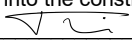


APPLICATION FOR SUBMITTAL OF POST-APPROVAL DOCUMENT

This application is for submittal of documents, after the initial approval of the project (post-approval documents), that require Division of the State Architect (DSA) review and approval. This form shall be completed by the Design Professional in General Responsible Charge of the project, in accordance with California Code of Regulations, Title 24, Part 1, Sections 4-317, 4-323 and 4-338 and in compliance with DSA IR A-6: Construction Change Document Submittal and Approval Process.

DSA documents referenced within this form are available on the [DSA Forms](#) or [DSA Publications](#) webpages.

1. SUBMITTAL TYPE: (Is this a resubmittal? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>)			
Deferred Submittal <input type="checkbox"/>	Addendum Number: 02	Revision Number:	CCD Number: Category A <input type="checkbox"/> or B <input type="checkbox"/>
2. PROJECT INFORMATION:			
School District/Owner: State Center Community College District		DSA File Number: 10 -C3	
Project Name/School: Clovis Community College		DSA Application Number 02 122242	
3. APPLICANT INFORMATION:			
Date Submitted: 04/01/2025		Attached Pages? No <input type="checkbox"/> Yes <input checked="" type="checkbox"/> Number of pages?	
Firm Name: Darden Architects, Inc.		Contact Name: Tony Avila	
Work Email: antonioa@dardenarchitects.com		Work Phone: (559) 448-8051	
Firm Address: 6790 N West Avenue		City: Fresno	State: CA Zip Code: 93711
4. REASON FOR SUBMITTAL: (Check applicable boxes)			
<input checked="" type="checkbox"/> For revision or addendum prior to construction.		<input type="checkbox"/> For a project currently under construction.	
<input type="checkbox"/> For a project that has a form DSA 301-N: <i>Notification of Requirement for Certification</i> , DSA 301-P: <i>Posted Notification of Requirement for Certification</i> or a 90-Day Letter issued.			
<input type="checkbox"/> To obtain DSA approval of an existing uncertified building or buildings.			
<input type="checkbox"/> For Category B CCD this is: <input type="checkbox"/> a voluntary submittal, <input type="checkbox"/> a DSA required submittal (attach DSA notice requiring submission).			
5. DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE:			
Name of the Design Professional In General Responsible Charge: Antonio Avila			
Professional License Number: C26235		Discipline: Architect	
Design Professional in General Responsible Charge Statement: The attached post-approval documents have been examined by me for design intent and appear to meet the appropriate requirements of Title 24, California Code of Regulations and the project specifications. They are acceptable for incorporation into the construction of the project. Signature: 			
DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE			
6. CONFIRMATION, DESCRIPTION AND LISTING OF DOCUMENTS:			
For addenda, revisions, or CCDs: CHECK THIS BOX <input checked="" type="checkbox"/> to confirm that <i>all</i> post-approval documents have been stamped and signed by the Responsible Design Professional listed on form DSA 1: <i>Application for Approval of Plans and Specifications</i> for this project. (For <i>Deferred Submittals</i> , refer to IR A-18: <i>Use of Construction Documents Prepared by Other Professionals</i> , and IR A-19: <i>Design Professional's Signature and Seal (Stamp) on Construction Documents</i> , when applicable, for signature and seal requirements.)			
Provide a brief description of construction scope for this post-approval document (attach additional sheets if needed): Addendum No. 01			
List of DSA-approved drawings affected by this post-approval document: Please see the attached summary narrative.			

DSA USE ONLY		
SSS _____ Date _____ <input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Not Required Comments: _____ FLS _____ Date _____ <input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Not Required Comments: _____ ACS _____ Date _____ <input type="checkbox"/> Approved <input type="checkbox"/> Disapproved <input type="checkbox"/> Not Required Comments: _____	Returned Date: _____ By: _____	DSA STAMP

ADDENDUM NO. 02

DATE: 04/07/2025

PROJECT:

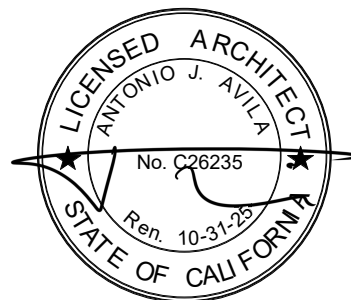
CLOVIS COMMUNITY COLLEGE SPORTS COMPLEX
Fresno, CA 93730
2425-22

OWNER:

STATE CENTER COMMUNITY COLLEGE DISTRICT
1171 Fulton St, Floor 5
Fresno, CA 93721

ARCHITECT:

DARDEN ARCHITECTS, INC.
Attention:
6790 N. West Avenue
Fresno, California 93711
T. (559) 448-8051
F. (559) 446-1765



DARDEN PROJECT NO. 2175
DSA File Nos. 10-C3
DSA APPL. NO. 02-122242

It will be the responsibility of the General Contractor to submit the information contained in this addendum to all its subcontractors and suppliers. Acknowledge receipt of this Addendum in the space provided on the Bid Form. Failure to do so may subject Bidder to disqualification.

The following additions, deletions, and revisions to the SHEETS and Project Manual are hereby made and do become a part of these Contract Documents.

PROJECT:

ADDENDUM NO.02 DATE:04/072025
PAGE 2

INDEX OF ADDENDA TRANSMITTED HEREWITH

PROJECT MANUAL:

SPECIFICATIONS:

CHANGES TO SPECIFICATIONS AD02-SP01

SHEETS:

CHANGES TO SHEETS:

ELECTRICAL AD02-E01 THRU AD02-E04
INFORMATION TECHNOLOGY AD02-T01 THRU AD02-T04

ATTACHMENTS:

DOCUMENTS OR SPECIFICATIONS:

231300 INTERCOMMUNICATION SYSTEMS.....(Pages 1 thru 21)

SHEETS:

ELECTRICAL AD02-EX01 thru AD02-EX04.
INFORMATION TECHNOLOGY AD02-TX01 thru AD02-TX04.

PROJECT:

ADDENDUM NO.02..... DATE:04/072025
PAGE 3

PROJECT MANUAL:

SPECIFICATIONS:

CHANGES TO SPECIFICATIONS:

AD02-SP01 Refer to Specification Section 271300, SECTION TITLE: INTERCOMMUNICATION SYSTEMS

Replace Section in its entirety. Specific change as noted below.

1. Revise 1.3, D to reference the 'Current Edition" of Telecommunications Standards.
2. Revise 2.2, B, (1).
3. Revise 2.2, C, (14).
4. Remove 2.3.
5. Revise 2.5, B, (n).
6. Revise 2.6, B, (3).
7. Revise 3.3, A, (n).
8. Revise 3.9, B, (2).
9. Revise 3.9, C

SHEETS:

CHANGES TO SHEETS:

ELECTRICAL:

AD02-E01 Refer to Sheet X/E202, and attached drawing AD02-EX01:

1. Refer to panel schedule 2E1. Added dedicated circuits 13 & 15 for remote IDF cabinet.

AD02-E02 Refer to Sheet SD/E101, and attached drawing AD02-EX02:

1. Refer to Site Plan. Relocated Press Box IDF cabinet.
2. Refer to Site Plan Reference Notes. Modified reference notes 8.

AD02-E03 Refer to Sheet SD/E102, and attached drawing AD02-EX03:

1. Refer to Site Plan. Relocated Press Box IDF cabinet.
2. Refer to Site Plan. Added emergency power circuits 2E1-13 &15 for remote IDF cabinet.
3. Refer to Site Plan Reference Notes. Modified reference notes 16 and 17.
4. Refer to detail 2/SD/E102. Added two exterior building mounted wireless access points.
5. Refer to detail 1/SD/E102. Relocated IDF cabinet and changed to pad mounted NEMA 3R enclosure.
6. Refer to detail 1/SD/E102. Added emergency power pullbox, conduit, and circuits for remote IDF cabinet.

PROJECT:

ADDENDUM NO.02 DATE:04/072025
PAGE 4

7. Refer to detail 1/SD/E102. Added communications J-box at press box.
8. Refer to detail 1/SD/E102. Modified A/V conduit callout.
9. Refer to Press Box reference notes. Added references notes 6 and 7. Modified reference notes 2 and 4.

AD02-E04 Refer to Sheet A/E201, and attached drawing AD02-EX04:

1. Revise wall location and equipment layout in Data 118.

INFORMATION TECHNOLOGY:

AD02-T01 Refer to Sheet X/T101, and attached drawing AD02-TX01:

1. Delete General Audio Visual Plan Notes.
2. Remove not applicable sheet cross reference from General Communication Plan Notes 'I'.
3. Refer to B.O.D. - Building Distribution Frame (BFD) Room Equipment Schedule. Revise part numbers for CAT6A Modular Jacks, Vertical Cable Manager, & UPS. Remove Wire Mesh Basket Tray. Add 4-Post Rack and Rack Mount PDU make and model information,
4. Refer to B.O.D. – Cabling Schedule. Revise part number for Indoor CAT6A cable.
5. Refer to B.O.D. – Miscellaneous System Components Schedule. Add exterior and interior IP speaker make and model information.

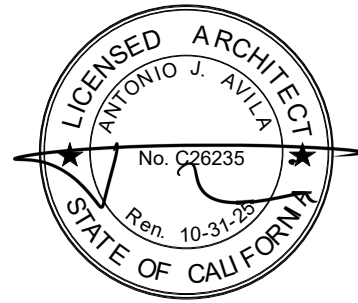
AD02-T02 Refer to Sheet X/T201, and attached drawing AD02-TX02:

1. Refer to Riser Diagram General Notes. Remove notes 3 & 4 regarding patch cords and cables.
2. Refer to Cabling Schedule. Revise CAT6A cable part number.
3. Refer to Cabling Schedule. Delete OSP25, CAT3 Telephone Cable.
4. Refer to Riser Diagram. Delete OSP25, CAT3 Telephone Cable and associated 110 Terminal Block shown between Bldg. 11 MDF and Sport Center Bldg. BDF.
5. Refer to Riser Diagram. Add Service Loops fiber optic cables.
6. Refer to Riser Diagram. Remove "By Others" note from graphic symbol of UPS's.
7. Refer to Riser Diagram. Revise Bldg. 11 Data Room designation from Data 113T to AC1-133.
8. Refer to Riser Diagram. Add (3) wall phone outlets. Add IP speakers. Add a data outlet at Future Musco Equipment.
9. Refer to Riser Diagram. Revise the fiber optic cable shown between Sport Center Bldg. BDF and Press Box remote IDF from cable type SM12 to SM24.
10. Refer to Riser Diagram Reference Notes. Modified note 4 and added notes 14 and 15 to plans.
11. Refer to Riser Diagram. Added exterior WAPs at Pressbox and modified cable counts accordingly.
12. Refer to Riser Diagram. Modified conduit/cable routing between Pressbox and remote IDF.

AD02-T03 Refer to Sheet X/T302, and attached drawing AD02-TX03:

1. Refer to Detail 1. Revise the note regarding CAT6A Patch Cord length. Revise the dimensional requirement for the Vertical Cable Managers.
2. Refer to Detail 2. Revise the Detail to remove the Unistrut wall attachment and connect the cable runway support bracket directly through the plywood backboard and into wood blocking.

SECTION 27 13 00 - INTERCOMMUNICATION SYSTEMS



PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section Includes:
 - 1. Telecommunications Cabling at the new or remodeled buildings for the project. Backbone and horizontal cabling comprised of copper and fiber cabling, and support systems are covered under this document.
 - 2. The Horizontal (workstation) Cabling System shall consist of a minimum of three (3) 4-pair Unshielded Twisted Pair (UTP) Copper Cables to each work area outlet unless otherwise noted for specific locations. The cables shall be installed from the Work Area Outlet to the Telecommunications Room (TR) located on the same floor, and routed to the appropriate rack serving that area and terminated as specified in this document.
 - 3. All cables and related terminations, support and grounding hardware shall be furnished, installed, wired, tested, labeled, and documented by the Telecommunications contractor as detailed in this document.
 - 4. Product specifications, general design considerations, and installation guidelines are provided in this document. Quantities of telecommunications outlets, typical installation details, cable routing and outlet types will be provided as an attachment to this document. If the bid documents are in conflict, this specification shall take precedence. The successful vendor shall meet or exceed all requirements for the cable system described in this document.

1.3 REGULATORY REFERENCES

- A. All work and materials shall conform in every detail to the rules and requirements of the National Fire Protection Association, the local Electrical Code and present manufacturing standards.
- B. All materials shall be UL Listed and shall be marked as such. If UL has no published standards for a particular item, then other national independent testing standards shall apply and such items shall bear those labels. Where UL has an applicable system listing and label, the entire system shall be so labeled.
- C. All modular jacks, patch cords, consolidation point, and patch cords performance shall be verified (not just tested) by a third party to be category 6A component and channel compliant.

- D. The cabling system described in this is derived from the recommendations made in recognized telecommunications industry standards. The current edition of following documents are incorporated by reference:
1. ANSI/TIA/EIA - 568-C.0, Generic Telecommunications Cabling for Customer Premises
 2. ANSI/TIA/EIA - 568-C.1, Commercial Building Telecommunications Cabling Standard.
 3. ANSI/TIA/EIA - 568-C.2, Balanced Twisted Pair Cabling Components, Addendum 1 –
 4. ANSI/TIA/EIA - 568-C.3, Optical Fiber Cabling Components
 5. ANSI/TIA/EIA – 569-A, Commercial Building Standard for Telecommunications Pathways and Spaces.
 6. ANSI/TIA/EIA – 606-A, Administration Standard for Telecommunications Infrastructure of Commercial Buildings.
 7. ANSI/TIA/EIA – 607-A, Commercial Building Grounding and Bonding Requirements for Telecommunications.
 8. ANSI/ TIA/EIA – 758, Customer-Owned Outside Plant Telecommunications Cabling Standard.
 9. BICSI - TDMM, Building Industries Consulting Services International, Telecommunications Distribution Methods Manual (TDMM) – Current Edition.
 10. California Electrical Code (CEC) –2022.
- E. If this document and any of the documents listed above are in conflict, then the more stringent requirement shall apply. All documents listed are believed to be the most current releases of the documents. The Contractor has the responsibility to determine and adhere to the most recent release when developing the proposal for installation.
- F. This document does not replace any code, either partially or wholly. The contractor must be aware of local codes that may impact this project.

1.4 APPROVED CONTRACTOR

- A. The Telecommunications Contractor must be a Certified Installer for the products and/or system being supplied. A copy of certification documents must be submitted with the quote in order for such quote to be valid. The Telecommunications contractor is responsible for workmanship and installation practices in accordance with said certification. At least (1) for every (3) members of the copper installation and termination crew must be certified to a Technician Level of training by the product manufacturer or BICSI. At least (1) for every (5) members of the optical fiber installation and termination crew must be certified by the product manufacturer or other approved organizations in Optical Fiber installation and termination practices.

