



CHABOT-LAS POSITAS COMMUNITY COLLEGE DISTRICT PURCHASING DEPARTMENT

February 12, 2026

Addendum No. 01 INVITATION TO BID.: B25/26-04 Las Positas College Exterior Wayfinding Project

To: All Prospective Bidders

This Addendum ONE (01) is issued to incorporate the following changes, additions or deletions to the Invitation to Bid B25/26-04 Las Positas College Exterior Wayfinding Project. Any modifications/changes made by this addendum affect only the portions or paragraphs specifically identified herein; all remaining portions of the Invitation to Bid B25/26-04 Las Positas College Exterior Wayfinding Project to remain in force. It is the responsibility of all responders to conform to this addendum.

A. ADDITIONS, CHANGES AND/OR CLARIFICATIONS:

1. CHANGES:

- a. Page 128, Item 7.3: The following weather days per month graph has been changed to as follows:

Weather Days Per Month			
		May:	1
		June:	1
		July:	0
April:	3	August:	0

- b. Page 129-130: Item 20, 20.5 "N/A – Rain Days. Pursuant to Article 7.3.9 of the General Conditions, the rain days included within the contract period shall be Zero (0) calendar days." shall be changed to **Five (5)** days to align with the graph per item A. 1. a. above.
- c. Page 6, Item 4: "Contractors License Classification. In accordance with the provisions of California Public Contract Code §3300, the District requires that Bidders possess the following classification(s) of California Contractors License B, C45." shall be changed to read "**Contractors License Classification. In accordance with the provisions of California Public Contract Code §3300, the District requires that Bidders possess the following classification(s) of California Contractors License B and/or C45.**"



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- d. A post-bid interview with the apparent qualifying low bidder will occur **2/23 @ 11:00 AM** at Las Positas College Facilities Maintenance Office Trailer.
- e. Project drawings, sheet 4.2, EWF.01A, Location 2 shall be changed to include the following note: **“Layout of EWF.01A-02 exact location to be reviewed with owner at pre-install walk.”**
- f. Sheet 8.20, 8.26, 8.27, 8.29, and 8.31 have been removed from the vehicular sign removal plan. **Pole-mounted parking lot identification signs at Parking lot A-E to remain.**
- g. Sheet 8.21 has been removed from the vehicular sign removal plan. **Existing Marquee sign to remain.**
- h. For sign type BR.02, sheets 11.143 through 11.171 have been added to the project drawings for Engineered drawings (SGN9.1 through SGN9.5) and calculations.
- i. Sheets 2.10, 2.19, 6.30, 6.31, 6.32, 6.33, 7.20, 7.21, 7.22 and 7.23 marked as “intentionally blank” have been removed from the drawings.
- j. On sheets where the following language is notated “Note: BID alternate price with the entire sign using powdercoat finish vs Matthews paint”, Signage Contractor is to disregard. Powdercoating is not included in this project at this time.
- k. On sheet 5.2, the following note “(powder coat to match where applicable)” has been removed. Powdercoating is not included in this project at this time.
- l. Page 140, Section 01 10 00 Table of Contents has added Division 02 existing conditions and Section 02 41 00 Demolition. Previously noted “Trenching Section 31 23 00” shall be changed to read **“Trenching & Backfill Section 31 23 33”**.
- m. Division 02 41 00 “Demolition” has been added to the project specifications.
- n. Page 240: Project specifications “Division 14 Exterior Signage” shall be changed to read **“Division 10 Exterior Signage”**.



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- o. Pg 241 – 253: Include minor modifications including the term “Client” has been removed and shall read as “**Owner**”; 2.1, B was changed to read “**The Owner and Signage Consultant shall review shop drawings and data with such promptness as to cause no delay in the work, minimum 2 weeks to review**”.
- p. Page 239: Division 05 50 00, Part 3, 3.1 – special inspection criteria has been added
- q. Page 255: Project specifications section 26 51 00, Item 1.5, C has been added to read “**Sign type BR.02 lighting shall automatically illuminate at dusk and extinguish at dawn, coincident with adjacent street lighting operation, regardless of control method employed. Existing wiring to support this is available as noted in section 10.1 as-built for reference.**”
- r. Pages 260-261: Project specifications “Trenching Section 31 23 00” shall be changed to read “**Trenching & Backfill Section 31 23 33**”
- s. Any reference in the project specifications to the term “Client” shall be changed to read as “Owner”. Owner is the Chabot-Las Positas Community College District.
- t. Page 138 of Division 00 "(Guarantee" document) is out of order and inserted at page 141.

B. REQUEST FOR INFORMATION QUESTIONS AND RESPONSES:

1. **QUESTION:** Is Union Labor required onsite? If so, what signatory Union is required?

RESPONSE: No, Union Labor is not required on this Project, but prevailing wage is required as well as certified payroll tracking through the California Department of Industrial Relations (DIR).

2. **QUESTION:** Please confirm 126-day project timeline. Does 126 days start from issue of contract or approval of drawings and submittals?

RESPONSE: The 126 days start upon receipt of the Notice to proceed issued by the CLPCCD.

3. **QUESTION:** Would you please let me know what is the engineer estimate for this project?

RESPONSE: \$1,100,000



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4. **QUESTION:** The RFP specifies that a California contractor license is mandatory for the prime contractor.

Could you please confirm whether this license is required at the time of bid submission, or if it is acceptable to submit the bid under a subcontractor's license and then procure the prime contractor license once the bid is awarded?

5. **RESPONSE:** Please see **CHANGES** b. above for clarification on the licenses.

The Bid states ""Contractors License Classification. In accordance with the provisions of California Public Contract Code §3300, the District requires that **Bidders** possess the following classification(s) of California Contractors License B and/or C45. Any Bidder not so duly and properly licensed shall be subject to all penalties imposed by law."

Per the bid, the license is required at the time of bid submission.

6. **QUESTION:** What is the intended purpose or function of utilizing SignComp kit, as opposed to custom fabrication? Access, interchangeability, etc? Is there specific need for the hinge besides internal access?

RESPONSE: To ensure all companies are bidding the same thing, SignComp aluminum extrusion, or equal product, is to be used. Bids should follow the specs to the letter. Any substitutions will be vetted at a later date once the project is awarded. The Intended purpose of utilizing SignComp, or equal product, is consistency in method/documentation, interchangeability and service.

7. **QUESTION:** Can existing pedestrian wayfinding signage that is **removal only** and secured to existing poured concrete slabs be removed at grade level, bolts cut and ground down smooth? Confirm, no need to remove and repour the concrete slabs.

RESPONSE: Existing pedestrian wayfinding signage removals that are secured to an existing concrete slab hardscape are to be unbolted and disposed of by Signage Contractor. The anchor bolts are to be cut and ground smooth flush with the existing concrete hardscape/ pad's surface.

8. **QUESTION:** Please confirm No temporary signage is included in scope. Removal work can begin upon contract approval without temporary signage throughout the project timeframe

RESPONSE: No Temporary signage required at roadway. Removal of signage can begin once all contractual documents are received and executed by both parties.



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9. **QUESTION:** Please confirm there is no city permitting requirement on the contractor.

RESPONSE: Confirmed, No city permitting is required.

10. **QUESTION:** Will the large, existing, electronic display sign at campus entry need full removal of existing footings below grade?

RESPONSE: See addendum item No. A, 1, g.

11. **QUESTION:** Are there any restrictions on working evenings or weekends, as long as prevailing wage daily/weekly rates are followed?

RESPONSE: Hours of work are 7am to 8 pm M-F; Saturday work 9am - 6pm
No Sunday work is allowed. Comply with Livermore noise ordinance (Ord. 1672 § 2, 2002; Ord. 1128 § 2, 1983; 1960 code § 13B.3(f)).

12. **QUESTION:** Parking Lot renaming – please verify that no construction drawings are provided for the new signage required (H, I, K, L) – sign fabricator to match existing.

RESPONSE: Confirmed, signage contractor to match existing parking lot signs.
Reference sheet 8.35.

13. **QUESTION:** During the walk through it was stated that the "complete" below ground concrete footing is to be removed for all signs.

a) Question: The removal will create large voids and will need fill dirt and typically a compaction inspection to determine the stability of the affected area. Please define what portion of this should be included in our bid?

RESPONSE: The following should be included in the bid. Any remaining voids in the soil from a removed sign in landscaped areas should be filled with soil spoils from new sign footing excavations. Filled voids should be hand tamped and grade should be leveled to adjacent grade. Compaction density testing is not required for void fills for existing wayfinding sign foundation removals located in landscaped areas.

At interior pedestrian on-campus signs, to be removed and disposed of by Signage Contractor, below ground concrete footing is to be removed and void filled with onsite native earth - this is to be coordinated with the Owner at time of removal and installation.

At existing vehicular signs along the outer perimeter of the loop road, to be removed and disposed of by Signage Contractor, the below ground concrete footing can be abandoned in place. Contractor is to leave existing footing condition flush with adjacent grade, free of any exposed sharp or rough edges. Existing grade at top of footing should be clean and professional in appearance.



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14. QUESTION: The drawings state "or comparable" in regards to the sign materials and specific aluminum extrusion.

a) To ensure all companies are bidding the same thing, should bids follow the specs to the letter and any substitutions be vetted at a later date once the project is awarded?

RESPONSE: See response to question 6

15. QUESTION: The finish schedule and sign details show PMS paint colors but also mentions (powder coat where applicable)? Who will decide where that would apply or is it best to standardize bids with paint finishes with uv clear coat?

RESPONSE: To ensure standardize bids, all companies are bidding the same thing. All Painted surfaces shall be priced using the manufacturer's or qual product, highest grade acrylic polyurethane for best ultraviolet light resistance, weatherability, and overall longevity of finish and color to match PMS callout. All painted surfaces must receive a UV protective matte clear coat.

Powder coating is not included in this project at this time. See addendum item No. A, 1, j and k.

16. QUESTION: Was unable to locate the engineering for sign type BR.02 (sign # 9.1 & 9.5)

RESPONSE: See addendum item No. A, 1, h.

17. QUESTION: What is the SLEB credit available for the project?

RESPONSE: No SLEB credit is available for this project.

QUESTION: Sheet 8.21 (179 of 355): Can this sign be cut at grade and brought offsite for removal or will everything need to be removed including electrical and foundation?

If sign company is responsible for removing footing, can we receive footing details on existing sign

RESPONSE: See addendum item No. A, 1, g.



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18. QUESTION: Sheet 9.16 (209 of 355): Can this sign be cut at grade and brought offsite for removal or will the entire concrete slab need to be removed and disposed of with new concrete being poured? This is a large area to backfill w/ new concrete

RESPONSE: See response to question 7. Where a new sign concrete footing coincides with the location of an existing sign to be removed, Signage Contractor to remove the existing sign footing to accommodate new sign footing – this is to be coordinated with the Owner at time of removal and installation. Reference sheet 9.19 (RM-68.3) and sheet 2.14 (EWF.20-209).

19. QUESTION: Sheet 9.11 (204 of 355): Can this sign be cut at grade and brought offsite for removal or will the entire concrete slab need to be removed and disposed of with new concrete being poured? This is a large area to backfill w/ new concrete

RESPONSE: See response to question 7. Where a new sign concrete footing coincides with the location of an existing sign to be removed, Signage Contractor to remove the existing sign footing to accommodate new sign footing – this is to be coordinated with the Owner at time of removal and installation. Reference sheet 9.19 (RM-65.2) and sheet 2.14 (EWF.10-203).

20. QUESTION: Sheet 6.6 (62 of 355): Please confirm intent is to pull secondary power from source located next to light pole, roughly 30' across the driveway to sign location and that primary power is 120V.

RESPONSE: Confirmed. In addition, Signage Contractor will also provide approximately 50 feet of new trenching at landscaped area, conduit and wire, to bring power to new BR.02 sign location. Reference Sheet 10.1 (page 213).

Sign type BR.02 lighting shall automatically illuminate at dusk and extinguish at dawn, coincident with adjacent street lighting operation.

21. QUESTION: Please confirm no local City of Livermore or County of Alameda Planning and Building permits are needed for the project.

RESPONSE: Confirmed, no city or county permitting is required.

All other terms and conditions remain unchanged.

Michael McClung - Buyer, Purchasing and Warehouse Services
Chabot-Las Positas Community College District

Substantial Completion is achieved.

7.2.3 Delayed Final Completion If the Contractor fails to achieve Final Completion of the Work within the Contract Time, including adjustments thereto in accordance with the Contract Documents, the Contractor shall be subject to assessment of Liquidated Damages in the amount **One Thousand Dollars (\$1,000.00)** per day from the scheduled date of Substantial Completion until Substantial Completion is achieved.

7.2.4 Delayed Completion of Punchlist Items If the Contractor fails to complete all Punchlist Items noted upon Substantial Completion within the time established for completion of all Punchlist Items, the Contractor shall be subject to assessment of Liquidated Damages in the amount **One Thousand Dollars (\$1,000.00)** per day from the scheduled date of completion until all Punchlist Items are completed.

7.2.5 District Withhold of Liquidated Damages; Performance Bond Surety If the Contractor is subject to assessment of Liquidated Damages for delayed Substantial Completion and/or delay completion of Punchlist Items, the District may withhold such assessments from the Contract Price then or thereafter due the Contractor. If the assessment of Liquidated Damages exceeds the then remaining balance of the Contract Price, the Contractor and the Surety issuing the Performance Bond shall be jointly and severally liable to the District for such amounts.

7.3 Notice of Delay - The Contractor shall notify the Construction Manager, in writing, of all delays Pursuant to Articles 7 and 9 of the General Conditions. Weather day are non-compensable.

Weather Days Per Month			
		May:	1
		June:	1
		July:	0
April:	3	August:	0

8. District Provided Temporary Utilities Pursuant to Article 4.3.4 of the General Conditions, during the Contractor’s performance of the Work, the District will provide utility services and a point of connection for electrical power. The connection and placement, relocation and removal of temporary distributions of the electrical power service provided by the District will be by the Contractor at its cost and expense without adjustment of the Contract Price. The Contractor may use the temporary electrical power service furnished by the District provided that: (a) the District may discontinue, limit or condition use of such services by a Contractor if the District reasonably determines that the Contractor has wasted such utilities, and (b) the District shall not be liable to the Contractor, nor shall the Contract Time or the Contract Price be increased if any District provided temporary utility service is discontinued or disrupted for any reason other than the District’s non-payment of undisputed utility charges.

9. Field Office

Contractor shall provide sufficient space and facilities for its own force’s needs.

10. Job Sign(s)

Signs other than the specified Project sign and or signs required by law, for safety, or for egress, shall not be permitted, unless otherwise approved in advance by District.

11. Fixture, Furniture and Equipment – N/A

12. Construction Laydown Area will be the contractor’s responsibility and shall be confined to within the project boundaries. Laydown Area will be coordinated and approved by the District.

13. Parking The Contractor is permitted to park within the project site as outlined during post bid interview. If additional parking is needed, the Contractor will work with CM and College to identify a designated area, construction parking permit instruction will be provided with Notice

- 20.5** Rain Days. Pursuant to Article 7.3.9 of the General Conditions, the rain days included within the contract period shall be **Five (5)** calendar days.
- 21. COVID 19** Where any District Consultant and its service professionals, employees or agents (“Consultant”) will be physically present on any District site, all such Consultants shall comply with all Center for Disease Control, State of California, Alameda County and District requirements related to COVID-19 and other communicable diseases. District Board Policy 7330 regarding Communicable Disease requires that all visitors to District campuses and sites must comply with all Cal/OSHA safety guidelines and other District policies and procedures, as well as any other District COVID-19 health and safety protocols in effect. Such health and safety protocols including requiring vaccinations of all employees providing services inside District owned/operated facilities as required by Board Policy 7330. Mask/Face Coverings are required at all times while inside District facilities, unless otherwise directed.

Please also take notice that, pursuant to Consultant’s Agreement with the District, Consultant “shall comply with all applicable federal, state, and local laws, ordinances, rules, regulations, and orders in effect throughout the term of this Agreement including, but not limited to Executive Order No. 11246 of September 24, 1965, as amended (regarding Equal Employment Opportunity), and the orders of the Secretary of Labor pursuant thereto.” (Exhibit C, General Provisions for Professional Services Agreement, Professional Services Agreement.)

This shall constitute sufficient notice of the applicable regulations and requirements set forth in District Board Policy 7330 and shall further act as a notice of compliance to all Consultants. The District requires compliance no later than bid award February 20, 2026 and will proceed to enforce all of its rights and remedies as a result of any non-compliance herein through the duration of the project.

performing any portion of the Work shall pay not less than the applicable prevailing wage rate for the classification of labor provide by their respective workers in prosecution and execution of the Work.

4. Contractors License Classification. In accordance with the provisions of California Public Contract Code §3300, the District requires that Bidders possess the following classification(s) of California Contractors License **B and/or C45**. Any Bidder not so duly and properly licensed shall be subject to all penalties imposed by law. No payment shall be made for work, labor, materials or services provided under the Contract for the Work unless and until the Registrar of Contractors verifies to the District that the Bidder awarded the Contract is properly and duly licensed to perform the Work.

5. Contract Time. The Contractor shall complete the Work and achieve Substantial Completion of the Work by the date(s) specified in the Special Conditions. Failure to complete designated portions of the Work within the time(s) established in the Special Conditions and/or failure to achieve Substantial Completion and Final Completion of the Work within the Contract Time established in the Special Conditions shall subject the Contractor to assessment of Liquidated Damages as set forth in the Special Conditions.

6. Labor Compliance Program (AB 1506). The District has established a Labor Compliance Program ("LCP") pursuant to Labor Code §1771.5. The Contractor awarded the Contract for the Work shall comply with the LCP and provisions of the Contract Documents relating to implementation, compliance with, and enforcement of the LCP. This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

7. Bid Security. Each Bid Proposal shall be accompanied by Bid Security in an amount not less than ten percent (10%) of the maximum amount of the Bid Proposal, inclusive of any additive Alternate Bid Item(s). Failure of any Bid Proposal to be accompanied by Bid Security in the form and in the amount required shall render such Bid Proposal to be non-responsive and rejected by the District.

8. No Withdrawal of Bid Proposals. Bid Proposals shall not be withdrawn by any Bidder for a period of sixty (60) days after the opening of Bid Proposals. During this time, all Bidders shall guarantee prices quoted in their respective Bid Proposals.

9. Job-Walk. The District will conduct **one (1) Mandatory** Job Walk. Job walk will be held on **Wednesday, February 4th, 2026, beginning at 10:00 AM. Bidders must attend the job walk.** Bidders are to meet at Las Positas College, 3000 Campus Hill Drive, Facilities Management Office Trailer, Conference Room 1, adjacent to Building 1300, Livermore, California 94551. **Bidders must attend the entire Site Walk to be eligible to participate in the bid.** Campus maps are available at <https://map.concept3d.com/?id=1994#!ct/59651?s/>. The Job and Site Walk is mandatory. If a Bid Proposal is submitted by a Bidder whose representative(s) did not attend the entirety of the Mandatory Job and Site Walk, such bid will be rejected by the district as being non-responsive.

10. Substitute Security. In accordance with the provisions of California Public Contract Code §22300, substitution of eligible and equivalent securities for any monies withheld by the District to ensure the Contractor's performance under the Contract will be permitted at the request and expense of the Contractor and in conformity with California Public Contract Code §22300. The foregoing notwithstanding, the Bidder to whom the Contract is awarded shall submit its written request to the District to permit the substitution of securities for retention under California Public Contract Code §22300 prior to the submission of its first Application for Progress Payment. The failure of such Bidder to make such written request to the District prior to submission of its first Application for Progress Payment shall be deemed a waiver of the Bidder's rights under California Public Contract Code §22300.

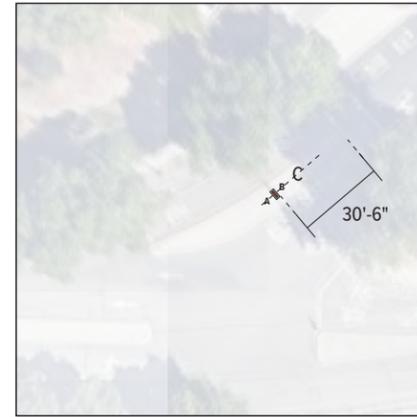
11. Waiver of Irregularities. The District reserves the right to reject any or all Bid Proposals or to waive any irregularities or informalities in any Bid Proposal or in the bidding.



NOTE:
Layout of
EWF.01A-02 exact
location to be
reviewed with owner
at pre-install walk.



