully compatible with the type of roof system and manufacturer’s warranty. The Roofing contractor shall approve all such items prior to installation. The design, proper sequence and installation of jacks, flashings, and drains shall be coordinated with the installation of the roofing system. The height of all penetrations shall be a minimum of 8” above the highest point of the finished roof surface. Overall dimensions must be based on the thickness of the insulating concrete fill system, rigid insulation, etc., as applicable.

38. Verify the exact location and finish height of each floor and deck drain in the interior rooms and exterior areas of the building before installation. Each drain shall be fully compatible and appropriate with the waterproofing systems and

thickness of the composite floor materials. The location of the drains shall be placed properly, symmetrically and as required to avoid conflict with all other building components (i.e. toilet partitions, etc.)

39. All equipment, fixtures, piping and work including installation shall fully comply with the current handicap codes (even if contrary to the Contract Documents and submittal approvals by the Engineer). Prime Contractor shall request specific written direction from the Construction Manager before proceeding with any work that is non-compliant.

40. Furnish and coordinate all plumbing fixture and equipment templates for cutouts in cabinetry and all other building components as applicable.

41. Include all excavation and backfill work as required for systems included in this contract. All excavation, bedding materials, backfill and compaction shall be pursuant to requirements of specifications, drawings, and this exhibit. All areas of excavation shall be returned to existing grades upon completion of work. Include handwork/grading around piping, vaults, etc. Haul from the site all spoils generated by the work included in this Contract.

42. Include all sawcutting, coring, minor demolition, and removal of debris from the site as required to install the Contract work in areas required by the Contract Documents. **In all cases, this Prime contractor shall properly layout and review the extent of all such work with Construction Manager prior to start of any work.** This specifically includes any sidewalk/fireroad removals as required. Sawcut to the nearest joint. Remove all debris from site.

43. Furnish and install specified labeling, stenciling, tagging and identification of work included in this Contract. This includes all heat trace cable and detection tape required by the plumbing contract documents and/or building codes; whichever is more stringent.

44. Furnish and install all access doors required for plumbing work. The proper type and finish of architectural access doors shall be provided. The type and finish may or may not be specifically listed in the plumbing and/or architectural specification sections. Prime Contractor to assume stainless steel access doors in bathroom walls. Coordinate all openings with the respective Prime contractors (i.e. framing, acoustic ceiling, etc.) The Framing Contractor shall provide the openings in the framing systems. Prime Contractor understands that the intent is to use one manufacturer for all exposed interior access doors.

45. The water piping system within the building shall be energized at all times during installation of drywall.

46. Properly secure all sleeves, work and fixtures that are cast into concrete work so that movement does not occur during placement. Verify proper location and placement before concrete placement.

47. This Prime contractor shall provide manpower and shift schedules (in advance of the actual work being performed) to the Construction Manager so that it can be analyzed against the Project's schedule requirements.

48. All piping diagrams and plumbing plans are schematic in nature only and actual routing of piping will vary due to actual job conditions. Include all necessary relocations and re-routing as required for a complete and functional system. Piping should be expected to be relocated up to 10' in order to avoid obstructions. Prime Contractor to install scope of work in accordance with the coordinated drawings/files. Any deviations that affect other systems shall require approval of the design team prior to installation.

49. Provide, erect and dismantle all ladders and scaffolding required to perform work. Provide all required rigging and hoisting necessary to perform this scope of work. All lifts and material handling required to perform this scope of work shall be provided by the Plumbing contractor.

50. Finish Prime Contractor includes all in-wall flat-strap backing and rough carpentry Prime Contractor includes all in-wall and above ceiling structural wood-framed backing. Prime Contractor shall coordinate accordingly and layout backing where required for this Prime Contractor's scope.

51. Daily clean-up of all debris related to the Work of this Prime Contractor is required. All debris generated by this Prime Contractor shall be legally removed daily and disposed of offsite by this Prime Contractor. All Prime Contractors, while on site, will provide a clean-up laborer to be included in the weekly clean-up effort for the duration of the project. For bidding purposes, Prime Contractor shall provide a 2 hours of clean-up labor for 54 total weeks.

III. **PLUMBING INCLUSIONS:** The following items are specifically included in the Plumbing scope of this Contract:

1. All Plumbing work shown on the Plumbing Drawings. Scope includes but is not limited to: building and domestic water, sanitary sewer and vent, storm drain, gas, water heaters, roof, overflow and area drains, drinking fountains, hose bibs, condensate drain systems, water closets, urinals, lavatories, sinks, mop sinks, eyewashes, floor drains, PRVs, piping insulation, all other plumbing fixtures, accessories, and equipment required by the Contract Documents.

   Scope includes complete **site** gas system including regulators, etc, per the Civil and Plumbing Drawings.

2. Provide temporary water as follows:
   a. Provide 2 each hose bibs to be located onsite as directed by Construction Manager. Connect to nearest water source and remove when directed by Construction Manager.
   b. Provide hydrometer at closest hydrant for 16 months. Water usage cost to be paid by others. Prime Contractor includes coordination with Water District.

3. Furnish and install all site and building natural gas work. Include a pressure

regulator and an earthquake valve as required by code and the Contract Documents.

4. Furnish and install roof drain/overflow drain. Connect to site storm drain system. Prime Contractor to include all roof drain components, including but not limited to drain body, frame and drain dome cover, per the Contract Documents. Prime Contractor includes coordination of roof drain installation sequence as it relates to roofing. Prime Contractor includes roof drain removal and temporary protection at all roof drains called out to be removed and replaced.

5. Provide vibration isolators and steel support rails for plumbing equipment.

6. Provide concrete anchors, thrust blocks and encasement for underground piping as required.

7. Furnish and install protective insulation and covering over all exposed fixture piping and valves as required by the Contract Documents.

8. Fully coordinate the locations and installation of all drains located within the building with the Structural Steel and Sheet Metal/Finishes Contractors. All drain leader piping shall be routed within the wall cavities.

9. Furnish and install drain pans and associated piping at the water heaters.

10. Furnish and install all waste line clean-outs as required by code, the Contract Documents and as required to provide proper access to all points of the system. Clean-outs shall be located in a manner that does not interfere with any building components and at inconspicuous locations. Floor clean-outs shall not be located in marble, tile or wood floors nor shall wall clean-outs be located in public side of walls. Exterior clean-outs shall not be installed in paved areas without consent of Construction Manager. Exterior clean-outs shall be installed in landscape areas whenever possible.

11. All plumbing fixtures and drains shall be adequately protected so that no foreign matter can enter. Additionally, protect so that they cannot be used prior to building occupancy.

12. Clean out and flow test all lines prior to project completion. Upon project completion and when directed by the Construction Manager, flush all drains, remove and clean all filters, strainers, etc.

13. Provide final connections to existing services, new equipment and work supplied under this contract and equipment supplied by others as defined by the Contract Documents.

14. Furnish and install water heater platforms/and other equipment supports as required by the Contract Documents.

15. Properly flush and sterilize the new domestic water piping system.

Disconnect/reconnect water mains at meters as required to charge system with chemicals. Provide chlorinating certificates at completion of all testing. Properly flush all faucets (without strainers installed) fixture supply valves, toilet flush valves, etc.

16. Provide bacteria testing upon completion of work.

17. Polish all floor drain covers at conclusion of Project.

18. Isolate any piping through concrete floors as required to prevent contact with concrete. Properly support all pipes below decks as required.

19. Coordinate with Structural drawings for all piping installed below grade.

20. Locate all valves as required for ease of accessibility. Coordinate with all work by other trades. Relocate valves as required if not easily accessible.

21. Design/Engineer all supports, hangers, bracing, etc. for ceiling and wall mounted plumbing items. Provide engineered shop drawings for approval by the Architect/Engineer. Reference associated specification requirements for further clarification.

22. If required, Prime Contractor will be required to utilize trapeze type supports to bridge under obstruction.

23. Provide complete equipment layout drawings for all work provided by this Prime Contractor as required to ensure all equipment will fit in designed areas. Provide all additional supports, mounting/anchorage systems, to comply with this requirement.

24. Install all work within casework as required to conceal piping to the maximum extent possible.

25. All exterior bolts install through Sheet Metal pad covers shall be set in mastic and have waterproof seal.

26. Connect condensate drains and secondary drains. Prime Contractor shall coordinate with HVAC Prime Contractor for manufacturer requirements on condensate drain discharge. If plumbing and mechanical plans do not explicitly shown where condensate shall be discharged from RTUs/DCUs, Prime Contractor shall assume condensate routes and discharges to the nearest mop sink in the same building.

27. All below slab piping rough in shall be installed below subgrade. (i.e. below gravel and sand base).

28. Furnish and install all catch basins, area drains and trench drains. Prime Contractor shall set the fixture to designed grade and make the final tie-in/connection.

29. All Prime Contractors are responsible for covering of roof openings for a weather tight system prior to rain and rain clean-up. Prime Contractor to consider the allotted rain days in the project schedule for budgeting purposes.

30. Reference the Site Utility plans for the point of connections. Extend piping to diagrammatic locations of POCs.

31. Label all piping per specifications and applicable building codes.

32. Furnish and install all supports for plumbing and plumbing equipment.

33. Furnish and install all rooftop flashing for plumbing work.

34. Provide concrete anchors, thrust blocks and encasement for underground piping as required.

35. Include wrapping of below grade pipe per Contract Documents.

36. Include all mixing valves.

37. Furnish and install all Unistrut, angles, channels, brackets, backing, threaded rod, miscellaneous steel fasteners, etc. as required to install all fixtures and piping work included in this subcontract, including seismic supports and sway bracing. All work shall comply with applicable codes and Contract Documents.

38. Prime Contractor includes plumbing safe-off and demolition coordination per the following: Properly identify and make safe all existing plumbing services as required to facilitate the demolition (including a mark-out job-walk) and/or retrofit work within the scope of the Project. Clearly identify all equipment and fixtures scheduled to be demolished for removal by the demolition contractor. Lay out the extents of the demolition. If there is equipment or fixtures that should have been demolished and were not properly identified by the plumbing Prime Contractor but are remaining after demolition, this Prime Contractor will be responsible for having them removed. If there are fixtures or equipment scheduled to remain but not properly identified by this Prime Contractor prior to demolition, this Prime Contractor will be required to buy the replacement equipment. Prime Contractor shall include re-cutting, re-grinding and any other required preparation of point of connections where existing equipment/material was removed by the demolition Prime Contractor. Prime Contractor shall account for and participate in on-site job-walks at the beginning of the project specifically for coordinating demolition/safe-off.

39. Furnish and install all fixture mounts.

40. Prime Contractor Includes eighty (80) journeyman labor hours for miscellaneous plumbing work. The Construction Manager/District may authorize the use of these hours only.

41. Prime Contractor has included multiple mobilizations to achieve the requirements of the contract. For bidding purposes, include five (5) mobilizations. A mobilization

is defined as removal and return of equipment and materials. A crew leaving the site is not a demobilization.

42. Prime Contractor includes provisions to accommodate multiple commissioning/functional testing in order to achieve the project milestones and completion dates shown in the project schedule.

43. Prime Contractor shall coordinate plumbing points of connection (POC) with other Prime Contractor's finish equipment/ systems accordingly. If this Prime Contractor fails to properly coordinate final POCs with other Prime Contractors prior to completing installation, and the POC is wrong and not feasible given the site conditions, the Prime Contractor will be responsible for the costs to relocate the power, low voltage, or fire alarm infrastructure and any subsequent remedial work as a result of the relocation.

44. Prime Contractor shall include food service equipment scope noted in the Orness drawing sheets and Foodservice Equipment Specification (#114000) regardless of what is shown on other sheets in the plans. Prime Contractor's food service scope includes but is not limited to:

    a. All plumbing rough-in – Unless specifically noted otherwise.

    b. Final connections of all food service equipment requiring plumbing/pipe work (water, sewer, gas, etc.) – Unless specifically noted otherwise.

    c. Prime Contractor shall cover all scope noted in the Orness plans or #114000 specifications that note scope by plumbing contractor, 'P.C.', PC, or any reference to plumber.

    d. Receiving equipment supplied by 'KEC' (Kitchen Equipment Contractor)/Food Service Equipment Prime Contractor that requires this Prime Contractor's final connection/installation.

    e. Prime Contractor shall reference Appendix Z – Food Service Equipment Scope Matrix for additional clarification of food service scope responsibility.

