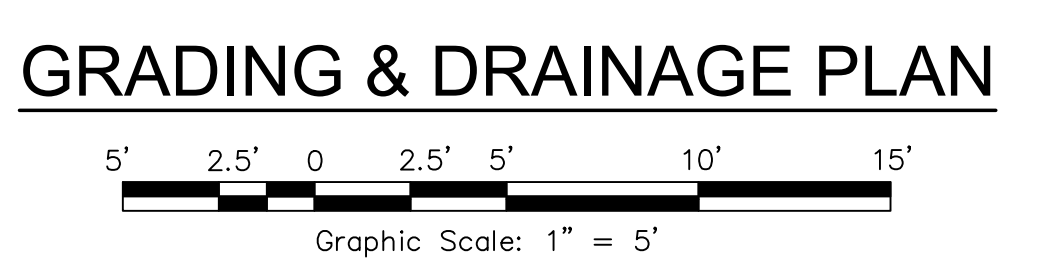
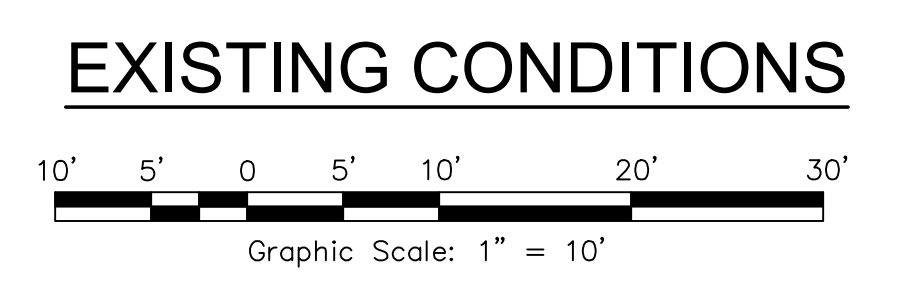
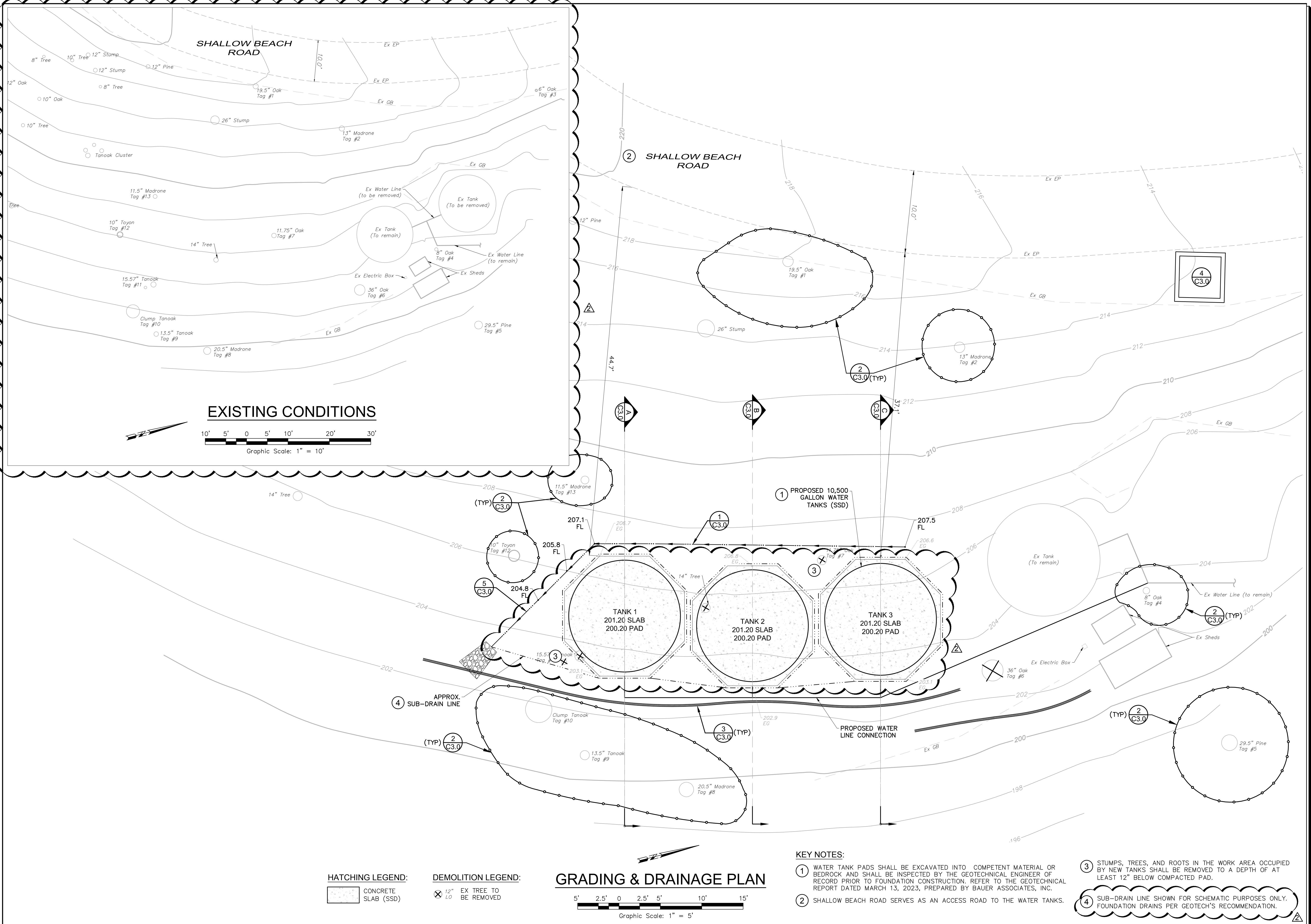




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**HATCHING LEGEND:**  
 CONCRETE SLAB (SSD)

**DEMOLITION LEGEND:**  
 EX TREE TO BE REMOVED

- KEY NOTES:**
- WATER TANK PADS SHALL BE EXCAVATED INTO COMPETENT MATERIAL OR BEDROCK AND SHALL BE INSPECTED BY THE GEOTECHNICAL ENGINEER OF RECORD PRIOR TO FOUNDATION CONSTRUCTION. REFER TO THE GEOTECHNICAL REPORT DATED MARCH 13, 2023, PREPARED BY BAUER ASSOCIATES, INC.
  - SHALLOW BEACH ROAD SERVES AS AN ACCESS ROAD TO THE WATER TANKS.
  - STUMPS, TREES, AND ROOTS IN THE WORK AREA OCCUPIED BY NEW TANKS SHALL BE REMOVED TO A DEPTH OF AT LEAST 12" BELOW COMPACTED PAD.
  - SUB-DRAIN LINE SHOWN FOR SCHEMATIC PURPOSES ONLY. FOUNDATION DRAINS PER GEOTECH'S RECOMMENDATION.

| No. | Date     | Description                | Approved |
|-----|----------|----------------------------|----------|
| 1   | 03/06/24 | ISSUE FOR PERMITS          | CT       |
| 2   | 04/25/24 | QUANTITIES AND UNIT PRICES | CT       |

