BID ADDENDUM NO. 02

Date: June 18, 2026

To original issued Drawings.

Project location

McNair High School Stormwater Pump Station

9550 Ronald E. McNair Way
Stockton, CA 95210

Prepared by: **PBK**
1110 Iron Point Road, Suite 200
Folsom, California 95630

PBK Project No.: 250131

A. Receipt of this Addendum shall be acknowledged on the Bid Form.

B. This Addendum forms part of the Contract documents for the above referenced project and shall be incorporated integrally therewith.

C. Each bidder shall make necessary adjustments and submit this proposal with full knowledge of all modifications, clarifications, and supplemental data included therein. Where provisions of the following supplemental data differ from those of the original Contract Documents, this Addendum shall govern.

VOLUME 1 – BIDDING AND CONTRACT REQUIREMENTS: N/A

1. Update Schedule to the following:
   a. Pre-Bid RFIs are due August 7, 2026, at 1:00 PM
   b. Final Addendum to be issued on August 26, 2026 by 1:00 PM
   c. Bid Day to be September 3, 2026 at 1:00 PM
   d. Board Approval on September 15, 2026.

VOLUME 2 – SPECIFICATIONS:

Refer to specification notes on updated addenda 2 plan set.

DRAWINGS:

Replace entire previously issued plan set with the included addenda 2 set with title block noted as ADDENDA 2 6/11/2026.

Calculations:

Refer to structural calculations issued in this addenda for project construction requirements.

End of Addendum No. 02

END OF SECTION 00 00 74

McNAIR HIGH SCHOOL STORMWATER PUMP STATION

9550 RONALD E. McNAIR WAY

STOCKTON, CA 95210

LODI UNIFIED SCHOOL DISTRICT



SITE LOCATION

N

PROJECT TEAM

MAIN POINT OF CONTACT
LEAF ENGINEERS / PBK ARCHITECTS
1100 IRON POINT RD., SUITE
FOLSOM, CA 95630
MAIN CONTACT PHONE
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STRUCTURAL ENGINEER
CORNERSTONE STRUCTURAL ENGINEERING GROUP
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FRESNO, CA 93720
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DUSTIN LEE - (559)-320-3200

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McNAIR HIGH SCHOOL STORMWATER PUMP STATION
LODI UNIFIED SCHOOL DISTRICT
McNAIR HIGH SCHOOL
9550 Ronald E. McNair Way
Stockton, CA 95210

LODI UNIFIED SCHOOL DISTRICT

Architect / Engineer

REGISTERED PROFESSIONAL ENGINEER
GAREN M. LENCIONI
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REN. 6-30-26
MECHANICAL
STATE OF CALIFORNIA

CLIENT
LODI UNIFIED SCHOOL DISTRICT
PROJECT NUMBER
250131
DATE: 06/02/2026
DRAWN BY: CAL CHKED BY: G.L.

CITY SUBMITTAL

#	DESCRIPTION	DATE
	ADDENDA 2	6/11/2026

INDEX AND PROJECT INFORMATION

This document is for plan review only

G0.0

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CHAPTER 3
GREEN BUILDING
SECTION 301 GENERAL

301.1 SCOPE.Buildings shall be designed to include the green building measures specified as mandatory in the application checklists contained in this code. Voluntary green building measures are also included in the application checklists and may be included in the design and construction of structures covered by this code, but are not required unless adopted by a city, county, or city and county as specified in Section101.7.

301.1.1 Additions and alterations. [HCD] The mandatory provisions of Chapter 4 shall be applied to additions or alterations of existing residential buildings where the addition or alteration increases the building's conditioned area, volume, or size. The requirements shall apply only to and/or within the specific area of the addition or alteration.

Note: On and after January 1, 2014, residential buildings undergoing permitted alterations, additions, or improvements shall replace noncompliant plumbing fixtures with water-conserving plumbing fixtures. Plumbing fixture replacement is required prior to issuance of a certificate of final completion, certificate of occupancy or final permit approval by the local building department. See Civil Code Section 1101.1, et seq., for the definition of a noncompliant plumbing fixture, types of residential buildings affected and other important enactment dates.

301.2 LOW-RISE AND HIGH-RISE RESIDENTIAL BUILDINGS. [HCD] The provisions of individual sections of CALGreen may apply to either low-rise residential buildings high-rise residential buildings, or both. Individual sections will be designated by banners to indicate where the section applies specifically to low-rise only (LR) or high-rise only (HR). When the section applies to both low-rise and high-rise buildings, no banner will be used.

SECTION 302 MIXED OCCUPANCY BUILDINGS

302.1 MIXED OCCUPANCY BUILDINGS. In mixed occupancy buildings, each portion of a building shall comply with the specific green building measures applicable to each specific occupancy.

Exceptions:

1. [HCD] Accessory structures and accessory occupancies serving residential buildings shall comply with Chapter 4 and Appendix A4, as applicable.
2. [HCD] For purposes of CALGreen, live/work units, complying with Section 419 of the California Building Code, shall not be considered mixed occupancies. Live/Work units shall comply with Chapter 4 and Appendix A4, as applicable.

DIVISION 4.1 PLANNING AND DESIGN

ABBREVIATION DEFINITIONS:

HCD	Department of Housing and Community Development
BSC	California Building Standards Commission
DSA-SS	Division of the State Architect, Structural Safety
OSHPD	Office of Statewide Health Planning and Development
LR	Low Rise
HR	High Rise
AA	Additions and Alterations
N	New

CHAPTER 4
NONRESIDENTIAL MANDATORY MEASURES

SECTION 4.102 DEFINITIONS

4.102.1 DEFINITIONS

The following terms are defined in Chapter 2 *(and are included here for reference)*

FRENCH DRAIN. A trench, hole or other depressed area loosely filled with rock, gravel, fragments of brick or similar pervious material used to collect or channel drainage or runoff water.

WATTLES. Wattles are used to reduce sediment in runoff. Wattles are often constructed of natural plant materials such as hay, straw or similar material shaped in the form of tubes and placed on a downflow slope. Wattles are also used for perimeter and inlet controls.

4.106 SITE DEVELOPMENT

4.106.1 GENERAL. Preservation and use of available natural resources shall be accomplished through evaluation and careful planning to minimize negative effects on the site and adjacent areas. Preservation of slopes, management of storm water drainage and erosion controls shall comply with this section.

4.106.2 STORM WATER DRAINAGE AND RETENTION DURING CONSTRUCTION. Projects which disturb less than one acre of soil and are not part of a larger common plan of development which in total disturbs one acre or more, shall manage storm water drainage during construction. In order to manage storm water drainage during construction, one or more of the following measures shall be implemented to prevent flooding of adjacent property, prevent erosion and retain soil runoff on the site.

1. Retention basins of sufficient size shall be utilized to retain storm water on the site.
2. Where storm water is conveyed to a public drainage system, collection point, gutter or similar disposal method, water shall be filtered by use of a barrier system, wattle or other method approved by the enforcing agency.
3. Compliance with a lawfully enacted storm water management ordinance.

Note: Refer to the State Water Resources Control Board for projects which disturb one acre or more of soil, or are part of a larger common plan of development which in total disturbs one acre or more of soil.

(Website: https://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.html)

4.106.3 GRADING AND PAVING. Construction plans shall indicate how the site grading or drainage system will manage all surface water flows to keep water from entering buildings. Examples of methods to manage surface water include, but are not limited to, the following:

1. Swales
2. Water collection and disposal systems
3. French drains
4. Water retention gardens
5. Other water measures which keep surface water away from buildings and aid in groundwater recharge.

Exception: Additions and alterations not altering the drainage path.

4.106.4 Electric vehicle (EV) charging for new construction. New construction shall comply with Sections 4.106.4.1, 4.106.4.2, or 4.106.4.3 to facilitate future installation and use of EV chargers. Electric vehicle supply equipment (EVSE) shall be installed in accordance with the California Electrical Code, Article 625.

Exceptions:

1. On a case-by-case basis, where the local enforcing agency has determined EV charging and infrastructure are not feasible based upon one or more of the following conditions:
   - 1.1 Where there is no commercial power supply.
   - 1.2 Where there is evidence substantiating that meeting the requirements will alter the local utility infrastructure design requirements on the utility side of the meter so as to increase the utility side cost to the homeowner or the developer by more than $400.00 per dwelling unit.
2. Accessory Dwelling Units (ADU) and Junior Accessory Dwelling Units (JADU) without additional parking facilities.

4.106.4.1 New one- and two-family dwellings and townhouses with attached private garages. For each dwelling unit, install a listed raceway to accommodate a dedicated 208/240-volt branch circuit. The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or enclosure in close proximity to the proposed location of an EV charger. Raceways are required to be continuous at enclosed, inaccessible or concealed areas and spaces. The service panel and/or subpanel shall provide capacity to install a 40-ampere 208/240-volt minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit overcurrent protective device.

Exemption: A raceway is not required if a minimum 40-ampere 208/240-volt dedicated EV branch circuit is installed in close proximity to the proposed location of an EV charger at the time of original construction in accordance with the California Electrical Code.

4.106.4.1.1 Identification. The service panel or subpanel circuit directory shall identify the overcurrent protective device space(s) reserved for future EV charging as "EV CAPABLE". The raceway termination location shall be permanently and visibly marked as "EV CAPABLE"

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4.106.4.2 New multifamily dwellings. If residential parking is available, ten (10) percent of the total number of parking spaces on a building site, provided for all types of parking facilities, shall be electric vehicle charging spaces (EV spaces) capable of supporting future EVSE. Calculations for the required number of EV spaces shall be rounded up to the nearest whole number.

Notes:

1. Construction documents are intended to demonstrate the project's capability and capacity for facilitating future EV charging.
2. There is no requirement for EV spaces to be constructed or available until EV chargers are installed for use.
3. A parking space served by electric vehicle supply equipment or designated as a future EV charging space shall count as at least one standard automobile parking space for the purpose of complying with any applicable minimum parking space requirements established by a local jurisdiction. See Vehicle Code Section 22511.2 for further details.

4.106.4.2.1 Electric vehicle charging space (EV space) locations. Construction documents shall indicate the location of proposed EV spaces. Where common use parking is provided at least one EV space shall be located in the common use parking area and shall be available for use by all residents.

4.106.4.2.1.1 Electric Vehicle Charging Stations (EVCS) When EV chargers are installed, EV spaces required by Section 4.106.2.2, Item 3, shall comply with at least one of the following options:

1. The EV space shall be located adjacent to an accessible parking space meeting the requirements of the California Building Code, Chapter 11A, to allow use of the EV charger from accessible parking space.
2. The EV space shall be located on an accessible route, as defined in the California Building Code, Chapter 2, to the building.

Exception: Electric vehicle charging stations designed and constructed in compliance with the California Building Code, Chapter 11B, are not required to comply with Section 4.106.4.2.1.1 and Section 4.106.4.2.2, Item 3.

Note: Electric Vehicle charging stations serving public housing are required to comply with the California Building Code, Chapter 11B.

4.106.4.2.2 Electric vehicle charging space (EV space) dimensions. The EV space shall be designed to comply with the following:

1. The minimum length of each EV space shall be 18 feet (5486 mm).
2. The minimum width of each EV space shall be 9 feet (2743 mm).
3. One in every 25 EV spaces, but not less than one EV space, shall have an 8-foot (2438 mm) wide minimum aisle. A 5-foot (1524 mm) wide minimum aisle shall be permitted provided the minimum width of the EV space is 12 feet (3658 mm).
   a. Surface slope for this EV space and the aisle shall not exceed 1 unit vertical in 48 units horizontal (2.083 percent slope) in any direction.

4.106.4.2.3 Single EV space required. Install a listed raceway capable of accommodating a 208/240- volt dedicated branch circuit. The raceway shall not be less than trade size 1 (nominal 1-inch inside diameter). The raceway shall originate at the main service or subpanel and shall terminate into a listed cabinet, box or enclosure in close proximity to the proposed location of the EV space. Construction documents shall identify the raceway termination point. The service panel and/or subpanel shall provide capacity to install a 40-ampere minimum dedicated branch circuit and space(s) reserved to permit installation of a branch circuit overcurrent protective device.

Exemption: A raceway is not required if a minimum 40-ampere 208/240-volt dedicated EV branch circuit is installed in close proximity to the proposed location of an EV charger, at the time of original construction in accordance with the California Electrical Code.

4.106.4.2.4 Multiple EV spaces required. Construction documents shall indicate the raceway termination point and proposed location of future EV spaces and EV chargers. Construction documents shall also provide information on amperage of future EVSE, raceway method(s), wiring schematics and electrical load calculations to verify that the electrical panel service capacity and electrical system, including any on-site distribution transformer(s), have sufficient capacity to simultaneously charge all EVs at all required EV spaces at the full rated amperage of the EVSE. Plan design shall be based upon a 40-ampere minimum branch circuit. Required raceways and related components that are planned to be installed underground, enclosed, inaccessible or in concealed areas and spaces shall be installed at the time of original construction.

Exemption: A raceway is not required if a minimum 40-ampere 208/240-volt dedicated EV branch circuit is installed in close proximity to the proposed location of an EV charger, at the time of original construction in accordance with the California Electrical Code.

4.106.4.2.5 Identification. The service panel or subpanel circuit directory shall identify the overcurrent protective device space(s) reserved for future EV charging purposes as "EV CAPABLE" in accordance with the California Electrical Code.

4.106.4.3 New hotels and motels. All newly constructed hotels and motels shall provide EV spaces capable of supporting future installation of EVSE. The construction documents shall identify the location of the EV spaces.

Notes:

1. Construction documents are intended to demonstrate the project's capability and capacity or facilitating future EV charging.
2. There is no requirement for EV spaces to be constructed or available until EV chargers are installed for use.
3. A parking space served by electrical vehicle supple equipment or designed as a future EV charging space shall count as at least one standard automobile parking space for the purpose of complying with any applicable minimum parking space requirements established by a local jurisdiction. See Vehicle Code Section 22511.2 for further details.

4.106.4.3.1 Number of required EV spaces. The number of required EV spaces shall be based on the total number of parking spaces provided for all types of parking facilities in accordance with Table 4.106.4.3.1. Calculations for the required number of EV spaces shall be rounded up to the nearest whole number.

TABLE 4.106.4.3.1

TOTAL NUMBER OF PARKING SPACES	NUMBER OF REQUIRED SPACES
0 - 9	0
10 - 25	1
26 - 50	2
51 - 75	4
76-100	5
101 - 150	7
151 - 200	10
201 AND OVER	AT LEAST 6% OF TOTAL

4.106.4.3.2 Electric vehicle charging space (EV space) dimensions. The EV spaces shall be designed to comply with the following:

1. The minimum length of each EV space shall be 18 feet (5486mm).
2. The minimum width of each EV space shall be 9 feet (2743mm)

4.106.4.3.3 Single EV space required. When a single EV space is required, the EV space shall be designed in accordance with Section 4.106.4.2.3.

4.106.4.3.4 Multiple EV spaces required. When multiple EV spaces are required, the EV spaces shall be designed in accordance with Section 4.106.4.2.4.

4.106.4.3.5 Identification. The service panels or sub-panels shall be identified in accordance with Section 4.106.4.2.5.

4.106.4.3.6 Accessible EV spaces. In addition to the requirements in Section 4.106.4.3, EV spaces for hotels/motels and all EVSE, when installed, shall comply with the accessibility provisions for the EV charging stations in the California Building Code, Chapter 11B.

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DIVISION 4.2 ENERGY EFFICIENCY

4.201 GENERAL

4.201.1 SCOPE. For the purposes of mandatory energy efficiency standards in this code, the California Energy Commission will continue to adopt mandatory standards.

DIVISION 4.3 WATER EFFICIENCY AND CONSERVATION

4.303 INDOOR WATER USE

4.303.1 WATER CONSERVING PLUMBING FIXTURES AND FITTINGS. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the sections 4.303.1.1, 4.303.1.2, 4.303.1.3, and 4.303.4.4.

Note: All noncompliant plumbing fixtures in any residential real property shall be replaced with water-conserving plumbing fixtures. Plumbing fixture replacement is required prior to issuance of a certificate of final completion, certificate of occupancy, or final permit approval by the local building department. See Civil Code Section 1101.1, et seq., for the definition of a noncompliant plumbing fixture, types of residential buildings affected and other important enactment dates.

4.303.1.1 Water Closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush. Tank-type water closets shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Tank-type Toilets.

Note: The effective flush volume of dual flush toilets is defined as the composite, average flush volume of two reduced flushes and one full flush.

4.303.1.2 Urinals. The effective flush volume of wall mounted urinals shall not exceed 0.125 gallons per flush.The effective flush volume of all other urinals shall not exceed 0.5 gallons per flush.

4.303.1.3 Showerheads.

4.303.1.3.1 Single Showerhead. Showerheads shall have a maximum flow rate of not more than 1.8 gallons per minute at 80 psi. Showerheads shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Showerheads.

4.303.1.3.2 Multiple showerheads serving one shower. When a shower is served by more than one showerhead, the combined flow rate of all the showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi, or the shower shall be designed to only allow one shower outlet to be in operation at a time.

Note: A hand-held shower shall be considered a showerhead.

4.303.1.4 Faucets.

4.303.1.4.1 Residential Lavatory Faucets. The maximum flow rate of residential lavatory faucets shall not exceed 1.2 gallons per minute at 60 psi. The minimum flow rate of residential lavatory faucets shall not be less than 0.8 gallons per minute at 20 psi.

4.303.1.4.2 Lavatory Faucets in Common and Public Use Areas. The maximum flow rate of lavatory faucets installed in common and public use areas (outside of dwellings or sleeping units) in residential buildings shall not exceed 0.5 gallons per minute at 60 psi.

4.303.1.4.3 Metering Faucets. Metering faucets when installed in residential buildings shall not deliver more than 0.2 gallons per cycle.

4.303.1.4.4 Kitchen Faucets. The maximum flow rate of kitchen faucets shall not exceed 1.8 gallons per minute at 60 psi. Kitchen faucets may temporarily increase the flow above the maximum rate, but not to exceed 2.2 gallons per minute at 60 psi, and must default to a maximum flow rate of 1.8 gallons per minute at 60 psi.

Note: Where complying faucets are unavailable, aerators or other means may be used to achieve reduction.

4.303.1.4.5 Pre-rinse spray valves.
When installed, shall meet the requirements in the California Code of Regulations, Title 20 (Appliance Efficiency Regulations), Sections 1605.1 (h)(4) Table H-2, Section 1605.3 (h)(4)(A), and Section 1607 (d)(7) and shall be equipped with an integral automatic shutoff.

FOR REFERENCE ONLY: The following table and code section have been reprinted from the California Code of Regulations, Title 20 (Appliance Efficiency Regulations),Section 1605.1 (h) (4) and Section 1605.3 (h)(4)(A).

TABLE H-2

STANDARDS FOR COMMERCIAL PRE-RINSE SPRAY VALVES MANUFACTURED ON OR AFTER JANUARY 28, 2019

PRODUCT CLASS [spray force in ounce force (ozf)]	MAXIMUM FLOW RATE (gpm)
Product Class 1 (≤ 5.0 ozf)	1.00
Product Class 2 (> 5.0 ozf and ≤ 8.0 ozf)	1.20
Product Class 3 (> 8.0 ozf)	1.28

Title 20 Section 1605.3 (h)(4)(A): Commercial prerinse spray values manufactured on or after January 1, 2006, shall have a minimum spray force of not less than 4.0 ounces-force (ozf) [113 grams-force(gf)]

4.303.2 Submeters for multifamily buildings and dwelling units in mixed-used residential/commercial buildings.
Submeters shall be installed to measure water usage of individual rental dwelling units in accordance with the California Plumbing Code.

4.303.3 Standards for plumbing fixtures and fittings. Plumbing fixtures and fittings shall be installed in accordance with the California Plumbing Code, and shall meet the applicable standards referenced in Table 1701.1 of the California Plumbing Code.

NOTE:
THIS TABLE COMPILES THE DATA IN SECTION 4.303.1, AND IS INCLUDED AS A CONVENIENCE FOR THE USER.

TABLE - MAXIMUM FIXTURE WATER USE

FIXTURE TYPE	FLOW RATE
SHOWER HEADS (RESIDENTIAL)	1.8 GMP @ 80 PSI
LAVATORY FAUCETS (RESIDENTIAL)	MAX. 1.2 GPM @ 60 PSI MIN. 0.8 GPM @ 20 PSI
LAVATORY FAUCETS IN COMMON & PUBLIC USE AREAS	0.5 GPM @ 60 PSI
KITCHEN FAUCETS	1.8 GPM @ 60 PSI
METERING FAUCETS	0.2 GAL/CYCLE
WATER CLOSET	1.28 GAL/FLUSH
URINALS	0.125 GAL/FLUSH

4.304 OUTDOOR WATER USE

4.304.1 OUTDOOR POTABLE WATER USE IN LANDSCAPE AREAS. Residential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent.

NOTES:

1. The Model Water Efficient Landscape Ordinance (MWELO) is located in the California Code Regulations, Title 23, Chapter 2.7, Division 2. MWELO and supporting documents, including water budget calculator, are available at: https://www.water.ca.gov/

DIVISION 4.4 MATERIAL CONSERVATION AND RESOURCE EFFICIENCY

4.406 ENHANCED DURABILITY AND REDUCED MAINTENANCE

4.406.1 RODENT PROOFING. Annular spaces around pipes, electric cables, conduits or other openings in sole/bottom plates at exterior walls shall be protected against the passage of rodents by closing such openings with cement mortar, concrete masonry or a similar method acceptable to the enforcing agency.

4.408 CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING

4.408.1 CONSTRUCTION WASTE MANAGEMENT. Recycle and/or salvage for reuse a minimum of 65 percent of the non-hazardous construction and demolition waste in accordance with either Section 4.408.2, 4.408.3 or 4.408.4, or meet a more stringent local construction and demolition waste management ordinance.

Exceptions:

1. Excavated soil and land-clearing debris.
2. Alternate waste reduction methods developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist or are not located reasonably close to the jobsite.
3. The enforcing agency may make exceptions to the requirements of this section when isolated jobsites are located in areas beyond the haul boundaries of the diversion facility.

4.408.2 CONSTRUCTION WASTE MANAGEMENT PLAN. Submit a construction waste management plan in conformance with Items 1 through 5. The construction waste management plan shall be updated as necessary and shall be available during construction for examination by the enforcing agency.

1. Identify the construction and demolition waste materials to be diverted from disposal by recycling, reuse on the project or salvage for future use or sale.
2. Specify if construction and demolition waste materials will be sorted on-site (source separated) or bulk mixed (single stream).
3. Identify diversion facilities where the construction and demolition waste material collected will be taken.
4. Identify construction methods employed to reduce the amount of construction and demolition waste generated.
5. Specify that the amount of construction and demolition waste materials diverted shall be calculated by weight or volume, but not by both.

4.408.3 WASTE MANAGEMENT COMPANY. Utilize a waste management company, approved by the enforcing agency, which can provide verifiable documentation that the percentage of construction and demolition waste material diverted from the landfill complies with Section 4.408.1.

Note: The owner or contractor may make the determination if the construction and demolition waste materials will be diverted by a waste management company.

4.408.4 WASTE STREAM REDUCTION ALTERNATIVE [LR]. Projects that generate a total combined weight of construction and demolition waste disposed of in landfills, which do not exceed 3.4 lbs./sq.ft. of the building area shall meet the minimum 65% construction waste reduction requirement in Section 4.408.1

4.408.4.1 WASTE STREAM REDUCTION ALTERNATIVE. Projects that generate a total combined weight of construction and demolition waste disposed of in landfills, which do not exceed 2 pounds per square foot of the building area, shall meet the minimum 65% construction waste reduction requirement in Section 4.408.1

4.408.5 DOCUMENTATION. Documentation shall be provided to the enforcing agency which demonstrates compliance with Section 4.408.2, Items 1 through 5, Section 4.408.3 or Section 4.408.4.

Notes:

1. Sample forms found in "A Guide to the California Green Building Standards Code (Residential)" located at www.hcd.ca.gov/CALGreen.html may be used to assist in documenting compliance with this section.
2. Mixed construction and demolition debris (C & D) processors can be located at the California Department of Resources Recycling and Recovery (CalRecycle).

4.410 BUILDING MAINTENANCE AND OPERATION

4.410.1 OPERATION AND MAINTENANCE MANUAL. At the time of final inspection, a manual, compact disc, web-based reference or other media acceptable to the enforcing agency which includes all of the following shall be placed in the building:

1. Directions to the owner or occupant that the manual shall remain with the building throughout the life cycle of the structure.
2. Operation and maintenance instructions for the following:
   a. Equipment and appliances, including water-saving devices and systems, HVAC systems, photovoltaic systems, electric vehicle chargers, water-heating systems and other major appliances and equipment.
   b. Roof and yard drainage, including gutters and downspouts.
   c. Space conditioning systems, including condensers and air filters.
   d. Landscape irrigation systems.
   e. Water reuse systems.
3. Information from local utility, water and waste recovery providers on methods to further reduce resource consumption, including recycle programs and locations.
4. Public transportation and/or carpool options available in the area.
5. Educational material on the positive impacts of an interior relative humidity between 30-60 percent and what methods an occupant may use to maintain the relative humidity level in that range.
6. Information about water-conserving landscape and irrigation design and controllers which conserve water.
7. Instructions for maintaining gutters and downspouts and the importance of diverting water at least 5 feet away from the foundation.
8. Information on required routine maintenance measures, including, but not limited to, caulking, painting, grading around the building, etc.
9. Information about state solar energy and incentive programs available.
10. A copy of all special inspections verifications required by the enforcing agency or this code.
11. Information from CAL Fire on maintenance of defensible space around residential structures.

4.410.2 RECYCLING BY OCCUPANTS. Where 5 or more multifamily dwelling units are constructed on a building site, provide readily accessible area(s) that serves all buildings on the site and are identified for the depositing, storage and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waster, and metals, or meet a lawfully enacted local recycling ordinance, if more restrictive.

Exception: Rural jurisdictions that meet and apply for the exemption in Public Resources Code Section 42649.82 (a)(2)(A) et seq. are note required to comply with the organic waste portion of this section.

DIVISION 4.5 ENVIRONMENTAL QUALITY

SECTION 4.501 GENERAL

4.501.1 Scope
The provisions of this chapter shall outline means of reducing the quality of air contaminants that are odorous, irritating and/or harmful to the comfort and well being of a building's installers, occupants and neighbors.

SECTION 4.502 DEFINITIONS

5.102.1 DEFINITIONS
The following terms are defined in Chapter 2 (and are included here for reference)

AGRIFIBER PRODUCTS. Agrifiber products include wheatboard, strawboard, panel substrates and door cores, not including furniture, fixtures and equipment (FF&E) not considered base building elements.

COMPOSITE WOOD PRODUCTS. Composite wood products include hardwood plywood, particleboard and medium density fiberboard. "Composite wood products" does not include hardboard, structural plywood, structural panels, structural composite lumber, oriented strand board, glued laminated timber, prefabricated wood I-joists or finger-jointed lumber, all as specified in California Code of regulations (CCR), title 17, Section 93120.1.

DIRECT-VENT APPLIANCE. A fuel-burning appliance with a sealed combustion system that draws all air for combustion from the outside atmosphere and discharges all flue gases to the outside atmosphere.
MAXIMUM INCREMENTAL REACTIVITY (MIR). The maximum change in weight of ozone formed by adding a compound to the "Base Reactive Organic Gas (ROG) Mixture" per weight of compound added, expressed to hundredths of a gram (g O^3/g ROC).
Note: MIR values for individual compounds and hydrocarbon solvents are specified in CCR, Title 17, Sections 94700 and 94701.

MOISTURE CONTENT. The weight of the water in wood expressed in percentage of the weight of the oven-dry wood.

PRODUCT-WEIGHTED MIR (PWMIR). The sum of all weighted-MIR for all ingredients in a product subject to this article. The PWMIR is the total product reactivity expressed to hundredths of a gram of ozone formed per gram of product (excluding container and packaging).
Note: PWMIR is calculated according to equations found in CCR, Title 17, Section 94521 (a).

REACTIVE ORGANIC COMPOUND (ROC). Any compound that has the potential, once emitted, to contribute to ozone formation in the troposphere.

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LODI UNIFIED SCHOOL DISTRICT

KEY PLAN
NORTH: PLAN TRUE

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STATE OF CALIFORNIA

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LODI UNIFIED SCHOOL DISTRICT
PROJECT NUMBER
250131
DATE: 10/28/2025
DRAWN BY: CAL CHKED BY: G.L.

CITY SUBMITTAL

#	DESCRIPTION	DATE
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VOC. A volatile organic compound (VOC) broadly defined as a chemical compound based on carbon chains or rings with vapor pressures greater than 0.1 millimeters of mercury at room temperature. These compounds typically contain hydrogen and may contain oxygen, nitrogen and other elements. See CCR Title 17, Section 94508(a).

4.503 FIREPLACES

4.503.1 GENERAL. Any installed gas fireplace shall be a direct-vent sealed-combustion type. Any installed woodstove or pellet stove shall comply with U.S. EPA New Source Performance Standards (NSPS) emission limits as applicable, and shall have a permanent label indicating they are certified to meet the emission limits. Woodstoves,pellet stoves and fireplaces shall also comply with applicable local ordinances.

4.504 POLLUTANT CONTROL

4.504.1 COVERING OF DUCT OPENINGS & PROTECTION OF MECHANICAL EQUIPMENT DURING CONSTRUCTION. At the time of rough installation, during storage on the construction site and until final startup of the heating, cooling and ventilating equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheet metal or other methods acceptable to the enforcing agency to reduce the amount of water, dust or debris which may enter the system.

4.504.2 FINISH MATERIAL POLLUTANT CONTROL. Finish materials shall comply with this section.

4.504.2.1 Adhesives, Sealants and Caulks. Adhesives, sealant and caulks used on the project shall meet the requirements of the following standards unless more stringent local or regional air pollution or air quality management district rules apply:

1. 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 Table 4.504.1 or 4.504.2, as applicable. Such products also shall comply with the Rule 1168 prohibition on the use of certain toxic compounds (chloroform, ethylene dichloride, methylene chloride, perchloroethylene and tricloroethylene), except for aerosol products, as specified in Subsection 2 below.
2. 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 1 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.

4.504.2.2 Paints and Coatings. Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Suggested Control Measure, as shown in Table 4.504.3, unless more stringent local limit apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 4.504.3 shall be determined by classifying the coating as a Flat, Nonflat or Nonflat-High Gloss coating, based on its gloss, as defined in subsections 4.21, 4.36, and 4.37 of the 2007 California Air Resources Board, Suggested Control Measure, and the corresponding Flat, Nonflat or Nonflat-High Gloss VOC limit in Table 4.504.3 shall apply.

4.504.2.3 Aerosol Paints and Coatings. Aerosol paints and coatings shall meet the Product-weighted MIR Limits for ROC in Section 94522(a)(2) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(e)(1) and (f) (1) of California Code of Regulations, Title 17, commencing with Section 94520; and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8, Rule 49.

4.504.2.4 Verification. Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following:

1. Manufacturer's product specification.
2. Field verification of on-site product containers.

TABLE 4.504.1 - ADHESIVE VOC LIMIT
(Less Water and Less Exempt Compounds in Grams per Liter)

ARCHITECTURAL APPLICATIONS	CURRENT VOC LIMIT
INDOOR CARPET ADHESIVES	50
CARPET PAD ADHESIVES	50
OUTDOOR CARPET ADHESIVES	150
WOOD FLOORING ADHESIVES	100
RUBBER FLOOR ADHESIVES	60
SUBFLOOR ADHESIVES	50
CERAMIC TILE ADHESIVES	65
VCT & ASPHALT TILE ADHESIVES	50
DRYWALL & PANEL ADHESIVES	50
COVE BASE ADHESIVES	50
MULTIPURPOSE CONSTRUCTION ADHESIVES	70
STRUCTURAL GLAZING ADHESIVES	100
SINGLE-PLY ROOF MEMBRANE ADHESIVES	250
OTHER ADHESIVES NOT SPECIFICALLY LISTED	50
SPECIALTY APPLICATIONS	
PVC WELDING	510
CPVC WELDING	490
ABS WELDING	325
PLASTIC CEMENT WELDING	250
ADHESIVE PRIMER FOR PLASTIC	550
CONTACT ADHESIVE	80
SPECIAL PURPOSE CONTACT ADHESIVE	250
STRUCTURAL WOOD MEMBER ADHESIVE	140
TOP & TRIM ADHESIVE	250
SUBSTRATE SPECIFIC APPLICATIONS	
METAL TO METAL	30
PLASTIC FOAMS	50
POROUS MATERIAL (EXCEPT WOOD)	50
WOOD	30
FIBERGLASS	80

1. IF AN ADHESIVE IS USED TO BOND DISSIMILAR SUBSTRATES TOGETHER, THE ADHESIVE WITH THE HIGHEST VOC CONTENT SHALL BE ALLOWED.
2. FOR ADDITIONAL INFORMATION REGARDING METHODS TO MEASURE THE VOC CONTENT SPECIFIED IN THIS TABLE, SEE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168.

TABLE 4.504.2 - SEALANT VOC LIMIT
Less Water and Less Exempt Compounds in Grams per Liter

SEALANTS	CURRENT VOC LIMIT
ARCHITECTURAL	250
MARINE DECK	760
NONMEMBRANE ROOF	300
ROADWAY	250
SINGLE-PLY ROOF MEMBRANE	450
OTHER	420

SEALANT PRIMERS	CURRENT VOC LIMIT
ARCHITECTURAL	
NONPOROUS	250
POROUS	775
MODIFIED BITUMINOUS	500
MARINE DECK	760
OTHER	750

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TABLE 4.504.3 - VOC CONTENT LIMITS FOR ARCHITECTURAL COATINGS
GRAMS OF VOC PER LITER OF COATING, LESS WATER & LESS EXEMPT COMPOUNDS

COATING CATEGORY	VOC LIMIT
FLAT COATINGS	50
NONFLAT COATINGS	100
NONFLAT HIGH GLOSS COATINGS	150
SPECIALTY COATINGS	
ALUMINUM ROOF COATINGS	400
BASEMENT SPECIALTY COATINGS	400
BITUMINOUS ROOF COATINGS	50
BITUMINOUS ROOF PRIMERS	350
BOND BREAKERS	350
CONCRETE CURING COMPOUNDS	350
CONCRETE/MASONRY SEALERS	100
DRIVEWAY SEALERS	50
DRY FOG COATINGS	150
FAUX FINISHING COATINGS	350
FIRE RESISTIVE COATINGS	350
FLOOR COATINGS	100
FORM-RELEASE COMPOUNDS	250
GRAPHIC ARTS COATINGS (SIGN PAINTS)	500
HIGH-TEMPERATURE COATINGS	420
INDUSTRIAL MAINTENANCE COATINGS	250
LOW SOLIDS COATINGS	120
MAGNESITE CEMENT COATINGS	450
MASTIC TEXTURE COATINGS	100
METALLIC PIGMENTED COATINGS	500
MULTICOLOR COATINGS	250
PRETREATMENT WASH PRIMERS	420
PRIMERS, SEALERS, & UNDERCOATERS	100
REACTIVE PENETRATING SEALERS	350
RECYCLED COATINGS	250
ROOF COATINGS	50
RUST PREVENTATIVE COATINGS	250
SHELLACS:	
CLEAR	730
OPAQUE	550
SPECIALTY PRIMERS, SEALERS & UNDERCOATERS	100
STAINS	250
STONE CONSOLIDANTS	450
SWIMMING POOL COATINGS	340
TRAFFIC MARKING COATINGS	100
TRAFFIC MARKING COATINGS	420
WATERPROOFING MEMBRANES	250
WOOD COATINGS	275
WOOD PRESERVATIVES	350
ZINC-RICH PRIMERS	340

1. GRAMS OF VOC PER LITER OF COATING, INCLUDING WATER & EXEMPT COMPOUNDS
2. THE SPECIFIED LIMITS REMAIN IN EFFECT UNLESS REVISED LIMITS ARE LISTED IN SUBSEQUENT COLUMNS IN THE TABLE.
3. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, ARCHITECTURAL COATINGS SUGGESTED CONTROL MEASURE, FEB. 1, 2008. MORE INFORMATION IS AVAILABLE FROM THE AIR RESOURCES BOARD.

TABLE 4.504.2 - SEALANT VOC LIMIT
MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION

PRODUCT	CURRENT LIMIT
HARDWOOD PLYWOOD VENEER CORE	0.05
HARDWOOD PLYWOOD COMPOSITE CORE	0.05
PARTICLE BOARD	0.09
MEDIUM DENSITY FIBERBOARD	0.11
THIN MEDIUM DENSITY FIBERBOARD	0.13

1. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIF. AIR RESOURCES BOARD, AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS TESTED IN ACCORDANCE WITH ASTM E 1333. FOR ADDITIONAL INFORMATION, SEE CALIF. CODE OF REGULATIONS, TITLE 17, SECTIONS 93120 THROUGH 93120.12.
2. THIN MEDIUM DENSITY FIBERBOARD HAS A MAXIMUM THICKNESS OF 5/16" (8 MM).

DIVISION 4.5 ENVIRONMENTAL QUALITY (continued)

4.504.3 CARPET SYSTEMS. All carpet installed in the building interior shall meet the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.2, January 2017 (Emission testing method for California Specification 01350)

See California Department of Public Health's website for certification programs and testing labs.

https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx

4.504.3.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.2, January 2017 (Emission testing method for California Specification 01350)

See California Department of Public Health's website for certification programs and testing labs.

https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx.

4.504.3.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Table 4.504.1.

4.504.4 RESILIENT FLOORING SYSTEMS. Where resilient flooring is installed , at least 80% of floor area receiving resilient flooring shall meet the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.2, January 2017 (Emission testing method for California Specification 01350)

See California Department of Public Health's website for certification programs and testing labs.

hhttps://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx.

4.504.5 COMPOSITE WOOD PRODUCTS. Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the buildings shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure for Composite Wood (17 CCR 93120 et seq.), by or before the dates specified in those sections, as shown in Table 4.504.5

4.504.5.1 Documentation. Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the following:

1. Product certifications and specifications.
2. Chain of custody certifications.
3. Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.),
4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269, European 636 3S standards, and Canadian CSA 0121, CSA 0151, CSA 0153 and CSA 0325 standards.
5. Other methods acceptable to the enforcing agency.

4.505 INTERIOR MOISTURE CONTROL

4.505.1 General. Buildings shall meet or exceed the provisions of the California Building Standards Code.

4.505.2 CONCRETE SLAB FOUNDATIONS. Concrete slab foundations required to have a vapor retarder by California Building Code, Chapter 19, or concrete slab-on-ground floors required to have a vapor retarder by the California Residential Code, Chapter 5, shall also comply with this section.

4.505.2.1 Capillary break. A capillary break shall be installed in compliance with at least one of the following:

1. A 4-inch (101.6 mm) thick base of 1/2 inch (12.7mm) or larger clean aggregate shall be provided with a vapor barrier in direct contact with concrete and a concrete mix design, which will address bleeding,shrinkage, and curling, shall be used. For additional information, see American Concrete Institute, ACI 302.2R-06.
2. Other equivalent methods approved by the enforcing agency.
3. A slab design specified by a licensed design professional.

4.505.3 MOISTURE CONTENT OF BUILDING MATERIALS. Building materials with visible signs of water damage shall not be installed. Wall and floor framing shall not be enclosed when the framing members exceed 19 percent moisture content. Moisture content shall be verified in compliance with the following:

1. Moisture content shall be determined with either a probe-type or contact-type moisture meter.Equivalent moisture verification methods may be approved by the enforcing agency and shall satisfy requirements found in Section 101.8 of this code.
2. Moisture readings shall be taken at a point 2 feet (610 mm) to 4 feet (1219 mm) from the grade stamped end of each piece verified.
3. At least three random moisture readings shall be performed on wall and floor framing with documentation acceptable to the enforcing agency provided at the time of approval to enclose the wall and floor framing. Insulation products which are visibly wet or have a high moisture content shall be replaced or allowed to dry prior to enclosure in wall or floor cavities. Wet-applied insulation products shall follow the manufacturers' drying recommendations prior to enclosure

4.506 INDOOR AIR QUALITY AND EXHAUST

4.506.1 Bathroom exhaust fans. Each bathroom shall be mechanically ventilated and shall comply with the following:

1. Fans shall be ENERGY STAR compliant and be ducted to terminate outside the building.
2. Unless functioning as a component of a whole house ventilation system, fans must be controlled by a humidity control.
   a. Humidity controls shall be capable of adjustment between a relative humidity range less than or equal to 50% to a maximum of 80%. A humidity control may utilize manual or automatic means of adjustment.
   b. A humidity control may be a separate component to the exhaust fan and is not required to be integral (i.e., built-in)

Notes:

1. For the purposes of this section, a bathroom is a room which contains a bathtub, shower or tub/shower combination.
2. Lighting integral to bathroom exhaust fans shall comply with the California Energy Code.

4.507 ENVIRONMENTAL COMFORT

4.507.2 HEATING AND AIR-CONDITIONING SYSTEM DESIGN. Heating and air conditioning systems shall be sized, designed and have their equipment selected using the following methods:

1. The heat loss and heat gain is established according to ANSI/ACCA 2 Manual J - 2011 (Residential Load Calculation), ASHRAE handbooks or other equivalent design software or methods.
2. Duct systems are sized according to ANSI/ACCA 1 Manual D - 2014 (Residential Duct Systems), ASHRAE handbooks or other equivalent design software or methods.
3. Select heating and cooling equipment according to ANSI/ACCA 3 Manual S - 2014 (Residential Equipment Selection), or other equivalent design software or methods.

Exception: Use of alternate design temperatures necessary to ensure the system functions are acceptable.

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CHAPTER 5
NONRESIDENTIAL MANDATORY MEASURES

SECTION 5.102 DEFINITIONS
5.102.1 DEFINITIONS
The following terms are defined in Chapter 2 *(and are included here for reference)*

CUTOFF LUMINAIRES. Luminaires whose light distribution is such that the candela per 1000 lamp lumens does not numerically exceed 25 (2.5 percent) at an angle of 90 degrees above nadir, and 100 (10 percent) at a vertical angle of 80 degrees above nadir. This applies to all lateral angles around the luminaire.

LOW-EMITTING AND FUEL EFFICIENT VEHICLES.

NEIGHBORHOOD ELECTRIC VEHICLE (NEV). Existing law defines "low-speed vehicle" for purposes of the Vehicle Code as a motor vehicle with 4 wheels that is capable of a minimum speed of 20 miles per hour and a maximum speed of 25 miles per hour on a paved level surface and that has a gross vehicle weight rating of less than 3,000 pounds. Existing law imposes certain restrictions on the use of low-speed vehicles on public streets and highways, and generally requires an operator of a low-speed vehicle to have a driver's license. A low-speed vehicle is also known as a neighborhood electric vehicle (NEV).

TENANT OCCUPANTS. Building occupants who inhabit a building during its normal hours of operation as permanent occupants, such as employees, as distinguished from customers and other transient visitors.

VANPOOL VEHICLE. A "vanpool vehicle" is any motor vehicle, other than a motortruck or truck tractor, designed for carrying more than 10 but not more than 15 persons including the driver, which is maintained and used primarily for the nonprofit work-related transportation of adults for the purposes of ridesharing.

ZEV. The Zero-Emission Vehicle (ZEV) program is part of CARB's Advanced Clean Cars package of coordinated standards that controls smog-causing pollutants and greenhouse gas emissions of passenger vehicles in California.

5.106.1 STORM WATER POLLUTION PREVENTION FOR PROJECTS THAT DISTURB LESS THAN ONE ACRE OF LAND. Newly constructed projects and additions which disturb less than one acre of land, and are not part of a larger common plan of development or sale, shall prevent the pollution of storm water runoff from the construction activities through one or more of the following measures:

5.106.1.1 Local ordinance. Comply with a lawfully enacted storm water management and/or erosion control ordinance.
5.106.1.2 Best Management Practices (BMPs). Prevent the loss of soil through wind or water erosion by implementing an effective combination of erosion and sediment control and good housekeeping BMPs.

1. Soil loss BMPs that should be considered for implementation as appropriate for each project include, but are not limited to, the following:
a. Scheduling construction activity during dry weather, when possible.
b. Preservation of natural features, vegetation, soil, and buffers around surface waters.
c. Drainage swales or lined ditches to control stormwater flow.
d. Mulching or hydroseeding to stabilize disturbed soils.
e. Erosion control to protect slopes.
f. Protection of storm drain inlets (gravel bags or catch basin inserts).
g. Perimeter sediment control (perimeter silt fence, fiber rolls).
h. Sediment trap or sediment basin to retain sediment on site.
i. Stabilized construction exits.
j. Wind erosion control.
k. Other soil loss BMPs acceptable to the enforcing agency.

2. Good housekeeping BMPs to manage construction equipment, materials, non-stormwater discharges and wastes that should be considered for implementation as appropriate for each project include, but are not limited to, the following:
a. Dewatering activities.
b. Material handling and waste management.
c. Building materials stockpile management.
d. Management of washout areas (concrete, paints, stucco, etc.).
e. Control of vehicle/equipment fueling to contractor's staging area.
f. Vehicle and equipment cleaning performed off site.
g. Spill prevention and control.
h. Other housekeeping BMPs acceptable to the enforcing agency.

5.106.2 STORMWATER POLLUTION PREVENTION FOR PROJECTS THAT DISTURB ONE OR MORE ACRES OF LAND. Comply with all lawfully enacted stormwater discharge regulations for projects that(1) disturb one acre or more of land, or (2) disturb less than one acre of land but are part of a larger common plan of development sale.
Note: Projects that (1) disturb one acre or more of land, or (2) disturb less than one acre of land but are part of the larger common plan of development or sale must comply with the post-construction requirements detailled in the applicable National Pollutant Discharge Elimination System (NPDES) General permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities issued by the State Water Resources Control Board or the Lahontan Regional Water Quality Control Board (for projects in the Lake Tahoe Hydrologic Unit).

The NPDES permits require postconstruction runoff (post-project hydrology) to match the preconstruction runoff (pre-project hydrology) with the installation of postconstruction stormwater management measures. The NPDES permits emphasize runoff reduction through on-site stormwater use, interception, evapotranspiration, and infiltration through nonstructural controls, such as Low Impact Development (LID) practices, and conversation design measures. Stormwater volume that cannot be addressed using nonstructural practices is required to be captured in structural practices and be approved by the enforcing agency.

Refer to the current applicable permits on the State Water Resources Control Board website at: www.waterboards.ca.gov/constructionstormwater. Consideration to the stormwater runoff management measures should be given during the initial design process for appropriate integration into site development.

5.106.4 BICYCLE PARKING. For buildings within the authority of California Building Standards Commission as specified in Section 103, comply with Section 5.106.4.1. For buildings within the authority of the Division of the State Architect pursuant to Section 105, comply with Section 5.106.4.2

5.106.4.1 Bicycle parking. [BSC-CG] Comply with Sections 5.106.4.1.1 and 5.106.4.1.2; or meet the applicable local ordinance, whichever is stricter.

5.106.4.1.1 Short-term bicycle parking. If the new project or an addition or alteration is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 5% of new visitor motorized vehicle parking spaces being added, with a minimum of one two-bike capacity rack.
Exception: Additions or alterations which add nine or less visitor vehicular parking spaces.

5.106.4.1.2 Long-term bicycle parking. For new buildings with tenant spaces that have 10 or more tenant-occupants, provide secure bicycle parking for 5 percent of the tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility.

5.106.4.1.3 For additions or alterations that add 10 or more tenant-occupant vehicular parking spaces, provide secure bicycle parking for 5 percent of the tenant vehicular parking spaces being added, with a minimum of one bicycle parking facility.

5.106.4.1.4 For new shell buildings in phased projects provide secure bicycle parking for 5 percent of the anticipated tenant-occupant vehicular parking spaces with a minimum of one bicycle parking facility.

5.106.4.1.5 Acceptable bicycle parking facility for Sections 5.106.4.1.2, 5.106.4.1.3, and 5.106.4.1.4 shall be convenient from the street and shall meet one of the following:

1. Covered, lockable enclosures with permanently anchored racks for bicycles;
2. Lockable bicycle rooms with permanently anchored racks; or
3. Lockable, permanently anchored bicycle lockers.

Note: Additional information on recommended bicycle accommodations may be obtained from Sacramento Area Bicycle Advocates.

5.106.4.2 Bicycle parking. [DSA-SS] For public schools and community colleges, comply with Sections 5.106.4.2.1 and 5.106.4.2.2

5.106.4.2.1 Student bicycle parking. Provide permanently anchored bicycle racks conveniently accessed with a minimum of four two-bike capacity racks per new building.
5.106.4.2.2 Staff bicycle parking. Provide permanent, secure bicycle parking conveniently accessed with a minimum of two staff bicycle parking spaces per new building. Acceptable bicycle parking facilities shall be convenient from the street or staff parking area and shall meet one of the following:

1. Covered, lockable enclosures with permanently anchored racks for bicycles;
2. Lockable bicycle rooms with permanently anchored racks; or
3. Lockable, permanently anchored bicycle lockers.

5.106.5.3 Electric vehicle (EV) charging. [N] Construction to provide electric vehicle infrastructure and facilitate electric vehicle charging shall comply with Section 5.106.5.3.1 and shall be provided in accordance with regulations in the California Building Code and the California Electrical Code.

Exceptions:
1. On a case-by-case basis where the local enforcing agency has determined compliance with this section is not feasible based upon one of the following conditions:
a. Where there is no local utility power supply
b. Where the local utility is unable to supply adequate power.
c. Where there is evidence suitable to the local enforcement agency substantiating the local utility infrastructure design requirements, directly related to the implementation of Section 5.106.5.3, may adversely impact the construction cost of the project.
2. Parking spaces accessible only by automated mechanical car parking systems are not required to comply with this code section

5.106.5.3.1 EV capable spaces.
[N]EV capable spaces shall be provided in accordance with Table 5.106.5.3.1 and the following requirements:

1. Raceways complying with the California Electrical Code and no less that 1-inch (25 mm) diameter shall be provided and shall originate at a service panel or a subpanel(s) serving the area, and shall terminate in close proximity to the proposed location of the EV capable and into a suitable listed cabinet, box,enclosure or equivalent. A common raceway may be used to serve multiple EV charging spaces.
2. A service panel or subpanel (s) shall be provided with panel space and electrical load capacity for a dedicated 208/240 volt, 40-ampere minimum branch circuit for each EV capable space, with delivery of 30-ampere minimum to an installed EVSE at each EVCS.
3. The electrical system and any on-site distribution transformers shall have sufficient capacity to supply full rated amperage at each EV capable space.
4. The service panel or subpanel circuit directory shall identify the reserved overcurrent protective devices space(s) as "EV CAPABLE". The raceway termination location shall be permanently and visibly marked as "EV CAPABLE."

Note: A parking space served by electric vehicle supply equipment or designed as a future EV charging space shall count as at least one standard automobile parking space only for the purpose of complying with any applicable minimum parking space requirements established by an enforcement agency. See vehicle Code Section 22511.2 for further details.

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CAL GREEN CHECKLIST

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G0.2

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TABLE 5.106.5.3.1		
TOTAL NUMBER OF ACTUAL PARKING SPACES	**NUMBER OF REQUIRED EV CAPABLE SPACES**	NUMBER OF EVCS (EV CAPABLE SPACES PROVIDED WITH EVSE)^2
0-9	0	0
10-25	2	0
26-50	8	2
51-75	13	3
76-100	17	4
101-150	25	6
151-200	35	9
201 AND OVER	20% of total[1]	25% of EV capable spaces[1]

1. Where there is insufficient electrical supply.
2. The number of required EVCS (EV capable spaces provided with EVSE) in column 3 count towards the total number of required EV capable spaces shown in column 2.

5.106.5.3.2 Electric vehicle charging stations (EVCS)

EV capable spaces shall be provided with EVSE to create EVCS in the number indicated in Table 5.106.5.3.1. The EVCS required by Table 5.106.5.3.1 may be provided with EVSE in any combination of Level 2 and Direct Current Fast Charging (DCFC), except that at least one Level 2 EVSE shall be provided.

One EV charger with multiple connectors capable of charging multiple EVs simultaneously shall be permitted if the electrical load capacity required by Section 5.106.5.3.1 for each EV capable space is accumulatively supplied to the EV charger.

The installation of each DCFC EVSE shall be permitted to reduce the minimum number of required EV capable spaces without EVSE by five and reduce proportionally the required electrical load capacity to the service panel or subpanel.

5.106.5.3.3 Use of automatic load management systems (ALMS).
ALMS shall be permitted for EVCS. When ALMS is installed, the required electrical load capacity specified in Section
5.106.5.3.1 for each EVCS may be reduced when serviced by an EVSE controlled by an ALMS. Each EVSE controlled by an ALMS shall deliver a minimum 30 amperes to an EV when charging one vehicle and shall deliver a minimum 3.3 kW while simultaneously charging multiple EVs.

5.106.5.3.4 Accessible EVCS.
When EVSE is installed, accessible EVSC shall be provided in accordance with the California Building Code, Chapter 11B, Section 11B-228.3.
Note: For EVCS signs, refer to Caltrans Traffic Operations Policy Directive 13-01 (Zero Emission Vehicle Signs and Pavement Markings) or its successor(s).

5.106.5.4 Electric Vehicle (EV) charging: medium-duty and heavy-duty. [N]
Construction shall comply with section 5.106.5.4.1 to facilitate future installation of electric vehicle supply equipment (EVSE). Construction for warehouses, grocery stores and retail stores with planned off-street loading spaces shall also comply with Section 5.106.5.4.1 for future installation of medium- and heavy-duty EVSE.
Exceptions:
1. On a case-by-case basis where the local enforcing agency has determined compliance with this section is not feasible based upon one of the following conditions:
a.Where there is no local utility power supply.
b. Where the local utility is unable to supply adequate power.
c. Where there is evidence suitable to the local enforcing agency substantiating that additional local utility infrastructure design requirements, directly related to the implementation of Section 5.106.5.3, may adversely impact the construction cost of the project.
When EVSE(s) is/are installed, it shall be in accordance with the California Building Code, the California Electrical Code and as follows:

5.106.5.4.1 Electric vehicle charging readiness requirements for warehouse, grocery stores and retail stores with planned off-street loading spaces.
[N] In order to avoid future demolition when adding EV charging supply and distribution equipment, spare raceways(s) or busway(s) and adequate capacity for transformers(s), service panels(s) or subpanel(s) shall be installed at the time of construction in accordance with the California Electrical Code. Construction plans and specifications shall include but are not limited to, the following:
1. The transformer, main service equipment and subpanel shall meet the minimum power requirement in Table 5.106.5.4.1 to accommodate the dedicated branch circuits for the future installation of EVSE.
2. The construction documents shall indicate on or more location(s) convenient to the planned offstreet loading space(s) reserved for medium-and heavy-duty ZEV charging cabinets and charging dispensers, and a pathway reserved for routing of conduit from the termination of the raceway(s) or busway(s) to the charging cabinet(s) and dispenser(s) as shown in Table 5.106.5.4.1
3. Raceway(s) or busway(s) originating at a main service panel or a subpanel(s) serving the area where potential future medium-and heavy-duty EVSE will be located and shall terminate in close proximity to the potential future location of the charging equipments for medium- and heavy-duty vehicles.
4. The raceway(s) or busway(s) shall be sufficient size to carry the minimum additional system load to the future location of the charging for medium- and heavy-duty ZEVs as shown in Table 5.106.5.4.1.

TABLE 5.106.5.4.1 RACEWAY CONDUIT AND PANEL POWER REQUIREMENTS FOR MEDIUM- AND HEAVY-DUTY EVSE [N]			
BUILDING TYPE	BUILDING SIZE (SQ. FT.)	**NUMBER OF OFF-STREET LOADING SPACES**	ADDITIONAL CAPACITY REQUIRED (KVA) FOR RACEWAY & BUSWAY AND TRANSFORMER & PANEL
Grocery	10,000 to 90,000	1 or 2	200
		3 or Greater	400
	Greater than 90,000	1 or Greater	400
Retail	10,000 to 135,000	1 or 2	200
		3 or Greater	400
	Greater than 135,000	1 or Greater	400
Warehouse	20,000 to 256,000	1 or 2	200
		3 or Greater	400
	Greater than 256,000	1 or Greater	400

5.106.8 LIGHT POLLUTION REDUCTION. [N]. Outdoor lighting systems shall be designed and installed to comply with the following:

1. The minimum requirements in the California Energy Code for Lighting Zones 0-4 as defined in Chapter 10, Section 10-114 of the California Administrative Code; and
2. Backlight (B) ratings as defined in IES TM-15-11 (shown in Table A-1 in Chapter 8);
3. Uplight and Glare ratings as defined in California Energy Code (shown in Tables 130.2-A and 130.2-B in Chapter 8) and
4. Allowable BUG ratings not exceeding those shown in Table 5.106.8. [N] or Comply with a local ordinance lawfully enacted pursuant to Section 101.7, whichever is more stringent.

Exceptions: [N]
1. Luminaires that qualify as exceptions in Sections 130.2 (b) and 140.7 of the California Energy Code.
2. Emergency lighting.
3. Building facade meeting the requirements in Table 140.7-B of the California Energy Code, Part 6.
4. Custom lighting features as allowed by the local enforcing agency, as permitted by Section 101.8 Alternate materials, designs and methods of construction.
5. Luminaires with less than 6,200 initial luminaire lumens.

MAXIMUM ALLOWABLE GLARE RATING [1] (G)					
MAXIMUM ALLOWABLE GLARE RATING [1] (G)	N/A	G1	G2	G3	G4
MAXIMUM ALLOWABLE GLARE RATING [1] (G)	N/A	G0	G1	G1	G2
MAXIMUM ALLOWABLE GLARE RATING [1] (G)	N/A	G0	G0	G1	G1
MAXIMUM ALLOWABLE GLARE RATING [1] (G)	N/A	G0	G0	G0	G1

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TABLE 5.106.8 [N] MAXIMUM ALLOWABLE BACKLIGHT, UPLIGHT AND GLARE (BUG) RATINGS [1,2]					
ALLOWABLE RATING	**LIGHTING ZONE LZ0**	**LIGHTING ZONE LZ1**	**LIGHTING ZONE LZ2**	**LIGHTING ZONE LZ3**	**LIGHTING ZONE LZ4**
MAXIMUM ALLOWABLE BACKLIGHT RATING					
Luminaire greater than 2 mounting heights (MH) from property line	N/A	No Limit	No Limit	No Limit	No Limit
Luminaire back hemisphere is 1-2 MH from property line	N/A	B2	B3	B4	B4
Luminaire back hemisphere is 0.5-1 MH from property line	N/A	B1	B2	B3	B3
Luminaire back hemisphere is less than 0.5 MH from property line	N/A	B0	B0	B1	B2
MAXIMUM ALLOWABLE UPLIGHT RATING (U)					
For area lighting	N/A	U0	U0	U0	U0
For all other outdoor lighting,including decorative luminaires	N/A	U1	U2	U3	UR

1. IESNA Lighting Zones 0 and 5 are not applicable; refer to Lighting Zones as defined in the California Energy Code and Chapter 10 of the California Administrative Code.
2. For property lines that abut public walkways, bikeways, plazas and parking lots, the property line may be considered to be 5 feet beyond the actual property line for purpose of determining compliance with this section. For property lines that abut public roadways and public transit corridors, the property line may be considered to be the centerline of the public roadway or public transit corridor for the purpose of determining compliance with this section.
3.General lighting luminaires in areas such as outdoor parking, sales or storage lots shall meet these reduced ratings. Decorative luminaries located in these areas shall meet U-value limits for "all other outdoor lighting"

5.106.8.1 Facing- Backlight
Luminaries within 2MH of a property line shall be oriented so that the nearest property line is behind the fixture, and shall comply with the backlight rating specified in Table 5.106.8 based on the lighting zone and distance to the nearest point of that property line.
Exception: Corners. If two property lines (or two segments of the same property line) have equidistant point to the luminaire, then the luminaire may be oriented so that the intersection of the two lines (the corner) is directly behind the luminaire. The luminaire shall still use the distance to the nearest point(s) on the property lines to determine the required backlight rating.

5.106.8.2 Facing-Glare. For luminaires covered by 5.106.8.1, if a property line also exists within or extends into the front hemisphere within 2MH of the luminaire then the luminaire shall comply with the more stringent glare rating specified in Table 5.106.8 based on the lighting zone and distance to the nearest point on the nearest property line within the front hemisphere.
Note: [N]
1.See also California Building Code, Chapter 12, Section 1205.6 for college campus lighting requirements for parking facilities and walkways.
2.Refer to Chapter 8 (Compliance Forms, Worksheets and Reference Material) for IES TM-15-11 Table A-1, California Energy Code Tables 130.2-A and 130.2-B.
3. Refer to the California Building Code for requirements for additions and alterations.

5.106.10 GRADING AND PAVING. Construction plans shall indicate how site grading or a drainage system will manage all surface water flows to keep water from entering buildings. Examples of methods to manage surface water include, but are not limited to, the following:
1. Swales.
2. Water collection and disposal systems.
3. French drains.
4. Water retention gardens.
5. Other water measures which keep surface water away from buildings and aid in groundwater recharge.
Exception: Additions and alterations not altering the drainage path.

5.106.12 SHADE TREES [DSA-SS]. Shade Trees shall be planted to comply with Sections 5.106.12.1, 5.106.12.2, and 5.106.12.3. Percentages shown shall be measured at noon on the summer solstice. Landscape irrigation necessary to establish and maintain tree health shall comply with Section

5.304.6. 5.106.12.1 Surface parking areas. Shade tree plantings, minimum #10 container size or equal, shall be installed to provide shade over 50 percent of the parking area within 15 years.
Exceptions: Surface parking area covered by solar photovoltaic shade structures with roofing materials that comply with Table A5.106.11.2.2 in Appendix A5 shall be permitted in whole or in part in lieu of shade tree planting.

5.106.12.2 Landscape areas. Shade tress plantings, minimum #10 container size or equal shall be installed to provide shade of 20% of the landscape area within 15 years.

Exceptions: Playfields for organized sport activity are not included in the total area calculation.

5.106.12.3. Hardscape areas. Shade tree plantings, minimum #10 container size or equal shall be installed to provide shade over 20 percent of the hardscape area within 15 years.

Exceptions:
1. Walks, hardscape areas covered by solar photovoltaic shade structures or shade structures with roofing materials that comply with Table A5.106.11.2.2 in Appendix A5 shall be permitted in whole or in part in lieu of shade tree planting.
2. Designated and marked play areas of organized sport activity are not included in the total area calculation.

DIVISION 5.2 ENERGY EFFICIENCY
SECTION 5.201 GENERAL
5.201.1 Scope [BSC-CG]. California Energy Code [DSA-SS]. For the purposes of mandatory energy efficiency standards in this code, the California Energy Commission will continue to adopt mandatory building standards.

DIVISION 5.3 WATER EFFICIENCY AND CONSERVATION
SECTION 5.301 GENERAL
5.301.1 Scope. The provisions of this chapter shall establish the means of conserving water use indoors, outdoors and in wastewater conveyance.

SECTION 5.302 DEFINITIONS
5.302.1 Definitions. The following terms are defined in Chapter 2 (and are included here for reference)

EVAPOTRANSPIRATION ADJUSTMENT FACTOR (ETAF) [DSA-SS]. An adjustment factor when applied to reference evapotranspiration that adjusts for plant factors and irrigation efficiency, which ae two major influences on the amount of water that needs to be applied to the landscape.

FOOTPRINT AREA [DSA-SS]. The total area of the furthest exterior wall of the structure projected to natural grade, not including exterior areas such as stairs, covered walkways, patios and decks.

METERING FAUCET. A self-closing faucet that dispenses a specific volume of water for each actuation cycle. The volume or cycle duration can be fixed or adjustable.

GRAYWATER. Pursuant to Health and Safety Code Section 17922.12, "graywater" means untreated wastewater that has not been contaminated by any toilet discharge, has not been affected by infectious, contaminated, or unhealthy bodily wastes, and does not present a threat from contamination by unhealthful processing, manufacturing, or operating wastes. "Graywater" includes, but is not limited to wastewater from bathtubs, showers, bathroom washbasins, clothes washing machines and laundry tubs, but does not include waste water from kitchen sinks or dishwashers.

MODEL WATER EFFICIENT LANDSCAPE ORDINANCE (MWELO). The California ordinance regulating landscape design, installation and maintenance practices that will ensure commercial, multifamily and other developer installed landscapes greater than 2500 square feet meet an irrigation water budget developed based on landscaped area and climatological parameters.

MODEL WATER EFFICIENT LANDSCAPE ORDINANCE (MWELO). [HCD] The California model ordinance (California Code of Regulations, Title 23, Division 2, Chapter 2.7), regulating landscape design, installation and maintenance practices. Local agencies are required to adopt the updated MWELO, or adopt a local ordinance at least as effective as the MWELO.

POTABLE WATER. Water that is drinkable and meets the U.S. Environmental Protection Agency (EPA) Drinking Water Standards. See definition in the California Plumbing Code, Part 5.

POTABLE WATER. [HCD] Water that is satisfactory for drinking, culinary, and domestic purposes, and meets the U.S. Environmental Protection Agency (EPA) Drinking Water Standards and the requirements of the Health Authority Having Jurisdiction.

RECYCLED WATER. Water which, as a result of treatment of waste, is suitable for a direct beneficial use or a controlled use that would not otherwise occur [Water Code Section 13050 (n)]. Simply put, recycled water is water treated to remove waste matter attaining a quality that is suitable to use the water again.

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SUBMETER. [HCD 1] A secondary device beyond a meter that measures water consumption of an individual rental unit within a multiunit residential structure or mixed-use residential and commercial structure. (See Civic Code Section 1954.202 (g) and Water code Section 517 for additional details.)

WATER BUDGET. Is the estimated total landscape irrigation water use which shall not exceed the maximum applied water allowance calculated in accordance with the Department of Water Resources Model Efficient Landscape Ordinance (MWELO)

SECTION 5.303 INDOOR WATER USE
5.303.1 METERS. Separate submeters or metering devices shall be installed for the uses described in Sections 503.1.1 and 503.1.2.

5.303.1.1 Buildings in excess of 50,000 square feet. Separate submeters shall be installed as follows:
1. For each individual leased, rented or other tenant space within the building projected to consume more than 100 gal/day (380 L/day), including, but not limited to, spaces used for laundry or cleaners, restaurant or food service, medical or dental office, laboratory, or beauty salon or barber shop.
2. Where separate submeters for individual building tenants are unfeasible, for water supplied to the following subsystems:
a. Makeup water for cooling towers where flow through is greater than 500 gpm (30 L/s).
b. Makeup water for evaporative coolers greater than 6 gpm (0.04 L/s).
c. Steam and hot water boilers with energy input more than 500,000 Btu/h (147 kW).

5.303.1.2 Excess consumption. A separate submeter or metering device shall be provided for any tenant within a new building or within an addition that is projected to consume more than 1,000 gal/day.

5.303.3 WATER CONSERVING PLUMBING FIXTURES AND FITTINGS. Plumbing fixtures (water closets and urinals) and fittings (faucets and showerheads) shall comply with the following:

5.303.3.1 Water Closets. The effective flush volume of all water closets shall not exceed 1.28 gallons per flush. Tank-type water closets shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Tank-Type toilets.
Note: The effective flush volume of dual flush toilets is defined as the composite, average flush volume of two reduced flushes and one full flush.

5.303.3.2 Urinals.
5.303.3.2.1 Wall-mounted Urinals. The effective flush volume of wall-mounted urinals shall not exceed 0.125 gallons per flush.
5.303.3.2.2 Floor-mounted Urinals. The effective flush volume of floor-mounted or other urinals shall not exceed 0.5 gallons per flush.

5.303.3.3 Showerheads. [BSC-CG]
5.303.3.3.1 Single showerhead. Showerheads shall have a maximum flow rate of not more than 1.8 gallons per minute at 80 psi. Showerheads shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Showerheads.

5.303.3.3.2 Multiple showerheads serving one shower. When a shower is served by more than one showerhead, the combined flow rate of all the showerheads and/or other shower outlets controlled by a single valve shall not exceed 1.8 gallons per minute at 80 psi, or the shower shall be designed to allow only one shower outlet to be in operation at a time.
Note: A hand-held shower shall be considered a showerhead.

5.303.3.4 Faucets and fountains.
5.303.3.4.1 Nonresidential Lavatory faucets. Lavatory faucets shall have a maximum flow rate of not more than 0.5 gallons per minute at 60 psi.

5.303.3.4.2 Kitchen faucets. Kitchen faucets shall have a maximum flow rate of not more than 1.8 gallons per minute at 60 psi. Kitchen faucets may temporarily increase the flow above the maximum rate, but not to exceed 2.2 gallons per minute at 60 psi, and must default to a maximum flow rate of 1.8 gallons per minute at 60 psi.

5.303.3.4.3 Wash fountains. Wash fountains shall have a maximum flow rate of not more than1.8 gallons per minute/20 [rim space (inches) at 60 psi].

5.303.3.4.4 Metering faucets. Metering faucets shall not deliver more than 0.20 gallons per cycle.

5.303.3.4.5 Metering faucets for wash fountains. Metering faucets for wash fountains shall have a maximum flow rate of not more than 0.20 gallons per minute/20 [rim space (inches) at 60 psi].
Note: Where complying faucets are unavailable, aerators or other means may be used to achieve reduction.

5.303.3.4.6 Pre-rinse spray value
When installed, shall meet the requirements in the *California Code of Regulations*, Title 20 (Appliance Efficiency Regulations), Section 1605.1 (h)(4) Table H-2, Section 1605.3 (h)(4)(A), and Section 1607 (d)(7), and shall be equipped with an integral automatic shutoff.

FOR REFERENCE ONLY: The following table and code section have been reprinted from the *California Code of Regulations*, Title 20 (Appliance Efficiency Regulations), Section 1605.1 (h)(4) and Section 1605.3 (h)(4)(A).

TABLE H-2	
STANDARDS FOR COMMERCIAL PRE-RINSE SPRAY VALVES MANUFACTURED ON OR AFTER JANUARY 28, 2019	
PRODUCT CLASS [spray force in ounce force (ozf)]	**MAXIMUM FLOW RATE (gpm)**
Product Class 1 (≤ 5.0 ozf)	1.00
Product Class 2 (> 5.0 ozf and ≤ 8.0 ozf)	1.20
Product Class 3 (> 8.0 ozf)	1.28

5.303.4 COMMERCIAL KITCHEN EQUIPMENT.

5.303.4.1 Food Waste Disposers. Disposers shall either modulate the use of water to no more than 1 gpm when the disposer is not in use (not actively grinding food waste/no-load) or shall automatically shut off after no more than 10 minutes of inactivity. Disposers shall use no more than 8 gpm of water.
Note: This code section does not affect local jurisdiction authority to prohibit or require disposer installation.

5.303.5 AREAS OF ADDITION OR ALTERATION. For those occupancies within the authority of the California Building Standards Commission as specified in Section 103, the provisions of Section 5.303.3 and 5.303.4 shall apply to new fixtures in additions or areas of alteration to the building.

5.303.6 STANDARDS FOR PLUMBING FIXTURES AND FITTINGS. Plumbing fixtures and fittings shall be installed in accordance with the *California Plumbing Code*, and shall meet the applicable standards referenced in Table 1701.1 of the *California Plumbing Code* and in Chapter 6 of this code.

SECTION 5.304 OUTDOOR WATER USE
5.304.1 OUTDOOR POTABLE WATER USE IN LANDSCAPE AREAS. Nonresidential developments shall comply with a local water efficient landscape ordinance or the current California Department of Water Resources' Model Water Efficient Landscape Ordinance (MWELO), whichever is more stringent.
Notes:
1. The Model Water Efficient Landscape Ordinance (MWELO) is located in the California Code of Regulations, Title 23, Chapter 2.7, Division 2.
2. MWELO and supporting documents, including a water budget calculator, are available at: https://www.water.ca.gov/
5.304.6 OUTDOOR POTABLE WATER USE IN LANDSCAPE AREAS. For public schools and community colleges, landscape projects as described in Sections 5.304.6.1 and 5.304.6.2 shall comply with the California Department of Water Resources Model Water Efficient Landscape Ordinance (MWELO) commencing with Section 490 of Chapter 2.7, Division 2, Title 23, *California Code of Regulations*, except that the evapotranspiration adjustment factor (ETAF) shall be 0.65 with an additional water allowance for special landscape areas (SLA) of 0.35.
Exception: Any project with an aggregate landscape area of 2,500 square feet or less may comply with the prescriptive measures contained in Appendix D of the MWELO.
5.304.6.1 Newly constructed landscapes. New construction projects with an aggregate landscape area equal to or greater than 500 square feet.
5.304.6.2 Rehabilitated landscapes. Rehabilitated landscape projects with an aggregate landscape area equal to or greater than 1,200 square feet.

DIVISION 5.4 MATERIAL CONSERVATION AND RESOURCE EFFICIENCY
SECTION 5.401 GENERAL
5.401.1 SCOPE. The provisions of this chapter shall outline means of achieving material conservation and resource efficiency through protection of buildings from exterior moisture, construction waste diversion, employment of techniques to reduce pollution through recycling of materials, and building commissioning or testing and adjusting.

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SECTION 5.402 DEFINITIONS

5.402.1 DEFINITIONS. The following terms are defined in Chapter 2 *(and are included here for reference)*
ADJUST. To regulate fluid flow rate and air patterns at the terminal equipment, such as to reduce fan speed or adjust a damper.
BALANCE. To proportion flows within the distribution system, including sub-mains, branches and terminals, according to design quantities.
BUILDING COMMISSIONING. A systematic quality assurance process that spans the entire design and construction process, including verifying and documenting that building systems and components are planned, designed, installed, tested, operated and maintained to meet the owner's project requirements.
ORGANIC WASTE. Food waste, green waste, landscape and pruning wste, nonhazardous wood waste, and food soiled paper waste that is mixed in with food waste.
TEST. A procedure to determine quantitative performance of a system or equipment

SECTION 5.407 WATER RESISTANCE AND MOISTURE MANAGEMENT
5.407.1 WEATHER PROTECTION. Provide a weather-resistant exterior wall and foundation envelope as required by California Building Code Section 1402.2 (Weather Protection), manufacturer's installation instructions or local
ordinance, whichever is more stringent.
5.407.2 MOISTURE CONTROL. Employ moisture control measures by the following methods.
5.407.2.1 Sprinklers. Design and maintain landscape irrigation systems to prevent spray on structures.
5.407.2.2 Entries and openings. Design exterior entries and/or openings subject to foot traffic or wind-driven rain to prevent water intrusion into buildings as follows:

5.407.2.2.1 Exterior door protection. Primary exterior entries shall be covered to prevent water intrusion by using nonabsorbent floor and wall finishes within at least 2 feet around and perpendicular to such openings plus at least one of the following:
1. An installed awning at least 4 feet in depth.
2. The door is protected by a roof overhang at least 4 feet in depth.
3. The door is recessed at least 4 feet.
4. Other methods which provide equivalent protection.

5.407.2.2.2 Flashing. Install flashings integrated with a drainage plane.

SECTION 5.408 CONSTRUCTION WASTE REDUCTION, DISPOSAL AND RECYCLING

5.408.1 CONSTRUCTION WASTE MANAGEMENT. Recycle and/or salvage for reuse a minimum of 65% of the non-hazardous construction and demolition waste in accordance with Section 5.408.1.1, 5.408.1.2 or 5.408.1.3, or
meet a local construction and demolition waste management ordinance, whichever is more stringent.

5.408.1.1 Construction waste management plan. Where a local jurisdiction does not have a construction and demolition waste management ordinance, submit a construction waste management plan that:
1. Identifies the construction and demolition waste materials to be diverted from disposal by efficient usage, recycling, reuse on the project or salvage for future use or sale.
2. Determines if construction and demolition waste materials will be sorted on-site (source-separated) or bulk mixed (single stream).
3. Identifies diversion facilities where construction and demolition waste material collected will be taken.
4. Specifies that the amount of construction and demolition waste materials diverted shall be calculated by weight or volume, but not by both.

5.408.1.2 Waste Management Company. Utilize a waste management company that can provide verifiable documentation that the percentage of construction and demolition waste material diverted from the landfill complies with this section.
Note: The owner or contractor shall make the determination if the construction and demolition waste material will be diverted by a waste management company.

Exceptions to Sections 5.408.1.1 and 5.408.1.2:
1. Excavated soil and land-clearing debris.
2. Alternate waste reduction methods developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist.
3. Demolition waste meeting local ordinance or calculated in consideration of local recycling facilities and markets.

5.408.1.3 Waste stream reduction alternative. The combined weight of new construction disposal that does not exceed two pounds per square foot of building area may be deemed to meet the 65% minimum requirement as approved by the enforcing agency.
5.408.1.4 Documentation. Documentation shall be provided to the enforcing agency which demonstrates compliance with Sections 5.408.1.1, through 5.408.1.3. The waste management plan shall be updated as necessary and shall be accessible during construction for examination by the enforcing agency.
Notes:
1. Sample forms found in "A Guide to the California Green Building Standards Code (Nonresidential)" located www.dgs.ca.gov/BSC/Resources/Page-Content/Building-Standards-Commission- Resources-List Folder/CALGreen may be used to assist in documenting compliance with the waste management plan.
2. Mixed construction and demolition debris processors can be located at the California Department of Resources Recycling and Recovery (CalRecycle).

5.408.2 UNIVERSAL WASTE. [A] Additions and alterations to a building or tenant space that meet the scoping provisions in Section 301.3 for nonresidential additions and alterations, shall require verification that Universal Waste items such as fluorescent lamps and ballast and mercury containing thermostats as well as other California prohibited Universal Waste materials are disposed of properly and are diverted from landfills. A list of prohibited Universal Waste materials shall be included in the construction documents.
Note: Refer to the Universal Waste Rule link at: http://www.dtsc.ca.gov/universalwaste/

5.408.3 EXCAVATED SOIL AND LAND CLEARING DEBRIS. 100 percent of trees, stumps, rocks and associated
vegetation and soils resulting primarily from land clearing shall be reused or recycled. For a phased project, such material may be stockpiled on site until the storage site is developed.
Exception: Reuse, either on or off-site, of vegetation or soil contaminated by disease or pest infestation.
Notes:
1. If contamination by disease or pest infestation is suspected, contact the County Agricultural Commissioner and follow its direction for recycling or disposal of the material.
2. For a map of how pest and/or disease quarantine zones, consult with the California Department of Food and Agriculture. (www.cdfa.ca.gov)

SECTION 5.410 BUILDING MAINTENANCE AND OPERATIONS
5.410.1 RECYCLING BY OCCUPANTS. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of non-hazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics, organic waste, and metals or meet a lawfully enacted local recycling ordinance, if more restrictive.
Exception: Rural jurisdictions that meet and apply for the exemption in Public Resources Code 42649.82 (a)(2) (A) et seq. shall also be exempt from the organic waste portion of this section

5.410.1.1 Additions. All additions conducted within a 12-month period under single or multiple permits, resulting in an increase of 30% or more in floor area, shall provide recycling areas on site.
Exception: Additions within a tenant space resulting in less than a 30% increase in the tenant space floor area.
5.410.1.2 Sample ordinance. Space allocation for recycling areas shall comply with Chapter 18, Part 3, Division 30 of the *Public Resources Code*. Chapter 18 is known as the California Solid Waste Reuse and Recycling Access Act of 1991 (Act).
Note: A sample ordinance for use by local agencies may be found in Appendix A of the document at the CalRecycle's web site.

5.410.2 COMMISSIONING. [N] New buildings 10,000 square feet and over. For new buildings 10,000 square feet and over, building commissioning shall be included in the design and construction processes of the building project to verify that the building systems and components meet the owner's or owner representative's project requirements. Commissioning shall be performed in accordance with this section by trained personnel with experience on projects of comparable size and complexity. For I-occupancies that are not regulated by OSHPD or for I-occupancies and L-occupancies that are not regulated y the California Energy Code Section 100.0 Scope, all requirements in Sections 5.410.2 through 5.410.2.6 shall apply.
Note: For energy-related systems under the scope (Section 100) of the California Energy Code, including heating,
ventilation, air conditioning (HVAC) systems and controls, indoor lighting systems and controls, as well as water heating systems and controls, refer to California Energy Code Section 120.8 for commissioning requirements Commissioning requirements shall include:
1. Owner's or Owner representative's project requirements.
2. Basis of design.
3. Commissioning measures shown in the construction documents.
4. Commissioning plan.
5. Functional performance testing.
6. Documentation and training.
7. Commissioning report.
Exceptions:
1. Unconditioned warehouses of any size.
2. Areas less than 10,000 square feet used for offices or other conditioned accessory spaces within unconditioned warehouses.
3. Tenant improvements less than 10,000 square feet as described in Section 303.1.1.
4. Open parking garages of any size, or open parking garage areas, of any size, within a structure.

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LODI UNIFIED SCHOOL DISTRICT

KEY PLAN
NORTH: PLAN TRUE

Architect / Engineer

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LODI UNIFIED SCHOOL DISTRICT
PROJECT NUMBER
250131
DATE: 10/28/2025
DRAWN BY: CAL CHKED BY: G.L.

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Note: For the purposes of this section, unconditioned shall mean a building, area, or room which does not provide heating and or air conditioning.
Informational Notes:
1. IAS AC 476 is an accreditation criteria for organizations providing training and/or certification of commissioning personnel. AC 476 is available to the Authority Having Jurisdiction as a reference for qualifications of commissioning personnel. AC 476 des not certify individuals to conduct functional performance tests or to adjust and balance systems.
2. Functional performance testing for heating, ventilation, air conditioning systems and lighting controls must be performed in compliance with the *California Energy Code*.

