EL MONTE UNION HIGH SCHOOL DISTRICT

Purchasing Department

3537 JOHNSON AVENUE, EL MONTE, CA 91731

Phone: (626) 444-9005

Email: purchasing@emuhsd.org

August 9, 2024

TO	:	All Bidders
FROM	:	El Monte Union High School District
BID #	:	2024-25 (B1)
PROJECT	:	El Monte High School Track & Field Project
SUBJECT	:	Addendum No. 2

The following changes, omissions, and/or additions to the Project Manual and/or Drawings shall apply to proposals made for and to the execution of the various parts of the work affected thereby, and all other conditions shall remain the same.

Careful note of the Addendum shall be taken by all parties of interest so that the proper allowances may be made in strict accordance with the Addendum, and that all trades shall be fully advised in the performance of the work which will be required of them.

Bidder shall acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject Bidder to disqualification.

In case of conflict between Drawings, Project Manual, and this Addendum, this Addendum shall govern.

BID FORM(S) REPLACED: NO

RESPONSE TO BID RFI: NO

REVISIONS TO SPECIFICATIONS: YES

1. **Refer to HMC Architects Addendum No. 1 (123 pages) dated August 08, 2024.**

REVISIONS TO DRAWINGS: YES

1. **Refer to HMC Architects Addendum No. 1 (123 pages) dated August 08, 2024.**

ATTACHMENTS: YES

1. **Refer to HMC Architects Addendum No. 1 (123 pages) dated August 08, 2024.**

END OF ADDENDUM 2

HMC ARCHITECTS
633 W. 5th Street, Third
Floor Los Angeles, CA
90071

August 08, 2024

El Monte High School Track and Field
El Monte Union High School District
El Monte, CA
HMC #3361-004-000
DSA #03 -122306

ADDENDUM NO. 1

The following changes, additions, deletions or corrections shall become a part of the Contract Documents 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. Acknowledge receipt of this Addendum in spaces provided on the Bid Form. Failure to acknowledge will subject Bidder to disqualification.

A. Added the following specification section and is hereby issued:

27 05 00 - Common Work Results for Communication Expansion, (4 Pages)

B. Added the following specification section and is hereby issued:

27 05 26 - Grounding and Bonding for Communication Systems Expansion, (6 Pages)

C. Added the following specification section and is hereby issued:

27 11 16 - Communications Cabinets, Racks, Frames, UPS and Enclosures Expansion, (5 Pages)

D. Added the following specification section and is hereby issued:

27 11 23 - Communications Cable Management and Ladder Rack Expansion, (8 Pages)

E. Added the following specification section and is hereby issued:

27 13 00 - Communications Backbone Cabling, (24 Pages)

F. Added the following specification section and is hereby issued:

27 15 00 - Communications Horizontal Cabling Expansion, (26 Pages)

G. Added the following specification section and is hereby issued:

27 15 23 - Communications Copper Horizontal Cabling Interior Expansion (17 Pages)

DRAWINGS

The following full-sized Drawing Sheets dated 08/08/2024 has been added or modified, and clouded via Delta #AD 01 are hereby issued:

GENERAL SHEETS

DRAWING SHEET G0.11 – PROJECT DATA SHEET

- Added Sheet E1.02, E2.01 and E2.02 under sheet index
- Updated grand total under sheet index

DRAWING SHEET G1.10 – OVERALL / ACCESSIBLE PATH OF TRAVEL AND EXITING

- Updated Decomposed Granite under “Site Plan Legend”

DRAWING SHEET G1.11 – FIRE ACCESS SITE PLAN

- Added Note 32.66 to site plan along Mildred Street

CIVIL

DRAWING SHEET C001 – DEMOLITION PLAN

- Revised demolition note R6.
- Revised demolition note R3.
- Added demolition note A, R7, R8, R9, R10, R11, R12, R13, R14.
- Added hatch for removal of existing container under “Hatch Legend”.
- Showed existing concrete pad at pole vault area.
- Removed the demolition note SL.
- Updated the flagpole to be removed.
- Added the removal of asphalt pad in front of container in the north side of the track.
- Showed the limits of demolition and protection for the storm drain.
- Showed the existing irrigation shut off valves.
- Showed the existing double gate in the south-east asphalt area to be removed.
- Added the removal of concrete abutting the north-west side of the asphalt area and the existing building.
- Removed from scope the demolition of the south-east asphalt abutting the fence.
- Showed the existing edge of concrete between the south side of the track and the concrete.
- Showed the existing gate separating the public sidewalk and the track.
- Updated the scoreboard and foundations to be removed.
- Added the removal of the irrigation control valve.

- Added the removal of the hose bib.
- Showed the limits of demolition for the CMU wall.
- Added the note to protect fence abutting the public sidewalk.
- Revised note 7 and 14 under “General Demolition Notes”

DRAWING SHEET C002 – GRADING PLAN

- Added construction note A, 19, 20, 21, and 22.
- Revised construction notes 2, 3C, 9 and 11.
- Removed construction notes 3D and 4B.
- Removed new asphalt pavement hatch under “Hatch Legend”.
- Added new asphalt seal coat hatch and new stabilized decomposed granite under “Hatch Legend”.
- Revised New Landscape hatch under “Hatch Legend”.
- Removed asphalt pavement detail.
- Revised invert elevation for north-east and south-west catch basins
- Adjusted storm drain pipes connecting to the 10” perforated pipe from 4” to 6” pipes.
- Adjusted storm drain pipes connecting slot drain to the 10” perforated pipes from 4” to 6” pipes.
- Added north and south radius point and curb radius to the inner and outer track curb.
- Added “D” zone curb detail note.
- Revised pipe connecting to existing 12” storm drain to note 3C.
- Removed 2B note.
- Added note to protect fence south of the asphalt area, south of track, and west side of track where it abuts public sidewalk.
- Added concrete pavement abutting the north-west side of the asphalt area.
- Revised elevations along the outer edge of the track surface.
- Added 3B note for the north and south storm drain pipes connecting to the slot drains.
- Added doweled joint detail note.
- Added mow curb note 11 south of the shot-put area and west landscape area along existing fence.
- Added curb along the west side of the shot-put area and concrete throwing area.
- Revised connection of south-west catch basin and pipe size to 4”.
- Added catch basin in shot-put area with 4” storm drain pipes connecting to south-west catch basin.
- Added radius of new CMU wall.
- Added invert elevations for east and west pipe connections.
- Added protect existing wall note.
- Added note to protect existing vault in new DG area, north-west side of track.
- Added note to adjust to grade existing sewer in landscape area near CMU wall.
- Added invert elevations to points of connection along the 10” perforated pipe.
- Revised landscape areas to show new stabilized decomposed granite

along the east, north and west side of the track.

DRAWING SHEET C003 – Detail Sheet

- Updated detail 11 to a concrete mow curb detail.
- Revised detail 10 “Section At Expansion Joint” by adding dowel.
- Added the following note to detail 10: THIS DETAIL IS EXEMPT FROM TESTING AND INSPECTION PER DSA IR A-22 (ITEM #3)

DRAWING SHEET C004 – Detail Sheet

- Removed detail 4B.
- Revised detail 4A, 5/8A,16, 7, and 6.

LANDSCAPE

DRAWING SHEET L1.01– IRRIGATION PLAN

- Removed notes along football field
- Updated irrigation lines along track and landscape area as clouded
- Updated irrigation legend
- Updated point of connection, booster pump and added notes
- Added Toro TS170V details

DRAWING SHEET L2.01– PLANTING PLAN

- Added hatch for AG Sod and Decomposed Grante
- Updated Plan to indicate location of Decomposed Granite
- Added stabilized decomposed granite detail

ARCHITECTURAL

DRAWING SHEET A1.10 – ENLARGED SITE PLAN

- Added note for decomposed granite location
- Added detail call out 10/A10.10
- Added track radius
- Added keynote 02.24,2.22 and 32.62 to site plan
- Added detail callout 12/A10.10
- Added detail callout 9/A10.10
- Added detail callout 5/A10.01
- Added detail callout 4/A1.12 for new gate G104
- Added miscellaneous note throughout the site plan

DRAWING SHEET A1.12 – FENCING PLAN

- Updated detail 3/A1.12
- Updated detail 2/A1.12
- Added shotput cage
- Added dimensions to new fence enclosure and added chain link gate detail callouts 13/A10.03 and 18/A10.03
- Added notes to new chain link fence
- Added callout 06/a10.03

DRAWING SHEET A10.01 – SITE DETAILS

- Updated detail 10/A10.01
- Added detail 5/A10.01
- Updated detail 1/A10.01
- Updated detail 9/A10.01

DRAWING SHEET A10.02 – SITE SIGNAGE
- Updated detail 2/A10.02
- Updated detail 5/A10.02
- Updated detail 1/A10.02

DRAWING SHEET A10.03 – CHAIN LINK GATE & FENCE DETAILS
- Added detail 1/A10.03
- Added detail 16/A10.03
- Updated detail 6/A10.03
- Updated detail 13/A10.03
- Updated detail 18/A10.03

DRAWING SHEET A10.04 – ORNAMENTAL FENCING DETAILS
- Updated detail 6/A10.04
- Updated detail 13/A10.04
- Updated detail 7/A10.04
- Updated detail 21/A10.04
- Updated detail 11/A10.04
- Updated detail 24/A10.04
- Added detail 12/A10.04
- Added detail 14/A10.04

DRAWING SHEET A10.09 – SITE DETAILS - PLAYFIELDS
- Updated detail 4/A10.09
- Updated detail 5/A10.09
- Updated detail 9/A10.09
- Updated detail 12/A10.09
- Updated detail 14/A10.09
- Updated detail 15/A10.09
- Updated detail 17A10.09
- Updated detail 18/A10.09
- Updated detail 21/A10.09
- Updated detail 24/A10.09
- Updated detail 25/A10.09

DRAWING SHEET A10.10 – SITE DETAILS MSC.
- Updated detail 1/A10.10
- Updated detail 2/A10.10
- Updated detail 3/A10.10
- Updated detail 4/A10.10
- Updated detail 5/A10.10
- Updated detail 11/A10.10
- Removed detail 10/A10.10

- Added detail 9/A10.10
- Added detail 12/A10.10
- Added detail 13/A10.10
- Added detail 19/A10.10

ELECTRICAL

DRAWING SHEET E0.01 – GENERAL NOTES, APPLICABLE CODES AND SHEET INDEX

- Added sheet E1.01 demolition electrical and signal site plan to sheet index.
- Added sheet E2.01 and E2.02 electrical and signal detail sheets to sheet index.

DRAWING SHEET E0.03 – PARTIAL SINGLE LINE DIAGRAM AND PANEL SCHEDULES

- Revised key notes.
- Updated panel schedule “LA”.
- Added enlarged electrical site plan.
- Clarified feeders for panel “LA” and booster Pump are new.

DRAWING SHEET E0.04 – LIGHTING FIXTURE SCHEDULES AND NOTES

- Added type “F’ flagpole lights to lighting fixture schedule and modified type “LG” description.
- Updated substitution notes.

DRAWING SHEET E1.00 – ELECTRICAL SITE PLAN

- Added reference detail bubble callouts.

DRAWING SHEET E1.01 – ELECTRICAL SITE PLAN

- Added new demolition sheet E1.01, electrical/signal site plan including general notes, key notes, and site plan keynote call outs.

DRAWING SHEET E1.02 – ELECTRICAL / SIGNAL SITE PLAN

- Revised low voltage/power conduit routing that may be impacted by new track and field work.
- Provided design for new track power/ data pullboxes.
- Provided design for cabling and wiring to new track power/data pullboxes.
- Provided design for existing sportsfield lighting conduit and feeders which will be affected by field excavation.
- Updated key notes.

DRAWING SHEET E2.00 – ELECTRICAL DETAILS

- Added electrical details 5,6,7,8.

DRAWING SHEET E2.01 – ELECTRICAL DETAILS

- Added additional electrical detail sheet E2.01.

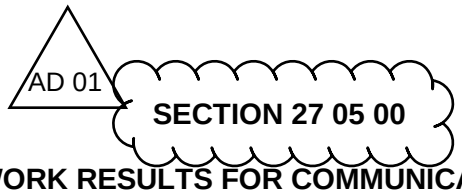
DRAWING SHEET E2.02 – ELECTRICAL AND SIGNAL DETAILS

- Added additional electrical and signal detail Sheet E2.02

HMC ARCHITECTS

By_____
Virginia E. Marquardt, AIA
Principal In Charge

END OF ADDENDUM #1



COMMON WORK RESULTS FOR COMMUNICATION EXPANSION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01, 07, 08, and 26 Specification Sections, apply to this Section.

B. Related Sections include the following:
   1. Section 270526, “Grounding and Bonding for Communication Systems”.
   2. Section 271116, “Communications Cabling, Racks, Frames, and Enclosures”.
   3. Section 271300, “Communications Backbone Cabling”.
   4. Section 271523, “Communications Copper Horizontal Cabling – Interior”.
   5. Section 275116, “Public Address Systems”.

1.02 SUMMARY

A. Section Includes:
   1. Communications equipment coordination and installation.
   2. Sleeves for pathways and cables.
   3. Sleeve seals.
   4. Grout.
   5. Common communications installation requirements.

1.03 DEFINITIONS

A. EPDM: Ethylene-propylene-diene terpolymer rubber.

B. NBR: Acrylo-nitrile butadiene rubber.

1.04 CODES, STANDARDS AND REFERENCES

A. ANSI/NFPA 70: National Electrical Code (NEC), with California Amendments (CEC).

B. ANSI/IEEE C2-97: National Electrical Safety Code (NESC).

C. ANSI/IEEE Std. 1100-1999: Recommended Practice for Powering and Grounding Sensitive Electronic Equipment in Industrial and Commercial Power Systems.

D. American Society for Testing and Materials (ASTM) – ASTM A53 / A53M: Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded, and Seamless.

E. American Society for Testing and Materials (ASTM) – ASTM C1107: Standard Specification for Packaged Dry, Hydraulic Cement Grout (Non-Shrink).

F. National Electrical Contractors Association (NECA): NECA 1.

1.05 SUBMITTALS

A. Product Data: For sleeve seals.

1.06 COORDINATION

A. Coordinate arrangement, mounting, and support of communications equipment:
   1. To allow maximum possible headroom unless specific mounting heights that reduce headroom are indicated.
   2. To provide for ease of disconnecting the equipment with minimum interference to other installations.
   3. To allow right of way for piping and conduit installed at required slope.
   4. To provide clearance from obstructions for connecting pathways, cables, wire ways, cable trays, and busways and working and access space of other equipment.

B. Coordinate installation of required supporting devices and set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

C. Coordinate location of access panels and doors for communications items that are behind finished surfaces or otherwise concealed. Access doors and panels are specified in Division 08, Section 083113, "Access Doors and Frames."

D. Coordinate sleeve selection and application with selection and application of fire-stopping specified in Division 07, Section 078413, "Penetration Fire-stopping."

PART 2 - PRODUCTS

2.01 SLEEVES FOR PATHWAYS AND CABLES

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral water-stop, unless otherwise indicated.

C. Sleeves for Rectangular Openings: Galvanized sheet steel.
   1. Minimum Metal Thickness:
      a. For sleeve cross-section rectangle perimeter less than 50 inches and no side more than 16 inches, thickness shall be 0.052 inch.
      b. For sleeve cross-section rectangle perimeter equal to, or more than, 50 inches and 1 or more sides equal to, or more than, 16 inches, thickness shall be 0.138 inch.

2.02 SLEEVE SEALS

A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and pathway or cable.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Advance Products & Systems, Inc.

b. Calpico, Inc.
c. Metraflex Co.
d. Pipeline Seal and Insulator, Inc.

2. Sealing Elements: EPDM, NBR interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of pathway or cable.
3. Pressure Plates: Stainless steel. Include two for each sealing element.
4. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.03 GROUT

A. Non-metallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, non-corrosive, non-staining, mixed with water to consistency suitable for application and a 30-minute working time.

PART 3 - EXECUTION

3.01 COMMON REQUIREMENTS FOR COMMUNICATIONS INSTALLATION

A. Comply with NECA 1.

B. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.

C. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.

D. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both communications equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.

E. Right of Way: Provide right of way to piping systems installed at a required slope.

3.02 SLEEVE INSTALLATION FOR COMMUNICATIONS PENETRATIONS

A. Communications penetrations occur when pathways, cables, wire ways, or cable trays penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.

B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.

C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with fire-stop system used are fabricated during construction of floor or wall.

E. Cut sleeves to length for mounting flush with both surfaces of walls.

F. Extend sleeves installed in floors 2 inches above finished floor level.

G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and pathway or cable, unless indicated otherwise.

H. Seal space outside of sleeves with grout for penetrations of concrete and masonry
   1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.

I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and pathway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 07, Section 079200, "Joint Sealants."

J. Fire-Rated Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at pathway and cable penetrations. Install sleeves and seal pathway and cable penetration sleeves with fire-stop materials. Comply with requirements in Division 07, Section 078413, "Penetration Fire-stopping."

K. Roof-Penetration Sleeves: Seal penetration of individual pathways and cables with flexible boot-type flashing units applied in coordination with roofing work.

L. Aboveground, Exterior Wall Penetrations: Seal penetrations using steel pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

M. Underground, Exterior Wall Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch annular clear space between pathway or cable and sleeve for installing mechanical sleeve seals.

3.03 SLEEVE-SEAL INSTALLATION

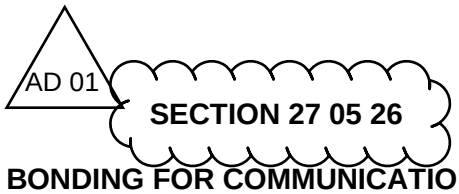
A. Install to seal exterior wall penetrations.

B. Use type and number of sealing elements recommended by manufacturer for pathway or cable material and size. Position pathway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between pathway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.04 FIRE-STOPPING

A. Apply fire-stopping material to penetrations of fire-rated floor and wall assemblies for communications installations to restore original fire-resistance rating of assembly. Fire-stopping materials and installation requirements are specified in Division 07 Section 078413, "Penetration Fire-stopping."

END OF SECTION



GROUNDING AND BONDING FOR COMMUNICATION SYSTEMS EXPANSION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01, 26, 28 Specification Sections, apply to this Section.

B. Related Sections include the following:
   1. Section 270500, “Common Work Results for Communications”.
   2. Section 271116, “Communications Cabling, Racks, Frames, and Enclosures”.
   3. Section 271300, “Communications Backbone Cabling”.
   4. Section 271523, “Communications Copper Horizontal Cabling – Interior”.
   5. Section 275116, “Public Address Systems”.

1.02 SUMMARY

A. This Section includes methods and materials for grounding and bonding systems and equipment installed specifically for telecommunication systems**,** plus the following special applications**:**
   1. Underground distribution grounding.
   2. Grounding electrodes and conductors.
   3. Equipment grounding conductors.
   4. Bonding.

1.03 CODES, STANDARDS AND REFERENCES

A. ANSI/NFPA 70: National Electrical Code, with California Amendments (CEC).

B. ANSI/IEEE C2-97: National Electrical Safety Code (NESC)

C. ANSI/IEEE Std. 1100-1999: Recommended Practice for Powering and Grounding Sensitive Electronic Equipment in Industrial and Commercial Power Systems.

D. American Society for Testing and Materials (ASTM) - ASTM B3: Standard Specification for Soft or Annealed Copper Wire.

E. American Society for Testing and Materials (ASTM) - ASTM B8: Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.

F. American Society for Testing and Materials (ASTM) - ASTM B33: Standard Specification for Tinned Soft or Annealed Copper Wire for Electrical Purposes.

G. EIA/TIA-568-B – Commercial Building Telecommunication Wiring Standard.

H. EIA/TIA-569 – Commercial Building Standard for Telecommunication Pathways.

I. EIA/TIA-607 – Grounding and Bonding for Communications.

J. National Fire Protection Association (NFPA) - NFPA 70B: Recommended Practice for Electrical Equipment Maintenance.

K. National Fire Protection Association (NFPA) - 780: Standard for the Installation of Lightning Protection Systems.

L. Occupational Safety and Health Administration (OSHA) – 29 CFR 1910.7: OSHA Occupational Safety and Health Standards.

M. Underwriters Laboratories – UL 83 – Thermoplastic Insulated Wires.

N. Underwriters Laboratories – UL 467 – Grounding and Bonding Equipment.

O. Underwriters Laboratories – UL 486A – Wire Connectors and Soldering Lugs for Use with Copper Conductors.

1.04 DEFINITIONS

A. TMGB: Telecommunications Main Ground Bus Bar.

B. MDF: Main Distribution Frame.

C. IDF/BDF: Building Distribution Frame.

D. UFER – As defined by Article 100 of the CEC.

1.05 REGULATORY REQUIREMENTS

A. The Contractor shall conform to requirements of the National Electrical Code Article 250, California Electrical Code, and requirements of EIA/TIA 607.

B. The Contractor shall furnish products listed and classified by Underwriters Laboratories, Inc. or testing firm suitable for purpose specified and as shown.

1.06 PERFORMANCE REQUIREMENTS

A. Grounding system resistance shall be 25 ohms or less unless otherwise indicated.

B. A telecommunications ground in the form of telecommunication main ground bus bar (TMGB) shall be installed in the Main Distribution Frame (MDF) room. It shall be directly attached and effectively bonded to the closest point in the building’s electrical service grounding electrode system.

C. In the event, the building’s service grounding electrode system is not in close proximity of the TMGB, install a driven ground rod for the telecommunication grounding system.

D. Each Building Distribution Frame (BDF/IDF) shall be effectively bonded with the TMGB in the MDF room. Each BDF ground shall be a separate grounding conductor between the BDF and the MDF.

1.07 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Other Informational Submittals: Plans showing dimensioned as-built locations of grounding features specified in Part 3 "Field Quality Control" Article, including the following:
   1. Ground rods.
   2. Ground connectors.
   3. Grounding arrangements and connections for separately derived systems.
   4. Grounding for sensitive electronic equipment.
   5. Telecommunication Main Grounding Bus bar TMGB (In MDF Room).
   6. Telecommunication Grounding Bus bar TGB (In BDF/IDF Room).

C. Qualification Data: For testing agency and testing agency's field supervisor.

D. Field quality-control test reports, original and four copies.

E. Operation and Maintenance Data: For grounding to include the following in emergency, operation, and maintenance manuals:
   1. Instructions for periodic testing and inspection of grounding features at test wells, ground rings, grounding connections for separately derived systems based on EIA/TIA 607 and NFPA 70B.
      a. Tests shall be to determine if ground resistance or impedance values remain within specified maximums, and instructions shall recommend corrective action if they do not.
      b. Include recommended testing intervals.

1.08 WARRANTY

A. Warranty shall comply with the provisions of Divisions 01, 11, 14, 26, 27, and 28 of these specifications.

1.09 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the International Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.
   1. Testing Agency’s Field Supervisor: Person currently certified by the International. Electrical Testing Association to supervise on-site testing specified in Part 3.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with UL 467 for grounding and bonding materials and equipment.

PRODUCTS

2.01 CONDUCTORS

D. Insulated Conductors: Copper or tinned-copper wire or cable insulated for 600 V, unless otherwise required by applicable Code or authorities having jurisdiction.
   1. Provide minimum No. 3/0 AWG, insulated, stranded copper grounding conductor between TMGB in MDF room and electrical system ground.
   2. Provide minimum No. 2 or No. 6 AWG insulated, stranded copper conductors, sized in accordance with Table for equipment grounding conductors, NEC. 250, EIA/TIA 607 between TMGB in MDF room and TGBs in BDF/IDF rooms.

2.02 CONNECTORS

A. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.

B. Welded Connectors: Exothermic welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

2.03 GROUNDING ELECTRODES

A. Ground Rods: Sectional, copper-clad, 3/4 inch diameter by10 feet in length. Provide driving pins. Provide threaded couplings where necessary to extend rods.

2.04 GROUND BUS BARS

A. A.Telecommunication Main Ground Bus Bar (In MDF room): 20” x 4” x ¾”.

B. Telecommunication Ground Bus Bars (In BDF/IDF rooms): 10” x 4” x ¾”.

C. The Ground Bus Bars shall be wall-mounted on insulated spacers.

EXECUTION

3.01 APPLICATIONS

D. Conductors: Install green insulated, solid conductors for No. 8 AWG and smaller and stranded conductors for No. 6 AWG and larger, unless otherwise indicated.

E. Grounding Bus Bars: Install in electrical and telephone equipment rooms, in rooms housing service equipment, and elsewhere as indicated.
   1. Install bus bars on insulated spacers 1 inch minimum, from wall 6 inches above finished floor, unless otherwise indicated.
   2. Where indicated on both sides of doorways, route bus up to top of door frame, across top of doorway, down to specified height above floor, and connect to horizontal bus.

3.02 GROUNDING UNDERGROUND DISTRIBUTION SYSTEM COMPONENTS

A. Comply with IEEE C2, EIA/TIA 607 grounding requirements.

B. Grounding Manholes and Hand holes: Install a driven ground rod through manhole or hand hole floor, close to wall, and set rod depth so 4 inches will extend above finished floor. If necessary, install ground rod before manhole is placed and provide No. 1/0 AWG bare, tinned-copper conductor from ground rod into manhole through a waterproof sleeve in manhole wall. Protect ground rods passing through concrete floor with a double wrapping of pressure-sensitive insulating tape or heat-shrunk insulating sleeve from 2 inches above to 6 inches below concrete. Seal floor opening with waterproof, non-shrink grout.

C. Grounding Connections to Manhole Components: Bond exposed-metal parts such as inserts, cable racks, pulling irons, ladders, and cable shields within each manhole or hand hole, to ground rod or grounding conductor. Make connections with No. 4 AWG minimum, stranded, hard-drawn copper bonding conductor. Train conductors level or plumb around corners and fasten to manhole walls.

3.03 EQUIPMENT GROUNDING

A. Signal and Communication Equipment: For telephone, alarm, voice and data, and other communication equipment, provide insulated grounding conductor in raceway, from electric utility service entrance grounding electrode system to the following locations unless otherwise shown on Drawings.
   1. No. 3/0 AWG, insulated to TMGB in MDF room.
   2. No. 2 & No. 6 AWG, green, insulated between TMGB and TGBs in BDF/IDF rooms.
   3. Use exothermic-welded connectors for all grounding jumpers and connections.

3.04 TESTS

A. Agency: An independent, qualified testing and inspecting agency shall perform the following field tests and inspections and prepare test reports.

B. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.

C. The testing equipment and devices used in performing the required tests shall have a calibration sticker affixed to the device stating the date when calibrated, date due for re-calibration, and the signature of the individual who did the calibration. In addition to the sticker, a certificate containing the brand name and serial number of the device shall also be provided.

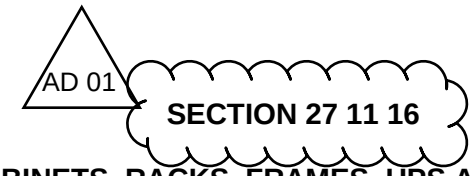
D. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal**,** at ground test wells, and at individual ground rods. Make tests at ground rods before any conductors are connected.

E. Perform tests by fall-of-potential method according to IEEE 81.

F. Documentation: Prepare dimensioned drawings locating each ground rod and ground rod assembly, and other grounding electrodes. Identify each by letter in alphabetical order, and key to the record of tests and observations. Include the number of rods driven and their depth at each location, and include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.

G. Furnish original and four copies of the complete report to the Architect in accordance with requirements of Contract Documents.

END OF SECTION



COMMUNICATIONS CABINETS, RACKS, FRAMES, UPS AND ENCLOSURES EXPANSION

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Provide all labor, materials, and equipment for the complete installation of work called for in the Contract Documents.

1.02 SCOPE OF WORK

A. This section includes the minimum requirements for the equipment and cable installations in communications equipment rooms (Telecommunications Rooms).

B. Included in this section are the minimum composition requirements and installation methods for the following:
   1. Racks.

1.03 QUALITY ASSURANCE

A. All cable and equipment shall be installed in a neat and workmanlike manner. All methods of construction that are not specifically described or indicated in the contract documents shall be subject to the control and approval of the Owner or Owner Representative.

B. Equipment and materials shall be of the quality and manufacture indicated. The equipment specified is based upon the acceptable manufacturers listed. Where “approved equal” is stated, equipment shall be equivalent in every way to that of the equipment specified and subject to approval.

C. Strictly adhere to all Building Industry Consulting Service International (BICSI), Electronic Industries Alliance (EIA) and Telecommunications Industry Association (TIA) recommended installation practices when installing communications/data cabling.

1.04 RELATED SECTIONS

A. 260526 – Grounding System

B. 260533 – Raceways

C. 271123 – Communications Cable Management and Ladder Rack

D. 271500 – Communications Horizontal Cabling

E. 271300 – Backbone Cabling

1.05 REFERENCES

A. Material and work specified herein shall comply with the applicable requirements of:
   1. NEC® 2011: National Electric Code®
   2. ANSI/TIA-568-D.0: Generic Telecommunications Cabling for Customer Premises
   3. ANSI/TIA-569-D: Commercial Building Standard for Telecommunications Pathways and Spaces.
   4. ANSI/TIA-606-B: Administration Standard for Commercial Telecommunications Infrastructures.
   5. ANSI/TIA-607-C: Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises.
   6. BICSI – Telecommunications Distribution Methods Manual, (TDMM).

1.06 SUBSTITUTIONS

A. The bid shall include products per PART 2. Unless products are specified as “or equal”, substitutions will not be considered for bid purposes.

B. Requests for substitutions after award of contract shall be considered only in case of product unavailability. Manufacturer shall verify product unavailability in writing.

C. Submit separate requests for each substitution at time of bid, or at appropriate time thereafter in the event of unavailability of item included in bid. Support each request with:
   1. Complete data (cut sheets) substantiating compliance of proposed substitution with requirements stated in Contract documents.
   2. Effect of substitution requiring schedule changes.
   3. Contractor shall be responsible at no extra cost to OWNER for changes resulting from proposed substitutions, which affect work or other Sections or Divisions, or related purposes.
   4. Substitute products shall not be ordered or installed without prior written approval/acceptance by OWNER.
   5. OWNER will have sole discretion to determine acceptability of proposed substitutions and reserves the right to reject such substitutions.
   6. Approval of substitutions shall not relieve Contractor from full compliance with requirements of Contract documents.

1.07 SUBMITTALS

A. Product Data.
   1. Provide manufacturer’s catalog information showing dimensions, colors, and configurations.
   2. Submittals shall include all items called for in PART 2 – PRODUCTS of this document and the manufacturers product data sheets and installation instructions for all products (submit with bid).

PART 2 - PRODUCTS

2.01 EQUIPMENT CABINETS

A. Wall Mount Enclosed Cabinets
   1. Wall-mounted electronic enclosures shall be designed to hold 19” rack mounted equipment and be EIA-310-D compliant.
   2. Enclosures shall be 36”, 48” high containing 19, 26 rack mounting units by 25” deep.
   3. Construction shall be of 16-gauge steel and shall be fully welded in a two-piece configuration consisting of a rear section mounted to the wall and a front section containing the mounting angles and door assembly that can be installed to open to the left or right.
   4. The enclosure shall have a load rating of 200, 300 pounds when equipment is evenly distributed and the enclosure is anchored to an adequate surface.
   5. Enclosures shall have provisions for 1.38”, 1.97”, 2.5” and 3.0” concentric knockouts for conduit or bushing connection or a foam gland plate option for installing pre-terminated patch panels.
   6. Raised lances for mounting accessories or cable tie down points shall be included.
   7. Enclosures shall include a pair of 11-gauge steel mounting rails that are #12-24 tapped in the EIA universal mounting hole pattern.
   8. Enclosures shall accept up to two fan kits to facilitate airflow through the enclosure as well as a filter kit to ensure that intake air is clean.
   9. The enclosures shall be provided with a black powder coat finish.
   10. Enclosures shall be UL listed to the Information Technology and Communications Equipment Cabinet, Enclosure and Rack Systems standard in the US and Canada.

B. Backup UPS
   1. Manufacturer is Eaton
      a. Part Number: 5PX2200RTN
         1) L5-20P Input.
         2) 65 lbs.
         3) Includes optional network mgmt. card.

C. Power Distribution Unit (PDU).
   1. Manufacturer is Eaton
      a. Part Number: PW101BA1U140.
      b. Input - NEMA 5-15.
      c. Output - 12 NEMA 5-15 RECEPTACLES 2.
      d. 19” Rack Mounted Steel Chassis 1U high.

D. Eaton / B Line Part numbers as follows:
   1. VLWM3625PB (36” High)
   2. VLWM4825PB (48” High)

2.02 EQUIPMENT RACKS

A. Free Standing Two-Post Network Equipment Racks
   1. Racks shall be manufactured from aluminum extrusion.

2. Each rack will have two L-shaped top angles, two L-shaped base angles and two C-shaped equipment-mounting channels. The rack will assemble with tapped holes eliminating the need for nuts and simplifies assembly and squaring. The base angles will be pre-punched for attachment to the floor.
3. When assembled with top and bottom angles, equipment-mounting channels will be spaced to allow attachment of 19" EIA rack-mount equipment. Attachment points will be threaded with 12-24 roll-formed threads. The rack will include assembly and equipment-mounting hardware. Racks will include 30 each, dog point combo head mounting screws.
4. The assembled rack will measure 7' (84") high, 20 5/16" wide and 18" deep. The sides of the equipment-mounting channels will be punched to allow attachment of vertical cable managers along the sides of the rack or for rack-to-rack baying.
5. The rack will be rated for 1,200 lb. of equipment.
6. The rack will be UL Listed and OPM certification.
7. Finish shall be powder coat in the color black.

B. Manufacturer is B-Line
   1. Part Number: SB55608419U6FB

C. Rack Accessories (one per rack)
   1. Network Equipment Rack Anchor Kit.
      a. 3/8" – 16 x 2 ¾" wedge anchors and hardware
      b. Clear Zinc (ZN) finish.
      c. Backup UPS
      d. Manufacturer is Eaton
         1) Part Number: 5PX2200RTN
         2) L5-20P Input
         3) 65 lbs.
         4) Includes optional network mgmt. card

D. Power Distribution Unit (PDU).
   1. Manufacturer is Eaton
      a. Part Number: PW101BA1U140
      b. Input - NEMA 5-15.
      c. Output - 12 NEMA 5-15 RECEPTACLES 2.
      d. 19" Rack Mounted Steel Chassis 1U high

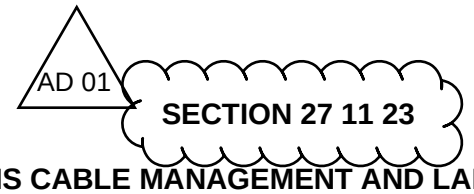
E. Backup UPS
   1. Manufacturer is Eaton
      a. Part Number: 5PX2200RTN
         1) L5-20P Input
         2) 65 lbs.
         3) Includes optional network mgmt. card
         4) 3-year warranty required on UPS and batteries

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION

A. Network Equipment Racks
   1. Assemble equipment racks according to manufacturer's instructions. Verify that equipment mounting rails are sized properly for rack-mount equipment before attaching the rack to the floor.
   2. All racks must be attached to the floor in four places using appropriate floor mounting anchors. When placed over a raised floor, threaded rods should pass through the raised floor tile and be secured in the structural floor below. Racks shall be grounded to the TGB using appropriate hardware provided by the contractor. The ground will meet local code requirements and will be approved by the Authority Having Jurisdiction (AHJ).
   3. In seismic areas, the rack should have additional bracing as required by building codes and the recommendations of a licensed structural engineer.
   4. Ladder rack may be attached to the top of the rack to deliver cables to the rack. The rack should not be drilled to attach ladder rack. Use appropriate hardware from the ladder rack manufacturer.
   5. The equipment load should be evenly distributed and uniform on the rack. Place large and heavy equipment towards the bottom of the rack. Secure all equipment to the rack with equipment mounting screws.

END OF SECTION



SECTION 27 11 23

COMMUNICATIONS CABLE MANAGEMENT AND LADDER RACK EXPANSION

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Provide all labor, materials, and equipment for the complete installation of work called for in the Contract Documents.

1.02 SCOPE OF WORK

A. This section includes the minimum requirements for the equipment and cable installations in telecommunications rooms.

B. Included in this section are the minimum composition requirements and installation methods for the following:
   1. Cable Runway.
   2. Cable Management.

1.03 QUALITY ASSURANCE

A. All cable and equipment shall be installed in a neat and workmanlike manner. All methods of construction that are not specifically described or indicated in the contract documents shall be subject to the control and approval of the owner or owner representative.

B. Equipment and materials shall be of the quality and manufacture indicated. The equipment specified is based upon the acceptable manufacturers listed. Where “approved equal” is stated, equipment shall be equivalent in every way to that of the equipment specified and subject to approval.

C. Strictly adhere to all Building Industry Consulting Service International (BICSI), Electronic Industries Alliance (EIA) and Telecommunications Industry Association (TIA) recommended installation practices when installing communications/data cabling.

1.04 RELATED SECTIONS

A. Section 260526 – Grounding System

B. Section 260533 – Raceways

C. Section 271116 – Communications Cabinets, Racks, Frames and Enclosures

D. Section 271300 – Communications Backbone Cabling

E. Section 271500 – Communications Horizontal Cabling

1.05 REFERENCES

A. Material and work specified herein shall comply with the applicable requirements of:
   1. NEC® 2011: National Electric Code®
   2. ANSI/TIA-568-D.0: Generic Telecommunications Cabling for Customer Premises.
   3. ANSI/TIA-569-D: Commercial Building Standard for Telecommunications Pathways and Spaces.
   4. ANSI/TIA-606-B: Administration Standard for Commercial Telecommunications Infrastructures.
   5. ANSI/TIA-607-C: Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises.
   6. BICSI – Telecommunications Distribution Methods Manual, (TDMM).
   7. NEMA VE 1 – Metal Cable Tray Systems.
   8. NEMA VE 2 – Metal Cable Tray Installation Guidelines.

1.06 SUBSTITUTIONS

A. The bid shall include products per PART 2. Unless products are specified as “or equal”, substitutions will not be considered for bid purposes.

B. Requests for substitutions after award of contract shall be considered only in case of product unavailability. Manufacturer shall verify product unavailability in writing.

C. Submit separate requests for each substitution at time of bid, or at appropriate time thereafter in the event of unavailability of item included in bid. Support each request with:
   1. Complete data (cut sheets) substantiating compliance of proposed substitution with requirements stated in Contract documents.
   2. Effect of substitution requiring schedule changes.
   3. Contractor shall be responsible at no extra cost to AECOM for changes resulting from proposed substitutions, which affect work or other Sections or Divisions, or related contracts.
   4. Substitute products shall not be ordered or installed without prior written approval/acceptance by OWNER.
   5. OWNER will have sole discretion to determine acceptability of proposed substitutions and reserves the right to reject such substitutions.

D. Approval of substitutions shall not relieve Contractor from full compliance with requirements of Contract documents.

1.07 SUBMITTALS

A. Product Data.
   1. Provide manufacturer’s catalog information showing dimensions, colors, and configurations.
   2. Submittals shall include all items called for in PART 2 – PRODUCTS of this document and the manufacturers product data sheets and installation instructions for all products (submit with bid).

PART 2 - PRODUCTS

2.01 LADDER RACK, SUPPORTS, AND ACCESSORIES

A. Ladder Rack (Universal Cable Runway)
   1. Ladder rack shall be manufactured from 3/8-inch wide by 1-1/2-inch in height tubular steel with .065-inch wall thickness.
   2. Ladder rack (side stringers) will be 9-inches to 11-1/2-inches long. Cross members will be welded in between stringers on 12-inch centers beginning 5-3/4-inches from one end so that there are 10 cross members per ladder rack. There will be 10-1/2-inches of open space in between each cross member.
   3. Ladder rack will be delivered individually boxed, and available in the width(s) specified below.
   4. Ladder rack shall be UL Classified
   5. Finish shall be powder coat in the color Black.

B. Manufacturer is B-Line
   1. Part Number: SB17U12BFB, 12-inches Wide
   2. Part Number: SB17U18BFB, 18-inches Wide

C. Ladder Rack Splices
   1. Splice kits will provide a method of mechanically connecting ladder rack sections and turns together end-to-end or side-to-end to form a continuous pathway for cables.
   2. Grounding kits will provide a method of bonding ladder rack sections and turns together that is independent of the pathway splices. The grounding kit should be constructed of UL Listed components. The preferred solution is a #6 AWG green insulated stranded copper conductor connected on both ends to ladder rack using two-hole compression lugs and stainless-steel hardware.
   3. Splices (splice plates) will be manufactured from steel. Splice, grounding and insulator bar kits will include installation hardware.
   4. Finish (of splice plates and hardware) shall be Black Zinc.

D. Manufacturer is B-Line
   1. Part Number: SB2107BZ, Butt-Splice Kit
   2. Part Number: SB2101ABZ, Junction-Splice Kit
   3. Part Number: SB2111ABZ, Adjustable Vertical-Splice Kit
   4. Part Number: SB6691x73/4, Grounding Strap

E. Ladder Rack Supports
   1. Supports will be sized to match the width of the ladder rack that is supported. Some supports will work with all widths of ladder rack.
   2. Each support will include a means of securing ladder rack to the support.
   3. Supports will be manufactured from steel.
   4. Finish shall be powder coat (paint) in the color Black or zinc plate with a gold chem. finish specified gold. Included hardware shall be zinc plated with a gold chem. finish.

F. Manufacturer is B-Line

1. Part Number: SB21312KFB,Triangular Support Bracket, 6-inches to 12-inches Wide
2. Part Number: SB21318KFB, Triangular Support Bracket, 12-inches to 18-inches Wide
3. Part Number: SB211312FB, Wall Angle Support Kit, 12-inches wide
4. Part Number: SB211318FB,Wall Angle Support Kit, 18-inches wide
5. Part Number: SB213312FB,Rack-To-Runway Kit, 8-inches to 12-inches wide
6. Part Number: SB213318FB,Rack-To-Runway Kit, 14-inches to 18-inches wide
7. Part Number: SB227R6FB, Cable Runway Elevation Kit, 4-inches to 6-inches

G. Ladder Rack Accessories
1. Velcro® cable straps used for attaching cable bundles to the ladder rack cross members must be reusable with a hook and loop-style closure, at least 3/4-inch wide, and sized for cable bundles that are 2-inches, 3-inches, or 4-inches diameter.
2. End caps used to cover the ends of ladder rack will be manufactured from a black fire-retardant rubberized material. End caps will be sized for 3/8-inch wide by 1-1/2-inches in height side stingers and will be sold in pairs.
3. Radius drops used to create a radius to form cables over as the cables exit or enter the ladder rack will be manufactured from aluminum extrusion. The extrusion will be formed in a 90° arc with a minimum bend radius of 3-inches. Radius drops will attach to either the side stringer or the cross member of the ladder rack.
4. Unless otherwise noted, finish on all metal components shall be powder coat (paint) in the color(s) Black. Hardware will be zinc plated with a gold chem. finish.

H. Manufacturer is B-Line
1. Part Number: SB21B, Protective End Caps
2. Part Number: SB212912FB, Cross Member Radius Drop-Out, 12-inches wide
3. Part Number: SB212918FB, Cross Member Radius Drop-Out, 18-inches wide

2.02 VERTICAL CABLE MANAGEMENT FOR RACKS

A. The vertical cable manager will create a space for storing and organizing cables along the side of the rack/frame. The cable manager will maintain separation between patch/equipment/jumper cords and premise cables.

B. The cable manager will be sized to match cabling requirements and to fit the rack/frame. The initial quantity of cables within the cable manager will not exceed a whole number value equal to 40% of the interior area of the cable manager.

C. A single vertical cable manager can be used in between bayed racks/frames if it is sized to match cable requirements for both racks. The manufacturer will state estimated cable fills for the cable manager in the product data sheet.

D. The vertical cable manager will match the height of the rack(s).

E. The vertical cable manager will bolt to the side of racks with included hardware. The manufacturer of the vertical cable manager will sell compatible racks.

F. The vertical cable manager will be a double-sided H-shaped trough with a front cover and evenly spaced spin-open latches on the rear side. The double-sided trough will

provide independent front and rear cable pathways and will have multiple evenly-spaced edge-protected front-to-rear cable pass-through holes for cables in the center divider.

G. The front cover will be removable, hinged to open from the right or left side and will include a quarter turn latch that will secure the cover in the closed position. The rear will be mostly open with multiple evenly spaced spin-open latches.

H. The front of the vertical cable manager will have cable openings along both sides of the trough. The openings will be formed by evenly-spaced T-shaped cable guides. The T-shaped cable guides will be made from a composite plastic material (not metal) and will have rounded edges to protect cables. When the cable manager is attached to a rack, each cable opening will align with a rack-mounted space on the rack.

I. The cable manager will be delivered individually boxed and available in several widths as specified below and in the contract documents.

J. The vertical cable manager shall be manufactured from sheet, aluminum and composite materials.

K. Finish shall be powder coat (paint) in the color Black and in the contract documents. Edge-protectors, T-shaped cable guides and latch hardware is black.

L. Manufacturer is B-Line
   1. Part Number: SB86486D084FB, 84-inches (height) x 6-inches (width) x 17.75-inches (diameter).

PART 3 - INSTALLATION

3.01 LADDER RACK

A. Provide all components of the ladder rack system (ladder rack, turns, splices, supports, and accessories) from a single manufacturer.

B. Ladder rack shall be installed with side stringers facing down so that the ladder forms an inverted U-shape and so that welds between the stringers (sides) and cross members (middle) face away from cables.

C. Ladder rack shall be secured to the structural ceiling, building truss system, wall, floor, or the tops of equipment racks and/or cabinets using the manufacturer's recommended supports and appropriate installation hardware and methods as defined by local code or the Authority Having Jurisdiction (AHJ).

D. Ladder rack splices will be made in mid-span, not over a support, with the manufacturer's recommended splice hardware.

E. Ladder rack shall be supported every 5' or less in accordance with TIA-569-D. Ladder rack shall be supported within 2' of every splice and within 2' on both/all sides of every intersection. Support ladder rack within 2' on both sides of every change in elevation. Support ladder rack every 2' when attached vertically to a wall.

F. Heavy-duty splices are recommended for ladder rack in excess of 18-inches in width (18-inch-wide ladder rack). Heavy-duty splices are required for any splice formed in the vertical orientation including changes in elevation formed using vertical-to-horizontal 90° turns or horizontal-to-vertical 90° turns. Use heavy-duty splices to secure all overhead turns to the overhead horizontal pathway(s).

G. When the pathway is overhead, ladder rack shall be installed with a minimum clearance of 12-inches above the ladder rack. Leave a minimum of 12-inches in between ladder rack and ceiling/building truss structure. Leave a minimum of 4-inches in between ladder rack and the tops of equipment racks and/or cabinets. Multiple tiers of ladder rack shall be installed with a minimum clearance of 12-inches in between each tier of ladder rack. When located above an acoustical drop ceiling, leave a minimum of 3-inch clearance between the top of the drop ceiling tiles and the bottom of the ladder rack.

H. When installed under a raised floor, ladder rack shall be installed with a minimum 3-inch clearance between the top of the ladder rack and the bottom of the floor tiles or floor system stringers, whichever is lower in elevation. Maintain a 3-inch clearance between ladder racks wherever ladder racks cross.

I. Within each telecommunications room, ladder rack should be bonded together, electrically continuous, and bonded to the TGB, unless otherwise noted in the specifications and contract documents. Ladder rack and turns shall be bonded across each splice with a bonding kit. Ladder rack shall be bonded to the Telecommunications Grounding Busbar (TGB) using an approved ground lug on the ladder rack and a minimum #6 grounding wire or as recommended by the AHJ.

J. Remove paint from the ladder rack where bonding/ground lugs contact the ladder rack so that the lug will contact bare metal. Use antioxidant joint compound in between the bare metal on the ladder rack and ground lug. Use antioxidant joint compound in between the bus bar and the ground lug. Verify continuity through the bonds at splices and intersections between individual ladder rack sections and turns and through the bond to the TGB.

K. The quantity of cables within the ladder rack will not exceed a whole number value equal to 50% of the interior area of the ladder rack divided by the cross-sectional area of the cable. The interior area of ladder rack will be considered to be the width of the ladder rack multiplied by a height of 2-inches, unless cable retaining posts are added to the ladder rack. The interior area of ladder rack equipped with cable retaining posts will be considered to be the width of the ladder rack multiplied by a height of 6-inches. Actual cable fill for ladder rack that is not equipped with cable retaining posts will not exceed 2-inches in height. Actual cable fill for ladder rack equipped with cable retaining posts will not exceed 6-inches in height.

L. The combined weight of cables within the ladder rack will not exceed the stated load capacity of the ladder rack as stated in the manufacturer's product specifications or load/design tables.

M. Cables (cable bundles) will be secured to the cross members of ladder rack with 3/4-inch-wide reusable Velcro straps. Straps are not required when ladder rack is equipped with cable retaining posts.

N. Add 8-inch in height cable retaining posts to the open sides of ladder rack when cable fill exceeds 2-inches in height or when cable bundles cannot be secured directly to the ladder rack cross members with a strap. Cable fill within any ladder rack should not exceed 6-inches in height.

O. When a single ladder rack supports different types of cable media, the cable media will be separated within the pathway by cable spools that attach to the cross members on the ladder rack. Treat each type of cable media and divided area of the ladder rack separately when determining cable fill limits.

P. Use a radius drop to guide cables wherever cable exits overhead ladder rack to access a rack, frame, cabinet or wall-mounted rack, cabinet or termination field. If necessary, provide a moveable cross member also to attach and align the radius drop in between the welded cross members of a ladder rack.

Q. Cover the exposed ends of cable runway that do not terminate against a wall, the floor or the ceiling with end caps or an end closing kit.

R. Use auxiliary support brackets that attach to the side stringer of the ladder rack to support interconnect cabling (patch cords, equipment cords, jumper cords) that is routed between racks using the ladder rack. Auxiliary support brackets can be used to support other conductors that should be physically separated from cables within the ladder rack as defined by local code or the authority having jurisdiction (AHJ).

S. Whenever possible, maintain a 2’ separation between ladder rack used for communications cables and pathways for other utilities or building services.

T. The installer will provide touch-up paint color-matched to the finish on the ladder rack and will correct any minor cosmetic damage (chips, small scratches, etc.) resulting from normal handling during the installation process prior to delivery to the owner. If a component is cosmetically damaged to the extent that correction in the field is obvious against the factory finish, the component will be replaced with a new component finished from the factory. If a component is physically damaged due to mishandling or modification during the installation process, it shall not be used as part of the ladder rack system.

3.02 VERTICAL CABLE MANAGERS

A. Attach vertical cable managers to the side of the rack/frame using the manufacturer’s installation instructions and included hardware.

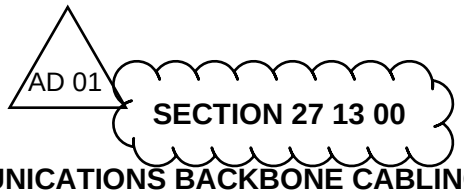
B. When a single vertical cable manager is used in between two racks/frames, attach the vertical cable manager to both racks/frames.

C. When more than one cable manager is used on a rack/frame or group of racks/frames, use the same make and style and size of vertical cable manager on the rack/frame verify the width with the Owners Representative for between racks/frames.

D. The color of the rack(s)/frame(s) and cable manager(s) must match.

E. Doors should be attached to the cable manager and in the closed position after cabling is complete.

END OF SECTION



SECTION 27 13 00

COMMUNICATIONS BACKBONE CABLING EXPANSION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions of the Contract and Division 01 – General Requirements apply to this Section.

1.02 TELECOMMUNICATIONS INFRASTRUCTURE CONTRACT WORK

A. General:
   1. Provide all labor, materials, tools, equipment and services for the installation as indicated, in accordance with general provisions of the specifications and the contract drawings.
   2. Coordinate all work with all other trades for a complete and operational system.
   3. Provide all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a sound, secure and complete installation, whether or not specifically indicated in the contract documents.
   4. Provide all open cabling support systems, ladder rack and cable trays.
   5. Provide testing of optical fiber connectivity and cabling infrastructure.
   6. Provide all project closeout documentation including but not limited to test result documentation, record drawings, manufacturer warranty applications and certificates and Operations and Maintenance (O & M) manuals.

B. Provide complete installation of the telecommunications infrastructure including but not limited to:
   1. Backbone copper connectivity and cabling.
   2. Pre-terminated Single-Mode and single mode optical fiber cabling assemblies.
   3. Testing of the backbone cabling systems.
   4. Labeling and identification.

1.03 RELATED SECTIONS

A. Section 260526 – Grounding System

B. Section 260533 – Raceways

C. Section 271116 – Communications Cabinets, Racks, Frames and Enclosures

D. Section 271123 – Communications Cable Management and Ladder Rack

E. Section 271500 – Communications Horizontal Cabling

1.04 REFERENCES

A. All work shall conform to the latest issue and addenda of the National Electrical Code, the Building Code, all local codes, standards and ordinances, as applicable.
   1. NEC® 2008: National Electric Code®
   2. NEC® 2011: National Electric Code®
   3. NESC® 2007: National Electric Safety Code®
   4. ANSI/TIA-568-D.0: Generic Telecommunications Cabling for Customer Premises.
   5. ANSI/TIA-568-D.1: Commercial Building Telecommunications Cabling Standard.
   6. ANSI/TIA-568-C.2: Balanced Twisted Pair Telecommunications Cabling and Components Standard.
   7. ANSI/TIA-568-C.3: Optical Fiber Cabling Components Standard.
   8. ANSI/TIA-569-D: Commercial Building Standard for Telecommunications Pathways and Spaces.
   9. ANSI/TIA-598-C: Optical Fiber Cable Color Coding.
   10. ANSI/TIA-606-B: Administration Standard for Commercial Telecommunications Infrastructures.
   11. ANSI/TIA-607-C: Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises.
   12. ANSI/TIA/EIA-758-B: Customer-Owned Outside Plant Telecommunication Infrastructure Standard.
   13. ANSI/TIA-862-A: Building Automation Systems Cabling Standard.
   14. ANSI/TIA/EIA-942: Telecommunications Infrastructure Standard for Data Centers.
   15. ANSI/TIA-455-C: General requirements for standard test procedures for optical fibers, cables, transducers, sensors, connecting and terminating devices, and other fiber optic components.
   16. ANSI/TIA-472C000-B / ICEA S-83-596-2001: Fiber Optic Premises Distribution Cable.
   17. ANSI/TIA-472D000-B / ICEA S-87-640-2006: Fiber Optic Outside Plant Communications Cable.
   18. ANSI/TIA-472E000 / ICEA S-104-696-2001: Standard For Indoor-Outdoor Optical Fiber Cable.
   19. ANSI/TIA-492AAAB-A: Detail Specification for 50um Core Diameter/125um Cladding Diameter Class Ia Graded-Index Single-Mode Optical Fibers.
   20. ANSI/TIA-492AAAC-B: Detail Specification for 850-nm Laser-Optimized, 50um Cladding Diameter Class Ia Graded-Index Single-Mode Optical Fibers.
   21. NANSI/TIA-492CAAA: Detail Specification for Class IVa Dispersion-Unshifted Single-Mode Optical Fibers.
   22. ANSI/TIA-526-14-C: Optical Power Loss Measurements of Installed Single-Mode Fiber Cable Plant - OFSTP-14.
   23. ANSI/TIA-526-7-A: Measurement of Optical Power Loss of Installed Single-Mode Fiber Cable Plant - OFSTP-7.
   24. ANSI/TIA TSB-140: Additional Guidelines for Field-Testing, Loss and Polarity of Optical Fiber Cabling Systems.
   25. ANSI/TIA-604: Fiber Optic Connector Intermateability Standard (FOCIS).
   26. IEEE 802.3: Ethernet Standard.
   27. BICSI Information Transport Systems Installation Methods Manual.
   28. BICSI – Telecommunications Distribution Methods Manual, (TDMM).
   29. Underwriters Laboratories (UL) Cable Certification and Follow Up Program.
   30. National Electrical Manufacturers Association (NEMA).
   31. Institute of Electrical and Electronic Engineers (IEEE).

B. Telecommunications contractor shall have read the above documents and shall be familiar with the requirements that pertain to AECOM installations.

C. Methodologies outlined in the latest edition of the BICSI Information Transport Systems Installation Methods Manual and BICSI Telecommunications Distribution Methods Manual shall also be used during all installation activities. Should conflicts exist with the foregoing, the authority having jurisdiction for enforcement shall have responsibility for making interpretation on codes related issues, and AECOM representative on standards related issues.

D. If this document or any of the documents listed in this RFP are in conflict, then the more stringent requirement shall prevail. All documents listed are believed to be the most current releases of the documents. Bidder has the responsibility to determine and adhere to the most recent release when developing the proposal for installation.

1.05 DEFINITIONS

A. Structured Cabling System (SCS): A SCS is defined as all required cabling including hardware, termination blocks, cross connect wire or cordage, patch panels, patch cords, telecommunication outlets, work area cords, UTP and fiber optic cable installed and configured to provide computer data and voice connectivity from each data or voice device to the network file server or voice network/switch designated as the service point of the local area network.

B. Work Area Subsystem: The connection between the telecommunications outlet and the station equipment in the work area is provided by the Work Area Subsystem. It consists of cords, adapters, and other transmission electronics. Horizontal Subsystem: The Horizontal subsystem Provides connections from the horizontal cross connect to the Telecommunication Outlets (TOs) in the work areas. It consists of the horizontal transmission media, the associated connecting hardware terminating this media and TOs in the work area. Each floor of a building is served by its own Horizontal Subsystem.

C. Equipment Subsystem: The Equipment Subsystem consists of shared (common) electronic communications equipment in the equipment room, main cross connects or telecommunications room and the transmission media required to terminate this equipment on the distribution hardware.

D. Telecommunications Room (TR): A Telecommunications Room is a space dedicated specifically for the housing and management of telecommunications equipment as well as a cross connect point between the horizontal subsystem and backbone cabling. Additional Nurse call, security, and CATV head end equipment may be housed in this space and any equipment not specifically dedicated to serving this space cannot be located in this space.

E. The Administration Subsystem: The Administration Subsystem links all of the subsystems together. It consists of labeling hardware for providing circuit identification and patch cords or jumper wire used for creating circuit connections at the cross connects.

1.06 SUBSTITUTIONS

A. The bid shall include products per PART 2. Unless products are specified as “or equal”, substitutions will not be considered for bid purposes.

B. Requests for substitutions after award of contract shall be considered only in case of product unavailability. Manufacturer shall verify product unavailability in writing.

C. Submit separate requests for each substitution at time of bid, or at appropriate time thereafter in the event of unavailability of item included in bid. Support each request with:
   1. Complete data (cut sheets) substantiating compliance of proposed substitution with requirements stated in Contract documents.
   2. Effect of substitution requiring schedule changes.
   3. Contractor shall be responsible at no extra cost to OWNER for changes resulting from proposed substitutions, which affect work or other Sections or Divisions, or related contracts.
   4. Substitute products shall not be ordered or installed without prior written approval/acceptance by OWNER.
   5. OWNER will have sole discretion to determine acceptability of proposed substitutions and reserves the right to reject such substitutions.
   6. Approval of substitutions shall not relieve Contractor from full compliance with requirements of Contract documents.

1.07 ROUGH-IN:

A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.

B. Refer to equipment specifications in Division 26 for rough-in requirements.

1.08 PERMITS AND FEES:

A. Contractor shall arrange for and pay for all inspections, licenses and certificates required in connection with the work.

1.09 SUBMITTALS

A. Product Data
   1. Provide manufacturer’s catalog information showing dimensions, colors, and configurations.
   2. Submittals shall include all items called for in PART 2 – PRODUCTS of this document and the manufacturers product data sheets for the following:
      a. All fiber optic and balanced twisted pair cable: to include patch cords, cross-connect wire and cross connect cordage.
      b. All connectors and required tooling.
      c. All termination system components for each cable type.
      d. All TR equipment frame types, hardware (and LAN equipment if applicable).
      e. All grounding and surge suppression system components.
      f. All test equipment to be used for the installation.
      g. Provide proof of calibration of the test equipment and permanent link adapters.

3. Performance Specification showing manufacturer's Guaranteed Performance.

B. Manufacturer's Instructions
   1. Indicate application conditions and limitations of use stipulated by product testing agency specified under regulatory requirements.
   2. Include instructions for storage, handling, protection, examination, preparation, operation and installation of product.

C. Pre-Qualification Certificate
   1. Contractor shall submit the following documents with project proposal:
      a. Training certificates for design, engineering and installation of the proposed products, for the relevant staff involved in the design and installation of this project.

D. Bid
   1. Vendor shall submit complete detailed bids. Lump sum bids will not be accepted.

E. Material Guarantee
   1. The contractor shall guarantee at the time of the bid that all cabling and components to be installed meet or exceed ANSI/TIA-568-D/C requirements.

F. Material Provided
   1. The successful contractor shall maintain that all correct parts are ordered per Products Section of this document and installed in accordance with manufacturers design and installation guidelines. Contractor shall submit complete product and part numbers to AECOM and Technology Consultant prior to installation of equipment.

G. Warranty Documentation
   1. The backbone communications cabling system installed shall be eligible for coverage by a Limited Lifetime Warranty to the owner.
      a. Backbone channels shall be completed with Leviton Network Solutions factory-terminated fiber patch cords in order to be eligible for the applicable Berk-Tek Leviton Technologies Warranty.
      b. The certified contractor shall provide labor, materials, and documentation in accordance with Berk-Tek and Leviton Network Solutions requirements necessary to ensure that the Owner will be furnished with a Limited Lifetime Warranty.
      c. Necessary documentation for warranty registration shall be provided to the manufacturer by the installer (within 10 days) following 100 percent testing of fiber optic cables.
      d. The certified contractor shall ensure that the Owner receives the manufacturer issued project warranty certificate within 60 calendar days of warranty registration.
   2. Complete documentation regarding the manufacturer's warranty shall be submitted as part of the proposal. This shall include but is not limited to: a sample of the warranty that would be provided to the customer when the installation is complete and documentation of the support procedure for warranty issues.

1.10 QUALIFICATIONS

A. Contractor
   1. Contractor shall be certified by the partnered component manufacturers in the installation and testing of the cabling systems to be installed and shall be able to furnish a manufacturers extended performance warranty for a complete cabling system.
   2. The contractor shall utilize the authorized manufacturer components and Anixter for distribution in provisioning this Project.
   3. Contractor shall have a minimum of five (5) years of recent experience on structured cabling systems of similar size and scope.
   4. Contractor shall be in compliance with all federal, state and local statutes regarding qualifications of firm.
   5. The contractor shall be experienced in all aspects of this work and shall be required to demonstrate direct experience on recent systems of similar size and scope.
   6. The contractor shall own and maintain the tools and equipment approved by the cabling system manufacturer(s) for successful installation and testing of the structured cabling system.
   7. The contractor shall have personnel who are properly trained in the usage of such tools and equipment.

1.11 CABLING BASIC REQUIREMENTS

A. Cable Pathway
   1. Extension of all data and voice cables shall be within raceway, conduit, cable tray, J- Hooks, or other designated cable delivery system provided and installed by the electrical contractor where concealed in walls and exposed above ceilings in plenum spaces.

B. Hardware
   1. Required hardware includes, but is not limited to, cables, fiber enclosures, adapter plates, patch panels, connecting blocks, connectors, patch cords and necessary support systems to comply with this specification.

1.12 GROUNDING AND BONDING

A. All grounding and bonding shall meet the National Electrical Code (NEC) as well as local codes, which specify additional grounding and/or bonding requirements.

B. Grounding and Bonding
   1. Communication bonding and grounding shall be in accordance with the NEC and NFPA. Backbone equipment includes cross connect frames, patch panels, optical fiber enclosures and racks, active telecommunication equipment and test apparatus and equipment. When required by local code, provide a Telecommunications Bonding Backbone utilizing a #6-AWG or larger bonding conductor that provides direct bonding between equipment rooms and telecommunications rooms (See ANSI/TIA-607-C). This is part of the grounding and bonding infrastructure (part of the telecommunications pathways and spaces in the building structure) and is independent of equipment or cabling.

1.13 PRODUCT WARRANTY

A. The Structured Cabling Solutions Limited Lifetime Product and Performance Warranty shall be Berk-Tek Leviton Technologies.

1.14 SPECIAL REQUIREMENTS FOR CABLE ROUTING AND INSTALLATION

A. Cabling
   1. All communications cabling used throughout this project shall comply with the requirements as outlined in the National Electric Code (NEC), ANSI/TIA-568-C and the appropriate local codes.
   2. All fiber optic cabling shall bear OFNP (Plenum Rated), OFNR (Riser Rated) and/or appropriate markings for the environment in which they are installed.

B. Cable Pathway
   1. Velcro™ wraps shall be used in all appropriate areas. Plastic cable ties are not allowed.
   2. The contractor shall adhere to the manufacturers' requirements for bend radius and pulling tension of all data and voice cables.
   3. Conduit runs shall not exceed 180 degrees of bend without an appropriate sized pull box.
   4. See ANSI/TIA-569-D for pull box size requirements.
   5. L-Bends or Condulets shall not be used under any circumstance without prior approval from the owner or Telecom engineer.
   6. Cables shall not be attached to lift out ceiling grid supports or laid directly on the ceiling grid.
   7. Cables shall not be attached to or supported by fire sprinkler heads, delivery systems or any environmental sensor located in the ceiling air space.

C. Fire Stopping
   1. Sealing of openings between floors, through rated fire and smoke walls, existing or created by the contractor for cable pass through shall be the responsibility of the contractor.
   2. Fire stop systems, sealing material and application shall be accomplished in such a manner, which is acceptable to the local fire and building authorities having jurisdiction over this work.
   3. Creation of such openings as are necessary for cable passage between locations as shown on the drawings shall be the responsibility of the contractor's work.
   4. Any openings created by or for the contractor and left unused shall also be sealed as part of this work.

D. Contractor Responsibility
   1. The contractor shall be responsible for damage to any surfaces or work disrupted as a result of his work. Repair of surfaces, including painting, shall be included as necessary.

1.15 WORK EXTERNAL TO THE BUILDING

A. Any work external to the confines of this building as shown on the drawings shall be governed by the provisions of this specification and the applicable drawings.

B. Only cabling products approved by the manufacturer for outside use shall be installed in locations external to the confines of the building.

PART 2 - PRODUCTS

2.01 GENERAL

A. The backbone cabling system specified in this document shall be an end-to-end solution that is procured from partnered manufacturers. Unless explicitly noted within these Specifications, this shall include cables, fiber enclosures, adapter plates, patch panels, connecting blocks, connectors, patch cords and necessary support systems.
   1. Manufacturer Solution is: Berk-Tek Leviton Technologies.

2.02 INTRABUILDING OPTICAL FIBER BACKBONE

A. Intrabuilding hybrid 50/125 µm (OM4+) Single-Mode optical fiber and 8.3/125 µm (OS2) single mode optical fiber shall be tight buffered containing 900 µm, individually colored fibers overall, Indoor / Outdoor OFNP rated meeting the following standards: ANSI/TIA-568-C.3; Telcordia GR-409; ANSI/ICEA S-83-596; OFCP (plenum).
   1. OM4+ Single-Mode optical fiber cabling shall be utilized for Local Area Network backbone connections from the MDF room to connect each IDF room. See fiber optic distribution line diagram on the plans for locations of fiber backbone cabling.
   2. Single-Mode optical fiber shall be graded-index wave-guide GIGAlite core/cladding. Restricted Mode Launch Measurement per EIA FOTP 204-Par. 3.2.1, EIA FOTP-220 DMD Test Measurement and TIA-455-220-A.
   3. Single-Mode optical fiber shall meet the following performance specifications:
      a. 10 Gigabit Ethernet distances of 600m @ 850 nm, 300m @ 1300 nm.
      b. Gigabit Ethernet distances of 1210m @ 850 nm, 600m @ 1300 nm.
      c. Maximum Attenuation: 3.0 dB/km @ 850 nm, 1.0 dB/km @1300 nm
      d. Minimum Bandwidth: Effective Model Bandwidth using Differential Mode Delay is 4900 MHz-km @ 850 nm; Overfilled launch is 3675 MHz-km @ 1300 nm.
      e. Numeric Aperture: 0.200 +/- 0.015.
      f. Core Diameter: 50 +/- 2.5 µm.
      g. Cladding Diameter: 125.0+/- 1.0 µm.
   4. OS2 single mode optical fiber cabling shall be utilized for Local Area Network backbone connections from the MPOE to the MDF room. See fiber optic distribution line diagram on the plans for locations of fiber backbone cabling.
   5. Singlemode optical fiber shall be Class IVa dispersion-unshifted low water peak per ANSI/TIA-492CAAB, primary coating diameter of 900 µm. Zero dispersion wavelength shall be between 1300nm and 1324nm. Dispersion measurements shall be made in accordance with ANSI/TIA-455-169 or ANSI/TIA-455-175.
   6. Singlemode optical fiber shall meet the following performance specifications:
      a. 10 Gigabit Ethernet distances of $\geq$ 10000m @ 1310 nm.
      b. Gigabit Ethernet distances of $\geq$ 5000m @ 1310 nm.
      c. Maximum Attenuation: 0.7/0.7 dB/km @ 1310/1550 nm.
      d. Cutoff Wavelength: <1279 nm when measured in accordance with ANSI/TIA-455-170. Distance versus bandwidth shall be using a laser transmitter operating at a 1310 nm wavelength.
      e. Numeric Aperture: 0.12.

f. Core Diameter: 9.0 ± 0.5 µm.
g. Cladding Diameter: 125.0 ± 1.0 µm.
1) Cable shall be manufactured in the USA.

B. Manufacturer is Berk-Tek, Premises Distribution Series
1. 24/12 - Part Number: PDP12B036-024XB3010/X5-012AB0707-I/O
2. 48/24 – Part Number: PDP12B072-048XB3010/X5-024AB0707-I/O

2.03 OPTICAL FIBER ENCLOSURES AND ADAPTER PLATES

A. The optical fiber enclosure is a termination and administration point for the optical fiber cables in the network. The enclosure shall protect the connectorized optical fiber from mechanical stress, macro-bending loss at the connection point and tampering with the circuits. The enclosure shall provide a place for circuit identification.
1. Fiber enclosures shall be available in 1RU, 2RU, 3RU, and 4RU versions to accommodate termination and splicing of fiber.
2. A removable sliding tray shall also be available in 1RU and 2RU enclosures. Adapter bulkhead shall accept LC, SC, ST, MTP® adapters, and plug-n-play MTP® cassettes. 3RU enclosures shall accommodate up to 12 adapter plates for 288 fiber connections, 4RU enclosures shall accommodate up to 15 adapter plates for 360 fiber connections.
3. The enclosure shall have solid metallic hinged doors in the front and back with a removable solid metallic cover.
4. Enclosure shall be constructed of 16-gauge steel with a powder-coated black finish and be mountable in either a 19-inch or 23-inch frame arrangements.
5. Enclosure shall be manufactured in the USA.
a. Manufacturer is Leviton, Opt-X 1000i Series
1) Part Number: 5R1UM-S03
2) Part Number: 5R2UM-S06
3) Part Number: 5R3UM-F12
4) Part Number: 5R4UM-F15

B. The optical fiber adapter plates shall be modular and functional for use in rack or wall-mount enclosures. Shall consist of 12-Fiber LC connector types and shall be configured in duplex connector arrangements. OM3 Single-Mode and OS2 singlemode connections shall be utilized to connect the Local Area Network backbone.
1. Shall use zirconia ceramic sleeves and be offered in standard fiber type colors pursuant to ANSI/TIA-568-C.3 standards.
2. The adapter plate shall be compliant to ANSI/TIA-568-C.3 (for performance) and respective ANSI/TIA-604-X (for intermateability) standards.
3. The adapter and plate shall be integrated to eliminate rattle and loose fit.
4. All unfilled positions within the fiber enclosure shall contain blank adapter plates.
5. Adapter plate shall be manufactured in the USA.

C. Manufacturer is Leviton, Opt-X Series
1. Part Number: 5F100-2QL
2. Part Number: 5F100-2LL
3. Part Number: 5F100-PLT

2.04 OPTICAL FIBER CONNECTORS

A. The mechanical connectors shall be pre-polished and field installable to eliminate the need for hand polishing, bonding or epoxy in the field. Be OM3/4 Single-Mode LC/PC in the color aqua and OS2 singlemode LC/UPC in the color blue, meet or exceed the requirements described in ANSI/TIA-568-C and ANSI/TIA-604-10A.
   1. Maximum connector insertion loss shall be no greater than 0.5 dB with an average of 0.1 dB (Single-Mode) and 0.5 dB with an average of 0.2 dB (singlemode).
   2. Typical connector return loss shall be -25 dB (Single-Mode) and -55 dB (singlemode).
   3. All versions shall allow continuity to be verified by use of a visual fault locator (VFL).
   4. Require no proprietary tools, be fast and easy to install.
   5. Uses proven, molded v-groove technologies.

B. Manufacturer is Leviton, FastCAM series
   1. Part Number: 49991-LLC
   2. Part Number: 49991-SLC

2.05 OPTICAL FIBER PATCH CORDS

A. Optic Patch Cords are designed to interconnect or cross connect fiber networks within structured cabling systems. Furnish quantities of optical fiber patch cords in lengths pursuant to customer representative requirements.
   1. Optical fiber patch cords shall be 50/125 µm OM4 (Single-Mode) fibers with LC/PC connectors for Intrabuilding MDF room to IDF room cabling connections.
   2. Optical fiber patch cords shall be 9/125 µm (singlemode) fibers with LC/UPC connectors for Intrabuilding MPOE to MDF room circuit extensions.
   3. Optical fiber patch cords shall be constructed from OFNR rated duplex fiber cordage.
   4. Only system approved OEM optical fiber patch cords 100% factory tested shall be allowed.

B. Manufacturer is Leviton
   1. Part Number: 54DLC-M01
   2. Part Number: 54CLD-M02
   3. Part Number: 54DLC-M03
   4. Part Number: UPDLC-S01
   5. Part Number: UPDLC-S02
   6. Part Number: UPDLC-S03

2.06 INTRA-BUILDING CATEGORY 5e BACKBONE CABLES

A. Voice Riser
   1. Compliance: Listed as complying with Category 5e of ANSI/TIA-568-C.2. All conductive cabling and associated components shall comply with Article 800 of the NEC®.
   2. Plenum rated: Listed for use in air-handling spaces. Features are as specified for cables, conductors, and UTP backbone cable. Plenum rated cable shall meet applicable requirements of NFPA 262, and shall be UL listed, CMP and shall be marked as such.

3. Riser rated: Listed for use in non-air-handling spaces. Features are as specified for cables, conductors, and UTP backbone cable. Riser rated cable shall meet applicable requirements of UL1666, and shall be UL listed, CMR and shall be marked as such.
4. Category 5e backbone cables shall consist of (25 pair) power sum 24 AWG UTP formed by assembling pairs together in a single group.
5. Where indicated on drawings or otherwise directed by AECOM representative, Category 5e backbone cables shall provide a total of 100 pairs installed from the MPOE to the MDF located in the Server Room and from the MDF to each of the IDFs contained in the Telecommunications Rooms.
6. All Category 5e backbone cables shall terminate on Category 5e patch panels in their respective MDF located in the Server Room and at the IDFs located in the Telecommunications Rooms.
7. Category 5e backbone cables jacket color shall be white.

B. Manufacturer is Berk-Tek
1. Part Number: 10089521, CMP
2. Part Number: 10080224, CMR

2.07 INTRA-BUILDING CATEGORY 5e PATCH PANELS

A. Category 5e, 8-Position 8-Conductor module, retention force technology, 110 type printed circuit board style patch panels, universal T568A/B, wired in accordance with the T568B pin configuration standard and used to terminate backbone static UTP cabling as specified herein. Patch panels shall be angled high density with 6-port modules, 48-part patch panels shall be two rack units.
1. Patch panels shall meet or exceed the component requirements for Category 5e described in ANSI/TIA-568-C.2, as well as the Class D5 requirements described in ISO/IEC 11801.
2. The panels shall be made of 14-gauge steel and shall have a black painted finish with white silk-screening.
3. Plastic elements shall be fire retardant with a UL flammability rating of 94V-0.
4. Have a 128-degree angle to promote improved cable management.
5. The 110 terminations on the rear of the panels shall follow normal installation color sequence (blue, orange, green, brown) from left to right.
6. Provide angled rear cable management bars with all patch panels.
7. 48 port 2U Angled 110-Style patch panels are to be used unless noted otherwise on the drawings.
8. Patch panel shall be manufactured in the USA.

B. Manufacturer is Leviton, eXtreme® series.
1. Part Number: 5G597-U48
2. Part Number: 49006-AMB, rear mgmt. bar

2.08 FIRE-RATED PATHWAY DEVICE

A. Based upon the number of backbone cables, provide a self-contained fire-rated pathway device for routing telecommunications cabling through fire-rated walls and vertically through floors. The fire-rated pathway shall contain a built-in fire sealing system sufficient to maintain the hourly fire rating of the barrier being penetrated. The self-contained sealing system shall automatically adjust to the installed cable loading and shall permit

cables to be installed, removed, or retrofitted without the need to remove or reinstall firestop materials. The pathway shall be UL Classified and/or FM Systems Approved and tested to the requirements of ASTM E814 (UL1479). The length of the sleeve shall be 14 inches and shall be engineered such that two or more devices may be ganged together for larger cable capacities.

1. Have UL Systems permitting cable loads from; "*Zero to 100% Visual Fill*." This requirement eliminates need for fill-ratio calculations to be made by cable technicians to ensure cable load is within maximum allowed by UL System.
2. Be "Zero-Maintenance", zero-maintenance is defined as; No action required by cabling technician to open and/or close pathway for cable moves, adds or changes, such as, but not limited to:
    a. Opening or closing of doors.
    b. Spinning rings to open or close fabric liner.
    c. Removal and or replacement of any material such as, but not limited to, firestop caulk, putty, pillows, bags, foam muffins, foam, foam plugs, foam blocks, or foam closures of any sort.
    d. Furnish letter from manufacturer certifying compliance with this definition of "Zero-Maintenance".
3. Cable Pathway Devices passing vertically through floors shall have equal F and T Rating.
4. Provide snap in Radius Control Module (waterfall) accessory for all fire rated pathway devices.

B. Manufacturer is Specified Technologies, Inc. (STI), EZ-Path® series.
1. Part Number: EZDP44S
2. Part Number: EZDP33FWS

2.09 CATEGORY 5e UTP PATCH CORDS

A. Patch cords shall meet or exceed requirements for Category 5e performance described in ANSI/TIA-568-C.2, shall be 24-gauge stranded conductor with an 8-position modular plug on each end. The cords shall include a snagless boot design that allows for easy cord removal. Patch cord plug shall be clear and contacts shall have industry-standard, ANSI/TIA-1096-A compliant 50 micro inches of gold plating. Backbone cross connects shall be completed with manufacturer-terminated copper UTP patch cords.
1. Patch cords must meet performance and assembly requirements per ANSI/TIA-568-C.2.
2. Patch cord cable assembly shall be cULus® listed.
3. Patch cord shall be manufactured in the USA.
4. Provide patch cords with the following lengths:
    a. Telecommunication Rooms.
        1) 95% - 3 ft.
        2) 3% - 7 ft.
        3) 2% - 10 ft.
    b. Patch cords shall be Blue in color.
    c. Provide unit pricing for additional patch cords.

B. Manufacturer is Leviton, GigaMax series.
1. Part Number: 5G460-03L, 3 ft.
2. Part Number: 5G460-07L, 7 ft.
3. Part Number: 5G460-10L, 10 ft.