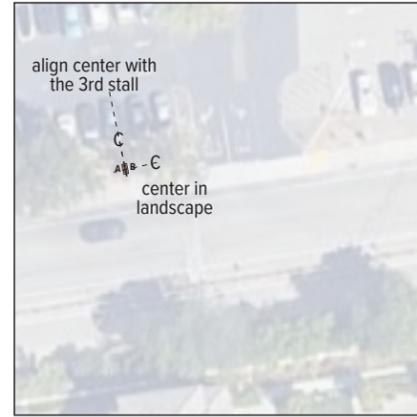
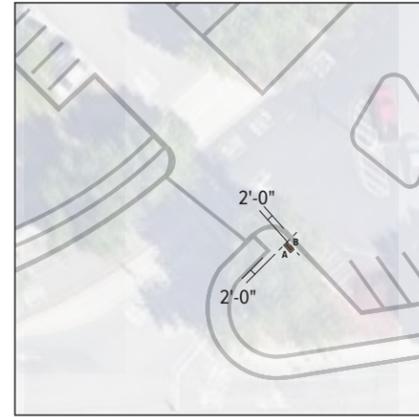
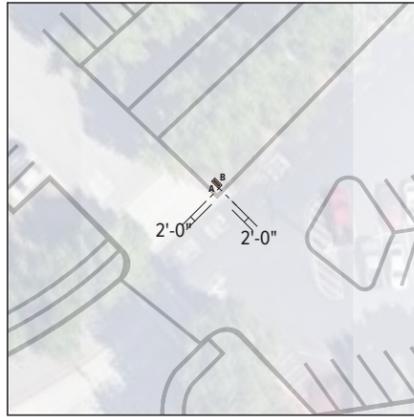
Add Alternate Bid



Loc 02 | Softscape **EWF.01A**
Scale: 1/64" = 1'-0"

Loc 03 | Hardscape **EWF.02**
Scale: 1/64" = 1'-0"

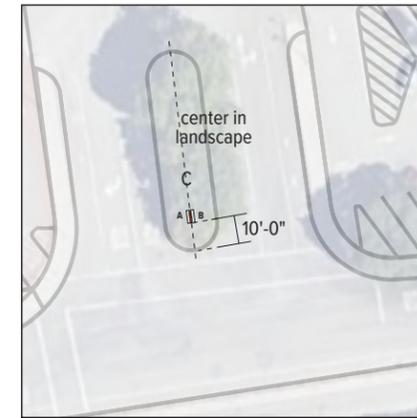
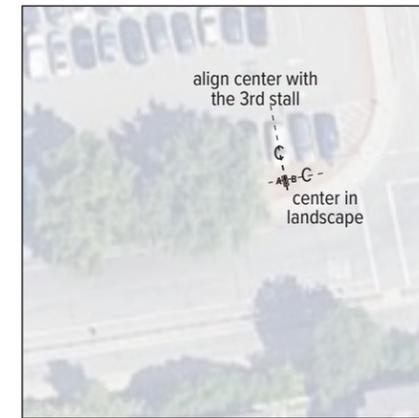
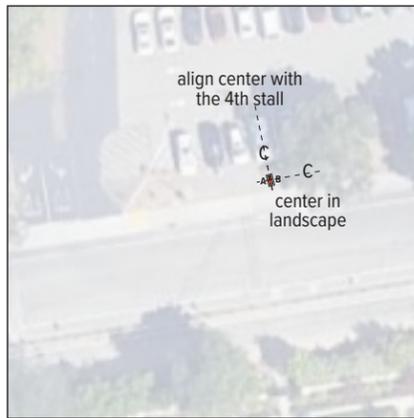
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Scale: 1/64" = 1'-0"



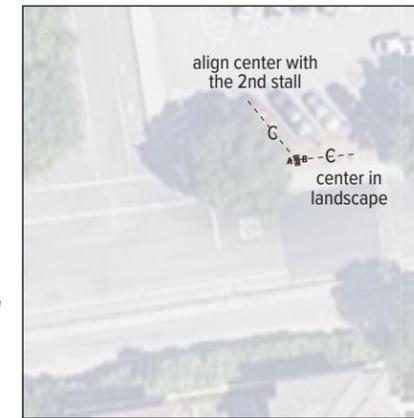
Loc 04.1 | Softscape **PID.01**
Scale: 1/64" = 1'-0"

Loc 04.2 | Softscape **PID.01**
Scale: 1/64" = 1'-0"

Loc 10 | Softscape **PID.01**
Scale: 1/64" = 1'-0"



NOTE:
Signage Contractor to
provide power to BR.02
sign and landscape
up-lights per note J.
Trenching and providing
power to be included in the
Signage Contractor's
scope. Reference section
10.1 for as-built reference.



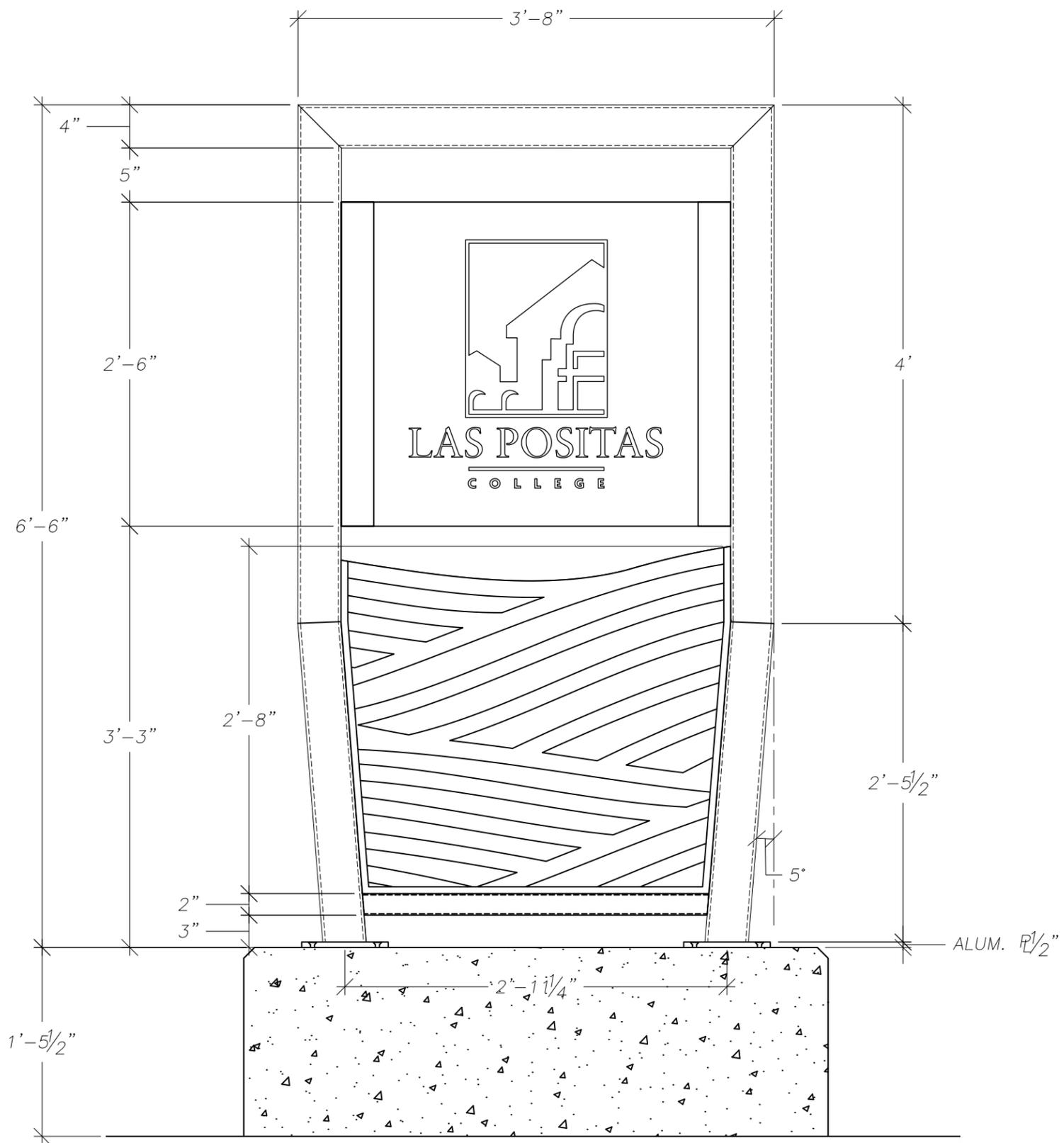
Loc 11 | Softscape **EWF.01**
Scale: 1/64" = 1'-0"

Loc 11.1 | Softscape **PID.01**
Scale: 1/64" = 1'-0"

Loc 13 | Softscape **BR.02**
Scale: 1/64" = 1'-0"

Loc 13.1 | Softscape **PID.01**
Scale: 1/64" = 1'-0"

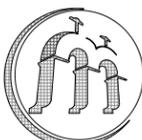
NOTE: PEDESTAL/PLINTH TO BE FORMED W/ BOARD FORM OR BOARD FORM LINER. PATTERN T.B.D.



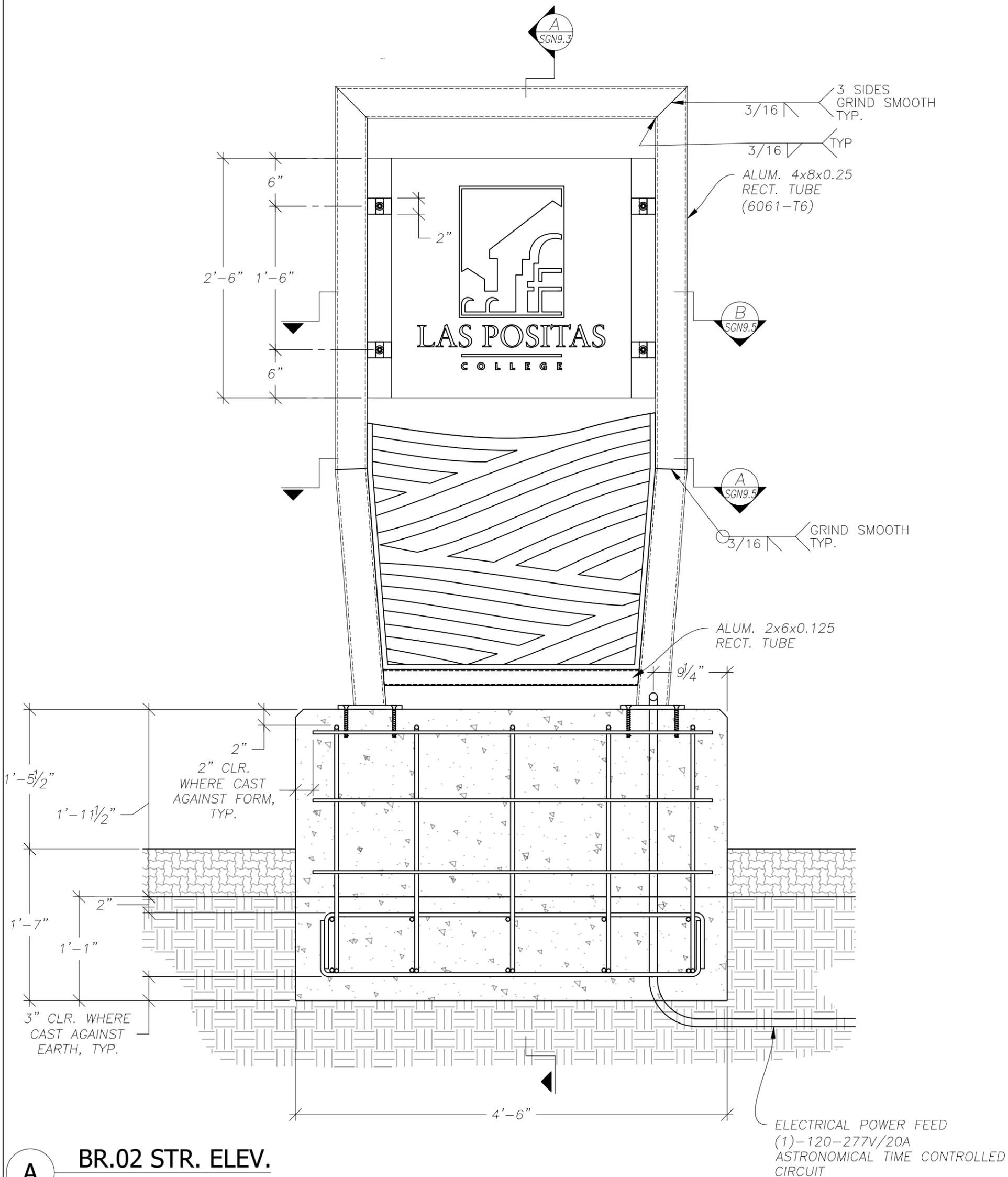
BR.02 ELEVATION

SCALE: 1"=1'

A

 <p>MISSION STRUCTURE ENGINEERING</p> <p>779 N. KATHLEEN LN. UNIT A ORANGE, CA 92867 INFO@MISSIONSTRUCTURE.COM 510.593.5022</p>	<table border="1"> <thead> <tr> <th>ISSUED FOR</th> <th>REV</th> <th>DATE</th> </tr> </thead> <tbody> <tr> <td>1st Submission</td> <td>0</td> <td>1/15/26</td> </tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table>	ISSUED FOR	REV	DATE	1st Submission	0	1/15/26																												<p>SEALS AND SIGNATURES</p> 	<p>CLIENT INFORMATION</p>  <p>SHANNON LEIGH STRATEGIC PLACEMAKING</p> <p>1455 Hays Street San Leandro, CA 94577 510.969.7870 info@shannonleigh.net</p>	<p>PROJECT INFORMATION</p> <p>Las Positas College 3000 Campus Hill Drive Livermore, CA 94551</p>	<p>PROJECT NUMBER</p> <hr/> <p>DRAWING TITLE</p> <p>BR.02 Elevation</p> <hr/> <p>DRAWING NUMBER</p> <p>SGN9.1</p>
ISSUED FOR	REV	DATE																																				
1st Submission	0	1/15/26																																				

NOTE: PEDESTAL/PLINTH TO BE FORMED W/ BOARD FORM OR BOARD FORM LINER. PATTERN T.B.D.



A BR.02 STR. ELEV.
SCALE: 1"=1'

**MISSION
STRUCTURE
ENGINEERING**

779 N. KATHLEEN LN. UNIT A
ORANGE, CA 92867
INFO@MISSIONSTRUCTURE.COM
510.593.5022

ISSUED FOR	REV	DATE
1st Submission	0	1/15/26

SEALS AND SIGNATURES

LICENSED PROFESSIONAL ENGINEER
MICHAEL CLARK BENNETT
C 90708
CIVIL
STATE OF CALIFORNIA

CLIENT INFORMATION

SHANNON LEIGH
STRATEGIC PLACEMAKING

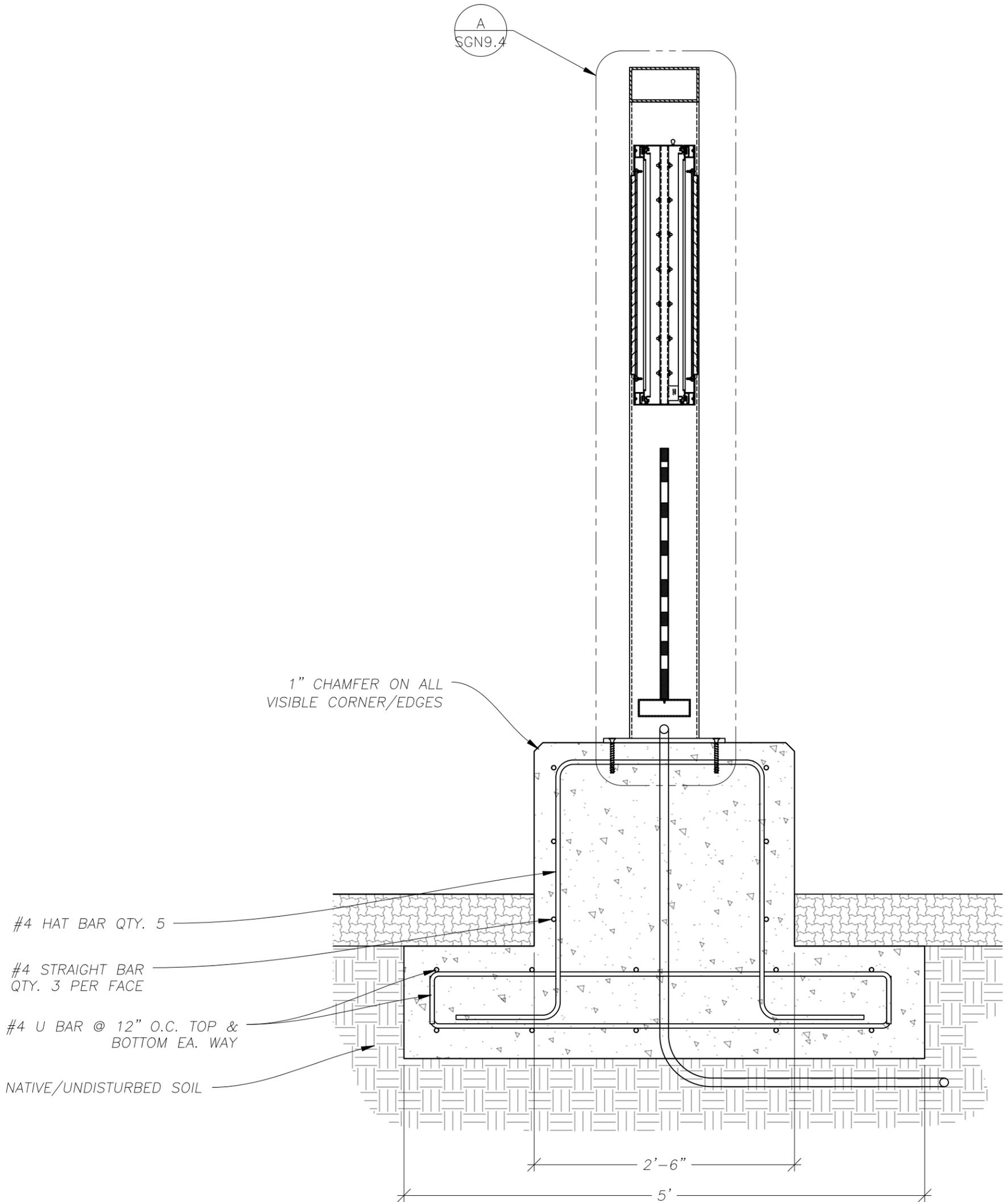
1455 Hays Street San Leandro, CA 94577
510.969.7870 info@shannonleigh.net

PROJECT INFORMATION

Las Positas College
3000 Campus Hill Drive
Livermore, CA 94551

PROJECT NUMBER
DRAWING TITLE
BR.02 Structure Elevation
DRAWING NUMBER
SGN9.2

NOTE: PEDESTAL/PLINTH TO BE FORMED W/ BOARD FORM OR BOARD FORM LINER. PATTERN T.B.D.



A **BR.02 SECTION**
SCALE: 1"=1'

**MISSION
STRUCTURE
ENGINEERING**

779 N. KATHLEEN LN. UNIT A
ORANGE, CA 92867
INFO@MISSIONSTRUCTURE.COM
510.593.5022

ISSUED FOR	REV	DATE
1st Submission	0	1/15/26

SEALS AND SIGNATURES

LICENSED PROFESSIONAL ENGINEER
MICHAEL CLARK BENNETT
C90708
CIVIL
STATE OF CALIFORNIA

CLIENT INFORMATION

SHANNON LEIGH
STRATEGIC PLACEMAKING

1455 Hays Street San Leandro, CA 94577
510.969.7870 info@shannonleigh.net

PROJECT INFORMATION

Las Positas College
3000 Campus Hill Drive
Livermore, CA 94551

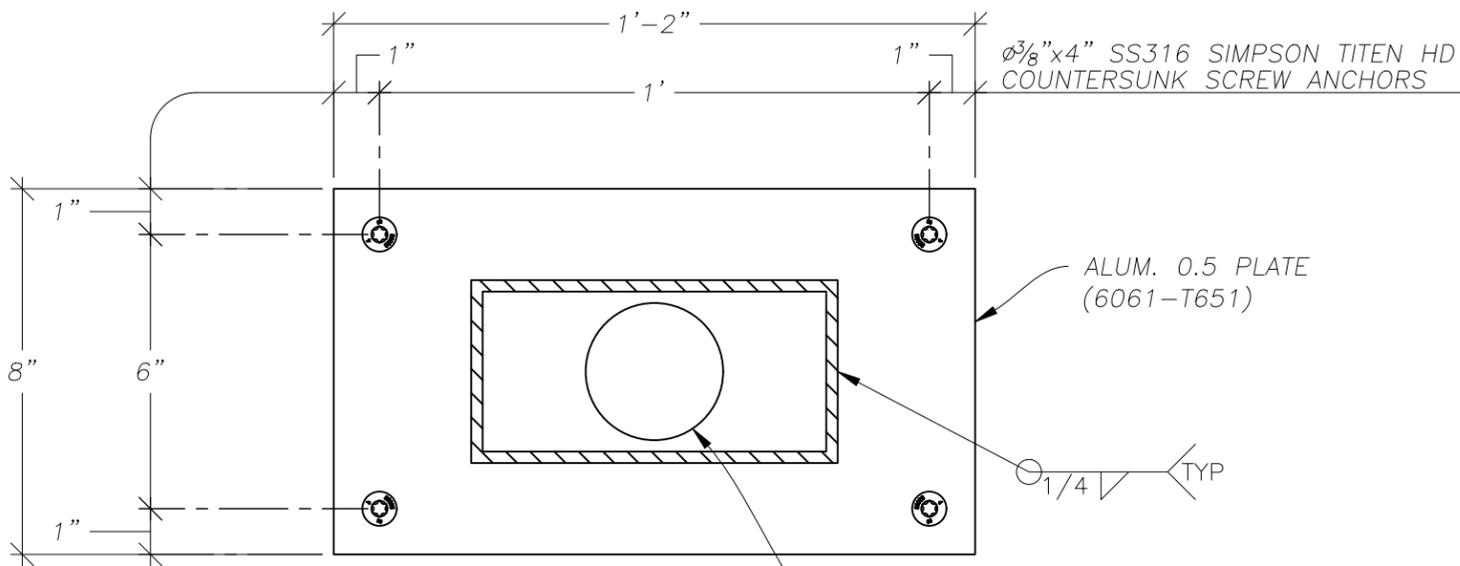
PROJECT NUMBER

DRAWING TITLE

**BR.02
Section**

DRAWING NUMBER

SGN9.3



B BR.02 BASEPLATE DETAILS

SCALE: 3"=1'

THRU HOLE IN PLATE TO ALLOW POWER ENTRANCE INTO FRAME

WEATHERPROOF DISCONNECT SWITCH (LOCKABLE, TOGGLE TYPE W/CLASP)

POWER SUPPLY LOCATED INSIDE CABINET MOUNTED TO VERTICAL ELEMENT OR @ BOTTOM ON CHAIR

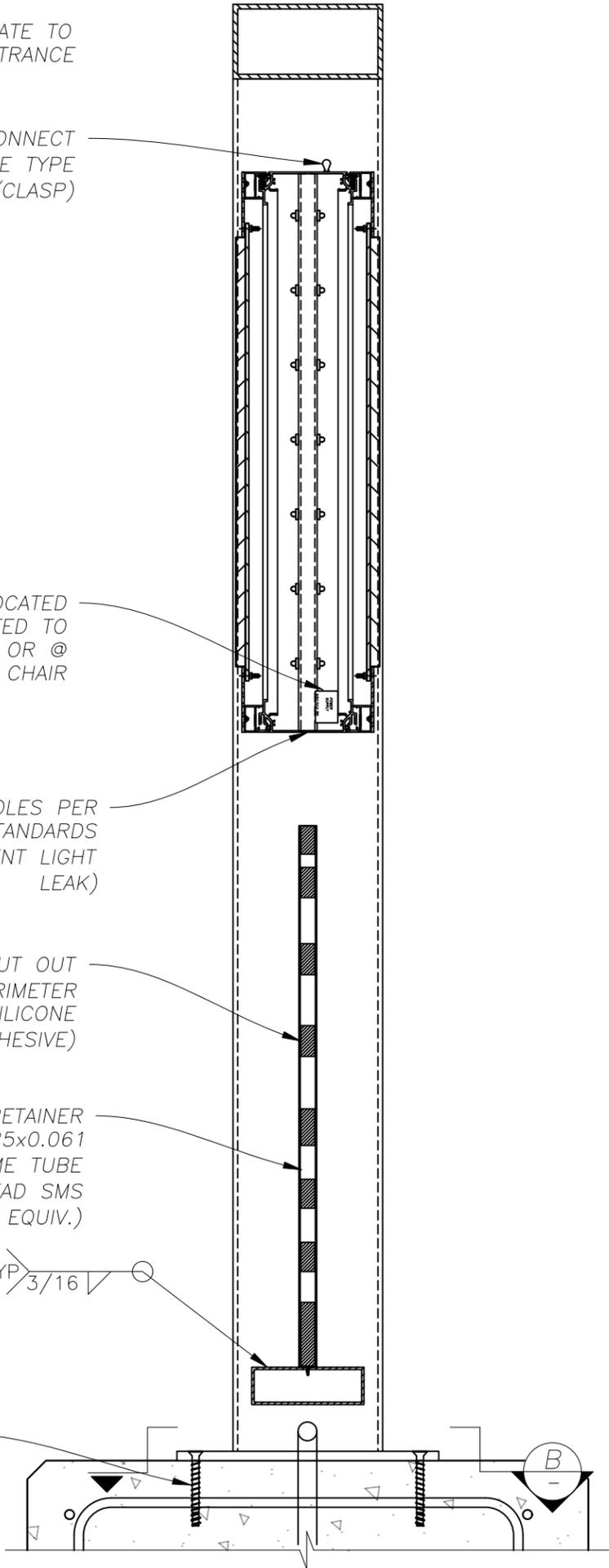
WEEP HOLES PER U.L. STANDARDS (TENT TO PREVENT LIGHT LEAK)

ALUM. 0.75 ROUT OUT GRAPHIC W/ $\frac{1}{2}$ " PERIMETER MARGIN (EMBED IN SILICONE OR URETHANE BASED ADHESIVE)

CHANNEL RETAINER ALUM. 0.625x0.625x0.061 (SCREW TO FRAME TUBE W/#4 SS FLATHEAD SMS @ 8" O.C., CRL LAURENCE OR EQUIV.)