1.5 WORK INCLUDED

- A. The work included under this specification consists of furnishing all labor, equipment, materials, and supplies and performing all operations necessary to complete the installation of this structured cabling system in compliance with the specifications and drawings. The Telecommunications contractor will provide and install all of the required material to form a complete system.
- B. The work shall include, but not be limited to the following:
1. Furnish and install a complete telecommunications wiring infrastructure as described on the plans and in these specifications.

2. Furnish, install, and terminate all UTP and Optical Fiber cable.
3. Furnish and install all wall plates, jacks, patch panels, and patch cords.
4. Furnish and install all required cabinets and/or racks as required and as indicated.
5. Furnish any other material required to form a complete system.
6. Perform link testing (100% of horizontal and/or backbone links) and certification of all components.
7. Furnish test results of all cabling to the owner on disk and paper format, listed by each closet, then by workstation ID.
8. Adhere and comply with all requirements of the product certification and warranty programs (sufficient to be able to provide and extend the manufacturer's extended warranty).
9. Provide owner training and documentation. (Testing documentation and As-built drawings).

1.6 SUBMITTALS

- A. Under the provisions of this request for proposal, prior to the start of work the telecommunications contractor shall:
 1. Submit copies of the certification of the company and names of staff that will be performing the installation and termination of the installation to provide proof of compliance of this spec.
 2. Submit proof from manufacturer of contractor's good standing in manufacturer's program.
 3. Submit appropriate cut sheets and samples for all products, hardware and cabling with highlighted or otherwise denoted specific products to be used. If product cut-sheets are submitted without specific products highlighted the engineer shall return submittal immediately with "Revise and Resubmit" response.
- B. Work shall not proceed without the Owner's approval of the submitted items.
- C. The telecommunications contractor shall receive approval from the Owners on all substitutions of material. No substituted materials shall be installed except by written approval from the Owner.

1.7 QUALITY ASSURANCE

- A. The telecommunications contractor shall staff the project with qualified personnel. All products shall be new and in good condition.

1.8 DELIVERY, STORAGE AND HANDLING

- A. Delivery and receipt of products shall be at the site described in the Scope Section.
- B. Cable shall be stored according to manufacturer's recommendations as a minimum. In addition, cable must be stored in a location protected from vandalism and weather. If cable is stored outside, it must be covered with opaque plastic or canvas with provision for ventilation to prevent condensation and for protection from weather. If air temperature at cable storage

location will be below 40 degrees F., the cable shall be moved to a heated (50 degrees F. minimum) location. If necessary, cable shall be stored off site at the contractor's expense.

- C. If the telecommunications contractor wishes to have a trailer on site for storage of materials, arrangements shall be made with the Owner.

1.9 DRAWINGS

- A. It shall be understood that the electrical details and drawings provided with the specification package are diagrammatic. They are included to show the intent of the specifications and to aid the telecommunications contractor in bidding the job. The telecommunications contractor shall make allowance in the bid proposal to cover whatever work is required to comply with the intent of the plans and specifications.
- B. The telecommunications contractor shall verify all dimensions at the site and be responsible for their accuracy.
- C. Prior to submitting the bid, the telecommunications contractor shall call the attention of the Engineer to any materials or apparatus the telecommunications contractor believes to be inadequate and to any necessary items of work omitted.

PART 2 - PRODUCTS

2.1 EQUIVALENT PRODUCTS

- A. The Owner and engineer have selected specific products that achieve the desired level of performance and preference. The project has been designed around said products. Proposed substitutions must demonstrate equivalent performance in all areas to the satisfaction of the Owner and must be submitted for review at least 10 days prior to bid. The Owner shall not be required to entertain substitutions submitted after bid.

2.2 WORK AREA OUTLETS

- A. Work area cables shall each be terminated at their designated work area location in the connector types described in the subsections below. Included are modular telecommunication jacks. These connector assemblies shall snap into a faceplate.
- B. The Telecommunications Outlet Assembly shall accommodate:
 - 1. A minimum of three (3) modular jacks, arranged into (1) 1-gang faceplate by Leviton (Quickport series or Engineer approved equal).
 - 2. Additional accommodations for specific locations as noted in the plans for optical fiber and/or additional copper cables as necessary.
 - 3. A blank filler (matching in color to indicated faceplate color) will be installed when extra ports are not used.
 - 4. All modular jacks shall have their circuit number on the faceplate identifier strip.
 - 5. Multiple jacks that are identified in close proximity on the drawings (but not separated by a physical barrier) may be combined in a single assembly. The telecommunications

contractor shall be responsible for determining the optimum compliant configuration based on the products proposed.

6. The same orientation and positioning of jacks and connectors shall be utilized throughout the installation. Prior to installation, the telecommunications contractor shall submit the proposed configuration for each outlet assembly for review by the Owner.
7. The modular jack shall incorporate printed label strip on the dust cap module for identifying the outlet. Printed labels shall be permanent and compliant with ANSI/TIA/EIA-606-A standard specifications. Labels shall be printed using a printer such as a Brady hand held printer. Hand printed labels shall not be accepted.

C. Faceplates: The faceplates shall:

1. Be as appropriate to fit the modular jack used.
2. Be UL listed and CSA certified.
3. Be constructed of high impact, ABS plastic UL 94V-0 construction (except where noted otherwise).
4. Shall be Off-White in color.
5. Be compliant with the above requirements along with the following when incorporating optical fiber:
 - a. Be a low profile assembly,
 - b. Incorporate a mechanism for storage of cable and fiber slack needed for termination,
 - c. Position the UTP modular jack to face downward or at a downward angle
 - d. Position the fiber optic couplings to face downward or at a downward angle to prevent contamination and,
 - e. Incorporate a shroud that protects the optical couplings from impact damage.
6. Be available as single-gang or dual-gang.
7. Provide easy access for adds, moves, and changes by front removal of jack modules.
8. Possess recessed designation windows to facilitate labeling and identification.
9. Include a clear plastic cover to protect labels in the designation window.
10. Have mounting screws located under recessed designation windows.
11. Comply with ANSI/TIA/EIA-606-A work area labeling standard.
12. Allow for the UTP modules to be inverted in place for termination purposes.
13. Be manufactured by an ISO 9001 registered company.
14. Acceptable products as follows (no substitutions will be allowed):
 - a. Leviton Quickport compatible with Atlas modular jacks.
 - b. Leviton Quickport blank modules where a blank filler is required.

D. Voice / Data Jacks (Telecommunications Jacks)

1. Voice/Data jacks, also known as telecommunications jacks, shall be 8-position modular jacks and shall be Category 6A performance as defined by the references in this document including ANSI/TIA/EIA-568-C.2. All pair combinations must be considered, with the worst-case measurement being the basis for compliance. Modular jack performance shall be third-party verified by a nationally recognized independent testing laboratory.
2. The modular jack shall use dual reactance modular contact array.
3. The modular jack shall be both component, link and channel compliant to category specifications in ANSI/TIA/EIA-568-C.
4. The modular jack's performance shall be third-party verified to ANSI/TIA/EIA-568-C Category 6A specifications.
5. The modular jack shall have low emission IDC contacts.

6. The modular jack shall use standard termination practice using 110 impact tool or manufacturer approved tool using trained technician.
7. The modular jack shall be backwards compatible to Category 3, 5, 5e, and 6.
8. The modular jack shall be center tuned to category 6A test specifications.
9. Dust covers shall be used on each termination.

2.3 NOT USED.

2.4 MODULAR PATCH PANELS

A. The Modular Patch Panels shall:

1. Meet category 6A component compliance and be verified by a third-party nationally recognized independent testing laboratory.
2. Use low emission IDC contacts.
3. Use dual reactance technology to enhance the signal-to-noise ratio.
4. Require standard termination practices using a 110 impact tool or manufacturer approved methods. Where modular jacks are used, EC shall use patch panel that accepts modular jacks as specified in Section 2.2(D) above.
5. Use a single piece IDC housing designed to accept larger Category 6A conductors.
6. Support both T568B and T568A wiring.
7. Include easy to follow wiring labels.
8. Include label fields.
9. Allow for the use of icons.
10. Include full length metal rear cable management.
11. Be available in standard or high density.
12. Be backward compatible to category 3, 5, 5e, and 6.
13. Be center tuned to category 6A test specifications.
14. Be 24-port in any given 1 rack-units
15. Acceptable products as follows (no substitutions will be allowed):
 - a. Leviton Quickport 49255-H24

2.5 RACKS

- ### A. All racks and wire management shall be of one manufacturer or designed specifically to work together. The equipment rack shall provide vertical cable management and support for the patch cords at the front of the rack and wire management, support, and protection for the horizontal cables inside the legs of the rack. Waterfall cable management shall be provided at the top of the rack for patch cords and for horizontal cables entering the rack channels for protection and to maintain proper bend radius and cable support. Wire management shall also be mounted above each patch panel and/or piece of equipment on the rack. The rack shall include mounting brackets for cable tray ladder rack to mount to the top of the rack. Velcro cable ties shall be provided inside the rack channels to support the horizontal cable. Rack shall be black in color to match the patch panels and cable management.
- ### B. Free-Standing Rack
1. Free-standing rack shall:

- a. Provide the necessary strain relief, bend radius and cable routing for proper installation of high performance cross connect products, meeting all specifications of ANSI/TIA/EIA-568-C.
 - 1) Rear channels to securely route distribution cables.
 - 2) Vertical management "cage" to protect patch cords while allowing easy access for moves, adds and change with individual 1-rack unit fingers and double hinged door.
 - 3) Include speednuts to reduce assembly time.
- b. Have top cable trough with waterfall and built in patch/horizontal cable distribution separator.
- c. Have EIA hole pattern on front and rear.
- d. Have rack units stamped on the front, on both sides allowing numbering from top-to-bottom or bottom-to-top.
- e. Be available with a 10.5" or 16.25" channel depth.
- f. Be available with hook and loop straps for securing bulk cables inside the vertical U-channels.
- g. Assemble as 19" (483 mm) or 23" (584 mm) with no additional hardware.
- h. Be available with three styles of vertical patch cord management: interbay with latches, cable management rings, or fingerduct with covers.
- i. Provide floor and ceiling access for cable management and distribution.
- j. Provide pre-drilled base for floor attachment of rack.
- k. Be available in a 7 foot version (45 rack units).
- l. Be available in standard color of black.
- m. Be manufactured by an ISO 9001 registered company.
- n. Acceptable products as follows:
 - 1) Chatsworth #46353-703, 45-RU 2-post rack, black (or approved equal).
 - 2) Chatsworth #50120-703, 45-RU 4-post rack, black (or approved equal).

2.6 HORIZONTAL DISTRIBUTION CABLE

- A. All horizontal data station cable and voice cable shall terminate on modular patch panels (copper or fiber), 110 cross-connecting blocks (copper), or patch/splice cabinets (fiber) in their respective Telecommunications Room or Equipment Room as specified on the drawings.
- B. 100 OHM Category 6A UNSHIELDED TWISTED PAIR CABLE (UTP)
 - 1. Physical Characteristics:
 - a. Shall be plenum rated only and meet applicable requirements of ANSI/ICEA S-80-576. All 4 pairs must be insulated with F.E.P. No 2 x 2 or 3 x 1 constructions will be allowed.
 - b. The diameter of the insulated conductor shall be .023 in. maximum.
 - c. Shall consist of (4) twisted pairs.
 - d. Shall be suitable for the environment in which they are to be installed.
 - e. The color coding of pairs shall be per T-658B color coding scheme:

Pair 1	Pair 2	Pair 3	Pair 4
W-BL; BL	W-O; O	W-G; G	W-BR; BR
 - f. The overall diameter of the cable shall be no larger than 0.320" nominal.
 - g. The ultimate breaking strength measured in accordance with ASTM D 4565 shall be 400 N minimum.
 - h. Cable shall withstand a bend radius of 1" at -20 degrees Celsius without jacket or insulation cracking.

- i. Cable shall be third party verified to meet ANSI/TIA/EIA-568-C.2.
 - 2. Transmission Characteristics:
 - a. DC resistance of any conductor shall not exceed 9.38 Ohms per 100m max. at 20°C. Measured in accordance with ASTM D 4566.
 - b. The mutual capacitance of any pair at 1 kHz for 100m of cable shall not exceed 4.4 Nf.
 - c. DC resistance unbalance between any two conductors of any pair shall not exceed 3% when measured at or corrected to 20°C in accordance with ASTM D 4566.
 - d. The capacitance unbalance to ground at 1 kHz of any pair shall not exceed 330 pF per 100m.
 - 3. Acceptable products as follows:
 - a. Cable shall be Berk-Tek Leviton 'SST' UTP or approved equal.
 - b. Cable installed underground/below slab in conduit shall be Berk-Tek LANmark-10G2 OSP (when used solely in wet location) or approved equal.
- C. 100 OHM Category 6A SHIELDED TWISTED PAIR CABLE (F/UTP)
 - 1. Physical Characteristics:
 - a. Shall be plenum rated only and meet applicable requirements of ANSI/ICEA S-80-576. All 4 pairs must be insulated with F.E.P. No 2 x 2 or 3 x 1 constructions will be allowed.
 - b. The diameter of the insulated conductor shall be .023 in. maximum.
 - c. Shall consist of (4) twisted pairs.
 - d. Shall be suitable for the environment in which they are to be installed.
 - e. The color coding of pairs shall be per T-658B color coding scheme:

Pair 1	Pair 2	Pair 3	Pair 4
W-BL; BL	W-O; O	W-G; G	W-BR; BR
 - f. The overall diameter of the cable shall be no larger than 0.320" nominal.
 - g. The ultimate breaking strength measured in accordance with ASTM D 4565 shall be 400 N minimum.
 - h. Cable shall withstand a bend radius of 1" at -20 degrees Celsius without jacket or insulation cracking.
 - i. Cable shall be third party verified to meet ANSI/TIA/EIA-568-C.2.
 - 2. Transmission Characteristics:
 - a. DC resistance of any conductor shall not exceed 9.38 Ohms per 100m max. at 20°C. Measured in accordance with ASTM D 4566.
 - b. The mutual capacitance of any pair at 1 kHz for 100m of cable shall not exceed 4.4 Nf.
 - c. DC resistance unbalance between any two conductors of any pair shall not exceed 3% when measured at or corrected to 20°C in accordance with ASTM D 4566.
 - d. The capacitance unbalance to ground at 1 kHz of any pair shall not exceed 330 pF per 100m.
 - 3. Acceptable products as follows:
 - a. Cable shall be Berk-Tek LANmark-MD751 Cat 6A FTP solid CMR-CMX Outdoor rated with PVC jacket.

