Jurupa Unified School District

Public Works Project

CUPCCAA Project – Informal Bid

25-26-15MOIB – P&D Portable-HVAC and Low Voltage

Purchasing Department

4850 Pedley Road

Jurupa Valley, CA, 92509

Bid Date: April 2, 2026 at 2:00 P.M.

Bidding Documents	**Contract Documents**
☒ Notice Calling for Bids ☒ Instructions to Bidders ☒ CUPCCAAA Bid Form ☒ Bidders' Security ☒ Non-collusion Affidavit ☒ Site Visit Certification ☒ References ☒ California Air Resources Board (CARB) Compliance Certification **Project Specification Documents** ☒ Project Plans ☒ District Standards ☐ Special Conditions ☒ Specifications ☐ Other:	☒ Agreement Form ☒ Exhibit "A" (Scope of Work) ☒ Payment Bond ☒ Performance Bond ☒ Guarantee ☒ Insurance Documents and Endorsements ☒ Background Check Certification w/ Attachment "A" (List of Employees) ☒ Worker's Compensation Certificate ☒ Drug-Free Workplace Certification ☒ Alcohol and Tobacco Free Certification ☒ W-9 (Form available from IRS website)

BIDDING DOCUMENTS

Notice Calling for Bids

Jurupa Unified School District

CUPCCAA Project

Bids Due: April 2, 2026 at 2:00 P.M.

For

25-26-15MOIB - P&D Portable-HVAC and Low Voltage

The Jurupa Unified School District is requesting bids for 25-26-15MOIB - P&D Portable-HVAC and Low Voltage. Sealed bids will be received at the District Office Purchasing Department, 4850 Pedley Road, Jurupa Valley, CA, 92509 no later than 2:00 p.m. on Thursday, April 2, 2026, per the Purchasing Bid Clock at which time or thereafter said sealed bids will be opened and read aloud.

Scope of Work: Contractors are responsible for completion of all work associated with: Providing all labor, tools, materials, and equipment required, per the bid documents/plans/ specifications, for the complete HVAC and low voltage installation on one (1) triple-wide modular building and portable restroom unit.

Mandatory Job Walk: A mandatory job walk will take place **on March 20, 2026, at 9:00 AM for HVAC and 10:00 AM for Low Voltage** at the following location: Maintenance/Operations and Transportation Yard 4740 Pedley Road, Jurupa Valley, CA 92509. **Bidders must attend the job walk for their specific category to qualify to bid on this project.**

Bid Documents: Bidding documents, drawings, addenda, and specifications for this project can be downloaded from the District website: https://jurupausd.org/our-district/BizServ/css/Pages/Bids.aspx

Multi-Prime and License Requirements: This project will be bid and constructed using the Multi-Prime delivery system. Table includes the individual bid packages and the contractor's license(s) required in order to bid on and perform the contract for this project.

Category	License Requirement
02 – HVAC	C-20
03 – Low Voltage	C-7

Contract Time: 15 calendar days

Requests for Information: May be submitted to the below point of contact, no later than: March 25, 2026, 12:00 P.M.

Required Bid Forms: All bidders must submit the following documents by the bid due date and time:

- Signed Bid Form, including Completed Subcontractor List or marked "N/A"
- Site Visit Clarification
- Bid Bond or Bid Security for 10% of the Bid Value
- Non-Collusion Affidavit
- References
- California Air Resources Board (CARB) Compliance Certification

Late bids will not be accepted.

Point of Contact: Elizabeth Massie, Senior Buyer, Purchasing Department
951-416-1590 elizabeth_massie@jusd.k12.ca.us

INSTRUCTIONS TO BIDDERS

1. Preparation of Bid Form. Proposals under these specifications shall be submitted on the blank forms furnished herewith at the time and place stated in the Notice Calling for Bids. All blanks in the bid form must be appropriately filled in, and all proposed prices must be stated clearly and legibly in both words and numerals. All bids must be signed by the bidder in permanent blue ink and submitted in sealed envelopes, bearing on the outside, the bidder's name, address, telephone number, and California Contractor's License number, and the name of the Project for which the bid is submitted. The District reserves the right to reject any bid if all of the above information is not furnished. It is each bidder's sole responsibility to ensure its bid is timely delivered and received at the location designated as specified above. Any bid received at the designated location after the scheduled closing time for receipt of bids shall be returned to the bidder unopened.

2. Bid Security. Each bid must be accompanied by one of the following forms of bidder's security: (1) cash; (2) a cashier's check made payable to the District; (3) a certified check made payable to the District; or (4) a bidder's bond executed by a California admitted surety as defined in Code of Civil Procedure section 995.120, made payable to the District, in the form set forth in the Contract Documents. Such bidder's security must be in an amount not less than ten percent (10%) of the maximum amount of such bidder's bid as a guarantee that the bidder will enter into the Contract, if the same is awarded to such bidder, and will provide the required Performance and Payment Bonds, insurance certificates and any other required documents. In the event that a bidder is awarded the Contract and such bidder fails to enter into said Contract or provide the surety bond or bonds within five (5) calendar days after award of the Contract to bidder, said security will be forfeited.

Bid Security Return. The Bid Security of three or more low Bidders, the number being solely at the discretion of the District, will be held by the District until posting by the successful Bidder(s) of the bonds, certificates of insurance required and return of executed copies of the Agreement, at which time the Bid Security of such other Bidders will be returned to them.

Forfeiture of Bid Security. If the Bidder awarded the Contract fails or refuses to execute the Agreement within seven (7) calendar days from the date of receiving notification that it is the Bidder to whom the Contract has been awarded, the District may declare the Bidder's Bid Security forfeited as damages caused by the failure of the Bidder to enter into the Contract and may thereupon award the Contract for the Work to the responsive responsible Bidder submitting the next lowest priced Bid Proposal or may call for new bids, in its sole and exclusive discretion.

3. Signature. The bid form, all bonds, and the non-collusion declaration forms must be signed in permanent blue ink in the name of the bidder and must bear the signature in longhand of the person or persons duly authorized to sign the bid.

If bidder is a corporation, the legal name of the corporation shall first be set forth, together with two signatures: One from the President and one from the Secretary or Assistant Secretary. Alternatively, the signature of other authorized officers or agents may be affixed, if a certified copy of the resolution of the corporate board of directors authorizing them to do so is provided to the District. Such documents shall include the title of such signatories below the signature and shall bear the corporate seal.

If bidder is a partnership, the true name of the firm shall first be set forth, together with the names of all persons comprising the partnership or co-partnership. The bid must be signed by all partners comprising the partnership unless proof in the form of a certified copy of a statement of partnership

acknowledging the signer to be a general partner is presented to the District, in which case the general partner may sign.

Bids submitted as joint ventures must so state and be signed by each joint venturer.

Bids submitted by individuals must be signed by the bidder unless an up-to-date power-of-attorney is on file in the District office, in which case, said person may sign for the individual.

The above rules also apply in the case of the use of a fictitious firm name. In addition, where a fictitious name is used, it must be so indicated in the signature.

4. Modifications. Changes in or additions to the bid form, recapitulations of the work bid upon, alternative proposals, or any other modification of the bid form which is not specifically called for in the Contract Documents may result in the District's rejection of the bid as not being responsive to the Notice Calling for Bids. **No oral or telephonic modification of any bid submitted will be considered**.

5. Erasures, Inconsistent or Illegible Bids. The bid submitted must not contain any erasures, interlineations, or other corrections unless each such correction creates no inconsistency and is suitably authenticated by affixing in the margin immediately opposite the correction the signature or signatures of the person or persons signing the bid. In the event of inconsistency between words and figures in the bid price, words shall control figures. In the event that the District determines that any bid is unintelligible, inconsistent, or ambiguous, the District may reject such bid as not being responsive to the Notice Calling for Bids.

6. Examination of Site and Contract Documents. Each bidder shall visit the site of the proposed Project and become fully acquainted with the conditions relating to the construction and labor so that the facilities, difficulties, and restrictions attending the execution of the work under the Contract are fully understood. Bidders shall thoroughly examine and be familiar with the drawings, specifications, Addenda, Contract Documents and all others documents and requirements that are attached to and/or contained in the Project Manual or other documents issued to bidders. The failure or omission of any bidder to receive or examine any Contract Documents, form, instrument, addendum, or other document or to visit the site and become acquainted with conditions there existing shall not relieve any bidder from obligations with respect to the bid or to the contract. The submission of a bid shall be taken as prima facie evidence of compliance with this Section. Bidders shall not, at any time after submission of the bid, dispute, complain, or assert that there were any misunderstandings with regard to the nature or amount of work to be done.

7. Withdrawal of Bids. Any bid may be withdrawn, either personally or by written request, at any time prior to the scheduled closing time for receipt of bids. The bid security for bids withdrawn prior to the scheduled closing time for receipt of bids, in accordance with this paragraph, shall be returned upon demand therefor.

No bidder may withdraw any bid for a period of ninety (90) calendar days after the date set for the opening of bids.

A bid may not be withdrawn by the bidder following the time and date designated for the receipt of bids, except in accordance with Section 5103 of the Public Contract Code.

8. Agreements, Insurance and Bonds. The Agreement form which the successful bidder, as Contractor, will be required to execute, and the forms and amounts of surety bonds and insurance

endorsements which Contractor will be required to be furnished at the time of execution of the Agreement, are included in the bid documents and should be carefully examined by the bidder. The number of executed copies of the Agreement, the Performance Bond, and the Payment Bond required is three (3). Payment and Performance bonds must be executed by an admitted surety insurer as defined in Code of Civil Procedure 995.120.

9. Pre-Bid Conference / Job Walk. The District may conduct a Job-Walk at the time(s) and place(s) designated in the Notice Calling for Bids. If attendance at the Job Walk is indicated in the Notice Calling for Bids as being mandatory, the failure of any Bidder to have its authorized representative present at the entirety of the Job Walk will render the Bid Proposal of such Bidder to be non-responsive. Where the Job Walk is mandatory, a Bidder may have more than one authorized representative and/or representatives of its Subcontractors present at the Job Walk; provided, however that attendance by representatives of the Bidder's Subcontractors without attendance by a representative of the Bidder shall not be sufficient to meet the Bidder's obligations hereunder and will render the Bid Proposal of such Bidder to be non-responsive.

10. Interpretation of Plans and Documents/Pre-Bid Clarification. If any prospective bidder is in doubt as to the true meaning of any part of the Contract Documents, or finds discrepancies in, or omissions, a written request for an interpretation or correction thereof may be submitted to the District. The bidder submitting the request shall be responsible for its prompt delivery. Any interpretation or correction of the Contract Documents will only be made by Addendum duly issued, and a copy of such Addendum will be made available for each contractor receiving a set of the Contract Documents. No person is authorized to make any oral interpretation of any provision in the Contract Documents, nor shall any oral interpretation be binding on the District. If discrepancies on drawings, specifications or elsewhere in the Contract Documents are not covered by addenda, bidder shall include in their bid methods of construction and materials for the higher quality and complete assembly. Each request for clarification shall be submitted in writing, via email, to the contact listed on the Notice Calling for Bids not less than seven (7) days prior to the scheduled closing date for the receipt of bids. Each transmitted request shall contain the name of the person and/or firm filing the request, address, telephone, and fax number, Specifications and/or Drawing number. Bidder is responsible for the legibility of hand written requests. A written response to timely pre-bid clarifications requests which materially affects the bidders price will be made by Addendum issued by the Jurupa Unified District, or their designee, not less than seventy-two (72) hours prior to bid opening.

11. Date and Time of Bid Proposal Submittal. The District will place a date/time stamp machine in a conspicuous location at the place designated for submittal of Bid Proposals. A Bid Proposal is submitted only if the outer envelope containing the Bid Proposal is stamped by the District's date/time stamp machine; Bid Proposals not so stamped as timely received will be rejected and returned to the Bidder unopened. The date/time stamp is controlling and determinative as to the date and time of the District's receipt of the Bid Proposal. The foregoing notwithstanding, whether or not Bid Proposals are opened exactly at the time fixed in the Notice Calling for Bids, no Bid Proposals shall be received or considered by the District after it has commenced the public opening and reading of Bid Proposals; Bid Proposals submitted.

12. Documents Accompanying Bid Proposal. The following forms need to be completed and signed with the submission of the bid:

a. Bid Form with proper acknowledgement of Addenda and Bid Package Number selected

b. Site-Visit Certification

c. Bidders Security

d. Non-Collusion Declaration

e. References

f. California Air Resources Board (CARB) Compliance Certification

13. Bidders Interested in More Than One Bid. No person, firm, or corporation shall be allowed to make, or file, or be interested in more than one prime bid for the same work unless alternate bids are specifically called for. A person, firm, or corporation that has submitted a proposal to a bidder, or that has quoted prices of materials to a bidder, is not thereby disqualified from submitting a proposal or quoting prices to other bidders or making a prime proposal.

14. Award of Contract. The Contract will be awarded to the lowest responsive responsible bidder by a representative who has been delegated authority by the governing board. The District reserves the right to reject any or all bids, or to waive any irregularities or informalities in any bids or in the bidding. In the event an award is made to bidder, and such bidder fails or refuses to execute the Contract and provide the required documents within five (5) calendar days after award of the Contract to bidder, the District may award the Contract to the next lowest responsible and responsive bidder or release all bidders**.** A responsive Bid Proposal shall mean a Bid Proposal which conforms, in all material respects, to the Bid and Contract documents.

15. Bid Protest Procedure. Any bidder may file a bid protest. The protest shall be filed in writing with the District's Director of Purchasing not more than two (2) business days after the date of the bid opening. An e-mail address shall be provided and by filing the protest, protesting bidder consents to receipt of e-mail notices for purposes of the protest and protest related questions and protest appeal, if applicable. The protest shall specify the reasons and facts upon which the protest is based. The protest must be signed and submitted under the penalty of perjury.

a. Resolution of Bid Controversy: Once the bid protest is received, the apparent lowest responsive responsible bidder will be notified of the protest and the evidence presented. If appropriate, the apparent low bidder will be given an opportunity to rebut the evidence and present evidence that the apparent low bidder should be allowed to perform the Work. If deemed appropriate by the District, an informal hearing will be held. District will issue a written decision within fifteen (15) calendar days of receipt of the protest, unless factors beyond the District's reasonable control prevent such resolution. The decision on the bid protest will be copied to all parties involved in the protest.

b. Appeal: If the protesting bidder or the apparent low bidder is not satisfied with the decision, the matter may be appealed to the Director of Purchasing, or their designee, within three (3) business days after receipt of the District's written decision on the bid protest. The appeal must be in writing and sent via overnight registered mail with all accompanying information relied upon for the appeal and an e-mail address from which questions and responses may be provided to:

Jurupa Unified School District
Director of Purchasing
4850 Pedley Road
Jurupa Valley, CA 92509

c. Appeal Review: The Superintendent, or their designee shall review the decision on the bid protest from the Director of Purchasing and issue a written response to the appeal, or if appropriate,

appoint a Hearing Officer to conduct a hearing and issue a written decision. The written decision of the Superintendent or the Hearing Officer shall be rendered within fifteen (15) calendar days and shall state the basis for the decision. The decision concerning the appeal will be final and not subject to any further appeals.

d. Reservation of Rights to Proceed with Project Pending Appeal. The District reserves the right to proceed to award the Project and commence construction pending an Appeal. If there is State Funding or a critical completion deadline, the District may choose to shorten the time limits set forth in this Section if written notice is provided to the protesting party. E-mailed notice with a written confirmation sent by First Class Mail shall be sufficient to constitute written notice. If there is no written response to a written notice shortening time, the District may proceed with the award.

e. Finality. Failure to comply with this Bid Protest Procedure shall constitute a waiver of the right to protest and shall constitute a failure to exhaust the protesting bidder's administrative remedies.

16. Alternates. The District may add or deduct from the contract any of the additive or deductive items after the lowest responsible bidder has been determined. The bidder further agrees that, should additional construction funds become available to the District, alternates not selected by the District at the time of the award may be incorporated into the contract by change order, based on the bidder's original alternate amount named on the Bid Form, within 90 days from the date of award of the contract.

a. Subcontractor Listing for Alternates. If alternate bids are called for and the bidder intends to use different or additional subcontractors, a separate list of subcontractors must be submitted for each such alternate.

17. Evidence of Responsibility. Upon the request of the District, a bidder whose bid is under consideration for the award of the Contract shall submit promptly to the District satisfactory evidence showing the bidder's financial resources, surety and insurance claims experience, construction experience, completion ability, workload, organization available for the performance of the Contract, and other factors pertinent to a Project of the scope and complexity involved.

18. Listing Subcontractors. Each bidder shall submit with his bid, on the form furnished with the Bid Documents, a list of the names, license numbers, scopes of work, locations of the places of business, contact information, and Department of Industrial Relations (DIR) registration numbers of each subcontractor who will perform work or labor or render service to the bidder in or about the project, or a subcontractor who under subcontract to the bidder, specially fabricates and installs a portion of the work, in an amount in excess of one-half of one percent of the bidder's total bid as required by the Subletting and Subcontracting Fair Practices Act (Public Contract Code section 4100, et seq.) Pursuant to Labor Code section 1725.5, all subcontractors (of any tier) performing work on this Project must be properly registered with DIR.

19. Workers' Compensation. In accordance with the provisions of Labor Code section 3700, the successful bidder as the Contractor shall secure payment of compensation to all employees. The Contractor shall sign and file with the District the following certificate prior to performing the work under this contract: "I am aware of the provisions of Section 3700 of the Labor Code, which requires every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this contract." The form of such certificate is included as a part of the Contract Documents.

20. Contractor's License. To perform the work required by this notice, the Contractor must possess the Contractor's License as specified in the Notice Calling for Bids, and the Contractor must maintain the license throughout the duration of the contract. If, at the time of bid, bidder is not licensed to perform the Project in accordance with Division 3, Chapter 9, of the Business and Professions Code for the State of California and the Notice to Contractors calling for bids, such bid will not be considered and the Contractor will forfeit its bid security to the District.

21. Anti-Discrimination. It is the policy of the District that in connection with all work performed under contracts, there be no discrimination against any prospective or active employee engaged in the work because of race, color, ancestry, national origin, religious creed, sex, age, or marital status. The Contractor agrees to comply with applicable federal and California laws, including, but not limited to, the California Fair Employment and Housing Act, beginning with Government Code section 12900 and Labor Code section 1735. In addition, the Contractor agrees to require like compliance by any subcontractors employed on the work by such Contractor.

22. Preference for Materials and Substitutions.

a. One Product Specified. Unless the Plans and Specifications state that no substitution is permitted, whenever the Contract Documents indicate any specific article, device, equipment, product, material, fixture, patented process, form, method, construction, or any specific name, make, trade name, or catalog number, with or without the words, "or equal," such specification shall be read as if the language "or equal" is incorporated.

b. Request for Substitution. Pursuant to Public Contract Code §§ 3400(a), any Bidder may submit data to the District to substantiate a request to substitute an "or equal" item for any item specified in the Bid Documents ("Substitution of Substantiated Data") no less than seven (7) days before the bid opening. If the District, in its sole judgement, makes a finding that the substitute product is equal, the District will issue clarifying information as part of a final addendum, no less than 72 hours before the bid opening.

23. Allowances. Allowances if called for shall be included in the bid.

24. Disqualification of Bidders and Proposals. More than one proposal for the same work from any individual, firm, partnership, corporation, or association under the same or different names will not be accepted; and reasonable grounds for believing that any bidder is interested in more than one proposal for the work will be cause for rejecting all proposals in which such bidder is interested and the bidder will forfeit their bid security to the District.

25. Unbalanced or Altered Bids. Proposals in which the prices are obviously unbalanced, and those which are incomplete or show any alteration of form, or contain any additions or conditional or alternate bids that are not called for or otherwise permitted, may be rejected. A proposal on which the signature of the bidder has been omitted may be rejected. If, in the District's sole discretion, it determines any pricing, costs or other information submitted by a bidder may result in an unbalanced bid, the District may deem such bid non-responsive. A bid may be determined by the District to be unbalanced if the bid is based on prices significantly less than cost for some work and prices which are significantly overstated in relation to cost for other work, and if there is a reasonable doubt that the bid will result in the lowest overall cost to the District even though it may be the low evaluated bid, or if it is so unbalanced as to be tantamount to allowing an advanced payment.

26. Employment of Apprentices. The Contractor and all Subcontractors shall comply with the provisions of California Labor Code including, but not limited to sections 1777.5, 1777.6, and 1777.7 concerning the employment of apprentices. The Contractor and any Subcontractor under him shall comply with the requirements of said sections, including applicable portions of all subsequent amendments in the employment of apprentices; however, the Contractor shall have full responsibility for compliance with said Labor Code sections, for all apprenticeable occupations, regardless of any other contractual or employment relationships alleged to exist.

27. Non-Collusion Declaration. Public Contract Code section 7106 requires bidders to submit declaration of non-collusion with their bids. This form is included with the bid documents and must be signed and dated by the bidder under penalty of perjury.

28. Wage Rates, Travel and Subsistence.

a. The Contractor and all subcontractors shall comply with the requirements set forth in Division 2, Part 7, Chapter 1 of the Labor Code. Pursuant to Labor Code section 1770 et seq., the District has obtained from the Director of the Department of Industrial Relations the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work in the locality in which this work is to be performed for each craft, classification or type of worker needed to execute the contract. Copies are available from the District to any interested party on request and are also available from the Director of the Department of Industrial Relations. The Contractor shall obtain copies of the above-referenced prevailing wage sheets and post a copy of such wage rates at appropriate, conspicuous, weatherproof points at the Site.

b. Any worker employed to perform work on the Project and such work is not covered by any classification listed in the published general prevailing wage rate determinations or per diem wages determined by the Director of the Department of Industrial Relations, shall be paid not less than the minimum rate of wages specified therein for the classification which most nearly corresponds to the employment of such person in such classification.

c. Holiday and overtime work, when permitted by law, shall be paid for at the rate set forth in the prevailing wage rate determinations issued by the Director of the Department of Industrial Relations or at least one and one-half (1½) times the specified basic rate of per diem wages, plus employer payments, unless otherwise specified in the Contract Documents or authorized by law.

d. These per diem rates, including holiday and overtime work, and employer payments for health and welfare, pension, vacation, and similar purposes, are on file at the administrative office of the District, located as noted above and are also available from the Director of the Department of Industrial Relations. It is the Contractor's responsibility to ensure the appropriate prevailing rates of per diem wages are paid for each classification. It shall be mandatory upon the Contractor to whom the Contract is awarded, and upon any subcontractor under such Contractor, to pay not less than the said specified rates to all workers employed by them in the execution of the Contract.

29. DIR Registration of Contractor and Subcontractors. A contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal subject to the requirements of Section 4104 of the Public Contract Code, or engage in the performance of any contract for public work as defined in the Labor Code, unless currently registered and qualified to perform public work pursuant to Section 1725.5. It is not a violation of this section for an unregistered contractor to submit a bid that is authorized by Section 7029.1 of the Business and Professions Code or by Section 10164 or 20103.5 of the Public Contract Code, provided

the contractor is registered to perform public work pursuant to Section 1725.5 at the time the contract is awarded.

This Project is a public works project as defined in Labor Code section 1720. Each contractor bidding on this Project and all subcontractors (of any tier) performing any portion of the Project must comply with the Labor Code sections 1725.5 and 1771.1 and must be properly and currently registered with DIR and qualified to perform public works pursuant to Labor Code section 1725.5 throughout the duration of the Project. For more information and up to date requirements, contractors are recommended to periodically review the DIR's website at www.dir.ca.gov. Contractor shall be solely responsible for ensuring compliance with Labor Code section 1725.5 as well as any requirements implemented by DIR applicable to its services or its subcontractors throughout the term of the Agreement and in no event shall contractor be granted increased payment from the District or any time extensions to complete the Project as a result of contractor's efforts to maintain compliance with the Labor Code or any requirements implemented by the DIR. It is the responsibility of the contractor to post wages on the job site in a an area routinely visible to their employees. Failure to comply with these requirements shall be deemed a material breach of this Agreement and grounds for termination for cause. The contractor and all subcontractors shall furnish certified payroll records as required pursuant Labor Code section 1776 directly to the Labor Commissioner in accordance with Labor Code section 1771.4 on at least a monthly basis (or more frequently if required by the District or the Labor Commissioner) and in a format prescribed by the Labor Commissioner. The District reserves the right to withhold contract payments if the District is notified, or determines as the result of its own investigation, that contractor is in violation of any of the requirements set forth in Labor Code section 1720 et seq. at no penalty or cost to the District. Monitoring and enforcement of the prevailing wage laws and related requirements will be performed by the Labor Commissioner/ Department of Labor Standards Enforcement (DLSE).

30. No Telephone or Facsimile Availability. No telephone or facsimile machine will be available to bidders on the District premises at any time.

31. Obtaining Bidding Documents. Bidding Documents may be obtained from website listed or by contacting the person listed in the Notice Calling for Bids. If there is a cost associated with obtaining the bidding documents, it will also be listed in the Notice Calling for Bids. Bidder shall utilize a complete set of Bidding Documents in preparing a bid. The failure or omission of bidder to receive any Bidding Document, form, instrument, Addendum, or other document shall not relieve bidder from any obligations with respect to the bid and/or Contract.

32. Bidding, Contract and Project Specification Documents. The Bidding, Contract, and Project Specification Documents are all outlined on the title page of this packet. All documents listed are deemed to be part of the project.

33. Addenda. Clarification or any other notice of a change in the Bidding Documents will be issued only by the District and only in the form of a written Addendum, posted on the website identified in the Notice Calling for Bids, or available for pick up to all who are known by the issuing office to have received a complete set of Bidding Documents. Any other purported Addenda are void and unenforceable.

Bidder is responsible for ascertaining the disposition of all Addenda issued regardless of District notification and to acknowledge all Addenda in the submitted sealed bid prior to the bid opening. Copies of Addenda will be made available for inspection wherever Bidding Documents are on file for inspection. Each Addendum will be numbered, dated, and identified with the Project number. Oral statements or any instructions in any form, other than Addendum as described above, shall be void and unenforceable.

Addenda issued by the District and not noted as being acknowledged by bidder as required in the Bid Form, may result in the bid being deemed non-responsive. It is the bidders' sole responsibility to check for any addenda issued 72 hours before the bid opening.

34. Debarment. In addition to seeking remedies for False Claims under Government Code section 12650 et seq. and Penal Code section 72, the District may debar a Contractor if the Board, or a designated a Hearing Officer who, in his or her discretion, finds the Contractor has done any of the following:

a. Intentionally or with reckless disregard, violated any term of a contract with the District

b. Committed an act or omission which reflects on the Contractor's quality, fitness or capacity to perform work for the District;

c. Committed an act or offense which indicates a lack of business integrity or business honesty; or,

d. Made or submitted a false claim against the District or any other public entity (See Government Code section 12650, et seq., and Penal Code section 72)

35. Public Records. Bid Proposals and other documents responding to the Notice Calling for Bids become the exclusive property of the District upon submittal to the District. At such time as the District opens bids pursuant to these Instructions to Bidders, all Bid Proposals and other documents submitted in response to the Notice Calling for Bids become a matter of public record and shall thereupon be considered public records, except for information contained in such Bid Proposals deemed to be Trade Secrets (as defined in California Civil Code § 3426.1) and financial information provided in response to the Statement of Qualifications. If the District is required to defend or otherwise respond to any action or proceeding wherein request is made for the disclosure of the contents of any portion of a Bid Proposal deemed exempt from disclosure hereunder, the Bidder submitting the materials sought by such action or proceeding agrees to defend, indemnify and hold harmless the District in any action or proceeding from and against any liability, including without limitation attorneys' fees arising therefrom. The party submitting materials sought by any other party shall be solely responsible for the cost and defense in any action or proceeding seeking to compel disclosure of such materials; the District's sole involvement in any such action shall be that of a stakeholder, retaining the requested materials until otherwise ordered by a court of competent jurisdiction.

