City of Oakley
ADDENDUM NO. 2 to contract documents for
OAKLEY RECREATION CENTER PROJECT
CIP # 194

BID OPENING DATE: February 1, 2018 at 2:00pm

Notice is hereby given that the following clarifications and revisions are made to the above referenced contract documents:

Updates to the Plans and Specifications pages:

Calculations:
180103 Fire Sprinkler Calculations Added
Specifications:
32 31 13 Chain Link Fence Specs

1. Page 3-5, clarify the line post, end/corner/pull post, gate post and post footing dimension for 8' high chain link fence.

Drawing Set:

General Notes: (Will be shown on conformed set)

1. G1.0- Gridlines to face of stud unless otherwise noted
2. A0.1- SFSD See Food Services Drawings added to abbreviations
3. G0.0 – Sheets A2.5 and A2.5B removed.
4. A3.1 – D1, D2, D3 Window dimensions from gridline are typical.
5. A3.2 – Detail tag for 3/A8.8 should reference 2/A8.8.
5. A4.1 – Attic floor height did not match rest of drawings, should show 18' 1-3/4"
6. A4.1 – Top plate heights added to section
7. A4.3 – 11'-6" height tag erroneously list T.O. Soffit instead of Bottom, revised.
8. A5.2 - Detail Tags on 1/A5.2 are typical.
9. A6.3 – Note added: See Food Service Drawings For Equipment
10. A7.3 – Base on 101 and 102 noted as vented to match detail.
11. A8.4 – Frames shown on details 5 and 7 are thermally broken.
12. A8.6 – Details 5, 9 and 10 show a Waterproof membrane. It should say weather proof.
13. A8.7 – Detail 5 should show a 6x6x5/16" storefront support beam instead of a 6x6x1/4"

General Sheets:
G1.1

1. Occupant load of great room with partition open is 817

Landscape:

L1.3

1. Sod specie will be specified in the planting spec, not in the plan.

L2.1

1. Two bollard lights in the walkway of the east patio are changed to the decorated post-top lights.
2. Two decorated post-top lights are added to west patio
3. Added vehicular concrete paving callout at the entry of the surface yard.
4. Added callout for L2.4 Enlarged Layout Plan
5. Shift light away from the storm drain
6. Added horizontal score lines to linear concrete patterns
7. Added scorelines and removable bollards in the maintenance access
8. Added redwood header and removable bollard callouts
9. Added redwood header callout along aggregate base pathway
10. Added concrete to match with civil demolition plan
11. The concrete walkway along one of the existing buildings has been reduced and connected to the existing asphalt pad. Notes were added regarding to this changes in the plan;

L2.2

1. Added Gate – (D) and Fence – (D) along the well
2. Adjusted mulch area to the existing fence line
3. Mowband along the east side of the ball field has been slightly adjusted per the civil's drawing, and an additional callout of '12" Concrete Mowband' has been added
4. Added callout for L2.4 Enlarged Layout Plan

L2.3

1. Added horizontal score lines to linear concrete patterns
2. Revised Wall (C) and (B) Layouts,
3. Hand rail is added for wall
4. Added horizontal score lines to linear concrete pattern

L2.4

1. Added Sheet L2.4 Enlarged Layout Plan for two enlarged areas

L4.1

1. Added note to repair and replace existing planting adjacent to the school
2. Adjusted shrubs planting in the entry to avoid existing traffic light utilities.

L5.2

1. Revised Detail 1, 12-inch Concrete Mowband to show 8" depth and revised score joint information
2. Revised Detail 2, Wall – (A) to show concrete adjacent to wall condition, and proper wall depth

3. Revised Detail 3, Wall – (B) to remove weep holes and reference grading plan for heights.
4. Revised Detail 4, Wall - (C) to show the stair condition with handrail
5. Revised Detail 6, Wall – (E) to reflect actual condition and add waterproofing

L5.3

1. Revised Detail 1, Fence – (A) to show top of fence condition, wall interface condition, and surface mount post at building condition
2. Revised Detail 2, Fence – (B) with an added not for contractor to submit shop drawings of metal gate for review of landscape architect prior to fabrication
3. Revised Detail 3, Gate - (A), note 4 to refer to metal notes
4. Revised Detail 3, Gate - (A) to have lever hardware painted to match gate
5. Revised Detail 3, Gate - (A) to remove "Wall - (A) reference."
6. Revised Detail 3, Gate - (A) to show steel panels on both sides of fence
7. Revised Detail 4, Gate - (B) to model GPG10D to match the design of fence-(B)

L5.4

1. Revised Detail 1, Fence – (C) to specify "vinyl-coated black"
2. Updated Specs for Chain Link Fences and Gates
3. Revised Detail 2, Fence – (D) to specify "vinyl-coated black"
4. Revised Detail 3, Fence – (E) to specify "vinyl-coated black"
5. Added Detail 4, Removable Bollard
6. Added Detail 5, Gate – (D)
7. Added Detail 6, Wall – (E) Profile
8. Added Detail 7, Fence - (A) Fence Height Diagram

L5.5

1. Updated Detail 2, Bollard, to include bollard mounting application
2. Updated Detail 3, Parking Sign, to have more specific callouts and notes for clarity and constructability.
3. Updated detail 4, Double Sided Entry Sign, to have more specific callouts and notes for clarity and constructability.

L5.7

1. Updated Detail 1, Concrete Seat Pad, to include mounting application
2. Updated Detail 2, Concrete Bench, to include mounting application

L5.8

1. Updated Detail 2 to Flo-well Sump. Changed from Dry Well – Drainage Sump
2. Updated Detail 3, Drinking Fountain, removed "optional" from "Internal Surface Carrier."; removed note #6, Added Internal surface carrier product number; Added note to clarify this drawing to show design intent only.

L5.9

1. Updated Detail 1, Dugout (1 of 3), to indicate the drilled pier footing option.

L5.12

1. Revised Detail 1, Trash Enclosure, to include callout "see legend for cane bolt"
2. Revised Detail 1, Trash Enclosure, to have updated steel notes callout
3. Revised Detail 1, Trash Enclosure, to have updated dimensions at active leaf plate
4. Revised Detail 1, Trash Enclosure, to show waterproofing on section B-B

L6.5

1. Irrigation changes due to the changes of east side concrete mow band along the ballfield and the well location

Architectural:

A0.3

1. Occupant sign in Great Room should list occupant load with moveable partition both open and closed
2. Names of signs clarified.
3. Exit Route sign added.

1/A2.2

1. Cut on detail tag 3/A8.2 clarified.

1/A2.3

1. Mechanical Platform dimensions noted
2. External gutter noted on mechanical platform

1/A2.4

1. Exit sign added to hall outside platform.
2. Sheet note added noting additional ceiling details on A4.1

1/A3.3

1. Recessed Fireman's Keybox added to exterior side of Fire Riser Room.

1/A5.1

1. Fire Extinguisher added to hallway
2. Tag for 13/A9.4 amended to show full extent of ramp per detail

A6.5

1. High ceiling and return air grill shown on east lobby elevation-1/A6.5
2. Supply Air grill noted on west lobby elevation – 1/A6.5
3. Exit Sign and Exit Route sign shown on South elevation of hall -3/A6.5

2/A7.1

1. Door 107b revised to 3'6" to match drawings
2. Signage updated for doors 101A and 102E
3. Door 105a changed to an acoustic threshold.
4. Doors 114a, 114b, 115a changed from insulated to uninsulated, removed thermally broken frame.

2/A8.1

1. Vented base clarified in drawing
2. Waterproof membranes clarified at concrete slab

4/A8.2

1. Detail previously showed a gyp. bd. ceiling. This area has a dropped acoustic ceiling.

3/A8.3

1. Rain water leader and splashblock added to detail

6/8.5

1. GSM flashing noted.
2. Bottom of shaft detail corrected.

7/A8.9

1. Exterior address signage enlarged to 12" from 6"

9/9.1

1. Sound isolating bottom shoe added to door threshold

Structural:

S1.0

1. Updated Seismic Response Coefficient (Cs = 0.185).
2. Updated Base Shear (W = 0.185).

S1.2

1. Revised detail 7/S1.2 to show step, SAD.

S2.0

2. Added detail cut 12/S4.1 and 4/S4.1 typical near grid line 1 and near grid line 11.

1/S2.1

3. Changed previous RJ2 at grid line 1 and grid line 11 to RJ5.
4. Added three hangers to joist near "Make Up Air/Exhaust" between grid line 1 and grid line 1.5.
5. Flipped cut orientation for detail 11/S5.1 between grid line 1 and grid line 1.5.

2/S2.2

1. Flipped cut orientation for detail 11/S5.1 between grid line 1 and grid line 1.5.
2. Updated FTAO shear wall length at grid line 3.
3. Added "-HD" to C1 at grid line 5.1/B, 3/C and 5/C.
4. Added sheet note 9.
5. Deleted a hanger and extend RJ1 between grid line 3 and grid line 4 at the drop down platform.

S4.1

1. Revised detail 2/S4.1, 4/S4.1 and 12/S4.1.

S5.1

2. Revised detail 9/S5.1.

Mechanical:

M0.2

1. MAU-1 Discharge position corrected to be Horizontal

Electrical:

E0.2:

1. Type EX3 added to the luminaire schedule.

E1.1:

1. Add pullbox at north/east corner of site for future at field power, instead of stub-out alone.
2. Add new note 1 to (5) existing portable building power panels to disconnect and remove existing power feeders back to switchboard 'MSB'.
3. Show outline of existing building to be removed.
4. Added power for Well Pump (no longer future)

E1.2:.

1. Site lighting at east/west patios revised to address Fire Dept. review comment regarding egress illumination.
2. Exit sign, Type EX3, added to east patio egress gates.

E3.3:

1. Add new sheet to show AV system requirements.

E5.1:

1. Add branch circuit info for Well Pump (no longer future).

E7.3:

1. Detail 4 revised to show 12" minimum clearance between concrete anchor base and perforated drain pipe in bio-retention area.

Fire Sprinkler:

FP0.1, FP1.1, FP2.1. FP2.2, FP4.1, FP5.1, FP5.2

1. Fire Sprinkler Drawings Added

All bidders shall acknowledge receipt and acceptance of Addendum No. 2 by signing in the space provided at the end of this Addendum and submitting the signed addendum with their proposal.

Jason Kabalin
Associate Engineer
January 17, 2018

_____
Contractor Signature

_____
Date

_____
Company Name

SECTION 32 31 13

CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. The scope of work outlined in this Section includes the following items of work, as detailed in these Contract Specifications, as shown on the Contract Drawings or reasonably implied therefrom and is not limited to the following items:
   1. FENCE (C – 8'H CHAIN LINK FENCE),
   2. FENCE (D – 4'H CHAINLINK FENCE)
   3. FENCE (E – 9'H CHAIN LINK FENCE)

B. This document includes requirements that supplement the paragraphs of General Conditions, of the City's Standard Specifications for Public Works Construction.

1.2 RELATED REQUIREMENTS

A. These Contract Specifications are part of the Contract Drawings and shall include but not be limited to all labor, materials, equipment, reasonable incidentals, services necessary, excavations, soil disposal, concrete footings, fence materials, caps, and hardware for the execution of the Work installed complete in place.

B. Refer to all other sections, determine the extent and character of related work, and coordinate all work to produce a complete, properly constructed product.

1.3 RELATED SECTIONS

A. Section 31 10 00 Site Preparation

B. Section 02 40 00 Selective Demolition

C. Section 03 30 00 Decorative Concrete

1.4 REFERENCES

A. CLFMI – Chain Link Fence Manufacturer's Institute, "Product Manual", 10015 Old Columbia Road, Suite B-215, Columbia, MD.

1.5 SUBMITTALS

A. General: Refer to Section 01 33 00 – Submittal Procedures for requirements and procedures.

B. All submittal data shall be forwarded in a single package to the Engineer within 30 days of award of Contract.

C. Product data: Material descriptions, construction details, Component profiles and finishes for the following:
1. Fence and gate posts, rails, and fittings.
2. Chain link fabric, reinforcements, and attachments.
3. Gates and Hardware.
4. Privacy slats.
5. Gate Operators, including operating instructions.
6. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

1.6 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work in this section.

1.7 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by City or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
1. Notify the Engineer not less than 2 days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without City's written permission.

B. Field Measurements: Verify layout information for chain link fences and gates shown in Drawings in relation to property survey and existing structures. If discrepancies occur, notify City's Representative.

1.8 DELIVERY, STORAGE AND HANDLING

A. Product Delivery Requirements, Storage and Handling Requirements – Comply with pertinent provisions.

1.9 GUARANTEE

A. Provide one (1) year written guarantee against material and workmanship.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General

1. Materials shall conform to ASTM F1083 and ASTM A392 ferrous metals, zinc coated, and detailed specifications forming the various parts thereto; and other requirements specified herein. Zinc-coat metal members (including fabric, gates, posts, rails, hardware and other ferrous metal items) after fabrication shall be reasonably free of excessive roughness, blisters and sal-ammoniac spots.

B. Chain Link Fence
1. Height: Shown on drawings.
2. All posts, rails, and appurtenances shall be hot dipped zinc coated steel, 1.2 oz per square foot, per ASTM specifications A53, A123, or A153, whichever is applicable.
3. Top Rail: Required, fitted with suitable expansion sleeves and means for securing rail to each gate, corner, and/or end post. Top rail shall be 1 5/8" O.D. standard pipe 2.27 lbs. per foot of section or 1'5/8" x 1'1/4" roll form section with minimum bending strength of 192 pounds. Rails to have a two (2) ounce zinc coating PSF of surface.
4. Mid/Brace Rail: Required for all fences greater than 7' - 0" tall. Mid Rail shall be 1 5/8" O.D. standard pipe 2.27 lbs. per foot of section or 1'5/8" x 1'1/4" roll form section with minimum bending strength of 192 pounds. Rails to have a two (2) ounce zinc coating PSF of surface.
5. Bottom Rail: Required, fitted with suitable expansion sleeves and means for securing rail to each gate, corner, and/or end post.
6. Chain Link Fabric: 11 gauge minimum, 1-3/4" mesh.
   a. Fabric shall be zinc coated steel wire, coated with 1.8 ounces of zinc per square foot conforming to requirements in ASTM A 392. The material shall receive a PVC or Polyolefin Elastomer coating, thermally fused to 9 gauge zinc coated steel core wire per ASTM-F668 Class 2B. Core wire tensile strength **[75,000/80,000]** psi minimum. Fabric shall be knuckled at top and bottom.
   b. PVC Color: Black
   c. Top and bottom selvage shall have twisted and/or knuckled finish. See table below for guidelines.

Fence Height	**Selvage Treatment**
Up to 6' height	Knuckle both selvages
Above 6' height	Twisted on top edge, knuckled on bottom edge

7. Line Post: O.D. shall be per chart below, standard pipe @ 3.65 #/L.F. or roll form section with minimum 201 pound bending strength perpendicular to fence lines. For fabric heights over 8 foot, "C" section roll form or H-post with minimum bending strength of 314 pounds shall be used. Zinc coating to be 1.8 ounces PSF surface.

Fence Height	4' or less	4' -7.5'	8' to 10'	16'

Line Post	1- 7/8" O.D.	2- 3/8" O.D.	2- 7/8" O.D.	4" O.D.

8. End, Corner, and Pull Posts: Shall be per chart below. Zinc coating to be 1.8 ounces PSF surface.

Fence Height	4' or less	4' -7.5'	8' to 10'	10 to 12'	12 to16'
End, Corner and Pull Post	2- 3/8" O.D.	2- 7/8" O.D.	3- 1/2" O.D.	4" O.D.	4- 1/2" O.D.

9. Gate Post: Shall be per chart below: Zinc coating to be 1.8 ounces PSF surface.

Fence Height	4' or less	4' -7.5'	8' to 10'
Gate Post <4' Span	2- 3/8" O.D.	3- 1/2" O.D.	3- 1/2" O.D.
Gate Post > (X)	2- 7/8" O.D. (4')	4" O.D. (6')	4" O.D. (6') 6-5/8" O.D. (12')

10. Gate frames shall be 1.90" O.D. pipe. Gates shall have positive type latching devices with provisions for padlocking; and drive gates shall have a center plunger rod, catch, and semi-automatic outer catches. No pin type hinges.
11. Pipe posts shall have tops which exclude moisture.
12. End, corner, pull, and gate posts shall have braces with same material as top rail and trussed to line posts with 3/8" rods and tighteners.
13. Hinges: Galvanized pressed steel or malleable iron to suit gate size, non lift-off type, offset to permit 180 degree gate opening. Provide 1 pair of hinges for each leaf of each gate.
14. Latch Assembly for Double Gates: Provide center drop-rod type latch assembly to permit operation from either side of gate. Provide padlock eye as integral part of the latch assembly requiring one padlock for locking both gate leaves.
15. Latch Assembly for Single Gates: Forked type or plunger-bar type to permit operation from either side of gate, with padlock eye as integral part of latch. All gate hinges and parts are to be heavy duty such that they cannot be twisted to gain entry.
16. Locking Gate Latch for accessible gates and accessibility signage, refer to plan and details. All gate hinges and parts are to be heavy duty such that they cannot be twisted to gain entry.
17. Gate Stops: Provide gate stops consisting of mushroom type or flush plate type with anchors, set in concrete to engage the center drop-rod.
18. Keeper: Provide keeper, which automatically engages the gate leaf and holds it in the open position until it is manually released, for all gate leaves.
19. Padlock: Provide one padlock for each gate. Padlocks shall conform to FSFF-P- 101 E (1) and as follows: Type EPC, Size 2-inches (solid brass body), 6 pin tumbler

mechanism, stainless steel spring extension type shackles with 2-inch clearance, and 2 nickel-chrome plated keys per padlock.

20. Post Footings: Shall be concrete foundation of 1-2-4 mix. Footing diameter and depth per chart below. Concrete footing shall be at minimum of 2,500 psi.

Fence Height	4' or less	4' -7.5'	8' to 10'	16'
Conc. Post Footing	3' x 12" DIA.	3' x 12" DIA.	5' x 18" DIA.	6' x 24" DIA.

2.2 TOLERANCE

A. Standard mill tolerances will apply. Installation shall be by experienced fence erectors, on lines and grades furnished by the City. All material will be tested for meeting of specifications for design, strength, shape, weight, and coating. Mill certificates confirming compliance with the herein described components will be submitted for approval upon request.

2.3 FABRACATION

A. According to Manufacturer's Details and Specifications.

PART 3 - EXECUTION

3.1 INSTALLATION

A. GENERAL - Related Work
1. Neatly excavate post holes per fencing post and footing chart requirements listed above. Holes shall be clean and free from loose dirt and water before placing posts and concrete.
2. Hand trim grade at fence lines as necessary to lower high spots away from bottom edge of fabric.
3. Paving or other surfaces receiving posts shall be neatly cut prior to drilling post holes. Upon completion of post setting and concrete work at said locations, earth disturbed shall be backfilled and compacted to 95% density and the cut paving or other surfacing shall be neatly repaired to the original condition.

3.2 CHAIN LINK INSTALLATION

A. Posts shall be set plumb on all sides and with tops uniformly aligned. Set posts, post sleeves and strikes in round concrete footings in grade as shown or required. Concrete shall be thoroughly compacted by rodding as placed; bevel tops and finish smooth. Set and grout posts into sleeves where required; neatly finish smooth and flush with adjacent surfaces.

B. Post:
   1. Terminal Post: Locate terminal end, corner, and gate posts per ASTM 567 and terminal pull posts at changes in horizontal or vertical alignment changes of fifteen (15) degrees or more.
   2. Line Posts: Install for all intermediate locations between end, corner and gate posts. Uniformly space at not over 10' center to center, 8' center to center for 12' high fence, measured parallel to grade, or space as shown.
   3. Corner Posts: Install at points where a change in alignment is 300 or greater. Where an alignment change occurs adjacent to a gate opening, use gate post in lieu of corner post.
   4. End Posts: Install at each terminal end of individual runs of fencing, except adjacent to gates.
   5. Gate Posts: Install each side of each gate opening.

C. Tension Wire: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Pull wire taut, without sags. Fasten fabric to tension wire with 0.120-inch diameter hog rings of same material and finish fabric wire, spaced a maximum of 24 inches O.C. Install tension wire before stretching fabric.
   1. Top Tension Wire: Install tension wire through post cap loops.
   2. Bottom Tension Wire: Install tension wire within 6 inches of bottom fabric and tie to each post with not less than same gage and type wire.

D. Top Rail: Install according to ASTM F 567, maintain plumb position and alignment of fencing. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended by fencing manufacturer.

E. Intermediate Rail: Install in one piece, spanning between post, using fittings, special offset fittings and accessories.

F. Bottom Rail: Install, spanning between posts, using fittings and accessories.

G. Chain Link Fabric: Apply fabric to inside of enclosing framework. Leave a minimum clearance of 1 inch, maximum 1-3/4 inch between finish grade and surface and bottom selvage, unless otherwise directed by City's Representative. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released and displays no sagging or buckling.

H. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain link fabric per ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.

I. Maximum Spacing: Tie fabric to line posts 12 inches O.C. and to braces 24 inches O.C.

J. Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

3.3 GATE INSTALLATION

A. Install gates according to manufacturer's written instructions, with all required hardware, level, plumb and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust gate and hardware to operate smoothly, easily, and quietly, free from binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

3.4 CLEAN-UP

A. Remove from the site all debris resulting from the work of this section.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. All work shall be done in conformance with the applicable provisions of the Standard Specifications.

B. All work involved in installing FENCE (C – 8'H CHAIN LINK FENCE), FENCE (D – 4'H CHAINLINK FENCE), and FENCE (E – 9'H CHAIN LINK FENCE) will be measured by the linear foot complete in place, unless otherwise specified in the Contract Documents.

4.2 PAYMENT

A. The contract unit price paid per linear foot for FENCE (C – 8'H CHAIN LINK FENCE), shall include but not limited to full compensation for furnishing all labor, materials, tools, equipment, incidentals, concrete footing and for doing all the work involved in installing fence (C – 8'H chain link fence), complete in place, as required by the Contract Documents and as directed by the Engineer.

B. The contract unit price paid per linear foot for FENCE (D – 4'H CHAIN LINK FENCE), shall include but not limited to full compensation for furnishing all labor, materials, tools, equipment, incidentals, concrete footing and for doing all the work involved in installing fence (D – 4'H chain link fence), complete in place, as required by the Contract Documents and as directed by the Engineer.

C. The contract unit price paid per linear foot for FENCE (E – 9'H CHAIN LINK FENCE), shall include but not limited to full compensation for furnishing all labor, materials, tools, equipment, incidentals, concrete footing and for doing all the work involved in installing fence (E – 9'H chain link fence), complete in place, as required by the Contract Documents and as directed by the Engineer.

END OF SECTION

OAKLEY RECREATION CENTER
1250 O'HARA AVENUE, OAKLEY, CA 94561

FIRE SPRINKLER SYSTEM

1. Hydraulic Calculations
2. Fire Sprinkler Heads

HYDRAULIC CALCULATIONS

1. STORAGE 105 - REMOTE AREA : # 1
2. GREATE ROOM 102 - REMOTE AREA : # 2
3. KITCHEN 107 - REMOTE AREA : # 3

H&M MECHANICAL GROUP
8517 EARHART ROAD #230
OAKLAND,CA 94621

HYDRAULIC CALCULATIONS FOR
OAKLEY RECREATION CENTER
1250 O'HARA AVENUE, OAKLEY, CA 94561

DRAWING NUMBER: 17001.00 DATE: JAN 3, 2018

-DESIGN DATA-

REMOTE AREA NUMBER: #1 REMOTE AREA LOCATION: STORAGE/PLATFORM

OCCUPANCY CLASSIFICATION: ORDINARY HAZARD GROUP 2
DENSITY: 0.2 gpm/sq. ft.
AREA OF APPLICATION: 1237 sq. ft.

COVERAGE PER SPRINKLER: 100 sq. ft.
TYPE OF SPRINKLERS CALCULATED: PENDENT
NUMBER OF SPRINKLERS CALCULATED: 15

*IN-RACK SPRINKLER DEMAND: gpm
HOSE-STREAM DEMAND: 250 gpm
TOTAL WATER REQUIRED (INCLUDING HOSE): 560.3 gpm
FLOW AND PRESSURE (AT BASE OF RISER): 310.3 gpm @ **35.3** psi

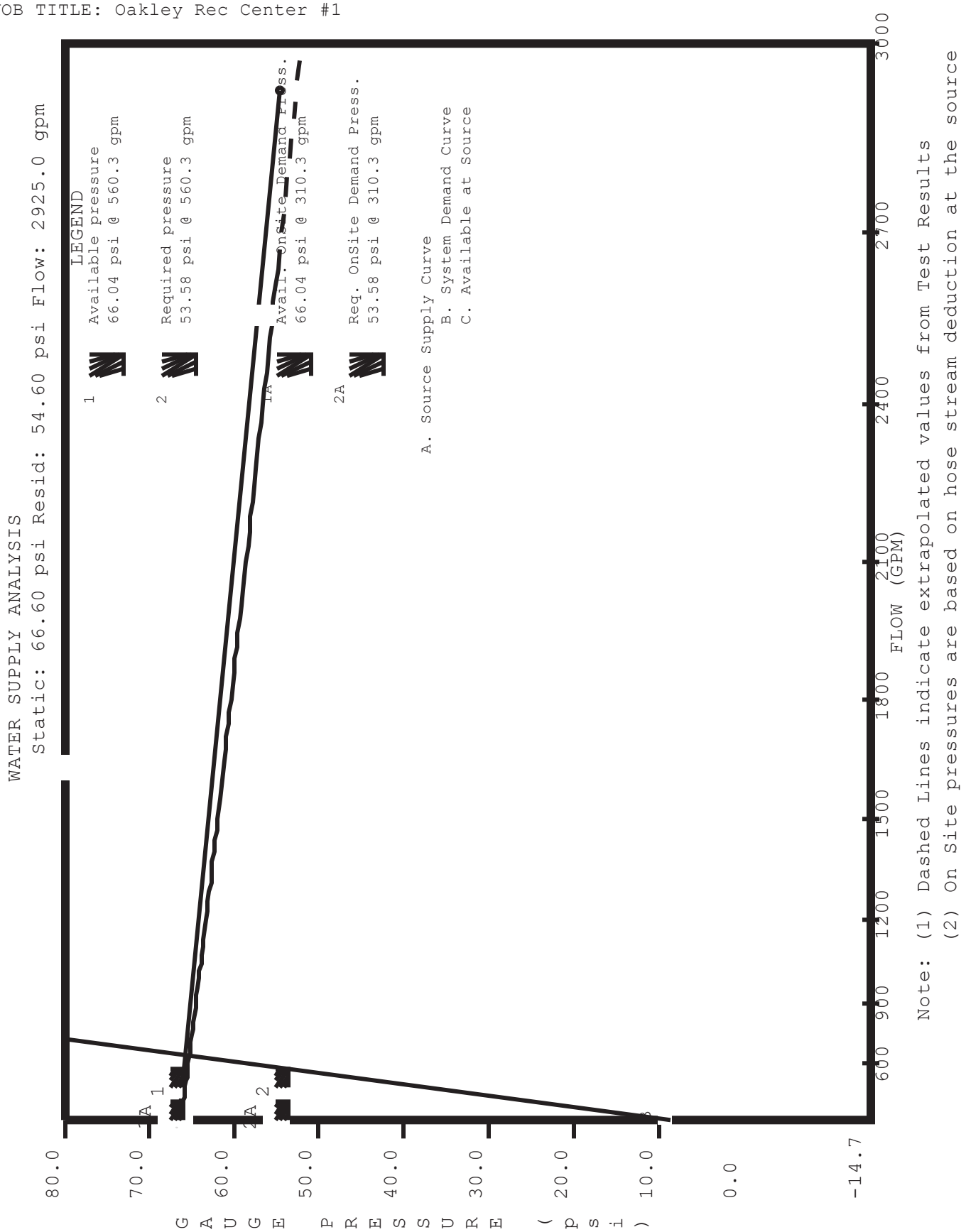
TYPE OF SYSTEM: Wet
*VOLUME OF DRY OR PREACTION SYSTEM:
*DETAILS:
WATER SUPPLY
Source: Test Date: Test By:
Location:
Static: 67 psi Residual: 55 psi Flow: 2925.0 gpm

Source Elevation Relative to Finished Flow Level: -3 ft.

NAME OF DESIGNER:
AUTHORITY HAVING JURISDICTION:

NOTES:
Calculations performed by HASS under license # 50121774 ,
granted by HRS SYSTEMS, INC. Petersburg, TN 37144 USA.
(Notes continue after pipe calculations results.)

DATE: 1/3/2018ON CENTER\OFFICE\FIRE\CALCULATIONS\OAKLEY REC CENTER #1.SDF
JOB TITLE: Oakley Rec Center #1



Note: (1) Dashed Lines indicate extrapolated values from Test Results
(2) On Site pressures are based on hose stream deduction at the source

DATE: 1/3/2018ON CENTER\OFFICE\FIRE\CALCULATIONS\OAKLEY REC CENTER #1.SDF
JOB TITLE: Oakley Rec Center #1

NFPA WATER SUPPLY DATA

FDC's NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	@ FLOW (GPM)	AVAIL. PRESS. (PSI)	@ TOTAL DEMAND (GPM)	REQ'D PRESS. (PSI)
SR	66.6	54.6	2925.0	66.0	560.3	53.6

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	560.3 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	250.0 GPM
OTHER HOSE STREAM ALLOWANCES	0.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	310.3 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	Notes
SR	-3.0	SOURCE	53.6	310.3	
U1	-3.0	- - - -	53.4	- - -	
U2	-3.0	- - - -	43.4	- - -	
U3	-3.0	- - - -	43.2	- - -	
U4	-3.0	- - - -	41.2	- - -	
U5	-3.0	- - - -	37.5	- - -	
BOR	1.0	- - - -	35.3	- - -	
TOR	10.8	- - - -	30.8	- - -	
43	16.0	- - - -	27.7	- - -	
16	16.0	- - - -	26.3	- - -	
15	26.5	- - - -	21.3	- - -	
14	26.5	- - - -	20.8	- - -	
13	26.5	- - - -	20.1	- - -	
12	26.2	- - - -	19.0	- - -	
11	25.4	- - - -	18.6	- - -	
10	24.8	- - - -	17.8	- - -	
9	23.5	- - - -	17.6	- - -	
8	22.2	- - - -	17.0	- - -	
7	20.6	- - - -	17.0	- - -	
6	19.6	- - - -	16.2	- - -	
5	17.8	- - - -	16.3	- - -	
4	16.6	- - - -	15.5	- - -	
3	14.9	- - - -	15.5	- - -	
2	12.6	- - - -	15.9	- - -	
1	10.6	- - - -	16.6	- - -	
36	16.0	- - - -	26.5	- - -	
35	26.5	- - - -	21.5	- - -	
34	26.5	- - - -	20.9	- - -	

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	Notes
33	26.5	- - - -	20.1	- - -	
32	26.2	- - - -	19.0	- - -	
31	25.4	- - - -	18.7	- - -	
30	24.8	- - - -	17.8	- - -	
29	23.5	- - - -	17.6	- - -	
28	22.2	- - - -	17.0	- - -	
27	20.6	- - - -	17.1	- - -	
26	19.6	- - - -	16.4	- - -	
25	17.8	- - - -	16.6	- - -	
24	16.6	- - - -	16.2	- - -	
23	14.9	- - - -	16.4	- - -	
22	12.6	- - - -	16.9	- - -	
21	10.6	- - - -	17.6	- - -	
51	10.6	- - - -	15.8	- - -	
52	10.6	- - - -	15.4	- - -	
53	10.6	- - - -	15.4	- - -	
54	10.6	- - - -	15.4	- - -	
55	10.6	- - - -	15.7	- - -	
56	12.6	- - - -	15.8	- - -	
57	12.6	- - - -	15.4	- - -	
58	12.6	- - - -	15.3	- - -	
59	12.6	- - - -	15.4	- - -	
60	12.6	- - - -	15.6	- - -	
61	14.9	- - - -	15.5	- - -	
62	14.9	- - - -	15.0	- - -	
63	14.9	- - - -	14.8	- - -	
64	14.9	- - - -	14.8	- - -	
65	14.9	- - - -	15.0	- - -	
S1	10.4	K= 5.60	14.3	21.2	
S2	10.4	K= 5.60	13.9	20.9	
S3	10.4	K= 5.60	13.9	20.9	
S4	10.4	K= 5.60	13.9	20.9	
S5	10.4	K= 5.60	14.2	21.1	
S6	12.5	K= 5.60	14.3	21.2	
S7	12.5	K= 5.60	13.9	20.9	
S8	12.5	K= 5.60	13.8	20.8	
S9	12.5	K= 5.60	13.9	20.8	
S10	12.5	K= 5.60	14.1	21.0	
S11	16.4	K= 5.60	13.3	20.4	
S12	16.4	K= 5.60	12.9	20.1	
S13	16.4	K= 5.60	12.8	20.0	
S14	16.4	K= 5.60	12.8	20.0	
S15	16.4	K= 5.60	12.9	20.1	

NFPA PIPE DATA

Pipe Tag / Frm Node / To Node	El (ft)	K-fac / PT	Add Fl (q) / Tot.(Q)	Add Fl To Node/ Disch	Nom ID / Act ID	Fit: / Eq.Ln. (ft.)	L / F / T	C / Pf/ft.	(Pt) / (Pe) / (Pf)	Note
Pipe: 1		FDC's	0.0			2E:54.0	107.00	150	0.2	
SR	-3.0	53.6	310.3	U2	E8.000	T:53.0	113.00		0.0	
U1	-3.0	53.4	310.3		7.980	G: 6.0	220.00	0.001	0.2	
Pipe: 2			0.0	FIXED PRESSURE LOSS DEVICE						
U1	-3.0	53.4	310.3	U3	10.0 psi, 310.3 gpm					
U2	-3.0	43.4	310.3							
Pipe: 3		0.0	0.0				256.00	150	0.2	
U2	-3.0	43.4	310.3	U4	E8.000	3E:81.0	81.00		0.0	
U3	-3.0	43.2	310.3		7.980		337.00	0.001	0.2	
Pipe: 4		0.0	0.0			T:39.0	47.00	150	2.0	
U3	-3.0	43.2	310.3	U5	E4.000	C:43.0	86.00		0.0	
U4	-3.0	41.2	310.3		4.240	G: 4.0	133.00	0.015	2.0	
Pipe: 5		0.0	0.0				161.00	150	3.6	
U4	-3.0	41.2	310.3	BOR	E4.000	2E:40.0	76.00		0.0	
U5	-3.0	37.5	310.3		4.240	3L:36.0	237.00	0.015	3.6	
Pipe: 6		0.0	0.0				11.40	140	2.2	
U5	-3.0	37.5	310.3	TOR	D4.000	E:17.0	17.00		1.7	
BOR	1.0	35.3	310.3		4.220		28.40	0.018	0.5	
Pipe: 7		0.0	0.0				9.75	120	4.5	
BOR	1.0	35.3	310.3	43	B4.000	G: 3.0	3.00		4.2	
TOR	10.8	30.8	310.3		4.260		12.75	0.023	0.3	
Pipe: 8		0.0	161.4	36			34.60	120	3.1	
TOR	10.8	30.8	148.9	16	B4.000	----	0.00		2.3	
43	16.0	27.7	310.3		4.260		34.60	0.023	0.8	
Pipe: 9		0.0	0.0				36.80	120	1.4	
43	16.0	27.7	148.9	15	B3.000	E:10.0	30.00		0.0	
16	16.0	26.3	148.9		3.260	T:20.0	66.80	0.021	1.4	
Pipe: 10		0.0	0.0				10.50	120	5.0	
16	16.0	26.3	148.9	14	B3.000	E:10.0	10.00		4.5	
15	26.5	21.3	148.9		3.260		20.50	0.021	0.4	
Pipe: 11		0.0	152.5	13			5.50	120	0.5	
15	26.5	21.3	-3.6	34	B3.000	2E:20.0	20.00		0.0	
14	26.5	20.8	148.9		3.260		25.50	0.021	0.5	

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 12		0.0	154.5	12			11.40	120	0.7	
14	26.5	20.8	-2.0	33	B3.000	T:20.0	20.00		0.0	
13	26.5	20.1	152.5		3.260		31.40	0.022	0.7	
Pipe: 13		0.0	154.9	11			12.33	120	1.1	
13	26.5	20.1	-0.5	32	B3.000	2E:20.0	40.00		-0.1	
12	26.2	19.0	154.5		3.260	T:20.0	52.33	0.023	1.2	
Pipe: 14		0.0	0.0				11.00	120	0.3	
12	26.2	19.0	154.9	10	B3.000	T:20.0	20.00		-0.4	
11	25.4	18.6	154.9		3.260		31.00	0.023	0.7	
Pipe: 15		0.0	155.6	9			8.60	120	0.8	
11	25.4	18.6	-0.4	30	B3.000	2E:20.0	40.00		-0.3	
10	24.8	17.8	155.2		3.260	T:20.0	48.60	0.023	1.1	
Pipe: 16		0.0	156.3	8			11.00	120	0.2	
10	24.8	17.8	-0.7	29	B3.000	T:20.0	20.00		-0.5	
9	23.5	17.6	155.6		3.260		31.00	0.023	0.7	
Pipe: 17		0.0	157.6	7			11.00	120	0.6	
9	23.5	17.6	-1.3	28	B3.000	2E:20.0	40.00		-0.5	
8	22.2	17.0	156.3		3.260	T:20.0	51.00	0.023	1.2	
Pipe: 18		0.0	159.5	6			11.00	120	0.0	
8	22.2	17.0	-1.8	27	B3.000	T:20.0	20.00		-0.7	
7	20.6	17.0	157.6		3.260		31.00	0.024	0.7	
Pipe: 19		0.0	162.5	5			7.80	120	0.7	
7	20.6	17.0	-3.0	26	B3.000	2E:20.0	40.00		-0.4	
6	19.6	16.2	159.5		3.260	T:20.0	47.80	0.024	1.2	
Pipe: 20		0.0	166.2	4			10.00	120	0.0	
6	19.6	16.2	-3.7	4	B3.000	T:20.0	20.00		-0.8	
5	17.8	16.3	162.5		3.260		30.00	0.025	0.8	
Pipe: 21		0.0	171.7	3			7.50	120	0.7	
5	17.8	16.3	-5.5	24	B3.000	2E:20.0	40.00		-0.5	
4	16.6	15.5	166.2		3.260	T:20.0	47.50	0.026	1.2	
Pipe: 22		0.0	60.5	61			7.80	120	0.0	
4	16.6	15.5	111.2	2	B3.000	T:20.0	20.00		-0.7	
3	14.9	15.5	171.7		3.260		27.80	0.028	0.8	

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 23		0.0	57.1	56			11.60	120	-0.4	
3	14.9	15.5	54.1	1	B3.000	2E:20.0	40.00		-1.0	
2	12.6	15.9	111.2		3.260	T:20.0	51.60	0.012	0.6	
Pipe: 24		0.0	0.0				8.20	120	-0.8	
2	12.6	15.9	54.1	51	B3.000	T:20.0	20.00		-0.9	
1	10.6	16.6	54.1		3.260		28.20	0.003	0.1	
Pipe: 25		0.0	0.0				18.33	120	1.2	
43	16.0	27.7	161.4	35	B3.000	E:10.0	30.00		0.0	
36	16.0	26.5	161.4		3.260	T:20.0	48.33	0.025	1.2	
Pipe: 26		0.0	0.0				10.50	120	5.1	
36	16.0	26.5	161.4	34	B3.000	E:10.0	10.00		4.5	
35	26.5	21.5	161.4		3.260		20.50	0.025	0.5	
Pipe: 27		0.0	3.6	14			5.50	120	0.6	
35	26.5	21.5	157.8	33	B3.000	2E:20.0	20.00		0.0	
34	26.5	20.9	161.4		3.260		25.50	0.025	0.6	
Pipe: 28		0.0	2.0	13			11.40	120	0.7	
34	26.5	20.9	155.8	32	B3.000	T:20.0	20.00		0.0	
33	26.5	20.1	157.8		3.260		31.40	0.024	0.7	
Pipe: 29		0.0	0.5	12			12.33	120	1.1	
33	26.5	20.1	155.4	31	B3.000	2E:20.0	40.00		-0.1	
32	26.2	19.0	155.8		3.260	T:20.0	52.33	0.023	1.2	
Pipe: 30		0.0	0.3	11			11.00	120	0.3	
32	26.2	19.0	155.4	30	B3.000	T:20.0	20.00		-0.4	
31	25.4	18.7	155.4		3.260		31.00	0.023	0.7	
Pipe: 31		0.0	0.4	10			8.60	120	0.8	
31	25.4	18.7	154.7	29	B3.000	2E:20.0	40.00		-0.3	
30	24.8	17.8	155.1		3.260	T:20.0	48.60	0.023	1.1	
Pipe: 32		0.0	0.7	9			11.00	120	0.2	
30	24.8	17.8	154.0	28	B3.000	T:20.0	20.00		-0.5	
29	23.5	17.6	154.7		3.260		31.00	0.023	0.7	
Pipe: 33		0.0	1.3	8			11.00	120	0.6	
29	23.5	17.6	152.7	27	B3.000	2E:20.0	40.00		-0.5	
28	22.2	17.0	154.0		3.260	T:20.0	51.00	0.023	1.2	

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 34		0.0	1.8	7			11.00	120	0.0	
28	22.2	17.0	150.8	26	B3.000	T:20.0	20.00		-0.7	
27	20.6	17.1	152.7		3.260		31.00	0.022	0.7	
Pipe: 35		0.0	3.0	6			7.80	120	0.6	
27	20.6	17.1	147.8	25	B3.000	2E:20.0	40.00		-0.4	
26	19.6	16.4	150.8		3.260	T:20.0	47.80	0.022	1.0	
Pipe: 36		0.0	3.7	5			10.00	120	-0.2	
26	19.6	16.4	144.1	24	B3.000	T:20.0	20.00		-0.8	
25	17.8	16.6	147.8		3.260		30.00	0.021	0.6	
Pipe: 37		0.0	5.5	4			7.50	120	0.5	
25	17.8	16.6	138.6	23	B3.000	2E:20.0	40.00		-0.5	
24	16.6	16.2	144.1		3.260	T:20.0	47.50	0.020	1.0	
Pipe: 38		0.0	40.2	65			7.80	120	-0.2	
24	16.6	16.2	98.4	22	B3.000	T:20.0	20.00		-0.7	
23	14.9	16.4	138.6		3.260		27.80	0.019	0.5	
Pipe: 39		0.0	47.6	60			11.50	120	-0.5	
23	14.9	16.4	50.8	21	B3.000	2E:20.0	40.00		-1.0	
22	12.6	16.9	98.4		3.260	T:20.0	51.50	0.010	0.5	
Pipe: 40		0.0	0.0				8.20	120	-0.8	
22	12.6	16.9	50.8	55	B3.000	T:20.0	20.00		-0.9	
21	10.6	17.6	50.8		3.260		28.20	0.003	0.1	
Pipe: 41		0.0	152.5	13			50.67	120	0.1	
34	26.5	20.9	-148.9	15	1.250	----	0.00		0.0	
14	26.5	20.8	3.6		1.380		50.67	0.001	0.1	
Pipe: 42		0.0	154.5	12			50.67	120	0.0	
33	26.5	20.1	-152.5	14	1.250	T: 6.0	6.00		0.0	
13	26.5	20.1	2.0		1.380		56.67	0.000	0.0	
Pipe: 43		0.0	154.9	11			50.67	120	0.0	
32	26.2	19.0	-154.5	13	1.000	----	0.00		0.0	
12	26.2	19.0	0.5		1.049		50.67	0.000	0.0	
Pipe: 44		0.0	155.2	10			50.67	120	0.0	
31	25.4	18.7	-154.9	12	1.000	T: 5.0	5.00		0.0	
11	25.4	18.6	0.3		1.049		55.67	0.000	0.0	

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 45		0.0	155.6	9			50.67	120	0.0	
30	24.8	17.8	-155.2	11	1.000	----	0.00		0.0	
10	24.8	17.8	0.4		1.049		50.67	0.000	0.0	
Pipe: 46		0.0	156.3	8			50.67	120	0.0	
29	23.5	17.6	-155.6	10	1.000	T: 5.0	5.00		0.0	
9	23.5	17.6	0.7		1.049		55.67	0.000	0.0	
Pipe: 47		0.0	157.6	7			50.67	120	0.0	
28	22.2	17.0	-156.3	9	1.000	----	0.00		0.0	
8	22.2	17.0	1.3		1.049		50.67	0.001	0.0	
Pipe: 48		0.0	159.5	6			50.67	120	0.1	
27	20.6	17.1	-157.6	8	1.000	T: 5.0	5.00		0.0	
7	20.6	17.0	1.8		1.049		55.67	0.002	0.1	
Pipe: 49		0.0	162.5	5			50.67	120	0.2	
26	19.6	16.4	-159.5	7	1.000	----	0.00		0.0	
6	19.6	16.2	3.0		1.049		50.67	0.004	0.2	
Pipe: 50		0.0	166.2	4			50.67	120	0.3	
25	17.8	16.6	-162.5	6	1.000	T: 5.0	5.00		0.0	
5	17.8	16.3	3.7		1.049		55.67	0.006	0.3	
Pipe: 51		0.0	171.7	3			50.67	120	0.6	
24	16.6	16.2	-166.2	5	1.000	----	0.00		0.0	
4	16.6	15.5	5.5		1.049		50.67	0.012	0.6	
Pipe: 52		0.0	20.1	64			15.75	120	1.4	
23	14.9	16.4	20.1	S15	1.500	T: 8.0	8.00		0.0	
65	14.9	15.0	40.2		1.610		23.75	0.059	1.4	
Pipe: 53		0.0	0.0				8.90	120	0.1	
65	14.9	15.0	20.1		1.500	----	0.00		0.0	
64	14.9	14.8	20.1		1.610		8.90	0.016	0.1	
Pipe: 54		0.0	0.0				8.90	120	0.0	
63	14.9	14.8	0.1		1.500	----	0.00		0.0	
64	14.9	14.8	0.1		1.610		8.90	0.000	0.0	
Pipe: 55		0.0	0.0				8.25	120	0.1	
62	14.9	15.0	19.9	64	1.500	----	0.00		0.0	
63	14.9	14.8	19.9		1.610		8.25	0.016	0.1	

Pipe Tag Frm Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Node/ Disch	Nom ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 56		0.0	19.9	63			8.50	120	0.5	
61	14.9	15.5	20.1	S12	1.500	----	0.00		0.0	
62	14.9	15.0	40.0		1.610		8.50	0.058	0.5	
Pipe: 57		0.0	40.0	62			0.40	120	0.1	
3	14.9	15.5	20.4	S11	1.500	----	0.00		0.0	
61	14.9	15.5	60.5		1.610		0.40	0.125	0.1	
Pipe: 58		0.0	26.6	59			15.75	120	1.3	
22	12.6	16.9	21.0	S10	1.500	----	0.00		0.0	
60	12.6	15.6	47.6		1.610		15.75	0.080	1.3	
Pipe: 59		0.0	5.7	58			8.90	120	0.2	
60	12.6	15.6	20.8	S9	1.500	----	0.00		0.0	
59	12.6	15.4	26.6		1.610		8.90	0.027	0.2	
Pipe: 60		0.0	0.0				8.90	120	0.0	
59	12.6	15.4	5.7		1.500	----	0.00		0.0	
58	12.6	15.3	5.7		1.610		8.90	0.002	0.0	
Pipe: 61		0.0	0.0				8.25	120	0.1	
57	12.6	15.4	15.1		1.500	----	0.00		0.0	
58	12.6	15.3	15.1		1.610		8.25	0.010	0.1	
Pipe: 62		0.0	15.1	58			8.50	120	0.4	
56	12.6	15.8	20.9	S7	1.500	----	0.00		0.0	
57	12.6	15.4	36.0		1.610		8.50	0.048	0.4	
Pipe: 63		0.0	36.0	57			0.40	120	0.0	
2	12.6	15.9	21.2	S6	1.500	----	0.00		0.0	
56	12.6	15.8	57.1		1.610		0.40	0.113	0.0	
Pipe: 64		0.0	29.7	54			13.50	120	2.0	
21	10.6	17.6	21.1	S5	1.500	T: 8.0	8.00		0.0	
55	10.6	15.7	50.8		1.610		21.50	0.091	2.0	
Pipe: 65		0.0	8.8	53			9.20	120	0.3	
55	10.6	15.7	20.9	S4	1.500	----	0.00		0.0	
54	10.6	15.4	29.7		1.610		9.20	0.034	0.3	
Pipe: 66		0.0	0.0				9.25	120	0.0	
54	10.6	15.4	8.8		1.500	----	0.00		0.0	
53	10.6	15.4	8.8		1.610		9.25	0.004	0.0	

Pipe Tag / Frm Node / To Node	El (ft)	K-fac / PT	Add Fl (q) / Tot.(Q)	Add Fl To Node/ Disch	Nom ID / Act ID	Fit: Eq.Ln. (ft.)	L / F / T	C / Pf/ft.	(Pt) (Pe) (Pf)	Note
Pipe: 67		0.0	0.0				9.25	120	0.1	
52	10.6	15.4	12.0		1.500	----	0.00		0.0	
53	10.6	15.4	12.0		1.610		9.25	0.006	0.1	
Pipe: 68		0.0	12.0	53			9.25	120	0.4	
51	10.6	15.8	20.9	S2	1.500	----	0.00		0.0	
52	10.6	15.4	33.0		1.610		9.25	0.041	0.4	
Pipe: 69		0.0	33.0	52			0.40	120	0.9	
1	10.6	16.6	21.2	S1	1.500	T: 8.0	8.00		0.0	
51	10.6	15.8	54.1		1.610		8.40	0.102	0.9	
Pipe: 70		5.60	21.2	Disch			2.00	120	1.5	
51	10.6	15.8	0.0		1.000	2E: 4.0	9.00		-0.1	
S1	10.4	14.3	21.2		1.049	T: 5.0	11.00	0.144	1.6	
Pipe: 71		5.60	20.9	Disch			2.00	120	1.5	
52	10.6	15.4	0.0		1.000	2E: 4.0	9.00		-0.1	
S2	10.4	13.9	20.9		1.049	T: 5.0	11.00	0.141	1.6	
Pipe: 72		5.60	20.9	Disch			2.00	120	1.5	
53	10.6	15.4	0.0		1.000	2E: 4.0	9.00		-0.1	
S3	10.4	13.9	20.9		1.049	T: 5.0	11.00	0.141	1.5	
Pipe: 73		5.60	20.9	Disch			2.00	120	1.5	
54	10.6	15.4	0.0		1.000	2E: 4.0	9.00		-0.1	
S4	10.4	13.9	20.9		1.049	T: 5.0	11.00	0.141	1.6	
Pipe: 74		5.60	21.1	Disch			2.00	120	1.5	
55	10.6	15.7	0.0		1.000	2E: 4.0	9.00		-0.1	
S5	10.4	14.2	21.1		1.049	T: 5.0	11.00	0.144	1.6	
Pipe: 75		5.60	21.2	Disch			2.00	120	1.5	
56	12.6	15.8	0.0		1.000	2E: 4.0	9.00		0.0	
S6	12.5	14.3	21.2		1.049	T: 5.0	11.00	0.144	1.6	
Pipe: 76		5.60	20.9	Disch			2.00	120	1.5	
57	12.6	15.4	0.0		1.000	2E: 4.0	9.00		0.0	
S7	12.5	13.9	20.9		1.049	T: 5.0	11.00	0.141	1.6	
Pipe: 77		5.60	20.8	Disch			2.00	120	1.5	
58	12.6	15.3	0.0		1.000	2E: 4.0	9.00		0.0	
S8	12.5	13.8	20.8		1.049	T: 5.0	11.00	0.140	1.5	

Pipe Tag Frm Node	El (ft)	K-fac PT	Add Fl (q)	Add Fl To Node/	Nom ID	Fit: Eq.Ln.	L F	C	(Pt) (Pe)	Note
To Node	El (ft)	PT	Tot.(Q)	Disch	Act ID	(ft.)	T	Pf/ft.	(Pf)	
Pipe: 78		5.60	20.8	Disch			2.00	120	1.5	
59	12.6	15.4	0.0		1.000	2E: 4.0	9.00		0.0	
S9	12.5	13.9	20.8		1.049	T: 5.0	11.00	0.140	1.5	
Pipe: 79		5.60	21.0	Disch			2.00	120	1.5	
60	12.6	15.6	0.0		1.000	2E: 4.0	9.00		0.0	
S10	12.5	14.1	21.0		1.049	T: 5.0	11.00	0.142	1.6	
Pipe: 80		5.60	20.4	Disch			2.00	120	2.1	
61	14.9	15.5	0.0		1.000	2E: 4.0	9.00		0.6	
S11	16.4	13.3	20.4		1.049	T: 5.0	11.00	0.135	1.5	
Pipe: 81		5.60	20.1	Disch			2.00	120	2.1	
62	14.9	15.0	0.0		1.000	2E: 4.0	9.00		0.6	
S12	16.4	12.9	20.1		1.049	T: 5.0	11.00	0.131	1.4	
Pipe: 82		5.60	20.0	Disch			2.00	120	2.1	
63	14.9	14.8	0.0		1.000	2E: 4.0	9.00		0.6	
S13	16.4	12.8	20.0		1.049	T: 5.0	11.00	0.130	1.4	
Pipe: 83		5.60	20.0	Disch			2.00	120	2.1	
64	14.9	14.8	0.0		1.000	2E: 4.0	9.00		0.6	
S14	16.4	12.8	20.0		1.049	T: 5.0	11.00	0.130	1.4	
Pipe: 84		5.60	20.1	Disch			2.00	120	2.1	
65	14.9	15.0	0.0		1.000	2E: 4.0	9.00		0.6	
S15	16.4	12.9	20.1		1.049	T: 5.0	11.00	0.131	1.4	

NOTES (HASS):

(1) Calculations were performed by the HASS 8.7 computer program
in accordance with NFPA13 (2016)
under license no. 50121774 granted by
HRS Systems, Inc.
208 Southside Square
Petersburg, TN 37144
(931) 659-9760

(2) The system has been calculated to provide an average
imbalance at each node of 0.002 gpm and a maximum
imbalance at any node of 0.111 gpm.

(3) Total pressure at each node is used in balancing the system.
Maximum water velocity is 9.5 ft/sec at pipe 57.

(4) Items listed in bold print on the cover sheet

are automatically transferred from the calculation report.

(5) Column Headers have been translated from the English by the user.

(6) Available pressure at source node SR under full flow conditions is 65.94 psi with a flow of 611.51 gpm.

(7) PIPE FITTINGS TABLE

Pipe Table Name: STANDARD.PIP

PAGE: A MATERIAL: S40 HWC: 120

Diameter	Equivalent Fitting Lengths in Feet								
(in)	E Ell	T Tee	L LngEll	C ChkVlv	B BfyVlv	G GatVlv	A AlmChk	D DPVlv	N Tee
1.049	2.00	5.00	2.00	5.00	6.00	1.00	10.00	2.00	5.00
1.380	3.00	6.00	2.00	7.00	6.00	1.00	10.00	10.00	6.00
1.610	4.00	8.00	2.00	9.00	6.00	1.00	10.00	10.00	8.00

PAGE: B MATERIAL: THNWL HWC: 120

Diameter	Equivalent Fitting Lengths in Feet								
(in)	E Ell	T Tee	L LngEll	C ChkVlv	B BfyVlv	G GatVlv	A AlmChk	D DPVlv	N NPTee
3.260	10.00	20.00	7.00	22.00	14.00	1.00	18.00	18.00	20.00
4.260	13.00	26.00	8.00	29.00	16.00	3.00	26.00	26.00	26.00

PAGE: D MATERIAL: DIRON HWC: 140

Diameter	Equivalent Fitting Lengths in Feet						
(in)	E Ell	T Tee	L LngEll	C ChkVlv	B BfyVlv	G GatVlv	N NPTee
4.220	17.00	34.00	10.00	37.00	20.00	3.00	34.00

PAGE: E MATERIAL: PVC150 HWC: 150

Diameter	Equivalent Fitting Lengths in Feet						
(in)	E Ell	T Tee	L LngEll	C ChkVlv	B BfyVlv	G GatVlv	N NPTee
4.240	20.00	39.00	12.00	43.00	23.00	4.00	39.00
7.980	27.00	53.00	20.00	68.00	18.00	6.00	53.00

H&M MECHANICAL GROUP
8517 EARHART ROAD #230
OAKLAND,CA 94621

HYDRAULIC CALCULATIONS FOR
OAKLEY RECREATION CENTER
1250 O'HARA AVENUE, OAKLEY, CA 94561

DRAWING NUMBER: 17001.00 DATE: JAN 2, 2018

-DESIGN DATA-

REMOTE AREA NUMBER: #2 REMOTE AREA LOCATION: GREAT ROOM

OCCUPANCY CLASSIFICATION: LIGHT HA/ARD
DENSITY: 0.1 Zgpmsq. ft.
AREA OF APPLICATION: 1519 sq. ft.

COVERAGE PER SPRINKLER: 180 sq. ft.
TYPE OF SPRINKLERS CALCULATED: PENDENT
NUMBER OF SPRINKLERS CALCULATED: 12

*IN-RACK SPRINKLER DEMAND: Zgp
HOSE-STREAM DEMAND: 100 Zgp
TOTAL WATER REQUIRED (INCLUDING HOSE): 324.9 Zgp
FLOW AND PRESSURE (AT BASE OF RISER): 224.9 Zgp @ **29.1** gsi

TYPE OF SYSTEM: Wet
*VOLUME OF DRY OR PREACTION SYSTEM:
*DETAILS:
WATER SUPPLY
Source: Test Date: Test By:
Location:
Static: 67 gsi Residual: 55 gsi Flow: 2925.0 Zgp

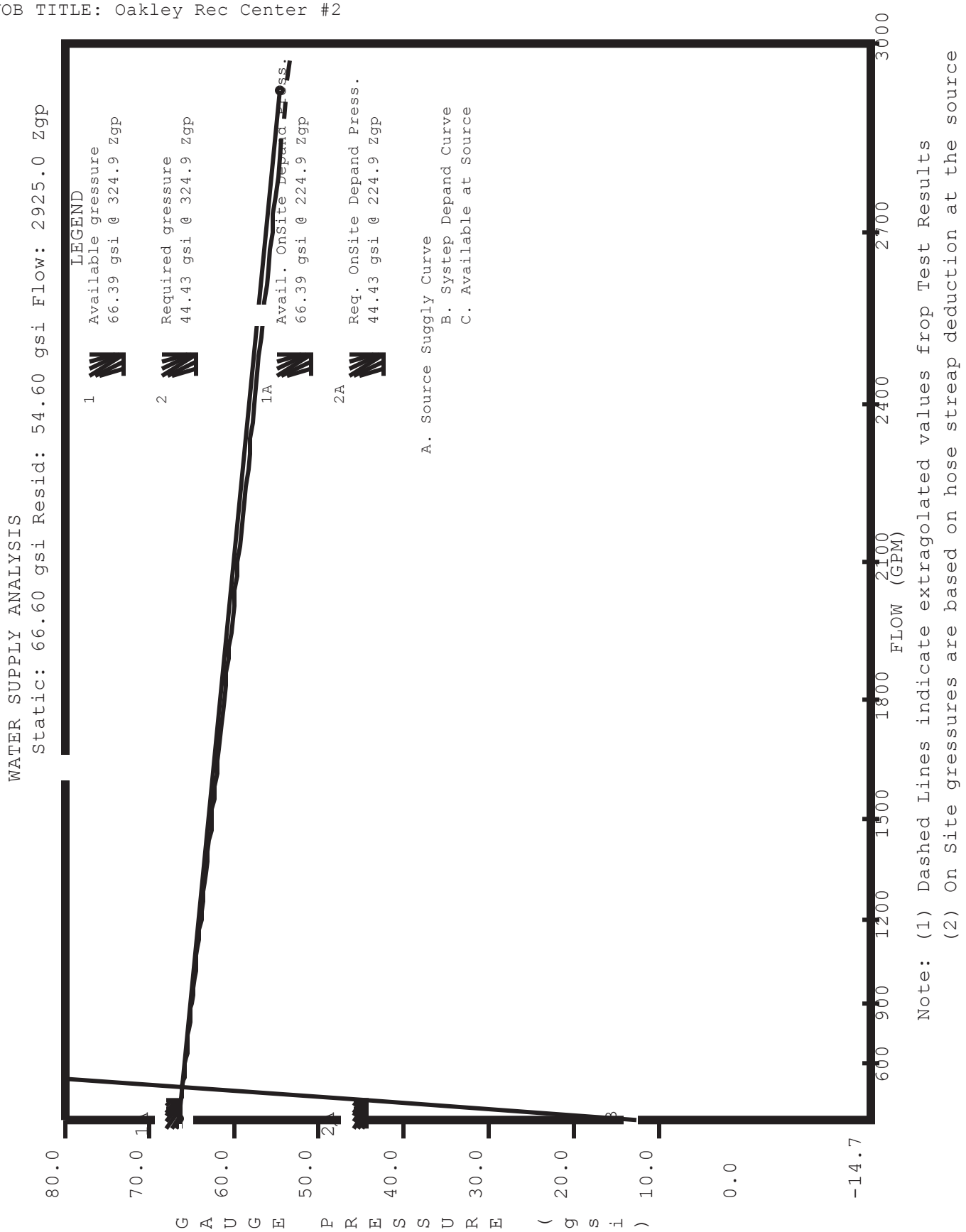
Source Elevation Relative to Finished Flow Level: -3 ft.

NAME OF DESIGNER:
AUTHORITY HAVING JURISDICTION:

NOTES:
Calculations gerforped by HASS under license # 50121774 ,
Zranted by HRS SYSTEMS, INC. PetersburZ, TN 37144 USA.
(Notes continue after gige calculations results.)

DATE: 1m2m2018ON CENTER\OFFICE\FIRE\CALCULATIONS\OAKLEY REC CENTER #2.SDF

JOB TITLE: Oakley Rec Center #2



Note: (1) Dashed Lines indicate extragolated values frop Test Results

(2) On Site gressures are based on hose streap deduction at the source

DATE: 1m2m2018ON CENTER\OFFICE\FIRE\CALCULATIONS\OAKLEY REC CENTER #2.SDF
JOB TITLE: Oakley Rec Center #2

NFPA WATER SUPPLY DATA

FDC's NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	@ FLOW (GPM)	AVAIL. PRESS. (PSI)	@ TOTAL DEMAND (GPM)	REQ'D PRESS. (PSI)
SR	66.6	54.6	2925.0	66.4	324.9	44.4

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	324.9 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	100.0 GPM
OTHER HOSE STREAM ALLOWANCES	0.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	224.9 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	Notes
SR	-3.0	SOURCE	44.4	224.9	
U1	-3.0	- - - -	44.3	- - -	
U2	-3.0	- - - -	34.3	- - -	
U3	-3.0	- - - -	34.2	- - -	
U4	-3.0	- - - -	33.1	- - -	
U5	-3.0	- - - -	31.1	- - -	
BOR	1.0	- - - -	29.1	- - -	
TOR	10.8	- - - -	24.7	- - -	
43	16.0	- - - -	22.0	- - -	
16	16.0	- - - -	21.2	- - -	
15	26.5	- - - -	16.4	- - -	
14	26.5	- - - -	16.1	- - -	
13	26.5	- - - -	15.7	- - -	
12	26.2	- - - -	15.1	- - -	
11	25.4	- - - -	15.2	- - -	
10	24.8	- - - -	15.3	- - -	
9	23.5	- - - -	15.9	- - -	
8	22.2	- - - -	16.4	- - -	
7	20.6	- - - -	17.2	- - -	
6	19.6	- - - -	17.6	- - -	
5	17.8	- - - -	18.4	- - -	
4	16.6	- - - -	18.9	- - -	
3	14.9	- - - -	19.7	- - -	
2	12.6	- - - -	20.7	- - -	
1	10.6	- - - -	21.5	- - -	
36	16.0	- - - -	21.4	- - -	
35	26.5	- - - -	16.5	- - -	
34	26.5	- - - -	16.2	- - -	

DATE: 1m2m2018ON CENTER\OFFICE\FIRE\CALCULATIONS\OAKLEY REC CENTER #2.SDF
JOB TITLE: Oakley Rec Center #2

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	Notes
33	26.5	- - - -	15.8	- - -	
32	26.2	- - - -	15.3	- - -	
31	25.4	- - - -	15.4	- - -	
30	24.8	- - - -	15.5	- - -	
29	23.5	- - - -	16.0	- - -	
28	22.2	- - - -	16.5	- - -	
27	20.6	- - - -	17.2	- - -	
26	19.6	- - - -	17.7	- - -	
25	17.8	- - - -	18.5	- - -	
24	16.6	- - - -	18.9	- - -	
23	14.9	- - - -	19.7	- - -	
22	12.6	- - - -	20.7	- - -	
21	10.6	- - - -	21.5	- - -	
71	23.5	- - - -	12.7	- - -	
72	23.5	- - - -	11.9	- - -	
73	23.5	- - - -	12.0	- - -	
74	24.8	- - - -	13.6	- - -	
75	24.8	- - - -	12.4	- - -	
76	24.8	- - - -	12.5	- - -	
77	25.4	- - - -	12.2	- - -	
78	25.4	- - - -	11.4	- - -	
79	25.4	- - - -	11.5	- - -	
80	26.2	- - - -	13.3	- - -	
81	26.2	- - - -	12.3	- - -	
82	26.2	- - - -	12.4	- - -	
S21	23.2	K= 5.60	11.5	19.0	
S22	23.2	K= 5.60	10.8	18.4	
S23	23.2	K= 5.60	10.9	18.5	
S24	24.4	K= 5.60	12.4	19.7	
S25	24.4	K= 5.60	11.3	18.8	
S26	24.4	K= 5.60	11.3	18.8	
S27	25.1	K= 5.60	11.1	18.6	
S28	25.1	K= 5.60	10.3	18.0	
S29	25.1	K= 5.60	10.4	18.1	
S30	25.9	K= 5.60	12.1	19.5	
S31	25.9	K= 5.60	11.2	18.7	
S32	25.9	K= 5.60	11.2	18.8	

DATE: 1m2m2018ON CENTER\OFFICE\FIRE\CALCULATIONS\OAKLEY REC CENTER #2.SDF
JOB TITLE: Oakley Rec Center #2

NFPA PIPE DATA

Pige TaZ Frp Node	El (ft)	K-fac PT	Add Fl (q)	Add Fl To Nodem	Nop ID	Fit: Eq.Ln.	L F	C	(Pt) (Pe)	Note
To Node	El (ft)	PT	Tot.(Q)	Disch	Act ID	(ft.)	T	Pfmft.	(Pf)	
Pige: 1		FDC's	0.0			2E:54.0	107.00	150	0.1	
SR	-3.0	44.4	224.9	U2	E8.000	T:53.0	113.00		0.0	
U1	-3.0	44.3	224.9		7.980	G: 6.0	220.00	0.000	0.1	
Pige: 2			0.0	FIXED PRESSURE LOSS DEVICE						
U1	-3.0	44.3	224.9	U3	10.0 gsi, 224.9 Zgp					
U2	-3.0	34.3	224.9							
Pige: 3		0.0	0.0				256.00	150	0.1	
U2	-3.0	34.3	224.9	U4	E8.000	3E:81.0	81.00		0.0	
U3	-3.0	34.2	224.9		7.980		337.00	0.000	0.1	
Pige: 4		0.0	0.0			T:39.0	47.00	150	1.1	
U3	-3.0	34.2	224.9	U5	E4.000	C:43.0	86.00		0.0	
U4	-3.0	33.1	224.9		4.240	G: 4.0	133.00	0.008	1.1	
Pige: 5		0.0	0.0				161.00	150	2.0	
U4	-3.0	33.1	224.9	BOR	E4.000	2E:40.0	76.00		0.0	
U5	-3.0	31.1	224.9		4.240	3L:36.0	237.00	0.008	2.0	
Pige: 6		0.0	0.0				11.40	140	2.0	
U5	-3.0	31.1	224.9	TOR	D4.000	E:17.0	17.00		1.7	
BOR	1.0	29.1	224.9		4.220		28.40	0.010	0.3	
Pige: 7		0.0	0.0				9.75	120	4.4	
BOR	1.0	29.1	224.9	43	B4.000	G: 3.0	3.00		4.2	
TOR	10.8	24.7	224.9		4.260		12.75	0.012	0.2	
Pige: 8		0.0	115.6	36			34.60	120	2.7	
TOR	10.8	24.7	109.3	16	B4.000	----	0.00		2.3	
43	16.0	22.0	224.9		4.260		34.60	0.012	0.4	
Pige: 9		0.0	0.0				36.80	120	0.8	
43	16.0	22.0	109.3	15	B3.000	E:10.0	30.00		0.0	
16	16.0	21.2	109.3		3.260	T:20.0	66.80	0.012	0.8	
Pige: 10		0.0	0.0				10.50	120	4.8	
16	16.0	21.2	109.3	14	B3.000	E:10.0	10.00		4.5	
15	26.5	16.4	109.3		3.260		20.50	0.012	0.2	
Pige: 11		0.0	113.6	13			5.50	120	0.3	
15	26.5	16.4	-4.3	34	B3.000	2E:20.0	20.00		0.0	
14	26.5	16.1	109.3		3.260		25.50	0.012	0.3	

Pige TaZ Frp Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Nodem Disch	Nop ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pfmft.	(Pt) (Pe) (Pf)	Note
Pige: 12		0.0	117.9	12			11.40	120	0.4	
14	26.5	16.1	-4.3	33	B3.000	T:20.0	20.00		0.0	
13	26.5	15.7	113.6		3.260		31.40	0.013	0.4	
Pige: 13		0.0	34.7	80			12.33	120	0.6	
13	26.5	15.7	83.3	11	B3.000	2E:20.0	40.00		-0.1	
12	26.2	15.1	117.9		3.260	T:20.0	52.33	0.014	0.7	
Pige: 14		0.0	31.8	77			11.00	120	-0.1	
12	26.2	15.1	51.4	10	B3.000	T:20.0	20.00		-0.4	
11	25.4	15.2	83.3		3.260		31.00	0.007	0.2	
Pige: 15		0.0	34.6	74			8.60	120	-0.1	
11	25.4	15.2	16.9	9	B3.000	2E:20.0	40.00		-0.3	
10	24.8	15.3	51.4		3.260	T:20.0	48.60	0.003	0.1	
Pige: 16		0.0	32.6	71			11.00	120	-0.5	
10	24.8	15.3	-15.8	8	B3.000	T:20.0	20.00		-0.5	
9	23.5	15.9	16.9		3.260		31.00	0.000	0.0	
Pige: 17		0.0	32.6	71			11.00	120	0.6	
8	22.2	16.4	-16.9	10	B3.000	2E:20.0	40.00		0.5	
9	23.5	15.9	15.8		3.260	T:20.0	51.00	0.000	0.0	
Pige: 18		0.0	15.8	9			11.00	120	0.7	
7	20.6	17.2	-2.0	28	B3.000	T:20.0	20.00		0.7	
8	22.2	16.4	13.8		3.260		31.00	0.000	0.0	
Pige: 19		0.0	13.8	8			7.80	120	0.4	
6	19.6	17.6	-1.7	27	B3.000	2E:20.0	40.00		0.4	
7	20.6	17.2	12.1		3.260	T:20.0	47.80	0.000	0.0	
Pige: 20		0.0	12.1	7			10.00	120	0.8	
5	17.8	18.4	-1.5	26	B3.000	T:20.0	20.00		0.8	
6	19.6	17.6	10.7		3.260		30.00	0.000	0.0	
Pige: 21		0.0	10.7	6			7.50	120	0.5	
4	16.6	18.9	-1.3	25	B3.000	2E:20.0	40.00		0.5	
5	17.8	18.4	9.4		3.260	T:20.0	47.50	0.000	0.0	
Pige: 22		0.0	9.4	5			7.80	120	0.7	
3	14.9	19.7	-1.1	24	B3.000	T:20.0	20.00		0.7	
4	16.6	18.9	8.3		3.260		27.80	0.000	0.0	

DATE: 1m2m2018ON CENTER\OFFICE\FIRE\CALCULATIONS\OAKLEY REC CENTER #2.SDF
JOB TITLE: Oakley Rec Center #2

Pige TaZ Frp Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Nodem Disch	Nop ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pfmft.	(Pt) (Pe) (Pf)	Note
Pige: 23		0.0	8.3	4			11.60	120	1.0	
2	12.6	20.7	-2.9	4	B3.000	2E:20.0	40.00		1.0	
3	14.9	19.7	5.4		3.260	T:20.0	51.60	0.000	0.0	
Pige: 24		0.0	5.4	3			8.20	120	0.9	
1	10.6	21.5	-2.8	22	B3.000	T:20.0	20.00		0.9	
2	12.6	20.7	2.6		3.260		28.20	0.000	0.0	
Pige: 25		0.0	0.0				18.33	120	0.6	
43	16.0	22.0	115.6	35	B3.000	E:10.0	30.00		0.0	
36	16.0	21.4	115.6		3.260	T:20.0	48.33	0.013	0.6	
Pige: 26		0.0	0.0				10.50	120	4.8	
36	16.0	21.4	115.6	34	B3.000	E:10.0	10.00		4.5	
35	26.5	16.5	115.6		3.260		20.50	0.013	0.3	
Pige: 27		0.0	4.3	14			5.50	120	0.3	
35	26.5	16.5	111.3	33	B3.000	2E:20.0	20.00		0.0	
34	26.5	16.2	115.6		3.260		25.50	0.013	0.3	
Pige: 28		0.0	4.3	13			11.40	120	0.4	
34	26.5	16.2	107.0	32	B3.000	T:20.0	20.00		0.0	
33	26.5	15.8	111.3		3.260		31.40	0.012	0.4	
Pige: 29		0.0	22.3	82			12.33	120	0.5	
33	26.5	15.8	84.7	31	B3.000	2E:20.0	40.00		-0.1	
32	26.2	15.3	107.0		3.260	T:20.0	52.33	0.012	0.6	
Pige: 30		0.0	22.9	79			11.00	120	-0.1	
32	26.2	15.3	61.8	30	B3.000	T:20.0	20.00		-0.4	
31	25.4	15.4	84.7		3.260		31.00	0.008	0.2	
Pige: 31		0.0	22.8	76			8.60	120	-0.1	
31	25.4	15.4	39.0	29	B3.000	2E:20.0	40.00		-0.3	
30	24.8	15.5	61.8		3.260	T:20.0	48.60	0.004	0.2	
Pige: 32		0.0	23.2	73			11.00	120	-0.5	
30	24.8	15.5	15.8	28	B3.000	T:20.0	20.00		-0.5	
29	23.5	16.0	39.0		3.260		31.00	0.002	0.1	
Pige: 33		0.0	2.0	8			11.00	120	-0.5	
29	23.5	16.0	13.8	27	B3.000	2E:20.0	40.00		-0.5	
28	22.2	16.5	15.8		3.260	T:20.0	51.00	0.000	0.0	

DATE: 1m2m2018ON CENTER\OFFICE\FIRE\CALCULATIONS\OAKLEY REC CENTER #2.SDF
JOB TITLE: Oakley Rec Center #2

Pige TaZ Frp Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Nodem Disch	Nop ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pfmft.	(Pt) (Pe) (Pf)	Note
Pige: 34		0.0	1.7	7			11.00	120	-0.7	
28	22.2	16.5	12.1	26	B3.000	T:20.0	20.00		-0.7	
27	20.6	17.2	13.8		3.260		31.00	0.000	0.0	
Pige: 35		0.0	1.5	6			7.80	120	-0.4	
27	20.6	17.2	10.7	25	B3.000	2E:20.0	40.00		-0.4	
26	19.6	17.7	12.1		3.260	T:20.0	47.80	0.000	0.0	
Pige: 36		0.0	1.3	5			10.00	120	-0.8	
26	19.6	17.7	9.4	24	B3.000	T:20.0	20.00		-0.8	
25	17.8	18.5	10.7		3.260		30.00	0.000	0.0	
Pige: 37		0.0	1.1	4			7.50	120	-0.5	
25	17.8	18.5	8.3	23	B3.000	2E:20.0	40.00		-0.5	
24	16.6	18.9	9.4		3.260	T:20.0	47.50	0.000	0.0	
Pige: 38		0.0	2.9	3			7.80	120	-0.7	
24	16.6	18.9	5.4	22	B3.000	T:20.0	20.00		-0.7	
23	14.9	19.7	8.3		3.260		27.80	0.000	0.0	
Pige: 39		0.0	2.8	2			11.50	120	-1.0	
23	14.9	19.7	2.6	21	B3.000	2E:20.0	40.00		-1.0	
22	12.6	20.7	5.4		3.260	T:20.0	51.50	0.000	0.0	
Pige: 40		0.0	0.0				8.20	120	-0.9	
22	12.6	20.7	2.6	1	B3.000	T:20.0	20.00		-0.9	
21	10.6	21.5	2.6		3.260		28.20	0.000	0.0	
Pige: 41		0.0	113.6	13			50.67	120	0.1	
34	26.5	16.2	-109.3	15	1.250	----	0.00		0.0	
14	26.5	16.1	4.3		1.380		50.67	0.002	0.1	
Pige: 42		0.0	117.9	12			50.67	120	0.1	
33	26.5	15.8	-113.6	14	1.250	T: 6.0	6.00		0.0	
13	26.5	15.7	4.3		1.380		56.67	0.002	0.1	
Pige: 43		0.0	3.6	81			18.50	120	3.0	
32	26.2	15.3	18.8	S32	1.000	----	0.00		0.0	
82	26.2	12.4	22.3		1.049		18.50	0.160	3.0	
Pige: 44		0.0	0.0				13.67	120	0.1	
82	26.2	12.4	3.6		1.000	----	0.00		0.0	
81	26.2	12.3	3.6		1.049		13.67	0.005	0.1	

Pige TaZ Frp Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Nodem Disch	Nop ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pfmft.	(Pt) (Pe) (Pf)	Note
Pige: 45		0.0	0.0				13.67	120	1.1	
80	26.2	13.3	15.2		1.000	----	0.00		0.0	
81	26.2	12.3	15.2		1.049		13.67	0.078	1.1	
Pige: 46		0.0	15.2	81			4.80	120	1.7	
12	26.2	15.1	19.5	S30	1.000	----	0.00		0.0	
80	26.2	13.3	34.7		1.049		4.80	0.360	1.7	
Pige: 47		0.0	4.8	78			18.50	120	3.9	
31	25.4	15.4	18.1	S29	1.000	T: 5.0	5.00		0.0	
79	25.4	11.5	22.9		1.049		23.50	0.167	3.9	
Pige: 48		0.0	0.0				13.67	120	0.1	
79	25.4	11.5	4.8		1.000	----	0.00		0.0	
78	25.4	11.4	4.8		1.049		13.67	0.009	0.1	
Pige: 49		0.0	0.0				13.67	120	0.8	
77	25.4	12.2	13.2		1.000	----	0.00		0.0	
78	25.4	11.4	13.2		1.049		13.67	0.060	0.8	
Pige: 50		0.0	13.2	78			4.80	120	3.0	
11	25.4	15.2	18.6	S27	1.000	T: 5.0	5.00		0.0	
77	25.4	12.2	31.8		1.049		9.80	0.307	3.0	
Pige: 51		0.0	3.9	75			18.50	120	3.1	
30	24.8	15.5	18.8	S26	1.000	----	0.00		0.0	
76	24.8	12.5	22.8		1.049		18.50	0.165	3.1	
Pige: 52		0.0	0.0				13.67	120	0.1	
76	24.8	12.5	3.9		1.000	----	0.00		0.0	
75	24.8	12.4	3.9		1.049		13.67	0.006	0.1	
Pige: 53		0.0	0.0				16.67	120	1.3	
74	24.8	13.6	14.9		1.000	----	0.00		0.0	
75	24.8	12.4	14.9		1.049		16.67	0.075	1.3	
Pige: 54		0.0	14.9	75			4.80	120	1.7	
10	24.8	15.3	19.7	S24	1.000	----	0.00		0.0	
74	24.8	13.6	34.6		1.049		4.80	0.358	1.7	
Pige: 55		0.0	4.8	72			18.50	120	4.0	
29	23.5	16.0	18.5	S23	1.000	T: 5.0	5.00		0.0	
73	23.5	12.0	23.2		1.049		23.50	0.171	4.0	

DATE: 1m2m2018ON CENTER\OFFICE\FIRE\CALCULATIONS\OAKLEY REC CENTER #2.SDF
JOB TITLE: Oakley Rec Center #2

Pige TaZ Frp Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Nodem Disch	Nop ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pfmft.	(Pt) (Pe) (Pf)	Note
Pige: 56		0.0	0.0				13.67	120	0.1	
73	23.5	12.0	4.8		1.000	----	0.00		0.0	
72	23.5	11.9	4.8		1.049		13.67	0.009	0.1	
Pige: 57		0.0	0.0				13.67	120	0.9	
71	23.5	12.7	13.6		1.000	----	0.00		0.0	
72	23.5	11.9	13.6		1.049		13.67	0.064	0.9	
Pige: 58		0.0	13.6	72			4.80	120	3.2	
9	23.5	15.9	19.0	S21	1.000	T: 5.0	5.00		0.0	
71	23.5	12.7	32.6		1.049		9.80	0.322	3.2	
Pige: 59		0.0	15.8	9			50.67	120	0.1	
28	22.2	16.5	-13.8	7	1.000	----	0.00		0.0	
8	22.2	16.4	2.0		1.049		50.67	0.002	0.1	
Pige: 60		0.0	13.8	8			50.67	120	0.1	
27	20.6	17.2	-12.1	6	1.000	T: 5.0	5.00		0.0	
7	20.6	17.2	1.7		1.049		55.67	0.001	0.1	
Pige: 61		0.0	12.1	7			50.67	120	0.1	
26	19.6	17.7	-10.7	5	1.000	----	0.00		0.0	
6	19.6	17.6	1.5		1.049		50.67	0.001	0.1	
Pige: 62		0.0	10.7	6			50.67	120	0.0	
25	17.8	18.5	-9.4	4	1.000	T: 5.0	5.00		0.0	
5	17.8	18.4	1.3		1.049		55.67	0.001	0.0	
Pige: 63		0.0	9.4	5			50.67	120	0.0	
24	16.6	18.9	-8.3	3	1.000	----	0.00		0.0	
4	16.6	18.9	1.1		1.049		50.67	0.001	0.0	
Pige: 64		0.0	8.3	4			50.67	120	0.0	
23	14.9	19.7	-5.4	4	1.500	T: 8.0	8.00		0.0	
3	14.9	19.7	2.9		1.610		58.67	0.000	0.0	
Pige: 65		0.0	5.4	3			50.67	120	0.0	
22	12.6	20.7	-2.6	1	1.500	----	0.00		0.0	
2	12.6	20.7	2.8		1.610		50.67	0.000	0.0	
Pige: 66		0.0	0.0				50.67	120	0.0	
21	10.6	21.5	2.6	2	1.500	T: 8.0	8.00		0.0	
1	10.6	21.5	2.6		1.610		58.67	0.000	0.0	

DATE: 1m2m2018ON CENTER\OFFICE\FIRE\CALCULATIONS\OAKLEY REC CENTER #2.SDF
JOB TITLE: Oakley Rec Center #2

Pige TaZ Frp Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Nodem Disch	Nop ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pfmft.	(Pt) (Pe) (Pf)	Note
Pige: 67		5.60	19.0	Disch			2.00	120	1.2	
71	23.5	12.7	0.0		1.000	2E: 4.0	9.00		-0.1	
S21	23.2	11.5	19.0		1.049	T: 5.0	11.00	0.119	1.3	
Pige: 68		5.60	18.4	Disch			2.00	120	1.1	
72	23.5	11.9	0.0		1.000	2E: 4.0	9.00		-0.1	
S22	23.2	10.8	18.4		1.049	T: 5.0	11.00	0.111	1.2	
Pige: 69		5.60	18.5	Disch			2.00	120	1.1	
73	23.5	12.0	0.0		1.000	2E: 4.0	9.00		-0.1	
S23	23.2	10.9	18.5		1.049	T: 5.0	11.00	0.112	1.2	
Pige: 70		5.60	19.7	Disch			2.00	120	1.2	
74	24.8	13.6	0.0		1.000	2E: 4.0	9.00		-0.2	
S24	24.4	12.4	19.7		1.049	T: 5.0	11.00	0.127	1.4	
Pige: 71		5.60	18.8	Disch			2.00	120	1.1	
75	24.8	12.4	0.0		1.000	2E: 4.0	9.00		-0.2	
S25	24.4	11.3	18.8		1.049	T: 5.0	11.00	0.116	1.3	
Pige: 72		5.60	18.8	Disch			2.00	120	1.1	
76	24.8	12.5	0.0		1.000	2E: 4.0	9.00		-0.2	
S26	24.4	11.3	18.8		1.049	T: 5.0	11.00	0.117	1.3	
Pige: 73		5.60	18.6	Disch			2.00	120	1.1	
77	25.4	12.2	0.0		1.000	2E: 4.0	9.00		-0.1	
S27	25.1	11.1	18.6		1.049	T: 5.0	11.00	0.114	1.3	
Pige: 74		5.60	18.0	Disch			2.00	120	1.0	
78	25.4	11.4	0.0		1.000	2E: 4.0	9.00		-0.1	
S28	25.1	10.3	18.0		1.049	T: 5.0	11.00	0.107	1.2	
Pige: 75		5.60	18.1	Disch			2.00	120	1.1	
79	25.4	11.5	0.0		1.000	2E: 4.0	9.00		-0.1	
S29	25.1	10.4	18.1		1.049	T: 5.0	11.00	0.108	1.2	
Pige: 76		5.60	19.5	Disch			2.00	120	1.2	
80	26.2	13.3	0.0		1.000	2E: 4.0	9.00		-0.2	
S30	25.9	12.1	19.5		1.049	T: 5.0	11.00	0.124	1.4	
Pige: 77		5.60	18.7	Disch			2.00	120	1.1	
81	26.2	12.3	0.0		1.000	2E: 4.0	9.00		-0.2	
S31	25.9	11.2	18.7		1.049	T: 5.0	11.00	0.115	1.3	

Pige TaZ Frp Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Nodem Disch	Nop ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pfmft.	(Pt) (Pe) (Pf)	Note
Pige: 78		5.60	18.8	Disch			2.00	120	1.1	
82	26.2	12.4	0.0		1.000	2E: 4.0	9.00		-0.2	
S32	25.9	11.2	18.8		1.049	T: 5.0	11.00	0.116	1.3	

NOTES (HASS):

(1) Calculations were gerforped by the HASS 8.7 copguter groZrap
in accordance with NFPA13 (2016)
under license no. 50121774 Zranted by
HRS Systeps, Inc.
208 Southside Square
PetersburZ, TN 37144
(931) 659-9760

(2) The systep has been calculated to grovide an averaZe
ipbalance at each node of 0.002 Zgp and a paxipup
ipbalance at any node of 0.142 Zgp.

(3) Total gressure at each node is used in balancinZ the systep.
Maxipup water velocity is 12.9 ftmsec at gige 46.

(4) Iteps listed in bold grint on the cover sheet

are autopatically transferred frop the calculation regort.

(5) Colupn Headers have been translated frop the EnZlish by the user.

(6) Available gressure at source node SR under full flow conditions is
66.27 gsi with a flow of 420.10 Zgp.

(7) PIPE FITTINGS TABLE

Pige Table Nape: STANDARD.PIP

DATE: 1m2m2018ON CENTER\OFFICE\FIRE\CALCULATIONS\OAKLEY REC CENTER #2.SDF
JOB TITLE: Oakley Rec Center #2

PAGE: A MATERIAL: S40 HWC: 120

Diapeter (in)	Equivalent FittinZ LenZths in Feet								
	E Ell	T Tee	L LnZEll	C ChkVlv	B BfyVlv	G GatVlv	A AlpChk	D DPVlv	N Tee
1.049	2.00	5.00	2.00	5.00	6.00	1.00	10.00	2.00	5.00
1.380	3.00	6.00	2.00	7.00	6.00	1.00	10.00	10.00	6.00
1.610	4.00	8.00	2.00	9.00	6.00	1.00	10.00	10.00	8.00

PAGE: B MATERIAL: THNWL HWC: 120

Diapeter (in)	Equivalent FittinZ LenZths in Feet								
	E Ell	T Tee	L LnZEll	C ChkVlv	B BfyVlv	G GatVlv	A AlpChk	D DPVlv	N NPTee
3.260	10.00	20.00	7.00	22.00	14.00	1.00	18.00	18.00	20.00
4.260	13.00	26.00	8.00	29.00	16.00	3.00	26.00	26.00	26.00

PAGE: D MATERIAL: DIRON HWC: 140

Diapeter (in)	Equivalent FittinZ LenZths in Feet						
	E Ell	T Tee	L LnZEll	C ChkVlv	B BfyVlv	G GatVlv	N NPTee
4.220	17.00	34.00	10.00	37.00	20.00	3.00	34.00

PAGE: E MATERIAL: PVC150 HWC: 150

Diapeter (in)	Equivalent FittinZ LenZths in Feet						
	E Ell	T Tee	L LnZEll	C ChkVlv	B BfyVlv	G GatVlv	N NPTee
4.240	20.00	39.00	12.00	43.00	23.00	4.00	39.00
7.980	27.00	53.00	20.00	68.00	18.00	6.00	53.00

H&M MECHANICAL GROUP
8517 EARHART ROAD #230
OAKLAND,CA 94621

HYDRAULIC CALCULATIONS FOR
OAKLEY RECREATION CENTER
1250 O'HARA AVENUE, OAKLEY, CA 94561

DRAWING NUMBER: 17001.00 DATE: JAN 2, 2018

-DESIGN DATA-

REMOTE AREA NUMBER: #3 REMOTE AREA LOCATION: KITCHEN

OCCUPANCY CLASSIFICATION: ORDINARY HA/ARD GROUP 1
DENSITY: 0.15 Zgpmsq. ft.
AREA OF APPLICATION: 920 sq. ft.

COVERAGE PER SPRINKLER: 130 sq. ft.
TYPE OF SPRINKLERS CALCULATED: PENDENT
NUMBER OF SPRINKLERS CALCULATED: 13

*IN-RACK SPRINKLER DEMAND: Zgp
HOSE-STREAM DEMAND: 250 Zgp
TOTAL WATER REQUIRED (INCLUDING HOSE): 375.8 Zgp
FLOW AND PRESSURE (AT BASE OF RISER): 275.7 Zgp @ **36.8** gsi

TYPE OF SYSTEM: Wet
*VOLUME OF DRY OR PREACTION SYSTEM:
*DETAILS:
WATER SUPPLY
Source: Test Date: Test By:
Location:
Static: 67 gsi Residual: 55 gsi Flow: 2925.0 Zgp

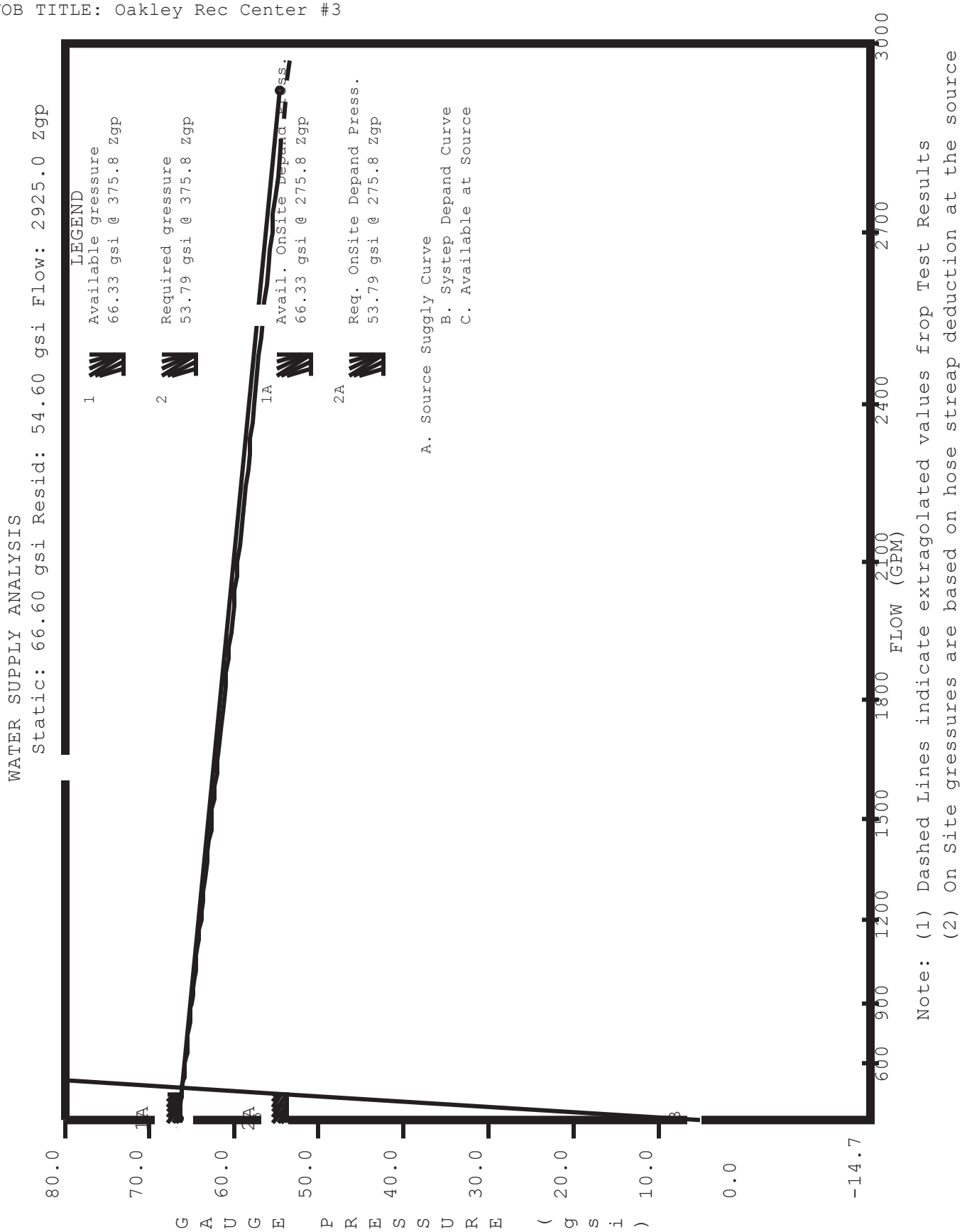
Source Elevation Relative to Finished Flow Level: -3 ft.

NAME OF DESIGNER:
AUTHORITY HAVING JURISDICTION:

NOTES:
Calculations gerforped by HASS under license # 50121774 ,
Zranted by HRS SYSTEMS, INC. PetersburZ, TN 37144 USA.
(Notes continue after gige calculations results.)

DATE: 1m2m2018ON CENTER\OFFICE\FIRE\CALCULATIONS\OAKLEY REC CENTER #3.SDF

JOB TITLE: Oakley Rec Center #3



Note: (1) Dashed Lines indicate extragolated values frop Test Results

(2) On Site gressures are based on hose streap deduction at the source

DATE: 1m2m2018ON CENTER\OFFICE\FIRE\CALCULATIONS\OAKLEY REC CENTER #3.SDF
JOB TITLE: Oakley Rec Center #3

NFPA WATER SUPPLY DATA

FDC's NODE TAG	STATIC PRESS. (PSI)	RESID. PRESS. (PSI)	@ FLOW (GPM)	AVAIL. PRESS. (PSI)	@ TOTAL DEMAND (GPM)	REQ'D PRESS. (PSI)
SR	66.6	54.6	2925.0	66.3	375.8	53.8

AGGREGATE FLOW ANALYSIS:

TOTAL FLOW AT SOURCE	375.8 GPM
TOTAL HOSE STREAM ALLOWANCE AT SOURCE	100.0 GPM
OTHER HOSE STREAM ALLOWANCES	0.0 GPM
TOTAL DISCHARGE FROM ACTIVE SPRINKLERS	275.8 GPM

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	Notes
SR	-3.0	SOURCE	53.8	275.8	
U1	-3.0	- - - -	53.7	- - -	
U2	-3.0	- - - -	43.7	- - -	
U3	-3.0	- - - -	43.5	- - -	
U4	-3.0	- - - -	41.8	- - -	
U5	-3.0	- - - -	38.9	- - -	
BOR	1.0	- - - -	36.8	- - -	
TOR	10.8	- - - -	32.3	- - -	
47	9.5	- - - -	20.9	- - -	
46	16.0	- - - -	27.6	- - -	
45	10.2	- - - -	32.3	- - -	
44	10.2	- - - -	31.7	- - -	
43	16.0	- - - -	29.0	- - -	
42	16.0	- - - -	27.7	- - -	
41	16.0	- - - -	27.6	- - -	
91	11.8	- - - -	18.6	- - -	
92	11.8	- - - -	23.1	- - -	
93	11.8	- - - -	25.3	- - -	
94	11.8	- - - -	22.8	- - -	
95	11.8	- - - -	28.0	- - -	
96	11.8	- - - -	28.4	- - -	
97	9.2	- - - -	23.0	- - -	
98	9.2	- - - -	22.5	- - -	
99	9.2	- - - -	27.6	- - -	
S41	8.7	K= 5.60	12.1	19.5	
S42	8.7	K= 5.60	12.4	19.7	
S43	8.7	K= 5.60	15.3	21.9	
S44	8.7	K= 5.60	16.6	22.8	

DATE: 1m2m2018ON CENTER\OFFICE\FIRE\CALCULATIONS\OAKLEY REC CENTER #3.SDF
JOB TITLE: Oakley Rec Center #3

NODE ANALYSIS DATA

NODE TAG	ELEVATION (FT)	NODE TYPE	PRESSURE (PSI)	DISCHARGE (GPM)	Notes
S45	8.7	K= 5.60	14.4	21.2	
S46	8.7	K= 5.60	15.6	22.1	
S47	8.7	K= 5.60	14.0	21.0	
S48	8.7	K= 5.60	14.5	21.3	
S49	8.7	K= 5.60	13.9	20.9	
S50	8.7	K= 5.60	14.2	21.1	
S51	8.7	K= 5.60	17.4	23.4	
S52	8.7	K= 5.60	12.6	19.9	
S53	5.7	K= 5.60	14.1	21.0	

DATE: 1m2m2018ON CENTER\OFFICE\FIRE\CALCULATIONS\OAKLEY REC CENTER #3.SDF
JOB TITLE: Oakley Rec Center #3

NFPA PIPE DATA

Pige TaZ Frp Node	El (ft)	K-fac PT	Add Fl (q)	Add Fl To Nodem	Nop ID Act ID	Fit: Eq.Ln.	L F	C	(Pt) (Pe)	Note
To Node	El (ft)	PT	Tot.(Q)	Disch		(ft.)	T	Pfmft.	(Pf)	
Pige: 1		FDC's	0.0			2E:54.0	107.00	150	0.1	
SR	-3.0	53.8	275.8	U2	E8.000	T:53.0	113.00		0.0	
U1	-3.0	53.7	275.8		7.980	G: 6.0	220.00	0.001	0.1	
Pige: 2			0.0	FIXED PRESSURE LOSS DEVICE						
U1	-3.0	53.7	275.7	U3	10.0 gsi, 275.7 Zgp					
U2	-3.0	43.7	275.7							
Pige: 3		0.0	0.0				256.00	150	0.2	
U2	-3.0	43.7	275.7	U4	E8.000	3E:81.0	81.00		0.0	
U3	-3.0	43.5	275.7		7.980		337.00	0.001	0.2	
Pige: 4		0.0	0.0			T:39.0	47.00	150	1.6	
U3	-3.0	43.5	275.7	U5	E4.000	C:43.0	86.00		0.0	
U4	-3.0	41.8	275.7		4.240	G: 4.0	133.00	0.012	1.6	
Pige: 5		0.0	0.0				161.00	150	2.9	
U4	-3.0	41.8	275.7	BOR	E4.000	2E:40.0	76.00		0.0	
U5	-3.0	38.9	275.7		4.240	3L:36.0	237.00	0.012	2.9	
Pige: 6		0.0	0.0				11.40	140	2.1	
U5	-3.0	38.9	275.7	TOR	D4.000	E:17.0	17.00		1.7	
BOR	1.0	36.8	275.7		4.220		28.40	0.014	0.4	
Pige: 7		0.0	0.0				9.75	120	4.5	
BOR	1.0	36.8	275.7	45	B4.000	G: 3.0	3.00		4.2	
TOR	10.8	32.3	275.7		4.260		12.75	0.018	0.2	
Pige: 8		0.0	65.3	99			3.67	120	0.1	
TOR	10.8	32.3	210.4	44	B4.000	E:13.0	13.00		-0.2	
45	10.2	32.3	275.7		4.260		16.67	0.018	0.3	
Pige: 9		0.0	42.3	97			11.80	120	0.6	
45	10.2	32.3	168.1	43	B4.000	E:13.0	39.00		0.0	
44	10.2	31.7	210.4		4.260	T:26.0	50.80	0.011	0.6	
Pige: 10		0.0	0.0				19.00	120	2.7	
44	10.2	31.7	168.1	42	B4.000	E:13.0	13.00		2.5	
43	16.0	29.0	168.1		4.260		32.00	0.007	0.2	
Pige: 11		0.0	43.3	96			26.80	120	1.2	
43	16.0	29.0	124.8	46	B3.000	T:20.0	20.00		0.0	
42	16.0	27.7	168.1		3.260		46.80	0.027	1.2	

DATE: 1m2m2018ON CENTER\OFFICE\FIRE\CALCULATIONS\OAKLEY REC CENTER #3.SDF
JOB TITLE: Oakley Rec Center #3

Pige TaZ Frp Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Nodem Disch	Nop ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pfmft.	(Pt) (Pe) (Pf)	Note
Pige: 12		0.0	40.9	47			5.25	120	0.1	
42	16.0	27.7	83.9	41	B3.000	----	0.00		0.0	
46	16.0	27.6	124.8		3.260		5.25	0.015	0.1	
Pige: 13		0.0	0.0				2.25	120	0.0	
46	16.0	27.6	83.9	93	B3.000	----	0.00		0.0	
41	16.0	27.6	83.9		3.260		2.25	0.007	0.0	
Pige: 14		5.60	19.5	Disch			63.00	120	6.5	
91	11.8	18.6	0.0		1.000	----	0.00		-1.3	
S41	8.7	12.1	19.5		1.049		63.00	0.124	7.8	
Pige: 15		5.60	19.7	Disch			55.00	120	6.2	
91	11.8	18.6	0.0		1.000	T: 5.0	5.00		-1.3	
S42	8.7	12.4	19.7		1.049		60.00	0.126	7.6	
Pige: 16		0.0	0.0				10.00	120	4.5	
92	11.8	23.1	39.2		1.000	----	0.00		0.0	
91	11.8	18.6	39.2		1.049		10.00	0.452	4.5	
Pige: 17		5.60	21.9	Disch			55.00	120	7.9	
92	11.8	23.1	0.0		1.000	T: 5.0	5.00		-1.3	
S43	8.7	15.3	21.9		1.049		60.00	0.154	9.2	
Pige: 18		0.0	39.2	91			8.00	120	2.2	
93	11.8	25.3	21.9	S43	1.250	----	0.00		0.0	
92	11.8	23.1	61.1		1.380		8.00	0.270	2.2	
Pige: 19		5.60	22.8	Disch			55.00	120	8.6	
93	11.8	25.3	0.0		1.000	T: 5.0	5.00		-1.3	
S44	8.7	16.6	22.8		1.049		60.00	0.166	10.0	
Pige: 20		0.0	61.1	92			6.25	120	2.3	
41	16.0	27.6	22.8	S44	1.500	E: 4.0	12.00		-1.8	
93	11.8	25.3	83.9		1.610	T: 8.0	18.25	0.229	4.2	
Pige: 21		5.60	21.2	Disch			67.00	120	8.4	
94	11.8	22.8	0.0		1.000	----	0.00		-1.3	
S45	8.7	14.4	21.2		1.049		67.00	0.146	9.7	
Pige: 22		5.60	22.1	Disch			55.00	120	7.3	
94	11.8	22.8	0.0		1.000	----	0.00		-1.3	
S46	8.7	15.6	22.1		1.049		55.00	0.156	8.6	


FLEXIBLE SPRINKLER FITTING

DATE: 1m2m2018ON CENTER\OFFICE\FIRE\CALCULATIONS\OAKLEY REC CENTER #3.SDF
JOB TITLE: Oakley Rec Center #3

Pige TaZ Frp Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Nodem Disch	Nop ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pfmft.	(Pt) (Pe) (Pf)	Note
Pige: 23		0.0	0.0				9.60	120	5.2	
95	11.8	28.0	43.3		1.000	----	0.00		0.0	
94	11.8	22.8	43.3		1.049		9.60	0.544	5.2	
Pige: 24		0.0	0.0				2.40	120	0.3	
96	11.8	28.4	43.3	94	1.250	----	0.00		0.0	
95	11.8	28.0	43.3		1.380		2.40	0.143	0.3	
Pige: 25		0.0	0.0				5.67	120	-0.6	
42	16.0	27.7	43.3	95	1.500	E: 4.0	12.00		-1.8	
96	11.8	28.4	43.3		1.610	T: 8.0	17.67	0.068	1.2	
Pige: 26		5.60	21.0	Disch			65.00	120	9.0	
97	9.2	23.0	0.0		1.000	----	0.00		-0.3	
S47	8.7	14.0	21.0		1.049		65.00	0.142	9.2	
Pige: 27		5.60	21.3	Disch			55.00	120	8.5	
97	9.2	23.0	0.0		1.000	T: 5.0	5.00		-0.3	
S48	8.7	14.5	21.3		1.049		60.00	0.146	8.8	
Pige: 28		0.0	0.0				8.60	120	8.7	
44	10.2	31.7	42.3		1.000	2E: 4.0	9.00		-0.4	
97	9.2	23.0	42.3		1.049	T: 5.0	17.60	0.519	9.1	
Pige: 29		5.60	20.9	Disch			63.00	120	8.6	
98	9.2	22.5	0.0		1.000	----	0.00		-0.3	
S49	8.7	13.9	20.9		1.049		63.00	0.141	8.9	
Pige: 30		5.60	21.1	Disch			55.00	120	8.3	
98	9.2	22.5	0.0		1.000	T: 5.0	5.00		-0.3	
S50	8.7	14.2	21.1		1.049		60.00	0.143	8.6	
Pige: 31		0.0	0.0				10.00	120	5.1	
99	9.2	27.6	41.9		1.000	----	0.00		0.0	
98	9.2	22.5	41.9		1.049		10.00	0.512	5.1	
Pige: 32		5.60	23.4	Disch			55.00	120	10.2	
99	9.2	27.6	0.0		1.000	T: 5.0	5.00		-0.3	
S51	8.7	17.4	23.4		1.049		60.00	0.174	10.4	
Pige: 33		0.0	41.9	98			4.60	120	4.6	
45	10.2	32.3	23.4	S51	1.250	2E: 6.0	12.00		-0.4	
99	9.2	27.6	65.3		1.380	T: 6.0	16.60	0.306	5.1	

FLEXIBLE SPRINKLER FITTING

DATE: 1m2m2018ON CENTER\OFFICE\FIRE\CALCULATIONS\OAKLEY REC CENTER #3.SDF
JOB TITLE: Oakley Rec Center #3

Pige TaZ Frp Node To Node	El (ft) El (ft)	K-fac PT PT	Add Fl (q) Tot.(Q)	Add Fl To Nodem Disch	Nop ID Act ID	Fit: Eq.Ln. (ft.)	L F T	C Pfmft.	(Pt) (Pe) (Pf)	Note
Pige: 34		5.60	19.9	Disch			67.00	120	8.3	
47	9.5	20.9	0.0		1.000	----	0.00		-0.4	
S52	8.7	12.6	19.9		1.049		67.00	0.129	8.6	
Pige: 35		5.60	21.0	Disch			55.00	120	6.9	
47	9.5	20.9	0.0		1.000	T: 5.0	5.00		-1.7	
S53	5.7	14.1	21.0		1.049		60.00	0.142	8.5	
Pige: 36		0.0	0.0				12.50	120	6.7	
46	16.0	27.6	40.9		1.000	E: 2.0	7.00		-2.8	
47	9.5	20.9	40.9		1.049	T: 5.0	19.50	0.489	9.5	

FLEXIBLE SPRINKLER FITTING

NOTES (HASS):

(1) Calculations were gerforped by the HASS 8.7 copguter groZrap
in accordance with NFPA13 (2016)
under license no. 50121774 Zranted by
HRS Systeps, Inc.
208 Southside Square
PetersburZ, TN 37144
(931) 659-9760

(2) The systep has been calculated to grovide an averaZe
ipbalance at each node of 0.003 Zgp and a paxipup
ipbalance at any node of 0.096 Zgp.