45. Prime contractor has reviewed Attachment L - DEHQ-FHD Approval and Conditions and shall comply with items #4 & 5.

46. Prime Contractor shall include provisions to execute scope, as shown in supplemental Appendix Z – Food Service Equipment Scope Matrix. In the event the plans or specification #114000 conflicts with the Appendix Z matrix and explicitly states a certain contractor shall provide or install specific scope, Prime Contractor shall assume the plans or specification #114000 governs. Appendix Z is meant to help clarify the involvement of multiple Prime Contractors for each specific kitchen equipment.

IV. **<u>SITE UTILITIES INCLUSIONS:</u>** The following items are specifically included in the Site Utilities scope of this Contract:

1. Furnish and install the site storm drain piping and structures. Include all manholes, clean out, structures, inlets, Catch Basins, Area Drains, boxes, headwall, etc.

2. Furnish and install natural gas piping, per the Contract Documents. Include an earthquake valve as required by code and the Contract Documents.

3. Include potholing, cutting, and capping of all existing site underground wet & dry utilities. Prime Contractor shall include potholing at all utility point of connections/tie-ins. Prime Contractor shall include five additional exploratory potholes (6' deep, by a 4' diameter) as directed by the Construction Manager.

4. Include removal of all existing site underground wet & dry utilities, as indicated in the Contract Documents. Removal includes saw-cutting and removing concrete & asphalt, potholing, soil removal, hauling, backfill to finish grade for concrete/asphalt paving Prime Contractor, compaction and any other means to complete utility removal.

5. Reference all Civils, drawings for additional information and scope.

6. If shown include furnishing and installing of all required grates, frames, and angles for storm utilities.

7. Provide all required thrust blocks for pressure lines installed under this Bid Package.

8. Purchase and leave at the Construction Manager's jobsite trailer a "key" for on-site water lines and a spanner wrench for shutting down/turning on fire hydrants.

9. All spoils generated from the underground utilities scope of work shall be removed/exported from the jobsite. Include in base bid all costs associated with this export.

10. Furnish and install all concrete and rebar as it pertains to your work. This includes, but is not limited to catch basins, thrust blocks, and other site utility structures.

11. Include a separate move-on for any required adjustments of manhole covers, boxes, etc. prior to asphalt paving. This includes adjustment of existing manholes to grade.

12. Locate and mark existing underground utilities prior to beginning work.

13. This Prime Contractor is responsible for coordinating with other underground Prime contractors for inverts and grades.

14. The scope of work includes dust control as required for installation of this work.

15. Approval shall be obtained from Construction Manager and the local jurisdiction for all haul routes to and from the project site, and in and around the site.

16. This Prime contractor will be held responsible for retesting costs caused by failed compaction tests.

17. Include coordination with the grading contract and all other trades relative to your scope of work.

~~18. Provide all measures (including temporary services) in order to keep occupied portions of the campus fully operational.~~

19. Provide isolators and steel support rails for plumbing equipment as required by the Contract Documents. Include wrapping of below grade pipe per Contract Documents.

20. Raise or lower all existing vaults, lids, boxes in work area to match new grades as required. If Prime Contractor is unable to adjust existing vaults to match new grades, Prime Contractor includes replacing said existing vaults. Prime Contractor includes the demolition and removal of all below-grade existing utilities, as indicated in the Construction Documents. This scope may be shown on other drawings other than the Plumbing sheets.

21. Prime Contractor shall slurry in this Prime Contractor's trenches, as applicable in civil and plumbing details for this Prime Contractor's underground rough-in.

22. Include all excavation, trenching and backfill work as required for systems included in this Contract. All excavation, trenching, bedding materials, shoring, underground utility installation, backfill and compaction shall be pursuant to requirements of specifications, drawings, and this Contract. All areas of excavation shall be returned to existing grades prior to completion of work. Include handwork/grading around conduits, vaults, etc. Haul-off from the site all spoils generated by the work included in this Contract. Any import shall be DTSC approved. Prime Contractor includes lay-out for saw-cut and demo limits for coordination with Demo Prime Contractor. Concrete Prime Contractor shall cover necessary fine grading for new hardscape. Prime Contractor includes all slurry required in this Prime Contractor's trenches, per the plans/Specifications.

23. Prime Contractor Includes forty (40) journeyman labor hours for miscellaneous site utility work. The Construction Manager/District may authorize the use of these hours only.

24. Immediately and continuously de-water and pump out to appropriate drainage receptacle; all excavations as required by water ponding and weather conditions. Automatic pumps shall be used during all off-hour periods of construction. Immediately clean, "muck-out", remove soft/muddy soils from all pit/trench excavations as required by Inspector or Soils Engineer so that work may continue. Reference Supplemental Conditions for further rain damage prevention responsibilities.

25. In addition to requirements found within specifications #221316, #221413, #333113 & #334211, Prime Contractor includes flushing and video-recording all

storm drains found within the project limits/logistics plan to verify drainpipes are clear of obstructions prior to construction operations starting. This requirement includes but is not limited to catch basins, below-grade storm drain pipe, above-grade storm drain pipe and roof drains (drain bodies and overflows).

V. ALLOWANCES: The following allowances are included in this scope of work. Construction Manager must agree to the price, type and extent of additional scope before work is started. Field tickets must be signed by Construction Manager's Superintendent on a daily basis to account for the time, material, and equipment used from these allowances. All time, material, and equipment used from these allowances will be billed against these allowances and any portion of the original allowance amount not used will be credited back to the Owner at the end of this Contract's scope of work as a deductive change order. This Article is separate and exclusive from all other Work required by the Contract.

- CN-2989 Allowance #1: Unforeseen Conditions = $40,000.00

VI. ALTERNATES: N/A

VII. EXCLUSIONS:

1. Gutters and downspouts (by Finishes Contractor)

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APPENDIX Z - FOOD SERVICE EQUIPMENT SCOPE MATRIX

GHS Kitchen & Weight Room Project - Food Service Scope Matrix

CN-2987	Prime: Food Service Equipment
CN-2989	Prime: Plumbing
CN-2990	Prime : HVAC
CN-2991	Prime: Electrical
District	Owner Furnished

*Refer to K-2 Orness sheet, Specification #114000 & associated Scope of Work for further clarification. Coordinate backing with respective Prime Contractor. MEP Prime Contractors perform final utility connections of equipment, unless specifically noted otherwise - 'Installation by' column represents setting/anchoring equipment, NOT 'final utility connections'

Equipment Item #	Description	Furnished By	Infrastructure #1 (MEP-FA) By	Infrastructure #2 (MEP-FA) By	Installation By	Notes
1	MOP SINK, FLOOR MOUNTED (24"x24"x12")	CN-2989	CN-2989	N/A	CN-2989	
2	MOP SINK FAUCET	CN-2989	CN-2989	N/A	CN-2989	
3	RACK, BRUSH/BROOM	CN-2987	N/A	N/A	CN-2987	
4	WALL STORAGE WALL SHELF	CN-2987	N/A	N/A	CN-2987	
5	AIR CURTAIN	CN-2987	CN-2991	CN-2991	CN-2991	
6	EMPLOYEE LOCKERS	District	N/A	N/A	CN-2987	Coordinate lockers with Concrete Prime
7	WALK-IN FREEZER w/ LIGHTS	CN-2987	CN-2991	CN-2989	CN-2987	Coordinate with Concrete Prime
8	WALK-IN FREEZER EVAPORATOR COIL (FAN) W/KE2 CONTROL	CN-2987	CN-2991	CN-2989	CN-2987	Coordinate with Concrete Prime
9	WIRE SHELVING, FREESTANDING	District	N/A	N/A	CN-2987	
10	WALK-IN COOLER w/ LIGHTS	CN-2987	CN-2991	CN-2989	CN-2987	Coordinate with Concrete Prime
11	WALK-IN COOLER EVAPORATOR COIL (FAN) W/KE2 CONTROL	CN-2987	CN-2991	CN-2989	CN-2987	Coordinate with Concrete Prime
12	REFRIGERATION RACK	CN-2987	CN-2991	CN-2989	CN-2987	
13	CORNER GUARDS, L-SHAPE	CN-2987	N/A	N/A	CN-2987	
14	CORNER GUARDS, U-SHAPE	CN-2987	N/A	N/A	CN-2987	
15	SPARE NUMBER	N/A	N/A	N/A	N/A	
16	DRY SHELVING, FREESTANDING	District	N/A	N/A	CN-2987	
17	ICE MACHINES	CN-2987	CN-2991	CN-2989	CN-2987	Plumber & electrician make connections
18	BIN, ICE	CN-2987	CN-2989	N/A	CN-2987	
19	WATER FILTER, ICE	CN-2987	CN-2989	N/A	CN-2987	
19.1	BACKFLOW PREVENTOR	CN-2989	CN-2989	N/A	CN-2989	
20	HAND SINK, WALL MOUNT	CN-2987	CN-2989	N/A	CN-2989	
20.1	FAUCET, ELECTRIC	CN-2987	CN-2991	CN-2989	CN-2989	
21	INTELLIGATE WEB-BASED GATEWAY	N/A	N/A	N/A	N/A	
22	INTELLISENSOR FOR TEMPERATURE & DOOR	N/A	N/A	N/A	N/A	
23	SPARE NUMBER	N/A	N/A	N/A	N/A	
24	3 - COMPARTMENT SINK	CN-2987	CN-2989	N/A	CN-2989	
25	PRE-RINSE FAUCET, BACKSPLASH MOUNT	CN-2987	CN-2989	N/A	CN-2989	
26	WALL STORAGE WALL SHELF	CN-2987	N/A	N/A	CN-2987	
27	POT RACK, STAINLESS STEEL	CN-2987	N/A	N/A	CN-2987	
28	WALL STORAGE WALL SHELF	CN-2987	N/A	N/A	CN-2987	
29	SOILED DISH TABLE w/ SCRAPPED SINK	CN-2987	CN-2989	N/A	CN-2989	
30	PRE-RINSE FAUCET, BACKSPLASH MOUNT	CN-2987	CN-2989	N/A	CN-2989	
31	QUICK DRAIN	CN-2987	CN-2989	N/A	CN-2989	
32	WAREWASHER, DOOR TYPE, HIGH TEMP w/ BOOSTER	CN-2987	CN-2991	CN-2989	CN-2989	
33	TYPE-II STEAM EXHAUST HOOD	CN-2987	CN-2990	CN-2990	CN-2987	
34	EXHAUST FAN	CN-2990	CN-2990	CN-2991	CN-2990	
35	SPARE NUMBER	N/A	N/A	N/A	N/A	
36	DISH TABLE, CLEAN	CN-2987	N/A	N/A	CN-2987	
37	POT SHELVING, FREESTANDING	District	N/A	N/A	CN-2987	
38	SPARE NUMBER	N/A	N/A	N/A	N/A	
39	SPARE NUMBER	N/A	N/A	N/A	N/A	
40	SPARE NUMBER	N/A	N/A	N/A	N/A	
41	PREP TABLE w/ DOUBLE PREP SINK, ADA	CN-2987	CN-2989	N/A	CN-2989	
42	FAUCET	CN-2987	CN-2989	N/A	CN-2989	
43	WALL STORAGE WALL SHELF	CN-2988	N/A	N/A	CN-2987	
44	SPARE NUMBER	N/A	N/A	N/A	N/A	
45	INSULATED HOT CABINET, MOBILE	District	CN-2991	CN-2991	District	
46	ISLAND PREP TABLE w/ INTEGRAL PREP SINK	CN-2988	CN-2989	N/A	CN-2989	
47	FAUCET	CN-2988	CN-2989	N/A	CN-2989	
48	COMMERCIAL MICROWAVE OVEN	District	CN-2991	CN-2991	District	
49	RACK, PAN	District	District	District	District	
50	WORK TABLE	District	N/A	N/A	CN-2987	
51	COOK & HOLD QUIKTHERM, MOBILE	District	CN-2991	CN-2991	District	
52	SPARE NUMBER	N/A	N/A	N/A	N/A	
53A	CONVECTION OVEN, GAS	District	CN-2991	CN-2989	CN-2989	
53B	CONVECTION OVEN, GAS	District	CN-2991	CN-2989	CN-2989	
54A	CONVECTION OVEN, GAS	District	CN-2991	CN-2989	CN-2989	
54B	CONVECTION OVEN, GAS	District	CN-2991	CN-2989	CN-2989	
55	TILTING SKILLET, GAS	District	CN-2991	CN-2989	CN-2989	
56	FLOOR TROUGH	CN-2987	CN-2989	N/A	CN-2989	
57	6-BURNER RANGE w/ CONVECTION OVEN, GAS	District	CN-2991	CN-2989	CN-2989	
58	SPARE NUMBER	N/A	N/A	N/A	N/A	
59	SPARE NUMBER	N/A	N/A	N/A	N/A	
60	SPARE NUMBER	N/A	N/A	N/A	N/A	
61	TYPE-I GREASE EXHAUST HOOD w/ LIGHTS	CN-2987	CN-2990	CN-2991	CN-2987	
62	EXHAUST FAN	CN-2990	CN-2990	CN-2991	CN-2990	
63	MAKE-UP AIR	CN-2990	CN-2990	CN-2991	CN-2990	
64	STAINLESS STEEL WALL PANELS	CN-2987	N/A	N/A	CN-2987	
65	QUICK GAS DISCONNECT	CN-2987	CN-2989	N/A	CN-2989	
66	FIRE SUPPRESSION SYSTEM; ANSUL AUTOMAN	CN-2987	CN-2991	CN-2989	CN-2987	Electrical Prime has E+FA infrastructure to box microswitches and gas valve reset relay
67	REMOTE PULL STATION FOR FIRE SUPPRESSION SYSTEM	CN-2987	CN-2991	CN-2989	CN-2987	Electrician rough-in conduit. KEC has pull box & cables
68	K-TYPE FIRE EXTINGUISHER, RECESSED	CN-2987	N/A	N/A	CN-2987	
69	GAS SHUT OFF VALVE	CN-2987	CN-2989	N/A	CN-2989	Plumber installs shut-off valve. Electrician wires back to hood ansul cabinet
70	WALL MOUNTED CONTROL CABINET	CN-2987	CN-2990	CN-2989	CN-2990	
71	SPARE NUMBER	N/A	N/A	N/A	N/A	
72	SPARE NUMBER	N/A	N/A	N/A	N/A	
73	REFRIGERATOR, PASS-THRU	District	CN-2991	N/A	CN-2987	
74	CABINET, WARMING & HOLDING, PASS-THRU	District	CN-2991	N/A	CN-2987	
75	P.O.S. CART	District	N/A	N/A	CN-2987	
76	P.O.S. & CARD READER	District	CN-2991	CN-2991	District	
77	SERVING CART, COLD	District	CN-2991	N/A	CN-2987	
78	SERVING CART, HOT	District	CN-2991	N/A	CN-2987	
79	DOUBLE SIDED SNEEZE GUARD, SELF-SERVE	District	N/A	N/A	CN-2987	
80	SERVING CART, COLD	District	CN-2991	N/A	CN-2987	
81	MILK COOLER	District	CN-2991	N/A	CN-2987	
82	AIR CURTAIN	CN-2987	CN-2991	N/A	CN-2987	