5.410.2.1 Owner's or Owner Representative's Project Requirements (OPR). [N] The expectations and requirements of the building appropriate to its phase shall be documented before the design phase of the project begins. This documentation shall include the following:
1. Environmental and sustainability goals.
2. Building sustainable goals.
3. Indoor environmental quality requirements.
4. Project program, including facility functions and hours of operation, and need for after hours operation.
5. Equipment and systems expectations.
6. Building occupant and operation and maintenance (O&M) personnel expectations.

5.410.2.2 Basis of Design (BOD). [N] A written explanation of how the design of the building systems meets the OPR shall be completed at the design phase of the building project. The Basis of Design document shall cover the following systems:
1. Renewable energy systems.
2. Landscape irrigation systems.
3. Water reuse system.

5.410.2.3 Commissioning plan. [N] Prior to permit issuance a commissioning plan shall be completed to document how the project will be commissioned. The commissioning plan shall include the following:
1. General project information.
2. Commissioning goals.
3. Systems to be commissioned. Plans to test systems and components shall include:
a. An explanation of the original design intent.
b. Equipment and systems to be tested, including the extent of tests.
c. Functions to be tested.
d. Conditions under which the test shall be performed.
e. Measurable criteria for acceptable performance.
4. Commissioning team information.
5. Commissioning process activities, schedules and responsibilities. Plans for the completion of commissioning shall be included.

5.410.2.4 Functional performance testing. [N] Functional performance tests shall demonstrate the correct installation and operation of each component, system and system-to-system interface in accordance with the approved plans and specifications. Functional performance testing reports shall contain information addressing each of the building components tested, the testing methods utilized, and include any readings and adjustments made.

5.410.2.5 Documentation and training. [N] A Systems Manual and Systems Operations Training are required, including Occupational Safety and Health Act (OSHA) requirements in *California Code of Regulations* (CCR), Title 8, Section 5142, and other related regulations.

5.410.2.5.1 Systems manual. [N] Documentation of the operational aspects of the building shall be completed within the systems manual and delivered to the building owner or representative. The systems manual shall include the following:
1. Site information, including facility description, history and current requirements.
2. Site contact information.
3. Basic operations and maintenance, including general site operating procedures, basic troubleshooting, recommended maintenance requirements, site events log.
4. Major systems.
5. Site equipment inventory and maintenance notes.
6. A copy of verifications required by the enforcing agency or this code.
7. Other resources and documentation, if applicable

5.410.2.5.2 Systems operations training. [N] A program for training of the appropriate maintenance staff for each equipment type and/or system shall be developed and documented in the commissioning report and shall include the following;
1. System/equipment overview (what it is, what it does and with what other systems and/or equipment it interfaces).
2. Review and demonstration of servicing/preventive maintenance.
3. Review of the information in the Systems Manual.
4. Review of the record drawings on the system/equipment.

5.410.2.6 Commissioning report. [N] A report of commissioning process activities undertaken through the design and construction phases of the building project shall be completed and provided to the owner or representative.

5.410.4 TESTING AND ADJUSTING. New buildings less than 10,000 square feet. Testing and adjusting of systems shall be required for new buildings less than 10,000 square feet or new systems to serve an addition or alteration subject to Section 303.1.

5.410.4.2 (Reserved)
Note: For energy-related systems under the scope (Section 100) of the California Energy Code, including heating, ventilation, air conditioning (HVAC) systems and controls, indoor lighting system and controls, as well as water heating systems and controls, refer to California Energy Code Section 120.8 for commissioning requirements and Sections 120.5, 120.6, 130.4, and 140.9(b)3 for additional testing requirements of specific systems.

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5.410.4.2 Systems. Develop a written plan of procedures for testing and adjusting systems. Systems to be included for testing and adjusting shall include at a minimum, as applicable to the project:
1. Renewable energy systems.
2. Landscape irrigation systems.
3. Water reuse systems.

5.410.4.3 Procedures. Perform testing and adjusting procedures in accordance with manufacturer's specifications and applicable standards on each system.

5.410.4.3.1 HVAC balancing. In addition to testing and adjusting, before a new space-conditioning system serving a building or space is operated for normal use, the system shall be balanced in accordance with the procedures defined by the Testing Adjusting and Balancing Bureau National Standards; the National Environmental Balancing Bureau Procedural Standards; Associated Air Balance Council National Standards or as approved by the enforcing agency.

5.410.4.4 Reporting. After completion of testing, adjusting and balancing, provide a final report of testing signed by the individual responsible for performing these services.

5.410.4.5 Operation and maintenance (O & M) manual. Provide the building owner or representative with detailed operating and maintenance instructions and copies of guaranties/warranties for each system. O & M instructions shall be consistent with OSHA requirements in CCR, Title 8, Section 5142, and other related regulations.

5.410.4.5.1 Inspections and reports. Include a copy of all inspection verifications and reports required by the enforcing agency.

DIVISION 5.5 ENVIRONMENTAL QUALITY
SECTION 5.501 GENERAL
5.501.1 SCOPE. The provisions of this chapter shall outline means of reducing the quantity of air contaminants that are odorous, irritating, and/or harmful to the comfort and well-being of a building's installers, occupants and neighbors.

SECTION 5.502 DEFINITIONS
5.502.1 DEFINITIONS. The following terms are defined in Chapter 2 *(and are included here for reference)*

ARTERIAL HIGHWAY. A general term denoting a highway primarily for through traffic usually on a continuous route.

A-WEIGHTED SOUND LEVEL (dBA). The sound pressure level in decibels as measured on a sound level meter using the internationally standardized A-weighting filter or as computed from sound spectral data to which A weighting adjustments have been made.

1 BTU/HOUR. British thermal units per hour, also referred to as Btu. The amount of heat required to raise one pound of water one degree Fahrenheit per hour, a common measure of heat transfer rate. A ton of refrigeration is 12,000 Btu, the amount of heat required to melt a ton (2,000 pounds) of ice at 320 Fahrenheit.

COMMUNITY NOISE EQUIVALENT LEVEL (CNEL). A metric similar to the day-night average sound level (Ldn), except that a 5 decibel adjustment is added to the equivalent continuous sound exposure level for evening hours (7pm to 10pm) in addition to the 10 dB nighttime adjustment used in the Ldn.

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COMPOSITE WOOD PRODUCTS. Composite wood products include hardwood plywood, particleboard and medium density fiberboard. "Composite wood products" does not include hardboard, structural plywood, structural panels, structural composite lumber, oriented strand board, glued laminated timber, timber, prefabricated wood I–joists or finger–jointed lumber, all as specified in California Code of Regulations (CCR), Title 17, Section 93120.1(a).
Note: See CCR, Title 17, Section 93120.1.

DAY-NIGHT AVERAGE SOUND LEVEL (Ldn). The A-weighted equivalent continuous sound exposure level for a 24-hour period with a 10 dB adjustment added to sound levels occurring during nighttime hours (10p.m. to 7 a.m.).

DECIBEL (db). A measure on a logarithmic scale of the magnitude of a particular quantity (such as sound pressure, sound power, sound intensity) with respect to a reference quantity.

ELECTRIC VEHICLE (EV). An automotive-type vehicle for on-road use, such as passenger automobiles, buses, trucks, vans, neighborhood electric vehicles, electric motorcycles, and the like, primarily powered by an electric motor that draws current from a rechargeable storage battery, fuel cell, photovoltaic array, or other source of electric current. Plug-in hybrid electric vehicles (PHEV) are considered electric vehicles. For purposes of the *California Electrical Code*, off-road, self-propelled electric vehicles, such as industrial trucks, hoists, lifts, transports, golf carts, airline ground support equipment, tractors, boats, and the like, are not included.

ELECTRIC VEHICLE CHARGING STATION(S) (EVCS)). One or more spaces intended for charging electric vehicles.

ELECTRIC VEHICLE SUPPLY EQUIPMENT (EVSE). The conductors, including the ungrounded, grounded, and equipment grounding conductors and the electric vehicle connectors, attachment plugs, and all other fittings, devices, power outlets, or apparatus installed specifically for the purpose of transferring energy between the premises wiring and the electric vehicle.

ENERGY EQUIVALENT (NOISE) LEVEL (Leq). The level of a steady noise which would have the same energy as the fluctuating noise level integrated over the time of period of interest.

EXPRESSWAY. An arterial highway for through traffic which may have partial control of access, but which may or may not be divided or have grade separations at intersections.

FREEWAY. A divided arterial highway with full control of access and with grade separations at intersections.

GLOBAL WARMING POTENTIAL (GWP). The radiative forcing impact of one mass-based unit of a given greenhouse gas relative to an equivalent unit of carbon dioxide over a given period of time. Carbon dioxide is the reference compound with a GWP of one.

GLOBAL WARMING POTENTIAL VALUE (GWP VALUE). A 100-year GWP value published by the Intergovernmental Panel on Climate Change (IPCC) in either its Second Assessment Report (SAR) (IPCC, 1995); or its Fourth Assessment A-3 Report (AR4) (IPCC, 2007). The SAR GWP values are found in column "SAR (100-yr)" of Table 2.14.; the AR4 GWP values are found in column "100 yr" of Table 2.14.

HIGH-GWP REFRIGERANT. A compound used as a heat transfer fluid or gas that is: (a) a chlorofluorocarbon, a hdrochlorofluorocarbon, a hydrofluorocarbon, a perfluorocarbon, or any compound or blend of compounds, with a GWP value equal to or greater than 150, or (B) any ozone depleting substance as defined in Title 40 of the Code of Federal Regulations, Part 82, sec.82.3 (as amended March 10, 2009).

LONG RADIUS ELBOW. Pipe fitting installed between two lengths of pipe or tubing to allow a change of direction, with a radius 1.5 times the pipe diameter.

LOW-GWP REFRIGERANT. A compound used as a heat transfer fluid or gas that: (A) has a GWP value less than 150, and (B) is not an ozone depleting substance as defined in Title 40 of the Code of Federal Regulations, Part 82, sec.82.3 (as amended March 10, 2009).

MERV. Filter minimum efficiency reporting value, based on ASHRAE 52.2–1999.

MAXIMUM INCREMENTAL REACTIVITY (MIR). The maximum change in weight of ozone formed by adding a compound to the "Base REactive Organic Gas (ROG) Mixture" per weight of compound added, expressed to hundreths of a gram (g O3/g ROC).

PRODUCT-WEIGHTED MIR (PWMIR). The sum of all weighted-MIR for all ingredients in a product subject to this article. The PWMIR is the total product reactivity expressed to hundredths of a gram of ozone formed per gram of product (excluding container and packaging).
PSIG. Pounds per square inch, guage.

REACTIVE ORGANIC COMPOUND (ROC). Any compound that has the potential, once emitted, to contribute to ozone formation in the troposphere.

SCHRADER ACCESS VALVES. Access fittings with a valve core installed.

SHORT RADIUS ELBOW. Pipe fitting installed between two lengths of pipe or tubing to allow a change of direction, with a radius 1.0 times the pipe diameter.

SUPERMARKET. For the purposes of Section 5.508.2, a supermarket is any retail food facility with 8,000 square feet or more conditioned area, and that utilizes either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units.

VOC. A volatile organic compound broadly defined as a chemical compound based on carbon chains or rings with vapor pressures greater than 0.1 millimeters of mercury at room temperature. These compounds typically contain hydrogen and may contain oxygen, nitrogen and other elements. See CCR Title 17, Section 94508(a)
Note: Where specific regulations are cited from different agencies such as SCAQMD, ARB, etc., the VOC definition included in that specific regulation is the one that prevails for the specific measure in question.

SECTION 5.503 FIREPLACES
5.503.1 FIREPLACES. Install only a direct-vent sealed-combustion gas or sealed wood-burning fireplace, or a sealed woodstove or pellet stove, and refer to residential requirements in the California Energy Code, Title 24, Part 6, Subchapter 7, Section 150. Woodstoves, pellet stoves and fireplaces shall comply with applicable local ordinances

5.503.1.1 Woodstoves. Woodstoves and pellet stoves shall comply with U.S. EPA New Source Performance Standards (NSPS) emission limits as applicable, and shall have a permanent label indicating they are certified to meet the emission limits.

SECTION 5.504 POLLUTANT CONTROL
5.504.1 TEMPORARY VENTILATION. The permanent HVAC system shall only be used during construction if necessary to condition the building or areas of addition or alteration within the required temperature range for material and equipment installation. If the HVAC system is used during construction, use return air filters with a Minimum Efficiency Reporting Value (MERV) of 8, based on ASHRAE 52.2-1999, or an average efficiency of 30% based on ASHRAE 52.1-1992 Replace all filters immediately prior to occupancy, or, if the building is occupied during alteration, at the conclusion of construction.

5.504.3 Covering of duct openings and protection of mechanical equipment during construction. At the time of rough installation and during storage on the construction site until final startup of the heating, cooling and ventilation equipment, all duct and other related air distribution component openings shall be covered with tape, plastic, sheetmetal or other methods acceptable to the enforcing agency to reduce the amount of dust, water and debris which may enter the system.

5.504.4 FINISH MATERIAL POLLUTANT CONTROL. Finish materials shall comply with Sections 5.504.4.1 through 5.504.4.6.

5.504.4.1 Adhesives, sealants and caulks. Adhesives, sealants, and caulks used on the project shall meet the requirements of the following standards:
1. 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 Tables 5.504.4.1 and 5.504.4.2. Such products also shall comply with the Rule 1168 prohibition on the use of certain toxic compounds (chloroform, ethylene dichloride, methylene chloride, perchloroethylene and trichloroethylene), except for aerosol products as specified in subsection 2, below.
2. 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.

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TABLE 5.504.4.1 - ADHESIVE VOC LIMIT[1,2]

Less Water and Less Exempt Compounds in Grams per Liter

ARCHITECTURAL APPLICATIONS	CURRENT VOC LIMIT
INDOOR CARPET ADHESIVES	50
CARPET PAD ADHESIVES	50
OUTDOOR CARPET ADHESIVES	150
WOOD FLOORING ADHESIVES	100
RUBBER FLOOR ADHESIVES	60
SUBFLOOR ADHESIVES	50
CERAMIC TILE ADHESIVES	65
VCT & ASPHALT TILE ADHESIVES	50
DRYWALL & PANEL ADHESIVES	50
COVE BASE ADHESIVES	50
MULTIPURPOSE CONSTRUCTION ADHESIVES	70
STRUCTURAL GLAZING ADHESIVES	100
SINGLE-PLY ROOF MEMBRANE ADHESIVES	250
OTHER ADHESIVES NOT SPECIFICALLY LISTED	50
SPECIALTY APPLICATIONS	
PVC WELDING	510
CPVC WELDING	490
ABS WELDING	325
PLASTIC CEMENT WELDING	250
ADHESIVE PRIMER FOR PLASTIC	550
CONTACT ADHESIVE	80
SPECIAL PURPOSE CONTACT ADHESIVE	250
STRUCTURAL WOOD MEMBER ADHESIVE	140
TOP & TRIM ADHESIVE	250
SUBSTRATE SPECIFIC APPLICATIONS	
METAL TO METAL	30
PLASTIC FOAMS	50
POROUS MATERIAL (EXCEPT WOOD)	50
WOOD	30
FIBERGLASS	80

1. IF AN ADHESIVE IS USED TO BOND DISSIMILAR SUBSTRATES TOGETHER, THE ADHESIVE WITH THE HIGHEST VOC CONTENT SHALL BE ALLOWED.
2. FOR ADDITIONAL INFORMATION REGARDING METHODS TO MEASURE THE VOC CONTENT SPECIFIED IN THIS TABLE, SEE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168, www.arb.ca.gov/DRDB/SC/CURHTML/R1168.PDF

TABLE 5.504.4.2 - SEALANT VOC LIMIT

Less Water and Less Exempt Compounds in Grams per Liter

SEALANTS	CURRENT VOC LIMIT
ARCHITECTURAL	250
MARINE DECK	760
NONMEMBRANE ROOF	300
ROADWAY	250
SINGLE-PLY ROOF MEMBRANE	450
OTHER	420
SEALANT PRIMERS	
ARCHITECTURAL	
NONPOROUS	250
POROUS	775
MODIFIED BITUMINOUS	500
MARINE DECK	760
OTHER	750

NOTE: FOR ADDITIONAL INFORMATION REGARDING METHODS TO MEASURE THE VOC CONTENT SPECIFIED IN THESE TABLES, SEE SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT RULE 1168.

5.504.4.3 Paints and coatings. Architectural paints and coatings shall comply with VOC limits in Table 1 of the ARB Architectural Coatings Suggested Control Measure, as shown in Table 5.504.4.3, unless more stringent local limits apply. The VOC content limit for coatings that do not meet the definitions for the specialty coatings categories listed in Table 5.504.4.3 shall be determined by classifying the coating as a Flat, Nonflat or Nonflat-High Gloss coating, based on its gloss, as defined in Subsections 4.21, 4.36 and 4.37 of the 2007 California Air Resources Board Suggested Control Measure, and the corresponding Flat, Nonflat or Nonflat-High Gloss VOC limit in Table 5.504.4.3 shall apply.

5.504.4.3.1 Aerosol Paints and coatings. Aerosol paints and coatings shall meet the PWMIR Limits for ROC in Section 94522(a)(3) and other requirements, including prohibitions on use of certain toxic compounds and ozone depleting substances, in Sections 94522(c)(2) and (d)(2) of *California Code of Regulations*, Title 17, commencing with Section 94520; and in areas under the jurisdiction of the Bay Area Air Quality Management District additionally comply with the percent VOC by weight of product limits of Regulation 8 Rule 49.

TABLE 5.504.4.3 - CONT.

GRAMS OF VOC PER LITER OF COATING, LESS WATER & LESS EXEMPT COMPOUNDS

COATING CATEGORY	CURRENT VOC LIMIT
SPECIALTY COATINGS	
ALUMINUM ROOF COATINGS	400
BASEMENT SPECIALTY COATINGS	400
BITUMINOUS ROOF COATINGS	50
BITUMINOUS ROOF PRIMERS	350
BOND BREAKERS	350
CONCRETE CURING COMPOUNDS	350
CONCRETE/MASONRY SEALERS	100
DRIVEWAY SEALERS	50
DRY FOG COATINGS	150
FAUX FINISHING COATINGS	350
FIRE RESISTIVE COATINGS	350
FLOOR COATINGS	100
FORM-RELEASE COMPOUNDS	250
GRAPHIC ARTS COATINGS (SIGN PAINTS)	500
HIGH-TEMPERATURE COATINGS	420
INDUSTRIAL MAINTENANCE COATINGS	250
LOW SOLIDS COATINGS[1]	120
MAGNESITE CEMENT COATINGS	450
MASTIC TEXTURE COATINGS	100
METALLIC PIGMENTED COATINGS	500
MULTICOLOR COATINGS	250
PRETREATMENT WASH PRIMERS	420
PRIMERS, SEALERS, & UNDERCOATERS	100
REACTIVE PENETRATING SEALERS	350
RECYCLED COATINGS	250
ROOF COATINGS	50
RUST PREVENTATIVE COATINGS	250
SHELLACS:	
CLEAR	730
OPAQUE	550
SPECIALTY PRIMERS, SEALERS & UNDERCOATERS	100
STAINS	250
STONE CONSOLIDANTS	450
SWIMMING POOL COATINGS	340
TRAFFIC MARKING COATINGS	100
TUB & TILE REFINISH COATINGS	420
WATERPROOFING MEMBRANES	250
WOOD COATINGS	275
WOOD PRESERVATIVES	350
ZINC-RICH PRIMERS	340

1. GRAMS OF VOC PER LITER OF COATING, INCLUDING WATER & EXEMPT COMPOUNDS
2. THE SPECIFIED LIMITS REMAIN IN EFFECT UNLESS REVISED LIMITS ARE LISTED IN SUBSEQUENT COLUMNS IN THE TABLE.
3. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, ARCHITECTURAL COATINGS SUGGESTED CONTROL MEASURE, FEB. 1, 2008. MORE INFORMATION IS AVAILABLE FROM THE AIR RESOURCES BOARD.

5.504.4.3.2 Verification. Verification of compliance with this section shall be provided at the request of the enforcing agency. Documentation may include, but is not limited to, the following:
1. Manufacturer's product specification
2. Field verification of on-site product containers

5.504.4.4 Carpet Systems.
All carpet installed in the building interior shall meet the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers." Version 1.2, January 2017 (Emission testing method for California Specifications 01350). See California Department of Public Health's website for certification programs and testing labs. https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx#material

5.504.4.4.1 Carpet cushion. All carpet cushion installed in the building interior shall meet the requirements of the California Department of Public Health,"Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers,"Version 1.2, January 2017 (Emission testing method for California Specifications 01350).
See California Department of Public Health's website for certification programs and testing labs. https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx#material

5.504.4.4.2 Carpet adhesive. All carpet adhesive shall meet the requirements of Table 5.504.4.1.

5.504.4.5 Composite wood products. Hardwood plywood, particleboard and medium density fiberboard composite wood products used on the interior or exterior of the buildings shall meet the requirements for formaldehyde as specified in ARB's Air Toxics Control Measure (ATCM) for Composite Wood (17 CCR 93120 et seq.). Those materials not exempted under the ATCM must meet the specified emission limits, as shown in Table 5.504.4.5.

5.504.4.5.3 Documentation. Verification of compliance with this section shall be provided as requested by the enforcing agency. Documentation shall include at least one of the following:
1. Product certifications and specifications.
2. Chain of custody certifications.
3. Product labeled and invoiced as meeting the Composite Wood Products regulation (see CCR, Title 17, Section 93120, et seq.).
4. Exterior grade products marked as meeting the PS-1 or PS-2 standards of the Engineered Wood Association, the Australian AS/NZS 2269 or European 636 3S standards.
5. Other methods acceptable to the enforcing agency.

TABLE 5.504.4.5 - FORMALDEHYDE LIMITS[1]

MAXIMUM FORMALDEHYDE EMISSIONS IN PARTS PER MILLION

PRODUCT	CURRENT LIMIT
HARDWOOD PLYWOOD VENEER CORE	0.05
HARDWOOD PLYWOOD COMPOSITE CORE	0.05
PARTICLE BOARD	0.09
MEDIUM DENSITY FIBERBOARD	0.11
THIN MEDIUM DENSITY FIBERBOARD[2]	0.13

1. VALUES IN THIS TABLE ARE DERIVED FROM THOSE SPECIFIED BY THE CALIFORNIA AIR RESOURCES BOARD, AIR TOXICS CONTROL MEASURE FOR COMPOSITE WOOD AS TESTED IN ACCORDANCE WITH ASTM E 1333. FOR ADDITIONAL INFORMATION, SEE CALIFORNIA CODE OF REGULATIONS, TITLE 17, SECTIONS 93120 THROUGH 93120.12.
2. THIN MEDIUM DENSITY FIBERBOARD HAS A MAXIMUM THICKNESS OF 5/16 INCHES (8 MM).

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KEY PLAN
NORTH: PLAN TRUE

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	5.504.4.6 Resilient flooring systems. Where resilient flooring is installed, at least 80 percent of floor area receiving resilient flooring shall meet the requirements of the California Department of Public Health,"Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers," Version 1.2, January 2017 (Emission testing method for California Specifications 01350) See California Department of Public Health's website for certification programs and testing labs. https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx#material **5.504.4.6.1 Verification of compliance.** Documentation shall be provided verifying that resilient flooring materials meet the pollutant emission limits. **5.504.4.7 Thermal insulation** Comply with the requirements of the California Department of Public Health, "Standard Method of the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, "Version 1.2, January 2017 (Emission testing method for California Specification 01350). See California Department of Public Health's website for certification programs and testing labs. https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/EHLB/IAQ/Pages/VOC.aspx#material 5.**504.4.7.1 Verification of compliance.** Documentation shall be provided verifying that thermal insulation materials meet the pollutant emission limits. **5.504.4.8 Acoustical ceiling and wall panels.** Comply with the requirements of the California Department of Public Health, "Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers, " Version 1.2, January 2017 (Emission testing method for California Specification 01350). See California Department of Public Health's website for certification programs and testing labs. **5.504.4.8.1 Verification of compliance.** Documentation shall be provided verifying that acoustical finish materials meet the pollutant emission limits. **5.504.5.3 Filters.** In mechanically ventilated buildings, provide regularly occupied areas of the building with air filtration media for outside and return air that provides at least a Minimum Efficiency Reporting Value (MERV) of 13. MERV 13 filters shall be installed prior to occupancy, and recommendations for maintenance with filters of the same value shall be included in the operation and maintenance manual. **Exceptions:** Existing mechanical equipment. **5.504.5.3.1 Labeling.** Installed filters shall be clearly labeled by the manufacturer indicating the MERV rating. **5.504.7 ENVIRONMENTAL TOBACCO SMOKE (ETS) CONTROL.** Where outdoor areas are provided for smoking, prohibit smoking within 25 feet of building entries, outdoor air intakes and operable windows and within the building as already prohibited by other laws or regulations; or as enforced by ordinances, regulations or policies of any city, county, city and county, California Community College, campus of the California State University, or campus of the University of California, whichever are more stringent. When ordinances, regulations or policies are not in place, post signage to inform building occupants of the prohibitions. **SECTION 5.505 INDOOR MOISTURE CONTROL** **5.505.1 INDOOR MOISTURE CONTROL.** Buildings shall meet or exceed the provisions of California Building Code, CCR, Title 24, Part 2, Sections 1202 (Ventilation) and Chapter 14 (Exterior Walls). For additional measures, see Section 5.407.2 of this code. **SECTION 5.506 INDOOR AIR QUALITY** **5.506.1 OUTSIDE AIR DELIVERY.** For mechanically or naturally ventilated spaces in buildings, meet the minimum requirements of Section 120.1 (Requirements For Ventilation) of the California Energy Code, or the applicable local code, whichever is more stringent, and Division 1, Chapter 4 of CCR, Title 8. **5.506.2 CARBON DIOXIDE (CO2) MONITORING.** For buildings or additions equipped with demand control ventilation, CO2 sensors and ventilation controls shall be specified and installed in accordance with the requirements of the California Energy Code, Section 120(c)(4). **5.506.3 Carbon dioxide (CO2) monitoring in classrooms.** **(DSA-SS)** Each public K-12 school classroom, as listed in Table 120.1-A of the California Energy Code, shall be equipped with a carbon dioxide monitor or sensor that meets the following requirements: 1. The monitor or sensor shall be permanently affixed in a tamper-proof manner in each classroom between 3 and 6 feet (914 mm and 1829 mm) above the floor and at least 5 feet (1524 mm) away from door and operable windows. 2. When the monitor or sensor is not integral to an Energy Management Control System (EMCS), the monitor or sensor shall display the carbon dioxide readings on the device. When the sensor is integral to an EMCS, the carbon dioxide readings shall be available to and regularly monitored by facility personnel. 3. A monitor shall provide notification though a visual indicator on the monitor when the carbon dioxide levels in the classroom have exceeded 1,100ppm. A sensor integral to an EMCS shall provide notification to facility personnel through a visual and/or audible indicator when the carbon dioxide levels in the classroom have exceeded 1,100ppm. 4. The monitor or sensor shall measure carbon dioxide levels at minimum 15- minute intervals and shall maintain a record of previous carbon dioxide measurements of not less than 30 days duration. 5. The monitor or sensor used to measure carbon dioxide levels shall have the capacity to measure carbon dioxide levels with a range of 400ppm to 2000ppm or greater. 6. The monitor or sensor shall be certified by the manufacturer to be accurate within 75ppm at 1,000ppm carbon dioxide concentration and shall be certified by the manufacturer to require calibration no more frequently than once every 5 years. **SECTION 5.507 ENVIRONMENTAL COMFORT** **5.507.4 ACOUSTICAL CONTROL.** Employ building assemblies and components with Sound Transmission Class (STC) values determined in accordance with ASTM E 90 and ASTM E 413, or Outdoor-Indoor Sound Transmission Class (OITC) determined in accordance with ASTM E 1332, using either the prescriptive or performance method in Section 5.507.4.1 or 5.507.4.2. **Exception:** Buildings with few or no occupants or where occupants are not likely to be affected by exterior noise, as determined by the enforcement authority, such as factories, stadiums, storage, enclosed parking structures and utility buildings. **Exception: [DSA-SS]** For public schools and community colleges, the requirements of this section and all subsections apply only to new construction. **5.507.4.1 Exterior noise transmission, prescriptive method.** Wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 in the following locations: 1. Within the 65 CNEL noise contour of an airport. **Exceptions:** 1. Ldn or CNEL for military airports shall be determined by the facility Air Installation Compatible Land Use Zone (AICUZ) plan. 2. Ldn or CNEL for other airports and heliports for which a land use plan has not been developed shall be determined by the local general plan noise element. 2. Within the 65 CNEL or Ldn noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway source as determined by the Noise Element of the General Plan. **5.507.4.1.1. Noise exposure where noise contours are not readily available.** Buildings exposed to a noise level of 65 dB Leq - 1-hr during any hour of operation shall have building, addition or alteration exterior wall and roof-ceiling assemblies exposed to the noise source meeting a composite STC rating of at least 45 (or OITC 35), with exterior windows of a minimum STC of 40 (or OITC 30). **5.507.4.2 Performance Method.** For buildings located as defined in Section 5.507.4.1 or 5.507.4.1.1, wall and roof-ceiling assemblies exposed to the noise source making up the building or addition envelope or altered envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level (Leq-1Hr) of 50 dBA in occupied areas during any hour of operation. **5.507.4.2.1 Site Features.** Exterior features such as sound walls or earth berms may be utilized as appropriate to the building, addition or alteration project to mitigate sound migration to the interior. **5.507.4.2.2 Documentation of Compliance.** An acoustical analysis documenting complying interior soundlevels shall be prepared by personnel approved by the architect or engineer of record. **5.507.4.3 Interior sound transmission.** Wall and floor-ceiling assemblies separating tenant spaces and tenant spaces and public places shall have an STC of at least 40. **Note:** Examples of assemblies and their various STC ratings may be found at the California Office of Noise Control: www.toolbase.org/PDF/CaseStudies/stc_icc_ratings.pdf.		**SECTION 5.508 OUTDOOR AIR QUALITY** **5.508.1 Ozone depletion and greenhouse gas reductions.** Installations of HVAC, refrigeration and fire suppression equipment shall comply with Sections 5.508.1.1 and 5.508.1.2. **5.508.1.1 Chlorofluorocarbons (CFCs).** Install HVAC, refrigeration and fire suppression equipment that do not contain CFCs. **5.508.1.2 Halons.** Install HVAC, refrigeration and fire suppression equipment that do not contain Halons. **5.508.2 Supermarket refrigerant leak reduction.** New commercial refrigeration systems shall comply with the provisions of this section when installed in retail food stores 8,000 square feet or more conditioned area, and that utilize either refrigerated display cases, or walk-in coolers or freezers connected to remote compressor units or condensing units. The leak reduction measures apply to refrigeration systems containing high-global-warming potential (high-GWP) refrigerants with a GWP of 150 or greater. New refrigeration systems include both new facilities and the replacement of existing refrigeration systems in existing facilities. **Exception:** Refrigeration systems containing low-global warming potential (low-GWP) refrigerant with a GWP value less than 150 are not subject to this section. Low-GWP refrigerants are nonozone-depleting refrigerants that include ammonia, carbon dioxide (CO2), and potentially other refrigerants. **5.508.2.1 Refrigerant piping.** Piping compliant with the California Mechanical Code shall be installed to be accessible for leak protection and repairs. Piping runs using threaded pipe, copper tubing with an outside diameter (OD) less than 1/4 inch, flared tubing connections and short radius elbows shall not be used in refrigerant systems except as noted below. **5.508.2.1.1 Threaded pipe.** Threaded connections are permitted at the compressor rack. **5.508.2.1.2 Copper pipe.** Copper tubing with an OD less than 1/4 inch may be used in systems with a refrigerant charge of 5 pounds or less. **5.508.2.1.2.1 Anchorage.** One-fouth-inch OD tubing shall be securely clamped to a rigid base to keep vibration levels below 8 mils. **5.508.2.1.3 Flared tubing connections.** Double-flared tubing connections may be used for pressure controls, valve pilot lines and oil. **Exception:** Single-flared tubing connections may be used with a multiring seal coated with industrial sealant suitable for use with refrigerants and tightened in accordance with manufacturer's recommendations. **5.508.2.1.4 Elbows.** Short radius elbows are only permitted where space limitations prohibit use of long radius elbows. **5.508.2.2 Valves.** Valves Valves and fittings shall comply with the California Mechanical Code and as follows. **5.508.2.2.1 Pressure relief valves.** For vessels containing high-GWP refrigerant, a rupture disc shall be installed between the outlet of the vessel and the inlet of the pressure relief valve. **5.508.2.2.1.1 Pressure detection.** A pressure gauge, pressure transducer or other device shall be installed in the space between the rupture disc and the relief valve inlet to indicate a disc rupture or discharge of the relief valve. **5.508.2.2.2 Access valves.** Only Schrader access valves with a brass or steel body are permitted for use. **5.508.2.2.2.1 Valve caps.** For systems with a refrigerant charge of 5 pounds or more, valve caps shall be brass or steel and not plastic. **5.508.2.2.2.2 Seal caps.** If designed for it, the cap shall have a neoprene O-ring in place. **5.508.2.2.2.2.1 Chain tethers.** Chain tethers to fit ov r the stem are required for valves designed to have seal caps. **Exception:** Valves with seal caps that are not removed from the valve during stem operation. **5.508.2.3 Refrigerated service cases.** Refrigerated service cases holding food products containing vinegar and salt shall have evaporator coils of corrosion-resistant material, such as stainless steel; or be coated to prevent corrosion from these substances. **5.508.2.3.1 Coil coating.** Consideration shall be given to the heat transfer efficiency of coil coating to maximize energy efficiency. **5.508.2.4 Refrigerant receivers.** Refrigerant receivers with capacities greater than 200 pounds shall be fitted with a device tha indicates the level of refrigerant in the receiver. **5.508.2.5 Pressure testing.** The system shall be pressure tested during installation prior to evacuation and charging. **5.508.2.5.1 Minimum pressure.** The system shall be charged with regulated dry nitrogen and appropriate tracer gas to bring system pressure up to 300 psig minimum. **5.508.2.5.2 Leaks.** Check the system for leaks, repair any leaks, and retest for pressure using the same gauge. **5.508.2.5.3 Allowable pressure change.** The system shall stand, unaltered, for 24 hours with no more than a +/- one pound pressure change from 300 psig, measured with the same gauge. **5.508.2.6 Evacuation.** The system shall be evacuated after pressure testing and prior to charging. **5.508.2.6.1 First vacuum.** Pull a system vacuum down to at least 1000 microns (+/- 50 microns), and hold for 30 minutes. **5.508.2.6.2 Second vacuum.** Pull a second system vacuum to a minimum of 500 microns and hold for 30 minutes. **5.508.2.6.3 Third vacuum.** Pull a third vacuum down to a minimum of 300 microns, and hold for 24 hours with a maximum drift of 100 microns over a 24-hour period. **CHAPTER 7** **INSTALLER & SPECIAL INSPECTOR QUALIFICATIONS** **702 QUALIFICATIONS** **702.1 INSTALLER TRAINING.** HVAC system installers shall be trained and certified in the proper installation of HVAC systems including ducts and equipment by a nationally or regionally recognized training or certification program. Uncertified persons may perform HVAC installations when under the direct supervision and responsibility of a person trained and certified to install HVAC systems or contractor licensed to install HVAC systems. Examples of acceptable HVAC training and certification programs include but are not limited to the following: 1. State certified apprenticeship programs. 2. Public utility training programs. 3. Training programs sponsored by trade, labor or statewide energy consulting or verification organizations. 4. Programs sponsored by manufacturing organizations. 5. Other programs acceptable to the enforcing agency. **702.2 SPECIAL INSPECTION [HCD].** When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition to other certifications or qualifications acceptable to the enforcing agency, the following certifications or education may be considered by the enforcing agency when evaluating the qualifications of a special inspector: 1. Certification by a national or regional green building program or standard publisher. 2. Certification by a statewide energy consulting or verification organization, such as HERS raters, building performance contractors, and home energy auditors. 3. Successful completion of a third party apprentice training program in the appropriate trade. 4. Other programs acceptable to the enforcing agency. **Notes:** 1. Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code. 2. HERS raters are special inspectors certified by the California Energy Commission (CEC) to rate homes in California according to the Home Energy Rating System (HERS). **[BSC-CG]** When required by the enforcing agency, the owner or the responsible entity acting as the owner's agent shall employ one or more special inspectors to provide inspection or other duties necessary to substantiate compliance with this code. Special inspectors shall demonstrate competence to the satisfaction of the enforcing agency for the particular type of inspection or task to be performed. In addition, the special inspector shall have a certification from a recognized state, national or international association, as determined by the local agency. The area of certification shall be closely related to the primary job function, as determined by the local agency. **Note:** Special inspectors shall be independent entities with no financial interest in the materials or the project they are inspecting for compliance with this code.		**703 VERIFICATIONS** **703.1 DOCUMENTATION.** Documentation used to show compliance with this code shall include but is not limited to, construction documents, plans, specifications, builder or installer certification, inspection reports, or other methods acceptable to the enforcing agency which demonstrate substantial conformance. When specific documentation or special inspection is necessary to verify compliance, that method of compliance will be specified in the appropriate section or identified applicable checklist.		

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NORTH: PLAN TRUE

Architect / Engineer

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CLIENT
LODI UNIFIED SCHOOL DISTRICT

PROJECT NUMBER
250131

DATE: 10/28/2025

DRAWN BY: CAL CHKED BY: G.L.

CITY SUBMITTAL

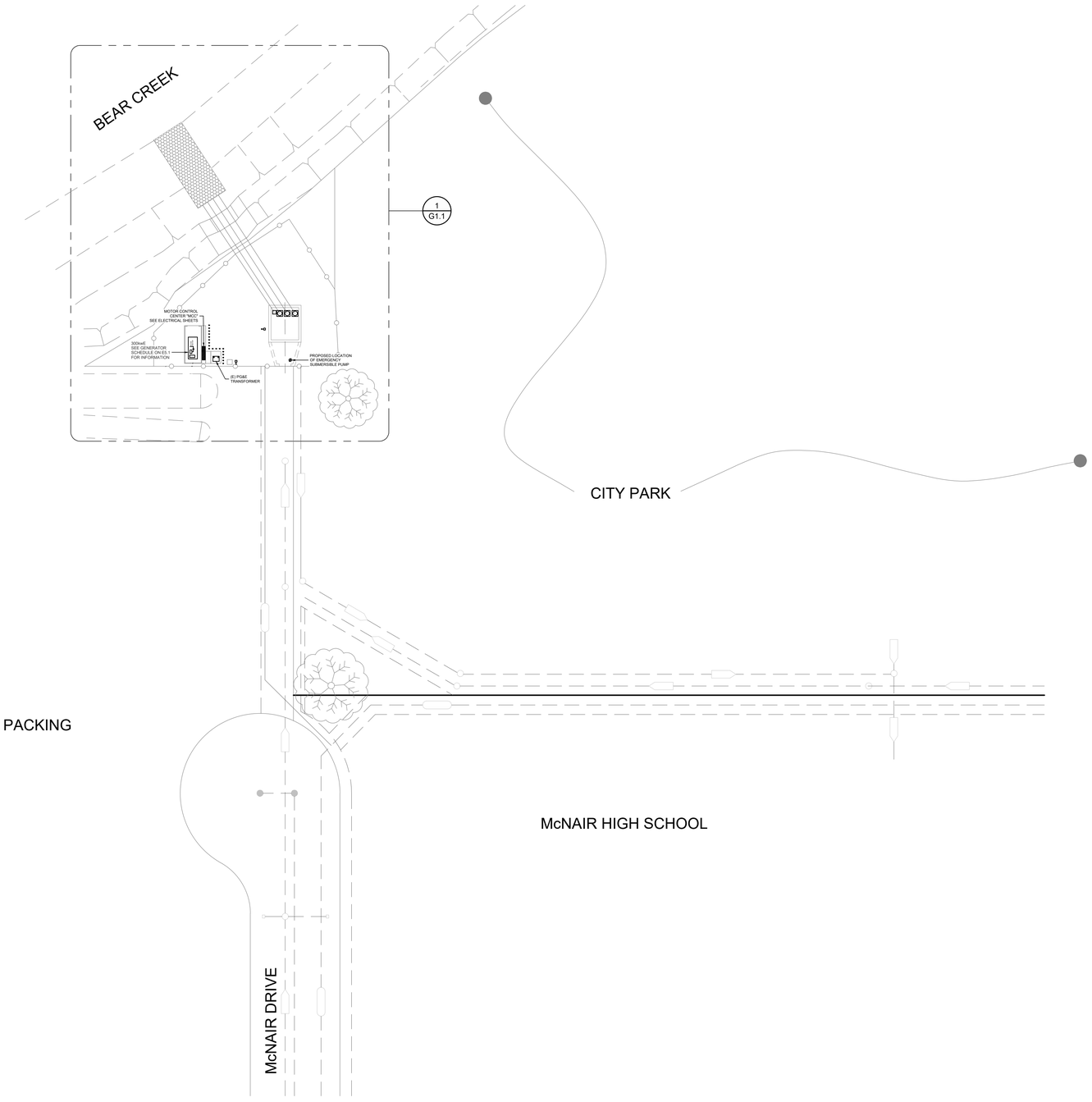
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CAL GREEN CHECKLIST

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G0.5

G3.1 CAL GREEN CHECKLIST



1 SITE PLAN
SCALE: 1" = 50'-0"

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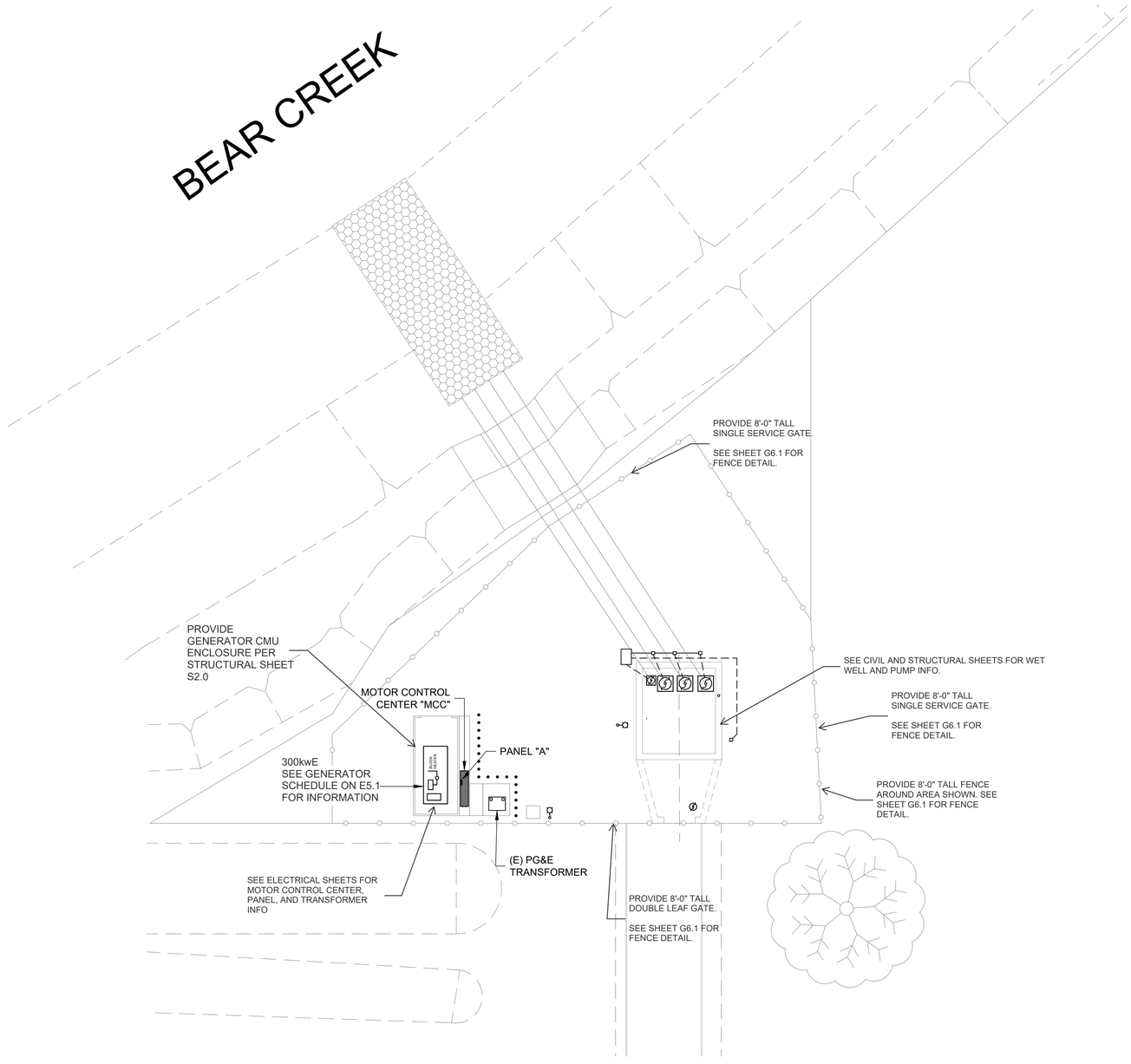
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SITE PLAN

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G1.0

G3.1 CAL GREEN CHECKLIST



1 ENLARGED SITE PLAN
SCALE: 1" = 20'-0"

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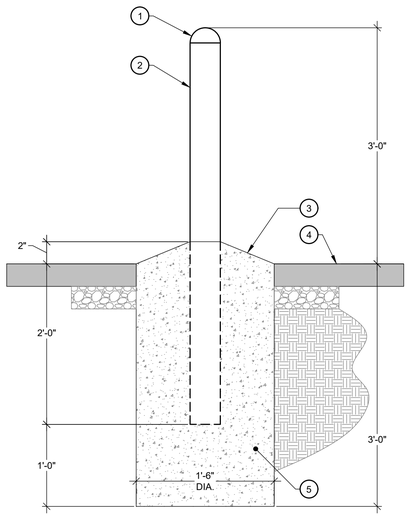
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ENLARGED SITE PLAN

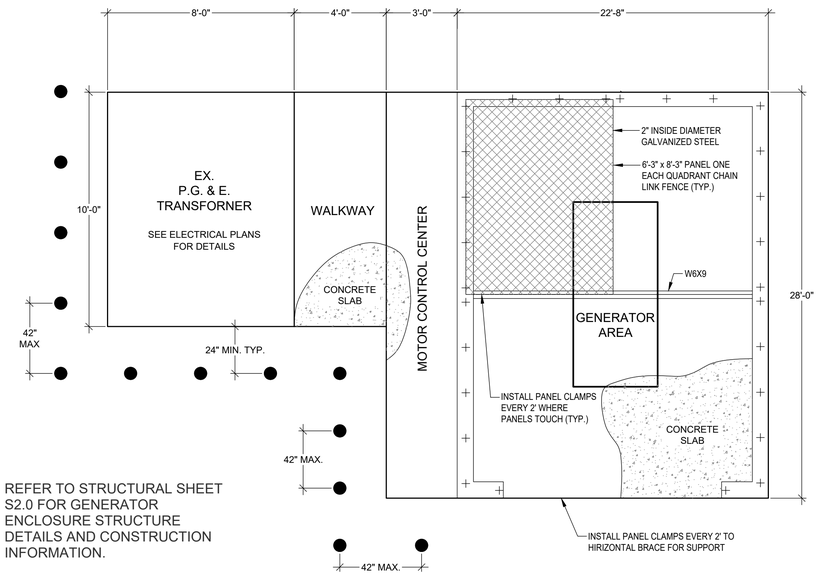
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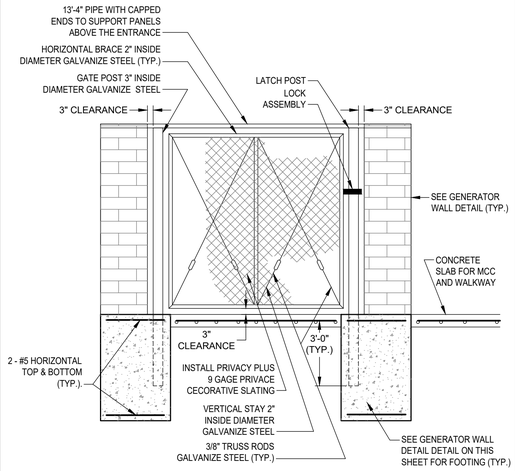
1. CONCRETE CAP.
2. 6" Ø STD. GALV. STEEL PIPE FILLED W/CONC. (APPLY TWO COATS YELLOW PAINT) MIN 0.188" WALL THK.
3. SLOPE CON. BASE.
4. GRAVEL OR PAVING.
5. CONCRETE FOOTING.

PIPE BOLLARD N.T.S 03



REFER TO STRUCTURAL SHEET S2.0 FOR GENERATOR ENCLOSURE STRUCTURE DETAILS AND CONSTRUCTION INFORMATION.

GENERATOR ROOF & BOLLARD PLACEMENT DETAIL N.T.S 02



REFER TO STRUCTURAL SHEET S2.0 FOR GENERATOR ENCLOSURE STRUCTURE DETAILS AND CONSTRUCTION INFORMATION.

GENERATOR GATE DETAIL N.T.S 01

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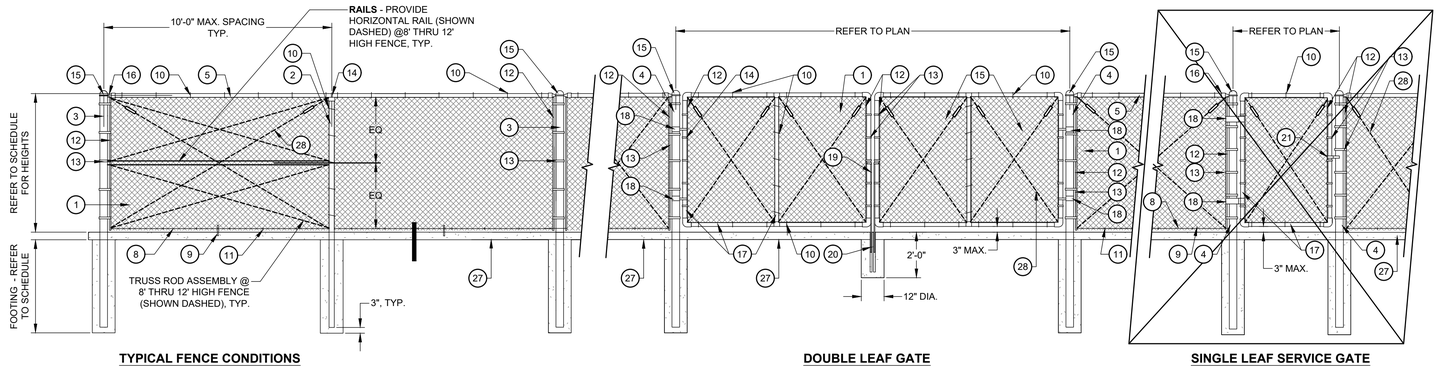
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CHAIN LINK POST AND FOOTING SCHEDULE				
MAX. FENCE HEIGHT	LINE POSTS		TERMINAL/CORNER POSTS	
	POST	FOOTING	POST	FOOTING
6'-0" TYP. UNLESS OTHERWISE NOTED	3/8" O.D.	10" DIA. x 3'-0" D.	2-7/8" O.D.	12" DIA. x 3'-6" D.
8'-0"	2-7/8" O.D.	14" DIA. x 3'-0" D.	3-1/2" O.D.	14" DIA. x 3'-6" D.

POST & FOOTING SIZES ARE MINIMAL UNLESS SPECIFICALLY DETAILED & NOTED OTHERWISE.

CHAIN LINK POST AND FOOTING SCHEDULE		
MAX. GATE LEAF WIDTH	GATE POST	POST FOOTINGS
3'-8" THRU 8'-0"	2-7/8" O.D.	12" DIA. x 3'-0" D.
8'-0" THRU 13'-0"	4" O.D.	18" DIA. x 4'-0" D.

GATE POSTS & FOOTING SIZES ARE MINIMUM UNLESS SPECIFICALLY DETAILED & NOTED OTHERWISE.
NOTE: WHEN TEMINAL POSTS ARE GREATER THAN GATE POSTS, USE TERMINAL POST & FOOTING SIZES FOR GATE POSTS.



TYPICAL FENCE CONDITIONS | **DOUBLE LEAF GATE** | **SINGLE LEAF SERVICE GATE**

NOTE: CONDITIONS SHOWN ARE CONSIDERED TYPICAL FOR CHAIN LINK FENCES UNLESS NOTED OTHERWISE.

LEGEND

1. **FABRIC** - 2" WIRE MESH, 9 GAUGE, KNUCKED SELVEDGE TOP & BOTTOM.
2. **POST** - LINE.
3. **POST** - TEMINAL / CORNER .
4. **POST** - GATE.
5. **RAILS** - TOP.
6. **RAILS** - HORIZONTAL.
7. **RAILS** - BRACES.
8. **TENSION WIRE** - 7 GAUGE, STEEL COLD DRAWN: ASTM A-82.
9. **HOOK BOLTS** - 60" ON CENTER.
10. **TIE WIRES:**
    A. TO LINE POSTS AT 16" ON CENTER.
    B. TO TOP RAIL, BRACE RAILS, & BOTTOM TENSION WIRE AT 18" ON CENTER.
11. **HOG RINGS** - TO BOTTOM TENSION WIRE AT 18" ON CENTER.
12. **TENSION BAR** - 3/16" x 3/4", MILD STEEL.
13. **TENSION BANDS** - AT 15" ON CENTER MAX.
14. **FITTINGS** - POST CAP, LINE.
15. **FITTINGS** - POST CAP, TERMINAL.
16. **FITTINGS** - TOP RAIL SLEEVES.
17. **GATES** - FRAME.
18. **GATES** - HARDWARE, HINGES, MALLEABLE IRON, DOUBLE CLAMPING, NON-LIFT-OFF, OFFSET TYP FOR 180E SWING.
19. **GATES** - HARDWARE, DOUBLE LEAF LATCH, CNETER DROP ROD OR PLUNGER BAR; WITH INTEGRAL PADLOCK EYES.
20. **GATES** - HARDWARE, STOP, FLUSH STEEL PIPE, WITH ANCHORS.
21. **SERVICE GATES** - HARDWARE, LEAF LATCH.
22. **GATES** - PIPE TRACK & BRACKET.
23. **GATES** - ROLLER ASSEMBLY.
24. **GATES** - WHEEL ASSEMBLY.
25. **GATES** - STEEL ANGLE TRACK (N/A).
26. **GATES** - GUIDE POST (N/A).
27. **MOW STRIP** - 20" WIDE BY 5-1/2" DEEP, CENTERED WITH FENCE.
28. **TRUSS ROD ASSEMBLY**.

FENCE DETAIL — N.T.S — 01

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GENERAL NOTES

1. ALL IMPROVEMENTS SHALL BE CONSTRUCTED IN STRICT ACCORDANCE WITH THE FOLLOWING: CITY OF STOCKTON STANDARD SPECIFICATIONS AND PLANS ADOPTED SEPTEMBER 27, 2016, AND ALL AMENDMENTS THERETO TO DATE. WHERE THERE IS A CONFLICT BETWEEN THE PLANS AND THE CITY'S STANDARD SPECIFICATIONS AND PLANS AND LOCAL BUILDING CODES, THE CITY OF STOCKTON STANDARD SPECIFICATION AND PLANS SHALL PREVAIL. ALL WORK SHALL BE SUBJECT TO INSPECTION BY THE CITY OF STOCKTON.
2. IT IS INTENDED THAT THESE PLANS AND THE CITY OF STOCKTON STANDARD SPECIFICATIONS REQUIRE ALL LABOR AND MATERIALS NECESSARY AND PROPER FOR THE WORK CONTEMPLATED HEREIN AND THAT THE WORK BE COMPLETED IN ACCORDANCE WITH THEIR TRUE INTENT AND PURPOSE. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY REGARDING ANY DISCREPANCIES OR AMBIGUITIES WHICH MAY EXIST IN THE PLANS OR SPECIFICATIONS. THE ENGINEER'S INTERPRETATION OR CORRECTION THEREOF SHALL BE CONCLUSIVE.
3. WHERE THE PLANS OR SPECIFICATIONS DESCRIBE PORTIONS OF THE WORK IN GENERAL TERMS BUT NOT IN COMPLETE DETAIL, IT IS UNDERSTOOD THAT ONLY THE BEST GENERAL PRACTICE IS TO PREVAIL AND THAT ONLY MATERIALS AND WORKMANSHIP OF THE FIRST QUALITY ARE TO BE USED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PERMITS AND LICENSES REQUIRED FOR THE CONSTRUCTION AND COMPLETION OF THE PROJECT.
5. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY FIELD CHANGES MADE WITHOUT WRITTEN AUTHORIZATION FROM THE ENGINEER & THE CITY OF STOCKTON. ANY AND ALL CHANGES MADE SHALL COMPLY WITH THE MOST RECENT APPLICABLE CODES AND LOCAL REQUIREMENTS.
6. ALL UNDERGROUND UTILITIES SHALL BE IN PLACE PRIOR TO THE INSTALLATION OF CURB, GUTTER, SIDEWALK AND STREET PAVING.
7. THE CONTRACTOR SHALL PROVIDE ALL LIGHTS, BARRICADES, SIGNS, FLAGMEN OR OTHER DEVICES NECESSARY FOR PUBLIC SAFETY.
8. ALL STATIONS REFER TO DISTANCES ALONG PROPERTY UNES, PERPENDICULAR TO OR RADIALLY OPPOSITE PROPERTY LINE STATIONS, UNLESS OTHERWISE NOTED.
9. THE CONTRACTOR SHALL CHECK WITH THE UTILITY COMPANIES AND VERIFY ALL UTILTY LOCATIONS. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO PROTECT ALL EXISTING UTILITIES SO THAT NO DAMAGE RESULTS TO THEM DURING THE PERFORMANCE OF THE CONTRACT. THE CONTRACTOR SHALL BE REQUIRED TO COOPERATE WITH OTHER CONTRACTORS AND UTILITY COMPANIES INSTALLING NEW STRUCTURES, UTILITIES, AND SERVICE TO THE DEVELOPMENT, WHEN OTHERS ARE WORKING IN THE SAME AREA.
10. PRIOR TO COMMENCING ANY WORK, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO HAVE EACH UTILITY COMPANY LOCATE IN THE FIELD THEIR MAIN AND SERVICE LINES. THE CONTRACTOR SHALL NOTIFY USA NORTH (811) 48 HOURS IN ADVANCE OF PERFORMING EXCAVATION WORK.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING EXISTING IMPROVEMENTS FROM DAMAGE. THE COST OF REPLACING EXISTING IMPROVEMENTS SHALL BE INCLUDED IN THE CONTRACTOR'S TOTAL CONTRACT PRICE.
12. WHENEVER PAVEMENT OR CONCRETE IS BROKEN OR CUT IN THE INSTALLATION OF THE WORK COVERED BY THESE PLANS AND SPECIFICATIONS, THE PAVEMENT OR CONCRETE SHALL BE REPLACED, AFTER PROPER BACKFILLING, WITH PAVEMENT OR CONCRETE MATERIALS EQUAL TO OR BETTER THAN THE REMOVED MATERIALS. UNLESS NOTED OTHERWISE, THE FINISHED PAVEMENT OR CONCRETE SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER & CITY OF STOCKTON.
13. PAYMENT FOR PAVEMENT OR CONCRETE WILL BE MADE ONLY FOR AREAS SHOWN ON THE PLANS. REPLACEMENT OF PAVEMENT OR CONCRETE WHICH IS BROKEN OR CUT IN THE INSTALLATION OF THE WORK COVERED BY THESE PLANS AND SPECIFICATIONS, AND WHICH LIES OUTSIDE OF SAID AREAS, SHALL BE INCLUDED IN THE CONTRACTOR'S TOTAL CONTRACT PRICE, AND NO ADDITIONAL PAYMENT SHALL BE MADE FOR SUCH WORK.
14. THE CONTRACTOR AGREES THAT THEY SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND ALL PROPERTY; THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS: AND THAT THE CONTRACTOR SHALL DEFEND, INDEMNIFY AND HOLD THE OWNER AND ENGINEER HARMLESS FROM ANY AND ALL LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT. EXCEPTING FOR THE LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE OWNER OR THE ENGINEER.
15. EXCAVATIONS OF 5 FEET OR MORE IN DEPTH WILL REQUIRE AN EXCAVATION PERMIT FROM THE STATE OF CALIFORNIA DEPARTMENT OF INDUSTRIAL SAFETY. FOR TRENCHES, 5 FEET OR MORE IN DEPTH, THE CONTRACTOR SHALL COMPLY WITH SECTION 5-1.02A OF THE CALTRANS STANDARDS, THE STATE OF CALIFORNIA LABOR CODE, AND ANY LOCAL CODES OR ORDINANCES.
16. THE CONTRACTOR'S ATTENTION IS DIRECTED TO: SECTION 1540 (C)(1) OF THE CONSTRUCTION SAFETY ORDERS (TITLE 8 CALIFORNIA ADMINISTRATION CODE SECTION 1540), ISSUED BY THE NATIONAL SAFETY AND HEALTH STANDARDS BOARD PURSUANT TO THE CALIFORNIA OCCUPATIONAL SAFETY AND HEALTH ACT OF 1973 AS AMENDED WHICH STATES:
    (1) PRIOR TO OPENING AN EXCAVATION, EFFORT SHALL BE MADE TO DETERMINE WHETHER UNDERGROUND INSTALLATIONS (I.E., SEWER, WATER, FUEL, ELECTRIC LINES, ETC.) WILL BE ENCOUNTERED AND IF SO , WHERE SUCH UNDERGROUND INSTALLATIONS ARE LOCATED. WHEN THE EXCAVATION APPROACHES THE APPROXIMATE LOCATION OF SUCH AN INSTALLATION, THE EXACT LOCATION SHALL BE DETERMINED BY CAREFUL PROBING OR HAND DIGGING; AND, WHEN IT IS UNCOVERED, ADEQUATE PROTECTION SHALL BE PROVIDED FOR THE EXISTING INSTALLATION. ALL KNOWN OWNERS OF UNDERGROUND FACILITIES IN THE AREA CONCERNED SHALL BE ADVISED OF PROPOSED WORK AT LEAST 48 HOURS PRIOR TO THE START OF ACTUAL EXCAVATION.
17. THE CONTRACTOR SHALL OBTAIN AN ENCROACHMENT PERMIT FOR ANY WORK DONE WITHIN CITY RIGHT-OF-WAY FROM THE CITY OF STOCKTON PUBLIC WORKS DEPARTMENT AND NOTIFY THE CITY OF STOCKTON DEPARTMENT OF PUBLIC WORKS 48 HOURS IN ADVANCE OF STARTING ANY WORK REQUIRED IN THE PLANS.
18. THE CONTRACTOR SHALL CONTACT THE CITY OF STOCKTON DEPARTMENT OF PUBLIC WORKS FOR A PRE-CONSTRUCTION CONFERENCE A MINIMUM OF SEVENTY-TWO (72) HOURS PRIOR TO THE COMMENCEMENT OF WORK.
19. WORK PERFORMED IN STREET RIGHT-OF-WAY IS SUBJECT TO THE APPROVAL AND ACCEPTANCE OF THE CITY OF STOCKTON DEPARTMENT OF PUBLIC WORKS.
20. NO PRODUCTS CONTAINING ASBESTOS WILL BE PERMITTED ON THE JOB.
21. ALL MAINTENANCE HOLES, LAMPHOLES, VALVE BOXES, ETC. SHALL BE ADJUSTED TO FINISH GRADE AFTER PAVING. COMPENSATION FOR ADJUSTING FACILITIES TO GRADE SHALL BE INCLUDED IN THE CONTRACTOR'S TOTAL CONTRACT PRICE.
22. DRAWING NUMBERS SHOWN ON THESE PLANS REFER TO DRAWINGS CONTAINED IN THE CITY OF STOCKTON STANDARD SPECIFICATIONS AND PLANS.
23. THE CONTRACTOR SHALL PROVIDE ALL SHORING, BRACING, SLOPING OR PROVISIONS TO PROTECT WORKMEN FOR ALL AREAS TO BE EXCAVATED TO A DEPTH OF FIVE (5) FEET OR MORE, IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY OF STOCKTON'S DEPARTMENT OF PUBLIC WORKS, AND THE STATE OF CALIFORNIA REGULATIONS.
24. ALL DRAWINGS ISSUED WITHOUT THE APPROVAL OF, AND DULY SIGNED & DATED BY, THE ENGINEER OF RECORD SHALL BE CONSIDERED PRELIMINARY AND SHALL NOT BE USED FOR CONSTRUCTION.

STAKING NOTES

1. CONSTRUCTION STAKING FOR SITE CONTROL, ROUGH GRADE, DEMO LIMITS, PUMP SUMP, PIPELINE, FINISHED A.C. PAVEMENT, MANHOLES AND CATCH BASINS SHALL BE PROVIDED BY QUAD KNOFF, INC. THE CONTRACTOR SHALL NOTIFY QUAD KNOFF, INC. A MINIMUM OF 72 HOURS IN ADVANCE OF HIS NEED FOR STAKING.
2. THE CONTRACTOR SHALL EXERCISE DUE CAUTION AND SHALL CAREFULLY PRESERVE BENCHMARKS, REFERENCE POINTS, CONTROL POINTS, AND ALL SURVEY STAKES, AND SHALL BEAR ALL EXPENSES FOR REPLACEMENT AND/OR ERRORS CAUSED BY THEIR UNNECESSARY LOSS OR DISTURBANCE OF SAID MONUMENTATION.

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EARTHWORK NOTES

1. GENERAL NOTES
    A. ALL EARTHWORK SHALL BE PERFORMED IN ACCORDANCE WITH THE CITY OF STOCKTON STANDARD PLANS & SPECIFICATIONS, THE GEOTECHNICAL REPORT PREPARED BY NEED INFORMATION, CHAPTER 19 OF THE LATEST VERSION OF THE CALIFORNIA BUILDING CODE AND/OR THE MOST RECENT ADOPTED CODES. ALL AREAS OF ONSTRUCTION SHALL BE TESTED AS REQUIRED BY THE CITY OF STOCKTON AND SHALL BE PAID FOR BY THE CONTRACTOR.
    B. THE CONTRACTOR SHALL REVIEW THE JOB SITE PRIOR TO BIDDING.
    C. ANY EXCESS CLEAN DIRT IS TO BE PLACED IN AREAS AS DIRECTED BY THE ENGINEER. ANY CHANCES IN PROPOSED GRADES IN ORDER TO ACHIEVE AN EARTHWORK BALANCE MUST BE APPROVED BY THE ENGINEER AND THE CITY OF STOCKTON. THERE WILL BE NO EXTRA COMPENSATION PAID TO THE CONTRACTOR FOR ANY ADJUSTMENTS.
    D. THE SITE SHALL BE GRADED TO THE ELEVATIONS AS STAKED AND SHOWN ON THE PLANS UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
    E. A PERMIT SHALL BE OBTAINED FROM THE CITY OF STOCKTON MUNICIPAL UTILTIES DEPARTMENT FOR CONSTRUCTION WATER FROM A FIRE HYDRANT. THE PERMIT SHALL BE APPROVED BY THE FIRE DEPARTMENT. THE CONTRACTOR SHALL INCLUDE THIS PERMIT AT NO COST.
    F. APPROPRIATE DUST CONTROL SHALL BE PROVIDED AT THE CONTRACTOR'S EXPENSE AND INCLUDED IN THE CONTRACTOR'S TOTAL CONTRACT PRICE. DUST CONTROL SHALL BE IN ACCORDANCE WITH THE SECTION 10 OF CALTRANS STANDARD SPECIFICATION AND THE REQUIREMENTS OF THE CITY OF STOCKTON & SAN JOAQUIN VALLEY AIR POLLUTION CONTROL DISTRICT.
    G. ALL AREAS SHALL BE GRADED AND MAINTAINED TO PROVIDE PROPER DRAINAGE WITHOUT CAUSING SOIL EROSION OR DRAINAGE ONTO THE ADJACENT PROPERTY, UNLESS SHOWN OTHERWISE, ALL GRADING SHALL BE PER THE PLAN. ANY DEVIATION FROM THE DESIGN SHALL BE REQUESTED IN WRITING TO THE ENGINEER AND APPROVED, IN WRITING, BY THE ENGINEER.
    H. THE MAXIMUM CUT & FILL SLOPE SHALL BE 2:1 PER THE 2016 CBC (CALIFORNIA BUILDING CODE).' GREATER SLOPES CAN BE USED WHEN RECOMMENDED AND APPROVED BY THE GEOTECHNICAL ENGINEER AND APPROVED BY THE CITY OF STOCKTON.
2. SUBGRADE PREPARATION
    A. COMPACTION OR "RELATIVE COMPACTION" SHALL REFER TO IN-PLACE DRY DENSITY OF SOIL EXPRESSED AS A PERCENTAGE OF THE MAXIMUM DRY DENSITY OF THE SAME MATERIAL AS DETERMINED BY ASTM D1557 TEST METHOD.
    B. ONCE THE SITE IS STRIPPED AND ALL DELETERIOUS MATERIAL HAS BEEN REMOVED, THE SITE BEING PREPARED FOR ALL STRUCTURES AND STREETS SHALL BE SCARIFIED TO A MIN. DEPTH OF 12", UNIFORMLY MOISTURE CONDITIONED TO A MOISTURE CONTENT AS RECOMMENDED BY THE GEOTECHNICAL REPORT AND COMPACTED TO A RELATIVE DENSITY OF 90% UNLESS OTHERWISE APPROVED BY THE GEOTECHNICAL ENGINEER.
    C. PRIOR TO PLACEMENT OF CONCRETE, THE SUBGRADE MOISTURE CONTENT SHALL BE AS DIRECTED BY THE GEOTECHNICAL REPORT.
    D. ANY ENGINEERED FILL SHALL BE PLACED IN LOOSE LAYER LIFTS NOT EXCEEDING 6-8 INCHES AND MECHANICALLY COMPACTED TO A MINIMUM RELATIVE DENSITY OF 90% AND/OR AS DIRECTED BY THE GEOTECHNICAL REPORT/ENGINEER.
3. TRENCH EXCAVATION & BACKFILL
    A. ALL TRENCH EXCAVATION, PIPE LAYING & BACKFILL FOR UNDERGROUND WET UTILITIES SHALL BE PER CITY OF STOCKTON STANDARD SPECIFICATIONS, SECTION 71-1.03 & 71--1.04 AND/OR RECOMMENDATIONS FROM THE GEOTECHNICAL REPORT.
    B. EXCAVATION FOR ALL TRENCHES/STRUCTURES/PIPES SHALL BE MADE TO THE GRADES SHOWN ON THE PLANS. SAFE AND SUITABLE ACCESS SHALL BE PROVIDED IN ACCORDANCE WITH CAL-OSHA AND OTHER APPLICABLE REGULATIONS.
    C. BEDDING FOR PIPE SHALL BE PER MANUFACTURER'S RECOMMENDATIONS, CITY STANDARDS AND GEOTECHNICAL ENGINEER RECOMMENDATIONS, UNLESS SHOWN OTHERWISE ON THESE PLANS.
    D. TRENCH EXCAVATION SHALL INCLUDE REMOVAL OF ANY UNSUITABLE MATERIALS OF ANY NATURE AND WATER WHICH INTERFERES WITH THE CONSTRUCTION WORK.
    E. TRENCH WIDTH SHALL BE PER THE TRENCH SECTION IN THE CITY OF STOCKTON STANDARDS. IN THE EVENT THAT UNSUITABLE MATERIALS OR UNSTABLE TRENCH WALLS ARE ENCOUNTERED, THE TRENCH WIDTH SHALL BE MODIFIED IN ACCORDANCE WITH THE APPLICABLE ASTM STANDARD OR AS DIRECTED BY THE ENGINEER.
    F. THE CONTRACTOR SHALL FURNISH AND INSTALL SUFFICIENT SHORING, SHEETING AND BRACING TO ENSURE THE SAFETY OF WORK PERSONNEL AND THE PUBLIC, TO PROTECT THE WORK AND PROTECT THE EXISTING FACILITIES.
        a. SHORING, SHEETING AND BRACING SHALL COMPLY WITH THE RULES, ORDERS AND REGULATIONS OF CAL-OSHA.
        b. THE CONTRACTOR SHALL PROVIDE A COPY OF ITS CURRENT ANNUAL EXCAVATION PERMIT ISSUED BY CAL-OSHA TO THE OWNER & CITY'S PRE-CONSTRUCTION MEETING.
        c. IF SPECIAL BRACING, SHORING OR SHEETING IS REQUIRED FOR SPECIFIC PARTS OF THE PROJECT, THE CONTRACTOR SHALL SUBMIT TO THE OWNER AND ENGINEER SUPPORTING CALCULATIONS PREPARED BY A CALIFORNIA REGISTERED CIVIL OR STRUCTURAL ENGINEER PRIOR TO BEGINNING THE EXCAVATION FOR THE SPECIALLY DESIGNED BRACING, SHORING OR SHEETING.
    G. THE BOTTOM OF THE EXCAVATION SHALL BE FIRM AND DRY. IN THE EVENT OF AN UNSTABLE BOTTOM, THE GEOTECHNICAL ENGINEER SHALL BE CONSULTED, AND A WRITTEN RECOMMENDATION SHALL BE REQUIRED AND APPROVED PRIOR TO ANY PLACEMENT OF BEDDING OR PIPE/CULVERT OR STRUCTURE.
    H. THE MAXIMUM LENGTH OF OPEN TRENCH WHERE PIPE IS TO BE LAID SHALL BE THE DISTANCE NECESSARY TO ACCOMMODATE THE AMOUNT OF PIPE WHICH CAN BE INSTALLED THAT SAME DAY. IF ANY TRENCH SECTION IS LEFT OPEN BECAUSE OF UNFORESEEN CIRCUMSTANCES, IT SHALL BE CORDONED OFF WITH APPROPRIATE SAFETY FENCING AND SIGNING TO ENSURE THAT THE AREA IS SAFE.
    I. THE CONTRACTOR SHALL REFER TO C.O.S. DWG. NO.'S R-36, R-37, R-41 & R-43 FOR APPLICABLE TRENCH BACKFILL DETAILS INCLUDING BUT NOT LIMITED TO TRENCH BEDDING, COMPACTION, TRENCH WIDTH, ETC.
    J. IN LEU OF MECHANICAL BACKFILL THE CONTRACTOR MAY USE SLURRY CEMENT BACKFILL (SCB). SCB BACKFILL SHALL MEET THE REQUIREMENTS AS DEFINED IN SECTION 19-3.03F OF THE CALTRANS 2018 STANDARD SPECIFICATIONS.

STORM DRAIN NOTES

1. THE UNDERGROUND CONTRACTOR SHALL EXPOSE EXISTING STORM DRAINS, WHERE CONNECTION IS TO BE MADE, SO THAT THE ENGINEER CAN VERIFY EXISTING FLOW LINES AND LOCATIONS BEFORE START OF CONSTRUCTION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TESTING OF STORM DRAIN FACILITIES. ALL TESTING SHALL BE AT CONTRACTOR'S EXPENSE AND SHAU BE INCLUDED IN THE CONTRACTOR'S TOTAL CONTRACT PRICE.
3. ALL STORM DRAIN CONSTRUCTION, MATERIALS, AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE STANDARD SUBDIVISION IMPROVEMENTS OF THE CITY OF STOCKTON SPECIFICATIONS AND PLANS.
4. ON PRECAST PIPES, RUBBER GASKET JOINTS SHALL BE USED IN HIGH GROUND WATER CONDITIONS.
5. STORM DRAINS 4" THROUGH 15" DIAMETER SHALL BE PSM SDR-35 PVC MEETING ASTM D3034 SPECIFICATIONS. 18" STORM DRAINS SHALL BE PS-46 PVC MEETING ASTM F679 SPECIFICATIONS. STORM DRAINS 21" THROUGH 84" DIAMETER SHALL BE CLASS 3 RCP MEETING ASTM C-76 SPECIFICATIONS WITH RUBBER GASKETED JOINTS, UNLESS OTHERWISE NOTED. ALL PIPES SHALL COMPLY WITH THE CITY OF STOCKTON SPECIFICATIONS SECTION 71-1.02 A & E.
6. ALL CATCH BASINS/DRAIN INLETS SHALL HAVE THE STORM DRAIN MESSAGE PER DETAIL 2/C3.2.
7. ANY AND ALL SEDIMENT AND/OR EROSION CONTROL DETAILS CONTAINED WITHIN THESE PLANS ARE TO BE CONSIDERED AS "REFERENCE DETAILS" ONLY AND THE CITY'S APPROVAL OF THESE PLANS AND "REFERENCE DETAILS' DOES NOT RELIEVE THE CONTRACTOR OR OWNER FROM COMPLIANCE WITH THE STORM WATER POLLUTION PREVENTION PLAN (SWPPP).
8. IN ADDITION TO ALL OF THE OTHER REQUIRED PERMITS, THE CONTRACTOR SHALL HAVE A GRADING AND EROSION CONTROL PERMIT, COMPLETE WITH AN APPROVED SWPPP.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FULFILLING ALL THE WASTE DISCHARGE REQUIREMENTS CONTAINED IN STATE WATER RESOURCES CONTROL BOARD ORDER NO. 2009 0009 DWQ (AS AMENDED BY ORDER NO. 2012-0006-DWQ AND 2010-0014-DWQ) FOR DISCHARGES OF STORM WATER RUNOFF ASSOCIATED WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES, INCLUDING PAYING ALL FEES, FILING ALL APPLICATIONS AND NOTICES, PREPARING PLANS, CONSTRUCTING EROSION AND POLLUTION CONTROL DEVICES, PROVIDING SERVICES OF A QUALIFIED SWPPP DEVELOPER (QSD) AND A QUALIFIED SWPPP PROVIDER (QSP), ETC.
2. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS AND REQUIREMENTS RELATED TO STORM WATER MANAGEMENT AND SEDIMENTATION AND EROSION CONTROL.

SANITARY SEWER NOTES

1. THE CONTRACTOR SHALL EXPOSE EXISTING SANITARY SEWER LINES WHERE CONNECTION IS TO BE MADE, SO THAT THE ENGINEER CAN VERIFY EXISTING FLOW LINES AND LOCATIONS BEFORE START OF CONSTRUCTION AND APPROPRIATE ADJUSTMENTS CAN BE MADE IF NECESSARY.
2. SANITARY SEWER SHALL BE POLYVINYL CHLORIDE (PVC). TYPE PSM, SDR-26 PVC, ASTM D3034, PER C.OS. STANDARD SPECIFICATIONS SECTION 71, UNLESS OTHERWISE NOTED.
3. AFTER THE SANITARY SEWER PIPE HAS BEEN LAID AND BACKFILLED. THE CONTRACTOR SHALL CLEAN THE LINE PER CITY OF STOCKTON SPECIFICATIONS SECTION 71-1.11A. FURTHERMORE THE CONTRACTOR SHALL PERFORM DEFLECTION TEST PER CITY OF STOCKTON SPECIFICATION SECTION 71-1.11B AND AIR PRESSURE TESTING PER CITY OF STOCKTON SPECIFICATION SECTION 71-1.11F. THE PRESSURE TESTS SHALL MEET AIR PRESSURE LOSS PER TIME PERIOD IN ACCORDANCE WITH THE CITY OF STOCKTON'S STANDARD SPECIFICATIONS AND PLANS. SHOULD ANY TEST ON ANY SECTION OR PIPELINE DISCLOSE AN AIR LOSS GREATER THAN THAT PERMITTED, THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, LOCATE AND REPAIR THE DEFECTIVE JOINTS OR PIPE AND RETEST UNTIL THE AIR LOSS IS WITHIN THE SPECIFIED ALLOWANCE. ANY DEFECTS FOUND BY THE CITY OF STOCKTON'S TELEVISION INSPECTION SHALL BE REPAIRED BY THE CONTRACTOR PRIOR TO THE CONSTRUCTION OF THE STREET PAVEMENT.
4. SANITARY SEWER CONSTRUCTION, MATERIALS, INSTALLATION, AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY OF STOCKTON'S STANDARD SPECIFICATIONS AND PLANS.
5. ON PRECAST PIPES, RUBBER GASKET JOINTS SHALL BE USED BECAUSE OF HIGH GROUND WATER.

HAZARDOUS MATERIALS NOTES

1. IF, DURING THE COURSE OF WORK UNDER THIS CONTRACT, THE CONTRACTOR ENCOUNTERS ANY SURFACE OR SUBSURFACE MATERIALS THAT THE CONTRACTOR BELIEVES ARE HAZARDOUS (AS DEFINED IN THE STATE HEALTH AND SAFETY CODE), THE CONTRACTOR MUST INFORM THE OWNER OR THE OWNER'S REPRESENTATIVE IN WRITING IMMEDIATELY.
2. UPON DISCOVERY, THE MATERIAL IS TO REMAIN UNDISTURBED UNTIL INVESTIGATION BY THE OWNER.
3. THE REMOVAL AND/OR DISPOSAL OF HAZARDOUS MATERIALS, IF DISCOVERED, IS NOT INITIALLY PART OF THE SCOPE OF WORK OF THIS CONTRACT UNLESS SPECIFICALLY CALLED OUT IN THE CONTRACT DOCUMENTS. AT THE DISCRETION OF THE OWNER, SUCH WORK MAY BE ADDED TO THE CONTRACT BY MUTUAL AGREEMENT PURSUANT TO THE CONTRACT PROVISIONS FOR CHANGES.
4. ANY AND ALL REMOVAL OF HAZARDOUS MATERIAL SHALL BE PERFORMED BY A LICENSED CONTRACTOR WHO CAN LEGALLY REMOVE, HAUL, DISPOSE OF. ETC. HAZARDOUS MATERIALS AND OBTAIN ANY NECESSARY PERMITS FROM THE APPROPRIATE AGENCIES.

