BID DOCUMENTS

Downey Unified
SCHOOL DISTRICT

Sussman Middle School
Girls' Locker Room and Site Improvements

May 11, 2022

NOTICE INVITING INFORMAL BIDS

Notice is hereby given that the governing board ("Board") of the Downey Unified School District ("District") will receive sealed bids for the following project, **Sussman Middle School Girls' Locker Room and Site Improvements** ("Project" or "Contract").

To bid on this Project, the Bidder is required to be registered as a public works contractor with the Department of Industrial Relations and to possess one or more of the following State of California Contractor License(s). The Bidder's license(s) must remain active and in good standing throughout the term of the Contract.

Agreement No. 202223-007 BP1-Demolition	A, B, or C-21 & HAZ Cert.
Agreement No. 202223-008 BP2-Concrete/Grading	B, C-8, or C-12
Agreement No. 202223-009 BP3-Handrails	C-13
Agreement No. 202223-010 BP4-Framing, Drywall/Backerboard, Paint	B, C-5, C-8, C-9, or C-33
Agreement No. 202223-011 BP5-Ceramic Tile	C-15 or C-54
Agreement No. 202223-012 BP6-Specialties	B or C-61
Agreement No. 202223-013 BP7-Plumbing	C-36

Documents are available as of May 11, 2022 for review and may be downloaded from the District's Bids/RFP website, https://web.dusd.net/purchasing/#bids under "Facilities Planning & Development."

Sealed Bids will be received until 9:00 a.m., May 27, 2022 at the District's Facilities Planning and Development Office, 11627 Brookshire Ave., Attn: Savana Weaver, Downey, CA 90241 at or after which time the bids will be opened and publicly read aloud. All bids shall be on the form provided by the District and must be responsive.

A mandatory pre-bid conference and site visit will be held on May 11, 2022 at 2 PM at Sussman Middle School, 12500 Birchdale Ave., Downey, CA 90242 outside of the front office ("Site Visit"). All participants are required to sign-in. Failure to attend or tardiness may render bid ineligible. The Site Visit Certification will be provided at the end of the Site Visit and must be submitted with the Bid.

The successful Bidder shall be required to furnish a 100% Performance Bond and a 100% Payment Bond if it is awarded the contract for the Work. The successful Bidder may substitute securities for any monies withheld by the District to ensure performance under the Contract, in accordance with the provisions of section 22300 of the Public Contract Code.

The successful Bidder shall comply with all requirements of Division 2, Part 7, Chapter 1, of the Labor Code and Title 8 of the California Code of Regulations. For all work performed pursuant to this Contract, the Contractor and all subcontractors shall pay all workers not less than the general prevailing rate of per diem wages and for holiday and overtime work as determined by the Director of the Department of Industrial Relations, State of California, ("DIR") for the type of work performed and the locality in which the work is to be performed within the boundaries of the District, pursuant to sections 1770 et seq. of the California Labor Code. Prevailing wage rates are also available from the District or the DIR website at: http://www.dir.ca.gov. This Project is subject to labor compliance monitoring and enforcement by the DIR.

The Board reserves the right to reject any and all bids and/or waive any irregularity in any bid received. Unless otherwise required by law, no bidder may withdraw its bid for ninety (90) days after the date of the bid opening.

END OF DOCUMENT

INSTRUCTIONS TO BIDDERS

Contractors shall follow the instructions in this document, and shall submit all documents, forms, and information required for consideration of a Bid.

Downey Unified School District ("District") will evaluate information submitted by the apparent low Bidder and, if incomplete or unsatisfactory to District, Bidder's bid may be rejected at the sole discretion of District.

1. Bids are requested for a general construction contract, or work described in general, ("Work") for the following project:

   Sussman Middle School Girls' Locker Room and Site Improvements ("Project").

2. District will receive sealed Bids from Bidders as stipulated in the Notice to Bidders.

3. District will receive sealed bids from bidders as stipulated in the Notice to Bidders.

   a. All bids must be sealed in an envelope, marked with the name and address of the Bidder, name of the Project, the Project Number and/or bid number, and time of bid opening.

   b. Bids must be submitted to the District Office by date and time shown in the Notice to Bidders.

   c. Bids must contain all documents as required herein.

4. Bidders are advised that on the date that bids are opened, telephones will not be available at the District Offices for use by bidders or their representatives.

5. Bids will be opened at or after the time indicated for receipt of bids.

6. Bidders must submit Bids on the documents titled Bid Form and Proposal and must submit all other required District forms. Bids not submitted on the District's required forms shall be deemed nonresponsive and shall not be considered. Additional sheets required to fully respond to requested information are permissible.

7. Bidders shall not modify the Bid Form and Proposal or qualify their bids. Bidders shall not submit to the District a re-formatted, re-typed, altered, modified, or otherwise recreated version of the Bid Form and Proposal or other District-provided document.

8. Bids shall be clearly written and without erasure or deletions. District reserves the right to reject any bid containing erasures, deletions, or illegible contents.

9. Bidders must supply all information required by each Bid Document. Bids must be full and complete. District reserves the right in its sole discretion to reject any Bid as non-responsive as a result of any error or omission in the Bid. Bidders must complete and submit all of the following documents with the Bid Form and Proposal:

   a. Bid Bond on the District's form, or other security.

b. Designated Subcontractors List.

c. Site Visit Certification, if a site visit was required.

d. Non-Collusion Declaration.

10. Bidders must submit with their Bids a cashier's check or a certified check payable to District, or a bid bond by an admitted surety insurer of not less than ten percent (10%) of amount of base Bid, plus all additive alternates ("Bid Bond"). If Bidder chooses to provide a Bid Bond as security, Bidder must use the required form of corporate surety provided by District. The Surety on Bidder's Bid Bond must be an insurer admitted in the State of California and authorized to issue surety bonds in the State of California. Bids submitted without necessary bid security will be deemed non-responsive and will not be considered.

11. If Bidder to whom a contract is awarded ("Contract" or "Agreement") fails or neglects to enter into Contract and submit required bonds, insurance certificates, and all other required documents, within **SEVEN (7)** calendar days after the date of the Notice of Award, District may deposit Bid Bond, cash, cashier's check, or certified check for collection, and proceeds thereof may be retained by District as liquidated damages for failure of Bidder to enter into Contract, in the sole discretion of District. It is agreed that calculation of damages District may suffer as a result of Bidder's failure to enter into the Contract would be extremely difficult and impractical to determine and that the amount of the Bidder's required bid security shall be the agreed and conclusively presumed amount of damages.

12. Bidders must submit with the Bid the Designated Subcontractors List for those subcontractors who will perform any portion of the Project, ("Subcontractor") including labor, rendering of service, or specially fabricating and installing a portion of the Work or improvement according to detailed drawings contained in the plans and specifications, in excess of one half of one percent (0.5%) of the total Bid. Failure to submit this list when required by law shall result in bid being deemed nonresponsive and the bid will not be considered.

13. All of the listed subcontractors are required to be registered as a public works contractor with the Department of Industrial Relations pursuant to the Labor Code.

    a. An inadvertent error in listing the California contractor license number on the Designated Subcontractors List shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive if the correct contractor's license number is submitted to the District within 24 hours after the bid opening and the corrected number corresponds with the submitted name and location for that subcontractor.

    b. An inadvertent error listing an unregistered subcontractor shall not be grounds for filing a bid protest or grounds for considering the bid nonresponsive provided that any of the following apply:

        (1) The subcontractor is registered prior to the bid opening.

        (2) The subcontractor is registered and has paid the penalty registration fee within 24 hours after the bid opening.

(3) The subcontractor is replaced by another registered subcontractor pursuant to Public Contract Code section 4107.

14. If a mandatory pre-bid conference and site visit ("Site Visit") is required as referenced in the Notice to Bidders, then Bidders must submit the Site Visit Certification with their Bid. District will transmit to all prospective Bidders of record such Addenda as District in its discretion considers necessary in response to questions arising at the Site Visit. Oral statements shall not be relied upon and will not be binding or legally effective. Addenda issued by the District as a result of the Site Visit, if any, shall constitute the sole and exclusive record and statement of the results of the Site Visit.

15. Bidders shall submit the Non-Collusion Declaration with their Bids. Bids submitted without the Non-Collusion Declaration shall be deemed non-responsive and will not be considered.

16. The Contractor and all Subcontractors under the Contractor shall pay all workers on all work performed pursuant to this Contract not less than the general prevailing rate of per diem wages and the general prevailing rate for holiday and overtime work as determined by the Director of the Department of Industrial Relations, State of California, for the type of work performed and the locality in which the work is to be performed within the boundaries of the District, pursuant to sections 1770 et seq. of the California Labor Code. Copies of the general prevailing rates of per diem wages for each craft, classification, or type of worker needed to execute the Contract, as determined by Director of the Department of Industrial Relations, are available upon request at the District's principal office. Prevailing wage rates are also available on the internet at http://www.dir.ca.gov.

17. Submission of Bid signifies careful examination of the District's proposed Contract Documents for the Project and complete understanding of the nature, extent, and location of Work to be performed. Bidders must complete the tasks listed below as a condition to bidding, and submission of a Bid shall constitute the Bidder's express representation to District that Bidder has fully completed the following:

    a. Bidder has visited the Site, if required, and has examined thoroughly and understood the nature and extent of the Contract Documents, Work, Project and Work sites, locality, actual conditions, as-built conditions, and all local conditions and federal, state and local laws, and regulations that in any manner may affect cost, progress, performance, or furnishing of Work or that relate to any aspect of the means, methods, techniques, sequences, or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto;

    b. Bidder has conducted or obtained and has understood all examinations, investigations, explorations, tests, reports, and studies that pertain to the subsurface conditions, as-built conditions, underground facilities, and all other physical conditions at or contiguous to the Work Site or otherwise that may affect the cost, progress, performance, or furnishing of Work, as Bidder considers necessary for the performance or furnishing of Work at the Contract Sum, within the Contract Time, and in accordance with the other terms and conditions of Contract Documents, including specifically the provisions of the General Conditions; and no additional examinations, investigations,

explorations, tests, reports, studies, or similar information or data are or will be required by Bidder for such purposes;

c. Bidder has correlated its knowledge and the results of all such observations, examinations, investigations, explorations, tests, reports, and studies with the terms and conditions of the Contract Documents;

d. Bidder has given the District prompt written notice of all conflicts, errors, ambiguities, or discrepancies that it has discovered in or among the Contract Documents and the actual conditions, and the written resolution(s) thereof by the District is/are acceptable to Bidder;

e. Bidder has made a complete disclosure in writing to the District of all facts bearing upon any possible interest, direct or indirect, that Bidder believes any representative of the District or other officer or employee of the District presently has or will have in this Contract or in the performance thereof or in any portion of the profits thereof;

f. Bidder must, prior to bidding, perform the work, investigations, research, and analysis required by this document and that Bidder represented in its Bid Form and Proposal and the Contract that it performed prior to bidding. Contractor under this Contract is charged with all information and knowledge that a reasonable bidder would ascertain from having performed this required work, investigation, research, and analysis. Bid prices must include entire cost of all work "incidental" to completion of the Work.

g. Conditions Shown on the Contract Documents: Information as to underground conditions, as-built conditions, or other conditions or obstructions, indicated in the Contract Documents, e.g., on Drawings or in Specifications, has been obtained with reasonable care, and has been recorded in good faith. However, District only warrants, and Contractor may only rely, on the accuracy of limited types of information.

(1) As to above-ground conditions or as-built conditions shown or indicated in the Contract Documents, there is no warranty, express or implied, or any representation express or implied, that such information is correctly shown or indicated. This information is verifiable by independent investigation and Contractor is required to make such verification as a condition to bidding. In submitting its Bid, Contractor shall rely on the results of its own independent investigation. In submitting its Bid, Contractor shall not rely on District-supplied information regarding above-ground conditions or as-built conditions.

(2) As to any subsurface condition shown or indicated in the Contract Documents, Contractor may rely only upon the general accuracy of actual reported depths, actual reported character of materials, actual reported soil types, actual reported water conditions, or actual obstructions shown or indicated. District is not responsible for the completeness of such information for bidding or construction; nor is District responsible in any way for any conclusions or opinions that the Contractor has drawn from such information; nor is the District responsible for subsurface conditions that are not specifically shown

(for example, District is not responsible for soil conditions in areas contiguous to areas where a subsurface condition is shown).

h. Conditions Shown in Reports and Drawings Supplied for Informational Purposes: Reference is made to the document entitled Geotechnical Data, and the document entitled Existing Conditions, for identification of:

(1) Subsurface Conditions: Those reports of explorations and tests of subsurface conditions at or contiguous to the Site that have been utilized by Architect in preparing the Contract Documents; and

(2) Physical Conditions: Those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that has been utilized by Architect in preparing the Contract Documents.

(3) These reports and drawings are **not** Contract Documents and, except for any "technical" data regarding subsurface conditions specifically identified in Geotechnical Data and Existing Conditions, and underground facilities data, Contractor may not in any manner rely on the information in these reports and drawings. Subject to the foregoing, Contractor must make its own independent investigation of all conditions affecting the Work and must not rely on information provided by District.

18. Bids shall be based on products and systems specified in Contract Documents or listed by name in Addenda. Whenever in the Specifications any materials, process, or article is indicated or specified by grade, patent, or proprietary name, or by name of manufacturer, that Specification shall be deemed to be followed by the words "or equal." Bidder may, unless otherwise stated, offer any material, process, or article that shall be substantially equal or better in every respect to that so indicated or specified. The District is not responsible and/or liable in any way for a Contractor's damages and/or claims related, in any way, to that Contractor's basing its bid on any requested substitution that the District has not approved in advance and in writing. Contractors and materials suppliers who submit requests for substitutions prior to the award of the Contract must do so in writing and in compliance with Public Contract Code section 3400. All requests must comply with the following:

a. District must receive any notice of request for substitution of a specified item a minimum of **TEN (10)** calendar days prior to bid opening. The Successful Bidder will not be allowed to substitute specified items unless properly noticed.

b. Within 35 days after the date of the Notice of Award, the Successful Bidder shall submit data substantiating the request(s) for all substitution(s) containing sufficient information to assess acceptability of product or system and impact on Project, including, without limitation, the requirements specified in the Special Conditions and the Specifications. Insufficient information shall be grounds for rejection of substitution.

c. Approved substitutions, if any, shall be listed in Addenda. District reserves the right not to act upon submittals of substitutions until after bid opening.

d. Substitutions may be requested after Contract has been awarded only if indicated in and in accordance with requirements specified in the Special Conditions and the Specifications.

19. Bidders may examine any available "as-built" drawings of previous work by giving District reasonable advance notice. District will not be responsible for accuracy of "as-built" drawings. The document entitled Existing Conditions applies to all supplied "as-built" drawings.

20. All questions about the meaning or intent of the Contract Documents are to be directed via email to the District to Vince Madsen at vmadsen@dusd.net. Interpretations or clarifications considered necessary by the District in response to such questions will be issued in writing by Addenda and emailed, faxed, mailed, or delivered to all parties recorded by the District as having received the Contract Documents or posted on the District's website at https://web.dusd.net/bids-rfps/. Questions received less than **three (3)** calendar days prior to the date for opening Bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

21. Addenda may also be issued to modify other parts of the Contract Documents, as deemed advisable by the District.

22. Each Bidder must acknowledge each Addendum in its Bid Form and Proposal by number or its Bid shall be considered non-responsive. Each Addendum shall be part of the Contract Documents. A complete listing of Addenda may be obtained from the District.

23. The Contract may include alternates. Alternates are defined as alternate products, materials, equipment, systems, methods, or major elements of the construction that may, at the District's option and under terms established in the Contract and pursuant to section 20103.8 of the Public Contract Code, be selected for the Work.

24. The District shall award the Contract, if it awards it at all, to the lowest responsive responsible bidder based on the criteria as indicated in the Notice to Bidders. In the event two or more responsible bidders submit identical bids, the District shall select the Bidder to whom to award the Contract by lot. In the event all Bids exceed the informal bid threshold of $200,000, the District's Governing Board may elect to pass a resolution to award the Contract at $212,500 or less to the lowest responsible Bidder, in accordance with Public Contract Code section 22034(d).

25. Time for Completion: District may issue a Notice to Proceed within **NINETY (90) days** from the date of the Notice of Award. Once Contractor has received the Notice to Proceed, Contractor shall complete the Work within the period of time indicated in the Contract Documents.

    a. In the event that the District desires to postpone issuing the Notice to Proceed beyond this 90-day period, it is expressly understood that with reasonable notice to the Contractor, the District may postpone issuing the Notice to Proceed.

    b. It is further expressly understood by Contractor that Contractor shall not be entitled to any claim of additional compensation as a result of the

postponement of the issuance of the Notice to Proceed beyond a 90-day period. If the Contractor believes that a postponement of issuance of the Notice to Proceed will cause a hardship to the Contractor, the Contractor may terminate the Contract. Contractor's termination due to a postponement beyond this 90-day period shall be by written notice to District within **TEN (10)** calendar days after receipt by Contractor of District's notice of postponement.

c. It is further understood by the Contractor that in the event that Contractor terminates the Contract as a result of postponement by the District, the District shall only be obligated to pay Contractor for the Work that Contractor had performed at the time of notification of postponement and which the District had in writing authorized Contractor to perform prior to issuing a Notice to Proceed.

d. Should the Contractor terminate the Contract as a result of a notice of postponement, District shall have the authority to award the Contract to the next lowest responsive responsible Bidder.

26. The Bidder to whom a Contract is awarded shall execute and submit the following documents by 5:00 p.m. of the **SEVENTH (7th)** calendar day following the date of the Notice of Award. Failure to properly and timely submit these documents entitles District to reject the bid as non-responsive.

a. Agreement: To be executed by successful Bidder. Submit three (3) copies, each bearing an original signature.

b. Performance Bond (100% of Contract Price): On the form provided in the Contract Documents and fully executed as indicated on the form.

c. Payment Bond (100%) (Contractor's Labor and Material Bond): On the form provided in the Contract Documents and fully executed as indicated on the form.

d. Insurance Certificates and Endorsements, as required.

e. Workers' Compensation Certification.

f. Prevailing Wage and Related Labor Requirements Certification.

g. Drug-Free Workplace Certification.

h. Tobacco-Free Environment Certification.

i. Hazardous Materials Certification.

j. Lead-Based Materials Certification.

k. Imported Materials Certification.

l. Criminal Background Investigation/Fingerprinting Certification.

m. Registered Subcontractors List: Must include Department of Industrial Relations (DIR) registration number of each subcontractor for all tiers.

27. Any Bid protest by any Bidder regarding any other Bid must be submitted in writing to the District, before 5:00 p.m. of the **THIRD (3rd)** business day following Bid opening.

a. Only a Bidder who has actually submitted a Bid, and who could be awarded the Contract if the bid protest is upheld, is eligible to submit a Bid protest. Subcontractors are not eligible to submit Bid protests. A Bidder may not rely on the bid protest submitted by another Bidder.

b. A Bid protest must contain a complete statement of any and all bases for the protest and all supporting documentation. Materials submitted after the Bid protest deadline will not be considered.

c. The protest must refer to the specific portions of all documents that form the basis for the protest.

(1) Without limitation to any other basis for protest, an inadvertent error in listing the California contractor's license number on the Designated Subcontractors List shall not be grounds for filing a Bid protest or grounds for considering the Bid nonresponsive if the correct contractor's license number is submitted to the District within 24 hours after the bid opening and the corrected number corresponds with the submitted name and location for that subcontractor.

(2) Without limitation to any other basis for protest, an inadvertent error listing an unregistered subcontractor shall not be grounds for filing a Bid protest or grounds for considering the bid nonresponsive provided that any of the following apply:

(i) The Subcontractor is registered prior to the Bid opening.

(ii) The Subcontractor is registered and has paid the penalty registration fee within 24 hours after the Bid opening.

(iii) The subcontractor is replaced by another registered Subcontractor pursuant to Public Contract Code section 4107.

d. The protest must include the name, address and telephone number of the person representing the protesting party.

e. The party filing the protest must concurrently transmit a copy of the protest and any attached documentation to all other parties with a direct financial interest that may be adversely affected by the outcome of the protest. Such parties shall include all other Bidders or proposers who appear to have a reasonable prospect of receiving an award depending upon the outcome of the protest.

f. The procedure and time limits set forth in this paragraph are mandatory and are each Bidder's sole and exclusive remedy in the event of Bid protest. Failure to comply with these procedures shall constitute a waiver of any right

to further pursue the Bid protest, including filing a Government Code Claim or legal proceedings.

28. District reserves the right to reject any or all Bids, including without limitation the right to reject any or all nonconforming, non-responsive, unbalanced, or conditional Bids, to re-bid, and to reject the Bid of any Bidder if District believes that it would not be in the best interest of the District to make an award to that Bidder, whether because the Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by District. District also reserves the right to waive any inconsequential deviations or irregularities in any bid. For purposes of this paragraph, an "unbalanced bid" is one having nominal prices for some work items and/or enhanced prices for other work items.

29. Discrepancies between written words and figures, or words and numerals, will be resolved in favor of figures or numerals.

30. It is the policy of the District that no qualified person shall be excluded from participating in, be denied the benefits of, or otherwise be subjected to discrimination in any consideration leading to the award of contract, based on race, color, gender, sexual orientation, political affiliation, age, ancestry, religion, marital status, national origin, medical condition or disability. The Successful Bidder and its subcontractors shall comply with applicable federal and state laws, including, but not limited to the California Fair Employment and Housing Act, beginning with Government Code section 12900, and Labor Code section 1735.

31. Prior to the award of Contract, District reserves the right to consider the responsibility of the Bidder. District may conduct investigations as District deems necessary to assist in the evaluation of any bid and to establish the responsibility, including, without limitation, qualifications and financial ability of Bidders, proposed subcontractors, suppliers, and other persons and organizations to perform and furnish the Work in accordance with the Contract Documents to District's satisfaction within the prescribed time.

END OF DOCUMENT

BID FORM AND PROPOSAL

To: Governing Board of Downey Unified School District ("District" or "Owner")

From: _____
(Proper Name of Bidder)

The undersigned declares that the Contract Documents, including, without limitation, the Notice to Bidders and the Instructions to Bidders, have been read, and agrees and proposes to furnish all necessary labor, materials, and equipment to perform and furnish all work in accordance with the terms and conditions of the Contract Documents, including, without limitation, the Drawings and Specifications for the following project known as: Sussman Middle School Girls' Locker Room and Site Improvements Project ("Project") and will accept in full payment for that Work the following total lump sum amount, all taxes included:

Agreement No. 202223-007 BP1-Demolition

_____ dollars $ _____

BASE BID

Agreement No. 202223-008 BP2-Concrete/Grading

_____ dollars $ _____

BASE BID

Agreement No. 202223-009 BP3-Handrails

_____ dollars $ _____

BASE BID

Agreement No. 202223-010 BP4-Framing, Drywall/Backerboard, Paint

_____ dollars $ _____

BASE BID

Agreement No. 202223-011 BP5-Ceramic Tile

_____ dollars $ _____

BASE BID

Agreement No. 202223-012 BP6-Specialties

_____ dollars $ _____ ***BASE BID***

Agreement No. 202223-013 BP7-Plumbing

_____ dollars $ _____ ***BASE BID***

The District shall award the contract, if it awards it at all, to the lowest responsive responsible bidder based on:

Lowest apparent bidder for each Bid Package, not combined.

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Additional Detail Regarding Calculation of Base Bid

1. The undersigned has reviewed the Work outlined in the Contract Documents and fully understands the scope of Work required in this Proposal, understands the construction and project management function(s) as described in the Contract Documents, and that each Bidder who is awarded a contract shall be in fact a prime contractor, not a subcontractor, to the District, and agrees that its Proposal, if accepted by the District, will be the basis for the Bidder to enter into a contract with the District in accordance with the intent of the Contract Documents.

2. The undersigned has notified the District in writing of any discrepancies or omissions or of any doubt, questions, or ambiguities about the meaning of any of the Contract Documents, and has contacted the Construction Manager or other official point of contact for the District before Bid date to verify the issuance of any clarifying Addenda.

3. The undersigned 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.

4. **The liquidated damages clause of the Agreement is hereby acknowledged.**

5. It is understood that the District reserves the right to reject this Bid and that the Bid shall remain open to acceptance and is irrevocable for a period of ninety (90) days.

6. The following documents are attached with this Bid Form and Proposal:

   - Bid Bond on the District's form or other security
   - Registered Subcontractors List
   - Site Visit Certification
   - Non-Collusion Declaration

7. Receipt and acceptance of the following Addenda is hereby acknowledged:

No. _____, Dated _____	No. _____, Dated _____
No. _____, Dated _____	No. _____, Dated _____
No. _____, Dated _____	No. _____, Dated _____

8. Bidder acknowledges that the license required for performance of the Work is a _____ _____ license.

9. Bidder hereby certifies that Bidder is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the Work.

10. Bidder specifically acknowledges and understands that if it is awarded the Contract, that it shall perform the Work of the Project while complying with all requirements of the Department of Industrial Relations.

11. Bidder hereby certifies that its bid includes sufficient funds to permit Bidder to comply with all local, state or federal labor laws or regulations during the Project, including payment of prevailing wage, and that Bidder will comply with the provisions of Labor Code section 2810(d) if awarded the Contract.

12. Bidder represents that it is competent, knowledgeable, and has special skills with respect to the nature, extent, and inherent conditions of the Work to be performed. Bidder further acknowledges that there are certain peculiar and inherent conditions existent in the construction of the Work that may create, during the Work, unusual or peculiar unsafe conditions hazardous to persons and property.

13. Bidder expressly acknowledges that it is aware of such peculiar risks and that it has the skill and experience to foresee and to adopt protective measures to adequately and safely perform the Work with respect to such hazards.

14. Bidder expressly acknowledges that it is aware that if a false claim is knowingly submitted (as the terms "claim" and "knowingly" are defined in the California False Claims Act, Gov. Code, § 12650 et seq.), the District will be entitled to civil remedies set forth in the California False Claim Act. It may also be considered fraud and the Contractor may be subject to criminal prosecution.

15. The undersigned Bidder 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 and registered as a public works contractor with the Department of Industrial Relations. Bidder further certifies that it is regularly engaged in the general class and type of work called for in the Contract Documents.

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

Dated this _____ day of _____ 20 ____

Name of Bidder _____

Type of Organization _____

Signed by _____

Title of Signer _____

Address of Bidder _____

Taxpayer's Identification No. of Bidder _____

Telephone Number _____

Fax Number _____

E-mail _____ Web page _____

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

No.: _____ Class:_____ Expiration Date: _____

No.: _____ Class:_____ Expiration Date: _____

Public Works Contractor Registration No.: _____

END OF DOCUMENT

BID BOND

(Note: If Bidder is providing a bid bond as its bid security, Bidder must use this form, NOT a surety company form.)

KNOW ALL PERSONS BY THESE PRESENTS:

That the undersigned,_____, as Principal ("Principal"),

and _____, as Surety ("Surety"), a corporation organized and existing under and by virtue of the laws of the State of California and authorized to do business as a surety in the State of California, are held and firmly bound unto the Downey Unified School District ("District") of Los Angeles County, State of California, as Obligee, in an amount equal to ten percent (10%) of the Base Bid plus alternates, in the sum of

_____ Dollars ($ _____)

lawful money of the United States of America, for the payment of which sum well and truly to be made, we, and each of us, bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal has submitted a bid to the District for all Work specifically described in the accompanying bid for the following project: _____ ("Project" or "Contract").

NOW, THEREFORE, if the Principal is awarded the Contract and, within the time and manner required under the Contract Documents, after the prescribed forms are presented to Principal for signature, enters into a written contract, in the prescribed form in accordance with the bid, and files two bonds, one guaranteeing faithful performance and the other guaranteeing payment for labor and materials as required by law, and meets all other conditions to the Contract between the Principal and the Obligee becoming effective, or if the Principal shall fully reimburse and save harmless the Obligee from any damage sustained by the Obligee through failure of the Principal to enter into the written contract and to file the required performance and labor and material bonds, and to meet all other conditions to the Contract between the Principal and the Obligee becoming effective, then this obligation shall be null and void; otherwise, it shall be and remain in full force and effect. The full payment of the sum stated above shall be due immediately if Principal fails to execute the Contract within seven (7) days of the date of the District's Notice of Award to Principal.

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 to the work to be performed thereunder, or the specifications accompanying the same, shall in any way 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 the Contract or the call for bids, or to the work, or to the specifications.

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 a reasonable attorneys' fee to be fixed by the Court.

If the District awards the bid, the security of unsuccessful bidder(s) shall be returned within sixty (60) days from the time the award is made. Unless otherwise required by law, no bidder may withdraw its bid for ninety (90) days after the date of the bid opening.

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

_____
Principal

_____
By

_____
Surety

_____
By

_____
Name of California Agent of Surety

_____
Address of California Agent of Surety

_____
Telephone Number of California Agent of Surety

Bidder must attach Power of Attorney and Certificate of Authority for Surety and a Notarial Acknowledgment for all Surety's signatures. The California Department of Insurance must authorize the Surety to be an admitted Surety Insurer.

END OF DOCUMENT

DESIGNATED SUBCONTRACTORS LIST
(Public Contact Code Sections 4100-4114)

Bidder acknowledges and agrees that it must clearly set forth below the name, location and California contractor license number of each subcontractor who will perform work or labor or render service to the Bidder in or about the construction of the Work or who will specially fabricate and install a portion of the Work according to detailed drawings contained in the plans and specifications in an amount in excess of one-half of one percent (0.5%) of Bidder's total Base Bid and the kind of Work that each will perform. Vendors or suppliers of materials only do not need to be listed.

Bidder acknowledges and agrees that, if Bidder fails to list as to any portion of Work, or if Bidder lists more than one subcontractor to perform the same portion of Work, Bidder must perform that portion itself or be subjected to penalty under applicable law. In case more than one subcontractor is named for the same kind of Work, state the portion of the kind of Work that each subcontractor will perform.

If alternate bid(s) is/are called for and Bidder intends to use subcontractors different from or in addition to those subcontractors listed for work under the Base Bid, Bidder must list subcontractors that will perform Work in an amount in excess of one half of one percent (0.5%) of Bidder's total Base Bid plus alternate(s).

If further space is required for the list of proposed subcontractors, attach additional copies of page 2 showing the required information, as indicated below.

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Subcontractor Name: _____

CA Cont. Lic. #: _____ Location: _____

Portion of Work: _____

Subcontractor Name: ____

CA Cont. Lic. #: _________________________ Location: ______________

Portion of Work: ____

Subcontractor Name: ____

CA Cont. Lic. #: _________________________ Location: ______________

Portion of Work: ____

Subcontractor Name: ____

CA Cont. Lic. #: _________________________ Location: ______________

Portion of Work: ____

Subcontractor Name: ____

CA Cont. Lic. #: _________________________ Location: ______________

Portion of Work: ____

Subcontractor Name: ____

CA Cont. Lic. #: _________________________ Location: ______________

Portion of Work: ____

Subcontractor Name: ____

CA Cont. Lic. #: _________________________ Location: ______________

Portion of Work: ____

Date: __________________________________

Proper Name of Bidder: __________________________________

Signature: __________________________________

Print Name: __________________________________

Title: __________________________________

END OF DOCUMENT

SITE VISIT CERTIFICATION

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID
IF SITE VISIT WAS MANDATORY

PROJECT: _____

Check option that applies:

_____ I certify that I visited the Site of the proposed Work, received the attached ___ pages of information, and became fully acquainted with the conditions relating to construction and labor. I fully understand the facilities, difficulties, and restrictions attending the execution of the Work under contract.

_____ I certify that _____ (Bidder's representative) visited the Site of the proposed Work, received the attached _____ pages of information, and became fully acquainted with the conditions relating to construction and labor. The Bidder's representative fully understood the facilities, difficulties, and restrictions attending the execution of the Work under contract.

Bidder fully indemnifies the Downey Unified School District, its Architect, its Engineers, its Construction Manager, and all of their respective officers, agents, employees, and consultants from any damage, or omissions, related to conditions that could have been identified during my visit and/or the Bidder's representative's visit to the Site.

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

Date: _____

Proper Name of Bidder: _____

Signature: _____

Print Name: _____

Title: _____

ATTACHMENTS:

1.

2.

3.

END OF DOCUMENT

NON-COLLUSION DECLARATION
To Be Executed By Bidder And Submitted With Bid
Public Contract Code Section 7106

The undersigned declares:

I am the_____ of _____, 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].

Date: _____

Proper Name of Bidder: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

AGREEMENT FOR CONSTRUCTION SERVICES (SMALL PROJECTS)

AGREEMENT NUMBER 202223-___

THIS AGREEMENT is made and entered into this _____ day of _____ _____, 20___, by and between _____ ("Contractor") and Downey Unified School District ("District") ("Contract" or "Agreement").

1. The Contractor shall furnish to the District for a total price of _____ _____ Dollars ($_____) ("Contract Price"), the following services ("Services" or "Work"):

   Sussman Middle School Girls' Locker Room and Site Improvements

2. Contractor shall perform the Work at Sussman Middle School, 12500 Birchdale Ave., Downey, California 90241 ("Site"). The Project is the scope of Work performed at the Site.

3. Work shall be completed within fifty-five (55) consecutive calendar days ("Contract Time") from the date specified in the District's Notice to Proceed.

   It is understood and agreed that the Work shall be performed and completed as required in the Contract Documents (as defined herein) including, without limitation, the Drawings and Specifications and submission of all documents required to secure funding or by the Division of the State Architect ("DSA") for close-out of the Project, under the direction and supervision of, and subject to the approval of, the District or its authorized representative.

4. Contractor agrees that if the Work is not completed within the Contract Time and/or pursuant to the completion schedule, construction schedule, or project milestones developed pursuant to provisions of the Contract, it is understood, acknowledged, and agreed that the District will suffer damage which is not capable of being calculated. Pursuant to Government Code section 53069.85, Contractor shall pay to the District, as fixed and liquidated damages for these incalculable damages, the sum of three hundred Dollars ($ 300.00) per day for each and every calendar day of delay beyond the Contract Time or beyond any completion schedule, construction schedule, or project milestones established pursuant to the Contract.

5. This Contract incorporates by this reference the Terms and Conditions attached hereto. Contractor, by executing this Contract, agrees to comply with all the Terms and Conditions.

[REMAINDER OF PAGE INTENTIONALLY BLANK]

6. This Contract incorporates by this reference the Contract Documents attached hereto. Contractor, by executing this Contract, agrees to comply with all obligations set forth in the Contract Documents. The Contract Documents include only the following documents, as indicated:

✓ Notice to Bidders	✓ Hazardous Materials Certification
✓ Instructions to Bidders	✓ Lead-Product(s) Certification
✓ Bid Form and Proposal	_____ Imported Materials Certification
✓ Bid Bond	_____ Buy American Certification
✓ Noncollusion Declaration	✓ Insurance Certificates and Endorsements
✓ Registered Subcontractors List	
_____ Notice to Proceed	✓ Performance Bond
✓ Prevailing Wage Certification	✓ Payment Bond
✓ Workers' Compensation Certification	_____ Specifications
	_____ Plans
✓ Criminal Background Investigation Certification	_____ Special Conditions
	_____ _____ [Other]
✓ Drug-Free Workplace Certification	_____ _____ [Other]
✓ Tobacco-Free Environment Certification	

7. Contractor shall not commence the Work under this Contract until the Contractor has submitted and the District has approved the performance bond, payment (labor and material) bond, the certificate(s) and affidavit(s), and the endorsement(s) of insurance required under the Terms and Conditions and the District has issued a Notice to Proceed.

8. Payment for the Work shall be made in accordance with the Terms and Conditions.

9. The architect for the Project is Annie Aung ("Architect"), the project manager on the Project is Annie Aung ("Project Manager"), and the project inspector on the Project is Annie Aung ("Project Inspector"). Contractor hereby acknowledges that the Architect, the Project Manager, the Project Inspector, and the Division of the State Architect have authority to approve and/or suspend Work if the Contractor's Work does not comply with the requirements of the Contract Documents, Title 24 of the California Code of Regulations, and all applicable laws. No work shall be carried on except with the knowledge and under the inspection of said Project Inspector. Project Inspector shall have free access to any or all parts of work at any time. Contractor shall furnish Project Inspector reasonable opportunities for obtaining such information as may be necessary to keep Project Inspector fully informed respecting progress, manner of work, and character of materials. The Contractor shall be liable for any delay caused by its non-compliant Work, its failure to provide proper notification for inspection, or where such delay could have been avoided or mitigated by Contractor's reasonable diligence.

10. Inspection and acceptance of the Work shall be performed by Annie Aung of the Facilities Planning and Development Department of the District.

11. Any notice required or permitted to be given under this Contract shall be deemed to have been given, served, and received if given in writing and either personally delivered or deposited in the United States mail, registered or certified mail, postage prepaid, return receipt required, or sent by overnight delivery service, or facsimile or email,

addressed as follows:

District	**Contractor**
Downey Unified School District ATTN: Darren Purseglove 11627 Brookshire Ave. Downey, CA 90241 [FAX] (562) 469-6536 EMAIL: dpurseglove@dusd.net	Name: _____ ATTN: _____ [ADDRESS] [FAX] [EMAIL]

Any notice personally given or sent by facsimile or email shall be effective upon receipt. Any notice sent by overnight delivery service shall be effective the business day next following delivery to the overnight delivery service. Any notice given by mail shall be effective three (3) days after deposit in the United States mail.

12. Contractor shall guarantee all labor and material used in the performance of this Contract for a period of one (1) year from the date of the District's written approval of the Work.

13. Each party has the full power and authority to enter into and perform this Contract, and the person signing this Contract on behalf of each party has been properly authority and empowered to enter into this Contract.

14. By signing this Contract, Contractor certifies, under penalty of perjury, that all the information provided in the Contract Documents is true, complete, and correct.

ACCEPTED AND AGREED on the date indicated below:

Dated: _____, 20___

DOWNEY UNIFIED SCHOOL DISTRICT

Signature: _____

Print Name: Christina Aragon

Print Title: Associate Superintendent

Address: 11627 Brookshire Avenue
Downey, CA 90241

Telephone: (562) 469-6533

Facsimile: (562) 469-6536

E-Mail: djimenez@dusd.net

Dated: _____, 20___

Contractor: _____

Signature: _____

Print Name: _____

Print Title: _____

License No.: _____

Registration No.: _____

Address: _____

Telephone: _____

Facsimile: _____

E-Mail: _____

[REMAINDER OF PAGE INTENTIONALLY BLANK; INFORMATION REGARDING CONTRACTOR FOLLOWS]

Information regarding Contractor:

Type of Business Entity:
_____ Individual
_____ Sole Proprietorship
_____ Partnership
_____ Limited Partnership
_____ Corporation, State: _____
_____ Limited Liability Company
_____ Other: _____

_____:
Employer Identification and/or
Social Security Number

NOTE: Section 6041 of the Internal Revenue Code (26 U.S.C. 6041) and Section 1.6041-1 of Title 26 of the Code of Federal Regulations (26 C.F.R. 1.6041-1) requires the recipients of $600.00 or more to furnish their taxpayer information to the payer. In order to comply with these requirements, the District requires the Contractor to furnish the information requested in this section.

[REMAINDER OF PAGE INTENTIONALLY BLANK; TERMS AND CONDITIONS FOLLOW]

TERMS AND CONDITIONS TO AGREEMENT

1. **NOTICE TO PROCEED:** District shall provide a Notice to Proceed to Contractor pursuant to the Contract at which time Contractor shall proceed with the Work.
2. **STANDARD OF CARE:** Contractor shall perform, diligently prosecute and complete the Work in a good and workmanlike manner within the Contract Time, and in strict conformity with all Contract Documents.
3. **SITE EXAMINATION:** Contractor has examined the Site and certifies that it accepts all measurements, specifications and conditions affecting the Work to be performed at the Site. By submitting its quote, Contractor warrants that it has made all Site examination(s) that it deems necessary as to the condition of the Site, its accessibility for materials, workers and utilities, and Contractor's ability to protect existing surface and subsurface improvements. No claim for allowance of time or money will be allowed as to any other undiscovered condition on the Site.
4. **PERMITS, LICENSES AND REGISTRATION:** Contractor and all of its employees, agents, and subcontractors shall secure and maintain in force, at Contractor's sole cost and expense, all licenses, registration and permits as are required by law, in connection with the furnishing of materials, supplies, or services herein listed.
5. **PROJECT INSPECTION CARD:** Contractor shall verify that forms DSA 152 Project Inspection Card (or current version) are issued for the Project prior to commencement of construction.
6. **NOTIFICATION:** Contractor shall notify the Architect and Project Inspector, in writing, of the commencement and completion of construction of each and every aspect of the work at least 48 hours in advance by submitting form DSA 156 (or current version) to the Project Inspector. Forms are available on the DSA's website at: http://www.dgs.ca.gov/dsa/Forms.aspx.
7. **LABOR, MATERIALS AND EQUIPMENT:** Contractor shall furnish all tools, equipment, apparatus, facilities, transportation, labor, and material necessary to furnish the services herein described, the services to be performed at such times and places as directed by and subject to the approval of the authorized District representative indicated in the Work specifications attached hereto. Unless otherwise specified, all materials shall be new and previously unused, and of the manufacturer's latest model or the best of their respective kinds and grades as noted or specified, and workmanship shall be of good quality.
8. **SUBSTITUTIONS:** No substitutions of material from those specified in the Work Specifications shall be made without the prior written approval of the District. Contractor shall be responsible for any re-design costs occasioned by District's acceptance and/or approval of any substitute, as well as any costs that the District incurs for professional services, including DSA fees. District may deduct those costs from any amounts owing to Contractor for the review of the request for substitution, even if the request for substitution is not approved. Contractor shall, in the event that a substitute is less costly than that specified, credit the District with one-hundred percent (100%) of the net difference between the substitute and the originally specified material.
9. **INDEPENDENT CONTRACTOR STATUS:** While engaged in carrying out the Services of this Contract, the Contractor is an independent contractor, and not an officer, employee, agent, partner, or joint venture of the District. Contractor shall be solely responsible for its own Workers' Compensation insurance, taxes, and other similar charges or obligations. Contractor shall be liable for its own actions, including its negligence or gross negligence, and shall be liable for the acts, omissions, or errors of its agents or employees.
10. **CONTRACTOR SUPERVISION:** Contractor shall provide competent supervision of personnel employed on the job Site, use of equipment, and quality of workmanship.
11. **WORKERS:** Contractor shall at all times enforce strict discipline and good order among its employees and the employees of its subcontractors and shall not employ or work any unfit person or anyone not skilled in work assigned to him or her. Any person in the employ of the Contractor or a subcontractor whom the District may deem incompetent or unfit shall be dismissed from the Site and shall not again be employed at Site without written consent from the District.
12. **SUBCONTRACTORS:** Subcontractors, if any, engaged by the Contractor for any Service or Work under this Contract shall be subject to the approval of the District. Contractor agrees to bind every subcontractor by the terms of the Contract as far as such terms are applicable to

subcontractor's work, including, without limitation, all registration, indemnification, insurance, bond, and warranty requirements. If Contractor shall subcontract any part of this Contract, Contractor shall be fully responsible to the District for acts and omissions of its subcontractor and of persons either directly or indirectly employed by itself. Nothing contained in the Contract Documents shall create any contractual relations between any subcontractor and the District.

13. **SAFETY AND SECURITY:** Contractor is responsible for maintaining safety in the performance of this Contract. Contractor shall be responsible to ascertain from the District the rules and regulations pertaining to safety, security, and driving on school grounds, particularly when children are present.
14. **TRENCH SHORING:** If this Contract is in excess of $25,000 and is for the excavation of any trench deeper than five (5) feet, Contractor must submit and obtain District acceptance, in advance of excavation, of a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of such trench or trenches. If the plan varies from the shoring system standards, the plan shall be prepared by a registered civil or structural engineer.
15. **EXCAVATIONS OVER FOUR FEET**: If this Contract includes excavations over four (4) feet, Contractor shall promptly, and before the following conditions are disturbed, notify the District, in writing, of any: (1) Material that the Contractor believes may be material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law; (2) Subsurface or latent physical conditions at the site differing from those indicated; or (3) Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract. The District shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of the Work shall issue a change order under the procedures described in the Contract. In the event that a dispute arises between the District and the Contractor whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the work, the Contractor shall not be excused from any scheduled completion date provided for by the contract, but shall proceed with all Work to be performed under the contract. The Contractor shall retain any and all rights provided either by Contract or by law which pertain to the resolution of disputes and protests between the contracting parties.
16. **LEAD-BASED PAINT:** Pursuant to the Lead-Safe Schools Protection Act (Education Code section 32240 et seq.) and other applicable law, no lead-based paint, lead plumbing and solders, or other potential sources of lead contamination shall be utilized on this Project, and only trained and state-certified contractors, inspectors and workers shall undertake any action to abate existing risk factors for lead. Pursuant to the Renovation, Repair and Painting Rule (title 40 of the Code of Federal Regulations part 745 (40 CFR 745)), all contractors who disturb lead-based paint in a six-square-foot area or greater indoors or a 20-square-foot area or greater outdoors must be trained by an EPA-accredited provider and certified by the EPA. Contractor must execute the Lead-Based Paint Certification, if applicable.
17. **STORM WATER PERMIT FOR CONSTRUCTION ACTIVITY:** Contractor shall comply with any Storm Water Pollution Prevention Plan ("SWPPP") that is approved by the District and applicable to the Project, at no additional cost to the District.
18. **CLEAN UP:** Debris shall be removed from the Site. The Site shall be in order at all times when work is not actually being performed and shall be maintained in a reasonably clean condition.
19. **PROTECTION OF WORK AND PROPERTY:** Contractor shall erect and properly maintain at all times, as required by conditions and progress of the Work, all necessary safeguards, signs, barriers, lights, and security persons for protection of workers and the public, and shall post danger signs warning against hazards created by the Work. In an emergency affecting life and safety of life or of Work or of adjoining property, Contractor, without special instruction or authorization from District, is permitted to act at his discretion to prevent such threatened loss or injury.
20. **FORCE MAJEURE:** The Contractor shall be excused from performance hereunder during the time and to the extent that it is prevented from obtaining delivery, or performing by act of God, fire,

strike, loss, or shortage of transportation facilities, lock-out, commandeering of materials, products, plants, or facilities by the government, when satisfactory evidence thereof is presented to the District, provided that it is satisfactorily established that the non-performance is not due to the fault or neglect of the Contractor.

21. **CORRECTION OF ERRORS:** Contractor shall perform, at its own cost and expense and without reimbursement from the District, any work necessary to correct errors or omissions which are caused by the Contractor's failure to comply with the standard of care required herein.
22. **DISTRICT'S RIGHT TO PERFORM WORK:** If the Contractor should neglect to prosecute the Work properly or fail to perform any provisions of this Contract, the District, after **FORTY-EIGHT (48)** hours' written notice to the Contractor, may make good such deficiencies, without prejudice to any other remedy it may have, including but not limited to the District hiring its own forces or another contractor to replace the Contractor's nonconforming Work, in which case the District shall either issue a deductive Change Order, a Construction Change Directive, or invoice the Contractor for the cost of that work. Contractor shall pay any invoices within thirty (30) days of receipt of same or District may withhold those amounts from payment(s) to Contractor.
23. **ACCESS TO WORK:** District representatives, Architect, and Project Inspector shall at all times have access to the Work wherever it is in preparation or in progress. Contractor shall provide safe and proper facilities for such access.
24. **OCCUPANCY:** District reserves the right to occupy buildings at any time before formal Contract completion and such occupancy shall not constitute final acceptance or approval of any part of the Work covered by this Contract, nor shall such occupancy extend the date specified for completion of the Work.
25. **PAYMENT:** On a monthly basis, Contractor shall submit an application for payment based upon the estimated value for materials delivered or services performed under the Contract as of the date of submission ("Application for Payment"). Within thirty (30) days after District's approval of the Application for Payment, Contractor shall be paid a sum equal to ninety-five percent (95%) of the value of the Work performed (as verified by Architect and Inspector and certified by Contractor) up to the last day of the previous month, less the aggregate of previous payments and amount to be withheld. The District may withhold or deduct from any payment an amount necessary to protect the District from loss because of: (1) liquidated damages which have accrued as of the date of the application for payment; (2) any sums expended by the District in performing any of Contractor's obligations under the Contract which Contractor has failed to perform or has performed inadequately; (3) defective Work not remedied; (4) stop payment notices as allowed by state law; (5) reasonable doubt that the Work can be completed for the unpaid balance of the Total Contract price or by the scheduled completion date; (6) unsatisfactory prosecution of the Work by Contractor; (7) unauthorized deviations from the Contract; (8) failure of the Contractor to maintain or submit on a timely basis proper and sufficient documentation as required by the Contract or by District during the prosecution of the Work; (9) erroneous or false estimates by the Contractor of the value of the Work performed; (10) any sums representing expenses, losses, or damages, as determined by the District, incurred by the District for which Contractor is liable under the Contract; and (11) any other sums which the District is entitled to recover from Contractor under the terms of the Contract or pursuant to state law, including section 1727 of the California Labor Code. The failure by the District to deduct any of these sums from a progress payment shall not constitute a waiver of the District's right to such sums. The District shall retain five percent (5%) from all amounts owing as retention. Retention shall be paid pursuant to Public Contract Code sections 7107, 7200 and 7201.
26. **CHANGE IN SCOPE OF WORK:** Any change in the scope of the Work, method of performance, nature of materials or price thereof, or any other matter materially affecting the performance or nature of the Work shall not be paid for or accepted unless such change, addition, or deletion is approved in advance and in writing by a valid change order executed by the District. Contractor specifically understands, acknowledges, and agrees that the District shall have the right to request any alterations, deviations, reductions, or additions to the Project or Work, and the cost thereof shall be added to or deducted from the amount of the Contract Price by fair and reasonable valuations. Contractor also agrees to provide the District with all information requested to substantiate the cost of the change order and to inform the District whether the Work will be done by the Contractor or a subcontractor. In addition to any other information requested, Contractor shall submit, prior to approval of the change order, its request for a time extension (if any), as

well as all information necessary to substantiate its belief that such change will delay the completion of the Work. If Contractor fails to submit its request for a time extension or the necessary supporting information, it shall be deemed to have waived its right to request such extension.

27. **INDEMNIFICATION:**

27.1 To the furthest extent permitted by California law, Contractor shall indemnify and hold harmless the District, its agents, representatives, officers, consultants, employees, and volunteers (the "Indemnified Parties") from any and all demands, losses, liabilities, claims, suits, injury, expenses, and actions (the "Claims") of any kind, nature, and description, including, but not limited to, attorneys' fees and costs, directly or indirectly arising from, arising out of, connected with, or resulting from, in whole or in part, the performance of this Contract. However, the Contractor's indemnification and hold harmless obligation shall be reduced by the proportion of the Indemnified Parties' liability to the extent the Claims are caused by the sole or active negligence or willful misconduct of the Indemnified Parties, as found by a court or arbitrator of competent jurisdiction.

27.2 To the furthest extent permitted by California law, Contractor shall also defend the Indemnified Parties at Contractor's own expense, including attorneys' fees and costs, from any and all Claims directly or indirectly arising from, arising out of, connected with, or resulting from the performance of this Contract. However, the Contractor's defense obligation shall be reduced by the proportion of the Indemnified Parties' liability to the extent the Claims are caused by the sole or active negligence or willful misconduct of the Indemnified Parties, as found by a court or arbitrator of competent jurisdiction. The District shall have the right to accept or reject any legal representation that Contractor proposes to defend the District.

27.3 Pursuant to Public Contract Code section 9201, the District shall provide timely notification to Contractor of the receipt of any third-party claim relating to this Contract. The District shall be entitled to recover its reasonable costs incurred in providing said notification.

27.4 The District may retain so much of the moneys due the Contractor as shall be considered necessary, until disposition of any such suit, claims until the District has received written agreement from the Contractor that it will unconditionally defend the Indemnified Parties, and pay any damages due by reason of settlement or judgment.

27.5 The Contractor's defense and indemnification obligations hereunder shall survive the completion of Work, the warranty/guarantee period, and the termination of the Contract.

28. **PAYMENT BOND AND PERFORMANCE BOND:** Contractor shall not commence the Work until it has provided to the District, in a form acceptable to the District, a Payment (Labor and Material) Bond and a Performance Bond, each in an amount equivalent to one hundred percent (100%) of the Contract Price issued by a surety admitted to issue bonds in the State of California and otherwise acceptable to the District.

29. **CONTRACTOR'S INSURANCE:**

29.1 The Contractor shall procure and maintain at all times it performs any portion of the Services the following insurance with minimum limits equal to the amount indicated below.

Type of Coverage	**Minimum Requirement**
Commercial General Liability Insurance, including Bodily Injury, Personal Injury, Property Damage, Advertising Injury, and Medical Payments	
Each Occurrence	$ 2,000,000
General Aggregate	$ 4,000,000
Automobile Liability Insurance - Any Auto	
Combined Single Limit	$ 1,000,000
Workers' Compensation	Statutory Limits
Employer's Liability	$ 1,000,000

29.2 **Commercial General Liability and Automobile Liability Insurance**. Commercial General Liability Insurance and Automobile Liability Insurance (covering owned, non-owned, and hired automobiles) that shall protect the Contractor, the District, and the State from all claims of bodily injury, property damage, personal injury, death, advertising injury, and medical payments arising performing any portion of the Services. (Form CG 0001 and CA 0001, or forms substantially similar, if approved by the District.)

29.3 **Workers' Compensation and Employers' Liability Insurance**. Workers' Compensation Insurance and Employers' Liability Insurance for all of its employees performing any portion of the Services. In accordance with provisions of section 3700 of the California Labor Code, the Contractor shall be required to secure workers' compensation coverage for its employees. If any class of employee or employees engaged in performing any portion of the Services under this Contract are not protected under the Workers' Compensation Statute, adequate insurance coverage for the protection of any employee(s) not otherwise protected must be obtained before any of those employee(s) commence performing any portion of the Services.

29.4 **Proof of Insurance**. The Contractor shall not commence performing any portion of the Services until all required insurance has been obtained and certificates indicating the required coverage have been delivered in duplicate to the District and approved by the District. Certificates and insurance policies shall include the following:

29.4.1 A clause stating the following, or other language acceptable to the District: "This policy shall not be canceled until notice has been mailed to the District, stating date of cancellation. Date of cancellation shall not be less than thirty (30) days after date of mailing notice."

29.4.2 Language stating in particular those insured, extent of insurance, location and operation to which insurance applies, expiration date, to whom cancellation notice will be sent, and length of notice period.

29.4.3 An endorsement stating that the District and its Governing Board, agents, representatives, employees, trustees, officers, consultants, and volunteers are named additional insured under all policies except Workers' Compensation Insurance, and Employers' Liability Insurance. An endorsement shall also state that Contractor's insurance policies shall be primary to any insurance or self-insurance maintained by District. An endorsement shall also state that there shall be a waiver of any subrogation.

29.4.4 All policies except the Workers' Compensation Insurance, and Employers' Liability Insurance Policies shall be written on an occurrence form.

29.5 **Acceptability of Insurers**. Insurance is to be placed with insurers with a current A.M. Best's rating of no less than A:VII, unless otherwise acceptable to the District.

30. **WARRANTY/QUALITY:** Unless a longer warranty is called for elsewhere in the Contract Documents, the Contractor, manufacturer, or their assigned agents shall guarantee the workmanship, product or service performed against defective workmanship, defects or failures of materials for a minimum period of one (1) year from filing the Notice of Completion with the county in which the Site is located. All workmanship and merchandise must be warranted to be in compliance with applicable California energy, conservation, environmental, and educational standards.

31. **CONFIDENTIALITY:** The Contractor shall maintain the confidentiality of all information, documents, programs, procedures, and all other items that Contractor encounters while performing the Contractor's Work to the extent allowed by law. This requirement shall be ongoing and shall survive the expiration or termination of this Contract and specifically includes all student, parent, and disciplinary information.

32. **LIMITATION OF DISTRICT LIABILITY:** District's financial obligations under this Contract shall be limited to the payment of the compensation provided in this Contract. Notwithstanding any other provision of this Contract, in no event shall District be liable, regardless of whether any claim is based on contract or tort, for any special, consequential, indirect or incidental damages,

including, but not limited to, lost profits or revenue, arising out of or in connection with this Contract for the services performed in connection with this Contract.

33. **COMPLIANCE WITH LAWS:** Contractor shall give all notices and comply with all laws, ordinance, rules and regulations bearing on conduct of the Work as indicated or specified. If Contractor observes that any of the Work required by this Contract is at variance with any such laws, ordinance, rules or regulations, Contractor shall notify the District, in writing, and, at the sole option of the District, any necessary changes to the scope of the Work shall be made and this Contract shall be appropriately amended in writing, or this Contract shall be terminated effective upon Contractor's receipt of a written termination notice from the District. If Contractor performs any work that is in violation of any laws, ordinances, rules or regulations, without first notifying the District of the violation, Contractor shall bear all costs arising therefrom.
34. **LABOR CODE REQUIREMENTS:** The Contractor shall comply with all applicable provisions of the California Labor Code, Division 3, Part 7, Chapter 1, Articles 1 – 5, including, without limitation, the payment of the general prevailing per diem wage rates for public work projects of more than one thousand dollars ($1,000). Copies of the prevailing rate of per diem wages are on file with the District or available online at http://www.dir.ca.gov/. In addition, the Contractor and each subcontractor shall comply with Chapter 1 of Division 2, Part 7 of the California Labor Code, beginning with Section 1720, and including Section 1735, 1777.5 and 1777.6, forbidding discrimination, and Sections 1776, 1777.5 and 1777.6 concerning the employment of apprentices by Contractor or subcontractors. Willful failure to comply may result in penalties, including loss of the right to bid on or receive public works contracts.

    34.1 **Registration**: Contractor and its subcontractor(s) shall be registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 and in accordance with Labor Code section 1771.1.

        34.1.1 **Registered Subcontractor List**: Within 30 days of the award of contract or prior to commencing the Work under this Contract, whichever occurs first, Contractor shall provide District all information required by Labor Code section 1773.3, as amended by Stats. 2017, Ch. 28, Sec. 21, for Company and all tiers of Subcontractors to enable District to provide notice to the Department of Industrial Relations (DIR) of the Contract (PWC-100 form). Contractor shall submit and maintain an updated Registered Subcontractor List including all Subcontractors of any tier furnishing labor, material, or equipment to the Project.

    34.2 **Certified Payroll Records**: Contractor and its subcontractor(s) shall upload certified payroll records ("CPR") electronically using California Department of Industrial Relations' (DIR) eCPR System by uploading the CPRs by electronic XML file or entering each record manually using the DIR's iform (or current form) online on a weekly basis and within ten (10) days of any request by the District or Labor Commissioner at http://www.dir.ca.gov/Public-Works/Certified-Payroll-Reporting.html or current application and URL, showing the name, address, social security number, work classification, straight time, and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed by the Contractor and/or each subcontractor in connection with the Work.

    34.3 **Labor Compliance**: Contractor shall perform the Work of the Project while complying with all the applicable regulations, including section 16000, et seq., of Title 8 of the California Code of Regulations and is subject to labor compliance monitoring and enforcement by the Department of Industrial Relations.

35. **ANTI-DISCRIMINATION:** It is the policy of the District that in connection with all work performed under Contracts there be no discrimination against any employee engaged in the work because of race, color, ancestry, national origin, religious creed, physical disability, medical condition, marital status, sexual orientation, gender, or age and therefore the Contractor agrees to comply with applicable Federal and California laws including, but not limited to the California Fair Employment Practice Act beginning with Government Code Section 12900 and Labor Code Section 1735. In addition, the Contractor agrees to require like compliance by all its subcontractor(s).
36. **ANTI-TRUST CLAIM:** Contractor and its subcontractor(s) agree to assign to the District all rights, title, and interest in and to all causes of action they may have under Section 4 of the Clayton Act

(15 U.S.C. Sec. 15) or under the Cartwright Act (Chapter 2 (commencing with Section 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services, or materials pursuant to the Contract or a subcontract. This assignment shall be made and become effective at the time the District tenders final payment to the Contractor, without further acknowledgment by the parties.

37. **CONTRACTOR CLAIMS:** In the event of any demand by Contractor for (A) a time extension, including, without limitation, for relief from damages or penalties for delay assessed by the District under the Contract, (B) payment by the District of money or damages arising from work done by, or on behalf of, the Contractor pursuant to the Contract and payment of which is not otherwise expressly provided for or to which Contractor is not otherwise entitled to, or (C) an amount of payment disputed by the District, the parties shall attempt to resolve the dispute by those procedures set forth in Public Contract Code section 9204 and/or Article 1.5 (commencing with section 20104) of Chapter 1, Part, 3, Division 2, of the Public Contract Code, if applicable, the provisions of which are each attached hereto and incorporated herein by this reference. If a claim, or any portion thereof, remains in dispute upon satisfaction of all applicable dispute resolution requirements, the Contractor shall comply with all claims presentation requirements as provided in Chapter 1 (commencing with section 900) and Chapter 2 (commencing with section 910) of Part 3 of Division 3.6 of Title 1 of Government Code as a condition precedent to the Contractor's right to bring a civil action against the District. For purposes of those provisions, the running of the time within which a claim must be presented to the District shall be tolled from the time the Contractor submits its written claim until the time the claim is denied, including any time utilized by any applicable meet and confer process. Pending resolution of the dispute, Contractor and its subcontractors shall continue to perform the Work under the Contract and shall not cause a delay of the Work during any dispute, claim, negotiation, mediation, or arbitration proceeding, except by written agreement of the District.
38. **ATTORNEY FEES/COSTS:** Should litigation be necessary to enforce any terms or provisions of this Contract, then each party shall bear its own litigation and collection expenses, witness fees, court costs and attorney's fees.
39. **TERMINATION:** If Contractor fails to perform the Services and Contractor's duties to the satisfaction of the District, or if Contractor fails to fulfill in a timely and professional manner Contractor's obligations under this Contract, or if Contractor violates any of the terms or provisions of this Contract, District shall have the right to terminate this Contract effective immediately upon the District giving written notice thereof to the Contractor. The Contractor and its performance bond surety, if any, shall be liable for all damages caused to the District by reason of the Contractor's failure to perform and complete the Contract. District shall also have the right in its sole discretion to terminate the Contract for its own convenience upon District giving three (3) days' written notice thereof to the Contractor. In case of a termination for convenience, Contractor shall be paid for the actual cost for labor, materials, and services performed that is unpaid and can be documented through timesheets, invoices, receipts, or otherwise, and five percent (5%) of the total cost of Work performed as of the date of termination, or five percent (5%) of the value of the Work yet to be performed, whichever is less. This five percent (5%) shall be full compensation for all of Contractor's and its subcontractor(s)' mobilization and/or demobilization costs and any anticipated loss profits resulting from termination of the Contractor for convenience. Termination shall have no effect upon any of the rights and obligations of the parties arising out of any transaction occurring prior to the effective date of termination.
40. **ASSIGNMENT OF CONTRACT:** Contractor shall not assign or transfer in any way any or all of its rights, burdens, duties, or obligations under this Contract without the prior written consent of the District.
41. **TIME IS OF THE ESSENCE:** Time is of the essence in the performance of and compliance with each of the provisions and conditions of this Contract.
42. **CALCULATION OF TIME:** For the purposes of this Contract, "days" refers to calendar days unless otherwise specified.
43. **GOVERNING LAW:** This Contract shall be governed by and construed in accordance with the laws of the State of California with venue of any action in a County in which the District administration office is located.

44. **BINDING CONTRACT:** This Contract shall be binding upon the parties hereto and upon their successors and assigns, and shall inure to the benefit of said parties and their successors and assigns.
45. **DISTRICT WAIVER:** District's waiver of any term, condition, covenant or waiver of a breach of any term, condition or covenant shall not constitute the waiver of any other term, condition or covenant or the waiver of a breach of any other term, condition or covenant.
46. **CAPTIONS AND INTERPRETATIONS:** Paragraph headings in this Contract are used solely for convenience, and shall be wholly disregarded in the construction of this Contract. No provision of this Contract shall be interpreted for or against a party because that party or its legal representative drafted such provision, and this Contract shall be construed as if jointly prepared by the parties.
47. **INVALID TERM:** If any provision of this Contract is declared or determined by any court of competent jurisdiction to be illegal, invalid or unenforceable, the legality, validity or enforceability of the remaining parts, terms and provisions shall not be affected thereby, and said illegal, unenforceable or invalid part, term or provision will be deemed not to be a part of this Contract.
48. **PROVISIONS REQUIRED BY LAW DEEMED INSERTED:** Each and every provision of law and clause required by law 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 therein.
49. **ENTIRE CONTRACT:** This Contract sets forth the entire agreement between the parties hereto and fully supersedes any and all prior agreements, understandings, written or oral, between the parties hereto pertaining to the subject matter thereof.
50. **NO ORAL MODIFICATIONS:** No oral agreement or conversation with any officer, agent, or employee of District, either before or after execution of Contract, shall affect or modify any of the terms or obligations contained in any of the documents comprising the Contract.

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Public Contract Code section 9204

(a) The Legislature finds and declares that it is in the best interests of the state and its citizens to ensure that all construction business performed on a public works project in the state that is complete and not in dispute is paid in full and in a timely manner.

(b) Notwithstanding any other law, including, but not limited to, Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2, Chapter 10 (commencing with Section 19100) of Part 2, and Article 1.5 (commencing with Section 20104) of Chapter 1 of Part 3, this section shall apply to any claim by a contractor in connection with a public works project.

(c) For purposes of this section:

(1) "Claim" means a separate demand by a contractor sent by registered mail or certified mail with return receipt requested, for one or more of the following:

(A) A time extension, including, without limitation, for relief from damages or penalties for delay assessed by a public entity under a contract for a public works project.

(B) Payment by the public entity of money or damages arising from work done by, or on behalf of, the contractor pursuant to the contract for a public works project and payment for which is not otherwise expressly provided or to which the claimant is not otherwise entitled.

(C) Payment of an amount that is disputed by the public entity.

(2) "Contractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who has entered into a direct contract with a public entity for a public works project.

(3) (A) "Public entity" means, without limitation, except as provided in subparagraph (B), a state agency, department, office, division, bureau, board, or commission, the California State University, the University of California, a city, including a charter city, county, including a charter county, city and county, including a charter city and county, district, special district, public authority, political subdivision, public corporation, or nonprofit transit corporation wholly owned by a public agency and formed to carry out the purposes of the public agency.

(B) "Public entity" shall not include the following:

(i) The Department of Water Resources as to any project under the jurisdiction of that department.

(ii) The Department of Transportation as to any project under the jurisdiction of that department.

(iii) The Department of Parks and Recreation as to any project under the jurisdiction of that department.

(iv) The Department of Corrections and Rehabilitation with respect to any project under its jurisdiction pursuant to Chapter 11 (commencing with Section 7000) of Title 7 of Part 3 of the Penal Code.

(v) The Military Department as to any project under the jurisdiction of that department.

(vi) The Department of General Services as to all other projects.

(vii) The High-Speed Rail Authority.

(4) "Public works project" means the erection, construction, alteration, repair, or improvement of any public structure, building, road, or other public improvement of any kind.

(5) "Subcontractor" means any type of contractor within the meaning of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code who either is in direct contract with a contractor or is a lower tier subcontractor.

(d) (1) (A) Upon receipt of a claim pursuant to this section, the public entity to which the claim applies shall conduct a reasonable review of the claim and, within a period not to exceed 45 days, shall provide the claimant a written statement identifying what portion of the claim is disputed and what portion is undisputed. Upon receipt of a claim, a public entity and a contractor may, by mutual agreement, extend the time period provided in this subdivision.

(B) The claimant shall furnish reasonable documentation to support the claim.

(C) If the public entity needs approval from its governing body to provide the claimant a written statement identifying the disputed portion and the undisputed portion of the claim, and the governing body does not meet within the 45 days or within the mutually agreed to extension of time following receipt of a claim sent by registered mail or certified mail, return receipt requested, the public entity shall have up to three days following the next duly publicly noticed meeting of the governing body after the 45-day period, or extension, expires to provide the claimant a written statement identifying the disputed portion and the undisputed portion.

(D) Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the

public entity issues its written statement. If the public entity fails to issue a written statement, paragraph (3) shall apply.

(2) (A) If the claimant disputes the public entity's written response, or if the public entity fails to respond to a claim issued pursuant to this section within the time prescribed, the claimant may demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand in writing sent by registered mail or certified mail, return receipt requested, the public entity shall schedule a meet and confer conference within 30 days for settlement of the dispute.

(B) Within 10 business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the public entity shall provide the claimant a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the public entity issues its written statement. Any disputed portion of the claim, as identified by the contractor in writing, shall be submitted to nonbinding mediation, with the public entity and the claimant sharing the associated costs equally. The public entity and claimant shall mutually agree to a mediator within 10 business days after the disputed portion of the claim has been identified in writing. If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator. If mediation is unsuccessful, the parts of the claim remaining in dispute shall be subject to applicable procedures outside this section.

(C) For purposes of this section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.

(D) Unless otherwise agreed to by the public entity and the contractor in writing, the mediation conducted pursuant to this section shall excuse any further obligation under Section 20104.4 to mediate after litigation has been commenced.

(E) This section does not preclude a public entity from requiring arbitration of disputes under private arbitration or the Public Works Contract Arbitration Program, if mediation under this section does not resolve the parties' dispute.

(3) Failure by the public entity to respond to a claim from a contractor within the time periods described in this subdivision or to otherwise meet the time requirements of this section shall result in the claim being deemed rejected in its entirety. A claim that is denied by reason of the public entity's failure to have responded to a claim, or its failure to otherwise meet the time requirements of this section, shall not constitute an adverse finding with regard to the merits of the claim or the responsibility or qualifications of the claimant.

(4) Amounts not paid in a timely manner as required by this section shall bear interest at 7 percent per annum.

(5) If a subcontractor or a lower tier subcontractor lacks legal standing to assert a claim against a public entity because privity of contract does not exist, the contractor may present to the public entity a claim on behalf of a subcontractor or lower tier subcontractor. A subcontractor may request in writing, either on his or her own behalf or on behalf of a lower tier subcontractor, that the contractor present a claim for work which was performed by the subcontractor or by a lower tier subcontractor on behalf of the subcontractor. The subcontractor requesting that the claim be presented to the public entity shall furnish reasonable documentation to support the claim. Within 45 days of receipt of this written request, the contractor shall notify the subcontractor in writing as to whether the contractor presented the claim to the public entity and, if the original contractor did not present the claim, provide the subcontractor with a statement of the reasons for not having done so.

(e) The text of this section or a summary of it shall be set forth in the plans or specifications for any public works project that may give rise to a claim under this section.

(f) A waiver of the rights granted by this section is void and contrary to public policy, provided, however, that (1) upon receipt of a claim, the parties may mutually agree to waive, in writing, mediation and proceed directly to the commencement of a civil action or binding arbitration, as applicable; and (2) a public entity may prescribe reasonable change order, claim, and dispute resolution procedures and requirements in addition to the provisions of this section, so long as the contractual provisions do not conflict with or otherwise impair the timeframes and procedures set forth in this section.

(g) This section applies to contracts entered into on or after January 1, 2017.

(h) Nothing in this section shall impose liability upon a public entity that makes loans or grants available through a competitive application process, for the failure of an awardee to meet its contractual obligations.

(i) This section shall remain in effect only until January 1, 2020, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2020, deletes or extends that date.

Public Contract Code sections 20104 – 20104.6

§ 20104.

(a) (1) This article applies to all public works claims of three hundred seventy-five thousand dollars ($375,000) or less which arise between a contractor and a local agency.

(2) This article shall not apply to any claims resulting from a contract between a contractor and a public agency when the public agency has elected to resolve any disputes pursuant to Article 7.1 (commencing with Section 10240) of Chapter 1 of Part 2.

(b) (1) "Public work" means "public works contract" as defined in Section 1101 but does not include any work or improvement contracted for by the state or the Regents of the University of California.

(2) "Claim" means a separate demand by the contractor for (A) a time extension, (B) payment of money or damages arising from work done by, or on behalf of, the contractor pursuant to the contract for a public work and payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled to, or (C) an amount the payment of which is disputed by the local agency.

(c) The provisions of this article or a summary thereof shall be set forth in the plans or specifications for any work which may give rise to a claim under this article.

(d) This article applies only to contracts entered into on or after January 1, 1991.

§ 20104.2.

For any claim subject to this article, the following requirements apply:

(a) The claim shall be in writing and include the documents necessary to substantiate the claim. Claims must be filed on or before the date of final payment. Nothing in this subdivision is intended to extend the time limit or supersede notice requirements otherwise provided by contract for the filing of claims.

(b) (1) For claims of less than fifty thousand dollars ($50,000), the local agency shall respond in writing to any written claim within 45 days of receipt of the claim, or may request, in writing, within 30 days of receipt of the claim, any additional documentation supporting the claim or relating to defenses to the claim the local agency may have against the claimant.

(2) If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the local agency and the claimant.

(3) The local agency's written response to the claim, as further documented, shall be submitted to the claimant within 15 days after receipt of the further documentation or within a period of time no greater than that taken by the claimant in producing the additional information, whichever is greater.

(c) (1) For claims of over fifty thousand dollars ($50,000) and less than or equal to three hundred seventy-five thousand dollars ($375,000), the local agency shall respond in writing to all written claims within 60 days of receipt of the claim, or may request, in writing, within 30 days of receipt of the claim, any additional documentation supporting the claim or relating to defenses to the claim the local agency may have against the claimant.

(2) If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of the local agency and the claimant.

(3) The local agency's written response to the claim, as further documented, shall be submitted to the claimant within 30 days after receipt of the further documentation, or within a period of time no greater than that taken by the claimant in producing the additional information or requested documentation, whichever is greater.

(d) If the claimant disputes the local agency's written response, or the local agency fails to respond within the time prescribed, the claimant may so notify the local agency, in writing, either within 15 days of receipt of the local agency's response or within 15 days of the local agency's failure to respond within the time prescribed, respectively, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon a demand, the local agency shall schedule a meet and confer conference within 30 days for settlement of the dispute.

(e) Following the meet and confer conference, if the claim or any portion remains in dispute, the claimant may file a claim as provided in Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code. For purposes of those provisions, the running of the period of time within which a claim must be filed shall be tolled from the time the claimant submits his or her written claim pursuant to subdivision (a) until the time that claim is denied as a result of the meet and confer process, including any period of time utilized by the meet and confer process.

(f) This article does not apply to tort claims and nothing in this article is intended nor shall be construed to change the time periods for filing tort claims or actions specified by Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code.

§ 20104.4.

The following procedures are established for all civil actions filed to resolve claims subject to this article:

(a) Within 60 days, but no earlier than 30 days, following the filing or responsive pleadings, the court shall submit the matter to nonbinding mediation unless waived by mutual stipulation of both parties. The mediation process shall provide for the selection within 15 days by both parties of a disinterested third person as mediator, shall be commenced within 30 days of the submittal, and shall be concluded within 15 days from the commencement of the mediation unless a time requirement is extended upon a good cause showing to the court or by stipulation of both parties. If the parties fail to select a mediator within the 15-day period, any party may petition the court to appoint the mediator.

(b) (1) If the matter remains in dispute, the case shall be submitted to judicial arbitration pursuant to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, notwithstanding Section 1141.11 of that code. The Civil Discovery Act (Title 4 (commencing with Section 2016.010) of Part 4 of the Code of Civil Procedure) shall apply to any proceeding brought under this subdivision consistent with the rules pertaining to judicial arbitration.

(2) Notwithstanding any other provision of law, upon stipulation of the parties, arbitrators appointed for purposes of this article shall be experienced in construction law, and, upon stipulation of the parties, mediators and arbitrators shall be paid necessary and reasonable hourly rates of pay not to exceed their customary rate, and such fees and expenses shall be paid equally by the parties, except in the case of arbitration where the arbitrator, for good cause, determines a different division. In no event shall these fees or expenses be paid by state or county funds.

(3) In addition to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, any party who after receiving an arbitration award requests a trial de novo but does not obtain a more favorable judgment shall, in addition to payment of costs and fees under that chapter, pay the attorney's fees of the other party arising out of the trial de novo.

(c) The court may, upon request by any party, order any witnesses to participate in the mediation or arbitration process.

§ 20104.6.

(a) No local agency shall fail to pay money as to any portion of a claim which is undisputed except as otherwise provided in the contract.

(b) In any suit filed under Section 20104.4, the local agency shall pay interest at the legal rate on any arbitration award or judgment. The interest shall begin to accrue on the date the suit is filed in a court of law.

END OF DOCUMENT

PERFORMANCE BOND
(100% OF CONTRACT PRICE)

(Note: Contractor must use this form, NOT a surety company form.)

KNOW ALL PERSONS BY THESE PRESENTS:

WHEREAS, the governing board ("Board") of the Downey Unified School District ("District") and _____ ("Principal") have entered into a contract ("Agreement") for the furnishing of all materials and labor, services and transportation, necessary, convenient, and proper to perform the following project:

_____ (Project Name)

("Project") which Agreement dated _____, 20___, and all of the Contract Documents attached to or forming a part of the Agreement, are hereby referred to and made a part hereof; and

WHEREAS, said Principal is required under the terms of the Agreement to furnish a bond for the faithful performance of the Agreement.

NOW, THEREFORE, the Principal and _____
_____ ("Surety")
are held and firmly bound unto the Board of the District in the penal sum of

_____

Dollars ($_____), lawful money of the United States, for the payment of which sum well and truly to be made we bind ourselves, our heirs, executors, administrators, successors, and assigns jointly and severally, firmly by these presents, to:

- Perform all the work required to complete the Project; and

- Pay to the District all damages the District incurs as a result of the Principal's failure to perform all the Work required to complete the Project.

The condition of the obligation is such that, if the above bounden Principal, his or its 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 the Agreement and any alteration thereof made as therein provided, on his or its part to be kept and performed at the time and in the intent and meaning, including all contractual guarantees and warrantees of materials and workmanship, and shall indemnify and save harmless the District, its trustees, officers and agents, as therein stipulated, then this obligation shall become null and void, otherwise it shall be and remain in full force and virtue.

Surety expressly agrees that the District may reject any contractor or subcontractor proposed by Surety to fulfill its obligations in the event of default by the Principal. Surety shall not utilize Principal in completing the Work nor shall Surety accept a Bid from Principal for completion of the Work if the District declares the Principal to be in default and notifies Surety of the District's objection to Principal's further participation in the completion of the Work.

As a condition precedent to the satisfactory completion of the Agreement, the above obligation shall hold good for a period equal to the warranty and/or guarantee period of the Agreement, during which time Surety's obligation shall continue if Contractor shall fail to make full, complete, and satisfactory repair and replacements and totally protect the District from loss or damage resulting from or caused by defective materials or faulty workmanship. The obligations of Surety hereunder shall continue so long as any obligation of Contractor remains. Nothing herein shall limit the District's rights or the Contractor or Surety's obligations under the Agreement, law or equity, including, but not limited to, California Code of Civil Procedure section 337.15.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the Agreement or to the Work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the Agreement or to the work or to the specifications.

IN WITNESS WHEREOF, two (2) identical counterparts of this instrument, each of which shall for all purposes be deemed an original thereof, have been duly executed by the Principal and Surety above named, on the _____ day of _____, 20___.

(Affix Corporate Seal)

_____
Principal

_____
By

_____
Surety

_____
By

_____
Name of California Agent of Surety

_____
Address of California Agent of Surety

_____
Telephone No. of California Agent of Surety

Contractor must attach a Notarial Acknowledgment for all Surety's signatures and a Power of Attorney and Certificate of Authority for Surety. The California Department of Insurance must authorize the Surety to be an admitted surety insurer.

END OF DOCUMENT

PAYMENT BOND

Contractor's Labor & Material Bond
(100% Of Contract Price)

(Note: Contractor MUST use this form, NOT a surety company form.)

KNOW ALL PERSONS BY THESE PRESENTS:

WHEREAS, the governing board ("Board") of the Downey Unified School District (or "District") and _____, ("Principal") have entered into a contract ("Agreement") for the furnishing of all materials and labor, services and transportation, necessary, convenient, and proper to perform the following project:

_____ (Project Name)
("Project") which Agreement dated _____, 20___, and all of the Contract Documents attached to or forming a part of the Agreement, are hereby referred to and made a part hereof; and

WHEREAS, pursuant to law and the Contract, the Principal is required, before entering upon the performance of the Work, to file a good and sufficient bond with the body by which the Agreement is awarded in an amount equal to one hundred percent (100%) of the Contract price, to secure the claims to which reference is made in sections 9000 through 9510 and 9550 through 9566 of the Civil Code, and division 2, part 7, of the Labor Code.

NOW, THEREFORE, the Principal and_____
_____ ("Surety")
are held and firmly bound unto all laborers, material men, and other persons referred to in said statutes in the sum of _____
Dollars ($_____), lawful money of the United States, being a sum not less than the total amount payable by the terms of Contract, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, or assigns, jointly and severally, by these presents.