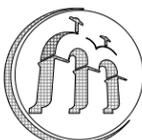
$\frac{3}{16}$ " TYP

$\phi \frac{3}{8}$ "x4" SS316 SIMPSON TITEN HD COUNTERSUNK SCREW ANCHORS

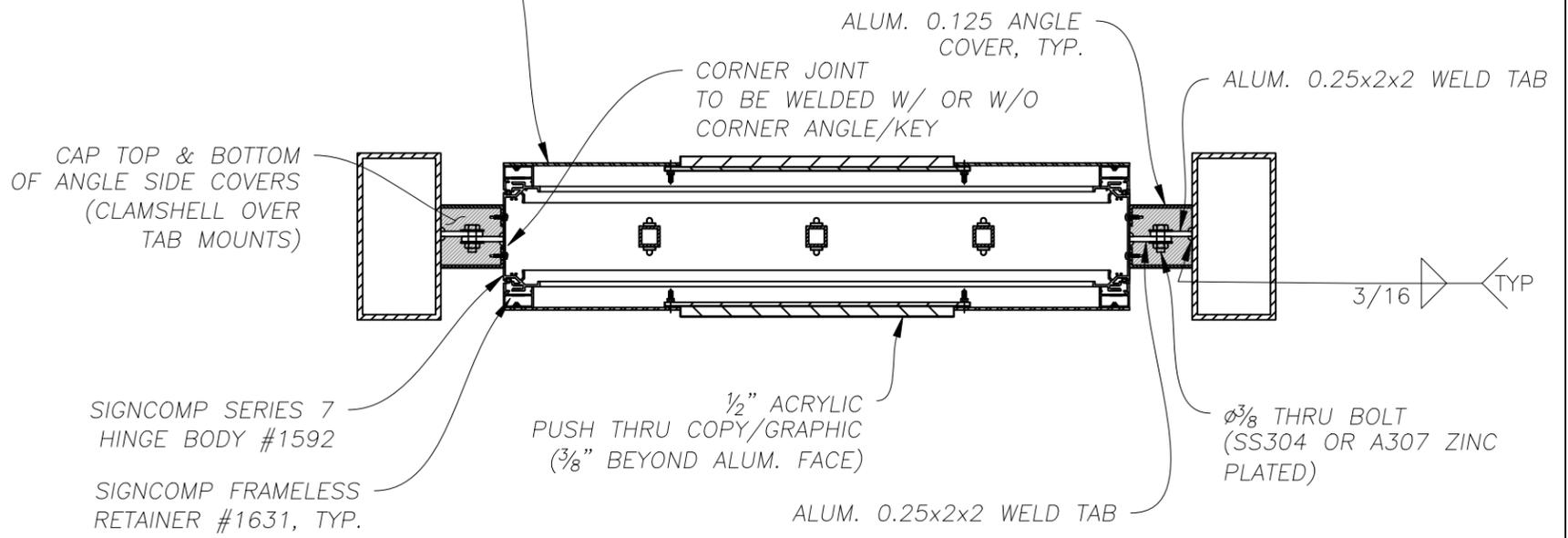


A BLOWUP DETAIL

SCALE: 1 1/2"=1'

 <p>MISSION STRUCTURE ENGINEERING</p> <p>779 N. KATHLEEN LN. UNIT A ORANGE, CA 92867 INFO@MISSIONSTRUCTURE.COM 510.593.5022</p>	<p>ISSUED FOR REV DATE</p> <p>1st Submission 0 1/15/26</p>	<p>SEALS AND SIGNATURES</p> 	<p>CLIENT INFORMATION</p> <p>SHANNON LEIGH STRATEGIC PLACEMAKING</p> <p>1455 Hays Street San Leandro, CA 94577 510. 969. 7870 info@shannonleigh.net</p>	<p>PROJECT INFORMATION</p> <p>Las Positas College 3000 Campus Hill Drive Livermore, CA 94551</p>	<p>PROJECT NUMBER</p>
					<p>DRAWING TITLE</p> <p>BR.02 Section Blow Up Detail</p>
					<p>DRAWING NUMBER</p> <p>SGN9.4</p>

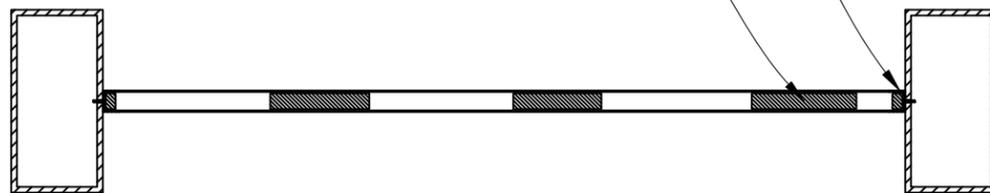
ALUM. 0.125 FACE PANEL, TYP. (WELDED STUD/NUT FACE TO RETAINER OR OTHER MEANS TO MAKE FACE REMOVABLE W/O VISIBLE FACE FASTENERS)



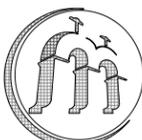
B BR.02 SECTION
SCALE: 1"=1'

CHANNEL RETAINER
ALUM. 0.625x0.625x0.061
(SCREW TO FRAME TUBE W/#4 SS FLATHEAD SMS @ 8" O.C., CRL LAURENCE OR EQUIV.)

ALUM. 0.75 ROUT OUT GRAPHIC W/1/2" PERIMETER MARGIN (EMBED IN SILICONE OR URETHANE BASED ADHESIVE)



A BR.02 SECTION
SCALE: 1"=1'

 <p>MISSION STRUCTURE ENGINEERING</p> <p>779 N. KATHLEEN LN. UNIT A ORANGE, CA 92867 INFO@MISSIONSTRUCTURE.COM 510.593.5022</p>	<p>ISSUED FOR REV DATE</p> <p>1st Submission 0 1/15/26</p>	<p>SEALS AND SIGNATURES</p> 	<p>CLIENT INFORMATION</p> <p>SHANNON LEIGH STRATEGIC PLACEMAKING</p> <p>1455 Hays Street San Leandro, CA 94577 510. 969. 7870 info@shannonleigh.net</p>	<p>PROJECT INFORMATION</p> <p>Las Positas College 3000 Campus Hill Drive Livermore, CA 94551</p>	<p>PROJECT NUMBER</p>
					<p>DRAWING TITLE</p> <p>BR.02 Sections</p>
					<p>DRAWING NUMBER</p> <p>SGN9.5</p>



**MISSION
STRUCTURE**
ENGINEERING

Project	Las Positas College	By	MB	Sheet No.
Location	Livermore, CA	Date	2025-11-25	1 / 5
Section	Freestanding BR.02			Job No.

Freestanding Monument Sign

Project Location:
3000 Campus Hill Drive
Livermore, CA 94551

for

Shannon-Leigh Associates, LLC
1455 Hays Street
San Leandro, CA 94577



Scope of design:

Design of freestanding monument sign anchorage & foundation. Design includes load analysis, base plate/anchor bolt design & footing design. Design Criteria based on geotechnical report by Ninyo & Moore dated November 22, 2023.

Current Codes Which Shall Apply (As applicable to project):

CBC 2025, ASCE 7-22, AISC 360-22, ACI 318-19, AA ADM1 2020,

Dead Load

Total Sign Weight:

$$DL = \text{Total Weight} = 205.353 \text{ lbf}$$

Metal Sign Weight:

$$DL_{\text{cab}} = DL = 205.353 \text{ lbf}$$

Seismic Load (Full Sign Mass)

Seismic Loads

Seismic Loads of Non-Building Structures

ASCE 7-16 Chapter 15

Seismic Base Shear:

$$V_B = C_s * W_p$$

Response Modification Factor:

$$R = 3$$

Spectral Acceleration, Short Period:

$$SDS = 1.36$$

Importance Factor:

$$I = 1.25$$

Seismic Weight:

$$W_p = 205.353 \text{ lbf}$$

Seismic Response Coefficient:

$$C_s = \frac{SDS}{\frac{R}{I}} = 0.567$$

Seismic Base Shear:

$$V_B = C_s * W_p = 116.366 \text{ lbf}$$

Overstrength Factor, Ω (where applicable): $OS = 1.75$

Load Distribution

Per ASCE Chapter 29

Top of Sign Height:

$$h = 7.95 \text{ ft}$$

Cabinet Height:

$$h_c = \text{Weight.C2} = 6.5 \text{ ft}$$

Pedestal Height:

$$h_p = 1.45 \text{ ft}$$

Sign Height:

$$s = 4 \text{ ft}$$

Sign Width (Breadth):

$$B = \text{Weight.E2} = 3.67 \text{ ft}$$

Number of Posts:

$$n_p = 2$$

Gross Sign Area:

$$A_g = s * B = 14.68 \text{ ft}^2$$

Tributary Area (single post):

$$A_n = 0.7 * A_g = 10.276 \text{ ft}^2$$



Project	Las Positas College	By	MB	Sheet No.
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Moment Arm (@ baseplate):

$$\text{arm}_1 = 1.05 * \left(h_c - \frac{s}{2} \right) = 4.725 \text{ ft}$$

Moment Arm (@ top of ftg.):

$$\text{arm}_T = 1.05 * \left(h - \frac{s}{2} \right) + 0.5 \text{ ft} = 6.748 \text{ ft}$$

Wind Pressure:

$$p_w = 25 \text{ psf}$$

Wind Load Section 1:

$$W_{11} = p_w * A_n = 256.9 \text{ lbf}$$

Wind Moment Section 1:

$$M_{w1} = W_{11} * \text{arm}_1 = 1213.9 \text{ lbf} * \text{ft} \quad (\text{Wind controls acting on sign face})$$

Wind Torsion:

$$T_w = 0$$

Seismic Load on Section 1 (alum. cab.):

$$EQ_{s1} = EQ2.C_s * DL = 116.366 \text{ lbf}$$

Seismic Load Section 1 w/ Over strength:

$$EQ_{s1os} = EQ_{s1} * EQ2.OS = 203.641 \text{ lbf}$$

EQ Lateral Shear Force @ baseplate:

$$V_{1eq} = EQ_{s1} = 116.366 \text{ lbf}$$

EQ Lateral Force Moment:

$$M_{1eq} = V_{1eq} * \text{arm}_1 = 549.831 \text{ lbf} * \text{ft}$$

EQ Lateral Force w/ OS:

$$V_{1eqos} = EQ_{s1os} = 203.641 \text{ lbf}$$

EQ Lateral Force Moment w/OS:

$$M_{1eqos} = V_{1eqos} * \text{arm}_1 = 962.205 \text{ lbf} * \text{ft}$$

LRFD Load Combinations (as applicable-anchorage)

LC: 0.9 DL + 1.0 W

Deal Load:

$$DL_{\min} = \frac{0.9 * (DL_{cab})}{n_p} = 92.409 \text{ lbf}$$

Shear Wind:

$$V_{1w1} = W_{11} = 256.9 \text{ lbf}$$

Moment Wind:

$$M_{1w1} = V_{1w1} * \text{arm}_1 = 1213.853 \text{ lbf} * \text{ft}$$

LC: 1.2 DL + 1.0 W

Deal Load:

$$DL_{\max} = \frac{1.2 * (DL_{cab})}{n_p} = 123.212 \text{ lbf}$$

Shear Wind:

$$V_{1w2} = W_{11} = 256.9 \text{ lbf}$$

Moment Wind:

$$M_{1w2} = V_{1w2} * \text{arm}_1 = 1213.853 \text{ lbf} * \text{ft}$$

LC: 0.9 DL - 1.0 E_v + E_{mh}

Dead Load:

$$DL_{eq\min} = \frac{0.9 * (DL_{cab})}{n_p} = 92.409 \text{ lbf}$$

Vertical Seismic:

$$E_{v1} = \frac{-0.2 * EQ2.SDS * (DL_{cab})}{n_p} = -27.928 \text{ lbf}$$

Shear EQ:

$$V_{1eq1} = \frac{EQ_{s1os}}{n_p} = 101.821 \text{ lbf}$$

Moment EQ:

$$M_{1eq1} = \left(\frac{EQ_{s1os}}{n_p} \right) * \text{arm}_1 = 481.102 \text{ lbf} * \text{ft}$$

LC: 1.2 DL + 1.0 E_v + E_{mh}



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Dead Load: $DL_{1eqmax} = \frac{1.2 * (DL_{cab})}{n_p} = 123.212 \text{ lbf}$

Vertical Seismic: $E_{v2} = \frac{0.2 * EQ2.SDS * (DL_{cab})}{n_p} = 27.928 \text{ lbf}$

Shear EQ: $V_{eq2} = \frac{EQ_{s1os}}{n_p} = 101.821 \text{ lbf}$

Moment EQ: $M_{eq2} = \frac{EQ_{s1os} * arm_1}{n_p} = 481.102 \text{ lbf * ft}$

ASD Load Combinations

(Note: Omit axial loads on post-no restoring moment weld design)

LC: DL + 0.6 W

LC: DL + 0.7 (E_v + E_{mh})

Convert to ASD/service level loads

Vertical Load, ASD:

$$DL_{S1} = DL = 205.353 \text{ lbf}$$

Wind Pressure, ASD:

$$p_{wasd} = p_w * 0.6 = 15 \text{ psf}$$

Wind Load, ASD:

$$W_{lasd} = p_{wasd} * A_n = 154.14 \text{ lbf}$$

Wind Force Moment, ASD:

$$M_{wasd} = arm_1 * W_{lasd} = 728.312 \text{ ft * lbf}$$

Wind Torsion, ASD:

$$T_{asd} = T_w * 0.6 = 0$$

Max. Vertical Load, ASD:

$$DL_{eqasd} = \frac{DL_{S1} + 0.7 * 0.2 * EQ2.SDS * DL_{S1}}{n_p} = 122.226 \text{ lbf}$$

Seismic Load, ASD:

$$EQ_{asd} = \frac{EQ2.V_B * 0.7}{n_p} = 40.728 \text{ lbf}$$

Seismic Load w/ OS, ASD:

$$EQ_{osasd} = EQ_{asd} * EQ2.OS = 71.274 \text{ lbf}$$

Seismic Force Moment, ASD:

$$M_{eqasd} = arm_1 * EQ_{asd} = 192.441 \text{ ft * lbf}$$

Seismic Force Moment w/ OS, ASD:

$$M_{eqasdos} = EQ_{osasd} * arm_1 = 336.772 \text{ lbf * ft}$$

Weld Connection From Post to Base Plate

Tube Depth:

$$d_{tube} = 8 \text{ in}$$

Tube Breadth:

$$b_{tube} = 4 \text{ in}$$

Tube Wall Thickness:

$$t_{tube} = 0.25 \text{ in}$$

Weld Line Section Modulus:

$$S_w = d_{tube} * b_{tube} + \frac{d_{tube}^2}{3} = 53.333 \text{ in}^2$$



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Weld Line Area: $A_w = d_{\text{tube}} * 2 + b_{\text{tube}} * 2 = 24 \text{ in}$

Fillet Weld Design (AISC 360 Section J2.4 or ADM J.2)

Weld to resist loads V & M.
Material = "Alum"

Weld Group Configuration: Type = "sq 4x8x0.25"

Input Weld Shear Load: $V = W_{\text{lasd}} = 154.14 \text{ lbf}$

Input Weld Moment Load: $M = M_{\text{wasd}} = 728.312 \text{ ft} * \text{lbf}$

Weld Line Section Modulus (bending): $S_w = \text{Report1}.S_w = 53.333 \text{ in}^2$

Weld Line Section Modulus (shear): $A_w = \text{Report1}.A_w = 24 \text{ in}$

Required Strength: $R = \sqrt{\left(\frac{V}{A_w}\right)^2 + \left(\frac{M}{S_w}\right)^2} = 164.0 \frac{\text{lb}}{\text{in}}$
 $f_u = 17 \text{ ksi}$

Weld Electrode Tensile Strength:

Weld Factor of Safety: $\Omega_w = 2$

Strength of Weld per inch: $R_n = \begin{cases} \frac{0.707 * f_u * 0.6 * \left(\frac{1 \text{ in}}{16}\right)}{\Omega_w} & \text{if Material == "Steel"} \\ \frac{0.707 * 0.85 * f_u * 0.6 * \left(\frac{1 \text{ in}}{16}\right)}{\Omega_w} & \text{otherwise} \end{cases} = 191.6 \frac{\text{lb}}{\text{in}}$

Required Size of Weld: $a_{\text{req}} = \text{RoundUp}\left(\frac{R}{R_n}\right) = 1/16" \text{ Weld Leg Size}$

Foundation Loads

Spread Footing Foundation

Nominal loads for allowable capacities per geotechnical report. Seismic Loads to have omega/overstrength applied (cantilever foundation system). Design provided in design worksheet to follow. Consider half of footing (loads per post/baseplate).

Width of Footing: $W_{\text{ftg}} = 3 \text{ ft}$

Length of Footing: $l_{\text{ftg}} = 3 \text{ ft}$

Width of Pedestal: $W_{\text{ped}} = 2 \text{ ft}$

Length of Pedestal: $l_{\text{ped}} = 2 \text{ ft}$

Height of Pedestal: $H_{\text{ped}} = 24 \text{ in}$

Weight of Concrete Pedestal: $W_{\text{t}_{\text{ped}}} = W_{\text{ped}} * l_{\text{ped}} * H_{\text{ped}} * 150 \text{ pcf} = 1200 \text{ lbf}$

LC: 0.9 DL + W
(nominal values for foundation software shown below)

Vertical Force: $A_1 = 0.9 * (\text{DL} + W_{\text{t}_{\text{ped}}}) = 1264.817 \text{ lbf}$

Horizontal Force: $P_1 = (B * s * p_w) = 367 \text{ lbf}$

Moment: $M_1 = P_1 * \text{arm}_T = 2476.333 \text{ lbf} * \text{ft}$



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LC: $0.9 DL + (E_v + E_{mh})$

(nominal values for foundation software shown below)

DL Vertical Force:

$$A_2 = 0.9 * (DL + W_{t_{ped}}) = 1264.817 \text{ lbf}$$

EQ Vertical Force:

$$A_3 = \left(-0.2 * EQ2.SDS * (DL + W_{t_{ped}}) \right) = -382.256 \text{ lbf}$$

Horizontal Forces:

Sign Cabinet:

$$P_2 = EQ2.V_B * EQ2.OS = 203.641 \text{ lbf}$$

Sign Cabinet moment arm:

$$a_2 = arm_T = 6.748 \text{ ft}$$

Sign Cabinet moment:

$$M_2 = P_2 * a_2 = 1374.069 \text{ lbf * ft}$$

Combined EQ Axial:

$$A_{eq} = A_2 + A_3 = 882.561 \text{ lbf}$$

Combined EQ Shear:

$$V_{eq} = P_2 = 203.641 \text{ lbf}$$

Combined EQ Moment:

$$M_{eq} = M_2 = 1374.069 \text{ lbf * ft}$$

Weight Takeoff

Height: 6.5 ft Width: 3.67 ft

Component	Unit Wt	Unit Qty	Wt	Qty	Weight
Skin	2 psf	7.5 ft ²	15 lbf	2	30 lbf
Post alum. 4x8x.25	8 plf	7.5 ft	60 lbf	2	120 lbf
Channel Extrusion	1.5 plf	11 ft	16.5 lbf	1	16.5 lbf
Misc Framing/Stiffeners	0.5 psf	23.9 ft ²	11.93 lbf	1	11.93 lbf
Screen Panel	2.5 psf	8.01 ft ²	20.02 lbf	1	20.02 lbf
2x6 tube	2.3 plf	3 ft	6.9 lbf	1	6.9 lbf

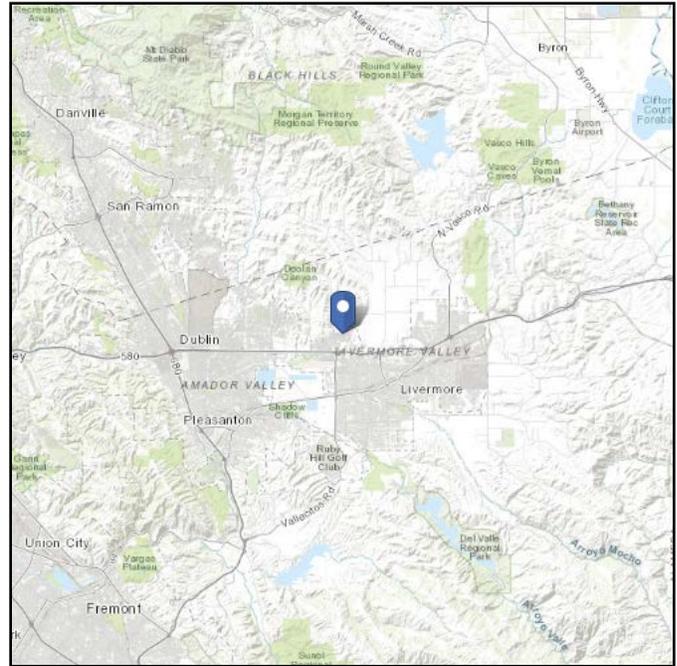
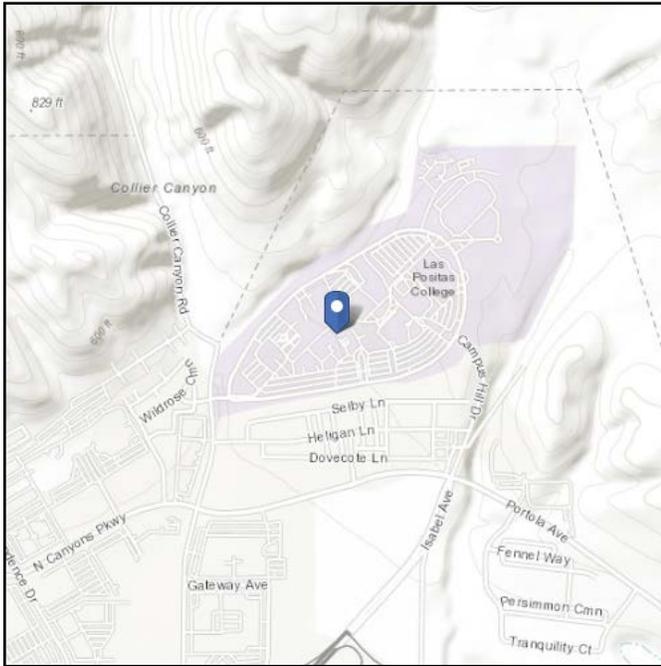
Total: 205.4 lbf

ASCE Hazards Report

Address:
Las Positas College - 3000
Campus Hill Drive
Livermore,

Standard: ASCE/SEI 7-22
Risk Category: III
Soil Class: D - Stiff Soil

Latitude: 37.710873
Longitude: -121.80058
Elevation: 480.38484203241944 ft
(NAVD 88)



Wind

Results:

Wind Speed	99 Vmph
10-year MRI	64 Vmph
25-year MRI	70 Vmph
50-year MRI	75 Vmph
100-year MRI	79 Vmph
300-year MRI	87 Vmph
700-year MRI	93 Vmph
1,700-year MRI	99 Vmph
3,000-year MRI	103 Vmph
10,000-year MRI	113 Vmph
100,000-year MRI	129 Vmph
1,000,000-year MRI	147 Vmph

Data Source: ASCE/SEI 7-22, Fig. 26.5-1C and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Mon Nov 24 2025



Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-22 Standard. Wind speeds correspond to approximately a 3% probability of exceedance in 50 years (annual exceedance probability = 0.000588, MRI = 1,700 years). Values for 10-year MRI, 25-year MRI, 50-year MRI and 100-year MRI are Service Level wind speeds, all other wind speeds are Ultimate wind speeds.