WATER NOTES

1. INSTALLATION OF WATER MAIN SHALL BE PER C.O.S STANDARD SPECIFICATIONS SECTION 78-1.03, A THRU C AND NFPA 24 STANDARDS, UNLESS OTHERWISE DIRECTED.
2. ALL WATER CONSTRUCTION, MATERIAL, AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND PLANS OF THE CITY OF STOCKTON.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TESTING AND DISINFECTING OF WATER LINES IN CONFORMANCE WITH THE REQUIREMENTS OF THE CITY OF STOCKTON, PRIOR TO FINAL ACCEPTANCE.
4. ACTUAL CONNECTIONS TO EXISTING CITY OF STOCKTON WATER LINES WILL NOT BE PERMITTED PRIOR TO THE COMPLETION OF STERILIZATION AND TESTING OF NEW WATER MAINS. ALL EXISTING WATER VALVES SHALL BE OPERATED UNDER THE DIRECTION OF, OR BY, THE WATER DIVISION OF THE CIYT OF STOCKTON OR CITY OF STOCKTON PERSONNEL ONLY.
5. ALL CONNECTIONS AND SERVICE TAPS TO EXISTING CITY OF STOCKTON MAINS SHALL BE MADE WITHOUT DEPRESSURIZING THE MAIN, UNLESS PRIOR APPROVAL IS GIVEN BY THE WATER SUPERINTENDENT.
6. THE DISCHARGE OF CHLORINATED AND DE-CHLORINATED WATER INTO THE STORM DRAIN SYSTEM IS PROHIBITED. THE DISCHARGE OF THE CHLORINATED AND DE-CHLORINATED WATER INTO THE SANITARY SEWER SYSTEM REQUIRES PRIOR APPROVAL FROM MUD. CONTACT CITY OF STOCKTON, MUNICIPAL UTILITY DISTRICT.
7. AT LEAST 72 HOURS PRIOR TO CONNECTING THE WATER SERVICE TO THE CITY MAIN THE CONTRACTOR SHALL CONTACT PUBLIC WORKS.
8. THE ENGINEER, PRIOR TO FINAL ACCEPTANCE, SHALL SUBMIT A RECORD DRAWING FOR ALL WATER SYSTEM IMPROVEMENTS REPRESENTED BY THE PROJECT PLANS AND SPECIFICATIONS.
9. THE TYPICAL ANGLE METER STOP AT THE END OF THE WATER SERVICES SHALL BE AS SHOWN ON THE CITY OF STOCKTON STANDARD SPECIFICATIONS AND PLANS DRAWING NO. W-4 AND SHALL BE INSTALLED AS PER DWG NO. W-3.

DEWATERING NOTES

THIS SECTION SHALL BE MODIFIED TO INCLUDE THE RECOMMENDATIONS CONTAINED IN THE GEOTECHNICAL REPORT.

1. THE CONTRACTOR SHALL UTILIZE SEDIMENTATION OR FILTER CONTROL TO REMOVE SEDIMENT FROM DEWATERING WATER PRIOR TO DISCHARGE.
2. THE CONTRACTOR SHALL FURNISH, INSTALL, OPERATE AND MAINTAIN ALL MACHINERY, APPLIANCES, AND EQUIPMENT TO MAINTAIN ALL EXCAVATIONS FREE FROM WATER DURING CONSTRUCTION, AND SHALL DEWATER AND DISPOSE OF THE WATER SO AS NOT TO CAUSE INJURY TO THE PUBLIC OR PRIVATE PROPERTY, OR TO CAUSE A NUISANCE OR MENACE TO THE PUBLIC. THE DEWATERING SYSTEM SHALL BE INSTALLED AND OPERATED SO THAT THE GROUNDWATER LEVEL OUTSIDE THE EXCAVATION IS NOT REDUCED TO THE EXTENT WHICH WOULD CAUSE DAMAGE OR ENDANGER ADJACENT STRUCTURES OR PROPERTY. ALL COSTS FOR DEWATERING SHALL BE INCLUDED IN THE CONTRACTOR'S TOTAL CONTRACT PRICE AND NO ADDITIONAL PAYMENT WILL BE MADE. THE STATIC WATER LEVEL SHALL BE DRAWN DOWN A MINIMUM OF 1 FOOT BELOW THE BOTTOM OF EXCAVATION TO MAINTAIN THE UNDISTURBED STATE OF NATURAL SOILS AND ALLOW THE PLACEMENT OF ANY FILL TO THE SPECIFIED DENSITY. THE DISPOSAL OF WATER SHALL NOT DAMAGE PROPERTY, CREATE A PUBLIC NUISANCE OR VIOLATE THE LAW. THE CONTRACTOR SHALL HAVE ON HAND, PUMPING EQUIPMENT AND MACHINERY IN GOOD WORKING CONDITION FOR EMERGENCIES AND SHALL HAVE WORKMEN AVAILABLE FOR ITS OPERATION. THE DEWATERING SYSTEM SHALL OPERATE CONTINUOUSLY UNTIL BACKFILL HAS BEEN COMPLETED TO 1 FOOT ABOVE THE NORMAL STATIC GROUNDWATER LEVEL.
3. THE CONTRACTOR SHALL CONTROL SURFACE WATER TO PREVENT ENTRY INTO EXCAVATIONS. AT EACH EXCAVATION, A SUFFICIENT NUMBER OF TEMPORARY OBSERVATION WELLS TO CONTINUOUSLY CHECK THE GROUNDWATER LEVEL SHALL BE PROVIDED.
4. SUMPS SHALL BE NO DEEPER THAN 5 FEET AND SHALL BE AT THE LOW POINT OF EXCAVATION. EXCAVATION SHALL BE GRADED TO DRAIN TO THE SUMPS.
5. THE CONTROL OF GROUNDWATER SHALL BE SUCH THAT SOFTENING OF THE BOTTOM OF EXCAVATION, OR FORMATIONS OF "QUICK" CONDITIONS OR "BOILS", DOES NOT OCCUR. DEWATERING SYSTEMS SHALL BE DESIGNED AND OPERATED SO AS TO PREVENT REMOVAL OF THE NATURAL SOILS. THE RELEASE OF GROUNDWATER AT ITS STATIC LEVEL SHALL BE PERFORMED IN SUCH A MANNER AS TO MAINTAIN THE UNDISTURBED STATE OF THE NATURAL FOUNDATION SOILS, PREVENT DISTURBANCE OF COMPACTED BACKFILL, AND PREVENT FLOTATION OR MOVEMENT OF STRUCTURES, PIPELINES AND SEWERS.
6. ONE HUNDRED PERCENT (100%) STANDBY PUMPING CAPACITY SHALL BE AVAILABLE ON SITE AT ALL TIMES AND SHALL BE CONNECTED TO THE DEWATERING SYSTEM PIPING TO PERMIT IMMEDIATE USE. IN ADDITION, STANDBY AUXILIARY EQUIPMENT AND APPLIANCES FOR ALL ORDINARY EMERGENCES, AND COMPETENT WORKMEN FOR OPERATION AND MAINTENANCE OF ALL DEWATERING EQUIPMENT SHALL BE ON SITE AT ALL TIMES. STANDBY EQUIPMENT SHALL INCLUDE EMERGENCY POWER GENERATION AND AUTOMATIC SWITCH OVER TO THE EMERGENCY GENERATOR WHEN NORMAL POWER FAILS. THE DEWATERING SYSTEMS SHALL NOT BE SHUT DOWN BETWEEN SHIFTS, ON HOLIDAYS, ON WEEKENDS, OR DURING WORK STOPPAGES.

REGISTERED PROFESSIONAL ENGINEER — LEE A. FREMLING — NO. 26983 — CIVIL — STATE OF CALIFORNIA

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9550 Ronald E. McNair Way
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LODI UNIFIED SCHOOL DISTRICT

KEY PLAN — NORTH: PLAN TRUE

CLIENT: LODI UNIFIED SCHOOL DISTRICT
PROJECT NUMBER: 250131
DATE: 5/18/26
DRAWN BY: GF CHKED BY:

REVISIONS

#	DESCRIPTION	DATE
	ADDENDA 2	6/11/2026

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CIVIL NOTES & SPECIFICATIONS

C0.1

NOT FOR CONSTRUCTION

PAVING NOTES

1. SUBGRADE PREPARATION: THE SUBGRADE SHALL BE COMPACTED TO NINETY-FIVE PERCENT (95%) RELATIVE COMPACTION TO A DEPTH OF 8" AND SHALL CONFORM TO THE PROVISIONS OF SECTION 19 OF THE STANDARD SPECIFICATIONS AND PLANS OF THE CITY OF STOCKTON.
2. AGGREGATE BASE: THE AGGREGATE BASE SHALL BE CLASS 2 WITH A MAXIMUM AGGREGATE SIZE OF ¾" AND SHALL CONFORM TO THE PROVISIONS OF SECTION 26 OF THE CAL-TRANS STANDARD SPECIFICATIONS AND PLANS.
3. ASPHALT CONCRETE: SHALL BE PER CAL-TRANS SECTION 39 AND CONFORM TO CITY OF STOCKTON STANDARD SPECIFICATIONS AT THE TIME OF CONSTRUCTION.

THE FOLLOWING IS ADDED TO SECTION 39 OF THE CAL-TRANS STANDARD SPECIFICATIONS.

SECTION 39-1.42 MATERIAL

A. HOT MIX ASPHALT (HMA) SHALL CONFORM TO THE PROVISIONS OF SECTION 39 OF THE CALTRANS STANDARD SPECIFICATION. HMA MUST BE TYPE A OR TYPE B. UNLESS OTHERWISE SPECIFIED, ASPHALT CONCRETE SHALL BE TYPE B. ASPHALT BINDER MUST BE PG 64-10 OR PG 70-10 AND MUST COMPLY WITH SECTION 39-1.020 OF CALTRANS STANDARD SPECIFICATIONS.

B. FOR SURFACE COURSE AND BASE COURSE PAVING ON LOW OR MEDIUM LOCAL STREETS, ASPHALT CONCRETE SHALL BE TYPE B, ½" NOMINAL MAXIMUM AGGREGATE SIZE.

C. UNLESS OTHERWISE SPECIFIED OR APPROVED BY THE ENGINEER, HMA FOR BASE AND SURFACE COURSE PAVING FOR ALL OTHER STREETS SHALL BE TYPE A, ½" MAXIMUM, MEDIUM AGGREGATE.

D. FOR NON-CITY PROJECTS, THE PRECISE ASPHALT BINDER CONTENT SHALL BE IN ACCORDANCE WITH A MIX DESIGN PRE-APPROVED BY THE CITY ENGINEER WITHIN TWELVE MONTHS OF PLACEMENT OF THE ASPHALT CONCRETE. FOR CITY PROJECTS, THE ASPHALT OIL CONTENT SHALL BE AS SPECIFIED IN THE PROJECT SPECIFICATION SPECIAL PROVISIONS. AN HMA MIX DESIGNS SHALL CONFORM TO CALTRANS SPECIFICATIONS SECTION 39-1.03 "HOT MIX ASPHALT MIX DESIGN REQUIREMENTS" AND MUST BE SUBMITTED.

SECTION 39-1.43 SPREADING AND COMPACTION

A. UNLESS SPECIFIED IN THE PROJECT SPECIAL PROVISIONS, SPREADING AND COMPACTION MUST BE IN ACCORDANCE TO SECTION 39-3 "METHOD CONSTRUCTION PROCESS". THE MAXIMUM COMPACTED THICKNESS OF ANY ONE BASE COURSE OF ASPHALT SHALL BE THREE (3) INCHES. THE MAXIMUM COMPACTED THICKNESS OF THE SURFACE COURSE (1/2" AGGREGATE) OF ASPHALT CONCRETE SHALL BE TWO (2.0) INCHES, AND THE MINIMUM THICKNESS SHALL BE ONE (1) INCH AFTER COMPACTION.

B. A MECHANICAL PAVING MACHINE SHALL ONLY BE REQUIRED FOR SPREADING THE SURFACE COURSE AND ANY LEVELING COURSES REQUIRED.

C. HMA BASE COURSES MAY BE SPREAD AND COMPACTED BY SUCH MECHANICAL MEANS AS WILL PROVIDE A SURFACING OF UNIFORM SMOOTHNESS AND TEXTURE IN SUCH A MANNER AS TO PREVENT SEGREGATION OF MATERIALS. APPROVAL WILL BE BASED ON DEMONSTRATED PERFORMANCE OF SUCH EQUIPMENT.

D. A PRIME COAT OF SC250 OR MC250 SHALL BE APPLIED TO ALL AGGREGATE BASES TO BE SURFACED. THE PRIME COAT SHALL BE APPLIED AT AN RATE OF 0.2 GALLON PER SQUARE YARD OVER THE ENTIRE ROADWAY AREA TO BE SURFACED.

E. ROLLING OF FULL DEPTH BASE COURSES SHALL BE FROM THE CENTER OF THE PAVING PASS TO THE EDGE.

F. THE CONTRACTOR SHALL FURNISH A MINIMUM OF ONE (1) STEEL WHEEL TANDEM ROLLER WITH A GROSS STATIC WEIGHT OF AT LEAST 7.5 TONS AND ONE (1) 15-TON PNEUMATIC TIRED ROLLER. AT THE ENGINEER'S DISCRETION, A THIRD STEEL 2 AXLE ROLLER OF A MINIMUM WEIGHT OF 7.5 TONS MAY BE REQUIRED.

G. ALTERNATE COMPACTING EQUIPMENT OR SUBSTITUTION OF A VIBRATORY ROLLER FOR A PNEUMATIC-TIRED ROLLER WILL NOT BE PERMITTED, APPROVED OR REVIEWED.

H. TIRE PRESSURE OF THE PNEUMATIC TIRE ROLLER AT THE TIME OF BREAKDOWN ROLLING SHALL BE 80 PSI MINIMUM AND MAINTAINED SUCH THAT THE AIR PRESSURE DOES NOT VARY MORE THAN 5 PSI. IT IS SUGGESTED THAT THE PNEUMATIC TIRE ROLLER HAVE TWENTY (20) INCH RIMS TO HELP PREVENT BOGGING DOWN. THE PNEUMATIC TIRE ROLLER SHALL BE USED TO BREAK DOWN THE SPREAD OF ASPHALT CONCRETE BASES AND SHALL OPERATE IMMEDIATELY BEHIND THE PAVER OR SPREADER.

I. ROLLER TIRES SHALL BE PREHEATED AND OPERATED HOT AND DRY OR HAVE PROPER SPRAY EQUIPMENT FOR USE OF ROLLER-EASE TO PREVENT PICK UP OF HOT MIX.

J. ALL COURSES SHALL BE COMPACTED WITH A PNEUMATIC ROLLER. IN TRUCK ROUTES, EACH COURSE SHALL BE PNEUMATIC AND STEEL ROLLED. ROLLING SHALL CONTINUE UNTIL RUTS ARE ELIMINATED AND THE PROPER DEGREE OF COMPACTION IS ACHIEVED. FINAL ROLLING OF THE SURFACE COURSE SHALL BE ACCOMPLISHED WITH A STEEL WHEEL TANDEM ROLLER, VIBRATOR TURNED OFF, AT THE MINIMUM TEMPERATURE SPECIFIED IN SECTION 39-3.04 OF CALTRANS STANDARD SPECIFICATIONS.

K. THE SURFACE OF THE COMPLETED BASE COURSE AT ANY POINT SHALL NOT VARY MORE THAN 0.02 FEET ABOVE OR BELOW THE GRADE ESTABLISHED FOR SURFACE COURSE PLACEMENT.

L. THE CONTRACTOR WILL BE RESPONSIBLE FOR CONSTRUCTION GRADES. THE ENGINEER WILL SET A BASE LINE AND FURNISH CUTS FOR GUTTER FLOWLINES AND PAVEMENT CENTERLINE OR EDGE OF PAVEMENT GRADE. BASE COURSE SURFACE PRIOR TO PLACEMENT OF SURFACE COURSE WHICH DOES NOT MEET THE ABOVE REQUIREMENTS SHALL BE PLANED OR FILLED AT THE CONTRACTOR'S EXPENSE IN A MANNER ACCEPTABLE TO THE ENGINEER THAT WILL NOT DAMAGE THE EXISTING COMPACTED BASE AND WILL OBTAIN THE REQUIRED MATERIAL COMPACTION AT REQUIRED TEMPERATURE.

4. FOG SEAL – ALL A.C PAVING SHALL BE FOG SEALED PER SECTION 37 OF CALTRANS STANDARD SPECIFICATIONS, PER THE LATEST EDITION.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPLACEMENT OF ALL STRIPING AND PAVEMENT MARKINGS THAT ARE REMOVED.

PUMPS

1. THE CONTRACTOR SHALL FURNISH AND INSTALL, AS SHOW ON THE PLANS AND AS SPECIFIED HEREIN, FOUR (4) NEW VERTICAL MIXED FLOW, OIL LUBRICATED PUMPS MANUFACTURED BY THE CASCADE PUMP COMPANY, OR APPROVED EQUAL. SEE THE "PUMP CHARACTERISTICS" TABLE ON SHEET C6.1 OF THE PLANS FOR THE MODEL NUMBERS OF THE PUMPS. CONTRACTOR SHALL SUBMIT PUMP TYPE AND BRAND AND MOTOR TYPE AND BRAND TO THE ENGINEER AND THE MUNICIPAL UTILITIES DEPARTMENT FOR APPROVAL. EACH PUMP SHALL OPERATE SUCCESSFULLY AS SPECIFIED ON THE PLANS.
2. THE PUMPS SHALL HAVE THE CAPACITIES AND PUMP PERFORMANCES AS INDICATED IN THE "PUMP CHARACTERISTICS" TABLE ON SHEET C6.1 OF THE PLANS. PUMP PERFORMANCE IS DEFINED AS THE SUM OF THE STATIC HEAD, VELOCITY HEAD, AND FRICTION & LOCAL HEAD LOSSES IN THE DISCHARGE PIPE. LOSSES IN THE PUMP, COLUMN AND DISCHARGE HEAD ARE NOT INCLUDED. BOWL PERFORMANCE IS THE SUM OF THE PUMP PERFORMANCE AND LOSSES IN THE PUMP, COLUMN AND DISCHARGE HEAD.
3. ALL PUMP MOTORS SHALL BE 3-PHASE, 480 VOLT, 60 HZ, VFD RATED INDUCTION MOTORS WITH WEATHER PROTECTED TYPE I ENCLOSURES. EACH MOTOR SHALL PROVIDE FULL CLASS F INSULATION AND SHALL HAVE A 1.15 SERVICE FACTOR. THE MOTORS SHALL NOT OPERATE IN THE SERVICE FACTOR AT ANY POINT ALONG THE PUMP CURVE.
4. ALL PUMP MOTORS SHALL MEET THE MINIMUM SIZE SCHEDULED ON THE DRAWINGS AND ATTACH TO THE MOUNTING PEDESTAL.
5. ALL PUMP MOTORS SHALL BE OF SUFFICIENT CAPACITY TO DRIVE PUMP CONTINUOUSLY AT THE RATED HEAD AND CAPACITY REQUIREMENTS WITHOUT EXCEEDING THE NAME PLATE CURRENT STATED ON THE MOTOR.
6. ALL PUMP MOTORS SHALL HAVE A THRUST GEARING WITH SUFFICIENT CAPACITY TO CARRY THE WEIGHT OF ALL ROTATING PARTS, HYDRAULIC THRUST, PLUS A FACTOR OF SAFETY.
7. DIMENSIONS SHOWN ON PLANS FOR BASE PLATE, COVER BLOCKOUTS, AND BELL CLEARANCE ARE ILLUSTRATIVE, IN NATURE AND PUMP MANUFACTURER'S RECOMMENDATIONS SHALL BE FOLLOWED FOR ACTUAL INSTALLATION.
8. WHERE OTHER INSTRUCTIONS ARE NOT GIVEN, EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH RECOMMENDATIONS OF THE MANUFACTURER AND BEST STANDARD PRACTICES FOR THIS TYPE OF WORK.
9. SUBMITTALS

A. THE CONTRACTOR SHALL PROVIDE THE SPECIFIED SUBMITTAL INFORMATION TO THE STOCKTON MUNICIPAL UTILITIES DEPARTMENT AND THE ENGINEER FOR REVIEW. THE CONTRACTOR SHALL PROVIDE THE MUNICIPAL UTILITIES DEPARTMENT WITH THREE (3) COPIES AND THE ENGINEER WITH ONE (1) COPY OF SUBMITTAL INFORMATION. INFORMATION SHALL BE PLACED IN 3-RING BINDERS OF LIKE KIND AND SHALL BE APPROPRIATELY LABELED FOR EASE OF IDENTIFICATION. BINDERS SHALL BE PROVIDED WITH A TABLE OF CONTENTS AND TAB SHEETS FOR EASY LOCATION OF INFORMATION. SUBMITTALS SHALL INCLUDE:

1) COMPLETE DESCRIPTION OF THE PUMPS EQUIPMENT INCLUDING MANUFACTURER'S BROCHURE AND MANUALS, MANUFACTURER'S SPECIFICATIONS, CATALOG INFORMATION, LIST OF COMPONENTS AND FEATURES, DRAWINGS, AND MATERIAL DESCRIPTIONS.
2) FABRICATION SHOP DRAWINGS AND BILL OF MATERIALS.
3) MANUFACTURERS INFORMATION ON COATINGS AND LINING TO BE USED.
4) COMPLETE PERFORMANCE DATA, CURVES, AND HORSEPOWER REQUIREMENTS FOR ALL PUMPS AND MOTORS, INCLUDING FACTORY CERTIFIED PUMP CURVES AND NET POSITIVE SUCTION HEAD REQUIRED (NPSHR) DATA. ALL INFORMATION PROVIDED SHALL CONFORM TO THE HYDRAULIC INSTITUTE STANDARDS.
5) FACTORY CERTIFIED STRUCTURAL LOADING REQUIREMENTS FOR THE PUMPING EQUIPMENT TO BE PROVIDED. INFORMATION SHALL INCLUDE THE DRY AND WET WEIGHTS FOR THE PUMP, COLUMN, PEDESTAL, ELBOW, MOTOR AND ANY OTHER EQUIPMENT PROVIDED.
6) ELEMENTARY WIRING DIAGRAM AND CONTROL DIAGRAMS OF ALL INTERNAL INSTRUMENTATION AND CONTROLS SUPPLIED INCLUDING LIST OF PARAMETERS MONITORED, CONTROLLED OR ALARMED.
7) DETAILED DESIGN AND CONSTRUCTION INFORMATION NECESSARY TO ADAPT ANY SITE ARCHITECTURAL, STRUCTURAL, MECHANICAL, PLUMBING, ELECTRICAL EQUIPMENT OR SYSTEMS TO THE ARRANGEMENT SHOWN AND/OR FUNCTIONS DESCRIBED ON THE DRAWINGS AND SPECIFICATIONS.
8) ALL DIFFERENCES BETWEEN THE SPECIFICATIONS AND THE PROPOSED SUBSTITUTE EQUIPMENT SHALL BE CLEARLY IDENTIFIED IN WRITING UNDER A SUBHEADING.

10. TESTING:

A. EACH PUMP SHALL BE FACTORY TESTED AND CERTIFIED BY THE PUMP MANUFACTURER PRIOR TO INSTALLATION IN ACCORDANCE WITH THE HYDRAULIC INSTITUTE STANDARDS. THIS TESTING SHALL MEASURE PUMP FLOWS, PRESSURE, MOTOR AMPERAGE DRAW, AND HORSEPOWER REQUIREMENTS OF THE PUMPS. SINCE THE PUMPS WILL BE OPERATED USING VFD CONTROLLED MOTORS, TESTING SHALL ALSO INCLUDE A NATURAL FREQUENCY ANALYSIS OF THE DISCHARGE HEAD/MOTOR STAND AND MOTOR TO ENSURE THAT THERE ARE NO NATURAL FREQUENCIES WITHIN THE PUMPS' OPERATING SPEED RANGES. THE PUMP MANUFACTURER SHALL PREPARE WRITTEN REPORTS FOR ALL TESTING AND THE REPORTS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AT LEAST 4 WEEKS PRIOR TO INSTALLATION OF THE PUMPS.

B. UPON COMPLETION OF WORK, THE PUMPS SHALL BE OPERATED AND FIELD TESTED TO DEMONSTRATE THEIR SATISFACTORY OVERALL OPERATION PRIOR TO FINAL ACCEPTANCE. THE FIELD TEST SHALL BE CONDUCTED BY THE CONTRACTOR AND/OR SUB-CONTRACTORS IN THE PRESENCE OF THE CITY OF STOCKTON MUNICIPAL UTILITIES REPRESENTATIVE AND THE ENGINEER. THE CONTRACTOR SHALL NOTIFY ALL REPRESENTATIVES TO BE PRESENT AT THE TESTING AT LEAST THREE (3) DAYS PRIOR TO FIELD TESTING.

C. EACH PUMP, INCLUDING THE LOW FLOW PUMP, WILL BE FIELD TESTED FOR A MINIMUM OF FOUR (4) CONTINUOUS HOURS USING TEMPORARY RECIRCULATION PIPING WHICH DISCHARGES WATER BACK INTO THE PUMP SUMP. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL TEMPORARY RECIRCULATION PIPING. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING THE NECESSARY RESTRAINT OF THE TEMPORARY RECIRCULATION PIPING TO PREVENT MOVEMENT AND POSSIBLE INJURY.

D. UPON SUCCESSFUL COMPLETION OF TESTING OF THE SPECIFIED PERFORMANCE REQUIREMENTS, AS NOTED BY C.O.S. PERSONNEL, THE DISCHARGE PIPING SHALL BE RETURNED TO THE NORMAL OPERATING CONFIGURATION AND THE REMAINING WATER SHALL BE REMOVED FROM THE PUMP SUMP.

E. THE CONTRACTOR SHALL PROVIDE A SIGN-OFF SHEET TO RECORD FIELD TESTING. THE SIGN-OFF SHEET SHALL INCLUDE, AS A MINIMUM, HOURLY RECORDS OF DISCHARGE, PRESSURE, MOTOR CURRENT DRAW, MOTOR TEMPERATURE AND VIBRATION.

F. THE EQUIPMENT SUPPLIER'S REPRESENTATIVE SHALL VISIT THE JOB SITE AS REQUIRED TO ENSURE SATISFACTORY INSTALLATION AND OPERATION.

G. DESCRIPTIONS OF TEST EQUIPMENT SHALL BE INCLUDED WITH SUBMITTAL DATA.

16. OPERATIONS & MAINTENANCE MANUALS

A. THE CONTRACTOR SHALL PROVIDE THE MUNICIPAL UTILITIES DEPARTMENT WITH A OPERATION AND MAINTENANCE MANUAL (O & M) FOR THE PUMPS.

B. O & M'S SHALL BE PROPERLY COMPLETED, SUBMITTED AND APPROVED PRIOR TO FINAL ACCEPTANCE.

C. PROVIDE FOUR (4) COPIES OF THE O & M MANUALS. THE DOCUMENTATION SHALL BE BOUND IN 3-INCH, 3-RING BINDERS WITH NO MORE THAN 2-INCHES OF DOCUMENTATION PER VOLUME (BINDER).

D. ALL O & M BINDERS SHALL BE OF THE SAME TYPE. COLOR AND LABELING. LABELS SMALL INDICATE PURPOSE OF DOCUMENT. PUMP STATION NAME AND VOLUME NUMBER, IF MULTIPLE VOLUMES, ARE REQUIRED.

E. EACH O & M SHALL CONTAIN A MASTER TABLE OF CONTENTS LOCATED IN THE FIRST VOLUME. THE TABLE OF CONTENTS SHALL ITEMIZE ALL INFORMATION INCLUDED IN O & M BY VOLUME NUMBER.

THE O & M MANUALS SHALL INCLUDE THE FOLLOWING MINIMUM INFORMATION:

1) NAMEPLATE DATA FOR ALL PUMPS INCLUDING MAKE, MODEL, SERIAL NUMBER, ETC.
2) CONTACT INFORMATION OF MANUFACTURER'S REPRESENTATIVE FOR ALL EQUIPMENT.
3) A COPY OF WARRANTY AND/OR SERVICE CONTRACT FOR ALL EQUIPMENT.
4) PARTS LIST WITH DIAGRAMS FOR ALL PUMPS.
5) RECOMMENDED INSTALLATION, OPERATION, MAINTENANCE AND TROUBLE SHOOTING PROCEDURES FOR ALL PUMPS.
6) ASSEMBLY AND DISASSEMBLY INSTRUCTIONS AND WIRING DIAGRAMS.
7) WRITTEN MAINTENANCE SCHEDULES FOR A 5-YEAR MAINTENANCE CYCLE FOR ALL PUMPS SHALL BE INCLUDED PRIOR TO AND REVIEWED DURING TRAINING SESSION.
8) A COPY OF ALL TEST RESULTS.

WELDED STEEL PIPE AND COATINGS

1. WELDED STEEL PIPE SHALL MEET THE REQUIREMENTS OF ASTM A53 GRADE B WITH A THICKNESS OF 1/4-INCH. WELDING SHALL CONFORM TO AMERICAN WELDING SOCIETY (AWS) STANDARD D1.1.
2. PIPE SHALL BE PREPARED AND COATED AS FOLLOWS:

A. PREPARE PIPE SURFACE AS RECOMMENDED BY THE PRIMER MANUFACTURER.

B. INITIAL COAT SHALL BE A ZINC-RICH PRIMER WITH A DRY FILM THICKNESS (DFT) OF 3-4 MILS.

C. INTERMEDIATE COAT SHALL BE A HIGH-BUILD POLYAMIDE EPOXY WITH A DFT OF 4-6 MILS.

D. TOPCOAT SHALL BE AN ALIPHATIC POLYURETHANE (2-3 MILS DFT) WHICH CAN PROVIDE UV RESISTANCE.

E. COATINGS SHALL BE COMPATIBLE WITH EACH OTHER.

F. CONTRACTOR TO SUBMIT A COATING SYSTEM THAT MEETS THE ABOVE REQUIREMENTS TO THE ENGINEER FOR REVIEW AND APPROVAL AT LEAST 3 WEEKS PRIOR TO PREPARING AND COATING THE PIPES.

SIGNS

1. SIGNS SHALL BE 14" X 10" IN SIZE AND CONSTRUCTED OF 0.040" ALUMINUM THAT ARE IMPRINTED AND HAVE AN OVER-LAMINATE. SIGNS SHALL BE SUITABLE FOR OUTDOOR USE, PREDRILLED FOR MOUNTING, AND HAVE OSHA COMPLIANT WORDING. SIGNS SHALL BE MANUFACTURED BY THE SETON NAME PLATE COMPANY (NEW HAVEN, CT (800) 243-6624), OR AN APPROVED EQUAL.

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LODI UNIFIED SCHOOL DISTRICT
McNAIR HIGH SCHOOL
9550 Ronald E. McNair Way
Stockton, CA 95210

LODI UNIFIED SCHOOL DISTRICT

KEY PLAN
NORTH: PLAN TRUE

CLIENT
LODI UNIFIED SCHOOL DISTRICT
PROJECT NUMBER
250131
DATE: 5/18/26
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CIVIL NOTES & SPECIFICATIONS

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250116-MASTER PLAN

EXISTING SURVEY MONUMENT PRESERVATION

PRESERVING AND/OR REPLACING EXISTING SURVEY MONUMENTATION (E.G., PROPERTY CORNERS, ETC.) SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THIS PLAN SHEET SHOWS BOTH WHERE MONUMENTS WERE FOUND AND ALSO WHERE THEY WERE NOT FOUND BUT MAY EXIST. ALL COSTS FOR LOCATING, PRESERVING, AND /OR REPLACING EXISTING SURVEY MONUMENTATION SHALL BE INCLUDED IN THE CONTRACTOR'S TOTAL CONTRACT PRICE AND NO ADDITIONAL PAYMENT SHALL BE MADE FOR SUCH WORK.

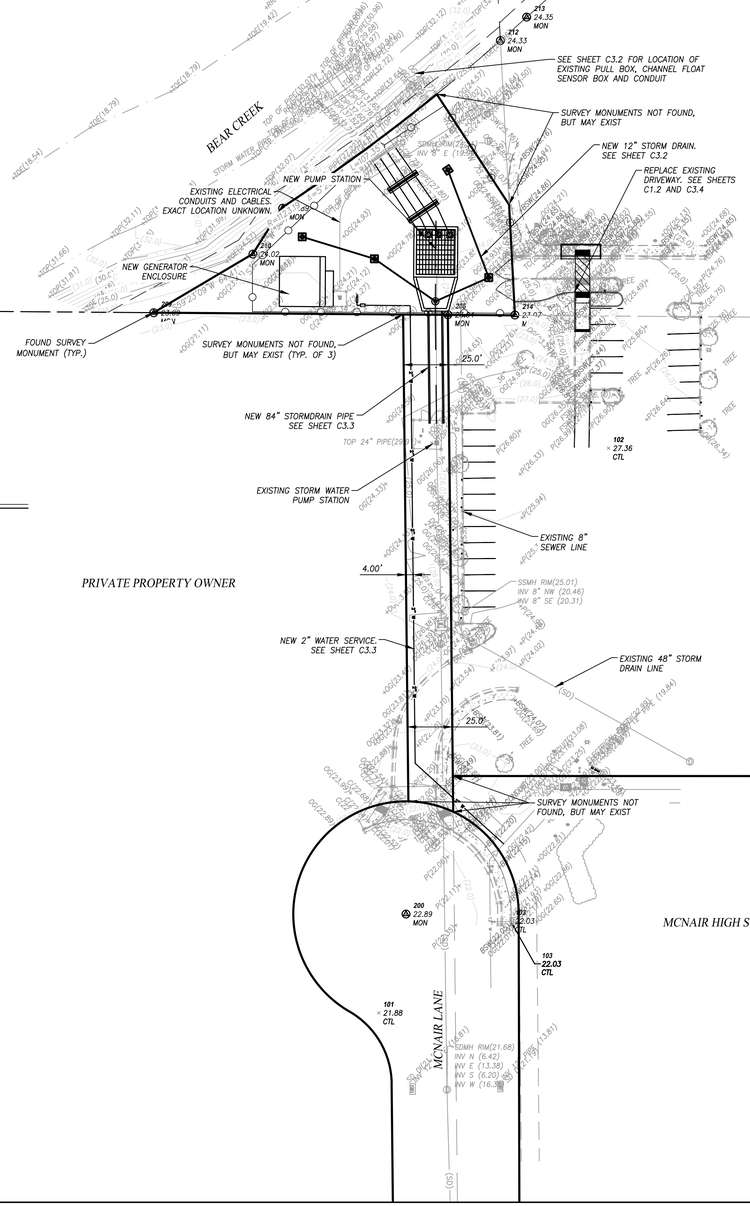
BENCHMARK

BENCHMARK 4N-8, ELEVATION 30.35', NAVD88 GPS DERIVED FROM CORS P309

N

1" 0' 40'

SCALE: 1"= 40'



ABBREVIATIONS/LEGEND

BSW	BACK OF SIDEWALK
C	CONCRETE
COS	CITY OF STOCKTON
DI	DRAIN INLET
EP	EDGE OF PAVEMENT
FL	FLOWLINE
FSW	FRONT OF SIDE WALK
OG	ORIGINAL GROUND
P	PAVEMENT
RRAP	RIP RAP
SDDI	STORM DRAIN, DRAIN INLET
SDMH	STORM DRAIN MANHOLE
SP	STAND PIPE
SSMH	SANITARY SEWER MANHOLE
TC	TOP OF CURB
TOE	TOE OF SLOPE
TOP	TOP OF SLOPE
	WATER VALVE
	ELECTRIC PULLBOX
	LIGHT POLE
	STORM DRAIN INLET
	STORM DRAIN CATCH BASIN
	SIGN (AS DESCRIBED)
	STORM DRAIN MANHOLE
	SANITARY SEWER MANHOLE
	SPRINKLER
	SURVEY MONUMENT
	IRRIGATION VALVE
IV	IRRIGATION VAULT
VAULT	VAULT (AS DESCRIBED)
	STAND PIPE
	ELECTRIC METER
	ELECTRICAL PANEL
	PULLBOX
	WELL
	GATE

CHAINLINK FENCE
FLOWLINE
LIP
EDGE OF PAVEMENT
TOP OF CURB
PARKING LOT STRIPING
ELECTRICAL CONDUIT (E)
STORM DRAIN PIPE LINE (SD)
SANITARY SEWER PIPE LINE (SS)
WATER PIPE LINE (W)
CONTOUR ELEVATION (24.0)
CONCRETE
TRUNCATED DOME
TREE (SIZE AS NOTED)
HEDGE

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MASTER SITE PLAN

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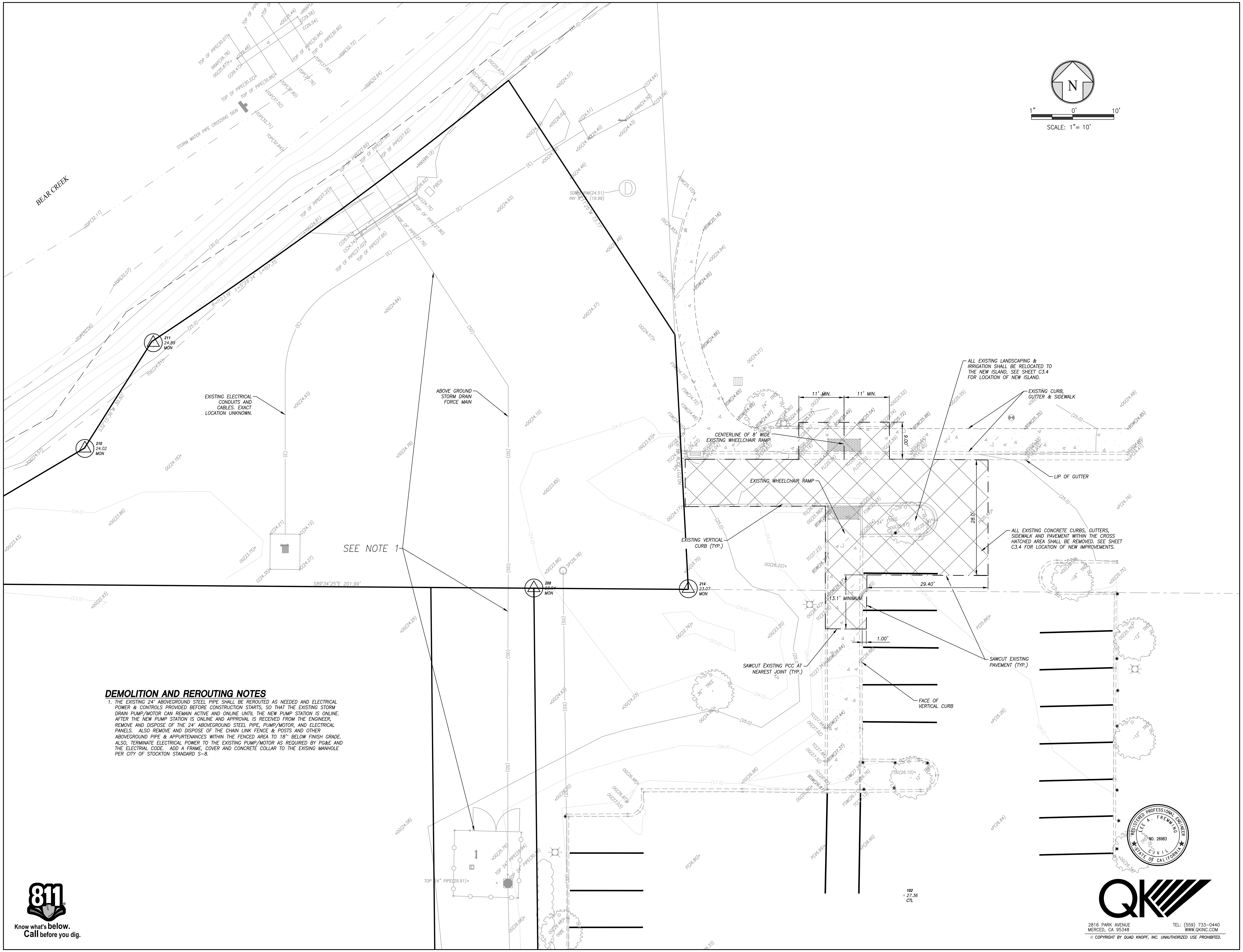
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DEMOLITION AND REROUTING NOTES

1. THE EXISTING 24" ABOVEGROUND STEEL PIPE SHALL BE REROUTED AS NEEDED AND ELECTRICAL POWER & CONTROLS PROVIDED BEFORE CONSTRUCTION STARTS, SO THAT THE EXISTING STORM DRAIN PUMP/MOTOR CAN REMAIN ACTIVE AND ONLINE UNTIL THE NEW PUMP STATION IS ONLINE. AFTER THE NEW PUMP STATION IS ONLINE AND APPROVAL IS RECEIVED FROM THE ENGINEER, REMOVE AND DISPOSE OF THE 24" ABOVEGROUND STEEL PIPE, PUMP/MOTOR, AND ELECTRICAL PANELS. ALSO REMOVE AND DISPOSE OF THE CHAIN LINK FENCE & POSTS AND OTHER ABOVEGROUND PIPE & APPURTENANCES WITHIN THE FENCED AREA TO 18'" BELOW FINISH GRADE. ALSO, TERMINATE ELECTRICAL POWER TO THE EXISTING PUMP/MOTOR AS REQUIRED BY PG&E AND THE ELECTRIAL CODE. ADD A FRAME, COVER AND CONCRETE COLLAR TO THE EXISING MANHOLE PER CITY OF STOCKTON STANDARD S-8.

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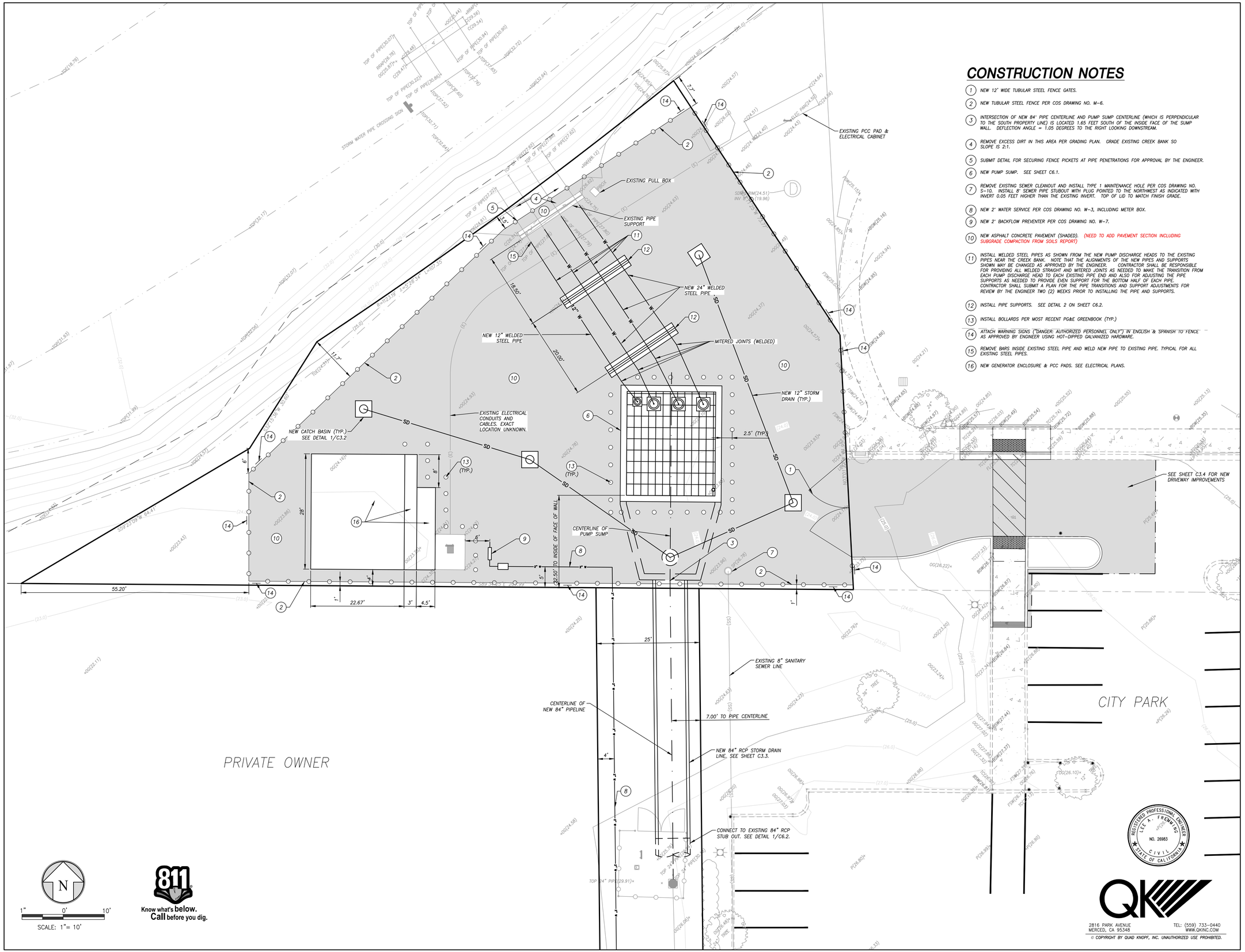
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TOPO MAP AND DEMOLITION PLAN

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250116-PUMP SITE PLAN



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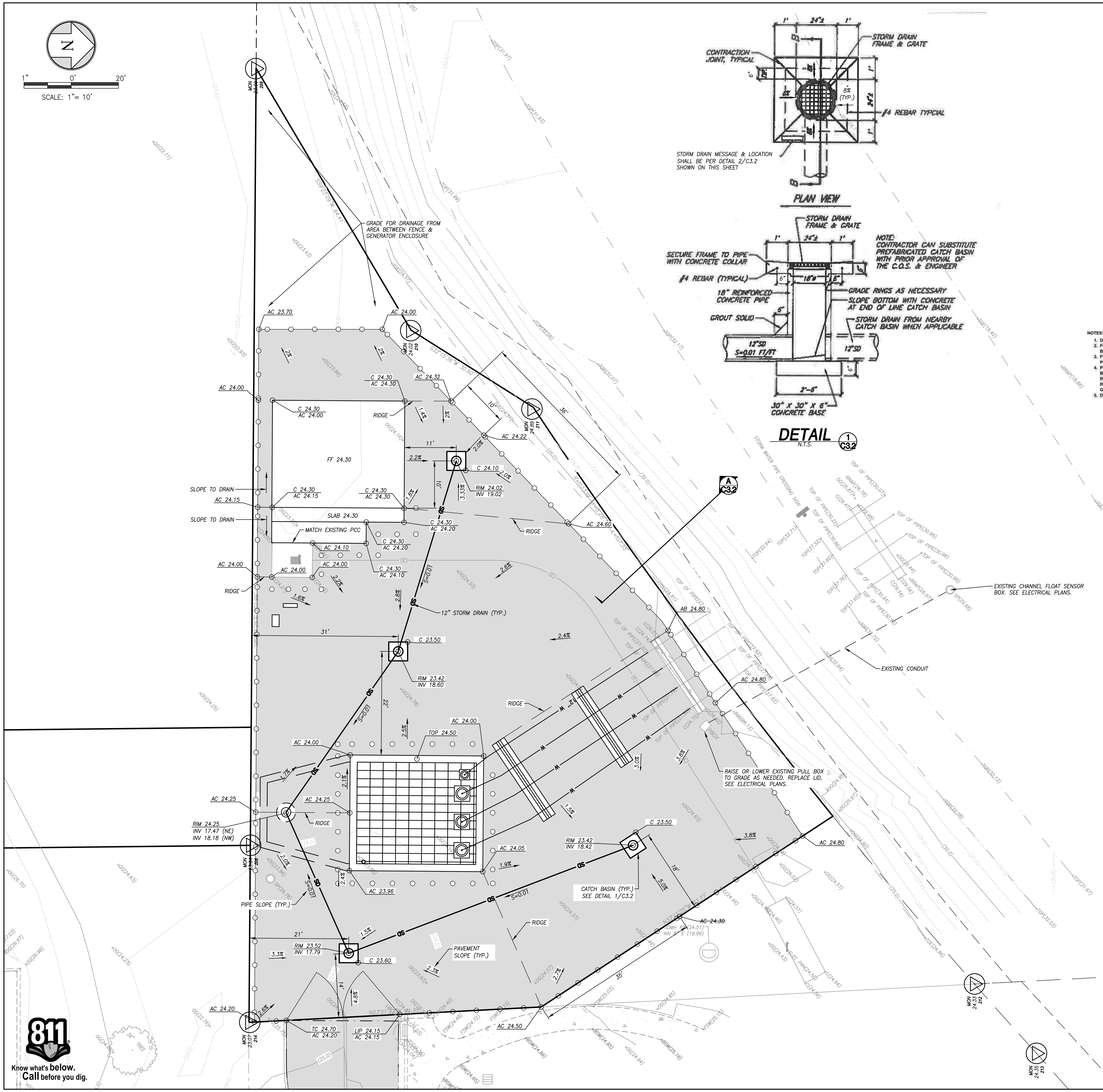
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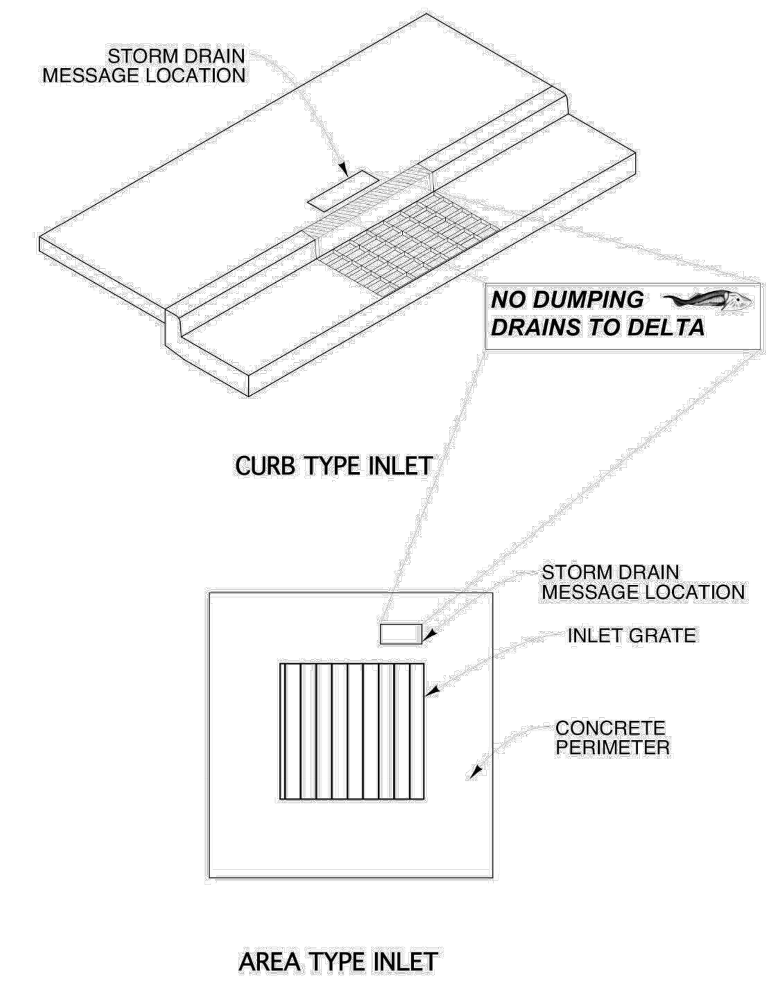
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PUMP STATION SITE PLAN

C3.1



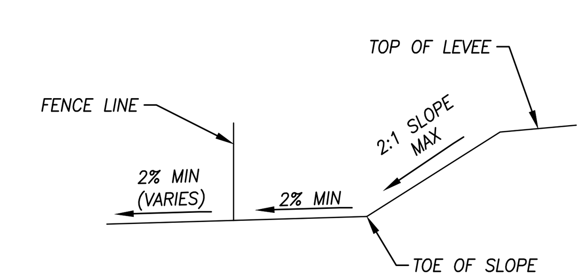
DETAIL 1/C3.2
N.T.S.



NOTES:
1. DESIGN OF STORM DRAIN MESSAGE SHALL BE IN ACCORDANCE WITH DETAILS SHOWN ABOVE.
2. FOR NEW DEVELOPMENT, MESSAGE AND SYMBOL SHALL BE PERMANENTLY PLACED WITH THE USE OF BOMANITE, STAMPED INTO THE CONCRETE, OR OTHER METHODS APPROVED BY THE CITY ENGINEER.
3. FOR REDEVELOPMENT, MESSAGE AND SYMBOL SHALL BE PLACED WITH THE USE OF THERMOPLASTIC PAVEMENT MARKINGS.
4. PAINTING SHALL NOT BE ALLOWED FOR NEW DEVELOPMENT OR REDEVELOPMENT. PAINTING SHALL ONLY BE ALLOWED IN EXISTING AREAS FOR COMMUNITY AWARENESS ACTIVITIES. LETTERS SHALL BE 1-1/2 INCHES IN HIEGHT. OUTSIDE DIMENSION OF PUBLIC NOTICE BACKGROUND SHALL FIT BACK OF INLET OR BE PLACED IN SIDEWALK IMMEDIATELY BEHIND INLET AND SHALL BE 8 INCHES X 24 INCHES MINIMUM. LETTERING AND GRAPHIC SHALL BE BLACK WITH GRAY BACKGROUND UNLESS OTHERWISE APPROVED BY CITY ENGINEER.
5. DRIVEWAY INLETS SHALL HAVE NOTICE IN DRIVEWAY ADJACENT TO INLET.

Figure 4-1. Storm Drain Message Location

DETAIL 2/C3.2
N.T.S.



SECTION A/C3.2
N.T.S.

REGISTERED PROFESSIONAL ENGINEER LEE A. FREMMING NO. 26983 CIVIL STATE OF CALIFORNIA

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McNAIR HIGH SCHOOL
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LODI UNIFIED SCHOOL DISTRICT

KEY PLAN
NORTH: PLAN TRUE

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LODI UNIFIED SCHOOL DISTRICT	
PROJECT NUMBER	250131
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GRADING & STORM DRAIN PLAN

C3.2

250116-PLAN-PROFILE

CONSTRUCTION NOTES

(1) PER THE OFFSITE IMPROVEMENT PLANS FOR MCNAIR HIGH SCHOOL, THIS MANHOLE WAS CONSTRUCTED PER COS DRAWING NO. S-23 WITH AN 8' LENGTH OF 84" DIAMETER RCP STUBBED OUT TO THE NORTH. THE PLANS FURTHER INDICATE THAT THE NORTH END OF THE STUB WAS TO BE PLUGGED BUT NO DETAILS WERE PROVIDED.

IT WAS NOT POSSIBLE TO SURVEY THE PIPE INVERTS IN THIS MANHOLE OR VISUALLY INSPECT THE STUB OUT, SO ASSUMPTIONS WERE MADE FOR THE LOCATION OF THE STUB OUT'S CENTERLINE (PARALLEL TO THE PIPE) AND FOR THE INVERT AT THE NORTH END. THREE (3) WEEKS PRIOR TO BEGINNING CONSTRUCTION WORK THE CONTRACTOR SHALL:

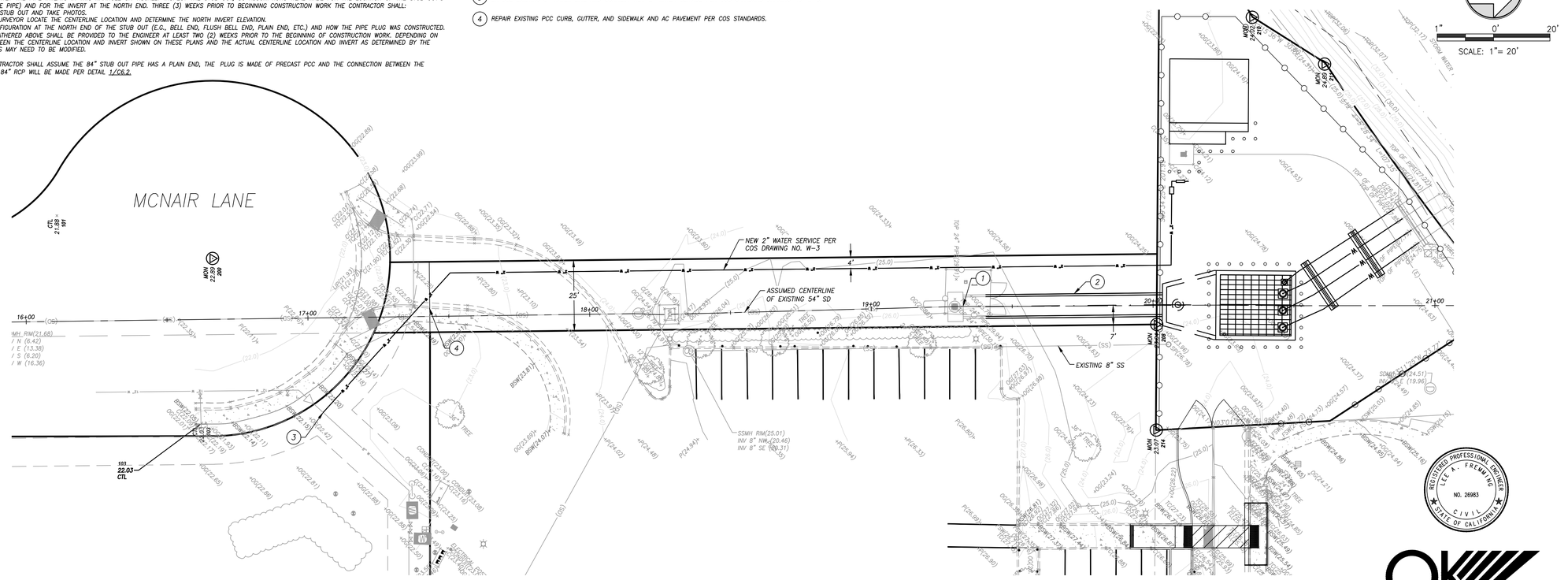
A. FULLY EXPOSE THE STUB OUT AND TAKE PHOTOS.
B. HAVE A LICENSED SURVEYOR LOCATE THE CENTERLINE LOCATION AND DETERMINE THE NORTH INVERT ELEVATION.
C. DETERMINE THE CONFIGURATION AT THE NORTH END OF THE STUB OUT (E.G., BELL END, FLUSH BELL END, PLAIN END, ETC.) AND HOW THE PIPE PLUG WAS CONSTRUCTED.
D. THE INFORMATION GATHERED ABOVE SHALL BE PROVIDED TO THE ENGINEER AT LEAST TWO (2) WEEKS PRIOR TO THE BEGINNING OF CONSTRUCTION WORK. DEPENDING ON THE DIFFERENCES BETWEEN THE CENTERLINE LOCATION AND INVERT SHOWN ON THESE PLANS AND THE ACTUAL CENTERLINE LOCATION AND INVERT AS DETERMINED BY THE CONTRACTOR THE PLANS MAY NEED TO BE MODIFIED.

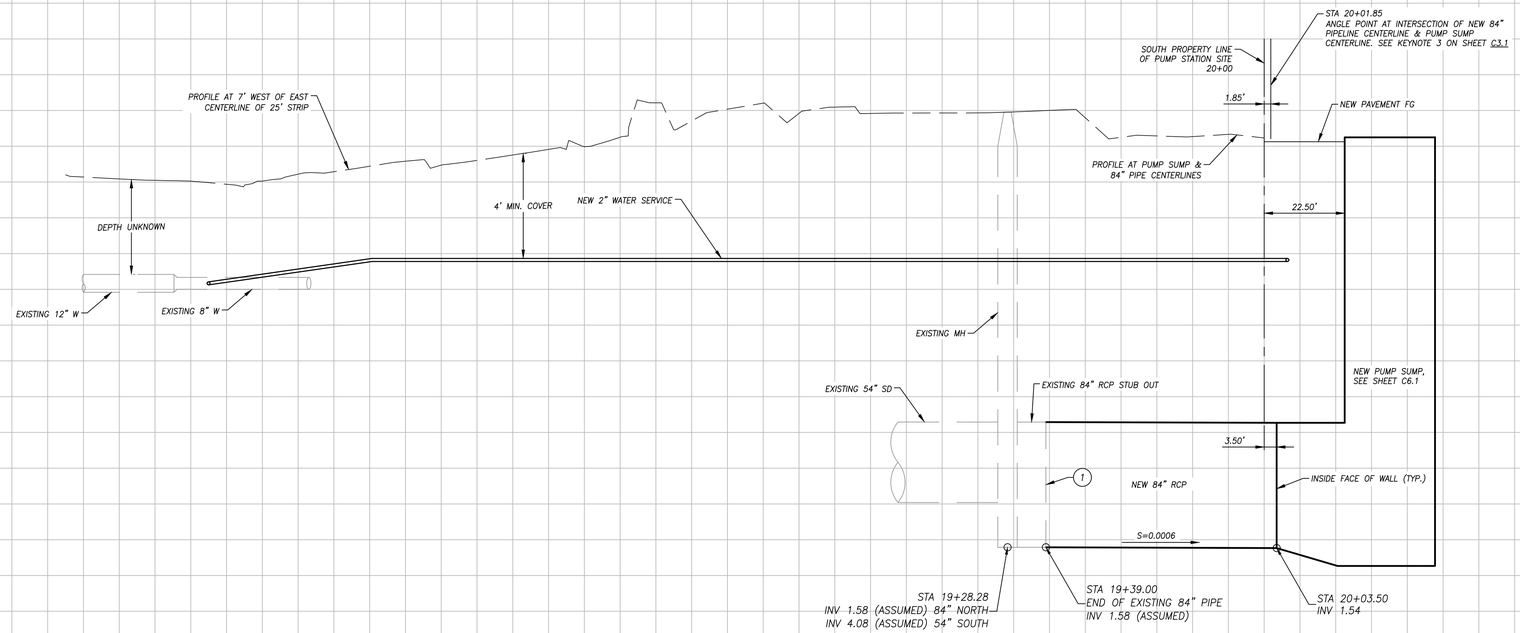
FOR BID PURPOSES THE CONTRACTOR SHALL ASSUME THE 84" STUB OUT PIPE HAS A PLAIN END, THE PLUG IS MADE OF PRECAST PCC AND THE CONNECTION BETWEEN THE EXISTING PIPE AND THE NEW 84" RCP WILL BE MADE PER DETAIL 1/C6.2.

(2) NEW 84" RCP STORM DRAIN LINE.

(3) EXPOSE EXISTING 8" WATER LINE AND CONNECT NEW 2" WATER SERVICE PER COS STANDARD DRAWING NO. W-3.

(4) REPAIR EXISTING PCC CURB, GUTTER, AND SIDEWALK AND AC PAVEMENT PER COS STANDARDS.





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PLAN-PROFILE

C3.3

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GENERAL NOTES

1. PRE-FABRICATED IN LINE RAISED TRUNCATED DOMES (DETECTABLE WARNING SURFACE). SEE COS DRAWING NO. R-65.
2. SAW-CUT EXISTING CONCRETE AT THE NEAREST JOINT TO ENSURE A 15' MIN. RAMP LENGTH PLUS A 1' WIDE BORDER LENGTH WITH GROOVES AND CONNECT TO EXISTING CONCRETE SIDEWALK WITH 6 - 5/8" X 24" LONG STEEL DOWELS (DOWELS SHALL BE 6" FROM EDGE OF CONCRETE & 1'-6" ON CENTER BETWEEN DOWELS).
3. GALVANIZED ROUND TUBULAR STEEL HANDRAILS SHALL CONFORM TO THE REQUIREMENTS OF TITLE 24 OF THE CALIFORNIA CODE OF REGULATIONS.

ACCESSIBILITY NOTES

1. ALL ACCESSIBILITY ISSUES SHALL COMPLY WITH THE LATEST EDITION OF THE CALIFORNIA BUILDING CODE, THE LATEST EDITION OF DSA'S (DIVISION OF STATE ARCHITECT) CALIFORNIA ACCESS COMPLIANCE REFERENCE MANUAL & ADAAG (AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES) AND CABO/ANSI A117.1 AND ANY ADOPTED LOCAL CODES.
2. NO RAMP SHALL EXCEED A SLOPE OF 8.33% AND SHALL HAVE LANDINGS, ETC. THEY SHALL BE PER THE LATEST EDITION OF DSA'S (DIVISION OF STATE ARCHITECT) CALIFORNIA ACCESS COMPLIANCE REFERENCE MANUAL, ADAAG (AMERICANS WITH DISABILITIES ACCESSIBILITY GUIDELINES) AND ANY ADOPTED LOCAL CODES.
3. THE SURFACE SLOPE FOR ALL THE CONCRETE FLAT WORK SHALL NOT EXCEED 5% SLOPE ALONG THE PATH OF TRAVEL & 2% CROSS SLOPE MAX.
4. ALL CONCRETE FLAT WORK SHALL COMPLY WITH CHAPTERS 10 & 11 OF THE LATEST CALIFORNIA BUILDING CODE AND ADOPTED LOCAL CODES.
5. THE CONCRETE FOR ALL FLAT WORK, RAMPS, ETC. SHALL BE A MINIMUM OF 6" THICK.
6. THE PATH OF TRAVEL SHALL COMPLY WITH THE LATEST EDITION OF THE CALIFORNIA BUILDING CODE, ADAAG (AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES) AND CABO/ANSI A117.1 AND ANY ADOPTED LOCAL CODES FOR PAINT, SIGNAGE, WIDTH, MATERIAL, ETC.

WHEELCHAIR RAMP NOTE

THE PATH OF TRAVEL SLOPES & CROSS SLOPES FOR WHEELCHAIR RAMPS SHALL COMPLY WITH THE MOST RECENTLY ADOPTED COS STANDARD PLANS AND SPECIFICATIONS AND TITLE 24 OF THE CALIFORNIA CODE OF REGULATIONS.

CONCRETE SLAB NOTES

A. GENERAL - ALL CONCRETE WORK SHALL BE PERFORMED IN ACCORDANCE WITH ACI, UBC, AND CMA STANDARDS.

B. CONCRETE SHALL ATTAIN A COMPRESSIVE STRENGTH OF AT LEAST 3000 PSI AT 28 DAYS.

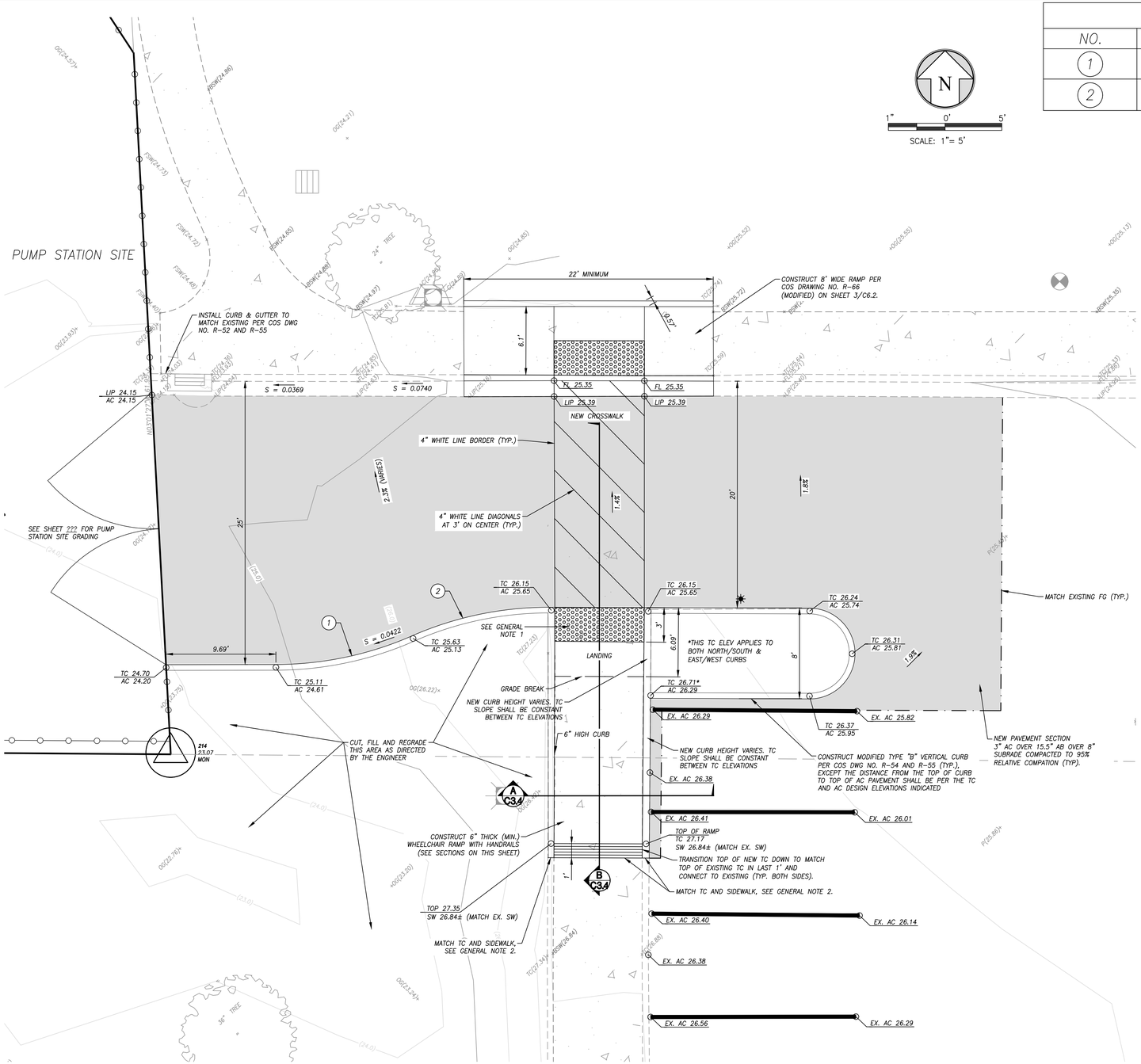
C. REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60.

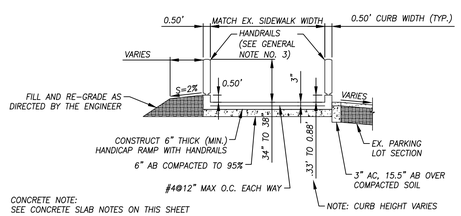
CURB DATA			
NO.	RADIUS	DELTA	LENGTH
1	30.00'	24°34'47"	12.35'
2	30.00'	24°34'47"	12.35'

N

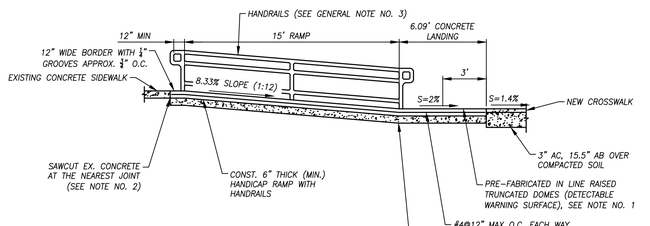
1" 0' 5'

SCALE: 1"= 5'





WHEELCHAIR RAMP SECTION A C3.4
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WHEELCHAIR RAMP SECTION B C3.4
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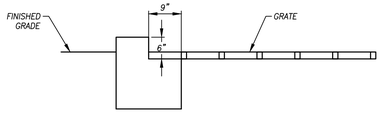
ENTRANCE RECONSTRUCTION PLAN

C3.4

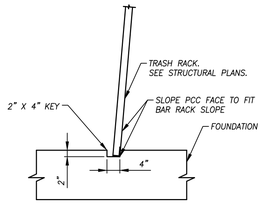
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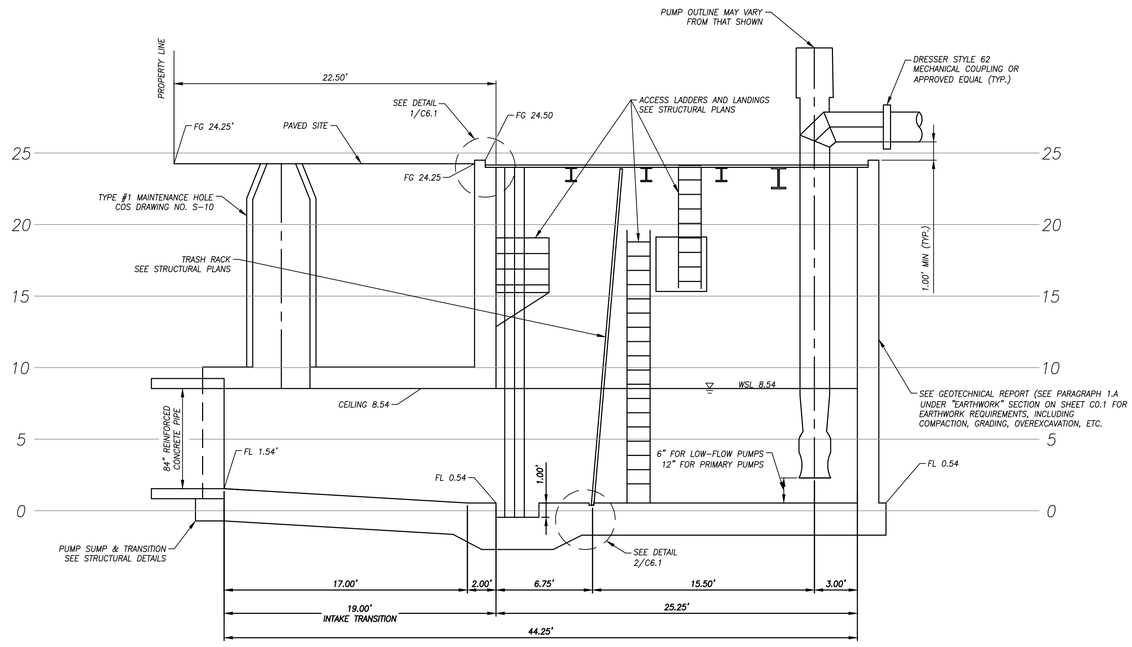
DETAIL 1/C6.1 N.T.S.



DETAIL 2/C6.1 N.T.S.

PUMP CHARACTERISTICS		
	CAPACITY (GPM)	PUMP PERFORMANCE (FT)
PRIMARY PUMPS (P1–P3)		
10–YEAR DESIGN	13,000	26.0
LOW–FLOW PUMP (P4)		
LOW–FLOW DESIGN	2,400	28.0

NOTES:
1. PRIMARY PUMPS: CASCADE 20AM_A5_B_RPM890 PUMP WITH 125 HP MOTOR OR APPROVED EQUAL.
2. LOW–FLOW PUMP: CASCADE 10MF_AA4_B_RPM1760 WITH 25 HP MOTOR OR APPROVED EQUAL
3. PUMP PERFORMANCE IS DEFINED AS THE SUM OF STATIC HEAD, VELOCITY HEAD, FRICTION AND LOCAL LOSSES IN THE DISCHARGE PIPE. LOSSES IN PUMP, COLUMN AND ELBOW ARE NOT INCLUDED.

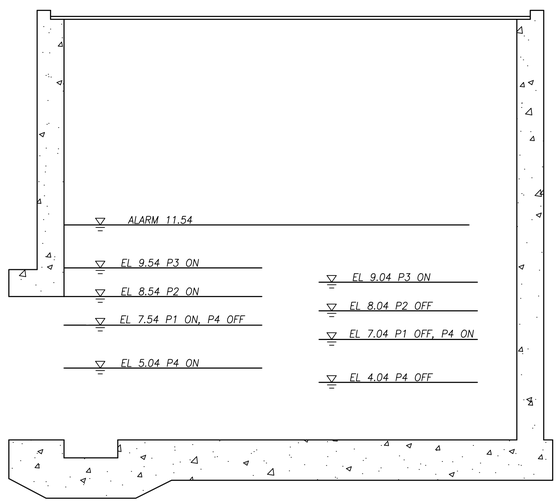


PUMP SUMP SECTION

SCALE: 1" = 5'

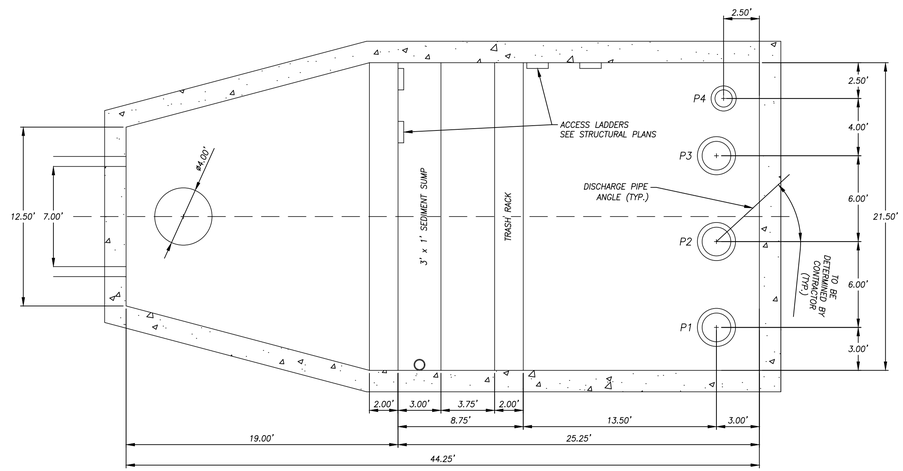
NOTES

1. SEE KEYNOTE 1 ON SHEET C3.3.
2. WALL, FLOOR AND CEILING THICKNESSES ARE ASSUMED. SEE STRUCTURAL PLANS FOR ACTUAL THICKNESSES.



PUMP START/STOP LEVELS

NOT TO SCALE



PUMP SUMP PLAN

SCALE: 1" = 5'

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DETAILS - PUMP SUMP

C6.1

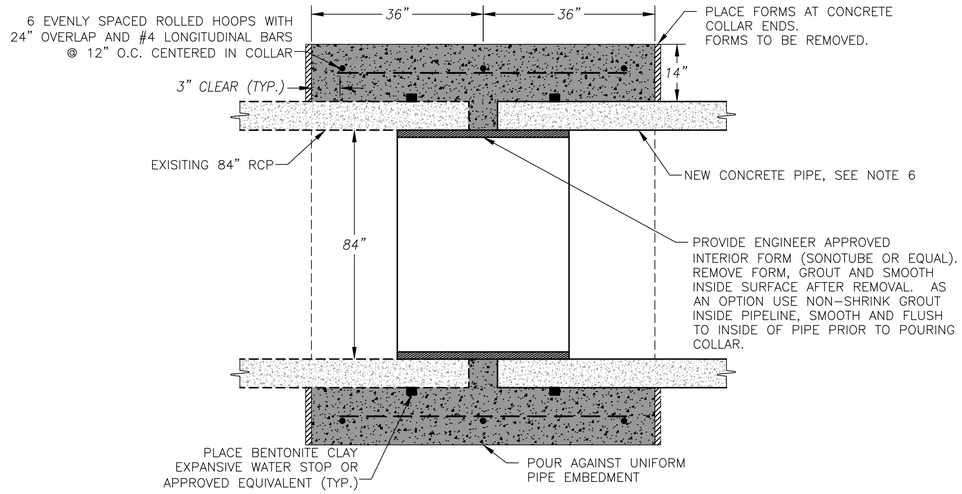
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CONSTRUCTION NOTES:

1. CONTRACTOR SHALL NOTIFY THE ENGINEER IF THE DEFLECTION ANGLE BETWEEN THE CENTERLINES OF THE EXISTING AND NEW PIPES EXCEEDS 1 DEGREE. IF IT DOES, THE ENGINEER WILL DETERMINE IF MODIFICATIONS NEED TO BE MADE TO THE COLLAR.

2. IF REMOVAL OF AN EXISTING SECTION OF PIPE IS REQUIRED, REMOVAL SHALL BE BY SAWCUTTING, OR OTHER APPROVED METHOD.

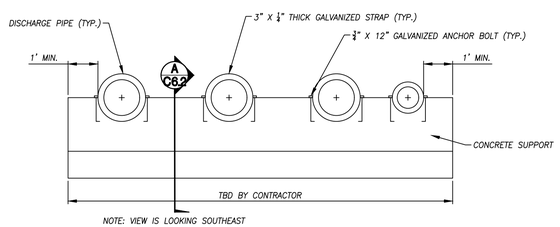
3. PREPARE SURFACE OF PIPES BY WIRE BRUSHING AND WATER BLASTING.

4. VIBRATE CONCRETE IN PLACE.

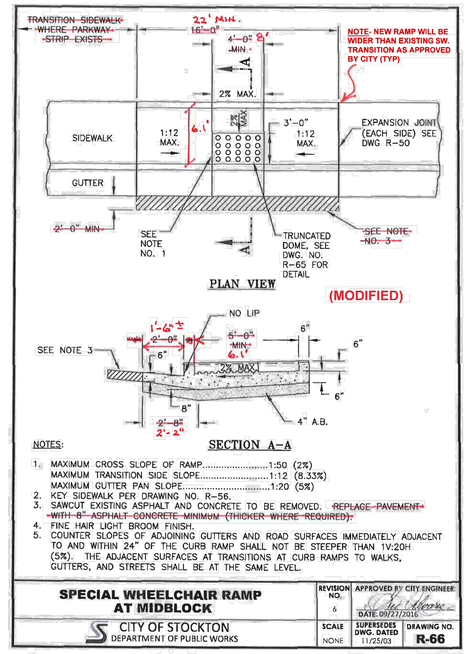
5. PROVIDE WATER TIGHT JOINT.

6. RUBBER GASKETED REINFORCED CONCRETE PIPE (RCP). SEE SHEET C0.1 FOR SPECIFICATION.

DETAIL 1 C6.2
N.T.S.



DETAIL 2 C6.2
N.T.S.