36. Fingerprint Certificate. In accordance with Education Code § 45125.1, the successful Bidder will be required to execute the Fingerprint Certificate included with the Contract Documents concurrently with the Bidder's execution of the Agreement. The successful Bidder shall comply with the terms and requirements of the Fingerprint Certificate and Education Code § 45125.1; failure to comply will result in penalties, including without limitation, termination of the Agreement and the suspension of payments of the Contract Price otherwise due under the Contract Documents.

37. Escrow. As a condition for approving progress payments, the District requires a 5% retainage to be deducted from each progress payment, unless the District finds the Work to be of sufficient complexity and difficulty to justify increasing retainage to 10% deducted from each progress payment. In accordance with the provisions of Public Contract Code Section 22300, substitution of eligible and equivalent securities for any monies withheld to ensure performance under this contract will be permitted at the request and expense of the Contractor.

38. UPCCAA. This Project is being let in accordance with the Uniform Public Construction Cost Accounting ("UPCCAA") set forth in Public Contract Code section 22000 et seq. Bidders shall comply with any requirements set forth in the UPCCAA including all guidelines and requirements in the current California Uniform Construction Cost Accounting Commission Cost Accounting Policies and Procedures Manual. If applicable, only Contractors included on the District's Qualified List shall submit bids for the Project as set forth in the UPCCAA.

Jurupa Unified School District

CUPCCAA INFORMAL BID FORM

(Required Bid Form)

FOR REPAIRS, MAINTENANCE OR CONSTRUCTION SERVICES AWARDED PURSUANT TO THE "INFORMAL BIDDING" PROCEDURES OF THE PUBLIC CONTRACT CODE § 22000, ET SEQ. (THE CALIFORNIA UNIFORM PUBLIC CONSTRUCTION COST ACCOUNTING ACT ("CUPCCAA") -- INFORMAL BID

Project: 25-26-15MOIB - P&D Portable-HVAC and Low Voltage

Contractor will perform the Work defined in the Contract Documents and fully understands the scope of Work required in this bid for the following Bid Package **(select one):**

	Category
☐	02 – HVAC
☐	03 – Low Voltage

Contractor accepts in full payment for that Work the following total lump sum or TOTAL BASE BID AMOUNT, all taxes included:

_____ Dollars $ _____

Total Bid (Allowance + Base Bid)

1. **Work.** Contractor has reviewed the Work outlined in the Contract Documents and fully understands the scope of Work required in this bid, understands the construction and project management function(s) is described in the Contract Documents.

2. **Schedule.** Contractor agrees to commence work under this Contract on the date established in the Contract Documents and to complete all work within the time specified in the Contract Documents.

3. **Subcontractors.** Contractor shall identify the name, location of the place of business, California Contractor State License Number, DIR Registration Number, and kind of work of each subcontractor that will perform work or labor or render service in or about the construction of the Work or improvement in an amount in excess of one-half of 1 percent (0.5%) of the Contractor's total bid. Use extra sheets/extra space as needed.

Description & Portion of Work	**Name of Subcontractor**	**Location & Place of Business**	**License Type and Number**	***E-Mail and Telephone****	***DIR Registration Number****

* E-Mail/Telephone and DIR Registration Number of subcontractors may be submitted up to 24 hours after the bid opening. It is the sole responsibility of the bidder to ensure that the owner receives this information on time.

4. **Bid Bond.** Contractor shall provide with its bid a certified or cashier's check or bidder's bond for an amount not less than ten percent (10%) of the bid amount. The certified or cashier's check or bid bond shall be made payable to the order of the District. If a bid bond accompanies the proposal, the bond shall be secured by an admitted surety company, licensed in the State of California, satisfactory to the District and in the form attached hereto. The certified or cashier's check or bond shall be given as a guarantee that Contractor will enter into the Contract if awarded the Work, and in the case of refusal or failure to enter into the Contract, the District shall have the right to award to another bidder. If Contractor fails or refuses to timely enter into the contract, the District reserves the right to declare the bid bond forfeited and to pursue all other remedies in law or equity relating to such breach including, but not limited to, seeking recovery of damages for breach of contract. Failure to provide bid security, or bid security in the proper amount, will result in rejection of the bid.

5. **Non-collusion Affidavit.** Contractor shall provide with its bid the Noncollusion Affidavit in the form attached hereto.

6. **License.** Contractor certifies that it is, at the time of bidding, and shall be throughout the period of the Contract, licensed by the State of California to do the type of work required under the terms of the Contract Documents. Contractor further certifies that it is regularly engaged in the general class and type of work called for in the Contract Documents.

7. **Bid Protests.** Any bid protest by any Contractor regarding any other bid on this Project must be submitted in writing to the District, before 5:00 p.m. of the SECOND (2ND) business day following the date of bid opening, or the Contractor waives its right to protest. The protest must contain a complete statement of any and all bases for the protest and the Contractor must concurrently transmit a copy of the protest to all other bidders that appear to have a reasonable prospect of receiving an award depending upon the outcome of the protest.

8. **Addenda.** Receipt and acceptance of the following addenda is hereby acknowledged.

Addenda #	Date

9. **Contractor Form.** District's contract form is part of the contract documents. The scope of the project is as described in exhibit "a" to the contract. The successful contractor shall, within seven (7) calendar days of notice that it has been awarded the contract, be required to provide to the district all certifications, bonds, insurance documents, construction schedule, subcontractor list and all other required documentation as indicated in the contract.

10. **Allowance.** Contractor shall include in their base bid the value of allowance set forth below for the specific bid package. Any portion of the allowance remaining at the end of the project shall be credited to the District via Change Order.

Category	Allowance
02 – HVAC	$1,000
03 – Low Voltage	$1,000

Contractor hereby certifies to the District that all representations, certifications, and statements made by Contractor, as set forth in this bid form, are true and correct and are made under penalty of perjury.

_____
Proper Name of Company

_____
Name of Bidder Representative

_____
Street Address

_____
City, State, and Zip

(_____) _____
Phone Number

(_____) _____
Fax Number

_____
E-Mail

_____
Taxpayer's Identification Number of Contractor

_____
Department of Industrial Relations (DIR) Registration Number of Contractor

Contractor's License No(s): No.: _____ Class: _____ Expiration Date: _____

No.: _____ Class: _____ Expiration Date: _____

No.: _____ Class: _____ Expiration Date: _____

By: _____ Date: _____
Signature of Bidder Representative

SITE VISIT CERTIFICATION

(Required Bid Form)

I certify that I have visited the site of the proposed work and have fully acquainted myself with the conditions of the Project site, as well as those relating to construction and labor of the Project, and I fully understand the facilities, difficulties, and restrictions which may impact the total and adequate completion of the Project.

I certify under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

I agree to fully defend, indemnify and hold harmless the DISTRICT, Architect, Inspectors, Construction Manager, and their directors, officers, employees, agents and volunteers from any damages, costs, expenses, or omissions related to conditions that could or should have been identified during my visit to the site.

Signature of Bidder: _____

Typed Name of Bidder: _____

BID GUARANTEE FORM

(Use only when not using a Bid Bond)

Accompanying this proposal is a cashier's check payable to the order of the Jurupa Unified School District or a certified check payable to the order of the Jurupa Unified School District in an amount equal to ten percent (10%) of the base bid and alternates ($_____).

The proceeds of this check shall become the property of said District, if, this proposal shall be accepted by the District, and the undersigned fails to execute a Contract with and furnish the sureties required by the District within the required time; otherwise, said check is to be returned to the undersigned.

_____

Bidder

Note: Use this form, in lieu of Bid Bond form, when a cashier's check or certified check is accompanying the bid

BID BOND FORM

(Required Bid Form)

KNOW ALL MEN BY THESE PRESENT that we, the undersigned, (hereafter called "Principal"), and _____ (hereafter called "Surety"), are hereby held and firmly bound unto the Jurupa Unified School District (hereafter called "District") in the sum of _____ ($_____) for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors, and assigns.

SIGNED this _____ day of _____, 20___.

The condition of the above obligation is such that whereas the Principal has submitted to the District a certain Bid, attached hereto and hereby made a part hereof, to enter into a Contract in writing for the construction of 25-26-15MOIB - P&D Portable-HVAC and Low Voltage.

NOW, THEREFORE,

a. If said Bid is rejected, or

b. If said Bid is accepted and the Principal executes and delivers a Contract or the attached Agreement form within five (5) calendar days after acceptance (properly completed in accordance with said Bid), and furnishes bonds for his faithful performance of said Contract and for payment of all persons performing labor or furnishing materials in connection therewith,

Then this obligation shall be void; otherwise, the same shall remain in force and effect.

Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Contract, or the call for bids, or the work to be performed thereunder, or the specifications accompanying the same, shall in anyway affect its obligation under this bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of said Contract, or the call for bids, or the work, or to the specifications.

In the event suit is brought upon this bond by the District and judgment is recovered, the Surety shall pay all costs incurred by the District in such suit, including without limitation, attorneys' fees to be fixed by the court.

IN WITNESS WHEREOF, Principal and Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, on the day and year first set forth above.

By

(Corporate Seal)

Principal's Signature

Typed or Printed Name

Principal's Title

By

(Corporate Seal)

Surety's Signature

Typed or Printed Name

Title

(Attached Attorney in Fact Certificate)

Surety's Name

Surety's Address

Surety's Phone Number

IMPORTANT:

Surety companies executing bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write surety insurance defined in California Insurance Code section 105, and if the work or project is financed, in whole or in part, with federal, grant, or loan funds, it must also appear on the Treasury Department's most current list (Circular 570 as amended).

THIS IS A REQUIRED FORM.

Any claims under this bond may be addressed to:

(Name and Address of Surety)

_____

_____

_____

(Name and Address of agent or representative for
service of process in California if different from above)

_____

_____

_____

(Telephone Number of Surety and agent or
representative for service of process in California).

_____

_____

_____

NON-COLLUSION DECLARATION

(Required Form)

The undersigned declares:

I am the _____ [Title] of _____ [Name of Company], the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____ [Date], at _____ [City], _____ [State].

Signed: _____

Typed Name: _____

REFERENCES
(Required Form)

Please list references of at least five (5) **completed** within the last five (5) years. Note that similar is defined as utilizing common trades, having like schedule and phasing requirements and having a budget of at least 70% of that for the project being bid.

1. Owner:_____
Address and Telephone:_____
Contact Person:_____
Project Name:_____
Dates of Commencement and completion of Construction Project:
_____
Contract Amount:_____
Architect / Telephone:_____

2. Owner:_____
Address and Telephone:_____
Contact Person:_____
Project Name:_____
Dates of Commencement and completion of Construction Project:
_____
Contract Amount:_____
Architect / Telephone:_____

3. Owner:_____
Address and Telephone:_____
Contact Person:_____
Project Name:_____
Dates of Commencement and completion of Construction Project:
_____
Contract Amount:_____
Architect / Telephone:_____

4. Owner:_____
Address and Telephone:_____
Contact Person:_____
Project Name:_____
Dates of Commencement and completion of Construction Project:
_____
Contract Amount:_____
Architect / Telephone:_____

5. Owner: _____

Address and Telephone: _____

Contact Person: _____

Project Name: _____

Dates of Commencement and completion of Construction Project:

_____

Contract Amount: _____

Architect / Telephone: _____

_____ _____

Proper Name of Bidder Signature

CALIFORNIA AIR RESOURCES BOARD (CARB) COMPLIANCE CERTIFICATION
(Required Form)

In accordance with California Air Resources Board's In-Use Off-Road Diesel-Fueled Fleets Regulation, the District is required to obtain copies of valid Certificates of Reported Compliance from the Contractor and all listed Subcontractors who own off-road diesel fleet vehicles in California and will use such vehicles on this Project before entering into a contract for this Project. This requirement covers all applicable vehicles and equipment as set forth Title 13, California Code of Regulations, Section 2449 and applies to the Contractor and all listed Subcontractors. Contractor hereby certifies the following:

1. Contractor and all listed Subcontractors agree to fully comply with all requirements set forth in Title 13, California Code of Regulations, Section 2449 (all references to this regulation herein shall include and incorporate any future amendments or updates.)

2. Contractor agrees to fully indemnify and defend the District from any claims, costs, damages, or any liability related to or arising from the failure of the Contractor or its Subcontractors to comply with all requirements set forth in Title 13, California Code of Regulations, Section 2449.

3. Within five (5) calendar days after the notice of award of Contract, Contractor shall provide copies of the valid Certificates of Reported Compliance for the Contractor and all listed Subcontractors.

4. If Contractor fails to provide all required Certificates of Reported Compliance within five (5) calendar days after the notice of award of award of Contract, the Contractor's bid shall be considered non-responsive and the District may award the Contract to the next lowest bidder or in its sole discretion, release all bidders.

5. Contractor agrees it will provide any additional information and documents reasonably requested by the District to confirm compliance with Title 13, California Code of Regulations, Section 2449 and any other requirements imposed by the California Air Resources Board.

6. Any exemptions to compliance with Title 13, California Code of Regulations, Section 2449 claimed by Contractor or any listed Subcontractor must be accompanied by a detailed explanation with specific citations to the applicable regulations governing such exemption and all supporting documentation within five (5) calendar days after the notice of award of award of Contract. Failure to meet these requirements will render the Contractor's bid non-responsive.

Company: _____

Name: _____

Title: _____

Signature: _____

Date: _____

[END OF REQUIRED BID FORMS]

[THE FOLLOWING DOCUMENTS FORM THE BASIS AS THE “CONTRACT DOCUMENTS” AND SHALL ONLY BE COMPLETED BY THE CONTRACTOR AFTER AN INTENT TO AWARD LETTER IS SENT TO THEM]

AGREEMENT FORM

THIS AGREEMENT, entered into this ___ day of _____ , _____ in the County of Riverside of the State of California, by and between the Jurupa Unified School District, hereinafter called the "District", and _____ hereinafter called the "Contractor".

WITNESSETH that the District and the Contractor for the consideration stated herein agree as follows:

ARTICLE 1 - SCOPE OF WORK: The Contractor shall furnish all labor, materials, equipment, tools, and utility and transportation services, and perform and complete all work required in connection with 25-26-15MOIB - P&D Portable-HVAC and Low Voltage - Category __ - _____("Project") in strict accordance with the Contract Documents." The Contractor shall be liable to the District for any damages arising as a result of a failure to comply with that obligation, and the Contractor shall not be excused with respect to any failure to so comply by an act or omission of the Architect, Engineer, Inspector, Division of the State Architect (DSA), or representative of any of them, unless such act or omission actually prevents the Contractor from fully complying with the Contract Documents and the Contractor protests, in accordance with the Contract Documents, that the act or omission is preventing the Contractor from fully complying with the Contract Documents. Such protest shall not be effective unless reduced to writing and filed with the District office within seven (7) days of the date of occurrence of such act or omission preventing the Contractor from fully complying with the Contract Documents.

ARTICLE 2 - TIME OF COMPLETION: The District may give notice to proceed within ninety (90) days of the award of the bid by the District. Once the Contractor has received a notice to proceed, the Contractor shall reach Substantial Completion of the Work within 15 calendar days from receipt of the Notice to Proceed. This shall be called Contract Time. It is expressly understood that time is of the essence.

Contractor has thoroughly studied the Project and has satisfied itself that the time period for this Project was adequate for the timely and proper completion of the Project within each milestone and within the Contract time. Further, Contractor has included in the analysis of the time required for this Project, including Submittal Schedules, Rain Day Float, and Governmental Delay Float.

In the event that the District desires to postpone giving the notice to proceed beyond this ninety (90) day period, it is expressly understood that with reasonable notice to the Contractor, giving the notice to proceed may be postponed by the District. It is further expressly understood by the Contractor, that the Contractor shall not be entitled to any claim of additional compensation as a result of the District's postponement of giving the notice to proceed.

If the Contractor believes that a postponement will cause hardship to it, the Contractor may terminate the Contract with written notice to the District within ten (10) days after receipt by the Contractor of the District's notice of postponement. It is further understood by the Contractor that in the event that the Contractor terminates the Contract as a result of postponement by the District, the District shall only be obligated to pay the Contractor for the work performed by the Contractor at the time of notification of postponement. Should the Contractor terminate the Contract as a result of a notice of postponement, the District shall have the authority to award the Contract to the next lowest responsible bidder.

ARTICLE 3 - LIQUIDATED DAMAGES: It being impracticable and infeasible to determine the amount of actual damage, it is agreed that the Contractor will pay the District the sum of One Thousand Dollars ($1,000.00) per calendar day for each and every day of delay beyond the Contract Time set forth in Article 2 of this Agreement (inclusive of Milestones that are critical on the critical path or noted as critical to the District) as liquidated damages and not as a penalty or forfeiture. In the event Liquidated Damages

are not paid, the Contractor further agrees that the District may deduct such amount thereof from any money due or that may become due the Contractor under the Contract.

ARTICLE 4 - CONTRACT PRICE: The District shall pay to the Contractor as full consideration for the faithful performance of the Contract, subject to any additions or deductions as provided in the Contract Documents, the sum of _____DOLLARS ($_____), said sum being the total amount stipulated in the Bid Contractor submitted. Payment shall be made as set forth in the Bid Documents.

The Contractor acknowledges that an allowance of ONE THOUSAND DOLLARS ($1,000.00) is included in the contract price. Per the Supplementary General Conditions, any authorized change orders shall be first charged against this allowance and any remaining allowance balance available at the completion of the Project shall be credited to the District in the form of a change order.

The District shall retain FIVE PERCENT (5%), equal to_____ DOLLARS ($_____), of the Contract Price as retention. This retention will be returned to the Contractor, less any justified withholdings (as per the Contract Documents), after the formal notice of completion has been signed.

The Contractor elects or does not elect (**circle one**) to setup an escrow account for security deposits in lieu of retention. If the Contractor elects to do so, they must submit the request using the District's "Escrow Agreement for Security Deposits in Lieu of Retention" form along with this Agreement. Furthermore, the Contractor requests that the security deposit by funded be the District or the Contractor (**circle one**).

Should any Change Order result in an increase in the Contract Price, the cost of such Change Order shall be agreed to in advance by the Contractor and the District, subject to the monetary limitations set forth in Public Contract Code section 20118.4. In the event that the Contractor proceeds with a Change in work without an agreement between the District and Contractor regarding the cost of a Change Order, the Contractor waives any Claim of additional compensation for such additional work.

ARTICLE 5 - HOLD HARMLESS AGREEMENT: Contractor shall defend, indemnify and hold harmless District, Architect, Inspector, the State of California and their officers, employees, agents and independent contractors from all liabilities, claims, actions, liens, judgments, demands, damages, losses, costs or expenses of any kind arising from death, personal injury, property damage or other cause based or asserted upon any act, omission, or breach connected with or arising from the progress of Work or performance of service under this Agreement or the Contract Documents. As part of this indemnity, Contractor shall protect and defend, at its own expense, District, Architect, Construction Manager, Inspector, the State of California and their officers, employees, agents and independent contractors from any legal action including attorney's fees or other proceeding based upon such act, omission, breach or as otherwise required by this Article.

Furthermore, Contractor agrees to and does hereby defend, indemnify and hold harmless District, Architect, Construction Manager, Inspector, the State of California and their officers, employees, agents and independent contractors from every claim or demand made, and every liability, loss, damage, expense or attorney's fees of any nature whatsoever, which may be incurred by reason of:

(a) Liability for (1) death or bodily injury to persons; (2) damage or injury to, loss (including theft), or loss of use of, any property; (3) any failure or alleged failure to comply with any provision of law or the Contract Documents; or (4) any other loss, damage or expense, sustained by any person, firm or corporation or in connection with the Work called for in this Agreement or the Contract Documents, except for liability resulting from the sole or active negligence, or the willful misconduct of the District.

(b) Any bodily injury to or death of persons or damage to property caused by any act, omission or breach of Contractor or any person, firm or corporation employed by Contractor, either directly or by independent contract, including all damages or injury to or death of persons, loss (including theft) or loss of use of any property, sustained by any person, firm or corporation, including the District, arising out of or in any way connected with Work covered by this Agreement or the Contract Documents, whether said injury or damage occurs either on or off District property, but not for any loss, injury, death or damages caused by the sole or active negligence or willful misconduct of the District.

(c) Any dispute between Contractor and Contractor's subcontractors/supplies/ Sureties, including, but not limited to, any failure or alleged failure of the Contractor (or any person hired or employed directly or indirectly by the Contractor) to pay any Subcontractor or Materialman of any tier or any other person employed in connection with the Work and/or filing of any stop notice or mechanic's lien claims.

Contractor, at its own expense, cost, and risk, shall defend any and all claims, actions, suits, or other proceedings that may be brought or instituted against the District, its officers, agents or employees, on account of or founded upon any cause, damage, or injury identified herein Article 5 and shall pay or satisfy any judgment that may be rendered against the District, its officers, agents or employees in any action, suit or other proceedings as a result thereof.

The Contractor's and Subcontractors' obligation to defend, indemnify and hold harmless the Owner, Architect, Inspector, the State of California and their officers, employees, agents and independent contractors hereunder shall include, without limitation, any and all claims, damages, and costs for the following: (1) any damages or injury to or death of any person, and damage or injury to, loss (including theft), or loss of use of, any property; (2) breach of any warranty, express or implied; (3) failure of the Contractor or Subcontractors to comply with any applicable governmental law, rule, regulation, or other requirement; (4) products installed in or used in connection with the Work; and (5) any claims of violation of the Americans with Disabilities Act ("ADA").

ARTICLE 6 - PROVISIONS REQUIRED BY LAW: Each and every provision of law and clause required to be inserted in this Contract shall be deemed to be inserted herein, and this Contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted or is not inserted correctly, then upon application of either party the Contract shall forthwith be physically amended to make such insertion or correction.

ARTICLE 7 - COMPONENT PARTS OF THE CONTRACT: The Contract entered into by this Agreement consists of the following Contract Documents, all of which are component parts of the Contract as if herein set out in full or attached hereto:

<u>Bidding Documents</u>
- Notice Calling for Bids
- Instructions to Bidders
- CUPCCAA Bid Form
- Site Visit Certification
- Bidder's Security
- Non-collusion Affidavit
- Any Addenda, as Issued
- References
- California Air Resources Board (CARB) Compliance Certification

<u>Project Specification Documents</u>
- Project Plans

Special Conditions
Specifications
Other:

Contract Documents

Agreement Form
Exhibit "A" (Scope of Work)
Payment Bond
Performance Bond
Guarantee
General Liability Endorsement
Workers' Compensation/Employers Liability Endorsement
Automobile Liability Endorsement
Contractor's Certificate Regarding Background Checks
Worker's Compensation Certificate
Contractor's Certificate Regarding Drug-Free Workplace
Contractor's Certificate Regarding Alcohol and Tobacco

All of the above named Contract Documents are intended to be complementary. Work required by one of the above named Contract Documents and not by others shall be done as if required by all.

ARTICLE 8 - PREVAILING WAGES: Wage rates for this Project shall be in accordance with the general prevailing rate of holiday and overtime work in the locality in which the work is to be performed for each craft, classification, or type of work needed to execute the Contract as determined by the Director of the Department of Industrial Relations. Copies of schedules of rates so determined by the Director of the Department of Industrial Relations are on file at the administrative office of the District and are also available from the Director of the Department of Industrial Relations. Monitoring and enforcement of the prevailing wage laws and related requirements will be performed by the Labor Commissioner/ Department of Labor Standards Enforcement (DLSE). Contractor is responsible for the submission of Certified Payroll Records directly to the Department of Industrial Relations. Contractor is required to post any jobsite notices and schedules of rates in a location visible to its workers.

The following are hereby referenced and made a part of this Agreement and Contractor stipulates to the provisions contained therein.

1. Chapter 1 of Part 7 of Division 2 of the Labor Code (Section 1720 et seq.)

2. California Code of Regulations, Title 8, Chapter 8, Subchapters 3 through 6 (Section 16000 et seq.)

ARTICLE 9 - RECORD AUDIT: In accordance with Government Code section 8546.7(and Davis Bacon, if applicable) and Article 13.11 of the General Conditions, records of both the District and the Contractor shall be subject to examination and audit for a period of five (5) years after a Final Retention Payment or the Recording of a Notice of Completion, whichever occurs first.

ARTICLE 10 - CONTRACTOR'S LICENSE: The Contractor must possess throughout the Project a Class _____ Contractor's License, issued by the State of California, which must be current and in good standing.

IN WITNESS WHEREOF, this Agreement has been duly executed by the above named parties, on the day and year first above written.

Jurupa Unified School District

Signature:_____

By: Jeffrey Lewis

Director of Purchasing

Dated: _____

CONTRACTOR:

_____
Typed or Printed Name

_____
Title

_____
Signature

_____
Type or Printed Name

_____
Title (Authorized Officers or Agents)

_____
Signature

(CORPORATE SEAL)

PAYMENT BOND

(CALIFORNIA PUBLIC WORK)

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, the JURUPA UNIFIED SCHOOL DISTRICT (sometimes referred to hereinafter as "Obligee") has awarded to _____ (hereinafter designated as the "Principal" or "Contractor"), an agreement for the work described as follows: 25-26-15MOIB - P&D Portable-HVAC and Low Voltage (hereinafter referred to as the "Public Work"); and

WHEREAS, said Contractor is required to furnish a bond in connection with said Contract, and pursuant to California Civil Code section 9550;

NOW, THEREFORE, We, _____, the undersigned Contractor, as Principal; and _____, a corporation organized and existing under the laws of the State of _____, and duly authorized to transact business under the laws of the State of California, as Surety, are held and firmly bound unto the JURUPA UNIFIED SCHOOL DISTRICT and to any and all persons, companies, or corporations entitled by law to file stop notices under California Civil Code section 9100, or any person, company, or corporation entitled to make a claim on this bond, in the sum of _____ Dollars ($_____), such sum being not less than one hundred percent (100%) of the total amount payable by said Obligee under the terms of said Contract, for which payment will and truly to be made, we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that if said Principal, its heirs, executors, administrators, successors, or assigns, or subcontractor, shall fail to pay any person or persons named in Civil Code section 9100; or fail to pay for any materials, provisions, or other supplies, used in, upon, for, or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Code, with respect to work or labor thereon of any kind; or shall fail to deduct, withhold, and pay over to the Employment Development Department, any amounts required to be deducted, withheld, and paid over by Unemployment Insurance Code section 13020 with respect to work and labor thereon of any kind, then said Surety will pay for the same, in an amount not exceeding the amount herein above set forth, and in the event suit is brought upon this bond, also will pay such reasonable attorneys' fees as shall be fixed by the court, awarded and taxed as provided in California Civil Code section 9550 et seq.

This bond shall inure to the benefit of any person named in Civil Code section 9100 giving such person or his/her assigns a right of action in any suit brought upon this bond.