2.10 GROUNDING SYSTEM AND CONDUCTORS

A. Grounding Conductor
   1. The SCS Contractor shall provide a minimum of a #6 AWG stranded copper wire cable between ground bars located at each TR and the building main service ground point. This ground conductor shall be utilized for equipment, termination, equipment rack and computer equipment grounding.

B. Bonding and Grounding
   1. Communication bonding and grounding shall be in accordance with the NEC and NFPA.
   2. Equipment shall be grounded in compliance with ANSI/NFPA 70 and local requirements and practices.
      a. Horizontal and backbone equipment includes cross connect frames, patch panels, enclosures and racks, active telecommunication equipment and test apparatus and equipment.

C. Telecommunications Bonding Backbone
   1. When required by local code, provide a Telecommunications Bonding Backbone utilizing a minimum of a #6-AWG or larger bonding conductor that provides direct bonding between equipment rooms and telecommunications rooms. This is part of the grounding and bonding infrastructure (part of the telecommunications pathways and spaces in the building structure) and is independent of equipment or cable.
   2. Always provide Telecommunications Bonding Backbone when using non-shielded backbone balanced twisted pair cable.

D. Manufacturer is B-Line

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION

A. All installation work shall be performed according to published industry guidelines, rules, and regulations. If disputes occur, local, state, and national codes have precedence; then standards such as ANSI/TIA; then guidelines from firms such as Building Industry Consulting Services International (BICSI); and then finally, manufacturer recommendations.

B. The contractor shall provide sufficient trained staff to monitor all work undertaken and to ensure that the requirements of these specifications are met throughout the installation process.

C. All tests will be conducted using equipment that has laboratory or manufacturer certified calibration within six months of the tests. The contractor shall provide a signed copy of the calibration test results for each item of test equipment with the acceptance documentation.

D. All installation work will be of the highest quality. The contractor shall at all times make every effort to conduct all installation work in a manner so as to minimize the impact on

the facilities. Whenever possible, all work will be hidden behind finished materials and all surfaces will be returned to their original condition.

E. The contractor shall provide and install all pathway and cable support hardware necessary to successfully complete the installation. This includes, but is not limited to, hangers, ladder racks, support brackets, earthquake bracing, conduit and sleeves, firestop materials, tie-wraps, and access openings such as core drills.

F. The contractor shall ensure that only staff fully qualified to work on specific types of materials are allowed to undertake the required installation. Particularly, copper and fiber optic cable placement, termination and testing shall only be undertaken by staff that is certified by approved manufacturer(s) listed herein.

G. The contractor shall provide all hardware, miscellaneous components necessary to provide a complete system.

H. The structured cabling system components of OWNER shall comply with all product specifications contained in Section two.

I. The bend radius of any cable installed shall not exceed the manufacturer's specifications.

3.02 NON-CONTINUOUS CABLE SUPPORT

A. Installation and configuration shall conform to the requirements of the current revision levels of ANSI/TIA Standards 568-C/D 569-D, NFPA 70 (National Electrical Code), applicable local codes, and to the manufacturer's installation instructions.

B. Installers shall observe the applicable requirements and recommended good practices contained within ANSI/TIA-568-C/D standard for cabling installation requirements.

C. All cabling shall be run exposed as "open cabling" in ceiling spaces and ceiling plenums, unless otherwise noted.

D. Provide all hanger supports and cable supports for cabling specified in this section. All support structures shall adhere to the requirements in the National Electrical Code.

E. Cabling supports shall be spaced no further than 5'-0" apart.

F. Cabling bundles shall not sag a maximum of two inches from the bottom of the cable support.

G. Do not support cables from ductwork, sprinkler piping, water piping, waste piping, conduit or other system supports. Cabling shall never come in physical contact with these mechanical, fire protection and electrical systems and raceways.

H. Do not bend cables, in handling or in installing, to smaller radii than minimums recommended by manufacturer.

I. Pull cables without exceeding cable manufacturer's recommended pulling tensions. Use pulling means that will not damage media.

J. Do not exceed load ratings specified by manufacturer.

K. Provide all additional cable management products as required to protect exposed cabling and complete the installation of cabling in a neat professional manner.

L. Follow manufacturer's recommendations for allowable fill capacity for each size non-continuous cable support.

3.03 INTRA-BUILDING CATEGORY 5e BACKBONE CABLE INSTALLATION

A. Unless otherwise noted on the floor plans or within this document, the type of copper backbone cables used for riser location shall be 25 pair unshielded twisted pair (UTP).

B. All cable routes to be approved by OWNER prior to installation of the cabling.

C. Maximum length of copper backbone cables shall be 295 feet (90 m) including all service loops.

D. All cabling shall be installed in accordance with manufacturer's recommendations, including but not limited to maximum tensile loading and maximum bend radius.

E. Backbone cabling shall be installed in continuous runs from the MPOE, MDF and IDF telecommunications room locations. Splices are not permitted.

F. Each bundle shall be neatly tied without cinching or stressing the cabling, using Velcro straps in open cabling installations and in the telecommunications room. Trim all excess length from Velcro™ straps. Plastic tie wraps are prohibited.

G. Cabling shall be organized and identified so as to facilitate locating and handling individual sheaths for maintenance functions.

H. Bundles shall be clearly marked identifying the frame and terminal block to which routed, the station numbers served by the bundle, and any other information that may assist in administration.

I. Provide machine typed label on both ends of the backbone cabling jacket no more than 8-inches from each termination point.

J. Great care shall be taken to protect all cabling from physical damage beneath floors, above ceilings, vertical risers or elsewhere. Cabling shall not be exposed to any forces or handling factors that will degrade performance, such as crushing, pull stressing, twisting, or damaging sheathing materials. When left unattended, all cabling shall be secured and protected to avoid damage.

K. Provide 8 feet of slack neatly coiled in the ladder rack or cable tray in the telecommunications room unless indicated otherwise on contract drawings. Service loops in the telecommunications room shall not be located above the equipment racks and server enclosures.

L. A nylon pull cord, 0.125 inch minimum shall be co-installed with all cable installed in any conduit.

M. Where cables are housed in conduits, the backbone and horizontal cables shall be installed in separate conduits.

N. Where backbone cables and horizontal distribution cables are installed in a ladder rack or wire way, backbone cables shall be installed first and bundled separately from the horizontal distribution cables.

O. All backbone cables shall be securely fastened to the overhead cable runway and racks in the Telecommunications Rooms on each floor.

P. Vertical runs of cable shall be supported to ceiling hangers, J Hooks or other method to provide proper support for the weight of the cable.

Q. Large bundles of cables and/or heavy cables shall be attached using metal clamps and/or metal banding to support the cables.

R. Category 5e backbone cables shall terminate on 48-port Category 5e angled patch panels.

S. Four (4) Category 5e UTP, 25 pair backbone cables shall be installed from the MDF located in the Server Room to each IDF located in each Telecommunications Room for a total of 100 pairs to each IDF unless otherwise noted on the drawings or requested by the OWNERS representative.

T. Four (4) Category 5e UTP, 25 pair backbone cables shall be installed from the MDF located in the Server Room to the MPOE unless otherwise noted on the drawings or requested by the OWNERS representative.

3.04 INTRA-BUILDING CATEGORY 5e UTP BACKBONE CABLE TERMINATION HARDWARE

A. Cables shall be dressed and terminated in accordance with the recommendations made in the ANSI/TIA-568-D.1 and ANSI/TIA-568-C.2 standard, manufacturer's recommendations and best industry practice.

B. A maximum of 0.25” of cable pair twists shall be removed from a Category 5e cable. Cabling and terminations exceed these dimensions shall be re-terminated.

C. Bend radius of the cable in the termination area shall not exceed 10 times the outside diameter of the cable.

D. Cables shall be neatly bundled and dressed to their respective 48-port Category 5e angled patch panels. Each patch panel shall be fed by an individual bundle separated and dressed back to the point of cable entrance into the rack or frame.

E. Each cable shall be clearly labeled on the cable jacket behind the patch panel at a location that can be viewed without removing the bundle support ties. Cables labeled within the bundle, where the label is obscured from view shall not be acceptable.

F. Terminate Category 5e UTP backbone cable on 48-port Category 5e angled patch panels.

G. Contractor to provide proposed wiring schematic to Customer Representative prior to installation designating 25 pair port allocation into noted rack mounted patch panels.

3.05 OPTICAL FIBER BACKBONE CABLE INSTALLATION

A. Fiber optic backbone cables shall be installed separately from horizontal distribution cables.

B. One (1) Intra-Building 6 strand OM3 Single-Mode fiber optic backbone cable for data shall be installed from MDF located in the Server Room to each IDF located Telecommunications Rooms. The MDF serves as the Primary Core Switch location.

C. One (1) Intra-Building 6 strand OS2 singlemode fiber optic backbone cable for data shall be installed from MDF located in the Server Room to the service provider. The MDF serves as the Primary Core Switch location.

D. A pull cord (nylon; 1/8 inches minimum) shall be co-installed with all cable installed in any conduit.

E. Where cables are housed in conduits, the backbone and horizontal cables shall be installed in separate conduits.

F. Where backbone cables and distribution cables are installed in a ladder rack or wire way, backbone cables shall be installed first and bundled separately from the horizontal distribution cables.

G. All backbone cables shall be securely fastened to the sidewall of the Telecommunications Room on each floor.

H. Vertical runs of cable shall be supported to ceiling hangers, J Hooks, cable tray, or other method to provide proper support for the weight of the cable.

3.06 FIBER OPTIC TERMINATION HARDWARE

A. Fiber slack shall be neatly coiled within the enclosure. No slack loops shall be allowed external to the fiber panel.

B. Each cable shall be individually attached to the respective enclosure by mechanical means. The cables strength member shall be securely attached the cable strain relief bracket in the enclosure.

C. Each cable shall be clearly labeled at the entrance to the enclosure. Cables labeled within the bundle shall not be acceptable.

3.07 FIRESTOPPING

A. A firestop system is comprised of the item or items penetrating the fire rated structure, the opening in the structure and the materials and assembly of the materials used to seal the penetrated structure. Firestop systems comprise an effective block for fire, smoke, heat, vapor and pressurized water stream.

B. All cabling running through rated floors and walls shall be firestopped.

C. All penetrations through fire-rated building structures (walls and floors) shall be sealed with an appropriate firestop system as noted in Part 2. This requirement applies to through penetrations (complete penetration) and membrane penetrations (through one side of a hollow fire rated structure). Any penetrating item (i.e., sleeves, conduit, cables, riser slots and etc.) shall be properly fire stopped.

D. Any penetrations created by or for the contractor and left unused shall also be sealed as part of the contractor's scope of work.

E. Firestop systems shall be UL Classified to ASTM E814 (UL 1479).

F. All firestop systems shall be installed in accordance with the NEC and the manufacturer's recommendations and shall be accomplished in a manner acceptable to the local fire and building authorities having jurisdiction over this work.

G. All firestopping sleeved devices shall be installed according to the manufacturer's recommendations including, but not limited to.
   1. Wiring devices shall be installed in locations where indicated on the contract drawings, arranged in a single or multiple sleeve formation at the height specified. Sleeves shall be installed a minimum of 18-24 inches above the accessible ceiling grid.
   2. Install the devices in strict accordance with the approved shop drawings and the manufacturer's recommendations.
   3. Apply the factory supplied gasketing material prior to the installation of the wall plates.
   4. Secure wall plates to devices per the equipment manufacturer's recommendations.
   5. All firestop systems shall be installed in accordance with the manufacturer's recommendations and shall be completely installed and available for inspection by the local inspection authorities prior to cable system acceptance.

3.08 GROUNDING SYSTEM

A. The facility shall be equipped with a Telecommunications Bonding Backbone (TBB). This backbone shall be used to ground all telecommunications cable shields, equipment, racks, cabinets, raceways, and other associated hardware that has the potential to act as a current carrying conductor. The TBB shall be installed independent of the building's electrical and building ground and shall be designed in accordance with the recommendations contained in the ANSI/TIA-607-C Telecommunications Bonding and Grounding Standard.

B. The TBB shall adhere to the recommendations of the ANSI/TIA-607-C standard and shall be installed in accordance with industry best practice.

C. Installation and termination of the main bonding conductor to the building service entrance ground shall be performed by a licensed electrical contractor.

D. The Server Room shall be equipped with a telecommunications main grounding bus bar (TMGB). Each Telecommunications Room shall be provided with a telecommunications

ground bus bar (TGB). The TMGB shall be connected to the building electrical entrance grounding facility. The intent of this system is to provide a grounding system that is equal in potential to the building electrical ground system. Therefore, ground loop current potential is minimized between telecommunications equipment and the electrical system to which it is attached.

E. All racks, metallic backboards, cable sheaths, metallic strength members, splice cases, cable trays, etc. entering or residing in the Telecommunications Room or Server Room shall be grounded to the respective TGB or TMGB using a minimum #6 AWG stranded copper bonding conductor and compression connectors.

F. All wires used for telecommunications grounding purposes shall be identified with a green insulation. Non-insulated wires shall be identified at each termination point with a wrap of green tape. All cables and bus bars shall be identified and labeled in accordance with the System Documentation Section of this specification.

3.09 IDENTIFICATION AND LABELING

A. Labeling shall be in accordance with ANSI/TIA-606-B, Administration Standard for Commercial Telecommunications Infrastructure.

B. Labeling for the MDF telecommunications room shall be in accordance with ANSI/TIA-942, Telecommunications Infrastructure Standard for Data Centers. Labeling shall include identification and designation for the rack or enclosure row, rack or enclosure position, rack and patch panel port number. This cabling identification shall be utilized for both horizontal cabling serving workstation devices and shall be utilized for copper and optical fiber cabling distribution between rack and enclosure rows within the MDF room.

C. Labels shall be installed on all cabling at each end. Ensure labels are securely fastened.

D. All labels shall be located within 6 inches of cable termination and placed so they can be easily read.

E. The font type for each type of label shall be Arial.

F. Labeling information will be reviewed at the Pre-Construction Meeting.

G. All labeling shall be completed prior to the substantial completion dates of the project.

H. All label printing will be machine generated. Self-laminating labels will be used on cable jackets, appropriately sized to the OD of the cable, and placed within view at the termination point on each end. Outlet, patch panel and wiring block labels shall be installed on, or in, the space provided on the device.

3.10 TESTING AND ACCEPTANCE

A. General

1. All UTP cables and termination hardware shall be 100 percent tested for defects in installation and to verify cabling system performance under installed conditions according to the requirements of ANSI/TIA-568-C. All pairs of each installed cable

shall be verified prior to system acceptance. Any defect in the cabling system installation including but not limited to cable, connectors, feed through couplers, patch panels, and connector blocks shall be repaired or replaced in order to ensure 100 percent useable conductors in all cables installed.

B. Test Equipment
   1. The network testing equipment shall be a Fluke Networks DTX-1800, DSX 5000 Cable Analyzer, Fluke CertiFiber® Pro OLTS and shall have a certified calibration from the manufacturer within the past six months. Proof of calibration shall be provided with the product submittal. Test equipment shall be utilized to test horizontal cabling.

C. Copper Backbone Testing
   1. All copper backbone cabling shall be certified to meet or exceed the permanent link performance specifications for Category 5e cabling as defined in ANSI/TIA-568-C.
   2. Certifications shall include the following parameters for each pair of each cable installed:
      a. Building Identification
      b. Cable Identification.
      c. Date of test
      d. Test equipment manufacturer and model number
      e. Wire map
         1) Continuity to the remote end.
         2) Shorts between any two or more conductors
         3) Reversed pairs
         4) Split pairs
         5) Transposed pairs
         6) Any other mis-wiring
      f. Length
      g. Insertion Loss (Attenuation)
      h. Near-end Crosstalk (NEXT)
      i. Power Sum Near-end Crosstalk (PSNEXT)
      j. Attenuation to Crosstalk Ratio (ACR)
      k. Power Sum Attenuation to Crosstalk Ratio (PSACR)
      l. Equal-level Far-end Crosstalk (ELFEXT)
      m. Power Sum Equal-level Far-end Crosstalk (PSELFEXT)
      n. Return Loss
      o. Propagation Delay
      p. Delay Skew
   3. All copper backbone cabling shall be tested using a Permanent Link configuration as defined in ANSI/TIA-568-C.
   4. Testing shall be conducted with frequency range from 1MHz to 100MHZ for Category 5e.
   5. Test reports with a * PASS result shall be documented identifying the reason for the test failure and a corrective action plan developed.
   6. After corrective action has been completed, the permanent link shall be retested.
   7. It is the Telecommunications Contractor’s responsibility to ensure 100 percent of the network horizontal cabling system links pass all tests with the minimum acceptable performance level.

8. Prior to testing of the entire structured cabling system, provide a sampling of 12 tests from the project site and submit to the owner's representative to conduct a review of the network equipment tester setup and accuracy parameters. The owner's representative shall provide approval after the review has been completed to continue with the testing of the project site. If the review of the sample test results indicate discrepancies and non-compliance, the contractor shall provide another random set of 12 tests for review to confirm the setup and configuration parameter issues have been resolved.
9. The test results shall be organized by building identification and cable identification number. The test results shall contain the date and time of when each test was saved in the memory of the tester. The test results shall be recorded on a CD-ROM in both PDF and LinkWare software formats.

D. Fiber Testing
1. All fiber testing shall be performed on all fibers in the completed end-to-end system. There shall be no splices unless clearly defined. Testing shall consist of an end-to-end test performed per ANSI/TIA/-526-14-C, ANSI/TIA-526-7-A and ANSI/TIA-568-D.0 Standards.
2. Certifications shall include the following parameters for each link segment installed:
    a. Building Identification.
    b. Fiber identification.
    c. Date of test.
    d. Test equipment used (manufacturer, model, serial number and calibration date*)
    e. Optical source wavelength, spectral width.
    f. End point locations
    g. Test direction
    h. Measured attenuation of the link segment.
3. Single-Mode backbone link segments shall be tested at 850 nm and 1300 nm wavelengths in one direction.
4. Singlemode backbone link segments shall be tested at 1310 nm and 1550 nm wavelengths in one direction.
5. Test set-up and performance shall be conducted in accordance with ANSI/TIA-526-14-C, ANSI/TIA-526-7-A and ANSI/568-D.0 Standards.
6. Attenuation testing shall be performed with a stable launch condition using two-meter test cord to attach the test equipment to the cable plant. The light source shall be left in place after calibration and the power meter moved to the far end to take measurements.
7. Test cord attenuation shall be less than or equal to .20 dB for LC 50 µm connection type.
8. Test cord attenuation shall be less than or equal to .30 dB for LC singlemode connection type.
9. Ensure that all connectors/modules are cleaned prior to mating test cords, trunk cables or patch cords. A contaminated connector to a clean connector will result in poor performance and can transfer contamination and permanently damage the connection.
10. All optical fiber connectors shall be inspected with a microscope prior to mating.
11. Testing results not meeting the minimum performance requirements shall be documented identifying the reason for the test failure and a corrective action plan developed.

12. After corrective action has been completed, the link segment shall be retested.
13. It is the Telecommunications Contractor's responsibility to ensure 100 percent of the network optical fiber backbone cabling system links pass all tests with the minimum acceptable performance.
14. Prior to testing of the entire structured cabling system, provide a sampling of 12 tests from the project site and submit to the owner's representative to conduct a review of the network equipment tester setup and accuracy parameters. The owner's representative shall provide approval after the review has been completed to continue with the testing of the project site. If the review of the sample test results indicate discrepancies and non-compliance, the contractor shall provide another random set of 12 tests for review to confirm the setup and configuration parameter issues have been resolved.
15. The test results shall be organized by building identification and cable identification number. The test results shall contain the date and time of when each test was saved in the memory of the tester. The test results shall be recorded on a CD-ROM in both PDF and LinkWare software formats.

3.11 SYSTEM DOCUMENTATION

A. Upon completion of the installation, the contractor shall provide 3 full documentation sets in both hard copy and soft copy to the Owner for approval. Documentation shall include the items detailed in the sections below.

B. Documentation shall be submitted within 10 working days of the completion of each testing phase (e.g., subsystem, cable type, area, floor, etc.). This is inclusive of all test result and draft as-built drawings. Draft drawings may include annotations done by hand. Machine generated (final) copies of all drawings shall be submitted within 30 working days of the completion of each testing phase. At the request of the Owner, the contractor shall provide copies of the original test results.

C. The Owner may request that a 10 percent random field re-test be conducted on the cable system, at no additional cost, to verify documented findings. Tests shall be a repeat of those defined above. If findings contradict the documentation submitted by the contractor, additional testing can be requested to the extent determined necessary by the Owner, including a 100 percent re-test. This re-test shall be at no additional cost to the Owner.

3.12 TEST RESULTS

A. Test documentation shall be provided on CD-ROM within three weeks after the completion of the project. The disk shall be clearly marked on the outside front cover with the words "Project Test Documentation", the project name, and the date of completion (month and year). The results shall include a record of test frequencies, wavelength, cable type, conductor pair, fiber strand and cable (or outlet) I.D., measurement direction, reference setup, and crew member name(s). The test equipment name, manufacturer, model number, serial number, software version and last calibration date will also be provided at the end of the document. Unless the manufacturer specifies a more frequent calibration cycle, an annual calibration cycle is anticipated on all test equipment used for this installation. The test document shall detail the test method used and the specific settings of the equipment during the test as well as the software version being used in the field test equipment.

B. The field test equipment shall meet the requirements of noted standards including applicable TSB's and amendments. The appropriate certified instrument testers shall be used to verify Category cabling and optical fiber systems.

C. Printouts generated for each cable by the wire (or fiber) test instrument shall be submitted as part of the documentation package.

D. When repairs and re-tests are performed, the problem found and corrective action taken shall be noted, and both the failed and passed test data shall be documented.

3.13 AS-BUILT DRAWINGS

A. The drawings are to include cable routes and connection locations. Numbering, icons, and drawing conventions used shall be consistent throughout all documentation provided. Owner will provide floor plans in paper and electronic (DWG, AutoCAD) formats on which as-built construction information can be added. These documents will be modified accordingly by the contractor to denote as-built information as defined above and returned to Owner.

3.14 WARRANTY

A. The contractor shall provide a 2-year warranty on the physical installation.

B. An Extended Product Warranty shall be provided from the Product Manufacturers, which warrants functionality of all components used in the system for Limited Lifetime duration from the date of registration. The Extended Product Warranty shall warrant the installed horizontal and backbone portions of the cabling system. The Warranty shall cover the failure of the wiring system to support the applications that are designed for the link/channel specifications of the referenced standards within this specification. These applications included, but are not limited to, 10BASE-T, 100BASE-T, 1000BASE-T, 1000BASE-SX/LX, 10GBASE-X. The Contractor shall be certified to install the product to qualify for the Manufacturer Extended Product Warranty.

3.15 COMPLETION OF WORK

A. At the completion of the SCS installation, the Contractor shall restore to its former condition, all aspects of the project site and on a daily basis, shall remove all waste and excess materials, rubbish debris, tools and equipment resulting from or used in the services provided under this Contract.

B. All clean up, restoration, and removal noted above will be by the Contractor and at no cost to OWNER.

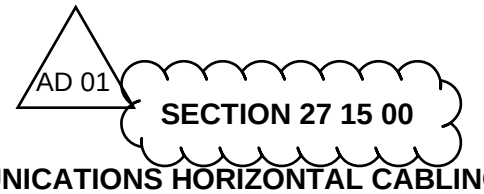
C. If the Contractor fails in its duties under this paragraph, OWNER may upon notice to the Contractor perform the necessary clean up and deduct the costs thereof from any amounts due or to become due to the Contractor.

D. See Division 1 for trash removal requirements.

3.16 FINAL ACCEPTANCE AND SYSTEM CERTIFICATION

A. Completion of the installation, in-progress and final inspections, receipt of the test and as-built documentation, and successful performance of the cabling system for a two-week period will constitute acceptance of the system. Upon successful completion of the installation and subsequent inspection, the end user shall be provided with a numbered certificate from the Manufacturer registering the installation.

END OF SECTION



SECTION 27 15 00

COMMUNICATIONS HORIZONTAL CABLING EXPANSION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

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

1.02 TELECOMMUNICATIONS INFRASTRUCTURE CONTRACT WORK

A. General:
   1. Provide all labor, materials, tools, equipment, and services for the installation as indicated, in accordance with general provisions of the specifications and the contract drawings.
   2. Coordinate all work with all other trades for a complete and operational system.
   3. Provide all supplementary or miscellaneous items, appurtenances, and devices incidental to or necessary for a sound, secure and complete installation, whether or not specifically indicated in the contract documents.
   4. Provide all open cabling support systems, ladder rack and cable trays.
   5. Provide testing of horizontal copper and optical fiber connectivity and cabling infrastructure.
   6. Provide all project closeout documentation including but not limited to test result documentation, record drawings, manufacturer warranty applications, certificates, and O&M manuals.

B. Provide complete installation of the telecommunications infrastructure including but not limited to:
   1. Pathways including overhead ladder rack and cable tray.

C. Firestopping materials.
   1. Equipment mounting racks, server racks and server enclosures.
   2. Horizontal and vertical cable management systems.
   3. Telecommunications grounding and bonding systems.
   4. Rack mount peripheral devices including equipment shelving, equipment support brackets, power strips with mounting hardware and other mounting hardware.
   5. Labeling and identification.

1.03 RELATED SECTIONS

A. Section 260526 – Grounding System

B. Section 260533 – Raceways

C. Section 271116 – Communications Cabinets, Racks, Frames and Enclosures

D. Section 271123 – Communications Cable Management and Ladder Rack

E. Section 271300 – Communications Backbone Cabling

1.04 REFERENCES

A. All work shall conform to the latest issue and addenda of the National Electrical Code, the Building Code, all local codes, standards, and ordinances, as applicable.
   1. NEC®□2008: National Electric Code®
   2. NEC®□2011: National Electric Code®
   3. NESC®□2007: National Electric Safety Code®
   4. ANSI/TIA-568-D.0: Generic Telecommunications Cabling for Customer Premises.
   5. ANSI/TIA-568-D.1: Commercial Building Telecommunications Cabling Standard.
   6. ANSI/TIA-568-C.2: Balanced Twisted Pair Telecommunications Cabling and Components Standard.
   7. ANSI/TIA-568-C.3: Optical Fiber Cabling Components Standard
   8. ANSI/TIA-569-D: Commercial Building Standard for Telecommunications Pathways and Spaces.
   9. ANSI/TIA-606-B: Administration Standard for Commercial Telecommunications Infrastructures.
   10. ANSI/TIA-607-C: Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises.
   11. TIA TSB-162-A: Telecommunications Cabling Guidelines for Wireless Access Points.
   12. International Standards Organization/International Electrotechnical Commission (ISO/IEC) IS 11801.
   13. BICSI Information Transport Systems Installation Methods Manual
   14. BICSI – Telecommunications Distribution Methods Manual, (TDMM).
   15. Underwriters Laboratories (UL) Cable Certification and Follow Up Program.
   16. National Electrical Manufacturers Association (NEMA).
   17. Institute of Electrical and Electronic Engineers (IEEE).

B. Telecommunications contractor shall have read the above documents and shall be familiar with the requirements that pertain to Rio School District.

C. Methodologies outlined in the latest edition of the BICSI Information Transport Systems Installation Methods Manual and BICSI Telecommunications Distribution Methods Manual shall also be used during all installation activities. Should conflicts exist with the foregoing, the authority having jurisdiction for enforcement shall have responsibility for making interpretation on codes related issues, and Rio School District representative on standards related issues.

D. If this document or any of the documents listed in this RFP are in conflict, then the more stringent requirement shall prevail. All documents listed are believed to be the most current releases of the documents. Bidder has the responsibility to determine and adhere to the most recent release when developing the proposal for installation.

1.05 DEFINITIONS

Administration: the methodology defining the documentation requirements of a cabling system and its containment, the labeling of functional elements, and the process by which moves, additions, and changes are recorded.

Bonding: the permanent joining of metallic parts to form an electrically conductive path that will assure electrical continuity and the capacity to conduct safely any current likely to be imposed

Cable: an assembly of one or more insulated conductors or optical fibers within an enveloping sheath.

Cable run: a length of installed media, which may include other components along its path.

Cabling: a system of cables, cords, and connecting hardware.

Channel: the end-to-end transmission path between two points at which application-specific equipment is connected including test cords and patch cords for a maximum total distance of 328 feet (100 meters).

Connecting hardware: a device, or a combination of devices, used to connect cables or cable elements.

Consolidation point: a location for interconnection between horizontal cables extending from building pathways and horizontal cables extending into furniture pathways.

Cross-connection: a connection scheme between cabling runs, subsystems, and equipment using patch cords or jumpers that attach to connecting hardware on each end.

Demarcation point: a point where the operational control or ownership changes.

Equipment room: an environmentally controlled centralized space for telecommunications equipment that usually houses a main or intermediate cross-connect.

Ground: a conducting connection, whether intentional or accidental, between an electrical circuit or equipment and the earth, or to some conducting body that serves in place of earth.

Horizontal cabling: distribution media that connect the telecommunications outlet/connector at the work area and the first piece of connecting hardware in the horizontal cross-connect.

Infrastructure (telecommunications): a collection of those telecommunications components, excluding equipment, that together provides the basic support for the distribution of all information within a building or campus.

Local area network (LAN): the standard industry term for a network installation that serves a relatively small area (e.g., structured cabling installation serving a building).

Main cross-connect: the cross-connect normally located in the (main) equipment room for cross-connection and interconnection of entrance cables, first-level backbone cables, and equipment cables.

Modular jack: a female telecommunications connector that may be keyed or un-keyed and may have 6 or 8 contact positions.

Outlet/connector (telecommunications): a connecting device in the work area on which a horizontal cable or outlet cable terminates.

Patch cord: a length of cable with connectors on both ends used to join telecommunications circuits/links at the cross-connect.

Patch panel: a connecting hardware system that facilitates cable terminations and cabling administration using patch cords.

Pathway: a sequence of connections that provides the connectivity between devices on a network or between networks on an internetwork; the vertical and horizontal route of the telecommunications cable; a facility for the placement of telecommunications cabling.

Permanent link: a test configuration for a link excluding test cords and patch cords for a maximum total distance of 295 feet (90 meters).

Plenum: a compartment or chamber to which one or more air ducts are connected and that forms part of the air distribution system.

Room, telecommunications: an enclosed architectural space for housing telecommunications equipment, cable terminations, and cross-connect cabling.

Star topology: a network topology in which services are distributed from or through a central point.

Telecommunications: any transmission, emission, and reception of signs, signals, writings, images, and sounds, that is information of any nature by cable, radio, optical, or other electromagnetic systems.

Unshielded twisted pair (UTP): cable made up of one or more pairs of twisted copper conductors with no metallic shielding; the entire assembly is covered with an insulating sheath (cable jacket).

Wireless access point (WAP): a stand-alone hardware device or a computer wireless adapter with software that acts as a wireless communication hub for users of wireless devices to connect with each other and to bridge those devices to the cabled portion of the network.

Wireless local area network (WLAN): using radio frequency technology, such networks transmit and receive data over the air, minimizing the need for wired connections; they combine data connectivity with user mobility.

Work area (workstation): a building space where the occupants interact with telecommunications terminal equipment.

Work area cable (cord): a cable connecting the telecommunications outlet/connector to the terminal equipment.

1.06 SUBSTITUTIONS

A. The bid shall include products per PART 2. Unless products are specified as, “or OWNER pre-approved equal”, substitutions will not be considered for bid purposes.

B. Requests for substitutions after award of contract shall be considered only in case of product unavailability. Manufacturer shall verify product unavailability in writing.

C. Submit separate requests for each substitution at time of bid, or at appropriate time thereafter in the event of unavailability of item included in bid. Support each request with:
   1. Complete data (cut sheets) substantiating compliance of proposed substitution with requirements stated herein and in Contract documents.
   2. Effect of substitution requiring schedule changes.
   3. Contractor shall be responsible at no extra cost to OWNER for changes resulting from proposed substitutions, which affect work or other Sections or Divisions, or related contracts.
   4. Substitute products shall not be ordered or installed without prior written approval/acceptance by OWNER.
   5. OWNER will have sole discretion to determine acceptability of proposed substitutions and reserves the right to reject such substitutions.
   6. Approval of substitutions shall not relieve Contractor from full compliance with requirements of Contract documents.

1.07 ROUGH-IN

A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.

B. Refer to equipment specifications in Division 26 for rough-in requirements.

1.08 PERMITS AND FEES

A. See section 01041 for permit requirements.

1.09 SUBMITTALS

A. Product Data
   1. Submit manufacturer’s product data sheets verifying that materials comply with specified requirements and are suitable for intended application.
   2. Submittals shall include all items called for in PART 2 – PRODUCTS of this document and the manufacturers product data sheets for the following:
      a. All balanced twisted pair cable: to include patch cords, cross connect wire and cross connect cordage.
      b. All connectors and required tooling.
      c. All termination system components for each cable type.
      d. All TR equipment frame types, hardware (and LAN equipment if applicable).
      e. All grounding and surge suppression system components.
      f. All test equipment to be used for balanced twisted pair channels.
   3. A Performance Specification showing manufacturer’s Guaranteed Channel Performance based on ANSI/TIA-568-C standards.

4. Technical data sheets shall include the physical specifications as well as the following parametric data and transmission characteristics for balanced twisted pair cable. Values listed shall reflect product guaranteed levels. Min, Max, Typical or Averages will not be accepted:
    a. Insertion Loss (IL)
    b. Near End Crosstalk (NEXT)
    c. Power Sum Near End Crosstalk (PSNEXT)
    d. Attenuation to Crosstalk Ratio (ACR)'
    e. Power Sum ACR (PSACR)
    f. Attenuation to Crosstalk Ratio, Far-End (ACRF)
    g. Power Sum ACRF (PSACR)
    h. Return Loss (RL)
    i. Transverse Conversion Loss (TCL)

B. Manufacturer's Instructions
    1. Indicate application conditions and limitations of use stipulated by product testing agency specified under regulatory requirements.
    2. Include instructions for storage, handling, protection, examination, preparation, operation, and installation of product.

C. Pre-Qualification Certificate

    1. Contractor shall submit the following documents with project proposal:
    a. Valid and current year Berk-Tek OASIS Integrator Certification &/or Leviton Premier Network Installer Certification.
    b. Training certificates for design, engineering, and installation of the proposed products, for the relevant staff involved in the design and installation of this project.

D. Bid
    1. Contractor shall submit complete detailed bids. Lump sum bids will not be accepted.

E. Material Guarantee
    1. The contractor shall guarantee at the time of the bid that all cabling and components to be installed meet or exceed ANSI/TIA-568-C requirements.

F. Material Provided
    1. The successful contractor shall maintain that all correct parts are ordered per Products Section of this document and installed in accordance with manufacturers design and installation guidelines. Contractor shall submit complete product and part numbers to OWNER Representative prior to installation of equipment.

G. Warranty Documentation
    1. The horizontal communications cabling system installed shall be eligible for coverage by a Limited Lifetime Warranty to the owner.
    2. Horizontal channels shall be completed with Leviton Network Solutions factory-terminated copper patch cords in order to be eligible for the applicable Berk-Tek Leviton Technologies Warranty with channel performance guarantees.

3. The certified contractor shall provide labor, materials, and documentation in accordance with Berk-Tek and Leviton Network Solutions requirements necessary to ensure that the Owner will be furnished with a Limited Lifetime Warranty.
4. Necessary documentation for warranty registration shall be provided to the manufacturer by the installer (within 10 days) following 100 percent testing of cables.
5. The certified contractor shall ensure that the Owner receives the manufacturer issued project warranty certificate within 60 calendar days of warranty registration.
6. Complete documentation regarding the manufacturer's warranty shall be submitted as part of the proposal. This shall include but is not limited to, a sample of the warranty that would be provided to the customer when the installation is complete and documentation of the support procedure for warranty issues.

1.10 QUALIFICATIONS

A. Contractor
1. Contractor shall be certified by the partnered component manufacturers in the installation and testing of the cabling systems to be installed and shall be able to furnish a manufacturer extended performance warranty for a complete cabling system.
2. The contractor shall utilize the authorized manufacturer components and Graybar for distribution in provisioning this Project.
3. Contractor shall have a minimum of five (5) years of recent experience on structured cabling systems of similar size and scope.
4. Contractor shall be in compliance with all federal, state, and local statutes regarding qualifications of firm.
5. The contractor shall be experienced in all aspects of this work and shall be required to demonstrate direct experience on recent systems of similar size and scope.
6. The contractor shall own and maintain the tools and equipment approved by the cabling system manufacturer(s) for successful installation and testing of the structured cabling system.
7. The contractor shall have personnel who are properly trained in the usage of such tools and equipment.

1.11 CABLING BASIC REQUIREMENTS

A. Cable Pathway
1. Extension of all data and voice cables shall be within raceway, conduit, cable tray, J-Hooks, or other designated cable delivery system provided and installed by the contractor where concealed in walls and exposed above ceilings in plenum spaces.

B. Hardware
1. Required hardware includes, but is not limited to, termination blocks, fastening devices, patch panels, data outlets, voice outlets, connectors, and all required accessories to comply with this specification.

1.12 GROUNDING AND BONDING

A. All grounding and bonding shall meet the National Electrical Code (NEC) as well as local codes, which specify additional grounding and/or bonding requirements.

1. Communication bonding and grounding shall be in accordance with the NEC and NFPA. Horizontal equipment includes cross connect frames, patch panels and racks, active telecommunication equipment and test apparatus and equipment. When required by local code, provide a Telecommunications Bonding Backbone utilizing a #6-AWG or larger bonding conductor that provides direct bonding between equipment rooms and telecommunications rooms (See ANSI/TIA-607-C). This is part of the grounding and bonding infrastructure (part of the telecommunications pathways and spaces in the building structure) and is independent of equipment or cabling.

1.13 PRODUCT WARRANTY

A. The Structured Cabling Solutions Limited Lifetime Product and Performance Warranty shall be Berk-Tek / Leviton Technologies.

1.14 SPECIAL REQUIREMENTS FOR CABLE ROUTING AND INSTALLATION

A. Cabling
1. All communications cabling used throughout this project shall comply with the requirements as outlined in the National Electric Code (NEC), ANSI/TIA-568-C and the appropriate local codes.
2. All balanced twisted pair cabling shall bear CMP (Plenum Rated) regardless of the Intrabuilding environment in which they are installed.

B. Cable Pathway
1. Velcro™ wraps shall be used in all appropriate areas. Plastic cable ties are not allowed.
2. Conduits running from outlet locations shall be stubbed to the nearest cable tray, cable slings, or home run to the nearest Telecom Room.
3. The contractor shall adhere to the manufacturers' requirements for bend radius and pulling tension of all data and voice cables.
4. Conduits runs shall not exceed 180 degrees of bend without an appropriately sized pull box.
5. See ANSI/TIA-569-D for pull box size requirements.
6. L-Bends or Condulets shall not be used under any circumstance without prior approval from the owner or Telecom engineer.
7. Cables shall not be attached to lift out ceiling grid supports or laid directly on the ceiling grid.
8. Cables shall not be attached to or supported by fire sprinkler heads, delivery systems or any environmental sensor located in the ceiling air space.

C. Fire Stopping
1. Firestopping shall be as manufactured by Specified Technologies Inc., 210 Evans Way, Somerville, NJ 08876.
2. Sealing of openings between floors, through rated fire and smoke walls, existing or created by the contractor for cable pass through shall be the responsibility of the contractor.
3. Fire stop systems, sealing material and application shall be accomplished in such a manner, which is acceptable to the local fire and building authorities having jurisdiction over this work.

4. Creation of such openings as are necessary for cable passage between locations as shown on the drawings shall be the responsibility of the contractor's work.
5. Any openings created by or for the contractor and left unused shall also be sealed as part of this work. Contractor shall make every effort to utilize available pathways and when doing so shall be responsible to bring the pathway in to compliance with NEC and local requirements for firestopping using proper UL systems.
6. Contractor technicians shall be firestop certified prior to start of work. Certification shall be as provided by Specified Technologies Inc., or district approved equivalent in writing prior to the start of work.

D. Contractor Responsibility
1. The contractor shall be responsible for damage to any surfaces or work disrupted as a result of his work. Repair of surfaces, including painting, shall be included as necessary.

1.15 WORK EXTERNAL TO THE BUILDING

A. Any work external to the confines of this building, as shown on the drawings, shall be governed by the provisions of this specification and the applicable drawings.

B. Only cabling products approved by the manufacturer for outside use shall be installed in locations external to the confines of the building.

PART 2 - PRODUCTS

2.01 GENERAL

A. The horizontal cabling system specified in this document shall be an end-to-end solution that is procured from partnered manufacturers. Unless explicitly noted within these Specifications, this shall include cables, patch panels, connecting blocks, connectors, patch cords and necessary support systems, such as cable managers and faceplates.
1. Manufacturer Solution is: Berk-Tek Leviton / Technologies.

2.02 COPPER HORIZONTAL CABLING

A. Each Enhanced Category 6 UTP cable shall be constructed from 23 AWG FEP (plenum) insulated solid bare copper conductors formed into four individually twisted pairs with a cross filler center spline and enclosed by a fluoropolymer (plenum) jacket. Cable shall be UL910, NFPA 262, CMP (plenum) rated unless otherwise noted.
1. Cable diameter shall not exceed 0.23 inches.
2. Cable shall be independently tested and verified by Intertek (ETL) to meet manufacturer guaranteed electrical performance values.
3. Parametric electrical values shall meet or exceed the following product guaranteed performance levels at 250 MHz. Min, Max, Average and Typical values are not acceptable.
a. 20.50 dB – Return Loss (RL)
b. 43.30 dB – Near End Cross Talk (NEXT)
c. 41.30 dB – Power Sum NEXT (PSNEXT)
d. 24.80 dB – Attenuation Crosstalk Ratio, Far End (ACRF)
e. 21.80 dB – Power Sum ACRF (PSACRF)

f. 32.60 dB – Insertion Loss (IL)
g. 10.80 dB – Attenuation Crosstalk Ratio (ACR)
h. 8.70 dB – Power Sum ACR (PSACR)

4. Each cable shall meet the most current technical characteristics of ANSI/TIA-568-C standard.
5. Cable temperature rating (degrees C), Operation of -20º to +75º.
6. Cable must be offered in 1500ft pull box packaging to reduce cable scrap and reduction in jobsite waste.
7. Cable jacket color shall be: Blue for Data, White for Video Surveillance.
8. Cable shall be manufactured in the USA.

B. Manufacturer is Berk-Tek, LANmark-1000.
1. Part Number: 10032092
2. Part Number: 10032094

2.03 FIELD CONFIGURABLE PATCH PANELS

A. Flat high density patch panels shall feature a 2RU / 48-port design that fits industry-standard 19” equipment racks and cabinet rails.
1. Patch panel kit shall include cable management bar, label holder including magnification feature for port identification.
2. Panels shall be constructed of die-cast aluminum, and feature a durable, powder-coat finish.
3. Patch Panel shall be UL® listed.
4. Patch panel shall be manufactured in the USA.
a. Manufacturer is Leviton, Extreme®.
5. Part Number: 69586-U48

2.04 CATEGORY 6 MODULAR CONNECTOR

A. 8-Position 8-Conductor RJ-45 connector shall be Category 6, retention force technology, universal T568A/B, wired in accordance with the T568B pin configuration standard and used to terminate Enhanced Category 6 UTP cabling as specified herein. The connector body shall be made of high-impact, fire-retardant plastic rated UL 94V-0. Provide blank inserts for spare positions in the faceplates.
1. The modular connector shall meet or exceed all component performance requirements in the ANSI/TIA-568-C.2 standard for Category 6 from 1 MHz to 250 MHz.
2. The connector shall be in compliance with all National Electrical Codes; compliant with ANSI/TIA-1096-A (formerly FCC Part 68); cULus Listed; and independently tested by Intertek (ETL) for component compliance.
3. The modular connector shall be available in 13 TIA 606-B compatible colors.
4. Confirm modular connector colors with OWNER Representative prior to ordering.
5. Connector shall be manufactured in the USA.
a. Manufacturer is Leviton, eXtreme® QuickPort.
b. Part Number: 61110-R*6 (* designate color)

2.05 CATEGORY 6 UTP PATCH CORDS

A. Patch cords shall meet or exceed requirements for Category 6 performance described in ANSI/TIA-568-C.2, shall be 24-gauge stranded conductor with an 8-position modular

plug on each end. The cords shall include a narrow-profile boot that allows for easy cord removal without snagging. Patch cord plug shall be clear, and contacts shall have industry-standard, ANSI/TIA-1096-A compliant 50 micro inches of gold plating. Horizontal channels shall be completed with manufacturer-terminated copper UTP patch cords.

1. Patch cords shall be tested, and third party verified by Intertek (ETL) to meet ANSI/TIA-568-C.2 component standards.
2. Patch cord cable assembly shall be UL® listed.
3. Patch cord shall be manufactured in the USA.
4. Provide patch cords with the following lengths:
    a. Workstation Locations.
        1) 100% - 10 ft.
        2) Workstation patch cords shall be White in color.
        3) Provide unit pricing for additional patch cords.
    b. Telecommunication Rooms.
        1) 95% - 5 ft.
        2) 3% - 7 ft.
        3) 2% - 10 ft.
        4) TR patch cords shall be Blue in color.
        5) Provide unit pricing for additional patch cords.
        6) Manufacturer is Leviton, eXtreme® SlimLine series.
            a) Part Number: 6D460-05L, 5 ft. Blue
            b) Part Number: 6D460-07L, 7 ft. Blue
            c) Part Number: 6D460-10L, 10 ft. Blue

2.06 MULTIMEDIA OUTLET SYSTEM

A. Faceplate.
1. Faceplate shall be rear-loading, individual port configurable. Faceplate mounting screw holes shall be slotted to permit leveling in crooked wall boxes and shall be hidden behind labeling identification windows at the top and bottom of each faceplate opening.
2. Faceplates shall be High-impact, self-extinguishing ABS plastic, UL-rated 94V-0.
3. Faceplate shall have recessed designation windows with clear plastic covers to facilitate labeling and identification in accordance with the ANSI/TIA-606-B standard.
4. Faceplate shall meet ANSI/TIA-568-C and ANSI/TIA-1096-A standards compliance and be UL 1863 cULus Listed.
5. Faceplate shall accept 4 ports
6. Faceplate shall be White in color.
7. Manufacturer is Leviton, Quickport®.
    a. Part Number: 42080-4WS

2.07 WIRELESS LAN HORIZONTAL CABLING

A. CATEGORY 6A UTP CABLE
1. Each wireless AP LAN horizontal Category 6A UTP cable shall be constructed from 23 AWG FEP (plenum) insulated solid bare copper conductors formed into four individually twisted pairs with a cross-filler center spline, cable core surrounded by an aluminum/polyester tape and enclosed by a fluoropolymer

(plenum) jacket. Cable shall be UL listed, NFPA 70, CMP rated unless otherwise noted.
2. Cable diameter shall not exceed 0.275 inches.
3. Cable shall be independently tested and verified by Intertek (ETL) to meet manufacturer guaranteed electrical performance values.
4. Each cable shall meet the most current technical characteristics of ANSI/TIA-568-C standard.
5. Provide error-free performance up to 10 Gigabit Ethernet with full duplex transmission up to 500 MHz.
6. Cable temperature rating (degrees C), Operation of -20º to +75º.
7. Cable jacket color shall be Green in color.
8. Cable shall be manufactured in the USA.
    a. Manufacturer is Berk-Tek, LANmark-XTP series or owner pre-approved equal.
    b. Part Number: 11083158

B. FIELD CONFIGURABLE PATCH PANELS
1. Flat high density patch panels shall feature a 1RU / 24-port design that fits industry-standard 19" equipment racks and cabinet rails. Must be compatible with manufacturers modular connectors utilized in the telecommunications workstation faceplates and surface mount boxes to maximize versatility with a variety of media applications and enable easy upgrades. The panel shall have the ability to allow for single port replacement. Provide blank modules for all unused ports.
2. Patch panel kit shall include cable management bar, label holder including magnification feature for port identification and support loading connectors from the rear. Connectors are not included.
3. Panels shall be constructed of die-cast aluminum, and feature a durable, powder-coat finish.
4. Patch Panel shall be UL® listed.
5. Patch panel shall be manufactured in the USA.
    a. Manufacturer is Leviton, QuickPort® series or owner pre-approved equal.
    b. Part Number: 49255-H24

C. CATEGORY 6A MODULAR CONNECTOR
1. 8-Position 8-Conductor RJ-45 connectors shall be Category 6A, retention force technology, universal T568A/B, wired in accordance with the T568B pin configuration standard and used to terminate Category 6A UTP cabling as specified herein. The connector body shall be made of die-cast zinc and all plastic components shall be made of high-impact, fire-retardant plastic rated UL 94V-0. Provide blank inserts for spare positions in the surface mount box.
2. The modular connector shall exceed all component performance requirements in the ANSI/TIA-568-C.2 standard for Category 6A from 1 MHz to 500 MHz.
3. Connector shall be terminated without the need for any punch down tool or other specialized or proprietary termination tool.
4. The modular connector shall be reusable and support multiple termination and re-termination cycles and be facilitated by simple termination release levers.
5. The connector shall also be in compliance with all National Electrical Codes; compliant with ANSI/TIA-1096-A (formerly FCC Part 68); UL Listed; and independently tested by Intertek (ETL) for component compliance.
6. The modular connector shall be available in 13 TIA 606-B compatible colors.

7. Connector Module shall be supplied with interchangeable icons (voice, data, A/V, and blank, color coded to match the connector face) for easy identification and tracking of data, voice, or other functions.
8. The connector shall be approved and compliant for use in plenum spaces.
    a. Connector shall be Green in color.
    b. Connector shall be manufactured in the USA.
9. Manufacturer is Leviton, Atlas-X1™ QuickPort® series. No known equal.
    a. Part Number: 6AUJK-RG6

D. CATEGORY 6A UTP PATCH CORD – WAP
1. Patch cords shall meet or exceed requirements for Category 6A performance described in ANSI/TIA-568-C.2 and ISO 11801. Patch cords shall be CMP (plenum) rated, solid conductor with an 8-position modular plug on each end. The cords shall include a narrow-profile boot that allows for easy cord removal without snagging. Patch cord plug shall be clear, and contacts shall have industry-standard, ANSI/TIA-1096-A compliant 50 micro inches of gold plating. Horizontal channels shall be completed with factory-terminated copper patch cords.
2. Verified performance beyond ANSI/TIA-568-C.2 Cat 6A by third-party lab (Intertek ETL).
3. Snagless plug design with integrated strain-relief boot.
4. Patch cord shall be White in color.
5. Provide one 10 ft. patch cord per WAP location.
6. Patch cord shall be manufactured in the USA.
7. Manufacturer is Leviton, XTP SlimLine series.
    a. Part Number: AXPPP-10W

E. CATEGORY 6A UTP PATCH CORD – TR
1. Patch cords shall provide electrical ANSI/TIA-568-C.2 Cat 6A performance for all internal and alien crosstalk parameters from 1 to 500 MHz. The patch cord shall be a 26-gauge FTP construction with stranded conductors to provide greater flex-life. The patch cord will incorporate a SlimLine boot combination to provide strain relief and ease of use in higher-density applications. Patch cord plug shall be clear, and contacts shall have industry-standard, ANSI/TIA-1096-A compliant 50 micro inches of gold plating. Horizontal channels shall be completed with manufacturer-terminated copper UTP patch cords.
2. Shall be Independently tested and verified by Intertek (ETL) for Cat 6A component performance.
3. Snagless plug design with integrated strain-relief boot.
4. Patch cord shall be Green in color.
5. Provide patch cords with the following lengths:
    a. 95% - 5 ft.
    b. 3% - 7 ft.
    c. 2% - 10 ft.
6. Patch cord shall be manufactured in the USA.
7. Manufacturer is Leviton, Atlas-X1™ SlimLine series or owner pre-approved equal.
    a. Part Number: 6AS05-10G, 5 ft.
    b. Part Number: 6AS07-10G, 7 ft.
    c. Part Number: 6AS10-10G, 10 ft.

F. SURFACE MOUNT BOX

1. Surface-mount telecommunications housings shall be a high-density low-profile design with two field-configurable ports, snap-lock cover, and cable knockouts on housing base. Base shall include tie-wrap anchor points at all cable entrances. The housing shall be mountable with screws, tape, or magnets, and have mounting holes compatible with standard NEMA and Euro wall boxes. The cover shall provide the option of securing it to the base with a screw that is hidden under the identification window.
2. Must be plenum rated and compliant with NEC 300-22 (b)(c).
3. Surface mount boxes must be compatible with manufacturers modular connectors.
4. Shall have capacity for two individual snap in modules.
5. Shall be White in color.
6. Provide blank inserts for all unused port.
7. Manufacturer is Leviton, QuickPort® series.
    a. Part Number: 4S089—2WP.

G. IN-CEILING BRACKET
1. The bracket shall provide the ability to create a testable permanent link for cabling that terminates above a drop ceiling. The bracket shall provide a fixed location for the connector after termination, reducing the potential for damage prior to device installation. It shall include a pre-installed multi-function clip that attaches to standard drop wire/rod. Surface-mount housings shall be used with the bracket to protect the connector terminations and provide strain relief. The bracket shall include tie-down points to accommodate cabling slack loops.
2. The bracket shall be installed on a dedicated drop wire/rod per NEC® 300.11.
3. Bracket clip must be compatible with ¼" rod and #12 wire.
4. Shall be compatible with surface mount box and include fasteners.
5. Manufacturer is Leviton, QuickPort® series.
    a. Part Number: 4S089-2WP

2.08 OPEN CABLING & DEVICE MOUNTING SUPPORTS

A. J-Hooks for Category Cabling
1. J-hooks shall comply with TIA requirements for structured cabling systems and pathway supports. Pre-Galvanized Steel finish. Provide all hardware necessary for secure mounting to the structure. The number of cables supported shall not exceed the maximum numbers identified below.
2. J-hooks shall be manufactured in the USA.
3. Manufacturer is B-Line.
    a. Part Number: BCH21, Maximum 20 Cables
    b. Part Number: BCH32, Maximum 35 Cables
    c. Part Number: BCH64, Maximum 140 Cables
4. Provide all accessories and mounting hardware required for a complete and working installation of open cabling supports.
5. Provide conduit waterfalls at the end of 4-inch conduits and conduit sleeves installed horizontally where a firestop system isn't present or pathways transition from conduit to open cabling methods and from conduit to ladder rack and cable tray pathways. Waterfalls shall be utilized to provide bend radius of all horizontal and backbone cabling. Waterfalls shall be UL Listed and rated for UL 94V-0. Material shall be glass reinforced flame retardant nylon 6.6.
    a. Manufacturer is Panduit or approved equal.
    b. Part Number: CWF400

6. All Velcro® tie wraps installed in the plenum spaces shall be plenum rated.
    a. Manufacturer is Leviton.
    b. Part Number: 43108-08P
7. Provide split duct in the color black with a 2.169-inch outside diameter and a 1.88-inch inside diameter from the modular furniture feed-through point devices to the modular furniture base channel.
    a. Manufacturer is Panduit or approved equal.
    b. Part Number: CLT-188F-C20 (per 100' roll)

2.09 FIRE-RATED PATHWAY DEVICE

A. Based upon the number of horizontal cables, provide a self-contained fire-rated pathway device for routing telecommunications cabling through fire-rated walls. The fire-rated pathway shall contain a built-in fire sealing system sufficient to maintain the hourly fire rating of the barrier being penetrated. The self-contained sealing system shall automatically adjust to the installed cable loading and shall permit cables to be installed, removed, or retrofitted without the need to remove or reinstall firestop materials. The pathway shall be UL Classified and/or FM Systems Approved and tested to the requirements of ASTM E814 (UL1479). The length of the sleeve shall be 14 inches and shall be engineered such that two or more devices may be ganged together for larger cable capacities.
    1. Have UL Systems permitting cable loads from; "*Zero to 100% Visual Fill*." This requirement eliminates need for fill-ratio calculations to be made by cable technicians to ensure cable load is within maximum allowed by UL System.
    2. Be "Zero-Maintenance", zero-maintenance is defined as; No action required by cabling technician to open and/or close pathway for cable moves, adds or changes, such as, but not limited to:
        a. Opening or closing of doors.
        b. Spinning rings to open or close fabric liner.
        c. Removal and or replacement of any material such as, but not limited to, firestop caulk, putty, pillows, bags, foam muffins, foam, foam plugs, foam blocks, or foam closures of any sort.
        d. Furnish letter from manufacturer certifying compliance with this definition of "Zero-Maintenance".
    3. Cable Pathway Devices passing vertically through floors shall have equal F & T Rating.
    4. Provide snap in Radius Control Module (waterfall) accessory for all fire rated pathway devices.
    5. Manufacturer is Specified Technologies, Inc. (STI), EZ-Path® series.
        a. Part Number: EZDP44S
        b. Part Number: EZDP33FWS

2.10 GROUNDING SYSTEM AND CONDUCTORS

A. Grounding Conductor
    1. The SCS Contractor shall provide a minimum of a #6 AWG stranded copper wire cable
    2. between ground bars located at each TR and the building main service ground point. This ground conductor shall be utilized for equipment, termination, equipment rack and computer equipment grounding.

B. Bonding and Grounding
   1. Communication bonding and grounding shall be in accordance with the NEC and NFPA.
   2. Equipment shall be grounded in compliance with ANSI/NFPA 70 and local requirements and practices.
   3. Horizontal equipment includes cross connect frames, patch panels and racks, active telecommunication equipment and test apparatus and equipment.

C. Telecommunications Bonding Backbone
   1. When required by local code, provide a Telecommunications Bonding Backbone utilizing a minimum of a #6-AWG or larger bonding conductor that provides direct bonding between equipment rooms and telecommunications rooms. This is part of the grounding and bonding infrastructure (part of the telecommunications pathways and spaces in the building structure) and is independent of equipment or cable.
   2. Always provide Telecommunications Bonding Backbone when using non-shielded backbone balanced twisted pair cable.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION

A. All installation work shall be performed according to published industry guidelines, rules, and regulations. If disputes occur, local, state, and national codes have precedence; then standards such as ANSI/TIA; then guidelines from firms such as Building Industry Consulting Services International (BICSI); and then finally, manufacturer recommendations.

B. The contractor shall provide sufficient trained staff to monitor all work undertaken and to ensure that the requirements of these specifications are met throughout the installation process.

C. All tests will be conducted using equipment that has laboratory or manufacturer certified calibration within six months of the tests. The contractor shall provide a signed copy of the calibration test results for each item of test equipment with the acceptance documentation.

D. All installation work will be of the highest quality. The contractor shall at all times make every effort to conduct all installation work in a manner so as to minimize the impact on the facilities. Whenever possible, all work will be hidden behind finished materials and all surfaces will be returned to their original condition.

E. The contractor shall provide and install all pathway and cable support hardware necessary to successfully complete the installation. This includes, but is not limited to, hangers, ladder racks, support brackets, earthquake bracing, conduit and sleeves, firestop materials, tie-wraps, and access openings such as core drills.

F. The contractor shall ensure that only staff fully qualified to work on specific types of materials are allowed to undertake the required installation. Particularly, copper and fiber

optic cable placement, termination and testing shall only be undertaken by staff that is certified by approved manufacturer(s) listed herein.

G. The contractor shall provide all hardware, miscellaneous components necessary to provide a complete system.

H. The structured cabling system components of OWNER shall comply with all product specifications contained in Section two.

I. The bend radius of any cable installed shall not exceed the manufacturer's specifications.

3.02 NON-CONTINUOUS CABLE SUPPORT

A. All cabling shall be run exposed as "open cabling" in ceiling spaces and ceiling plenums, unless otherwise noted.

B. Installation and configuration shall conform to the requirements of the current revision levels of ANSI/TIA Standards 568-C/D 569-D, NFPA 70 (National Electrical Code), applicable local codes, and to the manufacturer's installation instructions.

C. Installers shall observe the applicable requirements and recommended good practices contained within ANSI/TIA-568-C/D standard for cabling installation requirements.

D. Provide all hanger supports and cable supports for cabling specified in this section. All support structures shall adhere to the requirements in the National Electrical Code.

E. Cabling supports shall be spaced no further than 5'-0" apart.

F. Cabling bundles shall not sag a maximum of two inches from the bottom of the cable support.

G. Do not support cables from ductwork, sprinkler piping, water piping, waste piping, conduit or other system supports. Cabling shall never come in physical contact with these mechanical, fire protection and electrical systems and raceways.

H. Do not bend cables, in handling or in installing, to smaller radii than minimums recommended by manufacturer.

I. Pull cables without exceeding cable manufacturer's recommended pulling tensions. Use pulling means that will not damage media.

J. Do not exceed load ratings specified by manufacturer.

K. Provide all additional cable management products as required to protect exposed cabling and complete the installation of cabling in a neat professional manner.

L. Follow manufacturer's recommendations for allowable fill capacity for each size non-continuous cable support.

3.03 CABLING INSTALLATION

A. Unless otherwise noted on the floor plans or within this document, the type of horizontal cables used for each work location shall be 4-pair unshielded twisted pair (UTP).

B. Each telecommunications device shall be connected to the horizontal cross-connect in a telecommunications room with horizontal cabling installed in a star topology.

C. All cable routes to be approved by OWNER prior to installation of the cabling.

D. Maximum length of horizontal cables shall be 295 feet (90 m) including all service loops.

E. All cabling shall be installed in accordance with manufacturer's recommendations, including but not limited to maximum tensile loading and maximum bend radius.

F. Horizontal cabling shall be installed in continuous runs from the telecommunications rooms to telecommunications device locations. Splices are not permitted.

G. Each bundle shall be neatly tied without cinching or stressing the cabling, using Velcro straps in open cabling installations and in the telecommunications room. Trim all excess length from Velcro™ straps. Plastic tie wraps are prohibited.

H. Cabling shall be organized and identified so as to facilitate locating and handling individual sheaths for maintenance functions.

I. Bundles shall be clearly marked identifying the frame and terminal block to which routed, the station numbers served by the bundle, and any other information that may assist in administration.

J. Provide machine typed label on both ends of the horizontal cabling jacket no more than 4-inches from each termination point.

K. Great care shall be taken to protect all cabling from physical damage beneath floors, above ceilings or elsewhere. Cabling shall not be exposed to any forces or handling factors that will degrade performance, such as crushing, pull stressing, twisting, or damaging sheathing materials. When left unattended, all cabling shall be secured and protected to avoid damage.

L. Provide 12 inches of slack in neatly suspended loops above each workstation and 8 feet of slack neatly coiled in the ladder rack or cable tray in the telecommunications room unless indicated otherwise on contract drawings. Service loops in the telecommunications room shall not be located above the equipment racks and server enclosures.

M. Wireless access point (WAP) cable runs shall maintain 25-feet of slack in neatly suspended loops above each device while observing the minimum bend radius per the manufacturer's specifications.

N. Cables shall contact only dedicated and properly protected cable accesses and support mechanisms.

O. Telecommunications unshielded twisted pair cabling supported utilizing open cabling methods shall maintain a minimum separation of three inches from fire alarm, paging, security and CATV broadband cabling. Cabling supports shall maintain increased separation requirements when attaching to the same hanger rod to ensure cabling sag maintains the minimum three-inch separation.

P. Maintain the following distances between cabling and other building systems:
   1. One foot from fluorescent lights.
   2. Six feet from motors and transformers.
   3. Three feet from water piping or other mechanical equipment.
   4. One foot from electrical conduits or other electrical equipment.

Q. Plenum cable will be used in all appropriate areas.

R. Conduit runs installed by the contractor should not exceed 100 feet or contain more than 180 degrees of total bends without utilizing appropriately sized pull boxes. L-Bends shall not be used.

S. Route cabling runs from workstations parallel to building grid lines and directly to open cabling pathways without passing over adjacent office spaces or cubicles.

T. Allow for 20% growth in sizing patch panels.

3.04 CONNECTIVITY AND CABLING INSTALLATION

A. All cabling shall be dressed and terminated in accordance with the cabling installation requirements identified in ANSI/TIA-568-C, BICSI Telecommunication Cabling Installation Manual, and the manufacturer's documentation.

B. Cable to the workstation location will be in conduit running from the information outlet and stubbed up above partitions so as to be reachable above the access ceiling and accessible to the cable tray or main cable pathways. A pull string will be installed in all conduits. The conduit will be terminated with a plastic bushing. The minimum size of the conduit is 1-inch.

C. Cabling entering the telecommunications room and routing on the ladder rack or cable tray pathway shall be separated into cabling bundles specific to the patch panel in which it will be terminated to. Cabling bundles shall be in increments of 48 cables per Category patch panel. Cabling shall be neatly bundled and dressed to their respective panels or blocks. Each panel or block shall be fed by an individual bundle separated and dressed back to the point of cable entrance into the equipment rack or enclosure.

D. Cabling transitioning from ladder rack or cable tray pathway shall maintain proper bend radius utilizing waterfall device brackets for transitioning vertically down the side rail of an equipment rack or server enclosure as to not impact the physical jacket construction of the cable. Cabling that become damaged during this transition shall be replaced in their entirety.

E. Cabling shall terminate from either side of each patch panel only in 48 cable increments for a 48-port patch panel termination. The cabling shall terminate from the alternate side for the next patch panel position below the previous patch panel termination and shall

continue in this orientation for the entire duration of the number rack units per equipment rack.

F. Each cable shall be clearly labeled on the cable jacket behind the patch panel at a location that can be viewed without removing the bundle support straps. Cables labeled within the bundle, where the label is obscured from view shall not be acceptable.

G. The standard information outlet shall be equipped with a minimum of one, RJ-45 connector and three blank openings. All information outlets will be of a modular design that will allow for the easy transition to other connector types if needed in the future. For some office applications, additional cables may be used. All workstation connectors will conform to Category 6 specifications as required.

H. The installation of RJ-45 modules into faceplates and attaching of the faceplates to the wall shall ensure that the faceplate and modules are flush. The faceplate shall be secured to the wall but shall not be secured to the wall with such force as to bow the faceplate.

I. Wireless Access Points (WAPs) to be cabled to a separate patch panel in the TR in the same zone. Terminate the cable at the device location in a surface mount box referenced in Section 2. Provide reflective tape on the box to aid in locating in un-lit ceiling spaces and a green dot on the ceiling T-Bar grid below the outlet location.

3.05 WORK AREA

A. 4-pair UTP horizontal cabling shall be terminated on an 8-conductor 8-position modular jack located at each telecommunications device.

B. Each telecommunications device shall be provided with 1, 2, 3 or 4, 8-Position 8-Conductor RJ45 jack. Supply and install outlets as shown on drawings and as directed by OWNER.

C. RJ45 jack shall be mounted in faceplates attached to single gang mud ring.

D. Wall boxes shall be standard 4” by 4” deep metal utility boxes with a minimum 1-inch conduit to accessible ceiling space installed vertically with a single gang mud ring, installed per standard practice.

3.06 CABLING TERMINATIONS

A. 4-pair UTP horizontal cabling shall be terminated on an 8-conductor 8-position modular jack located at each telecommunications device.

B. All pairs in each cable shall be terminated on a 110 block, modular patch panel or telecommunications modules in accordance with this specification.

C. All cabling shall be terminated in accordance with the T568B pin configuration standard.

D. Remove only as much of the cable sheath as is necessary to terminate the cabling on the connecting hardware.

E. A maximum of 0.25” of cable pair twists shall be removed from a Category 6 and Category 6A cable. Cabling and terminations exceed these dimensions shall be re-terminated.

F. At the horizontal station patch panel, the cabling shall terminate from the center of the 110 IDC termination field.

G. Terminate cabling in accordance with connecting hardware manufacturer’s recommendations. All cabling shall terminate in numerical sequence.

3.07 FIRESTOPPING

A. A firestop system is comprised of the item or items penetrating the fire rated structure, the opening in the structure and the materials and assembly of the materials used to seal the penetrated structure. Firestop systems comprise an effective block for fire, smoke, heat, vapor, and pressurized water stream.

B. All cabling running through rated floors and walls shall be firestopped.

C. All penetrations through fire-rated building structures (walls and floors) shall be sealed with an appropriate firestop system as noted in Part 2. This requirement applies to through penetrations (complete penetration) and membrane penetrations (through one side of a hollow fire rated structure). Any penetrating item (i.e., sleeves, conduit, cables, riser slots and etc.) shall be properly fire stopped.

D. Any penetrations created by or for the contractor and left unused shall also be sealed as part of the contractor’s scope of work.

E. Firestop systems shall be UL Classified to ASTM E814 (UL 1479).

F. All firestop systems shall be installed in accordance with the NEC and the manufacturer’s recommendations and shall be accomplished in a manner acceptable to the local fire and building authorities having jurisdiction over this work.

G. All firestopping sleeved devices shall be installed according to the manufacturer’s recommendations including, but not limited to;
   1. Wiring devices shall be installed in locations where indicated on the contract drawings, arranged in a single or multiple sleeve formation at the height specified. Sleeves shall be installed a minimum of 18-24 inches above the accessible ceiling grid.
   2. Install the devices in strict accordance with the approved shop drawings and the manufacturer’s recommendations.
   3. Apply the factory supplied gasketing material prior to the installation of the wall plates.
   4. Secure wall plates to devices per the equipment manufacturer’s recommendations.

H. All firestop systems shall be installed in accordance with the manufacturer’s recommendations and shall be completely installed and available for inspection by the local inspection authorities prior to cable system acceptance.

3.08 GROUNDING SYSTEM

A. The facility shall be equipped with a Telecommunications Bonding Backbone (TBB). This backbone shall be used to ground all telecommunications cable shields, equipment, racks, cabinets, raceways, and other associated hardware that has the potential to act as a current carrying conductor. The TBB shall be installed independent of the building's electrical and building ground and shall be designed in accordance with the recommendations contained in the ANSI/TIA-607-C Telecommunications Bonding and Grounding Standard.

B. The TBB shall adhere to the recommendations of the ANSI/TIA-607-C standard and shall be installed in accordance with industry best practice.

C. Installation and termination of the main bonding conductor to the building service entrance ground shall be performed by a licensed electrical contractor.

D. The Server Room shall be equipped with a telecommunications main grounding bus bar (TMGB). Each Telecommunications Room shall be provided with a telecommunications ground bus bar (TGB). The TMGB shall be connected to the building electrical entrance grounding facility. The intent of this system is to provide a grounding system that is equal in potential to the building electrical ground system. Therefore, ground loop current potential is minimized between telecommunications equipment and the electrical system to which it is attached.

E. All racks, metallic backboards, cable sheaths, metallic strength members, splice cases, cable trays, etc. entering or residing in the Telecommunications Room or Server Room shall be grounded to the respective TGB or TMGB using a minimum #6 AWG stranded copper bonding conductor and compression connectors.

F. All wires used for telecommunications grounding purposes shall be identified with a green insulation. Non-insulated wires shall be identified at each termination point with a wrap of green tape. All cables and bus bars shall be identified and labeled in accordance with the System Documentation Section of this specification.

3.09 IDENTIFICATION AND LABELING

A. General
   1. Labeling shall be in accordance with ANSI/TIA-606-B, Administration Standard for Commercial Telecommunications Infrastructure.
   2. Labeling for the MDF room shall be in accordance with ANSI/TIA-942, Telecommunications Infrastructure Standard for Data Centers. Labeling shall include identification and designation for the rack or enclosure row, rack or enclosure position, rack, and patch panel port number. This cabling identification shall be utilized for both horizontal cabling serving workstation devices and shall be utilized for copper and optical fiber cabling distribution between rack and enclosure rows within the MDF room.
   3. All labels shall be permanent typewritten labels produced by a labeling machine.
   4. Labels shall be installed on all cabling at each end. Ensure labels are securely fastened.
   5. All labels shall be located within 6 inches of cable termination and placed so they can be easily read.

6. The font type for each type of label shall be Arial.
7. Labeling information will be reviewed at the Pre-Construction Meeting.
8. All labeling shall be completed prior to the substantial completion dates of the project.

B. Telecommunications Device Labeling.
1. Each telecommunications outlet shall be labeled in accordance with ANSI/TIA-606-B, Administration Standard for Commercial Telecommunications Infrastructure, and the Owner's standards.
2. The label shall be produced to fit into the recess provided and covered with a clear plastic cover.

C. Patch Panel Labeling
1. Station Patch Panel
a. Horizontal cabling distributed from station patch panels to wireless access points devices shall have a label in the designation strip space directly below the RJ-45 module identifying the device interconnect point. The designation label shall be "WAP - #", where the "#" represents the Owner's wireless access point identification number.

3.10 TESTING AND ACCEPTANCE

A. All UTP cables and termination hardware shall be 100 percent tested for defects in installation and to verify cabling system performance under installed conditions according to the requirements of ANSI/TIA-568-C. All pairs of each installed cable shall be verified prior to system acceptance. Any defect in the cabling system installation including but not limited to cable, connectors, feed through couplers, patch panels, and connector blocks shall be repaired or replaced in order to ensure 100 percent useable conductors in all cables installed.

B. Test Equipment
1. The network testing equipment shall be a Fluke Networks DTX-1800 or DSX 5000 Cable Analyzer and shall have a certified calibration from the manufacturer within the past six months. Proof of calibration shall be provided with the product submittal. Test equipment shall be utilized to test horizontal cabling.
2. Test adapter cords shall be coiled and stored as to prevent any twisting or kinking that will distort the accuracy recordings of the tests.
3. The field tester and adapters shall be certified by an independent laboratory as meeting or exceeding as defined in ANSI/TIA-1152.
4. The RJ45 test plug for the network testing equipment adapters shall be in range of values defined in Annex C with ANSI/TIA-568-C for Near-end Crosstalk, Far-end Crosstalk and Return Loss.
5. The test equipment shall be able to test up to a 900 MHz frequency range.
6. The test equipment shall be ISO 9001 certified.
7. The telecommunications contractor shall maintain an electronic copy of the manufacturer's testing procedures in the job site office.
8. The test equipment batteries shall be charged daily and a level of greater than twenty-five percent of capacity shall be maintained during the testing.
9. The test equipment shall be calibrated daily before the start of testing.

C. Horizontal Cabling

1. All horizontal cabling shall be certified to meet or exceed the permanent link performance specifications for Category 6 horizontal cabling as defined in ANSI/TIA-568-C.
2. All horizontal cabling for wireless access points shall be certified to meet or exceed the permanent link performance specifications for Category 6A horizontal cabling as defined in ANSI/TIA-568-C.
3. Certifications shall include the following parameters for each pair of each cable installed:
    a. Building Identification
    b. Cable Identification.
    c. Date of test.
    d. Test equipment used (manufacturer, model, serial number, and calibration date*).
    e. Wire map
        1) Continuity to the remote end.
        2) Shorts between any two or more conductors
        3) Reversed pairs
        4) Split pairs
        5) Transposed pairs
        6) Any other miswiring
    f. Length
    g. Insertion Loss (Attenuation)
    h. Near-end Crosstalk (NEXT)
    i. Power Sum Near-end Crosstalk (PSNEXT)
    j. Attenuation to Crosstalk Ratio (ACR)
    k. Power Sum Attenuation to Crosstalk Ratio (PSACR)
    l. Equal-level Far-end Crosstalk (ELFEXT)
    m. Power Sum Equal-level Far-end Crosstalk (PSELFEXT)
    n. Return Loss
    o. Propagation Delay
    p. Delay Skew
4. All horizontal cabling shall be tested using a Permanent Link configuration as defined in ANSI/TIA-568-C.
5. Testing shall be conducted with frequency range from 1MHz to 250MHZ for Category 6 and 1MHz to 500MHz for Category 6A (wireless).
6. Permanent link testing headroom and Near-End Crosstalk (NEXT) shall have a minimum performance value of 5.0 dB or greater for Category 6 tests. Test reports with a result less than 5.0 dB, is marked with an asterisk (*) or fails, shall be documented identifying the reason for the test failure and a corrective action plan developed.
7. After corrective action has been completed, the permanent link shall be retested.
8. It is the Telecommunications Contractor's responsibility to ensure 100 percent of the network horizontal cabling system links pass all tests with the minimum acceptable headroom performance level of 5.0 dB or greater.
9. Prior to testing of the entire structured cabling system, provide a sampling of 12 tests from the project site and submit to the owner's representative to conduct a review of the network equipment tester setup and accuracy parameters. The owner's representative shall provide approval after the review has been completed to continue with the testing of the project site. If the review of the sample test results indicates discrepancies and non-compliance, the contractor shall provide

another random set of 12 tests for review to confirm the setup and configuration parameter issues have been resolved.

10. The test results shall be organized by building identification and cable identification number. The test results shall contain the date and time of when each test was saved in the memory of the tester. The test results shall be recorded on a CD-ROM in both PDF and LinkWare software formats.

3.11 SYSTEM DOCUMENTATION

A. Upon completion of the installation, the contractor shall provide 3 full documentation sets in both hard copy and soft copy to the Owner for approval. Documentation shall include the items detailed in the sections below.

B. Documentation shall be submitted within 10 working days of the completion of each testing phase (e.g., subsystem, cable type, area, floor, etc.). This is inclusive of all test result and draft as-built drawings. Draft drawings may include annotations done by hand. Machine generated (final) copies of all drawings shall be submitted within 30 working days of the completion of each testing phase. At the request of the Owner, the contractor shall provide copies of the original test results.

C. The Owner may request that a 10 percent random field re-test be conducted on the cable system, at no additional cost, to verify documented findings. Tests shall be a repeat of those defined above. If findings contradict the documentation submitted by the contractor, additional testing can be requested to the extent determined necessary by the Owner, including a 100 percent re-test. This re-test shall be at no additional cost to the Owner.

3.12 TEST RESULTS

A. Test documentation shall be provided on CD-ROM within three weeks after the completion of the project. The disk shall be clearly marked on the outside front cover with the words “Project Test Documentation”, the project name, and the date of completion (month and year). The results shall include a record of test frequencies, wavelength, cable type, conductor pair, fiber strand and cable (or outlet) I.D., measurement direction, reference setup, and crew member name(s). The test equipment name, manufacturer, model number, serial number, software version and last calibration date will also be provided at the end of the document. Unless the manufacturer specifies a more frequent calibration cycle, an annual calibration cycle is anticipated on all test equipment used for this installation. The test document shall detail the test method used and the specific settings of the equipment during the test as well as the software version being used in the field test equipment.

B. The field test equipment shall meet the requirements of noted standards including applicable TSB’s and amendments. The appropriate certified instrument testers shall be used to verify Category cabling and optical fiber systems.

C. Printouts generated for each cable by the wire (or fiber) test instrument shall be submitted as part of the documentation package.

D. When repairs and re-tests are performed, the problem found and corrective action taken shall be noted, and both the failed and passed test data shall be documented.

3.13 AS-BUILT DRAWINGS

A. The drawings are to include cable routes and connection locations. Numbering, icons, and drawing conventions used shall be consistent throughout all documentation provided. Owner will provide floor plans in paper and electronic (DWG, AutoCAD) formats on which as-built construction information can be added. These documents will be modified accordingly by the contractor to denote as-built information as defined above and returned to Owner.

3.14 WARRANTY

A. The contractor shall provide a 2-year warranty on the physical installation.

B. An Extended Product Warranty shall be provided from the Product Manufacturers, which warrants functionality of all components used in the system for Limited Lifetime duration from the date of registration. The Extended Product Warranty shall warrant the installed horizontal and backbone portions of the cabling system. The Warranty shall cover the failure of the wiring system to support the applications that are designed for the link/channel specifications of the referenced standards within this specification. These applications included, but are not limited to, 10BASE-T, 100BASE-T, 1000BASE-T, 1000BASE-SX/LX, 10GBASE-X. The Contractor shall be certified to install the product to qualify for the Manufacturer Extended Product Warranty.