The condition of this obligation is that if the Principal or any of his or its subcontractors, of the heirs, executors, administrators, successors, or assigns of any, all, or either of them shall fail to pay for any labor, materials, provisions, provender, 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 required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of the Principal or any of his or its subcontractors of any tier under Section 13020 of the Unemployment Insurance Code with respect to such work or labor, that the Surety will pay the same in an amount not exceeding the amount herein above set forth, and also in case suit is brought upon this bond, will pay a reasonable attorney's fee to be awarded and fixed by the Court, and to be taxed as costs and to be included in the judgment therein rendered.

It is hereby expressly stipulated and agreed that this bond shall inure to the benefit of any and all persons, companies, and corporations entitled to file claims under section 9100 of the Civil Code, so as to give a right of action to them or their assigns in any suit brought upon this bond.

Should the condition of this bond be fully performed, then this obligation shall become null and void; otherwise it shall be and remain in full force and affect.

And the Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of Agreement or the specifications accompanying the same shall in any manner affect its obligations on this bond, and it does hereby waive notice of any such change, extension, alteration, or addition.

IN WITNESS WHEREOF, two (2) identical counterparts of this instrument, each of which shall for all purposes be deemed an original thereof, have been duly executed by the Principal and Surety above named, on the _____ day of _____, 20___.

(Affix Corporate Seal)

_____
Principal

_____
By

_____
Surety

_____
By

_____
Name of California Agent of Surety

_____
Address of California Agent of Surety

_____
Telephone No. of California Agent of Surety

Contractor must attach a Notarial Acknowledgment for all Surety's signatures and a Power of Attorney and Certificate of Authority for Surety. The California Department of Insurance must authorize the Surety to be an admitted surety insurer.

END OF DOCUMENT

SPECIAL CONDITIONS COVER PAGE

1. Mitigation Measures
2. Modernization Projects
3. Badge Policy for Contractors
4. Substitution for Specified Items
5. Weather Days
6. As-Builts and Record Drawings
7. Federal Funds
8. Certifications
9. Summary of Work

END OF DOCUMENT

SPECIAL CONDITIONS

1. Mitigation Measures

1.1. Contractor shall comply with all applicable mitigation measures, if any, adopted by any public agency with respect to this Project pursuant to the California Environmental Quality Act. (*See* Public Resources Code section 21000 *et seq.*)**Modernization Projects Access**. Access to the school buildings and entry to buildings, classrooms, restrooms, mechanical rooms, electrical rooms, or other rooms, for construction purposes, must be coordinated with District and onsite District personnel before Work is to start. Unless agreed to otherwise in writing, only a school custodian will be allowed to unlock and lock doors in existing building(s). The custodian will be available only while school is in session. If a custodian is required to arrive before 7:00 a.m. or leave after 3:30 p.m. to accommodate Contractor's Work, the overtime wages for the custodian will be paid by the Contractor, unless at the discretion of the District, other arrangements are made in advance.

1.2. Master Key. Upon request, the District may, at its own discretion, provide a master key to the school site for the convenience of the Contractor. The Contractor agrees to pay all expenses to re-key the entire school site and all other affected District buildings if the master key is lost or stolen, or if any unauthorized party obtains a copy of the key or access to the school.

1.3. Maintaining Services. The Contractor is advised that Work is to be performed in spaces regularly scheduled for instruction. Interruption and/or periods of shutdown of public access, electrical service, water service, lighting, or other utilities shall be only as arranged in advance with the District. Contractor shall provide temporary services to all facilities interrupted by Contractor's Work.

1.4. Maintaining Utilities. The Contractor shall maintain in operation during duration of Contract, drainage lines, storm drains, sewers, water, gas, electrical, steam, and other utility service lines within working area.

1.5. Confidentiality. Contractor shall maintain the confidentiality of all information, documents, programs, procedures and all other items that Contractor encounters while performing the Work. This requirement shall be ongoing and shall survive the expiration or termination of this Agreement and specifically includes, without limitation, all student, parent, and employee disciplinary information and health information.

1.6. Work During Instructional Time. By submitting its bid, Contractor affirms that Work may be performed during ongoing instruction in existing facilities. If so, Contractor agrees to cooperate to the best of its ability to minimize any disruption to school operations and any use of school facilities by the public up to, and including, rescheduling specific work activities, at no additional cost to District.

1.7. No Work During Student Testing. Contractor shall, at no additional cost to the District and at the District's request, coordinate its Work to not disturb District students including, without limitation, not performing any Work when students at the Site are taking State or Federally-required tests.

3. Badge Policy For Contractors

3.1. All Contractors doing work for the District will provide their workers with identification badges. These badges will be worn by all members of the Contractor's staff who are working in a District facility. Badges must be filled out in full and contain the following information:

- Name of Contractor
- Name of Employee
- Contractor's address and phone number

3.2. Badges are to be worn when the Contractor or his/her employees are on site and must be visible at all times. Contractors must inform their employees that they are required to allow District employees, the Architect, the Construction Manager, the Program Manager, or the Project Inspector to review the information on the badges upon request.

3.3. Continued failure to display identification badges as required by this policy may result in the individual being removed from the Project or assessment of fines against the Contractor.

4. Weather Days

Adverse Weather conditions are those wherein the weather satisfies all of the following conditions: (1) unusually severe precipitation, sleet, snow, hail, heat, or cold conditions in excess of the norm for the location and time of year it occurred, (2) unanticipated, and (3) at the Project. Delays due to Adverse Weather will only be permitted in compliance with any applicable provisions in the Agreement and only if the number of days of Adverse Weather exceeds the following parameters and Contractor can verify that the excess days of Adverse Weather caused delays:

January	**6**	July	**0**
February	**7**	August	**0**
March	**5**	September	**1**
April	**3**	October	**2**
May	**2**	November	**2**
June	**1**	December	**4**

5. Permits, Certificates, Licenses, Fees, Approvals

5.1. Payment for Permits, Certificates, Licenses, Approvals and Fees. Contractor shall secure and pay for all permits, licenses, approvals, and certificates necessary for the prosecution of the Work except for the following:

With respect to the above listed items, Contractor shall be responsible for securing such items; however, District will be responsible for payment of these charges or fees. Contractor shall notify the District of the amount due with respect to such items and to whom the amount is payable. Contractor shall provide the District with an invoice and receipt with respect to such charges or fees.

5.2. General Permit For Storm Water Discharges Associated With Construction and Land Disturbance Activities

Contractor acknowledges that all California school districts are obligated to develop and implement the following requirements for the discharge of storm water to

surface waters from its construction and land disturbance activities (storm water requirements), without limitation:

- Municipal Separate Storm Sewer System (MS4) is a system of conveyances used to collect and/or convey storm water, including, without limitation, catch basins, curbs, gutters, ditches, man-made channels, and storm drains.

- Storm Water Pollution Prevention Plan ("SWPPP") contains specific best management practices ("BMPs") and establishes numeric effluent limitations at:

    - Sites where the District engages in maintenance (e.g., fueling, cleaning, repairing) for transportation activities.

    - Construction sites where:

        - One (1) or more acres of soil will be disturbed, or

        - The project is part of a larger common plan of development that disturbs more than one (1) acre of soil.

Contractor shall comply with any District storm water requirements that are approved by the District and applicable to the Project, at no additional cost to the District.

At no additional cost to the District, Contractor shall provide a Qualified Storm Water Practitioner who shall be onsite and implement and monitor any and all SWPPP requirements applicable to the Project, including but not limited to:

- At least forty eight (48) hours prior to a forecasted rain event, implementing the Rain Event Action Plan (REAP) for any rain event requiring implementation of the REAP, including any erosion and sediment control measures needed to protect all exposed portions of the site; and

- Monitoring any Numeric Action Levels (NALs), if applicable.

6. <u>As-Builts and Record Drawings</u>

6.1. Contractor shall submit Record Drawings pursuant to the Contract Documents consisting of one set of computer-aided design and drafting ("CADD") files in the following format PDF.

27. FEDERAL LABOR, WAGE & HOUR, APPRENTICE, AND RELATED PROVISIONS

27.1. Minimum Wages

The Davis-Bacon Act and 29 CFR parts 1 through 7 shall apply if the Project is financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution.

All laborers and mechanics employed or working upon the Site of the Work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the Project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account, except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3) , the full amount of wages and bona fide fringe benefits, or cash equivalents thereof, due at time of payment computed at rates not less than those contained in the applicable wage determination of the Secretary of Labor regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of this section, including but not limited to paragraph 27.1.7; also, regular contributions made or costs incurred for more than a weekly period, but not less often than quarterly, under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of Work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing Work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which Work is performed. The wage determination including any additional classification and wage rates conformed under this section, including but not limited to paragraph 27.1.6 and the Davis-Bacon poster (WH-1321) shall be posted at all times by the Contractor and its Subcontractors at the Site of the Work in a prominent and accessible place where it can be easily seen by the workers.

Any class of laborers or mechanics, including helpers, and which is to be employed under the Contract which is not listed in the wage determination shall be classified in conformance with the wage determination. An additional classification and wage rate and fringe benefits will not be approved unless when the following criteria have been met:

27.1.1.1. The Work to be performed by the classification requested is not performed by a classification in the wage determination; and
The classification is utilized in the area by the construction industry; and

The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the District agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the Contractor to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210.

In the event the Contractor, the laborers or mechanics to be employed in the classification or their representatives, and the District do not agree on the proposed

classification and wage rate (including the amount designated for fringe benefits, where appropriate), the Contractor shall provide the questions, including the views of all interested parties and the recommendation of the District, to the District for the District's review and referral to the Administrator for determination.

The wage rate (including fringe benefits where appropriate) determined pursuant to this section, shall be paid to all workers performing Work in the classification under this Contract from the first day on which Work is performed in the classification.

Whenever the minimum wage rate prescribed in any applicable wage determination for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, Contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

If the Contractor does not make payments to a trustee or other third person, the Contractor may consider, as part of the wages of any laborer or mechanic, the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided that the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis-Bacon Act have been met. If the Secretary of Labor so requires, the Contractor to shall aside in a separate account sufficient assets to meet obligations under the plan or program.

Withholding.

District may, upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the Contractor under this Contract or any other Federal contract with the same Contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same Contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the Contractor or any Subcontractor the full amount of wages required by the Contract. In the event of Contractor's or any Subcontractors' failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the Site of the Work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the Contract, the District may, after written notice to the Contractor, sponsor, applicant, or owner, take such action as it deems necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

Payrolls and basic records.

Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the Work and preserved for a period of three years thereafter for all laborers and mechanics working at the Site of the Work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section

1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the Contractor shall maintain records that show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

The Contractor shall submit weekly for each week in which any Contract Work is performed a copy of all payrolls to the District. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information shall be submitted on a form acceptable to the District. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. Contractor is responsible for the submission of copies of payrolls by all Subcontractors. Contractor and Subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the District, the Contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. Contractor may require a Subcontractor to provide addresses and social security numbers to the Contractor for its own records, without weekly submission to the District or other government agency

Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or Subcontractor or his or her agent who pays or supervises the payment of the persons employed under the Contract and shall certify the following:

That the payroll for the payroll period contains the information required to be provided under 29 CFR 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5,

That the appropriate information is being maintained under 29 CFR 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and

That such information is correct and complete;

That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the Contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and

That no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of Work performed, as specified in the applicable wage determination incorporated into or applicable to the Contract.

The weekly submission of a properly executed certification in the form set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 27.3.3 of this section.

The falsification of any of the above certifications may subject the Contractor or one or more Subcontractors to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

The Contractor or Subcontractor shall make the records required under this section available for inspection, copying, or transcription by authorized representatives of the District or the federal Department of Labor, and shall permit representatives to interview employees during working hours on the job. If the Contractor or Subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the Contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

Apprentices and trainees

Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the Work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first ninety (90) days of probationary employment as an apprentice in an eligible apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job Site in any craft classification shall not be greater than the ratio permitted to the Contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of Work actually performed. In addition, any apprentice performing Work on the job Site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the Work actually performed. Where a Contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or Subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the

provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the Work performed until an acceptable program is approved.

Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to Work at less than the predetermined rate for the Work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job Site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of Work actually performed. In addition, any trainee performing Work on the job Site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the Work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the Work performed until an acceptable program is approved.

Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

Compliance with Copeland Act requirements. Contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this Contract.

Subcontracts. The Contractor or Subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the Federal agency may by appropriate instructions require, and also a clause requiring the Subcontractors to include these clauses in any lower tier subcontracts. The Contractor shall be responsible for the compliance by any Subcontractor or lower tier Subcontractor with all the Contract clauses in 29 CFR 5.5.

Contract termination: debarment. A breach of the Contract clauses in 29 CFR 5.5 may be grounds for termination of the Contract, and for debarment as a Contractor and a Subcontractor as provided in 29 CFR 5.12.

Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this Contract.

Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this Contract shall not be subject to the general disputes clause of this Contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the Contractor (or any of its Subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

Certification of eligibility.

By entering into this Contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

No part of this Contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

Contractor shall be subject to the penalty for making false statements prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

Clauses Mandated by Contract Work Hours and Safety Standards Act.

As used in the following paragraphs, the terms laborers and mechanics include watchmen and guards.

Overtime requirements. No Contractor or Subcontractor contracting for any part of the Contract Work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such Work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in the foregoing paragraph the Contractor and any Subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such Contractor and Subcontractor shall be liable to the United States for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the foregoing paragraph, in the sum of $10 for each calendar day on which such individual was required or permitted to Work in excess of the standard workweek of forty hours without payment of the overtime wages required by the foregoing paragraph.

Withholding for unpaid wages and liquidated damages. The District may upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of Work performed by the Contractor or Subcontractor under the Contract or any other Federal contract with the same Contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same Contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or Subcontractor for unpaid wages and liquidated damages as provided in the forgoing paragraph .

Subcontracts. The Contractor or Subcontractor shall insert in any subcontracts the foregoing paragraphs concerning Overtime Requirements and Violation: Liability for Unpaid Wages and Liquidated Damages and also a clause requiring each Subcontractor to include these clauses in any lower tier subcontracts. Contractor shall be responsible for compliance by any Subcontractor or lower tier Subcontractor with the clauses set forth in paragraphs 27.11.1 through 27.11.4 of this section.

END OF DOCUMENT

WORKERS' COMPENSATION CERTIFICATION

PROJECT/CONTRACT NO.: _____ between Downey Unified School District ("District") and _____ ("Contractor" or "Bidder") ("Contract" or "Project").

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:
>
> a. By being insured against liability to pay compensation by one or more insurers duly authorized to write compensation insurance in this state; and/or
>
> b. 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 his employees.

I am aware of the provisions of section 3700 of the Labor Code 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 provisions before commencing the performance of the Work of this Contract.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

(In accordance with Labor Code sections 1860 and 1861, the above certificate must be signed and filed with the awarding body prior to performing any Work under this Contract.)

END OF DOCUMENT

PREVAILING WAGE AND
RELATED LABOR REQUIREMENTS CERTIFICATION

PROJECT/CONTRACT NO.: _____ between Downey Unified School District ("District") and _____ ("Contractor" or "Bidder") ("Contract" or "Project").

I hereby certify that I will conform to the State of California Public Works Contract requirements regarding prevailing wages, benefits, on-site audits with 48-hours' notice, payroll records, and apprentice and trainee employment requirements, for all Work on the above Project including, without limitation, labor compliance monitoring and enforcement by the Department of Industrial Relations.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

DRUG-FREE WORKPLACE CERTIFICATION

PROJECT/CONTRACT NO.: _____ between Downey Unified School District ("District") and _____ ("Contractor" or "Bidder") ("Contract" or "Project").

This Drug-Free Workplace Certification form is required from the successful Bidder pursuant to 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 doing 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.

The District is not a "state agency" as defined in the applicable section(s) of the Government Code, but the District is a local agency and public school district under California law and requires all contractors on District projects to comply with the provisions and requirements of Government Code section 8350 et seq., the Drug-Free Workplace Act of 1990.

Contractor must also comply with the provisions of Health & Safety Code section 11362.3 which prohibits the consumption or possession of cannabis or cannabis products in any public place, including school grounds, and specifically on school grounds while children are present.

Contractor shall certify that it will provide a drug-free workplace by doing all of the following:

a. 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.

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

   (1) The dangers of drug abuse in the workplace.
   (2) The person's or organization's policy of maintaining a drug-free workplace.
   (3) The availability of drug counseling, rehabilitation, and employee-assistance programs.
   (4) The penalties that may be imposed upon employees for drug abuse violations.

c. Requiring that each employee engaged in the performance of the contract or grant be given a copy of the statement required above, 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 publish a statement notifying employees concerning (a) the

prohibition of controlled substance at the workplace, (b) establishing a drug-free awareness program, and (c) requiring that each employee engaged in the performance of the Contract be given a copy of the statement required by section 8355(a), and requiring that the employee agree to abide by the terms of that statement.

I also understand that if the 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 the aforementioned Act.

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 and Health and Safety Code section 11362.3.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

TOBACCO-FREE ENVIRONMENT CERTIFICATION

PROJECT/CONTRACT NO.: _____ between Downey Unified School District ("District") and _____ ("Contractor" or "Bidder") ("Contract" or "Project").

This Tobacco-Free Environment Certification form is required from the successful Bidder.

Pursuant to, without limitation, 20 U.S.C. section 6083, Labor Code section 6400 et seq., Health & Safety Code section 104350 et seq.,Business and Professions Code section 22950 et seq. and District Board Policies, all District sites, including the Project site, are tobacco-free environments. Smoking and the use of tobacco products by all persons is prohibited on or in District property. District property includes school buildings, school grounds, school owned vehicles and vehicles owned by others while on District property. The prohibition on smoking includes the use of any electronic smoking device that creates an aerosol or vapor, in any manner or in any form, and the use of any oral smoking device for the purpose of circumventing the prohibition of tobacco smoking. Further, Health & Safety Code section 11362.3 prohibits the smoking or use of cannabis or cannabis products in any place where smoking tobacco is prohibited.

I acknowledge that I am aware of the District's policy regarding tobacco-free environments at District sites, including the Project site and hereby certify that I will adhere to the requirements of that policy and not permit any of my firm's employees, agents, subcontractors, or my firm's subcontractors' employees or agents to use tobacco and/or smoke on the Project site.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

HAZARDOUS MATERIALS CERTIFICATION

PROJECT/CONTRACT NO.: _____ between Downey Unified School District ("District") and _____ ("Contractor" or "Bidder") ("Contract" or "Project").

1. Contractor hereby certifies that no Asbestos, or Asbestos-Containing Materials, polychlorinated biphenyl (PCB), or any material listed by the federal or state Environmental Protection Agency or federal or state health agencies as a hazardous material, or any other material defined as being hazardous under federal or state laws, rules, or regulations ("New Hazardous Material"), shall be furnished, installed, or incorporated in any way into the Project or in any tools, devices, clothing, or equipment used to affect any portion of Contractor's work on the Project for District.

2. Contractor further certifies that it has instructed its employees with respect to the above-mentioned standards, hazards, risks, and liabilities.

3. Asbestos and/or asbestos-containing material shall be defined as all items containing but not limited to chrysotile, crocidolite, amosite, anthophyllite, tremolite, and actinolite. Any or all material containing greater than one-tenth of one percent (0.1%) asbestos shall be defined as asbestos-containing material.

4. Any disputes involving the question of whether or not material is New Hazardous Material shall be settled by electron microscopy or other appropriate and recognized testing procedure, at the District's determination. The costs of any such tests shall be paid by Contractor if the material is found to be New Hazardous Material.

5. All Work or materials found to be New Hazardous Material or Work or material installed with equipment containing "New Hazardous Material" will be immediately rejected and this Work will be removed at Contractor's expense at no additional cost to the District.

6. Contractor has read and understood the document Hazardous Materials Procedures & Requirements, and shall comply with all the provisions outlined therein.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

LEAD-BASED MATERIALS CERTIFICATION

PROJECT/CONTRACT NO.: _____ between Downey Unified School District ("District") and _____ ("Contractor" or "Bidder") ("Contract" or "Project").

This certification provides notice to the Contractor that:

(1) Contractor's work may disturb lead-containing building materials.

(2) Contractor shall notify the District if any work may result in the disturbance of lead-containing building materials.

(3) Contractor shall comply with the Renovation, Repair and Painting Rule, if lead-based paint is disturbed in a six-square-foot or greater area indoors or a 20-square-foot or greater area outdoors.

1. Lead as a Health Hazard

Lead poisoning is recognized as a serious environmental health hazard facing children today. Even at low levels of exposure, much lower than previously believed, lead can impair the development of a child's central nervous system, causing learning disabilities, and leading to serious behavioral problems. Lead enters the environment as tiny lead particles and lead dust disburses when paint chips, chalks, peels, wears away over time, or is otherwise disturbed. Ingestion of lead dust is the most common pathway of childhood poisoning; lead dust gets on a child's hands and toys and then into a child's mouth through common hand-to-mouth activity. Exposures may result from construction or remodeling activities that disturb lead paint, from ordinary wear and tear of windows and doors, or from friction on other surfaces.

Ordinary construction and renovation or repainting activities carried out without lead-safe work practices can disturb lead-based paint and create significant hazards. Improper removal practices, such as dry scraping, sanding, or water blasting painted surfaces, are likely to generate high volumes of lead dust.

Because the Contractor and its employees will be providing services for the District, and because the Contractor's work may disturb lead-containing building materials, CONTRACTOR IS HEREBY NOTIFIED of the potential presence of lead-containing materials located within certain buildings utilized by the District. All school buildings built prior to 1978 are presumed to contain some lead-based paint until sampling proves otherwise.

2. Overview of California Law

Education Code section 32240 et seq. is known as the Lead-Safe Schools Protection Act. Under this act, the Department of Health Services is to conduct a sample survey of schools in the State of California for the purpose of developing risk factors to predict lead contamination in public schools. (Ed. Code, § 32241.)

[REMAINDER OF PAGE INTENTIONALLY BLANK]

Any school that undertakes any action to abate existing risk factors for lead is required to utilize trained and state-certified contractors, inspectors, and workers. (Ed. Code, § 32243, subd. (b).) Moreover, lead-based paint, lead plumbing, and solders, or other potential sources of lead contamination, shall not be utilized in the construction of any new school facility or the modernization or renovation of any existing school facility. (Ed. Code, § 32244.)

Both the Federal Occupational Safety and Health Administration ("Fed/OSHA") and the California Division of Occupational Safety and Health ("Cal/OSHA") have implemented safety orders applicable to all construction work where a contractor's employee may be occupationally exposed to lead.

The OSHA Regulations apply to all construction work where a contractor's employee may be occupationally exposed to lead. The OSHA Regulations contain specific and detailed requirements imposed on contractors subject to that regulation. The OSHA Regulations define construction work as work for construction, alteration, and/or repair, including painting and decorating. It includes, but is not limited to, the following:

a. Demolition or salvage of structures where lead or materials containing lead are present;

b. Removal or encapsulation of materials containing lead;

c. New construction, alteration, repair, or renovation of structures, substrates, or portions thereof, that contain lead, or materials containing lead;

d. Installation of products containing lead;

e. Lead contamination/emergency cleanup;

f. Transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed; and

g. Maintenance operations associated with the construction activities described in the subsection.

Because it is assumed by the District that all painted surfaces (interior as well as exterior) within the District contain some level of lead, it is imperative that the Contractor, its workers and subcontractors fully and adequately comply with all applicable laws, rules and regulations governing lead-based materials (including title 8, California Code of Regulations, section 1532.1).

[REMAINDER OF PAGE INTENTIONALLY BLANK]

Contractor shall notify the District if any Work may result in the disturbance of lead-containing building materials. Any and all Work that may result in the disturbance of lead-containing building materials shall be coordinated through the District. A signed copy of this Certification shall be on file prior to beginning Work on the Project, along with all current insurance certificates.

3. Renovation, Repair and Painting Rule, Section 402(c)(3) of the Toxic Substances Control Act

The EPA requires lead safe work practices to reduce exposure to lead hazards created by renovation, repair and painting activities that disturb lead-based paint. Pursuant to the Renovation, Repair and Painting Rule (RRP), renovations in homes, childcare facilities, and schools built prior to 1978 must be conducted by certified renovations firms, using renovators with training by a EPA-accredited training provider, and fully and adequately complying with all applicable laws, rules and regulations governing lead-based materials, including those rules and regulations appearing within title 40 of the Code of Federal Regulations as part 745 (40 CFR 745).

The RRP requirements apply to all contractors who disturb lead-based paint in a six-square-foot or greater area indoors or a 20-square-foot or greater area outdoors. If a DPH-certified inspector or risk assessor determines that a home constructed before 1978 is lead-free, the federal certification is not required for anyone working on that particular building.

4. Contractor's Liability

If the Contractor fails to comply with any applicable laws, rules, or regulations, and that failure results in a site or worker contamination, the Contractor will be held solely responsible for all costs involved in any required corrective actions, and shall defend, indemnify, and hold harmless the District, pursuant to the indemnification provisions of the Contract, for all damages and other claims arising therefrom.

If lead disturbance is anticipated in the Work, only persons with appropriate accreditation, registrations, licenses, and training shall conduct this Work.

It shall be the responsibility of the Contractor to properly dispose of any and all waste products, including, but not limited to, paint chips, any collected residue, or any other visual material that may occur from the prepping of any painted surface. It will be the responsibility of the Contractor to provide the proper disposal of any hazardous waste by a certified hazardous waste hauler. This company shall be registered with the Department of Transportation (DOT) and shall be able to issue a current manifest number upon transporting any hazardous material from any school site within the District.

The Contractor shall provide the District with any sample results prior to beginning Work, during the Work, and after the completion of the Work. The District may request to examine, prior to the commencement of the Work, the lead training records of each employee of the Contractor.

THE CONTRACTOR HEREBY ACKNOWLEDGES, UNDER PENALTY OF PERJURY, THAT IT:

1. HAS RECEIVED NOTIFICATION OF POTENTIAL LEAD-BASED MATERIALS ON THE OWNER'S PROPERTY;

2. IS KNOWLEDGEABLE REGARDING AND WILL COMPLY WITH ALL APPLICABLE LAWS, RULES, AND REGULATIONS GOVERNING WORK WITH, AND DISPOSAL, OF LEAD.

THE UNDERSIGNED WARRANTS THAT HE/SHE HAS THE AUTHORITY TO SIGN ON BEHALF OF AND BIND THE CONTRACTOR. THE DISTRICT MAY REQUIRE PROOF OF SUCH AUTHORITY.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

IMPORTED MATERIALS CERTIFICATION

PROJECT/CONTRACT NO.: _____ between Downey Unified School District ("District") and _____ ("Contractor" or "Bidder") ("Contract" or "Project").

This form shall be executed by all entities that, in any way, provide or deliver and/or supply any soils, aggregate, or related materials ("Fill") to the Project Site. All Fill shall satisfy all requirements of any environmental review of the Project performed pursuant to the statutes and guidelines of the California Environmental Quality Act, section 21000 et seq. of the Public Resources Code ("CEQA"), and all requirements of section 17210 et seq. of the Education Code, including requirements for a Phase I environmental assessment acceptable to the State of California Department of Education and Department of Toxic Substances Control.

Certification of:	□ Delivery Firm/Transporter	□ Supplier	□ Manufacturer
	□ Wholesaler	□ Broker	□ Retailer
	□ Distributor	□ Other _____	
Type of Entity	□ Corporation	□ General Partnership	
	□ Limited Partnership	□ Limited Liability Company	
	□ Sole Proprietorship	□ Other _____	

Name of firm ("Firm"): _____

Mailing address: _____

Addresses of branch office used for this Project: _____

If subsidiary, name and address of parent company: _____

_____

_____

By my signature below, I hereby certify that I am aware of section 25260 of the Health and Safety Code and the sections referenced therein regarding the definition of hazardous material. I further certify on behalf of the Firm that all soils, aggregates, or related materials provided, delivered, and/or supplied or that will be provided, delivered, and/or supplied by this Firm to the Project Site are free of any and all hazardous material as defined in section 25260 of the Health and Safety Code. I further certify that I am authorized to make this certification on behalf of the Firm.

Date: _____

Proper Name of Firm: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

CRIMINAL BACKGROUND
INVESTIGATION/ FINGERPRINTING CERTIFICATION

PROJECT/CONTRACT NO.: _____ between the Downey Unified School District ("District") and _____ ("Contractor"); Agreement dated, _____, 20__ ("Agreement").

The undersigned does hereby certify to the governing board of the District as follows:

That I am a representative of the Contractor currently under contract with the District; that I am familiar with the facts herein certified; and that I am authorized and qualified to execute this certificate on behalf of Contractor. Contractor certifies that it has taken at least one of the following actions with respect to the work that is the subject of the Agreement ("Work") (check all that applies):

Contractor certifies that it has taken at least one of the following actions with respect to the construction Project that is the subject of the Contract (check all that apply):

X The Contractor is a sole proprietor and intends to comply with the fingerprinting requirements of Education Code section 45125.1(k) with respect to all Contractor's employees who may have contact with District pupils in the course of providing services pursuant to the Contract, and hereby agrees to the District's preparation and submission of fingerprints such that the California Department of Justice may determine that none of those employees has been convicted of a felony, as that term is defined in Education Code section 45122.1. No work shall commence until such determination by DOJ has been made.

As an authorized District official, I am familiar with the facts herein certified, and am authorized to execute this certificate on behalf of the District and undertake to prepare and submit Contractor's fingerprints as if he or she was an employee of the District.

Date: _____

District Representative's Name and Title: _____

District Representative's Signature: _____

☐ The Contractor, who is not a sole proprietor, has complied with the fingerprinting requirements of Education Code section 45125.1 with respect to all Contractor's employees and all of its Subcontractors' employees who may have contact with District pupils in the course of providing services pursuant to the Contract, and the California Department of Justice has determined that none of those employees has been convicted of a felony, as that term is defined in Education Code section 45122.1. A complete and accurate list of Contractor's employees and of all of its subcontractors' employees who may come in contact with District pupils during the course and scope of the Contract is attached hereto; and/or

☐ Pursuant to Education Code section 45125.2, Contractor has installed or will install, prior to commencement of Work, a physical barrier at the Work Site, that will limit contact between Contractor's employees and District pupils at all times; and/or

☐ Pursuant to Education Code section 45125.2, Contractor certifies that all employees will be under the continual supervision of, and monitored by, an employee of the Contractor who the California Department of Justice has ascertained, or as described below, will ascertain, has not been convicted

of a violent or serious felony. The name and title of the employee who will be supervising Contractor's and its subcontractors' employees is:

Name: _____

Title: _____

NOTE: If the Contractor is a sole proprietor, and elects the above option, Contractor must have the above-named employee's fingerprints prepared and submitted by the District, in accordance with Education Code section 45125.1(k). No work shall commence until such determination by DOJ has been made.

As an authorized District official, I am familiar with the facts herein certified, and am authorized to execute this certificate on behalf of the District and undertake to prepare and submit Contractor's fingerprints as if he or she was an employee of the District.

Date: _____

District Representative's Name and Title: _____

District Representative's Signature: _____

☐ The Work on the Contract is either (i) at an unoccupied school site and no employee and/or subcontractor or supplier of any tier of the Contract shall come in contact with the District pupils or (ii) Contractor's employees or any subcontractor or supplier of any tier of the Contract will have only limited contact, if any, with District pupils and the District will take appropriate steps to protect the safety of any pupils that may come in contact with Consultant's employees, subcontractors or suppliers so that the fingerprinting and criminal background investigation requirements of Education Code section 45125.1 shall not apply to Contractor under the Contract.

As an authorized District official, I am familiar with the facts herein certified, and am authorized to execute this certificate on behalf of the District.

Date: _____

District Representative's Name and Title: _____

District Representative's Signature: _____

Contractor's responsibility for background clearance extends to all of its employees, Subcontractors, and employees of Subcontractors coming into contact with District pupils regardless of whether they are designated as employees or acting as independent contractors of the Contractor.

Date: _____

Proper Name of Contractor: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

REGISTERED SUBCONTRACTORS LIST
(Labor Code Section 1771.1)

PROJECT: _____

Date Submitted (for Updates): _____

Contractor acknowledges and agrees that it must clearly set forth below the name and Department of Industrial Relations (DIR) registration number of each subcontractor **for all tiers** who will perform work or labor or render service to Contractor or its subcontractors in or about the construction of the Work **at least two (2) weeks before the subcontractor is scheduled to perform work**. This document is to be updated as all tiers of subcontractors are identified.

Contractor acknowledges and agrees that, if Contractor fails to list as to any subcontractor of any tier who performs any portion of Work, the Contract is subject to cancellation and the Contractor will be subjected to penalty under applicable law.

If further space is required for the list of proposed subcontractors, attach additional copies of page 2 showing the required information, as indicated below.

Subcontractor Name: _____
DIR Registration #: _____
Portion of Work: _____

Subcontractor Name: _____
DIR Registration #: _____
Portion of Work: _____

Subcontractor Name: _____
DIR Registration #: _____
Portion of Work: _____

Subcontractor Name: _____
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DIR Registration #: ____
Portion of Work: ____

Subcontractor Name: ____
DIR Registration #: ____
Portion of Work: ____

Subcontractor Name: ____
DIR Registration #: ____
Portion of Work: ____

Date: ____________________________________

Name of Contractor: ____________________________________

Signature: ____________________________________

Print Name: ____________________________________

Title: ____________________________________

END OF DOCUMENT

SUPPLEMENTARY CONDITIONS

Summary of Work

- BP1-Demolition/Abatement – Interior and Site Concrete
  - Contractor to perform all interior and site demolition as indicated on contract documents.
  - Contractor to perform all abatement as indicated in abatement report.
  - Contractor to coordinate with MEP trades to safe off utilities prior to demolition.

- BP2-Concrete/Grading (includes stage ramp)
  - Contractor to perform all interior and exterior grading for concrete work.
  - Contractor to perform all interior and exterior concrete footings, slabs, walkways, ramps and platforms identified in contract documents.
  - Contractor to perform all concrete sealing where identified in the contract documents.
  - Contractor to install all railing sleeves provided by others.

- BP3-Handrails
  - Contractor to provide and install all railings identified in contract documents.
  - Contractor to provide railing sleeves and layout drawings for installation by others.

- BP4-Framing, Drywall/Backer Board, Paint
  - Contractor to provide and install all framing as identified in the contract documents.
  - Contractor to provide and install all ceramic tile backer board, drywall and drywall finishing as identified in the Contract Documents.
  - Contractor to perform all painting as identified in the contract documents.

- BP5-Ceramic Tile
  - Contractor to provide and install all ceramic tile as identified in the contract documents.

- BP6-Specialties (Toilet Partitions/Accessories)
  - Contractor to provide and install all toilet partitions identified in the contract documents.
  - Contractor to provide and install all toilet accessories identified in the contract documents.
  - Contractor to provide and install all mirrors.
  - Contractor to install all owner provided toilet accessories.

- BP7-Plumbing – Rough and Finish
  - Contractor to provide and install all new rough plumbing identified in the contract documents.
  - Contractor to coordinate limits of demolition with demolition contractor.
  - Contractor to safe off all plumbing prior to demolition phase of construction.
  - Contractor to provide and install all finish plumbing fixtures identified in the contract documents.
  - Contractor to perform chlorination of all new plumbing systems.

Downey Unified School District

SPECIFICATIONS
MANUAL

App No: 03-122176

GIRLS LOCKER ROOM REMODEL
AND SITE RENOVATIONS

APRIL 20, 2022

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END OF SECTION 00 01 10

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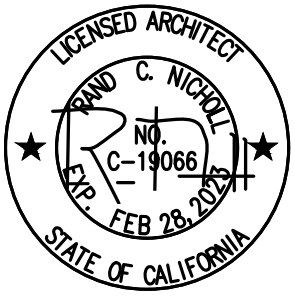
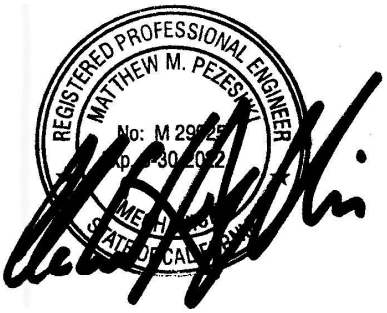
ARCHITECT



Rand Nicholl Architecture
4591 Siroday Avenue
Yorba Linda, CA 92886
714-915-4504

License: Rand Nicholl
C-19066 Exp. Feb 28, 2023

PLUMBING AND MECHANICAL ENGINEER



PEI Engineering
1920 E. Warner Avenue, Suite 3-H
Santa Ana, CA 92705
Tel: (714) 884-3803
Fax: (714) 884-3834

License: Matthew Pezeshki
M-29925 Exp. June 30, 2024

SECTION 01 04 50 - CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. This Section specifies administrative and procedural requirements for cutting and patching.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.1 SUBMITTALS

A. The word “cutting” as used in the Contract Documents includes, but is not limited to, cutting, drilling, chopping, and other similar operations and the word “patching” includes, but is not limited to, patching, rebuilding, reinforcing, repairing, refurbishing, restoring, replacing, or other similar operations.

B. Cutting and Patching Proposal: Contractor shall submit a proposal describing procedures well in advance of the time cutting and patching will be performed if the Contract Documents requires approval of these procedures before proceeding. Include the following information, as applicable, in the proposal:

1. Describe the extent of cutting and patching required. Denote how it will be performed and indicate why it cannot be avoided.
2. Describe anticipated results in terms of changes to existing construction. Include changes to structural elements and operating components as well as changes in the building’s appearance or other significant visual elements.
3. List products to be used and firms or entities that will perform this Work.
4. Indicate dates when cutting and patching will be performed.
5. Utilities: List utilities that cutting and patching operations will disturb or affect. List utilities to be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
6. Where cutting and patching involves adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with the original structure.
7. Review by Architect and/or DSA prior to proceeding with cutting and patching does not waive Architect right to later require complete removal and replacement of defective Work.

3.2 QUALITY ASSURANCE

A. Requirements for structural Work: Do not cut and patch structural elements in a manner that would change their load-carrying capacity or load-deflection ratio.

1. Obtain approval from Owner and/or Architect and the Division of the State Architect of the cutting and patching proposal before cutting and patching the following structural elements unless specifically detailed on the approved plans:

a. Foundation construction
b. Bearing and retaining walls
c. Structural concrete
d. Structural steel

e. Lintels
f. Timber and primary wood framing
g. Structural decking
h. Stair systems
i. Miscellaneous structural metals
j. Exterior curtain-wall construction
k. Equipment supports
l. Piping, ductwork, vessels, and equipment

B. Operational Limitations: Do not cut and patch operating elements or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut and patch operating elements or related components in a manner that would result in increased maintenance or decreased operational life or safety.

1. Obtain review of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:

a. Primary operational systems and equipment
b. Air or smoke barriers
c. Water, moisture, or vapor barriers
d. Membranes and flashings
e. Fire protection systems
f. Noise and vibration control elements and systems
g. Control systems
h. Communication and/or data systems
i. Conveying systems
j. Electrical wiring systems

C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the opinion of Architect, reduce the building's aesthetic qualities. Do not cut and patch construction in a manner that would result in visual evidence of cutting and patching. Remove and replace Work cut and patched in a visually unsatisfactory manner.

1. If possible, retain the original installer or fabricator to cut and patch the exposed Work listed below. If it is impossible to engage the original installer or fabricator, engage another recognized experienced and specialized firm.

a. Acoustical ceilings
b. Acoustical panels
c. HVAC enclosures, cabinets, or covers
d. Gypsum board

3.3 WARRANTY

A. Existing Warranties: Replace, patch, and repair material and surfaces cut or damaged by methods and with materials in such a manner as not to void any warranties required or existing.

3.4 INSPECTION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed before cutting. If unsafe or unsatisfactory conditions are encountered, take corrective action before proceeding.

1. Before proceeding, meet at the Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

3.5 PREPARATION

A. Temporary support: Provide adequate temporary support of existing improvements or Work to be cut.

B. Protection: Protect existing improvements and Work during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of existing improvements or Work that might be exposed during cutting and patching operations.

C. Avoid interference with operation of adjoining areas or interruption of free passage to adjoining areas.

3.6 PERFORMANCE

A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay. Carefully remove existing Work to be salvaged and/or reinstalled. Protect and store for reuse into the Work. Verify compatibility and suitability of existing substrates before starting the Work.

B. Cutting: Cut existing construction using methods least likely to damage elements retained or adjoining Work. Where possible, review proposed procedures with the original installer; comply with the original installer's recommendations.

1. In general, where cutting, provide hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
3. Cut through concrete and masonry using a cutting machine, such as a carborundum saw or a diamond-core drill. Saw cut reinforcing bars and paint ends with bituminous paint except where bonded into new concrete or masonry. Cut and remove concrete paving from control joint to control joint.
4. Comply with requirements of applicable Division 2 Sections where cutting and patching requires excavating, backfill, or re-compaction.
5. Sheet Metal: Remove back to joint, lap, or connection. Secure loose or unfastened ends or edges and seal watertight.
6. Plaster: Cut back to sound plaster on straight lines, and back bevel edges of remaining plaster. Trim existing lath and prepare for new lath.

C. Patching: Patch with durable seams that are as invisible as possible. Comply with required tolerances.

1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation. Verify conditions of existing substrates prior to executing Work.
2. Restore exposed finishes of patched areas and extend finish restoration into retaining adjoining construction in a manner that will eliminate all evidence of patching and refinishing.
3. Concrete: Maintain cut edges in a moist condition for twenty four (24) hours prior to the placement of new concrete. In lieu of this an epoxy adhesive may be provided. Finish placed concrete to match existing unless noted otherwise. Concrete shall provide a compressive strength 3,000 psi where installed to repair and/or match existing improvements, unless noted otherwise.
4. Metal Fabrications: Items to remain exposed shall have their edges cut and ground smooth and rounded.

5. Lath and Plaster: Install new lath materials to match existing and fasten to supports at 6”centers. Provide a 6” lap where new lath to adjoins existing lath. Fasten new lath as required for new Work. Restore paper backings as required. Apply a bonding agent on cut edges of existing plaster. Apply three coat plaster of the type, thickness, finish, texture, and color to match existing.
6. Gypsum Wallboard: Fasten cut edges of wallboard. Install patches with at least two opposite edges centered on supports and secure at 6” centers. Tape and finish joints and fastener heads. Patching shall be non-apparent when painted and/or finished.
7. Painting: Prepare areas to be patched, patch and paint as specified under related sections of the Contract Documents.

3.7 CLEANING

A. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar items. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged coverings to their original condition.

END OF SECTION 01 04 50

SECTION 01 10 00 - CONSTRUCTION DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. The General Conditions and Division 1 are a part of this Section and the Contract for this Work and apply to this Section as if repeated fully herein.

B. The Construction Documents include the Drawings and the Technical Specifications (including addenda, change orders, and other modifications), which are part of the Project Manual. Together with the other documents contained in the Project Manual they comprise the Contract Documents as described in the General Conditions. The Construction Documents describe the form and extent as well as the materials, products and equipment which are to be incorporated into the Work.

1.2 JURISDICTION

A. No trade jurisdictional allocation of this work is intended by the subdivision of the Construction Documents. It shall be the Contractor's sole responsibility to subdivide the Work in the manner he deems necessary. In that regard, it shall be the Contractor's responsibility to insure that all apportioned work be coordinated so as to provide complete working systems where such systems are composed of two or more components of work.

1.3 COMPLIMENTARY

A. The Drawings and Technical Specifications are complimentary and what is called for by one is called for by all. Generally, the Drawings show the composition of the various components and the Technical Specifications describe the nature and methods of incorporation of the various components. All aspects of the construction are not necessarily identified in both the Drawings and Technical Specifications. However, what is required by one is required by both. In cases of conflicting information, the Contractor is to provide the more costly option. In cases of conflicting information of equal value, Technical Specifications supersede the Drawings, Details supersede Notes and performance requirements supersede product model specifications. All cases of conflicting information shall be brought to the attention of the Architect.

1.4 USE OF MATERIALS, PRODUCTS AND EQUIPMENT

A. It is intended that all materials, products and equipment be used in the manner intended by the manufacturer. In the absence of instructions to be contrary, and where readily identifiable, the manufacturer's or his trade associations specifications and/or directions are hereby incorporated by reference. In the absence of specific manufacturer's instructions the trade associations general specifications or standards shall apply including any and all ASTM or ANSI performance and installation standards for the material, product or equipment.

1.5 INTENT OF THE DOCUMENTS

A. It is the intent of these Construction Documents to include all items and components for the proper execution of the Work, and the provisions of a complete and functional facility. In that regard all appurtenant and accessory items and components required for construction of complete and functional systems within the construction shall be provided whether specifically identified in these Construction Documents or not.

1.6 KEYNOTING

A. A keynoting system is used on the drawings for material references and notes. Refer to the Keynote Legend on the drawing for the information which relates to each keynote symbol on the respective drawing. Where provided within the drawings, keynotes reference specification sections by means of a five-digit number identifying the section where a more complete description of the item will be found. The letter suffix of the keynote is a sequential differentiation and does not relate to any corresponding reference letter in the specification. Keynotes do not describe construction means, methods, techniques, sequences, or procedures. No trade jurisdictional allocation of this work is intended by the subdivision of these keynotes. It shall be the Contractor's sole responsibility to subdivide the work in the manner he deems necessary.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 PERFORMANCE BY THE CONTRACTOR

A. Performance by the Contractor shall be required only to the extent consistent with the Construction Documents and reasonably inferable form them as being necessary to produce the intended results.

B. "Reasonably inferable" is defined as a degree of interpretation of the documents which will provide, at the Contractor's expense, complete working systems within the parameters of the following examples, but not limited to these examples:

1. Where light fixtures or electrical appliances and equipment are indicated, it is reasonably inferable that power and circuiting be provided.
2. Where plumbing fixtures are indicated, it is reasonably inferable that waste and vent be provided and supply and or return lines.
3. Where HVAC equipment is indicated, it is reasonably inferable that structural support, power and condensate piping be provided.
4. Where casework is indicated, it is reasonably inferable that anchorage or support be provided.
5. Where waterproofing systems are indicated, it is reasonably inferable that bond breakers, protective boards, backer rods, sealants and flashing be provided.
6. Where items of work are indicated which are not prefinished it is reasonably inferable that shop or field finish is required. Finish shall be to the standard of quality specified for similar materials.

C. In providing complete working systems, in the absence of complete information, the Contractor shall be required to provide components to a standard of quality consistent with similar work specified. In the absence of such standard, he shall be entitled to provide such items at the lease cost to him consistent with industry standards.

END OF SECTION 01 10 00

SECTION 01 30 00 - SUBMITTALS

GENERAL

1.1 SECTION INCLUDES

A. Procedures for submitting to the Architect/Engineer, schedules, shop drawings, product data, samples, material lists, manuals, warranties and certificates, etc., required by individual Specification Section and procedures for submitting finish hardware schedule and segregation of contract costs to the District.

B. Wherever possible, throughout the Contract Documents, the minimum acceptable quality of workmanship and materials has been defined by the name and catalog number of a manufacturer and by reference of recognized industry standards.

C. To ensure that specified products are furnished and installed in accordance with the design intent, procedures have been established for advance submittal of design data and for its review by the Architect.

1.2 RELATED SECTIONS

A. The General Conditions and Division 1 are part of this Section and the Contract for this Work and apply to this Section as if repeated fully herein.

B. Section 01 70 00: Contract Closeout.

C. Other Sections requiring submittals.

1.3 PROCEDURES

A. Contractor shall secure and submit Shop drawings, manufacturer's catalogs, samples, warranties, operating and instruction manuals, etc. to the Architect/Engineer for review and approval.

B. After the Architect has date-stamped, signed and reviewed submittals, with corrections noted, if any, the Architect will transmit submittals to Contractor.

1.4 SUBMITTALS

A. Approval of Submittals: Contractor shall clearly identify any deviations from the Contract Drawings and Specifications on submittals. Prior approval of any deviation by the District Architect/Engineer or his representative is required. Any deviation without said prior approval, even though stamped approved, is not acceptable.

1. Approval stamp is for design and quality only. No deviations. No quantities.

B. Deliver submittals to the Owner’s Representative. Identify project name and address, telephone number of Contractor, subcontractor and supplier. Identify, as appropriate, pertinent drawing sheets, detail numbers and Specification Section numbers. Clearly identify any deviations from Contract Documents.

C. Make submittals in accordance with the approved Construction Schedule, and approved Shop Drawing Submission Schedule, in sequence that avoids delaying work and progress of other Contractors.

D. CONTRACTOR SHALL THOROUGHLY REVIEW SUBMITTALS PRIOR TO SUBMISSION TO THE ARCHITECT/ ENGINEER.

E. Timing of Submittals:

1. In accordance with General Conditions, Contractor shall submit to Owner's Representative those Shop Drawings, Product Data, diagrams, materials lists, Samples and other submittals required by the Contract Documents.
2. The Contractor shall submit within ten (10) Days of the Award of Contract, a itemized listing of required submittals with a scheduled date for each submittal. The schedule of submittals shall provide adequate time between submittals in order to allow for proper review without negative impact to the Construction Schedule.
3. Schedule of submittals shall be related to Work progress, and shall be so organized as to allow sufficient time for transmitting, reviewing, corrections, resubmission, and re-reviewing.
4. Contractor shall coordinate submittal of related items and Owner's Representative reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received by Owner's Representative.
5. Contractor shall revise, update and submit submittal schedule to Owner's Representative on the first of each month, or as required by Owner's Representative.
6. Contractor shall allow in the Construction Schedule, at least sixteen (16) days for Owner's Representative review following Owner's Representative receipt of submittal. For mechanical, plumbing, electrical, and other submittals requiring joint review with CMR, and/or others Contractor shall allow a minimum of eighteen (18) days following Owner's Representative receipt of submittal.
7. No adjustments to the Contract Time and/or Milestones will be authorized because of a failure to transmit submittals to Owner's Representative sufficiently in advance of the Work to permit review and processing.

F. In case of product substitution, Shop Drawing preparation shall not commence until such time Owner's Representative reviews said submittal relative to the General Conditions. Each submittal shall be accompanied by a letter of transmittal containing a complete itemized and numbered list of submitted materials. Separate letters of transmittal shall accompany each submittal from different subcontractors.

G. Resubmission: If requested, resubmit submittals in a timely manner. Resubmit as specified for initial submittal but identify as such. Indicate any changes which have been made other than those requested by the Architect.

1.5 SHOP DRAWINGS

A. Shop Drawings are original drawings prepared by Contractor, subcontractor, supplier, or distributor which illustrate some portion of work by showing fabrication, layout, setting, or erection details.

B. Draw shop drawings to an accurate scale that is large enough to indicate all pertinent features and methods.

C. Copies Required and Distribution: Unless otherwise indicated in individual specification sections, submit 6 sets of blueline prints.

1.6 PRODUCT DATA

A. Manufacturer's Standard Schematic Drawings:

1. Delete information which is not applicable to Project.

2. Supplement standard Drawings to provide additional information applicable to Project.

B. Manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, and other standard descriptive data:

1. Clearly mark each copy to identify pertinent materials, products, or models.
2. Indicate dimensions and clearances required.
3. Indicate performance characteristics and capacities.
4. Indicate wiring diagrams and controls.

C. Copies Required and Distribution: Submit 6 copies.

1.7 SAMPLES

A. Samples:

1. Submit samples of sufficient size and quantity to clearly illustrate:

a. Functional characteristics of product or material, with integral parts and attachment devices.
b. Full range of colors, textures, and patterns.

2. Provide permanent identification for each sample.
3. Color and Pattern: Whenever a choice of color or pattern is available in a specified product, submit accurate color chips and pattern charts to the Architect/Engineer for review and selection.
4. Number Required: Submit 3 of each.

B. Field Samples: When specified, erect field samples and mock-ups at project site to illustrate materials, equipment, or workmanship and to establish standards by which completed work shall be judged.

C. After return of office samples or review of field samples, these items may be used in construction of project with approval of the Architect/Engineer.

1.8 MANUALS

A. Where Manuals are required to be submitted covering items included in Work, prepare Manuals in durable binders, approximately 8-1/2" by 11" in size, and provide following information:

1. Identification on, or readable through, front cover stating general nature of manual.
2. Neatly typewritten index at front of Manual, furnishing immediate information as to location in Manual of data or equipment involved.
3. Complete instructions regarding operation and maintenance of equipment involved.
4. Complete nomenclature of replaceable parts, their part numbers, current cost, and name and address of nearest vendor of parts.
5. Copy of all Guarantees and Warranties issued.
6. Copy of approved Shop Drawings with data concerning changes made during construction.

B. Extraneous Data: Where contents of Manuals include manufacturers' catalog pages, clearly indicate precise items included in this installation and delete, or otherwise clearly indicate, manufacturers' data which is not part of this installation.

C. Number of Copies Required: Deliver 6 copies to the Architect/Engineer for review, approval and distribution. The Architect/Engineer will return 3 copies to Contractor.

1.9 CERTIFICATES

A. Submit in triplicate, in accordance with requirements of each Specification Section.

1.10 COLOR SCHEDULES

A. The District shall review and approve color schedules prepared by the Architect/Engineer and distribute the approved schedules to Contractor.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION 01 30 00

SECTION 01 40 50 - TESTING AND INSPECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Testing and inspection services to meet requirements of the California Building Code (CBC), Title 24, Parts 1 and 2, as indicated on the Drawings.

C. Tests of materials are required by a DSA certified testing AGENCY as set forth in Section 4-335 of the California Building Standards Administrative Code.

1.02 RELATED SECTIONS

Provisions of the General Conditions, Supplemental Conditions and Division 01 apply to this Specification. Specifications that are referenced or related may include:

A. Section 01 04 50: Cutting and Patching

B. Section 01 10 00: Construction Documents

C. Section 01 30 00: Submittals

D. Section 01 50 00: Construction Facilities and Temporary Controls

E. Section 01 70 00: Contract Closeout

F. Section 01 74 00: Warranties and Guarantees

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION

3.01 TESTS

A. OWNER will select and provide an independent DSA approved certified testing agency (AGENCY) to conduct tests, sampling, and testing of materials. AGENCY shall have DSA Laboratory Evaluation and Acceptance (LEA) Program acceptance. Selection of material to be tested shall be by the AGENCY and not by CONTRACTOR. Lab to be approved by Architect of record/Structural Engineer (where applicable) DSA.

B. Any material shipped from the source of supply prior to having satisfactorily passed such testing and inspection, or prior to the receipt of notice from IOR such testing and inspection is not required, shall not be incorporated into the Work.

C. OWNER will select, and directly reimburse, the AGENCY for costs of all DSA required tests and inspections; however, the OWNER may be reimbursed by CONTRACTOR for such costs for re-testing of deficient Work.

D. The independent testing AGENCY is not authorized to release, revoke, alter, or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.

E. The AGENCY shall not perform any duties of CONTRACTOR.

F. CONTRACTOR shall provide an insulated curing box with the capacity for twenty (20) concrete cylinders and will relocate said box and cylinders as rapidly as required in order to provide for progress of the Work.

3.02 TEST REPORTS

A. Test reports shall include all tests performed, regardless of whether such tests indicate the material is satisfactory or unsatisfactory. Samples taken but not tested shall also be reported. Records of special sampling operations, when and as required, shall also be reported. Reports shall indicate the material (or materials) was sampled and tested in accordance with requirements of CBC, Title 24, Parts 1 and 2, as indicated on the Drawings. Test reports shall indicate specified design strength and specifically state whether or not the material (or materials) tested comply with the specified requirements.

3.03 VERIFICATION OF TEST REPORTS

A. Each testing AGENCY shall submit to the Division of the State Architect, in duplicate, a verified report covering all tests required to be performed by that AGENCY during the progress of the Work. Such report, covering all required tests, shall be furnished prior to Substantial Completion and/or, when construction on the Work is suspended, covering all tests up to the time of Work suspension.

3.04 INSPECTION BY OWNER

A. OWNER, and its representatives, shall have access, for purposes of inspection, at all times to all parts of the Work and to all shops wherein the Work is in preparation. CONTRACTOR shall, at all times, maintain proper facilities and provide safe access for such inspection.

B. OWNER, and its representatives, shall have the right to reject materials and/or workmanship deemed defective Work and to require correction. Defective workmanship shall be corrected in a satisfactory manner and defective materials shall be removed from the premises and legally disposed of without charge to OWNER. If CONTRACTOR does not correct such defective Work within a reasonable time, fixed by written notice and in accordance with the terms and conditions of the Contract Documents, OWNER may correct such defective Work and proceed in accordance with related Articles of the Contract Documents.

C. CONTRACTOR is responsible for compliance to all applicable local, state, and federal regulations regarding codes, regulations, ordinances, restrictions, and requirements.

3.05 INSPECTOR OF RECORD

A. An Inspector of Record (IOR) shall be employed by OWNER, and approved by ARCHITECT, STRUCTURAL ENGINEER and DSA in accordance with requirements of Title 24 of the California Code of Regulations with their duties specifically defined therein. Additional DSA certified inspectors may be employed and assigned to the Work by OWNER in accordance with the requirements of California Building Standards Administrative Code with their duties as specifically defined in Section 4-333(b).

B. Inspection of Work shall not relieve CONTRACTOR from any obligation to fulfill all terms and conditions of the Contract Documents.

C. CONTRACTOR shall be responsible for scheduling times of inspection, tests, sample taking, and similar activities of the Work.

3.06 TESTS AND INSPECTIONS

The following tests and inspections do not limit inspection of the Work but are required by DSA, other agencies, or are required in related Sections of the Contract Documents.

1. Concrete - CBC, Chapter 19A:

    a. Materials:

        1) Test of Materials: 1705A.3, ACI 318-14 Sections 26.12 & 26.13
        2) Portland Cement Tests: ACI 318, ASTM C 150.
        3) Concrete Aggregate: 1903A.5, ACI 318 Section 26.4.1.2, ASTM C 33.
        4) Reinforcing Bars: 1910A.2, ACI 318-14 Section 26.6.1.2
        5) Mix Designs: Table 1705A.3 Item 5, 1910A.1
        6) Admixtures: 1903A.6 ACI 318 Section 26.4.2.2 (b) and Table 26.4.2.2 (b)

    b. Quality:

        1) Proportions of Concrete: 1910A.1
        2) Mixing and Placing: Table 1705A.3 Item 5, 1910A.1
        3) Concrete Testing: 1905A.1.16, ACI 318-14 Section 26.12

    c. Inspection:

        1) Project Site Inspection: 1905A.7, 1705A.3.5
        2) Batch Plant: 1705A.3.3
        3) Weigh-Master Inspection: 1705A.3.3.1
        4) Reinforcing Bar Welding Inspection: 1705A.3.1 1903A.4.

2. Steel - CBC, Chapters 17A and 22A:

    a. Materials:

        1) Structural Steel: 2205A.1.
        2) Material Identification: 2203.A.1.

    b. Inspection and Tests:

        1) Test of Structural Steel: 1705A.2.
        2) Shop Fabrication Inspection: 1704A.2.5.
        3) Welding Inspection: 1705A.2.5.

3. Masonry - CBC, Chapter 21A:

    a. Materials:

        1) Masonry Units: 2103A.1.
        2) Mortar & Grout Aggregates: 2103A.3.1.
        3) Reinforcing Bars: 2103A.4.

b. Quality:

1) Portland Cement Tests: 2105A.2.
2) Mortar & Grout Tests: 2105A.3.
3) Masonry Core Tests: 2105.2
4) Reinforcing Bars: 2103A.4
5) Masonry Prism Tests: 2105A.2

c. Inspection:

1) Reinforced Masonry: 1705A.4.
2) Reinforcing Bar Welding: 1705A.3.1

END OF SECTION 01 40 50

SECTION 01 74 00 - WARRANTIES AND GUARANTEES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. This Section includes administrative and procedural requirements for warranties required by the Contract Documents, including manufacturers and/or installer's standard warranties on products and special product warranties.

B. Refer to General Conditions for terms of the guarantee period for the Work.

1.2 RELATED SECTIONS

A. Section 01 04 50: Cutting and Patching

B. Section 01 30 00: Submittals

C. Section 01 70 00: Contract Closeout

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.1 WARRANTY REQUIREMENTS

A. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties shall not relieve Contractor of the warranty of the Work incorporating such materials, products, and/or equipment. Manufacturer's disclaimers and limitations on warranties do not relieve suppliers, manufacturers, installers, and Subcontractors of the requirement to countersign special warranties with Contractor.

B. Standard warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to Owner.

C. Special warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for Owner.

D. Related Damages and Losses: When correcting failed or defective warranted Work, remove and replace Work that has been damaged as a result of such failure or which must be removed and replaced to provide access for correction of warranted Work.

E. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement with the reinstated warranty equal to the original warranty.

F. Replacement Cost: Upon determination the Work covered by a warranty has failed and/or is defective, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. Contractor is responsible for the cost of replacing or rebuilding defective Work regardless

of whether Owner has benefited from use of the Work through a portion of its anticipated useful service life.

G. Owner Recourse: Expressed warranties made to Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which Owner can enforce such other duties, obligations, rights, or remedies.

H. Rejection of Warranties: Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

I. Where the Contract Documents require a special warranty, or similar commitment on the Work or part of the Work, Owner reserves the right to refuse to accept the Work until Contractor presents evidence the entities required to countersign such commitments have done so.

3.2 SUBMITTALS

A. Submit written warranties to Owner's Representative prior to Final Completion of the Work. If the certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, submit written warranties as set forth in the certificate of Substantial Completion.

B. When a designated portion of the Work is partially used and/or occupied by Owner, submit properly executed warranties to OWNER'S REPRESENTATIVE within fifteen (15) days of the Partial Use or Occupancy of the designated portion of the Work.

C. When the Contract Documents require Contractor (s), or Contractor and a Subcontractor, installer, supplier or manufacturer to execute a special warranty, prepare a written document containing appropriate terms and identification, ready for execution by the required parties. Submit a draft to Owner, through the Owner's Representative, for approval fifteen (15) days in advance prior to final execution.

D. Refer to Divisions 02 through 16 for specific content requirements and particular requirements for submitting special warranties.

E. Form of Submittal: Prior to Final Completion of the Work, compile two copies of each required warranty properly executed by Contractor, or by Contractor and Subcontractor, installer, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the Specifications.

F. Bind warranties and bonds in heavy-duty, commercial-quality, durable 3-ring, vinyl-covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8½ by 11" (115 by 280 mm) paper.

1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the item or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address, and telephone number of the installer.
2. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project title and/or name, and name of Contractor.
3. When warranted Work requires operation and maintenance manuals, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

END OF SECTION 01 74 00

SECTION 01 74 50 - CLEANING

PART 1 - GENERAL

1.1 DESCRIPTION

A. The CONTRACTOR shall be solely responsible for the cleaning of the Project site.

B. Keep premises, and adjacent private and public properties free from accumulation of waste, debris and rubbish caused by construction process.

C. At completion of Work, remove waste materials, rubbish, tools, equipment, machinery and surplus material, and clean all exposed surfaces. Remove remaining mock-ups and samples.

D. Leave Project clean and ready for occupancy.

1.2 RELATED SECTIONS

A. Section 01 50 00: Construction Facilities and Temporary Control.
B. Section 01 70 00: Contract Closeout

1.3 SAFETY

A. The CONTRACTOR shall be solely responsible for cleaning safety.

B. Standards: Maintain Project in accord with Federal, State, Local safety regulations, ordinances, anti-pollution laws and insurance standards.

C. Hazard Control: Maintain Project in accord with Federal, State, Local safety regulations, ordinances, anti-pollution laws and insurance standards.

D. Conduct cleaning and disposal operations to comply with Federal, State, Local safety regulations, ordinances, and anti-pollution laws.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 DURING CONSTRUCTION

A. The CONTRACTOR is solely responsible for the cleaning of all public and private property.

B. Keep premises, and adjacent private and public properties free from accumulations of waste materials and rubbish. Remove debris and dirt from public property promptly; clean sidewalks and adjacent streets daily when soiled by work performed under this Contract.

C. As often as necessary, and/or as required the CONTRACTOR shall clean site and dispose of waste materials, debris, and rubbish off the site in a legal manner. Remove all combustible materials in a legal manner.

D. Provide on-site containers for collection of waste materials, debris, and rubbish. Provide a collection can at each location used as an eating area. Pick-up and dispose of all garbage daily.

E. Remove waste materials, debris, and rubbish from site and legally dispose of at legal public or private dumping areas or recycling center off OWNER'S property.

F. Do not allow debris and combustible materials to accumulate in voids, cavities, and plenums created by wall partition, and ceiling construction. These areas must be thoroughly cleaned out before being sealed or closed off by installation of finish materials.

G. Do not allow debris to clog drains. Keep roof drains, scuppers, floor drains and area drains clean and free of debris.

H. Vacuum clean interior areas when ready to be painted, installation of carpet, installation of floor tile, etc. Refer to Sections for other provisions on preparations of finish surfaces.

I. Handle materials in a controlled manner with as few handling as possible; do not drop or throw materials from heights.

J. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on newly finished surfaces.

K. Wet down materials and rubbish to lay dust and prevent it form blowing.

3.2 FINAL CLEANING

A. Complete cleaning operations before requesting inspection for a certificate of Substantial Completion.

B. Employ experienced workers, or professional cleaners, for all final cleaning.

C. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.

D. Remove labels that are not permanent labels.

E. Clean transparent materials, including mirrors and glass in doors and windows. Remove misplaced glazing compound and other substances. Replace chipped or broken mirrors, glass and other damaged transparent materials.

F. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors, walkways, and the like broom clean. Vacuum carpeted surfaces.

G. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.

H. Clean the site, including landscaped areas, of rubbish litter and other foreign substances.

1. Contaminated earth:

    a. Final clean-up operation includes the removal and disposal of earth contaminated or unsuitable for support of plant life in planting areas, and filling of resulting excavations with suitable soil.

    b. Contaminated areas include those used for disposal of waste concrete, mortar, plaster, masonry, and similar materials, areas in which washing out of concrete and plaster mixers or washing of tools and like cleaning operations have been performed, and areas that have been oiled, paved, or chemically-treated.

2. Sweep paved areas broom clean; remove stains, spills and other foreign deposits.

3. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.

I. The CONTRACTOR is to keep Project clean until it is occupied by OWNER.

END OF SECTION 01 74 50

SECTION 02 07 00 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Related Documents: Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

B. Related Sections:

1. 01 04 50 Cutting and Patching

C. Definitions: As follows:

1. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain the District's property.
2. Remove and Salvage: Items indicated to be removed and salvaged remain the District's property. Remove, clean, and pack or crate items to protect against damage. Identify contents of containers and deliver to District's designated storage area.
3. Salvage and Reuse In New Work: Remove items indicated; clean, service, and otherwise prepare them for reuse; store and protect against damage. Reinstall items in locations indicated.
4. Existing to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by the Architect, items may be removed to a suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations.
5. Replace: Remove and legally dispose of existing item(s) inidicated and install new like item(s) that conform(s) to project specifications.

D. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the District's property, demolished materials shall become the Contractor's property and shall be removed from the site with further disposition at the Contractor's option.

E. Record drawings at Project closeout according to Division 1 Section "Contract Closeout."

1. Identify and accurately locate capped utilities and other subsurface structural, electrical, or mechanical conditions.

F. Regulatory Requirements: Comply with local governing EPA notification regulations before starting selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction including, but not limited to, the City of Santa Ana. Comply with California Fire Code Article 87.

G. District will occupy portions of the building immediately adjacent to selective demolition area. Conduct selective demolition so that District's operations will not be disrupted. Provide not less than 72 hours' notice to District of activities that will affect District's operations.

H. District assumes no responsibility for actual condition of buildings to be selectively demolished.

I. Storage or sale of removed items or materials on-site will not be permitted.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.1 GENERAL

A. Survey the condition of the building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of the structure or adjacent structures during selective demolition.

B. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

C. Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

D. Utility Requirements: Locate, identify, shut off, disconnect, and seal or cap off indicated utility services serving building to be selectively demolished.

1. Where utility services are required to be removed, relocated, or abandoned, provide bypass connections to maintain continuity of service to other parts of the building before proceeding with selective demolition.

E. Drain, purge, or otherwise remove, collect, and dispose of chemicals, gases, explosives, acids, flammables, or other dangerous materials before proceeding with selective demolition operations.

F. Conduct demolition operations and remove debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.

G. Conduct demolition operations to prevent injury to people and damage to adjacent buildings, facilities, and site improvements to remain. Ensure safe passage of people around selective demolition area.

1. Provide temporary weather protection, during interval between demolition and removal of existing construction, on exterior surfaces and new construction to ensure that no water leakage or damage occurs to structure or interior areas.
2. Protect walls, ceilings, floors, and other existing finish work that are to remain and are exposed during selective demolition operations.
3. Cover and protect furniture, furnishings, and equipment that have not been removed.

H. Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of building to be selectively demolished.

I. Use water mist, temporary enclosures, and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations.

J. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

K. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before start of selective demolition.

L. Remove structural framing members and lower to ground by method suitable to avoid free fall.

M. Promptly patch and repair holes and damaged surfaces caused to adjacent construction by selective demolition operations.

N. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.

O. Restore exposed finishes of patched areas and extend finish restoration into adjoining construction to remain in a manner that eliminates evidence of patching and refinishing.

P. Patch and repair floor and wall surfaces in the new space where demolished walls or partitions extend one finished area into another. Provide a flush and even surface of uniform color and appearance.

Q. Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

R. Disposal: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

1. Do not burn demolished materials.
2. Dispose of demolished materials at designated spoil areas on District's property.
3. Transport demolished materials off District's property and legally dispose of them.

S. Sweep the building broom clean on completion of selective demolition operation.

T. Where performing contracted scope of work requires coring of existing concrete or CMU structures (including CMU Walls and concrete Floors), contractor shall obtain and document means of verifying existence and location of embedded steel reinforcing materials within said concrete and CMU assemblies. Contractor shall locate reinforcement by means of non-invasive technology such as X-ray photography for the purposes of protecting said reinforcement in place and shall not damage any reinforcement materials (rebar, etc.) unless specifically detailed as such and approved by the authority having jurisdiction.

END OF SECTION 02 07 00

SECTION 03 20 00 - CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Reinforcing steel bars, welded steel wire fabric fabricated steel bar or rod mats for cast-in-place concrete.

B. Support chairs, bolsters, bar supports, and spacers, for supporting reinforcement.

1.2 REFERENCES

A. CBC - California Building Code, (CCR) California Code of Regulations, Title 24, Part 2, Chapter 19A (ACI 318-14).

B. ACI 301 - Specifications for Structural Concrete for Buildings.

C. ACI 315 (SP-66) - Details and Detailing of Concrete Reinforcement.

D. ACI 318-14 - Building Code Requirements for Reinforced Concrete.

E. ASTM A82 - Cold Drawn Steel Wire for Concrete Reinforcement.

F. ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement.

G. ASTM A615 - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

H. ASTM A706 - Standard Specification for Low Alloy Steel Deformed Bars for Concrete Reinforcement.

I. AWS D1.4 - Structural Welding Code Reinforcing Steel.

J. CRSI - Manual of Practice.

K. CRSI - Placing Reinforcing Bars.

1.3 QUALITY ASSURANCE

A. Perform concrete reinforcement work in accordance with CRSI Manual of Standard Practice.

B. Conform to ACI 301 and ACI 315 (SP-66).

C. Conform to CBC California Building Code, (CCR) California Code of Regulations, Title 24, Part 2.

1.4 CERTIFICATES

A. Submit mill test certificates of supplied concrete reinforcing, indicating physical and chemical analysis.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Reinforcing Steel: ASTM A615, Grade 60. Billet-steel deformed bars, uncoated finish.

B. Welded Reinforcement: ASTM A706, Grade 60, deformed bars, unfinished.

C. Welded Steel Wire Fabric: ASTM A185 plain type; coiled rolls; uncoated finish.

D. Steel Wire: ASTM A82, plain, cold drawn steel.

2.2 ACCESSORY MATERIALS

A. Tie Wire: Minimum 16 gage annealed type.

B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during installation and placement of concrete including load bearing pad on bottom to prevent vapor barrier puncture.

2.3 FABRICATION

A. Fabricate in accordance with ACI 315 (SP-66), providing concrete cover specified in Section 033000.

B. Locate reinforcing splices not indicated on Drawings at points of minimum stress. Indicate location of splices on shop drawings.

C. Weld reinforcing bars in accordance with AWS D1.4.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Before placing concrete, clean reinforcement of foreign particles or coatings.

B. Place, support, and secure reinforcement against displacement. Do not deviate from alignment or measurement.

C. Mix fibrous reinforcement into concrete material according to Section 033000.

D. Do not displace or damage vapor barrier required by Section 033000.

3.2 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Section 014000 and as required by the Division of the State Architect and District Inspector.

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END OF SECTION 03 20 00

SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Cast-in-place concrete foundation walls and footings.

B. Floors and slabs.

C. Control, expansion, and contraction joint devices associated with concrete work.

D. Curing and sealing compound.

E. Retaining walls, utility slabs.

1.2 REFERENCES

A. CBC - California Building Code, (CCR) California Code of Regulations Title 24, Part 2, Chapter 19A

B. CBC - California Building Code, (CCR) California Code of Regulations, Title 24, Part 2, California State Accessibility Standards.

C. ADAAG - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities.

D. ACI 301 - Specifications for Structural Concrete for Buildings.

E. ACI 302.1R - Guide for Concrete Floor and Slab Construction.

F. ASTM C33 - Concrete Aggregates.

G. ASTM C94 - Ready-Mixed Concrete.

H. ASTM C150 - Portland Cement.

I. ASTM C260 - Air-Entraining Admixtures for Concrete.

J. ASTM C289 - Potential Reactivity of Aggregate.

K. ASTM C309 - Liquid Membrane Forming Compound.

L. ASTM C330 - Lightweight Aggregates for Structural Concrete.

M. ASTM C494 - Standard Specifications for Chemical Admixtures for Concrete.

N. ASTM C567 - Unit Weight of Structural Lightweight Concrete.

O. ASTM C618- Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture for Concrete.

P. ASTM C932 - Surface - Applied Bonding Agents.

Q. ASTM C1315 - Liquid Membrane - Forming Compounds Having Special Properties for Curing and Sealing

Concrete.

R. ASTM D226 - Asphalt Saturated Organic Felt used in Roofing and Waterproofing.

S. ASTM D1751 - Preformed Expansion Joint Filler for Concrete Paving and Structural Construction.

T. ASTM E96 – Standard Test Methods for Water Vapor Transmission of Materials.

U. ASTM E1643 - Installation of Water Vapor Retarders used in Contact with Earth or Granular Fill Under Concrete Slab.

V. ASTM E1155 - Determining Floor Flatness and Levelness Using the F-Number System.

W. ASTM E1745 - Standard Specifications for Plastic Water Vapor Retarders Used in Contact with Soil Or Granular Fill Under Concrete Slabs.

X. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.

Y. National Ready Mix Concrete Association - Plant Certification Program.

Z. Stormwater Best Management Practice Handbook (BMP Handbook), Construction Edition, as published by the California Storm Water Quality Association

1.3 QUALITY ASSURANCE

A. Perform work in accordance with ACI 301.

B. Obtain materials from same source throughout the Work.

1.4 QUALIFICATIONS

A. Manufacturer: Manufacturer of ready-mix concrete products complying with ASTM C94 requirements for production facilities and equipment. Certified according to National Ready Mix Concrete Associates Plant Certification Program.

1.5 DESIGN MIX

A. Submit design mix for each class of concrete, prepared by a California Registered Civil Engineer, to Testing Laboratory and Architect for review.

1.6 REGULATORY REQUIREMENTS

A. Conform CBC - California Building Code, (CCR) California Code of Regulations, Title 24, Part 2.

B. Conform to CBC - California Building Code, (CCR) California Code of Regulations, Title 24, Part 2, and ADAAG for access requirements for individuals with disabilities.

1.7 SUBMITTALS

A. Submit product data and manufacturer's instructions under provisions of Section 016000.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Provide concrete curing, finishing, and waste management techniques as defined in Section 4 of the Storm Water Best Management Practice Handbook, (BMP Handbook) Construction Edition.

PART 2 - PRODUCTS

2.1 FORMWORK

A. As specified in Section 031000.

2.2 REINFORCEMENT

A. Reinforcing steel as specified in Section 032000.

2.3 CONCRETE MATERIALS

A. Cement: ASTM C150, Type II/V Portland type; low alkali; grey color.

B. Fine and Coarse Aggregates Normal Weight Concrete: ASTM C33, non reactive when tested in accordance with ASTM C289 and Appendix X-1 of ASTM C33.

C. Water: Clean and not detrimental to concrete.

2.4 ADMIXTURES

A. Air Entrainment: ASTM C260.

B. Fly Ash: ASTM C618, Class F.

C. Water Reducing Admixture: ASTM C494, Type A.

D. Calcium chloride, or any other admixtures not allowable.

2.5 VAPOR BARRIER

A. Material: 15 mil thick polyethylene film meeting the requirements of ASTM E1745, Class B, with a minimum permeance of 0.03 perms in accordance with ASTM E96.

B. Accessories: Minimum 4 inch wide polyethylene tape with pressure sensitive adhesive.

C. Manufactures:

1. Stego Industries, www.stegoindustries.com.

2. Substitutions: Under Provisions of Section 016000.

2.6 ACCESSORIES

A. Underlayment: ASTM D226, Type I (No. 15) asphalt saturated roofing felt.

B. Bonding Agent: ASTM C932; Weld-Crete as manufactured by Larsen Products Corp., www.larsenproducts.com.

C. Non-shrink Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 7000 psi in 28 days.

D. Joint Filler: ASTM D1751, 1/2 inch thick.

E. Sand Fill: Manufactured "crusher run" sand free of silt, clay, loam, friable or soluble materials or organic matters, all passing the No. 4 sieve and only 5 percent passing the No. 200 sieve.

F. Slip Resistant Aggregate: 95 percent minimum fused homogeneous aluminum oxide.

G. Substitutions: Under provisions of Section 01 63 00.

2.7 CONCRETE MIX

A. Mix concrete in accordance with ASTM C94 and CBC, California Building Code, (CCR) California Code of Regulations, Title 24, Part 2, Section 1905A.3.

B. All Concrete: Proportion normal-weight concrete mixture as follows:

1. Minimum Compressive Strength: 4,000 psi at 28 days or as noted on the plans.

2. Maximum Water-Cement Materials Ratio: 0.45

3. Aggregate Size: 1 inch maximum.

4. Slump Limit: 4 inch maximum.

5. Fly Ash: Maximum 15 percent by weight.

6. Air Content: 1.5 percent, plus or minus 0.5 percent.

PART 3 - EXECUTION

3.1 INSPECTION

A. Verify anchors, seats, plates, reinforcement, and other items to be cast into concrete are accurately placed, held securely, and will not cause difficulty in placing concrete.

3.2 PREPARATION

A. At locations where new concrete is dowelled to existing work, drill holes in existing concrete, insert steel dowels, and pack solid with non-shrink grout.

B. Place 2 inch thick sand fill over subgrade.

3.3 BASE

A. Place 2 inch thick sand fill base over vapor barrier.

B. Compact base materials in accordance with provisions of Section 025000.

C. Ensure vapor barrier is not damaged or disturbed during base installation.

3.4 PLACING CONCRETE

A. Notify Architect minimum 24 hours prior to commencement of concreting operations.

B. Place concrete in accordance with ACI 301.

C. Hot and Cold Weather Placement: ACI 301.

1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.

2. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water.

3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete in hot weather. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

D. Ensure reinforcement, inserts, embedded parts and formed joints are not disturbed during concrete placement.

E. Do not disturb or damage vapor barrier while placing concrete. Repair damage as required to maintain integrity of barrier.

F. Place concrete continuously between predetermined construction and control joints. Do not break or interrupt successive pours such that cold joints occur.

G. Excessive honeycomb or embedded debris in concrete is not acceptable.

3.5 JOINTS

A. Saw cut control joints at an optimum time after finishing. Use 3/16 inch thick blade, cutting 1/3 into depth of slab thickness.

B. Provide control joints at 15 feet on center unless otherwise indicated.

C. Separate slabs from vertical surfaces with joint filler. Extend joint filler from bottom of slab to within 1/4 inch of finished slab surface.

3.6 FINISHING OF FORMED SURFACES

A. Rough form finish:

1. Leave surfaces with the texture imparted by forms, except patch tie holes and defects.

2. Remove fins exceeding 1/4 inch in height.

3. Use for below grade foundation walls and concealed spaces.

B. Smooth form finish:

1. Coordinate as necessary to secure form construction using smooth, hard, uniform surfaces, with number of seams kept to a practical minimum and in a uniform and orderly pattern.

2. Patch tie holes and defects.

3. Remove fins completely.

4. Use for exposed finish surfaces to receive paint.

C. Smooth rubbed finish:

1. Produce on newly hardened concrete no later than the day following form removal.

2. Wet the surfaces, and rub with carborundum brick or other abrasive until uniform color and texture are produced.

3. Do not use a cement grout other than the cement paste drawn from the concrete itself by the rubbing process.

4. Use for exposed finish surfaces to receive clear sealer.

D. Grout cleaned finish:

1. Do not start cleaning operations until all contiguous surfaces to be cleaned are completed and accessible.

2. Do not permit cleaning as the work progresses.

3. Mix one part Portland cement and 1-1/2 parts fine sand with sufficient water to produce a grout having the consistency of thick paint.