It is further stipulated and agreed that the Surety of this bond shall not be exonerated or released from the obligation of the bond by any change, extension of time for performance, addition, alteration or modification in, to, or of any contract, plans, or specifications, or agreement pertaining or relating to any scheme or work of improvement herein above described; or pertaining or relating to the furnishing of labor, materials, or equipment therefor; nor by any change or modification of any terms of payment or extension of time for payment pertaining or relating to any scheme or work of improvement herein above described; nor by any rescission or attempted rescission of the contract, agreement or bond; nor by any conditions precedent or subsequent in the bond attempting to limit the right of recovery of claimants otherwise entitled to recover under any such contract or agreement or under the bond; nor by any fraud practiced by any person other than the claimant seeking to recover on the bond; and that this bond be construed most strongly

against the Surety and in favor of all persons for whose benefit such bond is given; and under no circumstances shall the Surety be released from liability to those for whose benefit such bond has been given, by reason of any breach of contract between the Obligee and the Contractor or on the part of any obligee named in such bond; that the sole condition of recovery shall be that the claimant is a person described in California Civil Code section 9100, and who has not been paid the full amount of his or her claim; and that the Surety does hereby waive notice of any such change, extension of time, addition, alteration or modification herein mentioned.

IN WITNESS WHEREOF this instrument has been duly executed by the Principal and Surety above named, on the_____ day of _____, 20___.

PRINCIPAL/CONTRACTOR:

_____

By: _____

SURETY:

_____

By: _____
Attorney-in-Fact

IMPORTANT: THIS IS A REQUIRED FORM.

Surety companies executing bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write surety insurance defined in California Insurance Code section 105, and if the work or project is financed, in whole or in part, with federal, grant or loan funds, Surety's name must also appear on the Treasury Department's most current list (Circular 570 as amended).

Any claims under this bond may be addressed to:

(Name and Address of Surety)	(Name and Address of agent or representative for service for service of process in California)
_____	_____
_____	_____
Telephone:_____	Telephone: _____

A notary public or other office completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA)
) ss.
COUNTY OF)

On _____, before me, _____, personally appeared _____, who proved on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies) as the Attorney-in-Fact of _____ (Surety) and acknowledged to me that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

_____ (SEAL)
Notary Public in and for said State

Commission expires:_____

NOTE: A copy of the power-of-attorney to local representatives of the bonding company must be attached hereto.

PERFORMANCE BOND

(CALIFORNIA PUBLIC WORK)

KNOW ALL MEN BY THESE PRESENTS:

THAT WHEREAS, the JURUPA UNIFIED SCHOOL DISTRICT (sometimes referred to hereinafter as "Obligee") has awarded to _____ (hereinafter designated as the "Principal" or "Contractor"), an agreement for the work described as follows: 25-26-15MOIB - P&D Portable-HVAC and Low Voltage (hereinafter referred to as the "Public Work"); and

WHEREAS, the work to be performed by the Contractor is more particularly set forth in that certain contract for said Public Work dated _____ _____, (hereinafter referred to as the "Contract"), which Contract is incorporated herein by this reference; and

WHEREAS, the Contractor is required by said Contract to perform the terms thereof and to provide a bond both for the performance and guaranty thereof.

NOW, THEREFORE, we, _____, the undersigned Contractor, as Principal, and _____, a corporation organized and existing under the laws of the State of _____, and duly authorized to transact business under the laws of the State of California, as Surety, are held and firmly bound unto the JURUPA UNIFIED SCHOOL DISTRICT in the sum of _____ Dollars ($_____), said sum being not less than one hundred percent (100%) of the total amount payable by said Obligee under the terms of said Contract, for which amount well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH THAT, if the bounded Contractor, his or her heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions, and agreements in said Contract and any alteration thereof made as therein provided, on his or her part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their intent and meaning; and shall faithfully fulfill guarantees of all materials and workmanship; and indemnify, defend and save harmless the Obligee, its officers and agents, as stipulated in said Contract, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

The Surety, for value received, hereby stipulates and agrees that it shall not be exonerated or released from the obligation of this bond (either by total exoneration or pro tanto) by any change, extension of time, alteration in or addition to the terms of the contract or to the work to be performed there under or the specifications accompanying the same, nor by any change or modification to any terms of payment or extension of time for any payment pertaining or relating to any scheme of work of improvement under the contract. Surety also stipulates and agrees that it shall not be exonerated or released from the obligation of this bond (either by total exoneration or pro tanto) by any overpayment or underpayment by the Obligee that is based upon estimates approved by the Architect. The Surety stipulates and agrees that none of the aforementioned changes, modifications, alterations, additions, extension of time or actions shall in any way affect its obligation on this bond, and it does hereby waive notice of any such changes, modifications, alterations, additions or extension of time to the terms of the contract, or to the work, or the specifications as well notice of any other actions that result in the foregoing.

Whenever Principal shall be, and is declared by the Obligee to be, in default under the Contract, the Surety shall promptly either remedy the default, or shall promptly take over and complete the Contract through its agents or independent contractors, subject to acceptance and approval of such agents or independent contractors by Obligee as hereinafter set forth, in accordance with its terms and conditions and to pay and perform all obligations of Principal under the Contract, including, without limitation, all obligations with respect to warranties, guarantees and the payment of Liquidated Damages; or, at Obligee's sole discretion and election, Surety shall obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Obligee of the lowest responsible bidder, arrange for a contract between such bidder and the Obligee and make available as Work progresses (even though there should be a default or succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the "balance of the Contract Price" (as hereinafter defined), and to pay and perform all obligations of Principal under the Contract, including, without limitation, all obligations with respect to warranties, guarantees and the payment of Liquidated Damages. The term "balance of the Contract Price," as used in this paragraph, shall mean the total amount payable to Principal by the Obligee under the Contract and any modifications thereto, less the amount previously paid by the Obligee to the Principal, less any withholdings by the Obligee allowed under the Contract. Obligee shall not be required or obligated to accept a tender of a completion contractor from the Surety.

Surety expressly agrees that the Obligee may reject any agent or contractor which may be proposed by Surety in fulfillment of its obligations in the event of default by the Principal. Unless otherwise agreed by Obligee, in its sole discretion, Surety shall not utilize Principal in completing the Contract nor shall Surety accept a bid from Principal for completion of the work in the event of default by the Principal.

No final settlement between the Obligee and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

The Surety shall remain responsible and liable for all patent and latent defects that arise out of or relate to the Contractor's failure and/or inability to properly complete the Public Work as required by the Contract and the Contract Documents. The obligation of the Surety hereunder shall continue so long as any obligation of the Contractor remains.

Contractor and Surety agree that if the Obligee is required to engage the services of an attorney in connection with enforcement of the bond, Contractor and Surety shall pay Obligee's reasonable attorneys' fees incurred, with or without suit, in addition to the above sum.

In the event suit is brought upon this bond by the Obligee and judgment is recovered, the Surety shall pay all costs incurred by the Obligee in such suit, including reasonable attorneys' fees to be fixed by the Court.

IN WITNESS WHEREOF, we have hereunto set our hands and seals this _____ day of _____, 20___.

PRINCIPAL/CONTRACTOR:

_____

By: _____

SURETY:

_____

By: _____
Attorney-in-Fact

The rate of premium on this bond is _____ per thousand.

The total amount of premium charged: $_____ (This must be filled in by a corporate surety).

IMPORTANT: THIS IS A REQUIRED FORM.

Surety companies executing bonds must possess a certificate of authority from the California Insurance Commissioner authorizing them to write surety insurance defined in California Insurance Code section 105, and if the work or project is financed, in whole or in part, with federal, grant or loan funds, Surety's name must also appear on the Treasury Department's most current list (Circular 570 as amended).

Any claims under this bond may be addressed to:

(Name and Address of Surety)	(Name and Address of agent or representative for service for service of process in California)
_____	_____
_____	_____
Telephone:_____	Telephone: _____

A notary public or other office completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA)
) ss.
COUNTY OF)

On _____, before me, _____, personally appeared _____, who proved on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies) as the Attorney-in-Fact of _____ (Surety) and acknowledged to me that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

_____ (SEAL)
Notary Public in and for said State

Commission expires:_____

NOTE: A copy of the power-of-attorney to local representatives of the bonding company must be attached hereto.

GUARANTEE

Guarantee for 25-26-15MOIB - P&D Portable-HVAC and Low Voltage. We hereby guarantee that the _____, which we have installed in_____ _____ has been done in accordance with the Contract Documents, including without limitation, the drawings and specifications, and that the work as installed will fulfill the requirements included in the bid documents. The undersigned and its surety agrees to repair or replace any or all such work, together with any other adjacent work, which may be displaced in connection with such replacement, that may prove to be defective in workmanship or material within a period of One (1) year from the date of the Notice of Completion of the above-mentioned structure by the Jurupa Unified School District, ordinary wear and tear and unusual abuse or neglect excepted.

In the event the undersigned or its surety fails to comply with the above-mentioned conditions within a reasonable period of time, as determined by the District, but not later than ten (10) days after being notified in writing by the District or within forty eight (48) hours in the case of an emergency or urgent matter, the undersigned and its surety authorizes the District to proceed to have said defects repaired and made good at the expense of the undersigned and its surety, who will pay the costs and charges therefor upon demand. The undersigned and its surety shall be jointly and severally liable for any costs arising from the District's enforcement of this Guarantee.

	Countersigned
_____	_____
(Proper Name)	(Proper Name)
By: _____	By: _____
_____	_____
(Signature of Subcontractor or Contractor)	(Signature of General Contractor if for Subcontractor)

Representatives to be contacted for service:

Name: _____

Address: _____

_____

Phone Number:_____

INSURANCE DOCUMENTS & ENDORSEMENTS

The following insurance endorsements and documents must be provided to the Jurupa Unified School District within with the agreement, five (5) days after receipt of notification of award. If the apparent low bidder fails to provide the documents required below, the District may award the Contract to the next lowest responsible and responsive bidder or release all bidders, and the bidder's bid security will be forfeited. All insurance provided by the bidder shall fully comply with the requirements set forth below.

General Liability Insurance: Certificate of Insurance with all specific insurance coverages of $2,000,000 per occurrence, proper Project description, designation of the District as the Certificate Holder, a statement that the insurance provided is primary to any insurance obtained by the District and minimum of 30 days' cancellation notice. Bidder shall also provide required additional insured endorsement(s) naming the District as additional insureds. The Additional Insured Endorsement included on all such insurance policies shall be an ISO CG 20 10 (04/13), or an ISO CG 20 38 (04/13), or their equivalent as determined by the District in its sole discretion, and must state that coverage is afforded the additional insured with respect to claims arising out of operations performed by or on behalf of the insured. If the additional insureds have other insurance which is applicable to the loss, such other insurance shall be on an excess or contingent basis. The insurance provided by the Contractor must be designated in the policy as primary to any insurance obtained by the District and list on the endorsement. Furthermore, an endorsement for a waiver of subrogation in favor of the District must be provided. The amount of the insurer's liability shall not be reduced by the existence of such other insurance.

Incidents and claims are to be reported to the insurer at:

Attn: _____

(Title) (Department)

_____

(Company)

_____

(Street Address)

_____

(City) (State) (Zip Code)

(_____) _____(Telephone Number)

Workers' Compensation/ Employer's Liability Insurance: Certificate of Workers' Compensation Insurance meeting the coverages and requirements include, a minimum of 30 days' cancellation notice, proper Project description, waiver of subrogation and any applicable endorsements.

During the term of this Contract, the Contractor shall provide workers' compensation and employer's liability insurance for all of the Contractor's employees engaged in Work under this Contract on or at the Site of the Project and, in case any of the Contractor's Work is subcontracted, the Contractor shall require the Subcontractor to provide workers' compensation insurance for all the Subcontractor's employees engaged in Work under the subcontract. Any class of employee or employees not covered by a Subcontractor's insurance shall be covered by the Contractor's insurance. In case any class of employees engaged in Work under this Contract on or at the Site of the Project is not protected under the Workers' Compensation laws, the Contractor shall provide or cause a Subcontractor to provide insurance coverage for the protection of those employees not otherwise protected. The Contractor shall file with the District certificates of insurance as required under Article 11.6 and in compliance with Labor Code § 3700.

Workers' compensation limits as required by the Labor Code, but not less than $1,000,000 and employers' liability limits of $1,000,000 per accident for bodily injury or disease.

Automobile Liability Insurance: Certificate of Automobile Insurance meeting the coverages and requirements include, a minimum 30 days' cancellation notice, any applicable endorsements and a statement that the insurance provided is primary to any insurance obtained by the District.

The District shall be covered as additional insureds with respect to the ownership, operation, maintenance, use, loading or unloading of any auto owned, leased, hired or borrowed by the Contractor or for which the Contractor is responsible. Such insurance coverage shall be primary and non-contributory insurance as respects the District, shall stand in an unbroken chain of coverage excess of the Contractor's scheduled underlying coverage. Any insurance or self-insurance maintained by the District shall be excess of the Contractor's insurance and shall not be called upon to contribute with it. The insurer shall agree to waive all rights of subrogation against the District for losses paid under the terms of the insurance policy that arise from Work performed by the Contractor.

Insurance Services Office Business Auto Coverage Form Number CA 0001, Code 1 (any auto) is required. Comprehensive Automobile Liability insurance to include all autos, owned, non-owned, and hired, with limits of $1,000,000 per accident for bodily injury and property damage.

Incidents and claims are to be reported to the insurer at:

Attn: _____
(Title) (Department)

_____
(Company)

_____
(Street Address)

_____
(City) (State) (Zip Code)
(_____) _____(Telephone Number)

DATE:_____ _____
CONTRACTOR

By:_____

Signature

CONTRACTOR CERTIFICATION REGARDING BACKGROUND CHECKS

_____ certifies that it has performed one of the following:
[Name of contractor/consultant]

❑ Pursuant to Education Code section 45125.1, Contractor has conducted criminal background checks, through the California Department of Justice, of all employees providing services to the Jurupa Unified School District, pursuant to the contract/purchase order dated _____, and that none have been convicted of serious or violent felonies, as specified in Penal Code sections 1192.7(c) and 667.5(c), respectively.

As further required by Education Code section 45125.1, attached hereto as Attachment "A" is a list of the names of the employees of the undersigned who may come in contact with pupils.

OR

❑ Pursuant to Education Code section 45125.2, Contractor will ensure the safety of pupils by one or more of the following methods:

❑ 1. The installation of a physical barrier at the worksite to limit contact with pupils.

❑ 2. Continual supervision and monitoring of all employees of the entity by an employee of the entity whom the Department of Justice has ascertained has not been convicted of a violent or serious felony.

I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct.

Date_____, 20___

_____
[Name of Contractor/Consultant]

_____

By its:_____

ATTACHMENT A:

CONTRACTOR CERTIFICATION REGARDING BACKGROUND CHECKS

(INSERT NAMES OF EMPLOYEES WHO MAY COME IN CONTACT WITH PUPILS)

CONTRACTOR'S CERTIFICATE REGARDING WORKERS' COMPENSATION

Labor Code section 3700 in relevant part provides:

Every employer except the State shall secure the payment of compensation in one or more of the following ways:

39. By being insured against liability to pay compensation by one or more insurers duly authorized to write compensation insurance in this State.

40. By securing from the Director of Industrial Relations a certificate of consent to self-insure, which may be given upon furnishing proof satisfactory to the Director of Industrial Relations of ability to self-insure and to pay any compensation that may become due to employees.

41. For any county, city, city and county, municipal corporation, public district, public agency, or any political subdivision of the state, including each member of a pooling arrangement under a joint exercise of powers agreement (but not the state itself), by securing from the Director of Industrial Relations a certificate of consent to self-insure against workers' compensation claims, which certificate may be given upon furnishing proof satisfactory to the director of ability to administer workers' compensation claims properly, and to pay workers' compensation claims that may become due to its employees. On or before March 31, 1979, a political subdivision of the state which, on December 31, 1978, was uninsured for its liability to pay compensation, shall file a properly completed and executed application for a certificate of consent to self-insure against workers' compensation claims. The certificate shall be issued and be subject to the provisions of Section 3702.

I am aware of the provisions of Labor Code section 3700 which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provision before commencing the performance of the work of this Contract.

_____

(Signature)

_____

(Print)

_____

(Date)

In accordance with Article 5 (commencing at section 1860), Chapter 1, Part 7, Division 2 of the Labor Code, the above certificate must be signed and submitted with the Contractor's bid.

CONTRACTOR'S CERTIFICATE REGARDING DRUG-FREE WORKPLACE

This Drug-Free Workplace Certification form is required from all successful bidders pursuant to the requirements mandated by Government Code section 8350 et seq., the Drug-Free Workplace Act of 1990. The Drug-Free Workplace Act of 1990 requires that every person or organization awarded a contract or grant for the procurement of any property or service from any State agency must certify that it will provide a drug-free workplace by performing certain specified acts. In addition, the Act provides that each contract or grant awarded by a State agency may be subject to suspension of payments or termination of the contract or grant, and the Contractor or grantee may be subject to debarment from future contracting, if the contracting agency determines that specified acts have occurred.

Pursuant to Government Code section 8355, every person or organization awarded a contract or grant from a State agency shall certify that it will provide a drug-free workplace by doing all of the following:

42. Publishing a statement, notifying employees that the unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited in the person's or organization's workplace, and specifying actions which will be taken against employees for violations of the prohibition.

43. Establishing a drug-free awareness program to inform employees about all of the following:

a. The dangers of drug abuse in the workplace;
b. The person's or organization's policy of maintaining a drug-free workplace;
c. The availability of drug counseling, rehabilitation and employee-assistance programs; and
d. The penalties that may be imposed upon employees for drug abuse violations;

44. Requiring that each employee engaged in the performance of the contract or grant be given a copy of the statement required by subdivision (a) and that, as a condition of employment on the contract or grant, the employee agrees to abide by the terms of the statement.

I, the undersigned, agree to fulfill the terms and requirements of Government Code section 8355 listed above and will (a) publish a statement notifying employees concerning the prohibition of controlled substance at the workplace, (b) establish a drug-free awareness program, and (c) require each employee engaged in the performance of the contact be given a copy of the statement required by section 8355(a) and require such employee agree to abide by the terms of that statement.

I also understand that if the Jurupa Unified School District determines that I have either (a) made a false certification herein, or (b) violated this certification by failing to carry out the requirements of Section 8355, that the contract awarded herein is subject to termination, suspension of payments, or both. I further understand that, should I violate the terms of the Drug-Free Workplace Act of 1990, I may be subject to debarment in accordance with the requirements of Section 8350 et seq.

I acknowledge that I am aware of the provisions of Government Code section 8350 et seq. and hereby certify that I will adhere to the requirements of the Drug-Free Workplace Act of 1990.

DATE:_____ _____

CONTRACTOR

By:_____

Signature

CONTRACTOR'S CERTIFICATE REGARDING ALCOHOLIC BEVERAGE AND TOBACCO-FREE CAMPUS POLICY

The Contractor agrees that it will abide by and implement the District's Alcoholic Beverage and Tobacco-Free Campus Policy, which prohibits the use of alcoholic beverages and tobacco products, of any kind and at any time, in District-owned or leased buildings, on DISTRICT property and in DISTRICT vehicles. The Contractor shall procure signs stating "ALCOHOLIC BEVERAGE AND TOBACCO USE IS PROHIBITED" and shall ensure that these signs are prominently displayed in all entrances to school property at all times.

DATE:_____

_____
CONTRACTOR

By:_____
Signature

BID PACKAGE - HVAC – CATEGORY 02

SCOPE OF WORK

CATEGORY: 02 – HVAC

These are the four units that we would need for the portable area.

1. HVAC new installation adjacent office area 2
    1. Provide and install new Mitsubishi 2-ton ductless split system for modular building document storage/work area.
    2. Price should include removal and disposal of old equipment, equipment rental and all other parts required to complete full installation including start up and prevailing wage labor. Condensate lines and pump, and unit roof curb adapter. Electrical, disconnected, low voltage, integration to Pelican Thermostat with a TC4 including gateway and repeaters as needed to establish communication to all areas of this project.
    3. New disconnect and electrical from disconnect to the unit.

2. HVAC Roof top unit New Installation for Main area
    1. Provide and install new 4 TON PACKAGE HEAT PUMP CONV PACKAGE 208/230-1 for modular building main area.
    2. Price should include removal and disposal of old equipment, equipment rental and all other parts required to complete full installation including start up and prevailing wage labor. Condensate lines and pump, and unit roof curb adapter. Electrical, disconnect, low voltage, integration to Pelican Thermostat with a TC4 including gateway and repeaters as needed to establish communication to all areas of this project.

    3. New disconnect, and electrical from disconnect to the unit.

3. HVAC For Portable Restrooms
    1. Provide and install new Mitsubishi 4-ton multi head ductless split system with one head per area, 4 total head units, for modular building portable restrooms.
    2. Price should include removal and disposal of old equipment, equipment rental and all other parts required to complete full installation including start up and prevailing wage labor. Condensate lines and pump, and unit roof curb adapter. Electrical, disconnect, low voltage, integration to Pelican Thermostat with a TC4 including gateway and repeaters as needed to establish communication to all areas of this project.

    3. New disconnect and electrical from disconnect to the unit.

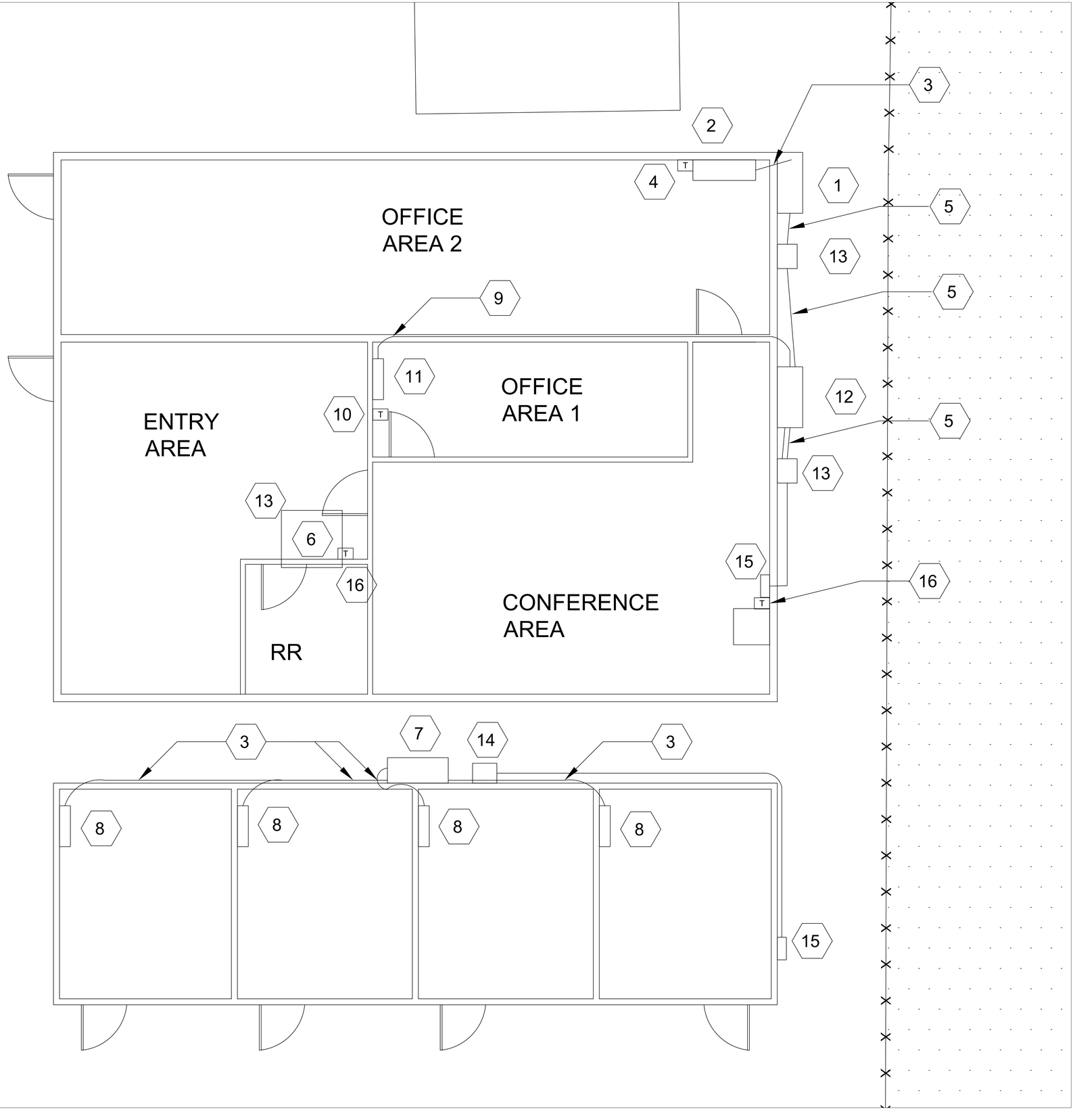
4. HVAC for Office 1
    1. Complete reconnection of existing Mitsubishi 1 ton single head ductless split system for Office area 1.
    2. Price should include removal and disposal of old equipment, equipment rental and all other parts required to complete full installation including start up and prevailing wage labor. Condensate lines and pump, and unit roof curb adapter. Electrical, disconnect, low voltage, integration to Pelican Thermostat with a TC4 including gateway and repeaters as needed to establish communication to all areas of this project.

BID PACKAGE - LOW VOLTAGE – CATEGORY 03

SCOPE OF WORK

CATEGORY: 03 – LOW VOLTAGE

Work will include termination and complete connection at both ends. Completing cabling work and terminating the connection at each endpoint. Price should also include parts, materials, and equipment needed to complete network and communication. Including fiber run from data center to rack at portable and onto each wall plate. All installed cabling should be labeled on both termination points in accordance with ANSI/TIA 606-B Cable Labeling Standards. The resulting fiber optic wide area network will be used for Internet access, email, web-based applications, client-server-based applications, video/audio streaming, video conferencing, planned VoIP services, security camera, alarm, and environmental control system monitoring. The Vendor will provide printed circuit test reports and will coordinate with the District's IT Department to resolve any bandwidth and equipment hand-off issues. Vendor will provide printed circuit test reports which certify the required bandwidth for each circuit.