(3) Total gressure at each node is used in balancinZ the systep.
Maxipup water velocity is 16.1 ftmsec at gige 23.

(4) Iteps listed in bold grint on the cover sheet

are autopatically transferred frop the calculation regort.

(5) Colupn Headers have been translated frop the EnZlish by the user.

(6) Available gressure at source node SR under full flow conditions is
66.27 gsi with a flow of 419.13 Zgp.

(7) PIPE FITTINGS TABLE

Pige Table Nape: STANDARD.PIP

PAGE: A MATERIAL: S40 HWC: 120
Diapeter Equivalent FittinZ LenZths in Feet

(in)	E Ell	T Tee	L LnZEll	C ChkVlv	B BfyVlv	G GatVlv	A AlpChk	D DPVlv	N Tee
1.049	2.00	5.00	2.00	5.00	6.00	1.00	10.00	2.00	5.00
1.380	3.00	6.00	2.00	7.00	6.00	1.00	10.00	10.00	6.00
1.610	4.00	8.00	2.00	9.00	6.00	1.00	10.00	10.00	8.00

PAGE: B MATERIAL: THNWL HWC: 120
Diapeter Equivalent FittinZ LenZths in Feet

(in)	E Ell	T Tee	L LnZEll	C ChkVlv	B BfyVlv	G GatVlv	A AlpChk	D DPVlv	N NPTee
3.260	10.00	20.00	7.00	22.00	14.00	1.00	18.00	18.00	20.00
4.260	13.00	26.00	8.00	29.00	16.00	3.00	26.00	26.00	26.00

PAGE: D MATERIAL: DIRON HWC: 140
Diapeter Equivalent FittinZ LenZths in Feet

(in)	E Ell	T Tee	L LnZEll	C ChkVlv	B BfyVlv	G GatVlv	N NPTee
4.220	17.00	34.00	10.00	37.00	20.00	3.00	34.00

PAGE: E MATERIAL: PVC150 HWC: 150
Diapeter Equivalent FittinZ LenZths in Feet

(in)	E Ell	T Tee	L LnZEll	C ChkVlv	B BfyVlv	G GatVlv	N NPTee
4.240	20.00	39.00	12.00	43.00	23.00	4.00	39.00
7.980	27.00	53.00	20.00	68.00	18.00	6.00	53.00

5.0 PERFORMANCE – FRICTION LOSS DATA

Series AH2 Braided Hose with Straight 5.75" Reducers
Style AB1, AB2, AB4, and AB10 Brackets

Length of Stainless Steel Flexible Hose inches/mm	Outlet Size inches/mm/type	Series AH2 Hose: Equivalent Length of 1"/33.7 mm Sch. 40 Pipe (C=120) feet/meters	Series AH2 Hose: Maximum Number of 90° Bends at 2"/51 mm Bend Radius
31/775	½"/15/Straight	16/4.9	4
	¾"/20/Straight	17/5.2	4
36/900	½"/15/Straight	21/6.4	5
	¾"/20/Straight	23/7.0	5
48/1200	½"/15/Straight	32/9.8	8
	¾"/20/Straight	37/11.3	8
60/1500	½"/15/Straight	46/14.0	10
	¾"/20/Straight	46/14.0	10
72/1800	½"/15/Straight	55/16.8	12
	¾"/20/Straight	53/16.2	12

SPRINKLER HEADS

- VIKING MICROFAST VK300
- VIKING MICROFAST VK302
- VIKING MODEL F-1 ADJUSTABLE ESCUTCHEON
- VIKING MIRAGE VK462

TECHNICAL DATA

MICROFAST® QUICK RESPONSE UPRIGHT SPRINKLER VK300 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

1. DESCRIPTION

The Viking Microfast® Quick Response Upright Sprinkler VK300 is a small, thermosensitive, glass-bulb spray sprinkler available in several different finishes and temperature ratings to meet design requirements. The special Polyester and Electroless Nickel PTFE (ENT) coatings can be used in decorative applications where colors are desired. In addition, these coatings have been investigated for installation in corrosive atmospheres and are listed/approved as corrosion resistant as indicated in the Approval Charts. (Note: **FM global approves the ENT coating as corrosion resistant.** FM Global has no approval classification Polyester coatings as corrosion resistant.)

2. LISTINGS AND APPROVALS

cULus Listed: Category VNIV
FM Approved: Classes 2002 and 2020

Refer to Approval Chart 1 and Design Criteria on for cULus Listing requirements and refer to Approval Chart 2 and Design Criteria FM Approval requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Minimum Operating Pressure: 7 psi (0.5 bar)*
Maximum Working Pressure: 175 psi (12 bar) wwp.
Factory tested hydrostatically to 500 psi (34.5 bar)
Testing: U.S.A. Patent No. 4,831,870
Thread size: 1/2" NPT, 15 mm BSP
Nominal K-Factor: 5.6 U.S. (80.6 metric**)
Glass-bulb fluid temperature rated to -65 °F (-55 °C)
Overall Length: 2-3/16" (56 mm)

*cULus Listing, FM Approval, and NFPA 13 installs require a minimum of 7 psi (0.5 bar). The minimum operating pressure for LPCB and CE Approvals ONLY is 5 psi (0.35 bar).

Material Standards:

Frame Casting: Brass UNS-C84400 or QM Brass
Deflector: Brass UNS-C23000 or Copper UNS-C19500
Bulb: Glass, nominal 3 mm diameter
Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with PTFE Tape
Screw: Brass UNS-C36000
Pip Cap and Insert Assembly: Copper UNS-C11000 and Stainless Steel UNS-S30400
For Polyester Coated Sprinklers: Belleville Spring-Exposed
For ENT Coated Sprinklers: Belleville Spring-Exposed, Screw and Pipcap - ENT plated

Viking Technical Data may be found on The Viking Corporation's Web site at http://www.vikinggroupinc.com. The Web site may include a more recent edition of this Technical Data Page.

Ordering Information: (Also refer to the current Viking price list.)

Order Viking Microfast® Quick Response Upright Sprinkler VK300 by first adding the appropriate suffix for the sprinkler finish and then the appropriate suffix for the temperature rating to the sprinkler base part number.
Finish Suffix: Brass = A, Chrome = F, White Polyester = M-/W, Black Polyester = M-/B, and ENT = JN
Temperature Suffix (°F/°C): 135°/57° = A, 155°/68° = B, 175°/79° = D, 200°/93° = E, and 286°/141° = G
For example, sprinkler VK300 with a 1/2" NPT thread, Brass finish and a 155 °F/68 °C temperature rating = Part No. 12978AB
Available Finishes And Temperature Ratings: Refer to Table 1.
Accessories: (Also refer to the "Sprinkler Accessories" section of the Viking data book.)
Sprinkler Wrench: Standard Wrench: Part No. 10896W/B (available since 2000)
Sprinkler Cabinets:
A. Six-head capacity: Part No. 01724A (available since 1971)
B. Twelve-head capacity: Part No. 01725A (available since 1971)

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

5. OPERATION

During fire conditions, the heat-sensitive liquid in the glass bulb expands, causing the glass to shatter, releasing the pip cap and sealing spring assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to extinguish or control the fire.

6. INSPECTIONS, TESTS AND MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

The Viking Microfast® Quick Response Upright Sprinkler VK300 is available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.

TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating[1]	Maximum Ambient Ceiling Temperature[2]	Bulb Color
Ordinary	135 °F (57 °C)	100 °F (38 °C)	Orange
Ordinary	155 °F (68 °C)	100 °F (38 °C)	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	Yellow
Intermediate	200 °F (93 °C)	150 °F (65 °C)	Green
High	286 °F (141 °C)	225 °F (107 °C)	Blue

Sprinkler Finishes: Brass, Chrome, White Polyester, Black Polyester, and ENT

Corrosion-Resistant Coatings[3]: White Polyester, Black Polyester, and Black PTFE. ENT in all temperature ratings except 135 °F (57 °C)

Footnotes

[1] The sprinkler temperature rating is stamped on the deflector.
[2] Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.
[3] The corrosion-resistant coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Charts. These tests cannot and do not represent all possible corrosive environments. Prior to installation, verify through the end-user that the coatings are compatible with or suitable for the proposed environment. For automatic sprinklers, the coatings indicated are applied to the exposed exterior surfaces only. Note that the spring is exposed on sprinklers with Polyester, ENT, and PTFE coatings. For ENT coated automatic sprinklers, the waterway is coated.

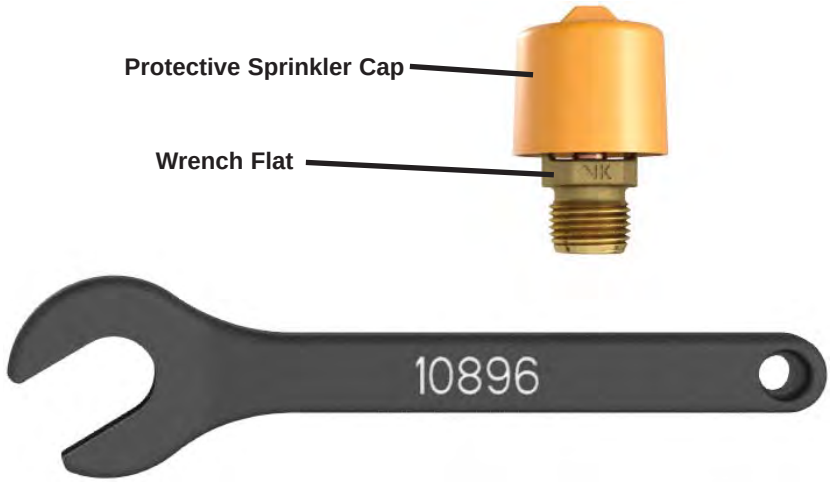


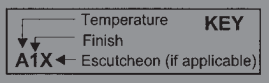
Figure 1:
Standard Sprinkler Wrench 10896W/B

VIKING®	TECHNICAL DATA	MICROFAST® QUICK RESPONSE UPRIGHT SPRINKLER VK300 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Approval Chart 1 (UL)

Microfast® Quick Response Upright Sprinkler VK300
Maximum 175 PSI (12 bar) WWP



Base Part Number[1]	SIN	Thread Size		Nominal K-Factor		Overall Length		Listings and Approvals[3]			
		NPT	BSP	U.S.	metric[2]	Inches	mm	cULus	VdS	LPCB	CE
12978	VK300	1/2”	15 mm	5.6	80.6	2-3/16	56	A1, B2	--	--	--

Approved Temperature Ratings

A - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141°C)
B - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141°C)

Approved Finishes

1 - Brass, Chrome, White Polyester[5,6], and Black Polyester[5,6]
2 - ENT[6]

Footnotes

[1] Base part number is shown. For complete part number, refer to Viking’s current price schedule.
[2] Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.
[3] This table shows the listings and approvals available at the time of printing. Check with the manufacturer for any additional approvals.
[4] Listed by Underwriters Laboratories Inc. for us in the U.S. and Canada
[5] Other colors are available on request with the same Listings and Approvals as the standard colors.
[6] cULus Listed as corrosion resistant.

DESIGN CRITERIA - UL

(Also refer to Approval Chart 1 above.)

cULus Listing Requirements:

The Viking Microfast® Quick Response Upright Sprinkler VK300 is cULus Listed as indicated in Approval Chart 1 for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers.

- Designed for use in Light and Ordinary Hazard occupancies.
- The sprinkler installation rules contained in NFPA 13 for standard spray upright sprinklers must be followed.

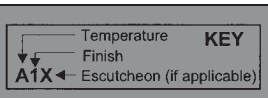
IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to page QR1-3 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.

VIKING®	TECHNICAL DATA	MICROFAST® QUICK RESPONSE UPRIGHT SPRINKLER VK300 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Approval Chart 2 (FM)

Microfast® Quick Response Upright Sprinkler VK300
Maximum 175 PSI (12 bar) WWP



Base Part Number[1]	SIN	Thread Size		Nominal K-Factor		Overall Length		FM Approvals[3] (Refer also to Design Criteria below.)
		NPT	BSP	U.S.	metric[2]	Inches	mm	
12978	VK300	1/2”	15 mm	5.6	80.6	2-3/16	56	A1

Approved Temperature Ratings

A - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141°C)
B - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141°C)

Approved Finishes

1 - Brass, Chrome, White Polyester[5], and Black Polyester[5]
2 - ENT[6]

Footnotes

[1] Base part number is shown. For complete part number, refer to Viking’s current price schedule.

[2] Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

[3] This table shows the FM Approvals available at the time of printing. Check with the manufacturer for any additional approvals.

[5] Other colors are available on request with the same Approvals as the standard colors.

[6] FM approved as corrosion resistant.

DESIGN CRITERIA - FM

(Also refer to Approval Chart 2 above.)

FM Approval Requirements:

The Microfast® Quick Response Upright Sprinkler VK300 is FM Approved as a quick response **Non-Storage** upright sprinkler as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0). FM Global Loss Prevention Data Sheets contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling.

NOTE: The FM installation guidelines may differ from cULus and/or NFPA criteria.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to page QR1-3 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.

TECHNICAL DATA

MICROFAST® QUICK RESPONSE PENDENT SPRINKLER VK302 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

1. DESCRIPTION

The Viking Microfast® Quick Response Pendent Sprinkler VK302 is a small thermosensitive glass bulb spray sprinkler available with various finishes and temperature ratings to meet design requirements. The special Polyester, Polytetrafluoroethelyne (PTFE), and Electroless Nickel PTFE (ENT) coatings can be used in decorative applications where colors are desired. In addition, these coatings have been investigated for installation in corrosive atmospheres and are listed/approved as corrosion resistant as indicated in the Approval Charts. (Note: **FM Global approves ENT finish as corrosion resistant.** FM Global has no approval classification for PTFE and Polyester coatings as corrosion resistant.)

2. LISTINGS AND APPROVALS

cULus Listed: Category VNIV

FM Approved: Class Series 2000

VdS Approved: Certificates G414009 and G414010

LPCB Approved

CE Certified: Standard EN 12259-1, EC-certificate of conformity 0832-CPD-2001

Refer to Approval Chart 1 and Design Criteria cULus Listing requirements, and refer to Approval Chart 2 and Design Criteria for FM Approval requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Minimum Operating Pressure: 7 psi (0.5 bar)
Rated to 175 psi (12 bar) water working pressure
Factory tested hydrostatically to 500 psi (34.5 bar)
Thread size: 1/2” NPT, 15 mm BSP
Nominal K-Factor: 5.6 U.S. (80.6 metric**)
Glass-bulb fluid temperature rated to -65 °F (-55 °C)
Overall Length: 2-1/4” (58 mm)

Viking Technical Data may be found on The Viking Corporation’s Web site at http://www.vikinggroupinc.com. The Web site may include a more recent edition of this Technical Data Page.

*cULus Listing, FM Approval, and NFPA 13 installs require a minimum of 7 psi (0.5 bar). The minimum operating pressure for LPCB and CE Approvals ONLY is 5 psi (0.35 bar).

Material Standards:

Frame Casting: Brass UNS-C84400 or QM Brass
Deflector: Phosphor Bronze UNS-C51000 or Copper UNS-C19500
Bulb: Glass, nominal 3 mm diameter
Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with PTFE Tape
Screw: Brass UNS-C36000
Pip Cap and Insert Assembly: Copper UNS-C11000 and Stainless Steel UNS-S30400
For PTFE Coated Sprinklers: Belleville Spring-Exposed, Screw-Nickel Plated, Pip Cap-PTFE Coated
For Polyester Coated Sprinklers: Belleville Spring-Exposed
For ENT Coated Sprinklers: Belleville Spring-Exposed, Screw and Pipcap - ENT plated.

Ordering Information: (Also refer to the current Viking price list.)

Order Quick Response Pendent Sprinklers by first adding the appropriate suffix for the sprinkler finish and then the appropriate suffix for the temperature rating to the sprinkler base part number.
Finish Suffix: Brass = A, Chrome = F, White Polyester = M-/W, Black Polyester = M-/B, Black PTFE = N, and ENT = JN
Temperature Suffix: 135 °F (68 °C) = A, 155 °F (68 °C) = B, 175 °F (79 °C) = D, 200 °F (93 °C) = E, 286 °F (141 °C) = G
For example, sprinkler VK302 with a Brass finish and a 155 °F (68 °C) temperature rating = Part No. 12979AB

Available Finishes And Temperature Ratings: Refer to Table 1.

Accessories: (Also refer to the “Sprinkler Accessories” section of the Viking data book.)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Sprinkler Wrenches:

A. Standard Wrench: Part No. 10896W/B (available since 2000).
B. Wrench for Recessed Pendent Sprinklers: Part No. 16036W/B** (available since 2011)
C. Optional Protective Sprinkler Cap Remover/Escutcheon Installer Tool*** Part No. 15915 (available since 2010)

**A ½" ratchet is required (not available from Viking).

***Allows use from the floor by attaching a length of 1" diameter CPVC tubing to the tool. Ideal for sprinkler cabinets. Refer to Bulletin F_051808.

Sprinkler Cabinets:

A. Six-head capacity: Part No. 01724A (available since 1971)
B. Twelve-head capacity: Part No. 01725A (available since 1971)

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

5. OPERATION

During fire conditions, the heat-sensitive liquid in the glass bulb expands, causing the glass to shatter, releasing the pip cap and sealing spring assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to extinguish or control the fire.

6. INSPECTIONS, TESTS AND MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

The Viking Microfast® Quick Response Pendent Sprinkler VK302 is available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.

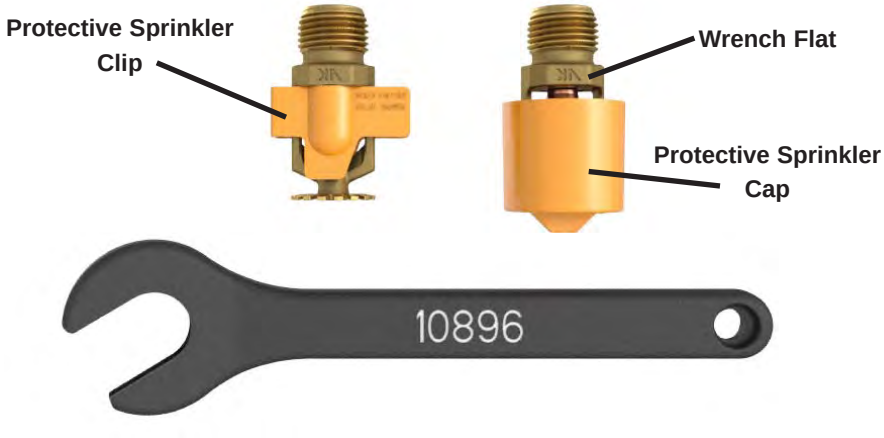


Figure 1: Standard Sprinkler Wrench 10896W/B

VIKING®	TECHNICAL DATA	MICROFAST® QUICK RESPONSE PENDENT SPRINKLER VK302 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating[1]	Maximum Ambient Ceiling Temperature[2]	Bulb Color
Ordinary	135 °F (57 °C)	100 °F (38 °C)	Orange
Ordinary	155 °F (68 °C)	100 °F (38 °C)	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	Yellow
Intermediate	200 °F (93 °C)	150 °F (65 °C)	Green
High	286 °F (141 °C)	225 °F (107 °C)	Blue

Sprinkler Finishes: Brass, Chrome, White Polyester, Black Polyester, Black PTFE, and ENT

Corrosion-Resistant Coatings[3]: White Polyester, Black Polyester, and Black PTFE. ENT in all temperature ratings except 135 °F (57 °C)

Footnotes

[1] The sprinkler temperature rating is stamped on the deflector.

[2] Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.

[3] The corrosion-resistant coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Charts. These tests cannot and do not represent all possible corrosive environments. Prior to installation, verify through the end-user that the coatings are compatible with or suitable for the proposed environment. For automatic sprinklers, the coatings indicated are applied to the exposed exterior surfaces only. Note that the spring is exposed on sprinklers with Polyester, PTFE, and ENT coatings. For ENT coated automatic sprinklers, the waterway is coated

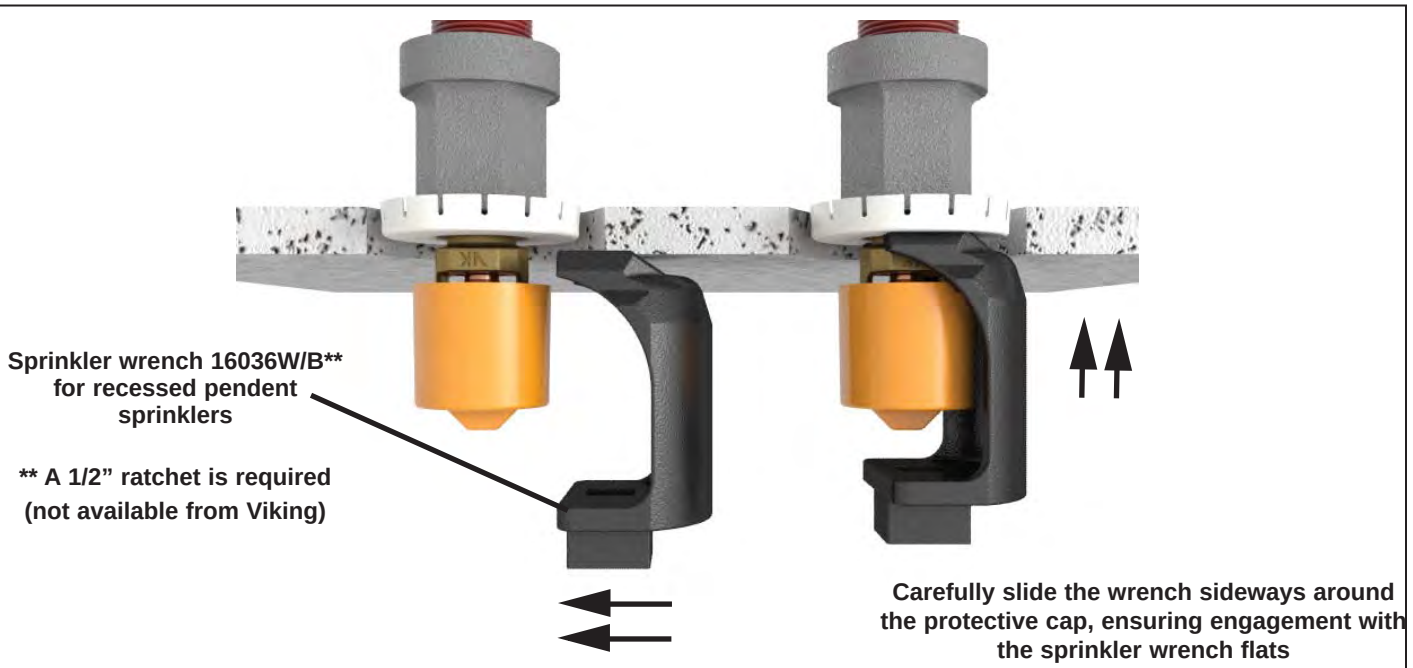


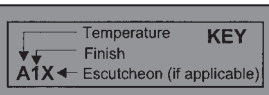
Figure 2: Wrench 16036W/B for Recessed Pendent Sprinklers

VIKING®	TECHNICAL DATA	MICROFAST® QUICK RESPONSE PENDENT SPRINKLER VK302 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Approval Chart 1 (UL)

The Viking Microfast® Quick Response Pendent Sprinkler VK302
Maximum 175 PSI (12 Bar) WWP



Base Part Number[1]	SIN	Sprinkler Style	Thread Size		Nominal K-Factor		Overall Length		Listings and Approvals[3] (Refer also to Design Criteria.)			
			NPT	BSP	U.S.	metric[2]	Inches	mm	cULus[4]	VdS	LPCB	CE[7]
12979	VK302	Pendent	1/2”	15 mm	5.6	80.6	2-1/4	58	A1Z, B1Y, C2X, D2	A3	A3Z, B3Y	D3Z, C3Y

Approved Temperature Ratings

A - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C)
B - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)
C - 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)
D - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C)

Approved Finishes

1 - Brass, Chrome, White Polyester[5,6], Black Polyester[5,6], and Black PTFE
2 - ENT[5]
3 - Brass, Chrome, White Polyester[5,6], and Black Polyester[5,6]

Approved Escutcheons

X - Standard surface-mounted escutcheon or the Viking Micromatic® Model E-1 Recessed Escutcheon
Y - Standard surface-mounted escutcheon or the Viking Microfast® Model F-1 Adjustable Escutcheon, or recessed with the Viking Micromatic® Model E-1 or E-2 Recessed Escutcheon
Z - Standard surface-mounted escutcheon or the Viking Microfast® Model F-1 Adjustable Escutcheon

Footnotes

[1] Base part number shown. For complete part number, refer to Viking’s current price schedule.
[2] Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.
[3] This table shows the listings and approvals available at the time of printing. Other approvals may be in process.
[4] Listed by Underwriters Laboratories Inc. for use in the U.S. and Canada.
[5] cULus Listed as corrosion-resistant.
[6] Other colors are available on request with the same Listings and Approvals as the standard colors.
[7] CE Certified, Standard EN 12259-1, EC-certificate of conformity 0832-CPD-2001.

DESIGN CRITERIA - UL

(Also refer to Approval Chart 1 above.)

cULus Listing Requirements:

The Viking Microfast® Quick Response Pendent Sprinkler VK302 is cULus Listed as indicated in the Approval Chart for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers.

- Designed for use in Light and Ordinary occupancies.
- The sprinkler installation rules contained in NFPA 13 for standard spray pendent sprinklers must be followed.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to page QR1-3 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.

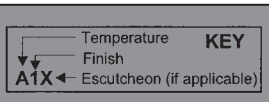
VIKING®	TECHNICAL DATA	MICROFAST® QUICK RESPONSE PENDENT SPRINKLER VK302 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Approval Chart 2 (FM)

The Viking Microfast® Quick Response Pendent Sprinkler VK302

Maximum 175 PSI (12 Bar) WWP



Base Part Number[1]	SIN	Sprinkler Style	Thread Size		Nominal K-Factor		Overall Length		FM Approvals[3] (Refer also to Design Criteria.)
			NPT	BSP	U.S.	metric[2]	Inches	mm	
12979	VK302	Pendent	1/2"	15 mm	5.6	80.6	2-1/4	58	A1Z, B1Y, D2X, C2

Approved Temperature Ratings

A - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C)
B - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)
C - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C)
D - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C)

Approved Finishes

1 - Brass, Chrome, White Polyester[4], and Black Polyester[4]
2 - ENT[5]

Approved Escutcheons

X - Standard surface-mounted escutcheon or the Viking Micromatic® Model E-1 Recessed Escutcheon
Y - Standard surface-mounted escutcheon or the Viking Microfast® Model F-1 Adjustable Escutcheon, or recessed with the Viking Micromatic® Model E-1 or E-2 Recessed Escutcheon
Z - Standard surface-mounted escutcheon or the Viking Microfast® Model F-1 Adjustable Escutcheon

Footnotes

[1] Base part number shown. For complete part number, refer to Viking's current price schedule.

[2] Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

[3] This table shows the FM Approvals available at the time of printing. Other approvals may be in process.

[4] Other colors are available on request with the same Approvals as the standard colors.

[5] FM approved as corrosion resistant.

DESIGN CRITERIA - FM

(Also refer to Approval Chart 2 above.)

FM Approval Requirements:

The Viking Microfast® Quick Response Pendent Sprinkler VK302 is FM Approved as quick response **Non-storage** upright and pendent sprinklers as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0). FM Global Loss Prevention Data Sheets contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling.

NOTE: The FM installation guidelines may differ from cULus and/or NFPA criteria.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to page QR1-3 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

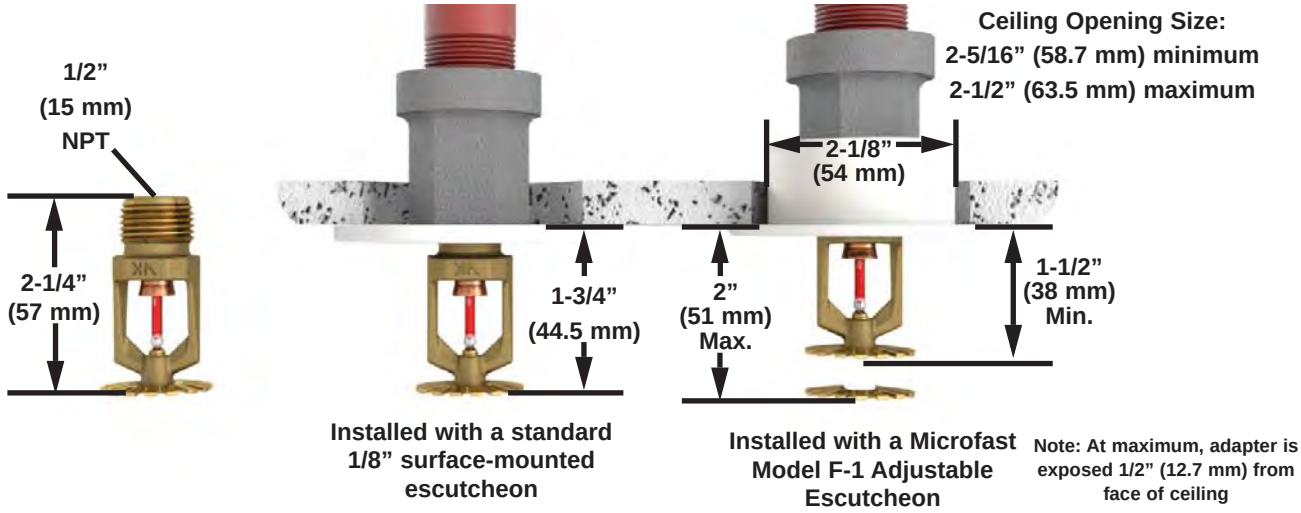


Figure 3: Sprinkler Dimensions with a Standard Escutcheon and the Model F-1 Adjustable Escutcheon

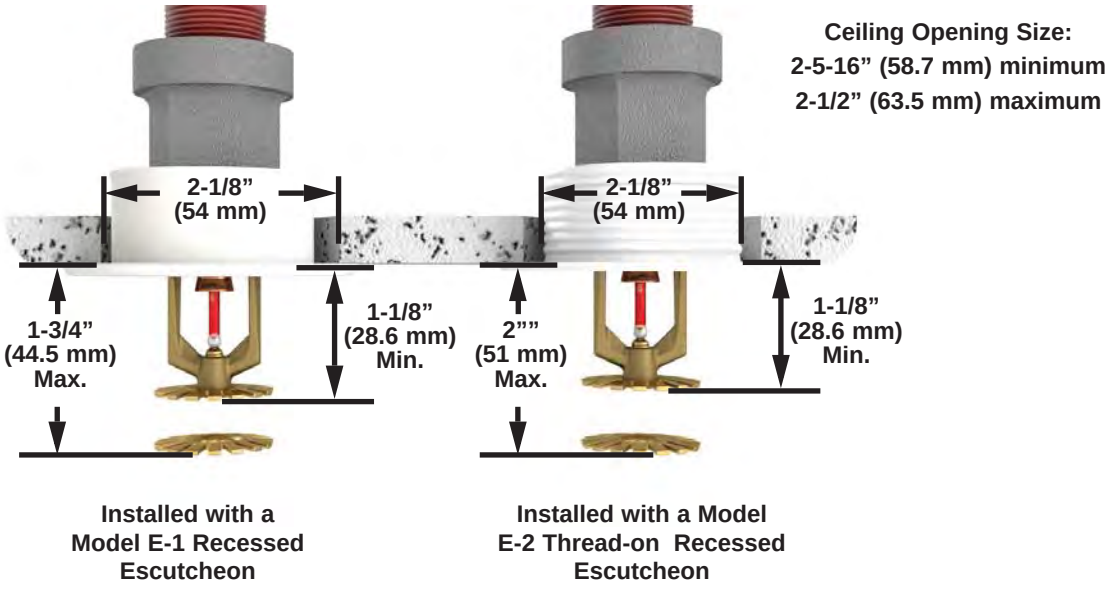


Figure 4: Sprinkler Dimensions with the Model E-1 and E-2 Recessed Escutcheons

VIKING®

TECHNICAL DATA

SPRINKLER ESCUTCHEONS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

1. DESCRIPTION

Viking sprinkler escutcheons are ornamental plates used with 3/8" NPT (10 mm BSP)*, ½" NPT (15 mm BSP)*, and ¾" NPT (20 mm BSP)* frame-style pendent and sidewall* sprinklers. The escutcheons are installed between the sprinklers and the ceiling or wall for a pleasing appearance. They are available with several finish options to meet design requirements.

Viking recessed and adjustable escutcheons provide a low-profile decorative recessed sprinkler installation. The E-1 Recessed Escutcheon may be recessed up to 5/8" (16 mm). The Model G-1 Recessed Escutcheon allows horizontal sidewall sprinklers to be recessed up to 1/2" (12.7 mm). The Model F-1 Adjustable Escutcheon has ½" (12.7 mm) total adjustment available.

The two-piece design of Viking's recessed and adjustable escutcheons allows installation and testing of the sprinklers prior to installing the ceiling or wall. Viking's Model E-1, F-1, and G-1 Escutcheons feature a slip-on design, while the Model E-2 and E-3 escutcheons are threaded (outer cup threads onto the adapter).

The Viking adjustable and recessed escutcheons are made to allow for minor adjustments due to pipe or ceiling pitch. These escutcheons can be removed and reinstalled, allowing access above removable ceiling panels for servicing building equipment without shutting down the sprinkler system and removing the sprinkler.

Viking standard 1/8" (3 mm) style flat and 1" (25 mm) style raised surface-mounted escutcheons have a one-piece design.

***Refer to the specific sprinkler technical data page for the escutcheon(s) listed and approved for use with the sprinkler.**

2. LISTINGS AND APPROVALS

Refer to the specific sprinkler technical data pages for sprinkler listings and approvals. Sprinklers must be specifically listed and/or approved for recessed installation. When using Viking Model E-1, E-2, E-3, F-1, and G-1 escutcheons for recessed applications, refer to technical data describing the sprinkler model to be used to verify whether the sprinkler is listed and/or approved for recessed installations. **NOTE**: Viking's thread-on style Model E-2 and E-3 Recessed Escutcheons carry the same listings and approvals as the slip-on style Model E-1 Recessed Escutcheons. **Model E-3 Recessed Escutcheon also meets IBC-ASCE/SEI 7 Codes for Seismic Areas C, D, and E.**

3. TECHNICAL DATA

Specifications:

A. Slip-on Style Model E-1 Recessed Escutcheons

Depth of Outer Cup: 1-1/16" (26.9 mm)
Outside Diameter of Outer Cup: 3-1/16" (77.7 mm)
Depth of Center Adapter Ring: 11/32" (8.7 mm) +/- 1/32" (0.8 mm)
Adjustment Range: Flush to 5/8" (16 mm) recessed
NOTE: Escutcheon adapter is stamped "Viking Model E-1".
Available since 1987.

B. Threaded Style Model E-2 Recessed Escutcheons

Depth of Outer Cup: 13/16" (20.6 mm)
Outside Diameter of Outer Cup: 3-1/8" (79.4 mm)
Depth of Center Adapter Ring: 21/32" (16.6 mm)
Adjustment Range: 27/32" (21.4 mm) total adjustment with ½" (12.7 mm) maximum recess available. **Note**: Face of escutcheon adapter may extend up to 11/32" (8.7 mm) beyond edge of escutcheon cup.
Available since 2000.

Viking Technical Data may be found on The Viking Corporation's Web site at http://www.vikinggroupinc.com. The Web site may include a more recent edition of this Technical Data Page.

Replaces page 135a-i dated July 22, 2013. (Reformatted, removed Micromatic and Microfast and updated Table 1)

VIKING® | TECHNICAL DATA | SPRINKLER ESCUTCHEONS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
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C. Threaded Style Model E-3 Recessed Escutcheons
Depth of Outer Cup: 13/16" (20.6 mm)
Outside Diameter of Outer Cup: 5-1/8" (130.2 mm). (See Figure 4)
Depth of Center Adapter Ring: 21/32" (16.6 mm)
Adjustment Range: 27/32" (21.4 mm) total adjustment with ½" (12.7 mm) maximum recess available. **Note**: Face of escutcheon adapter may extend up to 11/32" (8.7 mm) beyond edge of escutcheon cup.
Available since 2012.

D. Model F-1 Adjustable Escutcheons
Depth of Outer Cup: 1-1/16" (26.9 mm)
Outside Diameter of Outer Cup: 3-1/16" (77.7 mm)
Depth of Center Adapter Ring: 23/32" (18.3 mm)
Adjustment Range: ½" (12.7 mm) total adjustment with ¼" (6.4 mm) maximum recess available. **Note**: The face of escutcheon adapter may extend up to ¼" (6.4 mm) beyond the edge of the escutcheon cup.
NOTE: Escutcheon adapter is stamped "Viking Model F-1".
Available since 1988.

E. Slip-on Style Model G-1 Recessed Escutcheons (US Patent No. 8,376,060)
Depth of Outer Cup: 1-1/16" (26.9 mm)
Outside Diameter of Outer Cup: 4" (101.6 mm)
Depth of Center Adapter Ring: 1-7/16" (36.5 mm)
Adjustment Range: Up to 5/8" (16 mm) total adjustment available for use with ceilings sloped up to 8/12 (33.7°). May be recessed up to ½" (12.7 mm), depending on degree of slope. **Note**: The face of escutcheon adapter may extend up to 1/2" (12.7 mm) beyond the edge of the escutcheon cup.
NOTE: Escutcheon adapter is stamped "Viking Model G-1".
Available since 2007.

F. Expansion Plate (optional)
1. Base Part No. 12620 for use with Model E-1, E-2, and F-1 Escutcheons. May also be used with dry recessed sprinklers, dry standard adjustable sprinklers, and flat plate concealed sprinklers.
   Outside Diameter: 5" (127 mm)
   Inside Diameter: 2-3/16" (55.5 mm)
   Available since 2005.
2. Base Part No. 13128 for use with Domed Concealed Sprinklers.
   Outside Diameter: 5" (127 mm)
   Inside Diameter: 2-15/32" (62.7 mm) for Part No. 13128.
   Available since 2005.
3. Base Part No. 16340 for use with Concealed Sprinkler VK636.
   Outside Diameter: 5-5/16" (135 mm)
   Inside Diameter: 2-3/8" (60.6 mm)
   Available since 2010.

G. Standard Flat and Raised Surface-Mounted Escutcheons
Depth of Escutcheons: Flat: 1/8" (3.2 mm), Raised: 1" (25 mm)
Available since 1972.

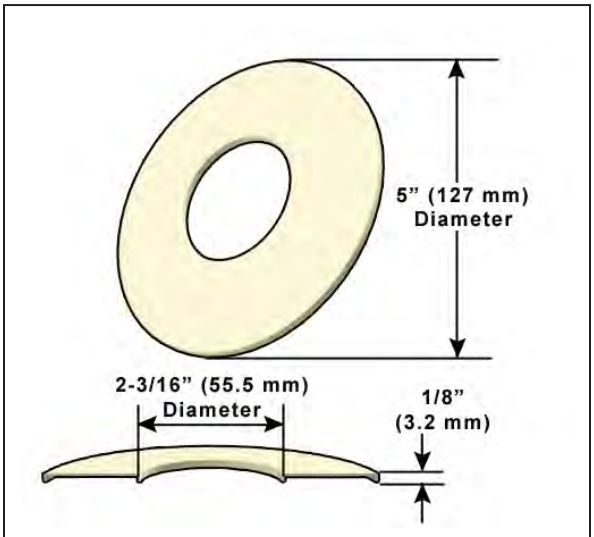

Figure 1: Expansion Plate Part No. 12620

Material Standards:
A. Slip-on Style Model E-1 Recessed Escutcheons:
Cold Rolled Steel UNS-G10080 or Stainless Steel UNS-S30400
B. Threaded Style Model E-2 and E-3 Recessed Escutcheons:
24 ga. (0.61 mm) thick 1010-1018 mild steel
C. Model G-1 Recessed Escutcheons and Model F-1 Adjustable Escutcheons: Cold Rolled Steel UNS-G10080
D. Expansion Plate (optional): Cold Rolled Steel UNS-G10080
E. Standard Flat and Raised Surface-Mounted Escutcheons:
Flat Style Part Numbers 01960A, 01015A, 02960A, and 05464A: Cold Rolled Steel UNS-G10080.
Flat Style Part Numbers 09488, 07526, and 09596*: Stainless Steel

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UNS-S43000

* These may also be special ordered and manufactured from Brass (non-magnetic material). Contact the manufacturer for more information.

Raised Style Part Numbers 01961B and 01016A: Brass UNS-C26000 or UNS-C26800.

Ordering Information: (Also refer to the current Viking price list.)

Viking recessed and adjustable escutcheons are available as escutcheon packages (includes outer cup and adapter). Escutcheon cups are also available to order separately as individual pieces for Model E-1, E-2, E3, or F-1 Escutcheons (refer to Table 1 on page 5. Order Viking escutcheons by adding the appropriate suffix for the finish to the base part number.

A. Model F-1 Adjustable and Model E-1, E-2, E-3, and G-1 Recessed Escutcheons:

1. To order as an escutcheon package (includes outer cup and adapter), specify the appropriate package part number from Table 1.
2. To order individual outer cup separately for Model E-1, E-2, E-3, or F-1 Escutcheons, specify the appropriate part number for the individual piece from Table 1.

B. Standard Flat and Raised Surface-Mounted Escutcheons: Specify the flat or raised escutcheon part number from Table 1.

Finish Suffix: Bright Brass = B, Polished Chrome = F, White Polyester = M-/W, and Black Polyester = M-/B.

For example, the Model E-1 Recessed Escutcheon for 1/2" NPT sprinkler, Brass finish = Part No. 06419AB. The 1/2" Model E-1 Recessed Escutcheon is also available in Antique Brass, Brushed Copper, Brushed Chrome, and Brushed Brass as standard finishes.

NOTE: Sprinklers are not included and must be ordered separately.

4. INSTALLATION

A. If the proposed installation of Model E-1, E-2, E-3, F-1, or G-1 Escutcheons requires recessing any of the heat-sensitive operating element, some Authorities Having Jurisdiction may limit the use, depending on the occupancy classification. Refer to the Authority Having Jurisdiction prior to installation. The use of quick response sprinklers may also be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction prior to installation.

B. All escutcheon styles are made to thread onto the sprinkler head prior to installing the sprinkler into the fitting. The escutcheon must be attached to the sprinkler prior to applying pipe-joint compound or PTFE tape to the sprinkler threads. **NOTE**: Sprinklers with protective caps or bulb shields must be contained within the caps or shields before applying pipe-joint compound or tape.

C. Refer to the appropriate sprinkler technical data page for additional warnings and installation instructions and then install the escutcheons according to the following sequence.

D. Model F-1 Adjustable and Model E-1, E-2, E-3, and G-1 Recessed Escutcheons:

(Refer to Figures 2-5.)

Step 1: Install all piping and cut the sprinkler nipple so that the reducing coupling is at the desired location and centered in a minimum 2-5/16" (59 mm) to a maximum 2-1/2" (64 mm) diameter opening in the ceiling or wall for Model E-1, E-2, or F-1 Escutcheons, 2-5/16" (59 mm) to 4-1/2" (115mm) for Model E-3, or 2-5/8" (66 mm) to 3-3/4 (95 mm) for Model G-1 Escutcheons.

Step 2: Secure the escutcheon adapter onto the sprinkler by hand turning the adapter clockwise onto the sprinkler threads. The face of the adapter should rest on the shoulder of the sprinkler wrench boss.

Step 3: Apply a small amount of pipe-joint compound or PTFE tape to the external threads of the sprinkler only, taking care not to allow a build-up of compound in the sprinkler inlet. **NOTE**: Sprinklers with protective caps or bulb shields must be contained within the caps or shields before applying pipe-joint compound or tape.

Step 4: Install the sprinkler into the coupling using the special recessed sprinkler wrench only, taking care not to over-tighten or damage the sprinkler operating parts. DO NOT use the escutcheon, sprinkler deflector, or fusible element to start or thread the sprinkler into a fitting.

Step 5: Test the system as required and repair all leaks. If a thread leak occurs, normally the unit must be removed, new pipe-joint compound or PTFE tape applied, and then reinstalled. This is due to the fact that when the joint seal leaks, the sealing compound or tape is washed out of the joint.

Step 6: **Remove plastic protective sprinkler caps and bulb shields AFTER the wall or ceiling finish work is completed where the sprinkler is installed and there no longer is a potential for mechanical damage to the sprinkler operating elements.** To remove the bulb shields, simply pull the ends of the shields apart where they are snapped together. To remove caps from frame style sprinklers, turn the caps slightly and pull them off the sprinklers. **SPRINKLER CAPS AND BULB SHIELDS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!** Retain a protective cap in the spare sprinkler cabinet.

Step 7: After installing the ceiling or wall with the required opening size, press on or thread on (depends on the style of escutcheon used) the outer escutcheon cup until the flanges touch the surface of the ceiling or wall.

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(**NOTE**: If the optional escutcheon expansion plate is used, first slide it onto the escutcheon cup. The flange on the expansion plate should touch the surface of the ceiling or wall.)

With the slip-on style Model E-1 Recessed Escutcheon, the maximum adapter recess is 5/8" (16 mm).

With the threaded style Model E-2 and E-3 Recessed Escutcheons, the maximum recess is ½" (12.7 mm). **Note**: The face of the escutcheon adapter may extend up to 11/32" (8.7 mm) beyond edge of escutcheon cup, resulting in 27/32" (21.4 mm) total adjustment range.

With the Model F-1 Adjustable Escutcheon, the maximum recess is ¼" (6.4 mm). **Note**: The face of the escutcheon adapter may extend up to ¼" (6.4 mm) beyond the edge of the escutcheon cup, resulting in ½" (12.7 mm) total adjustment range.

With the slip-on style Model G-1 Recessed Escutcheon, the maximum adapter recess is 1/2" (12.7 mm).

DO NOT modify the unit. If necessary, re-cut the sprinkler drop nipple as required.

E. Standard Flat and Raised Surface-Mounted Escutcheons:

Step 1: Install all piping and cut the sprinkler nipple so that the reducing coupling is at the desired location and centered in a maximum 2-1/2" (64 mm) diameter opening in the ceiling or wall.

Step 2: Secure the escutcheon onto the sprinkler by hand turning the escutcheon clockwise onto the sprinkler threads. (The convex surface of the escutcheon must face toward the deflector of the sprinkler.)

Step 3: Apply a small amount of pipe-joint compound or PTFE tape to the external threads of the sprinkler only, taking care not to allow a build-up of compound in the sprinkler inlet. **NOTE**: Sprinklers with protective caps or bulb shields must be contained within the caps or shields before applying pipe-joint compound or tape.

Step 4: Install the sprinkler into the coupling using the special sprinkler wrench only, taking care not to over-tighten or damage the sprinkler operating parts. DO NOT use the escutcheon, sprinkler deflector, or fusible element to start or thread the sprinkler into a fitting.

Step 5: After installation, the entire sprinkler system must be tested. The test must be conducted to comply with the installation standards. Make sure the sprinkler is properly tightened. If a thread leak occurs, normally the unit must be removed, new pipe-joint compound or tape applied, and then reinstalled. This is due to the fact that when the joint seal leaks, the sealing compound or tape is washed out of the joint.

Step 6: **Remove plastic protective sprinkler caps and bulb shields AFTER the wall or ceiling finish work is completed where the sprinkler is installed and there no longer is a potential for mechanical damage to the sprinkler operating elements.** To remove the bulb shields, simply pull the ends of the shields apart where they are snapped together. To remove caps from frame style sprinklers, turn the caps slightly and pull them off the sprinklers. **SPRINKLER CAPS AND BULB SHIELDS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!** Retain a protective cap in the spare sprinkler cabinet.

DO NOT modify the unit. If necessary, re-cut the sprinkler drop nipple as required.

F. Disassembly:

The outer cups of Viking adjustable and recessed escutcheons can be removed and reinstalled without removing the sprinklers to allow access above the ceiling or to replace it, if necessary.

1. For slip-on style Model E-1 or G-1 Recessed Escutcheons and Model F-1 Adjustable Escutcheons, remove the outer cup simply by pulling it outward and away from the wall or ceiling.
2. To remove the outer cup of the threaded style Model E-2 and E-3 Recessed Escutcheons, turn it counterclockwise to unthread it from the adapter.

If it is necessary to remove the entire unit, the system must be removed from service. Refer to maintenance instructions on the appropriate sprinkler technical data page and follow all warnings and instructions.

5. OPERATION

Refer to the sprinkler technical data page for the sprinkler model used.

6. INSPECTIONS, TESTS AND MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

Viking sprinklers and escutcheons are available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.

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Base Part Number	Material	Style	Sprinkler Thread Size	Available Finishes	Outside Diameter
Standard Flat and Raised Surface-Mounted Escutcheons					
01960A	Steel	Flat	1/2" (15 mm)	B, F	3-5/16" (84.1 mm)
09488	Stainless Steel††	Flat	1/2" (15 mm)	F, JN	3-5/16" (84.1 mm)
01015A	Steel	Flat	3/4" (20 mm)	F	3-5/16" (84.1 mm)
02960A	Steel	Flat	1/2" (15 mm)	B, F, M/W, M/B	2-3/4" (69.9 mm)
07526	Stainless Steel††	Flat	1/2" (15 mm)	F, M/W, JN	2-3/4" (69.9 mm)
05464A	Steel	Flat	3/4" (20 mm)	B, F, M/W	2-3/4" (69.9 mm)
09596	Stainless Steel††	Flat	3/4" (20 mm)	F, JN	2-3/4" (69.9 mm)
01961B	Brass	Raised	1/2" (15 mm)	F	3-1/16" (77.7 mm)
01016A	Brass	Raised	3/4" (20 mm)	F	3-1/16" (77.7 mm)
E-1 Slip-on Style Recessed Escutcheon Packages (includes adapter and outer cup)					
11123	Steel	Recessed Slip-on	3/8" (10 mm)	F, M/W	3-1/16" (77.7 mm)
06419A	Steel	Recessed Slip-on	1/2" (15 mm)	B, F, M/W, M/B	3-1/16" (77.7 mm)
07902	Stainless Steel	Recessed Slip-on	1/2" (15 mm)	F, M/W, JN	3-1/16" (77.7 mm)
13220	Stainless Steel	Recessed Slip-on	3/4" (20 mm)	F, M/W, JN	3-1/16" (77.7 mm)
06420A	Steel	Recessed Slip-on	3/4" (20 mm)	B, F, M/W, M/B	3-1/16" (77.7 mm)
E-2 Threaded Style Recessed Escutcheon Packages (includes adapter and outer cup)					
11038	Steel	Recessed Threaded	1/2" (15 mm)	F, M/W	3-1/8" (79.4 mm)
11625	Steel	Recessed Threaded	3/4" (20 mm)	F, M/W	3-1/8" (79.4 mm)
E-3 Threaded Style Recessed Escutcheon Packages (includes adapter and outer cup)					
18347	Steel	Recessed Threaded	1/2" (15 mm)	F, M/W	5 -1/8" (130.2mm)
18348	Steel	Recessed Threaded	3/4" (20 mm)	F, M/W	5 -1/8" (130.2mm)
F-1 Adjustable Escutcheon Packages (includes adapter and outer cup)					
06911A	Steel	Adjustable	1/2" (15 mm)	B, F, M/W, M/B	3-1/16" (77.7 mm)
06912A	Steel	Adjustable	3/4" (20 mm)	B, F, M/W, M/B	3-1/16" (77.7 mm)
G-1 Recessed Escutcheon Package (includes adapter and outer cup)					
14315	Steel	Recessed Slip-on	1/2" (15 mm)	B, F, M/W, M/B	4" (101.6 mm)
14955	Steel	Recessed Slip-on	3/4" (20 mm)	B, F, M/W, M/B	4" (101.6 mm)
Optional Expansion Plates Available Separately					
12620	Steel	E-1, E-2 Recessed & F-1 Adjustable	3/8", 1/2", & 3/4" (10, 15, & 20 mm)	B, F, M/W, M/B, M/SW1641, B/B, F/B, E/B	5" (127 mm)
13128	Steel	Domed Concealed	1/2" & 3/4" (15 & 20 mm)	F, M/W	5" (127 mm)
16340	Steel	Concealed (for Sprinkler VK636)	3/4" (20 mm)	F, M/W	5-5/16" (135 mm)

Escutcheon Finishes: B = Bright Brass, F = Polished Chrome, M/W = White Polyester, M/B = Black Polyester, JN = Electroless Nickel PTFE, M/SW1641 = Navajo White Paint, B/A = Antique Brass, B/B = Brushed Brass, F/B = Brushed Chrome, E/B = Brushed Copper. **Note**: Other colors are available on request with the same listings and approvals as the standard colors. See Sherwin-Williams® Color Answers™ Interior Color Selection color chart.

††Escutcheons 09488, 07526, and 09596 may also be special ordered and manufactured from Brass (non-magnetic material). Contact the manufacturer for more details.

Table 1

VIKING®

TECHNICAL DATA

SPRINKLER ESCUTCHEONS

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IMPORTANT NOTES

Per the current edition of NFPA 13: "Escutcheons used with recessed, flush-type, or concealed sprinklers shall be part of a listed sprinkler assembly." The Viking Corporation will not authorize the sale of unlisted recessed sprinkler assemblies nor assume any liability involving recessed sprinkler assemblies that are not considered cULus Listed, FM Approved, or in full compliance with NFPA requirements".

Listings and approvals vary, depending on the sprinkler model, temperature rating, finish, and occupancy classification.

⚠WARNING Viking products are manufactured and tested to meet the rigid requirements of the approving agency. The sprinklers are designed to be installed in accordance with recognized installation standards. Deviation from the standards or any alteration to the sprinkler after it leaves the factory including, but not limited to: painting , plating, coating, or modification, may render the sprinkler inoperative and will nullify the approval and any guarantee made by The Viking Corporation.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to the appropriate sprinkler data page. Viking sprinklers are designed to be installed in accordance with the latest edition of Viking technical data, the latest standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards whenever applicable. The use of certain types of sprinklers may be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction prior to installation.

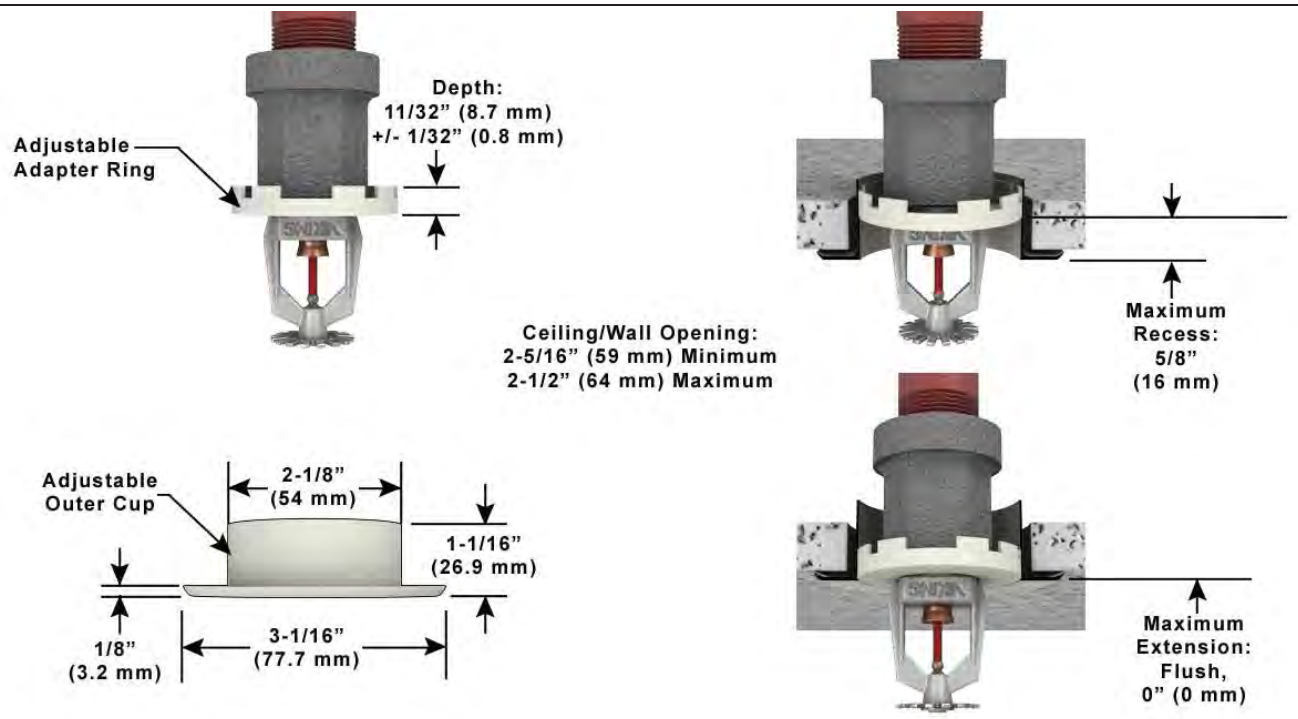

Figure 2: Installation of a Slip-on Style Model E-1 Recessed Escutcheon with 5/8" (16 mm) Maximum Recess.

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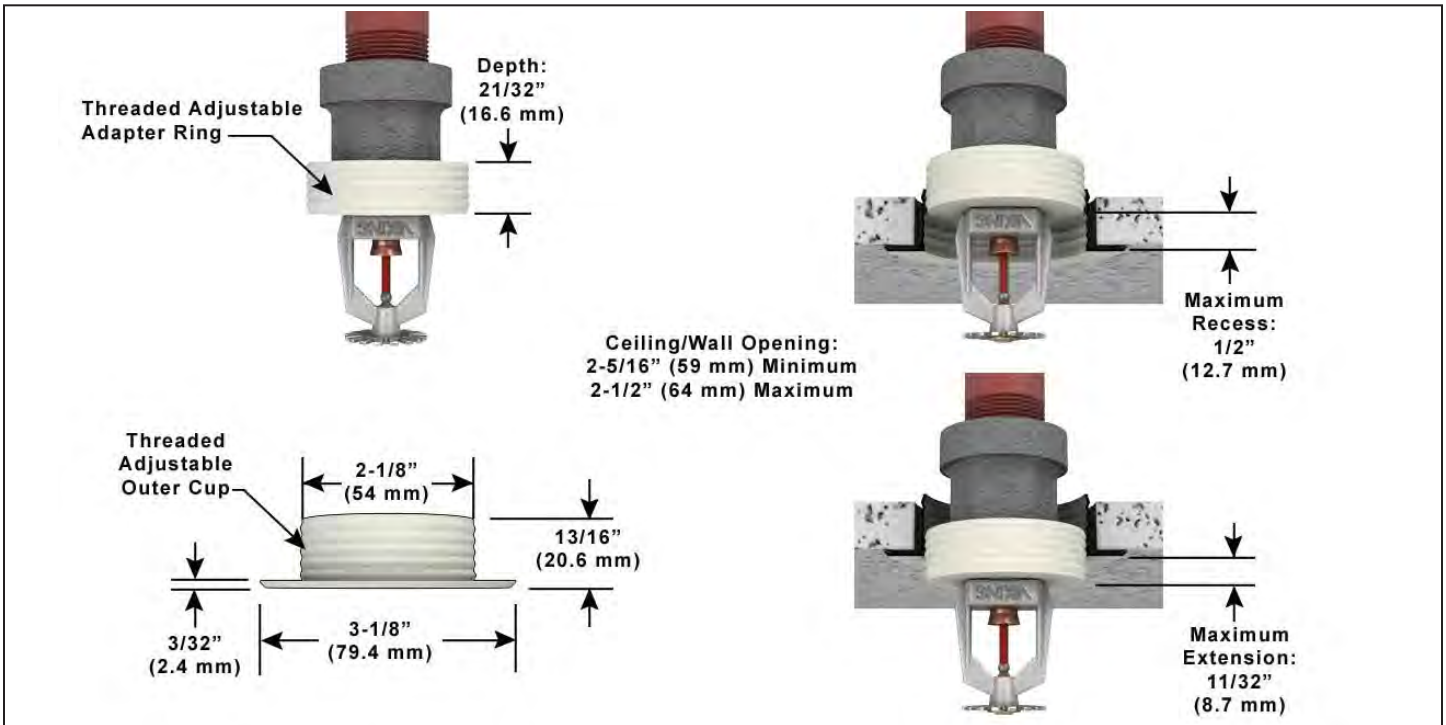

Figure 3: Installation of a Thread-on Style Model E-2 Recessed Escutcheon with 27/32" (21 mm) Total Adjustment.

Model E-3 Recessed Escutcheon meets IBC-ASCE/SEI 7 Codes for Seismic Areas C, D, and E

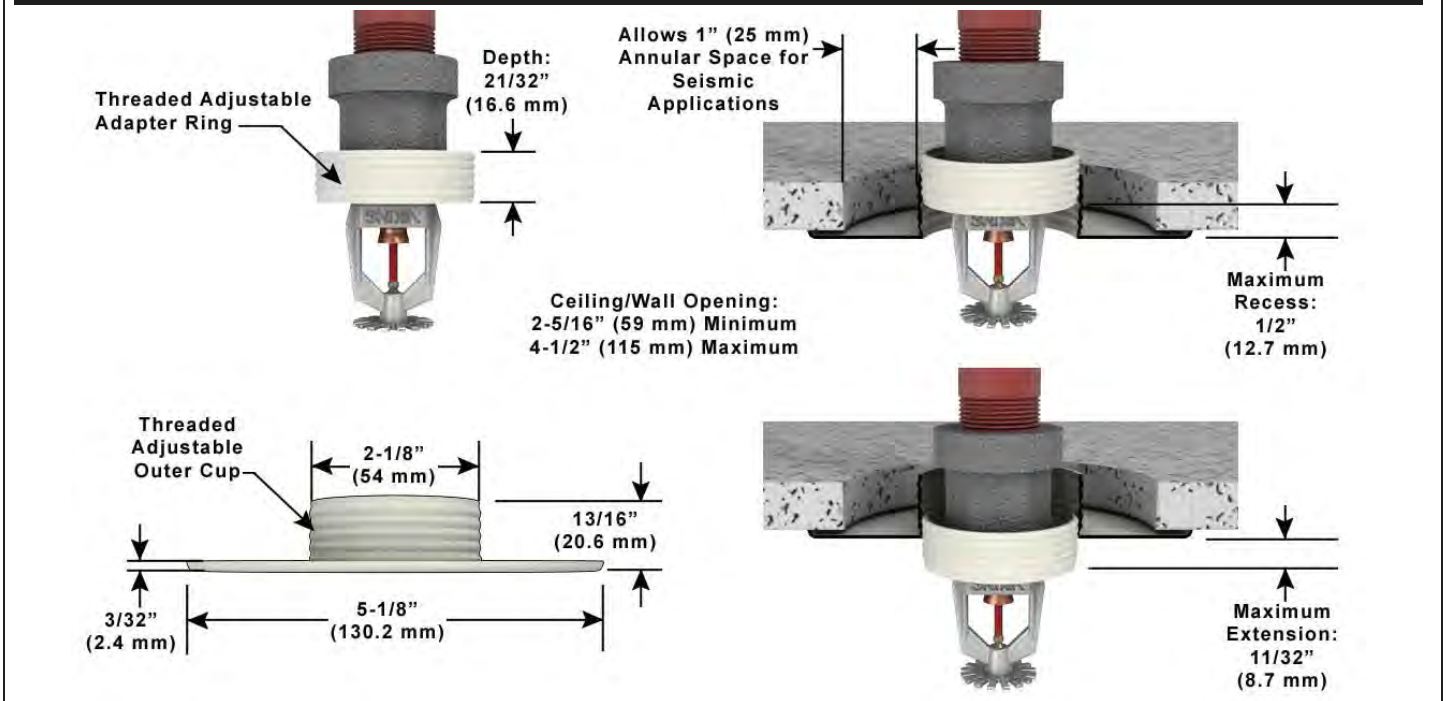

Figure 4: Installation of a Thread-on Style Model E-3 Recessed Escutcheon with 27/32" (21 mm) Total Adjustment.

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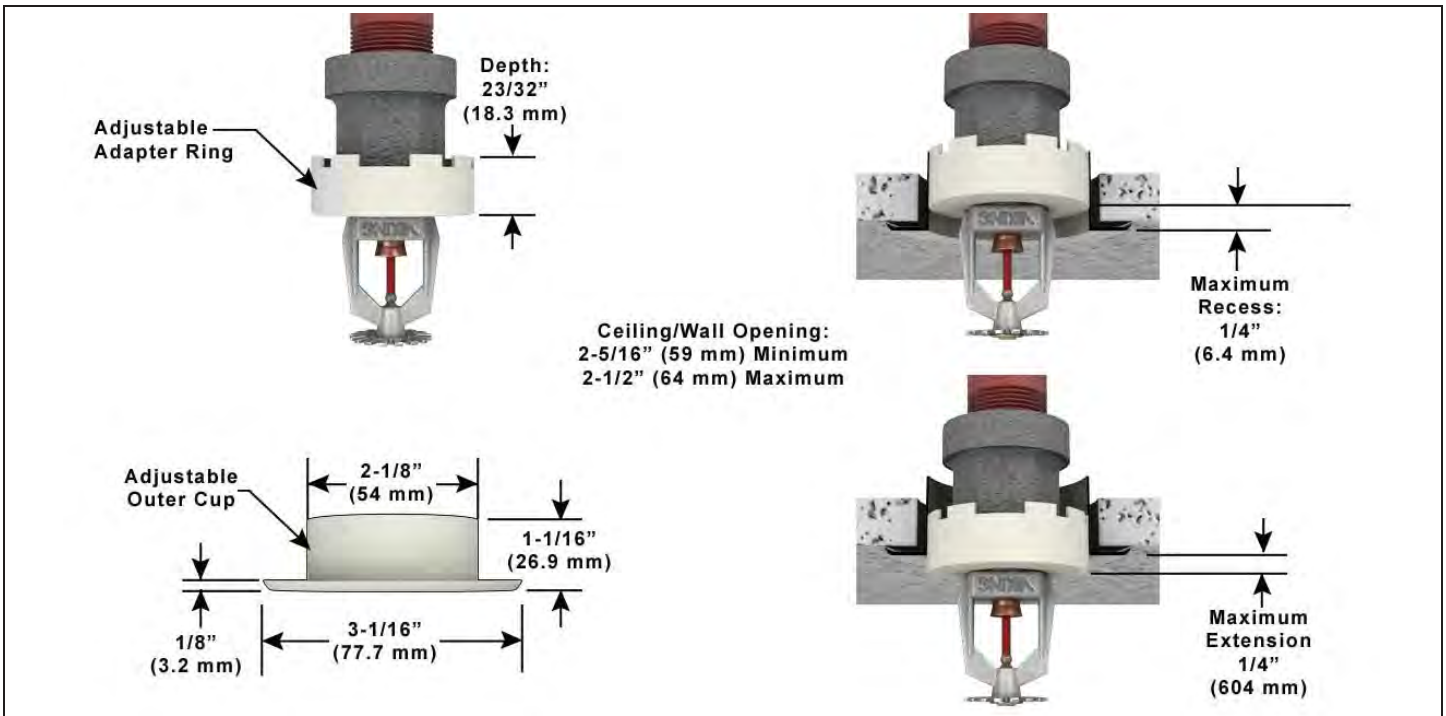

Figure 5: Installation of a Model F-1 Adjustable Escutcheon with ½" (12 mm) Total Adjustment.

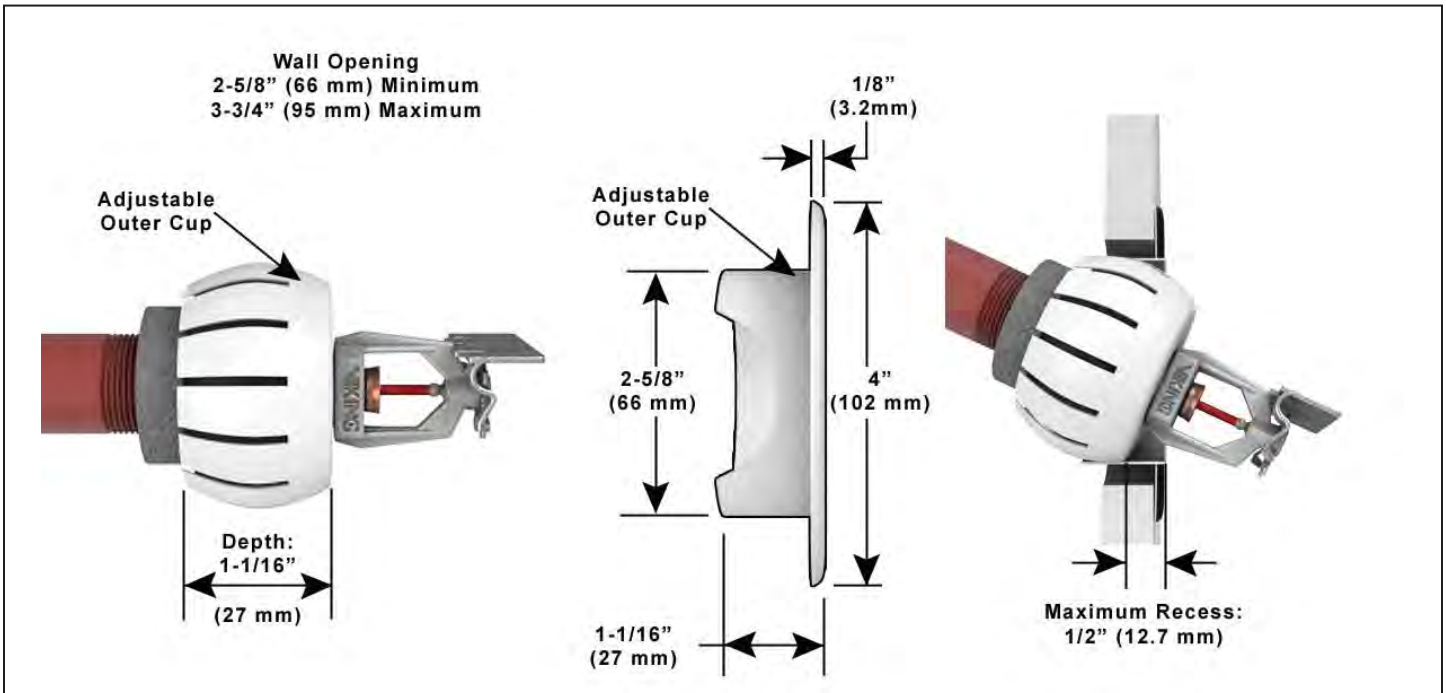

Figure 6: Installation of the Model G-1 Recessed Escutcheon with up to 1/2" (12.7 mm) Adjustment.

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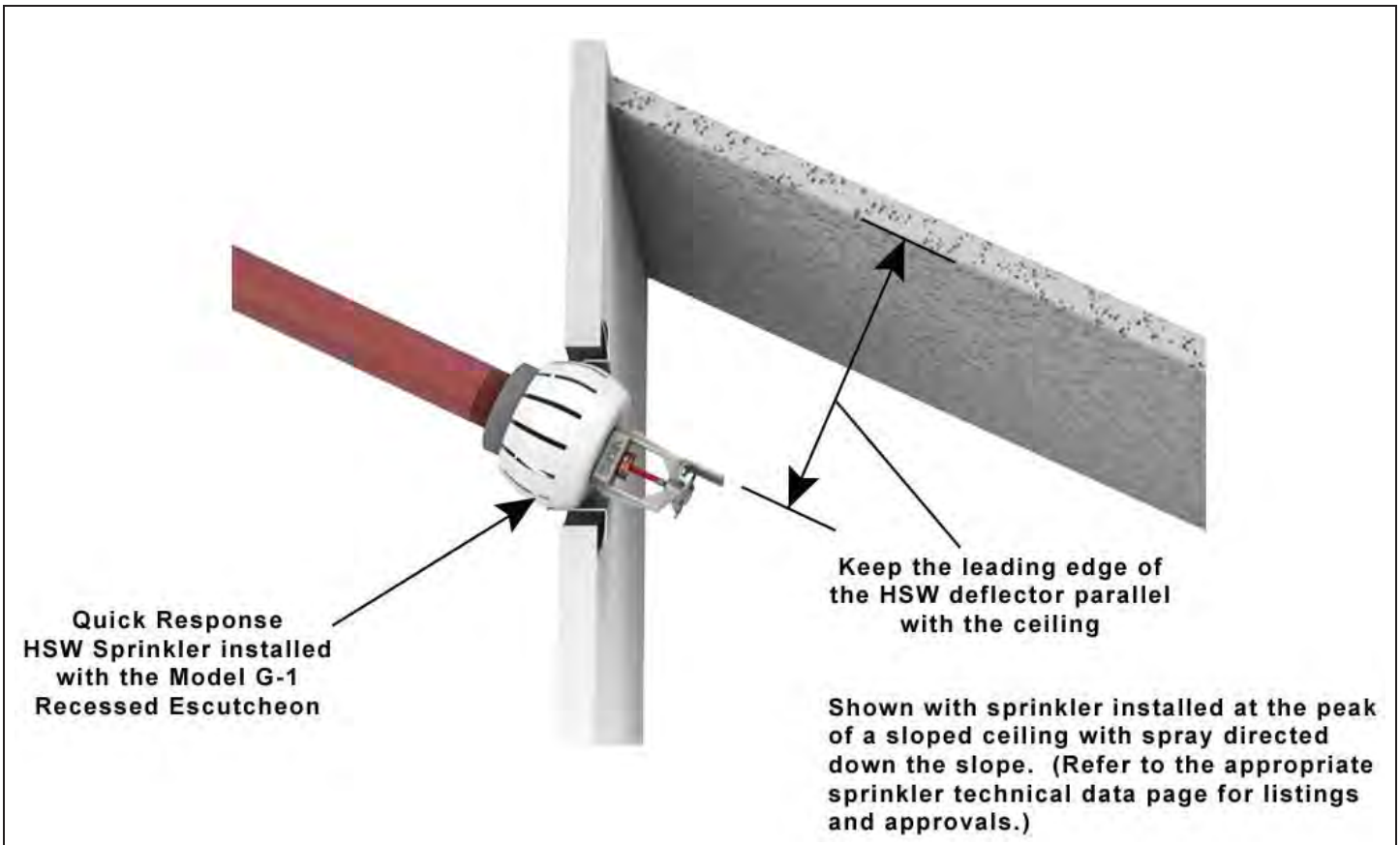


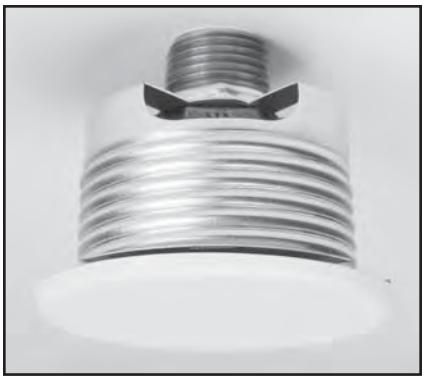
Figure 7: Model G-1 Recessed Escutcheon Installed with a Residential HSW Sprinkler below a sloped ceiling.

MIRAGE® STANDARD AND QR CONCEALED PENDENT SPRINKLER VK462 AND HP SPRINKLER VK463 (K5.6)

TECHNICAL DATA

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

1. DESCRIPTION



Viking Mirage® Standard and Quick Response Concealed Pendent Sprinkler VK462 and HP Sprinkler VK463 are thermosensitive glass-bulb spray sprinklers designed for installation on concealed pipe systems where the appearance of a smooth ceiling is desired.

The sprinkler is pre-assembled with a threaded adapter for installation with a low-profile cover assembly that provides up to ½" (12.7 mm) of vertical adjustment. The two-piece design allows installation and testing of the sprinkler prior to installation of the cover plate. The "push-on", "thread-off" design of the concealed cover plate assembly allows easy installation of the cover plate after the system has been tested and the ceiling finish has been applied. The cover assembly can be removed and reinstalled, allowing temporary removal of ceiling panels without taking the sprinkler system out of service or removing the sprinkler. The Electroless Nickel PTFE (ENT) coating has been investigated for installation in corrosive atmospheres and is cULus Listed as corrosion resistant as indicated in the Approval Charts. The ENT finish is only available for the sprinkler assembly, the cover plate is not plated.

Viking Technical Data may be found on The Viking Corporation's Web site at http://www.vikinggroupinc.com. The Web site may include a more recent edition of this Technical Data Page.

2. LISTINGS AND APPROVALS

cULus Listed: Category VNIV

FM Approval: Class 2015

NYC Approved: MEA 89-92-E, Volume 32

VdS Approved: Certificate G4080021

LPCB Approved: Ref. No. 096e/12

CE Certified: Standard EN 12259-1, EC-certificate of conformity 0832-CPD-2032

CCCF Approved: Approved by the China Certification Center for Fire Products (CCCF)

Refer to Approval Chart 1 Design Criteria for cULus Listing requirements, and refer to Approval Chart 2 and Design Criteria on page for FM Approval requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Available since 2006.

Minimum Operating Pressure: 7 psi (0.5 bar)*

Maximum Working Pressure: Sprinkler VK463 is rated for use with water working pressures ranging from the minimum 7 psi (0.5 bar) up to 250 psi (17.2 bar) for high-pressure systems. High-pressure (HP) sprinklers can be identified by locating "250" stamped on the deflector. Sprinkler VK462 is rated to a maximum 175 psi (12 bar) wwp.

Factory tested hydrostatically to 500 psi (34.5 bar)

Thread size: 1/2" (15 mm) NPT

Nominal K-Factor: 5.6 U.S. (80.6 metric†)

Glass-bulb fluid temperature rated to -65°F (-55°C)

Patents Pending

*cULus Listing, FM Approval, and NFPA 13 installs require a minimum of 7 psi (0.5 bar). The minimum operating pressure for LPCB and CE Approvals ONLY is 5 psi (0.35 bar).

†Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

Material Standards:

Sprinkler Body: Brass UNS-C84400

Deflector: Copper UNS-C19500 for Sprinkler VK462
Phosphor Bronze UNS-C51000 for Sprinkler VK463

Deflector Pins: Stainless Steel Alloy

Bulb: Glass, nominal 3 mm diameter

Pip Cap and Insert Assembly: Copper UNS-C11000 and Stainless Steel UNS-S30400

Button: Brass UNS-C36000

Screws: 18-8 Stainless Steel

Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with Teflon Tape

Yoke: Phosphor Bronze UNS-C51000

Cover Adapter: Cold Rolled Steel UNS-G10080, Finish: Clear Chromate over Zinc Plating

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Cover Assembly Materials:
Cover: Copper UNS-C11000
Base: Brass UNS-C26000 or UNS-C26800
Springs: Nickel Alloy
Solder: Eutectic

Ordering Information: (Also refer to the current Viking price list.)
Viking Mirage® Standard and Quick Response Concealed Pendent Sprinklers and Cover Plate Assemblies must be ordered separately:
Sprinkler: Base Part No. VK462 - 13503A for Brass finish and 13503JN for ENT finish. VK463 - HP Base Part No. 13667A
Specify sprinkler temperature rating by adding the appropriate suffix for the temperature rating to the base part number:
Temperature Suffix: 155 °F (68 °C) = B, 175 °F (79 °C) = D, 200 °F (93 °C) = E
For example, sprinkler VK463 with a 155 °F (68 °C) temperature rating = 13667AB.
Cover Plate Assembly: Base Part No. 13504 (2-3/4" diameter), Base Part No. 13642 (3-5/16" diameter), or Base Part No. 15394 (square cover plate, 3-5/16" diameter)
Specify finish and temperature rating of the cover plate assembly by adding the appropriate suffixes for the finish and the cover temperature rating to the base part number:
Finish Suffix: Polished Chrome = F, Brushed Chrome = F-/B, Bright Brass = B, Antique Brass = B-/A, Brushed Brass = B-/B, Brushed Copper = E-/B, Painted White = M-/W, Painted Ivory = M-/I, Painted Black = M-/B
Temperature Suffix: 135 °F (57 °C) UL (139 °F (59 °C) FM and LPCB) = A, 165 °F (74 °C) = C
For example, cover 13504 with a Polished Chrome finish and a 165 °F (74 °C) temperature rating = 13504FC.

Note: Square cover plate 15394 cULus Listing is for the 135 °F (57 °C) temperature rated cover plate only. Refer to the Approval Chart.

Available Finishes And Temperature Ratings: Refer to Table 1.

Accessories: (Also refer to the "Sprinkler Accessories" section of the Viking data book.)
Sprinkler Wrenches:**
A. Heavy Duty Wrench Part No. 14047W/B (available since 2006), or
B. Head Cabinet Wrench Part No. 14031*** (available since 2006)
C. Optional Concealed Cover Plate Installer Tool Part No. 14412 for cover 13504, or Part No. 14867 for the large diameter cover (available since 2007)

**Requires a ½" ratchet (not available from Viking). ***Optional for removal of the protective cap. Ideal for sprinkler cabinets.

Sprinkler Cabinet: Part No. 01731A (available since 1971)

4. INSTALLATION
Refer to appropriate NFPA Installation Standards.

5. OPERATION
During fire conditions, when the temperature around the sprinkler approaches its operating temperature, the cover plate detaches. Continued heating of the exposed sprinkler causes the heat-sensitive liquid in the glass bulb to expand and the bulb to shatter, releasing the yoke, pip-cap and sealing spring assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to extinguish or control the fire.

6. INSPECTIONS, TESTS AND MAINTENANCE
Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY
Viking Sprinklers VK462 and VK463 are available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE
For details of warranty, refer to Viking's current list price schedule or contact Viking directly.

VIKING®	TECHNICAL DATA	MIRAGE® STANDARD AND QR CONCEALED PENDENT SPRINKLER VK462 AND HP SPRINKLER VK463 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating[1]	Maximum Ambient Ceiling Temperature[2]	Temperature Rating of Cover Assembly (Required)	Bulb Color
Ordinary	155 °F (68° C)	100 °F (38 °C)	135 °F (57 °C) cULus 139 °F (59 °C) FM and LPCB	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	165 °F (74 °C)	Yellow
Intermediate	200 °F (93 °C)	150 °F (65 °C)	165 °F (74 °C)	Green

Cover Plate Finishes: Polished Chrome, Brushed Chrome, Bright Brass, Antique Brass, Brushed Brass, Brushed Copper, Painted White, Painted Ivory, or Painted Black

Sprinkler Finishes: Brass and ENT

Corrosion Resistant Coatings[3]: ENT

Footnotes

[1] The sprinkler temperature rating is stamped on the sprinkler deflector.

[2] Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.

[3] The corrosion resistant coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Charts. These tests cannot and do not represent all possible corrosive environments. Prior to installation, verify through the end-user that the coatings are compatible with or suitable for the proposed environment. For automatic sprinklers, the ENT coating is applied to all exposed exterior surfaces, including the waterway, but the Belleville spring is exposed.

Approval Chart 1 (UL)

Mirage® Concealed Pendent Sprinklers VK462 and VK463

Sprinkler Base Part No.[1]	SIN	NPT Thread Size		Nominal K-Factor		Maximum Water Working Pressure	Listings and Approvals[4] (Refer also to Design Criteria)					
		Inch	mm	U.S.	metric[2]		cULus[5]	NYC	VdS[7]	LPCB	CE	
Standard Response Applications												
13503A	VK462	1/2"	15	5.6	80.6	175 psi (12 bar)	--	--	AY1, CZ1	AY1, BZ1	AY1, CZ1[8]	AV1, CW1
Quick Response Applications												
13503A	VK462	1/2"	15	5.6	80.6	175 psi (12 bar)	AV1, BX1	AV1, BW1[6]	–	–	--	--
13503JN[11]	VK462	1/2"	15	5.6	80.6	175 psi (12 bar)	AV1, BX1	AV1, BW1[6]	–	–	--	--
13667A	VK463	1/2"	15	5.6	80.6	250 psi (17.2 bar)[3]	AV1, BX1	AV1, BW1[6]	--	--	--	--

Sprinkler Temperature Ratings

A - 155 °F (68 °C)
B - 175 °F (79 °C) and 200 °F (93 °C)
C - 200 °F (93 °C)

Cover Plate Assembly Temperature Ratings[9]

V - 135 °F (57 °C) cULus Listed cover 13504[1], 13642[1] (large diameter), or 15394[1] (square cover plate)
W - 165 °F (74 °C) cover 13504[1] or 13642[1] (large diameter)
X - 165 °F (74 °C) cover 13504[1], or 13642[1] (large diameter)
Y - 135 °F (57 °C) cover 13504[1] *LPCB Approved as 139 °F (59 °C)*
Z - 165 °F (74 °C) cover 13504[1]

Cover Plate Assembly Finishes[10]

1 - Polished Chrome, Brushed Chrome, Bright Brass, Antique Brass, Brushed Brass, Brushed Copper, Painted White, Painted Ivory, or Painted Black

Footnotes

[1] Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.

[2] Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

[3] The Water Working Pressure rating is stamped on the deflector.

[4] This chart shows the listings and approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals.

[5] Listed by Underwriter's Laboratories for use in the U.S. and Canada.

[6] Accepted for use, City of New York Department of Buildings, MEA Number 89-92-E, Vol. 32.

[7] VdS Approved, standards VdS 2344:2005-12, VdS 2100-25:2008-01, and EN 12259-1:1999 + A1:2001 + A2:2004 + A3:2006, Certificate G4080021.

[8] CE Certified, Standard EN 12259-1, EC-certificate of conformity 0832-CPD-2032.

[9] The 135/139 °F cover has an orange label. The 165 °F (74 °C) cover has a white label.

[10] Painted finish consists of Polyester Baked Enamel. Other paint colors are available on request with the same listings as the standard paint colors. Listings and approvals apply for any paint manufacturer. Contact Viking for additional information.

[11] cULus Listed as corrosion resistant.

NOTE: Custom colors are indicated on a label inside the cover assembly. Refer to Figure 1.

VIKING®	TECHNICAL DATA	MIRAGE® STANDARD AND QR CONCEALED PENDENT SPRINKLER VK462 AND HP SPRINKLER VK463 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

DESIGN CRITERIA - UL

(Also refer to Approval Chart 1)

cULus Listing Requirements:

Mirage® Concealed Pendent Sprinklers VK462 and VK463 are cULus Listed as quick response for installation in accordance with the latest edition of NFPA 13 for standard coverage pendent spray sprinklers as indicated below.

- For hazard occupancies up to and including Ordinary Hazard, Group II.
- Protection areas and maximum spacing shall be in accordance with the tables provided in NFPA 13. Maximum spacing allowed is 15 ft. (4.6 m).
- Minimum spacing allowed is 6 ft. (1.8 m) unless baffles are installed in accordance with NFPA 13.
- Minimum distance from walls is 4 in. (102 mm).
- Maximum distance from walls shall be no more than one-half of the allowable distance between sprinklers. The distance shall be measured perpendicular to the wall.
- The sprinkler obstruction rules contained in NFPA 13 for standard coverage pendent spray sprinklers must be followed.

NOTE: Concealed sprinklers must be installed in neutral or negative pressure plenums only.

VdS Approval Requirements:

a) The sprinkler can be installed in a concrete ceiling (massive ceiling) or in a false ceiling made of light materials.

b) This sprinkler is deflector fixed type and can be only activated by heat. The housing is not tight.

c) Follow installation guidelines of current standards, CEA4001VdS and EN12845. These sprinklers can only be installed in LH and OH occupancies, except in OH4.

NOTES: Due to the design the sprinkler type 'Domed-CCP' shall not be installed in false ceilings in which the false ceiling space is protected by a water extinguishing system.

Due to the design the sprinkler type 'Domed-CCP' shall not be installed in false ceilings in which during a fire the pressure above the false ceiling may be assumed to be higher than the pressure below the false ceiling.

The criterion for the dropping of the cover relevant for this approval is heat.

Steps of installation:

1. Prepare the sprinkler key.
2. Remove the plastic cover.
3. Hold the sprinkler with the wrench and fasten it.
4. Replace the plastic cover and do not remove until the cover is installed.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to page SR1-3 or QR1-3 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.

Identification of Custom Paint Color:
All custom color painted cover plates will have an identifying label affixed to the inside of the cover that indicates custom color and will have a representative sample (a paint dot) of the paint on the label.

Figure 1: Identification of Custom Paint Color for Concealed Covers

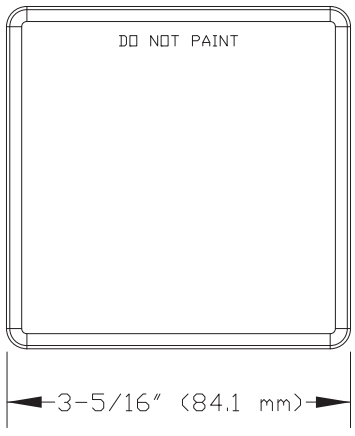


Figure 2: Square Cover Assembly 15394

VIKING®	TECHNICAL DATA	MIRAGE® STANDARD AND QR CONCEALED PENDENT SPRINKLER VK462 AND HP SPRINKLER VK463 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Approval Chart 2 (FM)

Mirage® Standard Response Concealed Pendent Sprinkler VK462

Sprinkler Base Part No.[1]	SIN	NPT Thread Size		Nominal K-Factor		Maximum Water Working Pressure	FM Approvals[3] (Refer also to Design Criteria below.)
		Inch	mm	U.S.	metric[2]		
13503A	VK462	1/2”	15	5.6	80.6	175 psi (12 bar)	AW1, BX1

Sprinkler Temperature Ratings	Cover Plate Assembly Temperature Ratings[4]	Cover Plate Assembly Finishes[5]
A - 155 °F (68 °C) B - 175 °F (79 °C) and 200 °F (93 °C)	W - 139 °F (59 °C) cover 13504[1], 13642[1] (large diameter), or 15394[1] (square cover plate) X - 165 °F (74 °C) cover 13504[1], 13642[1] (large diameter), or 15394[1] (square cover plate)	1 - Polished Chrome, Brushed Chrome, Bright Brass, Antique Brass, Brushed Brass, Brushed Copper, Painted White, Painted Ivory, or Painted Black

Footnotes

[1] Part number shown is the base part number. For complete part number, refer to current Viking price list schedule.

[2] Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

[3] This chart shows the FM Approvals available at the time of printing. Other approvals may be in process. Check with the manufacturer for any additional approvals.

[4] The 139 °F (59 °C) cover has an orange label. The 165 °F (74 °C) cover has a white label.

[5] Painted finish consists of Polyester Baked Enamel. Other paint colors are available on request with the same listings as the standard paint colors. Listings and approvals apply for any paint manufacturer. Contact Viking for additional information.

NOTE: Custom colors are indicated on a label inside the cover assembly. Refer to Figure 1.

DESIGN CRITERIA - FM

(Also refer to Approval Chart 2 above.)

FM Approval Requirements:

Viking Concealed Pendent Sprinkler VK462 is FM Approved as a standard response **Non-Storage** concealed pendent sprinkler as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0). FM Global Loss Prevention Data Sheets contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling.

NOTE: The FM installation guidelines may differ from cULus and/or NFPA criteria.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to page SR1-3 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.

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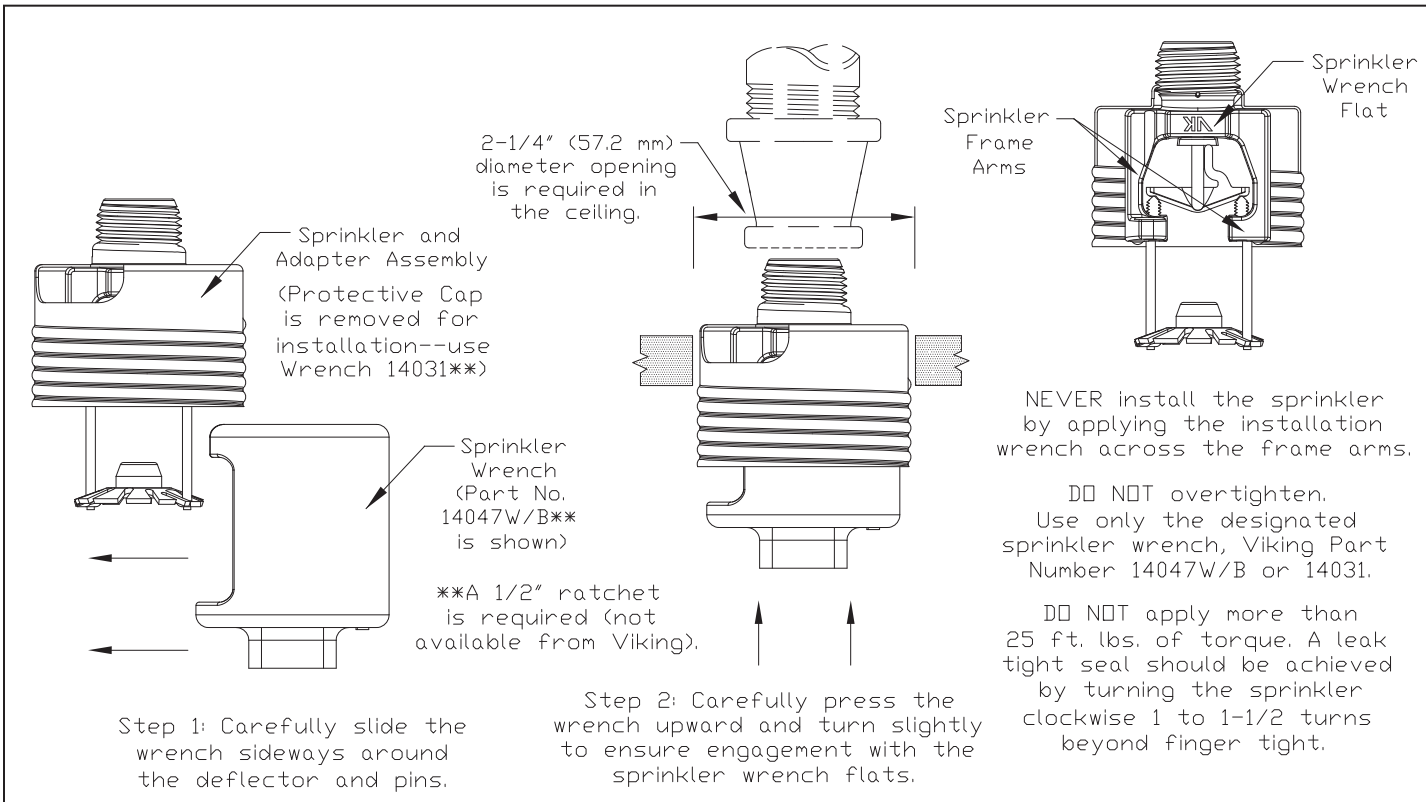


Figure 3: **Sprinkler Installation and Correct Use of Wrenches**

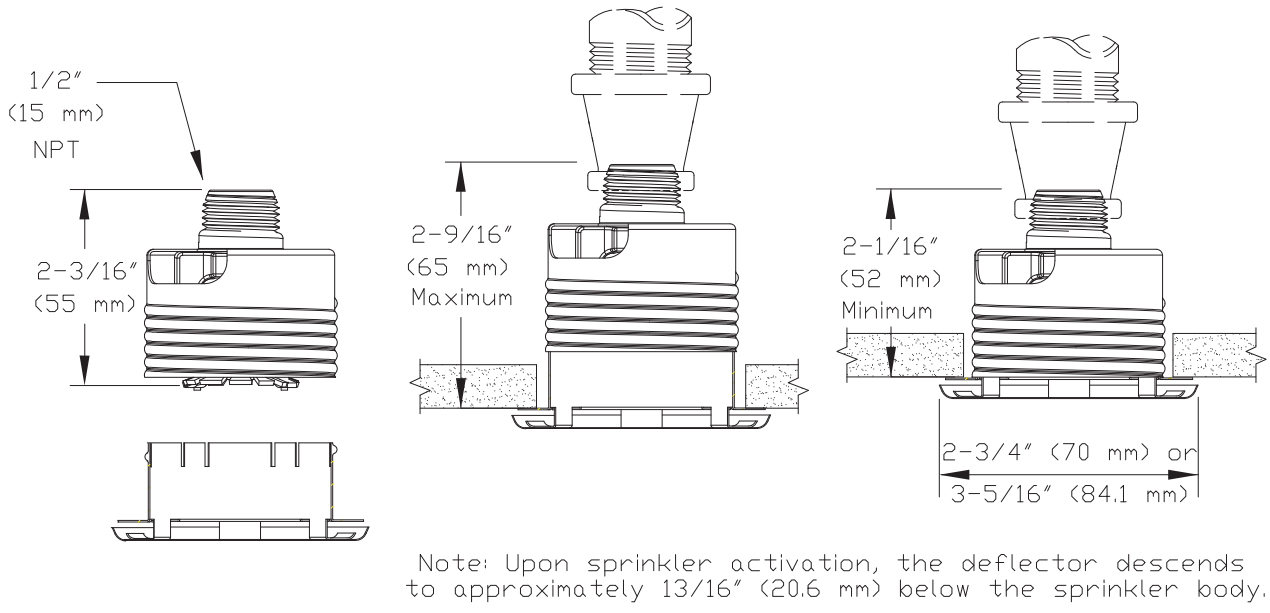
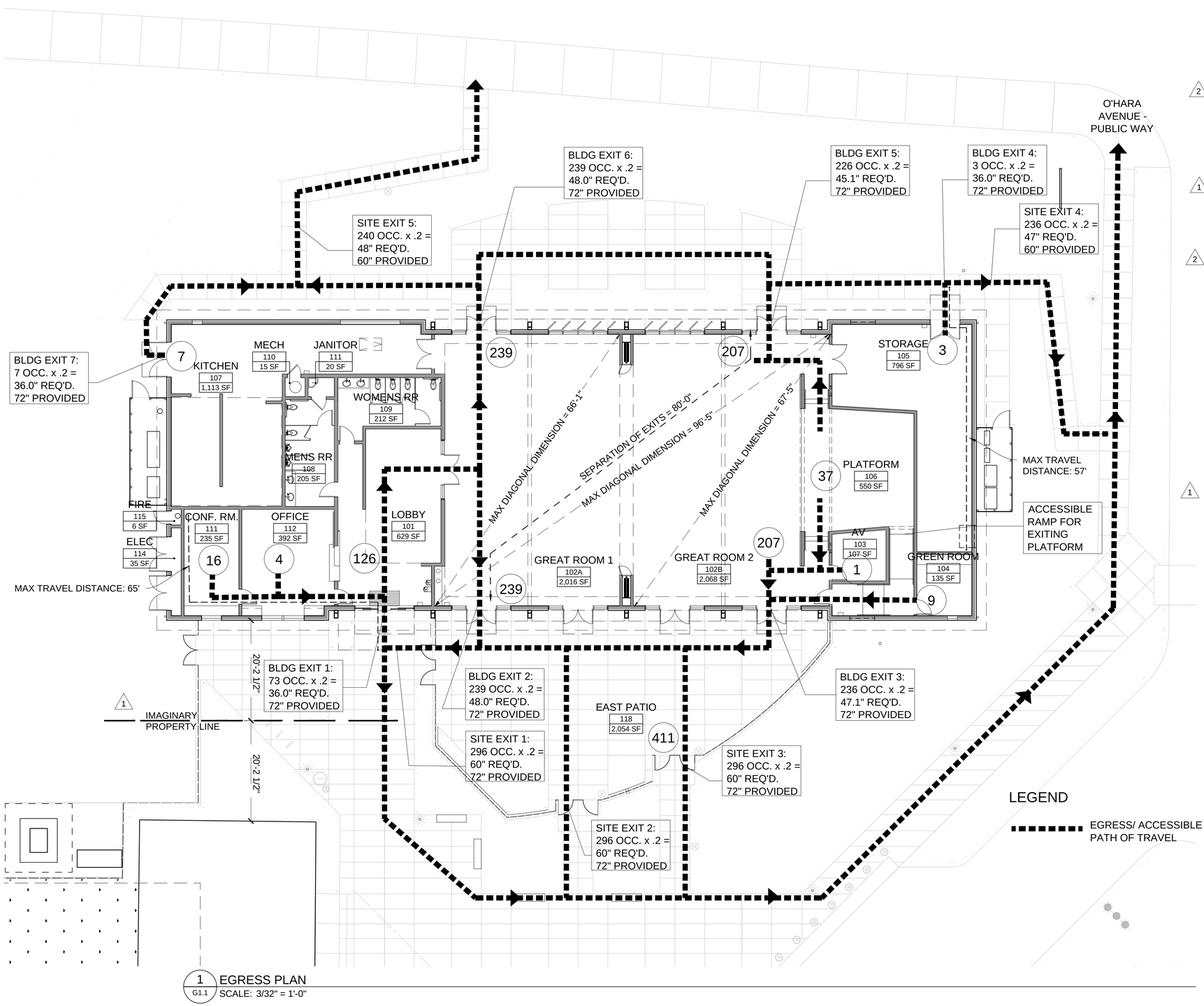


Figure 4: **Sprinkler Dimensions and Cover Installation**



1 G1.1 EGRESS PLAN
SCALE: 3/32" = 1'-0"

BUILDING OCCUPANCY: A-3, UNSEPARATED PER CBC 508.3

OCCUPANT LOAD (PER TABLE 1004.1.2)

ROOM	AREA (SF)	FUNCTION	AREA/ OCC (SF)	OCC LOAD
EXIT				
101 - LOBBY (ACCESSORY*)	629	ASSEM. -CONC.	5	126
2 102A - GREAT ROOM 1**	2,016	ASSEM. -CONC.	5	404
102B - GREAT ROOM 2**	2,068	ASSEM. -CONC.	5	414
103 - AV ROOM	107	STORAGE	300	1
104 - GREEN ROOM	136	ASSEM. - UNCON.	15	9
105 - STORAGE	796	STORAGE	300	3
106 - PLATFORM	550	PLATFORM	15	37
107 - KITCHEN	1,113	KITCHEN	200	7
111 - CONFERENCE ROOM	235	ASSEM. - UNCON.	15	16
1 112 - OFFICE	392	BUSINESS AREA	100	4
				1020
119- EAST PATIO	2054	ASSEM. -CONC.	5	411
		TOTAL OCCUPANTS:		**1,432**

***LOBBY IS ACCESSORY TO GREAT ROOM, EXITS PER CBC 1016.2**

2 ****GREAT ROOM OCCUPANT LOAD WITH PARTITION OPEN IS 817**

COMMON PATH OF EGRESS TRAVEL (CPET) 75 FT PER CBC TABLE 1004.3

EXIT ACCESS TRAVEL DISTANCE 250 FT (W/ SPRINKLER SYSTEM) PER CBC TABLE 1017.2

SEPARATION OF EXITS- SEPARATE BY 1/3 THE DIAGONAL PER CBC 1015.2.1

EXIT SIGNS REQUIRED PER CBC 1013

MINIMUM PLUMBING FIXTURES OCCUPANT LOAD CPC TABLE A

BUILDING & OCCUPANCY	*AREA*	*FACTOR*	*OCCUPANTS*
GROUP B OCCUPANCY:	1,505 SF	200	8 OCCUPANTS
GROUP S OCCUPANCY:	796 SF	5000	1 OCCUPANTS
GROUP A-1 OCCUPANCY	4,713 SF	15	315 OCCUPANTS
GROUP A-2 OCCUPANCY:	921 SF	30	31 OCCUPANTS
		TOTAL	**355 OCCUPANTS**

MINIMUM PLUMBING FIXTURES CPC TABLE 422.1

1

REQUIRED:	WATER CLOSETS		URINAL	LAVATORIES	
	MALE	FEMALE		MALE	FEMALE
GROUP A-3 :	2	4	2	2	2

PROVIDED:	**WATER CLOSETS**		**URINAL**	**LAVATORIES**	
	MALE	**FEMALE**		**MALE**	**FEMALE**
GROUP A-3 :	**2**	**4**	**2**	**2**	**2**

NOTE: 1 SERVICE SINK REQUIRED AND 1 PROVIDED @ JANITOR CLOSET 111

2 DRINKING FOUNTAINS PROVIDED

BUILDING SEPERATION

40'5" SEPERATION BETWEEN BUILDINGS, 20'3" TO IMAGINARY LINE

10≤X≥30 = NON RATED EXTERIOR CONSTRUCTION PER CBC 602.1

EXTERIOR OPENINGS

PER CBC 705.8.1 EXCEPTION #2, THE BUILDING IS PERMITTED TO HAVE UNLIMITED UNPROTECTED OPENINGS.

PANIC HARDWARE REQUIRED ON ALL EXIT DOORS SERVING 50 OR MORE OCCUPANTS

SIEGEL & STRAIN Architects
6201 Doyle Street Suite B
Emeryville, CA 94608
510 / 547-8092
www.siegelstrain.com

LICENSED ARCHITECT SUE A. MARZUOLA C 22905 11-30-19 STATE OF CALIFORNIA

OAKLEY CALIFORNIA

OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

CODE ANALYSIS & EGRESS PLAN

Issue	
2	ADDENDUM 2

Date: 1/16/18
Scale: AS NOTED
Design: SM
Drawn: SCD
Approved: MH
Job No: 17-005

Drawing Number:
G1.1

PLANTING NOTES

GENERAL

1. ALL WORK SHALL BE PERFORMED BY PERSONS FAMILIAR WITH PLANTING WORK AND UNDER THE SUPERVISION OF A QUALIFIED PLANTING FOREMAN.

2. ALL QUANTITIES AND PLANT COUNTS ARE FOR THE CONVENIENCE OF THE CONTRACTOR. IN CASE OF DISCREPANCIES, THE PLAN SHALL GOVERN.