2.7 FIBER OPTIC CABLE

- A. Plenum Indoor/Outdoor Optical Fiber Non-Conductive Loose Tube with Laser Enhanced 9/125um Optical Fibers

B. SINGLEMODE FIBER: Indoor/Outdoor Optical Fiber Non-Conductive Plenum (OFNP) Loose Tube with Laser Enhanced 9/125 Optical Fibers

1. Each Singlemode Fiber shall be:
 - a. Graded-index optical fiber wave-guide with nominal 9/125um-core/cladding diameter, OS2 or better industry rating.
 - b. The fiber shall comply with the latest revision of ANSI/EIA/TIA-4920000.
 - c. Attenuation shall be measured in accordance with ANSI/EIA/TIA-455-46, 53 or 61.
 - d. Information transmission capacity shall be measured in accordance with the latest revision of ANSI/EIA/TIA-455—204.
 - e. The measurements shall be performed at 23 degrees C +/- 5 degrees.
 - f. Maximum attenuation dB/Km @ 1310/1550 nm: 0.4/0.3.
 - g. Optical Fiber shall be laser optimized and guarantee Gigabit Ethernet distances of >5000m for 1310nm and 10 Gigabit Ethernet distances of >5000m for 1310nm.
2. Physical Characteristics:
 - a. Shall be suitable for use in both outdoor and indoor applications without the use of a transition at the building entrance.
 - b. Shall be suitable for use in risers, plenums and horizontal applications.
 - c. Shall have a dry water blocking system for cable core and buffer tubes.
 - d. Shall be available with a fiber strand count range from 6 to 72.
 - e. Shall have a 3.0 mm sub-unit diameter.
 - f. Shall have and be marked with an UL-OFNP and OFN FT6 Flame Rating.
 - g. Shall comply with the requirements of ICEA S-83-596 & ANSI/ICEA S-87-640.
 - h. Strength members shall be dielectric and may be either fiberglass or aramid yarn.
 - i. Suitable for underground or aboveground conduits.
 - j. Loose Tube fibers shall be color coded in accordance with EIA / TIA 598 with an overall dark blue jacket.
 - k. Shall have a ripcord for overall jacket.
 - l. Suitable for operation between -40° to +75° C.
 - m. Shall be UV resistant.
 - n. Shall be of an all dielectric design.
 - o. Shall have a maximum installation tension of 300 lbs for cables without dielectric strength member and 600 lbs for cables with dielectric strength members.
3. Design Make:
 - a. Berk-Tek “Adventum” OS2 optical fiber cable (Singlemode-AB) with 9/125 micron fiber or approved equal

2.8 FIBER OPTIC CONNECTORS

A. LC Fiber Optic Connectors

1. Each LC Fiber Connector shall:
 - a. Be a pre-polished fiber connector with a fiber stub or field-polish fiber connector.
 - b. Be available in single mode and multimode versions.
 - c. Have a domed zirconia ferrule.
 - d. Be a PC polish type connector.
 - e. Accept a nominal fiber diameter of 125 micrometers.
 - f. Have a typical insertion loss of 0.1 dB for multimode and 0.1 dB for single mode.
 - g. Have repairable tips.
 - h. Have an insertion loss change of less than 0.2 dB after 500 reconnects.
 - i. Be stable over an operating range of -40C to +75 degrees C.

2. Design Make:
 - a. Leviton LC Fiber Optic Connectors on pre-terminated pig-tails or approved equal.
 - b. Fiber optic pigtails shall be fusion spliced only in submitted and approved fiber optic splice trays and enclosures.

2.9 COPPER CABLE PROTECTION UNITS

- A. All copper circuits shall be provided with protection between each building with an entrance cable protector panel. All building-to-building circuits shall be routed through this protector. The protector shall be connected with a #6 AWG copper bonding conductor between the protector ground lug and the TC ground point. Approved manufacturer of protection units is Porta Systems.

2.10 PATCH CORDS

- A. The contractor shall provide factory terminated and tested UTP and optical fiber patch cords and equipment cords for the complete cabling system. The UTP patch cables shall meet the requirements of ANSI/TIA/EIA-568-B for patch cord testing.
- B. Copper (UTP) patch cords shall:
 1. Use 8-position connector with impedance matched contacts and designed using dual reactance.
 2. Be constructed of 100 ohm, 4 pair stranded conductor, unshielded twisted pair copper per the requirements of the ANSI/TIA/EIA-568-B.2 and ANSI/TIA/EIA-568-B.2-1 standard.
 3. Meet TIA category 6A component specifications in ANSI/TIA/EIA-568-B.2-1
 4. 100% factory tested to meet category 6A performance and
 5. ETL or any other nationally recognized 3rd party verification
 6. Be center tuned to category 6A performance specifications by using paired bi-level contact array.
 7. Be capable of universal T568A or T568B wiring schemes.
 8. Modular connector shall maintain the paired construction of the cable to facilitate minimum untwisting of the wires.
 9. Have a performance marking indelibly labeled on the jacket (by the manufacturer).
 10. Have the ability to accept color-coded labels and icons to comply with ANSI/TIA/EIA-606-A labeling specifications.
 11. Have "snagless" protection for the locking tab to prevent snagging and to protect locking tab in tight locations and provide bend relief.
 12. Be available in three standard colors.
 13. Be available in 3 foot, 5 foot, 7 foot, 9 foot, and 15 foot standard lengths.
 14. Be backwards compatible to Category 3, 5, 5e, and 6.
 15. Be manufactured by an ISO 9001 registered company.
- C. Copper (F/UTP) patch cords shall:
 1. Use 8-position connector with impedance matched contacts and designed using dual reactance, with a foil shield encompassing the circumference of the cable, along the entire cable length.
 2. Be constructed of 100 ohm, 4 pair stranded conductor, shielded twisted pair copper per the requirements of the ANSI/TIA/EIA-568-B.2 and ANSI/TIA/EIA-568-B.2-1 standard.
 3. Meet TIA category 6A component specifications in ANSI/TIA/EIA-568-B.2-1

4. 100% factory tested to meet category 6A performance
5. ETL or any other nationally recognized 3rd party verification
6. Be center tuned to category 6A performance specifications by using paired bi-level contact array.
7. Be capable of universal T568A or T568B wiring schemes.
8. Modular connector shall maintain the paired construction of the cable to facilitate minimum untwisting of the wires.
9. Have a performance marking indelibly labeled on the jacket (by the manufacturer).
10. Have the ability to accept color-coded labels and icons to comply with ANSI/TIA/EIA-606-A labeling specifications.
11. Have "snagless" protection for the locking tab to prevent snagging and to protect locking tab in tight locations and provide bend relief.
12. Be available in three standard colors.
13. Be available in 3 foot, 5 foot, 7 foot, 9 foot, and 15 foot standard lengths.
14. Be backwards compatible to Category 3, 5, 5e, and 6.
15. Be manufactured by an ISO 9001 registered company
16. Be compatible for use with A/V system as submitted and approved
17. When installed below-grade, shall be OSP listed

D. Optical Fiber patch cords shall:

1. Contain two (2) multi-mode or single-mode optical fibers as shown on contract documents.
2. Use graded-index fibers with a 50 micron or 9 micron core (multimode or singlemode, respectively).
3. Be capable of transmission at both 850 nm and 1300 nm wavelengths for multimode, and 1310nm and 1550nm wavelengths for singlemode.
4. Include listing of actual loss of patchcord when packaged.
5. Be manufactured in standard lengths of 1 m (3.27 ft), 2 m (6.56 ft), 3 m (9.84 ft), 4 m (13.11 ft), 7 m (22.95 ft), and 10 m (32.79 ft), and special ordered in any other lengths.
6. Be manufactured by an ISO 9001 registered company.

2.11 GROUNDING AND BONDING

- 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/EIA-607 Telecommunications Bonding and Grounding Standard.
- B. The main entrance facility/equipment room in each building 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.
- C. All racks, metallic backboards, cable sheaths, metallic strength members, splice cases, cable trays, ungrounded conduits, etc. entering or residing in the TR or ER shall be grounded to the

respective TGB or TMGB using a minimum #6 AWG stranded copper bonding conductor and compression connectors.

- D. 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.

2.12 FIRESTOP

- 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 penetrations through fire-rated building structures (walls and floors) shall be sealed with an appropriate firestop system. 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., riser slots and sleeves, cables, conduit, cable tray, and raceways, etc. shall be properly firestopped.
- C. Firestop systems shall be UL Classified to ASTM E814 (UL 1479) and shall be approved by a qualified Professional Engineer (PE), licensed (actual or reciprocal) in the state where the work is to be performed. A drawing showing the proposed firestop system, stamped/embossed by the PE shall be provided to the Owner's Technical Representative prior to installing the firestop system(s).

PART 3 - EXECUTION

3.1 WORK AREA OUTLETS

- A. Cables shall be coiled in the in-wall or surface-mount boxes if adequate space is present to house the cable coil without exceeding the manufacturer's bend radius. In hollow wall installations where box-eliminators are used, excess wire can be stored in the wall. No more than 12" of UTP and 12" of fiber slack shall be stored in an in-wall box, modular furniture raceway, or insulated walls. Excess slack shall be loosely coiled and stored in the ceiling above each drop location when there is not enough space present in the outlet box to store slack cable.
- B. Cables shall be dressed and terminated in accordance with the recommendations made in the ANSI/TIA/EIA-568-C.0 document, manufacturer's recommendations and best industry practices.
- C. Pair untwist at the termination shall not exceed 12 mm (one-half inch).
- D. Bend radius of the horizontal cable shall not be less than 4 times the outside diameter of the UTP cable.
- E. The cable jacket shall be maintained to within 25mm (one inch) of the termination point.

- F. Voice/Data jacks, also known as telecommunications jacks, for the purposes of this building are to be installed as all data, in conformance with all Category 6A standards for component and channel ratings. Data jacks, unless otherwise noted in drawings, shall be located in the top position(s) of each faceplate, populated from left-to-right and top-to-bottom in the faceplate.
- G. Where (4) or fewer data jacks are specified, contractor shall install a 4-port faceplate with blank covers (with color to match faceplate) in unused modular jack openings.

3.2 HORIZONTAL DISTRIBUTION CABLE INSTALLATION

- A. Cable shall be installed in accordance with manufacturer's recommendations and best industry practices.
- B. Cables shall be dressed and terminated in accordance with the recommendations made in the ANSI/TIA/EIA-568-C standard, manufacturer's recommendations and best industry practices.
- C. A pull cord (nylon; 1/8" minimum) shall be co-installed with all cable installed in any conduit.
- D. Cable raceways shall not be filled greater than the ANSI/TIA/EIA-569-A maximum fill for the particular raceway type or 40%.
- E. Cables shall be installed in continuous lengths from origin to destination (no splices) except for transition points, or consolidation points.
- F. Where transition points, or consolidation points are allowed, they shall be located in accessible locations and housed in an enclosure intended and suitable for the purpose.
- G. The cable's minimum bend radius and maximum pulling tension shall not be exceeded.
- H. If a J-hook or trapeze system is used to support cable bundles all horizontal cables shall be supported at a maximum of 48 to 60 inch (1.2 to 1.5 meter) intervals. At no point shall cable(s) rest on acoustic ceiling grids or panels.
- I. Horizontal distribution cables shall be bundled in groups of no more than 50 cables. Cable bundle quantities in excess of 50 cables may cause deformation of the bottom cables within the bundle and degrade cable performance.
- J. Cable shall be installed above fire-sprinkler systems and shall not be attached to the system or any ancillary equipment or hardware. The cable system and support hardware shall be installed so that it does not obscure any valves, fire alarm conduit, boxes, or other control devices.
- K. Cables shall not be attached to ceiling grid or lighting fixture wires. Where support for horizontal cable is required, the contractor shall install appropriate carriers to support the cabling.
- L. Any cable damaged or exceeding recommended installation parameters during installation shall be replaced by the contractor prior to final acceptance at no cost to the Owner.
- M. Cables shall be identified by a self-adhesive label in accordance with the System Documentation Section of this specification and ANSI/TIA/EIA-606-A. The cable label shall

be applied to the cable behind the faceplate on a section of cable that can be accessed by removing the cover plate.

- N. Unshielded twisted pair cable shall be installed so that there are no bends smaller than four times the cable outside diameter at any point in the run and at the termination field.
- O. Pulling tension on 4-pair UTP cables shall not exceed 25-lbf for a four-pair UTP cable.
- P. Cables installed underground or below slab shall be suitable for use in wet locations and outdoors in duct or conduit. If wet location cable is exposed in the building after exiting the wet area, it must transition to an appropriate category dry cable within 50 feet (15M) of exiting conduit.
- Q. Pair untwist at the termination shall not exceed 13 mm (0.5 inch).
- R. Bend radius of the cable in the termination area shall not exceed 4 times the outside diameter of the cable.
- S. Cables 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 rack or frame.
- T. The cable jacket shall be maintained as close as possible (within 25mm – 1 inch) to the termination point.
- U. 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.

3.3 OPTICAL FIBER TERMINATION HARDWARE

- A. Fiber slack shall be neatly coiled within the fiber splice tray or enclosure. Provide cable slack loop / service loop at each end of cable external to fiber termination panel.
- B. Each cable shall be individually attached to the respective splice enclosure by mechanical means. The cables strength member shall be securely attached the cable strain relief bracket in the enclosure.
- C. Each fiber bundle shall be stripped upon entering the splice tray and the individual fibers routed in the splice tray.
- D. Each cable shall be clearly labeled at the entrance to the splice enclosure. Cables labeled within the bundle shall not be acceptable.
- E. A maximum of 12 strands of fiber shall be spliced in each tray.
- F. All spare strands shall be installed into spare splice trays.

3.4 BACKBONE CABLE INSTALLATION

- A. Backbone cables shall be installed separately from horizontal distribution cables
- B. A pull cord (nylon; 1/8" minimum) shall be co-installed with all cable installed in any conduit.
- C. Where cables are housed in conduits, the backbone and horizontal cables shall be installed in separate conduits
- D. Where backbone cables are installed in an air return plenum, riser rated cable shall be installed in metallic conduit.
- E. Where backbone cables and distribution cables are installed in a cable tray or wireway, backbone cables shall be installed first and bundled separately from the horizontal distribution cables.
- F. All backbone cables shall be securely fastened to the sidewall of the TR on each floor.
- G. Backbone cables spanning more than three floors shall be securely attached at the top of the cable run with a wire mesh grip and on alternating floors or as required by local codes.
- H. Vertical runs of cable shall be supported to messenger strand, cable ladder, or other method to provide proper support for the weight of the cable.
- I. Large bundles of cables and/or heavy cables shall be attached using metal clamps and/or metal banding to support the cables.

3.5 RACKS

- A. Racks shall be securely attached to the concrete floor using a minimum 5/8" hardware or as required by local codes. In no case shall the racks be secured by means any less than the requirements as detailed on the Structural or Electrical drawings.
- B. Racks shall be placed with a minimum of 36-inch clearance from the walls on all sides of the rack. When mounted in a row, maintain a minimum of 36 inches from the wall behind and in front of the row of racks and from the wall at each end of the row.
- C. All racks shall be grounded to the telecommunications ground bus bar in accordance with Section 3.9 of this document.
- D. Rack mount screws not used for installing patch panels and other hardware shall be bagged and left with the rack upon completion of the installation.
- E. Wall mounted termination block fields shall be mounted on 4' x 8' x .75" void free plywood. The plywood shall be mounted vertically 12" above the finished floor. The plywood shall be painted with two coats of white fire retardant paint.
- F. Wall mounted termination block fields shall be installed with the lowest edge of the mounting frame 18" from the finished floor.