3.15 COMPLETION OF WORK

A. At the completion of the SCS installation, the Contractor shall restore to its former condition, all aspects of the project site and on a daily basis, shall remove all waste and excess materials, rubbish debris, tools and equipment resulting from or used in the services provided under this Contract.

B. All clean up, restoration, and removal noted above will be by the Contractor and at no cost to OWNER.

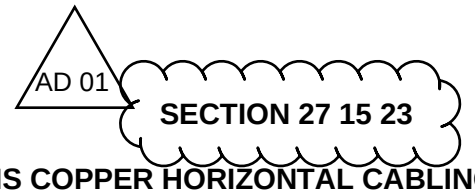
C. If the Contractor fails in its duties under this paragraph, OWNER may upon notice to the Contractor perform the necessary clean up and deduct the costs thereof from any amounts due or to become due to the Contractor.

D. See Division 1 for trash removal requirements.

3.16 FINAL ACCEPTANCE AND SYSTEM CERTIFICATION

A. Completion of the installation, in-progress and final inspections, receipt of the test and as-built documentation, and successful performance of the cabling system for a two-week period will constitute acceptance of the system. Upon successful completion of the installation and subsequent inspection, the end user shall be provided with a numbered certificate from the Manufacturer registering the installation.

END OF SECTION



COMMUNICATIONS COPPER HORIZONTAL CABLING INTERIOR EXPANSION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01, 06,07,09, 26, 28 Specification Sections, apply to this Section.

B. Related Sections include the following:
   1. Section 270500, “Common Work Results for Communication Systems”.
   2. Section 270526, “Grounding and Bonding for Communication Systems”.
   3. Section 271116, “Communications Cabling, Racks, Frames, and Enclosures”.
   4. Section 271300, “Communications Backbone Cabling”.
   5. Section 275116, “Public Address Systems”.

1.02 SUMMARY

A. The work shall consist of labor and materials for the provision, termination, testing, and documentation of a complete and fully functional ANSI/EIA/TIA 568-B Category 6 copper horizontal cabling system.

B. The instructions in this section are specific to communications copper horizontal cabling installations and should be read in conjunction with all other applicable divisions and sections of the contract documents. All Data pathways shall be constructed around ANSI/EIA/TIA 569 (current revision) and BICSI standards and will use most of the recommended/suggested practices, including but not limited to service loops and cable bend radius.

1.03 CODES, STANDARDS, AND REFERENCES

A. ANSI/EIA/TIA 568 B: Commercial Building Telecommunications Wiring Standard, current edition.

B. ANSI/EIA/TIA 569: Commercial Building Standard for Telecommunications Pathways and Spaces, current edition.

C. ANSI/EIA/TIA 606: The Administration Standard for the Telecommunications Infrastructure of Commercial Buildings, current edition.

D. ANSI/EIA/TIA 607A: Commercial Building Grounding and Bonding Requirements for Telecommunications, current edition.

E. ANSI/EIA/TIA 758: Customer-Owned Outside Plant Telecommunications Cabling Standard, current edition.

F. ANSI/ICEA P-61-694: Coding Guide for Copper Outside Plant and Riser Cable.

G. Building Industry Consulting Service International (BICSI) publications:
   1. Telecommunications Distribution Manual, current edition.
   2. LAN and Internetworking Design Manual, current edition.
   3. Telecommunications Wiring Installation Manual, current edition.
   4. Customer Owned Outside Plant Design Manual, current edition.

H. Cal OSHA: California Occupational Safety and Health Administration Regulations.

I. CBC: California Building Code.

J. CEC: National Electric Code with California Amendments.

K. IEEE 802: A set of network standards developed by the IEEE.

L. IEEE 802.3: Local Area Network (LAN) protocols. Ethernet Standard, defining the MAC layer for bus networks that use CSMA/CD.

M. IEEE 802.11: Specifications developed by the IEEE for wireless LAN (WLAN) technology. Providing 1 or 2 Mbps transmission in the 2.4 GHz band using either frequency hopping spread spectrum (FHSS) or direct sequence spread spectrum (DSSS).

N. IEEE 802.11a: Applies to wireless LANs and provides up to 54-Mbps transmission in the 5 GHz band.

O. IEEE 802.11b: Applies to wireless LANs and provides 11 Mbps transmission (with a fallback to 5.5, 2, and 1-Mbps) in the 2.4 GHz band.

P. IEEE C2 (NESC): National Electrical Safety Code.

Q. NEC 770: Communications Technology. Applies to optical fiber cables.

R. NEC 800: Communications Circuits.

S. NFPA 70 (NEC): National Electric Code.

T. NFPA 780: Lightning Protection Code.

U. Underwriters Laboratories – UL 13: Power-Limited Circuit Cables.

V. Underwriters Laboratories – UL 96: Standard for Safety Lightning Protection Components.

W. Underwriters Laboratories – UL 96A: Standard for Safety Installation Requirements for Lightning Protection Systems.

X. Underwriters Laboratories – UL 444: Standards for Communications Cables.

Y. Underwriters Laboratories – UL 1479: Standard for Safety Fire Tests of Through-Penetration.

Z. Underwriters Laboratories – UL 1863: Standard for Communications-Circuit Accessories.

1.04 DEFINITIONS

A. The following definitions apply to the scope of this project:
1. Backbone Cables: Cables linking the Main Distribution Frame (MDF) to each Building Distribution Frames (BDF) or dual function distribution frame i.e., Building Distribution Frame/Classroom Distribution (BDF/CDF), and BDF to CDF.
2. Horizontal Cables: Cables linking the Classroom Distribution Frame (CDF) or the Building Distribution Frame/Classroom Distribution Frame (BDF/CDF) or the Intermediate Distribution Frame (IDF) to each workstation outlet.
3. Station Cables: Cables linking the workstation outlet to active equipment.
4. Main Distribution Frame (MDF): Main cross-connect located in the equipment room, from which the Inter-building (campus) Horizontal cabling emanates. The primary function of the MDF is to connect entrance cables, building Horizontal cables and equipment cables.
5. Intermediate Distribution Frame (IDF): The intermediate cross-connect onto which the building Horizontal cables terminate and at which connections to the Main Distribution Frame (MDF) are made. The primary function of the IDF is to connect the MDF and the Classroom Distribution Frame (CDF).
6. Classroom Distribution Frame (CDF): The cross-connect frame where the horizontal cabling in the respective classroom terminates to other cabling, e.g., building Horizontal cabling.
7. Building Distribution Frame/Classroom Distribution Frame (IDF/CDF): The cross-connect that functions both as IDF and CDF.

B. Acronyms:
1. PBX: Private Branch Exchange
2. RTU: Remote Terminal Unit
3. TDR: Time-domain Reflectometer
4. RCDD: Registered Communication Distribution Designer
5. ELFEXT: Equal Level Far-End Crosstalk
6. NEXT: Near-End Crosstalk
7. PSELFEXT: Power Sum Equal Level Far-End Crosstalk
8. PSNEXT: Power Sum Near-End Crosstalk
9. CMP/CMR: UTP Network Cable Ratings (P – Plenum; R – Riser)
10. UTP: Unshielded Twisted Pair

1.05 SCOPE OF WORK

A. The Work shall include labor and materials that consist of provisions, installing, terminating, testing, and documenting a complete and fully functional communications copper horizontal cabling system. The work shall include, but not limited to the following:
1. Conduct underground detection survey to ensure constructability of outside plant pathway routing.
2. Provide indoor optical fiber and copper cabling.

3. Furnish and install modular patch panels for termination of UTP and copper horizontal cables within the BDF, CDF, CDF2, and/or BDF/CDF. Use copper patch panels for all copper horizontal cable terminations located in the MDF and IDF.
4. Furnish and install telephone punch blocks at PBX location using multi-pair cable for interconnection between PBX and MDF, as required. Furnish and install intrusion punch blocks at RTU location using multi-pair cable for interconnection between RTU and MDF.
5. Furnish and install connectors (terminate cable) and wall and/or faceplates as specified.
6. Furnish and install all high impact plastic cover wall and/or faceplates and connector housings for all communication systems outlet locations.
7. Furnish and install indoor copper horizontal, link and distribution cables.
8. Furnish and install equipment racks, with zone 4-rated seismic bracing and associated accessories in telecommunications spaces where required.
9. Furnish and install full labeling of the entire installation in compliance with ANSI/EIA/TIA 606, prior to testing.
10. Testing of each copper horizontal cable and connector with Power Meters and TDR.
11. Furnish the documentation of the installation, including test results, cable management records, and as-built documents on paper and in electronic format on CD-ROM (AutoCAD and MS Visio for drawings, MS Excel for schedule).
12. Provide and install associated and incidental items that may not be specifically indicated but belong to the Work described and which are required for a complete system.

1.06 WORK NOT INCLUDED

A. The work detailed in this section shall not include the following:
1. Installation of active networking equipment and computer terminals.
2. Installation of telephone equipment and associated services.
3. Installation of wireless access point devices.

1.07 SUBMITTALS

A. Refer to Division 1 Article 9.1 for general submittal guidelines, and submit, for approval, all submittals specified herein, within thirty (30) days of Notice to Proceed.

B. Format: Submittals for the copper horizontal cabling system shall be arranged in accordance with the sequence of sub-section headings in this specifications section. All submittals shall be signed by an RCDD for the work defined under this section.

C. References: Provide three (3) project references as required in Paragraph 1.2 A, of this Section with bid proposal. All project references shall be within sixty-mile radius of this project and be accessible for the Owner to visit upon request.

D. Personnel Qualifications: Technical certifications of the installation team as defined in 1.8, B of this section. The submittal shall reflect appropriate manpower required to complete this project as consistent with the overall project timelines and milestones.

E. Single Line Diagrams:

1. A complete shop drawing, which shall be based on all drawings included in the Construction Documents. It shall be updated to show quantities, part numbers, and descriptions for all components including copper patch panels, cables, conduits, cable trays, and all other associated components.
2. Telecommunications grounding and bonding implementation that comply with ANSI/EIA/TIA 607A standards.
3. Customer-owned outside plant pathway routing and spaces that comply with ANSI/EIA/TIA 758 standards.
4. Telecommunications administration and documentation implementation that comply with ANSI/EIA/TIA 606 standards: It shall include all components of the communications infrastructure system including telecommunications pathways and spaces, bonding and grounding, Horizontal and horizontal cabling cross-connects, patch cables, station cables, and all other associated components.

F. Test Equipment: Details of each item of test equipment to be used to test the copper components. Include patch cords and all other associated specialized components.

G. Product Literature/Data Sheets: Manufacturer's product data sheets for each component to be provided by the contractor to make up the complete copper horizontal cabling system. The product literature/data sheets shall be arranged in the sequence of items as listed in Part 2 of this section. Certify that the data sheets depict the components as described in this section of the Specifications.

H. Component Samples and Mock-ups:
1. Ten (10) working days after approval of product literature/data sheets submitted, provide for approval, one installation sample mock-up of each of the following components, to be fully labeled in accordance with this section of Specifications.
2. All sample mock-ups are intended to represent the components that are to be installed as part of this project; therefore, they are to be provided with all associated components and labeling necessary to make up a complete mock-up. Installation shall not proceed until all samples have been approved. The Consultant will retain all samples.
3. Copper Cable Samples: Provide a 24” length of each type of copper cable being used as a part of this installation. The outer jacket shall be stripped back 6" from one end of the sample to allow the individual pairs to be inspected for all cables. Label each cable as detailed in this specification. The sample shall show all the cable markings, including part numbers, manufacturer, and lengths.
4. Patch Panels: Category 6 patch panel samples, one each. This shall consist of the respective specified patch panel, fully loaded, complete with all associated components. The patch panel shall be fully loaded with the maximum number of cables dressed into the patch panel and terminated as described in this specification. All strain relief shall be provided as part of the sample. The unit shall be fully labeled in compliance with ANSI/EIA/TIA 606 standard.
5. Outlet Samples:
    a. Provide a mock-up of each communications outlet, as listed below. The sample is intended to represent a typical communications outlet and shall include all associated parts to make a complete sample. Provide bushings and strain relief for the distribution cable jacket, demonstrating how the cable shall be secured. Label the outlet and each connector as detailed in this specification.

b. Provide samples of the following outlet configurations:
   1) Wall-mounted outlet - provide the communications outlet and all terminations, the electrical backbox, a 12" length of raceway and a 36" length of the relevant cable(s). Labeling shall also be provided.
   2) Wall-mounted phone outlet - provide faceplate and jack insert only.
   3) Furniture outlet – provide faceplate, bezel, outlets, cable and labeling only.
c. Upon approval, the samples will be used as the standards by which the quality of work on the project by the contractor shall be judged. Any installation that does not meet this standard shall be replaced or re-worked by the contractor as approved by the District, at no additional cost to the project.

I. Record Documentation:
1. Ten (10) working days following completion of the installation, submit the following record drawings, documentation and testing for approval and inclusion into the Operations and Maintenance Manual.
2. Operations and Maintenance Manual: Manual shall be in matching three ring binders, clearly and neatly identified, including the project name, address, discipline and date. Submit five (5) copies.
   a. Provide a complete Table of Contents without required detailed material for review and acceptance prior to preparing final manuals.
   b. Base final manuals on comments received from this review.
      1) Submit one final manual with all information for review and acceptance.
      2) Submit final required total number of copies after this review.
   c. Table of Contents
      1) Original design criteria, Section 271523 Communications Copper Horizontal Backbone Cabling Specifications.
      2) Record Design Record Drawings. Submit Table of Contents and include all design drawings prepared by communications designers, including drawing number, original issue date, and list of all revision numbers and dates of issue.
   d. Design team shall update drawings and reflect the latest Scope of Work. Drawings are not intended to represent the detailed actual installed conditions, but rather to reflect the contractual status of the scope of the design work.
      1) It is the construction contractor’s responsibility to obtain the latest design drawings as part of this section of the manuals.
      2) Stamp clearly “RECORD DESIGN” on each drawing.
      3) Provide two complete sets of reproducible drawings separately from the manual book, to San Diego City Schools, IT Department, and Physical Plant Operations Department.
3. Record Drawings: Provide five (5) sets of Record (As-built) Drawings showing locations of telephone, tele/data and data outlets, Horizontal, link and external cable routes, data rack locations and telephone termination board locations.
4. Final Test Results: Test results for each cable indicating tests performed, results obtained and values measured. Test results shall be provided in electronic format with the associated application (if required) for viewing.

5. All documentation and drawings shall be provided in an electronic format (AutoCAD and MS Visio for drawings, MS Excel for schedule, etc.) and supplied on CD-ROM.

1.08 QUALITY ASSURANCE

A. Qualifications: Contractor-employed persons or organizations performing work under this section shall have a minimum of 3 years' full-time experience executing work of similar scope and complexity. The contractor shall have completed and have been the primary responsible contractor for at least three previous installations of comparable size, complexity, and work force within the last three years. Each installation shall utilize components, installation practices and testing procedures as specified in this document.

B. Certifications: Installers shall be certified by the manufacturer of the equipment and components being furnished and be authorized by the manufacturer to install and convey the product warranty and performance guarantee to the Owner upon completion of contract. The contractor shall employ a Registered Communications Distribution Designer (RCDD) or pre-approved equivalent to serve as an onsite Project Manager. The Project Manager is responsible for the entire project and will serve as the single point of contact until the completion of the Work. The RCDD shall be in good standing with Building Industry Consulting Services International (BICSI) and shall have a current registration. Installation and testing crew assigned to this project shall be BICSI Registered Technicians who have held a certification for a minimum of six months at the time of installation, for copper and fiber cabling installation by the manufacturer whose components are to be installed. The Registered Technicians shall be in good standing with Building Industry Consulting Services International (BICSI) and shall have a current registration.

C. Regulatory Requirements: The contractor shall certify that all products to be installed meet or exceed every performance parameter specified in all applicable standards published or ratified by American National Standards Institute/Telecommunications Industry Association/Electronic Industry Association (ANSI/EIA/TIA) and/or Institute of Electrical and Electronic Engineers (IEEE) within thirty (30)days prior to commencement of the work.

D. Licensing: The contractor shall hold a valid C-7 contractor's license in the State of California and be insured and bonded throughout the duration of the project. The contractor is responsible for obtaining and paying for all permits and inspections required by all legal authorities and agencies having jurisdiction to perform the work, without additional cost to this project.

E. Mock-Ups and Component Samples: Construct full-size installation mock-ups of all the components listed in Part 2 of this specification for review and Owner's approval. Submit mock-ups within ten days after approval of product literature/data sheets. Approved mock-ups shall serve to establish standards by which the Work will be judged. Remove mock-ups only after Work is substantially complete and with Owner's approval.

1.09 PROJECT CONDITIONS

A. To ensure a constructible copper horizontal cabling system, the Contractor shall examine all drawings and specifications to familiarize themselves with the type of construction materials to be used, and the nature and extent of work provided in other sections of the construction documents. Any clarifications needed shall be requested no later than ten (10) working days before bid opening. Upon contract award, Contractor shall assume full responsibility for any cost incurred due to changes as required to complete the work as defined in this section.

B. Coordinate copper horizontal cabling with Division 27 contractor installing conduit/raceways, electrical boxes, hand holes, pull boxes, and power receptacles. This coordination shall occur prior to start of construction to insure proper alignment of components and equipment.

C. Verify dimensions and the correct location of hardware before proceeding with the installation of hardware, cabling, and/or connections.

D. All existing utilities (voice, data, intrusion, safety systems, etc.) serving facilities occupied by Owner or others shall not be interrupted unless permitted under the following conditions and then only after arranging temporary utility services according to requirements indicated:
   1. Notify the Construction Manger no less than five working days in advance of proposed utility interruptions.
   2. Do not proceed with utility interruptions without the Construction Manager's written permission.
   3. Contractor shall furnish and provide an alternative communications path and/or equipments for these utilities during interruptions, without additional cost to the Owner.
   4. Ensure that existing equipment and furniture are returned as found in original locations.

1.10 WARRANTY

A. The contractor shall furnish manufacturer extended Component Product Warranty and Complete ANSI/TIA/EIA-Compliant System Performance Guarantee for no less than 25 years, with additional performance criteria specified in this section.

1.11 MANUFACTURERS

A. The component manufacturer part numbers specified in this document are not intended to limit or restrict submission of proposals for products by other manufacturers but to set a baseline of performance, operational functions and product accuracy that all proposals must meet.

B. In conjunction with Division 1, Article 10.2, it is acceptable for Bidders to submit any proposal for substitution of manufacturers not less than ten working days before bid opening. Proposed components shall be listed in an index page with exact sequence of components listed in this specification, and be accompanied by samples, shop drawings of individual components with comparison of detail dimensions in comparison to those

specified, neutral third-party verification, test results, certifications, and all pertinent technical data. .

C. No substitution of components in this section shall be considered after thirty-five (35) days of Notice to Proceed.

1.12 ADMINSTRATION STANDARD FOR TELECOMMUNICATIONS INFRASTRUCTURE

A. The contractor shall provide all labeling materials. The contractor shall provide the communications administration scheme in compliance with ANSI/EIA/TIA 606 standard, for approval. This labeling scheme will implement building numbers, room numbers (where applicable), work area outlets, and all other components that make up the Copper horizontal cabling system.

1.13 SYSTEM PERFORMANCE

A. The copper horizontal cabling system shall support data network protocols/services at data transmission speed of 1000 Mb/s (Gigabit Ethernet) as defined in IEEE 802.3 standards.

B. The following performance criteria shall also be met for worst-case EIA/TIA 568-B.2-1, 4-connector, 100-meter horizontal channels:
   1. Exceed EIA/TIA Category 6 channel specifications for NEXT, PSNEXT, ELFEXT, PSELFEXT and Return Loss by a minimum of 17.3dB @ 250 MHz in any EIA/TIA compliant channel configuration up to a 4-connector channel.
   2. Channel performance guarantees shall be verified in the field with a manufacturer approved hand-held tester.
   3. Free from bit errors caused by the structured cabling system for, Horizontal and peer-to-peer channels.
   4. Comprised of solid conductor (CMP/CMR) UTP, and stranded patch cordage from the same cable manufacturer.
   5. Verified by neutral third-party testing laboratory for EIA/TIA Category 6 channel performance to 250 MHz or higher, the verification is representative of 2, 3 and 4-connector CMP and CMR 100-meter channels.
   6. Free from bit errors caused by the structured cabling system for 100Base TX, 1000Base-T, 1000Base-SX, and 1000Base-LX as verified by a neutral third-party testing laboratory.
   7. Verified by a neutral third-party testing laboratory for 100Base-TX/1000Base-T, 1000BaseSX/LX peer-to-peer testing at worst-case 4-connector 100-meter horizontal UTP channels through worst-case 2-level multimode optical Horizontals at a minimum of 600 meters (1000Base-SX).
   8. 5 Gb/s (CAT-6) channel capacity guarantee for horizontal structured cabling systems at 250 MHz.

PRODUCTS

2.01 COMPONENTS

C. This specification section is built around a copper cable-based ANSI/TIA/EIA 568-B compliant wiring infrastructure. All terminations shall conform to T568B wiring standard. Vendors are to supply systems that meet or exceed the functional requirements herein. The base for this design includes all hardware components and cabling a complete copper horizontal cabling system

D. Two cable plant design architectures may be encountered, IDF/Classroom design, or the BDF/CDF design.

E. Following are attributes of the existing IDF/Classroom design:
   1. Classroom Wall Mount (Typical MDF/IDF configuration) 11 voice/data drops (Category 5e) consisting of 3 tri-plex wall-plates with 3 drops each, and a two-drop, biscuit block or wall-plate mounted above the drop ceiling near the exterior wall. The classroom wall mount configuration is associated with MDF/IDF structured cable plants.
   2. To IDF from Classroom Wall mount
      a. Data Cabling – Provide 11 Category 5e cables from Classroom Wall and ceiling mounts to IDF modular patch panel locations in IDF.

F. Following are attributes of the existing BDF/CDF design:
   1. CDF: 9 voice/data drops consisting of 3 tri-plex faceplates with 3 drops.
   2. CDF2: 18 voice/data drops (Category 5e), consisting of 3 tri-plex faceplates with 3 drops each for each classroom.
   3. Data cabling – Provide 1 each Category 5e cables from classroom (CDF) modular patch panel locations to BDF modular patch panel locations.

G. Following attributes will be implemented in all future copper horizontal cabling design:
   1. Classroom Wall Mount (Typical MDF/IDF) configuration) 6 voice/data drops consisting of 2 duplex wall plates with 2 drops each, and a two-drop, biscuit block or wall-mounted above the drop ceiling near the exterior wall. The classroom wall mount configuration is associated with MDF/IDF structured cable plants.
   2. To IDF from Classroom Wall mount:
      a. Data Cabling – Provide 6 Category 6 cables from Classroom Wall and ceiling mounts to IDF modular patch panel locations in the IDF.

H. In the MDF Room (Main Distribution Frame): Provide and install minimum of one Primary Rack and two Secondary Racks. Provide and install within the Secondary Rack, Category 6 UTP patch panels, and wire management for termination of Category 6 copper horizontal cable in the MDF. The remaining Primary Rack space will be used for data communications hardware (not supplied under this contract).

I. In MDF and IDF Rooms: The following configuration shall be adhered to, for rack component placement (top position going down):
   1. Switch – 1U
   2. 24 port Patch panel – 1U
   3. Wire Management panel – 1U

J. In the MDF and IDF Rooms: Group classroom cables in the following fashion on patch panels:
   1. Classroom A Voice/Data Drops (first classroom of two per patch panel):
   2. Four (4) wall-mounted drops in one contiguous group using positions 1-4 on patch panel.
   3. Classroom B Voice/Data Drops (second classroom of two per patch panel):
   4. Four (4) wall-mounted drops in one contiguous group using positions 13-16 on patch panel.
   5. Classroom A LWAP and Spare Drops:
   6. Two LWAP designated drops shall occupy positions 11, 12 with 5-10 spare.
   7. Classroom B LWAP and Spare Drops:
   8. Two LWAP designated drops shall occupy positions 23, 24 with 17-22 spare.
   9. The above represent preferred grouping arrangement of classroom cables on patch panels. In the event, existing configurations requiring a different grouping arrangement is encountered, the cable grouping arrangement on patch panels shall be configured with prior consultation and approval of the District's IT department.

K. Category 6 Data/Voice Cable:
   1. Provide blue, plenum-rated, Category 6, characterized to 500MHz with a minimum guaranteed PSACR of 3.5 dB and minimum guaranteed Return Loss of 17.3 dB @ 250 MHz, unshielded twisted pair (UTP) four pair cable for locations as noted herein. Do not exceed a total footage of two hundred ninety-five feet for any single run. Termination of all plenum-rated, data, Category 6, UTP cable will be according to T568-B termination scheme.
   2. UTP, plenum-rated, Category 6 cable shall be LANmark-6, 10136233, by Berk-Tek or Owner pre-approved equal.
   3. Provide Quantity of: As required.

L. MDF/IDF Data Patch Panels:
   1. Terminate all Category 6 cabling in the MDF on EIA/TIA Category 6 compliant rack mounted patch panels located in the data rack(s). Provide sufficient patch points for each Category 6 cable terminated in the MDF room plus spares as needed. With each patch panel, provide a closed or open cover wire management panel with dimensions sufficient for wiring management that is mounted on a standard EIA 19" compatible mounting panel. Rack mounted patch panels shall be OR-PSD66U48 by Ortronics or Owner pre-approved equal.
   2. With each patch panel, provide a metal, five ring horizontal wire management panel with dimensions sufficient for wiring management that is mounted on a standard EIA 19" mounting panel. Horizontal wire management shall be OR-60400131 (1RU), by Ortronics or Owner pre-approved equal.
   3. With each patch panel provide 1 Rack Unit of open space to accommodate the Data Communications Switch.
   4. Provide Quantity of: As required.

M. Wall Plates and Connectors
   1. The contractor will be responsible for providing all plates for communication boxes whether they exist for interconnection to Video, Voice, or Data systems. The contractor will also be responsible for providing a connector housing for every communication box in the facility whether that box contains active or inactive ports.

2. Faceplates: Provide single-, or dual- gang high impact front and rear loading compatible plastic faceplates, fog white in color for all communication box locations as shown on the contract drawings. Faceplates shall be TracJack OR-40300548 and OR-40300547 by Ortronics or Owner pre-approved equal.
3. Housings: Provide a 4-port field configurable housing from the surface raceway manufacturer matching the raceway in material or color for all communication boxes brackets located on the raceway. Raceway device bracket base-plate shall be OR-40800019-99 by Ortronics. For all housings, provide blanks for connector positions that are not utilized. Blank modules shall be OR-42100002-99 by Ortronics or Owner pre-approved equal.
4. Data Outlets: Terminate all outlets with one orange Category 6 snap-in module. Utilize the EIA/TIA T568-B termination method. Provide blank modules as necessary to fill all unused positions of the outlet. Category 6 module shall be OR-TJ600-23 by Ortronics or Owner pre-approved equal. Blank module shall be OR-42100002 by Ortronics or Owner pre-approved equal.

2.02 TEST EQUIPMENT

A. Draft Category 6 Test Equipment
1. Microtest Omni-Scanner, Fluke DSP-4100, or Owner pre-approved equal Level III tester to be used for Category 6 tests
2. Provide test leads for the specific cabling system manufacturer as specified in this document.
3. Power Meter: Fluke DSP-4100/DSP-FTA10S or Owner pre-approved shall be used for copper horizontal testing.

EXECUTION

3.01 EXAMINATION

B. Thorough examination and coordination shall be conducted by the Contractor prior to installation, to ensure that the following conditions are met:
1. All works furnished under other trades, such as cable trays installations, pathway provisions, etc., that have impact on the structured cabling systems are in compliance with this specification and the construction documents.
2. Upon delivery to project site, the Contractor shall ensure all components to be installed are free from defects and workmanship.
3. Prior to installation, the Contractor shall verify that all related work, furnished under other trades, are in compliance with all requirements for the execution of the work under this section.

C. Do not start the work of this section until all deficiencies have been corrected. Commencement of work constitutes acceptance of total and absolute responsibility including but not limited to bearing all cost to redo the work of this section and work furnished under other sections as well.

3.02 INSTALLATION

A. Horizontal Distribution Cabling: As specified in the construction drawings and this specification, place plenum-rated distribution cables, no longer than 290 feet each including service slack, running from each communications connector to the patch panels located in the CDF or CDF/BDF, or IDF serving each outlet.
   1. Maintain minimum bend radius of 1”for copper cables.
   2. Do not exceed maximum pull force of 110 N (25 lbf) per cable. To ensure that there is no excessive tension and deforming of the cable, use a 25 lb. breakaway swivel attached between the pull rope and the cable for all horizontal distribution cables.
   3. All cables shall be secured in Category 6 compliant “rings” and Velcro® straps cable ties as appropriate.
   4. No tie wraps shall be used on this project.
   5. When within the 290-foot distance limit, the service slack in the Telecommunications Room shall be the total length of the distance to reach the farthest corners, plus the distance from floor to ladder rack.
   6. The length of service slack at the work area shall be 2 ft long for all cables.
   7. Pull ropes must be reinstated for future cabling.
   8. Each cable label shall be a unique identifier that is clearly visible on both ends of the cable in accordance with EIA/TIA 606.
   9. Cable information detailing the origin and destination of each cable at both ends shall be documented.

B. Horizontal and Link Cabling: As specified in the construction drawings and this specification, place the Horizontal cabling connecting the telecommunications spaces, i.e., MDF, BDF/CDF, CDF, and entrance facilities.
   1. During pulling from top down in vertical pathway, use a reel dolly to place the cable. A reel brake shall be used to help control the descent of the cable as it is pulled off the cable reel. Pulleys will be used to handle the cable from the reel to the point where it will be dropped down to lower floors.
   2. During pulling from bottom up, use swivels, tuggers, and pulleys.
   3. All Horizontal copper cables shall be placed in cable trays.
   4. At each floor, all cables shall be secured using channel with straps.
   5. When the vertical pathway enters a wiring closet, make a sweep of the cable toward the termination point and secure the cable onto vertical cable tray, with Velcro® straps within cable trays or ladder racks. Cable ties (zip-ties) are not acceptable.
   6. The service slack shall be the total length of the distance to reach the farthest corner, plus the distance from floor to ceiling and another additional ten (10) feet.
   7. All cables shall be secured with Velcro® straps and other appropriate devices to the backboard, tray, or rack.
   8. Document the cable information, showing clearly what kind of cables installed, which conduit used, and the purpose of the installed cables.

C. Communications Outlets
   1. Teacher’s Desks, Administrative Work Areas, and Offices within Classrooms
      a. Unless otherwise specified, each workstation shall have (1) 2-port faceplate configured with (2) 8P8C Category 6 connectors for data and/or voice applications.

b. Provide two (2) Category 6 distribution cables running from each outlet back to the BDF/CDF, or IDF.
c. Terminate all distribution cables onto the Category 6 patch panels in the BDF/CDF, IDF as appropriate.
d. Terminate each Category 6 distribution cable at each end using the EIA/TIA T568B wiring scheme.

2. Standard Communications Outlet in Classrooms (Refer to Construction Drawings)
   a. Unless otherwise specified, each workstation shall have (1) 2-port faceplate configured with (2) 8P8C Category 6 connectors for data and/or voice applications.
   b. Provide two (2) Category 5e distribution cables running from each outlet back to the BDF/CDF, IDF.
   c. Terminate all distribution cables onto the Category 6 patch panels in the BDF/CDF, IDF or Wall Mounted as appropriate.
   d. Terminate each Category 6 distribution cable at each end using the EIA/TIA T568B wiring scheme.
3. Standard Communications Outlet in ceiling for Wireless Access Points (WAP):
   a. Unless otherwise specified, each WAP shall have (1) 2-port faceplate configured with (2) 8P8C Category 6 connectors for WAP applications.
   b. Provide two (2) Category 6 distribution cables running from each outlet back to the BDF/CDF, IDF.
   c. Terminate all distribution cables onto the Category 6 patch panels in the BDF/CDF, IDF as appropriate.
   d. Terminate each Category 6 distribution cable at each end using the EIA/TIA T568B wiring scheme.

D. Required Installation Practice:
1. Provide bushings, grommets, and strain-relief for cables terminating in equipment cabinets to ensure durable and robust connections. The bushings and grommets are intended to protect the cables from any sharp edges that present a risk to the cables. Ensure that all sharp edges are covered to protect the cables from damage.
2. No cables shall be installed in a fashion that contravenes either the minimum installed or the minimum under-load bend radius of the cable.
3. No cable is to be pulled through a conduit “L-bend” (condulets).
4. Install all cables in complete runs from outlet or patch panel to patch panel. In-line joints, splices, distribution points or other intermediate connections are not permitted.
5. At no point shall the communications cables be tied to power cables or other building services or their supports, or run in the same ducts, raceways, conduits or connection boxes as power cabling.
6. Use plenum-rated Velcro® straps in all ceiling voids.
7. Where conduits are not provided in ceiling void or access space, install Category 6-compliant “rings” at intervals of every four (4) feet.
8. Reinstate all pull-wires in conduits and ducts after use to facilitate future addition of cables.
9. Cables shall not be held so tightly with Velcro® straps so as to bend or warp the cables.
10. Individually and properly ground all relay racks, ladder racks, and equipment cabinets.

11. Ensure that all waste materials are disposed of in a safe manner. Pay particular attention to waste materials produced during the termination of copper horizontal cabling. Ensure that all used components and copper cut-offs are collected in purpose-made containers and disposed of properly.
12. Replace all moisture and fire barrier material in ducts, conduits, and other penetrations disturbed during installation of structured cabling. Install barrier material in all fire-rated penetrations that have cabling running through them. The barrier material shall be installed so the final penetration has the same fire rating as the original wall/floor.
13. Provide expansion plugs in all ducts/conduits entering the building. Seal all unused ducts/conduits with plugs that allow the pull-string to be tied off on the inside.
14. Use purpose-built pulling grips during cable installation. Do not pull cables by attaching pull wires to cable jackets, elements or reinforcement. Use strain gauges or equivalent measures to ensure that the maximum tensile load rating of the cables is not exceeded during installation.
15. The number of cables in each conduit shall be controlled to allow for future cable installation and to remain within the manufacturer's maximum allowable cable pulling tension. Conduit fill ratios shall not exceed the current requirements of the CEC.
16. The maximum run length of each distribution cable shall not exceed the 290-foot limit. Notify the Owner immediately if, due to on-site conditions or other factors, the length of a distribution cable exceeds this distance.
17. Provide Velcro® (hook and loop) ties to secure cabling running in the telecommunications spaces. Provide straps at 3' intervals. Upon completion of installation, neatly run and re-tie all cable bundles.

E. Unused Complementary Parts of Components: Any unused complementary parts included in any component purchased in accordance with these specifications shall be documented and submitted to the Owner upon completion of the project.

F. Testing:
   1. General Instructions
      a. The testing is to demonstrate beyond reasonable doubt that there are no errors, damaged or incorrectly installed components, that the installation is correctly labeled and that all the installed components meet or exceed the criteria detailed in this section of the specification. Any test that does not demonstrate that a component is satisfactorily installed, as per these specifications, shall be repeated. If a test procedure requires modification to satisfactorily test some components, the modification shall be submitted for approval to the Owner before the tests are conducted.
      b. Following copper horizontal cable installation, including labeling and termination at both ends, undertake and record tests to ensure that the cabling system will perform satisfactorily in service. In addition to the tests detailed in this specification, the Contractor shall perform any additional tests that are deemed necessary to ensure the satisfactory operation of the systems. The Contractor shall incur the costs of these additional tests.
      c. All outlets, cables, patch panels and associated components shall be fully assembled and labeled prior to testing. Any testing performed on incomplete systems shall be redone upon completion of the work.

d. All testing shall be performed in presence of the Owner's representative. The Contractor shall demonstrate that the test procedure appropriately identifies the fault conditions being tested for.
e. Complete all of the tests identified in these specifications.
f. Notify the Owner at least ten (10) working days before the date of commencement of the cable tests. Provide details in writing, on the advance date of proposed tests including the test schedule, equipment to be used, the test certification and calibration, and the names and qualifications of test personnel.
g. The Owner or a designated representative shall be present during each type of test conducted. Contractor shall develop a reasonable, mutually agreeable schedule for the Owner to observe all tests. First instance tests shall be scheduled in such a fashion which will allow the Owner adequate time and opportunity for full participation.
h. In the event of multiple tests being conducted by the Contractor prior to this first inspection, the Owner reserves the right to reject these tests as non-compliant and to require them to be repeated at the Contractor's cost.
i. Personnel shall be competent in and qualified by experience or training for comprehensive TDR operation and troubleshooting, for both copper and optical fiber testing.
j. Include the cost of obtaining, calibrating and maintaining test equipment and the cost of carrying out and recording the tests detailed in this Specification, including labor costs, in the bid sum. No extra costs will be entertained.
k. Ensure that all test equipment is in calibration before delivery to site and throughout the testing period. The Contractor shall be responsible for ensuring that any necessary tests and rework needed to maintain equipment's calibration status is carried out. Any tests performed on test equipment without calibration shall be repeated at the Contractor's cost.
l. The test documentation shall be available for inspection by the Owner during the installation period and copies shall be provided to the Owner within five (5) working days of completion of tests on cables in each area. The Contractor shall retain a copy to aid preparation of as-built information.
m. Owner reserves the right for Owner to observe and verify all re-tests. If the Owner wishes to exercise this right, Contractor will provide a mutually agreeable, reasonable re-test schedule.
n. Failures detected during the testing shall be noted on the test results schedule, rectified and re-tested. On the fault being rectified, this shall also be noted. These notes shall not be deleted or obliterated.
o. Rectification of all damaged cables shall include replacing damaged cables with new cables in complete runs, replacing damaged connectors or remaking poor terminations. In-line cable joints, splices or distribution points will not be acceptable except where specified in this document. All damaged cables shall be removed from site.
p. If, upon submittal of the construction record documentation, there are any missing test results or incorrectly named files, the test shall be repeated at the Contractor's expense.

2. Category 6 Cabling: Test each Category 6 Cable and associated connectors. Carry out the following tests on every pair of every Category 6 cable:
   a. Conductor Continuity
   b. Conductor Separation

c. Conductor Polarity
d. Pair Mapping
e. NEXT, ELFEXT, ACR and Attenuation
f. Power Sum NEXT, Power Sum ACR and Power Sum ELFEXT
g. Structural Return Loss and Delay Skew
h. Cable length

3. Work Area Faceplates
   a. Carry out a visual inspection of the faceplates and blanking plates. Replace all damaged components.
   b. Ensure that all faceplate labels are installed correctly, leveled and plumb.

END OF SECTION

THE LINE SHOWN ABOVE IS 1" LONG ON ORIGINAL PLANS SHEET'S ORIGINAL SIZE

GENERAL NOTES

1. CONSTRUCTION DOCUMENTS DESCRIBE THE PRODUCTS, SYSTEMS, QUANTITIES, CONFIGURATION, AND PERFORMANCE SPECIFICATIONS THAT DELIVER THE OVERALL DESIGN INTENT OF THE PROJECT.
2. THE CONSTRUCTION DOCUMENT DRAWINGS AND SPECIFICATIONS ARE COMPLEMENTARY, AND WHAT IS REQUIRED BY ONE SHALL BE AS BINDING AS IF REQUIRED BY BOTH.
3. PERFORMANCE BY THE CONSTRUCTION TEAM SHALL BE CONSISTENT WITH THE CONSTRUCTION DRAWINGS AND SPECIFICATIONS AS NECESSARY TO DELIVER THE INDICATED RESULTS OF THE DESIGN INTENT.
4. VERIFY ALL DIMENSIONS, LOCATIONS OF EXISTING UTILITIES, AND CONDITIONS ON THE JOB SITE PRIOR TO THE START OF WORK OR PORTIONS OF THE WORK. NOTIFY THE ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THE ACTUAL FIELD CONDITIONS AND THE CONSTRUCTION DOCUMENTS. EXISTING CONDITIONS ARE INDICATED AS A RESULT OF FIELD OBSERVATIONS, INFORMATION SHOWN ON AVAILABLE DOCUMENTS AND FIELD CONDITIONS AT THE TIME OF PREPARATION.
5. ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH ALL GOVERNING CODES, ORDINANCES, REGULATIONS AND LAWS.
6. THE DESIGN ADEQUACY AND SAFETY OF ERECTION BRACING, SHORING, TEMPORARY SUPPORTS AND SCAFFOLDING IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
7. WHERE ANY CONFLICT OCCURS BETWEEN THE REQUIREMENTS OF LAWS, CODES, ORDINANCES, RULES AND REGULATIONS, THE MOST STRINGENT SHALL GOVERN.
8. IN NO CASE SHALL WORKING DIMENSIONS BE SCALED FROM PLANS, SECTIONS OR DETAILS ON THE DRAWINGS.
9. DETAILS MARKED 'TYPICAL' SHALL APPLY IN ALL CASES UNLESS SPECIFICALLY NOTED OTHERWISE.
10. ENACT ALL MEASURES TO PROTECT AND SAFEGUARD ALL EXISTING ELEMENTS TO REMAIN FROM BEING DAMAGED. REPLACE OR REPAIR EXISTING ELEMENTS DAMAGED BY THE EXECUTION OF THIS CONTRACT TO EQUAL OR BETTER CONDITION.
11. PRIOR TO THE START OF WORK THE CONTRACTOR SHALL COORDINATE BETWEEN THE REQUIREMENTS OF ALL DISCIPLINES HEREIN AND BETWEEN THE REQUIREMENTS OF ALL DRAWINGS AND SPECIFICATIONS IN ORDER THAT ALL ITEMS SATISFACTORILY RELATE TO ONE ANOTHER. NOTIFY ARCHITECT IMMEDIATELY REGARDING ANY ITEMS THAT CANNOT BE COORDINATED.
12. CONTRACTOR SHALL EXCERCISE EXTREME CAUTION IN EXCAVATING AND TRENCHING ON THIS SITE TO AVOID EXISTING DUCTS, PIPING, CONDUIT, ETC. AND TO PREVENT HAZARD TO PERSONNEL AND/OR TO EXISTING UNDERGROUND UTILITIES OR STRUCTURES. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT SHOULD SUCH UNIDENTIFIED CONDITIONS BE DISCOVERED. THESE DRAWINGS AND SPECIFICATIONS DO NOT INCLUDE THE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY.
13. CHANGES TO THE APPROVED DRAWINGS AND/OR SPECIFICATIONS SHALL BE MADE BY ADDENDA OR A CONSTRUCTION CHANGE DOCUMENT.
14. CUTTING, BORING, SAWCUTTING OR DRILLING THROUGH THE EXISTING OR NEW STRUCTURAL ELEMENTS SHALL NOT TO BE STARTED UNTIL THE DETAILS HAVE BEEN REVIEWED AND APPROVED BY THE ARCHITECT, AND STRUCTURAL ENGINEER OF RECORD.
15. ALL WORK SHALL CONFORM TO 2019 TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)
16. CHANGES TO THE APPROVED DRAWINGS AND SPECIFICATIONS SHALL BE MADE BY AN ADDENDUM OR CONSTRUCTION CHANGE DOCUMENT (CCD) APPROVED BY THE DIVISION OF THE STATE ARCHITECT, AS REQUIRED BY SECTION OF 4-388, PART 1, TITLE 24, CCR.
17. A "DSA CERTIFIED" PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY THE DSA SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTION 4-342, PART 1, TITLE 24 CCR.
18. A DSA - CERTIFIED CLASS 3 PROJECT INSPECTOR IS REQUIRED FOR THIS PROJECT
19. A DSA ACCEPTED TESTING LABORATORY DIRECTLY EMPLOYED BY THE DISTRICT (OWNER) SHALL CONDUCT ALL THE REQUIRED TESTS AND INSPECTIONS FOR THE PROJECT
20. THE INTENT OF THESE DRAWINGS AND SPECIFICTIONS IS THAT THE WORK OF THE ALTERATION, REHABILITATION OR RECONSTRUCTION IS TO BE IN ACCORDANCE WITH TITLE 24, CCR. SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OR NON-COMPLYING CONSTRUCTION BE DISCOVERED, WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CCR, A CONSTRUCTION CHANGE DOCUMENT (CCD), OR A SEPERATE SET OF PLANS AND SPECIFICATIONS, DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY DSA BEFORE PROCEEDING WITH THE WORK.(SECTION 4-317(C), PART 1, TITLE 24, CCR).
21. GRADING PLANS, DRAINAGE IMPROVEMENTS, ROAD AND ACCESS REQUIREMENTS AND ENVIRONMENTAL HEALTH CONSIDERATIONS SHALL COMPLY WITH ALL LOCAL ORDINANCES

CODES

PARTIAL LIST OF APPLICABLE CODES

2019	CALIFORNIA ADMINISTRATIVE CODE (CAC), PART 1, TITLE 24 C.C.R.
2019	CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 C.C.R. (2018 INTERNATIONAL BUILDING CODE VOLUMES 1 & 2 AND 2016 CALIFORNIA AMENDMENTS)
2019	CALIFORNIA ELECTRICAL CODE (CEC), PART 3, TITLE 24 C.C.R. (2017 NATIONAL ELECTRICAL CODE AND 2019 CALIFORNIA AMENDMENTS)
2019	CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 C.C.R. (2018 IAPMO UNIFORM PLUMBING CODE AND 2019 CALIFORNIA AMENDMENTS)
2019	CALIFORNIA ENERGY CODE (CEC), PART 6, TITLE 24 C.C.R.
2019	CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24 C.C.R. (2018 INTERNATIONAL FIRE CODE AND 2019 CALIFORNIA AMENDMENTS)
2019	CALIFORNIA EXISTING BUILDING CODE (CEBC), PART 10, TITLE 24 CCR (2018 INTERNATIONAL EXISTING BUILDING CODE AND 2019 CALIFORNIA AMENDMENTS)
2019	CALIFORNIA GREEN BUILDING STANDARDS CODE (CALGREEN), PART 11, TITLE 24 C.C.R.
2019	CALIFORNIA REFERENCED STANDARDS CODE, PART 12,TITLE 24 C.C.R. TITLE 19 C.C.R., PUBLIC SAFETY, STATE FIRE MARSHAL REGULATIONS.
2010	ADA STANDARDS FOR ACCESSIBLE DESIGN

PARTIAL LIST OF APPLICABLE STANDARDS

NFPA 72	NATIONAL FIRE ALARM & SIGNALING CODE (CA AMENDED) -	2016 ED
UL 464	AUDIBLE SIGNAL APPLIANCES FOR FIRE ALARM AND SIGNALING SYSTEMS, INCLUDING ACCESSORIES -	2003 ED
UL 521	STANDARD FOR HEAT DETECTORS FOR FIRE PROTECTIVE SIGNALING SYSTEMS -	1999 ED
UL 1971	STANDARD FOR SIGNALING DEVICES FOR THE HEARING IMPAIRED -	2002 ED(R2012)

FOR A COMPLETE LIST OF APPLICABLE NFPA STANDARDS REFER TO 2019 CBC (SFM) CHAPTER 35 AND CALIFORNIA FIRE CODE (CFC) CHAPTER 80.

SEE CALIFORNIA BUILDING CODE, CHAPTER 35 FOR STATE OF CALIFORNIA AMENDMENTS TO NFPA STANDARDS.

STATEMENT OF GENERAL CONFORMANCE

(x) THE DRAWINGS OR SHEETS LISTED ON THE INDEX SHEET WHICH ARE INDICATED WITH AN *
( ) THIS DRAWING PAGE OF SPECIFICATIONS/CALCULATIONS

HAVE BEEN PREPARED BY OTHER DESIGN PROFESSIONALS OR CONSULTANTS WHO ARE LICENSED AND/OR AUTHORIZED TO PREPARE SUCH DRAWINGS IN THIS STATE. IT HAS BEEN EXAMINED BY ME FOR:

1) DESIGN INTENT AND APPEARS TO MEET THE APPROPRIATE REQUIREMENTS OF TITLE 24, CALIFORNIA CODE OF REGULATIONS AND THE PROJECT SPECIFICATIONS PREPARED BY ME, AND
2) COORDINATION WITH MY PLANS AND SPECIFICATIONS AND IS ACCEPTABLE FOR INCORPORATION INTO THE CONSTRUCTION OF THIS PROJECT.

THE STATEMENT OF GENERAL CONFORMANCE "SHALL NOT BE CONSTRUED AS RELIEVING ME OF MY RIGHTS, DUTIES, AND RESPONSIBILITIES UNDER SECTIONS 17302 AND 81138 OF THE EDUCATION CODE AND SECTIONS 4-336, 4-341 AND 4-344" OF TITLE 24, PART 1. (TITLE 24, PART 1, SECTION 4-317 (B))

I CERTIFY THAT:

THE INDEX SHEETS WHICH ARE INDICATED WITH AN * ARE IN GENERAL CONFORMANCE WITH THE PROJECT DESIGN INTENT, AND THEY HAVE BEEN COORDINATED WITH THE PROJECT PLANS AND SPECIFICATIONS

Virginia E Marquardt
SIGNATURE
ARCHITECT OR ENGINEER DESIGNATED TO BE IN GENERAL RESPONSIBLE CHARGE

03/28/2022
DATE

VIRGINIA ELAINE MARQUARDT
PRINT NAME

C-33423
LICENSE NUMBER

06-30-23
EXPIRATION DATE

LICENSED ARCHITECT
VIRGINIA ELAINE MARQUARDT
No. C-33423
06/30/2023
RENEWAL DATE
STATE OF CALIFORNIA

PROJECT DESCRIPTION

THE SCOPE OF WORK INCLUDES THE FOLLOWING:

DEMOLITION SCOPE OF WORK AT THE EXISTING TRACK AND FIELD STADIUM IS AS FOLLOWS:

- DEMO EXISTING TRACK SURFACE
- DEMO EXISTING NATURAL TURF FOOTBALL/SOCCER FIELD AND RELATED IRRIGATION
- DEMO EXISTING SCOREBOARD & FLAG POLE
- DEMO EXISTING HARDSCAPE/SITE WALLS, LANDSCAPE AND IRRIGATION IN AREAS IDENTIFIED IN THE DESIGN DOCUMENTS

THE SCOPE OF WORK AT THE NEW TRACK AND FIELD STADIUM IS AS FOLLOWS:

- NEW SYNTHETIC TURF FIELD AND RUBBERIZED RUNNING TRACK
- NEW SCOREBOARD
- STANDARD FIELD ELECTRICAL
- NEW FLAGPOLE AND FOOTING
- NEW GROUND MOUNTED UPLIGHTING TO LIGHT EXISTING MURAL
- NEW GOAL POST AND FOOTING
- NEW CHAINLINK FENCE AND GATES, AS NOTED
- EXTENSION TO EXISTING RETAINING WALL
- NEW GUARDRAILS AT EXISTING DRINKING FOUNTAINS
- SITE IMPROVEMENTS INCLUDE: WALKWAYS, UTILITIES, LANDSCAPING, IRRIGATION, NEW SLURRY COAT & RESTRIPE ACCESSIBLE PARKING AREAS, NEW ORNAMENTAL GATE AND FENCES

PROJECT DATA

PROJECT ADDRESS:

EL MONTE HIGH SCHOOL
3048 TYLER AVE.
EL MONTE, CA 91731

OCCUPANCY TYPE:

REFER TO SITE PLANS FOR ADDITIONAL INFO.

SHEET INDEX

SYMBOL LEGEND

VIEW MARKERS

BUILDING SECTION MARKER — DRAWING NUMBER (TYP), REFERENCE TYPE (SIM, OH), Ref, A101, DRAWING SHEET (TYP)

WALL SECTION MARKER — Ref, A101

DETAIL SECTION MARKER — Ref, A101

EXTERIOR ELEVATION MARKER — DRAWING NUMBER, REFERENCE TYPE (SIM, OH), 1 Ref, A101, DRAWING SHEET

INTERIOR ELEVATION MARKER — 88, DRAWING NUMBER, 88 A101 88, DRAWING DIRECTION, 88, DRAWING SHEET

DETAIL CALLOUT — DRAWING NUMBER, REFERENCE TYPE (SIM, OH), Ref, A3.888, VIEW EXTENTS, DRAWING SHEET

ITEM TAGS

ROOM IDENTIFICATION TAG — Room name, 150 SF

DOOR IDENTIFICATION TAG — DOOR NUMBER 101A; EXIT OCCUPANCY PROVIDED; EXIT OCCUPANCY REQUIRED; FIRE RATING (MINUTES); DOOR NUMBER

WALL IDENTIFICATION TAG — WALL TYPE, C12f 2S, FIRE RATING (HRS)

CEILING IDENTIFICATION TAG — CEILING TYPE, AC11 9'-8", ELEVATION ABOVE TOP OF SLAB ELEVATION

LIGHT FIXTURE IDENTIFICATION TAG — FIXTURE TYPE

SLOPE TAG — 1" / 12", RISE PER 12" RUN

DRAWING SYMBOLS

REFERENCE GRID LINES — AA.88, AA.88

REFERENCE FLOOR LEVEL IDENTIDICATIONS — Name, Elevation; Name, Elevation

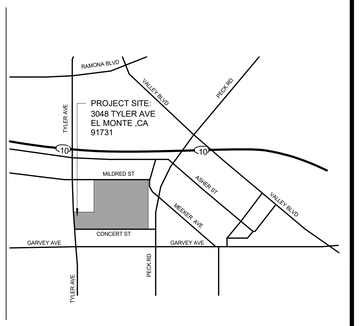
ABBREVIATIONS

(E)	EXISTING
AB	ANCHOR BOLT
AC PAVING	ASPHALTIC CONCRETE PAVING
ACC	ACCESS/ACCESSIBLE
ACP	ACOUSTICAL CEILING PANEL
ACT	ACOUSTICAL CEILING TILE
ADJ	ADJACENT/ADJUSTABLE
AFF	ABOVE FINISH FLOOR
AGG	AGGREGATE
AHU	AIR HANDLING UNIT
ARCH	ARCHITECTURAL
ATT	ATTENUATION
AUTO	AUTOMATIC
BD	BOARD
BLCG	BLOCKING
BOT	BOTTOM
BUR	BUILT UP ROOFING
CABT	CABINET
CF	CUBIC FEET
CFCI	CONTRACTOR FURNISHED, CONTRACTOR INSTALLED
CFOI	CONTRACTOR FURNISHED, OWNER INSTALLED
CG	CORNER GUARD
CJ	CONTROL JOINT
CL	CENTER LINE
CLF	CHAIN LINK FENCE
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
COL	COLUMN
COMP	COMPRESSION / COMPOSITE
CF	CUBIC FEET
COORD	COORDINATE
CORR	CORRUGATED
CT	CERAMIC TILE
CTSK	COUNTER SKUNK
CW	CURTAINWALL
DEPR	DEPRESSED / DEPRESSION
DF	DRINKING FOUNTAIN
DIM	DIMENSION
DISP	DISPENSER
DS	DOWNSPOUT
DTL	DETAIL
DW	DISHWASHER
E/W	EACH WAY
EIFS	EXTERIOR INSULATION FINISH SYSTEM
EJ	EXPANSION JOINT
ELEC	ELECTRICAL
ELEV	ELEVATION / ELEVATOR
ENCL	ENCLOSE / ENCLOSURE
EOS	EDGE OF SLAB
EP	ELECTRICAL PANEL
EQ	EQUAL
ESC	EXCUTCHEON
EWC	ELECTRIC WATER COOLER
EXP	EXPOSED
FA	FIRE ALARM
FD	FLOOR DRAIN
FDC	FIRE DEPARTMENT CONNECTION
FE	FIRE EXTINGUISHER
FEC	FIRE EXTINGUISHER W/ CABINET
FF	FINISH FLOOR
FG	FINISH GRADE
FH	FIRE HYDRANT
FHC	FIRE HOSE CABINET
FSH	FLAT HEAD SCREW
FIN	FINISH
FLR	FLOOR
FOC	FACE OF CONCRETE
FOF	FACE OF FINISH
FOM	FACE OF MASONRY
FOS	FACE OF STUD
FP	FIREPROOFING
FR	FIRE RATED
FRG	FIRE RATED GLASS
FRP	FIBERGLASS REINFORCED PLASTIC
FRT	FIRE RETARDANT TREATED
FS	FINISH SURFACE
FTG	FOOTING
GB	GRAB BAR
GFRC	GLASS FIBER REINFORCED CONCRETE
GL	GLASS TYPE
GLB	GLUE LAMINATED BEAM
GYP BD	GYPSUM BOARD
GYP PLAS	GYPSUM PLASTIC
HB	HOSE BIBB
HD	HEAVY DUTY
HDR	HEADER
HDWR	HARDWARE
HGT	HEIGHT
HM	HOLLOW METAL
HP	HIGH POINT
HSS	HOLLOW STEEL SECTION
ID	INSIDE DIAMTER
INT	INTERIOR
INV	INVERT
LANDS	LANDSCAPE
LAV	LAVATORY
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LP	LOW POINT
LT WT	LIGHT WEIGHT
LVR	LOUVER
MACH	MACHINE
MB	MACHINE BOLT
MDF	MEDIUM DENSITY FIBERBOARD
MDO	MEDIUM DENSITY OVERLAY
MECH	MECHANICAL
MED	MEDIUM
MEMB	MEMBRANE
MFR	MANUFACTURER
MH	MANHOLE
MO	MASONRY OPENING
MTD	MOUNTED
MTL	METAL
NIC	NOT IN CONTRACT
NR	NON RATED
NRC	NOISE REDUCTION COEFFICIENT
NTS	NOT TO SCALE
O/	OVER
O/A	OVERALL
OC	ON CENTER
OD	OUTSIDE DIAMTER
OFCI	OWNER FURNISHED, CONTRACTOR INSTALLED
OFOI	OWNER FURNISHED, OWNER INSTALLED
OFVI	OWNER FURNISHED, VENDOR INSTALLED
OH	OPPOSITE HAND
OPER	OPERABLE
OPNG	OPENING
ORD	OVERFLOW ROOF DRAIN
P/L	PROPERTY LINE
PA	PUBLIC ADDRESS
PAF	POWDER ACTUATED FASTENER
PCC	PORTLAND CEMENT CONCRETE PAVING
PED	PEDESTRIAN
PERF	PERFORATED
PERIM	PERIMETER
PERP	PERPENDICULAR
PH	PANIC HARDWARE
PIV	POST INDICATOR VALVE
PL	PLATE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLUMB	PLUMBING
PNL	PANEL
PNT	PAINT / PAINTED
POC	POINT OF CONNECTION
POLY ISO	POLYISOCYANURATE
PREFIN	PREFINISHED
PREP	PREP / PREPARATION
PTC	POST TENSIONED CONCRETE
PTD	PAPER TOWEL DISPENSER
PTN	PARTITION
PTS	PNEUMATIC TUBE STATION / SYSTEM
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
QT	QUARRY TILE
R	RADIUS, RISER
RB	RESILIENT BASE
RD	ROOF DRAIN
RECEPT	ECEPTACLE
REF	REFERENCE
REFL	REFLECT(ED), (IVE)
REFL	REFLECT(ED), (IVE)
REFR	REFRIGERATOR
REINF	REINFORCE/REINFORCED/ REINFORCEMENT
REM	REMOVE
RH	ROUND HEAD
RHS	ROUND HEAD SCREW
RO	ROUGH OPENING
ROW	RIGHT OF WAY
SCH	SCHEDULE (FOR PIPE)
SCHED	SCHEDULE / SCHEDULING
SD	STORM DRAIN / SOAP DISPENSER
SECT	SECTION
SG	SAFETY GLASS
SHT	SHEET
SHTG	SHEATHING
SMS	SHEET METAL SCREW
SND	SANITARY NAPKIN DISPOSAL
SOV	SHUT OFF VALVE
SPEC	SPECIFICATIONS
SS	STAINLESS STEEL
STC	SOUND TRAMISSION CLASS
STL	STEEL
STSMS	SELF TAPPING SHEET METAL SCREW
SUSP	SUSPENDED
SV	SHEET VINYL
SYM	SYMMETRICAL
T	TREAD
T&B	TOP AND BOTTOM
TO	TOP OF
TOC	TOP OF CURB / CONCRETE
TOP	TOP OF PARAPET
TOS	TOP OF STEEL
TOW	TOP OF WALL
TPD	TOILET PAPER DISPENSER
TS	TACKABLE SURFACE
U/C	UNDER CABINET (OR COUNTER
UNO	UNLESS NOTED OTHERWISE
UR	URINAL
VAC	VACUUM
VB	VAPOR BARRIER
VCT	VINYL COMPOSITION TILE
VIF	VERIFY IN FIELD
VTR	VENT THROUGH ROOF
VWC	VINYL WALL COVERING
W/	WITH
W/O	WITHOUT
WB	WOOD BASE
WC	WATER CLOSET
WD	WOOD
WDW	WINDOW
WGT	WEIGHT
WH	WATER HEATER
WP	WATERPROOFING/WALL PROTECTION
WR	WATER RESISTANT
WRGB	WATER RESISTANT GYPSUM BOARD
WS	WOOD SCREW
WSCT	WAINSCOT
WWF	WELDED WIRE FABRIC

NOTE:
OTHER ABBREVIATIONS USED ON THESE DRAWINGS ARE CONSIDERED STANDARDS IN THE BUILDING INDUSTRY. CONTACT ARCHITECT FOR NECESSARY CLARIFICATION.

STATE MAP

VICINITY MAP



HMC Architects
3361004000
3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

LICENSED ARCHITECT
VIRGINIA ELAINE MARQUARDT
No. C-33423
06/30/2025
RENEWAL DATE
STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

KEYNOTES

NOTES

FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD
EXISTING TRACK AND FIELD REPLACEMENT

SHEET NAME:
PROJECT DATA SHEET

ADDENDUM 01

FAC NO.: XXXXX | BLDG NO.: BLD-XXXXX

DATE: **08/08/2024** | CLIENT PROJ NO:

SHEET:

G0.11

8/8/2024 10:19:03 PM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THIS SHEETS ORIGINAL PAGE SIZE

PROJECT STATUS EL MONTE HS

DSA #	SCOPE	STATUS
51135	Construction of five vestibules at two boys and girls shower/locker room building L & M; elevator shaft building; alterations to auditorium building A, seven classroom buildings B, C, G, H, I, J, T, library/cafeteria building D, administration/classroom building E, two shower/locker buildings L & M, student union building P, two industrial arts buildings R & S, office building II, faculty lounge NN and science laboratory building F	#1 - Certified & Close of File
03-117117	Construction of 3 bleachers, 2 modular toilet buildings, 2 modular concession buildings, 1 ticket booth building	#1 - Certified & Close of File
03-118568	Alterations to 1 existing parking lot	#1 - Certified & Close of File
03-103300	Track and Field/ Construction of Electrical Utilities	#1 - Certified & Close of File

DSA #	SCOPE	STATUS
03-102001	Construction of Exterior Bleachers @ El Monte High School	#1 - Certified & Close of File
03-103779	Construction of CLSRM BLDGS C,F,H,I,MM, & NN @ EL MONTE HS	#2-Certification & Close of File Per EDU Code 17315(b) OR 81147(b)
03-107686	Alterations to buildings A, B, C, D, E, F, G, H, I, J, K, L, M, N, NN, and sitework	#1 - Certified & Close of File
03-108485	Construction of science building G and tennis courts. Alterations to classroom building G	#1 - Certified & Close of File
03-109061	Construction of library building, 2 classroom buildings, lunch shelter; mech/elect/trash enclosure, site work and grandstand at ball field	#2-Certification & Close of File Per EDU Code 17315(b) OR 81147(b)

SITE PLAN LEGEND

⬚	A.C. PAVING OR SLURRY COAT, REFER TO CIVIL DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION
⬚	CONCRETE - REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION
⬚	OFOI SYNTHETIC TURF - REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION
⬚	GRASS - AG SOD REFER TO LANDSCAPE DRAWINGS SPECIFICATIONS FOR ADDITIONAL INFORMATION
⬚	TRACK SURFACE - REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION
⬚	SHOT-PUT MIX - REFER TO LANDSCAPE DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION
⬚	AREA NOT IN SCOPE (N.I.S.)
⬚	SAND - REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION
⬚ AD-01	4" DEEP NATRICIL, OR APPROVED EQUAL, STABILIZED DESCOMPOSED GRANITE COLOR: DESERT GOLD.
—	EXPANSION OR CONTROL JOINT - REFER TO SPECIFICATIONS AND GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION
—X—X—	(E) CHAIN LINK FENCE
—□—□—	(E) ANTI-CLIMB METAL FENCING AND OR GATE(S)
▬ ▬	LIMITS OF WORK
▨	(E) MENS AND WOMENS TOILETS - NIC

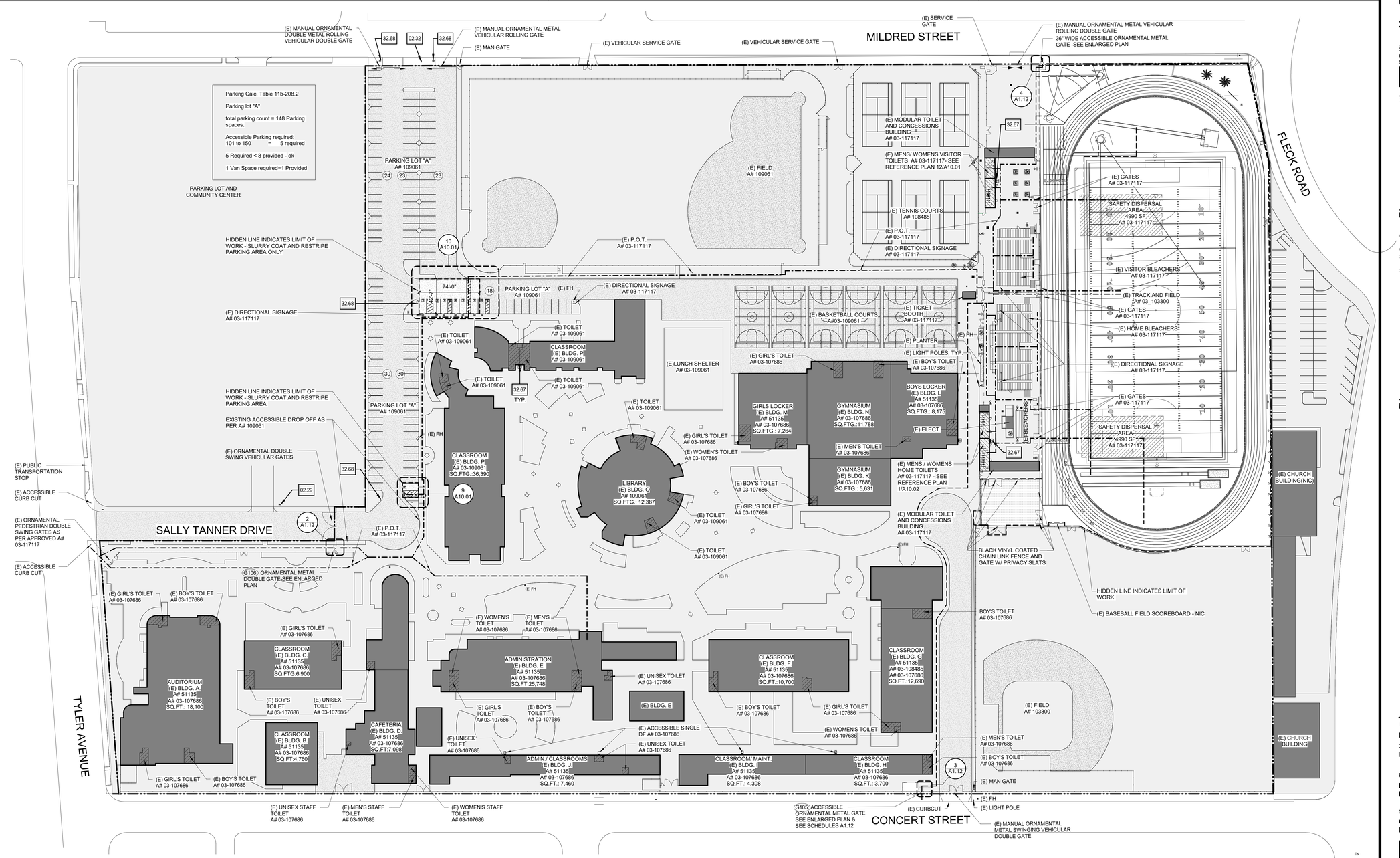
<u>DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE STATEMENT:</u>
THE POT IDENTIFIED IN THESE CONSTRUCTION DOCUMENTS IS COMPLIANT WITH THE CURRENT APPLICABLE CALIFORNIA BUILDING CODE ACCESSIBILITY PROVISIONS FOR PATH OF TRAVEL REQUIREMENTS FOR ALTERATIONS, ADDITIONS AND STRUCTURAL REPAIRS. AS PART OF THE DESIGN OF THIS PROJECT, THE POT WAS EXAMINED AND ANY ELEMENTS, COMPONENTS OR PORTIONS OF THE POT THAT WERE DETERMINED TO BE NONCOMPLIANT 1) HAVE BEEN IDENTIFIED AND 2) THE CORRECTIVE WORK NECESSARY TO BRING THEM INTO COMPLIANCE HAS BEEN INCLUDED WITHIN THE SCOPE OF THIS PROJECT'S WORK THROUGH DETAILS, DRAWINGS AND SPECIFICATIONS INCORPORATED INTO THESE CONSTRUCTION DOCUMENTS. ANY NONCOMPLIANT ELEMENTS, COMPONENTS OR PORTIONS OF THE POT THAT WILL NOT BE CORRECTED BY THIS PROJECT BASED ON VALUATION THRESHOLD LIMITATIONS OR A FINDING OF UNREASONABLE HARDSHIP ARE SO INDICATED IN THESE CONSTRUCTION DOCUMENTS.

DURING CONSTRUCTION, IF POT ITEMS WITHIN THE SCOPE OF THE PROJECT REPRESENTED AS CODE COMPLIANT ARE FOUND TO BE NONCONFORMING BEYOND REASONABLE CONSTRUCTION TOLERANCES, THEY SHALL BE BROUGHT INTO COMPLIANCE WITH THE CBC AS A PART OF THIS PROJECT BY MEANS OF A CONSTRUCTION CHANGE DOCUMENT."

"ACCESSIBLE ROUTE IS BARRIER FREE WITHOUT ANY ABRUPT LEVEL CHANGES EXCEEDING 1/2" BEVELED AT A SLOPE NOT STEEPER THAN 1:2, EXCEPT THAT LEVEL CHANGES ARE 1/4" MAXIMUM VERTICAL AND AT LEAST 48" WIDE. SURFACE SHALL BE STABLE, FIRM, AND SLIP RESISTANT. CROSS SLOPE SHALL NOT BE STEEPER THAN 1:48 AND RUNNING SLOPE SHALL NOT BE STEEPER THAN 1:20 (SECTION 11B-403.3). ACCESSIBLE ROUTE SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM (SECTION 11B-307.4) AND PROTRUDING OBJECTS GREATER THAN 4" PROJECTION FROM WALL SURFACE BETWEEN 27" AND 80" ABOVE FINISH FLOOR OR GROUND (SECTION 11B-307.2). PROVIDE FLUSH TRANSITIONS AT ANY ADJOINING JOINTS BETWEEN DIFFERENT WALK SURFACES IN ACCESSIBLE ROUTE. ARCHITECT TO VERIFY THAT THERE ARE NO BARRIERS IN THE ACCESSIBLE ROUTE AND ALL ACCESSIBLE ROUTES COMPLY WITH SECTION 11B-206."

SITE ACCESS LEGEND

■	(E) BUILDINGS
▨	SAFE DISPERSAL AREA
▨	(E) RESTROOMS - NIC
⬚	AREA N.I.C.
—·—·—	(E) PATH OF TRAVEL AS PER A# AS INDICATED ON DWGS.
— — —	PATH OF TRAVEL
—··—	ASSUMED PROPERTY LINE



OVERALL/ ACCESSIBILITY SITE PLAN 1
1" = 50'-0"

HMC Architects

3361004000

3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

LICENSED ARCHITECT
VIRGINIA ELAINE MARQUARDT
No. C-33423
Virginia E Marquardt
06/30/2025
RENEWAL DATE
STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

KEYNOTES

02.29	(E) TOW AWAY SIGN / NO HIGH SCHOOL PARKING - SEE DETAIL 4/A10.02 SIM.
02.32	(E) NO PARKING SIGN
32.67	NEW DF RAILING AT (E) ACCESSIBLE DF, SEE DETAIL 11/A10.10
32.68	NO PARKING/ TOW AWAY SIGN - SEE DETAIL 4/A10.02

NOTES

FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD
EXISTING TRACK AND FIELD REPLACEMENT

SHEET NAME:
OVERALL / ACCESSIBLE PATH OF TRAVEL AND EXITING

ADDENDUM 01

FAC NO.: XXXXX **BLDG NO.: BLD-XXXXX**

DATE: **08/08/2024** CLIENT PROJ NO:

SHEET:

G1.10

PLEASE RECYCLE

08-Aug-24 6:50:55 PM

THE LINE SHOWN ABOVE IS 1" LONG WHEN PRINTED ON SHEETS ORIGINAL SPACE SIZE

FIRE ACCESS GENERAL NOTES

1. REFER TO SHEET G0.11 FOR TYPICAL SYMBOLS AND ABBREVIATIONS.
2. PROVIDE A MIN. UNOBSTRUCTED WIDTH OF 20 FEET CLEAR TO SKY, VEHICULAR ACCESS TO WITHIN 150 FEET OF ALL PORTIONS OF BUILDING EXTERIOR WALLS PER CAL. FIRE CODE.
3. HATCH INDICATES FIRE DEPARTMENT ACCESS WAYS (SEE LEGEND).
4. VEHICULAR ACCESS MUST BE PROVIDED AND MAINTAINED SERVICEABLE THROUGHOUT CONSTRUCTION.
5. ALL POLES, BACKBOARDS AND OTHER CONSTRUCTIONS ON PLAYGROUNDS NEAR A FIRE ACCESS ROADWAY SHALL BE PROVIDED WITH REFLECTION TAPE OR PAINT.
6. KNOX KEY SWITCHES, KNOX LOCKS OR FRANGIBLE PADLOCKS/ CHAINS SHALL BE PROVIDED FOR ALL GATES AND BARRIERS IN THE PATH OF VEHICLE OR FIREFIGHTER ACCESS.
7. THE CAMPUS ID SHALL BE IDENTIFIED WITH 6 INCH HIGH ADDRESS NUMBERS EASILY VISIBLE FROM THE PUBLIC ROAD FRONTING THE PROPERTY. INDIVIDUAL STRUCTURES ARE IDENTIFIED WITH 6 INCH HIGH ADDRESS NUMBERS OR LETTERS EASILY VISIBLE FROM THE PUBLIC WAY OR FIRE ROADWAY.
8. PIVS', DDCV AND FDCS' SHALL BE UNOBSTRUCTED AND VISIBLE FROM THE FIRE LANE OR PUBLIC ROAD. THEY SHALL BE PAINTED OSHA SAFETY RED.
9. REFER TO CIVIL DRAWINGS FOR GRADING AND UTILITY INFORMATION.
10. REFER TO MEP/AV DRAWINGS FOR UTILITY INFORMATION.
11. CONTRACTOR IS RESPONSIBLE FOR REPAIR/REPLACEMENT OF ALL HARDSCAPE/ PLANTING OUTSIDE OF LIMIT OF WORK LINE FOR CONNECTION OF UNDERGROUND UTILITIES.
12. CONTRACTOR TO VERIFY LOCATIONS OF (E) KNOX BOX. IF NO KNOX BOX EXISTS, CONTRACTOR TO INSTALL NEW KNOX BOX IN ACCORDANCE W/ FIRE CODE SECTION 506 AND SPEC SECTION 10 80 00.

DSA **810**

FIRE & LIFE SAFETY SITE CONDITIONS SUBMITTAL

Division of the State Architect (DSA) documents referenced within this publication are available on the DSA Forms or DSA Publications webpages.

To facilitate the Division of the State Architect's (DSA) fire and life safety plan review of project site conditions, DSA requires the design professional to provide the following information at time of project submittal for projects consisting of construction of a new campus, construction of new building(s), additions to existing buildings, and for site alternate design means for fire department emergency vehicle access, and fire suppression water supply.

Information associated with compliance items 1 through 3 below is to be provided for all project types indicated above. Information associated with items 4 through 7 is to be completed when an alternate means is utilized. Acknowledgement by the school district and signature from the Local Fire Authority (LFA) is only required when an alternate design means is being requested.

The Project Information and Fire & Life Safety Information sections are to be completed for all projects and imaged onto the fire access site plan. When an alternate design/means is proposed, all sections on pages 1 and 2 are to be completed and imaged on the fire access site plan.

For additional information refer to the instructions at the end of this form and DSA Policy *PL 09-01: Fire Flow for Buildings*.

PROJECT INFORMATION	
School District/Owner:	El Monte Union High School District
Project Name/School:	El Monte High School
Project Address:	3048 Tyler Ave, El Monte, CA 91731

FIRE & LIFE SAFETY INFORMATION				
1.	Has a fire hydrant flow test been performed within the past 12 months? *(If yes, provide a copy of the test data.)*	Yes ☐		No ☒
2.	Was the fire hydrant water flow test performed as part of this LFA review?	Yes ☐		No ☒
3.	Is the project located within a designated fire hazard severity zone *(FHSZ)* as established by Cal-Fire? *(If yes, indicate FHSZ classification below.)*	Yes ☐		No ☒
	Refer to the following website for FHSZ locations: http://egis.fire.ca.gov/FHSZ/	Moderate ☐	High ☐	Very High ☐
	Wildland Interface Area (WIFA) *(If any designations are checked, project design must meet the requirements of CBC Chapter 7A.)*			WIFA ☐

CONDITION MEANS AND METHODS RESOLUTION		ALTERNATE ACCEPTED			
		Yes	No	N/A	N/R
4.	Emergency vehicle access roadways do not meet CFC requirements.			X	
4a.	**Acceptable Alternate:** Emergency vehicle and personnel access as proposed by the project architect is acceptable for providing fire suppression and protection of life and property.				
5.	**Fire Hydrants:** Number and spacing does not meet CFC requirements.			X	
5a.	**Acceptable Alternate:** Number of fire hydrants and spacing as proposed by the project architect is acceptable for fire suppression and protection of life and property.				
6.	**Fire Hydrants:** Water flow and pressure are less than CFC minimum.			X	
6a.	**Acceptable Alternate:** The available flow and pressure is acceptable for providing fire suppression and protection of life and property.				
7.	Location of fire department connection(s) serving fire sprinkler systems or standpipe systems does not meet CFC requirements.			X	
7a.	**Acceptable Alternate:** The location of fire department connection serving the fire sprinkler system and/or standpipe system is acceptable for providing fire suppression and protection of life and property.				

School District Acceptance of Acceptable Design Alternates

By signing this form, the school district acknowledges and accepts the proposed design as an alternative to California Building Code (CBC) and California Fire Code (CFC) minimum requirements, as indicated by one or more of the conditions indicated at items 4a, 5a, 6a or 7a, for providing fire and life safety protection of life and property.