3. THE ENGINEER RESERVES THE RIGHT TO MAKE SUBSTITUTIONS, ADDITIONS, AND DELETIONS IN THE PLANTING SCHEME AS THEY FEEL NECESSARY WHILE WORK IS IN PROGRESS, UPON APPROVAL BY THE ENGINEER. SUCH CHANGES ARE TO BE ACCOMPANIED BY EQUITABLE ADJUSTMENTS IN THE CONTRACT PRICE, WHEN NECESSARY.

4. PLANT MATERIAL LOCATIONS SHOWN ARE DIAGRAMMATIC AND MAY BE SUBJECT TO CHANGE IN THE FIELD BY THE ENGINEER. PLANT LOCATIONS ARE TO BE ADJUSTED IN THE FIELD AS NECESSARY TO SCREEN UTILITIES, BUT SHALL NOT BLOCK WINDOWS, BLOCK SIGNS NOR IMPEDE ACCESS.

5. THE DESIGN INTENT OF THE PLANTING PLAN IS TO ESTABLISH AN ATTRACTIVE MATURE LANDSCAPE APPEARANCE. FUTURE PLANT GROWTH WILL NECESSITATE TRIMMING, SHAPING, AND IN SOME CASE REMOVAL OF TREES AND SHRUBS AS AN ON-GOING MAINTENANCE PROCEDURE.

6. ALL PLANTING AREA MUST BE IRRIGATED WITH AUTOMATIC IRRIGATION SYSTEM. IRRIGATION SYSTEM SHALL BE FULLY AUTOMATED AND OPERATIONAL WITH FULL COVERAGE PRIOR TO PLANTING.

7. CONTRACTOR TO REVIEW ALL EXISTING, PROPOSED, & AS BUILT UTILITY PLANS PRIOR TO CONSTRUCTION. CONTRACTOR TO TAKE PRECAUTIONS IN EXCAVATION OF ALL TREE PLANTING PITS. CONTRACTOR TO NOTIFY THE ENGINEER OF ANY CONFLICTS FOUND DURING CONSTRUCTION.

8. CONTRACTOR MUST REVIEW ALL PLANS PRIOR TO THE BEGINNING OF CONSTRUCTION AND MAINTAIN THE FOLLOWING CLEARANCES FOR ALL TREE PLANTINGS. CONTRACTOR TO TAKE PRECAUTION IN ALL EXCAVATION ACTIVITY. NOTIFY THE ENGINEER OF ANY CONFLICTS PRIOR TO INSTALLATION.
   - FIRE HYDRANTS AND PIVS: 5' MINIMUM
   - LIGHT POLES: 10' MINIMUM
   - UTILITIES: 5' MINIMUM
   - BUILDING ROOF EDGE: 5' MINIMUM

9. CONTRACTOR TO PROVIDE AND ARRANGE FOR PLANT MATERIAL THRU CONTRACT GROW, PLANT BROKERS, OR DIRECT PURCHASE AS REQUIRED FOR THE FULL IMPLEMENTATION OF THE PROJECTS PLANTING PLAN. CONTRACTOR MUST SUBMIT WITHIN 30 DAYS AFTER AWARD OF A BID A DETAILED NURSERY LIST OF SECURED PLANT MATERIAL, CONTRACT GROW PLANT MATERIAL, AND ANY SUBSTITUTION REQUESTS. CONTRACTOR SHALL ARRANGE AND SECURE ALL PLANT MATERIAL WITHIN 30 DAYS OF BID. UPON DELIVERY, PLANT MATERIAL THAT DOES NOT MEET NURSERY STANDARDS, IS ROOTBOUND, OF POOR QUALITY & HEALTH, SUBSTANDARD SIZE, AND / OR IS NOT APPROVED BY THE ENGINEER SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. MATERIAL WHICH IS NOT SECURED AND IS UNAVAILABLE IN THE SIZE SPECIFIED SHALL BE UP-SIZED, IF AVAILABLE. ALL REPLACEMENT MATERIAL, SUBSTITUTIONS OR UP-SIZED PLANT MATERIAL MUST BE PROVIDED AS REQUIRED FOR THE FULL IMPLEMENTATION OF THE PLANTING PLAN AT NO ADDITIONAL COST TO THE CONTRACT AND THE CITY.

10. PROCUREMENT OF PLANT MATERIAL SHALL NOT BE LIMITED TO NORTHERN CALIFORNIA. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRUCKING, INSPECTIONS, AND INCIDENTALS FOR PROVIDING PLANT MATERIAL FROM SOURCES OUT OF STATE AS REQUIRED BY THE PROJECT PLANTING PLAN.

EXISTING PLANT MATERIAL

1. ALL EXISTING PLANT MATERIAL, TREES, OR LAWN TO REMAIN MUST BE PROTECTED AND MAINTAINED IN PLACE BY THE CONTRACTOR.

2. ANY DAMAGED MATERIAL MUST BE FULLY REPLACED TO MATCH EXISTING BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE CONTRACT AND THE CITY.

3. CONTRACTOR MUST MAINTAIN ANY EXISTING IRRIGATION SYSTEMS OR PROVIDE TEMPORARY IRRIGATION SYSTEMS AS REQUIRED TO ALL EXISTING PLANTING AREAS TO REMAIN.

SOILS △1

1. THE CONTRACTOR MUST PROVIDE AN AGRICULTURAL SUITABILITIES ANALYSIS FOR ALL SOILS EXISTING AND IMPORTED INCLUDING BUT NOT LIMITED TO: EXISTING ON-SITE SOILS, IMPORTED TOPSOIL, LIME TREATED AREAS, AND ALL AMMENDMENTS. RECOMMENDATIONS FOR AMENDMENTS CONTAINED IN THIS ANALYSIS ARE TO BE CARRIED OUT BEFORE PLANTING OCCURS. PROVIDE 2 TESTS AT 6" DEPTH AND 2 TESTS AT 24" DEPTH THROUGHOUT THE SITE. PROVIDE ADDITIONAL TESTING (ONE 6" AND ONE 24" DEPTH TEST PER 25,000 SF FOR AREAS WHICH WERE LIME TREATED). EACH TEST SAMPLE SHALL CONTAIN 3 REPRESENTATIVE SOIL SAMPLES. ALL LIME TREATED PLANTING AREAS SHALL BE REMOVED AND REPLACED WITH IMPORT TOP SOIL AT NO COST TO THE CITY. ALL TESTING SHALL BE PAID FOR BY THE CONTRACTOR. FOR BID PURPOSES AMEND ALL SOIL AS NOTED PER SPECS. CONTRACTOR TO SUBMIT ALL DELIVERY TICKETS FOR COMPOST AND FERTILIZERS FOR VERIFICATION.

2. ALL SOILS IMPORTED ONTO THE SITE FOR ANY PURPOSE SUCH AS GRADING, NON EXPANSIVE FILL, FILL, OR FOR ANY GENERAL PURPOSE MUST BE TESTED FOR PLANT SUITABILITY PRIOR TO PLACEMENT. ALL IMPORT SOILS SHALL BE NON-DETRIMENTAL TO PLANT MATERIAL AND SOILS ANALYSIS SUBMITTED TO THE ENGINEER AND THE LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL. PROVIDE 1 TEST PER 500 CY OF MATERIAL.

3. SOIL IS TO BE AMENDED, AT THE RATE INDICATED BY THE SOIL ANALYSIS, TO BRING THE SOIL ORGANIC MATTER CONTENT TO A MINIMUM OF 3.5% BY DRY WEIGHT, AND A MINIMUM OF 2" OF QUALITY RECYCLED COMPOST, ON ALL PLANTING AREAS.

4. ALL PLANTERS IN AREAS WHICH HAVE BEEN COMPACTED, SUCH AS ADJACENT TO BUILDINGS AND IN PARKING LOTS, SHALL BE CROSS RIPPED TO THE FOLLOWING DEPTHS: PLANTERS LESS THAN THREE (3) FEET WIDE SHALL HAVE COMPACTION RELIEVED TO A MINIMUM DEPTH OF TWENTY-FOUR (24) INCHES BELOW SUBGRADE. PLANTERS THREE TO TEN (3-10) FEET WIDE MUST HAVE COMPACTION RELIEVED TO A MINIMUM DEPTH OF 18" BELOW SUBGRADE, PLANTERS MORE THAN 10' WIDE SHALL HAVE COMPACTION RELIEVED TO A MINIMUM DEPTH OF 12" BELOW SUBGRADE. AREAS SHALL BE PROTECTED AFTER DECOMPACTION.

5. CONTRACTOR SHALL PERFORM A PERCOLATION TEST AT THE BEGINNING OF CONSTRUCTION AT 1 LOCATION PER ACRE (MAX OF 4) TO DETERMINE THE DRAINAGE CAPACITY OF THE EXISTING SITE SOIL FOR TREE HEALTH. NOTIFY THE ENGINGEER IF DRAINAGE IS LESS THAN 2" PER HOUR.

PLANTING NOTES (CONT)

TREES

1. ALL TREES SHALL BE STANDARDS UNLESS SPECIFICALLY NOTED.

2. ALL TREES ARE TO BE STAKED AS SHOWN ON THE TREE STAKING/GUYING DIAGRAMS. BRANCHING HEIGHT OF TREES SHALL BE A 6'-0" MINIMUM ABOVE FINISH GRADE. ALL TREES IN A FORMAL GROUP PLANTING MUST BE MATCHING IN SIZE AND SHAPE. ALL STREET TREES TO BE INSTALLED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE CITY. LANDSCAPE ARCHITECT SHALL BE CONSULTED REGARDING ORIENTATION OF TREES PRIOR TO PLANTING AND/OR BACKFILLING.

3. PLANT TREES 3'-0" MINIMUM FROM FACE OF CURB AT PARKING, AND FROM EDGES OF PAVING. ALL TREES WITHIN 5' OF PAVING AREAS AND BUILDINGS MUST HAVE ROOT BARRIERS INSTALLED. SEE ROOT BARRIER DETAIL. DEEP ROOT BARRIER MODEL NO. UB.24.2. (415) 344-1464, OR APPROVED EQUAL INSTALL PERMANUFACTURER'S SPECIFICATIONS. WHERE WATER BARRIERS AND ROOT BARRIERS ARE REQUIRED, USE CENTURY PRODUCTS DUAL PURPOSE WATER/ ROOT BARRIER CR-PE24-20, (714)632-7083, S.C.D. FOR LOCATIONS OF WATER BARRIER.

4. PROVIDE 4" BERM AROUND TREE FOR WATER BASIN. SEE TREE STAKING DETAIL. BERM TO BE REMOVED IN LAWN AREA AFTER INITIAL MAINTENANCE PERIOD. MULCH TREE WELL IN THE PLANTING AREA WITH 3" LAYER OF RECYCLED SUNGROW MULCH ($1\frac{1}{2}$" DIAMETER). KEEP MULCH AWAY FROM TREE TRUNK.

5. TREES MUST HAVE AN UNCUT LEADER THAT HAS A UNIFORM TAPER FROM BASE TO TIP. TREES MUST MEET AT LEAST NORMAL CALIPER AND HEIGHT FOR CONTAINER SIZE. OVERGROWN OR ROOT BOUND TREES ARE NOT ACCEPTABLE.

6. FOR ALL TREES IN STORMWATER INFILTRATION ZONES HOLD FG OF ROOTBALL 4" ABOVE FG OF FLOWLINE. ADJUST ADJACENT GRADE OF SOIL TO BLEND UNIFORMLY AROUND ROOTBALL AND ALLOW UNIMPEDED FLOW OF WATER.

SHRUBS AND GROUNDCOVERS

1. GROUNDCOVER MUST BE PLANTED AS SHOWN ON THE PLAN, INCLUDING UNDER SHRUBS AND IN TREE WATERING BASINS.

2. SHRUBS AND PERENNIALS MUST HAVE ADEQUATE SETBACK (MINIMUM OF 12") FROM THE ADJACENT SIDEWALK AND EDGES OF PARKING LOT CURBS. NOTIFY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION IF PLANT MATERIAL MAY PROTRUDE INTO THE PATH OF TRAVEL.

ACCESSORIES

1. ALL PLANTING SHALL BE BOUNDED BY CONCRETE OR A HARDSCAPE EDGE. ALL ASPHALT TO BE COMPLETELY SURROUNDED BY ADJACENT CONCRETE WORK.

2. ALL PLANTING AREAS MUST BE TOP-DRESSED WITH 3" LAYER OF RECYCLED SUNGROW MULCH ($1\frac{1}{2}$" DIAMETER). COLOR: BROWN. SUBMIT SAMPLE TO LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO ORDERING.

3. ALL MULCH WITHIN STORMWATER PLANTING AREAS MUST BE 3" OF WASHED PEA GRAVEL. SUBMIT SAMPLE FOR REVIEW AND APPROVAL.

4. ALL STORMWATER CURB CUTS MUST BE REINFORCED WITH A MINIMUM 12" WIDE x18" LONG x 6" DEEP BAND OF COBBLE. COBBLE SHALL BE 40% 4"-6" AND 60% 2"-3" NOIYO COBBLE. PROVIDE 24" WIDE BY 6" DEPTH OF COBBLE AROUND ALL CATCH BASINS LOCATED IN DRAINAGE AREAS. SUBMIT SAMPLE FOR REVIEW AND APPROVAL

5. ALL RAINWATER LEADERS DISCHARGING INTO LANDSCAPE AREAS MUST HAVE SPLASH BLOCKS. MODEL: CDI 16X24". COLOR: TO MATCH PAVING. (800) 279-2278.

6. ALL SLOPES GREATER THAN 2.5:1 MUST BE COVERED WITH EROSION CONTROL NETTING PER THE MANUFACTURER'S SPECIFICATIONS. OVERLAP ALL EDGES A MINIMUM OF 12" AND SECURE AS REQUIRED WITH METAL STAPLES. EROSION CONTROL NETTING TO BE WESTERN EXCELSIOR, EXCEL CS-3 OR APPROVED EQUAL. AVAILABLE FROM REED & GRAHAM 888-381-0800.

7. SEE SPECIFICATIONS FOR ALL FERTILIZER REQUIREMENTS

SUBMITTALS

1. CONTRACTOR MUST SUBMIT ALL TESTS, PRODUCTS, ACCESSORIES, CUT SHEETS OF ALL ITEMS SPECIFIED FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.

2. ALL PLANT MATERIAL MUST BE REVIEWED AND APPROVED BY THE ENGINEER AND THE LANDSCAPE ARCHITECT PRIOR TO DELIVERY. CONTRACTOR SHALL SUBMIT PHOTOS OF ALL SHRUBS, GROUND COVERS, AND TREES FOR PRELIMINARY REVIEW AND APPROVAL.

PLANT MATERIAL NOT APPROVED BY THE ENGINEER AND THE LANDSCAPE ARCHITECT MAY BE SUBJECT TO REMOVAL AND REPLACEMENT WITH APPROVED PLANT MATERIAL AT NO ADDITIONAL COST TO THE CITY.
MUNICIPAL REQUIREMENTS

1. ALL PLANT MATERIAL TO BE INSPECTED & APPROVED BY THE ENGINEER AND THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.

2. CONTACT THE ENGINEER AND THE PROJECT LANDSCAPE ARCHITECT FOR FINAL INSPECTION OF LANDSCAPE AND IRRIGATION. PRIOR TO FINAL ACCEPTANCE, THE PROJECT LANDSCAPE ARCHITECT WILL SUBMIT A LETTER TO THE CITY CERTIFYING THE PLANTING AND IRRIGATION HAS BEEN INSTALLED IN CONFORMANCE WITH THE APPROVED PLANTING AND IRRIGATION PLANS, SUBJECT TO THE REVIEW AND APPROVAL OF THE ENGINEER. SECURITIES IN LIEU OF INSTALLATION WILL NOT BE ACCEPTED.

PLANTING LIST

TREES	BOTANICAL NAME	COMMON NAME	SIZE	WATER REQ.	SPACING	QTY	CA NATIVE
AR	ACER RUBRUM `ARMSTRONG`	ARMSTRONG RED MAPLE	24"BOX	M	AS SHOWN	19	
GB	GINKGO BILOBA `PRINCETON SENTRY`	PRINCETON SENTRY GINKGO	24"BOX	M	AS SHOWN	10	
LM	LAGERSTROEMIA INDICA `MUSKOGEE`	MUSKOGEE CRAPE MYRTLE	24"BOX	L	AS SHOWN	8	
OE	OLEA EUROPAEA `SWAN HILL` TM	SWAN HILL OLIVE	24"BOX	VL	AS SHOWN	30	
PC	PLATANUS X ACERIFOLIA `COLUMBIA`	LONDON PLANE TREE	24"BOX	M	AS SHOWN	2	△1
PA	PRUNUS X YEDOENSIS `AKEBONO`	FLOWERING CHERRY	15 GAL.	M	AS SHOWN	46	
QA	QUERCUS AGRIFOLIA	COAST LIVE OAK	15 GAL.	VL	AS SHOWN	9	X
QS	QUERCUS SUBER	CORK OAK	15 GAL.	L	AS SHOWN	4	
UP	ULMUS PARVIFOLIA `DRAKE`	DRAKE ELM	15 GAL.	M	AS SHOWN	11	

SHRUBS	BOTANICAL NAME	COMMON NAME	SIZE	WATER USE	SPACING	QTY	
AA	AGAVE ATTENUATA `KARA`S STRIPES`	AGAVE	5 GAL	L	48" o.c.	34	
AB	AGAVE X `BLUE GLOW`	BLUE GLOW AGAVE	5 GAL	L	36" o.c.	5	
CH	CHONDROPETALUM TECTORUM `EL CAMPO`	CAPE RUSH	5 GAL	L	36" o.c.	252	
DG	DIETES GRANDIFLORA `VARIEGATA`	FORTNIGHT LILY	5 GAL	L	48" o.c.	68	△1
FM	FESTUCA MAIREI	ATLAS FESCUE	5 GAL	L	30" o.c.	49	
LS	LIGUSTRUM SINENSE `SUNSHINE`	SUNSHINE LIGUSTRUM	5 GAL	L	36" o.c.	76	
MD	MUHLENBERGIA DUBIA	PINE MUHLY	5 GAL	L	36" o.c.	648	
RE	RHAMNUS CALIFORNICA `EVE CASE`	CALIFORNIA COFFEEBERRY	5 GAL	L	72" o.c.	54	X
RM	RHAMNUS CALIFORNICA `MOUND SAN BRUNO`	CALIFORNIA COFFEEBERRY	5 GAL	L	48" o.c.	159	X △1
SWG	SALVIA CLEVELANDII `WINIFRED GILLMAN`	CLEVELAND SAGE	5 GAL	L	48" o.c.	123	X
SL	SALVIA LEUCANTHA `SANTA BARBARA`	MEXICAN BUSH SAGE	5 GAL	L	48" o.c.	106	X △1
SH	SALVIA MICROPHYLLA `HOT LIPS`	HOT LIPS SALVIA	5 GAL	L	36" o.c.	164	
TF	TEUCRIUM FRUTICANS `AZUREUM`	AZURE BUSH GERMANDER	5 GAL	L	48" o.c.	11	

SHRUB AREAS	BOTANICAL NAME	COMMON NAME	CONT	WATER USE	SPACING	QTY	△1
CF	CALAMAGROSTIS FOLIOSA	MENDOCINO REED GRASS	1 GAL	L	24" o.c.	41	X
CA	CALAMAGROSTIS X ACUTIFLORA `KARL FOERSTER`	FEATHER REED GRASS	1 GAL	L	30" o.c.	69	
CT	CAREX TUMULICOLA	BERKELEY SEDGE	1 GAL	L	24" o.c.	22	X
EB	EPILOBIUM CALIFORNICUM `BOWMAN`S #1`	CALIFORNIA FUCHSIA	1 GAL	VL	24" o.c.	506	X △1
HM	HEMEROCALLIS X `MAGIC MAGICIAN`	MAGIC MAGICIAN DAYLILY	1 GAL	M	24" o.c.	599	
JP	JUNCUS PATENS `ELK BLUE`	SPREADING RUSH	1 GAL	L	24" o.c.	488	X △1
LL	LOMANDRA LONGIFOLIA `BREEZE`	DWARF MAT RUSH	1 GAL	L	36" o.c.	541	
SK	SALVIA MICROPHYLLA `LITTLE KISS`	LITTLE KISS SALVIA	1 GAL	M	18" o.c.	57	
SB	SALVIA X SYLVESTRIS `BLUE HILL`	BLUE HILL MEADOW SAGE	1 GAL	L	12" o.c.	734	△1
TCH	TEUCRIUM CHAMAEDRYS	GERMANDER	1 GAL	L	24" o.c.	233	

NON-IRRIGATED HYDROSEED MIX
AVAILABLE FROM: PACIFIC COAST SEED
PH: (925)-373-4417
TYPE: HABITAT MIX

LBS./ACRE	BOTANICAL NAME
10	BROMUS CARINATUS
8	ELYMUS GLAUCUS
8	HORDEUM CALIFORNICUM
5	FESTUCA IDAHOENSIS
5	NASSELLA PULCHRA
4	POA SECUNDA
.75	ACHILLEA MILLEFOLIUM
2	ESCHSCHOLZIA CALIFORNICA
3	LUPINUS NANUS
2	SISYRINCHIUM BELLUM
1.25	WYETHIA ANGUSTIFOLIA

△2 SODDED LAWN W/ BIODEGRADABLE MESH NETTING
SEE SPECS FOR THE SOD SPECIE

WATER USE RATING LEGEND:
WUCOLS IV CATEGORIES OF WATER NEEDS FROM: UNIVERSITY OF CALIF COOPERATIVE EXTENSION, CALIF DEPARTMENT OF WATER RESOURCES, U.S. BUREAU OF RECLAMATION
- H = HIGH
- M = MODERATE
- L = LOW
- VL = VERY LOW

PLANTING LEGEND

Symbol		
PA / 5	TREE NAME / QUANTITY	SEE PLANT LIST FOR ADDT'L. INFO.
DV / 5	SHRUB / GROUND COVER NAME / QUANTITY	SEE PLANT LIST FOR ADDT'L INFO.

GATES +ASSOCIATES
LANDSCAPE ARCHITECTURE
LAND PLANNING • URBAN DESIGN
2671 CROW CANYON ROAD, CALIFORNIA 94583
T 925.736.8176 www.dgates.com

REGISTERED LANDSCAPE ARCHITECT
DAVID GATES • No. 1560
Signature
5/31/2019
Renewal Date
12/1/2017
Date
L.A.
STATE OF CALIFORNIA

OAKLEY CALIFORNIA

CIP 194 – OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

PLANTING NOTES

No.	Revisions
△1	PERMIT SET REV. / BID SET
△2	ADDENDUM 2

Date: 01/16/2018
Scale: AS NOTED
Design: KC
Drawn: JG, JS
Approved:
Job No: P5203

Drawing Number:
L1.3


APPROXIMATE LOCATION 14'X38' EASEMENT TO DWD
DETECTABLE WARNING SURFACE, TYP., S.C.D.
PEDESTRIAN CONCRETE PAVING, TYP. S.C.D. SEE L1.2 FOR COLOR AND FINISH
CONCRETE BENCH TYP. OF (2)
L5.7
PROPERTY LINE
EXISTING FENCE TO REMAIN, TYP.
Dense Trees
Asphalt
CURB-CUT RAMP, S.C.D.
RIGHT OF WAY
SEE SHEET L2.3 ENLARGED LAYOUT PLAN
VEHICULAR CONCRETE PAVING, TYP. S.C.D. / SPEED TABLE
2'X3' PULL BOX IN THE PLANTING AREA, S.E.D.
DRINKING FOUNTAIN
L5.8
DECORATIVE POST-TOP LIGHT, S.E.D. TYP. OF (20)
BARK MULCH AT TREE CUT OUT TYP.
BIO-RETENTION AREA, TYP. S.C.D. FOR DETAILS
PARKING SIGN
L5.5
VEHICULAR CONCRETE PAVING, TYP. S.C.D. SEE L1.2 FOR COLOR AND FINISH
CONCRETE SEAT PAD TYP. OF (14), ON 16"X16"X4" THICK CONCRETE PAD. S.C.D. FOR CONCRETE PAD DETAIL
O'HARA AVENUE
FF 43.50
WEST PATIO
EAST PATIO
PROPOSED RECREATION CENTER PHASE 1
PARKING LOT LIGHT, TYP. S.E.D.
DRIVEWAY CURB CUT, S.C.D.
PEDESTRIAN CONCRETE PAVING, TYP. S.C.D. SEE L1.2 FOR COLOR AND FINISH
VEHICULAR CONCRETE PAVING, S.C.D.
MATCH LINE, SEE SHEET L2.2
FF 41.76
EXISTING BUILDING TO REMAIN
FF 41.74
EXISTING BUILDING TO REMAIN
FF 41.74
EXISTING BUILDING TO REMAIN
REDWOOD HEADER
L5.1
REMOVABLE BOLLARD
L5.4
DRIVEWAY W/ AGGREGATE BASE, TYP. S.C.D.
NOTE: CONTRACTOR SHALL PROVIDE GSM FLASHING AGAINST EXISTING BUILDING WHERE NEW CONCRETE SIDEWALK IS POURED, TYP.
EXISTING BUILDING TO REMAIN
FF 41.76
VEHICULAR CONCRETE PAVING, TYP. S.C.D. SEE L1.2 FOR COLOR AND FINISH
EXISTING SIDEWALK TO REMAIN
SERVICE DRIVE, S.C.D.
DRIVEWAY CURB, S.C.D.
SERVICE YARD, S.C.D.
NON-IRRIGATED HYDROSEED MIX, TYP., SEE SHEET L1.3 FOR PLANT SPECIES
EXISTING A.C. WALKWAY ALONG THE BUILDING, S.C.D. FOR LIMIT OF THE A.C. PAD PAINT SKIRT ALONG 3 SIDES OF EXISTING BUILDING. COLOR TO MATCH EXISTING.
REDWOOD HEADER
SEE SHEET L2.4 ENLARGED LAYOUT PLAN
PROPERTY LINE
LIMIT OF WORK, TYP.
EXISTING FENCE TO REMAIN TYP.
DELTA DE ANZA REGIONAL TRAIL
DELTA DE ANZA REGIONAL TRAIL
Concrete
Asphalt
KEY MAP
L2.1
L2.2
0 10' 20' 40'

GATES + ASSOCIATES
LANDSCAPE ARCHITECTURE

OAKLEY CALIFORNIA

CIP 194 – OAKLEY RECREATION CENTER

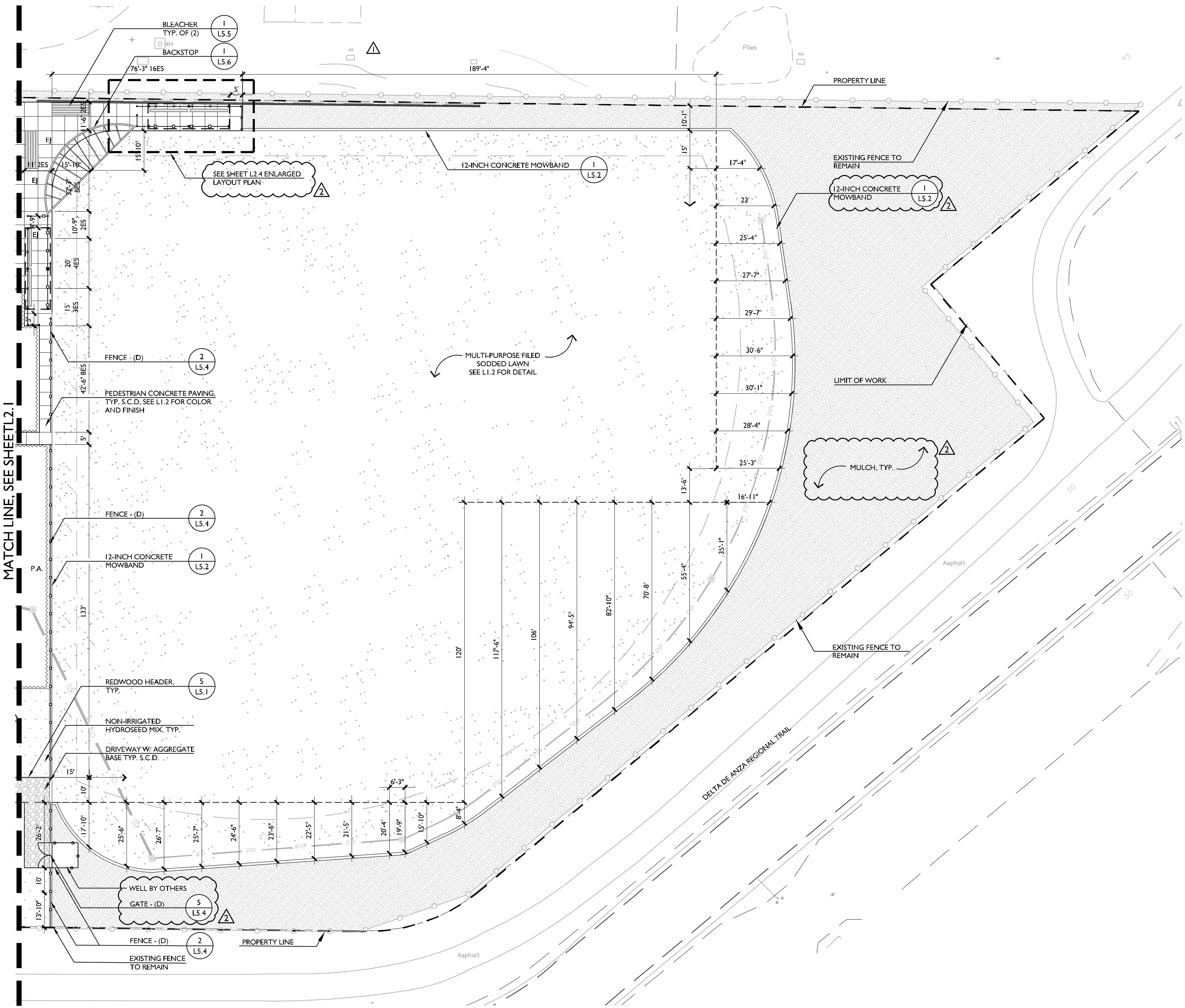
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

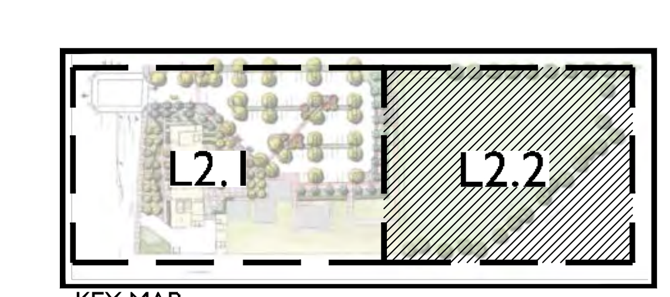
LAYOUT PLAN

No.	Revisions
1	PERMIT SET REV. / BID SET
2	ADDENDUM 2

Date: 01/16/2018
Scale: AS NOTED
Design: KC
Drawn: JG, JS
Approved:
Job No: P5203

Drawing Number: L2.1





KEY MAP

0 10' 20' 40'

GATES +ASSOCIATES
LANDSCAPE ARCHITECTURE
LAND PLANNING • URBAN DESIGN

OAKLEY CALIFORNIA

CIP 194 – OAKLEY RECREATION CENTER

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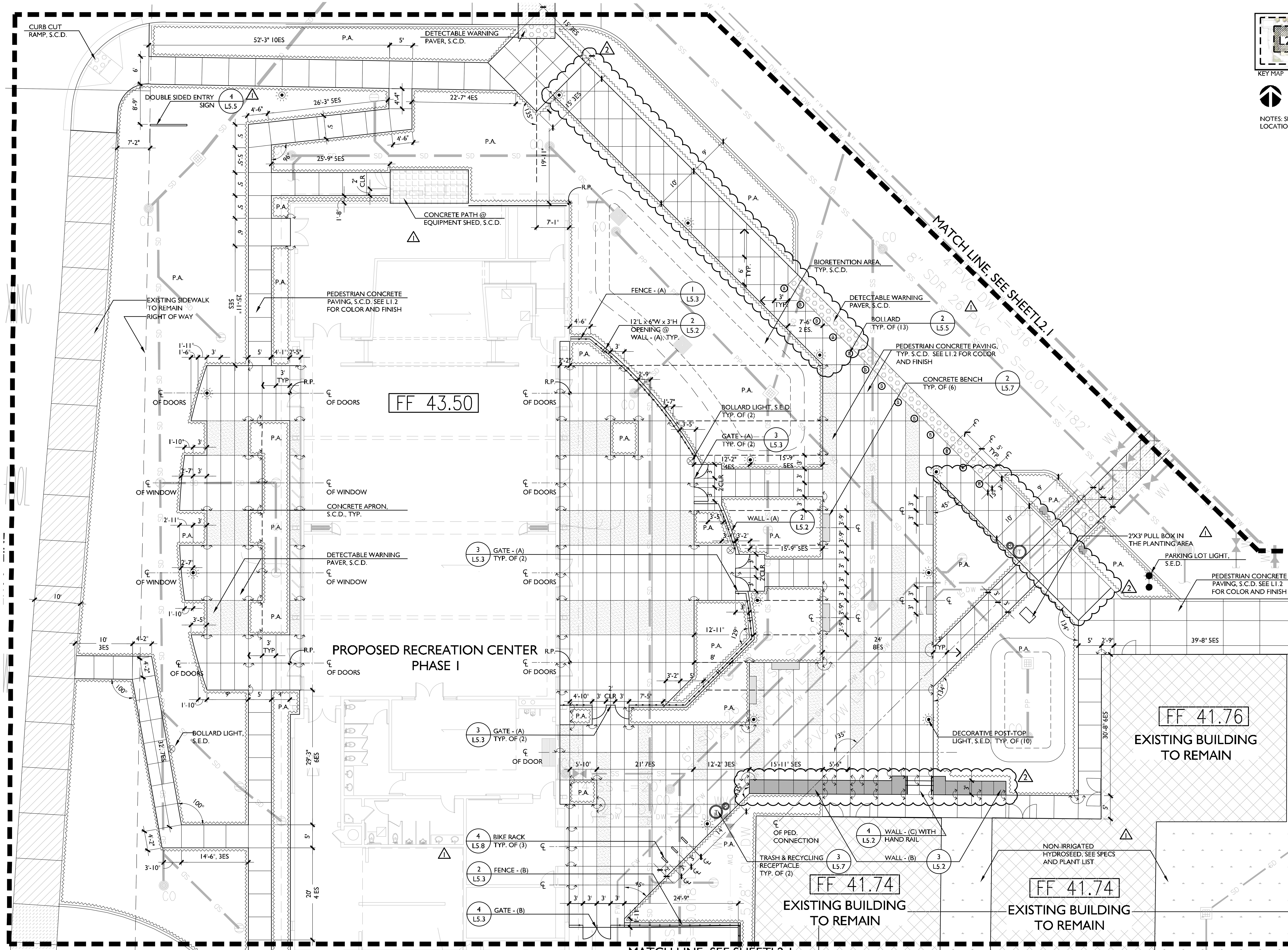
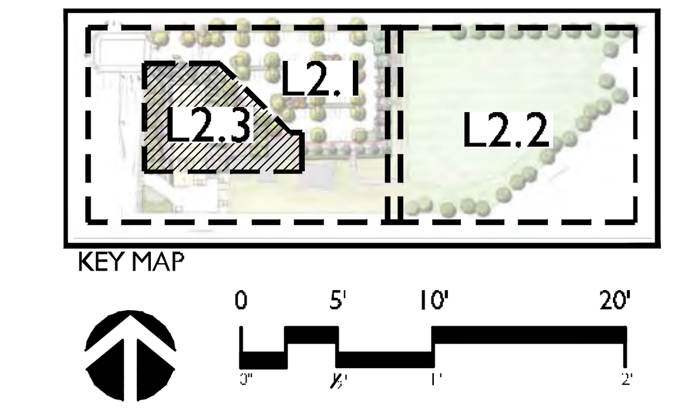
L2.2





NOTES: SEE SHEET L2.1 FOR EXPANSION JOINT LOCATIONS OF CONCRETE PAVING.

GATES +ASSOCIATES
LANDSCAPE ARCHITECTURE
LAND PLANNING • URBAN DESIGN

OAKLEY CALIFORNIA

CIP 194 – OAKLEY RECREATION CENTER

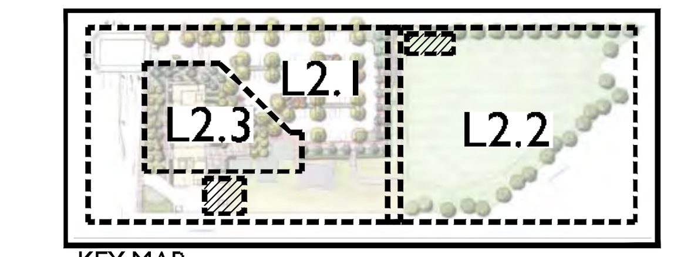
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

ENLARGED LAYOUT PLAN

No.	Revisions
1	PERMIT SET REV. / BID SET
2	ADDENDUM 2

Date: 01/16/2018
Scale: AS NOTED
Design: KC
Drawn: JG, JS
Approved:
Job No: P5203

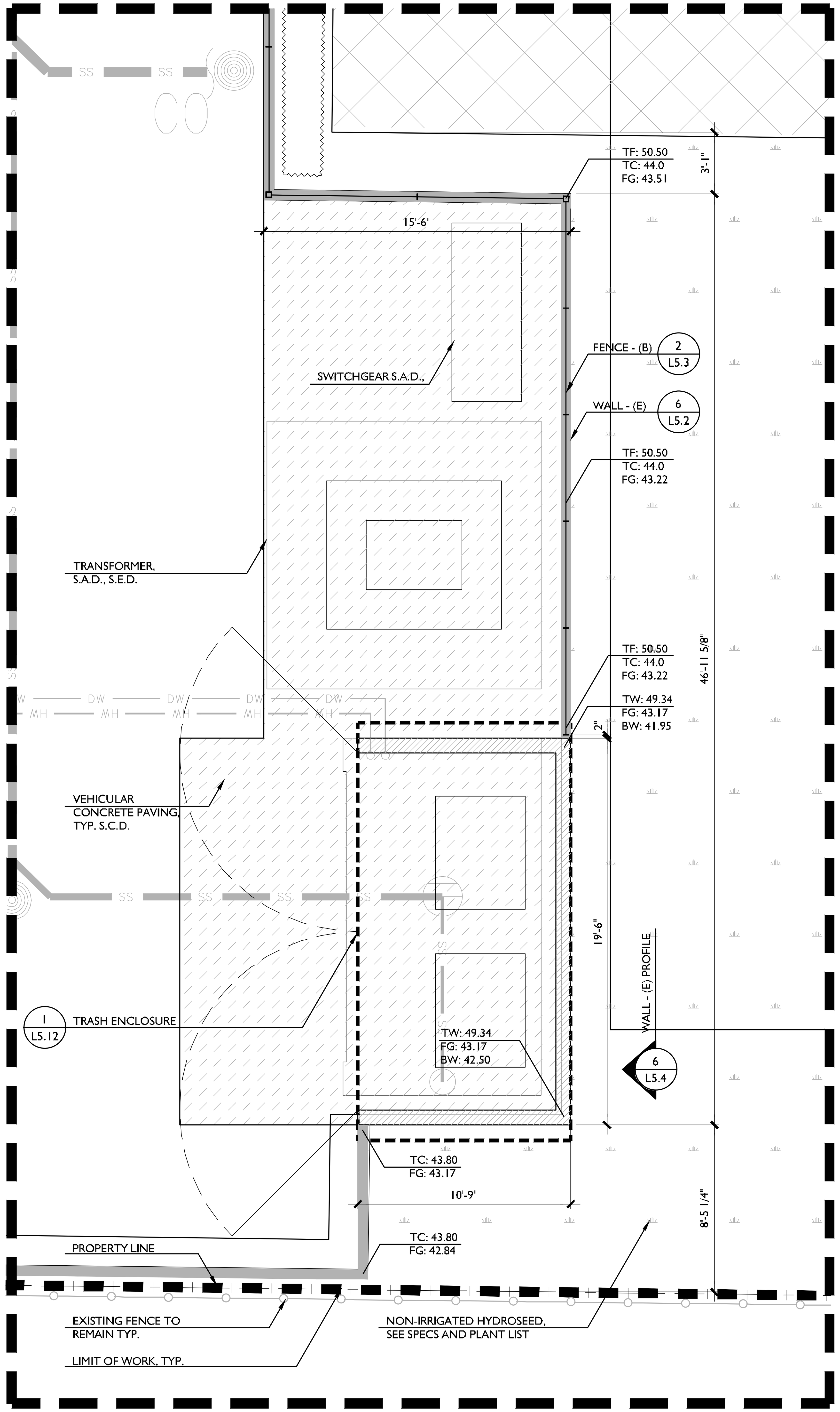
Drawing Number:
L2.3



KEY MAP

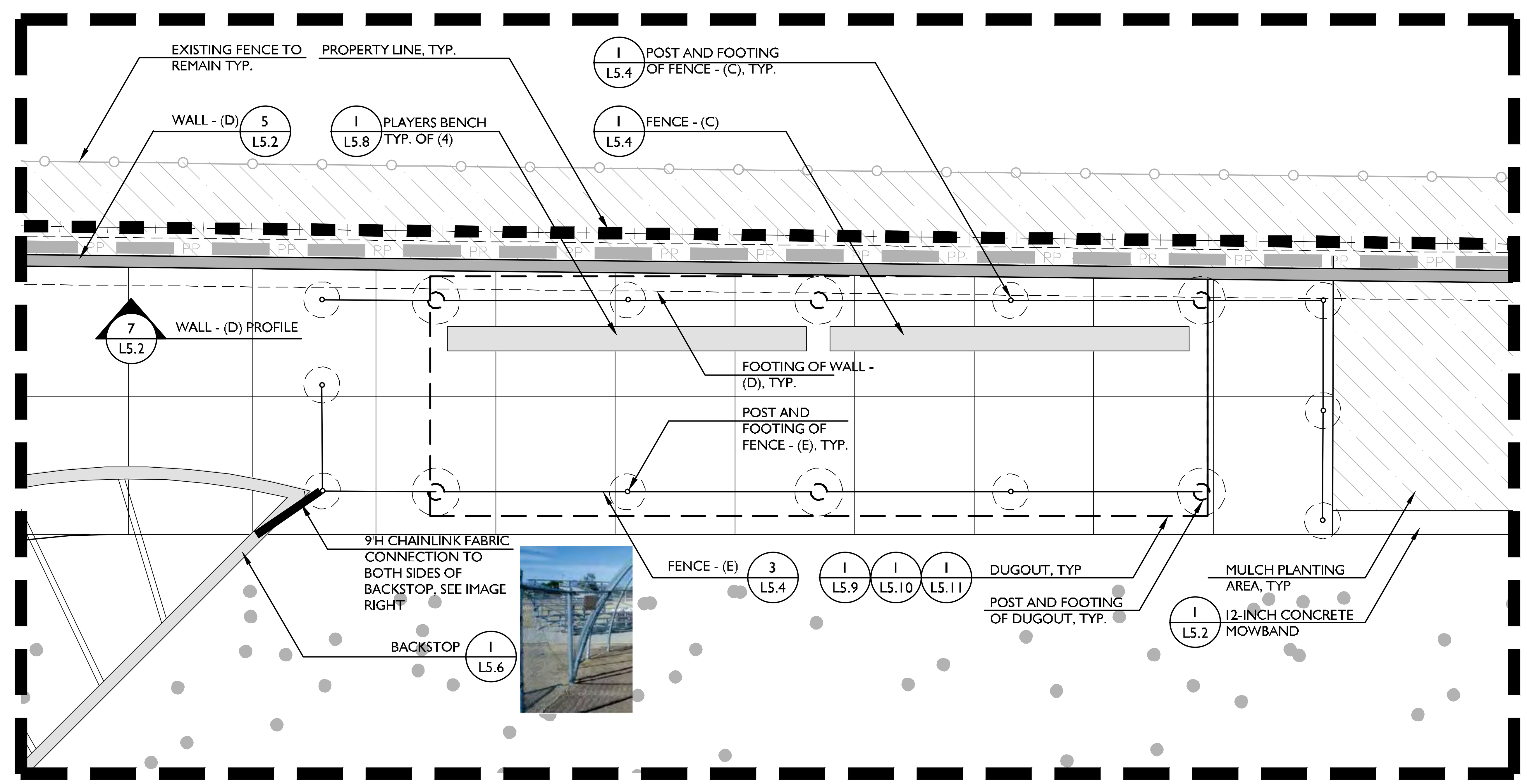
0 2' 4' 8'

NOTES: SEE SHEET L2.1 FOR EXPANSION JOINT LOCATIONS OF CONCRETE PAVING.



1 ENLARGEMENT: UTILITY AREA AT SERVICE YARD

SCALE: 1/4" = 1'-0"



2 ENLARGEMENT: UTILITY AREA AT SERVICE YARD

SCALE: 1/4" = 1'-0"

GATES +ASSOCIATES
LANDSCAPE ARCHITECTURE
LAND PLANNING / URBAN DESIGN

REGISTERED LANDSCAPE ARCHITECT — DAVID GATES — No. 1990 — STATE OF CALIFORNIA

OAKLEY CALIFORNIA

CIP 194 - OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

ENLARGED LAYOUT PLAN

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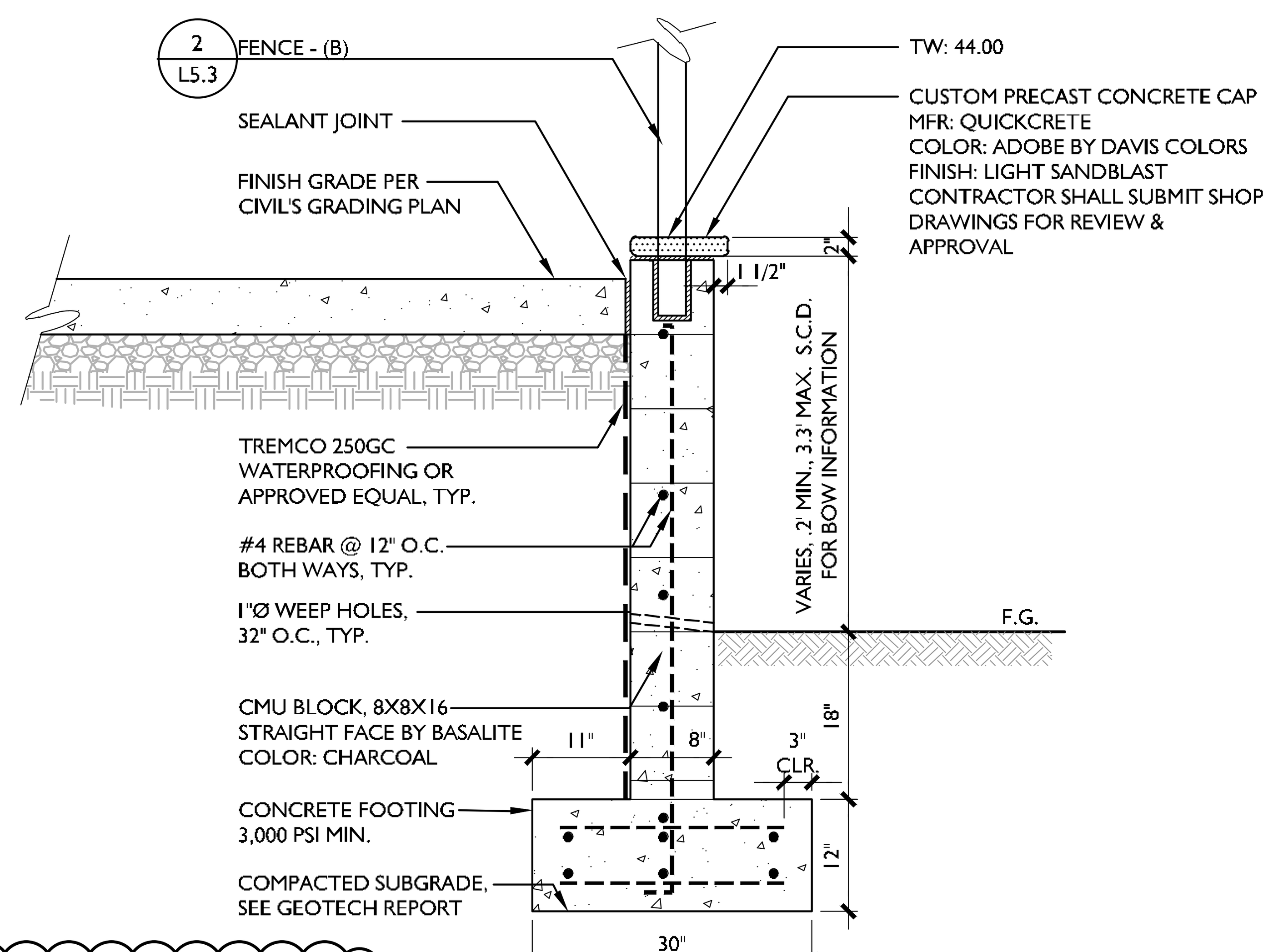
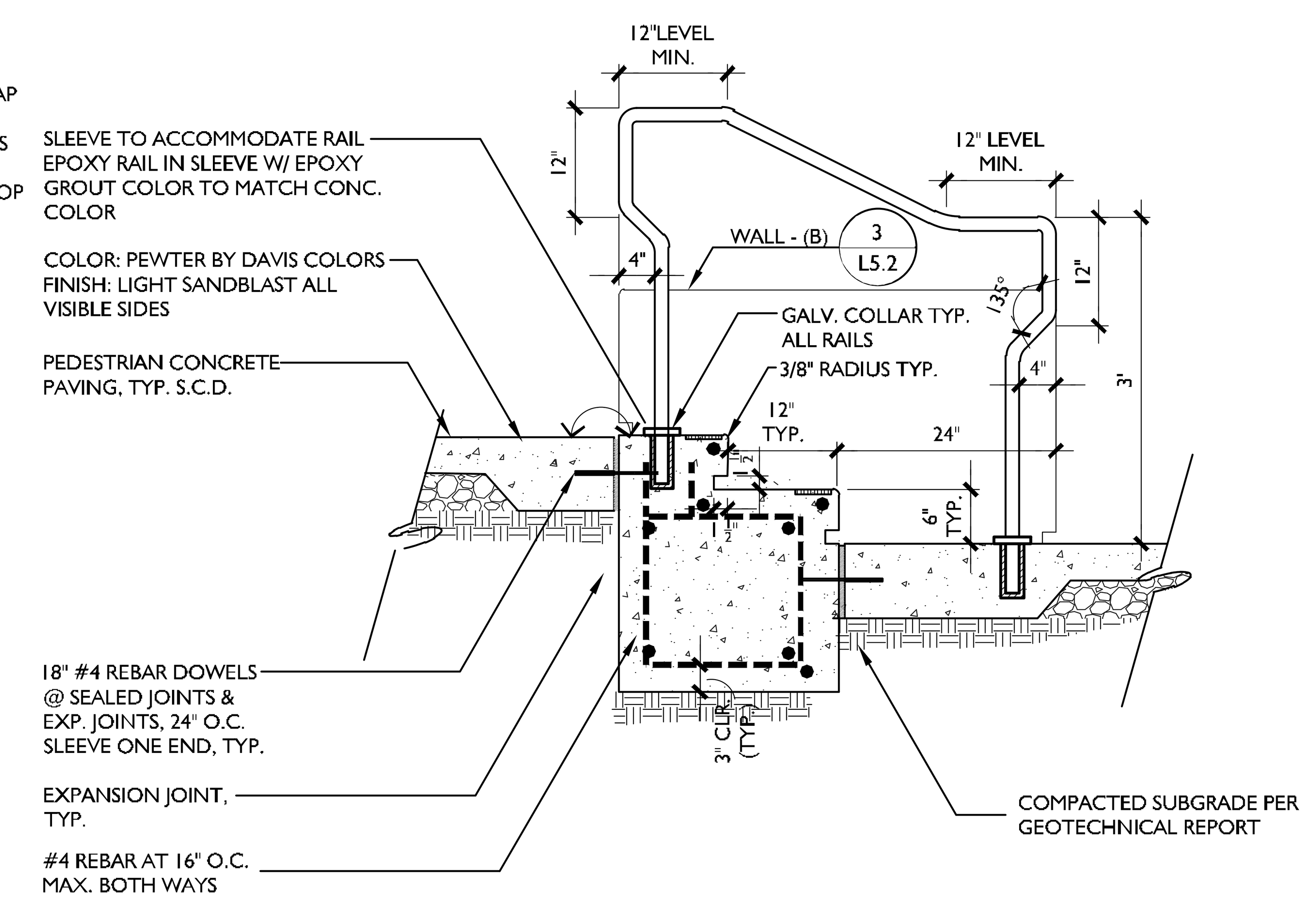
Drawing Number:

L2.4

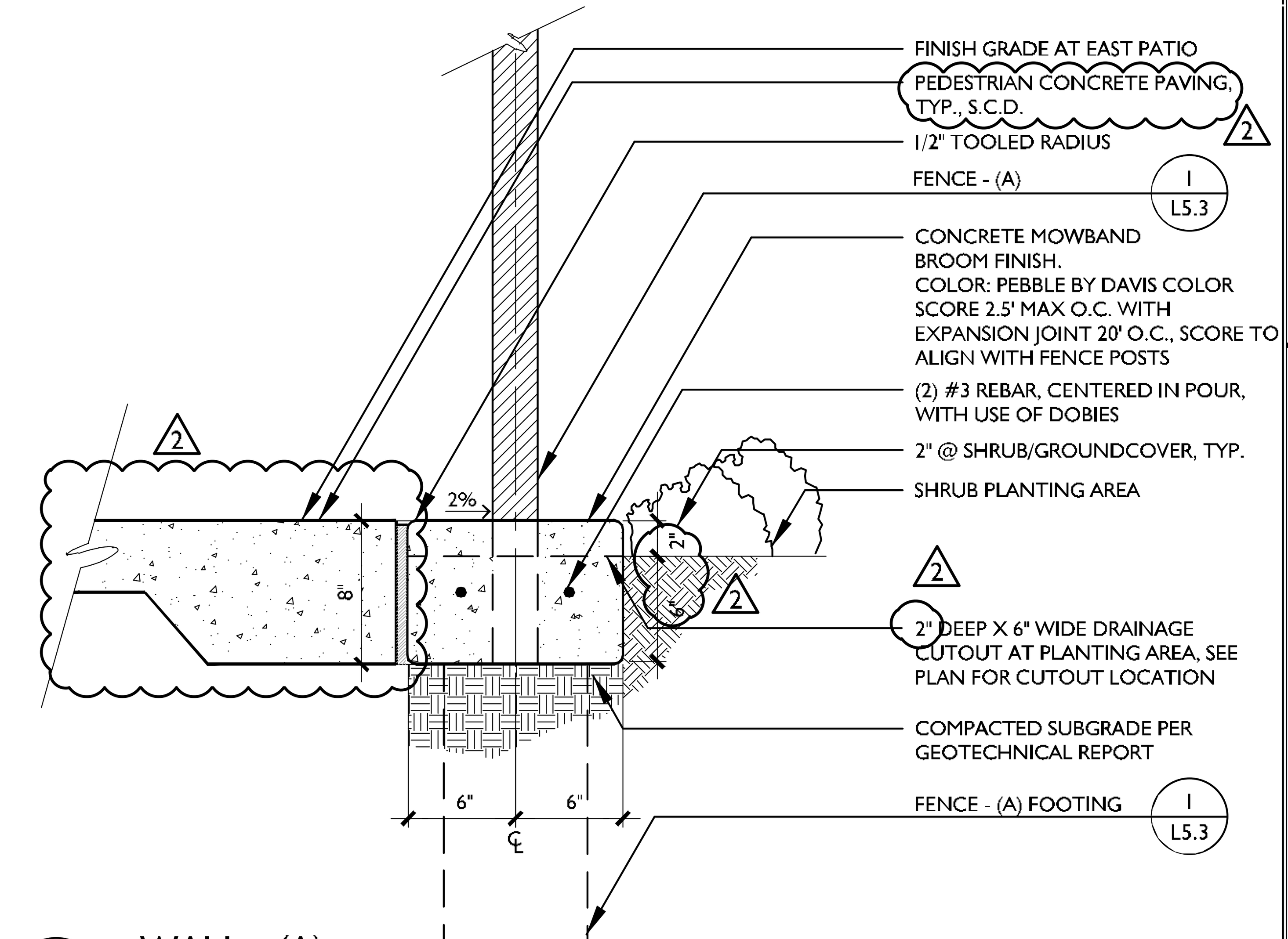
7 WALL - (D) PROFILE
1/4" = 1'-0"



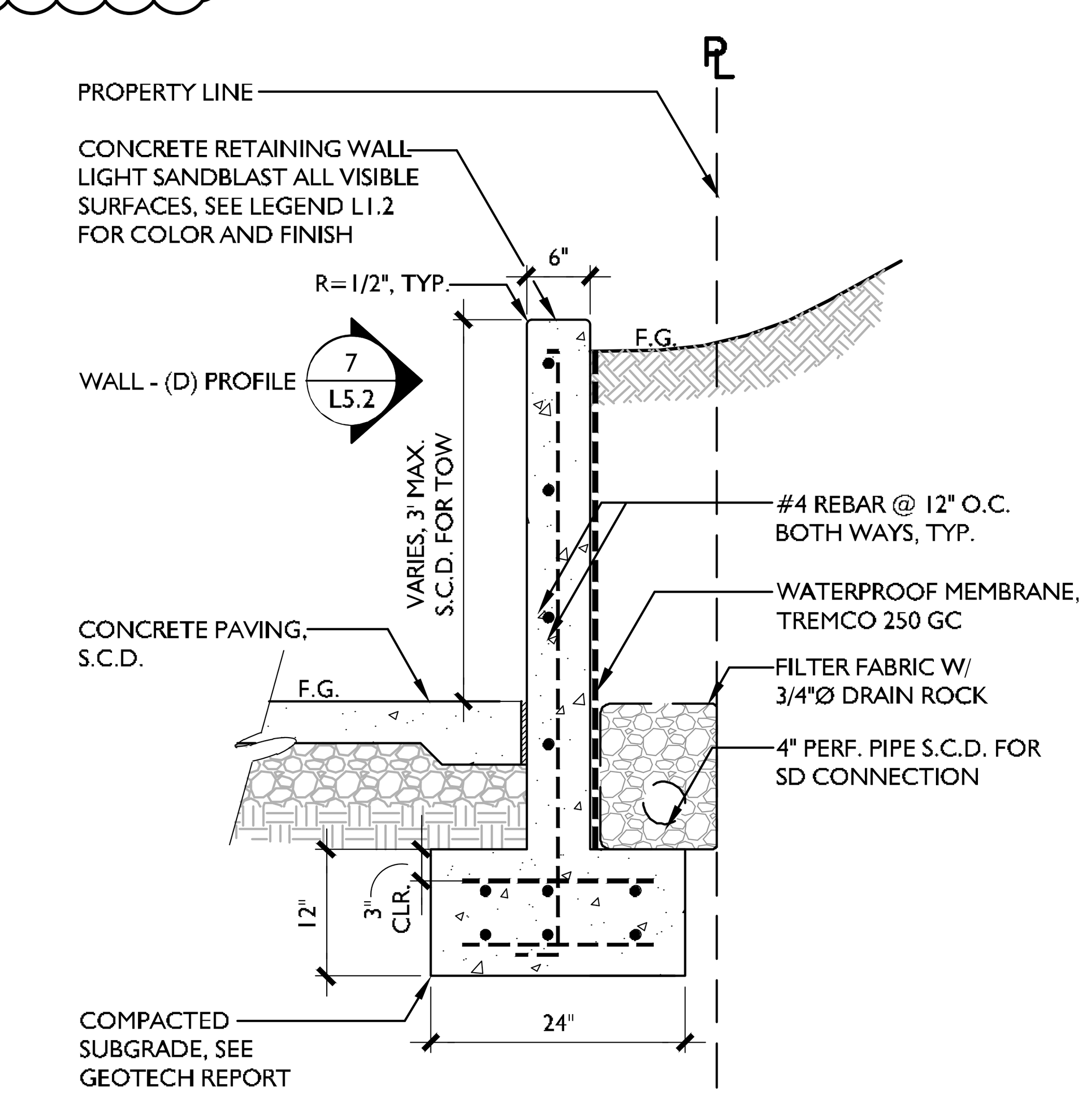
6 WALL - (E) 2
3/4" = 1'-0"



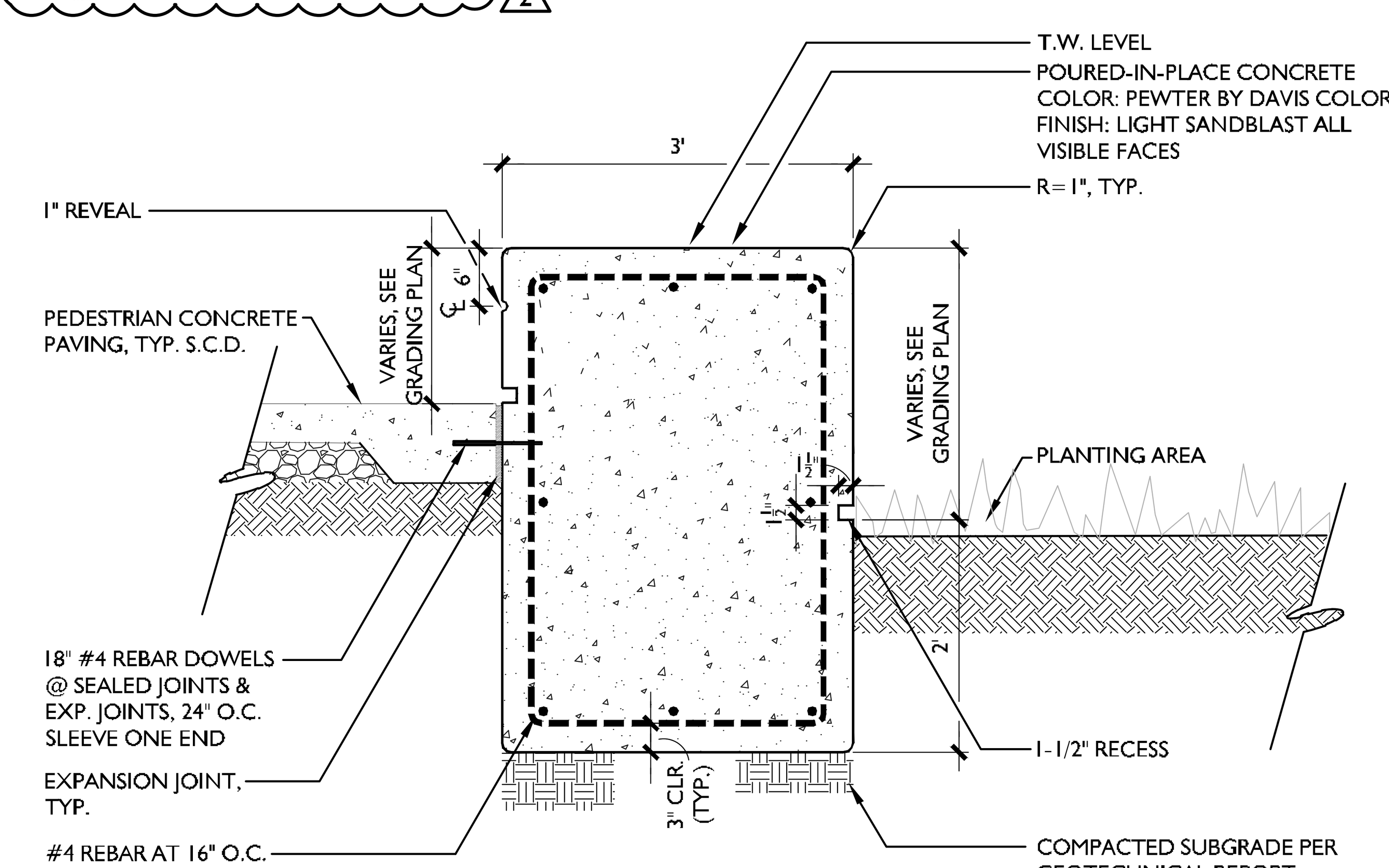
4 WALL - (C) 2
3/4" = 1'-0"



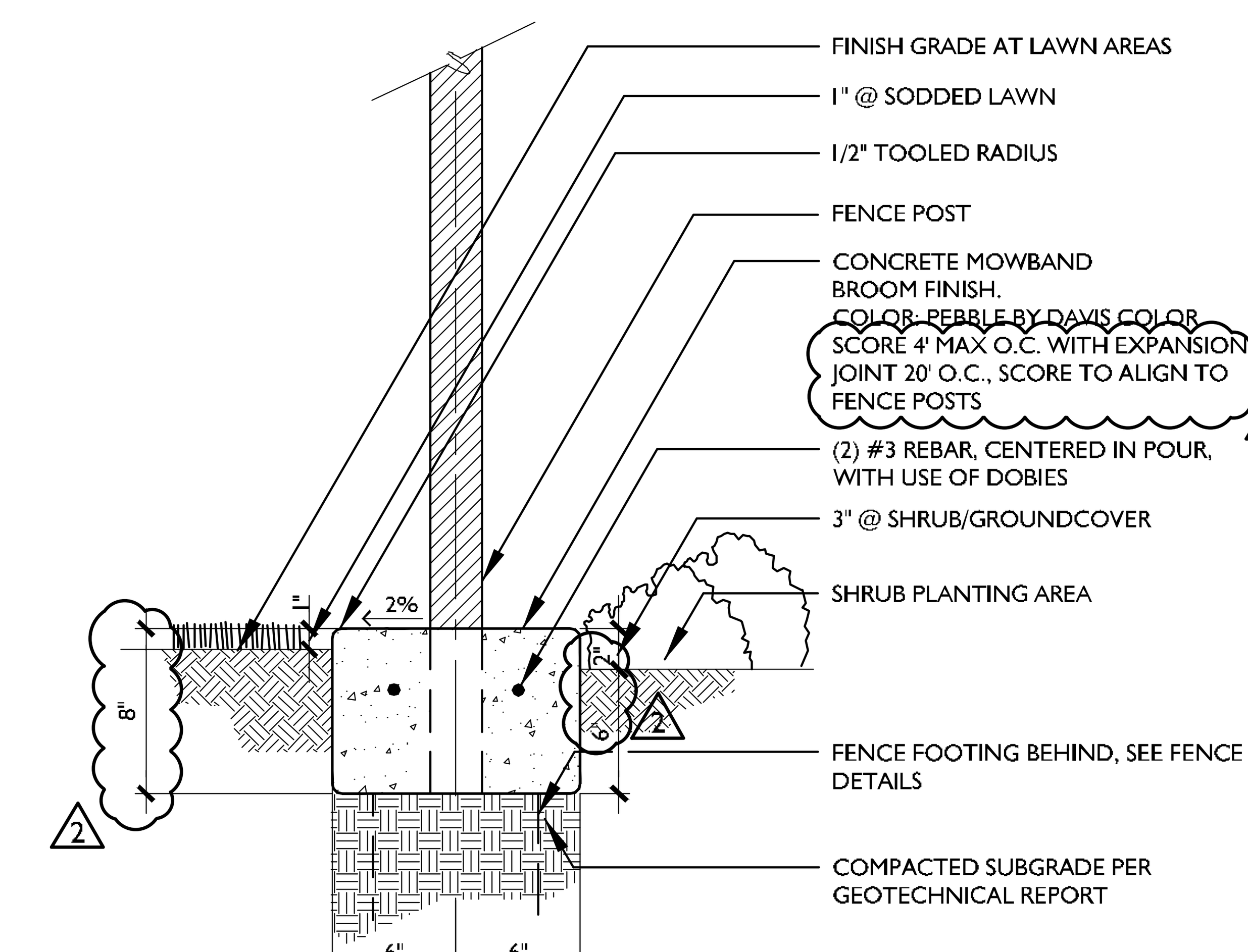
2 WALL - (A)
1 1/2" = 1'-0"



5 WALL - (D)
3/4" = 1'-0"



3 WALL - (B) 2
3/4" = 1'-0"



1 12-INCH CONCRETE MOWBAND
1 1/2" = 1'-0"

GATES +ASSOCIATES
LANDSCAPE ARCHITECTURE
LAND PLANNING / URBAN DESIGN

OAKLEY CALIFORNIA

CIP 194 – OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

CONSTRUCTION DETAILS - HARDSCAPE

No.	Revisions
1	PERMIT SET REV. / BID SET
2	ADDENDUM 2

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Approved:
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Drawing Number:
L5.2

NOTES:

1. THE DESIGN, FABRICATION AND ERECTION OF STEEL SHALL BE IN ACCORDANCE WITH AISC 360 AND AISC 341 INCLUDING ANY ENFORCEMENT AGENCY AMENDMENTS.

2. STEEL MATERIALS SHALL CONFORM TO THE FOLLOWING, UNO:

STEEL PRODUCT	ASTM SPECIFICATION, UNO	COMMENTS
W & WT SHAPES	A992, GRADE 50	Fy = 50ksi
CHANNELS (C & MC)	A36	Fy = 36ksi
ANGLES	A36	Fy = 36ksi
PLATES & BARS	A36	Fy = 36ksi
PIPES	A53, GRADE B	Fy = 35ksi
RECTANGULAR & SQUARE HSS	A500, GRADE B	Fy = 46ksi
BOLTS	A307, GRADE A, HEX	Fy = 60ksi
WASHERS	F844	
PLATE WASHERS	A36	Fy = 36ksi
NUTS FOR BOLTS & RODS	A563, HEAVY HEX, GRADE A TYP, UNO GRADE DH IF GALVANIZED	
ANCHOR BOLTS & RODS	F1554, CLASS 2A, S3, GRADE 36	Fy = 36ksi
WELDED HEADED STUDS	A108, GRADES 1010 - 1020	
WELD FILLER METAL	AWS D1.1	Fy = 70ksi

3. EXPOSED EXTERIOR STEEL & FASTENERS SHALL BE HOT DIP GALVANIZED, UNO. PROVIDE FILL AND VENT HOLES AT ENCLOSED SPACES OF HOLLOW PIECES. SEAL HOLES WATER-TIGHT AFTER GALVANIZING. PROVIDE DRAIN HOLES AS REQUIRED AT SOLID PIECES. HOLE SIZES AND LOCATIONS SHALL NOT DETRIMENTALLY AFFECT THE PIECES STRUCTURAL CAPACITY AND ARE SUBJECT TO THE STRUCTURAL ENGINEERS REVIEW.
PROVIDE CONCRETE / MASONRY COVER AT STEEL BELOW GRADE. STEEL EMBEDDED IN CONCRETE CAST AGAINST EARTH SHALL HAVE 3" MIN COVER. STEEL EMBEDDED IN FORMED CONCRETE OR MASONRY SHALL HAVE 2" MIN COVER.
4. WELDING MATERIALS & PROCEDURES SHALL CONFORM WITH AWS D1.1.
5. BOLTS FOR STEEL-TO-STEEL CONNECTIONS SHALL BE PLACED IN STANDARD SIZE HOLES, TYP UNO. BOLTS FOR STEEL-TO-CONCRETE/MASONRY CONNECTIONS SHALL BE PLACED IN ANCHOR ROD HOLES, TYP UNO. HOLE DIMENSIONS SHALL BE PER AISC STANDARDS. USE STANDARD AISC PITCH & GAGE FOR BOLTED CONNECTIONS, UNO.
6. BOLTS AND RODS SHALL BE CUT-THREAD TYPE WITH FULL DIAMETER BODY STYLE MEETING REQUIREMENTS OF ASME B18.2.1. THE BODY DIAMETER SHALL NOT BE LESS THAN THE MINIMUM MAJOR DIAMETER WHEN THREADS ARE CUT. REDUCED DIAMETER BODY STYLE ROLLED THREAD BOLTS OR RODS ARE NOT PERMITTED.

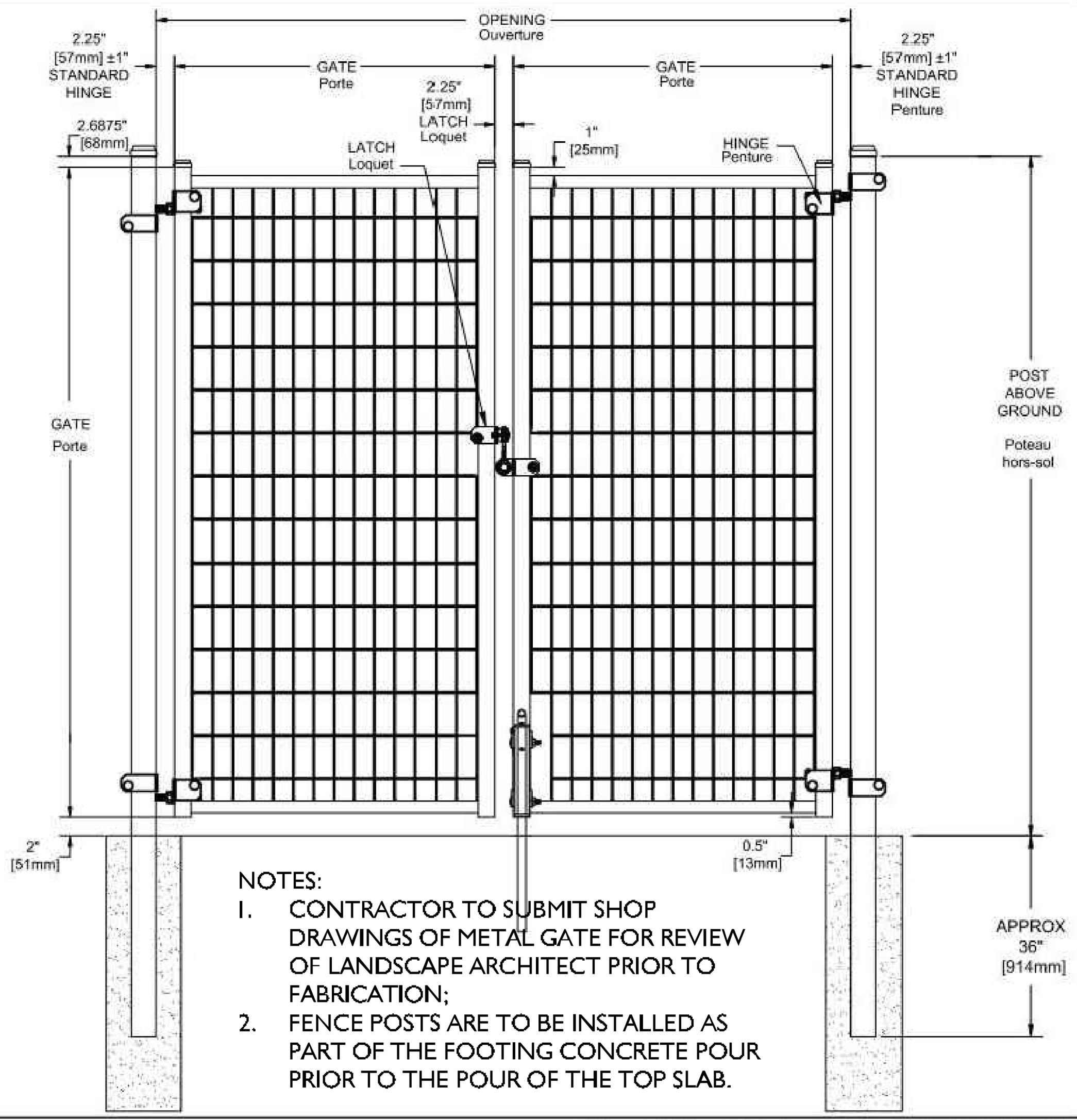
5 STEEL NOTES
1' = 1'-0"

DOUBLE WIRE DOUBLE SWING GATE MODEL GPG10D
Barrière double tige à battant double modèle GPG10D

REVISION 01

GATE POST DIMENSIONS		
PANEL (H)	OPENING	POSTS
4'	6' to 14'	3" x 3" 11ga
6.5'	6' to 12'	3" x 3" 11ga
8'	6' to 10'	3" x 3" 11ga
6.5'	14'	4" x 4" 11ga
8'	12' & 14'	4" x 4" 11ga

Dimensions des poteaux de porte		
Panneau (H)	Ouverture	Poteau
4'	6' à 14'	3" x 3" 11ga
6,5'	6' à 12'	3" x 3" 11ga
8'	6' à 10'	3" x 3" 11ga
6,5'	14'	4" x 4" 11ga
8'	12' & 14'	4" x 4" 11ga



NOTES:
1. CONTRACTOR TO SUBMIT SHOP DRAWINGS OF METAL GATE FOR REVIEW OF LANDSCAPE ARCHITECT PRIOR TO FABRICATION;
2. FENCE POSTS ARE TO BE INSTALLED AS PART OF THE FOOTING CONCRETE POUR PRIOR TO THE POUR OF THE TOP SLAB.

SYSTÈMES DE CLÔTURES omega II FENCE SYSTEMS

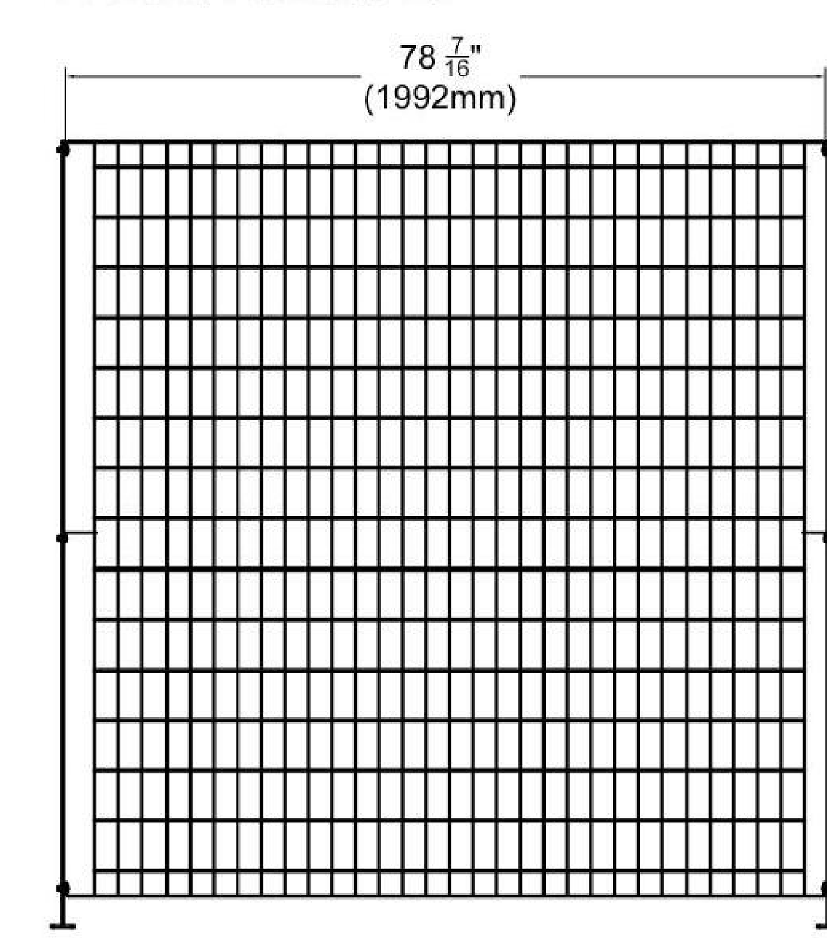
Omega II Fence Systems
1735 blvd. St-Elzéar West
Laval, Quebec
H7L 3N6
Tel: 450-686-9600
1-800-836-6342
Fax: 450-681-5318
www.omegatwo.com

4 GATE - (B)
NOT TO SCALE

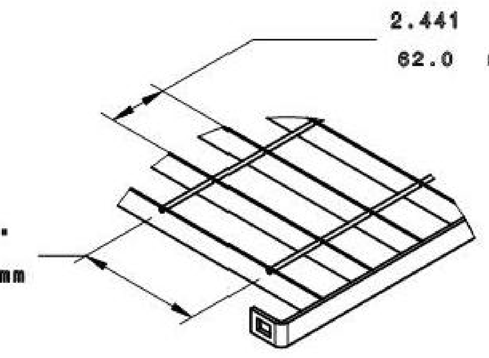
OMEGA 10 PANEL MOUNTED ON FLANGED POST (HEIGHT 78"H)
Panneau Omega 10 sur poteaux avec base (grandeur 78"H)

REVISION 1

PANEL / Panneau 78"



HORIZONTAL WIRES Tiges Horizontales	6GA Ø4.88mm
FRAME Cadre	1" x 9GA 25mm x 4mm
FLAT VERTICAL BARS Plaques verticales	1" x 14GA 25mm x 2mm



NOTES:
1. CONTRACTOR TO SUBMIT SHOP DRAWINGS OF METAL GATE FOR REVIEW OF LANDSCAPE ARCHITECT PRIOR TO FABRICATION

PANEL HEIGHT / Hauteur du panneau	NUMBER OF BRACKET KITS PER POST / Nombre d'ensembles d'attaches par poteau
1194 mm (47"H)	2
1980 mm (78"H)	3
2514 mm (99"H)	3

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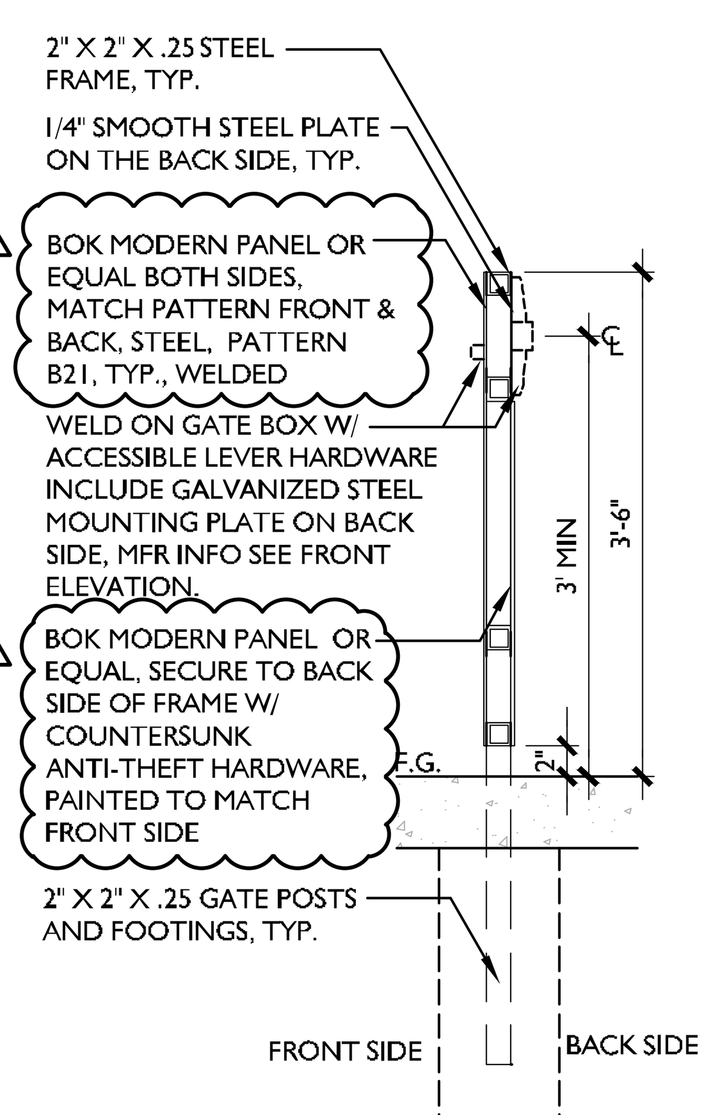
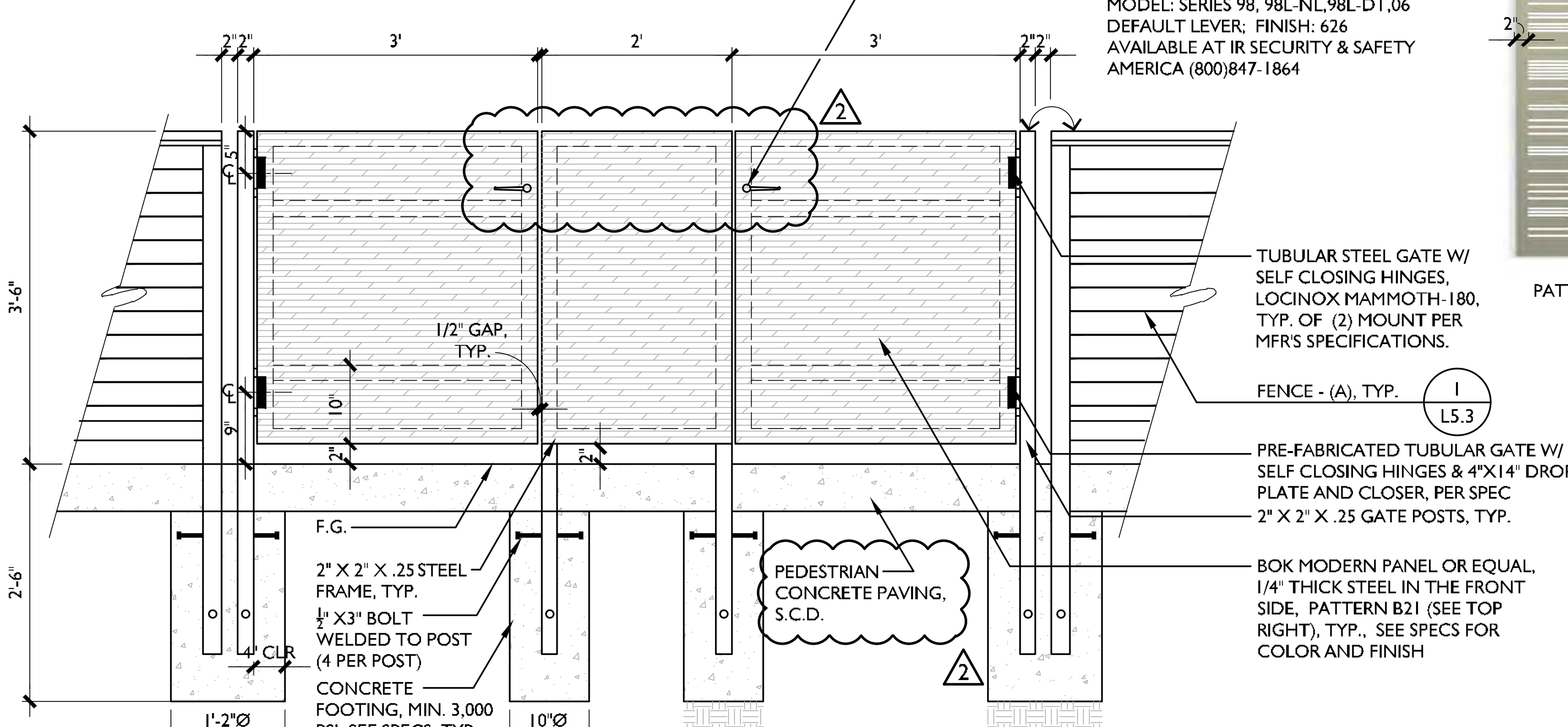
1-800-836-6342
Fax: 450-681-5318
www.omegafence.com

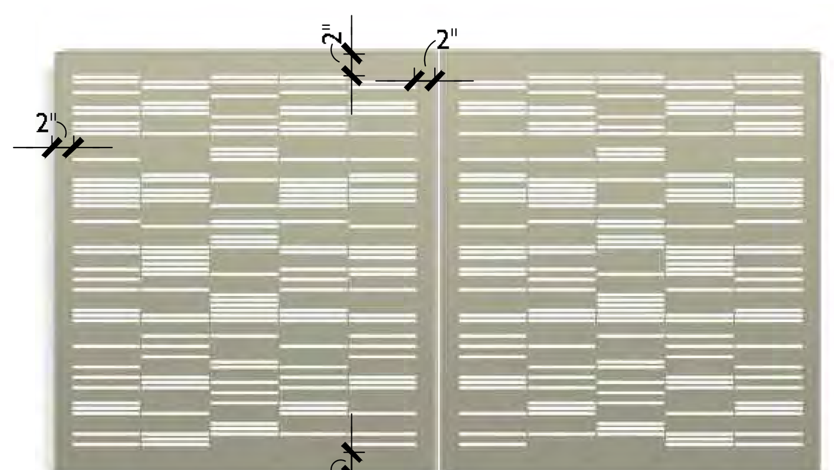
2 FENCE - (B)
NOT TO SCALE



SECTION OF GATE FRAME



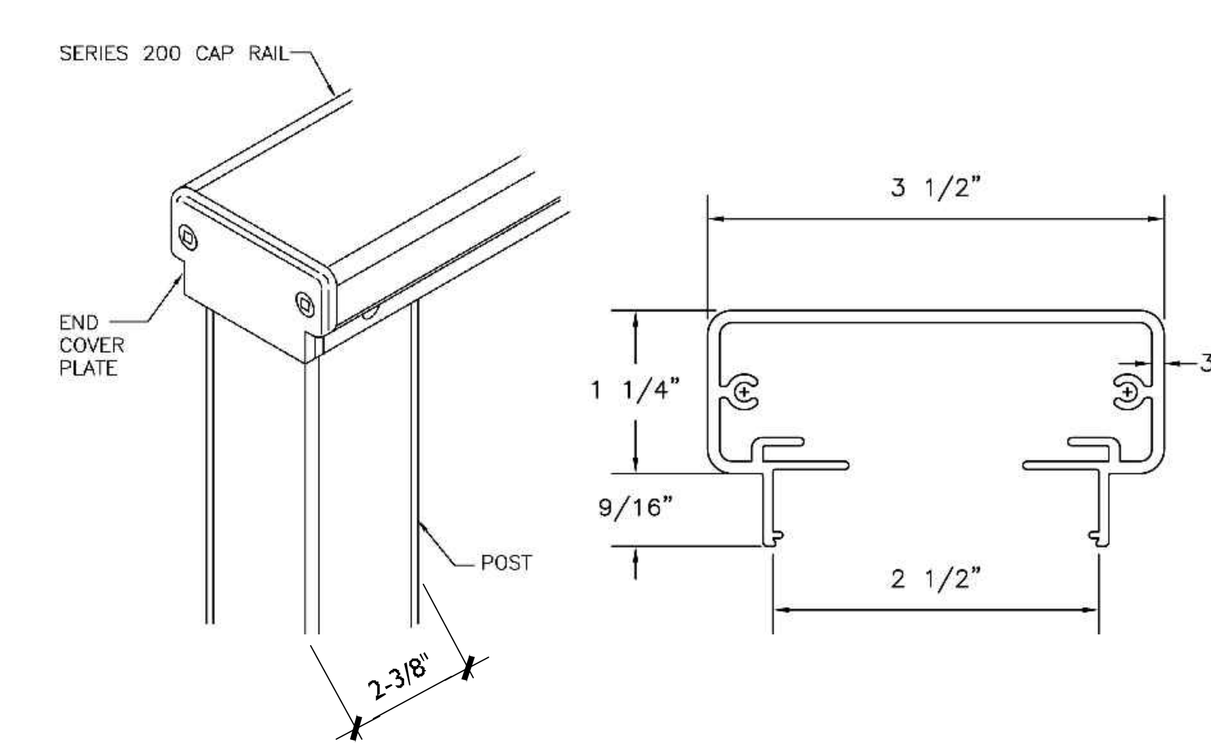
FRONT ELEVATION



PATTERN B21

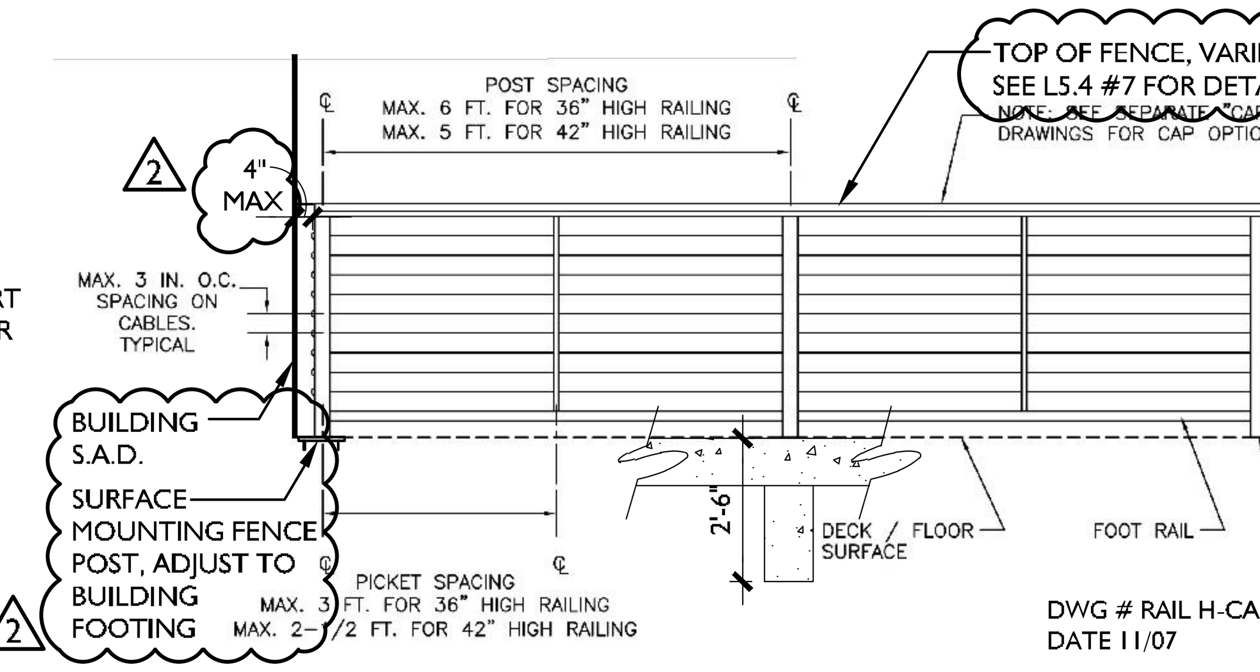
NOTES:
1. GRIND ALL WELDS SMOOTH;
2. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF METAL GATE FOR LANDSCAPE ARCHITECT'S REVIEW AND APPROVAL PRIOR TO FABRICATION;
3. FENCE POSTS SHALL BE INSTALLED AS PART OF THE FOOTING CONCRETE POUR PRIOR TO THE POUR OF THE TOP SLAB.
4. SEE 5 / L5.3 FOR STEEL NOTES

3 GATE - (A)
3/4" = 1'-0"



RAILING: HORIZONTAL CABLE INFILL (WITH FOOT RAIL)
36" HIGH ALUMINUM FRAME WITH FOOT RAIL
NOTE: 42" HIGH RAILING DETAIL SIMILAR WITH ADDITION OF 2 CABLES AND REDUCTION OF POST SPACING TO MAX 5-FT.

NOTES:
1. MFR: FEENEY INC. 510-893-9473, OR APPROVED EQUAL
2. HEIGHT OF CABLE RAILING: 42"
3. SPACING FOR CENTER OF POST TO CENTER OF POST: 5' MAXIMUM AS RECOMMENDED BY MFR
4. CABLE SPECIFICATION: 3/16", 6200 CABLE ASSEMBLIES
5. CAP RAIL: SERIES 200 RECTANGULAR
6. COLOR FINISH OF POSTS, CAP RAILS, INTERMEDIATE PICKETS AND FOOT RAILS: POWDER COATED OR PAINTED TO MATCH SUPER DURABLE 038/90015 PEARL DARK GRAY BY DRYLAC POWDER COATINGS.
7. SEE STRUCTURAL DRAWINGS FOR REINFORCING AND FOOTING INFORMATION.
8. INSTALL PER MFR SPECIFICATIONS AND DETAILS
9. CORE DRILL STRUCTURAL WALL AND GROUT POST IN PLACE S.S.D
10. MAX GAP BETWEEN POST AND BRIDGE NOT TO EXCEED 3 7/8".
11. CONTRACTOR TO FIELD MEASURE AND PROVIDE SHOP DRAWINGS FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
12. FOR 42" CABLE RAIL ONLY: CABLE TO BE STAINLESS STEEL: 1/8"X1X19, PART #4140 BY CABLE RAIL.
13. SEE DETAIL 5, SHEET L3.4 FOR GUARDRAIL POST GROUT ENLARGEMENT.
14. GRIND ALL WELDS SMOOTH;
15. CONTRACTOR TO SUBMIT SHOP DRAWINGS OF METAL GATE FOR REVIEW OF LANDSCAPE ARCHITECT PRIOR TO FABRICATION;
16. FENCE POSTS ARE TO BE INSTALLED AS PART OF THE FOOTING CONCRETE POUR PRIOR TO THE TOP SLAB.