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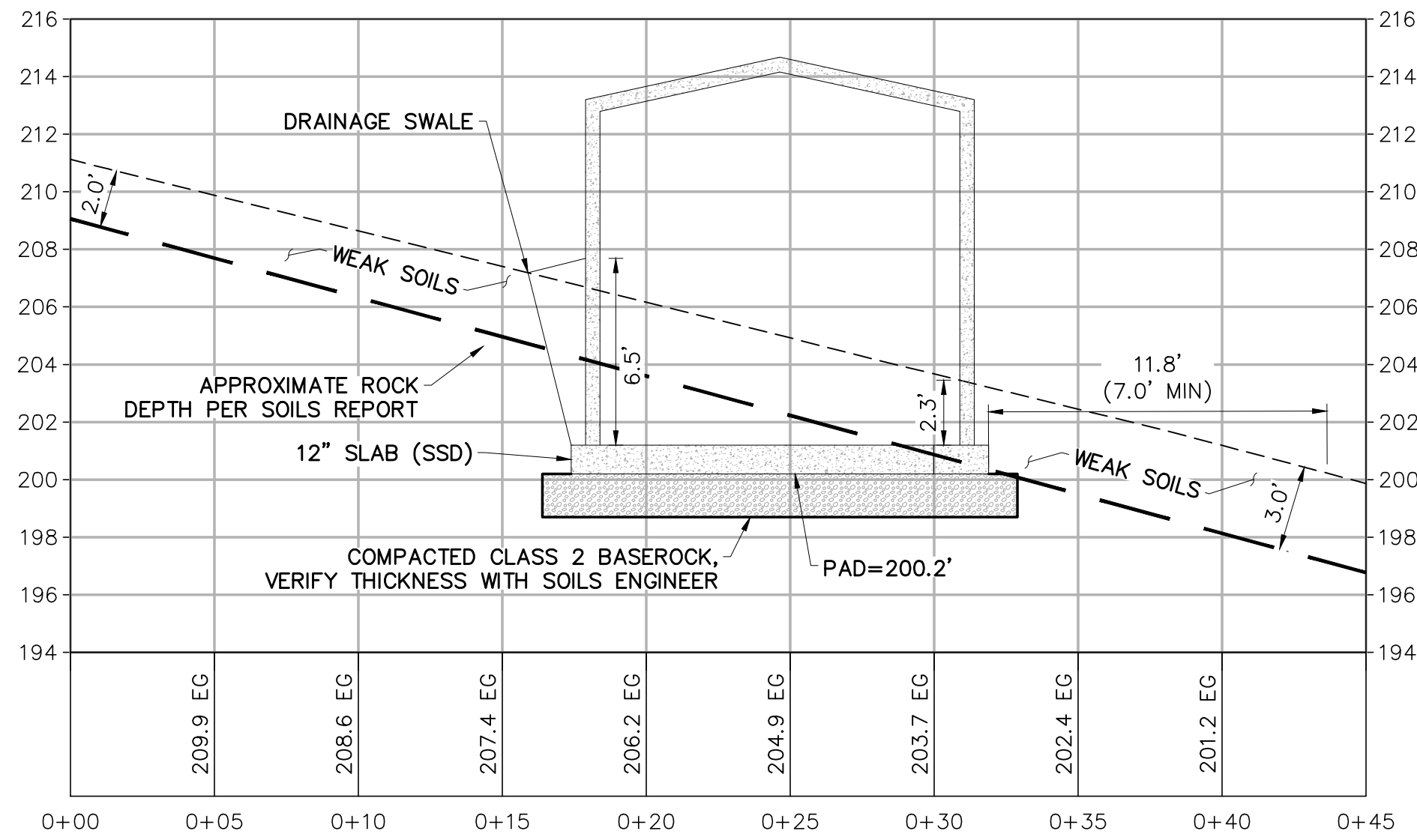
**PROFESSIONAL ENGINEER**  
 TIMOTHY L. SCHRAM  
 No. 67890  
 Exp. 6/30/2025  
 CIVIL  
 STATE OF CALIFORNIA

Timothy L. Schram, P.E. 67890  
 My license expires 6/30/2025

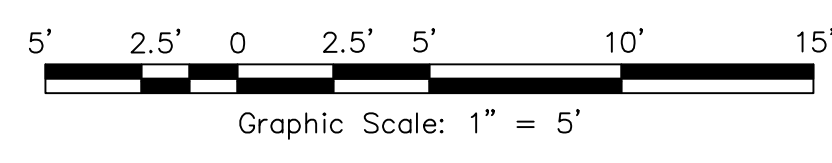
**SHALLOW BEACH WATER STORAGE TANKS GRADING AND DRAINAGE PLAN**  
 Shallow Beach Road, California  
 APN 109-410-011

SCALE: AS NOTED  
 Date: January 29, 2024  
 Design by: RMS/CJ  
 Drawn by: CJ  
 Checked by: BC

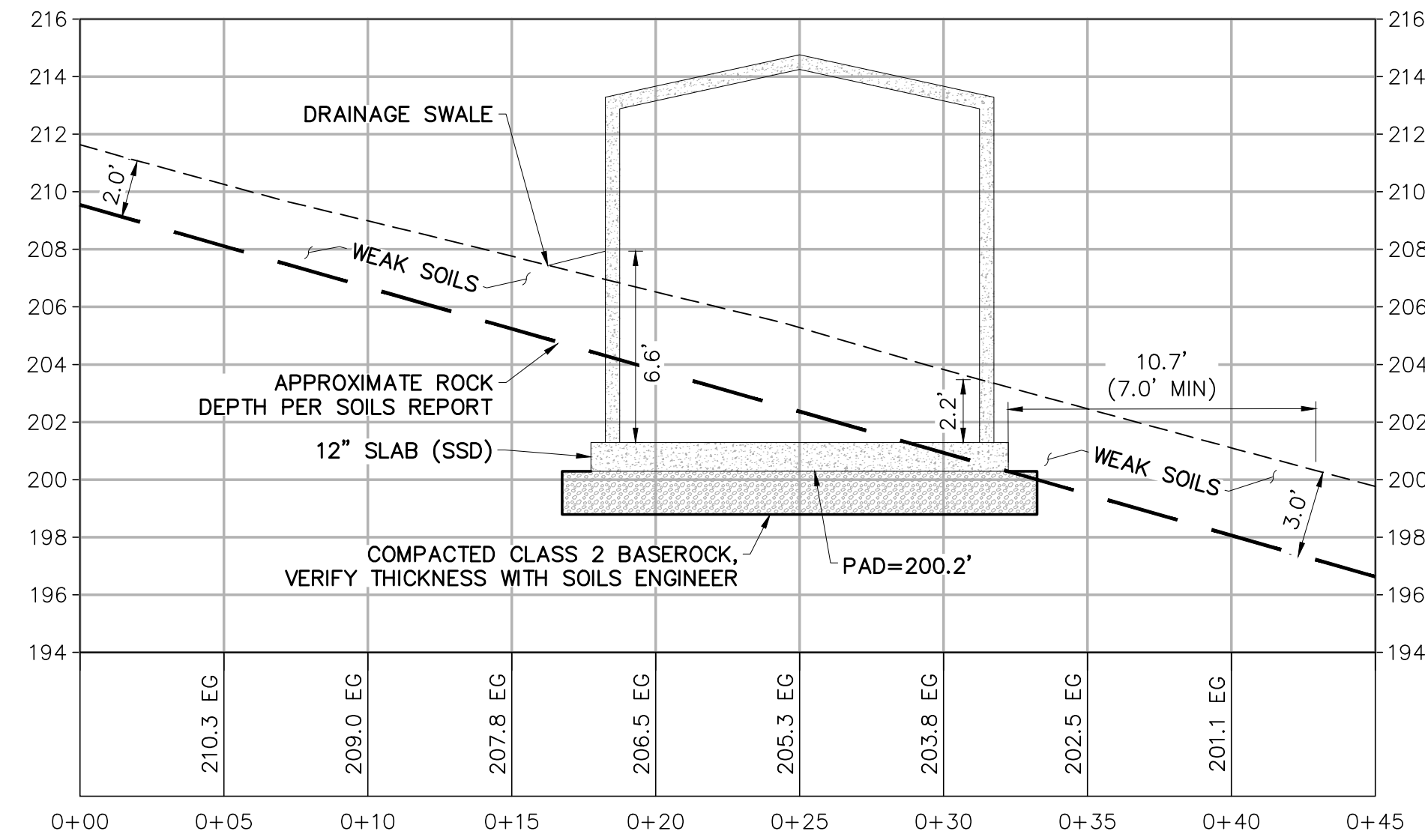
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 2 of 6 Sheets  
 Job 23204