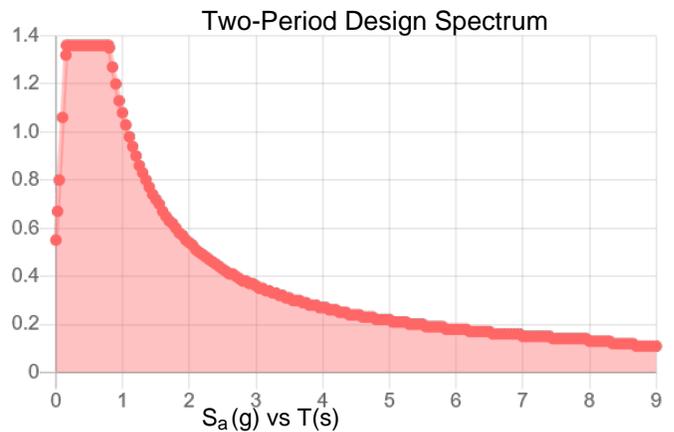
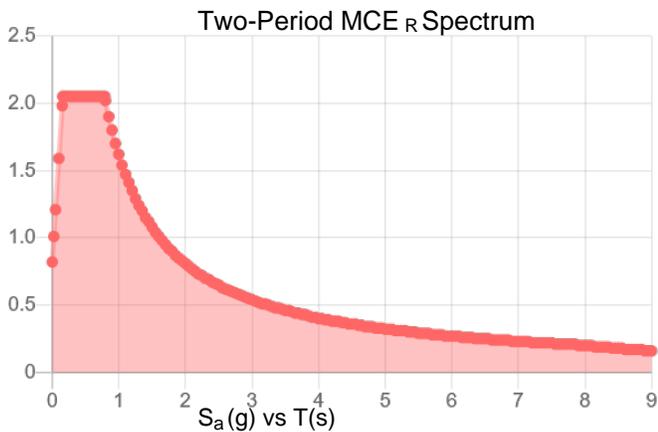
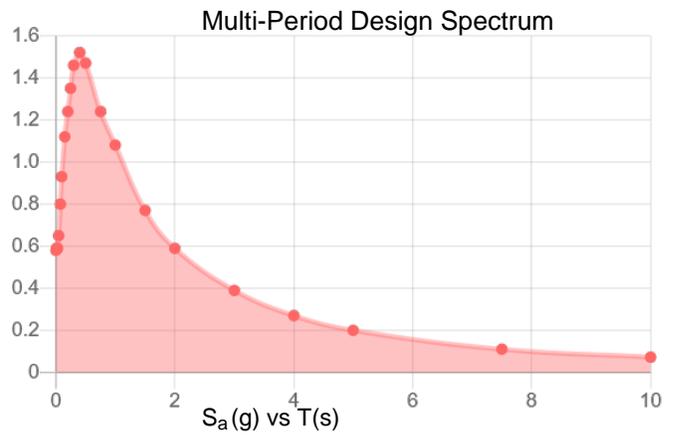
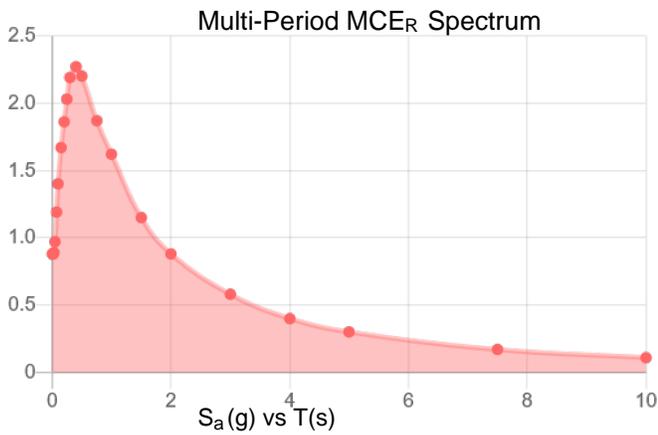
Site is not in a hurricane-prone region as defined in ASCE/SEI 7-22 Section 26.2.

Site Soil Class: D - Stiff Soil

Results:

PGA _M :	0.73	T _L :	8
S _{MS} :	2.05	S _s :	2.13
S _{M1} :	1.62	S ₁ :	0.81
S _{DS} :	1.36	V _{S30} :	260
S _{D1} :	1.08		

Seismic Design Category: E



MCE_R Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.

Design Vertical Response Spectrum

Vertical ground motion data has not yet been made available by USGS.



Data Accessed: Mon Nov 24 2025

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-22 and ASCE/SEI 7-22 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-22 Ch. 21 are available from USGS.

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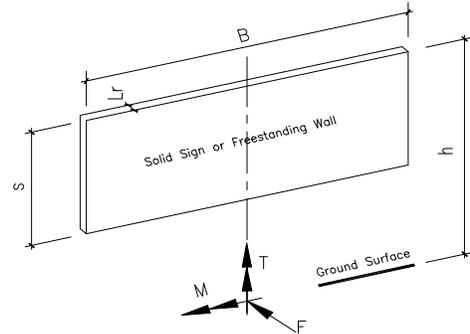


Wind Analysis for Freestanding Wall & Sign Based on ASCE 7-22

Monument Sign Wind Pressure

INPUT DATA

Exposure category (B, C or D) = C
 Importance factor, 1.0 only, (Table 1.5-2) $I_w = 1.00$
 Basic wind speed (ASCE 7 26.5.1) $V = 99$ mph, (159.32 kph)
 Topographic factor (26.8 & Table 26.8-1) $K_{zt} = 1$ Flat
 Height of top $h = 11$ ft, (3.35 m)
 Vertical dimension (for wall, $s = h$) $s = 11$ ft, (3.35 m)
 Horizontal dimension $B = 4$ ft, (1.22 m)
 Dimension of return corner $L_r = 0$ ft, (0.00 m)



DESIGN SUMMARY

Max horizontal wind pressure $p = 25$ psf, (1177 N/m²)
 Max total horizontal force at centroid of base $F = 1.08$ kips, (5 kN)
 Max bending moment at centroid of base $M = 6.54$ ft-kips, (9 kN-m)
 Max torsion at centroid of base $T = 0.87$ ft-kips, (1 kN-m)

ANALYSIS

Velocity pressure

$q_h K_d = (0.00256 K_z K_{zt} K_e V^2) K_d = 18.13$ psf

where: q_h = velocity pressure at mean roof height, h, (Eq. 26.10-1 page 277),

K_h = velocity pressure exposure coefficient evaluated at height, h, (Tab. 26.10-1, pg 277)

K_d = wind directionality factor. (Tab. 26.6-1, page 274)

h = height of top

$K_e = 1.00$, (Tab. 26.9-1 page 275)

= 0.85

= 0.85

= 11.00 ft

Wind Force Case A: resultant force through the geometric center (Sec. 29.3.1)

$p = q_h K_d G C_N = 25$ psf

$F = p A_s = 1.08$ kips

$M = F (h - 0.5s)$ for sign, $F (0.55h)$ for wall = 6.54 ft-kips

$T = 0.00$ ft-kips

where: G = gust effect factor. (Sec. 26.9)

C_f = net force coefficient. (Fig. 29.3-1, page 301)

$A_s = B s$

= 0.85

= 1.60

= 44.0 ft²

Wind Force Case B: resultant force at 0.2 B offset of the geometric center (Sec. 29.3.1)

$p = \text{Case A} = 25$ psf

$F = \text{Case A} = 1.08$ kips

$M = \text{Case A} = 6.54$ ft-kips

$T = 0.2 F B = 0.87$ ft-kips

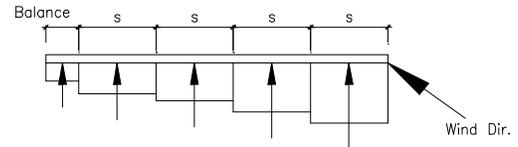
Wind Force Case C: resultant force different at each region (Sec. 29.4.1)

$p = q_h G C_f$

$F = \Sigma p A_s$

$M = \Sigma [F (h - 0.5s)$ for sign, $F (0.55h)$ for wall]

$T = \Sigma T_s$

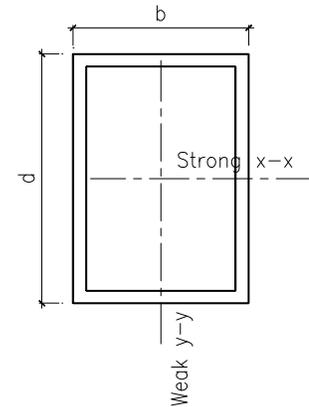


Distance (ft)	C_f (Fig. 29.3-1)	P_i (psf)	A_{si} (ft ²)	F_i (kips)	M_i (ft-kips)	T_i (ft-kips)
4.0	1.800	28	44	1.22	7.38	0.00
4.0	1.200	18	0	0.00	0.00	0.00
Σ				1.22	7.38	0.00

==== Case C may not be considered, footnote 3 of Fig. 6-20

Aluminum RT Member Capacity Based on Aluminum Design Manual 2015 (ASD)
BR.02 Post
INPUT DATA & DESIGN SUMMARY

MEMBER SIZE	RT 4 × 8 × 1/4	d (in)	b (in)	A (in ²)	I _x (in ⁴)	I _y (in ⁴)	E (ksi)	Wt (lbs/ft)
		8	4	5.75	47.60	15.90	10100	6.76
TENSILE ULTIMATE STRESS (T5 to T9, Table A.3.3)	$F_{tu} = 17$ ksi, (117 MPa)	(1 in = 25.4 mm , 1 ksi = 6.825 MPa , 1 lbs/ft = 14.584 N/m)						
TENSILE YIELD STRESS (T5, T6, T7, T8, or T9)	$F_{ty} = 11$ ksi, (76 MPa)							
COMPRESSIVE YIELD STRESS (T5 to T9)	$F_{cy} = 11$ ksi, (76 MPa)							
AXIAL COMPRESSION FORCE	$P = 0.1$ kips, (0.4 kN), ASD							
STRONG GEOMETRIC AXIS EFFECTIVE LENGTH	$kL_x = 13$ ft, (3.96 m)							
WEAK GEOMETRIC AXIS EFFECTIVE LENGTH	$kL_y = 13$ ft, (3.96 m)							
STRONG GEOMETRIC AXIS BENDING MOMENT	$M_{rx} = 0.729$ ft-kips, (1 kN-m), ASD							
STRONG GEOMETRIC AXIS BENDING UNBRACED LENGTH	$L_{bx} = 6.5$ ft, (1.98 m)							
STRONG DIRECTION SHEAR LOAD, ASD	$V_{strong} = 0.155$ kips, (0.7 kN)							
WEAK GEOMETRIC AXIS BENDING MOMENT	$M_{ry} = 0$ ft-kips, (0.0 kN-m), ASD							
WEAK DIRECTION SHEAR LOAD, ASD	$V_{weak} = 0$ kips, (0.0 kN)							


THE DESIGN IS ADEQUATE.
ANALYSIS

CHECK COMPRESSION STRESS IN AXIAL FORCE

$$F_{a1} = \frac{P_n}{A_g \Omega_c} = \begin{cases} \frac{F_{cy}}{n_y}, & \text{for } \frac{kL}{r} \leq \lambda_1 \\ \frac{1}{n_y} \left(B_c - \frac{D_c kL}{r} \right) \left(0.85 + 0.15 \frac{C_c - kL}{C_c - \lambda_1} \right), & \text{for } \lambda_1 \leq \frac{kL}{r} < \lambda_2 \\ \frac{\pi^2 E}{n_u \left(\frac{kL}{r} \right)^2}, & \text{for } \frac{kL}{r} \geq \lambda_2 \end{cases} = 4.31 \quad \text{ksi, (compression in column, ADM-I E.2)}$$

Where

$$\begin{aligned} r_x &= 2.880 \quad \text{in, (Page V-37 to V-41)} \\ r_y &= 1.660 \quad \text{in, (Page V-37 to V-41)} \\ kL/r &= \text{Max}(kL_x/r_x, kL_y/r_y) = 93.98 \\ E &= 10100 \quad \text{ksi, (ADM-I Table A.3.3)} \\ B_c &= F_{cy} [1 + (F_{cy}/2250)^{0.5}] = 11.77, \quad \text{(ADM-I Table B.4.2)} \\ D_c &= (B_c/10) (B_c/E)^{0.5} = 0.04, \quad \text{(ADM-I Table B.4.2)} \\ C_c &= 0.41 (B_c/D_c) = 120.11, \quad \text{(ADM-I Table B.4.2)} \\ n_u &= \Omega_c / 0.85 = 1.941, \quad \text{(ADM-I E.1, E.2-2 & E.2-3)} \\ n_y &= \Omega_c = 1.65, \quad \text{(ADM-I B.3-2, E.1, E.2-2 & E.2-3)} \\ \lambda_1 &= (B_c - F_{cy}) / D_c = 19.14, \quad \lambda_2 = C_c = 120.11, \quad \text{(ADM-I E.2)} \end{aligned}$$

$$F_{a2} = \frac{P_n}{A_g \Omega_c} = \begin{cases} \frac{F_{cy}}{n_y}, & \text{for } \frac{b}{t} \leq \lambda_1 \\ \frac{\left(B_p - \frac{1.6D_p b}{t} \right)}{n_u}, & \text{for } \lambda_1 < \frac{b}{t} < \lambda_2 \\ \frac{k_2 \sqrt{B_p E}}{n_u \frac{1.6b}{t}}, & \text{for } \frac{b}{t} \geq \lambda_2 \end{cases} = 5.60 \quad \text{ksi, (compression in web, ADM-I B.5.4.2)}$$

Where

$$\begin{aligned} b/t &= 30.000, \quad \text{(ADM-I Figure B.5.2)} \\ k_1 &= 0.35, \quad \text{(ADM-I Table B.4.3)} \\ k_2 &= 2.27, \quad \text{(ADM-I Table B.4.3)} \\ B_p &= F_{cy} [1 + F_{cy}^{(1/3)} / 11.447] = 13.14, \quad \text{(ADM-I Table B.4.2)} \end{aligned}$$

$$D_p = (B_p / 10) (B_p / E)^{0.5} = 0.05 \quad , \text{ (ADM-I Table B.4.2)}$$

$$\lambda_1 = (B_p - F_{cy}) / (1.6 D_p) = 28.19 \quad , \text{ (ADM-I B5.4.2)}$$

$$\lambda_2 = k_1 B_p / (1.6 D_p) = 60.65 \quad , \text{ (ADM-I B5.4.2)}$$

$$f_a = P / A = 0.02 \quad \text{ksi} < F_a = \text{Min} (F_{a1}, F_{a2}) = 4.31 \quad \text{ksi}$$

[Satisfactory]

CHECK TENSION STRESS IN BENDING MOMENTS

$$F = P_n / (A_g \Omega_t) = \text{Min} (F_{ty} / n_y, F_{tu} / k_t n_u, 1.3 F_{ty} / n_y, 1.42 F_{tu} / k_t n_u) = 6.67 \quad \text{ksi, (tension bending, ADM-I D.1, D.2 & F.8.1.2)}$$

Where $k_t = 1.00$, (ADM-I Table A.3.3)

$$f = \text{Min} (M_{rx} / S_x, M_{ry} / S_y) = 0.00 \quad \text{ksi} < F = 6.67 \quad \text{ksi}$$

[Satisfactory]

Where $S_x = 11.90 \quad \text{in}^3$, (Page V-37 to V-41)

$S_y = 7.93 \quad \text{in}^3$, (Page V-37 to V-41)

CHECK COMPRESSION STRESS IN STRONG GEOMETRIC AXIS, x - x, BENDING MOMENT

$$F_{bx0} = \frac{M_n}{S_x \Omega_b} = \begin{cases} \frac{M_{np}}{S_{xc} n_y}, & \text{for } \lambda_{eq} \leq \lambda_1 \\ \frac{M_{np}}{S_{xc} n_y} - \frac{1}{n_y} \left(\frac{M_{np}}{S_{xc}} - \frac{\pi^2 E}{C_p^2} \right) \left(\frac{\lambda_{eq} - \lambda_1}{C_p - \lambda_1} \right), & \text{for } \lambda_1 < \lambda_{eq} \leq \lambda_2 \\ \frac{k_2 \sqrt{B_p E}}{n_y \lambda_{eq}}, & \text{for } \lambda_{eq} \geq \lambda_2 \end{cases} = 8.28 \quad \text{ksi, (Direct Strength Method, ADM-I F.3.2)}$$

Where

$$M_{np} = \text{Min} (Z_x, 1.5 S_{xc}) F_{cy} = 162.59 \quad \text{in-kips}$$

$$Z_x = 14.78 \quad \text{in}^3, \text{ (Page V-37 to V-41)}$$

$$\lambda_1 = (B_p - F_{cy}) D_p = 45.11$$

$$\lambda_2 = C_p = 113.68 \quad , \text{ (ADM-I Table B.4.2)}$$

$$\lambda_{eq} = (E / F_e)^{0.5} \pi = 15.28$$

$$F_e = 43.27 \quad \text{ksi, (Table B.5.1)}$$

$$F_{bx1} = \frac{M_n}{S_x \Omega_b} = \begin{cases} \frac{F_{cy}}{n_y}, & \text{for } \frac{L_b S_c}{C_b \sqrt{I_y J} / 2} \leq S_1 \\ \frac{1}{n_y} \left(B_c - 1.6 D_c \sqrt{\frac{L_b S_c}{C_b \sqrt{I_y J} / 2}} \right), & \text{for } S_1 < \frac{L_b S_c}{C_b \sqrt{I_y J} / 2} < S_2 \\ \frac{\pi^2 E}{2.56 n_y \left(\frac{L_b S_c}{C_b \sqrt{I_y J} / 2} \right)}, & \text{for } \frac{L_b S_c}{C_b \sqrt{I_y J} / 2} \geq S_2 \end{cases} = 6.67 \quad \text{ksi, (compression in beam, 2010 ADM-I F.3.1)}$$

Where $S_c = S_x = 11.90 \quad \text{in}^3$, (Page V-37 to V-41)

$$C_b = 1.00 \quad , \text{ (ADM-I F.1.1)}$$

$$L_b S_c / [C_b (I_y J)^{0.5} / 2] = 76.85$$

$$S_1 = (B_c - F_{cy})^2 / (1.6 D_c) = 143.17 \quad , \text{ (ADM-I F.3.1)}$$

$$S_2 = (C_c / 1.6)^2 = 5635.1 \quad , \text{ (ADM-I F.3.1)}$$

$$J = 36.7 \quad , \text{ (Page V-34 to V-37)}$$

$$F_{bx2} = \frac{M_n}{S_x \Omega_b} = \begin{cases} \frac{F_{cy}}{n_y}, & \text{for } \frac{b}{t} \leq \lambda_1 \\ \frac{\left(B_p - \frac{1.6 D_p b}{t} \right)}{n_y}, & \text{for } \lambda_1 < \frac{b}{t} < \lambda_2 \\ \frac{k_2 \sqrt{B_p E}}{n_y \frac{1.6 b}{t}}, & \text{for } \frac{b}{t} \geq \lambda_2 \end{cases} = 6.67 \quad \text{ksi, (compression in flanges, ADM-I B.5.4.2)}$$