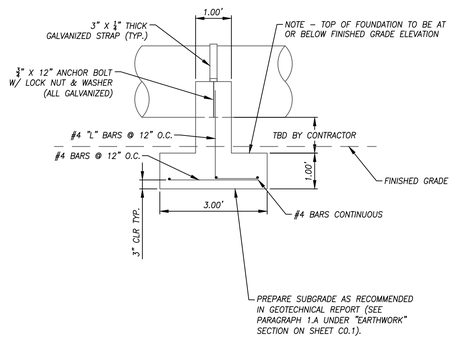


NOTES:

1. MAXIMUM CROSS SLOPE OF RAMP.....1:50 (2%)
   MAXIMUM TRANSITION SIDE SLOPE.....1:12 (8.33%)
   MAXIMUM GUTTER PAN SLOPE.....1:20 (5%)
2. KEY SIDEWALK PER DRAWING NO. R-56.
3. SAWCUT EXISTING ASPHALT AND CONCRETE TO BE REMOVED. ~~REPLACE PAVEMENT WITH 8" ASPHALT CONCRETE MINIMUM (THICKER WHERE REQUIRED).~~
4. FINE HAIR LIGHT BROOM FINISH.
5. COUNTER SLOPES OF ADJOINING GUTTERS AND ROAD SURFACES IMMEDIATELY ADJACENT TO AND WITHIN 24" OF THE CURB RAMP SHALL NOT BE STEEPER THAN 1V:20H (5%). THE ADJACENT SURFACES AT TRANSITIONS AT CURB RAMPS TO WALKS, GUTTERS, AND STREETS SHALL BE AT THE SAME LEVEL.

SPECIAL WHEELCHAIR RAMP AT MIDBLOCK	REVISION NO. 6	APPROVED BY: CITY ENGINEER DATE: 09/27/2016
CITY OF STOCKTON DEPARTMENT OF PUBLIC WORKS	SCALE NONE	SUPERSEDES DWG. DATED 11/25/03 — DRAWING NO. R-66

DETAIL 3 C6.2
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SECTION A C6.2
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C6.2

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MATERIAL SPECIFICATIONS

GENERAL

ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE GOVERNING CODE. SEE 'PROJECT DATA'

CONSTRUCTION LIABILITY
THE CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS AGREE THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, THE CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT LIMITED TO NORMAL WORKING HOURS, AND THE CONSTRUCTION CONTRACTOR AND HIS SUBCONTRACTORS FURTHER AGREE TO DEFEND, INDEMNIFY AND HOLD THE DESIGN PROFESSIONAL HARMLESS FROM ANY LIABILITY, REAL OR ALLEGED, IN CONNECTION WITH THE PERFORMANCE OF WORK ON THIS PROJECT, EXCEPT LIABILITY ARISING FROM THE SOLE NEGLIGENCE OF THE DESIGN PROFESSIONAL.

CONCRETE & REINFORCING

REINFORCING STEEL
BARS FOR REINFORCING SHALL BE GRADE 60 DEFORMED BARS CONFORMING TO ASTM A706. LAP SPLICES SHALL BE IN ACCORDANCE WITH ACI 318, CURRENT EDITION UNLESS NOTED OTHERWISE ON THE PLANS. BARS TO BE WELDED OR FIELD BENT SHALL CONFORM TO ASTM A706.

CONCRETE
CONCRETE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE **2019** EDITION OF ACI 301 & 318. CONCRETE SHALL BE READY-MIXED CONCRETE IN ACCORDANCE WITH ASTM C94.

MAXIMUM WATER-CEMENT RATIO, BY WEIGHT

28 DAY COMPRESSIVE STRENGTH	WATER-CEMENT RATIO
4000 PSI CONCRETE	0.45
3500 PSI CONCRETE	0.45
3000 PSI CONCRETE	0.50

AT THE CONTRACTOR'S OPTION, AN AIR ENTRAINING AGENT CONFORMING TO THE LATEST REVISION OF ASTM SPECIFICATION C260 MAY BE ADDED TO THE CONCRETE TO PROVIDE UP TO A MAXIMUM OF 3% ± 1.5% ENTRAINED AIR. CEMENT SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PORTLAND CEMENT PER ASTM DESIGNATION C150, TYPE II. NO MORE THAN 15% BY WEIGHT OF CEMENT MAY BE REPLACED BY FLY ASH CONFORMING TO ASTM C618, CLASS N OR F.

CONCRETE ELEMENT	MIN 28 DAY COMPRESSIVE STRENGTH	MAX SIZE AGGREGATE (INCHES)	SLUMP (INCHES)
FOOTINGS	3000	1-1/2	3
SLABS ON GRADE	3500	1	4
WALLS, BEAMS	4000	3/4	4

SLUMP WILL BE MEASURED AT THE TRUCK DISCHARGE. SLUMPS NOTED ABOVE ARE FOR CONCRETE WITHOUT ADMIXTURES TO BE CONSOLIDATED USING VIBRATION. FORMWORK CONSTRAINTS, CONGESTION OF REBAR, AND PUMPING OF CONCRETE MAY REQUIRE INCREASED SLUMP BEYOND THE SLUMP LISTED ABOVE. THE CONTRACTOR SHALL ADJUST THE SLUMP UP TO 8" MAX USING ADMIXTURES AS NECESSARY TO PROVIDE WORKABILITY AND CONSISTENCY TO PERMIT CONCRETE TO BE WORKED READILY INTO FORMS AND AROUND REINFORCEMENT UNDER CONDITIONS OF PLACEMENT TO BE EMPLOYED WITHOUT SEGREGATION OR EXCESSIVE BLEEDING. ALL ADMIXTURES SHALL BE NOTED IN THE SUBMITTED MIX DESIGN AND ARE SUBJECT TO THE ENGINEER'S REVIEW. THE SPECIAL INSPECTOR SHALL BE PROVIDED WITH A BATCH TICKET AND WEIGHT TAG UPON DELIVERY OF EACH LOAD OF CONCRETE.

ALL CONCRETE SHALL BE PLACED WITH MECHANICAL VIBRATION UNLESS NOTED OTHERWISE.

EXPOSURE CATEGORIES AND CLASSES FOR ALL CONCRETE TYPES ARE AS FOLLOW:
A. FREEZING AND THAWING: CLASS: F0
B. SULFATE EXPOSURE: CLASS: S0
C. IN CONTACT WITH WATER: CLASS: W0
D. CORROSION PROTECTION OF REINFORCEMENT: CLASS: C1

UNDER SLAB MATERIALS
SLAB MEMBRANE SHALL BE 15 MIL POLYETHYLENE FILM, UNLESS NOTED OTHERWISE. LAP SLAB MEMBRANE PER THE MANUFACTURER'S RECOMMENDATIONS, BUT NO LESS THAN 12 INCHES.

GRAVEL SHALL BE 3/4" CLEAN MATERIAL MEETING THE REQUIREMENTS OF ACI 302.1R.

NON-SHRINK GROUT
NON SHRINK GROUT SHALL BE FLOWABLE, WITH A MINIMUM 7 DAY COMPRESSIVE STRENGTH OF 5000 PSI. NON-SHRINK GROUT SHALL BE MASTERFLOW 928 GROUT AS MANUFACTURED BY BASF OR APPROVED EQUAL.

MASONRY

STRUCTURAL MASONRY (CMU)
STRUCTURAL MASONRY (CMU) SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT EDITION OF ACI 530 & 530.1. COMPLIANCE WITH SPECIFIED DESIGN STRENGTH METHOD SHALL BE BY THE UNIT STRENGTH METHOD. AT THE CONTRACTOR'S OPTION, THE PRISM TEST METHOD MAY BE USED TO CONFIRM COMPLIANCE WITH SPECIFIED DESIGN STRENGTH.

MASONRY UNITS SHALL BE OPEN ENDED LIGHT WEIGHT UNITS CONFORMING TO ASTM DESIGNATION C90. ALL CELLS SHALL BE GROUTED SOLID. F'm = 2000 PSI. WALL REINFORCEMENT SHALL BE RESTRAINED BY MECHANICAL POSITIONERS AT 48" OC, MAX.

MORTAR SHALL CONFORM TO ASTM C270 TYPE S OR M. MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS: 1800 PSI (TYPE S), 2500 PSI (TYPE M). MASONRY CEMENT MAY NOT BE USED IN MORTAR.

GROUT SHALL BE COARSE GROUT CONFORMING TO ASTM C476. THE GROUT SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 2500 PSI AT 28 DAYS. SLUMP SHALL BE 8" TO 10".

POST INSTALLED ANCHORS

EXISTING CONCRETE SURFACES SHALL BE SCANNED PER "AS-BUILT INFORMATION" ON **S0.01** TO ENSURE EXISTING REINFORCEMENT REMAINS UNDAMAGED DURING POST INSTALLED ANCHOR INSTALLATION.

ADHESIVE ANCHORING SYSTEMS FOR CONCRETE
ADHESIVE ANCHORING SYSTEMS SHALL BE:
- HILTI HIT-RE 500 V3 (ICC ESR-3814) OR HIT-HY 200 **A or R** ***(choose)*** (ICC ESR 3187)
- SIMPSON SET-XP (ICC ESR-2508) OR AT-XP (IAPMO UES ER-263)
- DEWALT\POWERS PURE 110+ (ICC ESR-3298) OR AC100+ GOLD (ICC ESR-2582)
- APPROVED EQUAL.

INSTALLATION OF ANCHORS AND ADHESIVE INCLUDING DRILLING AND CLEANING OF HOLES SHALL BE IN ACCORDANCE WITH **CBC 1910A.5.4** AND THE CURRENT ICC OR IAPMO REPORT. ADHESIVES SHALL BE USED ONLY IN APPLICATIONS PERMITTED BY THE ADHESIVE'S ICC OR IAPMO REPORT. ADHESIVE ANCHORS SHALL BE INSTALLED IN CONCRETE HAVING A MINIMUM AGE OF 21 DAYS AT TIME OF ANCHOR INSTALLATION.

ADHESIVE ANCHORING SYSTEMS FOR GROUTED CONCRETE BLOCK
ADHESIVE ANCHORING SYSTEMS SHALL BE:
- HILTI HIT HY270 (ICC ESR-4143)
- SIMPSON SET-XP (IAPMO UES ER-265) OR AT-XP (IAPMO UES ER-281)
- DEWALT\POWERS AC100+ GOLD (ICC-ES ESR-3200)
- APPROVED EQUAL

INSTALLATION OF ANCHORS AND ADHESIVE INCLUDING DRILLING AND CLEANING OF HOLES SHALL BE IN ACCORDANCE WITH THE CURRENT ICC OR IAPMO REPORT. ADHESIVES SHALL BE USED ONLY IN APPLICATIONS PERMITTED BY THE ADHESIVE'S ICC OR IAPMO REPORT.

EXPANSION ANCHORS FOR CONCRETE
EXPANSION ANCHORS SHALL BE:
- HILTI KWIK BOLT TZ2 ANCHORS (ICC ESR-4266),
- SIMPSON STRONG BOLT 2 WEDGE ANCHOR (ICC ESR-3037)
- DEWALT\POWERS POWER-STUD+ SD2 (ICC ESR-2502)
- APPROVED EQUAL.

CONTRACTOR SHALL TORQUE ANCHORS IN ACCORDANCE WITH THE ICC OR IAPMO REPORT. EXPANSION ANCHORS SHALL USE WASHERS SIZED TO PREVENT CRUSHING OF THE ATTACHED MEMBER UNDER THE INSTALLATION TORQUE.

EXPANSION ANCHORS FOR GROUTED CONCRETE BLOCK
EXPANSION ANCHORS SHALL BE:
- HILTI KWIK BOLT TZ2 ANCHORS (ICC ESR-4561)
- SIMPSON STRONG BOLT 2 EXPANSION ANCHOR (IAPMO ER-240)
- DEWALT\POWERS POWER-STUD+ SD1 (ICC ESR-2966)
- APPROVED EQUAL.

CONTRACTOR SHALL TORQUE ANCHORS IN ACCORDANCE WITH THE ICC OR IAPMO REPORT. EXPANSION ANCHORS SHALL USE WASHERS SIZED TO PREVENT CRUSHING OF THE ATTACHED MEMBER UNDER THE INSTALLATION TORQUE.

STRUCTURAL STEEL

STRUCTURAL STEEL AND MISCELLANEOUS IRON
STRUCTURAL STEEL AND MISCELLANEOUS IRON SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT EDITION OF THE AISC CODE OF STANDARD PRACTICE.

1. WIDE FLANGE AND STRUCTURAL TEE SHAPES SHALL CONFORM TO ASTM A992.
2. CHANNELS AND ANGLES SHALL CONFORM TO ASTM A36.
3. STEEL PIPE SHALL CONFORM TO ASTM A53, GRADE B.
4. STRUCTURAL PLATE SHALL CONFORM TO ASTM A36 OR ASTM A572 GR50.

ALL STRUCTURAL STEEL AND MISCELLANEOUS IRON SHALL RECEIVE SHOP PRIME COAT EXCEPT ON SURFACES RECEIVING WELDS, EMBEDDED IN CONCRETE, OR AT SLIP CRITICAL HIGH STRENGTH BOLTS WHICH SHALL BE TOUCHED UP AFTER CONNECTION IS COMPLETE. STRUCTURAL STEEL AND MISCELLANEOUS IRON WHICH IS TO HAVE SPRAY ON FIREPROOFING SHALL NOT BE PAINTED. STRUCTURAL STEEL PERMANENTLY EXPOSED TO WEATHER SHALL RECEIVE TWO COATS OF SEMI-GLOSS ALKYD ENAMEL COMPATIBLE WITH PRIMER.

MACHINE BOLTS, ANCHOR BOLTS AND THREADED RODS
BOLTS, NUTS, WASHERS AND RODS PERMANENTLY EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED.

1. BOLTS SHALL CONFORM TO ASTM A307 GRADE A OR B OR A36.
2. ANCHOR BOLTS AND RODS SHALL CONFORM TO ASTM F1554 GR 36.
3. ALL BOLTS & LAG SCREWS SHALL HAVE STANDARD STEEL WASHERS, U.N.O.
4. NUTS SHALL BE AS SHOWN BELOW AND FINISH SHALL MATCH FASTENER.
5. BOLT HOLES SHALL BE STANDARD SIZE (BOLT DIA + 1/16") TYP, U.N.O.

FASTENER GRADE AND SIZE	NUT CLASS	NUT STYLE
ASTM A36 , ASTM A307A, F1554 1/4" TO 1-1/2"	ASTM A563-A	HEX
ASTM A36 , ASTM A307A, F1554, OVER 1-1/2" TO 4"	ASTM A563-A	HEAVY HEX
ASTM A307B, 1/4" TO 4"	ASTM A563-A	HEAVY HEX

HIGH STRENGTH BOLTS, NUTS, WASHERS & ANCHOR RODS
BOLTS, NUTS, WASHERS AND RODS PERMANENTLY EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED.

1. BOLTS SHALL BE HEAVY HEX STRUCTURAL BOLTS PER ANSI B18.2.1 AND SHALL CONFORM TO THE REQUIREMENTS OF ASTM F3125 GRADE A325 OR A490. BOLTS SHALL BE TYPE 1 AND SHALL BE USED IN A BEARING CONNECTION, U.N.O.
2. TENSION CONTROL BOLT ASSEMBLIES SHALL CONFORM TO ASTM F1852 PER ASTM F3125.
3. DIRECT-TENSION INDICATORS SHALL CONFORM TO ASTM F959.
4. RODS SHALL CONFORM TO ASTM F1554 GR 55 U.N.O.
5. WASHERS SHALL BE FLAT CIRCULAR, RECTANGULAR OR SQUARE BEVELED WASHERS AND SHALL CONFORM TO ASTM F436 TYPE I FINISH SHALL MATCH NUT. WASHERS SHALL BE INSTALLED UNDER THE ELEMENT BEING TURNED FOR A325 BOLTS AND UNDER BOTH THE HEAD AND THE NUT FOR A490 BOLTS PER ASTM F3125. WASHERS OVER OVERSIZED OR SLOTTED HOLES SHALL ALSO COMPLY WITH RCSC SPECIFICATIONS.
6. BOLT HOLES SHALL BE STANDARD SIZE (BOLT DIA + 1/16") TYP, U.N.O.
7. NUTS SHALL BE AS SHOWN BELOW AND FINISH SHALL MATCH FASTENER.

ITEM	FASTENER GRADE AND SIZE	NUT CLASS	NUT STYLE
BOLTS:			
ASTM F3125 GR A325	TYPE 1, UNCOATED	ASTM A563-C, C3,D,DH,DH3	HEAVY HEX
	TYPE 1, ZINC COATED	ASTM A563-DH	HEAVY HEX
	TYPE 3, UNCOATED	ASTM A563-C3, DH3	HEAVY HEX
ASTM F3125 GR A490	TYPE 1, UNCOATED	ASTM A563-DH, DH3	HEAVY HEX
	TYPE 3, UNCOATED	ASTM A563-DH3	HEAVY HEX
RODS:			
ASTM F1554	1/4" TO 1-1/2", UNCOATED	ASTM A563-A	HEAVY HEX
	OVER 1-1/2" TO 3", UNCOATED	ASTM A563-DH	HEAVY HEX
	1/4" TO 3", ZINC COATED	ASTM A563-DH	HEAVY HEX

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WELDING
ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS PER AWS "STANDARD QUALIFICATION PROCEDURE" TO PERFORM THE TYPE OF WORK REQUIRED. ALL WELDING SHALL BE IN ACCORDANCE WITH THE CURRENT AWS WELDING CODE. ARC WELDING ELECTRODES SHALL BE E70 SERIES FOR A36, A53, A500, A572 & A992 MATERIAL, AND E80 SERIES FOR A706 REINFORCING STEEL.

WELD METAL TOUGHNESS SHALL BE REPORTED ON THE ELECTRODE MANUFACTURER'S CERTIFICATE OF COMPLIANCE. ALL ELECTRODES SHALL BE LOW HYDROGEN WITH A MINIMUM CVN VALUE OF 20 FT-LBS AT -20 DEGREE F. EXCEPTIONS: METAL DECK WELDING, STAIR AND HANDRAIL WELDING, LIGHT GAGE STEEL WELDING.

TACK WELDS, AIR-ARC GOUGING AND FLAME CUTTING SHALL NOT BE PERFORMED WITHOUT ADEQUATE PREHEAT OR INCORPORATION INTO THE FINAL WELD.

THE FILLER METAL MANUFACTURER'S PUBLISHED RECOMMENDATIONS SHALL BE THE BASIS FOR DETERMINING THE ALLOWABLE RANGE OF ESSENTIAL VARIABLES FOR THE PRE QUALIFIED WPS. UNLESS NOTED OTHERWISE ON THE PLANS, BACK-UP BARS FOR CJP WELDS SHALL BE REMOVED FOLLOWED BY BACKGOUGING AND BACKWELDING.

SUBMITTALS

SUBMITTALS FOR THE ENGINEERS REVIEW WILL BE REQUIRED AS FOLLOWS:
1. REINFORCING STEEL SHOP DRAWINGS
2. CONCRETE MIX DESIGNS
3. STRUCTURAL MASONRY (CMU) CERTIFICATES OF COMPLIANCE AND GROUT MIX DESIGNS
4. MASONRY CONTROL JOINT SHOP DRAWINGS
5. STRUCTURAL STEEL AND MISCELLANEOUS METALS SHOP DRAWINGS
6. WELDING PROCEDURE SPECIFICATIONS (AND PQR IF APPLICABLE)

NOTES:
1. CONTRACTOR SHALL ELECTRONICALLY SUBMIT SUBMITTALS FOR REVIEW OR SHALL SUBMIT A MINIMUM OF TWO SETS OF HARD PRINTS FOR REVIEW.
2. THE GENERAL CONTRACTOR SHALL REVIEW EACH SUBMITTAL PRIOR TO FORWARDING TO ARCHITECT AND STRUCTURAL ENGINEER. THE GENERAL CONTRACTOR SHALL VERIFY THAT THE SHOP DRAWING IS COORDINATED AMONG ALL CONSTRUCTION TRADES AND THAT THE ARCHITECT'S AND STRUCTURAL ENGINEER'S COMMENTS FROM ANY PREVIOUS SUBMITTALS ARE ADDRESSED.
3. CONTRACTOR SHALL SUBMIT IN WRITING, ANY REQUEST FOR MODIFICATIONS TO THE PLANS AND SPECIFICATIONS. SHOP DRAWINGS SUBMITTED FOR REVIEW DO NOT CONSTITUTE "IN WRITING" UNLESS IT IS CLEARLY NOTED THAT SPECIFIC CHANGES ARE BEING REQUESTED.
4. REVISIONS FROM PREVIOUS SUBMITTALS SHALL BE CLEARLY MARKED BY CLOUDS.
5. FABRICATION SHALL NOT PROCEED UNTIL SUBMITTALS HAVE BEEN REVIEWED BY THE ENGINEER.

CONTRACTOR'S STATEMENT OF RESPONSIBILITY
EACH CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OF A SEISMIC OR WIND-FORCE RESISTING SYSTEM OR COMPONENT SHALL ISSUE A WRITTEN STATEMENT OF RESPONSIBILITY IN COMPLIANCE WITH SECTION 1704.4 OF THE CURRENT GOVERNING EDITION OF THE CALIFORNIA BUILDING CODE. THE CONTRACTORS STATEMENT OF RESPONSIBILITY SHALL CONTAIN ACKNOWLEDGEMENT OF AWARENESS OF THE SPECIAL REQUIREMENTS CONTAINED IN THE STATEMENT OF SPECIAL INSPECTION.

ABBREVIATIONS

ABBREVIATIONS

@	AT
ø	DIAMETER
#	NUMBER
AB	ANCHOR BOLT
ACI	AMERICAN CONCRETE INSTITUTE
AESS	ARCHITECTURALLY EXPOSED STRUCTURAL STEEL
ALT	ALTERNATE
APPROX	APPROXIMATE(LY)
ARCH	ARCHITECT(URAL)
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BN	BOUNDARY NAILING
BOF	BOTTOM OF FOOTING
BOT	BOTTOM
BVC	BEGIN VERTICAL CURVE
C-C	CENTER TO CENTER
CL	CENTERLINE
CF	CUBIC FOOT
CIDH	CAST IN DRILLED HOLE
CIP	CAST IRON PIPE
CJ	CONSTRUCTION JOINT
CJP	COMPLETE JOINT PENETRATION
CLG	CEILING
CLR	CLEAR. CLEARANCE
CMP	CORRUGATED STEEL PIPE
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
COORD	COORDINATE
CSK	COUNTERSINK
CY	CUBIC YARD
DBL	DOUBLE
DCW	DEMAND CRITICAL WELD
DET	DETAIL
DF	DOUGLAS FIR
DIAG	DIAGONAL
Ø	DIAMETER
DIST	DISTANCE
DL	DEAD LOAD
DN	DOWN
DO	DITTO
DWG	DRAWING
(E)	EXISTING
EA	EACH
EC	END HORIZONTAL CURVE
ECR	END CURB RETURN
EL	ELEVATION
ELEV	ELEVATOR
EMB	EMBANKMENT
EN	EDGE NAILING
EQ	EQUAL
EVC	END VERTICAL CURVE
EW	EACH WAY
EXIST	EXISTING
EXP	EXPRESSWAY
FBC	FRAMED BEAM CONNECTION
FG	FINISHED GRADE
FIN	FINISH(ED)
FL	FLOW LINE
FND	FOUNDATION
FN	FIELD NAILING
FOC	FACE OF CONCRETE
FOHC	FREE OF HEART CENTER
FOM	FACE OF MASONRY
FOS	FACE OF STUD(S)
FP	FULL PENETRATION
FS	FAR SIDE
FTG	FOOTING
Ga	GAUGE
GALV	GALVANIZED
GLB	GLUE LAMINATED BEAM
H or HT	HEIGHT
HDR	HEADER
HEX	HEXAGONAL
HGR	HANGER
HORIZ	HORIZONTAL
HS	HIGH STRENGTH
HSB	HIGH STRENGTH BOLT
HSS	HOLLOW STRUCTURAL SECTION
ID	INSIDE DIAMETER
INSP	INSPECTION/INSPECTOR
INSUL	INSULATION
JT	JOINT
KIPS	ONE THOUSAND POUNDS
LBS	POUNDS
LF	LINEAR FOOT
LGS	LIGHT GAUGE STEEL
LL	LIVE LOAD
LLBB	LONG LEGS BACK TO BACK
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LOC	LOCATION
LOL	LAYOUT LINE
LONGIT	LONGITUDINAL
LS	LAG SCREW(S)
LT	LEFT
LW	LIGHT WEIGHT
MAX	MAXIMUM
MB	MACHINE BOLT(S)
MECH	MECHANICAL
MFR	MANUFACTURER
MIN	MINIMUM, MINUTES
MISC	MISCELLANEOUS
MOD	MODIFIED OR MODIFY
(N)	NEW
NIC	NOT IN CONTRACT
No.	NUMBER
Ø	NOMINAL DIAMETER
NOM	NOMINAL
NS	NEAR SIDE
NTS	NOT TO SCALE
O.C.	ON CENTER
OD	OUTSIDE DIAMETER
OG	ORIGINAL GROUND
OH	OPPOSITE HAND
OPP	OPPOSITE
OWSJ	OPEN WEB STEEL JOIST
PL	STEEL PLATE
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVE OR PORTLAND CEMENT CONCRETE
PCP	PERFORATED CONCRETE PIPE
PCVC	POINT OF COMPOUND VERTICAL CURVE
PDF	POWDER DRIVEN FASTENER
PG	PROFILE GRADE
PI	POINT OF INTERSECTION
PJP	PARTIAL JOINT PENETRATION
P/L	PROPERTY LINE
PL	PLATE
PLY	PLYWOOD
POC	POINT ON HORIZONTAL CURVE
POT	POINT ON TANGENT
POVC	POINT ON VERTICAL CURVE
PRC	POINT OF REVERSE CURVE
PRVC	POINT OF REVERSE VERTICAL CURVE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT OR POST TENSION
PTDF	PRESSURE TREATED DOUGLAS FIR
PVC	POLYVINYL CHLORIDE
RAD or R	RADIUS
RCP	REINFORCED CONCRETE PIPE
REINF	REINFORCED, REINFORCING
REQ'D	REQUIRED
REV	REVISION
RS	ROUGH SAWN
RT	RIGHT
RW	RETAINING WALL
RWD	REDWOOD
R/W	RIGHT OF WAY
SAD	SEE ARCHITECTURAL DRAWINGS
SCHED	SCHEDULE
SEC	SECTION
SHT	SHEET
SHTG	SHEATHING
SIM	SIMILAR
SLRS	SEISMIC LOAD RESISTING SYSTEM
SM	SHEET STEEL
SMS	SHEET STEEL SCREW
SPEC(S)	SPECIFICATION(S)
SQ	SQUARE
SQFT	SQUARE FOOT
SQYD	SQUARE YARD
STAG	STAGGERED
STD	STANDARD
STL	STEEL
STRUCT	STRUCTURAL
STS	SELF TAPPING SCREW
SYM	SYMMETRICAL
T&G	TONGUE AND GROOVE
TBR	TO BE REMOVED
TEMP	TEMPORARY
TO	TOP OF
TOF	TOP OF FOOTING
TOP	TOP OF PLATE
TOS	TOP OF SLAB OR STEEL
TOW	TOP OF WALL
TRANS	TRANSVERSE
TYP	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
VC	VERTICAL CURVE
VERT	VERTICAL
W/	WITH
WF	WIDE FLANGE
WP	WATERPROOF or WORKPOINT
WT	WEIGHT
WWF	WELDED WIRE FABRIC

PROJECT DATA

1. PLANS AND CALCULATIONS FOR THE STRUCTURAL DESIGN WERE BASED UPON:
   - GOVERNING CODE: 2025 CALIFORNIA BUILDING CODE
2. VERTICAL LOADS:
   FLOOR DEAD LOAD = 15 PSF
   FLOOR LIVE LOAD = 60 PSF [REDUCIBLE PER CODE]
3. EARTHQUAKE DESIGN DATA:
   EQUIVALENT LATERAL FORCE PROCEDURE
   $V = \frac{S_{DS} I}{R} W$
   $S_S = 0.79$; $S_1 = 0.26$
   $S_{DS} = 0.82$; $S_{D1} = 0.60$
   I = 1.0; RISK CATEGORY II
   SITE CLASS = DE (ASSUMED); SEISMIC DESIGN CAT = D
   SEISMIC RESISTING SYSTEM: GROUND SUPPORTED CANTILEVER WALL
   $R = 1.25$; $\Omega_0 = 2$; $C_d = 2.5$
   V = 0.656 W [LRFD]
4. WIND DESIGN DATA:
   BASIC WIND SPEED = 93 MPH
   RISK CATEGORY II
   WIND EXPOSURE = C
   INTERNAL PRESSURE COEFFICIENT = +0.18, -0.18
   DESIGN WIND PRESSURE q_h = 16.0 PSF
5. FOUNDATION DESIGN CRITERIA: PER CBC T1806.2 PRESUMPTIVE LOAD-BEARING VALUES
   BEARING PRESSURES:
   DL + LL 1500 PSF
6. RETAINING WALL DESIGN PRESSURES:
   AT REST: 120 PCF

GENERAL NOTES

1. CONSIDER GENERAL NOTES AS APPLYING TO ALL DRAWINGS.
2. DO NOT SCALE DRAWINGS. SCALE SHOWN FOR REFERENCE ONLY.
3. THE CONTRACTOR SHALL REFER TO THE PROJECT SPECIFICATIONS IN CONJUNCTION WITH THE STRUCTURAL DRAWINGS.
4. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF THE STRUCTURAL WORK WITH THE ARCHITECTURAL, CIVIL, AND MEP CONTRACT DOCUMENTS, AS WELL AS ANY OTHER APPLICABLE TRADES. OMISSIONS OR CONFLICTS BETWEEN VARIOUS ELEMENTS OF THE DRAWINGS, NOTES, AND DETAILS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT AND RESOLVED PRIOR TO BIDDING AND PROCEEDING WITH THE WORK.
5. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DESIGN, INSTALLATION, AND REMOVAL OF TEMPORARY BRACING AND CONSTRUCTION SUPPORTS REQUIRED TO COMPLETE THE PROJECT. NO PORTION OF THE STRUCTURE SHALL BE CONSIDERED TO BE SELF SUPPORTING UNTIL THE ENTIRE VERTICAL AND LATERAL LOAD RESISTING SYSTEM IS IN PLACE.
6. THE CONTRACTOR SHALL PROTECT AND SHORE ALL EXCAVATIONS WITH BRACING AND SHORING AS REQUIRED TO MAINTAIN SOIL STABILITY.
7. CONSTRUCT THOSE FEATURES OF THE PROJECT, WHICH MAY NOT BE FULLY SHOWN, IN MANNER SIMILAR TO THAT USED FOR SIMILAR FEATURES.
8. CENTERLINES OF COLUMNS AND FOUNDATIONS COINCIDE WITH GRID LINE INTERSECTIONS, U.N.O.
9. CENTERLINES OF FOUNDATION GRADE BEAMS COINCIDE WITH CENTERLINES OF WALLS, U.N.O.
10. CENTERLINES OF FRAMING MEMBERS COINCIDE WITH COLUMN CENTERLINES, U.N.O.
11. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS SHOWING PROPOSED FOUNDATION CONSTRUCTION JOINT LOCATIONS, DETAILS, AND THE PLACEMENT SEQUENCE FOR THE STRUCTURAL ENGINEER'S APPROVAL PRIOR TO PROCEEDING WITH WORK.
12. NO CONSTRUCTION JOINTS WILL BE PERMITTED IN BEAMS, WALLS, AND SLABS UNLESS SPECIFICALLY SHOWN ON THE DRAWINGS OR APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
13. SPLICES SHALL BE ALLOWED ONLY AT LOCATIONS SPECIFICALLY INDICATED ON THE STRUCTURAL DRAWINGS UNLESS APPROVED OTHERWISE BY THE ENGINEER.
14. SEE ARCHITECTURAL DRAWINGS FOR SIZE AND LOCATION OF OPENINGS. VERIFY SIZE AND LOCATION OF ALL OPENINGS WITH ARCHITECTURAL DRAWINGS AND MECHANICAL DRAWINGS. NOTIFY STRUCTURAL ENGINEER IMMEDIATELY OF ANY DISCREPANCIES TYPICAL, U.N.O.

SHEET INDEX

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S3.4	PUMP STATION STRUCTURAL PLANS AND DETAILS No.4
S3.5	PUMP STATION STRUCTURAL PLANS AND DETAILS No.5

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LODI UNIFIED SCHOOL DISTRICT
McNAIR HIGH SCHOOL
9550 Ronald E. McNair Way
Stockton, CA 95210

LODI UNIFIED SCHOOL DISTRICT

PROFESSIONAL SEAL
REGISTERED PROFESSIONAL ENGINEER DUSTIN G. FE... STRUCTURAL STATE OF CALIFORNIA
PLAN CHECK SET / NOT FOR CONST.

CLIENT
LODI UNIFIED SCHOOL DISTRICT

PROJECT NUMBER
250131

DATE: 6/5/2026 2:54:57 PM

DRAWN BY: DAA/MRC CHKED BY: DGL

CITY SUBMITTAL

#	DESCRIPTION	DATE
	ADDENDA 2	6/11/2026

PROJECT INFORMATION & MATERIAL DATA

S0.1

\\cseg-fr-fs01\frhome$\DAnderson\McNair HS Pump Station_Struct_danderson@cseg.com.rvt
6/5/2026 2:54:57 PM

REQUIRED STRUCTURAL SPECIAL INSPECTION

GENERAL NOTES

• THE FOLLOWING TABLE OF SPECIAL INSPECTIONS AND TESTING ARE DERIVED FROM THE STRUCTURAL PROVISIONS OF THE CBC AND REFERENCED STANDARDS AND ARE FOR REFERENCE ONLY. AT A MINIMUM, ALL SPECIAL INSPECTIONS REQUIRED BY THE CALIFORNIA BUILDING CODE (CBC) SHALL BE PROVIDED. THE FOLLOWING TABLES ARE NOT INTENDED TO BE ALL INCLUSIVE, AND ARE PROVIDED FOR THE CONVENIENCE OF THE OWNER, TESTING AGENCY AND CONTRACTOR IN DEVELOPING THE SCOPE OF WORK FOR REQUIRED TESTING AND INSPECTION OF STRUCTURAL MATERIALS AND COMPONENTS. FINAL DEFINITION OF THIS SCOPE OF WORK IS TO BE DETERMINED BY THE TESTING AGENCY AND THE OWNER (OR OWNER'S AUTHORIZED AGENT).

• THE OWNER SHALL EMPLOY A SPECIAL INSPECTOR DURING CONSTRUCTION ON THE FOLLOWING TYPES OF WORK.

SPECIAL INSPECTOR

• THE SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE TO HIS COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR INSPECTION OF A PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.
• TESTING AND INSPECTIONS WILL BE PERFORMED BY AN INDEPENDENT TESTING LABORATORY SELECTED AND EMPLPOYED BY THE OWNER AND APPROVED BY THE BUILDING OFFICIAL. PROCEDURAL AND ACCEPTANCE CRITERIA ARE SET FORTH IN THE 2022 CALIFORNIA BUILDING CODE (CBC) SECTION 1704.

DUTIES AND RESPONSIBILITIES OF THE SPECIAL INSPECTOR

• THE SPECIAL INSPECTOR SHALL OBSERVE THE WORK ASSIGNED FOR CONFORMANCE WITH THE APPLICABLE PROJECT DRAWINGS AND SPECIFICATIONS.
• THE SPECIAL INSPECTOR SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICAL, THE OWNER OR OWNER'S DESIGNATED REPRESENTATIVE, THE ARCHITECT OR PROJECT MANAGER, THE STRUCTURAL ENGINEER OF RECORD, THE CONTRACTOR AND OTHER PERSONS DESIGNATED BY THE OWNER OR OWNER'S REPRESENTATIVE. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION, THEN IF UNCORRECTED, TO THE PROPER DESIGN OF AUTHORITY AND TO THE BUILDING OFFICIAL.
• THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT STATING WHETHER THE WORK REQUIRING SPECIAL INSPECTION WAS, TO THE BEST OF THE INSPECTOR'S KNOWLEDGE, IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS AND THE APPLICABLE WORKMANSHIP PROVISIONS OF THE CBC.

SYSTEM OR MATERIAL	CBC CODE REFERENCE	CODE OR STANDARD REFERENCE	FREQUENCY		REMARKS
			CONTINUOUS	PERIODIC	
FABRICATORS					
1. FABRICATORS	1704.2.5		-	X	SPECIAL INSPECTIONS APPLY TO VERIFICATION OF DETAILED FABRICATION AND QUALITY CONTROL PROCEDURES INCLUDING REVIEW FOR COMPLETENESS AND ADEQUACY RELATIVE TO THE CODE REQUIREMENTS
2. APPROVED FABRICATORS			-	X	SPECIAL INSPECTIONS APPLY TO REVIEW OF WRITTEN PROCEDURES AND QUALITY CONTROL MANUALS AND PERIODIC AUDITING OF FABRICATION PRACTICES
CONCRETE					
1. REINFORCING STEEL PLACEMENT INCLUDING PRESTRESSING TENDONS					
~~a) REINFORCEMENT IN SPECIAL MOMENT FRAMES, BOUNDARY ELEMENTS OF SPECIAL STRUCTURAL WALLS AND COUPLING BEAMS.~~		ACI 318: Ch. 20, 25.2,25.3,26.6.1-26.6.3	X	-	SPECIAL INSPECTIONS APPLY TO BAR GRADE, SIZE, CONDITION, QUANTITY, SPACING, POSITION, SPLICES AND COVER
b) ALL OTHER REINFORCEMENT			-	X	
3. INSPECT ANCHORS CAST IN CONCRETE	-	ACI 318: 17.8.2, 17.8.2.4	-	X	ALL BOLTS VISUALLY INSPECTED, SPECIAL INSPECTIONS APPLY TO BOLT GRADE, SIZE, CONDITION, LOCATION AND EMBEDMENT.
4. INSPECT ANCHORS POST INSTALLED IN HARDENED CONCRETE MEMBERS:					SPECIAL INSPECTOR SHALL VERIFY AND RECORD: ANCHOR TYPE, SIZE AND DIMENSIONS. HOLE DIMENSIONS AND CLEANLINESS. ANCHOR SPACING. EDGE DISTANCE. ANCHOR EMBEDMENT. TORQUE VALUE AS APPLICABLE). ADHESIVE TYPE AND EXPIRATION (AS APPLICABLE). ADHESIVE ANCHOR INSTALLER CERTIFICATIONS (AS APPLICABLE).
a) ADHESIVE ANCHORS INSTALLED IN HORIZONTALLY OR UPWARDLY INCLINED ORIENTATIONS TO RESIST SUSTAINED TENSION LOADS.	-	ACI 318: 17.8.2.4	X	-	
b) MECHNICAL ANCHORS AND ADHESIVE ANCHORS NOT DEFINED IN 4a.	-	ACI 318: 17.8.2	-	X	
5. VERIFY USE OF REQUIRED MIX DESIGN.	1904.1, 1904.2	ACI 318: Ch. 19, 26.4.3, 26.4.4	-	X	EACH TRUCK DELIVERY TICKET
6. PRIOR TO CONCRETE PLACEMENT FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERINE THE TEMPERATURE OF THE CONCRETE.	-	ASTM C31, ASTM C172 ACI 318: 26.5, 26.12	X	-	
7. INSPECT CONCRETE (AND SHOTCRETE) PLACEMENT FOR PROPER APPLICATION TECHNIQUES	-	ACI 318: 26.5	X	-	
8. VERIFY MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES	-	ACI 318: 26.5.3-26.5.5	-	X	SPECIAL INSPECTIONS APPLY TO VERIFYING SPECIFIED CURING IS PERFORMED, INCLUDING HOT AND COLD WEATHER PROVISIONS.
12. VERIFICATION OF FORM WORK	-	ACI 26.11.1.2(b)	-	X	SPECIAL INSPECTIONS APPLY TO SHAPE, LOCATION AND DIMENSIONS OF THE COCNRETE MEMBERS BEING FORMED
NON-SHRINK GROUT					
1. PLACEMENT OF NON-SHRINK GROUT			X	-	SPECIAL INSPECTIONS APPLY TO THICKNESS OF GROUT PAD. TAKE TEST SPECIMENS OF NON-SHRINK GROUT
MASONRY (LEVEL 2 INSPECTION) (FOR RISK CAT I,II & III BLDGS. NOT ALLOWED FOR DSA)					
1. VERIFY COMPLIANCE WITH APPROVED SUBMITTALS	1705.4	TMS 602 1.5	-	X	
2. AS MASONRY CONSTRUCTION BEGINS VERIFY THE FOLLOWING:					
a) PROPORTIONS OF SITE MIXED MORTAR	1705.4	TMS 602 2.1, 2.6 A, 2.6 C	-	X	
f) SAMPLE PANEL CONSTRUCTION		TMS 602 1.6 D	-	X	
3. PRIOR TO GROUTING, VERIFY THE FOLLOWING					
a) GROUT SPACE	1705.4	TMS 602 3.2 D & 3.2 F	-	X	
c) PLACEMENT OF REINFORCEMENT, CONNECTORS, AND ANCHORS BOLTS		TMS 402 6.1, 6.3.1, 6.3.6 & 6.3.7, TMS 602 3.2 E & 3.4	-	X	
d) PROPORTIONS OF SITE-PREPARED GROUT AND PRESTRESSING GROUT FOR BONDED TENDONS		TMS 602 2.6 B & 2.4 G.1.b	-	X	
4. VERIFY COMPLIANCE OF THE FOLLOWING DURING CONSTRUCTION:					
a) MATERIALS AND PROCEDURES WITH THE APPROVED SUBMITTALS	1705.4	TMS 602 1.5	-	X	
b) PLACEMENT OF MASONRY UNITS AND MORTAR JOINT CONSTRUCTION		TMS 602 3.3 B	-	X	
c) SIZE & LOCATION OF STRUCTURAL MEMBERS		TMS 602 3.3 F	-	X	
d) TYPE, SIZE AND LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES OR OTHER CONSTRUCTION		TMS 402 1.2.1e, 6.2.1 & 6.3.1	-	X	
f) PREPARATION, CONSTRUCTION AND PROTECTION OF MASONRY DURING COLD WEATHER (BELOW 40°F) OR HOT WEATHER (ABOVE 90°F)		TMS 602 1.8 C & 1.8 D	-	X	
5. OBSERVE PREPARATION OF GROUT SPECIMENS, MORTAR SPECIMENS AND/OR PRISMS	1705.4	TMS 602 1.4 B.2.a.3, 1.4.B.2.b.3, 1.4.B.2.c.3, 1.4 B.3 & 1.4 B.4	X	-	SEE TESTING REQUIREMENT FOR PRISM TESTING. TMS 602 1.4. B.4.a

SYSTEM OR MATERIAL	CBC CODE REFERENCE	CODE OR STANDARD REFERENCE	FREQUENCY		REMARKS
			CONTINUOUS	PERIODIC	
STRUCTURAL STEEL					THE SPECIAL INSPECTIONS AND NONDESTRUCTIVE TESTING OF STRUCTURAL STEEL ELEMENTS IN BUILDINGS, STRUCTURES AND PORTIONS THEREOF SHALL BE IN ACCORDANCE WITH THE QUALITY ASSURANCE INSPECTION REQUIREMENTS OF: AISC 360
1. FABRICATION OF STRUCTURAL ELEMENTS	1704.2.5		-	X	REFER TO INSPECTION OF FABRICATOR REQUIREMENTS
2. MATERIAL VERIFICATION OF STRUCTURAL STEEL	1705.2	AISC 360 A3.1	-	X	CERTIFIED MILL TEST REPORTS
HIGH STRENGTH BOLTING		AISC 360 A3.3, N.5.6			**INSPECTION SHALL COMPLY WITH DSA IR 17-9 (DSA ONLY)**
1. PRIOR TO BOLTING OPERATIONS		AISC 360 T. N5.6-1			
a) MANUFACTURER'S CERT AVAILABLE FOR FASTENER MATERIALS	-	RCSC 1.5, 2.1 AISC 360 A3.3, N3.2	-	X	VERIFY THAT MILL CERTIFICATIONS SHOW THAT BOLTS, NUTS & WASHERS COMPLY WITH PROJECT SPECIFICATIONS MARKED IN ACCORDANCE WITH ASTM REQUIREMENT
b) CORRECT FASTENERS SELECTED FOR THE JOINT DETAIL	2202.1	RCSC 1.5 AISC 360 A3.3, J3.1 APPLICABLE ASTM MATERIAL STD'S	-	X	CORRECT GRADE, TYPE, BOLT LENGTH IF THREADS ARE TO BE EXCLUDED FROM SHEAR PLANE
c) CORRECT BOLTING PROCEDURE FOR JOINT DETAIL			-	X	VERIFY IN CONFORMANCE WITH THE PROVISIONS OF THE RCSC SPECIFICATION
d) CONNECTING ELEMENTS, INCLUDING THE APPROPRIATE FRAYING SURFACE CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET APPLICABLE REQUIREMENTS			-	X	VERIFY IN CONFORMANCE WITH THE PROVISIONS OF THE RCSC SPECIFICATION
e) PRE-INSTALLATION VERIFICATION TESTING BY INSTALLATION PERSONNEL OBSERVED AND DOCUMENTED FOR FASTENER ASSEMBLIES AND METHODS USED			-	X	
f) PROTECTED STORAGE PROVIDED FOR BOLTS, NUTS, WASHERS AND OTHER FASTENER COMPONENTS			-	X	
2. DURING BOLTING OPERATIONS		AISC 360 T. N5.6-2			
a) FASTENER ASSEMBLIES PLACED IN ALL HOLES AND WASHERS AND NUTS ARE POSITIONED AS REQUIRED	17052.6	RCSC 7-9 AISC 360 J3.1, J3.2, M2.5 AND N5.6	-	X	SPECIAL INSPECTOR NEED NOT BE PRESENT DURING ALL FINAL TIGHTENING OPERATIONS PROVIDED IT CAN BE VERIFIED THAT PROPER PROCEDURES WERE FOLLOWED (I.E. USE OF DTI's, "TWIST-OFF" TYPE BOLTS OR MATCH MARKING
b) JOINT BROUGHT TO THE SNUG TIGHT CONDITION PRIOR TO THE PRETENSIONING OPERATION			X	-	
c) FASTENER COMPONENTS NOT TURNED BY THE WRENCH PREVENTED FROM ROTATING			X	-	
d) FASTENERS ARE PRETENSIONED IN ACCORDANCE WITH THE RCSC SPECIFICATION, PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD THE FREE EDGES			-	X	
3. AFTER BOLTING OPERATIONS		AISC 360 T. N5.6-3			
a) WELDER QUALIFICATION RECORDS AND CONTINUITY RECORDS			-	X	
4. MATERIAL VERFICATION OF ANCHOR BOLTS AND THREADED RODS		AISC 360 A3.4	-	X	
5. MATERIAL VERIFICATION OF SHEAR STUD CONNECTORS		AISC 360 A3.6	-	X	
WELDING					
1. PRIOR TO WELDING		AISC 360: T. N5.4-1			COMPLAINCE WITH WELDING PROCEDURE SPECIFICATIONS AND PQR (IF APPLICABLE)
a) WELDER QUALIFICATION RECORDS AND CONTINUITY RECORDS			-	X	WPS SHALL BE AVAILABLE
b) MANUFACTURER CERTS FOR WELDING CONSUMABLES AVAILABLE			-	X	MATERIAL IDENTIFICATION (TYPE/GRADE)
c) WELDER IDENTIFICATION SYSTEM			X	-	THE FABRICATOR OR ERECTOR, AS APPLICABLE, SHALL MAINTAIN A SYSTEM BY WHICH A WELDER WHO HAS WELDED A JOINT OR MEMBER CAN BE IDENTIFIED. STAMPS, IF USED, SHALL BE THE LOW-STRESS TYPE.
d) FIT-UP OF GROOVE WELDS (INCLUDING JOINT GEOMETRY)			-	X	JOINT PREPARATIONS, DIMENSIONS, CLEANLINESS, TACKING AND BACKING TYPE (AS APPLICABLE), CONFIGURATION AND FINISH OF ACCESS HOLES
e) FIT UP OG CJP GROOVE WELDS OF HSS T-, Y- AND K-JOINTS WITHOUT BACKING (INCLUDING JOINT GEOMETRY)			-	X	
f) FIT-UP OF FILLET WELDS			-	X	
g) CHECK WELDING EQUIPMENT			-	X	
2. DURING WELDING		AISC 360: T. N5.4-2			
a) INSPECT ALL STRUCTURAL WELDING	1705.2.5		X	-	NOTE: THERE SHOULD BE NO WELDING OVER TACK WELDS. ENVIRONMENTAL CONDITIONS SHOULD MEET STANDARDS, WPS AND ESTABLISHED WELDING TECHNIQUES SHALL BE FOLLOWED PER AISC AND AWS STANDARDS.
3. AFTER WELDING		AISC 360: T. N5.4-3			
a) WELDS CLEANED			X	-	
b) SIZE, LENGTH AND LOCATION OF WELDS			-	X	WELDS SHALL MEET VISUAL ACCEPTANCE CRITERIA, NO ARC STRIKES WILL BE PRESENT, BRACKING AND WELD TABS ARE REMOVED (IF REQUIRED)
c) K-AREA			-	X	WHEN WELDING OF DOUBLER PLATES, CONTINUITY PLATES OR STIFFENERS HAS BEEN PERFORMED IN THE K-AREA, VISUALLY INSPECT THE WEB K-AREA FOR CRACKS WITHIN 3 IN. (75 MM) OF THE WELD.
d) WELD ACCESS HOLES IN ROLLED HEAVY SHAPES AND BUILT-UP HEAVY SHAPES			-	X	AFTER ROLLED HEAVY SHAPES (SEE SECTION A3.1c) AND BUILT-UP HEAVY SHAPES (SEE SECTION A3.1d) ARE WELDED, VISUALLY INSPECT THE WELD ACCESS HOLE FOR CRACKS.
h) REPAIR ACTIVITIES			-	X	DOCUMENTATION SHALL BE PROVIDED OF ACCEPTANCE OR REJECTION OF WELDED JOINTS OR MEMBERS
i) NO PROHIBITED WELDS HAVE BEEN ADDED WITHOUT THE APPROVAL OF THE EOR			-	X	

REQUIRED STRUCTURAL TESTING

SYSTEM OR MATERIAL	CBC CODE REFERENCE	CODE OR STANDARD REFERENCE	FREQUENCY/REMARKS
CONCRETE			
1. SAMPLING	1705.3	ASTM C172	
2. SLUMP		ASTM C143	ONE TEST AT POINT OF TRUCK DISCHARGE FOR 150 CY OR FRACTION THEREOF FOR EACH TYPE OF CONCRETE. ADDITIONAL TESTS REQUIRED WHEN CONSISTENCY SEEMS TO HAVE CHANGED
3. AIR CONTENT		ASTM C173	VOLUMETRIC METHOD, ONE FOR EACH 150 CY PLACED FOR EACH TYPE OF AIR-ENTRAINED CONCRETE
4. TEMPERATURE		ASTM 1064	TEST HOURLY WHEN AIR TEMPERATURE IS 50°F AND BELOW AND WHEN 85°F AND ABOVE, AND EACH TIME A SET OF COMPRESSION TEST SPECIMENS ARE MADE
5. TAKE LABORATORY CURED COMPRESSION TEST SPECIMENS		ASTM C31	TAKE (1) SET OF 3 STANDARD CYLINDERS FOR EACH 150 CY OF CONCRETE OR 5000 SQ. FT. (2000 SQ. FT. DSA) OF SLABS & WALL OR FRACTION THEREOF FOR EACH TYPE OF CONCRETE TAKEN EACH DAY. MOLD AND STORE CYLINDERS FOR LABORATORY CURED TEST SPECIMENS EXCEPT WHEN FIELD CURED TEST SPECIMENS ARE REQUIRED
6. TAKE FIELD CURED COMPRESSION TEST SPECIMENS WHEN CONTRACTOR PLANS TO REMOVE FORM WORK, FALSE WORK OR SHORING SOONER THAN 7 DAYS FOR VERTICAL FORM WORK AND 14 DAYS FOR SHORING AND FALSE WORK; OR WHEN POST TENSIONING IS REQUIRED		ASTM C31	TAKE (1) SET OF 3 STANDARD CYLINDERS FOR EACH 150 CY OF CONCRETE OR 5000 SQ. FT. (2000 SQ. FT. DSA) OF SLABS & WALL OR FRACTION THEREOF FOR EACH TYPE OF CONCRETE TAKEN EACH DAY. MOLD AND STORE CYLINDERS FOR LABORATORY CURED TEST SPECIMENS EXCEPT WHEN FIELD CURED TEST SPECIMENS ARE REQUIRED
7. TEST COMPRESSIVE STRENGTH		ASTM C39	TEST (1) SPECIMEN AT 7 DAYS AND (2) SPECIMENS AT 28 DAYS
NON-SHRINK GROUT			
1. TAKE TEST SPECIMENS			
MASONRY (LEVEL 2 INSPECTION)			
1. TEST PRISMS	1705.4	TMS 602 1.4 B	CONTINUOUSLY INSPECT PREPARATION OF PRISMS. PROVIDE (3) FOR EACH 5000 SQ. FT. OF WALL
POST INSTALLED ANCHORS			
1. TEST ANCHORS FOR STRUCTURAL APPLICATION	1910.5	ANCHOR ICC REPORT	TEST ANCHORS PER CBC 1910A.5 AND ANCHORS ICC REPORT WITH THE FOLLOWING FREQUENCY: 100% FOR STRUCTURAL APPLICATIONS
EXCEPTIONS:			
SILL PLATE BOLTING			10%
AT INTERFACE DOWELS AT CAST-IN-PLACE CONCRETE OR SHOTCRETE WALL OVERLAYS			25%
SLAB-ON-GRADE COLD JOINT DOWELS			AS APPROVED BY THE ENGINEER
2. TEST ANCHORS FOR NON STRUCTURAL APPLICATIONS SUCH AS EQUIPMENT ANCHORAGE (ANCHORS NOT SHOWN ON STRUCTURAL DRAWINGS)			50%
3. TESTING OF ANCHORS SHALL BE DONE IN THE PRESENCE OF THE PROJECT INSPECTOR AND A REPORT OF THE TEST RESILTS SHALL BE SUBMITTED TO DSA. IF ANY ANCHORS FAIL THE TESTING REQUIREMENTS, THE ADDITIONAL TESTING REQUIREMENTS SHALL BE ACCEPTABLE TO THE ENFORCEMENT AGENCY			
4. TESTING VALUES AS NOTED IN THE POST-INSTALLED ANCHOR TESTING LOADS ON SHEET			
HIGH STRENGTH BOLTING			
1. PERFORM TENSION CALIBRATION TESS WITH THE CONTRACTORS TOOLS ON 3 BOLT ASSEMBLIES	1705.2.1	RCSC SPECIFICATIONS	FOR EACH DIAMETER, LENGTH, GRADE, PRODUCTION LOT AND TIGHTENING METHOD TO BE USED ON THE PROJECT.
2. TESTING OF HIGH-STRENGTH BOLTS, NUTS AND WASHERS	17052.6		

REQUIRED GEOTECHNICAL SPECIAL INSPECTION

SYSTEM OR MATERIAL	CBC CODE REFERENCE	CODE OR STANDARD REFERENCE	FREQUENCY		REMARKS
			CONTINUOUS	PERIODIC	
SOILS					
1. INSPECT MATERIALS BELOW FOOTING FOR BEARING CAPACITY.	1705.6	GEOTECHNICAL REPORT	-	X	BY THE GEOTECHNICAL ENGINEER
2. INSPECT EXCAVATIONS FOR PROPER DEPTH.			-	X	
3. PERFORM CLASSIFICATION AND TESTING OF CONTROLLED FILL MATERIALS.			-	X	
4. VERIFY USE OF PROPER MATERIALS, DENSITIES, AND LIFT THICKNESS DURING PLACEMENT AND COMPACTION OF CONTROLLED FILL.			X	-	
5. PRIOR TO PLACEMENT OF CONTROLLED FILL, OBSERVE SUBGRADE AND VERIFY SITE HAS BEEN PREPARED PROPERLY.			-	X	
FOUNDATIONS					
1. PRIOR TO THE CONTRACTOR REQUESTING A BUILDING DEPARTMENT FOUNDATION INSPECTION, THE SOILS ENGINEERING SHALL ADVISE THE BUILDING DEPARTMENT IN WRITING.					SOILS ENGINEERING SHALL PROVIDE THE FOLLOWING IN WRITING: • THAT THE BUILDING PAD WAS PREPARED IN ACCORDANCE WITH THE SOILS REPORT • THAT THE UTILITY TRENCHES HAVE BEEN PROPERLY BACKFILLED AND COMPACTED. • THAT THE FOUNDATIONS COMPLY WITH THE SOILS REPORT AND APPROVED PLANS.

LEAF ENGINEERS

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LODI UNIFIED SCHOOL DISTRICT

PROFESSIONAL SEAL

REGISTERED PROFESSIONAL ENGINEER DUSTIN G. [illegible] STRUCTURAL STATE OF CALIFORNIA
PLAN CHECK SET / NOT FOR CONST.

CLIENT
LODI UNIFIED SCHOOL DISTRICT

PROJECT NUMBER
250131

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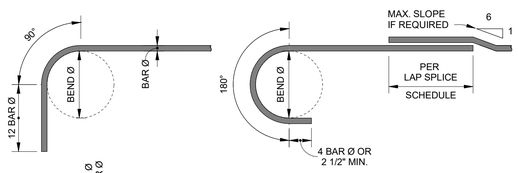
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#	DESCRIPTION	DATE
	ADDENDA 2	6/11/2026

TESTING & SPECIAL INSPECTION

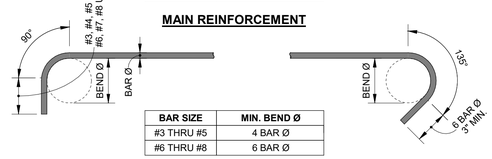
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BAR SIZE	MIN. BEND Ø
#3 THRU #8	6 BAR Ø
#9 THRU #11	8 BAR Ø

MAIN REINFORCEMENT



BAR SIZE	MIN. BEND Ø
#3 THRU #5	4 BAR Ø
#6 THRU #8	6 BAR Ø

STIRRUPS & TIES

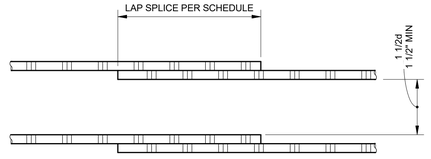
REINFORCING BAR HOOKS

1 1/2" = 1'-0"

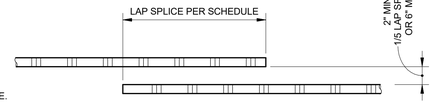
1 / S1.1

MINIMUM LAP SPLICE SCHEDULE					
BAR SIZE	POSITION	LAP SPLICE LENGTH IN INCHES			
		F'c ≤ 3500 PSI		F'c = 4000 PSI	
		CLASS A	CLASS B	CLASS A	CLASS B
#3	TOP	24	28	24	25
	BOTTOM	24	24	24	24
#4	TOP	29	38	25	33
	BOTTOM	24	29	24	25
#5	TOP	36	47	31	41
	BOTTOM	28	36	24	31
#6	TOP	43	56	37	49
	BOTTOM	33	43	29	37
#7	TOP	63	81	54	71
	BOTTOM	48	63	42	54
#8	TOP	72	93	62	81
	BOTTOM	55	72	48	62
#9	TOP	81	105	70	91
	BOTTOM	62	81	54	70
#10	TOP	91	118	79	102
	BOTTOM	70	91	61	79
#11	TOP	101	131	87	114
	BOTTOM	78	101	67	87

NOTES:
1. LAP SPLICE LOCATIONS SHALL BE APPROVED BY THE ENGINEER.
2. LAP SPLICES SHALL BE CONTACT (CLASS B) FOR CAST-IN-PLACE CONCRETE UNLESS NOTED OTHERWISE.
3. TOP BARS ARE HORIZONTAL BARS WITH 12 INCHES OR MORE OF FRESH CONCRETE BELOW THE BAR.
4. WHEN TWO BARS OF DIFFERENT SIZE ARE SPLICED, USE THE LARGER LAP LENGTH.
5. STAGGER LAP SPLICES WHERE POSSIBLE. WHERE CLASS A SPLICES ARE CALLED OUT ON THE DRAWINGS, STAGGER LAP SPLICES 24 INCHES FOR ADJACENT BARS.
6. LAP SPLICES NOTED ARE FOR NORMAL WEIGHT CONCRETE. LAP SPLICE LENGTHS SHALL BE MULTIPLIED BY 1.3 FOR LIGHTWEIGHT CONCRETE.
7. NO SPLICES ARE ALLOWED FOR #14 AND #18 REINFORCEMENT.
8. BAR DEVELOPMENT LENGTHS EQUAL CLASS A LAP SPLICE LENGTHS.
9. ENTIRE BUNDLED BARS SHALL NOT BE LAP SPLICED. LAP SPLICES OF INDIVIDUAL BARS WITHIN THE BUNDLE SHALL NOT OVERLAP.
10. AT CONTRACTOR'S OPTION, MECHANICAL COUPLERS MAY BE SUBSTITUTED FOR LAP SPLICES. MECHANICAL COUPLERS SHALL HAVE AN ICC REPORT AND SHALL DEVELOP 125% OF THE YIELD STRENGTH OF THE BAR.



CONTACT SPLICE



NON - CONTACT SPLICE

LAP SPLICE SCHEDULE FOR CONCRETE

NO SCALE

2 / S1.1

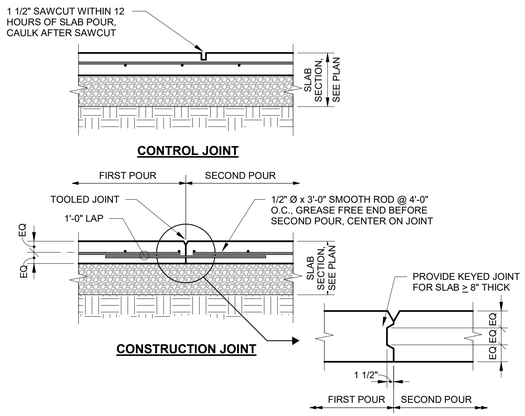
MINIMUM CONCRETE COVER SCHEDULE	
ELEMENT	CLEAR COVER
CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH	3"
CONCRETE EXPOSED TO EARTH OR WEATHER: #5 AND SMALLER #6 AND LARGER	 1 1/2" 2"
CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND: SLABS, WALLS & JOISTS: #11 AND SMALLER #14 AND #18 BEAMS & COLUMNS PRIMARY REINFORCEMENT, TIES, STIRRUPS, & SPIRALS SHELLS & FOLDED PLATE MEMBERS #5 AND SMALLER #6 AND LARGER	 3/4" 1 1/2" 1 1/2" 1/2" 3/4"

NOTES:
1. COVERS NOTED SHALL BE USED UNLESS NOTED OTHERWISE ON THE CONTRACT DOCUMENTS.
2. COVERS NOTED ARE FOR CAST-IN-PLACE, NON-PRESTRESSED MEMBERS.
3. MINIMUM CLEAR COVER FOR BUNDLED BARS SHALL BE THE LESSER OF THE EQUIVALENT DIAMETER OF THE BUNDLE AND 2".

MINIMUM CONCRETE COVER SCHEDULE

NO SCALE

3 / S1.1



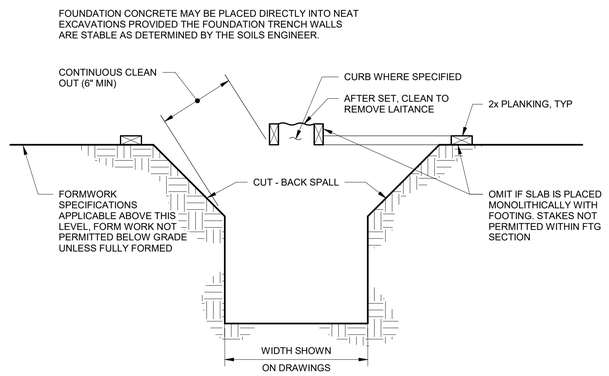
CONTROL JOINT

CONSTRUCTION JOINT

SLAB JOINT

NO SCALE

4 / S1.1

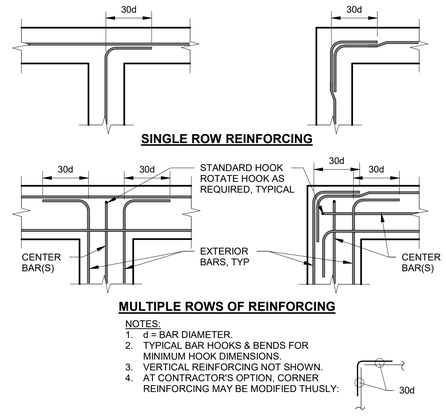


MANDATORY MIN FORMWORK (UNLESS FULLY FORMED)

FORMING DETAIL

NO SCALE

5 / S1.1



NOTES:
1. d = BAR DIAMETER.
2. TYPICAL BAR HOOKS & BENDS FOR MINIMUM HOOK DIMENSIONS.
3. VERTICAL REINFORCING NOT SHOWN.
4. AT CONTRACTOR'S OPTION, CORNER REINFORCING MAY BE MODIFIED THUSLY:

FOOTING, WALL & CURB INTERSECTIONS

NO SCALE

6 / S1.1

LEAF ENGINEERS

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PROFESSIONAL SEAL

REGISTERED PROFESSIONAL ENGINEER
JUSTIN G. LEE
PLAN CHECK SET / NOT FOR CONST
STRUCTURAL
STATE OF CALIFORNIA

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PROJECT NUMBER
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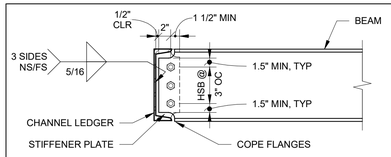
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#	DESCRIPTION	DATE
	ADDENDA 2	6/11/2026

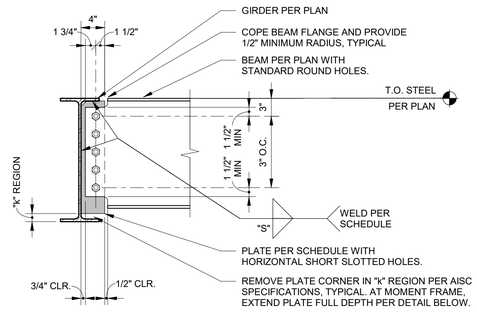
TYPICAL DETAILS No. 1

S1.1

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BOLTED PLATE CONNECTION @ CHANNEL



BEAM DEPTH LESS THAN OR EQUAL TO GIRDER

CONNECTION SCHEDULE

BEAM SIZE	PLATE (3)		WELD SIZE "S"	BOLTS (2)	AVAILABLE ALLOWABLE STRENGTH (7) (KIPS)
	MIN. DEPTH	THICKNESS		NO. & SIZE (1,4)	
W8x, C8x	6"	3/8"	5/16	(2) 3/4"Ø	16.7

NOTES:
1. FOR SINGLE COLUMN OF BOLTS, UNLESS NOTED OTHERWISE.
2. ALL BOLTS SHALL BE A325N AND ORIENTED IN THE SAME DIRECTION, UNLESS NOTED OTHERWISE.
3. STEEL PLATE SHALL BE ASTM A36, UNLESS NOTED OTHERWISE. AT COLLECTOR AND MOMENT CONNECTIONS, PLATE SHALL BE A572 GR. 50.
4. COPE FLANGES OR LOCATE TAB PLATE TO BE 1/16" MIN. CLEAR OF "K" PER AISC SPECIFICATIONS.
5. AVAILABLE ALLOWABLE STRENGTHS ARE BASED ON TABULATED VALUES FROM "TABLE 10-10a" OF THE AISC STEEL CONSTRUCTION MANUAL (ASD), 15TH EDITION, USING E70XX ELECTRODES.

STEEL BEAM CONNECTION — 1 / S1.2

1" = 1'-0"

REINFORCED STRUCTURAL MASONRY NOTES:

1. ALL CELLS CONTAINING REBAR IN CONCRETE BLOCK CONSTRUCTION SHALL BE GROUTED.
2. THE STANDARD WIDTH OF BOTH HORIZONTAL AND VERTICAL MORTAR JOINTS SHALL BE 3/8".
3. CONCRETE BLOCK CONSTRUCTION SHALL BE RUNNING BOND WITH OPEN ENDED BLOCK. STACK BOND REQUIRES OPEN ENDED BLOCK AT ALL BOND BEAM UNITS.
4. ALL VERTICAL STEEL IN WALLS AND COLUMNS SHALL BE LAPPED WITH DOWELS OF THE SAME SIZE AND SPACING INTO THE FOOTING UNLESS NOTED OTHERWISE. DOWELS SHALL BE DETAILED SIMILAR TO TYPICAL WALL DOWELS.
5. TYPICAL HORIZONTAL WALL REINFORCEMENT SHALL BE INSTALLED ABOVE AND BELOW ALL OPENINGS UNLESS NOTED OTHERWISE ON THE DRAWINGS. REINFORCEMENT SHALL EXTEND PAST OPENINGS 48 BAR DIAMETERS, MINIMUM. IF REINFORCEMENT CANNOT EXTEND A FULL 48 BAR DIAMETERS PAST THE OPENING, THEN THE REINFORCING IS TO EXTEND AS FAR AS POSSIBLE AND THE REST OF THE BAR IS TO BE BENT 90 DEGREES, EITHER UP OR DOWN.
6. MECHANICAL COUPLERS WHICH DEVELOP 125% OF THE BARS' YIELD STRENGTH MAY BE SUBSTITUTED FOR LAP SPLICES UPON SUBMITTAL AND REVIEW BY THE ENGINEER. WHEN A LAP SPLICE CANNOT BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE CALIFORNIA BUILDING CODE, THE ENGINEER MAY SPECIFY A MECHANICAL SPLICE AT NO ADDITIONAL COST TO THE OWNER.
7. CONCRETE BLOCK WALLS SHALL HAVE VERTICAL CONTROL JOINTS AT A SPACING APPROXIMATELY EQUAL TO 1.5 TIMES THE WALL HEIGHT BUT NO GREATER THAN 20 FEET ON CENTER. VERTICAL CONTROL JOINTS SHALL BE CONSTRUCTED AS SHOWN ON THE CONTRACT DRAWINGS.
8. CLEANOUTS SHALL BE PROVIDED AT THE BOTTOM COURSE OF EVERY GROUT POUR AT EACH VERTICAL BAR FOR LIFTS EXCEEDING 5'-4" IN HEIGHT.
9. REINFORCING SHOWN IS THE MINIMUM REQUIRED FOR ALL OPENINGS. SEE WALL ELEVATIONS (WHERE OCCURS) AND FRAMING PLANS FOR ADDITIONAL REINFORCING REQUIREMENTS.

ADDITIONAL REINFORCING [1,2]	
OPENING LENGTH 'L'	ADDITIONAL VERTICAL TRIM STEEL EACH SIDE
L < 4' - 0"	NO ADDITIONAL BARS
L ≤ 8' - 0"	(2) ADDITIONAL #5 BARS
L > 8' - 0"	(2) #5 @ 8" O.C. (4) ADDITIONAL TOTAL

NOTES:
1. ADDITIONAL VERTICAL TRIM STEEL NOT REQUIRED WHERE PILASTER, COLUMN, OR RETURN WALL OCCURS ADJACENT TO OPENING (WITHIN 1'-4") SEE DETAIL 6/S1.2
2. FOR OPENINGS FOR ROUND DUCTS 24" Ø MAX, CONSTRUCT SQUARE OPENING W/ MINIMUM (2) COURSES ABOVE & BELOW & GROUT BACK SOLID AROUND DUCT.

MASONRY NOTES — 2 / S1.2

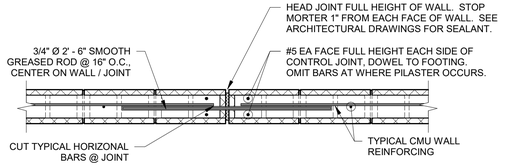
NO SCALE

LAP SPLICE SCHEDULE		
BAR SIZE	STANDARD LAP LENGTH	REDUCED LAP LENGTH
#3	16"	12"
#4	30"	18"
#5	45"	26"
#6	54"	50"
#7	63"	63"
#8	72"	72"

NOTES:
1. LAP SPLICE LOCATION SHALL BE APPROVED BY THE ENGINEER.
2. THE REDUCED LAP LENGTH MAY BE USED WHEN BOTH THE CLEAR COVER & BAR SPACING BETWEEN ADJACENT BARS IS EQUAL TO OR GREATER THAN 3".
3. WHEN TWO BARS OF DIFFERENT SIZE ARE SPLICED, USE LONGER LAP LENGTH.

LAP SPLICE SCHEDULE FOR MASONRY — 3 / S1.2

NO SCALE

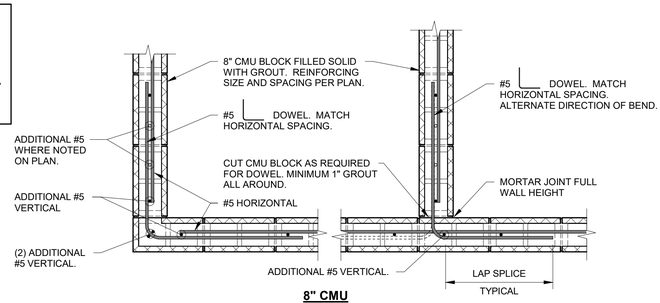


8" CMU

CONTROL JOINT — 4 / S1.2

NO SCALE

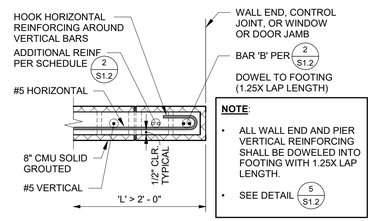
NOTE:
- ALL VERTICAL REINFORCING SHALL BE DOWELED INTO FOOTING WITH STANDARD HOOK.
- FOR LAP SPLICE REQUIREMENTS IN CMU, SEE DETAIL 3/S1.2



8" CMU

WALL CORNERS & INTERSECTIONS — 5 / S1.2

NO SCALE

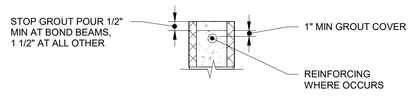


NOTE:
- ALL WALL END AND PIER VERTICAL REINFORCING SHALL BE DOWELED INTO FOOTING WITH 1.25X LAP LENGTH.
- SEE DETAIL 5/S1.2

WALL END

WALL END / PIER — 6 / S1.2

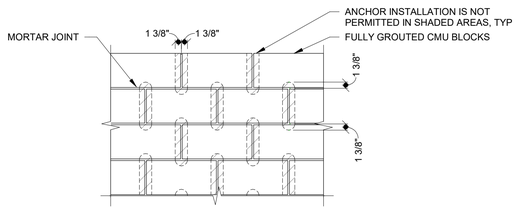
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NOTE:
COMPLY WITH THIS DETAIL WHEN GROUTING IS STOPPED FOR ONE HOUR OR LONGER

CMU HORIZONTAL CONSTRUCTION JOINT — 7 / S1.2

NO SCALE

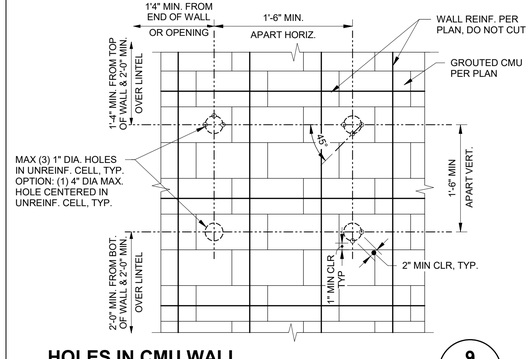


HILTI KWIK-BOLT 3				
ANCHOR DIAMETER (IN)	MINIMUM EMBEDMENT (IN)	ALLOWABLE SHEAR (LB)	ALLOWABLE TENSION (LB)	TEST (2x ALLOWABLE TENSION) (LB)
1/4	2	342	432	432
3/8	2 1/2	1054	626	626
1/2	3 1/2	1853	724	724
5/8	4	2123	1035	1035
3/4	4 3/8	2627	1368	1368

NOTES:
1. TABULATED VALUES BASED ON 80% OF THE ICC REPORT ESR-1385. INSTALLATION SHALL BE IN ACCORDANCE WITH THE ICC REPORT.
2. ANCHORS MUST BE INSTALLED A MINIMUM OF 1 3/8" FROM ANY VERTICAL JOINT.
3. EMBEDMENT DEPTH IS MEASURED FROM OUTSIDE FACE OF CMU.
4. ANCHOR LOCATIONS ARE LIMITED TO ONE PER MASONRY CELL WITH A MINIMUM SPACING OF 8" O.C. THE MINIMUM EDGE DISTANCE IS 12".
5. TENSION TEST 50% OF ANCHORS. IF ANY ANCHOR FAILS, ALL ANCHORS MUST BE TESTED.

EXPANSION ANCHORS IN GROUT FILLED CMU — 8 / S1.2

3/4" = 1'-0"



HOLES IN CMU WALL — 9 / S1.2

NO SCALE

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LODI UNIFIED SCHOOL DISTRICT

CLIENT
LODI UNIFIED SCHOOL DISTRICT

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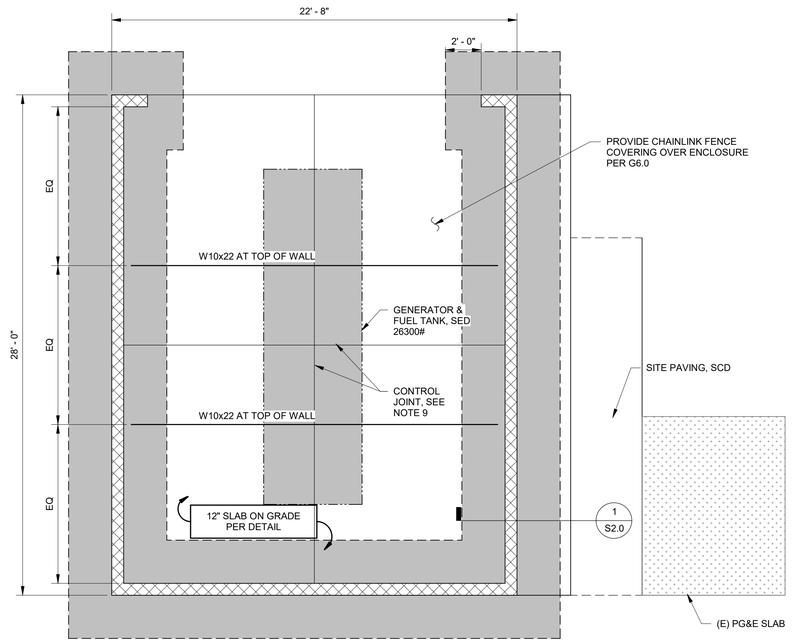
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TYPICAL DETAILS No. 2

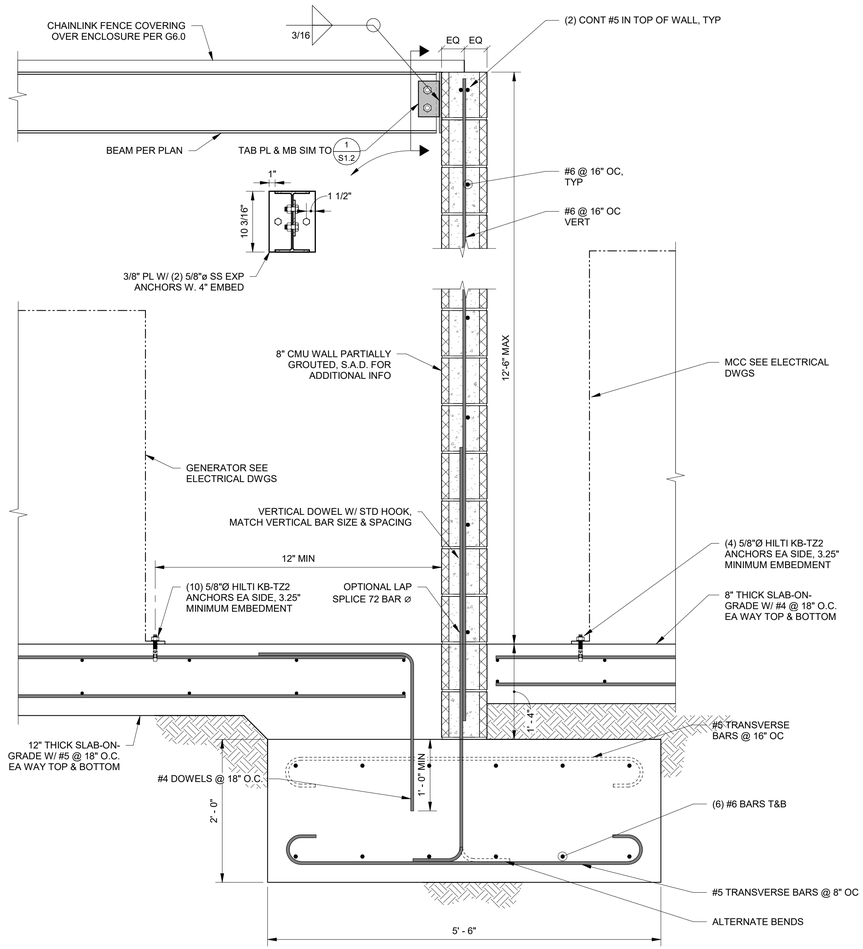
S1.2

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GENERATOR CMU ENCLOSURE - FOUNDATION PLAN

1/4" = 1'-0"



GENERATOR CMU ENCLOSURE- FOUNDATION DETAIL

1" = 1'-0"

1
S2.0

FOUNDATION PLAN NOTES:

1. REFER TO GENERAL NOTES & SPECIFICATIONS ON SHEET **S0.1 & S0.2**
2. SEE SHEET **S1.1-S1.2** FOR TYPICAL DETAILS.
3. TOP OF SLAB & GROUND FLOOR REFERENCE ELEVATION = +[0' - 0"] TYP, U.N.O.
4. FOR DETAILED SOILS INFORMATION AND COMPLETE REQUIREMENTS, REFER TO SOILS REPORT.
5. CONTRACTOR TO VERIFY ALL DIMENSIONS AND ELEVATIONS SHOWN WITH ARCHITECTURAL DRAWINGS AND INFORM BOTH ARCHITECT AND ENGINEER OF ANY CONFLICTING INFORMATION.
6. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING SIZES, CONDITIONS, MEMBER ELEVATIONS AND DIMENSIONS BEFORE BEGINNING CONSTRUCTION AND/OR ORDERING MATERIALS. ANY CONDITIONS ENCOUNTERED IN THE FIELD THAT CONFLICT WITH THESE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER IMMEDIATELY.
7. THE SIZE & LOCATION OF ALL FOOTING AND SLAB PENETRATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO INSTALLATION.
8. 8" THICK SLAB-ON-GRADE SECTION AS FOLLOWS: 8" THICK CONCRETE SLAB w/ #4 @ 18" O.C. EACH WAY TOP & BOTTOM. PLACE SLAB OVER 6" OF 3/4" CRUSHED ROCK.
9. 12" THICK SLAB-ON-GRADE SECTION AS FOLLOWS: 8" THICK CONCRETE SLAB w/ #5 @ 18" O.C. EACH WAY TOP & BOTTOM. PLACE SLAB OVER 6" OF 3/4" CRUSHED ROCK.
10. CONTROL JOINTS ARE TO BE INSTALLED @ 20'-0" O.C. MAX @ 8" SLABS AS SHOWN & @ 30'-0" O.C. MAX @ 12" SLABS AS SHOWN
11. CONCRETE CONTRACTOR IS RESPONSIBLE FOR THE PLACEMENT OF ALL EMBEDDED ITEMS.
12. ANCHOR BOLTS AND BASE PLATES SHALL NOT BE WET SET.
13. ALL DIMENSIONS ARE TO CENTERLINE OF COLUMNS OR FACE OF CMU, TYPICAL UNLESS NOTED OTHERWISE.