Accepted by: _____ Title: _____

Signature: _____ Date: _____

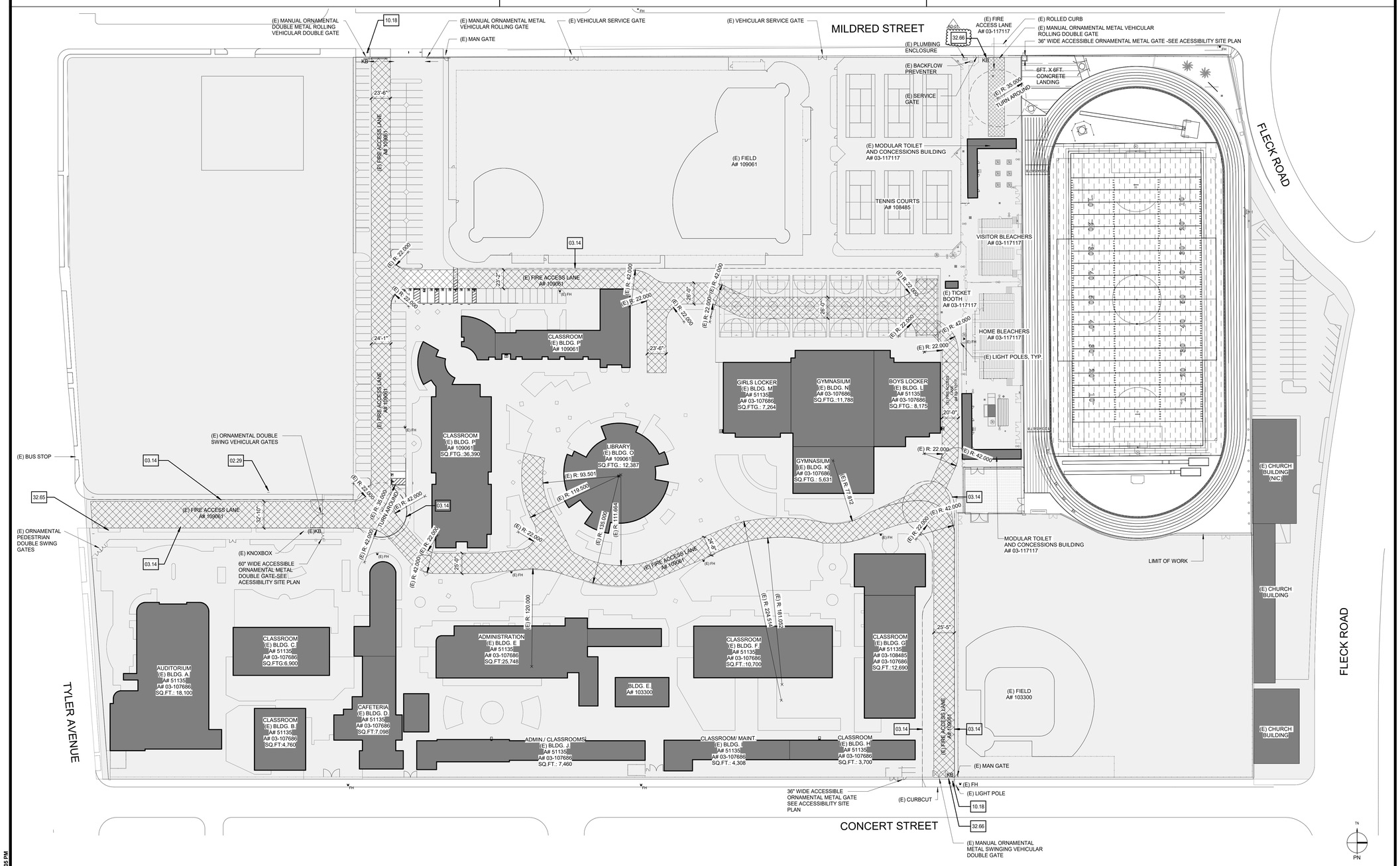
LOCAL FIRE AUTHORITY (LFA) INFORMATION	
LFA Agency Name:	
LFA Review Official:	
Title:	Work Phone:
Work Email:	

LFA Reviewer's Signature: _____ Date: _____

FIRE ACCESS LEGEND

- A/C SLURRY COAT, REFER TO CIVIL DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION
- CONCRETE - REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION
- SYNTHETIC TURF - REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION
- GRASS - REFER TO LANDSCAPE DRAWINGS SPECIFICATIONS FOR ADDITIONAL INFORMATION
- PLANTER WITH 6" CURB. SEE LANDSCAPE DRAWINGS FOR ADDITIONAL INFORMATION
- TRACK SURFACE - REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION
- SHOT-PUT MIX - REFER TO LANDSCAPE DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION
- (E) 20' FIRE LANE PER A# AS INDICATED ON PLAN
- AREA N.I.C.

- LIMIT OF WORK
- (E) FIRE LANE IDENTIFICATION - PAINTED RED
- X—X CHAIN LINK FENCE
- ORNAMENTAL METAL FENCING AND OR GATE(S)
- FH (E) FIRE HYDRANT
- (E) KB (E) KNOX BOX, A#109061
- KB KNOX BOX



FIRE ACCESS SITE PLAN

1" = 50'-0"

PLEASE RECYCLE

8/8/2024 6:02:05 PM

HMC Architects
3361004000
3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

LICENSED ARCHITECT
VIRGINIA ELAINE MARQUARDT
No. C-33423
06/30/2025
REGISTERED NURSE
STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

KEYNOTES

02.29	(E) TOW AWAY SIGN / NO HIGH SCHOOL PARKING - SEE DETAIL 4/A10.02 SIM.
03.14	(E) FIRE LANE IDENTIFICATION
10.18	SURFACE MOUNTED KNOXBOX ATTACHED TO ORNAMENTAL FENCE EXACT LOCATION TO BE DETERMINED BY FIRE DEPARTMENT; PROVIDE STEEL PLATE WELDED TO ORNAMENTAL FENCE FRAME TO ATTACH KNOXBOX. SECURE KNOXBOX PER MANUF. INSTALLATION & REFER TO SPEC SECTION 10 80 00
32.65	FIRE LANE NO PARKING SIGN WITH POLE - SEE DETAIL 2/A10.02
32.66	FIRE LANE NO PARKING SIGN - SEE DETAIL 2/A10.02

NOTES

FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD
EXISTING TRACK AND FIELD REPLACEMENT

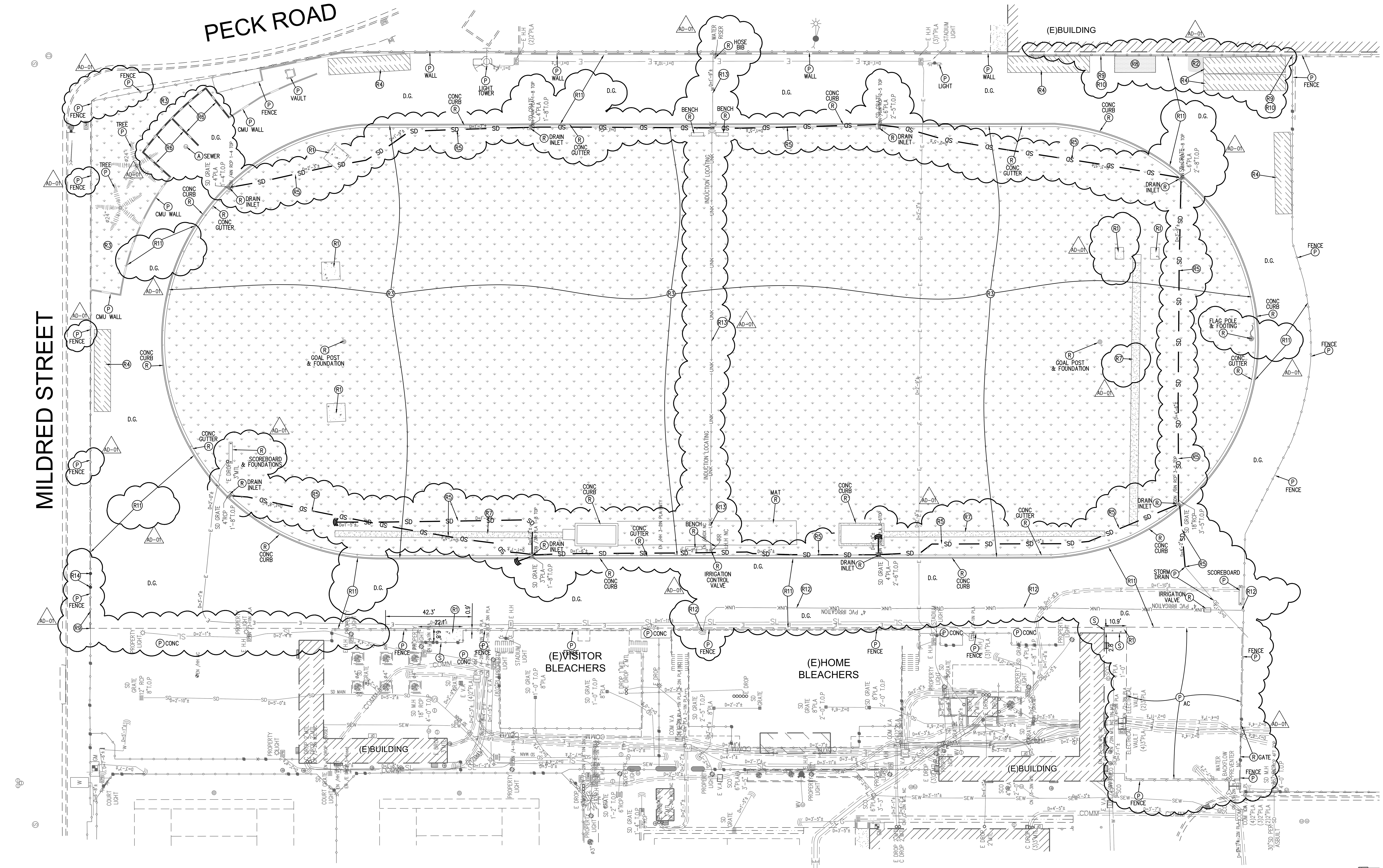
SHEET NAME:
FIRE ACCESS SITE PLAN

ADDENDUM 01

FAC NO.: XXXXX	BLDG NO.: BLD-XXXXX
DATE: 08/08/2024	CLIENT PROJ NO:

SHEET:

G1.11



GENERAL DEMOLITION NOTES

1. ALL ITEMS, SHOWN ON THIS PLAN TO BE REMOVED, SHALL BE VERIFIED BY THE OWNER PRIOR TO DEMOLITION. THE CONTRACTOR SHALL MEET WITH THE OWNERS REPRESENTATIVE PRIOR TO CLEARING AND GRUBBING.
2. THE CONTRACTOR SHALL VERIFY THE LOCATION AND QUANTITY OF EXISTING SURFACE STRUCTURES AND SHALL BE SOLELY RESPONSIBLE FOR ANY UNIDENTIFIED UTILITIES, IMPROVEMENTS, TREES, ETC,. TO BE DEMOLISHED AND REMOVED WITHIN THE DEMOLITION LIMIT LINE, INCLUDING APPURTENANT FOUNDATIONS OR SUPPORTS.
3. REMOVAL OF LANDSCAPING SHALL INCLUDE ROOTS AND ORGANIC MATERIAL.
4. DUST CONTROL SHALL BE IMPLEMENTED DURING DEMOLITION.
5. DAMAGE TO ANY EXISTING UTILITIES AND SERVICES WHICH ARE TO REMAIN SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. CONTRACTOR SHALL REPAIR AND/OR REPLACE IN KIND.
6. TEMPORARY EROSION CONTROL MEASURES SHALL BE IMPLEMENTED TO PREVENT DEBRIS AND UNSUITABLE MATERIALS FROM ENTERING STORM DRAIN, SANITARY SEWERS AND STREETS. AD-01
7. THE CONTRACTOR SHALL DEMOLISH AND REMOVE ALL LANDSCAPING WATERING SYSTEMS WITHIN THE LIMITS OF WORK. WHERE THE DEMOLITION IMPACTS EXISTING LANDSCAPE TO REMAIN, MODIFY THE EXISTING IRRIGATION SYSTEM, INCLUDING ADDING IRRIGATION HEADS AS NECESSARY TO MAINTAIN COMPLETE AND FULL COVERAGE OF EXISTING PLANTING.
8. THE CONTRACTOR SHALL TRENCH AND REMOVE ALL EXISTING UNDERGROUND STRUCTURES, UTILTIES OR IMPROVEMENTS SO DESIGNATED FOR REMOVAL ON THE PROJECT PLANS AND BACKFILL TO THE EXISTING GRADE OR FUTURE GRADE AS SHOWN HEREON.
9. THE CONTRACTOR SHALL BACKFILL SOIL IN THE EXCAVATED TREE ROOT PITS AND THE TRENCHES FOR REMOVED EXISTING UNDERGROUND STRUCTURES, UTILITIES, AND IMPROVEMENTS.
10. THE CONTRACTOR SHALL NOT ABANDON-IN-PLACE ANY EXISTING UNDERGROUND STRUCTURE, UTILITY, OR IMPROVEMENT SO DESIGNATED FOR REMOVAL ON THE PROJECT PLANS UNLESS DIRECTED TO BY THE OWNER.
11. CONTRACTOR TO SAWCUT ALL EXISTING A.C. AND CONCRETE PAVEMENT AT DEMOLITION LIMIT LINE. CONTRACTOR SHALL REMOVE SIDEWALK, CURB & GUTTER TO THE NEAREST JOINT.
12. CONTRACTOR SHALL REPLACE ALL EXISTING IMPROVEMENTS OUTSIDE THE DEMOLITION LIMIT LINE THAT ARE DAMAGED DURING CONSTRUCTION TO MATCH EXISTING, INCLUDING PERMANENT TRENCH RESURFACING.
13. CONTRACTOR IS RESPONSIBLE TO KEEP ALL UTILITES OPERATIONAL THAT SERVES FACILITIES OUTSIDE THE SCOPE OF THE DEMOLITION ZONE.
14. CONTRACTOR SHALL INSTALL A MINIMUM 8' HIGH CHAIN LINK CONSTRUCTION FENCE WITH WIND SCREEN AROUND PERIMETER OF DEMOLITION AREA. AD-01
15. ALL EXISTING DRAINAGE STRUCTURES ON SITE SHALL BE PROTECTED AND REMAIN FUNCTIONAL DURING DEMOLITION AND THROUGH THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO THESE STRUCTURES, OR DAMAGE CAUSED TO ADJACENT PROPERTIES DUE TO THE OBSTRUCTION OF THESE STRUCTURES.
16. ALL CONCRETE & CMU BLOCK WALLS & PLANTERS SHOWN ON THIS PLAN TO BE REMOVED SHALL INCLUDE WALL FOOTINGS & FOUNDATIONS IN THEIR REMOVAL.
17. THE PROVISIONS OF CALIFORNIA FIRE CODE CHAPTER 14 AND CALIFORNIA BUILDING CODE CHAPTER 37 SHALL BE ENFORCED ON THIS PROJECT.
18. ALL FENCING SHOWN ON THE DEMOLITION PLANS SHALL INCLUDE BELOW OR ABOVE GRADE CONCRETE FOUNDATIONS / FOOTINGS.

NOTE TO CONTRACTOR: BEFORE DEMOLITION OCCURS, THE CONTRACTOR SHALL COMPLETE HIS OWN UNDERGROUND UTILITY MAPPING SURVEY OF THE PROJECT SITE TO DETERMINE WERE EXISTING UTILITIES ARE AND WHERE POSSIBLE UNDERGROUND CONFLICTS MAY OCCUR.

UNDERGROUND UTILITY LINETYPE LEGEND:

Linetype	Description
— SD — SD —	(E)STORM DRAIN
— W — W —	(E)DOMESTIC WATER
— S — S —	(E)SANITARY SEWER
— G — G —	(E)GAS
— E — E —	(E)ELECTRICAL/POWER
— C — C —	(E)COMMUNICATIONS
— F — F —	(E)FIRE WATER

HMC Architects
3361004000
3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

LICENSED ARCHITECT
VIRGINIA ELAINE MARQUARDT
No. C-33423
06/30/2025
RENEWAL DATE
STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

DEMOLITION NOTES:

- (P) PROTECT EXISTING IMPROVEMENTS IN PLACE.
- (A) ADJUST TO GRADE. AD-01
- (S) SAWCUT EXISTING ASPHALT/CONCRETE PAVEMENT WITH CLEAN EDGE.
- (R) REMOVE EXISTING IMPROVEMENT AND DISPOSE BY CONTRACTOR.
- (R1) REMOVE CONCRETE PAVEMENT AND BASE MATERIAL
- (R2) REMOVE ASPHALT PAVEMENT AND BASE MATERIAL
- (R3) CLEAR AND GRUB & DISPOSE OF EXISTING LANDSCAPE/TURF. REMOVE BELOW GRADE IRRIGATION SYSTEM. AD-01
- (R4) RELOCATE STORAGE CONTAINER PER OWNER'S DIRECTION.
- (R5) REMOVE EXISTING STORM DRAIN.
- (R6) REMOVE 3' HIGH CMU WALL AND FOOTINGS.
- (R7) REMOVE CONCRETE WITH RUBBERIZED TRACK SURFACE.
- (R8) REMOVE AND DISPOSE OF EXISTING CONTAINER.
- (R9) REMOVE AND DISPOSE OF EXISTING FENCE.
- (R10) REMOVE AND DISPOSE OF MOW CURB.
- (R11) REMOVE AND DISPOSE OF EXISTING DECOMPOSED GRANITE. AD-01
- (R12) REMOVE EXISTING 4" PVC IRRIGATION LINE.
- (R13) REMOVE EXISTING WATER LINE.
- (R14) REMOVE EXISTING GATE AND REPLACE WITH PICKETS TO MATCH EXISTING.

HATCH LEGEND:

- = EXISTING BUILDING
- = REMOVE EXISTING CONTAINER AD-01
- = REMOVE EXISTING ASPHALT PAVEMENT
- = REMOVE EXISTING CONCRETE PAVEMENT
- = REMOVE EXISTING LANDSCAPE

20 10 0 20 40 60
SCALE: 1" = 20'

PLANS PREPARED BY:
FPL and Associates, Inc.
Traffic • Transportation • Civil
30 Corporate Park, Suite 401
Irvine, CA 92606
PHONE: 949-252-1688

SIGNATURE 1/5/2023 DATE

REGISTERED PROFESSIONAL ENGINEER
ALAN WING-CHI LEE
No. C 34971
Exp. 09-30-25
CIVIL
STATE OF CALIFORNIA

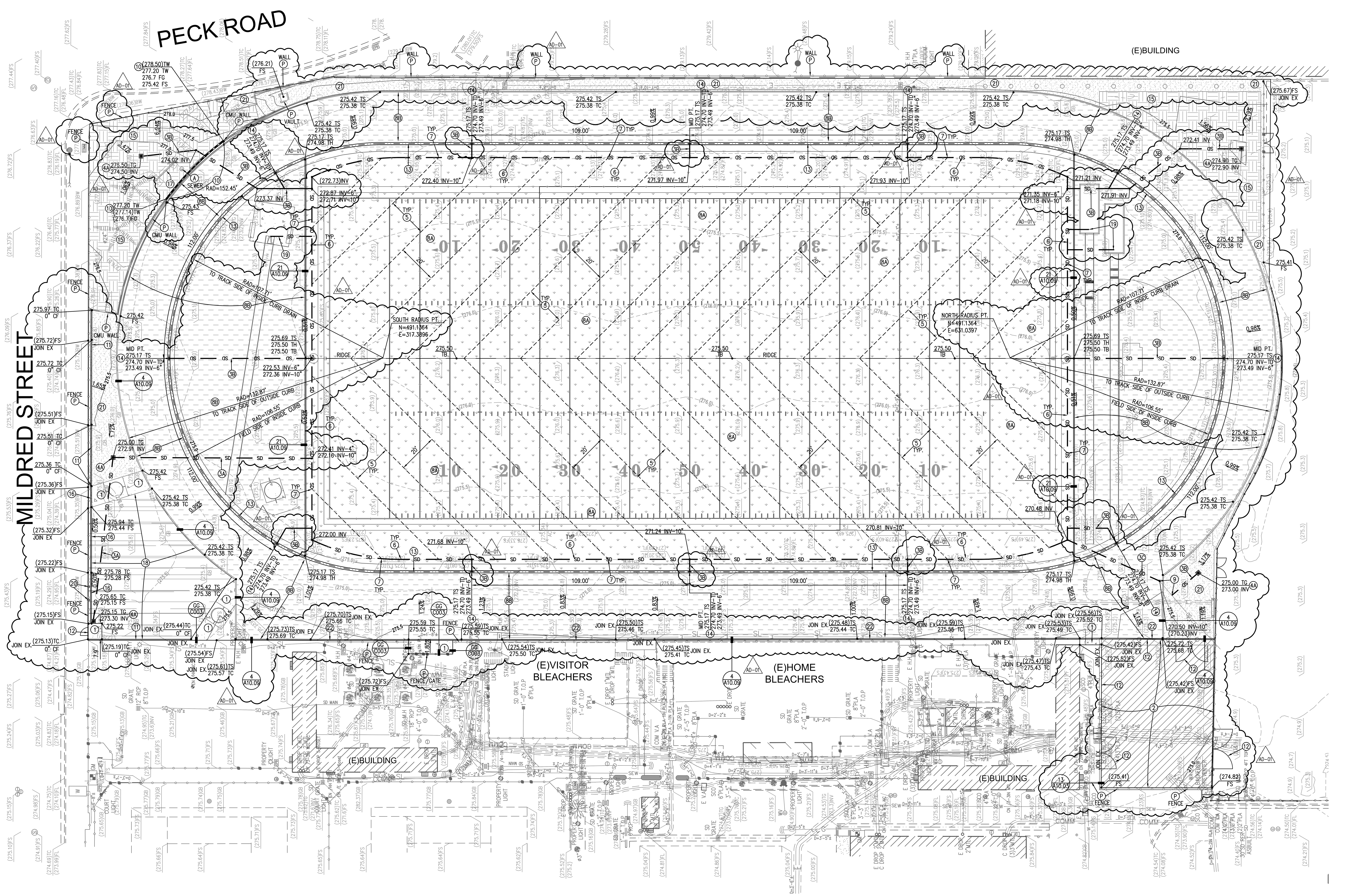
FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD
EXISTING TRACK AND FIELD REPLACEMENT

SHEET NAME:
DEMOLITION PLAN

ADDENDUM 01

FAC NO.: XXXXX BLDG NO.: BLD-XXXXX
DATE: 08/08/2024 CLIENT PROJ NO:
SHEET: **C001**



CONSTRUCTION NOTES:

- (P) PROTECT EXISTING IMPROVEMENTS IN PLACE.
- (A) ADJUST TO GRADE. AD-01
- (1) CONSTRUCT CONCRETE PAVEMENT PER DETAIL 1/C003. AD-01
- (2) CRACKS 1/2" WIDE OR LESS SHALL BE CLEANED OF DEBRIS, STEAMED TO KILL WEEDS AND FILLED WITH LIQUID ASPHALT EMULSION. AFTER ASPHALT PAVEMENT CRACK SEALING HAS BEEN COMPLETED ASPHALT PAVEMENT SHALL RECEIVE 2 COATS OF ASPHALT BASED SEALCOAT COMPLYING WITH S.S.P.W.C. SECTION 203-9. FOLLOW SPECIFICATION 32 12 36 SEAL COATS FOR INSTALLATION.
- (3A) CONSTRUCT 4" SDR-35 P.V.C DRAINAGE PIPE. SEE CORRESPONDING TRENCH DETAIL ON SHEET C003.
- (3B) CONSTRUCT 6" SDR-35 P.V.C DRAINAGE PIPE. SEE CORRESPONDING TRENCH DETAIL ON SHEET C003.
- (3C) CONSTRUCT 10" SDR-35 P.V.C DRAINAGE PIPE. SEE CORRESPONDING TRENCH DETAIL ON SHEET C003. AD-01
- (4A) CONSTRUCT 18" SQUARE CATCH BASIN, PARKWAY GRATE, PER DETAIL 4A/C004.
- (5) CONSTRUCT 1" HIGH x 12" WIDE HDPE FLAT DRAINAGE PIPE PER DETAIL 5/C004 AND SPACED PIPE AT 20' ON CENTER.
- (6) INSTALL 10" PERFORATED HDPE PIPE PER PERIMETER SUBDRAIN PER DETAIL 6/C004.
- (7) CONNECT FLAT DRAINAGE PIPE INTO 10" PERFORATED PIPE PER DETAIL 7/C004.
- (8A) CONSTRUCT SYNTHETIC TURF PER DETAIL 8A/C004.
- (8B) CONSTRUCT SYNTHETIC TRACK STRUCTURAL SECTION PER DETAIL 8B/C003. AD-01
- (9) CONNECT NEW STORM DRAIN LINE TO EXISTING 12" STORM DRAIN LINE WITH APPROPRIATE FITTINGS.
- (10) CONSTRUCT CMU RETAINING WALL PER DETAIL 10/C003.
- (11) CONSTRUCT CONCRETE MOW CURB PER DETAIL 11/C003. AD-01
- (12) CONSTRUCT FENCE/GATE PER ARCHITECTURAL PLAN.
- (13) CONSTRUCT ACO 3000 SLOT DRAIN PER MANUFACTURER INSTRUCTIONS.
- (14) CONSTRUCT ACO 3000 CATCH BASIN PER MANUFACTURER INSTRUCTIONS.
- (15) LANDSCAPE/TURF PER LANDSCAPE ARCHITECT PLAN.
- (16) CONSTRUCT CONCRETE CURB PER DETAIL 16/C004.
- (17) ELECTRONIC SCOREBOARD, SEE DETAIL 7/A10.10 AND SPECIFICATION 11 65 00.
- (18) CONSTRUCT SHOT-PUT MIX PER LANDSCAPE PLANS.
- (19) CONSTRUCT 1" SCH. 40 P.V.C PIPE. SEE CORRESPONDING TRENCH DETAIL ON SHEET C003.
- (20) CONSTRUCT FENCE BY REPLACING WITH PICKETS TO MATCH EXISTING.
- (21) CONSTRUCT STABILIZED DECOMPOSED GRANITE PER LANDSCAPE/L2.01.
- (22) CONSTRUCT CONCRETE CURB PER DETAIL 4/A10.09.

AD-01

GRADING NOTE:

FINAL AGGREGATE BASE GRADE SHALL BE ACHIEVED UTILIZING LASER GUIDED EQUIPMENT. SURFACE STABILITY SHALL BE SUCH THAT A LASER GUIDED MOTOR GRADER OR TRACTOR AND TOWED LASER GUIDED GANNON CAN FINE GRADE TO THE REQUIRED TOLERANCES LEAVING BEHIND NO TIRE TRACKS OR INDENTATIONS. IF NECESSARY, IN ORDER TO ATTAIN SURFACE STABILITY, CONTRACTOR SHALL ADD SMALL QUANTITIES OF FINE AGGREGATE AS APPROPRIATE TO ASSIST IN ATTAINMENT OF STABILITY. CONTRACTOR SHALL BE RESPONSIBLE FOR DELIVERY OF THE GRADED AGGREGATE BASE TO THE SATISFACTION OF THE OWNERS REPRESENTATIVE AT CONTRACTOR'S EXPENSE.

UNDERGROUND UTILITY COORDINATION NOTE:

THE CONTRACTOR IS RESPONSIBLE TO COORDINATE AND CONSTRUCT ALL UNDERGROUND UTILITIES SO THAT THE PROPOSED STORM DRAIN PIPES ARE INSTALLED AT THE ELEVATIONS SHOWN ON THESE PLANS. IF ELECTRICAL CONDUITS ARE INSTALLED PRIOR TO STORM DRAIN, THE CONTRACTOR MUST CONSTRUCT THE CONDUITS SO THEY DO NOT CLASH WITH GRAVITY LINES. CONTRACTOR IS RESPONSIBLE FOR ALL COSTS INCURRED IF GRAVITY LINES ARE NOT INSTALLED PER ELEVATIONS SHOWN HEREON.

HATCH LEGEND:

- = EXISTING BUILDING
- = NEW CONCRETE PAVEMENT
- = NEW ARTIFICIAL TURF (8A)
- = NEW SYNTHETIC TRACK SURFACE (8B)
- = NEW STABILIZED DECOMPOSED GRANITE (21)
- = NEW LANDSCAPE (15)
- = NEW ASPHALT SEAL COAT (2)

SCALE: 1" = 20'

UNDERGROUND UTILITY LINETYPE LEGEND:

- SD — NEW STORM DRAIN
- SD — (E)STORM DRAIN
- W — (E)DOMESTIC WATER
- S — (E)SANITARY SEWER
- G — (E)GAS
- E — (E)ELECTRICAL/POWER
- C — (E)COMMUNICATIONS
- F — (E)FIRE WATER

HMC Architects

3361004000

3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

LICENSED ARCHITECT VIRGINIA ELAINE MARQUARDT No. C-33423 06/30/2025 STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

PLANS PREPARED BY:

FPL and Associates, Inc.
Traffic • Transportation • Civil
30 Corporate Park, Suite 401
Irvine, CA 92606
PHONE: 949-252-1688

SIGNATURE 1/5/2023 DATE

REGISTERED PROFESSIONAL ENGINEER ALAN WING-CHI LEE No. C 34971 Exp. 09-30-25 CIVIL STATE OF CALIFORNIA

FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD EXISTING TRACK AND FIELD REPLACEMENT

SHEET NAME:
GRADING PLAN

ADDENDUM 01

FAC NO.: XXXXX BLDG NO.: BLD-XXXXX

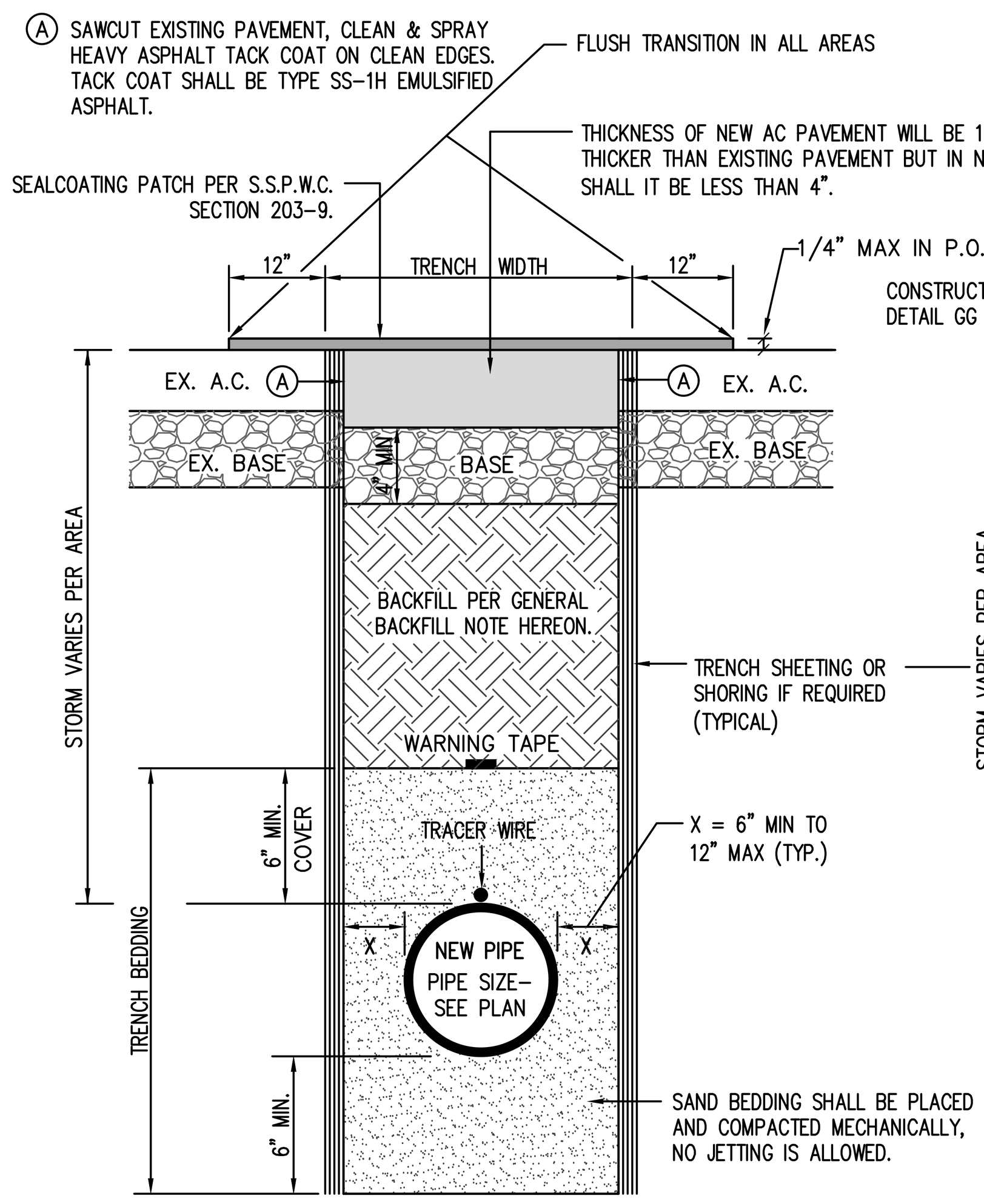
DATE: 08/08/2024 CLIENT PROJ NO:

SHEET:
C002

PLEASE RECYCLE

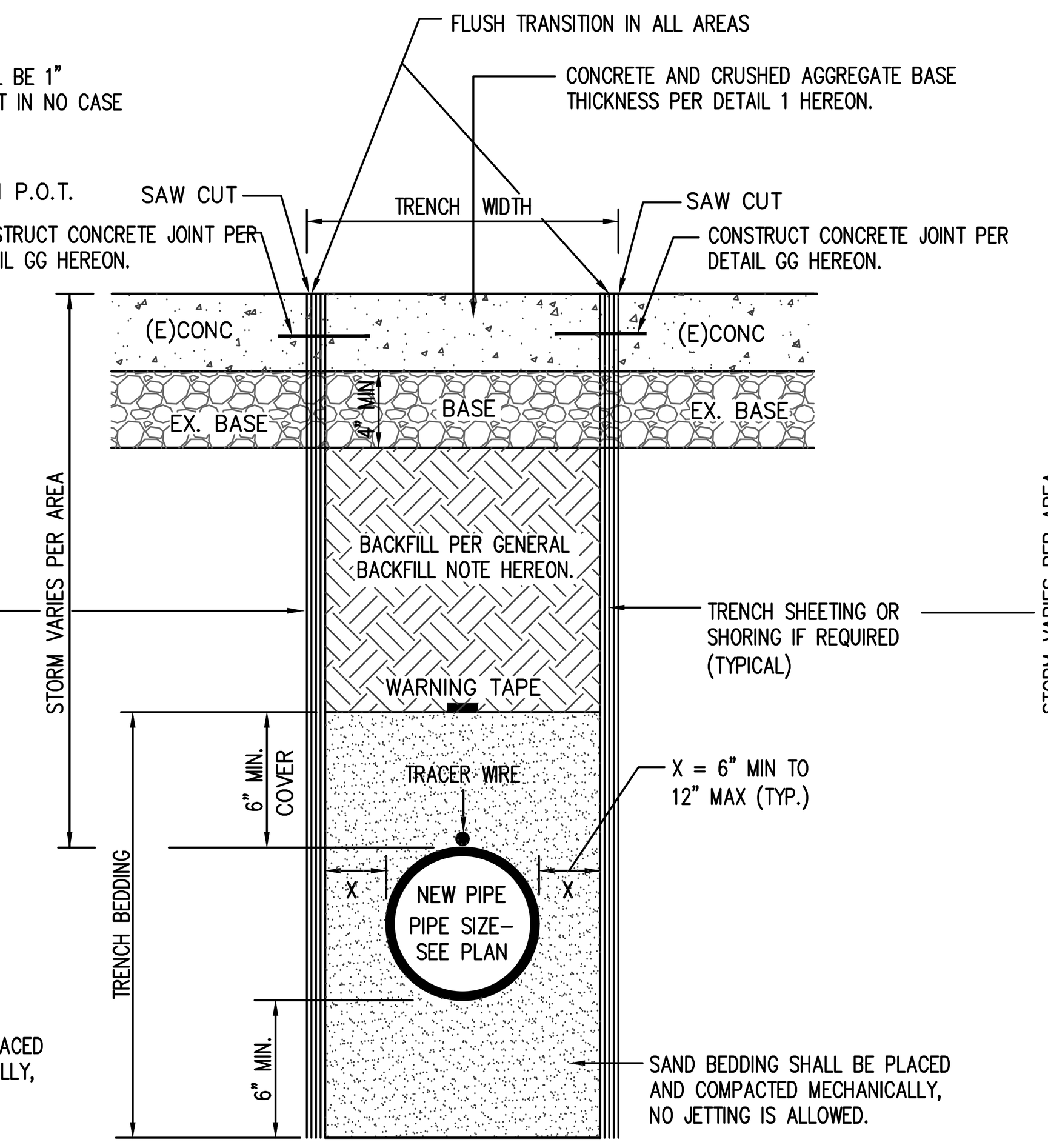
UTILITY TRENCHING DETAILS

NOT TO SCALE



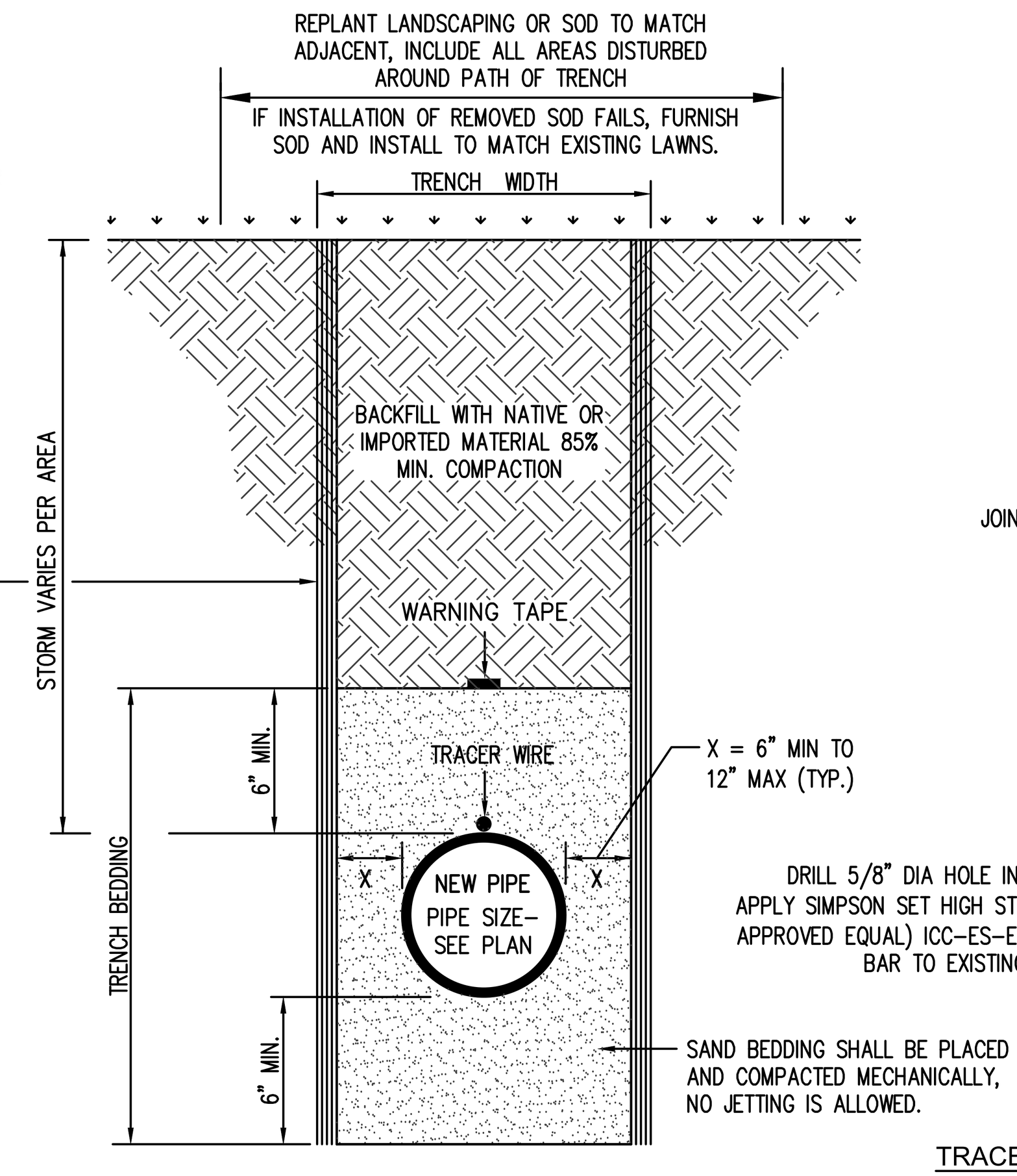
EXISTING ASPHALT AREAS

N.T.S.



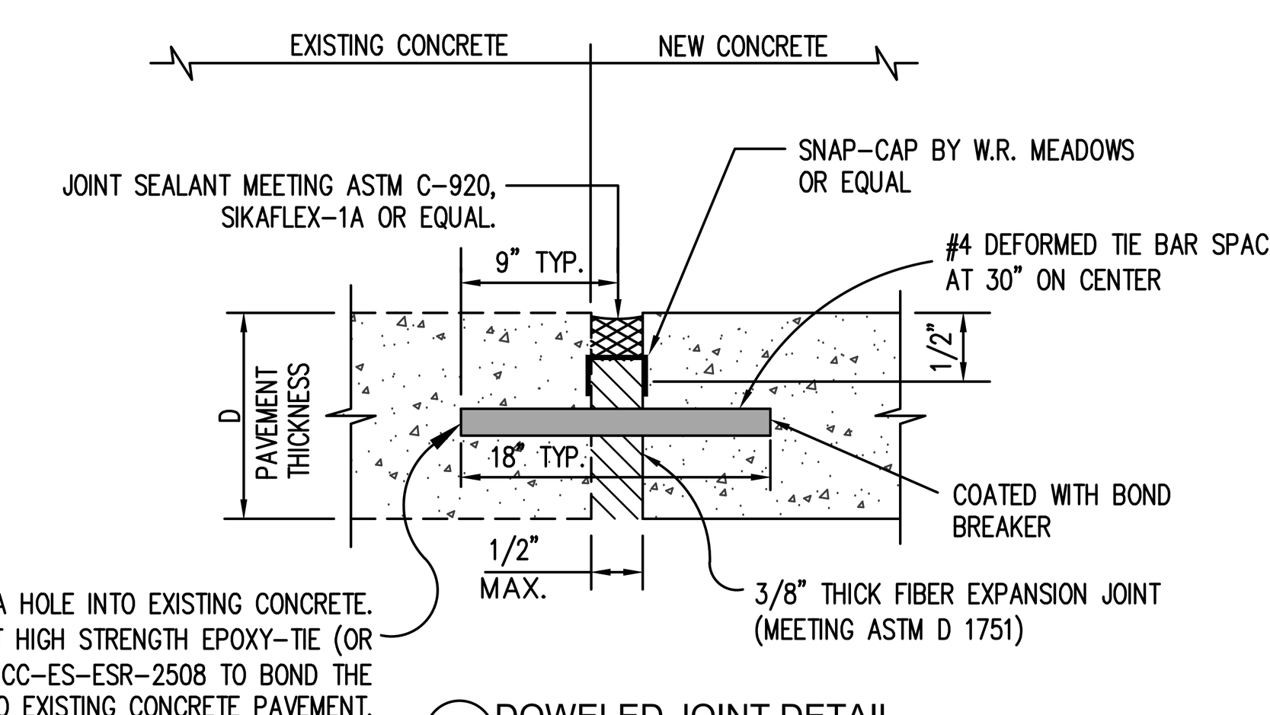
EXISTING CONCRETE AREAS

N.T.S.



NEW OR EXISTING LANDSCAPED AREAS

N.T.S.



GG DOWELED JOINT DETAIL

NOT TO SCALE

TRACER WIRE NOTES:

COPPER TRACER WIRE SHALL BE INSTALLED ON ALL NON-METALLIC PIPELINES, 2" AND GREATER, JUST ABOVE THE HORIZONTAL CENTERLINE OF THE PIPE. THE COPPER WIRE SHALL BE TYPE THWN #12 AWG GAUGE FOR SEWER, STORM & POTABLE WATER, #14 AWG GAUGE FOR IRRIGATION PIPES AND #18 AWG GAUGE FOR POLYETHYLENE GAS LINES. ALL TRACER WIRE SHALL HAVE HEAT AND MOISTURE RESISTANT INSULATION.

TRENCH EXCAVATION, BEDDING, & BACKFILL NOTES:

EXCAVATION NOTE: THE 2019 CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH REGULATIONS (CAL/OSHA) WILL REQUIRE A PERMIT FOR THE CONSTRUCTION OF TRENCHES OR EXCAVATIONS WHICH ARE FIVE (5) FEET OR DEEPER AND INTO WHICH A PERSON IS REQUIRED TO DESCEND. FOR PERMIT PURPOSES, "DESCEND" MEANS TO ENTER ANY PART OF THE TRENCH OR EXCAVATION ONCE THE EXCAVATION HAS ATTAINED A DEPTH OF 5 FEET OR MORE. FOR REGULATIONS RELATING TO PERMITS FOR EXCAVATIONS AND TRENCHES, REFER TO THE CALIFORNIA CODE OF REGULATIONS TITLE 8, CHAPTER 3.2, ARTICLE 2, SECTION 341 OF THE CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH REGULATIONS (CAL/OSHA)

THE CONTRACTOR SHALL SUBMIT A DETAIL SHOWING THE DESIGN OR SHORING; BRACING SLOPING OR OTHER PROVISIONS TO BE MADE FOR WORKER PROTECTION FROM THE HAZARDS OF CAVING GROUND DURING THE EXCAVATION. THE PLAN SUBMITTED SHALL BE SIGNED BY A REGISTERED CIVIL OR STRUCTURAL ENGINEER CERTIFIED THAT THE PLAN COMPLIES WITH ALL OSHA CONSTRUCTION SAFETY ORDERS.

BEDDING MATERIAL SHALL BE COARSE SAND WITH SAND EQUIVALENT OF 30 OR GREATER. NO ANGULAR STONES OR PEA GRAVELS WILL BE ALLOWED IN PIPE BEDDING.

COMPACTION METHODS: ALL BEDDING & BACKFILL COMPACTION SHALL BE BY HAND-OPERATED, PLATE-TYPE, VIBRATORY, OR OTHER SUITABLE HAND-TAMPERS IN AREAS NOT ACCESSIBLE TO LARGER ROLLERS OR COMPACTERS. EXTREME CARE SHALL BE TAKEN TO AVOID DAMAGE TO CONDUITS, PIPES, AND ANY APPURTENANCES. WATER DENSIFICATION BY INUNDATION OR JETTING SHALL NOT BE PERMITTED WITHOUT PRIOR WRITTEN APPROVAL FROM CIVIL ENGINEER.

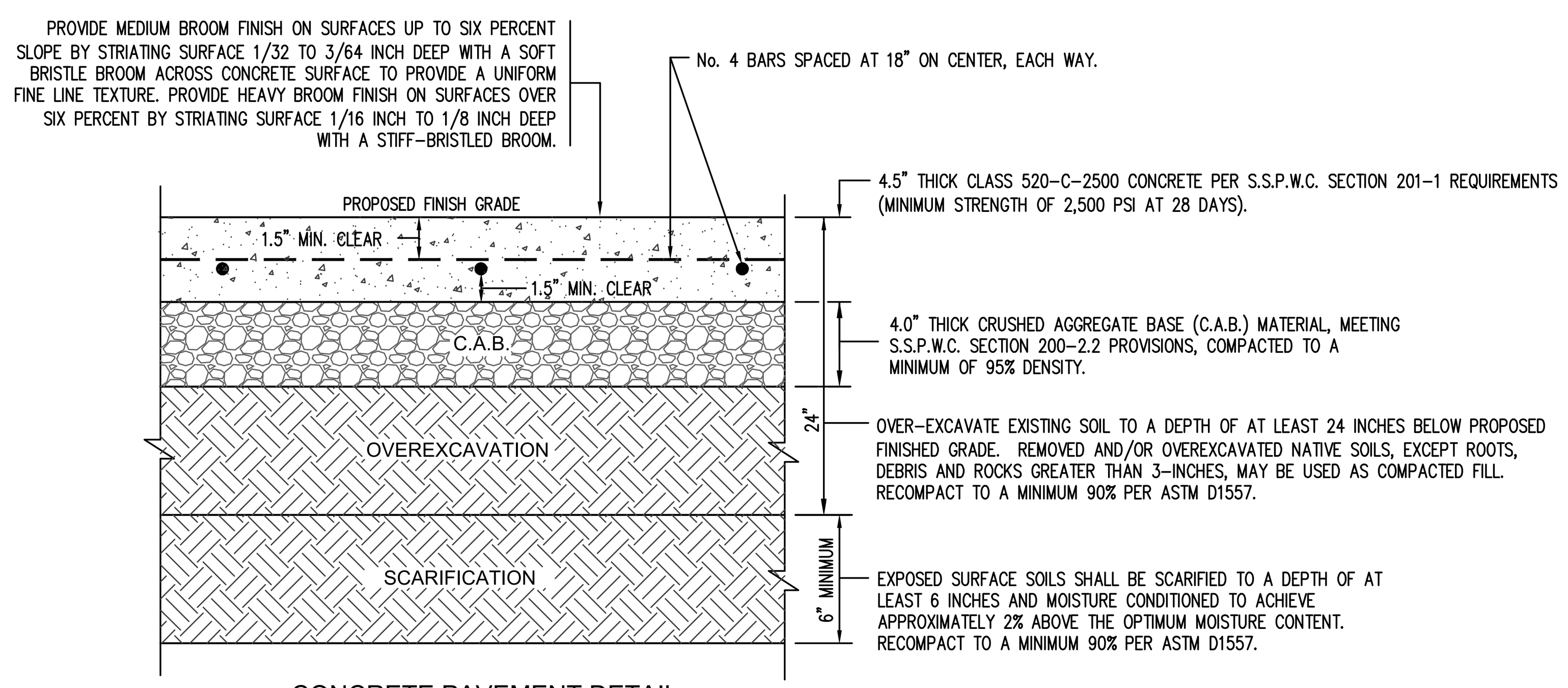
SHEETING: WHEN EXCAVATION DEPTHS OR SOIL CONDITIONS REQUIRE SHORING OR USE OF A TRENCH BOX, THE BOTTOM OF THE SHORING OR TRENCH BOX SHOULD BE PLACED NO LOWER THEN THE TOP OF THE PIPE. THIS PREVENTS DISRUPTION OF THE BACKFILL ENVELOPE WHEN REMOVING THE SHORING OR TRENCH BOX. IF THIS PRACTICE CANNOT BE FOLLOWED, CONSIDERATION SHOULD BE GIVEN TO LEAVING THE SHORING IN PLACE.

GENERAL BACKFILL NOTES:

EXCAVATED TRENCH MATERIAL TO BE INSTALLED FOR BACKFILLING SHALL BE CLEAN, FREE OF LARGE CLODS AND STONES LARGER THAN 3-INCHES IN ANY DIMENSION. INSTALL BACKFILL MATERIALS IN LAYERS NOT TO EXCEED 8 TO 10-INCHES IN THICKNESS AND COMPACT TO A MINIMUM 90% OF THE MAXIMUM DENSITY. IN LIEU OF USING NATIVE MATERIAL IN PAVED AREAS, THE USE OF A SLURRY BACKFILL MAY BE SUBSTITUTED. SAND SLURRY SHALL CONSIST OF 1 SACK PORTLAND CEMENT (CLASS 100-E-100) PER CUBIC YARD OF SAND SLURRY MIX. THE CONTRACTOR IS RESPONSIBLE FOR DISPOSAL OF ANY EXCESS BACKFILL MATERIAL FROM THE SITE.

WARNING TAPE NOTES (STORM DRAIN):

A METALLIC LINED TAPED FOR UNDERGROUND PIPES, MARKED "CAUTION STORM DRAIN LINE BELOW", IN POLYETHYLENE FILM COLOR GREEN, INSTALLED ABOVE PIPE, 6" WIDE.



1 CONCRETE PAVEMENT DETAIL

NOT TO SCALE

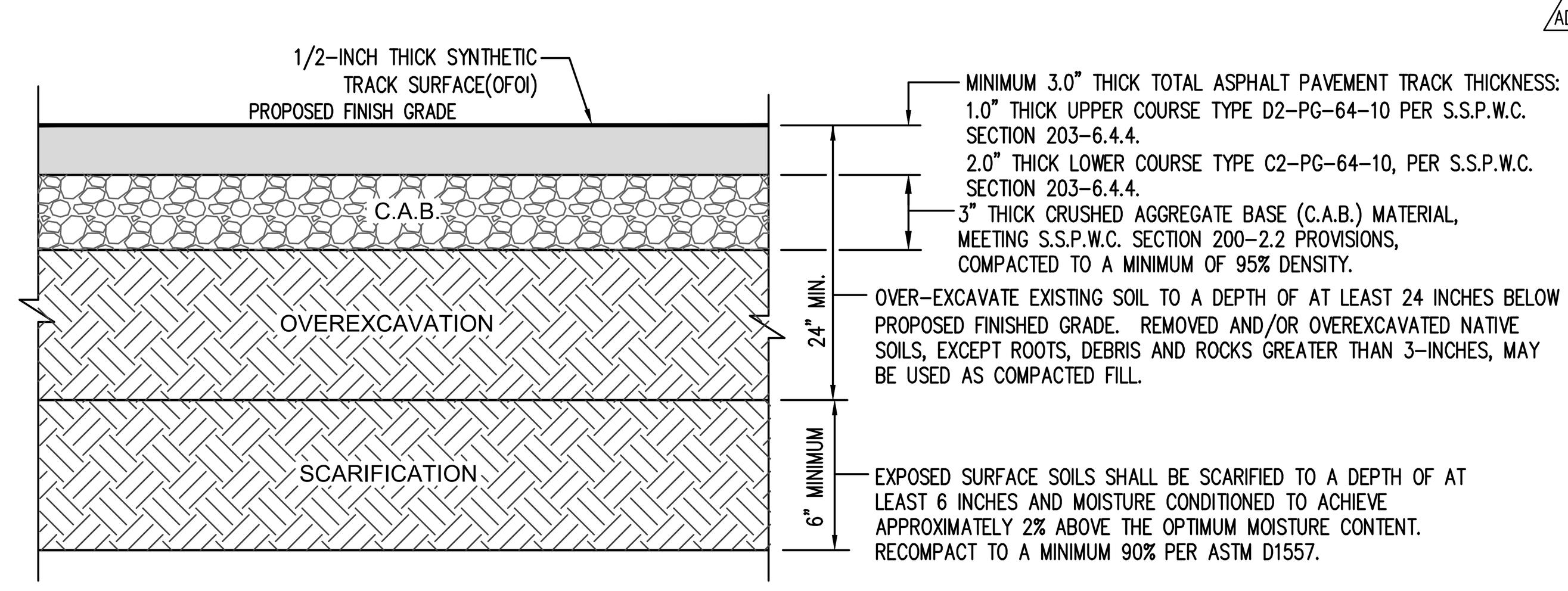
FLOOD TEST NOTE:

BEFORE ACCEPTANCE, ALL NEW CONCRETE SHALL BE WATER TESTED TO ENSURE PROPER DRAINAGE AS DIRECTED BY THE INSPECTOR. THE CONTRACTOR SHALL PROVIDE WATER FOR THIS PURPOSE. THE FLOODING SHALL BE DONE BY WATER TANK TRUCK. DEPRESSIONS WHERE THE WATER PONDS TO A DEPTH OF MORE THAN 1/8-INCH SHALL BE FILLED OR THE SLOPE CORRECTED TO PROVIDE PROPER DRAINAGE. THE EDGES OF THE FILL SHALL BE FEATHERED AND SMOOTHED SO THAT THE JOINT BETWEEN THE FILL AND THE EXISTING SURFACE IS INVISIBLE. NO STANDING WATER SHALL REMAIN AFTER 30 MINUTES ON A 70 DEGREE F (OR WARMER) DAY.

NOTE TO CONTRACTOR:

A. THE CONTRACTOR SHALL INSTALL EXPANSION AND CONTROL JOINTS IN CONCRETE FLATWORK AT LOCATIONS NOTED ON THE ARCHITECTURAL PLANS FOLLOWING DETAILS 'AA' THRU 'CC' HEREON.

B. CONTRACTOR SHALL FOLLOW DETAILS 'DD' THRU 'FF' HEREON WHEN CONSTRUCTING CONCRETE FLATWORK EDGE TREATMENTS.

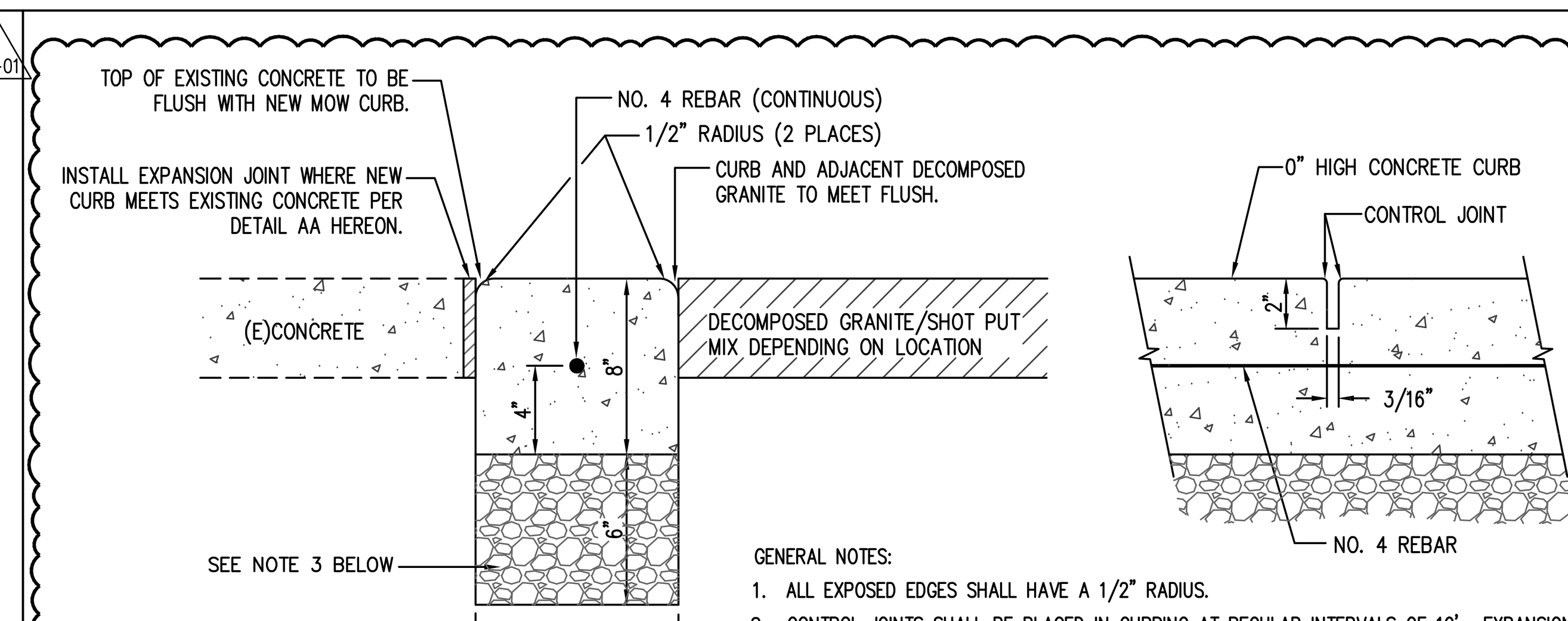


8B SYNTHETIC TRACK STRUCTURAL SECTION DETAIL

NOT TO SCALE

FLOOD TEST NOTE:

BEFORE ACCEPTANCE, ALL ASPHALT SHALL BE WATER TESTED TO ENSURE PROPER DRAINAGE AS DIRECTED BY THE INSPECTOR. THE CONTRACTOR SHALL PROVIDE WATER FOR THIS PURPOSE. THE FLOODING SHALL BE DONE BY WATER TANK TRUCK. DEPRESSIONS WHERE THE WATER PONDS TO A DEPTH OF MORE THAN 1/8-INCH SHALL BE FILLED OR THE SLOPE CORRECTED TO PROVIDE PROPER DRAINAGE. THE EDGES OF THE FILL SHALL BE FEATHERED AND SMOOTHED SO THAT THE JOINT BETWEEN THE FILL AND THE EXISTING SURFACE IS INVISIBLE. NO STANDING WATER SHALL REMAIN AFTER 20 MINUTES ON A 70 DEGREE F (OR WARMER) DAY. INSTALL FIRST COAT OF SEAL COAT ON ASPHALT BEFORE FLOOD TESTING OCCURS.

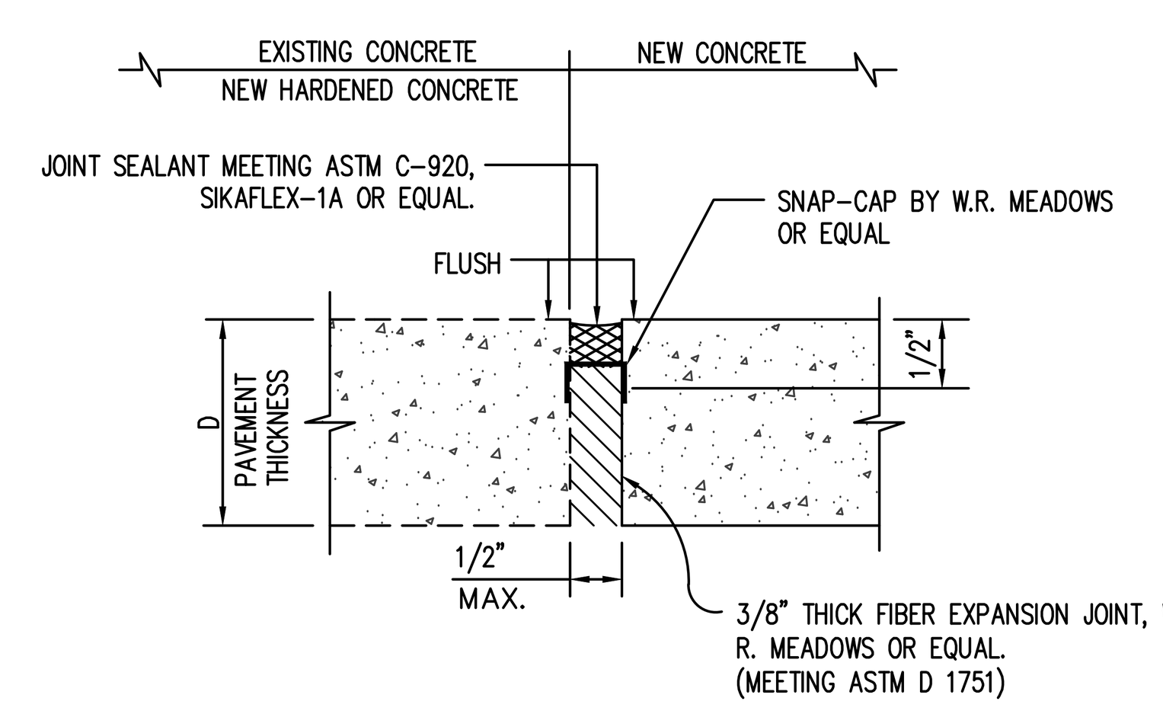


GENERAL NOTES:

1. ALL EXPOSED EDGES SHALL HAVE A 1/2" RADIUS.
2. CONTROL JOINTS SHALL BE PLACED IN CURBING AT REGULAR INTERVALS OF 10'. EXPANSION JOINTS AT 30' INTERVALS AND AT B.C.'S & E.C.'S.
3. A 6" THICK LAYER OF CRUSHED AGG. BASE SHALL BE PLACED UNDER ALL CURB. MINIMUM COMPACTION OF 95% IS REQUIRED.
4. CONCRETE SHALL BE CLASS 560-C-3250, PER S.S.P.W.C. SECTION 201-1.

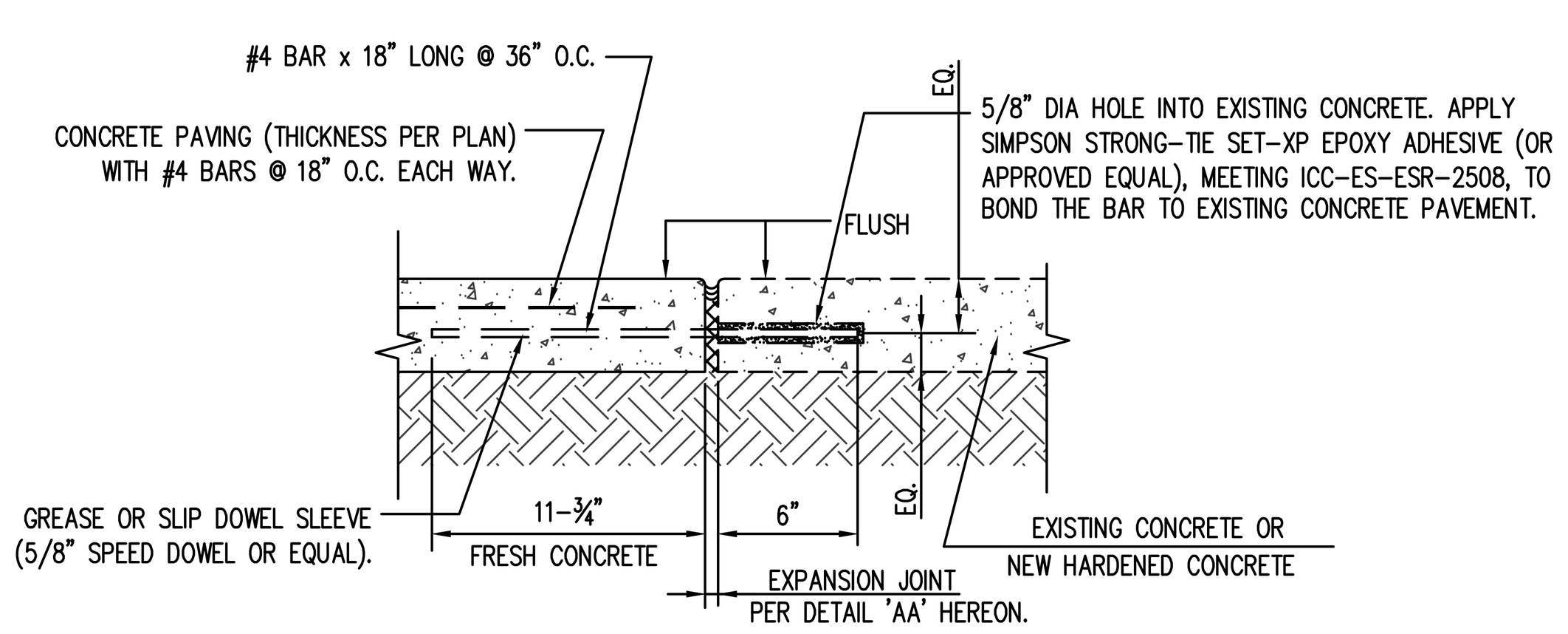
11 CONCRETE MOW CURB DETAIL

NOT TO SCALE



AA EXPANSION JOINT (E.J.)

NOT TO SCALE

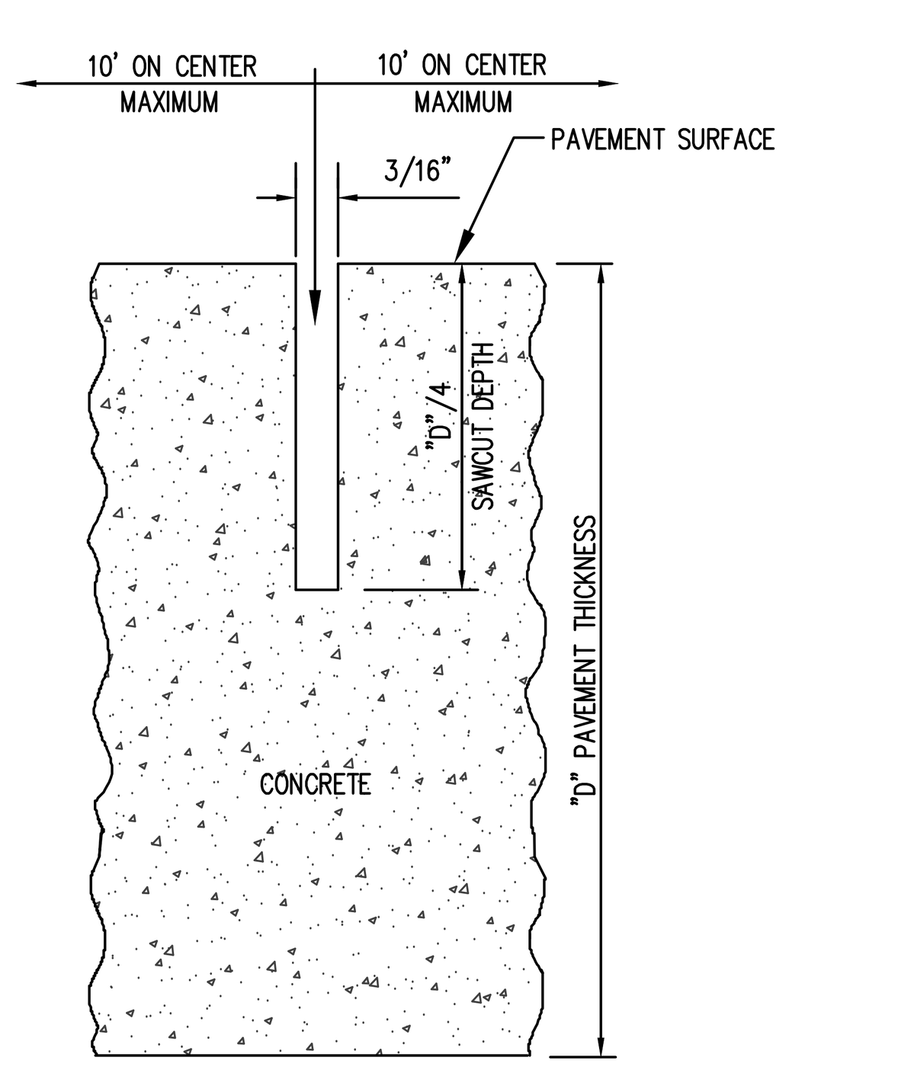


NOTE: 1. VERTICAL CHANGE IN ELEVATION ALONG ACCESSIBLE PATH OF TRAVEL CANNOT EXCEED 1/4" PER CBC 11B-303.2

2. LEVEL CHANGE BETWEEN 1/4"-1/2" MUST BE BEVELED AT 1:2 MAX PER CBC 11B-303.3

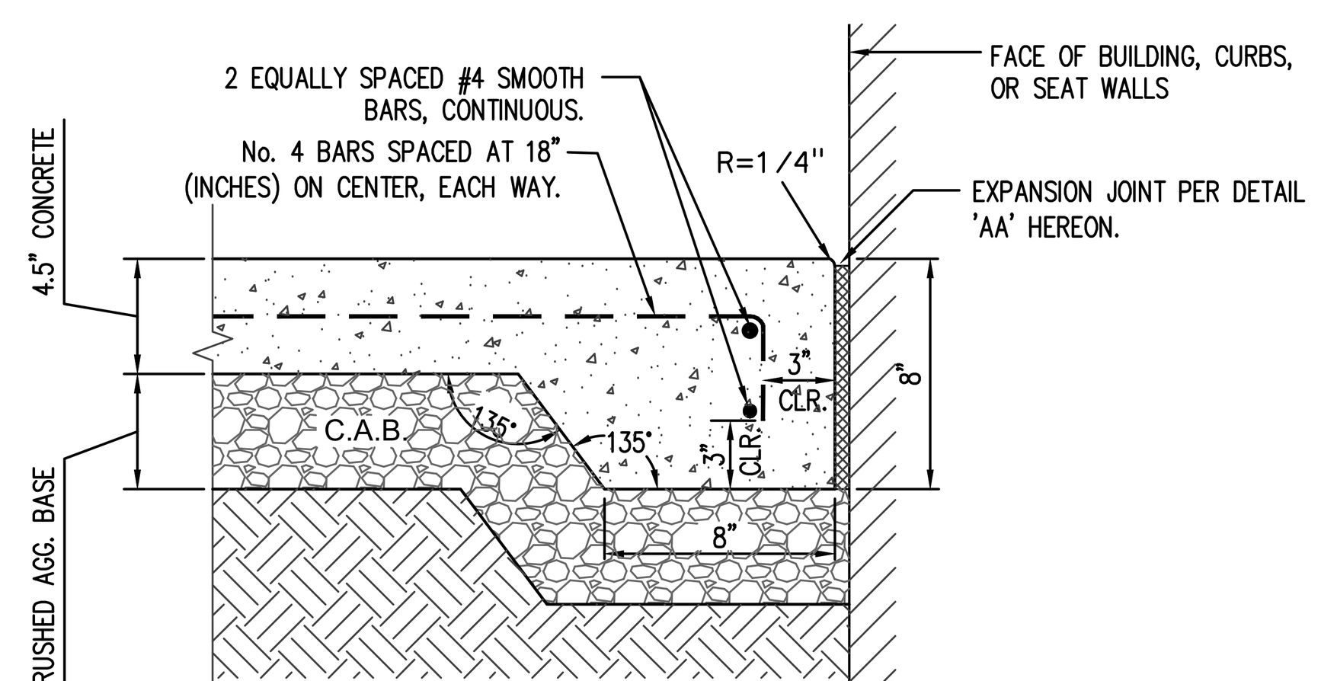
CC EXPANSION JOINT (E.J.) WITH REBAR

NOT TO SCALE



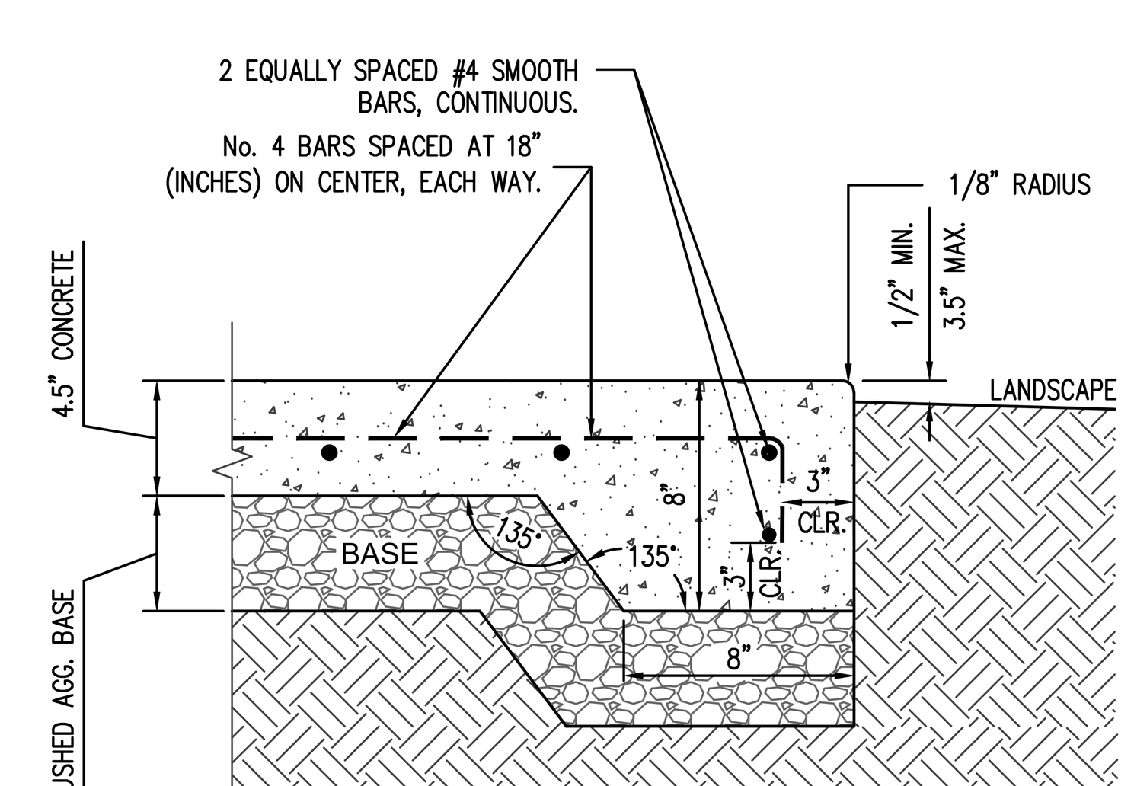
BB CONTROL JOINT (C.J.)

NOT TO SCALE



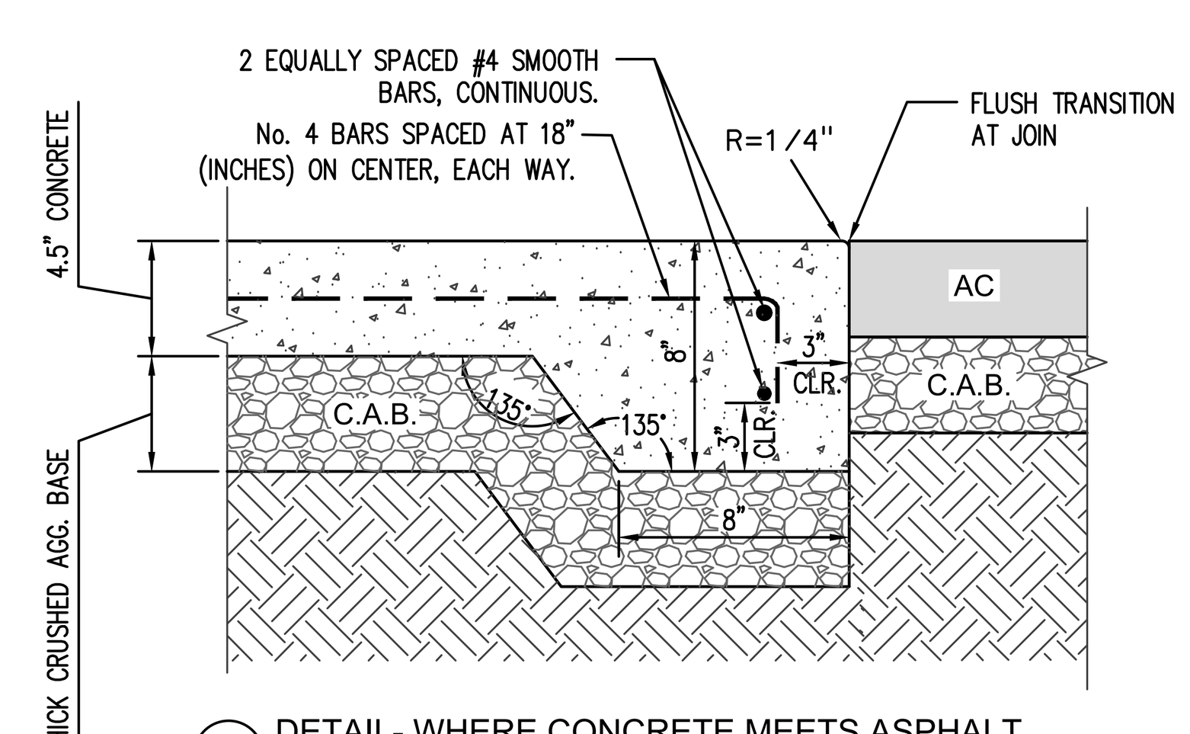
DD EDGE OF CONCRETE SLAB (E.C.S.)