Where $b/t = 14.000$, (ADM-I Figure B.5.2)

$$k_1 = 0.5 \quad , \text{ (ADM-I Table B.4.3)}$$

$$k_2 = 2.04 \quad , \text{ (ADM-I Table B.4.3)}$$

$$\lambda_1 = (B_p - F_{cy}) / (1.6 D_p) = 28.19 \quad , \text{ (ADM-I B5.4.2)}$$

$$\lambda_2 = k_1 B_p / (1.6 D_p) = 86.65 \quad , \text{ (ADM-I B5.4.2)}$$

$$F_{bx3} = \frac{M_n}{S_x \Omega_b} = \begin{cases} \frac{1.5 F_{cy}}{n_y}, & \text{for } \frac{h}{t} \leq \lambda_1 \\ \frac{\left(B_{br} - \frac{m D_{br} h}{t} \right)}{n_y}, & \text{for } \lambda_1 < \frac{h}{t} < \lambda_2 \\ \frac{k_2 \sqrt{B_{br} E}}{n_y \frac{m h}{t}}, & \text{for } \frac{h}{t} \geq \lambda_2 \end{cases} = 8.93 \quad \text{ksi, (compression in web, ADM-I B.5.5.1)}$$

Where $h/t = b/t = 30.000$, (ADM-I Figure B.5.2)

$$c_c = c_o = 4 \quad \text{in}$$

$$\begin{aligned}
 m &= 0.65, \text{ (ADM-I B5.5.1)} \\
 B_{br} &= 1.3 F_{cy} [1 + F_{cy}^{(1/3)} / 7] = 18.84, \text{ (ADM-I Table B.4.2)} \\
 D_{br} &= (B_{br} / 20) (6 B_{br} / E)^{(1/3)} = 0.21, \text{ (ADM-I Table B.4.2)} \\
 \lambda_1 &= (B_{br} - 1.3 F_{cy}) / (m D_{br}) = 0.37, \text{ (ADM-I B5.5.1)} \\
 \lambda_2 &= k_1 B_{br} / (m D_{br}) = 68.77, \text{ (ADM-I B5.5.1)}
 \end{aligned}$$

$$f_{bx} = M_{rx} / S_x = 0.74 \text{ ksi} < F_{bx} = \text{Min} (F_{bx0}, F_{bx1}, F_{bx2}, F_{bx3}) = 6.67 \text{ ksi}$$

[Satisfactory]

CHECK COMPRESSION STRESS IN WEAK GEOMETRIC AXIS, y - y, BENDING MOMENT

$$F_{by} = \frac{M_n}{S_y \Omega_b} = \begin{cases} \frac{F_{cy}}{n_y}, & \text{for } \frac{b}{t} \leq \lambda_1 \\ \frac{\left(B_p - \frac{1.6 D_p b}{t} \right)}{n_y}, & \text{for } \lambda_1 < \frac{b}{t} < \lambda_2 \\ \frac{k_2 \sqrt{B_p E}}{n_y \frac{1.6 b}{t}}, & \text{for } \frac{b}{t} \geq \lambda_2 \end{cases} = 6.58 \text{ ksi, (compression in flanges, ADM-I B.5.4.2)}$$

Where $b/t = 30.000$, (ADM-I Figure B.5.2)

$$f_{by} = M_{ry} / S_y = 0.00 \text{ ksi} < F_{by} = 6.58 \text{ ksi}$$

[Satisfactory]

CHECK COMBINED COMPRESSION AND BENDING (ADM-I H.1)

$$\text{Max} \left[\begin{array}{l} \frac{P_r + M_{rx} + M_{ry}}{P_c + M_{cx} + M_{cy}} = \frac{f_a + f_{bx} + f_{by}}{F_a + F_{bx} + F_{by}} \\ \left[\frac{f_a}{F_a} + \frac{C_{mx} f_{bx}}{F_{bx}(1 - f_a / F_{ex})} + \frac{C_{my} f_{by}}{F_{by}(1 - f_a / F_{ey})} \right] \text{Check} \end{array} \right] = 0.11 < 1.33, \text{ (1.33 if IBC/CBC 1605.2 apply)}$$

[Satisfactory]

Where $\text{Check} = 1$ Check if ASD 2005 Eq. 4.1.1-1 apply (1 = Yes, 0 = No)

$$C_{mx} = 0.85 \quad C_{my} = 0.85$$

$$F_{ex} = \pi^2 E / n_u (kL_x / r_x)^2 = 17.50 \text{ ksi}$$

$$F_{ey} = \pi^2 E / n_u (kL_y / r_y)^2 = 5.81 \text{ ksi}$$

CHECK SHEAR STRESS (ADM-I G)

$$F_s = \frac{V_n}{A_w \Omega_v} = \begin{cases} \frac{F_{cy} / \sqrt{3}}{n_y}, & \text{for } \frac{h}{t} \leq \lambda_1 \\ \frac{\left(B_s - \frac{1.25 D_s h}{t} \right)}{n_y}, & \text{for } \lambda_1 < \frac{h}{t} < \lambda_2 \\ \frac{\pi^2 E}{n_y \left(\frac{1.25 h}{t} \right)^2}, & \text{for } \frac{h}{t} \geq \lambda_2 \end{cases} = \begin{array}{l} 3.85 \text{ ksi, (for strong shear)} \\ 3.85 \text{ ksi, (for weak shear)} \end{array}, \text{ (shear, ADM-I G.2)}$$

Where $h/t = b/t = 30.000$, (for strong shear, Figure G.2)

$h/t = b/t = 14.000$, (for weak shear)

$$B_s = (F_{cy} / 3^{0.5}) [1 + (F_{cy} / 3^{0.5})^{(1/3)} / 9.3] = 7.62, \text{ (ADM-I Table B.4.2)}$$

$$D_s = (B_s / 10) (B_s / E)^{0.5} = 0.02, \text{ (ADM-I Table B.4.2)}$$

$$C_s = 0.41 B_s / D_s = 149.31, \text{ (ADM-I Table B.4.2)}$$

$$\lambda_1 = (B_s - F_{cy} / 3^{0.5}) / (1.25 D_s) = 48.38, \text{ (ADM-I G.2)}$$

$$\lambda_2 = C_s / 1.25 = 119.45, \text{ (ADM-I G.2)}$$

$$f_s = V_{strong} / A_w = 0.01 \text{ ksi} < F_s = 3.85 \text{ ksi, (for strong shear)}$$

$$f_s = V_{weak} / A_w = 0.00 \text{ ksi} < F_s = 3.85 \text{ ksi, (for weak shear)}$$

[Satisfactory]



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Address:			
Phone:			
E-mail:			

1. Project information

Project description:
Location: BR.02 0.9DL+W
Design name: Design

Comment:

2. Input Data & Anchor Parameters

General

Design method: ACI 318-19
Units: Imperial units

Anchor Information:

Anchor type: Concrete screw
Material: Stainless Steel
Diameter (inch): 0.375
Nominal Embedment depth (inch): 3.250
Effective Embedment depth, h_{ef} (inch): 2.040
Code report: IAPMO UES ER-493
Anchor category: 1
Anchor ductility: Yes
 h_{min} (inch): 5.00
 c_{ac} (inch): 5.50
 C_{min} (inch): 1.75
 S_{min} (inch): 3.00

Base Material

Concrete: Normal-weight
Concrete thickness, h (inch): 24.00
State: Cracked
Compressive strength, f'_c (psi): 2500
 $\Psi_{c,v}$: 1.2
Reinforcement condition: B tension, B shear
Supplemental edge reinforcement: Not applicable
Reinforcement provided at corners: Yes
Ignore concrete breakout in tension: No
Ignore concrete breakout in shear: No
Ignore ϕ_{do} requirement: Not applicable
Build-up grout pad: Yes

Base Plate

Length x Width x Thickness (inch): 14.00 x 8.00 x 0.50
Yield stress: 11000 psi

Profile type/size: 8X4X1/4

Recommended Anchor

Anchor Name: Titen HD® Stainless Steel Countersunk Head - 3/8"Ø THDCS-SS, h_{nom} : 3.25" (83mm)
Code Report: IAPMO UES ER-493





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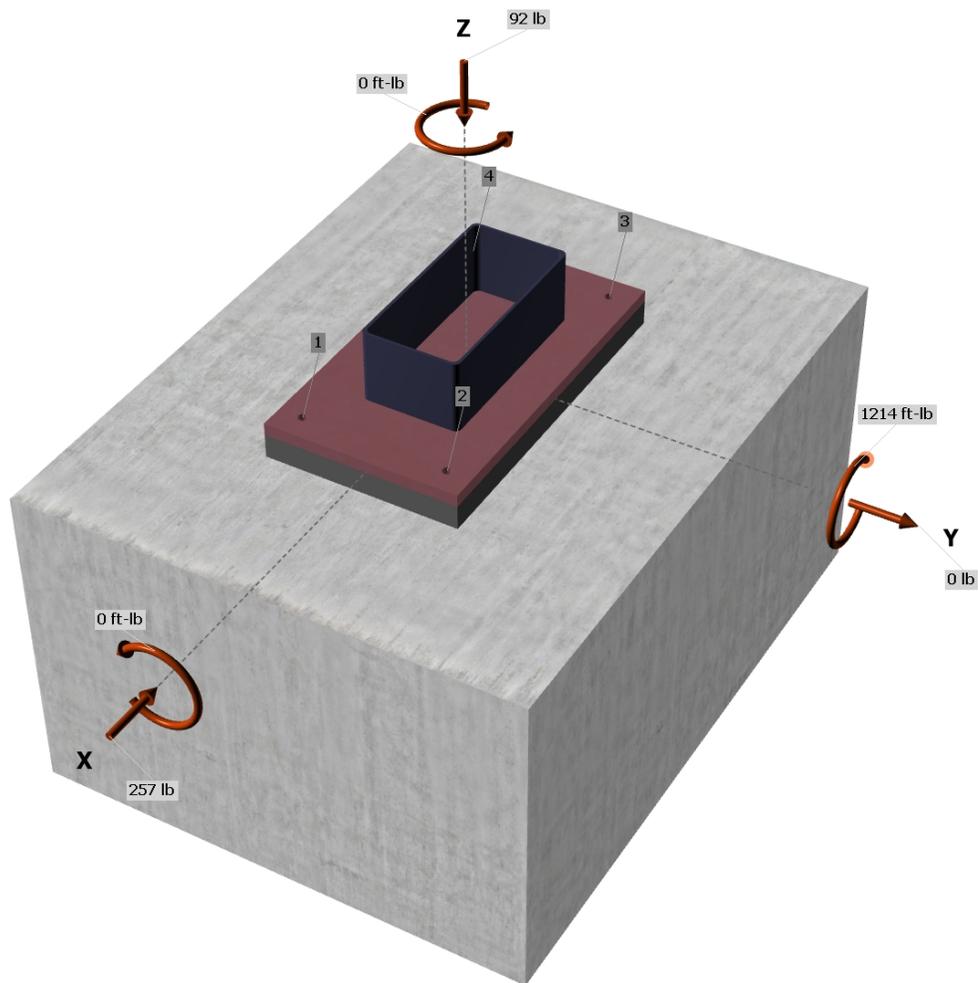
Load and Geometry

Load factor source: ACI 318 Section 5.3
Load combination: not set
Seismic design: No
Anchors subjected to sustained tension: Not applicable
Apply entire shear load at front row: No
Anchors only resisting wind and/or seismic loads: Yes

Strength level loads:

N_{ua} [lb]: -92
 V_{uax} [lb]: -257
 V_{uay} [lb]: 0
 M_{ux} [ft-lb]: 0
 M_{uy} [ft-lb]: -1214
 M_{uz} [ft-lb]: 0

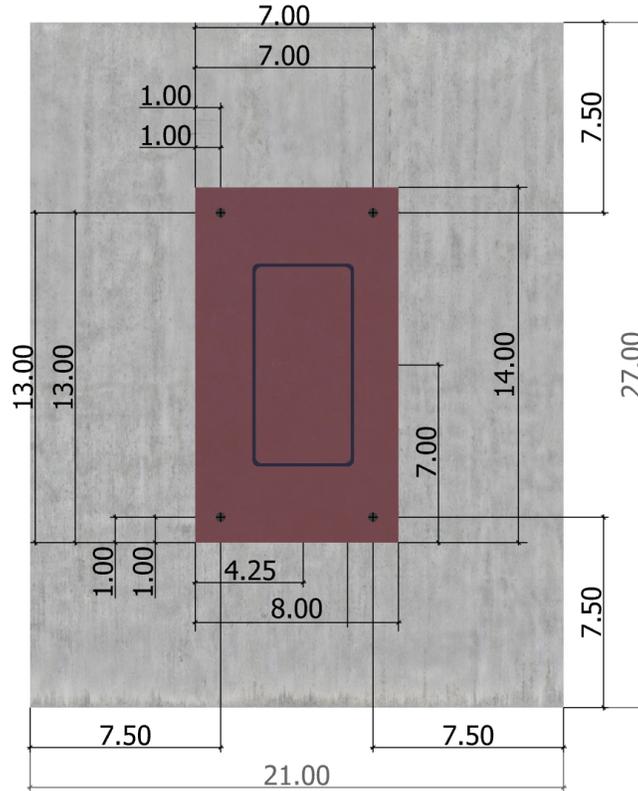
<Figure 1>





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<Figure 2>

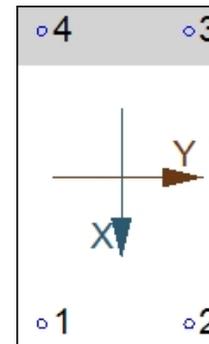


3. Resulting Anchor Forces

Anchor	Tension load, N _{ua} (lb)	Shear load x, V _{uax} (lb)	Shear load y, V _{uay} (lb)	Shear load combined, $\sqrt{(V_{uax})^2 + (V_{uay})^2}$ (lb)
1	574.1	-63.2	2.1	63.2
2	573.2	-65.3	2.1	65.4
3	0.0	-65.3	-2.1	65.4
4	0.0	-63.2	-2.1	63.2
Sum	1147.4	-257.0	0.0	257.1

Maximum concrete compression strain (%): 0.03
 Maximum concrete compression stress (psi): 130
 Resultant tension force (lb): 1147
 Resultant compression force (lb): 1240
 Eccentricity of resultant tension forces in x-axis, e'_{Nx} (inch): 0.00
 Eccentricity of resultant tension forces in y-axis, e'_{Ny} (inch): 0.00
 Eccentricity of resultant shear forces in x-axis, e'_{Vx} (inch): 0.05
 Eccentricity of resultant shear forces in y-axis, e'_{Vy} (inch): 0.00

<Figure 3>





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4. Steel Strength of Anchor in Tension (Sec. 17.6.1)

N_{sa} (lb)	ϕ	ϕN_{sa} (lb)
12177	0.75	9133

5. Concrete Breakout Strength of Anchor in Tension (Sec. 17.6.2)

$N_b = k_c \lambda_a \sqrt{f_c} h_{ef}^{1.5}$ (Eq. 17.6.2.2.1)

k_c	λ_a	f_c (psi)	h_{ef} (in)	N_b (lb)
17.0	1.00	2500	2.040	2477

$\phi N_{cbg} = \phi (A_{Nc} / A_{Nco}) \Psi_{ec,N} \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,N} N_b$ (Sec. 17.5.1.2 & Eq. 17.6.2.1a)

A_{Nc} (in ²)	A_{Nco} (in ²)	$c_{a,min}$ (in)	$\Psi_{ec,N}$	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,N}$	N_b (lb)	ϕ	ϕN_{cbg} (lb)
74.17	37.45	7.50	0.999	1.000	1.00	1.000	2477	0.65	3186

6. Pullout Strength of Anchor in Tension (Sec. 17.6.3)

$\phi N_{pn} = \phi \Psi_{c,P} \lambda_a N_p (f_c / 2,500)^n$ (Sec. 17.5.1.2, Eq. 17.6.3.1 & Code Report)

$\Psi_{c,P}$	λ_a	N_p (lb)	f_c (psi)	n	ϕ	ϕN_{pn} (lb)
1.0	1.00	2415	2500	0.50	0.65	1570

7. Steel Strength of Anchor in Shear (Sec. 17.7.1)

V_{sa} (lb)	ϕ_{grout}	ϕ	$\phi_{grout} \phi V_{sa}$ (lb)
4780	0.8	0.65	2486

8. Concrete Breakout Strength of Anchor in Shear (Sec. 17.7.2)

Shear perpendicular to edge in y-direction:

$V_{by} = \min[7(l_e / d_a)^{0.2} \sqrt{d_a} \lambda_a \sqrt{f_c} c_{a1}^{1.5}; 9 \lambda_a \sqrt{f_c} c_{a1}^{1.5}]$ (Eq. 17.7.2.2.1a & Eq. 17.7.2.2.1b)

l_e (in)	d_a (in)	λ_a	f_c (psi)	c_{a1} (in)	V_{by} (lb)
2.04	0.375	1.00	2500	13.50	14918

$\phi V_{cbgy} = \phi (A_{Vc} / A_{Vco}) \Psi_{ec,V} \Psi_{ed,V} \Psi_{c,V} \Psi_{h,V} V_{by}$ (Sec. 17.5.1.2 & Eq. 17.7.2.1b)

A_{Vc} (in ²)	A_{Vco} (in ²)	$\Psi_{ec,V}$	$\Psi_{ed,V}$	$\Psi_{c,V}$	$\Psi_{h,V}$	V_{by} (lb)	ϕ	ϕV_{cbgy} (lb)
546.75	820.13	1.000	0.811	1.200	1.000	14918	0.70	6776

Shear perpendicular to edge in x-direction:

$V_{bx} = \min[7(l_e / d_a)^{0.2} \sqrt{d_a} \lambda_a \sqrt{f_c} c_{a1}^{1.5}; 9 \lambda_a \sqrt{f_c} c_{a1}^{1.5}]$ (Eq. 17.7.2.2.1a & Eq. 17.7.2.2.1b)

l_e (in)	d_a (in)	λ_a	f_c (psi)	c_{a1} (in)	V_{bx} (lb)
2.04	0.375	1.00	2500	16.00	19248

$\phi V_{cbgx} = \phi (A_{Vc} / A_{Vco}) \Psi_{ec,V} \Psi_{ed,V} \Psi_{c,V} \Psi_{h,V} V_{bx}$ (Sec. 17.5.1.2 & Eq. 17.7.2.1b)

A_{Vc} (in ²)	A_{Vco} (in ²)	$\Psi_{ec,V}$	$\Psi_{ed,V}$	$\Psi_{c,V}$	$\Psi_{h,V}$	V_{bx} (lb)	ϕ	ϕV_{cbgx} (lb)
504.00	1152.00	0.998	0.794	1.200	1.000	19248	0.70	5603

Shear parallel to edge in y-direction:

$V_{bx} = \min[7(l_e / d_a)^{0.2} \sqrt{d_a} \lambda_a \sqrt{f_c} c_{a1}^{1.5}; 9 \lambda_a \sqrt{f_c} c_{a1}^{1.5}]$ (Eq. 17.7.2.2.1a & Eq. 17.7.2.2.1b)

l_e (in)	d_a (in)	λ_a	f_c (psi)	c_{a1} (in)	V_{bx} (lb)
2.04	0.375	1.00	2500	7.50	6177

$\phi V_{cbgy} = \phi (2)(A_{Vc} / A_{Vco}) \Psi_{ec,V} \Psi_{ed,V} \Psi_{c,V} \Psi_{h,V} V_{bx}$ (Sec. 17.5.1.2, 17.7.2.1(c) & Eq. 17.7.2.1b)

A_{Vc} (in ²)	A_{Vco} (in ²)	$\Psi_{ec,V}$	$\Psi_{ed,V}$	$\Psi_{c,V}$	$\Psi_{h,V}$	V_{bx} (lb)	ϕ	ϕV_{cbgy} (lb)
303.75	253.13	1.000	1.000	1.200	1.000	6177	0.70	12453

Shear parallel to edge in x-direction:

$V_{by} = \min[7(l_e / d_a)^{0.2} \sqrt{d_a} \lambda_a \sqrt{f_c} c_{a1}^{1.5}; 9 \lambda_a \sqrt{f_c} c_{a1}^{1.5}]$ (Eq. 17.7.2.2.1a & Eq. 17.7.2.2.1b)

l_e (in)	d_a (in)	λ_a	f_c (psi)	c_{a1} (in)	V_{by} (lb)
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Input data and results must be checked for agreement with the existing circumstances, the standards and guidelines must be checked for plausibility.



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2.04	0.375	1.00	2500	7.50	6177			
$\phi V_{cbgx} = \phi (2)(A_{Vc} / A_{Vco}) \Psi_{ec,V} \Psi_{ed,V} \Psi_{c,V} \Psi_{h,V} V_{by}$ (Sec. 17.5.1.2, 17.7.2.1(c) & Eq. 17.7.2.1b)								
A_{Vc} (in ²)	A_{Vco} (in ²)	$\Psi_{ec,V}$	$\Psi_{ed,V}$	$\Psi_{c,V}$	$\Psi_{h,V}$	V_{by} (lb)	ϕ	ϕV_{cbgx} (lb)
236.25	253.13	1.000	1.000	1.200	1.000	6177	0.70	9686

9. Concrete Pryout Strength of Anchor in Shear (Sec. 17.7.3)

$$\phi V_{cp} = \phi K_{cp} N_{cb} = \phi K_{cp} (A_{Nc} / A_{Nco}) \Psi_{ed,N} \Psi_{c,N} \Psi_{cp,NN} N_b$$
 (Sec. 17.5.1.2 & Eq. 17.7.3.1a)

K_{cp}	A_{Nc} (in ²)	A_{Nco} (in ²)	$\Psi_{ed,N}$	$\Psi_{c,N}$	$\Psi_{cp,NN}$	N_b (lb)	ϕ	ϕV_{cp} (lb)
1.0	37.09	37.45	1.000	1.000	1.000	2477	0.70	1717

10. Results

Interaction of Tensile and Shear Forces (Sec. R17.8)

Tension	Factored Load, N_{ua} (lb)	Design Strength, ϕN_n (lb)	Ratio	Status	
Steel	574	9133	0.06	Pass	
Concrete breakout	1147	3186	0.36	Pass	
Pullout	574	1570	0.37	Pass (Governs)	
Shear	Factored Load, V_{ua} (lb)	Design Strength, ϕV_n (lb)	Ratio	Status	
Steel	65	2486	0.03	Pass	
T Concrete breakout y-	4	6776	0.00	Pass	
T Concrete breakout x-	257	5603	0.05	Pass	
Concrete breakout y+	131	12453	0.01	Pass	
Concrete breakout x+	4	9686	0.00	Pass	
Concrete breakout, combined	-	-	0.05	Pass (Governs)	
Pryout	65	1717	0.04	Pass	
Interaction check	$(N_{ua}/\phi N_{ua})^{5/3}$	$(V_{ua}/\phi V_{ua})^{5/3}$	Utilization Ratio	Permissible	Status
Sec. R17.8	0.19	0.01	19.3%	1.0	Pass

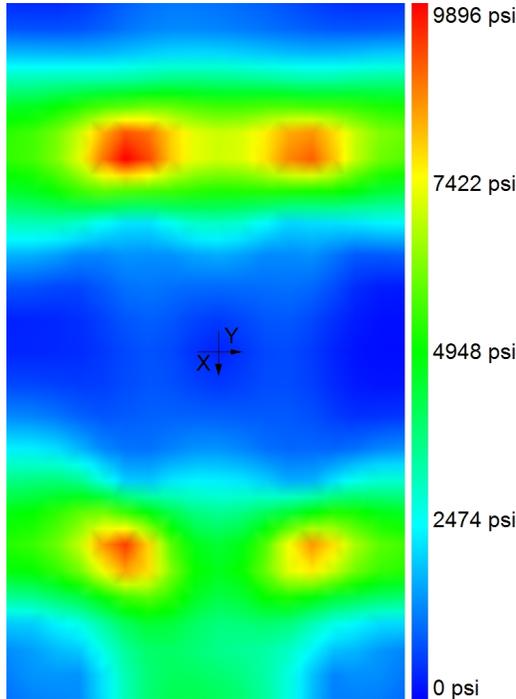
3/8"Ø THDCS-SS, hnom:3.25" (83mm) meets the selected design criteria.