14. 1 / A101 — INDICATES DETAIL/SECTION VIEW WITH VIEW DIRECTION ARROW, DETAIL NUMBER AND SHEET REFERENCE.
15. 1 — INDICATES GRID
16. INDICATES FOOTING
17. INDICATES 8" CONCRETE BLOCK WALL WITH #5 @ 16" OC VERTICAL & #5 @ 24" OC HORIZONTAL

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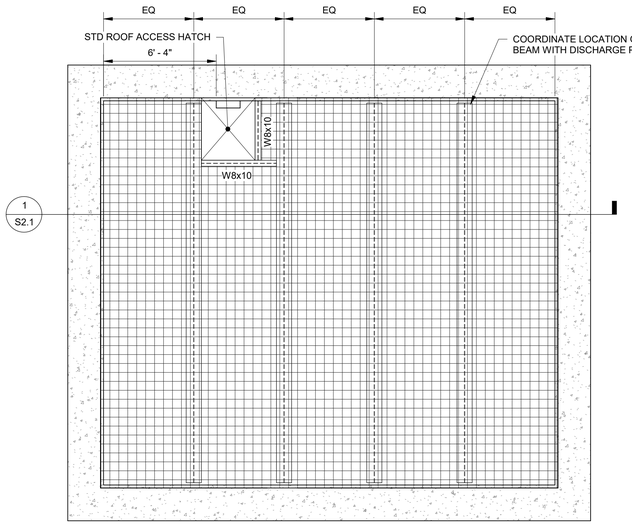
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GENERATOR ENCLOSURE PLAN

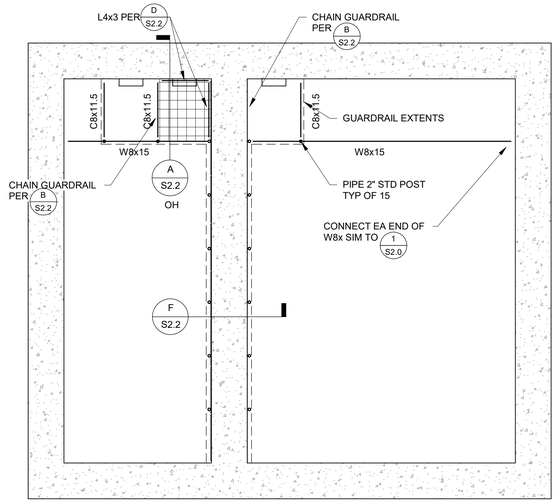
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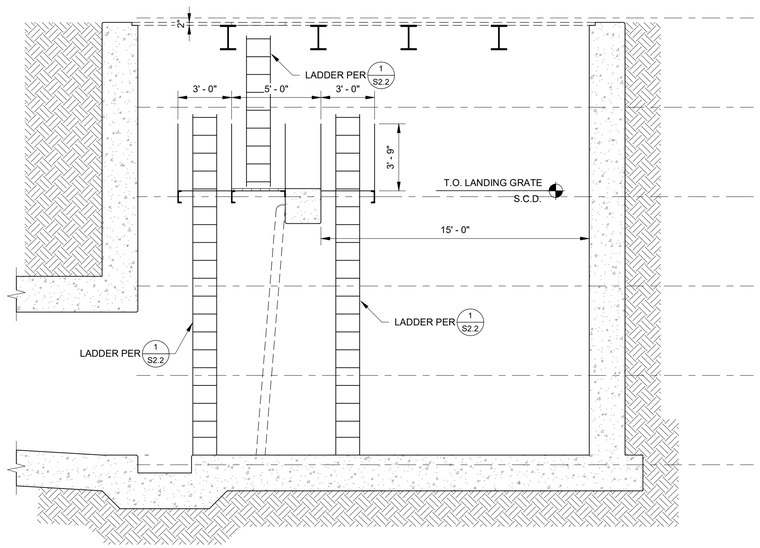
PUMP STATION LANDING PLAN

1/4" = 1'-0"



NOTES:

1. REFER TO GENERAL NOTES & SPECIFICATIONS ON SHEET **S0.1 & S0.2**
2. SEE SHEET **S1.1-S1.2** FOR TYPICAL DETAILS
3. ALL STEEL TO BE HOT DIPPED GALVANIZED
4. ALL HARDWARE TO BE STAINLESS STEEL
5. SEE PUMP STATION DRAWINGS FOR MORE INFORMATION
6. INDICATES McNICHOLS STANDARD DUTY WELDED STAINLESS STEEL GW-200 2" x 3/16" 19-W-4 (OR APPROVED EQUAL) BAR GRATE EXTENTS w/ MIN 1" BEARING ON SUPPORT SURFACES & MIN (2) SADDLE CLIPS PER SECTION OF GRATING
7. INDICATES CONCRETE WALL



PUMP STATION LANDING ELEVATION

1/4" = 1'-0"

1
S2.1

LEAF ENGINEERS

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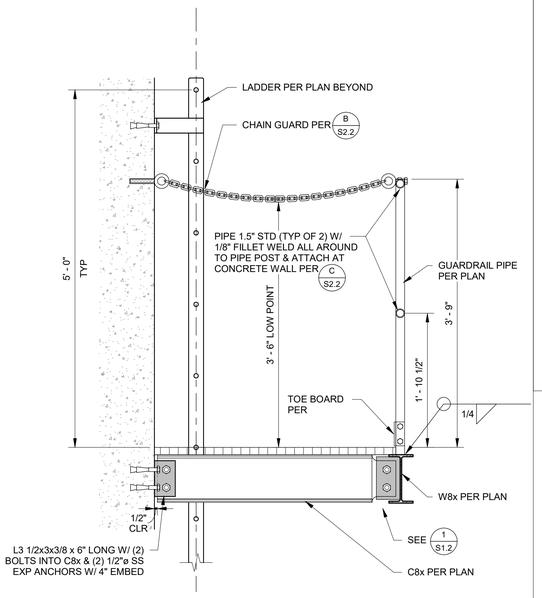
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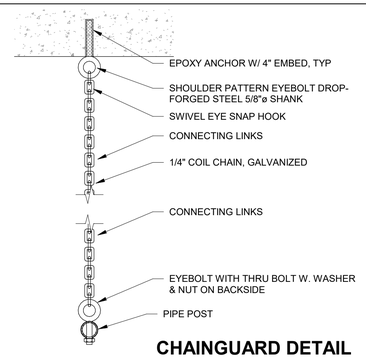
PUMP STATION LANDING PLAN

S2.1

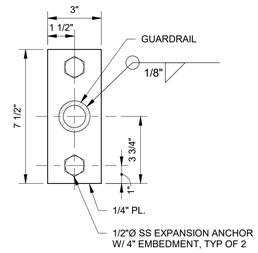
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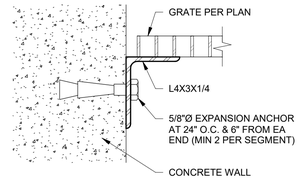
SECTION A
1" = 1'-0"
S2.2



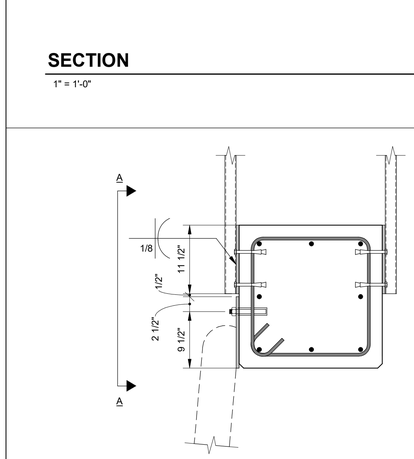
CHAINGUARD DETAIL B
1 1/2" = 1'-0"
S2.2

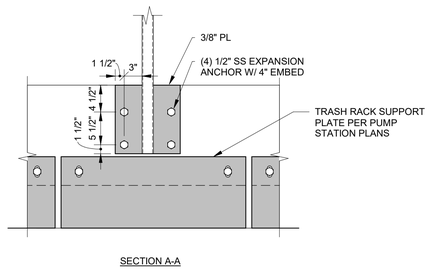


RAIL TO WALL CONNECTION C
3" = 1'-0"
S2.2

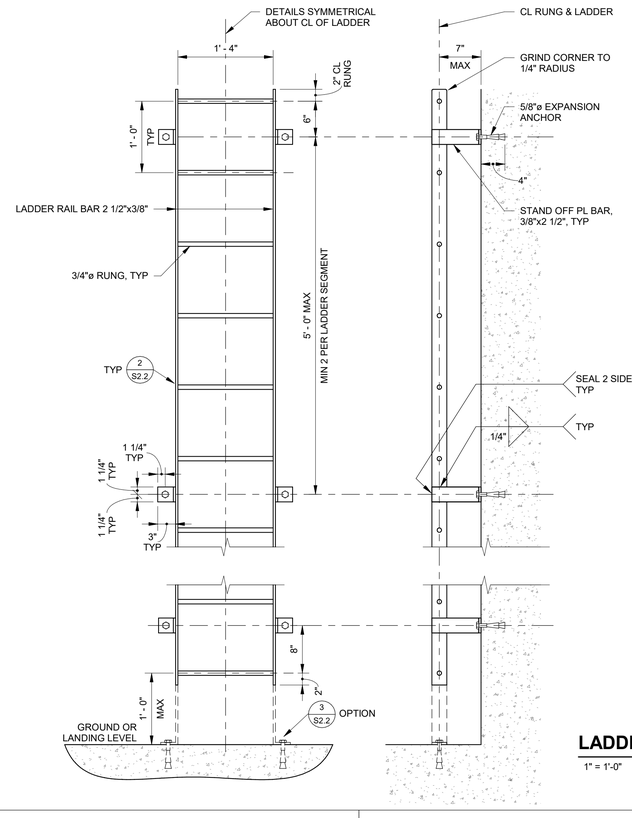


GRATE FRAME SUPPORT AT WALL DETAIL D
3" = 1'-0"
S2.2

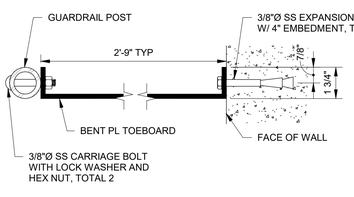


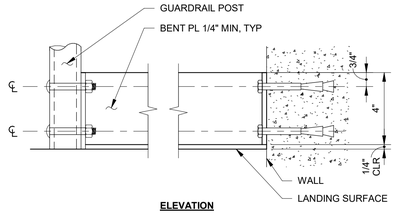


GUARDRAIL AT CONCRETE BEAM F
1" = 1'-0"
S2.2

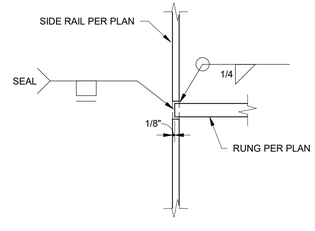


LADDER DETAILS 1
1" = 1'-0"
S2.2

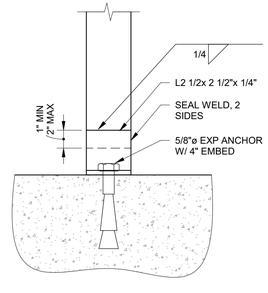




TOEBOARD DETAIL E
3" = 1'-0"
S2.2



RUNG DETAIL 2
3" = 1'-0"
S2.2



LADDER LANDING ANCHORAGE TO SLAB 3
3" = 1'-0"
S2.2

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PROFESSIONAL SEAL
REGISTERED PROFESSIONAL ENGINEER DUSTIN G. A. DERSON STRUCTURAL STATE OF CALIFORNIA
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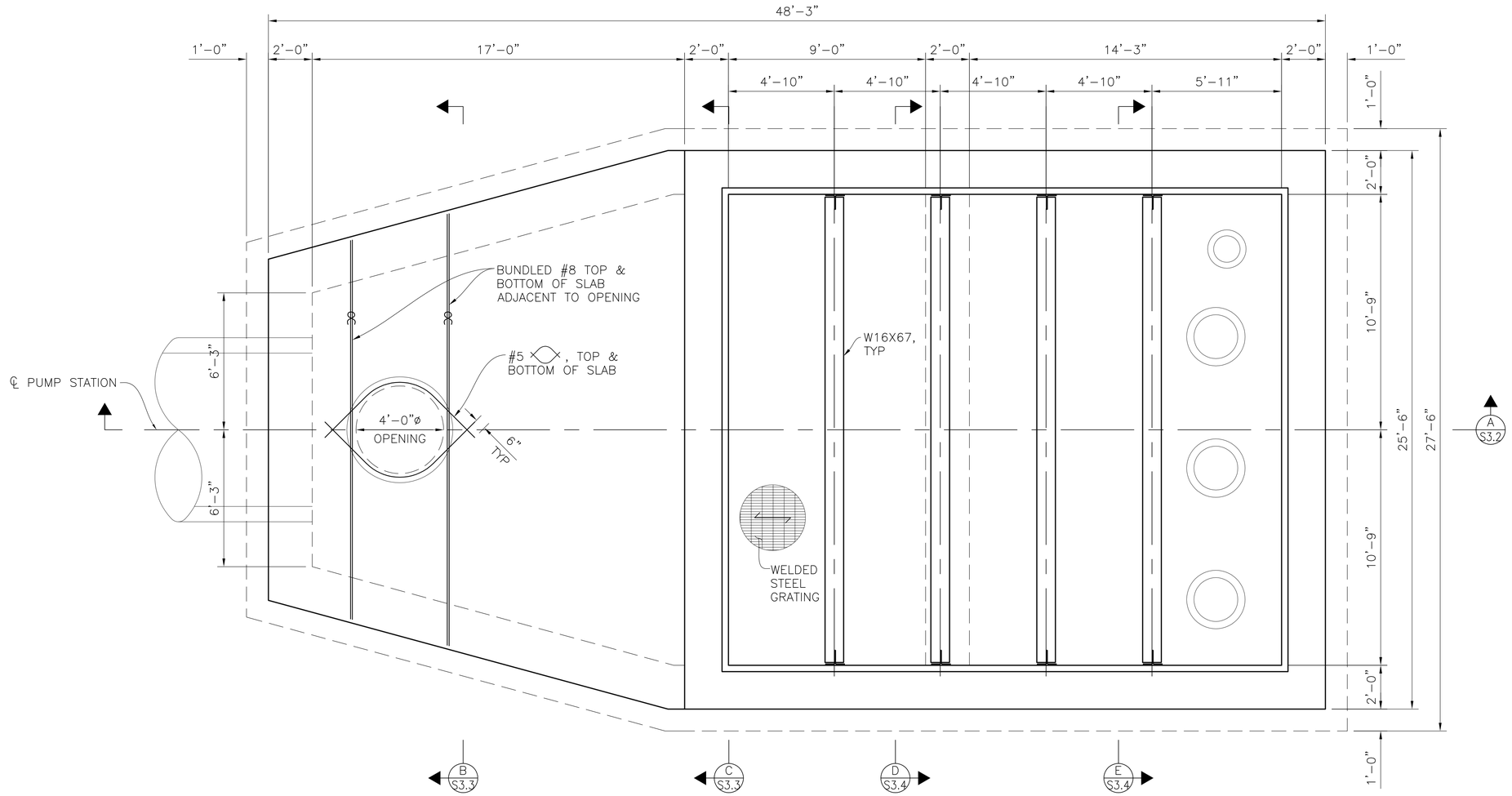
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PUMP STATION LANDING DETAILS

S2.2

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PUMP STATION PLAN

3/8" = 1'-0"

NOTE:
℄ INDICATES BUNDLED BARS

DESIGN NOTES

DESIGN: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 8TH EDITION WITH CALIFORNIA AMENDMENTS

LIVE LOADING: NO VEHICULAR ACCESS DUE TO BOLLARDS

REINFORCED CONCRETE: f'c = 3,600 psi AT 28 DAYS
fy = 60,000 psi

SEE SHEET S0.0 FOR MATERIAL PROPERTIES NOT SPECIFIED HEREIN

GEOTECHNICAL DESIGN PARAMETERS

REINFORCED CONCRETE PUMP STATION:
EARTH PRESSURE:
140 PCF VERTICAL; 120 PCF HORIZONTAL

ALLOWABLE BEARING CAPACITY = 1,500 PSF [PER CBC TABLE 1806.2]

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LEAF ENGINEERS

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structural engineering group
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fax 559.320.3201

PROFESSIONAL SEAL

REGISTERED PROFESSIONAL ENGINEER DUSTIN G. CATES STRUCTURAL STATE OF CALIFORNIA
PLAN CHECK SET / NOT FOR CONST

CLIENT
LODI UNIFIED SCHOOL DISTRICT

PROJECT NUMBER
250131

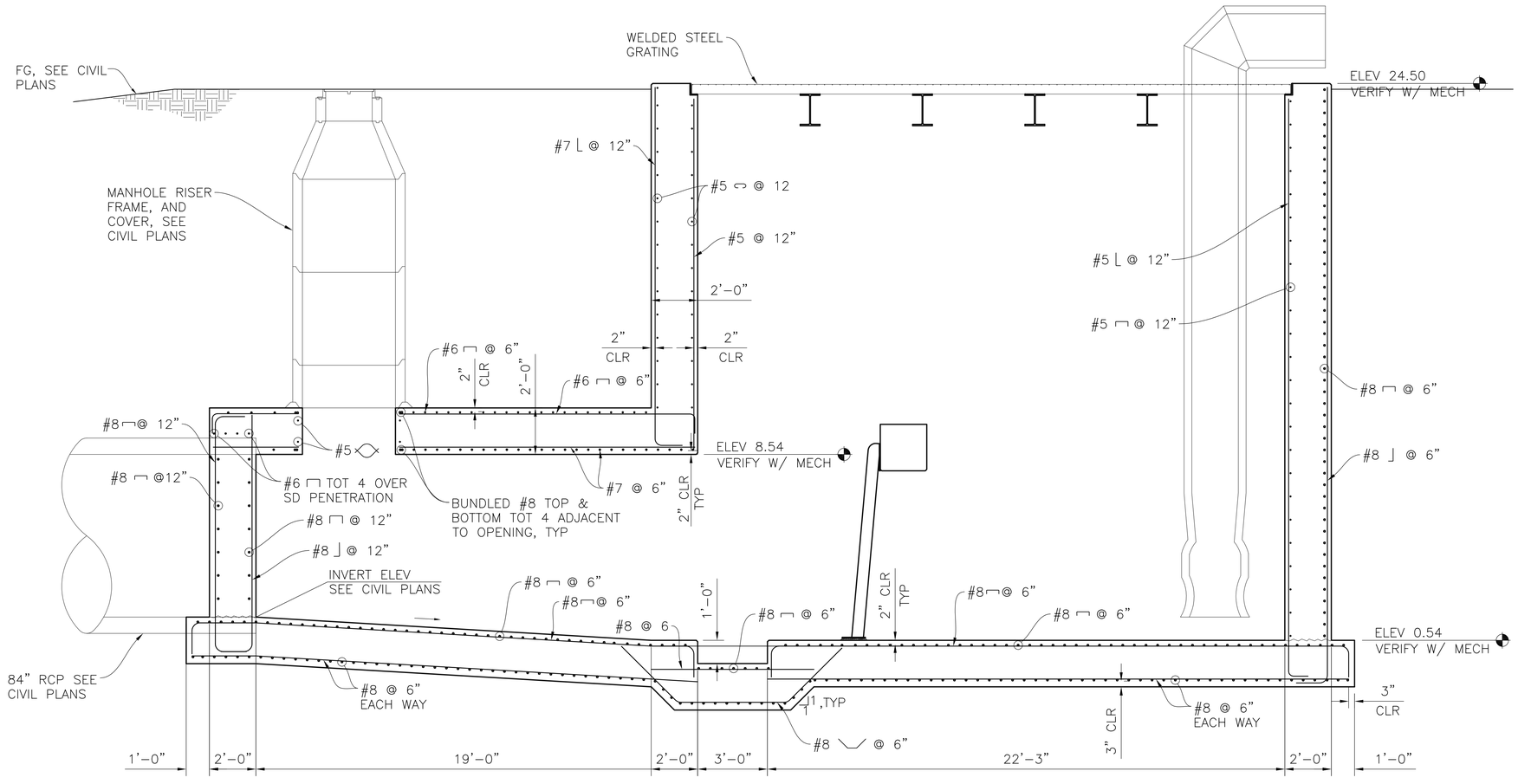
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	ADDENDA 2	6/11/2026

PUMP STATION STRUCTURAL PLANS AND DETAILS No.1

S3.1



SECTION

3/8" = 1'-0"

A S3.2

NOTE:
MAINTENANCE ACCESS LADDERS AND LANDINGS NOT SHOWN.

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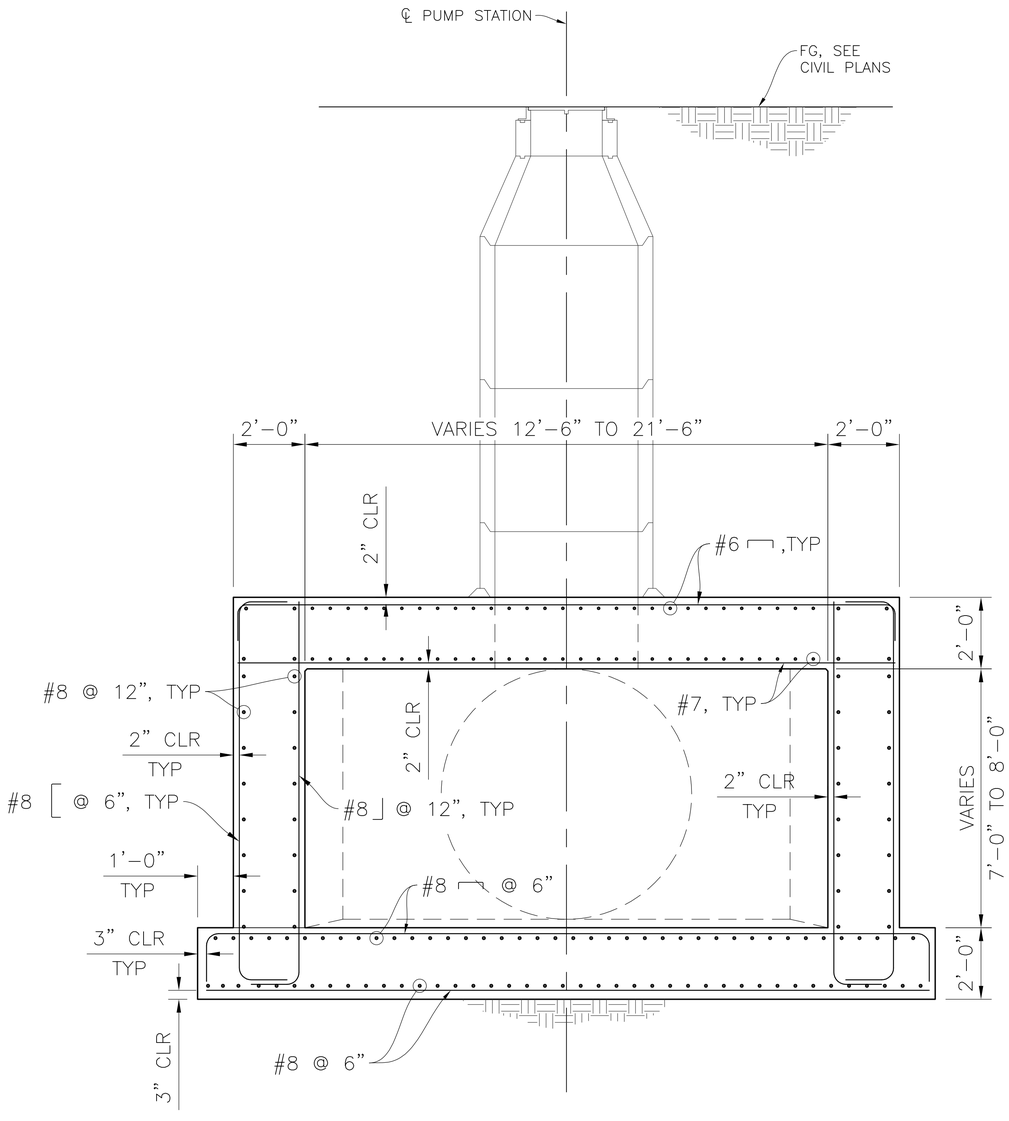
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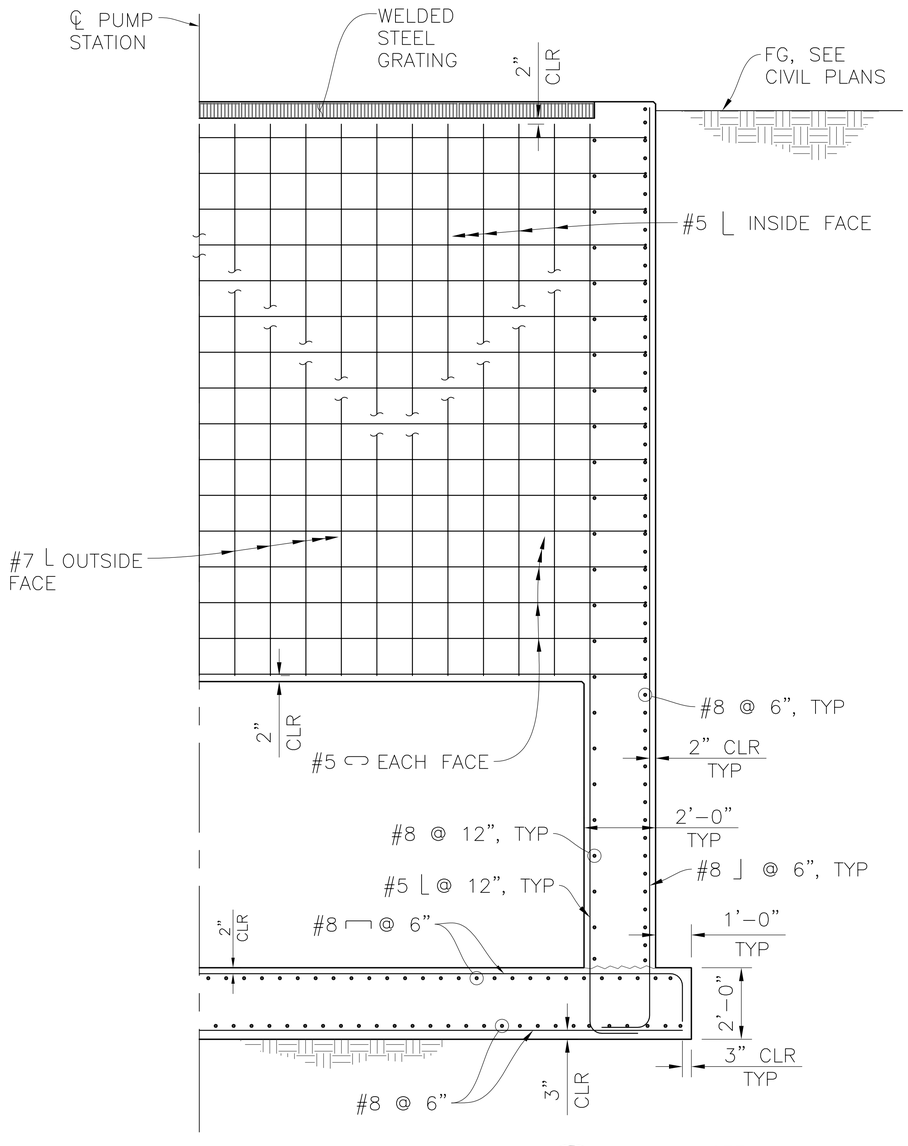
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	ADDENDA 2	6/11/2026

PUMP STATION STRUCTURAL PLANS AND DETAILS No.2

S3.2



SECTION B
3/8" = 1'–0" S3.3



SECTION C
3/8" = 1'–0" S3.3

NOTE:
REINF SYMMETRICAL ABOUT ℄ PUMP STATION

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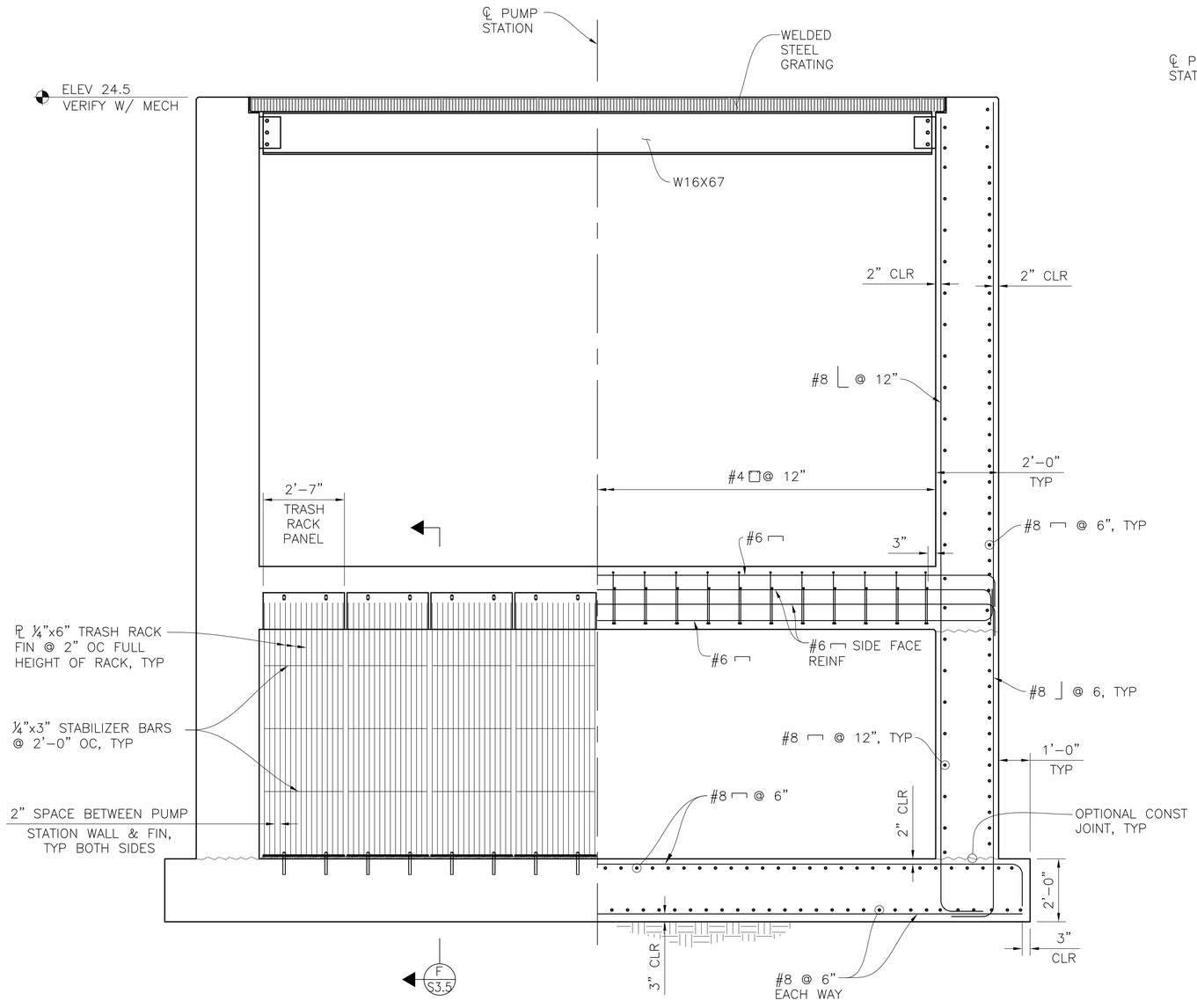
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#	DESCRIPTION	DATE
	ADDENDA 2	6/11/2026

PUMP STATION STRUCTURAL PLANS AND DETAILS No.3

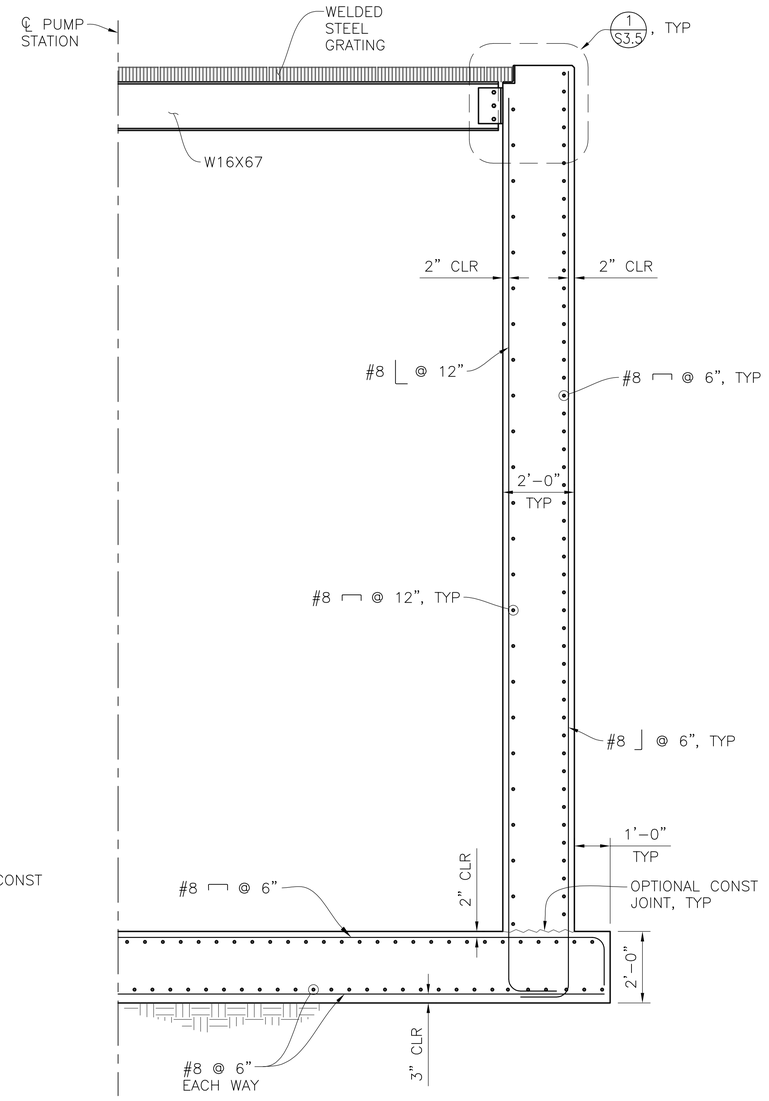
S3.3

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SECTION D S3.4
1/2" = 1'–0"

NOTE:
REINF SYMMETRICAL ABOUT ℄ PUMP STATION



SECTION E S3.4
1/2" = 1'–0"

NOTE:
REINF SYMMETRICAL ABOUT ℄ PUMP STATION

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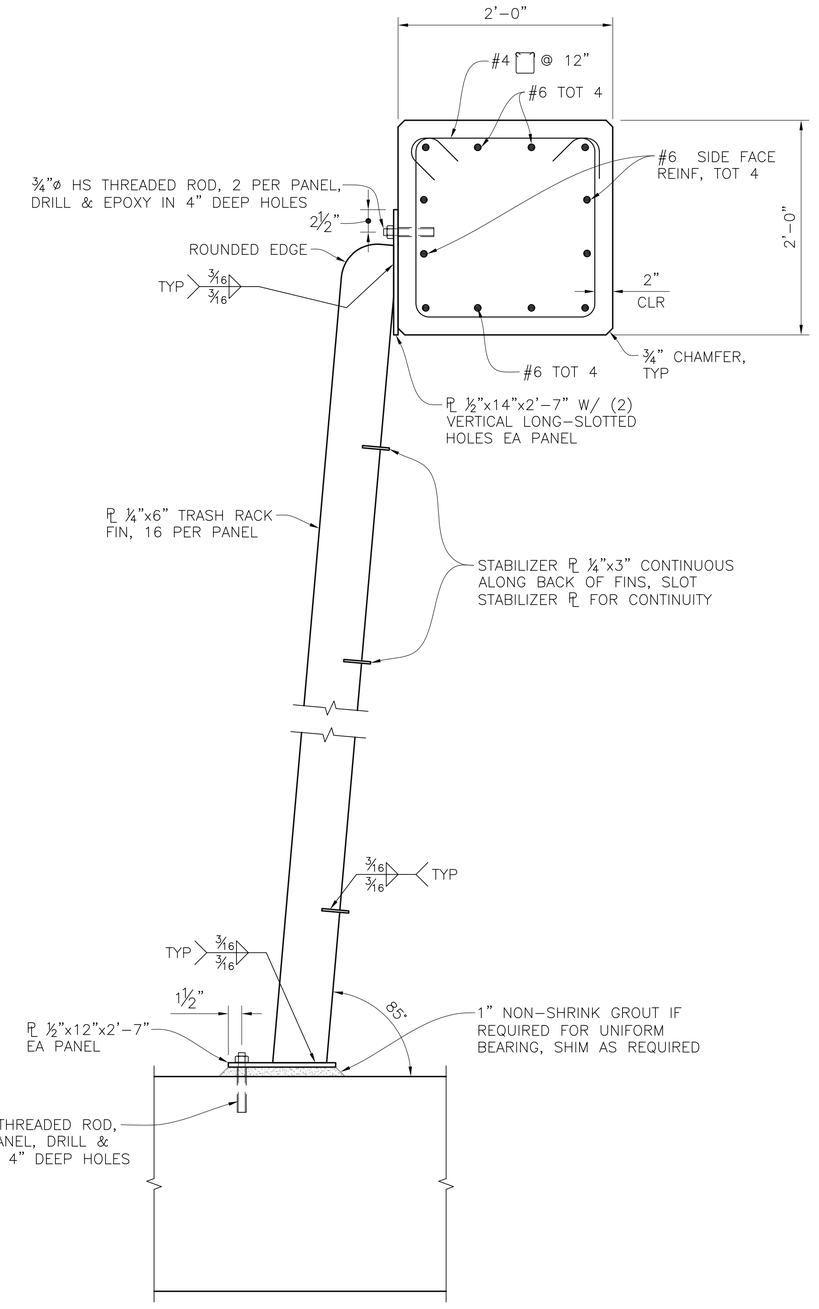
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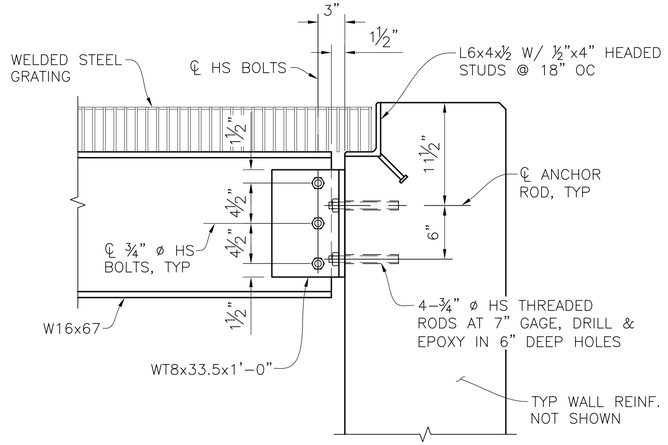
PUMP STATION STRUCTURAL PLANS AND DETAILS No.4

S3.4

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SECTION F
1-1/2" = 1'-0" S3.5



DETAIL 1
1-1/2" = 1'-0" S3.5

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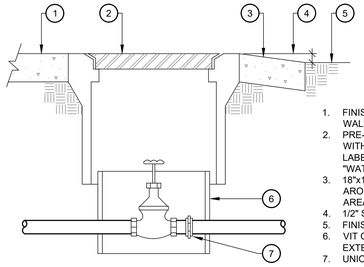
PUMP STATION STRUCTURAL PLANS AND DETAILS No.5

S3.5

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PLUMBING FIXTURE SCHEDULE

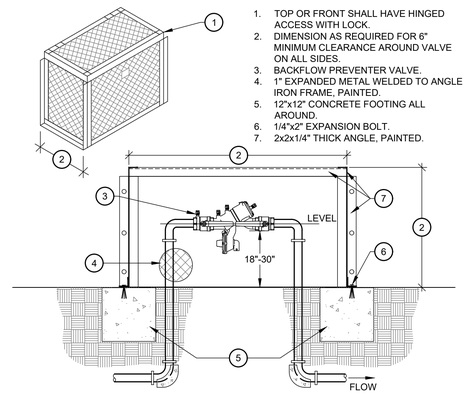
MARK	FIXTURE	S or W	V	CW	HW	DESCRIPTION
HB 1	HOSE BIBB (STANDPIPE)	--	--	3/4"	--	BRASS FAUCET, SHIELDED LOOSE KEY HANDLE, NON REMOVABLE VACUUM BREAKER, & ROUGH CHROME FINISH FOR OUTDOORS. WOODFORD Y24 AT STAND PIPES.
BP 1	BACKFLOW PREVENTER	--	--	--	2"	ZURN 975XL3, BRONZE REDUCED PRESSURE TYPE BACKFLOW PREVENTER.



1. FINISHED FLOOR OR SIDE WALK.
2. PRE-CAST CONCRETE BOX WITH CAST IRON COVER. LABEL THE COVER "WATER".
3. 18"x18" CAST CONC. AROUND IN UNPAVED AREA.
4. 1/2" SLOPE.
5. FINISHED GRADE.
6. VIT CLAY OR PVC EXTENSION SLEEVE
7. UNION

WATER SHUTOFF VALVE

N.T.S | 01



1. TOP OR FRONT SHALL HAVE HINGED ACCESS WITH LOCK.
2. DIMENSION AS REQUIRED FOR 6" MINIMUM CLEARANCE AROUND VALVE ON ALL SIDES.
3. BACKFLOW PREVENTER VALVE.
4. 1" EXPANDED METAL WELDED TO ANGLE IRON FRAME, PAINTED.
5. 12"x12" CONCRETE FOOTING ALL AROUND.
6. 1/4"x2" EXPANSION BOLT.
7. 2x2x1/4" THICK ANGLE, PAINTED.

CAGE FOR BACKFLOW PREVENTER

N.T.S | 02

GENERAL NOTES

1. SUPPORT AND BRACING OF ALL PIPING SHALL BE IN ACCORDANCE WITH 2022 C.B.C.
2. DRAINAGE PIPING SMALLER THAN 4" SHALL SLOPE 1/4" PER FOOT.
3. FOR PLUMBING FIXTURE MOUNTING HEIGHTS AND LOCATIONS, REFER TO ARCHITECTURAL DRAWINGS.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL PIPE ROUTING WITH WORK OF OTHER TRADES AND MAKE ANY OFFSETS AS REQUIRED TO AVOID CONFLICT WITH DUCTWORK, LIGHT FIXTURES, SKYLIGHTS, ETC.
5. PLUMBING CONTRACTOR TO COORDINATE WITH MECHANICAL CONTRACTOR FOR ALL GAS AND CONDENSATE DRAIN CONNECTIONS TO MECHANICAL EQUIPMENT.
6. ALL PIPE, PIPE OR PLUMBING FITTING OR FIXTURE, SOLDER, OR FLUX SHALL BE LEAD FREE THAT PROVIDES WATER FOR HUMAN CONSUMPTION PER CALIFORNIA ASSEMBLY BILL 1953.
7. GALVANIZED MALLEABLE IRON, GALVANIZED WROUGHT IRON, OR GALVANIZED STEEL ARE PROHIBITED MATERIALS FOR WATER SUPPLY AND BUILDING WATER PIPING BOTH UNDERGROUND AND IN BUILDINGS.

MEP COMPONENT ANCHORAGE NOTE

ALL MECHANICAL, PLUMBING AND ELECTRICAL COMPONENTS SHALL BE ANCHORED AND INSTALLED PER THE DETAILS ON THE DSA APPROVED CONSTRUCTION DOCUMENTS. THE FOLLOWING COMPONENTS SHALL BE ANCHORED OR BRACED TO MEET THE FORCE AND DISPLACEMENT REQUIREMENTS PRESCRIBED IN THE 2022 CBC, SECTIONS 1617A.1.18 THROUGH 1617A.1.26 AND ASCE 7-16 CHAPTER 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 ELECTRIC, 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 THE CITY.

THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND 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 POUND 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 THE CITY. 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 SECTION 13.3 AS DEFINED IN ASCE 7 SECTION 13.6.5, 13.6.6, 13.6.7, AND 13.6.8; AND 2022 CBC, SECTION 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. THE MEP DESIGN PROFESSIONAL ENGINEER RESPONSIBLE FOR CONTENT ON THESE SHEETS HAS VERIFIED THAT THE DESIGN METHOD IDENTIFIED BELOW ARE IN ACCORDANCE WITH DSA IR 16-13.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP☐MD☐PP☒E☐ OPTION 1: PROJECT-SPECIFIC DESIGN.
MP☐MD☐PP☐E☐ OPTION 2: DESIGN BASED ON OSHPD OPM, WITHIN PROJECT SUBMITTAL.
MP☐MD☐PP☐E☐ OPTION 3: DESIGN BASED ON OSHPD OPM, DEFERRED APPROVAL.

PLUMBING NOTES

1. ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN COMPLIANCE WITH THE FOLLOWING CODES AS ADOPTED BY THE INSPECTION AUTHORITY. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES OR OTHERS APPLICABLE TO THIS PROJECT:
   A. CALIFORNIA BUILDING CODE - 2022
   B. CALIFORNIA PLUMBING CODE - 2022
   C. CALIFORNIA MECHANICAL CODE - 2022
   D. CALIFORNIA ELECTRICAL CODE - 2022
   E. CALIFORNIA FIRE CODE - 2022
   F. CALIFORNIA GREEN CODE - 2022
   G. NATIONAL FIRE PROTECTION ASSOCIATION
   H. OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
2. WATER PIPE BELOW GRADE SHALL BE SCHEDULE 40 PVC.
3. WATER PIPE ABOVE GRADE SHALL BE SCHEDULE 40 GALVANIZED STEEL PIPE, ASTM A120. 150 PSI GALVANIZED MALLEABLE IRON SCREWED FITTINGS, ANSI B16.3.
4. CHECK WITH THE WATER DEPARTMENT FOR R.P. (BACKFLOW PREVENTION) DEVICE REQUIREMENTS AND LOCATIONS.
5. ALL MATERIAL AND EQUIPMENT INSTALLED UNDER THIS CONTRACT SHALL BE GUARANTEED FREE FROM ALL MECHANICAL, ELECTRICAL AND WORKMANSHIP DEFECTS FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DAMAGES TO THE PREMISES CAUSED BY LEAKS AND/OR BREAKS IN PIPES AND FIXTURES INSTALLED UNDER THIS CONTRACT.
6. BY OTHERS:
   A. GENERAL CONTRACTOR: CUTTING, FRAMING, PATCHING, FURRING, PAINTING, AND CONCRETE WORK.
7. WORKMANSHIP:
   ALL WORK SHALL BE DONE IN A NEAT AND WORKMANLIKE MANNER ACCORDING TO THE BEST TRADE PRACTICE BY THOSE SKILLED IN THE PARTICULAR TRADE; PIPES, FIXTURES, EQUIPMENT, ETC., TO BE INSTALLED LEVEL, SQUARE, OR CENTERED, ETC., TO GIVE A NEAT AND PLEASING APPEARANCE. ALL EQUIPMENT IS TO BE INSTALLED STRICTLY PER MANUFACTURERS RECOMMENDATIONS. COORDINATE ALL WORK WITH OTHER TRADES.

   IT IS THE INTENTION OF THE PLANS AND SPECIFICATIONS TO COVER ALL THINGS REQUIRED TO PROVIDE COMPLETE AND OPERATING SYSTEMS. THE CONTRACTOR IS TO FURNISH ALL LABOR, MATERIALS, TRANSPORTATION, EQUIPMENT, MISCELLANEOUS SERVICES, ETC., REQUIRED TO ACCOMPLISH THIS RESULT. ANYTHING WHICH MAY BE REASONABLY CONSTRUED AS A NECESSARY PART OF THE INSTALLATION IS TO BE INCLUDED, WHETHER SPECIFICALLY SHOWN OR MENTIONED. THE ENGINEER WILL GIVE ANY INTERPRETATIONS NECESSARY FOR THE CONTRACTOR TO PROPERLY ESTIMATE THE JOB.

SHEET INDEX

P0.1	PLUMBING SHEET INDEX, LEGEND, NOTES, SCHEDULE & DETAILS
P1.1	PLUMBING ENLARGED SITE PLAN

PLUMBING LEGEND

SYMBOL	ITEM	ABBR.
S 1	FIXTURE DESIGNATION UNIT ABBREVIATION NUMBER	
01 P-1	DETAIL DESIGNATION DETAIL NUMBER SHEET NO. WHERE SHOWN	
	DOMESTIC COLD WATER	CW
	DOMESTIC HOT WATER	HW
	DOMESTIC HW RETURN	HWR
	EXISTING PIPING	
	POINT OF CONNECTION	POC
C	CONDENSATE DRAIN	VCD
	SHUT-OFF VALVE IN BOX	SOV
	PIPING RISE	OBD
	PIPING DROP	BDD
S W	SOIL OR WASTE	S OR W
V	VENT	V
	VENT THRU ROOF	VTR
GW	GREASE WASTE	GW
AW	ACID WASTE	AW
AV	ACID VENT	AV
	ACID VENT THRU ROOF	AVTR
	FLOOR CLEANOUT	FCO
	CLEANOUT TO GRADE	COTG
	WALL CLEANOUT	WCO
	HOSE BIBB	HB
RD	ROOF DRAIN	RD
OD	OVERFLOW DRAIN	OD
	DOWN SPOUT	DS
	UNDERGROUND	UG
TP	TRAP PRIMER	TP
SD	STORM DRAIN	SD
(E)	EXISTING	EXIST.
(N)	NEW	NEW
	UNDERFLOOR	UF
	OVERHEAD	OH
R	RELIEF	
D	DRAIN	
	CONDENSATE DRAIN CLEANOUT	CO
SD	SECONDARY CONDENSATE DRAIN	
FC	FURNACE CONDENSATE	
	GAS SHUT OFF VALVE	GSOV
	SAFETY RELIEF VALVE	
	GATE VALVE	GV
	PLUG VALVE	
	BALL VALVE	
P	PRESSURE GAUGE	PG
	FIRE WALL PENETRATION	
	CONDENSATE DRAIN TRAP	CDT
LPG	LIQUIFIED PETROLEUM GAS	LPG
G	NATURAL GAS	G
	FIRE SPRINKLER RISER	FSR
FSL	FIRE SPRINKLER LINE	FSL
	FIRE DEPARTMENT CONNECTION	FDC
	FINISHED FLOOR	FF
	ABOVE FINISHED FLOOR	AFF
	ABOVE FINISHED GRADE	AFG
	CEILING	CLG
	CONTINUATION	CONT.
	DRAWING	DWG
	EACH	EA
	FEET	FT
	HORSEPOWER	HP
	INVERT ELEVATION	IVT
	KILOWATTS	KW
	MECHANICAL	MECH
	SQUARE FEET	SF
	TYPICAL	TYP
	WATER HAMMER ARRESTER	WHA
TF	TRANSFORMER WITH ACCESS PANEL	TF

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LODI UNIFIED SCHOOL DISTRICT

KEY PLAN
NORTH: PLAN TRUE

Architect / Engineer

REGISTERED PROFESSIONAL ENGINEER
GAREN M. LENDSMAN
NO. 33380
REN. 6-30-26
MECHANICAL
STATE OF CALIFORNIA

CLIENT
LODI UNIFIED SCHOOL DISTRICT
PROJECT NUMBER
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DATE: 10/28/2025
DRAWN BY: CAL CHKED BY: G.L.

REVISIONS

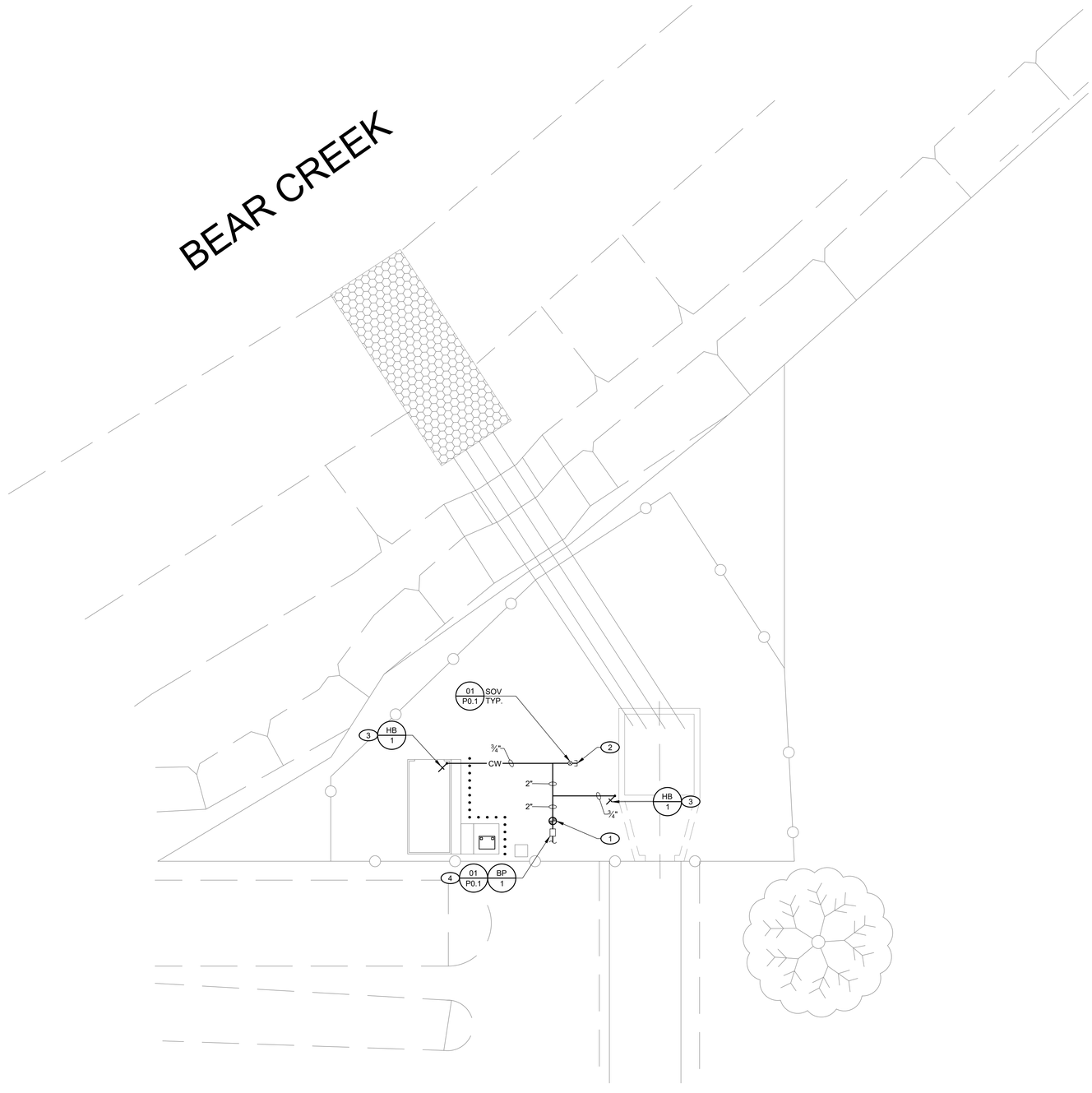
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PLUMBING SHEET INDEX, LEGEND, NOTES, SCHEDULE & DETAILS

P0.1

P1.1 PLUMBING SITE PLAN



1 PLUMBING ENLARGED SITE PLAN
SCALE: 1" = 20'-0"

KEYNOTES

1. POC (N) 2" CW. SEE CIVIL SHEET C3.1 FOR CONTINUATION.
2. STUB AND CAP 2" CW WITH SOV BELOW GRADE FOR FUTURE CONNECTION.
3. ROUTE 3/4" CW UP TO HOSE BIBB. MOUNT HOSE BIBB A MINIMUM OF 18" ABOVE FINISHED GRADE.
4. BACKFLOW PREVENTER, SEE CIVIL SHEET C3.1 FOR CONTINUATION.

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NORTH: PLAN TRUE

Architect / Engineer

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GAREN M. LENDOMAN
NO. 33380
REN. 6-30-26
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STATE OF CALIFORNIA

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PLUMBING ENLARGED SITE PLAN

P1.1

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ELECTRICAL NOTES

MEP COMPONENT ANCHORAGE NOTES

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   B. TEMPORARY, MOVABLE OR MOBILE EQUIPMENT THAT IS PERMANENTLY ATTACHED (e.g. HARD WIRED) TO THE BUILDING UTILITY SERVICES SUCH AS ELECTRIC, GAS OR WATER. "PERMANENTLY ATTACHED" SHALL INCLUDE ALL ELECTRICAL CONNECTIONS EXCEPT PLUGS FOR 110/220 VOLT RECEPTACLES HAVING A FLEXIBLE CABLE.

   C. 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.

2. THE FOLLOWING MECHANICAL AND ELECTRICAL COMPONENTS SHALL BE POSITIVELY ATTACHED TO THE STRUCTURE BUT NEED NOT DEMONSTRATE DESIGN COMPLIANCE WITH THE REFERENCES NOTED ABOVE. THESE COMPONENTS SHALL HAVE FLEXIBLE CONNECTIONS PROVIDED BETWEEN THE COMPONENT AND ASSOCIATED DUCTWORK, PIPING, AND CONDUIT. FLEXIBLE CONNECTIONS MUST ALLOW MOVEMENT IN BOTH TRANSVERSE AND LONGITUDINAL DIRECTIONS:

   A. COMPONENTS WEIGHING LESS THAN 400 POUNDS AND 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 POUND PER FOOT, WHICH ARE SUSPENDED FROM A ROOF OR FLOOR OR HUNG FROM A WALL.

3. 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.

UL LISTINGS NOTE

ALL ELECTRICAL MATERIALS AND EQUIPMENT SHALL BE NEW AND SHALL BE LISTED BY UNDERWRITER'S LABORATIES (UL) AND BEAR THEIR LABEL OR LISTED AND CERTIFIED BY A NATIONALLY RECOGNIZED TESTING AUTHORITY.

ALL EQUIPMENT/DEVICES INSTALLED RECESSED IN FIRE RATED CEILINGS OR WALLS SHALL BE ENCLOSED WITH AN APPROVED UL LISTED ENCLOSURE CARRYING THE SAME FIRE RATING AS THE CEILING OR WALL.

DEVICE LOCATION NOTE

THE LOCATION OF ALL ELECTRICAL DEVICES AND EQUIPMENT SHALL BE COORDINATED WITH THE ARCHITECTURAL ELEVATIONS, DETAILS, OR SECTIONS PRIOR TOINSTALLATIONS. ALL ELECTRICAL DEVICES AND EQUIPMENT SHALL BE RECESSED INWALLS UNLESS OTHERWISE NOTED. OUTLETS NOT INDICATED ON ARCHITECTURAL ELEVATIONS SHALL BE COORDINATED WITH THE ARCHITECT PRIOR TO ROUGH-IN, UNLESS OTHERWISE NOTED. ELECTRICAL DEVICES SHALL BE MOUNTED PER "ACCESSIBLE DEVICE MOUNTING HEIGHT" DETAIL.

COORDINATE WITH OTHER TRADES AS TO THE EXACT LOCATION OF THEIR RESPECTIVE EQUIPMENT SUPPLY POWER AND MAKE CONNECTION TO MOTORS AND EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS AS INDICATED ON THE SINGLE LINE DIAGRAM, ELECTRICAL DRAWINGS, AND DRAWINGS OF OTHER TRADES. REVIEW THE DRAWINGS OF OTHER TRADES FOR CONTROL DIAGRAMS, SIZE AND LOCATION OF EQUIPMENT. DISCONNECT SWITCHES, STARTERS, WIRING, CONTROLS, AND CONDUIT FOR MECHANICAL AND PLUMBING OPERATIONS SHALL BE PROVIDED THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING MANUFACTURER'S SHOP DRAWINGS PRIOR TO ROUGHING IN ALL CONDUIT TO THIS EQUIPMENT.

GENERAL NOTES

1. THE CONTRACTOR SHALL VISIT THE SITE INCLUDING ALL AREAS INDICATED ON THE DRAWINGS. HE SHALL THOROUGHLY FAMILIARIZE HIMSELF WITH THE EXISTING CONDITIONS BY SUBMITTING A BID, ACCEPTS THE CONDITIONS UNDER WHICH HE SHALL BE REQUIRED TO PERFORM HIS WORK, AND SHALL COMPLY WITH ALL AUTHORITIES HAVING JURISDICTION, CEC, ALL STATE AND LOCAL CODES AND AMENDMENT.
2. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN A COMPLETE SET OF CONTRACT DOCUMENTS AND ADDENDA (DRAWINGS AND SPECIFICATIONS.) HE SHALL CHECK THE CONTRACT DOCUMENTS OF THE OTHER TRADES AND DETERMINE HIS RESPONSIBILITIES. FAILURE TO DO SO SHALL NOT RELEASE THE CONTRACTOR FROM COMPLETING ALL RESPONSIBLE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
3. THE CONTRACTOR SECURE AND PAY FOR ALL PERMITS, FEES, CHARGES, AND INCIDENTAL COSTS NECESSARY FOR EXECUTION AND COMPLETION OF ELECTRICAL WORK, INCLUDING ALL CHARGES BY STATE, COUNTY AND LOCAL GOVERNMENTAL AGENCIES.
4. ALL ELECTRICAL WORK REFERENCED HEREIN SHALL BE COORDINATED WITH OTHER TRADES AND SITE CONDITIONS. ANY COSTS TO INSTALL WORK TO ACCOMPLISH SAID COORDINATION WHICH DIFFERS FROM THE WORK AS SHOWN ON THE CONTRACT DOCUMENTS SHALL BE INCURRED BY THE CONTRACTOR. ANY DISCREPANCIES, AMBIGUITIES OR CONFLICTS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT DURING BID TIME FOR CLARIFICATION. ANY SUCH CONFLICTS NOT CLARIFIED PRIOR TO BID SHALL BE SUBJECT TO THE INTERPRETATION OF THE ARCHITECT AT NO ADDITIONAL COST TO THE OWNER.
5. AND COMMUNICATIONS SYSTEMS BEING DISCONNECTED TO MAINTAIN SYSTEMS IN OPERATION.
6. ALL INTERRUPTION OF ELECTRICAL POWER SHALL BE KEPT TO A MINIMUM. HOWEVER, WHEN AN INTERRUPTION THE OUTAGE, AND OVERTIME PAY SHALL BE INCLUDED IN THE CONTRACTOR'S BID. WORK IN EXISTING SWITCHBOARDS OR PANEL BOARDS SHALL BE COORDINATED WITH THE OWNER PRIOR TO REMOVING ACCESS PANELS OR DOORS.
7. AFTER ALL REQUIREMENTS OF THE CONTRACT DOCUMENTS HAVE BEEN FULLY COMPLETED, REPRESENTATIVES OF THE OWNERS WILL INSPECT THE WORK. THE CONTRACTOR SHALL PROVIDE COMPETENT PERSONNEL TO REPRESENTATIVE. FINAL ACCEPTANCE OF THE WORK WILL BE MADE BY THE OWNER AFTER RECEIPT OF APPROVAL AND RECOMMENDATION OF ACCEPTANCE FROM EACH REPRESENTATIVE.
8. FURNISH A ONE-YEAR WRITTEN GUARANTEE OF MATERIALS AND WORKMANSHIP FROM THE DATE OF PUNCH LIST COMPLETION.
9. ALL FINAL CONNECTIONS TO OWNER-FURNISHED EQUIPMENT SHALL BE MADE BY THE CONTRACTOR.
10. THE EXACT METHOD AND LOCATION OF CONDUIT PENETRATION AND OPENINGS IN CONCRETE OR MASONRY WALLS, GRADE BEAMS, FLOORS, OR STRUCTURAL STEEL MEMBERS SHALL BE AS DIRECTED BY THE STRUCTURAL ENGINEER. PERFORM CORING, SAW CUTTING, PATCHING, AND REFINISHING OF WALLS AND SURFACES WHEREVER IT IS NECESSARY TO PENETRATE. OPENINGS SHALL BE SEALED IN AN APPROVED METHOD TO MEET THE FIRE RATING OF THE PARTICULAR WALL, FLOOR, OR CEILING. THE EXACT METHOD AND LOCATION OF CONDUIT PENETRATIONS AND OPENINGS IN CONCRETE WALLS OR FLOORS SHALL BE UL APPROVED.
11. FINAL CONNECTIONS TO VIBRATING EQUIPMENT AND AT SEISMIC SEPARATIONS SHALL BE FLEXIBLE STEEL CONDUIT IN DRY INTERIOR LOCATIONS, AND LIQUID-TIGHT FLEXIBLE STEEL CONDUIT IN AREAS EXPOSED TO WEATHER, DAMP LOCATIONS, CONNECTIONS TO TRANSFORMER ENCLOSURES, AND FINAL CONNECTIONS TO MOTORS.
12. EQUIPMENT OUTLETS, LIGHTING FIXTURES, CONDUIT, WIRE, AND CONNECTION METHODS IN HVAC AIR PLENUMS SHALL BE APPROVED FOR USE IN PLENUMS AND SHALL CONFORM TO THE CALIFORNIA ELECTRICAL CODE.
13. TO WALLS AND ADJACENT PIPING. ARRANGE CONDUIT TO MAINTAIN HEADROOM AND TO PRESENT A NEAT APPEARANCE.
14. CONDUIT SHALL NOT BE INSTALLED IN ANY FLOOR SLAB. CONDUIT SHALL BE INSTALLED CONCEALED IN THE CEILING SPACE, CONCEALED WALLS, OR 24" MINIMUM BELOW SLAB ON GRADE UNLESS NOTED OTHERWISE.
15. LOCATE ELECTRICAL EQUIPMENT AND BOXES IN ACCESSIBLE CEILING SPACE OR PROVIDE AN ACCESS PANEL FOR INACCESSIBLE CEILING SYSTEMS. ACCESS DOORS SHALL BE A MINIMUM DIMENSION OF 24" X 24". ACCESS DOOR LOCATIONS SHALL SUIT ACCESSIBILITY AND CONSTRUCTION CONDITIONS. ACCESS DOORS SHALL HAVE A FIRE RATING EQUAL TO THE CEILING ASSEMBLY IN WHICH THEY ARE INSTALLED.
16. COORDINATE REQUIRED ACCESS DOORS IN NON-ACCESSIBLE CEILINGS TO SUIT FIELD CONDITIONS. THE EXACT SHALL BE PROVIDED IN OTHER SECTIONS OF THE SPECIFICATIONS. ACCESS DOORS SHALL HAVE A FIRE RATING EQUAL TO THE CEILING ASSEMBLY IN WHICH THEY ARE INSTALLED.
17. WHENEVER A DISCREPANCY OF ANY SYSTEM AND/OR EQUIPMENT ARISES ON THE CONTRACT DOCUMENTS OR SPECIFICATIONS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL MATERIAL AND SERVICES REQUIRED BY THE STRICTEST CONDITIONS NOTED ON THE DRAWINGS OR SPECIFICATIONS TO ENSURE COMPLETE AND OPERABLE SYSTEMS AS REQUIRED BY THE OWNER AND ARCHITECT/ENGINEER.
18. STRAIGHT FEEDER BRANCH CIRCUIT AND CONDUIT RUNS SHALL BE PROVIDED WITH SUFFICIENT PULL BOXES OR JUNCTION BOXES TO LIMIT THE MAXIMUM LENGTH OF ANY SINGLE CABLE PULL TO 100 FEET. PULL BOXES SHALL BE SIZED PER CODE OR AS INDICATED ON DRAWINGS.
19. PANEL SCHEDULES SHALL BE REVISED TO REFLECT FINAL ROOM NAMES AND NUMBERS USING THE OWNER ROOM NAMES AND NUMBERS DESIGNATIONS. CONTRACTOR TO PROVIDE FINAL PANEL SCHEDULE TO EEOR AT COMPLETION OF PROJECT.
20. WHERE OUTLETS OCCUR AT TACKABLE WALL PANELS OR OTHER WALL FINISHES, PROVIDE EXTENSION RINGS AS REQUIRED SO THAT NO SPACE WILL EXIST BETWEEN DEVICE PLATE AND BACKBOX PER CALIFORNIA ELECTRICAL CODE 314.20. SEE ARCHITECTURAL ELEVATIONS FOR WALL FINISHES AND LOCATIONS.
21. COORDINATE LOCATIONS OF ALL SEISMIC SEPARATIONS.
22. ALL 120V POWER REQUIRED FOR THE FUNCTIONALITY OF ALL LOW VOLTAGE / TECHNOLOGY SYSTEMS SHALL BE A DEDICATED CIRCUIT AND ON EMERGENCY POWER WHEN AVAILABLE. CABLING CONTRACTOR SHALL COORDINATE ALL 120V POWER REQUIREMENTS AND LOCATIONS WITH ELECTRICAL CONTRACTOR FOR ALL EQUIPMENT.
23. ALL AC POWER CABLES ARE TO BE INSTALLED WITH A MINIMUM OF 12 INCHES OF SEPARATION FROM TECHNOLOGY LOW VOLTAGE CABLES, INTERCOM, FIRE ALARM, SECURITY CABLES IN ANY PARALLEL OPEN WIRE RUN.
24. THROUGH RATED WALLS. ALL TECHNOLOGY SYSTEM CONDUIT SLEEVES SHALL HAVE PROTECTIVE BUSHING ON BOTH ENDS, BE DEDICATED FOR TECHNOLOGY SYSTEMS ONLY AND SHALL NOT SHARE WITH OTHER BUILDING TRADES.
25. CONTRACTOR SHALL MAINTAIN WALL RATING WITH PROPER FIRE BLOCKING METHODS.
26. ALL CONDUCTORS SHALL BE UL LISTED, COPPER #12 MINIMUM SIZE, TYPE THHN/THWN THERMOPLASTIC, 600 VOLT, 75 DEGREES CELSIUS WET AND 90 DEGREES CELSIUS DRY, UNLESS NOTED OTHERWISE.
27. ALL CABLING SHALL BE ROUTED IN CONDUIT. SIZE CONDUIT AS REQUIRED TO ROUTE SYSTEMS WITH MAXIMUM 40% CABLE FILL. MINIMUM CONDUIT SIZE SHALL BE 3/4" INTERIOR & 1" EXTERIOR.
28. ALL CONDUIT STUB OUTS AND SLEEVES SHALL HAVE PROTECTIVE BUSHINGS TO PREVENT CABLE DAMAGE. BUSHING TO BE INSTALLED PRIOR TO CABLE INSTALLATION. CUTTING BUSHING AND INSTALLING AFTER CABLE IS INSTALLED WILL NOT BE ACCEPTED.
29. COORDINATE MOUNTING HEIGHTS AND DETAILS OF ALL OUTLETS (POWER, SIGNAL, ETC.) WITH ARCHITECTURAL CASEWORK DRAWINGS PRIOR TO DIVISION 26 ROUGH-IN. PROVIDE COORDINATION DRAWINGS IN ACCORDANCE WITH DIVISION 26 SPECIFICATIONS WHERE CONFLICTS EXIST. OBTAIN APPROVAL FROM ARCHITECT BEFORE ELECTRICAL ROUGH-IN WHEN CONFLICTS ARISE.
30. REFER TO MECHANICAL DRAWINGS FOR EXACT LOCATION OF ALL HVAC AND PLUMBING EQUIPMENT.
31. CIRCUITING:
   A. BRANCH CIRCUITING IS SCHEMATIC IN NATURE AND IS INTENDED TO INDICATE CIRCUIT LOADING AND CONTROL, NOT METHODS OF INSTALLATION. REFER TO SPECIFICATIONS FOR METHODS OF INSTALLATION AND MATERIALS, INCLUDING WHETHER OR NOT BX IS ALLOWED AND WHETHER "THROUGH-FIXTURE" OR"OCTOPUS (EMT WITH FLEXIBLE WHIPS)" TYPE LIGHTING BRANCH CIRCUITING IS REQUIRED.
   B. WHERE WIRE SIZE AND CONDUIT SIZE IS NOT INDICATED ON THE DRAWINGS AND/OR PANEL SCHEDULES, REFER TO SPECIFICATIONS FOR MINIMUM SIZE REQUIRED.
   C. BRANCH CIRCUITS ON THE DRAWINGS ARE GENERALLY NOT SHOWN GROUPED IN SINGLE RACEWAYS. HOWEVER, GROUPING IS ALLOWED UNDER CERTAIN CONDITIONS. REFER TO DIVISION 26 SPECIFICATIONS UNDER SECTION ENTITLED "ELECTRICAL WIRING" FOR REQUIREMENTS.
   D. THE DRAWINGS GENERALLY INDICATE QUANTITY OF CONDUCTORS ON BRANCH CIRCUIT HOME RUNS ONLY. ELSEWHERE WITHIN CIRCUITS, PROVIDE QUANTITY OF CONDUCTORS AS NEEDED TO ACCOMPLISH CIRCUITING AND SWITCHING REQUIREMENTS SHOWN.
32. WHEN REMOVING EXISTING ELECTRICAL WORK WHERE OTHER ITEMS REMAIN ON THE SAME CIRCUIT, THE CONTRACTOR SHALL TAKE WHATEVER STEPS ARE NECESSARY TO MAINTAIN CIRCUIT CONTINUITY.
33. ALL ITEMS NOTED TO BE REMOVED ARE TO REMAIN THE PROPERTY OF THE OWNER; HOWEVER, CONTRACTOR. SHALL REMOVE FROM JOB SITE ALL MATERIAL NOT RETAINED BY OWNER.
34. FIELD VERIFY CONDITION OF, AND MODIFICATIONS AND ADDITIONS TO, ALL EXISTING ELECTRICAL FIXTURES, PANELS, WIRING, ETC.
35. CONTRACTOR SHALL FIELD VERIFY EXISTING BRANCH CIRCUIT LOADING WHEN MAKING MODIFICATIONS AND/OR ADDITIONS TO THAT CIRCUIT. IF NEW WORK WOULD OVERLOAD EXISTING CIRCUIT, CONTRACTOR SHALL LOCATE ANOTHER EXISTING CIRCUIT (THE CLOSEST), WHICH WOULD NOT BE OVERLOADED UPON ADDING NEW LOAD, AND SHALL TIE NEW LOAD INTO THAT CIRCUIT.
36. CONTRACTOR TO REFER TO ARCHITECTURAL PHASING PLANS AND HAVE A GOOD UNDERSTANDING OF SCOPE OF PROJECT PRIOR TO COMMENCEMENT OF WORK.
37. LUMINAIRE SUPPORT IN SUSPENDED CEILINGS:
   A. PROVIDE MEANS OF SUPPORT FOR LUMINAIRES PER NEC 410-16. T BAR CLIPS SHALL BE INSTALLED ON A. THE LUMINAIRE AND SHALL BE FIELD SECURED TO THE INVERTED CEILING TEES SO THAT THE LUMINAIRE IS SECURELY FASTENED TO THE CEILING SYSTEM FRAMING MEMBERS.
   B. CEILING TILES SHALL NOT BEAR THE WEIGHT OF LUMINAIRES. SURFACE MOUNT LUMINAIRES, RECESSED DOWNLIGHTS, LIGHT TRACK, EXIT SIGN, ETC. SHALL BE SUPPORTED BY PROPER FRAMES OR OTHER ATTACHMENT TO MAIN CEILING SYSTEM GRID OR BUILDING STRUCTURE ABOVE CEILING.
   C. LUMINAIRES SHALL BE CENTERED IN CEILING TILE.
   D. LUMINAIRE SHALL HAVE FLANGE OR TRIM RING FOR CLOSURE OF CEILING CUTOUT OR OPENING.
   E. FIRE -RATED CEILING ASSEMBLY: FOR LUMINAIRES TO BE FLUSH-MOUNTED INTO A FIRE-RATED CEILING OR SURFACE MOUNTED TO A FIRE-RATED CEILING, INSTALL WITH INDEPENDENT, SECURE SUPPORT. RACEWAY, CABLE ASSEMBLIES, BOXES AND FITTINGS LOCATED ABOVE A FIRE-RATED FLOOR/CEILING OR ROOF CEILING ASSEMBLY SHALL NOT BE SECURED TO, OR SUPPORTED BY, THE CEILING ASSEMBLY INCLUDING THE CEILING SUPPORT WIRES. PROVIDE AN INDEPENDENT MEANS OF SECURE SUPPORT. INDEPENDENT SUPPORT WIRES SHALL BE DISTINGUISHABLE BY COLOR, TAGGING, OR OTHER EFFECTIVE MEANS FROM THOSE THAT ARE PART OF THE FIRE-RATED DESIGN.
38. CONTRACTOR SHALL FIELD VERIFY ANY EXISTING UNDERGROUND PIPING, WIRING OR OTHER FACILITIES PRIOR TO TRENCHING, AND SHALL BE RESPONSIBLE FOR ANY DAMAGE CAUSED BY INSTALLATION OF NEW WORK.

ELECTRICAL SHEET INDEX

E0.1	ELECTRICAL SHEET INDEX & NOTES
E0.2	ELECTRICAL LEGENDS
E1.1	ELECTRICAL SITE PLAN
E1.2	ELECTRICAL ENLARGED SITE PLAN
E5.1	ELECTRICAL SINGLE LINE DIAGRAM
E6.1	ELECTRICAL DETAILS

LIST OF APPLICABLE CODES

2022 CALIFORNIA ADMINISTRATIVE CODE (CAC)
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 1

2022 CALIFORNIA BUILDING CODE (CBC)
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 2, VOLUME 1 & 2

2022 CALIFORNIA ELECTRICAL CODE (CEC)
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 3

2022 CALIFORNIA ENERGY CODE
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 6

2022 CALIFORNIA FIRE CODE (CFC)
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 9

2022 CALIFORNIA GREEN BUILDING STANDARDS CODE (CGBSC)
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 11

2022 NFPA 72, NATIONAL FIRE ALARM AND SIGNALING CODE
WITH CA AMENDMENTS

PIPING, DUCTWORK, AND ELECTRICAL DISTRIBUTION SYSTEMS SHALL BE BRACED TO COMPLY WITH THE FORCES AND DISPLACEMENTS PRESCRIBED IN ASCE 7 SECTION 13.3 AS DEFINED IN ASCE 7 SECTIONS 13.6.5, 13.6.6, 13.6.7, 13.6.8; AND 2022 CBC, SECTION 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. THE MEP DESIGN PROFESSIONAL ENGINEER RESPONSIBLE OR CONTENT ON THESE SHEETS HAS VERIFIED THAT THE DESIGN METHODS IDENTIFIED BELOW ARE IN ACCORDANCE WITH DSA IR 16-13.

MECHANICAL PIPING (MP), MECHANICAL DUCTS (MD), PLUMBING PIPING (PP), ELECTRICAL DISTRIBUTION SYSTEMS (E):

MP ☐ MD ☐ PP ☐ E ☒ OPTION 1: PROJECT SPECIFIC DESIGN

MP ☐ MD ☐ PP ☐ E ☐ OPTION 2: DESIGN BASED ON OSHPD OPM, WITHIN PROJECT SUBMITTAL.

MP ☐ MD ☐ PP ☐ E ☐ OPTION 3: DESIGN BASED ON OSHPD OPM, DEFERRED SUBMITTAL.