DWG # RAIL H-CABLE REV 1
DATE 11/07

feeneyarchitectural PRODUCTS
DesignRail™–Railing Systems
2603 Union Street
Oakland, CA 94607–2423
Ph: 800–888–2418 or 510–893–9473
Fx: 510–893–9484, www.designrail.com

1 FENCE - (A)
NOT TO SCALE

GATES +ASSOCIATES
LANDSCAPE ARCHITECTURE
LAND PLANNING • URBAN DESIGN
2671 CROW CANYON ROAD, CALIFORNIA 94583

LANDSCAPE ARCHITECT No. 1860 DAVID GATES REGISTERED STATE OF CALIFORNIA
5/31/2019 Renewal Date
12/1/2017 Date

OAKLEY CALIFORNIA

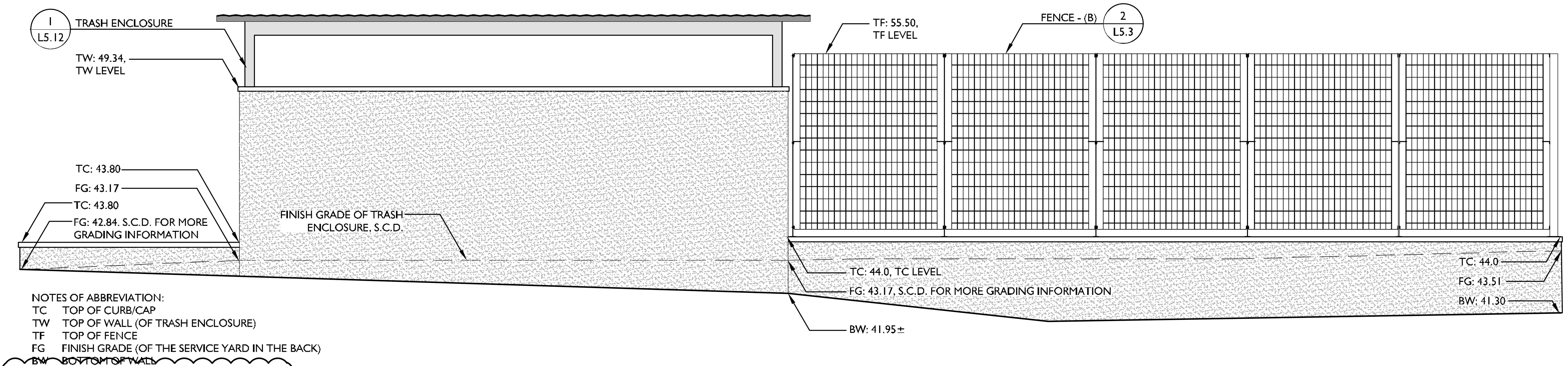
CIP 194 – OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

CONSTRUCTION DETAILS - FENCE & GATE

No.	Revisions
1	PERMIT SET REV. / BID SET
2	ADDENDUM 2

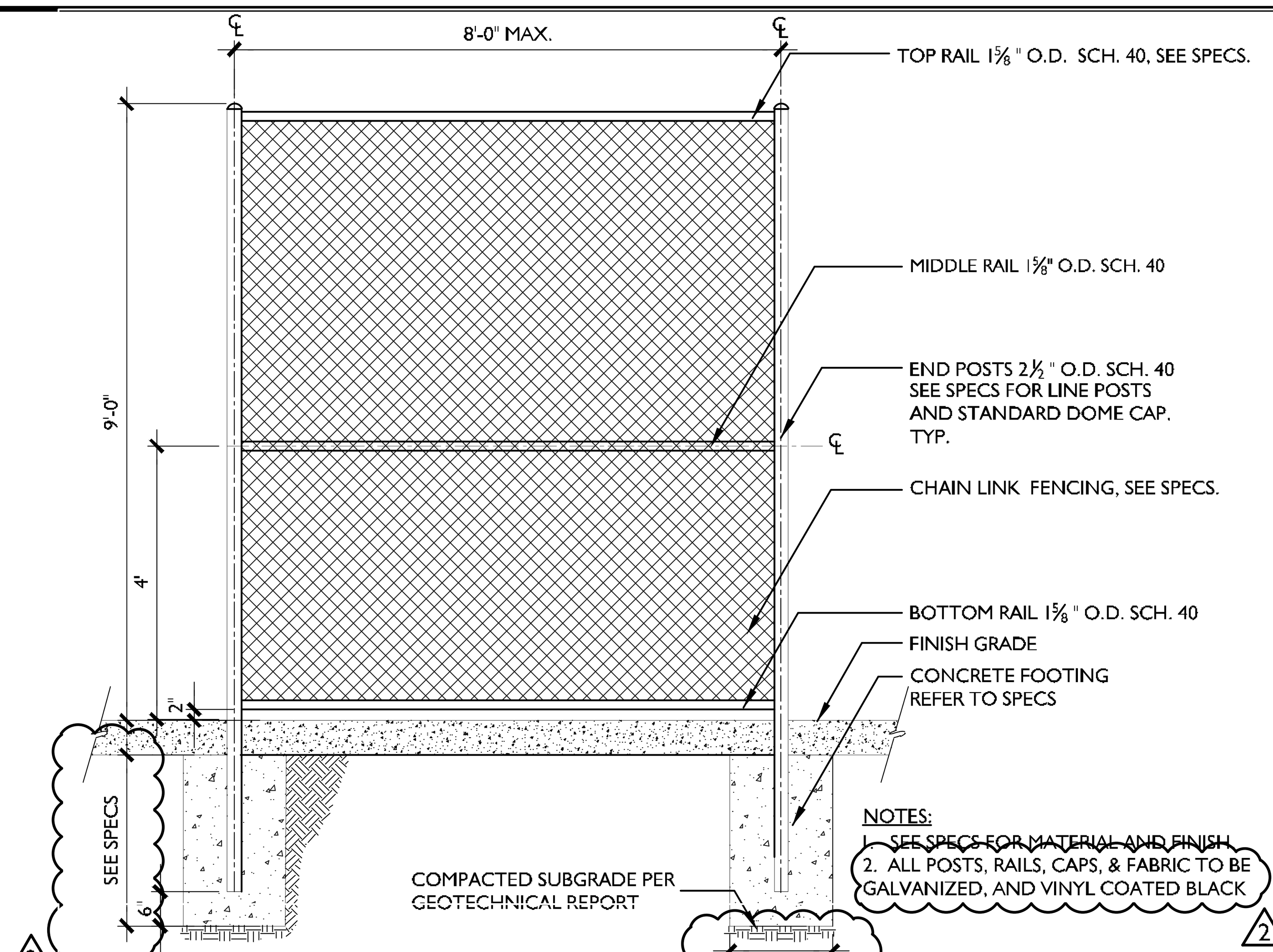
Date: 01/16/2018
Scale: AS NOTED
Design: KC
Drawn: JG, JS
Approved:
Job No: P5203

Drawing Number:
L5.3



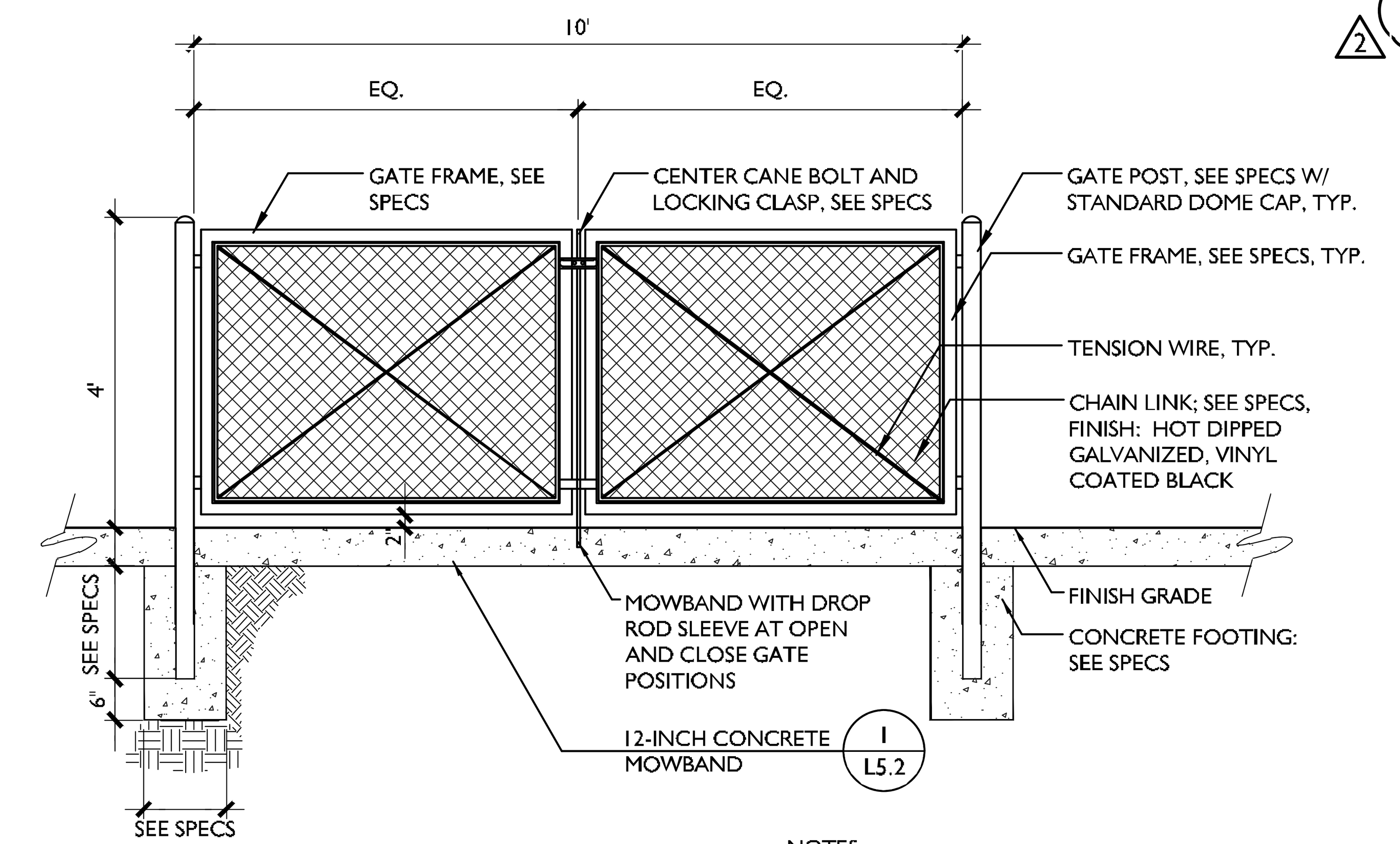
NOTES OF ABBREVIATION:
TC TOP OF CURB/CAP
TW TOP OF WALL (OF TRASH ENCLOSURE)
TF TOP OF FENCE
FG FINISH GRADE (OF THE SERVICE YARD IN THE BACK)
BW BOTTOM OF WALL

6 WALL - (E) PROFILE
3/8" = 1'-0" 2



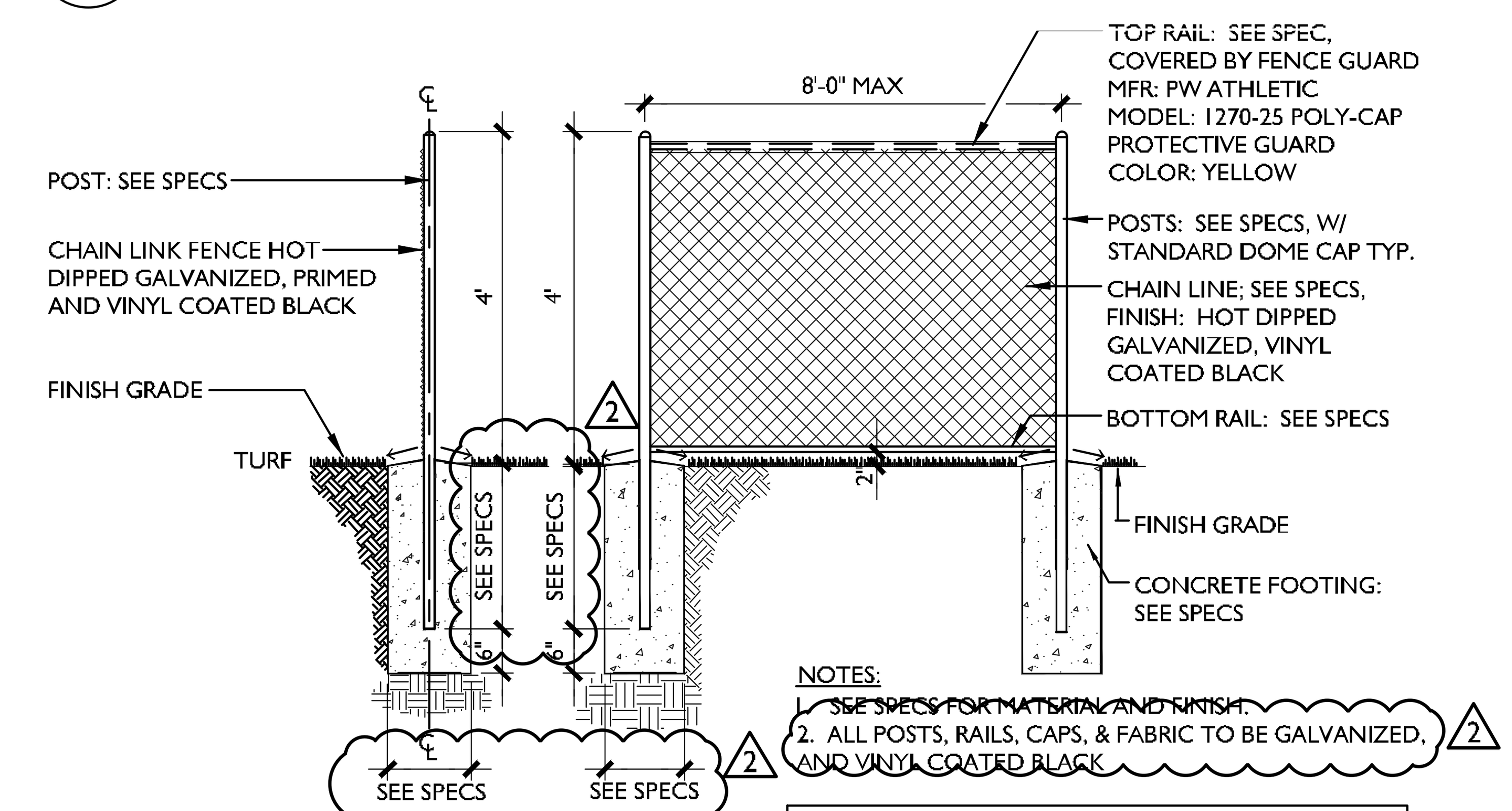
NOTES:
1. SEE SPECS FOR MATERIAL AND FINISH.
2. ALL POSTS, RAILS, CAPS, & FABRIC TO BE GALVANIZED, AND VINYL COATED BLACK

3 FENCE - (E)
1/2" = 1'-0" 2



NOTES:
1. SEE SPECS FOR MATERIAL AND FINISH.
2. ALL POSTS, RAILS, CAPS, & FABRIC TO BE GALVANIZED, AND VINYL COATED BLACK

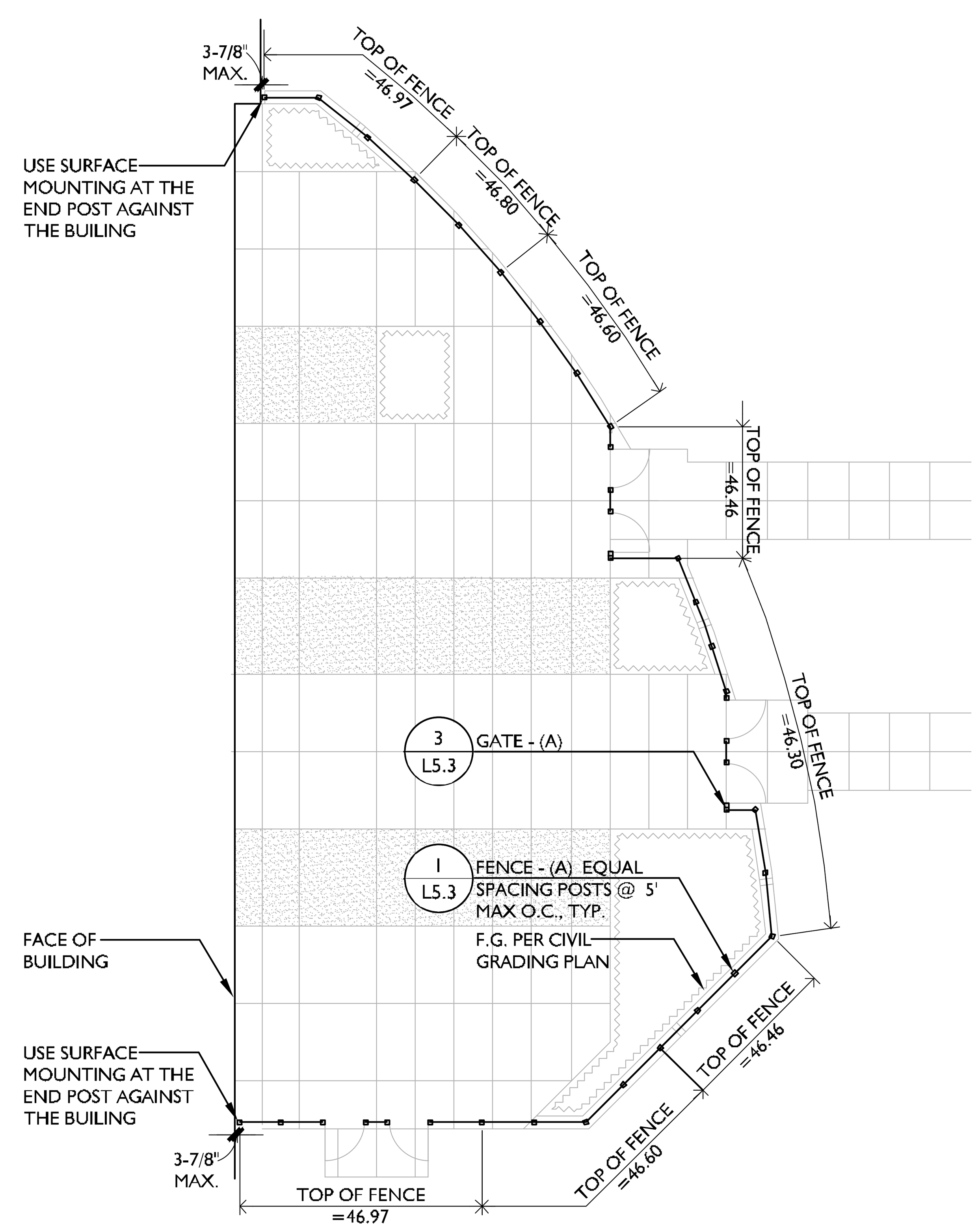
5 GATE - (D)
1/2" = 1'-0" 2



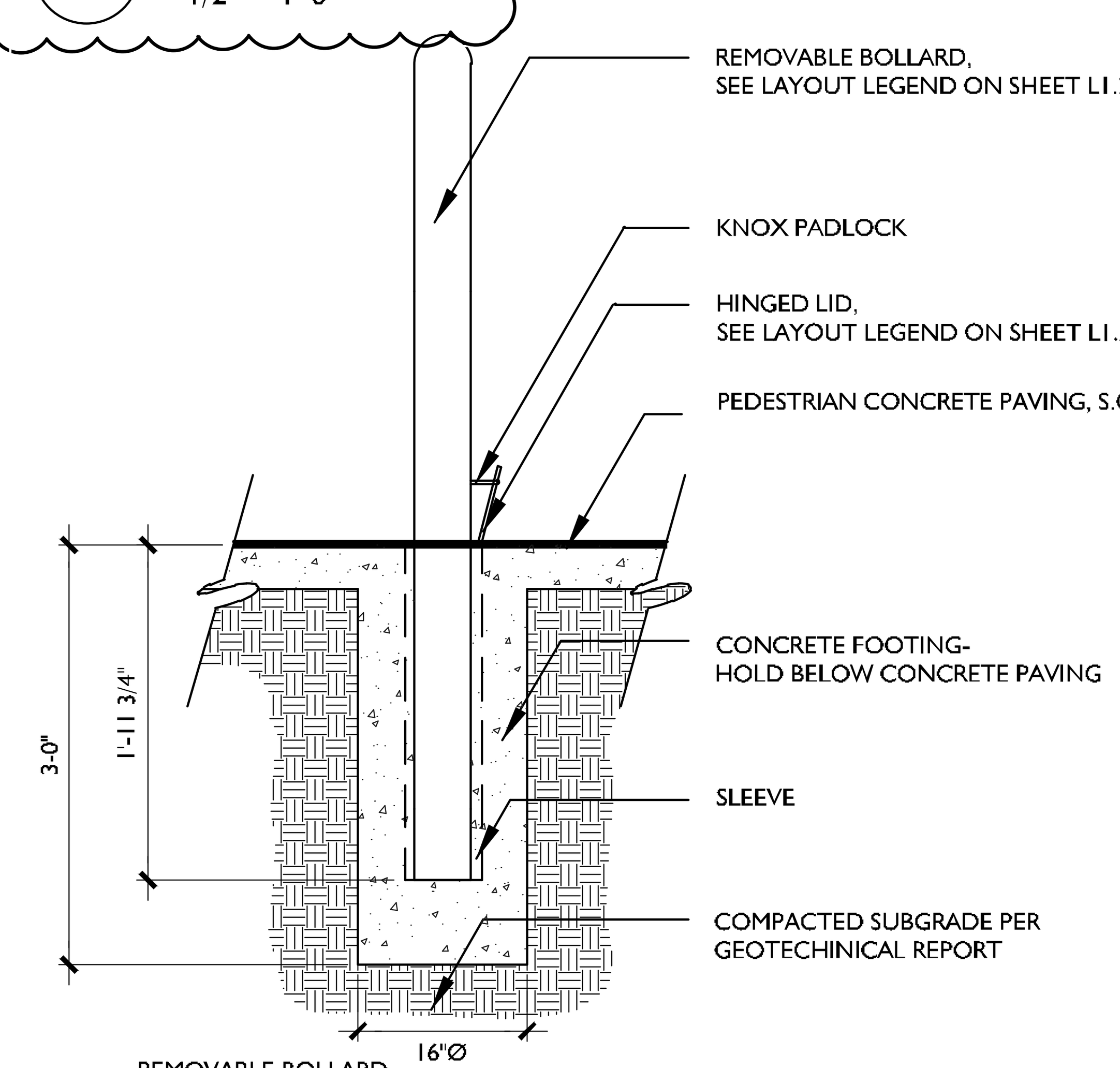
NOTES:
1. SEE SPECS FOR MATERIAL AND FINISH.
2. ALL POSTS, RAILS, CAPS, & FABRIC TO BE GALVANIZED, AND VINYL COATED BLACK

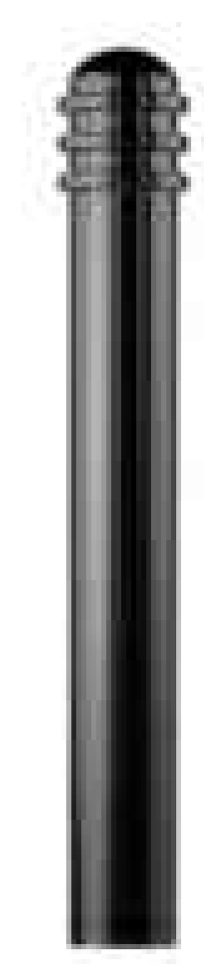
DETAIL NOTES:
-CHECK SPECS: MAKE SURE SPECS CALL OUT FINISH, COLOR, ETC
-CHECK INTERFACE AT FOOTINGS IS CORRECT AND SUFFICIENT

2 FENCE - (D)
1/2" = 1'-0" 2



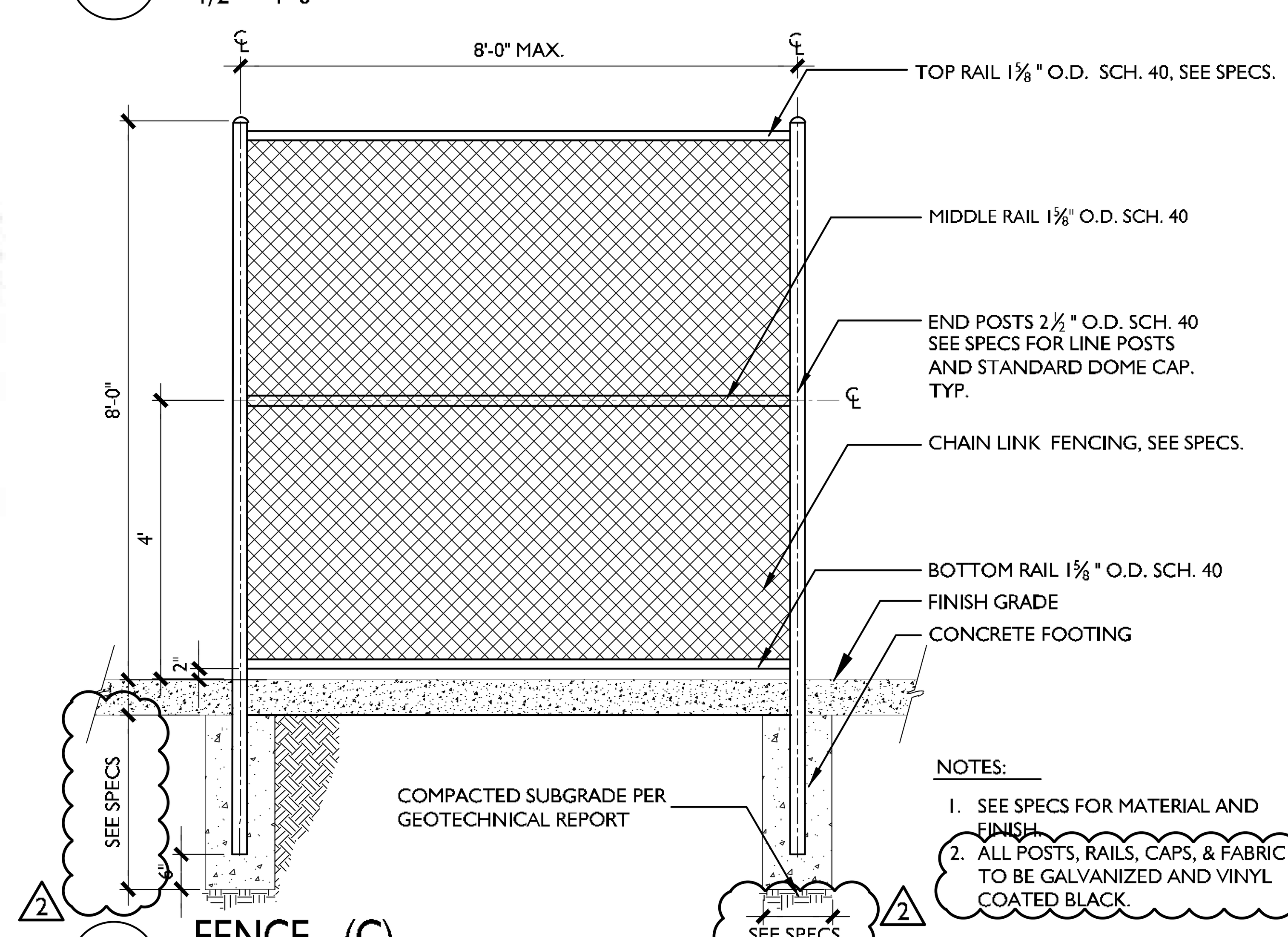
7 FENCE (A) FENCE HEIGHT DIAGRAM
1"=10'-0" 2





IMAGE

4 REMOVABLE BOLLARD
1" = 1'-0" 2



NOTES:
1. SEE SPECS FOR MATERIAL AND FINISH.
2. ALL POSTS, RAILS, CAPS, & FABRIC TO BE GALVANIZED AND VINYL COATED BLACK.

1 FENCE - (C)
1/2" = 1'-0" 2

GATES +ASSOCIATES
LANDSCAPE ARCHITECTURE
LAND PLANNING • URBAN DESIGN

LICENSED LANDSCAPE ARCHITECT — DAVID GATES — No. 1880 — STATE OF CALIFORNIA

OAKLEY CALIFORNIA

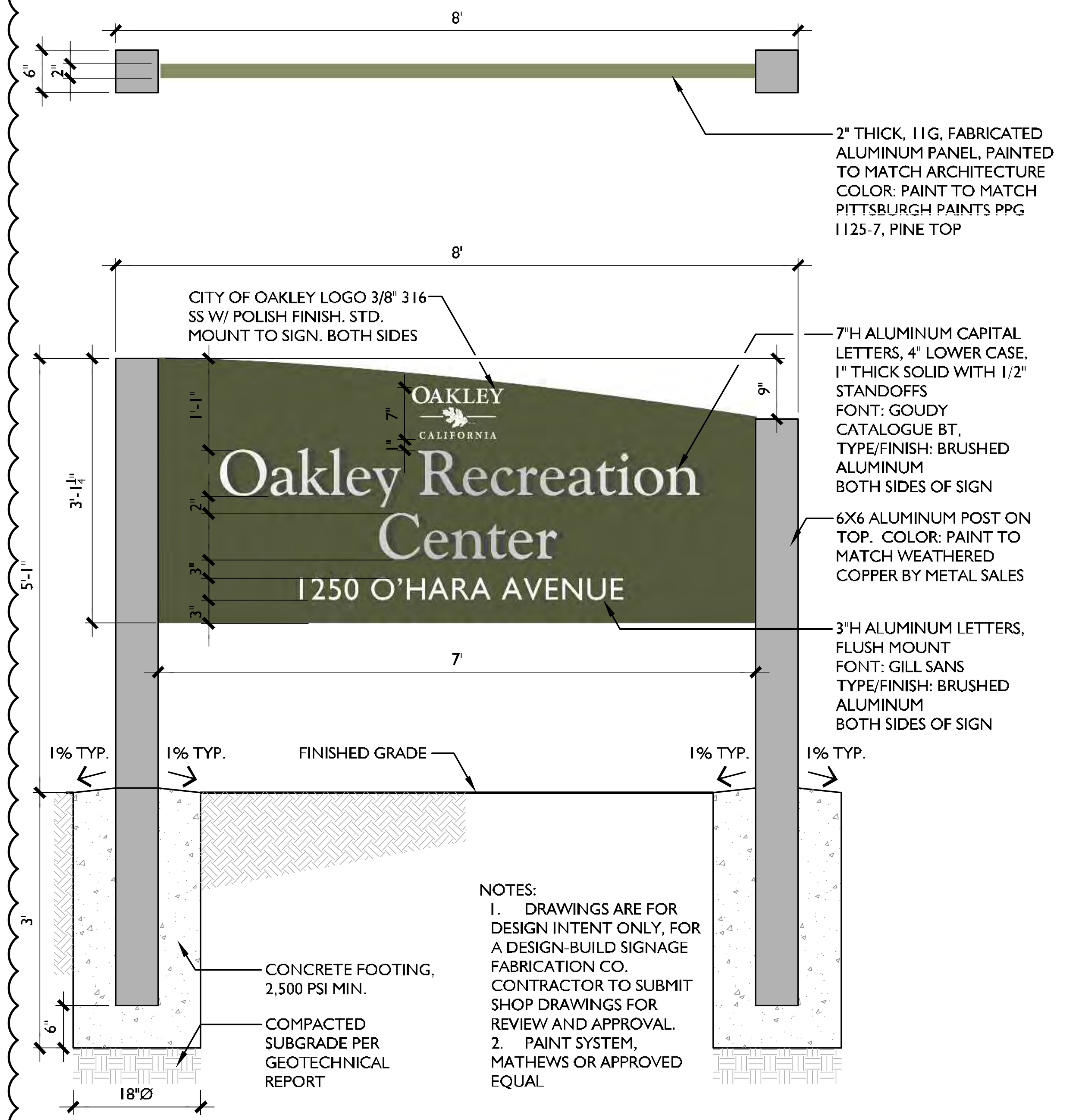
CIP 194 – OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

CONSTRUCTION DETAILS - FENCE & GATE

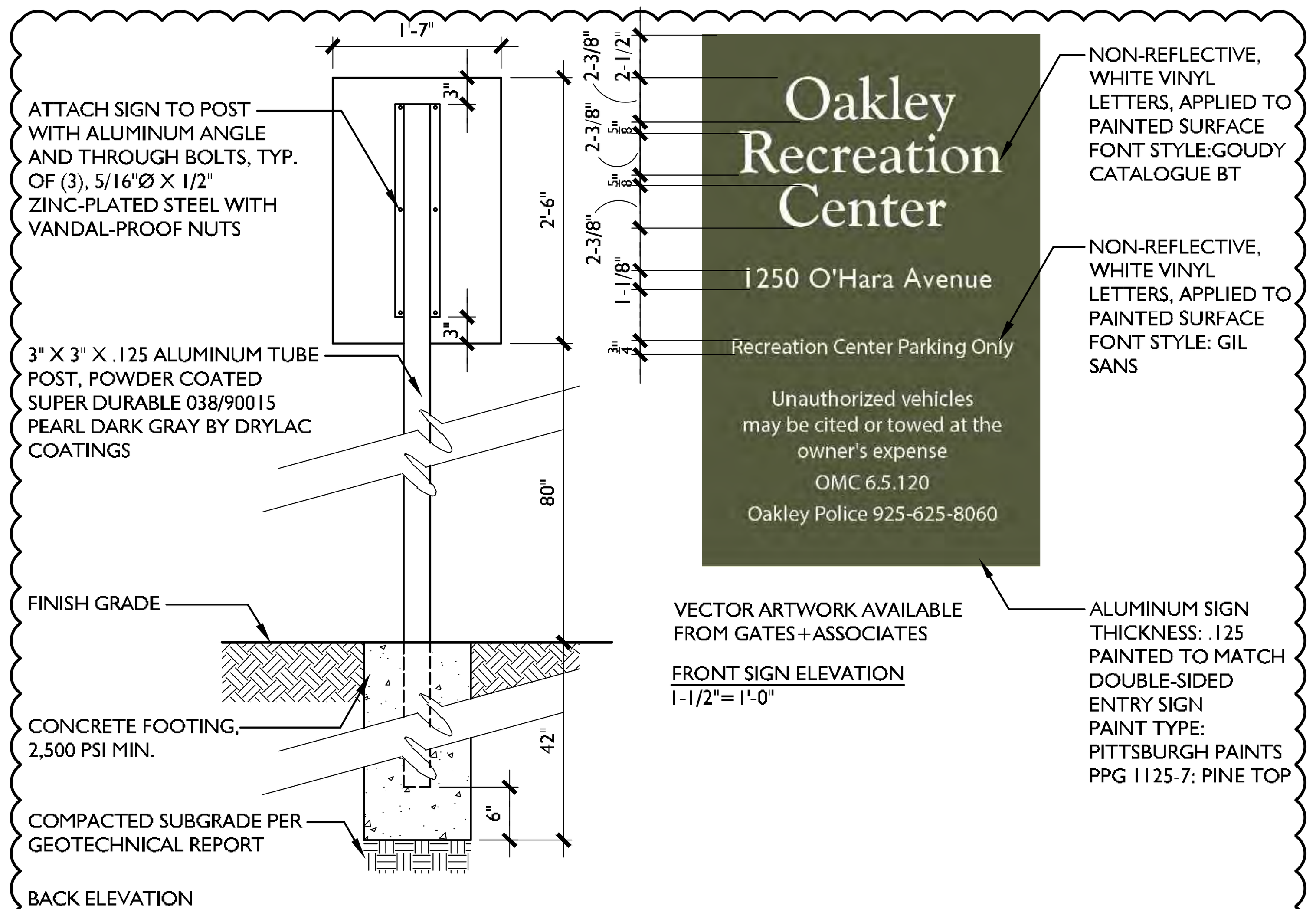
No.	Revisions
1	PERMIT SET REV. / BID SET
2	ADDENDUM 2

Date: 01/16/2018
Scale: AS NOTED
Design: KC
Drawn: JG, JS
Approved:
Job No: P5203

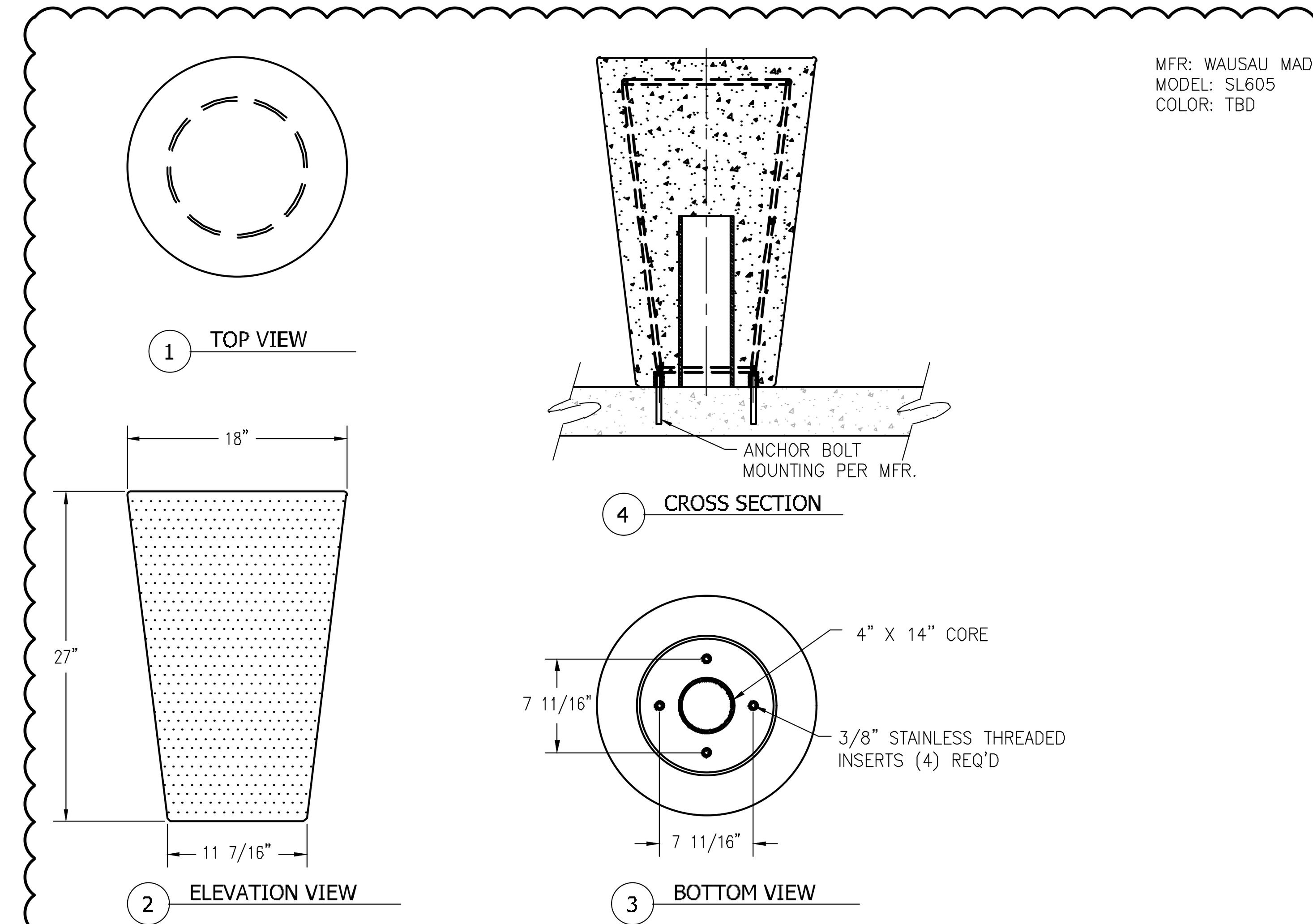
Drawing Number:
L5.4



4 DOUBLE SIDED ENTRY SIGN
3/4" = 1'-0"



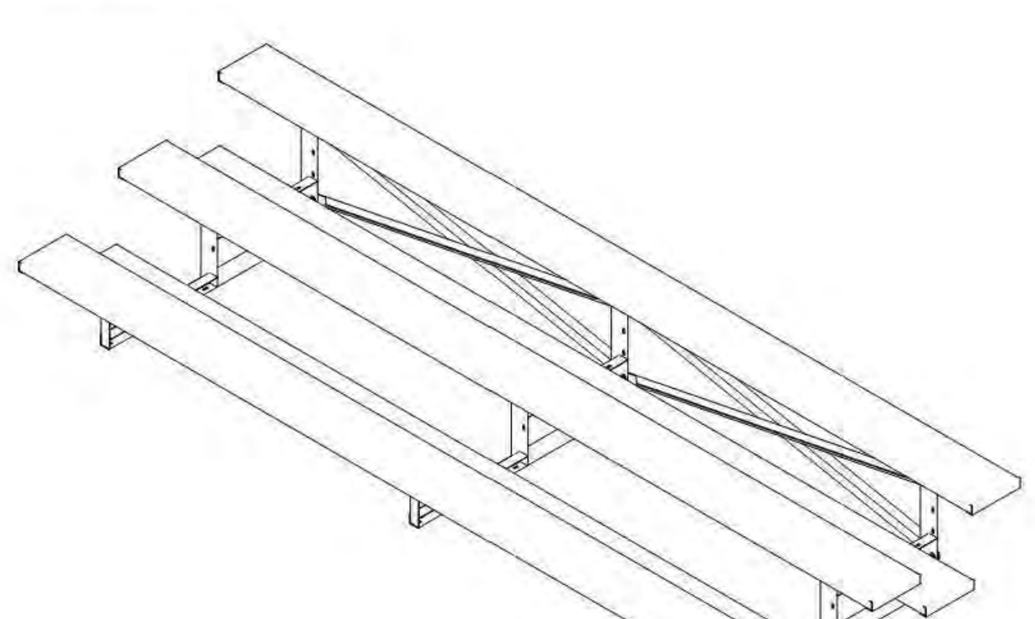
3 PARKING SIGN
3/4" = 1'-0"



2 BOLLARD
1" = 1'-0"

DELUXE SERIES 3-ROW 15' BLEACHER

Deluxe Series designed for dependability and trouble-free maintenance. Featuring 6" rise from row to row with nominal 12" aluminum planks and optional 2" x 6" ground sills.



Specifications:

Bleacher Frames, Horizontal and Diagonal Bracing:
Fabricated from 2" x 2" x 3/16" steel or aluminum angle. Frames are welded into a single unit. (Frames may have optional 2" x 6" ground sills at every point where frames are in contance with the ground.)

Deluxe Series bleachers conform to the requirements of ICC 300-2012.

Seat and Foot Planks:
Nominal 2" x 12" x 15' extruded ribbed aluminum. The edges and tops of planks shall be ribbed. The ribbed pattern, non-slip surface, is designed for safety and comfort with a grooved anodized coating. All exposed ends shall have aluminum caps fastened to the underside of the plank. Planks secure to each frame with two friction-type mounting clips capable of securing plank against movement under a horizontal force of 400 lbs. (all hardware is provided)

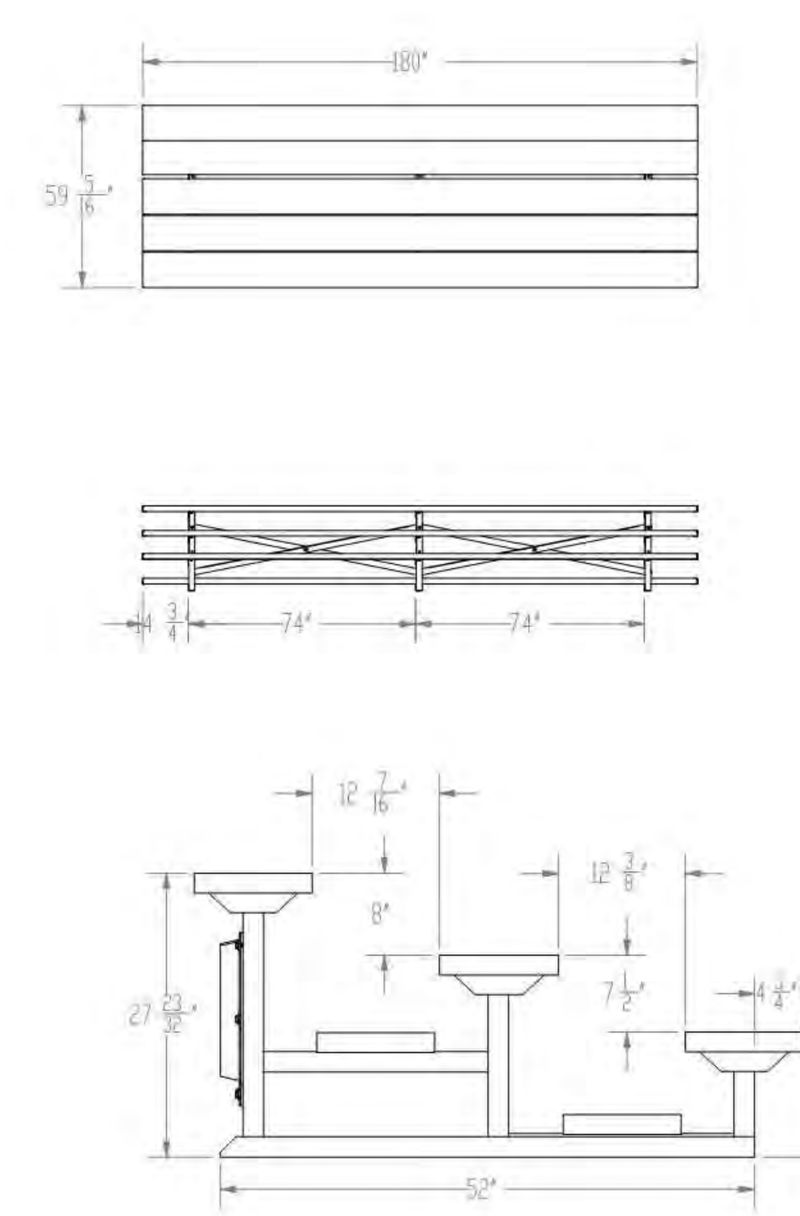
Finish: All fasteners shall be zinc plated.

Patterson-Williams Athletic Mfg. Co.	Date: 2/22/16	SPECIFICATION / INSTALLATION INSTRUCTIONS
	Rev: 7/18/17	Deluxe Series 3-Row 15' Bleacher
	Drawn: MT	MODEL NO. 1183
	Sheet: 1 of 5	

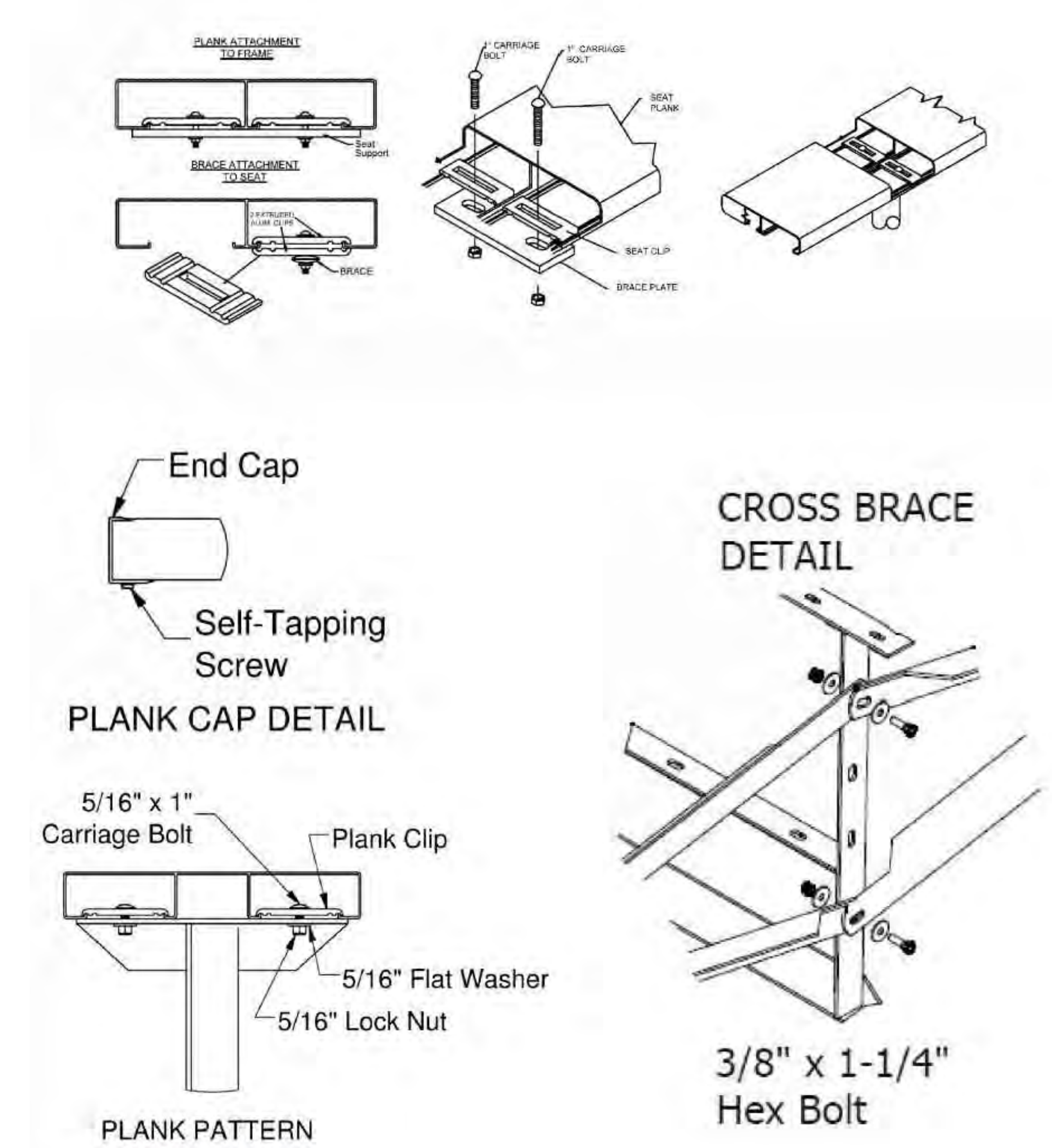
INSTALLATION INSTRUCTIONS:

1. Check materials received with the parts list (Page 5) to make sure that all components are included and to assure that the unit is complete.
2. Installing End Caps on seat and foot planks: A. Locate (10) 2" x 12" x 21' & (14) 2"x12"x8'6"seat and foot planks and (48) 2" x 12" end caps. B. Align and assemble all end caps to aluminum planks. Secure using a #10 x 3/4" self-tapping screw in two locations on the underside of the clip/plank. See End Cap Detail page 4.
3. Locate five bleacher frames and set on a level surface on centers noted on the Detail on Page 3.
4. To install cross braces: Locate the 4 sets of rear cross braces, whose sizes are noted on the detail on Page 3. Attach the cross braces to the end frames with 3/8" x 1" hex bolts, washers, and lock nuts. Use 3/8" x 1" hex bolts, washers, and lock nuts to secure the braces together where they cross. Be sure to leave the connections finger-tight until the assembly is complete. NOTE: Two washers are provided for every hex bolt connection.
5. Locate the Safety Rail and the Middle Brace which size is noted on Page 3. Attach the Brace and the Safety Rail to the second upright of the appropriate frames based on the Detail on Page 3 using 3/8" x 1-1/4" hex bolts, washers, and lock nuts.
6. To install seat planks: A. First install the plank clips using 5/16" x 1" carriage bolts, washer and lock nuts, on top of seat and foot board supports. Give nuts about 3/4 turn (just enough to secure). Turn plank clips perpendicular to the frames. See Detail page 4. B. Position seat planks on the seat supports so the plank clips are between the slots in the bottom of planks. C. Reach up underneath the seat & foot planks and turn the plank clips to the position shown. See Detail page 4.
7. To install foot planks: A. Follow the steps as outlined in step 6 for installation of foot planks.
8. To Secure Planks to Frames: A. Align the end of the planks on rows 1-3 so they are approximately 15' from outside edge of plank to center of eacher frame. Tighten all hardware on frames & planks securely.
9. Install Hand Rail on foot planks on row 2 and 5. See Detail on page 6.
10. Install Filler Panels to planks using Tek Screws provided. See Detail on page 6.
11. Cut and peen all exposed bolt threads past 2 threads out of nut.
Note: To insure proper installation, bolts used to secure seat, foot and riser planks must be tightened until the clips are firmly in contact with the plank. See Typical Cross Section.
12. Installing (Optional) Ground sills (wood measuring 2" x 6" x 4'-6"): a. Center one ground sill under each bleacher frame so the ends are evenly spaced and are centered from side to side. Mark the (2) hole locations in each bleacher frame on each of the ground sills and drill 1/4" x 1" deep pilot holes. Do Not drill completely through the ground sills. b. Attach the ground sills to the bottom of the bleacher frames with 5/16" x 1-1/4" lag bolts and flat washers provided.
13. Locate two side upright assemblies. a. Install one side upright assembly on 4th vertical seat support using 3/8" x 1" hex bolt, washers and lock nut. Align holes in upright with the 2 punched holes (3rd and 4th from top of frame). Note: Leave bolts loose at this time.
14. Locate the two side mesh panels. Looking at the rear of the bleacher, the mesh will be installed on the seating side of the bleacher. Secure the mesh panel to the left side upright assembly using 3/8" x 3-1/2" hex bolt, washers and lock nut. Do not tighten hardware until all panels are in place.
15. Installing Back Upright Assemblies - a. Locate three back upright assemblies. b. Install two back upright assemblies to rear of outside bleacher frames using the punched holes provided. Secure with 3/8" x 1" hex bolts, washers and locknuts, leaving hardware loose until all panels are in place.
16. To Install Mesh Panels a. Install back mesh panel to left frame upright assembly (#1) by aligning the two (2) holes in the rails of the pre-assembled mesh panel with the holes in the top and bottom of back left upright assembly. Secure using 3/8" x 3-1/2" hex bolt, washers and locknut. (MESH WILL BE ON THE INSIDE OF THE PANEL WHEN INSTALLED.)
17. Install 2 pair corner half clamps to attach the back and side mesh panels using 3/8" x 2-1/2" carriage bolts, washers and nuts. (See Mesh Panel Detail Pg 6)
18. Repeat steps 11-15 for right side of bleacher.
19. Attach center upright assembly to center frame using the punched holes provided and 3/8" x 1" hex bolts, washer and nut.
20. Align and plumb all mesh rail system components. Tighten all mesh rail panel, upright assembly and corner clamp hardware.

Patterson-Williams Athletic Mfg. Co.	Date: 2/22/16	SPECIFICATION / INSTALLATION INSTRUCTIONS
	Rev: 7/18/17	Deluxe Series 3-Row 15' Bleacher
	Drawn: MT	MODEL NO. 1183
	Sheet: 2 of 5	



Patterson-Williams Athletic Mfg. Co.	Date: 2/22/16	SPECIFICATION / INSTALLATION INSTRUCTIONS
	Rev: 7/18/17	Deluxe Series 3-Row 15' Bleacher
	Drawn:	MODEL NO. 1183
	Sheet: 3 of 5	



Patterson-Williams Athletic Mfg. Co.	Date: 2/22/16	SPECIFICATION / INSTALLATION INSTRUCTIONS
	Rev: 7/18/17	Deluxe Series 3-Row 15' Bleacher
	Drawn: MT	MODEL NO. 1183
	Sheet: 4 of 5	

DELUXE CAHR-ADA 3 ROW BLEACHER WITH GUARDRAILS	PACKING SLIP	QTY
	Aluminum Plank 21'	5
	3 Row Bleacher Frames	4
	Rear Cross Brace 77-1/2"	6
	Optional Ground Sills (100")	4
HARDWARE	DESCRIPTION	QTY
1-3/8" Corner Clamps (Pair)	Corner Clamps to Bolt Panel to Panel	8
3/8" x 3-1/2" Carriage Bolt	F-Frame to Rear Panel	10
3/8" x 3-1/2" Hex Bolt	F-Frame to Side Panel	4
3/8" x 2-1/2" Carriage Bolt	Panel to Panel Corner Clamp	8
3/8" x 1-1/4" Hex Bolt	Cross Brace Ctr & on Exterior Frames	8
3/8" x 1-1/4" Hex Bolt	F-Frame to Bleacher Frames	14
3/8" Lock Nut- Nylock		8
3/8" Flat Washers		16
5/16" x 1" Carriage Bolt	Seat & Foot Planks to Bleacher Frames	40
5/16" Lock Nut- Nylock		40
5/16" Flat Washers		80
#10 x 3/4" Self Tapping Screw	End Cap Mounting	20
2" x 12" End Caps	End Caps on Alum. Planks	10
Alum. Plank Clips	Mounting Plank Clips	40
Optional Ground Sills		
5/16" x 1-1/4" Lag Screws	Ground Sills to Bleacher Frames	12
5/16" Flat Washers		12

Patterson-Williams Athletic Mfg. Co.	Date: 2/22/16	SPECIFICATION / INSTALLATION INSTRUCTIONS
	Rev:	Deluxe Series 3-Row 15' Bleacher
	Drawn: MT	MODEL NO. 1183
	Sheet: 5 of 5	

1 BLEACHER
1' = 1'-0"

GATES +ASSOCIATES
LANDSCAPE ARCHITECTURE · LAND PLANNING · URBAN DESIGN

OAKLEY CALIFORNIA

CIP 194 – OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

CONSTRUCTION DETAILS - FURNISHING

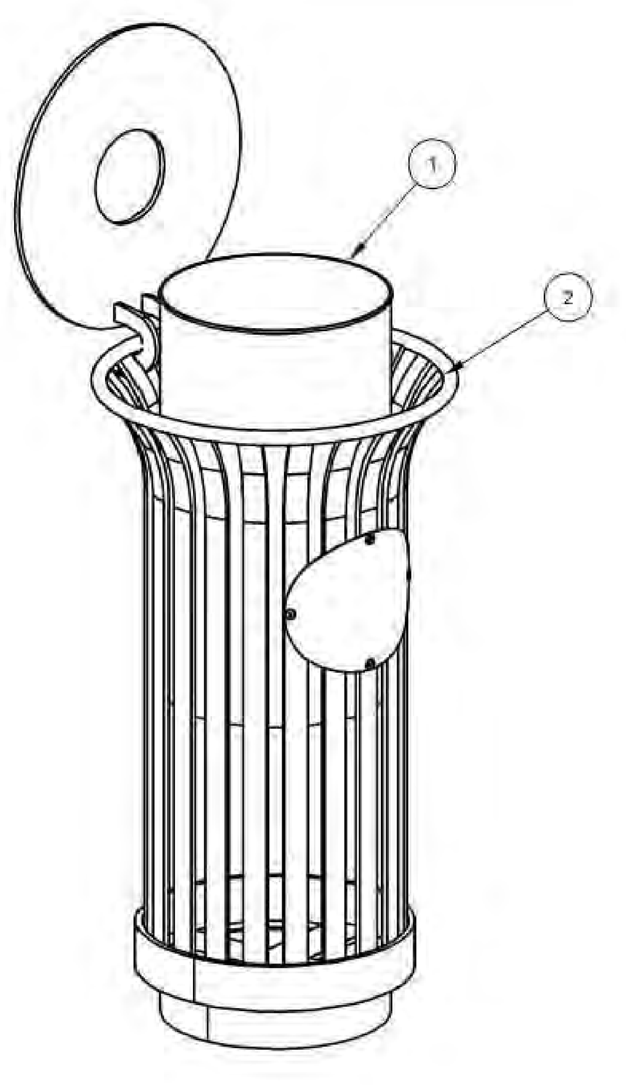
No.	Revisions
1	PERMIT SET REV. / BID SET
2	ADDENDUM 2

Date: 01/16/2018
Scale: AS NOTED
Design: KC
Drawn: JG, JS
Approved:
Job No: P5203

Drawing Number:
L5.5

NOTE:
1.) SHIPPED FULLY ASSEMBLED.
2.) MOUNT AND ANCHOR AS SPECIFIED.

TOOLS REQ'D
3/4" WRENCH
1/2" MASONRY DRILL BIT
DRILL



KITS PROVIDED

ITEM	QTY	PART NO	DESCRIPTION
3	1	K-ANC0860-2	1/2" X 3 3/4" SS ANCHOR KIT (2PCS)

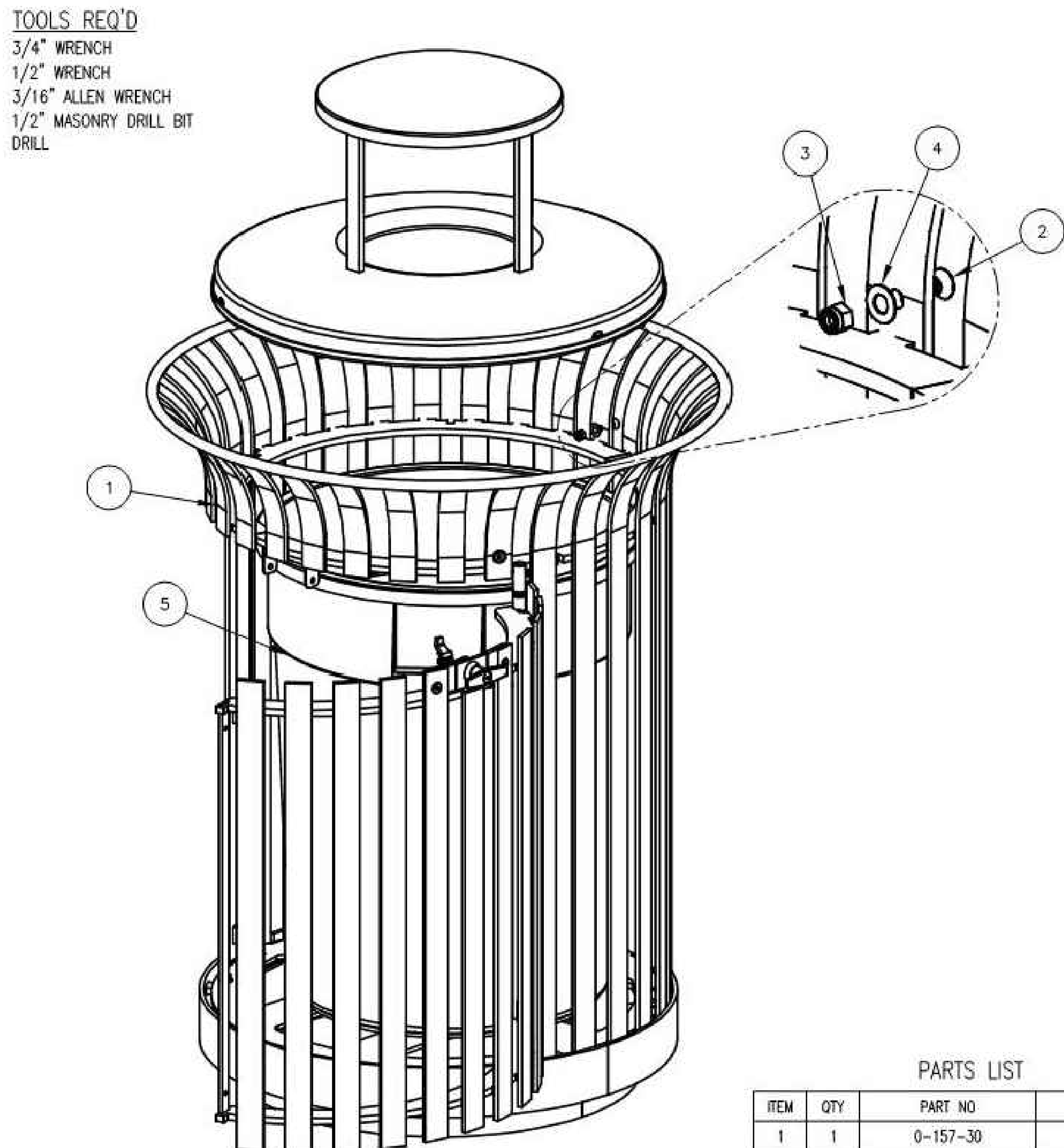
PARTS LIST

ITEM	QTY	PART NO	DESCRIPTION
1	1	0-129-00-04	5 GAL STL LINER
2	1	0-8837-5-0001	STL RECEPT ASSEMBLY W/ DECALS

DuMor, inc. | ASSEMBLY INSTRUCTIONS | DATE DRAWN : 07/24/13, DRAWN BY : ESS, DATE REV. :, REV. BY : | REV. A | DRAWING NUMBER 68-837-5-0001 | SHEET 2 OF 2

NOTES:
1.) DURING ASSEMBLY PROCEDURE;
DO NOT COMPLETELY TIGHTEN HARDWARE.
2.) THE ACTUAL PARTS WILL NOT BE NUMBERED.
NUMBERS ONLY APPLY TO DRAWING.
3.) UPON COMPLETION OF ASSEMBLY SQUARE
ALL COMPONENTS THEN TIGHTEN ALL HARDWARE.
4.) MOUNT AND ANCHOR AS SPECIFIED.

TOOLS REQ'D
3/4" WRENCH
1/2" WRENCH
3/16" ALLEN WRENCH
1/2" MASONRY DRILL BIT
DRILL



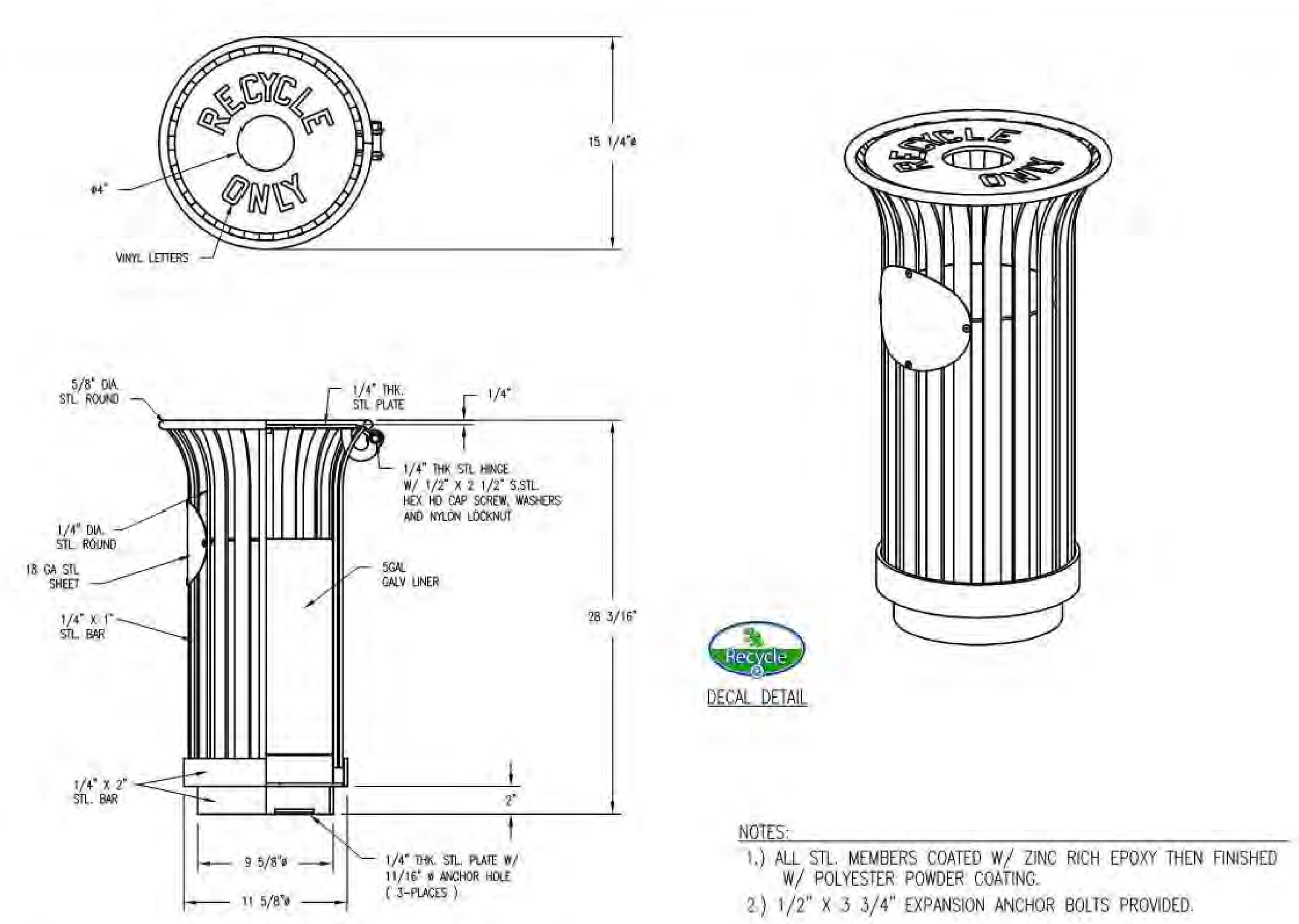
KITS PROVIDED

ITEM	QTY	PART NO	DESCRIPTION
6	1	K-ANC0860-3	1/2" X 3 3/4" SS ANCHOR KIT (3PCS)
7	1	K-FC0516-3L	5/16" CAP HARDWARE KIT (3 PCS)

PARTS LIST

ITEM	QTY	PART NO	DESCRIPTION
1	1	0-157-30	30 GAL RECEPTACLE ASSEMBLY
2	3	1-12-023	5/16" X 1" SS FLT SKT HD CAP SCR
3	3	1-20-016	5/16" SS NYLON LOCKNUT
4	3	1-22-017	5/16" SS FLAT WASHER
5	1	49-32	32 GAL PL LINER W/ HANDLE, BLK

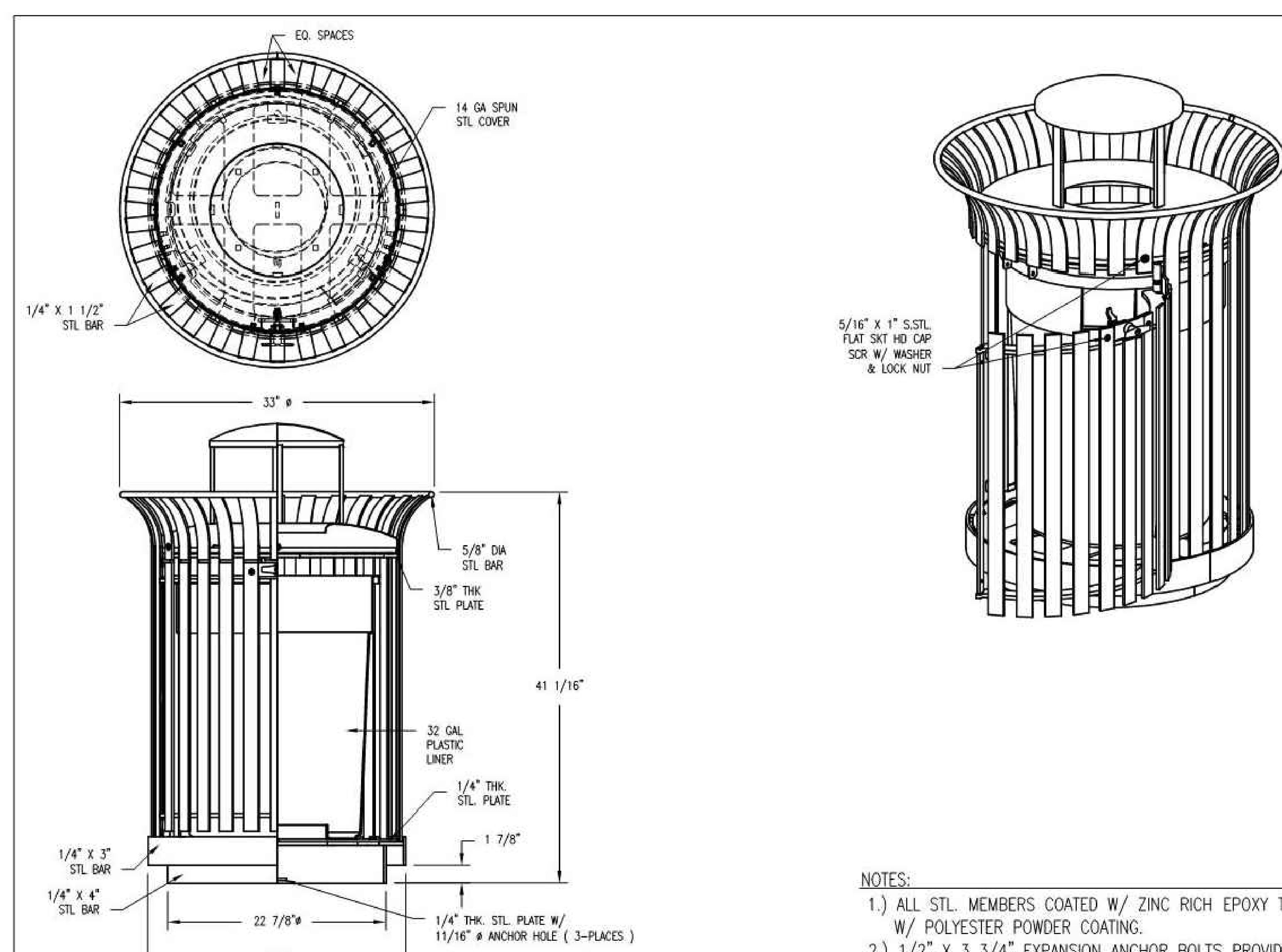
DuMor, inc. | ASSEMBLY INSTRUCTIONS | DATE DRAWN : 04/04/14, DRAWN BY : ESS, DATE REV. : 00/00/00, REV. BY : XXX | REV. A | DRAWING NUMBER 157-32 W/ CVB-30-BT | SHEET 2 OF 2



NOTES:
1.) ALL STL. MEMBERS COATED W/ ZINC RICH EPOXY THEN FINISHED W/ POLYESTER POWDER COATING.
2.) 1/2" X 3 3/4" EXPANSION ANCHOR BOLTS PROVIDED.

DuMor, inc. | RECEPTACLE | DATE DRAWN : 7/11/13, DRAWN BY : RDH, DATE REV. :, REV. BY : | REV. A | DRAWING NUMBER 68-837-5-0001 | SHEET 1 OF 2

RECYCLE RECEPTACLE

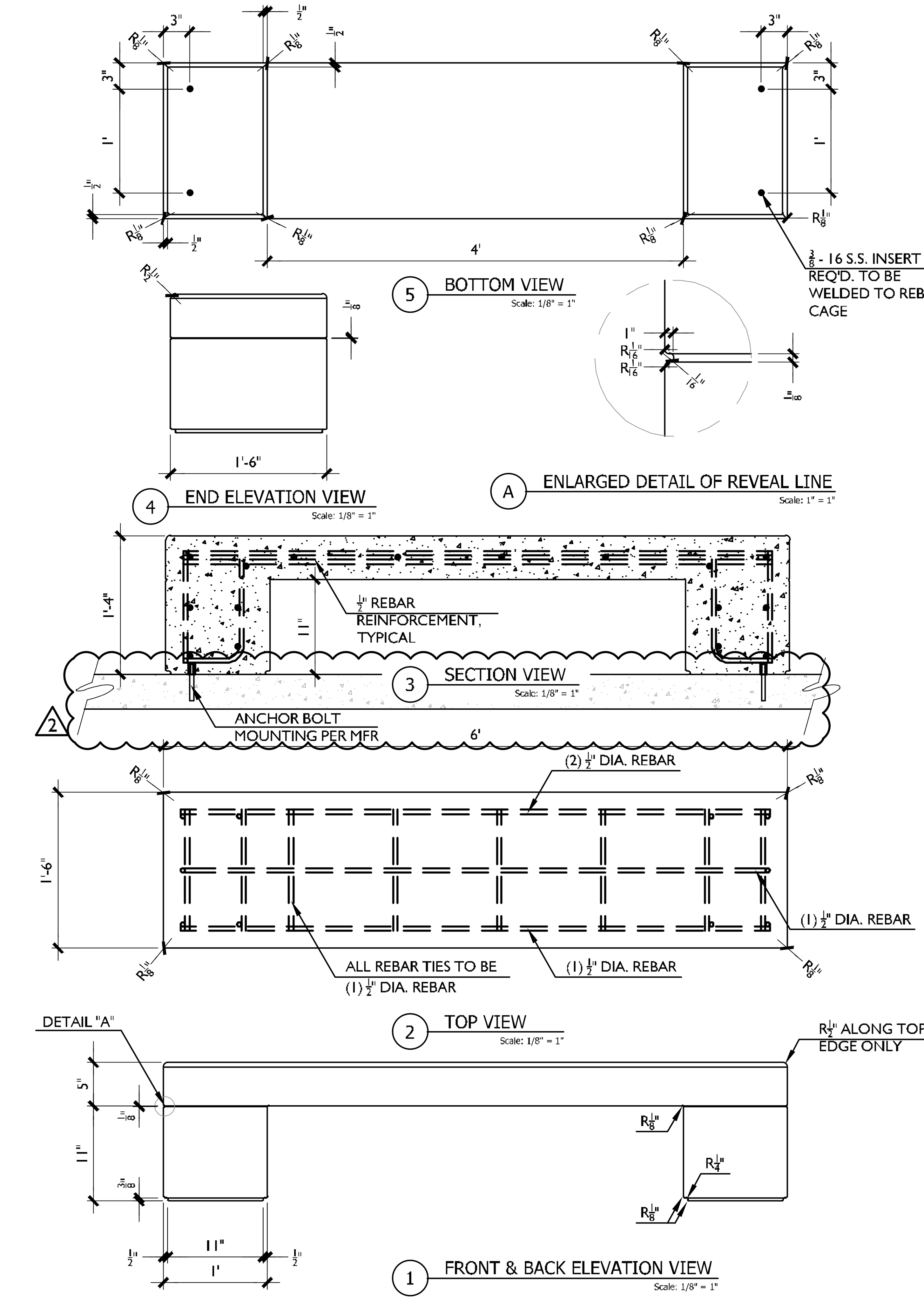


NOTES:
1.) ALL STL. MEMBERS COATED W/ ZINC RICH EPOXY THEN FINISHED W/ POLYESTER POWDER COATING.
2.) 1/2" X 3 3/4" EXPANSION ANCHOR BOLTS PROVIDED.
3.) LATCH PROVIDED W/ KEY, USE OF KEY OPTIONAL.

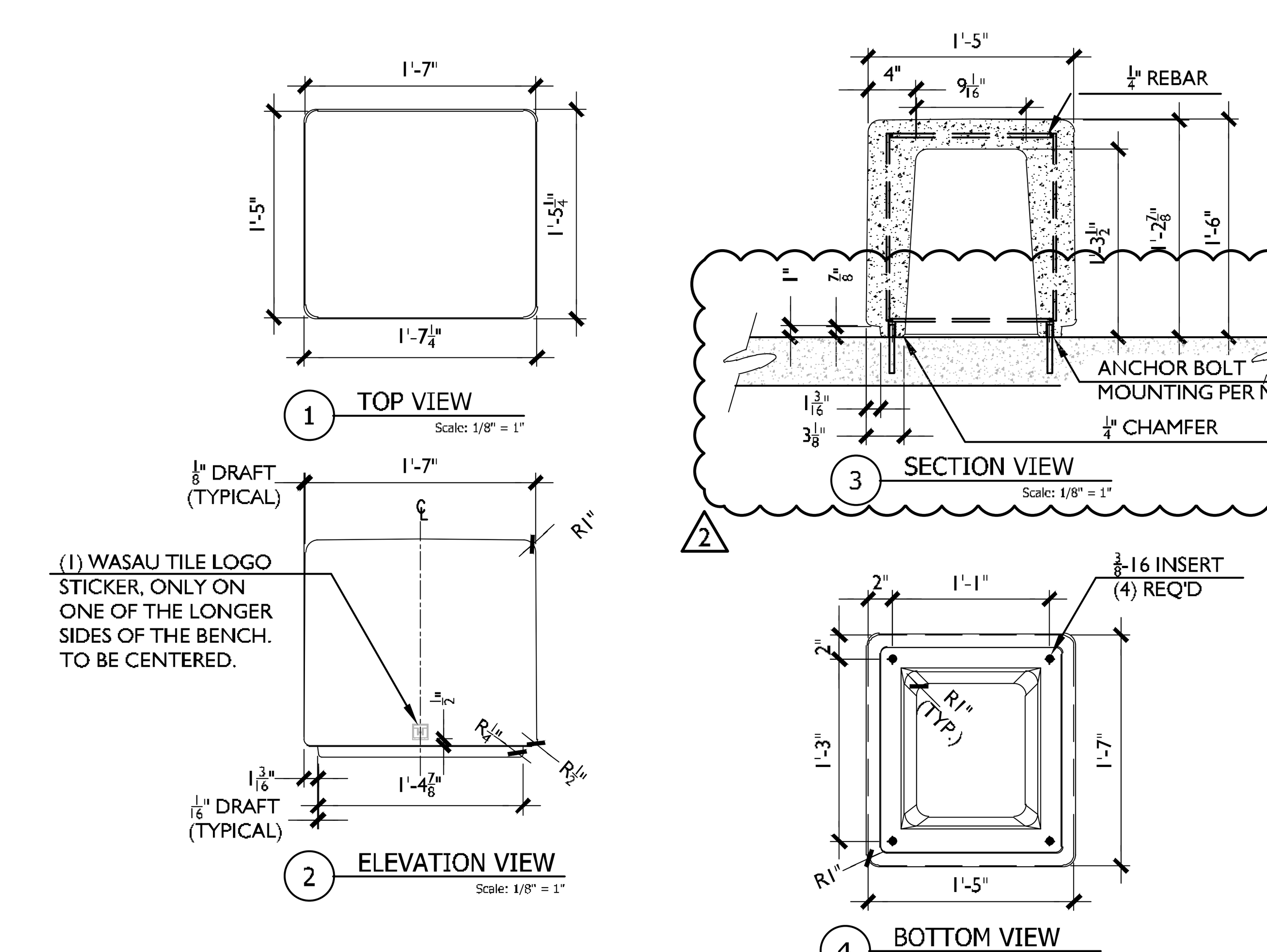
DuMor, inc. | RECEPTACLE | DATE DRAWN : 01/28/13, DRAWN BY : JSB, DATE REV. :, REV. BY : | REV. A | DRAWING NUMBER 157-32 W/ CVB-30-BT | SHEET 1 OF 2

TRASH RECEPTACLE

3 TRASH & RECYCLING RECEPTACLE
NOT TO SCALE



2 CONCRETE BENCH
1" = 1'-0"



1 CONCRETE SEAT PAD
1" = 1'-0"

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OAKLEY CALIFORNIA

CIP 194 - OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

CONSTRUCTION DETAILS - FURNISHING

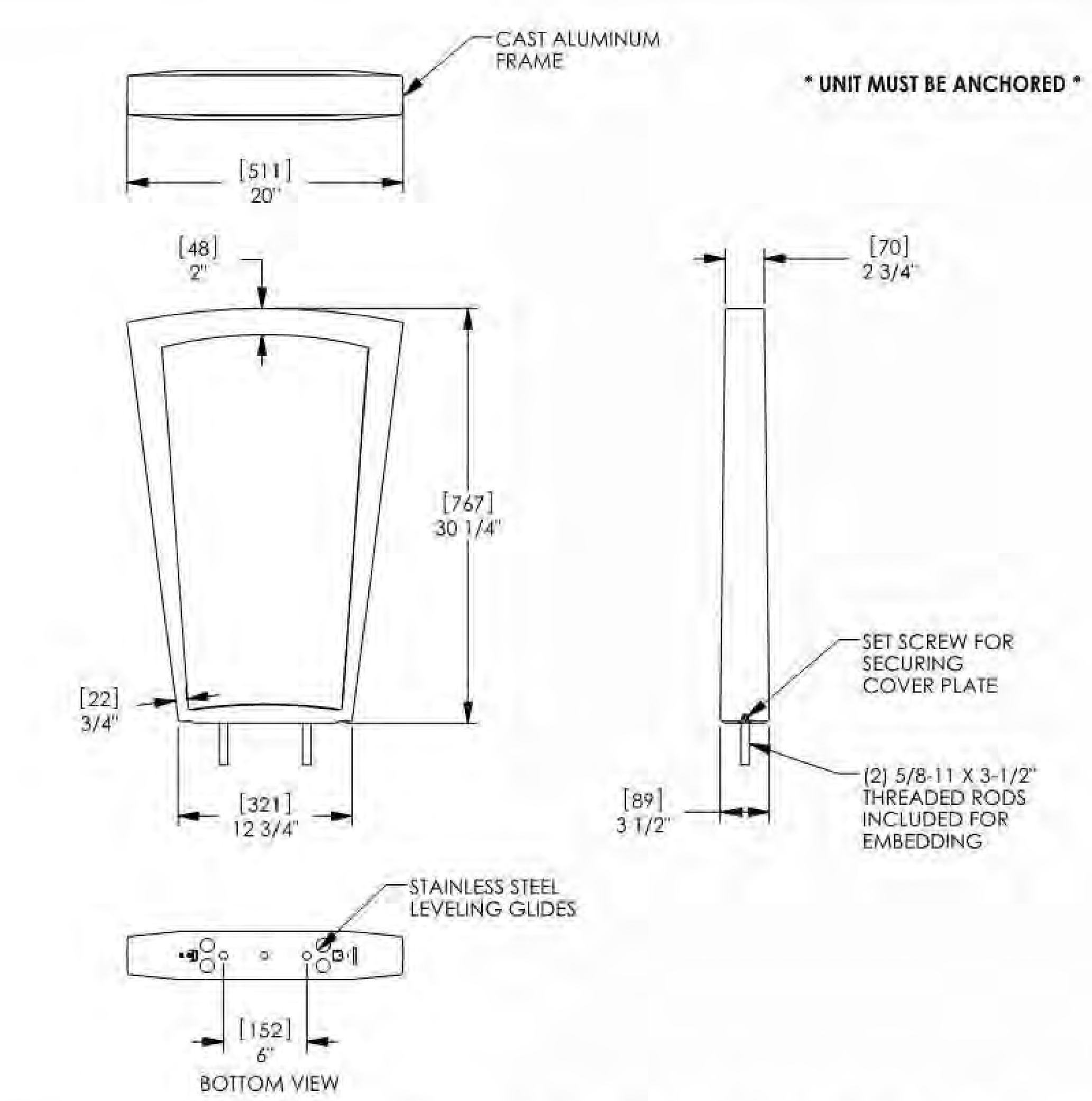
No.	Revisions
1	PERMIT SET REV. / BID SET
2	ADDENDUM 2

Date: 01/16/2018
Scale: AS NOTED
Design: KC
Drawn: JG, JS
Approved:
Job No: P5203

Drawing Number:
L5.7

Emerson Bike Rack, Embedded
Product Drawing

Date: 9/19/2016
www.landscapeforms.com Ph: 800.521.2546



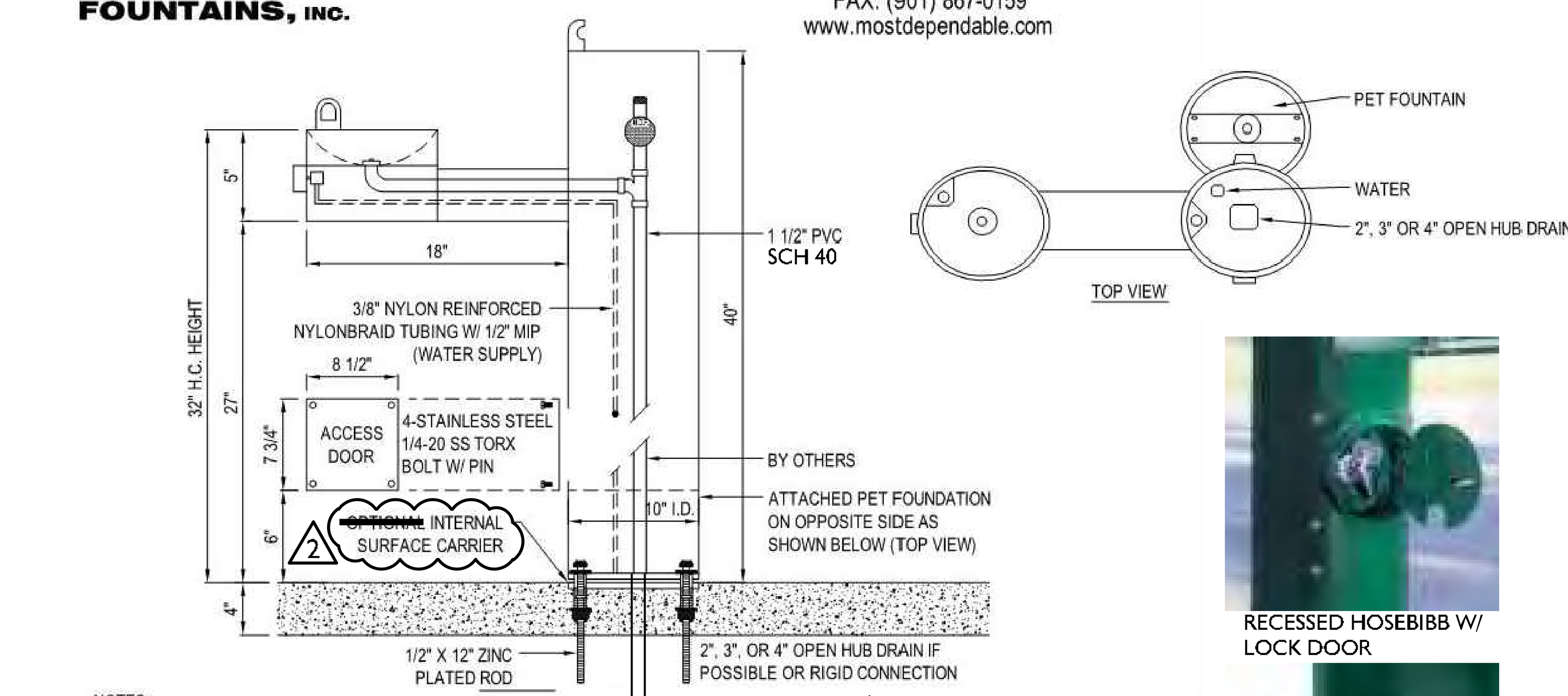
landscapeforms Drawing: EM0002 Dimensions are in inches [mm] U.S. Patent No. D648,658

4 BIKE RACK
NOT TO SCALE

MDF MOST DEPENDABLE FOUNTAINS, INC.

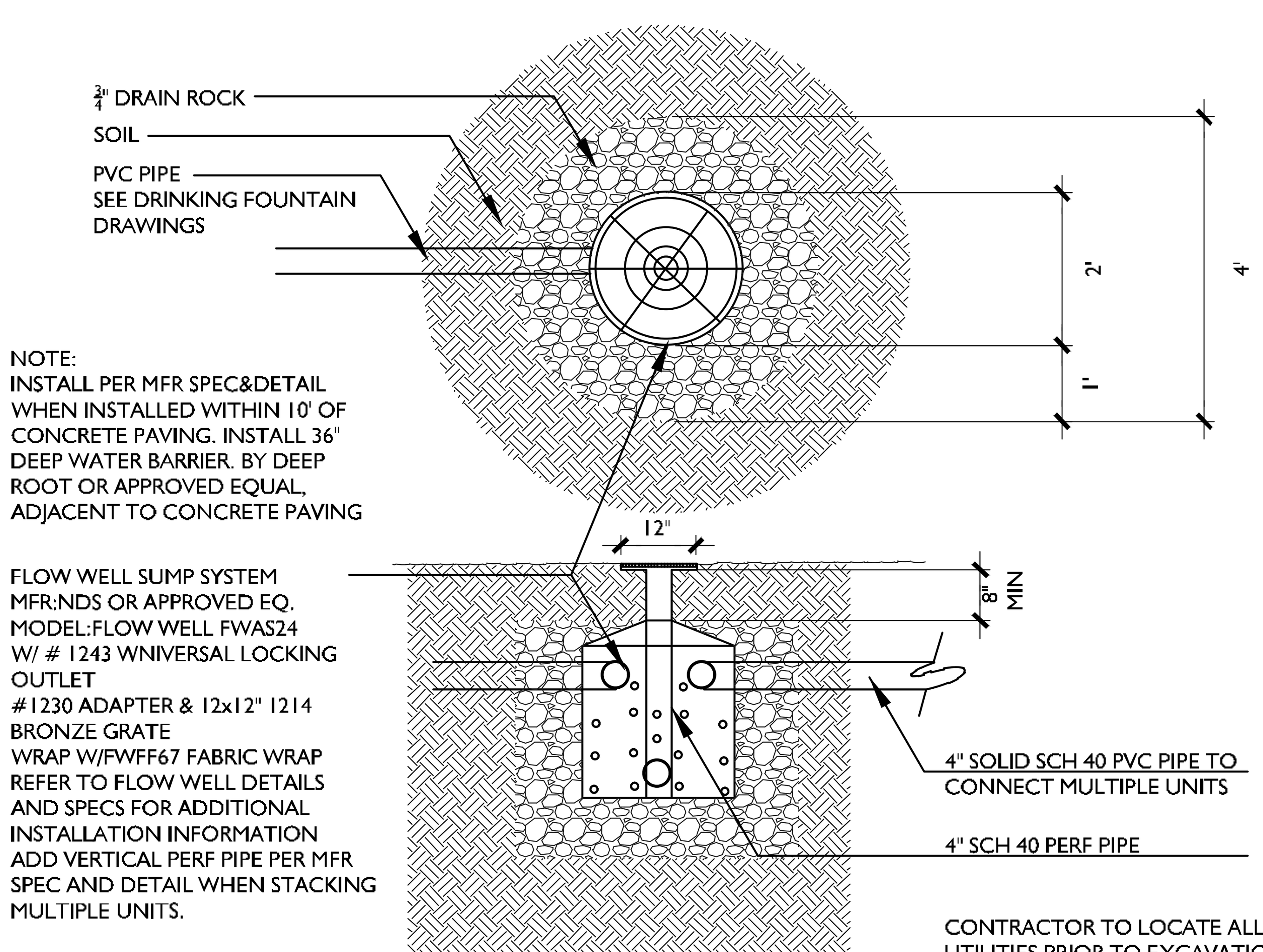
MOST DEPENDABLE FOUNTAINS, INC.
5705 COMMANDER DR. P.O. BOX 587
ARLINGTON, TN 38002-0587
TOLL FREE: 1-800-552-6331
PHONE: (901) 867-0039
FAX: (901) 867-0159
www.mostdependable.com

NOTE: DRAWING FOR DESIGN INTENT ONLY; CONTRACTOR SHALL SUBMIT SHOP DRAWING FOR REVIEW AND APPROVAL. (2)



NOTES:
1. MEETS ADA REGULATIONS.
2. ~~OPTIONAL~~ STAINLESS STEEL SURFACE CARRIER ~~RECOMMENDED~~ (2)
3. SHOWN WITH OPTIONAL 10 STAINLESS STEEL SURFACE CARRIER, ATTACHED PET FOUNTAIN.
4. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
5. DO NOT SCALE DRAWING.
6. ~~THIS DRAWING IS INTENDED FOR USE BY ARCHITECTS, ENGINEERS, CONTRACTORS, CONSULTANTS AND DESIGN PROFESSIONALS FOR PLANNING PURPOSES ONLY. THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION.~~ (2)
7. ALL INFORMATION CONTAINED HEREIN WAS CURRENT AT THE TIME OF DEVELOPMENT BUT MUST BE REVIEWED AND APPROVED BY THE PRODUCT MANUFACTURER TO BE CONSIDERED ACCURATE.
8. CONTRACTOR'S NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT www.CADdetails.com/info AND ENTER REFERENCE NUMBER 3354-1.51.

3 DRINKING FOUNTAIN
NOT TO SCALE



NOTE:
INSTALL PER MFR SPEC&DETAIL WHEN INSTALLED WITHIN 10' OF CONCRETE PAVING. INSTALL 36" DEEP WATER BARRIER. BY DEEP ROOT OR APPROVED EQUAL, ADJACENT TO CONCRETE PAVING

FLOW WELL SUMP SYSTEM MFR:NDS OR APPROVED EQ. MODEL:FLOW WELL FWAS24 W/ # 1243 WNIVERSAL LOCKING OUTLET #1230 ADAPTER & 12x12" 1214 BRONZE GRATE WRAP W/FWFF67 FABRIC WRAP REFER TO FLOW WELL DETAILS AND SPECS FOR ADDITIONAL INSTALLATION INFORMATION ADD VERTICAL PERF PIPE PER MFR SPEC AND DETAIL WHEN STACKING MULTIPLE UNITS.

CONTRACTOR TO LOCATE ALL UTILITIES PRIOR TO EXCAVATION.

2 FLO-WELL SUMP (2)
1/2" = 1'-0"

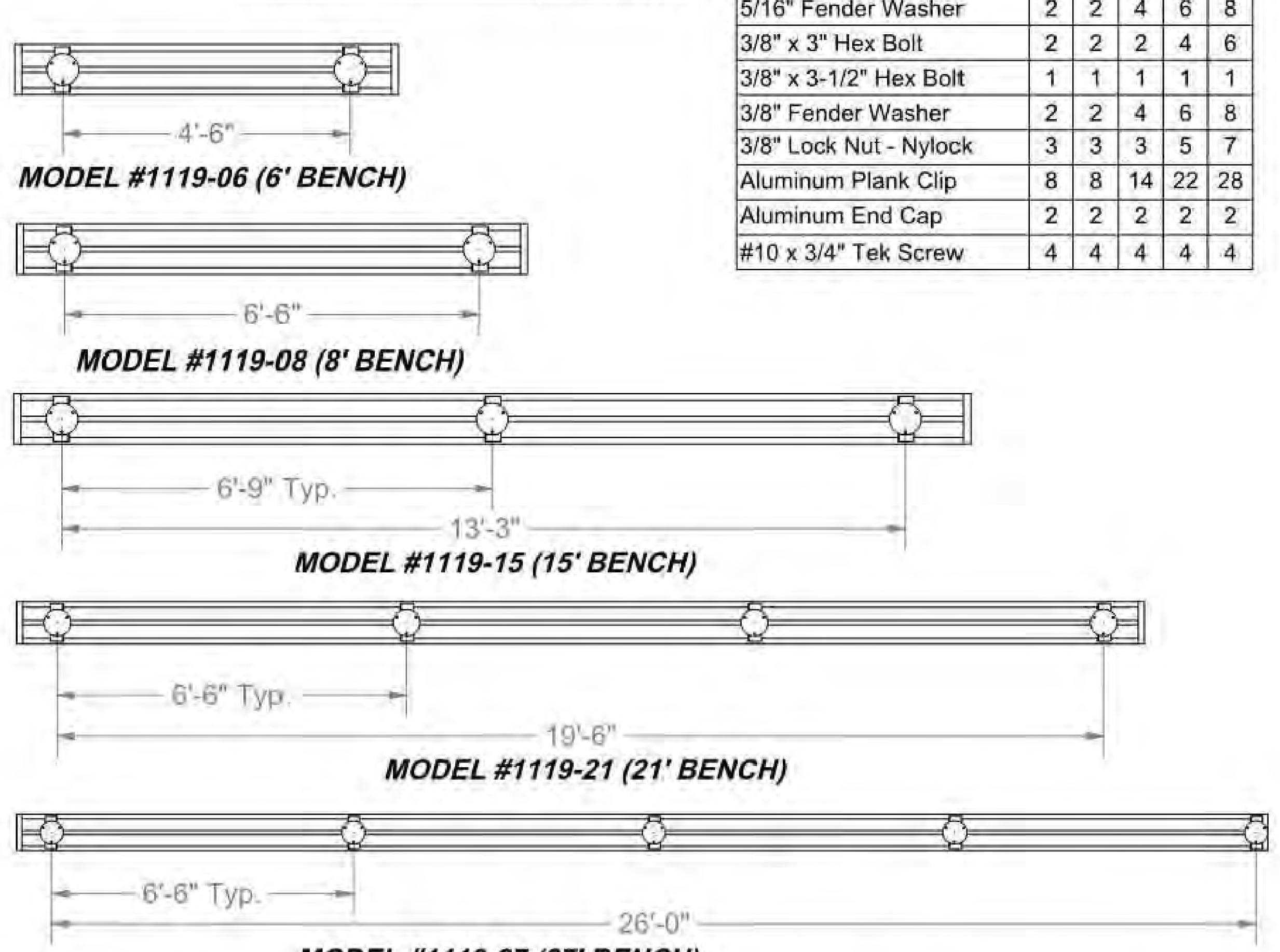
SITE FURNISHINGS
FOOTING DIMENSIONS

(M1, M3, M4 MOUNTS)
MATERIAL LIST QTY.

Length of Bench	6' & 8'	15'	21'
Bench Frame	2	3	4
Anodized Aluminum Plank	1	1	1
Aluminum End Cap	2	2	2
#10 x 3/4" Tek Screw	4	4	4
Aluminum Plank Clip	4	6	8
5/16" x 1-1/4" Carriage Bolt	4	6	8
5/16" Lock Nut - Nylock	4	6	8
5/16" Flat Washer	4	6	8

(M2 PORTABLE MOUNT)
MATERIAL LIST QTY.

Length of Bench	6'	8'	15'	21'	27'
Bench Frame	2	2	3	4	5
Brace Pipe 32"	2	2	4	6	8
Anodized Aluminum Plank	1	1	1	1	1
5/16" x 1-1/4" Carriage Bolt	4	4	6	10	13
5/16" x 1-1/2" Carriage Bolt	2	2	4	6	8
5/16" Lock Nut - Nylock	6	6	10	16	21
5/16" Flat Washer	4	4	6	10	13
5/16" Fender Washer	2	2	4	6	8
3/8" x 3" Hex Bolt	2	2	2	4	6
3/8" x 3-1/2" Hex Bolt	1	1	1	1	1
3/8" Fender Washer	2	2	4	6	8
3/8" Lock Nut - Nylock	3	3	3	5	7
Aluminum Plank Clip	8	8	14	22	28
Aluminum End Cap	2	2	2	2	2
#10 x 3/4" Tek Screw	4	4	4	4	4



NOTE: Footing sizes are based on average soil conditions. Loose and/or sandy soil is not average and footing sizes must be increased accordingly to meet soil conditions and local building codes and specifications.

Patterson-Williams SITE FURNISHINGS | DATE: 6/16/15 REV: 6/16/15 DRAWN: MT | SPECIFICATION / INSTALLATION INSTRUCTIONS ALUMINUM PLAYERS BENCH W/O BACK | SHEET: 4 of 4 | 1119 -06, -08, -15, -21, -27

SITE FURNISHINGS
M1 - IN-GROUND MOUNT

COMPONENT DESCRIPTION	QTY.
ALUMINUM PLANK (2" x 10")	1
ALUMINUM END CAP	2
M1 LEG FRAME	2
ALUMINUM CLIPS	4
5/16" x 1-1/4" Carriage Bolt	8
5/16" Flat Washers	8
5/16" Nylock Nut	8

INSTALLATION INSTRUCTIONS:
1. Lay leg frames on the ground with pre-drilled holes facing up. Line the pre-drilled holes in the planks with the holes in the leg frames & screw in the lag bolt with flat washer until almost tight. Align other leg frame & do the same.
Note: Leave all lag bolts loose until all planks are in place.
2. Line up the holes on another plank & screw lag bolts in place as in step 2.
3. When all planks are attached to leg frames attach the center support in same manner. Align ends on all planks & tighten all lag bolts.

FOR M1 IN-GROUND MOUNTING:
4. Dig footing holes per M1 permanent mount drawing on sheet 1.
5. Lower the assembled bench into footing holes. Block or shim from below so that top of bench plank is 18" above finish grade.
6. Pour concrete up to 2" of finish grade for a field instal or level with finish grade for slab install. Let concrete set for 3 days before removal of bracing. Cover field install footings with turf.

Patterson-Williams SITE FURNISHINGS | DATE: 6/16/15 REV: 6/16/15 DRAWN: MT | SPECIFICATION / INSTALLATION INSTRUCTIONS ALUMINUM PLAYERS BENCH W/O BACK | SHEET: 2 of 4 | 1119 -06, -08, -15, -21, -27

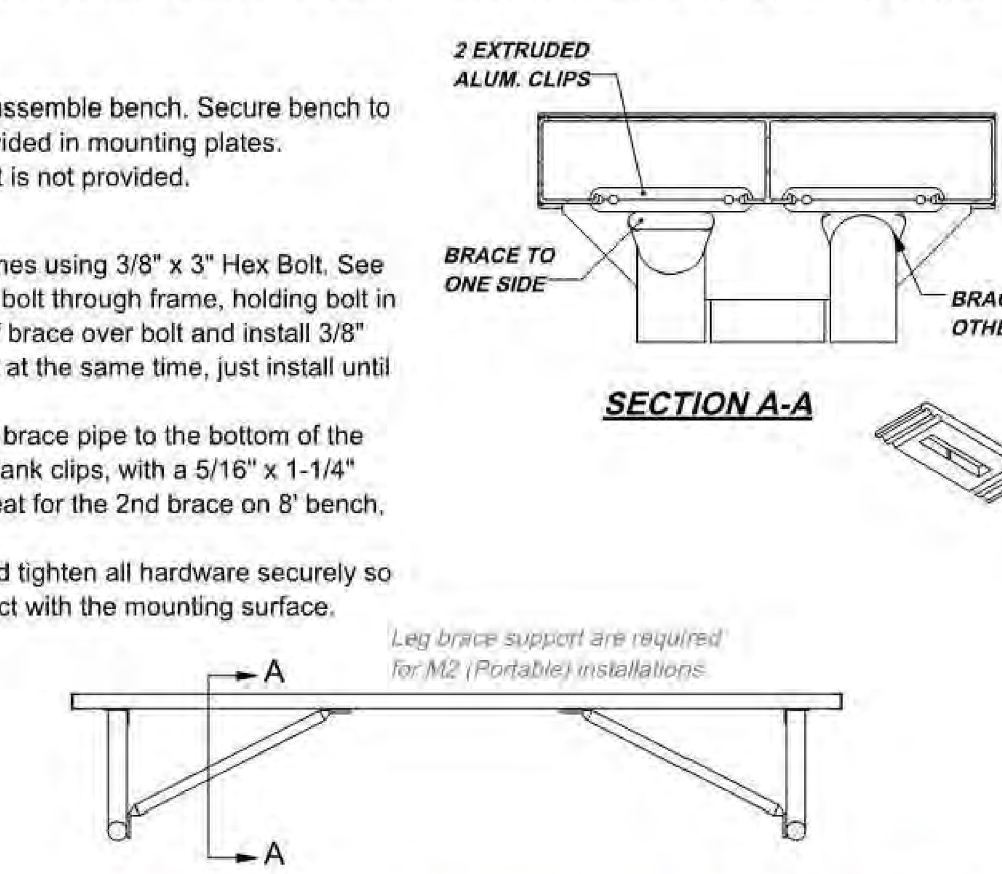
SITE FURNISHINGS
M2 - SURFACE MOUNTING

INSTALLATION INSTRUCTIONS:
1. Determine the model of bench to be installed. Use Detail A page 3 to determine the distance between support posts for that model and dig te holoes for the footings. See Detail B sheet 1 for recommended footing depths.
2. Assemble and align end caps on aluminum planks. Install self-drilling, self-taping tek screws on end caps.
3. Assemble extruded clips on seat supports with 5/16" 1-1/4" carriage bolts, washers and Nylock nuts provided.(See Detail Below) FInger0tighten bolts to where nylon begins in nut. Rotate clips 90 deg. to the frame.
4. Lay aluminum plank over plank clips. Rotate plank clips so the grooves lock down on the plank. Tighten bolts to where nylon begins in nut. The first seat support will be approximately 9" from center of support to end of plank. Assemble other seat supports to plank in same manner.
5. When all hardware is tightened lower bench into holes. Brace bench so top of seat plank is 18" above finished grade and level.
6. Pour concrete to within 2" of finish grade or to finish grade depending on your preference and let concrete set for 48 hours. Remove bracing and cover footings with turf.

GENERAL:
This is a durable bench ideal for dugouts, sideline seating, tennis courts, parks, and schools or anywhere a quality bench is needed. Frames are fabricated from galvanized steel. Seat is made from extruded aluminum. Benches are available is 6', 8', 15', 21' & 27" lengths.
MATERIAL: All materials are selected for strength, durability and the ability to withstand years of exposure.
SUPPORT POSTS: 2-3/8" O.D. galvanized steel. Two (2) support posts are required for the 21'bench.
SEAT PLANKS: 2' x 10" extruded aluminum with a standard wall thickness of .078", standard height of 1-3/4" and a fluted non-skid surface. Planks secure to each frame with two (2) friction-type aluminum mounting clips.
FINISH: All welds are ground smooth. Aluminum plank finish is clear anodized. All hardware is zinc-plated for long rust fee service.

Surface Mount Option:
1. Follow Steps 2-4 above to assemble bench. Secure bench to ground using the holes provided in mounting plates. Hardware for surface mount is not provided.

Portable Mount Option:
1. Install bench braces to frames using 3/8" x 3" Hex Bolt. See Detail E & F page 3. Insert bolt through frame, holding bolt in place assemble one end of brace over bolt and install 3/8" lock nut. Do not tighten nut at the same time, just install until finger tight.
2. Attach the other end of the brace pipe to the bottom of the aluminum plank with two plank clips, with a 5/16" x 1-1/4" carriage bolt and nut. Repeat for the 2nd brace on 8' bench, and 3x for 15' bench. Etc...
3. Plumb braces to planks and tighten all hardware securely so the clips are firmly in contact with the mounting surface.

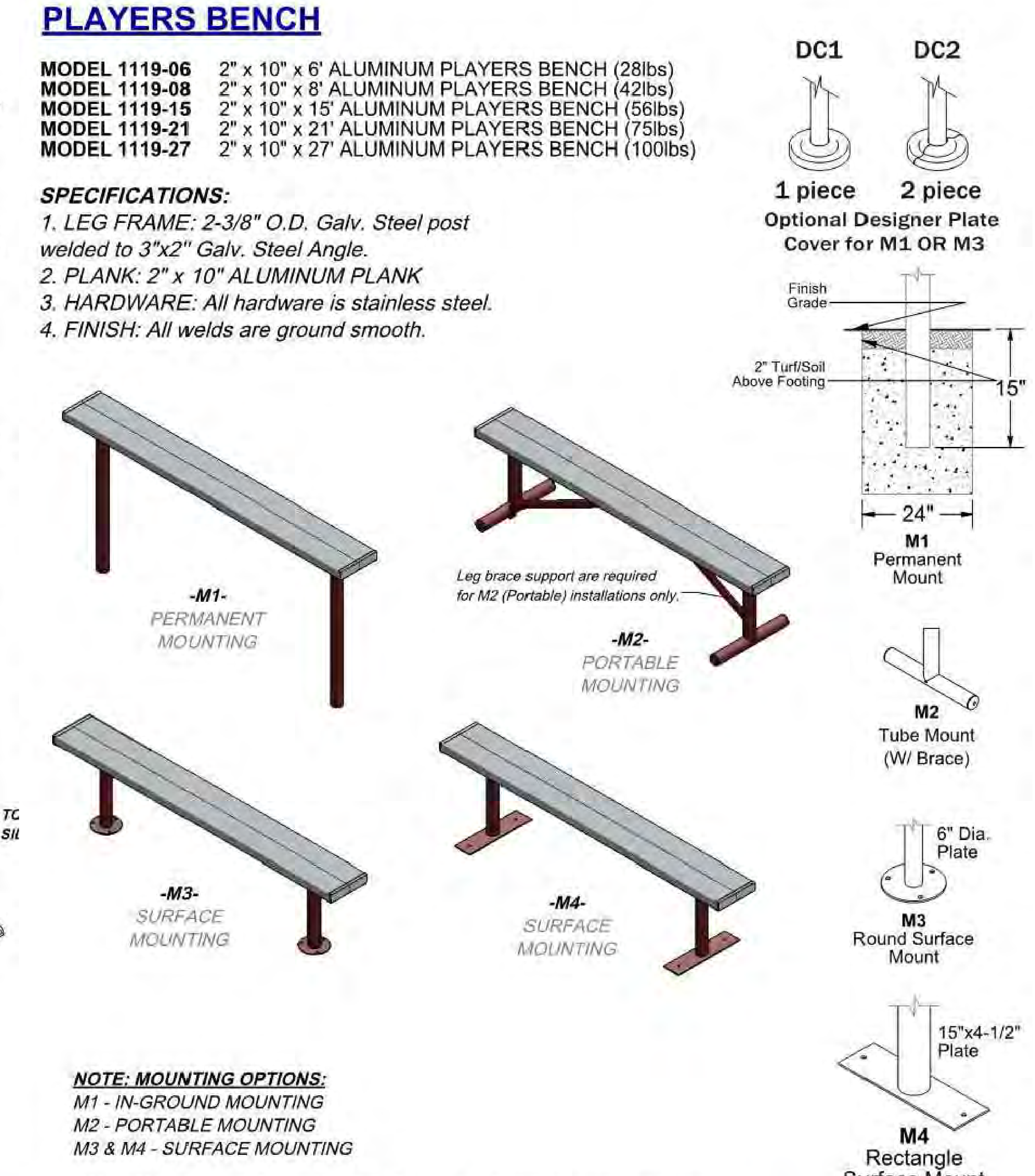


Patterson-Williams SITE FURNISHINGS | DATE: 6/16/15 REV: 6/16/15 DRAWN: MT | SPECIFICATION / INSTALLATION INSTRUCTIONS ALUMINUM PLAYERS BENCH W/O BACK | SHEET: 3 of 4 | 1119 -06, -08, -15, -21, -27

PLAYERS BENCH

MODEL 1119-06 2" x 10" x 6' ALUMINUM PLAYERS BENCH (28lbs)
MODEL 1119-08 2" x 10" x 8' ALUMINUM PLAYERS BENCH (42lbs)
MODEL 1119-15 2" x 10" x 15' ALUMINUM PLAYERS BENCH (56lbs)
MODEL 1119-21 2" x 10" x 21' ALUMINUM PLAYERS BENCH (75lbs)
MODEL 1119-27 2" x 10" x 27' ALUMINUM PLAYERS BENCH (100lbs)

SPECIFICATIONS:
1. LEG FRAME: 2-3/8" O.D. Galv. Steel post welded to 3"x2" Galv. Steel Angle.
2. PLANK: 2" x 10" ALUMINUM PLANK
3. HARDWARE: All hardware is stainless steel.
4. FINISH: All welds are ground smooth.



NOTE: MOUNTING OPTIONS:
M1 - IN-GROUND MOUNTING
M2 - PORTABLE MOUNTING
M3 & M4 - SURFACE MOUNTING

(Note: Bench must be anchored. Anchoring hardware not included.)

Patterson-Williams SITE FURNISHINGS | DATE: 6/16/15 REV: 6/16/15 DRAWN: MT | SPECIFICATION / INSTALLATION INSTRUCTIONS ALUMINUM PLAYERS BENCH W/O BACK | SHEET: 1 of 4 | 1119 -06, -08, -15, -21, -27

1 PLAYERS BENCH
NOT TO SCALE

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OAKLEY CALIFORNIA

CIP 194 – OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA
CONSTRUCTION DETAILS - FURNISHING

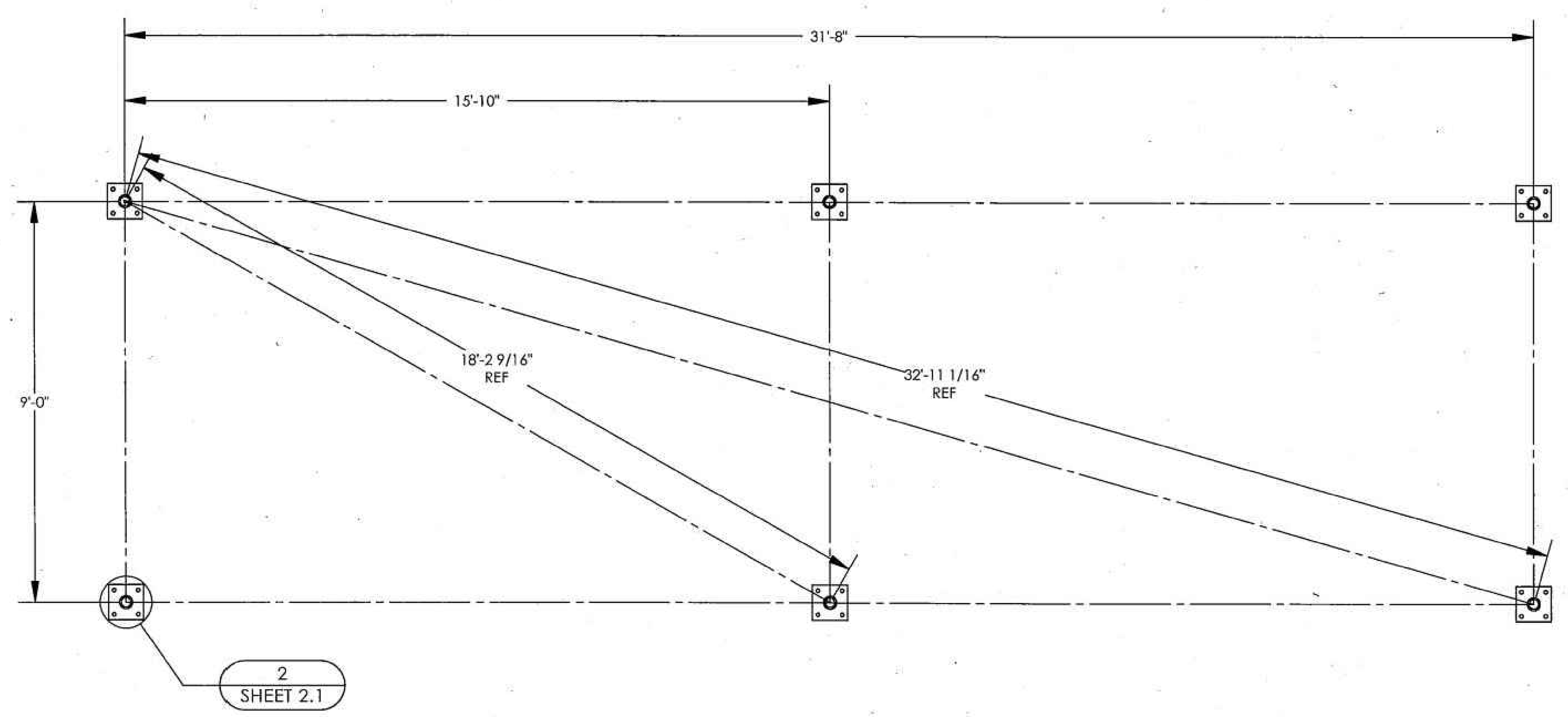
No.	Revisions
1	PERMIT SET REV. / BID SET
2	ADDENDUM 2

Date: 01/16/2018
Scale: AS NOTED
Design: KC
Drawn: JG, JS
Approved:
Job No: P5203

Drawing Number:
L5.8

ANCHOR AND FOOTING LAYOUT NOTES:

1. ANCHORS MUST BE CENTERED IN FOOTINGS
2. FOOTINGS MUST BE TURNED TO ALIGN WITH COLUMN AND TRUSS CENTERLINE.



IF THESE DRAWINGS ARE SEALED, THE SEAL APPLIES ONLY TO BUILDING COMPONENTS (AND FOUNDATION DESIGN IF APPLICABLE) DETAILED WITHIN THESE DRAWINGS.