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Base Plate Thickness

Steel **11000 psi**
 Maximum stress **9896 psi**
 Calculated plate thickness **0.452 inch**
 Stress distribution



For ACI and CSA design methods, maximum base plate stress is limited to 0.9 times yield stress.
 For ETAG and EN-1992-4 design method, maximum base plate stress is limited to yield stress divide by 1.5.
 Plate stress is derived using Von Mises theory.

$$\sigma_{xx} = \frac{F_{xx}}{t} + \frac{6M_{xx}}{t^2} \text{ (@ bottom) or } \sigma_{xx} = \frac{F_{xx}}{t} - \frac{6M_{xx}}{t^2} \text{ (@ top)}$$

$$\sigma_{yy} = \frac{F_{yy}}{t} + \frac{6M_{yy}}{t^2} \text{ (@bottom) or } \sigma_{yy} = \frac{F_{yy}}{t} - \frac{6M_{yy}}{t^2} \text{ (@ top)}$$

$$\sigma_{xy} = \frac{F_{xy}}{t} + \frac{6M_{xy}}{t^2} \text{ (@bottom) or } \sigma_{xy} = \frac{F_{xy}}{t} - \frac{6M_{xy}}{t^2} \text{ (@ top)}$$

$$\sigma_{xz} = \frac{V_x}{t}$$

$$\sigma_{yz} = \frac{V_y}{t}$$

$\sigma_{xx}, \sigma_{yy}, \sigma_{xy}$ as follows:

$$S_1 = \frac{\sigma_{xx} + \sigma_{yy}}{2} + \sqrt{\left(\frac{\sigma_{xx} - \sigma_{yy}}{2}\right)^2 + \sigma_{xy}^2}$$

$$S_2 = \frac{\sigma_{xx} + \sigma_{yy}}{2} - \sqrt{\left(\frac{\sigma_{xx} - \sigma_{yy}}{2}\right)^2 + \sigma_{xy}^2}$$

$$S_3 = 0$$

$$\sigma_{Von\ Mises} = \sqrt{\frac{(S_1 - S_2)^2 + (S_1 - S_3)^2 + (S_2 - S_3)^2}{2}}$$

11. Warnings

- Designer must exercise own judgement to determine if this design is suitable.
- Refer to manufacturer's product literature for hole cleaning and installation instructions.



Eccentric Footing Design Based on ACI 318-19

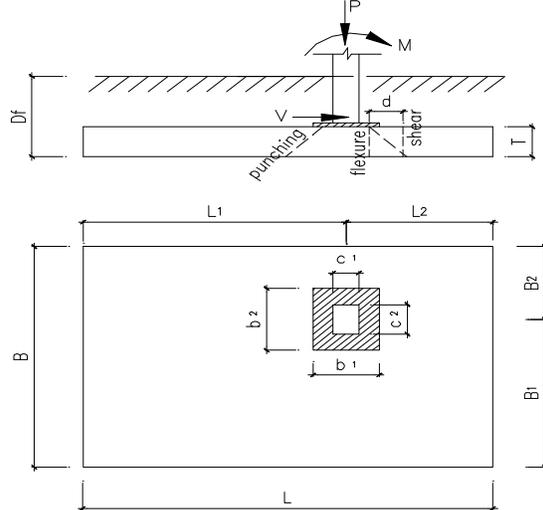
BR.02 0.9DL+W Spread Ftg.

INPUT DATA

COLUMN WIDTH	c_1	=	4	in
COLUMN DEPTH	c_2	=	8	in
BASE PLATE WIDTH	b_1	=	6	in
BASE PLATE DEPTH	b_2	=	14	in
FOOTING CONCRETE STRENGTH	f'_c	=	2.5	ksi
REBAR YIELD STRESS	f_y	=	60	ksi
AXIAL DEAD LOAD	P_{DL}	=	1.264	k
AXIAL LIVE LOAD	P_{LL}	=	0	k
LATERAL LOAD (0=WIND, 1=SEISMIC)		=	0	Wind,SD
WIND AXIAL LOAD	P_{LAT}	=	0	k, SD
WIND MOMENT LOAD	M_{LAT}	=	2.477	ft-k, SD
WIND SHEAR LOAD	V_{LAT}	=	0.367	k, SD
SURCHARGE	q_s	=	0	ksf
SOIL WEIGHT	w_s	=	0.11	kcf
FOOTING EMBEDMENT DEPTH	D_f	=	1.5	ft
FOOTING THICKNESS	T	=	12	in
ALLOWABLE SOIL PRESSURE	Q_a	=	2	ksf
FOOTING WIDTH	B_1	=	2	ft
	B_2	=	2	ft
FOOTING LENGTH	L_1	=	2	ft
	L_2	=	2	ft
REINFORCING SIZE	#	=	4	

DESIGN SUMMARY

FOOTING WIDTH	B	=	4.00	ft
FOOTING LENGTH	L	=	4.00	ft
FOOTING THICKNESS	T	=	12	in
LONGITUDINAL REINF., TOP		=	1 #4	
LONGITUDINAL REINF., BOT.		=	4 #4 @ 14 in o.c.	
TRANSVERSE REINF., BOT.		=	4 #4 @ 14 in o.c.	



THE FOOTING DESIGN IS ADEQUATE.

ANALYSIS

DESIGN LOADS AT TOP OF FOOTING (IBC 1605.2 & ACI 318 5.3)

CASE 1:	DL + LL	$P = 1$ kips	1.2 DL + 1.6 LL	$P_u = 2$ kips
		$M = 0$ ft-kips		$M_u = 0$ ft-kips
		$e = 0.0$ ft, fr cl ftg		$e_u = 0.0$ ft, fr cl ftg
CASE 2:	DL + LL + 0.6(1.3) W	$P = 1$ kips	1.2 DL + LL + 1.0 W	$P_u = 2$ kips
		$M = 2$ ft-kips		$M_u = 2$ ft-kips
		$V = 0$ kips		$V_u = 0$ kips
		$e = 1.6$ ft, fr cl ftg		$e_u = 1.6$ ft, fr cl ftg
CASE 3:	DL + LL + 0.6(0.65) W	$P = 1$ kips	0.9 DL + 1.0 W	$P_u = 1$ kips
		$M = 1$ ft-kips		$M_u = 2$ ft-kips
		$V = 0$ kips		$V_u = 0$ kips
		$e = 1.1$ ft, fr cl ftg		$e_u = 2.2$ ft, fr cl ftg

CHECK OVERTURNING FACTOR (2021 IBC 1605.2.1, 1808.3.1, & ASCE 7-22 12.13.4)

$M_R / M_O = 3.2 > F = 1.0 / 0.9 = 1.11$ [Satisfactory]

Where $M_O = M_{LAT} + V_{LAT} T - P_{LAT} L_2 = 3$ k-ft

$P_{ftg} = (0.15 \text{ kcf}) T B L = 2.40$ k, footing weight

$P_{soil} = w_s (D_f - T) B L = 0.88$ k, soil weight

$M_R = P_{DL} L_2 + 0.5 (P_{ftg} + P_{soil}) L = 9$ k-ft

FOR REVERSED LATERAL LOADS,

$M_R / M_O = 3.0 > F = 1.0 / 0.9$ [Satisfactory]

Where $M_O = M_{LAT} + V_{LAT} D_f - P_{LAT} L_1 = 3$ k-ft

$M_R = P_{DL} L_1 + 0.5 (P_{ftg} + P_{soil}) L = 9$ k-ft

CHECK SLIDING (2021 IBC 1807.2.3)

$1.5 (V_{Lat, ASD}) = 0.3303$ kips $< \mu \Sigma W = 1.47$ kips [Satisfactory]

Where $\mu = 0.4$

CHECK SOIL BEARING CAPACITY (ACI 318 13.3.1.1)

Service Loads	CASE 1	CASE 2	CASE 3	
P	1.3	1.3	1.3	k
e	0.0	1.9	1.2	ft (from center of footing)
$q_s B L$	0.0	0	0.0	k, (surcharge load)
$(0.15-w_s)T B L$	0.6	0.6	0.4	k, (footing increased)
ΣP	1.9	1.9	1.6	k
e_L	0.0 < L/6	1.2 > L/6	0.9 > L/6	ft
e_B	0.0 < B/6	0.0 < B/6	0.0 < B/6	ft
q_L	0.5	1.7	1.0	k / ft
q_{max}	0.1	0.4	0.3	ksf
q_{allow}	2.0	2.7	2.7	ksf

Where

$$q_L = \begin{cases} \frac{(\Sigma P) \left(1 + \frac{6e_L}{L}\right)}{L}, & \text{for } e_L \leq \frac{L}{6} \\ \frac{2(\Sigma P)}{3(0.5L - e_L)}, & \text{for } e_L > \frac{L}{6} \end{cases}$$

$$q_{MAX} = \begin{cases} \frac{q_L \left(1 + \frac{6e_B}{B}\right)}{B}, & \text{for } e_B \leq \frac{B}{6} \\ \frac{2q_L}{3(0.5B - e_B)}, & \text{for } e_B > \frac{B}{6} \end{cases}$$

[Satisfactory]**DESIGN FLEXURE & CHECK FLEXURE SHEAR**

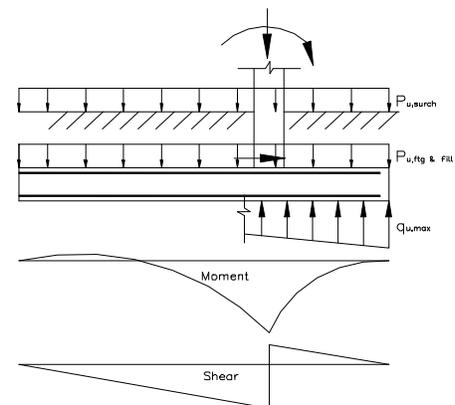
(ACI 318 13, 21, & 22)

$$q_{u,MAX} = \begin{cases} \frac{(\Sigma P_u) \left(1 + \frac{6e_u}{L}\right)}{BL}, & \text{for } e_u \leq \frac{L}{6} \\ \frac{2(\Sigma P_u)}{3B(0.5L - e_u)}, & \text{for } e_u > \frac{L}{6} \end{cases}$$

$$\rho_{MAX} = \frac{0.85\beta_1 f'_c}{f_y} \frac{\epsilon_u}{\epsilon_u + \epsilon_t}$$

$$\rho = \frac{0.85 f'_c \left(1 - \sqrt{1 - \frac{M_u}{0.383 b d^2 f'_c}}\right)}{f_y}$$

$$\rho_{MIN} = \text{MIN} \left(0.0018 \frac{T}{d}, \frac{4}{3} \rho \right)$$

**FACTORED SOIL PRESSURE**

Factored Loads	CASE 1	CASE 2	CASE 3	
P_u	1.5	1.5	1.1	k
e_u	0.0	1.9	2.5	ft
$\gamma q_s B L$	0.0	0.0	0.0	k, (factored surcharge load)
$\gamma[0.15T + w_s(D_f - T)]BL$	3.9	3.9	3.0	k, (factored footing & backfill loads)
ΣP_u	5.5	5.5	4.1	k
e_u	0.0 < L/6	0.5 < L/6	0.7 > L/6	ft
$q_{u,max}$	0.341	0.607	0.522	ksf

FOOTING MOMENT & SHEAR AT LONGITUDINAL SECTIONS FOR CASE 1

Section	0	0.25 L ₁	0.50 L ₁	0.75 L ₁	Col _L	Col _R	0.25 L ₂	0.50 L ₂	0.75 L ₂	L
X_u (ft, dist. from left of footing)	0	0.50	1.00	1.50	1.79	2.21	2.50	3.00	3.50	4.00
$M_{u,col}$ (ft-k)	0	0	0	0	0	-0.3	-0.8	-1.5	-2.3	-3.0
$V_{u,col}$ (k)	0	0.0	0.0	0.0	0.0	1.5	1.5	1.5	1.5	1.5
$P_{u,surch}$ (klf)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
$M_{u,surch}$ (ft-k)	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
$V_{u,surch}$ (k)	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
$P_{u,ftg \& fill}$ (klf)	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
$M_{u,ftg \& fill}$ (ft-k)	0	-0.1	-0.5	-1.1	-1.6	-2.4	-3.1	-4.4	-6.0	-7.9
$V_{u,ftg \& fill}$ (k)	0	0.5	1.0	1.5	1.8	2.2	2.5	3.0	3.4	3.9
$q_{u,soil}$ (ksf)	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34
$M_{u,soil}$ (ft-k)	0	0.2	0.7	1.5	2.2	3.3	4.3	6.1	8.3	10.9
$V_{u,soil}$ (k)	0	-0.7	-1.4	-2.0	-2.4	-3.0	-3.4	-4.1	-4.8	-5.5
ΣM_u (ft-k)	0	0.0	0.2	0.4	0.6	0.6	0.4	0.2	0.0	0
ΣV_u (kips)	0	-0.2	-0.4	-0.6	-0.7	0.7	0.6	0.4	0.2	0

FOOTING MOMENT & SHEAR AT LONGITUDINAL SECTIONS FOR CASE 2

Section	0	0.25 L ₁	0.50 L ₁	0.75 L ₁	Col _L	Col _R	0.25 L ₂	0.50 L ₂	0.75 L ₂	L
X _u (ft, dist. from left of footing)	0	0.50	1.00	1.50	1.79	2.21	2.50	3.00	3.50	4.00
M _{u,col} (ft-k)	0	0	0	0	0	2.5	2.1	1.3	0.6	-0.2
V _{u,col} (k)	0	0.0	0.0	0.0	0.0	1.5	1.5	1.5	1.5	1.5
P _{u,surch} (klf)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
M _{u,surch} (ft-k)	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
V _{u,surch} (k)	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P _{u,ftg & fill} (klf)	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
M _{u,ftg & fill} (ft-k)	0	-0.1	-0.5	-1.1	-1.6	-2.4	-3.1	-4.4	-6.0	-7.9
V _{u,ftg & fill} (k)	0	0.5	1.0	1.5	1.8	2.2	2.5	3.0	3.4	3.9
q _{u,soil} (ksf)	0.07	0.14	0.21	0.27	0.31	0.37	0.41	0.47	0.54	0.61
M _{u,soil} (ft-k)	0	0.0	0.2	0.6	1.0	1.7	2.3	3.7	5.6	8.1
V _{u,soil} (k)	0	-0.2	-0.6	-1.0	-1.4	-2.0	-2.4	-3.3	-4.3	-5.5
Σ M_u (ft-k)	0	-0.1	-0.3	-0.5	-0.6	1.8	1.3	0.6	0.2	0
Σ V_u (kips)	0	0.3	0.4	0.4	0.4	1.7	1.6	1.2	0.7	0

FOOTING MOMENT & SHEAR AT LONGITUDINAL SECTIONS FOR CASE 3

Section	0	0.25 L ₁	0.50 L ₁	0.75 L ₁	Col _L	Col _R	0.25 L ₂	0.50 L ₂	0.75 L ₂	L
X _u (ft, dist. from left of footing)	0	0.50	1.00	1.50	1.79	2.21	2.50	3.00	3.50	4.00
M _{u,col} (ft-k)	0	0	0	0	0	2.6	2.3	1.7	1.1	0.6
V _{u,col} (k)	0	0.0	0.0	0.0	0.0	1.1	1.1	1.1	1.1	1.1
P _{u,surch} (klf)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
M _{u,surch} (ft-k)	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
V _{u,surch} (k)	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P _{u,ftg & fill} (klf)	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
M _{u,ftg & fill} (ft-k)	0	-0.1	-0.4	-0.8	-1.2	-1.8	-2.3	-3.3	-4.5	-5.9
V _{u,ftg & fill} (k)	0	0.4	0.7	1.1	1.3	1.6	1.8	2.2	2.6	3.0
q _{u,soil} (ksf)	0.00	0.07	0.13	0.20	0.23	0.29	0.33	0.39	0.46	0.52
M _{u,soil} (ft-k)	0	2.4	4.2	5.4	5.8	6.3	6.4	6.3	5.9	5.3
V _{u,soil} (k)	0	-1.0	-1.8	-2.5	-2.9	-3.3	-3.5	-3.9	-4.0	-4.1
Σ M_u (ft-k)	0	2.3	3.8	4.5	4.7	7.1	6.3	4.7	2.6	0
Σ V_u (kips)	0	-0.6	-1.1	-1.4	-1.5	-0.5	-0.6	-0.5	-0.3	0

DESIGN FLEXURE

Location	M _{u,max}	d (in)	ρ _{min}	ρ _{reqd}	ρ _{max}	S _{max}	use	ρ _{prov'd}
Top Longitudinal	0.6 ft-k	9.75	0.0000	0.0000	0.0129	no limit	1 # 4	0.0004
Bottom Longitudinal	7.1 ft-k	8.75	0.0006	0.0004	0.0129	18	4 # 4 @ 14 in o.c.	0.0019
Bottom Transverse	0 ft-k / ft	8.50	0.0000	0.0000	0.0129	18	4 # 4 @ 14 in o.c.	0.0020

[Satisfactory]

CHECK FLEXURE SHEAR

Direction	V _{u,max}	φV _c = 2 φ b d (f' _c) ^{0.5}	check V _u < φ V _c
Longitudinal	1.7 k	32 k	[Satisfactory]
Transverse	0.1 k / ft	8 k / ft	[Satisfactory]

CHECK PUNCHING SHEAR (ACI 318 13.2.7.2, 22.6.4.1, 22.6.4.3, & 8.4.2.3)

$$v_u(\text{psi}) = \frac{P_u - R}{A_p} + \frac{0.5 \gamma_v M_u b_1}{J}$$

$$AP = 2(b_1 + b_2)d$$

$$\phi v_c(\text{psi}) = \phi(2 + y)\sqrt{f'_c}$$

$$J = \left(\frac{db_1^3}{6} \right) \left[1 + \left(\frac{d}{b_1} \right)^2 + 3 \left(\frac{b_2}{b_1} \right) \right]$$

$$\gamma_v = 1 - \frac{1}{1 + \frac{2}{3} \sqrt{\frac{b_1}{b_2}}}$$

$$y = \text{MIN} \left(2, \frac{4}{\beta_c}, 40 \frac{d}{b_0} \right)$$

$$R = \frac{P_u b_1 b_2}{A_f}$$

$$A_f = BL$$

$$b_0 = \frac{AP}{d}, b_1 = (0.5c_1 + 0.5b_1 + d), b_2 = (0.5c_2 + 0.5b_2 + d)$$

Case	P _u	M _u	b ₁	b ₂	b ₀	γ _v	β _c	y	A _f	A _p	R	J	V _u (psi)	φ V _c
1	1.5	0.0	13.5	19.5	0.5	0.4	1.4	2.0	16.0	3.9	0.2	1.0	2.4	150.0
2	1.5	2.5	13.5	19.5	0.5	0.4	1.4	2.0	16.0	3.9	0.2	1.0	2.4	150.0
3	1.1	2.5	13.5	19.5	0.5	0.4	1.4	2.0	16.0	3.9	0.1	1.0	1.8	150.0

[Satisfactory]

where φ = 0.75, (ACI 318 21.2)

Typography

Agenda

Aa Aa Aa Aa Aa
 Light Regular Medium SemiBold Bold

ABCDEFGHIJKLMNOPQRSTUVWXYZ
 abcdefghijklmnopqrstuvwxyz
 0123456789

SemiBold 

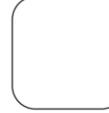
Symbols / Icons

 Parking Lot Central Campus C1	 Parking Lot Upper Campus C4	 <small>Note: Icon version for the letter "J" was adjusted using the Agenda font so it reads well</small>	 EV Charging			
 Parking	 Restroom	 Cafeteria	 Amphitheater	 Aquatic Center	 Basketball Court	 Soccer Field
 Building Number Central Campus C1	 Building Number Upper Campus C4	 You Are Here PMS 143	 Campus Hill Vineyard	 Track & Field	 Outdoor Courts	

Arrows



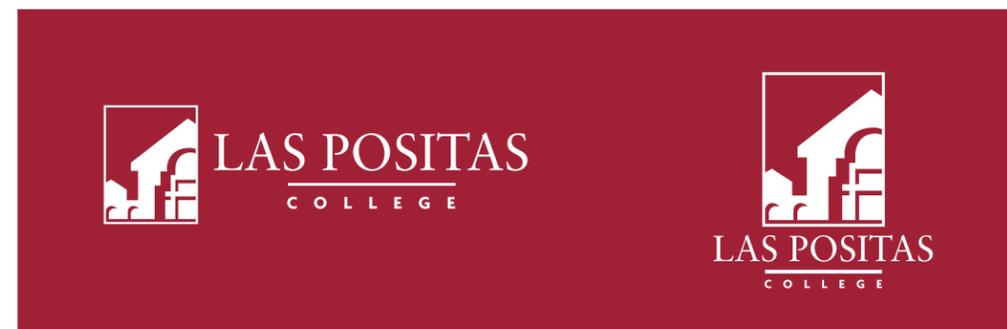
Colors (if a color callout reflects paint - Matthews Paint provides formulas to match PMS callouts)

 C1 PMS 201C	 C2 PMS BlackC	 C3 PMS Cool Gray 11	 C4 PMS 7461C	 C5 Matthews Paint MP 32071 White Wonder	 C6 Matthews Paint MP 18213 Wrought Iron Metallic
 C7 PMS Warm Gray 4	 C8 PMS 2259	 C9 PMS 7483	 M1 #7328 Acrylic Milk White <small>with translucent vinyl overlay 3M 3630-20 white</small>	 V1 3M 225-20 Opaque Vinyl Matte White	 V1R 3M 5100-10 Reflective Vinyl White

Brand



Brand - Monochromatic on dark background



GRAPHIC CONSULTANT:



1455 Hays Street San Leandro, CA 94577
 510.969.7870 info@shannonleigh.net

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CLIENT:



PROJECT ADDRESS:

Las Positas College
 3000 Campus Hill Drive
 Livermore, CA 94551

ARCHITECT:

PROJECT NAME:

**Exterior Wayfinding
 Project**

Job# 3738

CREATED BY / DATE:

MV / 2025_0217

REVISIONS BY / DATE / NOTES:

- MV 2025_0313
- MV 2025_0530
- MV 2025_0822
- MV 2025_1003
- MV 2025_1125
- MV 2025_1211
- MV 2025_0123

PROJECT PHASE:

100% Construction Intent
 For Construction Intent Only

SHEET TITLE:

Graphic Standards
 Typography, Arrows, Colors
 Symbols, Brand

PAGE NUMBER:

5.2

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END OF SECTION

DIVISION 02

EXISTING CONDITION

PART 1 – GENERAL**1.01 SUMMARY**

- A. This Section includes requirements for the selective demolition, removal, protection, and disposal of existing signage and related components.
- B. Signage demolition work to include, but is not limited to:
 - 1. Removal of existing exterior Vehicular and Pedestrian signage per Removal Plan, verified by Contractor.
 - 2. Removal of associated mounting hardware, brackets, anchors, fasteners.
 - 3. Patch and repair of surfaces affected by sign removal.
 - 4. Identification of utilities

1.02 RELATED SECTIONS

- A. Section 01 11 00 – Summary of Work
- B. Section 01 74 19 – Construction Waste Management and Disposal
- C. Section 03 30 00 – Cast-in-Place Concrete (for footing removal or abandonment)
- F. Section 10 14 00 – Exterior Signs
- G. Section 31 22 00 – Grading

1.03 REFERENCES

- A. Applicable local, state, and federal codes governing demolition, waste disposal, and safety.
- B. OSHA requirements for demolition and site safety.