4. Wet the surface of the concrete sufficiently to prevent absorption of water from the grout and apply the grout uniformly with brushes or spray gun.

5. Immediately after applying the grout, scrub the surface vigorously with a cork float or stone to coat the surface and fill all air bubbles and holes.

6. While the grout is still plastic, remove all excess grout by working the surface with a rubber float, sack, or other means.

7. After the surface whites from drying (about 30 minutes at normal temperatures), rub vigorously with clean burlap.

8. Keep the surface damp for at least 36 hours after final rubbing.

9. Use for repair of exposed finish surfaces to receive paint or clear sealer.

3.7 PATCHING

A. Notify Architect immediately upon removal of forms to determine areas that will require patching.

B. Surface defects shall include color and texture irregularities, stains, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections and discolorations in the surface that cannot be removed by cleaning.

C. Patch imperfections in accordance with ACI 301.

3.8 DEFECTIVE CONCRETE

A. Modify or replace concrete not conforming to required levels and lines, details, and elevations.

B. Repair or replace concrete not properly placed or of the specified type.

3.9 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Section 014000 and as required by the Division of the State Architect and District Inspector.

B. Owner's Inspector will take cylinders and perform slump and air entrainment tests in accordance with ACI 301 and will arrange for pick-up by Testing Laboratory.

C. Samples for strength test of each class of concrete placed each day shall be taken not less than once a day, or not less than once for each 50 cubic yards of concrete, or not less than once for each 2,000 square feet or surface area for slabs or walls. Additional samples for seven-day compressive strength test shall be taken for each class of concrete at the beginning of the concrete work or whenever the mix or aggregate is changed – CBC 1905A.1.15.

D. Tests of cement and aggregates will be performed by Testing Laboratory to ensure conformance with requirements stated herein.

E. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

3.10 PROTECTION

A. Protect finished work under provisions of Section 01 40 00.

B. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

C. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

END OF SECTION 03 30 00

SECTION 05 50 00 - METAL FABRICATIONS

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes:

1. Non-structural metal fabrications.
2. Prefabricated metal products and equipment.
3. Metal fasteners and connectors not specified elsewhere.

B. Related Sections:

1. Drawings and general provisions of the Contract, including Bidding and Contract Requirements, General and Supplementary Conditions and Division 1 Specifications, apply to this section.

C. Submittals:

1. Comply with pertinent provisions of Section 01 30 00.
2. Product Data: Submit manufacturer's specifications, anchor details and installation instructions for products to be used in the fabrication of miscellaneous metal fabrications, including paint products.
3. Shop Drawings: Submit shop drawings for fabrication and erection of miscellaneous metal assemblies. Include plans and elevations at not less than 2" to 1'-0" scale, and include details of sections and connections at not less than 3" to 1'-0" scale. Show anchorage and accessory items. Provide templates for anchor and bolt installation by others.

D. Quality Assurance

1. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible. Do not delay job progress; allow for trimming and fitting wherever taking field measurements before fabrication might delay work.
2. Shop Assembly: Preassemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

PART 2 - PRODUCTS

2.1 General: For work exposed to view use materials selected for their smoothness and freedom from surface blemishes. All metal exposed to weather shall be hot-dipped galvanized after fabrication except for portions embedded in concrete or enclosed within weather tight construction.

A. Steel Plates, Shapes, and Bars: ASTM A 36.

B. Slotted Channel Framing: Cold-formed metal channels with flanges returned toward web with 9/16 inch wide slotted holes in webs at 2 inches o.c. 1 5/8 inches width and depth. Galvanized steel

complying with ASTM A 653/A 653M, structural quality, Grade 33 (Grade 230), with G90 (Z275) coating; 0.079-inch nominal thickness. Painted.

C. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either malleable iron, ASTM A 47, or cast steel, ASTM A 27. Provide bolts, washers, and shims as required, hot-dip galvanized per ASTM A 153.

D. Expanded-Metal Lath: Fabricate expanded-metal lath from zinc-coated (galvanized) steel sheet to produce lath complying with ASTM C 847. Flat, diamond mesh, 3.4 lb/sq. Yd.

E. Fasteners: Provide bolts, nuts, lag bolts, machine screws, wood screws, lock washers as required for application indicated and complying with applicable Federal standards. Hot-dip galvanize fasteners for exterior applications to comply with ASTM A 153.

F. Shop Primer for Ferrous Metal: Manufacturer's or Fabricator's standard, fast-curing, lead-free, universal modified alkyd primer; resistant to normal atmospheric corrosion, compatible with finish paint systems indicated, capable of providing a sound foundation for field-applied topcoats despite prolonged exposure; complying with performance requirements of FS TT-P-645.

G. Bituminous Paint: Cold-applied asphalt mastic complying with SSPC-Paint 12 except containing no asbestos fibers.

H. Zinc Chromate Primer: FS TT-P-645.

I. Shop Painting: Apply shop primer to surface of metal fabrications except those embedded in concrete or galvanized; comply with SSPC-PA1 and requirements indicated below:

J. Galvanizing: ASTM A 123, A 153 and A386, as applicable, for fabricated and un-fabricated steel products made of uncoated rolled, pressed and forged steel shapes, plates, bars and strip 0.0229 inch and thicker.

K. Galvanizing Repair Paint: High zinc dust content paint with dry film containing not less than 94 percent zinc dust by weight, complying with DOD-P-21035 or SSPC-Paint-20.

L. Fabrication, General: Use materials of size and thickness shown, or, if not shown, of required size, grade and thickness to produce strength and durability in finished product. Shop-paint all items not specified to be galvanized after fabrication.

M. Rough Hardware: Furnish custom-fabricated bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes for framing and supporting and anchoring woodwork.

1. Galvanize per ASTM A153, unless otherwise indicated.

N. Miscellaneous Framing and Supports: Provide as required to complete work and not included with structural steel framework. Fabricate of welded construction in as large units as possible; drill and tap as required to receive hardware and similar items. Include required anchors for building into other work; spaced not more than 24 inches o.c.

O. Steel Pipe Railings: Fabricate pipe railings to dimensions and details shown, with smooth bends and welded joints ground smooth and flush. Where details are not shown, use 1-1/4", extra strong, standard steel pipe with top of top rail 42" above floor, or 36" above stair treads measured vertically at the stair riser line. Adjust railings prior to anchoring to ensure matching alignment at

butting joints. Space posts not more than 8' on centers, unless otherwise shown. Plumb posts in each direction. Secure posts and rail ends to buildings construction as follows:

1. Anchor posts in concrete by means of pipe sleeves set and anchored into concrete. Provide sleeves of galvanized, standard weight, steel pipe, not less than 6" long, and having an inside diameter not less than 1/2" greater than the outside diameter of the inserted pipe post. Provide steel plate secured to bottom of sleeve of width and length not less than 1" greater than outside diameter of sleeve. After posts have been inserted into sleeves, fill annular space between post and sleeve solid with non-shrink grout, molten lead, or sulphur. Cover anchorage joint with a round steel flange welded to post. Anchor rail ends into concrete and masonry with steel round flanges welded to rail ends and anchored into wall construction with lead expansion shields and bolts.
2. Anchor posts to steel with steel oval flanges, angle type or floor type, as required by conditions, welded to posts and bolted to steel supporting members.
3. Secure handrails to walls by means of wall brackets, and wall return fitting at handrail ends. Provide brackets to provide 1½" clearance from finish wall surface , and with wall plate portion of bracket drilled to receive one 3/8" bolt. Locate brackets not more than 60" o.c. Provide flush type wall return fittings with same projections as that specified for wall brackets. Secure wall brackets and wall return fittings to building construction as follows:

    a. Use bolt anchor expansion shields and lag bolts.

P. Railings and Handrails: CBC Section 11B-505

1. Top of gripping surfaces of handrails shall be 34" minimum and 38" maximum vertically above walking surfaces, stair nosings, and ramp surfaces. Handrails shall be at a consistent height above such surfaces.
2. Clearance between handrail gripping surfaces and adjacent surfaces shall be 1 ½" minimum. Handrail may be located in a recess if the recess if 3" maximum deep and 18' minimum clear above the top of the handrail.
3. Handrail gripping surfaces shall be continuous along their length and shall not be obstructed along their tops or sides. The bottoms of handrail gripping surfaces shall not be obstructed for than 20% of their length. Where provided, horizontal projections shall occur 1 ½" minimum below the bottom of the handrail gripping surfaces.
4. Handrail gripping surfaces with a circular cross section shall have an outside diameter of 1 1/4" minimum and 2" maximum.
5. Handrail gripping surfaces with a non-circular cross section shall have an outside dimension of 4" minimum and 6 ¼" maximum, and a cross-sectional dimension of 2 ¼" maximum.
6. Handrail gripping surfaces and any surfaces adjacent to them shall be free of sharp or abrasive elements and shall have rounded edges.
7. Handrails shall not rotate within their fittings.
8. Handrail gripping surfaces shall extend beyond and in the same direction of stair flights and ramp runs in accordance with CBC Section 11B-505.10. Such extensions are not required for continuous handrails at the inside turn of switchback or dogleg stairs and ramps.

PART 3 - EXECUTION

A. Perform cutting, drilling and fitting required for installation; set work accurately in location, alignment and elevation, measured from established lines and levels. Provide anchorage devices and fasteners where necessary for installation to other work.

B. Set loose items on cleaned bearing surfaces, using wedges or other adjustments as required. Solidly pack open spaces with bedding mortar, consisting of 1-part Portland cement to 3-parts sand and only enough water for packing and hydration, or use commercial non-shrink grout material.

C. Touch-up shop paint after installation. Clean field welds, bolted connections and abraded areas, and apply same type paint as used in shop. Use galvanizing repair paint on damaged galvanized surfaces.

END OF SECTION 05 50 00

SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Submittals: Submit the following:

1. Wood treatment data, including chemical treatment manufacturer's instructions for handling, storing, installing, and finishing treated materials.

PART 2 - PRODUCTS

A. Lumber, General: Comply with DOC PS 20 and with applicable grading rules of inspection agencies certified by the American Lumber Standards Committee's (ALSC) Board of Review. Provide dressed lumber, S4S, with each piece factory marked with grade stamp of inspection agency.

1. For exposed lumber, furnish pieces with grade stamps applied to ends or back of each piece, or omit grade stamps and provide grade-compliance certificates issued by inspection agency.

2. Provide dry lumber with 19 percent maximum moisture content at time of dressing for 2-inch nominal (38-mm actual) thickness or less, unless otherwise indicated.

B. Wood-Preservative-Treated Materials: Comply with applicable requirements of AWPA U1 (lumber) and AWPA M4 (plywood) per CBC 2303.1.8. Mark each treated item with the Quality Mark Requirements of an inspection agency approved by ALSC's Board of Review.

1. Pressure treat aboveground items with waterborne preservatives to a minimum retention of 0.25 lb/cu. ft. (4.0 kg/cu. m). After treatment, kiln-dry lumber and plywood to a maximum moisture content of 19 and 15 percent, respectively. Treat indicated items and the following:

    a. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
    b. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
    c. Wood framing members less than 18 inches (460 mm) above grade.
    d. Wood floor plates installed over concrete slabs directly in contact with earth.

2. Pressure treat wood members in contact with ground or freshwater with waterborne preservatives to a minimum retention of 0.40 lb/cu. ft. (6.4 kg/cu. m).

3. Complete fabrication of treated items before treatment, where possible. If cut after treatment, apply field treatment complying with AWPA M4 to cut surfaces. Inspect each piece of lumber or plywood after drying and discard damaged or defective pieces.

C. Quality Assurance

1. Lumber Grading Agency: Certified by specified agency and approved by Division of State Architect.

2. Plywood Grading Agency: Certified by specified agency and approved by Division of State Architect.

3. Provide Certificate of Inspection or grade mark by an approved inspection agency on each piece of lumber and plywood, indicating compliance with applicable standards or grading rules specified in the referenced standards and this Section.

4. Provide quality mark by an approved inspection agency on each piece of preservative-treated lumber and plywood, indicating compliance with applicable standards or grading rules specified in the referenced standards and this Section.

5. Provide on-site or other approved quality control program acceptable to Architect and designed to test lumber materials prior to installation in order to demonstrate compliance with moisture content criteria.

PART 3 - EXECUTION

A. General:

1. Discard units of material with defects which might impair quality of work, and units which are too small to use in fabricating work with minimum joints or optimum joint arrangement.

2. Set carpentry work to required levels and lines, with members plumb and true to line and cut and fitted.

3. Securely attach carpentry work to substrate by anchoring and fastening as shown and as required by recognized standards.

4. Countersink nail heads on exposed carpentry work and fill holes.

5. Use common wire nails, except as otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; predrill as required.

B. Wood Grounds, Nailers, Blocking And Sleepers:

1. Provide wherever shown and where required for screeding or attachment of other work. Form to shapes as shown and cut as required for true line and level of work to be attached. Coordinate location with other work involved.

2. Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise indicated. Build into masonry during installation of masonry work. Where possible, anchor to formwork before concrete placement.

3. Provide permanent grounds of dressed, preservative treated, key- bevelled lumber not less than 1-1/2" wide and of thickness required to bring face of ground to exact thickness of finish material involved. Remove temporary grounds when no longer required.

C. Wood Furring:

1. Install plumb and level with closure strips at edges and openings. Shim with wood as required for tolerance of finished work.

2. Firestop furred spaces on walls at each floor level and at ceiling line of top story, with wood blocking or noncombustible materials, accurately fitted to close furred spaces.

3. Furring to Receive Gypsum Drywall: Unless otherwise indicated, provide 1" x 2" furring at 16" o.c., vertically.

4. Suspended Furring: Provide size and spacing shown, including hangers and attachment devices. Level to a tolerance of 1/8" in 10', except 1/4" in 10' for thick-coat plaster work.

D. Wood Framing, General:

1. Provide framing members of sizes and on spacings shown, and frame openings as shown, or if not shown, comply with recommendations of 2013 California Building. Do not splice structural members between supports.

2. Anchor and nail as shown, and to comply with 2013 California Building.

3. Firestop concealed spaces of wood framed walls and partitions, including furred spaces, at each ceiling and floor level, at intervals not exceeding 10 feet vertically, and at the ceiling line of the top story. Where firestops are not automatically provided by the framing system used, use closely-fitted wood blocks of nominal 2" thick lumber of the same width as framing members. Firestop shall be provided as delineated in Section 708.2 CBC.

E. Installation of Construction Panels:

1. General: Comply with applicable recommendations contained in Form No. E 30F, "APA Design/Construction Guide - Residential & Commercial," for types of plywood products and applications indicated.

2. Fastening Methods: Fasten panels as indicated on plans.

END OF SECTION 06 10 00

SECTION 09 29 00 - GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Interior gypsum board.

B. Related Requirements:

1. Section 09 22 16 "Non-Structural Metal Framing" for non-structural steel framing and suspension systems that support gypsum board panels.
2. Section 09 30 13 "Ceramic Tiling" for cementitious backer units installed as substrates for ceramic tile.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Sustainable Design Submittals:

1. Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.
2. Product Data: For adhesives and sealants, indicating VOC content.
3. Laboratory Test Reports: For adhesives and sealants, indicating compliance with requirements for low-emitting materials.
4. Laboratory Test Reports: For ceiling and wall materials, indicating compliance with requirements for low-emitting materials.
5. Product Certificates: For regional materials, indicating location of material manufacturer and point of extraction, harvest, or recovery for each raw material. Include distance to Project and cost for each regional material.

1.4 DELIVERY, STORAGE AND HANDLING

A. Store materials inside under cover and keep them dry and protected against weather, condensation, direct sunlight, construction traffic, and other potential causes of damage. Stack panels flat and supported on risers on a flat platform to prevent sagging.

B. All materials shall be delivered in original bundles bearing the brand name, if any; applicable standard designation; and name of the manufacturer or supplier for whom the product is manufactured.

1. The plastic packaging used to wrap gypsum panel products for rail and/or truck shipment is intended to provide temporary protection from moisture exposure during transit only and is not intended to provide protection during storage after delivery. Such plastic packaging shall be removed immediately upon receipt of the shipment.

a. Failure to remove protective plastic shipping covers can result in condensation which can lead to damage, including mold.

C. All materials shall be kept dry. Gypsum panel products shall be neatly stacked flat with care taken to prevent sagging or damage to edges, ends, and surfaces.

1. Gypsum panel products and accessories shall be properly supported on a level platform, and fully protected from weather, direct sunlight exposure, and condensation.

D. Gypsum panel products shall be protected from elements before, during, after construction

1.5 FIELD CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written instructions, whichever are more stringent.

B. Do not install paper-faced gypsum panels until installation areas are enclosed and conditioned.

1. Gypsum panels installed in areas that are not enclosed and conditioned shall have fiberglass mat laminated to both sides and manufacturer's 12 month exposure warranty.

C. Do not install panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Comply with applicable provisions in CBC Chapter 25.

B. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.

C. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

1. Exterior Wall STC Rating: Not less than 50 unless otherwise indicated.
2. Interior Wall STC Rating: Not less than 40 unless otherwise indicated.

2.2 REGULATORY REQUIREMENTS

A. All insulation provided for use on this project shall be identified as required by Section 12-13-1557 of the California Referenced Standards Code (Part 12, Title 24, C.C.R.); Chapter 12-13 "Standards For Insulating Material", (See Part 6, Title 24, C.C.R.); Department Of Consumer Affairs, Bureau of Home Furnishings and Thermal Insulation; Article 3: "Standards for Insulating Material".

2.3 SUSTAINABILITY REQUIREMENTS

A. Comply with applicable provisions in the CGBC.

B. Recycled Content of Steel Products: Recycled content not less than 20 percent.

C. Recycled Content of Gypsum Panel Products: Recycled content not less than 20 percent by weight.

2.4 INTERIOR GYPSUM BOARD

A. Gypsum Wallboard: ASTM C 1396/C 1396M.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

    a. American Gypsum.
    b. CertainTeed Corporation.
    c. Continental Building Products, LLC.
    d. Georgia-Pacific Gypsum LLC.
    e. National Gypsum Company.
    f. PABCO Gypsum.
    g. USG Corporation.

2. Thickness: 5/8 inch.
3. Long Edges: Tapered.

B. Abuse-Resistant Gypsum Board: ASTM C 1396/C 1396M gypsum board, tested according to ASTM C 1629/C 1629M.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. American Gypsum.
    b. CertainTeed Corporation.

c. Continental Building Products, LLC.
d. Georgia-Pacific Building Products.
e. National Gypsum Company.
f. PABCO Gypsum.
g. Temple-Inland Building Products by Georgia-Pacific.
h. USG Corporation.

2. Core: 5/8 inch (15.9 mm), Type X.
3. Surface Abrasion: ASTM C 1629/C 1629M, meets or exceeds Level 2 requirements in corridors and Level 3 requirements in gymnasiums and locker rooms.
4. Indentation: ASTM C 1629/C 1629M, meets or exceeds Level 2 requirements in corridors and Level 3 requirements in gymnasiums and locker rooms.
5. Soft-Body Impact: ASTM C 1629/C 1629M, meets or exceeds Level 2 requirements in corridors and Level 3 requirements in gymnasiums and locker rooms.
6. Long Edges: Tapered.
7. Mold Resistance: ASTM D 3273, score of 10 as rated according to ASTM D 3274.

2.5 TRIM ACCESSORIES

A. Interior Trim: ASTM C 1047.

1. Material: Galvanized or aluminum-coated steel sheet or rolled zinc.
2. Shapes:

a. Cornerbead.
b. LC-Bead: J-shaped; exposed long flange receives joint compound.
c. L-Bead: L-shaped; exposed long flange receives joint compound.
d. U-Bead: J-shaped; exposed short flange does not receive joint compound.
e. Expansion (control) joint.
f. Curved-Edge Cornerbead: With notched or flexible flanges.

2.6 JOINT TREATMENT MATERIALS

A. General: Comply with ASTM C 475/C 475M.

B. Joint Tape:

1. Interior Gypsum Board: Paper.

C. Joint Compound for Interior Gypsum Board: For each coat, use formulation that is compatible with other compounds applied on previous or for successive coats.

1. Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.
2. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping compound.

a. Use setting-type compound for installing paper-faced metal trim accessories.

3. Fill Coat: For second coat, use drying-type, all-purpose compound.
4. Finish Coat: For third coat, use drying-type, all-purpose compound.

2.7 AUXILIARY MATERIALS

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written instructions.

B. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.

C. Steel Drill Screws: ASTM C 1002 unless otherwise indicated.

1. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.

D. Sound-Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.

1. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.

E. Acoustical Sealant: As specified in Section 07 92 19 "Acoustical Joint Sealants."

F. Thermal Insulation: As specified in Section 07 21 00 "Thermal Insulation."

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and substrates including welded hollow-metal frames and support framing, with Installer present, for compliance with requirements and other conditions affecting performance of the Work.

B. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 APPLYING AND FINISHING PANELS, GENERAL

A. Comply with ASTM C 840.

B. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.

C. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.

D. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges

against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

E. Form control and expansion joints with space between edges of adjoining gypsum panels.

F. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.

1. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m) in area.
2. Fit gypsum panels around ducts, pipes, and conduits.
3. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4 to 3/8 inch (6.4 to 9.5 mm) wide joints to install sealant.

G. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments. Provide 1/4 to 1/2 inch (6.4 to 12.7 mm) wide spaces at these locations and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.

H. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.

I. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written instructions for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

J. Install sound attenuation blankets before installing gypsum panels unless blankets are readily installed after panels have been installed on one side.

3.3 APPLYING INTERIOR GYPSUM BOARD

A. Install interior gypsum board in the following locations:

1. Wallboard Type: As substrate for acoustical tile and where indicated on Drawings.
2. Type X: Unless otherwise indicated.
3. Abuse-Resistant Type: Where indicated on Drawings.
4. Mold-Resistant Type: Where indicated on Drawings.

B. Single-Layer Application:

1. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing unless otherwise indicated.
2. On partitions/walls, apply gypsum panels vertically (parallel to framing) or horizontally (perpendicular to framing) unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.

    a. Stagger abutting end joints not less than one framing member in alternate courses of panels.

b. At stairwells and other high walls, install panels horizontally unless otherwise indicated or required by fire-resistance-rated assembly.

3. On Z-shaped furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
4. Fastening Methods: Apply gypsum panels to supports with steel drill screws.

3.4 INSTALLING TRIM ACCESSORIES

A. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.

B. Control Joints: Install control joints at locations indicated on Drawings or, if not indicated, according to ASTM C 840 and in specific locations approved by Architect for visual effect.

C. Interior Trim: Install in the following locations:

1. Cornerbead: Use at outside corners unless otherwise indicated.
2. LC-Bead: Use at exposed panel edges unless otherwise indicated.
3. L-Bead: Use where indicated.
4. U-Bead: Use where indicated.
5. Curved-Edge Cornerbead: Use at curved openings.

3.5 FINISHING GYPSUM BOARD

A. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.

B. Prefill open joints, rounded or beveled edges, and damaged surface areas.

C. Apply joint tape over gypsum board joints, except for trim products specifically indicated as not intended to receive tape.

D. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:

1. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
2. Level 3: At panel surfaces that will not be exposed to view such as those in mechanical and electrical rooms, panel surfaces that are substrate for plastic paneling (FRP) and acoustical tile, and where indicated on Drawings.

a. Primer and its application to surfaces are specified in Section 09 91 23 "Interior Painting."

3. Level 4: At panel surfaces that are substrate for wall coverings and panel surfaces that will be exposed to view unless otherwise indicated.

a. Primer and its application to surfaces are specified in Section 09 91 23 "Interior Painting."

3.6 PROTECTION

A. Protect adjacent surfaces from drywall compound and promptly remove from floors and other non-drywall surfaces. Repair surfaces stained, marred, or otherwise damaged during drywall application.

B. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

C. Remove and replace panels that are wet, moisture damaged, and mold damaged.

1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 09 29 00

SECTION 09 30 13 - CERAMIC TILING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Ceramic mosaic tile.
2. Glazed wall tile.
3. Stone thresholds.
4. Tile backing panels.
5. Waterproof membrane.
6. Crack isolation membrane.
7. Metal edge strips.

1.3 DEFINITIONS

A. General: Definitions in the ANSI A108 series of tile installation standards and in ANSI A137.1 apply to Work of this Section unless otherwise specified.

B. ANSI A108 Series: ANSI A108.01, ANSI A108.02, ANSI A108.1A, ANSI A108.1B, ANSI A108.1C, ANSI A108.4, ANSI A108.5, ANSI A108.6, ANSI A108.8, ANSI A108.9, ANSI A108.10, ANSI A108.11, ANSI A108.12, ANSI A108.13, ANSI A108.14, ANSI A108.15, ANSI A108.16, and ANSI A108.17, which are contained in its "Specifications for Installation of Ceramic Tile."

C. Module Size: Actual tile size plus joint width indicated.

D. Face Size: Actual tile size, excluding spacer lugs.

1.4 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review requirements in ANSI A108.01 for substrates and for preparation by other trades.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Sustainable Design Submittals:

1. Product Data: For adhesives, indicating VOC content.
2. Laboratory Test Reports: For adhesives, indicating compliance with requirements for low-emitting materials.
3. Laboratory Test Reports: For sealers, indicating compliance with requirements for low-emitting materials.

C. Shop Drawings: Show locations of each type of tile and tile pattern. Show widths, details, and locations of expansion, contraction, control, and isolation joints in tile substrates and finished tile surfaces.

D. Samples for Verification:

1. Full-size units of each type and composition of tile and for each color and finish required. For ceramic mosaic tile in color blend patterns, provide full sheets of each color blend.
2. Assembled samples mounted on a rigid panel, with grouted joints, for each type and composition of tile and for each color and finish required. Make samples not less than 36 inches (900 mm) square, but not fewer than four tiles. Use grout of type and in color or colors approved for completed Work.
3. Full-size units of each type of trim and accessory for each color and finish required.
4. Stone thresholds in 6 inch (150 mm) lengths.
5. Metal edge strips in 6 inch (150 mm) lengths.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Master Grade Certificates: For each shipment, type, and composition of tile, signed by tile manufacturer and Installer.

C. Product Certificates: For each type of product.

D. Product Test Reports: For tile-setting and -grouting products.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match and are from same production runs as products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Tile and Trim Units: Furnish quantity of full-size units equal to 3 percent of amount installed for each type, composition, color, pattern, and size indicated.
2. Grout: Furnish quantity of grout equal to 3 percent of amount installed for each type, composition, and color indicated.

1.8 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer is a five-star member of the National Tile Contractors Association or a Trowel of Excellence member of the Tile Contractors' Association of America.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Comply with requirements in ANSI A137.1 for labeling tile packages.

B. Store tile and cementitious materials on elevated platforms, under cover, and in a dry location.

C. Store aggregates where grading and other required characteristics can be maintained and contamination can be avoided.

D. Store liquid materials in unopened containers and protected from freezing.

1.10 FIELD CONDITIONS

A. Environmental Limitations: Do not install tile until construction in spaces is complete and ambient temperature and humidity conditions are maintained at the levels indicated in referenced standards and manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations for Tile: Obtain tile of each type and color or finish from single source or producer.

1. Obtain tile of each type and color or finish from same production run and of consistent quality in appearance and physical properties for each contiguous area.

B. Source Limitations for Setting and Grouting Materials: Obtain ingredients of a uniform quality for each mortar, adhesive, and grout component from single manufacturer and each aggregate from single source or producer.

1. Obtain setting and grouting materials, except for unmodified Portland cement and aggregate, from single manufacturer.
2. Obtain waterproof membrane and crack isolation membrane, except for sheet products, from manufacturer of setting and grouting materials.

C. Source Limitations for Other Products: Obtain each of the following products specified in this Section from a single manufacturer:

1. Stone thresholds.
2. Waterproof membrane.
3. Crack isolation membrane.
4. Joint Sealants.
5. Cementitious backer units.
6. Metal edge strips.

2.2 ACCESSIBILITY REQUIREMENTS

A. Comply with applicable provisions in the CBC and the 2010 ADA Standards for Accessible Design.

B. Floor or Ground Surfaces:

1. General: Floor and ground surfaces shall be stable, firm, and slip resistant and shall comply with CBC Section 11B-302 per CBC Section 11B-302.1.

a. Exceptions:

1) Within animal containment areas, floor and ground surfaces shall not be required to be stable, firm, and slip resistant.
2) Areas of sport activity shall not be required to comply with CBC Section 11B-302.

C. Changes in Level:

1. General: Where changes in level are permitted in floor or ground surfaces, they shall comply with CBC Section 11B-303 per CBC Section 11B-303.1.

a. Exceptions:

1) Animal containment areas shall not be required to comply with CBC Section 11B-303.
2) Areas of sport activity shall not be required to comply with CBC Section 11B-303.

2. Vertical: Changes in level of 1/4 inch (6.4 mm) high maximum shall be permitted to be vertical and without edge treatment per CBC Section 11B-303.2 and CBC Figure 11B-303.2.
3. Beveled: Changes in level between 1/4 inch (6.4 mm) high minimum and 1/2 inch (12.7 mm) high maximum shall be beveled with a slope not steeper than 1:2 per CBC Section 11B-303.3 and CBC Figure 11B-303.3.

D. Thresholds: Thresholds, if provided at doorways, shall be 1/2 inch (12.7 mm) high maximum. Raised thresholds and changes in level at doorways shall comply with CBC Sections 11B-302 and 11B-303 per CBC Section 11B-404.2.5.

2.3 SUSTAINABILITY REQUIREMENTS

A. Comply with applicable provisions in the CGBC.

B. Finish Material Pollutant Control: Finish materials shall comply with CGBC Sections 5.504.4.1 through 5.504.4.6 per CGBC Section 5.504.4.

1. Adhesives, Sealants, and Caulks: Adhesives, sealants, and caulks used on the project shall meet the requirements of the following standards per CGBC Section 5.504.4.1:

a. Adhesives, adhesive bonding primers, adhesive primers, sealants, sealant primers, and caulks shall comply with local or regional air pollution control or air

quality management district rules where applicable, or SCAQMD Rule 1168 VOC limits, as shown in CBC Tables 5.504.4.1 and 5.504.4.2. Such products also shall comply with Rule 1168 prohibition on the use of certain toxic compounds (chloroform, ethylene dichloride, methylene chloride, perchloroethylene, and trichloroethylene), except for aerosol products specified in subparagraph below.

b. Aerosol adhesives, and smaller unit sizes of adhesives, and sealant or caulking compounds (in units of product, less packaging, which do not weigh more than one pound and do not consist of more than 16 fluid ounces) shall comply with statewide VOC standards and other requirements, including prohibitions on use of certain toxic compounds, of California Code of Regulations, Title 17, commencing with Section 94507.

2. Adhesives shall comply with maximum VOC limits listed in CGBC Table 5.504.4.1.
3. Sealants and sealant primers shall comply with maximum VOC limits listed in CGBC Table 5.504.4.2.

C. VOC Content: Adhesives shall comply with the following VOC limits when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

1. Ceramic Tile Adhesives: 65 g/L.

D. VOC Content: Sealants and sealant primers shall comply with the following VOC limits when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

1. Architectural Sealants: 250 g/L.
2. Architectural Sealant Primers for Nonporous Substrates: 250 g/L.
3. Architectural Sealant Primers for Porous Substrates: 775 g/L.

E. Low-Emitting Materials: Adhesives shall comply with the requirements of authorities having jurisdiction.

F. Low-Emitting Materials: Sealants and sealant primers shall comply with the requirements of authorities having jurisdiction.

2.4 PRODUCTS, GENERAL

A. ANSI Ceramic Tile Standard: Provide tile that complies with ANSI A137.1 for types, compositions, and other characteristics indicated.

1. Provide tile complying with Standard grade requirements unless otherwise indicated.

B. ANSI Standards for Tile Installation Materials: Provide materials complying with ANSI A108.02, ANSI standards referenced in other Part 2 articles, ANSI standards referenced by TCNA installation methods specified in tile installation schedules, and other requirements specified.

C. Factory Blending: For tile exhibiting color variations within ranges, blend tile in factory and package so tile units taken from one package show same range in colors as those taken from other packages and match approved Samples.

D. Mounting: For factory-mounted tile, provide back- or edge-mounted tile assemblies as standard with manufacturer unless otherwise indicated.

1. Where tile is indicated for installation in wet areas, do not use back- or edge-mounted tile assemblies unless tile manufacturer specifies in writing that this type of mounting is suitable for installation indicated and has a record of successful in-service performance.

2.5 TILE PRODUCTS

A. Floor Tile: Factory-mounted unglazed ceramic mosaic tile.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. American Marazzi Tile, Inc.
b. American Olean; a division of Dal-Tile Corporation.
c. Crossville, Inc.
d. Daltile.
e. Deutsche Steinzeug America, Inc.
f. Grupo Porcelanite.
g. Interceramic.
h. Iris US.
i. Jeffrey Court Inc.
j. Lone Star Ceramics; Elgin Butler.
k. Portobello America, Inc.
l. Seneca Tiles, Inc.

2. Composition: Porcelain.
3. Certification: Porcelain tile certified by the Porcelain Tile Certification Agency.
4. Module Size: As indicated on Drawings or, if not indicated, as selected by Architect from manufacturer's full range.
5. Thickness: 1/4 inch (6.4 mm).
6. Face: Plain with cushion edges.
7. Surface: Smooth, without abrasive admixture.
8. Dynamic Coefficient of Friction: Not less than 0.42.
9. Finish: As indicated on Drawings or, if not indicated, as selected by Architect from manufacturer's full range.
10. Tile Color and Pattern: As indicated on Drawings or, if not indicated, as selected by Architect from manufacturer's full range.
11. Grout Color: As indicated on Drawings or, if not indicated, as selected by Architect from manufacturer's full range.

B. Wall Tile: Glazed wall tile.

1. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. American Marazzi Tile, Inc.
b. American Olean; a division of Dal-Tile Corporation.
c. Daltile.
d. Grupo Porcelanite.
e. Jeffrey Court Inc.
f. Seneca Tiles, Inc.

2. Module Size: As indicated on Drawings or, if not indicated, as selected by Architect from manufacturer's full range.
3. Face Size Variation: Rectified.
4. Thickness: 5/16 inch (8 mm).
5. Face: Plain with modified square edges or cushion edges.
6. Finish: As indicated on Drawings or, if not indicated, as selected by Architect from manufacturer's full range.
7. Tile Color and Pattern: As indicated on Drawings or, if not indicated, as selected by Architect from manufacturer's full range.
8. Grout Color: As indicated on Drawings or, if not indicated, as selected by Architect from manufacturer's full range.
9. Trim Units: Coordinated with sizes and coursing of adjoining flat tile where applicable and matching characteristics of adjoining flat tile. Provide shapes as follows, selected from manufacturer's standard shapes:

    a. Base for Thinset Mortar Installations: Straight, module size same size as adjoining flat tile unless otherwise indicated.
    b. Wainscot Cap for Thinset Mortar Installations: Surface bullnose, module size same size as adjoining flat tile unless otherwise indicated.
    c. External Corners for Thinset Mortar Installations: Surface bullnose, same size as adjoining flat tile unless otherwise indicated.
    d. Internal Corners: Field-butted square corners. For coved base and cap use angle pieces designed to fit with stretcher shapes.

2.6 THRESHOLDS

A. General: Fabricate to sizes and profiles indicated or required to provide transition between adjacent floor finishes.

1. Bevel edges at 1:2 slope, with lower edge of bevel aligned with or not more than 1/16 inch (1.5 mm) above adjacent floor surface. Finish bevel to match top surface of threshold. Limit height of threshold to not more than 1/2 inch (12.7 mm) or less above adjacent floor surface.

B. Granite Thresholds: ASTM C 615/C 615M, with honed finish.

1. Description: Uniform, fine-grained, gray stone without veining.

2.7 TILE BACKING PANELS

A. Cementitious Backer Units: ANSI A118.9 or ASTM C 1325, Type A, in maximum lengths available to minimize end-to-end butt joints.

1. Basis-of-Design Product: Subject to compliance with requirements, provide USG Corporation; DUROCK Cement Board. or a comparable product by another manufacturer.
2. Thickness: 5/8 inch (15.9 mm).

2.8 WATERPROOF MEMBRANE

A. General: Manufacturer's standard product, that complies with ANSI A118.10, ANSI A118.12 for high performance, and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Chlorinated Polyethylene Sheet: Nonplasticized, chlorinated polyethylene faced on both sides with nonwoven polyester fabric.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Noble Company (The); Nobleseal TS or a comparable product by another manufacturer.
2. Nominal Thickness: 0.030 inch (0.76 mm).

Property	Test Method	Units	NobleSeal TS
Service Requirements	ASTM C 627	cycles	1-14 "Extra Heavy"
Water Vapor Transmission (permeance)	ASTM E 96/96M (Procedure E, 90% RH)	perms	0.15
Seam Strength	ANSI A118.10	psi	passed
Breaking Strength	ANSI A118.10	% psi	passed
Dimensional Stability	ANSI A118.10	%	passed
Shear Strength (7 day/4 week/12 week)	ANSI A118.10	psi	passed
Shear Strength (7day/100 day)	ANSI A118.10	psi	passed
Fungus and Microorganism Resistance	ANSI A118.10	no growth	passed
Waterproofness	ANSI A118.10	no moisture	passed
Crack Isolation Performance	ANSI A118.12 (Jig Test)	1/8 inch	"High Performance" (>1/8 inch)

2.9 CRACK ISOLATION MEMBRANE

A. General: Manufacturer's standard product that complies with ANSI A118.12 for high performance and is recommended by the manufacturer for the application indicated. Include reinforcement and accessories recommended by manufacturer.

B. Chlorinated Polyethylene Sheet: Nonplasticized, chlorinated polyethylene faced on both sides with nonwoven polyester fabric; 0.030 inch (0.76 mm) nominal thickness.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Noble Company (The) ; Nobleseal CIS. or a comparable product by another manufacturer.

Property	Test Method	Units	Typical Value
System Performance	ASTM C 627	cycles	1-14 "Extra Heavy Service"
Hardness	ASTM D 2240	Shore A	82
Breaking Strength		psi	1243
Water Vapor Transmission	ASTM E 96/96M (Procedure E, 90% RH)	perms	0.15
Dimensional Stability	ANSI A118.10	%	0
Shear Strength (7 day/4 week/12 week)	ANSI A118.10	psi	passed
Shear Strength - Water Immersion (7 day)	ANSI A118.10	psi	passed
Fungus and Microorganism Resistance	ANSI A118.10	no growth	passed
Waterproofness	ANSI A118.10	perms	passed
Crack Isolation	ANSI A118.12	Jig test	"High Performance"

2.10 SETTING MATERIALS

A. Portland Cement Mortar (Thickset) Installation Materials: ANSI A108.02.

1. Reinforcing Wire Fabric: Galvanized, welded-wire fabric, 2 by 2 inches (50.8 by 50.8 mm) by 0.062 inch (1.57 mm) diameter; comply with ASTM A 185/A 185M and ASTM A 82/A 82M, except for minimum wire size.
2. Latex Additive: Manufacturer's standard acrylic resin or styrene-butadiene-rubber water emulsion, serving as replacement for part or all of gaging water, of type specifically recommended by latex-additive manufacturer for use with field-mixed portland cement and aggregate mortar bed.

B. Improved Modified Dry-Set Mortar (Thinset): ANSI A118.15.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Custom Building Products; ProLite Tile & Stone Mortar, or a comparable product by another manufacturer.
2. Provide prepackaged, dry-mortar mix containing dry, redispersible, vinyl acetate or acrylic additive to which only water must be added at Project site.
3. For wall applications, provide mortar that complies with requirements for nonsagging mortar in addition to the other requirements in ANSI A118.15.

2.11 GROUT MATERIALS

A. High-Performance Tile Grout: ANSI A118.7.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Custom Building Products; Prism Color Consistent Grout, or a comparable product by another manufacturer.
2. Polymer Type: Ethylene vinyl acetate or acrylic additive, in dry, redispersible form, prepackaged with other dry ingredients.

2.12 ELASTOMERIC SEALANTS

A. General: Provide sealants, primers, backer rods, and other sealant accessories that comply with the following requirements and with the applicable requirements in Section 07 92 00 "Joint Sealants."

B. Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints unless otherwise indicated.

2.13 MISCELLANEOUS MATERIALS

A. Metal Edge Strips: Angle or L-shaped, height to match tile and setting-bed thickness, metallic or combination of metal and PVC or neoprene base, designed specifically for flooring applications; stainless-steel, ASTM A 666, 300 Series exposed-edge material.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Blanke Corporation.
b. Ceramic Tool Company, Inc.
c. Schluter Systems L.P.

B. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

C. Grout Sealer: Manufacturer's standard product for sealing grout joints and that does not change color or appearance of grout.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Custom Building Products; Surfaceguard Sealer or a comparable product by another manufacturer.

2.14 MIXING MORTARS AND GROUT

A. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.

B. Add materials, water, and additives in accurate proportions.

C. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions where tile will be installed, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

1. Verify that substrates for setting tile are firm; dry; clean; free of coatings that are incompatible with tile-setting materials, including curing compounds and other substances that contain soap, wax, oil, or silicone; and comply with flatness tolerances required by ANSI A108.01 for installations indicated.
2. Verify that concrete substrates for tile floors installed with bonded mortar bed comply with surface finish requirements in ANSI A108.01 for installations indicated.

    a. Verify that surfaces that received a steel trowel finish have been mechanically scarified.
    b. Verify that protrusions, bumps, and ridges have been removed by sanding or grinding.

3. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed.
4. Verify that joints and cracks in tile substrates are coordinated with tile joint locations; if not coordinated, adjust joint locations in consultation with Architect.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Where indicated, prepare substrates to receive crack isolation membrane by applying a reinforced mortar bed that complies with ANSI A108.1A and is sloped 1/4 inch per foot (1:50) toward drains.

B. Blending: For tile exhibiting color variations, verify that tile has been factory blended and packaged so tile units taken from one package show same range of colors as those taken from other packages and match approved Samples. If not factory blended, either return to manufacturer or blend tiles at Project site before installing.

3.3 CERAMIC TILE INSTALLATION

A. Comply with TCNA's "Handbook for Ceramic, Glass, and Stone Tile Installation" for TCNA installation methods specified in tile installation schedules. Comply with parts of the ANSI A108 series "Specifications for Installation of Ceramic Tile" that are referenced in TCNA installation methods, specified in tile installation schedules, and apply to types of setting and grouting materials used.

1. For the following installations, follow procedures in the ANSI A108 series of tile installation standards for providing 95 percent mortar coverage:

    a. Tile floors in wet areas.

b. Tile floors consisting of tiles 8 by 8 inches (200 by 200 mm) or larger.
c. Tile floors consisting of rib-backed tiles.

B. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.

D. Provide manufacturer's standard trim shapes where necessary to eliminate exposed tile edges.

E. Where accent tile differs in thickness from field tile, vary setting-bed thickness so that tiles are flush.

F. Jointing Pattern: Lay tile in grid pattern unless otherwise indicated. Lay out tile work and center tile fields in both directions in each space or on each wall area. Lay out tile work to minimize the use of pieces that are less than half of a tile. Provide uniform joint widths unless otherwise indicated.

1. For tile mounted in sheets, make joints between tile sheets same width as joints within tile sheets so joints between sheets are not apparent in finished work.
2. Where adjoining tiles on floor, base, walls, or trim are specified or indicated to be same size, align joints.
3. Where tiles are specified or indicated to be whole integer multiples of adjoining tiles on floor, base, walls, or trim, align joints unless otherwise indicated.
4. Joints between tiles shall be continuous straight lines unless otherwise indicated.

G. Joint Widths: Unless otherwise indicated, install tile with the following joint widths:

1. Floor Tile: 1/8 inch (3.2 mm).
2. Glazed Wall Tile: 1/8 inch (3.2 mm).

H. Lay out tile wainscots to dimensions indicated or to next full tile beyond dimensions indicated.

I. Expansion Joints: Provide expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated. Form joints during installation of setting materials, mortar beds, and tile. Do not saw-cut joints after installing tiles.

1. Where joints occur in concrete substrates, locate joints in tile surfaces directly above them.
2. Prepare joints and apply sealants to comply with requirements in Section 07 92 00 "Joint Sealants."

J. Stone Thresholds: Install stone thresholds in same type of setting bed as adjacent floor unless otherwise indicated.

1. Do not extend crack isolation membrane under thresholds set in improved modified dry-set mortar. Fill joints between such thresholds and adjoining tile set on crack isolation membrane with elastomeric sealant.

K. Metal Edge Strips: Install at locations indicated where exposed edge of tile flooring meets carpet, wood, or other flooring and no threshold is indicated.

L. Grout Sealer: Apply grout sealer to cementitious grout joints according to grout sealer manufacturer's written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer from tile faces by wiping with soft cloth.

3.4 TILE BACKING PANEL INSTALLATION

A. Install panels and treat joints according to ANSI A108.11 and manufacturer's written instructions for type of application indicated. Use improved modified dry-set mortar (thinset) for bonding material unless otherwise directed in manufacturer's written instructions.

3.5 WATERPROOF MEMBRANE INSTALLATION

A. Install waterproof membrane to comply with ANSI A108.13 and manufacturer's written instructions to produce waterproof membrane of uniform thickness that is bonded securely to substrate.

1. Install waterproof membrane over mortar bed.
2. Install waterproof membrane over tile backing panels.

B. Allow waterproof membrane to cure and verify by testing that it is watertight before installing tile or setting materials over it.

3.6 CRACK ISOLATION MEMBRANE INSTALLATION

A. Install crack isolation membrane to comply with ANSI A108.17 and manufacturer's written instructions to produce membrane of uniform thickness that is bonded securely to substrate.

1. Install crack isolation membrane over bonded mortar bed.

B. Allow crack isolation membrane to cure before installing tile or setting materials over it.

3.7 ADJUSTING AND CLEANING

A. Remove and replace tile that is damaged or that does not match adjoining tile. Provide new matching units, installed as specified and in a manner to eliminate evidence of replacement.

B. Cleaning: On completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

1. Remove grout residue from tile as soon as possible.
2. Clean grout smears and haze from tile according to tile and grout manufacturer's written instructions but not less than 10 days after installation. Use only cleaners recommended by tile and grout manufacturers and only after determining that cleaners are safe to use by testing on samples of tile and other surfaces to be cleaned. Protect metal surfaces and plumbing fixtures from effects of cleaning. Flush surfaces with clean water before and after cleaning.

3.8 PROTECTION

A. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear. If recommended by tile manufacturer, apply coat of neutral protective cleaner to completed tile walls and floors.

B. Prohibit foot and wheel traffic from tiled floors for not less than seven days after grouting is completed.

C. Before final inspection, remove protective coverings and rinse neutral protective cleaner from tile surfaces.

3.9 INTERIOR CERAMIC TILE INSTALLATION SCHEDULE

A. Interior Floor Installations, Concrete Subfloor:

1. Ceramic Floor Tile Installation with Waterproof Membrane: TCNA F112 and ANSI A108.1B; cement mortar bed (thickset) bonded to concrete.

    a. Ceramic Tile Type: Floor Tile.
    b. Bond Coat for Cured-Bed Method: Improved modified dry-set mortar.
    c. Grout: High-performance unsanded grout.

2. Ceramic Floor Tile Installation with Crack Isolation Membrane (Full Coverage): TCNA F112, TCNA F125-Full, and ANSI A108.1B; cement mortar bed (thickset) bonded to concrete.

    a. Ceramic Tile Type: Floor tile.
    b. Bond Coat for Cured-Bed Method: Improved modified dry-set mortar.
    c. Grout: High-performance unsanded grout.

B. Interior Wall Installations, Wood Studs or Furring:

1. Ceramic Wall Tile Installation: TCNA W231/W241 and ANSI A108.1B; cement mortar bed (thickset).

    a. Ceramic Tile Type: Wall tile.
    b. Bond Coat for Cured-Bed Method: Improved modified dry-set mortar.
    c. Grout: High-performance unsanded grout.

C. Interior Wall Installations, Metal Studs or Furring:

1. Ceramic Wall Tile Installation: TCNA W244C; thinset mortar on cementitious backer units.

    a. Ceramic Tile Type: Wall Tile.
    b. Thinset Mortar: Improved modified dry-set mortar.
    c. Grout: High-performance unsanded grout.

D. Shower Receptor and Wall Installations, Wood Studs or Furring:

1. Ceramic Floor and Wall Tile Installation with Waterproof Membrane: TCNA B414 and ANSI A108.1B; cement mortar bed (thickset) over vapor-retarder membrane.

    a. Ceramic Wall Tile Type: Wall tile.
    b. Ceramic Floor Tile Type: Floor tile with abrasive admixture.
    c. Bond Coat for Cured-Bed Method: Improved modified dry-set mortar.
    d. Grout: High-performance unsanded grout.

E. Shower Receptor and Wall Installations, Metal Studs or Furring:

1. Ceramic Floor and Wall Tile Installation with Waterproof Membrane: TCNA B415; thinset mortar on waterproof membrane over cementitious backer units.

    a. Ceramic Wall Tile Type: Wall tile.
    b. Ceramic Floor Tile Type: Floor tile with abrasive admixture.
    c. Thinset Mortar: Improved modified dry-set mortar.
    d. Grout: High-performance unsanded grout.

END OF SECTION 09 30 13

SECTION 09 91 23 - INTERIOR PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes surface preparation and the application of paint systems on interior substrates.

1. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.

B. Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as similar adjacent materials or surfaces. If a color of finish is not indicated, Architect will select from standard colors and finishes available.

1. Painting includes field painting of exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron supports, and surfaces of mechanical and electrical equipment that do not have a factory-applied final finish.

C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.

1. Prefinished items include, but are not limited to, the following factory-finished components:

a. Architectural woodwork.
b. Acoustical wall panels.
c. Metal toilet enclosures.
d. Metal lockers.
e. Unit kitchens.
f. Elevator entrance doors and frames.
g. Elevator equipment.
h. Finished mechanical and electrical equipment.
i. Light fixtures.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

1. Material List: An inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
2. Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material.

    a. VOC Content: Include VOC content for each product.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:

1. Product name or title of material.
2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.
4. Contents by volume, for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.
8. VOC content.

B. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).

1. Maintain containers in clean condition, free of foreign materials and residue.
2. Remove rags and waste from storage areas daily.
3. Store on shelves or wood pallets.

1.5 FIELD CONDITIONS

A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).

B. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers Names: District Standard:
1. Dunn-Edwards Corporation (Dunn-Edwards).

B. Products: Subject to compliance with requirements, avail

C. able products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles for the paint category indicated.

D. Source Limitations: Obtain block fillers and primers for each coating system from the same manufacturer as the finish coats.

2.2 PAINT, GENERAL

A. Material Compatibility:

1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.

B. Material Quality:

1. Provide paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
2. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.

C. Colors: As indicated on Drawings or, if not indicated, as selected by Architect from manufacturer's full range.

2.3 PRIMERS/SEALERS

A. Interior Gypsum Board Primer: Factory-formulated latex-based primer for interior application.
1. Dunn-Edwards: VINYLASTIC Premium (VNPR00): Applied at a dry film thickness of not less than 1.2 mils (0.0305 mm).

2.4 WATER-BASED PAINTS

A. Interior Semigloss Acrylic Enamel: Factory-formulated semigloss acrylic-latex enamel for interior application. 35 to 70 units at 60 degrees, according to ASTM D 523.
1. Dunn-Edwards: SPARTASHIELD 100% acrylic Interior Semi-Gloss Paint (SWLL50): Applied at a dry film thickness of not less than 1.5 mils (0.0381 mm).

B. Color to be Dunn Edwards **Droplets DEW381**

2.5 SOURCE QUALITY CONTROL

A. Testing of Paint Materials: Owner reserves the right to invoke the following procedure:

1. Owner will engage the services of a qualified testing agency to sample paint materials. Contractor will be notified in advance and may be present when samples are taken. If

paint materials have already been delivered to Project site, samples may be taken at Project site. Samples will be identified, sealed, and certified by testing agency.

2. Testing agency will perform tests for compliance with product requirements.
3. Owner may direct Contractor to stop applying coatings if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
   1. Gypsum Board: 12 percent.

C. Gypsum Board Substrates: Verify that finishing compound is sanded smooth.

D. Spray-Textured Substrates: Verify that surfaces are dry.

E. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

F. Proceed with coating application only after unsatisfactory conditions have been corrected.

   1. Application of coating indicates acceptance of surfaces and conditions.

G. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

   1. Notify Architect about anticipated problems when using the materials specified over substrates primed by others.

3.2 PREPARATION

A. Comply with manufacturer's written instructions and recommendations applicable to substrates indicated.

B. Remove door and other hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

   1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.

C. Clean substrates of substances that could impair bond of paints, including dust, dirt, oil, grease, and incompatible paints and encapsulants.

1. Remove incompatible primers and reprime substrate with compatible primers or apply tie coat as required to produce paint systems indicated.

D. Wood Substrates:

1. Scrape and clean knots, and apply coat of knot sealer before applying primer.
2. Sand surfaces that will be exposed to view, and dust off.
3. Prime edges, ends, faces, undersides, and backsides of wood.
4. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.

3.3 APPLICATION

A. Apply paints according to manufacturer's written instructions and recommendations applicable to substrates and paint systems indicated.

1. Use applicators and techniques suited for paint and substrate indicated.
2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
3. Paint faces, all four edges, edges of cutouts, and mortises of interior doors and entire exposed surface of interior door frames.

    a. Paint all surfaces that will be covered by door hardware including, but not limited to, kick, mop, and armor protection plates.

4. Paint entire exposed surface of window frames and sashes.
5. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
6. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
7. Primers specified in painting schedules are required on items that are factory primed or factory finished.

B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.4 FIELD QUALITY CONTROL

A. Dry Film Thickness Testing: Owner may engage the services of a qualified testing and inspecting agency to inspect and test paint for dry film thickness.

1. Contractor shall touch up and restore painted surfaces damaged by testing.

2. If test results show that dry film thickness of applied paint does not comply with paint manufacturer's written recommendations, Contractor shall pay for testing and apply additional coats as needed to provide dry film thickness that complies with paint manufacturer's written recommendations.

3.5 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.6 INTERIOR PAINTING SCHEDULE

A. Gypsum Board: Provide the following finish systems over interior gypsum board surfaces:

1. Semigloss Acrylic-Enamel Finish: Two finish coats over a primer.

    a. Primer: Interior gypsum board primer.
    b. Finish Coats: Interior semigloss acrylic enamel.

END OF SECTION 09 91 23

SECTION 10 21 16 - SOLID PLASTIC TOILET COMPARTMENTS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Solid plastic toilet compartments, urinal screens, privacy screens and entry partitions.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM):
   1. A167 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
   2. B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
   3. E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

B. National Fire Protection Association (NFPA) 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth.

1.3 SYSTEM DESCRIPTION

A. Compartment Configurations:
   1. Toilet partitions, privacy screens and entry partitions: Floor mounted, overhead braced.
   2. Urinal screens: Wall mounted.

1.4 SUBMITTALS

A. Submittals for Review:
   1. Shop Drawings: Include dimensioned layout, elevations, trim, closures, and accessories.
   2. Product Data: Manufacturer's descriptive data for panels, hardware and accessories.
   3. Samples: 2 x 3 inch samples showing available color.

B. Sustainable Design Submittals:
   1. Recycled Content: Certify percentages of post-consumer and pre-consumer recycled content.
   2. Regional Materials: Certify distance between manufacturer and Project and between manufacturer and extraction or harvest point in miles.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum 5 years experience in manufacture of solid plastic toilet compartments with products in satisfactory use under similar service conditions.

B. Installer Qualifications: Minimum 5 years experience in work of this Section.

1.6 WARRANTIES

A. Provide manufacturer's 25 year warranty against breakage, corrosion, and delamination under normal conditions.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Contract Documents are based on products by Scranton Products. (www.scrantonproducts.com)

B. Substitutions: Not permitted.

2.2 MATERIALS

A. Doors, Panels and Pilasters:
1. High density polyethylene (HDPE), fabricated from polymer resins compounded under high pressure, forming single thickness panel.
2. Waterproof and nonabsorbent, with self-lubricating surface, resistant to marks by pens, pencils, markers, and other writing instruments.
3. 1 inch thick with edges rounded to 1/4 inch radius.
4. Recycled content: Minimum 25 percent.
5. Fire hazard classification: Class A flame spread/smoke developed rating, tested to ASTM E84, shall also pass NFPA 286.
6. Color: To be selected from Manufacturer's full color range.

B. Aluminum Extrusions: ASTM B221, 6463-T5 alloy and temper.

C. Stainless Steel: ASTM A167, Type 304.

2.3 HARDWARE

A. Hinges:
1. 8 inches long, fabricated from heavy-duty extruded aluminum with bright dip anodized finish, wrap-around flanges, adjustable on 30-degree increments, through bolted to doors and pilasters with stainless steel, Torx head sex bolts.
2. Hinges operate on field-adjustable nylon cams, field adjustable in 30 degree increments.

B. Door Strike and Keeper:
1. 6 inches long, fabricate from heavy-duty extruded aluminum with bright dip anodized finish, with wrap-around flanges secured to pilasters with stainless steel tamper resistant Torx head sex bolts.
2. Bumper: Extruded black vinyl.

C. Latch and Housing:
1. Heavy-duty extruded aluminum.
2. Latch housing: Bright dip anodized finish.
3. Slide latch: Black anodized finish
a. Toilet compartments for disabled persons shall have a flip over or sliding latch, with a loop or U shaped handle immediately below the latch on both sides of the door and an automatic closing device. Door hardware shall be mounted at 34" to 44" above finished floor. CBC Section 11B-404.2.7. The layout of

compartments for disabled persons shall comply with CBC Section 11B-604.8 Toilet compartment doors, including door hardware, shall comply with Section 11B-404 except that if the approach is from the push side of the compartment door, clearance between the door side of the compartment and any obstruction shall be 48 inches minimum measured perpendicular to the compartment door in its closed position. Doors shall be located in the front partition or in the side wall or partition farthest from the water closet. Where located in the front partition, the door opening shall be 4 inches maximum from the side wall or partition farthest from the water closet. Where located in the side wall or partition, the door opening shall be farthest from the water closet and shall be 54 inches minimum from the rear wall. When located at the side of a toilet compartment, the toilet compartment door opening shall provide a clear width of 34 inches minimum. CBC Section 11B-604.8.1.2.

D. Coat Hook/Bumper:
   1. Combination type, chrome plated Zamak.
   2. Equip outswing accessible stall door with second door pull and door stop.

2.4 COMPONENTS

A. Doors and Dividing Panels: 55 inches high, mounted 14 inches above finished floor, with aluminum heat-sinc fastened to bottom edges.

B. Pilasters: 82 inches high, fastened to pilaster sleeves with stainless steel tamper resistant Torx head sex bolt.

C. Pilaster Sleeves: 2 inch high, 20 gage stainless steel, secured to pilaster with stainless steel tamper resistant Torx head sex bolt.

D. Wall Brackets: 54 inches long, heavy duty aluminum, fastened to pilasters and panels with stainless steel tamper resistant Torx head sex bolts.

E. Headrail: Heavy-duty extruded aluminum, anti-grip design, clear anodized finish, fastened to headrail bracket with stainless steel tamper resistant Torx head sex bolt and at top of pilaster with stainless steel tamper resistant Torx head screws.

F. Headrail Brackets: 20 gage stainless steel, stain finish, secured to wall with stainless steel tamper resistant Torx head screws.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install compartments in accordance with manufacturer’s instructions and approved Shop Drawings.

B. Install rigid, straight, plumb, and level.

C. Locate bottom edge of doors and panels 14 inches above finished floor.

D. Provide uniform, maximum 3/8 inch vertical clearance at doors.

E. Not Acceptable: Evidence of cutting, drilling, or patching.

3.2 ADJUSTING

A. Adjust doors and latches to operate correctly.

END OF SECTION 10 21 16

SECTION 10 28 00 – TOILET ROOM ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Public-use washroom accessories.
2. Underlavatory guards.

B. Related Requirements:

1. Section 06 10 00 "Rough Carpentry" for wood backing for anchoring toilet, bath, and laundry accessories.

1.3 COORDINATION

A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.

B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
2. Include anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
3. Include electrical characteristics.

B. Samples: When requested, provide full size, for each accessory item and for each finish specified to verify design, operation, and finish requirements.

1. Approved full-size Samples will be returned and may be used in the Work.

C. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.

1. Identify locations using room designations indicated.
2. Identify accessories using designations indicated.

1.5 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For manufacturer's special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For accessories to include in maintenance manuals.

1.7 WARRANTY

A. Manufacturer's Special Warranty for Mirrors: Manufacturer agrees to repair or replace mirrors that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, visible silver spoilage defects.
2. Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 OWNER-FURNISHED MATERIALS

A. Owner-Furnished Materials:

1. Owner may furnish some or all toilet, bath, and laundry accessories at his option for installation by the Contractor.
2. All Owner-furnished material shall comply with the CBC, the 2010 ADA Standards for Accessible Design, and the requirements of this section.
3. Installation of all Owner-Furnished material shall comply with the CBC, the 2010 ADA Standards for Accessible Design, and the requirements of this section.

2.2 ACCESSIBILITY REQUIREMENTS

A. Comply with applicable provisions in the CBC and the 2010 ADA Standards for Accessible Design.

B. Mirrors: Where mirrors are provided, at least one shall comply with CBC Section 11B-603.3 per CBC Section 11B-213.3.5.

C. Coat Hooks and Shelves: Where coat hooks or shelves are provided in toilet rooms without toilet compartments, at least one of each type shall comply with CBC Section11B-603.4. Where coat hooks or shelves are provided in toilet compartments, at least one of each type complying with CBC Section11B-604.8.3 shall be provided in toilet compartments required to comply with CBC Section 11B-213.3.1. Where coat hooks or shelves are provided in bathing facilities, at least one of each type complying with CBC Section11B-603.4 shall serve fixtures required to comply with CBC Section 11B-213.3.6.

D. Protruding Objects:

1. General: Protruding objects shall comply with CBC Section 11B-307 per CBC Section 11B-307.1.
2. Protrusion Limits: Objects with leading edges more than 27 inches (686 mm) and not more than 80 inches (2032 mm) above finish floor or ground shall protrude 4 inches (102 mm) maximum horizontally into the circulation path per CBC Section 11B-307.2 and CBC Figure 11B-307.2.

E. Reach Ranges:

1. General: Reach ranges shall comply with CBC Section 11B-308 per CBC Section 11B-308.1.

F. Operable Parts:

1. General: Operable parts shall comply with CBC Section 11B-309 per CBC Section 11B-309.1.
2. Operation: Operable parts shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate operable parts shall be 5 pounds (22.2 N) maximum per CBC Section 11B-309.4.

G. Toilet and Bathing Rooms:

1. General: Toilet and bathing rooms shall comply with CBC Section 11B-603 per CBC Section 11B-603.1.
2. Mirrors: Mirrors located above lavatories or countertops shall be installed with the bottom edge of the reflecting surface 40 inches (1016 mm) maximum above the finish floor or ground. Mirrors not located above lavatories or countertops shall be installed with the bottom edge of the reflecting surface 35 inches (889 mm) maximum above the finish floor or ground per CBC Section 11B-603.3.
3. Coat Hooks, Shelves, and Medicine Cabinets: Coat hooks shall be located within one of the reach ranges specified in CBC Section 11B-308. Shelves shall be located 40 inches (1016 mm) minimum and 48 inches (1219 mm) maximum above the finish floor. Medicine cabinets shall be located with a useable shelf no higher than 44 inches (1118 mm) maximum above the finish floor per CBC Section 11B-603.4.
4. Accessories: Where towel or sanitary napkin dispensers, waste receptacles, or other accessories are provided in toilet facilities, at least one of each type shall be located on an accessible route. All operable parts, including coin slots, shall be 40 inches (1016 mm) maximum above the finish floor per CBC Section 11B-603.5.

H. Water Closets and Toilet Compartments:

1. General: Water closets and toilet compartments shall comply with CBC Sections 11B-604.2 through 11B-604.8 per CBC Section 11B-604.1.
2. Grab Bars for Water Closets: Grab bars for water closets shall comply with CBC Section 11B-609. Grab bars shall be provided on the side wall closest to the water closet and on the rear wall. Where separate grab bars are required on adjacent walls at a common mounting height, an L-shaped grab bar meeting the dimensional requirements of CBC Sections 11B-604.5.1 and 11B-604.5.2 shall be permitted per CBC Section 11B-604.5.

    a. Side Wall: The side wall grab bar shall be 42 inches (1067 mm) long minimum, located 12 inches (305 mm) maximum from the

rear wall and extending 54 inches (1372 mm) minimum from the rear wall with the front end positioned 24 inches (610 mm) minimum in front of the water closet per CBC Section 11B-604.5.1 and CBC Figure 11B-604.5.1.

b. Rear Wall: The rear wall grab bar shall be 36 inches (914 mm) long minimum and extend from the centerline of the water closet 12 inches (305 mm) minimum on one side and 24 inches (610 mm) minimum on the other side per CBC Section 11B-604.5.2 and CBC Figure 11B-604.5.2.

3. Dispensers: Toilet paper dispensers shall comply with CBC Section 11B-309.4 and shall be 7 inches (178 mm) minimum and 9 inches (229 mm) maximum in front of the water closet measured to the centerline of the dispenser. The outlet of the dispenser shall be below the grab bar, 19 inches (483 mm) minimum above the finish floor and shall not be located behind grab bars. Dispensers shall not be of a type that controls delivery or that does not allow continuous paper flow per CBC Section 11B-604.7 and CBC Figure 11B-604.7.

I. Lavatories and Sinks:

1. General: Lavatories and sinks shall comply with CBC Section 11B-606 per CBC Section 11B-606.1.
2. Exposed Pipes and Surfaces: Water supply and drain pipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks per CBC Section 11B-606.5.

J. Shower Compartments:

1. General: Shower compartments shall comply with CBC Section 11B-608 per CBC Section 11B-608.1.
2. Grab Bars: Grab bars shall comply with CBC Section 11B-609 and shall be provided in accordance with CBC Section 11B-608.3. Where multiple grab bars are used, required horizontal grab bars shall be installed at the same height above the finish floor. Where separate grab bars are required on adjacent walls at a common mounting height, an L-shaped or U-shaped grab bar meeting the dimensional requirements of CBC Section 11B-608.3.2 or 11B-608.3.3 shall be permitted per CBC Section 11B-608.3.

    a. Standard Roll-In Type Shower Compartments: Grab bars shall be provided on the back wall and the side wall opposite the seat. Grab bars shall not be provided above the seat. Grab bars shall be installed 6 inches (152 mm) maximum from adjacent walls per CBC Section 11B-608.3.2 and CBC Figure 11B-608.3.2.
    b. Alternate Roll-In Type Shower Compartments: In alternate roll-in type shower compartments, grab bars shall be provided on the back wall and the side wall farthest from the compartment entry. Grab bars shall not be provided above the seat. Grab bars shall be installed 6 inches (152 mm) maximum from adjacent walls per CBC Section 11B-608.3.3 and CBC Figure 11B-608.3.3.

3. Seats: A folding seat shall be provided in roll-in type showers. Seats shall comply with CBC Section 11B-610 per CBC Section 11B-608.4.

4. Soap Dish for Shower Compartments: Where a soap dish is provided, it shall be located on the control wall at 40 inches (1016 mm) maximum above the shower floor, and within the reach limits from the seat per CBC Section 11B-608.10.

K. Grab Bars:

1. General: Grab bars in toilet facilities and bathing facilities shall comply with CBC Section 11B-609 per CBC Section 11B-609.1.
2. Cross Section: Grab bars shall have a cross section complying with CBC Section 11B-609.2.1 or 11B-609.2.2 per CBC Section 11B-609.2.

    a. Circular Cross Section: Grab bars with circular cross sections shall have an outside diameter of 1-1/4 inches (32 mm) minimum and 2 inches (51 mm) maximum per CBC Section 11B-609.2.1.
    b. Non-Circular Cross Section: Grab bars with non-circular cross sections shall have a cross-section dimension of 2 inches (51 mm) maximum and a perimeter dimension of 4 inches (102 mm) minimum and 4.8 inches (122 mm) maximum per CBC Section 11B-609.2.2 and CBC Figure 11B-609.2.2.

3. Grab Bars: Spacing: The space between the wall and the grab bar shall be 1-1/2 inches (38 mm). The space between the grab bar and projecting objects below and at the ends shall be 1-1/2 inches (38 mm) minimum. The space between the grab bar and projecting objects above shall be 12 inches (305 mm) minimum per CBC Section 11B-609.3 and CBC Figure 11B-609.3.

    a. Exceptions:

    1) The space between the grab bars and shower controls, shower fittings, and other grab bars above shall be permitted to be 1-1/2 inches (38 mm) minimum.
    2) For L-shaped or U-shaped grab bars complying with CBC Section 11B-609.9 the space between the walls and grab bar shall be 1-1/2 inches (38 mm) minimum for a distance of 6 inches on either side of the inside corner between two adjacent surfaces.

4. Position of Grab Bars: Grab bars shall be installed in a horizontal position, 33 inches (838 mm) minimum and 36 inches (914 mm) maximum above the finish floor measured to the top of the gripping surface, except that at water closets for children's use complying with CBC Section 11B-604.9, grab bars shall be installed in a horizontal position 18 inches (457 mm) minimum and 27 inches (686 mm) maximum above the finish floor measured to the top of the gripping surface. The height of the lower grab bar on the back wall of a bathtub shall comply with CBC Section 11B-607.4.1.1 or 11B-607.4.2.1 per CBC Section 11B-609.4.
5. Surface Hazards: Grab bars and any wall or other surfaces adjacent to grab bars shall be free of sharp or abrasive elements and shall have rounded edges per CBC Section 11B-609.5.
6. Fittings: Grab bars shall not rotate within their fittings per CBC Section 11B-609.6.
7. Installation: Grab bars shall be installed in any manner that provides a gripping surface at the specified locations and that does not obstruct the required clear floor space per CBC Section 11B-609.7.

8. Structural Strength: Allowable stresses shall not be exceeded for materials used when a vertical or horizontal force of 250 pounds (1112 N) is applied at any point on the grab bar, fastener, mounting device, or supporting structure per CBC Section 11B-609.8.
9. Alternate Configuration: L-shaped or U-shaped grab bars shall be permitted per CBC Section 11B-609.9.

L. Seats:

1. General: Seats in bathtubs and shower compartments shall comply with CBC Section 11B-610 per CBC Section 11B-610.1.
2. Shower Compartment Seats: A seat in a standard roll-in shower compartment shall be a folding type, shall be installed on the side wall adjacent to the controls, and shall extend from the back wall to a point within 3 inches (76 mm) of the compartment entry. A seat in an alternate roll-in type shower compartment shall be a folding type, shall be installed on the front wall opposite the back wall, and shall extend from the adjacent side wall to a point within 3 inches (76 mm) of the compartment entry. The top of the seat shall be 17 inches (432 mm) minimum and 19 inches (483 mm) maximum above the bathroom the finish floor. When folded, the seat shall extend 6 inches (152 mm) maximum from the mounting wall. Seats shall comply with CBC Section 11B-610.3.1 or 11B-610.3.2 per CBC Section 11B-610.3 and CBC Figure 11B-610.3.

    a. Rectangular Seats: The rear edge of a rectangular seat shall be 2-1/2 inches (64 mm) maximum and the front edge 15 inches (381 mm) minimum and 16 inches (406 mm) maximum from the seat wall. The side edge of the seat shall be 1-1/2 inches (38 mm) maximum from the adjacent wall per CBC Section 11B-610.3.1 and CBC Figure 11B-610.3.1.
    b. L-Shaped Seats: The rear edge of an L-shaped seat shall be 2-1/2 inches (64 mm) maximum and the front edge 15 inches (381 mm) minimum and 16 inches (406 mm) maximum from the seat wall. The rear edge of the "L" portion of the seat shall be 1-1/2 inches (38 mm) maximum from the wall and the front edge shall be 14 inches (356 mm) minimum and 15 inches (381 mm) maximum from the wall. The end of the "L" shall be 22 inches (559 mm) minimum and 23 inches (584 mm) maximum from the main seat wall per CBC Section 11B-610.3.2 and CBC Figure 11B-610.3.2.

3. Structural Strength: Allowable stresses shall not be exceeded for materials used when a vertical or horizontal force of 250 pounds (1112 N) is applied at any point on the seat, fastener, mounting device, or supporting structure per CBC Section 11B-610.4.

M. Toilet tissue dispensers, seat cover dispensers, sanitary-napkin vendors, and sanitary-napkin disposal units located on the grab bar side of an accessible toilet room or stall shall not project more than 3 inches (76.2 mm) from the finished wall surface.

2.3 PERFORMANCE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC and NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.4 SUSTAINABILITY REQUIREMENTS

A. Comply with applicable provisions in the CGBC.

B. Recycled Content of Steel Products: Recycled content not less than 20 percent.

C. Recycled Content of Stainless-Steel Products: Recycled content not less than 20 percent.

2.5 PUBLIC-USE WASHROOM ACCESSORIES

A. Source Limitations: Obtain public-use washroom accessories from single source from single manufacturer.

B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated or comparable product by one of the following:

1. AJW Architectural Products.
2. American Specialties, Inc.
3. Bobrick Washroom Equipment, Inc. (Basis of Design for units below)
4. Bradley Corporation.

C. Recessed Multi-Roll Toilet Tissue Dispenser:

1. Model B-4388 (recessed) , Model B-4288 (surface)

D. Surface-Mounted (Folded) Paper Towel Dispenser:

1. Model B-2620.

E. Surface-Mounted Waste Receptacle:

1. Model B-279.

F. Grab Bar with Snap Flange - Type A:

1. Model B-5806 x 36.

G. Grab Bar with Snap Flange - Type B:

1. Model B-5806 x 42.

H. Recessed Sanitary-Napkin Disposal:

1. Model B-270.

I. Surface-Mounted Seat-Cover Dispenser:

1. Model B-4221.

J. Mirror with Stainless Steel Channel Frame, Snap Locking Design:

1. Model B-290.

K. Shower seat:

1. Model B-5181.

L. Shower Curtain:

1. Model B-203-3.

2.6 UNDERLAVATORY GUARDS

A. Source Limitations: Obtain underlavatory guards from single source from single manufacturer.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Buckaroos, Inc.
2. Plumberex Specialty Products, Inc.
3. Truebro by IPS Corporation.

C. Underlavatory Guards:

1. Description: Insulating pipe covering for supply and drain piping assemblies that prevents direct contact with and burns from piping; allow service access without removing coverings.
2. Material and Finish: Antimicrobial, molded plastic, white.

2.7 MATERIALS

A. Stainless Steel: ASTM A 666, Type 304, not less than 0.031 inch (0.8 mm) nominal thickness unless otherwise indicated.

B. Brass: ASTM B 19, flat products; ASTM B 16/B 16M, rods, shapes, forgings, and flat products with finished edges; or ASTM B 30, castings.

C. Steel Sheet: ASTM A 1008/A 1008M, Designation CS (cold rolled, commercial steel), not less than 0.036 inch (0.9 mm) nominal thickness.

D. Galvanized-Steel Sheet: ASTM A 653/A 653M, with G60 (Z180) hot-dip zinc coating.

E. Galvanized-Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.

F. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed.

G. Chrome Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).

H. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.

2.8 FABRICATION

A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

B. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide not less than six keys to Owner's representative.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Mirrors located above lavatories or countertops shall be installed with the bottom edge of the reflecting surface not more than 40 inches (1016 mm) above the finish floor.

B. Mirrors not located above lavatories or countertops shall be installed with the bottom edge of the reflecting surface not more than 35 inches (889 mm) above the finish floor.

C. Where towel dispensers, sanitary napkin dispensers, waste receptacles, or other accessories are provided in toilet facilities, at least one of each type shall be located on an accessible route.

1. All operable parts, including coin slots, shall be not more than 40 inches (1016 mm) above the finish floor.

D. The space between grab bars and projecting objects below and at the ends shall be not less than 1-1/2 inches (32 mm).

E. The space between grab bars and projecting objects above shall be not less than 12 inches (305 mm).

F. Grab bars shall not rotate within their fittings.

G. Allowable stresses shall not be exceeded for materials used when a vertical or horizontal force of 250 pounds (1112 N) is applied at any point on the grab bar, fastener, mounting device, or supporting structure.

H. Toilet and bath accessories shall not project more than 4 inches (101.6 mm) into the path of travel.

I. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

J. Grab Bars: Install to withstand a downward load of at least 250 lbf (1112 N), when tested according to ASTM F 446.

3.2 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.

B. Remove temporary labels and protective coatings.

C. Clean and polish exposed surfaces according to manufacturer's written instructions.

END OF SECTION 10 28 00

SECTION 10 44 00 - SIGNS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following types of signs:

B. SECTION INCLUDES

1. Permanent room or space identification signage.

C. SUBMITTALS

1. General: Submit the following according to the Conditions of the Contract and Division 1 Specification Sections.
2. Product data for each type of sign specified, including details of construction relative to materials, dimensions of individual components, profiles, and finishes.

D. QUALITY ASSURANCE

1. Sign Fabricator Qualifications: Firm experienced in producing signs similar to those indicated for this Project, with a record of successful in-service performance, and sufficient production capacity to produce sign units required without causing delay in the Work.
2. Single-Source Responsibility: For each separate sign type required, obtain signs from one source of a single manufacturer.
3. Design Criteria: The drawings indicate size, profiles, and dimensional requirements of some signs and some are based on the specific type and model indicated. Signs by other manufacturers may be considered provided that deviations in dimensions and profiles are minor and do not change the design concept as judged by the Architect. The burden of proof of equality is on the Contractor.

    a. Raised Characters shall comply with CBC Section 11B-703.2
    b. Depth: It shall be 1/32-inch minimum above their background and shall be scans serif uppercase and be duplicated in Braille
    c. Height: it shall be 5/8” minimum and 2-inches maximum based on the height of the uppercase letter “I”. CBC Section 11B-703.2.5
    d. Finish and Contrast: Characters and their background shall have a non-glare finish Character shall contrast with their background with either light characters on a dark background or dark characters on a light background.CBC Section 11B-703.5.1
    e. Proportions: It shall be selected from fonts where the width of the uppercase “O” is 60 percent minimum and 110% maximum of the height of the uppercase “I”. Stroke thickness of the uppercase letter “I” shall be 15 percent maximum of the height of the character. CBC Section 11B-703.4 and 11B-703.6\
    f. Braille: It shall be contracted (Grade 2) and shall comply with CBC Section 11B-703.3 and 11B-703.4 Braille dots shall have a domed and rounded shape and shall comply with CBC table and figure 11B-703.3.1.

g. Mounting Height: A tactile sign shall be located 48” minimum to the baseline of the lowest Braille cells and 60” maximum to the baseline of the highest line of raised characters above the finish floor or ground surface.
h. Mounting Location: A tactile sign shall be located on the approach side, as one enters or exits rooms or space, and be reached within 0” of the required floor space per CBC Section and Figure 11B-703.4.2 as follows:
   1) A clear floor space of 18”x18” minimum, centered on the tactile characters, shall be provided beyond the arc of any door swings between the closed position and 45 degree open position.
   2) On the wall at the latch side of a single door.
   3) On the inactive leaf of a double door with one active leaf.
   4) On the wall at the right side of a double door with two active leafs.
   5) On the nearest adjacent wall where there is no wall space at the latch side of a single door or no space at the right side of a double door with two active leafs.
i. Visual Characters shall comply with CBC Section 11B-703.5 and shall be 40” minimum above finish floor or ground.
j. Pictograms shall comply with CBC Section 11B-703.6
k. Symbols of Accessibility: shall comply with CBC Section 11B-703.7.
l. Character Spacing: Spacing between individual raised characters shall comply with CBC Section 11B-703.2.7 and 11B-703.2.8
m. Format: Text shall be in a horizontal format. CBC Section 11B-703.2.9
n. Variable message signs shall comply with CBC Section 11B-703.8

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. PERMANENT ROOM IDENTIFICATION SIGNAGE

1. Manufacturer: Architectural Sign Identity, Inc., (specified as basis of design) phone 951-654-4350 or approved equal.
2. Type:

   a. Interior and Exterior: Sand Etched 1/8" thermosetting laminate signs with phenolic resin core and melamine resin surface.

3. Graphic Image Process: Process providing raised and braille relief image. Applied message not acceptable.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Locate sign units and accessories where indicated, using mounting methods of the type described and in compliance with the manufacturer's instructions.

1. Install signs level, plumb, and at the height indicated, with sign surfaces free from distortion or other defects in appearance.
2. Tactile Plaques - Room Identification Signage:

    a. Background Size: 8" x 8".
    b. Typography: Helvetica Medium.
    c. Room Number: 1 line, 1-1/2" high.
    d. Room Name: 2 lines, 5/8" high.
    e. Braille Lines: 2, Contracted Grade 2 Braille directly below number or name.
    f. Mounting Location and Height: Signs shall be installed on the wall adjacent to the latch side of the door. Where there is no wall space to the latch side of the door, including at double leaf doors, signs shall be placed on the nearest adjacent wall. Mounting height shall be 60 inches (1525 mm) above the finish floor to the centerline of the sign. Mounting location for such signage shall be so that a person may approach within 3 inches (76 mm) of signage without encountering protruding objects or standing within the swing of a door. Owner will select sign locations. Allow for a variety of mounting types.