PROJECT: OAKLEY RECREATION CENTER | PROJECT LOCATION: OAKLEY, CA | DRAWING: ANCHOR AND FOOTING LAYOUT | CREATION DATE: 2/17/2016 | BUILDING NO: 16285 | CAD MODEL: -16285 | DRAWN BY: | REV LEVEL: A | PRINT DATE: 9/6/2017 | SCALE: 1:36 | SHEET 2

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FOUNDATION NOTES:

1. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE REQUIREMENTS OF THE BUILDING CODE, AMERICAN CONCRETE INSTITUTE, AND ALL APPLICABLE STATE AND LOCAL ORDINANCES AND REQUIREMENTS.
2. THE CONCRETE DESIGN IS BASED ON THE FOLLOWING PROPERTIES:
   - 28 DAY STRENGTH OF 3000 psi.
   - SLUMP OF 4" (+/-1").
3. THE FOOTING SHALL BEAR ON COMPETENT UNDISTURBED SOIL OR 95% COMPACTED FILL. IF SIGNS OF ORGANIC MATERIAL, UNCONTROLLED FILL, CLAY OR SILT, HIGH WATER TABLE OR OTHER POSSIBLE DETRIMENTAL CONDITIONS ARE FOUND, INSTALLATION OF THE FOUNDATION MUST BE DISCONTINUED AND A SOILS ENGINEER CONTACTED.
4. THE REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615, GRADE 60.
5. IF FOOTING DEPTH SHOWN DOES NOT MEET LOCAL FROST REQUIREMENTS, THE DRILLED PIER FOOTING MAY BE EXTENDED. EXTEND VERTICAL BARS AS REQUIRED AND PROVIDE ADDITIONAL TIES TO MEET SPACING REQUIREMENTS AS SHOWN. IF LOCAL FROST DEPTH REQUIREMENTS ARE NOT MET AND NO DRILLED PIER FOOTING OPTION IS GIVEN, CONTACT POLIGON ENGINEERING. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCAL FROST LINE DEPTH BELOW GRADE PRIOR TO CONSTRUCTION.

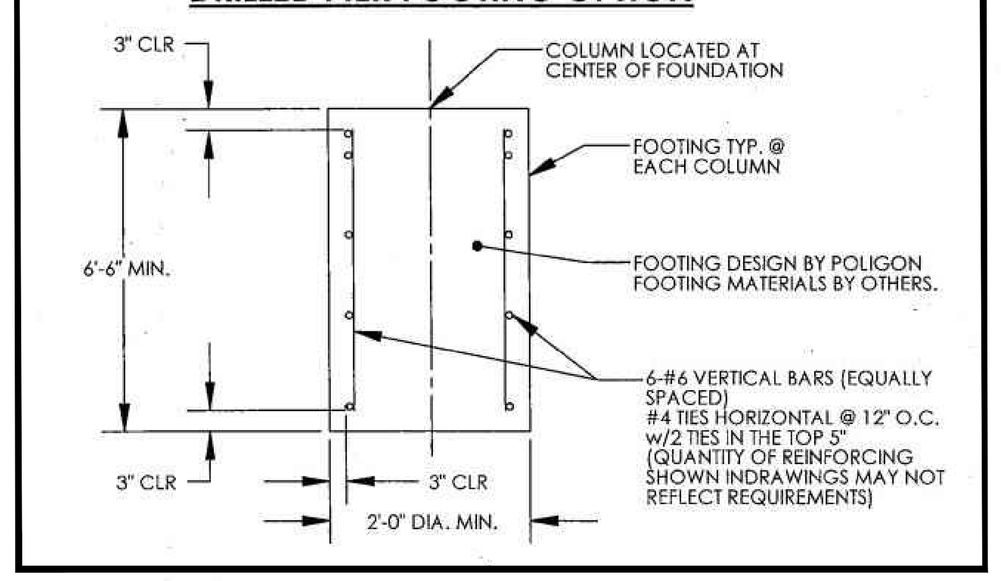
THE FOUNDATION DESIGN SHOWN ON THESE DRAWINGS IS NOT SITE SPECIFIC, BUT BASED ON THE PRESUMPTIVE ALLOWABLE FOUNDATION PRESSURES IN CHAPTER 18 OF THE BUILDING CODE (CLASS 5 SOIL). THE BUILDING OFFICIAL IN THE JURISDICTION IN WHICH THIS STRUCTURE IS LOCATED MAY REQUIRE A SITE SPECIFIC GEOTECHNICAL REPORT OR LETTER FROM A QUALIFIED LOCAL PROFESSIONAL ENGINEER ATTESTING TO WHETHER THE ACTUAL SITE CONDITIONS MEET THE ASSUMPTIONS IDENTIFIED ABOVE.

ANCHOR BOLT NOTES - FIXED BASE STRUCTURES (ANCHOR BOLTS LOCATED OUTSIDE COLUMN):

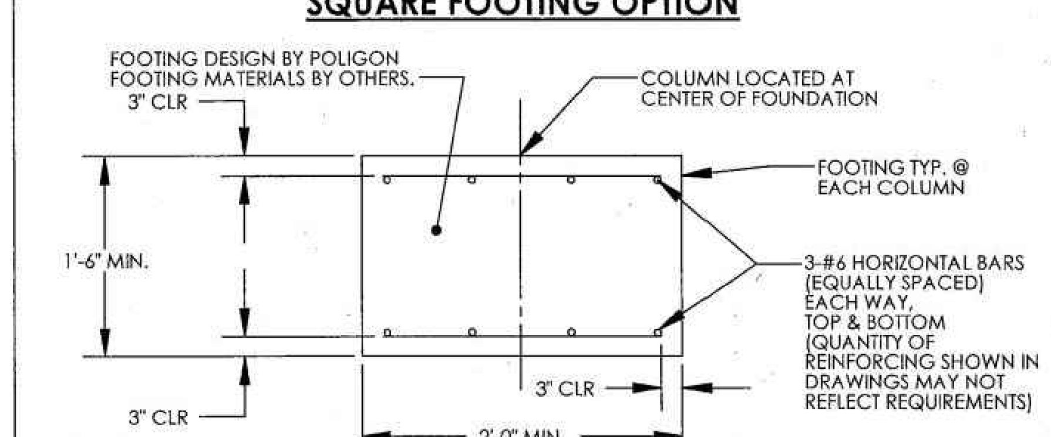
1. ANCHOR BOLTS SHALL BE ASTM F1554 (GRADE 55) MATERIAL UNLESS OTHERWISE NOTED.
2. ANCHOR BOLTS SHALL BE EITHER "HEADED" OR "THREADED WITH NUT" AS DEFINED IN THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL (PART 14), 13th EDITION.
3. HOOKED ANCHOR BOLTS ARE NOT ACCEPTABLE.
4. ACCURATE ANCHOR BOLT PLACEMENT IS CRITICAL. TO ENSURE THE ANCHOR BOLT LAYOUT MEETS THE DIMENSIONS REQUIRED ON THE DRAWINGS, SURVEY (OR MEASURE) THE LOCATION OF ALL ANCHOR BOLTS PRIOR TO POURING THE FOOTINGS. AN ADDITIONAL SURVEY (OR MEASUREMENT) SHOULD BE MADE AFTER THE FOOTINGS ARE POURED TO CONFIRM THE ANCHOR BOLTS DID NOT SHIFT DURING THE CONCRETE POUR.
5. POLIGON STRONGLY RECOMMENDS USING ANCHOR BOLT TEMPLATES BECAUSE THEY SIGNIFICANTLY IMPROVE THE ACCURACY OF ANCHOR BOLT PLACEMENT.
6. IF OUTSIDE CONSULTING ENGINEERS ARE DESIGNING THE FOUNDATIONS FOR THIS STRUCTURE, THEY MUST REFER TO POLIGON CALCULATIONS FOR MINIMUM CONCRETE PROPERTIES (COMPRESSIVE STRENGTH, EDGE DISTANCE, ETC.) REQUIRED FOR THE ANCHOR BOLT DESIGN.
7. ELECTRICAL ACCESS HOLE IS ALWAYS LOCATED IN THE COLUMN BASE PLATE AS SHOWN.
8. GROUT UNDER BASEPLATES SHALL BE NON-METALLIC, NON-SHRINK GROUT WITH MINIMUM f'c=6500 PSI.

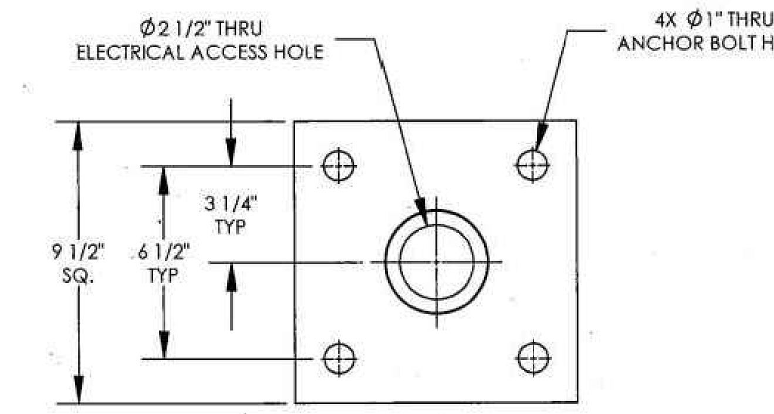
USE DRILLED PIER FOOTING OPTION FOR THIS PROJECT (2)

DRILLED PIER FOOTING OPTION



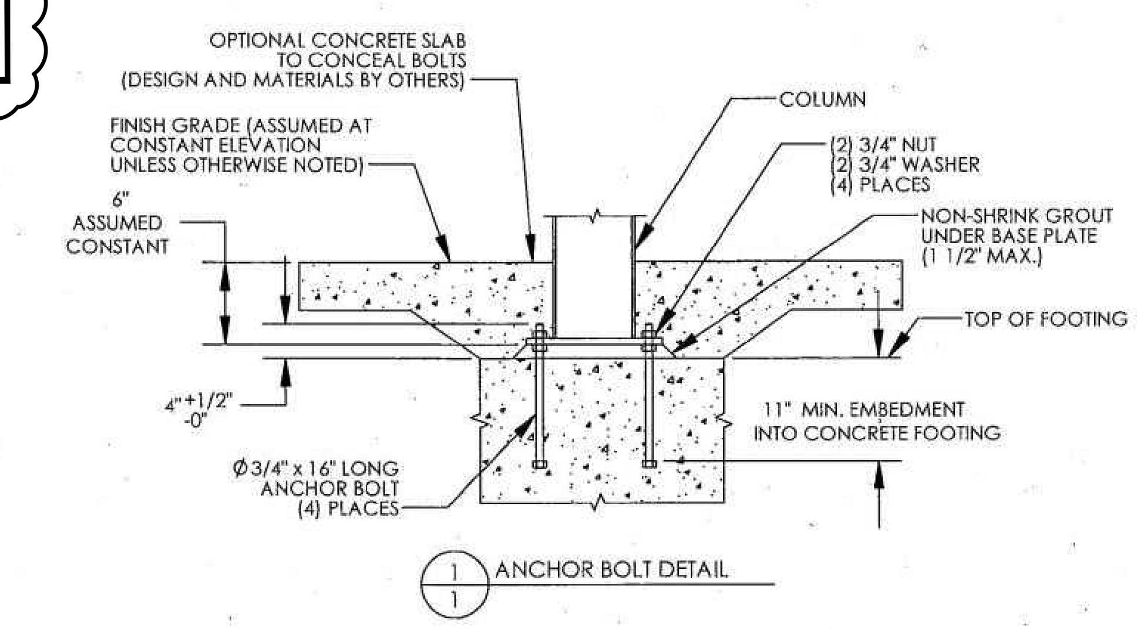
SQUARE FOOTING OPTION





THE FOLLOWING ADHESIVE ANCHORS MAY BE SUBSTITUTED FOR THE CAST-IN-PLACE ANCHOR BOLTS:
- HILTI HIT-HY 200 (A OR R) ADHESIVE W/ Φ 3/4" HAS-E ROD WITH MINIMUM 11" EMBEDMENT.
CONTRACTOR SHALL FOLLOW ALL INSTALLATION SPECIFICATIONS AND REQUIREMENTS OF ANCHOR MANUFACTURER.

2/2 ANCHOR BOLT PATTERN
BASE PLATE THICKNESS: 3/4"



1/1 ANCHOR BOLT DETAIL

IF THESE DRAWINGS ARE SEALED, THE SEAL APPLIES ONLY TO BUILDING COMPONENTS (AND FOUNDATION DESIGN IF APPLICABLE) DETAILED WITHIN THESE DRAWINGS.

PROJECT: OAKLEY RECREATION CENTER | PROJECT LOCATION: OAKLEY, CA | DRAWING: ANCHOR AND FOOTING DETAILS | CREATION DATE: 2/17/2016 | BUILDING NO: 16285 | CAD MODEL: -16285 | REV LEVEL: A | PRINT DATE: 9/6/2017 | SCALE: 1:1 | SHEET 2.1

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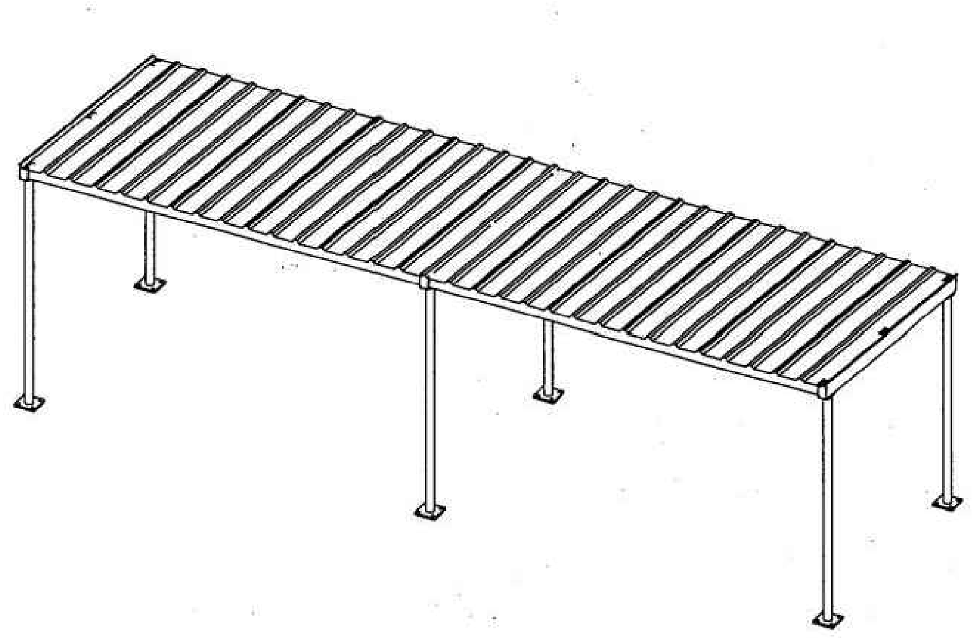
PROJECT NAME: OAKLEY RECREATION CENTER
PROJECT LOCATION: OAKLEY, CA
BUILDING TYPE: DUG 10x32
ROOF TYPE: MULTI-RIB
BUILDING NUMBER: 16285
ORDER NUMBER: 60328



DRAWING LIST:

SHEET NUMBER	DRAWING DESCRIPTION
CS	COVER SHEET
1	ARCHITECTURAL ELEVATIONS
2-2.1	ANCHOR AND FOOTING LAYOUT / DETAILS
3	STRUCTURAL FRAMING PLAN
4	FRAME CONNECTION DETAILS
5-5.1	ROOF LAYOUT
6-6.1	ROOF CONNECTION DETAILS

MANUFACTURER NOTES:

MATERIALS:

DESCRIPTION	ASTM DESIGNATION
TUBE STEEL	A500 (GRADE B)
SCHEDULE PIPE	A53 (GRADE B)
RMT PIPE	A519
LIGHT GAGE COLD FORMED	A1003 (GRADE 50)
STRUCTURAL STEEL PLATE	A36
ROOF PANELS (STEEL)	A653
ANCHOR BOLTS	SEE SHEET 2.1

GENERAL NOTES:

UNLESS NOTED OTHERWISE, THIS STRUCTURE WAS DESIGNED TO ONLY SUPPORT WHAT IS SHOWN ON THESE DRAWINGS. POLIGON MUST BE CONTACTED IF ANYTHING ELSE IS TO BE ATTACHED TO THIS STRUCTURE (WALLS, COLUMN WRAPS, RAILINGS, ETC.) SO THE DESIGN OF THIS STRUCTURE CAN BE REVIEWED AND POSSIBLY REVISED.

UNLESS NOTED OTHERWISE, THIS STRUCTURE WAS DESIGNED ASSUMING A 20' SEPARATION BETWEEN ANY ADJACENT STRUCTURE WITH AN EAVE HEIGHT EQUAL TO OR GREATER THAN THE EAVE HEIGHT OF THIS STRUCTURE. IF THAT SEPARATION DOES NOT EXIST, POLIGON MUST BE CONTACTED SO THE DESIGN OF THIS STRUCTURE CAN BE REVIEWED AND POSSIBLY REVISED.

STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) SPECIFICATION MANUAL.

ALL WELDING IS PERFORMED BY AMERICAN WELDING SOCIETY CERTIFIED WELDERS AND CONFORMS TO THE LATEST EDITION OF AWS D1.1 OR D1.3 AS REQUIRED.

PARTS SHOWN MAY BE UPGRADED DUE TO STANDARDIZED FABRICATION. REFER TO THE SHIPPING BILL OF MATERIALS AND FINAL INSTALLATION INSTRUCTIONS INCLUDED WITH THE STRUCTURE FOR POSSIBLE SUBSTITUTIONS AND IMPROVEMENTS.

FOR PROPER FIELD INSTALLATION OF THE BUILDING IT IS RECOMMENDED THAT THE PRIMARY FRAME INSTALLER AND THE ROOF INSTALLER HAVE A MINIMUM FIVE (5) YEARS DOCUMENTED EXPERIENCE INSTALLING THIS TYPE OF PRODUCT.

FOR PROPER FIELD INSTALLATION OF THE BUILDING IT IS RECOMMENDED THAT ELECTRIC WIRING, IF REQUIRED, BE RUN THROUGH THE STRUCTURAL MEMBERS BEFORE THE BUILDING IS ERECTED.

FABRICATOR APPROVALS:
CITY OF PHOENIX, AZ APPROVED FABRICATOR #C08-2010
CITY OF LOS ANGELES, CA APPROVED FABRICATOR #1596
CITY OF RIVERSIDE, CA APPROVED FABRICATOR #SP06-0033
CITY OF HOUSTON, TX APPROVED FABRICATOR #470
CLARK COUNTY, NV APPROVED FABRICATOR #264
STATE OF UTAH APPROVED FABRICATOR 02008-14

CERTIFICATES:
MIAMI-DADE COUNTY CERTIFICATE OF COMPETENCY NO. 16-1025.01
PCI (POWDER COATING INSTITUTE) 4000 CERTIFIED

DESIGN CRITERIA:

GENERAL:
2016 CALIFORNIA BUILDING CODE
RISK CATEGORY: II

DEAD LOAD:
ROOF DEAD LOAD: 2 PSF
FRAME DEAD LOAD: SELF WEIGHT

LIVE LOAD:
ROOF LIVE LOAD: 20 PSF

SNOW DESIGN DATA:
GROUND SNOW LOAD (Pg): 0 PSF
FLAT ROOF SNOW LOAD (Pf): 0 PSF
SNOW EXPOSURE FACTOR (Ce): 1.0
SNOW LOAD IMPORTANCE FACTOR (Is): 1.0
THERMAL FACTOR (Ct): 1.2

WIND DESIGN DATA:
BASIC WIND SPEED (V): 115 MPH
GUST EFFECT FACTOR (G): 0.85
INTERNAL PRESSURE COEFFICIENT (GCpi): 0
WIND EXPOSURE: C

SEISMIC DESIGN DATA:
STEEL ORDINARY CANTILEVER COLUMN SYSTEMS
SEISMIC IMPORTANCE FACTOR (Ie): 1.0
SEISMIC DESIGN CATEGORY: D
SEISMIC SITE CLASS: D
SEE CALCULATIONS FOR ADDITIONAL DATA

ADDITIONAL CRITERIA:
NONE

IF THESE DRAWINGS ARE SEALED, THE SEAL APPLIES ONLY TO BUILDING COMPONENTS (AND FOUNDATION DESIGN IF APPLICABLE) DETAILED WITHIN THESE DRAWINGS.

PROJECT: OAKLEY RECREATION CENTER | PROJECT LOCATION: OAKLEY, CA | DRAWING: COVER SHEET | CREATION DATE: 2/17/2016 | BUILDING NO: 16285 | CAD MODEL: -16285 | REV LEVEL: A | PRINT DATE: 9/6/2017 | SCALE: 1:75 | SHEET CS

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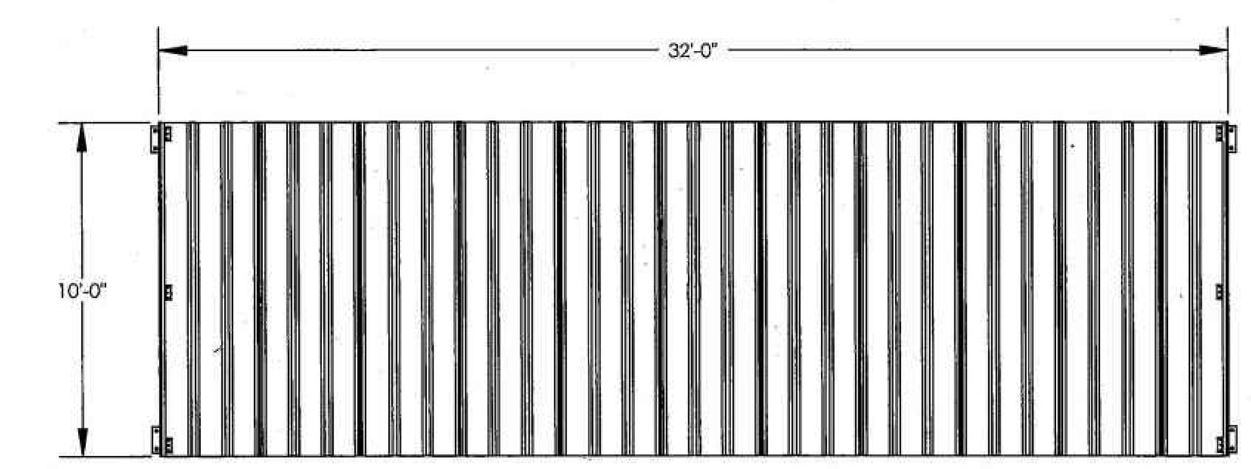

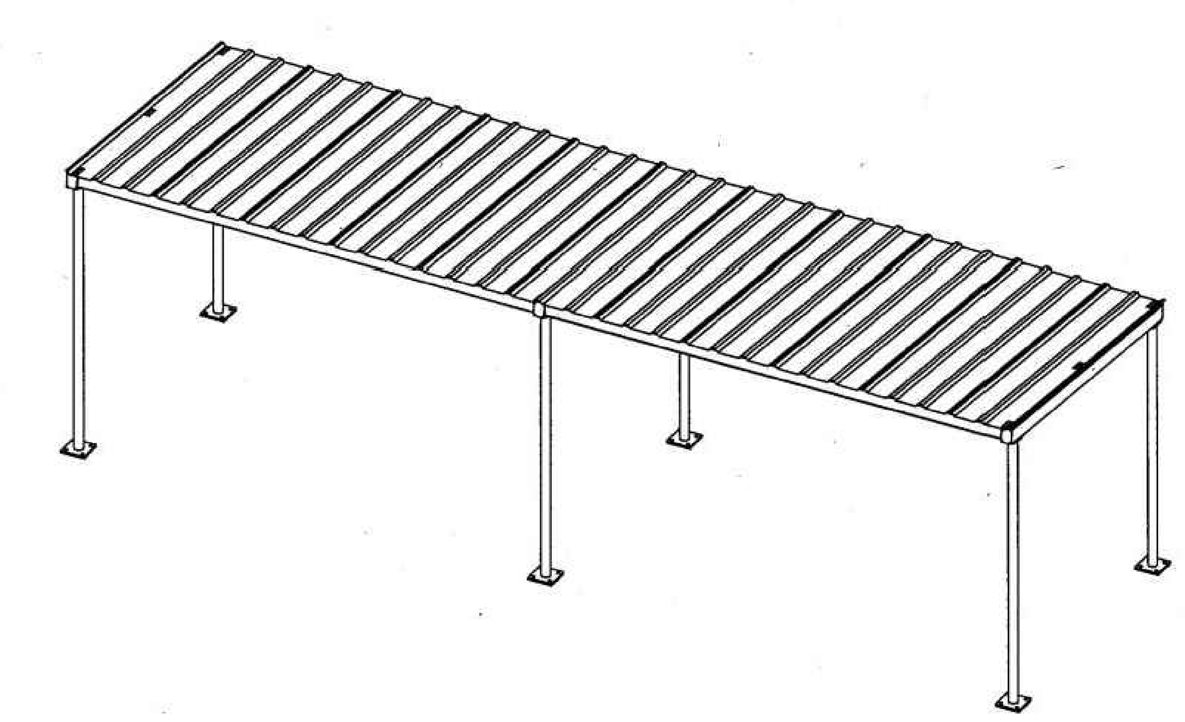

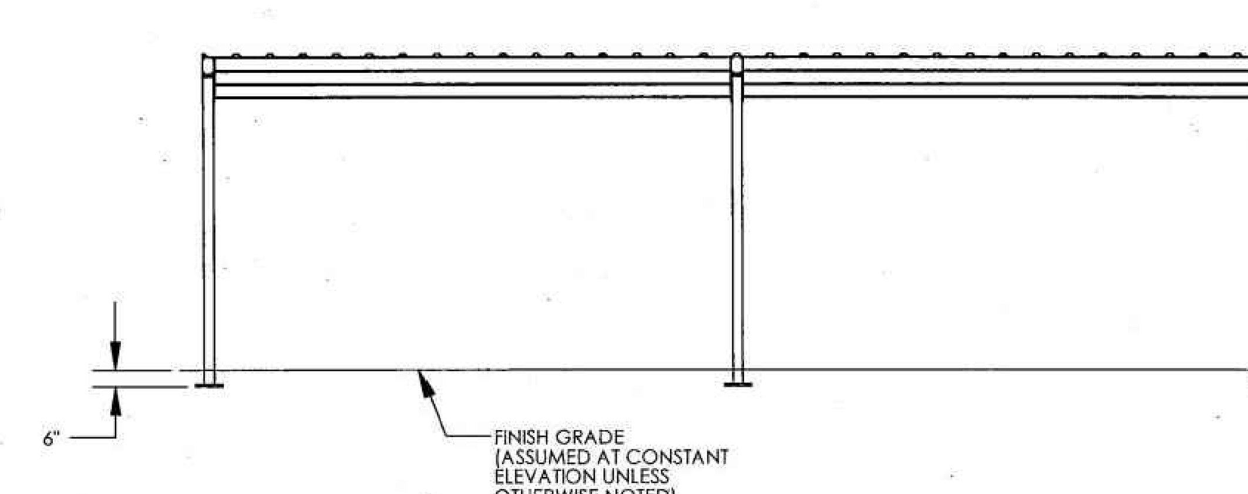

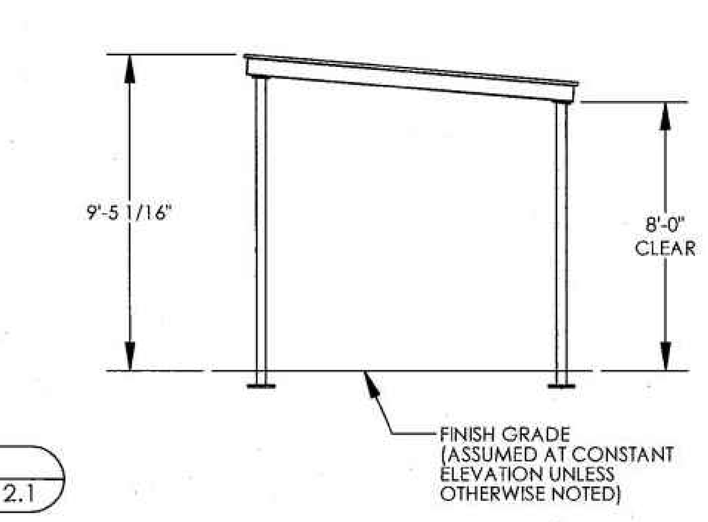

IF THESE DRAWINGS ARE SEALED, THE SEAL APPLIES ONLY TO BUILDING COMPONENTS (AND FOUNDATION DESIGN IF APPLICABLE) DETAILED WITHIN THESE DRAWINGS.

PROJECT: OAKLEY RECREATION CENTER | PROJECT LOCATION: OAKLEY, CA | DRAWING: ARCHITECTURAL ELEVATIONS | CREATION DATE: 2/17/2016 | BUILDING NO: 16285 | CAD MODEL: -16285 | REV LEVEL: A | PRINT DATE: 9/6/2017 | SCALE: 1:64 | SHEET 1

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1 DUGOUT (1 OF 3)
1' = 1'-0"

GATES +ASSOCIATES
LANDSCAPE ARCHITECTURE
LAND PLANNING • URBAN DESIGN

LANDSCAPE ARCHITECT • DAVID GATES • No. 1960 • 5/31/2018 • STATE OF CALIFORNIA • REGISTERED

OAKLEY CALIFORNIA

CIP 194 – OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

CONSTRUCTION DETAILS - DUGOUT

No.	Revisions
1	PERMIT SET REV. / BID SET
2	ADDENDUM 2

Date: 01/16/2018
Scale: AS NOTED
Design: KC
Drawn: JG, JS
Approved:
Job No: P5203

Drawing Number:
L5.9

REAR ELEVATION
2-2/3"X1/2" CORRUGATED GALVANIZED METAL ROOF
HSS 3X6X¼ BEAM
HSS 1X2X1/8, TYP.
HSS 4X4X1/4 POST
CUSTOM PRECAST CONCRETE CAP
MFR: QUICKRETE
COLOR: ADOBE BY DAVIS COLORS
FINISH: LIGHT SANDBLAST
CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR REVIEW AND APPROVAL.
½" THICK STUCCO FINISH, COLOR TO MATCH BUILDING
CMU BLOCK WALL WITH 3 PORT STUCCO FINISH
CONCRETE CURB, FINISH: MEDIUM BROOM, COLOR: STD. GRAY
(2) #4 BARS HORIZONTAL CONT.
DRIP SCREED
VEHICULAR CONCRETE PAVING, S.C.D.
COLOR: STD. GRAY
FINISH: MEDIUM BROOM
TREMCO TREMPROOF 250GC OR APPROVED EQUAL
HSS 1X2X1/8 EQUALLY SPACED TYP.
1/4 PLATE W/ SEAL WELD ALL AROUND & TOP OF POSTS,TYP.
HSS 4X4X1/4 BEAM, (TYP.)
THIN SET MORTAR
8X8X16 CMU BLOCK GROUT ALL CELLS SOLID
#5 REBAR @ 16" O.C. VERTICAL
#4 REBAR @ 30" O.C. HORIZONTAL
DRIP SCREED, 1" ABOVE TOP OF CONC. (TYP.)
CMU BLOCK WALL, FINISH: STRAIGHT FACE BY BASALITE
COLOR: CHARCOAL
B.W. S.C.D.
COMPACTED SUBGRADE PER GEOTECHNICAL REPORT
SECTION B-B
¼" PLATE W/ SEAL WELD ALL AROUND, TYP.
TYP. HS & FS OF HSS
HSS 3X6X¼ BEAM
PLATE 6"X6"X1/4" FLUSH
1/2"Ø X 12" NELSON D2L DEFORMED BAR ANCHOR AT ℄ OF PLATE
HSS 4X4X1/4 POST, TYP.
SECTION A-A
NOTE:
1. FOR ALL METAL MEMBERS, APPLY (2) PRIMER COATS AND STEEL PAINT TWO COATS TO MATCH THE COLOR OF "WEATHERED COPPER" OF THE BUILDING ROOF. CONTRACTOR SHALL SUBMIT COLOR SAMPLE FOR REVIEW AND APPROVAL.
2. SEE 5 L5.3 FOR STEEL NOTES
SLOPE ROOF @ 1% FRONT TO REAR
9 EQ. SPACES TYP.
FRONT
REAR
HSS 3X6X1/4
HSS 1X2X1/8, TYP.
HSS 4X4X1/4 POST
PRECAST CONCRETE CAP
CMU WALL WITH 3 PORT STUCCO FINISH
CONCRETE CURB
DRIP SCREED
ELEVATION OF CONC.
WALL FINISH: CMU BLOCK WALL TO RECEIVE
(1) SCRATCH COAT
(2) COATS SAND FINISH STUCCO
(3) TOP COAT TO BE COLOR TO MATCH BUILDING
SIDE ELEVATION
1/4"PLATE AT ACTIVE LEAF
3/8" ROUND BAR WELD TO FRAME
3 7/8" MAX
℄ OF HINGE
SEE LEGEND FOR RIGHT, TYP.
* REFER TO CITY STANDARD FOR LEGEND
5 L5.3 STEEL NOTES
FRONT ELEVATION
HSS 3X6X1/4 PERIMETER AND INTERMEDIATE BEAMS
HSS 4X4X1/4 POST @ CORNERS TYP.
HSS 1X2X1/8 EQUALLY SPACED
6" CONCRETE CURB
VEHICULAR CONCRETE PAVING, S.C.D.
CMU BLOCK WALL WITH STUCCO FINISH
PRECAST CONCRETE CAP
PLAN VIEW
HSS 3X6
HS & FS
HSS 4X4X1/4 POST
ENLARGEMENT
SCALE : 1" = 1'-0"
TOP VIEW
Refuse Bin
Conc Block Cap
6" High Curb
Enclosure Pad See Note 1
Gate Post
Apron Pad
Gate See Note 3
See Note 3
* Inside Dimension
SIDE ELEVATION
Metal roof req by City Ordinance
Apron Pad
3/8" Round Bar weld to frame
FRONT ELEVATION
4" Clr
¼" Plate at active leaf
LEGEND:
A Concrete Block or Reinforced Masonry Block Finish to Match the Main Building
B Receiving sleeve. Outside location 135° Min angle from closed gate position.
C Stanley, or approved equal. Heavy duty surface mounted external hinges, weld to metal angle
D ASC Pacific "HR-36" 18 GA GJ. Mtl Panels, or approved equal-Paint over shop prime.
E Ideal 64-6813 or approved equal. Cane bolt & keeper Interior.
F King Arch. Metals 30-100 Weldable slide bolt latch or approved equal.
G 1-½" Square Steel Tube weld to frame at interior, Typical.
H 4" Sq. x ¼" Plate Butt Weld w/rounded corners for bolt latch.
NOTES:
1. Pad shall be Engineered to withstand 20,000 lbs of direct force from a single truck axle.
2. A minimum of 32' Vert. and 50' Horiz. clearance over the entire approach to and from the enclosure shall be provided.
3. Gates shall be solid metal with cane bolts sleeves in the open and closed position. Each gate, with a minimum total span width of 16' shall swing open a Min of 135° from closed position. Hung gates have a 4" Clearance off the finished pad or apron and surrounding curb.
4. The trash enclosure pad shall be designed to drain to a sewer connection as approved by the City of Oakley. A water connection may be required by the Contra Costa County Health Department.
5. The enclosure exterior shall comply with standard conditions of approval for commercial and industrial projects. No enclosure shall be installed behind parking spaces.
6. ONLY solid waste containers and recycle containers are allowed inside the enclosure. Grease storage bins, soiled rag storage, etc. shall never be stored in the enclosure.
7. Roof and gates shall be powder coated and match in color.
NOT TO SCALE
APPROVED BY
CITY ENGINEER
DATE
JUNE 2016
OAKLEY CALIFORNIA
SOLID WASTE TRASH ENCLOSURE
STD. PLAN NO.
M-04
CITY STANDARD DETAIL
1 TRASH ENCLOSURE
1/2" = 1'-0"

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LAND PLANNING • URBAN DESIGN
2671 CROW CANYON ROAD, CALIFORNIA 94583

REGISTERED LANDSCAPE ARCHITECT · DAVID GATES · No. 1560 · 5/31/2019 · 12/1/2017 · STATE OF CALIFORNIA

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CIP 194 – OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

CONSTRUCTION DETAILS - TRASH ENCLOSURE

No.	Revisions
1	PERMIT SET REV. / BID SET
2	ADDENDUM 2

Date: 01/16/2018
Scale: AS NOTED
Design: KC
Drawn: JG, JS
Approved:
Job No: P5203

Drawing Number:
L5.12 1

GATES +ASSOCIATES
LANDSCAPE ARCHITECTURE
LAND PLANNING · URBAN DESIGN

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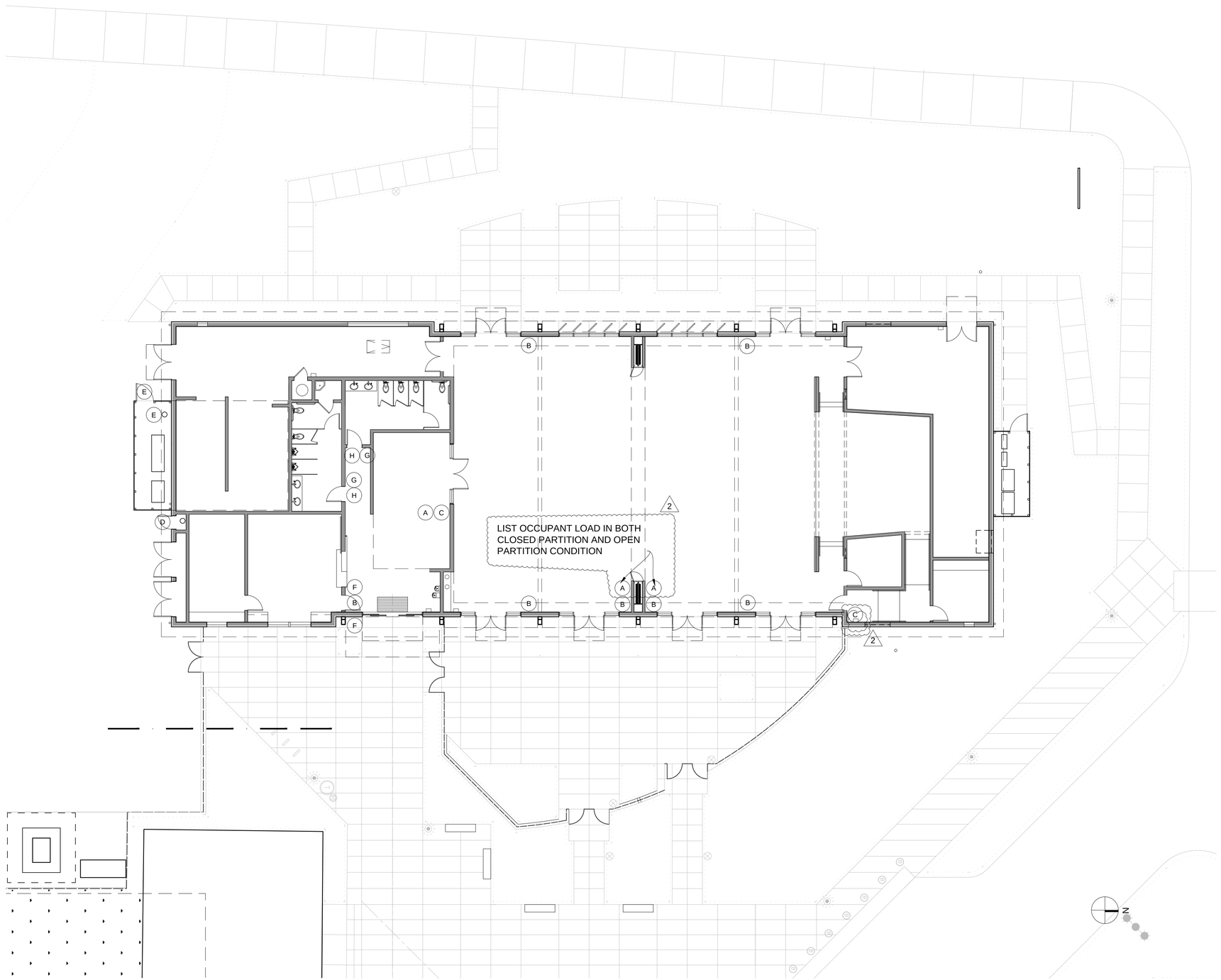
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

IRRIGATION PLAN

No.	Revisions
1	PERMIT SET REV. / BID SET
2	ADDENDUM 2

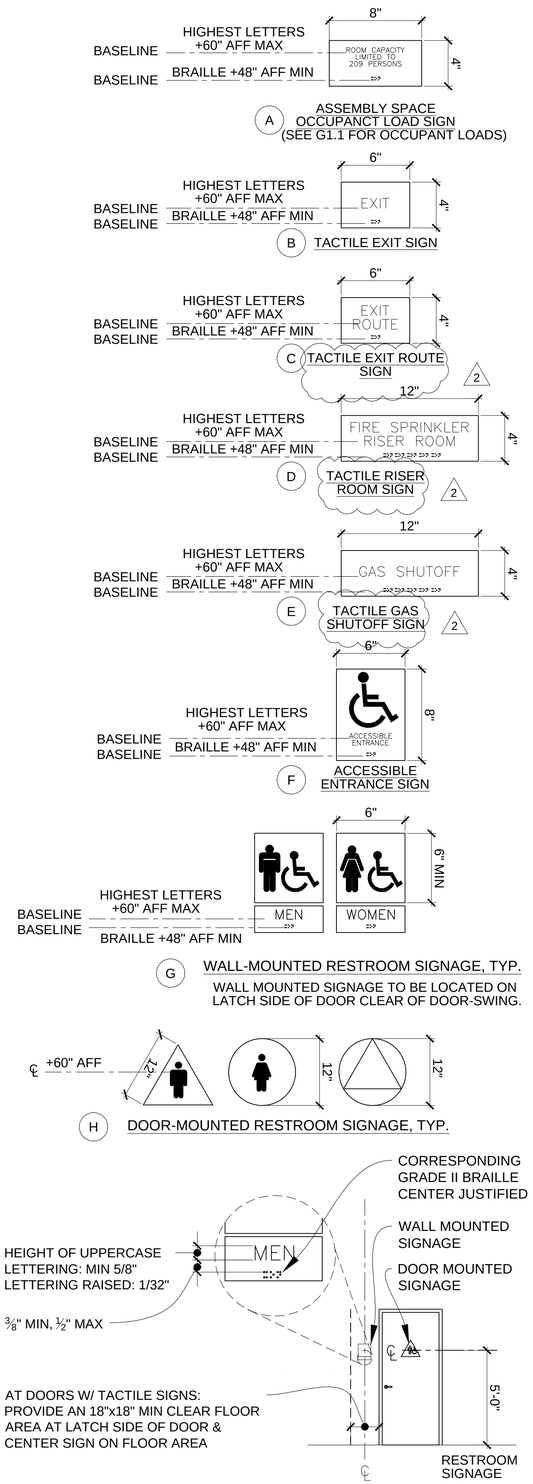
Date: 01/16/2018
Scale: AS NOTED
Design: KC
Drawn: JG, JS
Approved:
Job No: P5203

Drawing Number:
L6.5



2 A0.3 SIGNAGE PLAN
SCALE: 3/32" = 1'-0"

1



1 A0.3 SIGNAGE
NO SCALE

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LICENSED ARCHITECT
SIA MARZOLA
C 22905
11-30-19
STATE OF CALIFORNIA

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CALIFORNIA

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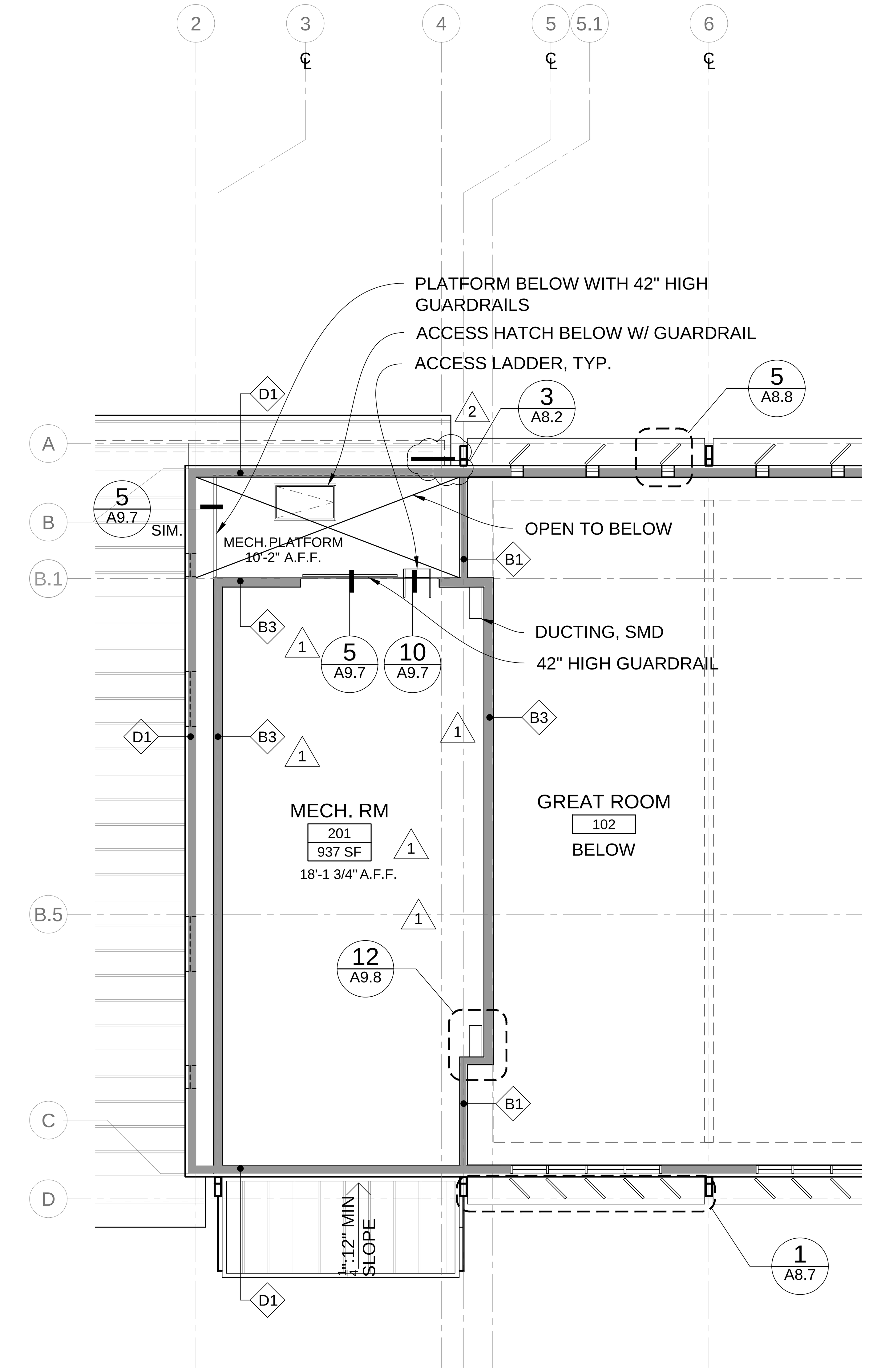
CONTRA COSTA COUNTY CALIFORNIA
OAKLEY

SIGNAGE PLAN

Issue	
2	ADDENDUM 2

Date: 1/16/18
Scale: AS NOTED
Design: SM
Drawn: SCD
Approved: MH
Job No: 17-005

Drawing Number:
A0.3



1 A2.2 ATTIC PLAN
SCALE: 1/8" = 1'-0"

0 4 8 16 ft.
Scale 1/8"=1'-0"

N

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ATTIC PLAN

Issue
2 ADDENDUM 2

Date: 1/16/18
Scale: AS NOTED
Design: SM
Drawn: SCD
Approved: MH
Job No: 17-005

Drawing Number:
A2.2

SHEET NOTES:
1. SEE 8 & 9/A8.5 FOR TYPICAL ROOF PENETRATION DETAILS

(2) ROWS OF WATER WEIRS @ 10" O.C.

(4) ROWS OF WATER WEIRS @ 10" O.C.

162'-7 1/2"

23'-1 1/8"

RWL

SOLAR ZONE AREA 1650 SF

SLOPE VARIES

6'-0"

10' MIN.

MAKE UP AIR, SMD.

WALKWAY PADS, TYP.

GAS METER

GUTTER

SINGLE PLY ROOFING

EXHAUST FAN, SMD.

MECH EQ.

4'-0"

15'-1 7/8"

60'-0"

22'-7 1/4"

2" METAL TUBE GUARD RAIL

VENT, SPD

INTEGRAL GUTTER

$\frac{1}{4}$":12" MIN SLOPE

SLOPE VARIES

STANDING SEAM METAL ROOF, TYP

WALL BELOW SHOWN DASHED

ENTRY CANOPY

ENTRY

EAST PATIO

(E) BUILDING

EXISTING BUILDING TO REMAIN

TRASH, SCD

TRANSFORMER SED

SWITCHGEAR SED

1 A2.3 ROOF PLAN
SCALE: 1/8" = 1'-0"

Scale 0 4 8 16 ft.
1/8"=1'-0"

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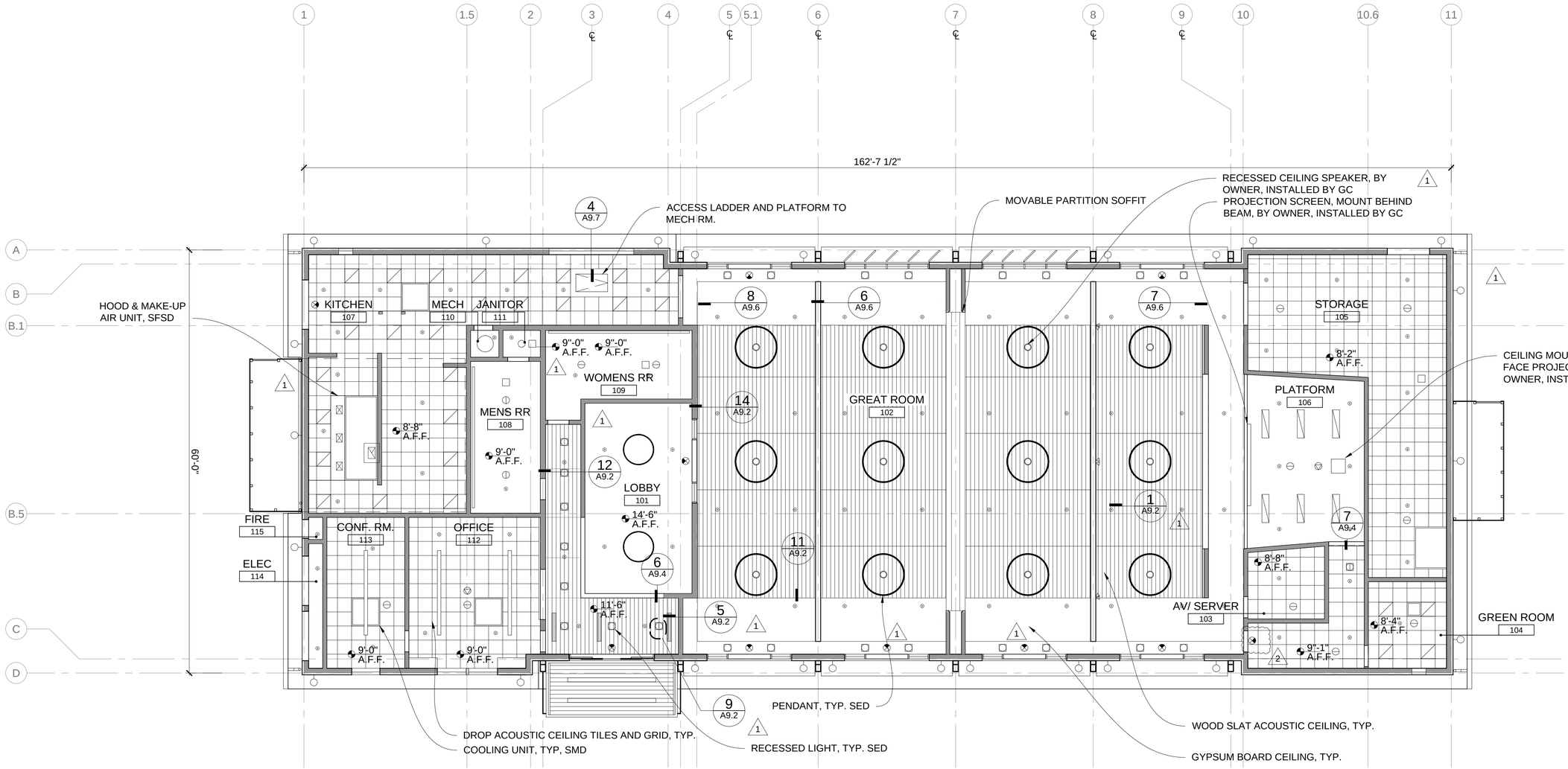
ROOF PLAN

Issue
2 ADDENDUM 2

Date: 1/16/18
Scale: AS NOTED
Design: SM
Drawn: SCD
Approved: MH
Job No: 17-005

Drawing Number:
A2.3



SHEET NOTES:
1. SEE SHEET A9.2 FOR TYPICAL SUSPENDED CEILING NOTES & DETAILS
2. ALIGN CEILING DEVICES, TYP.
3. CONCEAL SPRINKLER PIPING @ FINISHED CEILING SPACES, TYP.
4. SPRINKLER PIPING LAYOUT IS DIAGRAMMATIC. INTENT OF DIAGRAM IS TO INDICATE STRATEGY OF CONCEALING PIPING.
5. SEE A4.1 FOR ADDITIONAL CEILING DETAILS.

1 A2.4 REFLECTED CEILING PLAN
SCALE: 1/8" = 1'-0"

0 4 8 16 ft.
Scale 1/8"=1'-0"

N

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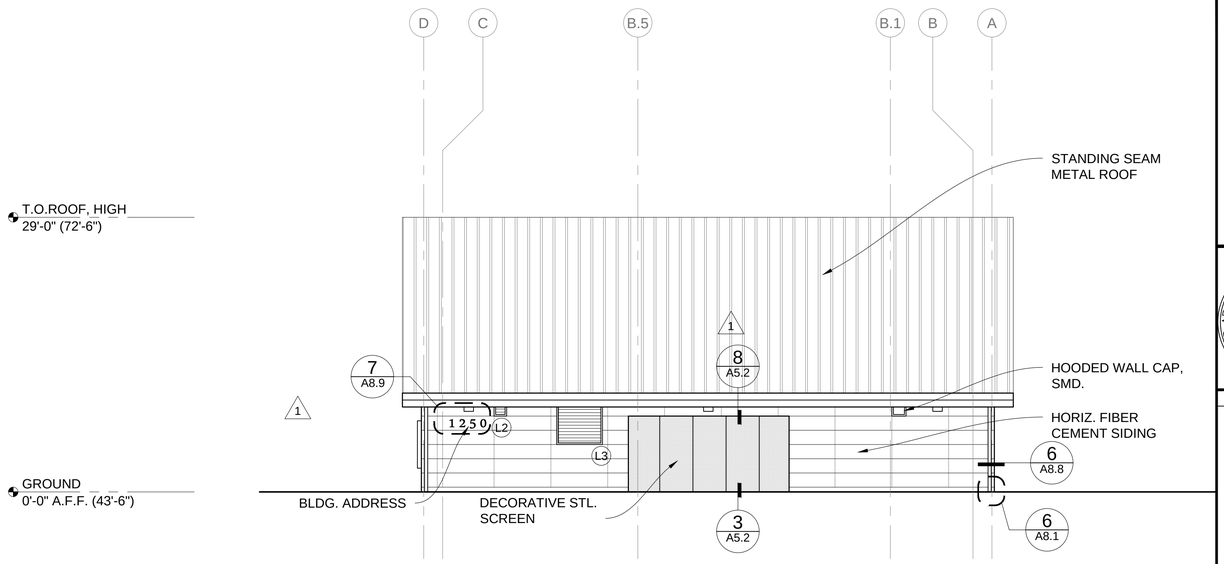
REFLECTED CEILING PLAN

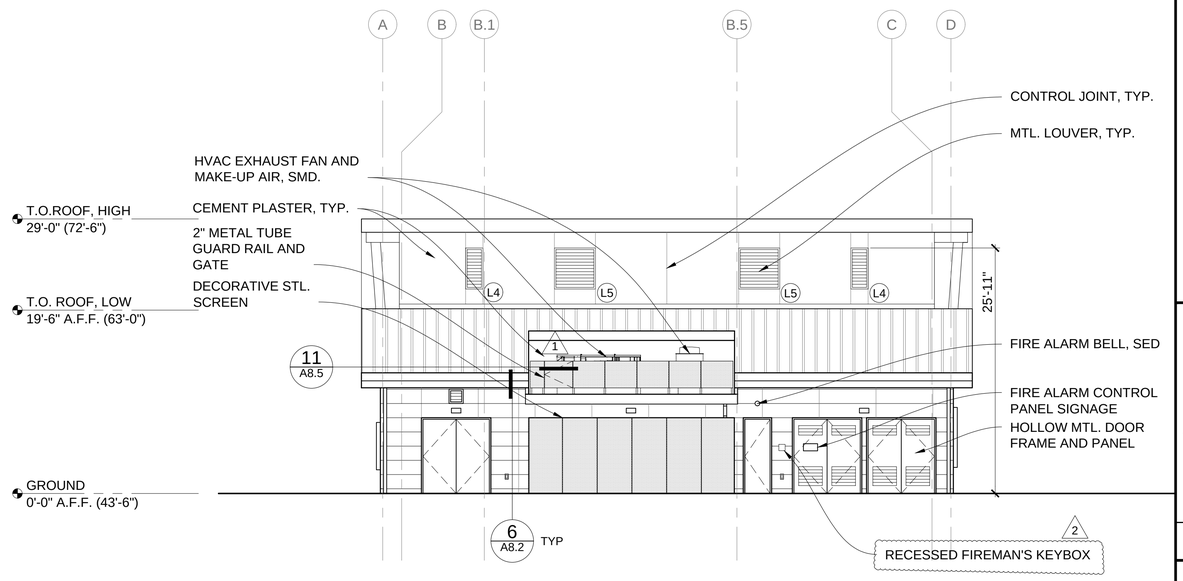
Issue
1 ADDENDUM 2

Date: 1/16/18
Scale: AS NOTED
Design: SM
Drawn: SCD
Approved: MH
Job No: 17-005

Drawing Number:
A2.4



2 A3.3 NORTH ELEVATION
SCALE: 1/8" = 1'-0"



1 A3.3 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

0 4 8 16 ft.
Scale 1/8"=1'-0"

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EXTERIOR ELEVATIONS

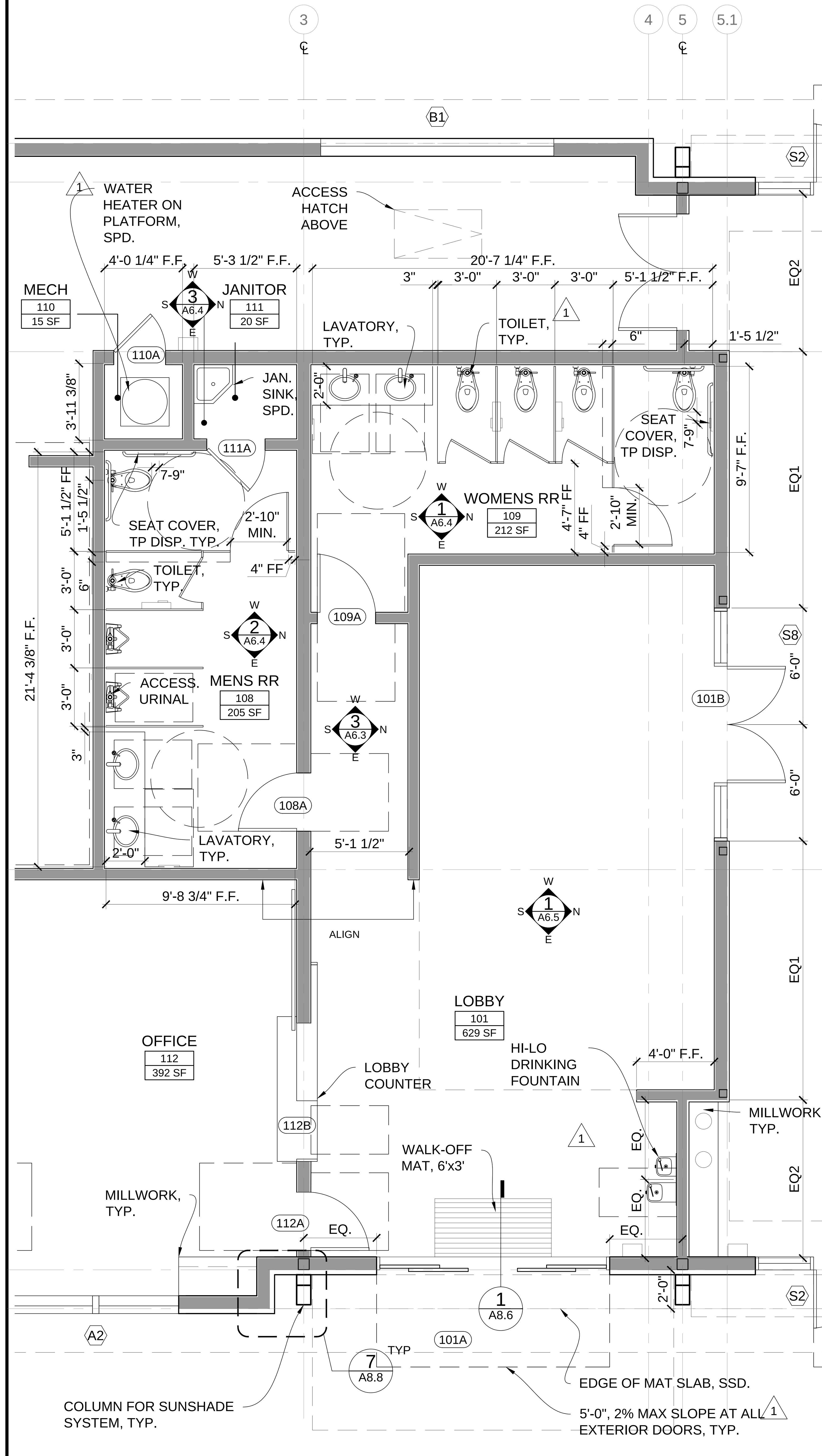
Issue	
2	ADDENDUM 2

Date: 1/16/18
Scale: AS NOTED
Design: SM
Drawn: SCD
Approved: MH
Job No: 17-005

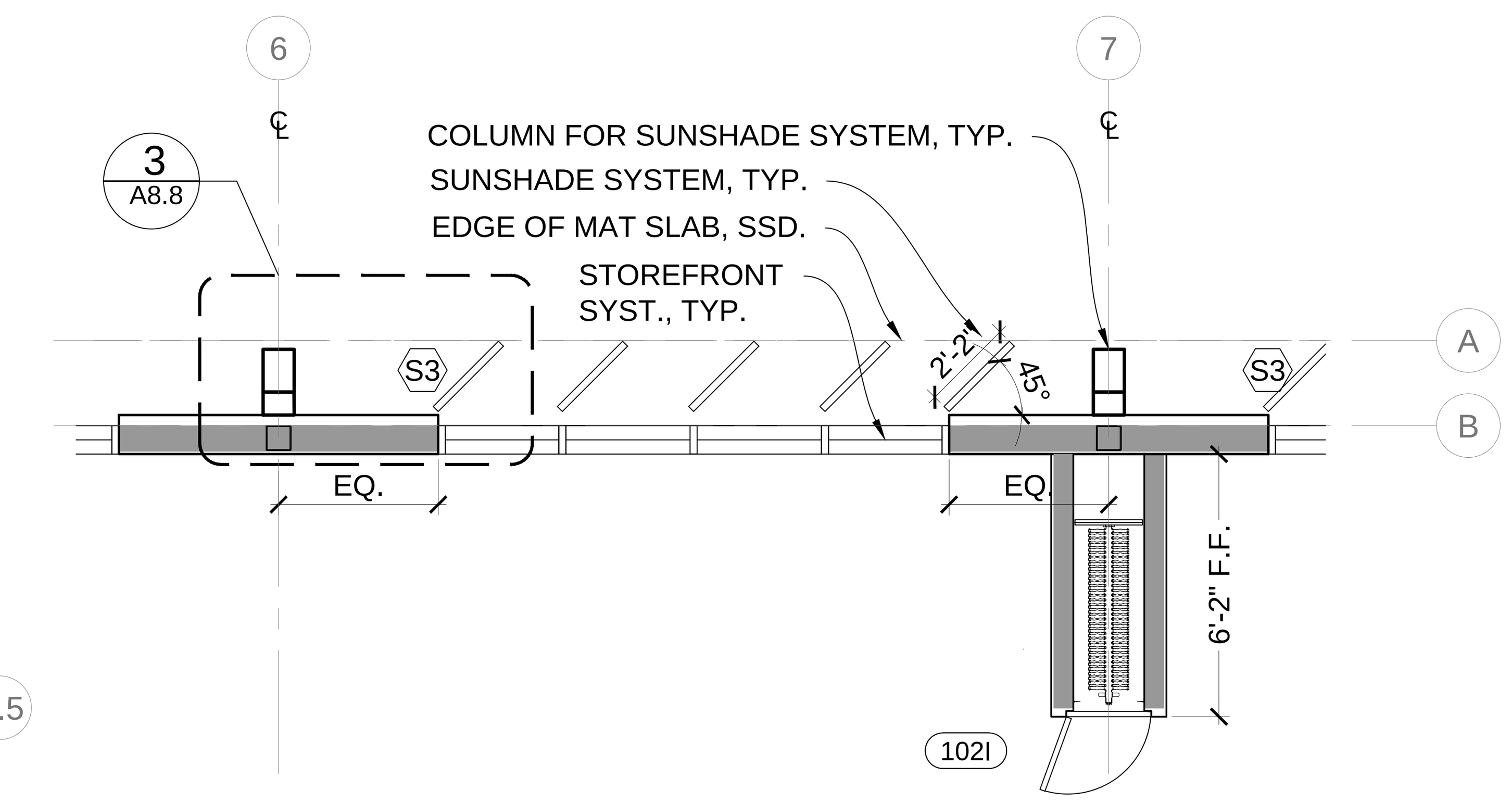
Drawing Number:
A3.3

SHEET NOTES:
1. ALL DIMENSIONS TO FACE OF STUD, UON.
2. ALL PORTIONS OF THE BUILDING SHALL BE WITHIN 75 FT. OF A FIRE EXTINGUISHER. THE MINIMUM SIZE OF THE EXTINGUISHER SHALL BE 2-A:10-BC. [CFC/906]

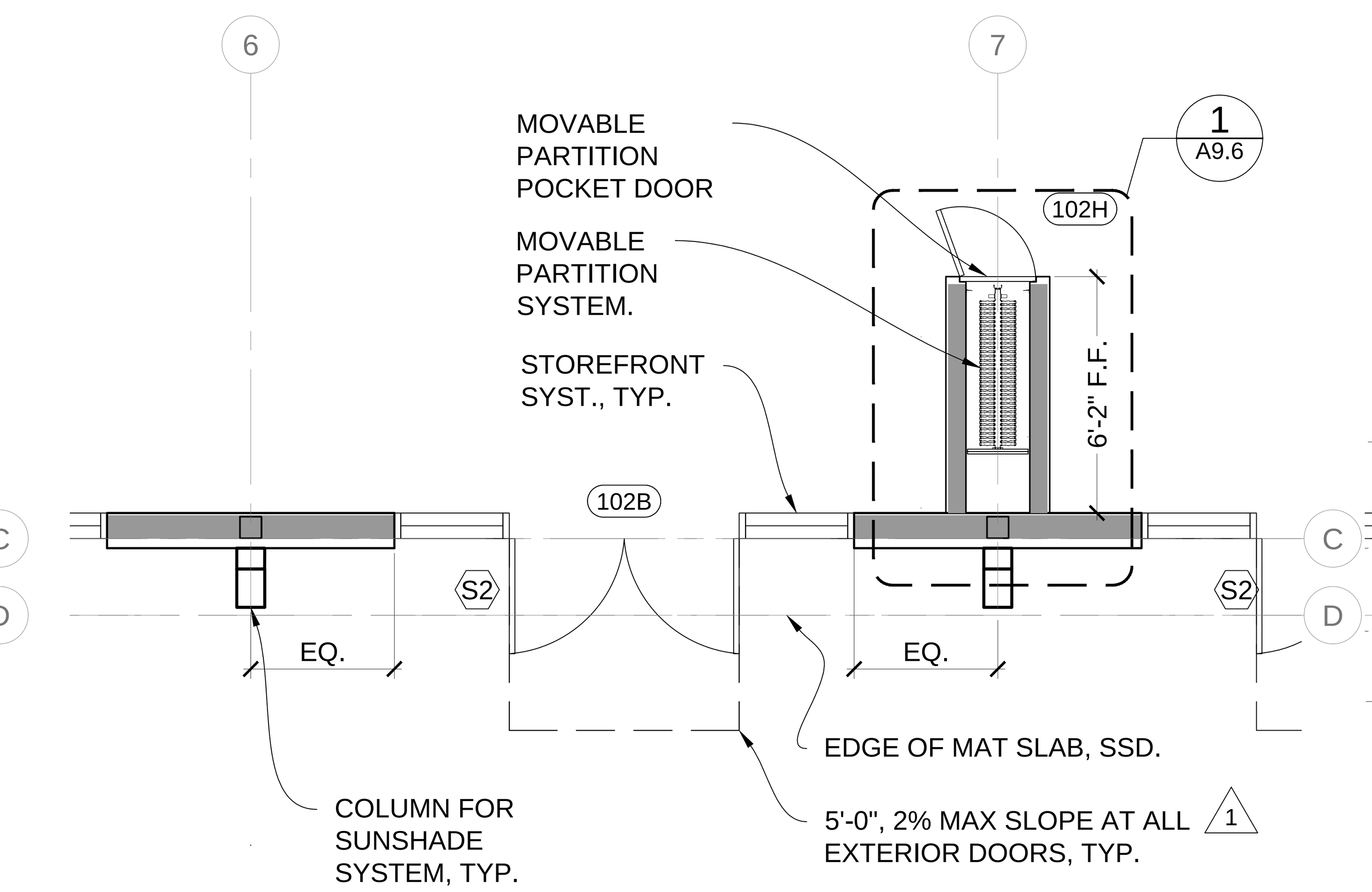
ACCESSIBILITY NOTES:
1. SEE 1&2/A0.2 FOR TYPICAL ACCESSIBLE CLEARANCES
2. SEE 11/A0.2 FOR ACCESSIBLE FLOOR MOUNTED WATER CLOSET & URINAL DETAILS
3. SEE 7/A0.2 FOR GRAB BAR DETAILS
4. SEE 10&14/A0.2 FOR ACCESSIBLE LAVATORY DETAILS
5. SEE 15/A0.2 FOR ACCESSIBLE RESTROOM ACCESSORIES
6. SEE 8/A0.2 FOR ACCESSIBLE DRINKING FOUNTAIN DETAILS
7. FOR SIGNAGE DETAILS AND LOCATIONS, SEE SIGNAGE PLAN A0.3
8. ACCESSIBLE TOILET PARTITION NOTES:
   a. PROVIDE 34" CLEAR AT ACCESSIBLE PARTITION DOORS, MEASURED FROM THE FACE OF THE DOOR POSITIONED AT AN ANGLE OF 90 DEG FROM THE CLOSED POSITION, PER CBC 11B-604.8.1.2
   b. ACCESSIBLE TOILET PARTITION DOORS TO BE EQUIPPED WITH SELF CLOSING DEVICES PER CBC 11B-604.8.1.2
   c. ACCESSIBLE TOILET COMPARTMENT DOORS TO BE EQUIPPED ON INSIDE AND OUTSIDE WITH DOOR PULLS COMPLYING WITH CBC 11B-404.2.7, PER CBC 11B-604.8.1.2
   d. ACCESSIBLE TOILET PARTITONS SHALL PROVIDE A TOE CLEARANCE OF 9" MIN. A.F.F. AND 6" DEEP MIN. BEYOND THE COMPARTMENT-SIDE FACE OF PARTITION PER CBC 11B-604.8.1.4



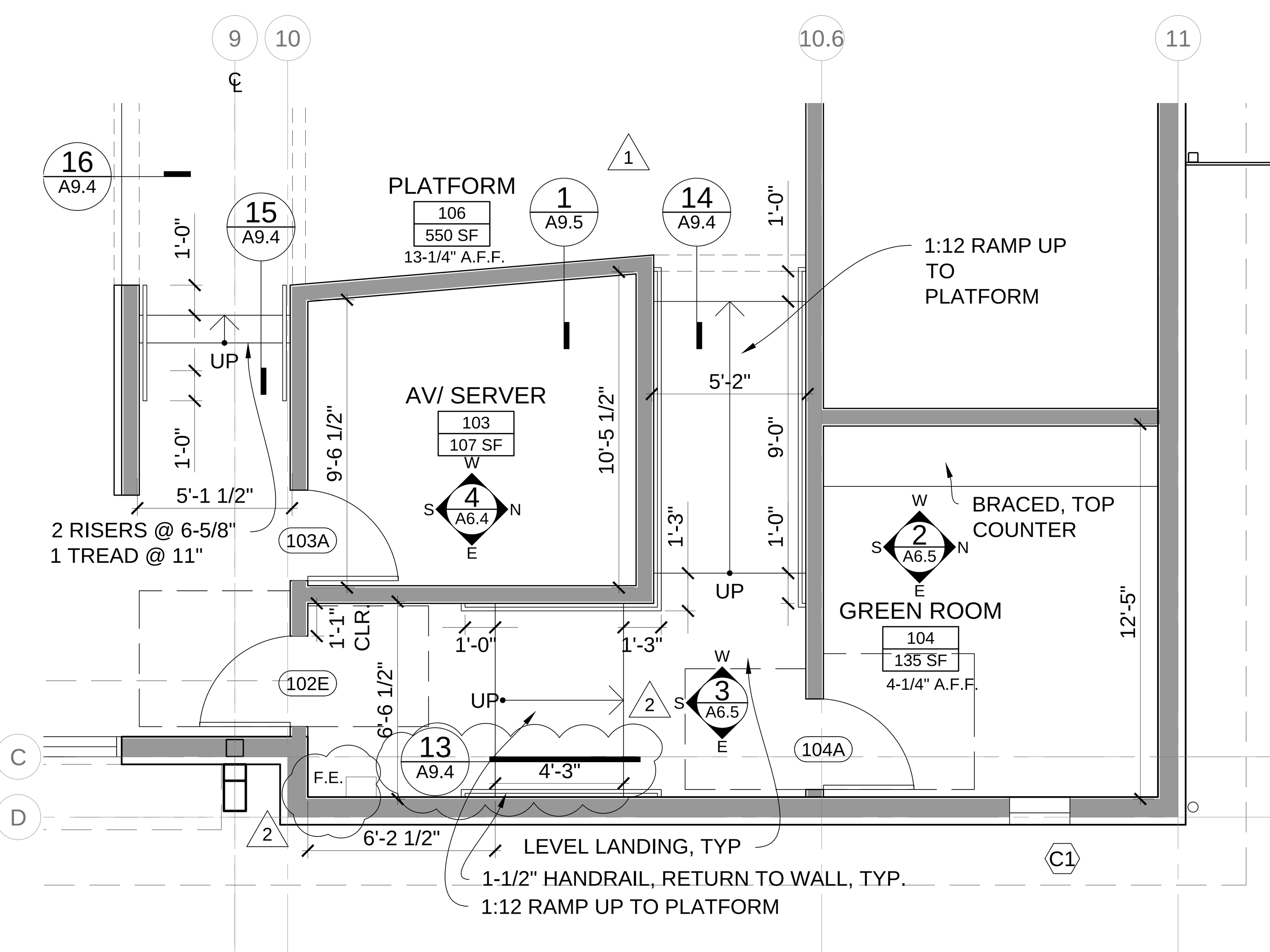
4 OFFICE 112, LOBBY 100, RESTROOMS 108 AND 110 EL. PLAN
A5.1 SCALE: 1/4" = 1'-0"



3 SUNSCREEN ENLARGED PLAN
A5.1 SCALE: 1/4" = 1'-0"



2 ENLARGED STOREFRONT/ PARTITION POCKET PLAN
A5.1 SCALE: 1/4" = 1'-0"



1 PLATFORM RAMP AND AV/SERVER 103
A5.1 SCALE: 1/4" = 1'-0"

0 2 4 8 ft.
Scale 1/4"=1'-0"

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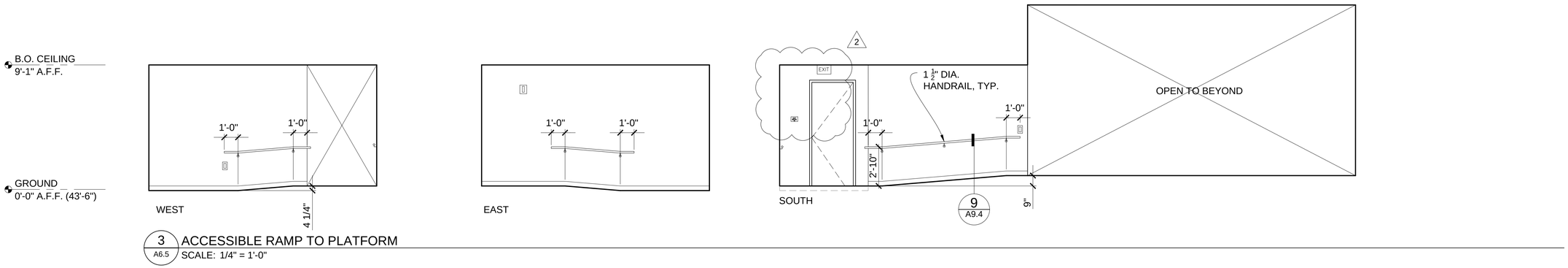
OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

ENLARGED PLANS

Issue
1 ADDENDUM 2

Date: 1/16/18
Scale: AS NOTED
Design: SM
Drawn: SCD
Approved: MH
Job No: 17-005

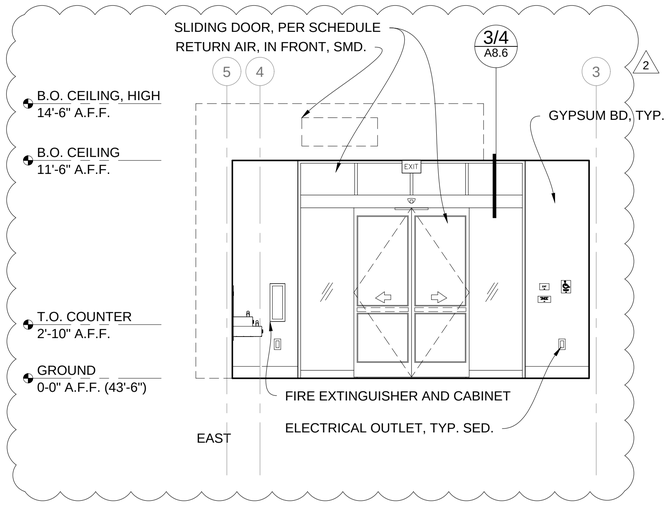
Drawing Number:
A5.1

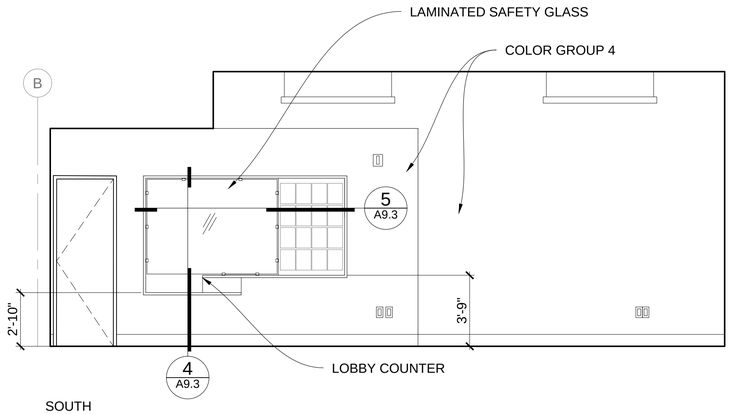


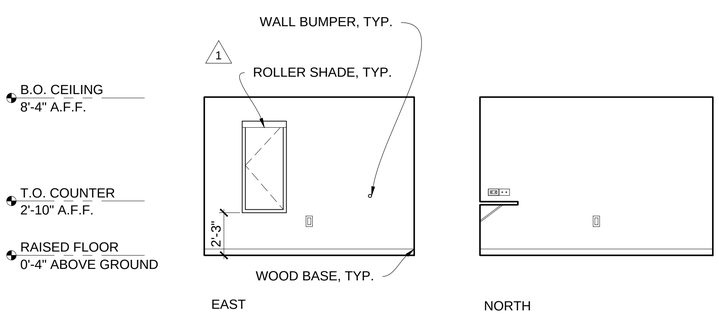
3 A6.5 ACCESSIBLE RAMP TO PLATFORM
SCALE: 1/4" = 1'-0"

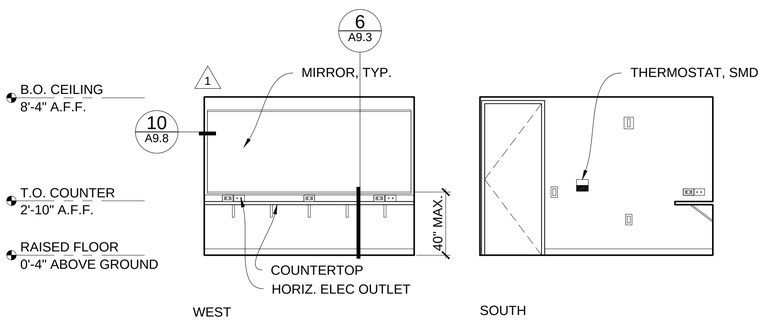
1

SHEET NOTES:
1. ALIGN DEVICES, TYP.
2. SEE A0.2 FOR STANDARD MOUNTING HEIGHTS
3. SEE A0.3 FOR SIGNAGE PLAN
4. PROVIDE BLOCKING FOR WALL MOUNTED DEVICES PER DETAIL 9/A9.4, TYP.
5. SEE 11 & 12/A9.5 FOR STANDARD BASE DETAILS

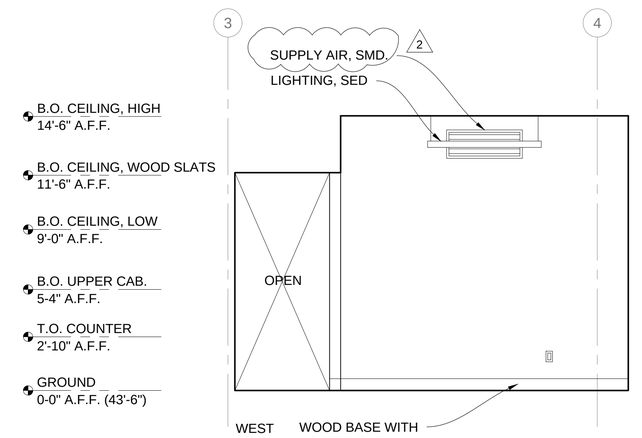


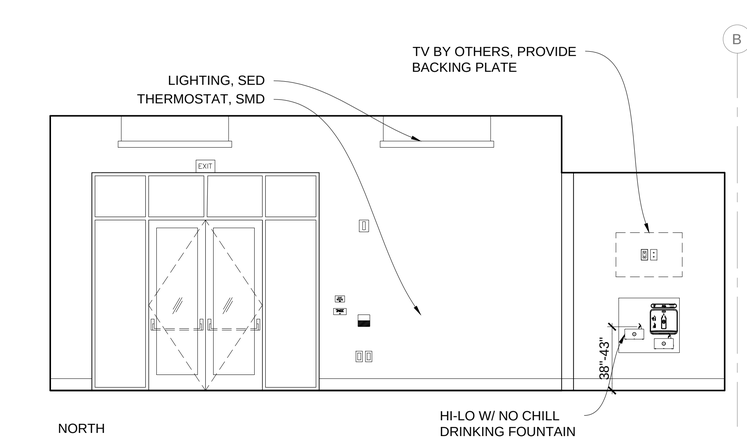






2 A6.5 GREEN ROOM 104 ELEVATIONS
SCALE: 1/4" = 1'-0"





1 A6.5 LOBBY 100 ELEVATIONS
SCALE: 1/4" = 1'-0"

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INTERIOR ELEVATIONS

Issue	
2	ADDENDUM 2

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Drawing Number:
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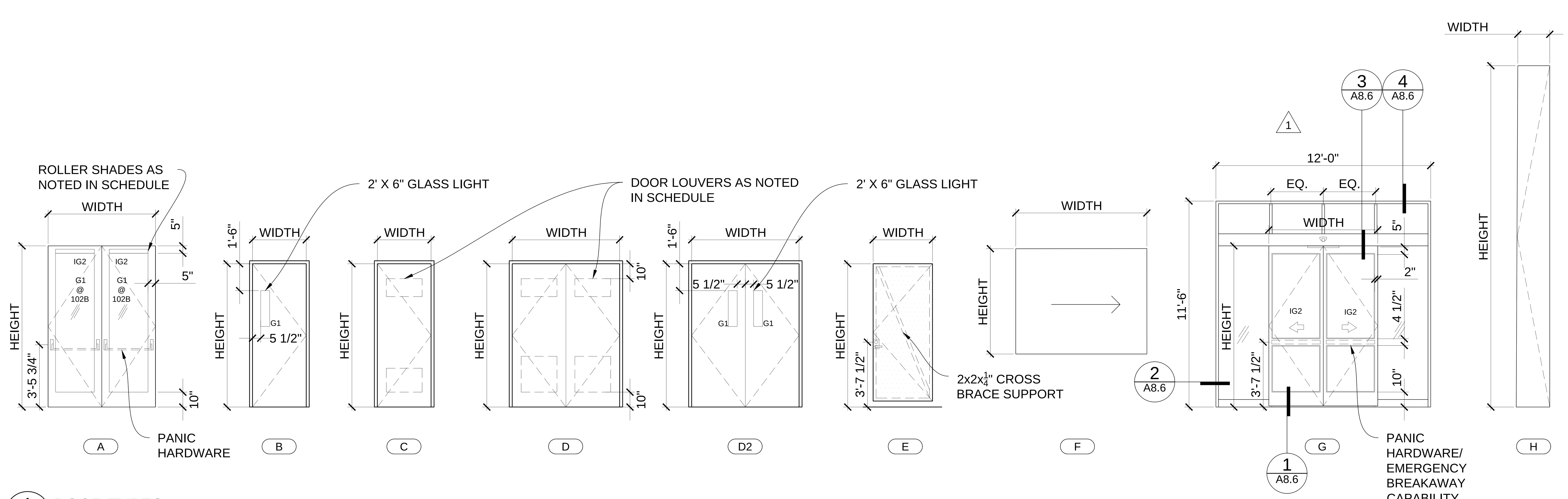
Door #	Nominal Door Size (WxH)	Door Thickness	Door Type	Glass Type	Door Panel	Door Frame	Head Detail	Jamb Detail	Threshold Detail	Hardware Set	Comments	Signage
101A	Double Sliding Automatic 3'-0"x 9'-0"	1 3/4"	G	IG2	Double Glazed Aluminum	Aluminum Storefront	See 1/A7.1 for callout	See 1/A7.1 for callout	See 1/A7.1 for callout	18	Electronic Key Access, Panic Hardware. Sensing Device on Int/Ext.	1" "IN EMERGENCY PUSH TO OPEN", "EXIT", ACCESSIBLE SYMBOL, "THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED"
101B	Double 3'-0"x 9'-0"	1 3/4"	A	G1	Interior Glazed Storefront	Interior Storefront			1/A9.4	14 (ACOUSTIC THRESH.)	Panic Hardware	"EXIT ROUTE"
102A	Double 3'-0"x 9'-0"	1 3/4"	A	IG2	Double Glazed Aluminum	Aluminum Storefront	3/A8.4		1/A8.4	02	Panic Hardware, Roller Shade @ Each Door Leaf	"EXIT"
102B	Double 3'-0"x 9'-0"	1 3/4"	A	IG2	Double Glazed Aluminum	Aluminum Storefront	3/A8.4		1/A8.4	03	Panic Hardware, Roller Shade @ Each Door Leaf	"EXIT"
102C	Double 3'-0"x 9'-0"	1 3/4"	A	IG2	Double Glazed Aluminum	Aluminum Storefront	3/A8.4		1/A8.4	03	Panic Hardware, Roller Shade @ Each Door Leaf	"EXIT"
102D	Double 3'-0"x 9'-0"	1 3/4"	A	IG2	Double Glazed Aluminum	Aluminum Storefront	3/A8.4		1/A8.4	03	Panic Hardware, Roller Shade @ Each Door Leaf	"EXIT"
102E	3'-0"x 8'-0"	1 3/4"	C	IG2	Wood Solid Core	Hollow Metal	10/A9.1	10/A9.1	3/A9.8	07		"EXIT ROUTE"
102F	Double 3'-0"x 9'-0"	1 3/4"	A	IG2	Double Glazed Aluminum	Aluminum Storefront	3/A8.4		1/A8.4	02	Panic Hardware, Roller Shade @ Each Door Leaf	"EXIT"
102G	Double 3'-0"x 9'-0"	1 3/4"	A	IG2	Double Glazed Aluminum	Aluminum Storefront	3/A8.4		1/A8.4	03	Panic Hardware, Roller Shade @ Each Door Leaf	"EXIT"
102H	2'-0" x 19'-2"	1 3/4"	H		Engineered Comp. Core	Flush	10/A9.5	4/A9.5	3/A9.8 SIM.	20	Blind Partition Door	
102I	2'-0" x 19'-2"	1 3/4"	H		Engineered Comp. Core	Flush	10/A9.5	4/A9.5	3/A9.8 SIM.	20	Blind Partition Door	
103A	3'-0"x 8'-0"	1 3/4"	C		Wood Solid Core	Hollow Metal	10/A9.1	10/A9.1	2/A9.8	10 (ACOUSTIC THRESH.)	Electronic Key Access	
104A	3'-0"x 8'-0"	1 3/4"	C		Wood Solid Core	Hollow Metal	10/A9.1	10/A9.1	5/A9.8	08 (ACOUSTIC THRESH.)		
105A	Double 3'-0"x 8'-0"	1 3/4"	D		Wood Solid Core	Hollow Metal	10/A9.1	10/A9.1	9/A9.1	16 (ACOUSTIC THRESH.)	Electronic Key Access	
105B	Double 3'-0"x 8'-0"	1 3/4"	D		Insulated Hollow Metal	Therm. Brk. Hollow Metal	7/A8.4	5/A8.4	6/A8.4	04	Electronic Key Access, Low Louver 1.2SF Free	
107A	Double 3'-0"x 8'-0"	1 3/4"	D2	G1	Wood Solid Core	Hollow Metal	10/A9.1	10/A9.1	13/A9.8	15 (ACOUSTIC THRESH.)	2'x6"Glass Light @ Each Panel	
107B	Double 3'-0"x 8'-0"	1 3/4"	D		Insulated Hollow Metal	Therm. Brk. Hollow Metal	7/A8.4	5/A8.4	8/A8.6	06		
108A	3'-0"x 8'-10"	1 3/4"	C		Wood Solid Core	Hollow Metal	10/A9.1	9/A9.8	7/A9.8	12	Low Louver 1.2SF Free	MENS ACCESSIBLE BATHROOM SYMBOL
109A	3'-0"x 8'-10"	1 3/4"	C		Wood Solid Core	Hollow Metal	10/A9.1	9/A9.8	7/A9.8	12	Low Louver 1.2SF Free	WOMENS ACCESSIBLE BATHROOM SYMBOL
110A	2'-8"x 7'-0"	1 3/4"	C		Wood Solid Core	Hollow Metal	10/A9.1	10/A9.1	6/A9.8	11	High/Low Louver 1.2SF Free, Each	
111A	2'-8"x 7'-0"	1 3/4"	C		Wood Solid Core	Hollow Metal	10/A9.1	9/A9.8	6/A9.8	17	Low Louver 1.2SF Free	
112A	3'-0"x 8'-10"	1 3/4"	C		Wood Solid Core	Hollow Metal	10/A9.1	10/A9.1	7/A9.1	09	Electronic Key Access	
112B	7'-3"x6'-2 1/2"	1 3/4"	F		Wood Solid Core	N/A	6/A9.5	N/A	5/A9.5		Barn Door	
113A	3'-0"x 8'-10"	1 3/4"	B	G1	Wood Solid Core	Hollow Metal	10/A9.1	10/A9.1	4/A9.8	13 (ACOUSTIC THRESH.)	2' x 6" Glass Light	
114A	Double 3'-6"x 8'-0"	1 3/4"	D		Hollow Metal	Hollow Metal	7/A8.4	5/A8.4	6/A8.4	05	High/Low Louver 1.2SF Free	
114B	Double 3'-6"x 8'-0"	1 3/4"	D		Hollow Metal	Hollow Metal	7/A8.4	5/A8.4	6/A8.4	05	High/Low Louver 1.2SF Free	
115A	2'-8"x 8'-0"	1 3/4"	C		Hollow Metal	Hollow Metal	7/A8.4	5/A8.4	6/A8.4	01	Rated per FD requirements	"FIRE SPRINKLER RISER ROOM"
116A	3'-6"x 7'-8"	N/A	E		Tube Steel / Metal Panel	Tube Steel	N/A	7/A5.2	N/A	19	Equipment Area Gate	"GAS SHUTOFF"
117A	3'-6"x 7'-8"	N/A	E		Tube Steel / Metal Panel	Tube Steel	N/A	7/A5.2	N/A	19	Equipment Area Gate	

2 DOOR SCHEDULE
A7.1 NO SCALE



1 DOOR TYPES
A7.1 SCALE: 1/4" = 1'-0"

DOOR NOTES:

1. PROVIDE SAFETY GLAZING IN ALL DOORS AND FIXED LIGHTS IN ACCORDANCE WITH CBC SEC 2406.4.1/2406.4.2
   SEE ELEVATIONS FOR SAFETY GLAZING LOCATIONS.
   IG1 = STANDARD INSULATED GLAZING
   IG2 = INSULATED SAFETY GLAZING
   G1 = MONOLITHIC TEMPERED SAFETY GLAZING
   G2 = LAMINATED GLAZING
2. DOOR HARDWARE TO BE LEVER TYPE. ALL DOOR HARDWARE SHALL BE ADA COMPLIANT.
3. THE FORCE FOR PUSHING OR PULLING OPEN INTERIOR SWINGING EGRESS DOORS, OTHER THAN FIRE DOORS, SHALL NOT EXCEED 5 POUNDS. THESE FORCES DO NOT APPLY TO THE FORE REQUIRED TO RETRACT LATCH BOLTS OR DISENGAGE OTHER DEVICES THAT HOLD THE DOOR IN A CLOSED POSITION. FOR OTHER SWINGING DOORS, AS WELL AS SLIDING AND FOLDING DOORS, THE DOOR LATCH SHALL RELEASE WHEN SUBJECTED TO A 15 POUND FORCE. THE DOOR SHALL BE SET IN MOTION WHEN SUBJECTED TO A 30 POUND FORCE. THE DOOR SHALL SWING TO A FULL OPEN POSITION WHEN SUBJECTED TO A 15 POUND FORCE PER CBC 1010.1.3
4. THE FORCE FOR PUSHING AND PULLING INTERIOR HINGED DOORS AND GATES, SLIDING OR FOLDING DOORS AND EXTERIOR HINGED DOORS SHALL BE 5 POUNDS MAXIMUM. THE MINIMUM OPENING FORCE FOR FIRE DOORS SHALL NOT EXCEED 15 POUNDS PER CBC 11B-404.2.9
5. INTERIOR DOORS SHALL BE MAPLE FINISH WITH GRAIN DIRECTION UP/DOWN.
6. ELECTRIFIED KEY ACCESS IS FOR ENTRANCE TO BUILDING ONLY. UNDER NO CIRCUMSTANCES SHALL ELECTRIFIED KEY ACCESS LIMIT EXITING OF THE BUILDING

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DOOR SCHEDULE

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2	ADDENDUM 2

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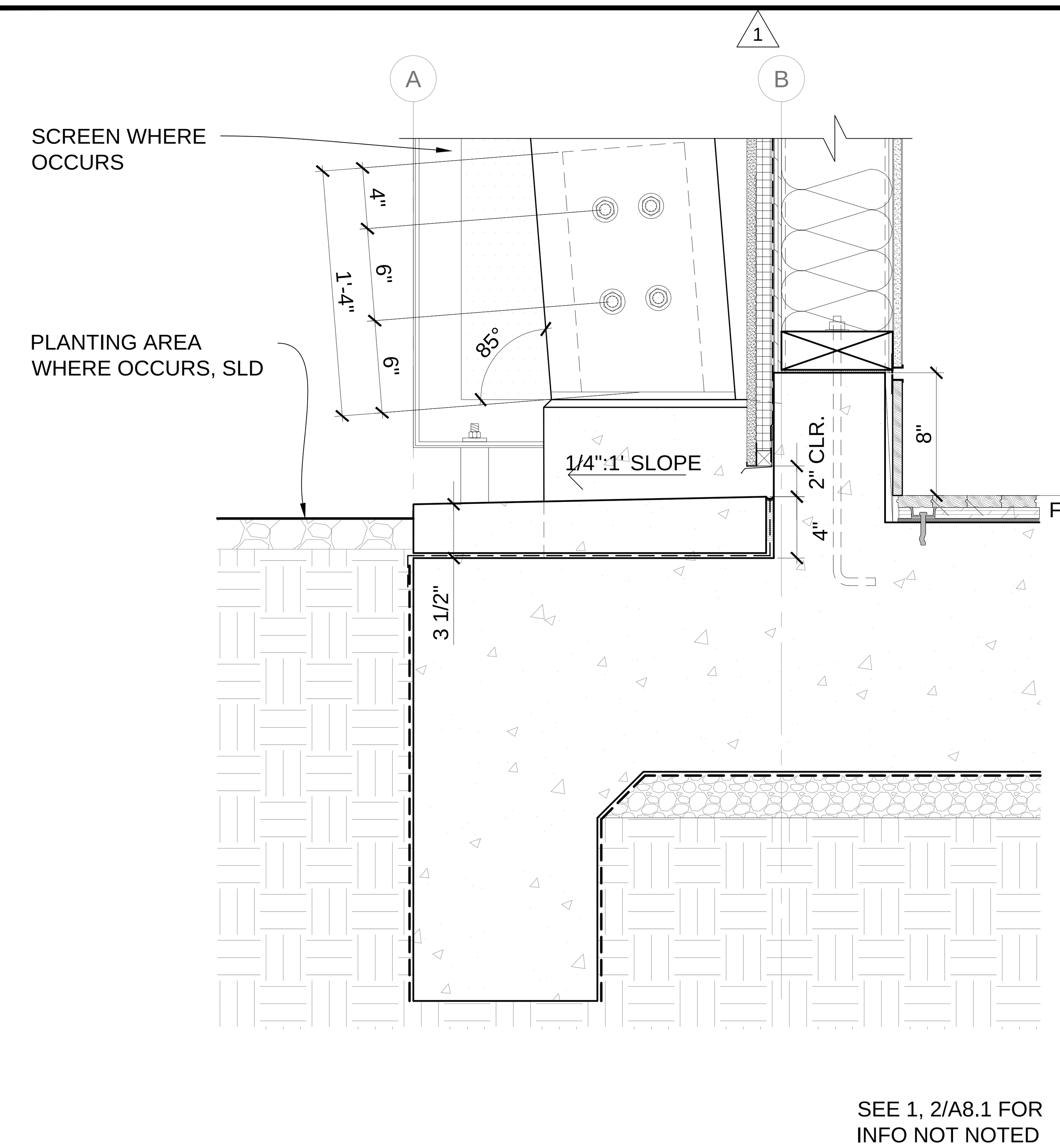
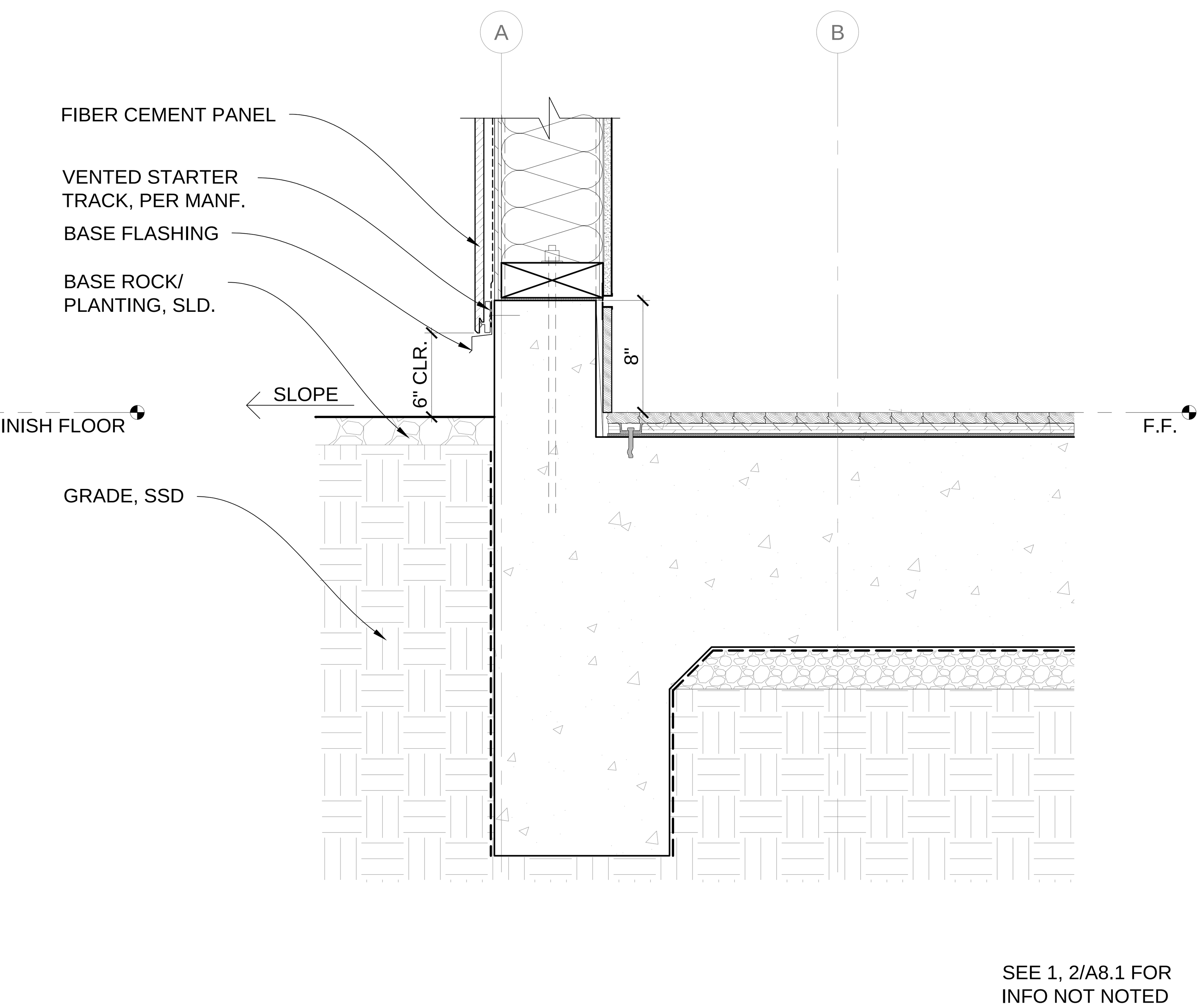
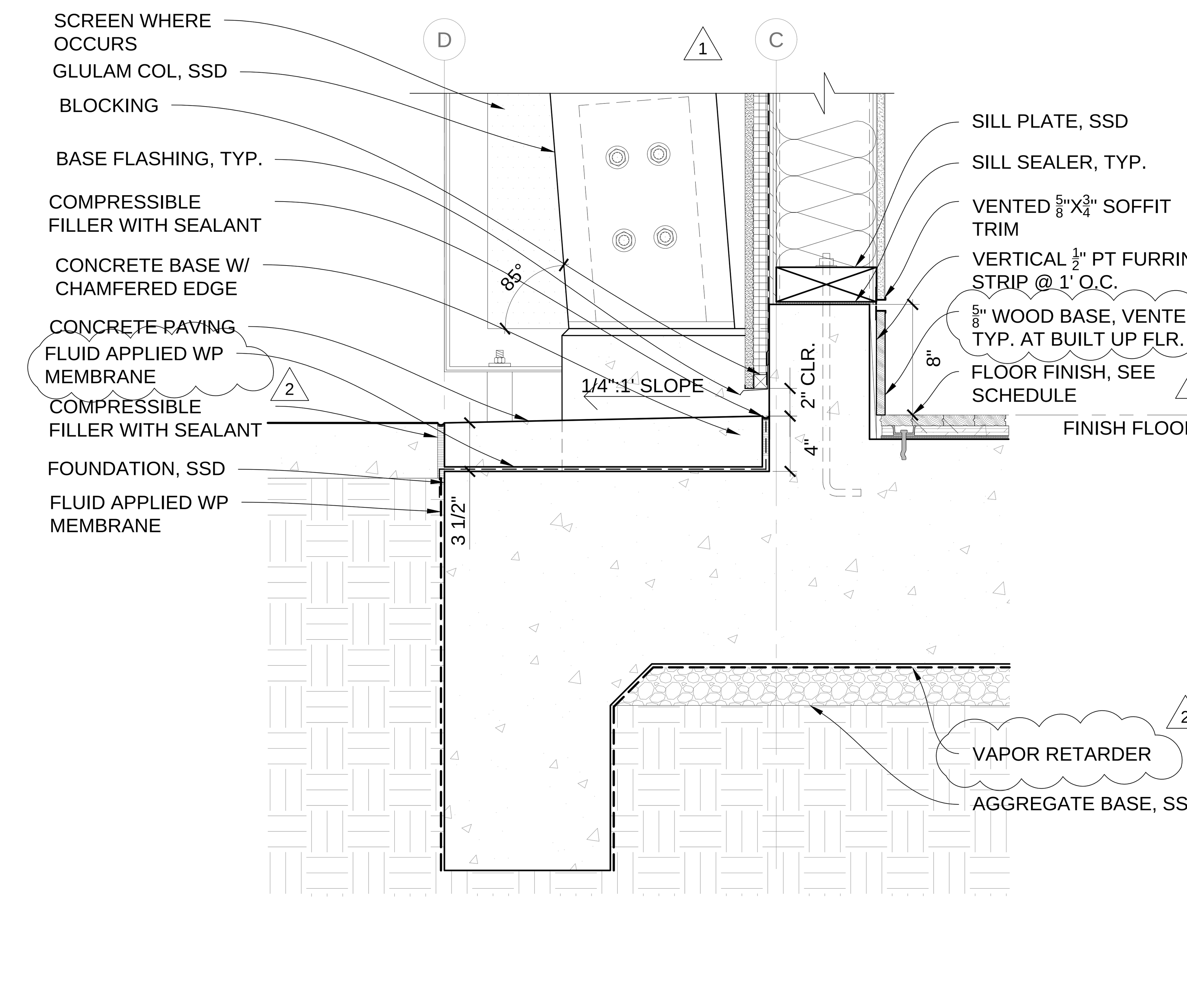