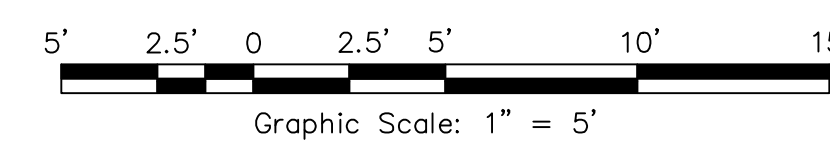
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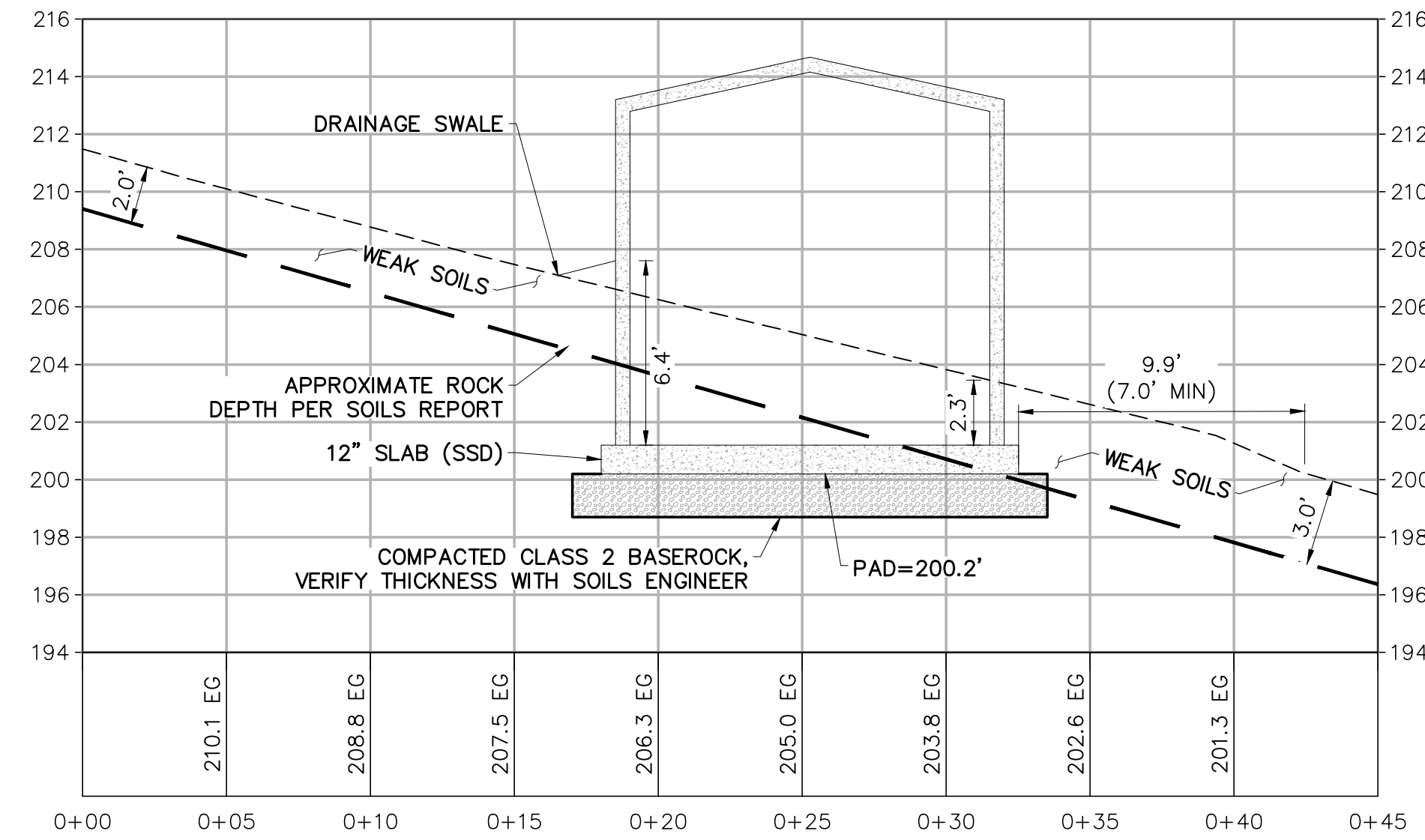
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 — FINISHED GRADE  
 - - - - - EXISTING GRADE



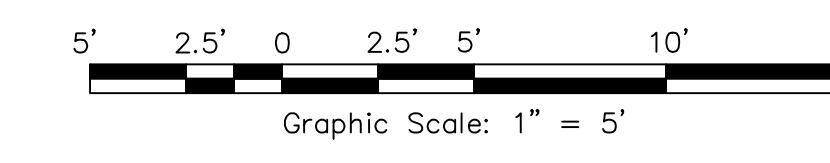
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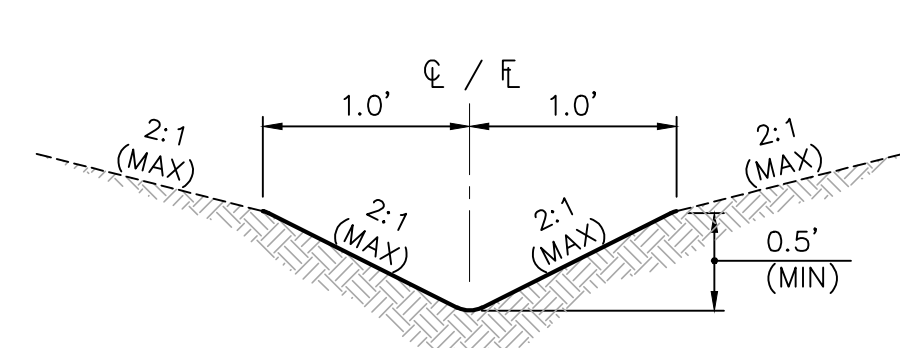
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 - - - - - EXISTING GRADE