3. Tactile Plaques - Toilet Room Identification:

    a. Size: 8" x 8".
    b. Typography: Helvetica Medium.
    c. Pictogram: Man or woman or both as applicable plus International Symbol of Accessibility. 1/32" raised finish.
    d. Text: Men, Women, as applicable.
    e. Braille: Contracted Grade 2 Braille directly below text.

3.2 INSTALLATION AND PLACEMENT CONSIDERATIONS

A. Install signs after substrate surfaces receive final finish.

B. Where signs are installed in sealant method on glass panels, provide back plate matching sign at opposite side of glass

C. When sign is installed on window surface or other similar recessed conditions, provide spacer as required to maintain sign face within 3 inches of outermost wall plane.

D. Where signs are mounted on gate or fence mesh, sandwich mesh between sign and backing panel of same material and size as sign. Install using sex bolt, tamper resistant fasteners, mounted through aluminum sleeve/spacer.

E. Cleaning and Protection: At completion of the installation, clean soiled sign surfaces. Protect from damage until Owner's acceptance.

END OF SECTION 10 44 00

SECTION 22 0500

COMMON WORK RESULTS FOR PLUMBING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Project Specification, apply to this and the other sections of Division 22.

B. This Division is an integrated whole comprising interrelated and interdependent Section and shall be considered in its entirety in determining requirements of the Work.

C. Refer to other sections of this Division for additional requirements or information regarding the subjects of this Section.

1.02 SECTION INCLUDES

A. This Section includes general administrative and procedural requirements for plumbing installations. The following administrative and procedural requirements are included in this Section to expand the requirements specified in Division 01:

1. Submittals.
2. Coordination drawings.
3. Record documents.
4. Maintenance manuals.
5. Rough-ins.
6. Mechanical installations.
7. Cutting and patching.

1.03 SUBMITTALS

A. General: Follow the procedures specified in Division 01.

B. Plumbing submittals shall include shop drawings, product data, and samples per requirements of each section of specification

C. Plumbing Submittals and Product Data: Assemble “submittals” and “product data” into tabbed brochures according to main areas of work.

1. Assemble each brochure with tabbed separators for each Specification Section where products are noted to be submitted, with separate tabs for each product listed.
2. Temperature "control shop drawings" may be submitted separately after preparations for review.
3. For items such as valves, hangers and accessories, indicate specific items and where they are to be used.
4. Contractor need only to submit for review those items specified to be submitted, unless requested by the Architect for special review.

D. All submittals shall be submitted in hard copy, electronic submittals are not acceptable.

E. Increase the number of plumbing related submittals including; shop drawings, product data, and samples submitted to allow for required distribution by one additional copy, which will be retained by the Mechanical Consulting Engineer.

F. Submit for review, only the specific items required in this Section or other Sections of Division 22.

SECTION 22 0519

METERS AND GAGES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section includes the following types of meters and gages:

1. Temperature gages and fittings.
2. Pressure gages and fittings.
3. Flow meters.

B. Meters and gages furnished as part of factory-fabricated equipment are specified as part of equipment assembly in other Division 22 sections.

1.02 SUBMITTALS

A. General: Submit the following in accordance with conditions of Contract and Division 01 Specification Sections and Section 22 0500 "Common Work Results for Plumbing."

1. Product data for each type of meter and gage. Include scale range, ratings. Submit meter and gage schedule showing manufacturer's figure number, scale range, location, and accessories for each meter and gage.
2. Maintenance data for each type of meter and gage for inclusion in Operating and Maintenance Manuals specified in Division 01 and Division 22 Section "Common Work Results for Plumbing."

1.03 QUALITY ASSURANCE

A. ASME and ISA Compliance: Comply with applicable portions of ASME and Instrument Society of America (ISA) standards pertaining to construction and installation of meters and gages.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Liquid-In-Glass Thermometers:
   a. Marshalltown Instruments, Inc.
   b. Trerice (H.O.) Co.
   c. Weiss Instruments, Inc.
   d. Weksler Instruments Corp.
2. Thermometer Wells: Same as for thermometers.
3. Pressure Gages:
   a. Ametek, U.S. Gauge Div.
   b. Ashcroft Dresser Industries Instrument Div.
   c. Marsh Instruments Co., Unit of General Signal.
   d. Marshalltown Instruments, Inc.
   e. Trerice (H.O.) Co.
   f. Weiss Instruments, Inc.
   g. Weksler Instruments Corp.
   h. WIKA Instruments Corp.
4. Pressure Gage Accessories: Same as for pressure gages.

5. Water Orifice-Type Measurement System:
   a. Armstrong Pumps, Inc.
   b. Bell & Gossett, ITT. Fluid Handling Div.
6. Calibrated Balance Valves
   a. Armstrong Pumps, Inc.
   b. Bell and Gossett, ITT, Fluid Handling Div.
7. Venturi-Type Flow Measurement System
   a. Armstrong Pumps, Inc.
   b. Barco Div., Marison Industries
   c. Gerand Engineering Co.
8. Test Plugs
   a. MG Piping Products Co.
   b. Peterson Equipment Co., Inc.
   c. Sisco, ASpedco, Inc. Co.
   d. Trerice (H.O.) Co.
   e. Watts Regulator Co.

2.02 THERMOMETERS, GENERAL

A. Accuracy: Plus or minus 1 percent of range span or plus or minus one scale division to maximum of 1.5 percent of range span.

B. Scale range: Temperature ranges for services listed as follows:

1. Domestic Hot Water: 30 to 240 deg with 2-degree scale divisions.
2. Domestic Cold Water: 0 to 100 deg F with 2-degree scale divisions
3. Heating Water: 30 to 300 deg with 2-degree scale divisions
4. Condenser Water: 0 to 160 deg F with 2-degree scale divisions
5. Chilled Water: 0 to 100 deg F with 2-degree scale divisions
6. Steam and Condensate: 50 to 400 Deg F with 2-degree scale divisions

2.03 LIQUID-IN-GLASS THERMOMETERS

A. Case: Die cast, aluminum finished, in baked epoxy enamel, glass front, spring secured, 9 inches long.

B. Adjustable Joint: Finished to match case, 180-degree adjustment in vertical plane, 360-degree adjustment in horizontal plane, with locking device.

C. Tube: Red reading, liquid filled, magnifying lens.

D. Scale: Satin-faced, non-reflective aluminum, with permanently etched markings.

E. Stem: Copper-plated steel, aluminum or brass, for separable socket, length to suit installation.

2.04 THERMOMETER WELLS

A. Thermometer Wells: Brass or stainless steel, pressure rated to match piping system design pressure; with 2-inch extension for insulated piping and threaded cap nut with chain permanently fastened to well and cap.

2.05 PRESSURE GAGES

A. Type: General use, ASME B40.1, Grade A, phosphor bronze bourdon-tube type, bottom connection.

B. Case: Drawn steel or brass, glass lens, 4-1/2-inches diameter.

C. Connector: Brass, 1/4-inch NPS.

D. Scale: White coated aluminum, with permanently etched markings.

E. Accuracy: Plus or minus 1 percent of range span.

F. Range: Conform to the following:

1. Vacuum: 30" & 0-15 PSI compound range; 1" and 1/2 PSI gradations.
2. Chilled and heating water systems, except as otherwise indicated: 0-60 PSI range, 1 PSI gradation.
3. Condenser water system, except as otherwise indicated: (0-15); (0-30) PSI range, (1/4 PSI); (1/2 PSI) gradation.
4. Except as otherwise indicated: 0-100 PSI range, 1 PSI gradation.
5. High temperature water system: 0-300 PSI range, 2 PSI gradations.

2.06 PRESSURE GAGE ACCESSORIES

A. Syphon: 1/4-inch NPS straight coil constructed of brass tubing with threads on each end.

B. Snubber: 1/4-inch NPS brass bushing with corrosion-resistant porous metal disc. Disc material shall be suitable for fluid served and rated pressure.

2.07 FLOW METERS, GENERAL

A. Flow rate of elements and meters shall be same as connected equipment or system.

2.08 WAFER ORIFICE TYPE FLOW ELEMENTS

A. Type: Differential-pressure wafer type orifice insert flow elements designed for installation between pipe flanges.

B. Construction: Cast-iron body, brass valves with integral check readout valves and caps, and calibrated nameplate. Elements pressure rated for 300 PSIG and 250 degree F.

2.09 CALIBRATED BALANCE VALVE

A. Type: Differential-pressure, ball type, adjustable orifice designed for installation in piping.

B. Construction: Bronze body/brass ball construction with glass and carbon filled TFE seal rings, screwed connections with integral check readout valves and caps and calibrated nameplate and memory stop and drain connection. Elements pressure rated for 300 PSIG and 250 degree f.

2.10 VENTURI TYPE FLOW ELEMENTS

A. Type: Differential-pressure venturi type, designed for installation in piping.

B. Construction: Bronze or cadmium-plated steel with brass fittings and attached tag with flow conversion data. Ends shall be threaded for 2 inches and smaller elements and flanged or welded for 2-1/2 inches and larger elements.

2.11 PITOT-TUBE TYPE FLOW ELEMENTS

A. Type: Differential-pressure Pitot-tube type design with probe for insertion into piping.

B. Construction: Stainless steel probe of length to span inside of pipe, with brass fittings and attached tag with flow conversion data. Elements shall be pressure rated for 150 PSIG and 250 Degree F. (120 Degree C).

2.12 METERS

A. Portable Meters: Differential-pressure gage and two 12-foot hoses in carrying case with handle.

B. Scale: In inches of water unless otherwise indicated.

C. Accuracy: Plus or minus 2 percent between 20 to 80 percent of range.

D. Each meter shall be complete with operating instructions.

2.13 TEST PLUGS

A. Test Plugs shall be nickel-plated brass body, with 1/2-inch NPS fitting and 2 self-sealing valve-type core inserts, suitable for inserting a 1/8-inch O.D. probe assembly from a dial-type thermometer or pressure gage. Test plug shall have gasketed and threaded cap with retention chain and body of length to extend beyond insulation. Pressure rating shall be 500 PSIG.

B. Core Material: conform to the following for fluids and temperature range:

1. Air, Water, Oil, and Gas, 20 to 200 Degree F.: Neoprene.

C. Test Kit: Provide test kit consisting of 1 pressure gage, gage adapter with probe, 2 bimetal dial thermometers, and carrying case.

D. Ranges of pressure gage and thermometers shall be approximately 2 times systems operating conditions.

PART 3 - EXECUTION

3.01 THERMOMETERS INSTALLATION

A. Install thermometers in vertical and tilted positions to allow reading by observer standing on floor.

B. Install in the following locations and elsewhere as indicated:

1. At inlet and outlet of each hydronic zone.
2. At inlet and outlet of each hydronic boiler and chiller.
3. At inlet and outlet of each hydronic coil in air-handling units and built-up central systems.
4. At inlet and outlet of each hydronic heat exchanger.
5. At inlet and outlet of each hydronic heat recovery unit.
6. At inlet and outlet of each thermal storage tank.

C. Thermometer Wells: Install in piping tee where thermometers are indicated, in vertical position. Fill well with oil or graphite and secure cap.

3.02 INSTALLATION OF PRESSURE GAGES

A. Install pressure gages in piping tee with pressure gage valve, located on pipe at most readable position.

B. Install in the following locations, and elsewhere as indicated:

1. At suction and discharge of each pump.
2. At discharge of each pressure-reducing valve.
3. At building water service entrance.
4. At chilled water and condenser water inlets and outlets of chillers.

C. Pressure Gage Needle Valves: Install in piping tee with snubber. Install syphon in lieu of snubber for steam pressure gages.

3.03 INSTALLATION OF TEST PLUGS

A. Test Plugs: Install in piping tee where indicated, located on pipe at most readable position. Secure cap.

3.04 INSTALLATION OF FLOW MEASURING ELEMENTS AND METERS

A. Locations: Install flow measuring elements in the following locations and elsewhere as indicated.

1. At discharge of each pump.
2. At inlet of each hydronic coil in built-up central systems.

B. Differential-Pressure-Type Flow Elements: Install minimum straight lengths of pipe upstream and downstream from element as described by the manufacturer's installation instructions.

C. Install wafer orifice-type element between 2 Class 125 pipe flanges, ANSI B16.1 (cast iron) or ANSI B16.24 (bronze).

D. Install connections for attachments to portable flow meters in a readily accessible location.

3.05 INSTALLATION OF CALIBRATED BALANCE VALVES

A. Install calibrated balance valves in the following locations and elsewhere as indicated.

1. At each fan coil unit.
2. At each unitary water source heat pump.
3. At each 3-Way valve.

3.06 ADJUSTING AND CLEANING

A. Adjusting: Adjust faces of meters and gauges to proper angle for best visibility.

B. Cleaning: Clean windows of meters and gages and factory-finished surfaces. Replace cracked and broken windows, and repair scratched and marred surfaces with manufacturer's touch-up paint.

3.07 CONNECTIONS

A. Piping installation requirements are specified in other sections of Division 22. The drawings indicate the general arrangement of piping, fittings, and specialties. The following are specific connection requirements:

B. Install meters and gages piping adjacent to machine to allow servicing and maintaining of machine.

END OF SECTION 22 0519

SECTION 22 0523

VALVES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section includes general duty valves common to most mechanical piping systems.

1. Special purpose valves are specified in individual piping system specifications.

1.02 RELATED SECTIONS

A. Division 22 Section "Plumbing Identification" for valve tags and charts.

1.03 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract, Division 01 Specification Sections, and Section 22 0500 "Common Work Results for Plumbing."

1. Product data, including body material, valve design, pressure and temperature classification, end connection details, seating materials, trim material and arrangement, dimensions and required clearances, and installation instructions.
2. Provide valve schedule showing manufacturer's figure number and sizes.

1.04 QUALITY ASSURANCE

A. Single Source Responsibility: Comply with the requirements specified in Division 01 Section "Materials and Equipment," under "Source Limitations."

B. American Society of Mechanical Engineers (ASME) Compliance: Comply with ASME B31.9 for building services piping and ASME B31.1 for power piping.

C. Manufacturers Standardization Society of the Valve and Fittings Industry (MSS) Compliance): Comply with the various MSS Standard Practices referenced.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Preparation For Transport: Prepare valves for shipping as follows:

1. Ensure valves are dry and internally protected against rust and corrosion.
2. Protect valve ends against damage to threads, flange faces, and weld-end preps.
3. Set valves in best position for handling. Set globe and gate valves closed to prevent ratting; set ball and plug valves open to minimize exposure of functional surfaces; and block swing check valves in either closed or open position.

B. Storage: Use the following precautions during storage:

1. Do not remove valve end protectors unless necessary for inspection; then reinstall for storage.
2. Protect valves from weather. Store valves indoors. Maintain valve temperature higher than the ambient dew point temperature. If outdoor storage is necessary, support valves off the ground or pavement in watertight enclosures.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide products from one of the manufacturers listed in valve schedule.

2.02 VALVE FEATURES, GENERAL

A. Valve Design: Rising stem or rising outside screw and yoke stems.

1. Non-rising stem valves may be used where headroom prevents full extension of rising stems.

B. Pressure and Temperature Ratings: As scheduled and required to suit system pressures and temperatures.

C. Sizes: Same size as upstream pipe, unless otherwise indicated.

D. Operators: Provide the following special operator features:

1. Hand wheels, fastened to valve stem, for valves other than quarter turn.
2. Lever handles, on quarter-turn valves 6-inch and smaller, except for plug valves. Provide plug valves with square heads; provide one wrench for every 10 plug valves.
3. Chain-wheel operators, for valves 2-1/2 inch and larger, install 72 inches or higher above finished floor elevation. Extend chains to an elevation of 5'-0" above finished floor elevation.
4. Gear drive operators, on quarter-turn valves 8-inch and larger.

E. Extended Stems: Where insulation is indicated or specified, provide extended stems arranged to receive insulation.

F. End Connections: As indicated in the valve specifications.

1. Threads: Comply with ANSI B1.20.1.
2. Flanges: Comply with ANSI B16.1 for cast iron, ANSI B16.5 for steel, and ANSI B16.24 for bronze valves.
3. Solder-Joint: Comply with ANSI B16.18.

a. Caution: Where soldered end connections are used, use solder having a melting point below 840 deg. F for gate, globe, and check valves; below 421 deg. F for ball valves.

2.03 GATE VALVES

A. Gate Valves, 2-Inch and Smaller: MSS SP-80; Class 150, body and union bonnet of ASTM B62 cast bronze; with threaded or solder ends, solid disc, copper-silicon alloy stem, brass packing gland, "Teflon" impregnated packing, and malleable iron hand wheel. Do not use solder end valves for hot water heating or steam piping applications.

MANUFACTURER	THREADED NRS	THREADED RS	SOLDER NRS	SOLDER RS
Crane	X	431UB	X	X
Grinnell	3050	3060	X	X
Milwaukee	1141	1151	X	1169
Nibco	T-136	T-135	S-136	X
KITZ	x	42	x	43

"x" means not available. **Provide lead-free products.**

B. Gate Valves, 2-1/2 Inch and Larger: MSS SP-70; Class 125 iron body, bronze mounted, with body and bonnet conforming to ASTM A126 class B; with flanged ends, "Teflon" impregnated packing, and two-piece backing gland assembly.

MANUFACTURER	OS & Y RS	NRS
Crane	465-1/2	461
Grinnell	6020A	6060A
Nibco	617-O	F-619
Milwaukee	F-2885	F-2882
KITZ	72	75

"x" means not available. **Provide lead-free products.**

2.04 BALL VALVES

A. Ball Valves, 2 Inches and Smaller: Rated for 150 psi saturated stem pressure, 400 psi WOG pressure; two- or three-piece construction; with bronze body conforming to ASTM B 62, full port only, chrome-plated brass ball, replaceable "Teflon" or "TFE" seats and seals, blowout-proof stem, and vinyl covered steel handle. Provide solder ends for condenser water, chilled water, and domestic hot and cold water service; threaded ends for heating hot water and low-pressure steam.

1. Ball Valves - 1 Inch and Smaller:

MANUFACTURER	THREADED ENDS	SOLDER ENDS
Crane	9302	9322
Nibco	T-580-70	S-580-70
Watts	B-6000	B-6001
Milwaukee	BA-100	BA-150
KITZ	58	59

"x" means not available. Provide lead-free products.

2. Ball Valves - 1-1/4 Inch to 2 Inch:

MANUFACTURER	THREADED ENDS	SOLDER ENDS
Nibco	T-590-Y	S-590-Y
Stockham	S-216 BR-R-T	S-216-BR-R-S
Watts	B-6800	B-6801
KITZ	62	63

"x" means not available. **Provide lead-free products.** Grooved Ends: Victaulic Style 721.

2.05 PLUG VALVES

A. Plug Valves, 2-Inch and Smaller: Rated at 150 psi WOG; bronze body, with straightaway pattern, square head, and threaded ends.

1. Lunkenheimer: 454 or equal.
2. Homestead: 611 (Semi Steel Body) or equal.

B. Plug Valves, 2-1/2 Inch and Larger: MSS SP-78; rated at 175 psi WOG; lubricated plug type, with semi steel body, single gland, wrench operated and flanged ends.

1. Powell: 2201 or equal.
2. Homestead: 605 or equal.

2.06 CHECK VALVES

A. Swing Check Valves, 2-Inch and Smaller: MSS SP-80; Class 125, cast-bronze body and cap conforming to ASTM B 62; with horizontal swing, Y-pattern, and bronze disc; and having threaded or solder ends. Provide valves capable of being reground while the valve remains in the line. Provide Class 150 valves meeting the above specifications, with threaded end connections, where system pressure requires or where Class 125 valves are not available.

MANUFACTURER	CLASS 125THREADED ENDS	CLASS 125SOLDER ENDS	CLASS 125THREADED ENDS
Crane	37	1342	137
Milwaukee	509	1509	510
Nibco	T-413	S-413	T-433
KITZ	22	23	29

Grooved Ends: Victaulic Series 712. **Provide lead-free products.**

B. Swing Check Valves, 2-1/2 Inch and Larger: MSS SP-71; Class 125 (Class 175 FM approved for fire protection piping systems), cast iron body and bolted cap conforming to ASTM A 126, Class B; horizontal wing, and bronze disc or cast-iron disc with bronze disc ring; and flanged ends. Provide valves capable of being refitted while the valve remains in the line.

MANUFACTURER	CLASS 125	CLASS 175
Crane	373	x
Milwaukee	F2974	x
Nibco	F-918	x
KITZ	78	x

"x" means not available. **Provide lead-free products.**

C. Lift Check Valves, 2-Inch and Smaller: Class 125; cast-bronze body and cap conforming to ASTM B 62; horizontal or angle pattern, lift-type valve, with stainless steel spring, bronze disc holder with renewable "Teflon" disc, and threaded ends. Provide valves capable of being refitted and ground while the valve remains in the line.

MANUFACTURER	HORIZONTAL	ANGLE
Jenkins	655-A	x
Lunkenheimer	233	x

"x" means not available. **Provide lead-free products.**

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine valve interior through the end ports for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks used to prevent disc movement during shipping and handling.

B. Actuate valve through an open-close and close-open cycle. Examine functionally significant features, such as guides and seats made accessible by such actuation. Following examination, return the valve closure member to the shipping position.

C. Examine threads on both the valve and the mating pipe for form (i.e., out-of-round or local indentation) and cleanliness.

D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Check gasket material for proper size, material composition suitable for service, and freedom from defects and damage.

E. Prior to valve installation, examine the piping for cleanliness, freedom from foreign materials, and proper alignment.

F. Replace defective valves with new valves.

3.02 VALVE ENDS SELECTION

A. Select valves with the following ends or types of pipe/tube connections:

1. Copper Tube Size, 2-Inch and Smaller: Solder ends, except provide threaded ends for heating hot water and low-pressure steam service.
2. Steel Pipe Sizes, 2-Inch and Smaller: threaded or grooved end.
3. Steel Pipe Sizes 2-1/2 Inch and Larger: grooved end or flanged.

3.03 VALVE INSTALLATIONS

A. General Application: Refer to piping system specification sections for specific valve applications and arrangements. Use gate, ball, and butterfly valves for shut-off duty. Use globe, plug, and ball valves for throttling duty.

B. Locate valves for easy access and provide separate support where necessary. Where concealed, install behind access panel with valve located for complete accessibility for servicing.

C. Install valves and unions for each fixture and item of equipment. Arrange valves to allow equipment removal without system shutdown. Unions are not required on flanged devices.

D. Install three-valve bypass around each pressure reducing valve using throttling-type valves.

E. Install valves in horizontal piping with stem at or above the center of the pipe.

F. Install valves in a position to allow full stem movement.

G. Installation of Check Valves: Install for proper direction of flow as follows:

1. Swing Check Valves: Horizontal position with hinge pin level.
2. Lift Check Valve: With stem upright and plumb.

H. Where shut-off valves are installed in a confined space such as in a wall or furring, install ball valves with operating handle parallel with face of wall.

I. Where valves are located in walls, do not install more than 6'-0" from finished floor. Where valves are located above ceilings, install centered on access point and not greater than 24" above access point.

3.04 SOLDER CONNECTIONS

A. Cut tube square and to exact lengths.

B. Clean end of tube to depth of valve socket with steel wool, sand cloth, or a steel wire brush to a bright finish. Clean valve socket in same manner.

C. Apply proper soldering flux in an even coat to inside of valve socket and outside of tube.

D. Open gate and glove valves to full open position.

E. Remove the cap and disc holder of swing check valves having composition discs.

F. Insert tube into valve socket, making sure the end rests against the shoulder inside valve. Rotate tube or valve slightly to ensure even distribution of the flux.

G. Apply heat evenly to outside of valve around joint until solder will melt upon contact. Feed solder until it completely fills the joint around tube. Avoid hot spots or overheating valve. Once the solder starts cooling, remove excess amounts around the joint with a cloth or brush.

H. Use 95-5 tin/antimony lead-free solder for all solder joints unless indicated otherwise.

3.05 THREADED CONNECTIONS

A. Note the internal length of threads in valve ends, and proximity of valve internal seat or wall, to determine how far pipe should be threaded into valve.

B. Align threads at point of assembly.

C. Apply appropriate tape or thread compound to the external pipe threads (except where dry seal threading is specified).

D. Assemble joint, wrench tight. Wrench on valve shall be on the valve end into which the pipe is being threaded.

3.06 FLANGED CONNECTIONS

A. Align flange surfaces parallel.

B. Assemble joints by sequencing bolt tightening to make initial contact of flanges and gaskets as flat and parallel as possible. Use suitable lubricants on bolt threads. Tighten bolts gradually and uniformly with a torque wrench.

3.07 FIELD QUALITY CONTROL

A. Tests: After piping systems have been tested and put into service, but before final adjusting and balancing, inspect valves for leaks. Adjust or replace packing to stop leaks; replace valves if leak persists.

3.08 ADJUSTING AND CLEANING

A. Cleaning: Clean mill scale, grease, and protective coatings from exterior of valves and prepare valves to receive finish painting or insulation.

3.09 VALVE PRESSURE/TEMPERATURE CLASSIFICATION SCHEDULES

A. Below schedules are for standard installation conditions. Variations or special valves and/or conditions set forth in other Division 15 Sections shall take precedence.

1. VALVES, 2-INCH AND SMALLER

SERVICE	GATE	GLOBE	BALL	CHECK
Condenser Water	125	125	150	125
Chilled Water	125	125	150	125
Domestic Hot and Cold Water	125	125	150	125
Heating Hot Water	150	150	150	150
Low-Pressure Steam	150	150	150	150

2. VALVES, 2-1/2 INCH AND LARGER

SERVICE	GATE	GLOBE	BUTTERFLY	CHECK
Condenser	125	125	200	125
Chilled Water	125	125	200	125
Domestic Hot and Cold Water	125	125	200	125
Heating Hot Water	125	125	200	125
Low-Pressure Steam	125	125	200	125

END OF SECTION 22 0523

SECTION 22 0529

SUPPORTS AND ANCHORS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Extent of supports and anchors required by this section is indicated on drawings or in other Division 22 sections and include the following:

1. Horizontal Piping Hangers and Supports;
2. Vertical Piping Clamps;
3. Hanger-Rod Attachments;
4. Building Attachments;
5. Saddles and Shields;
6. Miscellaneous Materials;
7. Anchors;
8. Equipment Supports.

1.02 RELATED SECTIONS

A. This section is part of each Division 22 section making reference to or requiring supports and anchors specified herein.

B. Supports and anchors furnished as part of factory-fabricated equipment, are specified as part of equipment assembly in other Division 22 sections.

C. Section 033000: Cast-in-Place Concrete.

1.03 QUALITY ASSURANCE

A. Codes and Standards:

1. Code Compliance: Comply with applicable plumbing codes pertaining to product materials and installation of supports and anchors.
2. UL and FM Compliance: Provide products which are UL-Listed and FM approved.
3. MSS Standard Compliance:

   a. Provide pipe hangers and supports of which materials, design, and manufacturer comply with MSS SP-58.
   b. Select and apply pipe hangers and supports, complying with MSS SP-69.
   c. Fabricate and install pipe hangers and supports, complying with MSS SP-89.
   d. Terminology used in this section is defined in MSS SP-90.

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's technical product data, including installation instructions for each type of support and anchor.

PART 2 - PRODUCTS

2.01 MANUFACTURED UNITS

A. Hangers and support components shall be factory fabricated of materials, design, and manufacturer complying with MSS SP-58.

1. Components shall have galvanized coatings where installed piping and equipment will not have field-applied finish.
2. Pipe attachments shall have nonmetallic coating for electrolytic protection where attachments are in direct contact with copper tubing.

B. Thermal Hanger Shield Inserts: 100-psi average compressive strength, waterproofed calcium silicate, encased with a sheet metal shield. Insert and shield shall cover entire circumference of the pipe and shall be of length indicated by manufacturer for pipe size and thickness of insulation.

2.02 HORIZONTAL PIPING HANGERS AND SUPPORTS

A. General: Except as otherwise indicated, provide factory fabricated horizontal-piping hangers and supports complying with MSS SP-58, of one of the following MSS types listed, selected by Installer to suit horizontal-piping systems, in accordance with MSS SP-69 and manufacturer's published product information. Use only one type by one manufacturer for each piping service. Select size of hangers and supports to exactly fit pipe size for bare piping, and to exactly fit around piping insulation with saddle or shield for insulated piping. Provide copper-plated hangers and supports for copper-piping systems.

1. Adjustable Steel Clevis Hangers: MSS Type 1.
2. Adjustable Swivel Pipe Rings: MSS Type 6.

2.03 VERTICAL PIPING CLAMPS

A. General: Except as otherwise indicated, provide factory fabricated vertical-piping clamps complying with MSS SP-58, of one of the following types listed, selected by Installer to suit vertical piping systems, in accordance with MSS SP-69 and manufacturer's published product information. Select size of vertical piping clamps to exactly fit pipe size of bare pipe. Provide copper-plated clamps for copper-piping systems.

B. Two-Bolt Riser Clamps: MSS Type 8.

2.04 HANGER ROD AND BUILDING ATTACHMENTS

A. General Hanger Rod Attachment: Refer to structural drawings for requirements of hanger rod and building attachments. If a specific attachment that is required is not detailed on the structural drawings, one of the following attachments may be submitted for review by the structural engineer prior to installation. Except as otherwise indicated, provide factory fabricated hanger-rod attachments complying with MSS SP-58, of one of the following MSS types listed, selected by Installer to suit horizontal-piping hangers and building attachments, in accordance with MSS SP-69 and manufacturer's published product information. Use only one type by one -manufacturer for each piping service. Select size of hanger-rod attachment to suit hanger rods. Provide copper-plated hanger-rod attachments for copper-piping systems.

B. General Building Attachment: Except as otherwise indicated, provide factory fabricated building attachments complying with MSS SP-58, of one of the following MSS types listed, selected by Installer to suit building substrate conditions, in accordance with MSS SP-69 and manufacturer's published product information. Select size of building attachments to suit hanger rods. Provide copper-plated building attachments for copper-piping systems.

1. Concrete Inserts: MSS Type 18.
2. Center Beam Clamps: MSS Type 21.
3. Steel Beam Clamps W/Eye Nut: MS Type 28.
4. Linked Steel Clamps W/Eye Nut: MSS Type 29.
5. Malleable Beam Clamps: MSS Type 30.
6. Steel Brackets: One of the following for indicated loading:
7. Light Duty: MSS Type 31.

2.05 SADDLES AND SHIELDS

A. General: Except as otherwise indicated, provide saddles or shields under piping hangers and supports, factory-fabricated, for all insulated piping. Size saddles and shields for exact fit to mate with pipe insulation.

B. Protection Shields: MSS Type 40; provide high density insert of same thickness of insulation.

2.06 MANUFACTURERS OF HANGERS AND SUPPORTS

A. Manufacturers: Subject to compliance with requirements, provide hangers and supports of one of the following:

1. B-Line Systems, Inc.
2. Tolco, Inc.
3. Elcen Metal Products Co.
4. Fee & Mason Mfg. Co.; Div. Figgie International.
5. ITT Grinnel Corp.

2.07 MISCELLANEOUS MATERIALS

A. Steel Plates, Shapes and Bars: ASTM A36.

B. Cement Grout: Portland cement (ASTM C150, Type I or Type III) and clean uniformly graded, natural sand (ASTM C 404, Size No. 2). Mix at a ratio of 1 part cement to 3 parts sand, by volume, with minimum amount of water required for placement and hydration.

C. Pipe Alignment Guides: Factory fabricated, of cast semi-steel or heavy fabricated steel, consisting of bolted two-section outer cylinder and base with two-section guiding spider that bolts tightly to pipe. Length of guides shall be as recommended by manufacturer to allow indicated travel.

D. Pipe Roll Stand: Factory fabricated cast iron stand, size as required, with insulation installed on piping.

2.08 ISOLATORS

A. Isolators: Provide factory-fabricated isolators of size required.

B. Spring Isolators: Refer to Section 22 0548 VIBRATION CONTROL.

C. Manufacturers: Semco "Trisolator" or Potter-Roemer PR-ISO.

PART 3 - EXECUTION

3.01 INSPECTION

A. Examine substrates and conditions under which supports and anchors are to be installed. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Proceed with installation of hangers, supports and anchors only after required building structural work has been completed in areas where the work is to be installed. Correct inadequacies including (but not limited to) proper placement of inserts, anchors and other building structural attachment.

B. Prior to installation of hangers, supports, anchors and associated work, installer shall meet at project site with Contractor, installer of each component of associated work, inspection and testing agency representatives (if any), installers of other work requiring coordination with work of this section and Architect/Engineer for purpose of reviewing material selections and procedures to be followed in performing the work in compliance with requirements specified.

3.03 INSTALLATION OF BUILDING ATTACHMENTS

A. Install building attachments at required locations within concrete or on structural steel for proper piping support. Space attachments within maximum piping span length indicated in MSS SP-69. Install additional building attachments where support is required for additional concentrated loads, including valves, flanges, guides, strainers, expansion joints, and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten insert securely to forms. Where concrete with compressive strength less than 2500 PSI is indicated, install reinforcing bars through openings at top of inserts.

3.04 INSTALLATION OF HANGERS AND SUPPORTS

A. General: Install hangers, supports, clamps and attachments to support piping properly from building structure; comply with MSS SP-69. Arrange for grouping of parallel runs of horizontal piping to be supported together on trapeze type hangers where possible. Install supports with maximum spacing complying with MSS SP-69. Where piping of various sizes is to be supported together by trapeze hangers, space hangers for smallest pipe size or install intermediate supports for smaller diameter pipe. Do not use wire or perforated metal to support piping, and do not support piping from other piping.

B. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers and other accessories. Except as otherwise indicated for exposed continuous pipe runs, install hangers and supports of same type and type as installed for adjacent similar piping.

C. Prevent electrolysis in support of copper tubing by use of hangers and supports which are copper plated, or by other recognized industry methods.

D. Provisions of Movement: Install hangers and supports to allow controlled movement of piping systems and to permit freedom of movement between pipe anchors.

E. Load Distribution: Install hangers and supports so that piping live and dead loading and stresses from movement will not be transmitted to connected equipment.

F. Pipe Slopes: Install hangers and supports to provide required pipe slopes, and so that maximum pipe deflections allowed by ANSI B31 Pressure Piping Codes are not exceeded.

G. Bare Piping: Install isolators for all bare domestic water and bare hydronic piping.

H. Insulated Piping: Comply with the following installation requirements.
   1. Clamps: Attach clamps, including spacers (if any), to piping with clamps projecting through insulation; do not exceed pipe stresses allowed by ANSI B31.
   2. Shields: Where low-compressive-strength insulation or vapor barriers are indicated on cold or chilled water piping, install coated protective shields. Provide rigid insulation reinforcement at shields.

I. Hangers and supports to be capable to resist the minimum seismic forces indicated in drawings.

3.05 EQUIPMENT SUPPORTS

A. Concrete housekeeping bases will be provided as work of Division 03.

B. Furnish to Contractor, scaled layouts of all required bases, with dimensions of bases, and location to column center lines. Furnish templates, anchor bolts, and accessories, necessary for base construction.

3.06 ADJUSTING AND CLEANING

A. Hanger Adjustment: Adjust hangers so as to distribute loads equally on attachments.

B. Support Adjustment: Provide grout under supports so as to bring piping and equipment to proper level and elevations.

C. Cleaning: Clean factory-finished surfaces. Repair any marred or scratched surfaces with manufacturer's touch-up paint.

D. Touch-Up Painting: Immediately after erection of anchors and supports, clean field welds and abraded areas of shop paint and paint exposed areas with same material as used for shop painting to comply with SSPC-PA-1 requirements for touch-up of field-painted surfaces.
1. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.

E. For galvanized surfaces clean welds bolted connections and abraded areas and apply galvanizing repair paint to comply with ASTM A 780.

END OF SECTION 22 0529

SECTION 22 0548

VIBRATION CONTROL FOR PLUMBING

PART 1 - GENERAL

1.01 DESIGN REQUIREMENTS

A. It is the intent of this Specification to provide the necessary design for the avoidance of excessive noise or vibration in the building due to the operation of machinery or equipment, or due to interconnected piping, ductwork, or conduit and to seismically restraint piping, ductwork and equipment per the applicable codes against seismic forces in any direction.

1. All isolators shall:

   a. Be provided by a single manufacturer.
   b. Be designed or treated for resistance to corrosion. Structural steel bases shall be cleaned of welding slag and coated with an SCAQMD compliant primer.
   c. Be selected to perform their function without undue stress or overloading. All isolators shall have a method for leveling and have a 1/4" thick ribbed neoprene acoustical pad under the spring baseplate.
   d. Be installed in a manner to prevent the transmission of vibration to the structure. No rigid connections between rotating or oscillating equipment or piping and the building will be permitted.
   e. Be designed to be non-resonant with equipment forcing frequencies or support structure natural frequencies.

2. Anchor floor mounted isolated equipment to concrete housekeeping pads of sufficient size to accommodate the anchorage of seismic restraints. Housekeeping pads shall be anchored to the structure as specified by the Structural Engineer of Record.
3. Each motor assembly shall be supported on a single structural steel frame.
4. Where called for in the specifications or on the drawings, all structural steel bases, including concrete pouring form bases, shall be designed and fabricated by the isolation manufacturer. Isolation manufacturer shall be a licensed fabricator for the City of Los Angeles, California.
5. Unless otherwise indicated, all equipment mounted on vibration bases shall have a minimum operating clearance of 1" between structural steel base and floor or support base beneath. The minimum operating clearance between concrete inertia bases and housekeeping pads shall be 1 inch. Check clearance space after installation to ensure that no debris has been left to possibly short circuit isolation bases.
6. Where necessary due to height limitations, provide height saving brackets.
7. Design isolators for positive anchorage against uplift and overturning.

1.02 MANUFACTURERS

A. Acceptable Isolation Manufacturer:

1. M. W. Sausse' & Co., Inc. (Vibrex)
2. Mason Industries, Inc
3. Or Approved Equal

B. Purchased and/or fabricated equipment must be designed and manufactured with provision for positive anchorage against seismic forces.

C. Seismic restraints for pipes and ducts shall be as per the SMACNA Guidelines for seismic Restraint of Mechanical Systems and shall be approved by DSA.

D. Seismic restraints for equipment and piping shall be designed to meet the criteria of the current California Code of Regulations.

E. The manufacturer of Vibration Isolation and Seismic Control Equipment shall have the following responsibilities:

1. Determine adequate vibration isolation and seismic restraint sizes and locations.
2. Provide piping and equipment isolation systems and seismic restraints as scheduled and/or specified.
3. Provide installation instructions and drawings to assure proper installation and performance.

1.03 SUBMITTALS

A. Make Submittals in Accordance with:

1. Contract General Provisions - Division 01.
2. Plumbing General Provisions - Sections 220500 and 220511.

B. Submit Shop Drawings and Manufacturer's Literature

1. Specific vibration isolators and seismic restraints to be utilized showing compliance with the specifications.
2. Isolation frame construction for each machine including dimensions, structural member sizes, support points and restraint locations and details.
3. Methods for isolation and restraint of suspended piping, ductwork, and equipment.
4. Methods for guides and isolation of piping risers.
5. Seismic restraint calculations signed and stamped by an engineer licensed in the State of California and experienced in the design of isolation and seismic restraint for flexibly mounted equipment.

PART 2 - PRODUCTS

2.01 VIBRATION ISOLATOR TYPES

A. "RMS" shall be a laterally stable un-housed spring isolator. Spring, top plate, and baseplate assembly shall be welded. Mounting shall comply with all requirements stated in paragraph above.

B. "RMSG" shall be the same as "RMS" above, but shall include height saving brackets for attachment to the equipment frame or isolation base.

C. "RMSP-EQ" shall be the same as "RMS" above except that the spring shall be enclosed in a welded steel cylinder with uplift restraints for horizontal and vertical seismic control.

D. "RMLS-EQ" shall be the same as "RMS" above, and shall be equipped with a steel housing designed for seismic restraint and with vertical limit stops to prevent the equipment changing from its loaded height should it be necessary to remove a portion of its weight. This housing may also be used as rigid blocking during rigging so that the installed height and the operating height of the isolated equipment remain the same. O.S.H.P.D. pre-approval # OPA-0029.

E. "RMLS-SB" shall be a steel frame constructed of structural wide flange members unless shown otherwise and shall be rectangular in shape. The depths of the steel members shall not be less than one tenth (1/10) of the longest span between base supports or designed for a maximum beam deflection of .005". If the latter method is used, submittals shall include calculations showing the necessary moment of inertia. All steel members shall be coped and fitted, or constructed using the overlap insert method to assure a structural strength that is greater than the individual member strength. The steel frame is placed directly on top of the RMLS-EQ type isolators. O.S.H.P.D. Pre-approved isolator/seismic restraints.

F. "RMU-EQ-SH": shall be an individual semi-housed steel spring isolator complete with vertical motion limit stops incorporating seismic restraints, leveling, and ribbed neoprene pad bonded to the base-plate. O.S.H.P.D. pre-approval # OPA-0098.

G. "AS" shall be air spring isolators and shall incorporate the following:

1. A complete vibration isolation system consisting of a minimum of three air springs and a total of three height sensing valves. If there are two or more air springs per location, they shall be connected to the outlet of the height control valve in parallel. An associated interconnecting air supply system is required which is not included in this work.
2. The air spring shall operate at its normal operating height and the maximum pressure shall not exceed the manufacturer's recommended rating of 100 PSI. The system shall maintain an elevation of +/- 1/8", once adjusted.
3. The type air spring to be utilized shall be based upon the required natural frequency as indicated in the schedule. In order to avoid instability, auxiliary height saving brackets, housings, etc. may be utilized, subject to approval.

H. "RP-EQ" shall be a rubber pad type elastomer mounting, consisting of a steel bearing plate with 1/4" thick neoprene ribbed acoustical pad. Maximum loading shall be 60 PSI. Proper anchorage for seismic loads shall be indicated on drawings.

I. FUD-EQ shall be rubber-in-shear isolators incorporating mounting bolts for bolting to equipment base, a bottom steel plate for bolting isolator to sub base or structure, and built in seismic restraints.

J. "RMXA" shall be a rectangular steel housing that shall be bolted to the overhead structure and designed to allow up to 30 degrees rod misalignment. Hanger shall consist of a steel spring located in a molded neoprene retaining cup with hanger rod bushing.

K. "PRMXA" - Same as type "RMXA" with the addition of a steel load transfer plate so that the equipment or piping operating height is the same as the installed height.

L. "HXA" -Same as type "RMXA" with the addition of a neoprene element in series to isolate the upper connection.

M. "PHXA" - Same as type "HXA" with the addition of a steel load transfer plate so that the equipment or piping operating height is the same as the installed height.

N. "HSS" - shall be a 'rubber in shear' isolator element contained within a rectangular steel housing.

2.02 RAIL AND BASE TYPES

A. "RMR" spring rail isolator. Rails shall have springs of proper size and constant, installed between a continuous structural steel channel (upper member) and a continuous flat steel plate (bottom member) in such manner, quantity, and location that efficient uniform deflection and loading to the structure is assured. Rails shall be furnished with Vibrex hold down stabilizers to restrict excessive amplitudes. Cross bracing must be used when necessary for seismic stability.

B. "RMB" shall be the same as "RMR" above except that it shall be designed as an integral fan and motor base with an adjustable motor slide base.

C. "RMSR" shall be a set of wide flange structural steel rails supplied with height saving brackets to reduce the mounting height of the equipment. The maximum allowable deflection of any point on the loaded frame relative to the unloaded frame shall be 0.005". A wide flange section depth greater than 1/10 the supporting span between isolators will be accepted as satisfying the deflection requirement.

D. "RMSB" shall be a steel frame constructed of structural wide flange members unless shown otherwise and shall be rectangular in shape. The depths of the steel members shall not be less than one tenth (1/10) of the longest span between base supports or designed for a maximum beam deflection of .005". If the latter method is used, submittals shall include calculations showing the necessary moment of inertia. All steel members shall be coped and fitted, or constructed using the overlap insert method to assure a structural strength that is greater than the individual member strength. Adjustable motor slide bases shall be included when required for centrifugal fan applications. The steel bases shall have an operating clearance of one (1") inch above the supporting structure. Where bases are used to mount pumps, the bases shall be large enough to support the pipe elbows if required.

E. "RMSBI" shall be a steel frame inertia base with all welded members and constructed of structural channel shapes. The base shall be designed for a thickness or inertia mass to equipment weight ratio as shown on the schedule with a minimum thickness of six (6") inches. The bases shall include a template and anchor bolts to anchor the equipment. Inertia bases shall have 1/2" (#4) rebar spaced a maximum of 12" on centers in each direction and located 1-1/2" from the bottom of the base. Adjustable motor slide bases shall be included when required for centrifugal fan applications. Bases shall be supplied with height saving brackets to reduce the mounting height of the equipment.

F. “RMUAB-EQ” shall be a steel frame made of structural angle with type “RMU-EQ-SH” O.S.H.P.D. pre-approved combination isolator/restraints.

G. "RMLSR" shall be a set of multiple wide flange structural steel rails supplied with type RMLS-EQ vibration isolator/seismic restraints and height saving brackets to reduce the mounting height of the equipment. The maximum allowable deflection of any point on the loaded frame relative to the unloaded frame shall be 0.005". A wide flange section depth greater than 1/10 the supporting span between isolators will be accepted as satisfying the deflection requirement.

H. Type "RMLSB" shall be a steel frame constructed of structural wide flange members unless shown otherwise and shall be rectangular in shape. The depths of the steel members shall not be less than one tenth (1/10) of the longest span between base supports or designed for a maximum beam deflection of .005". If the latter method is used, submittals shall include calculations showing the necessary moment of inertia. All steel members shall be coped and fitted, or constructed using the overlap insert method to assure a structural strength that is greater than the individual member strength. Frame shall be supplied complete with height saving brackets and type RMLS-EQ, O.S.H.P.D. pre-approved isolator/seismic restraints.

1. Type RMLS-SB is the same as type “RMLSB” but rather than utilizing height saving brackets the steel frame is placed directly on top of the RMLS-EQ type isolators.

2.03 SEISMIC RESTRAINTS

A. Shall be capable of safely accepting external forces as specified in the applicable codes without failure. Restraints shall maintain equipment and piping in a captive position during an earthquake. Restraints shall not short circuit vibration isolation systems or transmit objectionable vibration or noise under normal operating conditions. Seismic restraints shall be provided on all equipment as scheduled on the drawings. Submit calculations by a Licensed Structural Engineer Registered in State of California to verify snubber capacities.

B. Type "3500" seismic restraint shall be constructed of steel plate, concentric steel pipes, and structural members in an all-welded assembly. All contact points shall be cushioned with minimum 1/4" thick resilient pad. Restraints shall be O.S.H.P.D pre-approved type OPA-0029.

C. Type "3200" seismic restraint shall be all directional type with interlocking steel members constructed of structural angle and A-36 threaded rod. All contact points shall be cushioned with minimum 1/4" thick resilient pad or bushing.

D. Type "CR" seismic restraints shall be constructed of 7x19 strand galvanized aircraft cable. Cable assembly shall come complete with minimum (2) "U" bolt clamps per end and thimbles to protect cable from chafing. Allowed loads shall be the cable breaking strength with a safety factor of three. Actual loads shall be calculated with the worst case of all loads applied to one cable and anchor pattern. Cable shall be installed with 1/4" slack to prevent the transmission of vibration to the structure.

PART 3 - EXECUTION

3.01 GENERAL

A. Install in accordance with manufacturer's written instructions. Vibration isolators must not be installed in a manner that will result in piping stress or misalignment.

B. The structural steel or concrete inertia base shall be placed in position and supported temporarily by blocks or shims, as appropriate, prior to the installation of the equipment or isolators. The isolators shall be installed without raising the equipment and frame assembly.

C. After the entire installation is complete and under full operational load, the isolator shall be adjusted so that the load is transferred from the blocks or shims to the isolator. When all isolators are properly adjusted, the blocks or shims shall be barely free and shall be removed.

D. Once the equipment is in operation, install and anchor the seismic restraints with proper operating clearances as indicated on drawings.

E. Plumbing equipment shall be isolated from the building structure by vibration isolators as scheduled on the drawings.

F. All piping 1 1/4" and over located in mechanical equipment rooms, and for a minimum of fifty (50) feet or 100 pipe diameters whichever is greater, from connection to vibrating plumbing or electrical equipment, shall be isolated from the building structure by means of vibration isolators as identified above.

G. All plumbing piping and vertical risers shall be isolated from the building structure by means of vibration isolators and guides.

H. All piping to be isolated shall freely pass-through walls and floors without contact. Penetration points shall be sleeved or otherwise formed to allow passage of piping and maintain adequate clearance (Minimum of 2 inches all around) around the outside surfaces. Any materials used to fill the clearance space shall be permanently flexible so that vibration will not pass through it.

I. No rigid connections between equipment and building structure, including electrical conduit, shall be made that degrades the vibration isolation system herein specified. Inform other following trades, such as plastering, or electrical, to avoid any contact which would short-circuit the vibration isolation.

J. Bring to the Architect's attention prior to installation any conflicts with other trades which will result in unavoidable rigid contact with equipment or piping as described herein, due to inadequate space or other unforeseen conditions. Corrective work necessitated by conflicts after installation shall be at the contractor's expense.

K. Bring to the Architect's attention any discrepancies between the specifications and field conditions or changes required due to specific equipment selection, prior to installation. Corrective work necessitated by discrepancies after installation shall be at the contractor's expense.

L. Obtain inspection and approval of any isolation installation to be covered or enclosed, prior to such closure.

M. Thrust restraints shall consist of spring hangers with the same deflection as specified for the spring mountings. Thrust restraints shall be attached to the fan at the centerline of air discharge opening.

N. Correct, at no additional cost, all installations that are deemed defective in workmanship or materials.

3.02 PIPING ISOLATORS

A. All piping except fire standpipe systems are included under this section.

B. Isolate piping within 50 feet of rotating equipment and pressure reducing stations.

C. The isolators shall be installed with the isolator hanger box attached to, or hung as close as possible to, approved locations on the supporting structure.

D. The isolators shall be suspended from substantial structural members, not from slab diaphragm unless specifically permitted.

E. Hanger rods shall be aligned to clear the hanger box.

F. Horizontal floor supported piping shall be isolated by type "RMLS-EQ", with a minimum static deflection of 1.0 inch or the same deflection as isolated equipment to which pipe is connected, whichever is greater.

G. Vertical riser pipe support and restraint system shall consist of type "RMS" springs and type "PG-EQ" guides. Install vertical riser guides so that clearances are maintained around concentric pipes in the guides. Install vertical restraints on the floor location as shown on drawings.

H. Pipe anchors, where required, shall utilize resilient pipe anchors, type "RPA" or equivalent, to avoid direct contact of piping with building.

I. Pipe Extension and Alignment connectors: Provide connectors at pump suction and discharge, riser take offs, cooling and heating coils, and elsewhere as required to accommodate thermal expansion and misalignment.

J. Seismic restraint spacing shall be in accordance with applicable codes.

3.03 INSPECTION

A. On completion of installation of all vibration isolation and seismic control devices herein specified, the local representative of the isolation materials manufacturer shall inspect the completed system and report in writing any installation error, improperly selected isolation devices, or other faults in the system that could affect the performance of the system. The contractor shall submit a report to the Architect, including the above report with consequent steps taken to properly complete the isolation work.

END OF SECTION 22 0548

SECTION 22 0553

PLUMBING IDENTIFICATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Extent of Plumbing identification work required by this section is indicated on drawings or specified in other Division 22 sections, and includes the following:

1. Painted Identification Materials;
2. Plastic Pipe Markers;
3. Plastic Tape;
4. Underground-Type Plastic Line Marker;
5. Plastic Duct Markers;
6. Valve Tags;
7. Diagram and Schedule Frames;
8. Engraved Plastic-Laminate Signs;
9. Plastic Equipment Markers;
10. Plasticized Tags.

1.02 RELATED SECTIONS

A. This section is part of each Division 22 section making reference to identification devices specified herein.

B. Plumbing identification furnished as part of factory-fabricated equipment is specified as part of equipment assembly in other Division 22 sections.

C. Refer to Division 26 Sections for identification requirements of electrical work; not work of this section.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's technical product data and installation instructions for each identification material and device required.

B. Samples: Submit samples of each color, lettering style and other graphic representation required for each identification material or system.

C. Schedules and Diagrams:

1. Submit valve schedule for each piping system, typewritten and reproduced on 8-1/2" x 11" bond paper. Tabulate valve number, piping system, system abbreviation (as shown on tag), location of valve (room or space), and variations for identification (if any). Mark valves which are intended for emergency shut-off and similar special uses, by special "flags", in margin of schedule.
2. Submit temperature control diagrams and Sequence of Operation on bond paper suitable for framing.

D. Maintenance Data: Include product data and schedules in maintenance manuals; in accordance with requirements of Division 01 and Division 22 Section 22 0511 "Supplementary Plumbing Requirements."

1.04 QUALITY ASSURANCE

A. Codes and Standards:

1. ANSI Standards: Comply with ANSI A13.1 for lettering size, length of color field, colors, and viewing angles of identification devices.
2. No adhesive type identification markers will be accepted. All markers and tags shall be permanently attached to pipe, etc.
3. All identification markers installed exterior of buildings shall be ultra-violet resistant.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide Plumbingidentification materials of one of the following:

1. Seton Name Plate Corp.
2. Allen Systems, Inc.
3. Brady (W.H.) Co.; Signmark Div.
4. Industrial Safety Supply Co., Inc.

2.02 PLUMBING IDENTIFICATION MATERIALS

A. General: Provide manufacturer's standard products of categories and types required for each application as referenced in other Division 22 sections. Where more than single type is specified for application, selections is Installer’s option, but provide single selection for each product category.

2.03 PLASTIC PIPE MARKERS

A. Snap-On Type: Provide manufacturer's standard pre-printed, semi-rigid snap-on, color-coded pipe markers, complying with ANSI A13.1.

B. Insulation: Furnish 1" thick molded fiberglass insulation with jacket for each plastic pipe marker to be installed on uninsulated pipes subject to fluid temperatures of 125^{o}F (52^{o}C) or greater. Cut length to extend 2" beyond each end of plastic pipe marker.

C. Small Pipes: For external diameters less than 6" (including insulation if any), provide full-band pipe markers, extending 360 degrees around pipe at each location, fastened by one of the following methods:

1. Snap-on application of pre-tensioned semi-rigid plastic pipe marker.
2. Laminated or bonded application of pipe marker to pipe (or insulation).
3. Taped to pipe (or insulation) with color-coded plastic adhesive tape, not less than 3/4" wide; full circle at both ends of pipe marker, tape lapped 1-1/2".

D. Large Pipes: For external diameters of 6" and larger (including insulation if any), provide either full-band or strip-type pipe markers, but not narrower than 3 times letter height (and of required length), fastened by one of the following methods:

1. Laminated or bonded application of pipe marker to pipe (or insulation).
2. Taped to pipe (or insulation) with color-coded plastic adhesive tape, not less than 1-1/2" wide; full circle at both ends of pipe marker, taped lapped 3".
3. Strapped-to-pipe (or insulation) application of semi-rigid type, with manufacturer's standard stainless-steel bands.

E. Lettering: Manufacturer's standard pre-printed nomenclature which best describes piping system in each instance, as selected by Architect/Engineer in cases of variance with names as shown or specified.

1. Arrows: Print each pipe marker with arrows indicating direction of flow, either integrally with piping system service lettering (to accommodate both directions), or as a separate unit of plastic.

2.04 PLASTIC TAPE

A. General: Provide manufacturer's standard color-coded pressure-sensitive (self-adhesive) vinyl tape, not less than 3 mils thick.

B. Width: Provide 1-1/2" wide tape markers on pipes with outside diameters (including insulation, if any) of less than 6", 2-1/2" wide tape for larger pipes.

C. Color: Comply with ANSI A13.1, except where another color selection is indicated.

2.05 UNDERGROUND TYPE PLASTIC LINE MARKER

A. General: Manufacturer's standard permanent, bright-colored, continuous-printed plastic tape, intended for direct-burial service; not less than 6" wide x 4 mils thick. Provide tape with printing which most accurately indicates the type of service of buried pipe.

1. Provide multi-ply tape consisting of solid aluminum foil core between 2-layers of plastic tape.

2.06 VALVE TAGS

A. Brass Valve Tags: Provide 19-gage polished brass valve tags with stamped-engraved piping system abbreviation in 1/4" high letters and sequenced valve numbers 1/2" high, and with 5/32" hole for fastener.

1. Provide 1-1/2" diameter tags, except as otherwise indicated.
2. Fill tag engraving with black enamel.

B. Valve Tag Fasteners: Provide manufacturer's standard solid brass chain (wire link or beaded type), or solid brass S-hooks of the sizes required for proper attachment of tags to valves and manufactured specifically for that purpose.

C. Access panel markers: Provide manufacturer's standard solid brass chain (wire link or beaded type), or solid brass S-hooks of the sizes required for proper attachment of tags to valves and manufactured specifically for that purpose.

D. Access Panel Markers: Provide manufacturer's standard 1/16" thick engraved plastic laminate access panel markers, with abbreviations and numbers corresponding to concealed valve. Include 1/8" center hole to allow attachment.

2.07 DIAGRAM AND SCHEDULE FRAMES

A. General: For each page of schedule and/or diagrams, provide glazed display frame, with screws for removable mounting on masonry walls. Provide frames of finished hardwood or extruded aluminum, with SSB-grade sheet glass.

2.08 ENGRAVED PLASTIC LAMINATE SIGNS

A. General: Provide engraving stock melamine plastic laminate, complying with FS L-P-387, in the sizes and thicknesses indicated, engraved with engraver's standard letter style of the sizes and wording indicated, white with black core (letter color) except as otherwise indicated, punched for mechanical fastening except where adhesive mounting is necessary because of substrate.

B. Thickness: 1/16" for units up to 20 sq. in. or 8" length; 1/8" for larger units.

C. Fasteners: Self-tapping stainless-steel screws, except contact-type permanent adhesive where screws cannot or should not penetrate the substrate.

2.09 LETTERING AND GRAPHICS

A. General: Coordinate names, abbreviations and other designations used in Plumbing identification work, with corresponding designations shown, specified or scheduled. Provide numbers, lettering and wording as indicated, and as recommended by manufacturer or as required for proper identification and operation/maintenance of Plumbing systems and equipment.

1. Multiple Systems: Where multiple systems of same generic name are shown and specified, provide identification which indicates individual system number as well as service (as examples; Boiler No. 3, Air Supply No. 1H, Standpipe F12).

2.10 EQUIPMENT MARKERS

A. Equipment Nameplates: Metal, with data engraved or stamped, for permanent attachment on equipment.

1. Data:

a. Manufacturer, product name, model number, and serial number.
b. Capacity, operating and power characteristics, and essential data.
c. Labels of tested compliances.

2. Location: Accessible and visible.
3. Fasteners: As required to mount on equipment.

B. Equipment Markers: Engraved, color-coded laminated plastic. Include contact-type, permanent adhesive.

1. Terminology: Match schedules as closely as possible.
2. Data.
3. Name and plan number.

a. Equipment service.
b. Design capacity.
c. Other design parameters such as pressure drop, entering and leaving conditions, and speed.

4. Size: 2-1/2 by 4 inches for control devices, dampers, and valves; 4-1/2 by 6 inches for equipment.

C. Equipment Signs: ASTM D 709, Type I, cellulose, paper-base, phenolic-resin-laminate engraving stock; Grade ES-2, black surface, black phenolic core, with white melamine sub-core, unless otherwise indicated. Fabricate in sizes required for message. Provide holes for mechanical fastening.

1. Data: Instructions for operation of equipment and for safety procedures.
2. Engraving: Manufacturer's standard letter style, of sizes and with terms to match equipment identification.
3. Retain and edit subparagraph above or first subparagraph below.
4. Thickness: 1/16 inch for units up to 20 sq. in. or 8 inches in length, and 1/8 inch for larger units.
5. Fasteners: Self-tapping, stainless-steel screws or contact-type, permanent adhesive.

D. Access Panel and Door Markers: 1/16-inch thick, engraved laminated plastic, with abbreviated terms and numbers corresponding to identification. Provide 1/8-inch center hole for attachment.

1. Fasteners: Self-tapping, stainless-steel screws or contact-type, permanent adhesive.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS

A. Coordination: Where identification is to be applied to surfaces which require insulation, painting or other covering or finishes, including valve tags in finished mechanical spaces, install identification after completion of covering and painting. Install identification prior to installation of acoustical ceilings and similar removable concealment.

3.02 PIPING SYSTEM IDENTIFICATION

A. General: Install pipe markers of one of the following types on each system indicated to receive identification, and include arrows to show normal direction of flow:

1. Plastic pipe markers, with application system as indicated under "Materials" in this section. Install on pipe insulation segment where required for hot-non-insulated pipes.

B. Locate pipe markers as follows wherever piping is exposed to view in occupied spaces, machine rooms, accessible maintenance spaces (shafts, tunnels, plenums) and exterior non-concealed locations.

1. Near each valve and control device.
2. Near each branch, excluding short take-offs for fixtures and terminal units; mark each pipe at branch, where there could be question of flow pattern.
3. Near locations where pipes pass through walls, floors ceilings, or enter non-accessible enclosures.
4. At access doors, manholes similar access points which permit view of concealed piping.
5. Near major equipment items and other points of origination and termination.
6. Spaced intermediately at maximum spacing of 50' along each piping run, except reduce spacing to 25' in congested areas of piping and equipment.
7. On piping above removable acoustical ceilings, except omit intermediately spaced markers.

3.03 UNDERGROUND PIPING IDENTIFICATION

A. General: During back-filling of each exterior underground piping systems, except sanitary sewer and storm drainage install continuous underground-type plastic line marker, located directly over buried line at 6" to 8" below finished grade. Where multiple small lines are buried in common trench and do not exceed overall width of 16", install single line marker.

3.04 VALVE IDENTIFICATION

A. General: Provide valve tag on every valve, cock and control device in each piping system; exclude check valves, valves within factory-fabricated equipment units, plumbing fixture faucets, convenience and lawn-watering hose bibs, and shut-off valves at plumbing fixtures, and similar rough-in connections of end-use fixtures and units. List each tagged valve on valve schedule for each piping system.

B. Mount valve schedule frames and schedules in machine rooms where indicated or, if not otherwise indicated, where directed by Architect/Engineer.

3.05 PLUMBING EQUIPMENT IDENTIFICATION

A. General: Install engraved plastic laminate sign or plastic equipment marker on or near each major item of plumbing equipment and each operational device, as specified herein if not otherwise specified for each item or device. Provide signs for the following general categories of equipment and operational devices:

1. Fuel-burning units including water heaters, boilers, furnaces, heaters.

2. Pumps, compressors, chillers, condensers and similar motor-driven units.
3. Fans and blowers.

B. Lettering Size: Minimum 1/4" high lettering for name of unit where viewing distance is less than 2'-0", 1/2" high for distances up to 6'-0", and proportionately larger lettering for greater distances. Provide secondary lettering of 2/3 to 3/4 of size of the principal lettering.

C. Test of Signs: In addition to name of identified unit, provide lettering to distinguish between multiple units, inform operator of operational requirements, indicate safety and emergency precautions, and warn of hazards and improper operations.

3.06 ADJUSTING AND CLEANING

A. Adjusting: Relocate any Plumbing identification device which has become visually blocked by work of this division or other divisions.

B. Cleaning: Clean face of identification devices, and glass frames of valve charts.

END OF SECTION 22 0553

SECTION 22 0700

PLUMBING INSULATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Extent of plumbing insulation required by this section is indicated on drawings and schedules, and by requirements of this section, and includes the following:

1. Piping Systems Insulation:
    a. Fiberglass.
    b. Calcium Silicate.
    c. Flexible Unicellular.
2. Equipment Insulation:
    a. Fiberglass
    b. Calcium Silicate
    c. Flexible Unicellular.

1.02 RELATED SECTIONS

A. Refer to Division 22 Section "Supports and Anchors" for protection saddles, protection shields, and thermal hanger shields; not work of this section.

B. Refer to Division 22 Section "Plumbing Identification" for installation of identification devices for piping and equipment; not work of this section.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's technical product data and installation instructions for each type of mechanical insulation. Submit schedule showing manufacturer's product number, K-value, thickness, and furnished accessories for each mechanical system requiring insulation.

B. Maintenance Data: Submit maintenance data and replacement material lists for each type of mechanical insulation. Include this data and product data in maintenance manual.

1.04 QUALITY ASSURANCE

A. Flame/Smoke Ratings: Provide composite mechanical insulation (insulation, jackets, coverings, sealers, mastics and adhesives) with flame-spread index of 25 or less, and smoke-developed index of 50 or less, as tested by ASTM E 84 (NFPA 255) method.

B. As a minimum, insulation shall meet installed conductance as set forth in Title 24 California Code of Regulations (CCR) 2013 Building Energy Efficiency Standards or as indicated in contract documents, whichever is greater.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver insulation, coverings, cements, adhesives, and coatings to site in containers with manufacturer's stamp or label, affixed showing fire hazard indexes of products.

B. Protect insulation against dirt, water, and chemical and mechanical damage. Do not install damaged or wet insulation; remove from project site.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide products of one of the following:

1. Owens-Corning Fiberglas Corp.
2. Manville Products Corp.
3. Armstrong World Industries, Inc.
4. CertainTeed Corp.
5. Knauf Fiber Glass GmbH.

2.02 PIPING INSULATION MATERIALS

A. Fiberglass (Mineral Fiber) Piping Insulation: ASTM C547, Class 1 unless otherwise indicated. Manville Products Corp. Micro-Lok, Owens-Corning Fiberglas Corp., ASJ/SL-II or equivalent.

B. Calcium Silicate Piping Insulation: ASTM C533, Type I. Owens-Corning Fiberglass Corp. "Kaylo Asbestos Free" or equivalent.

C. Flexible Unicellular Piping Insulation: ASTM C534, Type I. Armstrong World Industries, Inc. or equal meeting ASTM E-84 25/50 index.

D. Jackets for Piping Insulation: ASTM C921, Type I (Vapor Barrier) for piping with temperatures below ambient. (Type II (Water Vapor Permeable) for piping with temperatures above ambient. Type I may be used for all piping at Installer's option.

1. Encase pipe fittings insulation with one-piece pre-molded PVC fitting covers, fastened as per manufacturer's recommendations. Zeston PVC Insulated fitting covers or equivalent.
2. Encase exterior piping insulation with aluminum jacket with weather-proof construction.

E. Staples, Bands, Wires, and Cement: As recommended by insulation manufacturer for applications indicated.

F. Adhesives, Sealers, and Protective Finishes: As recommended by insulation manufacturer for applications indicated.

G. All Insulation shall be U.L. listed showing flame spread not greater than 25, nor smoke greater than 50, per NFPA 90A.

2.03 EQUIPMENT INSULATION MATERIALS

A. Flexible Fiberglass Equipment Insulation: ASTM C553, Type II, Class F-1, Owens-Corning Fiberglass, Inc., Type 701 1.5 lbs/Ft3.

B. Calcium Silicate Equipment Insulation: ASTM C533, Type I, Block; Owens/Corning Fiberglass, Inc., Kaylo Asbestos Free, U-Grooved block insulation.

C. Jacketing Material for Equipment Insulation: Provide canvas jacketing material, not less than 7.8 ounces per square yard, or metal jacket at Installer's option, except as otherwise indicated.

D. Equipment Insulation Compounds: Provide adhesives, cements, sealers, mastics and protective finishes as recommended by insulation manufacturer for applications indicated.

E. Equipment Insulation Accessories: Provide staples, bands, wire, wire netting, tape corner angles, anchors and stud piping as recommended by insulation manufacturer for applications indicated.

F. All Insulation shall be U.L. listed showing flame spread not greater than 25, nor smoke greater than 50, per NFPA 90A.

PART 3 - EXECUTION

3.01 INSPECTION

A. Examine areas and conditions under which plumbing insulation is to be installed. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.02 PLUMBING PIPING SYSTEM INSULATION

A. Insulation Omitted: Omit insulation on chrome-plated exposed piping (except for handicapped fixtures), air chambers, unions, strainers, check valves, balance cocks, flow regulators, drain lines from water coolers, drainage piping located in crawl spaces or tunnels, buried piping, fire protection piping, and pre- insulated equipment.

B. Cold Piping:

1. Application requirements: Insulate the following cold plumbing piping systems:

   a. Potable chilled water piping.
   b. Plumbing drains carrying cold condensate.

2. Insulate each piping system specified above with one of the following types and thicknesses of insulation:

   a. Fiberglass: 1" thickness.
   b. Flexible Unicellular: 1/2" thickness.

C. Hot Piping:

1. Application Requirements: Insulate the following hot plumbing piping systems.

   a. Potable hot water piping.
   b. Potable hot water re-circulating piping.
   c. Hot drain piping (where indicated).

2. Insulate each piping system specified above with one of the following types and thicknesses of insulation.

   a. Fiberglass: 1" thick for pipe sizes up to and including 6", 1-1/2" thick for pipe sizes over 6".

3.03 EQUIPMENT INSULATION

A. Cold Equipment (Below Ambient Temperature):

1. Application requirements: Insulate the following cold equipment:

   a. Refrigeration equipment, including chillers, tanks and pumps.
   b. Drip pans under chilled equipment.
   c. Cold and chilled water pumps.
   d. Pneumatic water tanks.

2. Insulate each item of equipment specified above with one of the following types and thicknesses of insulation:

   a. Fiberglass: 2" thick for cold surfaces above 35ºF and 3" thick for surfaces 35ºF and lower.

B. Hot Equipment (Above Ambient Temperature):

1. Application Requirements: Insulate the following hot equipment:
    a. Boilers (not pre-insulated at factory).
    b. Water heaters.
    c. Hot water expansion tanks.
    d. Hot water pumps.
2. Insulate each item of equipment specified above with one of the following types and thicknesses of insulation.
    a. Fiberglass: 2" thick, except 3" thick for low-pressure boilers and steam-jacketed heat exchangers.

C. Breeching and Stacks:
1. Application Requirements: Insulate the following breechings and stacks:
    a. Breechings between heating equipment outlet and stack or chimney connection, except for double wall or factory insulated breechings.

3.04 INSTALLATION OF PIPING INSULATION

A. General: Install insulation products in accordance with manufacturer's written instructions, and in accordance with recognized industry practices to ensure that insulation serves its intended purpose.

B. Install insulation on pipe systems subsequent to installation of heat tracing, painting, testing, and acceptance of tests.

C. Install insulation materials with smooth and even surfaces. Insulated each continuous run of piping with full-length units of insulation, with a single cut piece to complete run. Do not use cut pieces or scraps abutting each other.

D. Clean and dry pipe surfaces prior to insulating. Butt insulation joints firmly together to ensure a complete and tight fit over surfaces to be covered.

E. Maintain integrity of vapor barrier jackets on pipe insulation, and protect to prevent puncture or other damage.

F. Cover valves, fittings and similar items in each piping system with equivalent thickness and composition of insulation as applied to adjoining pipe run. Install factory molded, precut or job fabricated units (at Installer's option) except where specific form or type is indicated.

G. Extend piping insulation without interruption through walls, floors and similar piping penetrations, except where otherwise indicated.

H. Butt pipe insulation against pipe hanger insulation inserts. For hot pipes, apply 3" wide vapor barrier tape or band over the butt joints. For cold piping apply wet coat of vapor barrier lap cement on butt joints and seal joints with 3" wide vapor barrier tape or band.

3.05 INSTALLATION OF EQUIPMENT INSULATION

A. General: Install equipment thermal insulation products in accordance with manufacturer's written instructions, and in compliance with recognized industry practices to ensure that insulation serves intended purpose.

B. Install insulation materials with smooth and even surfaces and on clean and dry surfaces. Redo poorly fitted joints. Do not use mastic or joint sealer as filler for gaping joints and excessive voids resulting from poor workmanship.

C. Maintain integrity of vapor-barrier on equipment insulation and protect it to prevent puncture and other damage.

D. Do not apply insulation to equipment, breechings, or stacks while hot.

E. Apply insulation using the staggered joint method for both single and double layer construction, where feasible. Apply each layer of insulation separately.

F. Coat insulated surfaces with layer of insulating cement, trowel in workmanlike manner, leaving a smooth continuous surface. Fill in scored block, seams, chipped edges and depressions, and cover over wire netting and joints with cement of sufficient thickness to remove surface irregularities.

G. Cover insulated surfaces with all-service jacketing neatly fitted and firmly secured. Lap seams at least 2". Apply over vapor barrier where applicable.

H. Do not insulate boiler manholes, hand-holes, cleanouts, ASME stamp, and manufacturer's nameplate. Provide neatly beveled edge at interruptions of insulation.

I. Provide removable insulation sections to cover parts of equipment which must be opened periodically for maintenance; include metal vessel covers, fasteners, flanges, frames and accessories.

J. Equipment exposed to Weather: Protect outdoor insulation from weather by installation of weather-barrier mastic protective finish, or jacketing, as recommended by the manufacturer.

3.06 PROTECTION AND REPLACEMENT

A. Replace damaged insulation which cannot be repaired satisfactorily, including units with vapor barrier damage and moisture saturated units.

B. Protection: Insulation Installer shall advise Contractor of required protection for insulation work during remainder of construction period, to avoid damage and deterioration.

END OF SECTION 22 0700

SECTION 22 1100

PLUMBING PIPING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section specifies piping materials and installation methods common to more than one section of Division 22 and includes joining materials, fire stop sealants, and basic piping installation instructions.

1.02 RELATED SECTIONS

A. The following sections contain requirements that relate to this section:

1. Division 22 Section "Common Work Results for Plumbing" applies to the work of this Section.
2. Piping materials and installation methods peculiar to individual systems are specified withintheir respective system specification sections of Division 02 and 22.
3. Valves are specified in a separate section and in individual piping system sections of Division 22.
4. Division 22 Section "Supports and Anchors."
5. Division 22 Section "Plumbing Identification."

1.03 SUBMITTALS

A. Refer to Division 01 and Division 22 Section "Common Work Results for Plumbing" for administrative and procedural requirements for submittals.

B. Product Data: Submit product data on fire stop sealants.

1.04 QUALITY ASSURANCE

A. Welding procedures and testing shall comply with ANSI Standard B31.1.0 - Standard Code for Pressure Piping, Power Piping, and The American Welding Society, Welding Handbook.

B. Soldering and Brazing procedures shall conform to ANSI B9.1 Standard Safety Code for Mechanical Refrigeration.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Provide factory-applied plastic end-caps on each length of pipe and tube, except for concrete, corrugated metal, hub-and-spigot, and clay pipe. Maintain end-caps through shipping, storage and handling to prevent pipe-end damage and prevent entrance of dirt, debris, and moisture.

B. Protect stored pipes and tubes. Elevate above grade and enclose with durable, waterproof wrapping. When stored inside, do not exceed structural capacity of the floor.

C. Protect flanges, fittings, and specialties from moisture and dirt by inside storage and enclosure, or by packaging with durable, waterproof wrapping.

PART 2 - PRODUCTS

2.01 PIPE AND FITTINGS

A. Refer to the individual piping system specification Sections in Division 22 for specifications on piping and fittings relative to that particular system.

B. Weld-O-Lets: Welding Weld-O-Lets of domestic manufacture may be used in lieu of tees where branch connection pipe size is two or more pipe sizes smaller than main header size.

2.02 JOINING MATERIALS

A. Welding Materials: Comply with Section II, Part C, ASME Boiler and Pressure Vessel Code for welding materials appropriate for the wall thickness and chemical analysis of the pipe being welded.

B. Brazing Materials: Comply with SFA-5.8, Section II, ASME Boiler and Pressure Vessel Code for brazing filler metal materials appropriate for the materials being joined.

C. Soldering Materials: Refer to individual piping system specifications for solder appropriate for each respective system.

1. Soldering materials shall not contain lead.

D. Gaskets for Flanged Joints: Gasket material shall be full-faced for cast-iron flanges and raised-face for steel flanges. Select materials to suit the service of the piping system in which installed and which conform to their respective ANSI Standard (A21.11, B16.20, or B16.21). Provide materials that will not be detrimentally affected by the chemical and thermal conditions of the fluid being carried.

2.03 SLEEVES AND SEALS

A. Sleeves:

1. Sheet-Metal Sleeves: 5" and Smaller, 20 gage galvanized sheet metal; 6" and Larger, 10 gage,galvanized sheet metal, round tube closed with welded longitudinal joint.
2. Steel Sleeves: Schedule 40 galvanized, welded steel pipe, ASTM A53, Grade A.
3. Galvanized steel telescoping type: Galvanized sheet metal per manufacturer’s standards.
4. Polyethylene Sleeves: Manufacturer's standard product.

B. Mechanical Sleeve Seals: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between pipe and sleeve, connected with bolts and pressure plates which cause rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

2.04 FIRESTOP SEALANT

A. Fire stopping material shall be asbestos-free and capable of maintaining an effective barrier against flame and gases in compliance with the following requirements:

1. Flame Spread: 25 or less, ASTM E 84.
2. Smoke Development: 50 or less, ASTM E 84.
3. Combustibility: Noncombustible, ASTM E 136.

B. Material when installed shall have the same fire rating as the assembly in which it is being installed.

2.05 PIPING ISOLATION

A. Manufacturer's standard product for providing sound and electrolysis isolation.

PART 3 - EXECUTION

3.01 PREPARATION

A. Ream ends of pipes and tubes, and remove burrs. Bevel plain ends of steel pipe.

B. Remove scale, slag, dirt, and debris for both inside and outside of piping and fittings before assembly.

3.02 INSTALLATIONS

A. General Locations and Arrangements: Drawings (plans, schematics, and diagrams) indicate the general location and arrangement of the piping systems. Location and arrangement of piping layout take into consideration pipe sizing and friction loss, expansion, pump sizing, and other design considerations. So far as practical, install piping as indicated. Refer to individual system specifications for requirements for coordination drawing submittals.

B. Conceal all pipe installations in walls, pipe chases, utility spaces, above ceilings, below grade or floors, unless indicated otherwise.

C. Install piping free of sags or bends and with ample space between piping to permit proper insulation applications.

D. Install exposed piping at right angles or parallel to building walls. Diagonal runs are not permitted, unless expressly indicated on the Drawings.

E. Install piping tight to slabs, beams, joists, columns, walls and other permanent elements of the building. Provide space to permit insulation applications, with 1" clearance outside the insulation. Allow sufficient space above removable ceiling panels to allow for panel removal.

F. Locate groups of pipes parallel to each other, spaced to permit applying full insulation and servicing of valves.

G. Install drains at low points in mains, risers, and branch lines consisting of a tee fitting, 3/4" ball valve, and short 3/4" threaded nipple and cap.

H. Exterior Wall Penetrations: Seal pipe penetrations through exterior walls using sleeves and mechanical sleeve seals.

I. Coordinate to provide curb, minimum 4" above finish floor, for all pipe shafts or floor openings for multiple pipes.

J. Fire Barrier Penetrations: Where pipes pass through fire rated walls, partitions, ceilings, or floors, the fire rated integrity shall be maintained.

3.03 PIPE SUPPORTS AND HANGERS

A. All pipe Supports and Hangers shall be per requirements of Specification Section 220529 “Supports and Anchors.”

3.04 FITTINGS AND SPECIALTIES

A. Use fittings for all changes in direction and all branch connections.

B. Remake leaking joints using new materials.

C. Install Y-type strainers with blow-down valves on the supply side of each control valve, pressure reducing or regulating valve, solenoid valve, and elsewhere as indicated.

D. Install unions adjacent to each valve and at the final connection to each piece of equipment and plumbing fixture having 2" and smaller connections, and elsewhere as indicated.

E. Install Flanges in piping 2-1/2" and larger, where indicated, adjacent to each valve, and at the final connection to each piece of equipment.

F. Install dielectric unions to connect piping materials of dissimilar metals in dry piping systems (gas, compressed air, vacuum).

G. Install dielectric fittings to connect piping materials of dissimilar metals in wet piping systems (water, steam).

3.05 JOINTS

A. Steel Pipe Joints:

1. Pipe 2" and Smaller: Thread pipe with tapered pipe threads in accordance with ANSI B2.1. Cut threads full and clean using sharp dies. Ream threaded ends to remove burrs and restore full inside diameter. Apply pipe joint lubricant or sealant suitable for the service for which the pipe is intended on the male threads at each joint and tighten to leave not more then 3 threads exposed.
2. Pipe Larger than 2":
    a. Weld pipe joints (except for exterior water service pipe) in accordance with ASME Code for Pressure Piping, B31.
    b. Weld pipe joints of exterior water service pipe in accordance with AWWA C206.
    c. Install flanges on all valves, apparatus, and equipment. Weld pipe flanges to pipe ends in accordance with ASME B31.1.0 Code for Pressure Piping. Clean flange faces and install gaskets. Tighten bolts to torque specified by manufacturer of flange and flange bolts, to provide uniform compression of gaskets.