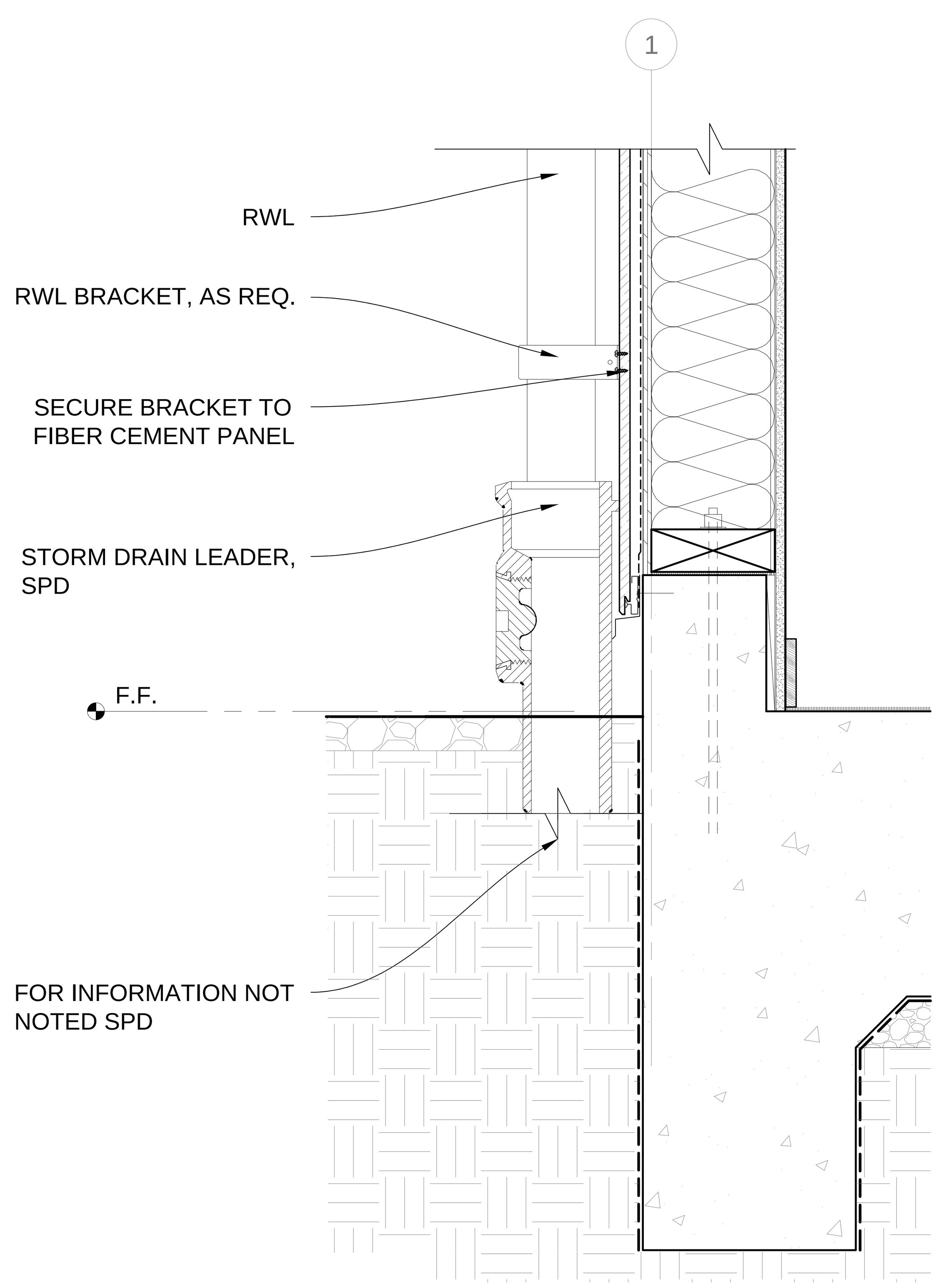
5 FOUNDATION AT PLANTERS
A8.1 SCALE: 1-1/2" = 1'-0"



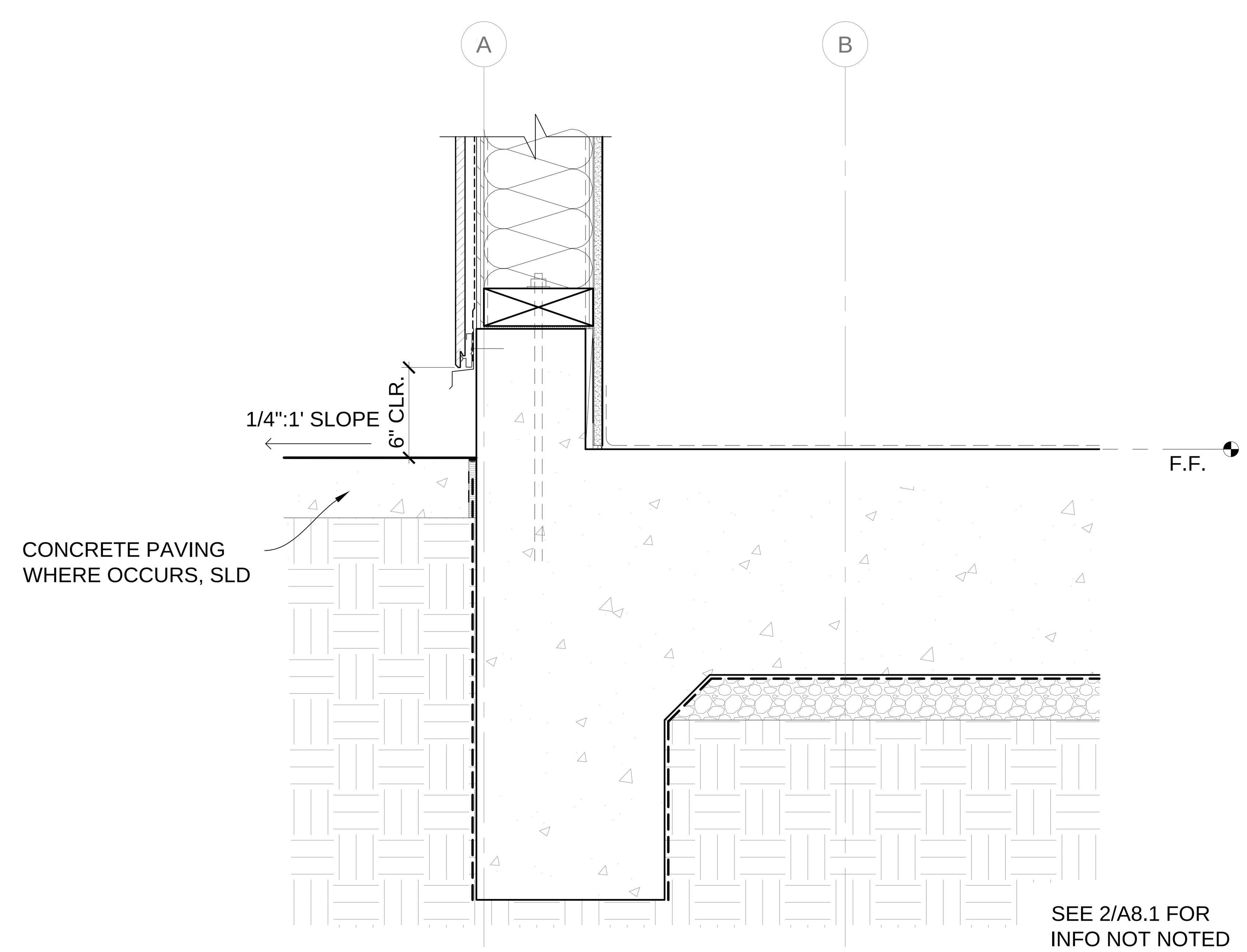
4 FOUNDATION AT FIBER CEMENT AT GRADE
A8.1 SCALE: 1-1/2" = 1'-0"



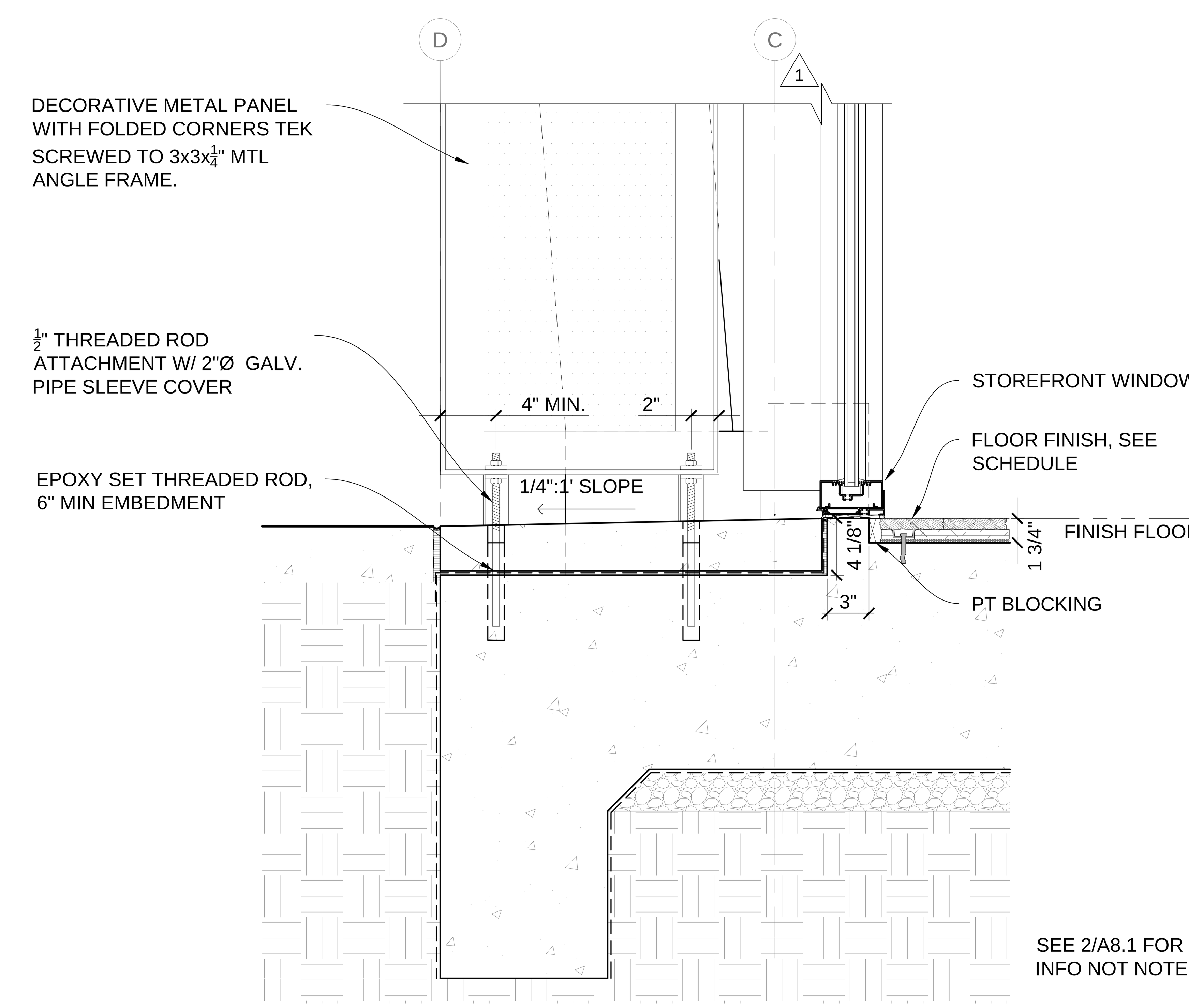
2 FOUNDATION AT CEMENT PLASTER
A8.1 SCALE: 1-1/2" = 1'-0"



6 RAIN WATER LEADER
A8.1 SCALE: 1-1/2" = 1'-0"



3 FOUNDATION AT FIBER CEMENT AT PAVING
A8.1 SCALE: 1-1/2" = 1'-0"



1 FOUNDATION AT STOREFRONT
A8.1 SCALE: 1-1/2" = 1'-0"

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FOUNDATION DETAILS

	Issue
2	ADDENDUM 2

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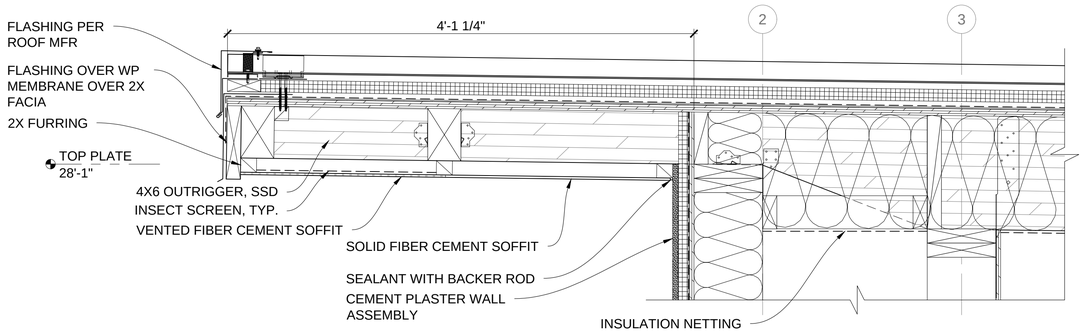
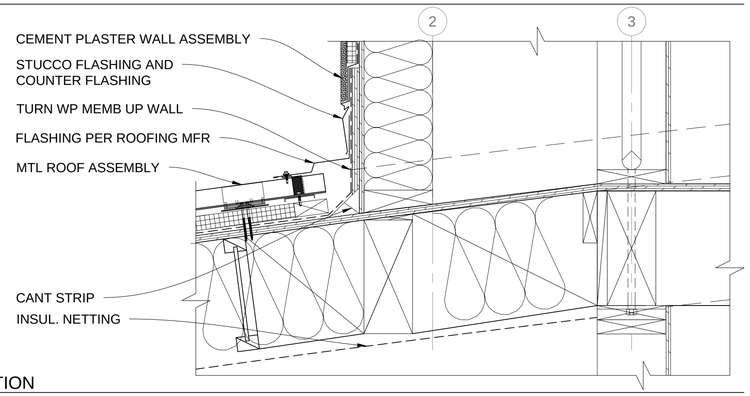
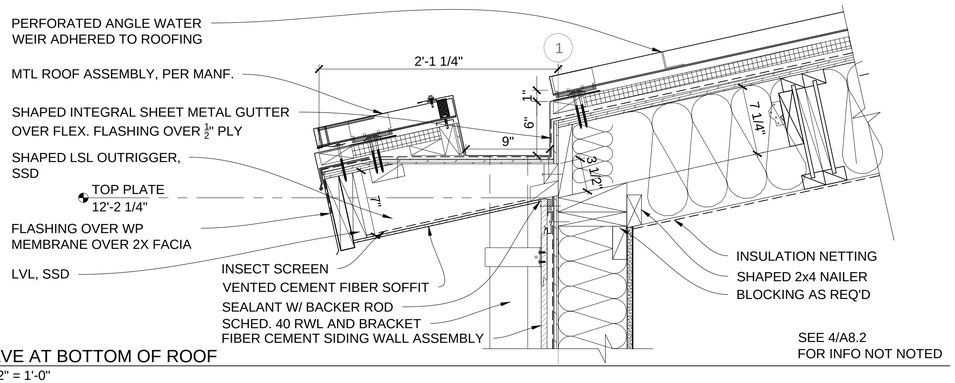


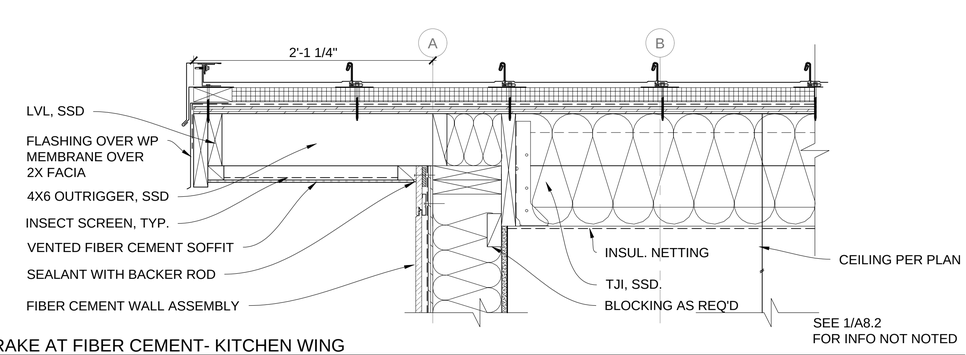
8 A8.2 ROOF EAVE AT TOP OF ROOF
SCALE: 1-1/2" = 1'-0"



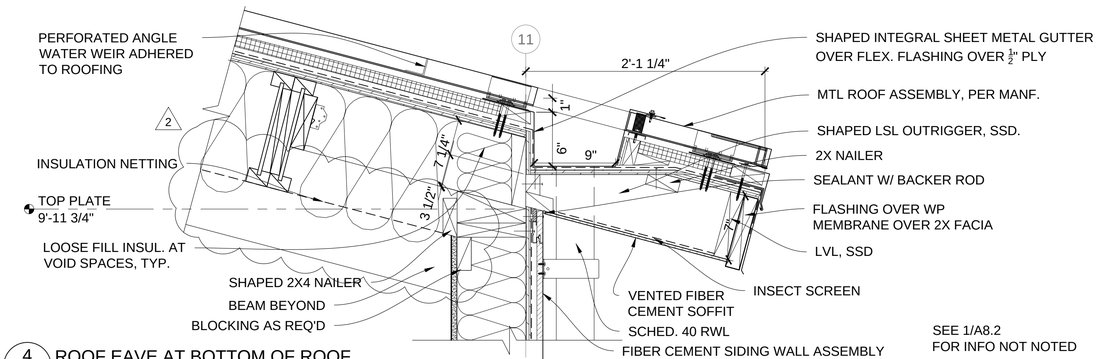
7 A8.2 ROOF EAVE AT WALL INTERSECTION
SCALE: 1-1/2" = 1'-0"



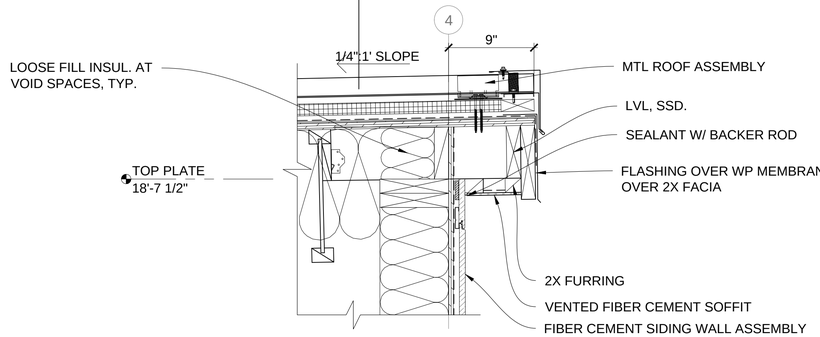
6 A8.2 ROOF EAVE AT BOTTOM OF ROOF
SCALE: 1-1/2" = 1'-0"



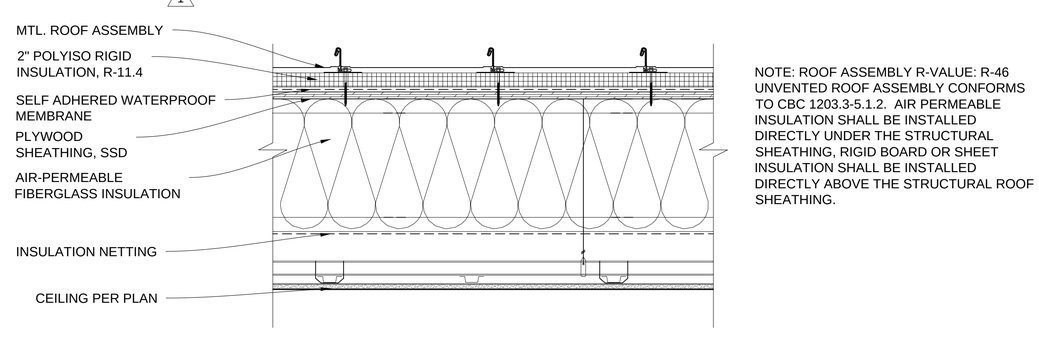
5 A8.2 ROOF RAKE AT FIBER CEMENT- KITCHEN WING
SCALE: 1-1/2" = 1'-0"



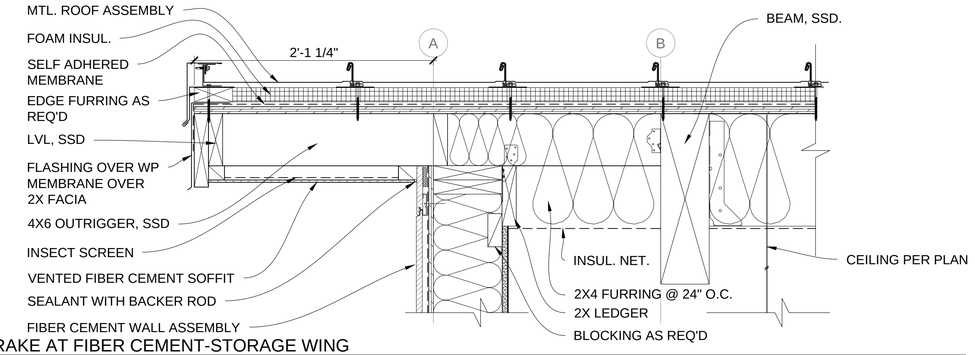
4 A8.2 ROOF EAVE AT BOTTOM OF ROOF
SCALE: 1-1/2" = 1'-0"



3 A8.2 ROOF EAVE AT TOP OF LOWER ROOF
SCALE: 1-1/2" = 1'-0"



2 A8.2 ROOF ASSEMBLY, TYP.
SCALE: 1-1/2" = 1'-0"



1 A8.2 ROOF RAKE AT FIBER CEMENT-STORAGE WING
SCALE: 1-1/2" = 1'-0"

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ROOF DETAILS

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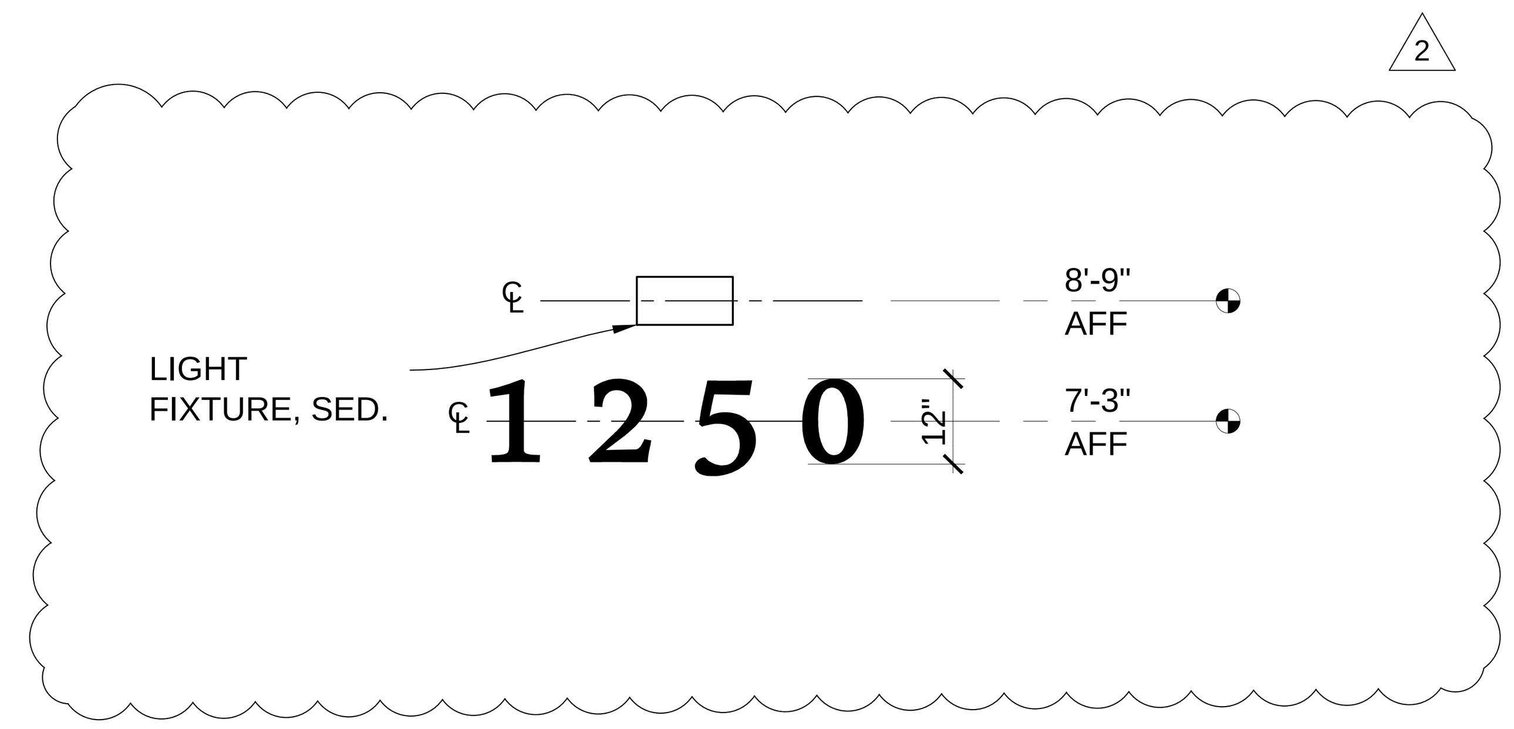
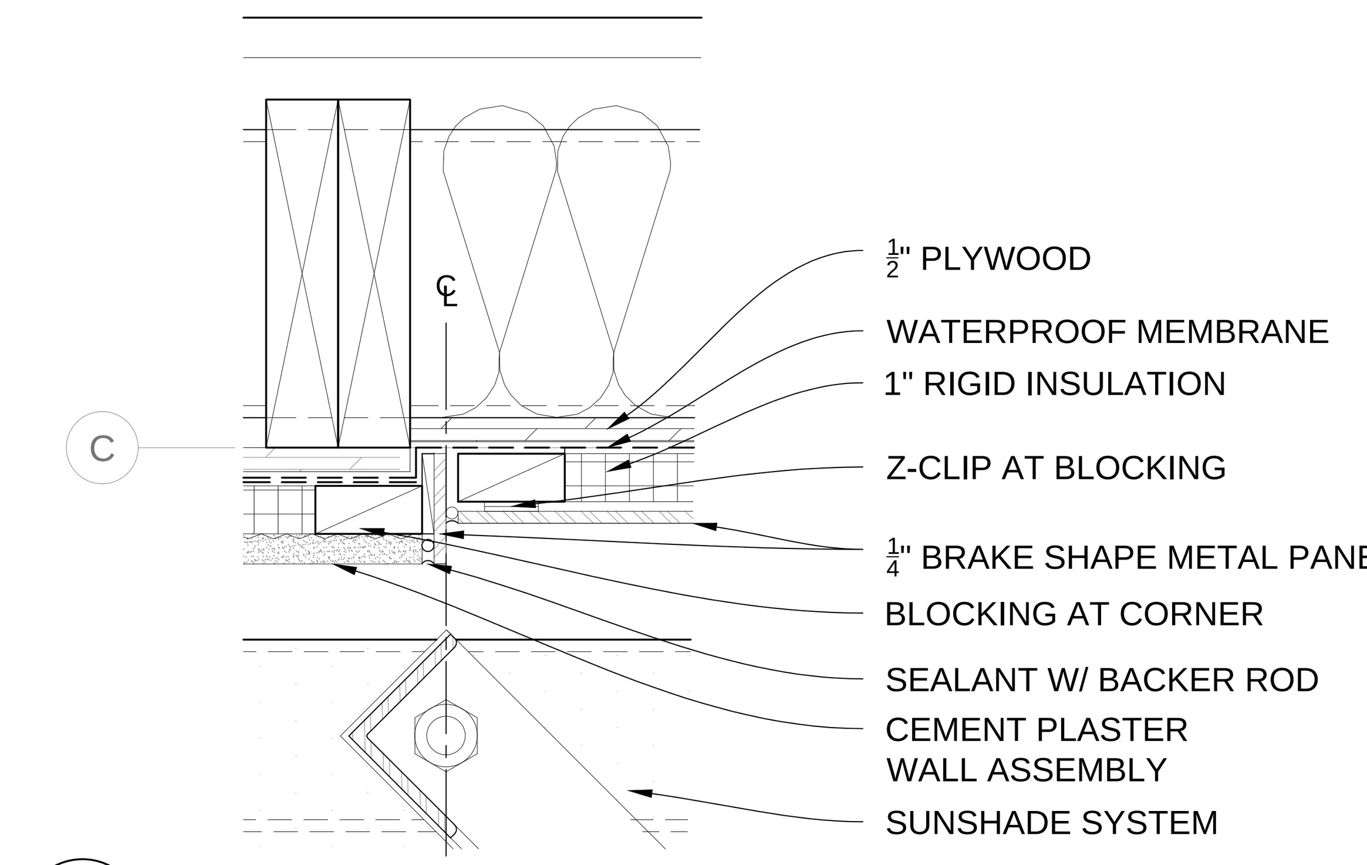


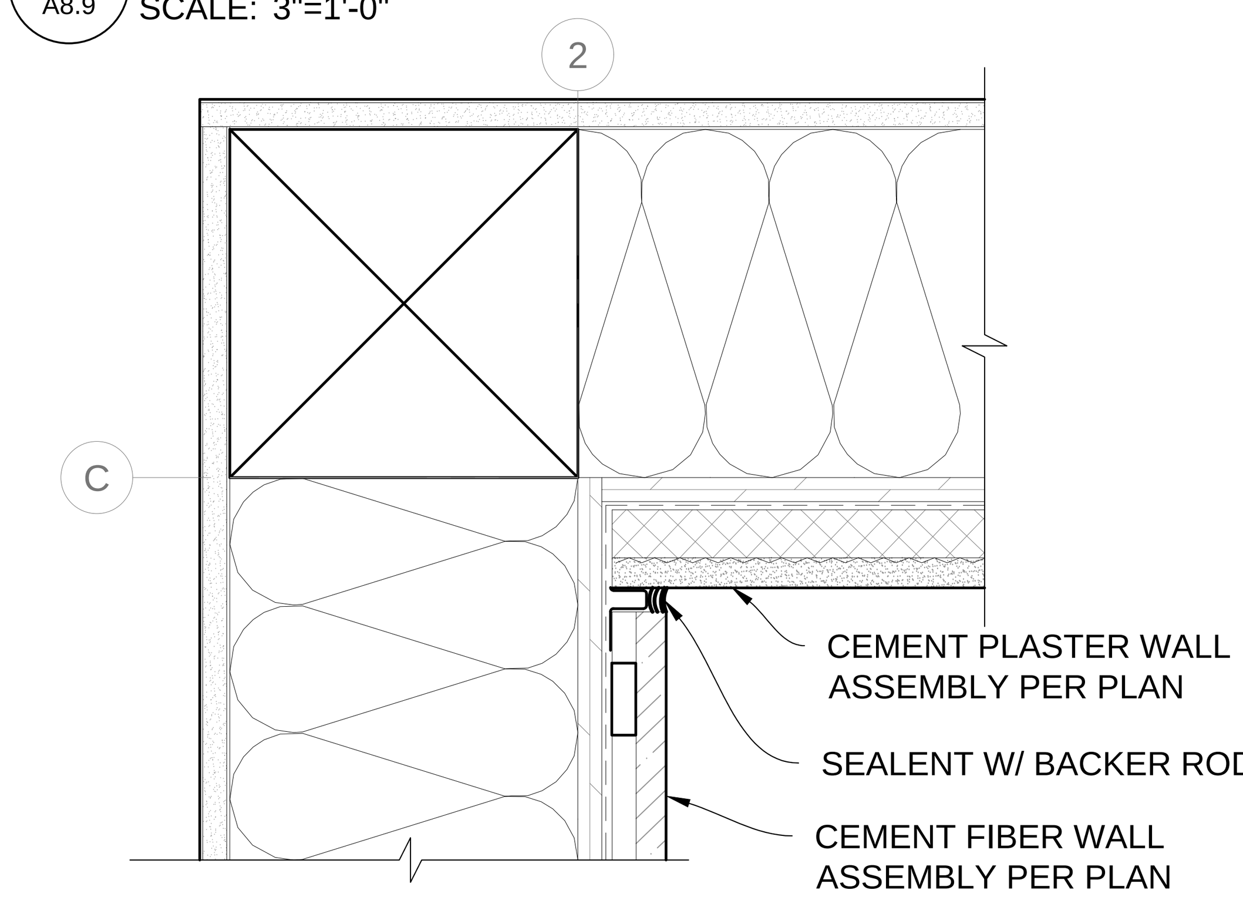
7 ENLARGED SIGNAGE ELEVATION - NORTH
A8.9 SCALE: 1/2" = 1'-0"

6 ENLARGED SIGNAGE ELEVATION - EAST
A8.9 SCALE: 1/2" = 1'-0"

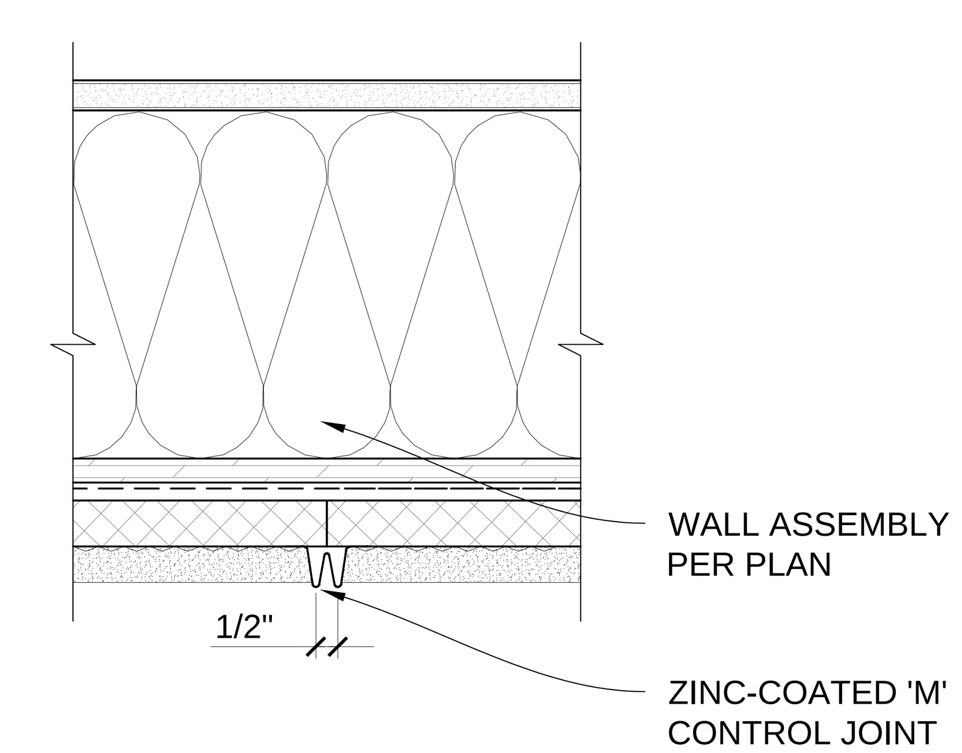
5 ENLARGED SIGNAGE ELEVATION - WEST
A8.9 SCALE: 1/2" = 1'-0"



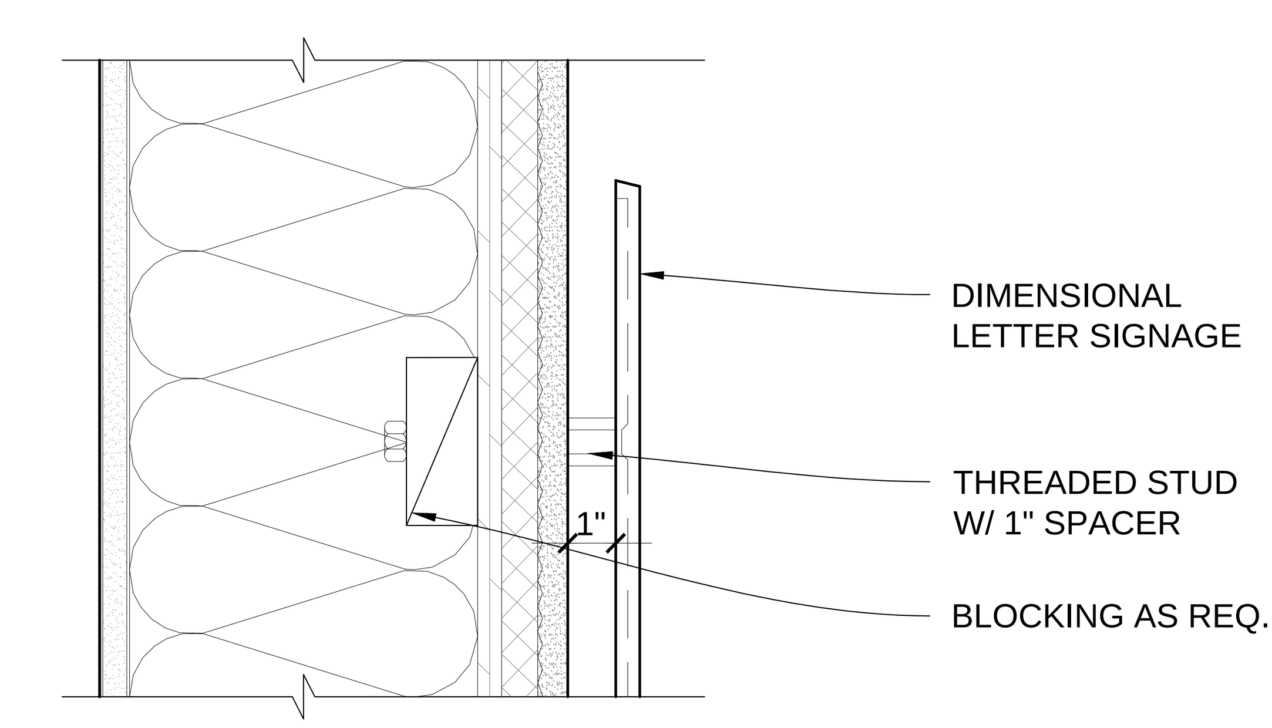
4 CEMENT PLASTER/METAL PANEL CONTROL JOINT
A8.9 SCALE: 3"=1'-0"



3 CEMENT FIBER/ CEMEMT PLASTER CONTROL JOINT
A8.9 SCALE: 3"=1'-0"



2 CEMENT PLASTER CONTROL JOINT, TYP.
A8.9 SCALE: 3"=1'-0"



1 DIMENSIONAL LETTER SIGNAGE ATTACHMENT
A8.9 SCALE: 3"=1'-0"

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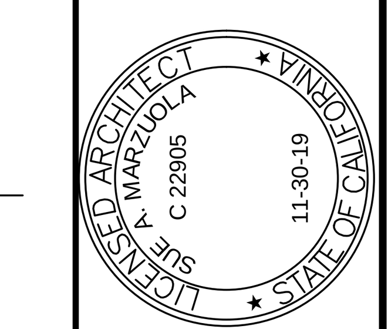

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SIGNAGE & CONTROL JOINT DETAILS

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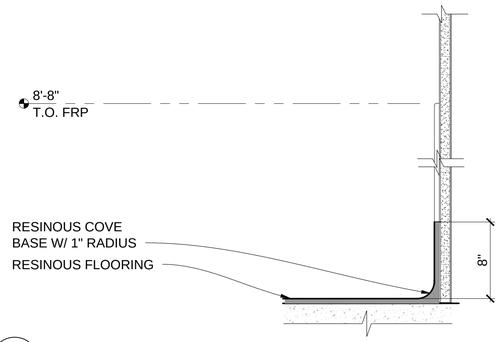
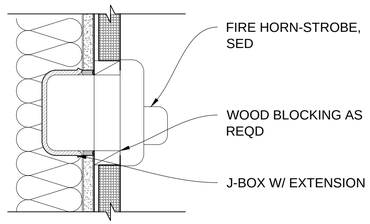
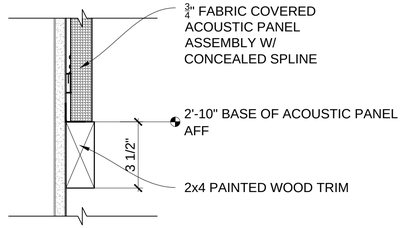
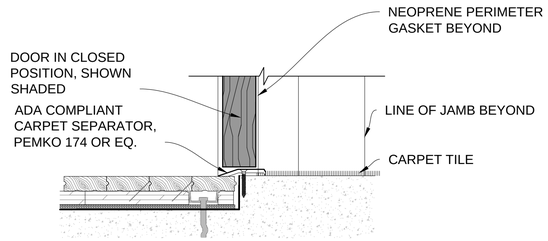


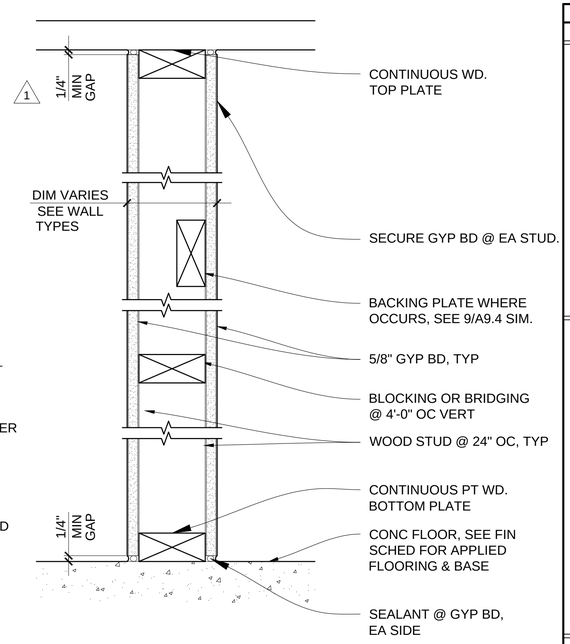
12 A9.1 RESINOUS FLOORING COVE BASE & FRP
SCALE: 3" = 1'-0"



8 A9.1 FIRE STROBE @ ACOUSTIC PANEL
SCALE: 3"=1'-0"





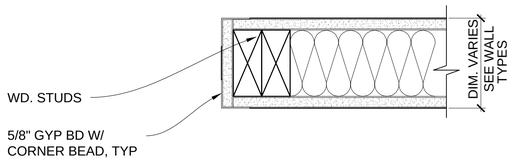


4 A9.1 TYPICAL PARTITION FRAMING
SCALE: 3" = 1'-0"

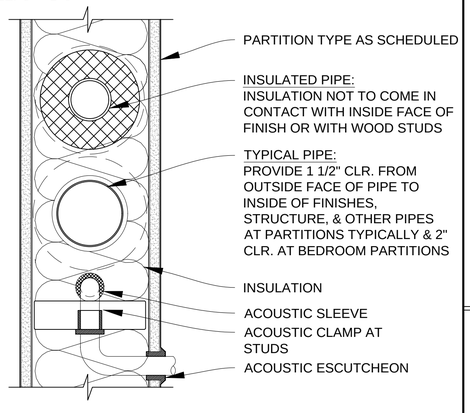
PARTITION TYPES:

MARK	COMMENT	DESCRIPTION
		EXTERIOR WALLS (R-24) 1
A1	-16" X 72" PANEL	(1) LAYER 5/8" TYPE X GYPSUM BOARD OR ALT
	1	2 LAYERS OF 3.5" FIBERGLASS INSULATION
A2	-16" X 72" PANEL -HIGH IMPACT GYP. BD. (INT.)	2X8 WOOD STUD @ 24" OC, TYP, UON METAL CLIP FASTENER (1) LAYER PLYWOOD, SSD. TAPE JOINTS, TYP.
A3	-16" X 72" PANEL, (1) GLASS-MAT (INT.)	WATERPROOF BARRIER 5/8" FIBER CEMENT BOARD OVER 3/8" AIR GAP
		INTERIOR PARTITIONS
B1	AS INDICATED	(1) LAYER 5/8" GYPSUM BOARD
B2	HIGH IMPACT GYP. BD.	2X6 WD. STUDS @ 24" OC, TYP, UON
B3	2X8 WD. STD.	5-1/2" FIBERGLASS INSULATION, EXTEND 6" ABOVE CEILING, TYP
B4	(1) ACOUSTICALLY ENHANCED GYP. BD., (1) HIGH IMPACT GYP. BD.	PLYWOOD SHEAR WHERE OCCURS, SSD (1) LAYER 5/8" GYP. BD., TYP
B5	2X8 WD. STD. HIGH IMPACT GYP BD.	
		WET RESISTANT INTERIOR PARTITIONS
C1	(1) ACOUSTICALLY ENHANCED GYP. BD., (1) GLASS-MAT GYP. BD.	(1) LAYER 5/8" GLASS-MAT GYP. BD. 2X6 WD. STUDS @ 24" OC, TYP, UON PLYWOOD SHEAR WHERE OCCURS, SSD
C2	(1) GLASS-MAT GYP. BD. BOTH SIDES	5-1/2" FIBERGLASS INSULATION, EXTEND 6" ABOVE CEILING, TYP
C3	2X8 STUD (1) GLASS-MAT GYP. BD. BOTH SIDES	(1) LAYER 5/8" GLASS-MAT GYP. BD., TYP OR ACOUSTICALLY ENHANCED GYP. BD. AS INDICATED
C4	2X8 STUD (1) ACOUSTICALLY ENHANCED GYP. BD./ (1) GLASS-MAT	
		EXTERIOR WALLS (R-29) 1
D1	AS INDICATED	(1) LAYER 5/8" HIGH IMPACT GYPSUM BOARD
	1	2 LAYERS 3-1/2" FIBERGLASS INSULATION 2X8 WOOD STUD @ 24" OC, TYP, UON (1) LAYER PLYWOOD, SSD TAPE JOINTS, TYP. 1" RIGID INSULATION BOARD WATERPROOF BARRIER/ DRAINAGE PLANE CEMENT PLASTER O/ METAL LATH

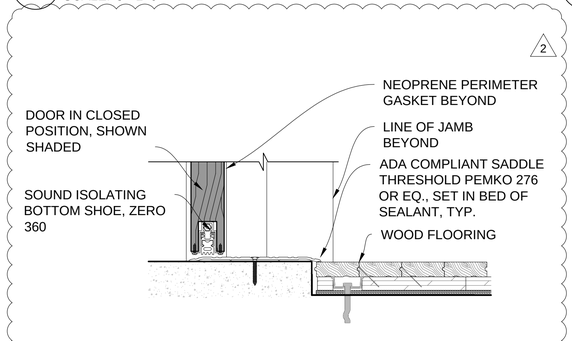
11 A9.1 WALL MOUNTED ACOUSTIC PANEL
SCALE: 3"=1'-0"



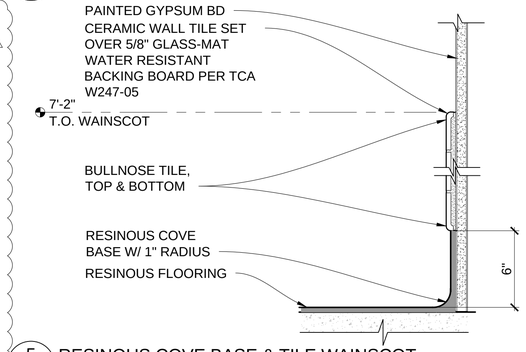
7 A9.1 DOOR SILL @ WOOD TO CARPET TRANSITION
SCALE: 3"=1'-0"



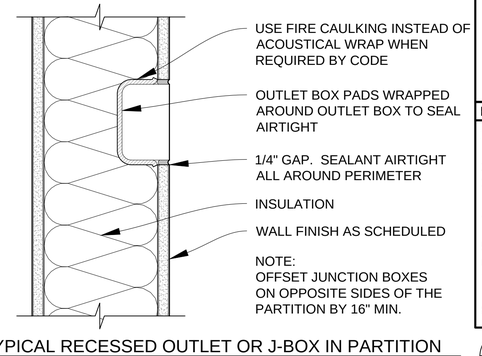
3 A9.1 TYPICAL PLUMBING AT ACOUSTIC PARTITION
SCALE: 3" = 1'-0"



10 A9.1 DOOR HEAD (JAMB SIM.)
SCALE: 3"=1'-0"



6 A9.1 TYPICAL END WALL PLAN DETAIL
SCALE: 3"=1'-0"



9 A9.1 DOOR SILL @ CONC. TO WOOD FLOOR TRANSITION
SCALE: 3"=1'-0"

5 A9.1 RESINOUS COVE BASE & TILE WAINSCOT
SCALE: 3" = 1'-0"

2 A9.1 TYPICAL RECESSED OUTLET OR J-BOX IN PARTITION
SCALE: 3" = 1'-0"

PARTITION NOTES:

1. PARTITION & WALL TYPES APPLY TO THE WHOLE WALL PLANE WHERE TAGGED, EVEN WHEN INTERRUPTED.
2. ALL GYPSUM BOARD USED IN THIS PROJECT TO BE 5/8" TYP., UON.
3. SEE FINISH SCHEDULE AND INTERIOR ELEVATIONS FOR APPLIED FINISH MATERIALS (TILE, TACKBOARD, MIRROR, CABINETS, ETC.).
4. AT ACOUSTIC PARTITIONS, FRAME TO STRUCTURE ABOVE, AND SEAL TOP & BOTTOM OF GYP BD WITH ACOUSTICAL SEALANT.
5. USE GLASS-MAT GYP BD AT ALL RESTROOMS.
6. MAINTAIN PLANE FOR LENGTH OF WALL.
7. UL REFERS TO UNDERWRITERS LABORATORIES 2009 FIRE RESISTANCE MANUAL, VOLUME 1
8. SEE 2, 3, 4 & 6/A9.1 FOR TYPICAL WALL DETAILS. 1

1 A9.1 PARTITION SCHEDULE
SCALE: N.T.S.

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LICENSED ARCHITECT SUSAN A. MARZULLA C 22905 11-30-19 STATE OF CALIFORNIA

OAKLEY CALIFORNIA

OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

WALL TYPES AND DETAILS

Issue
1 ADDENDUM 2

Date: 1/16/18
Scale: AS NOTED
Design: SM
Drawn: SCD
Approved: MH
Job No: 17-005

Drawing Number:
A9.1

GENERAL NOTES
1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE 2016 CALIFORNIA BUILDING CODE AND THE SPECIFICATIONS.
2. THESE NOTES SHALL APPLY TO ALL STRUCTURAL DRAWINGS UNLESS OTHERWISE NOTED OR SHOWN.
3. FEATURES OF CONSTRUCTION SHOWN ARE TYPICAL AND SHALL APPLY GENERALLY THROUGHOUT SIMILAR CONDITIONS.
4. UNLESS SHOWN OTHERWISE, DETAILS SHOWN ON "TYPICAL DETAIL" SHEETS SHALL BE USED WHEREVER APPLICABLE. SPECIFIC DETAILS ON THE STRUCTURAL DRAWINGS TAKE PRECEDENCE OVER "TYPICAL DETAILS". SPECIFIC NOTES ON STRUCTURAL DRAWINGS TAKE PRECEDENCE OVER NOTES SHOWN IN "GENERAL NOTES".
5. THE STRUCTURAL DRAWINGS SHOW STRUCTURAL FEATURES. EXACT CONFIGURATION OF INTERIOR PARTITION WALLS IS SHOWN ON ARCHITECTURAL DRAWINGS AND IS NOT NECESSARILY ALL SHOWN ON THE STRUCTURAL DRAWINGS. PROVIDE ANCHORAGE, INSERTS, ANCHOR BOLTS, ETC. FOR STRUCTURAL CONNECTIONS OF TOP, SIDES AND BOTTOM OF ALL PARTITION WALLS AS LOCATED ON THE ARCHITECTURAL DRAWINGS.
6. REFER TO THE ARCHITECTURAL DRAWINGS AND THE SPECIFICATIONS FOR THE FOLLOWING: FLOOR FINISHES; DEPRESSIONS AND CURBS ON FLOORS; OPENINGS REQUIRED FOR WINDOWS, DOORS, DUCTS, VENTS, PLUMBING, ETC.; FLASHING, INSERTS, ANCHORAGES, HANGERS ETC., EMBEDDED IN OR ATTACHED TO THE STRUCTURE; ROADWAY, WALKS, PAVING, STAIRS, RAMPS, TERRACES, EXTERIOR GRADES, ELEVATIONS OF ROOF SURFACE AND LOCATIONS OF DRAINS AND PARTITION WALLS.
7. THE CONTRACTOR SHALL COMPARE THE STRUCTURAL DRAWINGS WITH ARCHITECTURAL, PLUMBING, MECHANICAL, CIVIL, AND ELECTRICAL DRAWINGS AS TO ALL LAYOUTS, DIMENSIONS AND ELEVATIONS. ANY DISCREPANCIES SHALL BE REPORTED TO THE ARCHITECT FOR PROPER ADJUSTMENT BEFORE PROCEEDING WITH THE WORK.
8. IN THE EVENT THAT CERTAIN FEATURES OF THE CONSTRUCTION ARE NOT FULLY SHOWN ON THE DRAWINGS OR CALLED FOR IN THE GENERAL NOTES OR SPECIFICATIONS, THEIR CONSTRUCTION SHALL BE OF THE SAME CHARACTER AS SHOWN FOR SIMILAR CONDITIONS.
9. BEAMS, JOISTS AND ANY OTHER STRUCTURAL ELEMENTS SHALL NOT BE CUT OR PENETRATED, EXCEPT AS SHOWN IN STRUCTURAL DETAILS OR AS APPROVED BY THE ARCHITECT AND THE STRUCTURAL ENGINEER.
10. CONTRACTOR SHALL VERIFY ALL DIMENSIONS IN FIELD PRIOR TO POURING CONCRETE; ANY DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF THE ARCHITECT BEFORE PROCEEDING WITH THE WORK.
11. FEATURES OF EXISTING CONSTRUCTION SHALL BE VERIFIED BY THE CONTRACTOR IN THE FIELD AND DISCREPANCIES SHALL BE CALLED TO THE ATTENTION OF THE ARCHITECT.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MEANS, METHODS, TECHNIQUES AND SEQUENCES OF CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SAFETY PROGRAMS AND PROCEDURES DURING CONSTRUCTION.
13. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ADEQUATELY SHORE AND BRACE THE BUILDING AS REQUIRED DURING CONSTRUCTION.
14. THE CONTRACTOR SHALL FOLLOW ALL INSTRUCTIONS, RECOMMENDATIONS AND SAFETY PRECAUTIONS PROVIDED BY THE MANUFACTURER OR SUPPLIER OF ANY MATERIAL OR PRODUCT NOTED IN GENERAL NOTES OR DRAWINGS.
15. SEE ARCHITECTURAL DRAWINGS FOR DETAILS ON REQUIRED VENTILATION OF ROOF JOISTS, FLOOR JOISTS, AND ATTIC SPACES.
16. CONTRACTOR SHALL FIELD VERIFY EXISTING FRAMING CONDITIONS AND SHALL NOTIFY ARCHITECT OF ANY VARIATION FROM CONDITIONS ASSUMED ON DRAWINGS. CONTRACTOR SHALL VERIFY THAT EXISTING FRAMING IS RE-SUPPORTED AND ALL LOADS ARE TRANSFERRED TO NEW OR EXISTING FOOTINGS. CONTRACTOR SHALL CONSULT WITH THE STRUCTURAL ENGINEER AS REQUIRED.
17. GRADES SHOWN ON STRUCTURAL DRAWINGS ARE APPROXIMATE AND FOR GENERAL REFERENCE ONLY.
18. MECHANICAL UNIT LOCATIONS SHOWN ON STRUCTURAL DRAWINGS ARE SCHEMATIC ONLY. GENERAL CONTRACTOR TO COORDINATE STRUCTURAL TRADES WITH MECHANICAL CONTRACTOR TO DETERMINE EXACT LOCATION OF UNITS AND SUPPORTING STRUCTURE.
19. DO NOT SCALE DRAWINGS.

DESIGN CRITERIA
1. VERTICAL LOADS:
   - A. DEAD LOADS:
     - i. ROOF DEAD LOAD: 20 PSF
     - ii. FLOOR DEAD LOAD: 20 PSF
   - B. LIVE LOADS:
     - i. ROOF LIVE LOAD: 20 PSF
     - ii. MECHANICAL AREA ON ROOF: 50 PSF (FOR AREA AROUND EQUIPMENT)
     - iii. TYPICAL FLOORS: 50 PSF
     - iv. CORRIDORS AND LOBBIES: 100 PSF
     - v. STORAGE: 125 PSF
   - C. SPRINKLER DESIGN LOADS: 250 LBS + WEIGHT OF WATER FILLED PIPE
2. LATERAL LOADS:
   - A. WIND DESIGN LOADS -PER CBC SECTION 1609:
     - BASIC WIND SPEED: 110 MPH
     - EXPOSURE CATEGORY: B
   - B. SEISMIC DESIGN-PER CBC SECTION 1613
     - RISK CATEGORY: II
     - SEISMIC DESIGN CATEGORY: D
     - SITE CLASS: D
     - FUNDAMENTAL PERIOD: T = 0.19 SECONDS
     - BASIC LATERAL FORCE RESISTING SYSTEM-LIGHT FRAMED WALLS WITH WOOD STRUCTURAL PANELS
     - MAPPED SHORT PERIOD ACCELERATION: Ss = 1.44 g
     - SITE COEFFICIENT: Fa = 1.0
     - DESIGN SHORT PERIOD ACCELERATION: SDS = 0.96
     - MAPPED ONE SECOND PERIOD ACCELERATION: S1 = 0.49 g
     - SITE COEFFICIENT: Fv = 1.51
     - DESIGN ONE SECOND ACCELERATION: SD1 = 0.50
     - RESPONSE MODIFICATION FACTOR: R = 6.5
     - IMPORTANCE FACTOR: I = 1.25
     - SEISMIC RESPONSE COEFFICIENT, (SDS*I/R): Cs = 0.185 (2)
     - BASE SHEAR, V= Cs * W = 0.185 W AT STRENGTH LEVEL (2)
3. ALLOWABLE SOIL PRESSURES:
   - DEAD LOAD: 1500 PSF
   - DEAD + LIVE LOADS: 2000 PSF
   - DEAD + LIVE + LATERAL LOADS: 2000 PSF

FOUNDATION NOTES
1. THE SOIL REPORT APPLICABLE TO THIS PROJECT SITE IS BY BSK ASSOCIATES DATED MARCH 1, 2017 AND IS AVAILABLE FOR REVIEW AT THE ARCHITECT'S OFFICE. THE BSK PROJECT NUMBER IS G16-221-11L. THE CONTRACTOR SHALL READ THE SOIL REPORT PREPARED FOR THIS PROJECT SITE AND SHALL BE RESPONSIBLE FOR PERFORMING ALL WORK DESCRIBED THEREIN.
2. FOOTINGS SHALL BEAR ON UNDISTURBED NATURAL SOIL.
3. FOR BIDDING PURPOSES, THE ELEVATION OF THE BOTTOM OF FOOTINGS SHALL BE AS INDICATED ON THE FOUNDATION PLANS AND ON DETAILS. SLOPE BOTTOM OF FOOTINGS AT 1:10 MAXIMUM SLOPE AS REQUIRED TO SUIT GRADING AND ADJACENT FOOTING CONDITIONS. STEP BOTTOM OF FOOTINGS PER TYPICAL DETAIL FOR GREATER INCLINATIONS.
4. SOIL BEARING PRESSURES UNDER FOOTINGS AS DESIGNED DO NOT EXCEED ALLOWABLE SOIL PRESSURES DEFINED IN DESIGN CRITERIA ABOVE.
5. SEE ARCHITECTURAL, PLUMBING, MECHANICAL, ELECTRICAL AND ANY OTHER INCLUDED DRAWINGS, AND CONSULT WITH THE RESPECTIVE TRADES FOR VERIFICATION OF ALL ITEMS SHOWN OR NOT SHOWN ON STRUCTURAL PLANS PRIOR TO POURING CONCRETE FOOTINGS AND FLOOR SLABS.
6. VERIFY LOCATIONS FOR OPENINGS OR PENETRATIONS THROUGH CONCRETE, CONCRETE CURBS, FLOOR DEPRESSIONS, FLOOR SLOPES AND DRAINS, INSERTS, ETC.

CONCRETE NOTES
1. ALL CONCRETE SHALL BE REINFORCED UNLESS NOTED "NOT REINFORCED".
2. SEE THE CALIFORNIA BUILDING CODE AND THE SPECIFICATIONS FOR THE REQUIREMENTS IN THE PRODUCTION, TESTING AND INSTALLATION OF CONCRETE.
3. SEE ARCHITECTURAL DRAWINGS FOR THE LOCATION AND EXTENT OF EXTERIOR WALKS AND PAVEMENTS AND FOR REINFORCEMENT REQUIREMENTS.
4. REINFORCEMENT SHALL BE PER ASTM A615, GRADE 60 WITH BAR MARKS LEGIBLY ROLLED INTO THE SURFACE INDICATING SIZE, TYPE OF STEEL, AND YIELD STRENGTH DESIGNATION.
5. CONCRETE SHALL TEST NOT LESS THAN 3000 PSI AT 28 DAYS FOR STRUCTURAL AND FOUNDATION ELEMENTS WITH A MAXIMUM SLUMP OF 4". FLOOR SLABS ON GRADE SHALL TEST NOT LESS THAN 3000 PSI AT 28 DAYS UNLESS OTHERWISE NOTED ON STRUCTURAL DRAWINGS WITH A MAXIMUM SLUMP OF 4". WATER/CEMENT RATIO SHALL NOT EXCEED 0.43 FOR SLAB ON GRADE.
6. PROVIDE 15 MIL VAPOR BARRIER CONFORMING TO ASTM E 1745 CLASS A UNDER ALL SLABS ON GRADE.
7. REPLACE A MINIMUM OF 40% OF CEMENT CONTENT WITH FLYASH CONFORMING TO ASTM C618 CLASS C OR F, OR GROUND GRANULATED BLAST FURNACE SLAG CONFORMING TO ASTM 989, CLASS 100 OR 120.
8. SEE REINFORCING BAR LAP SPLICE SCHEDULE FOR REINFORCING BAR LAP SPLICE LENGTHS. STAGGER SPLICES WHENEVER POSSIBLE. VERTICAL WALL REINFORCING BARS SHALL EITHER EXTEND INTO FOOTINGS OR LAP SPLICED WITH FOOTING DOWELS OF THE SAME SIZE BARS.
9. REINFORCEMENT, ANCHOR BOLTS, PIPE SLEEVES, AND OTHER INSERTS SHALL BE POSITIVELY SECURED IN PLACE BEFORE CONCRETE IS POURED. "WET-SETTING" WILL NOT BE ALLOWED.
10. REINFORCING BARS WELDED TO STRUCTURAL STEEL SHALL BE SUPPLIED BY REINFORCING BAR SUB-CONTRACTOR AND ALL WELDING SHALL BE DONE BY STRUCTURAL STEEL SUB-CONTRACTOR.
11. BAR COVERAGE TO FACE OF BAR, EXCEPT AS OTHERWISE SHOWN, SHALL BE:
    - 3" WHERE CONCRETE IS POURED AGAINST EARTH OR AGAINST GROUND CONTACT
    - 2" FOR BARS LARGER THAN #5, WHERE CONCRETE SURFACES ARE EXPOSED TO EARTH OR TO WEATHER AFTER REMOVAL OF FORMS.
    - 1-1/2" FOR #5 BARS OR SMALLER, WHERE CONCRETE SURFACES ARE EXPOSED TO EARTH OR TO WEATHER AFTER REMOVAL OF FORMS
    - 1-1/2" FOR COLUMN SPIRAL TIES*
    - 1" FOR WALL BARS (DOUBLE MAT)*
    - 3/4" FOR STRUCTURAL SLAB BARS, TOP AND BOTTOM*
    - *UNLESS GOVERNED ABOVE BY EXPOSURE OR NOTED ON DETAILS
12. INTERIOR SLAB ON GROUND SHALL BE REINFORCED AS SHOWN ON STRUCTURAL PLANS. LOCATIONS OF CONSTRUCTION JOINTS OTHER THAN SHOWN ON DRAWINGS MUST BE APPROVED BY THE ARCHITECT.
13. ALL CONCRETE CURBS ARE 6 INCHES HIGH UNLESS OTHERWISE NOTED.
14. THE SURFACE OF ALL CONSTRUCTION JOINTS SHALL BE CLEANED AND ROUGHENED BY REMOVING THE ENTIRE SURFACE AND EXPOSING CLEAN AGGREGATE SOLIDLY EMBEDDED IN MORTAR MIX.
15. WHERE NEW CONSTRUCTION IS INTEGRATED WITH EXISTING CONCRETE CONSTRUCTION, CARE SHALL BE TAKEN SO AS NOT TO DAMAGE EXISTING REMAINING CONCRETE AND REINFORCING. WHERE NEW CONCRETE ABUTS EXISTING CONCRETE, CLEAN EXISTING CONCRETE SURFACE WITH HIGH PRESSURE WATER SPRAY. APPLY APPROVED BONDING AGENT TO SURFACE OF EXISTING CONCRETE.
16. HOLES FOR GROUTED ANCHORS SHALL BE DRILLED WITH ROTARY HAMMER OR OTHER SUITABLE METHODS TO ENSURE EXISTING REINFORCEMENT IS NOT DAMAGED. HOLE DIAMETER SHALL BE 1/8" GREATER THAN ANCHOR ROD DIAMETER, UNLESS OTHERWISE NOTED. GROUT SHALL BE NON-SHRINK EPOXY. LOCATE EXISTING REINFORCING BARS PRIOR TO DRILLING HOLES. DO NOT DAMAGE EXISTING REINFORCING. METHOD OF LOCATING EXISTING REINFORCING BARS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER. ALL MIS-DRILLED OR UNACCEPTABLE HOLES SHALL BE GROUTED SOLID.

CARPENTRY NOTES
1. SILLS ON CONCRETE SHALL BE PRESSURE TREATED DOUGLAS FIR LARCH 3x THICK AT ALL EXTERIOR WALLS AND INTERIOR SHEAR WALLS NOTED ON PLAN. ALL OTHER SILLS ON CONCRETE MAY BE PRESSURE TREATED DOUGLAS FIR LARCH 2x THICK. THEY SHALL BE ANCHORED WITH 5/8" DIAMETER MACHINE BOLTS WITH 7" EMBEDMENT. AT SHEAR WALLS, BOLTS SHALL HAVE NUT, CUT WASHER AND SIMPSON BPS 5/8-6 BEARING PLATE. AT NON-SHEAR WALLS, BEARING PLATE IS NOT REQUIRED. LOCATE BOLTS 6" MINIMUM AND 12" MAXIMUM FROM EACH END OF EACH STICK AND NOT OVER 48" ON CENTER BETWEEN. SEE SHEAR WALL SCHEDULE FOR SPECIFIC SPACING OF ANCHOR BOLTS WHICH MAY BE NOTED AS LESS THAN 48" ON CENTER. THERE SHALL BE AT LEAST 2 BOLTS IN EACH STICK. WHERE NOTCHES FOR PIPES, ETC., EXCEED 1/3 THE WIDTH OF THE SILL, PLACE A BOLT WITHIN 6" OF EACH SIDE OF NOTCH. TIEDOWN BOLTS SHALL NOT BE CONSIDERED AS SILL BOLTS.
2. FRAMING LUMBER: DOUGLAS FIR-LARCH, MANUFACTURED AND GRADED IN ACCORDANCE WITH THE WEST COAST LUMBER INSPECTION BUREAU "STANDARD GRADING RULES NO. 17", LATEST EDITION INCLUDING ALL SUPPLEMENTS. LUMBER SHALL BE FSC CERTIFIED.
   - STRUCTURAL LIGHT FRAMING: NO. 1, 2" TO 4" THICK
   - BEAMS: NO. 1, FREE OF HEART CENTER, 5" AND THICKER
   - POSTS: NO. 1
   - STUDS: 2x4 OR 3x4 – CONSTRUCTION; 2x6 AND LARGER – NO. 2
3. ALL FRAMING LUMBER SHALL BE HAVE A MAXIMUM MOISTURE CONTENT OF 19 PERCENT AT TIME OF INSTALLATION.
4. STUD AND POST SIZES (UNLESS OTHERWISE NOTED)
   - STUDS AT NEW EXTERIOR WALLS: 2x8 @ 24" ON CENTER
   - STUDS AT NEW INTERIOR WALLS: 2x8 @ 24" ON CENTER
   - POSTS: 4x8
5. BLOCKING AND BRIDGING – PROVIDE AS FOLLOWS:
   - A. 2x SOLID BLOCKING BETWEEN JOISTS AND RAFTERS OVER SUPPORT.
   - B. 2x SOLID BLOCKING BETWEEN JOISTS AND RAFTERS NOT OVER 8'-0" ON CENTER NOR MORE THAN 8'-0" FROM SUPPORT.
   - C. OMIT BLOCKING BETWEEN CEILING JOISTS AND RAFTERS 2x8 AND SMALLER.
6. PIPES EXCEEDING ONE-THIRD OF THE PLATE WIDTH SHALL NOT BE PLACED IN PARTITIONS USED AS BEARING OR SHEAR WALLS, UNLESS OTHERWISE DETAILED OR COMPLETELY FURRED CLEAR OF THE STUDS. PIPES SHALL PASS THROUGH THE CENTER OF THE PLATES USING A NEATLY BORED HOLE. NO NOTCHING WILL BE ALLOWED.
7. LAG SCREWS SHALL BE SCREWED (NOT DRIVEN) INTO PLACE. DRILL HOLES SAME DIAMETER AND DEPTH AS SHANK. THEN DRILL HOLE 60-70% OF DIAMETER AT BASE OF THREAD FOR THE THREADED PORTION. USE STEEL PLATE WASHERS AS REQUIRED FOR THE SAME BOLT SIZE.
8. BOLTS IN WOOD SHALL BE MACHINE BOLTS UNLESS OTHERWISE NOTED. ALL MACHINE BOLTS SHALL HAVE CUT THREADS.
9. BOLT HOLES IN WOOD AND STEEL SHALL BE THE DIAMETER OF THE BOLT PLUS 1/16".
10. PROVIDE PLATE WASHER UNDER HEAD AND NUT OF BOLT WHERE BEARING IS AGAINST WOOD (INCLUDING HOLDOWN BOLTS). LENGTH OF THREAD SHALL BE SUCH THAT THREADS DO NOT BEAR AGAINST WOOD. ALL NUTS SHALL BE TIGHTENED WHEN PLACED AND RE-TIGHTENED AT COMPLETION OF THE JOB IMMEDIATELY BEFORE CLOSING WITH FINISH CONSTRUCTION.
11. CONNECTORS FOR WOOD CONSTRUCTION NOTED ON PLANS AND DETAILS SHALL BE SIMPSON COMPANY STRONG-TIE CONNECTORS OR APPROVED EQUAL.
12. STUDS SHALL BE ONE PIECE BETWEEN FLOORS AND FROM FLOOR TO ROOF. ALIGN CENTERLINE OF STUDS WITH CENTERLINE OF FLOOR JOISTS. ALIGN CENTERLINE OF STUDS FOR FULL HEIGHT OF STRUCTURE TYPICAL.
13. ALL POSTS SHALL BE FULL HEIGHT FROM FOUNDATION TO ROOF. WHERE POSTS ARE DISCONTINUOUS AT JOIST SPACE AND/OR FROM TOP OF BEAMS/HEADERS TO LOWER TOP PLATE, BLOCK THIS SPACE WITH STUD POST.
14. ALL NON-BEARING PARTITIONS SHALL HAVE DOUBLE JOISTS BELOW WHERE PARTITIONS ARE PARALLEL TO JOISTS, AND FULL DEPTH 2x BLOCKING BELOW WHERE PARTITIONS ARE PERPENDICULAR TO JOISTS.
15. JOISTS SUPPORTING MECHANICAL EQUIPMENT SHALL BE DOUBLE JOISTS (DJ) UNLESS NOTED OTHERWISE.
16. FASTENERS PENETRATING PRESSURE-PRESERVATIVE TREATED AND FIRE-RETARDANT TREATED WOOD SHALL BE HOT-DIPPED GALVANIZED PER ASTM A153, CLASS D.

PLYWOOD SHEATHING NOTES
1. ROOF, FLOORS, ALL EXTERIOR WALLS AND INTERIOR SHEAR WALLS (WHERE NOTED ON STRUCTURAL PLANS) SHALL BE SHEATHED WITH DOUGLAS FIR PLYWOOD WITH EXTERIOR GLUE AS FOLLOWS:
   - ROOF: 5/8" T&G, APA STRUCTURAL I RATED SHEATHING, 40/20, EXPOSURE 1
   - WALL: 1/2", APA STRUCTURAL I RATED SHEATHING, 32/16, EXPOSURE 1
2. ALL EXTERIOR WALLS SHALL BE SHEATHED WITH PLYWOOD.
3. ALL PLYWOOD SHEATHING USED STRUCTURALLY SHALL EXTEND CONTINUOUSLY BEHIND ALL FINISH. WHERE IT IS TO BE PLASTERED, IT SHALL BE PROTECTED BY AN UNBROKEN LAYER OF MOISTURE-TIGHT PAPER UNDER LATHING.
4. IN GENERAL, PLYWOOD SHEETS SHALL BE 4'-0" x 8'-0". MINIMUM SHEET DIMENSION IS 24 INCHES, UNLESS ALL EDGES ARE FULL SUPPORTED BY FRAMING MEMBERS OR BLOCKING. THE LONG DIMENSION MAY BE LAID EITHER HORIZONTALLY OR VERTICALLY AT WALLS. ROOF AND FLOOR SHEETS SHALL BE LAID WITH FACE PLIES ACROSS JOISTS OR FRAMING MEMBERS AND WITH END JOINTS STAGGERED 4'-0". USE PLYCLIPS HALFWAY BETWEEN EACH SUPPORT AT UNBLOCKED ROOFS. ALL PLYWOOD JOINTS SHALL BE ACCURATELY CENTERED ON SUPPORTING ELEMENTS, INCLUDING BLOCKING. BLOCKING BETWEEN JOISTS FOR PLYWOOD EDGE NAILING SHALL BE 3x4 MINIMUM FLAT BLOCKING, EXCEPT WHERE DETAILED OTHERWISE. ROOF AND FLOOR PLYWOOD MAY BE UNBLOCKED. GLUE FLOOR PLYWOOD TO ALL SUPPORTS INCLUDING BLOCKING WITH AN ADHESIVE RECOMMENDED BY THE AMERICAN PLYWOOD ASSOCIATION FOR THIS PURPOSE.

NAILING NOTES
1. ALL NAILS SHALL BE COMMON WIRE NAILS. WHERE NAILS TEND TO SPLIT THE WOOD, NAIL HOLES SHALL BE PRE-DRILLED. NAILS AT PRESSURE TREATED WOOD SHALL BE HOT DIP GALVANIZED.
2. PROVIDE MINIMUM NAILING REQUIREMENTS AS SET FORTH IN CALIFORNIA BUILDING CODE TABLE 2304.9.1 EXCEPT THAT BOX NAILS SHALL NOT BE USED.
3. PLYWOOD NAILING:
   - AT ROOF: 5/8" T&G PLYWOOD WITH 10d @ 4" ON CENTER ALONG SUPPORTED PANEL EDGES AND WHERE NOTED ON PLANS AND DETAILS AS EDGE NAILING (EN) AND 10d @ 12" ON CENTER ALONG INTERMEDIATE FRAMING MEMBERS.
   - AT WALLS: SEE SHEAR WALL SCHEDULE.
4. MAINTAIN ACCURATE NAIL SPACING AS INDICATED. NAIL SPACING CLOSER THAN SPECIFIED WILL BE CAUSE FOR REJECTION OF THE WORK.
5. NAILS PENETRATING PRESSURE-PRESERVATIVE TREATED AND FIRE-RETARDANT TREATED WOOD SHALL BE HOT-DIPPED GALVANIZED PER ASTM A153, CLASS D.

STRUCTURAL GLUED LAMINATED MEMBER NOTES
1. ALL STRUCTURAL GLUED LAMINATED MEMBERS SHALL BE COMBINATION 24F-V4 DF/DF FABRICATED AND ERECTED IN ACCORDANCE WITH ANSI/ASTM STANDARD A190.1 AND ASTM D3737.
2. ALL STRUCTURAL GLUED LAMINATED MEMBERS EXPOSED TO THE WEATHER SHALL BE COMBINATION 20F/V12 AC/AC WITH A MINIMUM OF 90% HEARTWOOD.
3. ADHESIVE SHALL BE EXTERIOR TYPE ADHESIVE MEETING REQUIREMENTS OF U.S. COMMERCIAL STANDARD PS-56 AND ASTM 2559.
4. THE FABRICATOR SHALL FURNISH AITC CERTIFICATES AND A LAMINATING REPORT TO THE STRUCTURAL ENGINEER AND THE BUILDING INSPECTION DEPARTMENT PRIOR TO FRAMING INSPECTION.

PARALLAM PSL, MICROLLAM LVL AND TIMBERSTRAND LSL NOTES
1. ALL PARALLAM PARALLEL STRAND LUMBER, MICROLLAM LAMINATED VENEER LUMBER AND TIMBERSTRAND LAMINATED STRAND LUMBER MEMBERS SHALL BE AS MANUFACTURED BY TRUS JOIST OR APPROVED EQUAL AND SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH ICC ES ESR-1387.
2. PARALLAM MEMBERS SHALL HAVE THE FOLLOWING PROPERTIES:
   - ALLOWABLE FLEXURAL STRESS: 2900 PSI
   - ALLOWABLE SHEAR STRESS: 290 PSI
   - MODULUS OF ELASTICITY: 2,000,000 PSI
3. TIMBERSTRAND MEMBERS SHALL HAVE THE FOLLOWING PROPERTIES:
   - ALLOWABLE FLEXURAL STRESS: 2325 PSI
   - ALLOWABLE SHEAR STRESS: 310 PSI
   - MODULUS OF ELASTICITY: 1,550,000 PSI
4. MICROLLAM MEMBERS SHALL HAVE THE FOLLOWING PROPERTIES:
   - ALLOWABLE FLEXURAL STRESS: 2600 PSI
   - ALLOWABLE SHEAR STRESS: 285 PSI
   - MODULUS OF ELASTICITY: 1,900,000 PSI
5. DO NOT USE PARALLAM, MICROLLAM OR TIMBERSTRAND MEMBERS WHERE THEY MAY BE EXPOSED TO THE WEATHER. PROTECT THESE MEMBERS FROM MOISTURE UNTIL CLOSED IN WITH FINISH CONSTRUCTION.

PREFABRICATED I-JOIST NOTES
1. ALL PREFABRICATED I-JOISTS SHALL BE WEYERHAEUSER UNLESS OTHERWISE NOTED.
2. TJI JOIST SERIES SHALL CONFORM TO ICC ES ESR-1387 AND ICC ES ESR-1153.
3. TRUSS JOIST MANUFACTURER SHALL DESIGN ALL MEMBERS AND CONNECTIONS FOR ROOF LOADS INCLUDING MECHANICAL EQUIPMENT LOADS. DESIGN SHALL BE BY A CIVIL ENGINEER REGISTERED IN THE STATE OF CALIFORNIA.
4. APPROVED COPIES OF TRUSS JOIST SHOP DRAWINGS SHALL BE FORWARDED TO THE BUILDING INSPECTION DEPARTMENT.
5. TEMPORARY BRACING AND BRIDGING PER MANUFACTURER'S RECOMMENDATIONS SHALL BE INSTALLED TO HOLD TRUSS JOIST TRUE AND PLUMB UNTIL PERMANENT ROOF SHEATHING IS INSTALLED.

STRUCTURAL STEEL NOTES
1. STRUCTURAL STEEL SHALL BE ASTM A36 UNLESS OTHERWISE NOTED. ALL W AND WT SHAPES SHALL BE ASTM A992. ALL HOLLOW STEEL SECTIONS SHALL BE ASTM A1085. ALL STEEL PIPE SECTIONS SHALL BE A1085.
2. ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS, LATEST EDITION.
3. ALL BOLTED CONNECTIONS STEEL TO STEEL SHALL BE MADE WITH 1" DIAMETER HIGH-STRENGTH (A325-X) BOLTS UNLESS OTHERWISE NOTED. ANCHOR BOLTS SHALL BE ASTM F1554, Fy=36 KSI. THREADED RODS SHALL BE PER ASTM A193 GRADE B7.
4. ALL WELDING SHALL BE DONE BY CERTIFIED WELDERS.
5. ALL TESTING AND INSPECTION OF SHOP AND FIELD WELDING OPERATIONS SHALL BE MADE BY A CERTIFIED WELDING INSPECTOR.
6. ALL WELDS SHALL BE TESTED AND INSPECTED IN ACCORDANCE WITH THE SPECIFICATIONS, THE CALIFORNIA BUILDING CODE, AWS D1.1, AS WELL AS D1.8 FOR SEISMIC ELEMENTS.
7. ALL WELDING ELECTRODES SHALL BE E70 SERIES. THE WELDING INSPECTOR SHALL CHECK THE WELDER'S CERTIFICATION, MATERIAL, EQUIPMENT, FIT UP AND PROCEDURES AS WELL AS THE WELDS. THE INSPECTOR SHALL USE ALL MEANS NECESSARY TO DETERMINE THE QUALITY OF THE WELDS, INCLUDING THE USE OF GAMMA RAY, MAGNAFLUX, TREPANNING, SONICS OR ANY OTHER AID TO VISUALLY INSPECT AND TO ASCERTAIN THE ADEQUACY OF THE WELDING. THE INSPECTOR SHALL FURNISH THE ARCHITECT AND THE STRUCTURAL ENGINEER WITH A REPORT VERIFYING THAT ALL WELDS HAVE BEEN DONE IN CONFORMITY WITH THE PLANS, SPECIFICATIONS, AWS D1.1 AND ANY APPLICABLE CODES. UNLESS NOTED OTHERWISE ON THE DRAWINGS, THE FABRICATION AND ERECTION REQUIREMENTS MAY DICTATE FIELD WELDING AND/OR SHOP WELDING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE METHOD OF WELDING TO FULFILL THESE REQUIREMENTS. ALL ASSOCIATED COSTS SHALL BE INCLUDED IN THE CONTRACT PRICE.ALL WELDS USED IN MEMBERS AND CONNECTIONS IN THE SEISMIC LOAD RESISTING SYSTEM AS DEFINED ON THE PLANS SHALL BE MADE WITH A FILLER METAL THAT CAN PRODUCE WELDS THAT HAVE A MINIMUM CHARPY V-NOTCH TOUGHNESS OF 20 FT-LB AT 0 DEGREES FAHRENHEIT AS DETERMINED BY THE APPROPRIATE AWS A5 CLASSIFICATION TEST METHOD OR MANUFACTURER CERTIFICATION.
8. ALL WELDS DESIGNATED AS DEMAND CRITICAL SHALL BE MADE WITH A FILLER METAL THAT CAN PRODUCE WELDS THAT HAVE A MINIMUM CHARPY V-NOTCH TOUGHNESS OF 20 FT-LB AT -20 DEGREES FAHRENHEIT AS DETERMINED BY THE APPROPRIATE AWS A5 CLASSIFICATION TEST METHOD OR MANUFACTURER CERTIFICATION, AND 40 FT-LB AT 70 DEGREES FAHRENHEIT AS DETERMINED BY APPENDIX X OF AISC 341-05 OR OTHER APPROVED METHOD, WHEN THE STEEL FRAME IS NORMALLY ENCLOSED AND MAINTAINED AT A TEMPERATURE OF 50 DEGREES FAHRENHEIT OR HIGHER.
9. SUBMIT SHOP DRAWINGS TO ARCHITECT FOR REVIEW PRIOR TO FABRICATION. SHOP DRAWINGS SHALL INCLUDE ITEMS REQUIRED BY THE SPECIFICATIONS AND THE FOLLOWING:
   - A. DESIGNATION OF THE MEMBERS AND CONNECTIONS THAT ARE PART OF THE SEISMIC LOAD RESISTING SYSTEM
   - B. CONNECTION MATERIAL SPECIFICATIONS AND SIZES
   - C. LOCATIONS OF DEMAND CRITICAL WELDS
   - D. LOCATIONS AND DIMENSIONS OF PROTECTED ZONES
   - E. GUSSET PLATES DRAWN TO SCALE
   - F. WELDING REQUIREMENTS AS SPECIFIED IN APPENDIX W OF AISC 341-05.
10. WHERE CLOSER THAN AISC TOLERANCES ARE NECESSARY, SUCH AS FOR ALIGNMENT OF STEEL STUDS, MULLIONS, GFRC PANELS, ETC., FIELD WELDING WILL BE REQUIRED TO MEET THE NECESSARY TOLERANCES WITH NO ADDITIONAL COSTS TO THE OWNER.
11. USE ONE TYPE OF WELDING ELECTRODE THROUGHOUT ANY ONE CONNECTION.
12. WELDING OF REINFORCING STEEL TO STRUCTURAL STEEL SHALL BE DONE BY STRUCTURAL STEEL SUB-CONTRACTOR.
13. BOLT HOLES IN STEEL SHALL BE 1/16" OVERSIZE UNLESS OTHERWISE NOTED.
14. STRUCTURAL STEEL CONTRACTOR SHALL EXCHANGE SHOP DRAWINGS WITH STEEL DECK SUB-CONTRACTOR FOR COORDINATION.

GROUTED ANCHORS AND DOWELS IN HARDENED CONCRETE
1. GROUT FOR SETTING ANCHORS OR DOWELS IN HARDENED CONCRETE SHALL BE SIMPSON SET-XP (PER ESR-2508), HILTI HIT RE-500SD (PER ESR-2322), OR APPROVED EQUAL.
2. HOLES FOR GROUTED ANCHORS SHALL BE DRILLED WITH ROTARY HAMMER OR OTHER SUITABLE METHODS TO ENSURE EXISTING REINFORCEMENT IS NOT DAMAGED. HOLE DIAMETER SHALL BE AS REQUIRED BY MANUFACTURER. LOCATE EXISTING REINFORCING BARS PRIOR TO DRILLING HOLES. DO NOT DAMAGE EXISTING REINFORCING. METHOD OF LOCATING EXISTING REINFORCING BARS SHALL BE APPROVED BY THE STRUCTURAL ENGINEER. ALL MIS-DRILLED OR UNACCEPTABLE HOLES SHALL BE GROUTED SOLID.
3. JOB TESTING AND INSPECTION: CONTINUOUS SPECIAL INSPECTION OF ALL GROUTED ANCHOR AND DOWEL INSTALLATION IS REQUIRED. TESTING SHALL BE AS FOLLOWS:
   - A. THREADED RODS: TEST FIRST 5 INSTALLED RODS OF EACH SIZE TO TENSION PROOF LOAD SHOWN ON GROUTED ANCHOR SCHEDULE. IF ALL PASS, TEST 5% OF REMAINING RODS. IF ANY ROD FAILS, TEST ALL RODS UNTIL 10 SUCCESSFUL CONSECUTIVE TESTS ARE MADE, THEN RESUME 5% TESTING FREQUENCY. THE LOAD TEST SHALL BE PERFORMED IN THE PRESENCE OF THE PROJECT INSPECTOR.
   - B. HOLDOWN ANCHORS: TEST 100% OF ANCHORS USED TO TENSION PROOF LOAD PER TABLE ON TYPICAL HOLDOWN DETAIL.
   - C. REINFORCING BAR ANCHORS, #5 AND LARGER: TEST PER THREADED ROD REQUIREMENTS ABOVE
   - D. REINFORCING BAR ANCHORS #4 AND SMALLER: NO TESTING REQUIRED. VISUAL OBSERVATION ONLY.

TESTS, INSPECTIONS AND OBSERVATIONS NOTES
1. TESTS AND INSPECTIONS SHALL BE PROVIDED FOR ALL ITEMS AS REQUIRED BY THE CALIFORNIA BUILDING CODE. SEE STATEMENT OF SPECIAL INSPECTIONS FOR REQUIREMENTS.
2. THE OWNER SHALL BE RESPONSIBLE FOR RETAINING AN INDEPENDENT TESTING AND INSPECTION LABORATORY TO PERFORM ALL REQUIRED TESTING AND INSPECTIONS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE TESTING AND INSPECTION LABORATORY WITH CONSTRUCTION SCHEDULES TO ENSURE PROPER COORDINATION OF WORK.
4. IN ADDITION TO SPECIAL INSPECTIONS, THE FOLLOWING SPECIFIED ITEMS SHALL HAVE PERIODIC STRUCTURAL OBSERVATION BY THE STRUCTURAL ENGINEER OF RECORD:
   - A. REINFORCING STEEL
   - B. HOLDOWNS IN WALLS AND CONCRETE
   - C. NAILING OF PLYWOOD ON WALLS, AND ROOFS
   - D. STRUCTURAL STEEL CONSTRUCTION
5. THE CONTRACTOR SHALL NOTIFY THE STRUCTURAL ENGINEER OR INSPECTOR A MINIMUM OF 48 HOURS (EXCLUDING WEEKEND DAYS) PRIOR TO THE TIME OF A REQUIRED INSPECTION.

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GENERAL NOTES

Issue	
2	01/16/2018 ADDENDUM 2

Date: 01/16/2018
Scale: AS NOTED
Design: JML
Drawn: XG, AI
Approved: JML
Job No: 17-005

Drawing Number:
S1.0

SYMBOLS AND ABBREVIATIONS

A/S2.1	SECTION A ON DRAWING S2.1
@	AT
&	AND
°	DEGREE
Ø OR DIA	DIAMETER
#	NUMBER OR POUND
(E)	EXISTING
(N)	NEW
AB	ANCHOR BOLT
AC	ASPHALT CONCRETE
ADDL	ADDITIONAL
ADJ	ADJACENT
AFF	ABOVE FINISH FLOOR
ALT	ALTERNATE
APPROX	APPROXIMATE
ARCH	ARCHITECT OR ARCHITECTURAL
ATTN	ATTENTION
BD	BOARD
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM
BO	BOTTOM OF
BOT	BOTTOM
BS	BOTH SIDES
BTWN	BETWEEN
C	CONTROL JOINT
CBC	CALIFORNIA BUILDING CODE
CJ	CONSTRUCTION JOINT
CL	CENTERLINE
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE OR CONCENTRATED
COND	CONDITION
CONN	CONNECTION
CONT	CONTINUOUS
CP	COMPLETE PENETRATION WELD
CTSK	COUNTERSINK
d	PENNY
D	DEPTH
DBL	DOUBLE
DCW	DEMAND CRITICAL WELD
DEMO	DEMOLISH
DET	DETAIL
DF	DOUGLAS FIR
DIAG	DIAGONAL
DIM(S)	DIMENSION(S)
DJ	DOUBLE JOIST
DL	DEAD LOAD
DN	DOWN
DO	DITTO
DP	DEEP
DTLS	DETAILS
DWG(S)	DRAWING(S)
EA	EACH
EB	EXPANSION BOLT
EE	EACH END
EF	EACH FACE
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
EMBED	EMBEDMENT
EN	EDGE NAILING
ENGR	ENGINEER
EQ	EQUAL
EQUIP	EQUIPMENT
ES	EACH SIDE
EW	EACH WAY
EXC	EXCAVATE
EXT	EXTERIOR
FDN	FOUNDATION
FF	FINISH FLOOR
FIN	FINISH
FLR	FLOOR
FOC	FACE OF CONCRETE
FOS	FACE OF STUD
FS	FAR SIDE
FT	FEET
FTAO	FORCE TRANSFER AROUND OPENING
FTG	FOOTING
GA	GAGE, GAUGE
GALV	GALVANIZED
GB	GRADE BEAM
GLM	GLUED LAMINATED
GYP BD	GYPSUM BOARD
HD	HOLDOWN
HDG	HOT-DIPPED GALVANIZED
HDR	HEADER
HGR	HANGER
HOR	HORIZONTAL
HP	HIGH POINT
HSB	HIGH STRENGTH BOLT
HSS	HOLLOW STEEL SECTION
HT	HEIGHT
ID	INSIDE DIAMETER
IF	INSIDE FACE
INT	INTERIOR
INV	INVERT
JST	JOIST
JT(S)	JOINT(S)
K	KIPS (1000 LBS)
LBS	POUNDS
LG	LONG
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LP	LOW POINT
LSL	TIMBERSTAND LAMINATED STRAND LUMBER
LT	LIGHT
LTWT	LIGHTWEIGHT
LVL	MICROLLAM LAMINATED VENEER LUMBER

MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MECH	MECHANICAL
MFR	MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MTL	METAL
NIC	NOT IN CONTRACT
NOM	NOMINAL
NTS	NOT TO SCALE
NS	NEAR SIDE
OSB	ORIENTED STRAND BOARD
OC	ON CENTER
OD	OUTSIDE DIAMETER
OH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE
QAP	QUALITY ASSURANCE PROGRAM
P#	STEEL PIPE (# = NOMINAL DIAMETER)
PERF	PERFORATED
PDF	POWDER DRIVEN FASTENER
PDP	POWDER DRIVEN PIN
PHD	PREDEFLECTED HOLDOWN
PL	PLATE
PP	PARTIAL PENETRATION WELD
PROP	PROPERTY
PSF	POUNDS PER SQUARE FEET
PSI	POUNDS PER SQUARE INCH
PSL	PARALLAM PARALLEL STRAND LUMBER
PT	POINT
PTDF	PRESSURE TREATED DOUGLAS FIR LUMBER
PTN	PARTITION
PW	STRUCTURAL PLYWOOD
PW EN	PLYWOOD EDGE NAILING
RAD	RADIUS
REF	REFERENCE
RECT	RECTANGULAR
REINF	REINFORCING
REQD	REQUIRED
RET WALL	RETAINING WALL
RW	REDWOOD LUMBER
SAD	SEE ARCHITECTURAL DRAWING OR SEE ARCHITECTURAL DETAIL
SCD	SEE CIVIL/SITE DRAWINGS
SCHED	SCHEDULE
SEC	SECTION
SED	SEE ELECTRICAL DRAWINGS
SHT	SHEET
SHTG	SHEATHING
SIM	SIMILAR
SLD	SEE LANDSCAPE DRAWINGS
SLRS	SEISMIC LOAD RESISTING SYSTEM
SMD	SEE MECHANICAL DRAWINGS OR SEE MECHANICAL DETAIL
SMS	SHEET METAL SCREW
SOG	SLAB ON GRADE
SPD	SEE PLUMBING DRAWINGS
SPEC(S)	SPECIFICATION(S)
SQ	SQUARE
SS	SOLID SAWN
STAG	STAGGERED
STD	STANDARD
STIFF	STIFFENER
STL	STEEL
STRUCT	STRUCTURAL
SW	SHEAR WALL
SWL	SHEAR WALL LENGTH
SYM	SYMMETRICAL
TB	TIE BEAM
T&B	TOP & BOTTOM
TDS	TIEDOWN SYSTEM
T&G	TONGUE & GROOVE
THK	THICK
THRU	THROUGH
TN	TOENAIL
T.O.	TOP OF
TOC	TOP OF CONCRETE
TOF	TOP OF FOOTING
TO PW	TOP OF PLYWOOD
TOS	TOP OF STEEL OR SLAB
TOW	TOP OF WALL
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED
VENT	VENTILATION
VERT	VERTICAL
VIF	VERIFY IN FIELD
W/	WITH
WD	WOOD
WF	WIDE FLANGE
W/O	WITHOUT
WP	WATERPROOF OR WORK POINT
WT	WEIGHT
WWF	WELDED WIRE FABRIC
WWM	WELDED WIRE MESH

CONTINUOUS WOOD MEMBER IN SECTION

NON-CONTINUOUS WOOD MEMBER IN SECTION

NEW STUD WALL IN PLAN
PLYWOOD SHEAR WALL MARK

SEE SHEAR WALL SCHEDULE
DENOTES MINIMUM LENGTH OF WALL
(SAD FOR ACTUAL LENGTH)

HD — SIMPSON STRONG-TIE HOLDOWN TO 6x6 POST

NEW FOUNDATION CONCRETE IN PLAN

SCHEDULE OF SPECIAL INSPECTION SERVICES AND STRUCTURAL OBSERVATIONS

THIS SCHEDULE IS INTENDED TO MEET SECTIONS 1704 AND 1705 OF THE CALIFORNIA BUILDING CODE.
THIS TABLE IS IN ADDITION TO ALL OTHER SPECIAL INSPECTIONS LISTED AND DOES NOT SUPERSEDE ANY CODE OR OTHER SPECIFIED REQUIREMENTS ON THESE DRAWINGS. SEE STATEMENT OF SPECIAL INSPECTIONS FOR ADDITIONAL REQUIREMENTS.

DESIGNATED SYSTEM AND CODE REFERENCE	VERIFICATIONS AND SPECIAL INSPECTIONS	FREQUENCY OF SPECIAL VERIFICATION/ INSPECTION	REPORTS REQUIRED	SERVICE OR SPECIAL INSPECTION	FREQUENCY OF TESTING	REPORTS REQUIRED	STRUCTURAL OBSERVATION TO BE PERFORMED BY SEOR	REPORTS REQUIRED
GENERAL 1704.2.5	INSPECT FABRICATOR'S QUALITY CONTROL	NA	NA	NA	NA	NA		
STEEL 1705.2	VERIFICATION OF MATERIALS FOR HIGH-STRENGTH BOLTS	EACH SUBMITTAL	PERIODIC AND FINAL	REVIEW MATERIAL MARKINGS AND CERTIFICATES OF COMPLIANCE	NA	YES		
	INSPECTION OF HIGH-STRENGTH BOLTS	PERIODIC	PERIODIC AND FINAL	NA	NA	NA		
	VERIFICATION OF MATERIALS FOR STRUCTURAL STEEL	EACH SUBMITTAL	PERIODIC AND FINAL	REVIEW IDENTIFICATION MARKINGS AND CERTIFIED MILL TESTS	NA	NA		
	VERIFICATION OF WELD FILLER MATERIALS	PERIODIC AND EACH SUBMITTAL	PERIODIC AND FINAL	REVIEW CERTIFICATE OF COMPLIANCE AND FIELD VERIFICATION	NA	NA		
	INSPECTION OF WELDING AT STRUCTURAL STEEL:							
	A. COMPLETE AND PARTIAL PENETRATION GROOVE WELDS	CONTINUOUS	DAILY AND FINAL	SHOP AND FIELD INSPECTION	SHOP AND FIELD TESTING: ULTRASONICALLY TEST FOR DISCONTINUITIES BEHIND AND ADJACENT TO WELDS WITH BASE METAL THICKER THAN 1.5 INCHES WHERE SUBJECT TO THROUGH-THICKNESS WELD SHRINKAGE STRAINS.	EACH OCCURRENCE	PER TEST		
	B. MULTIPASS FILLET WELDS	CONTINUOUS	DAILY AND FINAL	SHOP AND FIELD INSPECTION				
	C. SINGLE-PASS FILLET WELDS > 5/16"	CONTINUOUS	DAILY AND FINAL	SHOP AND FIELD INSPECTION				
	D. SINGLE-PASS FILLET WELDS ≤ 5/16"	PERIODIC	PERIODIC AND FINAL	SHOP AND FIELD INSPECTION	NA	NA		
	INSPECTION OF WELDING AT REINFORCING STEEL:							
CONCRETE 1705.3	REVIEW REINFORCING MILL TEST REPORTS	EACH SUBMITTAL	PERIODIC AND FINAL	FIELD REVIEW	NA	NA		
	VERIFY CONCRETE MIX	PERIODIC	PERIODIC AND FINAL	REVIEW SUBMITTALS	NA	NA		
	TEST CONCRETE	CONTINUOUS	DAILY AND FINAL	STRENGTH, SLUMP, AIR CONTENT, TEMPERATURE	PER BATCH	PER TEST		
	INSPECT CONCRETE PLACEMENT	CONTINUOUS	DAILY AND FINAL	FIELD REVIEW	NA	NA		
	INSPECT CONCRETE CURING OPERATIONS	PERIODIC	PERIODIC AND FINAL	FIELD REVIEW	NA	NA		
	INSPECT ANCHORS INSTALLED IN HARDENED CONCRETE	PERIODIC	PERIODIC	FIELD INSPECTION	PER GENERAL NOTES	PER TEST		
	INSPECT CAST-IN-PLACE BOLTS PRIOR TO AND DURING PLACEMENT OF CONCRETE	CONTINUOUS	DAILY AND FINAL	FIELD INSPECTION	NA	NA	REPRESENTATIVE SAMPLE LAYOUT OF CAST-IN-PLACE BOLTS	PER VISIT
SOILS 1705.6	VERIFICATION OF MATERIALS BELOW FOOTINGS OF DESIRED BEARING CAPACITY	PERIODIC	PERIODIC AND FINAL	FIELD INSPECTION	NA	NA	OBSERVATION TO BE PERFORMED BY THE GEOTECHNICAL ENGINEER	
	VERIFICATION OF EXCAVATIONS	PERIODIC	PERIODIC AND FINAL	FIELD INSPECTION	NA	NA		
	VERIFICATION OF MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF CONTROLLED FILL	CONTINUOUS	DAILY AND FINAL	FIELD INSPECTION	NA	NA		
	VERIFICATION OF SUBGRADE PREPARATION	PERIODIC	PERIODIC AND FINAL	FIELD INSPECTION				
	INSPECT NAILING, BOLTING, ANCHORING, AND OTHER FASTENING OF COMPONENTS WITHIN THE SEISMIC-FORCE-RESISTING SYSTEM, INCLUDING:	PERIODIC	PERIODIC AND FINAL	FIELD INSPECTION	NA	NA	REPRESENTATIVE SAMPLE	PER VISIT
	A) WOOD SHEAR WALLS							
	B) WOOD DIAPHRAGMS							
	C) DRAG STRUTS							
	D) SHEAR PANELS							
	E) HOLD-DOWNS							

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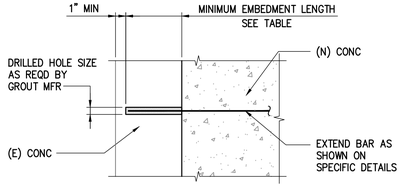
SYMBOLS & ABBREVIATIONS AND SPECIAL INSPECTION FORM

Issue	
1	01/16/2018 ADDENDUM 2
2	

Date: 01/16/2018
Scale: AS NOTED
Design: JML
Drawn: XG, AI
Approved: JML
Job No: 17-005

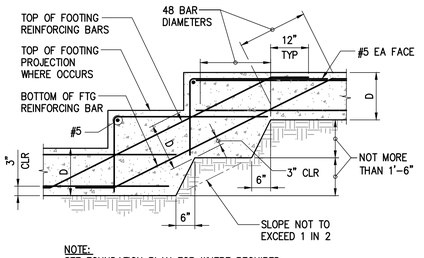
Drawing Number:
SI.1



BAR SIZE	THREADED ROD SIZE	MIN EMBEDMENT LENGTH (1), (2)	TENSION PROOF LOAD (LBS)	
			REINFORCING BAR	THREADED ROD
#3	⅜"ø	3½"	–	2,500
#4	½"ø	4¼"	–	3,781
#5	⅝"ø	5"	5,094	5,094
#6	¾"ø	6¾"	6,531	6,531
#7	⅞"ø	7¾"	6,563	6,563
#8	1"ø	9"	9,469	9,469
#10	1–1/4"ø	10"	16,125	16,125

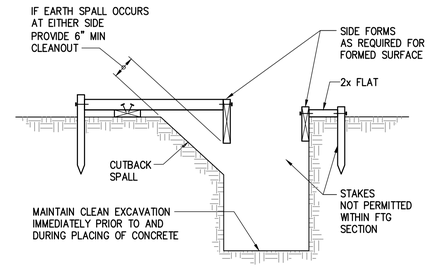
NOTES:
1. EMBEDMENT LENGTHS SHOWN ON SPECIFIC DETAILS SUPERCEDE SCHEDULE.
2. ANCHOR EMBEDMENT INTO WALLS AND SLABS SHALL NOT EXCEED THICKNESS (IN DIRECTION OF DRILLING) MINUS ONE INCH.
3. SEE GENERAL NOTES FOR GROUT REQUIREMENTS. SUBMIT GROUT TECHNICAL INFORMATION TO STRUCTURAL ENGINEER FOR APPROVAL.
4. THREADED RODS SHALL CONFORM TO ASTM F1554 GRADE 36.
5. TENSION PROOF LOAD IS THE LESSER OF 80% OF THE YIELD STRENGTH AND 1.25ϕNn PER CBC CHAPTER "A" REQUIREMENTS FOR 2500 PSI CONCRETE.
6. SEE TYPICAL HOLDOWN DETAIL FOR TEST PROOF LOADING.

10 S1.2 GROUTED ANCHOR SCHEDULE
NTS

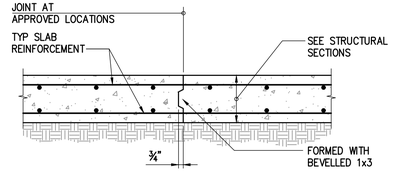


NOTE:
SEE FOUNDATION PLAN FOR WHERE REQUIRED OR AS REQUIRED DUE TO FIELD CONDITIONS.