3.6 FIRESTOP SYSTEM

- A. 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.

3.7 GROUNDING SYSTEM

- A. The TBB shall be designed and/or approved by a qualified PE, licensed in the state that the work is to be performed. The TBB shall adhere to the recommendations of the ANSI/TIA/EIA-607 standard, and shall be installed in accordance with best industry practice.
- B. Installation and termination of the main bonding conductor to the building service entrance ground shall be performed by a licensed electrical contractor.

3.8 IDENTIFICATION AND LABELING

- A. The contractor shall develop and submit for approval a labeling system for the cable installation. The Owner will negotiate an appropriate labeling scheme with the successful contractor. At a minimum, the labeling system shall clearly identify all components of the system: racks, cables, panels and outlets. The labeling system shall designate the cables origin and destination and a unique identifier for the cable within the system. Racks and patch panels shall be labeled to identify the location within the cable system infrastructure. All labeling information shall be recorded on the as-built drawings and all test documents shall reflect the appropriate labeling scheme. Labeling shall follow the guidelines of ANSI/TIA/EIA-606-A.
- B. Outside Plant cables passing through a pull box or vault shall have a cable label that is water and mud proof.
- C. All label printing will be machine generated by Ortronics LabelMo, or similar software, using indelible ink ribbons or cartridges. 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.

3.9 TESTING AND ACCEPTANCE

- A. General
 1. All cables and termination hardware shall be 100% tested for defects in installation and to verify cabling system performance under installed conditions according to the requirements of ANSI/TIA/EIA-568-B. 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% useable conductors in all cables installed.
 2. All cables shall be tested in accordance with this document, the ANSI/TIA/EIA standards, the Certification Program Information Manual provided by the product manufacturer and best industry practice. If any of these are in conflict, the Contractor

shall bring any discrepancies to the attention of the project team for clarification and resolution.

B. Copper Link Testing

1. All twisted-pair copper cable links shall be tested for continuity, pair reversals, shorts, opens and performance as indicated below. Additional testing is required to verify Category performance.
2. Horizontal cabling shall be tested using a Level III test unit for category 6a performance compliance.
3. The basic tests required are:
 - a. Wire Map
 - b. Length
 - c. Attenuation
 - d. NEXT (Near end crosstalk)
 - e. Return Loss
 - f. ELFEXT Loss
 - g. Propagation Delay
 - h. Delay skew
 - i. PSNEXT (Power sum near-end crosstalk loss)
 - j. PSELFEXT (Power sum equal level far-end crosstalk loss)
4. Continuity - Each pair of each installed cable shall be tested using a test unit that shows opens, shorts, polarity and pair-reversals, crossed pairs and split pairs. Shielded/screened cables shall be tested with a device that verifies shield continuity in addition to the above stated tests. The test shall be recorded as pass/fail as indicated by the test unit in accordance with the manufacturers' recommended procedures, and referenced to the appropriate cable identification number and circuit or pair number. Any faults in the wiring shall be corrected and the cable re-tested prior to final acceptance.
5. Length - Each installed cable link shall be tested for installed length using a TDR type device. The cables shall be tested from patch panel to patch panel, block to block, patch panel to outlet or block to outlet as appropriate. The cable length shall conform to the maximum distances set forth in the ANSI/TIA/EIA-568-C Standard. Cable lengths shall be recorded, referencing the cable identification number and circuit or pair number. For multi-pair cables, the shortest pair length shall be recorded as the length for the cable.
6. Category 6A performance shall meet the link requirements outlined below for a 90-meter, 4-connector permanent link.

Frequency (MHz)	Maximum Insertion Loss (dB)	Minimum NEXT (dB)	Minimum PSNEXT (dB)	Minimum ELFEXT (dB)	Minimum PSELFEXT (dB)	Minimum Return Loss (dB)
1.0	2.1	74.3	72.3	-	-	20.0
4.0	3.8	65.3	63.3	-	-	23.0
10.0	5.9	59.3	57.3	-	-	25.0
16.0	7.5	56.2	54.2	-	-	25.0
20.0	8.4	54.8	52.8	-	-	25.0
31.25	10.5	51.9	49.0	-	-	23.6
62.5	15.0	47.4	45.4	-	-	21.5
100.0	19.1	44.3	42.3	-	-	20.1
250.0	31.1	38.3	36.3	-	-	17.3
350.0	37.2	36.1	34.1	-	-	16.3
400.0	40.1	35.3	33.3	-	-	15.9
500.0	45.3	33.8	31.8	-	-	15.2

NOTE: For ELFEXT and PSELFEXT, follow TIA guidelines for Cat6A

C. Fiber Testing

1. All fiber testing shall be performed on all fibers in the completed end-to-end system. Testing shall consist of an end-to-end power meter test performed per EIA/TIA-455-53A. The system loss measurements shall be provided at 850 and/or 1300 nanometers for multimode fibers and 1310 and/or 1550 nanometers for single mode fibers. These tests also include continuity checking of each fiber.
2. Backbone fiber cabling shall be tested at both 850 nm and 1300 nm for multimode fiber (or 1310 and 1550 nm for singlemode) in both directions.
3. Test set-up and performance shall be conducted in accordance with ANSI/TIA/EIA-568-B, the tester itself shall be capable of performing the tests required by ANSI/TIA/EIA-568-B, ANSI/TIA/EIA-526-14A, and ANSI/TIA/EIA-526-7.
4. Cable Test Methods:
 - a. Backbone multimode fiber shall be tested in one direction at both 850nm and 1300 nm in accordance with ANSI/EIA/TIA-526-14A method B, for each strand. Acceptable link attenuation for backbone 62.5/125 or 50/125 multimode fiber based on distance shall be 3.4 dB/km @ 850nm or 1.0 dB/km @ 1300nm.
 - b. Backbone single mode fiber shall be tested at both 1310nm and 1550 nm in accordance with ANSI/EIA/TIA-526-14A method A.1, for each strand. Acceptable link attenuation for backbone 8.3 to 9/125 single mode fiber, based on distance, shall be 1.0 dB/km @ 1310 nm and 1550 nm for inside plant.
5. Attenuation testing shall be performed with an approved hand held tester from an industry recognized test equipment manufacturer, with a calibration date (as performed by a manufacturer-certified calibration facility) no more than 60-days prior to the start of testing.
6. All fiber optic cables shall be tested and results submitted for all fibers in an electronic format on CD-ROM. Contractor shall also provide one (1) soft copy of the test results showing graphically, the entire length of the fiber. The Contractor shall submit (1) copy of software capable of viewing the electronic test result files. Test results shall be provided with warranty registration no later than 14 days after completion of approved test results.

7. Cable Testing Validation: After installation is completed and the Telecommunication Contractor has completed testing, District IS and reserve the right to separately test the installed cables, up to 100% using the Telecommunication Contractor testing equipment or with SCCCD-provided computer/network equipment. Cables that have been tested and fail to meet performance requirements as stated in the specifications shall be removed and replaced with all new material and re-tested at no cost to the college or the District. Test results from Contractor shall be provided with warranty registration no later than 14 days after completion of approved test results.

D. Additional 3rd Party Fiber Optic and UTP (Copper Link) Testing

1. Due to the initial/immediate network implementation of 40-100Gbps fiber Ethernet topologies and multi-Gigabit Ethernet UTP technologies with up to Class 8 PoE, the Owner, at the Owner's own expense, will be performing additional independent third-party testing of all fiber and UTP cabling. The fiber optic testing, in particular, will include independent third-party end-face inspection with certification, bidirectional Tier-1, and averaged-bidirectional Tier-2 fiber testing for every strand of the new permanent fiber optic cabling installed within this project. This additional testing will allow the IT department to certify the cabling performance for the required network application topologies, before equipment installation and provisioning, with testing criteria and procedures that may exceed the requirements described within these construction documents.
2. While the additional aforementioned third-party testing is independent and outside of this contract, the fiber optic and UTP test results provided from both parties will be compared directly against each other for additional Owner confirmation of the new cabling's suitability for use.
3. On projects involving Contractor racking, stacking, and patching (RSP) of Owner provided network electronics, Contractor RSP work shall not be started until all fiber optic and UTP tests within the respective telecom room have been reviewed and accepted by the Owner in writing.
4. The Contractor shall submit all fiber optic and UTP testing results as LinkWare PC native source output (.flw file extension). The Owner will not accept PDF results. All other contractor requirements defined within the project scope of work shall remain in place.

3.10 NETWORK INTEGRATION

1. Contractor shall perform network integration and physical installation of owner provided and contractor provided active electronics and associated patch cabling. No network integration work shall commence prior to the following prerequisites:
 - a. Owner approval of all fiber and UTP test reports indicating suitability for use of installed cabling infrastructure.
 - b. On-site coordination meeting to review installation details
2. Integration work will include tasks that will prepare systems for owner commissioning:
 - a. Physical installation of network electronics (owner furnished)
 - b. Physical installation of UTP patch cords from premises cabling systems to network electronics (contractor provided patch cabling)
 - c. Physical installation, testing, and commissioning of UPS and PDU power delivery equipments within the telecom rooms (contractor furnished)
 - d. Physical installation of IP cameras including required patch cabling (contractor furnished)
 - e. Physical installation of Wireless Access Points including required patch cabling (WAPs are owner furnished, contractor installed including patch cords).

3. Prior to owner configuration and commissioning of network systems, contractor shall provide as-built drawings and schedules of integration work performed. Details and formats to be reviewed during the pre-integration coordination meeting and will include, but may not be limited to the following items:
 - a. Patching schedule detailing all UTP premises cabling to network switch ports
 - b. Equipment schedules including all devices with their serial numbers, MAC addresses, and the cable identification(s) supporting the device.
 - c. As-built drawings including the locations of all installed devices with serial numbers, MAC addresses, and the cable identification(s) supporting the device.

3.11 SYSTEM DOCUMENTATION

- A. Upon completion of the installation, the telecommunications contractor shall provide three (3) full documentation sets to the Engineer for approval. Documentation shall include the items detailed in the sub-sections below.
- B. Documentation shall be submitted within ten (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 Engineer, the telecommunications contractor shall provide copies of the original test results.
- C. The Engineer may request that a 10% 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 telecommunications contractor, additional testing can be requested to the extent determined necessary by the Engineer, including a 100% 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 disk 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, cable type, conductor pair 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 ANSI/TIA/EIA-568-C including applicable TSB's and amendments. The appropriate Level III tester shall be used to verify Category 6A cabling systems.
- C. Printouts generated for each cable by the wire (or fiber) test instrument shall be submitted as part of the documentation package. The telecommunications contractor must furnish this

information in electronic form CD-ROM). If needed, provide manufacturers software require to read the test results.

- 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.

PART 4 - WARRANTY AND SERVICES

4.1 WARRANTY

- A. The manufacturer shall provide the warranty directly to the end-user.
- B. An Extended Product Warranty shall be provided which warrants functionality of all components used in the system for a minimum of 20 years from the date of registration. The Extended Product Warranty shall warrant the installed horizontal and/or backbone copper, and both the horizontal and the backbone optical fiber portions of the cabling system as applicable for the cabling manufacturer.
- C. The Application Assurance Warranty shall cover the failure of the wiring system to support the applications that are designed for the link/channel specifications of ANSI/TIA/EIA-568-C.0. These applications include, but are not limited to, 10BASE-T, 100BASE-T, 1000BASE-T, 155Mb/sATM, and 1Gb/s ATM.
- D. The contractor shall provide a warranty on the physical installation.

4.2 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 product manufacturer, registering the installation.

END OF SECTION

PROJECT:

ADDENDUM NO.02..... **DATE:04/072025**
PAGE 5

3. Refer to Detail 4. Revise the Detail to reflect the current SCCC standard for voice/data outlet and cable labeling.
4. Add Detail 7 for underground fiber optic cable to be installed in an fabric style innerduct.
5. Add Detail 8 for ground mounted Remote IDF to be located below bleachers / press box.

AD02-T04 Refer to Sheet A/T101, and attached drawing AD02-TX04:

1. Revise overhead cable runway layout in Data Room 118 to extend to east wall.
2. Adjust location of west wall of Data Room 118
3. Adjust Data Room 118 equipment rack locations with 8" vertical cable management.
4. Add a data outlet adjacent to the future Musco equipment.
5. Add a wall phone outlet in Room 105, 110, 115 & 118.
6. Add IP Speaker in each enclosed room except Offices and Data Room.
7. Add (3) exterior wall mounted IP Speakers.
8. Add (3) exterior flush mounted J-boxes with conduit stubs into accessible ceiling space for future cameras.

END OF ADDENDUM NO.