B. Non-ferrous Pipe Joints:

1. Brazed and Soldered Joints: For copper tube and fitting joints, braze joints in accordance withANSI B31.1.0 -Standard Code for Pressure Piping, Power Piping and ANSI B9.1 - Standard Safety Code for Mechanical Refrigeration.
2. Thoroughly clean tube surface and inside surface of the cup of the fittings, using every fine emery cloth, prior to making soldered or brazed joints. Wipe tube and fittings clean and apply flux. Flux shall not be used as the sole means for cleaning tube and fitting surfaces.
3. Mechanical Joints: Flared compression fittings may be used for refrigerant lines 3/4" and smaller.

C. Joints for other piping materials are specified within the respective piping systems sections.

3.06 INSTALLATION OF SLEEVES

A. Provide pipe sleeves for pipes to pass through walls, floor and roofs. Diameter of sleeve to be 1-inch larger than the outside diameter of pipe or pipe and covering of insulated pipe. Galvanized steel telescoping type sleeves or polyethylene may be used. Where seepage may occur, use steel pipe sleeves.

B. All pipe sleeves through floors other than floors on grade shall extend 2-inches above finished floor and shall be caulked with mineral wool. Provide collar where polyethylene sleeve is used.

C. Where required in existing construction, or where sleeves have been omitted, openings for pipe may be core drilled in floors and/or walls or partitions, providing prior acceptance of such core drilling is obtained from the Architect. Holes core drilled through floors above grade shall be provided with sleeves extending 2-inches above finish floor as hereinbefore specified.

D. Seal with resilient sealant: Dow Corning "Fire Stop" or approved equal.

3.07 INSTALLATION OF FIRE STOP SEALANT

A. Fire-stopping shall be provided at, but not limited to, duct, and piping penetrations through floor slabs and through time rated partitions or firewalls.

B. Install fire-stopping materials in accordance with the manufacturer's instructions and the following requirements.

1. Filling: Fire-stopping materials shall completely fill the void spaces.

C. Coordination: Coordinate the work with other trades. Firestopping materials at penetrations of insulated pipes and ducts shall be applied prior to insulation, unless the insulation meets the requirements specified for firestopping.

D. Surface Preparation: Surfaces to be in contact with firestopping materials shall be free of dirt, grease, oil, loose material, rust, or other substances that may affect proper fitting or the required fire resistance.

3.08 INSTALLATION OF PIPE ISOLATION

A. Provide sound and electrolysis isolation on all un-insulated, pipes, Semco "Trisolators" or Potter-Roemer "Prisolators".

3.09 INSTALLATION OF PIPE FLASHING

A. Pipe flashing assemblies, "Semco" Fig. 1100-4, as required, seal the joint between flashing and pipe with waterproofing compound. Install counter-flashing sleeve to cover a minimum of 3/4-inch to top of lead flashing, making the top joint permanently watertight.

3.10 TESTING OF PIPING

A. Provide notification of test at least three working days prior to tests on all or part of any piping system. Do not allow or cause any piping system to be insulated, covered, concealed or enclosed until such systems have been tested and reviewed. Provide all necessary materials (including temporary isolation valves or caps), pumps, testing media and labor for testing. Temporarily remove any device in piping system, which will not withstand test pressure specified, and reinstall same after successful testing. Test time begins to accrue after full test pressure is achieved.

B. Testing and inspection of all piping systems and associated equipment for leaks shall be accomplished after installation and cleaning and prior to placing into service. Flanges, threaded joints and all welds shall be left unpainted and uninsulated until the piping systems have been approved.

C. A rigid visual inspection of each specific piping system shall be made prior to conducting tightness tests, to ascertain that all appurtenances and equipment are provided, properly connected and supported, and in all respects ready for testing.

D. Equipment such as pumps, chillers, tanks, heat exchangers, flexible hose, safety valves and similar equipment shall not be subjected to the piping system test pressure. Equipment shall either be disconnected from the piping or be isolated by valves or blanks during testing and reinstalled after acceptance by the Owner.

E. Indicating pressure gauges mounted locally may be tested with the lines provided the test pressure does not exceed the scale range.

F. Orifice plates, rotometers, displacement meters and other line inserts shall either not be installed until completion of all testing, or shall be removed prior to any tests and reinstalled after test has been accepted by the Owner.

G. The application of pressure to a system shall be under control at all times, so that in no case shall the test pressure be exceeded by more than 6 percent.

H. Gauges used for testing shall be tested for accuracy as directed or approved by the Owner, and then installed as close as possible to the low point of the piping system.

I. Do not apply test pressure until the piping system and its contents approach the same temperature.

J. While piping is under test, exercise care that excessive pressure does not occur due to increase in ambient temperature.

K. Control Valves:

1. Control valves which are installed with block and by-pass valve shall have the block valve closed, the by-pass valve opened, and a temporary pipe piece inserted in place of the control valve (or a test blank may be installed on each side of the control valve) until all flushing and testing of all lines of that system is completed and accepted by the Owner, after which they shall be reinstalled.
2. Control valves installed without block or by-pass valves shall be replaced by a pipe piece during flushing and testing of the system. After acceptance of the flushing they shall be reinstalled.

L. Minimum piping test pressures shall be as noted in tabulation; or they shall be 150 percent of design pressure for the specific system being tested, whichever is higher.

SYSTEM	TEST MEDIUM	TESTING PRESSURE (PSIG)	DURATION (HOURS	ACCEPTABLE TOLERANCE
Soil, Water, Vent, & Storm Water	Water	Top of highest vent	4	No joint sweat
Water	Water	150	4	None. Except temperature change.
Fuel Gas	Air	60	4	None. Except temperature change.
Fire Sprinkler	Water	200	4	None. Except temperature change.

M. Conduct hydrostatic tests with water at a temperature below 100 degrees F.

1. Fill the system slowly with water and vent at highest points to expel the air before pressurizing.
2. Carefully examine all joints for leaks or defects.
3. Provide connections as required to accomplish the above.

N. Keep accurate test records of each line or system tested and provide copies of same to Owner after acceptance. Each test shall include:

1. Identification of piping system and test number.
2. Testing medium.
3. Test pressure.
4. Date of test acceptance.

3.11 ADJUSTMENTS

A. At the completion of the Work, completely adjust all valves and equipment for their proper use and rating.

END OF SECTION 22 1100

SECTION 22 1116

WATER DISTRIBUTION PIPING (INSIDE BUILDING)

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This section includes potable cold water, hot water, and circulation hot water piping, fittings, and specialties within the building to a point of 5 feet outside the building.

1.02 RELATED SECTIONS

A. The following sections contain requirements that relate to this section.

1. Division 22

   a. Section 220500 “Common Work Results for Plumbing.”
   b. Section 220503 “Earthwork for Plumbing Systems.”
   c. Section 220511 "Supplementary Plumbing Requirements.”
   d. Section 220519 "Meters and Gages.”
   e. Section 220523 “Valves.”
   f. Section 220553 “Plumbing Identification.”

2. Division 31 Section 311313.
3. Division 07 Section "Joint Sealers" for materials and methods for sealing pipe penetrations through rated walls and fire and smoke barriers.

B. Separate sections of Division 22 specify Plumbing Piping, Supports and Anchors, piping system identification materials and requirements, general duty valves, pipe insulation, fire protection piping, and plumbing equipment.

1.03 DEFINITIONS

A. Water Distribution Pipe: A pipe within the building or on the premises that conveys water from the water service pipe or meter to the points of usage.

B. Water Service Pipe: The pipe from the water main or other source of potable water supply to the water distributing system of the building served.

C. Pipe sizes used in this Specification are nominal pipe size (NPS).

1.04 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specifications Sections.

1. Product data for each piping specialty and valve specified.
2. Test reports specified in Part 3 of this Section.
3. Maintenance data for each piping specialty and valve specified for inclusion in Maintenance Manual specified in Division 01 and Division 22 Section "Common Work Results for Plumbing."

1.05 QUALITY ASSURANCE

A. Codes and Standards

1. California Building Code 2016, Title 24, Part 2 for Accessibility Requirements.

a. Accessible plumbing fixtures for adults; dimensions shall comply with the requirements of CCT, T-24, Section 1115.B.
b. Heights and location of fixtures shall be according to CCR, T-24, Chapter 11-B and Table 1115.B-1.
c. Fixture Controls shall comply with CCR, T-24 Section 1115.B.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Provide factory-applied plastic end-caps on each length of pipe and tube, except for concrete, corrugated metal, hub-and-spigot, clay pipe. Maintain end-caps through shipping, storage and handling to prevent pipe-end damage and prevent entrance of dirt, debris, and moisture.

B. Protect stored pipes and tubes. Elevate above grade and enclose with durable, waterproof wrapping. When stored inside, do not exceed structural capacity of the floor.

C. Protect flanges, fittings and specialties, from moisture and dirt by inside storage and enclosure, or by packaging with durable, waterproof wrapping.

D. Store CPVC, and PVC pipe and fittings where protected from direct sunlight.

E. Store pipe in a manner to prevent sagging and bending.

1.07 SEQUENCING AND SCHEDULING

A. Coordinate the size and location of concrete equipment pads. Cast anchor-bolt inserts into pad. Concrete, reinforcement, and formwork requirements are specified in Division 03.

B. Coordinate the installation of pipe sleeves for foundation wall penetrations.

1.08 EXTRA MATERIALS

A. Maintenance Stock: Furnish one valve key for each key-operated wall hydrant, hose bib, fixture supply, or faucet installed.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer Uniformity: Conform to the requirements specified in Division 22 Section "Basic Plumbing Requirements."

1. Hose Bibs:
   a. Lee Brass Co.
   b. Acorn
   c. Watts Regulator Co.
   d. Woodford Mfg. Co.
2. Relief Valves:
   a. Cash (A. W.) Valve Mfg. Corp.
   b. Watts Regulator Co.
   c. Zurn Industries, Inc. Wilkins Regulator Divs.
3. Water Hammer Arresters:
   a. Precision Plumbing Products, Inc.

b. Smith (Jay R.) Mfg. Co.
c. Sioux Chief
d. Watts Regulator Co.
e. Zurn Industries, Inc.; Hydromechanics Div.

4. Vacuum Breakers for Hose Connections:
   a. Cash (A.W.) Valve Mfg. Corp.
   b. Conbraco Industries, Inc.
   c. Watts Regulator Co.

5. Mechanical Sleeve Seals:
   a. Thunderline Corp.

6. Pipe Escutcheons:
   a. Chicago Specialty Mfg. Co.
   b. Grinnell

7. Dielectric Waterway Fittings:
   a. Epco Sales, Inc.
   b. Victaulic Company of America

8. Dielectric Unions:
   a. Eclipse, Inc.
   b. Perfection Corp.
   c. Watts Regulator Co.

2.02 PIPE AND TUBE MATERIALS, GENERAL

A. Pipe and Tube: Refer to Part 3, Article "Application, General," for identification of systems where the below materials are used.

B. Copper Tube: (Within Building) ASTM B88, Type L Water Tube, drawn temper of domestic manufacture.

C. Copper Tube: (Underground) ASTM B88, Type K Water Tube, annealed temper of domestic manufacture.

2.03 FITTINGS

A. Wrought Copper Solder-Joint Fittings: ANSI B16.22, streamlined pattern of domestic manufacture.

B. Wrought Copper and Bronze Grooved-End Fittings: ASTM B75 Tube and ASTM B584 Bronze Castings of domestic manufacture.

C. Unions: ASME B16.39, malleable iron, Class 150, hexagonal stock, with ball-and-socket joints, metal-to-metal bronze seating surfaces, female threaded ends. Threads shall conform to ASME B1.20.1. and of domestic manufacture.

D. Dielectric Unions: Threaded, solder, or grooved-end connections as required to suit application and constructed to isolate dissimilar metals, prevent galvanic action, and prevent corrosion of domestic manufacture.

E. Dielectric Unions: Flexible Connectors: Stainless-steel bellows with woven, flexible, bronze wire reinforced protective jacket; minimum 150 psig working pressure, maximum 250 Degree F. operating temperature. Connectors shall have flanged or threaded-end connections to match equipment connected and shall be 12" long and capable of 3/4-inch misalignment. Sweat ends are not acceptable. Fittings shall be of domestic manufacture.

2.04 JOINING MATERIALS

A. Solder Filler Metal: ASTM B32, 95-5 Tin-Antimony 'lead-free' solder.

B. Brazing Filler Metals: AWS A5.8, BCUP Series.

C. Gasket Material: Thickness, material, and type suitable for fluid to be handled and design temperatures and pressure.

2.05 GENERAL DUTY VALVES

A. General-duty valves (i.e., gate, globe, check, ball, and butterfly valves) are specified in Division 22 Section "Valves." Special duty valves are specified below by their generic name; refer to Part 3 Article "Valve Application" for specific uses and applications for each valve specified.

2.06 SPECIAL DUTY VALVES

A. Balance Cocks: 400 PSI WOG, 2-piece, ball valve, handle, memory stop, with threaded-end connections conforming to ASME B1.20.1.

B. Balance Cocks: 400 PSI WOG, 2-piece bronze, ball valve, handle, memory stop, with solder-end connections.

2.07 PIPING SPECIALTIES

A. Water Hammer Arresters:

1. J.R. Smith or Approved Equal.
2. Bellows type, with stainless steel casing and bellows, pressure rated for 250 psi, tested and certified in accordance with PDI Standard WH-201 shall be of the following sizes unless otherwise indicated on the drawings:
   a. Self-closing valves, lavatories, sinks, etc.

Supply header or pipe size (Inch)	Manufacturer Name	Water Hammer Arrester Model No.
1/2"	J.R. Smith	5005
3/4"	J.R. Smith	5005
1"	J.R. Smith	5010

3. Flushometer, automatic and solenoid valves:
   a. J.R. Smith or Approved Equal.

Supply header or pipe size (Inch)	Manufacturer Name (a)	Water Hammer Arrester Model No.
3/4”	J.R. Smith	5010
1”	J.R. Smith	5010
1-1/4"	J.R. Smith	5030
1-1/2"	J.R. Smith	5040
2”	J.R. Smith	5050

B. Y-Type Strainers: Provide strainers full line size of connecting piping, with ends matching piping system materials. Screens shall be Type 304 stainless steel, with 3/64" perforations at 233 per square inch. Strainers in copper lined to have bronze bodies.

1. Provide strainers with 125 psi working pressure rating for low pressure applications, and 250 psi pressure rating for high pressure application.
2. Threaded ends, 2" and Smaller: Cast-iron body, or bronze body, screwed screen retainer with centered blow-down fitted with pipe plug.

3. Threaded Ends, 2-1/2" and Larger: Cast-iron body or bronze body bolted screen retainer with off-center blow-down fitted with pipe plug.
4. Flanged Ends, 2-1/2" and Larger: Cast-iron body or bronze body, bolted screen retainer with off-center blow-down fitted with pipe plug.

C. Hose-Connections: Hose connections shall have garden hose threaded outlets conforming to ASME B1.20.7.

D. Hose Bibs: Bronze body with chrome- or nickel-plated finish, with renewable composition disc, removable wheel handle, vacuum breaker, 3/4- inch solder inlet, hose outlet.

E. Vacuum Breakers: Hose connection vacuum breakers shall conform to ASSE Standard 1011, with finish to match hose connection.

F. Relief Valves: Sizes for relief valves shall be in accordance with ASME Boiler and Pressure Vessel Codes for indicated capacity of the appliance for which installed.

1. Combined Pressure-Temperature Relief Valves: Bronze body, test lever, thermostat, complying with ANSI Z21.22 listing requirements for temperature discharge capacity. Temperature relief valves shall be factory set at 210 degree F, and pressure relief at 150 psi.

G. Escutcheons: Chrome-plated, stamped steel, hinged, split-ring escutcheon, with set screw. Inside diameter shall closely fit pipe outside diameter, or outside of pipe insulation.

H. Sleeves:

1. Sheet-Metal Sleeves: 10 gage, galvanized sheet metal, round tube closed with welded longitudinal joint.
2. Steel Sleeves: Schedule 40 galvanized, welded steel pipe, ASTM A53, Grade A.

I. Mechanical Sleeve Seals: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between pipe and sleeve, connected with bolts and pressure plates which cause rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine rough-in requirements for plumbing fixtures and other equipment with water connections to verify actual locations of piping connections prior to installation.

3.02 PREPARATION

A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

B. Remove scale, slag, dirt, and debris for both inside and outside of piping and fittings before assembly.

3.03 PIPE APPLICATIONS

A. Install Type L, drawn copper tube with wrought copper fittings and solder joints for pipe sizes 4 inches and smaller, above ground, within building.

B. Install Type K, annealed temper copper tube for pipe sizes 2 inches and smaller, with minimum number of joints, below ground.

C. Water piping in sizes 2-1/2 to 6 inches may be Type L drawn copper tube with roll-grooved ends and mechanical couplings, above ground within building.

3.04 PIPING INSTALLATION

A. General Locations and Arrangements; Drawings (plans, schematics, and diagrams) indicate the general location and arrangement of the piping systems. Location and arrangement of piping layout take into consideration pipe sizing and friction loss, expansion, pump sizing, and other design considerations. So far as practical, install piping as indicated.

B. Use fittings for all changes in direction and branch connections.

C. Install exposed piping at right angles or parallel to building walls. Diagonal runs are not permitted unless expressly indicated.

D. Install piping free of sags or bends and with ample space between piping to permit proper insulation applications.

E. Conceal all piping installations in walls, pipe chases, utility spaces, above ceilings, below grade or floors, unless indicated to be exposed to view.

F. Install piping tight to slabs, beams, joists, columns, walls, and other permanent elements of the building. Provide space to permit insulation applications, with 1-inch clearance outside the insulation. Allow sufficient space above removable ceiling panels to allow for panel removal.

G. Locate groups of pipes parallel to each other, spaced to permit applying full insulation and servicing of valves.

H. Install drains at low points in mains, risers, and branch lines consisting of a tee fitting, 3/4-inch ball valve, and short 3/4-inch threaded nipple and cap.

I. Pipe sleeves smaller than 6 inches shall be galvanized steel pipe; pipe sleeves 6 inches and larger shall be galvanized steel sheet metal.

J. Exterior Wall Penetrations: Seal pipe penetrations through exterior walls with sleeves and mechanical sleeve seals.

K. Fire Barrier Penetrations: Where pipes pass though fire-rated walls, partitions, ceilings, and floors, maintain the fire-rated integrity. Refer to Division 07 for special sealers and materials.

3.05 HANGERS AND SUPPORTS

A. General: Hanger, support, and anchor devices conforming to MSS SP-69 are specified in Division 22, Section "Supports and Anchors." Conform to the table below for maximum spacing of supports:

B. Pipe Attachments: Install the following:

1. Adjustable steel clevis hangers, MSS Type 1, for individual horizontal runs less than 20 feet in length.
2. Adjustable roller hangers, MSS Type 43, and spring hangers, MSS Type 41 with Type 49, for individual horizontal runs 20 feet and longer.
3. Pipe roll, complete MSS Type 44 for multiple horizontal runs, 20 feet or longer, support on a trapeze.
4. Spring hangers to support vertical runs.

C. Install hangers for horizontal piping with the following maximum spacing and minimum rod sizes:

Steel & Copper Nom. Pipe Size – In.	Steel Pipe Max. Span – Ft.	Steel Pipe Min. Rod	Copper Tube Max. Span – Ft.	Copper Tube Min. Rod
Up to 3/4	7	3/8	5	3/8
1	7	3/8	6	3/8
1-1/4	7	3/8	7	3/8
1-1/2	9	3/8	8	3/8
2	10	3/8	8	3/8
2-1/2	11	3/8	9	3/8
3	12	1/2	10	1/2
3-1/2	13	1/2	11	1/2
4	14	5/8	12	1/2
5	16	5/8	13	1/2
6	17	3/4	14	5/8
8	19	7/8	16	3/4
10	22	7/8	18	3/4
12	23	7/8	19	3/4

D. Support vertical steel pipe and copper tube at each floor.

3.06 PIPE AND TUBE JOINT CONSTRUCTION

A. Soldered Joints: Comply with the procedures contained in the AWS "Soldering Manual."

B. Brazed Joints: Comply with the procedures contained in the AWS "Brazing Manual."

1. CAUTION: Remove stems, seats, and packing of valves and accessible internal parts of piping specialties before soldering and brazing.
2. Fill the tubing and fittings during soldering and brazing with an inert gas (nitrogen or carbon dioxide) to prevent formation of scale.
3. Heat joints to proper and uniform temperature.

C. Threaded Joints: Conform to ASME B1.20.1, tapered pipe threaded for field-cut threads. Join pipe fittings and valves as follows:

1. Note the internal length of threads in fittings or valve ends, and proximity of internal seat or wall, to determine how far pipe should be threaded into joint.
2. Align threads at point of assembly.
3. Apply appropriate tape or thread compound to the external pipe threads (except where dry seal threading is specified).
4. Assembly joint wrench tight. Wrench on valve shall be on the valve end into which the pipe is being threaded.

    a. Damaged Threads: Do not use pipe with corroded or damaged threads. If a weld opens during cutting or threading operations, that portion of pipe shall not be used.

D. Flanged Joints: Align flange surfaces parallel. Assemble joints by sequencing bolt tightening to make initial contact of flanges and gaskets as flat and parallel as possible. Use suitable lubricants on bolt threads. Tighten bolts gradually and uniformly with a torque wrench.

E. Grooved-End Joints: Prepare pipe and tubing and install in accordance with manufacturer's installation instructions.

3.07 SERVICE ENTRANCE

A. Extend water distribution piping to connect to water service piping, of size and in location indicated for service entrance to building. Water service piping is specified in separate section of Division 22.

B. Install sleeve and mechanical sleeve seal at penetrations through foundation wall for watertight installation.

3.08 VALVE APPLICATIONS

A. General-Duty Valve Applications: The Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:

1. Shut-off duty: Use gate, ball, and butterfly valves.
2. Throttling duty: Use globe and ball valves.

3.09 INSTALLATION OF VALVES

A. Sectional Valves: Install sectional valves on each branch and riser, close to main, where branch or riser serves 2 or more plumbing fixtures or equipment connections, and elsewhere as indicated. For sectional valves 2 inches and smaller, use gate valves; for sectional valves 2-1/2 inches and larger, use gate or butterfly valves.

B. Shutoff Valves: Install shutoff valves at inlet and outlet of each plumbing equipment item and elsewhere as indicated.

1. At plumbing equipment: 2" and smaller use gate or ball valves.
2. At plumbing equipment: 2-1/2" and larger use gate or butterfly valves.
3. For plumbing fixtures see fixture trim.
4. All other locations use gate valves.

C. Drain Valves: Install drain valves on each plumbing equipment item, located to drain equipment completely for service or repair. Install drain valves at the base of each riser, at low points of horizontal runs, and elsewhere as required to drain distribution piping system completely. For drain valves use 3/4" hose end drain valve.

D. Hose Bibs: Install on exposed piping where indicated. Provide vacuum breaker.

3.10 INSTALLATION OF PIPING SPECIALTIES

A. Install backflow Preventers at each connection to mechanical equipment and systems and in compliance with the plumbing code and authority having jurisdiction. Install air cap fitting and pipe relief outlet drain without valves to nearest floor drain. Identify all piping downstream of backflow preventers as "industrial water".

B. Install pressure-regulating valves with inlet and outlet shutoff valves and balance cock bypass. Install pressure gage on valve outlet.

3.11 INSTALLATION OF PIPING WATER HAMMER ARRESTORS

A. Provide an air chamber at each valve water outlet or fixture supply for fixtures with manual closing valves. Air chamber shall be 18 inches long and one pipe size larger than supply to outlet. For a battery of fixtures, one air chamber 30 inches long and the full size of the header, but not less than 1 inch may be installed in lieu of individual air chambers. Precision Plumbing Products, JMJ "System Rated" arrestors are acceptable in lieu of air chambers.

B. Install water hammer arrestors on supply line to fixtures with self-closing, automatic or Flushometer valves. Arrestors shall be as close as possible to individual fixtures and on the end of the header for a battery of fixtures. Arrestors shall be installed in the wall or furring, whenever possible, behind an access panel large enough to permit removal of the arrestor. Sizes as shown on the drawings or as specified hereinafter. Sizes and model numbers are J. R. Smith; equivalent arrestors by Josam, Wade or Zurn are acceptable.

3.12 EQUIPMENT CONNECTIONS

A. Piping Run-outs to Fixtures: Provide hot and cold water piping Run-outs to fixtures of sizes indicated, but in no case smaller than required by plumbing code.

B. Equipment Connections: Connect hot and cold water piping system to equipment as indicated. Provide shutoff valve and union for each connection; provide drain valve on drain connection. For connections 2-1/2 inches and larger, use flanges instead of unions.

3.13 FIELD QUALITY CONTROL

A. Inspections: Inspect water distribution piping as follows:

1. Do not enclose, cover, or put into operation water distribution piping system until it has been inspected and approved by the authority having jurisdiction.
2. During the progress of the installation, notify the plumbing official having jurisdiction at least 24 hours prior to the time such inspection must be made. Perform tests specified below in the presence of the plumbing official.
    a. Rough-In Inspection: After system is roughed in and prior to setting fixtures,arrange for inspection of the piping system before concealed or closed in.
    b. Final Inspection: Arrange for a final inspection by the plumbing official to observe the tests specified below and to ensure compliance with the requirements of the plumbing code.
3. Re-inspections: Whenever the plumbing official finds that the piping system will not pass the test or inspection, make the required corrections and arrange for re-inspection by the plumbing official.
4. Reports: Prepare inspection reports signed by the plumbing official.

B. Test water distribution piping as follows:

1. Test for leaks and defects all new water distribution piping systems and parts of existing systems that have been altered, extended or repaired. If testing is performed in segments, submit a separate report for each test, complete with a diagram of the portion of the system tested.
2. Leave uncovered and unconcealed all new, altered, extended, or replaced water distribution piping until it has been tested and approved. Expose all such work for testing that has been covered or concealed before it has been tested and approved.
3. Cap and subject the piping system to a static water pressure of 50 psig above the operating pressure without exceeding the pressure rating of the piping system materials. Isolate the test source and allow to-stand for 4 hours. Leaks and loss in test pressure constitute defects that must be repaired.
4. Repair all leaks and defects with new materials and retest system or portion thereof until satisfactory results are obtained.
5. Prepare reports for all tests and required corrective action.

3.14 ADJUSTING AND CLEANING

A. Clean and disinfect water distribution piping as follows:

1. Purge all new water distribution piping systems and parts of existing systems that have been altered, extended, or repaired prior to use.

2. Use the purging and disinfecting procedure prescribed by the authority having jurisdiction or, in case a method is not prescribed by that authority, the procedure described in either AWWA C651, or AWWA C652, or as described below:

    a. Flush the piping system with clean, potable water until dirty water does not appear at the points of outlet.
    b. Fill the system or part thereof with a water/chlorine solution containing at least 50 parts per million of chlorine. Isolate (valve off) the system or part thereof and allow to stand for 24 hours.
    c. Drain the system or part thereof of the previous solution and refill with a water/chlorine solution containing at least 200 parts per million of chlorine and isolate and allow to stand for 3 hours.
    d. Following the allowed standing time, flush the system with clean, potable water until chlorine does not remain in the water coming from the system.
    e. Submit water samples in sterile bottles to the authority having jurisdiction. Repeat the procedure if the biological examination made by the authority shows evidence of contamination.

B. Prepare reports for all purging and disinfecting activities.

3.15 COMMISSIONING

A. Fill the system. Check compression tanks, where used, to determine that they are not air bound and that the system is completely full of water.

B. Before operating the system, perform these steps:

1. Close drain valve, hydrants, and hose bibs.
2. Open valves to full open position.
3. Remove and clean strainers.
4. Check pumps for proper direction of rotation. Correct improper wiring.
5. Lubricate pump motors and bearings.

END OF SECTION 22 1116

SECTION 22 1119

PIPING SPECIALTIES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section specifies piping specialties and installation methods common to more than one section of Division 22.

1.02 RELATED SECTIONS

A. This section applies to all piping systems specified in Division 22.

B. Valves are specified in a separate section and in individual piping system Sections of Division 22.

C. Fire Barrier Penetration Seals are specified in Section 221100.

1.03 SUBMITTALS

A. Refer to Division 01 and Section 220500 “Common Work Results for Plumbing” for administrative and procedural requirements for submittals.

B. Product Data: Submit product data on the following items:

1. Escutcheons
2. Dielectric Unions and Fittings
3. Mechanical Sleeve Seals
4. Strainers

1.04 DELIVERY, STORAGE, AND HANDLING

A. Protect flanges, fittings, and specialties from moisture and dirt by inside storage and enclosure, or by packaging with durable, waterproof wrapping.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer Uniformity: Conform to the requirements specified in Common Work Results For Plumbing, under "Product Options."

B. Manufacturer: Subject to compliance with requirements, provide piping materials and specialties from one of the following:

1. Pipe Escutcheons:
   a. McGuire
   b. BrassCraft
   c. Pasco
2. Dielectric Waterway Fittings:
   a. Epco Sales, Inc.
   b. Victaulic Company of America
3. Dielectric Unions:

a. Eclipse, Inc.
b. Perfection Corp.
c. Watts Regulator Co.

4. Strainers:
   a. Armstrong Machine Works
   b. Hoffman Specialty ITT; Fluid Handling Div.
   c. Metraflex Co.
   d. R-P&C Valve; Div. White Consolidated Industries, Inc.
   e. SpiraxSarco
   f. Trane Co.
   g. Victaulic Co. of America. (low pressure applications only).
   h. Watts Regulator Co.

5. Mechanical Sleeve Seals:
   a. Thunderline Corp.

2.02 PIPE AND FITTINGS

A. Refer to the individual piping system specification sections in Division 22 for specifications on piping and fittings relative to that particular system.

2.03 JOINING MATERIALS

A. Welding Materials: Comply with Section II, Part C, ASME Boiler and Pressure Vessel Code for welding materials appropriate for the wall thickness and chemical analysis of the pipe being welded.

B. Brazing Materials: Comply with SFA-5.8, Section II, ASME Boiler and Pressure Vessel Code for brazing filler metal materials appropriate for the materials being joined.

C. Soldering Materials: Refer to individual piping system specifications for solder appropriate for each respective system.

D. Gaskets for Flanged Joints: Gasket material shall be full-faced for cast-iron flanges and raised-face for steel flanges. Select materials to suit the service of the piping system in which they are to be installed and which conform to their respective ANSI Standard (A21.11, B16.20, or B16.21). Provide materials that will not be detrimentally affected by the chemical and thermal conditions of the fluid being carried.

2.04 PIPING SPECIALTIES

A. Escutcheons: Chrome-plated, stamped steel, hinged, split-ring escutcheon, with set screw. Inside diameter shall closely fit pipe outside diameter, or outside of pipe insulation where pipe is insulated. Outside diameter shall completely cover the opening in floors, walls, or ceilings.

B. Unions: Malleable-iron, Class 150 for low pressure service and class 250 for high pressure service; hexagonal stock, with ball-and-socket joints, metal-to-metal bronze seating surfaces; female threaded ends.

C. Dielectric Unions: Provide dielectric unions with appropriate end connections for the pipe materials in which installed (screwed, soldered, or flanged), which effectively isolate dissimilar metals, prevent galvanic action, and stop corrosion.

D. Dielectric Waterway Fittings: Electroplated steel or brass nipple, with an inert and non-corrosive, thermoplastic lining.

E. Y-Type Strainers: Provide strainers full line size of connecting piping, with ends matching piping system materials. Screens shall be Type 304 stainless steel, with 3/64" perforations at 225 holes per square inch.

1. Provide strainers with 125 psi working pressure rating for low-pressure applications, and 250 psi pressure rating for high-pressure application.
2. Threaded Ends, 2" and Smaller: Cast-iron body, screwed screen retainer with centered blowdown fitted with pipe plug.
3. Threaded Ends, 2-1/2" and Larger: Cast-iron body, bolted screen retainer with off-center blowdown fitted with pipe plug.
4. Flanged Ends, 2-1/2" and Larger: Cast-iron body, bolted screen retainer with off-center blow-down fitted with pipe plug.
5. Butt Welded Ends, 2-1/2" and Larger for Low Pressure Application: Schedule 40 cast carbon steel body, bolted screen retainer with off-center blowdown fitted with pipe plug.
6. Butt Welded Ends, 2-1/2" and Larger for High Pressure Application: Schedule 80 cast carbon steel body, bolted screen retainer with off-center blowdown fitted with pipe plug.
7. Grooved Ends, 2-1/2" and Larger: Tee pattern, ductile-iron or malleable-iron body and access end cap, access coupling with EDPM gasket.

F. Mechanical Sleeve Seals: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between pipe and sleeve, connected with bolts and pressure plates which cause rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

PART 3 - EXECUTION

3.01 ESCUTCHEONS

A. Install escutcheons at all exposed penetrations of piping through walls, ceilings, and floors in rooms with finish surfaces.

3.02 FITTINGS AND SPECIALTIES

A. Install strainers on the supply side of each control valve, pressure reducing or regulating valve, solenoid valve, and elsewhere as indicated.

B. Install unions adjacent to each valve, and at the final connection to each piece of equipment and plumbing fixture having 2" and smaller connections, and elsewhere as indicated.

C. Install Flanges in piping 2-1/2" and larger, where indicated, adjacent to each valve, and at the final connection to each piece of equipment.

D. Install dielectric unions to connect piping materials of dissimilar metals in dry piping systems (gas, compressed air, vacuum).

E. Install dielectric fittings to connect piping materials of dissimilar metals in wet piping systems (water, steam).

END OF SECTION 22 1119

SECTION 22 1316

SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section includes building sanitary and storm drainage and vent piping systems, including drains and drainage specialties.

1.02 RELATED SECTIONS

A. The following sections contain requirements that relate to this section:

1. Division 22 Section "Plumbing Identification," for labeling and identification of drainage and vent piping.

1.03 DEFINITIONS

A. Building Drain: That part of the lowest piping of a drainage system which receives the discharge from soil, waste, and other drainage pipes inside the walls of the building and conveys it to the building sewer.

B. Building Sewer: That part of the piping within public or private premises which conveys sewage, rain-water or other liquid wastes to a point of disposal.

C. Drainage System: Includes all the piping within public or private premises which conveys sewage, rain-water or other liquid wastes to a point of disposal. It does not include the mains of public sewer systems or a private or public sewage treatment or disposal plant.

D. Vent System: A pipe or pipes installed to provide a flow of air to or from a drainage system, or to provide a circulation of air within such system to protect trap seals from siphonage and backpressure.

1.04 SUBMITTALS

A. Product data for the following products:

1. Drainage piping specialties

1.05 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with the provisions of the following:

1. California Plumbing Code (CPC): Current edition in use by authority having jurisdiction.

1.06 SEQUENCING AND SCHEDULING

A. Coordinate the installation of roof drains, flashing, and roof penetrations.

B. Coordinate flashing materials installation of roofing, waterproofing, and adjoining substrate work.

C. Coordinate the installation of drains in poured-in-place concrete slabs, to include proper drain elevations, installation of flashing, and slope of slab to drains.

D. Coordinate with installation of sanitary and storm sewer system as necessary to interface building drains with drainage piping system.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide drainage and vent systems from one of the following:

1. Drainage Piping Specialties, including backwater valves, expansion joints, drains, trap primers, and vandal-proof vent caps:

a. J. R. Smith Mfg. Co.
b. Josam Mfg. Co.
c. Zurn Industries Inc; Hydromechanics Div.
d. Tyler Pipe; Subs. of Tyler Corp.

2.02 ABOVE GROUND DRAINAGE AND VENT PIPE AND FITTINGS

A. General: Select from the following options:

1. Pipe Sizes Larger than 2": Cast-iron soil pipe. Conform to ASTM A74, for service weight, hub-and-spigot soil pipe and fittings, with clamps and compression gasket joints conforming to ASTM C564. Piping shall bear the CISPI stamp.
2. Pipe Sizes Larger than 2": Hub-less cast-iron soil pipe. Conform to CISPI Standard 301, Service weight, cast-iron soil pipe and fittings, with neoprene gaskets conforming to CISPI Standard 310. Piping shall bear the CISPI stamp.

2.03 UNDERGROUND BUILDING DRAIN PIPE AND FITTINGS

A. Pipe and fittings shall have heavy coating of coal tar varnish or 'asphaltum' on both inside and outside surfaces.

B. General: For pipe and fittings below grade and/or below finish floor of floors on grade select from the following options:

1. Pipe Sizes 15" and Smaller: Cast-iron soil pipe. Conform to ASTM A74, for standard weight hub and spigot soil pipe and fittings, with clamps and neoprene gasket, conforming to ASTM C564. Piping shall bear the CISPI stamp.
2. Pipe Sizes 16" and Smaller: Hub-less cast-iron soil pipe, conform to CISPI Standard 301, service weight; with "Best" or "MG" cast iron joint connection couplings. Coupling body shall conform to ASTM A-48 or ASTM A-74 with neoprene gasket conforming to ASTM C-564. Piping shall bear the CISPI stamp.

2.04 ACID WASTE - ABOVE AND BELOW GROUND

A. Waste Pipe and Fittings: Polypropylene flame retardant pipe and fittings: Conform to ASTM D635 and UL Test Method Subject 94. Pipe and fittings shall be Schedule 40 wall thickness.

B. Pipe and Fittings shall be of same manufacturer. Joints made by means of heat fusion per manufacturer's instructions. Provide minimum 25-year manufacturer guarantee.

C. Manufacturers:

1. Orion
2. Lab Line
3. R & G Sloan 'Fuseal'

2.05 DRAINAGE PIPE SPECIALTIES

A. Trap Primers: Bronze body valve with automatic vacuum breaker, with 1/2 inch connections matching piping system. Complying with ASSE 1018 of domestic manufacture.

B. Expansion Joints: Cast-iron body with adjustable bronze sleeve, bronze bolts with wing nuts.

C. Cleanout Plugs: Cast-bronze or brass, threads complying with ANSI B2.1, countersunk head.

2.06 CLEANOUTS

A. Cleanouts on cast iron soil pipe, iron body with ABS plugs screwed into caulking ferrules. Cleanouts on steel pipe, ABS plugs. Cleanouts on vitrified clay pipe, vitrified clay pipe. Where cleanouts occur in finished interior surfaces, smooth polished chromium plated. Exposed parts of floor cleanouts in finished rooms, non-slip polished nickel bronze. Floor cleanouts adjustable type. Where cleanouts occur in carpeted floor areas, the cover shall be elevated so as to be flush with finished carpeted areas.

B. Floor Cleanouts: Cast-iron body and frame, with cleanout plug and adjustable round top as follows:

1. Floor level type in rooms with concrete floor: Smith #4021, Josam 58330-2, or Zurn Z1420-25 with cast iron top.

C. Wall Cleanouts: Cast-iron body adaptable to pipe with ABS plastic plug; stainless steel cover including screws.

1. Wall type for cast-iron pipes: Smith #4532, Josam 58790-4, or Zurn Z-1445-1.
2. Wall type for steel pipes: Smith #4472, Josam 58890-4, or Zurn 1460-8.

D. Flashing Flanges: Cast-iron watertight stack or wall sleeve with membrane flashing ring. Provide under-deck clamp and sleeve length as required.

E. Vent Flashing Sleeves: Cast-iron caulking type roof coupling for cast-iron stacks, cast-iron threaded type roof coupling for steel stacks.

F. Vandal-Proof Vent Caps: Cast-iron body full size of vent pipe, with caulked base connection for cast-iron pipes, threaded base for steel pipes.

2.07 FLOOR DRAINS

A. Floor drains are specified in Section 22 4200 "Commercial Plumbing Fixtures".

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify all dimensions by field dimensions. Verify that all drainage and vent piping and specialties may be installed in accordance with pertinent codes and regulations, the original design, and the referenced standards.

B. Verify existing grades, inverts, utilities, obstacles, and topographical conditions prior to installations.

C. Examine rough-in requirements for plumbing fixtures and other equipment having drain connections to verify actual locations of piping connections prior to installation.

D. Examine walls, floors, roof, and plumbing chases for suitable conditions where piping and specialties are to be installed.

E. Do not proceed until unsatisfactory conditions have been corrected.

3.02 PREPARATION FOUNDATION FOR UNDERGROUND BUILDING DRAINS

A. Grade trench bottoms to provide a smooth, firm, and stable foundation, free from rock, throughout the length of the pipe.

B. Remove unstable, soft, and unsuitable materials at the surface upon which pipes are to be laid and backfill with clean sand or pea gravel to indicated invert elevation.

C. Shape bottom of trench to fit bottom of pipe for 90-degrees (bottom 1/4 of the circumference). Fill unevenness with tamped sand backfill. At each pipe joint dig bell holes to relieve the bell of the pipe of all loads, and to ensure continuous bearing of the pipe barrel on the foundation.

3.03 PIPE APPLICATIONS - ABOVE GROUND, WITHIN BUILDING

A. General: Select from following options:

1. Install hub-and spigot, service weight, cast-iron soil pipe with compression gasket joints for larger than 2 inches drainage and vent pipe. Piping shall bear the CISPI stamp.
2. Install Hub-less, service weight, cast-iron soil pipe and fittings for larger than 2-inch drainage and vent pipe. Piping shall bear the CISPI stamp.

3.04 PIPE APPLICATIONS - BELOW GROUND, WITHIN BUILDING

A. General: Select from the following options:

1. Install hub-and-spigot, heavy service weight, cast-iron, soil pipe and fittings with gasket joints for 15 inch and smaller drainage pipe. Piping shall bear the CISPI stamp.
2. Install hub-less, service weight, cast-iron soil pipe with Anaco Husky SD 4000 stainless steel couplings with neoprene gaskets. Piping shall bear the CISPI stamp.

3.05 PIPE AND TUBE JOINT CONSTRUCTION

A. Copper Tubing: Solder joints in accordance with the procedures specified in AWS "Soldering Manual."

B. Cast-Iron Soil Pipe: Make lead and oakum caulked joints, compression joints, and hub-less joints in accordance with the recommendations in the CISPI Cast Iron Soil Pipe and Fittings Handbook, Chapter IV.

C. Install couplings per manufacturer's recommendations.

3.06 INSTALLATION

A. General Locations and Arrangements: Drawings (plans, schematics, and diagrams) indicate the general location and arrangement of the piping systems. Location and arrangement of piping layout take into account many design considerations. So far as practical, install piping as indicated.

B. Use fittings for all changes in direction and all branch connections.

C. Install exposed piping at right angles or parallel to building walls. Diagonal runs are not permitted, unless expressly indicated.

D. Install piping free of sags or bends and with ample space between piping to permit proper insulation applications.

E. Conceal all pipe installations in walls, pipe chases, utility spaces, above ceilings, below grade or floors, unless indicated to be exposed to view.

F. Install piping tight to slabs, beams, joists, columns, walls, and other permanent elements of the building. Allow sufficient space above removable ceiling panels to allow for panel removal.

G. Exterior Wall Penetrations: Seal pipe penetrations through exterior walls using sleeves and mechanical sleeve seals. Pipe sleeves smaller than 6-inch shall be steel; pipe sleeves 6 inches and larger shall be sheet metal.

H. Fire Barrier Penetrations: Where pipes pass through fire rated walls, partitions, ceiling and floors, maintain the fire rated integrity.

I. Make changes in direction for drainage and vent piping using appropriate 45 Degree wyes, half-wye, or long sweep quarter, sixth, eight, or sixteenth bends. Sanitary tees or short quarter bends may be used on vertical stacks of drainage lines where the change in direction of flow is from horizontal to vertical, except use long-turn tees where two fixtures are installed back-to - back and have a common drain.

Straight tees, elbows, and crosses may be used on vent lines. No change in direction of flow greater than 90 degrees shall be made. Where different sizes of drainage pipes and fittings are connected, use proper size, standard increasers and reducers. Reduction of the size of drainage piping in the direction of flow is prohibited.

J. Install underground building drains to conform with the plumbing code, and in accordance with the Cast Iron Soil Pipe Institute Engineering Manual. Lay underground building drains beginning at low point of systems, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install required gaskets in accordance with manufacturer's recommendations for use of lubricants, cements, and other special installation requirements. Maintain swab or drag in line and pull past each joint as it is completed.

K. Install building drain pitched down at minimum slope of 1/4 inch per foot (2 percent) for piping 3 inch and smaller, and 1/8 inch per foot (1 percent) for piping 4 inch and larger.

L. Extend building drain to connect to sewer piping, of size and in location indicated for service entrance to building. Sewer piping is specified in a separate section of Division 22.

M. Install sleeve and mechanical sleeve through foundation wall for watertight installation.

3.07 HANGERS AND SUPPORTS

A. General: Hangers, supports, and anchorage devices are specified in Division 22 Section "Plumbing Piping." Conform to the table below for maximum spacing of supports:

B. Install the following pipe attachments:

1. Adjustable steel clevis hangers for individual horizontal runs less than 20 feet in length.

C. Install hangers at the following intervals:

Pipe material	Max. Horizontal Spacing (Ft.)	Max. Vertical Spacing (Ft.)
Cast Iron Pipe	5	15
Copper Tubing 1-1/2" & Smaller	6	10
Copper Tubing 2" & Larger	10	10

3.08 INSTALLATION OF PIPE SPECIALTIES

A. Install backwater valves in sanitary building drain piping as indicated, and as required by the plumbing code. For interior installation, provide cleanout cover flush to floor centered over backwater valve cover and of adequate size to remove valve cover for service.

B. Install expansion joints on vertical risers as indicated, and as required by the plumbing code.

C. Above Ground Cleanouts: Install in above ground piping and building drain piping as indicated, and:

1. As required by plumbing code.
2. At each horizontal change in direction of piping greater than 135 degrees.
3. At maximum intervals of 50' for piping 3" and smaller and 100' for larger piping.
4. At base of each vertical soil or waste stack.

D. Cleanouts Covers: Install floor and wall cleanout covers for concealed piping.

E. Flashing Flanges: Install flashing flange and clamping device with each stack and cleanout passing through roof, secure over stack flashing in accordance with manufacturer's instructions.

3.09 INSTALLATION OF TRAP PRIMERS

A. Install trap primers with piping pitched towards drain trap, minimum of 1/8 inch per foot (1 percent). Adjust trap primer for proper flow. Provide trap primer for all floor drains and floor sinks. Multiple outlet primers are acceptable.

3.10 CONNECTIONS

A. Piping Run-outs to Fixtures: Provide drainage and vent piping run-outs to plumbing fixtures and drains, with approved trap, of sizes indicated; but in no case smaller than required by the plumbing code.

3.11 FIELD QUALITY CONTROL

A. Inspections:

1. Do not enclose, cover, or put into operation drainage and vent piping system until it has been inspected and approved by the authority having jurisdiction.
2. During the progress of the installation, notify the plumbing official having jurisdiction, at least 24 hours prior to the time such inspection must be made. Perform tests specified below in the presence of the plumbing official.

    a. Rough-In Inspection: Arrange for inspection of the piping system before concealed or closed-in after system is roughed-in, and prior to setting fixtures.

b. Final Inspection: Arrange for a final inspection by the plumbing official to observe the tests specified below and to ensure compliance with the requirements of the plumbing code.

3. Re-inspections: Whenever the piping system fails to pass the test or inspection, make the required corrections, and arrange for re-inspection by the plumbing official.
4. Reports: Prepare inspection reports, signed by the plumbing official.

B. Piping System Test: Test drainage and vent system in accordance with the procedures of the authority having jurisdiction, or in the absence of a published procedure, as follows:

1. Test for leaks and defects all new drainage and vent piping systems and parts of existing systems, which have been altered, extended or repaired. If testing is performed in segments, submit a separate report for each test, complete with a diagram of the portion of the system tested.
2. Leave uncovered and unconcealed all new, altered, extended, or replaced drainage and vent piping until it has been tested and approved. Expose all such work for testing, which has been covered or concealed before it has been tested and approved.
3. Rough Plumbing Test Procedure: Except for outside leaders and perforated or open jointed drain tile, test the piping of plumbing drainage and venting systems upon completion of the rough piping installation. Tightly close all openings in the piping system, and fill with water to the point of overflow, but not less than 10 feet head of water. Water level shall not drop during the period from 15 minutes before the inspection starts, through completion of the inspection. Inspect all joints for leaks.
4. Finished Plumbing Test Procedure: After the plumbing fixtures have been set and their traps filled with water, their connections shall be tested and proved gas and water-tight. Plug the stack openings on the roof and building drain where it leaves the building and introduce air into the system equal to a pressure of 1" water column. Use a "U" tube or manometer inserted in the trap of a water closet to measure this pressure. Air pressure shall remain constant without the introduction of additional air throughout the period of inspection. Inspect all plumbing fixture connections for gas and water leaks.
5. Repair all leaks and defects using new materials and retest system or portion thereof until satisfactory results are obtained.
6. Prepare reports for all tests and required corrective action.

3.12 ADJUSTING AND CLEANING

A. Clean interior of piping system. Remove dirt and debris as work progresses.

B. Clean drain strainers, domes, and traps. Remove dirt and debris.

3.13 PROTECTION

A. Protect drains during remainder of construction period, to avoid clogging with dirt and debris, and to prevent damage from traffic and construction work.

B. Place plugs in ends of uncompleted piping at end of day or whenever work stops.

END OF SECTION 22 1316

SECTION 22 4200

COMMERCIAL PLUMBING FIXTURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This section specifies plumbing fixtures and trim. The types of fixtures specified include the following:

1. Water Closets
2. Urinals
3. Lavatories (including wheelchair type)
4. Service Sinks
5. Mop Basins
6. Electric Water Coolers (including wheelchair type)
7. Faucets
8. Flush Valves
9. Fixture Supports (including wheelchair type)
10. Toilet Seats
11. Fittings, Trim, and Accessories
12. Floor Drains
13. Roof Drains

1.02 RELATED SECTIONS

A. Separate grab bars and toilet accessories not in integral part of plumbing fixtures and are specified in Division 10.

B. Electrical Requirements for, Water Heaters, water conditioners, and other plumbing equipment are specified in other Sections of Division 22 and Division 26.

1.03 SUBMITTALS

A. Product Data: Submit Product Data and installation instructions for each fixture, faucet, specialties, accessories, and trim specified; clearly indicate rated capacities of selected models of water coolers, and water heaters.

B. Shop Drawings: Submit rough-in drawings. Detail dimensions, rough-in requirements, required clearances, and methods of assembly of components and anchorages. Coordinate requirements with Architectural Woodwork shop drawings specified in Division 06 for fixtures installed in countertops and cabinets. Furnish templates for use in woodwork shop.

C. Wiring Diagrams: Submit manufacturer's electrical requirements and wiring diagrams for power supply to units. Clearly differentiate between portions of wiring that are factory installed and field installed portions.

D. Maintenance Data: Include data in Maintenance Manual specified in Division 01 and Section 22 0500.

E. Quality Control Submittals:

1. Submit certification of compliance with specified ANSI, UL, and ASHRAE Standards.
2. Submit certification of compliance with performance verification requirements specified in this Section.

1.04 QUALITY ASSURANCE

A. Codes and Standards:

1. California Building Code 2016, Title 24, Part 2 for Accessibility Requirements.
   a. Plumbing fixtures and accessories provided in a toilet room or bathing room required to comply with CBC Section 11B-213.2 shall comply with CBC Section 11B-213.3.
   b. Accessible plumbing fixtures shall comply with all the requirements in CBC Division 6.
   c. Heights and location of all accessible fixtures shall be mounted according to CBC Sections 11B-602 through 11B-612.
   d. Accessible fixture controls shall comply with CBC Sections 11B-602.3 for drinking fountains, 11B-604.6 for water closets, 11B-604.9.5 for children's water closets, 11B-605.4 for urinals, 11B-606.4 for lavatories and sinks, 11B-604.9.5 for bathtubs, 11B-608.5 for showers, and 11B-611.3 for washing machines and clothes dryers.
   e. Accessible lavatories and sinks shall be mounted with the front of the higher of the rim or counter surface 34" maximum above the finish floor or ground. Depth of lavatories or sinks shall not interfere with knee and toe clearance provided in accordance with CBC Section 11B-306 when a forward approach is required. CBC Sections 11B-606.3 and 11B-606.7.
   f. Water supply and drain pipes under accessible lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under accessible lavatories and sinks. CBC Sections 11B-606.5

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store fixtures where environmental conditions are uniformly maintained within the manufacturer's recommended temperatures to prevent damage.

B. Store fixtures and trim in the manufacturer's original shipping containers. Do not stack containers or store in such a manner that may cause damage to the fixture or trim.

1.06 SEQUENCE AND SCHEDULING

A. Schedule rough-in installations with the installation of other building components.

1.07 MAINTENANCE

A. Extra Stock: Furnish special wrenches and other devices necessary for servicing plumbing fixtures and trim to Owner with receipt in a quantity of one device for each 10 fixtures.

B. Repair Kits: Furnish faucet repair kits complete with all necessary washers, springs, pins, retainer packings, O-rings, sleeves, and seats in a quantity of 1 kit for each 40 faucets.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer uniformity shall be as specified in Section 22 0500: "Common Work Results for Plumbing."

B. The following specification mentions manufacturers to establish a standard quality. The following fixtures and accessories are acceptable, if used throughout:

1. Water Closets, Urinals, Lavatories, Service Sinks:
   a. Kohler Co. (Preferred District Standard)
   b. American Standard
   c. Crane Co.
2. Stainless Steel Sinks:
   a. Elkay Mfg. Co.

b. Just Mfg. Co.

3. Faucets:
   a. Chicago Faucet Co. (Preferred District Standard)
   b. American Standard
   c. T & S Brass
   d. Speakman

4. Flush Valves:
   a. Sloan Valve Co. (Preferred District Standard)
   b. Zurn

5. Water Closet Seats:
   a. Church Products
   b. Bemis
   c. Beneke Corp

6. Fixture Supports:
   a. Jay R. Smith Manufacturing Co.
   b. Josam Mfg. Co.
   c. Zurn Industries, Inc.; Hydromechanics Div.

7. Drains:
   a. Jay R. Smith Manufacturing Co.
   b. Josam Mfg. Co.
   c. Zurn Industries, Inc.; Hydromechanics Div.

2.02 FIXTURES

A. Plumbing fixture trim and exposed supplies and wastes are to be brass with polished chromium plated finish unless otherwise specified. Provide individual lose key or screwdriver stops for all fixture supplies. Separately trap all wastes. Furnish chrome plated wall escutcheons for all exposed supplies and trap arms. Locate stops below fixtures or countertops. All fixtures for use by the disabled shall have exposed hot water pipe and tailpiece and trap insulated with 1/2" rubber foam insulation.

B. All plumbing fixture faucets submitted for review shall have identification label or certification showing compliance with California Title 24, Part 5, Article 1, "Energy Conservation Standards"; Article 1, T20-1406; Article 2, T20-1525 and Article 4, 1604, and 1606.

C. Provide fixtures as scheduled on plumbing drawings and requirements of this Section.

2.03 SINK FAUCET

A. Description: General Service faucet. Include hot- and cold-water indicators; coordinate faucet inlets with supplies and fixture holes; coordinate outlet with spout and fixture receptor.

1. Maximum Flow Rate: 1.5 GPM.

2.04 FLUSHOMETER

A. Description: Flushometer for urinal and water-closet]-type fixture. Include brass body with corrosion-resistant internal components, non-hold-open feature,]control stop with check valve, vacuum breaker, copper or brass tubing, and polished chrome-plated finish on exposed parts.

1. Consumption for Urinal: Waterless is basis of design (0.5 gal./flush).
2. Consumption for Water-closet: 1.28 gal./flush

2.05 WATER CLOSET

A. Description Accessible Wall-mounting, back-outlet, vitreous-china fixture designed for flushometer valve operation.

1. Style: Flushometer valve.
   a. Design Consumption: 1.28 gal./flush

B. Description: Accessible Floor-mounting, floor-outlet, vitreous-china fixture designed for flushometer valve operation.

1. Style: Flushometer valve.
   a. Design Consumption: 1.28 gal./flush

2.06 URINAL

A. Description: Accessible, Wall-mounting, back-outlet, vitreous-china fixture designed for flushometer valve operation.

1. Design Consumption: Basis of design (0.3 gal./flush).

2.07 FIXTURE SUPPORTS

A. Lavatory Supports: Adjustable cast iron, with thin concealed arms and sleeves, and complete with escutcheons and mounting fasteners.

B. Water Closet Supports: Adjustable, factory painted, cast iron face plate, support base, and appropriate type waste fitting having face plate gasket; zinc plated steel fixture studs and fasteners; coated and threaded adjustable wall coupling with neoprene closet outlet gasket; and chrome plated fixture cap nuts and fiber fixture washers. Provide an appropriate model to suit deep or shallow rough-in, siphon jet or blow-out water closet, and type of sanitary piping system to which it is connected.

C. Wheelchair Water Closet Supports: Adjustable, factory painted, cast iron face plate, support base, and appropriate type waste fitting having face plate gasket; zinc plated steel fixture studs and fasteners; coated and threaded adjustable wall coupling with neoprene closet outlet gasket; and chrome plated fixture cap nuts and fiber fixture washers. Units shall have elevated mounting heights of wheelchair fixtures, siphon jet or blow-out water closet, and type of sanitary piping system to which it is connected.

2.08 ESCUTCHEONS

A. Select one of the two options below:

1. Chrome-plated cast brass with set screw.
2. Chrome-plated sheet steel with friction clips.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify all dimensions by field measurements. Verify that all plumbing fixtures may be installed in accordance with pertinent codes and regulations, the original design, and the referenced standards.

B. Examine rough-in for potable water and waste piping systems to verify actual locations of piping connections prior to installing fixtures.

C. Examine walls, floors, and cabinets for suitable conditions where fixtures are to be installed.

D. Do not proceed until unsatisfactory conditions have been corrected.

3.02 INSTALLATION OF FIXTURES

A. Install plumbing fixtures level and plumb, in accordance with fixture manufacturer's written instructions, rough-in drawings, and pertinent codes and regulations, the original design, and the referenced standards.

B. Comply with the installation requirements of the 2019 California Building Code "CBC" Division 6 for accessible plumbing fixtures. Reference Article 1.04, A., 1., a. thru f. of this Section.

C. Fasten plumbing fixtures securely to supports or building structure. Secure supplies behind or within wall construction to provide rigid installation.

D. Securely attach wall hung fixtures to a 3/8 inch x 6 inch wide steel plate. Steel plate to extend at least one stud beyond first and last mounting point. Drill and tap plate at time of installation of fixture or fixture hanger. Support fixture hanger with 1/2" diameter threaded studs, jamb nuts, C.P. Acorn nuts and completely free of wall by means of a second set of jamb nuts. Weld plate to each metal stud crossed by means of a continuous vertical fillet weld and same size as stud thickness. Secure plate to each wood stud crossed by securely bolting to each stud crossed with two 1/2-inch steel bolts, 4-inch center with 1/8-inch maximum x 1-1/2 inch steel back up plates. Notch studs to set plate flush with surface.

E. Set mop basins in a leveling bed of cement grout.

F. Install a stop valve in an accessible location in the water connection to each fixture.

G. Install chrome plated brass escutcheons at each wall, floor, and ceiling penetration in exposed finished locations and with cabinets and millwork.

H. Seal fixtures to walls and floors using silicone sealant as specified in Section 079000. Match sealant color to fixture color.

I. Provide abrasive washers under all single drilling deck mounted trim.

3.03 INSTALLATION OF FLOOR DRAINS

A. Install floor drains in accordance with manufacturer's written instructions and in locations indicated.

B. Install floor drains at low points of surface areas to be drained, or as indicated. Set tops of drains flush with finished floor.

C. Set drain elevation depressed below finished slab elevation as listed below to provide proper slope to drain:

Depression (Inch)	Radius Of Area Drained (Feet)
1/2	5
3/4	10
1	15
1-1/4	20
1-1/2	25

D. Trap all drains connected to the sanitary sewer.

E. Install drain flashing collar or flange so that no leakage occurs between drain and adjoining flooring. Maintain integrity of waterproof membranes, where penetrated.

F. Position drains so that they are accessible and easy to maintain.

3.04 INSTALLATION OF TRAP PRIMERS

A. Install trap primers with piping pitched towards drain trap, minimum of 1/8 inch per foot (1 percent). Adjust trap primer for proper flow.

3.05 INSTALLATION OF ROOF DRAINS

A. Install roof drains at low points of roof areas, in accordance with the roof membrane manufacturer's installation instructions.

B. Install drain flashing collar or flange so that no leakage occurs between roof drain and adjoining roofing. Maintain integrity of waterproof membranes, where penetrated.

C. Position roof drains so that they are accessible and easy to maintain.

3.06 FIELD QUALITY CONTROL

A. Test fixtures to demonstrate proper operation upon completion of installation and after units are water pressurized. Replace malfunctioning units, then retest.

B. Inspect each installed unit for damage. Replace damaged fixtures.

3.07 ADJUSTING

A. Adjust water pressure at drinking fountains, faucets, shower valves, and flush valves to provide proper flow and stream.

B. Replace washers or leaking or dripping faucets and stops.

C. Clean fixtures, trim, and strainers using manufacturer's recommended cleaning methods and materials.

3.08 CLEANING

A. Clean fixtures, trim, and strainers using manufacturer's recommended cleaning methods and materials.

3.09 PROTECTION

A. Provide protective covering for installed fixtures, water coolers, and trim.

B. Do not allow use of fixtures for temporary facilities unless expressly approved in writing by Owner.

3.10 MOUNTING HEIGHTS SCHEDULE

Fixture	Mounting Height
Water Closet	See Architectural Drawings
Accessible Water Closet	See Architectural Drawings
Urinal	See Architectural Drawings
Accessible Urinal	See Architectural Drawings
Lavatory or Sink	See Architectural Drawings
Accessible Lavatory / Sink	See Architectural Drawings
Accessible Water Cooler	See Architectural Drawings

3.11 ROUGH-IN FOR FIXTURES

A. Rough-in for all fixtures and/or equipment as shown on any drawings, including the architectural drawings, which forms a part of the contract documents. This shall include all fixtures and equipment shown and/or noted as N.I.C. (not in contract) or as U.O.S. (furnished under another section of the specification). Stub out all piping to the exact location of the fixtures and set symmetrical with the fixture. Stub out for fixture supply pipes with drop ear fittings secured to stud or backing plate. Stub out two pipe diameter and terminate with pipe cap. When liens are indicated as capped or plugged at floor level, plug flush with the finished floor.

END OF SECTION 22 4200

SECTION 22 0503

EARTHWORK FOR PLUMBING SYSTEMS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section includes limited scope instructions for methods and materials applicable to excavation for underground utilities and services, including underground piping under the building and from building to utility connection, tanks, basins, and equipment.

1.02 SUBMITTALS

A. Submit schedules in accordance with Conditions of Contract and Divisions 01 and 22 specification sections.

1. Indicate proposed methods and schedule of operations prior to commencement of work.
2. Include coordination for shut off of utility services where required.
3. Maintain services to areas outside construction limits, where such service exists.
4. Coordinate sequencing with construction phasing and Owner occupancy specified in Division 01.

1.03 DEFINITIONS

A. Excavation consists of removal of material encountered to sub-grade elevations indicated and subsequent disposal of materials removed.

B. Unauthorized excavation consists of removal of materials beyond indicated sub-grade elevations or dimensions without specific direction of Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be at Contractor's expense.

C. Sub-grade: The undisturbed earth or the compacted soil layer immediately below granular sub-base drainage fill, or topsoil materials.

D. Structure: Buildings, foundations, slabs, tanks, curbs, or other man-made stationary features occurring above or below ground surface.

1.04 CODES AND ORDINANCES

A. Perform excavation work in compliance with applicable requirements of authorities having jurisdiction.

1.05 PROJECT CONDITIONS

A. Conditions Affecting Excavations: The following project conditions apply:

1. Maintain and protect existing building services which transit the area affected by selective demolition.
2. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by excavation operations.

B. Site Information: Subsurface conditions were investigated during the design of the Project. Reports of these investigations are available for information only; data in the reports are not intended as representations or warranties of accuracy or continuity of conditions.

The Owner will not be responsible for interpretations or conclusions drawn from this information.

C. Existing Utilities: Locate existing underground utilities in excavation areas. If utilities are indicated to remain, support and protect services during excavation operations. Remove existing underground utilities indicated to be removed.

D. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility owner immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.

E. Use of Explosives: Use of explosives is not permitted.

1.06 SEQUENCE AND SCHEDULING

A. Coordinate the shut off and disconnection of utility services with Owner and utility company.

B. Provide minimum of 48-hour notice to Architect prior to utility interruption.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Select Bedding Sand: Dry river bed sand free of any debris or organic matter.

B. Mastic Coatings: "Henry's" oil base roof mastic or approved equal.

C. Polyethylene sheeting not less than 8 mils thick.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas where earthwork is to occur. Determine extent of work and effect on existing conditions to remain. Advise Architect of any conditions that might create extensive alteration beyond indicated scope.

B. Clearances: Take special notice and maintain the required horizontal and vertical depth clearances from structural footings for utility trenches running parallel to footings. Do not violate the area of the footing bearing prism.
In the event of conflict (i.e., the utility cannot be relocated or its depth changed), proceed as directed by the Architect. Lower structural footings to maintain proper clearances for underground utilities trenching without additional cost to Owner.

3.02 EXCAVATION

A. Slope sides of excavations to comply with local codes and ordinances. Shore and brace as required for stability of excavation.

B. Shoring and Bracing: Establish requirements for trench shoring and bracing to comply with local codes and authorities. Maintain shoring and bracing in excavations regardless of time-period excavations will be open.

1. Remove shoring/bracing when no longer required. Where sheeting is allowed to remain, cut top of sheeting at a height of 30 inches below finished grade elevation.

C. Install sediment and erosion control measures in accordance with local codes and ordinances.

3.03 DEWATERING

A. Dewatering: Prevent surface water and subsurface or ground water from flowing into excavations and from flooding project site and surrounding area.

1. Do not allow water to accumulate in excavations. Remove water to prevent softening of bearing materials. Provide and maintain dewatering system components necessary to convey water away from excavations.
2. Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey surface water to collecting or run-off areas. Do not use trench excavations as temporary drainage ditches.

3.04 MATERIAL STORAGE

A. Material Storage: Stockpile satisfactory excavated materials where directed, until required for backfill or fill. Place, grade, and shape stockpiles for proper drainage.

1. Locate and retain soil materials away from edge of excavations. Do not store within drip-line of trees indicated to remain.
2. Remove and legally dispose of excess excavated materials and materials not acceptable for use as backfill or fill.

3.05 TRENCHING

A. Do all necessary trenching, excavation, shoring and backfilling required for the proper laying of the piping.

B. Pipe Trench Dimensions: The following requirements are considered minimal unless otherwise indicated, in-order to provide adequate pipe clearances and bedding. Provide trenches wider than the specified minimum where required to properly install a particular type of piping. In the event utility company regulations, code requirements, or the pipe manufacturer's recommendations differ from these provisions, the most restrictive requirements shall take precedence.

1. Pipe Burial Depths:

Sewer & Drainage:	24"(a) + pipe O.D.(b) + 3" bed of sand
Gas:	30" + pipe O.D. + 4" bed of sand
Water (Domestic)	
PVC:	30" + pipe O.D. + 4" bed of sand
All other:	24" (30" at planters) + pipe O.D. + 4" bed of sand
Pre-insulated Piping	24" + jacket O.D. + 4" bed
Condenser Water (PVC)	30" + pipe O.D. + 4" bed

Notes:
a. Finish grade to top of pipe, typical.
b. O.D.: Outside dimension.

2. Trench Widths:

Sewer & Drainage:	12" + pipe O.D. for 4" to 18" diameter pipe
Gas:	8" + pipe O.D.
Water (Domestic)	8" + pipe O.D.
Water (Fire)	
Pre-insulated Pipe	8" + jacket O.D.
Condenser Water	8" + pipe O.D.

C. Where rock is encountered, carry excavation below required elevation and backfill with a layer of select bedding sand prior to installation of pipe. Provide a minimum of 6 inches of stone or gravel cushion between rock bearing surface and pipe.

D. Excavate trenches for piping and equipment with bottoms of trench to accurate elevations for support of pipe and equipment on undisturbed soil.

E. Do not install copper piping or metal gas piping in a common trench with other dissimilar metal piping or conduit; separate a minimum of 4 feet when running parallel to such piping or conduit.

F. Separate multiple parallel lines of piping in a common trench a minimum of 12 inches, both horizontally and vertically, between individual pipes.

G. Install domestic water piping, running parallel in a common trench with sewer or drainage lines, on a solid shelf 12 inches above the sewer or drainage piping.

H. Do not run electrical power and communications conduit in a common trench with sewer, drainage, water or gas piping.

I. Provide and install a bare 14 Gauge copper "tracer" wire, continuous for entire length, for all underground non-metallic piping. Secure to piping at alternate joints, at each fitting and at each valve. Locate "Tracer" wire along side pipe, but not under pipe.

J. Install thrust blocks in all pressurized lines. Install thrust blocks in accordance with pipe manufacturer's recommendations.

3.06 EXCAVATION FOR UNDERGROUND CLARIFIERS AND STRUCTURES

A. Excavation for Underground Tanks, Basins, and Mechanical Structures: conform to elevations and dimensions shown within a tolerance of plus or minus 0.10 foot; plus a sufficient distance to permit placing and removal of concrete formwork, installation of services, other construction, and for inspection.

1. Excavate, by hand, areas within drip-line of large trees. Protect the root system from damage and dry-out. Maintain moist conditions for root system and cover exposed roots with burlap. Paint root cuts of 1 inch in diameter larger with emulsified asphalt tree paint.
2. Take care not to disturb bottom of excavation. Excavate by hand to final grade just before concrete reinforcement is placed.

3.07 BACKFILLING AND FILLING

A. Backfilling and Filling: Place soil materials in layers to required sub-grade elevations for each area classification listed below, using materials specified in Part 2 of this Section.

B. Bedding: Lay and bed pipe in compacted select dry river-bed bedding sand, thickness as specified herein and backfill with the same sand material to a height of one foot above the top of pipe.

1. Sewer drain lines except as hereinafter specified may be bedded in the native soil provided it is rock free and sandy. Dig out under bell portions of the piping for uniform bearing.
2. Under walks and pavements, use a combination of sub-base materials and excavated or borrowed materials.
3. Under building slabs, set piping on a 6-inch bed of dry river-bed sand and backfilled to 12" of finish grade with dry river-bed sand. Remainder of backfill to be approved backfill material.
4. Under piping and equipment, use sub-base materials where required over rock bearing surface and for correction of unauthorized excavation.
5. For piping less than 30 inches below surface of roadways, provide 4-inch-thick concrete base slab support. After installation and testing of piping, provide a 4-inch thick concrete encasement (sides and top) prior to backfilling and placement of roadway sub-base.

6. Other areas use excavated or borrowed materials.

C. Backfill excavations as promptly as work permits, but not until completion of the following:

1. Do not backfill until installation has been approved and as-built drawings are up to date.
2. Inspection, testing, approval, and locations of underground utilities have been recorded.
3. Removal of concrete formwork.
4. Removal of shoring and bracing, and backfilling of voids.
5. Removal of trash and debris.

D. Placement and Compaction: Place backfill and fill materials in layers of not more than 8 inches in loose depth for material compacted by heavy equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

E. Before compaction, moisten or aerate each layer as necessary to provide optimum moisture content. Compact each layer to required percentage as specified in Division 02. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

F. Install backfill and fill materials evenly adjacent to structures, piping, and equipment to required elevations. Prevent displacement of piping and equipment by carrying material uniformly around them to approximately same elevation in each lift.

G. Cold Weather Protection: Protect excavation bottoms against freezing when atmospheric temperature is less than 35 deg. F.

H. Unauthorized excavation:

1. Under footings, foundation bases, or retaining walls, fill unauthorized excavation by extending indicated bottom elevation of footing or base to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position, when acceptable to Architect.
2. In locations other than those above, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by Architect.

3.08 SUBSIDENCE

A. Subsidence: Where subsidence occurs at mechanical installation excavations during the period 12 months after Substantial Completion, remove surface treatment (i.e., pavement, lawn, or other finish), add backfill material, compact to specified conditions, and replace surface treatment. Restore appearance, quality, and condition of surface or finish to match adjacent areas.

3.09 CORROSION PROTECTION

A. All below ground metallic fittings, valves, flanges, bolts, pipes (which are not factory coated with a bituminous material) shall be protected against corrosion as follows:

1. All metallic components as described above shall receive a heavy coating of "Henry's" oil base roof mastic.
2. After mastic coating is completed and inspected, wrap entire metallic component with a minimum of 8 mil polyethylene wrap overlapped 50% of the circumference and extended beyond ends of component as required for polyethylene to be secured to piping. The overlap seam shall be located to avoid backfill material from entering the encapsulated area. The ends and seam of the polyethylene material shall be secured to the piping and sealed with 3M Scotch/Wrap N. 50, 10 mil., 2" wide, printed, pipe wrap sealing tape.

3. The mastic coating shall be inspected and approved prior to the finish application of the polyethylene material, which shall also be inspected.

END OF SECTION 22 0503

SECTION 22 0514

SELECTIVE PLUMBING DEMOLITION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section includes limited scope of selective Plumbing demolition work as follows:

1. Nondestructive removal of materials and equipment for reuse or salvage as indicated.
2. Dismantling Plumbing fixtures, materials and equipment made obsolete by these installations.

1.02 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 01 and Division 22 Specification Sections.

B. Schedules indicating proposed methods and sequence of operations for selective demolition prior to commencement of Work. Include coordination for shut-off of utility services and details for dust and noise control.

1. Coordinate sequencing and Owner occupancy specified in Division 01.
2. Coordinate other selective demolition work as outlined in Division 01.

1.03 PROJECT CONDITIONS

A. Conditions Affecting Selective Demolition: The following project conditions apply:

1. Protect adjacentmaterials indicated to remain. Install and maintain dust and noise barriers to keep dirt, dust, and noise from being transmitted to adjacent areas. Remove protection and barriers after demolition operations are complete.
2. Locate, identify, and protect plumbing services passing through demolition area and serving other areas outside the demolition limits. Maintain services to areas outside demolition limits. When services must be interrupted, install temporary services for affected areas. Provide minimum of 72-hour notice to Owner prior to utility interruption.

1.04 SEQUENCE AND SCHEDULING

A. Coordinate the shut-off and disconnection of utility services with the Owner and the utility company.

B. Notify the Architect at least 7 days prior to commencing demolition operations.

C. Perform demolition in phases as indicated.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas where selective demolition is to occur. Determine extent of work and affect on existing conditions to remain. Advise Architect of any conditions that might create extensive alterations beyond indicated scope.

3.02 SELECTIVE DEMOLITION

A. General: Demolish, remove, demount, and disconnect abandoned Plumbing fixtures, materials and equipment indicated to be removed and not indicated to be salvaged or saved.

B. Materials and Equipment to Be Salvaged: Remove, demount, and disconnect existing Plumbing fixtures, materials and equipment indicated to be removed and salvaged, and deliver materials and equipment to the location designated for storage.

1. Protect all removed and salvaged equipment from being damaged during the demolition work.

C. Disposal and Cleanup: Remove from the site and legally dispose of demolished materials and equipment not indicated to be salvaged.

D. Plumbing Materials and Equipment: Demolish, remove, demount, and disconnect the following items:

1. Inactive and obsolete, piping, fittings and specialties, equipment, controls, fixtures, and insulation.
    a. Obtain written approval form Architect and owner for piping embedded in floors, walls, and ceilings which may remain, if such materials do not interfere with new installations.
        1) Drain and cap piping allowed to remain.
    b. Remove materials above accessible ceilings.
2. Perform cutting and patching required for demolition.

END OF SECTION 22 0514

SECTION 22 0515

ACCESS DOORS AND PANELS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section includes limited scope of general construction materials and methods for access doors and panels in walls and ceilings for access to plumbing materials.

B. Requirements of access doors are outlined in Division 08.

C. Access doors and panels are required for all plumbing equipment requiring maintenance, inspection, adjustment, monitoring, etc… which are installed in inaccessible areas such as behind walls, above ceiling, under floor, etc…

1.02 SUBMITTALS

A. Product Data: Submit manufacturer's technical product data, including installation instructions for each type of access door or panel.

1.03 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Firms regularly engaged in manufacture of types and sizes required, whose products have been in satisfactory use in similar service for not less than 5 years.

B. Installer Qualifications: Engage an experienced Installer for the installation of access panels and doors.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with specified requirements, manufacturers offering products which may be incorporated in the Work include, but are not limited to, the following:

1. Elmdor / Stoneman.
2. Jay R. Smith Mfg. Co.
3. Milcor Inc.

2.02 ACCESS DOORS

A. Steel Access Doors and Frames: Factory-fabricated and assembled units, complete with attachment devices and fasteners ready for installation. Joints and seams shall be continuously welded steel, with welds ground smooth and flush with adjacent surfaces.

B. Frames:16-gage steel, with a 1-inch-wide exposed perimeter flange.

1. For installation in masonry, pre-cast, or cast-in-place concrete, ceramic tile, or wood paneling: 1 inch-wide-exposed perimeter flange and adjustable metal masonry anchors.
2. For gypsum wallboard or plaster: perforated flanges with wallboard bead.
3. For full-bed plaster applications: galvanized expanded metal lath and exposed casing bead, welded to perimeter frame.

C. Flush Panel Doors: 14-gage sheet steel, with concealed spring hinges or concealed continuous piano hinge set to open 175 degrees; factory-applied prime paint.

1. Fire-Rated Units: Insulated flush panel doors, with continuous piano hinge and self-closing mechanism.

D. Locking Devices: Flush, screwdriver-operated cam locks.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions under which access door and panel products are to be installed. Do not proceed with work until unsatisfactory conditions have been in manner acceptable to Installer.

3.02 APPLICATION

A. Nonrated Walls and Ceilings: Prime coat finish door and frame, Allen key latch face of wall type; Smith 4760, Elmdor / Stoneman DW Series.

B. Fire Rated Walls and Ceilings: "B" Labeled U.L. 1-1/2 hours, prime coat finish door and frame, flush keyed cylinder lock; Milcor.

C. Tile Walls: Cover and frame 18-8 satin stainless steel, face-of-wall type, vandal resistant screws; J. R. Smith 4762, Elmdor / Stoneman DW Series

3.03 INSTALLATION OF ACCESS DOORS

A. Set frames accurately in position and securely attached to supports, with face panels plumb and level in relation to adjacent finish surfaces.

B. Adjust hardware and panels after installation for proper operation.

3.04 COORDINATION

A. General: Coordinate locations of ceilings access doors with lights, air outlets, speakers, etc. Submit drawings showing relative locations of doors to other ceiling items for acceptance by the Architect prior to installation. Transparencies of floor plans and/or reflected ceiling plans will be available from the Architect for this purpose.

B. Location: Doors may be located to serve more than one item where feasible, providing they are approved as specified. Sizes suitable for purpose intended, with 12" x 12" minimum.

C. Access doors and panels not required in accessible ceiling systems where direct access to plumbing items is possible.

END OF SECTION 22 0515

SECTION 22 0512

PLUMBING PRODUCT SUBSTITUTIONS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section specifies administrative and procedural requirements for handling requests made after award of the Contract for substitutions of products specified in Division 22.

1.02 RELATED SECTIONS

A. Procedure for Contractor's construction Schedule and the Schedule of Submittals are included under Division 01.

B. Standards: Refer to Division 01 for applicability of industry standards to products specified.

C. Procedural requirements governing the Contractor's selection of products and product options are included under Division 01.

D. Refer to Division 01 for Products and Substitutions.

E. Refer to Sections 22 0500 & 22 0511 for additional requirements.

1.03 DEFINITIONS

A. "Products" is defined to include purchased items for incorporation into the work, regardless of whether specifically purchased for project or taken from Contractor's stock of previously purchased products. "Materials" is defined as products which must be substantially cut, shaped, worked, mixed, finished, refined or otherwise fabricated, processed, installed or applied to form units of work.

B. "Equipment" is defined as products with operational parts, regardless of whether motorized or manually operated, and particularly including products with service connections (wiring, piping, etc.). Definitions in this paragraph are not intended to negate the meaning of other terms used in contract documents, including "specialties", "systems", "structure", "finishes", "accessories", "furnishings", "special construction", and similar terms, which are self-explanatory and have recognized meanings in the construction industry.

1.04 SUBSTITUTIONS

A. The requirements for substitutions do not apply to specified Contractor options on products and construction methods. Revisions to contract documents, where requested by Owner, Architect or Engineer, are "changes" not "substitutions". Substitutions requested during bidding period, which have been accepted prior to Contract Date, are included in contract document and are not subject to requirements for substitutions as specified herein. Contractor's determination of and compliance with governing regulations and orders issued by governing authorities do not constitute "substitutions"; and do not constitute a basis for change orders, except as provided for in contract documents. Otherwise, contractor's requests of changes in products, materials and methods of construction required by contract documents are considered requests for "substitutions" and are subject to requirements hereof.