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GROSSMONT UNION HIGH SCHOOL DISTRICT

GROSSMONT HS KITCHEN AND WEIGHT ROOM
MULTI-PRIME

ATTACHMENT H
BID PACKAGE

CN-2991

ELECTRICAL / LOW VOLTAGE / AUDIO VISUAL

TRADE CONTRACTOR SPECIFIC PROVISIONS
BID PACKAGE: CN-2991
ELECTRICAL / LOW VOLTAGE / AUDIO VISUAL

VERSION 02

ELECTRICAL & LOW VOLTAGE & AUDIO VISUAL – VERSION 02

The following clarifies certain inclusions, exclusions, and other information. This list is not inclusive of all work and is not limiting in any manner. This Exhibit shall supplement all General and Special Conditions in this Contract unless specifically noted herein to supersede them. This exhibit shall supersede all other conditions in the Contract and Contract Documents in the event of specific conflicts between the Documents.

I. **GENERAL REQUIREMENTS:** The following General Requirements apply to all work included in this Contract:

1. Full compliance and scope coverage with Specification Section(s)

   - DIVISION 00
   - DIVISION 01
   - 07 92 00 – Joint Sealants
   - 08 31 00 – Access Doors and Panels (For this Prime Only)
   - 11 40 00 – Foodservice Equipment (For this Prime Only)
   - DIVISION 26 – In its entirety
   - DIVISION 27 – In its entirety
   - DIVISION 28 – In its entirety
   - 31 23 16.13 – Trenching (For this Prime only)
   - 312323 – Fill (For this Prime only)

   Full compliance and scope coverage with all other Project Scope and Specification Sections that interface with and require Electrical services unless modified or excluded by this Exhibit.

2. Prime Contractor shall have a current California Contractor's License Classification as listed on the Notice to Bidders and shall keep same current through-out the duration of the project. License required for this scope is C-10.

3. Schedule of shop drawings, submittals, and dimension verifications: The following groups of shop drawings and submittals are not all-inclusive and are supplemental to requirements found elsewhere in the documents. These submittals shall be delivered to the Project Manager not later than the below listed dates:

   a. #262213 – Dry Type Transformer

      Due: 10 Calendar Days after Preliminary Notice of Award

   b. #262413 – Switchboard

      Due: 10 Calendar Days after Preliminary Notice of Award

   c. #262416 – Panelboards

Due: 10 Calendar Days after Preliminary Notice of Award

d. #263323 – Emergency Lighting Equipment

Due: 15 Calendar Days after Preliminary Notice of Award

e. #265114 – LED Lighting Fixtures and Lamps

Due: 15 Calendar Days after Preliminary Notice of Award

f. Division 27 Submittals

Due: 15 Calendar Days after Preliminary Notice of Award

g. Division 28 Submittals

Due: 15 Calendar Days after Preliminary Notice of Award

h. ALL Remaining Contractual Submittals

Due: 20 Calendar Days after Notice to Proceed

These due dates take precedence over other dates found elsewhere in the Contract Documents.

4. Prepare any coordination drawings required to show the interface between work provided by this Contract and others. This includes but is not limited to:

   a. Electric Room Layout Drawings

   b. Below Grade Coordination Drawings

   c. Above Ceiling Coordination Drawings

5. Procurement of Critical Long Lead Items: Prime Contractor shall be responsible to ensure that the critical long lead items are delivered as required to comply with the requirements and intent of the master building schedule.

6. Schedule: Prime Contractor shall issue to the Construction Manager a detailed Construction Schedule for this trade's work as it pertains to this Project. The work shall proceed in accordance with the Master Construction Schedule issued with the Construction Documents. This schedule shall be modified from time to time in order to properly coordinate and sequence the work; however, the Prime Contractor is responsible to supply sufficient manpower, equipment and material necessary to ensure the duration of time established for the Prime Contractor's work is maintained as per the Construction Documents.

7. Prime Contractor has reviewed the Project and is aware of existing conditions.

8. Prime Contractor has included the costs for offsite storage of project materials including all switchgear and light fixtures for the duration of the project.

9. Provide flagmen as required. It is understood that the work will take place within an operating Campus and that the Prime Contractor is solely responsible to protect the public and maintain uninterrupted access to the campus by the general public. Provide all barricades, etc. to achieve this. Perform work during off-hours as required to avoid disruption of campus operations.

10. Prime Contractor will be responsible for collateral damage to areas or finishes not scheduled for demolition as a result of his operations.

11. It is understood that the Trade Contractor Specific Provisions contained in the contract documents are a material element of this Contract and scope of work. It is specifically noted that the Prime Contractor shall be responsible for all requirements and clauses contained in the Trade Contractor Specific Provisions

12. It is understood that the Project Specific Provisions contained in the Contract Documents are a material element of this Contract and scope of work. It is specifically noted that the Prime Contractor shall be responsible for all requirements and clauses contained in the Project Specific Provisions.

13. Building Dimension Verification: Prime Contractor shall issue a plan and/or letter to the Construction Manager in the form of a submittal that locates and verifies exact dimensions for the following items:

    a. Locations and sizes of formed concrete housekeeping pads.

    b. Size confirmation of interior rooms in each location where electrical equipment and panels will be installed; stating that the area, configuration of walls, placement and swing of doors, and dimensions designed are adequate and will meet codes.

Due: 20 Working Days after Notice to Proceed

14. Perform all coring and/or sleeving (as required by actual project requirements) for all contract work. If required, include proper types of steel sleeves at penetrations. Prime Contractor includes X-ray or pachometer investigation before coring into concrete.

15. Provide Fire, Smoke, Sound and/or Architectural caulking and sealants at all electrical penetrations as required by the Contract Documents. The intent of this general inclusion is for each Prime Trade Contractor to be responsible for their own penetrations as it relates to their scope of work. Include sound pads at J-boxes and similar penetrations if required by the Project's specifications.

16. Contractor shall maintain and record as-built information of his work in a current condition. The Contractor shall transfer all as-built information onto the record set of drawings located at the Construction Manager's Field Office. All

transferred information shall be neat, legible and in accordance with the guidelines set forth in the contract documents. Failure to provide as-built information in a timely manner will result in progress payments being withheld.

17. This contractor acknowledges and includes the cost for all required off-hour, overtime and weekend work schedules as required to perform the work included in this contract and coordinate this contract work with all other related trades. This contractor shall provide manpower and shift schedules (in advance of the actual work being performed) to the Construction Manager so that it can be analyzed against the Project's schedule requirements.

18. Prime Contractor is required to properly staff the Project to maintain the Project's schedule and to ensure proper sequencing with other prime Contractors as required by the Construction Manager.

19. Prime Contractor is responsible to provide all layout for its work from survey control points and lines, including all building corners, grid lines, offsets, elevations, etc.

20. Provide all necessary protection for new work and adjacent finishes from Prime Contract work operations. Include steel plates, plywood, plastic and masking protection as required. Prime Contractor is responsible to maintain/repair/replace any temporary barricades that are moved or damaged by its work. Prime Contractor is responsible to protect all existing structures/MEPs/benchmarks/miscellaneous items as required by the Contract Documents during this Prime Contractor's work.

21. Prime Contractor acknowledges that space for storing materials within the worksite is limited. All delivery and storage of materials shall be scheduled and coordinated with the Construction Manager prior to shipping. Prime Contractor is responsible to assure that stocking of building materials does not overload the building structure or unreasonably impede the work of other trades. Prime Contractor shall promptly relocate stored and stockpiled materials when directed by Prime Contractor.

22. Prime Contractor is responsible to promptly remove from the project all surplus material and debris associated with its work.

23. Prime Contractor is responsible for scheduling and coordinating all deliveries required for this scope of work with the Construction Manager and other Prime Contractors. Prime Contractor to provide adequate flagmen, street closures, sidewalk closures, permits, traffic control, etc. for deliveries, transporting on site, pick-ups as required by the project schedule, specifications, job conditions and governing agencies within the jobsite limits.

24. Prime Contractor shall adhere to OSHA safety standards while on the project site and shall engage their designated safety professional to make periodic jobsite walks for safety compliance. Any noted issues or concerns shall be

reported to Construction Manager's Superintendent at the time of visit. Prime Contractor is responsible to maintain/repair/replace any temporary barricades.

25. The general site wide storm water pollution prevention plan (SWPPP) will be prepared and implemented by others. Subcontractor shall assume full responsibility to replace any broken sandbags or any other SWPPP type materials damaged by this Subcontractor during the course of this Subcontractors work.