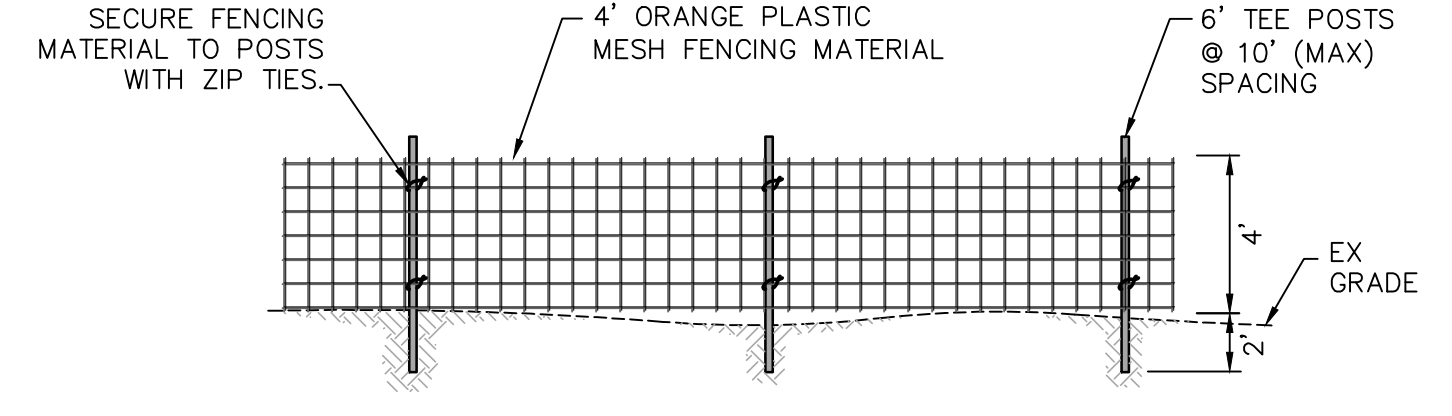
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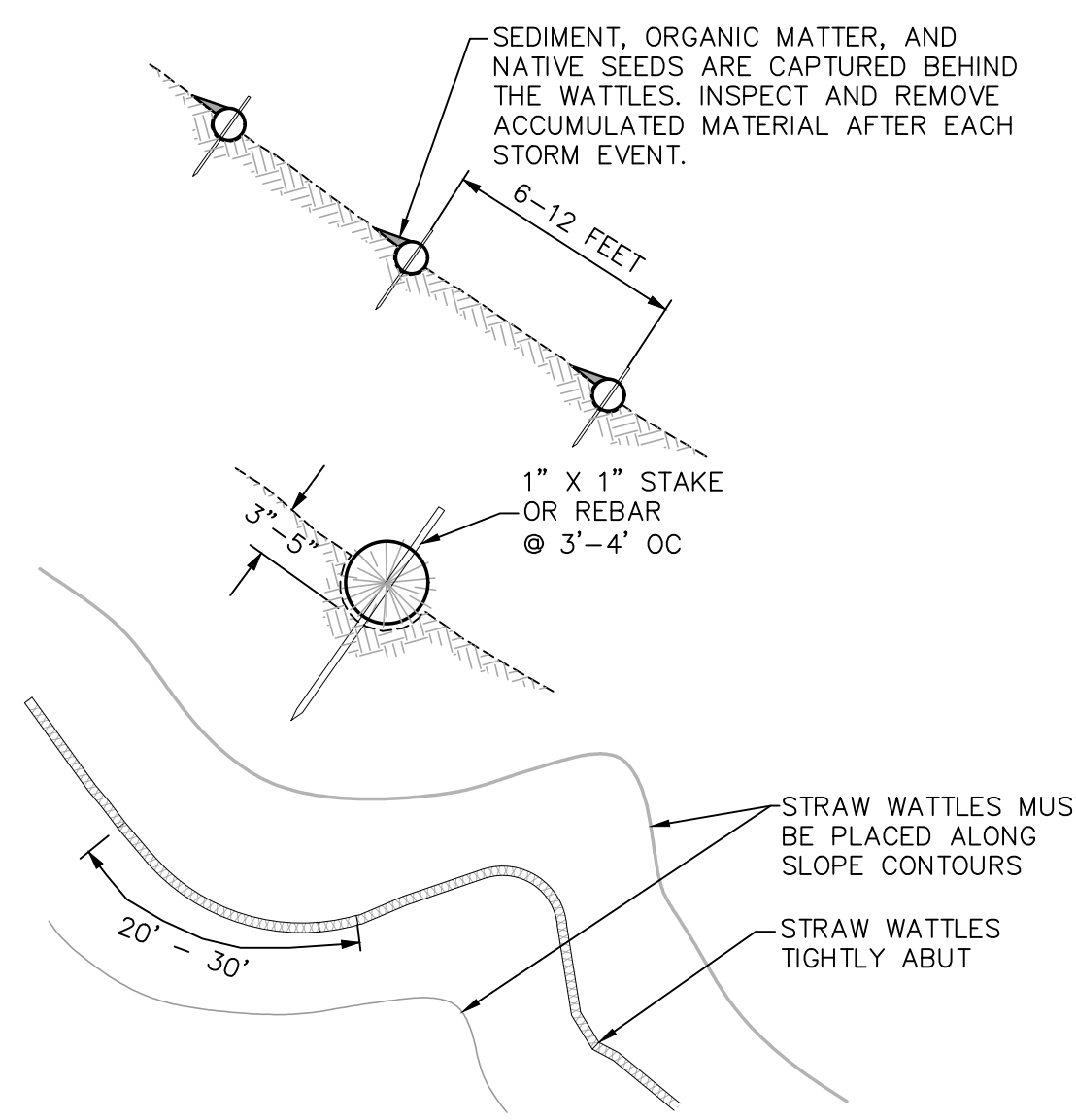
**LEGEND:**  
 — FINISHED GRADE  
 - - - - - EXISTING GRADE



1 DRAINAGE SWALE DETAIL  
 NTS



2 TREE PROTECTION FENCING  
 NTS



**STRAW WATTLES (CONSTRUCTION SPECIFICATIONS)**

PREPARE SLOPE BEFORE THE WATTLING PROCEDURE IS STARTED. SHALLOW GULLIES SHOULD BE SMOOTHED AS WORK PROGRESSES.