NOT TO SCALE



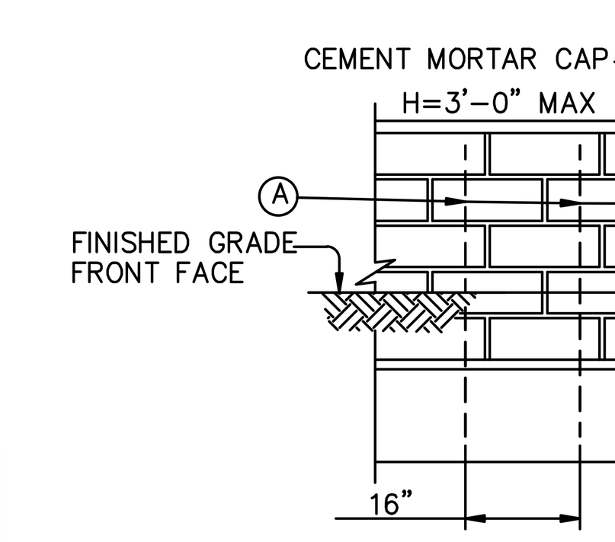
EE EDGE OF CONCRETE SLAB (E.C.S.)

NOT TO SCALE



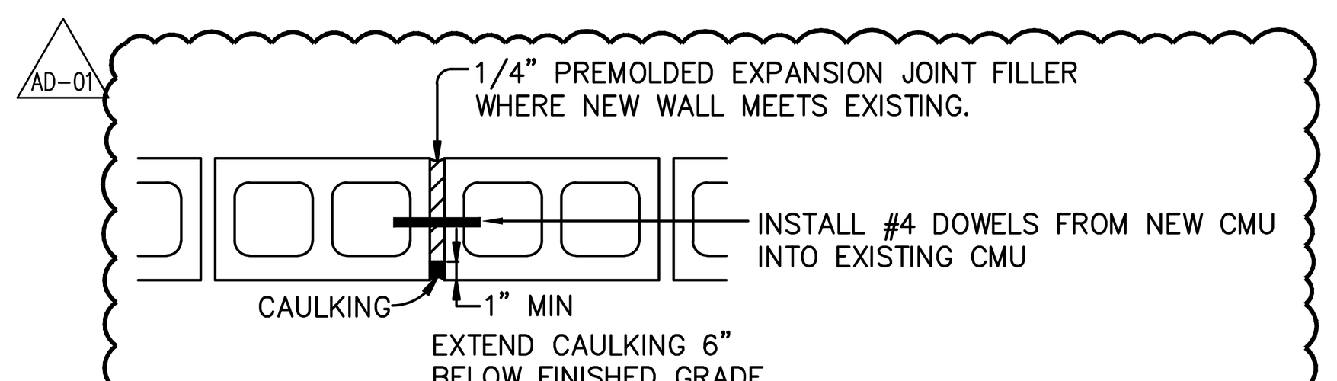
FF DETAIL- WHERE CONCRETE MEETS ASPHALT

NOT TO SCALE

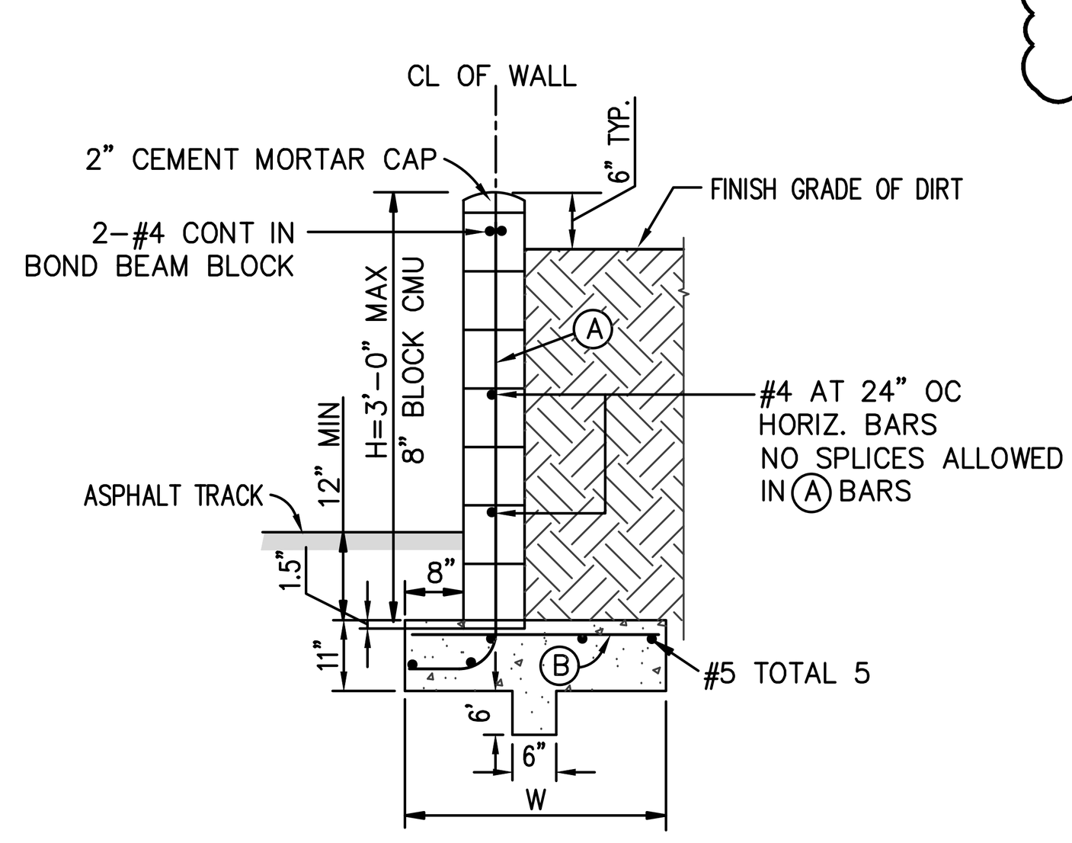


ELEVATION

DESIGN H	2'-10"	3'-6"
W	2'-8"	3'-0"
Ⓐ BARS	#5 @ 16"	#5 @ 16"
Ⓑ BARS	#5 @ 16"	#5 @ 16"



SECTION AT EXPANSION JOINT



10 MASONRY RETAINING WALL DETAIL

NOT TO SCALE

THIS DETAIL IS EXEMPT FROM TESTING AND INSPECTION PER DSA IR A-22 (ITEM #3)

MASONRY WALL NOTES

1. FILL ALL CMU BLOCK CELLS WITH GROUT PER CBC 2103A.3. MORTAR GROUT, SHALL BE TYPE S PER CBC 2103A.2.1 AND SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH F'm OF 2,000 PSI IN 28 DAYS AND MORTAR SHALL ATTAIN F'm 1,800 PSI IN 28 DAYS. ALL CELLS SHALL BE FILLED WITH GROUT, ROD OR VIBRATE CONSOLIDATION. BRING GROUT TO A POIN 2" FROM THE TOP OF THE MASONRY UNITS WHEN GROUTING OF SECOND LIFTS IS TO BE CONTINUED AT ANOTHER TIME.
2. FOOTING CONCRETE SHALL BE 560-C-3250, 3250 PSI AT 28 DAYS.
3. 8" CONCRETE MASONRY (CMU) SHALL BE NORMAL-WEIGHT UNITS CONFORMING TO ASTM C-90 WITH FLUSH JOINT FINISH, FULLY GROUTED.
4. ALL REINFORCED STEEL SHALL CONFORM TO ACI 318-14 20.2 AND ASTM A615 GRADE 60.
5. NO BACKFILL MATERIAL SHALL BE PLACED AGAINST MASONRY RETAINING WALLS UNTIL GROUT HAS REACHED DESIGN STRENGTH OR UNTIL GROUT HAS CURED FOR A MINIMUM OF 28 DAYS. COMPACTION OF BACKFILL MATERIAL BY JETTING OR PONDING WITH WATER WILL NOT BE PERMITTED. EACH LAYER OF BACKFILL SHALL BE MOISTENED AS DIRECTED BY THE SOILS ENGINEER AND THOROUGHLY TAMPED, ROLLED OR OTHERWISE COMPACTED UNTIL THE RELATIVE COMPACTING IS NOT LESS THAN 90%.
6. ALL FOOTINGS SHALL EXTEND AT LEAST 12" INTO UNDISTURBED NATURAL SOIL OR APPROVED COMPACTED FILL. SOIL SHOULD BE DAMPENED PRIOR TO PLACING CONCRETE IN FOOTINGS.

HMC Architects

3361004000

3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

LICENSED ARCHITECT VIRGINIA ELAINE MARQUARDT No. C-33423 06/30/2025 STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

PLANS PREPARED BY:

FPL and Associates, Inc.
Traffic • Transportation • Civil
30 Corporate Park, Suite 401
Irvine, CA 92606
PHONE: 949-252-1688

SIGNATURE 1/5/2023 DATE

REGISTERED PROFESSIONAL ENGINEER No. C 34971 Exp. 09-30-25 CIVIL STATE OF CALIFORNIA

FACILITY:

EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

PROJECT:

EL MONTE HIGH SCHOOL TRACK AND FIELD EXISTING TRACK AND FIELD REPLACEMENT

SHEET NAME:

DETAIL SHEET

ADDENDUM 01

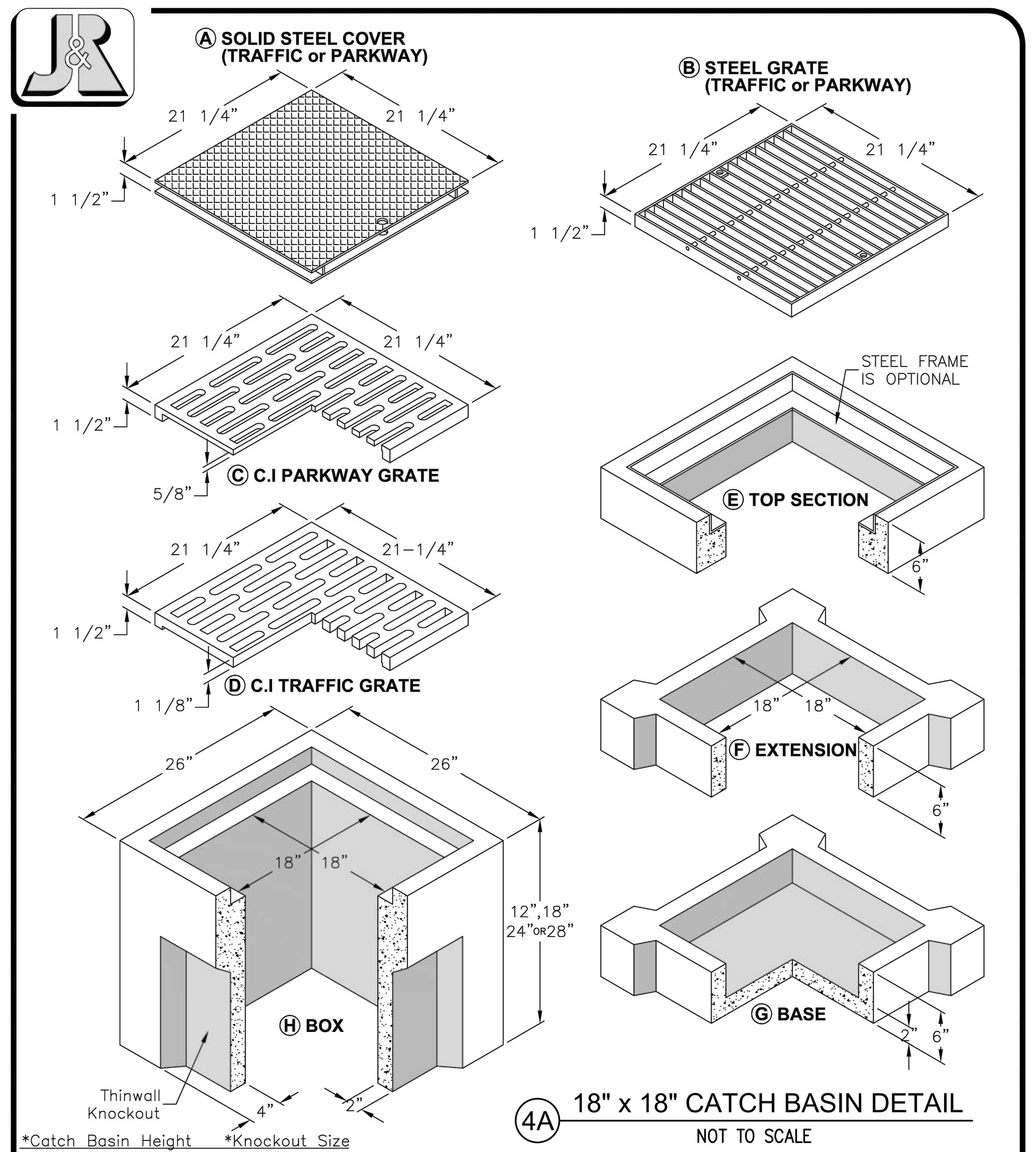
FAC NO.: XXXXX BLDG NO.: BLD-XXXXX

DATE: 08/08/2024 CLIENT PROJ NO:

SHEET:

C003

U.S. PATENT # 6,00,023 & 6,877,029



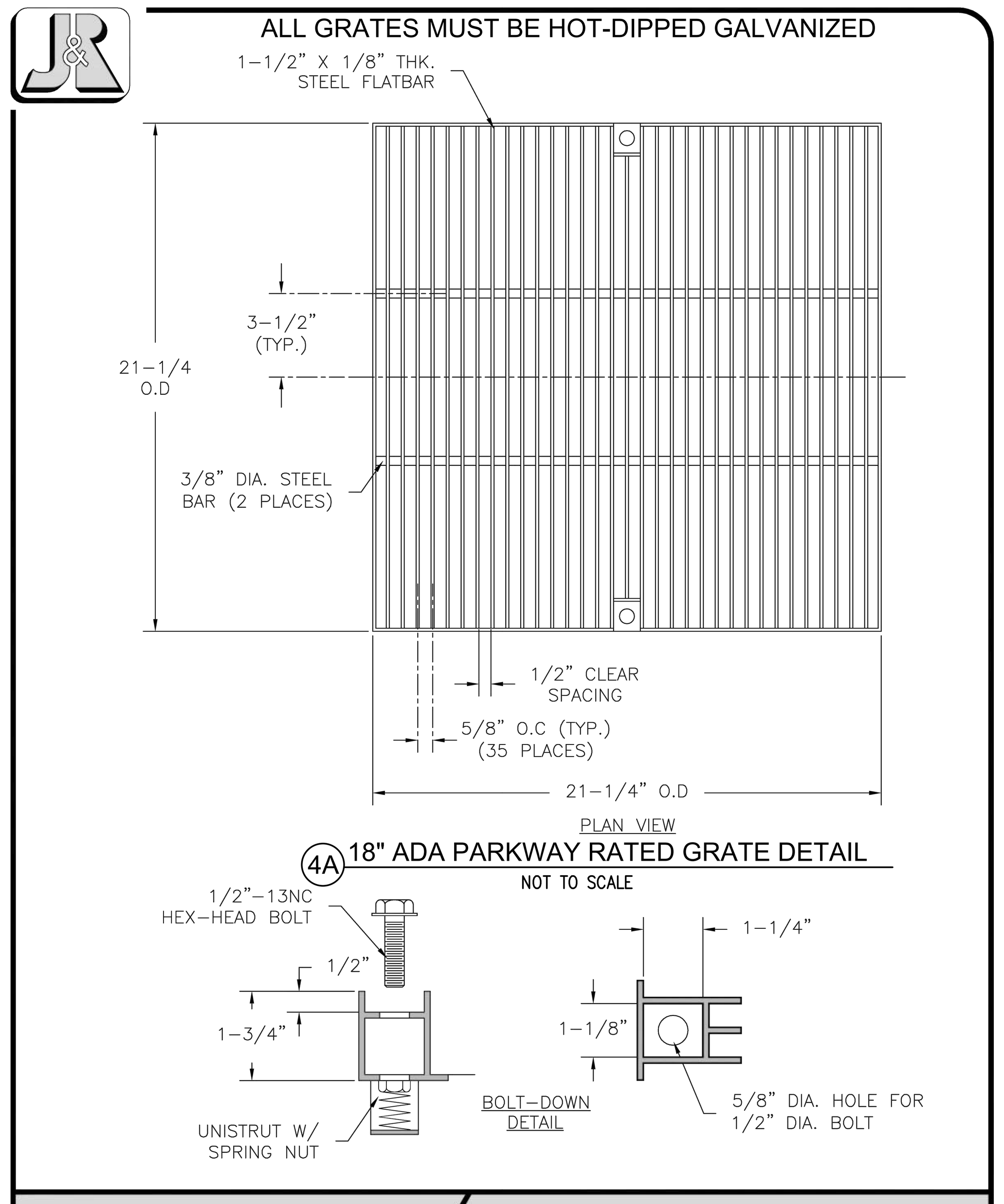
*Catch Basin Height *Knockout Size
12" High............12"W X 7"H
18" High............13"W X 12"H
24" High............13"W X 18"H
28" High............13"W X 22"H

4A 18" x 18" CATCH BASIN DETAIL
NOT TO SCALE

CB1818 SERIES
18" X 18" CATCH BASIN

NOTES
1. Steel Traffic Frames W/ Steel TFC Covers Or Steel TFC Grates Are Designed For AASHTO H-20 Wheel Loading, But Are Not Intended For Direct Traffic Installations.
2. Steel Frames W/ Steel Parkway Covers Or Steel Parkway Grates, Are Designed For A Live Load Of 300 p.s.f.
3. Cast Iron Traffic Grates Are Designed For AASHTO H-10 Wheel Loading, But Are Not Intended For Direct Traffic Installations
4. Cast Iron Parkway Grates Are Designed For 300 p.s.f Wheel Loading.

ALL GRATES MUST BE HOT-DIPPED GALVANIZED



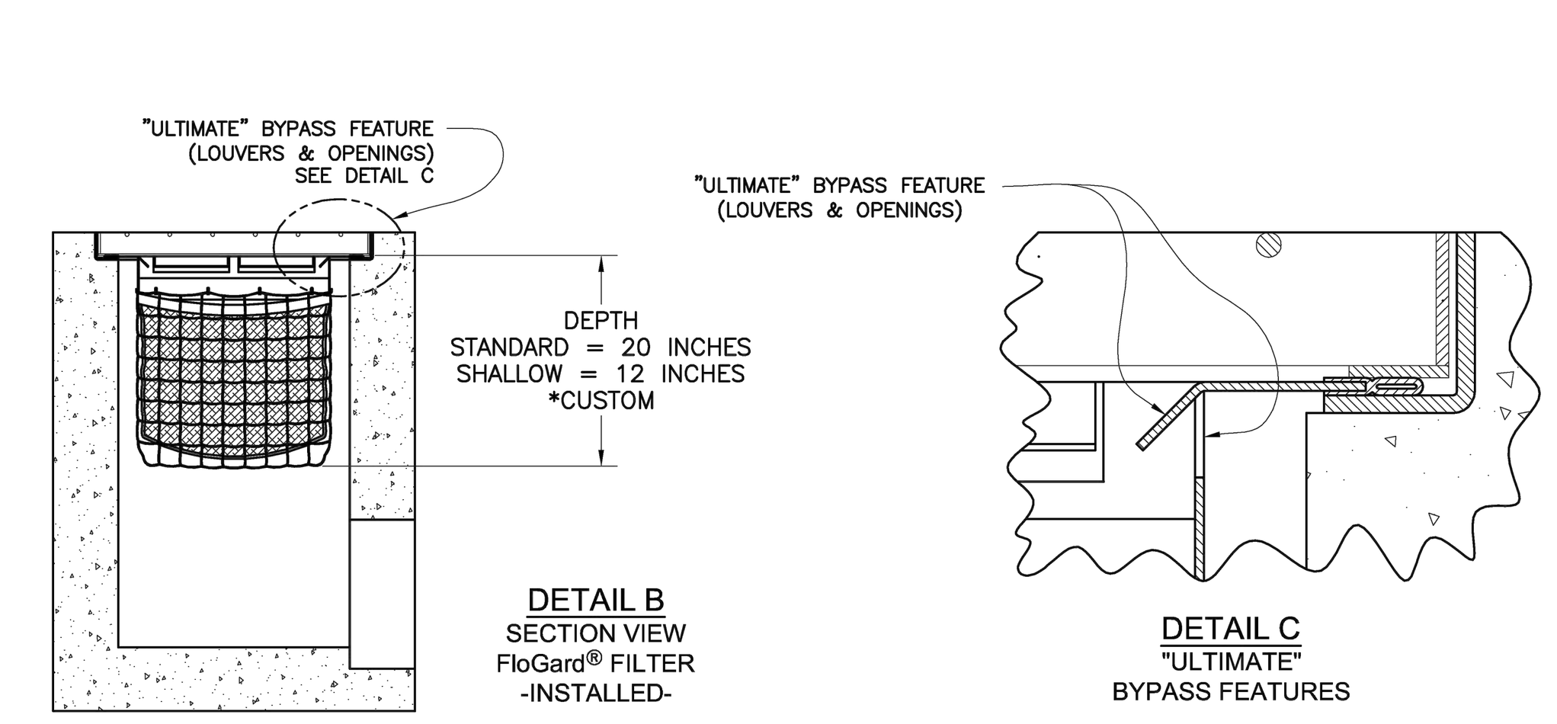
4A 18" ADA PARKWAY RATED GRATE DETAIL
NOT TO SCALE

18" X 18" STEEL PARKWAY GRATE per ADA SPECIFICATIONS

1. All steel shall conform to ASTM A36.
2. Grate conforms to ADA requirements.
3. Galvanizing is available upon request.
4. Structures are designed for AASHTO 300 p.s.f Wheel Loading.

AD-01

FGP-0001



* MANY OTHER STANDARD & CUSTOM SIZES & DEPTHS AVAILABLE UPON REQUEST.

SPECIFIER CHART

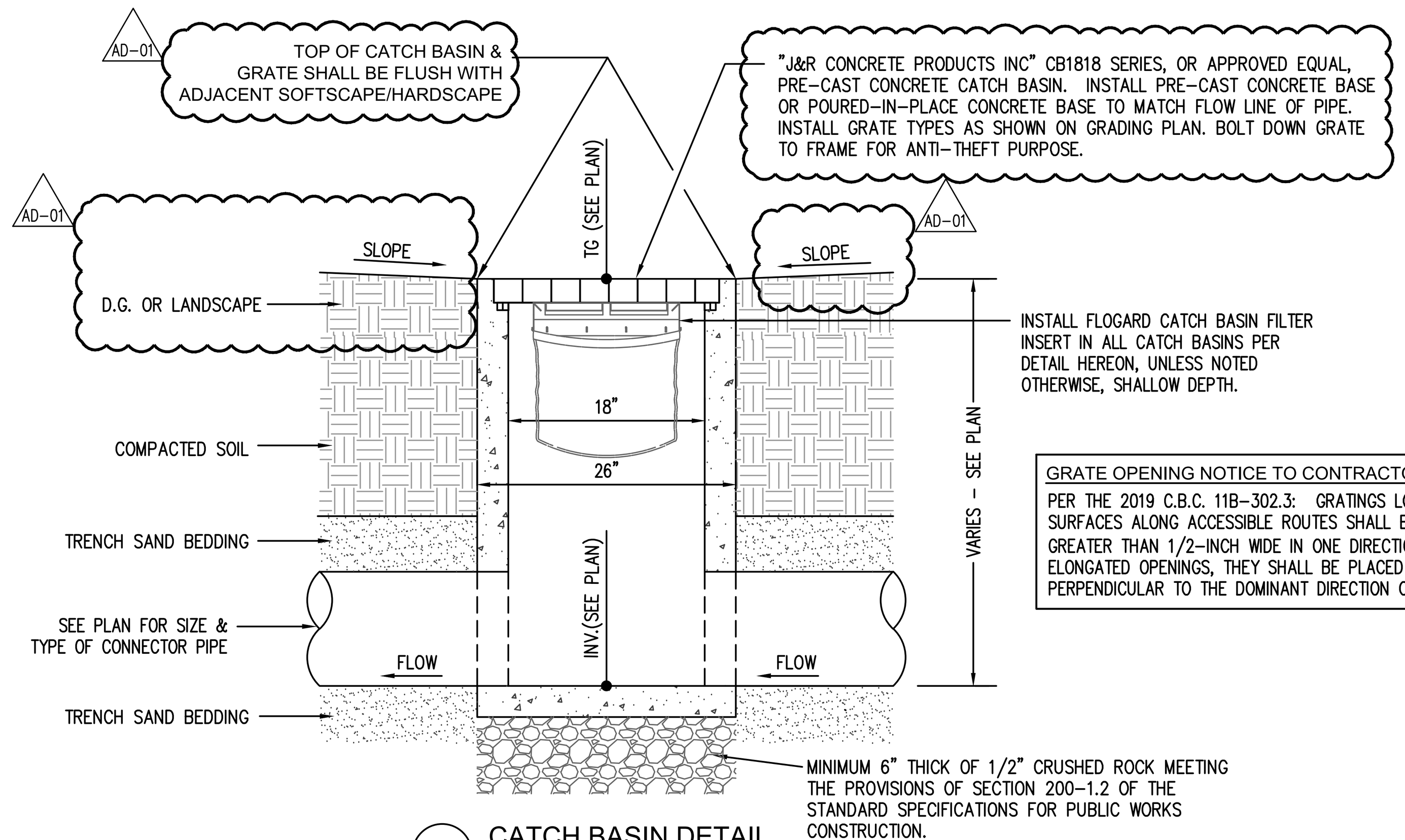
MODEL NO. STANDARD DEPTH	STANDARD & SHALLOW DEPTH (Data in these columes is the same for both STANDARD & SHALLOW versions)			STANDARD DEPTH -20 Inches-		MODEL NO. SHALLOW DEPTH	SHALLOW DEPTH -12 Inches-	
	INLET ID Inside Dimension (inch x inch)	GRATE OD Outside Dimension (inch x inch)	TOTAL BYPASS CAPACITY (cu. ft. / sec.)	SOLIDS STORAGE CAPACITY (cu. ft.)	FILTERED FLOW (cu. ft. / sec.)		SOLIDS STORAGE CAPACITY (cu. ft.)	FILTERED FLOW (cu. ft. / sec.)
FGP-12F	12 X 12	12 X 14	2.8	0.3	0.4	FGP-12F8	.15	.25
FGP-16F	16 X 16	16 X 19	4.7	0.8	0.7	FGP-16F8	.45	.4
FGP-18F	18 X 18	18 X 20	4.7	0.8	0.7	FGP-18F8	.45	.4
FGP-1824F	16 X 22	18 X 24	5.0	1.5	1.2	FGP-1824F8	.85	.7
FGP-1836F	18 X 36	18 X 40	6.9	2.3	1.6	FGP-1836F8	1.3	.9
FGP-2024F	18 X 22	20 X 24	5.9	1.2	1.0	FGP-2024F8	.7	.55
FGP-21F	22 X 22	22 X 24	6.1	2.2	1.5	FGP-21F8	1.25	.85
FGP-24F	24 X 24	24 X 27	6.1	2.2	1.5	FGP-24F8	1.25	.85
FGP-2430F	24 X 30	26 X 30	7.0	2.8	1.8	FGP-2430F8	1.6	1.05
FGP-2436F	24 X 36	24 X 40	8.0	3.4	2.0	FGP-2436F8	1.95	1.15
FGP-2448F	24 X 48	26 X 48	9.3	4.4	2.4	FGP-2448F8	2.5	1.35
FGP-28F	28 X 28	32 X 32	6.3	2.2	1.5	FGP-28F8	1.25	.85
FGP-30F	30 X 30	30 X 34	8.1	3.6	2.0	FGP-30F8	2.05	1.15
FGP-36F	36 X 36	36 X 40	9.1	4.6	2.4	FGP-36F8	2.65	1.35
FGP-3648F	36 X 48	40 X 48	11.5	6.8	3.2	FGP-3648F8	3.9	1.85
FGP-48F	48 X 48	48 X 54	13.2	9.5	3.9	FGP-48F8	5.45	2.25
FGP-SD24F	24 X 24	28 X 28	6.1	2.2	1.5	FGP-SD24F8	1.25	.85

FloGard®
Catch Basin Insert Filter
Grated Inlet Style
Inlet Filtration

Oldcastle® Stormwater Solutions
7921 Southpark Plaza, Suite 200 | Littleton, CO | 80120 | Ph: 800.579.8819 | oldcastlestormwater.com

DRAWING NO. FGP-0001 | REV G | ECO ECO-0142 JPR 7/13/16 | DATE JPR 11/3/06 | SHEET 2 OF 2

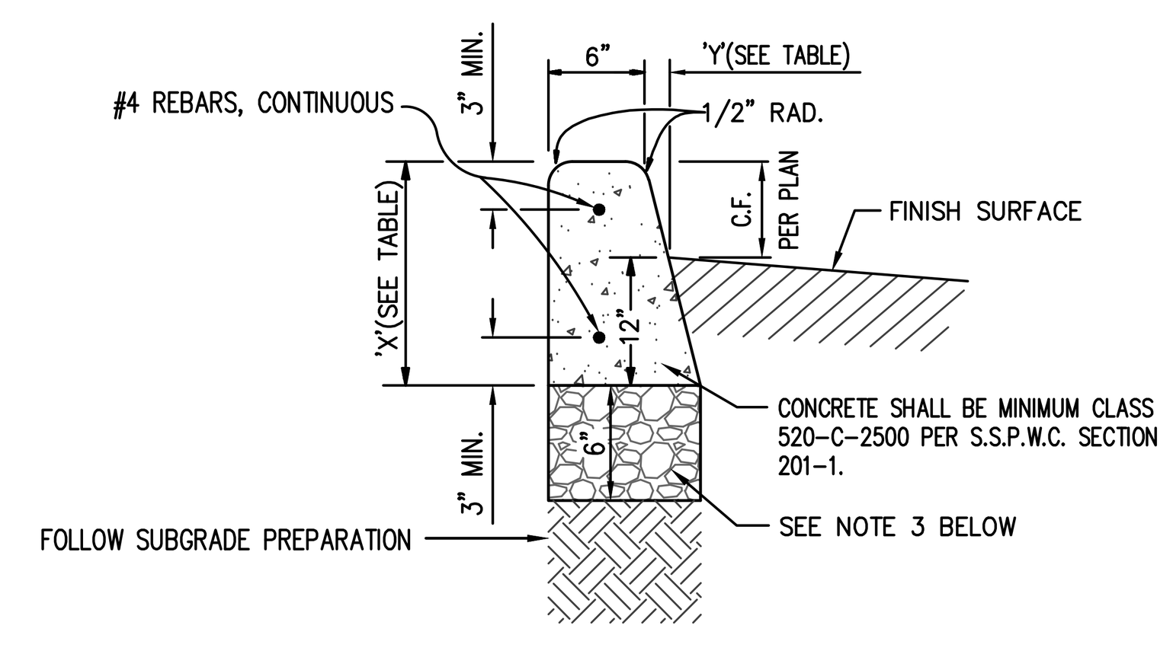
FLOGARD CATCH BASIN INSERT FILTER
NOT TO SCALE



GRATE OPENING NOTICE TO CONTRACTOR:
PER THE 2019 C.B.C. 11B-302.3: GRATINGS LOCATED IN GROUND AND FLOOR SURFACES ALONG ACCESSIBLE ROUTES SHALL BE LIMITED TO SPACES NO GREATER THAN 1/2-INCH WIDE IN ONE DIRECTION. IF GRATINGS HAVE ELONGATED OPENINGS, THEY SHALL BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAFFIC.

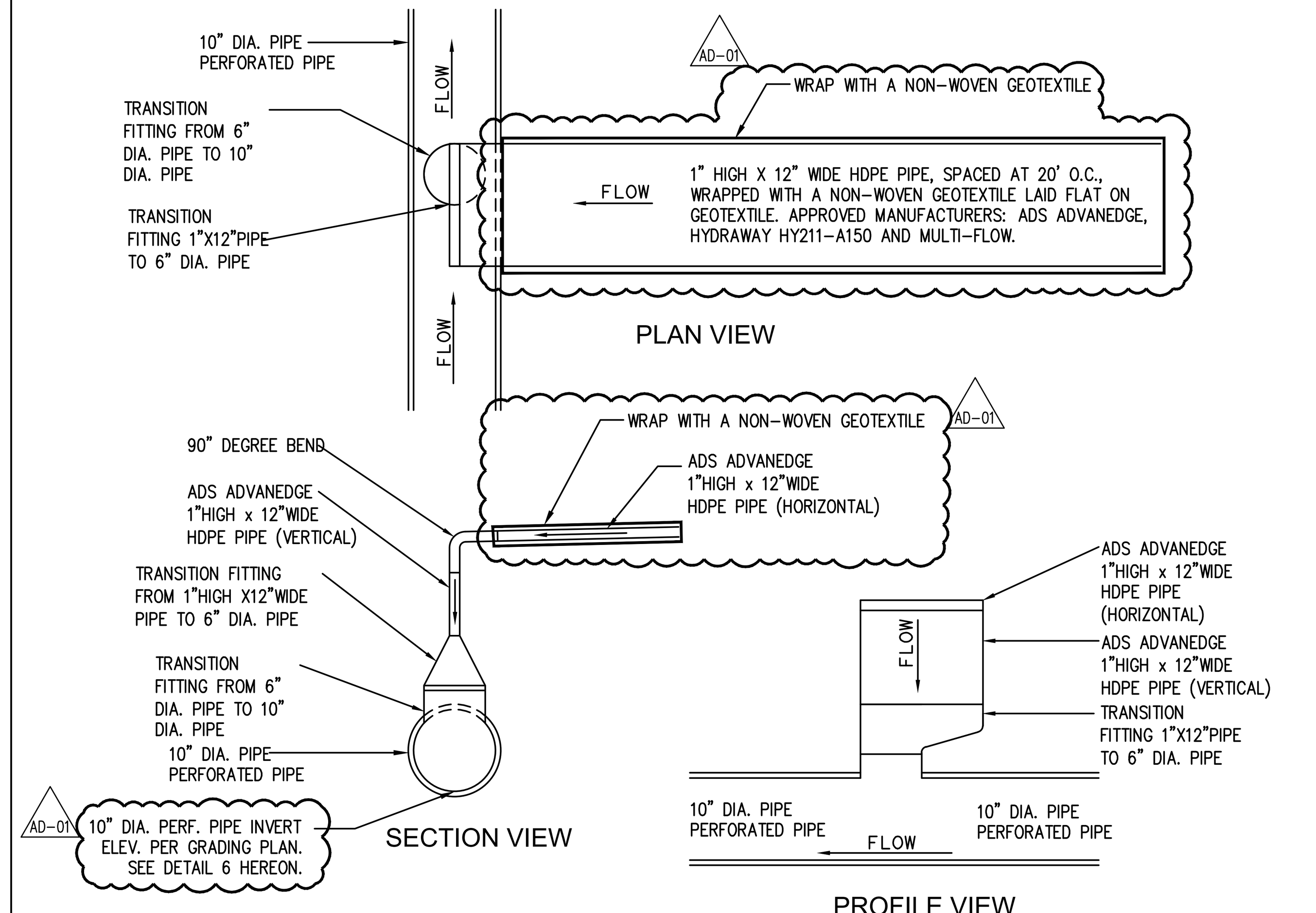
4A CATCH BASIN DETAIL
NOT TO SCALE

CURB FACE	0"	4"	5"	6"	8"	9"
"X"	12"	16"	17"	18"	20"	21"
"Y"	0"	1"	1.25"	1.5"	2"	2"

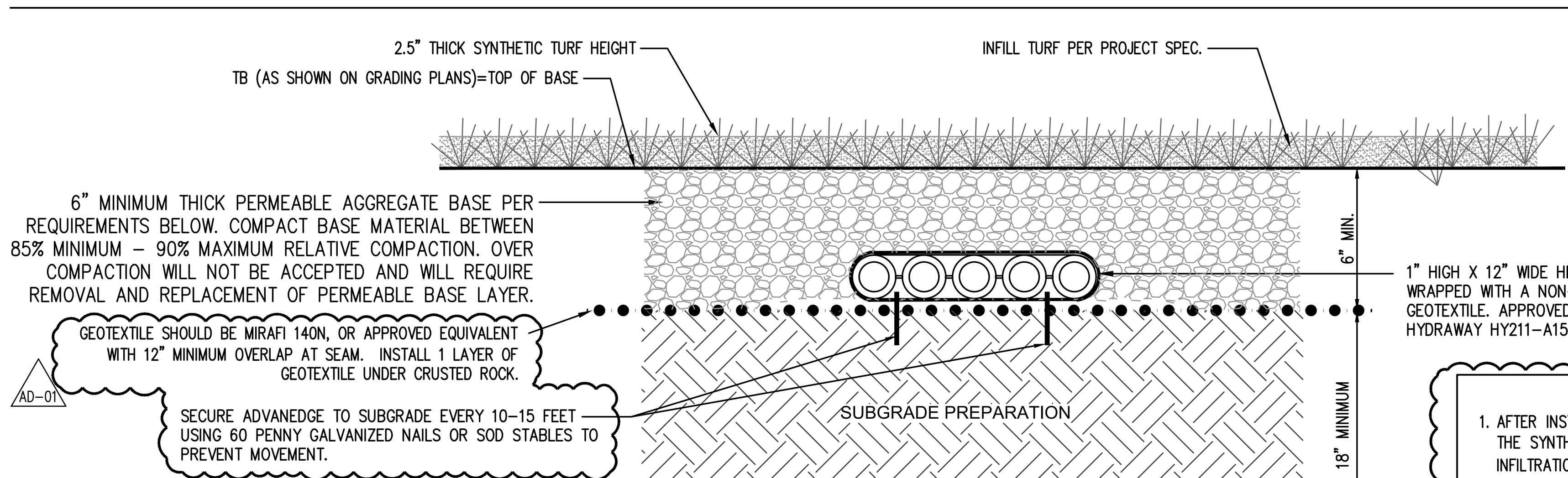


16 CONCRETE CURB DETAIL
NOT TO SCALE

GENERAL NOTES:
1. ALL EXPOSED EDGES SHALL HAVE A 1/2" RADIUS.
2. CONTROL JOINTS SHALL BE PLACED IN CURBING AT REGULAR INTERVALS OF 10'. EXPANSION JOINTS AT 30' INTERVALS, AND AT DRIVE APPROACHES, B.C.'S, E.C.'S, CROSS GUTTERS AND CATCH BASIN TRANSITIONS PER DETAILS ON C003.
3. A 6" THICK LAYER OF CRUSHED AGGREGATE BASE SHALL BE PLACED UNDER ALL CURB. MINIMUM COMPACTION OF 95% RELATIVE DENSITY UNLESS WAIVED BY CIVIL ENGINEER.
4. CONCRETE SHALL BE MINIMUM CLASS 520-C-2500 PER S.S.P.W.C. SECTION 201-1.
5. PLACE NO. 4 REBARS 3" MINIMUM FROM TOP AND BOTTOM OF CURB.



1"x12" PIPE TO 10" DIA. PIPE CONNECTION DETAIL 7
NOT TO SCALE



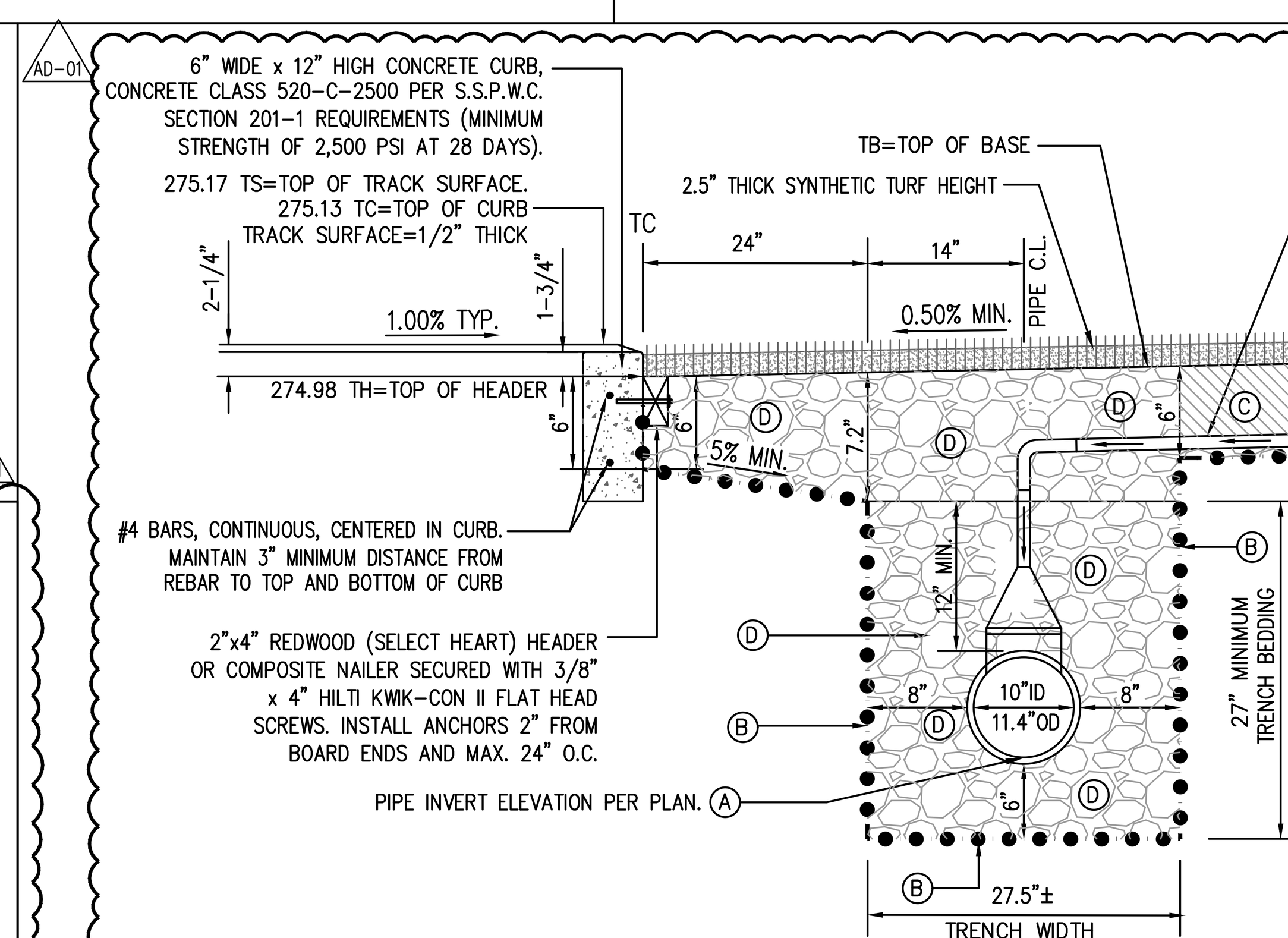
PERMEABLE BASE MATERIAL GRADATION REQUIREMENT PER 2015 CALTRANS SECTION 68-2.02F(3)

SIEVE SIZE	% PASSING
1"	100
3/4"	90-100
3/8"	40-100
No. 4	25-40
No. 8	18-33
No. 30	5-15
No. 50	0-7
No. 200	0-3

SYNTHETIC TURF SECTION 5 8A
NOT TO SCALE

EXPOSED SURFACE SOILS UNDER GEOTEXTILE SHALL BE SCARIFIED TO A DEPTH OF AT LEAST 18 INCHES AND MOISTURE CONDITIONED AS NEEDED. RECOMPACT TO A MINIMUM OF 90% PER ASTM D1557. SUBGRADE SHOULD BE FIRM AND UNYIELDING PRIOR TO GEOTEXTILE PLACEMENT.

FIELD INFILTRATION TEST NOTE TO CONTRACTOR:
1. AFTER INSTALLATION OF THE PERMEABLE AGGREGATE BASE, AND PRIOR TO INSTALLATION OF THE SYNTHETIC TURF, THE CONTRACTOR SHALL PAY FOR AND TEST THE FINISHED BASE FOR INFILTRATION PER ASTM F2898 - 11 (REAPPROVED 2019) STANDARD TEST METHOD FOR PERMEABILITY OF SYNTHETIC TURF SPORTS FIELD BASE STONE AND SURFACE SYSTEM BY NON-CONFINED AREA FLOOD TEST METHOD.
2. THE TEST IS TO BE PERFORMED BY A REGISTERED GEOTECHNICAL ENGINEER, CERTIFIED AGRONOMIST, OR OTHER QUALIFIED INDEPENDENT TESTING PROFESSIONAL. TEST IN AT LEAST 3 AREAS OF EACH CONTIGUOUS PERMEABLE AGGREGATE BASE AS DETERMINED BY THE OWNER'S REPRESENTATIVE.
3. THE PERMEABLE AGGREGATE BASE IS TO HAVE AN INFILTRATION RATE OF A MINIMUM 4 - 6 INCHES PER HOUR.
4. CONTRACTOR SHALL PROVIDE THE RESULTS OF THE TEST TO THE OWNERS REPRESENTATIVE.
5. IF THE PERMEABLE AGGREGATE BASE DOES NOT MEET THE REQUIRED INFILTRATION RATE, CONTRACTOR SHALL CORRECT OR REINSTALL THE NON-CONFORMING SECTIONS TO THE REQUIRED GRADE, CROSS-SECTION AND DENSITY.
6. TESTING FEES AND CORRECTIONS TO AND/OR REINSTALLATION OF THE PERMEABLE AGGREGATE BASE ARE AT NO ADDITIONAL COST TO THE OWNER.



6 PERIMETER SUBDRAIN DETAIL
NOT TO SCALE

SUBDRAIN NOTES:
Ⓐ 10" PERFORATED DUAL WALL HDPE PIPE BY ADS, PRINSCO OR EQUAL. PIPE SHALL BE INSTALLED WITH PERFORATIONS DOWN. PERFORATIONS SHALL BE 1/2 INCH IN DIAMETER PLACED AT THE ENDS OF A 120-DEGREE ARC IN TWO ROWS AT 5 INCHES ON CENTER.
Ⓑ GEOTEXTILE SHOULD BE MIRAFI 140N, OR APPROVED EQUIVALENT WITH 12" MINIMUM OVERLAP AT SEAM. INSTALL 1 LAYER OF GEOTEXTILE UNDER CRUSHED ROCK.
Ⓒ PERMEABLE BASE PER CALTRANS SECTION 68-2.02F(E)

PERMEABLE BASE MATERIAL GRADATION REQUIREMENT PER 2015 CALTRANS SECTION 68-2.02F(3)

SIEVE SIZE	% PASSING
1"	100
3/4"	90-100
3/8"	40-100
No. 4	25-40
No. 8	18-33
No. 30	5-15
No. 50	0-7
No. 200	0-3

Ⓓ 3/4" WASHED CRUSHED ROCK (ASTM #67)

SIEVE SIZE	% PASSING
1"	100
3/4"	90-100
3/8"	20-55
No. 4	0-10
No. 8	0-5
No. 200	0-1

HMC Architects
3361004000
3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

LICENSED ARCHITECT VIRGINIA ELAINE MARQUARDT No. C-33423 06/30/2025 STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

PLANS PREPARED BY:
FPL and Associates, Inc.
Traffic • Transportation • Civil
30 Corporate Park, Suite 401
Irvine, CA 92606
PHONE: 949-252-1688
SIGNATURE 1/5/2023 DATE
REGISTERED PROFESSIONAL ENGINEER No. C 34971 Exp. 09-30-25 CIVIL STATE OF CALIFORNIA

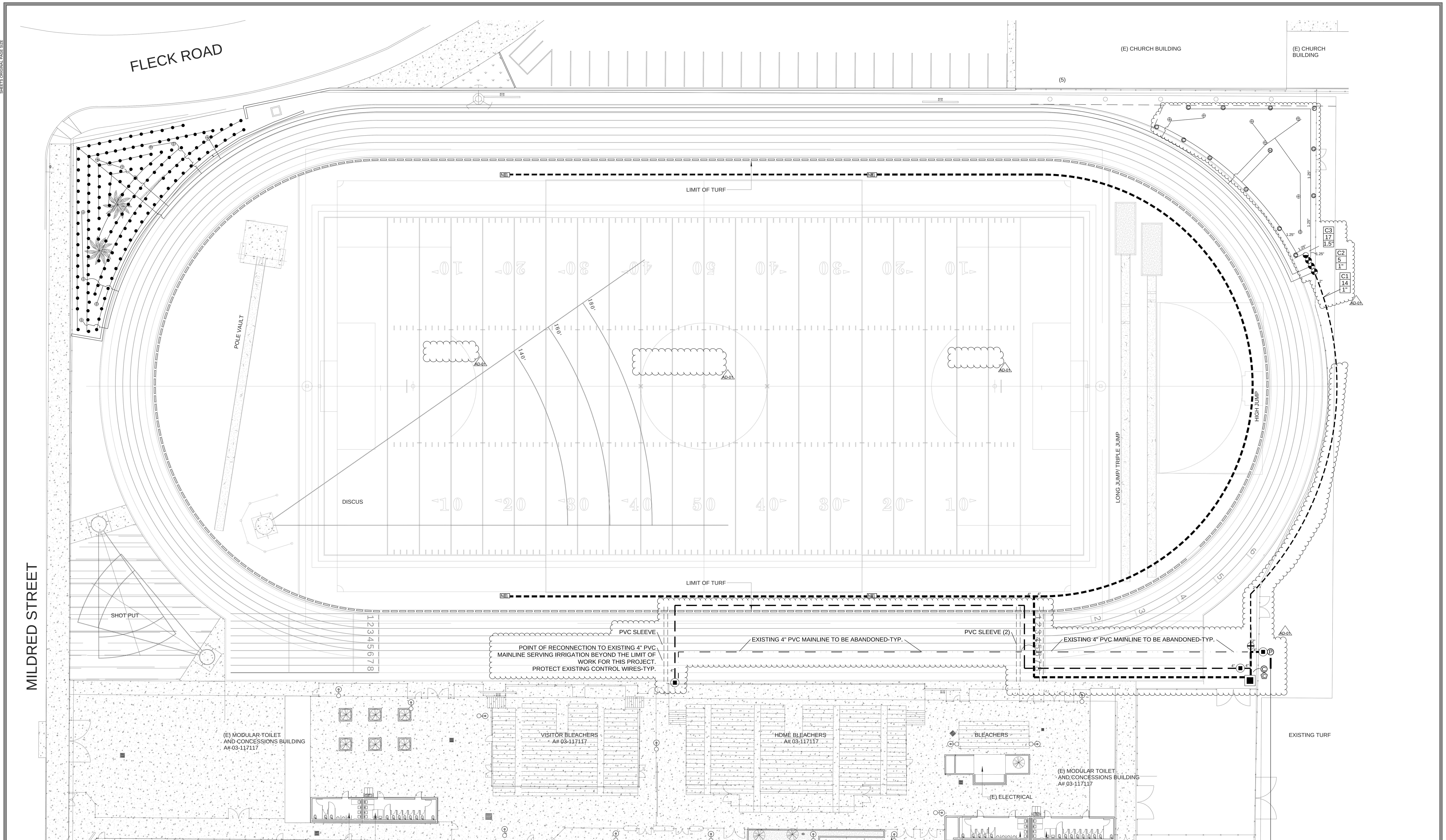
FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

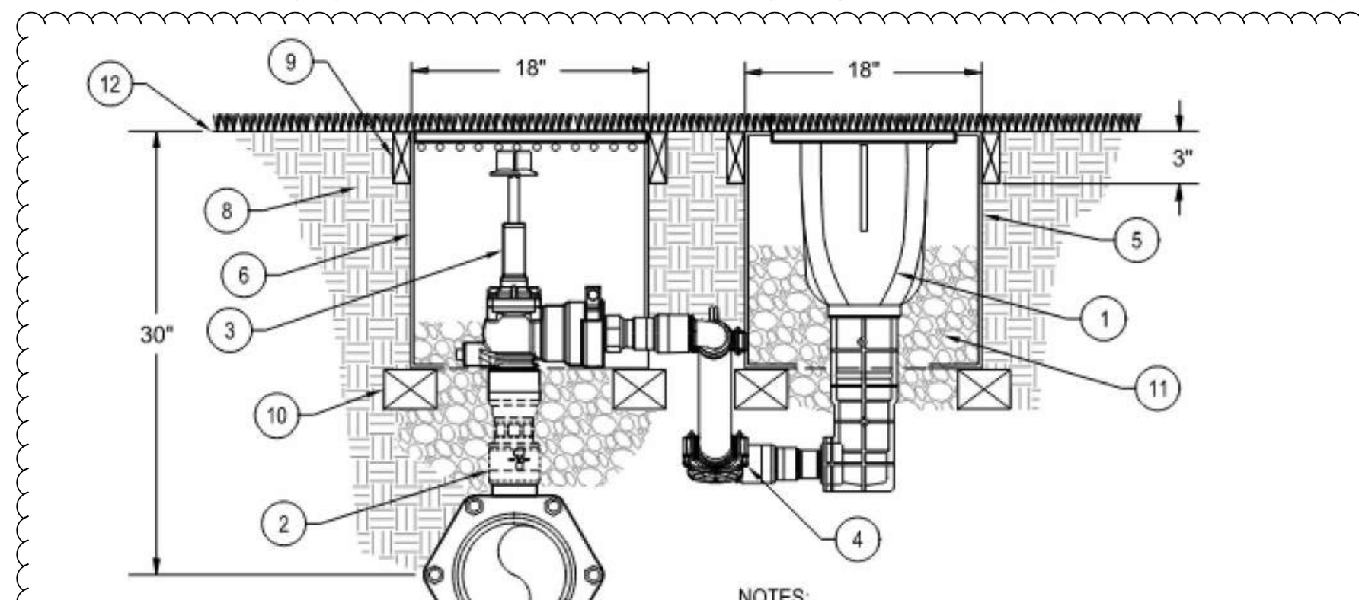
PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD EXISTING TRACK AND FIELD REPLACEMENT

SHEET NAME:
DETAIL SHEET

ADDENDUM 01

FAC NO.: XXXXX BLDG NO.: BLD-XXXXX
DATE: 08/08/2024 CLIENT PROJ NO:
SHEET:
C004





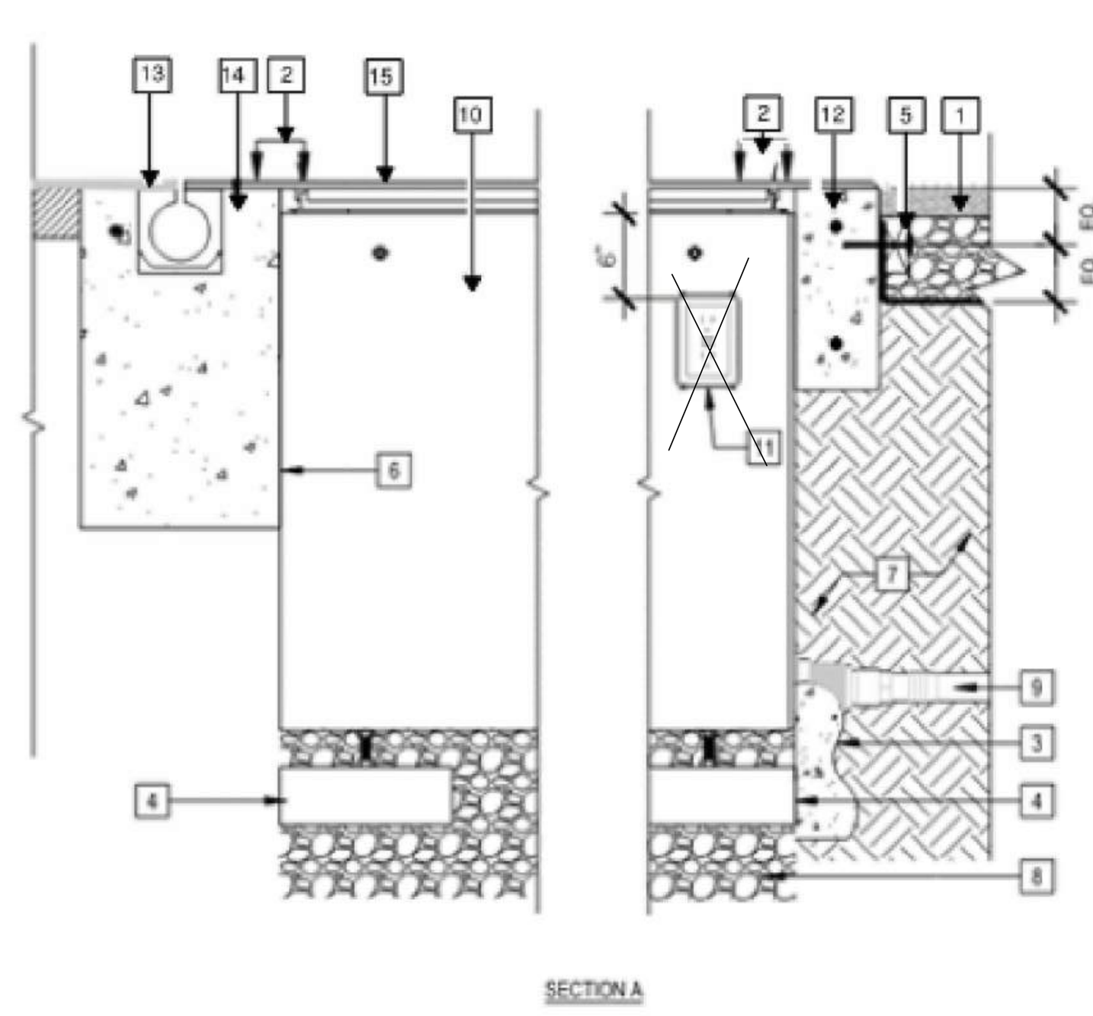
NOTES:
1. IN GROUND ENCLOSURE TO WITHSTAND HEAVY TRAFFIC WITHOUT DEFLECTION.
2. BOX BASE INCLUDES 2.5" RETURN FOR STABILITY WITHIN SOILS.
3. ALL HARDWARE SHALL BE STAINLESS STEEL.

LEGEND

1. TORO TS170V SPRINKLER
2. DUCTILE IRON TEE WITH ACME SWIVEL THREAD (NOT INCLUDED IN KIT) WITH MAIN LINE @30" DEPTH.
3. ISOLATION SLEEVE VALVE (INCLUDED WITH TORO SWING JOINT KIT), 3-INCH WITH MALE SWIVEL THREADED INLET, 2-INCH SQUARE NUT AND DUCTILE IRON GRIP RING.
4. TORO COMPACT DUCTILE IRON SWING JOINT ASSEMBLY, 3-INCH X 2.5-INCH NPT SIZE, MODEL No. TS170-1V3K-3LC-SJ.
5. TORO ENCLOSURE MODEL No. TSSBK-18-170, 18"W X 18"L X 18"D, STAINLESS STEEL WITH 1/2" LID AND 1/2" THICK HDPE INSERT FITTED FOR TS170V, SECURED FROM UNDERSIDE.
6. TORO ENCLOSURE MODEL No. TSSBK-18-SOLID, 18"W X 18"L X 18"D, STAINLESS STEEL WITH SOLID LID AND 1/2" THICK HDPE INSERT SECURED FROM UNDERSIDE.
7. IRRIGATION MAIN LINE PIPING INCLUDING TEE OR ELL CONNECTION TO VALVE, SUPPLIED BY OTHERS.
8. COMPACTED SUB-BASE MATERIAL.
9. HDPE SIDE SUPPORTS (NOT INCLUDED), ADJUST FOR VARYING PILE HEIGHTS - SECURE TO ALL FOUR SIDES OF VALVE BOX.
10. COMMON RED OR CONCRETE BRICK SUPPORT UNDER EACH CORNER OF BOX. TYPICAL.
11. 3/4" WASHED GRAVEL BACKFILL. SET TO 6-8 INCHES BELOW VALVE BOX.
12. FINISHED GRADE. REFER TO DETAIL ON THIS SHEET FOR RUBBERIZED LID SURFACING MATERIAL

TORO. TS170V Compact Ductile Iron Swing Joint Kit with ISOLATION VALVE

DRAWING NOT TO SCALE



RUBBERIZED LID SUFACING DETAIL

1. SYNTHETIC TURF SYSTEM
2. FLUSH ADJACENT SURFACES
3. CONCRETE SETTING BASE PER MANUF. RECOMMENDATIONS
4. LEVELING BRICKS
5. HDPE HEADER TYP.
6. UTILITY BOX TO BUTT DIRECTLY AGAINST ADJACENT SURFACE AT 90 DEGRESS. CONTRACTOR TO CUT THE SS FLANGE(S) AS NECESSARY FOR FLUSH CONDITION
7. COMPACTED SUBGRADE
8. 3/4" WASHED GRAVEL BACKFILL - SET TO 6-INCHES BELOW BOX.
9. PVC STUB WHERE OCCURS - CONNECT TO PERIMETER DRAIN PER IRRIGATION DWGS.
10. ISOLATION VALVE/ SPRINKLER/ QUICK COUPLER PER IRRIGATION DWGS.
12. CONCRETE CURB PER MANUF. RECOMMENDATIONS. PROVIDE 2- #4 TOP AND BOTTOM - CONTINOUS, AS RECOMMENDED
13. TRACK SURFACE
14. CONCRETE CURB WITH SLOT DRAIN
15. SYNTH TRACK SURFACING OVER TOP OF UTILITY BOX AND CONCRETE CURB AND BETWEEN ADJACENT UTILITY BOXES

IRRIGATION LEGEND

SYMBOL	DESCRIPTION	GPM	PSI	RAD	DETAIL
N1	TORO TS170V KIT W/#16 NOZZLE. REFER TO DETAIL ON THIS SHEET FOR LID SURFACE MATERIAL DETAIL	151	100	137'	
(dashed line)	4" WASH-DOWN SYSTEM MAINLINE CLASS 200 PVC GASKETED W/LEEMCO JOINT RESTRAINTS PER TABLE ON SHEET L1.02 ALL CONTROL WIRE BETWEEN COACHES SWITCH AND FIELD BOXES TO BE PLACED IN 1" ELECTRICAL CONDUIT.				
	WATTS 403RT-RW W/OPERATING NUT				
	BARRETT ENGINEERED PUMPS BOOSTER PUMP CONTACT: GPS@EARTHLINK.NET - DARYL GREEN				
P	POINT OF CONNECTION AT EXISTING 4" PVC MAINLINE. FURNISH AND INSTALL WATTS 403RT GATE VALVE.				
C	COACH'S SWITCH IMPERIAL TECHNICAL SERVICES CONTROLLER. CONTACT: GPS@EARTHLINK.NET - DARYL GREEN				

IRRIGATION LEGEND

SYMBOL	DESCRIPTION	GPM	PSI	RAD	PR
C	HUNTER I-20-0.5SR	0.5	50	18'	0.3
D	HUNTER I-20-1.0SR	1.0	50	18'	0.59
E	HUNTER I-20-2.0SR	2.0	50	18'	1.19
F	HUNTER I-20-75SR	0.75	50	25'	0.23
G	HUNTER I-20-1.5SR	1.5	50	25'	0.46
H	HUNTER I-20-3.0SR	3.0	50	25'	0.92
⊕	RAINBIRD PCT-05 ON SCH. 80 RISER 2" ABOVE GRADE. FOUR PER TREE EQUALLY SPACED.	4 @ .083	15-50	---	
●	RAINBIRD PCT-05 ON SCH. 80 RISER 2" ABOVE GRADE. FOUR PER TREE EQUALLY SPACED.	4 @ .083	15-50	---	
	SCH 40 1" PVC LATERAL PIPE				
1.25"	SCH 40 1-1/4" PVC LATERAL PIPE				
1.5"	SCH 40 1-1/2" PVC LATERAL PIPE				
2"	SCH 40 2" PVC LATERAL PIPE				
	EXISTING 4" PVC MAINLINE				
	CLASS 200 4" GASKETED PVC MAINLINE UNLESS INDICATED OTHERWISE. 4" LINE - LEEMCO JOINT RESTRAINTS PER TABLE ON SHEET L1.02 2" LINE TO BE SCH. 40 SOLVENT WELD				
	RAINBIRD LFV-100 WITH 30-PSI SENNINGER, OR EQUAL, PRESSURE REDUCER AND 1" AMIAD COMPACT 800-MESH FILTER. INSTALL PER INDUSTRY STANDARDS.				
	SUPERIOR 950-PRS-NC REMOTE CONTROL VALVE IN LARGE RECTANGULAR VALVE BOX.				
	RAINBIRD 1" 44DRC QUICK COUPLER W/ADJACENT 1" BALL VALVE IN SEPARATE BOX. PROVIDE QUICK-COUPLER SWING JOINT IN BETWEEN				
	NIBCO 2" T-113 BRONZE GATE VALVE				
	ALL IRRIGATION LINES UNDER PAVING GREATER THAN 5' WIDE SHALL BE SLEEVED IN CLASS 315 PCV 2X SLEEVED PIPE. EXTEND SLEEVE 12" MINIMUM BEYOND EDGE OF PAVING-TYP.				
C	RAINBIRD ESP-LXME 4-STATION IRRIGATION CONTROLLER..				

E1 EXISTING CONTROLLER STATION DESIGNATION - VERIFY AVAILABILITY
12 GALLONS PER MINUTE
1" VALVE SIZE

PROVIDE PVC SLEEVE UNDER TRACK FOR FIELD ROTORS. SLEEVES NOT SHOWN.

COORDINATE 120-V ELECTRICAL SERVICCE AT BOOSTER PUMP FOR NEW IRRIGATION CONTROLLER.

POINT OF CONNECTION
CONNECT NEW 4" PVC MAINLINE TO EXISTING PVC MAINLINE AT THIS LOCATION. VERIFY EXISTING LINE SIZE. NOTIFY THE ARCHITECT IF THE EXISTING LINE SIZE IS NOT 4".
VERIFY WATER PRESSURE AT THIS LOCATION. REPORT WATER PRESSURE FINDINGS TO ARCHITECT. THE ASSUMED WATER PRESSURE IS 65-PSI. NOTIFY THE ARCHITECT AND PUMP FABRICATOR BEFORE BOOSTER PUMP FABRICATION, IN THE EVENT THE WATER PRESSURE IS ABOVE OR BELOW 65-PSI.

PROVIDE MAINLINE TEE AND EXTEND NEW 4" MAINLINE TO NEW BOOSTER PUMP. EXTEND A SECOND NEW 4" MAINLINE TO POINT OF RECONNECTION WHERE NOTED ON PLAN.

EXTEND NEW AND TEMPORARY 4" PVC MAINLINE SERVICING IRRIGATION BEYOND THE LIMIT OF WORK FOR THIS PROJECT. THE LOCATION OF RECONNECTION IS NOTED ON PLAN. PROTECT ALL CONTROL WIRES EXTENDING TROUGH THE LIMIT OF WORK FOR THIS PROJECT. PROVIDE TEMPORARY OPERATION OF THESE CONTROL WIRES. PROVIDE PERMANENT ROUTING OF THESE CONTROL WIRES ALONG NEW 4" MAINLINE. PROVIDE SPLICE BOXES AT EACH END WITH BUNDLED AND RECONNECTED CONTROL WIRES.

0 8 16 32

HMC Architects
3361004000
3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

LICENSED ARCHITECT VIRGINIA ELAINE MARQUARDT No. C-33423 06/30/2025 RENEWAL DATE STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

KEYNOTES

NOTES

silver bar studio
landscape architecture
environmental design
mariposa, ca.

LICENSED LANDSCAPE ARCHITECT CRAIG THOMAS DUNCAN 2903 REN. JULY 2026 STATE OF CALIFORNIA

FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD EXISTING TRACK AND FIELD REPLACEMENT

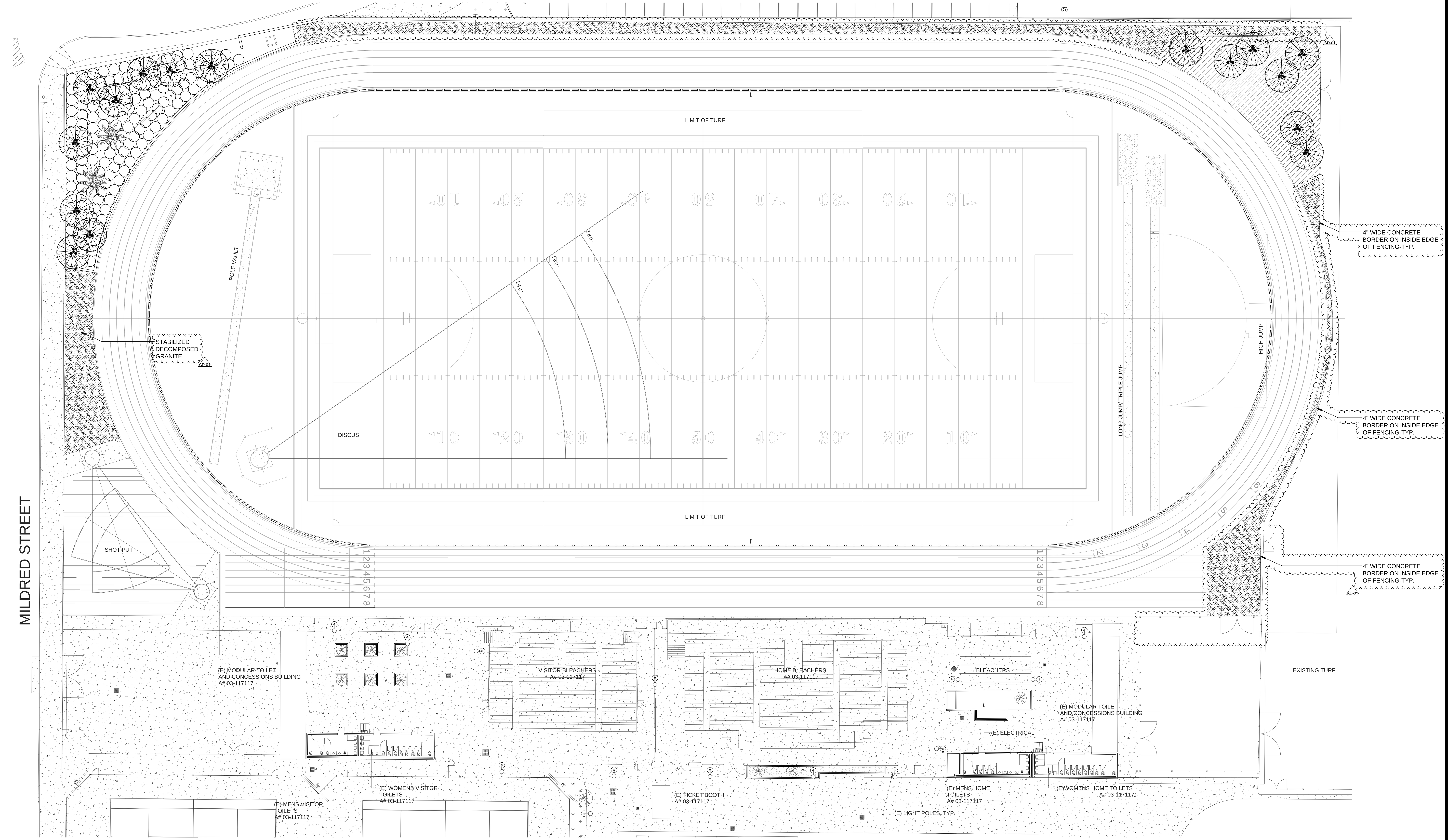
SHEET NAME:
IRRIGATION PLAN

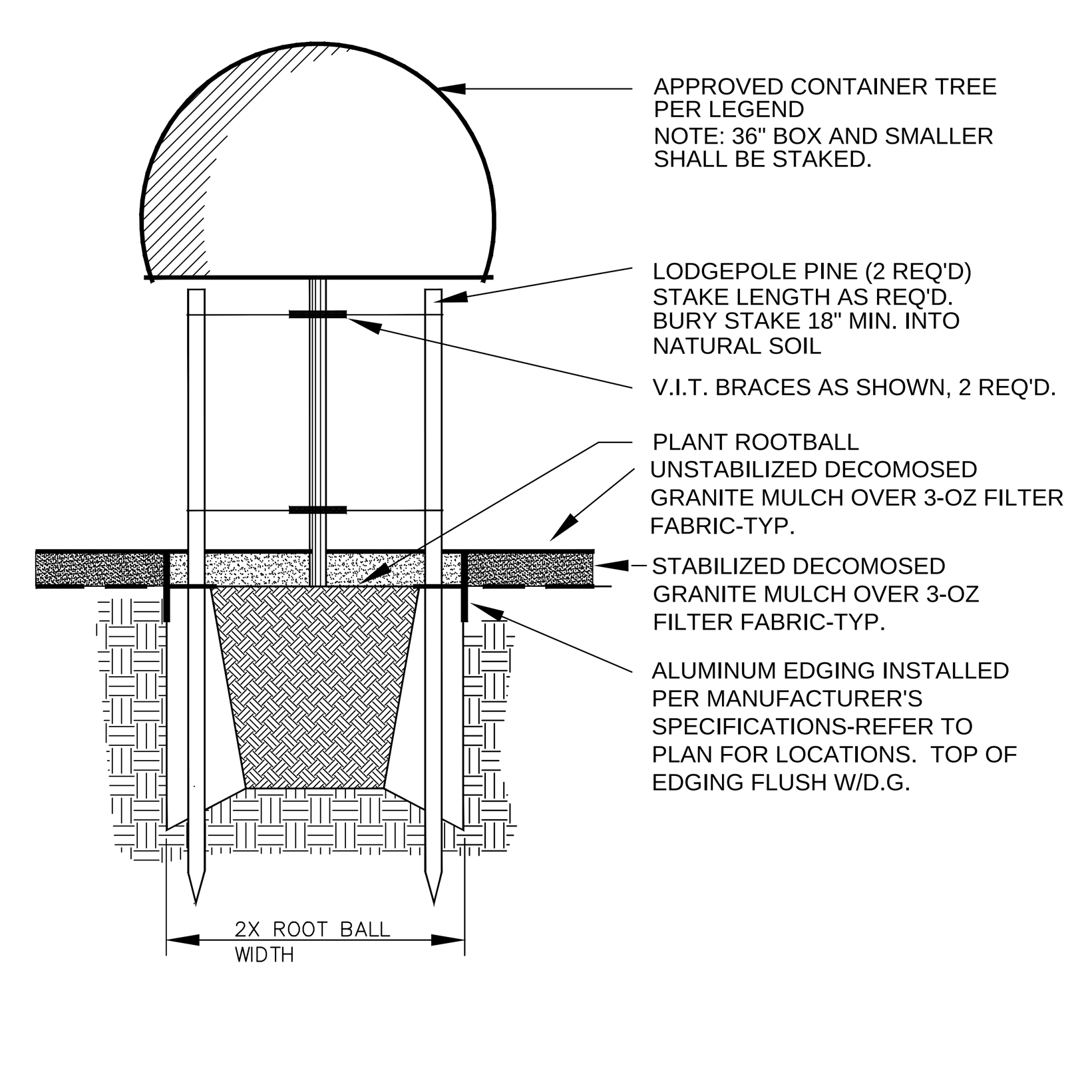
ADDENDUM 01

FAC NO.: XXXXX **BLDG NO.: BLD-XXXXX**

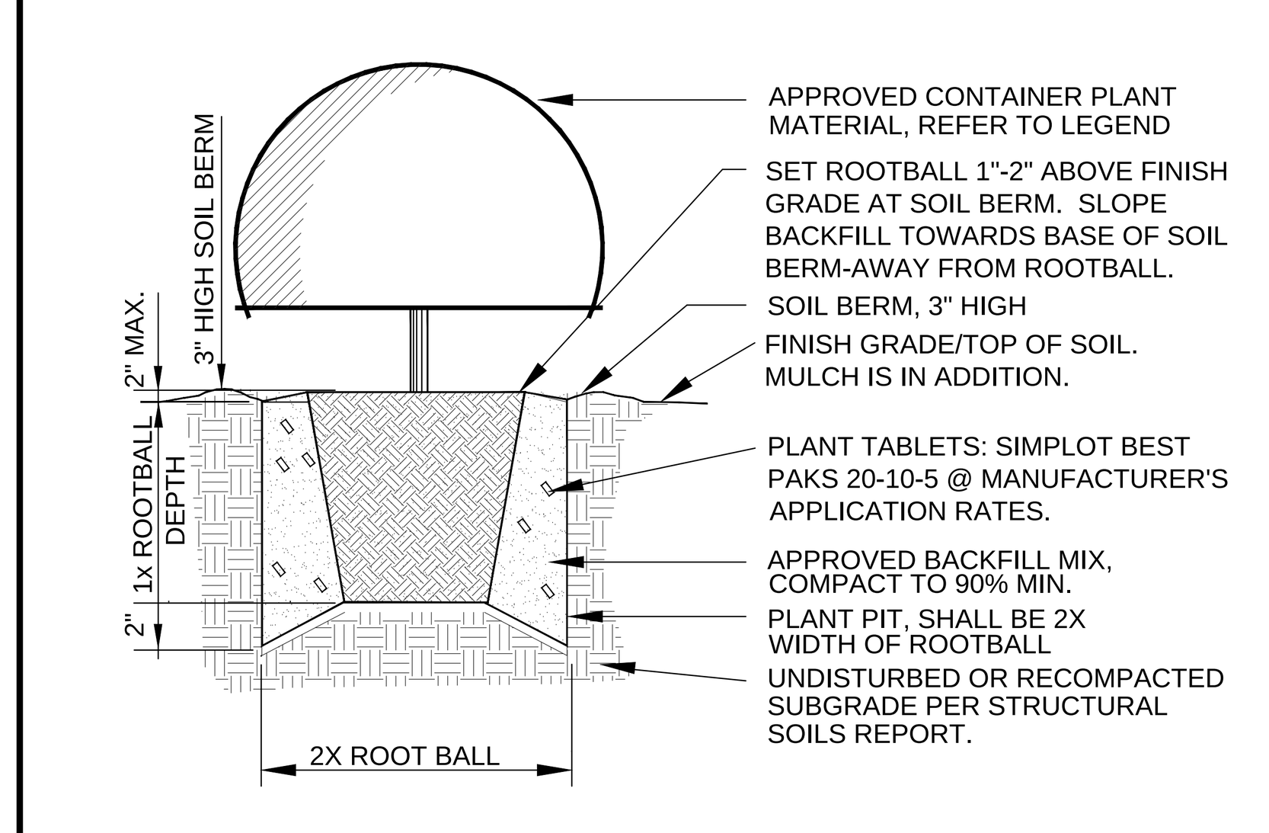
DATE: **08/08/2024** CLIENT PROJ NO:

SHEET:
L1.01

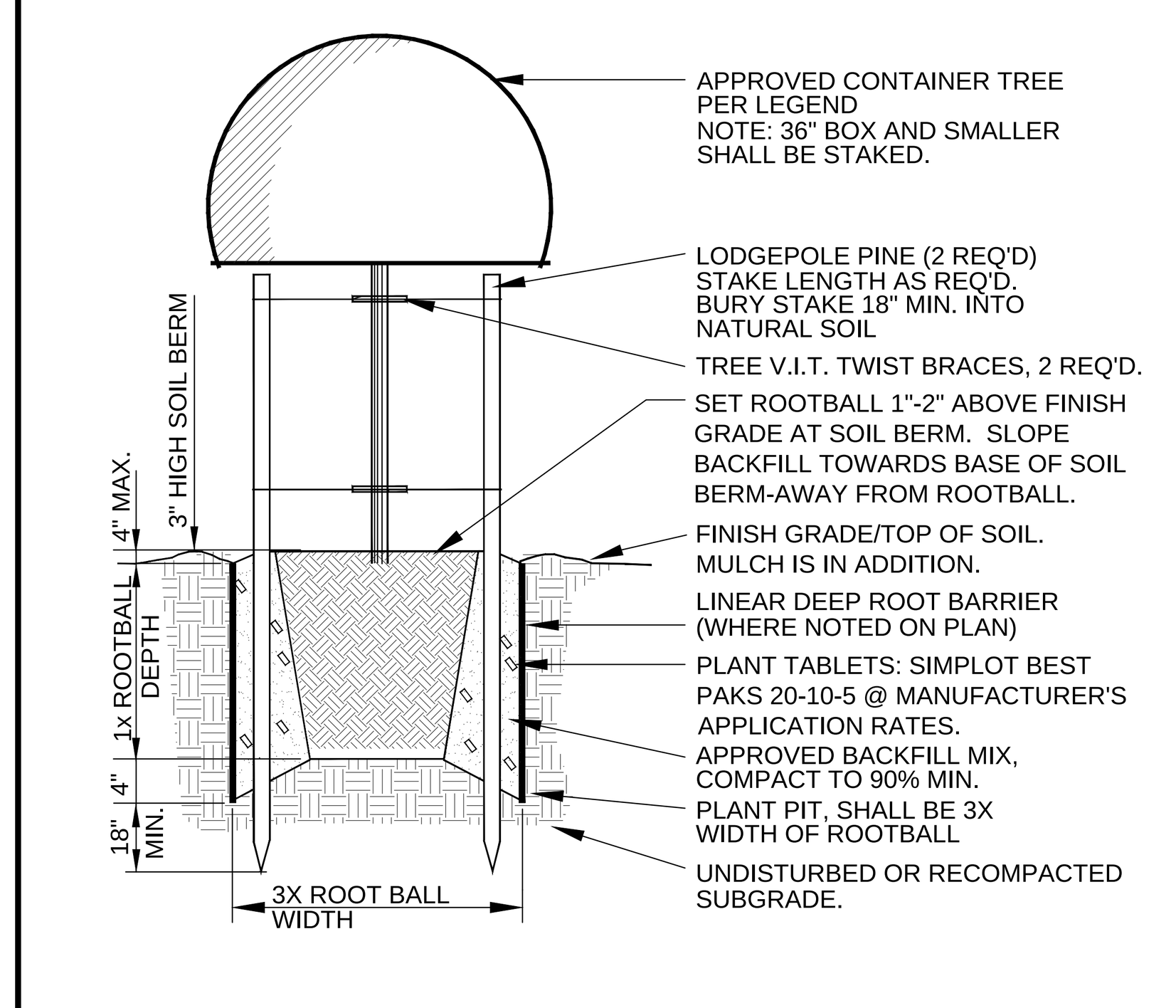




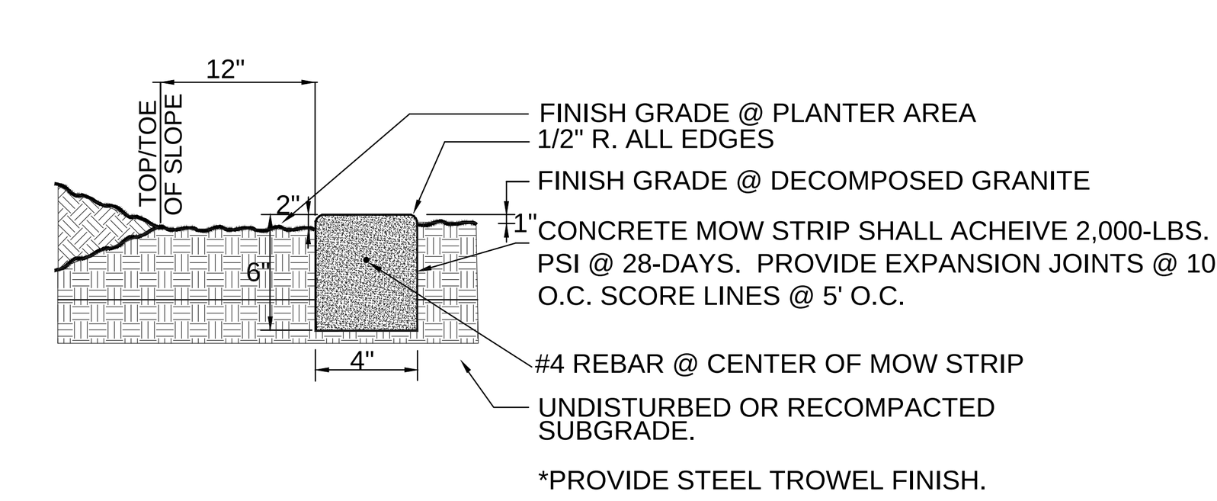
TREE PLANTING IN DECOMPOSED GRANITE



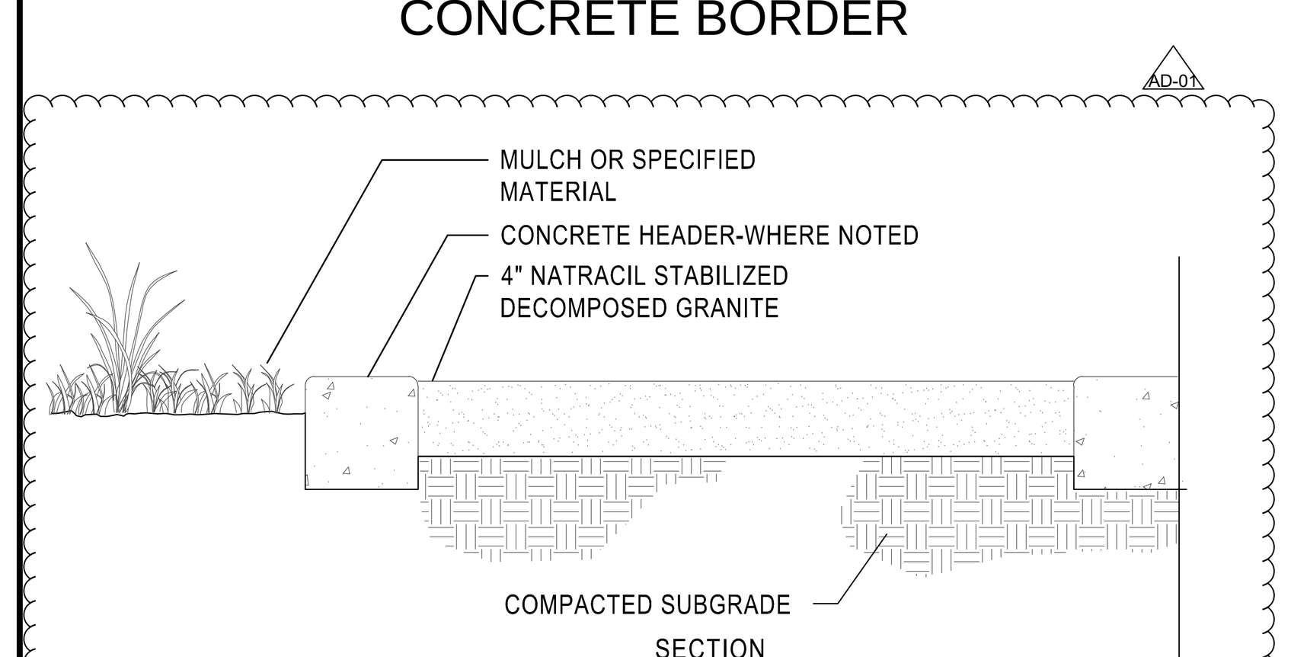
SHRUB PLANTING



TREE PLANTING



CONCRETE BORDER



NOTES:
1. INSTALL WITH MIN. 1% to MAX. 3% CROSS SLOPE
2. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH SUPPLIER'S SPECIFICATIONS. .