CONSTRUCTION NOTES

1. CONTRACTOR TO PROVIDE AND INSTALL NEW WALLMOUNT CONDENSER
2. CONTRACTOR TO PROVIDE AND INSTALL A MITSUBISHI 2-TON DUCTLESS SPLIT SYSTEM HEAD UNIT. INSTALL WITH MINI PUMP AND NEW CONDENSATE LINE. INSTALL AT 86" AFF TO BOTTOM.
3. CONTRACTOR TO PROVIDE AND INSTALL NEW REFRIGERANT LINE AND POWER
4. CONTRACTOR TO PROVIDE AND INSTALL NEW PELICAN TC4
5. CONTRACTOR TO INSTALL NEW CONNECTION TO DISCONNECT
6. CONTRACTOR TO PROVIDE AND INSTALL NEW 4-TON PACKAGE HEAT PUMP CONV PACKAGE 208/230-1
7. CONTRACTOR TO PROVIDE AND INSTALL NEW MITSUBISHI 4-TON MULTI-HEAD DUCTLESS SPLIT SYSTEM
8. CONTRACTOR TO PROVIDE AND INSTALL NEW HEAD UNIT FOR SPLIT SYSTEM. INSTALL WITH MINI PUMP AND NEW CONDENSATE LINE. COORDINATE EXACT LOCATION IN THE FIELD WITH PM
9. EXISTING CONDENSATE LINE
10. EXISTING PELICAN TC4
11. EXISTING MITSUBISHI 1-TON SINGLE HEAD UNIT. 86" AFF TO BOTTOM
12. EXISTING MITSUBISHI 1-TON CONDENSER FOR DUCTLESS SPLIT SYSTEM
13. EXISTING DISCONNECT. CONNECTED TO EXISTING POWER.
14. CONTRACTOR TO PROVIDE AND INSTALL NEW DISCONNECT. RUN CONDUIT AND POWER AS ILLUSTRATED
15. EXISTING ELECTRICAL PANEL. SQUARE D S1 SERIES 100 AMP MAIN.
16. EXISTING PELICAN TS200. REPLACE WITH NEW TC4. REGISTER TO JUSD ACCOUNT

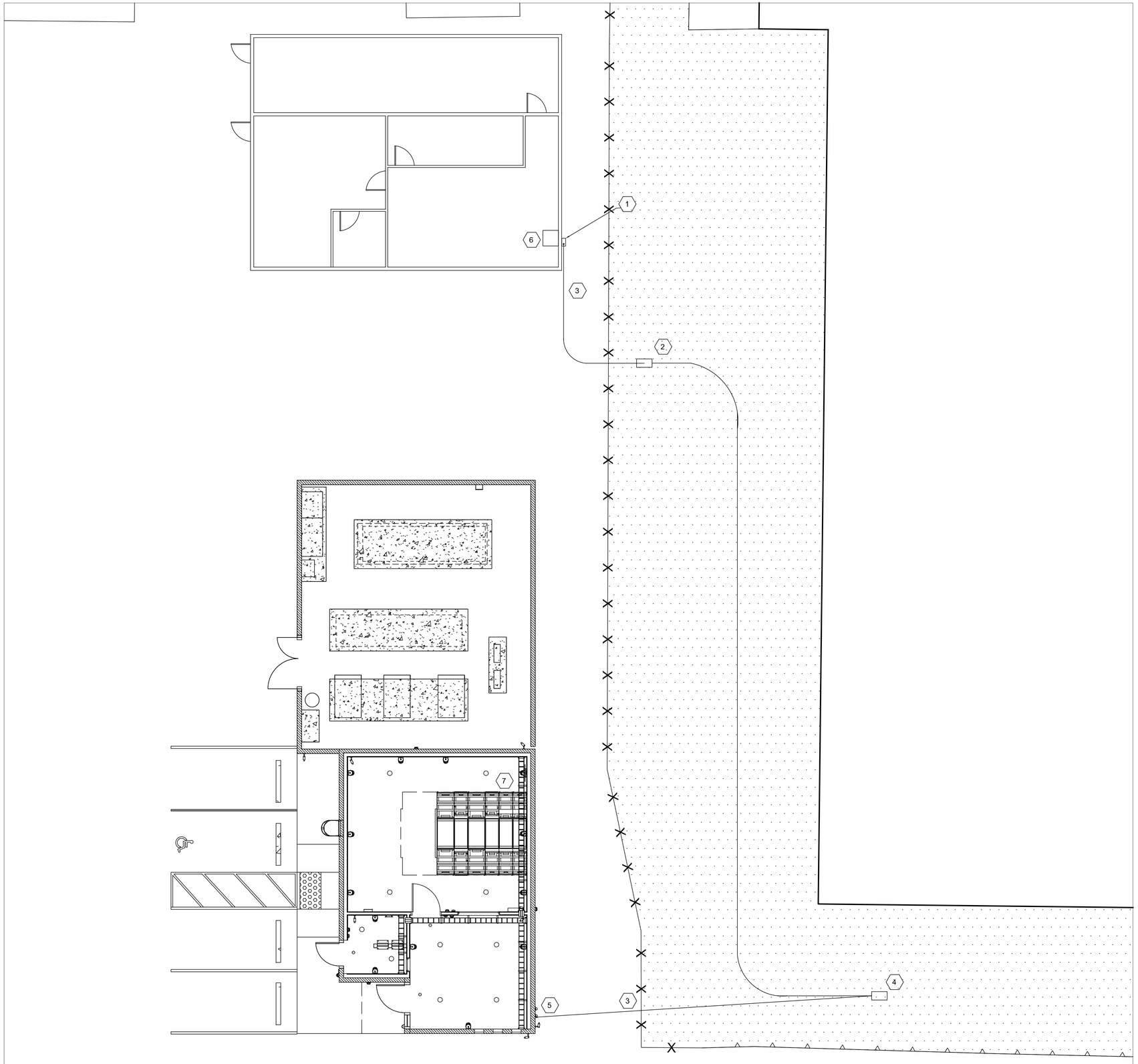
KEY PLAN

JURUPA UNIFIED SCHOOL DISTRICT

Revision No.	Description	Date

25-26-15MOIB - P&D PORTABLE HVAC & LOW VOLTAGE
4740 PEDLEY ROAD, JURUPA VALLEY, CA
MECHANICAL PLAN

Approved By:	
Designed:	
Drawn By:	JUSD
Reviewed:	
Submittal:	
Date:	03/17/2026
Project Number:	25-26-15MOIB
Scale:	NTS
Drawing Number:	M1-1



CONSTRUCTION NOTES

1. EXISTING 2" CONDUIT RISER WITH 12X12X6 NEMA3R ENCLOSURE. TOPPED WITH A CONDULETE (LB) WITH SLEEVE PENETRATING INTO THE ABOVE CEILING AREA.
2. CONTRACTOR TO PROVIDE AND INSTALL A 13X24X12 POLYMER CONCRETE TIER 22 HANDHOLE VAULT TO INTERCEPT THE EXISTING CONDUIT AND CREATE A PULL POINT. PULLBOX TO BE LABELED AS "COMM". ELECTRICAL CONDUIT IS IN PROXIMITY. HANDHOLE LOCATION WILL NEED TO BE TRACED WITH DETECTABLE TAPE IN THE EXISTING EMPTY CONDUIT, THEN HAND DUG.
3. EXISTING 2" UNDERGROUND CONDUIT. APPROXIMATE ROUTING SHOWN.
4. EXISTNG 13X24X12 TELECOMMUNICATIONS HANDHOLE.
5. EXISTING 2" CONDUIT RISER. CONTRACTOR TO EXTEND AS NEEDED TO NEW NEMA3R PULLBOX LOCATION. PROVIDE (2) 2" SLEEVES INTO BUILDING ABOVE INTERIOR DRYWALL. SEAL SLEEVES AFTER CABLE INSTALL. SEE CONDUIT RISER DETAIL.
6. EXISTING CPI CUBE-IT IDF CABINET. PROVIDE LC DUPLEX SM ADAPTER INTO OFCI LEVITON FIBER OPTIC PANEL. SEE RACK LAYOUT FOR ADDITIONAL REQUIREMENTS AND CABLING ZONE PLAN FOR HORIZONTAL CABLING REQUIREMENTS.
7. DATACENTER RACK 1. PROVIDE AND INSTALL COMPONENTS PER THE FIBER PANEL DETAIL. PROVIDE AND INSTALL BERKTEK 12SM I/O RATED FIBER OPTIC CABLING FROM DATACENTER TO PLANNING AND DEVELOPMENT PORTABLE EXISTING IDF. THIS WILL BE ZONE 5. FIBER OPTIC CABLING SHALL BE INSTALLED INSIDE CONTRACTOR PROVIDED MAXCELL FABRIC INNERDUCT. FIBER OPTIC INSTALLATION, TERMINATION, TESTING, AND WARRANTY MUST BE PROVIDED BY A BERK-TEK/LEVITON CERTIFIED CONTRACTOR. EXISTING INFRASTRUCTURE IS COVERED UNDER WARRANTY. WORK MUST NOT VOID EXISTING WARRANTY.

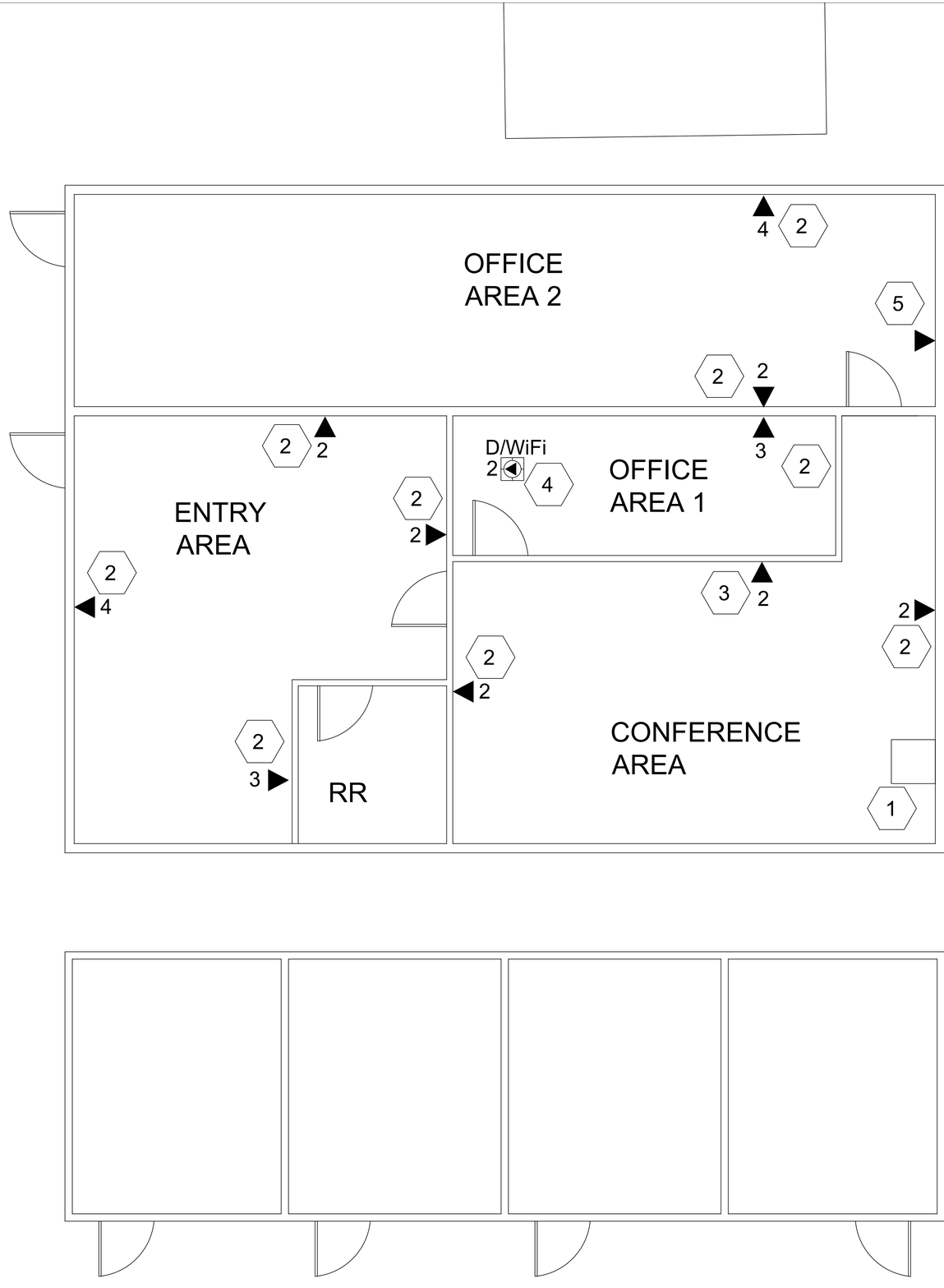
KEY PLAN

JURUPA UNIFIED SCHOOL DISTRICT

Revision No.	Description	Date

25-26-15MOIB - P&D PORTABLE HVAC & LOW VOLTAGE
4740 PEDLEY ROAD, JURUPA VALLEY, CA
TELECOMMUNICAITONS SITE PLAN

Approved By:	
Designed:	
Drawn By:	JUSD
Reviewed:	
Submittal:	
Date:	03/17/2026
Project Number:	25-26-15MOIB
Scale:	NTS
Drawing Number:	T1-1



CONSTRUCTION NOTES

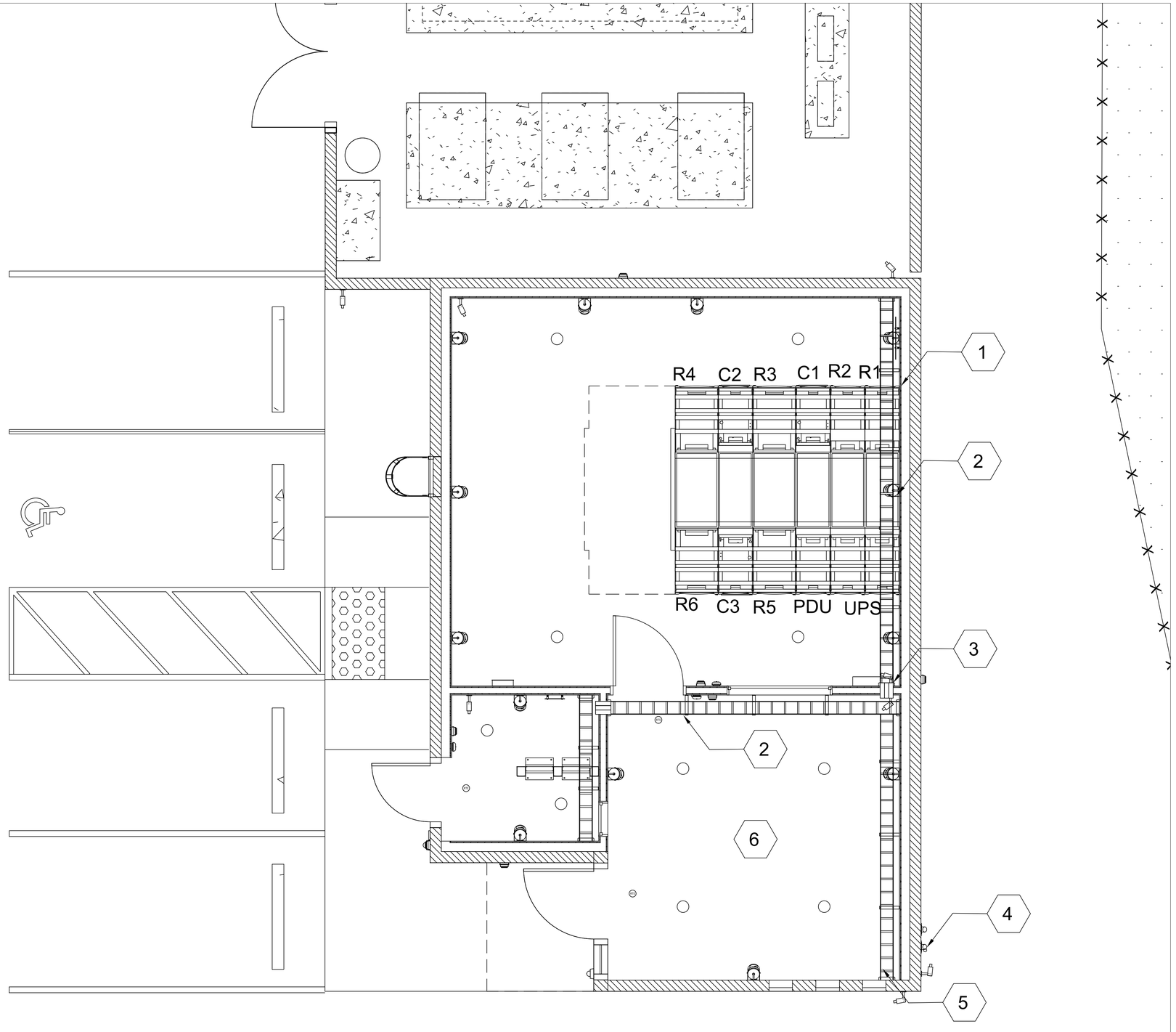
1. EXISTING IDF RACK. RELABEL AS IDF 5
2. EXISTING BERKTEK CAT6 CABLES IN CONDUIT, QUANTITY AS NOTED. CONTRACTOR TO PROVIDE, TERMINATE, TEST, AND LABEL LEVITON JACKS IN ACCORDANCE WITH SPECIFICATIONS. PROVIDE 4 PORT LEVITON WHITE FACEPLATE
3. EXISTING BERKTEK CAT6 CABLE IN CONDUIT, QUANTITY AS NOTED. CONTRACTOR TO PROVIDE, TERMINATE, TEST, AND LABEL LEVITON JACK IN ACCORDANCE WITH SPECIFICATIONS AT 75" AFF. PROVIDE 4 PORT LEVITON WHITE FACEPLATE.
4. PROVIDE AND INSTALL NEW BERKTEK CAT6A CABLE, SUPPORTED FROM CONTRACTOR PROVIDED AND INSTALLED J-HOOKS. QUANTITY AS NOTED. CONTRACTOR TO INSTALL ALL COMPONENTS AS SHOWN IN WIRELESS AP MOUNTING DETAIL ON T4-1
5. DEMO ABANDONED TELECOMMUNICATIONS CABLING.

JURUPA UNIFIED SCHOOL DISTRICT

Revision No.	Description	Date

25-26-15MOIB - P&D PORTABLE HVAC & LOW VOLTAGE
4740 PEDLEY ROAD, JURUPA VALLEY, CA
TELECOMMUNICATIONS FLOOR PLAN

Approved By:	
Designed:	
Drawn By:	JUSD
Reviewed:	
Submittal:	
Date:	03/17/2026
Project Number:	25-26-15MOIB
Scale:	NTS
Drawing Number:	T2-1



CONSTRUCTION NOTES

1. DATACENTER RACK 1. FIBER OPTIC TERMINATION POINT
2. EXISTING CABLE RUNWAY
3. EZ-PATH EXISTING PATHWAY
4. EXISTING CONDUIT RISER
5. CONTRACTOR TO PROVIDE AND INSTALL 12" CPI CABLE RUNWAY. P/N: 11275-712 IN ACCORDANCE WITH DETAILS. MATCH EXISTING HEIGHT.
6. COORDINATION FOR ACCESS AND INSTALLATION WILL BE DONE WITH PM. WORK WILL CAUSE A SERVICE OUTAGE AND NEED TO BE SCHEDULED ACCORDINGLY.

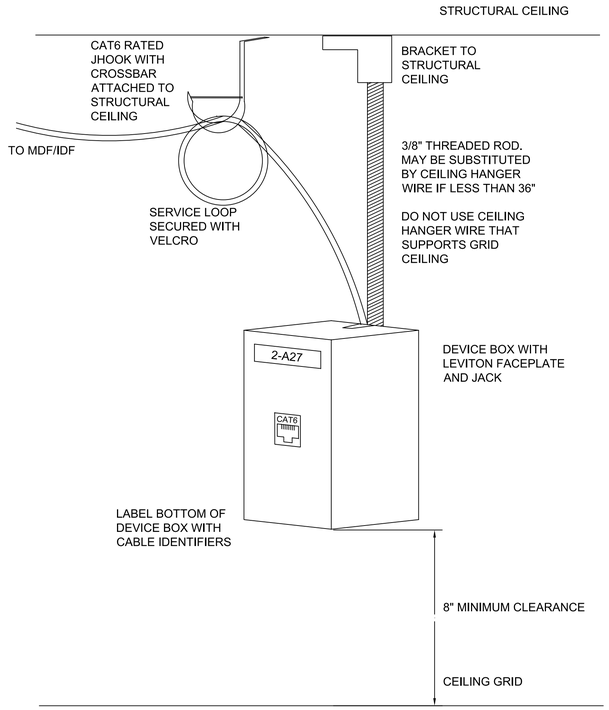
KEY PLAN

JURUPA UNIFIED SCHOOL DISTRICT

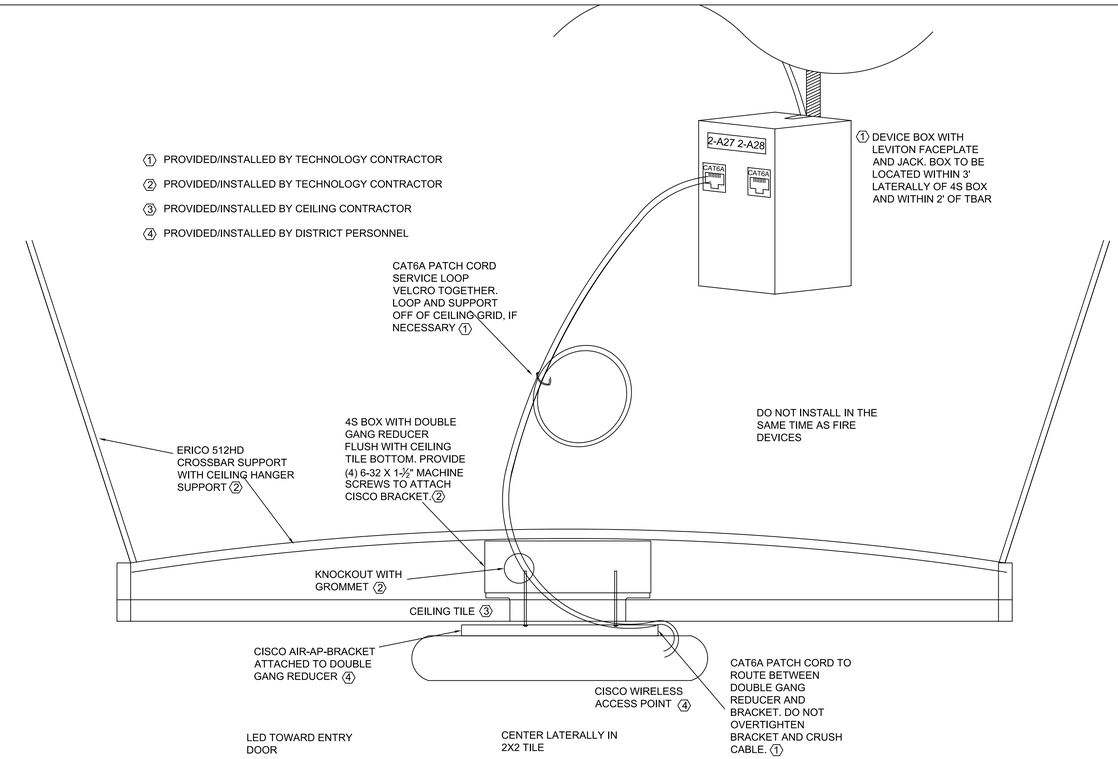
Revision No.	Description	Date

25-26-15MOIB - P&D PORTABLE HVAC & LOW VOLTAGE
4740 PEDLEY ROAD, JURUPA VALLEY, CA
TELECOMMUNICATIONS DATACENTER FLOOR PLAN

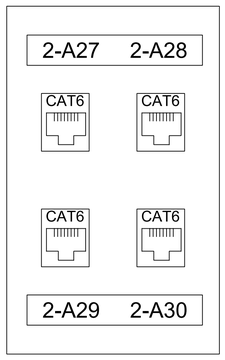
Approved By:	
Designed:	
Drawn By:	JUSD
Reviewed:	
Submittal:	
Date:	03/17/2026
Project Number:	25-26-15MOIB
Scale:	NTS
Drawing Number:	T2-2



ABOVE CEILING DROP DETAIL



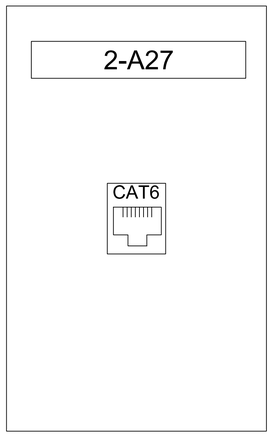
WIRELESS AP MOUNTING



LABELING SHALL BE TIA-606B COMPLIANT.
2-A27 IS IDF2, PATCH PANEL A, PORT #27 IDENTIFICATION SHALL BE IN NUMERICAL ORDER, LEFT TO RIGHT, TOP TO BOTTOM

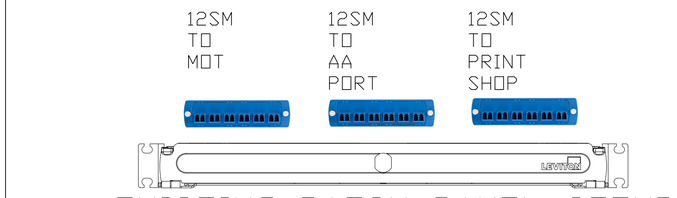
ANY PORTS ON THE FACEPLATE NOT OCCUPIED BY A CABLING JACK SHALL BE FILLED BY THE CONTRACTOR WITH A JACK BLANK OF THE SAME COLOR

MULTIPORT LABELING

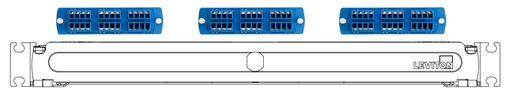


LABELING SHALL BE TIA-606B COMPLIANT.
2-A27 IS IDF2, PATCH PANEL A, PORT #27

SINGLE PORT LABELING



EXISTING PATCH PANEL SETUP



CONTRACTOR SHALL:
1. PROVIDE AND INSTALL (3) LEVITON 5F100-4LL.
2. RELOCATE 12SM FROM OLD FIRST PANEL TO TOP HALF OF NEW 24 STRAND FIRST PANEL. RELABEL.
3. RELOCATE 12SM FROM OLD SECOND PANEL TO BOTTOM HALF OF NEW 24 STRAND FIRST PANEL. RELABEL.
4. RELOCATE 12SM FROM OLD THIRD PANEL TO TOP HALF OF NEW 24 STRAND SECOND PANEL. RELABEL
5. TERMINATE NEW 12SM FROM P&D TO LC SM TERMINATIONS AND INSTALL IN BOTTOM HALF OF NEW 24 STRAND SECOND PANEL.

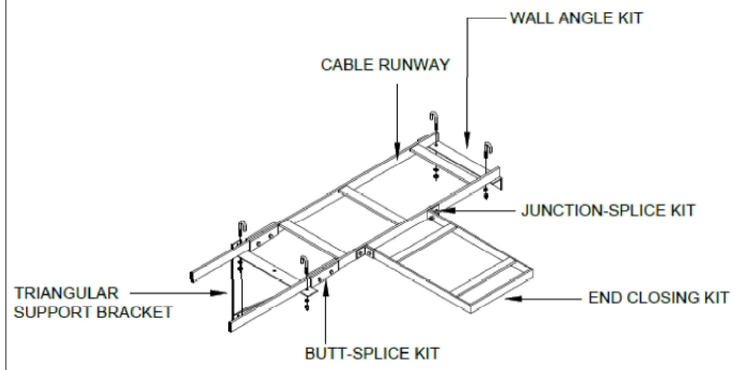
FIBER PANEL SCOPE

JURUPA UNIFIED SCHOOL DISTRICT

Revision No.	Description	Date

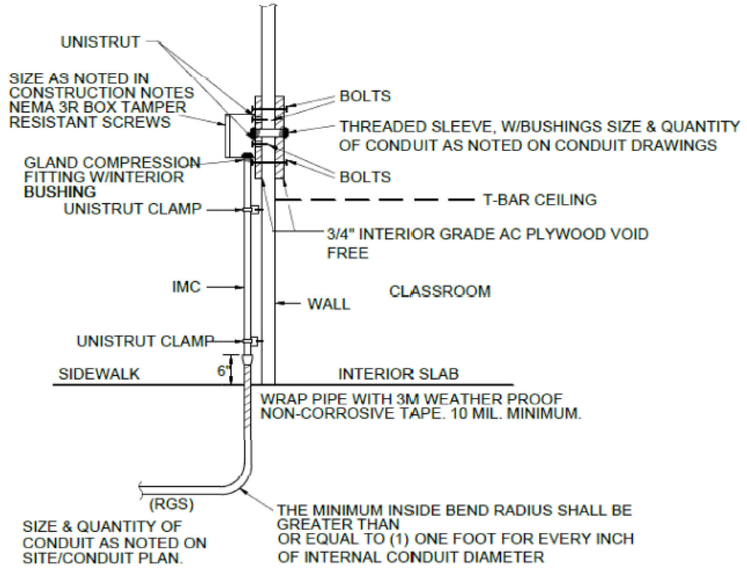
25-26-15MOIB - P&D PORTABLE HVAC & LOW VOLTAGE
4740 PEDLEY ROAD, JURUPA VALLEY, CA
TELECOMMUNICATIONS DETAILS

Approved By:	
Designed:	
Drawn By:	JUSD
Reviewed:	
Submittal:	
Date:	03/17/2026
Project Number:	25-26-15MOIB
Scale:	NTS
Drawing Number:	T4-1



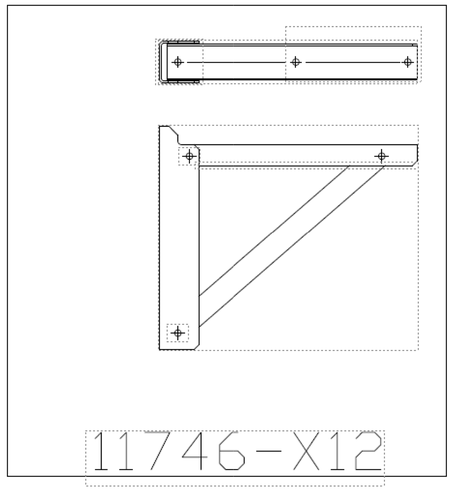
CONTACTOR TO PROVIDE AND INSTALL CABLE RUNWAY AS ILLUSTRATED IN FLOOR PLAN.