DIG SMALL TRENCHES ACROSS SLOPE ON CONTOUR, TO PLACE WATTLES IN. THE TRENCH SHOULD BE DEEP ENOUGH TO ACCOMMODATE HALF THE THICKNESS OF THE WATTLE. WHEN THE SOIL IS LOOSE AND UNCOMPACTED, THE TRENCH SHOULD BE DEEP ENOUGH TO BURY THE WATTLE 2/3 OF ITS THICKNESS BECAUSE THE GROUND WILL SETTLE. IT IS CRITICAL THAT WATTLES ARE INSTALLED PERPENDICULAR TO WATER MOVEMENT, PARALLEL TO THE SLOPE CONTOUR.

START BUILDING TRENCHES AND INSTALL WATTLES FROM THE BOTTOM OF THE SLOPE AND WORK UP.

CONSTRUCT TRENCHES AT CONTOUR INTERVALS OF THREE TO EIGHT FEET APART DEPENDING ON STEEPNESS OF SLOPE. THE STEEPER THE SLOPE, THE CLOSER TOGETHER THE TRENCHES.

LAY THE WATTLE ALONG THE TRENCHES FITTING IT SNUGLY AGAINST THE SOIL. MAKE SURE NO GAPS EXIST BETWEEN THE SOIL AND THE STRAW WATTLE.

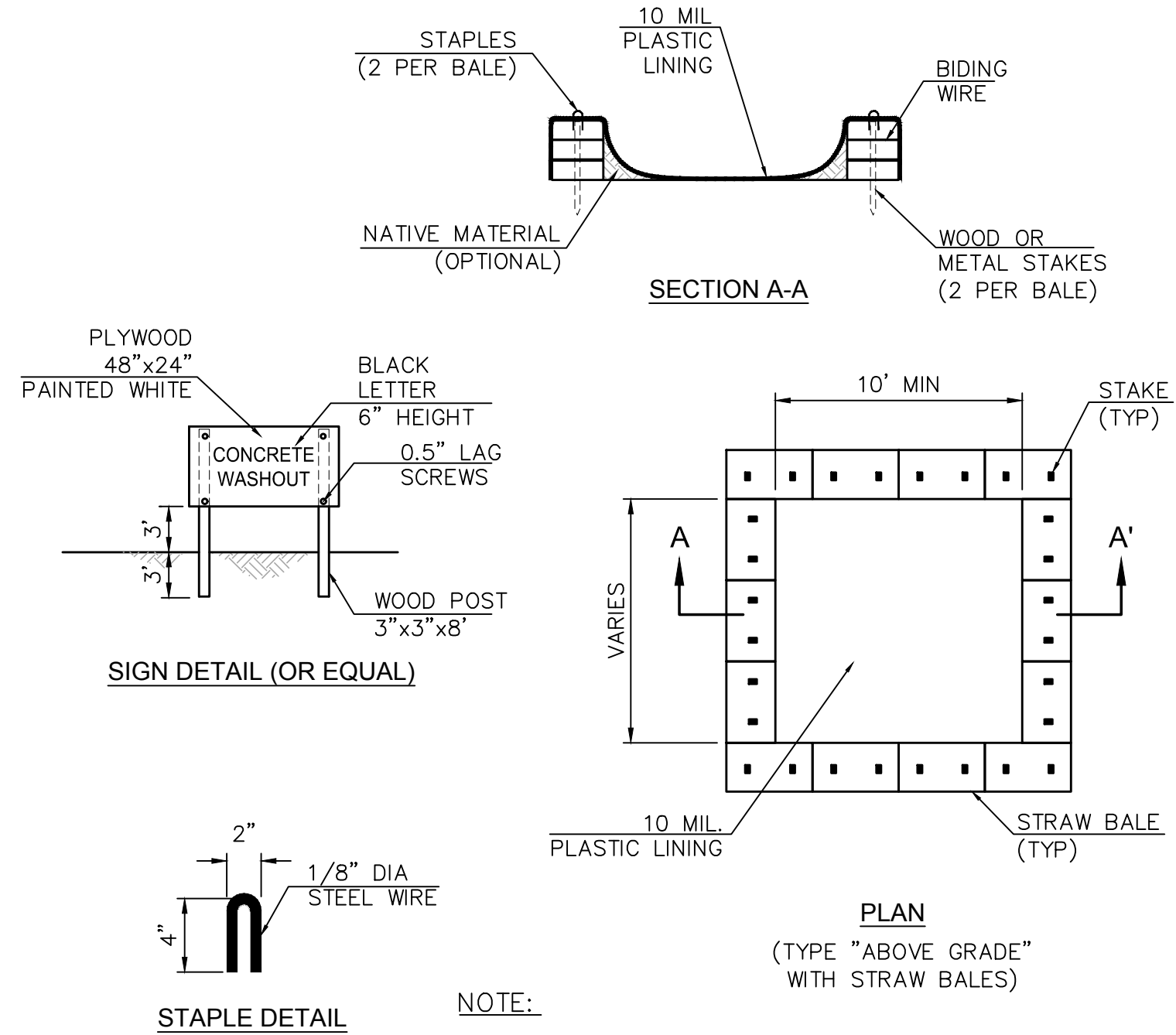
USE A STRAIGHT BAR TO DRIVE HOLES THROUGH THE WATTLE AND INTO THE SOIL FOR THE WOODEN STAKES.

DRIVE THE STAKE THROUGH THE PREPARED HOLE INTO THE SOIL. LEAVE ONLY ONE OR TWO INCHES OF STAKE EXPOSED ABOVE WATTLE.

INSTALL STAKES AT LEAST EVERY FOUR FEET APART THROUGH WATTLE. ADDITIONAL STAKES MAY BE DRIVEN ON THE DOWNSLOPE SIDE OF THE TRENCHES ON HIGHLY EROSION OR VERY STEEP SLOPES.

- NOTES:**
- STRAW WATTLES ARE TUBES MADE FROM STRAW AND BOUND W/ BIO-DEGRADABLE WRAPPED NETTING. THEY ARE APPROXIMATELY 8" DIA AND 20 - 30 FT LONG.
  - STRAW WATTLES TRAP SEDIMENT AND REDUCE SHEET & RILL EROSION BY REDUCING SLOPE GRADIENT, INCREASING INFILTRATION RATES AND BY PRODUCING A FAVORABLE ENVIRONMENT FOR PLANT ESTABLISHMENT.
  - STRAW WATTLE INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE WATTLE IN A TRENCH, 3" - 5" DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND WATTLE.