26. Prime Contractor acknowledges that parking space within the project boundaries is extremely limited. The only trucks in immediate use (Loading/Offloading, welding rigs, rigging, etc.) will be allowed to stage near work areas. Worker parking will be designated by the Construction Manager. Penalties for failure to comply with this requirement are the responsibility of the individual vehicle owner.

27. In the event of conflicts not clarified prior to bidding deadline, Prime Contractor shall assume the most stringent, higher quality and greater quantity of work for bidding purposes. If Prime Contractor still requires clarification after awarded the project, Prime Contractor shall generate an RFI. If appropriate, a deductive change order shall be issued if the clarification results in a reduced scope.

28. Prime Contractor shall furnish and install all mock-ups required by specifications found within this Prime Contractor's scope.

29. Prime Contractor shall include provisions to comply with all delegated-design submittal requirements found within their respective specification sections.

30. Furnish and install all necessary angles, clamps, hangers, channels, Unistrut, supports, wires, cables, threaded rod, misc. steel, isolation devices, seismic anchorage, slack wires, backing, etc.; for all electrical work, equipment, misc. items and light fixtures included in this Contract. All work shall comply with applicable codes and Contract Document requirements.

31. If applicable, furnish and install proper support under conduits and similar items that run horizontally on the roof membrane.

32. The locations, configuration, sizes and height of roof penetrations shall be fully compatible with the type of roof system and manufacturer's warranty. The Roofing Prime Contractor shall approve all such items prior to installation. The design, proper sequence and installation of jacks/flashings shall be coordinated with the installation of the roofing system. The height of all penetrations shall be a minimum of 8" above the highest point of the finished roof surface. Overall dimensions must be based on the thickness of the insulating concrete fill system, rigid insulation, etc., as applicable.

33. Install labeled pull ropes in all spare or empty conduits and conduit systems that are installed under this Contract to be used by other Trades.

34. All fixtures, equipment and work including installation shall fully comply with current handicap codes (even if contrary to the Contract Documents and submittal approvals by the Engineer). This Prime Contractor shall request specific written direction from the Construction Manager before proceeding with any work that is non-compliant.

35. Furnish and coordinate all electrical fixture/equipment templates for cutouts in cabinetry and all other building components, as applicable.

36. Include all excavation, trenching and backfill work as required for systems included in this Contract. All excavation, trenching, bedding materials, shoring, underground utility installation, backfill and compaction shall be pursuant to requirements of specifications, drawings, and this Contract. All areas of excavation shall be returned to existing grades prior to completion of work. Include handwork/grading around conduits, vaults, etc. Haul-off from the site all spoils generated by the work included in this Contract. Any import shall be DTSC approved. Prime Contractor includes lay-out for saw-cut and demo limits for coordination with Demo Prime Contractor. Concrete Prime Contractor shall cover necessary fine grading for new hardscape. Prime Contractor includes all slurry required in underground trenches, per the Contract Documents – Example: 2/E1.2.

37. All light fixture lenses shall be protected by plastic wrapping during the construction period. Remove the plastic wrapping at the completion of the project or as directed by the Construction Manager. Prime Contractor shall also perform the final cleaning of all equipment, light fixtures and fixture lenses at a time as directed by Construction Manager.

38. Perform all specified labeling, stenciling, tagging and identification of all equipment, conduit systems, devices, fixtures, etc., which are included in this Contract.

39. Furnish and install all access doors required for electrical work. The proper type and finish of architectural access doors shall be provided. The type and finish may or may not be specifically listed in the electrical and/or architectural specification sections. Coordinate all openings with the respective Prime contractors (i.e. framing, acoustic ceiling, etc.) The Framing Contractor shall provide the openings in the framing systems. Prime Contractor understands that the intent is to use one manufacturer for all exposed interior access doors.

40. Provide, erect and dismantle all ladders and scaffolding required to perform work. Provide all required rigging and hoisting necessary to perform this scope of work. All lifts and material handling required to perform this scope of work shall be provided by the Electrical contractor.

41. Prime Contractor shall maintain and record as-built information of his work in a current condition. The Prime Contractor shall transfer all as-built information onto the record set of drawings located at the Construction Manager's Field Office. All transferred information shall be neat, legible and in accordance with the guidelines set forth in the contract documents. Failure to provide as-built information in a timely manner will result in progress payments being withheld.

42. All Prime Contractors are responsible for covering of roof openings for a weather tight system prior to rain and rain clean-up.

43. Prime Contractor understands that parking will not be permitted within the limits of work, staff parking, student parking or public parking spaces on campus, unless specifically allowed in the Contract Documents or agreed upon by the District. Prime Contractor acknowledges that food trucks are prohibited from entry to the construction limits of work and Grossmont High School campus. This General Requirement supersedes parking provisions outlined elsewhere in the Contract Documents.

44. Daily clean-up of all debris related to the Work of this Bid Package Contractor is required. All debris generated by this Bid Package Contractor shall be legally removed daily and disposed of offsite by this Bid Package. All Bid Package Contractors, while on site, will provide a clean-up laborer to be included in the weekly clean-up effort for the duration of the project. For bidding purposes, Prime Contractor shall provide a 2 hours of clean-up labor for 60 total weeks.

II. **ELECTRICAL INCLUSIONS:** The following items are specifically included in the scope of this Contract:

1. All electrical work within the building and site including but not limited to: Electrical Power, Lighting, Communication Systems, Cable Trays, Audio Visual Systems, Clock Systems, Intrusion System, Video Surveillance Security, Fire detection and alarm and all other electrical systems as required by the Contract Documents.

2. Furnish and install all primary, secondary and emergency site underground conduits. Include all items necessary for a complete electrical power service entrance for the designed P.O.C. Coordinate all work and requirements with the serving utilities.

3. Furnish and install a complete fire alarm system, including, but not limited to, conduit, wire, devices, control panels, etc. Coordinate work with HVAC contractor.

4. Furnish/install concrete encasement of underground duct banks as required.

5. Furnish/install all pre-cast concrete pull/splice boxes, transformer pad/slab boxes, frames, covers, plates, grating, manhole covers/frames, grounding devices, and all other accessories required by the Contract Documents and utility company.

6. Furnish and install the Tele/IDF cabinets as noted on the Contract Documents.

7. Furnish and install all electrical grounding systems as required for systems and services that are included in this Contract's scope of work and in the Project's scope of work. Additionally, the Electrical Contractor shall fully coordinate the Building's primary grounding system with all appropriate Trades if this system is connected to/or an integral part of the Project's concrete foundations.

8. Furnish and install plywood backboards for all Electrical/Signal/Communication and similar systems that are shown and required by the Contract Documents.

Backboards shall be fire retardant plywood unless otherwise noted.

9. The Electrical Contractor shall fully coordinate with the Mechanical Contractor(s) with regards to the HVAC energy management/ temperature control systems. The Electrical Contractor has reviewed all the Contract Documents and acknowledges that each specific trade's responsibility to furnish and install each of the specified/ shown components, conduit systems, equipment items and low/line voltage wiring are clearly defined between the Electrical & Mechanical/HVAC Trades so that all items required by the Contract Documents are installed.

10. Include all electrical rough-in, conduit, conductors, line/low-voltage, and final connections to equipment items / work included in this Contract and that which is supplied others; i.e. electrified door hardware, motorized-shades/drapes, projection screens/projectors, drinking fountains, operable walls, door hardware, hand dryers, exhaust fans, Clock systems, fire detection/alarm system, rollup doors, etc.

11. Furnish/install all necessary conduit, wiring, connections required for bells and supervisory systems.

12. Furnish, install, relocate and maintain temporary construction power within the building areas and site. Provide a sufficient quantity of power distribution boxes so that no portion of the site is more than 100' from a power outlet. Electrical Contractor shall furnish all "spider" boxes, cords, connectors, etc. for a complete system. A minimum of two (2) spider boxes / at each building and as required for power by other trades for the full duration of the project. Prime Contractor shall provide step-down transformer(s) from existing distribution panels/electrical panels that are available for use of this project. Available power sources are identified in Appendix A – Available Power Sources.

13. Furnish, install, relocate and maintain all temporary construction light strings and light fixtures throughout the project as required by the Construction Manager. Light levels in all interior areas shall meet minimum OSHA requirements. Furnish and replace all light bulbs/lamps as required throughout the construction period.

14. Disconnect the power & data to the Construction Manager's trailer & IOR's Trailer at the completion of the project. Coordinate with the Construction Manager.

15. Furnish/install power (line/low voltage as applicable), circuiting, wiring and all connections to electrified hardware and related components that are listed in the finish hardware specification section and/or as otherwise required by the Contract Documents. Coordinate all rough-in locations with the Hardware Contractors.

16. Furnish/install electrical rough-in and final connections for all electrical items that are within casework and millwork elements.

17. Furnish and install all electrically illuminated and/or self-illuminated exit signage and "low level" exit signage as required by the Contract Documents.

18. Include removal, repair, re-routing and re-installation of existing electrical

work/services that is required by Contract Documents and that which can be reasonably anticipated to be necessary for proper interface with the new work, existing facilities and construction phasing requirements.

19. T-bar ceiling wires for light fixtures will be provided by others with layout provided by Electrical Contractor. Electrical Contractor will furnish and install for an additional 5% of all light fixture T-bar/wires to replace those existing ceiling wires lost during construction. Electrical Contractor will be responsible for all trapeze and other installation methods where overhead obstructions prohibit/limit the use of ceiling wires. All other above ceiling supports for electrical work will be by the Electrical Contractor.

20. Electrical Contractor to provide power for drinking fountains noted on the plumbing and architectural drawings whether specifically noted or not on electrical prints.

21. Include Security Camera System per the contract documents.

22. All conduits located below the slab on grade shall be located below sub-grade and not in the sand/gravel base.

23. Prime Contractor includes electrical safe-off and demolition coordination of the following: Properly identify and make safe all existing electrical services as required to facilitate the demolition (including a mark-out job-walk) and/or retrofit work within the scope of the Project. Clearly identify all equipment and fixtures scheduled to be demolished for removal by the demolition contractor. Lay out the extents of the demolition. If there is equipment or fixtures that should have been demolished and were not properly identified by the electrical Prime Contractor but are remaining after demolition, this Prime Contractor will be responsible for having them removed. If there are fixtures or equipment scheduled to remain but not properly identified by this Prime Contractor prior to demolition, this Prime Contractor will be required to buy the replacement equipment. Prime Contractor shall include re-cutting, re-grinding and any other required preparation of point of connections where existing equipment/material was removed by the demolition Prime Contractor. Prime Contractor shall account for and participate in on-site job-walks at the beginning of the project specifically for coordinating demolition/safe-off.

24. Provide temporary power and temporary low voltage systems as required to keep occupied portions of the campus operational during construction. Occupied portions of the campus include but are not limited to: buildings, storage units, parking lots (lighting), electrical rooms, IDF rooms, sport facilities, pool equipment room, Gym buildings, etc. It is Prime Contractor's means and methods to maintain power and low-voltage systems throughout the duration of the project. The maintenance of power and low-voltage may not be specifically detailed or noted on the plans.

25. Provide electrical connection to all Owner Furnished and Contractor Furnished equipment.

26. Provide temporary generators if required during shutdowns to keep occupied portions of the campus completely operational. Prime Contractor shall assume all power shutdowns will be performed outside normal school operating hours (6:30am – 4:00pm) with the understanding that sporting events can take place in adjacent buildings/facilities until 10pm, Monday through Friday. Power/data shutdowns will be expected to be coordinated with the school/District a minimum of two weeks in advance to ensure the school and site is prepared for the event.

27. Include all sway bracing and supports for pendant lights.

28. Provide all assisted listening devices.

29. Provide all supports for speakers, audio visual equipment, etc. at all locations.

30. Prime Contractor shall perform the required short-circuit, arc-flash and coordination studies as required by the Contract Documents. If Prime Contractor installs electrical equipment prior to the Engineer of Record reviewing and approving the above-mentioned studies, Prime Contractor shall modify/fix any of the electrical equipment that the Electrical Engineer notes as requiring modification/fixes, at no additional cost to the District.