B. Conditions: The Contractor's substitution request will be received and considered by the Architect when one or more of the following conditions are satisfied, as determined by the Architect otherwise requests will be returned without action except to record noncompliance with these requirements.

1. Extensive revisions to Contract Documents are not required.
2. Proposed changes are in keeping with the general intent of Contract Documents.
3. The request is directly related to an "or approved equal" clause or similar language in the Contract Documents.
4. All costs required to make all necessary revisions and modifications to the contract documents resulting from the substitution, including but not limited to, all professional fees and the cost of DSA approval will be the Contractor's responsibility.
5. All costs required to make all necessary revisions and modifications to the building structure, electrical and all other related construction costs resulting from the substitution, including but not limited to, material, products, equipment, testing, and inspection will bethe Contractor's responsibility.
6. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
7. Contractor will coordinate the installation of the accepted substitute, making such changes as may be required for the work to be complete in all respects.
8. Contractor certifies that the substitution is not heavier than the specified item and does not necessitate any structural and electrical redesign; will fit within the room or area designed for the specified item; and will not exceed any maximum dimensions specified or shown on the original contract Documents. All roof mounted equipment must be less than or equal to the maximum height dimension from the finished roof as shown on the drawings.
9. Contractor represents that he has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified.
10. Contractor represents that he will provide the same warranty for the substitution that he would for that specified.

1.05 SUBMITTALS

A. Requests for Substitutions: Any request for substitution shall follow the guidelines of Substitution Requirements in Division 01, Section 22 0500 & 22 0511.

B. Substitution Warranty: All submittals of Request for Substitutions under the General and Supplementary Conditions of this Section shall be accompanied by a completely executed (filled out) and signed Substitution Warranty in the form entitled "Substitution Warranty", bound herein. Substitutions will not be accepted without the Substitution Warranty. In addition to other requirements, Contractor shall warrant in writing on his own letterhead that substituted materials shall perform as specified, and assume complete responsibility for same, including responsibility and costs required for modifications to building or other materials or equipment, and any additional coordination with work of other trades. Testing, if required, shall be paid by Contractor.

C. Responsibility of Contractor: The contractor shall be solely and directly responsible for fitting accepted substitute material and equipment into the available space in a manner acceptable to the Architect, and for the proper operation of the substituted equipment with all other equipment with which it may be associated. The Contractor shall bear all costs of meeting the above requirements for presenting a proposed substitution, and if the substitution is accepted, he must bear all costs involved.

D. Submit the following as part of the Request for Substitutions:

1. Data showing proposed equipment is "equal" to that specified and is fully equipped, fits the space allotted and has physical configuration and weight similar to the equipment specified in detail.
2. A complete layout, where applicable, of equipment room or area must be submitted for equipment proposed in "Request for Substitution". Submittal shall conform to requirements of Division 01 and Section 220500 "Common Work Results for Plumbing" as it applies to "Coordination Drawings."

3. Seismic Restraint: Where seismic restraint is required for products or equipment as specified, methods of seismic restraint signed by licensed Structural Engineer registered in the State of California, shall be submitted for review to the Division of the State Architect.

1.06 ARCHITECT'S ACTION

A. The Architect may request additional information or documentation necessary for evaluation of the request. Requests, by the Architect, for additional information or documentation will be in accordance with Division 01 requirements. The Architect will notify the Contractor of acceptance or rejection of the proposed substitution. If a decision on use of a proposed substitute cannot be made or obtained within the time allocated, Contractor shall use the “Basis of Design” product specified by name in the contract documents. Acceptance will be in the form of a Change Order.

PART 2 - PRODUCTS

2.01 SUBSTITUTIONS

A. Substitutions shall conform to the product requirements for the specified products or equipment.

PART 3 - EXECUTION (Not Applicable.)

END OF SECTION 22 0512

SAMPLE

S U B S T I T U T I O N S W A R R A N T Y

In addition to other requirements, Contractor shall warrant in writing that substituted materials shall perform as specified, and assume complete responsibility for same, including responsibility and costs required for modifications to building or other materials or equipment, and any additional coordination with work of other trades. Testing, if required, shall be paid by contractor. The following is an example of the type Substitution Warranty which shall be executed by the Contractor, on his own letterhead:

SUBSTITUTION WARRANTY

We propose to provide

_____
(Describe items being proposed for substitution)

for_____ in lieu of
(List project name)

as indicated on the drawings and described in Section _____ of the Specifications.

We agree to assume the cost of any and all modifications to the Contract Documents and to other portions of the work as indicated in the Specification Sections 22 0500, 22 0511, & 22 0512, and as necessary to accommodate for substituted material(s) and system(s) as indicated in this letter of "Substitution Warranty".

We hereby warrant that _____
(Provide Description)

is the equivalent of _____
(Specified Product)

in every respect and will perform satisfactorily under the conditions and use indicated on the Drawings and described in the Specifications.

Signed: _____ Date: _____
(Manufacturer/Supplier)

Signed: _____ Date: _____
(Subcontractor)

Signed: _____ Date: _____
(Contractor)

NOTE: Affix Corporate Seal over Signatures.

SECTION 22 0511

SUPPLEMENTARY PLUMBING REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This Section specifies supplementary requirements for plumbinginstallations and includes requirements common to more than one section of Division 22. It expands and supplements the requirements specified in Section 220500 "Common Work Results for Plumbing."

1.02 DESCRIPTION

A. Provide a complete and operable installation, including all labor, supervision, materials, equipment, tools, apparatus, transportation, warehousing, rigging, scaffolding and other equipment and services necessary to accomplish the work in accordance with the intent and meaning of these drawings and specifications.

1.03 COORDINATION

A. Coordination of the work is the responsibility of the Contractor.

B. Contractor shall designate an individual competent and versed in the plumbing trades to coordinate the plumbing work with the work of other trades.

1.04 DEFINITIONS (AS USED ON DIVISION 22 DRAWINGS AND HEREIN)

A. "Provide" means furnish, install and connect unless otherwise described in specific instances.

B. "Piping" means pipes, fittings, valves and all like pipe accessories connected thereto.

C. "Extend", "Submit", "Repair" and similar words mean that the Contractor (or his designated subcontractor) shall accomplish the action described.

D. "Codes" or "Code" means all codes, laws, statutes, rules, regulations, ordinances, orders, decrees, and other requirements of all legally constituted authorities and public utility franchise holders having jurisdiction.

E. "Products", "Materials" and "Equipment" are used interchangeably and mean materials, fixtures, equipment, accessories, etc.

F. "Utility Areas" are defined as mechanical, electrical, janitorial, and similar rooms or spaces which are normally used or occupied only by custodial or maintenance personnel. "Public Areas" are defined as the rooms or spaces, which are not included in the utility areas definition.

G. "Building Boundary" includes concrete walkways immediately adjacent to the building structure.

H. "Below Grade" means buried in the ground.

I. "Substantial Completion" means all components of all systems are functioning but lacking in final adjustment.

J. Pressure rating specified (such as for valves and the like) means design working pressure for and with references to the fluid, which the device will serve.

1.05 RELATED WORK

A. Coordination: Refer to Architectural, HVAC, Plumbing, Civil, Structural, and Electrical Drawings for the construction details and coordinate the work of this Division with that of other Divisions. Order the work of this Division so that progress will harmonize with that of other Divisions and all work will proceed expeditiously. The work of this Division shall include direct responsibility for the correct placing and connection of Plumbingwork in relation to the work of other Divisions.

B. Examine other Divisions for work related to the Work of this Division, especially Divisions 23 & 26.

1.06 EXISTING CONDITIONS

A. Visit the site prior to bidding and investigate the existing conditions, which affect or will be affected by the work of this Division. Become thoroughly familiar with the working conditions and take into-account any special or unusual features peculiar to this job. By the act of submitting a Bid, the Contractor will be deemed to have complied with the foregoing, to have accepted such conditions, and to have made allowance therefore in preparing his Bid.

B. The locations of existing concealed utility lines are shown in accordance with reference data received by the Architect. The Architect does not guarantee the accuracy of such data. The points of connection are therefore approximate and the Bidder shall include adequate funds in his Bid to cover costs of connection regardless of their exact location.

C. Exercise extreme caution during trenching operations. Repair the damage caused by such operations to existing utility lines at no cost to the Owner, whether the lines are shown on drawings or not.

1.07 DRAWINGS AND SPECIFICATIONS

A. These drawings and specification do not include necessary components for construction safety.

B. All provisions shall be deemed mandatory except as expressly indicated as optional by the word "may" or "option".

C. Except where dimensioned, the drawings relating to this division are a diagrammatic presentation of the design concept, which indicates the general area where piping is to be run. The drawings do not necessarily indicate any and all offsets and configurations required for coordination with other trades. The contractor is responsible for the correct placing of his work, and the proper location and connection of his work in relation to the work or other trades.

1.08 WATER (DOMESTIC AND FIRE), SANITARY SEWERS AND NATURAL GAS SERVICES

A. Within 5 days after award of Contract, notify the serving utilities that the project is under construction and apply for permanent service in the name of the Owner. Furnish pertinent load and location information to them including the required dates for permanent service. Verify service locations and conform to utility company requirements.

B. Contractor shall pay charges for permanent service connections levied by the utilities for which he will be reimbursed by the Owner. The reimbursement shall be limited to the actual amount of the utility service charges and a copy of the billing from the utility company shall accompany the Contractor's invoice.

1.09 PERMITS AND INSPECTIONS

A. Obtain, schedule and pay for permits, licenses, approvals, tests, and inspections required by legally constituted authorities and public utility franchise holders having jurisdiction over the work.

B. Afford the Architect's representative every facility for evaluating the skill and competence of the mechanics and to examine the materials. Concealed work shall be reopened when so directed during his periodic visits.

1.10 CODES AND REGULATIONS

A. By submitting a Bid, Contractor is deemed to represent himself as competent to accomplish the work of this Division in conformance with applicable Codes. In case of conflict between the Contract Documents and Code requirements, the Codes shall take precedence. Should such conflicts appear, cease work on the parts of the contract affected and immediately notify the Architect in writing. It shall be the Contractor's responsibility to correct, at no cost to the Owner, any work he executes in violation of Code requirements. Specific references to codes elsewhere in this Division are either to aid the Contractor in locating applicable information or to deny him permission to use options, which are permitted by Codes.

B. Applicable Codes: (Current editions unless otherwise noted)

1. All local codes; City and/or County as applicable.
2. OSHA requirements
3. California Building Code
4. California Code of Regulations (CCR) Titles (as applicable)
5. Fire Marshal Regulations
6. State, County, City Health Department Ordinances and Regulations
7. Regulations of all other authorities having jurisdiction.
8. California Mechanical Code.
9. California Plumbing Code.

C. Where conflict or variation exists amongst Codes, the most stringent shall govern.

1.11 RECORD AND DOCUMENTATION

A. Accumulate the following and deliver to the Owner's representative prior to final acceptance of the work.

1. Record (As-Built) Drawings:
   a. Maintain in good order in the field office a complete set of prints for all work being done under Division 22. Update the drawings daily with neat and legible annotations in red ink showing the work as actually installed.
   b. The actual size, location and elevation of all buried lines, valve boxes, manholes, monuments, and stubouts shall be accurately located and dimensioned from building walls or other permanent landmarks.
   c. Furnish the original marked up AS-Built drawings and an electronic copy in AutoCAD-14 format.
2. Operation and Maintenance Manual: Furnish an operation and maintenance manual covering the stipulated Plumbing systems and equipment. Seven copies of the manual, bond in hardback binders or an approved equivalent shall be provided to the Architect.
3. Furnish one complete manual prior to the time that system or equipment tests are performed.
4. Furnish the remaining manuals before the contract is completed.
5. The following identification shall be inscribed on the cover:

   OPERATION AND MAINTENANCE MANUAL

   PROJECT TITLE . . . . . .

   CONTRACTOR NAME & CONTACT INFORMATION

6. Provide a Table of Contents.

a. Insert tab sheets to identify discrete subjects.
b. Instruction sheets shall be legible and easily understood, with large sheets of drawings folded in.
c. The manual shall be complete in all respects for all materials, piping, valves, devices and equipment, controls, accessories and appurtenances stipulated. Include as a minimum the following:

1) Updated approved materials lists, shop drawings and catalog information of all items of HVAC system equipment.
2) System layout showing piping, valves and controls.
3) Wiring and control diagrams with data to explain detailed operation and control of each component.
4) A control sequence describing start-up, operation and shutdown.
5) Detailed description of the function of each principal component of the system.
6) Procedure for starting.
7) Procedure for operating.
8) Shut-down instructions.
9) Installation instructions.
10) Adjustments, maintenance and overhaul instructions.
11) Lubrication schedule including type, grade, temperature range and frequency.
12) Safety precautions, diagrams and illustrations.
13) Test procedures.
14) Performance data.
15) Parts lists, with manufacturer's names and catalog numbers.
16) Preventive maintenance schedule.
17) Service organization with name, address and telephone number.
18) Valve identification chart and schedule.
19) ASME certificates.
20) Hydronic balance report.

B. Standards Compliance: Where equipment or materials are specified to conform to requirements of standards of recognized technical or industrial organizations such as American National Standards Institute (ANSI) American Society for Mechanical Engineers (ASME) American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE), American Society for Testing Materials (ASTM), Underwriters Laboratories (UL), American Gas Association (AGA), American Society of Plumbing Engineers (ASPE),, American Refrigeration Institute (ARI), or National Electrical Manufacturer's Association (NEMA), that use a label or published listing as a method of indicating compliance, proof of such conformance shall be submitted and approved. The label or listing of the specified organization will be acceptable evidence.

C. Certificates of Conformance or Compliance: Submit original and not pre-printed certifications. Do not make statements in the certifications that could be interpreted to imply that the product does not meet all requirements.

D. Certified Test Reports: Certified Test Reports are reports of tests conducted on previously manufactured materials or equipment identical to that proposed for use. Before delivery of materials and equipment, submit certified copies of test reports specified in the individual sections.

E. Factory Tests: Factory tests are tests, which are required to be performed on the actual materials or equipment, proposed for use. Submit results of the tests in accordance with the requirements for laboratory test results of this Contract.

F. Permits and Certificates of Inspection: Furnish the originals.

G. Testing procedures and test results required in this and other sections. Furnish 2 copies.

H. Other data required by other sections of this Division. Furnish 2 copies.

1.12 CONSTRUCTION COST BREAKDOWN

A. Prepare and submit for review a construction cost breakdown for the major subdivisions of the PLUMBING scope of work in accordance with General and Supplemental Conditions and Project Specification.

B. Subdivide each item on the breakdown into two headings: labor and materials. Include overhead and profit in each entry.

C. Submit one copy of the breakdown directly to the Engineer and the remaining copies sent through regular channels.

1.13 TOOLS

A. Provide all special tools needed for proper operation and routine adjustment and maintenance of systems and equipment. Deliver tools to Owner's representative and request a receipt for same.

1.14 WARRANTIES

A. Refer to Project Specification for procedures and submittal requirements for warranties. Refer to individual equipment specifications for warranty requirements.

B. Where periods more than one year are specified in the specifications, such longer periods shall govern. However, when any component fails at any time during this period, the warranty period for such component and all other components, which are inactive because of, said failure shall be suspended. The warranty period for such components shall resume to run for the remaining portion of the warranty period when failed component is completely repaired and in operation; however, in no case shall the resumed portion of the warranty period be less than 3 months in duration.

C. Neither payment for work, nor total or partial occupancy of work by the Owner, within or prior to the warranty period specified, shall be construed as acceptance of faulty work or shall condone any negligence or omission of Contractor in doing the work.

D. Compile and assemble the warranties specified in Division 22, into a separated set of vinyl covered, three ring binders, tabulated and indexed for easy reference.

E. Provide complete warranty information for each item to include product or equipment to include date of beginning of warranty or bond; duration of warranty or bond; and names and addresses, and telephone numbers and procedures for filing a claim and obtaining warranty services.

1.15 SEISMIC RESTRAINT

A. Provide seismic restraint for plumbing equipment, piping, and accessories.

B. Contractor shall submit certification of suitability of seismic restraint methods signed by Licensed Structural Engineer registered in the State of California.

1.16 SYSTEM OPERATIONAL TESTS

A. The Contractor shall inform the Owner one week prior to start of testing in order that the Owner's representative may be present.

B. After balancing and prior to final inspection, the contractor shall operate all plumbing systems trouble free and stable. Contractor shall submit a written report certified by the Owner's representative indicating the successful completion of a stable and trouble free testing.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Standard Products: Materials and equipment shall be essentially the standard cataloged products of manufacturers regularly engaged in production of such materials or equipment and shall be their latest standard designs that comply with the specification requirements.

B. Materials and equipment shall duplicate items that have been in satisfactory commercial or industrial use at least two years prior to bid opening unless more stringent requirements are specified. Where two or more units of the same type of equipment are required, these units shall be products of a single manufacturer. The components thereof, however, are not required to be exclusively of the same manufacturer.

C. Each major component of equipment shall have manufacturer's name, address, model, and serial number on a nameplate securely affixed in a conspicuous place. The nameplate of the distributing agent will not be acceptable.

D. In these specification and drawings, whenever more than one (1) manufacturer’s product is specified, the manufacturer specified on the drawings and the first named product in these specifications is the basis of design and the use of alternate-named manufacturer’s product or substitutes shall comply with the requirements of Section
22 0500.

2.02 PRODUCT LISTING

A. When two or more items of same material or equipment are required (pipe and fittings, plumbing fixtures, pumps, valves, etc.) they shall be of the same manufacturer. Product manufacturer uniformity does not apply to raw materials, bulk materials, sheet metal, wire, steel bar stock, welding rods, solder, fasteners, and similar items used in Work, except as otherwise indicated.

2.03 NAMEPLATE DATA

A. Provide permanent operational data nameplate on each item of power operated plumbing equipment, indicating manufacturer, product name, model name, serial number, capacity, operating and power characteristics, labels of tested compliances, and similar essential data. Locate nameplates in an accessible location.

2.04 SUBSTITUTIONS

A. General: Submittals of "Substitutions" shall be in accordance with requirements of Division 01.

B. By proposing a substitution, it is deemed that the Contractor shall bear the cost of any and all design and construction changes (whether architectural, structural, electrical, and Plumbing) necessary to accommodate the substitution, if said substitution is accepted.

C. Specific: Refer to Specification Sections 22 0500 & 22 0512 for additional requirements.

2.05 SUBMITTALS

A. General: Make submittals in accordance with requirements of Division 01.

B. Specific: Refer to Specification Sections 22 0500 for additional requirements.

PART 3 - EXECUTION

3.01 WORKMANSHIP AND INSTALLATION METHODS

A. Workmanship shall be in the best standard practice of the trade.

B. Install equipment in accordance with the manufacturer's instructions and recommendations unless otherwise noted or specified.

3.02 TESTS

A. General:

1. Demonstrate that all components of the work of this Division have been provided and that they operate in accordance with the Contract Documents.
2. Provide instruments and personnel for tests and demonstrations. Submit signed test results.

B. Specific: Refer to the other sections of this Division for test requirements.

3.03 DELIVERY, HANDLING, STORAGE OF MATERIALS AND PROTECTION OF WORK

A. Protect materials against dirt, water, chemical and mechanical damages both while in storage and during construction.

B. Cover materials in such a manner that no finished surfaces will be damaged, marred or splattered with plaster or paint, and all moving parts will be kept clean and dry.

C. Replace or refinish any damaged materials including fronts of control panels, piping, insulation, and equipment.

D. All plumbing fixtures, vents, and waste linesshall be aggressively protected during construction process to ensure that no contamination of the system occurs.

E. The use of permanently installed plumbing fixtures during construction is prohibited.

F. Keep cabinets and other openings closed to prevent entry of foreign matter.

G. Specific: Refer to other sections of this Division for additional requirements.

3.04 PROJECT CONDITIONS

A. Check and coordinate for clearance, accessibility and placement of equipment either by going through openings provided or by placing equipment during construction. Ordering of equipment to be shipped disassembled, or disassembly of equipment at Project Site and reassembly of equipment to accomplish this requirement shall be executed without additional cost. Where provided openings are inadequate to accommodate equipment, provide new openings and restoration of same, all at no additional cost. Obtain written approval for new openings before proceeding.

B. Verify location of all plumbing fixtures and equipment within finished spaces with the Architectural Drawings. In the event, that Plumbing Drawings do not indicate exact locations, or are in-conflict with the Architectural Drawings, obtain information regarding proper locations. Installation of work without proper instruction under such circumstances will result in relocation of work, when directed, without additional cost.

3.05 INSTRUCTION TO OWNER PERSONNEL

A. Contractor shall furnish, without additional expense to the Owner, the services of competent instructors who will give full instruction to the designated personnel in the adjustment, operation, and maintenance, including pertinent safety requirements, of the equipment or system specified. Each instructor shall be thoroughly familiar with all parts of the installation and shall be trained in operating theory as well as practical operation and maintenance of work. Instruction shall be given at the Owner's convenience. The number of man-days (eight-hours) of instruction furnished shall be as specified in other sections. When more than four man-days of instruction are specified, approximately half of the time shall be used for classroom instruction. All other time shall be used for instruction with the equipment or system. When significant changes or modifications are made under the terms of the contract, provide additional instructions to acquaint the operating personnel with the changes or modifications.

B. Contractor shall videotape, both visual and audio, instruction to Owner's personnel on the maintenance and operation of the plumbing equipment and systems.

C. Submit certification, signed by Owner's agent that instructions have been completed and the videotape has been reviewed and delivered to the Owner.

D. Printed operating instructions and a copy of wiring diagrams are to be mounted in all equipment areas, framed and behind glass or encased in plastic. Printed operating instructions shall include steps for starting up and securing equipment. As a precedent to final acceptance four (4) copies of instructions are to be submitted to the Architect for review. Contractor shall turn over to Owner in a neat brochure form, equipment guarantees and maintenance instructions.

3.06 CLEANING

A. Cleaning shall be done as the work proceeds. Periodically remove waste and debris to keep the site as clean as is practical.

B. Refer the Division 01 for general requirements for cleaning.

C. Leave exposed parts of the plumbing work in a neat and clean condition, with painted surfaces unblemished and plated metal surfaces polished.

D. Thoroughly clean all materials, equipment and appliances. Clean and prepare all surfaces to be painted. Clean the entire premises of unused materials, debris, spots and marks to the satisfaction of the Architect.

E. Remove, thoroughly clean and replace all strainers and valves after the system has been put in operation until system is clear of all foreign matter and repeat this operation after ten (10) days and again after the system has been in operation thirty (30) days. Submit certification that this operation has been completed.

3.07 SAFETY REQUIREMENTS

A. Enclose and guard belts, pulleys, chains, gears, couplings, projecting setscrews, keys, and other rotating parts in accordance with OSHA requirements. Insulate, guard, and cover any high-temperature equipment and piping so located as to endanger personnel or create a fire hazard.

END OF SECTION 22 0511

SECTION 22 0500

COMMON WORK RESULTS FOR PLUMBING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Project Specification, apply to this and the other sections of Division 22.

B. This Division is an integrated whole comprising interrelated and interdependent Section and shall be considered in its entirety in determining requirements of the Work.

C. Refer to other sections of this Division for additional requirements or information regarding the subjects of this Section.

1.02 SECTION INCLUDES

A. This Section includes general administrative and procedural requirements for plumbing installations. The following administrative and procedural requirements are included in this Section to expand the requirements specified in Division 01:

1. Submittals.
2. Coordination drawings.
3. Record documents.
4. Maintenance manuals.
5. Rough-ins.
6. Mechanical installations.
7. Cutting and patching.

1.03 SUBMITTALS

A. General: Follow the procedures specified in Division 01.

B. Plumbing submittals shall include shop drawings, product data, and samples per requirements of each section of specification

C. Plumbing Submittals and Product Data: Assemble “submittals” and “product data” into tabbed brochures according to main areas of work.

1. Assemble each brochure with tabbed separators for each Specification Section where products are noted to be submitted, with separate tabs for each product listed.
2. Temperature "control shop drawings" may be submitted separately after preparations for review.
3. For items such as valves, hangers and accessories, indicate specific items and where they are to be used.
4. Contractor need only to submit for review those items specified to be submitted, unless requested by the Architect for special review.

D. All submittals shall be submitted in hard copy, electronic submittals are not acceptable.

E. Increase the number of plumbing related submittals including; shop drawings, product data, and samples submitted to allow for required distribution by one additional copy, which will be retained by the Mechanical Consulting Engineer.

F. Submit for review, only the specific items required in this Section or other Sections of Division 22.

G. Additional submittals shall include, but not limited:

1. Equipment data record drawings.
2. Certification of completion of testing.
3. Certification of completion of operation instructions.
4. Operating instruction brochure.
5. Maintenance instruction brochures.
6. Equipment guarantees.
7. 1/4" = 1'-0" or larger scale layouts of "Equivalent" equipment or "Or Approved Equal" equipment.
8. Coordination Drawings, where requested or required.

H. Submittal materials will be reviewed for substantial conformity with the intent of the contract plans and specifications only. Such review does not indicate approval of dimensions, quantities, coordination with other trades, or work methods of the contractor, which are indicated thereon.

I. Additional copies may be required by individual sections of these specifications.

1.04 COORDINATION

A. The Contractor shall be totally responsible for coordinating the layout of all building elements to avoid conflict of the work of the structural, mechanical, electrical systems, and architectural features of the building.

B. The cost of any extra work of any kind caused by a conflict due to this lack of coordination shall be borne by the Contractor.

1.05 COORDINATION OF DRAWINGS

A. Prepare coordination drawings in accordance with requirements of Project Specification to a scale of 1/4" = 1'-0" or larger; detailing major elements, components, required clearances, and systems of plumbing equipment and materials in relationship with other systems, installations, and building components. Indicate locations where space is limited for installation and access and where sequencing and coordination of the installations are of importance to the efficient flow of the Work, including but not necessarily limited to the following:

1. Indicate the proposed locations of piping, fixtures, equipment, and materials. Include the following:
   a. Clearances for servicing and maintaining equipment, including tube removal, filter removal, and space for equipment disassembly required for periodic maintenance.
   b. Equipment for connections and support details.
2. Prepare reflected ceiling plans to coordinate and integrate installations with other systems and components, such as, ductwork, air outlets and inlets, light fixtures, communication systems components, sprinklers, and other ceiling-mounted items.

B. Submittal of "Or Equal" substitutions of equipment will not be reviewed unless accompanied by coordination drawings.

1.06 RECORD DOCUMENTS

A. Prepare record documents in accordance with the requirements of project specification. In addition to the requirements of project specification, indicate the following installed conditions:

1. Record drawings of all installed systems as specified in project specification including the locations and invert elevations of underground installations.

1.07 MAINTENANCE MANUALS

A. Prepare maintenance manuals in accordance with project specification and Division 22 Section "Supplementary Plumbing Requirements".

1.08 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to the project properly identified with names, model numbers, types, grades, compliance labels, mill certification, and other information needed for identification.

1.09 EQUIVALENT EQUIPMENT

A. In these specification and drawings, whenever more than one (1) manufacturer's product is specified, the manufacturer specified on the drawings and the first named product in these specifications is the basis of design and the use of alternate-named manufacturer's product or substitutes may require modification in the design work and agency approvals. If such alternatives or substitutions are proposed by the contractor, contractor shall adhere to the following requirements;

1. Contractor shall clearly identify all proposed alternatives or substitutions in the submittal package.
2. The Contractor shall assume all costs required to make all necessary revisions and modifications of the contract documents resulting from the substitution or selection of an alternate manufacturer's product, including all professional fees and the cost of DSA approval.
3. The Contractor shall assume all costs required for any additional modification to building structure, electrical and all other related construction costs resulting from the substitution or selection of an alternate manufacturer's product

B. These specifications and/or drawings, names and specifies certain equipment in detail which are the basis of design and are explained in paragraph 1.09-A above. It also names alternate equipment by manufacturer, which is not considered to be a "substitution".

C. Submit equivalent equipment to the Architect for review per the requirements of Division 01, and Section "Supplementary Plumbing Requirements."

D. Equipment of Manufacturers named in Division 22 will be considered equivalent to that specified in detail and/or named on the drawings if:

1. The proposed equipment is of equivalent quality, capacity.
2. Equipment is as fully equipped, fits the space allotted, and has physical configuration and weight similar to the equipment specified in detail.

E. A complete lay out of an equipment room or area must be submitted for equivalent equipment. Notice space limitations. Layouts to include plans and section views at a scale of not less than 1/4" = 1 ft.

F. The Architect shall determine the acceptability of "Equivalent Equipment."

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 ROUGH-IN

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

3.02 MECHANICAL INSTALLATIONS

A. General: Sequence, coordinate, and integrate the various elements of plumbing systems, materials, and equipment. Comply with the following requirements:

1. Coordinate plumbing systems, equipment, and materials installation with other building components.
2. Verify all dimensions by field measurements.
3. Arrange for chases, slots, and openings in other building components during progress of construction, to allow for plumbing installations.
4. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed.
5. Sequence, coordinate, and integrate installations of plumbing materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning prior to closing in the building.
6. Where mounting heights are not detailed or dimensioned, install systems, materials, and equipment to provide the maximum headroom possible as required by California Building Code.
7. Coordinate connection of plumbing system with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.
8. Install systems, materials, and equipment to conform with approved submittal data, including coordination drawings, to greatest extent possible. Conform to arrangements indicated by the Contract Documents, recognizing that portions of the Work are shown only in diagrammatic form. Where coordination requirements conflict with individual system requirements, refer conflict to the Architect prior to commencement of installation.
9. Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components.
10. Install all plumbing equipment to facilitate servicing, maintenance, and repair or replacement of equipment components in full compliance with California Building Code and the equipment manufacturer's recommendations. If the drawings or the manufacturer does not provide a specific space requirement for servicing equipment, provide as a minimum, horizontal distance of 36" from face of equipment to opposite vertical surface.
11. Install access panels or doors for all equipment and components which require access for adjustment and maintenance, where units are concealed behind finished surfaces.
12. Install systems, materials, and equipment giving right-of-way priority to systems required to be installed at a specified slope.
13. Any equipment located above a ceiling that has any component which is serviceable shall be installed within 12" of the top of the ceiling.

3.03 CUTTING AND PATCHING

A. General: Perform cutting and patching in accordance with project specification. In addition to the requirements specified in project specification, the following requirements apply:

1. Protection of Installed Work: During cutting and patching operations, protect adjacent installations.

B. Perform cutting, fitting, and patching of plumbing equipment and materials required to:

1. Uncover Work to provide for installation of ill-timed Work.
2. Remove and replace defective work.
3. Remove and replace Work not conforming to requirements of the Contract Documents.
4. Remove samples of installed Work as specified for testing.
5. Install equipment and materials in existing structures.
6. Upon written instructions from the Architect, uncover and restore Work to provide for Architect/Engineer observation of concealed Work.

C. Cut, remove and legally dispose of selected plumbing equipment, components, and materials as indicated, including but not limited to removal of plumbing piping, gas lines, heating units, plumbing fixtures and trim, and other plumbing items made obsolete by the new Work.

D. Protect the structure, furnishings, finishes, and adjacent materials not indicated or scheduled to be removed

E. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.

1. Patch existing finished surfaces and building components using experienced installers and new materials matching existing materials. For installer's qualifications refer to the materials and methods required for the surface and building components being patched.

END OF SECTION 22 0500

SUSSMAN MIDDLE SCHOOL
GIRLS LOCKER ROOM AND SITE RENOVATIONS

12500 BIRCHDALE AVE, DOWNEY, CA 90242
DOWNEY UNIFIED SCHOOL DISTRICT

ABBREVIATIONS

A.B.	ANCHOR BOLT
A.F.F.	ABOVE FINISH FLOOR
APPROX.	APPROXIMATELY
BD.	BOARD
BET.	BETWEEN
BLDG	BUILDING
BLKG	BLOCKING
BM	BEAM
CAB	CABINET
CF	CURB FACE
CJ	CONTROL JOINT
COL	COLUMN
CON	CONCRETE
C.M.U.	CONCRETE MASONRY UNITS
CONT	CONTINUOUS
DF	DRINKING FOUNTAIN
D.N.	DIAMETER
DIM.	DIMENSION
DIS.	DISPENSER
DIV.	DIVISION
DN.	DONW
DBL.	DOUBLE
DF	DRINKING FOUNTAIN
(E)	EXISTING
EA.	EACH
E.J.	EXPANSION JOINT
ELEC.	ELECTRIC
ELEV.	ELEVATION
ENCL	ENCLOSURE
EQ	EQUAL
EQUIP.	EQUIPMENT
EXIST.	EXISTING
E.G.	EXISTING GRADE
EXP	EXPANSION
EXT.	EXTERIOR
E.W.	EACH WAY
F.D.	FLOOR DRAIN
F.E.	FIRE EXTINGUISHER
F.E.C.	FIRE EXTINGUISHER & CABINET
F.F.	FINISH FLOOR
F.G.	FINISH GRADE
F.H.	FIRE HYDRANT
FIN.	FINISH
F.L.	FLOW LINE
FLASH.	FLASHING
FLUOR.	FLUORESCENT
F.O.C.	FACE OF CONCRETE
F.O.F.	FACE OF FINISH
F.O.M.	FACE OF MASONRY
F.O.S.	FACE OF STUD
F.R.V.	FIBERGLASS REINFORCED PANELS
F.S.	FLOOR SINK
FT.	FOOT OR FEET
FURR.	FURRING
F.V.	FIELD VERIFY
GA.	GAUGE
GALV.	GALVANIZE
G.I.	GALVANIZED IRON
GL.	GLASS
GLU. LAM.	GLUE LAMINATED
GND.	GRADE
GYP.	GYPSUM
H.B.	HOSE BIBB
H.M.	HOLLOW METAL
HORZ.	HORIZONTAL
HR.	HEIGHT
HTG.	HEATING
HDWD.	HARDWOOD
I.D.	INSIDE DIAMETER
INSUL.	INSULATION
INT.	INTERIOR
INV.	INVERT
JAN.	JANITOR
JT.	JOINT
KIT.	KITCHEN
LAB.	LABORATORY
LAM. PLAS.	LAMINATED PLASTIC
LAV.	LAVATORY
LVR.	LOUVER
MAR.	MARBLE
MAT'L	MATERIAL
MAX.	MAXIMUM
M.D.	MEDICINE CABINET
M.D.B.	METAL CORNER BEAD
MECH.	MECHANICAL
MET.	METAL
MFR.	MANUFACTURER
MIN.	MININUM
MISC.	MISCELLANEOUS
M.O.	MASONRY OPENING
MTD.	MOUNTED
MUL.	MULLION
(N)	NEW
N.	NORTH
NAT.	NATURAL
N.G.	NATURAL GRADE
N.I.A.	NOT IN CONTRACT
NO./ #	NUMBER
NOM.	NOMINAL
N.T.S.	NOT TO SCALE
O.A.	OVERALL
OBS.	OBSCURE
O.C.	ON CENTER
O.D.	OUTSIDE DIAMETER
PAR	PARTITION
PH	PANIC HARDWARE
PL.	PLATE
P.L.	PROPERTY LINE
PLAS.	PLASTER
PLYWD.	PLYWOOD
RB	RUBBER BASE
R	RADIUS
REF.	REFERENCE
REINF.	REINFORCEMENT
REQ'D.	REQUIRED
RESIL.	RESILIENT
RM.	ROOM
R.J.	ROUGH OPENING
RO.	ROUGH
S.	SOUTH
S.B.	SPLASH BLOCK
S.D.	STORM DRAIN
S.C.	SOLID CORE
SCHED.	SCHEDULE
SECT.	SECTION
SHT.	SHEET
SIM.	SIMILAR
S.M.S.	SHEET-METAL SCREW
SPEC.	SPECIFICATIONS
SQ.	SQUARE
S.S.	SERVICE SINK
SST.	STAINLESS STEEL
STD.	STANDARD
STL.	STEEL
STRUCT.	STRUCTURAL
SUSP.	SUSPENDED
SYM	SYMMETRICAL
T.	TREAD
T. & B.	TOP & BOTTOM
TC	TOP OF CURB
TG	TOP OF GRATE
T. & G.	TONGUE & GROVE
TOM	TOP OF MASONRY
TOP	TOP OF PLATE
TOR	TOP OF ROOFING
TOS	TOP OF SHEATHING
TOW	TOP OF WALL
T.	TELEPHONE
TEMP.	TEMPERATURE
TR.	TRANSOM
TRANSF.	TRANSFORMER
TYP.	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
UR.	URINAL
V.	VENT
VAR.	VARIES
V.C.T.	VINYL COMPOSITION TILE
VERT.	VERTICAL
VEST.	VESTIBULE
V.G.D.F.	VERTICAL GRAIN DOUGLAS FIR
WC	WATER CLOSET
W.	WOOD
W. GL.	WIRE GLASS
W.C.	WROUGHT IRON
WP.	WATERPROOF

APPLICABLE CODES

PARTIAL LIST OF APPLICABLE CODES AS OF January 1, 2020

2019 California Administrative Code (CAC), Part 1, Title 24 C.C.R.
2019 California Building Code (CBC), Part 2, Title 24 C.C.R.
(2018 International Building Code Volumes 1 & 2 2019 California Amendments)
2019 California Electrical Code (CEC), Part 3, Title 24 C.C.R.
(2017 National Electrical Code and 2019 California Amendments)
2019 California Mechanical Code (CMC), Part 4, Title 24 C.C.R.
(2018 IAPMO Uniform Mechanical Code and 2019 California Amendments)
2019 California Plumbing Code (CPC), Part 5, Title 24 C.C.R.
(2018 IAPMO Uniform Plumbing Code and 2019 California Amendments)
2019 California Energy Code (CEC), Part 6, Title 24 C.C.R.
2019 California Fire Code (CFC), Part 9, Title 24 C.C.R.
(2018 International Fire Code and 2019 California Amendments)
2019 California Existing Building Code (CEBC), Part 10, Title 24 C.C.R.
(2018 International Existing Building Code and 2019 California Amendments)
2019 California Green Building Standards Code (CALGreen), Part 11, Title 24 C.C.R.
2019 California Referenced Standards Code, Part 12, Title 24 C.C.R.
Title 19, C.C.R., Public Safety, State Fire Marshall Regulations
2016 ASME A17.1/CSA B44-13 Safety Code for Elevators and Escalators (per 2019 CBC Part 2 Ch 35)
Note: Cal/OSHA Elevator Unit enforces CCR Title 8 and uses the 2004 ASME A17.1 by adoption 2010 ADA Standard for Accessibility Design

PARTIAL LIST OF APPLICABLE STANDARDS

NFPA 13	Standard for the installation of Sprinkler Systems (CA amended)	2016 Edition
NFPA 14	Standard for Installation of Standpipe and Hose Systems (CA amended)	2016 Edition
NFPA 17	Standard for Dry Chemical Extinguishing Systems	2017 Edition
NFPA 17A	Standard for Wet Chemical Extinguishing Systems	2017 Edition
NFPA 20	Standard for Installation of Stationary Pumps for Fire Protection	2016 Edition
NFPA 22	Standard for Water Tanks for Private Fire Protection	2013 Edition
NFPA 24	Standard for Installation of Private Fire Service Mains & Their Appurtenances (CA amended)	2016 Edition
NFPA 72	National Fire Alarm & Signaling Code (CA amended)	2016 Edition
NFPA 80	Standard for Fire Doors and Other Opening Protectives	2016 Edition
NFPA 2001	Standard on Clean Agent Fire Extinguishing Systems (CA amended)	2015 Edition
UL 300	Standard for Fire Testing of Fire Extinguishing Systems for Protection of Commercial Cooking Equipment	2005 (R2010)
UL 464	Audible Signaling Devices for Fire Alarm and Signaling Systems Including Accessories	2008 Edition
UL 521	Standard for Heat Detectors for Fire Protective Signaling Systems	1999 Edition
UL 1971	Standard for Signaling Devices for the Hearing Impaired	2002 (R2010)
ICC 300	Standard for Bleachers, Folding and Telescopic Seating and Grandstands	2017 Edition

For a complete list of applicable NFPA standards refer to 2019 CBC (SFM) Chapter 35 and California Fire Code Chapter 80

See California Building Code Chapter 35 for State of California amendments to the NFPA Standards.

*All parts of 2019 California Building Code become effective January 1, 2020 except the effective date for the use of the 2019 Building Energy Efficiency Standards (Title 24, Part 1, Chapter 10) is January 8, 2019 and effective date for the use of the California Administrative Code (Title 24, Part 1, Chapter 4) is January 8, 2019.

RENOV/DEMO NOTES

1. COORDINATE ALL DEMOLITION WORK WITH REPAIR WORK. COORDINATE ARCHITECTURAL, AND SHADE STRUCTURE MANUFACTURER'S DRAWINGS, EACH WITH THE OTHERS, FOR LOCATIONS, EXTENT OF WORK AND SIZES.
2. THE CONTRACTOR SHALL DISPOSE OF ALL REMOVED AND/OR DEMOLISHED MATERIAL, WASTE AND DEBRIS CAUSED BY THE NEW WORK. THIS MATERIAL SHALL BE REMOVED FROM THE PROPERTY AND TAKEN TO A LEGALLY OPERATED DISPOSAL SITE.
3. MATERIALS, EQUIPMENT OR CONSTRUCTIONS NOT NOTED IN THE CONSTRUCTION DOCUMENTS, ARE A PART OF THE WORK, AND IF DISCOVERED DURING THE COURSE OF THE WORK, SHALL BE REPORTED FOR INSTRUCTIONS PRIOR TO REMOVAL OR ABANDON IN PLACE.
4. IN ADDITION TO DEMOLITION SHOWN, CUT, MOVE, DISMANTLE OR SALVAGE ITEMS NECESSARY TO PROVIDE ACCESS TO ALLOW REPAIR WORK TO PROCEED. INCLUDE SUCH ITEMS SUCH AS :
   A. REPAIR OR REMOVAL OF HAZARDOUS OR UNSANITARY CONDITIONS.
   B. REMOVAL OF ABANDONED ITEMS AND ITEMS SERVING NO USEFUL PURPOSE SUCH AS ALL ABANDONED PIPING, CONDUIT AND WIRING.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXPOSED EXISTING STRUCTURES AT THE WORK AREA FROM WEATHER AND OTHER INCLEMENT CONDITIONS AND FROM THE INSTALLATION OF OTHER WORK. ANY DAMAGE INCURRED DUE TO FAILURE BY THE CONTRACTOR TO PROPERLY PROTECT SUCH WORK, SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE.
7. ALL ADJACENT WORK AND CONSTRUCTIONS DAMAGED DUE TO DEMOLITION SHALL BE REPAIRED AS PART OF THIS CONTRACT

GENERAL NOTES

1. VERIFY ALL DIMENSIONS, LOCATIONS OF EXISTING UTILITIES, AND CONDITIONS ON JOB SITE PRIOR TO START OF WORK OR PORTIONS OF WORK. NOTIFY ARCHITECT IMMEDIATELY OF ANY DISCREPANCIES BETWEEN ACTUAL FIELD CONDITIONS AND CONSTRUCTION DOCUMENTS. EXISTING CONDITIONS ARE INDICATED AS RESULT OF FIELD OBSERVATIONS, INFORMATION SHOWN ON AVAILABLE DOCUMENTS AND FIELD CONDITIONS AT TIME OF PREPARATION.
2. ALL MATERIALS AND WORKMANSHIP SHALL COMPLY WITH ALL GOVERNING CODES, ORDINANCES, REGULATIONS AND LAWS.
3. WHERE ANY CONFLICT OCCURS BETWEEN REQUIREMENTS OF LAWS, CODES, ORDINANCES, RULES AND REGULATIONS, THE MOST STRINGENT SHALL GOVERN.
4. IN NO CASE SHALL WORKING DIMENSIONS BE SCALED FROM PLANS, SECTIONS OR DETAILS ON THE DRAWINGS.
5. DETAILS MARKED 'TYPICAL' SHALL APPLY IN ALL CASES UNLESS SPECIFICALLY NOTED OTHERWISE.
6. ENACT ALL MEASURES TO PROTECT AND SAFEGUARD ALL EXISTING ELEMENTS TO REMAIN FROM BEING DAMAGED. REPLACE OR REPAIR EXISTING ELEMENTS DAMAGED BY THE EXECUTION OF THIS CONTRACT TO EQUAL OR BETTER CONDITION.
7. CONTRACTOR SHALL COORDINATE BETWEEN THE REQUIREMENTS OF ALL DISCIPLINES HEREIN AND BETWEEN DRAWING AND SPECIFICATION REQUIREMENTS IN ORDER THAT ALL ITEMS RELATE TO ONE ANOTHER. NOTIFY ARCHITECT IMMEDIATELY REGARDING ANY ITEMS NOT COORDINATED.
8. THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS IS THAT THE WORK OF CONSTRUCTION, ALTERATION, REHABILITATION OR RECONSTRUCTION SHALL CONFORM TO TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR). SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OR NON COMPLYING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS, A CONSTRUCTION CHANGE DOCUMENT (CCD) OR A SEPARATE SET OF PLANS AND SPECIFICATIONS, DETAILING AND SPECIFYING THE REQUIRED WORK SHALL BE SUBMITTED TO AND APPROVED BY THE DIVISION OF THE STATE ARCHITECT BEFORE PROCEEDING WITH THE WORK.
9. CONTRACTOR SHALL STOP WORK AND NOTIFY ARCHITECT IMMEDIATELY IF ANY ASBESTOS CONTAINING MATERIAL (ACM) OR SUSPECTED ACM IS FOUND DAMAGED OR DISTURBED.
10. CONTRACTOR SHALL EXCERCISE EXTREME CAUTION IN EXCAVATING AND TRENCHING ON THIS SITE TO AVOID EXISTING DUCTS, PIPING, CONDUIT, ETC. AND TO PREVENT HAZARD TO PERSONNEL AND/OR TO EXISTING UNDERGROUND UTILITIES OR STRUCTURES. THE DESIGN PROFESSIONALS ARE NOT RESPONSIBLE FOR THE LOCATION OF UNDERGROUND UTILITIES OR STRUCTURES, WHETHER OR NOT SHOWN ON AND INSTALLED BY THESE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE DISTRICT SHOULD SUCH UNIDENTIFIED CONDITIONS BE DISCOVERED. THESE DRAWINGS AND SPECIFICATIONS DO NOT INCLUDE THE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY.
11. CHANGES TO THE APPROVED DRAWINGS AND SPECIFICATIONS SHALL BE MADE BY AN ADDENDA OR A CONSTRUCTION CHANGE DOCUMENT (CCD) APPROVED BY THE DIVISION OF THE STATE ARCHITECT, AS REQUIRED BY SECTION 4-338, PART 1, TITLE 24, CCR.
12. A DSA CERTIFIED CLASS 3 PROJECT INSPECTOR EMPLOYED BY THE DISTRICT (OWNER) AND APPROVED BY THE DIVISION OF THE STATE ARCHITECT SHALL PROVIDE CONTINUOUS INSPECTION OF THE WORK. THE DUTIES OF THE INSPECTOR ARE DEFINED IN SECTIONS 4-342, PART 1, TITLE 24, CCR.
13. ALL WORK SHALL CONFORM TO TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR).
14. A DSA ACCEPTED TESTING LABORATORY DIRECTLY EMPLOYED BY THE DISTRICT (OWNER) SHALL CONDUCT ALL THE REQUIRED TESTS AND INSPECTIONS FOR THE PROJECT.
15. WORK SHALL COMPLY WITH THE PROVISIONS OF CHAPTER 33 OF CBC & CFC, "FIRE SAFETY DURING CONSTRUCTION AND DEMOLITION"

SHEET INDEX

TOTAL SHEETS: 11

ARCHITECTURAL		8 SHEETS
G001	TITLE SHEET	
C001	SURVEY	
A001	OVERALL SITE PLAN	
A002	ENLARGED SITE CONCRETE PLAN AND DETAILS	
A003	ENLARGED SITE PLATFORM PLAN AND DETAILS	
A101	FLOOR PLANS	
A310	ENLARGED PLANS	
A510	DETAILS	
PLUMBING		3 SHEETS
P001	GENERAL	
P002	SCHEDULES AND DETAILS	
P101	PLUMBING PLANS	

SCOPE OF WORK

SITE RENOVATION OF EXISTING CONCRETE SURFACES, WHEELCHAIR RAMP AT AN EXISTING RAISED EXTERIOR CONCRETE PLATFORM, AND INTERIOR TOILET ROOM & SHOWER RENOVATIONS IN THE GIRLS LOCKER ROOM ON THE EXISTING SUSSMAN MIDDLE SCHOOL CAMPUS.

NOTE: THIS PROJECT SHALL NOT BE CLOSED WITH CERTIFCATION PRIOR TO THE CLOSE AND CERTIFICATION OF APP. NO. 03-119235

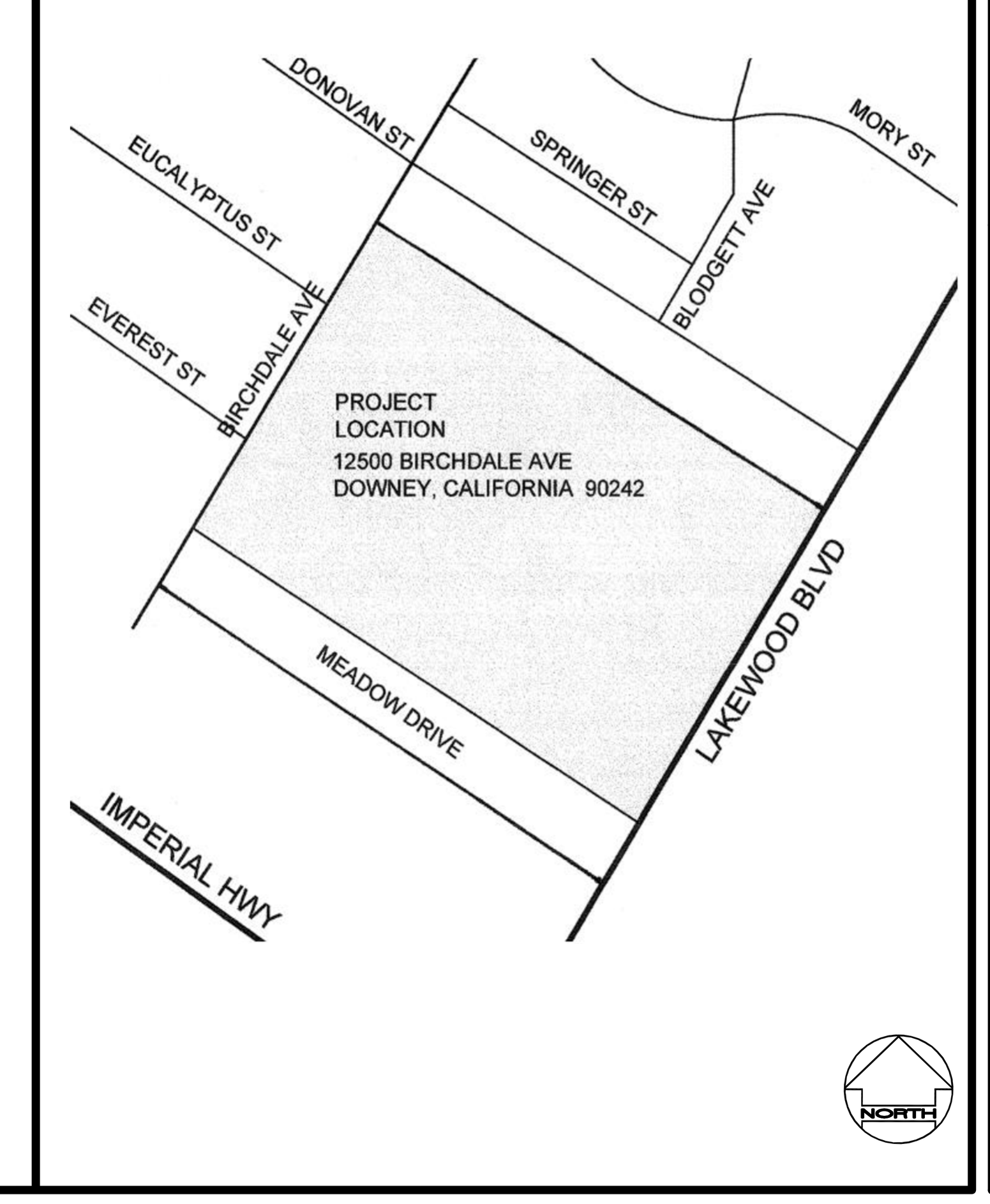
LOS ANGELES COUNTY PUBLIC WORKS FLOOD ZONE DETERMINATION WEBSITE PROPERTY IS LOCATED IN A NON-HAZARD ZONE ZONE"X" (0.2% CHANCE OF ANNUAL: FLOOD).

DIRECTORY

OWNER
DOWNEY UNIFIED SCHOOL DISTRICT
11627 BROOKSHIRE AVE.
DOWNEY , CA 90241
TEL: 562.469.6707
CONTACT: VINCE MADSEN

ARCHITECT
RAND NICHOLL ARCHITECTURE
4591 SIRODAY AVENUE
YORBA LINDA, CA 92686
TEL: 714.915.4504
CONTACT: RAND NICHOLL

VICINITY MAP



Architecture · Planning · Design
RAND NICHOLL ARCHITECTURE
4591 SIRODAY AVENUE
YORBA LINDA, CA 92686
ph: 714.915.4504

Consultant Seal

SUSSMAN MIDDLE SCHOOL
GIRLS LOCKER ROOM AND SITE RENOVATIONS
12500 BIRCHDALE AVE, DOWNEY CA 90242
DOWNEY UNIFIED SCHOOL DISTRICT

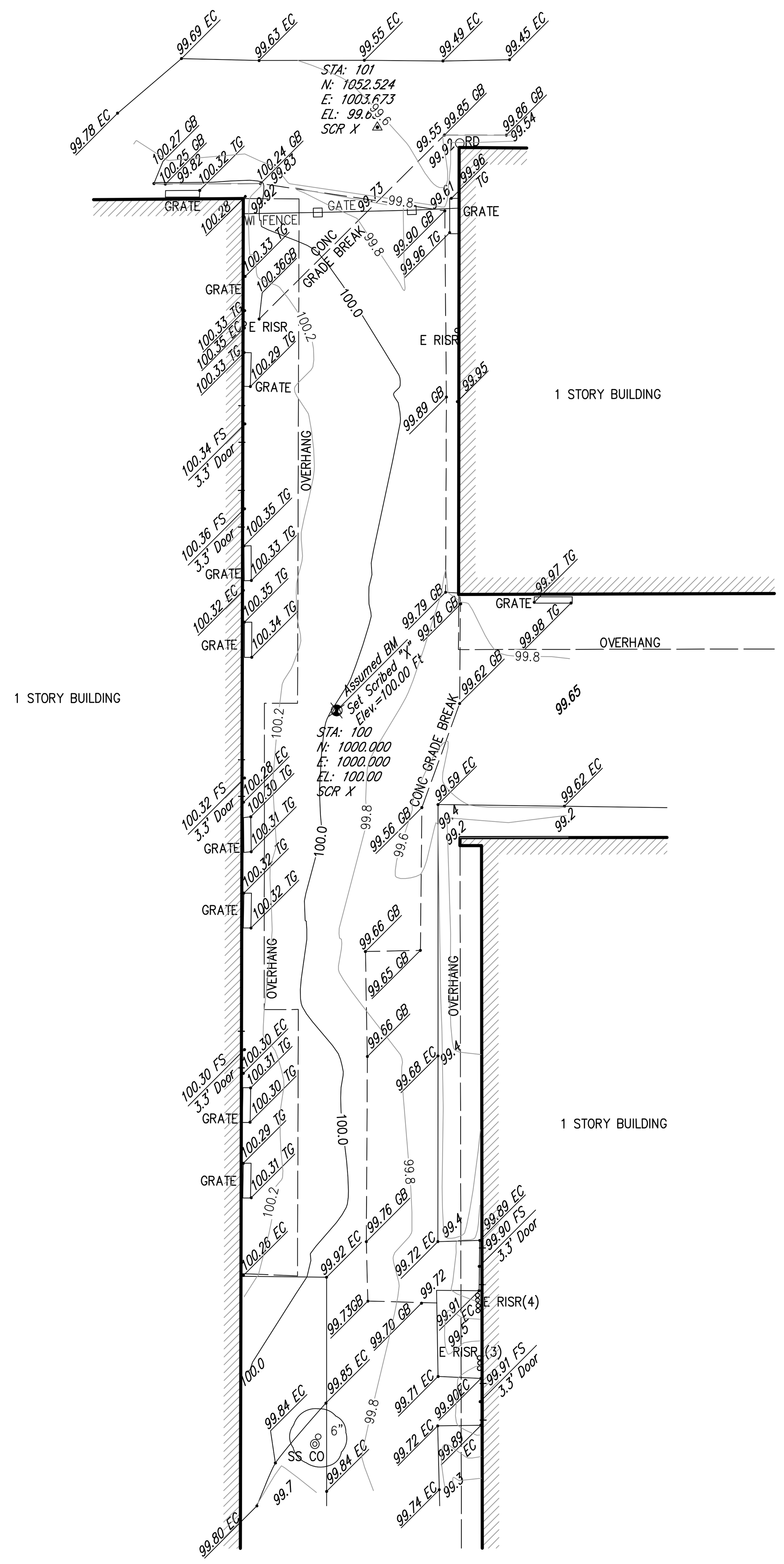
TITLE SHEET

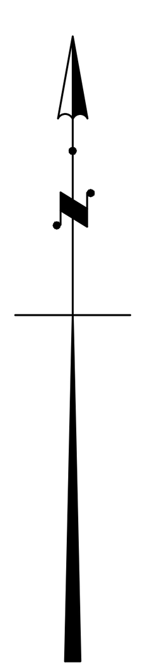
REVISIONS:

Date:	4/18/2022
Job:	2201
Scale:	N.T.S.
Drawn:	

G001

SHEET OF XXX
XREF:

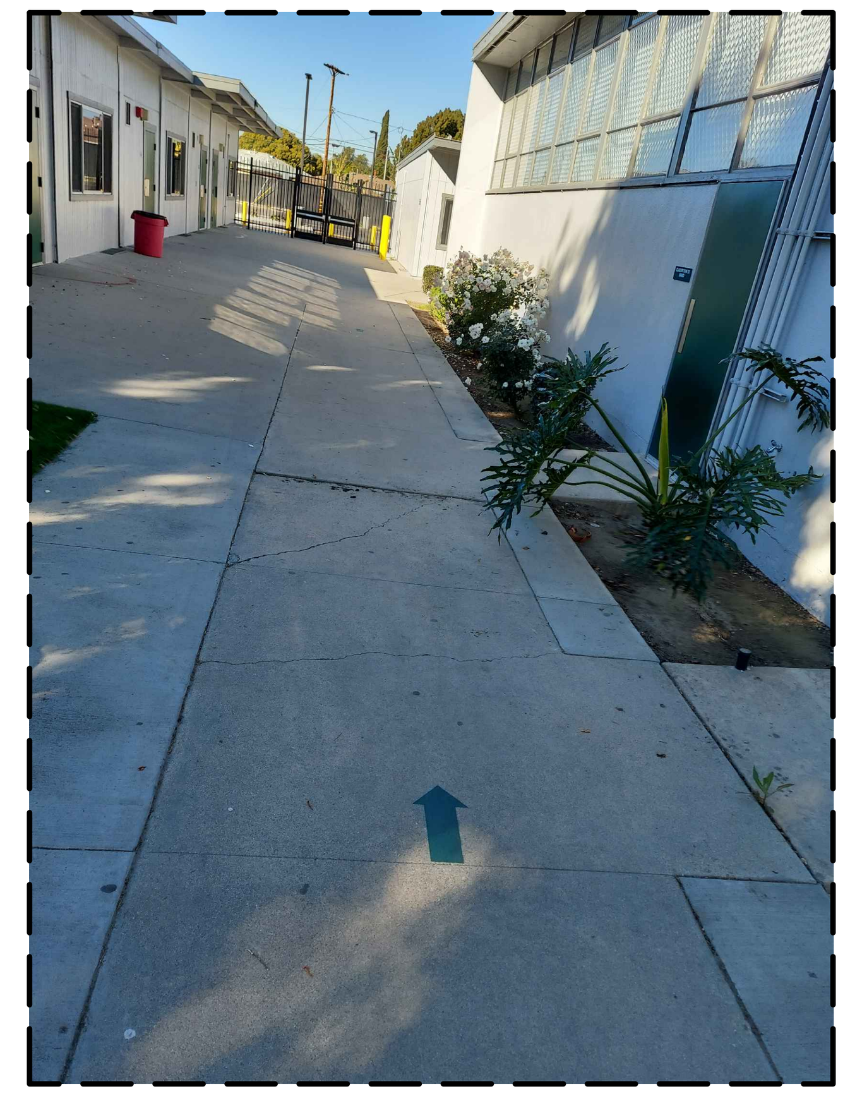


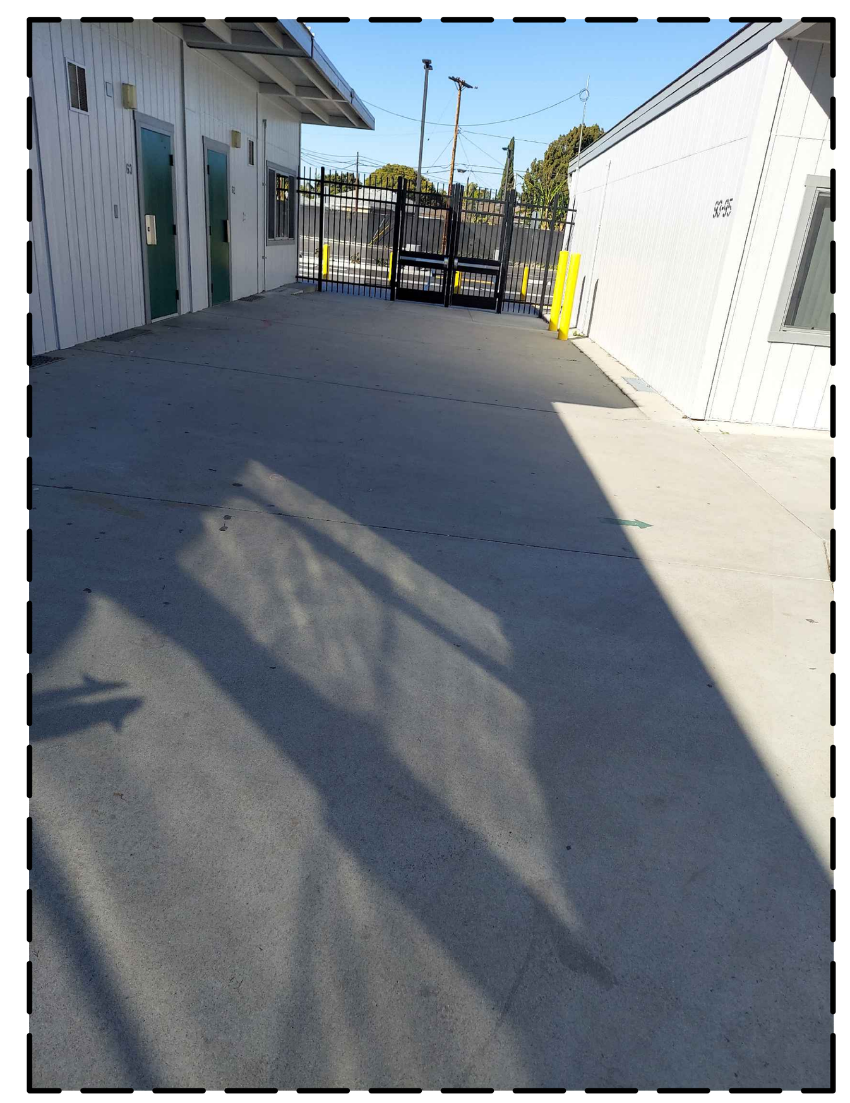


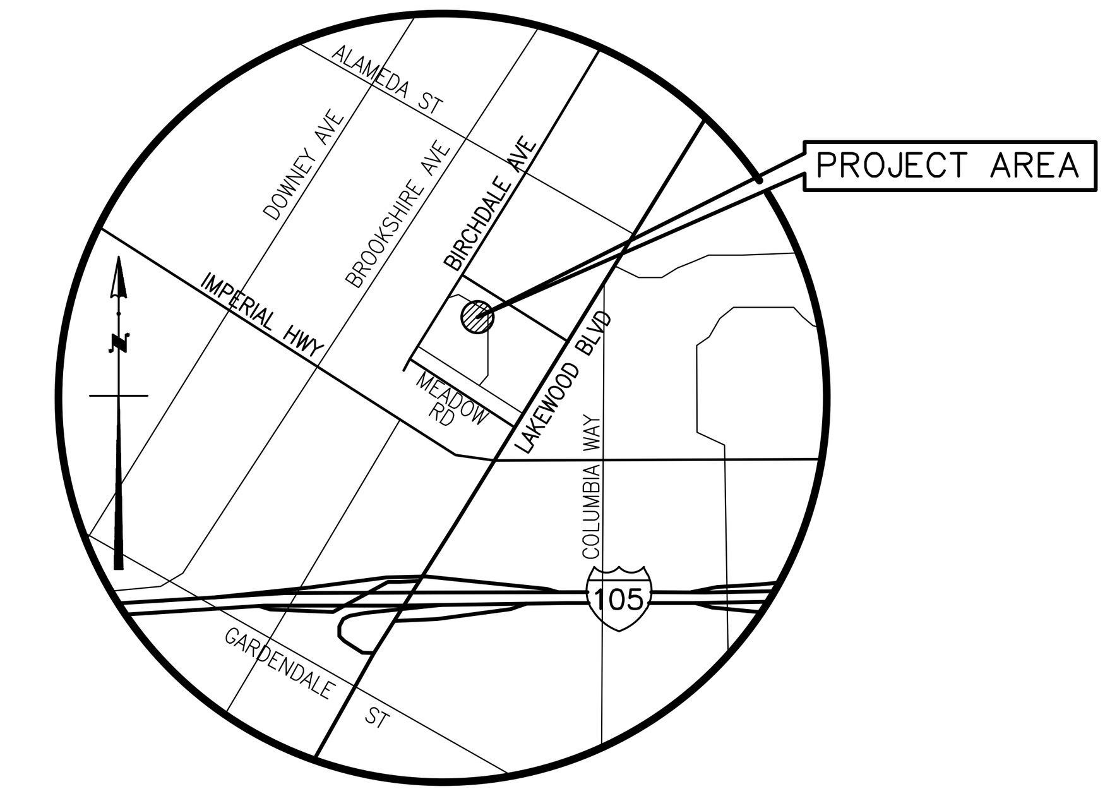
GRAPHIC SCALE

SCALE: 1" = 10'

SITE NORTH







VICINITY MAP

NOT TO SCALE

COMMENTS:

BOUNDARY LINES.	NOT PLOTTED.
LEGAL DESCRIPTION	NONE PROVIDED
EASEMENTS	NOT PLOTTED.
TITLE REPORT	NONE PROVIDED
BASIS OF BEARINGS . . .	NONE PROVIDED
TOPOGRAPHY.	BY GROUND SURVEY AND COMPLIES WITH THE NATIONAL MAP STANDARDS.
UTILITIES	NO UNDERGROUND UTILITIES WERE PLOTTED. ONLY SURFACE VISIBLE SIGNS OF UTILITIES ARE PLOTTED.
CONTOUR INTERVAL	0.20 FT

SURVEYOR'S NOTES

THIS SURVEY HAS BEEN PREPARED FOR DESIGN PURPOSES

1. BEFORE USING THIS MAP FOR DESIGN OR CONSTRUCTION PURPOSES, ALL EASEMENTS OF RECORD AND SETBACK LINES DEFINED IN COVENANTS, CONDITIONS AND RESTRICTIONS OF RECORD AFFECTING THIS PROPERTY SHOULD BE PLOTTED ON THIS MAP FROM A CURRENT TITLE REPORT. IF NO TITLE REPORT WAS FURNISHED, OUR CLIENT IS URGED TO FURNISH A CURRENT TITLE REPORT SO THAT THESE EASEMENT AND SETBACK LINES OF RECORD CAN BE PLOTTED ON THIS MAP.

2. THIS MAP SHOULD BE EXPANDED TO MEET ALTA REQUIREMENTS IF FINANCING IS TO BE OBTAINED FOR THE PROJECT, REQUIRING AN EXTENDED COVERAGE POLICY OF TITLE INSURANCE.

3. THIS SURVEY DOES NOT INCLUDE EASEMENTS EXCEPT THOSE SPECIFICALLY DELINEATED HEREON.

4. IF UNDERGROUND PUBLIC UTILITIES AND OTHER SUBSTRUCTURES, ZONES, SET BACK AND STREET WIDENING DATA ARE SHOWN HEREON, IT IS FOR INFORMATION ONLY, HAVING BEEN OBTAINED FROM A GENERAL REQUEST AT THE LOCAL AGENCY'S PUBLIC COUNTER AND/OR OTHER SOURCES NOT CONNECTED WITH THIS COMPANY. NO REPRESENTATION IS MADE AS TO THE ACCURACY, CURRENCY OR COMPLETENESS OF SAID INFORMATION AND ANY USERS OF SAID INFORMATION IS URGED TO CONTACT THE UTILITY OR LOCAL AGENCY DIRECTLY.

LEGEND

	PROPERTY / BOUNDARY LINE
	STREET R/W LINE
	CURB LINE (FROM 1"=20' ON TO 1"=200')
	CURB LINE (1"=10', 1"=8', 1"=16')
	CENTER LINE
	FLOW LINE
	LOT LINE / PARCEL LINE
	EASEMENT LINE (W=WIDTH)
AD	CONTOUR LINE (APPROXIMATE)
	BUILDING FOOT PRINT LINE
	OVERHANG LINE
	CHAINLINK (CHLK) FENCE LINE
	BARBWIRE FENCE LINE
	WOODEN (WDN) FENCE LINE
	WROUGHT IRON (WI) FENCE LINE
	RETAINING (RET) / SCREEN WALL (AS NOTED)
	GUARD RAIL
	EDGE OF ASPHALT PAVING
ASPH	ASPHALT PAVING
CONC	CONCRETE PAVING
AD	AREA DRAIN
CB	CATCH BASIN W/ACCESS HOLE
CMH/EMH/FMH/GMH	COMMUNICATION/ELECTRICAL/FIBER OPTIC/GAS MANHOLE
SMH/SDMH/UMH/WMH	SEWER/STORMDRAIN/UNKNOWN/WATER MANHOLE
CP/PP/UP	COMMUNICATION/POWER/UTILITY POLE
CPC/PPC/UPC	COMMUNICATION/POWER/UTILITY POLE AND CONDUIT
S	SIGN (ALL KINDS)
	GUY ANCHOR
	GUY POLE
	STREET LIGHT
	STREET LIGHT W/ARM
	STREET LIGHT W/ARM ON POWER POLE
	TRAFFIC SIGNAL W/ARM
	TRAFFIC SIGNAL W/STREET LIGHT
	TRAFFIC SIGNAL
PED TS	PEDESTRIAN TRAFFIC SIGNAL
	PEDESTRIAN CROSSING PUSH BUTTON
	YARD LIGHT
	GARDEN LIGHT
	PARKING LIGHT
	FIRE HYDRANT
DS	DOWNSPOUT
FDC	FIRE DEPARTMENT CONNECTION
PIV	POST INDICATOR VALVE
	DIRECTION OF WATER DRAINAGE FLOW
PM	PARKING METER
EM/GM/UM/WM	ELECTRICAL/GAS/UNKNOWN/WATER METER
AV/GV/IV/PV/UV/WV	AIR/GAS/IRRIGATION/PETROLEUM/UNKNOWN/WATER VALVE
C/E/FO VLT	COMMUNICATION/ELECTRICAL/FIBER OPTIC VAULT
G/I/U/W VLT	GAS/IRRIGATION/UNKNOWN/WATER VAULT
C/E/G RISR	COMMUNICATION/ELECTRICAL/GAS RISER
P/U/W RISR	PETROLEUM/UNKNOWN/WATER RISER
C/E/I/TS PNL	COMMUNICATION/ELECTRICAL/IRRIGATION/TRAFFIC SIGNAL PANEL
C/E/U/TS CAB	COMMUNICATION/ELECTRICAL/UNKNOWN/TRAFFIC SIGNAL CABINET
CPB/EPB/FOPB	COMMUNICATION/ELECTRICAL/FIBER OPTIC PULL BOX
SLPB/TSPB/UPB	STREET LIGHT/TRAFFIC/UNKNOWN PULL BOX
G/I/U BOX	GAS/IRRIGATION/UNKNOWN BOX
A/C/E/F STRU	AIR/COMMUNICATION/ELECTRICAL/FIRE STRUCTURE
G/I/P/SS STRU	GAS/IRRIGATION/PETROLEUM/SANITARY SEWER STRUCTURE
SD/SL/U/W STRU	STORM DRAIN/STREET LIGHT/UNKNOWN/WATER STRUCTURE
A/C/E PMRK	AIR/COMMUNICATION/ELECTRICAL PAINT MARK
G/P/SS PMRK	GAS/IRRIGATION/SANITARY SEWER PAINT MARK
SD/U/W PMRK	STORM DRAIN/UNKNOWN/WATER PAINT MARK
COMP/HC/STD	COMPACT/HANDYCAP/STANDARD PARKING STALL
DI	DRAIN INLET
1"	EVERGREEN TREE W/TRUNK DIAMETER
1"	PALM TREE W/TRUNK DIAMETER
1"	DECIDUOUS TREE IN WELL W/TRUNK DIAMETER
PL	PLANTER
GP	GUARD POST
APPR	APPROACH
DRWY	DRIVEWAY
R/R	RAILROAD
BFP	BACKFLOW PREVENTER
CO	CLEAN OUT
	BENCHMARK
OVHG	OVERHANG
UNDR	UNDERGROUND
TRANS	TRANSFORMER
ISH	IRRIGATION SPRINKLER HEAD
SEC/TRAF CAM	SECURITY/TRAFFIC CAMERA
	FIRE DEPARTMENT CONNECTION
C/L	STREET CENTERLINE/CONTROL LINE
P/L	PROPERTY LINE
123.4	TOPOGRAPHIC SPOT ELEVATION, NO LEADER
BW	BACK OF WALK ELEVATION
EC	EDGE OF CONCRETE ELEVATION
EG	EDGE OF GUTTER ELEVATION
EP	EDGE OF PAVEMENT ELEVATION
FL	FLOW LINE ELEVATION
INV	PIPE INVERT ELEVATION
RIM	MANHOLE RIM ELEVATION
TB	TOP OF BERM ELEVATION
TC	TOP OF CURB ELEVATION
TF	TOP OF FOOTING ELEVATION
TG	TOP OF GRATE ELEVATION
TW	TOP OF WALL ELEVATION
FO	FIBER OPTIC

SEAL: PROFESSIONAL LAND SURVEYOR DANIEL L. RAHE No. 9425 STATE OF CALIFORNIA

DESIGNED	BBH
DRAFTED	BBH
CHECKED	DLR

REV	DATE	DESCRIPTION	BY	APP'D
△				
△				
△				
△				
△				
△				
△				
△				

BENCHMARK

SET SCRIBED 'X"
ASSUMED ELEVATION = 100.00 FT

ELEV. ______ ADJUSTMENT ______

PATH/PLOT DATE:
Feb. 11, 2022 – 12:07:27 DWG Name: W:\1DOW030200\SURVEY\DESIGN\SHEETS\PL-0DS01.dwg Updated By: brian.hebron

PSOMAS
555 South Flower Street, Suite 4300
Los Angeles, CA 90071
(213) 223-1400 (213) 223-1444 fax
www.psomas.com

LIMITED DESIGN SURVEY FOR:

DOWNEY UNIFIED SCHOOL DISTRICT

SUSSMAN MIDDLE SCHOOL
12500 BIRCHDALE AVENUE

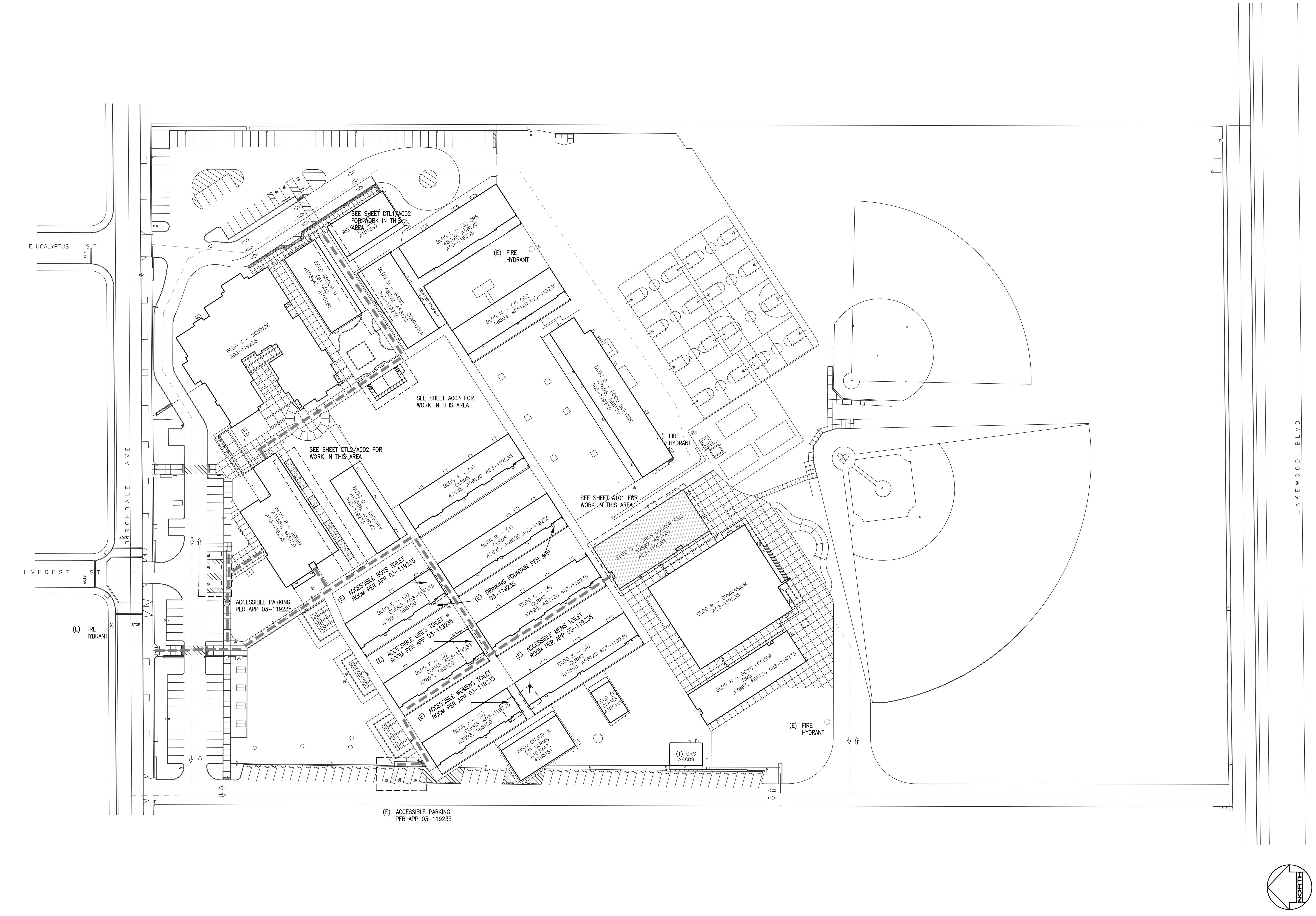
IN THE CITY OF DOWNEY COUNTY OF LOS ANGELES STATE OF CALIFORNIA

DATE	FEBRUARY 8, 2022
SCALE	1"= 10'
PROJECT NUMBER	1DOW030200 T100
SHEET	1 OF 1

| V-TB01 | V-DS01 | V-DTM01 |

SITE NOTES

1. FOR TYPICAL SYMBOLS AND ABBREVIATIONS, SEE SHEET G001.
2. PROTECT AND SAFEGUARD FROM DAMAGES ALL EXISTING CONSTRUCTION AND FINISHES TO REMAIN.
3. PROVIDE TEMPORARY 6' HIGH CHAIN LINK FENCE ENCLOSURES WITH LOCKABLE GATES AS REQUIRED FOR CONSTRUCTION ACCESS AT CONTRACTOR'S STAGING AREA AND AROUND ALL CONSTRUCTION SITES.
4. WHERE REMOVAL OF CONCRETE WALKS, MOWSTRIPS, CURBS AND GUTTERS IS REQUIRED BY THE EXECUTION OF THIS CONTRACT, REMOVE THE CONCRETE WORK TO THE NEAREST EXISTING EXPANSION OR CONTROL JOINT (SAWCUT IF REQUIRED). CURBS AND GUTTERS MAY BE REMOVED IN MINIMUM LENGTHS OF 6' IF THE DISTANCE BETWEEN EXISTING JOINTS IS 12' OR MORE. REPLACE REMOVED WORK WITH REINFORCED CONCRETE TO MATCH ADJACENT EXISTING WORK IN PROFILE, JOINT LAYOUT AND FINISH. SEE SHEET A003 FOR SIMILAR DETAILS AND REINFORCING REQUIREMENTS. DOWEL NEW CONCRETE WORK INTO EXISTING PER SHEET A002.
5. WHERE ASPHALT PAVING IS DAMAGED BY THE EXECUTION OF THIS CONTRACT, PATCH & REPAIR TO ORIGINAL OR BETTER CONDITION. WHERE (E) LAWNS ARE DAMAGED BY THE EXECUTION OF THIS CONTRACT, FILL, COMPACT, AND REPLANT AREA TO MATCH EXISTING TURF AREA.