STABILIZED DECOMPOSED GRANITE

PINUS CANARIENSIS	WUCOLS 3: LOW
CANARY ISLAND PINE	45' TALL/16' WIDE
36" BOX	SUN
COTONEASTER DAMMERI	WUCOLS 3: LOW
CORAL BEAUTY	16" TALL/60" WIDE
5-GAL.	SUN
AG SOD	WUCOLS 3: MED
BALLPARK	GRASS
	SUN
4" DEEP NATRICIL, OR APPROVED EQUAL, STABILIZED DECOMPOSED GRANITE COLOR: "DESERT GOLD"	

AD-01

0 8 16 32

HMC Architects

3361004000

3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

LICENSED ARCHITECT
VIRGINIA ELAINE MARQUARDT
No. C-33423
06/30/2025
RENEWAL DATE
STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

KEYNOTES

NOTES

silver bar studio
landscape architecture
environmental design

FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD EXISTING TRACK AND FIELD REPLACEMENT

SHEET NAME:
PLANTING PLAN

ADDENDUM 01

FAC NO.: XXXXX	BLDG NO.: BLD-XXXXX
DATE: 08/08/2024	CLIENT PROJ NO:

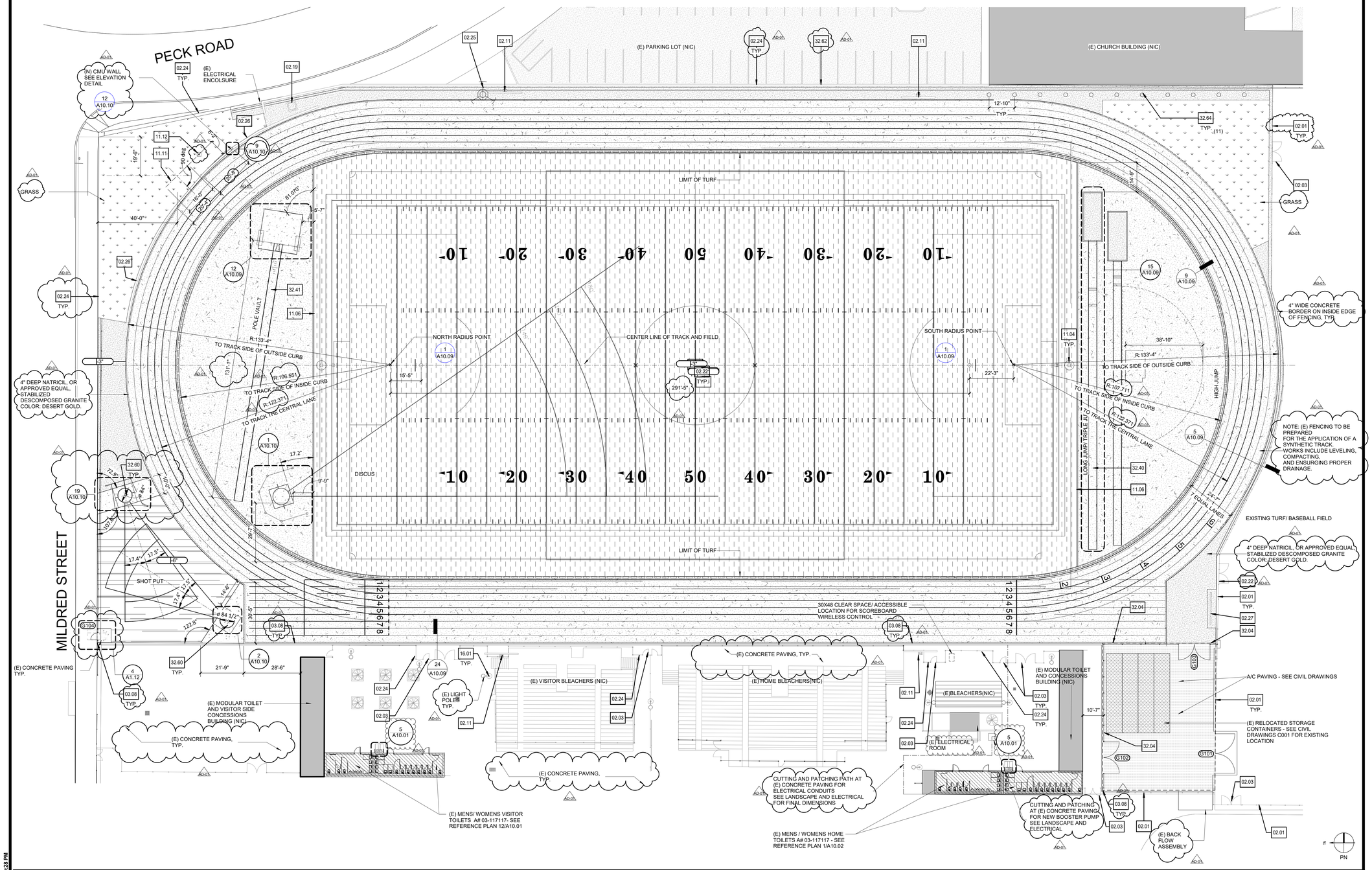
SHEET:

L2.01

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG ON THIS SHEET'S ORIGINAL SPACE SIZE

SITE PLAN LEGEND

- A.C. PAVING OR SLURRY COAT, REFER TO CIVIL DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION
- CONCRETE - REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION
- OFOI SYNTHETIC TURF - REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION
- GRASS - AG SOD
  REFER TO LANDSCAPE DRAWINGS SPECIFICATIONS FOR ADDITIONAL INFORMATION
- TRACK SURFACE - REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION
- SHOT-PUT MIX - REFER TO LANDSCAPE DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION
- AREA NOT IN SCOPE (N.I.S.)
- SAND - REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION
- 4" DEEP NATRICIL, OR APPROVED EQUAL, STABILIZED DESCOMPOSED GRANITE COLOR: DESERT GOLD.
- EXPANSION OR CONTROL JOINT - REFER TO SPECIFICATIONS AND GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION
- (E) CHAIN LINK FENCE
- (E) ANTI-CLIMB METAL FENCING AND OR GATE(S)
- LIMITS OF WORK
- (E) MENS AND WOMENS TOILETS - NIC



ENLARGED SITE PLAN

1" = 20'-0"

PLEASE RECYCLE

08-Aug-24 6:50:28 PM

HMC Architects

3361004000

3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

LICENSED ARCHITECT
VIRGINIA ELAINE MARQUARDT
No. C-33423
06/30/2025
RENEWAL DATE
STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

KEYNOTES

02.01	(E) CHAIN LINK FENCE TO REMAIN; PROTECT IN PLACE
02.03	(E) GATE TO REMAIN PROTECT IN PLACE
02.11	(E) MUSCO LIGHT AND POLE TO REMAIN; PROTECT IN PLACE
02.19	(E) UTILITIES TO REMAIN, REFER TO CIVIL FOR ADDITIONAL INFORMATION
02.22	(E) ROLLING GATE TO REMAIN
02.24	(E) ORNAMENTAL FENCE TO REMAIN; PROTECT IN PLACE
02.25	(E) CELL TOWER TO REMAIN; PROTECT IN PLACE
02.26	(E) CMU WALL TO REMAIN; PROTECT IN PLACE
02.27	(E) BASEBALL FIELD SCOREBOARD NIC. TO REMAIN; PROTECT IN PLACE
03.08	CONC. EXPANSION JOINT, REFER TO CIVIL DWGS. AND DETAIL 18/A2.00 FOR ADDITIONAL INFORMATION
11.04	FOOTBALL GOAL POST, SEE SPEC 11 66 00 AND DETAIL 1/A2.19
11.06	INSIDE STRAIGHT "D" ZONE CURB, SEE DETAIL 21/A10.09
11.11	ELECTRONIC SCOREBOARD. SEE DETAIL 16/A10.10 AND SPECS. WIRELESS CONTROL IS PROVIDED. SEE PLAN FOR ACCESSIBLE LOCATION
11.12	FLAG POLE, REFER TO DETAIL 6/A10.10
16.01	EXTERIOR LIGHT FIXTURE WITH CONCRETE BASE - REFER TO ELECTRICAL DWGS. FOR ADDITIONAL INFORMATION
32.04	CHAIN LINK FENCE, REFER TO FENCING PLAN. SEE SHEET A1.12
32.40	LONG/TRIPLE JUMP, SEE DETAIL 15/A10.09. REFER TO SPEC
32.41	POLE VAULT REFER TO SPEC 11 66 00 AND DETAIL 12/A10.09
32.60	SHOT PUT THROWING CIRCLE, SEE DETAIL 2/A10.10
32.62	RETAINING WALL, REFER TO DETAIL 08/S0.03
32.64	GROUND MOUNTED LIGHTS FOR MURAL, REFER TO ELECT.

NOTES

FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD
EXISTING TRACK AND FIELD REPLACEMENT

SHEET NAME:
ENLARGED SITE PLAN

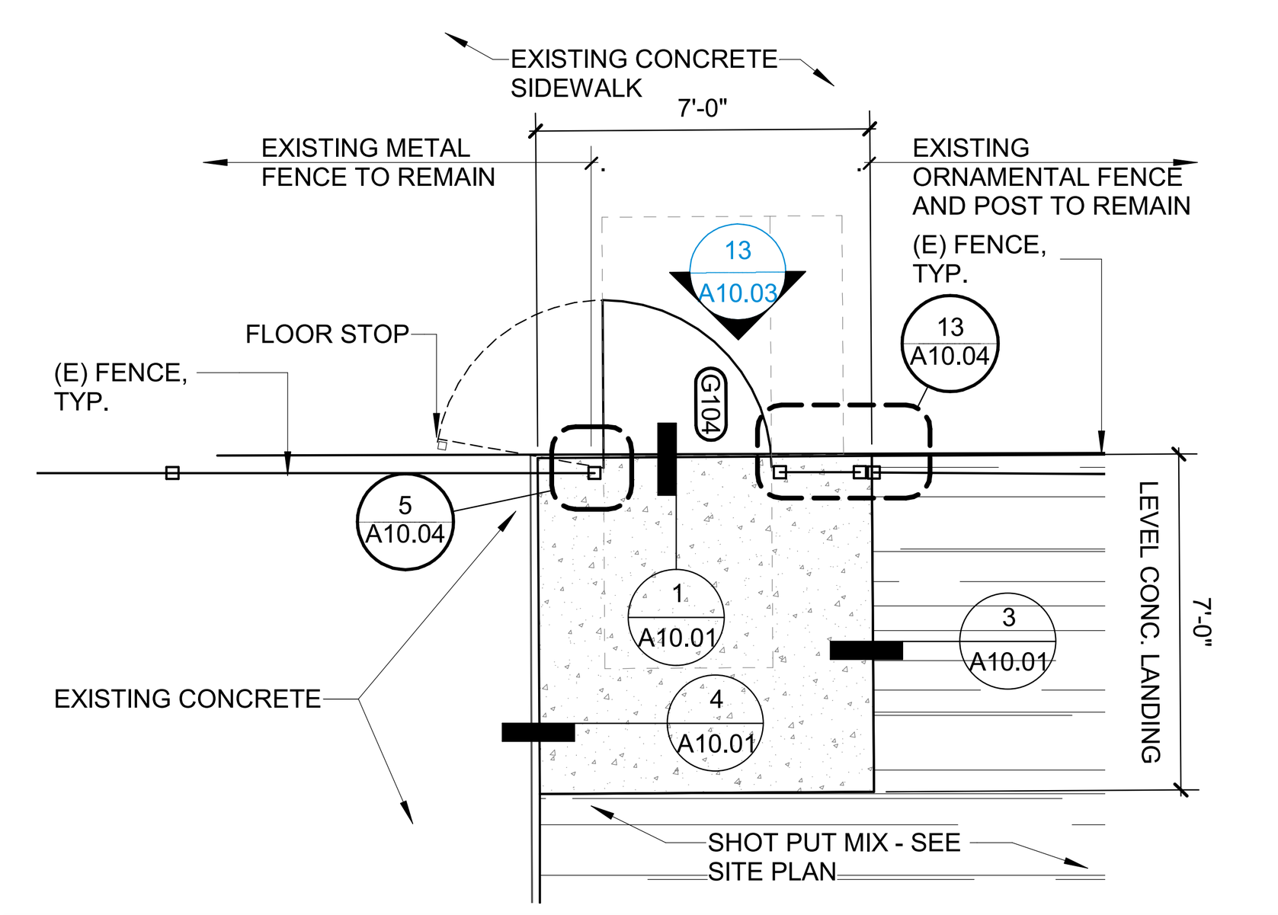
ADDENDUM 01

FAC NO.: XXXXX | BLDG NO.: BLD-XXXXX

DATE: **08/08/2024** | CLIENT PROJ NO:

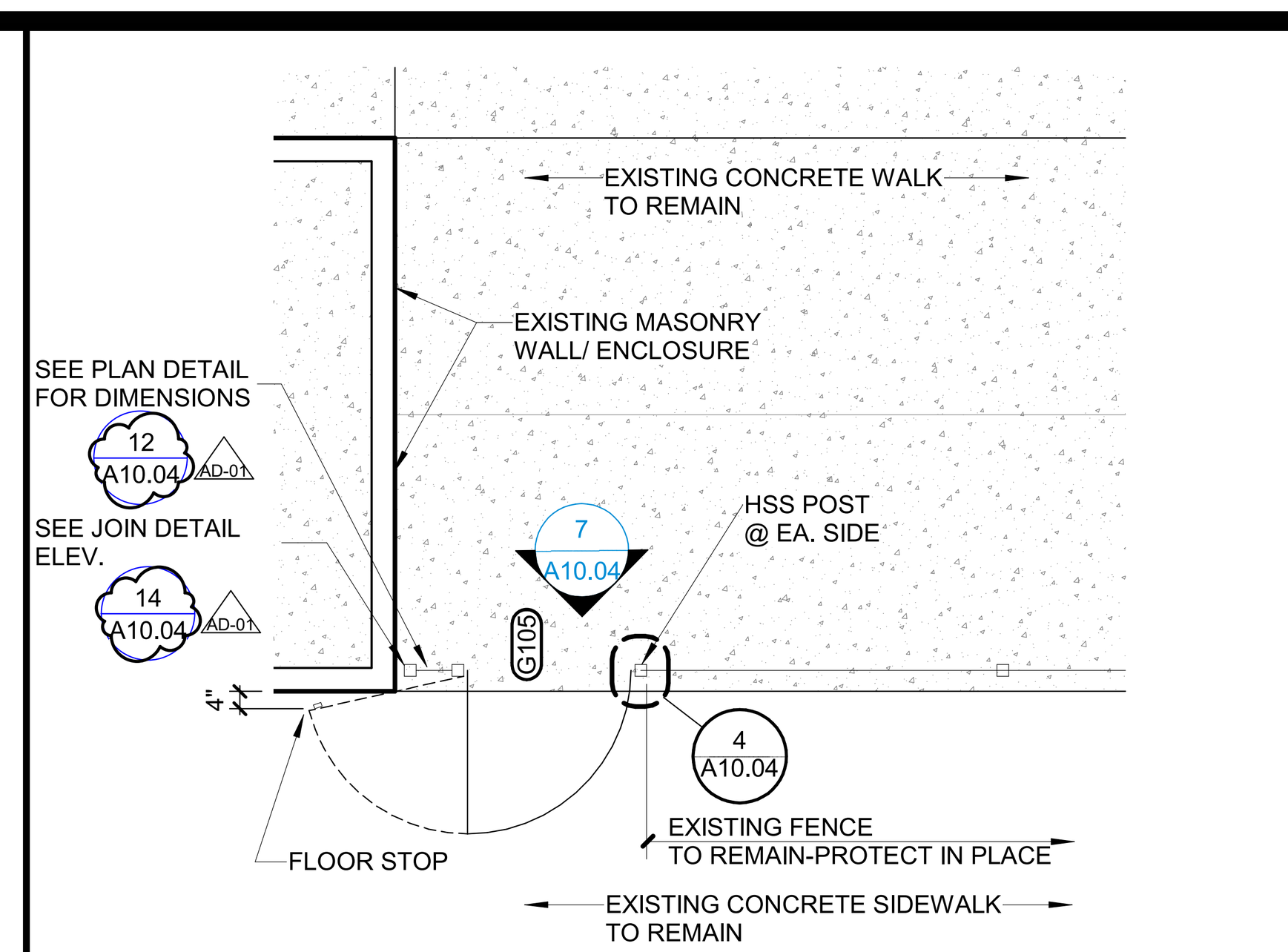
SHEET:

A1.10



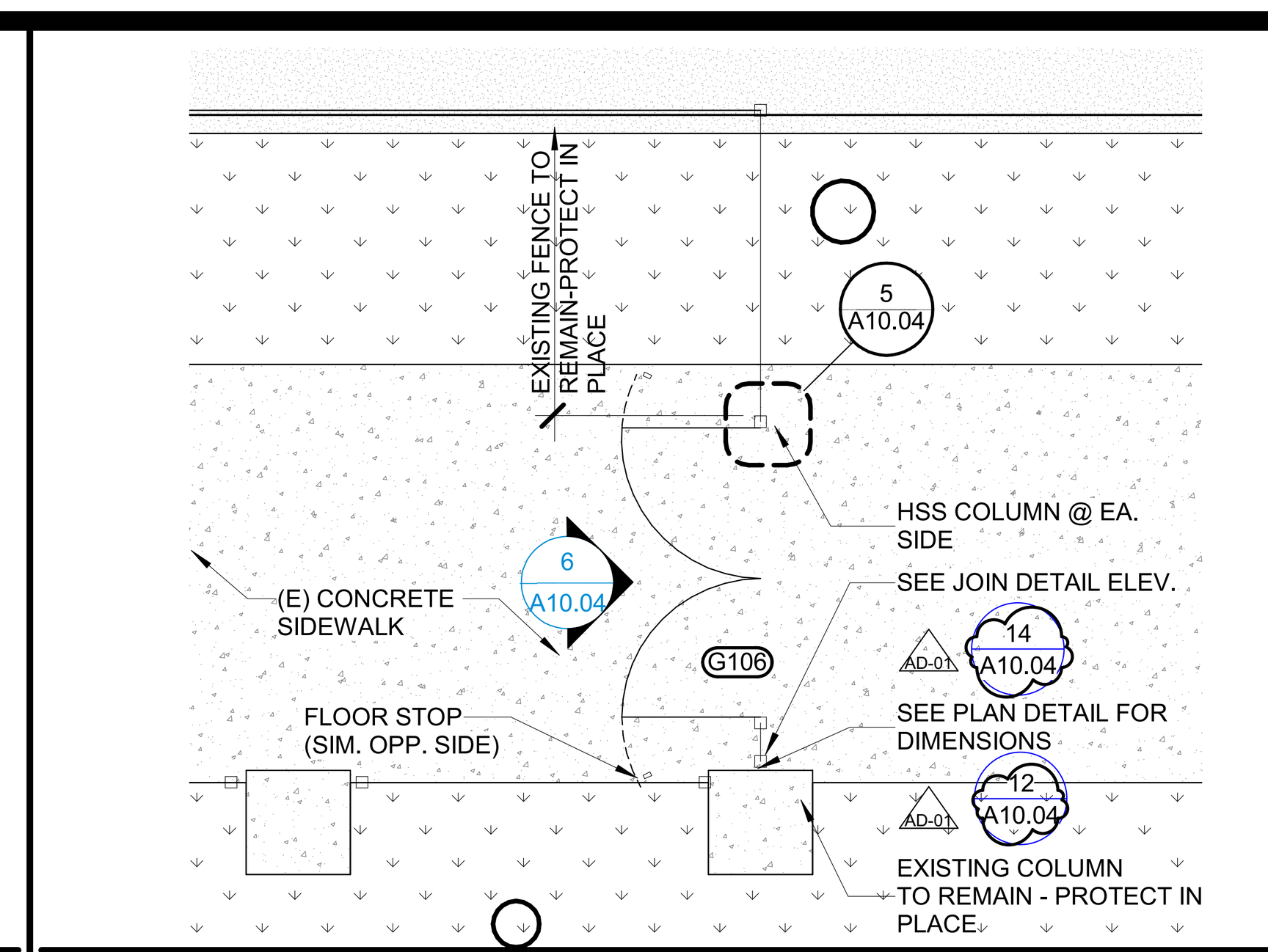
ENLARGED PLAN - G104 **4**

1/4" = 1'-0"



ENLARGED PLAN - GATE G105 **3**

1/4" = 1'-0"



ENLARGED PLAN - GATE G106 **2**

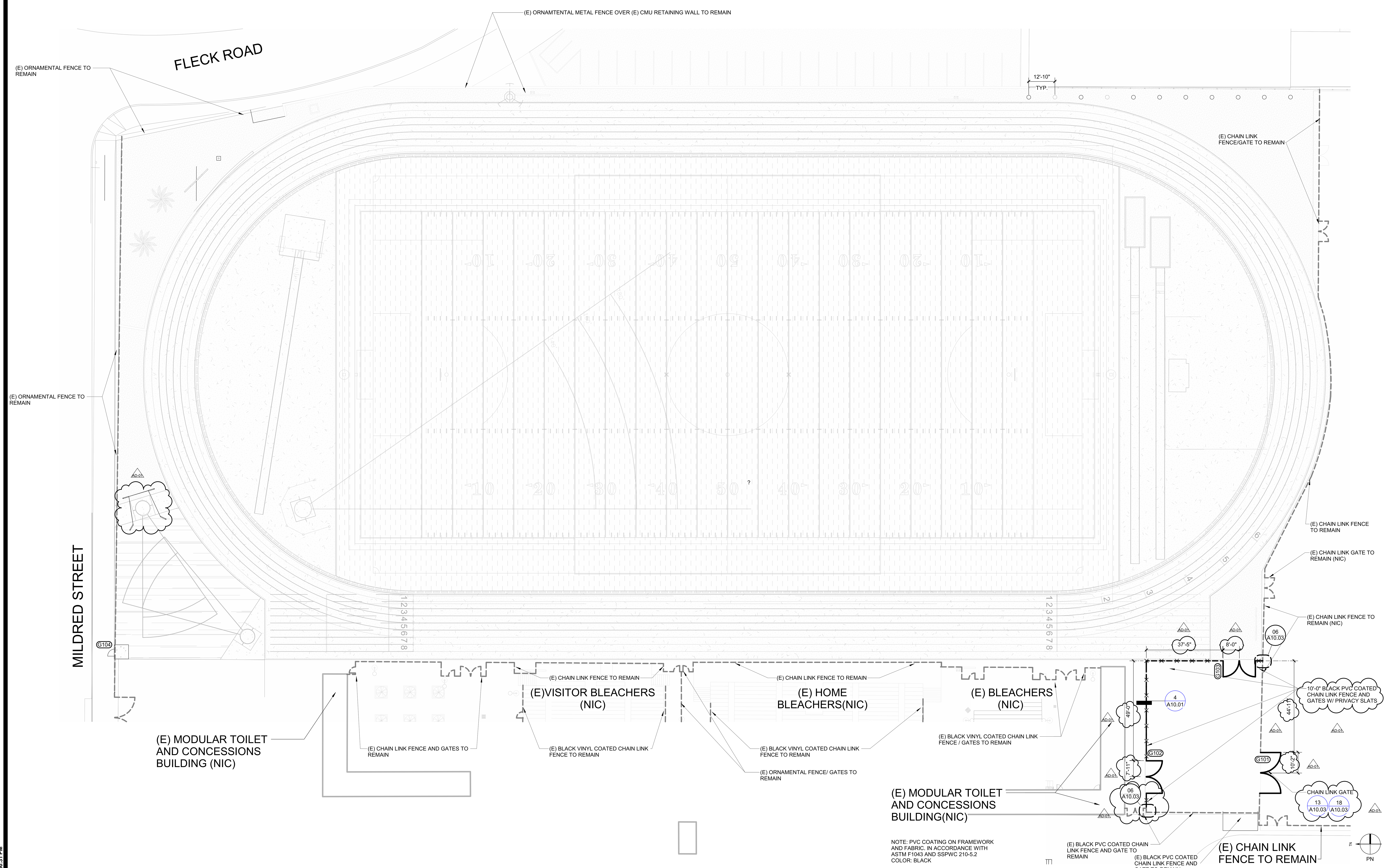
1/4" = 1'-0"

GATE SCHEDULE

NUMBER	NUMBER OF PANELS	Width	Height	MATERIAL	HARDWARE GROUP	PANIC HARDWARE	GATE ELEVATION	COMMENTS
G101	2	20'-0"	10'-0"	GALV. CHAINLINK	G101	No	18/A10.03	SERVICE GATE WITH FORK LATCH AND CANE BOLT/ CHAIN LINK GATE TO MATCH (E) FENCE MATERIAL AND FINISH
G102	2	16'-0"	10'-0"	BLACK VINYL COATED CHAINLINK	G101	No	18/A10.03	SERVICE GATE WITH FORK LATCH AND CANE BOLT
G103	2	16'-0"	10'-0"	BLACK VINYL COATED CHAINLINK	G101	No	18/A10.03	SERVICE GATE WITH FORK LATCH AND CANE BOLT
G104	1	3'-0"	8'-0"	IRON	G102	Yes	16/A10.03	ACCESSIBLE GATE AND HARDWARE WITH HYDRAULIC CLOSER AND KICK PLATE
G106	2	3'-0"	8'-0"	ORNAMENTAL METAL	G103	Yes	6/A10.04	ACCESSIBLE GATE AND HARDWARE WITH HYDRAULIC CLOSER AND KICK PLATE
G105	1	4'-0"	8'-0"	ORNAMENTAL METAL	G102	Yes	7/A10.04	ACCESSIBLE GATE AND HARDWARE WITH HYDRAULIC CLOSER AND KICK PLATE

LEGEND

—X—	CHAINLINK FENCING
— — —	(E) CHAINLINK FENCING
— — — (heavy)	LIMIT OF WORK



FENCING SITE PLAN **1**

1" = 20'-0"

HMC Architects

3361004000

3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

LICENSED ARCHITECT – VIRGINIA ELAINE MARQUARDT – No. C-33423 – 06/30/2025 RENEWAL DATE – STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

KEYNOTES

NOTES

FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD EXISTING TRACK AND FIELD REPLACEMENT

SHEET NAME:
FENCING PLAN

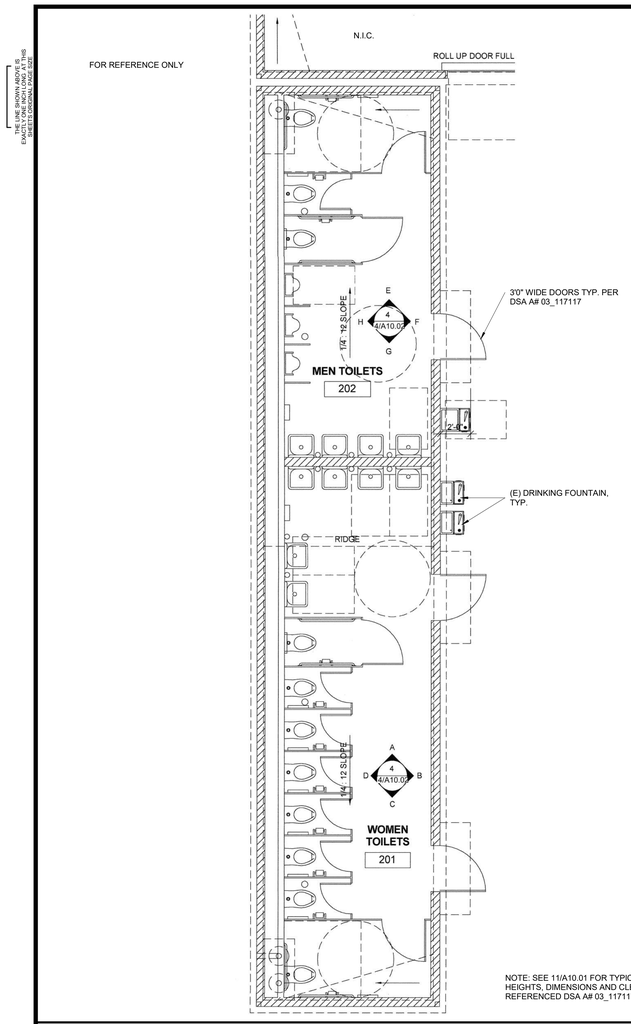
ADDENDUM 01

FAC NO.: XXXXX	BLDG NO.: BLD-XXXXX
DATE: 08/08/2024	CLIENT PROJ NO:

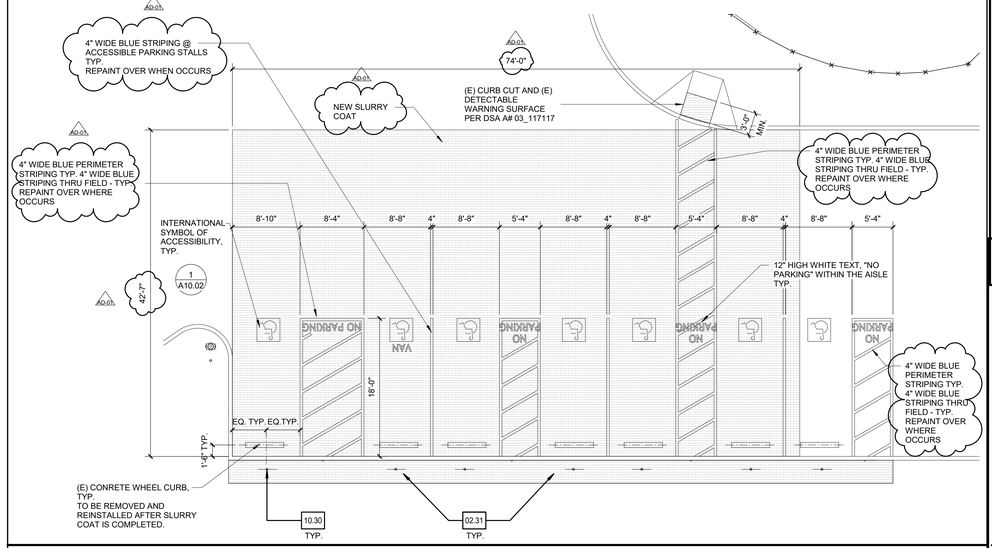
SHEET:

A1.12

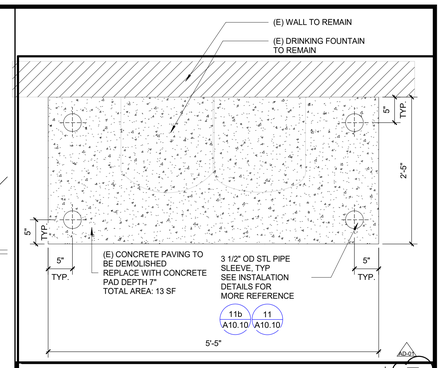
THE LINE SHOWN ABOVE IS 1" LONG WHEN PLOTTED ON THIS SHEET'S ORIGINAL SPACE SIZE



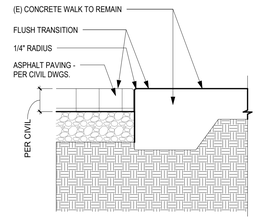
EXISTING TOILET PLAN @ VISITOR SIDE(REFERENCE A# 03_117117) 12
1/4" = 1'-0"



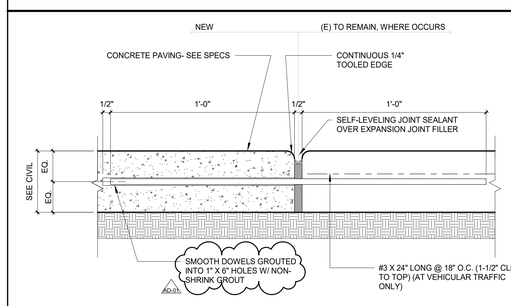
ENLARGED ACCESSIBLE PARKING 10
1/8" = 1'-0"



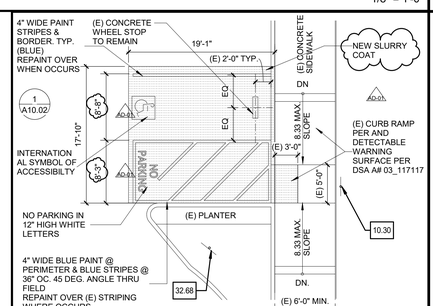
DEMO PLAN @ DRINKING FOUNTAIN 5
1" = 1'-0"



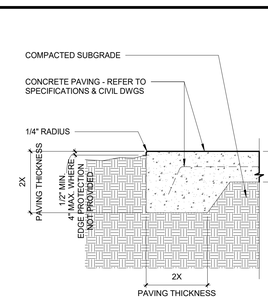
ASPHALT AT CONCRETE PAVING 4
1 1/2" = 1'-0"



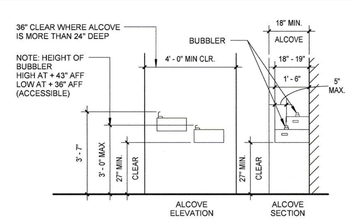
EXPANSION JOINT 1
3" = 1'-0"



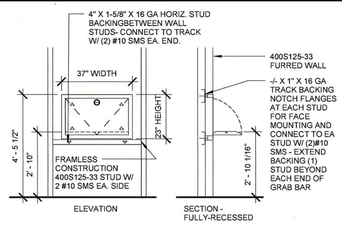
ENLARGED ACCESSIBLE SINGLE PARKING 9
1/8" = 1'-0"



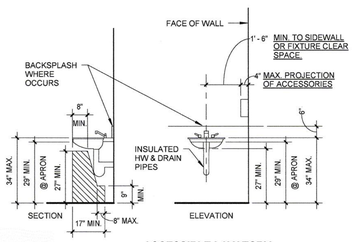
CONCRETE PAVING EDGE 3
1 1/2" = 1'-0"



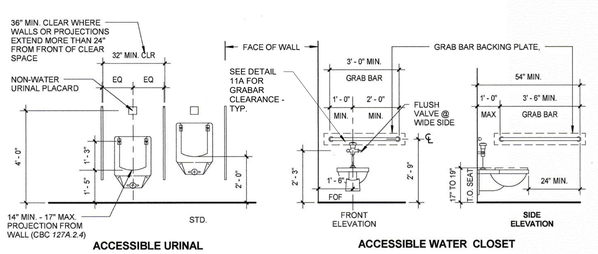
DRINKING FOUNTAIN



BABY CHANGING TABLE

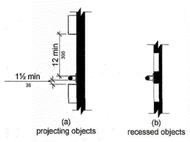


ACCESSIBLE LAVATORY

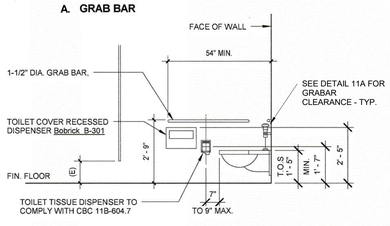


ACCESSIBLE URINAL

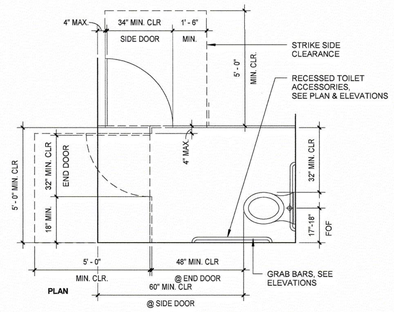
ACCESSIBLE WATER CLOSET



A. GRAB BAR

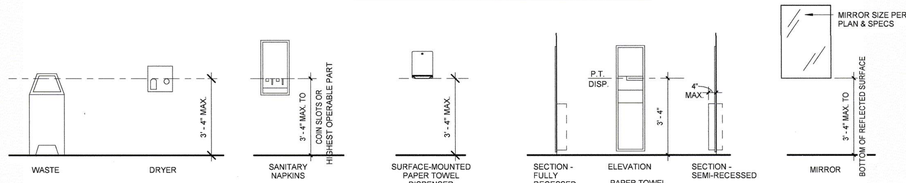


TOILET COMPARTMENT ACCESSORIES INDIVIDUAL ITEMS



ACCESSIBLE TOILET COMPARTMENTS

TOILET ROOM PLUMBING FIXTURE HEIGHTS/DIMENSIONS



NOTES:

1. MINIMUM 30" x 48" CLEAR FLOOR OR GROUND SPACE IS PROVIDED TO ALLOW FORWARD OR PARALLEL APPROACH TO ACCESSORIES.
2. CONTROLS AND OPARATING MECHANISMS ARE OPERATE THE ONE HAND AND DO NOT REQUIRE TIGHT GRASPING, PINCHING, OR TWISTING OF THE WIST.
3. THE FORCE REQUIRED TO ACTIVATE CONTROLS IS 5 LBS. MAXIMUM.
4. COAT HOOKS AND SHELVING ARE LOCATED WITHIN APPROPRIATE REACH RANGES (48" MAX. ABOVE FLOOR RECOMMENDED).
5. IF MEDICINE CABINETS ARE PROVIDED, AT LEAST ONE HAS A USABLE SHELF NO HIGHER THAN 44" ABOVE FLOOR.
6. THE SPACE BETWEEN THE WALL AND THE GRAB BAR SHALL BE 1½2 INCHES. THE SPACE BETWEEN THE GRAB BAR AND PROJECTING OBJECTS ABOVE SHALL BE 12 INCHES MINIMUM (11B-609.3)
7. *TOILET TISSUE DISPENSERS SHALL BE LOCATED ON THE WALL OR PARTITION CLOSEST TO THE WATER CLOSET, 7 INCHES MINIMUM AND 9 INCHES MAXIMUM IN FRONT OF THE WATER CLOSET MEASURED TO THE CENTERLINE OF THE DISPENSER. THE OUTLET OF THE DISPENSER SHALL BE BELOW THE GRAB BAR, 19 INCHES MINIMUM ABOVE THE FINISH FLOOR. THE OUTLET OF THE DISPENSER SHALL NOT BE LOCATED BEHIND GRAB BARS. DISPENSERS SHALL NOT BE OF A TYPE THAT CONTROLS DELIVERY OR THAT DOES NOT ALLOW CONTINUOUS PAPER FLOW.* CBC 11B-603.5 & 11B-604.7

TOILET ROOM ACCESSORY MOUNTING HEIGHTS

EXISTING TOILET ACCESSORIES (REFERENCE A# 03_117117 SHEET GEN-4) 11
3/8" = 1'-0"

08-Aug-24 6:50:23 PM

PLEASE RECYCLE

HMC Architects
3361004000
3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com
VIRGINIA ELAINE MARQUARDT
No. C-33423
06/30/2025

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

KEYNOTES

02.31	(E) DETECTABLE WARNING SURFACE TO REMAIN OVER (E) ZERO CURB
10.30	ACCESSIBLE PARKING SIGN, REFER TO DETAIL 5/A10.02 - EXISTING POSTS TO REMAIN
32.68	NO PARKING/ TOW AWAY SIGN - SEE DETAIL 4/A10.02

NOTES

FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

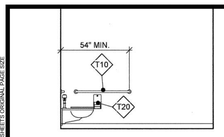
PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD
EXISTING TRACK AND FIELD REPLACEMENT

SHEET NAME:
SITE DETAILS

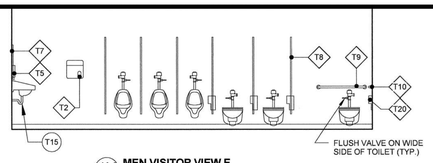
ADDENDUM 01

FAC NO.: XXXXX | BLDG NO.: BLD-XXXXX
DATE: 08/08/2024 | CLIENT PROJ NO:
SHEET:

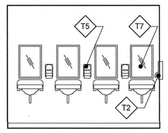
A10.01



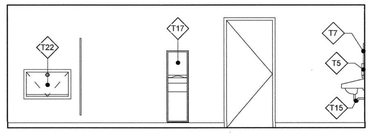
4E MEN VISITOR VIEW F
1/4" = 1'-0"



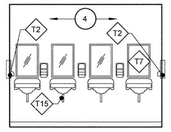
4H MEN VISITOR VIEW E
1/4" = 1'-0"



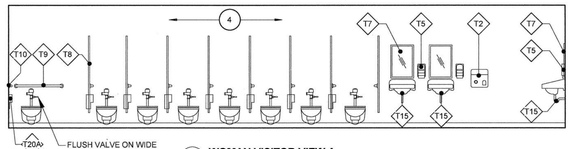
4G MEN VISITOR VIEW H
1/4" = 1'-0"



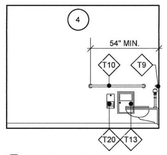
4F MEN VISITOR VIEW G
1/4" = 1'-0"



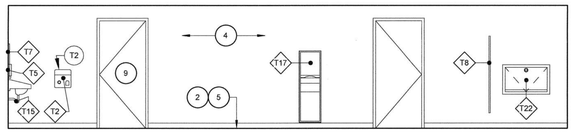
4A WOMAN VISITOR VIEW B
1/4" = 1'-0"



4D WOMAN VISITOR VIEW A
1/4" = 1'-0"



4C WOMAN VISITOR VIEW D
1/4" = 1'-0"



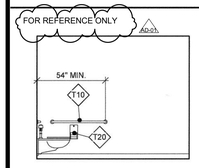
4B WOMAN VISITOR VIEW C
1/4" = 1'-0"

NOTE: SEE 11/A10.01 FOR TYPICAL FIXTURE HEIGHTS, DIMENSIONS AND CLEARANCES PER REFERENCED DSA A# 03_117117

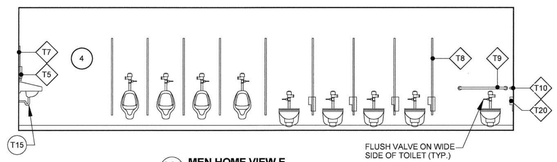
FOR REFERENCE ONLY AD-01

ELEVATIONS AT VISITOR MODULAR TOILET | 1/4" = 1'-0" | 4

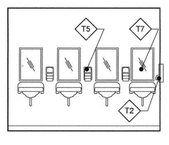
FOR REFERENCE ONLY AD-01



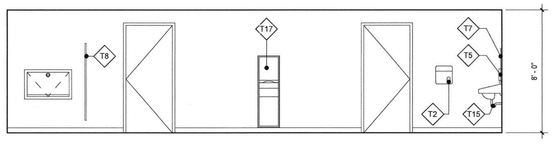
3E MEN HOME VIEW F
1/4" = 1'-0"



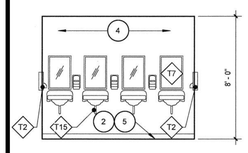
3H MEN HOME VIEW E
1/4" = 1'-0"



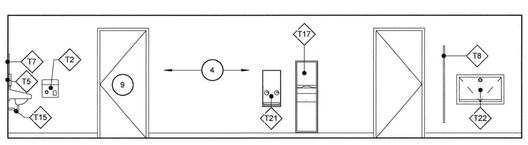
3G MEN HOME VIEW H
1/4" = 1'-0"



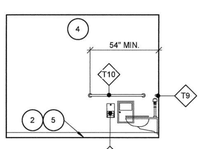
3F MEN HOME VIEW G
1/4" = 1'-0"



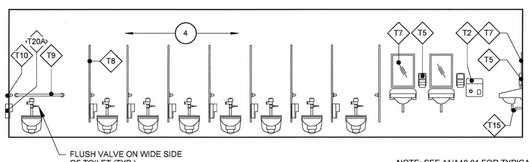
3A WOMAN HOME VIEW B
1/4" = 1'-0"



3B WOMAN HOME VIEW C
1/4" = 1'-0"



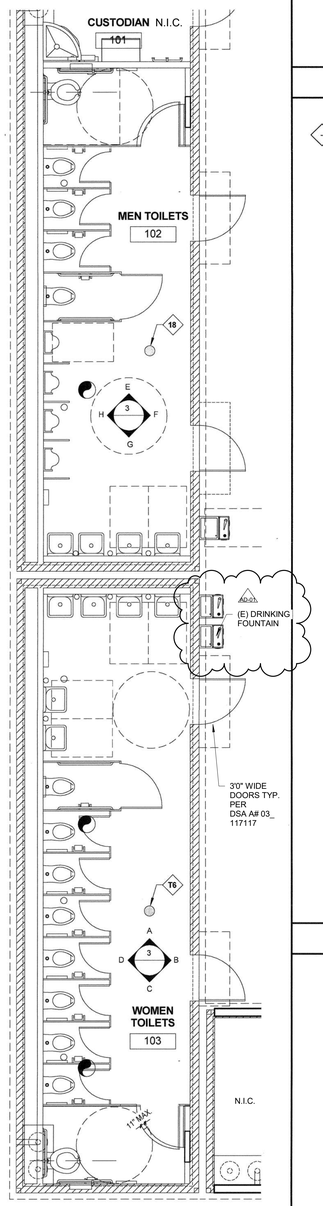
3C WOMAN HOME VIEW D
1/4" = 1'-0"



3D WOMAN HOME VIEW A
1/4" = 1'-0"

NOTE: SEE 11/A10.01 FOR TYPICAL FIXTURE HEIGHTS, DIMENSIONS AND CLEARANCES PER REFERENCED DSA A# 03_117117

ELEVATIONS AT HOME MODULAR TOILET | 1/4" = 1'-0" | 3



NOTE: SEE 11/A10.01 FOR TYPICAL FIXTURE HEIGHTS, DIMENSIONS AND CLEARANCES PER REFERENCED DSA A# 03_117117

FOR REFERENCE ONLY AD-01

ENLARGED RESTROOM PLAN (HOME) | 1/4" = 1'-0" | 1

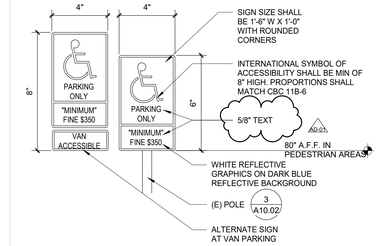
- T1 PAPER TOWEL DISPENSER WITH 4" MAXIMUM PROJECTION
- T2 HAND DRYER, BRADLEY AERIX 2902-287400
- T3 SANITARY NAPKIN DISPENSER - 3" MAX. PROJECTION
- T4 SEMI-RECESSED WASTE RECEPTACLE WITH 4" MAXIMUM PROJECTION
- T5 SOAP DISPENSER - 4" MAXIMUM PROJECTION
- T6 FLOOR DRAIN SHALL HAVE MAXIMUM 1/2" OPENINGS (TYP.)
- T7 24" X 36" FRAMED MIRROR, BOBRICK B-290 2436
- T8 OVERHEAD BRACED PARTITION, SEE SPECS,
- T9 GRAB BARS FOR ACCESSIBLE TOILET (1-1/4" DIA. STAINLESS STEEL): 36" LENGTH @ REAR WALL (BOBRICK B-5806X36)
- T10 GRAB BARS FOR ACCESSIBLE TOILET (1-1/4" DIA. STAINLESS STEEL): 42" LENGTH @ SIDE WALL (BOBRICK B-5806X42)
- T11 STANDARD TOILET PAPER DISPENSER
- T12 ACCESSIBLE TOILET PAPER DISPENSER- 3" MAXIMUM PROJECTION
- T13 SANITARY NAPKIN DISPOSAL, SINGLE COMPARTMENT- 3" MAXIMUM PROJECTION
- T14 SANITARY NAPKIN DISPOSAL, DUAL COMPARTMENT
- T15 PIPE INSULATION WRAP
- T16 MOP STRIP
- T17 PARTITION-MOUNTED SANITARY NAPKIN DISPOSAL, BOBRICK B-354
- T18 WALL-HUNG SOLID URINAL SCREEN, 42" HIGH X 18" DEEP
- T19 TOILET PAPER DISPENSER, NON-ACCESS FACULTY TOILETS
- T20 SURFACE MOUNTED TOILET TISSUE DISPENSER, BOBRICK B-35745 FOR WOMEN ONLY WITH TAMPON TRASH DISPENSER.
- T20A SURFACE MOUNTED TOILET TISSUE DISPENSER, BOBRICK B-3471 FOR MEN ONLY.
- T21 SEMI-RECESSED SANITARY NAPKIN / TAMPON VENDOR, FREE OPERATION (BOBRICK MODEL #B3706)
- T22 RECESSED BABY CHANGING STATION MODEL @ KB110-SSRE HORIZONTAL PER DET.\

TOILET ACCESSORIES

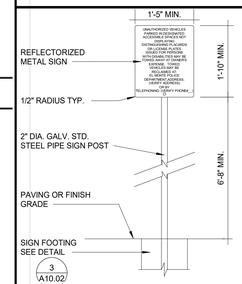
1. WOOD TRIM 1X4 (S4S) PAINT TO MATCH DOOR AND WINDOWS FRAMES
2. EPOXY PAINT
3. EPOXY FLOORING (TNEMEC)
4. FRP WALLS
5. CONCRETE
6. 5/8" PLYWOOD, PAINTED
7. SEALED CONCRETE
8. ROLL UP DOOR
9. DOOR AND HOLLOW METAL FRAME

TOILET KEY NOTES

EXISTING TOILET PLAN AND INTERIOR ELEVATIONS (REFERENCE A# 03_117117) 6
1/4" = 1'-0"



ACCESSIBLE PARKING SIGN | 5 | 3" = 1'-0"



SIGN NOTES:

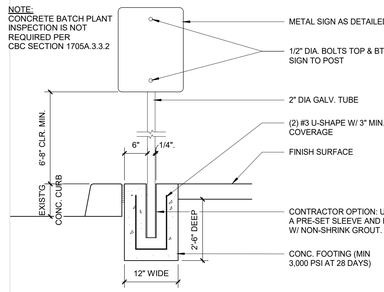
A REFLECTORIZED SIGN SHALL BE PERMANENTLY POSTED IN A CONSPICUOUS PLACE AT EACH ENTRANCE TO OFF-STREET PARKING FACILITIES. OR IMMEDIATELEY ADJACENT TO AND VISIBLE FROM EACH STALL OR SPACE. THE SIGN SHALL NOT BE LESS THAN 17" BY 22" IN SIZE WITH WHITE LETTERING NOTLESS THAN 1" IN HEIGHT ON A DARK BLUE BACKGROUND. WHICH CLEARLY AND CONSPICUOUSLY STATES THE FOLLOWING:

"UNAUTHORIZED VEHICLES PARKED IN DESIGNATED ACCESSIBLE SPACES NOT DISPLAYING DISTINGUISHING PLACARDS OR SPECIAL LICENSE PLATES ISSUED FOR PERSONS WITH DISABILITIES WILL BE TOWED AWAY AT OWNER'S EXPENSE. TOWED VEHICLES MAY BE RECLAIMED AT: EL MONTE POLICE DEPARTMENT 11333 VALLEY BLVD, EL MONTE, CA 91731. OR BY TELEPHONING (626) 580-2100

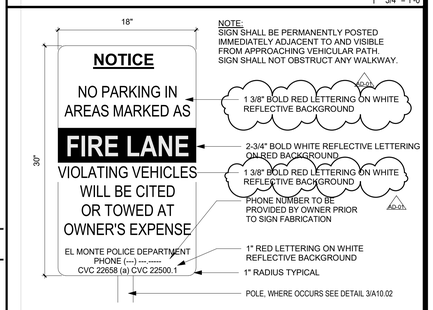
RECLAMATION ADDRESS AND TELEPHONE NUMBER SHALL BE A PERMANENT PART OF THIS SIGN. DARK BLUE BACKGROUND SHALL BE EQUAL TO COLOR NUMBER 15090 IN FEDERAL STANDARD 595B. SIGN SHALL NOT OBSTRUCT PASSAGE BETWEEN STALL AND ANY ACCESSIBLE WALKWAY. SEE SITE PLAN FOR LOCATIONS.

TOW AWAY SIGNAGE | 4 | 1/2" = 1'-0"

NOTE:
CONCRETE BATCH PLANT INSPECTION IS NOT REQUIRED PER CBC SECTION 1705A.3.3.2

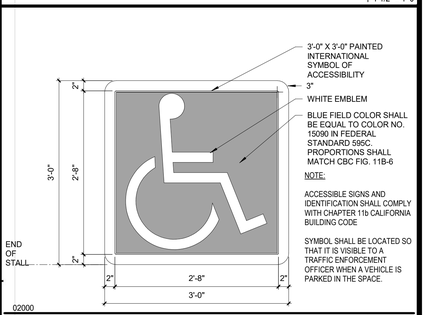


POST AND FOOTING FOR SIGNAGE | 3 | 3/4" = 1'-0"



FIRE LANE ENTRY SIGN | 2 | 1 1/2" = 1'-0"

10-42400.RVT



INTERNATIONAL SYMBOL OF ACCESSIBILITY | 1 | 1" = 1'-0"

HMC Architects
3361004000
3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

LICENSED ARCHITECT
VIRGINIA ELAINE MARQUARDT
No. C-33423
06/30/2025
RENEWAL DATE
STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

KEYNOTES

NOTES

FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD
EXISTING TRACK AND FIELD REPLACEMENT

SHEET NAME:
SITE SIGNAGE

ADDENDUM 01

FAC NO.: XXXXX | BLDG NO.: BLD-XXXXX

DATE: **08/08/2024** | CLIENT PROJ NO:

SHEET:

A10.02

08-Aug-24 8:09:34 PM

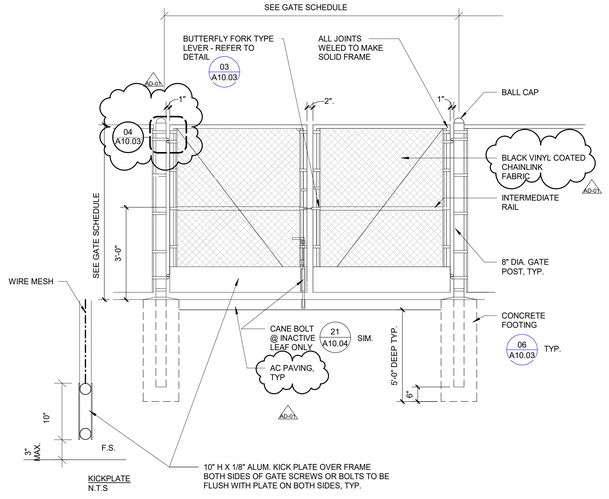
PLEASE RECYCLE

NOTE:

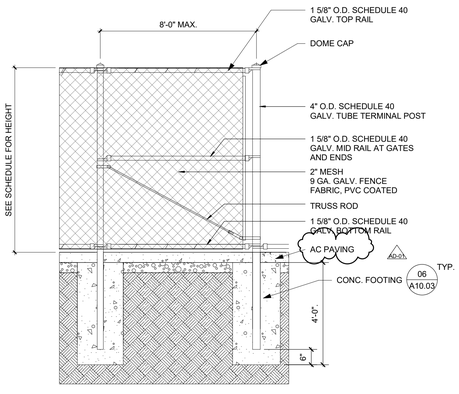
1. CANE BOLT TO BE INSTALLED ON THE NON ACCESSIBLE LEAF ONLY. SEE GATE SCHEDULE

2. REFER TO FENCING PLAN SHEET A1.12 FENCING SCHEDULE FOR GATE SIZES TYP.

3. GATE POSTS, AND ALL GATE COMPONENTS PER SPECS SEE 03/A10.03 & 04/A10.03

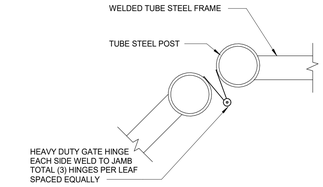


DOUBLE C.L. GATES/ GATE POST 18
1/2" = 1'-0"

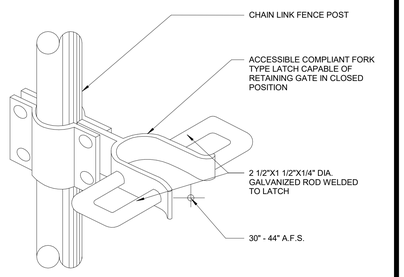


CHAIN LINK FENCE POST ELEVATION @ END CONDITION 13
1/2" = 1'-0"

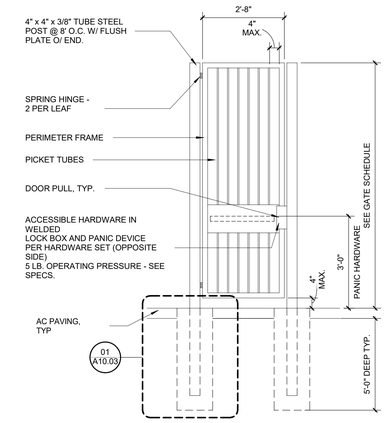
NOTE :
GRIND ALL EDGES AND WELDS SMOOTH
ALL EXPOSED SURFACES SHALL BE GALVANIZED



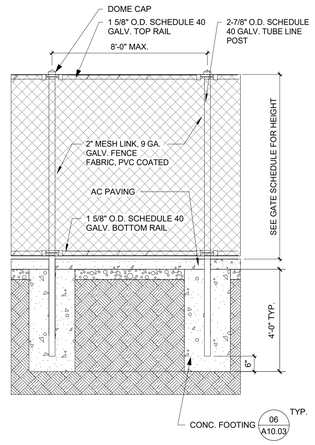
C.L. GATE DETAIL 04
1/4" = 1'-0"



ACCESSIBLE FORK TYPE LATCH 03
1/2" = 1'-0"



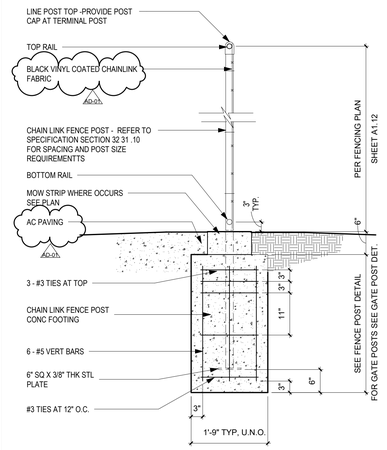
IRON FENCE SINGLE GATE ELEVATION 16
1/2" = 1'-0"



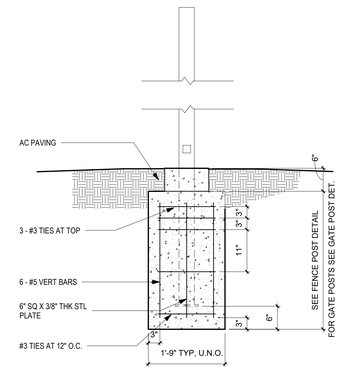
CHAIN LINK FENCE POST ELEVATION - TYP. 11
1/2" = 1'-0"

NOTE:
CONCRETE BATCH PLANT INSPECTION IS NOT REQUIRED PER CBC SECTION 1705A.3.3.2

PVC COATING ON FRAMEWORK AND FABRIC:
IN ACCORDANCE WITH ASTM F1043 AND SSPWC 210-5.2
COLOR: BLACK



CHAINLINK FOOTING DETAIL 06
3/4" = 1'-0"



IRON FOOTING DETAIL 01
3/4" = 1'-0"

HMC Architects
3361004000
3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com
LICENSED ARCHITECT
VIRGINIA ELAINE MARQUARDT
No. C-33423
06/30/2025
RENEWAL DATE
STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

KEYNOTES

NOTES

FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD EXISTING TRACK AND FIELD REPLACEMENT

SHEET NAME:
CHAIN LINK GATE & FENCE DETAILS

ADDENDUM 01

FAC NO.: XXXXX | BLDG NO.: BLD-XXXXX

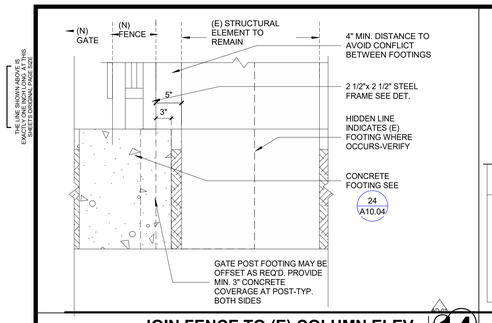
DATE: 08/08/2024 | CLIENT PROJ NO:

SHEET:

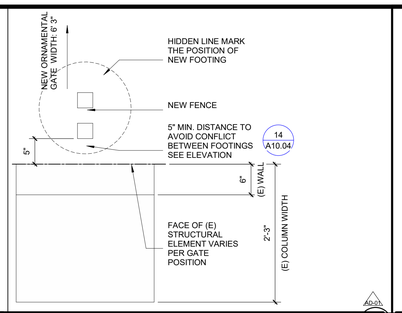
A10.03

PLEASE RECYCLE

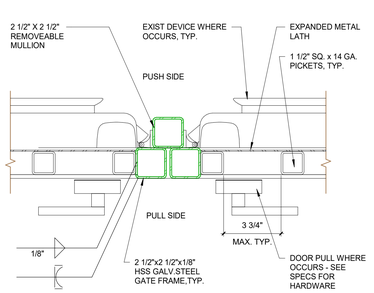
08-Aug-24 8:50:35 PM



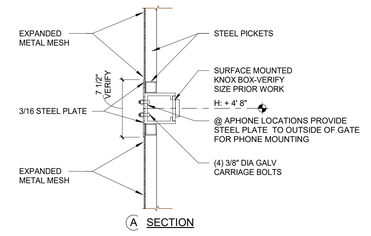
JOIN FENCE TO (E) COLUMN ELEV. 14
1" = 1'-0"



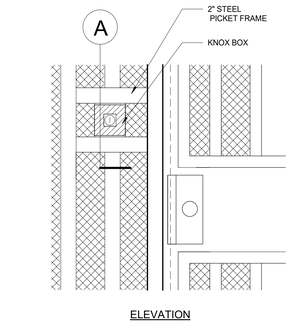
JOIN FENCE TO (E) COLUMN 12
1" = 1'-0"



WI GATE DETAIL @ LATCH DOUBLE GATE 10
3" = 1'-0"

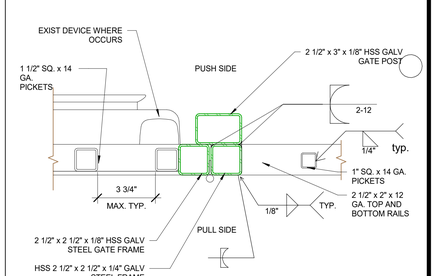


A SECTION

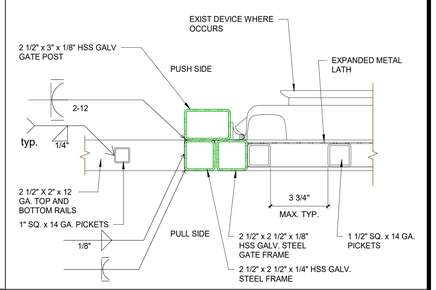


ELEVATION

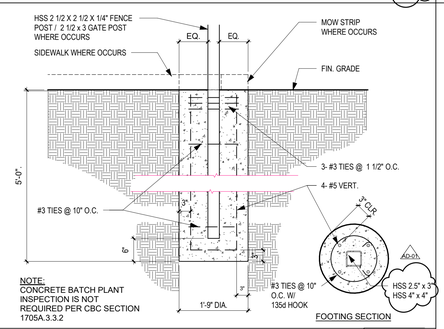
KNOX BOX ENLARGED DETAIL 9
1 1/2" = 1'-0"



WI GATE DETAIL- HINGE 5
3" = 1'-0"

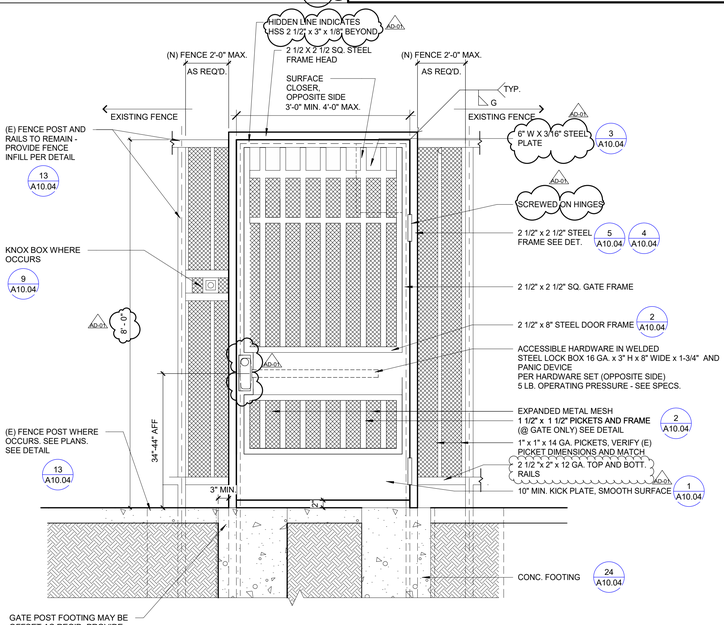


WI GATE DETAIL @ LATCH 4
3" = 1'-0"

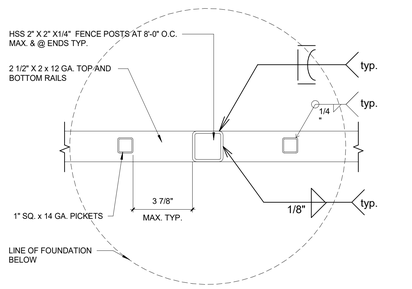


FOOTING SECTION

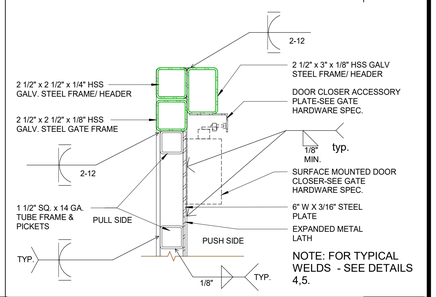
ORNAMENTAL FENCE/ GATE FOUNDATION 24
3/4" = 1'-0"



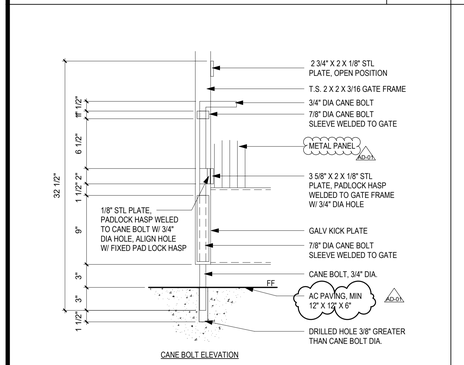
WI ACCESSIBLE SINGLE GATE ELEVATION 7
3/4" = 1'-0"



WI FENCE- INTERMEDIATE POST -TYP. 8
3" = 1'-0"

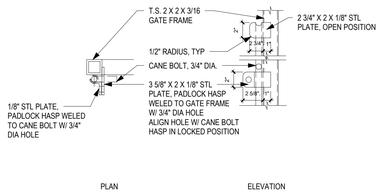


WI GATE DETAIL @ HEAD 3
3" = 1'-0"



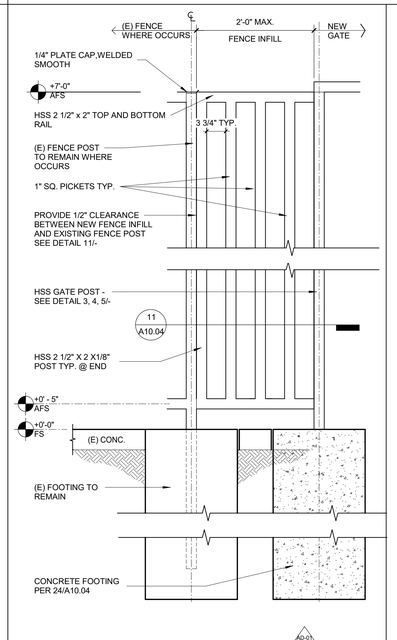
CANE BOLT ELEVATION

NOTE::
CANE BOLTS SHALL NOT BE USED ON EGRESS GATES.