1.04 SUBMITTALS

- A. Demolition Plan: Submit a brief written description outlining methods for removal of signage, protection of adjacent work, and disposal procedures, including schedule for removal.
- B. Construction Waste Management Documentation: Submit documentation demonstrating compliance with Section 01 74 19.
- C. Photographic Documentation: Provide pre-demolition photographs of existing signage and adjacent surfaces.

1.05 QUALITY ASSURANCE

- A. Perform demolition work using personnel experienced in signage removal and related construction activities.
- B. Coordinate demolition activities with new signage installation to minimize disruption and rework.

1.06 PROJECT CONDITIONS

- A. Verify existing conditions prior to demolition. Report discrepancies between existing conditions and Drawings to the Owner's Representative before proceeding.

- B. Maintain access to buildings, pedestrian paths, and vehicular routes as required.
- C. Accurately record actual locations of utilities and subsurface obstructions from field survey of existing and new sign locations.
- D. Do not disable or disrupt existing underground utility systems at Las Positas Campus.
 - 1. The signage contractor will field survey at new sign locations for presence of existing utilities
 - 2. Erasable paint only is allowed for utility locating.
- E. Conform to procedures applicable when discovering hazardous or contaminated materials

PART 2 – PRODUCTS

2.01 MATERIALS

- A. No new materials are required for demolition work, except temporary protection materials as necessary to safeguard adjacent surfaces, landscaping, and structures.
- B. Temporary Protection Materials:
 - 1. Plywood, plastic sheeting, or protective wraps as required.
 - 2. Temporary barriers, fencing, delineators and/or signage for safety and access control.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Clearly identify signage scheduled for removal and signage to remain.
- B. Protect adjacent construction, finishes, landscaping, and utilities from damage.
- C. Provide, erect, and maintain temporary materials as required per 2.01

3.02 DEMOLITION OF SIGNAGE

- A. Remove signage indicated for demolition in a careful manner to prevent damage to adjacent surfaces and structures.
- B. Remove signs, panels, faces, cabinets, posts, and frames, including associated anchors and fasteners, unless noted otherwise.
- C. Except where noted otherwise, remove demolished materials from site. Do not bury materials on site. Abandon material will apply where Owner allows only.

3.03 PATCHING AND REPAIR

- A. Patch and repair surfaces damaged by signage removal to restore substrates to a smooth, uniform condition.
- B. Match adjacent materials, textures, and finishes where surfaces are exposed.
- C. Prime and paint repaired areas where required under related Sections.

3.04 DISPOSAL

- A. Remove demolished signage materials promptly from the site.
- B. Dispose of materials in accordance with applicable regulations and the Construction Waste Management Plan.
- C. Recycle aluminum, steel, and other recyclable materials to the maximum extent feasible.

3.05 CLEANING

- A. Leave site free of debris resulting from signage demolition.
- B. Clean adjacent surfaces soiled by demolition operations.

3.06 PROTECTION

- A. Protect remaining signage and new work from damage during demolition activities.
- B. Repair or replace damaged items at no additional cost to the Owner.

END OF SECTION

DIVISION 10

EXTERIOR SIGNAGE

PART 1 – GENERAL

1.1 DEFINITIONS AND TERMS

A. Parties:

1. “Signage Consultant”: Shannon-Leigh Associates, LLC. When general reference to “Architect/Engineer” is made throughout contract documents, it is referring to Shannon Leigh Associates, LLC.
2. “Owner”: Chabot-Las Positas Community College District for work at Las Positas College
3. “Bidders”: One or more signage Contractor s bidding for the project; includes the selected Signage Contractor.
4. “Signage Contractor”: Selected contractor awarded the project, containing either a C45 or B license, who holds a direct contractual relationship with Owner.

B. Terms:

1. “Sign” shall refer to any fabrication, object, or article of product described in the construction intent drawings and/or specifications.
2. “Mock-up” shall refer to a non-functional scale or full-size representation made to resemble a complete or partial sign, used for design evaluation.
3. “Prototype” shall refer to a functional scale or full-size model of a complete or partial sign made with the specified materials, used for design evaluation.

1.2 RELATED SECTIONS AND REFERENCES

- #### A. Signage Contractor shall be responsible for providing signage and graphic products that comply with the documents listed below and any other relevant code or legal requirements. If newer versions of these documents are in effect at the time of installation, then Signage Contractor is responsible for compliance with the newer versions.

1. 2025 California Building Code (CBC).
2. 2025 California Fire Code (CFC).
3. California Title 19 Public Safety.
4. California Department of General Services, Division of the State Architect, 2008.
5. California Access Compliance Reference Manual, Checklist 17.
6. City Code, Livermore, California.
7. Americans with Disabilities Act (ADA) legislation, published in the Department of Justice Federal Register.
8. “ADA Standards for Accessible Design,” as published in the Title III regulations 28 CFR Part 36, (revised September 15, 2010 or most recent revision) issued by the Department of Justice. The ADA Standards for Accessible Design are in Appendix A of the Title III regulations.
9. “Instruction Manual for Braille Transcribing” Fifth Edition, 2009, National Library Service for the Blind and Physically Handicapped, Library of Congress, <http://www.loc.gov>.

1.3 SCOPE OF WORK

- A. Bidders shall base their proposals on the performance of all services including items of labor, material, and equipment required for the complete fabrication and installation of the specified work within the timeframe agreed to.
- B. Bidders shall, as a part of their bid, call specific attention to any construction details, materials, methods of fabrication, or other similar items which they consider to be impractical or not in keeping with good industry practice. Requests for change orders for substitutions to address such items after award of contract shall not be accepted.
- C. Pricing shall be submitted in accordance with the construction intent drawings. Bidders are required to clearly indicate in writing within their bid the method of construction anticipated, the materials to be used, and any exclusions or exceptions to the bid documents.
- D. Allow for thorough and complete preparation of all submittal items described in Section 2.1, for delivery and/or shipping of same, and for re-submittal(s) as required until approval has been obtained for all items.
- E. Unless otherwise directed by the Owner and Signage Consultant, signs shall be designed to withstand environmental conditions, including wind and seismic loads as shown in engineering details.
- F. Signs to withstand severe guest abuse or vandalism, but not less than the equivalent of resisting simple hand implements and tools and adult physical force for approximately 10 minutes. All fabricated signs shall be built to withstand normal maintenance operations and use by employees/staff.
- G. Provide graphics complete as shown and specified in construction intent drawings.

1.4 CONSTRUCTION INTENT DRAWINGS

- A. Details on drawings indicate a construction/design intent approach for sign structures. Signage Contractor to comply with engineering criteria provided by the Signage Consultant and Engineer subconsultant. It shall be the responsibility of the Signage Contractor to perform site verifications.

1.5 SCHEDULING

- A. Coordinate to assure other trades affected by work are performed in proper sequence. Furnish setting templates, layouts, anchors, fasteners, and other built-in items as required to cause no delay.
- B. Submit a schedule of submittals, fabrication, and installation with the bid response and maintain/update such schedule throughout the progress of the contract as requested by the Owner and Signage Consultant.
 - 1. It is the Signage Contractor's responsibility to schedule with the Owner and Signage Consultant reviews of signs in production for approval. Review meetings are to be scheduled at the convenience of the Owner and Signage Consultant.

1.6 QUALITY ASSURANCE

- A. Signage Contractor shall be responsible for the quality and delivery of all materials and workmanship required for the execution of the contract, including the materials and workmanship of any firms or individuals who act as their subs (if allowed). Signage Contractor shall be responsible for providing subcontractors with complete and up-to-date drawings, specifications, graphic schedule, and other information issued by the Owner and Signage Consultant.

- B. Written dimensions on the drawings shall take precedence over scaled dimensions. Signage Contractor shall verify and be responsible for all dimensions and conditions shown by design intent drawings as they relate to actual material sizes, existing construction, and related site conditions in the field. Font sizes to be determined in coordination between the Owner, Signage Consultant, and Signage Contractor; precise determination for height of message defined in graphic layouts, inquiries about letter height to be directed to the Owner and Signage Consultant. Default letter height to be measured from font baseline to the top of the capital "I" glyph.
- C. Copy, quantities, and references shown in the design intent drawings and specifications are for construction intent only.
- D. In the case of discrepancies in quantities, dimensions, message, or any other related elements, Signage Contractor is to notify the Owner and Signage Consultant before proceeding further in any operation, to resolve the issue in question. It is required that Signage Contractor not attempt to resolve the discrepancies without consulting the Owner and Signage Consultant.
- E. Signage Contractor shall follow all structural requirements for above and below grade conditions as shown in engineering details.
- F. Signage Contractor may make specific recommendations for changes to the provided construction intent drawings. If those changes will improve the method of fabrication while adhering to the design intent. The Owner or Signage Consultant, with Owner authorization, shall approve such recommendations and changes in writing prior to approval of shop drawings or fabrication of any sign samples.
- G. Digital artwork as required by Signage Contractor for symbols or custom-designed graphic components (i.e. logos, logo types, arrows, or patterns) will be provided in Adobe PDF format with vectors intact when possible, at a proportional full/scaled percentage of the final size.
- H. There shall be no visible labels, manufacturer's or otherwise, code permitting, on the completed signs. If labels are required, a sample label and intended location, along with an explanation of the requirements, must be submitted for review by the Owner and Signage Consultant prior to application and/or installation.
- I. All material, hardware, electrical components, finishes, etc. used to fabricate any and all sign components shall be "NEW" (not previously used or operated in any other application); from the most recent original manufacturer's production run/supply; and appropriately matched to the service conditions required of the site. The only exception is when "RETROFIT" is called out in the construction intent drawings or the message schedule.
- J. Provide the Owner and Signage Consultant with a copy of all Testing Inspection Reports as may be required. Signage Contractor is not to proceed with the work until all unsatisfactory conditions have been corrected by Signage Contractor in a manner acceptable to the Owner and Signage Consultant.
- K. Completed work shall be structurally sound, and free from scratches, distortions, chips, breaks, blisters, holes, splits, or other disfigurements considered as imperfections for the specific material.

PART 2 - PRODUCTS

2.1 SUBMITTALS, MOCK-UPS AND PROTOTYPES

- A. Submit digitally dated shop drawings of all custom fabricated items and specifications on all standard pre-manufactured items to the Owner and Signage Consultant for review prior to production. These drawings are to show/indicate all materials, finishes, construction details, lighting specifications, and installation details of artwork and sign structure. This includes types and locations of fasteners, attachments, joint details, internal frames, foundations,

reinforcements, support backing, and connection to support structure or mounting surface. Shop drawings to include all relevant mounting elevations including section for mounting detail. Dimension setbacks on scaled site plans are required for all freestanding sign types; noting all confirmed hardscape and softscape conditions for each freestanding sign location.

- B. The Signage Consultant shall review shop drawings for conformance with construction intent drawings and engineered criteria compliance. The Owner and Signage Consultant shall review shop drawings and data with such promptness as to cause no delay in the work, minimum 2 weeks to review. Signage Contractor shall make all corrections required by the Owner and Signage Consultant and resubmit for final review. The Owner and Signage Consultant must approve shop drawings for all signs before production starts.
- C. The Signage Contractor to recognize and bring to the Owner and Signage Consultant any conflicts and/or contradictions either in regard to drawings or as they relate to other conditions or contractors. All conflicts should be described in writing and provide alternative solutions to resolve the conflict. Signage Consultant will provide feedback and guidance to resolve identified conflict. All conflicts are to be resolved and any changes approved by the Owner and Signage Consultant prior to sign fabrication.
- D. Submit manufacturer's technical data and installation instructions for each type of sign and/or fixture as will be provided in the completed, installed sign unit. Identification of all materials used, by manufacturer's descriptive literature, control number, name, code number, batch and formula shall be provided when available.
- E. Submit three (3) samples as specified on the construction intent drawings, minimum size 4" x 4", or as requested, of each color and finish on the specified materials and accessories required for signs. Submit non-returnable samples of each lettering type, finish, color, and exposed material to be used in the work.
Each sample to be clearly labeled with the material number and submittal date on the back of each. Samples must be submitted to the Owner and Signage Consultant in a time frame allowable for review of color and aesthetic compatibility to any existing adjacent materials. Compliance with all other requirements is the exclusive responsibility of Signage Contractor. When requested in writing, furnish full-size samples of sign materials. Resubmit samples if requested until all the Owner and Signage Consultant specifications are met and approved.
- F. Structure: Installation, internal structure, mounting assemblies and foundations are by Signage Contractor and are to adhere to design intent drawings. Coordinate and provide the Owner and Signage Consultant with drawings indicating placement and structural attachment requirements for any needed architectural backing. Submit to the Owner and Signage Consultant digital set (PDF format) of comprehensive shop drawings incorporating mounting structure for all sign components to meet all given site conditions. Signage Contractor shall submit final installation documentation (including the provided engineering details of all weights and load calculations of all structural members including foundations).
- G. Mock-ups of specific sign(s) may be requested by the Owner and Signage Consultant. The cost of mock-ups will be a part of Signage Contractor's bid.
- H. Mock-ups will be specified for in-shop or on-site review and coordinated with the Owner, Signage Consultant and all interested parties.
- I. Mock-ups will be reviewed and signed off by the Owner, Signage Consultant, and interested parties prior to fabrication and installation.
- J. Submit full-size patterns of each sign with solid black letterforms and graphic elements on a white background with sign face outlined. Typography must be represented in exact typeface and letter spacing.
- K. All samples and prototypes submitted shall be in strict accordance with the requirements of the General Provisions, Special Conditions, Technical Specifications, where applicable, and approved shop drawings and shall establish a standard of workmanship, construction, and finish.

- L. Samples and prototypes submitted to the Owner and Signage Consultant for approval shall be reviewed; they will then either be approved or returned to the Signage Contractor for changes and/or corrections. Returned samples and prototypes shall be reviewed and resubmitted until approved.
- M. The approved prototypes shall be used as a standard for determining the acceptability of the work to be installed. Approved prototypes shall remain with the Owner and Signage Consultant or may be approved for installation. Approved prototypes shall be wrapped, protected, and stored locally by Signage Contractor until the installation phase of the work.
- N. List of Prototypes: Provide two (2) full-size, working prototypes for each of the following sign types:

One (1) Set of Prototypes shipped directly to Shannon Leigh for review.
Patrick Connor
1455 Hays Street
San Leandro, CA 94577.

One (1) Set of Prototypes shipped directly to Ann Knoll for review.
M&O Warehoused Department
Attn: Ann Knoll c/o Ari Mirenda
3000 Campus Hill
Livermore, CA 94551

1. BR.02: 12" x 12" sample of push-through method for finished product with surface applied translucent vinyl overlay.

2.2 COPY/TEXT/VERBIAGE LAYOUTS

- A. Shop drawings require all individual copy layouts as provided in the message schedule for all sign types and all locations. All individual layouts must be submitted in the shop drawings to the Owner and Signage Consultant in a time frame allowable for review, multiple adjustments, and approval without delay to the project. Final copy of all signs, including size and fonts used, will be reviewed and approved by the Owner and Signage Consultant prior to final fabrication. The Owner and Signage Consultant are not responsible for correct adherence to code, copy information, or location of signs. Fire Marshal, City, and Owner sign requirements supersede information shown in the Owner and Signage Consultant designs. Signage Contractor is responsible to notify the Owner and Signage Consultant of any conflicts and/or changes as a result. Signage Contractor is responsible for obtaining the license for all fonts used on the project. No substitution of fonts will be allowed.

2.3 FINISHES

- A. All colors shall match exactly the color and finish specification provided by the Owner and Signage Consultant. Exercise care to assure that finished surfaces meet the Owner and Signage Consultant specifications in the completed work.
- B. All surfaces shall be thoroughly cleaned and free from dust, dirt, rust, scale, mill scale, oil, greasy materials, or residue from cleaning. All structural metals shall be cleaned by sandblasting. Except as indicated or directed otherwise, finish all surfaces smooth. All coatings shall be applied in strict accordance with the manufacturer's recommendations. All paint products shall confirm to Fire Marshal and local codes. All finished pieces shall present a uniform opaque color appearance unless specifically indicated otherwise by the Owner and Signage Consultant.

- C. All applications of color coatings are to be equal and of consistent cover, with no “streaking,” “spotting,” “gradation,” or other variations within and from each similar application. See paint requirements in section 2.6.F.
- D. Ultra-Violet/Fading Protection: Utilize materials, coatings, and processes to minimize any noticeable fading of pigmented coatings as much as possible.

2.4 ELECTRICAL REQUIREMENTS

- A. Specify LED electrical components to be used to illuminate sign elements. Final coordination of fixture type quantity and locations to take place between Signage Contractor, the Owner, and Signage Consultant for suitability in attaining desired appearance and/or effect. Basis of design light fixture, or equal:
 - 1. ALCON Lighting, Model 31022, or equal product.
- B. Signage Contractor is responsible for connecting signage to existing electrical power and electrical conduits within fifty (50) feet on site. Signage Contractor to confirm all connecting electrical components are properly concealed per design intent drawings. It is recommended that Signage Contractor survey the site to ensure they include all needed electrical work, as the site will be provided as-is. All work must be in compliance with NEC and all other required codes.
- C. This Contractor or Signage Contractor is responsible to hire a licensed electrical contractor (C-45 license) or equivalent to provide the appropriate power to each sign location requiring power. Actual installation of lighting fixtures not contained within the sign element(s) must be performed by a licensed electrical contractor.
- D. All components to be UL listed. Submit certification of conformance to UL requirements for sign construction. All illuminated signs will have “UL Listed” label as required.
- E. Shop drawings and contract documents including permit documents, are the sole responsibility of Signage Contractor in every respect.
- F. Owner and Signage Consultant shall review the shop drawings only for conformance with general design intent and will in no way be responsible or liable for any results of construction.
- G. All electrical hardware installed will be concealed (i.e. not detectable by any normal means from vehicular or pedestrian traffic). All components shall be easily accessible for servicing.
- H. All electrical components shall be warranted against failure for at least one year. Within that period, defective components will be replaced by Signage Contractor within 48 hours of notification of the problem by the Owner. If Signage Contractor fails to replace the defective component within 48 hours, these items may be replaced by others at Signage Contractor’s expense.
- I. The Contractor or Signage Contractor will trench in landscaped area approximately 50 feet to provide power to new (1) one BR-02 sign. Existing power will be provided from 120/208V site lighting box.

2.5 LIGHTING COMPONENTS

- A. Signage Contractor is responsible for the design of all internal lighting elements and structures called for in construction intent drawings.
- B. All components will be easily accessible for servicing.
- C. Unless otherwise specified, the internal space of all lit signs will be painted matte white to enhance reflectivity.
- D. All components will comply with required codes or regulations, and with manufacturer’s recommendations.

2.6 MATERIALS

- A. Sign Grade Acrylic Sheet: "Acrylite" cast sheet or approved equal, thicknesses as specified.
1. Where sheet material is indicated as "clear," provide colorless sheet in gloss or non-glare finish as required, with light transmittance of 92% where tested in accordance with the requirements of ASTM D-1103.
 2. Translucent Sheet: Provide sheet of density required to produce uniform brightness without halo-like effect. Material provided shall be appropriately matched to the intended permanent field conditions.
- B. Metals:
All metal surfaces shall be cleaned, prepared, degreased and treated in strict accordance with the recommendations of the manufacturer of the surfacing material to be applied thereon.
1. Aluminum:
 - a. Provide aluminum alloy and temper recommended by the aluminum producer or finisher for the type of use and finish indicated and with no less than the strength and durability properties specified in ASTM B-109 for 5005-H15.
 - b. Aluminum sheets, plates, extrusions and supports shall conform to the requirements of the sign details and ASTM standards. Aluminum sheeting will not be less than 0.125" thick, unless noted otherwise and fabricated by HELIARC or MIG welding, filled and ground smooth, unless the seam occurs along a color break. A clean butt joint with concealed backing channel and plug weld is acceptable upon receipt of the Owner - and Signage Consultant-approved sample to match surrounding material finish. All binds, curves, and folds to be geometrically correct and produced by a consistent mechanical method unless otherwise approved. Signage Contractor to ensure no elastic buckling (oil canning).
 2. Steel:
 - a. All miscellaneous steel shall conform to the requirements of the sign details and ASTM standards and shall be as submitted and approved on the Shop Drawings.
- C. Fasteners: Unless otherwise indicated, provide concealed fasteners fabricated from metals that are non-corrosive to either the sign materials or the mounting surface. Where screw heads are necessarily visible, they shall be flat head and painted to match the adjacent surface. All fasteners to meet criteria as defined by the Signage Consultant and engineering criteria.
- D. Vinyl Machine-Cut Copy:
1. Vinyl machine-cut copy shall be of 3M Scotchcal high performance brand film or other product with provable identical performance specifications and warranty conditions. Unless noted, all vinyl shall match the colors and finishes noted in the package. Unless noted, all vinyl shall be applied in strict accordance with the manufacturer's specifications and recommendations to ensure the highest possible level of UV light resistance, weatherability, and overall longevity for both the materials indicated and any and all environmental conditions which exist at the final install locations.
 2. Provide opaque reflective or non-reflective vinyl film as indicated, 0.0355" minimum thickness, with pressure sensitive permanent adhesive backing.
- E. Paint:
1. Paint shall be manufacturer's highest grade for best ultraviolet light resistance, weatherability, and overall longevity of finish and color. All painted surfaces must receive a UV protective clear coat. Paint shall have a written warranty against premature fading and be approved by the Owner and Signage Consultant prior to construction. Prior to close-out, Signage Contractor shall turn over to the Owner and Signage Consultant three (3) copies of complete paint schedule indicating colors used on each sign type.