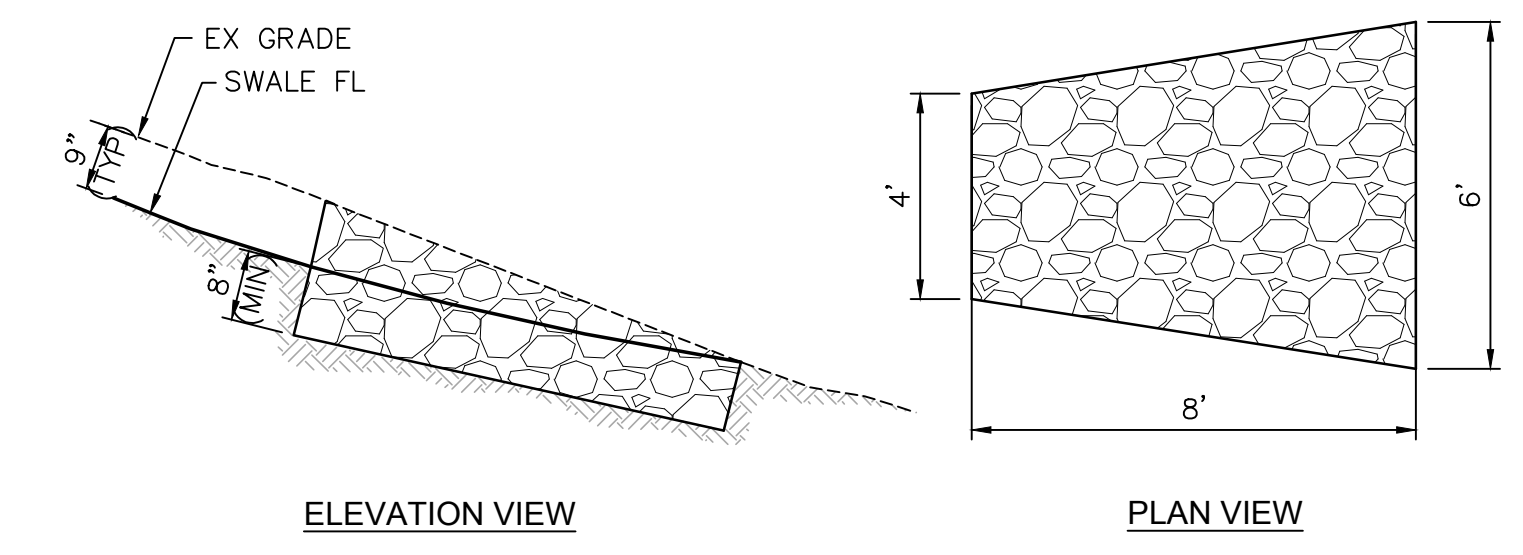
3 STRAW WATTLE  
 NTS



**NOTE:**

- ACTUAL LAYOUT DETERMINED IN FIELD.
- THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

4 CONCRETE WASHOUT  
 NTS



**NOTE:**  
 PLACE ROCK PER CALTRANS SECTION 72 METHOD B, (CLASS N0 3)

5 SWALE OUTFALL PROTECTION DETAIL  
 NTS

| No. | Date     | Description                | Approved |
|-----|----------|----------------------------|----------|
| 1   | 03/06/24 | REVISED & REVISIONS        | CT       |
| 2   | 04/25/24 | QUANTITIES AND UNIT PRICES | CT       |

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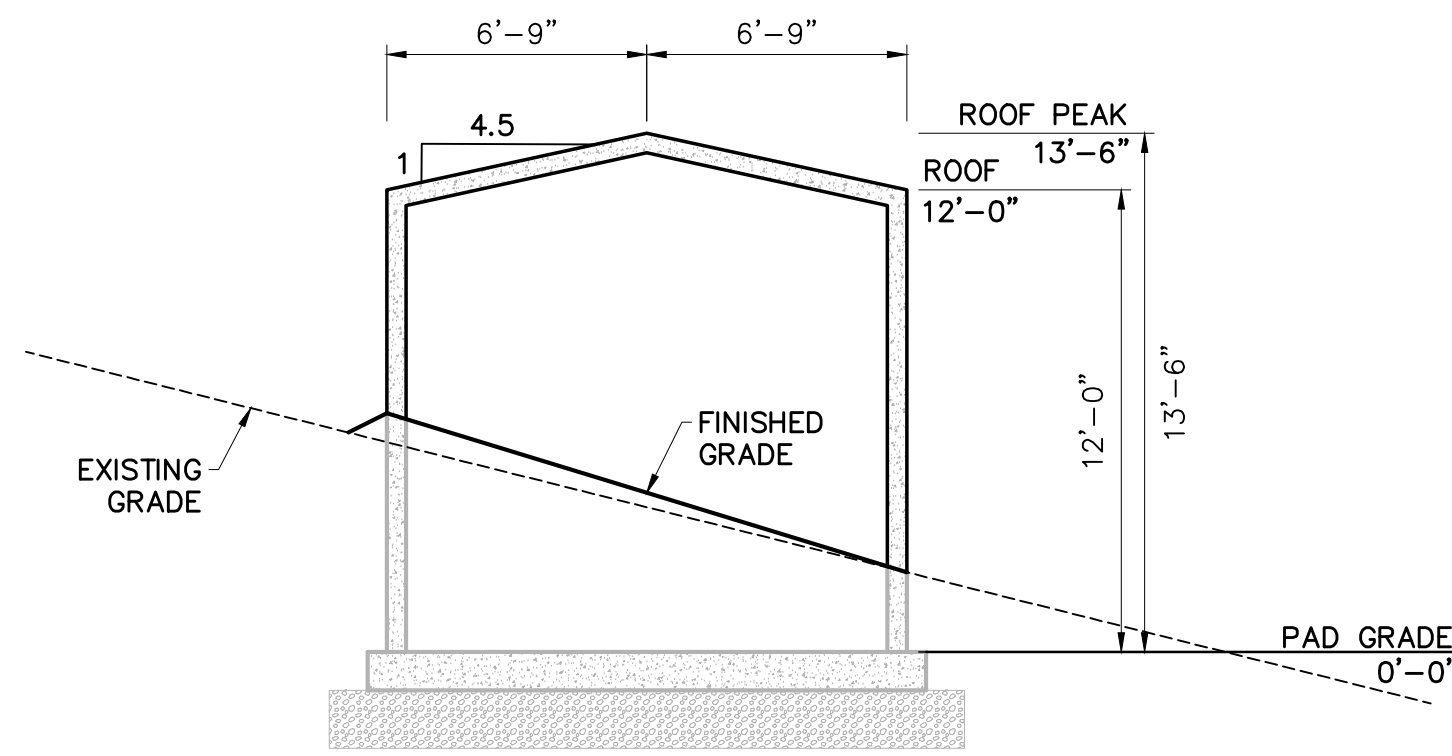
Professional Engineer License No. 67890  
 State of California  
 Exp. 6/30/2025  
 Timothy L. Schram, RCE 67890  
 My license expires 6/30/2025