31. Include complete audio-visual systems.

32. Prime Contractor shall fully coordinate with the Mechanical Prime Contractor with regards to the smoke/fire dampers and duct/mechanical equipment smoke detection systems. The Electrical Prime Contractors shall provide all work related to the fire alarm system. This specifically includes but is not limited to:

    - Duct detectors shall be provided by the electrical contractor, installed into the duct by the mechanical contractor and wired by the electrical contractor.

    - Fire Smoke Dampers shall be provided and installed by the mechanical contractor. All line-voltage, low voltage, transformers and signal/alarm wiring and connections shall be made by the electrical subcontractor. This specifically includes all low voltage and step-down transformers required for a complete system.

    - Variable Frequency Drives shall be furnished and installed by the mechanical contractor. All line voltage to and from the VFD, and all Fire Alarm connections shall be by the electrical subcontractor. Electrical contractor provides final connections/landing.

33. Prime Contractor includes re-programming the fire alarm and intrusion detection systems of existing cafeteria and existing museum/P.E. building prior to demo. Prime Contractor includes a temporary addressable FA panel, until the new addressable panel is installed, per the Contract Documents. For bidding purposes, assume the full duration of the project.

34. Prime Contractor includes one hundred and twenty (120) journeyman labor hours for miscellaneous work. The Construction Manager/District may authorize the use of these hours only.

35. Prime Contractor includes twenty (20) journeyman labor hours for low-voltage work. The Construction Manager/District may authorize the use of these hours only.

36. Prime Contractor has included multiple mobilizations to achieve the requirements of the contract. For bidding purposes, include seven (7) mobilizations. A mobilization is defined as removal and return of equipment and materials. A crew leaving the site is not a demobilization.

37. Prime Contractor includes all temporary lighting for all Prime Trades throughout the duration of the project and shall adhere to OSHA candela requirements for work area access & egress. In addition, Prime Contractor shall provide task lighting as required to complete this Prime Contractor's scope.

38. Prime contractor includes all motor starters required to start-up mechanical equipment.

39. Prime Contractor includes refeeding all utility vaults scheduled to be removed

40. Prime contractor includes all power, low-voltage & fire alarm rough-in required at each coiling door.

41. Prime Contractor includes provisions to comply with all suspended ceiling system requirements for Prime Contractor's finish applications installed within the ceiling grid system, per AD-4.0. Prime Contractor shall include any additional requirements found within the Interpretation of Regulations (IF) 25-2.13 if said requirement is more stringent than the requirements found within the drawings/specifications.

42. Prime Contractor includes lighting control for all rooms, regardless of any explicitly being shown in the plans. Prime Contractor shall assume industry standard and assume the controls are fed from the nearest lighting control panel.

43. Prime Contractor includes provisions to accommodate multiple commissioning/functional testing in order to achieve the project milestones and completion dates shown in the project schedule.

44. Prime Contractor shall coordinate power, low-voltage, fire alarm points of connection (POC) with other Prime Contractor's finish equipment/systems accordingly. If this Prime Contractor fails to properly coordinate final POCs with other Prime Contractors prior to completing installation and the POC is wrong and not feasible given site conditions, this Prime Contractor will be responsible for the costs to relocate the power, low-voltage or fire alarm infrastructure and any subsequent remedial work as a result of the relocation.

45. Prime Contractor includes one (1) 120V duplex receptacle and associated infrastructure for each HVAC control router, regardless of what is shown in the electrical plans.

46. Prime Contractor shall furnish and install all hood switches, light switches, interlock relays and associated wiring & conduit for exhaust fans. Reference M0-6.3 and associated specifications for further clarification.

47. Prime Contractor shall provide sufficient power to all water heaters, hot water circulating pumps & instantaneous water heaters regardless of what is shown on the electrical plans. Prime Contractor shall review the associated specifications of said equipment to ensure sufficient power is provided.

48. Prime Contractor shall include food service equipment scope noted in the Orness drawing sheets and Foodservice Equipment Specification (#114000) regardless of what is shown on other sheets in the plans. Prime Contractor's food service scope includes but is not limited to:

    - All electrical, fire alarm and low-voltage infrastructure for food service equipment, as shown in the Orness drawing sheets and Foodservice Equipment Specification.

    - All conduit, wiring, j-boxes, receptacles & raceways

    - Prime Contractor shall cover all scope noted in the Orness plans or #114000 specifications that note scope by electrician contractor, 'E.C.', fire alarm contractor, low-voltage contractor, or any reference to an electrician.

    - Final connections of all equipment requiring power, fire alarm or low-voltage – Unless specifically noted otherwise.

    - Receive equipment supplied by 'KEC' (Kitchen Equipment Contractor)/Food Service Equipment Prime Contractor that requires this Prime Contractor's final connection/installation.

    - Prime Contractor shall reference Appendix Z – Food Service Equipment Scope Matrix for additional clarification of food service scope responsibility.

49. Prime Contractor includes all provisions to complete scope shown on E1.2, including the 6" DIA perforated drain pipe, per 6/E1.2.

50. Prime Contractor includes all power and low-voltage infrastructure for the new stadium press-box and ticket-booth building.

51. Prime Contractors includes furnishing and installing all floor boxes and floor box pour floor pans. Prime Contractor shall coordinate with concrete Prime Contractor to ensure floor boxes are located properly pre-pour and shall be present during the

day of the pour to ensure floor boxes remain level and undisturbed. It is this Prime Contractor's responsibility to provide a level floor box with a floor box lid that is code-compliant and free from trip hazards.

52. Prime Contractor is responsible for any scope referenced in the plans and specifications as 'by the electrical contractor.'

53. Prime Contractor shall coordinate & provide a new meter at new distribution panelboard 'DPHK'.

54. Prime Contractor shall salvage and reinstall existing submeters per Appendix B – Salvage Submeters.

55. Prime Contractor has reviewed Attachment L - DEHQ-FHD Approval and Conditions and shall comply with item #7.

56. Prime Contractor shall include provisions to execute scope, as shown in supplemental Appendix Z – Food Service Equipment Scope Matrix. In the event the plans or specification #114000 conflicts with the Appendix Z matrix and explicitly states a certain contractor shall provide or install specific scope, Prime Contractor shall assume the plans or specification #114000 governs. Appendix Z is meant to help clarify the involvement of multiple Prime Contractors for each specific kitchen equipment.

57. Prime Contractor shall assume all manholes and pull-boxes are full of water/liquid and require pumping and legal dumping offsite. We understand that the water level in the existing manholes and pull-boxes are unquantifiable at the time of bid based on the unexpected amount of rainfall and frequency of water evaporation; therefore Prime Contractor includes forty (40) journeyman labor hours for pumping vault liquid, hauling liquid and legally dumping liquid at an appropriate facility.

58. Prime Contractor includes furnishing & installing two hundred (200) lineal feet (LF) of 1/2" conduit and CAT-6 cable. This shall include installation of pull-string and coiling extra slack in a single gang box with a blank faceplate. CAT-6 cable at head-end shall be coordinated with the Construction Manager.

59. Prime Contractor shall provide a minimum of (10) work lights (minimum 4,000 lumens) to be fixed to the existing pool fence and (5) minimum 4' tall tripod work lights (minimum 4,000 lumens) – locations to be coordinated with the District. Prime Contractor shall include labor to install the above-mentioned lights.

60. Prime Contractor has reviewed the on-site soils conditions and fully understands and acknowledges the quality of the existing soil. For bidding purposes Prime Contractor shall include export of all excavated soils and import of select material for fill and backfill in complete compliance with the Contract Documents for all existing utility backfill and grading areas. Include haul-off and disposal of all debris, existing fill materials, spoils and surplus soil/cobbles/boulders. Prime Contractor includes industry standard equipment or equipment recommended to perform the work described in the Geotechnical Report. Prime Contractor

acknowledges the presence of cobble, gravel, and Stadium Conglomerate and includes provisions for removal, as necessary to complete this Prime Contractor's scope. Provisions for removal include, but are not limited to screening, breaking, utilizing appropriate heavy equipment, etc. Prime Contractor has reviewed the boring logs and acknowledges the presence of concrete sections beneath asphalt paving. Prime Contractor shall assume concrete identified in boring data to be present in a minimum of two hundred (200) square feet surrounding the associated boring location.

61. Prime Contractor shall furnish and install fire-rated plywood backboards, anchorage and fire-rated painting, per 7/E4.5, 2&3/E4.4 and per applicable specifications.

62. Provide separate power supply and disconnects for modulating power exhausts with economizers at ALL rooftop HVAC equipment regardless if the HVAC mechanical schedules require power disconnects at each rooftop HVAC equipment.

63. Immediately and continuously de-water and pump out to appropriate drainage receptacle; all excavations as required by water ponding and weather conditions. Automatic pumps shall be used during all off-hour periods of construction. Immediately clean, "muck-out", remove soft/muddy soils from all pit/trench excavations as required by Inspector or Soils Engineer so that work may continue. Reference Supplemental Conditions for further rain damage prevention responsibilities.

64. Finish Prime Contractor includes all in-wall flat-strap backing and rough carpentry Prime Contractor includes all in-wall and above ceiling structural wood-framed backing. Prime Contractor shall coordinate accordingly and layout backing where required for this Prime Contractor's scope.

III. <u>ALLOWANCES:</u> The following allowances are included in this scope of work. Construction Manager must agree to the price, type and extent of additional scope before work is started. Field tickets must be signed by Construction Manager's Superintendent on a daily basis to account for the time, material, and equipment used from these allowances. All time, material, and equipment used from these allowances will be billed against these allowances and any portion of the original allowance amount not used will be credited back to the Owner at the end of this Contract's scope of work as a deductive change order. This Article is separate and exclusive from all other Work required by the Contract.

- CN-2991 Allowance #1: Unforeseen Conditions = $25,000.00

II. <u>ALTERNATES:</u> N/A

III. <u>EXCLUSIONS:</u>

a. Light pole bases and power pedestal bases.