UTILITY PENETRATION NOTE

UTILITY PENETRATIONS OF ANY KIND IN FIRE AND SMOKE PARTITIONS AND CEILING ASSEMBLIESSHALL BE FIRESTOPPED AND SEALED WITH AN APPROVED UL LISTED SYSTEM OR MATERIAL. STEEL ELECTRICAL OUTLET BOXES WHICH DO NOT EXCEED 16 SQUARE INCHES IN AREA, NEED NOT BE PROTECTED IN ONE HOUR OR TWO HOUR FIRE RATED WALLS, PARTITIONS, CEILING, OR AREASEPARATION UNLESS THEY:

1. OCCUR ON OPPOSITE SIDES OF THE WALL WITHIN 24 INCH HORIZONTAL DISTANCE OF ONE ANOTHER IN THIS CASE , ONLY ONE OUTLET BOX NEEDS TO BE PROTECTED BY AN APPROVED FIRESTOP MATERIAL OR DETAIL TO CORRECT THIS CONDITION.
2. OCCUR IN COMBINATION WITH OUTLET BOXES OF ANY SIZE SUCH THAT THE AGGREGATE AREA OF UNPROTECTED OUTLET BOXES EXCEEDS 100 SQUARE INCHES IN ANY 100 SQUARE FEET OF WALL AREA IN THIS CASE, ONLY A SUFFICIENT NUMBER OF OUTLET BOXES NEED TO BE PROTECTED BY AN APPROVED MATERIAL OR DETAIL TO DECREASE THE AGGREGATE AREA OF UNPROTECTED UTILITY BOXES TO LESS THAN 100 SQUARE FEET OF WALL.

STEEL ELECTRICAL OUTLET BOXES WHICH EXCEED 16 SQUARE INCHES IN AREA, AND ALL OTHER STEEL UTILITY OUTLET BOXES REGARDLESS OF SIZE, SHALL BE PROTECTED BY AN APPROVED FIRESTOP MATERIAL AS LISTED OR EQUAL
FIRESTOPPING MATERIAL: MPP-1 MOLDABLE PUTTY PADS
3M CONTRACTOR PRODUCTS
MINNEAPOLIS, MN
3M TEST REPORT NO. 1167
DATED AUGUST 21, 1987

FLAMESAFE FSP 1077 FIRESTOP PADS
INTERNATIONAL PROTECTIVE COATINGS
OAKHURST, NJ

FSP FIRESTOP PUTTY PADS
HEVI-DUTY NELSON PRODUCTS
TULSA, OK

STEEL UTILITY BOXES WHICH EXCEED 100 SQUARE INCHES IN AREA SHALL BE PROTECTED BY ENCASEMENT.

UTILITY AND ELECTRICAL OUTLETS OR BOXES SHALL BE SECURELY FASTENED TO THE STUD FRAMING OF THE WALL, PARTITION OR CEILING ASSEMBLY. THE OPENING IN THE GYPSUM BOARD FACING SHALL BE CUT SO THAT THE CLEARANCE BETWEEN THE BOX AND THE GYPSUM BOARD DOES NOT EXCEED 1/8 INCH IN SMOKE WALLS OR PARTITIONS, THE 1/8 INCH CLEARANCE SHALL BE FILLED WITH AN APPROVED FIRE-RATED SEALANT.

DIAGRAMMATIC NOTE

DRAWINGS ARE DIAGRAMMATIC AND DO NOT INDICATE DETAILED CONDUIT ROUTING OR LENGTHS REQUIRED FOR COMPLETE INSTALLATION. ROUTING OF RACEWAYSSHALL BE AT THE OPTION OF THE CONTRACTOR BUT SHALL BE IN STRICT COMPLIANCE WITH STRUCTURAL REQUIREMENTS, CONTRACT DOCUMENTS AND SPECS UNLESS OTHERWISE NOTED. ALL WORK SHALL BE COORDINATED WITH OTHER TRADES. DO NOT SCALE THE ELECTRICAL DRAWINGS FOR LOCATIONS ANY ELECTRICAL ARCHITECTURAL, STRUCTURAL AND/OR MECHANICAL ITEMS OR FEATURES, REFER ARCHITECTURAL AND STRUCTURAL CONTRACT DOCUMENTS TO FEATURES, REFERTO ARCHITECTURAL AND STRUCTURAL FOR DOCUMENTS FOR DIMENSIONS. CONTRACT

STRUCTURAL NOTE

UNLESS SPECIFICALLY SHOWN ON THESE PLANS. STRUCTURAL MEMBERS SHALL NOT BE CUT. DRILLED, OR NOTCHED WITHOUT PRIOR WRITTEN AUTHORIZATION FROM THE STRUCTURAL ENGINEER AND THE DIVISION OF THE STATE ARCHITECT.

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KEY PLAN
NORTH: PLAN TRUE

Architect / Engineer

REGISTERED PROFESSIONAL ENGINEER
STEVEN C. MUSSER
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Exp. 3-31-26
ELECTRICAL
STATE OF CALIFORNIA

CLIENT
LODI UNIFIED SCHOOL DISTRICT

PROJECT NUMBER
250131

DATE: 10/28/2025

DRAWN BY: KG CHKED BY: SM

REVISIONS

#	DESCRIPTION	DATE
	ADDENDA 2	6/11/2026

This document is for plan review only

ELECTRICAL SHEET INDEX & NOTES

E0.1

ELECTRICAL SYMBOL LEGENDS

SYMBOLS SHOWN ON LEGENDS MAY NOT APPEAR ON DRAWINGS

ELECTRICAL ABBREVIATIONS

A OR AMP	AMPERES	LTG	LIGHTING
ABV	ABOVE	LV	LOW VOLTAGE
AFF	OBOVE FINISHED FLOOR	MAX	MAXIMUM
AFG	OBOVE FINISH GRADE	MCA	MINIMUM CIRCUIT AMPS
AIC	AMPERE INTERRUPTING CAPACITY	MCC	MOTOR CONTROL CENTER
AL	ALUMINUM	MFR	MANUFACTURER
AS	DISCONNECT SWITCH SIZE RATING	MH	MANHOLE
ATS	AUTOMATIC TRANSFER SWITCH	MOCP	MAXIMUM OVERCURRENT PROTECTION
AUX	AUXILIARY	MTD	MOUNTED
AWG	AMERICAN WIRE GAUGE	MTG	MOUNTING
B.S.	BARE STRANDED	MV	MEDIUM VOLTAGE
BKBD	BACKBOARD	NAC	NOTIFICATION APPLIANCE CIRCUIT
BDR	BREAKER	NC	NORMALLY CLOSED
BLDG	BUILDING	NEC	NATIONAL ELECTRICAL CODE
C	CONDUIT	NF	NON-FUSED
C.O.	CONDUIT ONLY WITH PULL WIRE	NIC	NOT IN CONTRACT
CB	CIRCUIT BREAKER	NO.	NUMBER
CKT	CIRCUIT	OC	ON CENTER
CL	CENTER LINE	OD	OUTSIDE DIAMETER
CLG.	CEILING	PB	PULL BOX
COL	COLUMN	PC	PHOTOCELL
CU	COPPER	PH OR Ø	PHASE
DIS	DISCONNECT	PIV	POST INDICATING VALVE
DP	DISTRIBUTION PANEL	PNL	PANEL
DWG	DRAWING	POC	POINT OF CONNCETION
EA	EACH	PRI.	PRIMARY
ELEC.	ELECTRICAL	PVC	POLY-VINYL CHLORIDE
EMH	ELECTRICAL MANHOLE	PWR	POWER
EMT	ELECTRICAL METALLIC TUBING	REC/ RECEPT	RECEPTACLE
EPO	EMERGENCY POWER OFF	REQ'D	REQUIRED
EQ	EQUIPMENT	RGS	RIGID GALVANIZED STEEL
FA	FIRE ALARM	RPBP	REDUCED PRESSURE BACK FLOW PREVENTER
FACP	FIRE ALARM CONTROL PANEL	SF	SQUARE FEET
FATC	FIRE ALARM TERMINAL CABINET	SP	SPARE
FF	FINISHED FLOOR	SPECS	SPECIFICATIONS
FLA	FULL LOAD AMPS	STD	STANDARD
FO	FIBER OPTIC	SW	SWITCH
FT	FEET	SWBD	SWITCHBOARD
GFI	GROUND FAULT INTERRUPTER	TB	TERMINAL BLOCK
GFR	GROUND FAULT RELAY	TEL./TELE	TELEPHONE
GND	GROUND	TPS	TWISTED SHIELDED PAIR
HP	HORSEPOWER	TRANSF/ XFMR	TRANSFORMER
HTR	HEATER	TS	TAMPER SWITCH
HV	HIGH VOLTAGE	TYP	TYPICAL
ISC	SHORT CIRCUIT CURRENT	UG	UNDERGROUND
KCMIL	THOUSAND CIRCULAR MILS	UNO	UNLESS NOTED OTHERWISE
KV	KILOVOLT	V	VOLTS
KVA	KILOVOLT-AMPERES	VA	VOLT-AMPERES
KW	KILOWATT	VFD	VARIABLE FREQUENCY DRIVE
LF	LINEAR FEET	W	WATTS
LIS	LOAD INTERRUPTER SWITCH	WP	WEATHERPROOF
LOC.	LOCATION	Z	INPEDANCE

SHEET OR DETAIL REFERENCE
-NUMBER ON TOP INDICATES DETAIL NUMBER
-NUMBER ON BOTTOM INDICATES SHEET NUMBER

MECHANICAL EQUIPMENT CALLOUT
SEE MECHANICAL PLANS FOR EXACT LOCATION AND REQUIREMENTS.

KEY NOTE

CIRCUITING

ARROW INDICATES HOME RUN, LONGER TICK(S) INDICATE NEUTRAL WIRE(S), SHORTER STRAIGHT TICK(S) INDICATE PHASE WIRE(S), SLANTED SHORTER TICK(S) INDICATE SWITCH LEG(S), DOT(S) INDICATE GROUNDING CONDUCTOR(S), DASHED WIRING (LONG-SHORT-LONG DASHES) INDICATES WIRING BELOW SLAB OR GRADE, DASHED WIRING (SERIES OF SHORT DASHES) INDICATES EXISTING WIRING, SLASH THROUGH ARROWINDICATES PARTIAL CIRCUIT, "D" ON HOMERUN ARROW INDICATES DEDICATED CIRCUIT:

PROVIDE A SEPARATE NEUTRAL FOR EACH PHASE CONDUCTOR FOR ENTIRE LENGTH OF CIRCUIT FROM PANEL TO OUTLET; COUNT EACH NEUTRAL AS CURRENT-CARRYING AND GROUP A MAXIMUM OF SIX THHN/THWN CONDUCTORS IN A SINGLE RACEWAY; GROUNDING CONDUCTOR IS NOT COUNTED.

LC1-X — LIGHTING CIRCUIT DESIGNATION FOR SPACE, U.N.O.

LC1-X — CIRCUIT DESIGNATION NEXT TO RECEPTACLE DEVICES INDICATES BRANCH CIRCUIT NUMBER. SEE PANEL SCHEDULES FOR INFORMATION.

+42" — A NOTATION INDICATING THE MOUNTING HEIGHT OF A DEVICE AS MEASURED FROM FINISHED FLOOR OR GRADE TO CENTER LINE OF DEVICE

ELECTRICAL DEVICES & EQUIPMENT

- JUNCION BOX
- 20A MOTOR-RATED TOGGLE SWITCH
- 20A-125V DUPLEX RECEPTACLE
- 20A-125V GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE
- 20A-125V DUPLEX RECEPTACLE MOUNTED ABOVE COUNTER TOP
- 20A-125V CONTROLLED PLUG-LOAD DUPLEX RECEPTACLE
- 20A-125V ISOLATED GROUND TYPE DUPLEX RECEPTACLE
- 20A-125V DUPLEX TAMPER RESISTANT RECEPTACLE WITH (2) USB CHARGING PORTS
- 20A-125V FOURPLEX RECEPTACLE (SAME SYMBOLOGY TYPES AS DUPLEX RECEPTACLE)
- SPECIAL PURPOSE SINGLE POWER RECEPTACLE. RATED AS INDICATED (IF NO RATING INDICATED, RECEPTACLE RATING SHALL MATCH BRANCH CIRCUIT OVERCURRENT PROTECTIVE DEVICE AND SHALL MEET REQUIREMENTS OF EQUIPMENT BEING CONNECTED)
- 20A-125V FLUSH FLOOR DUPLEX RECEPTACLE
- 20A-125V CEILING MOUNTED DUPLEX RECEPTACLE
- BELL
- EMERGENCY POWER OFF (EPO)
- PUSHBUTTON
- DISCONNECT SWITCH. DISCONNECT SWITCHES SHALL BE 30/NF/3 UON. NF = NON-FUSIBLE, NEMA 1 ENCLOSURE. PROVIDE FUSED BUSWAY PLUG WHEN SWITCH IS INDICATED ON BUSWAY.
- TRANSFORMER
- PANELBOARD
- SWITCHBOARD OR DISTRIBUTION PANELBOARD
- PHOTOVOLTAIC SOLAR PANEL

LIGHTING FIXTURES

EMERGENCY	NORMAL	
		LED 2'x2' FIXTURE
		LED 2'x4' FIXTURE
		LED LINEAR FIXTURE (SURFACE/RECESSED/SUSPENDED)
		LED STRIP FIXTURE
		LED DOWNLIGHT (ROUND)
		LED DOWNLIGHT (SQUARE)
		LED INDOOR WALL SCONCE FIXTURE
		LED WALL MOUNTED FIXTURE
		LED OUTDOOR PEDESTRIAN STYLE POST-TOP AREA FIXTURE
		LED OUTDOOR ARM MOUNT AREA FIXTURE
		SPORTS LIGHTING FIXTURE
		LED ACCENT SPOT LIGHT
		EMERGENCY EXIT LIGHT SIGN. REFER TO LIGHTING PLAN FOR NUMBER OF FACES AND DIRECTIONAL ARROWS

FIXTURE TYPE DESIGNATION — A
PANEL AND CIRCUIT NUMBER — LC1-X
SWITCHLEG CONTROL IDENTIFICATION — a

REFER TO LIGHT FIXTURE SCHEDULE FOR MANUFACTURER ORDER NUMBERS

SINGLE LINE DIAGRAM

- L1A — PANELBOARD
- AUTOMATIC TRANSFER SWITCH
- CIRCUIT BREAKER (FUSED TYPE)
- CIRCUIT BREAKER
- GF — GROUND FAULT CIRCUIT BREAKER
- M — METER
- TRANSFORMER
- ECM — ELECTRIC CIRCUIT MONITOR
- COMBINATION MOTOR-STARTER
- DISCONNECT SWITCH W/COMBINATION MOTOR-STARTER
- F — DISCONNECT SWITCH - FUSED
- DISCONNECT SWITCH
- ECM — ELECTRIC CIRCUIT MONITOR
- SPD — SURGE PROTECTIVE DEVICE
- MOTOR
- TAP
- POINT OF CONNECTION
- CONTINUATION LINE
- G — GENERATOR
- GROUND

RENOVATION WORK

EXISTING WORK SHALL BE SHOWN LIGHT - NEW WORK SHALL BE SHOWN DARK

- (E) (E) — EXISTING TO REMAIN
- (R) (R) — EXISTING SHALL BE DEMOLISHED AND REMOVED.
- (ER) (ER) — EQUIPMENT WITH "ER" ADJACENT IS RELOCATED EQUIPMENT SHOWN IN NEW LOCATION.
- (RR) (RR) — EXISTING EQUIPMENT WITH "RR" ADJACENT IS TO BE DISCONNECTED, REMOVED AND RELOCATED TO NEW LOCATION AND RECONNECTED AS REQUIRED.
- NO TAG INDICATES NEW EQUIPMENT.

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LODI UNIFIED SCHOOL DISTRICT

KEY PLAN
NORTH: PLAN TRUE

Architect / Engineer
REGISTERED PROFESSIONAL ENGINEER
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Exp. 3-31-26
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STATE OF CALIFORNIA

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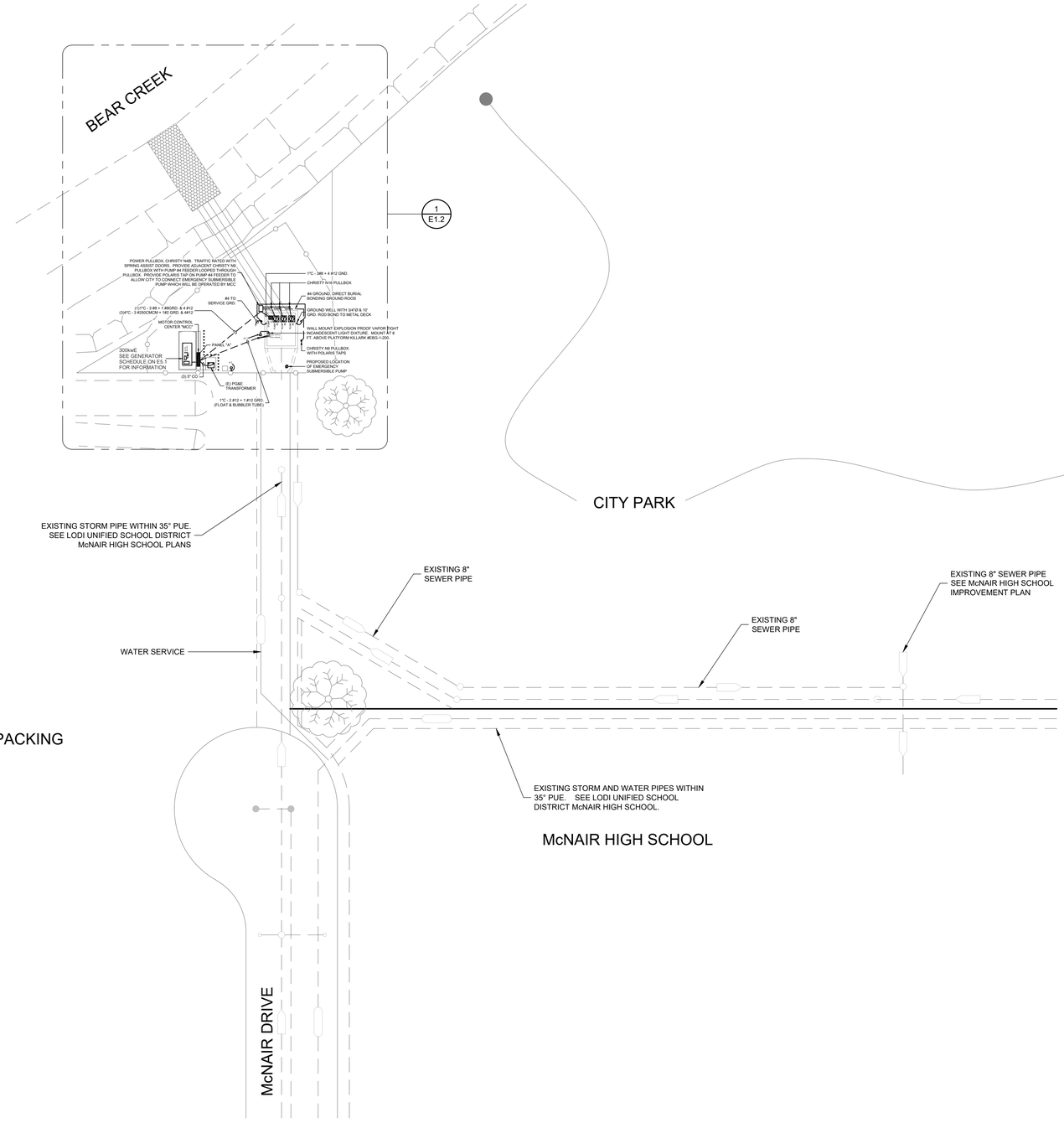
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#	DESCRIPTION	DATE
	ADDENDA 2	6/11/2026

ELECTRICAL LEGENDS

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E0.2



1 ELECTRICALSITE PLAN
SCALE: 1" = 50'-0"

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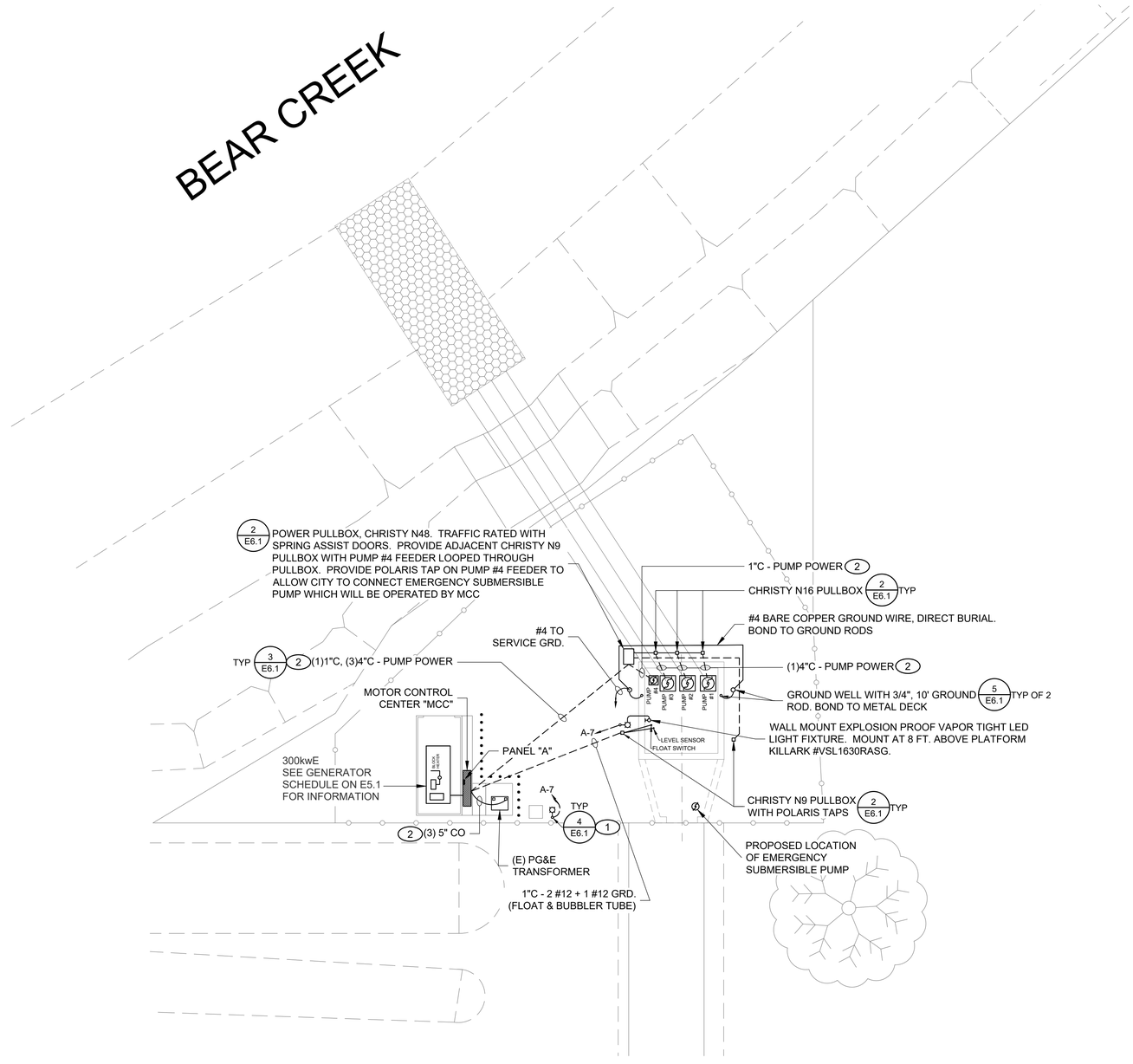
ELECTRICAL SITE PLAN

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E1.1

KEYNOTES

1. PROVIDE POLE MOUNTED FLOOD LIGHT FIXTURE, 'LITHONIA' MODEL #: DSX F2 P2 40K 70CRI WFL MVOLT IS PE DDBXD. FIXTURE MOUNTING HEIGHT TO BE 10' AFG.
2. SEE SINLGE LINE FOR FEEDER SIZES AND QUANTITIES.



1 ELECTRICAL ENLARGED SITE PLAN
SCALE: 1" = 20'-0"

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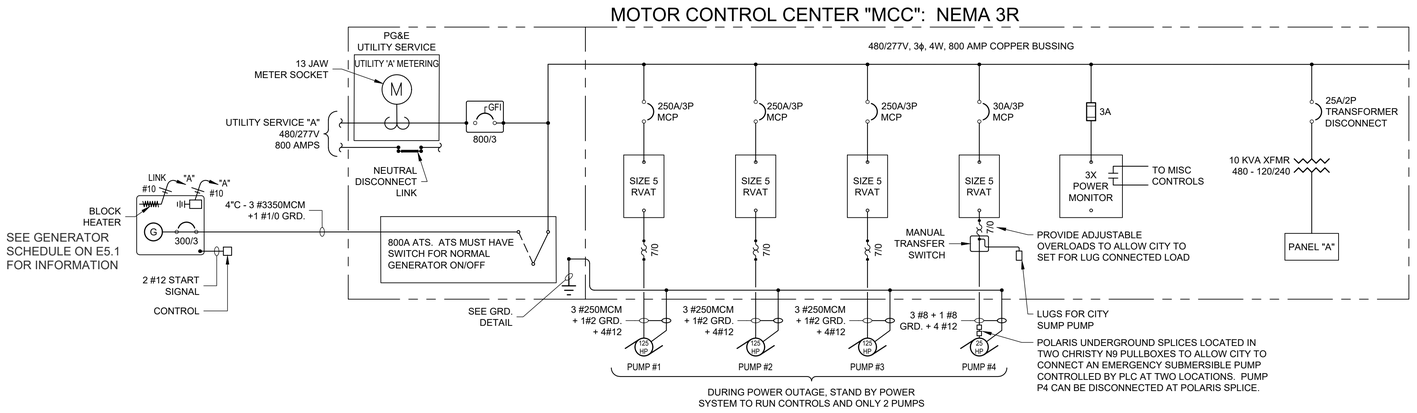
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ELECTRICAL ENLARGED SITE PLAN

E1.2

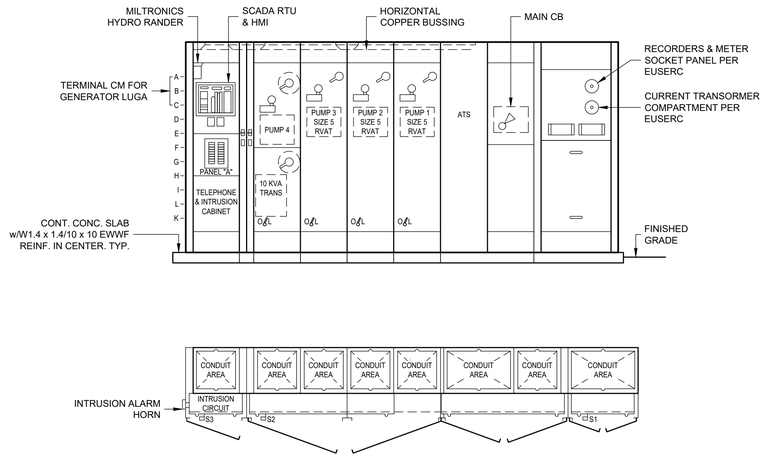
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NEW PANEL: A		ENCLOSURE:	NEMA 3		OPTIONS: HINGED COVER	
VOLTAGE: 208Y/120V 3PH 4W		MOUNTING:	IN 'MCC'		MAIN: 50A MCB	
LOAD	VA	BKR	CIR	CIR	BKR	VA	LOAD
MCC LIGHTS	--	20/1	1	2	20/1	--	SCAD
MCC RECEPTACLES	--	20/1	3	4	20/1	--	INTRUSION ALARM
MCC HEATERS	--	20/1	5	6	20/1	--	LEVEL TRANSDUCER
SITE LIGHTS	--	20/1	7	8	20/1	--	SPARE
SITE LIGHTS	--	20/1	9	10	20/1	--	SITE LIGHTS
BATTERY CHARGER	--	20/1	11	12	20/1	--	SUMP LIGHTS
SPARE	--	20/1	13	14	20/1	--	SPARE
SPARE	--	20/1	15	16	20/1	--	SPARE
BLOCK HEATER	--	20/1	17	18	20/1	--	SPARE
SPACE	--	--	19	20	--	--	SPACE
SPACE	--	--	21	22	--	--	SPACE
SPACE	--	--	23	24	--	--	SPACE
SPACE	--	--	25	26	--	--	SPACE
SPACE	--	--	27	28	--	--	SPACE
SPACE	--	--	29	30	--	--	SPACE
SPACE	--	--	31	32	--	--	SPACE
SPACE	--	--	33	34	--	--	SPACE
SPACE	--	--	35	36	--	--	SPACE
SPACE	--	--	37	38	--	--	SPACE
SPACE	--	--	39	40	--	--	SPACE
SPACE	--	--	41	42	--	--	SPACE
KVA FOR PHASE A	0.0					5	AMPERES
KVA FOR PHASE B	0.0					5	AMPERES
KVA FOR PHASE C	0.0					5	AMPERES
TOTAL KVA	5.3						

* PROVIDE RED HANDLE REAKER AND LOCK-ON CLIP.

GENERATOR SCHEDULE:
BLUESTAR POWER SYSTEMS DIESIL SYSTEM, 300 kWe, WITH 1620 GALLON TANK FOR 72 HOUR RUN TIME, LEVEL 2 SOUND PACKAGE AND FACTORY TIER 4 COMPLIANCE. PROVIDE COMPLETE SYSTEM. PROVIDE FACTORY STARTUP AND COMMISSIONING.



NOTES: MOTOR CONTROL CENTER

1. ALL DIMENSIONS ARE NOMINAL.
2. THE COMPLETE SWITCHBOARD SHALL HAVE A SYMMETRICAL SHORT CIRCUIT RATING EQUAL TO OR GREATER THAN THAT AVAILABLE FROM THE UTILITY COMPANY.
3. MINIMUM INTEGRAL A.I.C. RATING OF SWITCHBOARD AND FEEDER CIRCUIT BREAKERS TO BE 42,000 AMPS.
4. BOLT SECTIONS OF THE SWITCHBOARD TOGETHER WITH 1/2" BOLT AND NUTS AT 4 PLACES PER SECTION.
5. BOLT EACH SECTION OF SWOTCHBOARD TO FLOOR WITH (4)1/2" x 3" HILTI KWIK BOLT & WEDGE ANCHORS FAB. & INSTALLED BY ICBO REPORT NO. 4627.

ENCLOSURE CONSTRUCTION NOTES

1. EXTERIOR 12 GA. H.D. GALV. STEEL AND INTERIOR 14 GA. COLD ROLLED STEEL ELECTRICALLY WELDED AND REINFORCED WHERE REQUIRED.
2. CONSTRUCTION WILL BE NEMA 3R AND 12, RAINTIGHT AND DUSTTIGHT.
3. ALL NUTS, BOLTS, SCREWS AND HINGES WILL BE STAILESS STEEL.
4. NUTS, BOLTS AND SCREWS WILL NOT BE VISIBLE FROM OUTSIDE OF ENCLOSURE.
5. PHENOLIC NAMEPLATES WILL BE PROVIDED AS REQUIRED.
6. CONTROL WIRING WILL BE MARKED AT BOTH ENDS BY PERMANENT WIRE MARKERS.
7. A PLASTIC COVERED WIRING DIAGRAM WILL BE ATTACHED TO THE INSIDE OF THE FRONT DOOR.
8. ENCLOSURE WILL BE FACTORY WIRED AND CONFORM TO REQUIRED NEMA STANDARDS.
9. COLOR TO BE ANSI 61 GRAY.

1 ELECTRICAL SINGLE LINE
SCALE: NONE

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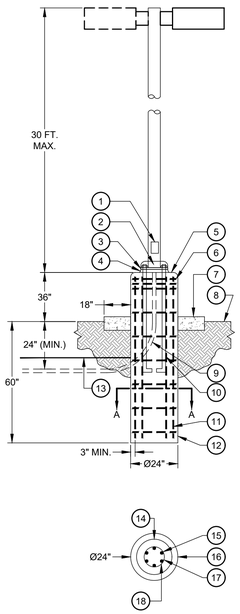
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ELECTRICAL SINGLE LINE

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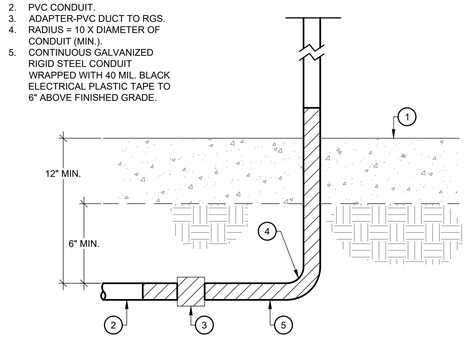
E5.1



1. HANDHOLE IN BASE OF POLE COMPLETE WITH GASKETED COVER.
2. BOND GROUND WIRE/CONDUIT TO POLE.
3. POLE BASE WITH WASHERS AND NUTS ON TOP AND BOTTOM AND FULL BASE COVER.
4. GROUT AROUND POLE BASE AFTER LEVELING.
5. RAISED CONCRETE BASE WITH EASED TOP EDGE 1/2" RADIUS CORNERS. SACK AND PATCH SURFACE TO ACHIEVE A SMOOTH UNIFORM FINISH.
6. PLACE THREE #3 TIES IN TOP 5" BASE.
7. MOW STRIP SHALL BE FLUSH WITH SIDEWALK.
8. FINISHED GRADE.
9. THREE 3/4" CONDUITS - ONE FOR LIGHTING, ONE FOR POWER & ONE FOR SIGNAL.
10. TYPICAL OF SIX 1" x 48" GALVANIZED THREADED RODS WITH NUTS DOUBLED. STEEL GRADE FOR ANCHOR BOLTS SHALL BE F15554 GRADE 36 STEEL (YIELD STRESS 36KSI).
11. SIX #6 VERTICAL REBAR WITH #6 TIES ON 9" CENTER TO FORM CAGE.
12. CONCRETE BASE. CONCRETE TO BE MIN. 3000 PSI. IN 28 DAYS, POURED IN NATURALLY COMPACTED EARTH HOLE FREE OF LOOSE DIRT OR DEBRIS.
13. PLASTIC WARNING TAPE MARKED "ELECTRICAL" 6" ABOVE CONDUIT.
14. TYP. 18" DIAMETER ROUND STEEL CAGE.
15. TYP. 10" DIAMETER ROUND CAGE WITH 9.5" BOLT CIRCLE.
16. CONCRETE BASE.
17. #6 VERTICAL REBAR, TYPICAL OF SIX FOR EACH STEEL CAGE.
18. BOLT WITH #3 TIE, TYP.

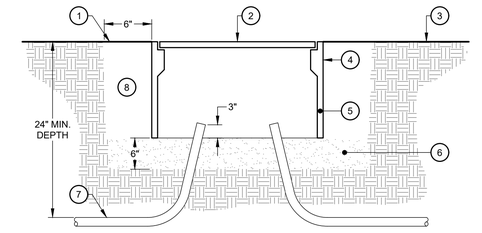
NOTE:
1. REFER TO FIXTURE SCHEDULE FOR POLE AND FIXTURE TYPES.
2. PER IR-A22, LIGHT POLES LESS THAN 35' TALL SUPPORTED ON GRADE ARE EXEMPT FROM INSPECTION; NOT PART OF THE DSA APPROVAL.

LIGHTING POLE MOUNTING DETAIL
N.T.S | 4



1. CONCRETE FLOOR.
2. PVC CONDUIT.
3. ADAPTER-PVC DUCT TO RGS.
4. RADIUS = 10 X DIAMETER OF CONDUIT (MIN.).
5. CONTINUOUS GALVANIZED RIGID STEEL CONDUIT WRAPPED WITH 40 MIL. BLACK ELECTRICAL PLASTIC TAPE TO 6" ABOVE FINISHED GRADE.

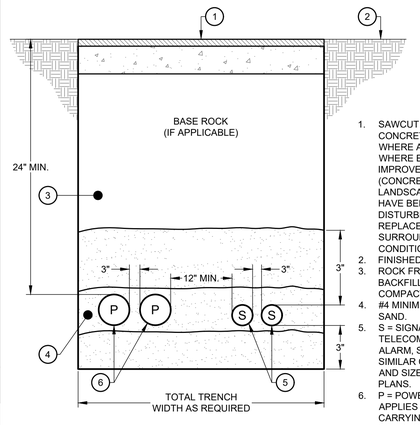
CONDUIT RISER DETAIL
N.T.S | 1



1. SET BOX FLUSH WITH FINISHED GRADE. WHERE EXISTING SURFACE IMPROVEMENTS (CONCRETE, PAVEMENT, LANDSCAPING, TURF, ETC.) HAVE BEEN REMOVED OR DISTURBED. REPAIR OR REPLACE TO MATCH SURROUNDING CONDITIONS.
2. TRAFFIC RATED COVER WHERE APPLICABLE, NON-TRAFFIC RATED REINFORCED CONCRETE COVER OTHERWISE. COVER MARKED OR INSCRIBED WITH INTENDED USE.
3. FINISHED GRADE.
4. REINFORCED CONCRETE PULLBOX. QTY AND SIZE AS SHOWN ON PLANS.
5. PROVIDE BOX EXTENSION RINGS AS REQUIRED.
6. CRUSHED GRAVEL DRAIN BASE BEDDING.
7. TYPICAL UNDERGROUND CONDUIT PER PLANS. DEPTH MIN. 24", SEE TYPICAL TRENCH DETAIL.
8. EXCAVATE A MINIMUM WIDTH EQUAL TO THE DIMENSIONS OF THE BOX PULS 6" ON ALL SIDES. BACKFILL WITH ROCK-FREE NATIVE SOIL AT 90% COMPACTION.

UNDERGROUND PULLBOX DETAIL
N.T.S | 2

GROUND WELL ASSEMBLY
N.T.S | 5



1. SAWCUT AND REMOVE CONCRETE OR PAVING WHERE APPLICABLE. WHERE EXISTING SURFACE IMPROVEMENTS (CONCRETE, PAVING, LANDSCAPING, TURF, ETC.) HAVE BEEN REMOVED OR DISTURBED, REPAIR OR REPLACE TO MATCH SURROUNDING CONDITIONS.
2. FINISHED GRADE.
3. ROCK FREE NATIVE BACKFILL, 90% COMPACTION.
4. #4 MINIMUM SALT-FREE SAND.
5. S = SIGNAL (INCLUDES TELECOM, CATV, FIRE ALARM, SECURITY OR SIMILAR CABLING. QTY. AND SIZE AS SHOWN ON PLANS.
6. P = POWER (THIS DETAIL APPLIES TO CONDUITS CARRYING 600V OR BELOW CONDUCTORS. HIGHER VOLTAGE HAS DIFFERENT REQUIREMENTS. QTY. AND SIZE AS SHOWN ON PLANS

GENERAL NOTES:

1. THE EXTENT THAT PEDESTRIAN SURFACES ARE TRENCHED AND PATCHED, THE PATCH SHALL COMPLY WITH CBC §11B-302.1 AND §11B-303.

TRENCH DETAIL
N.T.S | 3

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ELECTRICAL DETAILS

E6.1

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Lodi Unified School District

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Job No. 2026021



STRUCTURAL CALCULATIONS

City Submittal

June 5, 2026

9 River Park Place East Suite 330
Fresno, CA 93720
tel (559) 320-3200
fax (559) 320-3201

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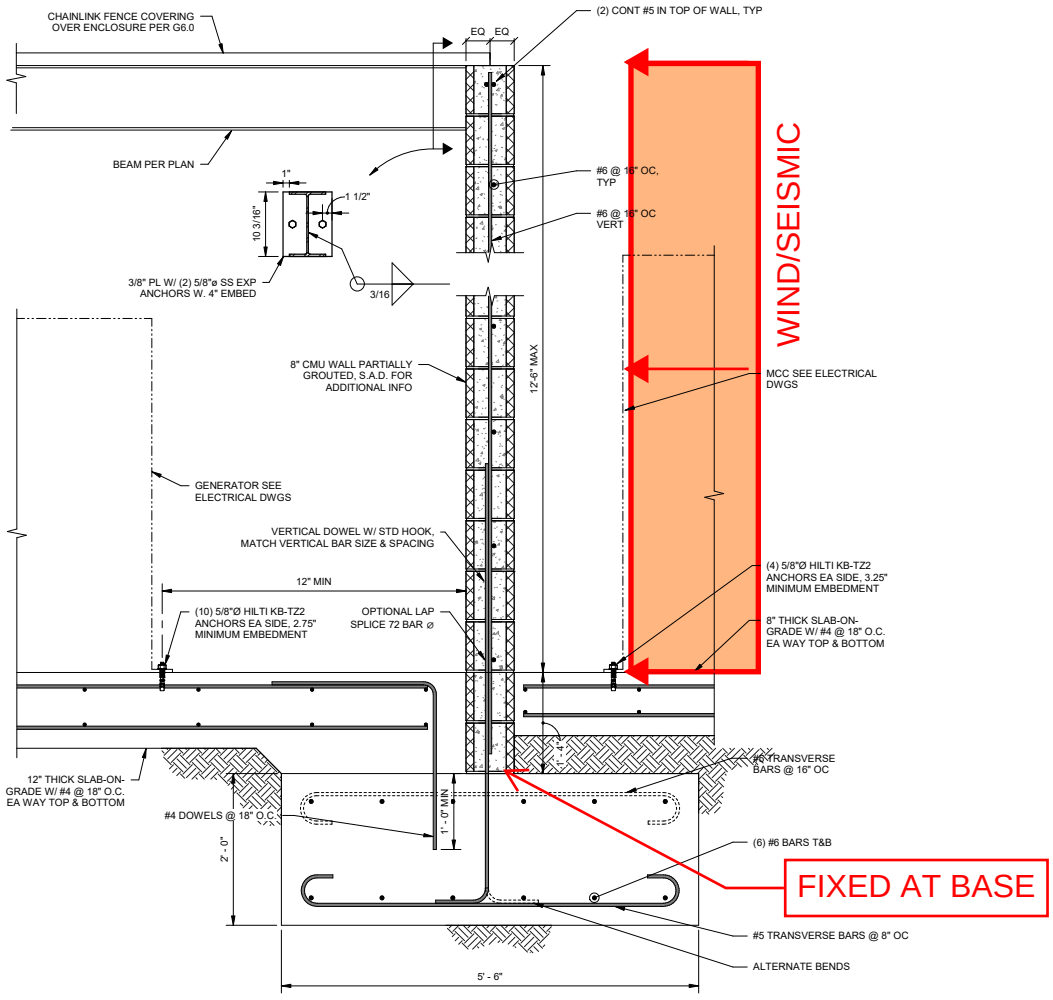
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BY _____ DATE 4/26 SUBJECT MCNAIR HS PUMP STATION SHEET NO. _____ OF _____

CHKD.BY _____ DATE _____ STRUCTURAL CALCULATIONS JOB NO. 2026021

GENERATOR ENCLOSURE DESIGN

DESIGN THE ENCLOSURE AS A FIXED-FREE GROUND SUPPORTED SITE WALL FOR WIND AND SEISMIC LOADS



GENERATOR CMU ENCLOSURE-FOUNDATION DETAIL 1 / S2.0

1" = 1'-0"

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MASONRY WALL LATERAL LOADS

-BELOW ARE THE DESIGN LOADS USED FOR MASONRY WALL AND FOOTING DESIGN USING ASCE 7.

Wind Loading

ASCE 7-22 chapter 26

h_{avg} =	13.833	ft	
Risk Category =	II		[CBC T 1604A.5]
V =	93	mph	[ASCE 7-22, Figure 26.5-1C]
K_d =	0.85		[ASCE 7-22, Table 26.6-1]
Exposure =	C		[ASCE 7-22, Section 26.7]
K_{zt} =	1.00		[ASCE 7-22, Section 26.8.2]
K_e =	1.00		[ASCE 7-22, Section 26.9]
G =	0.85		[ASCE 7-22, Section 26.11]
K_z or K_h =	0.85		[ASCE 7-22, Table 26.10-1]
			[ASCE 7-22, Eq. 26.10-1]
qz = qh =	**16.0**	psf	$q_z = q_h = 0.00256 * K_z * K_{zt} * K_d * V^2$

Design Wind Solid Freestanding Walls

ASCE 7-22 chapter 29.3

B_1 =	20	ft
s =	13.833	ft
h =	13.833	ft

s/h =	**1**
B_1/s =	**1.4458**

Cf =	1.4		[ASCE 7-22, Figure 29.3-1]
F =	**19.0**	psf	[ASCE 7-22, Eq. 29.3-1]

Design Seismic Solid Freestanding Walls

ASCE 7-22 chapter 12 & 15

W =	57	psf	8" partrially grouted CMU wall
R =	1.25		[ASCE 7-22 T 15.4-2 ground supported walls]
S_{DS} =	0.82		
I =	1		
V =	**37.4**	psf	[ASCE 7-22, Eq. 12.8-1]

BY_____ DATE _____ SUBJECT _____ SHEET NO. _____ OF _____

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MASONRY WALL DESIGN

-DESIGN CMU WALL ENCLOSURE USING ASCE 7 AND ACI.

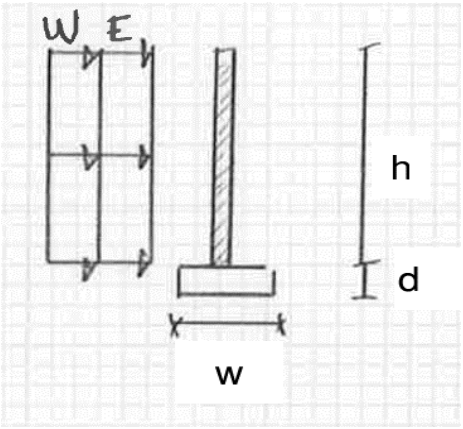
Ground Supported CMU Site Wall Design

ASCE 7-22, CBC25 and TMS 402-16

Inputs:

Geometry		
h =	13.833	ft
d =	1.5	ft
w =	3.5	ft
block size	8	in
Block wt	57	psf
Lateral Loads		
W =	19.0	psf
E =	37.4	psf
Vert Bars		
Size	5	
Spacing	16	in oc
Material		
f'_m =	2,000	psi
f_y =	60000	psi

Sketch:



Flexure Design: [LRFD]

M_u =	4770.0	lb-ft
a =	0.72	in
ΦM_n =	5026.0	lb-ft
D/C	0.95	

*assumes bar is centered in block

Earthquake Controlled

$$M_n = A_s\ f_y \left(d - \frac{a}{2}\right)$$

where:

$$a = \frac{A_s\ f_y}{0.80\ f'_m\ b}$$

USE PARTIALLY GROUTED BLOCKS W/ #5 BARS @ 16" O.C.

BY_____ DATE _____ SUBJECT _____ SHEET NO. _____ OF _____

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MASONRY WALL FOOTING OVERTURNING DESIGN

-DESIGN MASONRY WALL FOOTING USING ASCE 7.

Foundation Design:

Resisting Dead Load		Weight (k)	Distance to right toe (ft)	M_r (left toe) k-ft	M_r (right toe) k-ft
Wall Weight		0.1	2.75	0.4	0.4
Footing		2.2	2.75	6.1	6.1
	W	2.3	Total	6.5	6.5
Seismic Vertical		-0.024	2.75	-0.067	-0.067

Footing Dimensions (ft)	
Length	1.33
Width	5.5
Depth	2

Soil Pressure Equations	
If e < L/6	W/(B*L)*(1+6*e/L)
If e > L/6	2*W/(3*a*B)

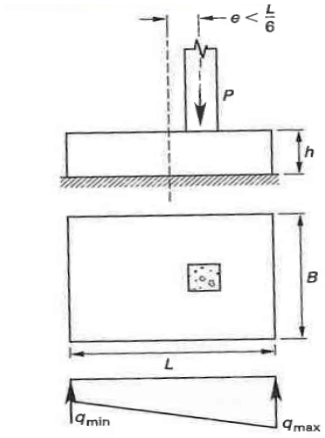
Overturning Check @ Left	
M_{ot} [ASD] (k-ft)	3.34
.6M_r -.7E_v(k-ft)	3.8
FS = 0.6M_r/M_{ot}	**1.15**

Overturning Check @ Right	
M_{ot} [ASD] (k-ft)	3.34
.6M_r -.7E_v(k-ft)	3.8
FS = 0.6M_r/M_{ot}	**1.14**

Soil Pressure Check @ Left			Soil Pressure Check @ Right	
W (k)	2.3		W (k)	2.3
e' = ((0.6-.14SDS)Mr-Mot)/.6W	0.35	L/6		0.33
e = L/2-a	0.32	0.22	e = L/2-a	0.33
SP	0.82		SP	0.86
SP_{all}	1.50		SP_{all}	1.50
D/C	**0.55**		**D/C**	**0.57**

Notes:

1. 2025 CBC 1605.3.1 Basic Load Combination 16-6 or ASCE 7-22 ASD Load Combination is used.
2. Foundation idealized as rigid
3. Resisting Dead Loads = area x unit weight (psf)
4. a = eccentricity from toe and e = eccentricity from centroid
5. ASCE 7 sec 12.3.4 reduction in overturning forces is used



The maximum and minimum values of the soil pressure are

$$q_{max} = \frac{P}{BL} + \frac{M}{S}$$

$$q_{min} = \frac{P}{BL} - \frac{M}{S}$$

For a rectangular footing, the length of the short side is B and the length of the long side is L. The section modulus of the footing is

$$S = \frac{BL^2}{6}$$

The maximum and minimum values of the soil pressure are

$$q_{max} = \left(\frac{P}{BL}\right)\left(1 + \frac{6e}{L}\right)$$

$$q_{min} = \left(\frac{P}{BL}\right)\left(1 - \frac{6e}{L}\right)$$

USE 5.5' WIDE x 2' DEEP GRADE BEAM

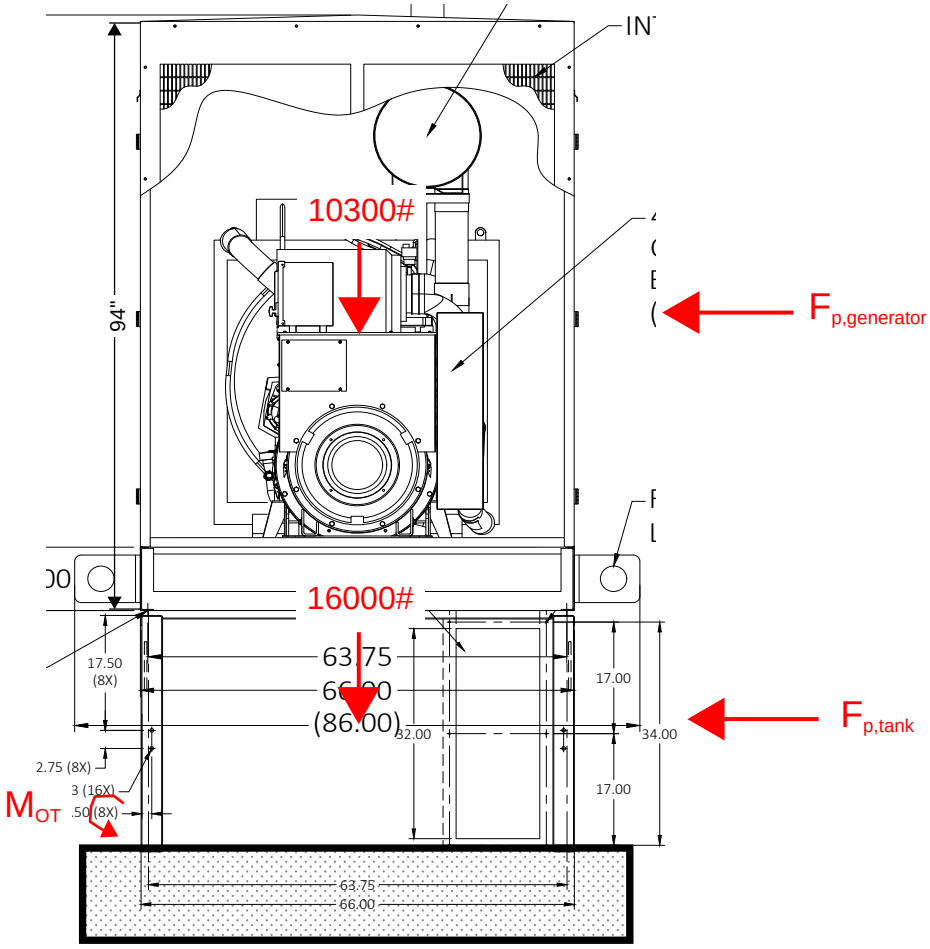
BY_____ DATE _____ SUBJECT _____ SHEET NO. _____ OF _____

CHKD.BY_____ DATE _____ _____ JOB NO._____

GENERATOR/FUEL TANK ANCHORAGE DESIGN

-DESIGN GENERATOR ANCHORAGE USING ASCE 7 CHP 13

SKETCH



Generator w/ Fuel Tank - WEIGHT 26,300#

Inputs

label	input	units	description
attachment width	5.500	ft	
CoG	varies	ft	Center of Gravity if given by MNFR, otherwise H/2
W_p generator	10300	lbs	unit weight + the weight of curb & accessories
W_p fuel tank	16000	lbs	unit weight + the weight of curb & accessories
h_v generator	6.75	ft	height of application of seismic force wrt the anchorage (Hv+CoG)
h_v fuel tank	1.42	ft	height of application of seismic force wrt the anchorage (Hv+CoG)

BY_____ DATE _____ SUBJECT _____ SHEET NO. _____ OF _____

CHKD.BY_____ DATE _____ _____ JOB NO._____

GENERATOR/FUEL TANK ANCHORAGE DESIGN

-DESIGN GENERATOR ANCHORAGE USING ASCE 7 CHP 13

ASCE 7-22 Chp 13 Seismic Loads

Sesimic Design for non structural components Sec. 13

Design Data:		
S_{DS} =	0.820	
C_{AR} =	1.0	(ASCE 7-22 Table 13-5.1 or 13.6-1)
R_{po} =	1.5	(ASCE 7-22 Table 13-5.1 or 13.6-1)
Ω_{op} =	2.0	(ASCE 7-22 Table 13-5.1 or 13.6-1)
I_p =	1.00	(ASCE 7-22 Sec 13.1.3)
z =	0.00	ft (height of point of attachment with respect to base)
h =	1.00	ft (average rof height with respect to base)

Seismic Demand:

ASCE 7-22 13.3

Factors:		
a_1 =	2.500	
a_2 =	0.000	
H_f =	1.000	[ASCE 7-22 Eqn. 13.3-4]
R_μ =	1.000	[ASCE 7-22 Eqn. 13.3-5]

$$F_P = 0.4 S_{DS} I_P W_p \left[\frac{H_f}{R_\mu}\right]\left[\frac{C_{AR}}{R_{po}}\right]$$

$$a_1 = \frac{1}{T_a} \le 2.5$$

$$a_2 = \left[1 - \left(\frac{0.4}{T_a}\right)^2\right] \ge 0$$

	F_p =	0.22	W_p	
$F_{pmin} = 0.3\ S_{DS} W_P I_p$ =		0.25	W_p	controls
$F_{pmax} = 1.6\ S_{DS} W_P I_p$ =		1.31	W_p	
	F_p =	**0.25**	**W_p**	
Generator	**F_p** =	**13514**	**lbs**	at $h_{v\ generator}$
Fuel Tank	**F_p** =	**3936**	**lbs**	at $h_{v\ tank}$

Seismic Overturning (M_{OTV})

Generator	M_{OTV} =	**63852**	**lb-ft [.7E]**	$.7F_p \times h_v$	M_{OTV} =	**91217**	**lb-ft**	$F_p \times h_v$
Fuel tank	M_{OTV} =	**3903**	**lb-ft [.7E]**	$.7F_p \times h_v$	M_{OTV} =	**5576**	**lb-ft**	$F_p \times h_v$

Vertical Seismic Demand:

ASCE 7-22 13.3

$F_p = 0.2\ S_{DS} W_P$ =	0.16	W_p	
$F_{p\ Vertical}$ =	**0.16**	**W_p**	
Generator **$F_{p\ Vertical}$** =	**1689**	**lbs**	
Fuel Tank **$F_{p\ Vertical}$** =	**2624**	**lbs**	

Overturning Resistance Check:

Resisting Dead Load	Weight (lb)	Distance to right toe (ft)	ASD M_r (lb-ft)	ASD Load Case	LRFD M_r (lb-ft)	LRFD Load Case
Unit	26300	2.75	43395	(0.6D)	65093	(0.9D)
Vert Seismic	-4313	2.75	-8303	(0.7Ev)	-11861	(1Ev)
Σ			**35092**		**53231**	

Design Forces

Uplift Force =	**5939**	*lb [ASD]*	*(Mot-Mr)/d*	**25519**	*lb [LRFD]*	*(ΩMot-Mr)/d*
Shear Force =	**12215**	*lb [ASD]*	($0.7xF_p$)	**34899**	*lb [LRFD]*	($1.0x\Omega F_p$)

Check Anchorage of curb

Check: 5/8" Ø Expansion Anchors # anchors 20

Uplift Force = **2552** *lb/anchor [LRFD]*

Shear Force = **1745** *lb/anchor [LRFD]*

USE (20) 5/8"Ø HILTI KB-TZ2 ANCHORS W/ 2.75" MIN EMBED.
SEE HILTI REPORT NEXT PAGES.

CORNERSTONE STRUCTURAL ENGINEERING GROUP, INC.

Hilti PROFIS Engineering 3.1.32

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Design:	Generator Anchorage	Date:	6/5/2026
Fastening point:			

Specifier's comments:

1 Input data



Anchor type and diameter:	**Kwik Bolt TZ2 - CS 5/8 (2 3/4) hnom1**
Item number:	2210270 KB-TZ2 5/8x4 1/4
Specification text:	HILTI ∅ 5/8 IN KWIK BOLT TZ2 - CS WITH 3.25 IN NOMINAL EMBEDMENT DEPTH PER ICC-ES ESR-4266 , HAMMER DRILL BIT INSTALLATION PER MPII
Effective embedment depth:	$h_{ef,act}$ = 2.750 in., h_{nom} = 3.250 in.
Material:	Carbon Steel
Evaluation Service Report:	ESR-4266
Issued I Valid:	12/1/2025 | 12/1/2027
Proof:	Design Method ACI 318-19 / Mech
Shear edge breakout verification:	Row closest to edge (Case 3 only from ACI 318-19 Fig. R.17.7.2.1b)
Stand-off installation:	
Profile:	
Base material:	cracked concrete, 3000, f_c' = 3,000 psi; h = 12.000 in.
Installation:	**Hammer drilled hole, Installation condition: Dry**
Reinforcement:	tension: not present, shear: not present; no supplemental splitting reinforcement present edge reinforcement: none or < No. 4 bar

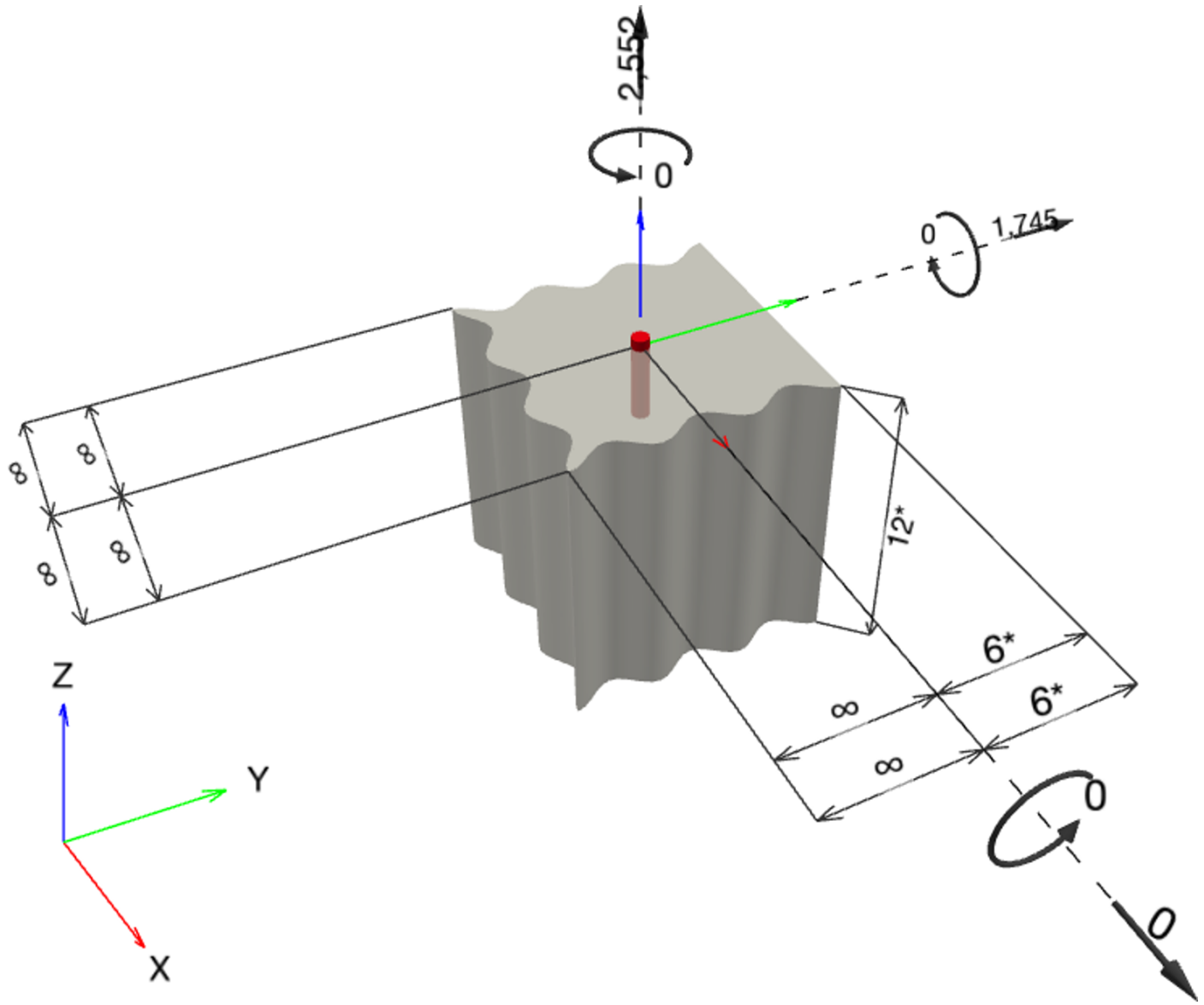
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Geometry [in.] & Loading [lb, ft.lb]



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1.1 Design results

Case	Description	Forces [lb] / Moments [ft.lb]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = 2,552; V_x = 0; V_y = 1,745; M_x = 0.000; M_y = 0.000; M_z = 0.000;	no	85

2 Load case/Resulting anchor forces

Anchor reactions [lb]

Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	2,552	1,745	0	1,745

3 Tension load

	Load N_{ua} [lb]	Capacity ϕ N_n [lb]	Utilization $\beta_N = N_{ua}/\phi$ N_n	Status
Steel Strength*	2,552	13,157	20	OK
Pullout Strength*	N/A	N/A	N/A	N/A
Concrete Breakout Failure**	2,552	3,410	75	OK

* highest loaded anchor **anchor group (anchors in tension)

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3.1 Steel Strength

N_{sa} = ESR value — refer to ICC-ES ESR-4266
$\phi\ N_{sa} \geq N_{ua}$ — ACI 318-19 Table 17.5.2

Variables

$A_{se,N}$ [in.^{2}]	f_{uta} [psi]
0.16	106,704

Calculations

N_{sa} [lb]
17,542

Results

N_{sa} [lb]	ϕ_{steel}	$\phi\ N_{sa}$ [lb]	N_{ua} [lb]
17,542	0.750	13,157	2,552

3.2 Concrete Breakout Failure

$N_{cb} = \left(\frac{A_{Nc}}{A_{Nc0}}\right) \psi_{ed,N}\ \psi_{c,N}\ \psi_{cp,N}\ N_b$ — ACI 318-19 Eq. (17.6.2.1a)

$\phi\ N_{cb} \geq N_{ua}$ — ACI 318-19 Table 17.5.2

A_{Nc} see ACI 318-19, Section 17.6.2.1, Fig. R 17.6.2.1(b)

$A_{Nc0} = 9\ h_{ef}^2$ — ACI 318-19 Eq. (17.6.2.1.4)

$\psi_{ed,N} = 0.7 + 0.3 \left(\frac{c_{a,min}}{1.5h_{ef}}\right) \leq 1.0$ — ACI 318-19 Eq. (17.6.2.4.1b)

$\psi_{cp,N} = \text{MAX}\left(\frac{c_{a,min}}{c_{ac}}, \frac{1.5h_{ef}}{c_{ac}}\right) \leq 1.0$ — ACI 318-19 Eq. (17.6.2.6.1b)

$N_b = k_c\ \lambda_a\ \sqrt{f'_c}\ h_{ef}^{1.5}$ — ACI 318-19 Eq. (17.6.2.2.1)

Variables

h_{ef} [in.]	$c_{a,min}$ [in.]	$\psi_{c,N}$	c_{ac} [in.]	k_c	λ_a	f'_c [psi]
2.750	6.000	1.000	10.000	21	1.000	3,000

Calculations

A_{Nc} [in.^{2}]	A_{Nc0} [in.^{2}]	$\psi_{ed,N}$	$\psi_{cp,N}$	N_b [lb]
68.06	68.06	1.000	1.000	5,245

Results

N_{cb} [lb]	$\phi_{concrete}$	$\phi\ N_{cb}$ [lb]	N_{ua} [lb]
5,245	0.650	3,410	2,552

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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4 Shear load

	Load V_{ua} [lb]	Capacity ϕ V_n [lb]	Utilization $\beta_V = V_{ua}/\phi$ V_n	Status
Steel Strength*	1,745	6,668	27	OK
Steel failure (with lever arm)*	N/A	N/A	N/A	N/A
Pryout Strength**	1,745	7,344	24	OK
Concrete edge failure in direction y+**	1,745	4,194	42	OK

* highest loaded anchor **anchor group (relevant anchors)
When the input edge distance is set to "infinity", edge breakout verification is not performed in that direction

4.1 Steel Strength

V_{sa} = ESR value refer to ICC-ES ESR-4266
ϕ $V_{steel} \geq V_{ua}$ ACI 318-19 Table 17.5.2

Variables

$A_{se,V}$ [in.^{2}]	f_{uta} [psi]
0.16	106,704

Calculations

V_{sa} [lb]
10,259

Results

V_{sa} [lb]	ϕ_{steel}	ϕ V_{sa} [lb]	V_{ua} [lb]
10,259	0.650	6,668	1,745

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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4.2 Pryout Strength

$V_{cp} = k_{cp} \left[\left(\frac{A_{Nc}}{A_{Nc0}} \right) \psi_{ed,N} \psi_{c,N} \psi_{cp,N} N_b \right]$ ACI 318-19 Eq. (17.7.3.1a)

$\phi V_{cp} \geq V_{ua}$ ACI 318-19 Table 17.5.2

A_{Nc} see ACI 318-19, Section 17.6.2.1, Fig. R 17.6.2.1(b)

$A_{Nc0} = 9 h_{ef}^2$ ACI 318-19 Eq. (17.6.2.1.4)

$\psi_{ed,N} = 0.7 + 0.3 \left(\frac{c_{a,min}}{1.5 h_{ef}} \right) \leq 1.0$ ACI 318-19 Eq. (17.6.2.4.1b)

$\psi_{cp,N} = MAX \left(\frac{c_{a,min}}{c_{ac}}, \frac{1.5 h_{ef}}{c_{ac}} \right) \leq 1.0$ ACI 318-19 Eq. (17.6.2.6.1b)

$N_b = k_c \lambda_a \sqrt{f'_c} h_{ef}^{1.5}$ ACI 318-19 Eq. (17.6.2.2.1)

Variables

k_{cp}	h_{ef} [in.]	$c_{a,min}$ [in.]	$\psi_{c,N}$
2	2.750	6.000	1.000

c_{ac} [in.]	k_c	λ_a	f'_c [psi]
10.000	21	1.000	3,000

Calculations

A_{Nc} [in.^{2}]	A_{Nc0} [in.^{2}]	$\psi_{ed,N}$	$\psi_{cp,N}$	N_b [lb]
68.06	68.06	1.000	1.000	5,245

Results

V_{cp} [lb]	$\phi_{concrete}$	ϕV_{cp} [lb]	V_{ua} [lb]
10,491	0.700	7,344	1,745

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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4.3 Concrete edge failure in direction y+

$V_{cb} = \left(\frac{A_{Vc}}{A_{Vc0}}\right) \psi_{ed,V} \psi_{c,V} \psi_{h,V} \psi_{parallel,V} V_b$ — ACI 318-19 Eq. (17.7.2.1a)

$\phi V_{cb} \geq V_{ua}$ — ACI 318-19 Table 17.5.2

A_{Vc} see ACI 318-19, Section 17.7.2.1, Fig. R 17.7.2.1(b)*

$A_{Vc0} = 4.5 c_{a1}^2$ — ACI 318-19 Eq. (17.7.2.1.3)

$\psi_{ed,V} = 0.7 + 0.3\left(\frac{c_{a2}}{1.5c_{a1}}\right) \leq 1.0$ — ACI 318-19 Eq. (17.7.2.4.1b)

$\psi_{h,V} = \sqrt{\frac{1.5c_{a1}}{h_a}} \geq 1.0$ — ACI 318-19 Eq. (17.7.2.6.1)

$V_b = \left(7\left(\frac{l_e}{d_a}\right)^{0.2}\sqrt{d_a}\right) \lambda_a \sqrt{f'_c} c_{a1}^{1.5}$ — ACI 318-19 Eq. (17.7.2.2.1a)

Variables

c_{a1} [in.]	c_{a2} [in.]	$\psi_{c,V}$	h_a [in.]	l_e [in.]
6.000	-	1.000	12.000	2.750

λ_a	d_a [in.]	f'_c [psi]	$\psi_{parallel,V}$
1.000	0.625	3,000	1.000

Calculations

A_{Vc} [in.^{2}]	A_{Vc0} [in.^{2}]	$\psi_{ed,V}$	$\psi_{h,V}$	V_b [lb]
162.00	162.00	1.000	1.000	5,991

Results

V_{cb} [lb]	$\phi_{concrete}$	ϕV_{cb} [lb]	V_{ua} [lb]
5,991	0.700	4,194	1,745

*Anchor row defined by: Anchor 1; Case 3 controls

When the input edge distance is set to "infinity", edge breakout verification is not performed in that direction

5 Combined tension and shear loads, per ACI 318-19 section 17.8

β_N	β_V	ζ	Utilization $\beta_{N,V}$ [%]	Status
0.748	0.416	5/3	85	OK

$\beta_{NV} = \beta_N^{\zeta} + \beta_V^{\zeta} <= 1$

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6 Warnings

- The anchor design methods in PROFIS Engineering require rigid anchor plates per current regulations (EN1992-4, AS5216, etc.). This means load re-distribution on the anchors due to elastic deformations of the anchor plate are not considered - the anchor plate is assumed to be sufficiently stiff, in order not to be deformed when subjected to the design loading. PROFIS Engineering calculates the minimum required anchor plate thickness with FEM to limit the stress of the anchor plate based on the assumptions explained above. The proof if the rigid anchor plate assumption is valid is not carried out by PROFIS Engineering. Input data and results must be checked for agreement with the existing conditions and for plausibility!
- The equations presented in this report are based on imperial units. When inputs are displayed in metric units, the user should be aware that the equations remain in their imperial format.
- Condition A applies where the potential concrete failure surfaces are crossed by supplementary reinforcement proportioned to tie the potential concrete failure prism into the structural member. Condition B applies where such supplementary reinforcement is not provided, or where pullout or pryout strength governs.
- Refer to the manufacturer's product literature for cleaning and installation instructions.
- For additional information about ACI 318 strength design provisions, please go to https://viewer.joomag.com/profis-design-guide-us-en-summer-2021/0841849001625154758?short&/
- Hilti post-installed anchors shall be installed in accordance with the Hilti Manufacturer's Printed Installation Instructions (MPII). Reference ACI 318-19, Section 26.7.

Fastening meets the design criteria!

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7 Installation data

Anchor type and diameter: Kwik Bolt TZ2 - CS 5/8 (2 3/4) hnom1

Profile: -

Item number: 2210270 KB-TZ2 5/8x4 1/4

Hole diameter in the fixture: -

Maximum installation torque: 40.123 ft.lb

Plate thickness (input): -

Hole diameter in the base material: 0.625 in.

Hole depth in the base material: 3.750 in.

Drilling method: Hammer drilled

Minimum thickness of the base material: 5.000 in.

Cleaning: Manual cleaning of the drilled hole according to instructions for use is required.

Hilti ∅ 5/8 in Kwik Bolt TZ2 - CS with 3.25 in nominal embedment depth per ICC-ES ESR-4266 , Hammer drill bit installation per MPII

7.1 Recommended accessories

Drilling	Cleaning	Setting
• Suitable Rotary Hammer • Properly sized drill bit	• Manual blow-out pump	• Torque controlled cordless impact tool • Torque wrench • Hammer

Coordinates Anchor in.