R

Q

P

N

M

L

K

J

H

G

F

E

D

C

B

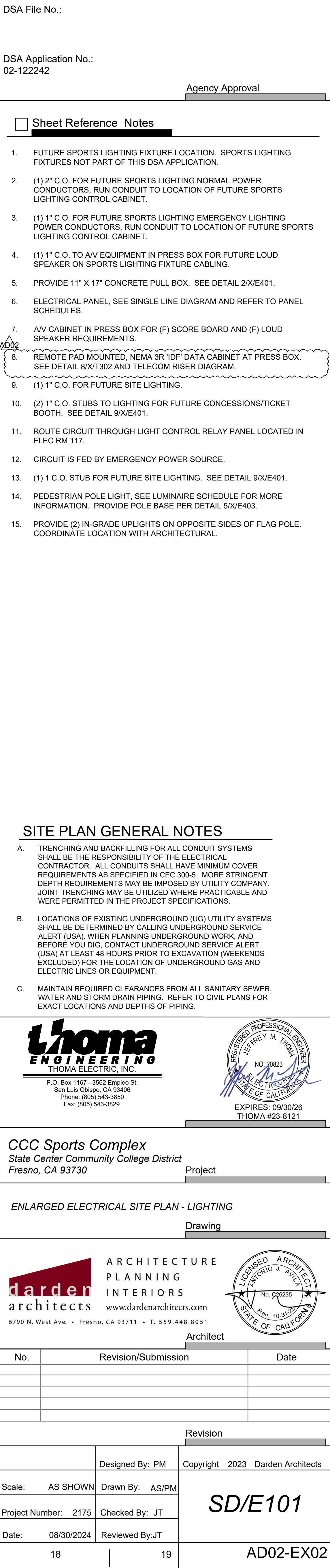
A

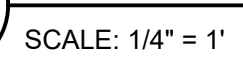
BUS RATING: 200A 277/480V, 3PH, 4W MAIN: 200A MAIN CIRCUT BREAKER SPACES: 42 FULL SIZE BOLT-ON CB SPACES AIC RATING: 30 KAIC PANEL										(N) PANEL 4P										SURFACE MOUNT, NEMA 1 LOCATION: ELECTRICAL ROOM 117 WITH EQUIPMENT GND BUS PANEL FED FROM "MDP"											
CKT %WD		DIST (FT)		LOAD NOTES TYPE		CKT	DESCRIPTION	TRIP	POLES	COND SIZE	PHASE A	PHASE B	PHASE C	COND SIZE	POLES	TRIP	DESCRIPTION	CKT	LOAD TYPE	NOTES	DIST (FT)	CKT %WD									
0.22%	50			M	1		HEAT PUMP HP-1	40	3	8				4268		XX	SPARE	2													
0.22%	50			M	3	"	"	-	-	8				4268		-	"	4													
0.22%	50			M	5	"	"	-	-	8				4268		-	"	6													
0.13%	40			M	7		HEAT PUMP HP-2	25	3	8				3104		-	SPACE	8													
0.13%	40			M	9	"	"	-	-	8				3104		-	SPACE	10													
0.13%	40			M	11	"	"	-	-	8				3104		-	SPACE	12													
0.15%	35			M	13		HEAT PUMP HP-3	40	3	8				4268		-	SPACE	14													
0.15%	35			M	15	"	"	-	-	8				4268		-	SPACE	16													
0.15%	35			M	17	"	"	-	-	8				4268		-	SPACE	18													
0.06%	25			L	19		LCP	20	1	12				500		-	SPACE	20													
0.49%	175			L	21		EXT. LIGHTING	20	1	12				548		-	SPACE	22													
					23		SPACE	-	-	-						-	SPACE	24													
					25		SPACE	-	-	-						-	SPACE	26													
					27		SPACE	-	-	-						-	SPACE	28													
					29		SPACE	-	-	-						-	SPACE	30													
					31		SPACE	-	-	-						-	SPACE	32													
					33		SPACE	-	-	-						-	SPACE	34													
					35		SPACE	-	-	-						-	SPACE	36													
					37		SPACE	-	-	-						-	SPACE	38													
					39		SPACE	-	-	-						-	SPACE	40													
					41		SPACE	-	-	-						-	SPACE	42													
PANEL SCHEDULE NOTES:										CON: 12140 12188 11640 25%: 125 137 0 SUB: 0 0 0 TOT: 12265 12325 11640 AMPS 44 44 42												LOAD (VA) LOAD TYPE LEGEND 0 R RECEPTACLE 1048 L LIGHTING (125% OF CONNECTED LOAD CEC 215.2) 34918.8 M MECHANICAL 0 K KITCHEN APPLIANCE 0 N NON-CONTINUOUS MSC 0 C CONTINUOUS MSC (125% OF CONNECTED LOAD CEC 215.2)									

BUS RATING: 600A 277/480V, 3PH, 4W MAIN: 600A 3P MAIN CIRCUIT BREAKER SPACES: 42 FULL SIZE BOLT-ON CB SPACES AIC RATING: 65 KAIC PANEL										(N) PANEL MDP			SURFACE MOUNT, NEMA 1 LOCATION: ELECTRICAL ROOM 117 WITH EQUIPMENT GND BUS LINE STYLE DIST: PANEL FED FROM SWBDB "MSB"												
CKT %WD	DIST (FT)	LOAD NOTES	TYPE	CKT	DESCRIPTION	TRIP	POLES	COND SIZE	PHASE A	PHASE B	PHASE C	COND SIZE	POLES	TRIP	DESCRIPTION	CKT	LOAD TYPE	DIST NOTES	(FT)	CT %WD					
			N	1	SPD	60	3	6				4070			SPARE FOR (F) SPORTS FIELD LIGHT POLE 1	2	L								
			N	3	"	-	-	6				4070			(F)10 - -	4	L								
			N	5	"	-	-	6				4070			(F)10 - -	6	L								
0.01%	10		N	7	PANEL 4P	200	3	3/0				12265 4070			(F)10 3 20	SPARE FOR (F) SPORTS FIELD LIGHT POLE 2	8	L							
0.01%	10		N	9	"	-	-	3/0				12325 4070			(F)10 - -	10	L								
0.01%	10		N	11	"	-	-	3/0				11640 4070			(F)10 - -	12	L								
0.05%	35		N	13	XFRMR T-2-1 / PANEL 2P	225	3	4/0				19513 4070			(F)10 3 20	SPARE FOR (F) SPORTS FIELD LIGHT POLE 3	14	L							
0.07%	35		N	15	"	-	-	4/0				25886 4070			(F)10 - -	16	L								
0.06%	35		N	17	"	-	-	4/0				21603 4070			(F)10 - -	18	L								
			C	19	SPARE FOR (F) SPORTS FIELD SCOREBOARD	200	3	(F)3/0				37500 4070			(F)8 3 20	SPARE FOR (F) SPORTS FIELD LIGHT POLE 4	20	L							
			C	21	"	-	-	3	(F)3/0			37500 4070			(F)8 - -	22	L								
			C	23	"	-	-	3	(F)3/0			37500 4070			(F)8 - -	24	L								
				25	SPACE	-	-	-				22170			(F)2 3 100	SPARE FOR (F) CONCESSIONS BLDG.	26	N							
				27	SPACE	-	-	-				22170			(F)2 - -	28	N								
				29	SPACE	-	-	-				22170			(F)2 - -	30	N								
				31	SPACE	-	-	-							3	100	SPARE	32							
				33	SPACE	-	-	-							-	-		34							
				35	SPACE	-	-	-							-	-		36							
				37	SPACE	-	-	-							3	100	SPARE	38							
				39	SPACE	-	-	-							-	-		40							
				41	SPACE	-	-	-							-	-		42							
PANEL SCHEDULE NOTES:						CON: 107228 114161 109192 25%: 13445 13445 13445 SUB: 0 0 0 37416 TOT: 121173 127606 122637 446.74 AMPS 437 461 443														LOAD (VA) LOAD TYPE LEGEND 0 R RECEPTACLE 48840 L LIGHTING (125% OF CONNECTED LOAD CEC 215.2) 0 M MECHANICAL 0 K KITCHEN APPLIANCE 169740.55 N NON-CONTINUOUS MSC 112500 C CONTINUOUS MSC (125% OF CONNECTED LOAD CEC 215.2)					

BUS RATING: 200A 277/480V, 3PH, 4W MAIN: 200A MAIN CIRCUIT BREAKER SPACES: 42 FULL SIZE BOLT-ON CB SPACES AIC RATING: 36 KAIC PANEL										(N) PANEL 4E1										SURFACE MOUNT, NEMA 1 LOCATION: ELECTRICAL ROOM 117 WITH EQUIPMENT GND BUS PANEL FED FROM "MDP"									
CONNECTED VA										CONNECTED VA										CONNECTED VA									
CKT	DIST	LOAD	LOAD	CT	DESCRIPTION	TRIP	POLES	COND	PHASE	PHASE	PHASE	COND	POLES	TRIP	DESCRIPTION	CKT	LOAD	DIST	CT										
%WD	(FT)	NOTES	TYPE					SIZE	A	B	C	SIZE				TYPE	NOTES	(FT)	%WD										
0.04%	35		N	1	XFRMR T-2-E1 / PANEL 2E1	70	3	4	2005 360						(F)12	3	20	SPARE FOR (F) SPORTS FIELD EM LIGHTING POLE 1 & 2	2										
0.07%	35		N	3	"	-	-	4	4992 360						(F)12	-	-	"	4										
0.06%	35		N	5	"	-	-	4			4031 360				(F)12	-	-	"	6										
0.08%	105		L	7	EXTERIOR LIGHTING	20	1	12	174 180						(F)12	3	20	SPARE FOR (F) SPORTS FIELD EM LIGHTING POLE 3 & 4	8										
0.13%	240			9	EXTERIOR LIGHTING	20	1	12		106 180					(F)12	-	-	"	10										
				11	SPACE	-	-	-			180				(F)12	-	-	"	12										
				13	SPACE	-	-	-								SPACE	14												
				15	SPACE	-	-	-								SPACE	16												
				17	SPACE	-	-	-								SPACE	18												
				19	SPACE	-	-	-								SPACE	20												
				21	SPACE	-	-	-								SPACE	22												
				23	SPACE	-	-	-								SPACE	24												
				25	SPACE	-	-	-								SPACE	26												
				27	SPACE	-	-	-								SPACE	28												
				29	SPACE	-	-	-								SPACE	30												
				31	SPACE	-	-	-								SPACE	32												
				33	SPACE	-	-	-								SPACE	34												
				35	SPACE	-	-	-								SPACE	36												
				37	SPACE	-	-	-								SPACE	38												
				39	SPACE	-	-	-								SPACE	40												
				41	SPACE	-	-	-								SPACE	42												
PANEL SCHEDULE NOTES:										CON: 3640 5638 4571 25%: 179 162 135 SUB: 0 0 0 TOT: 3819 5800 4706 AMPS 14 21 17										LOAD (VA) LOAD TYPE LEGEND 0 R RECEPTACLE 1900 L LIGHTING (125% OF CONNECTED LOAD CEC 215.2) 0 M MECHANICAL 0 K KITCHEN APPLIANCE 11948 N NON-CONTINUOUS MSC 0 C CONTINUOUS MSC (125% OF CONNECTED LOAD CEC 215.2)									

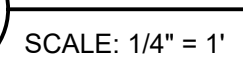
BUS RATING: 600A 120/208V, 3PH, 4W MAIN: 600A 3P MAIN CIRCUT BREAKER SPACES: 66 FULL SIZE BOLT-ON CB SPACES AIC RATING: 10 KA/CIRCUIT										(N) PANEL 2P CONNECTED VFA										SURFACE MOUNT, NEMA 1 LOCATION: ELECTRICAL ROOM 117 WITH EQUIPMENT GND BUS PANEL FED FROM WTRB1-F2-17PNL "4P"									
CKT #WD	DIST (FT)	LOAD NOTES	TYPE	CKT	DESCRIPTION	TRIP	POLES	COND SIZE	PHASE A	PHASE B	PHASE C	COND SIZE	POLES	TRIP	DESCRIPTION	CKT	LOAD TYPE	DIST (FT)	CKT #WD										
				N	1	SPD	30	3	10				1	20	SPARE	2													
				N	3	"	-	-	10				4/0	2	100	PANEL PB, PRESS BOX	4	N	580	2.35%									
				N	5	"	-	-	10				4/0	-	"		6	N	580	2.35%									
				R	7	SPARE FOR (F) FOOD TRUCK RECEPT.	50	2	(F)8				(F)8	2	50	SPARE FOR (F) TICKET BOOTH	8												
				R	9	"	-	-	(F)8				(F)8	-	"		10												
1.61%	65			R	11	ELEC 117, DATA 118, ROOF	20	1	12				900	12	1	20	NIT. LIGHTING	12	L	90	2.65%								
1.62%	80			R	13	STORAGE 111, TEAM ROOM 115, RR 116, SCG-1, ETP-2	20	1	12	1395 985			12	1	20	NIT. LIGHTING	14	L	90	2.44%									
0.97%	25			N	15	ICE MACHINE	20	1	12				1416	1	20	SPARE	16												
0.47%	20			N	17	ICE MACHINE	20	2	12				1477 1000	12	1	20	TRAINING ROOM 116, CORRIDOR 107, EPT-1	18	R	65	1.79%								
0.47%	20			N	19	"	-	-	12				1477 1000	12	1	20	COMBINATION UNIT	20	N	60	1.65%								
0.41%	15			C	21	HYDROCOLLATOR	20	1	12				1000 600	12	1	20	THERAPY TABLE	22	N	60	0.99%								
0.46%	20			N	23	WHIRLPOOL	20	1	12				828 600	12	1	20	THERAPY TABLE	24	N	60	0.98%								
0.35%	35			R	25	TRAINING ROOM KITCHENETTE	20	1	12				360 600	12	1	20	THERAPY TABLE	26	N	65	1.07%								
1.16%	35			N	27	MICROWAVE	20	1	12				1200 600	12	1	20	THERAPY TABLE	28	N	65	1.07%								
0.58%	35			N	29	UIC REFRIGERATOR	20	1	12				600 1440	12	1	20	OFFICE 108, OFFICE 109	30	R	65	2.57%								
1.13%	50			R	31	LAUNDRY ROOM 112, ETP-1	20	1	12	820 1050			600 1440	12	1	20	TEAM ROOM 105, WRS 101, 102, 104, EXT. OF EDC, SCG-1, ETP-2	32	R	80	2.31%								
0.83%	50			M	33	COMMERCIAL WASHER	20	1	12				600 800	12	2	20	HAND DRY ER R02	34	M	80	1.02%								
1.65%	50			M	35	COMMERCIAL GAS DRY ER	20	1	12				1200 800	12	-	"		36	M	80	1.02%								
1.11%	75			R	37	HR-1, HR-2, HR-3 RECEPT.	20	1	12	540 800			12	2	20	HAND DRY ER R02	38	M	80	1.02%									
				39	SPARE	20	1						800	12	-	"		40	M	80	1.02%								
				41	SPARE	20	1						800	12	2	20	HAND DRY ER R01	42	M	100	1.27%								
				43	SPARE	20	1						800	12	-	"		44	M	100	1.27%								
				45	SPARE	20	1						800	12	2	20	HAND DRY ER R01	46	M	100	1.27%								
				47	SPARE	20	1						800	12	-	"		48	M	100	1.27%								
1.32%	120			M	49	IPRESSATION CONTROLLER	20	1	12	400 720			14	1	15	EXHAUST FAN EP-1, EF-2, EF-4	50	M	65	2.04%									
2.02%	520			R	51	FIELD RECEPTACLES	20	1	8	360 820			12	1	20	(2) WH-1, CP-1	52	M	50	1.13%									
0.88%	450			R	53	FIELD RECEPTACLES	20	1	8				180 1320	10	1	20	EXHAUST FAN EF-3	54	N	90	2.05%								
				55	SPACE	-	-	-					-	-	-	SPACE	56												
				57	SPACE	-	-	-					-	-	-	SPACE	58												
				59	SPACE	-	-	-					-	-	-	SPACE	60												
				61	SPACE	-	-	-					-	-	-	SPACE	62												
				63	SPACE	-	-	-					-	-	-	SPACE	64												
				65	SPACE	-	-	-					-	-	-	SPACE	66												
60				67	SOLAR PV / BESS	100	3	2					-	-	-	SPACE	68												
60				69	"	-	-	-	2				-	-	-	SPACE	70												
60				71	"	-	-	-	2				-	-	-	SPACE	72												
PANEL SCHEDULE NOTES:							CON			19267	26636	21338	LOAD (VA) LOAD TYPE/DESIGN																
							25%:			240	250	288	16365 R RECEPTACLE																
							SUB:			0	0	0	2055 L LIGHTING (125% OF CONNECTED LOAD CEC 215.2)																
							67002 TOT:			19613	26886	21603	1040 M MECHANICAL																
							AMPS			163	216	180	0 K KITCHEN APPLANCE																
													29358 N NON-CONTINUOUS MISC.																
													10000 C CONTINUOUS MISC. (125% OF CONNECTED LOAD CEC 215.2)																