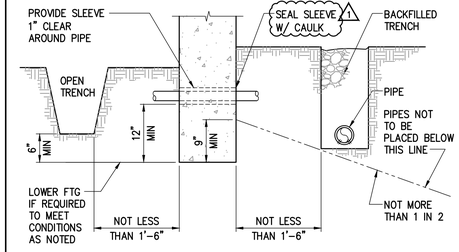
5 S1.2 TYPICAL STEPPED FOOTING
NTS



1 S1.2 TRENCHED FOOTING DETAIL
APPLICABLE WHERE SIDE FORMS CAN BE OMITTED AND APPROVED BY THE ARCHITECT
NTS

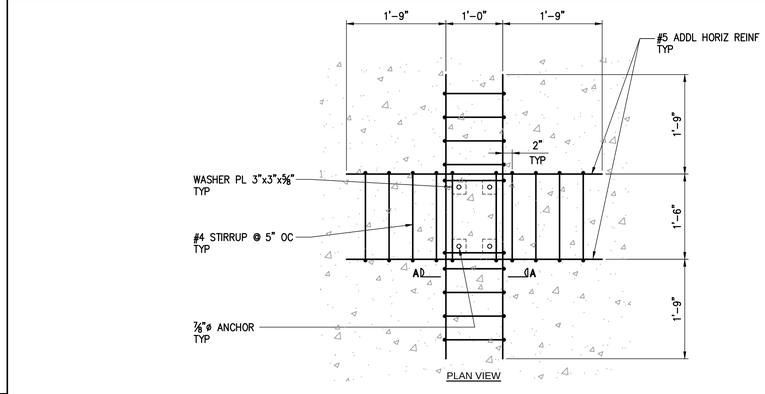


6 S1.2 TYPICAL CONSTRUCTION JOINT (C) AT CONCRETE MAT
NTS

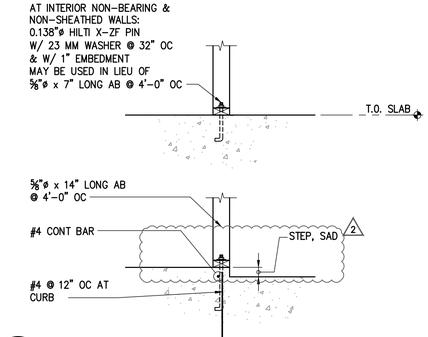


NOTES:
1. DEPTHS OF FTGS MAY BE DETERMINED BY LOCATIONS OF PIPES.
2. GENERAL CONTRACTOR SHALL CONSULT WITH MECH CONTRACTOR TO DETERMINE EXACT DEPTH AND LOCATIONS OF PIPES.
3. NO PIPES SHALL PASS UNDER FOOTINGS.

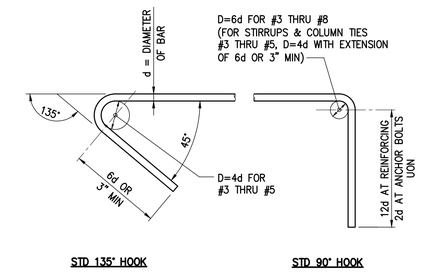
2 S1.2 RELATION OF PIPES & TRENCHES TO SPREAD FOOTING
NTS



16 S1.2 MAT REINFORCING AT HSS HOLDOWN COLUMNS
3/4" = 1'-0"



7 S1.2 TYP INTERIOR STUD WALLS ON CONCRETE SLAB / FILL
NTS



3 S1.2 TYPICAL REINFORCING BAR AND ANCHOR BOLT HOOK
NTS

CONCRETE STRENGTH PSI	BAR TYPE	BAR SIZE																			
		#3		#4		#5		#6		#7		#8		#9		#10		#11			
		CLASS		CLASS		CLASS		CLASS		CLASS		CLASS		CLASS		CLASS		CLASS			
		A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B		
2500	TOP BAR	24	31	32	41	39	51	47	61	69	89	78	102	88	115	100	129	110	143		
	ALL OTHER BARS	18	24	24	32	30	39	36	47	53	69	60	78	68	88	77	100	85	110		
3000	TOP BAR	22	28	29	37	36	47	43	56	63	81	72	93	81	105	91	118	101	131		
	ALL OTHER BARS	17	22	22	29	28	36	33	43	48	63	55	72	62	81	70	91	78	101		
4000	TOP BAR	19	24	25	33	31	41	37	49	54	71	62	81	70	91	79	102	87	113		
	ALL OTHER BARS	15	19	19	25	24	31	29	37	42	54	48	62	54	70	61	79	67	87		
5000	TOP BAR	17	22	23	29	28	36	34	43	49	63	56	72	63	81	70	92	78	102		
	ALL OTHER BARS	13	17	17	23	22	28	26	34	38	49	43	56	48	63	54	70	60	78		

NOTES:
1. SPLICE LENGTH IN INCHES.
2. USE CLASS B FOR ALL LAP SPLICES EXCEPT CLASS A MAY BE USED FOR NON–STRUCTURAL SLABS ON GRADE. TOP BARS = HORIZONTAL BARS (OTHER THAN IN WALLS) PLACED WITH MORE THAN 12" OF FRESH CONCRETE CAST BELOW BARS.
3. TABLE IS BASED UPON MINIMUM CLEAR COVER GREATER THAN ONE BAR DIAMETER AND MINIMUM CLEAR SPACING GREATER THAN TWO BAR DIAMETERS. WHERE EITHER OF THESE REQUIREMENTS IS NOT MET, INCREASE LAP LENGTH BY 50%.

8 S1.2 REINFORCING BAR LAP SPLICE SCHEDULE IN CONCRETE

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CALIFORNIA

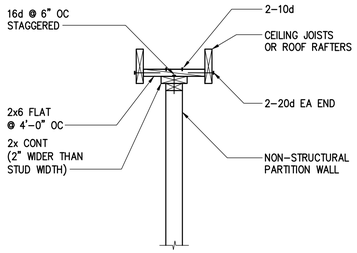
OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

TYPICAL CONCRETE DETAILS

Issue	Date
2	01/16/2018 ADDENDUM 2

Date: 01/16/2018
Scale: AS NOTED
Design: JML
Drawn: XG, AI
Approved: JML
Job No: 17-005

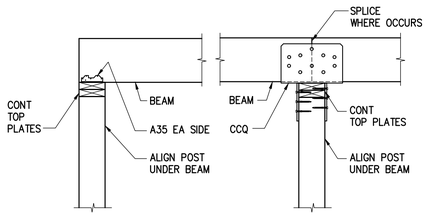
Drawing Number:
S1.2



PARTITION WALL PARALLEL TO FRAMING

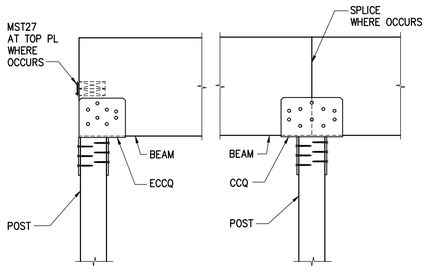
17 S1.3 TYPICAL SECTION AT PARTITION WALL

NTS



END CONDITION AT WALL

AT INTERIOR WALL



END CONDITION AT WALL

AT INTERIOR POST CONDITION

19 S1.3 TYPICAL BEAM TO POST

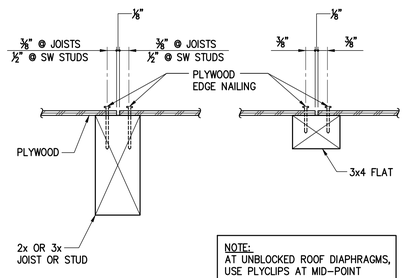
NTS

MARK	½" STRUCT I SHEATHING	CONNECTIONS NOTED ON DETAILS						REMARKS
		ⓐ NAILING		ⓑ	ⓒ	ⓓ	ⓔ	
		EDGES	FIELD	2x SOLE PLATE CONNECTION	TOP PLATE CONNECTION	JOIST OR BLKG	3x PTDF SILL PL W/ ANCHOR BOLT SIZE & SPACING	MAX ALLOWABLE SHEAR CAPACITY (plf)	
A	1 SIDE	10d @ 6" OC	10d @ 12" OC	16d @ 6" OC STAGGERED	A35 @ 16" OC	3x SS OR 1¾" LSL	⅝"ø @ 48" OC	340	
B	1 SIDE	10d @ 4" OC	10d @ 12" OC	16d @ 4" OC STAGGERED	A35 @ 8" OC	3x SS OR 1¾" LSL	⅝"ø @ 32" OC	510	USE 3x STUDS @ SHEATHING PANEL JTS
	2 SIDES	10d @ 4" OC	10d @ 12" OC	¼"ø x 6" SDS SCREWS @ 4" OC STAGGERED	A35 @ 6" OC	3x SS OR 3½" LSL	⅝"ø @ 16" OC	1020	USE 3x STUDS @ SHEATHING PANEL JTS
C	1 SIDE	10d @ 3" OC	10d @ 12" OC	16d @ 3" OC STAGGERED	A35 @ 8" OC	3x SS OR 1¾" LSL	⅝"ø @ 16" OC	665	USE 3x STUDS @ SHEATHING PANEL JTS
	2 SIDES	10d @ 3" OC	10d @ 12" OC	¼"ø x 6" SDS SCREWS @ 3" OC STAGGERED	A23 @ 4" OC	3x SS OR 3½" LSL	⅝"ø @ 8" OC	1330	USE 3x STUDS @ SHEATHING PANEL JTS
D	1 SIDE	10d @ 2" OC	10d @ 12" OC	20d @ 3" OC STAGGERED	A35 @ 8" OC	3x SS OR 1¾" LSL	⅝"ø @ 16" OC	870	USE 3x STUDS @ SHEATHING PANEL JTS
	2 SIDES	10d @ 2" OC	10d @ 12" OC	3 ROWS ¼"ø x 6" SDS SCREWS @ 6" OC STAGGERED	A23 @ 3½" OC	3x SS OR 3½" LSL	⅝"ø @ 8" OC	1740	USE 3x STUDS @ SHEATHING PANEL JTS

NOTES
1. ALL EXTERIOR WALLS SHALL BE SHEATHED WITH SHEAR WALL MARK (A) UON.
2. DO NOT LOCATE SHEATHING JOINTS ON THE SAME STUD WHERE SHEATHING OCCURS ON BOTH SIDES, UNLESS 3x STUDS ARE USED.
3. PROVIDE 2 ROWS OF SHEATHING EDGE NAILING (EN) FULL HEIGHT OF ALL POSTS WITH HOLDOWNS.
4. SHEATHING AT SHEAR WALLS SHALL EXTEND FULL LENGTH AND HEIGHT OF WALL.
5. USE 3x SILL PLATES AT ALL SHEAR WALLS AND EXTERIOR WALLS.
6. ANCHOR BOLTS SHALL HAVE 7" MINIMUM EMBEDMENT. EMBEDDED END SHALL HAVE 6 DIAMETER BEND WITH 2 DIAMETER EXTENSION PAST CENTER OF BEND.
7. USE GROUTED ANCHORS WITH 7" MINIMUM EMBEDMENT AT EXISTING CONCRETE CONDITIONS.
8. SOLE PLATE NAILING SHALL BE STAGGERED.
9. ANCHOR BOLTS (E) SHALL HAVE CUT WASHER OVER SIMPSON BPS ⅝–6 BEARING PLATE. AT 6" SILL PLATE, ORIENT LONG DIMENSION OF BEARING PLATE PERPENDICULAR TO WALL.
10. NAILS PENETRATING PRESSURE–PRESERVATIVE TREATED OR FIRE TREATED WOOD SHALL BE HOT–DIPPED GALVANIZED PER ASTM A153, CLASS D AND SDS SCREWS SHALL BE STAINLESS STEEL OR HAVE DOUBLE BARRIER COATING.
11. ANCHOR BOLTS SHALL BE LOCATED A MINIMUM OF 1¾" FROM EDGE OF THE CONCRETE PERPENDICULAR TO THE LENGTH OF THE WOOD SILL PLATE.
12. ANCHOR BOLTS SHALL BE LOCATED A MINIMUM OF 9½" FROM EDGE OF THE CONCRETE PARALLEL TO THE LENGTH OF THE WOOD SILL PLATE.
13. LTP5 MAY BE SUBSTITUTED FOR A35.

14 S1.3 SHEATHING SHEAR WALL SCHEDULE

WOOD STRUCTURAL PANEL



NOTE:
AT UNBLOCKED ROOF DIAPHRAGMS, USE PLYCLIPS AT MID–POINT BETWEEN SUPPORTS OR USE T&G PANEL EDGES.

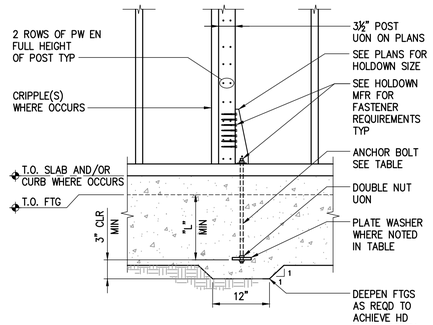
15 S1.3 TYPICAL PLYWOOD PANEL EDGE DETAIL

NTS

PARTITION WALL PERPENDICULAR TO FRAMING

16 S1.3 TYPICAL SECTION AT PARTITION WALL

NTS



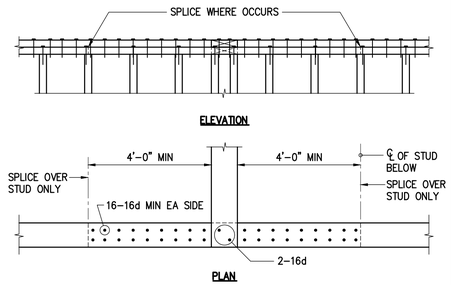
HOLDOWN	"L" MIN	ANCHOR BOLT
HDU2 HDU4 HDU5	7"	PAB5 OR ⅝"ø AB W/ 1½"x1½"x⅜" PLATE WASHER
HDU8	11"	PAB7 OR ⅞"ø AB W/ 2¼"x2¼"x⅜" PLATE WASHER
HDU11 HDU14	12"	PAB8 OR 1"ø AB W/ 2½"x2½"x⅜" PLATE WASHER
HD19	14"	PAB9 OR 1"ø AB W/ 2¾"x2¾"x⅜" PLATE WASHER

NOTES:
1. ANCHOR BOLT SHALL BE IN ACCORDANCE WITH ASTM F1554 GRADE 36, A36 OR A307.
2. PW SHEATHING NOT SHOWN FOR CLARITY OF DETAIL

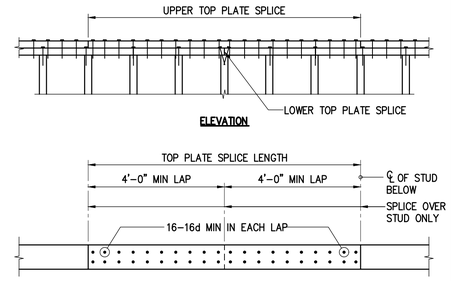
12 S1.3 TYPICAL HOLDOWN DETAIL

(ONE STORY HOLDOWN)

NTS



AT INTERSECTING WALLS

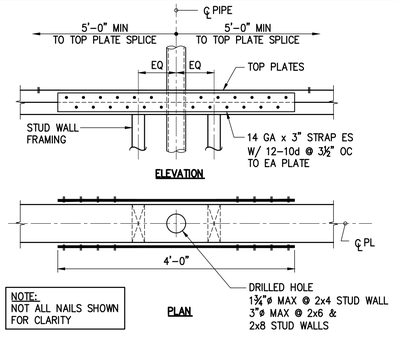


TYPICAL CONDITION

6 S1.3 TYPICAL TOP PLATE SPLICE

UNLESS OTHERWISE NOTED

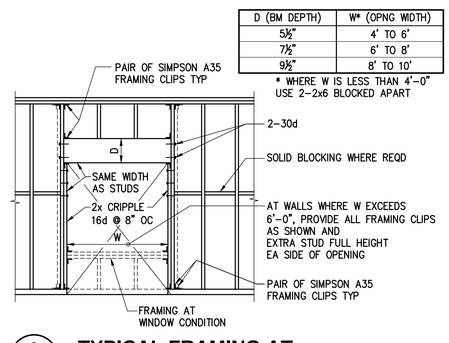
NTS



NOTE:
NOT ALL NAILS SHOWN FOR CLARITY

7 S1.3 PIPE PENETRATION AT STUD WALL TOP PLATES

NTS



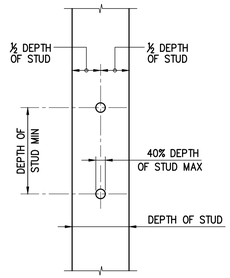
D (BM DEPTH)	W* (OPNG WIDTH)
5½"	4' TO 6'
7½"	6' TO 8'
9½"	8' TO 10'

* WHERE W IS LESS THAN 4'–0" USE 2–2x6 BLOCKED APART

8 S1.3 TYPICAL FRAMING AT WINDOW / DOOR OPENING

(UNLESS OTHERWISE NOTED)

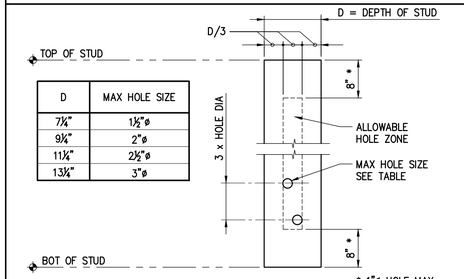
NTS



NOTE:
1. NOTCHING OF STUDS NOT PERMITTED EXCEPT AS DETAILED.
2. SEE CARPENTRY NOTES FOR PIPE & HOLES IN SHEAR WALL & BEARING WALL FRAMING.

1 S1.3 HOLES IN STUDS

NTS



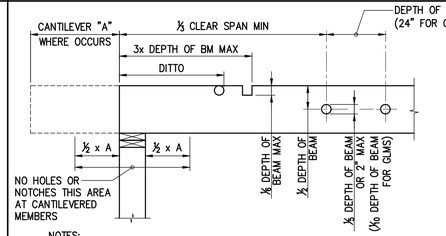
D	MAX HOLE SIZE
7¼"	1½"ø
9¼"	2"ø
11¼"	2½"ø
13¼"	3"ø

NOTE:
1. NOTCHING OF STUDS NOT PERMITTED EXCEPT AS DETAILED.
2. SEE CARPENTRY NOTES FOR PIPE & HOLES IN SHEAR WALL & BEARING WALL FRAMING.

* 1"ø HOLE MAX FOR BOLTED CONNECTIONS NEAR MEMBER END

2 S1.3 HOLES IN TIMBERSTRAND STUDS

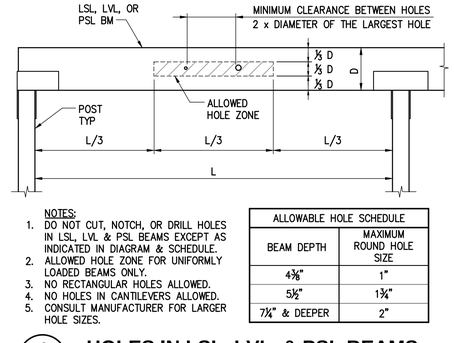
NTS



NOTES:
1. NO HOLES OR NOTCHES PERMITTED IN BOTTOM OF BEAMS OR JOISTS.
2. NO HOLES OR NOTCHES PERMITTED WHERE DEPTH OF BEAM IS 5½" OR LESS (12" FOR GLMS).
3. VERTICAL HOLES ARE NOT PERMITTED.
4. APPLY PRESERVATIVE TO HOLES IN PRESSURE TREATED WOOD.
5. THIS DETAIL APPLIES TO SOLID SAWN AND GLM WOOD MEMBERS ONLY. FOR OTHER MANUFACTURED WOOD PRODUCTS, NOTCH AND DRILL PER MANUFACTURER'S PUBLISHED INSTRUCTIONS AND LIMITATIONS.

3 S1.3 HOLES AND NOTCHES IN BEAM AND JOISTS

NTS



NOTES:
1. DO NOT CUT, NOTCH, OR DRILL HOLES IN LSL, LVL & PSL BEAMS EXCEPT AS INDICATED IN DIAGRAM & SCHEDULE.
2. ALLOWED HOLE ZONE FOR UNIFORMLY LOADED BEAMS ONLY.
3. NO RECTANGULAR HOLES ALLOWED.
4. NO HOLES IN CANTILEVERS ALLOWED.
5. CONSULT MANUFACTURER FOR LARGER HOLE SIZES.

ALLOWABLE HOLE SCHEDULE	
BEAM DEPTH	MAXIMUM ROUND HOLE SIZE
4⅜"	1"
5½"	1¾"
7¼" & DEEPER	2"

4 S1.3 HOLES IN LSL, LVL, & PSL BEAMS

NTS

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REGISTERED PROFESSIONAL ENGINEER JASON M. LEE No. 54980 STRUCTURAL STATE OF CALIFORNIA

OAKLEY CALIFORNIA

OAKLEY RECREATION CENTER
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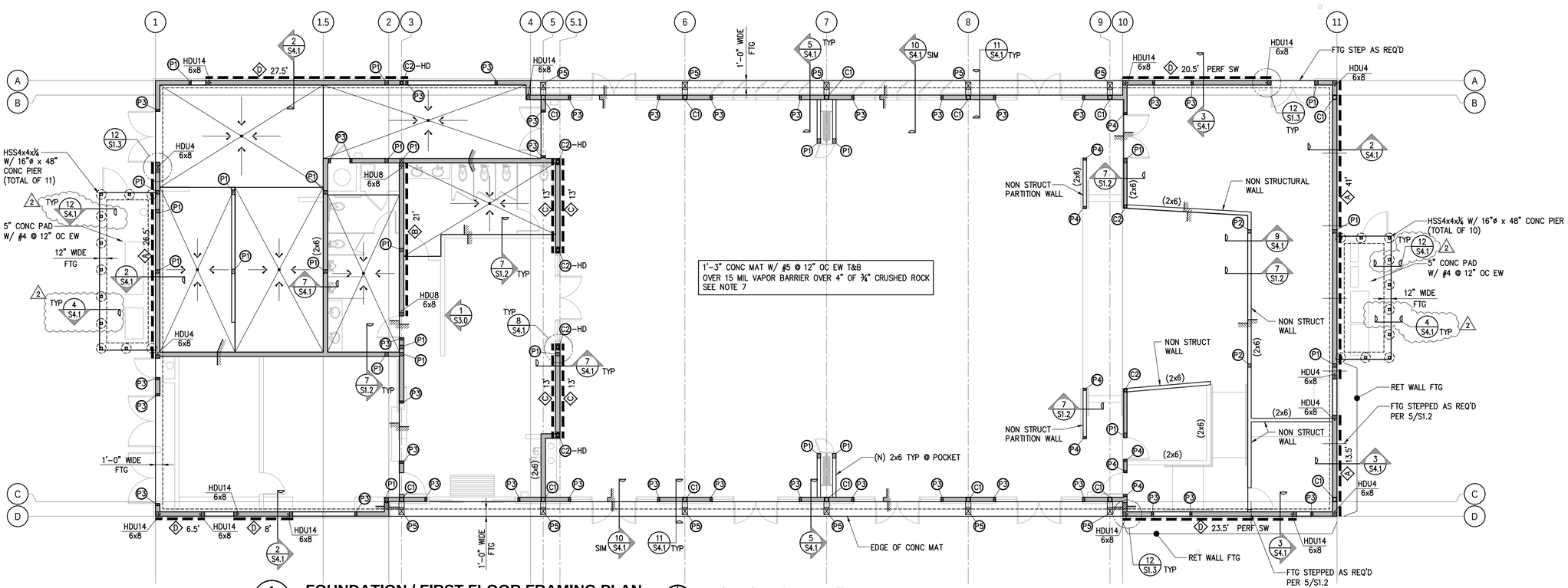
TYPICAL WOOD DETAILS

Issue	Date	Scale: AS NOTED	Design: JML	Drawn: XG, AI	Approved: JML	Job No: 17–005
2	01/16/2018 ADDENDUM 2					
	Date: 01/16/2018					

Drawing Number: S1.3



1 S2.0 FOUNDATION / FIRST FLOOR FRAMING PLAN

1/8"=1'-0"

N 0 8' 16' 32'

COLUMN / POST SCHEDULE		
MARK	SIZE	REMARK
C1	HSS7x7x¼	
C2	HSS5x5x¼	
P1	6x8	
P2	6x6 DF-L	
P3	4x8	
P4	4x6	
P5	8¾"x12"	ALASKAN YELLOW CEDAR (AYC) NON STRUCTURAL CANTED COLUMN

SHEET NOTES:

1. SEE GENERAL NOTES AND TYPICAL DETAILS FOR INFORMATION NOT SHOWN HEREIN.
2. ◇ DENOTES STRUCTURAL PANEL SHEAR WALL.
3. -HD DENOTES HOLDOWN POST W/ NAILER PER 8/S4.01, BASE PLATE AND MAT REINFORCING PER 16/S1.02.
4. SEE ARCHITECTURAL DRAWINGS A2.6 FOR CURB LOCATIONS AND DEPRESSED SLAB CONDITION.
5. (2x6) DENOTES ALTERNATE WALL THICKNESS AT 24" OC
6. FTAO DENOTES FORCE TRANSFER AROUND OPENING.
7. CRUSHED ROCK SHOULD CONTAIN LESS THAN 5 PERCENT BY WEIGHT OF MATERIAL PASSING THE NO. 4 SIEVE.

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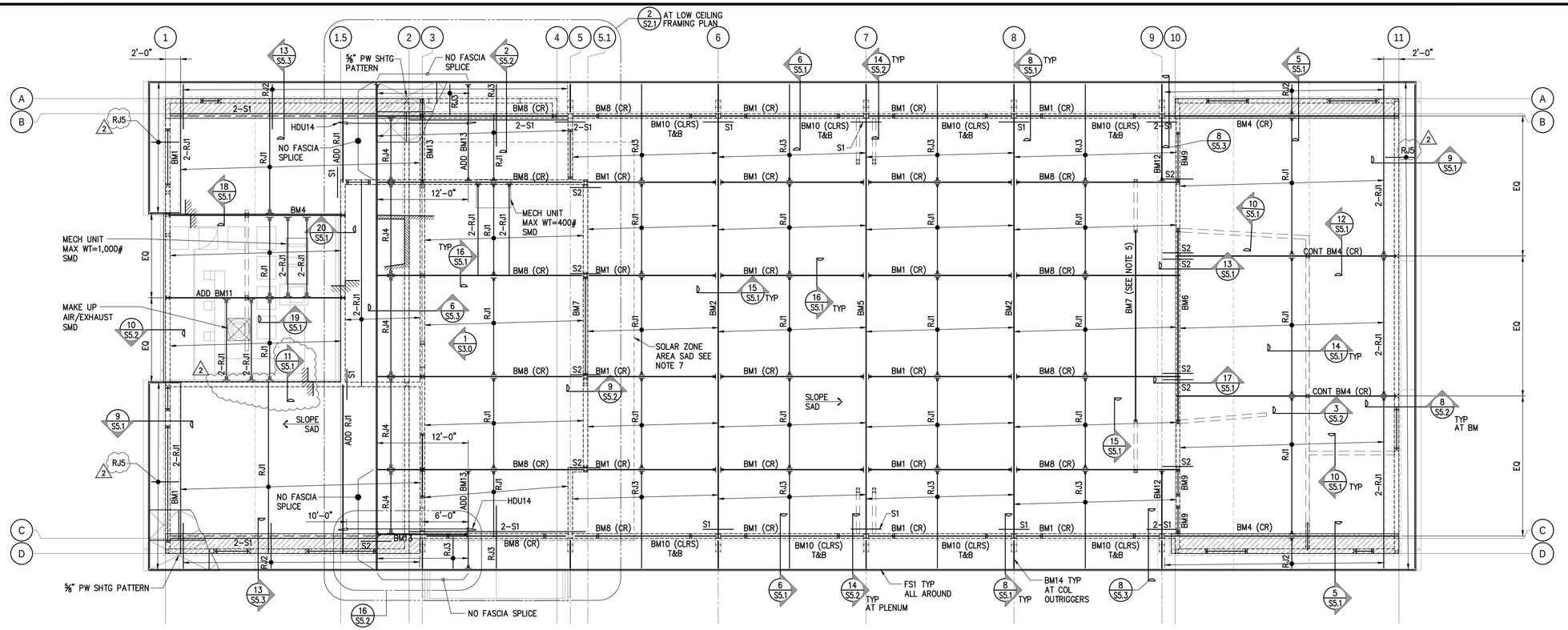
OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

FOUNDATION/FIRST FLOOR FRAMING PLAN

Issue	
01/16/2018 ADDENDUM 2	2

Date: 01/16/2018
Scale: AS NOTED
Design: JML
Drawn: XG, AI
Approved: JML
Job No: 17-005

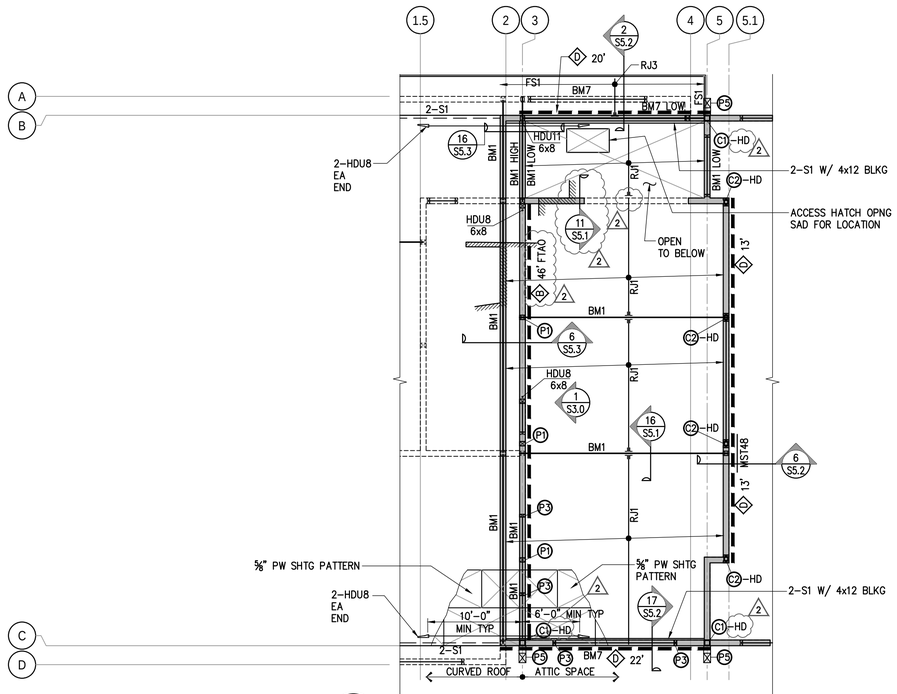
Drawing Number:
S2.0



1 S2.1 ROOF FRAMING PLAN

1/8"=1'-0"

N 0 8' 16' 32'



2 S2.1 LOW CEILING FRAMING PLAN

1/8"=1'-0"

COLUMN / POST SCHEDULE		
MARK	SIZE	REMARK
C1	HSS7x7x¼	
C2	HSS5x5x¼	
P1	6x8	
P2	6x6 DF-L	
P3	4x8	
P4	4x6	
P5	8¾"x12"	ALASKAN YELLOW CEDAR (AYC) NON STRUCTURAL CANTED COLUMN

BEAM AND JOIST SCHEDULE			
MARK	SIZE	HANGER	REMARK
RJ1	11⅞" TJI210 @ 24" OC	IUS2.06/11.88	
RJ2	2x6 OUTRIGGERS @ 24" OC		
RJ3	4x6 OUTRIGGERS @ 24" OC		
RJ4	5¼"x5½" PSL @ 16" OC	HU66TF	
RJ5	1¾"x7¼" LSL @ 24" OC		
BM1	5⅛"x12" GLM (CR)	HUCQ5.25/11-SDS	CURVED WITH INSIDE RADIUS = 543'-0"
BM2	8¾"x34½" GLM		
BM3	5⅛"x10½" GLM		CURVED
BM4	5⅛"x18" GLM	HGUS5.25/10	CURVED
BM5	8¾"x54" GLM		SHAPED TO RADIUS OF ROOF WHERE NOTED
BM6	5⅛"x21" GLM	HUCQ5.25/11-SDS	
BM7	5⅛"x12" GLM		
BM8	8¾"x12" GLM		CURVED WITH INSIDE RADIUS = 543'-0"
BM9	6x8		
BM10	HSS6x6x5/16		
BM11	5¼"x11⅞" PSL		
BM12	7"x7" MINIMUM DEPTH SHAPED PSL		
BM13	5¼"x5½" PSL		
BM14	8¾"x18" GLM		ALASKAN YELLOW CEDAR (AYC)
FS1	1¾"x5½" LVL		

SHEET NOTES:

1. SEE GENERAL NOTES AND TYPICAL DETAILS FOR INFORMATION NOT SHOWN HEREIN.
2. (CR) DENOTES CURVED BEAM.
3. HATCHED AREA DENOTES BLOCK DIAPHRAGM WITH 10d @ 2" OC PW EDGE NAILING AND 3x BLOCKING
4. (CLRS) DENOTES CLERESTORY MEMBERS.
5. THIS IS A NON STRUCTURAL MEMBER.
6. S1 DENOTES CMST12 STRAP
   S2 DENOTES CMSTC16 STRAP
7. SOLAR ZONE IS DESIGNED FOR ADDITIONAL 4 PSF DEAD LOAD FOR SOLAR PANEL LOADING. SEE ARCHITECTURAL DRAWINGS FOR ADDITIONAL INFORMATION.
8. FOR HOLES IN BEAMS FOR PIPE AND CONDUIT PENETRATIONS REFER TO DETAILS 3/S1.3 AND 4/S1.3.
9. –HD DENOTES HOLDOWN POST W/ NAILER PER 8/S4.01, BASE PLATE AND MAT REINFORCING PER 16/S1.02.

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OAKLEY CALIFORNIA

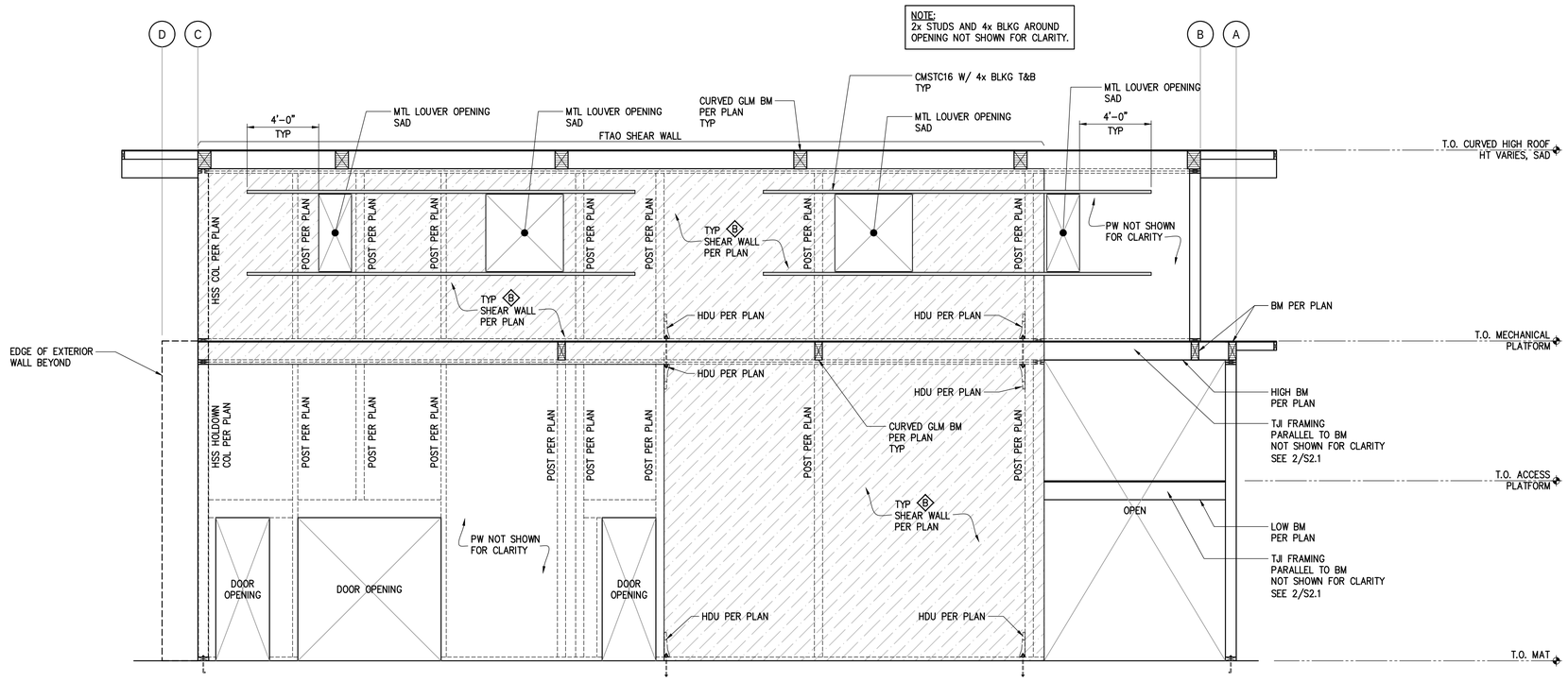
OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

ROOF FRAMING PLAN

Issue	
1	01/16/2018 ADDENDUM 2

Date: 01/16/2018
Scale: AS NOTED
Design: JML
Drawn: XG, AI
Approved: JML
Job No: 17-005

Drawing Number:
S2.1



1 S3.0 **ELEVATION**

1/4"=1'-0"

0 2' 4' 8'

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OAKLEY CONTRA COSTA COUNTY CALIFORNIA

ELEVATION

Issue	
2	01/16/2018 ADDENDUM 2

Date: 01/16/2018
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Job No: 17-005

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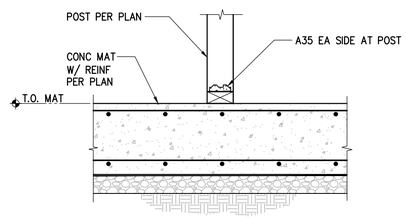
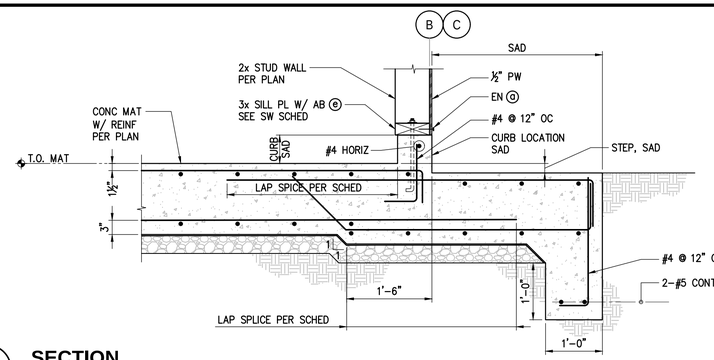
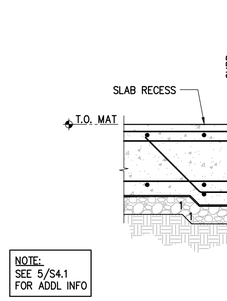
S3.0



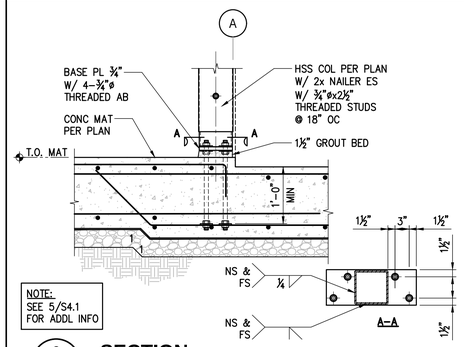
9 S4.1 **SECTION** 3/4" = 1'-0"



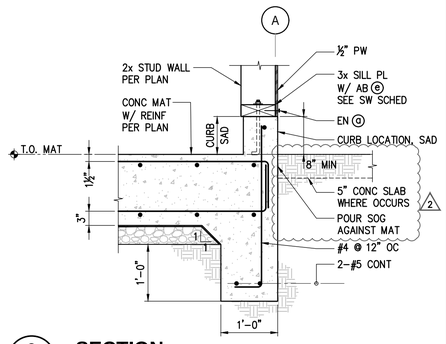
5 S4.1 **SECTION** 3/4" = 1'-0"



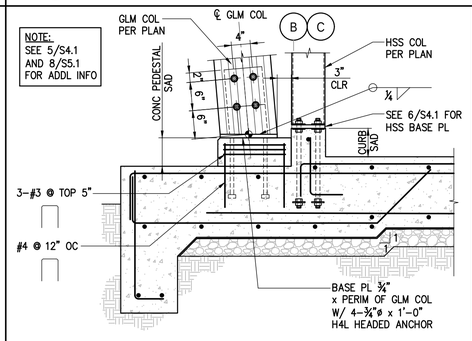
10 S4.1 **SECTION** 3/4" = 1'-0"



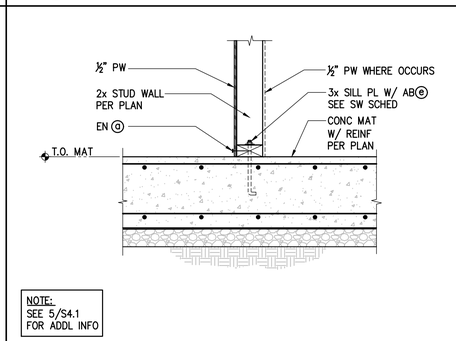
6 S4.1 **SECTION** 3/4" = 1'-0"



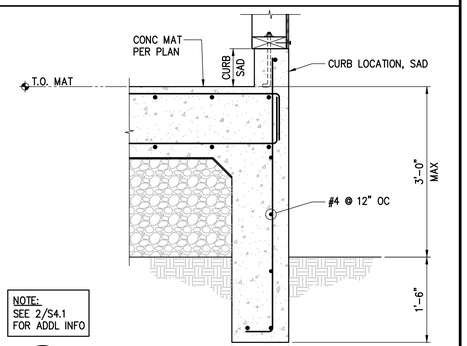
2 S4.1 **SECTION** 3/4" = 1'-0"



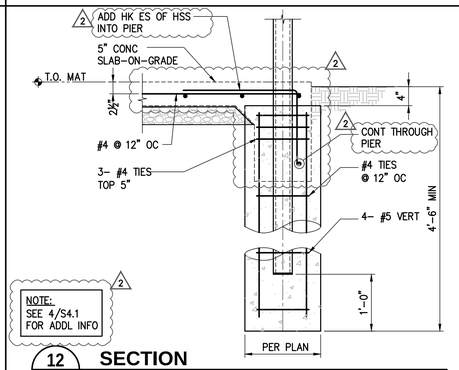
11 S4.1 **SECTION** 3/4" = 1'-0"



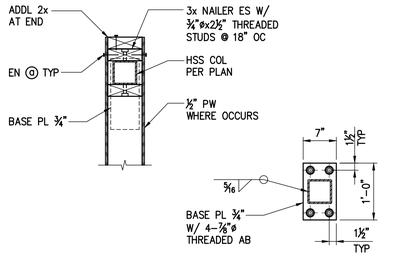
7 S4.1 **SECTION** 3/4" = 1'-0"



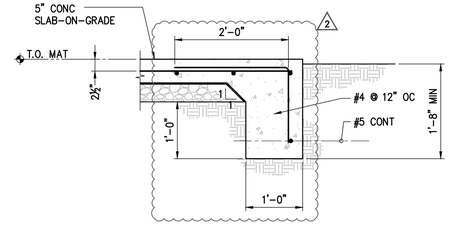
3 S4.1 **SECTION** 3/4" = 1'-0"



12 S4.1 **SECTION** 3/4" = 1'-0"



8 S4.1 **PLAN DETAIL AT HSS HOLDOWN COLUMN** 3/4" = 1'-0"



4 S4.1 **SECTION** 3/4" = 1'-0"

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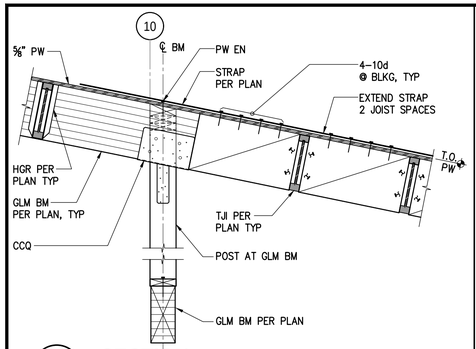
CONCRETE DETAILS

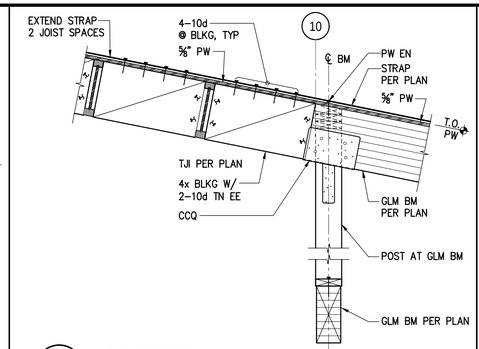
Issue	
2	01/16/2018 ADDENDUM 2

Date: 01/16/2018
Scale: AS NOTED
Design: JML
Drawn: XG, AI
Approved: JML
Job No: 17-005

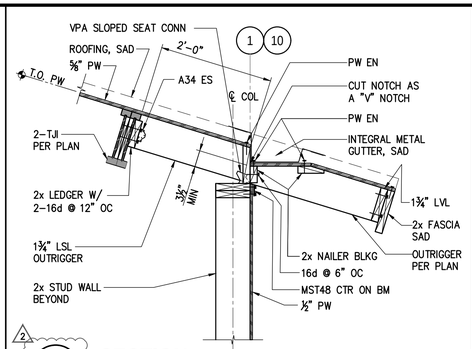
Drawing Number:
S4.1



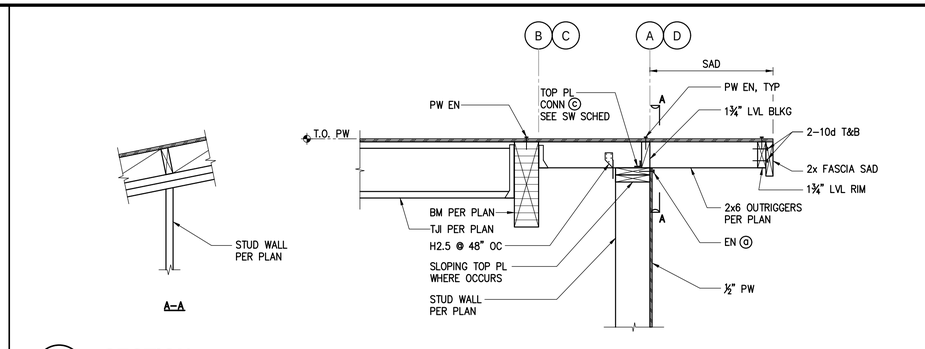
17 S5.1 **SECTION** 3/4" = 1'-0"



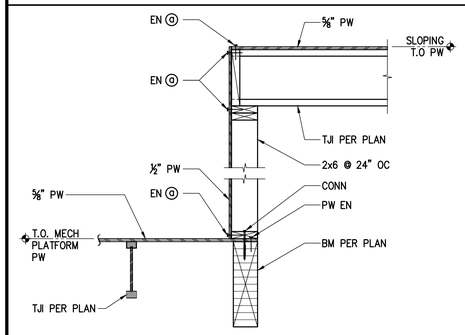
13 S5.1 **SECTION** 3/4" = 1'-0"



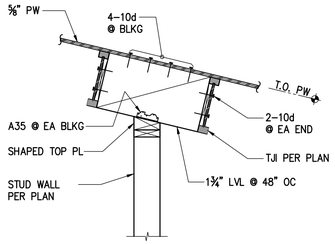
9 S5.1 **SECTION** 3/4" = 1'-0"



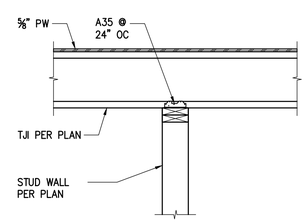
5 S5.1 **SECTION** 3/4" = 1'-0"



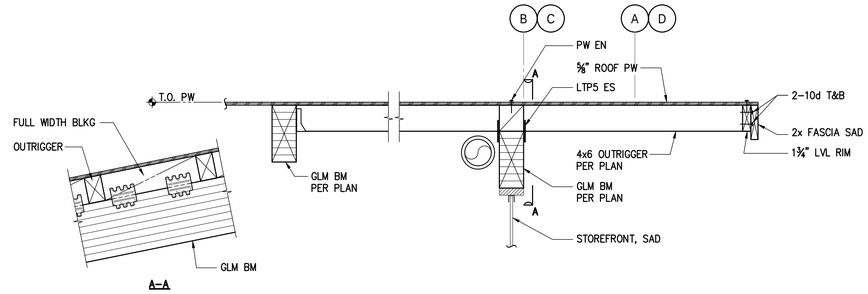
18 S5.1 **NON LOAD BEARING WALL PERPENDICULAR TO JOIST** 3/4" = 1'-0"



14 S5.1 **NON LOAD BEARING WALL PARALLEL TO JOIST** 3/4" = 1'-0"

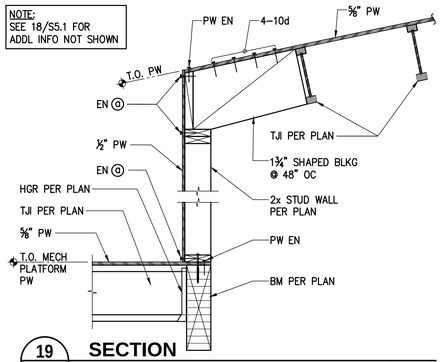


10 S5.1 **NON LOAD BEARING WALL PERPENDICULAR TO JOIST** 3/4" = 1'-0"

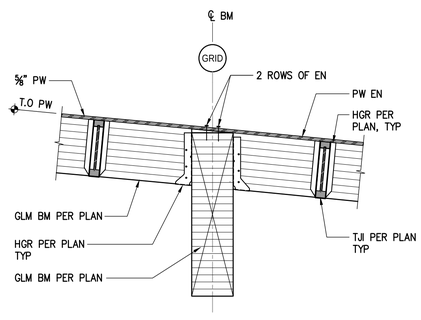


6 S5.1 **SECTION** 3/4" = 1'-0"

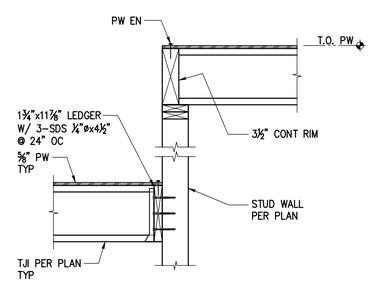
NOTE:
SEE 18/S5.1 FOR ADDL INFO NOT SHOWN



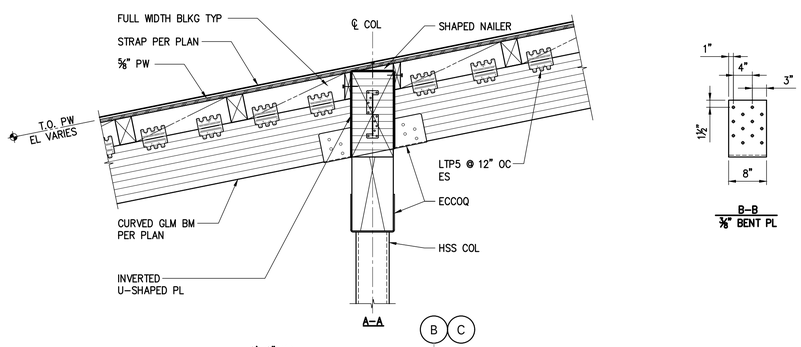
19 S5.1 **SECTION** 3/4" = 1'-0"

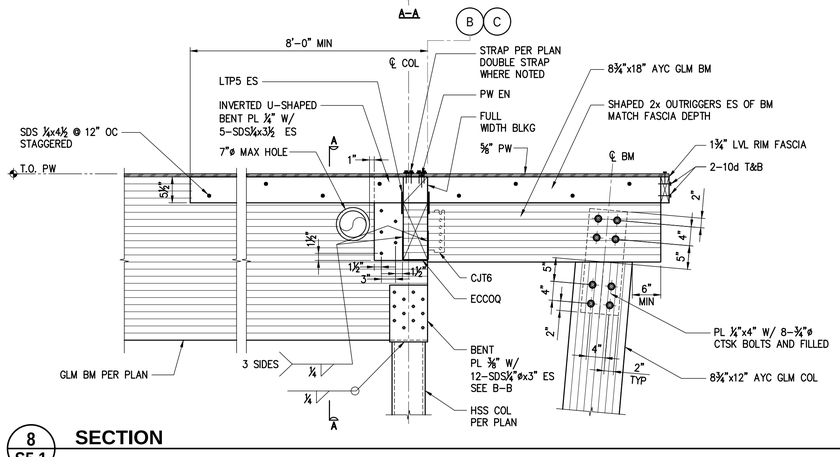


15 S5.1 **SECTION** 3/4" = 1'-0"

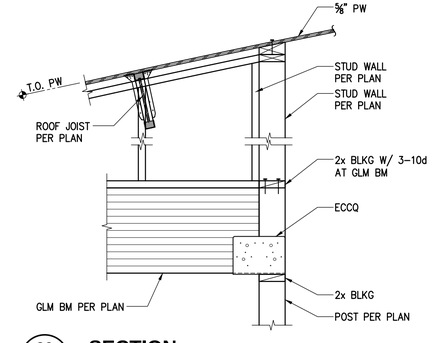


11 S5.1 **LOAD BEARING WALL PERPENDICULAR TO JOIST** 3/4" = 1'-0"

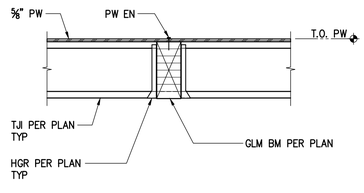




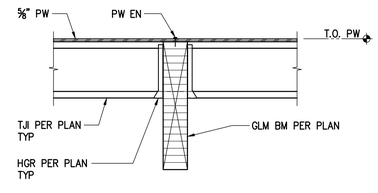
8 S5.1 **SECTION** 3/4" = 1'-0"



20 S5.1 **SECTION** 3/4" = 1'-0"



16 S5.1 **SECTION** 3/4" = 1'-0"



12 S5.1 **SECTION** 3/4" = 1'-0"

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OAKLEY CONTRA COSTA COUNTY

ROOF DETAILS

Issue	Date
2	01/16/2018 ADDENDUM 2

Date: 01/16/2018
Scale: AS NOTED
Design: JML
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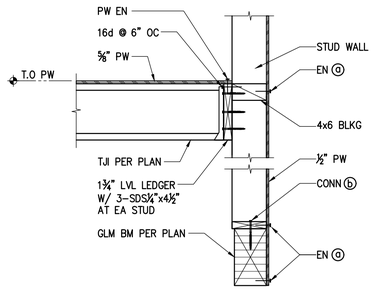
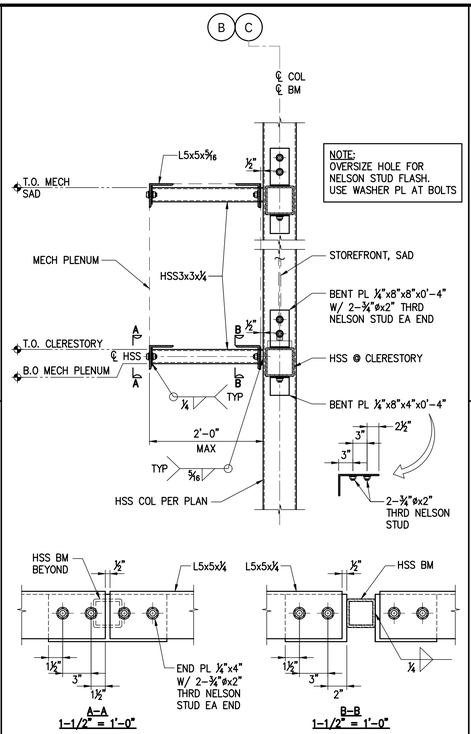
Approved: JML
Job No: 17-005

Drawing Number:
S5.1



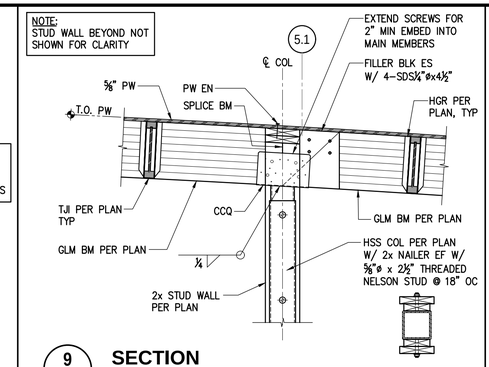
17 S5.2 **SECTION**

3/4" = 1'-0"



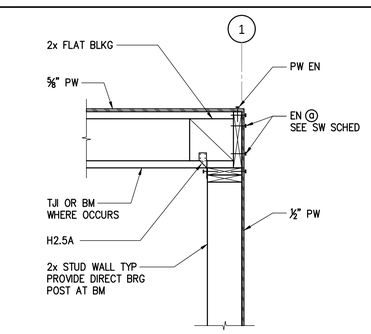
14 S5.2 **SECTION**

3/4" = 1'-0"



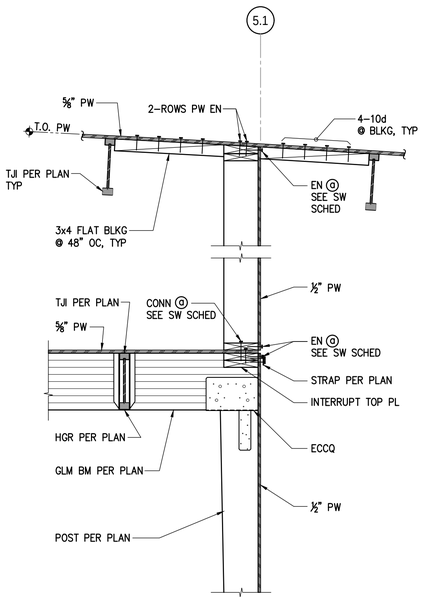
9 S5.2 **SECTION**

3/4" = 1'-0"



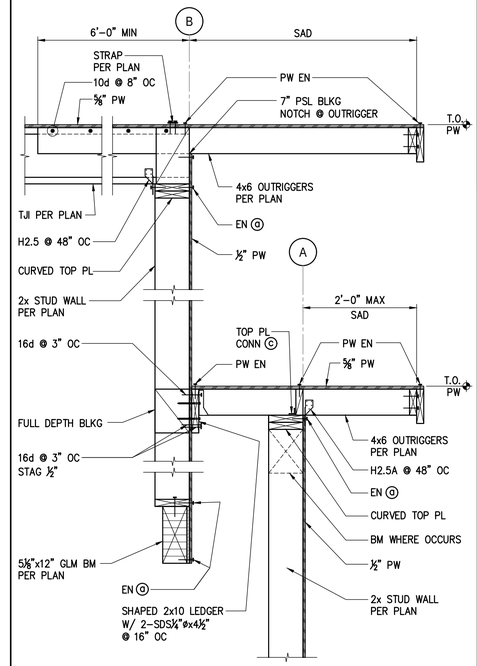
10 S5.2 **SECTION**

3/4" = 1'-0"



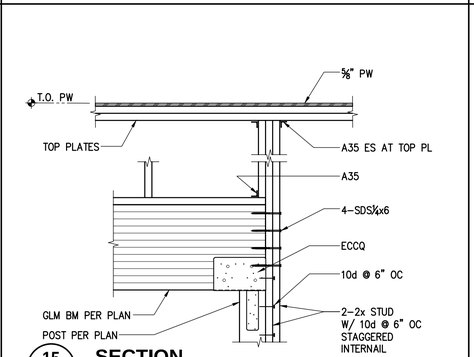
6 S5.2 **SECTION**

3/4" = 1'-0"



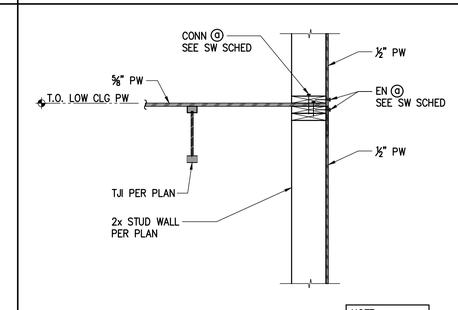
2 S5.2 **SECTION**

3/4" = 1'-0"



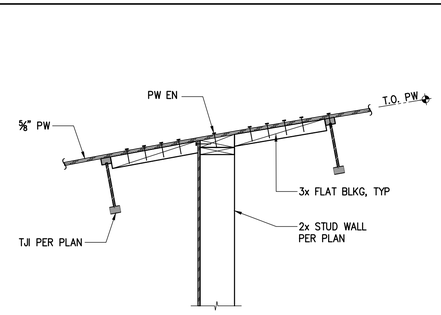
15 S5.1 **SECTION**

3/4" = 1'-0"



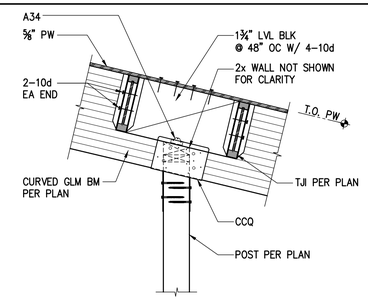
11 S5.2 **SECTION**

3/4" = 1'-0"



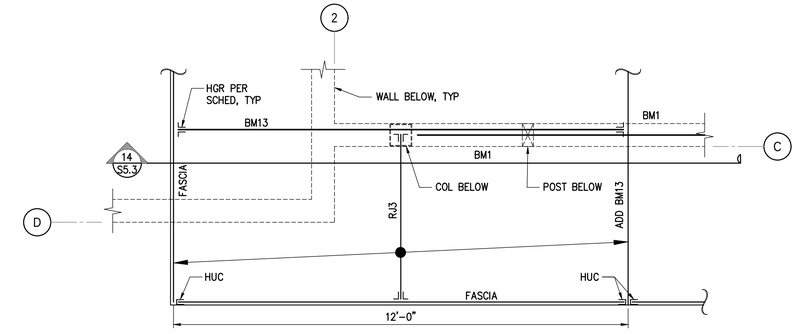
7 S5.2 **SECTION**

3/4" = 1'-0"



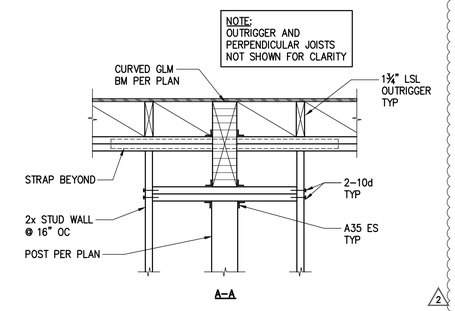
3 S5.2 **SECTION**

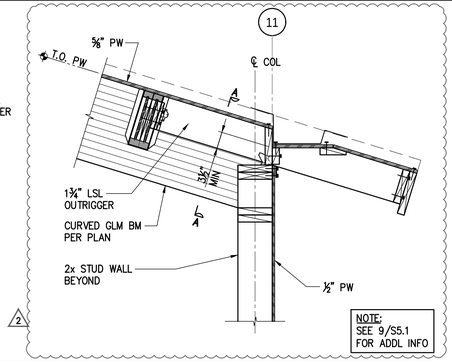
3/4" = 1'-0"



16 S5.2 **ENLARGED PARTIAL ROOF FRAMING PLAN**

1/2" = 1'-0"





8 S5.2 **SECTION**

3/4" = 1'-0"

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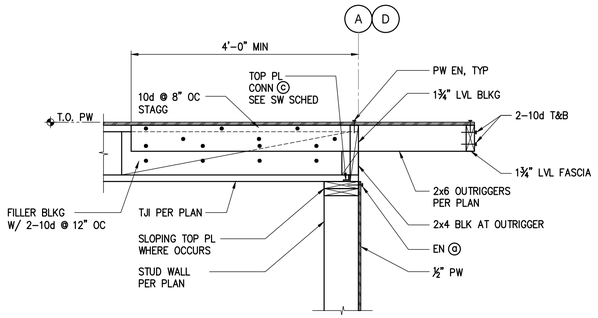
ROOF DETAILS

Issue	
2	01/16/2018 ADDENDUM 2

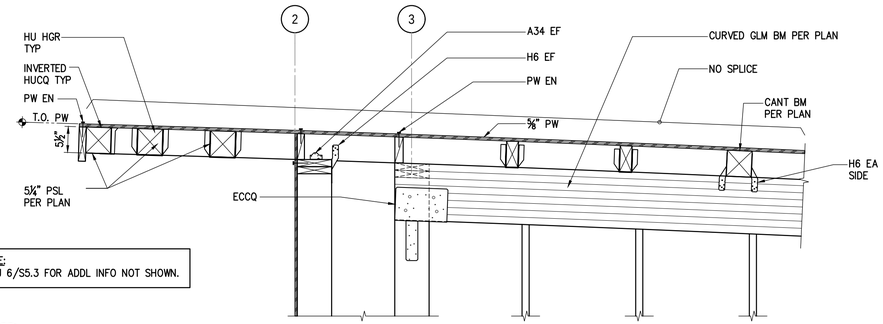
Date: 01/16/2018
Scale: AS NOTED
Design: JML
Drawn: XG, AI
Approved: JML
Job No: 17-005

Drawing Number:
S5.2



13 S5.3 SECTION

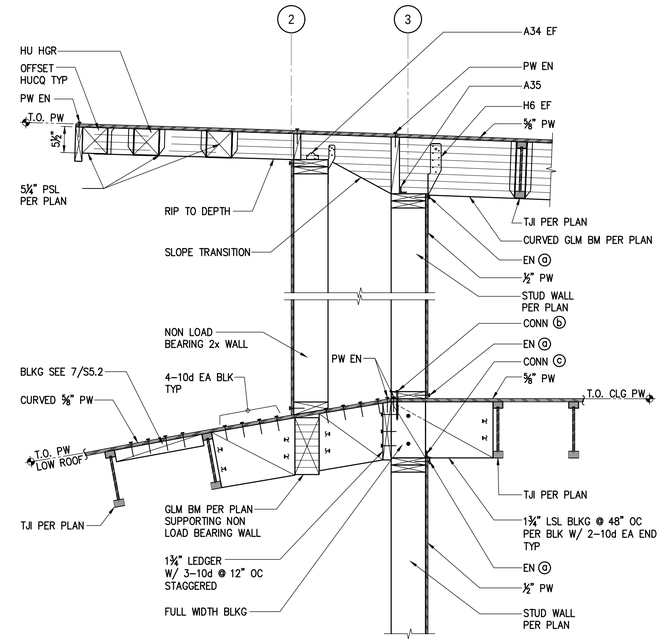
3/4" = 1'-0"



NOTE:
SEEJ 6/S5.3 FOR ADDL INFO NOT SHOWN.

14 S5.3 SECTION

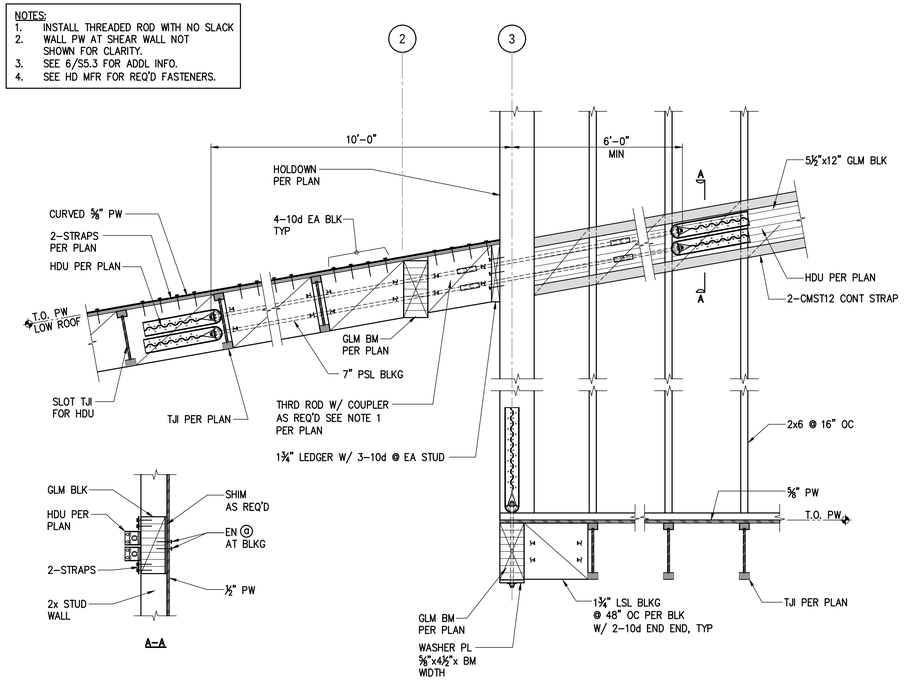
3/4" = 1'-0"



6 S5.3 SECTION

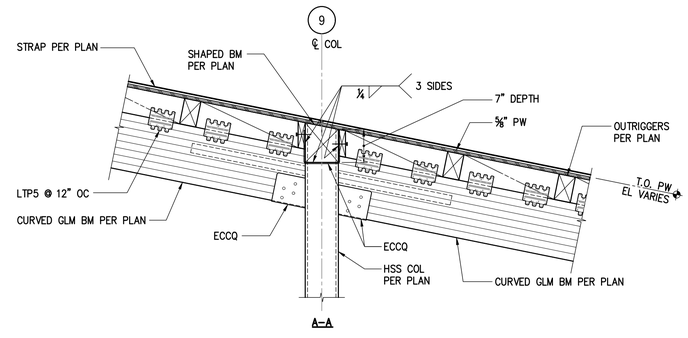
3/4" = 1'-0"

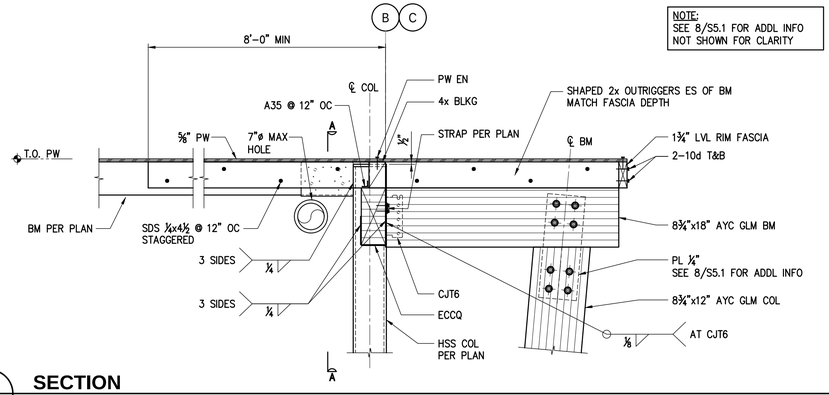
NOTES:
1. INSTALL THREADED ROD WITH NO SLACK
2. WALL PW AT SHEAR WALL NOT SHOWN FOR CLARITY.
3. SEE 6/S5.3 FOR ADDL INFO.
4. SEE HD MFR FOR REQ'D FASTENERS.



16 S5.3 SECTION

3/4" = 1'-0"





NOTE:
SEE 8/S5.1 FOR ADDL INFO
NOT SHOWN FOR CLARITY

8 S5.3 SECTION

3/4" = 1'-0"

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IDA PROJECT: 17007

REGISTERED PROFESSIONAL ENGINEER
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OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

ROOF DETAILS

Issue	Date
2	01/16/2018 ADDENDUM 2

Date: 01/16/2018
Scale: AS NOTED
Design: JML
Drawn: XG, AI
Approved: JML
Job No: 17-005

Drawing Number:
S5.3

VARIABLE REFRIGERANT VOLUME SYSTEM SCHEDULE

NO.	VRV-1A	VRV-1B	VRV-2
DAIKIN MODEL N0.	RXYQ216TTJU	RXYQ192TTJU	REYQ120TTJU
NOM. CLG. CAP. - KBTUH @ ARI	180.0	161.0	115.0
NOM. HTG. CAP - KBTUH @ ARI	242.0	215.0	155.0
EER/ IEER /COP	11.70 /20.0/ 3.65	12.3/20.7/ 3.6	12.6 /20.7/ 3.51
MCA/MAX FUSE SIZE: CKT 1 & CKT 2	36.3/45 & 36.3/45	36.3/45 & 27.6/35	43/50
ELECT. - V/Ø/HZ	230/3/60	230/3/60	230/3/60
OPER. WT. - LBS	550+550	550+450	800

REMARKS:

SEE SHEET M0.2 FOR REFRIGERANT PIPE SIZING, ELECTRICAL AND CONTROL WIRING, AND SYSTEM COMPONENTS FOR A COMPLETE AND OPERABLE SYSTEM.

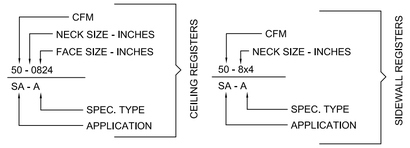
PROVIDE JOINT PIPE ADAPTER AND BRANCH JOINT

PROVIDE I-TOUCH CONTROLLER - DCS601C71

PROVIDE SLIMDUCT PVC DUCT SYSTEMS LINESETS COVER - PD SERIES

DIFFUSER, REGISTER AND GRILLE SCHEDULE

TAG	MANUF	MODEL	FACE TYPE	MOUNTING	PATTERN	DAMPER	MATERIAL	FINISH
A	TITUS	300RS	HORIZ. BLADE	FLUSH	ADJUSTABLE	--	STEEL	COORDINATE WITH ARCHITECT
B	TITUS	350ZR	HORIZ. BLADE	FLUSH	--	--	STEEL	COORDINATE WITH ARCHITECT
C	TITUS	1700	HORIZ. BLADE	FLUSH	--	--	STEEL	COORDINATE WITH ARCHITECT
D	TITUS	R- 300F	HORIZ. BLADE	FLUSH	--	--	ALUMINUM	COORDINATE WITH ARCHITECT
E	TITUS	FL-30-HT	FLOW BAR	FLUSH	--	--	ALUMINUM	COORDINATE WITH ARCHITECT
F	TITUS	PAR	PERFORATED	FLUSH	--	--	STEEL	COORDINATE WITH ARCHITECT
G	TITUS	TDC	LOUVERED	FLUSH	--	--	STEEL	COORDINATE WITH ARCHITECT



FAN SCHEDULE

TAG	BASIS OF DESIGN		AIR FLOW (SCFM)	ESP (" WC)	ELECTRICAL				SOUND POWER (dBA)	WEIGHT (LBS)	ACCESSORIES	REMARKS
	MANUF	MODEL			RPM	BHP	HP/ (WATT)	ELECT V/ϕ/HZ				
F-1, 2	GREENHECK	SQ-160-VG	2100	0.5	1725	-	3/4	208/1/60	52	150	BD, SC, IS, IH	INTERLOCK W/ FC-1A-1 AND FC-1A-2
F-3, 4	GREENHECK	SP-A390	280	0.375	1,350	-	(135)	120/1	43	30	SC, BD, RDC, IS	INTERLOCK W/ LIGHT SWITCH
F-5	GREENHECK	SP-B110	40	0.3	950	-	(100)	120/1/60	29	12	BD, SC, RDC, TDR, DG, IS	INTERLOCK W/ LIGHT SWITCH
F-6	GREENHECK	BSQ-300HP	4200	0.5	536	-	1.5	208/1/60	55	500	BD, SC, IS, IH	INTERLOCK W/ FC-1B-2
F-7	GREENHECK	SQ-120-VG	400	0.2	648	-	1/2	120/1/60	34	57	BD, SC,TDR, IS	INTERLOCK W/ LIGHT SWITCH
F-8	FANTECH	FR 140	205	0.3	2764	-	(60)	120/1/60	-	20	BD	INTERLOCK W/ FAN COIL F-2-3
F-9	GREENHECK	CUBE-180HP	2257	1.5	1285	-	1	208/3/60	66	150	SEE BELOW	CONTROL VIA KITCHEN HOOD CONTROL
F-10	GREENHECK	SQ-80-VG	190	0.2	1725	-	1/10	120/1/60	46	90	SC, BD, RDC, IS, FB	CONTROL VIA TIME CLOCK

ACCESSORIES :
BD - BACKDRAFT DAMPER
SC - SPEED CONTROLLER / DIAL ON FAN
IS - RUBBER ISOLATORS
WH - WEATHERHOOD
DC - 1" DRAIN CONNECTION
RC - ROOF CURB (SOUND CURB)
BS - BIRDSCREEN
RDC- ROUND DUCT CONNECTOR
TDR- TRANSITION DUCT REDUCER
DG - DESIGNER GRILLE
GW- GALVANIZED WHEEL MATERIAL
FB- FILTER BOX 1" MERV-8 FILTERS
EXP- EXPLOSION PROOF
PF - PERFORMANCE BAFFLE
ALUM - ALUMINUM CONSTRUCTION
IH- INSULATED HOUSING

ACCESSORIES FOR F-9
UL/CUL 762 LISTED - "POWER VENTILATORS FOR REST. EXH. APPLIANCES"
SWITCH, NEMA-1, TOGGLE,
SHIPPED WITH UNIT HINGED BRACKET (PN: 877583)
HINGE LATCH (PN: 879145)
COATED WITH PERMATECTOR, CONCRETE GRAY-RAL 7023, FAN AND ATTACHED ACC EXTENDED LUBE LINES
DRAIN CONNECTION
HEAT BAFFLE (ATTACHED)
BEARINGS WITH GREASE FITTINGS, L10 LIFE OF 100,000 HRS (L50 AVG. LIFE 500,000 HRS)

FAN COIL UNIT SCHEDULE

TAG	MANUF.	MODEL	NET TOTAL CLG. CAP (KBTUH @ ARI)	TOTAL HTG. CAP (KBTUH @ ARI)	NOMINAL AIR FLOW (CFM)	MCA/MOCP	EXT. STATIC PRESSURE (IN. WG)	ELECT. V/ϕ/HZ	OPER. WEIGHT (LBS)
FC-1A-1, FC-1A-2	DAIKIN	FXMQ96MVJU	82.9	108.0	2050	10.1/15.0	0.95	230/1/60	350
FC-1A-3	DAIKIN	FXMQ15PBVJU	12.2	16.5	500	1.5/15.0	0.8	230/1/60	100
FC-1B-1, FC-1B-2	DAIKIN	FXMQ96MVJU	82.9	108.0	2050	10.1/15.0	0.95	230/1/60	350
FC-2-1	DAIKIN	FXMQ96MVJU	78.7	108.0	2050	10.1/15.0	0.95	230/1/60	350
FC-2-2, FC-2-3	DAIKIN	FXFQ12TVJU	9.8	13.5	430	0.3/15.0	-	230/1/60	60
FC-2-4	DAIKIN	FXFQ30TVJU	24.6	34.0	1200	1.3/15.0	-	230/1/60	70

ACCESSORIES:
1. DUCTLESS FAN COIL UNITS SHALL BE FURNISHED WITH INTEGRAL CONDENSATE PUMPS WITHIN THE UNIT.
2. ALL FAN COIL UNITS SHALL HAVE RETURN FILTER WITH MINIMUM MERV 8 RATING.
3. DECORATION PANEL BYFQ60B8W1U FOR ALL FXZQ UNITS
4. PROVIDE FRESH AIR INTAKE KIT DIRECT INSTALLTATION TYPE KDDP55B160K FOR ALL FXFQ UNITS.
5. PROVIDE KRP1C75 ADAPTOR PCB FOR FC-2-4 AND FC-2-5 FOR OUTSIDE AIR FAN INTEGRATION
6. INSTALLATION BOX FOR KRP1C75

BS CONTROLLER UNIT SCHEDULE

TAG	MANUF.	MODEL	MCA/ MOCP	ELECT. V/ϕ/HZ	OPER. WEIGHT (LBS)
BS-1	DAIKIN	BS654TVJ	0.6/15	230/1/60	80

REMARKS:
1. REFER TO SHEET M0.2 FOR REFRIGERANT PIPE SIZING, ELECTRIAL AND CONTROL WIRING AND SYSTEM COMPONENTS FOR A COMPLETE AND OPERABLE SYSTEM.
2. PROVIDE JOINT PIPE ADAPTER AND BRANCH JOINT

DUCTLESS SPLIT FAN COIL AND HEAT PUMP/CONDENSING UNIT SCHEDULE

INDOOR UNIT							OUTDOOR UNIT						NET TOTAL COOLING CAPACITY KBTUH @ ARI	NET TOTAL HEATING CAPACITY KBTUH @ ARI	EER/SEER/HSPF
TAG	MANUF	MODEL	MCA/MOCP	ELECT V/ϕ/HZ	AIRFLOW (CFM)	WEIGHT (LBS)	TAG	MANUF	MODEL	MCA/MOCP	ELECT V/ϕ/HZ	WEIGHT (LBS)			
DSFC-1	DAIKIN	FFQ15VJU	SEE NOTE 1	SEE NOTE 1	440	50	DSCU-1	DAIKIN	RX15QMVJU	9.10/15.0	208/1/60	100	14,500	16,200	12.5/20.7/11.0
DSFC-2	DAIKIN	FTK24NMVJU	SEE NOTE 1	SEE NOTE 1	512	50	DSCU-2	DAIKIN	RK24NMVJU	18.3/20.0	208/1/60	120	15,760	-	12.5/18.0/12.6

ACCESSORIES :
PROVIDE ASPEN MINI WHITE CONDENSATE PUMP AT FAN COIL
MAXIMUM PIPE LENGTH = 65 FT FOR MINISPLIT AND 82 FT PER LINSET FOR MULTISPLIT
REFRIGERANT PIPES FROM THE INDOOR UNITS ARE ALL HOME RUNS TO THE OUTDOOR UNIT
PRE-INSULATED ISOCLIMA REFRIGERANT LINE SET
WIRED ENVI SMART WIFI TITLE 24 COMPLIANT THERMOSTAT FOR FTXS, FDXC, CTXS MODELS
PROVIDE UNITS WITH NECESSARY VENDOR ADAPTORS AND LOW VOLTAGE POWER SUPPLY AT FAN COIL UNIT AND WIRING PER THE VENDOR'S INSTALLATION INSTRUCTIONS
3-POLE DISCONNECT SWITCH
PROVIDE POLAR ROUGH-IN BOX FOR ALL WALL MOUNTED UNITS

NOTES:
1. INDOOR UNITS POWERED ELECTRICAL CONTRACTOR FROM OUTDOOR UNIT. USE MINISPLIT AND MULTISPLIT GRADE 14-4 CABLING HOMERUN EACH CABLE FROM OUTDOOR UNIT INDIVIDUALLY.
   MAX. CABLE LENGTH 65' FOR MINISPLIT, 82' FOR MULTISPLIT
   NO SPLICES IN CABLING OR SHARED JUNCTIONS WITH OTHER CABLING ALLOWED.
   MOTOR RATED SWITCH FOR WIRES 1, 2, 3 BY ELECTRICAL CONTRACTOR.
   MAINTAIN POLARITY THROUGHOUT WIRE RUN
   NO SPLICES ON ELECTRICAL WIRE FROM OUTDOOR UNIT TO INDOOR UNIT

TEMPERED MAKE-UP AIR UNIT (MAU-1)

QTY	GREENHECK MODEL	VOLUME	EXTERNAL SP	TOTAL SP	FRPM	OPERATING POWER	WEIGHT
1	IGX-110-H12	2,257 CFM	0.3 IN. WG	0.765 IN. WG	960	0.76 HP	962 LB

MOTOR INFORMATION						
SIZE	V/C/P	ENCLOSURE	MOTOR RPM	WINDINGS	MCA	MOP
1 HP	208/60/3	ODP	1725	1	17.2	20

HEATING

TYPE	GAS TYPE	TEMPERATURE			ENERGY			CONNE, GAS	BLDG. GAS PRES.	CONTROL ACCESS
		WINTER DB	MAX Δ	MAX LAT	INPUT	OUTPUT	EFF.			
INDIRECT GAS	NATURAL	22.0 F	49.2 F	71.2 F	150.0 MBH	120.0 MBH	80%	3/4"	1/2PSI	RIGHT HAND

COOLING

COOLING TYPE	COOLING MEDIA	SUMMER BULB		FILTERS	COOLING CONTROL	REQUIRED FLOW**
		DRY	WET			
EVAPORATIVE	CELDEK	97.0 F	69.0 F	2IN. ALUMINUM MESH	RECIRCULATING PUMP	NA

OPTIONS AND ACCESSORIES

AIR FLOW ARRANGEMENT: OUTDOOR AIR ONLY
DAMPER: INLET
OUTDOOR AIR INTAKE POSITION: END
DISCHARGE POSITION: HORIZONTAL (2)
COATING: GALVANIZED
INSULATION: NONE
ISOLATION: SPRING
ACCESS SIDE: RIGHT-HAND
CONTROL CENTER
FREEZE PROTECTION
HEAT INLET AIR SENSOR
REMOTE PANEL: KITCHEN (SHIPS LOOSE)
SMOKE DETECTOR: 120V/24V - FURNISHED AND WIRED BY DIV 28-ELECTRICAL; INSTALLED BY DIV 23, MECHANICAL
INDIRECT GAS OPTIONS/ACCESSORIES
OUTDOOR INSTALL.-STANDARD VENT.
HEAT EXCHANGER: ALUMINIZED STEEL
FURNACE CONTROL: 8 STAGE
TEMPERATURE CONTROL: DISCHARGE
EVAP COOLING OPTIONS/ACCESSORIES
EVAP MEDIA: CELDEK
EVAP CONTROL: RECIRCULATING PUMP

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OAKLEY CALIFORNIA

OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

MECHANICAL SCHEDULES

No.	Revisions
-	PERMIT SET
1	ENV. HEALTH PERMIT REVISIONS
1	PERMIT SET REV. / BID SET
2	ADDENDUM 2

Date: 12/1/17
Scale: SEE DRAWING
Design:
Drawn:
Approved:
Job No: 17-005

Drawing Number:
M0.2

LUMINAIRE SCHEDULE

LG3	DESCRIPTION:	NOT USED.
LG4	DESCRIPTION:	SIMILAR TO TYPE LG1 EXCEPT WITH HIGHER LUMEN OUTPUT.
	MANUFACTURER:	FAIL SAFE #EN-V-24-2-LD2-39-30-CP125-120-EDD1-GSK/GRD
	POWER SUPPLY:	INTEGRAL ELECTRONIC 0-10V DIMMING POWER SUPPLY
	LIGHT SOURCE:	INTEGRAL 3000K LEDS WITH 3900 NOMINAL LUMEN OUTPUT
	WATTS / VOLTAGE:	42W/120V
LH1	DESCRIPTION:	SURFACE WALL MOUNTED SCONCE WITH DIE CAST ALUMINUM CONSTRUCTION HOUSING WITH FULLY GASKETED AND ENCLOSED LED ARRAY CHAMBER. ALUMINUM HEAT SINK AND SATIN FINISHED ALUMINUM INTERNAL REFLECTOR. STANDARD PAINTED FINISH TO BE DETERMINED BY THE ARCHITECT. 8" NOMINAL WIDTH X 8" NOMINAL HEIGHT X 2" NOMINAL DEPTH.
	MANUFACTURER:	PERFORMANCE IN LIGHTING MIMIK 20 FLAT M #071200-FINISH
	POWER SUPPLY:	INTEGRAL ELECTRONIC SWITCHING POWER SUPPLY
	LIGHT SOURCE:	INTEGRAL 3000K LEDS WITH 960 LUMEN OUTPUT
	WATTS / VOLTAGE:	15W/120V
LJ1	DESCRIPTION:	RECESSED LED LENSED WALLWASHER DOWNLIGHT WITH FORMED STEEL CONSTRUCTION HOUSING. 3" SQUARE APERTURE WITH 1" REGRESSED BEVEL TRIM WITH CLEAR MATTE ANODIZED FINISH. MICRO DIFFUSION ANGLED WALL WASH LENS WITH INJECTION MOLDED WALL WASH REFLECTOR. FIELD REPLACEABLE LIGHT ENGINE AND DRIVER. 2" DEEP HOUSING. WET LOCATION LISTED.
	MANUFACTURER:	USAI LIGHTING #2151-W-AC1-01 / LSTW3-6014-M2-30KS-W2-FT-120V-DIML2-CM(27 OR 52)
	POWER SUPPLY:	INTEGRAL ELECTRONIC SWITCHING POWER SUPPLY
	LIGHT SOURCE:	INTEGRAL 3000K LEDS WITH 850 LUMEN OUTPUT
	WATTS / VOLTAGE:	20W/120V
LJ2	DESCRIPTION:	SIMILAR TO TYPE LJ1 EXCEPT WITH ADJUSTABLE ACCENT WITH 10 DEGREE BEAM SPREAD AND 4" DEEP HOUSING.
	MANUFACTURER:	USAI LIGHTING #2131-W-AC1-S-01 / LSTA3-8420-M2-30KS-10-FTA-120V-DIML2-CB(27 OR 52)
	POWER SUPPLY:	INTEGRAL ELECTRONIC SWITCHING POWER SUPPLY
	LIGHT SOURCE:	INTEGRAL 3000K LEDS WITH 850 LUMEN OUTPUT
	WATTS / VOLTAGE:	20W/120V 1
LK1	DESCRIPTION:	SURFACE MOUNTED LED COVE UPLIGHT. EXTRUDED ALUMINUM CONSTRUCTION WITH TEMPERED GLASS LENS AND 120X120 DEGREE DISTRIBUTION. COLOR CHANGING RED, GREEN, BLUE AND WHITE LED'S. PROVIDE A FULLY FUNCTIONING SYSTEM WITH ALL NECESSARY CBOXES, LEADER CABLES, JUMPER CABLES, AND CONTROL INTERFACE. 36' CONTINUOUS RUN LUMINAIRE. 2 7/8" H X 2 1/4" W.
	MANUFACTURER:	LUMENPULSE #LCS2-120-48-RGBW-FR-WH-DMX/RDM
	POWER SUPPLY:	INTEGRAL ELECTRONIC DMX DIMMING POWER SUPPLY WITH REMOTE POWER/DATA CONVERTER BOXES.
	LIGHT SOURCE:	INTEGRAL RED, GREEN, BLUE, AND WHITE LEDS WITH 772 LUMENS PER 4'
	WATTS / VOLTAGE:	180W/120V
LL1	DESCRIPTION:	CANOPY MOUNTED MONOPOINT LED TRACK LUMINAIRE WITH FORMED ALUMINUM CONSTRUCTION BODY WITH FINISH AS DETERMINED BY THE ARCHITECT. 12 DEGREE BEAM DISTRIBUTION WITH 16500CBCP AND BEAM SOFTENING GEL. 8" NOMINAL PROJECTION X 5.75" DIAMETER.
	MANUFACTURER:	LSI #LP1-ZE4-11-90-30-12-5A-ED(1%)-120-FINISH-R101-B
	POWER SUPPLY:	INTEGRAL CANOPY MOUNTED 0-10V 1% DIMMING POWER SUPPLY.
	LIGHT SOURCE:	INTEGRAL 3000K LED WITH 1000 NOMINAL LUMEN OUTPUT
	WATTS / VOLTAGE:	15W/120V
LM1	DESCRIPTION:	SURFACE WALL MOUNTED SCONCE WITH DIE CAST ALUMINUM CONSTRUCTION HOUSING WITH FULLY GASKETED AND ENCLOSED LED ARRAY CHAMBER. ALUMINUM HEAT SINK AND SATIN FINISHED ALUMINUM INTERNAL REFLECTOR. IES TYPE IV OPTICAL DISTRIBUTION. STANDARD PAINTED FINISH TO BE DETERMINED BY THE ARCHITECT. 8" NOMINAL WIDTH X 8" NOMINAL HEIGHT X 2.5" NOMINAL DEPTH.
	MANUFACTURER:	PERFORMANCE IN LIGHTING MIMIK 20M TYPE IV #071170-FINISH
	POWER SUPPLY:	INTEGRAL ELECTRONIC SWITCHING POWER SUPPLY
	LIGHT SOURCE:	INTEGRAL 3000K LEDS WITH 2149 LUMEN OUTPUT
	WATTS / VOLTAGE:	26W/120V

LUMINAIRE SCHEDULE

LD3	DESCRIPTION:	PENDANT MOUNTED LED DIRECT/INDIRECT LUMINAIRE WITH CURVILINEAR EXTRUDED ALUMINUM HOUSING AND CURVED OPTICAL GRADE ACRYLIC "WAVESTREAM" REFRACTOR LENS WITH POLYESTER POWDER COAT FINISH TO BE DETERMINED BY THE ARCHITECT. 40% UPLIGHT DISTRIBUTION AND 60% DOWNLIGHT DISTRIBUTION. FULLY ADJUSTABLE AIRCRAFT CABLE SUSPENSION KIT. 3.7" HEIGHT X 8.13" WIDTH X 12' NOMINAL LENGTH COMPRISED OF (1) 8' AND (1) 4' MODULE.
	MANUFACTURER:	NEO-RAY #S921DIP-W-3-30-PT-12'(8'-4')-S-4-U-DCD-FINISH
	POWER SUPPLY:	REMOTE ELECTRONIC 0-10V DIMMING POWER SUPPLY
	LIGHT SOURCE:	INTEGRAL 3000K LEDS WITH 4300 NOMINAL LUMEN OUTPUT PER 4'
	WATTS / VOLTAGE:	116W/120V
LD4	DESCRIPTION:	SIMILAR TO TYPE LD3 EXCEPT WITH ON GRID MOUNTING.
	MANUFACTURER:	NEO-RAY #S921DIP-W-3-30-GD-12'(8'-4')-S-4-U-DCD-FINISH
	POWER SUPPLY:	REMOTE ELECTRONIC 0-10V DIMMING POWER SUPPLY
	LIGHT SOURCE:	INTEGRAL 3000K LEDS WITH 4300 NOMINAL LUMEN OUTPUT PER 4'
	WATTS / VOLTAGE:	116W/120V
LE2	DESCRIPTION:	RECESSED LED LENSED WALLWASHER DOWNLIGHT. 4" SQUARE APERTURE WITH FORMED STEEL CONSTRUCTION HOUSING. 1" REGRESSED BEVEL AND FLANGE WITH CLEAR MATTE ANODIZED FINISH.
	MANUFACTURER:	USAI #3651-AC1-01 / LSTW4-6016-C3-30KS-W2-FT-120V-DIML6B
	POWER SUPPLY:	INTEGRAL ELECTRONIC 0-10V DIMMING POWER SUPPLY (0.1%)
	LIGHT SOURCE:	INTEGRAL 3000K LEDS WITH 1000 NOMINAL LUMEN OUTPUT
	WATTS / VOLTAGE:	16W/120V
LE3	DESCRIPTION:	SIMILAR TO TYPE LE2 EXCEPT WITH 50 DEGREE DOWNLIGHT DISTRIBUTION.
	MANUFACTURER:	USAI #3110-AC1-S-01 / LSTD4-9016-C3-30KS-50-FT-120V-DIML6B
	POWER SUPPLY:	INTEGRAL ELECTRONIC 0-10V DIMMING POWER SUPPLY (0.1%)
	LIGHT SOURCE:	INTEGRAL 3000K LEDS WITH 1000 NOMINAL LUMEN OUTPUT
	WATTS / VOLTAGE:	16W/120V
LE4	DESCRIPTION:	SIMILAR TO TYPE LE2 EXCEPT WITH 3" SQUARE TRIMLESS APERTURE, 5.5" DEEP HOUSING, AND DOWNLIGHT DISTRIBUTION.
	MANUFACTURER:	USAI #2411-AC1-S / LSLD3-9014-M2-30KS-50-NC1-120V-DIML6B
	POWER SUPPLY:	INTEGRAL ELECTRONIC 0-10V DIMMING POWER SUPPLY (0.1%)
	LIGHT SOURCE:	INTEGRAL 3000K LEDS WITH 820 NOMINAL LUMEN OUTPUT
	WATTS / VOLTAGE:	14W/120V
LE5	DESCRIPTION:	SIMILAR TO TYPE LE4 EXCEPT WITH SELF FLANGED TRIM. 1
	MANUFACTURER:	USAI #2110-AC1-S-01 / LSTD3-9014-M2-30KS-50-NC1-120V-DIML6B
	POWER SUPPLY:	INTEGRAL ELECTRONICC76 0-10V DIMMING POWER SUPPLY (0.1%)
	LIGHT SOURCE:	INTEGRAL 3000K LEDS WITH 820 NOMINAL LUMEN OUTPUT
	WATTS / VOLTAGE:	14W/120V
LF1	DESCRIPTION:	SURFACE CEILING MOUNTED LED UTILITY LIGHT. ONE PIECE PLASTIC FLANGE WITH WHITE FINISH, HIGH TRANSMITTANCE LENS, AND 6" APERTURE.
	MANUFACTURER:	PHILIPS LIGHTOLIER #S6S-8-30K-10-FINISH
	POWER SUPPLY:	INTEGRAL ELECTRONIC SWITCHING
	LIGHT SOURCE:	INTEGRAL 3000K LEDS WITH > 80 CRI AND 980 LUMENS
	WATTS / VOLTAGE:	15W / 120V
LG1	DESCRIPTION:	RECESSED LED 2X2 WITH EXTRUDED ALUMINUM HOUSING FRAME WITH INJECTION MOLDED COMPOSITE END PLATES. PRECISION FORMED OPTICAL GRADE ACRYLIC LENS WITH "WAVESTREAM" TECHNOLOGY. 0.125" CLEAR POLYCARBONATE SHATTERPROOF LENS WITH GASKET AROUND PERIMETER OF BOTTOM EDGE OF LENS.
	MANUFACTURER:	FAIL SAFE #EN-V-24-2-LD2-34-30-CP125-120-EDD1-GSK/GRD
	POWER SUPPLY:	INTEGRAL ELECTRONIC 0-10V DIMMING POWER SUPPLY
	LIGHT SOURCE:	INTEGRAL 3000K LEDS WITH 3400 NOMINAL LUMEN OUTPUT
	WATTS / VOLTAGE:	35W/120V
LG2	DESCRIPTION:	SIMILAR TO TYPE LG1 EXCEPT WITHOUT VANDAL RESISTANT LENS COVER AND LOWER LUMEN OUTPUT.
	MANUFACTURER:	METALUX #22EN-LD2-25-HP-UNV-L830-HCD-1
	POWER SUPPLY:	INTEGRAL ELECTRONIC 0-10V DIMMING POWER SUPPLY
	LIGHT SOURCE:	INTEGRAL 3000K LEDS WITH 2500 NOMINAL LUMEN OUTPUT
	WATTS / VOLTAGE:	21W/120V

LUMINAIRE SCHEDULE

EX1	DESCRIPTION:	CEILING MOUNTED EXIT SIGN WITH RECESSED FORMED STEEL HOUSING. FACES AND CHEVRONS AS INDICATED ON THE DRAWINGS. GREEN LETTERS WITH TRIM/HOUSING FINISH TO BE DETERMINED BY THE ARCHITECT. FLAT CEILING TRIM. PROVIDE SELF-DIAGNOSTICS.
	MANUFACTURER:	EVENLITE #SOV-EM-G-FACES-FINISH-RC-CHEVRONS-FT-SD
	POWER SUPPLY:	INTEGRAL ELECTRONIC POWER SUPPLY WITH EMERGENCY BACK UP
	LIGHT SOURCE:	INTEGRAL LEDS
	WATTS / VOLTAGE:	3W/120V
EX2	DESCRIPTION:	SIMILAR TO TYPE EX1 EXCEPT WITH SURFACE WALL MOUNTING HARDWARE.
	MANUFACTURER:	EVENLITE #SOV-EM-G-FACES-FINISH-SW-CHEVRONS-SD
	POWER SUPPLY:	INTEGRAL ELECTRONIC POWER SUPPLY WITH EMERGENCY BACK UP
	LIGHT SOURCE:	INTEGRAL LEDS
	WATTS / VOLTAGE:	3W/120V
EX3	DESCRIPTION:	SELF-LUMINOUS VANDAL RESISTANT EXIT SIGN WITH TRITIUM GAS TUBES, ABS ENCLOSURE AROUND EXTRUDED ALUMINUM SIGN MODULE, ALUMINUM STENCIL FACE WITH RED, GREEN, OR BLACK COLOR TO BE DETERMINED BY THE ARCHITECT. RECYCLABLE AFTER 10 YEAR SERVICE LIFE. CEILING OR END MOUNTING PLATE AS REQUIRED FOR MOUNTING TO DECORATIVE GATE.
	MANUFACTURER:	EVENLITE #SLV-10-FACE COLOR-EB/TB
	LIGHT SOURCE:	INTEGRAL TRITIUM GAS TUBES 2
LA1	DESCRIPTION:	ABOVE GROUND MOUNTED SIGN LIGHT WITH EXTRUDED ALUMINUM CONSTRUCTION HOUSING, ASYMMETRIC OPTICAL DISTRIBUTION, POLYCARBONATE LENS, GLARE SHIELD, AND STANDARD POLYESTER POWDER COATED FINISH TO BE DETERMINED BY THE ARCHITECT. 2.75" H X 3" W X 4' LONG LUMINAIRE HOUSING ON RAISED "PERMAPOST" STANCHIONS (2 PER LUMINAIRE).
	MANUFACTURER:	ORGATECH OMEGALUX #1400-4-LS-30-U-ND-A-P-FINISH-G
	POWER SUPPLY:	INTEGRAL ELECTRONIC SWITCHING POWER SUPPLY
	LIGHT SOURCE:	INTEGRAL 3000K LEDS
	WATTS / VOLTAGE:	20W/120V 1
LB1	DESCRIPTION:	SURFACE WALL OR CEILING MOUNTED LED LUMINAIRE WITH EXTRUDED ALUMINUM CONSTRUCTION HOUSING AND SNAP ON HIGH TRANSMISSION ACRYLIC DIFFUSER. 3" HEIGHT X 2.5" NOMINAL WIDTH X 4' NOMINAL LENGTH. STANDARD FINISH TO BE DETERMINED BY THE ARCHITECT. SINGLE GANG ELECTRICAL BOX COVER.
	MANUFACTURER:	PRUDENTIAL #R1-LED3-MO-4-WA-FINISH-UNV-SUR-X3-DM10-EBCP1G-PRUBIN
	POWER SUPPLY:	INTEGRAL ELECTRONIC 0-10V DIMMING POWER SUPPLY
	LIGHT SOURCE:	INTEGRAL 3000K LEDS WITH 2800 LUMEN NOMINAL OUTPUT
	WATTS / VOLTAGE:	28W/UNV.
	REMARKS:	ROUGH IN WITH HORIZONTALLY MOUNTED SINGLE GANG DEVICE BOX. REFER TO LUMINAIRE INSTALLATION INSTRUCTIONS.
LB2	DESCRIPTION:	SIMILAR TO TYEP LB1 EXCEPT 8' NOMINAL LENGTH.
	MANUFACTURER:	PRUDENTIAL #R1-LED3-MO-8-WA-FINISH-UNV-SUR-X3-DM10-EBCP1G-PRUBIN
	POWER SUPPLY:	INTEGRAL ELECTRONIC 0-10V DIMMING POWER SUPPLY
	LIGHT SOURCE:	INTEGRAL 3000K LEDS WITH 2800 LUMEN NOMINAL OUTPUT PER 4'
	WATTS / VOLTAGE:	56W/UNV.
	REMARKS:	ROUGH IN WITH HORIZONTALLY MOUNTED SINGLE GANG DEVICE BOX. REFER TO LUMINAIRE INSTALLATION INSTRUCTIONS.
LC1	DESCRIPTION:	RECESSED LINEAR LED LUMINAIRE. EXTRUDED ALUMINUM HOUSING, 0.04" THICK INTERNAL GEAR TRAYS, AND MACHINED ALUMINUM END CAPS. TOTAL INTERNAL REFLECTING OPTIC WITH LIGHT ABSORBING BAFFLE WITH 55° SHARP CUT OFF. NOMINAL 4' LENGTH; NOMINAL 4300 LUMEN OUTPUT PER 4'; CEILING MOUNTING HARDWARE TO BE VERIFIED AS INDICATED ON THE DRAWINGS.
	MANUFACTURER:	ALIGHT #APX5-4-LH-30-U-S-55-CEILING-B-B-D-BE
	POWER SUPPLY:	INTEGRAL ELECTRONIC 0-10V DIMMING
	LIGHT SOURCE:	INTEGRAL 3000K LEDS WITH 4300 NOMINAL LUMEN OUTPUT
	WATTS / VOLTAGE:	54W/120V

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OAKLEY CALIFORNIA

OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

LUMINAIRE SCHEDULE

No.	Issue
--	PERMIT SET
1	ENV. HEALTH PERMIT REVISIONS
1	PERMIT SET REV. / BID SET
2	ADDENDUM #2

Date: 12/1/17
Scale: AS NOTED
Design: DO/PJC
Drawn: TV
Approved:
Job No: 17-005

Drawing Number:
E0.2

OAKLEY REC CENTER – BUILDING – 217020

NUMBERED SHEET NOTES

26 IN-GROUND PULL BOXES AND EMPTY UNDERGROUND RACEWAYS (SIX 1-1/4" C.O. AND ONE 2" C.O.) FROM 'MSB' FOR SIX (6) FUTURE ELECTRICAL VEHICLE (EV) CHARGING STATIONS AND ONE 2" CONDUIT STUBBED OUT AND CAPPED IN PLANTED AREA NEAR BALL FIELD BACKSTOP. LOCATION IDENTIFIED ON PLAN BY NOTE 32. COORDINATE AND VERIFY UNDERGROUND PATHWAY WITH LANDSCAPE ARCHITECT PRIOR TO TRENCHING. 1

27 TYPICAL LOW VOLTAGE UNDERGROUND CONDUITS FROM PULLBOX ALONG SOUTH PROPERTY LINE TO EACH EXISTING MODULAR BUILDING SHALL CONSIST OF: (1) 2" FOR SIGNAL SYSTEMS & (1) 1" FOR FIRE ALARM.

28 TURN UP UNDERGROUND CONDUIT(S) AT (E) BUILDING EXTERIOR WALL. ATTACH CONDUITS TO EXTERIOR WALL AND CONNECT COMPLETE TO (E) WALL MOUNTED TERMINAL CAN. POWER CONDUIT MAY USE 'LB' CONDUIT BODY FOR TRANSITION THROUGH WALL TO INTERIOR AREA ABOVE SUSPENDED CEILING IF EXTERIOR JUNCTION BOX AND/OR PANEL BOARD DOES NOT EXIST. CONNECT POWER CONDUIT COMPLETE TO (E) ELECTRICAL PANEL. EXISTING INCOMING SERVICE CONDUITS AND BOXES MAY BE REUSED WHERE POSSIBLE.

29 (1) 2" UG EMPTY CONDUIT FOR (F) WELL PUMP AT BALLFIELD AND(1) 1"UG BRANCH CIRCUIT CONDUIT FROM MSB TO IRRIGATION CONTROLLER. SEE 1/E5.1.

30 (2) 4" UG CONDUITS STUBBED OUT AND CAPPED FOR (F) PHASE 2 BUILDING ELECTRICAL POWER.