**SHALLOW BEACH  
 WATER STORAGE TANKS  
 CONSTRUCTION DETAILS**  
 Shallow Beach Road, California  
 APN 109-410-011

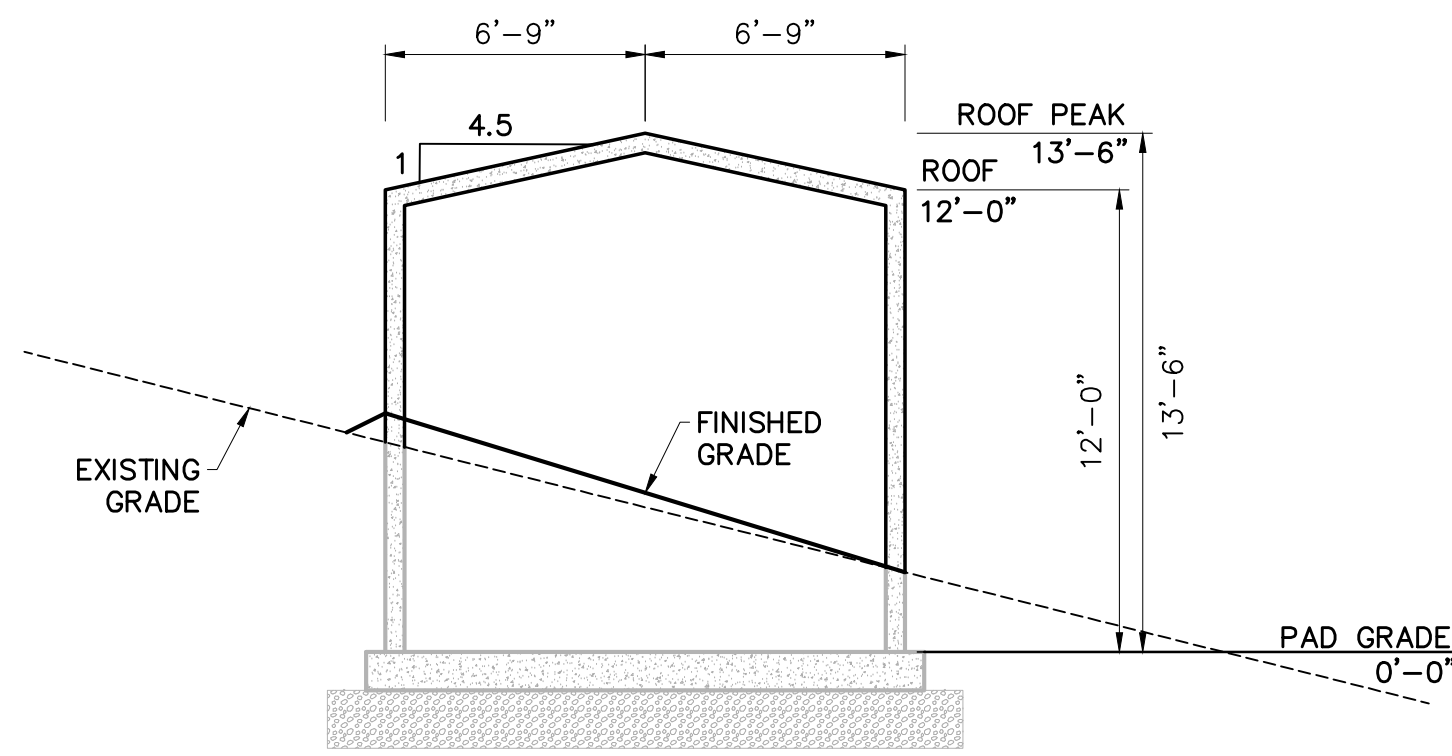
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 Date: January 29, 2024  
 Design by: RMS/CJ  
 Drawn by: CJ  
 Checked by: BC

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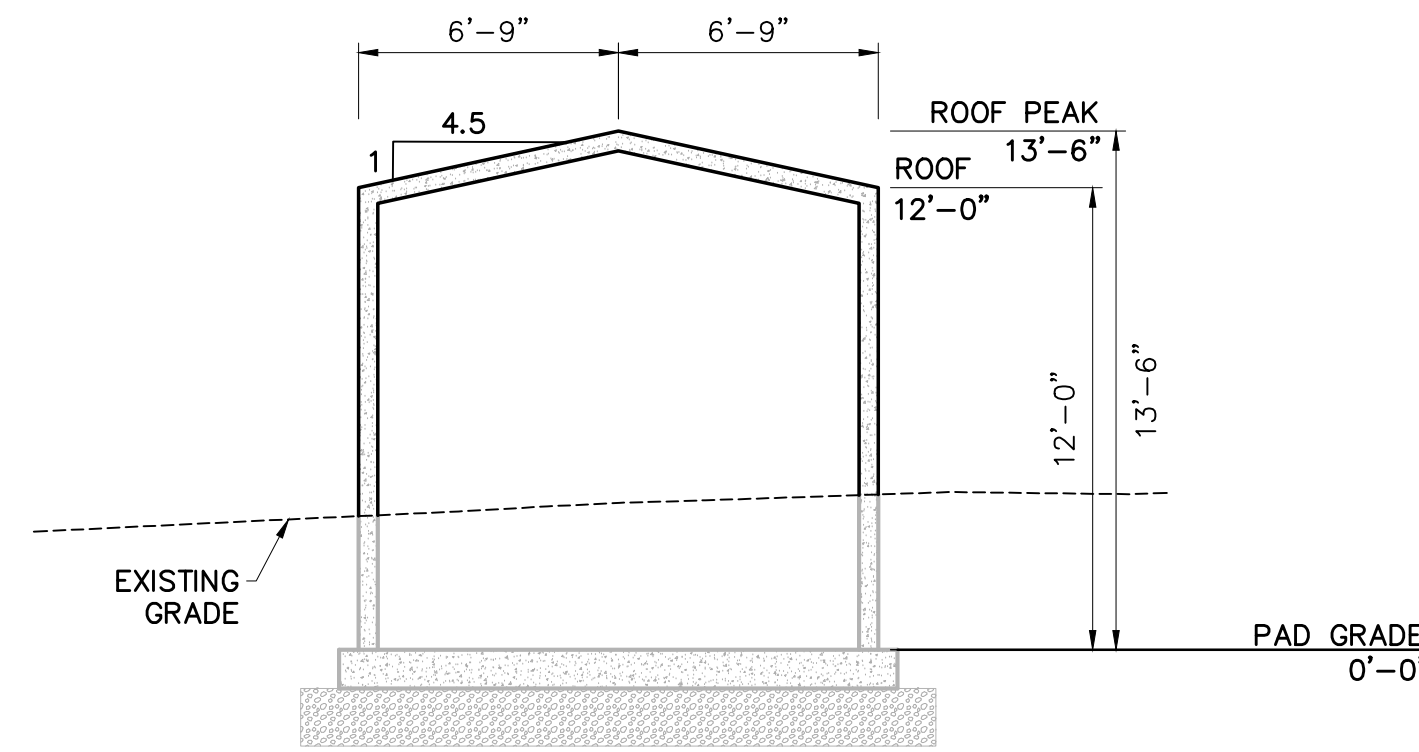
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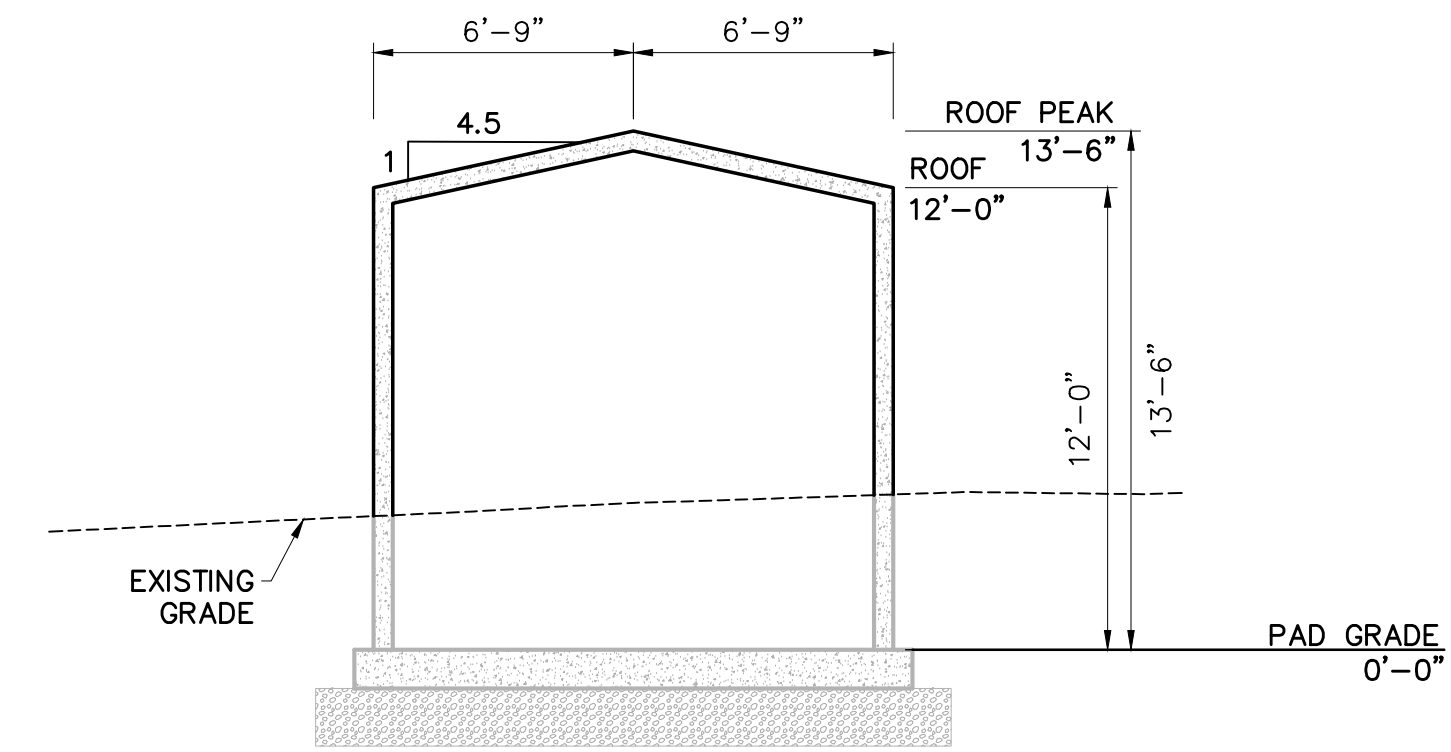
TANK 1 - WEST ELEVATION