Anchor	x	y	c_{-x}	c_{+x}	c_{-y}	c_{+y}
1	0.000	0.000	-	-	-	6.000

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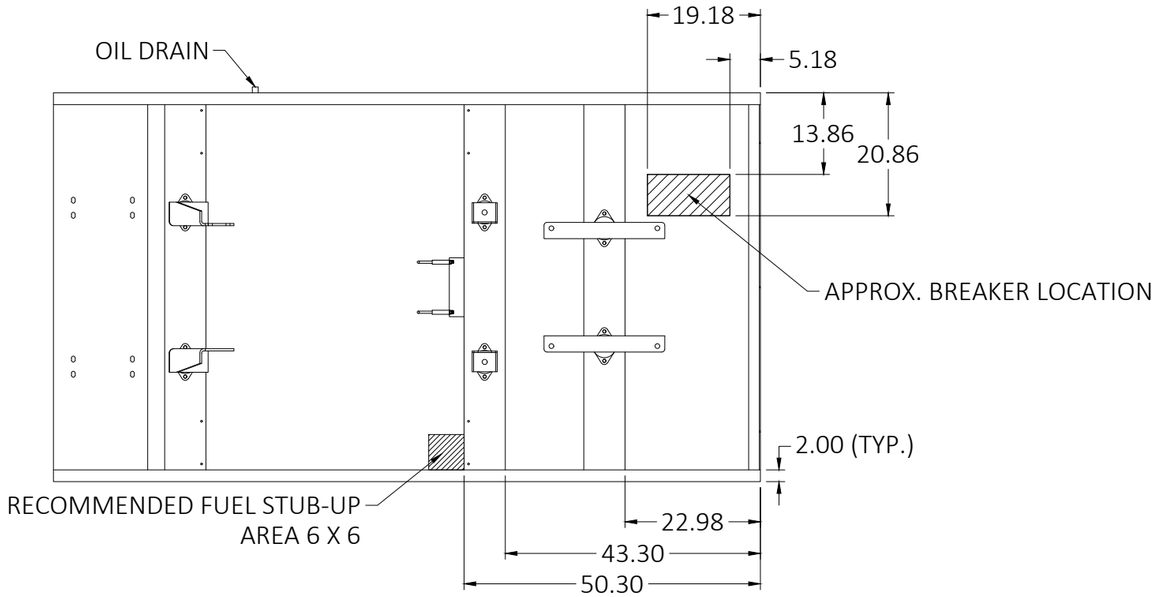
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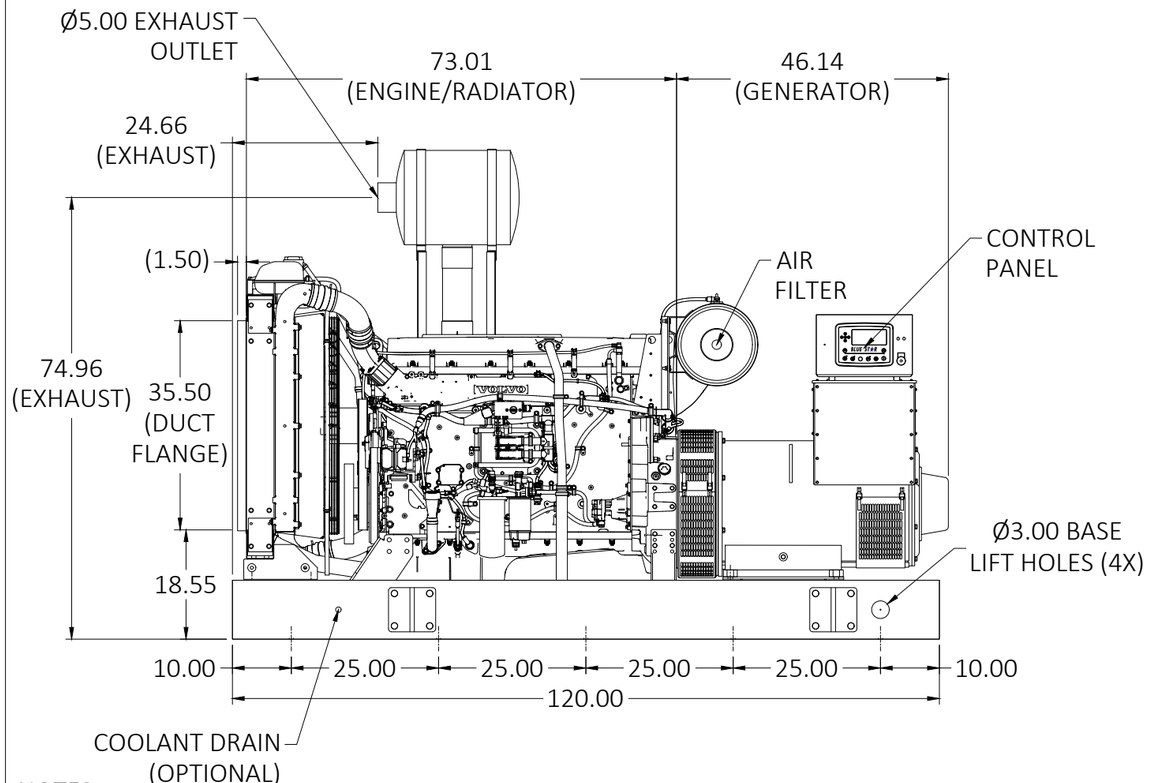
8 Remarks; Your Cooperation Duties

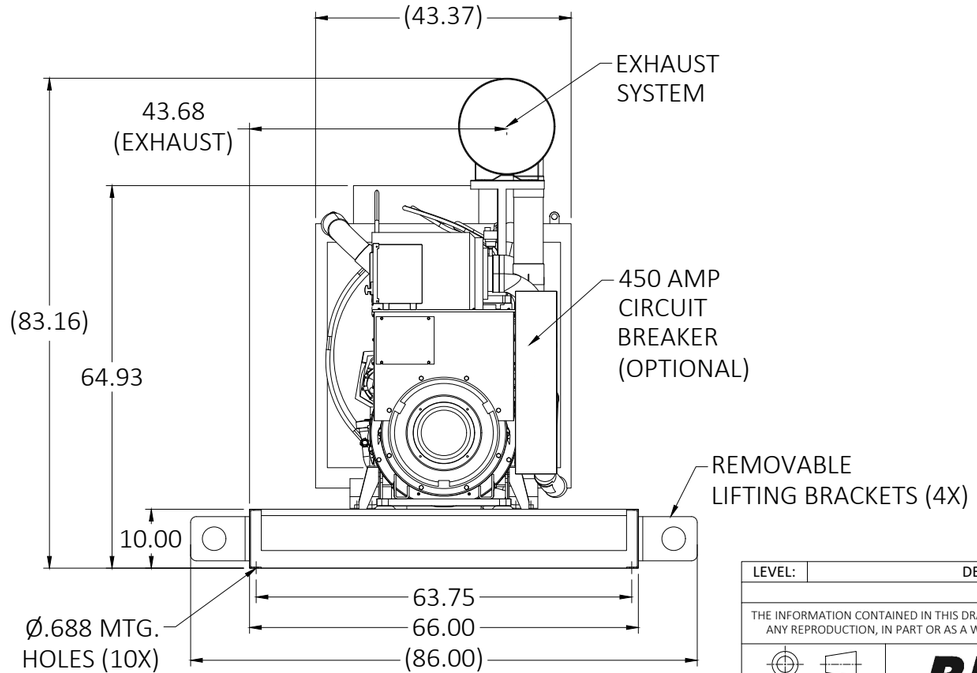
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DRAWING: VD300-01-LV0







NOTES:
1. BREAKER DIMENSIONS ARE APPROXIMATE
2. DUCT FLANGE WIDTH: 35.88"
3. FUEL SUPPLY: 3/8" FUEL RETURN: 1/4"
4. (XX.XX) DIMENSIONS ARE FOR REFERENCE ONLY

LEVEL:	DESCRIPTION:	DATE:	BY:
	REVISIONS:		

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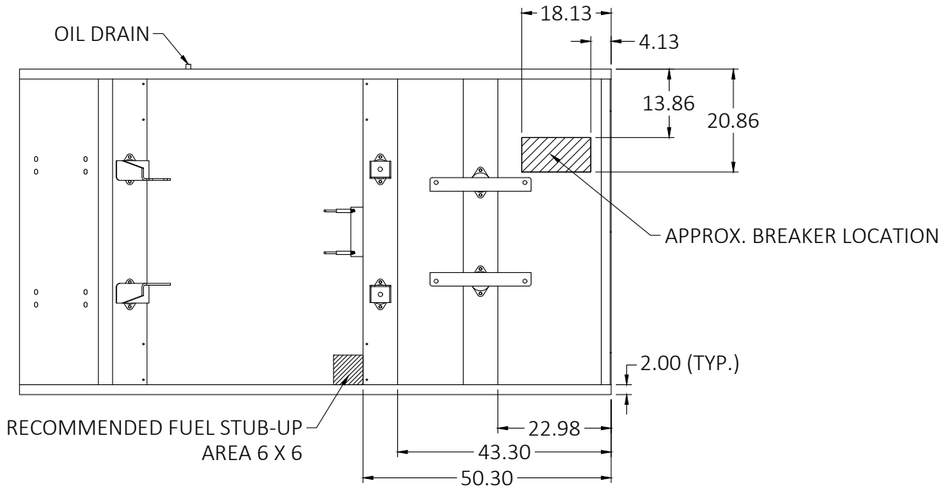
DRAWN BY: RPS
DATE: 11-09-2022

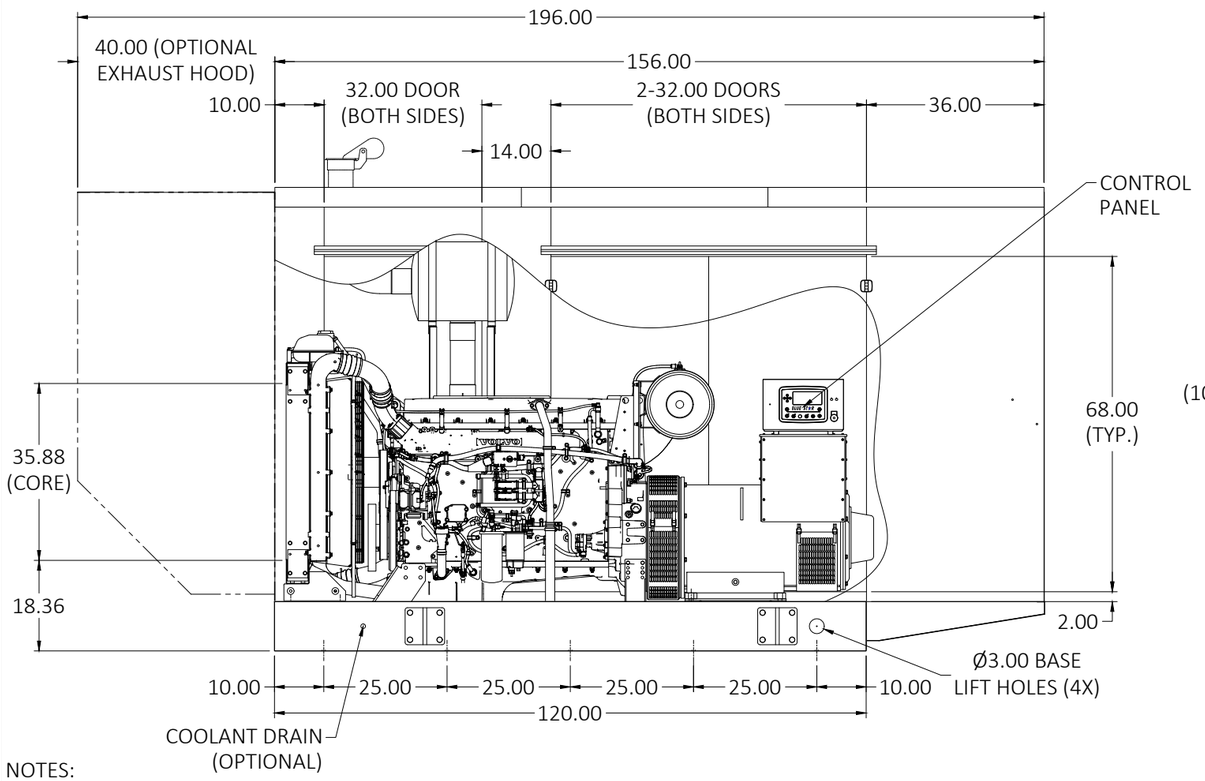
BLUE STAR Power Systems
2250 CARLSON DRIVE, NORTH MANKATO, MINNESOTA 56003 | 1 507 345 1776

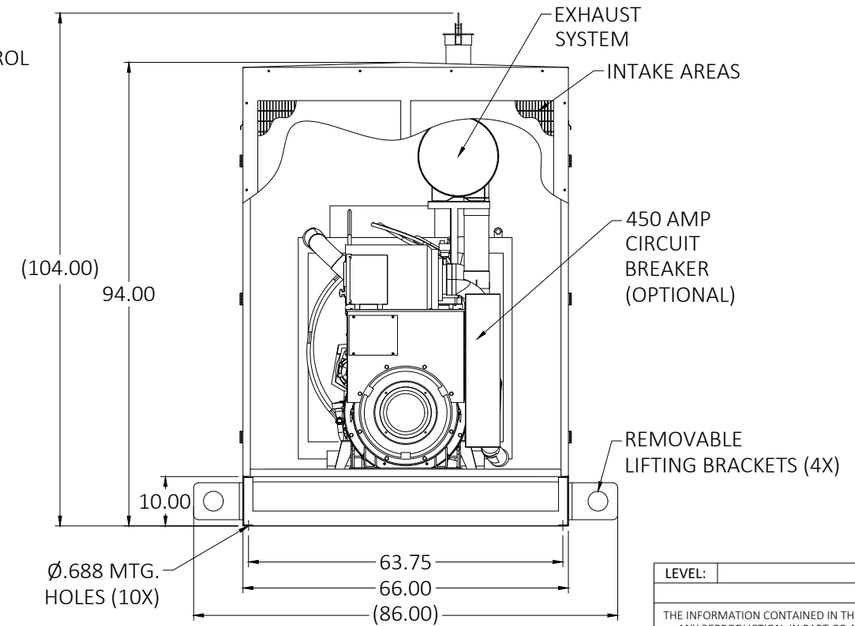
ENGINE:	BASE:	TANK:
TAD1351GE	31445	NONE
GENERATOR:	HSG:	SIZE:
S4L1D-D41	NONE	B

SCALE: NONE | SHEET: 1 OF 1

DRAWING: VD300-01-HSD







NOTES:
1. FUEL SUPPLY: 3/8" FUEL RETURN: 1/4"
2.RADIATOR CORE WIDTH 36.25"
3.APPROX. BREAKER LOCATION SHOWN
4.(OPTIONAL): EXHAUST HOOD INCLUDED LEVEL 3 ONLY
5.(OPTIONAL): EXHAUST ROUTED THROUGH EXHAUST HOOD LEVEL 3 ENCLOSURE ONLY
6. SOUND ATTENUATION FOAM INCLUDED LEVEL 2 & 3 ENCLOSURES ONLY
7. (XX.XX) DIMENSIONS ARE FOR REFERENCE ONLY

LEVEL:	DESCRIPTION:	DATE:	BY:
	REVISIONS:		

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DRAWN BY: RPS
DATE: 12-02-2022

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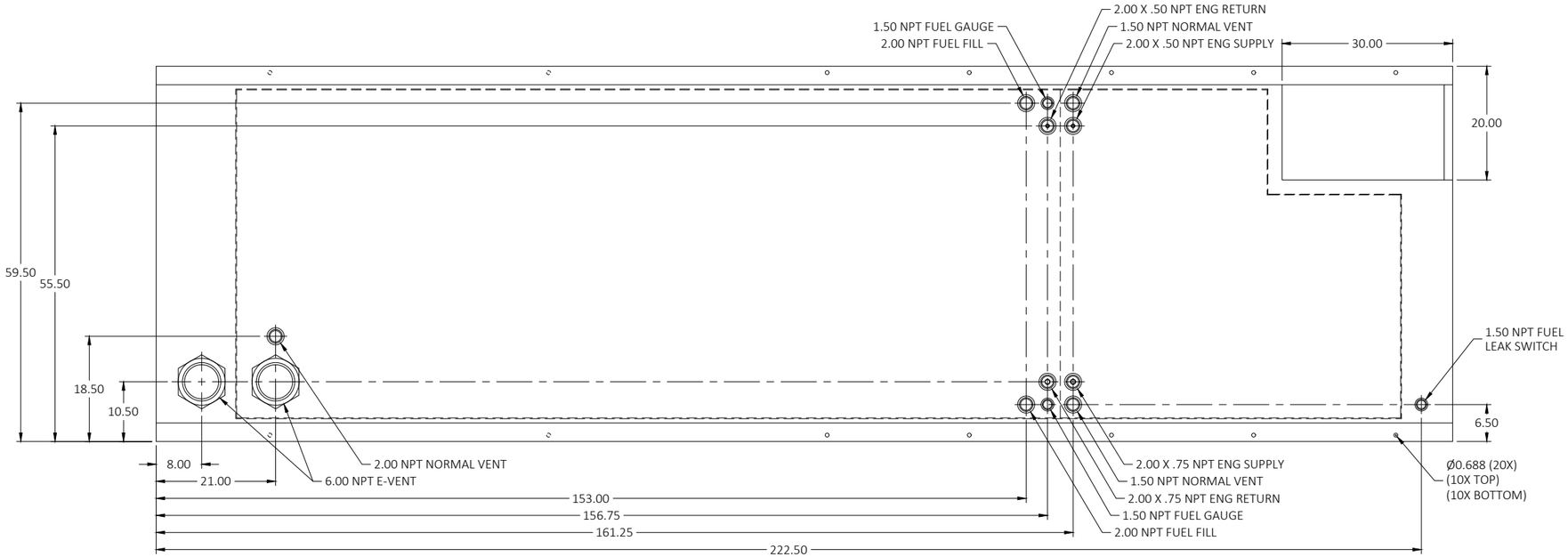
ENGINE:	BASE:	TANK:
TAD1351GE	31445	NONE
GENERATOR:	HSG:	SIZE:
S4L1D-D41	WPE-105	B

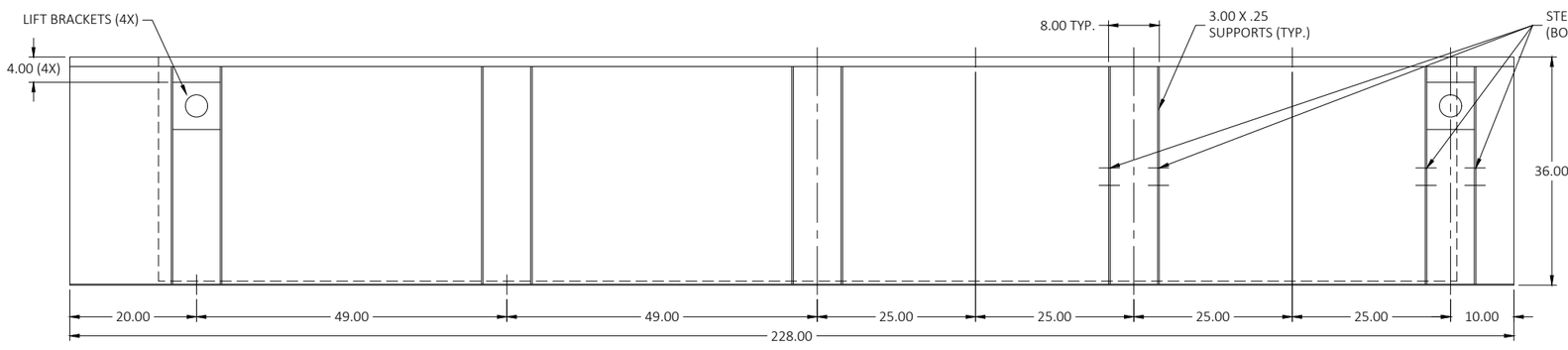
SCALE: NONE | SHEET: 1 OF 1

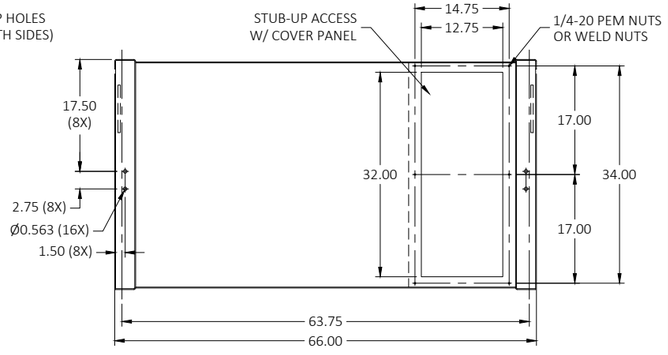
DRAWING: 20773

72HR / 1,620GL FUEL TANK

JD250-02, JD275-02, JD300-02
PD250-01, PD300-01
VD230-01, VD250-01, VD250-03, VD275-01, VD300-01
VD250-04FT4, VD300-04FT4
LV0 / LV1 / LV2 / LV3







LEVEL:	DESCRIPTION:	DATE:	BY:
R04	CHANGED LEFT SUPPLY/RETURN TO 2.00 X 0.75	04-01-21	CRC

REVISIONS:

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REMOVE ALL BURRS AND SHARP EDGES

TOLERANCE UNLESS OTHER SPECIFIED:

FRACTIONAL: ± 1/32
ANGULAR: ± 1°
X.X = ± .1
X.XX = ± .03
X.XXX = ± .010

DIMENSIONS ARE IN INCHES

DO NOT SCALE DRAWING

BLUE STAR Power Systems
2250 CARLSON DRIVE, NORTH MANKATO, MINNESOTA 56003 | 1 507 345 1776

TANK SB 1620GL DW SC UL/ULC W/ STUB-UP

	NAME	DATE
DRAWN BY:	CRC	12-07-22
APPROVED:	CRC	12-07-22

SIZE: B
PART NUMBER: 20773
SCALE: NONE
APPROX. WEIGHT: 4,300 LBS
SHEET 1 OF 1

MATERIAL: SEE NOTES
FINISH: BLACK HAMMERED

NOTES:
1. MATERIAL: PER VENDOR'S UL/ULC REQUIREMENTS
2. SECONDARY CONTAINMENT TANK
3. TANK TO INCLUDE:
   -FUEL SUPPLY/RETURN DIP TUBES
   -LIFTING/TIE-DOWN BRACKETS

BY_____ DATE _____ SUBJECT _____ SHEET NO. _____ OF _____

CHKD.BY_____ DATE _____ _____ JOB NO._____

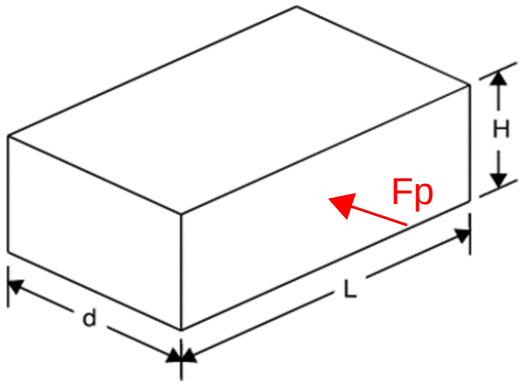
MCC ANCHORAGE DESIGN

-DESIGN MCC ANCHORAGE USING ASCE 7 CHP 13

MCC - WEIGHT 1500#

Unit Geometry **Sketch:**

Unit Height (H)	9.000	ft
attachmnt width (d)	3.000	ft
Unit Length (L)	12.000	ft
Unit width (w)	3.000	ft
Curb Ht (H_c)	0.0	ft max



Horiztonal Wind Area (A_f)

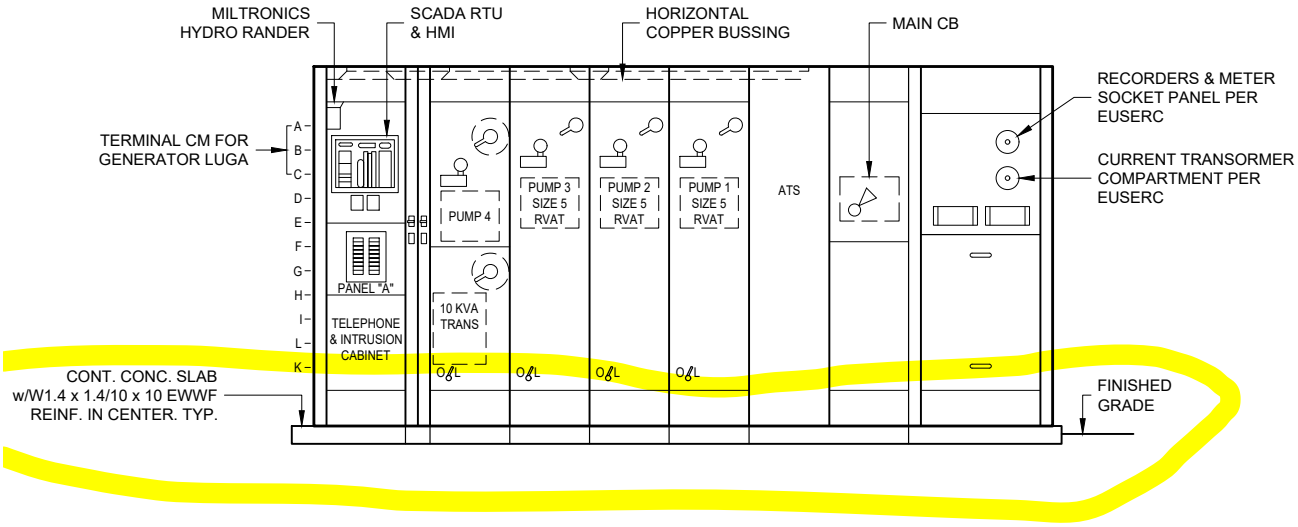
(Lx(H+Hc+Hp)) 108.00 ft^2

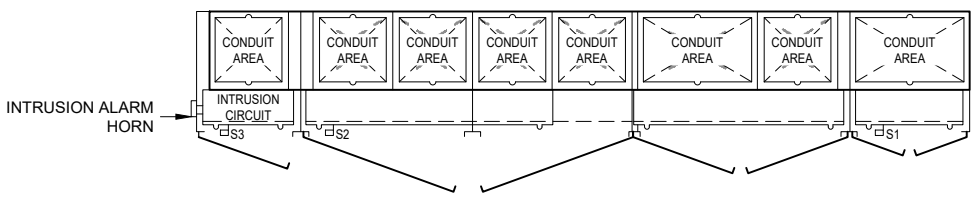
Wind Uplift Area (A_r)

(Lxw) 36.00 ft^2

Inputs

label	input	units	description
CoG	4.500	ft	Center of Gravity if given by MNFR, otherwise H/2
W_p	1500	lbs	unit weight + the weight of curb & accessories
h_v	4.50	ft	height of application of seismic force wrt the anchorage (Hc+Hp+CoG)
h_w	4.73	ft	height of application of wind force wrt the anchorage (1.05 x (H+Hc+Hp)/2)





TURAL INC.

BY_____ DATE _____ SUBJECT _____ SHEET NO. _____ OF _____

CHKD.BY_____ DATE _____ _____ JOB NO._____

MCC ANCHORAGE DESIGN

-DESIGN MCC ANCHORAGE USING ASCE 7 CHP 13

ASCE 7-22 Chp 13 Seismic Loads

Sesimic Design for non structural components Sec. 13

Design Data:		
S_{DS} =	0.620	
C_{AR} =	1.4	(ASCE 7-22 Table 13-5.1 or 13.6-1)
R_{po} =	2.0	(ASCE 7-22 Table 13-5.1 or 13.6-1)
Ω_{op} =	2.0	(ASCE 7-22 Table 13-5.1 or 13.6-1)
I_p =	1.00	(ASCE 7-22 Sec 13.1.3)
z =	0.00	ft (height of point of attachment with respect to base)
h =	1.00	ft (average rof height with respect to base)

Seismic Demand:

ASCE 7-22 13.3

Factors:		
a_1 =	2.500	
a_2 =	0.000	
H_f =	1.000	[ASCE 7-22 Eqn. 13.3-4]
R_u =	1.000	[ASCE 7-22 Eqn. 13.3-5]

$$F_P = 0.4 S_{DS} I_P W_p \left[\frac{H_f}{R_\mu}\right]\left[\frac{C_{AR}}{R_{po}}\right]$$

$$a_1 = \frac{1}{T_a} \le 2.5$$

$$a_2 = \left[1 - \left(\frac{0.4}{T_a}\right)^2\right] \ge 0$$

F_p =	0.17	W_p	
$F_{pmin} = 0.3\ S_{DS} W_P I_p$ =	0.19	W_p	controls
$F_{pmax} = 1.6\ S_{DS} W_P I_p$ =	0.99	W_p	
F_p =	**0.19**	**W_p**	
F_p =	**279**	**lbs**	at h_v

Seismic Overturning (M_{OTV})

M_{OTV} = **879** **lb-ft [.7E]** $.7F_p \times h_v$ M_{OTV} = **1256** **lb-ft** $F_p \times h_v$

Vertical Seismic Demand:

ASCE 7-22 13.3

$F_p = 0.2\ S_{DS} W_P$ =	0.12	W_p	
$F_{p\ Vertical}$ =	**0.12**	**W_p**	
$F_{p\ Vertical}$ =	**186**	**lbs**	

Overturning Resistance Check:

Resisting Dead Load	Weight (lb)	Distance to right toe (ft)	ASD M_r (lb-ft)	ASD Load Case	LRFD M_r (lb-ft)	LRFD Load Case
Unit	1500	1.50	1350	(0.6D)	2025	(0.9D)
Vert Seismic	-186	1.50	-195	(0.7Ev)	-279	(1Ev)
Σ			**1155**		**1746**	

Design Forces

Uplift Force =	**0**	*lb [ASD]*	*(Mot-Mr)/d*	**255**	*lb [LRFD]*	*(ΩMot-Mr)/d*
Shear Force =	**195**	*lb [ASD]*	(0.7xF_p)	**558**	*lb [LRFD]*	(1.0xΩF_p)

Check Anchorage of curb

Check: 5/8" Ø Expansion Anchors # anchors 8

Uplift Force = **64** *lb/anchor [LRFD]*

Shear Force = **70** *lb/anchor [LRFD]*

USE (8) 5/8"Ø HILTI KB-TZ2 ANCHORS W/ 3.25" MIN EMBED.

SEE HILTI REPORT NEXT PAGES.

CORNERSTONE STRUCTURAL ENGINEERING GROUP, INC.

Hilti PROFIS Engineering 3.1.32

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Company:		Page:	1
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	MCC Anchorage	Date:	6/5/2026
Fastening point:			

Specifier's comments:

1 Input data



Anchor type and diameter:	**Kwik Bolt TZ2 - CS 5/8 (3 1/4) hnom2**
Item number:	2210271 KB-TZ2 5/8x4 3/4
Specification text:	HILTI ∅ 5/8 IN KWIK BOLT TZ2 - CS WITH 3.75 IN NOMINAL EMBEDMENT DEPTH PER ICC-ES ESR-4266 , HAMMER DRILL BIT INSTALLATION PER MPII
Effective embedment depth:	$h_{ef,act}$ = 3.250 in., h_{nom} = 3.750 in.
Material:	Carbon Steel
Evaluation Service Report:	ESR-4266
Issued I Valid:	12/1/2025 | 12/1/2027
Proof:	Design Method ACI 318-19 / Mech
Shear edge breakout verification:	Row closest to edge (Case 3 only from ACI 318-19 Fig. R.17.7.2.1b)
Stand-off installation:	
Profile:	
Base material:	cracked concrete, 3000, f_c' = 3,000 psi; h = 8.000 in.
Installation:	**Hammer drilled hole, Installation condition: Dry**
Reinforcement:	tension: not present, shear: not present; no supplemental splitting reinforcement present edge reinforcement: none or < No. 4 bar

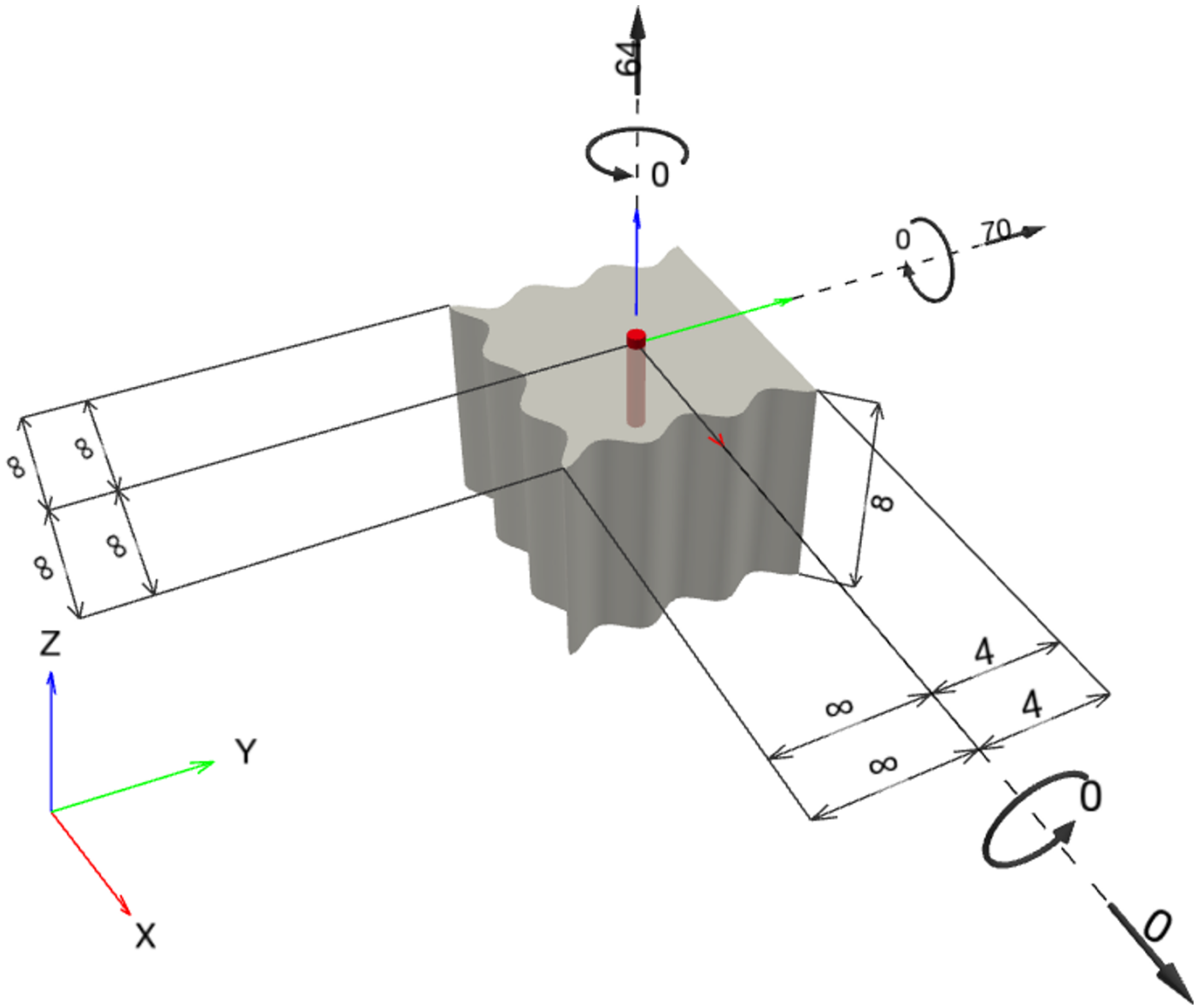
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Fastening point:			

Geometry [in.] & Loading [lb, ft.lb]



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Phone I Fax:	|	E-Mail:	
Design:	MCC Anchorage	Date:	6/5/2026
Fastening point:			

1.1 Design results

Case	Description	Forces [lb] / Moments [ft.lb]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = 64; V_x = 0; V_y = 70; M_x = 0.000; M_y = 0.000; M_z = 0.000;	no	3

2 Load case/Resulting anchor forces

Anchor reactions [lb]

Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	64	70	0	70

3 Tension load

	Load N_{ua} [lb]	Capacity ϕ N_n [lb]	Utilization $\beta_N = N_{ua}/\phi$ N_n	Status
Steel Strength*	64	13,157	1	OK
Pullout Strength*	N/A	N/A	N/A	N/A
Concrete Breakout Failure**	64	3,773	2	OK

* highest loaded anchor **anchor group (anchors in tension)

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Design:	MCC Anchorage	Date:	6/5/2026
Fastening point:			

3.1 Steel Strength

N_{sa} = ESR value — refer to ICC-ES ESR-4266
$\phi\ N_{sa} \geq N_{ua}$ — ACI 318-19 Table 17.5.2

Variables

$A_{se,N}$ [in.^{2}]	f_{uta} [psi]
0.16	106,704

Calculations

N_{sa} [lb]
17,542

Results

N_{sa} [lb]	ϕ_{steel}	$\phi\ N_{sa}$ [lb]	N_{ua} [lb]
17,542	0.750	13,157	64

3.2 Concrete Breakout Failure

$N_{cb} = \left(\frac{A_{Nc}}{A_{Nc0}}\right) \psi_{ed,N}\ \psi_{c,N}\ \psi_{cp,N}\ N_b$ — ACI 318-19 Eq. (17.6.2.1a)

$\phi\ N_{cb} \geq N_{ua}$ — ACI 318-19 Table 17.5.2

A_{Nc} see ACI 318-19, Section 17.6.2.1, Fig. R 17.6.2.1(b)

$A_{Nc0} = 9\ h_{ef}^2$ — ACI 318-19 Eq. (17.6.2.1.4)

$\psi_{ed,N} = 0.7 + 0.3 \left(\frac{c_{a,min}}{1.5h_{ef}}\right) \leq 1.0$ — ACI 318-19 Eq. (17.6.2.4.1b)

$\psi_{cp,N} = \text{MAX}\left(\frac{c_{a,min}}{c_{ac}}, \frac{1.5h_{ef}}{c_{ac}}\right) \leq 1.0$ — ACI 318-19 Eq. (17.6.2.6.1b)

$N_b = k_c\ \lambda_a\ \sqrt{f'_c}\ h_{ef}^{1.5}$ — ACI 318-19 Eq. (17.6.2.2.1)

Variables

h_{ef} [in.]	$c_{a,min}$ [in.]	$\psi_{c,N}$	c_{ac} [in.]	k_c	λ_a	f'_c [psi]
3.250	4.000	1.000	11.500	21	1.000	3,000

Calculations

A_{Nc} [in.^{2}]	A_{Nc0} [in.^{2}]	$\psi_{ed,N}$	$\psi_{cp,N}$	N_b [lb]
86.53	95.06	0.946	1.000	6,739

Results

N_{cb} [lb]	$\phi_{concrete}$	$\phi\ N_{cb}$ [lb]	N_{ua} [lb]
5,804	0.650	3,773	64

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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Design:	MCC Anchorage	Date:	6/5/2026
Fastening point:			

4 Shear load

	Load V_{ua} [lb]	Capacity ϕ V_n [lb]	Utilization $\beta_V = V_{ua}/\phi$ V_n	Status
Steel Strength*	70	6,668	2	OK
Steel failure (with lever arm)*	N/A	N/A	N/A	N/A
Pryout Strength**	70	8,126	1	OK
Concrete edge failure in direction y+**	70	2,360	3	OK

* highest loaded anchor **anchor group (relevant anchors)
When the input edge distance is set to "infinity", edge breakout verification is not performed in that direction

4.1 Steel Strength

V_{sa} = ESR value refer to ICC-ES ESR-4266
ϕ $V_{steel} \geq V_{ua}$ ACI 318-19 Table 17.5.2

Variables

$A_{se,V}$ [in.^{2}]	f_{uta} [psi]
0.16	106,704

Calculations

V_{sa} [lb]
10,259

Results

V_{sa} [lb]	ϕ_{steel}	ϕ V_{sa} [lb]	V_{ua} [lb]
10,259	0.650	6,668	70

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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Fastening point:			

4.2 Pryout Strength

$V_{cp} = k_{cp} \left[\left(\frac{A_{Nc}}{A_{Nc0}} \right) \psi_{ed,N} \psi_{c,N} \psi_{cp,N} N_b \right]$ ACI 318-19 Eq. (17.7.3.1a)

$\phi V_{cp} \geq V_{ua}$ ACI 318-19 Table 17.5.2

A_{Nc} see ACI 318-19, Section 17.6.2.1, Fig. R 17.6.2.1(b)

$A_{Nc0} = 9 h_{ef}^2$ ACI 318-19 Eq. (17.6.2.1.4)

$\psi_{ed,N} = 0.7 + 0.3 \left(\frac{c_{a,min}}{1.5 h_{ef}} \right) \leq 1.0$ ACI 318-19 Eq. (17.6.2.4.1b)

$\psi_{cp,N} = MAX \left(\frac{c_{a,min}}{c_{ac}}, \frac{1.5 h_{ef}}{c_{ac}} \right) \leq 1.0$ ACI 318-19 Eq. (17.6.2.6.1b)

$N_b = k_c \lambda_a \sqrt{f'_c} h_{ef}^{1.5}$ ACI 318-19 Eq. (17.6.2.2.1)

Variables

k_{cp}	h_{ef} [in.]	$c_{a,min}$ [in.]	$\psi_{c,N}$
2	3.250	4.000	1.000

c_{ac} [in.]	k_c	λ_a	f'_c [psi]
11.500	21	1.000	3,000

Calculations

A_{Nc} [in.^{2}]	A_{Nc0} [in.^{2}]	$\psi_{ed,N}$	$\psi_{cp,N}$	N_b [lb]
86.53	95.06	0.946	1.000	6,739

Results

V_{cp} [lb]	$\phi_{concrete}$	ϕV_{cp} [lb]	V_{ua} [lb]
11,608	0.700	8,126	70

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Fastening point:			

4.3 Concrete edge failure in direction y+

$V_{cb} = \left(\frac{A_{Vc}}{A_{Vc0}}\right) \psi_{ed,V} \psi_{c,V} \psi_{h,V} \psi_{parallel,V} V_b$ — ACI 318-19 Eq. (17.7.2.1a)

$\phi V_{cb} \geq V_{ua}$ — ACI 318-19 Table 17.5.2

A_{Vc} see ACI 318-19, Section 17.7.2.1, Fig. R 17.7.2.1(b)*

$A_{Vc0} = 4.5 c_{a1}^2$ — ACI 318-19 Eq. (17.7.2.1.3)

$\psi_{ed,V} = 0.7 + 0.3\left(\frac{c_{a2}}{1.5c_{a1}}\right) \leq 1.0$ — ACI 318-19 Eq. (17.7.2.4.1b)

$\psi_{h,V} = \sqrt{\frac{1.5c_{a1}}{h_a}} \geq 1.0$ — ACI 318-19 Eq. (17.7.2.6.1)

$V_b = \left(7\left(\frac{l_e}{d_a}\right)^{0.2}\sqrt{d_a}\right) \lambda_a \sqrt{f'_c} c_{a1}^{1.5}$ — ACI 318-19 Eq. (17.7.2.2.1a)

Variables

c_{a1} [in.]	c_{a2} [in.]	$\psi_{c,V}$	h_a [in.]	l_e [in.]
4.000	-	1.000	8.000	3.250

λ_a	d_a [in.]	f'_c [psi]	$\psi_{parallel,V}$
1.000	0.625	3,000	1.000

Calculations

A_{Vc} [in.^{2}]	A_{Vc0} [in.^{2}]	$\psi_{ed,V}$	$\psi_{h,V}$	V_b [lb]
72.00	72.00	1.000	1.000	3,372

Results

V_{cb} [lb]	$\phi_{concrete}$	ϕV_{cb} [lb]	V_{ua} [lb]
3,372	0.700	2,360	70

*Anchor row defined by: Anchor 1; Case 3 controls

When the input edge distance is set to "infinity", edge breakout verification is not performed in that direction

5 Combined tension and shear loads, per ACI 318-19 section 17.8

β_N	β_V	ζ	Utilization $\beta_{N,V}$ [%]	Status
0.017	0.030	5/3	1	OK

$\beta_{NV} = \beta_N^{\zeta} + \beta_V^{\zeta} <= 1$

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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Fastening point:			

6 Warnings

- The anchor design methods in PROFIS Engineering require rigid anchor plates per current regulations (EN1992-4, AS5216, etc.). This means load re-distribution on the anchors due to elastic deformations of the anchor plate are not considered - the anchor plate is assumed to be sufficiently stiff, in order not to be deformed when subjected to the design loading. PROFIS Engineering calculates the minimum required anchor plate thickness with FEM to limit the stress of the anchor plate based on the assumptions explained above. The proof if the rigid anchor plate assumption is valid is not carried out by PROFIS Engineering. Input data and results must be checked for agreement with the existing conditions and for plausibility!
- The equations presented in this report are based on imperial units. When inputs are displayed in metric units, the user should be aware that the equations remain in their imperial format.
- Condition A applies where the potential concrete failure surfaces are crossed by supplementary reinforcement proportioned to tie the potential concrete failure prism into the structural member. Condition B applies where such supplementary reinforcement is not provided, or where pullout or pryout strength governs.
- Refer to the manufacturer's product literature for cleaning and installation instructions.
- For additional information about ACI 318 strength design provisions, please go to https://viewer.joomag.com/profis-design-guide-us-en-summer-2021/0841849001625154758?short&/
- Hilti post-installed anchors shall be installed in accordance with the Hilti Manufacturer's Printed Installation Instructions (MPII). Reference ACI 318-19, Section 26.7.

Fastening meets the design criteria!

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7 Installation data

Anchor type and diameter: Kwik Bolt TZ2 - CS 5/8 (3 1/4) hnom2

Profile: -

Item number: 2210271 KB-TZ2 5/8x4 3/4

Hole diameter in the fixture: -

Maximum installation torque: 40.123 ft.lb

Plate thickness (input): -

Hole diameter in the base material: 0.625 in.

Hole depth in the base material: 4.250 in.

Drilling method: Hammer drilled

Minimum thickness of the base material: 5.500 in.

Cleaning: Manual cleaning of the drilled hole according to instructions for use is required.

Hilti ∅ 5/8 in Kwik Bolt TZ2 - CS with 3.75 in nominal embedment depth per ICC-ES ESR-4266 , Hammer drill bit installation per MPII

7.1 Recommended accessories

Drilling	Cleaning	Setting
• Suitable Rotary Hammer • Properly sized drill bit	• Manual blow-out pump	• Torque controlled cordless impact tool • Torque wrench • Hammer

Coordinates Anchor in.

Anchor	x	y	c_{-x}	c_{+x}	c_{-y}	c_{+y}
1	0.000	0.000	-	-	-	4.000

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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8 Remarks; Your Cooperation Duties

- Any and all information and data contained in the Software concern solely the use of Hilti products and are based on the principles, formulas and security regulations in accordance with Hilti's technical directions and operating, mounting and assembly instructions, etc., that must be strictly complied with by the user. All figures contained therein are average figures, and therefore use-specific tests are to be conducted prior to using the relevant Hilti product. The results of the calculations carried out by means of the Software are based essentially on the data you put in. Therefore, you bear the sole responsibility for the absence of errors, the completeness and the relevance of the data to be put in by you. Moreover, you bear sole responsibility for having the results of the calculation checked and cleared by an expert, particularly with regard to compliance with applicable norms and permits, prior to using them for your specific facility. The Software serves only as an aid to interpret norms and permits without any guarantee as to the absence of errors, the correctness and the relevance of the results or suitability for a specific application.
- You must take all necessary and reasonable steps to prevent or limit damage caused by the Software. In particular, you must arrange for the regular backup of programs and data and, if applicable, carry out the updates of the Software offered by Hilti on a regular basis. If you do not use the AutoUpdate function of the Software, you must ensure that you are using the current and thus up-to-date version of the Software in each case by carrying out manual updates via the Hilti Website. Hilti will not be liable for consequences, such as the recovery of lost or damaged data or programs, arising from a culpable breach of duty by you.

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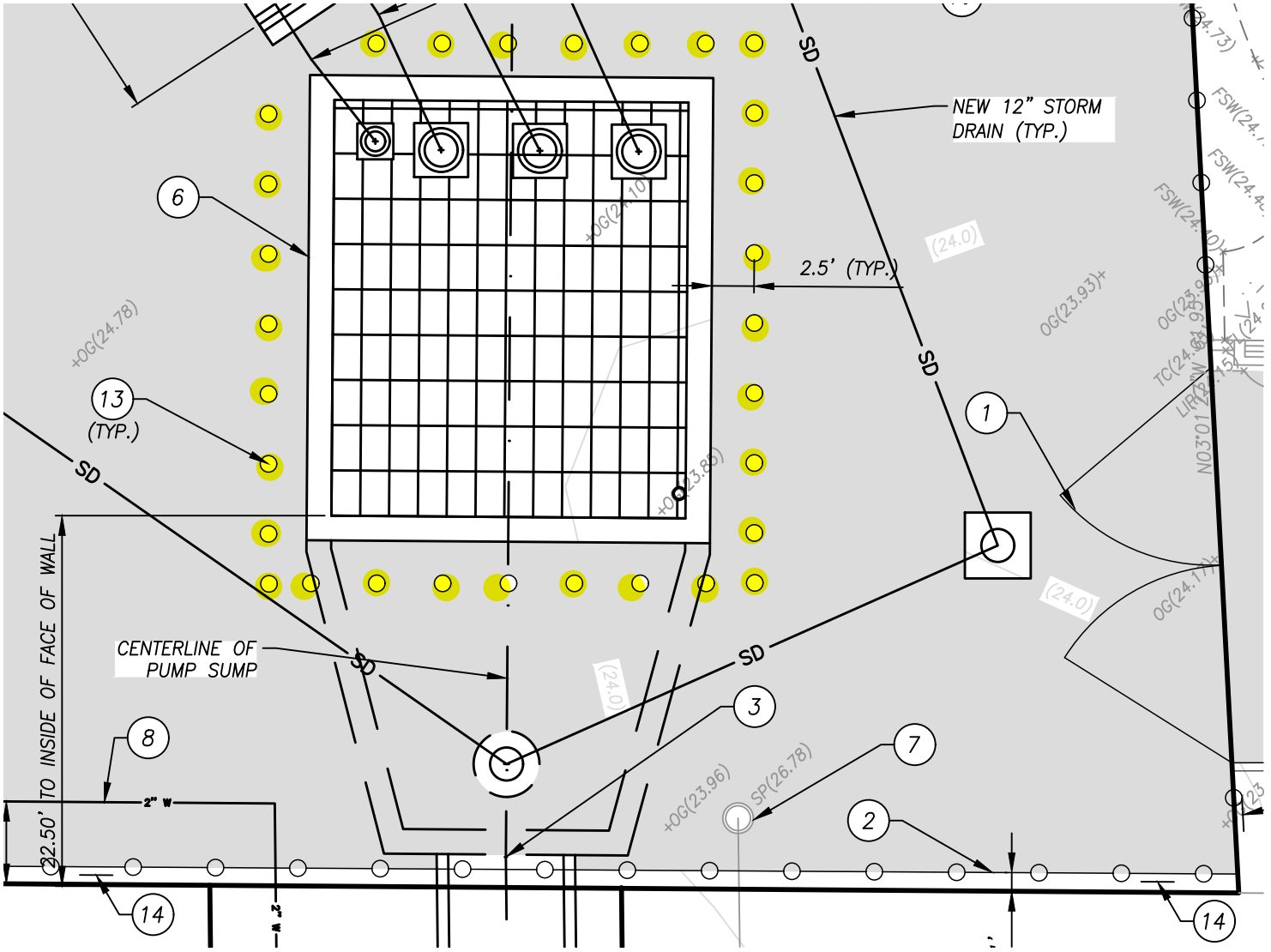
BY JED DATE 06/02/2026 SUBJECT McNAIR HS PUMP STATION SHEET NO. _____ OF _____

CHKD.BY _____ DATE _____ JOB NO. _____

EXECUTIVE SUMMARY

The following calculations are for the McNair High School Stormwater Pump Station in Stockton, CA. The facility includes a reinforced concrete vault to house the four stormwater pumps that will discharge stormwater into Bear Creek. The cast-in-place reinforced concrete structure is designed to resist earth pressures and applicable operational loads and includes, a trash rack for debris control, and manhole openings for maintenance and inspection access. At grade, the vault is covered with a metal steel grating system to allow ventilation and personnel access. Protective bollards are installed around the perimeter of the pump station to restrict vehicular access; therefore, HS-20 vehicular live loading was not considered in the design of the supporting beams.

SKETCH:



Pump Station Plan View

BY JED DATE 06/02/2026 SUBJECT McNAIR HS PUMP STATION SHEET NO. _____ OF _____

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DESIGN BASIS:

The following calculations are prepared in accordance with AASHTO LRFD Bridge Design Specifications 8th Edition with California Amendments. Geotechnical parameters were assumed .

- Equivalent Undrained At-Rest Lateral Fluid Pressure = 120 pcf/ft
- Soil Unit Weight = 125 pcf
- Net Bearing Pressure = 1.5 ksf [Per CBC Table 1806.2]

LOAD COMBINATIONS:

Service I: 1.00DC + 1.00WA+ 1.00EH + 1.00LS
Strength I: 1.25DC + 1.00WA + 1.35EH + 1.75LS
Strength I: 0.9DC + 1.00WA + 1.35EH + 1.75LS

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Wx BEAM DESIGN

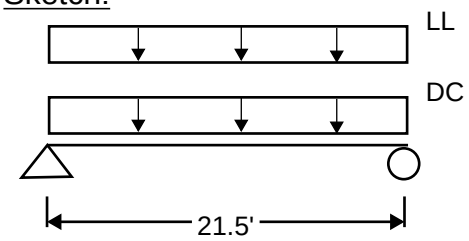
-Design roof beams using AASHTO loading.

Loading:

DC = (44.1 psf Grating) * 5.33' + 0.067 klf = 0.30 klf

LL = 0.060 ksf * 5.33' = 0.32 klf (Assuming the loading of a walkway) [CBC Table 1607.1]

Sketch:



Max Moment & shear

Demands:

V_u = 1.25 *[0.30 klf * 21.5'/2] + 1.75 *[0.32 klf * 21.5'/2] = 10.1 k

M_u = [1.25 * (0.30 klf) * (21.5')^2]/8 + 1.75 * [(0.32 klf) * (21.5')^2]/8]

= 54.0 k-ft

Capacity:

Try a W16x67

Unbraced Length = 21.5'

ϕM_n ~ 348 k-ft; D/C = 0.16 [AISC Table 3-10]

Deflection:

Deflection Limit:

Live Load only = L/360 = 258"/360 = 0.72"

Dead + Live Load = L/240 = 258" / 240 = 1.08"

Dead Load + Live Load:

Δ = 5/384 * (w*L^4)/ (E I)

w = 0.30 klf *(1'/12") + 0.32 klf * (1'/12") = 0.051 k/in

L = 21.5' * 12 = 258"

E = 29,000 ksi

I = 954 in^4

= 5/384 * (0.050 k/in * (258")^4)/(29,000 ksi * 954 in^4) = 0.10" < 1.08" (OK)

Live Load Only:

Δ = 5/384 * (w*L^4)/ (E I)

w = 0.32 klf * (1/12) = 0.027 k-in

= 5/384 * (0.027 k/in * (258")^4)/(29,000 ksi * 954 in^4) = 0.06" < 0.72" (OK)

USE A W16x67

BY JED DATE 06/02/2026 SUBJECT McNAIR HS PUMP STATION SHEET NO. _____ OF _____

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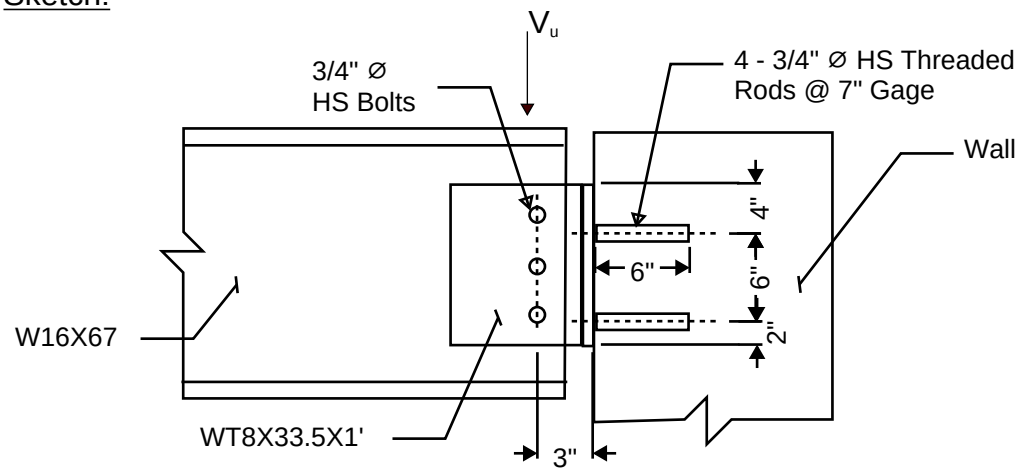
Wx BEAM CONNECTION DESIGN

-Design roof beams using AASHTO loading.

Loading:

V_u = 9.65 k [See Wx Beam Design Demands]

Sketch:



Bolt Demand:

V = 10.1 k / 3 bolts = 3.4 k/bolt

Capacity:

$\phi R_n = \phi_s 0.45 * A_b * F_{ub} * N_s$ (Assuming threads are included) [AASHTO Eq 6.13.2.7-1]

$A_b = \pi/4 * (0.75")^2 = 0.44$ in^2

F_{ub} = 120 ksi (A325 Bolts) [AASHTO T6.4.3.1.1-1]

N_s = 1

ϕ_s = 0.80

= 0.80 * 0.45 * 0.44 in^2 * 120 ksi *1 = 19 k

D/C = 3.4 k / 19 k = 0.18

Hilti Profis Input Demands for 3/4" ∅ HS Threaded Rods Anchoring to Concrete Wall):

V = 10.1 k

M = (10.1 k * 3") = 30.3 k-in

Hilti Profis Output:

Concrete Breakout: D/C = 0.44

Pryout: D/C = 0.35

Combination: D/C = 0.42

Use 4 - Post-installed 3/4" ∅ HS threaded rods

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Specifier's comments:

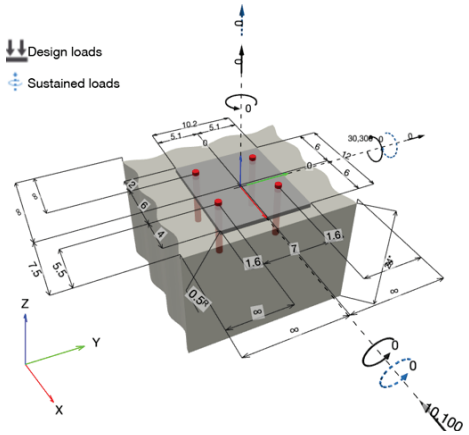
1 Input data



Anchor type and diameter:	**HIT-HY 200 V3 + HAS-B-105 (ASTM F1554 Gr.105) 3/4**
Item number:	2197970 HAS-B-105 3/4"x10" (element) / 2334276 HIT-HY 200-R V3 (adhesive)
Specification text:	HILTI ∅ 3/4 IN HIT-HY 200 V3 + HAS-B-105 (ASTM F1554 GR.105) WITH 6 IN NOMINAL EMBEDMENT DEPTH PER ICC-ES ESR-4868 , HAMMER DRILL BIT INSTALLATION PER MPII
Effective embedment depth:	$h_{ef,act}$ = 6.000 in. ($h_{ef,limit}$ = - in.)
Material:	ASTM F1554 Grade 105
Evaluation Service Report:	ESR-4868
Issued I Valid:	11/1/2024 | 11/1/2026
Proof:	Design Method ACI 318-19 / Chem
Shear edge breakout verification:	Row closest to edge (Case 3 only from ACI 318-19 Fig. R.17.7.2.1b)
Stand-off installation:	e_b = 0.000 in. (no stand-off); t = 0.500 in.
Anchor plate[R] :	l_x x l_y x t = 12.000 in. x 10.200 in. x 0.500 in.; (Recommended plate thickness: not calculated)
Profile:	no profile
Base material:	cracked concrete, Custom, f_c' = 3,600 psi; h = 24.000 in., Temp. short/long: 32/32 °F
Installation:	**Hammer drilled hole, Installation condition: Dry**
Reinforcement:	tension: not present, shear: not present; no supplemental splitting reinforcement present edge reinforcement: none or < No. 4 bar

[R] - The anchor calculation is based on a rigid anchor plate assumption.

Geometry [in.] & Loading [lb, in.lb]



Input data and results must be checked for conformity with the existing conditions and for plausibility!
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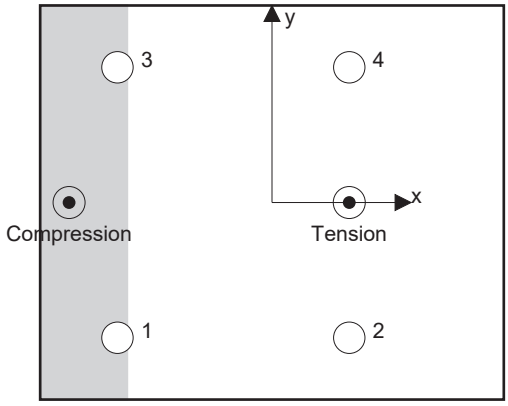
1.1 Design results

Case	Description	Forces [lb] / Moments [in.lb]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = 0; V_x = -10,100; V_y = 0; M_x = 0; M_y = -30,300; M_z = 0;	no	44

2 Load case/Resulting anchor forces

Anchor reactions [lb]
Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	0	2,525	-2,525	0
2	2,089	2,525	-2,525	0
3	0	2,525	-2,525	0
4	2,089	2,525	-2,525	0



Max. concrete compressive strain:	0.08 [‰]
Max. concrete compressive stress:	365 [psi]
Resulting tension force in (x/y)=(2.000/0.000):	4,178 [lb]
Resulting compression force in (x/y)=(-5.252/0.000):	4,178 [lb]

Anchor forces are calculated based on the assumption of a rigid anchor plate.

3 Tension load

	Load N_{ua} [lb]	Capacity ϕ N_n [lb]	Utilization $\beta_N = N_{ua}/\phi$ N_n	Status
Steel Strength*	2,089	31,361	7	OK
Bond Strength**	4,178	10,231	41	OK
Sustained Tension Load Bond Strength*	N/A	N/A	N/A	N/A
Concrete Breakout Failure**	4,178	9,630	44	OK

* highest loaded anchor **anchor group (anchors in tension)

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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3.1 Steel Strength

N_{sa} = ESR value — refer to ICC-ES ESR-4868
$\phi\ N_{sa} \geq N_{ua}$ — ACI 318-19 Table 17.5.2

Variables

$A_{se,N}$ [in.^{2}]	f_{uta} [psi]
0.33	125,000

Calculations

N_{sa} [lb]
41,815

Results

N_{sa} [lb]	ϕ_{steel}	$\phi\ N_{sa}$ [lb]	N_{ua} [lb]
41,815	0.750	31,361	2,089

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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3.2 Bond Strength

$N_{ag} = \left(\frac{A_{Na}}{A_{Na0}}\right) \psi_{ec1,Na} \psi_{ec2,Na} \psi_{ed,Na} \psi_{cp,Na} N_{ba}$ ACI 318-19 Eq. (17.6.5.1b)

$\phi N_{ag} \geq N_{ua}$ ACI 318-19 Table 17.5.2

A_{Na} see ACI 318-19, Section 17.6.5.1, Fig. R 17.6.5.1(b)

$A_{Na0} = (2 c_{Na})^2$ ACI 318-19 Eq. (17.6.5.1.2a)

$c_{Na} = 10 d_a \sqrt{\frac{\tau_{uncr}}{1100}}$ ACI 318-19 Eq. (17.6.5.1.2b)

$\psi_{ec,Na} = \left(\frac{1}{1 + \frac{e'_N}{c_{Na}}}\right) \leq 1.0$ ACI 318-19 Eq. (17.6.5.3.1)

$\psi_{ed,Na} = 0.7 + 0.3 \left(\frac{c_{a,min}}{c_{Na}}\right) \leq 1.0$ ACI 318-19 Eq. (17.6.5.4.1b)

$\psi_{cp,Na} = \text{MAX}\left(\frac{c_{a,min}}{c_{ac}}, \frac{c_{Na}}{c_{ac}}\right) \leq 1.0$ ACI 318-19 Eq. (17.6.5.5.1b)

$N_{ba} = \lambda_a \cdot \tau_{k,c} \cdot \pi \cdot d_a \cdot h_{ef}$ ACI 318-19 Eq. (17.6.5.2.1)

Variables

$\tau_{k,c,uncr}$ [psi]	d_a [in.]	h_{ef} [in.]	$c_{a,min}$ [in.]	$\alpha_{overhead}$	$\tau_{k,c}$ [psi]
2,302	0.750	6.000	5.500	1.000	1,307

$e_{c1,N}$ [in.]	$e_{c2,N}$ [in.]	c_{ac} [in.]	λ_a
0.000	0.000	9.302	1.000

Calculations

c_{Na} [in.]	A_{Na} [in.^{2}]	A_{Na0} [in.^{2}]	$\psi_{ed,Na}$
10.802	466.29	466.71	0.853

$\psi_{ec1,Na}$	$\psi_{ec2,Na}$	$\psi_{cp,Na}$	N_{ba} [lb]
1.000	1.000	1.000	18,474

Results

N_{ag} [lb]	ϕ_{bond}	ϕN_{ag} [lb]	N_{ua} [lb]
15,740	0.650	10,231	4,178

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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3.3 Concrete Breakout Failure

$N_{cbg} = \left(\frac{A_{Nc}}{A_{Nc0}}\right) \psi_{ec,N} \psi_{ed,N} \psi_{c,N} \psi_{cp,N} N_b$ — ACI 318-19 Eq. (17.6.2.1b)

$\phi N_{cbg} \geq N_{ua}$ — ACI 318-19 Table 17.5.2

A_{Nc} see ACI 318-19, Section 17.6.2.1, Fig. R 17.6.2.1(b)

$A_{Nc0} = 9 h_{ef}^2$ — ACI 318-19 Eq. (17.6.2.1.4)

$\psi_{ec,N} = \left(\frac{1}{1 + \frac{2 e'_N}{3 h_{ef}}}\right) \leq 1.0$ — ACI 318-19 Eq. (17.6.2.3.1)

$\psi_{ed,N} = 0.7 + 0.3 \left(\frac{c_{a,min}}{1.5 h_{ef}}\right) \leq 1.0$ — ACI 318-19 Eq. (17.6.2.4.1b)

$\psi_{cp,N} = MAX\left(\frac{c_{a,min}}{c_{ac}}, \frac{1.5 h_{ef}}{c_{ac}}\right) \leq 1.0$ — ACI 318-19 Eq. (17.6.2.6.1b)

$N_b = k_c \lambda_a \sqrt{f'_c} h_{ef}^{1.5}$ — ACI 318-19 Eq. (17.6.2.2.1)

Variables

h_{ef} [in.]	$e_{c1,N}$ [in.]	$e_{c2,N}$ [in.]	$c_{a,min}$ [in.]	$\psi_{c,N}$
6.000	0.000	0.000	5.500	1.000

c_{ac} [in.]	k_c	λ_a	f'_c [psi]
9.302	17	1.000	3,600

Calculations

A_{Nc} [in.^{2}]	A_{Nc0} [in.^{2}]	$\psi_{ec1,N}$	$\psi_{ec2,N}$	$\psi_{ed,N}$	$\psi_{cp,N}$	N_b [lb]
362.50	324.00	1.000	1.000	0.883	1.000	14,991

Results

N_{cbg} [lb]	$\phi_{concrete}$	ϕN_{cbg} [lb]	N_{ua} [lb]
14,815	0.650	9,630	4,178

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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4 Shear load

	Load V_{ua} [lb]	Capacity ϕ V_n [lb]	Utilization $\beta_V = V_{ua}/\phi$ V_n	Status
Steel Strength*	2,525	16,308	16	OK
Steel failure (with lever arm)*	N/A	N/A	N/A	N/A
Pryout Strength (Concrete Breakout Strength controls)**	10,100	29,324	35	OK
Concrete edge failure in direction **	N/A	N/A	N/A	N/A

* highest loaded anchor **anchor group (relevant anchors)

4.1 Steel Strength

V_{sa} = ESR value refer to ICC-ES ESR-4868
ϕ $V_{steel} \geq V_{ua}$ ACI 318-19 Table 17.5.2

Variables

$A_{se,V}$ [in.^{2}]	f_{uta} [psi]
0.33	125,000

Calculations

V_{sa} [lb]
25,090

Results

V_{sa} [lb]	ϕ_{steel}	ϕ V_{sa} [lb]	V_{ua} [lb]
25,090	0.650	16,308	2,525

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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4.2 Pryout Strength (Concrete Breakout Strength controls)

$V_{cpg} = k_{cp} \left[\left(\frac{A_{Nc}}{A_{Nc0}} \right) \psi_{ec,N} \psi_{ed,N} \psi_{c,N} \psi_{cp,N} N_b \right]$ ACI 318-19 Eq. (17.7.3.1b)

$\phi V_{cpg} \geq V_{ua}$ ACI 318-19 Table 17.5.2

A_{Nc} see ACI 318-19, Section 17.6.2.1, Fig. R 17.6.2.1(b)

$A_{Nc0} = 9 h_{ef}^2$ ACI 318-19 Eq. (17.6.2.1.4)

$\psi_{ec,N} = \left(\frac{1}{1 + \frac{2 e'_N}{3 h_{ef}}} \right) \leq 1.0$ ACI 318-19 Eq. (17.6.2.3.1)

$\psi_{ed,N} = 0.7 + 0.3 \left(\frac{c_{a,min}}{1.5 h_{ef}} \right) \leq 1.0$ ACI 318-19 Eq. (17.6.2.4.1b)

$\psi_{cp,N} = \text{MAX}\left(\frac{c_{a,min}}{c_{ac}}, \frac{1.5 h_{ef}}{c_{ac}} \right) \leq 1.0$ ACI 318-19 Eq. (17.6.2.6.1b)

$N_b = k_c \lambda_a \sqrt{f'_c} h_{ef}^{1.5}$ ACI 318-19 Eq. (17.6.2.2.1)

Variables

k_{cp}	h_{ef} [in.]	$e_{c1,N}$ [in.]	$e_{c2,N}$ [in.]	$c_{a,min}$ [in.]
2	6.000	0.000	0.000	5.500

$\psi_{c,N}$	c_{ac} [in.]	k_c	λ_a	f'_c [psi]
1.000	9.302	17	1.000	3,600

Calculations

A_{Nc} [in.^{2}]	A_{Nc0} [in.^{2}]	$\psi_{ec1,N}$	$\psi_{ec2,N}$	$\psi_{ed,N}$	$\psi_{cp,N}$	N_b [lb]
512.50	324.00	1.000	1.000	0.883	1.000	14,991

Results

V_{cpg} [lb]	$\phi_{concrete}$	ϕV_{cpg} [lb]	V_{ua} [lb]
41,892	0.700	29,324	10,100

5 Combined tension and shear loads, per ACI 318-19 section 17.8

β_N	β_V	ζ	Utilization $\beta_{N,V}$ [%]	Status
0.434	0.344	5/3	42	OK

$\beta_{NV} = \beta_N^{\zeta} + \beta_V^{\zeta} <= 1$

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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Fastening point:			

6 Warnings

- The anchor design methods in PROFIS Engineering require rigid anchor plates per current regulations (EN1992-4, AS5216, etc.). This means load re-distribution on the anchors due to elastic deformations of the anchor plate are not considered - the anchor plate is assumed to be sufficiently stiff, in order not to be deformed when subjected to the design loading. PROFIS Engineering calculates the minimum required anchor plate thickness with FEM to limit the stress of the anchor plate based on the assumptions explained above. The proof if the rigid anchor plate assumption is valid is not carried out by PROFIS Engineering. Input data and results must be checked for agreement with the existing conditions and for plausibility!
- The equations presented in this report are based on imperial units. When inputs are displayed in metric units, the user should be aware that the equations remain in their imperial format.
- Condition A applies where the potential concrete failure surfaces are crossed by supplementary reinforcement proportioned to tie the potential concrete failure prism into the structural member. Condition B applies where such supplementary reinforcement is not provided, or where pullout or pryout strength governs.
- Design Strengths of adhesive anchor systems are influenced by the cleaning method. Refer to the INSTRUCTIONS FOR USE given in the Evaluation Service Report for cleaning and installation instructions.
- For additional information about ACI 318 strength design provisions, please go to https://viewer.joomag.com/profis-design-guide-us-en-summer-2021/0841849001625154758?short&/
- Installation of Hilti adhesive anchor systems shall be performed by personnel trained to install Hilti adhesive anchors. Reference ACI 318-19, Section 26.7.

Fastening meets the design criteria!

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7 Installation data

Profile: no profile

Hole diameter in the fixture: d_f = 0.812 in.

Plate thickness (input): 0.500 in.

Recommended plate thickness: not calculated

Drilling method: Hammer drilled

Cleaning: Compressed air cleaning of the drilled hole according to instructions for use is required

Anchor type and diameter: HIT-HY 200 V3 + HAS-B-105 (ASTM F1554 Gr.105) 3/4

Item number: 2197970 HAS-B-105 3/4"x10" (element) / 2334276 HIT-HY 200-R V3 (adhesive)

Maximum installation torque: 1,200 in.lb

Hole diameter in the base material: 0.875 in.

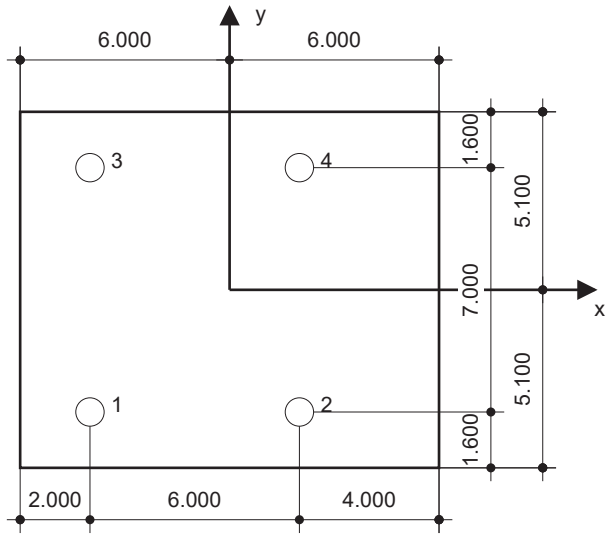
Hole depth in the base material: 6.000 in.

Minimum thickness of the base material: 7.750 in.

Hilti ∅ 3/4 in HIT-HY 200 V3 + HAS-B-105 (ASTM F1554 Gr.105) with 6 in nominal embedment depth per ICC-ES ESR-4868 , Hammer drill bit installation per MPII

7.1 Recommended accessories

Drilling	Cleaning	Setting
• Suitable Rotary Hammer • Properly sized drill bit	• Compressed air with required accessories to blow from the bottom of the hole • Proper diameter wire brush	• Dispenser including cassette and mixer • Torque wrench



Coordinates Anchor [in.]

Anchor	x	y	c_{-x}	c_{+x}	c_{-y}	c_{+y}
1	-4.000	-3.500	-	11.500	-	-
2	2.000	-3.500	-	5.500	-	-
3	-4.000	3.500	-	11.500	-	-
4	2.000	3.500	-	5.500	-	-

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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BY JED DATE 06/02/2026 SUBJECT McNAIR HS PUMP STATION SHEET NO. _____ OF _____

CHKD.BY _____ DATE _____ JOB NO. _____

REINFORCED CONCRETE ROOF BEAM DESIGN

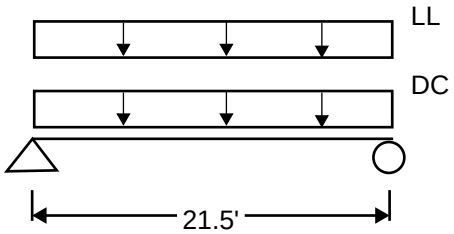
-DESIGN ROOF BEAMS USING AASHTO LOADING

Loads:

DC = (0.0441 ksf Grating) * 5.33' + 0.15 kcf * 2' * 2' = 0.84 klf

LL = 0.060 ksf * 5.33' = 0.32 klf (Assuming the loading of a walkway) [CBC Table 1607.1]

Sketch:



Max Moment

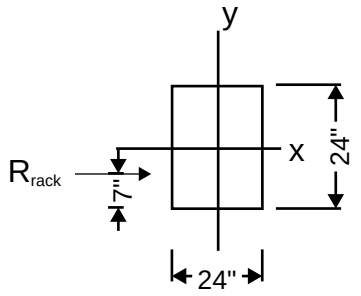
Demands:

V_{max} = 0.5 * 1.25 * 0.84 klf * 21.5' + 0.5 * 1.75 * 0.32 klf * 21.5' = 17.3 k

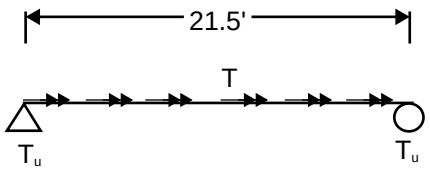
M_u = [1.25 * (0.84 klf) * (21.5')^2]/8 + [1.75 * (0.32 klf) * (21.5')^2]/8= 93.0 k-ft

Torsion Check:

Since the reaction from the trash rack is not acting at the center of the beam, the beam will experience torsion about it's longitudinal axis. If the torsional demand is less than the threshold torsion demand per AASHTO 5.7.2.1-3, torsional effects may be neglected.



RC Beam Section



T = 0.72 k-ft * 0.54' = 0.39 k-ft/ft

RC Beam Loading Diagram

R_{rack} = (0.12 k / 2") * 12"/1ft = 0.72 k/ft (See Trash Rack

T_u = 0.72 k/ft * (0.54') * (21.5') * 0.5 * (12 in / 1ft) = 50.2 k-in (At beam ends)

$T_{cr} = 0.126 * K * \lambda * \sqrt{(f'_c)} * A_{cp}^2/p_c$ [AASHTO 5.7.2.1-4]

K = 1.0 (The beam is nonprestressed)

λ = 1.0 (Normal Weight Concrete)

f'_c = 3.6 ksi

A_{cp} = 24" * 24" = 576 in^2

p_c = 2 * 24" + 2 * 24" = 96"

= 0.126 * 1 * 1* $\sqrt{}$(3.6 ksi) *(576 in^2)^2/ 96"

= 826 k-in

T_u = 50.2 k-in < 0.25ϕT_{cr} = 0.25 * 0.9 * 826 k-in = 186 k-in, therefore, torsional effects do not need to be investigated per AASHTO 5.7.2.1-3.

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BY: JED DATE: 4/16/2026 McNair HS

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ROOF BEAM - POSITIVE FLEXURE

Input:

M_u= 93.0 k-ft

f'c= 3600 psi

fy= 60000 psi

φ = 0.9

b_1= 0.85

h= 24 in.

b= 24 in.

Clear Cover = 2.50 in.

No. Bars = 4

Dia. of Main Bar = #6 0.750 in.

Area of Main Bar = #6 0.440 in^2

$$d = h - Clr\ Cover - \frac{Bar\ dia}{2} = 21.13 \text{ in.}$$

$$S_c = \frac{bh^2}{6} = 2304 \text{ in}^3$$

$$f_r = 0.24\sqrt{f'_c} = 455 \text{ psi}$$

$M_{u(min)}$= 104.9 K-FT

$$M_{CR} = \gamma_3\left[(\gamma_1 f_r + \gamma_2 f_{cpe})S_c - M_{dnc}\left(\frac{S_c}{S_{nc}} - 1\right)\right] \quad \text{[AASHTO 5.6.3.3-1]}$$

γ_1 = 1.6

γ_2 = 1

γ_3 = 0.75

f_r = 455 psi

f_{cpe} = 0 psi

S_c = 2304 in^3

S_{nc} = 2304 in^3

M_{dnc} = 0 k-ft

M_{CR} = 104.9 k-ft

Design Ultimate Moment; M_u= 104.9 K-FT (Minimum of 1.33M_u or M_{CR})

$$a = \frac{A_s f_y}{0.85 f'_c b} = 1.44 \text{ in.}$$

$$c = \frac{a}{b_1} = 1.692 \text{ in.}$$

ε = 0.0345 in/in. *Therefore tension controlled*

$A_{s,provided}$ = 1.760 in^2 $\phi M_n = \phi A_s f_y\left(d - \frac{a}{2}\right)$ = 161.6 k-ft > M_u= 104.9 k-ft

USE #6 TOT 4 D/C: 0.65 **OK**

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CHKD. BY: DATE: Pump Station JOB NO.: 2026021

ROOF BEAM - SHEAR DESIGN

V_u = 17.30 kip

f'_c = 3600 psi

f_y = 60000 psi

φ = 0.90 [AASHTO Art. 5.5.4.2]

β = 2.0 [AASHTO Art. 5.7.3.4.1]

θ = 45 ° [AASHTO Art. 5.7.3.4.1]

b_v = 24.00 in

Note: This calculation uses the simplified procedure for nonprestressed sections per AASHTO LRFD 5.7.3.3 and 5.7.3.4.1

Dia. Of Stirrup = #4 0.500 in.

Area of Stirrup = #4 0.200 in^2

No. Legs of Stirrup = 2

A_v = 0.40 in^2

Spacing of Stirrup, s = 12.00 in

d_v = 20.41 in [AASHTO Art. 5.7.2.8]

Vc = $0.0316\beta\sqrt{f'_c}b_v d_v =$ 58.7 kip

Vs = $\frac{A_v f_y d_v \cot\theta}{s} =$ 40.8 kip

$V_n = V_c + V_s =$ 99.5 kip

$V_n = 0.25 f'_c b_v d_v =$ 440.8 kip

φV_n =	89.59	>	17.30	OK

D/C: 0.19 OK

USE #4 STIRRUPS (2 LEGS) @ 12"

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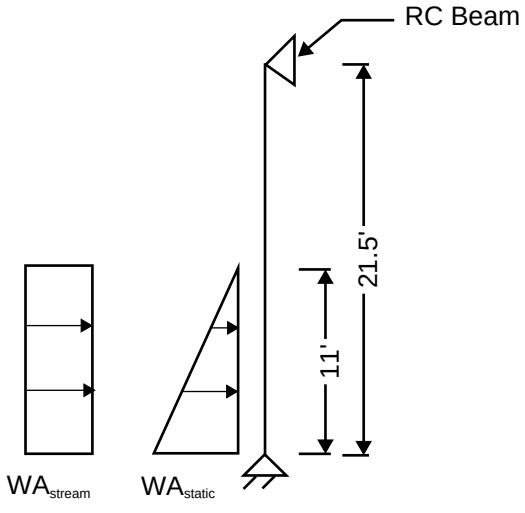
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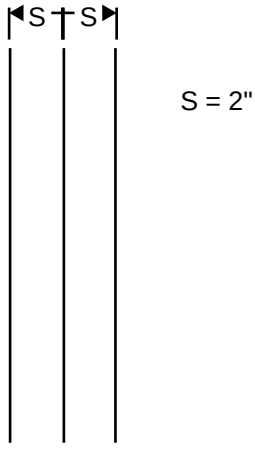
TRASH RACK DESIGN

Note:

- Max flow velocity was assumed at 5 ft/s.
- Max water elevation was set to the alarm water depth = 11'.
- Drag coefficient was assumed to be 1.4.
- Trash rack was designed as if it were completely clogged.
- Trash rack was assumed to be vertical.
- Hydrostatic water pressure and stream pressure applied to the track rack plates.

Trash Rack Load Diagram:





Trash Rack Plate Spacing

SAP 2000 Load Input:

WA_{static} = 0.0624 kcf/ft * (11') * 2/12 ' trib. width = 0.114 klf (At the base of the trash rack)

$WA_{Stream} = [(C_d * V^2)/1000] * 2/12'$ trib. width [AASHTO 3.7.3.1-1]

Cd = 1.4

V = 5 ft/s

$= [1.4 * (5 \text{ ft/s})^2/ 1000] * 2/12' = 0.0058$ klf

SAP 2000 Output Demands:

M_u = 1.63 k-ft = 19.6 k-in

Required Section Modulus (ASD):

$Fy/\Omega = M / S_{required}$

$S_{required} = M/(Fy/\Omega)$

$= 19.6 \text{ k-in} /(36 \text{ ksi}/1.67)$

$= 0.91 \text{ in}^3$

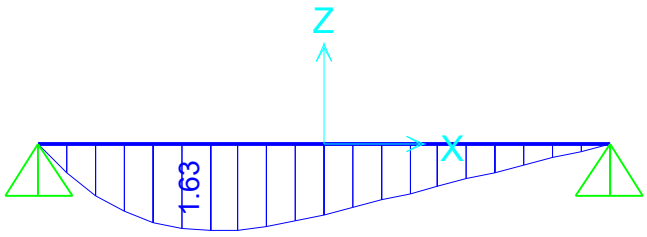
Try 1/4" x 5" Plates

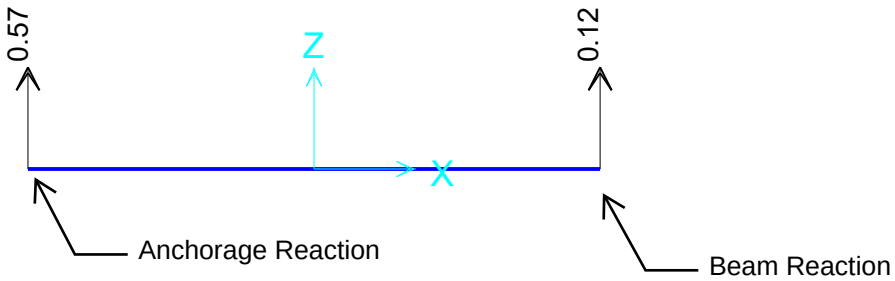
$S_x = (0.25" * 5^2)/6 = 1.04 \text{ in}^3$

$S_x > S_{required}$ ∴ OK

Use 1/4" x 5" Plates

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Z
X
1.63


0.57
Z
0.12
X
Anchorage Reaction
Beam Reaction

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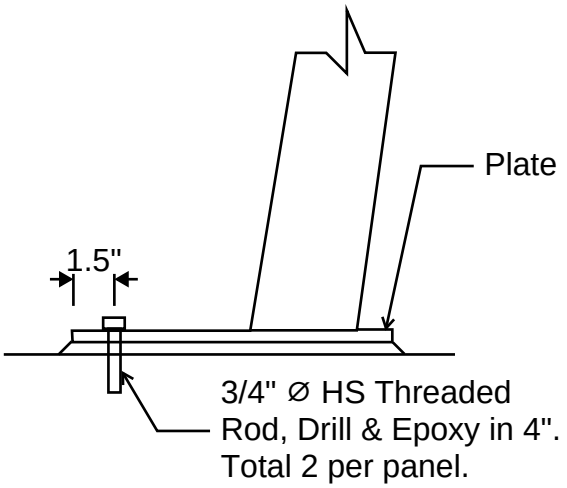
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TRASH RACK ANCHORAGE DESIGN

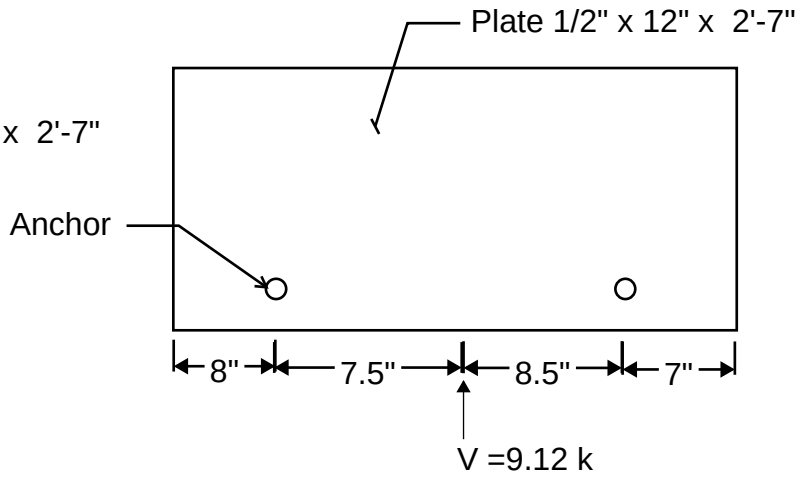
Loading:

V_u = 0.57 k/per plate * 16 plates per panel = 9.12 k per panel [See Trash Rack Joint Reactions]

Sketch:



Elevation View:



Plan View:

Anchor Demand:

$V_{u\ Max}$ = 9.12 k * 8.5" / (8.5" + 7.5") = 4.85 k

D/C Summary:

D/C_{Steel} = 0.64

D/C_{Pryout} = 0.44

Governing D/C = 0.64

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Specifier's comments:

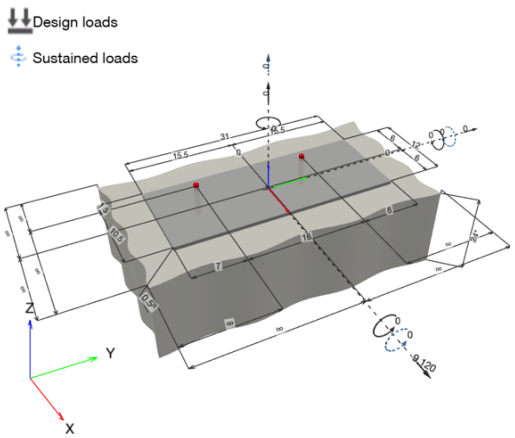
1 Input data



Anchor type and diameter:	**HIT-HY 200 V3 + HAS-B-105 (ASTM F1554 Gr.105) 3/4**
Item number:	2197970 HAS-B-105 3/4"x10" (element) / 2334276 HIT-HY 200-R V3 (adhesive)
Specification text:	HILTI ∅ 3/4 IN HIT-HY 200 V3 + HAS-B-105 (ASTM F1554 GR.105) WITH 4 IN NOMINAL EMBEDMENT DEPTH PER ICC-ES ESR-4868 , HAMMER DRILL BIT INSTALLATION PER MPII
Effective embedment depth:	$h_{ef,act}$ = 4.000 in. ($h_{ef,limit}$ = - in.)
Material:	ASTM F1554 Grade 105
Evaluation Service Report:	ESR-4868
Issued I Valid:	11/1/2024 | 11/1/2026
Proof:	Design Method ACI 318-19 / Chem
Shear edge breakout verification:	Row closest to edge (Case 3 only from ACI 318-19 Fig. R.17.7.2.1b)
Stand-off installation:	e_b = 0.000 in. (no stand-off); t = 0.500 in.
Anchor plate[R] :	l_x x l_y x t = 12.000 in. x 31.000 in. x 0.500 in.; (Recommended plate thickness: not calculated)
Profile:	no profile
Base material:	cracked concrete, Custom, f_c' = 3,600 psi; h = 24.000 in., Temp. short/long: 32/32 °F
Installation:	**Hammer drilled hole, Installation condition: Dry**
Reinforcement:	tension: not present, shear: not present; no supplemental splitting reinforcement present edge reinforcement: none or < No. 4 bar

[R] - The anchor calculation is based on a rigid anchor plate assumption.