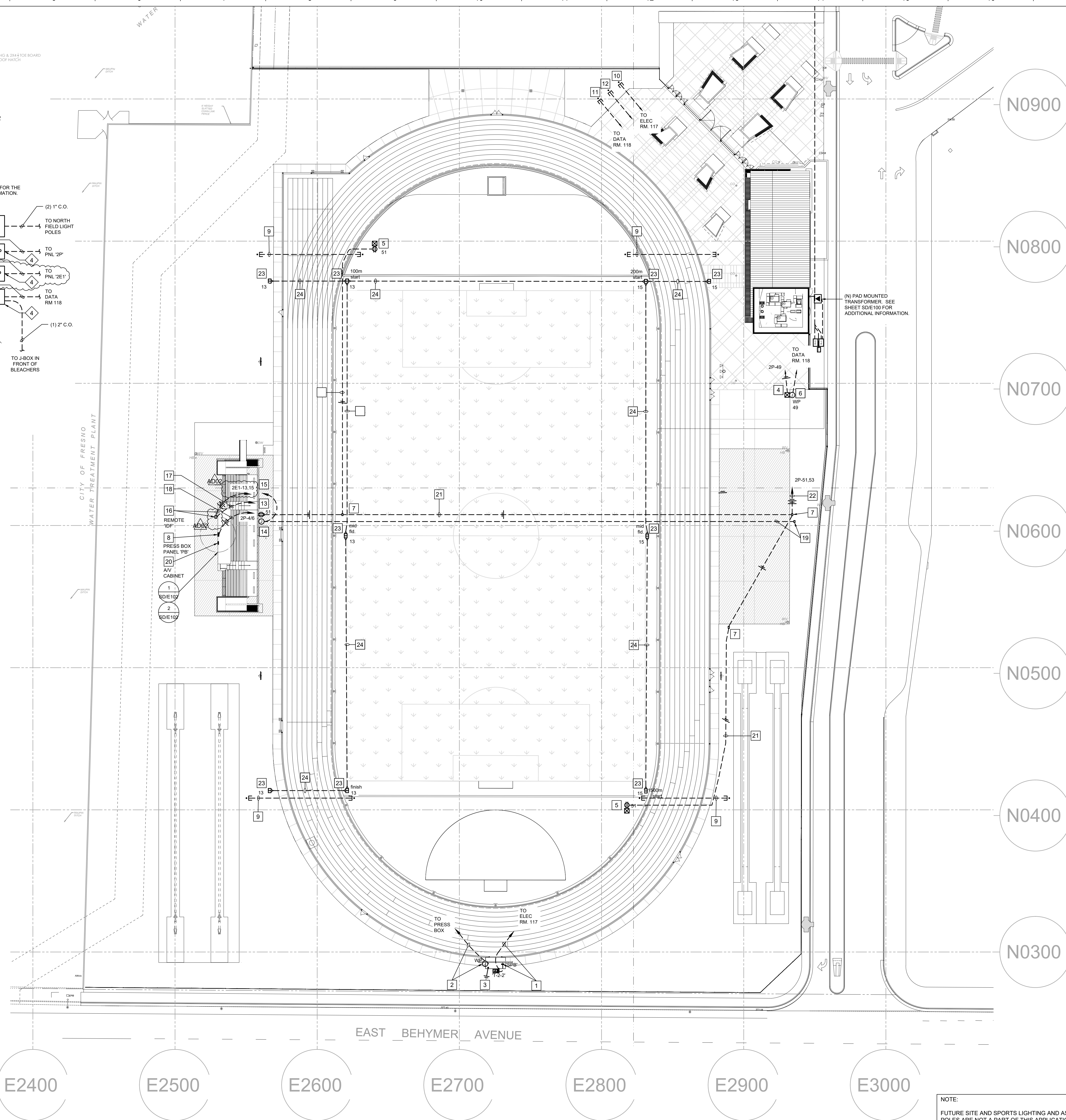
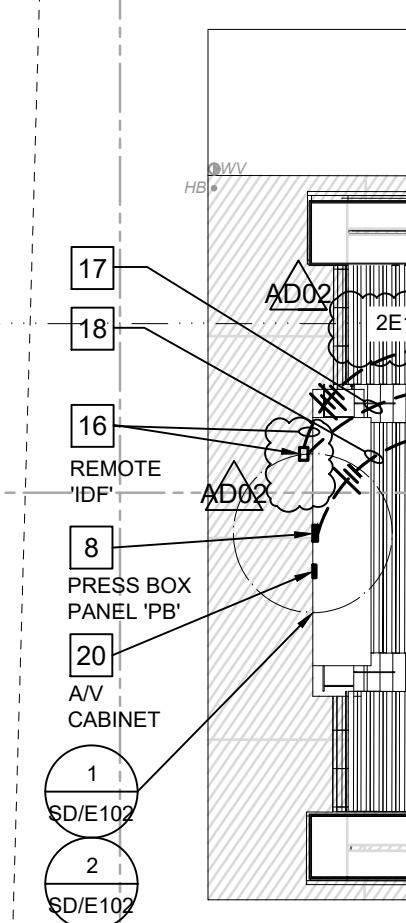


SCALE: 1/4" = 1'

DETAIL 1 & 2 NOTE:
REFER TO, AND COORDINATE INSTALLATION WITH, THE APPROVED SHOP DRAWINGS FOR THE PRESS BOX. SEE PRESS BOX SHOP DRAWINGS FOR BUILDING CONSTRUCTION INFORMATION.



1. PROVIDE A MINIMUM 24" X 24" X 6" J-BOX FOR PRESS BOX A/V CABLING.
2. REMOVE PAD MOUNTED, NEMA 3R IDF CABINET. SEE DETAIL 8/R/T302 AND COORDINATE WITH TELECOM RINGS DIAGRAM FOR REQUIREMENTS.
3. PROVIDE A MINIMUM 2' X 3' CONCRETE PULL BOX FOR A/V CABLING.
4. PROVIDE A MINIMUM 17' X 30" CONCRETE PULL BOX FOR POWER CIRCUITS AND DATA CABLING.
5. PROVIDE FIELD TIMING SYSTEM CIRCUIT CONTROL SWITCHES, 20A 3-P 5T, IN COORDINATION WITH SITE POWER PLAN REF. NO. 25. FIELD COORDINATE LOCATION OF SWITCHES. LABEL THE SWITCH WITH CIRCUIT NUMBER AND USE.
6. EXTERIOR W/P. WALL MOUNTED WIRELESS ACCESS POINT. SEE DETAIL 2/X/T301. COORDINATE FINAL LOCATION WITH COLLEGE I.T. REPRESENTATIVE.
7. PROVIDE A MINIMUM 24" X 24" X 6" J-BOX FOR PRESSBOX COMMUNICATION CABLING DISTRIBUTION.



NOTE:

FUTURE SITE AND SPORTS LIGHTING AND ASSOCIATED POLES ARE NOT A PART OF THIS APPLICATION.



SCALE: 1" = 30'-0"

DSA Application No.:
02-122242

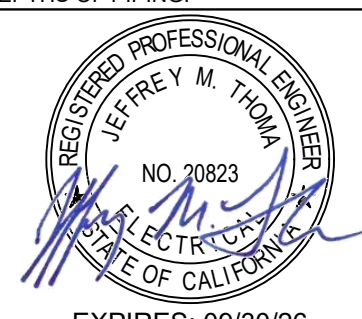
Agency Approval

1. PROVIDE (1) 2" C TO PANEL MDP WITH FEEDER, STEP-DOWN TRANSFORMER T-2-2 W/ ASSOCIATED DISCONNECT SWITCHES AND PANEL 'PSB' MOUNTED TO STEEL COLUMN. SEE SINGLE LINE DIAGRAM. PROVIDE BRANCH CIRCUIT CONNECTIONS FROM PSB TO SCOREBOARD PER SCOREBOARD INSTALLATION INSTRUCTIONS.
2. (3) 2" C. FROM SCOREBOARD CONTROLLER TO PRESS BOX FOR SCOREBOARD SIGNALS & CONTROL CABLING. VERIFY EXACT LOCATIONS WITH ARCHITECTURAL PLANS.
3. PROVIDE GROUND ROD WITH GROUNDING CONDUCTOR FROM SCOREBOARD FRAME TO GROUND ROD AS PER SCOREBOARD MANUFACTURERS INSTALLATION INSTRUCTIONS. SEE DETAIL.
4. PROVIDE 120V CONNECTION TO IRRIGATION CONTROLLER AS PER IRRIGATION DRAWINGS. VERIFY EXACT LOCATION WITH IRRIGATION DRAWINGS.
5. GFI RECEPTACLE WITH WIU COVER IN ENCLOSURE ON POST. TRANSITION CONDUCTORS DOWN TO #12 IN RECEPTACLE ENCLOSURE AS REQUIRED TO TERMINATE IN RECEPTACLE TERMINALS. SEE DETAIL.
6. PROVIDE (1) 1" C.O. FROM IRRIGATION CONTROLLER TO DATA CABINET FOR FUTURE IRRIGATION CONTROL CABLING.
7. PROVIDE 11" X 17" CONCRETE PULL BOX. SEE DETAIL 2X/E401.
8. ELECTRICAL PANEL, SEE SINGLE LINE DIAGRAM AND REFER TO PANEL SCHEDULES.
9. PROVIDE (1) 1" C.O. STUB UNDERNEATH TABLE. SEE DETAIL 9X/E401.
10. (2) 2" C.O. STUBS TO PANEL MDP AND 2" CP FOR POWER TO FUTURE CONCESSIONS / TICKET BOOTH. SEE SINGLE LINE DIAGRAM. SEE DETAIL 9X/E401.
11. (1) 2" C.O. STUB TO DATA CABINET FOR COMMUNICATIONS / TICKET CONCESSIONS / TICKET BOOTH. SEE DETAIL 9X/E401.
12. (1) 2" C.O. STUB TO PANEL 2" CP FOR POWER TO FUTURE FOOD SERVICE TRUCK PEDESTAL. SEE DETAIL 9X/E401.
13. GFI RECEPTACLE WITH WIU COVER, MOUNT ON FACE OF BLEACHER SUPPORTS.
14. WP J-BOX FOR FUTURE COMMUNICATION DEVICE, MOUNT IN FACE OF BLEACHER SUPPORTS.
15. (1) 2" C.O. TO REMOTE '1D' IN PRESS BOX FOR (F) COMMUNICATION CABLING. SEE TELECOM RISER DIAGRAM.
16. REMOTE PAD MOUNTED, NEMA 3R 1D/1D DATA CABINET AT PRESS BOX. SEE DETAIL 8X/T302 AND CONDUIT Riser DIAGRAM. PROVIDE (2) DEDICATED 120V CIRCUITS. CONDUIT SIZE PER DETAIL 1/SD/E102.
17. (1) 2" CONDUIT WITH 24-STRAND FIBER TO DATA ROOM 118. SEE TELECOM RISER DIAGRAM.
18. CONDUIT AND FEEDER PER SINGLE LINE DIAGRAM TO ELECTRICAL ROOM 117.
19. PROVIDE 1" 1" PULL BOX AND (1) 2" C.O. SPANNING BETWEEN FIELD BLEACHERS FOR (F) COMMUNICATION CABLING.
20. A/V CABINET IN PRESS BOX FOR (F) SCORE BOARD AND (F) LOUD SPEAKER REQUIREMENTS.
21. PROVIDE (1) 1" CONDUIT WITH (2) #8 THWN AND (1) #8 GND.
22. PROVIDE (1) 1" CONDUIT WITH (4) #8 THWN AND (2) #8 GND AND (1) SPARE 2" C.O. TO ELEC RM 117.
23. 2-SECTION (DIVIDED) COMBO BOX FOR TIMING SYSTEM CONNECTIONS. COORDINATE BOX REQUIREMENTS AND LOCATIONS WITH CIVIL PLANS.
24. PROVIDE (2) 2" C FOR TIMING SYSTEM POWER/SIGNAL.
25. PROVIDE (2) 120V, 20A CIRCUITS FOR TIMING SYSTEM. #13 ON WEST SIDE USING #6 AWG AND #15 ON EAST SIDE USING #6 AWG. ROUTE THE CIRCUITS THROUGH A COUNTER SWITCH IN THE PRESS BOX AND CONNECT THE 20A/1P 120V CIRCUIT BREAKERS IN PRESS BOX PANEL 'PB'.
26. PROVIDE (1) 1/4" VC TO PRESS BOX FOR TIMING SYSTEM SIGNAL CABLING TO THE TIMING COMPUTER.

A. TRENCING AND BACKFILLING FOR ALL CONDUIT SYSTEMS SHALL BE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. ALL CONDUITS SHALL HAVE MINIMUM COVER REQUIREMENTS AS SPECIFIED IN CDD 300.5. MORE STRINGENT DEPTH REQUIREMENTS MAY BE IMPOSED BY UTILITY COMPANIES. JOINT TRENCHING MAY BE UTILIZED WHERE PRACTICABLE AND WERE PERMITTED IN THE PROJECT SPECIFICATIONS.

B. LOCATIONS OF EXISTING UNDERGROUND (UG) UTILITY SYSTEMS SHALL BE DETERMINED BY CALLING UNDERGROUND SERVICE ALERT (USA) WHEN PLANNING UNDERGROUND WORK, AND BEFORE YOU DIG. CONTACT UNDERGROUND SERVICE ALERT (USA) AT LEAST 48 HOURS PRIOR TO EXCAVATION (WEEKENDS EXCLUDED) FOR THE LOCATION OF UNDERGROUND GAS AND ELECTRIC LINES OR EQUIPMENT.

C. MAINTAIN REQUIRED CLEARANCES FROM ALL SANITARY SEWER, WATER AND STORM DRAIN PIPING. REFER TO CIVIL PLANS FOR EXIST' LOCATIONS AND DEPTHS OF PIPING.