CABLE RUNWAY DETAIL



* ALL BOXES / PLYWOOD TO BE SECURED USING MIN. 3/8" WALL ANCHORS/LAG BOLTS.
* 50 yr. SILICONE CAULK AROUND ALL PENETRATIONS, OR ALL THREAD "AS REQUIRED"
* SEAL ALL ENTRANCE CONDUITS AND INNERDUCT PER SPEC.
* UNISTRUT TO RUN ACROSS ENTIRE WIDTH OF PULLBOX. ENDS SHALL ALIGN WITH EDGE OF PLYWOOD

CONDUIT RISER DETAIL



CONTRACTOR TO PROVIDE AND INSTALL STEEL TRIANGULAR SUPPORT BRACKET P/N: 11746-712 AT 48" INTERVALS UNDER NEW CABLE RUNWAY IN DATACENTER OFFICE AREA.

TRIANGLE SUPPORT

Rack layout	
19	OFCI Fiber Panel
18	NP2
17	
16	CFCI Leviton PP A
15	
14	NP2
13	
12	OFOI Switch
11	CFCI Leviton PP B
10	
9	NP2
8	
7	OFOI Switch
6	//////
5	//////
4	///////
3	//////
2	//////
1	///////

IDF 5 RACK LAYOUT

DataCenter Rack 1

Rack layout	
42	///////
41	Fiber Obtic Panel
40	A Patch Panel
39	
38	Wifi Patch Panel
37	Neat-Patch
36	
35	Cisco C3560
34	Fiber Obtic Panel
33	
32	
31	
30	Neat-Patch
29	
28	///////
27	//////
26	//////
25	//////
24	C93180YC-FX3S
23	C93180YC-FX3S
22	CK Server
21	CK Server
20	Aruba WLC
19	Aruba WLC
18	Cisco ISR
17	///////
16	///////
15	Server
14	Firepower 4120
13	Firepower 4120
12	Server
11	///////
10	///////
9	///////
8	///////
7	89500-40X
6	///////
5	///////
4	///////
3	///////
2	///////
1	///////

DATACENTER R1 RACK LAYOUT

JURUPA UNIFIED SCHOOL DISTRICT

Revision No.	Description	Date

25-26-15MOIB - P&D PORTABLE HVAC & LOW VOLTAGE
4740 PEDLEY ROAD, JURUPA VALLEY, CA
TELECOMMUNICATIONS DETAILS

Approved By:
Designed:
Drawn By: JUSD
Reviewed:
Submittal:
Date: 03/17/2026
Project Number: 25-26-15MOIB
Scale: NTS
Drawing Number: T4-2

SECTION 27 00 00

COMMUNICATIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. ANSI/TIA-568-C.0 Generic Telecommunications Cabling for Customer Premises

B. ANSI/TIA-568-C.1 Commercial Building Telecommunications Cabling Standard

C. ANSI/TIA-568-C.2 Balanced Twisted Pair Cabling Components

D. ANSI/TIA-568-C.3 Optical Fiber Cabling Components Standard

E. ANSI/TIA/EIA 569-E Commercial Building Standards For Telecommunications Pathways And Spaces

F. ANSI/TIA/EIA 606-B The Administration Standard For The Telecommunications Infrastructure Of Commercial Building

G. ANSI/J-STD-607-C Commercial Building Grounding And Bonding Requirements For Telecommunications

H. ANSI/TIA/EIA-862 Building Automation Systems Cabling Standard for Commercial Buildings

I. ASTM D 4566-05, Standard Test Methods for Electrical Performance Properties of Insulations and Jackets for Telecommunications Wire and Cable, 2005

J. BICSI Telecommunications Distribution Methods Manual (TDMM) Current Edition

K. BICSI Information Transport Installation Manual (ITSM) Current Edition

L. ISO/IEC 11801 – Information Technology – Generic Cabling for Customer Premise

M. IEEE 802.3 Standard for Information technology -Telecommunications and information exchange between systems - Local and metropolitan area networks – Specific requirements Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications

N. IEC 61156-1, Multicore and Symmetrical Pair/Quad Cables for Digital Communications – Part 1: Generic Specification, 2005

O. NFPA-70 National Electrical Code Current Edition

P. NECA/BICSI-568-A Standard for Installing Commercial Building Telecommunications Cabling

Q. Federal Communications Commission Part 15 and Part 68

R. UL 444 – Standard for Safety of Communications Cable

S. UL 1666 – Standard for Safety of Flame Propagation Height

T. NFPA 262 – Flame Travel and Smoke of Wires and Cables

U. Local Authority Having Jurisdiction

1.02 DEFINITIONS / TERMS / ACRONYMS

A. ANSI – American Northern Standards Institute

B. AWG – American Wire Gauge

C. BICSI – Building Industry Consulting Service International

D. EIA – Electronics Industry Alliance

E. ETL – Intertek Semko Labs

F. FCC – Federal Communications Commission

G. IEC – International Electrotechnical Commission

H. IEEE – Institute of Electrical and Electronic Engineers

I. IDC – Insulation displacement contact

J. ISO – International Standards Organization

K. J-STD – Joint Standard

L. NECA – National Electrical Contractors Association

M. NFPA – National Fire Protection Agency

N. SC – Subscriber Channel

O. TIA – Telecommunications Industry Association

P. UL – Underwriters Laboratory

Q. 1GBase-T – networking protocol capable of transmitting 1 billion bits of information per second over copper twisted pair

R. 10GBase-T – networking protocol capable of transmitting 10 billion bits of information per second over copper twisted pair

S. 10GBase-SX – networking protocol capable of transmitting 10 billion bits of information per second over optical fiber at 850 nanometers

T. Contractor: The term "Contractor" refers to the installation Contractor responsible for the furnishing and installation of all work indicated within this Specification.

U. Construction Manager: The terms "Construction Manager" mean the Owner's appointed representative.

V. Furnish: The term "furnish" is used to mean "purchase, supply, provide and deliver to the Project site, protect and provide interim storage and be ready for unloading, unpacking, assembly, installation, and similar operations in accordance with Manufacturer's specifications."

W. Provide: The terms "provide" means to "furnish and install, complete and ready for the intended use".

X. Install: The term "install" is used to describe operations at project site including the actual "unloading, unpacking, rigging in place, assembly, erection, placing, anchoring, applying, working to dimension,

finishing, curing, protecting, cleaning, and similar operations".

Y. Installer: The "Installer" is the Contractor, Subcontractor and/or supplier who uses their own employees for performance of all construction activity related to their specified responsibilities, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform and the "Installers" must be an authorized Manufacturers representative, certified, experienced and qualified to provide, install, program, troubleshoot, train, warrant and service all the systems in this section in their entirety.

Z. If Applicable: The term “if applicable” will be that work which maybe required for completed construction at applicable locations, but is not necessarily shown or described in the Contract Documents.

AA. As Necessary: The term “as necessary” will be that work which is required for completed construction, but is not necessarily shown or described in the Contract Documents.

BB. As Required: The term “as required” will be that work which is required for completed construction and is shown on the drawings or described in the project Specification.

CC. Concealed: The Term “concealed” means hidden from sight, buried as in chases, furred spaces, shafts, fixed ceiling or embedded in construction.

DD. Exposed: The term “exposed” means bare, open to the elements, out in the open, uncovered.

EE. Product: The term “product” will mean any item of equipment, material, fixture, apparatus, appliance or accessory installed under this Division.

FF. “Substantial Completion” is deemed that the project is sufficiently complete to be utilized for its intended use as stated in the body of this written Specification.

GG. Governmental: The term “governmental” means all municipal, state and federal government agencies.

HH. Words in the singular will also mean and include the plural, wherever the context so indicates, and words in the plural will mean the singular, wherever the context so indicates.

II. Cabling: The term “cabling” will mean cable assembly, raceway, conductors, fittings and any other necessary accessories to make a complete wiring system.

JJ. Backbone: A facility (e.g., pathway, cable or conductors) between telecommunications rooms, or floor distribution terminals, the entrance facilities and equipment rooms within or between buildings.

KK. Backbone Cabling: Cabling and connecting hardware that provides interconnections between telecommunications rooms, equipment rooms, and entrance facilities.

LL. Horizontal Cabling: The cabling between and including the work area outlet/connector and the horizontal cross-connect/patch cord in the telecommunications room.

MM. Telecommunications: A branch of technology concerned with the transmission, emission, and reception of signs, signals, writing, images, and sounds; that is, information, of any nature by cable, radio, optical, or other electromagnetic systems.

NN. Pull Point: A Pull Point is a space used to transition between floors for backbone and horizontal cabling within a building riser system.

OO. Equipment Outlet (EO): A device also known as the outlet or information outlet placed at the user workstation for termination using connectors (jacks) of horizontal media for connectivity of data and voice at teacher work area outlet, multimedia equipment. These outlets provide the connection point to voice, data, and other media services.

PP. Connector 8P8C (Jack): A female connector that has eight positions and eight conductors. Jacks are typically used to terminate eight conductor category rated cable at the user end and are inserted into faceplates to create a connection point for the user's equipment cord.

1.03 SUBMITTAL REQUIREMENTS

A. Under the provisions of this request for proposal, as a part of the bid submission, the Structured Cabling System Contractor will:

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.

B. Prior to the start of work, the Structured Cabling System Contractor will:

1. Submit appropriate cut sheets for all products, hardware, and cabling.

C. Work will not proceed without the Owner's approval of the submitted items.
D. The Structured Cabling Systems Contractor will receive approval from the Owners on all substitutions of material. No substituted materials will be installed except by written approval from the Owner.
E. Refer to other applicable sections for additional submittals requirements.

1.04 CONTRACTOR QUALIFICATIONS

A. Comply with below qualification requirements.

B. The Installer (Firm and Employees) will be experienced in the operations they are engaged to perform. Demonstrate at least five years of continuous recent experience on similar projects. The Installer will hold recent, up-to-date licenses, certifications and training certificates in the area the project is located and for the equipment to be installed.

C. Provide names of contacts from the last five similar projects including the General Contractor, Owner's Representative, Architect and Engineer. Indicate project locations, scope and current phone numbers that the contacts can be reached at.

D. Qualified Structured Cabling System Installation firms will have demonstrable design and installation training with certifications of competence. Certified training will be industry recognized and at least equal to:

1. Building Industry Consulting Service International, Inc. (BISCI) Registered Installer.
2. Certified Berk-Tek / Leviton Technologies Installer.

E. Provide a full time on site foreman who personally has been certified as described above. Submit all documentation under this Section.

F. Provide an on-call Project Manager to supervise the project.

G. Each Foreman and Installer working on this project will be trained to the qualified level as specified by the Manufacturer(s) for installation and maintenance of equipment being provided on this project. The training will consist of at least a minimum of proper installation techniques of their specific equipment in order to have a complete operating system meeting or exceeding the requirements as specified herein. Each Foreman and Installer working on this project will have documentation from the Manufacturer indicating that they have been adequately trained prior to the start of the project. Only Foreman and Installers who have been properly trained and documented by the Manufacturer whose equipment is being provided on this project will be allowed to install same.

1.05 BIDDER QUALIFICATIONS

A. Bidding Contractor shall be a licensed to install telecommunications systems with a valid California C7 license.

B. Bidding Contractor shall have a minimum of 3 years experience installing structured cabling for telecommunications.

C. Bidding Contractor shall have the capability to bond project in its entirety.

D. Bidding Contractor shall be able to provide insurance at the request of the owner.

E. Contractor performing work must be listed on the BerkTek Leviton authorized installers, valid and able to provide full warranty.

1.06 DELIVERY, STORAGE, AND PROTECTION

A. Contractor shall ensure that materials delivery to work area shall be coordinated with construction site manager responsible for materials distribution to all trades.

B. Contractor is responsible for all materials, tools and vehicles left on the job site.

C. Contractor shall coordinate a disposal bin for the removal of all trash produced by the Contractor's associated personnel during the project.

D. Contractor shall ensure materials are stored in an environmental area where:

1. Temperature does not exceed 120 degrees Fahrenheit nor below 32 degrees Fahrenheit.
2. Humidity does not exceed 80 %.
3. No direct exposure to sunlight.

1.07 PROJECT CONDITIONS

A. Environmental Requirements

1. Contractor shall ensure that any pollutants produced during the work is disposed off according to local, state or national regulations. Follow the most stringent guidelines.
2. It is preferred that the Communications Contractor recycle any used or un-used components during the course of the construction project.
3. Coordinate with LEED project manager if cabling system or components will used for points in a LEED certified project.

B. Existing conditions

1. See Section 01 51 33 for Temporary Telecommunications requirements
2. The school has an existing computer network that must remain running, unless otherwise identified in writing.
3. Coordinate with LEED project manager if cabling system or components will used for points in a LEED certified project.

C. Field Measurements

1. Contractor shall coordinate with electrical engineer on project that the main electrical service ground has a resistance to earth of less than 5 ohms.

2. Contractor shall ensure that all grounding busbars for all equipment network rooms shall have a resistance of less than 1 ohm back to the main electrical service ground.
3. Contractor shall ensure that all field testers have been calibrated from the Manufacturer within 1 year.

1.08 SEQUENCING

A. Contractor shall coordinate with Owner's project manager on sequencing of various trades and construction teams for the lifecycle of the project.

B. Cooperation and coordination with other trades.

1. The work will be so performed that the progress of the entire building construction, including all other trades, will not be delayed and not interfered with. Materials and apparatus will be installed as fast as conditions of the building will permit and must be installed promptly when and as directed.
2. Telecommunications network must be operational and in place by identified scheduling milestones, as a prerequisite for other network enabled low voltage and building management systems. Delays to installation may cause liquidated damages, for compensation of stacking resources by district and other contractor trades.
3. Keep fully informed as to the shape, size and position of all openings required for all apparatus and give information in advance to build openings into the work. Furnish and set in place all sleeves, pockets, supports and incidentals.
4. Coordinate exact locations and roughing in dimensions of all work before installation and make all final connections as required. Any changes required to avoid interferences or to provide adequate clearances for Code and maintenance requirements will be made at no additional costs.
5. Structural elements of the project will not be relocated, altered or changed to accommodate the work without written authorization from the Owner/Architect.
6. Work that is installed before coordination with other trades or that causes interference with the work of other trades will be changed to correct condition at no additional cost to the Owner.
7. Obtain a complete set of Project Drawings and Specifications for coordination and to determine the full scope of work.
8. Attend project coordination meetings to coordinate work of this Section, pathways, work of other trades phasing and other project requirements.

1.09 CONTINUITY OF SERVICE AND SCHEDULING OF WORK

A. Contractor shall provide a detailed construction schedule with hard dates for completion of roughing in cables, terminations and testing once scheduling sequence has been determined to the Owner's Project Manager. Schedule shall include milestones when owner is to return to install and configure active network electronics.

B. Cabling schedule shall be in a software program designated by the Owner's Project Manager.

C. Continuity of all services will be maintained in all areas that will be occupied or temporarily relocated during the construction period. If an interruption of service becomes necessary, such will be scheduled in advance, made only upon consent of the Owner and at a time outside normal working hours as the Owner will designate. The Contractor will schedule the shutdown with seven days in advance. Arrange work to minimize shutdown time.

D. Should services be inadvertently interrupted, immediately notify the Owner. Be prepared to immediately furnish labor, materials and the equipment necessary for prompt restoration of interrupted service.

E. Refer to the overall scheduling of the work of the project. Schedule work, process Submittals and order materials and equipment to neither conform to this schedule and install work to not delay nor interfere with the progress of the project.

F. Inform General Contractor and Architect immediately of any delays or potential delays. Furnish Manufacturer's letter to verify order date, equipment delays, expected shipment date, order number, and potential remedies to speed up delivery. Any costs to speed up delivery will be implemented at no cost to the project if the equipment or material was not ordered as soon as possible after Contract award or within the time frames indicated with the Submittals.

G. Include premium time required to comply with the project scheduling and phasing.

H. Be aware of, and plan for, project scheduling and phasing. Provide for complete continuous operation of all systems. Coordinate scheduling and phasing with the Architect, Owner, other Trades, and the General Contractor.

I. Demolition of existing systems being updated will take place only after the new or replacement system is completely installed, operational, tested and certified. This work may be required on a "per-phase" basis.

1.10 PROTECTION OF WORK AND PROPERTY

A. Be responsible for the care and protection of all work included under this Section until it has been tested and accepted.

B. Protect all equipment and materials from damage from all causes including theft. All materials and equipment damaged or stolen will be replaced with equal material or equipment at the option of the Architect and Owner.

C. Materials and equipment stored for this project will be protected and maintained according to the Manufacturer's recommendations and requirements and according to the applicable requirements of NFPA 70B.

D. Protect all equipment, outlets and openings with temporary plugs, caps and covers. Protect work and materials of other trades from damage that might be caused by work or workmen and make good any damage caused.

E. Use caution to avoid damage to existing work, and to prevent harm to personnel working in all areas.

F. Observe all safety precautions and requirements for the construction.

G. The General Contractor and the Installer are responsible for initiating, maintaining, and supervising all safety precautions and requirements during construction.

H. Coordinate installations with all other trades in order to not damage equipment or cables during construction. Any work that is damaged during construction will not be repaired. Replace damaged work completely, with no splices in cabling, at no additional cost to the Owner.

PART 2 PRODUCTS

2.01 REFERENCES

A. Refer to 27 05 26 for Bonding and Grounding Specifications

B. Refer to 27 11 00 for Equipment Room Fittings

C. Refer to 27 13 00 for Communications Backbone Cabling

D. Refer to 27 15 00 for Communications Horizontal Cabling

E. Refer to 27 16 00 for Communications Connecting Cords, Devices, and Adapters

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. Verify the exact location prior to bid of all items that may be indicated and determine exact location of all electrical items that are not indicated on the Drawings.

B. Include the cost of all work including sub-letting of any work that may be required to complete the work indicated in order to avoid work stoppages and jurisdictional disputes. The work to be sublet will conform to precedent agreements and decisions of record. Jurisdictional assignment will be a responsibility under this Section's contractual obligation.

C. Do not install equipment and materials that have not been reviewed by the Architect. Equipment and materials which are installed without the Architect's review or without complying to comments issued with the review will be removed from the project when so instructed by the Architect. No payment will be made for unapproved or removal if it is ordered removed. The Installer will be responsible for any ancillary costs incurred because of its removal and the installation of the correct equipment and materials.

D. Obtain detailed information on installation requirements from the Manufacturers of all equipment to be furnished, installed or provided. At the start of construction, check all Contract Documents include all Drawings and all Sections of the specifications for equipment requiring electrical connections and service and verify electrical characteristics of equipment prior to roughing.

E. Equipment and systems will not be installed without first coordinating the location and installation of equipment and systems with the General Contractor and all other Trades.

F. Any and all material installed or work performed in violation of above requirements will be re-adjusted and corrected by the Installer without charge.

G. Refer to all Drawings associated with the project, prior to the installation or roughing-in of the electrical outlets, conduit and equipment, to determine the exact location of all outlets.

H. After installation, equipment will be protected to prevent damage during the construction period. Openings in conduits and boxes will be closed to prevent the entrance of foreign materials.

I. Home runs indicated are not to be combined or reduced without written consent from the Architect.

J. All connections to equipment will be made as required, if applicable, and in accordance with the approved submittal and setting drawings.

K. Site Observation:

1. Site observation visits will be performed randomly during the project by the Architect and owner. Reports will be generated noting observations. Deficiencies noted on the site visit reports will be corrected. All work will comply with the Contract Documents, applicable Codes, regulations and local Authorities whether or not a particular deficiency has been noted in a site visit report.
2. Be responsible to notify the Architect ten working days prior to closing in work behind walls, raised access floors, ceilings, etc., so that installed work can be observed prior to being concealed.
3. Areas will stay accessible until deficiencies are corrected and accepted. Notify the Architect when all deficiencies are corrected. Return reports with items indicated as corrected prior to re-observation by the Architect.

L. Change Orders, Modifications, Revisions and Directives:

1. When change orders, modifications, revisions or Architect's Directives are issued or authorized, provide the required additional material, equipment, personnel and workers to prevent delays in the work, and to complete the work within the time limit of the Contract unless a specific time extension is requested

with the change and accepted. Include costs for expediting deliveries where required.
2. Requests for additional compensation will be submitted broken down and associated by item, tasks and Drawing or sketch number with material and labor costs, so quantities can be easily verified.
3. Requests will be properly and adequately identified so the scope of work can be clearly determined. Indicate who originated change in work.
4. Submit on all credits broken down as requested for adds. Credits will be separately identified and accounted for. Do not indicate as net changes with adds.

M. A trailer may be used for the storage of materials to be located on the Owner's property at a location designated by the Owner and the General Contractor. Such on-site storage will be kept locked by the Installer. Security for the trailer and its contents will be strictly the responsibility of the Installer.

N. Protect existing spaces where work is being performed; protect it from damage and from the accumulation of dirt and debris.

O. Any ceilings, walls, floors, furniture, equipment, furnishings, etc., damaged by the work of this Section will be replaced, or at the Owner's option, repaired with similar materials, workmanship and quality.

P. Work includes field survey of existing conditions, systems, equipment and tracing of existing circuits in order to determine scope of work.

Q. Maintain the existing building in operation at all times during the entire construction period. If it is necessary to have a system shutdown, a written request for approval will be submitted in advance stating the estimated shutdown time. Work will be planned to minimize shutdown. Shutdowns will be at the convenience of the Owner and, if necessary, on premium time.

R. Clean and touch up all equipment, materials and work sites at the completion of work in each area.

S. Certain portions of the work area may be occupied during construction. Determine which areas and schedule work accordingly and include necessary premium time.

T. Make sure necessary provisions to provide continuous service of all existing systems throughout all occupied areas.

3.02 CABLE PATHWAYS

A. Install cables in pathways

B. Provide all equipment and cabling for a complete installed operating system. Pathways, outlet boxes and grounding are provided by the Electrical Subcontractor.

C. All pathways provided under this Section will comply with fill capacities as per Code, TIA/EIA 569 and BICSI.

D. Cable bending radius will not be less than minimum required by TIA/EIA and BICSI.

E. Cabling installed concealed will be supported from the building structure (e.g. cable trays, J-Hooks, etc.).

F. Cables will be installed no closer than 12 inches (305mm) to electrical equipment and wiring. When cables are required to cross power wiring, they will only do so perpendicular to the power wiring. Cable and power wiring will only cross each other the minimal number of times as required due to building design limitations.

G. Clearances: Clearances between cabling and other building systems as required by TIA/EIA 569 and BICSI will be maintained throughout the building.

H. All cables will be installed in a neat and workman-like manner. Cables will be installed parallel and perpendicular to building elements.

I. Provide expansion fittings and adequate cable slack at all building expansion joints.

J. Fire/smoke seal all conduits, raceways, sleeves, slots, etc. where cables pass from one location to another.

3.03 WORK AREA OUTLETS

A. All work area outlet locations will be as indicated on the Drawings. Uniquely label each work area outlet and jack within the outlet according to the numbering convention outlined in the section on labeling.

B. Labeling shall be sequential in order, do not reuse a number throughout the entire infrastructure.

C. Work area outlets installed in casework will have their cables installed within the conduit or raceway provided.

D. Install jack and connector modules as indicated in the details and on the Drawings.

E. Work area outlets will be seated properly and will be installed level on walls and parallel to building elements as required.

3.04 INSTALLATION PRACTICES

A. Follow and adhere to installation practices specified by the applicable Telecommunications Industry Association standards.

B. Follow and adhere to installation practices specified by BICSI Information Transport System Installation Manual 5th Edition.

C. Follow and adhere to installation practices specified by BICSI Telecommunications Distribution Methods Manual 11th Edition.

D. Follow and adhere to installation practices specified by NFPA-70 National Electric Code, Edition 2008.

E. Follow and adhere to installation practices specified by the Manufacturers.

F. The general topology will be a "hierarchal star" configuration. All segments will originate in NRTL listed patch panels located in the telecommunication equipment racks/cabinets and end at the work area outlets.

1. Routing:

    a. All cabling will be installed in conduit where indicated on plans or will be installed open using “J" hooks and routed on cable trays located as shown on plans.
    b. Cables will be routed, in large groups, down main cable pathways, until a direct path to the point of access to the workstation outlet can be taken. At that point, cables will be routed, above all building systems, to the outlet location in accordance with standard installation practices, as described herein.
    c. Multiple cables to individual rooms will be pulled as a bundle and terminated at each end in sequential order so that labeling within a room location is in sequence.
    d. When not in conduit or tray, cables will be supported to the deck and/or beams, every five

feet throughout the length of their installed run. Hangers, clips, and other methods of grouping the cables and keeping them away from other systems installed in the building are to be provided and installed. Ensure that hangers and other methods of securing cable do not compress cable or damage insulation.

e. Cables will be attached to beams with minimal disruption of the fireproofing. Care should be taken to assure that fireproofing removal is not excessive. The Contractor will be responsible of restoring the fireproofing to appropriate levels. Restoration will be verified by the General Contractor.
f. Cable routes will be with 90-degree angles whenever possible. Cables will not be installed randomly or diagonally through the building.
g. Cables installed partially or fully within the telecommunications room will be routed through and secured in the cable tray wherever possible. No cables are to be routed across the rooms at angles, or are the cables to be run from one portion of the room or tray to another. Cables placed in the cable tray are to be laced frequently to keep them neatly bundled and not permitted to shift from one side of the tray to the other as they are routed in the tray.
h. Station cables will be routed to fixed wall locations through EMT to back box. Secure and store four feet of slack cable above ceiling at cable entrance to EMT.