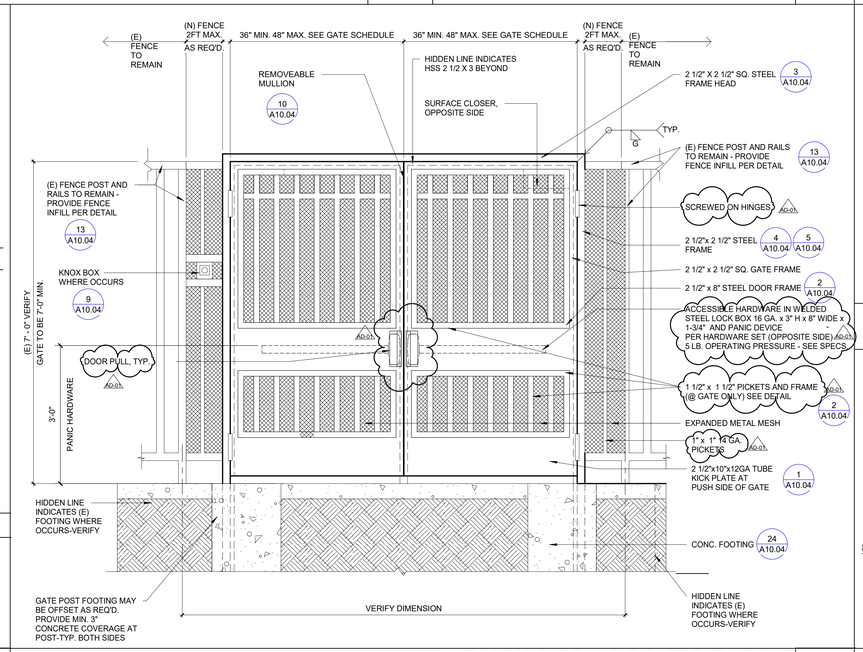


CANE BOLT HOLDER/ PADLOCK HASP

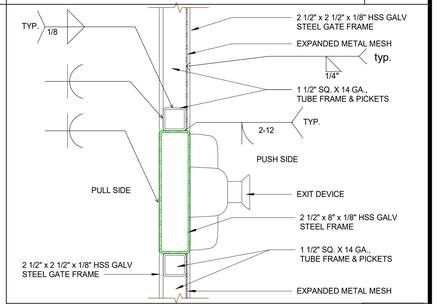
CANE BOLT DETAILS 21
1 1/2" = 1'-0"



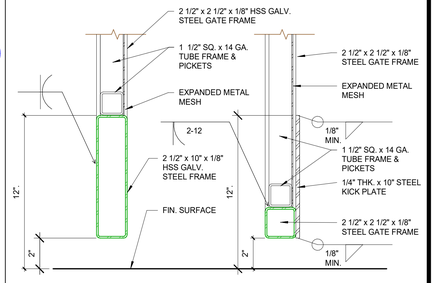
ORNAMENTAL MTL FENCE INFILL 13
1" = 1'-0"



WI ACCESSIBLE DOUBLE GATE ELEVATION 6
3/4" = 1'-0"



WI GATE DETAIL- PUSH BAR 2
3" = 1'-0"



WI GATE DETAIL-KICKPLATE 1
3" = 1'-0"

PLEASE RECYCLE

08-Aug-24 8:50:37 PM

HMC Architects

3361004000

3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

LICENSED ARCHITECT
VIRGINIA ELAINE MARQUARDT
No. C-33423
06/30/2025
RENEWAL DATE
STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

KEYNOTES

NOTES

FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD
EXISTING TRACK AND FIELD REPLACEMENT

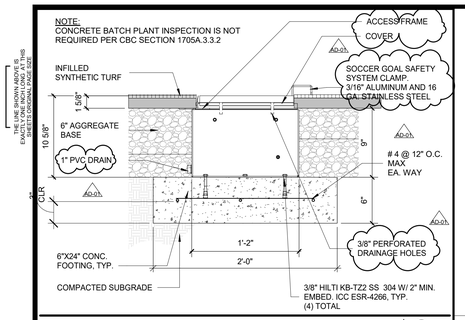
SHEET NAME:
ORNAMENTAL FENCING DETAILS

ADDENDUM 01

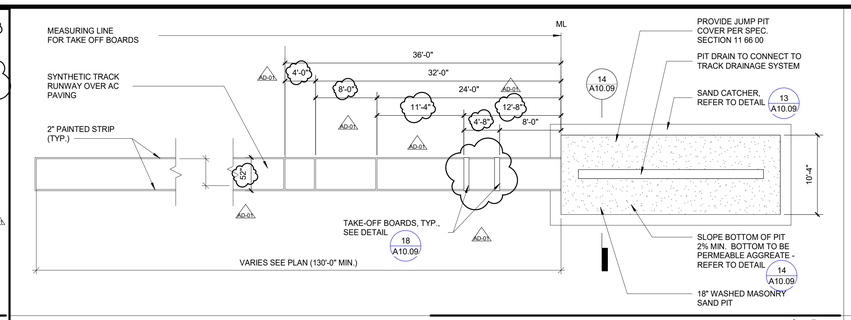
FAC NO.: XXXXX | BLDG NO.: BLD-XXXXX
DATE: 08/08/2024 | CLIENT PROJ NO:

SHEET:

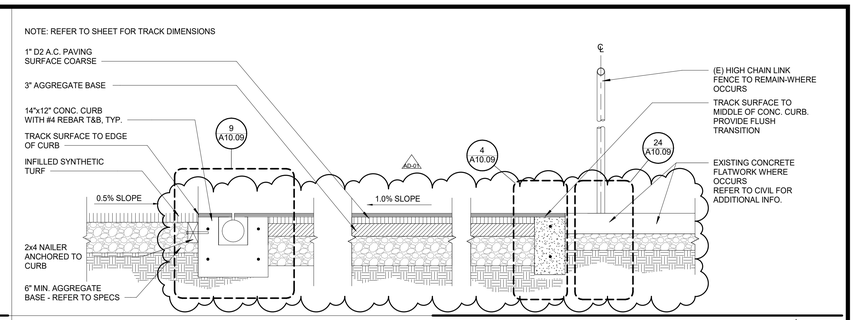
A10.04



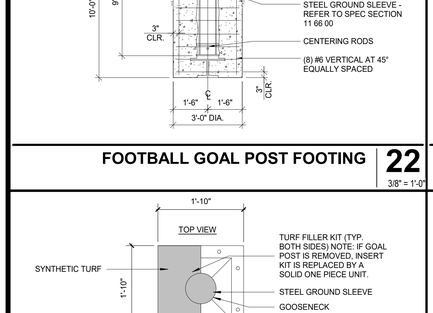
SOCCER SAFETY CLAMP 25
1 1/2" = 1'-0"



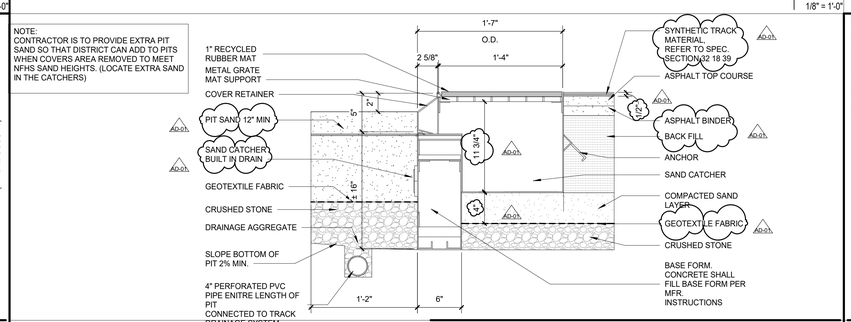
LONG JUMP TRIPLE JUMP PLAN 15
1/8" = 1'-0"



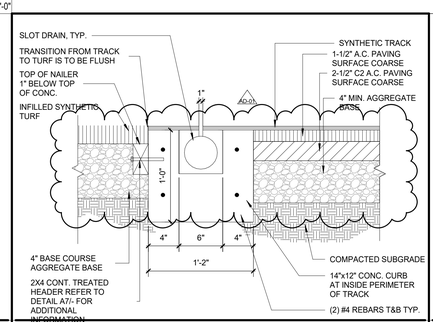
SECTION THROUGH TRACK TYP. 5
1" = 1'-0"



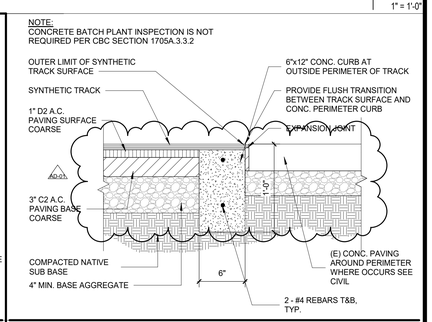
HORIZ. CONTROL OF CL AT TRACK EDGE 24
1" = 1'-0"



JUMP PIT SAND CATCHER AT EDGE ANCHOR 14
1 1/2" = 1'-0"



INSIDE CONC CURB AT TRACK EDGE 9
1 1/2" = 1'-0"



OUTSIDE PERIMETER CONC CURB AT TRACK 4
1 1/2" = 1'-0"

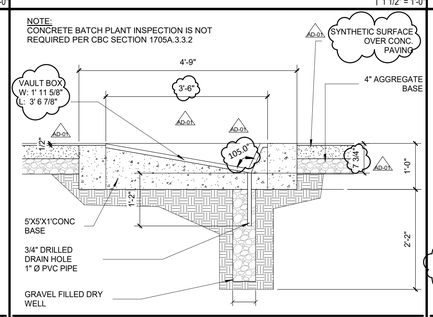
FOOTBALL GOAL POST - 8 FT OFFSET 23
1/8" = 1'-0"

TAKE-OFF BOARD SECTION 18
1 1/2" = 1'-0"

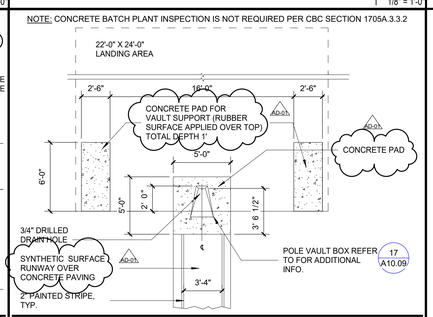
SAND PIT SAND CATCHER 13
1/8" = 1'-0"

RADIUS POINT MONUMENT 3
1" = 1'-0"

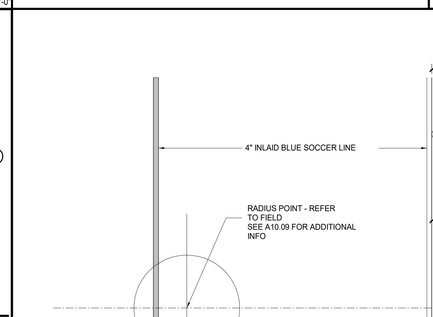
FOOTBALL GOAL POST FOOTING 22
3/8" = 1'-0"



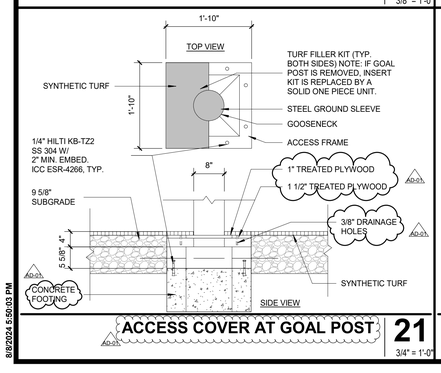
POLE VAULT BOX SECTION 17
3/4" = 1'-0"



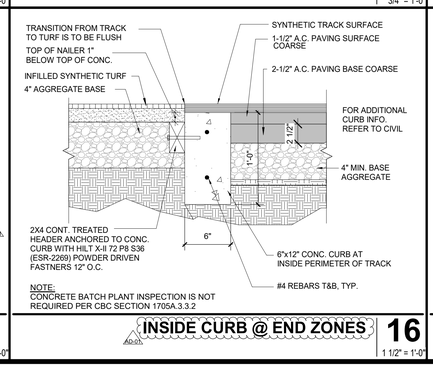
POLE VAULT PLAN LAYOUT 12
3/16" = 1'-0"



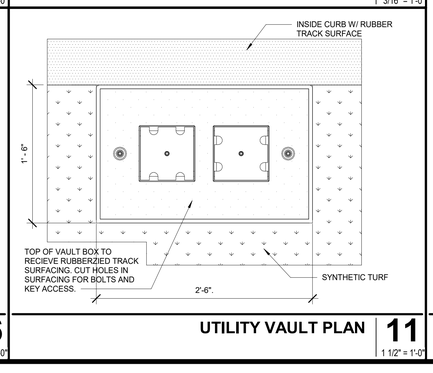
FOOTBALL GOAL POST PLACEMENT 1
1/4" = 1'-0"



ACCESS COVER AT GOAL POST 21
3/4" = 1'-0"



INSIDE CURB @ END ZONES 16
1 1/2" = 1'-0"



UTILITY VAULT PLAN 11
1 1/2" = 1'-0"

HMC Architects
3361004000
3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

LICENSED ARCHITECT
VIRGINIA ELAINE MARQUARDT
No. C-33423
06/30/2025
RENEWAL DATE
STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

KEYNOTES

NOTES

FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD
EXISTING TRACK AND FIELD REPLACEMENT

SHEET NAME:
SITE DETAILS - PLAYFIELDS

ADDENDUM 01

FAC NO.: XXXXX | BLDG NO.: BLD-XXXXX
DATE: 08/08/2024 | CLIENT PROJ NO:
SHEET:

A10.09

08/8/2024 5:50:03 PM

PLEASE RECYCLE

THE LINE SHOWN ABOVE IS 1" LONG ON ORIGINAL PLOT. IF IT IS NOT, ADJUST SCALE ACCORDINGLY

PROJECT DESIGN CRITERIA

1. WIND LOADS

RISK CATEGORY: III
EXPOSURE CATEGORY: C
BASIC DESIGN WIND SPEED (3-SECOND GUST), V = 101 MPH
ALLOWABLE STRESS DESIGN WIND SPEED, V_{ASD} = 78.23 MPH
VELOCITY PRESSURE EXPOSURE COEFFICIENT, K_z = 0.90 (15-20 FT)
TOPOGRAPHIC FACTOR, K_{zt} = 1.0
WIND DIRECTIONALITY FACTOR, K_d = 0.85
GROUND ELEVATION FACTOR, K_e = 1.00
GUST EFFECT FACTOR, G = 0.85

A. MWFRS – DIRECTIONAL PROCEDURE (ASCE 7-16, CH. 29.3 – SCOREBOARD DESIGN)

$q_z = 0.00256\ K_z\ K_{zt}\ K_d\ K_e\ V^2$ = 19.98 PSF

$P = qGC_f A_N$

NET FORCE COEFFICIENT, C_f = [FIG. 29.3-1]

B. COMPONENTS & CLADDING (ASCE 7-16, CH. 30)

$q_h = 0.00256\ K_z\ K_{zt}\ K_d\ V^2$ = 19.98 PSF

$P = q_h[(GC_P) – (GC_{Pi})]$

EXTERNAL PRESSURE COEFFICIENT, (GC_P) = [FIG. 30.3-1 THRU 30.3-7]
INTERNAL PRESSURE COEFFICIENT, (GC_{Pi}) = [TABLE 26.13-1]

2. EARTHQUAKE LOADS

SEISMIC DESIGN CRITERIA

S_{DS} = 1.848
S_{D1} = 0.668
SITE CLASS: D
F_a = 1.2
F_v = 1.7
S_{DS} = 1.478
S_{D1} = 0.757
RISK CATEGORY: III
SEISMIC DESIGN CATEGORY: D

SEISMIC DESIGN REQUIREMENTS (ASCE 7-16, CH. 15 – SCOREBOARD DESIGN)

DESIGN BASE SHEAR $V = C_sW$
WHERE $C_s = S_{DS}/(R/I_e)$
BUT SHALL NOT BE LESS THAN $C_s = 0.044S_{DS}I_e \geq 0.03$
BUT NEED NOT EXCEED $C_s = S_{D1}/[T(R/I_e)]$

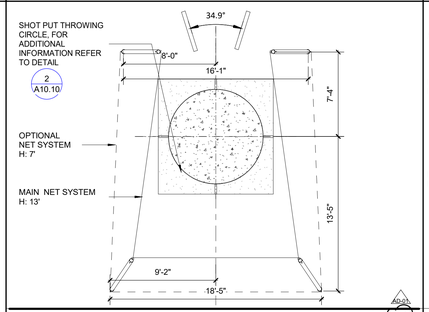
R = 3.0
C_d = 1.75
T = 8
I_e = 1.00
C_s = 0.493
V = 1250 LBS

PRIMARY LATERAL FORCE RESISTING SYSTEM: NONBUILDING STRUCTURES
NOT SIMILAR TO BUILDINGS (ASCE 7-16, TABLE 15.4-2, SIGNS AND BILLBOARDS)
ANALYSIS PROCEDURE: NONBUILDING STRUCTURES

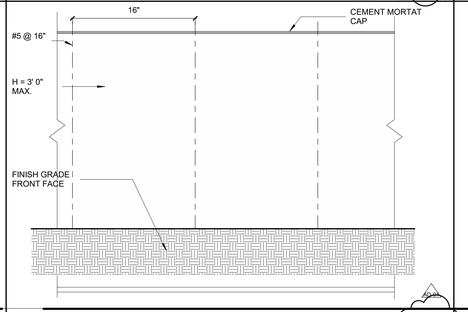
3. FOUNDATION LOADS

PRESUMPTIVE SOIL LOAD BEARING VALUES (TITLE 24, PART 2, CHAPTER 1806A)

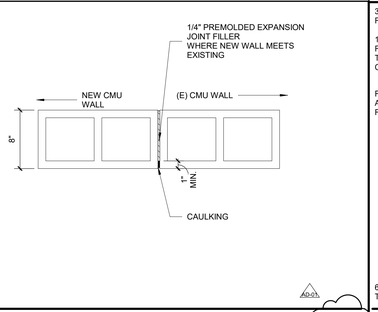
VERTICAL FOUNDATION PRESSURE = 1,500 PSF
LATERAL BEARING PRESSURE = 100 PSF/FT



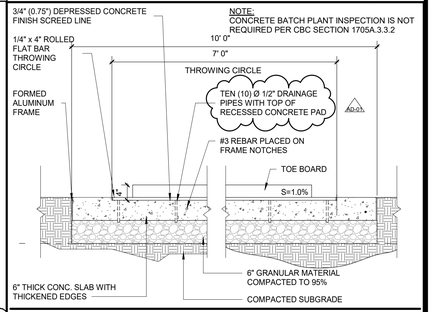
SHOT PUT CAGE LAYOUT 19 — 1/16" = 1'-0"



CMU WALL ELEVATION 12 — 1 1/2" = 1'-0"

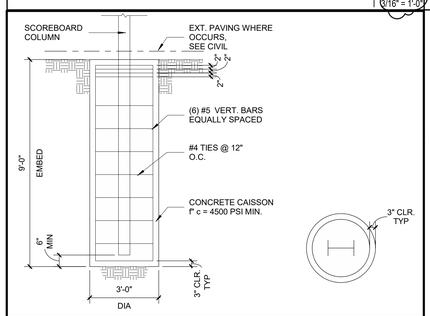


CMU WALL @ EXPANSION JOINT 9 — 1 1/2" = 1'-0"

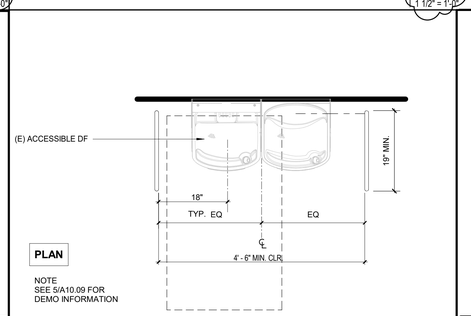


NOTE:
CONCRETE BATCH PLANT INSPECTION IS NOT REQUIRED PER CBC SECTION 1705A.3.3.2

SHOT PUT THROWING CIRCLE SECTION 4 — 3/4" = 1'-0"

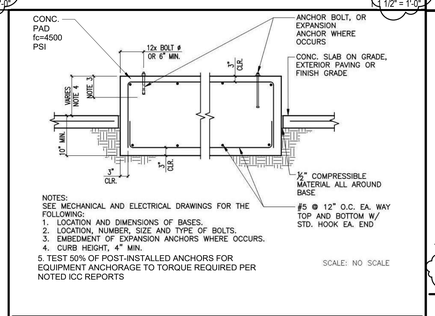


SCOREBOARD FOOTING 18 — 3/8" = 1'-0"



NOTE
SEE 5/A10.09 FOR DEMO INFORMATION

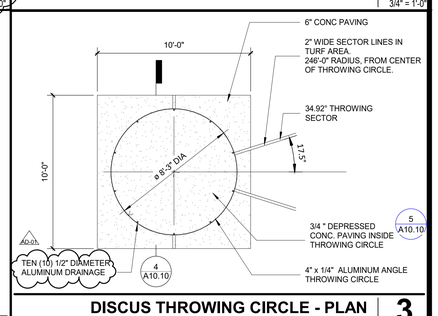
RAILING AT (E) DRINKING FOUNTAIN 11 — 3/4" = 1'-0"



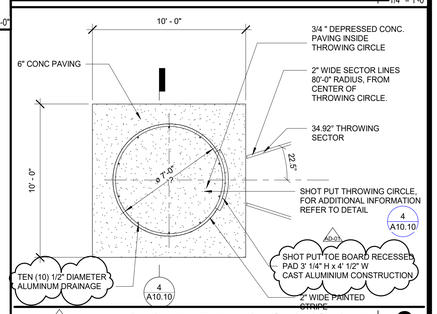
NOTES:
SEE MECHANICAL AND ELECTRICAL DRAWINGS FOR THE FOLLOWING:
1. LOCATION AND DIMENSIONS OF BASES.
2. LOCATION, NUMBER, SIZE AND TYPE OF BOLTS.
3. EMBEDMENT OF EXPANSION ANCHORS WHERE OCCURS.
4. CURB HEIGHT, 4" MIN.
5. TEST 50% OF POST-INSTALLED ANCHORS FOR EQUIPMENT ANCHORAGE TO TORQUE REQUIRED PER NOTED ICC REPORTS

SCALE: NO SCALE

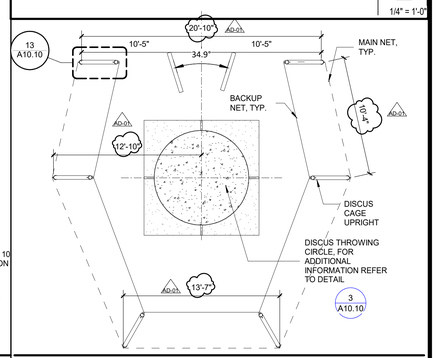
TYPICAL EQUIPMENT PAD 8 — 3/8" = 1'-0"



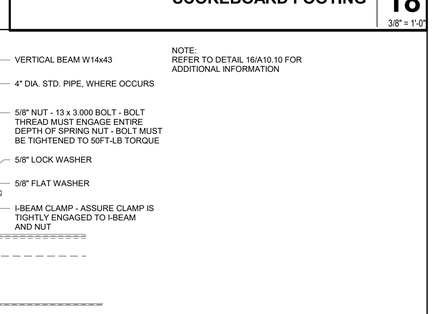
DISCUS THROWING CIRCLE - PLAN 3 — 1/4" = 1'-0"



SHOT PUT THROWING CIRCLE 2 — 1/4" = 1'-0"

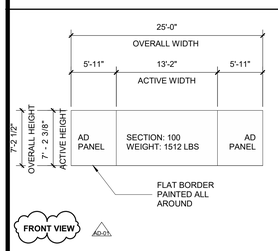


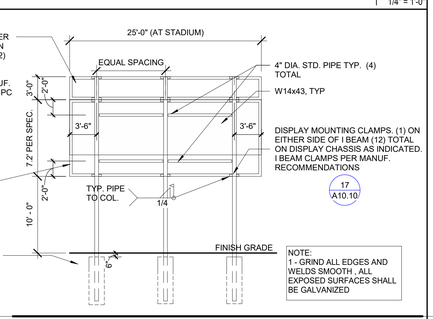
DISCUS CAGE LAYOUT 1 — 3/16" = 1'-0"



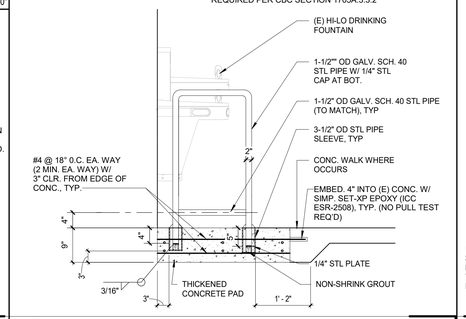
NOTE:
REFER TO DETAIL 16/A10.10 FOR ADDITIONAL INFORMATION

SCOREBOARD DETAIL 17 — 1/4" = 1'-0"



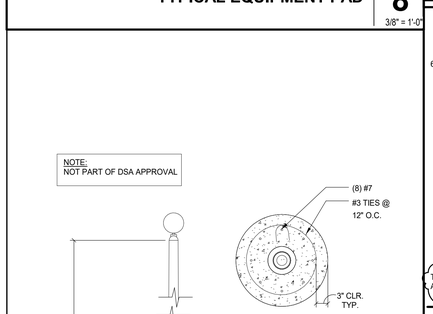


SCOREBOARD ELEVATION 16 — 1/8" = 1'-0"



NOTE:
CONCRETE BATCH PLANT INSPECTION IS NOT REQUIRED PER CBC SECTION 1705A.3.3.2

RAILING AT (E) DRINKING FOUNTAIN 11 — 3/4" = 1'-0"



ALUMINUM FLAG POLE 6 — 1/2" = 1'-0"

PLEASE RECYCLE

08-Aug-24 8:03:41 PM

HMC Architects
3361004000
3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

LICENSED ARCHITECT
VIRGINIA ELAINE MARQUARDT
No. C-33423
06/30/2025
STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

KEYNOTES

NOTES

FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD
EXISTING TRACK AND FIELD REPLACEMENT

SHEET NAME:
SITE DETAILS MISC.

ADDENDUM 01

FAC NO.: XXXXX | BLDG NO.: BLD-XXXXX
DATE: 08/08/2024 | CLIENT PROJ NO:
SHEET:

A10.10

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THIS SHEETS ORIGINAL PAGE SIZE

GENERAL NOTES

1. ALL PIPES, DUCTS, CONDUITS, RACEWAYS, CABLE TRAYS AND BUS DUCTS SHALL BE ANCHORED AND BRACED TO RESIST THE FORCES PRESCRIBED IN SMACNA SECTION 1632A.6 (AND TABLE 16A-O, FOOTNOTE 12). WHERE POSSIBLE, PIPES, CONDUIT, AND THEIR CONNECTIONS SHALL BE CONSTRUCTED OF DUCTILE MATERIALS (COPPER, DUCTILE IRON, STEEL, OR ALUMINUM AND BRAZED, WELDED, OR SCREWED CONNECTIONS). PIPES, CONDUITS AND THEIR CONNECTIONS, CONSTRUCTED OF NON-DUCTILE MATERIALS (E.G., CAST IRON, NO-HUB PIPE AND PLASTIC), SHALL HAVE THE BRACE SPACING REDUCED TO ONE- HALF OF THE SPACING ALLOWED FOR DUCTILE MATERIAL IN ACCORDANCE WITH SECTION 1630A.5 OR OTHER STANDARDS APPROVED BY THE ENFORCING AGENCY. THE 1998 SMACNA SEISMIC RESTRAINT MANUAL GUIDELINES FOR MECHANICAL SYSTEMS MAY BE REFERENCED IN LIEU OF PROVIDING SPECIFIC DETAILS FOR MOST ORDINARY PIPE AND DUCT SUPPORT AND BRACING.

2. ALL ELECTRICAL PREFABRICATED EQUIPMENT SHALL BE DESIGNED AND CONSTRUCTED IN SUCH A MANNER THAT ALL PORTIONS, ELEMENTS, SUB-ASSEMBLIES AND/OR PARTS OF SAID EQUIPMENT, AND THE EQUIPMENT AS A WHOLE INCLUDING ITS ATTACHMENTS, WILL RESIST A LOAD WHICH EXCEEDS THE FORCE LEVEL USED TO RESTRAIN AND ANCHOR THE EQUIPMENT TO THE SUPPORTING STRUCTURE.

3. ALL ELECTRICAL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BE LISTED BY UNDERWRITER'S LABORATORIES (UL) AND BEAR THEIR LABEL, OR LISTED AND CERTIFIED BY A NATIONALLY RECOGNIZED TESTING AUTHORITY WHERE UL DOES NOT HAVE A LISTING. CUSTOM MADE EQUIPMENT SHALL HAVE COMPLETE TEST DATA SUBMITTED BY THE MANUFACTURER ATTESTING TO ITS SAFETY. IN ADDITION, THE MATERIALS, EQUIPMENT, AND INSTALLATION SHALL COMPLY WITH THE REQUIREMENTS OF THE FOLLOWING:

   AMERICAN SOCIETY OF TESTING MATERIALS (ASTM)
   INSULATED POWER CABLE ENGINEERS ASSOCIATION (IPCEA)
   NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)
   AMERICAN STANDARD ASSOCIATION (ASA)
   NATIONAL FIRE PROTECTION AGENCY (NFPA)
   AMERICAN NATIONAL STANDARD INSTITUTE (ANSI)
   CALIFORNIA ELECTRICAL CODE (CEC) - LATEST EDITION
   CALIFORNIA CODE OF REGULATIONS TITLE 24 (CCR)
   INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS (IEEE)
   ALL LOCAL CODES HAVING JURISDICTION.

   WHERE THE CODES HAVE DIFFERENT LEVELS OF REQUIREMENTS, THE MOST STRINGENT RULE SHALL APPLY.

4. THE CONTRACTOR SHALL VISIT THE SITE INCLUDING ALL AREAS INDICATED ON THE DRAWINGS. HE SHALL THOROUGHLY FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS AND BY SUBMITTING A BID, ACCEPTS THE CONDITIONS UNDER WHICH HE SHALL BE REQUIRED TO PERFORM HIS WORK.

5. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN A COMPLETE SET OF CONTRACT DOCUMENTS, ADDENDA, DRAWINGS AND SPECIFICATIONS. HE SHALL CHECK THE DRAWINGS OF THE OTHER TRADES AND SHALL CAREFULLY READ THE ENTIRE SPECIFICATIONS AND DETERMINE HIS RESPONSIBILITIES. FAILURE TO DO SO SHALL NOT RELEASE THE CONTRACTOR FROM DOING THE WORK IN COMPLETE ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS.

6. THE CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS, FEES, CHARGES, AND INCIDENTAL COSTS NECESSARY FOR EXECUTION AND COMPLETION OF ELECTRICAL WORK, INCLUDING ALL CHARGES BY STATE, COUNTY AND LOCAL GOVERNMENTAL AGENCIES.

7. THE CONTRACTOR SHALL PROVIDE AND KEEP UP-TO-DATE A COMPLETE RECORD SET OF DRAWINGS. THESE PRINTS SHALL BE CORRECTED DAILY AND SHOW EVERY CHANGE FROM THE ORIGINAL DRAWINGS. THIS SET OF DRAWINGS SHALL BE KEPT ON THE JOB SITE AND SHALL BE USED ONLY AS A RECORD SET. THIS SHALL NOT BE CONSTRUED AS AUTHORIZATION FOR THE CONTRACTOR TO MAKE CHANGES IN THE LAYOUT WITHOUT DEFINITE INSTRUCTION IN EACH CASE. UPON COMPLETION OF THE WORK, A SET OF REPRODUCIBLE CONTRACT DRAWINGS SHALL BE OBTAINED FROM THE ARCHITECT, AND ALL CHANGES AS NOTED ON THE RECORD SET OF DRAWINGS SHALL BE INCORPORATED THEREON WITH BLACK INK IN A NEAT, LEGIBLE, UNDERSTANDABLE AND PROFESSIONAL MANNER. FAILURE TO KEEP RECORD DRAWINGS UP-TO-DATE SHALL CONSTITUTE CAUSE FOR WITHHOLDING OF PROGRESS PAYMENTS.

8. SHOP DRAWINGS SHALL BE SUBMITTED WITHIN THIRTY DAYS AFTER AWARD OF THE CONTRACT. THE CONTRACTOR SHALL SUBMIT EIGHT COPIES OF A COMPLETE LIST OF MATERIALS AND EQUIPMENT INCLUDING MANUFACTURER AND MODEL NUMBER PROPOSED FOR THE JOB. SHOP DRAWINGS SHALL INCLUDE JOB DESCRIPTION, ARCHITECT AND ENGINEER IDENTIFICATION, AND ALL DATA WITH CAPACITIES, SIZES, DIMENSIONS, CATALOG NUMBERS, AND MANUFACTURER'S BROCHURES. SHOP DRAWINGS UNBOUND SUBMITTALS WILL BE RETURNED WITHOUT REVIEW. CONTRACTOR SHALL SUBMIT A SCHEDULE OF ALL SHOP DRAWINGS AND SUBMITTALS WHICH ARE TO BE REVIEWED WITHIN FIFTEEN DAYS OF CONTRACT AWARD.

9. THE CONTRACTOR SHALL FURNISH A ONE YEAR WRITTEN GUARANTEE OF MATERIALS AND WORKMANSHIP FROM THE DATE OF SUBSTANTIAL COMPLETION.

10. AFTER ALL REQUIREMENTS OF THE SPECIFICATIONS AND/OR THE DRAWINGS HAVE BEEN FULLY COMPLETED, REPRESENTATIVES OF THE OWNERS WILL INSPECT THE WORK. THE CONTRACTOR SHALL PROVIDE COMPETENT PERSONNEL TO DEMONSTRATE THE OPERATION OF ANY ITEM OR SYSTEM TO THE FULL SATISFACTION OF EACH REPRESENTATIVE. FINAL ACCEPTANCE OF THE WORK WILL BE MADE BY THE OWNER AFTER RECEIPT OF APPROVAL AND RECOMMENDATION OF ACCEPTANCE FROM EACH REPRESENTATIVE.

11. ALL FINAL CONNECTIONS TO OWNER FURNISHED EQUIPMENT SHALL BE MADE BY THE CONTRACTOR.

12. EXACT METHOD AND LOCATION OF CONDUIT PENETRATION AND OPENINGS IN CONCRETE OR MASONRY WALLS, FLOORS OR STRUCTURAL STEEL MEMBERS SHALL BE AS DIRECTED BY THE ARCHITECT. PERFORM CORING, SAWCUTTING, PATCHING, AND REFINISHING OF WALLS AND SURFACES WHEREVER IT IS NECESSARY TO PENETRATE. OPENINGS SHALL BE SEALED IN AN APPROVED METHOD TO MEET THE FIRE RATING OF THE PARTICULAR WALL, FLOOR OR CEILING. EXACT METHOD AND LOCATIONS OF CONDUIT PENETRATIONS AND OPENINGS IN CONCRETE WALLS OR FLOORS SHALL BE FOR UL APPROVED SYSTEMS

13. ROUTE EXPOSED CONDUIT AND CONDUIT ABOVE ACCESSIBLE CEILING SPACES PARALLEL AND PERPENDICULAR TO WALLS AND ADJACENT PIPING. ARRANGE CONDUIT TO MAINTAIN HEADROOM AND TO PRESENT A NEAT APPEARANCE.

14. CONDUIT SHALL NOT BE INSTALLED IN ANY FLOOR SLAB. CONDUIT SHALL BE INSTALLED CONCEALED IN THE CEILING SPACE, CONCEALED IN WALLS, OR BELOW SLAB ON GRADE UNLESS NOTED OTHERWISE.

15. ATTENTION IS CALLED TO THE FACT THAT THE CEILING SYSTEMS FOR THE MOST PART ARE CONSIDERED TO BE INACCESSIBLE. THE CONTRACTOR SHALL STRATEGICALLY LOCATE BOXES, ETC., IN AN ACCESSIBLE CEILING SPACE.

16. COORDINATE REQUIRED ACCESS DOORS IN NON-ACCESSIBLE CEILINGS TO SUIT FIELD CONDITIONS. THE EXACT SIZES AND PHYSICAL LOCATIONS SHALL SUIT ACCESSIBILITY AND CONSTRUCTION CONDITIONS. ACCESS DOORS SHALL BE PROVIDED IN OTHER SECTIONS OF THE SPECIFICATIONS. ACCESS DOORS SHALL HAVE A FIRE RATING EQUAL TO THE CEILING ASSEMBLY IN WHICH THEY ARE INSTALLED.

17. WHENEVER A DISCREPANCY IN QUANTITY OR SIZE OF CONDUIT, WIRE, EQUIPMENT DEVICES, CIRCUIT BREAKERS, GROUND FAULT PROTECTION SYSTEMS, ETC. (ALL MATERIALS), ARISES ON THE DRAWINGS OR SPECIFICATIONS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL MATERIAL AND SERVICES REQUIRED BY THE STRICTEST CONDITIONS NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS TO ENSURE COMPLETE AND OPERABLE SYSTEMS AS REQUIRED BY THE OWNER AND ARCHITECT/ENGINEER.

18. UTILITY PENETRATIONS OF ANY KIND IN FIRE AND SMOKE PARTITIONS AND CEILING ASSEMBLIES, SHALL BE FIRESTOPPED AND SEALED WITH AN APPROVED MATERIAL SECURELY INSTALLED STEEL ELECTRICAL OUTLET BOXES WHICH DO NOT EXCEED 16 SQUARE INCHES IN AREA, NEED NOT BE PROTECTED IN ONE HOUR OR TWO HOUR FIRE RATED WALLS, PARTITIONS, CEILINGS, OR AREA SEPARATION UNLESS THEY:

    OCCUR ON OPPOSITE SIDES OF THE WALL WITHIN 24 INCH HORIZONTAL DISTANCE OF ONE ANOTHER. IN THIS CASE, ONLY ONE OUTLET BOX NEED TO PROTECTED BY AN APPROVED FIRESTOP MATERIAL OR DETAIL TO CORRECT THIS CONDITION.

    OCCUR IN COMBINATION WITH OUTLET BOXES OF ANY SIZE SUCH THAT THE AGGREGATE AREA OF UNPROTECTED OUTLET BOXES EXCEEDS 100 SQUARE INCHES IN ANY 100 SQUARE FEET OF WALL AREA. IN THIS CASE, ONLY A SUFFICIENT NUMBER OF OUTLET BOXES NEED BE PROTECTED BY AN APPROVED MATERIAL OR DETAIL TO DECREASE THE AGGREGATE AREA OF UNPROTECTED UTILITY BOXES TO LESS THAN 100 SQUARE INCHES IN ANY 100 SQUARE FEET OF WALL.

    STEEL ELECTRICAL OUTLET BOXES WHICH EXCEED 16 SQUARE INCHES IN AREA, AND ALL OTHER STEEL UTILITY OUTLET BOXES REGARDLESS OF SIZE, SHALL BE PROTECTED BY AN APPROVED FIRESTOP MATERIAL AS LISTED.

    UTILITY AND ELECTRICAL OUTLETS OR BOXES SHALL BE SECURELY FASTENED TO THE STUD OF FRAMING OF THE WALL, PARTITION OR CEILING ASSEMBLY. THE OPENING IN THE GYPSUM BOARD FACING SHALL BE CUT SO THAT THE CLEARANCE BETWEEN THE BOX AND THE GYPSUM BOARD DOES NOT EXCEED 1/8 INCH IN SMOKE WALLS OR PARTITIONS, THE 1/8 INCH CLEARANCE SHALL BE FILLED WITH AN APPROVED FIRE-RATED SEALANT.

    REFER TO SINGLE LINE DIAGRAM AND FEEDER SCHEDULES FOR CONDUIT AND CONDUCTOR SIZE TO PANELS, TRANSFORMERS, MECHANICAL AND PLUMBING EQUIPMENT, ETC., CONDUIT RUNS MAY NOT BE SHOWN ON DRAWINGS, BUT ARE PART OF THIS CONTRACT.

19. STRAIGHT FEEDER, BRANCH CIRCUIT, AND CONDUIT RUNS SHALL BE PROVIDED WITH SUFFICIENT PULL BOXES OR JUNCTION BOXES TO LIMIT THE MAXIMUM LENGTH OF ANY SINGLE CABLE PULL TO 100 FEET. PULL BOXES SHALL BE SIZED PER CODE OR AS INDICATED ON DRAWINGS. LOCATIONS SHALL BE DETERMINED IN THE FIELD OR AS INDICATED ON THE DRAWINGS.

20. MAXIMUM NUMBER OF CONDUCTORS IN OUTLET OR JUNCTION BOXES SHALL CONFORM TO THE CALIFORNIA ELECTRICAL CODE, ARTICLE 370-6, BUT IN NO CASE SHALL CONTAIN MORE THAN THE FOLLOWING NUMBER OF #12 AWG CONDUCTORS FOR THE SIZE OF BOX INDICATED. THE MINIMUM SIZE OUTLET OR JUNCTION BOX PERMITTED IN A WALL IS FOUR INCHES SQUARE BY 1 1/2 INCHES DEEP.

    SQUARE BY 1 1/2" D = 9 CONDUCTORS
    4" SQUARE BY 2 1/8" D = 13 CONDUCTORS
    4 11/16" SQUARE BY 1 1/2" D = 11 CONDUCTORS
    4 11/16" SQUARE BY 2 1/8" D = 18 CONDUCTORS
    ALL OUTLET BOXES CONTAINING MORE THAN ONE DEVICE SHALL BE GANGED. TWO DEVICES DOUBLE GANGED, MINIMUM.

21. WHERE MULTI-HOMERUNS ARE INDICATED ON DRAWINGS INDICATING THE SAME PANELBOARD CIRCUIT NUMBER, PROVIDE JUNCTION BOX ABOVE ACCESSIBLE CEILING AND ROUTE ONE SET OF WIRES TO CIRCUIT BREAKERS.

22. IDENTIFICATION NAMEPLATES SHALL BE MICARTA 1/8 INCH THICK AND OF APPROVED SIZE WITH BEVELED EDGES AND ENGRAVED WHITE LETTERS A MINIMUM OF 1/4 INCH HIGH ON BLACK BACKGROUND. NAMEPLATES SHALL BE PROVIDED FOR ALL CIRCUITS IN THE SERVICE DISTRIBUTION AND POWER DISTRIBUTION SWITCHBOARDS OR PANELBOARDS, MOTOR CONTROL CENTERS, LIGHTING DISTRIBUTION PANELBOARDS, SEPARATELY MOUNTED STARTING SWITCHES, DISCONNECTING SWITCHES, MOTOR CONTROL PUSH-BUTTON STATIONS, SELECTOR SWITCHES, TRANSFORMERS, TERMINAL CABINETS, TELEPHONE CABINETS, ETC. ALL NAMEPLATES SHALL BE ATTACHED WITH SCREWS. (SEE SPECIFICATIONS) PULLBOXES, JUNCTION BOXES, AND DEVICE BOXES SHALL BE MARKED WITH A PERMANENT MARKER.

23. THE EXACT LOCATION OF ALL ELECTRICAL DEVICES AND EQUIPMENT SHALL BE COORDINATED WITH THE ARCHITECTURAL ELEVATIONS, DETAILS, OR SECTIONS PRIOR TO INSTALLATION. ALL ELECTRICAL DEVICES AND EQUIPMENT SHALL BE SURFACE MOUNTED UNLESS OTHERWISE NOTED. OUTLETS NOT INDICATED ON ARCHITECTURAL ELEVATIONS SHALL BE COORDINATED WITH THE ARCHITECT PRIOR TO ROUGH-IN. UNLESS OTHERWISE NOTED, MOUNT ELECTRICAL DEVICES AT THE FOLLOWING HEIGHTS:

    WALL SWITCH AT CMU WALL +48" SET VERTICALLY
    WALL SWITCH AT DRY WALL +48" SET VERTICALLY
    CONVENIENCE RECEPTACLE AT CMU WALL +1'-6" SET VERTICALLY.
    OUTLETS AT COUNTERS WITHOUT SINK 38" SET VERTICALLY.

    MOUNTING HEIGHTS OF ALL DEVICES AND EQUIPMENT ARE FROM FINISHED FLOOR TO CENTER OF DEVICES AND EQUIPMENT UNLESS OTHERWISE NOTED. BOXES INSTALLED IN LOCATIONS NOT APPROVED BY THE ARCHITECT SHALL BE RELOCATED AS DIRECTED BY THE ARCHITECT AT NO ADDITIONAL COST TO THE OWNER.

24. DRAWINGS ARE DIAGRAMMATIC ONLY AND DO NOT SHOW SPECIAL CONDUIT ROUTING OR LENGTHS REQUIRED FOR A COMPLETE INSTALLATION. ROUTING OF RACEWAYS SHALL BE AT THE OPTION OF THE CONTRACTOR BUT SHALL BE IN STRICT COMPLIANCE WITH STRUCTURAL REQUIREMENTS AND SPECIFICATIONS UNLESS OTHERWISE NOTED AND SHALL BE COORDINATED WITH OTHER TRADES. NO CONDUIT SHALL BE ROUTED HORIZONTALLY IN MASONRY WALLS IN EXCESS OF 48". DO NOT SCALE THE ELECTRICAL DRAWINGS FOR LOCATIONS OF ANY ELECTRICAL, ARCHITECTURAL, STRUCTURAL, CIVIL, OR MECHANICAL ITEMS OR FEATURES, REFER TO ARCHITECTURAL AND STRUCTURAL DIMENSIONAL DRAWINGS.

25. THE EQUIPMENT GROUNDING CONDUCTOR ALTHOUGH NOT SHOWN ON CONDUIT RUNS, SHALL BE INSTALLED AND RUN CONTINUOUS FROM PANEL TO LAST OUTLET. THIS WIRE SHALL BE PIGTAILED IN EACH OUTLET FOR CONNECTION TO BOX AND DEVICE SO THAT IF DEVICE IS REMOVED, GROUND WILL NOT BE INTERRUPTED. ALL EQUIPMENT GROUNDING CONDUCTORS SHALL BE INSULATED GREEN CONDUCTORS-ALTERNATE METHODS OF IDENTIFICATION SHALL NOT BE USED. CONTRACTOR SHALL NOTIFY ELECTRICAL ENGINEER TO EXAMINE CONDUCTOR INSTALLATION PRIOR TO INSTALLATION OF DEVICES.

26. JUNCTION AND PULL BOXES: FOR INTERIOR DRY LOCATIONS, BOXES SHALL BE GALVANIZED ONE-PIECE, DRAWN STEEL, KNOCKOUT TYPE WITH REMOVABLE MACHINE SCREW SECURED COVERS. FOR OUTSIDE, DAMP, OR SURFACE LOCATIONS, BOXES SHALL BE HEAVY CAST ALUMINUM OR CAST IRON WITH REMOVABLE, GASKETED, NON-FERROUS MACHINE SCREW SECURED COVERS. BOXES SHALL BE SIZED FOR THE NUMBER AND SIZES OF CONDUCTORS AND CONDUIT ENTERING THE BOX AND EQUIPPED WITH PLASTER EXTENSION RINGS WHERE REQUIRED. BOXES SHALL BE LABELED TO INDICATE PANEL AND CIRCUIT NUMBER, OR TYPE OF SIGNAL OR COMMUNICATIONS SYSTEM.

27. CONTRACTOR SHALL COORDINATE EXACT LOCATIONS OF ALL SEISMIC SEPARATIONS.

28. IT IS THE INTENT OF THE PLANS AND SPECIFICATIONS THAT A COMPLETE AND WORKABLE ELECTRICAL INSTALLATION BE PROVIDED FOR ALL THE EQUIPMENT DESCRIBED OR SHOWN AS BEING IN THIS CONTRACT. FURNISH ALL LABOR AND TOOLS NECESSARY AND FURNISH AND INSTALL ALL APPARATUS, MATERIALS AND EQUIPMENT IN A FASHION COMPLYING WITH ALL APPLICABLE CODES, INCLUDING ITEMS REQUIRED BUT NOT NORMALLY SHOWN, SUCH AS LAMPS, HANGERS, BRACKETS, CLAMPS, COUPLINGS, BOXES, CONNECTORS AND HARDWARE REFER ALSO TO WRITTEN SPECIFICATIONS FOR GENERAL, MECHANICAL AND ELECTRICAL SECTIONS.

29. ALL LINE VOLTAGE WIRING SHALL BE #12 AWG COPPER WITH THWN/THHN INSULATION AND IN 3/4" DIAMETER CONDUIT MINIMUM. IN EACH CONDUIT WITHOUT CONDUCTORS, PROVIDE ONE #12 TW COPPER PULL WIRE WITH TAG IDENTIFYING LOCATION OF OPPOSITE END.

30. THE CENTER OF ELECTRICAL AND COMMUNICATION SYSTEM RECEPTACLE OUTLETS SHALL BE INSTALLED NOT LESS THAN 15" OR MORE THAN 48" ABOVE THE FLOOR OR WORKING PLATFORMS, (ADA).

31. ANY LENGTH OF FEEDERS OR BRANCH CIRCUITS SHOWN ON ALL DRAWINGS ARE FOR USE IN DESIGN CALCULATIONS ONLY AND NOT TO BE USED FOR ANY OTHER PURPOSES.

32. FURNISH AND INSTALL POWER DISTRIBUTION PANELBOARDS AS INDICATED ON THE DRAWINGS. PANELBOARDS SHALL COMPLY WITH NEMA STANDARD FOR PANELBOARDS AND FEDERAL SPECIFICATION W-P-115A. PANELBOARDS SHALL BE COMPLETE WITH COPPER BUS BARS, 40 DEGREE CELSIUS THERMAL MAGNETIC BOLT-ON TYPE CIRCUIT BREAKERS AND TYPED CIRCUIT DIRECTORY CARD AS INDICATED ON DRAWINGS. PANELBOARDS SHALL BE SQUARE D OR EQUAL BY SIEMENS, ITE, WESTINGHOUSE, OR GENERAL ELECTRIC.

33. FURNISH AND INSTALL GENERAL PURPOSE, K-1, PAD TRANSFORMER AS INDICATED ON THE DRAWINGS, WITH 150°C TEMPERATURE RISE, COPPER WINDING MATERIAL, NEMA-3R VENTED ENCLOSURE, FRAME 924, TAPS: 2 @ + 2.5% AND 2 @ - 2.5%, NEMA ST20 SOUND LEVEL: 60 AND NEMA TP-1 ENERGY EFFICIENT. COMPLETE WITH MANUFACTURER SEISMIC QUALIFICATION CERTIFICATION, DIMENSIONED OUTLINED DRAWINGS, EQUIPMENT ANCHORAGE DEVICES, TEXT REPORTS AND COMPLIANCE WITH IEEE C57.12.91 "TEST CODE FOR DRY-TYPE DISTRIBUTION AND POWER TRANSFORMERS". MANUFACTURED BY EATON, SIEMENS OR SQUARE-D.

34. INSTALLATION OF THE FIRE ALARM SYSTEM SHALL NOT BE STARTED UNTIL DETAILED PLANS, SPECIFICATIONS AND ENGINEERING CALCULATIONS HAVE BEEN ACCEPTED AND SIGNED BY THE ARCHITECT IN GENERAL CHARGE OF DESIGN AND THE SIGNATURE OF THE ARCHITECT OR PROFESSIONAL ENGINEER WHO HAS BEEN DELEGATED RESPONSIBILITY COVERING THE WORK SHOWN ON A PARTICULAR PLAN OR SPECIFICATION, AND APPROVED BY THE LOCAL FIRE AUTHORITY. THE FIRE ALARM SYSTEM INDICATED IN THESE DRAWINGS SHALL BE USED FOR BIDDING PURPOSES ONLY AND ARE NOT FOR CONSTRUCTION. THE CONTRACTOR SHALL SUBMIT FIRE ALARM SYSTEM SHOP DRAWINGS TO THE LOCAL FIRE AUTHORITY FOR APPROVAL PRIOR TO INSTALLATION. SYSTEM SHALL MEET THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS.

35. SIGNAL AND COMMUNICATIONS SYSTEMS (DATA, SECURITY, FIRE ALARM) PROVIDE A COMPLETE AND OPERABLE EXTENSION TO THE EXISTING SYSTEMS AS INDICATED ON THE DRAWINGS. THESE SYSTEMS SHALL BE PROVIDED AS A SINGLE SUBCONTRACT UNDER THE ELECTRICAL CONTRACT. IN THE INTEREST OF MAINTENANCE CONVENIENCE AND CAPABILITY, THE NEW EQUIPMENT SHALL MATCH THAT OF EXISTING SYSTEMS AS INSTALLED IN ADJACENT AREAS. ALL EQUIPMENT AND CABLE SHALL BE PROVIDED BY THE AUTHORIZED DISTRIBUTOR. PROVIDE ALL BACKBOXES PER MANUFACTURER'S REQUIREMENTS. SUBMIT ENGINEERED SHOP DRAWINGS FOR EACH SIGNAL AND COMMUNICATION SYSTEM TO THE ARCHITECT FOR REVIEW.

MEP COMPONENT ANCHORAGE NOTES

ALL MECHANICAL. PLUMBING. AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2019 CBC SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTERS 13, 26, AND 30:

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
3. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND HAVING A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH THE ABOVE REQUIREMENTS.

PIPING, DUCTWORK. AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7-16 SECTION 13.3 AS DEFINED IN ASCE 7-16 SECTIONS 13.6.5. 13.6.6, 13.6.7, 13.6.8; AND 2019 CBC, SECTIONS 1617A.1.24, 1617A.1.25 AND 1617A.1.26.

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PRE-APPROVED INSTALLATION GUIDE (E.G., OSHPD OPM FOR 2013 CBC OR LATER). COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP☐ MD☐ PP☐ E☑ - OPTION 1: DETAILED ON APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

MP☐ MD☐ PP☐ E☐ - OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE-APPROVAL (OPM #) #____________.

APPLICABLE CODES

BUILDING OCCUPANCY CLASSIFICATION: GROUP E

THE CONSTRUCTION OF THIS PROJECT SHALL CONFORM TO THE REQUIREMENTS OF:

APPLICABLE CODE AS OF JANUARY 1, 2017

Part 1	2019 California Building Standards Administrative Code, Title 24 C.C.R.
Part 2	2019 California Building Code, Title 24 C.C.R. (2018 International Building Code of the International Code Council, with California Amendments)
Part 3	2019 California Electrical Code, Title 24 C.C.R. (2019 National Electrical Code of the National Fire Protection Association, NFPA)
Part 4	2019 California Mechanical Code, Title 24 C.C.R. (2018 Uniform Mechanical Code of the International Association of Plumbing and Mechanical Officials, IAPMO)
Part 5	2016 California Plumbing Code, Title 24, C.C.R. (2015 Uniform Plumbing Code of the International Association of Plumbing and Mechanical Officials, IAPMO)
Part 6	2019 California Energy Code, Title 24 C.C.R.
Part 7	currently vacant
Part 8	2019 California Historical Building Code, Title 24 C.C.R.
Part 9	2019 California Fire Code, Title 24 C.C.R. (2015 International Fire Code of the International Code Council
Part 10	2019 California Existing Building Code, Title 24 C.C.R. (2018 International Existing Building Code of the International Code Council, with amendments)
Part 11	2019 California Green Building Standard Code (CALGreen Code), Title 24 C.C.R.
Part 12	2019 California Referenced Standards Code, Title 24 C.C.R.

PARTIAL LIST OF APPLICABLE STANDARDS

2019 California Building Code (for SFM) Referenced Standards Chapter 35

NFPA 13	AUTOMATIC SPRINKLER SYSTEMS (California Amended)	2019 Edition
NFPA 14	STANDPIPE SYSTEMS (California Amended)	2016 Edition
NFPA 17	DRY CHEMICAL EXTINGUISHING SYSTEMS	2017 Edition
NFPA 17A	WET CHEMICAL EXTINGUISHING SYSTEMS	2017 Edition
NFPA 20	STATIONARY PUMPS	2016 Edition
NFPA 24	PRIVATE FIRE SERVICE MAINS (California Amended)	2016 Edition
NFPA 72	NATIONAL FIRE ALARM AND SIGNALING CODE (California Amended) (Note: See UL Standard 1971 for "Visual Devices"	2016 Edition
NFPA 80	FIRE DOOR AND OTHER OPENING PROTECTIVES	2016 Edition
NFPA 253	CRITICAL RADIANT FLUX OF FLOOR COVERING SYSTEM	2006 Edition
NFPA 2001	CLEAN AGENT FIRE EXTINGUISHING SYSTEMS (California Ameded)	2016 Edition

SHEET INDEX

SHT.NO.	DESCRIPTION
E0.01	GENERAL NOTES, APPLICABLE CODES AND SHEET INDEX
E0.02	ABBREVIATIONS AND SYMBOLS LIST
E0.03	PARTIAL SINGLE LINE DIAGRAM AND PANEL SCHEDULES
E0.04	LIGHTING FIXTURE SCHEDULES AND NOTES
E0.05	TITLE-24 COMPLIANCE FORMS
E1.00	ELECTRICAL SITE PLAN
E1.01	ELECTRICAL TRACK AND FIELD PLAN
E1.02	ELECTRICAL / SIGNAL SITE PLAN AD-01
E2.00	ELECTRICAL DETAILS
E2.01	ELECTRICAL DETAILS AD-01
E2.02	ELECTRICAL AND SIGNAL DETAILS

SCOPE OF WORK

PROJECT SCOPE IS LIMITED TO SIGN DISPLAY LIGHTING AND PROVIDING COMMUNICATION AND POWER INFRASTRUCTURE CONDUIT ON SITE AT FAR SIDE OF TRACK.

HMC Architects

3361004000

3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

VIRGINIA ELAINE MARQUARDT
No. C-33423
Virginia E Marquardt
06/30/2025
RENEWAL DATE

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

CONSULTANT

PBS ENGINEERS
2100 East Route 66, Suite 210
Glendora, CA 91740
T. 626.650.0350 F. 626.650.0352
www.pbsengineers.com Job no. 2022-011-00

KUNAL G. SHAH
E17249
EXP. 06-30-2026
ELECTRICAL

FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

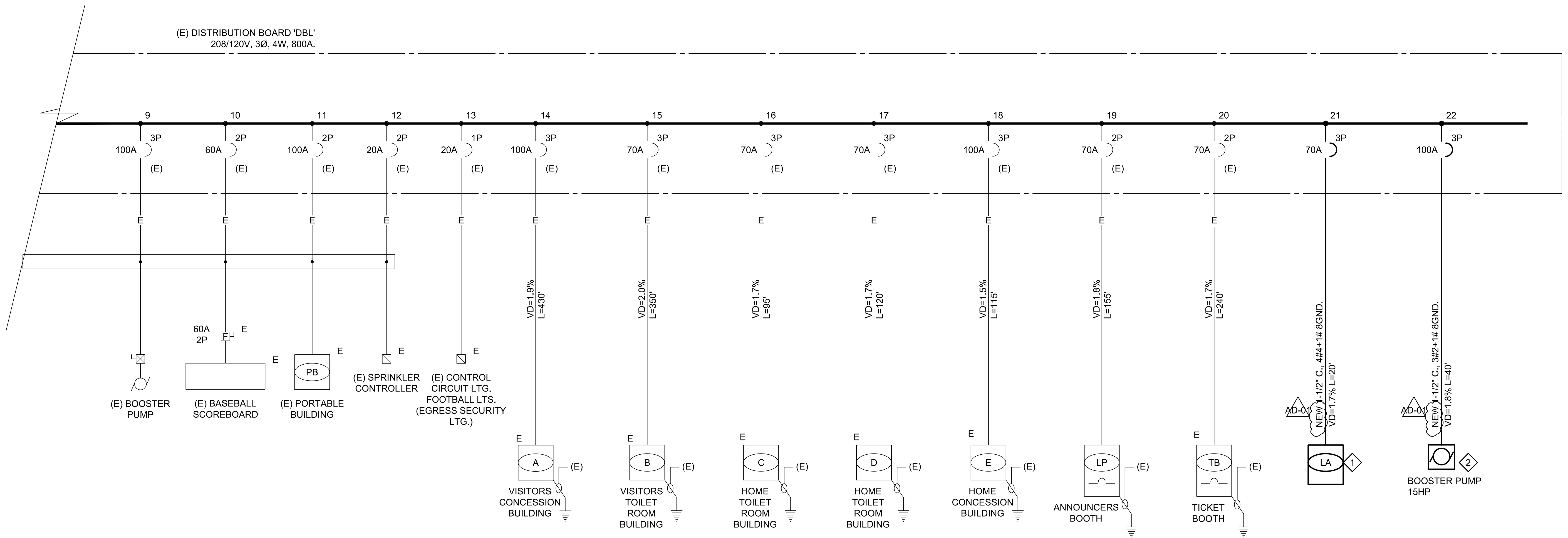
PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD
EXISTING TRACK AND FIELD REPLACEMENT

SHEET NAME:
GENERAL NOTES, APPLICABLE CODES
AND SHEET INDEX

ADDENDUM 01

FAC NO.: XXXXX **BLDG NO.: BLD-XXXXX**
DATE: **08/08/2024**
CLIENT PROJ NO:
SHEET:

E0.01



PARTIAL EXISTING SINGLE LINE DIAGRAM

KEY NOTES

1. NEW PANEL BOARD TO BE USED TO CONNECT NEW FEEDERS TO FEED SCOREBOARD, FLAG POLE LIGHTING MURAL LIGHTING AND IN-GROUND BOXES WITH RECEPTACLES.
2. NEW BOOSTER PUMP FEEDERS TO "DBL" PROVIDE NEW CIRCUIT BREAKERS TO MATCH EXISTING BOARD MANUFACTURER AND BREAKER CHARASTICTS.
3. REFER SHEETS E1.02 FOR CONTINUATION.

EXISTING LOAD SUMMARY FOR PANEL DBL & TRANSF "T2"

EXISTING LOAD (BASED ON 12 MONTH DEMAND HISTORY)	=	112.0 KVA
112.0 KVA x 125%	=	140.0 KVA
NEW LOAD ADDED PNL LA, 15HP PUMP	=	25.8 KVA
TOTAL NEW LOAD	=	165.8 KVA
TOTAL AMPS	=	461.0 AMPS

EXISTING SERVING TRANSF. T2 IS 225KVA 480-120/208V,3P,4W

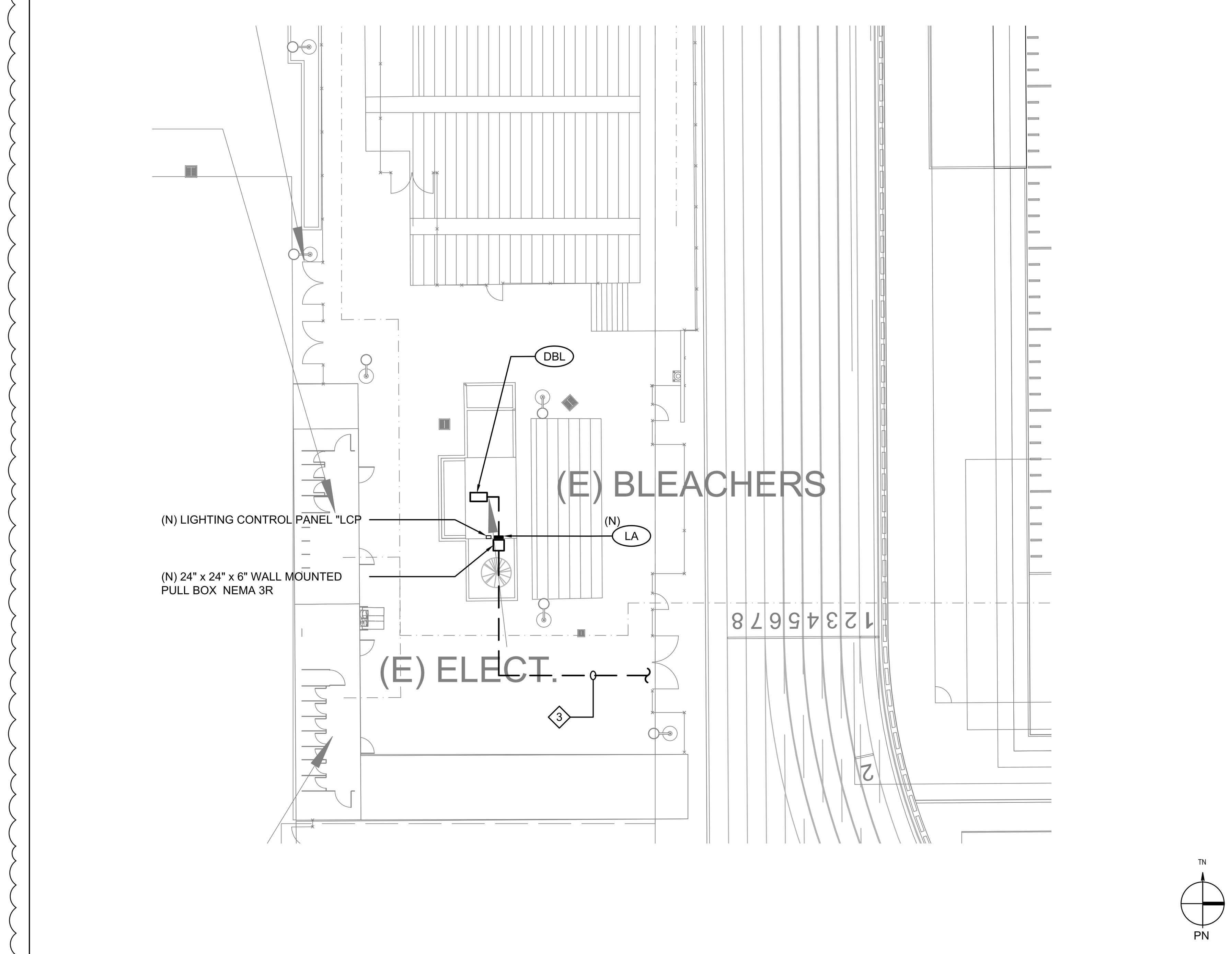
PANEL- LA

MOUNTING: SURFACE — LOCATION: ELECTRICAL ROOM
VOLTAGE: 120/208V,3Ø,4W NORMAL BRANCH 10,000 AIC SYM 100 AMP BUS 70A-3P MAIN CB

DESCRIPTION	ØA	ØB	ØC	P	A	CKT	CKT	A	P	ØA	ØB	ØC	DESCRIPTION
FLAG POLE LIGHTING	900			1	20	1	2	20	1	500			RECEPTACLES BOX
SCORE BOARD		2200		2	30	3	4	20	1		500		RECEPTACLES BOX
SCORE BOARD			2200	-	-	5	6	20	1			500	RECEPTACLES BOX
MURAL SIGN LIGHTING	500			1	20	7	8	20	1	500			RECEPTACLES BOX
COACHS SWITCH		500		1	20	9	10	20	1		500		RECEPTACLES BOX
SPARE				1	20	11	12	20	1			500	RECEPTACLES BOX
SPARE				1	20	13	14	20	1				SPARE
SPARE				1	20	15	16	20	1				SPARE
SPARE				1	20	17	18	20	1				SPARE
SPARE				1	20	19	20	20	1				SPARE
SPARE				1	20	21	22	20	1				SPARE
SPARE				1	20	23	24	20	1				SPARE
VA PER PHASE	1400	2700	2200							1000	1000	1000	VA PER PHASE
										2400	3700	3200	TOTAL VA PER PHASE
										9300			TOTAL CONNECTED VA

CONTINUOUS LOAD 400 x1.25= 500 VA
+ OTHER= 8900 VA
TOTAL LOAD= 9400 VA 26 AMPS
CEILING OUTLETS =
CONV. OUTLETS =
MISC. OUTLETS =
THIS PANEL IS FED BY:

NOTES
1
2
3
4



ELECTRICAL SITE PLAN

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

HMC Architects
3361004000
3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com
LICENSED ARCHITECT VIRGINIA ELAINE MARQUARDT No. C-33423 06/30/2025 STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

CONSULTANT

PBS ENGINEERS
2100 East Route 66, Suite 210
Glendora, CA 91740
T. 626.650.0350 F. 626.650.0352
www.pbsengineers.com Job no. 2022-011-00
REGISTERED PROFESSIONAL ENGINEER E17249 EXP. 06-30-2026 ELECTRICAL STATE OF CALIFORNIA

FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD EXISTING TRACK AND FIELD REPLACEMENT

SHEET NAME:
PARTIAL SINGLE LINE DIAGRAM AND PANEL SCHEDULES

ADDENDUM 01

FAC NO.: XXXXX BLDG NO.: BLD-XXXXX
DATE: 08/08/2024 CLIENT PROJ NO:
SHEET:
E0.03

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	FINISH	LAMP(S)	MANUFACTURER & NO.
LG	NEW LED IN GROUND LIGHTING FIXTURE DIRECT BURIAL AD-01	STAINLESS STEEL	25W	LUMIERE 3002 LED- RD 25LED4000-MFL-CLR-UNIV-NSS SERIES
F	FLOOR MOUNTED FLAG POLE LIGHT. WATERPROOF COMPLETE WITH ACCESSORIES	BRONZE	25W	COOPER LIGHTING SOLUTION 3002A-RD-25LED3000-MFL-NSL-UNV-BZ AD-01 HOUSING: 3000BBR
-	-	-	-	- -
-	-	-	- - -	- - - -
-	-	-	-	- -
-	-	-	- -	- -

LIGHTING FIXTURE NOTES

1. REFER TO LIGHTING FIXTURE SCHEDULE FOR TYPE OF FIXTURE TO BE PROVIDED AND INSTALLED.
2. REFER TO GENERAL NOTES, DRAWING E0.01 FOR ADDITIONAL REQUIREMENTS.
3. ALL LIGHT FIXTURES SHALL BE INSTALLED PER MANUFACTURERS RECOMMENDATIONS AND CONSTRUCTION SPECIFICATIONS.
4. PROVIDE ALL HANGERS, CLIPS AND NECESSARY HARDWARE TO INSTALL THE SPECIFIED FIXTURE AS INTENDED BY THE MANUFACTURER, THE ENGINEER AND TO INSURE U.L. INTEGRITY. ALL PENDANT MOUNTED FIXTURES SHALL BE PROVIDED WITH SEISMIC SAFETY AIRCRAFT TYPE CABLE INSIDE PENDANT SECURED TO MAIN FIXTURE HOUSING AND STRUCTURE ABOVE.
5. CONFLICTS BETWEEN CATALOG NUMBERS AND FIXTURE DESCRIPTIONS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION.
6. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL SURFACES TYPES AND CONDITIONS PRIOR TO RELEASING FIXTURE ORDERS. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY HARDWARE FOR MOUNTING THE SPECIFIED FIXTURE IN THE VERIFIED CEILING TYPE. NOTIFY THE ENGINEER FOR CLARIFICATION IMMEDIATELY.
7. THE LIGHT FIXTURES, LAMPS SPECIFIED HAVE BEEN DONE TO INSURE THAT ENERGY, FOOTCANDLE REQUIREMENTS, AESTHETIC AND PERFORMANCE ISSUES HAVE BEEN MET.
8. NOTIFY THE ARCHITECT AND ENGINEER UPON COMPLETION OF ROUGH-IN AND PRIOR TO CLOSING CEILINGS SO THAT FIELD INSPECTIONS CAN BE ARRANGED.
9. FINAL AND EXACT LOCATION OF LIGHTING FIXTURES AND DEVICES SHALL BE DETERMINED BY THE ARCHITECT AND/OR THE ARCHITECTURAL REFLECTED CEILING PLANS. CONFLICTS BETWEEN THE ENGINEER'S PLANS AND THE ARCHITECTS SHALL BE CLARIFIED PRIOR TO COMMENCING WORK. THE CONTRACTOR IS REQUIRED TO MAKE ANY ADJUSTMENTS TO AVOID INTERFERENCE WITH OTHER SYSTEMS.
10. UNLESS SPECIFICALLY CALLED OUT IN THE DESCRIPTION OR MODEL NUMBER, THE COLOR AND FINISH OF THE FIXTURE SHALL BE SELECTED FROM THE SPECIFIED MANUFACTURER'S STANDARD COLORS AND FINISHES. SUBMIT MANUFACTURER'S STANDARD COLOR CHART AND FINISH SCHEDULE WITH SHOP DRAWINGS FOR ARCHITECTURAL APPROVAL & DESIGNATION.
11.. LIGHTING HAS BEEN DESIGNED TO SUBSTANTIALLY COMPLY WITH TITLE 24. DIVISION 9 REQUIREMENTS (TYPICAL).
12. ALL RECESSED DOWNLIGHTS SHALL BE EQUIPPED WITH THERMAL CUTOFF WHERE REQUIRED BY CODE.
13. ALL FIXTURES LOCATED IN MECHANICAL EQUIPMENT ROOMS SHALL BE MOUNTED TO CLEAR ALL MECHANICAL EQUIPMENT.
14. ALL LIGHTING FIXTURES OF ONE TYPE SHALL BE MANUFACTURED BY THE SAME MANUFACTURER.
15. CONTRACTOR SUBMITTALS SHALL INCLUDE STANDARD FIXTURE CUTS, COMPLETE LAMP DATA SUBMITTALS, AND PHOTOMETRIC REPORTS.
16. EACH BRANCH CIRCUIT HOMERUN SHALL HAVE NO MORE THAN THREE CIRCUITS. EACH BRANCH CIRCUIT HOMERUN SHALL HAVE A SEPARATE GREEN INSULATED EQUIPMENT GROUNDING CONDUCTOR.
17. FIXTURES SHALL HAVE APPROPRIATE UL LABEL, DAMP OR WET AS REQUIRED BY CODES AND ORDINANCES.
18. CONTRACTOR SHALL VERIFY FIXTURE VOLTAGES AND CEILING TRIM COMPATIBILITY PRIOR TO ORDERING FIXTURE.
19. ENSURE COMPATIBILITY OF ALL LIGHTING SYSTEM COMPONENTS SUCH AS DIMMING SYSTEMS. FIXTURES, LAMPS AND DIMMING SYSTEMS/INDIVIDUAL CONTROLS MUST BE FACTORY CERTIFIED COMPATIBLE FOR FULL RANGE OF DIMMING COMPATIBILITY.
20. CONTRACTOR SUBMITTALS SHALL INCLUDE STANDARD FIXTURE CUTS, COMPLETE LAMP DATA SUBMITTALS, AND PHOTOMETRIC REPORTS.
21. CONTRACTOR SHALL ROUTE ALL CONDUIT IN A NEAT AND ORGANIZED MANNER TO MAINTAIN AESTHETIC APPEAL OF THE CEILING.

SUBSTITUTION NOTES

1. ALL SUBSTITUTIONS MUST BE APPROVED BY THE ARCHITECT AND ELECTRICAL ENGINEER PRIOR TO CONSIDERING SUBSTITUTIONS. THE FOLLOWING MUST BE PROVIDED (15) DAYS PRIOR TO BID TIME.
   - PHOTOMETRIC STUDIES UTILIZING IES STANDARD PHOTOMETRIC DATA AND SOFTWARE FOR THIS PROJECT USING PROPOSED SUBSTITUTION FIXTURES TO ENSURE DESIGN INTENT IS MET. LUMEN OUTPUT AND LIGHT LOSS FACTOR VALUES TO BE DICTATED BY PBS ELECTRICAL ENGINEERS FOR THIS STUDY.

AD-01

HMC Architects
3361004000
3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

LICENSED ARCHITECT
VIRGINIA ELAINE MARQUARDT
No. C-33423
06/30/2025
RENEWAL DATE
STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

CONSULTANT

PBS ENGINEERS
2100 East Route 66, Suite 210
Glendora, CA 91740
T. 626.650.0350 F. 626.650.0352
www.pbsengineers.com Job no. 2022-011-00

REGISTERED PROFESSIONAL ENGINEER
KUNAL G. SHAH
E17249
EXP. 06-30-2026
ELECTRICAL
STATE OF CALIFORNIA

FACILITY:

EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

PROJECT:

EL MONTE HIGH SCHOOL TRACK AND FIELD
EXISTING TRACK AND FIELD REPLACEMENT

SHEET NAME:

LIGHTING FIXTURE SCHEDULES AND NOTES

ADDENDUM 01

FAC NO.: XXXXX **BLDG NO.: BLD-XXXXX**

DATE: **08/08/2024** CLIENT PROJ NO:

SHEET:

E0.04

P:_PROJECTS\P-2022\2022-011-00 EMUHSD-El Monte HS Stadium Upgrade\10_BIM-CAD\MEP\E0.04.dwg 8/9/2024 9:01 AM Katherine M. Kiliona

THE LINE BROWN ABOVE IS EXACTLY 1" WHEN PLOTTED AT THIS SHEET'S ORIGINAL MADE SIZE

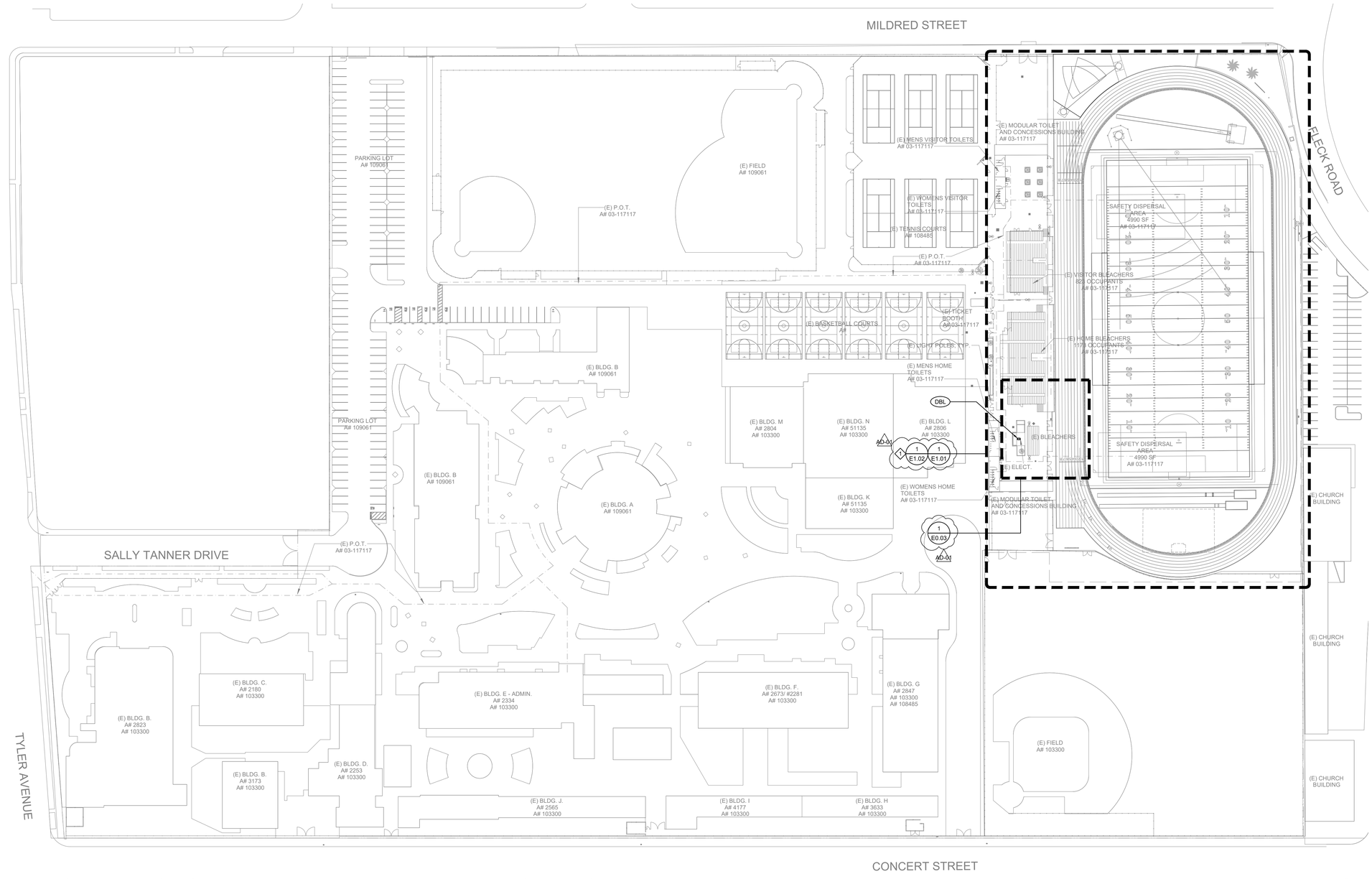
REMODEL KEY NOTES

1 REFER TO ENLARGED PLAN DRAWING FOR SCOPE OF WORK RELATED TO SIGN LIGHTING AND CONNECTION TO POWER AND COMMUNICATION SYSTEMS. AD-01

GENERAL NOTES

1. UNDERGROUND CONDUIT TERMINATIONS SHALL BE COORDINATED IN THE FIELD WITH THE FINAL LOCATIONS OF THE ELECTRICAL EQUIPMENT. AD-01
2. THE CONDUIT AND WIRE SIZES FOR ALL SITE LIGHTING AND SITE POWER CIRCUITS SHALL BE AS FOLLOWS:

   a) MINIMUM CONDUIT SIZE ON SITE SHALL BE 1"
   b) MINIMUM WIRE SIZE ON SITE SHALL BE #10 AWG
   c) MINIMUM GROUND WIRE SIZE ON SITE SHALL BE #10 AWG
3. CONDUIT ROUTING AND STUB-UP/STUB-IN LOCATIONS SHALL BE COORDINATED WITH ALL NEW UTILITIES AND WITH STRUCTURAL.
4. ALL EXISTING UNDERGROUND CONDUITS AND UTILITIES SHALL BE COORDINATED WITH CIVIL DRAWINGS. IF THERE ARE EXISTING UNDERGROUND CONDUITS AND WIRES THAT REQUIRE RELOCATION, CONTRACTOR SHALL EXTEND AND RE-ROUTE THE CONDUITS AND MAKE SURE THE EXISTING ELECTRICAL SYSTEMS ARE WORKING PROPERLY FOR A COMPLETE AND OPERABLE SYSTEM.
5. ALL UNDERGROUND CONDUIT INSTALLATION SHALL BE COORDINATED WITH OTHER TRADES PRIOR TO ROUGH-IN. PROVIDE SPACERS IN ALL MULTI-CONDUIT UNDERGROUND INSTALLATIONS.



OVERALL ELECTRICAL / SIGNAL SITE PLAN

SCALE: 1"=50'-0" | 1

PLEASE RECYCLE

HMC Architects
3361004000
3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com
VIRGINIA ELAINE MARQUARDT No. C-33423 06/30/2025 LICENSED ARCHITECT STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

CONSULTANT

PBS ENGINEERS
2100 East Route 66, Suite 210
Glendora, CA 91740
T. 626.650.0350 F. 626.650.0352
www.pbsengineers.com Job no. 2022-011-00
E17249 EXP: 06-30-2026 ELECTRICAL PROFESSIONAL ENGINEER STATE OF CALIFORNIA

FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD
EXISTING TRACK AND FIELD REPLACEMENT

SHEET NAME:
OVERALL ELECTRICAL / SIGNAL SITE PLAN

ADDENDUM 01

FAC NO.: XXXXX | BLDG NO.: BLD-XXXXX
DATE: 08/08/2024 | CLIENT PROJ NO:
SHEET:

E1.00

P:_PROJECTS\P-2022\2022-011-00 EMUHSD-El Monte HS Stadium Upgrade\10_BIM-CAD\MEP\E1.00.dwg 8/9/2024 9:01 AM Katherine M. Kiltona

THE LINE SHOWN ABOVE IS
EXACTLY ONE INCH LONG AT THIS
SHEETS ORIGINAL PAGE SIZE

GENERAL NOTES

1. ALL ELECTRICAL EQUIPMENT SHALL BE DE-ENERGIZED PRIOR TO COMMENCING ANY DEMOLITION WORK
2. FOLLOW ALL LOCKOUT/TAGOUT PROCEDURE PER NFPA 70E.
3. ALL EXISTING DEVICES SHOWN ARE BASED ON ENGINEER'S FIELD OBSERVATION HAVE BEEN ABLE TO BE OBSERVED. VERIFY AND REMOVE ALL HIDDEN DEVICES ONLY. ALL DEVICES MAY NOT AS REQUIRED.
4. DEMOLISH ELECTRICAL CIRCUITS AS NECESSARY TO ACCOMMODATE ELECTRICAL DEVICES (DISCONNECTS, STARTERS, WIRING, CONDUITS, ETC.) RENOVATION WORK. REMOVE ALL REMOVED BY OTHERS. EXISTING CIRCUITS SERVING RECEPTACLES FOR A ASSOCIATED WITH EQUIPMENT THE FULLEST EXTENT POSSIBLE AND SHALL SERVE THE NEW LAYOUT FOR THAT GIVEN AREA SHALL BE REUSED TO MODIFICATIONS INDICATED OR AS OTHERWISE REQUIRED TO MAINTAIN THE AREA. PROVIDE CIRCUIT THAT REMAIN. CONTINUITY OF EXISTING CIRCUITS
5. REFER TO ARCHITECTURAL, CIVIL DEMOLITION PLANS FOR EXISTING BUILDINGS, BE DEMOLISHED. ALL ELECTRICAL DEVICES, ASSOCIATED CONDUITS AND WIRES WALLS, EQUIPMENT, ETC., TO REMOVED. SHALL BE DISCONNECTED AND
6. ALL EXISTING UNDERGROUND CONDUITS AND UTILITIES SHALL BE THERE ARE EXISTING UNDERGROUND CONDUITS AND WIRES THAT REQUIRE COORDINATED WITH CIVIL DRAWINGS. IF EXTEND AND RE-ROUTE THE CONDUITS AND MAKE SURE THE EXISTING RELOCATION, CONTRACTOR SHALL PROPERLY FOR A COMPLETE AND OPERABLE SYSTEM. ELECTRICAL SYSTEMS ARE WORKING
7. PROVIDE A TEMPORARY SUPPORT FOR ALL EXISTING CONDUITS TO REMAIN DEMOLITION AND RENOVATION WORKS. ALL EXISTING CONDUITS TO REMAIN THAT ARE AFFECTED DURING SHALL BE PROTECTED IN PLACE.