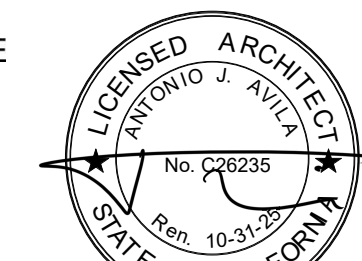
EXPIRES: 09/30/26
THOMA #23-8121

CCC Sports Complex
State Center Community College District
Fresno, CA 93730

Project

ENLARGED ELECTRICAL SITE PLAN, POWER / TELECOM

- POWER



Archite

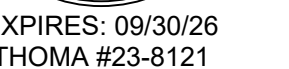
[illegible]

SD/E102

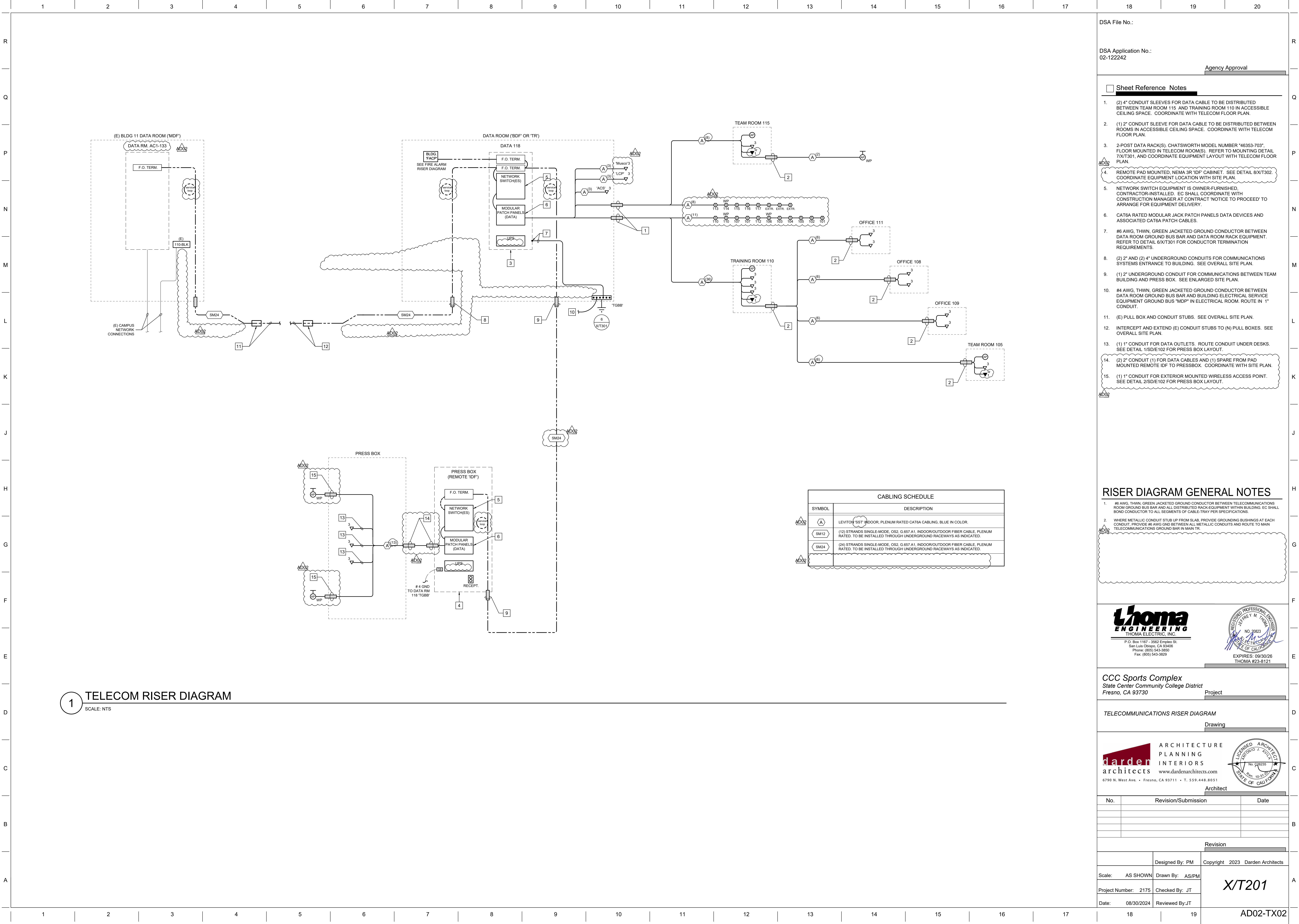
AD02-EX03



1. U/G ELECTRICAL AND COMMUNICATIONS CONDUITS PER SITE PLAN.
2. PULL BOXES PER SITE PLAN.
3. MEDIUM VOLTAGE TRANSFORMER PER SINGLE LINE DIAGRAM.
4. INDOOR UNIT POWERED FROM OUTDOOR UNIT ON ROOF--REFER TO SHEET AE301 FOR OUTDOOR UNIT LOCATION AND CIRCUITING. COORDINATE INDOOR UNIT LOCATIONS WITH MECHANICAL CONTRACTOR. PROVIDE 20A, 208V, 2P TWIGLE SWITCH AT INDOOR UNIT (VOLTAGE POLE COUNT FOR OUTDOOR TO INDOOR POWER FEED WITH SUPPLIED EQUIPMENT).
5. HALF SWITCHED CONTROL RECEPTABLES REQUIRED IN OFFICE AREAS PER CENC 130.5 (d). COORDINATE WITH LIGHTING FLOOR PLAN AND CONTROL DIAGRAM ON SHEET XE301.
6. PROVIDE 120V LINE VOLTAGE POWER CONNECTION TO SHOWER CONTROL SOLENOID VALVES IN ACCESSIBLE CEILING SPACE. COORDINATE WITH PLUMBING PLANS
7. PROVIDE 120V LINE VOLTAGE POWER CONNECTION POWER TO ELECTRONIC TRAP PRIMER. COORDINATE WITH PLUMBING PLANS.
8. PROVIDE 120V LINE VOLTAGE POWER CONNECTION TO DOMESTIC HOT WATER CIRCULATING PUMP. COORDINATE WITH PLUMBING PLANS.
9. SEE DETAIL 5X401 FOR MOUNTING REQUIREMENTS OF SURFACE MOUNTED ELECTRICAL PANELS AND CABINETS. TYPICAL.
10. SPACE ALLOCATED FOR (F) MUSCO FIELD LIGHTING CONTROL & AUXILIARY PANELS.
11. PROVIDE POWER CONNECTION TO MECH SFD. ROUTE CIRCUIT THROUGH FIRE ALARM RELAY TO DE-ENERGIZE AND CLOSE THE DAMPER UPON ACTIVATION OF THE TOTAL COVERAGE SMOKE DETECTION FIRE ALARM SYSTEM.

[illegible]

AD02-EX04



DSA File No.:

DSA Application No.:
02-122242

Agency Approval

Sheet Reference Notes

- (2) 4" CONDUIT SLEEVES FOR DATA CABLE TO BE DISTRIBUTED BETWEEN TEAM ROOM 115 AND TRAINING ROOM 110 IN ACCESSIBLE CEILING SPACE. COORDINATE WITH TELECOM FLOOR PLAN.
- (1) 2" CONDUIT SLEEVE FOR DATA CABLE TO BE DISTRIBUTED BETWEEN ROOMS IN ACCESSIBLE CEILING SPACE. COORDINATE WITH TELECOM FLOOR PLAN.
- 2-POST DATA RACK(S), CHATSWORTH MODEL NUMBER "46353-703", FLOOR MOUNTED IN TELECOM ROOM(S). REFER TO MOUNTING DETAIL 7/X/T301, AND COORDINATE EQUIPMENT LAYOUT WITH TELECOM FLOOR PLAN.
- REMOTE PAD MOUNTED, NEMA 3R 10" CABINET. SEE DETAIL 8/X/T302. COORDINATE EQUIPMENT LOCATION WITH SITE PLAN.
- NETWORK SWITCH EQUIPMENT IS OWNER-FURNISHED. CONTRACTOR-INSTALLED. EC SHALL COORDINATE WITH CONSTRUCTION MANAGER AT CONTRACT NOTICE TO PROCEED TO ARRANGE FOR EQUIPMENT DELIVERY.
- CAT6A RATED MODULAR JACK PATCH PANELS DATA DEVICES AND ASSOCIATED CAT6A PATCH CABLES.
- #6 AWG, THWN, GREEN JACKETED GROUND CONDUCTOR BETWEEN DATA ROOM GROUND BUS BAR AND DATA ROOM RACK EQUIPMENT. REFER TO DETAIL 6/X/T301 FOR CONDUCTOR TERMINATION REQUIREMENTS.
- (2) 2" AND (2) 4" UNDERGROUND CONDUITS FOR COMMUNICATIONS SYSTEMS ENTRANCE TO BUILDING. SEE OVERALL SITE PLAN.
- (1) 2" UNDERGROUND CONDUIT FOR COMMUNICATIONS BETWEEN TEAM BUILDING AND PRESS BOX. SEE ENLARGED SITE PLAN.
- #4 AWG, THWN, GREEN JACKETED GROUND CONDUCTOR BETWEEN DATA ROOM GROUND BUS BAR AND BUILDING ELECTRICAL SERVICE EQUIPMENT GROUND BUS "MDP" IN ELECTRICAL ROOM. ROUTE IN 1" CONDUIT.
- (E) PULL BOX AND CONDUIT STUBS. SEE OVERALL SITE PLAN.
- INTERCEPT AND EXTEND (E) CONDUIT STUBS TO (N) PULL BOXES. SEE OVERALL SITE PLAN.
- (1) 1" CONDUIT FOR DATA OUTLETS. ROUTE CONDUIT UNDER DESKS. SEE DETAIL 1/SD/E102 FOR PRESS BOX LAYOUT.
- (2) 2" CONDUIT (1) FOR DATA CABLES AND (1) SPARE FROM PAD MOUNTED REMOTE IDF TO PRESSBOX. COORDINATE WITH SITE PLAN.
- (1) 1" CONDUIT FOR EXTERIOR MOUNTED WIRELESS ACCESS POINT. SEE DETAIL 2/SD/E102 FOR PRESS BOX LAYOUT.

RISER DIAGRAM GENERAL NOTES

- #6 AWG, THWN, GREEN JACKETED GROUND CONDUCTOR BETWEEN TELECOMMUNICATIONS ROOM GROUND BUS BAR AND ALL DISTRIBUTED RACK-EQUIPMENT WITHIN BUILDING. EC SHALL BOND CONDUCTOR TO ALL SEGMENTS OF CABLE-TRAY PER SPECIFICATIONS.
- WHERE METALLIC CONDUIT STUB UP FROM SLAB, PROVIDE GROUNDING BUSHINGS AT EACH CONDUIT. PROVIDE #6 AWG GND BETWEEN ALL METALLIC CONDUITS AND ROUTE TO MAIN TELECOMMUNICATIONS GROUND BAR IN MAIN TR.

thoma
ENGINEERING

P.O. Box 1167 - 5562 Empire St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829



EXPIRES: 09/30/26
THOMA #23-8121

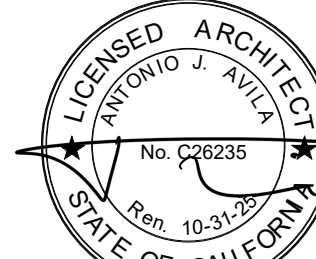
CCC Sports Complex
State Center Community College District
Fresno, CA 93730

Project

TELECOMMUNICATIONS RISER DIAGRAM

Drawing

darden
architects
ARCHITECTURE
PLANNING
INTERIORS
www.dardenarchitects.com
6790 N. West Ave. • Fresno, CA 93711 • T. 559-448-8051

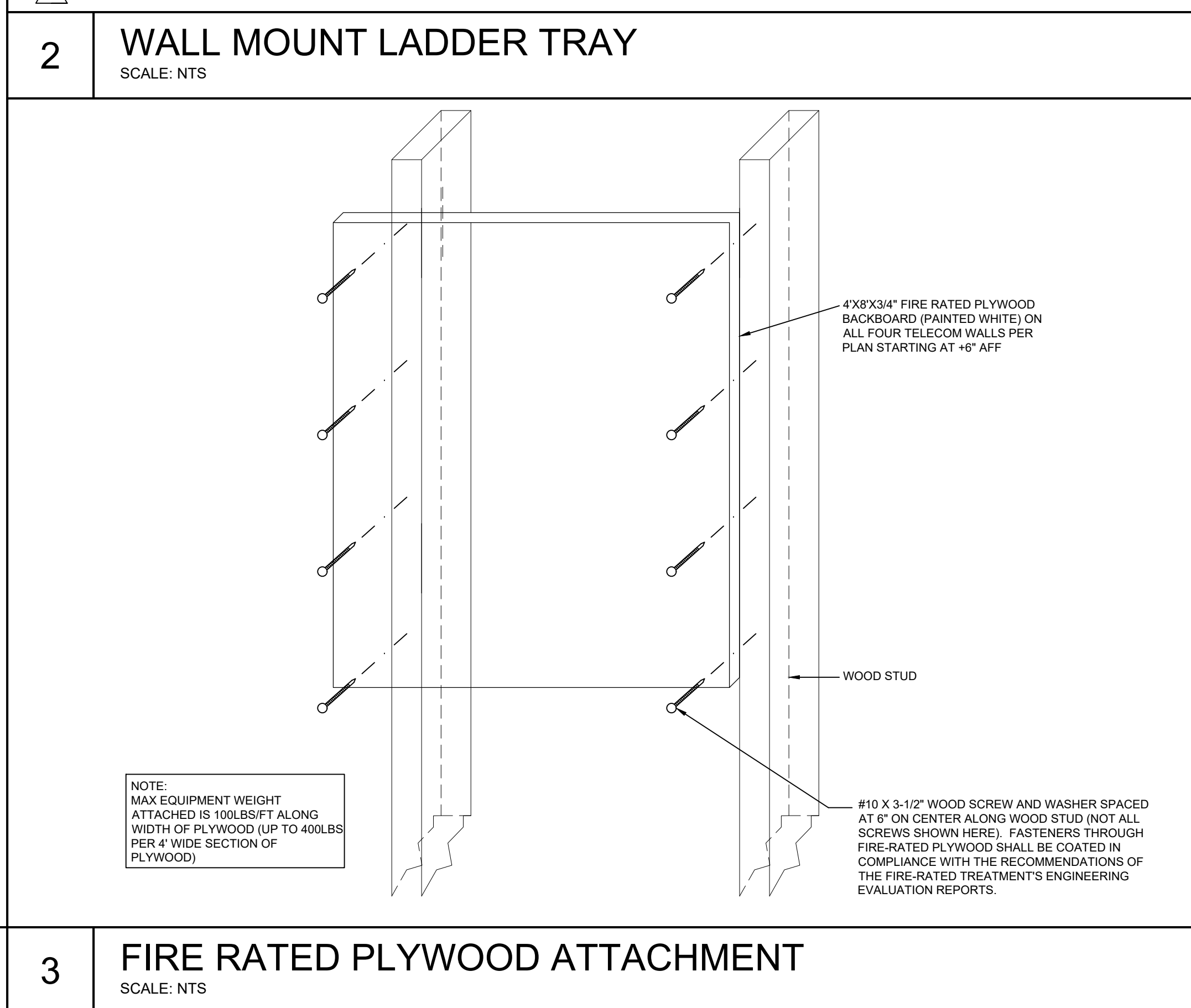
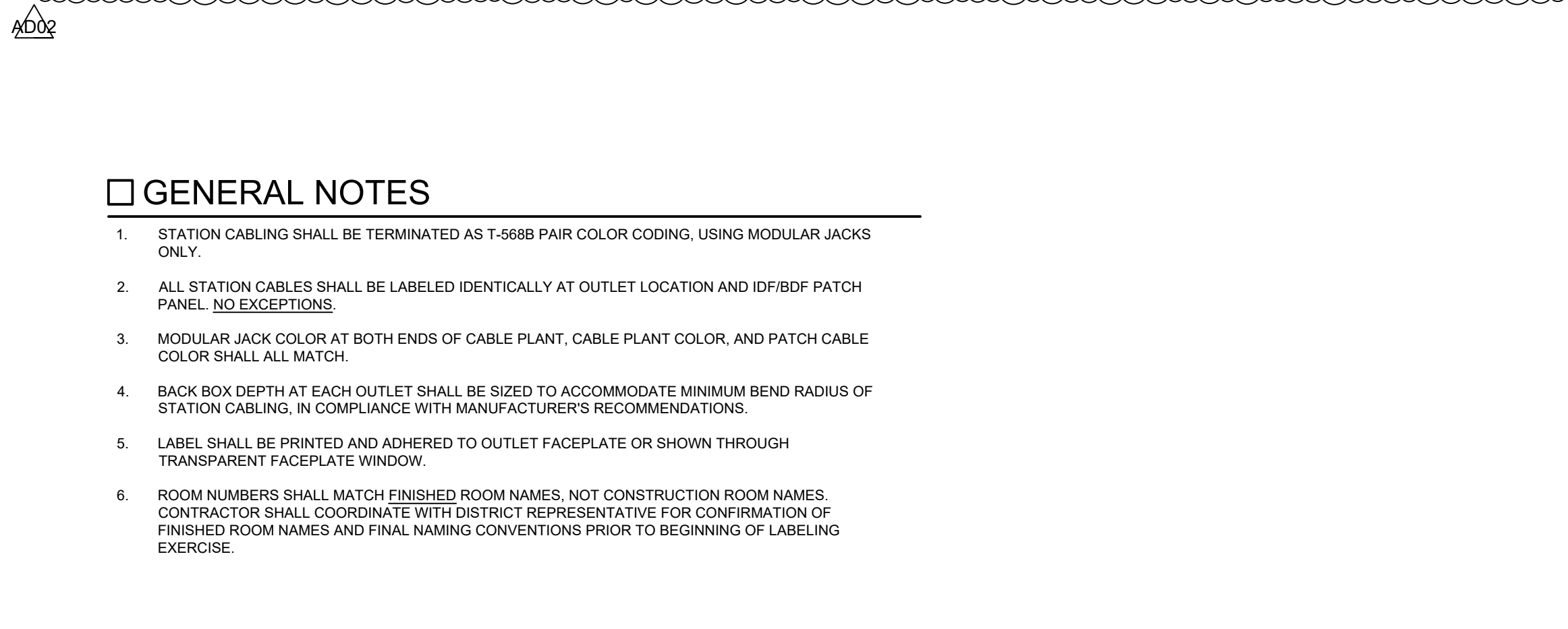