31 (1) 2" UG EMPTY CONDUIT FROM 'MSB' FOR (F) ELECTRICAL CIRCUIT(S) AT BALLFIELD. 2

32 STUB-OUT CONDUIT 2' PAST PULLBOX AND CAP, WITH PLASTIC LABEL INSIDE PULLBOX AT CONDUIT ENTRY TO IDENTIFY STUB-OUT LOCATION.

NUMBERED SHEET NOTES

25 UNDERGROUND UTILITY SERVICE CONDUITS WILL BE INSTALLED BY OTHERS AND ARE N.I.E.C.. UNDERGROUND UTILITY SERVICE CONDUCTS WILL BE EXTENDED UNDER THIS CONTRACT TO EQUIPMENT AND BUILDINGS FROM POINTS OF CONNECTION (P.O.C.) IDENTIFIED ON PLANS.

NUMBERED SHEET NOTES

1 DISCONNECT AND REMOVE (E) POWER FEEDER BACK TO (E) 'MSB' TO BE REMOVED. 2

2 (2) 4" CONDUITS REQUIRED FOR UNDERGROUND PRIMARY UTILITY POWER SERVICE FEEDER. SEE UTILITY DRAWINGS.

3 (5) 5" CONDUITS REQUIRED FOR UNDERGROUND SECONDARY UTILITY POWER SERVICE FEEDER. SEE UTILITY DRAWINGS.

4 (2) 4" SCHEDULE 40 PVC UNDERGROUND ELECTRICAL FEEDER CONDUITS. SEE POWER SINGLE LINE DIAGRAM 1/E5.1 FOR FURTHER REQUIREMENTS.

5 FLUSH IN-GROUND PULL BOX, CHRISTY #N40 OR EQUAL (NORMALLY 21" x 33" I.D.), WITH COMPOSITE LID (CHRISTY "FIBRELYTE"), INSCRIBED "ELECTRICAL".

6 CONNECT NEW POWER FEEDER COMPLETE, PER SHEET E5.1, TO (E) POWER PANEL AT (E) MODULAR BUILDING.

7 UNDERGROUND SCHEDULE 40 PVC BUILDING POWER FEEDER CONDUIT(S) AND CONDUCTORS PER SHEET E5.1.

8 SEE POWER SINGLE LINE DIAGRAM 1/E5.1 FOR FEEDER REQUIREMENTS.

9 PROTECT (E) PANEL AND SECONDARY UTILITY FEEDER IN PLACE, DURING CONSTRUCTION OF NEW UTILITY INFRASTRUCTURE AND MAIN SWITCHBOARD. DISCONNECT AND REMOVE (E) PANEL AND SECONDARY FEEDER (BACK TO SOURCE), UPON COMPLETION OF NEW SERVICE AND CUT-OVER OF (E) MODULAR BUILDING FEEDERS TO NEW SERVICE. SEE SHEET E5.1 FOR NEW CONNECTIONS. COORDINATE WITH UTILITY DRAWINGS.

10 SEE CIVIL SITE UTILITY PLAN C4.0 FOR EXACT LOCATION OF FIRE WATER SUPPLY LINE COMPONENT.

11 PROVIDE, INSTALL AND CONNECT COMPLETE (2)#16 TWISTED UNSHIELDED CONDUCTORS FOR FIRE ALARM INITIATION CIRCUIT FROM SITE FIRE ALARM DEVICE(S) TO REC. CENTER 'FACP'.

12 T-TAP INITIATION CIRCUIT CONDUCTORS IN PULLBOX.

13 UNDERGROUND POWER CONDUITS FROM MSB DISTRIBUTION SECTION TO FLUSH IN GRADE POWER PULLBOX #P1: (2) 4" C. SERVING PHASE 1 BUILDING; (2) 4" C. (EMPTY) FOR (F) PHASE 2 BUILDING; (1) 2" C. (EMPTY) FOR (F) WELL PUMP AT BALLFIELD; (1) 1" C. FOR 120V POWER CIRCUIT SERVING IRRIGATION CONTROLLER AT BALLFIELD (@SITE-SOUTH); (6) 1-1/4" C.O. FOR (F) ELECTRIC VEHICLE CHARGERS (@ SITE-NORTH); (1) 2" C.O. FOR (F) ELECTRICAL AT BALLFIELD BACKSTOP AREA (@SITE-NORTH); (2) 3" C.O. SPARE, (4) 2" C.O. SPARE, (2) 1" C.O. SPARE.

14 (1) 2" C. UNDERGROUND FIRE ALARM SYSTEM CONDUIT FROM PHASE 1 BUILDING FACP TO FIRE ALARM PULLBOXES #F1 AND #F2.

15 (2) 4" C. UNDERGROUND SIGNAL (LOW VOLTAGE) SYSTEMS CONDUITS FOR FUTURE PHASE 2 BUILDING; (ONE OF THESE CONDUITS WILL BE USED TO TEMPORARILY FEED THE EXISTING MODULAR BUILDINGS).

16 UNDERGROUND POWER CONDUITS: (2) 4" C. (EMPTY) FOR FUTURE PHASE 2 BUILDING; (1) 2" C. (EMPTY) FOR FUTURE WELL PUMP AT BALLFIELD; (1) 1" C. FOR 120V POWER CIRCUIT SERVING IRRIGATION CONTROLLER AT BALLFIELD. (2) 3"C.O. SPARE, (2) 2"C.O. SPARE; (2) 1"C.O. SPARE.

17 (1) 4" C.O. TELEPHONE SERVICE CONDUIT AND (1) 2" C.O. CABLE TV SERVE CONDUIT.

18 POWER PULLBOX #P1: FLUSH IN-GRADE, NOMINAL 4-FT. WIDE BY 6-FT. LONG BY 5-FT. DEEP (INSIDE DIM'S.) REINFORCED CONCRETE UTILITY VAULT STYLE PULLBOX WITH HEAVY H2O TRAFFIC RATED TWO-PIECE REINFORCED GALVANIZED STEEL COVER WITH SPRING OR TORSION LIFT ASSIST AND SLIP RESISTANT EXTERIOR COATING.

19 POWER PULLBOX #P2: FLUSH IN-GRADE, NOMINAL 3-FT. WIDE BY 5-FT. LONG BY 5-FT. DEEP (INSIDE DIM'S.) REINFORCED CONCRETE UTILITY VAULT STYLE PULLBOX WITH TWO-PIECE REINFORCED GALVANIZED STEEL COVER WITH SPRING OR TORSION LIFT ASSIST AND SLIP RESISTANT EXTERIOR COATING.

20 POWER PULLBOX #P3: NOMINAL 16"x29" (INSIDE DIMENSION) REINFORCED CONCRETE PULLBOX (CHRISTY N36, OR EQUAL) WITH COMPOSITE LID (CHRISTY "FIBRELYTE", OR EQUAL) INSCRIBED: "ELECTRICAL". PROVIDE EXTENSION RINGS AS NEEDED TO ACHIEVE DEPTH REQUIREMENTS.

21 FIRE ALARM PULLBOX: NOMINAL 9"x19" (INSIDE DIMENSION) REINFORCED CONCRETE PULLBOX (CHRISTY N16, OR EQUAL) WITH COMPOSITE LID (CHRISTY "FIBRELYTE", OR EQUAL) INSCRIBED: "FIRE ALARM". PROVIDE EXTENSION RINGS AS NEEDED TO ACHIEVE DEPTH REQUIREMENTS.

22 SIGNAL PULLBOX: NOMINAL 21"x33" (INSIDE DIMENSION) REINFORCED CONCRETE PULLBOX (CHRISTY N40, OR EQUAL) WITH COMPOSITE LID (CHRISTY "FIBRELYTE", OR EQUAL) INSCRIBED: "SIGNAL". PROVIDE EXTENSION RINGS AS NEEDED TO ACHIEVE DEPTH REQUIREMENTS.

23 POWER PULLBOXES #P4 &#P5: NOMINAL 21"x33" (INSIDE DIMENSION) REINFORCED CONCRETE PULLBOX (CHRISTY N40, OR EQUAL) WITH COMPOSITE LID (CHRISTY "FIBRELYTE", OR EQUAL) INSCRIBED: "ELECTRICAL". PROVIDE EXTENSION RINGS AS NEEDED TO ACHIEVE DEPTH REQUIREMENTS.

24 APPROXIMATE P.O.C. (POINT OF CONNECTION) TO (E) UNDERGROUND UTILITY COMPANY SERVICE CONDUIT(S).

GENERAL SHEET NOTES

1. SEE SHEET E1.2 FOR SITE LIGHTING PLAN.

SITE PLAN - ELECTRICAL

SCALE: 1" = 20'-0"

REF. NORTH

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OAKLEY CALIFORNIA

OAKLEY RECREATION CENTER CALIFORNIA
OAKLEY CONTRA COSTA COUNTY

SITE PLAN - ELECTRICAL

No.	Issue
–	PERMIT SET
1	ENV. HEALTH PERMIT REVISIONS
1	PERMIT SET REV. / BID SET
2	ADDENDUM #2

Date: 12/1/17
Scale: AS NOTED
Design: DO/PJC
Drawn: LN/TV
Approved:
Job No: 17-005

Drawing Number:
E1.1

OAKLEY REC CENTER – BUILDING – 217020

NUMBERED SHEET NOTES

1. SEE DETAIL 1/E7.3.
2. SEE DETAIL 2/E7.3.
3. SEE DETAIL 3/E7.3.
4. SEE DETAIL 4/E7.3.
5. SEE DETAIL 3/E7.2.
6. SEE SHEET E2.1 FOR BUILDING MOUNTED EXTERIOR LIGHTING.
7. SEE DETAIL 6/E7.3. 1
8. NON-POWERED EXIT SIGN MOUNTED TO DECORATIVE METAL GATE. COORDINATE EXACT LOCATION WITH THE LANDSCAPE ARCHITECT. 2

O'HARA AVENUE

O'HARA AVENUE

INV-1 VIA 'LCP'; (3)#10, (1)#10G. IN 1" CONDUIT THROUGHOUT

LB-1,3 VIA 'LCP'; (4)#8, (1)#10G. IN 1-1/4" CONDUIT THROUGHOUT

LB-5,7 VIA 'LCP'; (3)#8, (1)#10G. IN 1-1/4" CONDUIT THROUGHOUT

PROPOSED RECREATION CENTER PHASE I

EXISTING BUILDING TO REMAIN

EXISTING BUILDING TO REMAIN

EXISTING BUILDING TO REMAIN

EXISTING BUILDING TO REMAIN

MAIN ELECTRICAL CLOSET 1/E3.1

PANEL 'LB'

LIGHTING CONTROL PANEL 'LCP'

REF. NORTH

SITE PLAN - LIGHTING

SCALE: 1" = 20'-0"

1/E1.2

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OAKLEY — CONTRA COSTA COUNTY — CALIFORNIA

SITE PLAN - LIGHTING

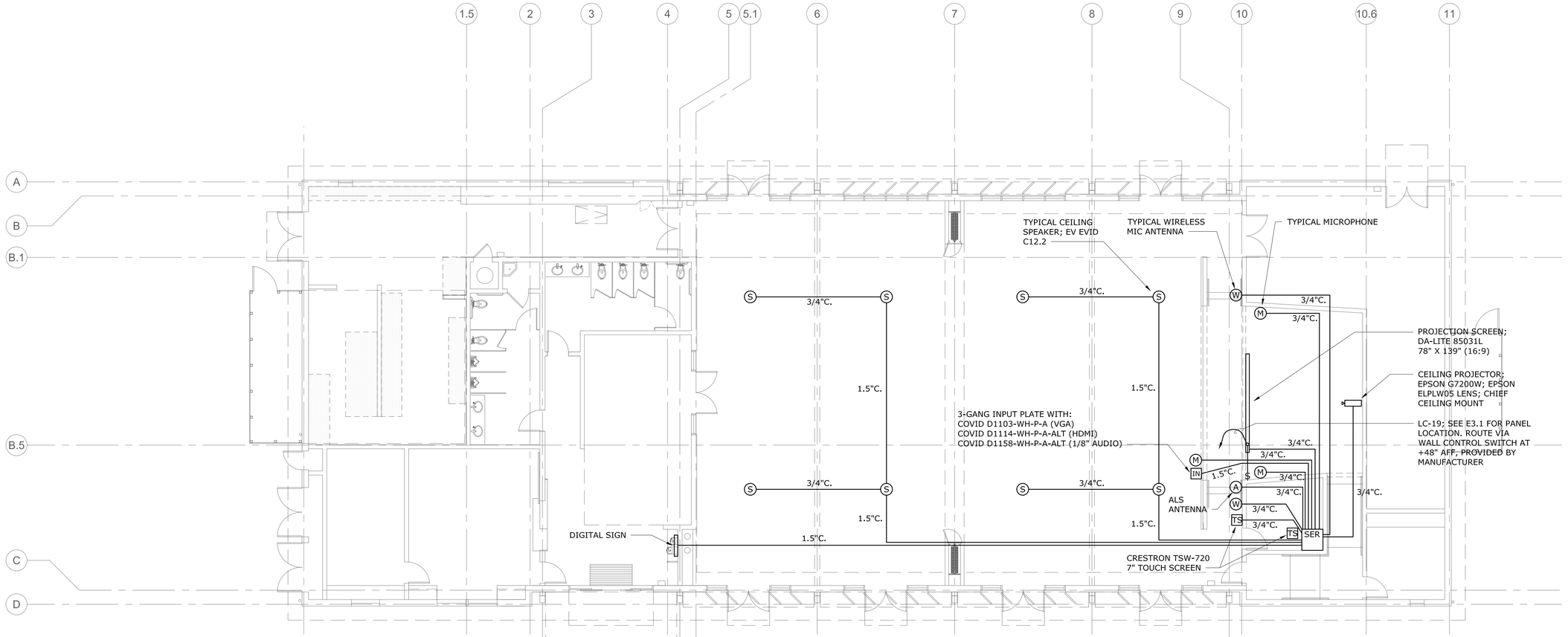
No.	Issue
-	PERMIT SET
1	ENV. HEALTH PERMIT REVISIONS
1	PERMIT SET REV. / BID SET
2	ADDENDUM #2

Date: 12/1/17
Scale: AS NOTED
Design: DO/PJC
Drawn: TV
Approved:
Job No: 17-005

Drawing Number:
E1.2

GENERAL SHEET NOTES

1. SEE ARCHITECTURAL PLANS AND ELEVATIONS FOR EXACT DEVICE LOCATIONS.
2. COORDINATE ROUGH-IN BOX REQUIREMENTS WITH ACTUAL AV EQUIPMENT PROVIDED FOR PROJECT.



FLOOR PLAN - AV SYSTEM

SCALE: 1/8" = 1'-0"

1 / E3.3

REF. NORTH

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FLOOR PLAN - AV SYSTEM

No.	Issue
–	PERMIT SET
1	ENV. HEALTH PERMIT REVISIONS
1	PERMIT SET REV. / BID SET
2	ADDENDUM #2

Date: 12/1/17
Scale: AS NOTED
Design: DO/PJC
Drawn: RS/TV
Approved:
Job No: 17-005

Drawing Number: E3.3 (2)

OAKLEY REC CENTER – BUILDING – 217020

REFER TO SHEET E6.2 FOR SERVICE LOAD CALCULATION

1

NUMBERED SHEET NOTES

8 PROVIDE AND INSTALL ENGRAVED LAMINATED PLASTIC NAMEPLATE (ATTACHED WITH SS SCREWS) WITH RED BACKGROUND AND 1/4" HIGH WHITE LETTERS WITH THE FOLLOWING INSCRIPTION: THIS SPACE RESERVED FOR FUTURE PV AC INPUT CIRCUIT BREAKER, MAXIMUM RATING NOT TO EXCEED 250 AMPS AT 208 VOLTS, 3 PHASE.

9 THIS BUSSED CIRCUIT BREAKER SPACE FOR FUTURE PV AC INPUT CIRCUIT BREAKER AND FEEDER SHALL BE LOCATED AT THE EXTREME FAR END OF THE BUSSING IN THE LAST DISTRIBUTION SECTION OPPOSITE THE MAIN CIRCUIT BREAKER (IE: LAST SECTION/LAST BREAKER SPACE).

10 PROVIDE AND INSTALL ENGRAVED LAMINATED PLASTIC NAMEPLATE (ATTACHED WITH SS SCREWS) TO INCOMING LINE SECTION INSCRIBED WITH: AVAILABLE FAULT CURRENT (AMPS) AND DATE OF INSTALLATION. CONTRACTOR SHALL OBTAIN FAULT CURRENT VALUE FOR THIS NAMEPLATE FROM THE SERVING ELECTRICAL UTILITY COMPANY.

11 PROVIDE AND INSTALL ENGRAVED LAMINATED PLASTIC NAMEPLATE ON EACH TWO-POLE CIRCUIT BREAKER SPACE IDENTIFYING INTENDED USE FOR ELECTRIC VEHICLE (EV) WITH THE FOLLOWING INSCRIPTION: EV CAPABLE.

12 PROVIDE (N) FUSED DISCONNECT WITH CURRENT LIMITING FUSES FOR (E) PANEL 'EP3'. PROVIDE FUSED COORDINATED TO LIMIT FAULT DUTY TO ASSUMED 10KAIC VALUE OF (E) BREAKERS IN (E) PANEL.

1

NUMBERED SHEET NOTES

1 PROVIDE UTILITY METER SOCKET AND CT SECTION TO PG&E STANDARDS.

2 CONNECT (N) FEEDER TO (E) POWER PANEL AT EACH (E) AND/OR RELOCATED MODULAR BUILDING.

3 SEE ELECTRICAL SITE PLAN E1.1 FOR EQUIPMENT LOCATION, ADDITIONAL UPSTREAM PULLBOXES NOT SHOWN ON THIS DIAGRAM AND CONDUIT ROUTING PATH.

4 STUB-UP CONDUIT(S) IN DISTRIBUTION SECTION OF MSB.

5 NOT USED.

6 FOR (F) POWER FEEDER TO (F) PHASE 2 BUILDING.

7 PROVIDE, INSTALL AND CONNECT COMPLETE NEW 10 FT. LONG BY 3/4" DIA. GROUND ROD AND #2 AWG COPPER GROUNDING ELECTRODE CONDUCTOR (G.E.C.). CONNECT G.E.C. TO EXISTING EQUIPMENT GROUND BUS IN (E) MODULAR BUILDING MAIN POWER PANELBOARD. INSTALL IN ACCORDANCE WITH SPEC. SECTION 26 24 00-2.02.C, EXCEPT #2 AWG G.E.C. SIZING IS ACCEPTABLE (MODULAR BUILDINGS ONLY). DO NOT BOND NEUTRAL BUS TO EQUIPMENT GROUND BUS AT (E) MODULAR BUILDING.

2

1

COPPER FEEDER SCHEDULE

FEEDER	CONDUIT	CONDUCTORS
8004	(2) 4"	(2) SETS: (4)#500 MCM & (1)#1/0 G.
6004	(2) 4"	(2) SETS: (4)#350 MCM & (1)#1/0 G.
4003	(1) 4"	(3)#500 MCM & (1)#1/0 G.
3004	(1) 3"	(4)#350 MCM & (1)#2 G.
2504	(1) 3"	(4)#250 MCM & (1)#4 G.
2254	(1) 3"	(4)#4/0 & (1)#4 G.
2003	(1) 2"	(3)#3/0 & (1)#4 G.
1503	(1) 2"	(3)#1/0 & (1)#6 G.
1253	(1) 1.25"	(3)#1 & (1)#6 G.
1004	(1) 2"	(4)#2 & (1)#6 G.
1003	(1) 1.25"	(3)#2 & (1)#6 G.
703	(1) 1"	(3)#4 & (1)#8 G.
603	(1) 1"	(3)#6 & (1)#10 G.
203	(1) .75"	(3)#12 & (1)#12 G.

FEEDER TAG KEY

400 4 N
- INDICATES DOUBLE NEUTRAL
- WIRE QUANTITY
- FEEDER AMPACITY

NOTE: NOT ALL FEEDERS ON THIS SCHEDULE ARE NECESSARILY USED ON THIS PROJECT.

PG&E PRIMARY SERVICE (INSTALLED UNDER SITE CONTRACT)

PG&E PAD MOUNT TRANSFORMER AND GROUNDING (INSTALLED UNDER SITE CONTRACT)

PG&E SECONDARY SERVICE. (INSTALLED UNDER SITE CONTRACT)

MAIN SWITCHBOARD 'MSB', 1,600A 120/208V, 3Ø, 4W 65KAIC, Nema 3R

10 AVAILABLE FAULT CURRENT & DATE — NP

C.T. — M UTILITY METER 1

Isc FAULT DUTY AT MAIN SERVICE = 42,000A (208V, 3-PHASE) (PER JOINT TRENCH DRAWINGS)

PROVIDE BONDING JUMPER TO NEUTRAL BUS WITH REMOVABLE LINK

1600A 3P MAIN

PHASE ASSIGNMENTS FOR 2 POLE CIRCUIT BREAKERS

PH. A/B	PH. C/A	PH. B/C	PH. A/B	PH. C/A

800A 3P | 150A 2P | 200A 2P | 125A 2P | 100A 2P | 100A 2P | 20A 1P | 40A 3P | 3P,400A FRAME SPACE | 3P,800A FRAME SPACE | (4) 225A FRAME, 3 POLE SPACES | (5) 100A FRAME, 3 POLE SPACES | 3P,250A FRAME SPACE — NP

CONTINUOUS GROUND BUS (100% RATED THROUGHOUT)

GEC'S

GROUNDING ELECTRODES
- (1)#4/0 CU UFER GROUND IN PAD, SEE SPECS
- GROUND ROD, SEE 1/E7.1

8004	1503	2003	1253	1003	1003	(2) #8, (1) #8G, 1" C. 420 LF VD=1.34% @ 5 FLA	603	(2) 4" C. (EMPTY)	(6) EV CAPABLE 100A FRAME, 2 POLE SPACES	FOR FUTURE PHOTOVOLTAIC AC INPUT CIRCUIT BREAKER
80 LF VD=0.46% @ 532 FLA	90 LF VD=1.27% @ 120 FLA Isc=9,601A	70 LF VD=0.82% @ 160 FLA Isc=15,238A	225 LF VD=3.33% @ 100 FLA Isc=3655A	155 LF VD=2.31% @ 80 FLA Isc=4,217A	200 LF VD=2.98% @ 80 FLA Isc=3,344A					
(E) PANEL 'EP1'	(E) PANEL 'EP2'	(E) PANEL 'EP3'	(ER) PANEL 'EP4A'	(ER) PANEL 'EP4B'						
(E) MODULAR BUILDING #1	(E) MODULAR BUILDING #2	(E) MODULAR BUILDING #3	(ER) MODULAR BUILDING #4							

(E) MODULAR BUILDINGS (SEE SITE PLAN E1.1)

IRRIGATION CONTROLLER — 3

WELL PUMP (7.5HP, 230V, 3PH) — 3

IN-GROUND POWER PULLBOX #P2 - (F) PHASE 2 BUILDING — 3, 6

#P4 — P — IN-GROUND POWER PULLBOX FOR (F) EV CHARGING STATIONS - SEE SITE PLAN E1.1

#P5 — P

1

DISTRIBUTION PANEL 'LDP1', 800A 120/208V, 3Ø, 4W, 42KAIC, Nema 1

Isc=27,573A

GROUND BUS

800A 3P MCB

225A 3P | 100A 3P | (3) 225A FRAME 3 POLE SPACES | 225A 3P | 300A 3P | 60A 3P | 60A 3P | 60A 3P | 60A 3P | 60A 3P | 60A 3P | 20A 3P | 15A 3P | (8) 100A FRAME, 3 POLE SPACES

GEC'S

GROUNDING ELECTRODES
- (1)#4/0 CU UFER GROUND IN FOUNDATION, SEE SPECS
- GROUND ROD, SEE 1/E7.1
- (1)#4/0 BARE CU IN 1"C TO BLDG. STEEL
- (1)#4/0 BARE CU IN 1"C. TO METALLIC COLD WATER SERVICE ENTRANCE

2254	1004	2254	3004	603	603	603	603	603	603	203	203
5 LF VD=0.02% @ 94 FLA Isc=25,625A	5 LF VD=0.02% @ 24 FLA Isc=23,090A	140 LF VD=0.68% @ 96 FLA Isc=9,425A	30 LF VD=0.17% @ 180 FLA Isc=21,168A	175 LF VD=2.36% @ 33 FLA Isc=1,574A	175 LF VD=2.36% @ 33 FLA Isc=1,574A	45 LF VD=0.61% @ 33 FLA Isc=5,255A	45 LF VD=0.46% @ 25 FLA Isc=5,255A	35 LF VD=0.56% @ 39 FLA Isc=6,408A	50 LF VD=0.48% @ 6 FLA Isc=1,408A	50 LF VD=0.37% @ 4.6 FLA Isc=1,408A
PANEL 'LA'	PANEL 'LB' / LTG. CONTROL PNL 'LCP'	PANEL 'LC'	PANEL 'LK'	MODULE 1	MODULE 2	MODULE 1	MODULE 2	VRV-2	MAU-1 (ROOF)	EF-9 1HP (ROOF)
SOUTH SIDE POWER	LIGHTING	NORTH SIDE POWER	KITCHEN	VRV-1A		VRV-1B				

1

SINGLE LINE DIAGRAM - POWER

SCALE: NONE

1 / E5.1

GENERAL NOTES

A. PER NEC 110.06, PROVIDE AND INSTALL ELECTRIC ARC FLASH WARNING SIGNS ON ALL SWITCHBOARDS, PANELBOARDS, CONTROL PANELS, METER SOCKET ENCLOSURES, AND MOTOR CONTROLS.

B. COORDINATE ALL POWER SHUT-DOWNS WITH CITY STAFF AT LEAST 10 WORKING DAYS IN ADVANCE.

C. OBTAIN APPROVAL OF NEW 'MSB' SHOP DRAWINGS FROM PG&E PRIOR TO MANUFACTURING. ALL EQUIPMENT SPECIFICATIONS TO MEET PG&E UTILITY STANDARDS.

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REGISTERED PROFESSIONAL ENGINEER PETER COLEMAN No.14738 Exp. 6/19 ELECTRICAL STATE OF CALIFORNIA

OAKLEY CALIFORNIA

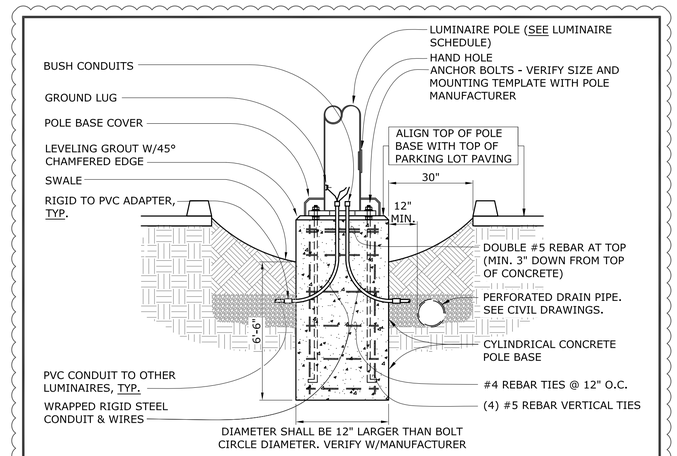
OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

SINGLE LINE DIAGRAM - POWER

No.	Issue
–	PERMIT SET
1	ENV. HEALTH PERMIT REVISIONS
1	PERMIT SET REV. / BID SET
2	ADDENDUM #2

Date: 12/1/17
Scale: AS NOTED
Design: DO/PJC
Drawn: TV
Approved:
Job No: 17-005

Drawing Number:
E5.1



POLE BASE AT BIOSWALE

4 E7.3

SCALE: NOT TO SCALE
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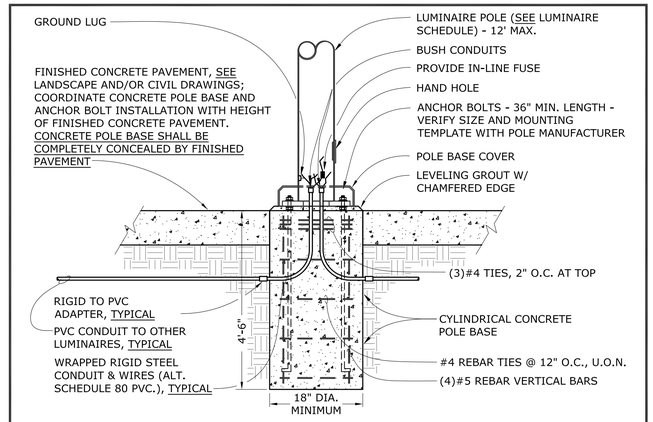

TYPES LE - POLE BASE IN CONCRETE PAVING

1 E7.3

SCALE: NOT TO SCALE
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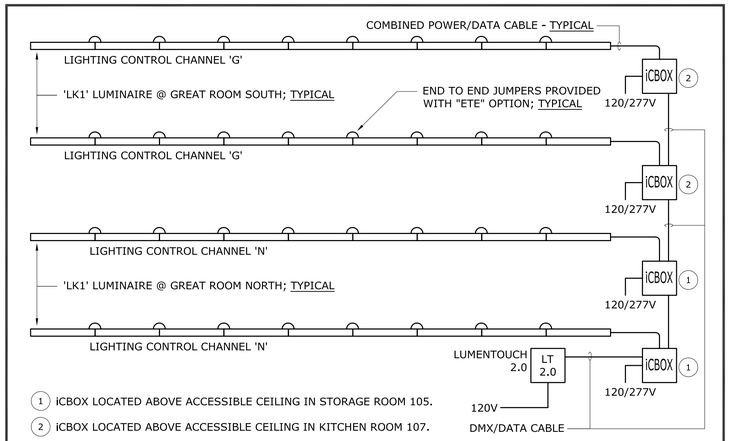

DMX CONTROLLED COVE LIGHTING

5 E7.3

SCALE: NONE
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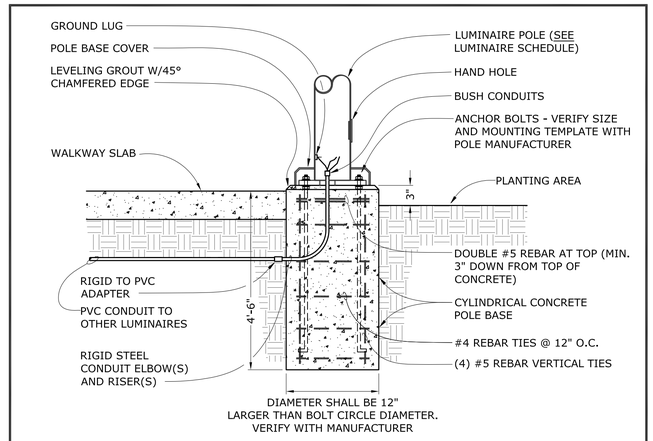
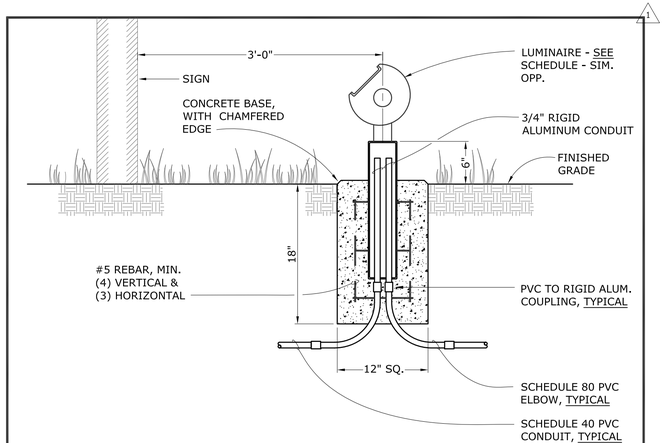


AT ENTRY WALKWAYS IN SIDEWALK OR PAVED AREA

2 E7.3

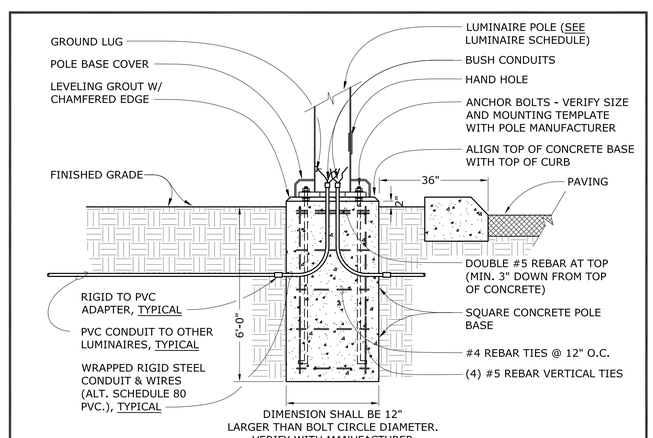
SCALE: NOT TO SCALE
FILE: L:\DETAILS\LIGHT\POLEBASE\LPOLE024



SIGN LIGHT MOUNTING

6 E7.3

SCALE: NOT TO SCALE
FILE: L:\DETAILS\LIGHT\GROUND\LGROU013



POLE BASE AT PLANTING AREA

3 E7.3

SCALE: NOT TO SCALE
FILE: L:\DETAILS\LIGHT\POLEBASE\LPOLE020

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OAKLEY CALIFORNIA

OAKLEY RECREATION CENTER CONTRA COSTA COUNTY CALIFORNIA
OAKLEY

DETAILS

No.	Issue
–	PERMIT SET
1	ENV. HEALTH PERMIT REVISIONS
1	PERMIT SET REV. / BID SET
2	ADDENDUM #2

Date: 12/1/17
Scale: AS NOTED
Design: DO/PJC
Drawn: TV
Approved:
Job No: 17-005

Drawing Number:
E7.3

Contra Costa County **Fire Protection District**

FIRE FLOW TEST RESULTS

Date: 12/22/17

TO: CITY OF OAKLEY
CITY OF OAKLEY
OAKLEY, CA

SITE: 1250 O'HARA AV..
OAKLEY, CA

X-ST.: LAUREL RD.

ATTN: KEVIN ROHANI

CCCFPD NO. : P-2017-06057

THE FOLLOWING FIRE FLOW RESULTS INCLUDE THE REQUIRED 10% REDUCTION FOR SYSTEM DESIGN:

STATIC 66.6 **RESIDUAL** 54.6 **GPM** 2925 **MAIN SIZE** 10" **WATER DISTRICT** DIABLO

Conducted on: 12/22/17 **at** 0900 **hours**
If you have any questions, please contact the undersigned.
TODD SCHIESS Todd Schiess

NOTE: Contact the local water district for detector check valve and backflow prevention requirements. All such devices shall be shown on underground plans and included in sprinkler calculations. *All sprinkler calculations shall be done in the HASS format or similar*

2010 Geary Road • Pleasant Hill, California 94523-4694 • Telephone (925) 941-3300 • Fax (925) 941-3309
East County • Telephone (925) 757-1303 • Fax (925) 941-3329 West County • Telephone (510) 374-7070
www.cccfpd.org

FIRE SPRINKLER NOTES

1. PROVIDE EARTHQUAKE BRACING PER NFPA 13 (2016) CHAPTER 9.3.5.
2. NFPA 13 (2016) CH. 9.3.4: CLEARANCE SHALL BE PROVIDED AROUND ALL PIPING EXTENDING THROUGH WALLS, FLOOR, PLATFORM AND FOUNDATION, INCLUDING DRAINS, FIRE DEPARTMENT CONNECTIONS, AND OTHER AUXILIARY PIPING.
3. ALL PIPE PENETRATIONS AT WALL AND FLOOR SHALL COMPLY WITH STRUCTURAL DESIGN AND CALIFORNIA BUILDING CODE. OBTAIN APPROVAL TO DRILL HOLES AT STRUCTURAL MEMBERS FROM STRUCTURAL ENGINEER BEFORE COMMENCEMENT OF WORK.
4. CONTRACTOR SHALL ENSURE THAT NO LIGHT FIXTURE, SOFFIT OR OTHER CEILING-MOUNTED OBJECT OBSTRUCTS DISCHARGE FROM SPRINKLERS.
5. ALL PIPES, FITTINGS AND VALVES SHALL BE PAINTED PER ARCHITECTURAL SPECIFICATIONS.
6. ALL SPRINKLER PIPING AT AREAS WITH NEW CEILING OR WALLS ARE TO BE CONCEALED.
7. ALL FIRE SPRINKLER WORK SHALL BE EXPOSED UNDER EXISTING CEILINGS.
8. PROVIDE TAMPER SWITCH ON ALL VALVES.
9. NFPA 13 (2016) CH. 10.10.2.1: UNDERGROUND MAINS AND LEAD-IN CONNECTIONS TO SYSTEM RISER SHALL BE COMPLETELY FLUSHED BEFORE CONNECTION IS MADE TO OVERHEAD SPRINKLER PIPING SYSTEMS (WITNESSED BY THE INSPECTOR OF RECORD).
10. NFPA 13 (2016) CH. 10.10.2.2.1: ALL PIPING AND APPURTENANCES SUBJECTED TO SYSTEM WORKING PRESSURE SHALL BE HYDROSTATICALLY TESTED AT 200 PSI AND SHALL MAINTAIN THAT PRESSURE WITHOUT LOSS FOR 2 HOURS (WITNESSED BY THE INSPECTOR OF RECORD). LOCAL FIRE DEPARTMENT SHALL BE NOTIFIED OF DATE AND TESTING SO THAT THEY MAY OBSERVE TESTING.
11. NFPA 13 (2016) CH. 6.2.9: PROVIDE SPARE SPRINKLER HEAD CABINET, SPRINKLER WRENCH AND NO FEWER THAN 6 SPARE SPRINKLER HEADS MATCHING THE TYPES AND TEMPERATURE RATING IN EACH PROTECTED BUILDING FOR SYSTEMS LESS THAN 300 SPRINKLERS (12 SPARE SPRINKLER HEADS FOR SYSTEMS 300 TO 1000 SPRINKLERS). MOUNT CABINET 5 FT.-6 FT. A.F.F. NEAR SYSTEM RISER.
12. NFPA 13 (2016) CH. 9.3.6.3: THE END SPRINKLER ON A LINE SHALL BE RESTRAINED AGAINST EXCESSIVE VERTICAL AND LATERAL MOVEMENT.
13. NFPA 13 (2016) CH. 9.3.6.1: PROVIDE RESTRAIN OF BRANCH LINES BY USE OF ONE OF THE FOLLOWING:
14. 1) A LISTED SWAY BRACE ASSEMBLY
15. 2) A WRAPAROUND U-HOOK SATISFYING THE REQUIREMENTS OF 6-4.5.3 EXCEPTION NO.3
16. 3) NUMBER 12, 440 LB WIRE INSTALLED AT LEAST 45 DEGREES FROM THE VERTICAL PLANE AND ANCHORED ON BOTH SIDE OF THE PIPE.
17. NFPA 72 CH. 5.7.2: SPRINKLER FLOW SWITCH SHALL BE TESTED BY INSPECTOR OF RECORD TO CONFIRM THAT WHEN THE INSPECTOR'S TEST VALVE IS ACTIVATED AN ALARM WILL SOUND NO LESS THAN 20 SECONDS AND NOT MORE THAN 90 SECONDS AFTER INITIAL FLOW.
18. NFPA 13 (2016) CH. 6.9.3.1: FLOW SWITCH SHALL BE CONNECTED TO A 10 INCH OUTSIDE ALARM BELL AT EACH RISER.
19. NFPA 13 (2016) FIGURE A.8.17.1: APPROVED IDENTIFICATION SIGNS SHALL BE PROVIDED FOR OUTSIDE ALARM BELL WHICH STATES: "SPRINKLER FIRE ALARM - WHEN BELL RINGS CALL 911 / FIRE DEPARTMENT".
20. NFPA 13 (2016) FIGURE A.24.5: A PERMANENT HYDRAULIC DESIGN DATA PLACARD SHALL BE ATTACHED TO EACH RISER.
21. NFPA 13 (2016) FIGURE 24.1: SPRINKLER CONTRACTOR (C-16) SHALL COMPLETE AND SIGN "CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR ABOVEGROUND PIPING". THIS FORM SHALL BE GIVEN TO THE INSPECTOR OF RECORD WHO WILL TURN-IN FOR DSA RECORDS.
22. NFPA 24 (2016) FIGURE 10.10.1: SPRINKLER CONTRACTOR (C-16) SHALL COMPLETE AND SIGN "CONTRACTOR'S MATERIAL AND TEST CERTIFICATE FOR UNDERGROUND PIPING" AND DISTRIBUTE PER NFPA 24 CH. 10.10.1 AND NFPA 13 CH. 10.10.1.
23. NFPA 13 (2016) CH. 24.2.3.4: THE MAIN DRAIN VALVE SHALL BE OPEN AND REMAIN OPEN UNTIL THE SYSTEM PRESSURE STABILIZES. THE STATIC AND RESIDUAL PRESSURES SHALL BE RECORDED ON THE CONTRACTOR'S MATERIAL AND TEST CERTIFICATE (WITNESSED BY INSPECTOR OF RECORD)
24. TITLE 19 ARTICLE 906(A): A LABEL OF THE SELF ADHESIVE TYPE SHALL BE PLACED ON THE FIRE DEPARTMENT CONNECTION OR ON THE RISER FOR FIRE SPRINKLER SYSTEM WITH THE DATE OF SERVICE AND/OR DATE INSTALLATION WAS PERFORMED AND LICENSE NUMBER OF PERSON PERFORMING SERVICE WORK.
25. NFPA 13 (2016) CH. 8.17.2.4.7.1: EACH FIRE DEPARTMENT CONNECTION TO SPRINKLER SYSTEMS SHALL BE DESIGNATED BY A SIGN HAVING RAISED OR ENGRAVED LETTERS AT LEAST 1 IN. IN HEIGHT ON PLATE OR FITTING READING SERVICE DESIGN.
26. CBC (2016) CH. 903.4.1: CONNECTIONS TO PROTECTED PREMISES AND SUPERVISING STATION FIRE ALARM SYSTEMS SHALL BE TESTED TO VERIFY PROPER IDENTIFICATION AND RETRANSMISSION OF ALARMS FROM AUTOMATIC FIRE EXTINGUISHING SYSTEMS. (WITNESSED BY PROJECT ENGINEER).
27. CBC (2016) CH. 904.3.1: MAIN FIRE ALARM PANEL VALVE MONITORING AND WATER FLOW ALARM AND TROUBLE SIGNALS SHALL BE DISTINCTLY DIFFERENT AND SHALL BE AUTOMATICALLY TRANSMITTED TO AN APPROVED CENTRAL STATION MONITORING COMPANY.
28. THE AUTOMATIC SPRINKLER SYSTEM MUST BE CONNECTED TO THE BUILDING FIRE ALARM SYSTEM PER 2016 CBC 907.2.3.

GENERAL NOTES AND SPECIFICATIONS

1. ALL WORK SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL CODES, LAWS AND REGULATIONS.INSTALLATION SHALL CONFORM TO NFPA 13, 2016 EDITION, AS MODIFIED BY THE OAKLAND FIRE DEPARTMENT.
2. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL REQUIRED UTILITY SERVICES, INSPECTIONS AND PERMITS.
3. DESIGN IS BASED ON DRAWINGS PROVIDED BY OWNER. CONTRACTOR SHALL VERIFY ALL MEASUREMENTS AND NOTIFY OWNER'S REPRESENTATIVE IMMEDIATELY IF A DISCREPANCY BETWEEN THE DRAWING AND THE ACTUAL SITE CONDITION OCCURS. STOP THE WORK THAT IS AFFECTED AND OBTAIN INSTRUCTION FROM THE OWNER'S REPRESENTATIVE BEFORE THE WORK CAN BE RESTARTED.
4. FIELD VERIFY UNDERGROUND PIPE LENGTHS AND ROUTING.
5. FURNISH AND INSTALL ALL MATERIAL, EQUIPMENT AND LABOR AS SHOWN AND AS NECESSARY FOR A COMPLETE WORKABLE SYSTEM.
6. THE DRAWINGS ARE DIAGRAMMATIC AND INDICATE THE GENERAL ARRANGEMENT AND LOCATION OF PIPING AND EQUIPMENT. MAKE DEVIATIONS SUCH AS OFFSETS IN PIPES THAT ARE NECESSARY TO MEET SITE CONDITIONS AND TO COORDINATE WORK WITH OTHER TRADES. ALL DEVIATIONS TO THE CONTRACT DOCUMENTS, WHETHER SHOWN OR NOT, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE MADE AT NO EXTRA EXPENSE TO THE OWNER.
7. COORDINATE ALL CUTTING AND PATCHING WITH GENERAL CONTRACTOR. INDIVIDUAL SUBCONTRACTOR SHALL BE RESPONSIBLE FOR ALL CUTTING AND PATCHING TO THEIR WORK.
8. SIZES SHOWN ON PLANS ARE CALCULATED SIZES.
9. CONTRACTOR SHALL RESTORE ALL DAMAGE AND CLEAN THE PREMISES ON A DAILY BASIS.
10. CONTRACTOR SHALL GUARANTEE THAT THE WORK DONE UNDER THIS SPECIFICATION WILL BE FREE FROM FAULTY MATERIALS OR WORKMANSHIP AND HEREBY AGREES, UPON RECEIVING NOTIFICATION FROM THE OWNER, AND TO OWNER'S ENTIRE SATISFACTION, TO CORRECT ALL DEFECTS, DAMAGES OR IMPERFECTIONS APPEARING IN SAID WORK FOR A PERIOD OF ONE (1) YEAR FROM DATE OF FILING OF COMPLETION.
11. SUBMIT FOUR (4) SETS OF SHOP DRAWINGS AND MANUFACTURER'S PRODUCT LITERATURE FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION OF WORK.
12. SPRINKLER TEMPERATURE RATINGS TO BE PER 2010 CBC CHAPTER 9 FIRE PROTECTION SYSTEMS.
13. TO PROVIDE ADEQUATE HEADROOM, THE SPRINKLER PIPING SHALL BE MAINTAINED AS HIGH AS POSSIBLE ABOVE THE FLOOR IN FINISHED AREAS.
14. ALL CONCEALED SPRINKLER HEAD SHALL HAVE COPPER PLATES REMOVED AND ALL HEADS SHALL BE CLEARLY VISIBLE AT FINAL INSPECTION.
15. PROVIDE OWNER WITH TWO (2) SETS OF AS-BUILT DRAWINGS AND TWO (2) BOUND SETS OF ALL OPERATING MANUALS, TESTING INSTRUCTIONS, DIAGRAMS, SERVICE CONTRACTS, GUARANTEES, ETC.

ABBREVIATIONS

A.P.	ACCESS PANEL	MAX.	MAXIMUM
A.F.F.	ABOVE FINISHED FLOOR	MIN.	MINIMUM
A.F.G.	ABOVE FINISHED GRADE	N.I.C.	NOT IN CONTRACT
BEL.	BELOW	OS&Y	OUTSIDE SCREW & YOKE
B.O.R.	BOTTOM OF RISER	PIV	POST INDICATOR VALVE
CLG.	CEILING	RN	RISER NIPPLE
DN.	DOWN	S.A.D.	SEE ARCHITECTURAL DRAWINGS
DR	DROP NIPPLE	S.C.D.	SEE CIVIL DRAWINGS
DSA	DIVISION OF THE STATE ARCHITECT	S.M.D.	SEE MECHANICAL DRAWINGS
DSP	DRY STAND PIPE	S.P.D.	SEE PLUMBING DRAWINGS
(E)	EXISTING	S/W	SWITCH
FDC	FIRE DEPARTMENT CONNECTION	T.O.R.	TOP OF RISER
FIG.	FIGURE	TYP.	TYPICAL
FR.	FROM	U.G.	UNDERGROUND
HT.	HEIGHT	U.O.N.	UNLESS OTHERWISE NOTED
H.V.	HOSE VALVE	W/	WITH

SCOPE OF WORK

INSTALLATION OF AN AUTOMATIC FIRE SPRINKLER SYSTEM THROUGHOUT THE BUILDING.

SHEET INDEX

SYMBOLS LEGEND

PIPE HANGER	
END OF LINE RESTRAINT	
BRANCH LINE RESTRAINT	
2-WAY SWAY BRACE	
4-WAY RISER SWAY BRACE	
FIRE ALARM BELL	
AUTOMATIC FIRE SPRINKLER RISER	
PIPE RISERS	
HYDRAULIC CALCULATION REFERENCE POINTS	(#)
INSPECTOR'S TEST VALVE	
PIPE CAP	
FIRE PROTECTION PIPE: DIAMETER / APPROXIMATE LENGTH	1-1/2" 12'-6"
FIRE SPRINKLER HEAD LOCATION	12'-6"
ABOVEGROUND PIPE CONCEALED	
ABOVEGROUND PIPE EXPOSED	
UNDERGROUND PIPE	
EXISTING FIRE SPRINKLER PIPE	
EXISTING FIRE SPRINKLER PIPE DEMO	

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Oakland, CA 94621
510-569-2000

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OAKLEY CALIFORNIA

OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

FIRE PROTECTION NOTES, SYMBOLS AND WATER FLOW DATA

No.	Revisions
–	PERMIT SET
1	ENV. HEALTH PERMIT REVISIONS
1	PERMIT SET REV. / BID SET
2	ADDENDUM 2

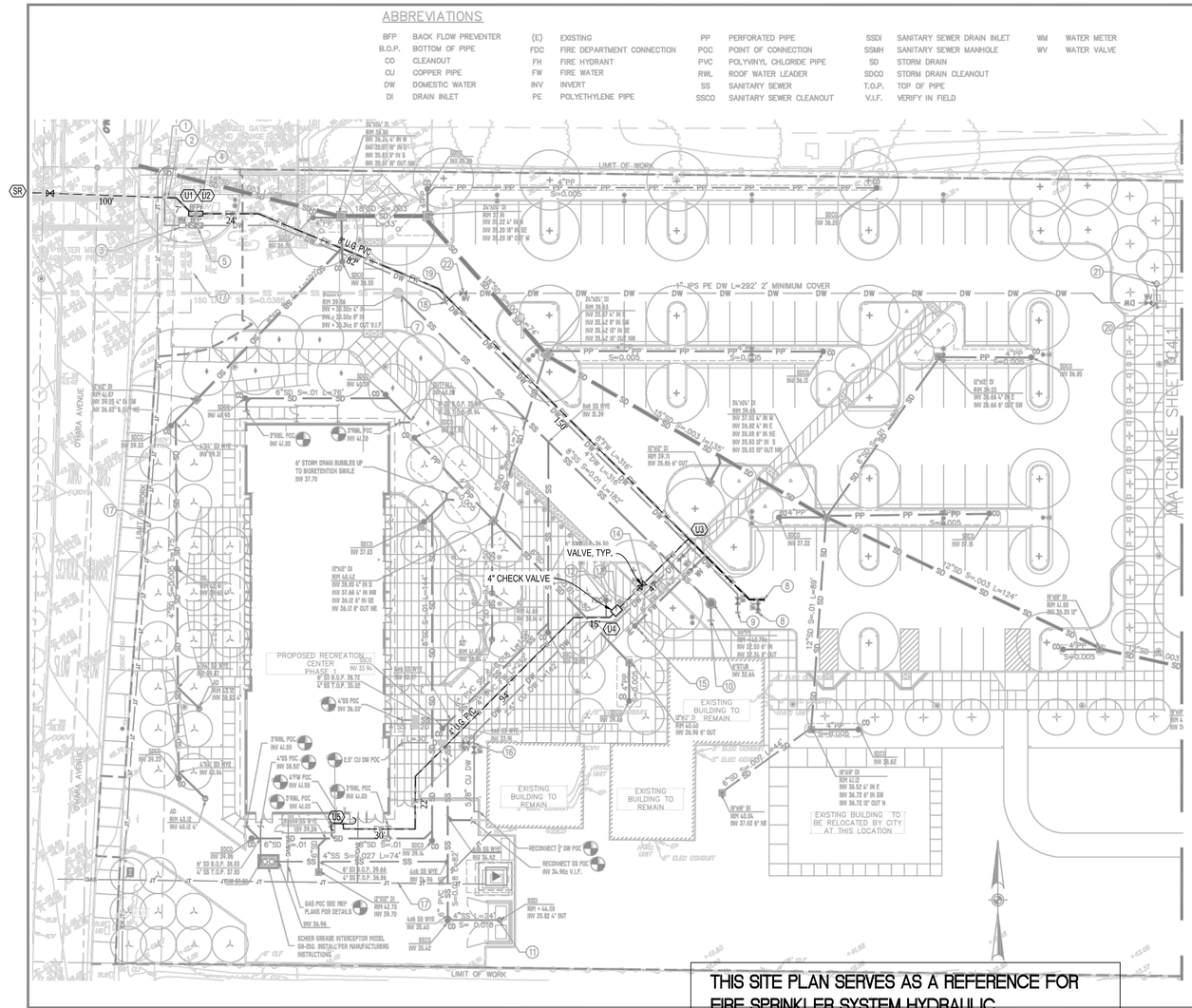
Date: 1/16/18
Scale: NONE
Design:
Drawn:
Approved:
Job No: 17-005

Drawing Number:
FP0.1

2

ABBREVIATIONS

BFP	BACK FLOW PREVENTER	(E)	EXISTING	PP	PERFORATED PIPE	SSDI	SANITARY SEWER DRAIN INLET	WM	WATER METER
B.O.P.	BOTTOM OF PIPE	FDC	FIRE DEPARTMENT CONNECTION	POC	POINT OF CONNECTION	SSMH	SANITARY SEWER MANHOLE	WV	WATER VALVE
CO	CLEANOUT	FH	FIRE HYDRANT	PVC	POLYVINYL CHLORIDE PIPE	SD	STORM DRAIN		
CU	COPPER PIPE	FW	FIRE WATER	RWL	ROOF WATER LEADER	SDCO	STORM DRAIN CLEANOUT		
DW	DOMESTIC WATER	INV	INVERT	SS	SANITARY SEWER	T.O.P.	TOP OF PIPE		
DI	DRAIN INLET	PE	POLYETHYLENE PIPE	SSCO	SANITARY SEWER CLEANOUT	V.I.F.	VERIFY IN FIELD		



LEGEND

- SD — SD — PROPOSED STORM DRAIN LINE
- SS — SS — PROPOSED SANITARY SEWER LINE
- DW — DW — PROPOSED DOMESTIC WATER LINE
- FW — FW — PROPOSED FIRE WATER LINE
- GAS — GAS — PROPOSED GAS LINE
- JT — JT — PROPOSED JOINT TRENCH
- LIMIT OF WORK
- PROPOSED STORM DRAIN INLET
- CO PROPOSED CLEANOUT
- PROPOSED MANHOLE
- PROPOSED SEWER DRAIN INLET
- WV PROPOSED WATER VALVE
- FH PROPOSED FIRE HYDRANT
- FDC PROPOSED FIRE DEPARTMENT CONNECTION
- BFP PROPOSED BACKFLOW PREVENTER
- WM PROPOSED WATER METER
- PIV PROPOSED POST INDICATOR VALVE
- PROPOSED POINT OF CONNECTION

UTILITY NOTES

ALL WATER RELATED WORK SHALL COMPLY WITH DIABLO WATER DISTRICT STANDARD SPECIFICATIONS AND PLANS

ALL SANITARY SEWER WORK SHALL COMPLY WITH IRON HOUSE SANITARY SEWER DISTRICT STANDARD SPECIFICATIONS AND PLANS.

1. INSTALL NEW 8"X4"X8" TEE CONNECTION
2. INSTALL COUPLING TO CONNECT TO EXISTING 8" DUCTILE IRON DOMESTIC WATERLINE
3. INSTALL NEW DOMESTIC WATER COMPOUND METER AND CHRISTY B-44 METER BOX
4. INSTALL NEW FIRE WATER DOUBLE CHECK BACKFLOW PREVENTER
5. INSTALL NEW DOMESTIC WATER REDUCE PRESSURE PRINCIPLE BACKFLOW PREVENTER
6. NOT USED
7. CONNECT NEW 8" SS TO NEW SSMH
8. STUB FIRE WATER LINE AND INSTALL 8" BLIND FLANGE FOR FUTURE USE
9. STUB DOMESTIC WATER LINE AND INSTALL 4" BLIND FLANGE FOR FUTURE USE
10. STUB SANITARY SEWER LINE AND INSTALL 6" BLIND FLANGE FOR FUTURE USE.
11. INSTALL NEW SANITARY SEWER DRAIN AND CONNECT NEW 4" SEWER LINE.
12. INSTALL NEW FIRE DEPARTMENT CONNECTION
13. INSTALL NEW SINGLE CHECK VALVE
14. INSTALL NEW POST INDICATOR VALVE
15. INSTALL NEW FIRE HYDRANT
16. INSTALL NEW 2"X2"X⅝" TEE
17. JOINT TRENCH SHOWN FOR REFERENCE ONLY
18. INSTALL A BRONZE WIDE BAND OR DOUBLE STRAP SADDLE, AWWA STANDARD (CC) THREAD ONLY AND CONNECT 1" IPS PE PIPE AT AN UPWARD 45° ANGLE TO A 2 FOOT MINIMUM COVER.
19. INSTALL CORPORATION STOP, KEY OR BALL TYPE, INLET; AWWA STD (CC) THREAD ONLY AT THE SERVICE SADDLE.
20. CONNECT 1" IPS PE PIPE TO NEW DRINKING FOUNTAIN PER MANUFACTURERS INSTRUCTIONS. INSTALL SHUT-OFF VALVE AND PRESSURE REDUCER PRIOR TO CONNECTION. SEE LANDSCAPE DRAWINGS FOR DRINKING FOUNTAIN DETAIL.
21. INSTALL 1.5" SCHEDULE 40 PVC PIPE TO CONNECT THE DRINKING FOUNTAIN TO THE DRY WELL/DRAINAGE SUMP. SEE LANDSCAPE DRAWINGS FOR DRAINAGE SUMP DETAILS.
22. INSTALL MUELLER 300 BALL CURB VALVE COMPATIBLE WITH 1" IPS PE PIPE.

GRAPHIC SCALE

(IN FEET)
1 inch = 80 ft.

THIS SITE PLAN SERVES AS A REFERENCE FOR FIRE SPRINKLER SYSTEM HYDRAULIC CALCULATIONS ONLY. SEE CIVIL PLANS FOR UNDERGROUND FIRE SERVICE INSTALLATION AND DETAILS.

1 SITE PLAN
1" = 30'

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4670 WILLOW RD
SUITE 250
PLEASANTON, CA 94588
925-396-7700
925-396-7799 (FAX)

HM MECHANICAL GROUP
8517 Earhart Rd. Suite 230
Oakland, CA 94621
510-569-2000

REGISTERED PROFESSIONAL ENGINEER JOHN CHOU No. M34214 CIVIL STATE OF CALIFORNIA

OAKLEY CALIFORNIA

OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

SITE UTILITY PLAN

Issue
PERMIT SET

Date: 09/15/17
Scale: AS NOTED
Design: BR
Drawn: AM
Approved: MC
Job No: 17-005

Drawing Number: C4.0

No.	Revisions
–	PERMIT SET
1	ENV. HEALTH PERMIT REVISIONS
1	PERMIT SET REV. / BID SET
2	ADDENDUM 2

Date: 1/16/18
Scale: 1" = 30'
Design:
Drawn:
Approved:
Job No: 17-005

OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

FIRE PROTECTION SITE PLAN

Drawing Number: FP1.1

2

SPRINKLER LEGEND

	SYMBOL	COUNT	TYPE	RESPONSE	TEMP	K-FACTOR	ORIFICE	MANUFACTURER	MODEL	SIN	FINISH	REMARKS
1	⊗	-	PENDENT ON DROP NIPPLE	QUICK	155°F	5.6	1/2"	VIKING	MICROFAST MODEL M	VK302	CHROME	W/ VIKING MODEL F-1 ADJUSTABLE ESCUTCHEON
2	○	-	UPRIGHT ON SPRIG	QUICK	175°F	5.6	1/2"	VIKING	MICROFAST MODEL M	VK300	BRASS	
3	●	-	CONCEALED PENDENT	QUICK	155°F	5.6	1/2"	VIKING	MIRAGE	VK462	BRASS	W/ VIKING STANDARD COVER PLATE- POLISHED CHROME

ALL BRANCH LINE PIPE SIZES AND LENGTHS NOT INDICATED ON THE FLOOR PLANS ARE BASED ON THE TYPICAL BRANCH LINE PIPE SIZES AND LENGTHS AS INDICATED WITHIN THE SAME FLOOR OR COMPARTMENT.

DESIGN INFORMATION

BUILDING	REC CENTER
FLOOR LEVEL #	1
REMOTE AREA NAME	REMOTE AREA #3
HAZARD	ORDINARY HAZARD
DENSITY	0.15 GPM/SQ. FT.
*AREA REDUCTION	--
MAX. CEILING HEIGHT	8'-8"
NO OF SPRINKLER	13
AREA OF OPERATION	1500 SF
AREA PER HEAD	130 SQ. FT. MAX
HOSE ALLOWANCE: INSIDE 0	OUTSIDE 250

SYSTEM DEMAND

PSI REQUIRED @ SUPPLY	53.79 PSI
GPM REQUIRED	375.8 GPM
PSI AVAILABLE @ SUPPLY	66.33 PSI
SAFETY MARGIN	18.9%
RESIDUAL PSI DEMAND @ THE BASE OF RISER	36.8 PSI
PRV SETTING & LOSS	N/A
SYSTEM TYPE:	WET

DESIGN INFORMATION

BUILDING	REC CENTER
FLOOR LEVEL #	1
REMOTE AREA NAME	REMOTE AREA #2
HAZARD	LIGHT HAZARD
DENSITY	0.10 GPM/SQ. FT.
*AREA REDUCTION	--
MAX. CEILING HEIGHT	26'-0"
NO OF SPRINKLER	12
AREA OF OPERATION	1500 SF
AREA PER HEAD	180 SQ. FT. MAX
HOSE ALLOWANCE: INSIDE 0	OUTSIDE 100

SYSTEM DEMAND

PSI REQUIRED @ SUPPLY	44.43 PSI
GPM REQUIRED	324.9 GPM
PSI AVAILABLE @ SUPPLY	66.39 PSI
SAFETY MARGIN	33.1%
RESIDUAL PSI DEMAND @ THE BASE OF RISER	29.1 PSI
PRV SETTING & LOSS	N/A
SYSTEM TYPE:	WET

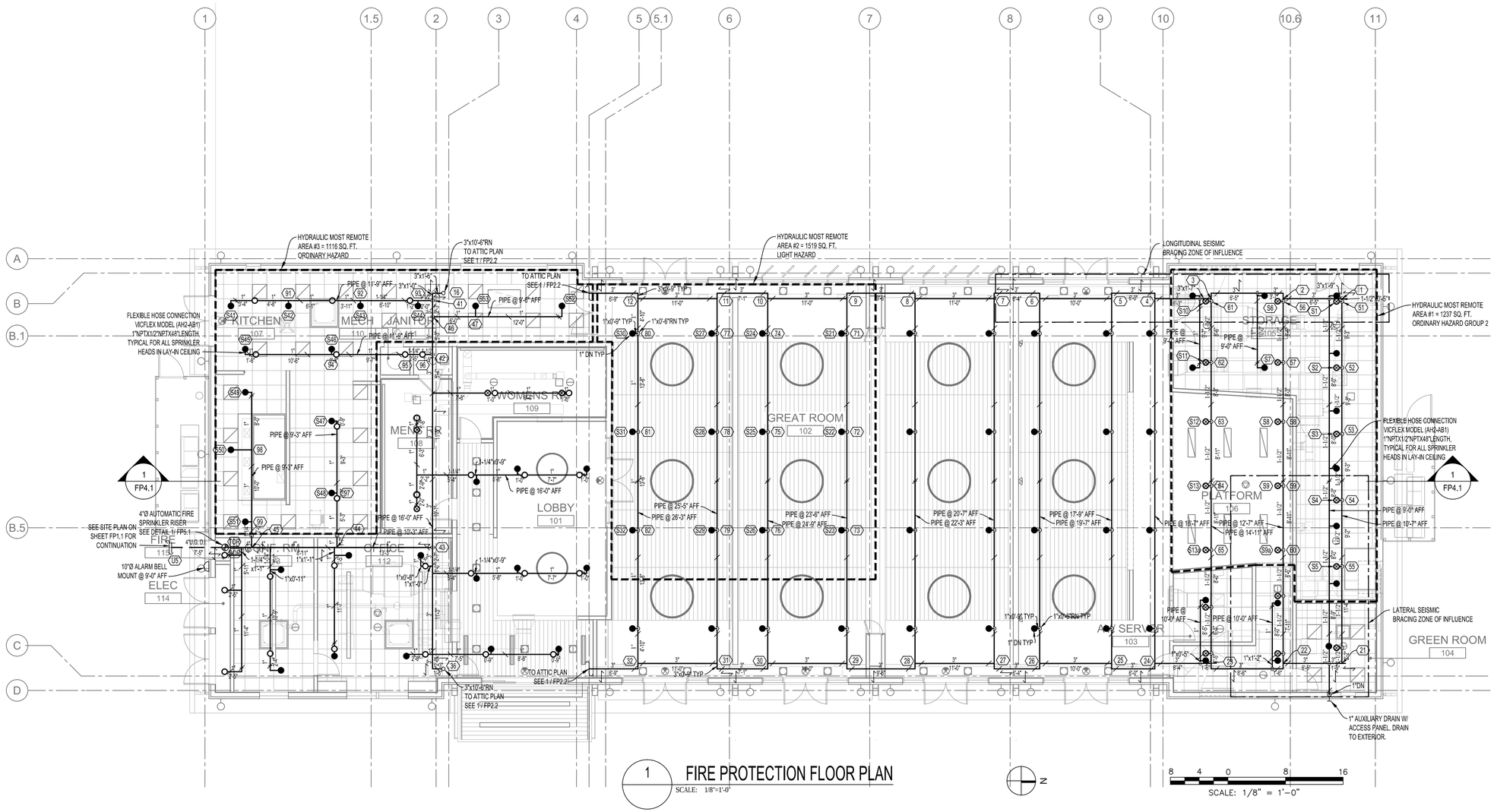
DESIGN INFORMATION

BUILDING	REC CENTER
FLOOR LEVEL #	1
REMOTE AREA NAME	REMOTE AREA #1
HAZARD	ORDINARY HAZARD GROUP 2
DENSITY	0.20 GPM/SQ. FT.
*AREA REDUCTION	--
MAX. CEILING HEIGHT	17'-0"
NO OF SPRINKLER	13
AREA OF OPERATION	1500 SF
AREA PER HEAD	100 SQ. FT. MAX
HOSE ALLOWANCE: INSIDE 0	OUTSIDE 250

SYSTEM DEMAND

PSI REQUIRED @ SUPPLY	48.54 PSI
GPM REQUIRED	518.2 GPM
PSI AVAILABLE @ SUPPLY	64.32 PSI
SAFETY MARGIN	18.9%
RESIDUAL PSI DEMAND @ THE BASE OF RISER	35.3 PSI
PRV SETTING & LOSS	N/A
SYSTEM TYPE:	WET

1. PROVIDE SPRINKLER GUARDS IN ALL AREAS OF LOW CEILINGS, OR WHERE SUBJECT TO PHYSICAL EDUCATION ACTIVITIES.
2. DRAWINGS INDICATE GENERAL ARRANGEMENT OF PIPING AND EQUIPMENT. SHOULD IT BE NECESSARY TO DEVIATE FROM ARRANGEMENT OR LOCATION INDICATED IN ORDER TO MEET ARCHITECTURAL CONDITIONS OR SITE CONDITIONS, OR DUE TO INTERFERENCE WITH WORK IN OTHER DIVISIONS, SUCH DEVIATIONS AS OFFSETS, RISES, OR DROPS IN PIPING THAT MAY BE NECESSARY, WHETHER SHOWN OR NOT, SHALL BE MADE AT CONTRACTOR'S EXPENSE.



1 FIRE PROTECTION FLOOR PLAN
SCALE: 1/8"=1'-0"

N

8 4 0 8 16
SCALE: 1/8" = 1'-0"

HM MECHANICAL GROUP
8517 Earhart Rd, Suite 230
Oakland, CA 94621
510-569-2000

REGISTERED PROFESSIONAL ENGINEER JOHN CHOU No. M34214 MECHANICAL STATE OF CALIFORNIA

OAKLEY CALIFORNIA

OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

FIRE PROTECTION FLOOR PLAN

No.	Revisions
-	PERMIT SET
1	ENV. HEALTH PERMIT REVISIONS
1	PERMIT SET REV. / BID SET
2	ADDENDUM 2

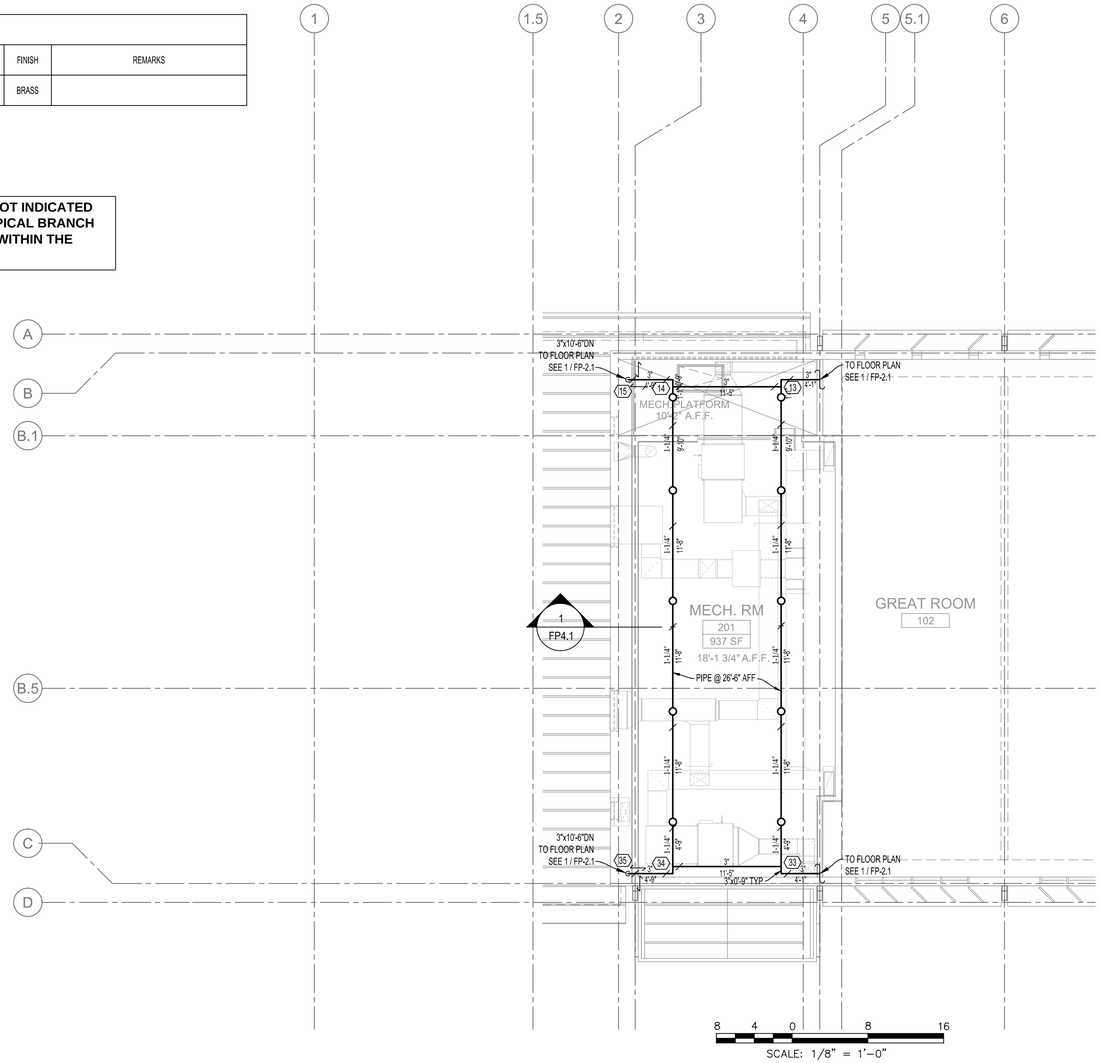
Date: 1/15/18
Scale: 1/8"=1'-0"
Design:
Drawn:
Approved:
Job No: 17-005

Drawing Number:
FP2.1

2

SPRINKLER LEGEND												
	SYMBOL	COUNT	TYPE	RESPONSE	TEMP	K-FACTOR	ORIFICE	MANUFACTURER	MODEL	SIN	FINISH	REMARKS
2	O	-	UPRIGHT ON SPRIG	QUICK	175°F	5.6	1/2"	VIKING	MICROFAST MODEL M	VK300	BRASS	

ALL BRANCH LINE PIPE SIZES AND LENGTHS NOT INDICATED ON THE FLOOR PLANS ARE BASED ON THE TYPICAL BRANCH LINE PIPE SIZES AND LENGTHS AS INDICATED WITHIN THE SAME FLOOR OR COMPARTMENT.



1 FIRE PROTECTION ATTIC PLAN
SCALE: 1/8"=1'-0"

N

1. PROVIDE SPRINKLER GUARDS IN ALL AREAS OF LOW CEILINGS, OR WHERE SUBJECT TO PHYSICAL EDUCATION ACTIVITIES.
2. DRAWINGS INDICATE GENERAL ARRANGEMENT OF PIPING AND EQUIPMENT. SHOULD IT BE NECESSARY TO DEVIATE FROM ARRANGEMENT OR LOCATION INDICATED IN ORDER TO MEET ARCHITECTURAL CONDITIONS OR SITE CONDITIONS, OR DUE TO INTERFERENCE WITH WORK IN OTHER DIVISIONS, SUCH DEVIATIONS AS OFFSETS, RISES, OR DROPS IN PIPING THAT MAY BE NECESSARY, WHETHER SHOWN OR NOT, SHALL BE MADE AT CONTRACTOR'S EXPENSE.

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STATE OF CALIFORNIA

OAKLEY CALIFORNIA

OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

FIRE PROTECTION ATTIC PLAN

No.	Revisions
-	PERMIT SET
1	ENV. HEALTH PERMIT REVISIONS
1	PERMIT SET REV. / BID SET
2	ADDENDUM 2

Date: 1/16/18
Scale: 1/8"=1'-0"
Design:
Drawn:
Approved:
Job No: 17-005

Drawing Number:
FP2.2

2

Tol-Brace Seismic Calculations

Project Address: Oakley Recreation Center
1250 O'hara Avenue
Oakley, CA 94561
Job #

H&M Mechanical Group
8517 Earhart RD
Oakland, CA 94621

B-Line by EATON

Calculations based on 2016 NFPA Pamphlet #13

Brace Information

Maximum Spacing	50' 0" (15.24 m)
Maximum Brace Length	7' 0" (2.13 m)
Bracing Material	1" Sch.40
Angle from Vertical	45° Min.
Least Rad. of Gyration	0.42" (11 mm)
L/R Value	200
Max Horizontal Load	1310 lbs (594 kg)
Force Factor (Cp)	0.671

Fastener Information

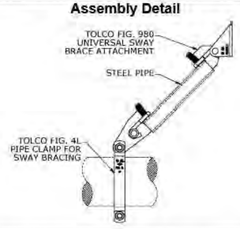
Fastener Orientation	NFPA Type E
Maximum Load	400 lbs (181 kg)
Diameter	5/8in. (16 mm)
Length	3-1/2in. (89 mm)
Type	Dual Lag Bolts - Fig 906

Tolco Brace Components

Tolco Component Fig. Number	Adjusted Load
Fig. 4L Clamp	1425 lbs (646 kg)
Fig.980 Universal Swivel	1425 lbs (646 kg)

*Calculation Based on CONCENTRIC Loading
*Please Note: These calculations are for Tolco components only. Use of any other components voids these calculations and the listing of the assembly.

Assembly Detail



Brace Identification on Plans	Longitudinal
Orientation of Brace	Longitudinal

Braced Pipe: 3" Sch.10 Steel Pipe

Load Information

Size and Type of Pipe	Total Length	Total Calculated Load
3" Sch.10 Steel Pipe (76.2 mm)	50ft (15.2 m)	266 lbs (121 kg)
Percentage added for Fittings and Sprinklers	15%	40 lbs (18.14 kg)
Total Adjusted Load of all pipe within Zone of Influence		306 lbs (139 kg)

(Tol-Brace Verizon 8)

LONGITUDINAL

Tol-Brace Seismic Calculations

Project Address: Oakley Recreation Center
1250 O'hara Avenue
Oakley, CA 94561
Job #

H&M Mechanical Group
8517 Earhart RD
Oakland, CA 94621

B-Line by EATON

Calculations based on 2016 NFPA Pamphlet #13

Brace Information

Maximum Spacing	20' 0" (6.1 m)
Maximum Brace Length	7' 0" (2.13 m)
Bracing Material	1" Sch.40
Angle from Vertical	45° Min.
Least Rad. of Gyration	0.42" (11 mm)
L/R Value	200
Max Horizontal Load	1310 lbs (594 kg)
Force Factor (Cp)	0.671

Fastener Information

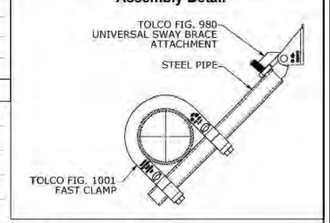
Fastener Orientation	NFPA Type E
Maximum Load	400 lbs (181 kg)
Diameter	5/8in. (16 mm)
Length	3-1/2in. (89 mm)
Type	Dual Lag Bolts - Fig 906

Tolco Brace Components

Tolco Component Fig. Number	Adjusted Load
Fig. 1001 Clamp	1425 lbs (646 kg)
Fig.980 Universal Swivel	1425 lbs (646 kg)

*Calculation Based on CONCENTRIC Loading
*Please Note: These calculations are for Tolco components only. Use of any other components voids these calculations and the listing of the assembly.

Assembly Detail



Brace Identification on Plans	Lateral
Orientation of Brace	Lateral

Braced Pipe: 3" Sch.10 Steel Pipe

Load Information

Size and Type of Pipe	Total Length	Total Calculated Load
3" Sch.10 Steel Pipe (76.2 mm)	20ft (6.1 m)	107 lbs (49 kg)
1.5" Sch.40 Steel Pipe (38.1 mm)	75ft (22.9 m)	182 lbs (83 kg)
1" Sch.40 Steel Pipe (25.4 mm)	10ft (3 m)	14 lbs (6 kg)
Percentage added for Fittings and Sprinklers	15%	45 lbs (20.41 kg)
Total Adjusted Load of all pipe within Zone of Influence		347 lbs (157 kg)

(Tol-Brace Verizon 8)

LATERAL

SEISMIC COEFFICIENT

2010 ASCE 7 STANDARD

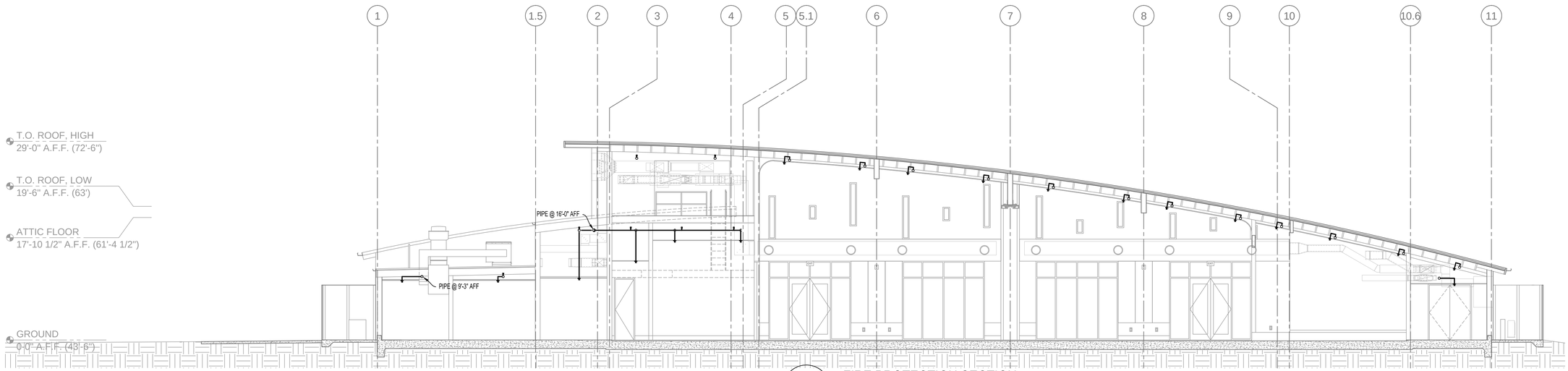
OAKLEY RECREATION CENTER
1250 O'HARA AVE.
OAKLEY, CA 94561

LATITUDE = 37.9873
LONGITUDE = -121.7133
SPECTRAL RESPONSE ACCELERATION Ss AND S1
Ss AND S1 = MAPPED SPECTRAL ACCELERATION VALUES
SITE CLASS B - Fa = 1.0, Fv = 1.0
DATA ARE BASED ON A 0.01 DEG GRID SPACING

PERIOD (SEC)	Sa (G)
0.2	1.442 (Ss, SITE CLASS B)
1.0	0.493 (S1, SITE CLASS B)

Cp VALUE PER NFPA 13 TABLE 9.3.5.9.3

Ss		CP
1.442	-	0.671



1 FIRE PROTECTION SECTION
SCALE: 1/8"=1'-0"

2

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STATE OF CALIFORNIA

OAKLEY CALIFORNIA

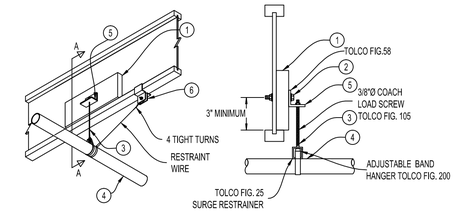
OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

FIRE PROTECTION SECTION AND SEISMIC CALCULATIONS

No.	Revisions
–	PERMIT SET
1	ENV. HEALTH PERMIT REVISIONS
1	PERMIT SET REV. / BID SET
2	ADDENDUM 2

Date: 1/16/18
Scale: SEE DRAWING
Design:
Drawn:
Approved:
Job No: 17-005

Drawing Number:
FP4.1



1. 2X6 X 18" LONG
2. ONE ¾" OR ⅞" DIAMETER MACHINE BOLT WITH WASHERS - CINCH TIGHT
3. HANGER ROD OR SUPPORT PER NFPA 13
4. SPRINKLER PIPE PARALLEL OR PERPENDICULAR TO JOISTS
5. APPROVED SIDE BEAM BRACKET (CHECK WITH MANUFACTURER)
6. TOLCO FIG.130 BEAM CLAMP WITH BOLT AND NUT OR APPROVED EQUAL

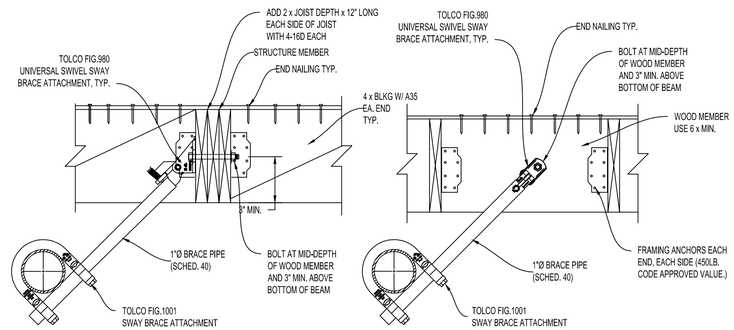
TYPICAL BRANCH LINE RESTRAINT

(FOR PIPE HUNG w/ROD LONGER THAN 6")

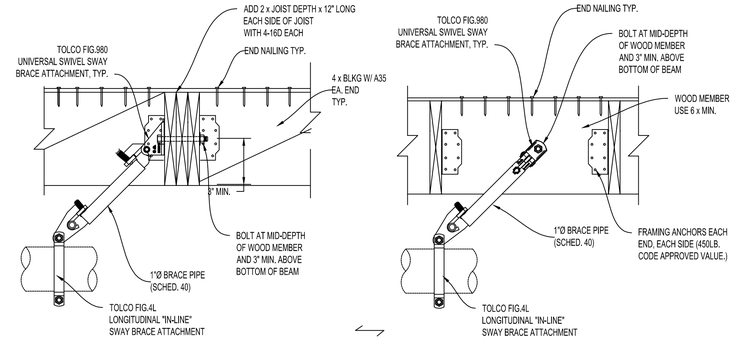
RESTRAINT HANGER NOT LESS THAN 45° FROM VERTICAL INSTALLED WITHIN 6" OF A VERTICAL HANGER PER NFPA 13, 9.3.6.1(5). RODS SHALL BE TIGHT TO PIPE PER NFPA 13, FIG. A.9.2.3.4.3(b)

MAXIMUM RESTRAINT SPACING PER NFPA 13, TABLE 9.3.6.4(a)

43 FT. MAX. FOR 1" PIPE
46 FT. MAX FOR 1-1/4" PIPE
49 FT. MAX FOR 1-1/2" PIPE
53 FT. MAX FOR 2" PIPE



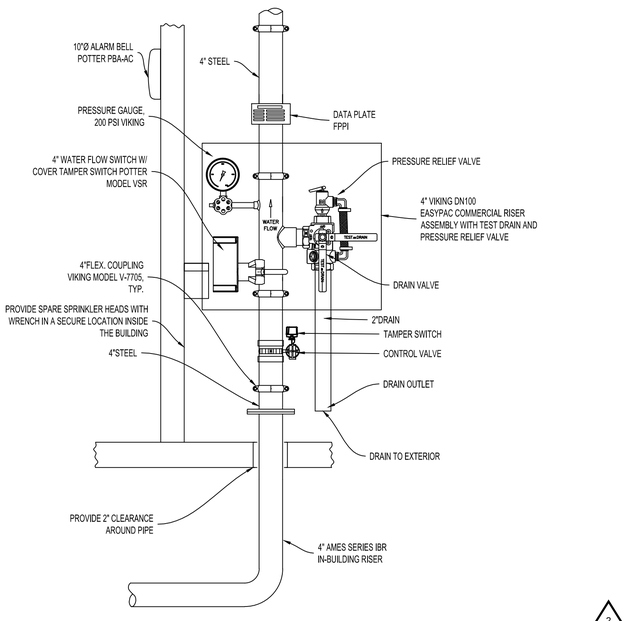
LATERAL BRACING



LONGITUDINAL BRACING

2 SEISMIC BRACING DETAIL

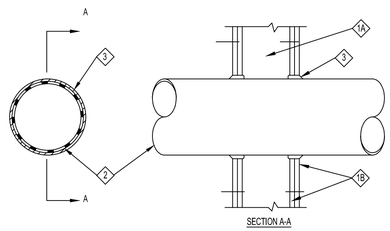
NO SCALE



1 FIRE SPRINKLER RISER DETAIL

NO SCALE

U.L. SYSTEM NO. WL1001
F RATINGS-1,2,3 AND 4 HR (SEE ITEMS 2 AND 3)
T RATINGS-0,1,2,3 AND 4 HR (SEE ITEM 3)
L RATING AT AMBIENT-LESS THAN 1 CFM/SQ FT (SEE ITEM 3)
L RATING AT 400°F-LESS THAN 1 CFM/SQ FT (SEE ITEM 3)



1. WALL ASSEMBLY - THE 1, 2, 3 OR 4 HR FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U300 OR U400 SERIES WALL OR PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:

   A. STUDS - WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS (MAX 2 H FIRE RATED ASSEMBLIES) OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACED 16 IN. OC WITH NOM 2 BY 4 IN. LUMBER END PLATES AND CROSS BRACES. STEEL STUDS TO BE MIN 3-5/8 IN. WIDE BY 1-3/8 IN. DEEP CHANNELS SPACED MAX 24 IN. OC. DO NOT CUT EXISTING STUDS.

   B. WALLBOARD, GYPSUM* - NOM 1/2 OR 5/8 IN. THICK, 4 FT. WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM WALLBOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIAM OF OPENING IS 13-1/2 IN.

2. PIPE OR CONDUIT - NOM 12 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE, NOM 12 IN. DIAM (OR SMALLER) SERVICE WEIGHT (OR HEAVIER) CAST IRON SOIL PIPE, NOM 12 IN. DIAM (OR SMALLER) CLASS 50 (OR HEAVIER) DUCTILE IRON PRESSURE PIPE, NOM 6 IN. DIAM (OR SMALLER) STEEL CONDUIT, NOM 4 IN. DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR TYPE L OR (OR HEAVIER) COPPER TUBING OR NOM 1 IN. DIAM (OR SMALLER) FLEXIBLE STEEL CONDUIT. WHEN COPPER PIPE OR FLEXIBLE STEEL CONDUIT IS USED, MAX F RATING OF FIRESTOP SYSTEM (ITEM 3) IS 2 H. STEEL PIPES OR CONDUITS LARGER THAN NOM 4 IN. DIAM MAY ONLY BE USED IN WALLS CONSTRUCTED USING STEEL CHANNEL STUDS. A MAX OF ONE PIPE OR CONDUIT IS PERMITTED IN THE FIRESTOP SYSTEM. PIPE OR CONDUIT TO BE INSTALLED NEAR CENTER OF STUD CAVITY WIDTH AND TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY.

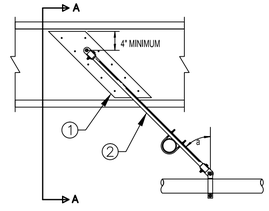
3. FILL, VOID OR CAVITY MATERIAL* - CAULK - CAULK FILL MATERIAL INSTALLED TO COMPLETELY FILL ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND GYPSUM WALLBOARD AND WITH A MIN 1/4 IN. DIAM BEAD OF CAULK APPLIED TO PERIMETER OF PIPE OR CONDUIT AT ITS EGRESS FROM THE WALL. CAULK INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL ASSEMBLY. THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS SHOWN IN THE FOLLOWING TABLE. THE HOURLY T RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE TYPE OR SIZE OF THE PIPE OR CONDUIT AND THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS TABULATED BELOW:

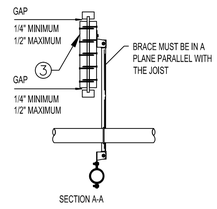
MAX PIPE OR CONDUIT DIAM, IN	ANNULAR SPACE, IN	F RATING HR	T RATING HR
1	0 TO 3/16	1 OR 2	0+, 1 OR 2
1	1/4 TO 1/2	3 OR 4	3 OR 4
4	0 TO 1/4	1 OR 2	0
4	0 TO 1-1/2	1 OR 2	0
6	1/4 TO 1/2	3 OR 4	0
12	3/16 TO 3/8	1 OR 2	0

+ WHEN COPPER PIPE IS USED, T RATING IS O H.
#0 TO 1-1/2 IN. ANNULAR SPACE APPLIES ONLY WHEN TYPE CP-25 WB+ CAULK IS USED.
MINNESOTA MINING & MFG. CO. - TYPES CP-25 S/L, CP-25 N/S, CP-25 WB, CP-25 WB+. (NOTE: L RATINGS APPLY ONLY WHEN TYPE CP-25 WB+ CAULK IS USED.)
*BEARING THE UL CLASSIFICATION MARKING

6 PIPE THROUGH FIRE-RATED WALL

NO SCALE





1. 2X_ DOUGLAS FIR OR SOUTHERN PINE NO. 2 OR BETTER WITH TEN 12D (3¼") COMMON (16D SINKER) NAILS

2. BRACE AND ATTACHMENT TO 2X_ BLOCK PER NFPA 13

3. OPTIONAL 2X_ FOR LARGER SEISMIC LOADS

* DO NOT USE THIS DETAIL FOR LOADS PERPENDICULAR TO THE JOIST
* MAKE CONNECTION IN TOP HALF OF BLOCK, CENTERED AT LEAST 4" FROM THE END OF THE BLOCK
* THE DIRECTION OF THE WOOD GRAIN IN THE BLOCK IS APPROXIMATELY PARALLEL WITH THE BRACE

ALLOWABLE HORIZONTAL SEISMIC FORCES (lbs)

BLOCKING CONDITION	ANGLE TO VERTICAL (a)		
	30°	45°	60°
2x_ on one side	440	620	760
2x_ on both sides	520	730	900

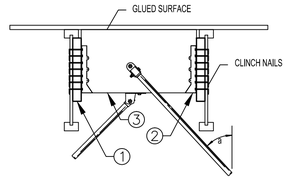
* THE LOADS IN THE TABLE ARE BASED ON THE CONTROLLING CONNECTION TO THE JOIST.
* THE CAPACITY OF THE BRACE FASTENER TO THE WOOD BLOCK MAY LIMIT THE CAPACITY OF THE DETAIL (SEE NFPA 13).
* THE FORCES INCLUDE A 1.33 DURATION FACTOR ADJUSTMENT.

(↓)

FOR FORCES PARALLEL TO TJI JOISTS

4 SEISMIC BRACING DETAIL

NO SCALE



1. 2X12 X 1'-0" FILLER BLOCK

2. SIMPSON STRONG-TIE U410 HANGER

3. 4X12 HANGER BLOCK. BEFORE INSTALLING IN HANGERS, GLUE THE TOP FACE WITH FOUR ½" BEADS OF APPROVED ELASTOMERIC FLOOR ADHESIVE. FOLLOW MANUFACTURER'S RECOMMENDATIONS. GLUED SURFACES MUST BE CLEAN AND DUST FREE.

* ATTACH HANGER AND FILLER BLOCK BY NAILING THROUGH THE HANGER, BLOCK AND TJI JOIST WEB WITH TEN 12D (3¼") COMMON (16D SINKER) NAILS AND CLINCH
* FOR LOADS PARALLEL TO THE JOISTS, MAKE ATTACHMENT TO THE HANGER BLOCK TO THE UPPER HALF OF THE BLOCK
* MAKE ATTACHMENT PER NFPA 13 NEAR THE CENTER OF THE 4X12 BLOCK. FASTENER MUST BE AT LEAST SEVEN DIAMETERS FROM THE END OF THE BLOCK AND FOUR DIAMETERS FROM ALL OTHER EDGES.

ALLOWABLE HORIZONTAL SEISMIC FORCES (lbs)

ANGLE TO VERTICAL (a)		
30°	45°	60°
520 (1)	740	810

(1) 620 for ⅞" web.

* THE LOADS IN THE TABLE ARE BASED ON THE CONTROLLING CONNECTION TO THE JOIST.
* THE CAPACITY OF THE BRACE FASTENER TO THE WOOD BLOCK MAY LIMIT THE CAPACITY OF THE DETAIL (SEE NFPA 13).
* THE FORCES INCLUDE A 1.33 DURATION FACTOR ADJUSTMENT.

(↔)

FOR FORCES PARALLEL AND PERPENDICULAR TO TJI JOISTS

3 SEISMIC BRACING DETAIL

NO SCALE

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Oakland, CA 94621
510-569-2000

REGISTERED PROFESSIONAL ENGINEER
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No. M34214
MECHANICAL
STATE OF CALIFORNIA

OAKLEY CALIFORNIA

OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

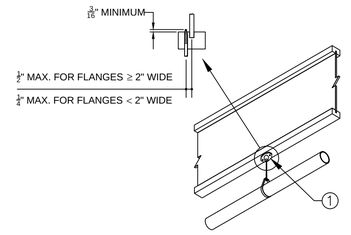
FIRE PROTECTION ATTIC DETAILS

No.	Revisions
–	PERMIT SET
1	ENV. HEALTH PERMIT REVISIONS
1	PERMIT SET REV. / BID SET
2	ADDENDUM 2

Date: 1/16/18
Scale: NOT TO SCALE
Design:
Drawn:
Approved:
Job No: 17-005

Drawing Number:
FP5.1

2

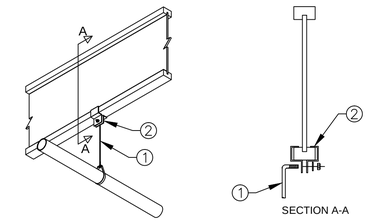


1. CEILING FLANGE WITH TWO 18 GAUGE (0.294") X 1 1/2" WOOD SCREWS (1/8" PILOT HOLE REQUIRED) OR TWO 3/4" X 2" LAG SCREWS (1/4" PILOT HOLE REQUIRED)

NOTE: PENETRATION OF SCREWS INTO WEB IS ALLOWED

PIPE SIZE AT MAXIMUM HANGER SPACING: 2"

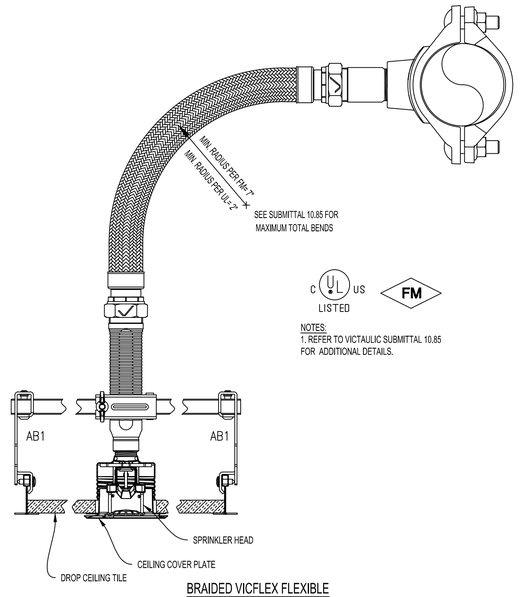
3 RING TYPE HANGER (—)
NO SCALE



1. 3/8" DIAMETER EYE ROD OR L-ROD
2. BEAM CLAMP (EQUIVALENT TO TOLCO INCORPORATED FIGURE 130)

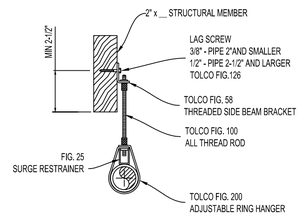
PIPE SIZE AT MAXIMUM HANGER SPACING: 4"

2 RING TYPE HANGER (—)
NO SCALE



BRAIDED VICFLEX FLEXIBLE
HOSE SPRINKLER ASSEMBLIES
FOR CONCEALED PENDENT SPRINKLERS

4 SPRINKLER HEAD DETAIL - CEILING PENETRATION
NO SCALE



1 RING TYPE HANGER (—)
NO SCALE

HM MECHANICAL GROUP
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510-569-2000

REGISTERED PROFESSIONAL ENGINEER
JOHN CHOU
No. M34214
MECHANICAL
STATE OF CALIFORNIA

OAKLEY CALIFORNIA

OAKLEY RECREATION CENTER
OAKLEY CONTRA COSTA COUNTY CALIFORNIA

FIRE PROTECTION DETAILS

No.	Revisions
–	PERMIT SET
1	ENV. HEALTH PERMIT REVISIONS
1	PERMIT SET REV. / BID SET
2	ADDENDUM 2

Date: 1/16/18
Scale: SEE DRAWING
Design:
Drawn:
Approved:
Job No: 17-005

Drawing Number:
FP5.2

2

Landscape:

L1.3

1. Sod specie will be specified in the planting spec, not in the plan.

L2.1

1. Two bollard lights in the walkway of the east patio are changed to the decorated post-top lights.
2. Two decorated post-top lights are added to west patio
3. Added vehicular concrete paving callout at the entry of the surface yard.
4. Added callout for L2.4 Enlarged Layout Plan
5. Shift light away from the storm drain
6. Added horizontal score lines to linear concrete patterns
7. Added scorelines and removable bollards in the maintenance access
8. Added redwood header and removable bollard callouts
9. Added redwood header callout along aggregate base pathway
10. Added concrete to match with civil demolition plan
11. The concrete walkway along one of the existing buildings has been reduced and connected to the existing asphalt pad. Notes were added regarding to this changes in the plan;

L2.2

1. Added Gate – (D) and Fence – (D) along the well
2. Adjusted mulch area to the existing fence line
3. Mowband along the east side of the ball field has been slightly adjusted per the civil's drawing, and an additional callout of '12" Concrete Mowband' has been added
4. Added callout for L2.4 Enlarged Layout Plan

L2.3

1. Added horizontal score lines to linear concrete patterns
2. Revised Wall (C) and (B) Layouts,
3. Hand rail is added for wall
4. Added horizontal score lines to linear concrete pattern

L2.4

1. Added Sheet L2.4 Enlarged Layout Plan for two enlarged areas

L4.1

1. Added note to repair and replace existing planting adjacent to the school
2. Adjusted shrubs planting in the entry to avoid existing traffic light utilities.

L5.2

1. Revised Detail 1, 12-inch Concrete Mowband to show 8" depth and revised score joint information
2. Revised Detail 2, Wall – (A) to show concrete adjacent to wall condition, and proper wall depth

3. Revised Detail 3, Wall – (B) to remove weep holes and reference grading plan for heights.
4. Revised Detail 4, Wall - (C) to show the stair condition with handrail
5. Revised Detail 6, Wall – (E) to reflect actual condition and add waterproofing

L5.3

1. Revised Detail 1, Fence – (A) to show top of fence condition, wall interface condition, and surface mount post at building condition
2. Revised Detail 2, Fence – (B) with an added not for contractor to submit shop drawings of metal gate for review of landscape architect prior to fabrication
3. Revised Detail 3, Gate - (A), note 4 to refer to metal notes
4. Revised Detail 3, Gate - (A) to have lever hardware painted to match gate
5. Revised Detail 3, Gate - (A) to remove "Wall - (A) reference."
6. Revised Detail 3, Gate - (A) to show steel panels on both sides of fence
7. Revised Detail 4, Gate - (B) to model GPG10D to match the design of fence-(B)

L5.4

1. Revised Detail 1, Fence – (C) to specify "vinyl-coated black"
2. Updated Specs for Chain Link Fences and Gates
3. Revised Detail 2, Fence – (D) to specify "vinyl-coated black"
4. Revised Detail 3, Fence – (E) to specify "vinyl-coated black"
5. Added Detail 4, Removable Bollard
6. Added Detail 5, Gate – (D)
7. Added Detail 6, Wall – (E) Profile
8. Added Detail 7, Fence - (A) Fence Height Diagram

L5.5

1. Updated Detail 2, Bollard, to include bollard mounting application
2. Updated Detail 3, Parking Sign, to have more specific callouts and notes for clarity and constructability.
3. Updated detail 4, Double Sided Entry Sign, to have more specific callouts and notes for clarity and constructability.

L5.7

1. Updated Detail 1, Concrete Seat Pad, to include mounting application
2. Updated Detail 2, Concrete Bench, to include mounting application

L5.8

1. Updated Detail 2 to Flo-well Sump. Changed from Dry Well – Drainage Sump
2. Updated Detail 3, Drinking Fountain, removed "optional" from "Internal Surface Carrier."; removed note #6, Added Internal surface carrier product number; Added note to clarify this drawing to show design intent only.

L5.9

1. Updated Detail 1, Dugout (1 of 3), to indicate the drilled pier footing option.

L5.12

1. Revised Detail 1, Trash Enclosure, to include callout "see legend for cane bolt"
2. Revised Detail 1, Trash Enclosure, to have updated steel notes callout
3. Revised Detail 1, Trash Enclosure, to have updated dimensions at active leaf plate
4. Revised Detail 1, Trash Enclosure, to show waterproofing on section B-B

L6.5

1. Irrigation changes due to the changes of east side concrete mow band along the ballfield and the well location

Architectural:

A0.3

1. Occupant sign in Great Room should list occupant load with moveable partition both open and closed
2. Names of signs clarified.
3. Exit Route sign added.

1/A2.2

1. Cut on detail tag 3/A8.2 clarified.

1/A2.3

1. Mechanical Platform dimensions noted
2. External gutter noted on mechanical platform

1/A2.4

1. Exit sign added to hall outside platform.
2. Sheet note added noting additional ceiling details on A4.1

1/A3.3

1. Recessed Fireman's Keybox added to exterior side of Fire Riser Room.

1/A5.1

1. Fire Extinguisher added to hallway
2. Tag for 13/A9.4 amended to show full extent of ramp per detail

A6.5

1. High ceiling and return air grill shown on east lobby elevation-1/A6.5
2. Supply Air grill noted on west lobby elevation – 1/A6.5
3. Exit Sign and Exit Route sign shown on South elevation of hall -3/A6.5

2/A7.1

1. Door 107b revised to 3'6" to match drawings
2. Signage updated for doors 101A and 102E
3. Door 105a changed to an acoustic threshold.
4. Doors 114a, 114b, 115a changed from insulated to uninsulated, removed thermally broken frame.

2/A8.1

1. Vented base clarified in drawing
2. Waterproof membranes clarified at concrete slab

4/A8.2

1. Detail previously showed a gyp. bd. ceiling. This area has a dropped acoustic ceiling.

3/A8.3

1. Rain water leader and splashblock added to detail

6/8.5

1. GSM flashing noted.
2. Bottom of shaft detail corrected.

7/A8.9

1. Exterior address signage enlarged to 12" from 6"

9/9.1

1. Sound isolating bottom shoe added to door threshold

Structural:

S1.0

1. Updated Seismic Response Coefficient (Cs = 0.185).
2. Updated Base Shear (W = 0.185).

S1.2

1. Revised detail 7/S1.2 to show step, SAD.

S2.0

2. Added detail cut 12/S4.1 and 4/S4.1 typical near grid line 1 and near grid line 11.

1/S2.1

3. Changed previous RJ2 at grid line 1 and grid line 11 to RJ5.
4. Added three hangers to joist near "Make Up Air/Exhaust" between grid line 1 and grid line 1.5.
5. Flipped cut orientation for detail 11/S5.1 between grid line 1 and grid line 1.5.

2/S2.2

1. Flipped cut orientation for detail 11/S5.1 between grid line 1 and grid line 1.5.
2. Updated FTAO shear wall length at grid line 3.
3. Added "-HD" to C1 at grid line 5.1/B, 3/C and 5/C.
4. Added sheet note 9.
5. Deleted a hanger and extend RJ1 between grid line 3 and grid line 4 at the drop down platform.

S4.1

1. Revised detail 2/S4.1, 4/S4.1 and 12/S4.1.

S5.1

2. Revised detail 9/S5.1.

Mechanical:

M0.2

1. MAU-1 Discharge position corrected to be Horizontal

Electrical:

E0.2:

1. Type EX3 added to the luminaire schedule.

E1.1:

1. Add pullbox at north/east corner of site for future at field power, instead of stub-out alone.
2. Add new note 1 to (5) existing portable building power panels to disconnect and remove existing power feeders back to switchboard 'MSB'.
3. Show outline of existing building to be removed.
4. Added power for Well Pump (no longer future)

E1.2:.

1. Site lighting at east/west patios revised to address Fire Dept. review comment regarding egress illumination.
2. Exit sign, Type EX3, added to east patio egress gates.

E3.3:

1. Add new sheet to show AV system requirements.

E5.1:

1. Add branch circuit info for Well Pump (no longer future).

E7.3:

1. Detail 4 revised to show 12" minimum clearance between concrete anchor base and perforated drain pipe in bio-retention area.

Fire Sprinkler:

FP0.1, FP1.1, FP2.1. FP2.2, FP4.1, FP5.1, FP5.2

1. Fire Sprinkler Drawings Added

All bidders shall acknowledge receipt and acceptance of Addendum No. 2 by signing in the space provided at the end of this Addendum and submitting the signed addendum with their proposal.

Jason Kabalin
Associate Engineer
January 17, 2018

_____
Contractor Signature

_____
Date

_____
Company Name