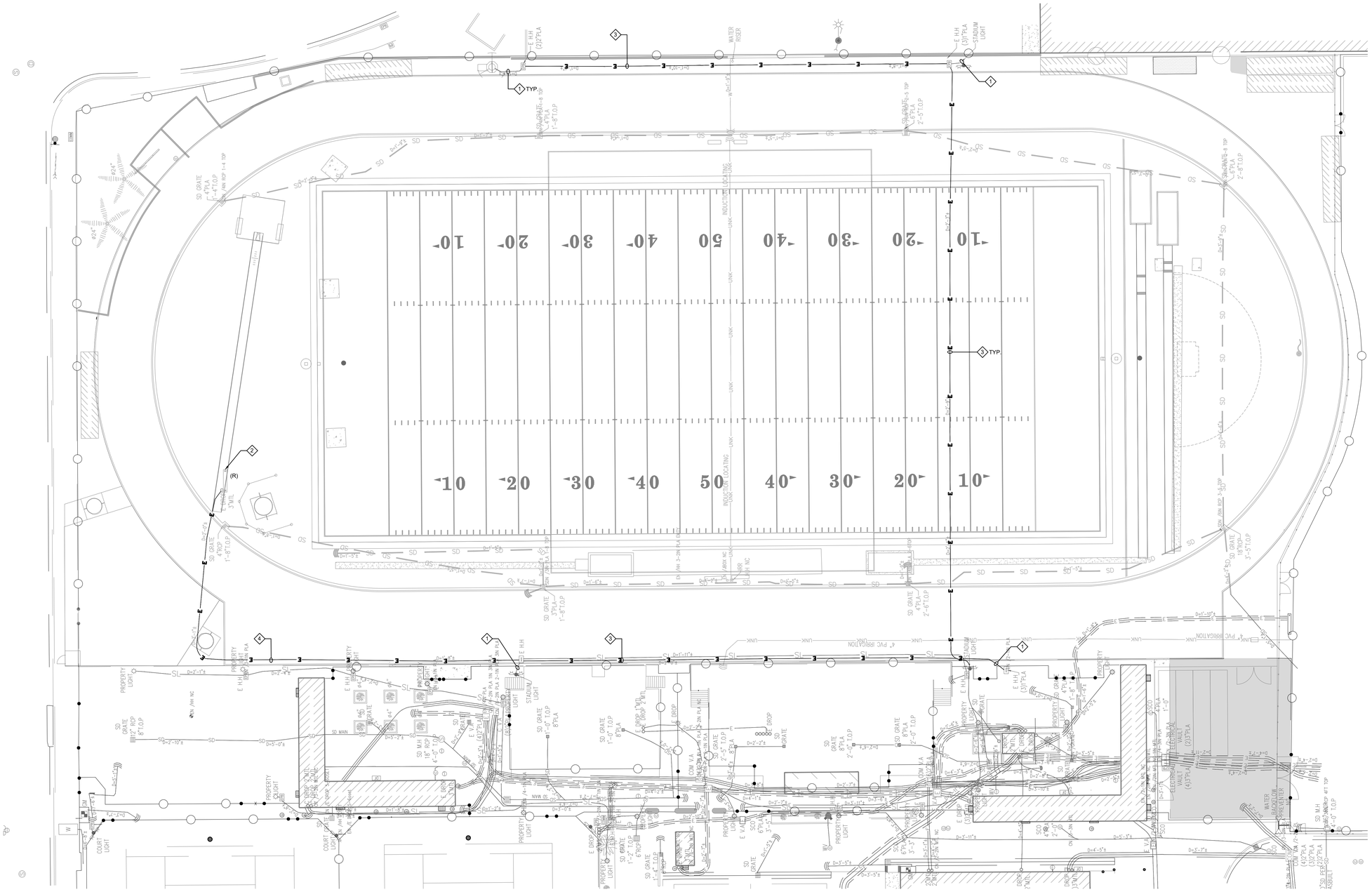
KEY NOTES

◇1 EXISTING UNDERGROUND CONDUITS AND WIRES TO REMOVE. CONTRACTOR SHALL VERIFY EXISTING FEEDER AND CIRCUITS PRIOR TO DEMOLITION WORKS. IF THE EXISTING CIRCUITS ARE CONNECTED TO EXISTING ELECTRICAL SYSTEM TO REMAIN, CONTRACTOR SHALL EXTEND AND RE-ROUTE THE CONDUITS AND MAKE SURE THE ELECTRICAL SYSTEMS ARE WORKING PROPERLY FOR A COMPLETE AND OPERABLE SYSTEM. REFER TO CIVIL DRAWINGS FOR ADDITIONAL INFORMATION.

◇2 EXISTING SCORE BOARD TO REMOVE. DISCONNECT POWER AND REMOVE CIRCUIT AND ALL ASSOCIATED WIRING CONNECTION.

◇3 EXISTING UNDERGROUND CONDUIT AND WIRING TO BE REMOVED BACK TO SOURCE. PROVIDE NEW CONDUIT AND WIRING TO EXISTING MUSCO LIGHTING.

◇4 EXISTING UNDERGROUND CONDUIT AND WIRES TO BE REMOVED BACK TO SOURCE.



DEMO ELECTRICAL / SIGNAL SITE PLAN

SCALE:
1"=20'-0"

1

PLEASE RECYCLE ♻

HMC Architects

3361004000

3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

LICENSED ARCHITECT
VIRGINIA
ELAINE
MARQUARDT
No. C-33423
Virginia E Marquardt
06/30/2025
RENEWAL DATE
STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

CONSULTANT

PBS ENGINEERS
2100 East Route 66, Suite 210
Glendora, CA 91740
T. 626.650.0350 F. 626.650.0352
www.pbsengineers.com Job no. 2022-011-00

E17249
EXP. 06-30-2026

FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD
EXISTING TRACK AND FIELD REPLACEMENT

SHEET NAME:
DEMO ELECTRICAL / SIGNAL SITE PLAN

ADDENDUM 01

FAC NO.: XXXXX **BLDG NO.: BLD-XXXXX**

DATE: **08/08/2024** CLIENT PROJ NO:

SHEET:
AD-01
E1.01

P:_PROJECTS\P-2022\2022-011-00 EMUHSD-El Monte HS Stadium Upgrade\10_BIM-CAD\MEP\E1.01.dwg 8/9/2024 9:02 AM Katherine M. Killona

THE LINE BROWN ABOVE IS EXACTLY 1" WHEN PRINTED ON THIS SHEET IN ORIGINAL MADE SIZE

GENERAL NOTES

1. ALL CONDUCTORS BOTH LOW AND LINE VOLTAGE FOR POWER AND SIGNAL SYSTEMS SHALL BE INSTALLED IN CODE APPROVED RACEWAY.
2. PROVIDE EQUIPMENT GREEN GROUND CONDUCTOR IN EACH RACEWAY.
3. THE CONTRACTOR SHALL COORDINATE EXACT LOCATION OF ALL OUTLETS SHOWN ON THIS DRAWING WITH THE ARCHITECTURAL ELEVATIONS PRIOR TO ROUGH-IN AND MAKING ANY ADJUSTMENTS REQUIRED TO AVOID INTERFERENCES WITH ANY OTHER DEVICES.
4. EACH MULTI-WIRE BRANCH CIRCUIT SHALL BE PROVIDED WITH MEANS TO SIMULTANEOUSLY DISCONNECT ALL UNDER-GROUNDED CONDUCTORS WITH CEC 210.4(B) & (D).
5. ALL CONDUCTORS SHALL HAVE UNDERWRITER'S LABORATORIES, INC. (UL) LISTED, 600 VOLTS INSULATION FOR TYPE SPECIFIED BELOW OR ELSEWHERE IN THE SPECIFICATIONS, ALL CONDUCTORS SHALL BE COPPER.

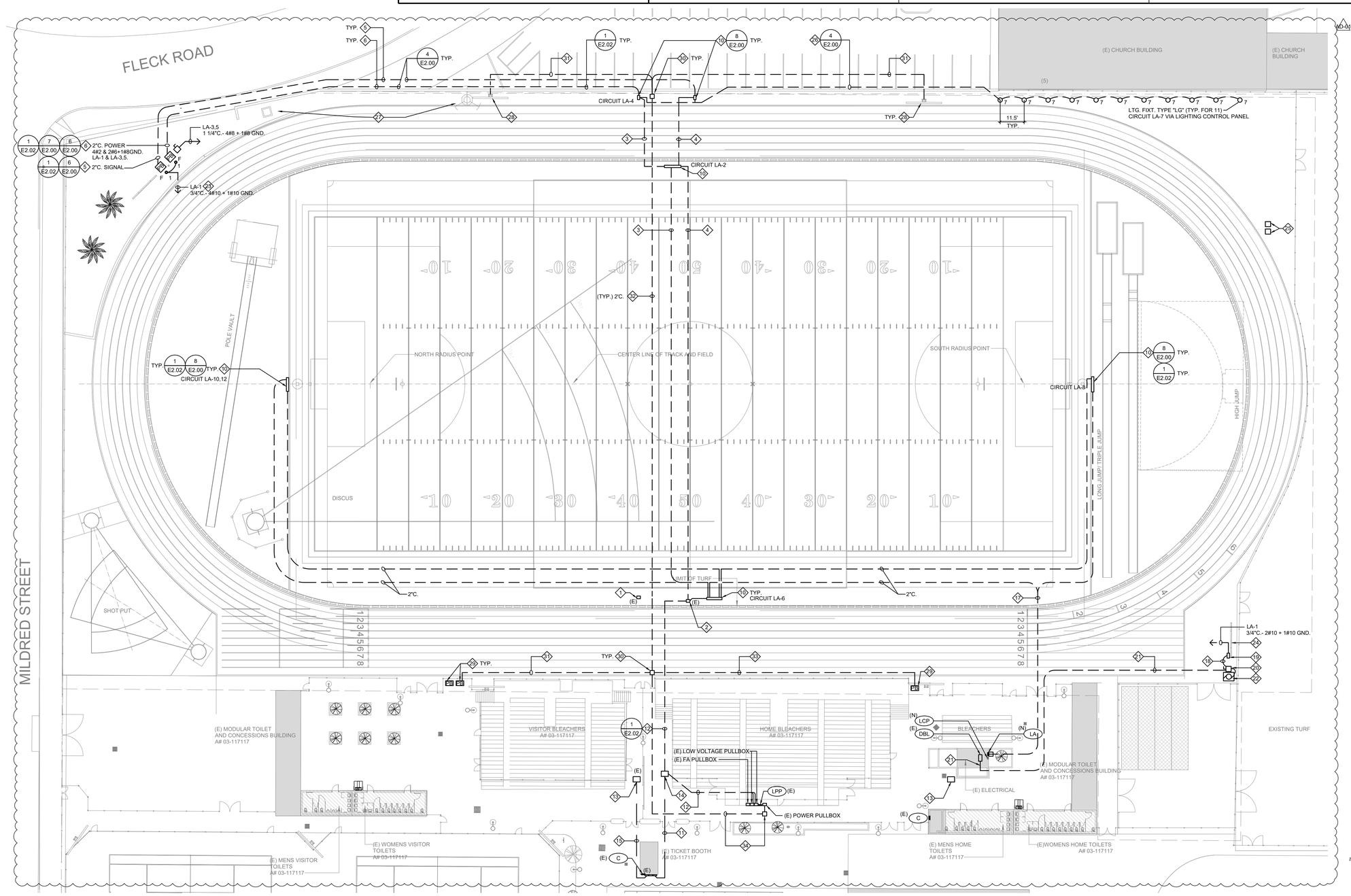
   * BRANCH CIRCUITS - LIGHTING AND POWER.

   a. #12 AWG AND SMALLER, SOLID WIRE TYPE THW OR THHN/THWN, THHW (THHN FOR DRY LOCATION ONLY).

   b. #10 AWG AND LARGER, STRANDED TYPE THW OR THHN/THHW.
6. COORDINATE DEMOLITION WORK WITH ALL RELATED DISCIPLINES INCLUDING ELECTRICAL AND PLUMBING.

KEY NOTES

1. EXISTING POWER SYSTEM CONCRETE PULLBOX.
2. EXISTING SIGNAL SYSTEM CONCRETE PULLBOX.
3. NEW (2) 2" CONDUIT FOR POWER SYSTEM WIRING (TYP.). AD-01
4. NEW (2) 2" CONDUIT FOR SIGNAL SYSTEM CABLES (TYP.) AND (1) 2" SPARE.
5. PROVIDE 24"X 24"X 24" DEEP UNDERGROUND PULL BOX AT EDGE OF FIELD AND TERMINATE (1) 2" CONDUIT FOR SCORE BOARD POWER AD-01
6. PROVIDE 18"X18"X 24" DEEP UNDERGROUND PULL BOX AT EDGE OF FIELD AND TERMINATE (1) 2" CONDUIT FOR SCOREBOARD AND FLAG POLE IN-GROUND LIGHTING.
7. NOT USED. AD-01
8. JUNCTION BOX FOR SCOREBOARD POWER (TYP.)
9. PROVIDE NEMA 3R JUNCTION BOX WITH W.P. COVER. CONTRACTOR SHALL COORDINATE POWER REQUIREMENT WITH APPROVED SCOREBOARD SUBMITTAL. COORDINATE EXACT LOCATIONS IN FIELD.
10. PROVIDE OUTDOOR GROUND BOX EACH FOR POWER AND COMMUNICATION WITH (2) 20A, 1P DUPLEX RECEPTACLE AND COMMUNICATION (2) R-45 DATA JACKS AND PA SYSTEM INPUT. CAT6 CABLES AS REQUIRED. COVER WITH RUBBERIZED SURFACE. AD-01
11. EXIST. (3) 1 1/2"C. PA SYSTEM (1) 3"C. TEL/DATA. AD-01
12. EXIST SIGNAL SYSTEM CONDUIT (3) 1 /2"C. FOR PA. SPARE & TEL/DATA UP TO PRESS BOX.
13. EXISTING POWER SYSTEM PULL BOX.
14. EXISTING SIGNAL SYSTEM PULL BOX PROVIDE NEW COMMUNICATION CABLES TO PRESS BOX. AD-01
15. EXISTING POWER SYSTEM CONDUIT AND WIRES.
16. NOT USED. AD-01
17. NEW (2) 2" CONDUIT PROVIDE NEW 12#6 + 2#8 GND IN ONE AND IN OTHER PROVIDE 4#2 AND 4#6+1#8 GND. TO PANEL BOARD LA. AD-01 4 E2.00 AD-01
18. PROVIDE 3/4" CONDUIT PER MANUFACTURER FOR COACHES SWITCH. AD-01 AD-01
19. COACHES SWITCH MOUNT ON I-BEAM OF EXISTING SCORE BOARD SUPPORT. AD-01
20. PROVIDE 100A, 3P, 250V, W.P. DISCONNECT SWITCH IN NEMA 3R ENCLOSURE.
21. PROVIDE 1-1/2"C., 3#2+1#8 GND TO "DBL" FOR BOOSTER PUMP REFER TO ELECTRICAL SINGLE LINE DIAGRAM.
22. BOOSTER PUMP 15 HP REFER TO LANDSCAPE DRAWINGS FOR EXACT LOCATION AND EXACT REQUIREMENTS. AD-01
23. PROVIDE FLAG POLE LIGHT. LIGHTING CIRCUIT SHALL BE VIA LIGHTING CONTROL PANEL "LCP". AD-01
24. EXISTING POWER DATA CONDUITS FOR EXISTING SCORE BOARD TO BE PROTECTED IN PLACE.
25. EXISTING IRRIGATION CONTROLLERS TO BE PROTECTED IN PLACE.
26. NEW 2" CONDUIT FOR BUILDING FLOOD LIGHTS.
27. PROTECT EXISTING CELL TOWER AND VERIZON VAULT IN PLACE.
28. PROTECT EXISTING MUSCO POLE IN PLACE.
29. PROVIDE AND INSTALL NEW 12"x18" CONCRETE PULLBOX IN NEW LOCATION. EXTEND CONDUIT AND PROVIDE NEW CONDUCTORS FROM EXISTING LIGHT FIXTURES WIRING TO THIS LOCATION (TYP.).
30. NEW 24"x24"x24" DEEP UNDERGROUND PULLBOX EXISTING MUSCO LIGHTING.
31. PROVIDE AND INSTALL 2" CONDUIT WITH 2 # 8 + 1 # 10 GND. AND REQUIRED CONTROL WIRING.
32. PROVIDE AND INSTALL 2" CONDUIT WITH 4 # 8 + 1 # 10 GND. AND REQUIRED CONTROL WIRING.
33. PROVIDE AND INSTALL 2" CONDUIT WITH 6 # 8 + 1 # 10 GND.
34. SAW CUT EXISTING CONCRETE PAD AND INSTALL (1) 2" CONDUIT W/ 8 # 8 + 1 # 10 GND. W/ MUSCO LIGHTING AND TERMINATE AT NEW WEATHER PROOF WALL MOUNTED PULLBOX AND CONNECT TO EXISTING PANEL BOARD "LLP" AND TERMINTE AT EXISTING CIRCUIT BREAKERS. AD-01



ELECTRICAL / SIGNAL SITE PLAN

SCALE: 1"=20'-0" | 1

PLEASE RECYCLE

HMC Architects
3361004000
3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com
VIRGINIA ELAINE MARQUARDT
No. C-33423
06/30/2025
REGISTERED OWNER
LICENSED ARCHITECT
STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

CONSULTANT

PBS ENGINEERS
2100 East Route 66, Suite 210
Glendora, CA 91740
T. 626.650.0350 F. 626.650.0352
www.pbsengineers.com Job no. 2022-011-00
E17249
EXP. 06-30-2026
PROFESSIONAL ENGINEER
ELECTRICAL
STATE OF CALIFORNIA

FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD
EXISTING TRACK AND FIELD REPLACEMENT

SHEET NAME:
ELECTRICAL / SIGNAL SITE PLAN

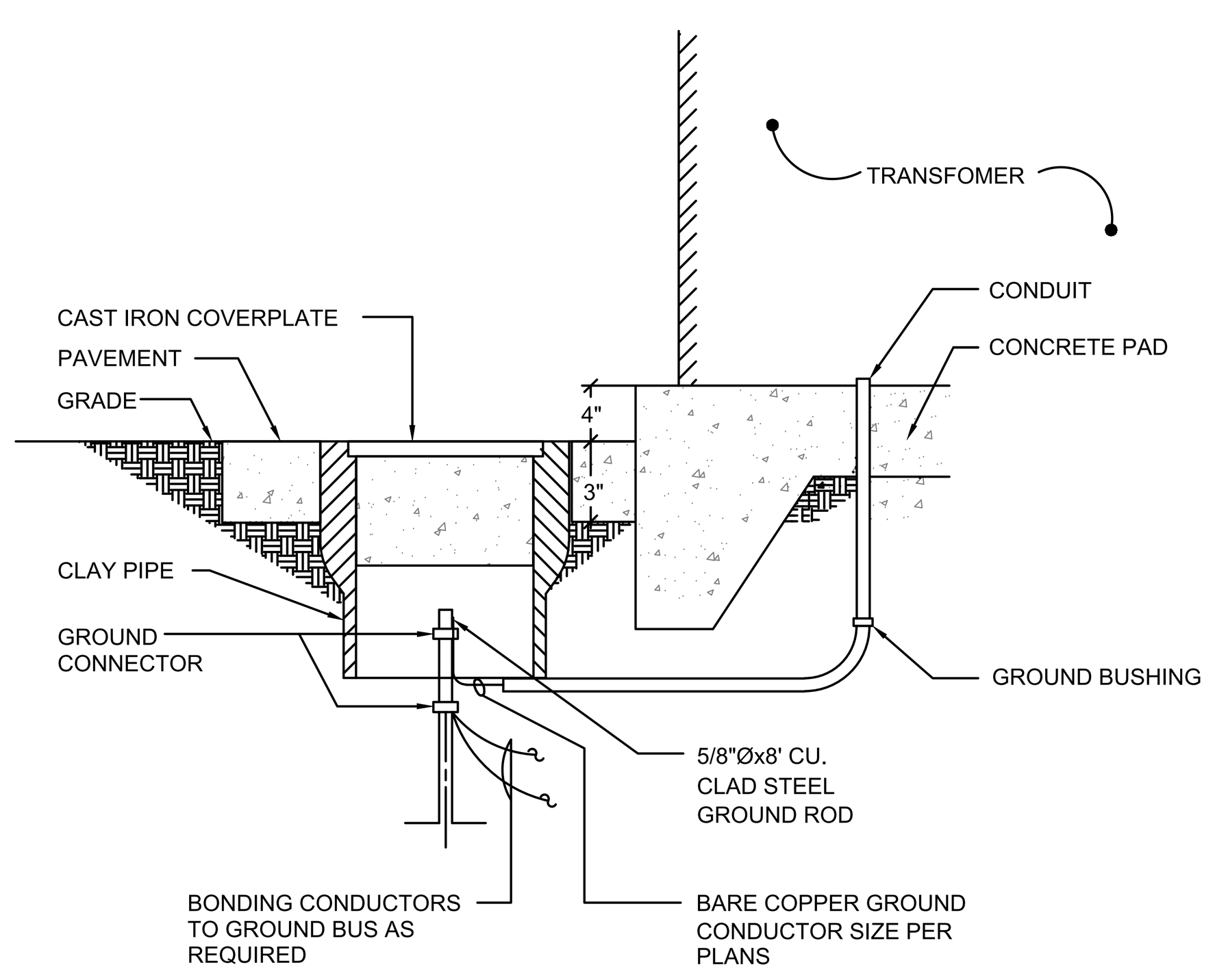
ADDENDUM 01

FAC NO.: XXXXX	BLDG NO.: BLD-XXXXX
DATE: 08/08/2024	CLIENT PROJ NO:

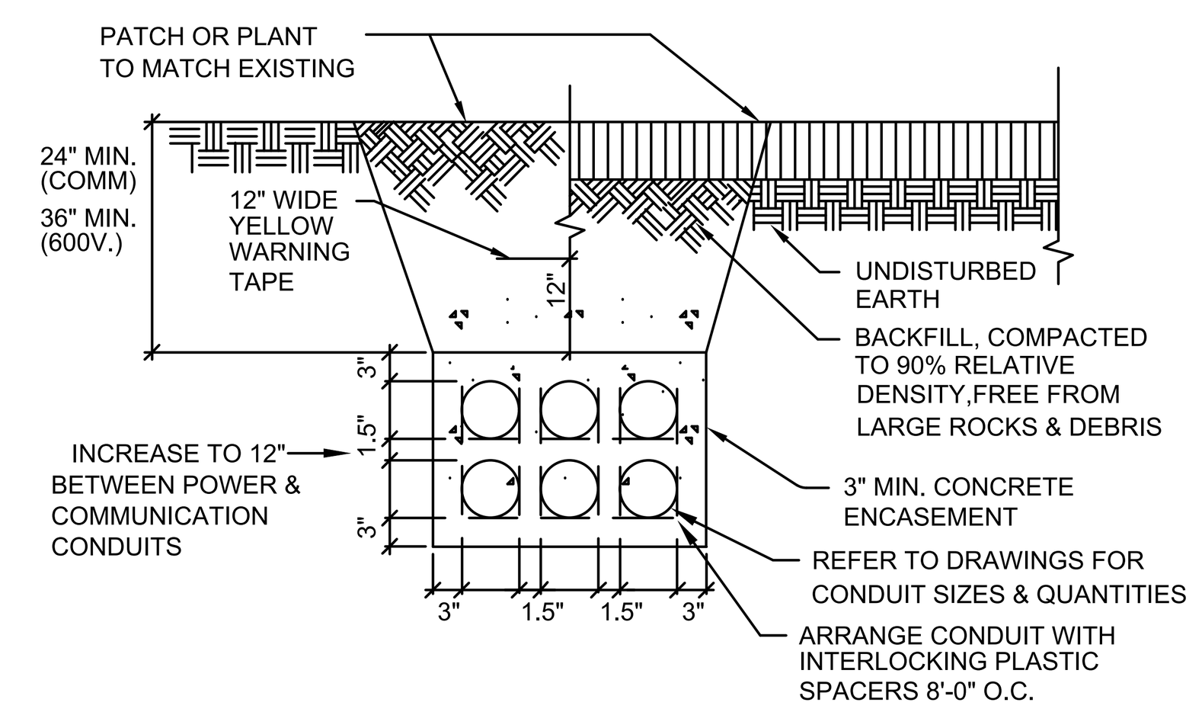
SHEET:

E1.02

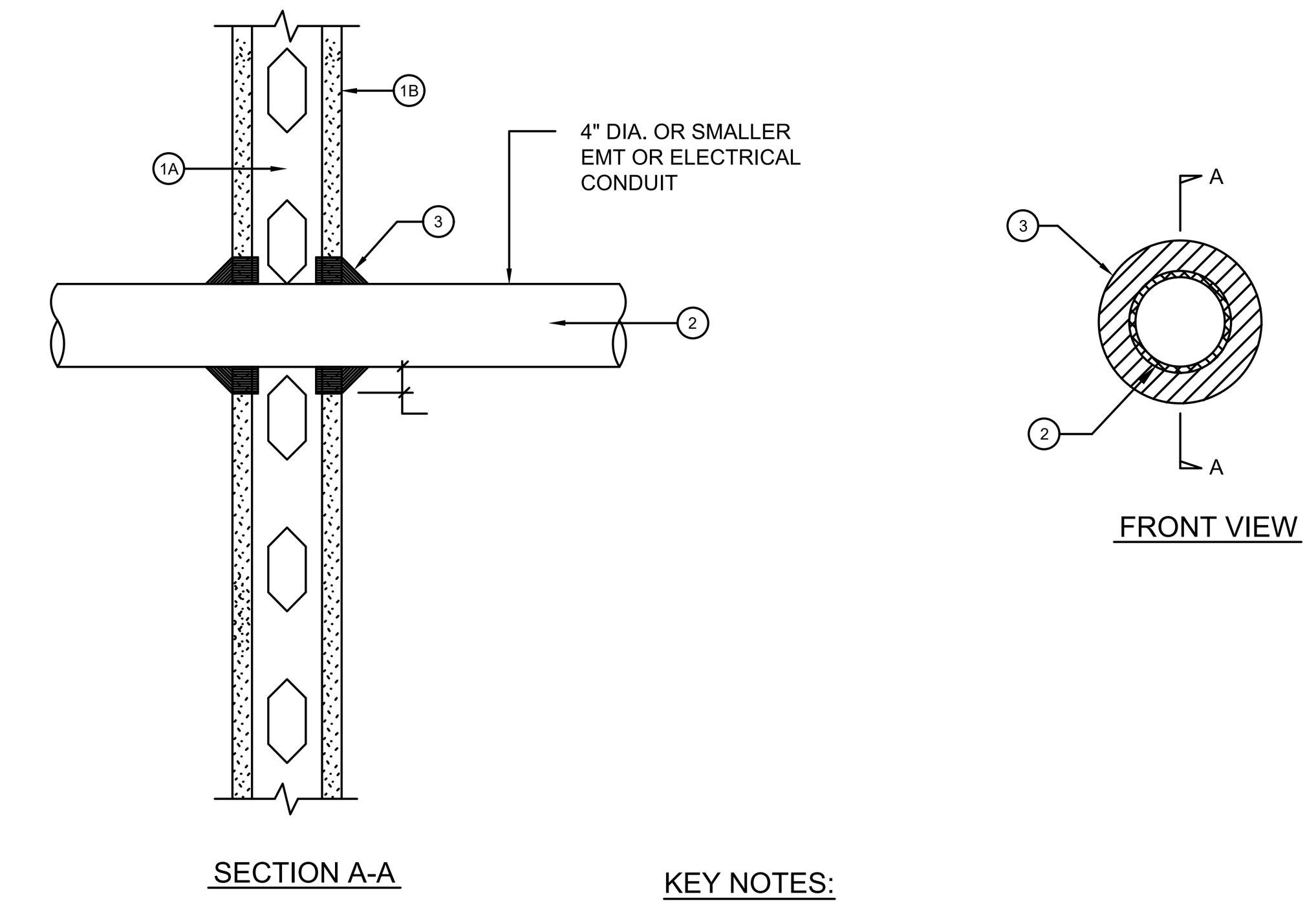
P:_PROJECTS\P-2022\2022-011-00 EMUHSD-El Monte HS Stadium Upgrade\10_BIM-CAD\MEP\E1.02.dwg 8/9/2024 9:02 AM Katherine M. Kiliona



GROUND WELL DETAIL — NOT TO SCALE — 7



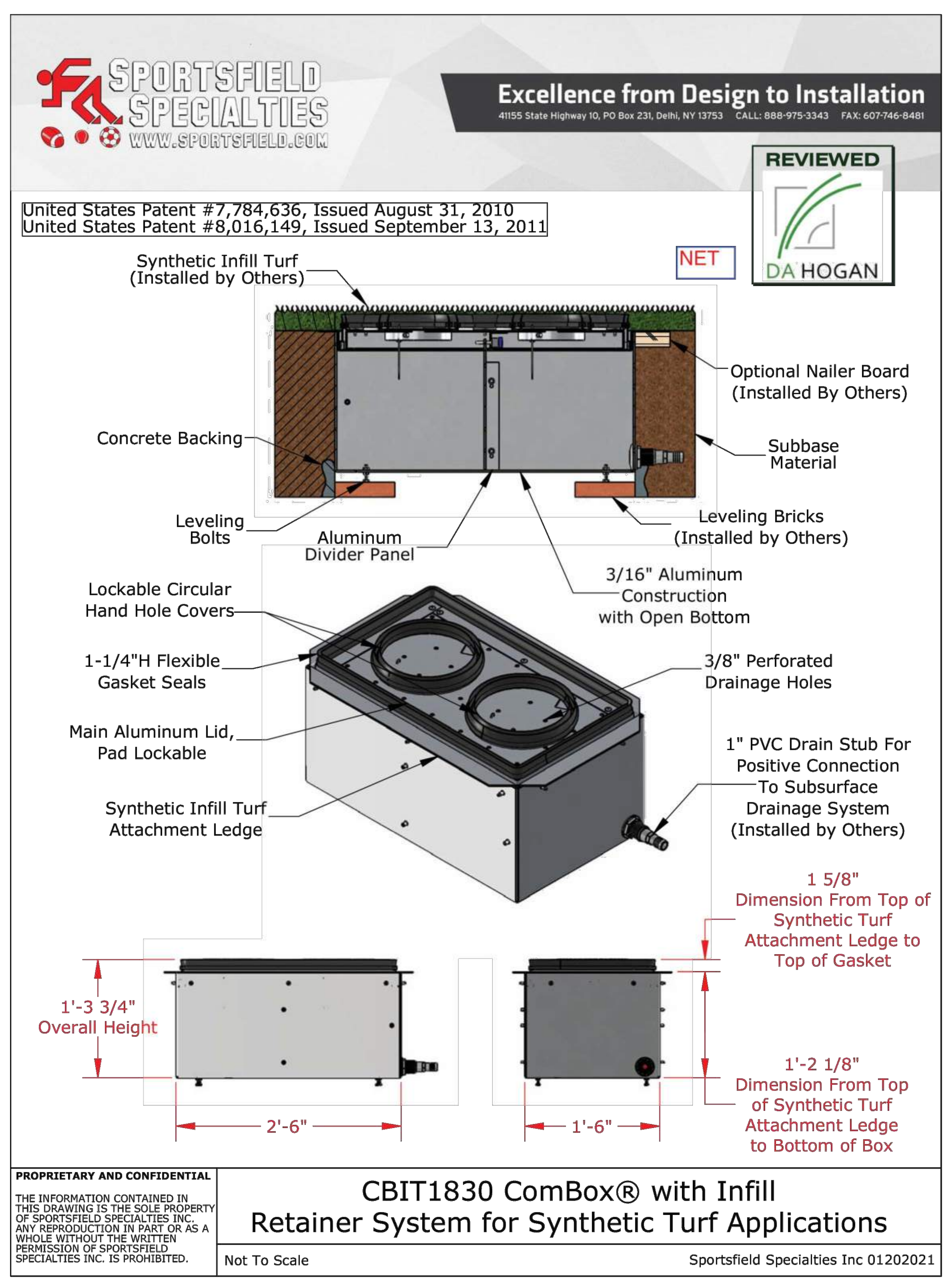
UNDERGROUND MULTI-CONDUIT PLACEMENT DETAIL — NOT TO SCALE — 4



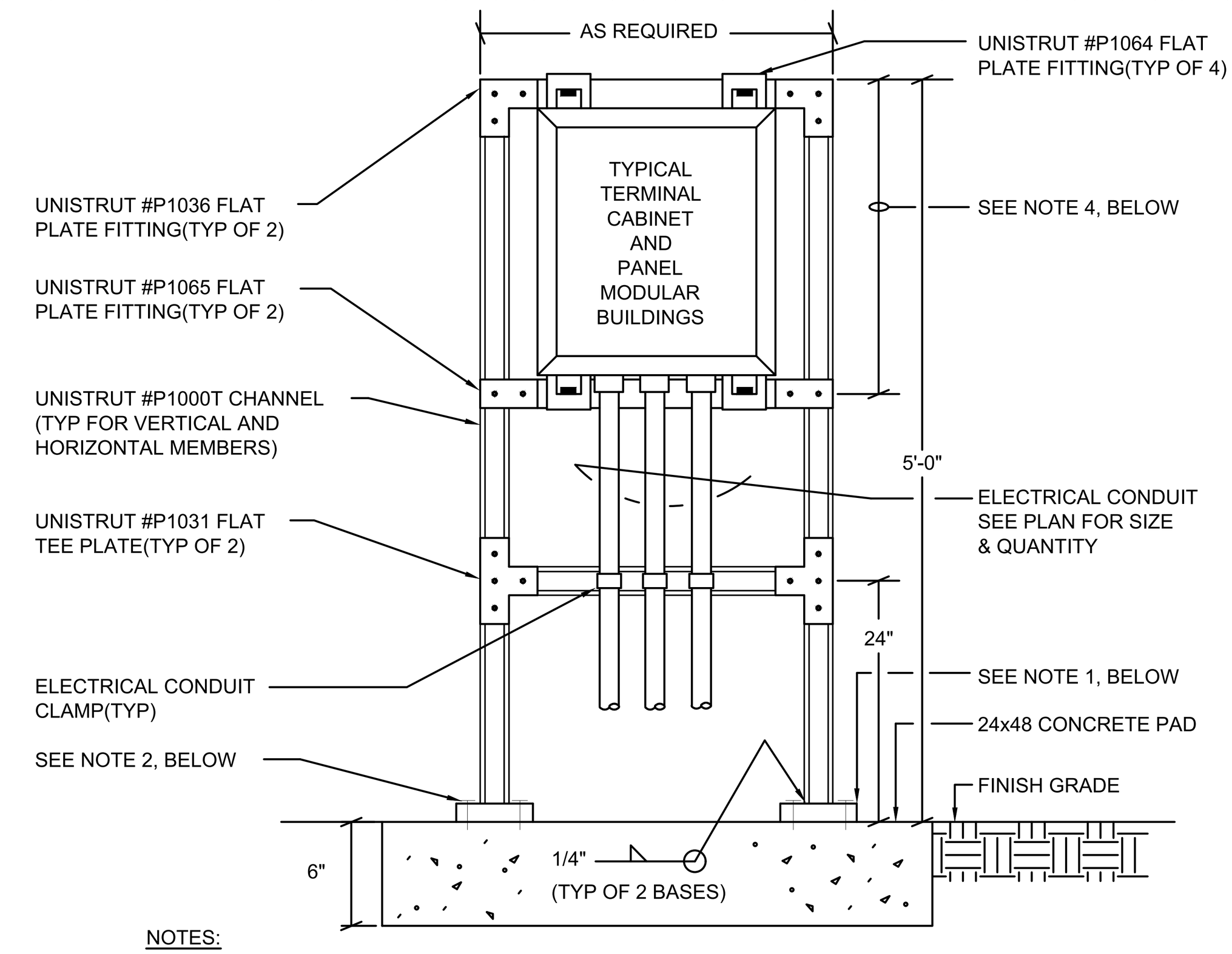
KEY NOTES:

1. WALL CONSTRUCTION:
   - 1A EXISTING STEEL STUD WALL.
   - 1B EXISTING 5/8" TYPE X GYPSUM BOARD AND WALL SURFACE.
2. CONDUIT SIZE PER DRAWINGS
3. U.L. APPROVED SILICON SEALANT. APPLY TO INTERFACE WITH WALL SURFACE. SUBMIT SEALANT TYPE FOR REVIEW AND APPROVAL PRIOR TO APPLICATION.

CONDUIT PENTRATION THRU EXTERIOR WALL DETAIL — NOT TO SCALE — 1



IN GROUND BOX INFORMATION — NOT TO SCALE — 8



NOTES:

1. PROVIDE/INSTALL 6"L x 6"W x 1/4" THICK STEEL PLATE, FOR MOUNTING OF VERTICAL UNISTRUT, HOLE SPACINGS TO BE 4" DIA. TYPICAL FOR TWO BASES.
2. PROVIDE/INSTALL (2) 5/8"Ø X 3" MIN. EMBEDMENT ANCHOR BOLT.
3. PROVIDE/INSTALL ALL UNISTRUT NUTS, STUD NUTS, SCREWS, WASHERS, LOCK WASHERS, ETC.... AS REQUIRED FOR MOUNTING OF ALL UNISTRUT CHANNELS AND PLATES.
4. HEIGHT AS REQUIRED, VERIFY HEIGHT WITH EQUIPMENT MANUFACTURER.

TERMINAL CABINET AND PANEL MOUNTING DETAIL — NOT TO SCALE — 5

1. Floor or Wall Assembly -- Min 4-1/2 in. thick reinforced lightweight or normal weight (100-150 pcf) concrete. Wall may also be constructed of any UL Classified Concrete Blocks *. Max diam of opening is 12 in.

   See Concrete Blocks (CAZT) category in the Fire Resistance Directory for names of manufacturers.

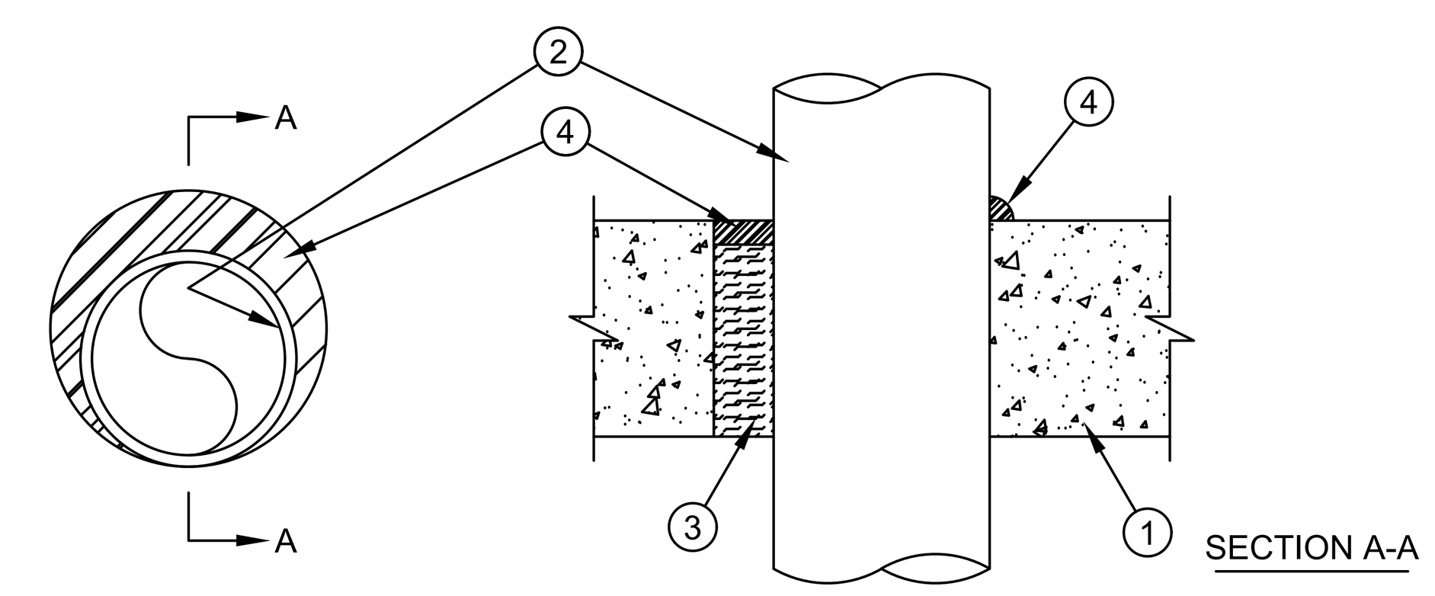
2. Through Penetrants -- One metallic pipe, conduit or tubing to be installed within the firestop system. Pipe, conduit or tubing to be rigidly supported on both sides of floor or wall assembly. The annular space shall be 0 in. (point contact) to max 1-1/4 in. The following types and sizes of metallic pipes, conduits or tubing may be used:
   - A. Steel Pipe -- Nom 10 in. diam (or smaller) Schedule 10 (or heavier) steel pipe.
   - B. Iron Pipe -- Nom 10 in. diam (or smaller) cast or ductile iron pipe.
   - C. Conduit -- Nom 4 in. diam (or smaller) steel electrical metallic tubing or steel conduit.
   - D. Copper Tubing -- Nom 4 in. diam (or smaller) Type L (or heavier) copper tubing.
   - E. Copper Pipe -- Nom 4 in. diam (or smaller) Regular (or heavier) copper pipe.

3. Packing Material -- Min 3 in. thickness of min 4 pcf mineral wool batt insulation for nom 4 in. diam (and smaller) pipes, conduits or tubings and a min 4 in. thickness of min 4 pcf mineral wool batt insulation for pipe greater than nom 4 in. diam, firmly packed into opening as a permanent form. Packing material to be recessed from top surface of floor or from both surfaces of wall as required to accommodate the required thickness of fill material.

4. Fill, Void or Cavity Material* -- Sealant -- Min 1/2 in. thickness of fill material applied within the annulus, flush with the top surface of floor or both surfaces of wall. At the point of contact location between pipe and concrete, a min 1/2 in. diam bead of fill material shall be applied at the concrete/pipe interface on the top surface of floor and on both surfaces of wall. W Rating applies only when CP601S or CP604 sealant is used.
   HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC -- CP601S, CP604, CP606 or FS-ONE Sealant

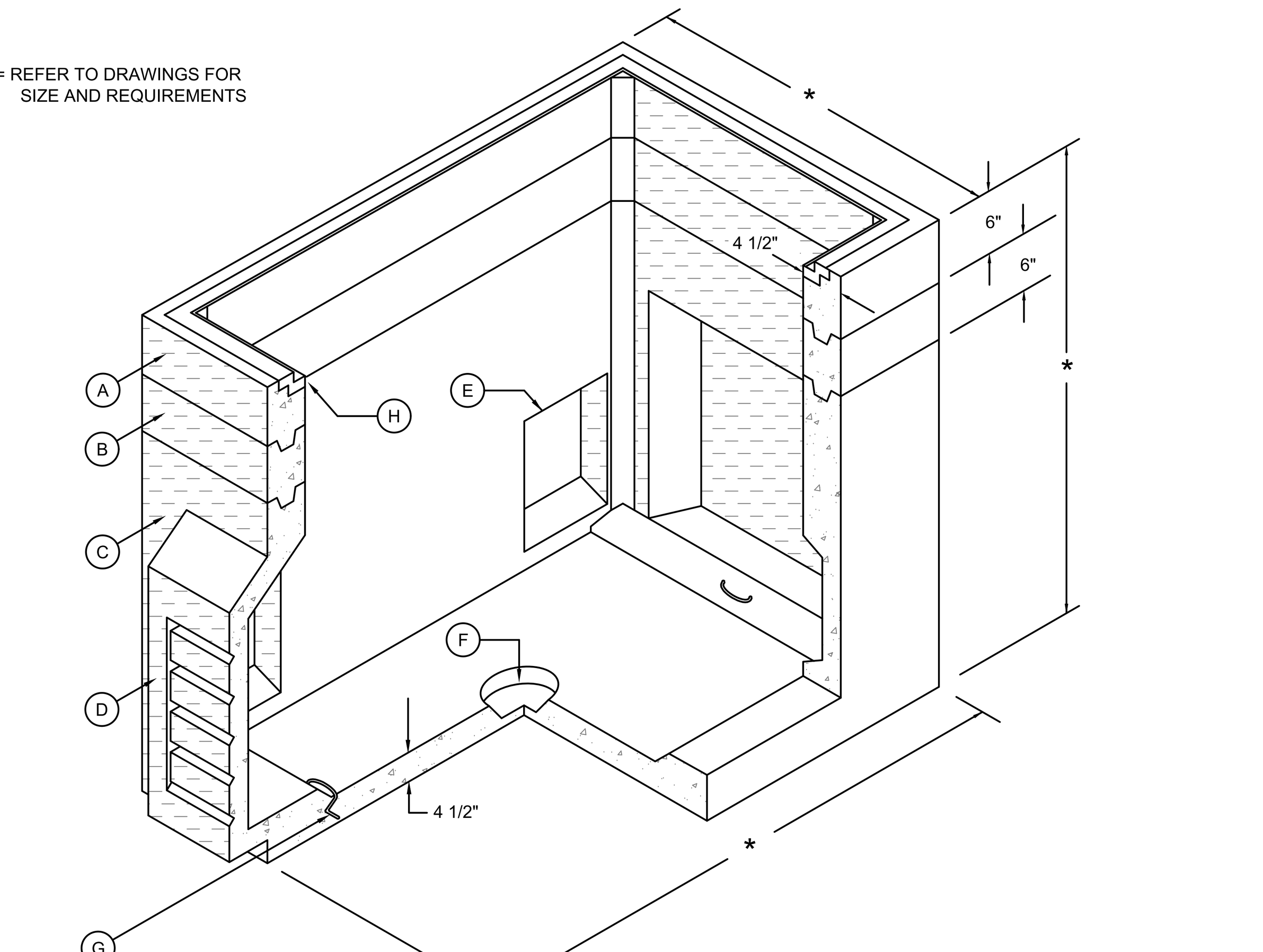
*Bearing the UL Classification Mark

System No. C-AJ-1149
F Rating -- 2 Hr
T Rating -- 0 Hr
L Rating At Ambient -- Less Than 1 CFM/sq ft
L Rating At 400 F -- 4 CFM/sq ft
W Rating -- Class I (See Item 4)



CONDUIT PENETRATION THRU 2-HOUR CONCRETE FLOOR/WALL DETAIL — NOT TO SCALE — 2

* = REFER TO DRAWINGS FOR SIZE AND REQUIREMENTS



- (A) - TOP SECTION
- (B) - EXTENSION SECTION
- (C) - BOTTOM SECTION
- (D) 1'-6" X 2'-2 1/2" X 1'-0" DEEP DUCT
- (E) - KNOCKOUT
- (F) - SUMP
- (G) - PULL IRONS
- (H) - ARMOR FRAME

● ASSEMBLY TO BE PLACED ON 6" BASE COMPACTED ROCK TO INSURE UNIFORM DISTRIBUTION OF SOIL PRESSURE ON FLOOR.

UNDERGROUND PULLBOX DETAIL — NOT TO SCALE — 6

1. Wall Assembly — The 1 or 2 hr fire rated wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features.

   A. Studs — Wall framing shall consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. lumber spaced 16 in. OC. Steel studs to be min 2-1/2 in. wide and spaced max 24 in. OC.
   B. Gypsum Board* — Nom 5/8 in. thick, 4 ft wide with square or tapered edges. The gypsum wallboard type, thickness, number of layers, fastener type and sheet orientation shall be as specified in the individual U300 or U400 Series Design in the Fire Resistance Directory. Max diam of opening is 5-1/2 in. The hourly F and T Ratings of the firestop system is equal to the hourly fire rating of the wall assembly in which it is installed.

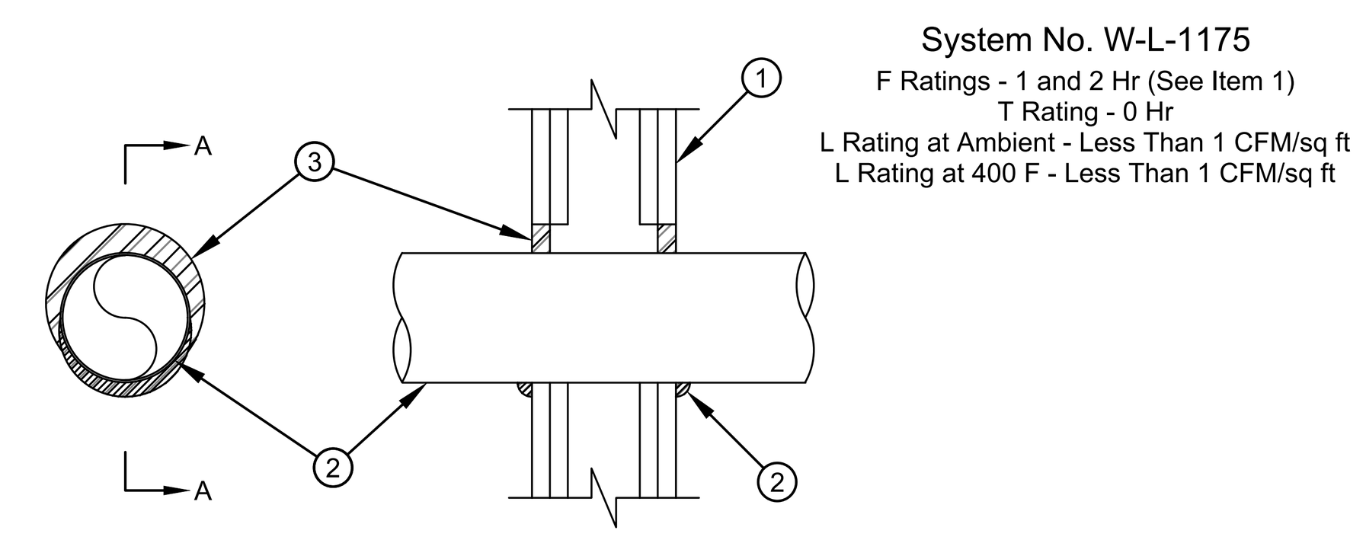
2. Through Penetrant — One metallic tubing or conduit installed concentrically or eccentrically within the firestop system. Tube or conduit to be rigidly supported on both sides of wall assembly. The annular space between the tube or conduit and periphery of the steel sleeve shall be min 0 in. (point contact) to max 1 in. The following types and sizes of metallic tube or conduit may be used:

   A. Conduit — Nom 4 in. diam (or smaller) steel electrical metallic tubing or steel conduit.

3. Fill Void or Cavity Material* — Putty — Min 5/8 in. thickness of fill material applied within the annulus, flush with both surfaces of wall. At point contact location between penetrant and wall, a 1/4 in. crown of fill material shall be applied at the conduit/wall interface on both sides of the assembly, lapping 1/4 in. on the conduit and 1/4 in. beyond the periphery of the opening.
   HILTI INC — CP618 Putty Stick

*Bearing the UL Classification Mark

System No. W-L-1175
F Ratings - 1 and 2 Hr (See Item 1)
T Rating - 0 Hr
L Rating at Ambient - Less Than 1 CFM/sq ft
L Rating at 400 F - Less Than 1 CFM/sq ft



CONDUIT PENETRATION THRU 1-HOUR CONCRETE FLOOR/WALL DETAIL — NOT TO SCALE — 3

HMC Architects
3361004000
3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

LICENSED ARCHITECT — VIRGINIA ELAINE MARQUARDT — No. C-33423 — 06/30/2025 — STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

CONSULTANT

PBS ENGINEERS
2100 East Route 66, Suite 210
Glendora, CA 91740
T. 626.650.0350 F. 626.650.0352
www.pbsengineers.com Job no. 2022-011-00

PROFESSIONAL ENGINEER — E17249 — EXP. 06-30-2026 — ELECTRICAL — STATE OF CALIFORNIA

FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD EXISTING TRACK AND FIELD REPLACEMENT

SHEET NAME:
ELECTRICAL DETAILS

ADDENDUM 01

FAC NO.: XXXXX BLDG NO.: BLD-XXXXX

DATE: 08/08/2024 CLIENT PROJ NO:

SHEET:

E2.00

PLEASE RECYCLE

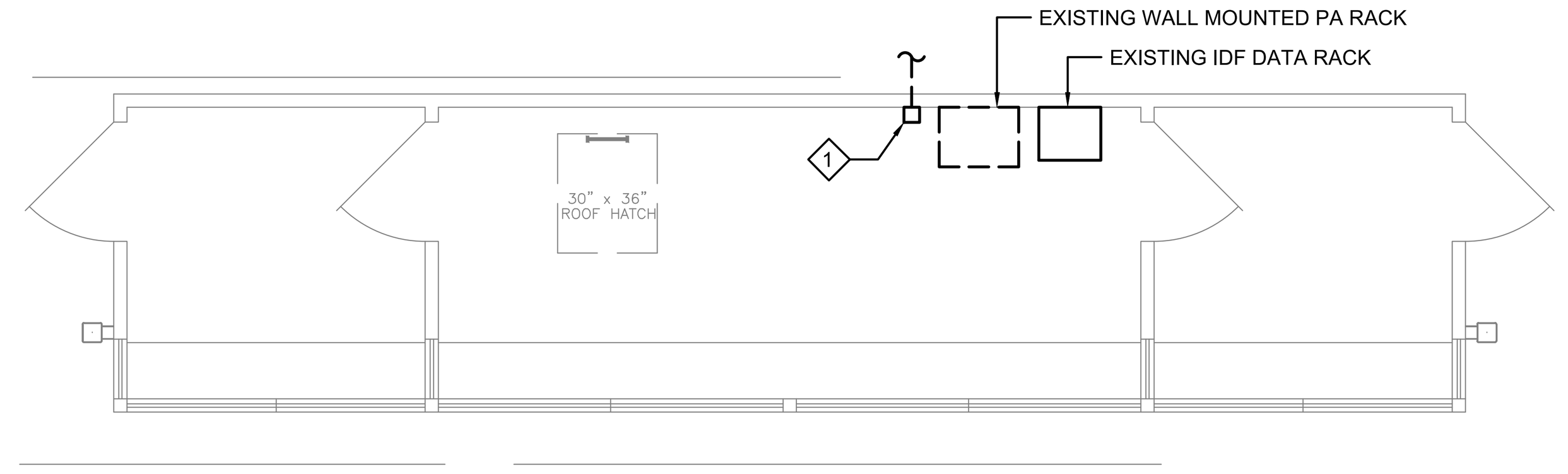
P:_PROJECTS\P-2022\2022-011-00 EMUHSD-El Monte HS Stadium Upgrade\10_BIM-CAD\MEP\E2.00.dwg 8/9/2024 9:02 AM Katherine M. Kiliona

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THIS SHEET'S ORIGINAL PAGE SIZE

P:_PROJECTS\P-2022\2022-011-00 EMUHSD-El Monte HS Stadium Upgrade\10_BIM-CAD\MEP\E2.01.dwg 8/9/2024 9:02 AM Katherine M. Kiliona

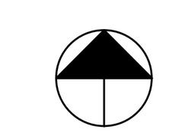
NOT USED

NOT TO SCALE 7



KEY NOTE

1. CONDUITS DROPPING DOWN TO BE ROUTED UNDERGROUND TO UNDERGROUND PULLBOX (1) 2" CONDUIT W/6-STRANDS SINGLE MODE FIBER OPTIC CABLE TO FIELD BOXES.



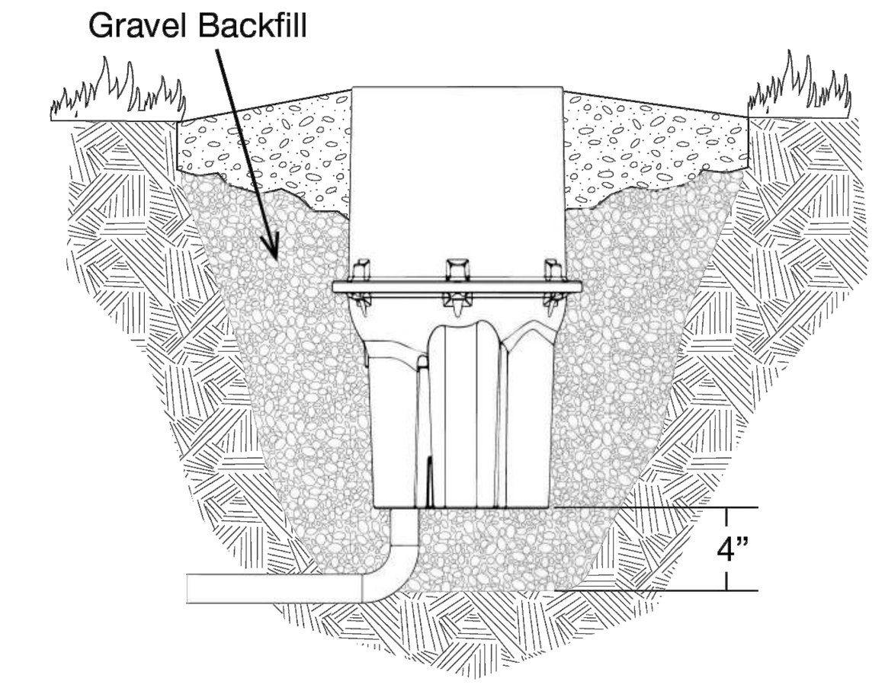
ENLARGED PRESS AOX COMMUNICATION AND DATA PLAN

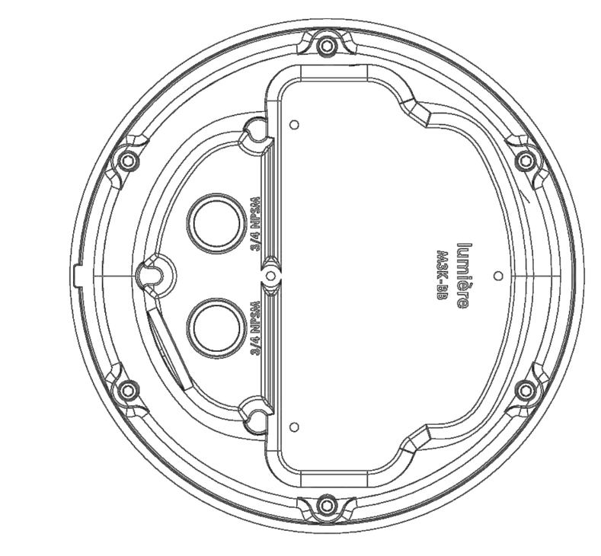
SCALE: 1/4"=1'-0" 4

INSTALLATION NOTES

Caution: To prevent water, dirt and debris from collecting, install fixture to allow runoff. Do not install fixture in areas where water can collect for long periods of time. Appropriate drainage must be provided.

Excavated hole must be approximately 15" in diameter by 20" in depth. Fixture must be installed with a minimum 4" depth of pea gravel or equivalent drainage base. Backfill an additional 8" depth of pea gravel on lower portion of fixture for soil stability. For more detailed installation instructions and warnings consult factory.





Bottom view of recessed housing showing two 3/4 inch NPS conduit entries.

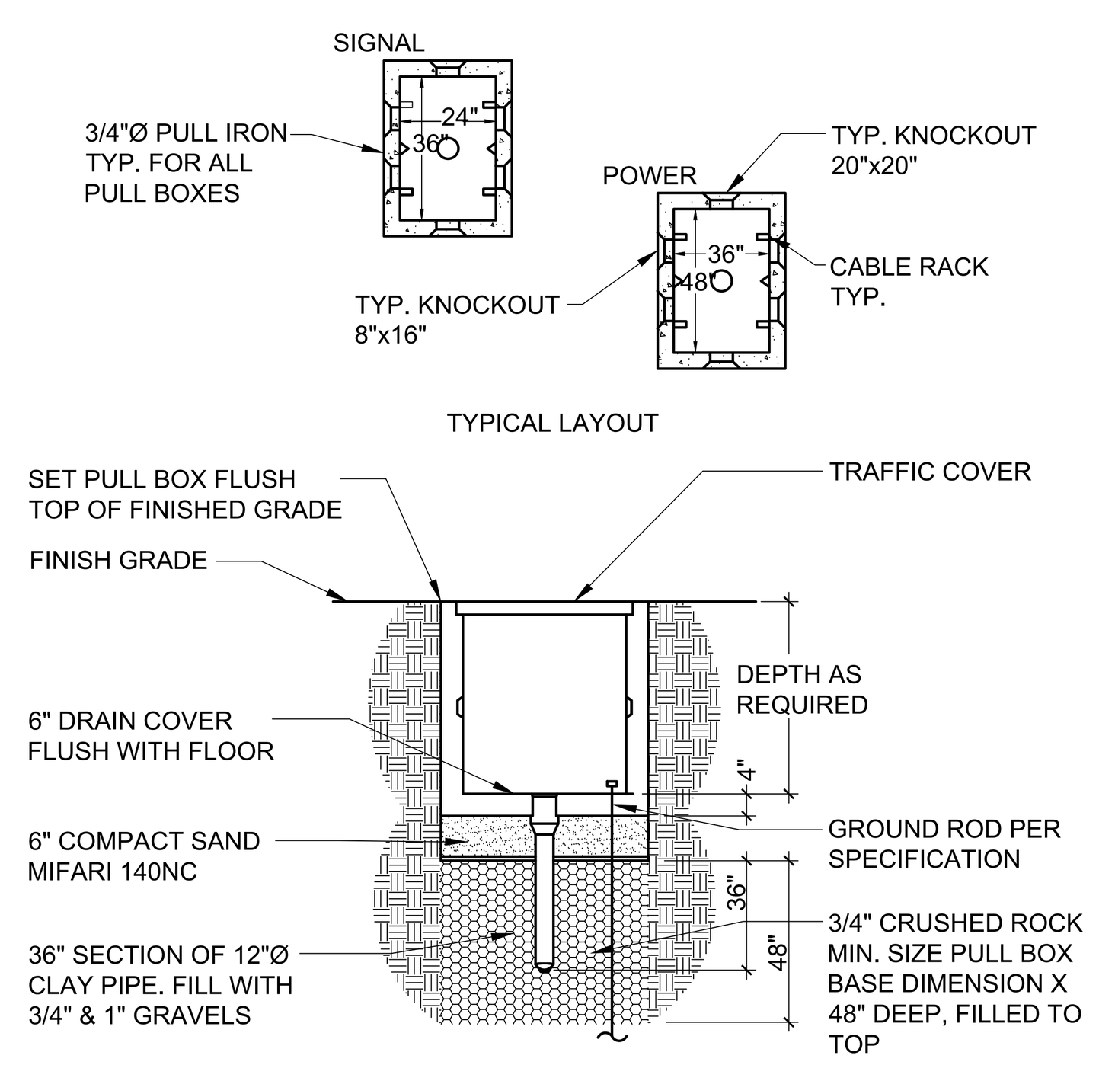
INGRADE MOUNTING DETAIL FOR TYPE "LG" LIGHT FIXTURE

NOT TO SCALE 1

NOT USED

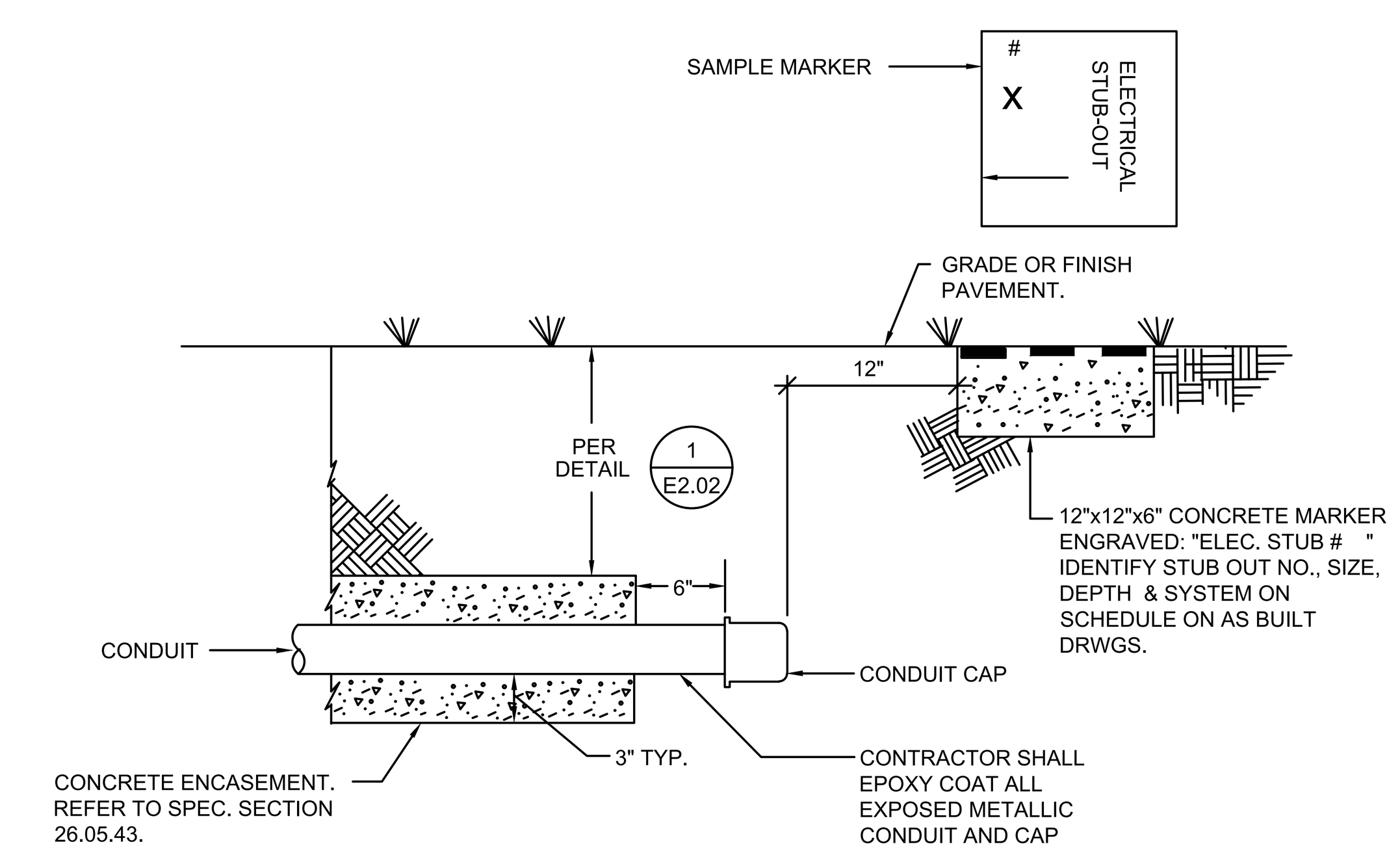
NOT TO SCALE 8

1. IN THE PRECAST CONCRETE PULL BOXES FURNISH AND INSTALL CABLE RACKS ON WALLS INDICATED. EACH RACK SHALL BE EQUIPPED WITH THREE PORCELAIN CABLE HOLDERS ON A VERTICAL STEEL MOUNTING BAR. BOLT HOLES SHALL BE PRE-CAST PULL BOXES QUICKSET UTILITY VAULT SERIES TPB-1001 OR EQUAL WITH STAINLESS STEEL FLAT HEAD SCREWS AND SELF CLEANING HOLES. LOOP ALL CABLES AROUND THE LONGEST LENGTH IN THE PULL BOX.



UNDERGROUND PULLBOX INSTALLATION DETAIL

NOT TO SCALE 5



CONDUIT STUB-OUT SCHEDULE

No.	CONDUIT	DEPTH	SYSTEM	REMARKS
X	2-4"C.	36"	TEL.	(EXAMPLE)

CONDUIT BELOW GRADE STUB-OUT DETAIL

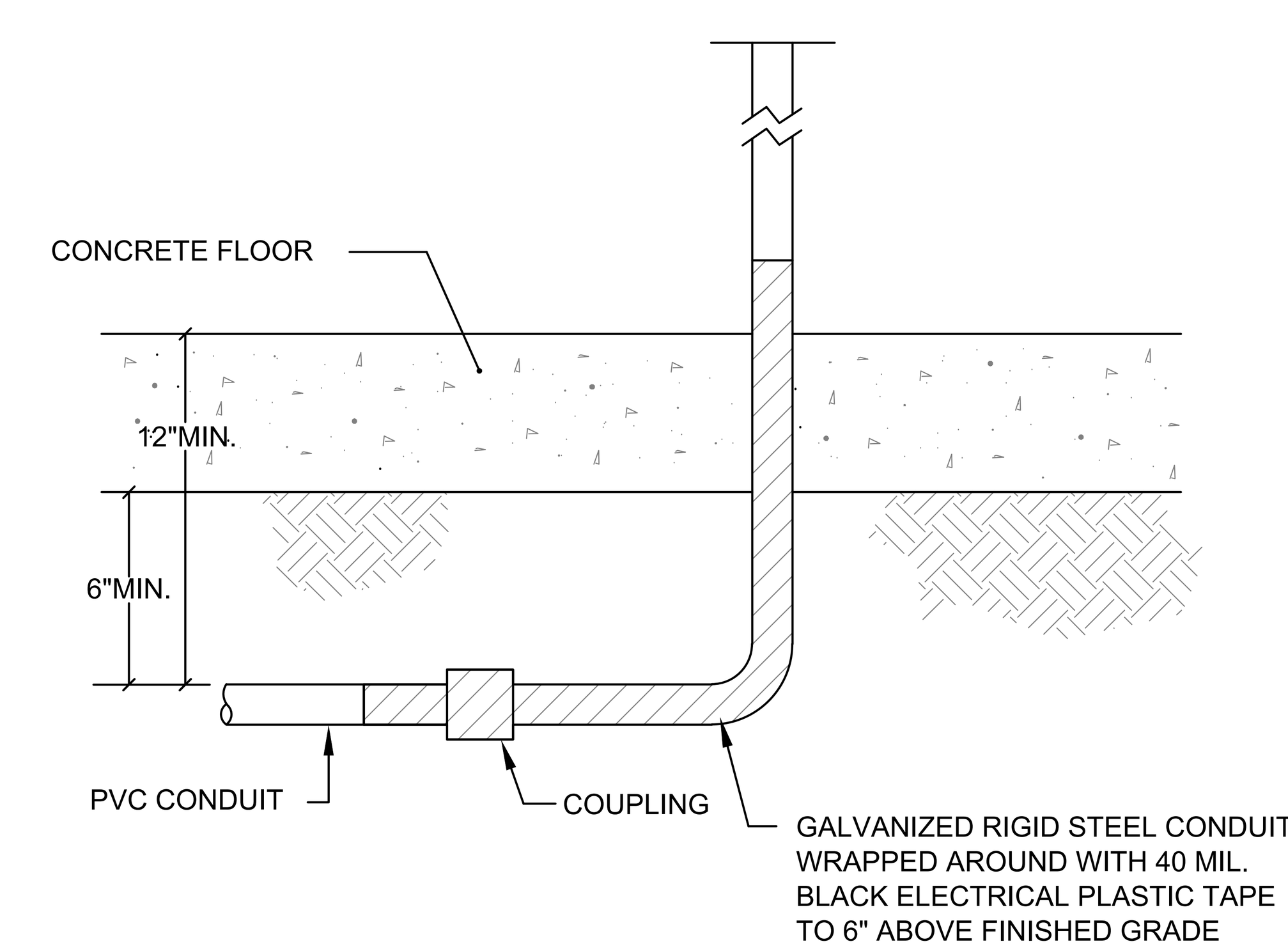
NOT TO SCALE 2

NOT USED

NOT TO SCALE 9

NOT USED

NOT TO SCALE 6



CONDUIT INSTALLED BELOW CONCRETE INSIDE BUILDING DETAIL

NOT TO SCALE 3

HMC Architects

3361004000

3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

LICENSED ARCHITECT VIRGINIA ELAINE MARQUARDT No. C-33423 06/30/2025 RENEWAL DATE STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

CONSULTANT

PBS ENGINEERS

2100 East Route 66, Suite 210
Glendora, CA 91740
T. 626.650.0350 F. 626.650.0352
www.pbsengineers.com Job no. 2022-011-00

REGISTERED PROFESSIONAL ENGINEER E17249 EXP. 06-30-2026 ELECTRICAL STATE OF CALIFORNIA

FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD
EXISTING TRACK AND FIELD REPLACEMENT

SHEET NAME:
ELECTRICAL DETAILS

ADDENDUM 01

FAC NO.: XXXXX | BLDG NO.: BLD-XXXXX

DATE: 08/08/2024 | CLIENT PROJ NO:

SHEET:

AD-01

E2.01

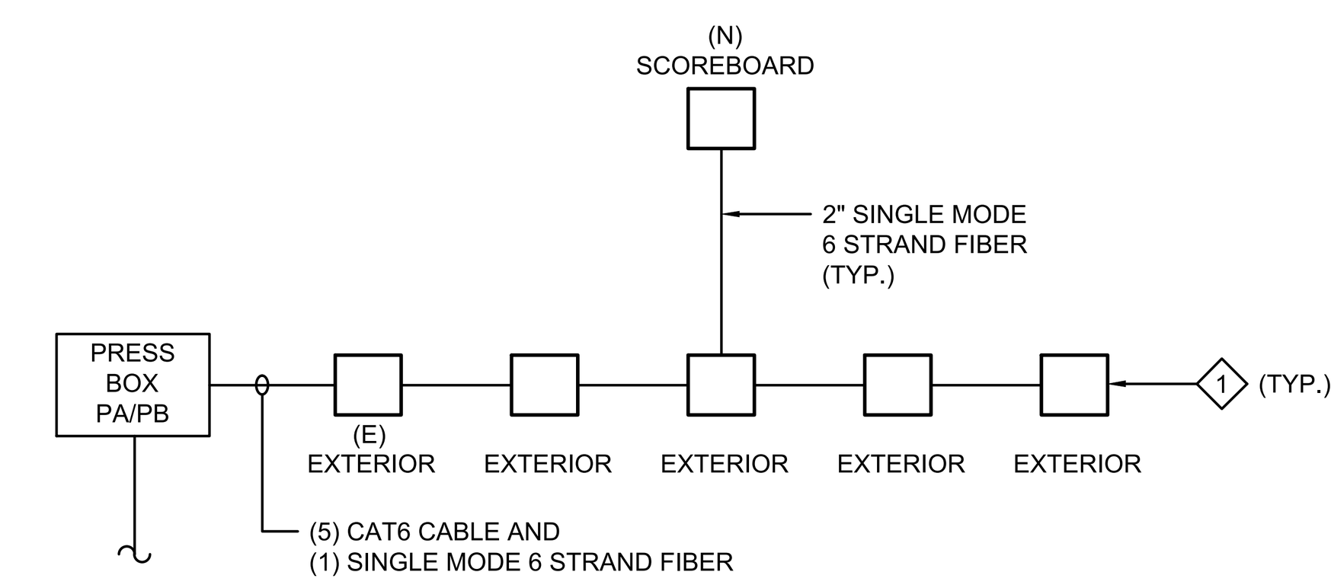
PLEASE RECYCLE

GENERAL NOTE

1. PROVIDE AUTONOMOUS PUBLIC ADDRESS SYSTEM FOR BLEACHERS MOUNT THE PA CABINET IN THE PRESS BOX REFER TO RISER DIAGRAM FOR THE LOCATION. PROVIDE OUTDOOR WP SPEAKER IN PROTECTIVE ENCLOSURE. PROVIDE INDOOR SPEAKERS AS INDICATED AND 15 ADA ACCESSIBILITY HEAD SETS AS PART OF THIS PROJECT SCOPE. PROVIDE MICROPHONE JACKS AND INTERCONNECTION TO MAIN CAMPUS PA SYSTEM.
2. CONTRACTOR TO PROVIDE ALL PULL BOXES 14"X12"X4" DEEP RECESSED MOUNTED WITH HINGED COVER EXACT LOCATION TO BE COORDINATED WITH MODULAR MANUFACTURER.

KEY NOTES

1. SEE COMBINATION UNDERGROUND PULLBOX, SEE DETAIL 8/E2.00 FOR TYPE.



POWER, PUBLIC ADDRESS AND SIGNAL SYSTEM BLOCK DIAGRAM

SIGNAL SYSTEM BLOCK DIAGRAM | NOT TO SCALE | 1

NOT USED | NOT TO SCALE | 2

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THIS SHEET'S ORIGINAL PAGE SIZE

P:_PROJECTS\P-2022\2022-011-00 EMUHSD-El Monte HS Stadium Upgrade\10_BIM-CAD\MEP\E2.02.dwg 8/9/2024 9:02 AM Katherine M. Killona

HMC Architects
3361004000
3546 CONCOURS STREET
ONTARIO, CA 91764
909 989 9979 / www.hmcarchitects.com

LICENSED ARCHITECT VIRGINIA ELAINE MARQUARDT No. C-33423 06/30/2025 RENEWAL DATE STATE OF CALIFORNIA

ISSUE

Δ	DESCRIPTION	DATE
AD-01	ADDENDUM 01	08/08/2024

CONSULTANT

PBS ENGINEERS
2100 East Route 66, Suite 210
Glendora, CA 91740
T. 626.650.0350 F. 626.650.0352
www.pbsengineers.com Job no. 2022-011-00

REGISTERED PROFESSIONAL ENGINEER E17249 EXP: 06-30-2026 ELECTRICAL STATE OF CALIFORNIA

FACILITY:
EL MONTE HIGH SCHOOL
3048 TYLER AVE
EL MONTE, CA 91731

PROJECT:
EL MONTE HIGH SCHOOL TRACK AND FIELD EXISTING TRACK AND FIELD REPLACEMENT

SHEET NAME:
ELECTRICAL AND SIGNAL DETAILS

ADDENDUM 01

FAC NO.: XXXXX | BLDG NO.: BLD-XXXXX
DATE: 08/08/2024 | CLIENT PROJ NO:

SHEET:
AD-01
E2.02

PLEASE RECYCLE