2. Separation from EMI Sources:

i. Comply with BICSI TDMM and TIA-569-B recommendations for separating unshielded copper voice and data communication cable from potential EMI sources, including electrical power lines and equipment.

j. Separation between open communications cables or cables in nonmetallic raceways and unshielded power conductors and electrical equipment will be as follows:
   1) Electrical Equipment Rating Less Than 2 kVA: A minimum of 5 inches (127 mm).
   2) Electrical Equipment Rating between 2 and 5 kVA: A minimum of 12 inches (300 mm).
   3) Electrical Equipment Rating More Than 5 kVA: A minimum of 24 inches (610 mm).

3. Separation between communications cables in grounded metallic raceways and unshielded power lines or electrical equipment will be as follows:

   1) Electrical Equipment Rating Less Than 2 kVA: A minimum of 2-1/2 inches (64 mm).
   2) Electrical Equipment Rating between 2 and 5 kVA: A minimum of 6 inches (150 mm).
   3) Electrical Equipment Rating More Than 5 kVA: A minimum of 12 inches (300 mm).

4. Separation between communications cables in grounded metallic raceways and power lines and electrical equipment located in grounded metallic conduits or enclosures will be as follows:
   1) Electrical Equipment Rating Less Than 2 kVA: No requirement.
   2) Electrical Equipment Rating between 2 and 5 kVA: A minimum of 3 inches (76 mm).
   3) Electrical Equipment Rating More Than 5 kVA: A minimum of 6 inches (150 mm).

5. Separation between Communications Cables and Electrical Motors and Transformers, 5 kVA or HP and Larger: A minimum of 48 inches (1200 mm).

6. Separation between Communications Cables and Fluorescent Fixtures: A minimum of 5 inches (127 mm).

G. All cables will have both ends completely terminated at their respective patch panel and work area outlet. Individual conductors will be trimmed flush with IDC block. Cables indicated to be “spare" will have one end terminated at their respective patch panel or cross-connect block and the other end will be hermetically sealed with a polyolefin heat-shrinkable cap. Provide Brother TZ or approved equivalent after testing. Tape will not be approved.

H. The total length of permanently installed cable for any complete segment will not exceed 295 feet (90m). Do not splice or otherwise re-terminate any cable used, terminate only at the patch panels, cross connect blocks and work area outlets. Route cables [minimum of 12 inches (305mm) away] to avoid light ballasts, transformers, power wiring and other electrical devices so that there is no EMI or RFI interference with data transmission. Permanently label all cables six inches from the connector at each end, according to the numbering convention outlined in the section on labeling. All cables will be terminated at outlets, patch panels or cross connect blocks ONLY.

I. Maximum pulling tension will not exceed 25 lbs/ft. when installing cables.

3.05 LABELING

A. Labeling procedure will meet EIA/TIA 568A, 606-A (Class 2 Administration) and BICSI Standards.

B. The labeling scheme will be provided as follows at all locations within the cable infrastructure:

C. Labeling will be as follows:

1. Location identification will start from the left, as you walk in the doorway, and continue around the room in a clockwise direction.

2. Data drops will be labeled based on the serving zone and patch panel. The cable terminated in zone 2 (IDF2) to patch panel B on port 32 will be “2-B32”. The cable terminated in zone 1 (MDF) to patch panel E on port 18 will be “1-E18”. The letters I and O will not be used for patch panels.

3. Labeling shall be sequential in order, do not reuse a number throughout the entire infrastructure.

4. Hand-written and embossed type labels are specifically prohibited. In addition, provide the following:

    a. Label each outlet with permanent self-adhesive label with minimum 3/16 in. high characters.
    b. Label each cable with permanent self-adhesive label with minimum, 1/8 in. high characters, in the following locations:
    c. Inside receptacle box at the work area.
    d. Behind the communication room patch panel or punch block.
    e. Use labels on face of data patch panels. Provide facility assignment records in a protective cover at each telecommunications room location that is specific to the facilities terminated therein.
    f. Use color-coded labels for each termination field that conforms to ANSI/TIA/EIA-606(A) standard color codes for termination blocks.
    g. Mount termination blocks on color-coded backboards.
    h. Labels will be machine-printed. Hand-lettered labels will not be acceptable.
        1) Use industry standard EIA/TIA and BICSI color codes as specified herein and maintain consistent color-coding throughout the building.

D. Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.

E. Architect will notify Contractor in writing of decision to accept or reject request.

1. Architect's decision following review of proposed substitution will be noted on the submitted form.

3.06 FIRESTOPPING

A. Work, in general, includes furnishing and installing fire and smoke barrier penetration seals for openings in floor, walls, and other elements of construction.

B. Comply with requirements in Division 07 Section "Penetration Firestopping."

C. Comply with TIA/EIA-569-A, Annex A, "Firestopping."

D. Comply with BICSI TDMM, "Firestopping Systems" Article.

E. Applicator Qualifications: Two years experience installing UL classified firestopping.

F. Performance of materials will have been tested to provide fire rating equal to that of the construction.

G. Shop Drawings:

1. Submit shop drawings showing each condition requiring penetration seals indicating proposed UL systems materials, anchorage, methods of installation, and actual adjacent construction.
2. Submit a copy of UL illustration of each proposed system indicating Manufacturer approved modifications. Submitting a single product is insufficient.

H. Manufacturer’s Data: Submit copies of Manufacturer’s specifications, recommendations, installation instructions, and maintenance data for each type of material required. Include letter indicating that each material complies with the requirements and is recommended for the applications shown.

I. Applicator's Qualification Statement: List past projects indicating required experience.

J. Existing Project Conditions:

1. Verify existing conditions and substrates before starting work. Correct unsatisfactory conditions before proceeding.
2. Proceed with installation only after penetrations of the substrate and supporting brackets have been installed.

K. Environmental Requirements:

1. Furnish adequate ventilation if using solvent.
2. Furnish forced air ventilation during installation if required by Manufacturer.
3. Keep flammable materials away from sparks or flame.
4. Provide masking and drop cloths to prevent contamination of adjacent surfaces by firestopping materials.

L. Warranties: Submit copies of written warranty, minimum of one year, agreeing to repair or replace joint sealers which fail in joint adhesion, cohesion, abrasion residence, weather resistance, extrusion residence, migration residence, stain resistance, or general durability or appear to deteriorate in any other manner not clearly specified by submitted Manufacturer’s data as an inherent quality of the material for the exposure indicated. The guarantee period will be one year from date of substantial completion.

M. Acceptable Manufacturers: Subject to compliance with requirements, provide products of Nelson Fire Protection Products or Engineers approved equal as further defined in the. Systems and Applications Schedule in Part 3 of this section.

N. Materials:

1. Provide materials classified by UL to provide Fire Barrier equal to time rating of construction being penetrated.

2. Provide asbestos free materials that comply with applicable codes and have been tested in accordance with UL 1479 or ASTM E-814.

O. Preparation: Clean surfaces to be in contact with penetration seal materials of dirt, grease, oil, loose materials, rust, or other substances that may affect proper fitting, adhesion, or the required fire resistance.

P. Installation:

1. Install penetration seal materials in accordance with printed instructions of the UL Building Materials Directory and in accordance with Manufacturer's instructions.
2. Seal holes or voids made by penetration to ensure an effective smoke barrier.
3. Where floor openings without penetrating items are more than four inches in width and subject to traffic or loading, install firestopping materials capable of supporting same loading as floor.
4. Protect materials from damage on surfaces subject to traffic.

Q. Field Quality Control:

1. Examine penetration sealed areas to ensure proper installation before concealing or enclosing areas.
2. Keep areas of work accessible until inspection by applicable code authorities.
3. Perform under this section patching and repairing of firestopping caused by cutting or penetration by other trades.

R. Adjusting and Cleaning:

1. Clean up spills of liquid components.
2. Neatly cut and trim materials as required.
3. Remove equipment, materials and debris, leaving area in undamaged clean condition.

3.07 SEALING OF PENETRATIONS AND OPENINGS

A. All firestop systems will be manufactured by Specified Technologies Inc. All forestop will be installed in accordance with the Manufacturer's recommendations and will be completely installed and available for inspection by the local inspection authorities prior to cable system acceptance.

B. Provide a seal around raceways or cables penetrating full height walls (slab to slab), floors or ventilation or air handling ducts so that the spread of fire or products of combustion will not be substantially increased.

C. Penetrations through fire-resistant-rated walls, partitions, floors or ceilings will be fire stopped using approved methods and NRTL listed products to maintain the fire resistance rating.

D. Installation restrictions of the listing agencies will be strictly adhered to {e.g. 24 inch (610 mm) minimum horizontal separation between boxes on opposite sides of the wall, maximum square inch opening in wall}.

E. Fire stopping in sleeves or in areas having small openings that may require the addition or modification of installed cables or raceways will be soft, pliable, non-hardening fire stop putty. Putty will be water resistant and intumescent.

F. Fire stopping in locations not likely to require frequent modification will be NRTL listed putty or caulk to meet the required fire resistance rating.

G. Box penetrations into a fire rated wall or shaft will have a fire-stopping pad installed on the back of the box.

H. Fire stopping of cable trays through walls will be with NRTL listed bags to meet the required fire

resistive rating and that will not allow products of combustion to pass through the protected opening. The NRTL listed bags will be installed inside and on both sides of the opening as required to meet the required resistive fire rating of the wall.

I. Fire stopping materials will be NRTL listed to UL 1479 (ASTM E814). Installation methods will conform to a UL fire stopping system. Submit specifications and installation drawings for the type of material to be used. Fire stopping materials will be as manufactured by Specified Technologies, Inc., or approved equal.

3.08 CABLE SUPPORTS

A. Provide hook and loop (Velcro) cable wraps at all panels, equipment racks and cabinets. Tie wraps are specifically prohibited.

B. Tie wraps for horizontal cables will be secured with minimum required compression in order to secure the cables properly without impeding the signal transmission rating (geometry) of the cable. Hook and loop (Velcro) cable wraps may be used in lieu of cable ties for copper cables only.

C. Provide J-Hook supports from the building structure as required for cable runs to the cable drop location. Maximum distance between supports will be five feet (1500mm) depending on the structural elements of the building. Maximum number of cables per support will be thirty. Provide additional supports as required when cable quantities exceed thirty and to maintain required bending radius of cables. Cables installed exposed or in areas subject to abuse {below 10 feet (3m) above finished floor} or in accessible areas will be installed in conduit.

D. All cables will be supported directly from building structure. Under no circumstance will cable be installed using cross bracing, plumbing/sprinkler pipes, ceiling systems or any other system that is not a specifically approved method to independently support cables. Cables will not be allowed to rest on ceiling tiles, duct work, piping, etc. Supports will be provided as required in order for cables to avoid contact with any other building system. Bundle cables in groups by Room.

3.09 CABLE PROTECTION

A. Provide bushings in all metal studs and the like where cables will pass through. Bushings will be of two (2)-piece construction with one piece inserted through the opening and the second piece locking it into place. Single piece bushings with locking tabs or friction fit are specifically prohibited.

B. Cables to be installed in existing enclosed open bays or furred spaces where conduit stubs are not provided, will be protected from chafing or any damage. The Installer will verify that the warranty will not be violated before installing any cabling in these locations.

C. Provide cutting, coring, sleeves and bushings and seal as required at all penetrations.

D. Cables damaged during installation will not be repaired. They will be completely replaced with new cable at no cost to the Owner.

3.10 GROUNDING & BONDING

A. Refer to 270526 for Grounding and Bonding requirements.

3.11 DOCUMENTATION

A. Label all equipment as herein specified.

B. Provide:

1. Provide Building Structured Cabling Systems Administration Report indicating TIA/EIA-606 required

information.
2. Documentation of test results for every cable segment and link will be turned over in native tester form and PDF. Documents will include measured values as well as whether or not the test passed. Test results to be turned over prior to punchwalk. Labeling of cable in test results must match field conditions.
3. "Record" drawings indicating location of all equipment including but not limited to work area outlets, patch panels, cross connect blocks, on each segment and cable routing. Indicate labeling for each piece of equipment.
4. Record drawings indicating actual cable routes and outlet identifiers. Provide respective copies mounted in each telecommunications room, and the main cross connect.

C. Provide "as-built" Drawings on AutoCAD Version 12 or higher to the Owner. Obtain copy of original Drawings from the Architect.

D. Submit NRTL certification that the structured cabling system meets the transmission requirements of TIA-568-C.0.

3.12 TRAINING

A. As a minimum training sessions will consist of the following:

1. General project information and review will be by the General Foreman or Superintendent of the Trade.
2. Specific system training will be by a Factory Trained Representative.
3. Provide a complete review of the project and systems including, but not limited to, the following:

a. Review each Record Drawing (use of typicals is acceptable).
b. Note equipment layouts, locations and control points.
c. Review each system.
d. Review system design operation and philosophy.
e. Review alarms and necessary responses.
f. Review standard troubleshooting techniques for each system.
g. Review areas served by equipment.
h. Identify color codes used.
i. Review features and special functions.
j. Review maintenance requirements.
k. Review operation and maintenance manuals.
l. Respond to questions (record questions and answers).

4. After training, walk the entire project, review each equipment room and typical locations. Explain equipment and proper operation.

B. During the instruction period the Owner and Maintenance Manual will be used and explained.

C. The Owner and Maintenance Manual material will be bound in 3-ring binders and indexed. On the edge of the binder provide a clear see-through plastic holder with a typed card indicating the Project name, the Architect's name, the installer's name and the Volume number (e.g., Vol. No.1 of 2).

D. Provide name, address and telephone number of the Manufacturer’s representative and Service Company for all items supplied so that the source of replacement parts and service can be readily obtained.

1. Include copies of Manufacturer’s and installer's warranties and maintenance contracts and performance bonds properly executed and signed by an authorized representative.
2. Include copies of all test reports and certifications.

3.13 CLEANING

A. In all telecom room spaces - a thorough sweeping, vacuuming and wet mopping shall be preformed on a weekly basis or more frequently as directed by the owner. Cleaning shall include floors, rafters, floor joists, exposed structural members, exposed mechanical/electrical equipment and ductwork/piping/conduits, walls, ladder trays, tops of cabinets/racks, existing/new passive and active components, or per manufacturer recommendations.

B. All non-metallic cable managers and snap covers shall be wiped clean, both inside and outside of front, including rear channels. All clear covers and doors shall be cleaned, both front and rear per manufacturer recommendations.

C. Inside of fiber optic enclosure and patch panels shall be blown clean of settled dust. Cleaning shall be performed for all new construction projects or where gypsum sanding has been performed.

D. All scraps, boxes, spools, pull-line and trash shall be removed and properly disposed of.

E. All residual cable lubricant shall be cleaned from floors and walls with an appropriate degreaser.

3.14 PROJECT CLOSEOUT

A. Provide close out submittals as required herein and include the following close out submittals.

1. Operation and Maintenance Manuals
2. Record Drawings
3. Test Reports
4. Warranty certification form Manufacturer’s
5. Extra Materials
6. Provide factory calibration report of field test equipment

B. Obtain written receipts of acceptance close out submittals submitted. Receipts will specifically detail what is being delivered (description, quantity and specification section) and will be dated and signed by firm delivering materials and by the Owner's Representative.

C. Provide patch cables as follows:

1. Provide one UTP patch cable for each horizontal cable terminated within the patch panel.
2. Coordinate patch cable lengths and color with the Owner prior to ordering.

D. Provide equipment cords as follows:

1. Provide one 15-foot equipment cord for each data connector installed in data Work Area Outlets. Provide one 5-foot equipment cord for each data connector at wifi and AV projector outlets.
2. Coordinate equipment cord lengths and color with the Owner prior to ordering.

E. Provide record drawings indicating actual cable routing and cable terminations including all required identifiers.

F. Provide a half size laminated set of drawings mounted in the Main Equipment Room.

G. All sketches, drawings, and charts herein are for the purpose of providing for specifications in a simplified format. Errors and omissions in such do not relieve the Contractor of the responsibility for providing a fully complete, secure and properly operating structured cabling system suitable for the intended use. Bidders must obtain a complete set of Project Drawings and Specifications to determine the full scope of work. In case of conflict, the Project Drawings and Specifications will prevail.

END OF SECTION 27 00 00

SECTION 27 11 23

CABLE MANAGEMENT AND LADDER RACKS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

A. Section Includes:

1. Vertical Cable Management for Racks and Frames.
2. Horizontal Cable Management for Racks and Frames.
3. Ladder Racks.

B. Related Requirements:

1. Section 271116 "Communications Cabinets, Racks, Frames, and Enclosures" for cabinets, racks, frames and enclosures.
2. Section 271126 "Communications Rack Mounted Power Protection and Power Strips" for rack-mounted power distribution units
3. Section 270536 "Cable Trays for Communications Systems" for cable trays and accessories serving communications systems.

1.03 DEFINITIONS

A. BICSI: Building Industry Consulting Service International

1. EIA: Electronic Industries Alliance.
2. TIA: Telecommunications Industry Association
3. ANSI: American National Standard Institute

1.04 ACTION SUBMITTAL

A. Product Data: For each type of product.

B. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for cable management and ladder racks.

1. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

C. Shop Drawings: For communications equipment room fittings. Include plans, elevations, sections, details, and attachments to other work.

D. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

1. Include workspace requirements and access for cable connections.
2. Grounding: Indicate bonding requirements and location of bonding bus bar.

PART 2 PRODUCTS

2.01 VERTICAL CABLE MANAGEMENT FOR RACKS AND FRAMES

A. No vertical cable management is included in this scope.
B. Basis-of-Design Product: Subject to compliance with requirements, provide Chatsworth Products (CPI); MCS Master Cabling Section.

C. Double-Sided MCS, for 3 inch Deep Channel Racks:

D. Configuration: 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/frame, each cable opening will align with a rack-mount space (RMU) on the rack/frame. Each opening will pass a minimum of 24 each 0.25 inch (6 mm) OD patch cords. The rear of the cable manager will be an open through with integrated evenly-spaced spinning latches to secure cables. The manager will include a front door that securely latches in the closed position.

1. Width: 10 inches (250 mm)].
2. Depth: 12.24 inches (311 mm).
3. Height: 84 inches (2.1 m).
4. Finishes and colors: Powder coat paint in black. Edge-protectors, T-shaped cable guides and latch hardware is black.

2.02 HORIZONTAL CABLE MANAGEMENT FOR RACKS AND FRAMES

A. Basis-of-Design Product: Subject to compliance with requirements, provide Neatpatch Horizontal Cable Manager. P/N: NP2

1. Width: 19 inches (482 mm).
2. RMU:**2**.
3. Finishes and colors: **black**. Edge-protectors, T-shaped cable guides and latch hardware is black.
4. Many of the horizontal cable management are existing. Please see quantities below:

a. IDF5-3

2.03 LADDER RACKS

A. Basis-of Design Product: Subject to compliance with requirements, provide Chatsworth Products (CPI); Universal Cable Runway.
B. Description:
1. Size: 1.5 inches (38 mm) high by 0.4 inches (10 mm) wide high tubular steel with 0.065 inch (1.65 mm) wall thickness.
2. Stringers: 9 feet 11-1/2 inches (3 m) long.
3. Cross Members: Welded in between stringers on 12 inch (300 mm) intervals/centers beginning 5-3/4 inches (146 mm) with 10 cross members per ladder rack. Open space of 10-1/2 inches (267 mm) between each cross member.
4. Width: 12 inches (300 mm).
5. Finish and Color: Powder coat paint paint in black.

2.04 LADDER RACK ACCESSORIES

A. Horizontal 90° Turns (Cable Runway E-Bend): 1-1/2 inches (38 mm) by 3/8 inch (9.5 mm) wide tubular steel with 0.065 inch (1.65 mm) wall thickness.

1. Width: 12 inches (300 mm).
2. Finish and Color: Powder coat paint in black.

B. Vertical-To-Horizontal 90° Turns (Cable Runway Outside Radius Bend): 1-1/2 inches (38 mm) by 3/8 inch (9.5 mm) wide tubular steel with 0.065 inch (1.65 mm) wall thickness.

1. Width: 12 inches (300 mm).
2. Finish and Color: Powder coat paint in black.

C. Horizontal-To-Vertical 90° Turns (Cable Runway Inside Radius Bend): 1-1/2 inches (38 mm) by 3/8 inch (9.5 mm) wide tubular steel with 0.065 inch (1.65 mm) wall thickness.

1. Width: 12 inches (300 mm).
2. Finish and Color: Powder coat paint in black.

D. Horizontal-To-Vertical 90° Turns (Cable Runway Inside Radius Bend): 1-1/2 inches (38 mm) by 3/8 inch (9.5 mm) wide tubular steel with 0.065 inch (1.65 mm) wall thickness.

1. Width: 12 inches (300 mm).
2. Finish and Color: Powder coat paint in black.

E. Corner Brackets (Cable Runway Corner Bracket): 1-1/2 inches (38 mm) by 3/8 inch (9.5 mm) wide tubular steel with 0.065 inch (1.65 mm) wall thickness.

1. Width: 15 inches (381 mm) and 24 inches (600 mm).
2. Finish and Color: Powder coat paint in black.

F. Ladder Rack Splices: Mechanically connects ladder rack sections and turns together end-to-end or side-to-end to form a continuous pathway for cables.

1. Finish and Color: Powder coat paint in black.

G. Butt-Splice Kit.

1. Junction-Splice Kit.
2. Heavy-Duty Butt-Splice Kit.
3. Heavy-Duty Junction-Splice Kit.
4. Adjustable Junction-Splice Kit.
5. Runway-Splice Kit.
6. Butt Swivel Splice Kit.
7. Junction Swivel Splice Kit.
8. Vertical Swivel Splice Kit.

H. Grounding Kit, zinc.

1. Insulator Bar Kit, white.

I. Ladder Rack Supports: Sized to match the width of the ladder rack that is supported.

1. Finish and Color: Powder coat paint in **black**.

J. Triangular Support Bracket.
1. Wall Angle Support Kit.
2. Foot Kit.
3. Adjustable Floor Support Channel.
4. Threaded Ceiling Kit.
5. Center Support Kit.
6. Rack-to-Runway Mounting Plate.
7. Cable Runway Elevation Kit.

8. Vertical Wall Brackets.

K. Miscellaneous Accessories:

1. Tool-less Pathway Dividers: 6.8 inches (173 mm) high by 1.5 inches (38 mm) wide by 2.2 inches (55.9 mm) deep Polycarbonate/Acrylonitrile Butadiene Styrene (PC/ABS) thermoplastic material.
2. Tool-less Cross Member Radius Drops: 0.060 inch (1.5 mm) thick Steel and measure 4.6 inches (117 mm) high by 6.1 inches (155 mm).
3. Tool-less Stringer Radius Drops: 0.060 inch (1.5 mm) thick steel and measure 4.6 inches (117 mm) high by 4.6 inches (117 mm) deep.
4. Saf-T-Grip Reusable Cable Management Straps: Open loop series, End Grommet and Buckle Series.
5. Cable Retaining Post.
6. Cable Runway Protective End Caps.
7. Touch-Up Paint: Spray Can in black.
8. Miscellaneous Hardware: Includes cable runway support brackets, ceiling support brackets, cable runway slotted support brackets, slip-on cable runway support brackets, slip-on lock nuts, hex nuts, split lock washers, washers, hex lag screws, and anchors.

PART 3 EXECUTION

3.01 VERTICAL CABLE MANAGER INSTALLATION

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 of vertical cable manager on the rack/frame or in 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.

3.02 HORIZONTAL CABLE MANAGER INSTALLATION

A. When more than one horizontal cable manager is used on a rack/frame/cabinet or group of racks/frames/cabinets, use the same make, and style of cable manager on the rack/frame/cabinet or racks/frames/cabinets.

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

C. Attach horizontal cable managers to the rack/frame/cabinet with four screws according to the manufacturer's installation instructions. Each cable manager should be centered within the allocated rack-mount space (RMU or U).

D. Horizontal managers will be located so that the number of ports (cables) they support will not exceed the cable fill capacity of the cable manager.

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

3.03 LADDER RACK INSTALLATION

A. Install with side stringers facing down so the runway forms an inverted U-shape and that the hardware between the stringers and cross members face away from cables.

B. Secure to the structural ceiling, building truss system, wall, floor or tops of equipment racks and/or cabinets using the manufacturer's recommended supports and appropriate hardware, as defined by local code or the authority having jurisdiction (AHJ).

C. Support requirements:

1. Ladder Rack (cable runway): 5 feet (1.5 m) or less in accordance with TIA-569-B.
2. Splices: Within 2 feet (0.6 m)
3. Intersections: Within 2 feet (0.6 m) on all sides of every intersection.
4. Changes in Elevation: Within 2 feet (0.6 m) on both sides.
5. Attached vertically to wall: 2 feet (0.6 m).

D. Secure to each support with included hardware with a minimum of two fasteners.

E. Splices: Place mid-span, not over a support, with the manufacturer's recommended splice hardware.

F. Overhead installation clearances:

1. Above ladder rack: 12 inches (300 mm) minimum.
2. From building or ceiling structure: 12 inches (300 mm) minimum.
3. Between ladder rack and the tops of equipment racks and/or cabinets: 3 inches (75 mm).
4. Multiple ladder rack tiers: 12 inches (300 mm) minimum.
5. Above acoustical ceilings: 3 inches (75 mm).

G. Within each telecommunications room, bond ladder rack together, electrically continuous, and bonded to the telecommunications bonding busbar, unless otherwise noted. Bond ladder rack and turns across each splice with a UL Classified Splice Kit or other accepted method as recommended by the AHJ. Bond cable runway to the bonding busbar using an approved ground lug with a wire sized per local code, ANSI/TIA-607-C, or as recommended by the AHJ. Verify the bonds at splices and intersections between individual ladder rack sections and turns, as well as the bonding busbar.

H. On Adjustable Cable Runway, use thread-forming screws to cut through paint in order to create a bond between the Cross Member and the Stringer.

I. Cable fill tolerances:

1. Maximum: 6 inches (150 mm) high.
2. Over 2 inches (50 mm) or non-secured cables: Install 8 inch (200 mm) high cable retaining posts or 6 inch (150 mm) high pathway dividers.

J. Quantity of cables: Not to exceed a whole number value equal to 50 percent 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 (50 mm), unless cable retaining posts/pathway dividers are added to the runway. The interior area of ladder rack equipped with cable retaining posts/pathway dividers will be considered to be the width of the ladder rack multiplied by a height of 6 inch (150 mm). Actual cable fill for ladder rack that is not equipped with cable retaining posts/pathway dividers will not exceed 2 inches (50 mm) in height. Actual cable fill for ladder rack equipped with cable retaining posts/pathway dividers will not exceed 6 inch (150 mm) in height.

K. Weight of cables: Not to exceed the stated load capacity of the ladder rack as stated in the manufacturer's product specifications or design tables.

L. Secure cables (cable bundles) to the cross members with 3/4 inch (19 mm) wide reusable velcro straps. Straps are not required when ladder rack is equipped with cable retaining posts/pathway dividers.

M. Cover the exposed ends of the ladder rack that do not terminate against a wall, the floor or the ceiling with fire-retardant black colored end caps made from a rubberized material or an end closing kit consisting of a flat bar of ladder rack stringer material factory cut to the width of the ladder rack and secured to the ladder rack with a junction splice kit.

N. Separate different cable media types within the ladder rack using pathway dividers. Treat each type of cable media separately when determining cable fill limits.

O. Where cable exits or enters the end, middle or side of overhead ladder rack to access a rack, frame, cabinet or wall-mounted rack, cabinet or termination field, a radius drop shall be used to guide the cable.

P. Maintain a minimum separation of 2 feet (0.6 m) between ladder rack used for communications cables and pathways for other utilities or building services.