ENLARGED SITE PLAN 5
1"=30'-0"

ASBESTOS NOTES

NON-UTILIZATION OF ASBESTOS MATERIAL

NO ASBESTOS OR ASBESTOS-CONTAINING PRODUCTS SHALL BE USED IN THIS CONSTRUCTION OR IN ANY TOOLS, DEVICES, CLOTHING OR EQUIPMENT USED TO AFFECT THIS CONSTRUCTION.

ASBESTOS AND OR ASBESTOS CONTAINING PRODUCTS SHALL BE DEFINED AS ALL ITEMS CONTAINING BUT NOT LIMITED TO CHRYSTOLITE, CROCIDOLITE, AMOSITE, ANTHOPYLLITE, TERMOLITE AND ANTINOLITE.

ANY OR ALL MATERIAL CONTAINING GREATER THAN ONE TENTH OF ONE PERCENT(>.1%) ASBESTOS SHALL BE DEFINED AS ASBESTOS CONTAINING MATERIAL.

ANY DISPUTES INVOLVING THE QUESTION OF WHETHER OR NOT MATERIAL INSTALLED WITH ASBESTOS-CONTAINING EQUIPMENT WILL BE SETTLED BY ELECTRON MICROSCOPY: THE COST OF ANY SUCH TEST SHALL BE PAID BY THE CONTRACTOR.

ALL WORK OR MATERIALS FOUND TO CONTAIN ASBESTOS OR WORK OR MATERIAL INSTALLED WITH ASBESTOS-CONTAINING EQUIPMENT WILL BE IMMEDIATELY REJECTED AND THIS WORK WILL BE REMOVED AT NO ADDITIONAL COST TO THE DISTRICT.

DECONTAMINATION AND REMOVAL

DECONTAMINATION AND REMOVAL OF WORK FOUND TO CONTAIN ASBESTOS OR WORK INSTALLED WITH ASBESTOS-CONTAINING EQUIPMENT SHALL BE DONE ONLY UNDER SUPERVISION OF A QUALIFIED CONSULTANT, KNOWLEDGEABLE IN THE FIELD OF ASBESTOS ABATEMENT AND ACCREDITED BY THE ENVIRONMENTAL PROTECTION AGENCY.

THE ASBESTOS REMOVAL CONTRACTOR SHALL BE AN EPA ACCREDITED CONTRACTOR QUALIFIED IN THE REMOVAL OF ASBESTOS AND SHALL BE CHOSEN AND APPROVED BY THE ASBESTOS CONSULTANT WHO SHALL HAVE SOLE DISCRETION AND FINAL DETERMINATION IN THIS MATTER.

THE ASBESTOS CONSULTANT SHALL BE CHOSEN AND APPROVED BY THE DISTRICT WHO SHALL HAVE SOLE DESCRETION AND FINAL DETERMINATION IN THIS MATTER.

THE WORK WILL NOT BE ACCEPTED UNTIL ASBESTOS CONTAMINATION IS REDUCED TO LEVELS DEEMED ACCEPTABLE BY THE ASBESTOS CONSULTANTS.

HOLD HARMLESS

INTERFACE OF WORK UNDER THIS CONTRACT WITH WORK CONTAINING ASBESTOS SHALL BE EXECUTED BY THE CONTRACTOR AT HIS RISK AND HIS DISCRETION WITH FULL KNOWLEDGE OF THE CURRENTLY ACCEPTED STANDARDS, HAZARDS RISKS, AND LIABILITIES ASSOCIATED WITH ASBESTOS WORK AND ASBESOS CONTAINING PRODUCTS. BY EXECUTION OF THIS CONTRACT THE CONTRACTOR ACKNOWLEDGES THE ABOVE AND AGREES TO HOLD ASSIGNS FOR ALL ASBESTOS LIABILITY WHICH MAY BE ASSOCIATED WITH THIS WORK AND AGREES TO INSTRUCT HIS EMPLOYEES WITH RESPECT TO THE ABOVE MENTIONED STANDARDS, HAZARDS, RISKS AND LIABILITIES. THE CONTRACTOR SHALL, PRIOR TO COMMENCEMENT OF THIS WORK, PROVIDE A DULY SIGNED AND NOTARIZED AFFIDAVIT THAT HE HAS INSTRUCTED HIS EMPLOYEEES WITH RESPECT TO THE ABOVE MENTIONED STANDARDS, HAZARDS, RISKS AND LIABILITIES AND THE CONTENTS AND REQUIREMENTS OF THIS PORTION OF THE CONTRACT DOCUMENTS.

HAZARD MATERIALS

IN THE EVENT THE CONTRACTOR ENCOUNTERS ON THE SITE MATERIALS REASONABLY BELIEVED TO BE ASBESTOS OR POLY-CHLORINATED BIPHENYL (PCB) WHICH HAS NOT BEEN RENDERED HARMLESS, THE CONTRACTOR SHALL IMMEDIATELY STOP WORK IN THE AREA AFFECTED AND REPORT THE CONDITION TO THE DISTRICT AND ARCHITECT IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT THEREAFTER BE RESUMED EXCEPT BY WRITTEN AGREEMENT OF THE DISTRICT AND CONTRACTOR IF IN FACT THE MATERIAL IS ASBESTOS OR POLYCHLORINATED BIPHENYL (PCB), OR WHEN IT HAS BEEN RENDERED HARMLESS, BY WRITTEN AGREEMENT OF THE DISTRICT AND CONTRACTOR, OR IN ACCORDANCE WITH FINAL DETERMINATION BY THE ARCHITECT.

MATERIAL SAFETY DATA SHEETS (MSDS)

CONTRACTOR IS REQUIRED TO ENSURE THAT MATERIAL SAFETY DATA SHEETS ARE AVAILABLE IN A READILY ACCESSIBLE PLACE AT THE WORK SITE; FOR ANY MATERIAL REQUIRING A MATERIAL SAFETY DATA SHEET PER THE FEDERAL "HAZARD COMMUNICATION" STANDARD, OR EMPLOYEES RIGHT TO KNOW LAW. THE CONTRACTOR IS ALSO REQUIRED TO ENSURE PROPERLY LABELING ANY SUBSTANCE BROUGHT ONTO THE JOB SITE, AND THAT ANY PERSON WORKING WITH THE MATERIAL, IS INFORMED OF THE HAZARDS OF THE SUBSTANCE AND FOLLOWS PROPER HANDLING AND PROTECTION PROCEDURES.

SITE PLAN LEGEND

(E) BUILDINGS NOT IN SCOPE OF WORK

(E) BUILDING TO BE RENOVATED

(E) CHAINLINK FENCE TO REMAIN

EXISTING "PATH OF TRAVEL" (P.O.T) PER A#03-119235

EXISTING FIRE LANE PER A#03-119235

EXISTING FIRE HYDRANT PER A#03-119235

THIS PROJECT SHOULD NOT BE CERTIFIED UNTIL A#03-119235 PROJECTS ASSOCIATED PATH OF TRAVEL IS CLOSED AND CERTIFIED

ACCESSIBLE PATH OF TRAVEL AS INDICATED ON THE PLAN IS A BARRIER FREE ACCESS ROUTE WITHOUT ABRUPT LEVEL CHANGES EXCEEDING 1/2" IF BEVELED AT 1:2 MAXIMUM SLOPE OR VERTICAL LEVEL CHANGES NOT EXCEEDING 1/4" MAXIMUM AND AT LEAST 48" IN WIDTH. SURFACE IS STABLE, FIRM, AND SLIP RESISTANT. CROSS SLOPE SHALL NOT BE STEEPER THAN 1:20. ACCESSIBLE PATH OF TRAVEL SHALL BE MAINTAINED FREE OF OVERHANGING OBSTRUCTIONS TO 80" MINIMUM AND FREE OF OBJECTS PROTRUDING MORE THAN 4" FROM A WALL, ABOVE 27" AND LESS THAN 80" ABOVE THE FLOOR. ARCHITECT SHALL VERIFY THAT THERE ARE NO BARRIERS IN THE PATH OF TRAVEL.

THE P.O.T INDENTIFIED IN THESE CONSTRUCTION DOCUMENTS IS COMPLIANT WITH THE CURRENT APPLICABLE CALIFORNIA BUILDING CODE ACCESSIBILITY PROVISIONS FOR PATH OF TRAVEL REQUIREMENTS FOR ALTERATIONS, ADDITIONS, AND STRUCTURAL REPAIRS. AS PART OF THE DESIGN OF THIS PROJECT, THE P.O.T WAS EXAMINED AND ANY ELEMENTS, COMPONENTS, OR PORTIONS OF THE POT THAT WERE DETERMINED TO BE NONCOMPLIANT 1) HAVE BEEN IDENTIFIED AND 2) THE DETAILS, DRAWINGS AND SPECIFICATIONS INCORPORATED INTO THESE CONSTRUCTION DOCUMENTS. ANY NONCOMPLIANT ELEMENTS, COMPONENTS, OR PORTIONS OF THE POT THAT WILL NOT BE CORRECTED BY THIS PROJECT BASED ON VALUATION THRESHOLD LIMITATIONS OR A FINDING OF UNREASONABLE HARDSHIP ARE SO INDICATED IN THESE CONSTRUCTION DOCUMENTS.

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

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SUSSMAN MIDDLE SCHOOL
GIRLS LOCKER ROOM AND SITE RENOVATIONS
12500 BIRCHDALE AVE, DOWNEY CA 90242
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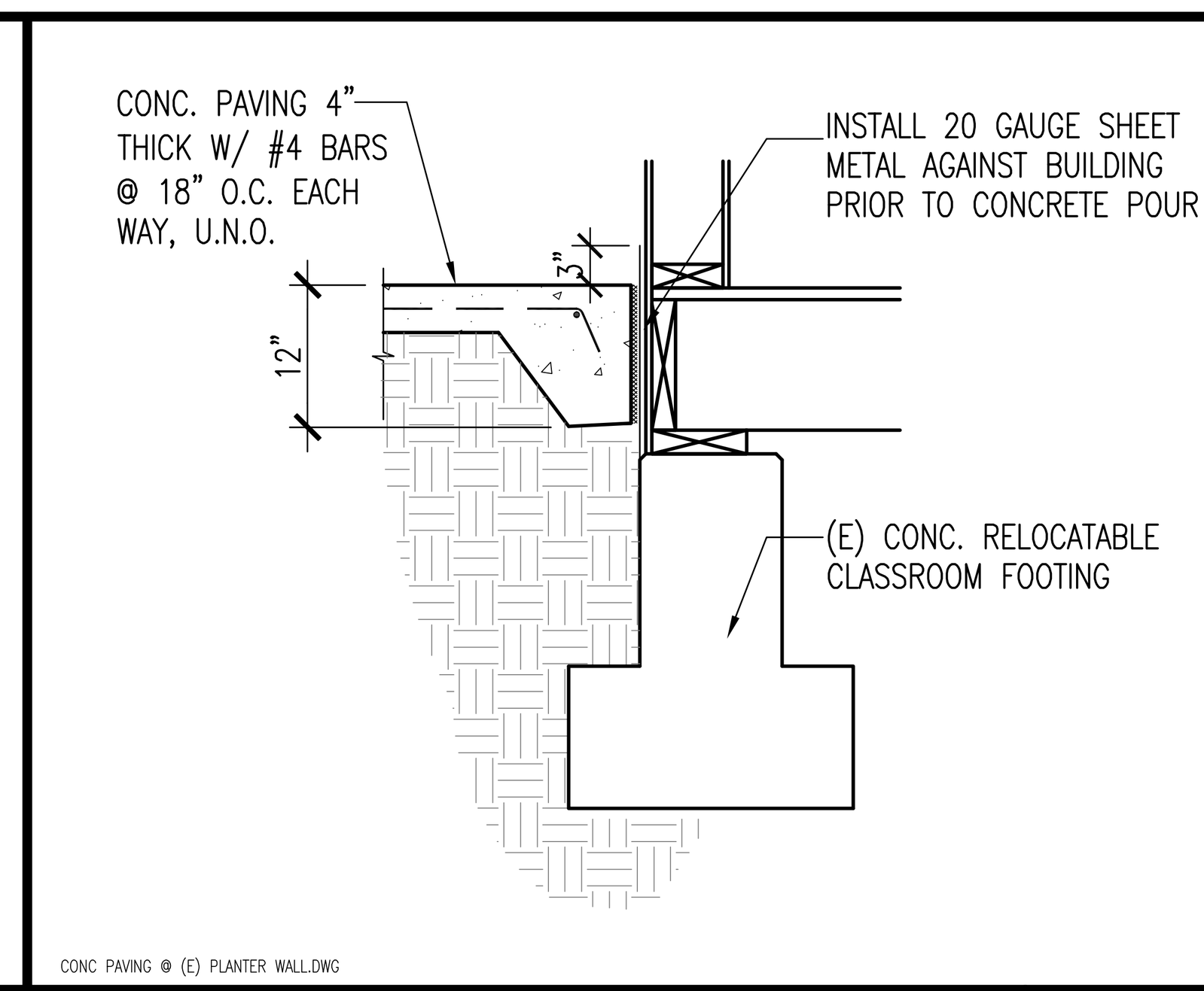
SITE PLAN

REVISIONS:

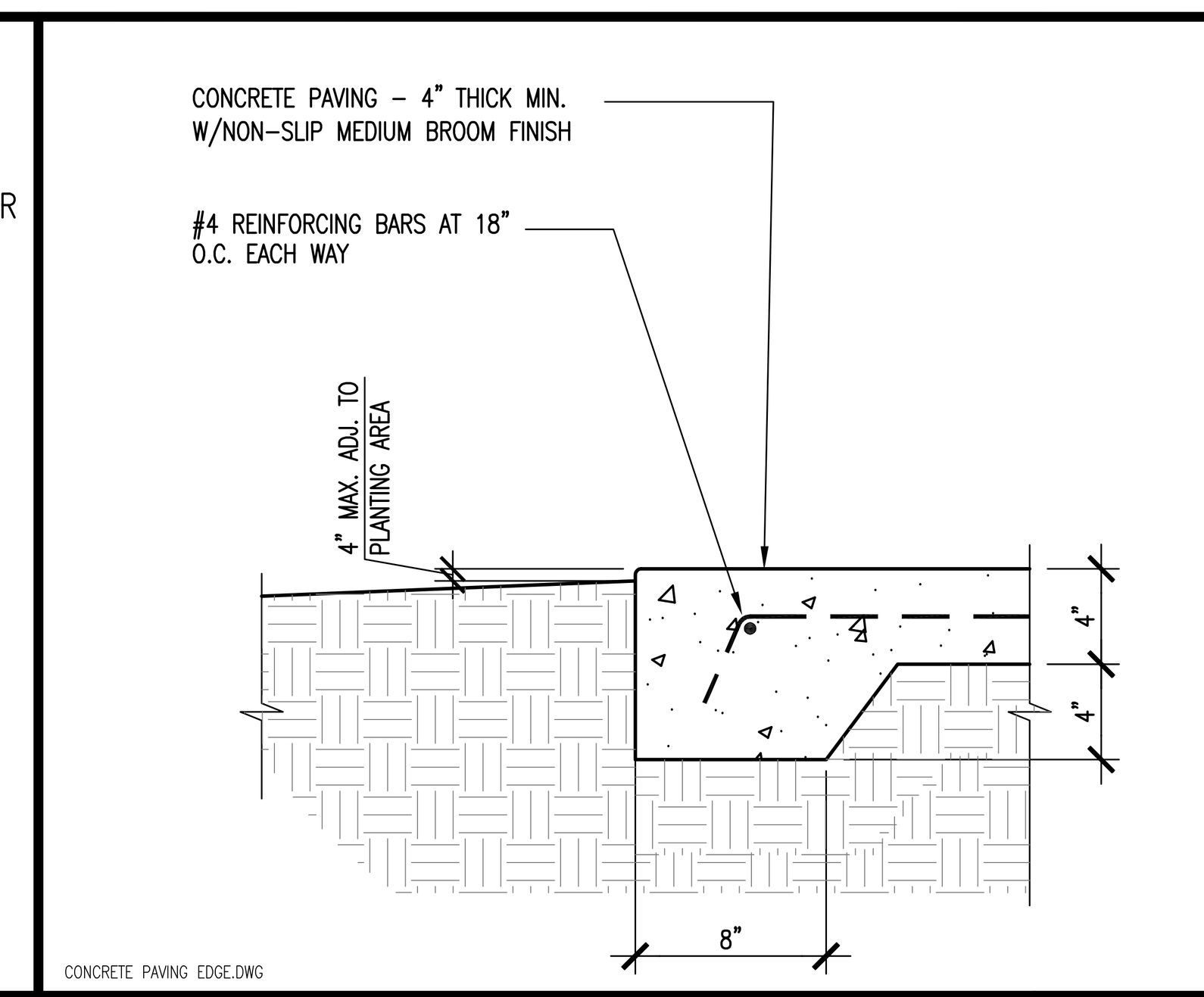
Date:	4/18/2022
Job:	2201
Scale:	
Drawn:	

A001

SHEET - OF XXX
XREF:

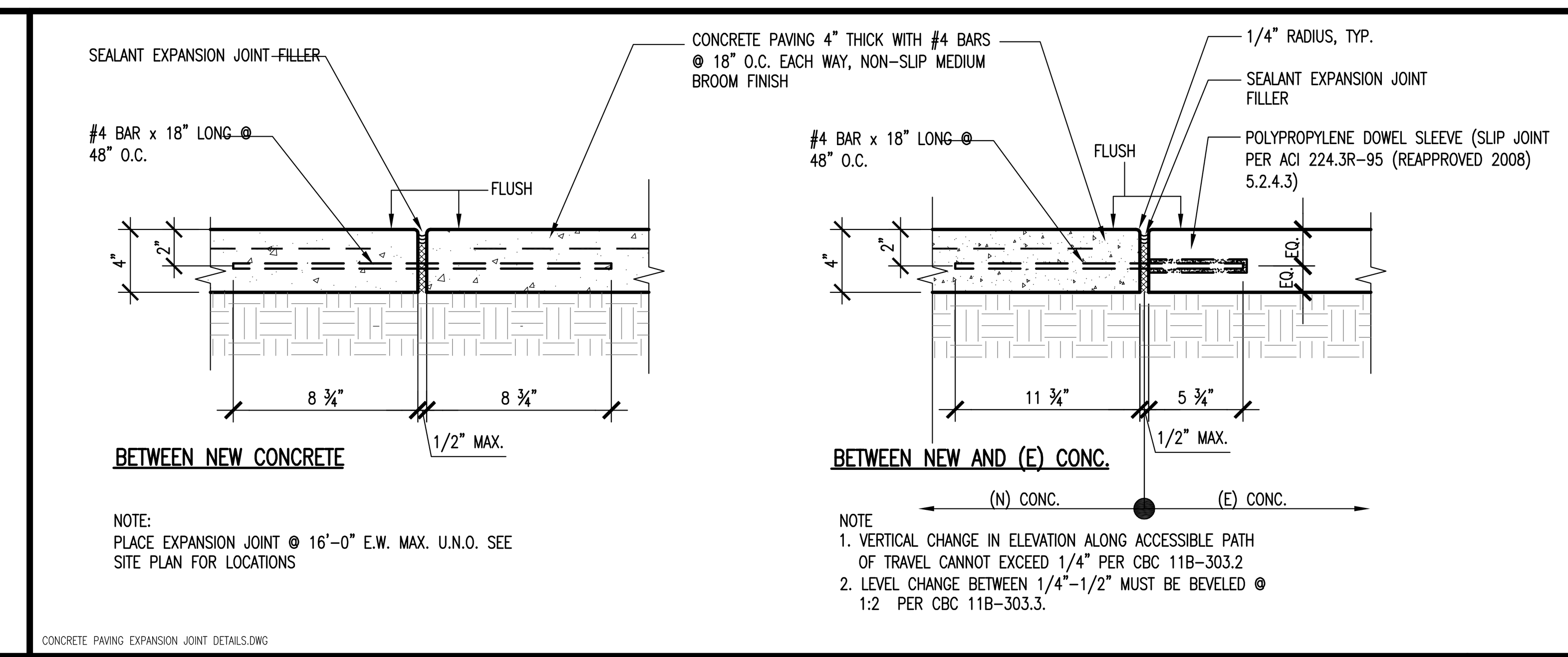


	28		27	CONC. PAVING @ (E) RELO CLASSROOM	26
					3/4"=1'-0"



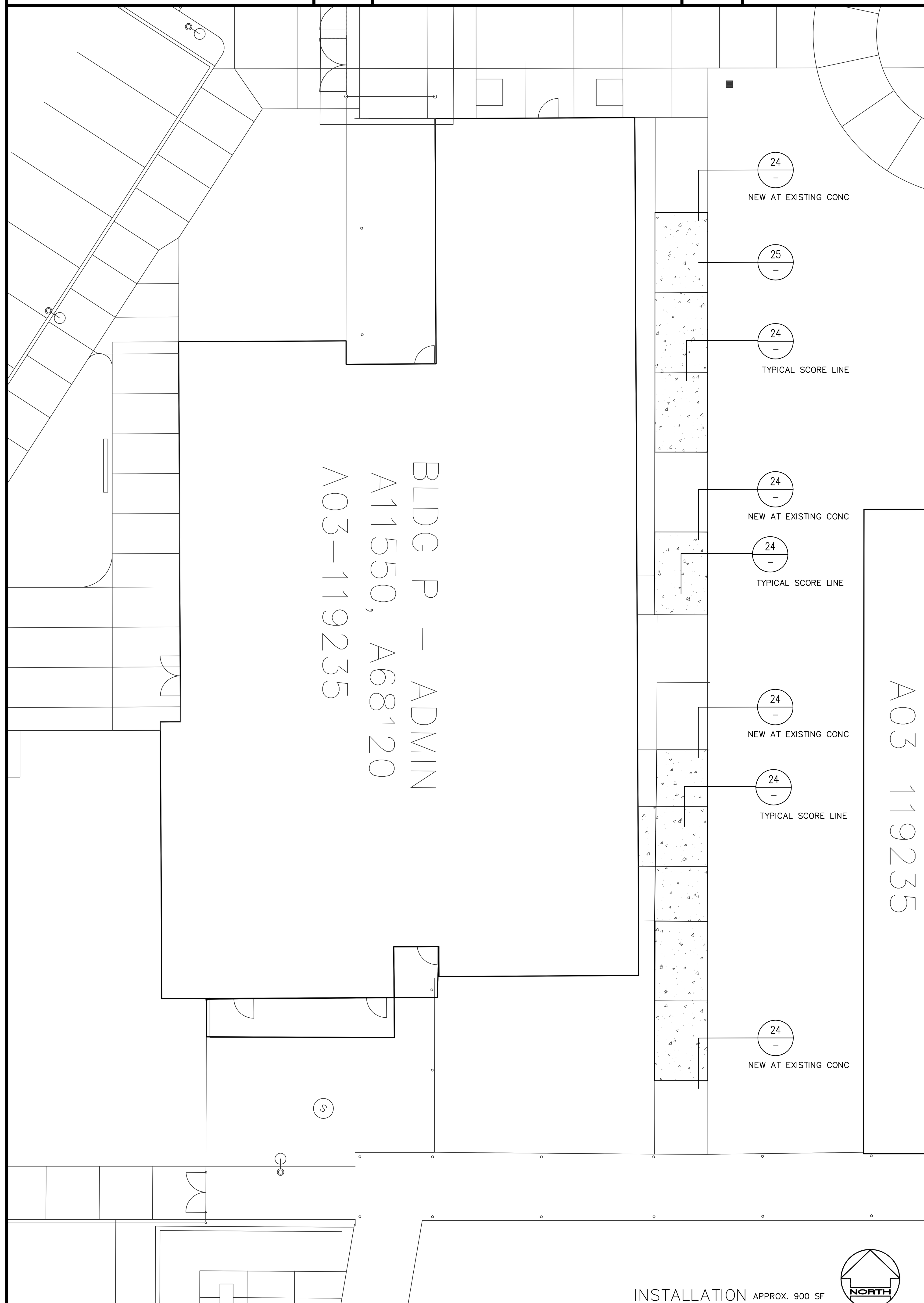
CONCRETE PAVING EDGE 25

1 1/2" = 1'-0"



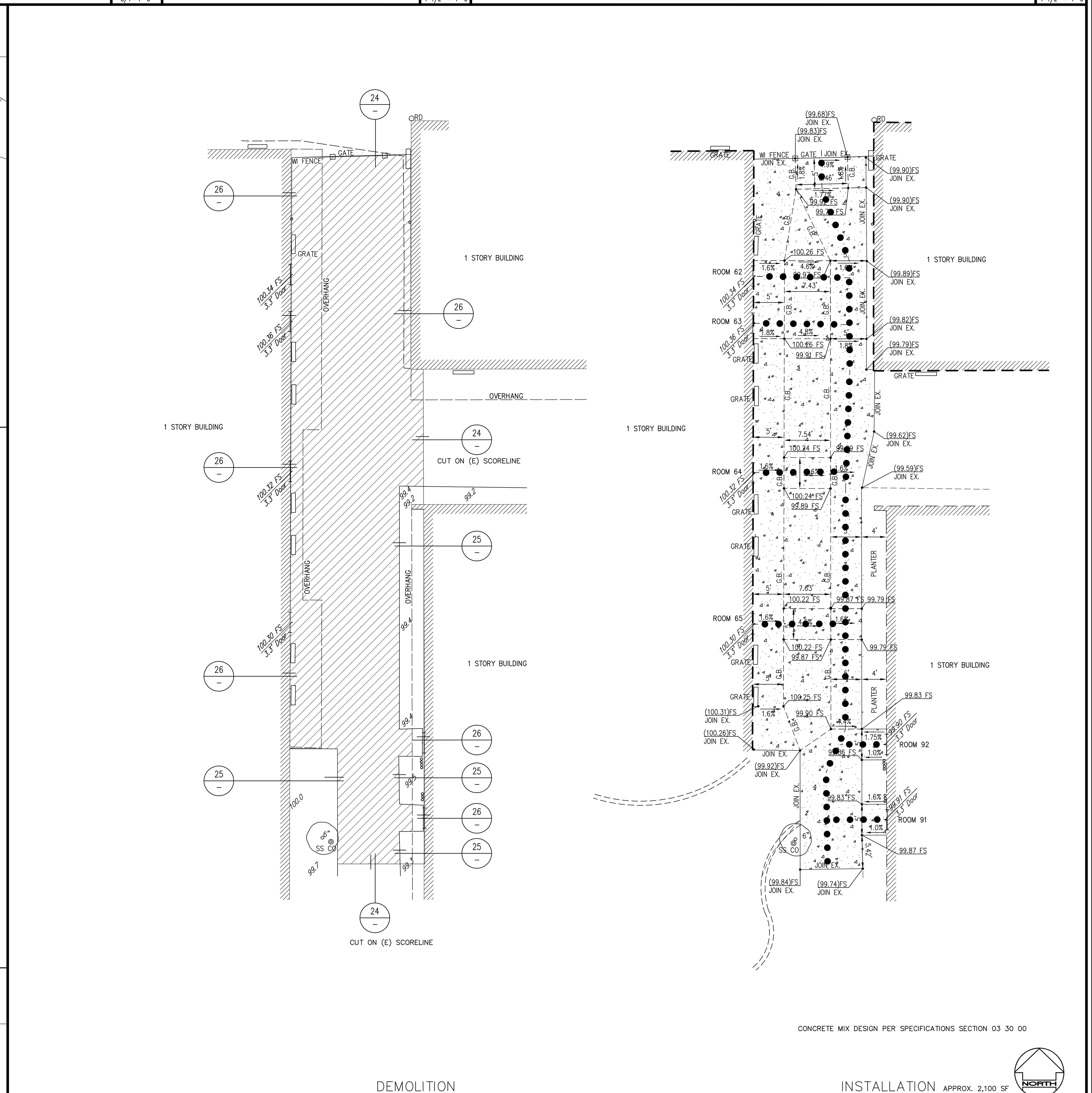
CONCRETE PAVING EXPANSION JOINT DETAILS 24

1 1/2" = 1'-0"



CONCRETE REPLACEMENT BEHIND ADMINISTRATION BUILDING 2

1/8"=1'



CONCRETE MIX DESIGN PER SPECIFICATIONS SECTION 03 30 00

CONRETE REPLACEMENT AT (E) NORTH RELOCATABLE CLASSROOMS 1

1/8"=1'

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GIRLS LOCKER ROOM AND SITE RENOVATIONS
12500 BIRCHDALE AVE, DOWNEY CA 90242
DOWNEY UNIFIED SCHOOL DISTRICT

ENLARGED SITE PLAN + DETAILS

REVISIONS:
1
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6
7
8

Date: 4/18/2022
Job: 2201
Scale:
Drawn:

A002

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RAMP SECTION 21 1/2"=1'-0"
ADJACENT GRADE
30" MAX.
2'-10"
HANDRAIL
CONCRETE SLAB/RETAINING WALL STRUCT. REF: 6/S201
SEE DETAIL 16 FOR REINFORCEMENT INFORMATION
RAMP WALL SECTION 16
4" CONC SLAB ON GRADE #3 @ 12" OC HORZ
6" CONC WALL W/ #5 @16" OC VERT & #5 @12" OC HORZ
FINISH GRADE
48" MAX
1'-4"
HANDRAIL SECTION 11 3/4"=1'-0"
1 1/4 XS PIPE TOP RAILING & POST TYP
HANDRAIL POST AT 48" O.C. MAX
INTERMEDIATE RAIL WHERE REQD. SEE RAILING ELEV.
GUIDE RAIL
NON SHRINK GROUT
2.5" PIPE SLEEVE
CONC. WALL AT RAMP PERIMETER
HANDRAIL ANCHORAGE @ CONCRETE 6 3"=1'-0"
5 1/2" WIDTH X 5 1/2" LONG X 1/4" THICK STL. PLATE W/(4) 3/8"Ø HILTI KH-EZ CONC. SCREWS 2" MIN. EMBED, PER ICC ESR-3027.
PLAN VIEW
(E) CONC. FLR
BASEPLATE @ CONCRETE 3 3"=1'-0"
RAILING PER PLAN
1/4" THICK STL. PLATE
5 1/2"
EQ. EQ.
1-1/4"Ø XS GALV. PIPE HANDRAIL
1'-0" MIN. LEVEL
F.S.
ADJACENT GRADE
22 1/2"=1'-0"
HANDRAIL SECTION 28 3/4"=1'-0"
FIN. SURFACE
18" MIN
CONC. SLAB ON GRADE PER PLAN
STAIR SECTION 23 1/2"=1'-0"
1'-0" MIN. LEVEL
1'-0" (1) TREAD
SIM
4 EQ. RISERS @ 6-1/2" EA.
AT FOOTING
(E) PLASTIC BELOW GRADE IRRIGATION BOX TO BE REMOVED. PROVIDE NEW CONCRETE 12" X 12"FLUSH WITH NEW CONC. SURFACE
NEW GUARDRAIL ALONG BACK OF RAISED CONCRETE PLATFORM. SEE DETAIL 6 FOR POST ANCHORAGE
RAISED CONCRETE PLATFORM AT +28"
CONCRETE MIX DESIGN PER SPECIFICATIONS SECTION 03 30 00 MINIMUM DESIGN STRENGTH TO BE 4000 PSI AT 28 DAYS
ENLARGED SITE PLAN – INSTAALLATION 2 1/4"=1'
SEALANT EXPANSION JOINT FILLER
CONCRETE PAVING 4" THICK WITH #4 BARS @ 18" O.C. EACH WAY, NON-SLIP MEDIUM BROOM FINISH
1/4" RADIUS, TYP.
#4 BAR x 18" LONG @ 48" O.C.
FLUSH
POLYPROPYLENE DOWEL SLEEVE (SLIP JOINT PER ACI 224.3R-95 (REAPPROVED 2008) 5.2.4.3)
BETWEEN NEW CONCRETE
BETWEEN NEW AND (E) CONC.
(N) CONC. (E) CONC.
1/2" MAX.
NOTE: PLACE EXPANSION JOINT @ 16'-0" E.W. MAX. U.N.O. SEE SITE PLAN FOR LOCATIONS
NOTE: 1. VERTICAL CHANGE IN ELEVATION ALONG ACCESSIBLE PATH OF TRAVEL CANNOT EXCEED 1/4" PER CBC 11B-303.2 2. LEVEL CHANGE BETWEEN 1/4"-1/2" MUST BE BEVELED @ 1:2 PER CBC 11B-303.3.
CONCRETE PAVING EXPANSION JOINT DETAILS 24 1 1/2" = 1'-0"
(E) 6" CONCRETE SLAB W/ #3 BARS AT 18" OC
CONC. PAVING 4" THICK W/ #3 BARS @ 18" O.C. EACH WAY, U.N.O.
(E) 8" CONCRETE BLOCK WALL ON 12" DEEP CONCRETE FOOTING
CONC. PAVING @ (E) RAISED PLATFORM 30 3/4"=1'-0"
CONCRETE PAVING – 4" THICK MIN. W/NON-SLIP MEDIUM BROOM FINISH
#4 REINFORCING BARS AT 18" O.C. EACH WAY
4" MAX. ADJ. TO PLANTING AREA
CONCRETE PAVING EDGE 25 1 1/2" = 1'-0"
TYP
RAISED CONCRETE PLATFORM AT +28"
1 PROTECT (E) CONCRETE STAIRS AND RAISED PLATFORM IN PLACE
2 REMOVE ALL EXISTING CONCRETE ON GRADE INCLUDING ALL STEEL REINFORCING
3 FINE GRADE AND LEVEL EXISTING GRADE FOR NEW CONCRETE INSTALLTION
NOTE: ALL IRRIGATION LINES AND SPRAY HEADS DISTRBED ARE TO BE CAPPED OUTSIDE OF NEW AREA OF CONCRETE INSTALLATION. NOTIFY DISTRICT OF THE CAPPED AREAS.
DEMOLITION
NORTH
ENLARGED SITE PLAN – DEMOLITION 1 1/4"=1'
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LICENSED ARCHITECT RAND C. NICHOLL NO. C-19066 STATE OF CALIFORNIA
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12500 BIRCHDALE AVE, DOWNEY CA 90242
DOWNEY UNIFIED SCHOOL DISTRICT
ENLARGED SITE PLATFORM PLAN + DETAILS
REVISIONS:
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A003
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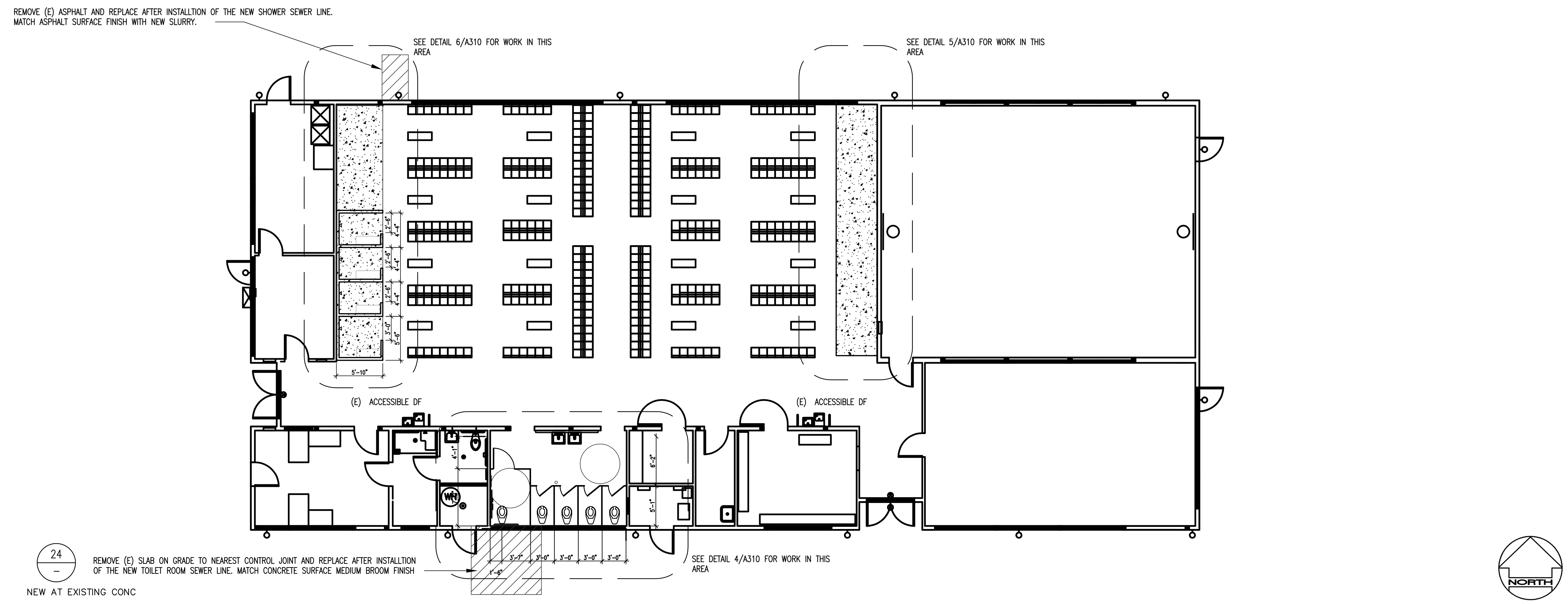
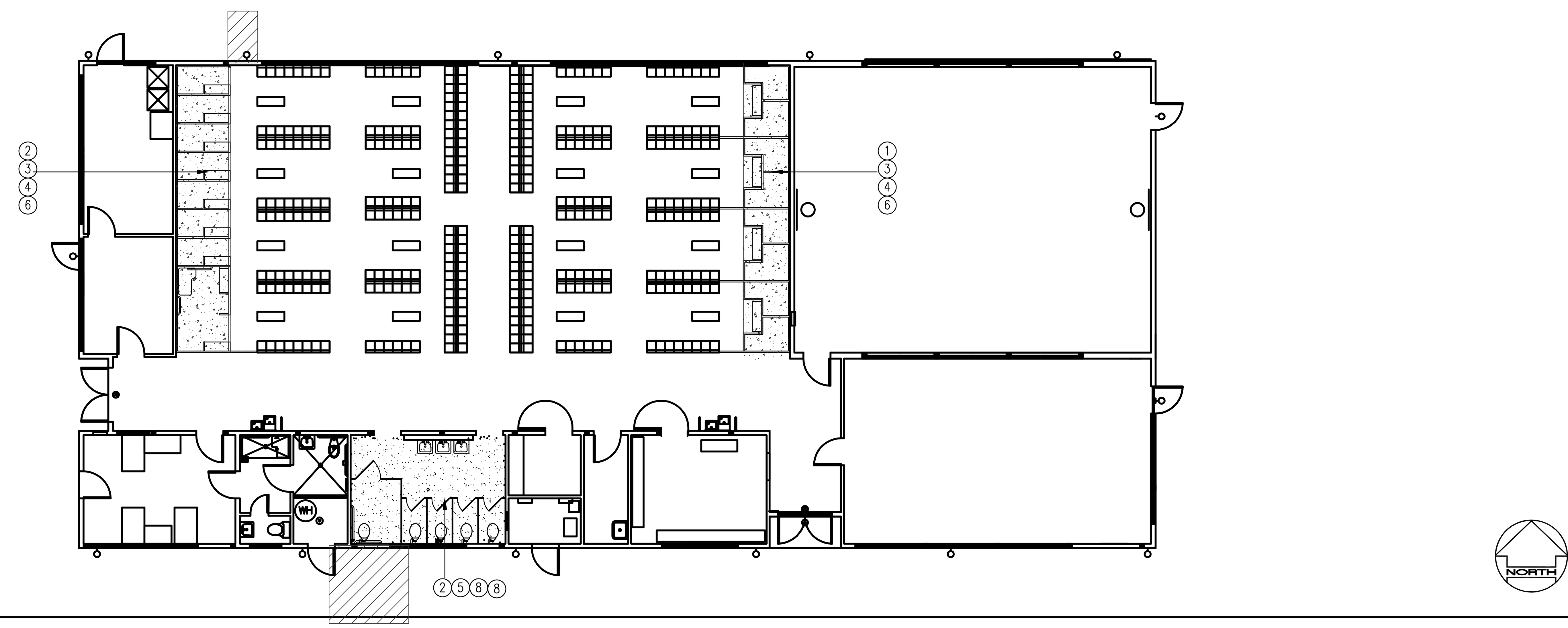


RENOVATION FLOOR PLAN 1
1"=10'-0"



DEMOLITION FLOOR PLAN 2
1"=10'-0"

KEYNOTES

1. REMOVE (E) TERRAZO FLOOR FINISH DOWN TO CONCRETE SLAB
2. REMOVE (E) TERRAZO FLOOR FINISH AND CONCRETE SLAB TO GRADE
3. REMOVE (E) PLASTER WALL FINISH FROM 7'–0" DOWN TO FLOOR
4. REMOVE (E) MARBLE SHOWER PARTITIONS AND ALL ANCHORAGE SUPPORTS
5. REMOVE (E) TOILET PARTITIONS, TOILET FIXTURES, AND ACCESSORIES.
6. REMOVE (E) SHOWER FIXTURES, AND ACCESSORIES.
7. REMOVE (E) 4'–0" HIGH TILE WAINSCOT AROUND THE PERIMETER OF THE ROOM.
8. REMOVE (E) PLASTER DOWN TO (E) WALL FRAMING FROM 7'–0" HIGH TO FLOOR.

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BUILDING G FLOOR PLAN

REVISIONS:
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Date: 4/18/2022
Job: 2201
Scale:
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A101

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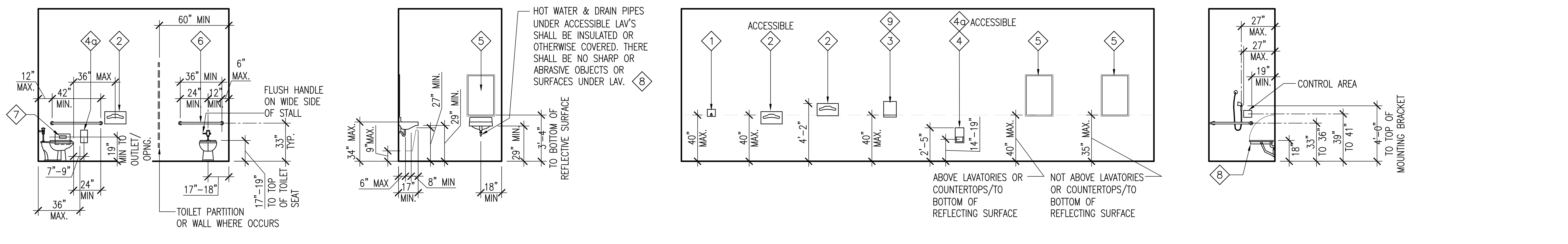
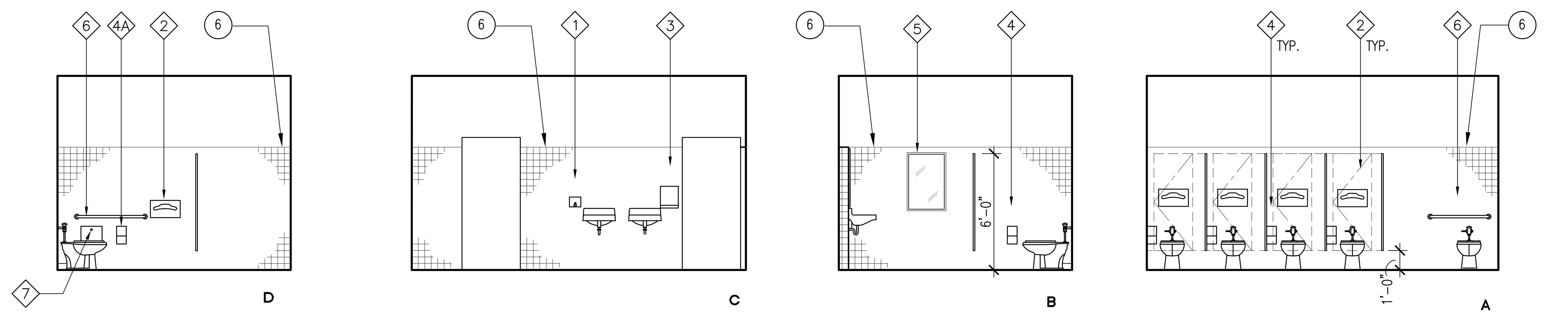
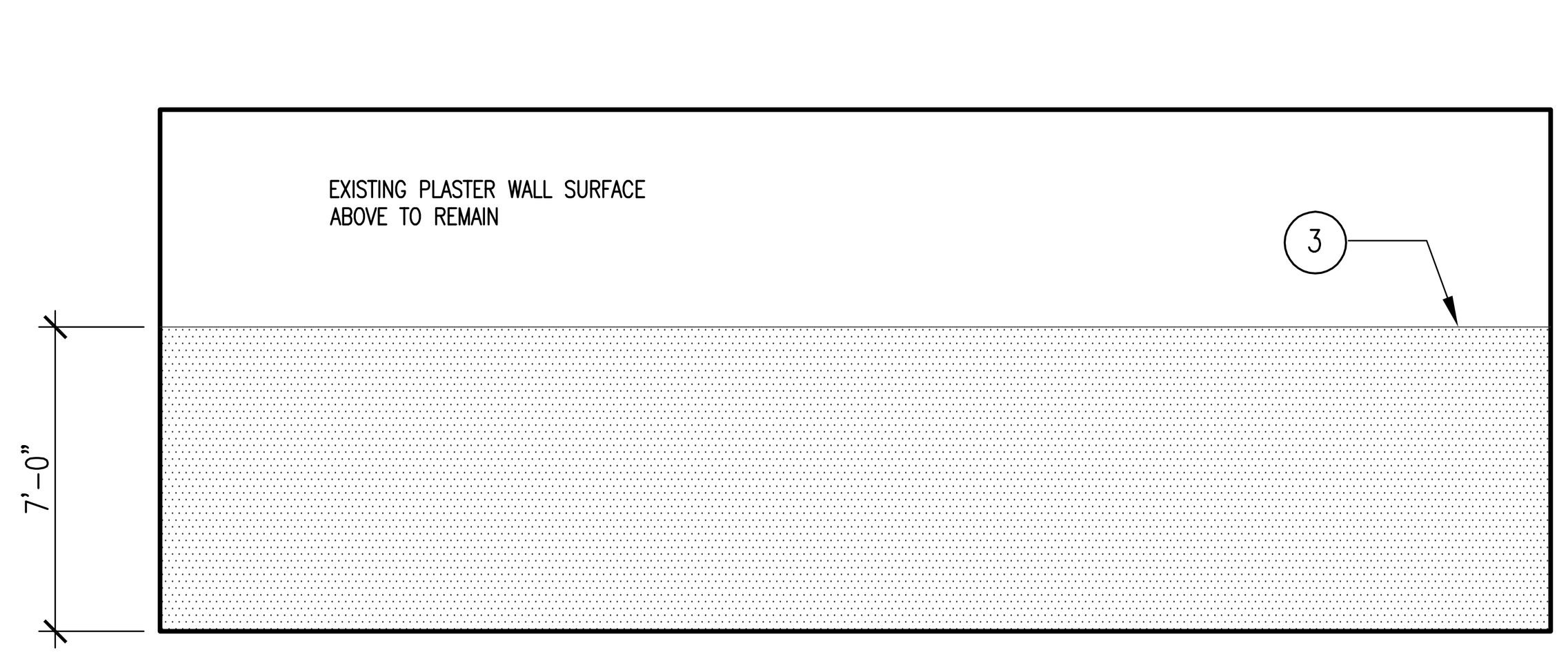


TYPICAL ACCESSIBLE TOILET FIXTURES AND ACCESSORIES MOUNTING DIMENSIONS AND CLEARANCES 1
1/4"=1'-0"

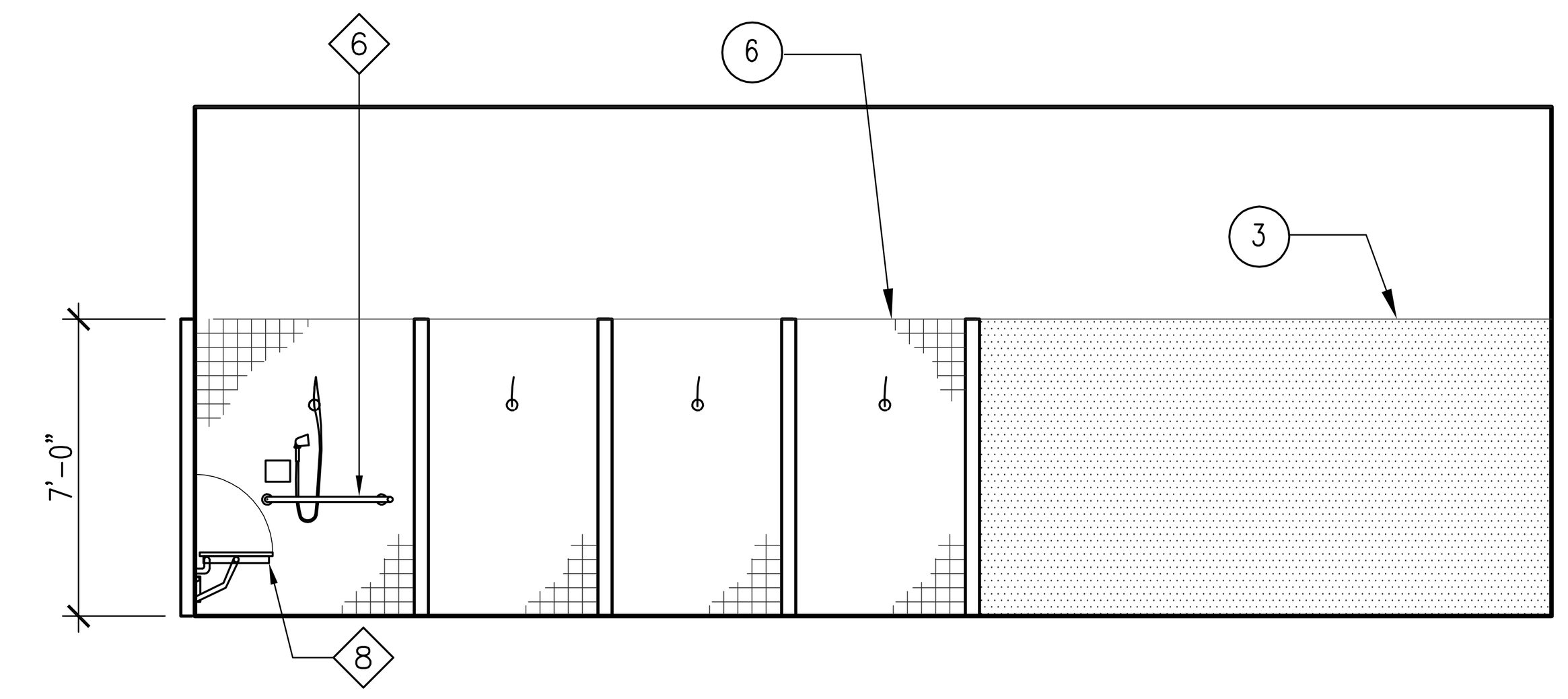


NOTES:
1. SEE DETAIL 1 FOR TYPICAL ACCESSIBLE MOUNTING HEIGHTS.

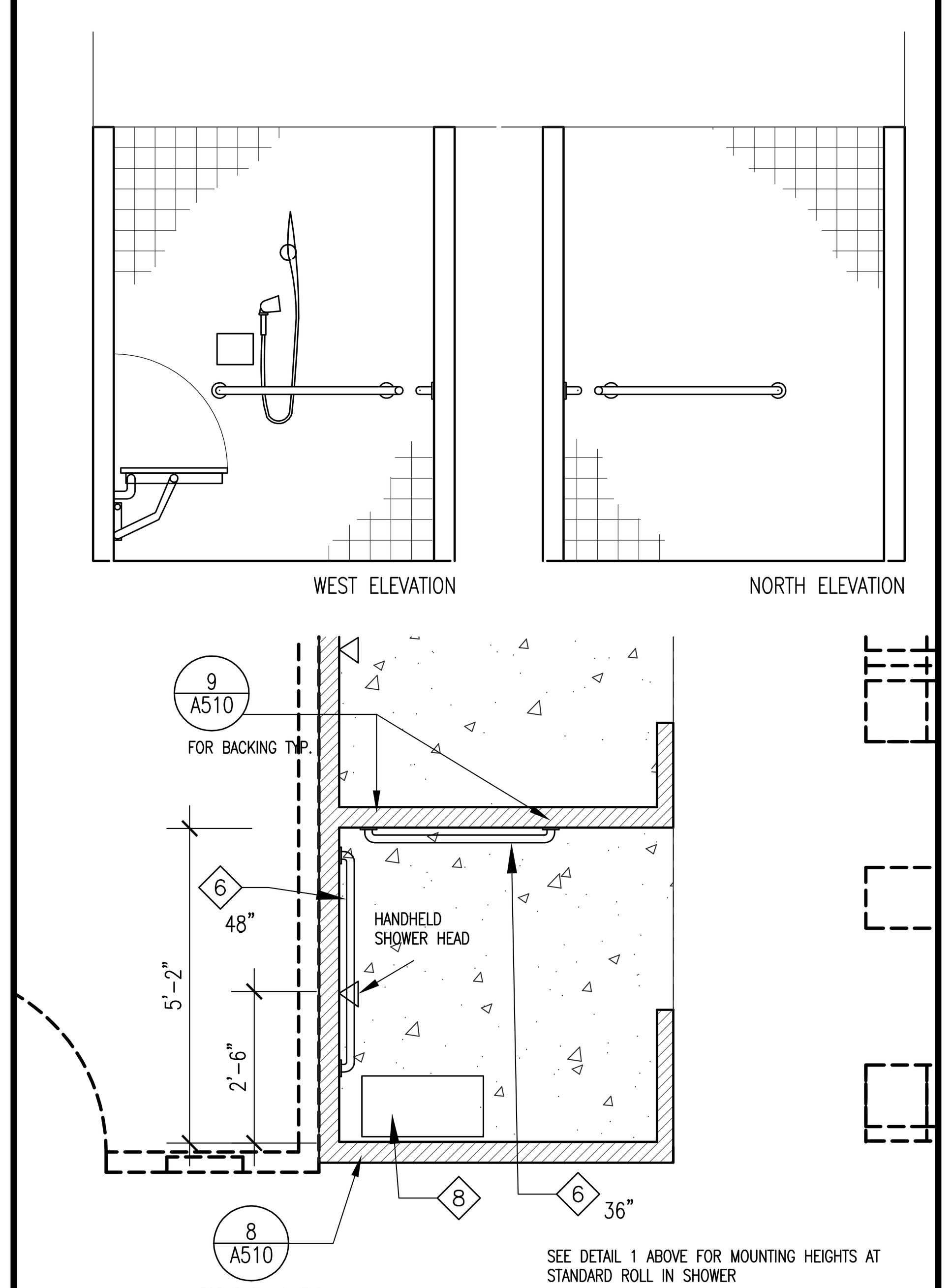
BUILDING G GIRLS TOILET ROOM 2
1/4"=1'-0"



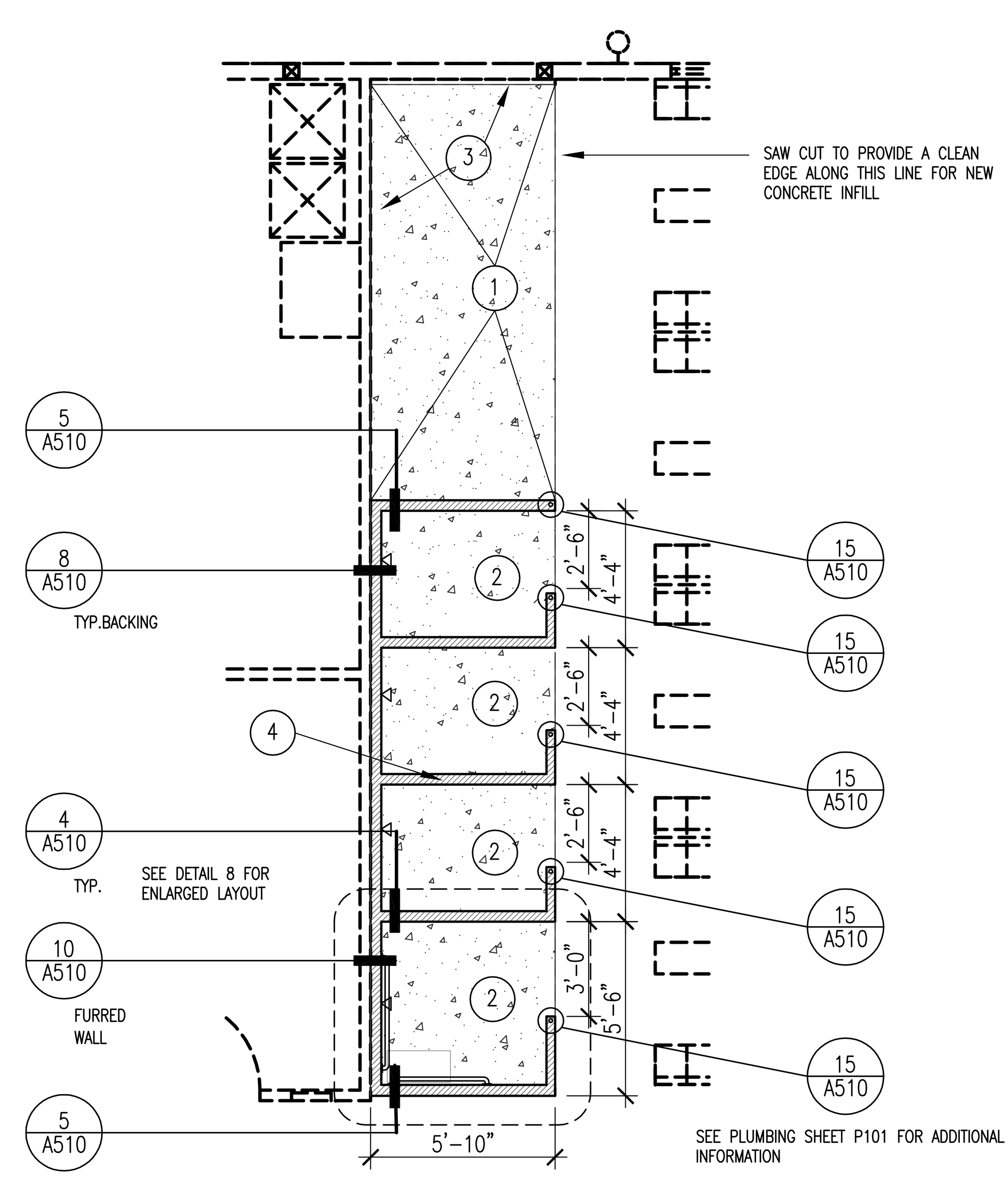
BUILDING G GIRLS EAST WALL SHOWER RENOVATION 6
1/4"=1'-0"



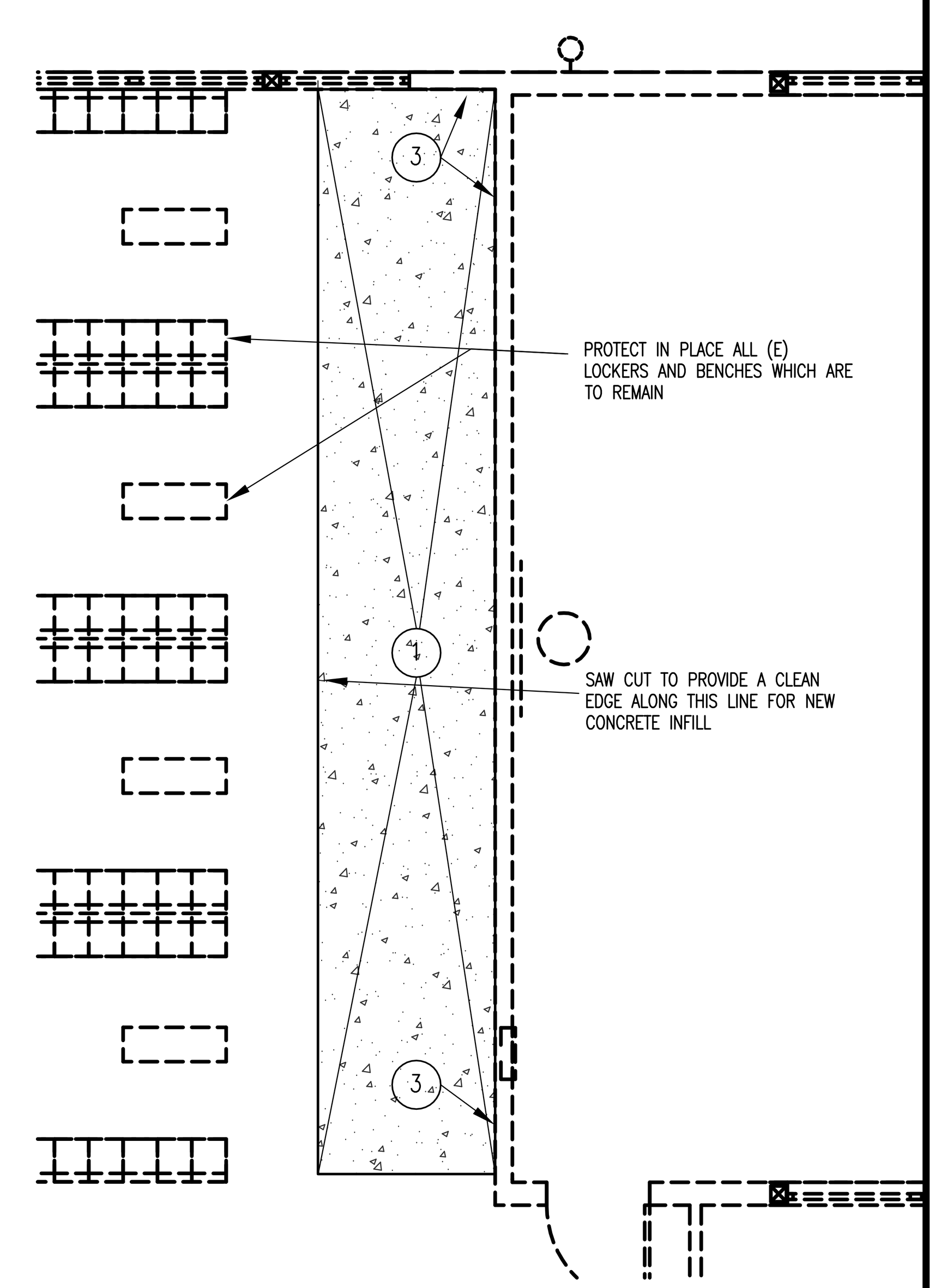
BUILDING G GIRLS WEST WALL SHOWER RENOVATION 3
1/4"=1'-0"



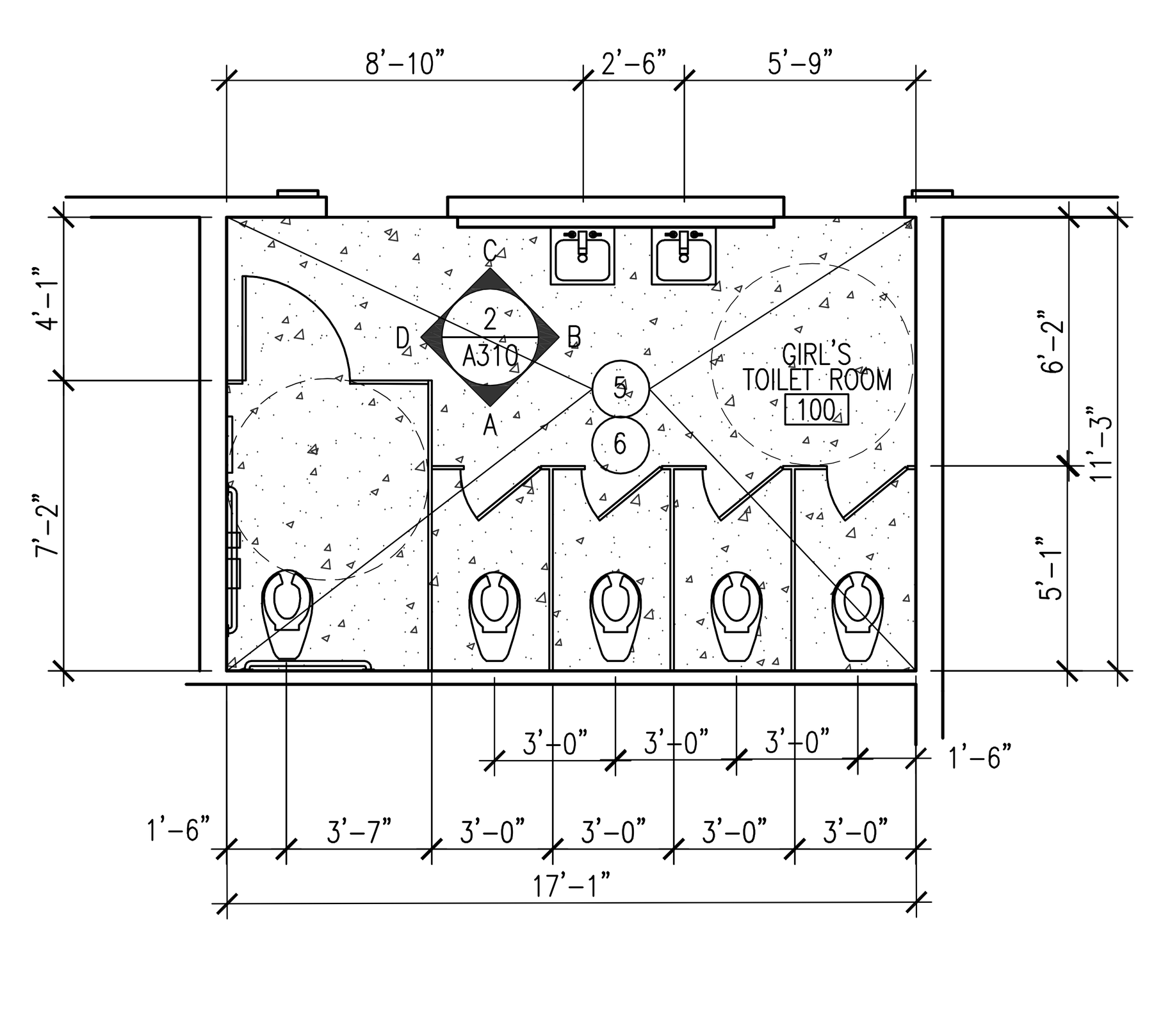
ENLARGED ACCESSIBLE SHOWER LAYOUT 8
1/2"=1'-0"



BUILDING G GIRLS WEST SHOWERS 6
1/4"=1'-0"



BUILDING G GIRLS EAST SHOWERS 5
1/4"=1'-0"



SEE PLUMBING SHEET P101 FOR ADDITIONAL INFORMATION

GIRLS TOILET ROOM RENOVATION PLAN 4
1/4"=1'-0"

RESTROOM NOTES

1. FOR TYPICAL SYMBOLS AND ABBREVIATIONS, SEE SHEET G001.
2. REFER TO DETAIL 1 ON THIS SHEET FOR STANDARD MOUNTING HEIGHTS/DIMENSIONS.
3. THERE SHALL BE NO SHARP OR ABRASIVE OBJECTS OR SURFACES UNDER LAVATORIES.
4. ALL DIMENSIONS ON THIS SHEET ARE TO FACE OF FINISH U.N.O

ACCESSORIES LEGEND

1 SOAP DISPENSER – 4" MAX PROJECTION (OFCI)

2 TOILET SEAT COVER DISPENSER (BOBRICK B-4221 AT STUDENT STALLS)

3 ADA COMPLIANT PAPER TOWEL DISPENSER-4" MAX. PROJECTION (BOBRICK B-2620)

4 TOILET PAPER DISPENSER, SURFACE (BOBRICK B-4288)

4A TOILET PAPER DISPENSER, RECESSED (BOBRICK B-4388)

5 MIRROR (BOBRICK B-290)

6 GRAB BAR – BOBRICK B-5806, SEPARATE 36" AND 42" BAR

7 SANITARY NAPKIN DISPOSAL – SURFACE MOUNTED (BOBRICK B-270)

8 FOLDING SHOWER SEAT (BOBRICK B-5181)

NOTES:
1. ALL DIMENSIONS ARE TO FACE OF FINISH U.N.O
2. FLOOR DRAIN W/ 1/4" MAX GRATE OPENING IN ALL DIRECTIONS, TYP.
3. 2% MAXIMUM SLOPE IN ALL DIRECTIONS IN RESTROOMS WITH FLOOR DRAINS, TYP.

ACCESSIBLE TURNAROUND SPACE MIN. 60" DIA. X 27"H CLEAR

30"X48" CLEAR SPACE

CONSTRUCTION NOTES

ALL DIMENSIONS TO (E) CONSTRUCTION ARE TO BE FIELD VERIFIED. CONTRACTOR SHALL INFORM ARCHITECT OF ANY SUBSTANTIAL DISCREPANCY BETWEEN FIELD DIMENSIONS AND DRAWINGS.

1. FOR TYP. SYMBOLS & ABBREVIATIONS, SEE SHEET G001
2. PROVIDE SEALANT MATERIAL AT ALL PENETRATIONS THROUGH NEW AND EXISTING WALLS AND HARD CEILINGS, MAINTAIN FIRE RATINGS.
3. ALL WALLS, COLUMNS AND VERTICAL SURFACES TO BE PATCHED, AND TO BE FINISHED TO A LEVEL 5 FINISH AND PAINT, TYPICAL.

FLOOR PLAN LEGEND

EXISTING PARTITION WALL TO REMAIN

INTERIOR PARTITION: 2X4 WOOD STUDS @ 16" O.C. W/ CERAMIC TILE OVER 5/8" CEMENT. BD. BOTH SIDES.

NEW SIGN, REFER TO ROOM SIGNAGE DETAILS SHEET A510

KEYNOTES

1 NEW CONCRETE SLAB INFILL WHERE TERRAZO HAS BEEN REMOVED. SMOOTH TROWEL FINISH.

2 NEW CONCRETE SLAB INFILL. PROVIDE SLOPE TO DRAIN WITHIN SHOWERS

3 NEW WATER RESISTANT GYP.BD. WALL SURFACE OVER EXISTING WOOD STUDS. PROVIDE ¼" METAL PLASTER HORIZONTAL REVEAL BETWEEN OLD AND NEW SURFACES.

4 NEW PARTITION WALL AT SHOWERS. SEE DETAILS ON SHEET A510

5 NEW CONCRETE SLAB INFILL. PROVIDE SLOPE TO NEW FLOOR DRAIN. SEE PLUMBING DRAWINGS.

6 NEW CERAMIC TILE WAINSCOT OVER CEMENT BD TO (E) WOOD FRAMED WALL.

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BUILDING G
TOILET ROOM/ SHOWER PLANS & INT. ELEVATIONS

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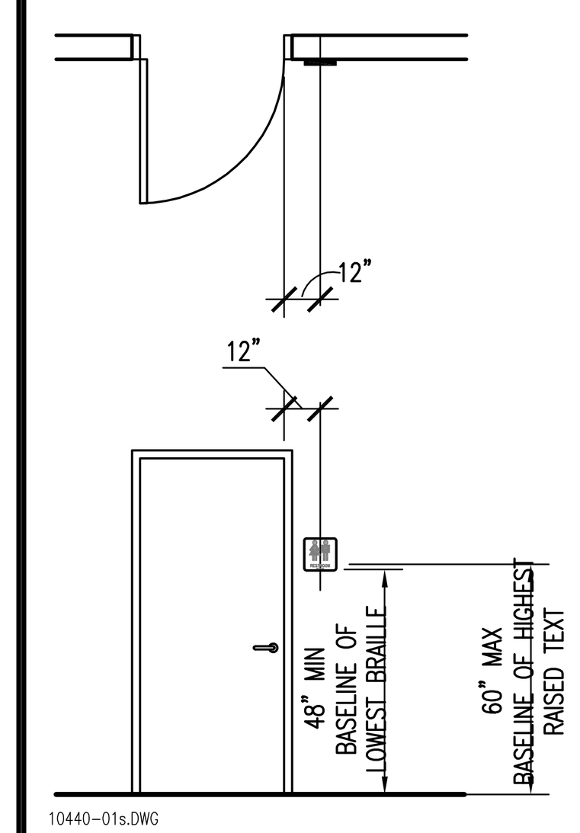


NOTES:
SIGNS SHALL BE INSTALLED ON THE WALL ADJACENT TO THE LATCH SIDE OF THE DOOR. WHERE THERE IS NO WALL SPACE ON THE LATCH SIDE, INCLUDING DOUBLE LEAF DOORS, SIGNS SHALL BE PLACED ON THE NEAREST ADJACENT WALL, PREFERABLY ON THE RIGHT. MOUNTING HEIGHT SHALL BE 60" MAX TO THE BASELINE OF THE HIGHEST LINE OF RAISED CHARACTERS AND 48" TO THE BASELINE OF THE LOWEST LINE OF BRAILLE (CBC SECTION 11B-703.4.1). MOUNTING LOCATION SHALL BE DETERMINED SO THAT A PERSON MAY APPROACH WITHIN 3" OF SIGNAGE WITHOUT ENCOUNTERING PROTRUDING OBJECTS OR STANDING WITHIN THE SWING OF A DOOR. FOR PAIRS OF DOORS WHERE DOOR SWING IS LIMITED TO 90° MOUNT SIGN 12" FROM EDGE OF DOOR. FOR PAIRS OF DOORS WHERE DOOR SWING EXCEEDS 90° MOUNT SIGN DOOR WIDTH PLUS 12" FROM EDGE OF DOOR.

10440-01s.DWG

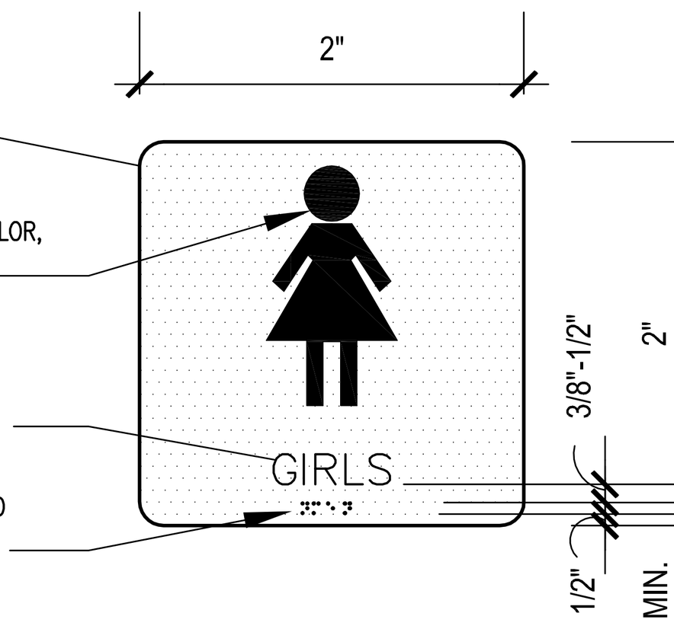
WALL MOUNTED SIGNAGE LOCATION — 6 — 1/4" = 1'-0"

1/4" THICK OPAQUE ACRYLIC SHEET

PICTOGRAM & TEXT OF CONTRASTING COLOR, CENTERED

5/8" MIN. – 2" MAX. SANS- SERIF UPPERCASE TEXT – RAISED 1/32" MIN., CENTERED

CONTRACTED GRADE 2 BRAILLE – RAISED 1/40" MIN., CENTERED



1. LOCATE PER DETAIL 5/–
2. PROVIDE SIGN AT ALL GIRLS RESTROOM DOORS, U.N.O.
3. FOR ADDITIONAL TEXT & BRAILLE NOTES SEE DETAIL 14/–
4. SEE 15/– FOR SIGN COLORS & FINISH NOTES

10440-10.DWG

WALL MOUNTED RESTROOM SIGNAGE — 1 — 3"=1'-0"

~~GIRLS RESTROOMS~~

TEXT:
LETTERS AND NUMBERS SHALL HAVE A WIDTH TO HEIGHT RATIO BETWEEN 3:5 AND 1.1:1 AND A STROKE WIDTH TO HEIGHT RATIO BETWEEN 1:5 AND 1:10. LETTERS AND NUMBERS ON SIGNS SHALL BE RAISED 1/32" MINIMUM AND SHALL BE SANS-SERIF UPPERCASE CHARACTERS ACCOMPANIED BY GRADE 2 CONTRACTED BRAILLE. RAISED CHARACTERS OR SYMBOLS SHALL BE A MINIMUM OF 5/8" HIGH AND A MAXIMUM OF 2" HIGH. THE MINIMUM AND MAXIMUM HEIGHT IS MEASURED USING AN UPPERCASE X. VERIFY TEXT WITH DOOR SCHEDULE.

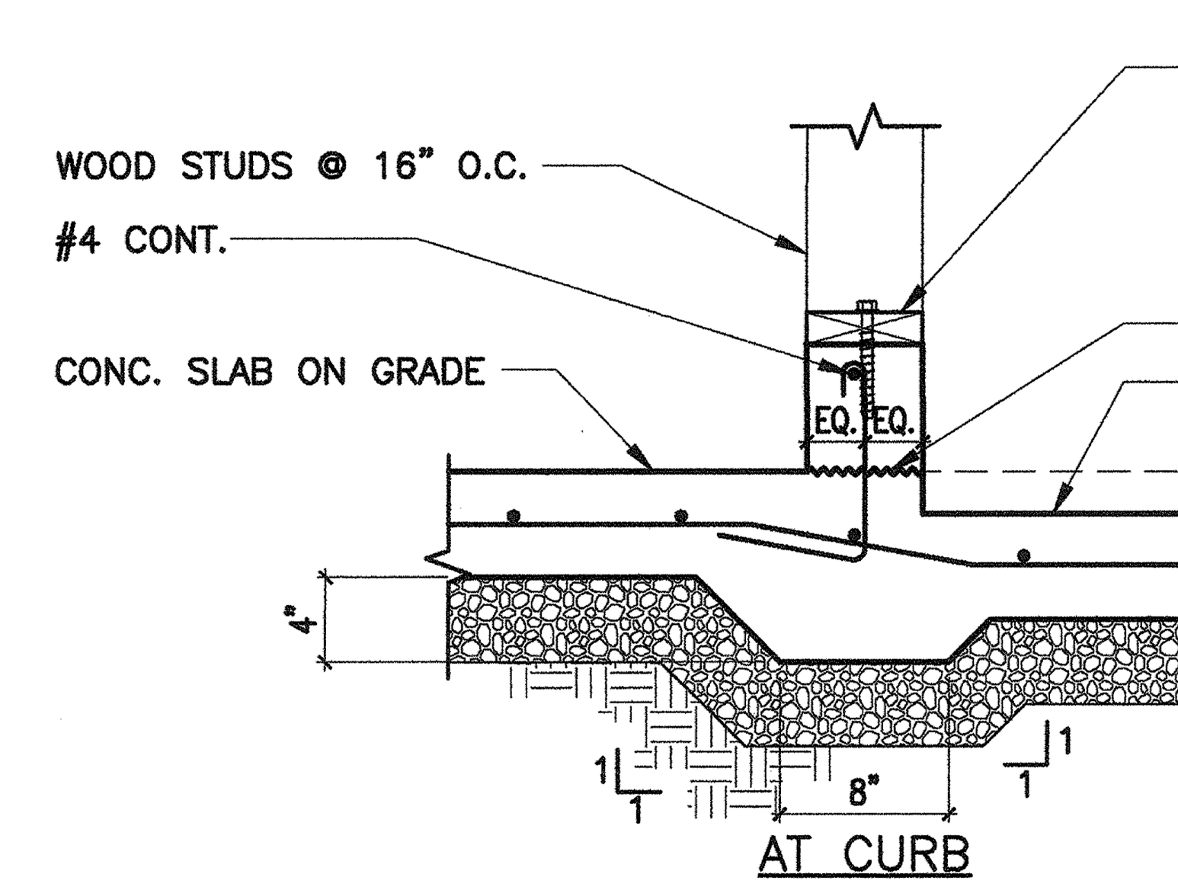
BRAILLE SYMBOLS:
CONTRACTED GRADE 2 BRAILLE SHALL BE USED WHEREVER BRAILLE SYMBOLS ARE REQUIRED BY THE CALIFORNIA BUILDING CODE. BRAILLE SHALL BE LOCATED A MINIMUM OF 3/8" & 1/2" MAX. PER CBC 11B-703.3.2 BELOW TACTILE CHARACTERS. BRAILLE DOTS SHALL BE 1/10" ON CENTERS IN EACH CELL WITH 2/10" SPACE BETWEEN CELLS. BRAILLE DOTS SHALL BE RAISED 1/40" MINIMUM ABOVE THE BACKGROUND, WITH DOMED DOTS.