Architect

No.	Revision/Submission	Date
Revision		
	Designed By: PM	Copyright 2023 Darden Architects
Scale: AS SHOWN	Drawn By: AS/PM	X/T201
Project Number: 2175	Checked By: JT	
Date: 08/30/2024	Reviewed By: JT	

AD02-TX02

DSA File No.:	
DSA Application No.: 02-122242	
Agency Approval	
<input type="checkbox"/> Sheet Reference Notes	





THOMA ENGINEERING
THOMA ELECTRIC, INC.

P.O. Box 1167 • 3562 Emplato St.
San Luis Obispo, CA 93406
Phone: (805) 543-3850
Fax: (805) 543-3829



EXPIRES: 09/30/26
THOMA #23-8121


CCC Sports Complex

State Center Community College District
Fresno, CA 93730

Project

TELECOMMUNICATION DETAILS

Drawing



darden
architects

6790 N. West Ave. • Fresno, CA 93711 • T. 559.448.8051

ARCHITECTURE
PLANNING
INTERIORS

www.dardenarchitects.com



Architect

No.	Revision/Submission	Date

Revision

	Designed By: PM
--	-----------------

Copyright 2023 Darden Architects

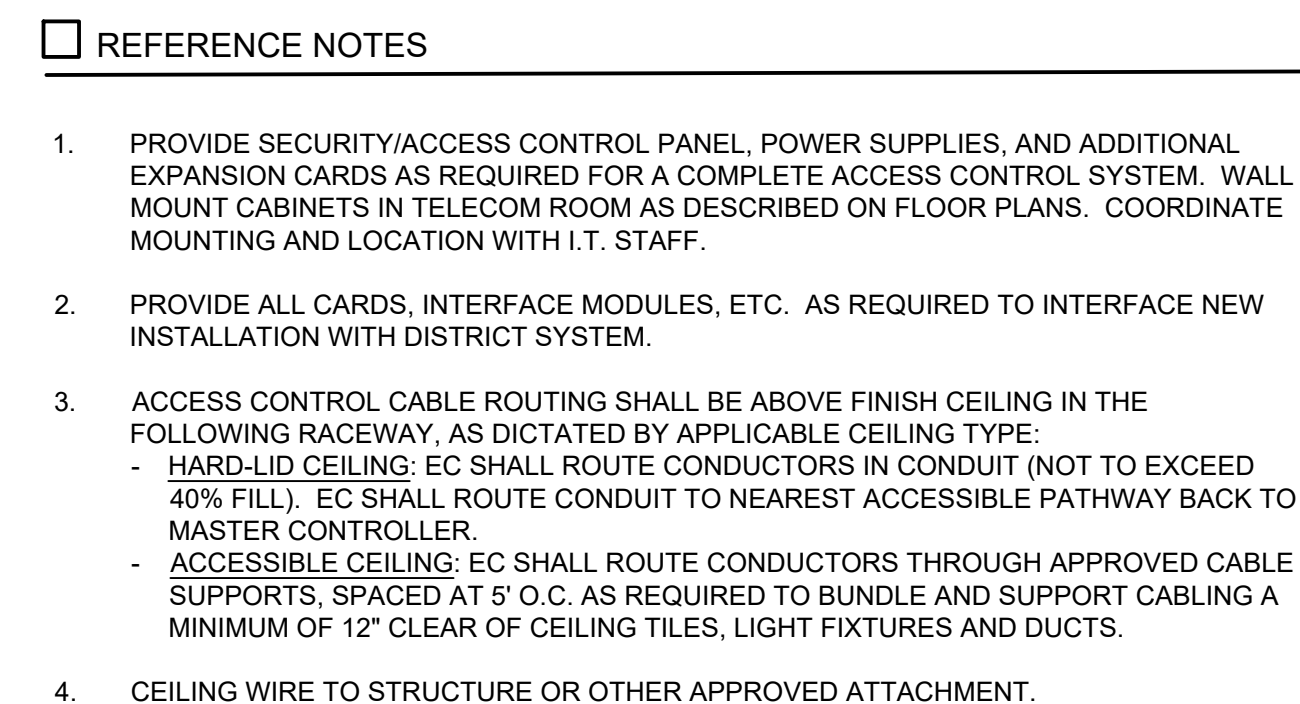
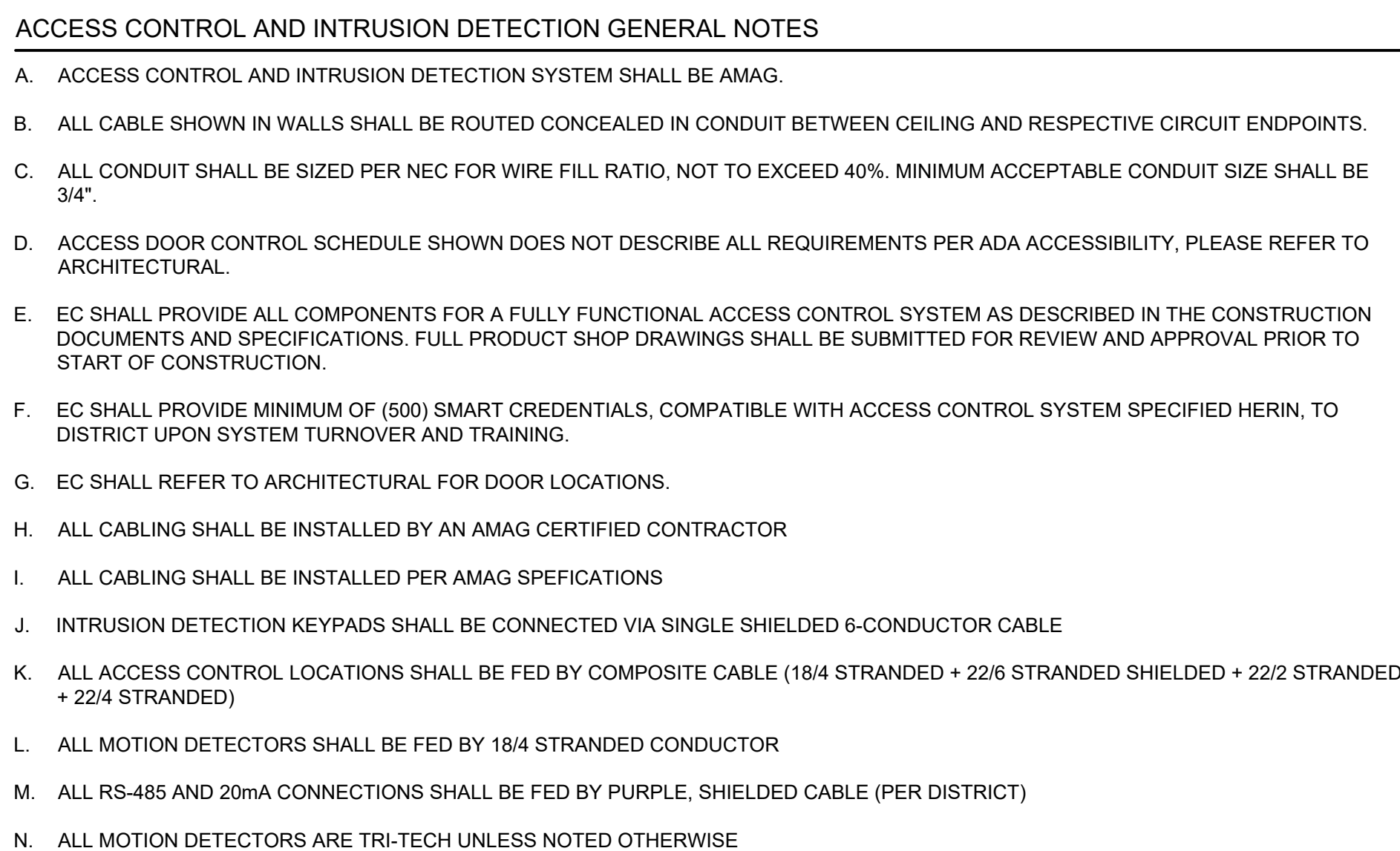
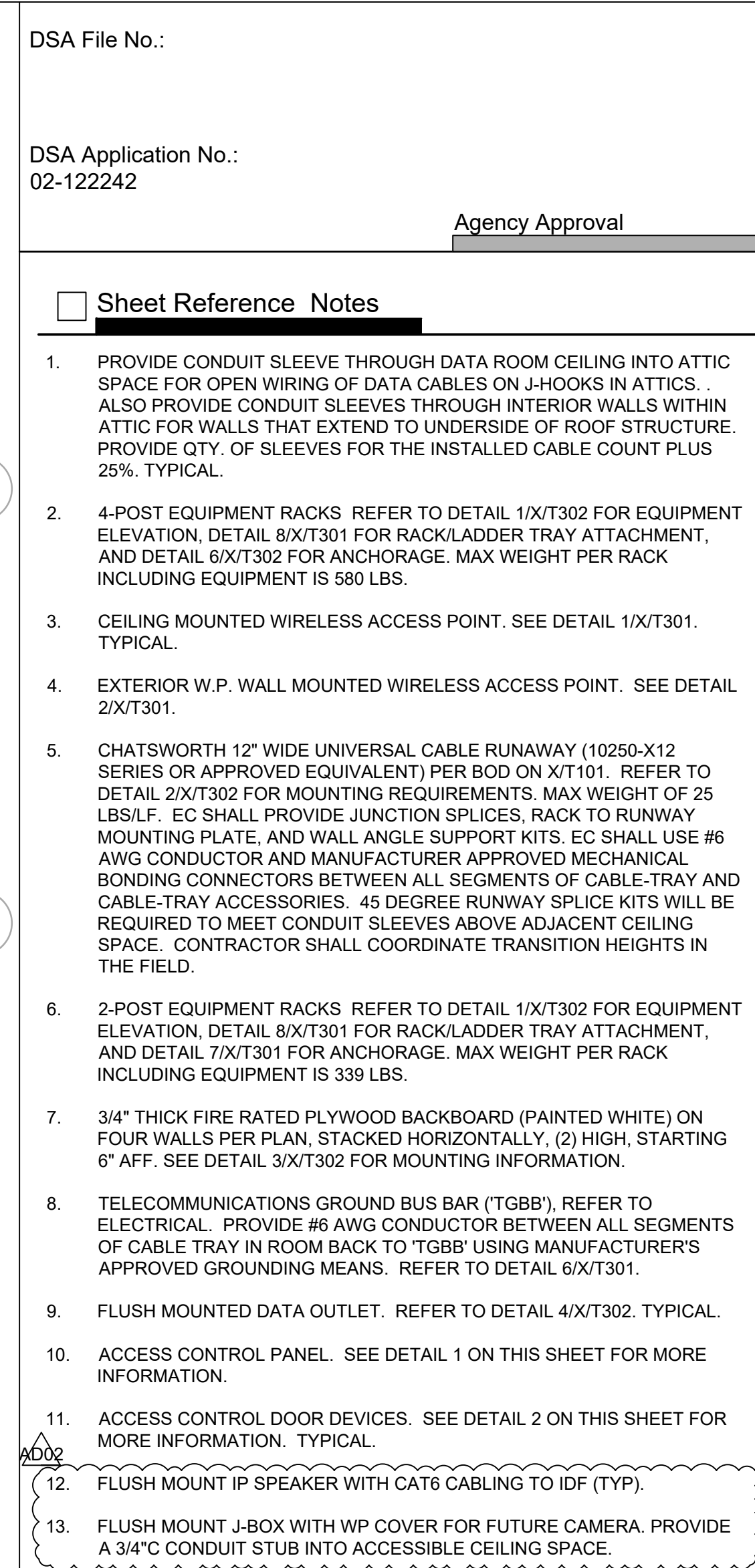
Scale: AS SHOWN

Project Number: 2175

Date: 08/30/2024

	AS/PM
	Checked By: JT

X/T302



CCC Sports Complex
State Center Community College District
Fresno, CA 93730

TELECOMMUNICATIONS FLOOR PLAN


**ARCHITECTURE
PLANNING
INTERIORS**
www.dardenarchitects.com
 6790 N. West Ave. • Fresno, CA 93711 • T. 559.448.8051


 Architect

No.	Revision/Submission	Date
Revision		
	Designed By: PM	Copyright 2023 Darden Architects
Scale: AS SHOWN	Drawn By: AS/PM	<i>A/T101</i>
Project Number: 2175	Checked By: JT	
Date: 08/30/2024	Reviewed By: JT	