Geometry [in.] & Loading [lb, in.lb]



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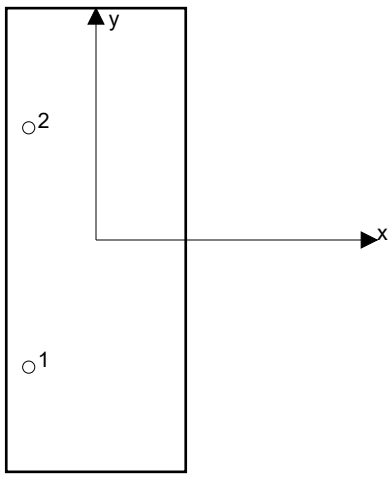
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1.1 Design results

Case	Description	Forces [lb] / Moments [in.lb]	Seismic	Max. Util. Anchor [%]
1	Combination 1	N = 0; V_x = 9,120; V_y = 0; M_x = 0; M_y = 0; M_z = 0;	no	44

2 Load case/Resulting anchor forces



Anchor reactions [lb]
Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	0	4,275	4,275	0
2	0	4,845	4,845	0

Max. concrete compressive strain: - [‰]
Max. concrete compressive stress: - [psi]
Resulting tension force in (x/y)=(-/-): 0 [lb]
Resulting compression force in (x/y)=(-/-): 0 [lb]

Anchor forces are calculated based on the assumption of a rigid anchor plate.

3 Tension load

	Load N_{ua} [lb]	Capacity ϕ N_n [lb]	Utilization $\beta_N = N_{ua}/\phi$ N_n	Status
Steel Strength*	N/A	N/A	N/A	N/A
Bond Strength**	N/A	N/A	N/A	N/A
Sustained Tension Load Bond Strength*	N/A	N/A	N/A	N/A
Concrete Breakout Failure**	N/A	N/A	N/A	N/A

* highest loaded anchor **anchor group (anchors in tension)

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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4 Shear load

	Load V_{ua} [lb]	Capacity ϕ V_n [lb]	Utilization $\beta_V = V_{ua}/\phi$ V_n	Status
Steel Strength*	4,845	16,308	30	OK
Steel failure (with lever arm)*	N/A	N/A	N/A	N/A
Pryout Strength (Concrete Breakout Strength controls)**	9,120	21,090	44	OK
Concrete edge failure in direction **	N/A	N/A	N/A	N/A

* highest loaded anchor **anchor group (relevant anchors)

4.1 Steel Strength

V_{sa} = ESR value refer to ICC-ES ESR-4868
ϕ $V_{steel} \geq V_{ua}$ ACI 318-19 Table 17.5.2

Variables

$A_{se,V}$ [in.^{2}]	f_{uta} [psi]
0.33	125,000

Calculations

V_{sa} [lb]
25,090

Results

V_{sa} [lb]	ϕ_{steel}	ϕ V_{sa} [lb]	V_{ua} [lb]
25,090	0.650	16,308	4,845

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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4.2 Pryout Strength (Concrete Breakout Strength controls)

$V_{cpg} = k_{cp} \left[\left(\frac{A_{Nc}}{A_{Nc0}} \right) \psi_{ec,N} \psi_{ed,N} \psi_{c,N} \psi_{cp,N} N_b \right]$ — ACI 318-19 Eq. (17.7.3.1b)

$\phi V_{cpg} \geq V_{ua}$ — ACI 318-19 Table 17.5.2

A_{Nc} see ACI 318-19, Section 17.6.2.1, Fig. R 17.6.2.1(b)

$A_{Nc0} = 9 h_{ef}^2$ — ACI 318-19 Eq. (17.6.2.1.4)

$\psi_{ec,N} = \left(\frac{1}{1 + \frac{2 e'_N}{3 h_{ef}}} \right) \leq 1.0$ — ACI 318-19 Eq. (17.6.2.3.1)

$\psi_{ed,N} = 0.7 + 0.3 \left(\frac{c_{a,min}}{1.5 h_{ef}} \right) \leq 1.0$ — ACI 318-19 Eq. (17.6.2.4.1b)

$\psi_{cp,N} = \text{MAX}\left(\frac{c_{a,min}}{c_{ac}}, \frac{1.5 h_{ef}}{c_{ac}} \right) \leq 1.0$ — ACI 318-19 Eq. (17.6.2.6.1b)

$N_b = k_c \lambda_a \sqrt{f'_c} h_{ef}^{1.5}$ — ACI 318-19 Eq. (17.6.2.2.1)

Variables

k_{cp}	h_{ef} [in.]	$e_{c1,N}$ [in.]	$e_{c2,N}$ [in.]	$c_{a,min}$ [in.]
2	4.000	0.000	0.500	∞

$\psi_{c,N}$	c_{ac} [in.]	k_c	λ_a	f'_c [psi]
1.000	5.718	17	1.000	3,600

Calculations

A_{Nc} [in.^{2}]	A_{Nc0} [in.^{2}]	$\psi_{ec1,N}$	$\psi_{ec2,N}$	$\psi_{ed,N}$	$\psi_{cp,N}$	N_b [lb]
288.00	144.00	1.000	0.923	1.000	1.000	8,160

Results

V_{cpg} [lb]	$\phi_{concrete}$	ϕV_{cpg} [lb]	V_{ua} [lb]
30,129	0.700	21,090	9,120

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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Fastening point:			

5 Warnings

- The anchor design methods in PROFIS Engineering require rigid anchor plates per current regulations (EN1992-4, AS5216, etc.). This means load re-distribution on the anchors due to elastic deformations of the anchor plate are not considered - the anchor plate is assumed to be sufficiently stiff, in order not to be deformed when subjected to the design loading. PROFIS Engineering calculates the minimum required anchor plate thickness with FEM to limit the stress of the anchor plate based on the assumptions explained above. The proof if the rigid anchor plate assumption is valid is not carried out by PROFIS Engineering. Input data and results must be checked for agreement with the existing conditions and for plausibility!
- The equations presented in this report are based on imperial units. When inputs are displayed in metric units, the user should be aware that the equations remain in their imperial format.
- Condition A applies where the potential concrete failure surfaces are crossed by supplementary reinforcement proportioned to tie the potential concrete failure prism into the structural member. Condition B applies where such supplementary reinforcement is not provided, or where pullout or pryout strength governs.
- Design Strengths of adhesive anchor systems are influenced by the cleaning method. Refer to the INSTRUCTIONS FOR USE given in the Evaluation Service Report for cleaning and installation instructions.
- For additional information about ACI 318 strength design provisions, please go to https://viewer.joomag.com/profis-design-guide-us-en-summer-2021/0841849001625154758?short&/
- Installation of Hilti adhesive anchor systems shall be performed by personnel trained to install Hilti adhesive anchors. Reference ACI 318-19, Section 26.7.

Fastening meets the design criteria!

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Hilti PROFIS Engineering 3.1.31

www.hilti.com

Company:		Page:	6
Address:		Specifier:	
Phone I Fax:	|	E-Mail:	
Design:	Trash Rack Anchorage	Date:	6/1/2026
Fastening point:			

6 Installation data

Profile: no profile

Hole diameter in the fixture: d_f = 0.812 in.

Plate thickness (input): 0.500 in.

Recommended plate thickness: not calculated

Drilling method: Hammer drilled

Cleaning: Compressed air cleaning of the drilled hole according to instructions for use is required

Anchor type and diameter: HIT-HY 200 V3 + HAS-B-105 (ASTM F1554 Gr.105) 3/4

Item number: 2197970 HAS-B-105 3/4"x10" (element) / 2334276 HIT-HY 200-R V3 (adhesive)

Maximum installation torque: 1,200 in.lb

Hole diameter in the base material: 0.875 in.

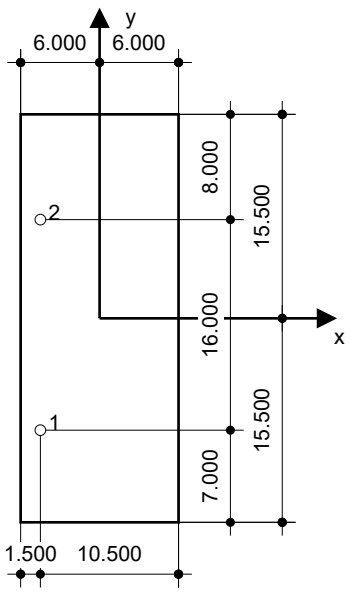
Hole depth in the base material: 4.000 in.

Minimum thickness of the base material: 5.750 in.

Hilti ∅ 3/4 in HIT-HY 200 V3 + HAS-B-105 (ASTM F1554 Gr.105) with 4 in nominal embedment depth per ICC-ES ESR-4868 , Hammer drill bit installation per MPII

6.1 Recommended accessories

Drilling	Cleaning	Setting
• Suitable Rotary Hammer • Properly sized drill bit	• Compressed air with required accessories to blow from the bottom of the hole • Proper diameter wire brush	• Dispenser including cassette and mixer • Torque wrench



Coordinates Anchor [in.]

Anchor	x	y	c_{-x}	c_{+x}	c_{-y}	c_{+y}
1	-4.500	-8.500	-	-	-	-
2	-4.500	7.500	-	-	-	-

Input data and results must be checked for conformity with the existing conditions and for plausibility!
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BY JED DATE 06/02/2026 SUBJECT McNAIR HS PUMP STATION SHEET NO. _____ OF _____

CHKD.BY _____ DATE _____ JOB NO. _____

BEARING PRESSURE CHECK:

Note:

- The pump station was assumed to be full of water for the bearing pressure check.
- The weight of water within the structure was neglected for buoyancy check.

Pump Station Structure Weigh-Up:

Dead Load:

$DC_{Walls\ Full\ Height}$ = ((2 * 28.25' long + 21.5' long) * 2' thick * 24.21' tall) * 0.15 kcf = 566.5 k
$DC_{Wall\ Partial\ 1}$ = (50.2' long * 2' thick * 9' tall) * 0.15 k = 135.6 k
$DC_{Wall\ Partial\ 2}$ = (21.5' long * 2' thick * 16.2' tall) * 0.15 k = 104.5 k
$DC_{Roof\ Slab}$ = (289 ft^2 - (π/4 * 4'^{2}))* 2' thick) * 0.15 kcf = 83 k
$DC_{Footing}$= (62.5 ft^2 * 27.5' Wide + 448.2 ft^2 * 2' thick) * 0.15 kcf = 392.3 k
$DC_{RC\ Beam}$ = (2' * 3.5' * 21.5' * 0.15 kcf) = 22.6 k
DC_{W16X67} = 0.067 klf * 21.5' * 3 beams = 4.32 k
$DC_{Grating}$ = ((9' + 14.25') * 21.5') * 0.0441 ksf = 22 k
$DC_{Trash\ Rack}$ = [(21.25' long * 5/12' deep * 0.25/12' thick) * (21.5' /(2"/12") +1)] * 0.49 kcf = 11.75 k
$DC_{Manhole}$ = 0.15 kcf * [(1' * 0.5' * π * 2.5') + 5.32 ft^3 MH Cone + (10.75' * 0.42' * π * 4.42')] = 10.8 k

DC_{Total} = 566.5 k + 135.6 k + 104.5 k + 83 k + 392.3 k + 22.6 k + 4.32 k + 22 k + 11.75 k + 10.8 k = 1,354 k

Vertical Earth Load:

EV = 0.125 kcf * ((391.5 ft^2 - (π/4 * 4'^{2})) * 13.71' + 142.7 ft^2 * 23.71') = 1,072 k

Live Load:

LL = 32 k + 32 k = 64 k

Water Load:

WA = 0.0642 kcf * (21.5' wide * 25.25' long * 24.21' tall + 332 ft^2 * 7.5' tall) = 1,004 k

Bearing Pressure:

σ_{allow} = 1.5 ksf [Per CBC Table 1806.2]

$\sigma_{net} = P/A - \sigma_v$

P = 1,354 k + 1,072 k + 64 k + 1,004 k = 3,494 k

A = 1,280 ft^2 (Area of footing slab)

σ_v = 0.125 kcf * (0.5 * (24.71' + 25.71') = 3.15 ksf

= 3,494 k / 1,280 ft^2 - 3.15 ksf = -0.42 ksf

$\sigma_{net} < \sigma_{allow}$, OK

Bearing Pressure Used For Footing Slab Design:

$\sigma_{STR\ 1} = P/A$

P = 1.25 *(DC) + 1.30 *(EV) * 1.75 (LL) + 1.00 *(WA)

= 1.25 * (1,354 k) + 1.30 * (1,072 k) + 1.75 * (64 k) + 1.00 * (1,004 k)

= 4,202 k

A = 1,280 ft^2 (Area of footing slab)

= 3.31 ksf

BY JED DATE 06/02/2026 SUBJECT McNAIR HS PUMP STATION SHEET NO. _____ OF _____

CHKD.BY _____ DATE _____ JOB NO. _____

BUOYANCY CHECK:

Buoyancy Check:

- It was assumed that the water table was located at an elevation 19'.

Displaced Volume:

$V_{footing}$ = 62.5 ft^2 * 27.5' Wide + 448.2 ft^2 * 2' thick + = 2,615 ft^3

$V_{Chamber}$ = 391.5 ft^2 * 9' + 29.25' Long * 25.5' Wide * (19' - 0.54') deep = 17,292 ft^3

V_{MH} = [(π/4 * (2.83')^2 * 1.38' deep) + (0.5 *(π/4 * (2.83')^2 + π/4 * (4.83')^2) * 2.5' deep) + (10.75' * π/4 * (4.83')^2)] =
= 237 ft^3

V_{Total} = 2,615 ft^3 + 17,292 ft^3 + 237 ft^3 = 20,144 ft^3

Water Uplift Force:

F_{Water} = V_{Total} * 0.0642 kcf
= 20,144 ft^3 * 0.0642 kcf = 1,294 k

Factor of Safety:

FS = (DC_{Total} + EV) / F_{water}
DC_{Total} = 1,354 k (See Bearing Pressure Check)
EV = 1,072 k (See Bearing Pressure Check)
= (1,354 k + 1,072 k)/1,294 k
= 1.87 > 1.5, OK

BY JED DATE 06/02/2026 SUBJECT McNAIR HS PUMP STATION SHEET NO. _____ OF _____

CHKD.BY _____ DATE _____ JOB NO. _____

BOX SECTION DESIGN

Note:

- The reinforced concrete beam will be fixed to the exterior walls.
- The horizontal length of wall that was considered effective for resisting concentrated demands from the roof beam was assumed as the bearing width plus two times the wall thickness.
- Demands at the base of the wall will be calculated using Roark's Formulas.

SAP 2000 Unfactored Input Loads:

DC_{Slab} = 0.15 kcf * 1' * 2' = 0.30 klf

EV = 0.125 kcf * 1' * (13.71') = 1.71 klf

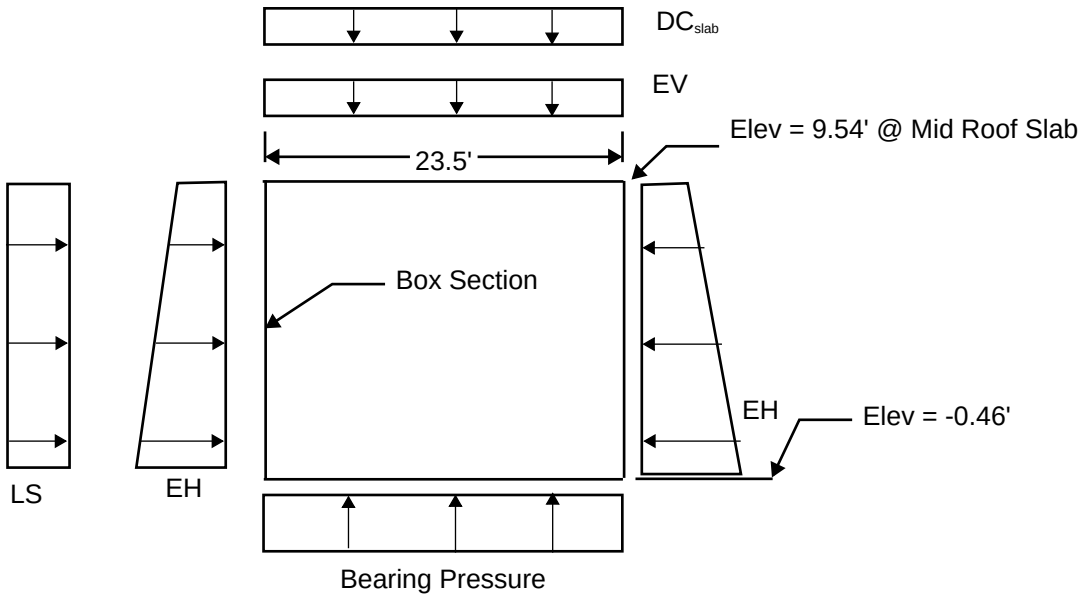
EH_{top} = 0.12 kcf/ft * (24.25'- 9.54') = 1.76 ksf/ft

EH_{bot} = 0.12 kcf/ft * (24.25' + 0.46') = 2.97 ksf/ft

LS = 0.072 ksf/ft

Bearing Pressure = 3.31 ksf

Sketch:



SAP2000 Factored Output Demands:

Roof Slab:

M_u (+) = 89.5 k-ft/ft (Bottom Mat Reinforcement)

M_u(-) = 63.1 k-ft/ft (Top Mat Reinforcement)

V_u = 23.2 k/ft

Footing Slab:

M_u (+) = 81.8 k-ft/ft (Bottom Mat Reinforcement)

M_u(-) = 109.5 k-ft/ft (Top Mat Reinforcement)

V_u = 29.5 k/ft

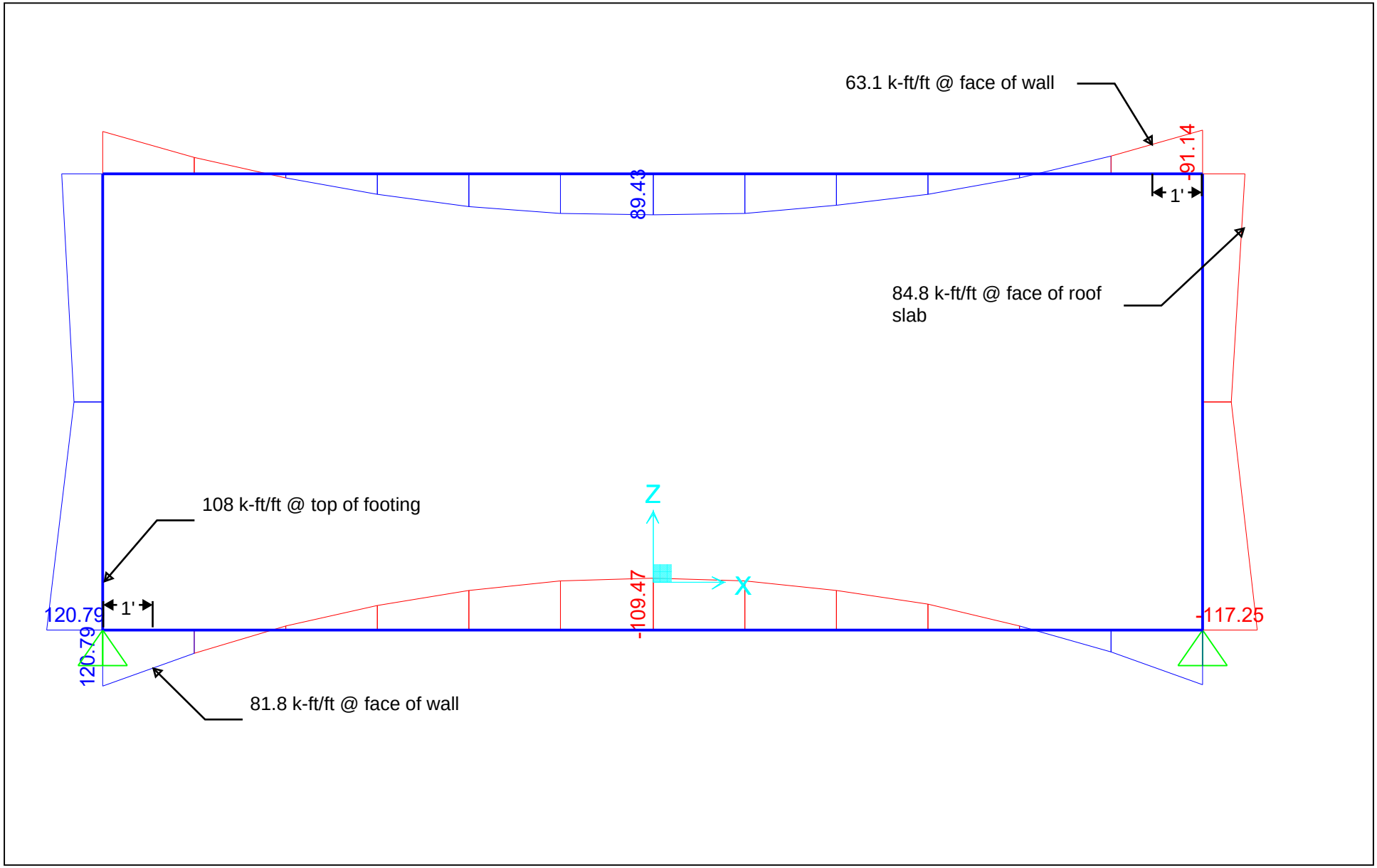
Walls:

M_u = 108 k-ft/ft (Bottom Corner)

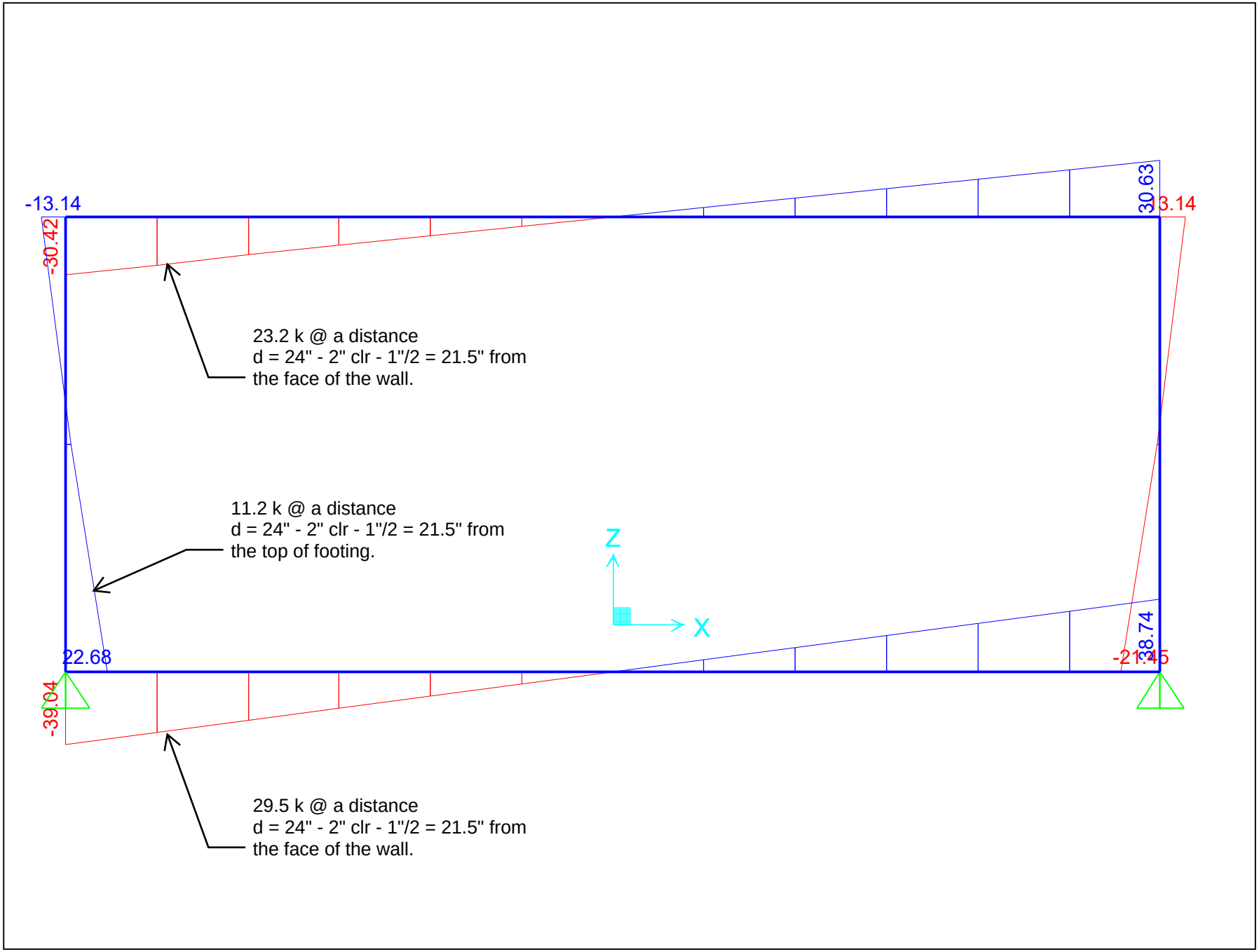
M_u = 84.8 k-ft/ft (Top Corner)

V_u = 11.2 k/ft

Box Section Demands.sdb 4/23/2026



SAP2000 23.3.1 Moment 3-3 Diagram (STR 1) Kip, ft, F


-13.14
30.63
13.14
-30.42
23.2 k @ a distance
d = 24" - 2" clr - 1"/2 = 21.5" from
the face of the wall.
11.2 k @ a distance
d = 24" - 2" clr - 1"/2 = 21.5" from
the top of footing.
Z
X
22.68
38.74
-21.45
-39.04
29.5 k @ a distance
d = 24" - 2" clr - 1"/2 = 21.5" from
the face of the wall.

BY: JED DATE: 4/16/2026 McNair HS

CHKD. BY: DATE: Pump Station JOB NO.: 2026021

ROOF SLAB - FLEXURE (TOP MAT REINFORCEMENT)

Input:

M_u=	63.1	k-ft
f'c=	3600	psi
fy=	60000	psi
φ =	0.9	
b_1=	0.85	
h=	24	in.
b=	12	in.
Clear Cover =	2.00	in.
Bar Spacing =	6	in.

Dia. of Main Bar = #6 0.750 in.

Area of Main Bar = #6 0.440 in^2

$$d = h - Clr\ Cover - \frac{Bar\ dia}{2} = 21.63 \text{ in.}$$

$$S_c = \frac{bh^2}{6} = 1152 \text{ in}^3$$

$$f_r = 0.24\sqrt{f'_c} = 455 \text{ psi}$$

$M_{u(min)}$= 52.5 K-FT

$$M_{CR} = \gamma_3\left[(\gamma_1 f_r + \gamma_2 f_{cpe})S_c - M_{dnc}\left(\frac{S_c}{S_{nc}} - 1\right)\right] \quad \text{[AASHTO 5.6.3.3-1]}$$

γ_1 =	1.6	
γ_2 =	1	
γ_3 =	0.75	
f_r =	455	psi
f_{cpe} =	0	psi
S_c =	1152	in^3
S_{nc} =	1152	in^3
M_{dnc}	0	k-ft
M_{CR} =	52.5	k-ft

Design Ultimate Moment; M_u= 63.1 K-FT (Minimum of 1.33M_u or M_{CR})

$$a = \frac{A_s f_y}{0.85 f'_c b} = 1.44 \text{ in.}$$

$$c = \frac{a}{b_1} = 1.692 \text{ in.}$$

ε = 0.0353 in/in. *Therefore tension controlled*

$A_{s,provided}$ = 0.880 in^2 $\phi M_n = \phi A_s f_y\left(d - \frac{a}{2}\right)$ = 82.8 k-ft > M_u= 63.1 k-ft

USE #6 @ 6" TOP MAT D/C: 0.76 **OK**

BY: JED DATE: 4/16/2026 McNair HS

CHKD. BY: DATE: Pump Station JOB NO.: 2026021

ROOF SLAB - FLEXURE (BOTTOM MAT REINFORCEMENT)

Input:

M_u=	89.5	k-ft
f'c=	3600	psi
fy=	60000	psi
φ =	0.9	
b_1=	0.85	
h=	24	in.
b=	12	in.
Clear Cover =	2.00	in.
Bar Spacing =	6	in.
Dia. of Main Bar =	#7	0.875 in.
Area of Main Bar =	#7	0.600 in^2

$$d = h - Clr\ Cover - \frac{Bar\ dia}{2} = 21.56 \text{ in.}$$

$$S_c = \frac{bh^2}{6} = 1152 \text{ in}^3$$

$$f_r = 0.24\sqrt{f'_c} = 455 \text{ psi}$$

$M_{u(min)}$= 52.5 K-FT

$$M_{CR} = \gamma_3\left[(\gamma_1 f_r + \gamma_2 f_{cpe})S_c - M_{dnc}\left(\frac{S_c}{S_{nc}} - 1\right)\right] \quad \text{[AASHTO 5.6.3.3-1]}$$

γ_1 =	1.6	
γ_2 =	1	
γ_3 =	0.75	
f_r =	455	psi
f_{cpe} =	0	psi
S_c =	1152	in^3
S_{nc} =	1152	in^3
M_{dnc}	0	k-ft
M_{CR} =	52.5	k-ft

Design Ultimate Moment; M_u= 89.5 K-FT (Minimum of 1.33M_u or M_{CR})

$$a = \frac{A_s f_y}{0.85 f'_c b} = 1.96 \text{ in.}$$

$$c = \frac{a}{b_1} = 2.307 \text{ in.}$$

ε = 0.025 in/in. *Therefore tension controlled*

$A_{s,provided}$ = 1.200 in^2 $\phi M_n = \phi A_s f_y\left(d - \frac{a}{2}\right)$ = 111.1 k-ft > M_u= 89.5 k-ft

USE #7 @ 6" BOTTOM MAT D/C: 0.81 **OK**

BY: JED DATE: 4/16/2026 McNair HS

CHKD. BY: DATE: Pump Station JOB NO.: 2026021

ROOF SLAB - SHEAR DESIGN

V_u = 23.20 kip

f'_c = 3600 psi

f_y = 60000 psi

φ = 0.90 [AASHTO Art. 5.5.4.2]

β = 2.0 [AASHTO Art. 5.7.3.4.1]

θ = 45 ° [AASHTO Art. 5.7.3.4.1]

b_v = 12.00 in

Note: This calculation uses the simplified procedure for nonprestressed sections per AASHTO LRFD 5.7.3.3 and 5.7.3.4.1

Dia. Of Stirrup = #4 0.500 in.

Area of Stirrup = #4 0.200 in^2

No. Legs of Stirrup = 0

A_v = 0.00 in^2

Spacing of Stirrup, s = 12.00 in

d_v = 20.91 in [AASHTO Art. 5.7.2.8]

Vc = $0.0316\beta\sqrt{f'_c}b_v d_v =$ 30.1 kip

Vs = $\frac{A_v f_y d_v \cot\theta}{s} =$ 0.0 kip

$V_n = V_c + V_s =$ 30.1 kip

$V_n = 0.25 f'_c b_v d_v =$ 225.8 kip

φV_n = 27.07 > 23.20 OK D/C: 0.86 OK

NO REINFORCEMENT NEEDED

BY: JED DATE: 4/16/2026 McNair HS

CHKD. BY: DATE: Pump Station JOB NO.: 2026021

FOOTING SLAB - FLEXURE (TOP MAT REINFORCEMENT)

Input:

M_u=	109.5	k-ft
f'c=	3600	psi
fy=	60000	psi
φ =	0.9	
b_1=	0.85	
h=	24	in.
b=	12	in.
Clear Cover =	2.00	in.
Bar Spacing =	6	in.

Dia. of Main Bar = #8 1.000 in.

Area of Main Bar = #8 0.785 in^2

$$d = h - Clr\ Cover - \frac{Bar\ dia}{2} = 21.50 \text{ in.}$$

$$S_c = \frac{bh^2}{6} = 1152 \text{ in}^3$$

$$f_r = 0.24\sqrt{f'_c} = 455 \text{ psi}$$

$M_{u(min)}$= 52.5 K-FT

$$M_{CR} = \gamma_3\left[(\gamma_1 f_r + \gamma_2 f_{cpe})S_c - M_{dnc}\left(\frac{S_c}{S_{nc}} - 1\right)\right] \quad \text{[AASHTO 5.6.3.3-1]}$$

γ_1 =	1.6	
γ_2 =	1	
γ_3 =	0.75	
f_r =	455	psi
f_{cpe} =	0	psi
S_c =	1152	in^3
S_{nc} =	1152	in^3
M_{dnc}	0	k-ft
M_{CR} =	52.5	k-ft

Design Ultimate Moment; M_u= 109.5 K-FT (Minimum of 1.33M_u or M_{CR})

$$a = \frac{A_s f_y}{0.85 f'_c b} = 2.57 \text{ in.}$$

$$c = \frac{a}{b_1} = 3.018 \text{ in.}$$

ε = 0.0184 in/in. *Therefore tension controlled*

$A_{s,provided}$ = 1.570 in^2 $\phi M_n = \phi A_s f_y\left(d - \frac{a}{2}\right)$ = 142.8 k-ft > M_u= 109.5 k-ft

USE #8 @ 6" TOP MAT D/C: 0.77 **OK**

BY: JED DATE: 4/16/2026 McNair HS

CHKD. BY: DATE: Pump Station JOB NO.: 2026021

FOOTING SLAB - FLEXURE (BOTTOM MAT REINFORCEMENT)

Input:

M_u=	81.8	k-ft
f'c=	3600	psi
fy=	60000	psi
φ =	0.9	
b_1=	0.85	
h=	24	in.
b=	12	in.
Clear Cover =	3.00	in.
Bar Spacing =	6	in.

Dia. of Main Bar = #8 1.000 in.

Area of Main Bar = #8 0.785 in^2

$$d = h - Clr\ Cover - \frac{Bar\ dia}{2} = 20.50 \text{ in.}$$

$$S_c = \frac{bh^2}{6} = 1152 \text{ in}^3$$

$$f_r = 0.24\sqrt{f'_c} = 455 \text{ psi}$$

$M_{u(min)}$= 52.5 K-FT

$$M_{CR} = \gamma_3\left[(\gamma_1 f_r + \gamma_2 f_{cpe})S_c - M_{dnc}\left(\frac{S_c}{S_{nc}} - 1\right)\right] \quad \text{[AASHTO 5.6.3.3-1]}$$

γ_1 =	1.6	
γ_2 =	1	
γ_3 =	0.75	
f_r =	455	psi
f_{cpe} =	0	psi
S_c =	1152	in^3
S_{nc} =	1152	in^3
M_{dnc}	0	k-ft
M_{CR} =	52.5	k-ft

Design Ultimate Moment; M_u= 81.8 K-FT (Minimum of 1.33M_u or M_{CR})

$$a = \frac{A_s f_y}{0.85 f'_c b} = 2.57 \text{ in.}$$

$$c = \frac{a}{b_1} = 3.018 \text{ in.}$$

ε = 0.0174 in/in. *Therefore tension controlled*

$A_{s,provided}$ = 1.570 in^2 $\phi M_n = \phi A_s f_y\left(d - \frac{a}{2}\right)$ = 135.8 k-ft > M_u= 81.8 k-ft

USE #8 @ 6" BOTTOM MAT D/C: 0.60 **OK**

BY: JED DATE: 4/16/2026 McNair HS

CHKD. BY: DATE: Pump Station JOB NO.: 2026021

BOXED SECTION WALLS - FLEXURE (OUTSIDE FACE REINFORCEMENT TOP CORNER)

Input:

M_u= 84.8 k-ft

f'c= 3600 psi

fy= 60000 psi

φ = 0.9

b_1= 0.85

h= 24 in.

b= 12 in.

Clear Cover = 2.00 in.

Bar Spacing = 6 in.

Dia. of Main Bar = #8 1.000 in.

Area of Main Bar = #8 0.785 in^2

$$d = h - Clr\ Cover - \frac{Bar\ dia}{2} = 21.50 \text{ in.}$$

$$S_c = \frac{bh^2}{6} = 1152 \text{ in}^3$$

$$f_r = 0.24\sqrt{f'_c} = 455 \text{ psi}$$

$M_{u(min)}$= 52.5 K-FT

$$M_{CR} = \gamma_3\left[(\gamma_1 f_r + \gamma_2 f_{cpe})S_c - M_{dnc}\left(\frac{S_c}{S_{nc}} - 1\right)\right] \quad \text{[AASHTO 5.6.3.3-1]}$$

γ_1 = 1.6

γ_2 = 1

γ_3 = 0.75

f_r = 455 psi

f_{cpe} = 0 psi

S_c = 1152 in^3

S_{nc} = 1152 in^3

M_{dnc} 0 k-ft

M_{CR} = 52.5 k-ft

Design Ultimate Moment; M_u= 84.8 K-FT (Minimum of 1.33M_u or M_{CR})

$$a = \frac{A_s f_y}{0.85 f'_c b} = 2.57 \text{ in.}$$

$$c = \frac{a}{b_1} = 3.018 \text{ in.}$$

ε = 0.0184 in/in. *Therefore tension controlled*

$A_{s,provided}$ = 1.570 in^2 $\phi M_n = \phi A_s f_y\left(d - \frac{a}{2}\right)$ = 142.8 k-ft > M_u= 84.8 k-ft

USE #8 @ 6" TOP MAT D/C: 0.59 **OK**

BY: JED DATE: 4/16/2026 McNair HS

CHKD. BY: DATE: Pump Station JOB NO.: 2026021

BOXED SECTION WALLS - FLEXURE (OUTSIDE FACE REINFORCEMENT BOTTOM CORNER)

Input:

M_u= 108.0 k-ft

f'c= 3600 psi

fy= 60000 psi

φ = 0.9

b_1= 0.85

h= 24 in.

b= 12 in.

Clear Cover = 3.00 in.

Bar Spacing = 6 in.

Dia. of Main Bar = #8 1.000 in.

Area of Main Bar = #8 0.785 in^2

$$d = h - Clr\ Cover - \frac{Bar\ dia}{2} = 20.50 \text{ in.}$$

$$S_c = \frac{bh^2}{6} = 1152 \text{ in}^3$$

$$f_r = 0.24\sqrt{f'_c} = 455 \text{ psi}$$

$M_{u(min)}$= 52.5 K-FT

$$M_{CR} = \gamma_3 \left[(\gamma_1 f_r + \gamma_2 f_{cpe}) S_c - M_{dnc} \left(\frac{S_c}{S_{nc}} - 1 \right) \right] \quad \text{[AASHTO 5.6.3.3-1]}$$

γ_1 = 1.6

γ_2 = 1

γ_3 = 0.75

f_r = 455 psi

f_{cpe} = 0 psi

S_c = 1152 in^3

S_{nc} = 1152 in^3

M_{dnc} 0 k-ft

M_{CR} = 52.5 k-ft

Design Ultimate Moment; M_u= 108.0 K-FT (Minimum of 1.33M_u or M_{CR})

$$a = \frac{A_s f_y}{0.85 f'_c b} = 2.57 \text{ in.}$$

$$c = \frac{a}{b_1} = 3.018 \text{ in.}$$

ε = 0.0174 in/in. *Therefore tension controlled*

$A_{s,provided}$ = 1.570 in^2 $\phi M_n = \phi A_s f_y \left(d - \frac{a}{2} \right)$ = 135.8 k-ft > M_u= 108.0 k-ft

USE #8 @ 6" BOTTOM MAT D/C: 0.80 **OK**

BY: JED DATE: 4/16/2026 McNair HS

CHKD. BY: DATE: Pump Station JOB NO.: 2026021

BOXED SECTION WALLS - SHEAR DESIGN

V_u = 11.20 kip

f'_c = 3600 psi

f_y = 60000 psi

Note: This calculation uses the simplified procedure for nonprestressed sections per AASHTO LRFD 5.7.3.3 and 5.7.3.4.1

φ = 0.90 [AASHTO Art. 5.5.4.2]

β = 2.0 [AASHTO Art. 5.7.3.4.1]

θ = 45 ° [AASHTO Art. 5.7.3.4.1]

b_v = 12.00 in

Dia. Of Stirrup = #4 0.500 in.

Area of Stirrup = #4 0.200 in^2

No. Legs of Stirrup = 0

A_v = 0.00 in^2

Spacing of Stirrup, s = 12.00 in

d_v = 20.22 in [AASHTO Art. 5.7.2.8]

Vc = $0.0316\beta\sqrt{f'_c}b_v d_v =$ 29.1 kip

Vs = $\frac{A_v f_y d_v \cot\theta}{s} =$ 0.0 kip

$V_n = V_c + V_s =$ 29.1 kip

$V_n = 0.25 f'_c b_v d_v =$ 218.3 kip

φV_n = 26.18 > 11.20 OK

D/C: 0.43 OK

NO REINFORCEMENT REQUIRED

BY JED DATE 06/02/2026 SUBJECT McNAIR HS PUMP STATION SHEET NO. _____ OF _____

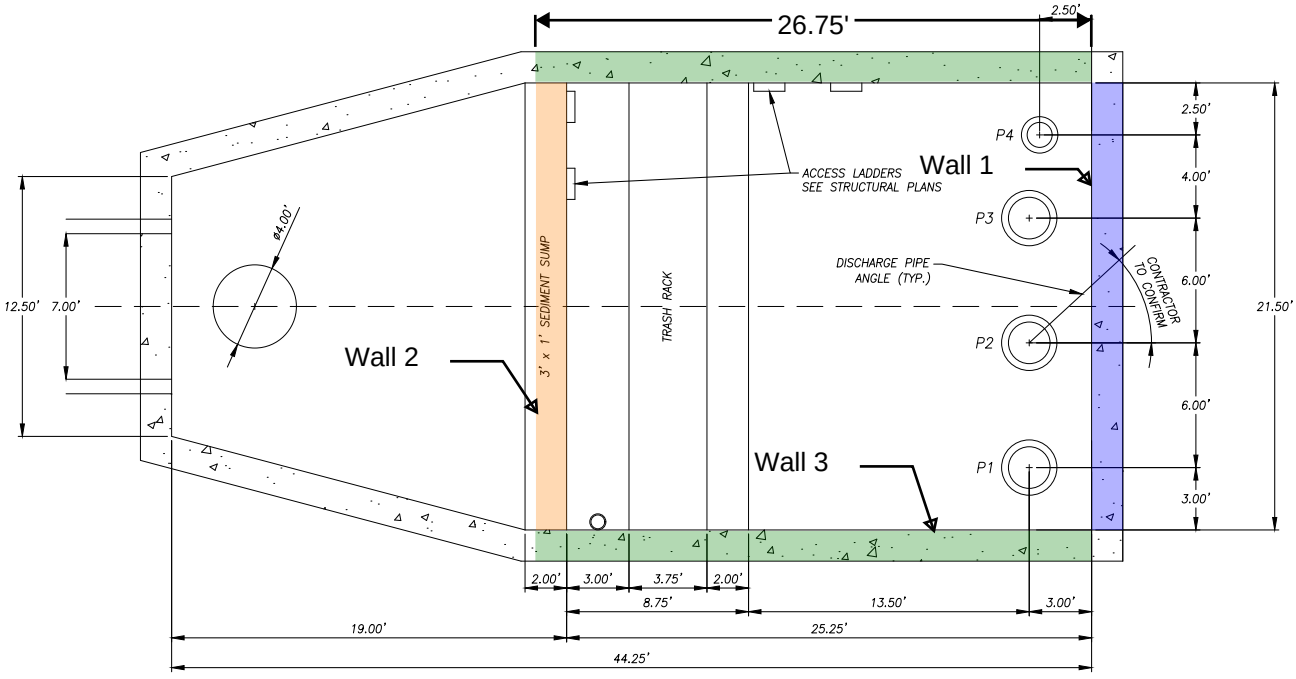
CHKD.BY _____ DATE _____ JOB NO. _____

WALL DESIGN

Note:

- Demands at the base of the wall will be calculated using Roark's Formulas for Wall 1.
- Wall 2 & 3 demands were determined using SAP 2000.

Sketch:



BY JED DATE 06/02/2026 SUBJECT McNAIR HS PUMP STATION SHEET NO. _____ OF _____

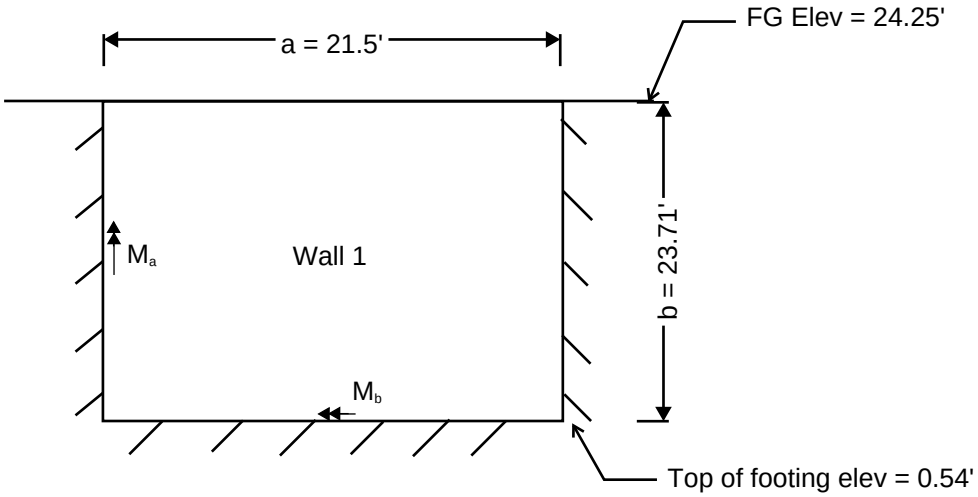
CHKD.BY _____ DATE _____ JOB NO. _____

WALL 1 DESIGN:

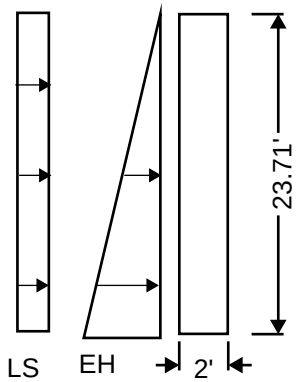
Notes:

- Wall 1 was assumed to be fixed on all sides except the top of the wall.

Wall 1 Boundary Condition Diagram & Loading Diagram:



Elevation View



Loading Diagram

Unfactored Loads:

EH_{top} = 0.12 kcf * (0') = 0 ksf/ft

$EH_{bot} = q_{EH}$ = 0.12 kcf * (23.71') = 2.85 ksf/ft

$LL = q_{LS}$ = 0.072 ksf/ft

Factored Demands:

$M_b = \sigma_{b\ total} * S_x$

$\sigma_{b\ Uniform} = (-\beta_1 * q_{LS} * b^2)/t^2$ [Roark's Formulas Table 11.4 Case 10a]

β_1 = 0.266 for (a/b = 0.91) [Roark's Formulas Table 11.4 Case 10a]

q_{LS} = 0.072 ksf/ft

b = 23.71'

t = 2'

$= (-0.266 * 0.072\ ksf/ft * (23.71')^2)/(2')^2 = -2.69\ ksf/ft$

$\sigma_{b\ Triangular} = (-\beta_1 * q_{EH} * b^2)/t^2$ [Roark's Formulas Table 11.4 Case 10d]

β_1 = 0.167 for (a/b = 0.91) [Roark's Formulas Table 11.4 Case 10d]

q_{EH} = 2.85 ksf/ft

$= (-0.167 * 2.85\ ksf/ft * (23.71')^2)/(2')^2 = -66.8\ ksf/ft$

$S_x = (1' * t^2)/6 = 0.67\ ft^3$

$M_b = (1.75 * \sigma_{b\ Uniform} + 1.50 * \sigma_{b\ Triangular}) * S_x$

$= (1.75 * -2.69\ ksf + 1.50 * -66.8\ ksf/ft) * 0.67\ ft^3$

= 70.3 k-ft (Resisted by vertical outside face reinforcement)

BY JED DATE 06/02/2026 SUBJECT McNAIR HS PUMP STATION SHEET NO. _____ OF _____

CHKD.BY _____ DATE _____ JOB NO. _____

WALL 1 DESIGN (CONT.):

Factored Demands:

$M_a = \sigma_{a\ total} * S_x$

$\sigma_{a\ Uniform} = (-\beta_3 * q_{LS} * b^2)/t^2$ [Roark's Formulas Table 11.4 Case 10a]

$\beta_3 = 0.427$ for (a/b = 0.91) [Roark's Formulas Table 11.4 Case 10a]

$q_{LS} = 0.072$ ksf/ft

b = 23.71'

t = 2'

$= (-0.427 * 0.072\ ksf/ft * (23.71')^2)/(2')^2 = -4.32\ ksf/ft$

$\sigma_{a\ Triangular} = (-\beta_2 * q_{EH} * b^2)/t^2$ [Roark's Formulas Table 11.4 Case 10d]

$\beta_2 = 0.151$ for (a/b = 0.91) [Roark's Formulas Table 11.4 Case 10d]

$q_{EH} = 2.85$ ksf/ft

$= (-0.151 * 2.85\ ksf/ft * (23.71')^2)/(2')^2 = -60.5\ ksf/ft$

$S_x = 0.67\ ft^3$

$M_a = (1.75 * \sigma_{a\ Uniform} + 1.50 * \sigma_{a\ Triangular}) * S_x$

$= (1.75 * -4.32\ ksf + 1.50 * -60.5\ ksf/ft) * 0.67\ ft^3$

$= -65.9$ k-ft (Resisted by outside face reinforcement)

M_a demands are governed by Wall 3 demands, therefore the reinforcement size and spacing used for Wall 3 was used for Wall 1.

BY: JED DATE: 4/16/2026 McNair HS

CHKD. BY: DATE: Pump Station JOB NO.: 2026021

WALL 1 - FLEXURE (VERTICAL OUTSIDE FACE REINFORCEMENT)

Input:

M_u=	70.3	k-ft
f'c=	3600	psi
fy=	60000	psi
φ =	0.9	
b_1=	0.85	
h=	24	in.
b=	12	in.
Clear Cover =	2.00	in.
Bar Spacing =	6	in.

Dia. of Main Bar = #8 1.000 in.

Area of Main Bar = #8 0.785 in^2

$$d = h - Clr\ Cover - \frac{Bar\ dia}{2} = 21.50 \text{ in.}$$

$$S_c = \frac{bh^2}{6} = 1152 \text{ in}^3$$

$$f_r = 0.24\sqrt{f'_c} = 455 \text{ psi}$$

$M_{u(min)}$= 52.5 K-FT

$$M_{CR} = \gamma_3\left[(\gamma_1 f_r + \gamma_2 f_{cpe})S_c - M_{dnc}\left(\frac{S_c}{S_{nc}} - 1\right)\right] \quad \text{[AASHTO 5.6.3.3-1]}$$

γ_1 =	1.6	
γ_2 =	1	
γ_3 =	0.75	
f_r =	455	psi
f_{cpe} =	0	psi
S_c =	1152	in^3
S_{nc} =	1152	in^3
M_{dnc}	0	k-ft
M_{CR} =	52.5	k-ft

Design Ultimate Moment; M_u= 70.3 K-FT (Minimum of 1.33M_u or M_{CR})

$$a = \frac{A_s f_y}{0.85 f'_c b} = 2.57 \text{ in.}$$

$$c = \frac{a}{b_1} = 3.018 \text{ in.}$$

ε = 0.0184 in/in. *Therefore tension controlled*

$A_{s,provided}$ = 1.570 in^2 $\phi M_n = \phi A_s f_y\left(d - \frac{a}{2}\right)$ = 142.8 k-ft > M_u= 70.3 k-ft

USE #8 @ 6" D/C: 0.49 **OK**

BY: JED DATE: 4/16/2026 McNair HS

CHKD. BY: DATE: Pump Station JOB NO.: 2026021

WALL 1 - FLEXURE (OUTSIDE FACE HORIZONTAL REINFORCEMENT AT THE WALL CORNER)

Input:

M_u= 65.9 k-ft

f'c= 3600 psi

fy= 60000 psi

φ = 0.9

b_1= 0.85

h= 24 in.

b= 12 in.

Clear Cover = 2.00 in.

Bar Spacing = 6 in.

Dia. of Main Bar = #8 1.000 in.

Area of Main Bar = #8 0.785 in^2

$$d = h - Clr\ Cover - \frac{Bar\ dia}{2} = 21.50 \text{ in.}$$

$$S_c = \frac{bh^2}{6} = 1152 \text{ in}^3$$

$$f_r = 0.24\sqrt{f'_c} = 455 \text{ psi}$$

$M_{u(min)}$= 52.5 K-FT

$$M_{CR} = \gamma_3\left[(\gamma_1 f_r + \gamma_2 f_{cpe})S_c - M_{dnc}\left(\frac{S_c}{S_{nc}} - 1\right)\right] \quad \text{[AASHTO 5.6.3.3-1]}$$

γ_1 = 1.6

γ_2 = 1

γ_3 = 0.75

f_r = 455 psi

f_{cpe} = 0 psi

S_c = 1152 in^3

S_{nc} = 1152 in^3

M_{dnc} 0 k-ft

M_{CR} = 52.5 k-ft

Design Ultimate Moment; M_u= 65.9 K-FT (Minimum of 1.33M_u or M_{CR})

$$a = \frac{A_s f_y}{0.85 f'_c b} = 2.57 \text{ in.}$$

$$c = \frac{a}{b_1} = 3.018 \text{ in.}$$

ε = 0.0184 in/in. *Therefore tension controlled*

$A_{s,provided}$ = 1.570 in^2 $\phi M_n = \phi A_s f_y\left(d - \frac{a}{2}\right)$ = 142.8 k-ft > M_u= 65.9 k-ft

USE #8 @ 6" BOTTOM MAT D/C: 0.46 **OK**

BY JED DATE 06/02/2026 SUBJECT McNAIR HS PUMP STATION SHEET NO. _____ OF _____

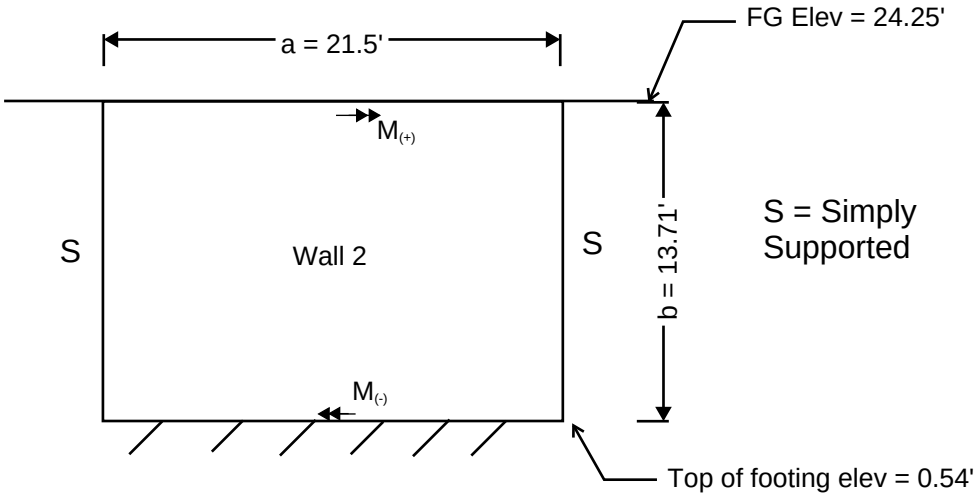
CHKD.BY _____ DATE _____ JOB NO. _____

WALL 2 DESIGN:

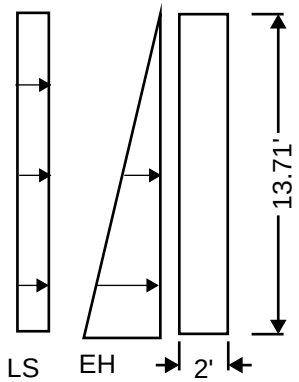
Notes:

- Demands at the base and the sides of the wall will be calculated using Roark's Formulas.
- Wall 2 was assumed to be fixed on all sides except the top of the wall.

Wall 1 Boundary Condition Diagram & Loading Diagram:



Elevation View



Loading Diagram

Unfactored Loads:

EH_{top} = 0.12 kcf * (0') = 0 ksf/ft

$EH_{bot} = q_{EH}$ = 0.12 kcf * (13.71') = 1.65 ksf/ft

$LL = q_{LS}$ = 0.072 ksf/ft

Factored Demands:

$M_{(-)} = \sigma * S_x$

$\sigma_{Uniform} = (-\beta_1 * q_{LS} * b^2)/t^2$ [Roark's Formulas Table 11.4 Case 7a]

β_1 = 1.353 for (a/b = 1.57) [Roark's Formulas Table 11.4 Case 7a]

q_{LS} = 0.072 ksf/ft

b = 13.71'

t = 2'

$= (-1.353 * 0.072 \text{ ksf/ft} * (13.71')^2)/(2')^2 = -4.58$ ksf/ft

$\sigma_{Triangular} = (-\beta * q_{EH} * b^2)/t^2$ [Roark's Formulas Table 11.4 Case 7d]

β = 0.544 for (a/b = 1.57) [Roark's Formulas Table 11.4 Case 7d]

q_{EH} = 1.65 ksf/ft

$= (-0.544 * 1.65 \text{ ksf/ft} * (13.71')^2)/(2')^2 = -42.2$ ksf/ft

$S_x = (1' * t^2)/6 = 0.67 \text{ ft}^3$

$M_{(-)} = (1.75 * \sigma_{Uniform} + 1.50 * \sigma_{Triangular}) * S_x$

$= (1.75 * -4.58 \text{ ksf} + 1.50 * -42.2 \text{ ksf/ft}) * 0.67 \text{ ft}^3$

= 47.8 k-ft (Resisted by vertical outside face reinforcement)

BY JED DATE 06/02/2026 SUBJECT McNAIR HS PUMP STATION SHEET NO. _____ OF _____

CHKD.BY _____ DATE _____ JOB NO. _____

WALL 2 DESIGN (CONT.):

Factored Demands:

$M_{(+)} = \sigma * S_x$

$\sigma_{Uniform} = (\beta_2 * q_{LS} * b^2)/t^2$ [Roark's Formulas Table 11.4 Case 7a]

$\beta_2 = 0.724$ for (a/b = 1.57) [Roark's Formulas Table 11.4 Case 7a]

$q_{LS} = 0.072$ ksf/ft

b = 13.71'

t = 2'

$= (0.724 * 0.072 \text{ ksf/ft} * (13.71')^2)/(2')^2 = 2.45$ ksf/ft

$S_x = 0.67 \text{ ft}^3$

$M_{(+)} = (1.75 * \sigma_{Uniform}) * S_x$

$= (1.75 * 2.45 \text{ ksf}) * 0.67 \text{ ft}^3$

= 2.87 k-ft (Resisted by inside face reinforcement)

BY: JED DATE: 4/16/2026 McNair HS

CHKD. BY: DATE: Pump Station JOB NO.: 2026021

WALL 2 - FLEXURE (VERTICAL OUTSIDE FACE REINFORCEMENT)

Input:

M_u= 47.8 k-ft

f'c= 3600 psi

fy= 60000 psi

φ = 0.9

b_1= 0.85

h= 24 in.

b= 12 in.

Clear Cover = 2.00 in.

Bar Spacing = 12 in.

Dia. of Main Bar = #7 0.875 in.

Area of Main Bar = #7 0.600 in^2

$$d = h - Clr\ Cover - \frac{Bar\ dia}{2} = 21.56 \text{ in.}$$

$$S_c = \frac{bh^2}{6} = 1152 \text{ in}^3$$

$$f_r = 0.24\sqrt{f'_c} = 455 \text{ psi}$$

$M_{u(min)}$= 52.5 K-FT

$$M_{CR} = \gamma_3\left[(\gamma_1 f_r + \gamma_2 f_{cpe})S_c - M_{dnc}\left(\frac{S_c}{S_{nc}} - 1\right)\right] \quad \text{[AASHTO 5.6.3.3-1]}$$

γ_1 = 1.6

γ_2 = 1

γ_3 = 0.75

f_r = 455 psi

f_{cpe} = 0 psi

S_c = 1152 in^3

S_{nc} = 1152 in^3

M_{dnc} 0 k-ft

M_{CR} = 52.5 k-ft

Design Ultimate Moment; M_u= 52.5 K-FT (Minimum of 1.33M_u or M_{CR})

$$a = \frac{A_s f_y}{0.85 f'_c b} = 0.98 \text{ in.}$$

$$c = \frac{a}{b_1} = 1.153 \text{ in.}$$

ε = 0.0531 in/in. *Therefore tension controlled*

$A_{s,provided}$ = 0.600 in^2 $\phi M_n = \phi A_s f_y\left(d - \frac{a}{2}\right)$ = 56.9 k-ft > M_u= 52.5 k-ft

USE #7 @ 12" D/C: 0.92 **OK**

BY: JED DATE: 4/16/2026 McNair HS

CHKD. BY: DATE: Pump Station JOB NO.: 2026021

WALL 2 - FLEXURE (INSIDE FACE REINFORCEMENT)

Input:

M_u= 3.0 k-ft

f'c= 3600 psi

fy= 60000 psi

φ = 0.9

b_1= 0.85

h= 24 in.

b= 12 in.

Clear Cover = 2.00 in.

Bar Spacing = 12 in.

Dia. of Main Bar = #5 0.625 in.

Area of Main Bar = #5 0.306 in^2

$$d = h - Clr\ Cover - \frac{Bar\ dia}{2} = 21.69 \text{ in.}$$

$$S_c = \frac{bh^2}{6} = 1152 \text{ in}^3$$

$$f_r = 0.24\sqrt{f'_c} = 455 \text{ psi}$$

$M_{u(min)}$= 4.0 K-FT

$$M_{CR} = \gamma_3 \left[(\gamma_1 f_r + \gamma_2 f_{cpe}) S_c - M_{dnc} \left(\frac{S_c}{S_{nc}} - 1 \right) \right] \quad \text{[AASHTO 5.6.3.3-1]}$$

γ_1 = 1.6

γ_2 = 1

γ_3 = 0.75

f_r = 455 psi

f_{cpe} = 0 psi

S_c = 1152 in^3

S_{nc} = 1152 in^3

M_{dnc} 0 k-ft

M_{CR} = 52.5 k-ft

Design Ultimate Moment; M_u= 4.0 K-FT (Minimum of 1.33M_u or M_{CR})

$$a = \frac{A_s f_y}{0.85 f'_c b} = 0.50 \text{ in.}$$

$$c = \frac{a}{b_1} = 0.588 \text{ in.}$$

ε = 0.1076 in/in. *Therefore tension controlled*

$A_{s,provided}$ = 0.306 in^2 $\phi M_n = \phi A_s f_y \left(d - \frac{a}{2} \right)$ = 29.5 k-ft > M_u= 4.0 k-ft

USE #5 @ 12" D/C: 0.14 **OK**

BY JED DATE 06/02/2026 SUBJECT McNAIR HS PUMP STATION SHEET NO. _____ OF _____

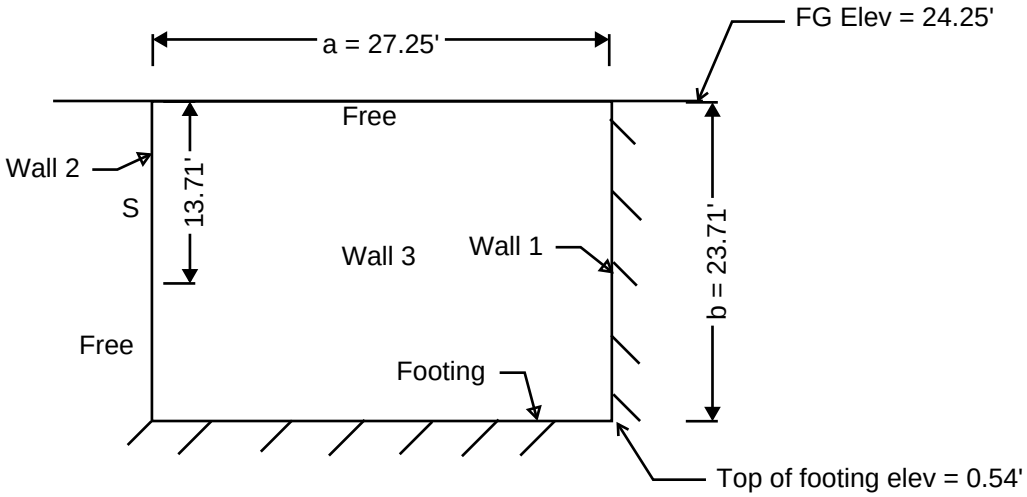
CHKD.BY _____ DATE _____ JOB NO. _____

WALL 3 DESIGN:

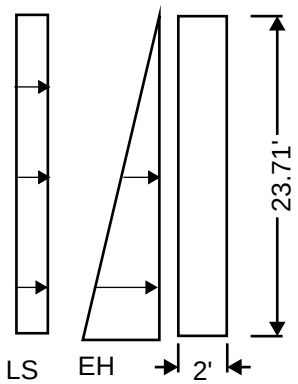
Notes:

- Demands at the base and the sides of the wall were calculated using SAP 2000.
- Wall 3 was assumed to be fixed on two sides, free at the top, and partially simply supported on the remaining side.

Wall 1 Boundary Condition Diagram & Loading Diagram:



Elevation View



Loading Diagram

SAP 2000 Unfactored Input Loads:

EH_{top} = 0.12 kcf * (0') = 0 ksf/ft

EH_{bot} = 0.12 kcf * (23.71') = 2.85 ksf/ft

LL = 0.072 ksf/ft

Factored Demands:

M_{11} Demands:

M_u = -106.3 k-ft (Resisted by horizontal outside face corner reinforcement)

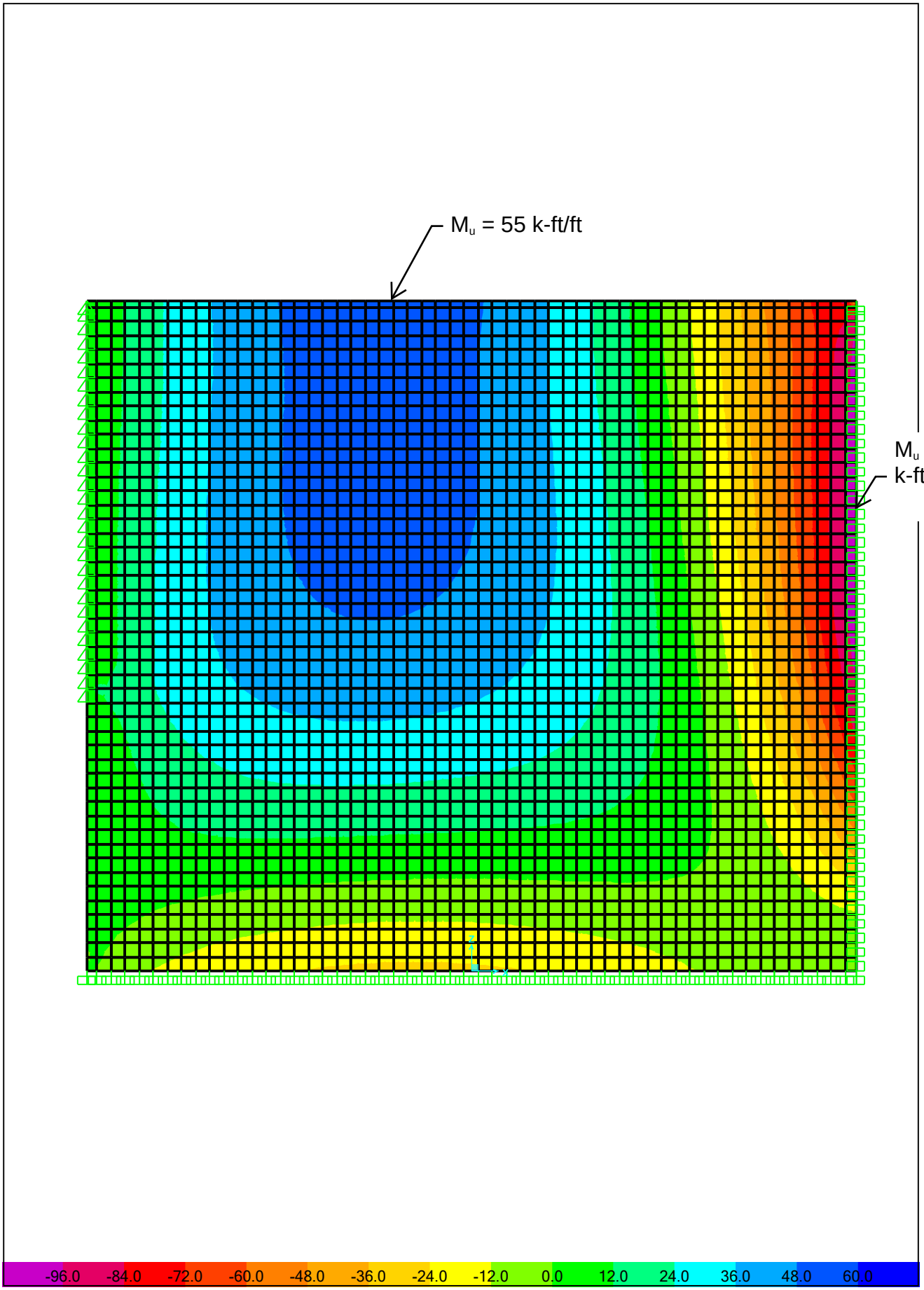
M_u = 55 k-ft (Resisted by horizontal inside face reinforcement)

M_{22} Demands:

M_u = - 135 k-ft (Resisted by vertical outside face reinforcement)

M_u = 36 k-ft (Resisted by vertical inside face reinforcement)

Wall 3 Demands.sdb 4/27/2026



SAP2000 23.3.1 Resultant M11 Diagram (STR 1) Kip, ft, F

BY: JED DATE: 4/16/2026 McNair HS

CHKD. BY: DATE: Pump Station JOB NO.: 2026021

WALL 3 - FLEXURE (OUTSIDE FACE HORIZONTAL REINFORCEMENT AT THE WALL CORNER)

Input:

M_u= 106.0 k-ft

f'c= 3600 psi

fy= 60000 psi

φ = 0.9

b_1= 0.85

h= 24 in.

b= 12 in.

Clear Cover = 2.00 in.

Bar Spacing = 6 in.

Dia. of Main Bar = #8 1.000 in.

Area of Main Bar = #8 0.785 in^2

$$d = h - Clr\ Cover - \frac{Bar\ dia}{2} = 21.50 \text{ in.}$$

$$S_c = \frac{bh^2}{6} = 1152 \text{ in}^3$$

$$f_r = 0.24\sqrt{f'_c} = 455 \text{ psi}$$

$M_{u(min)}$= 52.5 K-FT

$$M_{CR} = \gamma_3\left[(\gamma_1 f_r + \gamma_2 f_{cpe})S_c - M_{dnc}\left(\frac{S_c}{S_{nc}} - 1\right)\right] \quad \text{[AASHTO 5.6.3.3-1]}$$

γ_1 = 1.6

γ_2 = 1

γ_3 = 0.75

f_r = 455 psi

f_{cpe} = 0 psi

S_c = 1152 in^3

S_{nc} = 1152 in^3

M_{dnc} 0 k-ft

M_{CR} = 52.5 k-ft

Design Ultimate Moment; M_u= 106.0 K-FT (Minimum of 1.33M_u or M_{CR})

$$a = \frac{A_s f_y}{0.85 f'_c b} = 2.57 \text{ in.}$$

$$c = \frac{a}{b_1} = 3.018 \text{ in.}$$

ε = 0.0184 in/in. *Therefore tension controlled*

$A_{s,provided}$ = 1.570 in^2 $\phi M_n = \phi A_s f_y\left(d - \frac{a}{2}\right)$ = 142.8 k-ft > M_u= 106.0 k-ft

USE #8 @ 6" D/C: 0.74 **OK**

BY: JED DATE: 4/16/2026 McNair HS

CHKD. BY: DATE: Pump Station JOB NO.: 2026021

WALL 3 - FLEXURE (HORIZONTAL INSIDE FACE REINFORCEMENT)

Input:

M_u= 55.0 k-ft

f'c= 3600 psi

fy= 60000 psi

φ = 0.9

b_1= 0.85

h= 24 in.

b= 12 in.

Clear Cover = 2.00 in.

Bar Spacing = 12 in.

Dia. of Main Bar = #8 1.000 in.

Area of Main Bar = #8 0.785 in^2

$$d = h - Clr\ Cover - \frac{Bar\ dia}{2} = 21.50 \text{ in.}$$

$$S_c = \frac{bh^2}{6} = 1152 \text{ in}^3$$

$$f_r = 0.24\sqrt{f'_c} = 455 \text{ psi}$$

$M_{u(min)}$= 52.5 K-FT

$$M_{CR} = \gamma_3 \left[(\gamma_1 f_r + \gamma_2 f_{cpe}) S_c - M_{dnc} \left(\frac{S_c}{S_{nc}} - 1 \right) \right] \quad \text{[AASHTO 5.6.3.3-1]}$$

γ_1 = 1.6

γ_2 = 1

γ_3 = 0.75

f_r = 455 psi

f_{cpe} = 0 psi

S_c = 1152 in^3

S_{nc} = 1152 in^3

M_{dnc} 0 k-ft

M_{CR} = 52.5 k-ft

Design Ultimate Moment; M_u= 55.0 K-FT (Minimum of 1.33M_u or M_{CR})

$$a = \frac{A_s f_y}{0.85 f'_c b} = 1.28 \text{ in.}$$

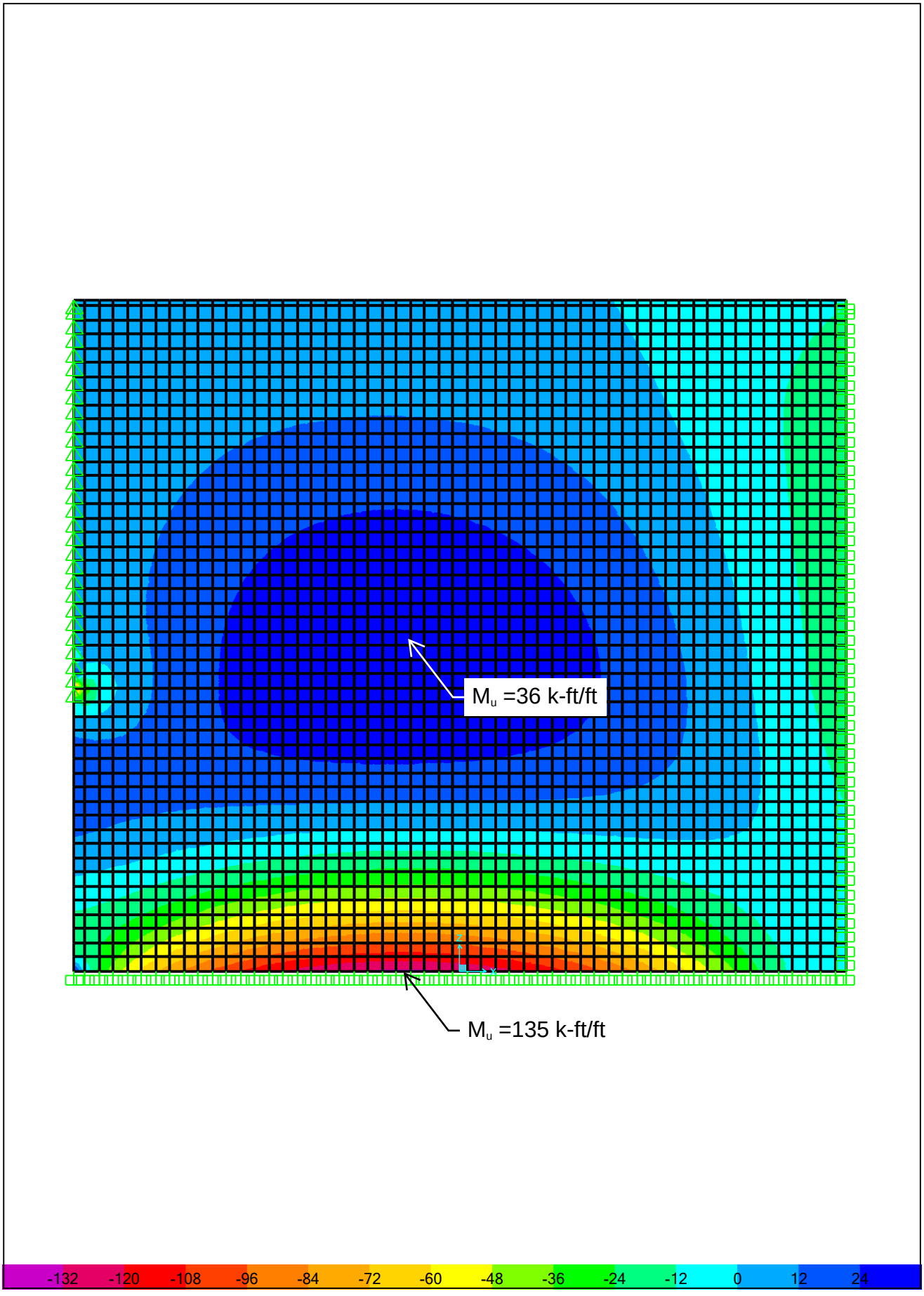
$$c = \frac{a}{b_1} = 1.509 \text{ in.}$$

ε = 0.0397 in/in. *Therefore tension controlled*

$A_{s,provided}$ = 0.785 in^2 $\phi M_n = \phi A_s f_y \left(d - \frac{a}{2} \right)$ = 73.7 k-ft > M_u= 55.0 k-ft

USE #8 @ 12" D/C: 0.75 **OK**

Wall 3 Demands.sdb 4/27/2026



SAP2000 23.3.1 Resultant M22 Diagram (STR 1) Kip, ft, F

BY: JED DATE: 4/16/2026 McNair HS

CHKD. BY: DATE: Pump Station JOB NO.: 2026021

WALL 3 - FLEXURE (VERTICAL OUTSIDE FACE REINFORCEMENT)

Input:

M_u= 135.0 k-ft

f'c= 3600 psi

fy= 60000 psi

φ = 0.9

b_1= 0.85

h= 24 in.

b= 12 in.

Clear Cover = 2.00 in.

Bar Spacing = 6 in.

Dia. of Main Bar = #8 1.000 in.

Area of Main Bar = #8 0.785 in^2

$$d = h - Clr\ Cover - \frac{Bar\ dia}{2} = 21.50 \text{ in.}$$

$$S_c = \frac{bh^2}{6} = 1152 \text{ in}^3$$

$$f_r = 0.24\sqrt{f'_c} = 455 \text{ psi}$$

$M_{u(min)}$= 52.5 K-FT

$$M_{CR} = \gamma_3\left[(\gamma_1 f_r + \gamma_2 f_{cpe})S_c - M_{dnc}\left(\frac{S_c}{S_{nc}} - 1\right)\right] \quad \text{[AASHTO 5.6.3.3-1]}$$

γ_1 = 1.6

γ_2 = 1

γ_3 = 0.75

f_r = 455 psi

f_{cpe} = 0 psi

S_c = 1152 in^3

S_{nc} = 1152 in^3

M_{dnc} 0 k-ft

M_{CR} = 52.5 k-ft

Design Ultimate Moment; M_u= 135.0 K-FT (Minimum of 1.33M_u or M_{CR})

$$a = \frac{A_s f_y}{0.85 f'_c b} = 2.57 \text{ in.}$$

$$c = \frac{a}{b_1} = 3.018 \text{ in.}$$

ε = 0.0184 in/in. *Therefore tension controlled*

$A_{s,provided}$ = 1.570 in^2 $\phi M_n = \phi A_s f_y\left(d - \frac{a}{2}\right)$ = 142.8 k-ft > M_u= 135.0 k-ft

USE #8 @ 6" D/C: 0.95 **OK**

BY: JED DATE: 4/16/2026 McNair HS

CHKD. BY: DATE: Pump Station JOB NO.: 2026021

WALL 3 - FLEXURE (VERTICAL INSIDE FACE REINFORCEMENT)

Input:

M_u=	36.0	k-ft
f'c=	3600	psi
fy=	60000	psi
φ =	0.9	
b_1=	0.85	
h=	24	in.
b=	12	in.
Clear Cover =	2.00	in.
Bar Spacing =	12	in.

Dia. of Main Bar = #8 1.000 in.

Area of Main Bar = #8 0.785 in^2

$$d = h - Clr\ Cover - \frac{Bar\ dia}{2} = 21.50 \text{ in.}$$

$$S_c = \frac{bh^2}{6} = 1152 \text{ in}^3$$

$$f_r = 0.24\sqrt{f'_c} = 455 \text{ psi}$$

$M_{u(min)}$= 47.9 K-FT

$$M_{CR} = \gamma_3 \left[(\gamma_1 f_r + \gamma_2 f_{cpe}) S_c - M_{dnc} \left(\frac{S_c}{S_{nc}} - 1 \right) \right] \quad \text{[AASHTO 5.6.3.3-1]}$$

γ_1 =	1.6	
γ_2 =	1	
γ_3 =	0.75	
f_r =	455	psi
f_{cpe} =	0	psi
S_c =	1152	in^3
S_{nc} =	1152	in^3
M_{dnc}	0	k-ft
M_{CR} =	52.5	k-ft

Design Ultimate Moment; M_u= 47.9 K-FT (Minimum of 1.33M_u or M_{CR})

$$a = \frac{A_s f_y}{0.85 f'_c b} = 1.28 \text{ in.}$$

$$c = \frac{a}{b_1} = 1.509 \text{ in.}$$

ε = 0.0397 in/in. *Therefore tension controlled*

$A_{s,provided}$ = 0.785 in^2 $\phi M_n = \phi A_s f_y \left(d - \frac{a}{2} \right)$ = 73.7 k-ft > M_u= 47.9 k-ft

USE #8 @ 12" D/C: 0.65 **OK**