10440-02

TEXT & BRAILLE SYMBOL NOTES — 2 — N.T.S.

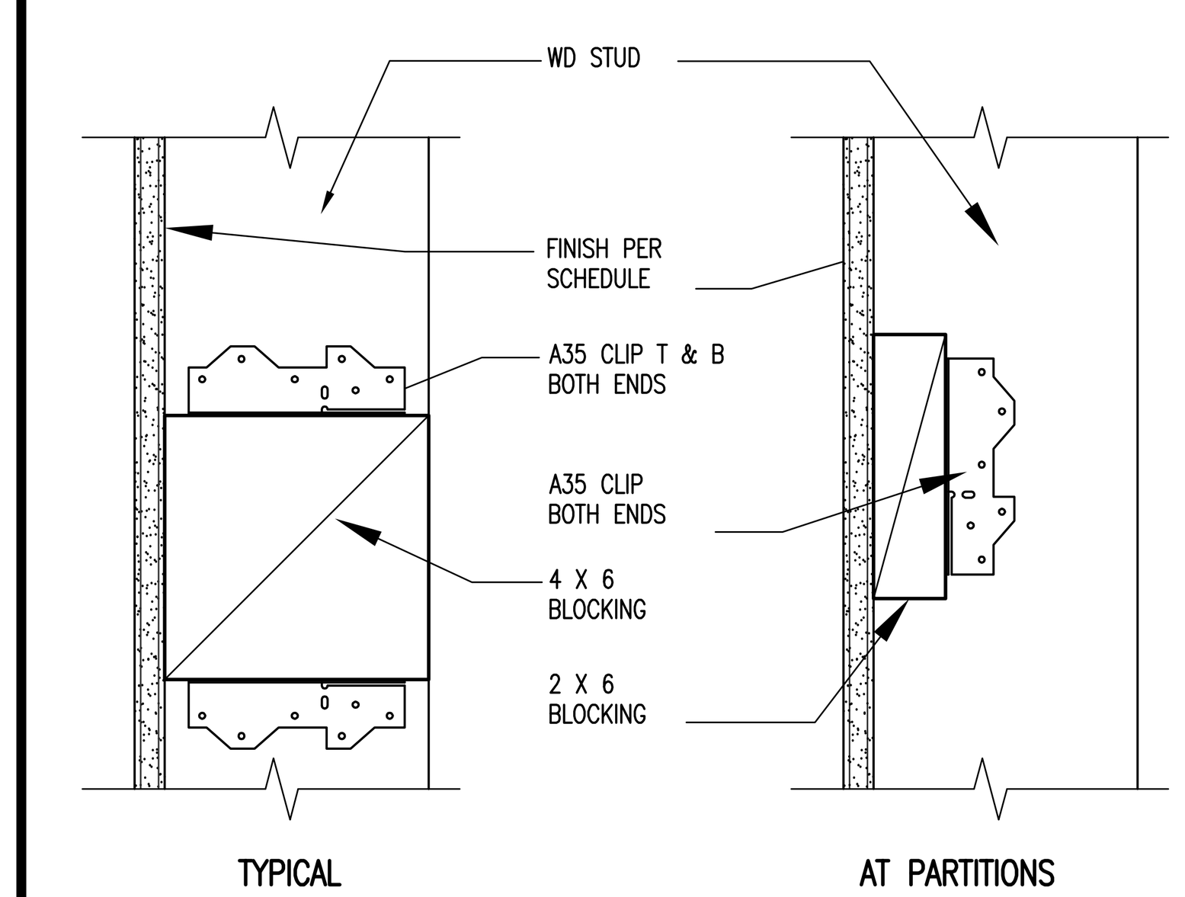
26 | 21 | 16 | 11

27 | 22 | 17 | 12 | 7

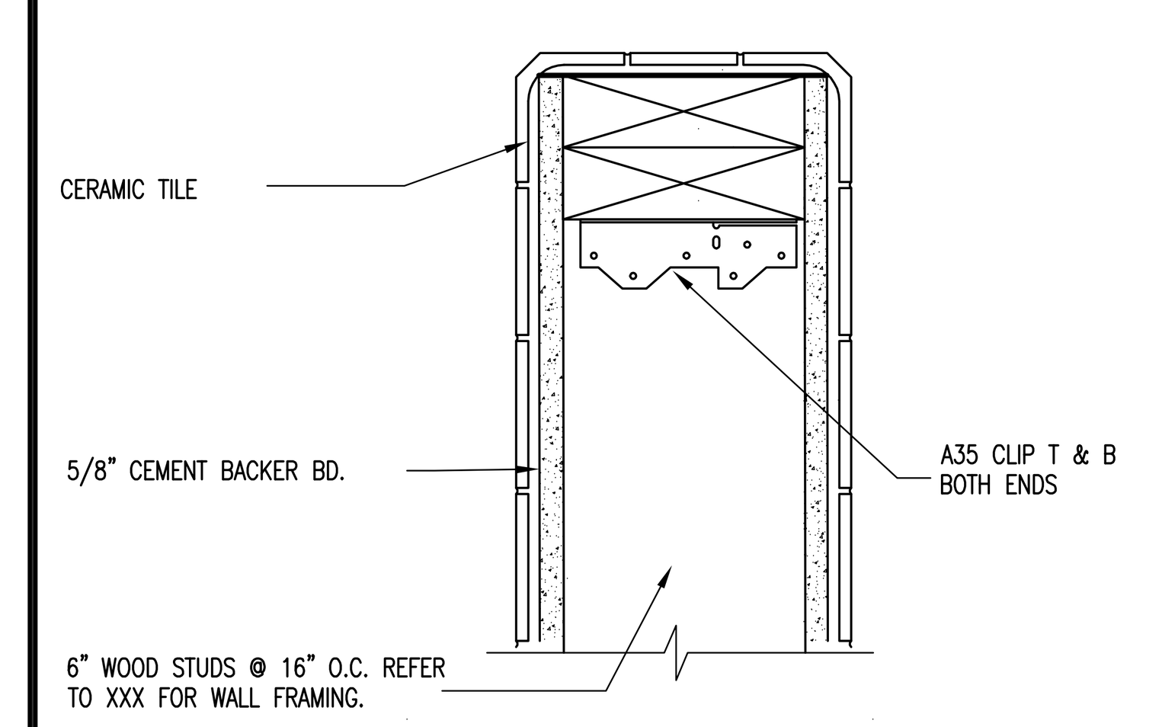


TYP. CONC. CURB INSTALLATION — 13

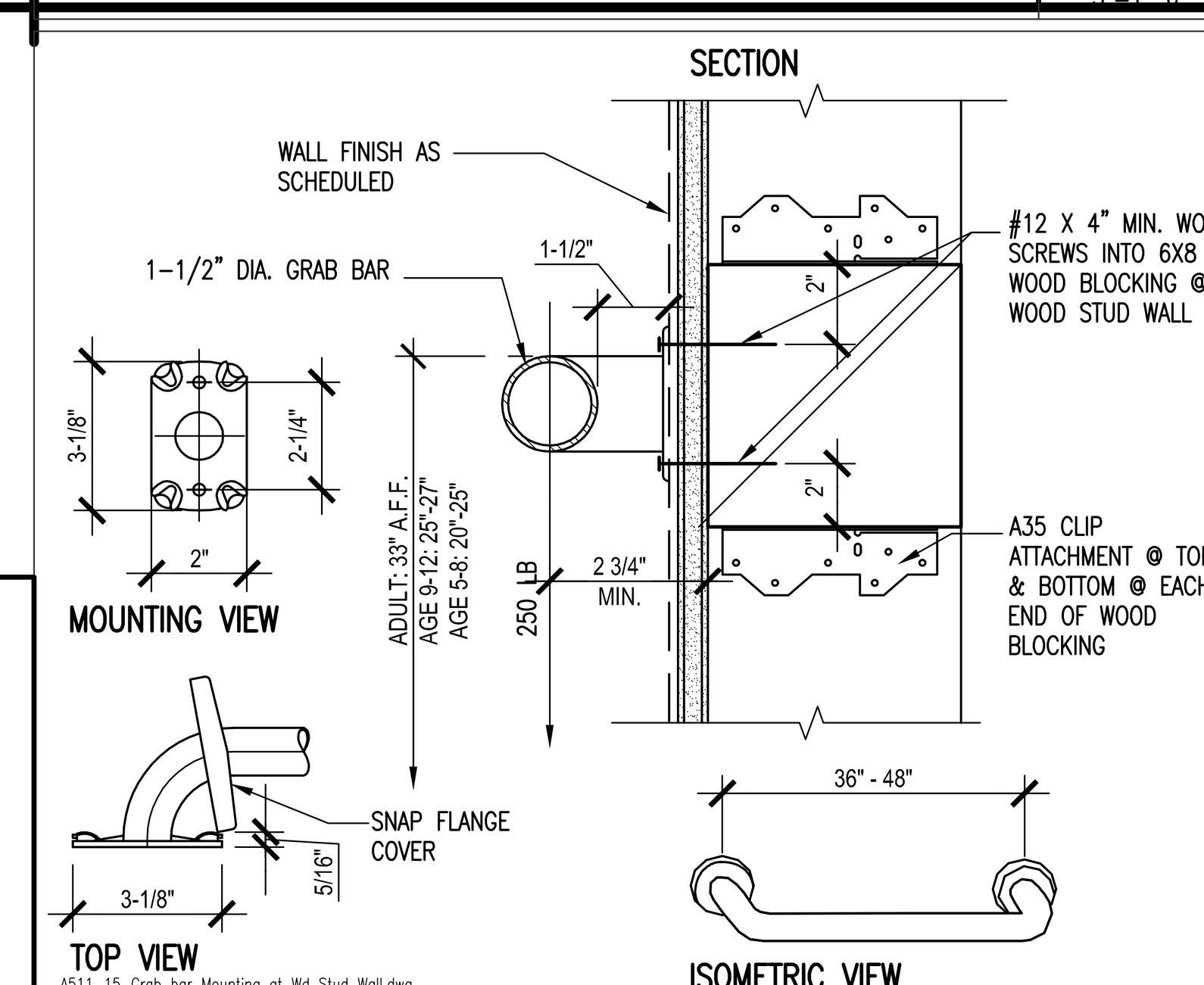
28 | 23



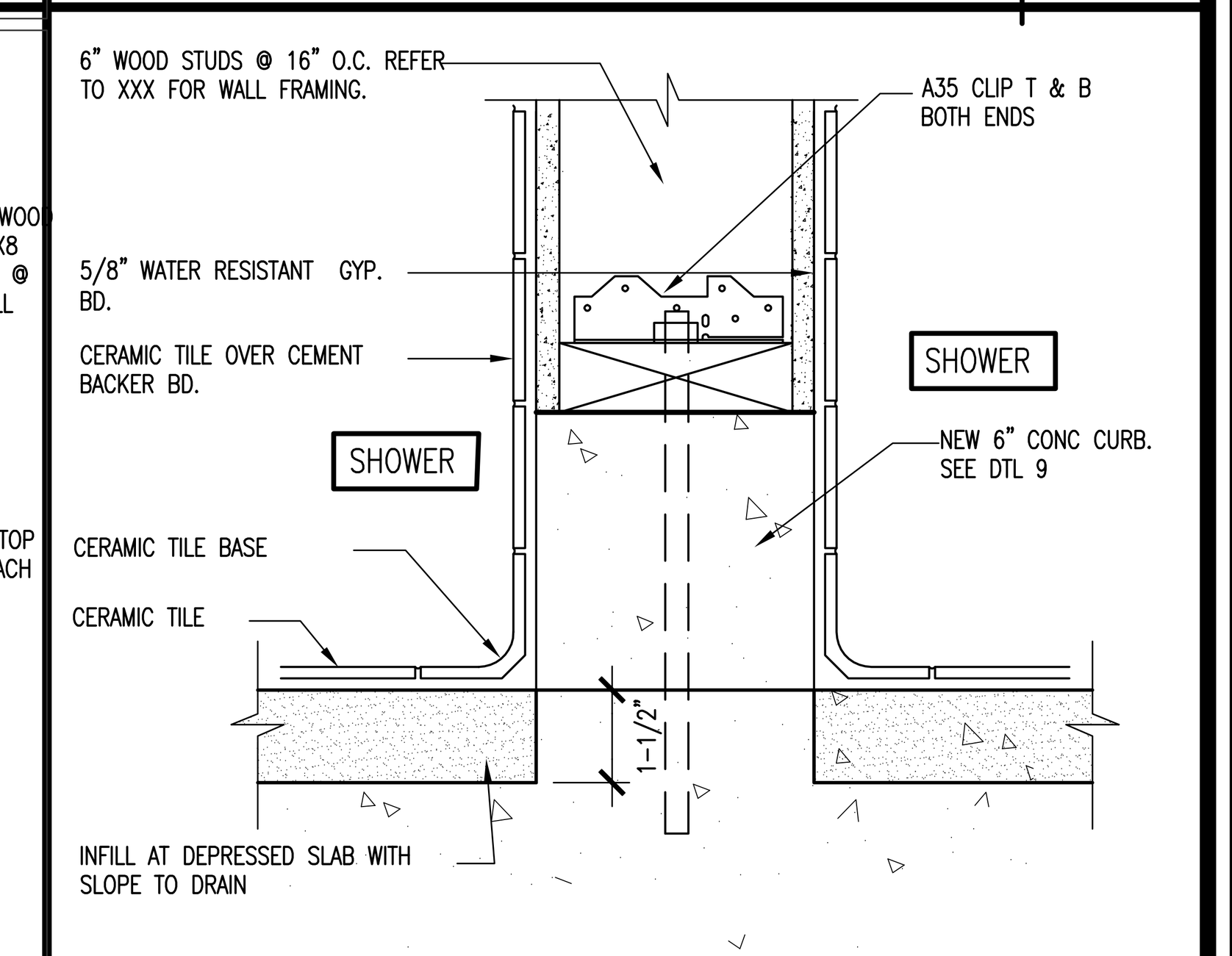
BACKING @ WOOD STUD WALL — 8 — 1"=1'-0"



WALL TYPE 4 — 3 — 3"=1'-0"

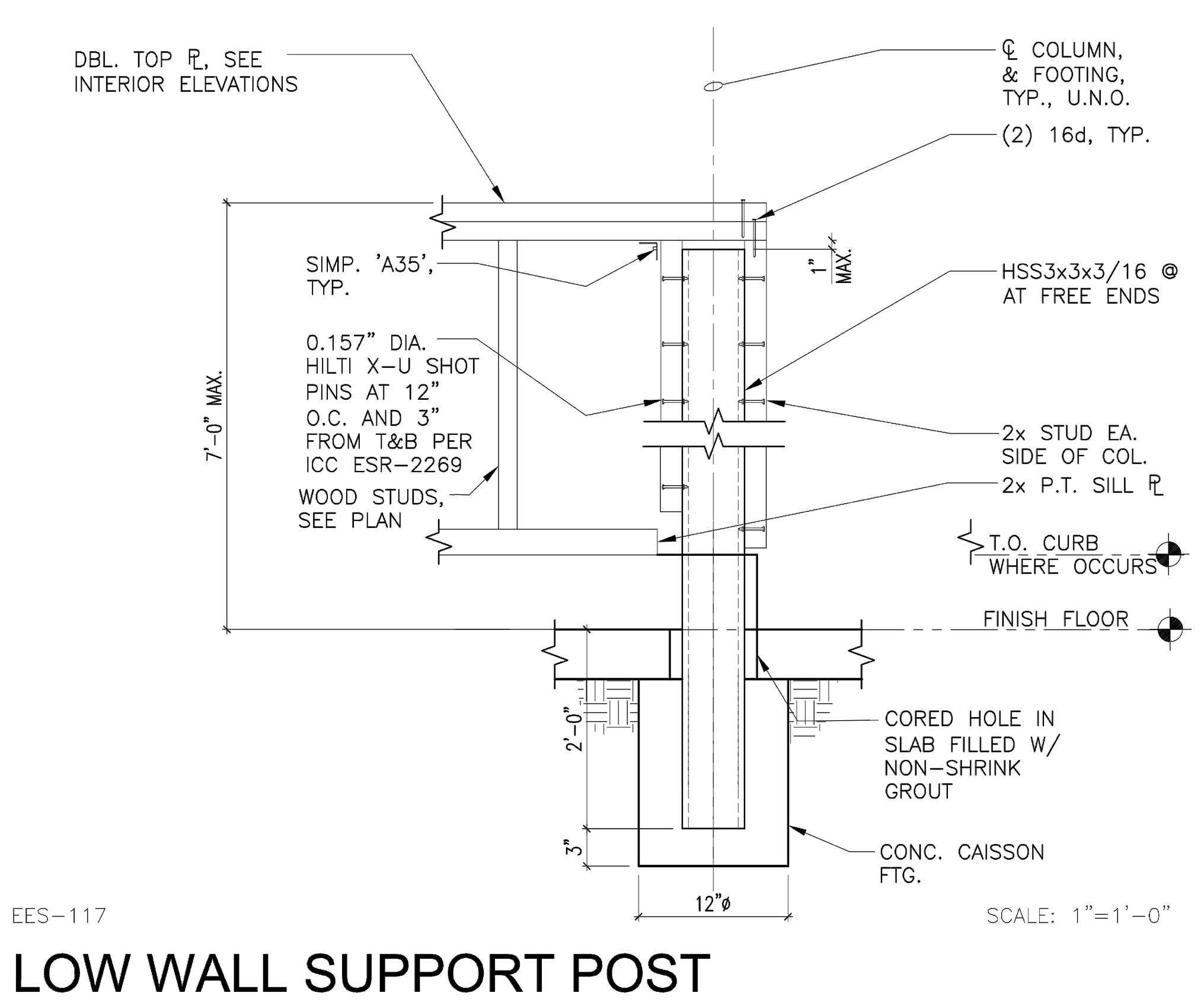


GRAB BAR MOUNTING @ WOOD STUD WALL — 9 — N.T.S.

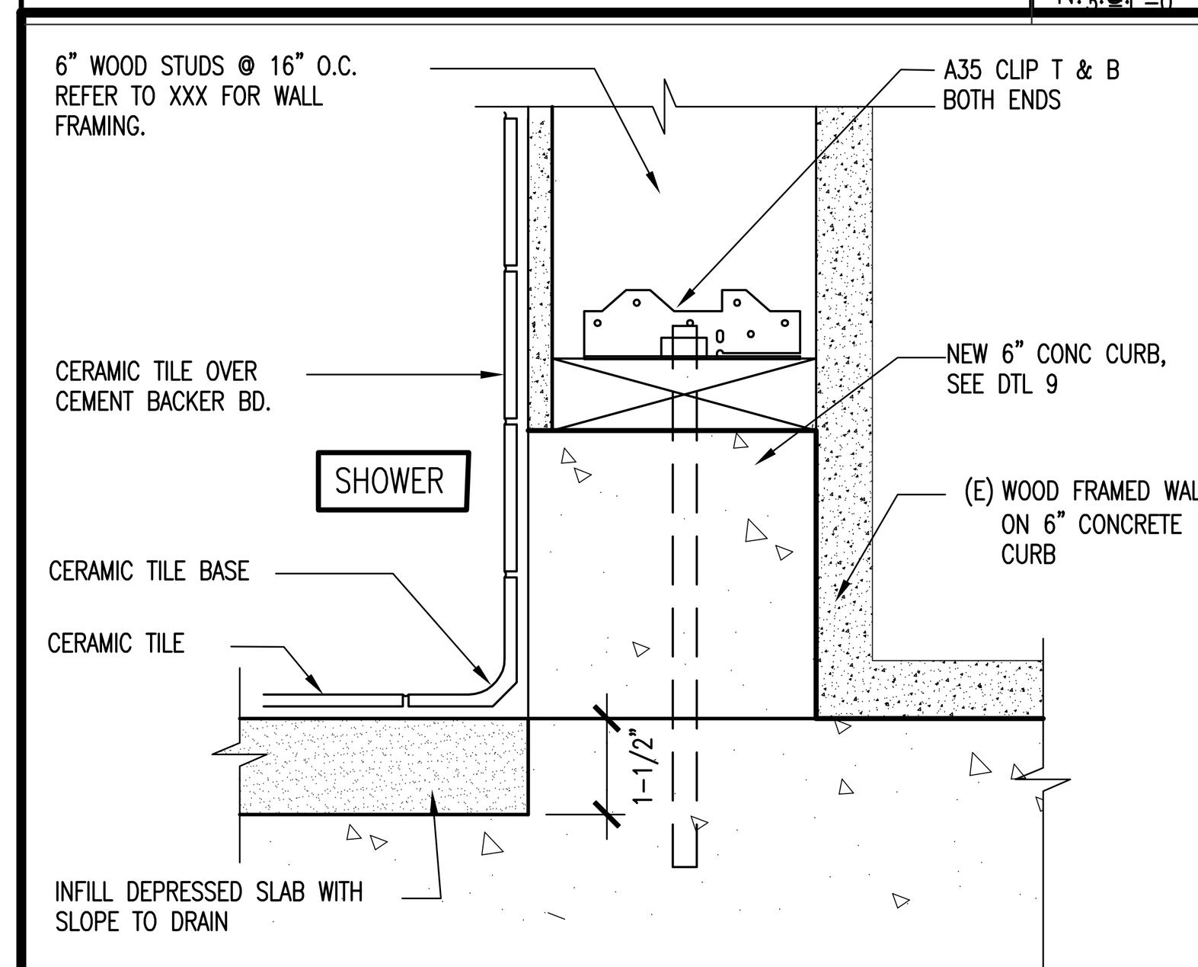


WALL TYPE 3 — 3"=1'-0"

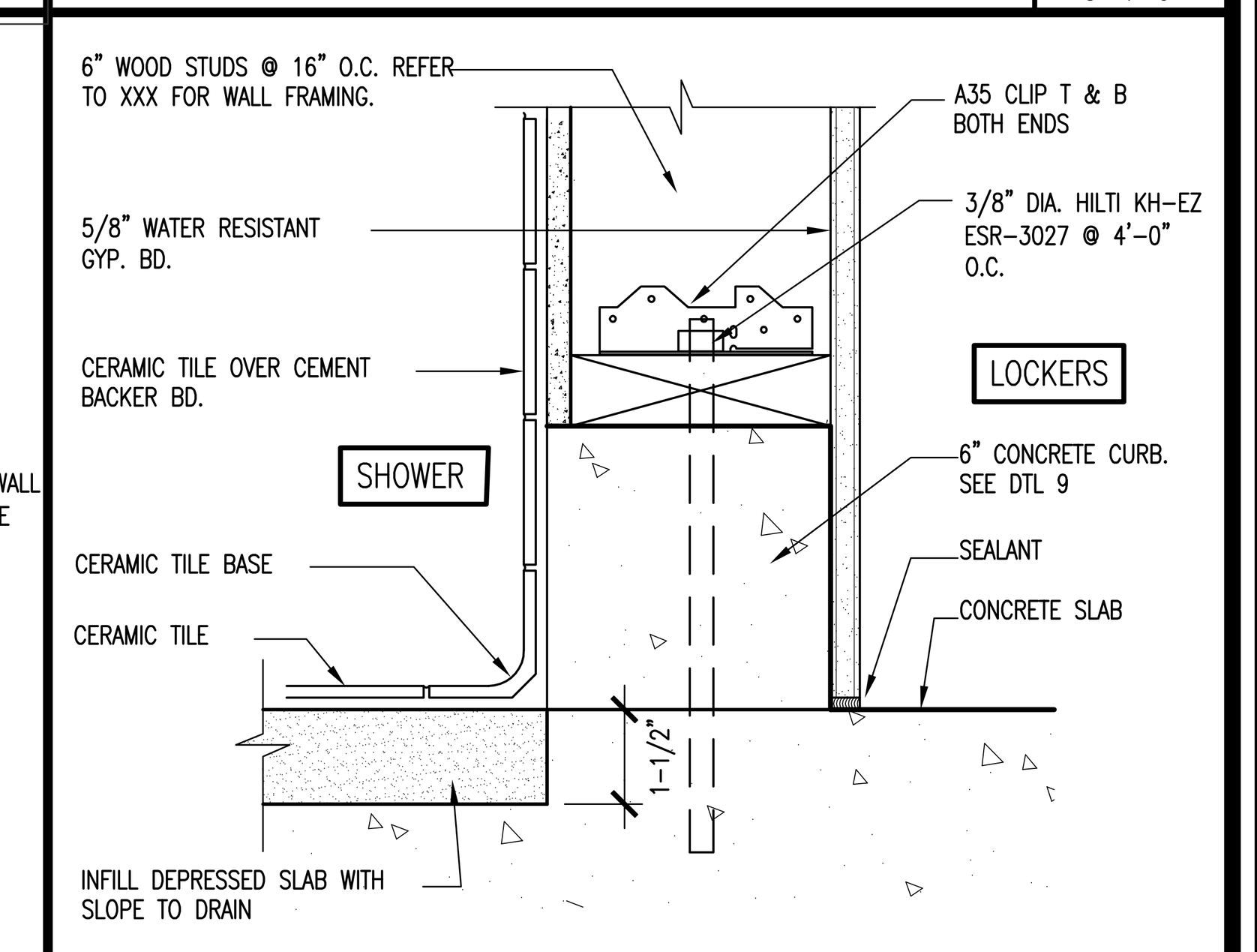
24



LOW WALL SUPPORT POST



WALL TYPE 5 — 10 — 3"=1'-0"



WALL TYPE 2 — 5 — 3"=1'-0"

30 | 25 | 20 | 15

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LICENSED ARCHITECT — RAND C. NICHOLL — NO. C-19066 — EXP. FEB 28, 2023 — STATE OF CALIFORNIA

Consultant Seal

SUSSMAN MIDDLE SCHOOL
GIRLS LOCKER ROOM AND SITE RENOVATIONS
12500 BIRCHDALE AVE, DOWNEY CA 90242
DOWNEY UNIFIED SCHOOL DISTRICT

DETAILS

REVISIONS:
1 --
2
3
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5
6
7
8

Date: 4/18/2022
Job: 2201
Scale:
Drawn:

A510

SHEET – OF XXX
XREF:

PLUMBING ABBREVIATIONS AND SYMBOLS LIST

PLUMBING ABBREVIATIONS

ABV	ABOVE
ABV CLG	ABOVE CEILING
AC	AIR CONDITIONING
AD	ACCESS DOOR
AFF	ABOVE FINISHED FLOOR
AFSR	AUTOMATIC FIRE SPRINKLER RISER
AP	ACCESS PANEL
@	AT
BEL	BELOW
BFP	BACKFLOW PREVENTOR
BLV	BALL VALVE
CD	CONDENSATE
CFH	CUBIC FEET PER HOUR
CFM	CUBIC FEET PER MINUTE
CI	CAST IRON
CLG	CEILING
CO	CLEANOUT
COP	CLEANOUT PLUG
CONC	CONCRETE
CONN	CONNECT OR CONNECTION
CONT	CONTINUE OR CONTINUATION
COTG	CLEAN OUT TO GRADE
CW	COLD WATER
DF	DRINKING FOUNTAIN
DN	DOWN
DR	DRAIN
DS	DOWNSPOUT
ELEC	ELECTRICAL
EXIST	EXISTING
F	FIRE
°F	DEGREES FAHRENHEIT
FC	FLEXIBLE CONNECTION
FCO	FLOOR CLEAN OUT
FD	FLOOR DRAIN
FLR	FLOOR
FOC	FACE OF CURB
FPM	FEET PER MINUTE
FR	FROM
FS	FLOOR SINK
FSH	FIRE SPRINKLER HEAD
FT	FEET
FTR	FLUE THRU ROOF
FU	FIXTURE UNITS
G	GAS—LOW PRESSURE
GA	GAUGE
GAL	GALLON
GC	GAS COCK
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GPR	GAS PRESSURE REGULATOR
GR	GRADE
GV	GATE VALVE
H	HIGH
HB	HOSE BIBB
HDR	HEADER
HP	HORSEPOWER
HW	HOT WATER
IE	INVERT ELEVATION
KW	KILOWATT

LAV	LAVATORY
LBS	POUNDS
MBH	THOUSAND BTU PER HOUR
MIN	MINIMUM
MPG	GAS—MEDIUM PRESSURE
NO	NORMALLY OPEN
NO.	NUMBER
NTS	NOT TO SCALE
OD	OVERFLOW DRAIN
OPWT	OPERATING WEIGHT
PG	PRESSURE GAUGE
PH	PHASE (ELECTRICAL)
℄	PROPERTY LINE
POC	POINT OF CONNECTION
PPM	PARTS PER MILLION
PRESS	PRESSURE
PRV	PRESSURE REDUCING VALVE
PSI	POUNDS PER SQUARE INCH
PSIA	PSI GAUGE
PT	PLUGGED TEE
PTRV	PRESSURE/TEMPERATURE RELIEF VALVE
PVC	POLYVINYL CHLORIDE
PW	PLUGGED WYE
RD	ROOF DRAIN
REQ'D	REQUIRED
RHB	RECESSED HOSE BIBB
RI&C	ROUGH—IN AND CONNECT
RPM	REVOLUTIONS PER MINUTE
S	SINK
SD	STORM DRAIN
SHT	SHEET
SOV	SHUT OFF VALVE
SPEC	SPECIFICATION
SQ. FT.	SQUARE FEET
SS	SERVICE SINK
STL	STEEL
STR	STRAINER
TEMP	TEMPERATURE
TP	TRAP PRIMER
TYP	TYPICAL
U	URINAL
UL	UNDERWRITERS LABORATORY
UN	UNION
UTR	UP THRU ROOF
V	VENT
VB	VACUUM BREAKER
VBF	VENT BELOW FLOOR
VTR	VENT THRU ROOF
W	WIDE OR WASTE
W/	WITH
WH	WATER HEATER
WHA	WATER HAMMER ARRESTER
W/O	WITHOUT
WTR	WATER
WCO	WALL CLEANOUT
WC	WATER CLOSET
WT	WEIGHT
YB	YARDBOX

1. SYMBOLS AND ABBREVIATIONS ARE SHOWN FOR REFERENCE; NOT ALL SYMBOLS AND ABBREVIATIONS MAY BE USED.
2. ALL NOTES ON THIS SHEET REMAIN PART OF THE CONTRACT DOCUMENTS.

PLUMBING SYMBOLS

PIPING BRANCH
PIPE DROP
PIPE RISE
RISER OR DROP
BRANCH — TOP CONNECTION
BRANCH — BOTTOM CONNECTION
UNION (SCREWED)
PLUGGED TEE
FLANGED CONNECTION
CAP ON END OF PIPE
RED BRASS NIPPLE
VALVE IN RISER
GATE VALVE OR SHUT—OFF VALVE
PRESSURE — TEMPERATURE RELIEF VALVE
GAS COCK
WATER HAMMER ARRESTER
CHECK VALVE, SWING OR LIFT
SLOPE — IN DIRECTION OF ARROW
FLOW — IN DIRECTION OF ARROW
GAS/WATER SHUT—OFF VALVE IN YARDBOX
FLOOR CLEANOUT
CLEANOUT IN YARDBOX — TRAFFIC WEIGHT
WALL CLEANOUT
HOSE BIBB WITH VACUUM BREAKER
CAP PIPING FOR RECONNECTION

SANITARY WASTE ABOVE GRADE
SANITARY WASTE BELOW GRADE
SANITARY VENT ABOVE GRADE
—V— SANITARY VENT BELOW GRADE
—SD— STORM DRAIN ABOVE GRADE
—SD— STORM DRAIN BELOW GRADE
—OD— OVERFLOW DRAIN
—D— INDIRECT DRAIN
—CD— CONDENSATE DRAIN
DOMESTIC COLD WATER ABOVE GRADE
—CW— DOMESTIC COLD WATER BELOW GRADE
DOMESTIC HOT WATER ABOVE GRADE
—HW— DOMESTIC HOT WATER BELOW GRADE
—G— GAS — LOW PRESSURE
—(E)G— EXISTING GAS — LOW PRESSURE
—MPG— GAS — MEDIUM PRESSURE
—(E)MPG— EXISTING GAS — MEDIUM PRESSURE
HOT WATER RETURN ABOVE GRADE
EXISTING PIPING TO BE ABANDONED
EXISTING PIPING TO BE REMOVED
REPRESENTS REMODEL NOTES
REPRESENTS DETAIL NUMBER
REPRESENTS PLUMBING SHEET
REPRESENTS PLUMBING FIXTURE
REPRESENTS QUANTITY

GENERAL NOTES

1.— THESE DRAWINGS AND SPECIFICATIONS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY.

2.— FOR BUILDING LOCATIONS, FINISH FLOOR, AND GRADE ELEVATIONS, SEE ARCHITECTURAL AND CIVIL DRAWINGS.

3.— FOR PIPING RUNNING THROUGH AND PARALLEL TO FOOTING, SEE STRUCTURAL DRAWINGS.

4.— BEFORE COMMENCEMENT OF WORK, THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS, ELEVATIONS AND CHARACTERISTICS OF ALL UTILITIES AND PIPING, PRIOR TO START OF ANY TRENCHING, AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT OF ANY DISCREPANCIES.

5.— FOR SERVICE CONNECTIONS TO INDIVIDUAL FIXTURES REFER TO SPECIFICATIONS.

6.— ALL HOSE BIBBS SHALL BE INSTALLED 18" ABOVE FINISH FLOOR OR GRADE, UNLESS OTHERWISE NOTED.

7.— FOR EXACT LOCATION OF ROOF DRAINS, SEE ARCHITECTURAL DRAWINGS.

8.— ALL PLUGGED TEES AND PLUGGED WYES SHALL BE LINE SIZE UNLESS OTHERWISE NOTED.

9.— ALL PLUMBING FIXTURE VENTS TO TERMINATE A MIN. OF 12 INCHES FROM ANY VERTICAL SURFACE AND 10 FEET FROM, OR 3 FEET ABOVE, ANY OUTSIDE AIR INTAKES.

10.— THE CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL CEILING ACCESS PANELS WITH THE ARCHITECTURAL REFLECTED CEILING PLAN AND THE ELECTRICAL LIGHTING LAYOUT.

11.— EXACT LOCATIONS AND MOUNTING HEIGHTS OF PLUMBING FIXTURES SHALL BE OBTAINED FROM THE ARCHITECTURAL DRAWINGS

12.— CONNECTION BETWEEN INCOMPATIBLE MATERIALS ABOVE GRADE AND INSIDE BUILDING SHALL BE MADE WITH TWO (2) DIELECTRIC UNIONS SEPARATED BY A 12" SECTION OF RED BRASS PIPE.

13.— ALL CUTTING OF EXISTING PAVING, WALKS AND/OR FLOORS SHALL BE BY MACHINE SAW CUTTING. HOLES FOR PIPING IN CONCRETE WALLS OR FLOORS SHALL BE DONE BY CORE DRILLING EQUIPMENT.

14.— THE CONTRACTOR SHALL BE RESPONSIBLE FOR PATCHING AND REPAIRING ALL PAVED AREAS WHICH ARE EXCAVATED AND/OR DAMAGED BY HIS OPERATIONS.

15.— ALL CONNECTIONS TO EXISTING SERVICES SHALL BE MADE SUCH THAT INTERRUPTION TIME WILL BE AS SHORT AS POSSIBLE. THE CONTRACTOR SHALL GIVE THE OWNER'S REPRESENTATIVE SUFFICIENT NOTICE OF SUCH INTERRUPTION AND THE ACTUAL SHUT—DOWN TIME SHALL BE AT A TIME DESIGNATED BY THE OWNER'S REPRESENTATIVE.

16.— COORDINATE LOCATION OF GAS AND CONDENSATE CONNECTIONS ON MECHANICAL EQUIPMENT WITH MECHANICAL CONTRACTOR PRIOR TO INSTALLATION.

17.— FOR CONTINUATION OF STORM DRAINS OUTSIDE OF BUILDING, SEE CIVIL DRAWINGS.

18.— ALL SHUT—OFF VALVES, OUTSIDE THE BUILDINGS, SHALL BE IN CONCRETE YARD BOXES WITH THE NAME OF THE SERVICE CONSPICUOUSLY CAST IN THE COVER.

19.— DURING THE PROGRESS OF WORK THE PLUMBING CONTRACTOR SHALL MAINTAIN AN ACCURATE RECORD OF ALL CHANGES MADE IN THE PLUMBING SYSTEMS. THE RECORD DRAWING SHALL SHOW CHANGES IN MANUFACTURER (WITH NUMBERS AND TRADE NAMES). MATERIALS, SIZES, LOCATIONS AND HOOK—UP POINTS. AS—BUILTS SHALL BE GIVEN TO THE OWNER'S CONSTRUCTION MANAGER AT COMPLETION OF JOB.

20.— INSTALL ALL PLUMBING TO AVOID INTERFERENCE WITH ELECTRICAL AND MECHANICAL EQUIPMENT AND STRUCTURAL FRAMING. NO WATER OR DRAIN PIPING PERMITTED OVER OR UNDER ELECTRICAL PANELS.

21.— ALL WORK SHALL BE DONE IN ACCORDANCE WITH CURRENT DSA RULES AND REGULATIONS AS SET FORTH BY THE AUTHORITY HAVING JURISDICTION.

22.— SEE ARCHITECTURAL DRAWINGS FOR ACCESSIBLE FIXTURE LOCATIONS AND MOUNTING HEIGHTS. (INSULATE ALL EXPOSED WATER AND DRAIN PIPING BELOW ACCESSIBLE LAVATORIES AND SINKS WITH PREFORMED INSULATED FITTING COVERS (TRUEBRO OR EQUAL) WITH A MAX. FLAME SPREAD RATING OF 25, MAX. SMOKE RATING OF 50 PER ASTM E—84) OFFSET P—TRAP AGAINST WALL. ALSO, ALL ACCESSIBLE WATER CLOSET FLUSH VALVES SHALL BE ON WIDE SIDE OF STALL.

23.— ALL CONDENSATE PIPING IN ATTIC SPACES SHALL BE INSULATED WITH 3/4" MICRO—LOK INSULATION OR APPROVED EQUAL. WITH A MAX. FLAME SPREAD RATING OF 25, MAX. SMOKE RATING OF 50 PER ASTM E—84 25/50.

24.— ALL CLEANOUTS SHALL BE INSTALLED WHERE READILY ACCESSIBLE. THE CONTRACTOR SHALL COORDINATE ALL CLEANOUT LOCATIONS WITH EQUIPMENT, CABINETS, ETC., AND THE ARCHITECT PRIOR TO ANY INSTALLATION.

25.— ALL VALVES, UNIONS, ETC. TO BE SAME SIZE AS PIPE UNLESS OTHERWISE INDICATED ON DRAWINGS.

26.— UNIONS SHALL BE PROVIDED AND INSTALLED AFTER EACH SCREW—TYPE VALVE AND PRIOR TO EQUIPMENT CONNECTIONS.

27.— BEFORE FABRICATION OR INSTALLATION THIS CONTRACTOR SHALL VERIFY EXACT LOCATIONS OF ALL MECHANICAL EQUIPMENT AND EQUIPMENT PROVIDED UNDER ANOTHER SECTION OF SPECIFICATIONS. EXACT ROUGH—IN LOCATIONS AND REQUIREMENTS SHALL BE COORDINATED IN FIELD.

28.— THE PLUMBING CONTRACTOR SHALL COORDINATE ALL REQUIREMENTS FOR ALL POINTS OF CONNECTION WITH THE GENERAL CONTRACTOR AND OTHER TRADES PRIOR TO BID.

29.— ALL WASTE AND VENT PIPING SHALL SLOPE AT 2% MIN. UNLESS OTHERWISE INDICATED.

30.— ALL VALVES, TRAP PRIMER, WATER HAMMER ARRESTORS OR OTHER EQUIPMENT SHOWN IN WALLS OR ABOVE NON—ACCESSIBLE CEILINGS SHALL BE INSTALLED BEHIND AN ACCESS PANEL.

31.— ALL LAVATORIES TO BE EQUIPPED WITH PRESSURE COMPENSATING FLOW CONTROL DEVICES RESTRICTING THE FLOW TO 0.35 GPM., FAUCET CONTROLS SHALL REQUIRE NO MORE THAN 5 LBS/FORCE TO OPERATE.

32.— WATER OR SOIL PIPE BELOW GRADE OUTSIDE SHALL HAVE MINIMUM COVER AS RECOMMENDED BY LOCAL AUTHORITIES.

33.— BEFORE ANY USE OF WATER SYSTEM IS MADE FOR DOMESTIC PURPOSES, IT SHALL BE STERILIZED BY SLOWLY FILLING THE SYSTEM WITH A WATER—CHLORINE SOLUTION CONTAINING AT LEAST FIFTY (50) PPM OF CHLORINE, AND THE SYSTEM OR PART THEREOF SHALL BE VALVED OFF AND ALLOWED TO STAND FOR TWENTY FOUR (24) HOURS; OR, THE SYSTEM OR PART THEREOF SHALL BE FILLED WITH A WATER—CHLORINE SOLUTION CONTAINING AT LEAST TWO HUNDRED (200) PPM OF CHLORINE AND ALLOWED TO STAND FOR THREE (3) HOURS. FOLLOWING THE ALLOWED STANDING TIME, THE SYSTEM SHALL BE FLUSH WITH CLEAN POTABLE WATER UNTIL THE CHLORINE RESIDUAL IN THE WATER COMING FROM THE SYSTEM DOES NOT EXCEED THE CHLORINE RESIDUAL IN THE FLUSHING WATER. THIS PROCEDURE OF FLUSHING THE SYSTEM SHALL BE REPEATED IF IT IS SHOWN BY BACTERIOLOGICAL EXAMINATION MADE BY AN APPROVED AGENCY THAT CONTAMINATION PERSIST IN THE SYSTEM.

34.— ALL ELECTRICAL DEVICES, WIRING AND CONDUITS, ETC., SERVING PLUMBING FIXTURES, INCLUDING BUT NOT LIMITED TO SENSOR OPERATED FAUCETS AND FLUSH VALVES SHALL BE INSTALLED RECESSED, PROVIDED WITH REQUIRED ACCESS PANEL AND COVER. COORDINATE WITH ARCHITECT FOR INSTALLATION LOCATION, DIMENSION AND THE FINISH COLOR OR MATERIAL OF THESE PANELS.

35.— ALL PLUMBING WORK SHALL CONFORM TO 2019 CPC.

36.— UNLESS SPECIFICALLY SHOWN ON THESE PLANS NO STRUCTURAL MEMBER SHALL BE CUT, NEITHER DRILLED NOR NOTCHED WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE STRUCTURAL ENGINEER AND THE DIVISION OF THE STATE ARCHITECT.

37.— CUTTING, BORING, SAWCUTTING OR DRILLING THROUGH THE NEW OR EXISTING STRUCTURAL ELEMENTS TO BE DONE ONLY WHEN SO DETAILED IN THE DRAWINGS OR ACCEPTED BY THE ARCHITECT OR STRUCTURAL ENGINEER WITH THE APPROVAL OF DSA REPRESENTATIVE.

38.— THE SEISMIC ANCHORAGE OF MECHANICAL AND ELECTRICAL EQUIPMENT SHALL CONFORM TO ASCE 7—16 SECTION 13.3 AND TABLE 13.3—1. ANCHORAGE DETAILS FOR ROOF/FLOOR MOUNTED EQUIPMENT SHALL BE SHOWN ON PLANS.

39.— ALL BRACING OF DUCTS AND PIPING SHALL BE INSTALLED IN ACCORDANCE WITH SMACNA GUIDELINES AS APPROVED BY DSA.

GENERAL NOTES

40.— WHERE BRACING DETAILS ARE NOT SHOWN ON THE DRAWING OR IN THE GUIDELINES, THE FIELD INSTALLATION SHALL BE SUBJECTED TO THE APPROVAL OF THE ARCHITECT, STRUCTURAL ENGINEER AND DSA FIELD ENGINEER.

41.— A COPY OF THE GUIDELINES PUBLISHED BY SMACNA AND APPROVED BY THE CITY BUILDING DEPARTMENT SHALL BE PROVIDED BY THE CONTRACTOR AND KEPT ON THE JOB AT ALL TIMES.

42.— ALL WORK SHALL BE IN CONFORMANCE WITH TITLE 24, 2019 CALIFORNIA CODE OF REGULATIONS (CCR), 2019 CALIFORNIA BUILDING CODE, PART 2, TITLE 24 CCR, 2019 CALIFORNIA PLUMBING CODE, PART 5, TITLE 24, CCR.

SPECIAL NOTE

ALL PLUMBING DRAWINGS CONTAINED IN THIS SET SHALL DISPLAY THE DIVISION OF THE STATE ARCHITECT APPROVAL STAMP BEFORE THESE DRAWINGS CAN BE USED AS CONSTRUCTION DOCUMENTS.

COORDINATION

THESE DRAWINGS ARE DIAGRAMMATIC AND SHOW IN GENERAL WHERE THE PIPING AND OTHER WORK SPECIFIED IN THE DIVISION 22 SECTIONS OF THE SPECIFICATIONS IS TO BE LOCATED. THE DRAWINGS DO NOT NECESSARILY INDICATE ANY AND ALL OFFSETS AND CONFIGURATIONS REQUIRED FOR COORDINATION WITH THE SPACE REQUIREMENTS OF OTHER TRADES. THE CONTRACTOR IS RESPONSIBLE FOR THE CORRECT PLACING, LOCATION AND CONNECTION OF THIS WORK IN RELATION TO THE WORK OF OTHER TRADES.

THE CONTRACTOR, SHALL EXAMINE ALL MECHANICAL, ARCHITECTURAL, STRUCTURAL, ELECTRICAL AND OTHER DRAWINGS THAT HAVE BEEN PREPARED FOR THIS PROJECT, AND ACCEPT SUCH CONDITIONS, AND MAKE ALLOWANCES FOR THEM IN PREPARING THE BID.

MEP COMPONENT ANCHORAGE NOTE

ALL MECHANICAL, PLUMBING, AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS.

THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2019 CBC SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7—16 CHAPTERS 13, 26 AND 30:

1. ALL PERMANENT EQUIPMENT AND COMPONENTS.
2. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (E.G. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRICITY, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.
3. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT WHICH IS HEAVIER THAN 400 POUNDS OR HAS A CENTER OF MASS LOCATED 4 FEET OR MORE ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT IS REQUIRED TO BE RESTRAINED IN A MANNER APPROVED BY DSA.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

A. COMPONENTS WEIGHTING LESS THAN 400 POUNDS AND HAVE A CENTER OF MASS LOCATED 4 FEET OR LESS ABOVE THE ADJACENT FLOOR OR ROOF LEVEL THAT DIRECTLY SUPPORT THE COMPONENT.
B. COMPONENTS WEIGHING LESS THAN 20 POUNDS, OR IN THE CASE OF DISTRIBUTED SYSTEMS, LESS THAN 5 POUNDS PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

THE ANCHORAGE OF ALL MECHANICAL, ELECTRICAL AND PLUMBING COMPONENTS SHALL BE SUBJECT TO THE APPROVAL OF THE DESIGN PROFESSIONAL IN GENERAL RESPONSIBLE CHARGE OR STRUCTURAL ENGINEER DELEGATED RESPONSIBILITY AND ACCEPTANCE BY DSA. THE PROJECT INSPECTOR WILL VERIFY THAT ALL COMPONENTS AND EQUIPMENT HAVE BEEN ANCHORED IN ACCORDANCE WITH ABOVE REQUIREMENTS.

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEM BRACING NOTE

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7—16 SECTION 13.3 AS DEFINED IN ASCE 7—16 SECTION 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2019 CBC SECTIONS 1617A.1.24, 1617A.1.25 AND 1617A.1.26

THE METHOD OF SHOWING BRACING AND ATTACHMENTS TO THE STRUCTURE FOR THE IDENTIFIED DISTRIBUTION SYSTEM ARE AS NOTED BELOW. WHEN BRACING AND ATTACHMENTS ARE BASED ON A PREAPPROVED INSTALLATION GUIDE (E.G., OSHPD OPM FOR 2013 CBC OR LATER), COPIES OF THE BRACING SYSTEM INSTALLATION GUIDE OR MANUAL SHALL BE AVAILABLE ON THE JOBSITE PRIOR TO THE START OF AND DURING THE HANGING AND BRACING OF THE DISTRIBUTION SYSTEMS. THE STRUCTURAL ENGINEER OF RECORD SHALL VERIFY THE ADEQUACY OF THE STRUCTURE TO SUPPORT THE HANGER AND BRACE LOADS.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP ☐ MD ☐ PP ☒ E ☐ — OPTION 1: DETAILED ON THE APPROVED DRAWINGS WITH PROJECT SPECIFIC NOTES AND DETAILS.

MP ☐ MD ☐ PP ☐ E ☐ — OPTION 2: SHALL COMPLY WITH THE APPLICABLE OSHPD PRE—APPROVAL (OPM#) # .

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DOWNEY UNIFIED SCHOOL DISTRICT

PLUMBING ABBREVIATIONS AND SYMBOLS LIST

REVISIONS:
1
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Date: 4/18/2022
Job: 2201
Scale:
Drawn:

P001

SHEET
XREF:

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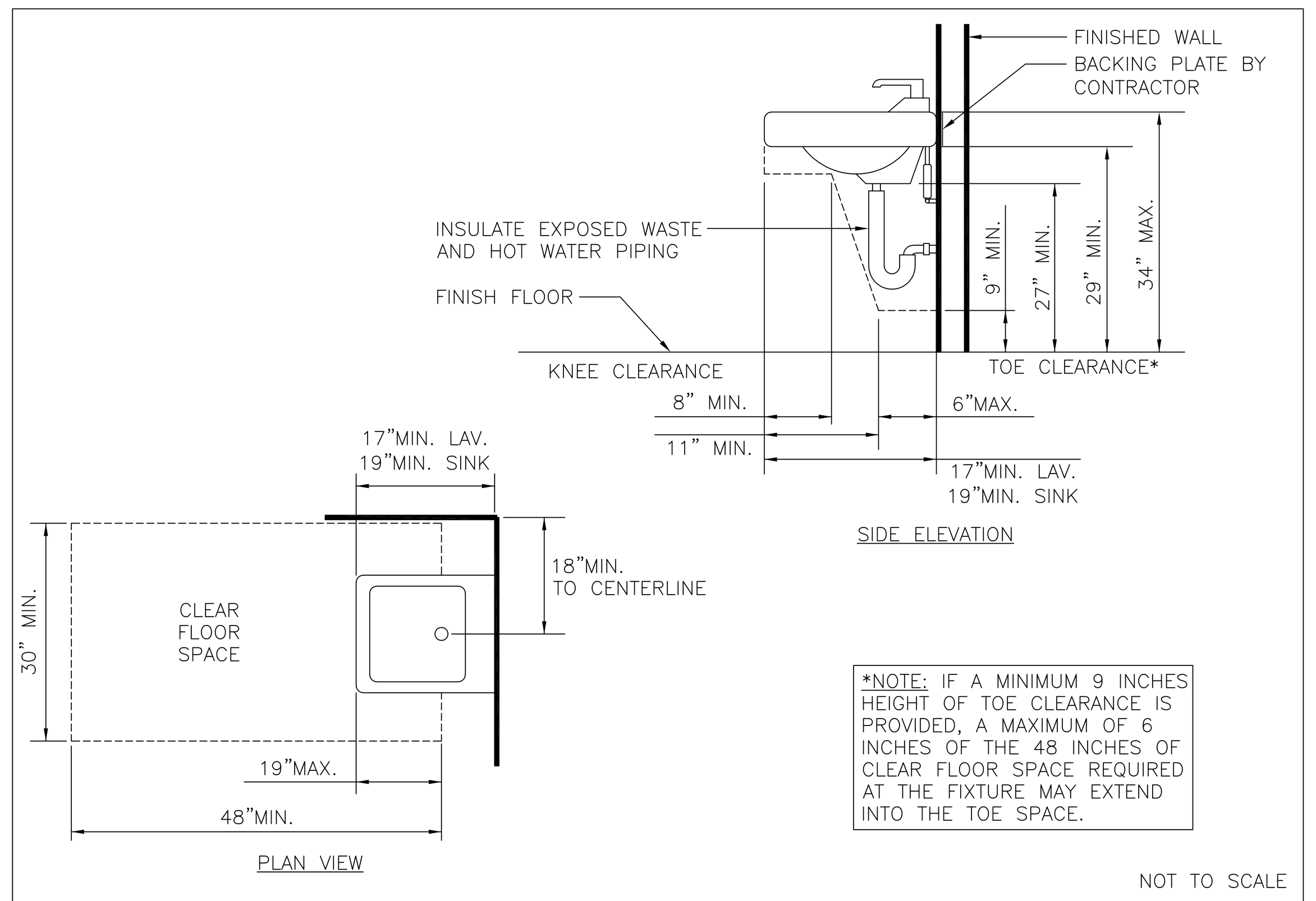

A.D.A. LAVATORY/ SINK COMPLIANCE DETAIL (1)

PLUMBING FIXTURE SCHEDULE

ITEM	FIXTURE	ROUGH-IN CONNECTIONS					DESCRIPTION
		COLD WATER	HOT WATER	WASTE	VENT	INDIRECT WASTE	
WC 1	STUDENT WATER CLOSET (ACCESSIBLE)	1"	–	4"	2"	–	KOHLER "WELLCOMME ULTRA" NO. K-96053-SS, WHITE, ELONGATED BOWL, FLOOR MOUNTED, TOP SPUD, COMPLETE WITH SLOAN "ROYAL" N0. 111-1.28, 1.28 GPF, LOW WATER CONSUMPTION FLUSHOMETER VALVE WITH VACUUM BREAKER. PROVIDE CHURCH NO. 295SSCT OPEN FRONT SEAT, BOLT CAPS AND J.R. SMITH NO. 9230 BRONZE CLOSET RING ASSEMBLY. SEE ARCHITECTURAL DRAWINGS FOR MOUNTING HEIGHT.
WC 2	STUDENT WATER CLOSET (ACCESSIBLE)	1"	–	4"	2"	–	KOHLER "HIGHCLIFF ULTRA" NO. K-96057-SS, WHITE, ELONGATED BOWL, FLOOR MOUNTED, TOP SPUD, COMPLETE WITH SLOAN "ROYAL" NO. 111-1.28, 1.28 GPF, LOW WATER CONSUMPTION FLUSHOMETER VALVE WITH VACUUM BREAKER. PROVIDE CHURCH NO. 295SSCT OPEN FRONT SEAT, BOLT CAPS AND J.R. SMITH NO. 9230 BRONZE CLOSET RING ASSEMBLY. TOP OF SEAT TO BE 17"-19" A.F.F.
L 1	STUDENT LAVATORY (ACCESSIBLE)	1/2"	–	2"	1-1/2"	–	KOHLER "KINGSTON" NO. K-2005, WHITE, VITREOUS CHINA, WALL HUNG, 4" CENTERS, SUPPORT ARMS, COMPLETE WITH CHICAGO NO. 857-E2805-665PSHAB, METERING FAUCET, CHICAGO NO. E38VPJKABCP, .35 GPM AERATOR, CHICAGO NO. 327-XCP, GRID STRAINER. PROVIDE CHICAGO NO. 1006-ABCP LOOSE KEY STOP AND RIGID SUPPLY, DEARBORN NO. 750-3, CHROME PLATED 17 GA. L.A. PATTERN CAST BRASS P-TRAP WITH SECURED ESCUTCHEON AND TRUEBRO E-Z SERIES PREFORMED LAV GUARD 2 PIPE COVERS. SET TOP OF LAV AT +34" MAX.
SH 1	STUDENT SHOWER	3/4"	3/4"	2"	1-1/2"	–	SYMMONS NO. C-96-I-295-X-1.5-A-BB-VP, ADJUSTABLE SPRAY HEAD, 1.5 GPM. 5' METAL HOSE, 30" SLIDE BAR AND DIVERTER VALVE.
SH 2	SHOWER (ACCESSIBLE)	3/4"	3/4"	2"	1-1/2"	–	SYMMONS NO. C-96-500-B30-V-1.5-VP-X-EF101 SHOWER WAND, 1.5 GPM, 5' METAL HOSE, 30" SLIDE BAR AND DIVERTER VALVE. SET CONTROLS AT +44" MAX.
HB 1	HOSE BIBB (RECESSED)	3/4"	–	–	–	–	WOODFORD NO. B75, POLISHED CHROME RECESSED HOSE BOX WITH VACUUM BREAKER, LOCKING DOOR AND LOOSE TEE KEY HANDLE. SET AT +18" MAX.
FD 1	FLOOR DRAIN	1/2"	–	2"	1-1/2"	–	J.R. SMITH NO. 2005Y(A)-P050-U-NBHP-02, 5" SQ., NICKEL BRONZE STRAINER HEAD WITH VANDAL PROOF SCREWS, HEEL PROOF STRAINER AND TRAP PRIMER CONNECTION.
FD 2	FLOOR DRAIN (SHOWER)	1/2"	–	2"	1-1/2"	–	J.R. SMITH NO. 2005Y(A)-U-CH-02, 5" SQ., CHROME PLATED STRAINER HEAD WITH VANDAL PROOF SCREWS.
TP 1	TRAP PRIMER	1/2"	–	–	–	–	P.P.P. INC. PR-500, INSTALL COMPLETE WITH SHUT-OFF VALVE AND STAINLESS STEEL ACCESS PANEL.
WHA 1	WATER HAMMER ARRESTOR	1"	–	–	–	–	P.P.P. INC. MODEL SC, COPPER BODY, SIZED AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. INSTALL COMPLETE WITH STAINLESS STEEL ACCESS PANEL.
AP 1	ACCESS PANEL	–	–	–	–	–	ELMDOR NO. DW-CL-SS, 12"x12" STAINLESS STEEL WITH CYLINDER LOCK.

NOTES:
1.– THE ABOVE ITEMS SHALL BE PROVIDED AND INSTALLED IN FULL ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
2.– COORDINATE LOCATION AND ARRANGEMENT OF ACCESSIBLE FIXTURES WITH THE ARCHITECTURAL PLANS AND ELEVATIONS.
3.– MANUAL FAUCET CONTROLS AT SINKS AND DRINKING FOUNTAINS SHALL REQUIRE NO GREATER THAN 5 LBS. OF FORCE TO ACTIVATE CONTROLS.
4.– ALL FAUCET TRIM TO COMPLY WITH LATEST AB1953 REQUIREMENTS.
5.– PROVIDE PRE-FORMED INSULATED COVERS BY "TRUBRO" TO ALL EXPOSED PIPING BELOW LAV/SINK.

PIPE MATERIAL SCHEDULE

AG: ABOVE GRADE
BG: BELOW GRADE

SERVICES		PIPE MATERIALS									REMARKS
		C.I. NO-HUB	ABS PLASTIC SCH. 40	SCH 40 BLACK STEEL	SCH 40 GALV. STEEL	COPPER TYPE M	COPPER TYPE L	COPPER TYPE K	SCH 40 PVC	YELLOW PE PIPE	
WATER	AG						●				IAPMO IS 3-93 E1
	BG							●			IAPMO IS 3-93 E1
WASTE	AG	●									IAPMO IS 6-95
	BG	●									IAPMO IS 6-95
VENT	AG	●									
	BG	●									
INDIRECT WASTE	AG					●					CONDENSATE DRAIN
	BG					●					CONDENSATE DRAIN WRAPPED

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Consultant Seal

SUSSMAN MIDDLE SCHOOL
GIRLS LOCKER ROOM AND SITE RENOVATIONS

12500 BIRCHDALE AVE. DOWNEY CA 90242
DOWNEY UNIFIED SCHOOL DISTRICT

PLUMBING SCHEDULES AND DETAILS

REVISIONS:
1
2
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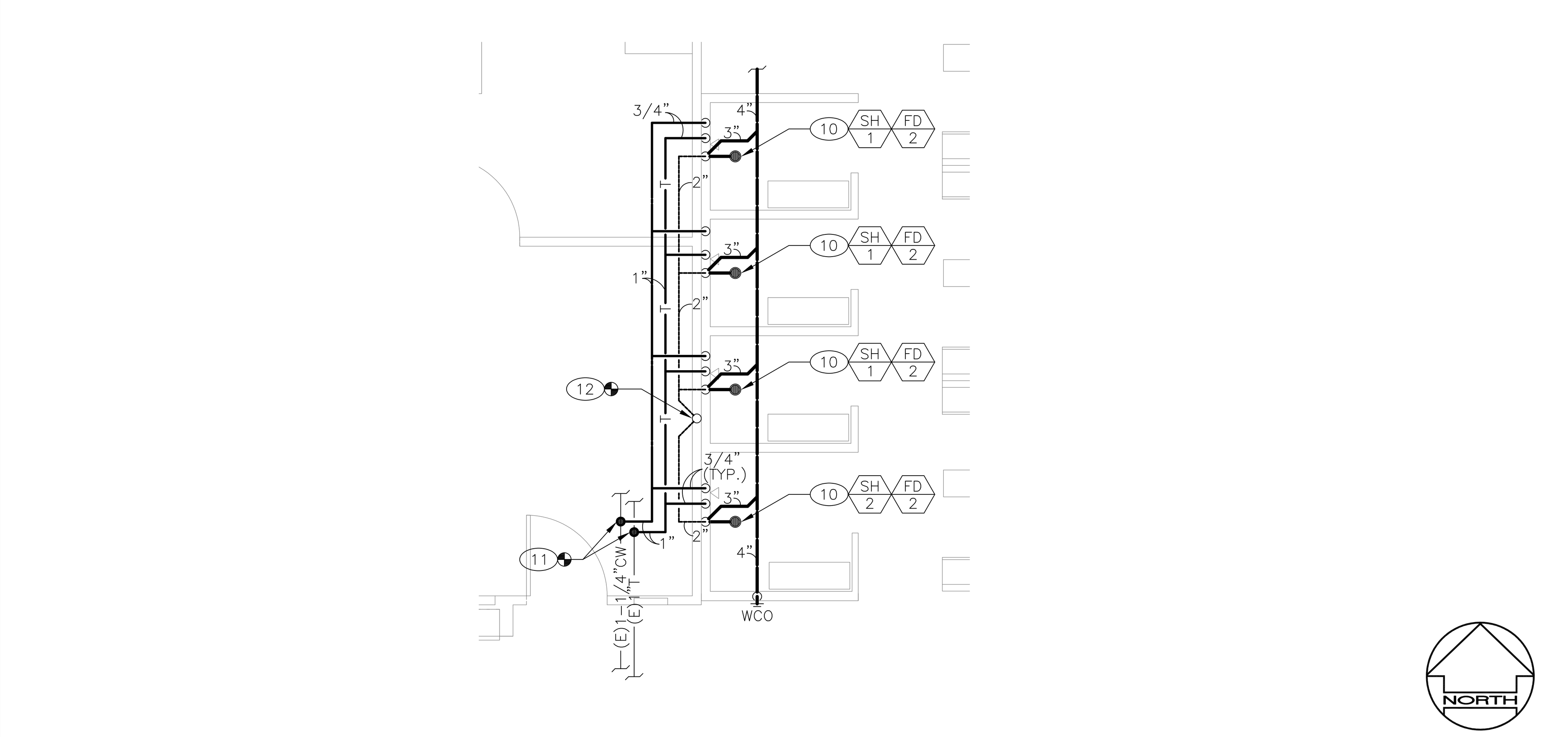
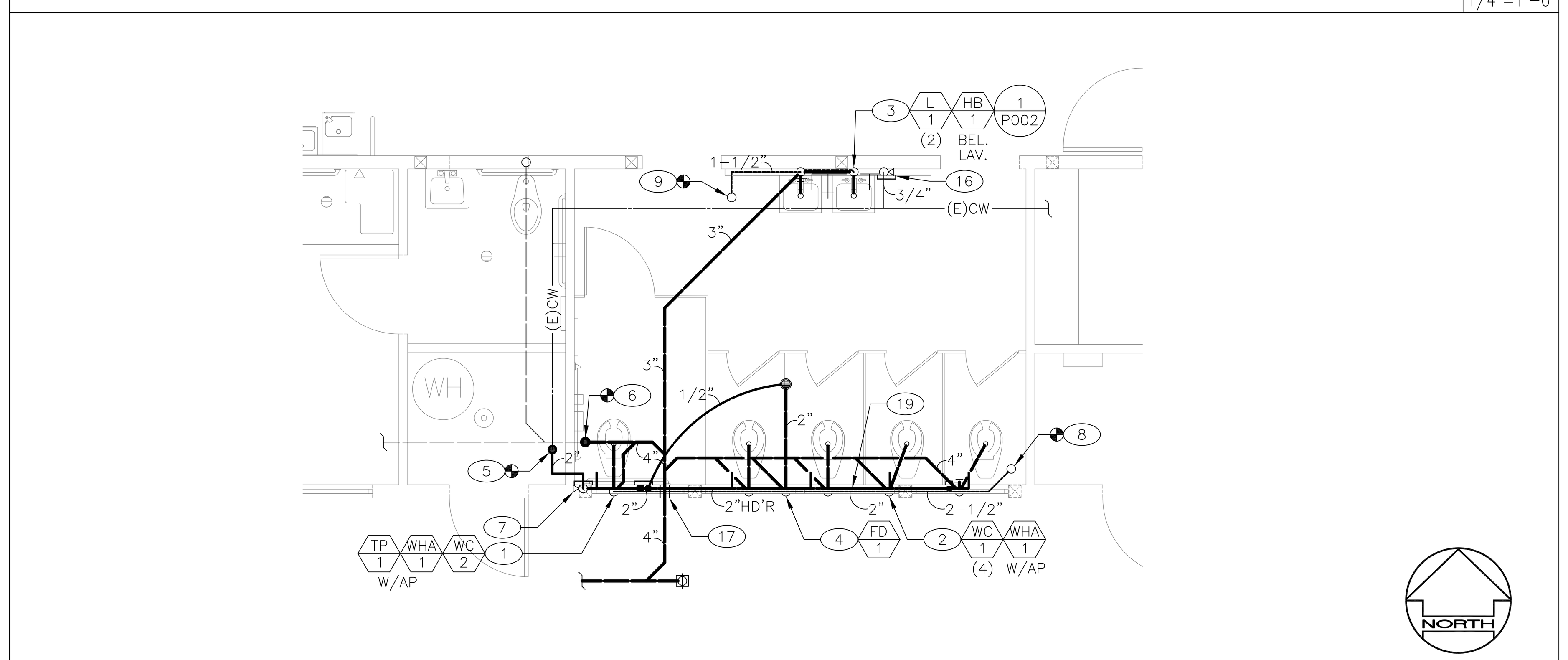
Date: 4/18/2022
Job: 2201
Scale:
Drawn:

P002

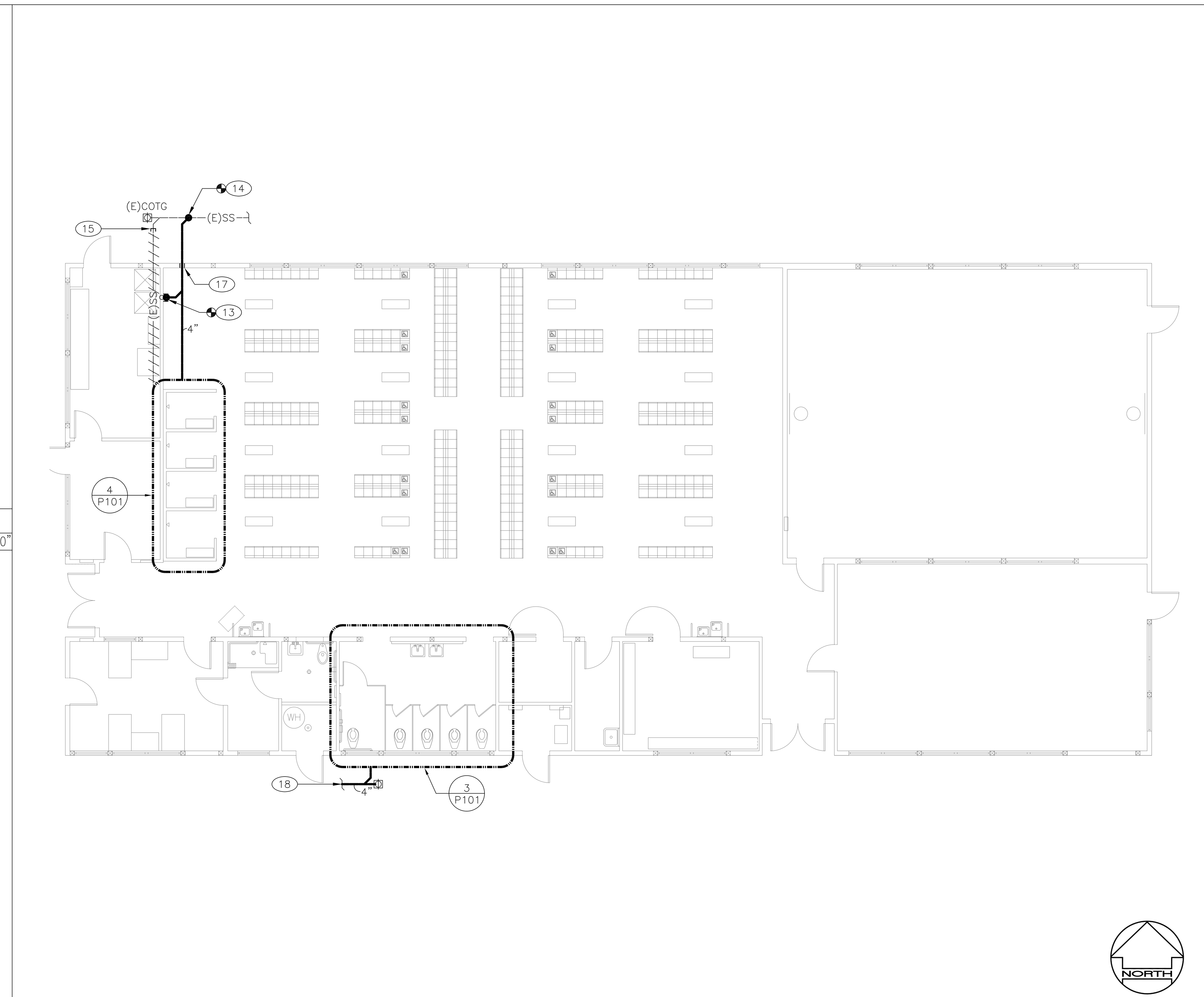
SHEET –
XREF:



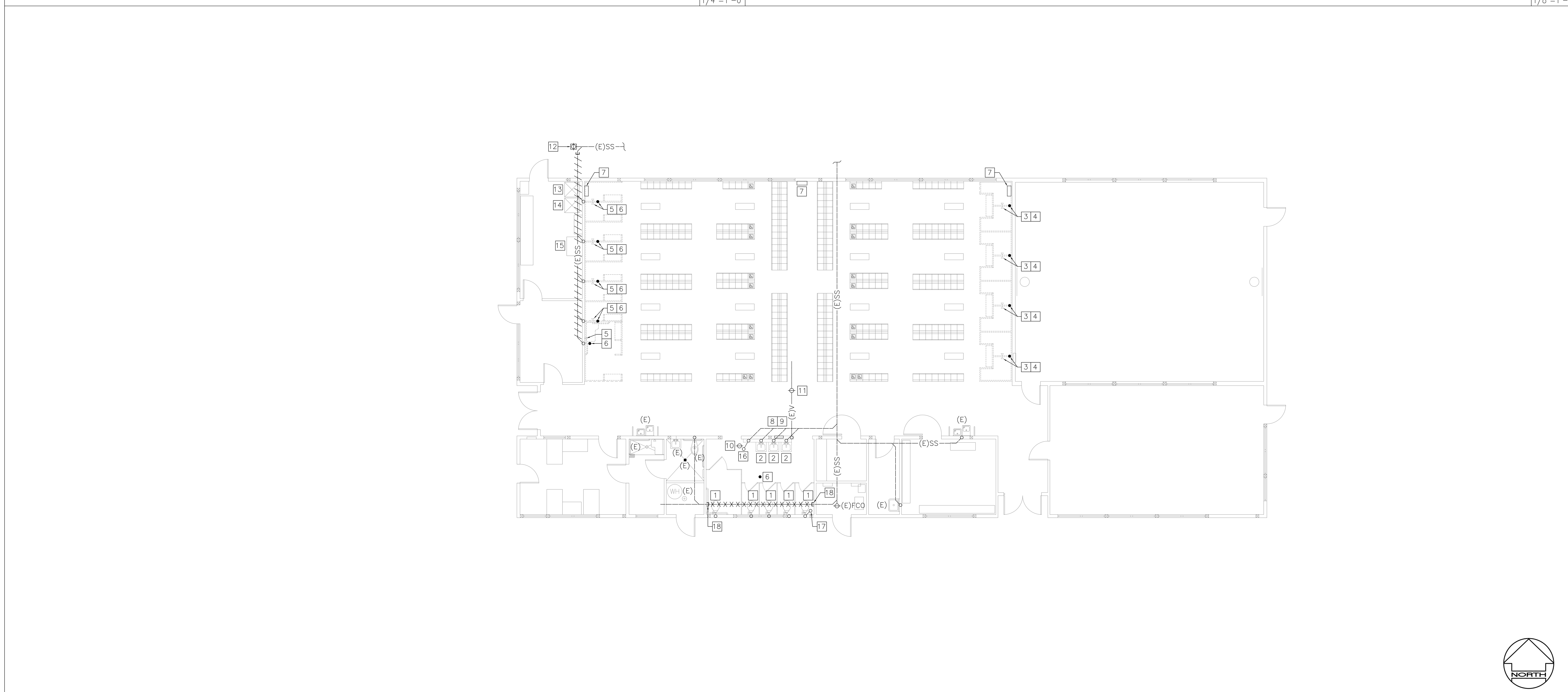
PLUMBING ENLARGED SHOWER PLAN 4
1/4"=1'-0"



PLUMBING ENLARGED TOILET PLAN 3
1/4"=1'-0"



PLUMBING RENOVATION FLOOR PLAN 2
1/8"=1'-0"



PLUMBING DEMOLITION FLOOR PLAN 1
1/8"=1'-0"

PLAN NOTES

1.– PROVIDE 4" WASTE, 2" VENT AND 1" COLD WATER. EXTEND SERVICE TO WHA–1 AND TP–1.

2.– PROVIDE 4" WASTE, 2" VENT AND 1" COLD WATER.

3.– PROVIDE 2" WASTE, 1–1/2" VENT AND 3/4" COLD WATER. EXTEND 3/4" COLD WATER TO HOSE BIBB.

4.– PROVIDE 2" WASTE AND 2" VENT. EXTEND 1/2" PRIMER LINE.

5.– P.O.C.– 2" CW TO EXISTING WATER SUPPLY ABV. CLG. EXTEND SERVICE AS INDICATED. PATCH CLG. TO MATCH EXISTING.

6.– P.O.C.– 4" WASTE TO EXISTING 4" WASTE BEL. FLR. EXTEND SERVICE AS INDICATED.

7.– 2" CW SHUT–OFF VALVE COMPLETE WITH ACCESS PANEL.

8.– P.O.C.– 2–1/2" VENT TO EXISTING VTR ABV. CLG. PATCH CLG. TO MATCH EXISTING.

9.– P.O.C.– 1–1/2" VENT TO EXISTING VTR ABV. CLG. PATCH CLG. TO MATCH EXISTING.

10.– PROVIDE 3" WASTE, 2" VENT AND 3/4" COLD WATER AND TEMPERED WATER.

11.– P.O.C.– 1" CW AND TEMPERED WATER TO EXISTING SUPPLIES ABV. CLG. EXTEND SERVICE AS INDICATED. PATCH CLG. AND/OR WALL TO MATCH EXISTING.

12.– P.O.C.– 2" VENT TO EXISTING VTR. PATCH CLG. TO MATCH EXISTING.

13.– P.O.C.– 2" WASTE TO EXISTING MODIFIED WASTE SERVING THE CLOTHES WASHER. EXTEND SERVICE AS INDICATED COMPLETE WITH PIPE SLEEVE. PATCH WALL AND/OR FLR. TO MATCH EXISTING.

14.– P.O.C.– 4" WASTE TO EXISTING SANITARY SEWER. FIELD VERIFY EXACT LOCATION AND INVERT ELEVATION PRIOR TO START OF WORK. EXTEND SERVICE AS INDICATED. PATCH GRADE TO MATCH EXISTING.

15.– EXISTING WASTE LINE TO BE ABANDONED IN PLACE. CAP BEL. GRADE. PATCH GRADE TO MATCH EXISTING.

16.– 3/4" CW SHUT–OFF VALVE COMPLETE WITH ACCESS PANEL.

17.– PROVIDE PIPE SLEEVE THRU FOOTING AS APPLICABLE. PATCH GRADE TO MATCH EXISTING.

18.– EXTEND AND CONNECT THE 4" WASTE TO EXISTING 4" SANITARY WASTE COTG SERVING THE GYMNASIUM. PATCH GRADE WITH NEW COMPLETE HARDSCAPE. DO NOT "PATCH" THE HARDSCAPE.

19.– EXTEND COLD WATER AND VENT HEADERS IN FURRED SPACE. FOLLOW PREVIOUS PIPE ROUTING.

DEMOLITION NOTES

1.– EXISTING WATER CLOSET TO BE REMOVED. REMOVE WASTE AND WATER SUPPLY PIPING IN WALL. REMOVE WASTE PIPING BEL. FLR. WITHIN LIMITS OF GIRL'S TOILET FOOTPRINT.

2.– EXISTING LAVATORY TO BE REMOVED. REMOVE WASTE AND WATER SUPPLY PIPING IN WALL. REMOVE WASTE PIPING BEL. FLR. WITHIN LIMITS OF GIRL'S TOILET FOOTPRINT AND CAP BEL. FLR.

3.– EXISTING SHOWER TRIM TO BE REMOVED BACK TO WALL AND CAP IN WALL. PATCH WALL TO MATCH EXISTING.

4.– EXISTING FLOOR DRAIN TO BE REMOVED. CAP WASTE BEL. FLR. PATCH FLOOR TO MATCH EXISTING.

5.– EXISTING SHOWER TRIM TO BE REMOVED. REMOVE PIPING IN WALL BACK TO MAINS FOR RECONNECTION.

6.– EXISTING FLOOR DRAIN TO BE REMOVED. REMOVE WASTE AND VENT PIPING IN WALL. REMOVE WASTE PIPING BEL. FLR. WITHIN LIMITS OF GIRL'S SHOWER FOOTPRINT AND CAP BEL. FLR.

7.– EXISTING WALL MOUNTED GRAVITY SOAP DISPENSER TANK TO BE REMOVED. CAP PIPING IN WALL. PATCH WALL TO MATCH EXISTING.

8.– EXISTING FIRE HOSE CABINET TO BE REMOVED. REMOVE ALL ASSOCIATED WATER PIPING IN WALL BACK TO MAIN AND CAP. PATCH WALL TO MATCH EXISTING.

9.– EXISTING HYDRONIC VALVE ASSEMBLY PIPING TO BE REMOVED. REMOVE ALL PIPING IN WALL BACK TO MAIN AND CAP. CAP PIPING BEL. FLR. PATCH WALL AND FLOOR TO MATCH EXISTING.

10.– EXISTING FLOOR CLEANOUT TO BE REMOVED. REMOVE WASTE PIPING BEL. FLR. WITHIN LIMITS OF GIRL'S TOILET FOOTPRINT AND CAP BEL. FLR.

11.– EXISTING FLOOR CLEANOUT TO REMAIN. REMOVE VENT PIPING IN LAVATORY WALL. CAP VENT ABV. CLG. AND BEL. FLR.

12.– EXISTING CLEANOUT TO GRADE TO REMAIN. MODIFY PIPING BEL. GRADE FOR CONNECTION TO NEW SANITARY DRAIN LINE.

13.– EXISTING CLOTHES DRYER TO REMAIN.

14.– EXISTING CLOTHES WASHER TO REMAIN. MODIFY WASTE PIPING BEL. FLR. FOR CONNECTION TO NEW SANITARY WASTE LINE SERVING THE NEW SHOWERS.

15.– EXISTING REFRIGERATOR TO REMAIN.

16.– EXISTING 1–1/2" VTR TO REMAIN. MODIFY PIPING ABV. CLG. FOR RECONNECTION TO NEW LAVATORIES.

17.– EXISTING 2–1/2" VTR TO REMAIN. MODIFY PIPING ABV. CLG. FOR RECONNECTION TO NEW WATER CLOSETS.

18.– REMOVE EXISTING WASTE SERVING THE WATER CLOSETS WITHIN LIMITS OF GIRL'S TOILET FOOTPRINT AND CAP FOR RECONNECTION.

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PLUMBING DEMOLITION AND RENOVATION FLOOR PLANS

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Drawn:	

P101

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