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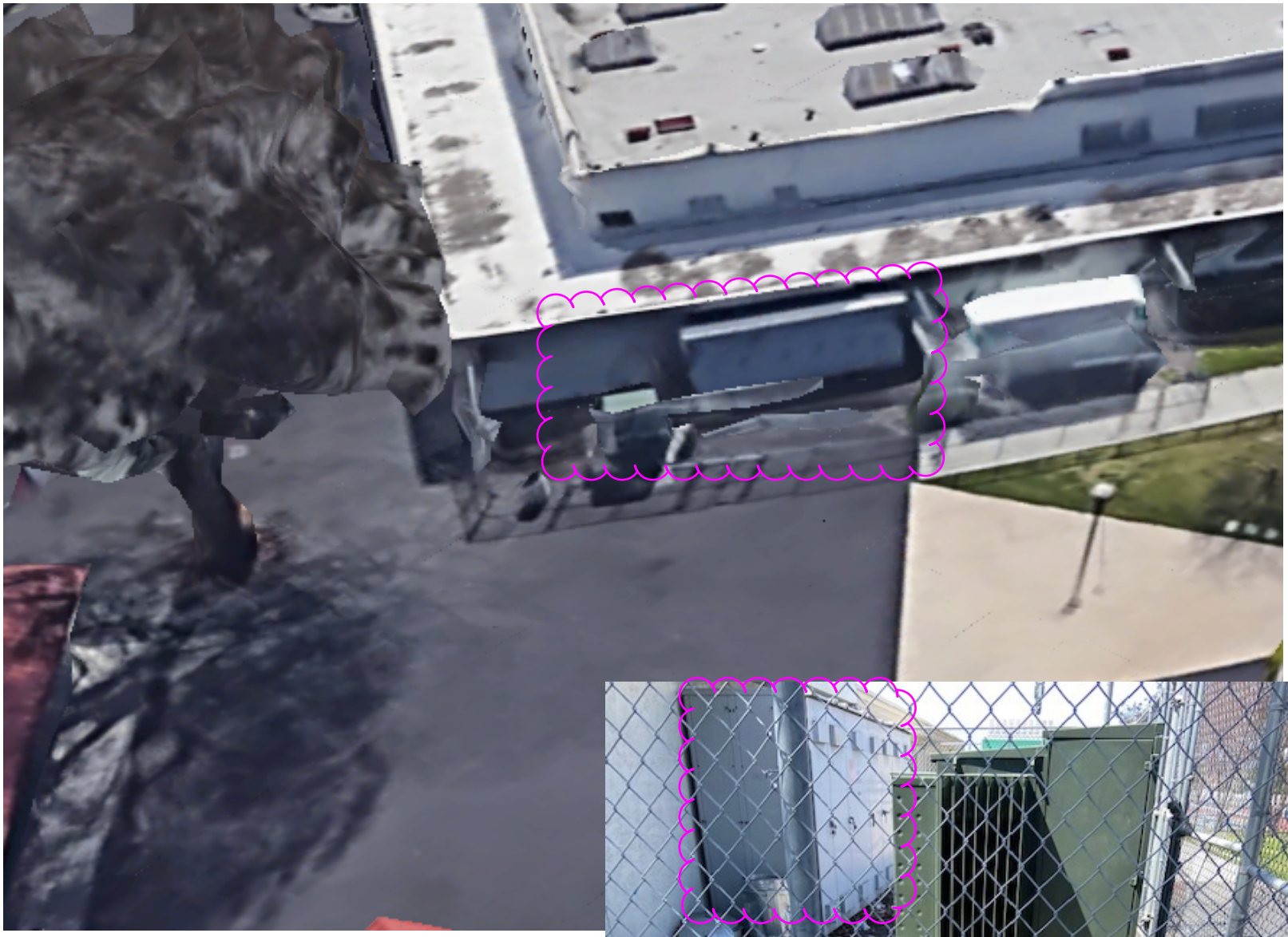
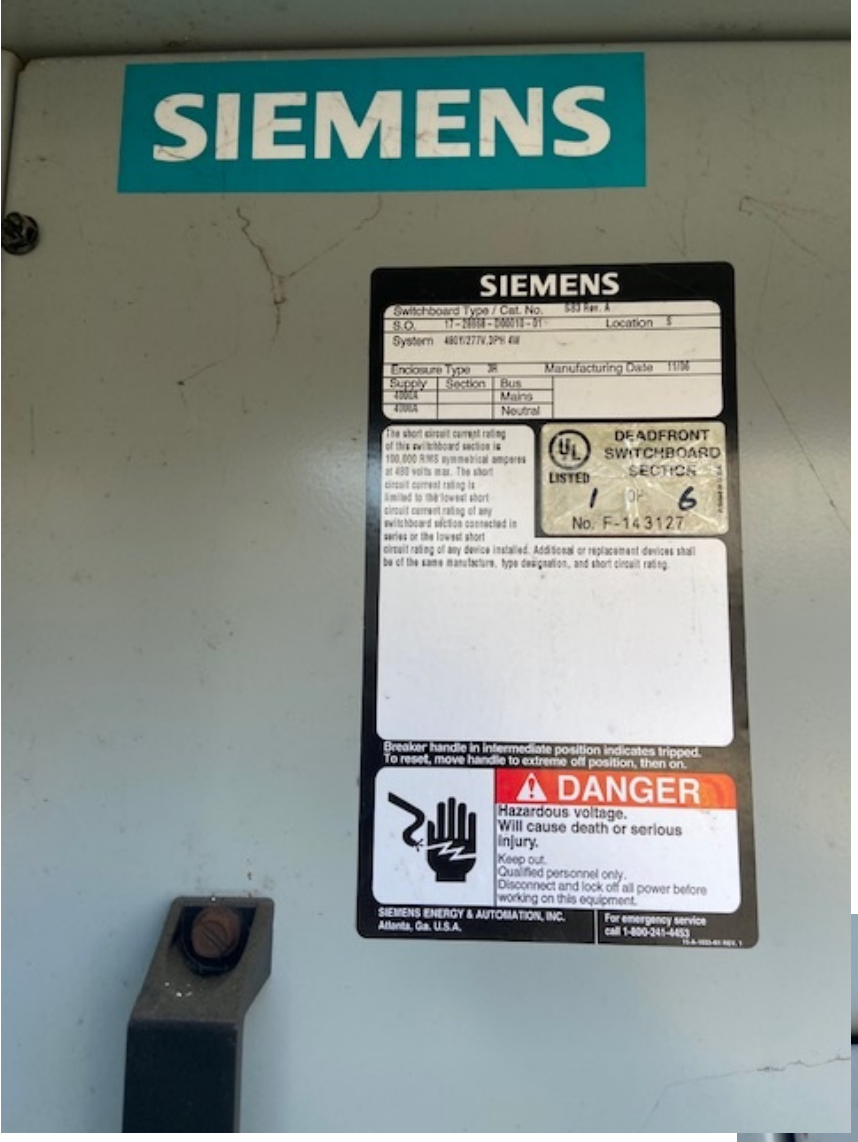
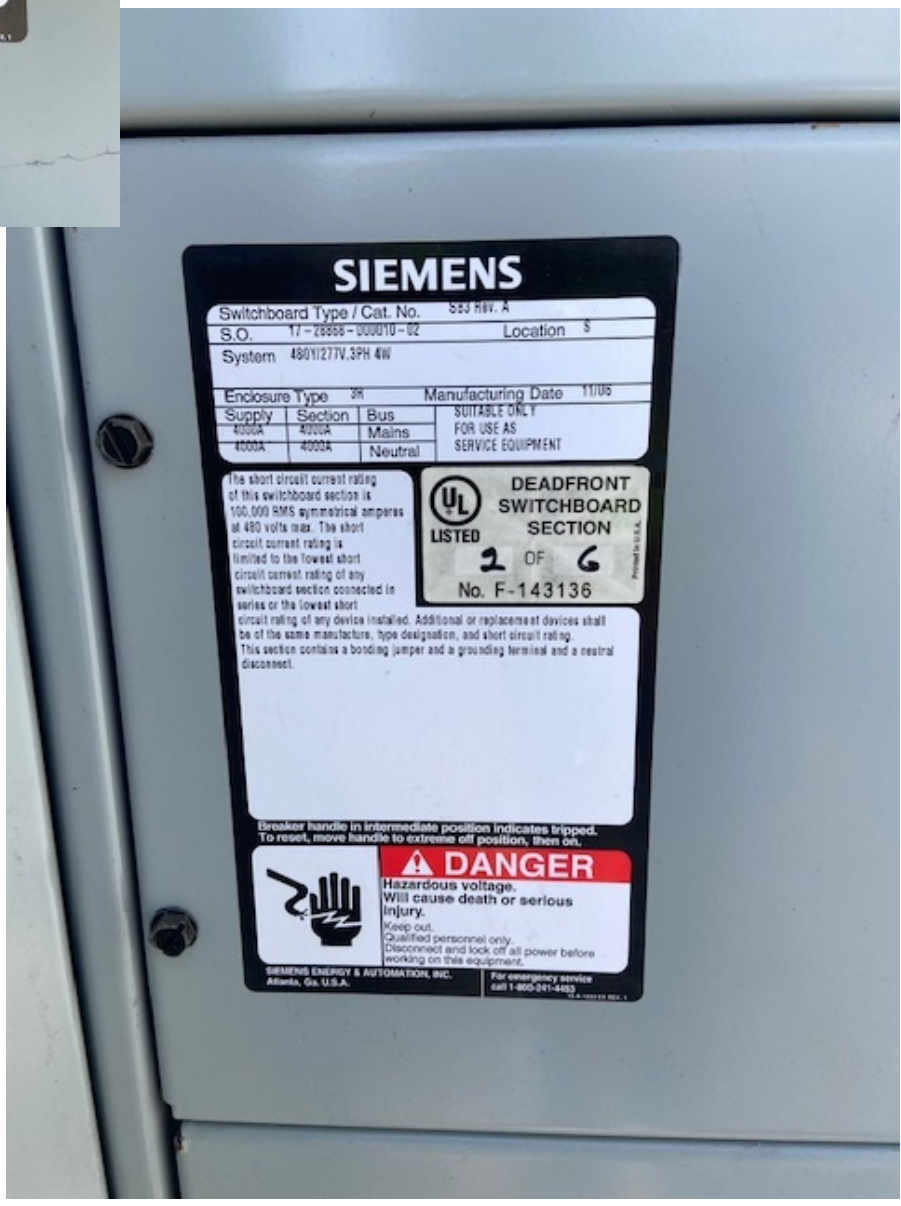
APPENDIX A - AVAILABLE POWER SOURCES

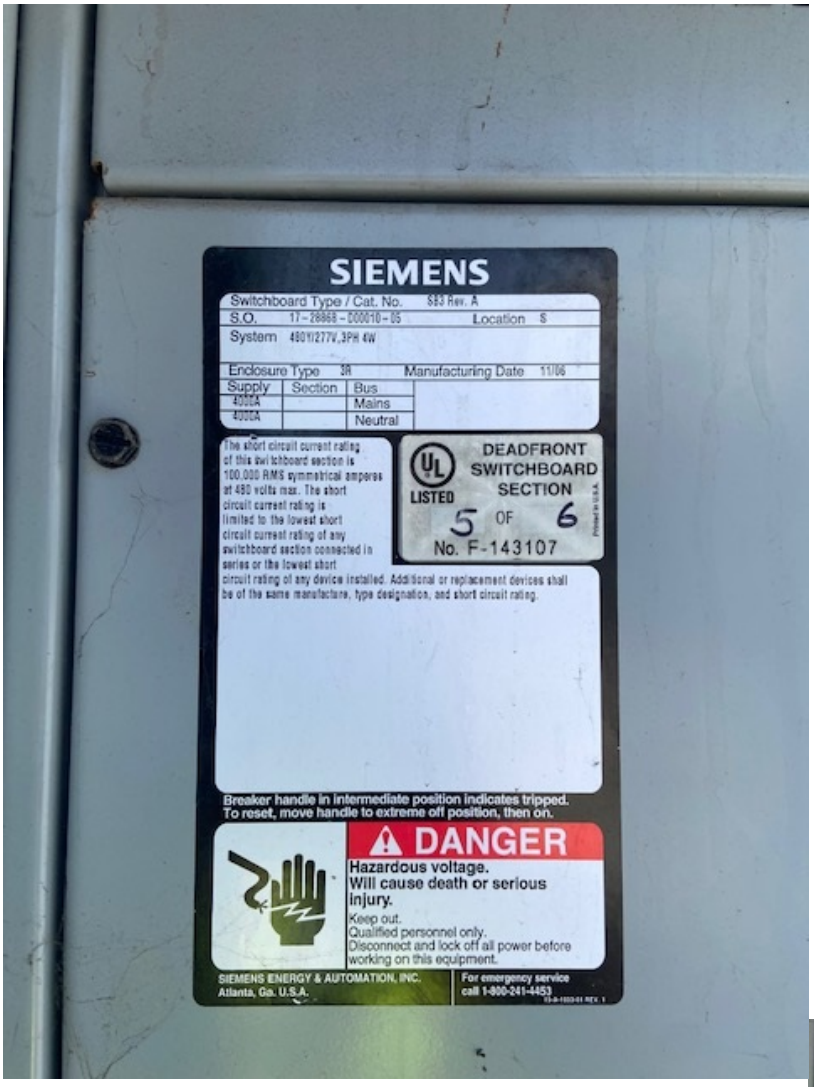



SIEMENS
SIEMENS
Switchboard Type / Cat. No. S&J HW. A
S.O. 17-28958-000010-01 Location S
System 480Y/277V,3PH 4W
Enclosure Type 3R Manufacturing Date 11/06
Supply Section Bus
4000A Mains
4000A Neutral
The short circuit current rating of this switchboard section is 100,000 RMS symmetrical amperes at 480 volts max. The short circuit current rating is limited to the lowest short circuit current rating of any switchboard section connected in series or the lowest short circuit rating of any device installed. Additional or replacement devices shall be of the same manufacture, type designation, and short circuit rating.
UL LISTED
DEADFRONT SWITCHBOARD SECTION
1 OF 6
No. F-143127
Breaker handle in intermediate position indicates tripped. To reset, move handle to extreme off position, then on.
DANGER
Hazardous voltage. Will cause death or serious injury.
Keep out.
Qualified personnel only.
Disconnect and lock off all power before working on this equipment.
SIEMENS ENERGY & AUTOMATION, INC. Atlanta, Ga. U.S.A.
For emergency service call 1-800-241-4453