2. The Sign Contractor shall allow paint surfaces to air dry 48 hours prior to the application of masking film which shall be applied to protect all sign surfaces during shipping and erection.
 3. Acrylic polyurethane with ultraviolet inhibitors and light-fast, weather-, abrasion-, and graffiti-resistant additives as manufactured by Matthews Paint Company, (800) 323-6593, or other product with provable identical performance specifications and warranty conditions. Prime and finish coats shall be mixed and applied in accordance with manufacturer's specification. Paint finish shall be smooth and free of scratches, gouges, drops, bubbles, thickness variations, foreign matter, or other imperfections.
 4. Provide a CCR Title 24 compliant non-glare finish for all applications.
 5. Colored coatings for cast acrylic sheet: Use paints for background color which are recommended by acrylic manufacturer for optimum adherence to acrylic surfaces and are non-fading for application intended.
- F. Powder Coating:
1. Application thickness 2–3 mils minimum, performance standards (e.g. AAMA 2603/2604 or ISO 2409 for adhesion and ISO 9227 for salt spray resistance). Application must include proper curing temperature and time per product specifications.
- G. Digital Print: All graphic call outs specifying digital print must be made using exterior/interior UV based ink applied at 200 dpi or greater quality. Large format digital graphics to comply with the following:
1. Minimum resolution 200 dpi
 2. Process: 3M SCOTCHPRINT or approved equal
 3. Substrate: Opaque or translucent 3M Scotchcal film or approved equal
 4. Finish: 2 mil UV matte overlamine
 5. Input: Digital art as specified to be provided by the Owner or Signage Consultant.
 6. Warranty: Three (3) year minimum

2.7 FABRICATION

- A. All finished work is to be of highest quality to pass eye-level examination and scrutiny by the Owner and Signage Consultant. Signage Contractor to assume responsibility for coordinating all locations of sign types as well as footings, foundations and blocking as may be necessary within walls. Signage Contractor is to take field measurements prior to preparation of sign patterns and fabrication, where possible. Signage Contractor is responsible for coordinating all electrical power requirements and connections to all applicable sign locations.
- B. Copy Application:
1. All sign copy shall be crisp, sharp, clean, and free from "ticks," discontinuous curves, line waver, and similar type imperfections.
 2. Sign copy to comply with the requirements indicated for size, proportion, style, spacing, content, position, material, finish and color of letters, numbers, symbols, and other graphic devices.
 3. All letterforms shall be aligned to maintain a baseline parallel to the sign format, with margins and layout as indicated on design drawings and approved shop drawings.
 4. Digital copy: Finish sheen of copy to match sheen of copy panel background. Edges of letters shall be straight and corners sharp. Surfaces of letters shall be uniform in color and finish, and free from pinholes and other imperfections.

5. Routed copy: Cutting and routing shall be done in such manner that edges and corners of finished letterforms shall be sharp and true. Letterforms with nicked, cut, ragged, rounded (positive or negative) corners, and similar disfigurements will not be acceptable. Letterforms shall be aligned to maintain a baseline parallel to the sign format, with margins and layout as indicated in package and approved shop drawings. Vertical strokes shall be plumb.

C. Sign/Cabinet:

1. Details shown on the drawings shall be followed for exterior appearance. Surfaces shall be free from oil canning, warping, distortion, or any irregularities or inconsistencies.
2. Metal thickness: Provide metal thicknesses as specified or as appropriate for the fabrication conditions. The Owner and Signage Consultant to be advised of any changes to specified metal thickness / gauge.
3. Construct all work to eliminate burrs, cutting edges and sharp corners.
4. All structural details shall follow engineering criteria. Include internal bracing for stability and attachment of mounting accessories as required.
5. Signage Contractor may change interior construction shown on these details to conform to its shop practices. However, these changes must be submitted as part of the shop drawings and be reviewed and approved by the Owner and Signage Consultant prior to fabrication.
6. Make all signs tight fitting between parts and sections, and with adjacent surfaces. Unless indicated otherwise, non-welded joints between various portions of signs must be weatherproof (for exterior signs) and have tight, hairline-type appearance without gaps (varying or otherwise). Provide sufficient fastenings to preclude looseness, racking, or similar movement.
7. Conform to material manufacturer's recommended fabricating procedures regarding fastening, restraining, expansion and contraction of dissimilar materials.
8. Isolate dissimilar materials: Signage Contractor will exercise particular care to isolate nonferrous metals from ferrous metals, including fasteners.
9. Signs to be assembled and mounted to provide reasonable ease of access and replacement of all components, i.e. use conforming, accessible, but not visible fasteners where possible.

D. Fastenings:

1. Fasteners on sign-face surface shall not be exposed, except where specifically noted.
2. Sign-face surfaces shall not be penetrated during fabrication or installation of signs, except where specifically noted.
3. Sign-face surface shall not be deformed, distorted, or discolored by attachment of concealed fasteners.
4. All fasteners shall be resistant to oxidation or other corrosive action completely through their cross sections.
5. Work shall be secured with fasteners of the same metal, color, and finish as the components they secure where they are exposed to view.

E. Adhesives:

1. Silicone adhesive: GE Momentive RTV6708 Clear Silicone Adhesive, or approved equivalent.
2. Acrylic adhesive

3. Lord's structural adhesive
 4. 3M VHB tape for high bond
- F. Jointing and brake forming: All sheet metal shall have brake formed edges with radii not greater than sheet thickness unless otherwise specified. Adjacent stock shall have edges with similar radii.
- G. Welding: All exposed welds are to be ground smooth to match surface of adjacent material.
- H. Signs to be properly painted and sealed if located within marine environments.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Signage Contractor shall be responsible for determining the erection and dismantling of all barricade or protective coverings necessary to safeguard the public and property during the performance and duration of their work.
- B. Removal of existing signs: Remove existing signs at the locations. Repair any walls where removed (if not being replaced by a new sign) to match surrounding area. Locations of removals will be specified on pre-bid walk by the Owner and Signage Consultant.
- C. Newly painted mounting surfaces must outgas for the manufacturer-recommended length of time prior to signage installation.
- D. Attach signs to surface in accordance with the structural engineer's specifications and the manufacturer's instructions. Repair or replace damaged units as directed by and to the approval of the Owner and Signage Consultant.
- E. Installation of all sign items shall be by the Signage Contractor. Installation includes provision of any required footing, to be reviewed and approved by the Owner and Signage Consultant, all anchor bolts, fastenings, attachment metals, and other miscellaneous metal items embedded in concrete or building wall material as required, and security of sign units in place with no visible fasteners. All penetrations on outer skin of buildings must be water-sealed/weather-tight and only started after a concrete scan is completed as required for rebar detection.
- F. Match sign service available on site to the requirements of the sign, including transformers.
- G. All necessary sign components, as well as the entire sign assembly, are to be UL listed, or by approved nationally recognized testing lab.
- H. Comply with all applicable environmental regulations.
- I. Comply with all OSHA regulations.
- J. Coordinate installation so that overall project schedule is not impacted.
- K. Determine site wind load requirements and ensure that all signs comply.
- L. Signage Contractor shall be responsible for the fabrication and coordination with other subcontractors, installation, and service of the signs as per the construction intent drawings and specifications.
- M. During the installation of all signage units, structure the work and provide adequate and qualified personnel to ensure the least amount of inconvenience and interruption of normal activities of other contractors. Working hours shall have the approval of the Owner.

3.2 SIGN PLACEMENT

- A. Signage Contractor to confirm access to internal wall supporting structure(s)

- B. Sign Contractor to confirm if the site condition is a hardscape or softscape for each freestanding sign location.
- C. Utilities and Irrigation Lines:
 - 1. Signage Contractor will send proper notices; make necessary arrangements; perform other services required in construction, care, and maintenance of all existing utilities and irrigation lines; and assume all responsibility concerning the same. Provide necessary protection to existing utility services and irrigation lines as directed, and repair any damage caused by Signage Contractor's work.
 - 2. Sign Contractor to confirm locations to be coordinated with underground utilities. Field survey and/or call 811 prior to fabrication and / or digging.

3.3 SIGN PREPARATION

- A. Pre-Installation Walkthrough / Field-Staking: Sign Contractor shall attend a pre-installation walkthrough at the job site to confirm all typical installation conditions and determine installation locations for nontypical conditions.
- B. Provide reinforced concrete footings where required, with plan dimensions as shown and depth as specified by engineer. Use Sonotube type formwork for post and panel signs at all landscape locations; core drill and set post(s) in epoxy grout at all hardscape locations.
- C. Where a concrete footing is level with finished grade to serve as a mow strip, slope the top of the footing away from the sign cabinet or post(s) minimally as required for drainage and to prevent puddling. All required footings, connections, electrical conduits, mounting, and fasteners are the responsibility of Signage Contractor.
- D. Securely attach all signs to footings or site work in accordance with engineer's specifications.
- E. Signage Contractor is responsible for verifying all final locations. Signage Contractor will seek and receive written approval from the Owner and Signage Consultant of locations prior to installation. If a discrepancy is found between documents and the actual site, or if field conditions prohibit sign placement or functionality, Signage Contractor will notify the Owner and Signage Consultant, suggest a resolution, and receive written approval before beginning production.

3.4 CLEANING / PROTECTION AND WARRANTIES

- A. All items to be installed shall be left in a clean condition. Upon completion of each sign installation, clean all soiled sign surfaces and "touch up" as directed by the Owner and Signage Consultant and in accordance with the manufacturer's instructions. All debris and packing material shall be removed and disposed of in a legal manner. Any protective masking of the surfaces shall be removed upon installation completion. All excavation and site work shall be returned to its original grade configuration after contract items are installed.
- B. Finish Surfaces: All finishes are to be warranted for three (3) years from the date of acceptance. There shall be:
 - 1. No delamination of any parts of the sign or of lettering from the sign face.
 - 2. No cupping, warping, or dishing in excess of the requirements stipulated in the specifications.
 - 3. No bubbling, crazing, chalking, rusting, or other disintegration of the sign face, messages, or edge finish of the panels.
 - 4. No corrosion developing beneath the paint surface of the support systems, except as the result of obvious vandalism.
 - 5. No corrosion of the fasteners.

6. No movement of signs from their foundations. The signs must remain true and plumb on their foundations, except when the sign has sustained obvious post-installation external damage.
 7. No fading of the colors when matched against a sample of the original color and materials.
 8. No variation of any other performance specified by the Owner and Signage Consultant on the construction intent drawings or in the specifications.
- C. Warranties: Signage Contractor shall warranty any defect due to faulty materials or workmanship for three (3) years from date of acceptance. Signage Contractor shall repair or replace the product without charge, providing it has been installed according to design and installation specifications. Signage Contractor shall be responsible for removal and reinstallation costs of said product. Failures during warranty period shall be repaired or replaced by Signage Contractor to satisfaction of the Owner.
- D. Structure / Components:
1. Signage Contractor shall provide a digital version (PDF format) of the warranty prior to installation, guaranteeing to correct to the Owner's satisfaction, at Signage Contractor's sole expense, all defects in fabrication, faulty materials, workmanship, and installation of sign work for a period of three (3) years after acceptance of sign work.
 2. Fading, cracking, warping, peeling, delaminating, rusting, corroding, and structural failure, including distortion by whatever cause, shall be construed as failure because of faulty materials and workmanship.
- E. Security:
1. Signage Contractor shall have total and complete responsibility for the security of all equipment, materials, and sign components until reviewed and accepted by the Owner and Signage Consultant.
 2. Signage Contractor shall at all times guard The Owner's property from damage or loss. Damage to or loss of property of the Owner, their vendors or contractors shall be replaced or repaired unless such be caused by the Owner, other vendors or contractors. Payment may be withheld or deductions made as deemed necessary to ensure reimbursement for loss or damage to property through negligence of the Signage Contractor or his agents. Signage Contractor shall at all times guard against injury to persons within the Owner's facility or facility site.
 3. Protect finishes of signage and graphics from damage during construction period by use of temporary protective covering.
 4. Restore finishes damaged during installation and construction period so that no evidence remains of correction work. Return items which cannot be refinished in the field to the shop; make alterations and refinish entire unit or provide new units as required.
 5. Existing Construction: Protect furniture, architecture, and finishes from any damage which could result from installation of signage and graphics.
- F. Maintenance: Provide a digital version (PDF format) of complete finish/components care instructions as specified by the manufacturer(s) for on-going cosmetic sign cleaning and maintenance. Ensure signs, LEDs, lamps, electrical components, etc. are easily accessible for maintenance.
- G. Additional warranties: Signage Contractor to provide a digital version (PDF format) of specific warranties for material(s) and/or finish/components that fall outside of the standard workmanship warranty.
- H. Permits and Insurance:

1. Signage Contractor is responsible for securing and paying for all permits required by governmental agencies. Inspections and tests necessary for the construction and placement of all work required by local, State, and Federal agencies are the responsibility of the Signage Contractor.
2. Secure and pay for all insurance required by law and the Owner, meeting all requirements including but not limited to General Liability, Worker's Compensation, Comprehensive Construction Liability, Personal Injury, and Comprehensive Auto and Property on and off-sites. Insurance requirements should be checked for terminology and coordinated with general specifications.

3.5 CODE REQUIREMENTS

- A. Signage Contractor is responsible for all signs complying with all applicable codes; see also Section 1.2.A.

3.6 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Signage Contractor to coordinate delivery. Deliver fabricated units and component pieces to project completely identified per installation drawings. Inspect work for damage upon delivery to site.
- B. Storage: Signage Contractor to coordinate storage. Store components and materials in clean, dry location. Protect from damage until installation.
- C. Handling: Handle signage on site at a minimum, exercise care to avoid damaging surfaces.

3.7 CONTRACT CLOSE-OUT ITEMS

- A. Punch List: Signage Contractor shall notify Owner in writing when all work has been completed. Upon notice, the Owner and Signage Consultant will review all work in accordance with the Signage Contractor's contract and prepare a punch list detailing any unsatisfactory items. The repair/replacement of any work detailed on the punch list will be coordinated between the Owner, Signage Consultant and Signage Contractor.
- B. Maintenance: Provide the Owner and Signage Consultant with a digital copy (PDF format) of complete service and maintenance manuals including finish/component care instructions for all products and finishes used in all components of the job as specified by the manufacturer(s) including cleaning solution, tools, and/or materials for on-going cosmetic sign cleaning and maintenance. Note any solvents that should not be used. These manuals shall include, but are not limited to, warranty information, routine maintenance recommendations, manufacturer data, product specification, etc. If digital file is over 25MB then submission must be via USB drive compatible with Windows or Mac OS, otherwise via email or file sharing upload (the Owner to determine).
- C. Provide the Owner with touch-up paint/stain of each color/finish used on the project (unopened and clearly marked):
 1. Acrylic polyurethane: One-half (1/2) pint. Note provide the catalyst hardener separately. Once mixed the acrylic polyurethane must be used within no more than two (2) weeks of the catalyst hardener being mixed in.
 2. Latex paint: One (1) quart

END OF SECTION

- b. HSS Square & Rect. Tube ASTM A500 GR. C
 - c. HSS Round Tube ASTM A500 GR. C
 - d. Pipe ASTM A53 B or A500 GR. B or B/C
 - e. Plate/Flatbar ASTM A572 GR. 50
 - f. Angle ASTM A36 or A572 GR. 50
2. Structural steel design, fabrication & erection shall conform to AISC 360-22
 3. All exposed steel shall be coated w/ paint & primer. Concealed steel shall be coated w/ zinc rich primer.
 4. Steel bolts shall be ASTM A307, hot dip galvanized, and installed snug tight. All bolted connections are bearing type w/ no slip critical installation requirements, U.O.N.
 5. Welding electrodes shall conform to AWS 5.1 or 5.5, electrode E70XX. All welding shall be in Accordance with current edition of the AWS structural welding code, D1.1
 6. Surfaces of steel to be field welded shall be free and clear of all paint, dirt, grease, or other Deleterious coatings
 7. Steel framing & connectors, except those portions embedded in concrete, shall be shop primed & painted
 8. All field welds shall have slag removed by chipping hammer or wire brush. Grind all splatter from weld area. Touch up field welds with primer and paint.

PART 3 – SPECIAL INSPECTION CRITERIA

3.1 STEEL

- A. Fillet welds $\leq 5/16"$ shall have periodic special inspection or special inspection of shop welds may be omitted if shop is AISC or LADBS certified shop
- B. Fillet welds $> 5/16"$ or multipass fillet welds shall have continuous inspection or special inspection of shop welds may be omitted if shop is AISC or LADBS certified shop
- C. Bevel type welds to have continuous special inspection or special inspection of shop welds may be omitted if shop is AISC or LADBS certified shop
- D. Material verification tags & mill certification to be provided to Owner before installation.
- E. Welders to be certified with AWS certification for weld process/position being performed.

END OF SECTION

PART 1 – GENERAL**1.1 SUMMARY**

- A. Electrical work includes power, raceways, disconnects, and connections required to support electrically illuminated signage, including LED-lit sign cabinets, channel letters, halo-lit letters, and specialty architectural signage.
- B. Lighting fixtures and LED modules integral to signage are furnished under Division 10 – Signage, unless noted otherwise.

1.2 RELATED SECTIONS

- A. 10 14 00 – Signage (or project-specific signage section)

1.3 PERFORMANCE REQUIREMENTS

- A. Provide electrical infrastructure to support 12V DC LED systems typical of architectural signage.
- B. Power supplies shall be UL-listed, suitable for continuous operation, and sized to support 125% of connected LED load.
- C. Lighting shall provide uniform illumination with no visible hot spots, flicker, or light leaks.

1.4 ELECTRICAL CHARACTERISTICS

- A. Input voltage: 120V AC, unless otherwise indicated.
- B. Output voltage: Low-voltage DC as required by sign manufacturer.
- C. Maximum circuit loading: Per NEC, with dedicated circuits where required by jurisdiction or sign type.
- D. Provide local disconnect for each sign or sign group, readily accessible and code-compliant.
- E. Reference as-builts in section 10.1 of 100% Construction Intent Drawings.

1.5 CONTROLS & OPERATION

- A. Sign lighting shall be:
 - Controlled by time clock, photocell, or building lighting control system, as directed.
 - On/off control coordinated with Owner.
- B. Dimming generally not required unless explicitly noted.
- C. Sign type BR.02 lighting shall automatically illuminate at dusk and extinguish at dawn, coincident with adjacent street lighting operation, regardless of control method employed. Existing wiring to support this is available as noted in section 10.1 as-built for reference.

1.6 COORDINATION REQUIREMENTS

- A. Coordinate power locations, circuiting, and access requirements with Signage Consultant, Sign Fabricator, Architect, and Owner prior to rough-in.
- B. Electrical contractor shall:

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Excavation for exterior sign foundations.
 - 2. Trenching for direct-burial aluminum sign posts with cast-in-place concrete footings.
 - 3. Backfilling, compaction, and surface restoration.
- B. Related Sections:
 - 1. Section 31 22 00 – Grading.
 - 2. Section 03 30 00 – Cast-in-Place Concrete.
 - 3. Section 10 14 00 – Exterior Signs.

1.2 DEFINITIONS

- A. Trench: Excavation required to install sign foundations and structural supports.
- B. Backfill: Approved soil material placed and compacted around completed foundations.

1.3 QUALITY ASSURANCE

- A. Comply with OSHA excavation safety standards.
- B. Maintain trench stability throughout installation.

PART 2 – PRODUCTS

2.1 BACKFILL MATERIALS

- A. Structural Backfill:
 - 1. Clean, well-graded soil free of organic material, frozen matter, and debris.
 - 2. Maximum particle size: 2 inches.
- B. Native Material:
 - 1. May be reused if clean and approved by Owner.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify location of underground utilities prior to excavation.
- B. Confirm sign locations with Owner prior to trenching.

3.2 EXCAVATION

- A. Excavate holes or trenches to dimensions required for sign footings as indicated on drawings or manufacturer's recommendations.
- B. Excavation shall allow for:
 - 1. Concrete footing diameter and depth.
 - 2. Proper alignment and plumb installation of sign posts.
- C. Protect excavation from collapse, erosion, and water accumulation.
- D. Ensure no damage to existing utilities when trenching for new electrical conduit at one (1) sign BR-02. Signage Contractor to locate utilities before trenching activities.

3.3 FOUNDATION PREPARATION

- A. Remove loose soil from bottom of excavation.
- B. Provide firm, undisturbed bearing surface prior to concrete placement.
- C. Do not place concrete on frozen or muddy subgrade.

3.4 BACKFILLING

- A. Do not begin backfilling until concrete has achieved sufficient strength to resist displacement.
- B. Backfill in lifts not exceeding 8 inches, compacting each lift.
- C. Compact to a minimum of 95 percent of maximum dry density per ASTM D698.

3.5 SURFACE RESTORATION

- A. Restore pavements, curbs, sidewalks, and landscaping to original condition.
- B. Replace topsoil and turf to match surrounding grades and finishes.
- C. Remove excess materials and debris from site.

3.6 TOLERANCES

- A. Final sign installations shall be plumb within 1/8 inch per 10 feet.
- B. Finished grade variation shall not exceed $\pm 1/2$ inch at sign base.

END OF SECTION