Q. Touch-up paint color-matched to the finish on the component 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.

END OF SECTION 27 11 23

SECTION 27 13 00

COMMUNICATIONS BACKBONE CABLING

PART 1 GENERAL

1.01 ADDITIONAL INFORMATION

A. Refer to the general conditions and the related sections for the following information

1. References
2. Definitions / Terms / Acronyms
3. Submittal Requirements
4. Contractor Qualifications
5. Manufacturer Qualifications
6. Bidder Qualifications
7. Testing Agency Qualifications
8. Delivery, Storage and Protection
9. Project conditions
10. Sequencing
11. Continuity of Service and Scheduling of Work
12. Protection of Work and Property
13. Warranty

1.02 PRODUCTS INSTALLED BUT NOT SUPPLIED UNDER THIS SECTION

A. All conduit and EMT required for Communications cabling pathway in/out of cross connect closets and in/out of wall cavities at the work area. EMT or Conduit for pathways shall have no more than two 90 degree bends and no continuous section over 100’.

B. All core holes and poke through devices in the floor for the installation of Communications cabling.

C. All core holes and EMT sleeves between floors for the routing of Communications cabling.

D. Basket tray or ladder racking to support main pathway cable bundles.

1.03 BACKBONE CABLING DESCRIPTION

A. Backbone cabling system will provide interconnections between communications equipment rooms, main terminal space, and entrance facilities in the telecommunications cabling system structure. Cabling system consists of backbone cables, intermediate and main cross-connects, mechanical terminations, and patch cords or jumpers used for backbone-to-backbone cross-connection.

B. Backbone cabling cross-connects may be located in telecommunication rooms or at the entrance facilities.

1.04 WORK INCLUDED

A. The Work of this Section shall consist of the labor, materials and equipment required for furnishing and installing backbone cabling as part of a complete and operating telecommunications cabling system.

B. All items specified or included in this section shall be furnished and installed by Telecommunications

Contractor, wired and connected by Telecommunications Contractor and tested by Telecommunications Contractor, unless noted otherwise. “Contractor” as used herein shall mean Telecommunications Contractor or Telecommunications Contractor’s sub-contractor.

C. All items specified or included in this section shall be furnished and installed by Electrical Contractor, wired and connected by Electrical Contractor and tested by Electrical Contractor, unless noted otherwise. “Contractor” as used herein shall mean Electrical Contractor or Electrical Contractor’s sub-contractor.

1.05 SUBMITTALS

A. Submit for approval in accordance with specified submittal procedures:

B. Components of the telecommunications system, as specified herein.

1.06 COORDINATION

A. Contractor shall furnish and install the following:

1. Inside plant copper backbone cables, if noted.
2. Inside plant fiber optic backbone cables.
3. Outside plant copper backbone cables, if noted.
4. Outside plant fiber optic backbone cables

B. Electrical Contractor shall furnish and install the following:

1. Telecommunications raceways within the building.
2. Telecommunications duct banks, handholes and manholes.

PART 2 PRODUCTS

2.01 FIBER OPTIC CABLES

A. Acceptable Manufacturer: Berk-Tek.

B. Cable may be either of composite cable construction or standard cable containing single-mode fibers in one cable sheath and multi-mode fibers in a separate cable sheath. Contractor shall verify raceway fill requirements when furnishing and installing two standard cable constructions to meet composite strand count requirements.

C. Fiber Cable Specification No. 3 – Outside Plant/Inside Plant, Plenum

1. Cable Construction:
   a. Tight Buffered
   b. Dry water-blocking tape.
   c. Epoxy glass central strength member.
2. Jacket Material: Flame retardant UV stabilized , OFNP rated
3. Fiber Count: As indicated on Drawings (single mode/multimode).
4. Fiber Type:
   a. Single-mode: 8.2/125.
   b. Multimode: 50/125.
5. Color coded 900 micron buffered fibers.
6. Color Code: TIA/EIA-598-A, Optical Fiber Cable Color Coding.
7. Jacket Color: Black
8. Maximum Pulling Tension:

a. Up to 12 strand: 1335 N (300 lb/f) during installation, 400 N (90 lb/f) installed
b. 18 strand and above: 2670 N (600 lb/f) during installation, 801 N (180 lb/f) installed

9. Storage Temperature: -40 to +70 degrees C (-40 to +158 degrees F).
10. Installation Temperature: 0 to +60 degrees C (+32 to +140 degrees F).
11. Operating Temperature: -40 to +70 degrees C (-40 to +158 degrees F).
12. This is the sheath type required for this project.

D. Glass Transmission Media - Single Mode

1. Acceptable Manufacturer: Berk-Tek.
2. Dispersion unshifted, low water peak.
3. Proof tested to 100 kpsi
4. Cable cutoff wave length <1260 nm.
5. Glass Geometry:
   a. Fibercurl: > 4.0mm radius of curvature.
   b. Cladding Diameter: 125.0 ± 0.7 µm
   c. Core: Clad Concentricity: - < 0.50 µm
   d. Cladding Non Circularity: < 1.0%.
6. Cabled Fiber Optical Performance:
   a. 1310 nm: - < 0.4 dB/Km, maximum
   b. 1383 nm: ± 3 nm ≤ 22 dB/Km
   c. 1550 nm: < 0.20 dB/Km, maximum
   d. Zero Dispersion Wave Length: 1302 ≤ wavelength ≤ 1322
   e. Zero Dispersion Slope: 0.086 psi/(nm.km)
   f. Refractive Index Difference: 0.36%
   g. Numerical Aperture: 0.14
   h. In compliance with TIA/EIA 492-CAAB and Telecordia's GR-20.
   i. Enhanced water peak at 1383 nm.

E. Glass Transmission Media – Multimode 50/125

1. Acceptable Manufacturer: Berk-Tek
2. The multimode fiber shall meet EIA/TIA-492AAAC-A, "Detail Specification for 50-µm Core Diameter/125-µm Cladding Diameter, Graded-Index, Multimode Optical Fibers."
3. 100 Kpsi Proof Tested
4. Glass Geometry
   a. Core Diameter: (µm) 50 ± 2.5
   b. Core Non-Circularity: < 5%
   c. Cladding Diameter: (µm) 125.0 ± 2.0
   d. Cladding Non-Circularity: (µm) < 1.0%
   e. Core-to-Cladding Concentricity: (µm) < 1.5
   f. Numerical Apeture: 0.200 ± 0.015
   g. Coating Diameter: (µm) 245 ± 5
   h. Coating – Cladding Concentricity < 12 µm
5. Cabled Optical Fiber Performance
   a. Attenuation (dB/km): 850 nm < 3.0, 1300 nm < 1.0
   b. Minimum LED Bandwidth: 850 nm, 1500; 1300 nm 500
   c. Cabled Effective Modal Bandwidth: (MHz•Km): 850 nm > 2000
   d. IEEE 802.3 GbE Distance (m): 850 nm, 1000; 1300 nm, 600
   e. IEEE 802.3 10GbE Distance (m): 850 nm, 300
6. There is not a requirement for multimode in this project.

F. Fiber Optic Cable Shipping Requirements

1. All cabled optical fibers > 1000 meters in length shall be 100% attenuation tested. The attenuation of each fiber shall be provided with each cable reel.
2. Top and bottom ends of the cable shall be available for testing on the shipping reel.
3. Both ends of the cable shall be sealed to prevent the ingress of moisture.

4. Each reel shall have a weather resistant reel tag attached identifying the reel and cable. The reel tag shall include the following information:
    a. Cable Number, Gross Weight
    b. Shipped Cable Length in Meters, Job Order Number
    c. Manufacturer Product Number, Customer Order Number
    d. Date Cable was Tested, Manufacturer Order Number
    e. Cable Length Markings, Item Number
        1) Top (inside end of cable)
        2) Bottom (outside end of cable)

5. Each cable shall be accompanied by a cable data sheet. The cable data sheet shall include the following information:

    a. Manufacturer Cable Number, Manufacturer Product Number
    b. Manufacturer Factory Order Number, Customer Name
    c. Customer Purchase Order Number
    d. Mark for Information Ordered Length
    e. Maximum Billable Length, Actual Shipped Length
    f. Measured Attenuation of Each Fiber Bandwidth Specification (for lengths > 1000 m)

G. The cable manufacturer shall provide installation procedures and technical support concerning the items contained in this specification.

2.02 FIBER OPTIC PANELS

A. FIBER OPTIC TERMINATION ENCLOSURES and SPLICE TRAYS

1. For OM4 and OS2 Fiber Optic Systems:
    a. Opt-X Ultra Fiber Optic Enclosures: High-end appearance, metal and composite, rack mountable, holds various fiber adapter plates, splice trays, or MTP modules, based on connector choice and density requirements.
    b. 1RU Opt-X Ultra rack-mount Fiber Optic Enclosure, empty, with sliding tray. Capacity: 72 fiber strands (LC), 3 fiber adapter plates and 3 splice trays, or 3 MTP modules. Part Number: Leviton 5R1UH-S03. Use at all IDF locations.
    c. 4RU Opt-X Ultra rack-mount Fiber Optic Enclosure, empty, with sliding tray. Capacity: 288 fiber strands (LC),12 fiber adapter plates and 12 splice trays, or 12 MTP modules. Part Number: Leviton 5R4UH-S12. Use at all MDF locations. One is needed for every six zones served from the IDF.

B. Splice Trays

1. Use splice sleeves that come with splice cassettes.

C. Splice Cassettes

1. Opt-X 12-Fiber LC OM3 Splice Module. Part Number: Leviton SPLCS-12A
2. Opt-X 12-Fiber LC OS2 Splice Module. Part Number: Leviton SPLCS-12L

2.03 FIBER OPTIC JUMPERS (PATCH CORDS)

A. OM3, aqua. Factory-terminated, double-ended, 2-strand multimode cordage.

1. Duplex LC-Duplex LC: Leviton 5LDLC-M03 (3 meter) for all wallmount IDF racks and enclosures. Leviton 5LDLC-M05 (5 meter) for all standing racks and enclosures.

B. OS2, yellow. Factory-terminated, double-ended, 2-strand multimode cordage, UPC polish.

1. Duplex LC- Duplex LC: Leviton UPDLC-S03 (3 meter) for all wall mount IDF racks and enclosures. Leviton UPDLC-S05 (5 meter) for all standing racks and enclosures.

C. Provide quantify for all fiber stands to each zone. One will be required for each pair of strands at the MDF, one will be required for each pair of strands at the IDF.

PART 3 EXECUTION

3.01 ADDITIONAL INFORMATION

A. Refer to Section 27 00 00 for the following Part 3 - Execution information

1. General
2. Cable Pathways
3. Work Area Outlets
4. Installation Practices
5. Labeling
6. Firestopping
7. Sealing of Penetrations and Openings
8. Cable Supports
9. Cable Protection
10. Grounding
11. Documentation
12. Training
13. Cleaning
14. Project Closeout

3.02 INSTALLATION

A. General
1. All cable and associated hardware shall be placed so as to make efficient use of available space in coordination with other uses. All cable and associated hardware shall be placed so as to not impair the use or capacity of other building systems, equipment, or hardware placed by others (or existing).
2. Where cable is placed in ceiling areas or other non-exposed areas, cables shall be installed in cable trays or in non-continuous cable support system. Non-continuous cable supports shall be placed at random intervals no greater than 48 inches. Cables in non-continuous support systems shall be bundled using hook and loop type fasteners. Cable sag between supports shall not exceed 3 inches. Attaching wire to pipes or other mechanical items is not permitted. Cables shall not be bundled or tied in conduits, and in cable trays above ceilings.
3. All cabling shall be routed so as to avoid interference with any other service or system, operation, or maintenance purposes such as access boxes, network equipment, mechanical equipment access doors and covers, switches or electrical panels, and lighting fixtures. Avoid crossing areas horizontally just above or below any riser conduit. Lay and dress cables to allow other cables to enter the conduit/riser at a later time by maintaining a working distance from these openings. All cable shall be installed to allow for simple installation and removal of cables in the future.
4. Unless noted, all interior wiring shall be installed in raceways, Raceway Specification No. 2, one inch minimum. Wiring above accessible ceilings may be installed in cable tray and exposed on "J" hooks.
5. All cables not in raceways shall be riser or plenum rated.
6. All cables running outside the building shall be rated for outside plant installation.
7. Backbone cables shall be grouped separately from horizontal distribution cables. Cable for other systems shall be grouped separately from cables for telephone and data.
8. All inside cable shall be installed neatly above accessible ceilings using cable tray and "J" hooks supported from building structure. Do not attach to pipes, conduits, ducts, etc. Do not allow cable to rest on pipes, conduits, ducts, ceiling tiles, etc. Do not attach to wires used for supporting suspended ceilings. Do not use tie wires or bridle rings.
9. All wires shall be marked at all junction boxes, pull boxes, cabinets, boxes and terminations. Each cable run between terminating locations shall be one continuous cable (no splices or connections).

10. The Contractor shall install cable in such a manner as to prevent stretching, kinking or sharp bends. Cable damaged during installation or not passing required testing shall be removed and replaced at no additional cost to Owner.
11. The Contractor shall replace or rework cables showing evidence of improper handling including stretches, kinks, short radius bends, over tightened bindings, loosely twisted and over twisted pairs at terminations, and too much jacket removed.
12. Minimum bend radius and maximum pulling tension for all cables shall be maintained during and after installation. Install cable in accordance with manufacturer's ratings and instructions.
13. Cables shall not be installed near power sources or other items where interference could develop. Cables shall not be placed within 18 inches of light fixtures and within 3 feet of motors, transformers, copy machines, or solid state motor starters unless cable is installed in conduit. Contractor shall furnish and install a grounding conduit system where these minimum clearances cannot be maintained.
14. In telecommunications spaces, cables shall be routed as close as possible to the ceiling, floor, or corners to insure that adequate wall or backboard space is available for current and future equipment and for cable terminations. Cables shall not be tie-wrapped to existing electrical conduit or other equipment. Minimum bend radius shall be observed.
15. Dress and attach cables to the backboard along the shortest possible route run square (horizontal and vertical) to the backboard. Bundle similarly routed cables together and attach by means of clamps or distribution rings. Cable dress and attachment shall minimize obstruction to future installations of equipment, backboard, or other cables.
16. Cables shall be neatly bundled with hook and loop type fasteners. Nylon tire wraps are not acceptable. Cables must be neatly bundled in the telecommunications spaces and at the cable service loop.
17. Cable service loops shall be provided at both ends of backbone cable runs.
    a. At the telecommunications room, provide a minimum 8 foot service loop stored in a figure eight pattern in the cable tray above the racks/cabinets.
    b. At the telecommunications room, provide sufficient slack to properly dress and terminate cables at the racks and cabinets.
        1) Provide sufficient slack so that swing gate type racks and cabinets can open fully
        2) Provide sufficient slack so that cables do not catch or bind at swing gate type rack or cabinet hinge and the cables do not pull taught across the hinge or edge.
    c. A minimum 25 foot service loop shall be maintained at each building entrance and exit.
18. All interior fiber optic cables shall be installed in plenum rated innerduct above accessible ceilings.
    a. Innerduct shall be installed to within 12 inches of termination enclosure.
    b. Install pull boxes, 12” x 12” minimum, as required to limit cable pulls to two 90 degree bends or 150 feet.
    c. Innerduct shall not be kinked or tightly bent in any way.
19. All exterior fiber optic cables shall be installed in innerduct.
20. A break-away link shall be used for installation of cables with a cable-puller or winch. The break-away link shall be designed to separate at or below the recommended maximum tension of the cable being installed.
21. Any damage to Owner’s existing cabling or existing cable owned by others, caused as a result of work performed under this scope, shall be brought to the Owner’s attention and repaired or replaced within 48 hours.
22. Contractor shall use only cable lubricants recommended by the manufacturer for use with the specific cable construction.
23. Should a cable become kinked, skinned or stretched during installation, the cable shall be removed and replaced at no additional cost to the Owner. Splicing at points other than those specified will not be acceptable.

B. Outside Plant Cable
    1. Cable service loops shall be included in each manhole to allow for proper cable dressing, splicing the cable outside the manhole in a controlled space and for repairing damaged cable.
    2. Cable service loops shall be provided as indicated herein, and as otherwise indicated elsewhere in the contract documents and on the Drawings.

3. Install sufficient cable slack to remove cable from the manhole for splicing in a splice van or tent.
4. In addition to the cable slack required for proper termination/splicing in a splice enclosure, the Contractor shall install sufficient cable slack to form at least one loop of cable along the inner perimeter of the manhole.
5. Where no cable splice is planned for a manhole, the contractor shall leave sufficient slack to form at least two loops of cable along the inner perimeter of the manhole.
6. Cable service loop lengths shall be adjusted based on manhole size, manhole depth and existing conditions.
7. Cables slack shall be securely fastened to all four walls of the manhole. Furnish and install bracket arms for securing and mounting of all cables where built-in racking exists.
8. If racking is not furnished in a manhole, furnish and install a cable sling of weather, water, oil and solvent resistant material to support the cable(s) on those walls without built in racking.
9. Cable splice enclosures shall be security fastened to mounting arm brackets attached to manhole racking. Furnish and install racking and mounting arm brackets to support splice cases. Cable splice enclosures shall be attached to at least two racks in the manhole.
10. All cables shall be secured to bracket arms using cable ties and straps resistant to weather, water, oil, fuel and solvents. Plastic or stainless steel ties/straps rated for this application shall be acceptable for use.
11. All cable dressing in manholes shall be performed so that the minimum bend radius of cables is not exceeded.
12. All cable splice enclosures shall be mounted either on the long wall of the manhole or on the wall parallel with the main cable run entry and exit conduits.
13. Wherever possible in existing manholes, and as a standard for manholes furnished and installed under this or an associated project, optical cable splice enclosures shall be mounted on one long wall (or parallel wall as previously defined) and copper cable splice enclosures, if needed, shall be mounted on the opposite wall.
14. Wherever possible, large pair count copper cable enclosures shall be mounted at the vertical mid-line of the manhole and fiber cable splice enclosures shall be mounted at or above the vertical mid-line.
15. All cables shall be spliced in splice enclosures as specified herein.
    a. Furnish and install the maximum slack in each enclosure as recommended by the cable, splice system and enclosure manufacturer.
    b. Furnish and install all splice trays, splice holders, splice tray holders, mounting brackets, frames, grounding and other ancillary hardware and materials as required by the cable manufacturer, splice system manufacturer, splice enclosure manufacturer and standard industry practices.
    c. Only technicians trained in the proper assembly of enclosures, splices and splicing procedures shall be permitted to splice cables.

3.03 FIBER OPTIC CABLE TESTING

A. Fiber Optic Cable Test Equipment:

1. Cable tester will be NRTL certified for TIA/EIA TSB95.
2. Cable testers will be Optical Power Meter and High Resolution Optical Time Domain Reflectometer (OTDR). The cable tester will be NRTL certified for compliance to latest TIA/EIA Standard 568B performance requirements at 850, 1300 and 1550 nm.
3. Testers will have been calibrated at least one year prior to use on this project. Contractor to provide proof to Owner if requested.
4. Submit software copy of test results, in original tester software format, to the Owner and to the Manufacturer (either Berk-Tek or Leviton).

B. Cable segments and links will be tested from both ends of the cable for each of the construction phases. (Verify that cable labeling matches at both ends).

C. The system will not be considered certified until the tester has acknowledged that the performance of the physical layer of the system has been fully tested and is operational at the completion of the installation phase.

D. Testing Procedures:

1. Perform each visual and mechanical inspection and electrical test, including optional procedures, stated in NETA ATS, Section 7.25. Certify compliance with test parameters and manufacturer's written recommendations. Test optical performance with optical power meter capable of generating light at all appropriate wavelengths.
2. Prior to testing, all connectors will be properly cleaned with an approved product manufactured specifically for this purpose.
3. Prior to beginning testing, confirm that all testing equipment is fully charged or operating on building power. If the test equipment power levels drop below 50%, recharge unit or continue testing with a different (fully charged) tester.
4. Initially test optical cable with a light source and power meter utilizing procedures as stated in TIA TSB-140, ANSI/TIA/EIA-526-7, ANSI/TIA/EIA-526-14A, OFSTP-14A Optical Power Loss Measurements of Installed Multi-mode Fiber Cable Plant and ANSI/TIA/EIA-526-7 Measurement of Optical Power Loss in installed Single-Mode Fiber cable plant.
5. Measured results will be plus/minus 1 dB of submitted loss budget calculations. If loss figures are outside this range, test cable with Optical Time Domain Reflectometer (OTDR) to determine cause of variation. Correct improper splices and replace damaged cables at no charge to the Owner.

E. Multi-Mode Fiber Optic Cables:

1. Will be tested bi-directionally for length and attenuation at both the short and long wavelengths for Multi-Mode (850 and 1300 nm). This is Tier 1 testing as specified in TIA TSB-140. Test all Multi-Mode strands to ensure they are capable of transmitting 10 Gigabit Ethernet speeds.
2. The maximum insertion loss measured at 23 degrees C. will be 3.75dB/km @ 850 nm and 1.5 dB/km @ 1300 nm.

F. Single-Mode Fiber Optic Cables:

1. Will be tested bi-directionally for length and attenuation at both the short and long wavelengths for Single-Mode fiber (1310 and 1550 nm). This Tier 1 testing as specified in TIA TSB-140.
2. Single-mode fibers will be dual wave length and provide attenuated wavelength of the 1310 nm and 1550 nm. 850 nm for single-mode fiber will not be acceptable under any circumstances.

G. All cables will be tested after termination using a cable certification tester that contains the test equipment manufacturer’s most current version of firmware.

H. Test all fiber optic cable segments end-to-end from the fiber optic backbone patch panel in the Equipment Room to each fiber optic backbone patch panel in each Telecommunications Room.

I. Broken or faulty strands will not be accepted. Any cable not fully functional with all strands usable will be replaced at no cost to the Owner.

J. Upon completion of testing, all connectors will be capped with a product made for that specific function by the connecting hardware manufacturer to prevent the contamination of the fiber from construction debris or other foreign objects.

K. Test Results:

1. The test results information for each link will be recorded in the memory of the field tester upon completion of the test. The tester will be capable of storing test data in either internal or external memory. The external media used will be left to the discretion of the user.
2. Test results saved by the tester will be transferred into a Windows based database utility that allows for maintenance, inspection and archiving of these test records. A guarantee must be made that the measurement results are transferred to the PC unaltered as well as any printed reports generated from the software application.
3. Test results saved by the tester will be transferred into a Windows based database utility that allows for maintenance, inspection and archiving of these test records. A guarantee must be made that the measurement results are transferred to the PC unaltered as well as any printed reports generated from the software application.
4. Optional formats of data reporting are: comma separated variable (.csv), Portable Document File (.pdf) or compatible, plain text (.txt), or hypertext markup language (.html/.htm). Test results will be turned over to owner's representative prior to cutover.
5. Test results will include the following:
    a. Telecommunications Room number
    b. Location of fiber pull i.e. (Equipment Room # to Telecom Room #)
    c. Patch panel # and location
    d. Connector type
    e. Distance
    f. Wavelength tested
    g. Technician who performed the testing

L. The Owner and Engineer reserve the right to observe testing and/or randomly sample completed links for conformance to project specifications.

END OF SECTION 27 13 00

SECTION 27 15 00

COMMUNICATIONS HORIZONTAL CABLING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Horizontal (distribution) communications wiring and connecting hardware from Telecommunications Room (TR) to Telecommunication Outlets (TO).

1.02 RELATED REQUIREMENTS

A. Section 27 05 26 – Grounding and Bonding for Communications Systems.

B. Section 27 05 28 – Pathways for Communications Systems.

C. Section 27 10 00 – Structured Cabling.

D. Section 27 11 00 – Communications Equipment Room Fittings.

E. Section 27 13 00 – Communications Backbone Cabling.

F. Section 27 16 00 – Communications Connecting Cords, Devices, and Adapters.

1.03 REFERENCE STANDARDS

A. ANSI/TIA-568.0-D – Generic Communications Cabling for Customer Premises.

B. ANSI/TIA-568.1-D – Commercial Building Communications Cabling Standard Part 1: General Requirements.

C. ANSI/TIA 568-C.2 – Balanced Twisted-Pair Telecommunications Cabling and Components Standards

D. ANSI/TIA-569-D – Commercial Building Standard for Telecommunications Pathways and Spaces.

E. ANSI/TIA-606-B – Administration Standard for the Commercial Telecommunications Infrastructure.

F. ANSI/JSTD-607-C – Commercial Building Bonding and Grounding (Earthing) Requirements for Telecommunications.

G. NFPA 70 – National Electrical Code (NEC).

H. BICSI – TDMM, Building Industries Consulting Services International, Telecommunications Distribution Methods Manual (TDMM)

1.04 PRE-INSTALLATION MEETINGS

A. Convene pre-installation meeting 4 weeks before start of installation of communications horizontal cabling. Should occur with construction manager, owner representatives, and contractor project manager and project foreman.

B. Review materials, installation, field quality control, labeling, protection, and coordination with other work.

1.05 SUBMITTALS

A. Comply with Section 01 33 00 – Submittal Procedures.

B. Product Data: Submit manufacturer's product data sheets, including installation instructions verifying that materials comply with specified requirements and are suitable for intended application.

C. Installer's Project References: Submit installer's list of successfully completed communications horizontal cabling projects, including project name and location, name of architect, and type and quantity of communications horizontal cabling installed.

1.06 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Manufacturer regularly engaged, for past 10 years, in manufacture of communications horizontal cabling of similar type to that specified.

B. Installer's Qualifications:

1. Approved Leviton Optimized Installer or Berk-Tek Oasis Optimized Integrator Optimized before, during, and through completion of the system installation. Supporting documentation will be required as part of the submittal.
2. Responsible for workmanship and installation practices in accordance with Leviton Optimized Installer Program and Berk-Tek Oasis Program.

1.07 DELIVERY, STORAGE, AND HANDLING

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

B. Storage and Handling Requirements:

1. Store and handle materials in accordance with manufacturer's instructions.
2. Keep materials in manufacturer's original, unopened containers and packaging until installation.
3. Store materials in clean, dry area indoors.
4. Protect materials during storage, handling, and installation to prevent damage.

1.08 WARRANTY

A. The horizontal communications cabling system installed shall be eligible for coverage by a Limited Lifetime Warranty to the end user.

1. Horizontal channels shall be completed with Leviton Network Solutions factory-terminated copper and/or fiber optic patch cords in order to be eligible for the applicable Berk-Tek or Leviton Warranty with channel performance guarantees.
2. Approved product shall be listed on the most recent version of the applicable Berk-Tek Leviton Technologies data sheets for each Berk-Tek Leviton Technologies solution.

B. Optimized Installer/Optimized Integrator 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. The installed structured cabling system shall provide a warranty guaranteeing installed channel performance above the ANSI/TIA 568-C requirements for Cat 5e, Cat 6, and/or Cat 6A cabling systems or ISO 11801 requirements for Cass D, Class E, and/or Class E_a.

1. Standards-compliant channel or permanent link performance tests shall be performed in the field with a Berk-Tek Leviton Technologies approved certification tester in the appropriate channel or

permanent link test configuration. See 1.8 A.1 above for channel requirements.

D. Necessary documentation for warranty registration shall be provided to the manufacturer by the installer (within 10 days) following 100 percent testing of cables.
   1. Submit test results to Leviton Network Solutions or to Berk-Tek, in the certification tester's original software files. A copy of test results must be submitted to the district.
   2. Installer shall ensure that the warranty registration is properly submitted, with all required documentation within 10 days of project completion.
   3. Optimized Contractor/Optimized Integrator must adhere to the terms and conditions of the respective manufacturer's warranty programs.