SIEMENS
Switchboard Type / Cat. No. S&J HW. A
S.O. 17-28958-000010-02 Location S
System 480Y/277V,3PH 4W
Enclosure Type 3R Manufacturing Date 11/06
Supply Section Bus
4000A 4000A Mains
4000A 4000A Neutral
SUITABLE ONLY FOR USE AS SERVICE EQUIPMENT
The short circuit current rating of this switchboard section is 100,000 RMS symmetrical amperes at 480 volts max. The short circuit current rating is limited to the lowest short circuit current rating of any switchboard section connected in series or the lowest short circuit rating of any device installed. Additional or replacement devices shall be of the same manufacture, type designation, and short circuit rating. This section contains a bonding jumper and a grounding terminal and a neutral disconnect.
UL LISTED
DEADFRONT SWITCHBOARD SECTION
2 OF 6
No. F-143136
Breaker handle in intermediate position indicates tripped. To reset, move handle to extreme off position, then on.
DANGER
Hazardous voltage. Will cause death or serious injury.
Keep out.
Qualified personnel only.
Disconnect and lock off all power before working on this equipment.
SIEMENS ENERGY & AUTOMATION, INC. Atlanta, Ga. U.S.A.
For emergency service call 1-800-241-4453

SIEMENS
Switchboard Type / Cat. No. S83 Rev. A
S.O. 17-28868-000010-03 Location S
System 480Y/277V,3PH 4W
Enclosure Type 3R Manufacturing Date 11/06
Supply Section Bus
4000A 1600A Mains
4000A 1600A Neutral
The short circuit current rating of this switchboard section is 100,000 RMS symmetrical amperes at 480 volts max. The short circuit current rating is limited to the lowest short circuit current rating of any switchboard section connected in series or the lowest short circuit rating of any device installed. Additional or replacement devices shall be of the same manufacture, type designation, and short circuit rating.
UL LISTED
DEADFRONT SWITCHBOARD SECTION
3 OF 6
No. F-143157
Printed in U.S.A.
Breaker handle in intermediate position indicates tripped.
To reset, move handle to extreme off position, then on.
DANGER
Hazardous voltage.
Will cause death or serious injury.
Keep out.
Qualified personnel only.
Disconnect and lock off all power before working on this equipment.
SIEMENS ENERGY & AUTOMATION, INC.
Atlanta, Ga. U.S.A.
For emergency service call 1-800-241-4453

SIEMENS
Switchboard Type / Cat. No. S83 Rev. A
S.O. 17-28868-000010-04 Location S
System 480Y/277V,3PH 4W
Enclosure Type 3R Manufacturing Date 11/06
Supply Section Bus
4000A 2500A Mains
4000A 2500A Neutral
The short circuit current rating of this switchboard section is 100,000 RMS symmetrical amperes at 480 volts max. The short circuit current rating is limited to the lowest short circuit current rating of any switchboard section connected in series or the lowest short circuit rating of any device installed. Additional or replacement devices shall be of the same manufacture, type designation, and short circuit rating.
UL LISTED
DEADFRONT SWITCHBOARD SECTION
4 OF 6
No. F-143086
Printed in U.S.A.
Breaker handle in intermediate position indicates tripped.
To reset, move handle to extreme off position, then on.
DANGER
Hazardous voltage.
Will cause death or serious injury.
Keep out.
Qualified personnel only.
Disconnect and lock off all power before working on this equipment.
SIEMENS ENERGY & AUTOMATION, INC.
Atlanta, Ga. U.S.A.
For emergency service

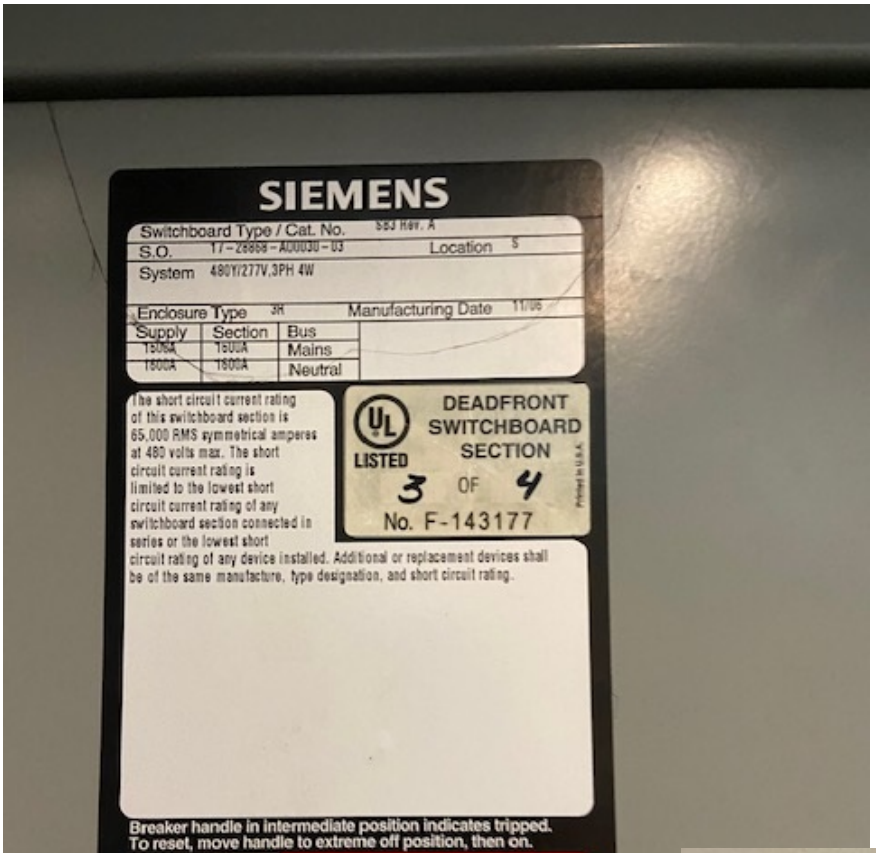

SIEMENS
Switchboard Type / Cat. No. S93 Rev. A
S.O. 17-28868-000010-05 Location S
System 480Y/277V,3PH 4W
Enclosure Type 3R Manufacturing Date 11/06
Supply Section Bus
4000A Mains
4000A Neutral
The short circuit current rating of this switchboard section is 100,000 RMS symmetrical amperes at 480 volts max. The short circuit current rating is limited to the lowest short circuit current rating of any switchboard section connected in series or the lowest short circuit rating of any device installed. Additional or replacement devices shall be of the same manufacture, type designation, and short circuit rating.
UL LISTED
DEADFRONT SWITCHBOARD SECTION
5 OF 6
No. F-143107
Breaker handle in intermediate position indicates tripped.
To reset, move handle to extreme off position, then on.
DANGER
Hazardous voltage.
Will cause death or serious injury.
Keep out.
Qualified personnel only.
Disconnect and lock off all power before working on this equipment.
SIEMENS ENERGY & AUTOMATION, INC.
Atlanta, Ga. U.S.A.
For emergency service call 1-800-241-4453

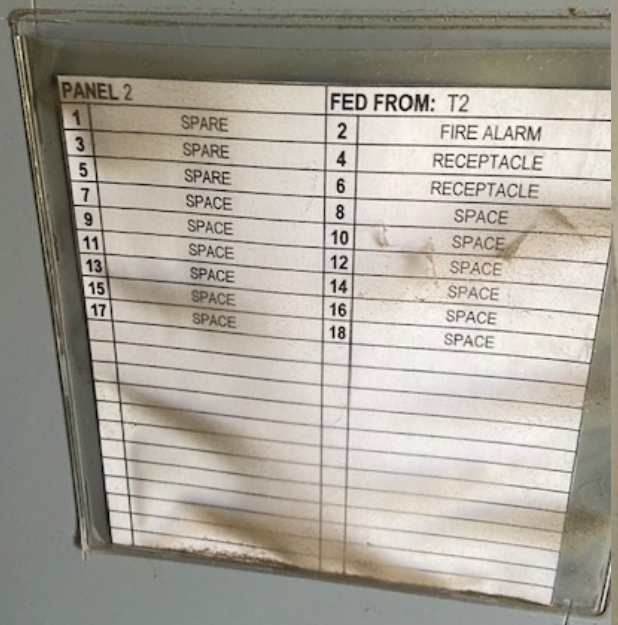
SIEMENS
Switchboard Type / Cat. No. S93 Rev. A
S.O. 17-28868-000010-06 Location S
System 480Y/277V,3PH 4W
Enclosure Type 3R Manufacturing Date 11/06
Supply Section Bus
4000A 2000A Mains
4000A 2000A Neutral
The short circuit current rating of this switchboard section is 100,000 RMS symmetrical amperes at 480 volts max. The short circuit current rating is limited to the lowest short circuit current rating of any switchboard section connected in series or the lowest short circuit rating of any device installed. Additional or replacement devices shall be of the same manufacture, type designation, and short circuit rating.
UL LISTED
DEADFRONT SWITCHBOARD SECTION
6 OF 6
No. F-143120
Breaker handle in intermediate position indicates tripped.
To reset, move handle to extreme off position, then on.
DANGER
Hazardous voltage.
Will cause death or serious injury.
Keep out.
Qualified personnel only.
Disconnect and lock off all power before working on this equipment.
SIEMENS ENERGY & AUTOMATION, INC.
Atlanta, Ga. U.S.A.
For emergency service call 1-800-241-4453

CAFE
OLD GYM
Upper Quad
500 Building

PANEL H2
SIEMENS
Switchboard Type / Cat. No. SB3 Rev. A
S.O. 17-28868-A00030-01 Location S
System
Enclosure Type 3R Manufacturing Date 11/05
Supply Section Bus
Mains
Neutral
The short circuit current rating of this switchboard section is 0,000 RMS symmetrical amperes at 0 volts max. The short circuit current rating is limited to the lowest short circuit current rating of any switchboard section connected in series or the lowest short circuit rating of any device installed. Additional or replacement devices shall be of the same manufacture, type designation, and short circuit rating.
UL LISTED
DEADFRONT SWITCHBOARD SECTION
1 OF 4
No. F-143179
Breaker handle in intermediate position indicates tripped. To reset, move handle to extreme off position, then on.
DANGER
Hazardous voltage.
Will cause death or serious injury.
Keep out.
Qualified personnel only.
Disconnect and lock off all power before working on this equipment.
SIEMENS ENERGY & AUTOMATION, INC.
Atlanta, Ga. U.S.A.
For emergency service call 1-800-241-4453

SIEMENS
Switchboard Type / Cat. No. SB3 Rev. A
S.O. 17-28868-A00030-02 Location S
System 480Y/277V,3PH 4W
Enclosure Type 3R Manufacturing Date 11/05
Supply Section Bus
1600A 1600A Mains
1600A 1600A Neutral
The short circuit current rating of this switchboard section is 65,000 RMS symmetrical amperes at 480 volts max. The short circuit current rating is limited to the lowest short circuit current rating of any switchboard section connected in series or the lowest short circuit rating of any device installed. Additional or replacement devices shall be of the same manufacture, type designation, and short circuit rating.
UL LISTED
DEADFRONT SWITCHBOARD SECTION
2 OF 4
No. F-143180
Breaker handle in intermediate position indicates tripped. To reset, move handle to extreme off position, then on.
DANGER
Hazardous voltage.
Will cause death or serious injury.
Keep out.
Qualified personnel only.
Disconnect and lock off all power before working on this equipment.
SIEMENS ENERGY & AUTOMATION, INC.
Atlanta, Ga. U.S.A.
For emergency service call 1-800-241-4453


SIEMENS
Switchboard Type / Cat. No.
S.O.
Location
System 480Y/277V,3PH 4W
Enclosure Type
Manufacturing Date
Supply
Section
Bus
Mains
Neutral
The short circuit current rating of this switchboard section is 65,000 RMS symmetrical amperes at 480 volts max. The short circuit current rating is limited to the lowest short circuit current rating of any switchboard section connected in series or the lowest short circuit rating of any device installed. Additional or replacement devices shall be of the same manufacture, type designation, and short circuit rating.
LISTED
DEADFRONT SWITCHBOARD SECTION
3 OF 4
No. F-143177
Breaker handle in intermediate position indicates tripped. To reset, move handle to extreme off position, then on.
DANGER
Hazardous voltage.
Will cause death or serious injury.
Keep out.
Qualified personnel only.
Disconnect and lock off all power before working on this equipment.
SIEMENS ENERGY & AUTOMATION, INC.
Atlanta, Ga. U.S.A.
For emergency service call 1-800-241-4453


PANEL 2
FED FROM: T2
1 SPARE
2 FIRE ALARM
3 SPARE
4 RECEPTACLE
5 SPARE
6 RECEPTACLE
7 SPACE
8 SPACE
9 SPACE
10 SPACE
11 SPACE
12 SPACE
13 SPACE
14 SPACE
15 SPACE
16 SPACE
17 SPACE
18 SPACE

SIEMENS
Panel Type
System
P1
208Y/120 3 Ph 4 W
250 Amps Max
(See main device or breaker)
Catalog Number
P1C1954125ATS
Sales Order Number
60-29869
Customer Marking
2
Item Number
B00030
Location
C
Date
08/25/06
MAIN
ON
125
1
2
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12

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APPENDIX B - SALVAGE SUBMETERS

GHS FOOD SERVICE SUBMETERING SCOPE

(Revised June 28, 2022)

Pre-demolition scope –

Remove (5) existing Honeywell E34 submeters, including over current protection devices, and current transducers monitoring the following existing electrical panels:

- Electrical Panel “A” -- E34-208200-R04 (return to District)
- Electrical Panel “B” – E34-208100-R04 (return to District)
- Electrical Panel “C” – E34-208100-R04 (return to District)
- Electrical Panel “E” – E34-208200-R04 (return to District)
- Electrical Panel “P1” – E34-208400-R04 (return to District)

Construction scope –

- Distribution Panelboard “DPHK”- Install a new Honeywell E34-480/400-R04KIT* submeter, TBWC/OCP-3P over current device, and current transducers onto electrical panel feeds.

*Division 26 to provide an Ethernet RJ45 connection to District’s network. Controls Contractor to provide integration of submeter into the District’s EMS to allow for the monitoring of Food Service KW usage.

By RDD

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APPENDIX Z - FOOD SERVICE EQUIPMENT SCOPE MATRIX

GHS Kitchen & Weight Room Project - Food Service Scope Matrix

CN-2987	Prime: Food Service Equipment
CN-2989	Prime: Plumbing
CN-2990	Prime : HVAC
CN-2991	Prime: Electrical
District	Owner Furnished

*Refer to K-2 Orness sheet, Specification #114000 & associated Scope of Work for further clarification. Coordinate backing with respective Prime Contractor. MEP Prime Contractors perform final utility connections of equipment, unless specifically noted otherwise - 'Installation by' column represents setting/anchoring equipment, NOT 'final utility connections'

Equipment Item #	Description	Furnished By	Infrastructure #1 (MEP-FA) By	Infrastructure #2 (MEP-FA) By	Installation By	Notes
1	MOP SINK, FLOOR MOUNTED (24"x24"x12")	CN-2989	CN-2989	N/A	CN-2989	
2	MOP SINK FAUCET	CN-2989	CN-2989	N/A	CN-2989	
3	RACK, BRUSH/BROOM	CN-2987	N/A	N/A	CN-2987	
4	WALL STORAGE WALL SHELF	CN-2987	N/A	N/A	CN-2987	
5	AIR CURTAIN	CN-2987	CN-2991	CN-2991	CN-2991	
6	EMPLOYEE LOCKERS	District	N/A	N/A	CN-2987	Coordinate lockers with Concrete Prime
7	WALK-IN FREEZER w/ LIGHTS	CN-2987	CN-2991	CN-2989	CN-2987	Coordinate with Concrete Prime
8	WALK-IN FREEZER EVAPORATOR COIL (FAN) W/KE2 CONTROL	CN-2987	CN-2991	CN-2989	CN-2987	Coordinate with Concrete Prime
9	WIRE SHELVING, FREESTANDING	District	N/A	N/A	CN-2987	
10	WALK-IN COOLER w/ LIGHTS	CN-2987	CN-2991	CN-2989	CN-2987	Coordinate with Concrete Prime
11	WALK-IN COOLER EVAPORATOR COIL (FAN) W/KE2 CONTROL	CN-2987	CN-2991	CN-2989	CN-2987	Coordinate with Concrete Prime
12	REFRIGERATION RACK	CN-2987	CN-2991	CN-2989	CN-2987	
13	CORNER GUARDS, L-SHAPE	CN-2987	N/A	N/A	CN-2987	
14	CORNER GUARDS, U-SHAPE	CN-2987	N/A	N/A	CN-2987	
15	SPARE NUMBER	N/A	N/A	N/A	N/A	
16	DRY SHELVING, FREESTANDING	District	N/A	N/A	CN-2987	
17	ICE MACHINES	CN-2987	CN-2991	CN-2989	CN-2987	Plumber & electrician make connections
18	BIN, ICE	CN-2987	CN-2989	N/A	CN-2987	
19	WATER FILTER, ICE	CN-2987	CN-2989	N/A	CN-2987	
19.1	BACKFLOW PREVENTOR	CN-2989	CN-2989	N/A	CN-2989	
20	HAND SINK, WALL MOUNT	CN-2987	CN-2989	N/A	CN-2989	
20.1	FAUCET, ELECTRIC	CN-2987	CN-2991	CN-2989	CN-2989	
21	INTELLIGATE WEB-BASED GATEWAY	N/A	N/A	N/A	N/A	
22	INTELLISENSOR FOR TEMPERATURE & DOOR	N/A	N/A	N/A	N/A	
23	SPARE NUMBER	N/A	N/A	N/A	N/A	
24	3 - COMPARTMENT SINK	CN-2987	CN-2989	N/A	CN-2989	
25	PRE-RINSE FAUCET, BACKSPLASH MOUNT	CN-2987	CN-2989	N/A	CN-2989	
26	WALL STORAGE WALL SHELF	CN-2987	N/A	N/A	CN-2987	
27	POT RACK, STAINLESS STEEL	CN-2987	N/A	N/A	CN-2987	
28	WALL STORAGE WALL SHELF	CN-2987	N/A	N/A	CN-2987	
29	SOILED DISH TABLE w/ SCRAPPED SINK	CN-2987	CN-2989	N/A	CN-2989	
30	PRE-RINSE FAUCET, BACKSPLASH MOUNT	CN-2987	CN-2989	N/A	CN-2989	
31	QUICK DRAIN	CN-2987	CN-2989	N/A	CN-2989	
32	WAREWASHER, DOOR TYPE, HIGH TEMP w/ BOOSTER	CN-2987	CN-2991	CN-2989	CN-2989	
33	TYPE-II STEAM EXHAUST HOOD	CN-2987	CN-2990	CN-2990	CN-2987	
34	EXHAUST FAN	CN-2990	CN-2990	CN-2991	CN-2990	
35	SPARE NUMBER	N/A	N/A	N/A	N/A	
36	DISH TABLE, CLEAN	CN-2987	N/A	N/A	CN-2987	
37	POT SHELVING, FREESTANDING	District	N/A	N/A	CN-2987	
38	SPARE NUMBER	N/A	N/A	N/A	N/A	
39	SPARE NUMBER	N/A	N/A	N/A	N/A	
40	SPARE NUMBER	N/A	N/A	N/A	N/A	
41	PREP TABLE w/ DOUBLE PREP SINK, ADA	CN-2987	CN-2989	N/A	CN-2989	
42	FAUCET	CN-2987	CN-2989	N/A	CN-2989	
43	WALL STORAGE WALL SHELF	CN-2988	N/A	N/A	CN-2987	
44	SPARE NUMBER	N/A	N/A	N/A	N/A	
45	INSULATED HOT CABINET, MOBILE	District	CN-2991	CN-2991	District	
46	ISLAND PREP TABLE w/ INTEGRAL PREP SINK	CN-2988	CN-2989	N/A	CN-2989	
47	FAUCET	CN-2988	CN-2989	N/A	CN-2989	
48	COMMERCIAL MICROWAVE OVEN	District	CN-2991	CN-2991	District	
49	RACK, PAN	District	District	District	District	
50	WORK TABLE	District	N/A	N/A	CN-2987	
51	COOK & HOLD QUIKTHERM, MOBILE	District	CN-2991	CN-2991	District	
52	SPARE NUMBER	N/A	N/A	N/A	N/A	
53A	CONVECTION OVEN, GAS	District	CN-2991	CN-2989	CN-2989	
53B	CONVECTION OVEN, GAS	District	CN-2991	CN-2989	CN-2989	
54A	CONVECTION OVEN, GAS	District	CN-2991	CN-2989	CN-2989	
54B	CONVECTION OVEN, GAS	District	CN-2991	CN-2989	CN-2989	
55	TILTING SKILLET, GAS	District	CN-2991	CN-2989	CN-2989	
56	FLOOR TROUGH	CN-2987	CN-2989	N/A	CN-2989	
57	6-BURNER RANGE w/ CONVECTION OVEN, GAS	District	CN-2991	CN-2989	CN-2989	
58	SPARE NUMBER	N/A	N/A	N/A	N/A	
59	SPARE NUMBER	N/A	N/A	N/A	N/A	
60	SPARE NUMBER	N/A	N/A	N/A	N/A	
61	TYPE-I GREASE EXHAUST HOOD w/ LIGHTS	CN-2987	CN-2990	CN-2991	CN-2987	
62	EXHAUST FAN	CN-2990	CN-2990	CN-2991	CN-2990	
63	MAKE-UP AIR	CN-2990	CN-2990	CN-2991	CN-2990	
64	STAINLESS STEEL WALL PANELS	CN-2987	N/A	N/A	CN-2987	
65	QUICK GAS DISCONNECT	CN-2987	CN-2989	N/A	CN-2989	
66	FIRE SUPPRESSION SYSTEM; ANSUL AUTOMAN	CN-2987	CN-2991	CN-2989	CN-2987	Electrical Prime has E+FA infrastructure to box microswitches and gas valve reset relay
67	REMOTE PULL STATION FOR FIRE SUPPRESSION SYSTEM	CN-2987	CN-2991	CN-2989	CN-2987	Electrician rough-in conduit. KEC has pull box & cables
68	K-TYPE FIRE EXTINGUISHER, RECESSED	CN-2987	N/A	N/A	CN-2987	
69	GAS SHUT OFF VALVE	CN-2987	CN-2989	N/A	CN-2989	Plumber installs shut-off valve. Electrician wires back to hood ansul cabinet
70	WALL MOUNTED CONTROL CABINET	CN-2987	CN-2990	CN-2989	CN-2990	
71	SPARE NUMBER	N/A	N/A	N/A	N/A	
72	SPARE NUMBER	N/A	N/A	N/A	N/A	
73	REFRIGERATOR, PASS-THRU	District	CN-2991	N/A	CN-2987	
74	CABINET, WARMING & HOLDING, PASS-THRU	District	CN-2991	N/A	CN-2987	
75	P.O.S. CART	District	N/A	N/A	CN-2987	
76	P.O.S. & CARD READER	District	CN-2991	CN-2991	District	
77	SERVING CART, COLD	District	CN-2991	N/A	CN-2987	
78	SERVING CART, HOT	District	CN-2991	N/A	CN-2987	
79	DOUBLE SIDED SNEEZE GUARD, SELF-SERVE	District	N/A	N/A	CN-2987	
80	SERVING CART, COLD	District	CN-2991	N/A	CN-2987	
81	MILK COOLER	District	CN-2991	N/A	CN-2987	
82	AIR CURTAIN	CN-2987	CN-2991	N/A	CN-2987	

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