E. Installer shall ensure that the Owner receives the manufacturer issued project warranty certificate within 60 calendar days of warranty registration.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Leviton Network Solutions, 2222 222nd Street SE, Bothell, Washington 98021. Phone 425-486-2222. Fax 425-485-3373. Website www.leviton.com.

B. Berk-Tek, A Nexans Company, 132 White Oak Road, New Holland, PA 17557 Phone: 717-354-6200. Fax 717-354-7944. Website www.berktek.com.

2.02 SYSTEM DESCRIPTION

A. Horizontal Distribution Subsystem: Intra-building twisted-pair and fiber optic communications cabling connecting Telecommunication Rooms (TRs) to Telecommunication Outlets (TOs) located at individual work areas.

B. Horizontal Cabling: Combination of the following types of cables from TR to TO:

   1. Category 6A, cables from TRs to Wireless access point TOs
   2. Category 6, (100-Ohm, 4-pair, unshielded twisted pair) cables from TRs to remaining TOs.

C. Communications Horizontal Cabling System: Includes cables, jacks, patch panels, connecting blocks, patch cords, jumpers, and necessary support systems, such as cable managers and faceplates.

D. Cables: Route through conduit, cable trays, spaces below raised floors, open ceiling areas, non-ventilated spaces above ceiling tile, and through plenum air-handling spaces above ceiling tile.

E. Furnish and install all materials necessary for a complete and working communications horizontal cabling system.

2.03 STATION CABLING

A. Category 6A Unshielded Twisted Pair: CX6650 Cat 6A Enhanced UTP System

   1. 100 ohm, Category 6A, 23 AWG, 4-pair unshielded twisted pair, LANmark-10G2, CMP rated.
      a. Color: Blue.
      b. Part Numbers: Reel: 10130484 Reel in Box: 11085339
      c. Electrical Characteristics: Characterized to 750 MHz.
      d. Cable: Third-party verified by ETL.
      e. Maximum Cable Diameter: 0.300 inch.
      f. Berk-Tek LANmark-10G2 CMP
      g. All category cabling manufacturers must be able to provide documentation from an independent third-party testing agency that verifies through random sampling that cable components perform at or above the levels contained on their product specifications, not simply at or above the standard.
   2. Channel margin guarantees for a **CX6650 Cat 6A Enhanced UTP System** (margin vs. ANSI/TIA-568-C.2 and margin guarantees are for a 4-connector channel).

a. Insertion Loss 3 %
b. NEXT 4 dB
c. PSNEXT 5 dB
d. ACR-F (ELFEXT) 7 dB
e. PSACR-F (PSELFEXT) 8 dB
f. Return Loss 3 dB
g. ACR-N 6 dB
h. PSACR-N 7 dB
i. PSANEXT 1 dB
j. PSAACR-F 1 dB

B. Category 6 Unshielded Twisted Pair: CX6200 Cat 6 Premium UTP System.

1. 100 ohm, Category 6, 23 AWG, 4-pair unshielded twisted pair, LANmark 2000, CMP rated.
   a. Color: Blue. O.D. 0.220”
   b. Part Number: 10163222 (reel) 10063780 (reel-in-a-box).
   c. Electrical Characteristics: Characterized to 600 MHz.
   d. Each Pair in Cable: Insulated with FEP.
   e. Cable: Third-party verified by ETL.
   f. Berk-Tek LANmark-2000 CMP
   g. All category cabling manufacturers must be able to provide documentation from an independent third-party testing agency that verifies through random sampling that cable components perform at or above the levels contained on their product specifications, not simply at or above the standard
2. Channel margin guarantees for a CX6200 Cat 6 Premium UTP System (margin vs. ANSI/TIA-568-C.2 and margin guarantees are for a 4-connector channel).
   a. Insertion Loss 5 %
   b. NEXT 8 dB
   c. PSNEXT 8 dB
   d. ACR-F (ELFEXT) 9 dB
   e. PSACR-F (PSELFEXT) 10 dB
   f. Return Loss 5 dB
   g. ACR-N 9 dB
   h. PSACR-N 10 dB

2.04 MODULAR JACKS AND FIBER ADAPTERS FOR WORKSTATION OUTLETS

A. Category 6A Modular Jacks:CX6650 Cat 6A Enhanced UTP System,

1. 8-position modular jack, Category 6A, IDC terminals, T568A/B wiring scheme.
2. The modular connector shall exceed all component performance requirements in the ANSI/TIA-568-C.2 standard for Augmented Category 6 from 1 MHz to 500 MHz to support the IEEE 802.3an standard for 10GBASE-T network performance
3. The Modular Connector shall be terminated without the need for any punch down tool or other specialized or proprietary termination tool.
4. The Connector Module shall feature a termination wire manager that holds individual conductors in place during termination.
5. The Category 6A Modular Connector termination method shall be consistent with the termination method available for Category 5e and Category 6 UTP modules from the same manufacturer. The same termination method shall also be consistent with Category 5e, 6 and 6A shielded modules from the same manufacturer.
6. The Modular Connector shall be reusable and support multiple termination and re-termination cycles and be facilitated by simple termination release levers.
7. The modular connector shall be independently tested and verified by Intertek (ETL) to exceed Category 6A component performance.
8. The eight-position connector module shall utilize a method of tine tensioning that prevents six-position modular plug insertion from damaging either the cord or the module.
9. 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.
10. The connector shall also be in compliance will all National Electrical Codes; compliant with ANSI/TIA-1096-A (formerly FCC Part 68); cULus Listed; and independently tested for component compliance.
11. In addition to Category 6A component compliance, the connector shall have the ability to support high megabit and

shared sheath applications.
12. Connector wiring shall be universal and will accommodate both T568A and T568B pair/pin assignments.
13. The connector shall incorporate a triple-stage compensation design with integrated flexible circuit design that enhances link and channel performance.
14. The modular connector shall fit a range of telecommunications faceplates, outlets, and field-configurable patch panels.
15. The modular connector shall be available in 13 TIA 606-A compatible colors.
16. 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.
17. Additional bulk Icons for the connector shall be available in 13 colors to facilitate a broad range of connector marking/identification options.
18. Connector Modules shall be available with an internal shutter to protect against dust and debris
19. Connector Module shall have a maximum depth of 1.31”
20. Each connector shall be identified on its face as CAT 6A.
21. Basis for design: Leviton Atlas-X1 UTP Cat 6A Connector.
22. Color: blue.
23. Part Numbers: Standard version: 6AUJK-RL6 (blue).

B. Category 6 Modular Jacks: CX6200 Cat 6 Premium UTP System

1. 8-position eXtreme QuickPort modular jack, Category 6, IDC terminals, T568A/B wiring scheme.
2. Component-rated jack.
3. Each Jack: Identified on its face as CAT 6.
4. Color: blue.
5. Part Number: Leviton 61110-RL6 (blue).

2.05 WORK AREA OUTLETS

A. Flush-Mounted Plastic Faceplates:
1. 1-port single-gang plastic wallplate with ID windows.
   a. Colors: white
   b. Part Number: Leviton 42080-1WS (white).
2. 2-port single-gang plastic wallplate with ID windows.
   a. Colors: white
   b. Part Number: Leviton 42080-2WS (white).
3. 3-port single-gang plastic wallplate with ID windows.
   a. Colors: white
   b. Part Number: Leviton 42080-3WS (white).
4. 4-port single-gang plastic wallplate with ID windows.
   a. Colors: white
   b. Part Number: Leviton 42080-4WS (white).
5. 6-port single-gang plastic wallplate with ID windows.
   a. Colors: white
   b. Part Number: Leviton 42080-6WS (white).
6. 1-port dual-gang plastic wallplate with ID windows.
   a. Colors: white
   b. Part Number: Leviton 42080-1WP (white).
7. 2-port dual-gang plastic wallplate with ID windows.
   a. Colors: white
   b. Part Number: Leviton 42080-2WP (white).
8. 3-port dual-gang plastic wallplate with ID windows.
   a. Colors: white
   b. Part Number: Leviton 42080-3WP (white).
9. 4-port dual-gang plastic wallplate with ID windows.
   a. Colors: white
   b. Part Number: Leviton 42080-4WP (white).
10. 6-port dual-gang plastic wallplate with ID windows.
    a. Colors: white
    b. Part Number: Leviton 42080-6WP (white).
11. 8-port dual-gang plastic wallplate with ID windows.

a. Colors: white
b. Part Number: Leviton 42080-8WP (white).

12. 12-port dual-gang plastic wallplate with ID windows.
    a. Colors: white
    b. Part Number: Leviton 42080-12W (white).
13. Faceplate Colors: Coordinate with Architect to match finish. Part numbers shown are for standard color of white. Also available in Light Almond, Ivory, Grey, and Black.

B. Flush-Mounted Stainless Steel Faceplates: Stainless faceplates are not called for in the initial version of the plan set. This section is included if they are needed in a particular location, via RFI or addendum.
1. 1-port QuickPort faceplate with mounting lugs for wall phone, stainless steel, mounts onto single-gang wall box.
    a. Part Number: Leviton 4108W-0SP (flush plate) or 4108W-1SP(jack area recessed).
2. 1-port QuickPort single-gang stainless steel wallplate, with ID windows
    a. Part Number: Leviton 43080-1L1.
3. 2-port QuickPort single-gang stainless steel wallplate, with ID windows
    a. Part Number: Leviton 43080-1L2.
4. 3-port QuickPort single-gang stainless steel wallplate, with ID windows
    a. Part Number: Leviton 43080-1L3.
5. 4-port QuickPort single-gang stainless steel wallplate, with ID windows
    a. Part Number: Leviton 43080-1L4.
6. 6-port QuickPort single-gang stainless steel wallplate, with ID windows
    a. Part Number: Leviton 43080-1L6.
7. 2-port QuickPort dual-gang stainless steel wallplate, with ID windows
    a. Part Number: Leviton 43080-2L2.
8. 4-port QuickPort dual-gang stainless steel wallplate, with ID windows
    a. Part Number: Leviton 43080-2L4.
9. 6-port QuickPort dual-gang stainless steel wallplate, with ID windows
    a. Part Number: Leviton 43080-2L6.
10. 8-port QuickPort dual-gang stainless steel wallplate, with ID windows
    a. Part Number: Leviton 43080-2L8.
11. 12-port QuickPort dual-gang stainless steel wallplate, with ID windows
    a. Part Number: Leviton 43080-L12.

C. Surface-Mounted Outlet Boxes:
1. 1-port QuickPort surface-mount box, plastic, with ID window.
    a. Color: white
    b. Part Number: Leviton 41089-1WP (white).
2. 2-port QuickPort surface-mount box, plastic, with ID window.
    a. Color: white
    b. Part Number: Leviton 41089-2WP (white).
3. 4-port QuickPort surface-mount box, plastic, with ID window.
    a. Color: white
    b. Part Number: Leviton 41089-4WP (white).
4. 6-port QuickPort surface-mount box, plastic, with ID window.
    a. Color: white
    b. Part Number: Leviton 41089-6WP (white).
5. 12-port QuickPort surface-mount box, plastic, with ID window.
    a. Color: white
    b. Part Number: Leviton 41089-12W (white)
6. 2-port QuickPort surface-mount box, plastic, with ID window, extra-deep for shielded connectors, Cat 6A, other larger bend-radius cable applications.
    a. Color: white
    b. Part Number: Leviton 4S089-2WP (white)
    c. This is the box to be used above the ceiling grid for WiFi jacks.
7. 4-port QuickPort surface-mount box, plastic, with ID window, extra-deep for shielded connectors, Cat 6A, other larger bend-radius cable applications.
    a. Color: white
    b. Part Number: Leviton 4S089-4WP (white)
8. Surface Box Colors: part numbers shown are for white. Also available: Ivory, Grey, and Black. Coordinate with Architect to match finish.

D. Modular Furniture Faceplates:
   1. 2-port furniture wallplate fits 1.38-inch by 2.63-inch furniture knockout, with ID window.
      a. Colors: white
      b. Part Number: Leviton 49910-SW2 (white).
   2. 4-port furniture wallplate fits 1.38-inch by 2.63-inch furniture knockout, with ID window.
      a. Colors: white
      b. Part Number: Leviton 49910-SW4 (white).
   3. 4-port furniture wallplate fits 1.38-inch by 2.63-inch furniture knockout, with ID window. Extra-deep version with additional room for cable bend radius.
      a. Colors: white
      b. Part Number: Leviton 49910-EW4 (white).
   4. 2-port furniture wallplate fits 1.88-inch by 2.98-inch Hermann-Miller furniture knockout, with ID window.
      a. Colors: white
      b. Part Number: Leviton 49910-HW2 (white).
   5. 4-port furniture wallplate fits 1.88-inch by 2.98-inch Hermann-Miller furniture knockout, with ID window.
      a. Colors: white
      b. Part Number: Leviton 49910-HW4 (white).
   6. Furniture Faceplate Colors: Part numbers shown are for white. Also available: Ivory, grey, and black. Coordinate with Architect to match finish.

E. Mounting Frames for QuickPort Jacks and Connectors. Decora style faceplates are not called for in the initial version of the plan set. This section is included if they are needed in a particular location, via RFI or addendum.

   1. 1-port QuickPort Decora-style frame. Fits in Decora-style wallplate
      a. Colors: white
      b. Part Number: Leviton 41641-00W (white).
   2. 2-port QuickPort Decora-style frame. Fits in Decora-style wallplate
      a. Colors: white
      b. Part Number: Leviton 41642-00W (white).
   3. 3-port QuickPort Decora-style frame. Fits in Decora-style wallplate
      a. Colors: white
      b. Part Number: Leviton 41643-00W (white).
   4. 4-port QuickPort Decora-style frame. Fits in Decora-style wallplate
      a. Colors: white
      b. Part Number: Leviton 41644-00W (white).
   5. 6-port QuickPort Decora-style frame. Fits in Decora-style wallplate
      a. Colors: white
      b. Part Number: Leviton 41646-00W (white)
   6. 2-port QuickPort Duplex 106-style frame. Fits in Duplex electrical-style wallplate
      a. Colors: white
      b. Part Number: Leviton 41087-2WP (white).
   7. Decora-style wallplates for above mounting frames
      a. Single-gang, nylon: Leviton part number 80401-0NW (white)
      b. Dual-gang, nylon: Leviton part number 80409-0NW (white)
   8. 4-port QuickPort Duplex 106-style frame. Fits in Duplex electrical-style wallplate
      a. Colors: white
      b. Part Number: Leviton 41087-QWP (white).
   9. Duplex electrical-style wallplates for above mounting frames
      a. Single-gang, nylon: Leviton part number 80703-00W (white)
      b. Dual-gang, nylon: Leviton part number 80716-00W (white)
   10. Mounting Frame colors: Part numbers shown are for white. Also available: Light almond, ivory, grey, black (and brown for the Decora-style frames). Coordinate with Architect to match finish.

2.06 TERMINATION BLOCKS

A. Termination Blocks: May be used for Consolidation Point terminations, or for termination of multi-pair copper (analog voice) backbone cabling. AMEP should validate if any of these are needed on copper diagram.

B. Category 6, 110-Style Blocks: CX6200 Cat 6 Premium UTP System,

1. Category 6, 288 pair, 110-style, with mounting legs, wall mount.
    a. Part Number: Leviton 41AB6-3F4.
2. Category 6, 96 pair, 110-style, with mounting legs, wall mount.
    a. Part Number: Leviton 41AB6-1F4.
3. Category 6, 288 pair, 110-style, rack mount.
    a. Part Number: Leviton 41DR6-3F4.
4. Category 6, 96 pair, 110-style, rack mount.
    a. Part Number: Leviton 41DR6-1F4.

2.07 PATCH PANELS

A. QuickPort-Style Patch Panels: CX6650 Cat 6A Enhanced UTP System, CX6200 Cat 6 Premium UTP System
    1. 24-port, 1RU, QuickPort, flat metal, patch panel, empty.
        a. Part Number: Leviton 49255-H24.
    2. 48-port, 1RU, QuickPort, flat metal, patch panel, empty.
        a. Part Number: Leviton 49255-H48.
    3. Contractor shall provide 48 port patch panels for terminations, unless otherwise specifically noted in writing.

2.08 PATCH CORDS/JUMPERS

A. Jurupa Unified School District has a standardized color scheme for all patch and station cords.
    1. Blue(L)-Computer/VoIP phone
    2. Yellow(Y)-WiFi
    3. Red(R)-Security/Access Control
    4. Green(G)-Energy Management/Building Management/Facility systems

B. High-Flex Category 6A Modular Patch Cords: CX6650 Cat 6A Enhanced UTP System
    1. Slim-Line style, Category 6A, shielded cord (use same cord for shielded or unshielded systems) 4-pair, stranded wire construction.
        a. Color: 9 colors available.
        b. Part Numbers:
            1) Leviton H6A10-1Y (1 foot, Yellow). Patch
            2) Leviton H6A10-10Y (3 feet, Yellow). Station/Device

C. eXtreme Category 6 Modular Patch Cords: CX6200 Cat 6 Premium UTP System,
    1. Slim-Line style, Category 6 UTP patch cord, 4-pair, stranded wire construction.
        a. Color: 7 colors available.
        b. Part Numbers:
            1) Leviton 6D460-01L (1 foot, Blue). Patch

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine areas to receive communications horizontal cabling.

B. Notify Construction manager of conditions that would adversely affect installation or subsequent use.

C. Do not begin installation until unacceptable conditions are corrected.

3.02 INSTALLATION - GENERAL

A. Install communications horizontal cabling in accordance with manufacturer’s instructions, ANSI/TIA-568-C.0, ANSI/TIA-568-C.1, ANSI/TIA-569-C, BICSI TDMM, and NFPA 70.

B. Field Terminated Copper Patch Cords and Jumpers: Not allowed.

C. Copper Patch Cords: Manufactured by Leviton Network Solutions.

D. Install cables after building interior has been physically protected from weather and mechanical work likely to damage cabling has been completed.

E. Ensure cable pathways are completely and thoroughly cleaned before installing cabling.

F. Inspect installed conduit, wireway, cable trays, and innerduct.

G. Clean additional enclosed raceway and innerduct systems furnished.

H. Provide protection for exposed cables where subject to damage.

I. Abrasion Protection:
   1. Provide abrasion protection for cable or wire bundles which pass through holes or across edges of sheet metal.
   2. Use protective bushings to protect cables.

J. Cable Ties and Other Cable Management Clamps:
   1. No more than hand tightened.
   2. Fit snugly, but not compress, crimp, or otherwise change physical characteristics of cable jacket or distort placement of twisted-pair components.
   3. Replace cables exhibiting stresses due to over tightening of cable management devices.
   4. Use plenum-rated cable ties in plenum spaces.
   5. Velcro wraps are to be used for cable bundle management. Plenum-rated Velcro wraps are available from Leviton. Nylon cable ties should not be used during installation or for finishing.

K. Where possible, route cables in overhead cable trays and inside wire management systems attached to equipment cabinets and racks.
   1. Use Velcro or ducts to restrain cabling installed outside of wire management systems on racks or in cabinets.
   2. Cable Trays: Do not exceed 50 percent fill.

L. Pull Cord:
   1. Nylon, 1/8-inch minimum.
   2. Co-install with cables installed in conduit.

M. Cable Raceways: Do not fill greater than ANSI/TIA-569-B maximum fill for particular raceway type.

N. Support horizontal cables at a maximum of 48-inch (1.2 to 1.5-m) irregular intervals, if J-hook or trapeze system is used to support cable bundles.

O. Do not allow cables to rest on acoustic ceiling grids, plumbing pipes, or electrical conduits.

P. Bundle horizontal distribution cables in groups of no more than amount of cables designed for by cable support manufacturer, based on cable OD and weight.

Q. Fire-Sprinkler System:
   1. Install cables above fire-sprinkler system.
   2. Do not attach cables to fire-sprinkler system or ancillary equipment or hardware.
   3. Install cable system and support hardware so that it does not obscure valves, fire alarm conduit, boxes, or other control devices.

R. Do not attach cables to ceiling grid or lighting fixture wires. Any supports needed above the ceiling shall be independent of the ceiling grid system.

S. Install appropriate carriers to support cabling, where support for horizontal cables are required.

T. Replace before final acceptance, cables damaged or exceeding recommended installation parameters during installation.

3.03 INSTALLATION – UNSHIELDED TWISTED-PAIR CABLES

A. Install unshielded twisted-pair cables in accordance with manufacturer's instructions.

B. Install cables in continuous lengths from origin to destination, without splices, except for transition points or consolidation points. These locations must be approved in writing, or specified explicitly in construction documents.

C. Where transition points or consolidation points are allowed, they shall be located in accessible locations and housed in enclosure intended and suitable for the purpose.

D. Cable Minimum Bend Radius and Maximum Pulling Tension:

1. Do not exceed bend radius for UTP = 4 X Cable OD, FTP = 4 X Cable OD.
2. Install unshielded twisted-pair cables so that there are no bends smaller than 4 times cable outside diameter at any point in the run and at the termination field.
3. Pulling Tension on 4-Pair UTP Cables: Do not exceed 25 ft.lb. for 4-pair UTP cable.

E. Separation from Power Lines: Provide following minimum separation distances between pathways for copper communications cables and power wiring of 480 volts or less:

1. Open or Nonmetal Communications Pathways:
   a. Electric motors, fluorescent light fixtures, and unshielded power lines carrying up to 3 kVA: 12 inches.
   b. Electrical equipment and unshielded power lines carrying more than 5 kVA: 36 inches.
   c. Large electrical motors or transformers: 48 inches.

2. Grounded Metal Conduit Communications Pathways:
   a. Electrical equipment and unshielded power lines carrying up to 2 kVA: 2-1/2 inches.
   b. Electrical equipment and unshielded power lines carrying from 2 kVA to 5 kVA: 6 inches.
   c. Electrical equipment and unshielded power lines carrying more than 5 kVA: 12 inches.
   d. Power lines enclosed in grounded metal conduit (or equivalent shielding) carrying from 2 kVA to 5 kVA: 3 inches.
   e. Power lines enclosed in grounded metal conduit (or equivalent shielding) carrying more than 5 kVA: 6 inches.

3.04 INSTALLATION – UNSHIELDED TWISTED-PAIR TERMINATION

A. Coil cables to house cable coil without exceeding manufacturer's bend radius.

1. In hollow wall installations where box eliminators are used, store excess wire in wall.
2. Store no more than 12 inches of UTP and 36 inches of fiber slack.
3. Loosely coil excess slack and store in ceiling above each drop location, when there is not enough space present in outlet box to store slack cables.

B. Dress and terminate cables in accordance with ANSI/TIA-568-C.0, ANSI/TIA- C.1, BICSI TDMM, and manufacturer's instructions.

C. Terminate 4-pair cables on jack and patch panels using T568-B or T568-A wiring scheme.

D. Pair Untwist at Termination: Do not exceed 12 mm (1/2 inch).

E. Bend Radius of Horizontal Cables:

1. Not less than 4 times OD of UTP cables.
2. Not less than 4 times OD of FTP cables.

F. Maintain cable jacket to within 25 mm (1 inch) of termination point.

G. Neatly bundle cables and dress to their respective panels or blocks.

1. Feed each panel or block by individual bundle separated and dressed back to point of cable entrance into rack or frame.

3.05 FIELD QUALITY CONTROL

A. Cables and Termination Hardware: Test 100 percent for defects in installation and verify cabling system performance under installed conditions in accordance with ANSI/TIA-568-C.0.

1. Verify all pairs of each installed cable before system acceptance.
2. Defects in cabling system installation, including but not limited to cables, connectors, patch panels, and connector blocks shall be repaired or replaced to ensure 100 percent useable conductors in all cables installed.

B. Test all cables in accordance with this specification section, ANSI/TIA-568-C.2, and ANSI/TIA-568-C.3 standards, and Berk-Tek and Leviton Network Solutions instructions

1. If any of these are in conflict, bring discrepancies to the attention of the Construction manager for clarification and resolution.

C. Cables, Jacks, Connecting Blocks, and Patch Panels:

1. Verify all pairs of each installed cable before system acceptance.
2. Defects in cabling system installation, including but not limited to cables, connectors, patch panels, and connector blocks shall be repaired or replaced to ensure 100 percent useable conductors in all cables installed.

D. Testing Unshielded Twisted-Pair Cables: (NOTE: Permanent Link Test results are required.

1. Test twisted-pair copper cable links for continuity, pair reversals, shorts, opens, and performance as specified.
   a. Additional testing is required to verify Category performance.
   b. Test horizontal cabling using approved certification tester for Category 6A, Category 6, and Category 5e performance compliance in accordance with ANSI/TIA-568-C.2.
   c. (NOTE: Appropriate Fluke, Agilent, Ideal, or JDSU certification testers may be used).
   d. Category 6A shall conform to ANSI/TIA-568-C.2 for augmented Category 6 to 500 MHz.
2. Follow ANSI/TIA-568-C.2.
3. Basic Tests Required:
   a. Wire map.
   b. Length (feet).
   c. Insertion loss (dB), formerly attenuation.
   d. NEXT (Near end crosstalk) (dB).
   e. Return loss (dB).
   f. ELFEXT (dB).
   g. Propagation delay (ns).
   h. Delay skew (ns).
   i. PSNEXT (Power sum near-end crosstalk loss) (dB).
   j. PSELFEXT (Power sum equal level far-end crosstalk loss) (dB).
4. Test Category 6A by auto test to 500 MHz.
   a. Alien Crosstalk (AXT) testing and AXT test results are NOT required by Leviton or Berk-Tek

for warranty of a Category 6A system. (**Note**: AXT testing may be required by the customer, in which case these tests WOULD have to be performed).

5. Test Category 6 by auto test to 250 MHz.
6. Provide test results in approved certification testers original software format on CD, with the following minimum information per cable:
   a. Circuit ID. Final circuit ID as identified by labeling and as-builts.
   b. Information from specified basic tests required.
   c. Test Result: "Pass" or "Fail".
   d. Date and time of test.
   e. Project name.
   f. NVP.
   g. Software version.
7. An occasional asterisk-Pass (*Pass) will be accepted by Leviton or Berk-Tek at the manufacturer's discretion, but rework of these links should be done in an attempt to achieve clean "Pass" results prior to submission of test results.
8. To receive Manufacturer's Warranty for the project, submit software copy of test results, in original tester software format, to the Owner and to the Manufacturer (either Berk-Tek or Leviton).
9. Submit fully functional version of tester software for use by the Owner in reviewing test results.
10. Report in writing to the Owner immediately, along with copy of test results, failed test results that cannot be remedied through re-termination (as in the case of reversed or split pairs).

3.06 LABELING

A. All labeling is to be in accordance with ANSI/TIA-606-B and manufacturer's instructions.

B. Label horizontal cables using machine-printed label at each end of cable at approximately 12 inches from termination point.
   1. Sharpie and handwritten Labels: Not acceptable.

C. Label patch panel ports and TO ports with cable identifier.

D. Labels: Denote TO ID and unique cable number for that TO, i.e. 2-A43 for telecommunications zone 2, patch panel A, cable number 43. The MDF is zone 1, IDF 2 is zone 2.
   1. Owner may provide specific labeling requirements. Coordinate with the Owner.

E. Note labeling information on shop drawings, redlines, and final as-builts.

3.07 PROTECTION

A. Protect installed communications horizontal cabling from damage during construction.

END OF SECTION 27 15 00