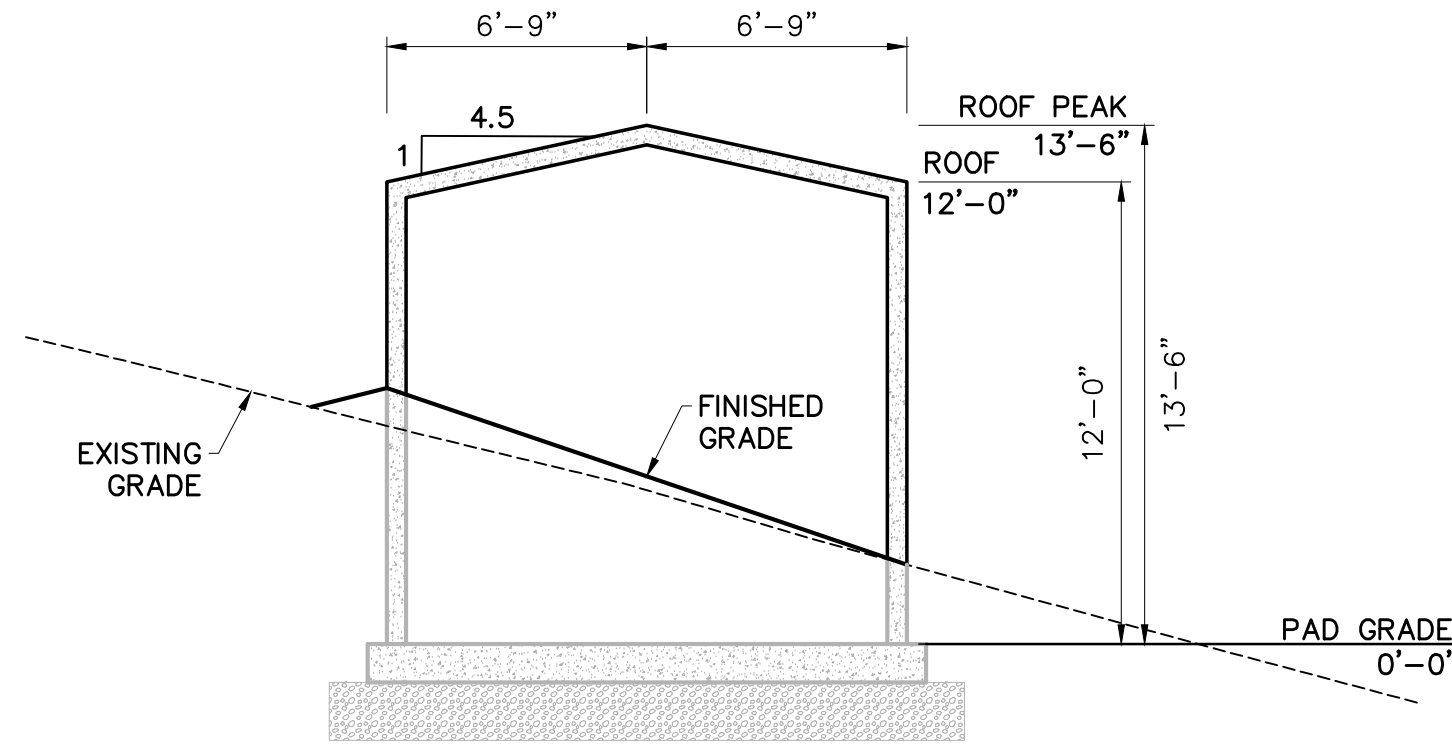
TANK 1 - EAST ELEVATION



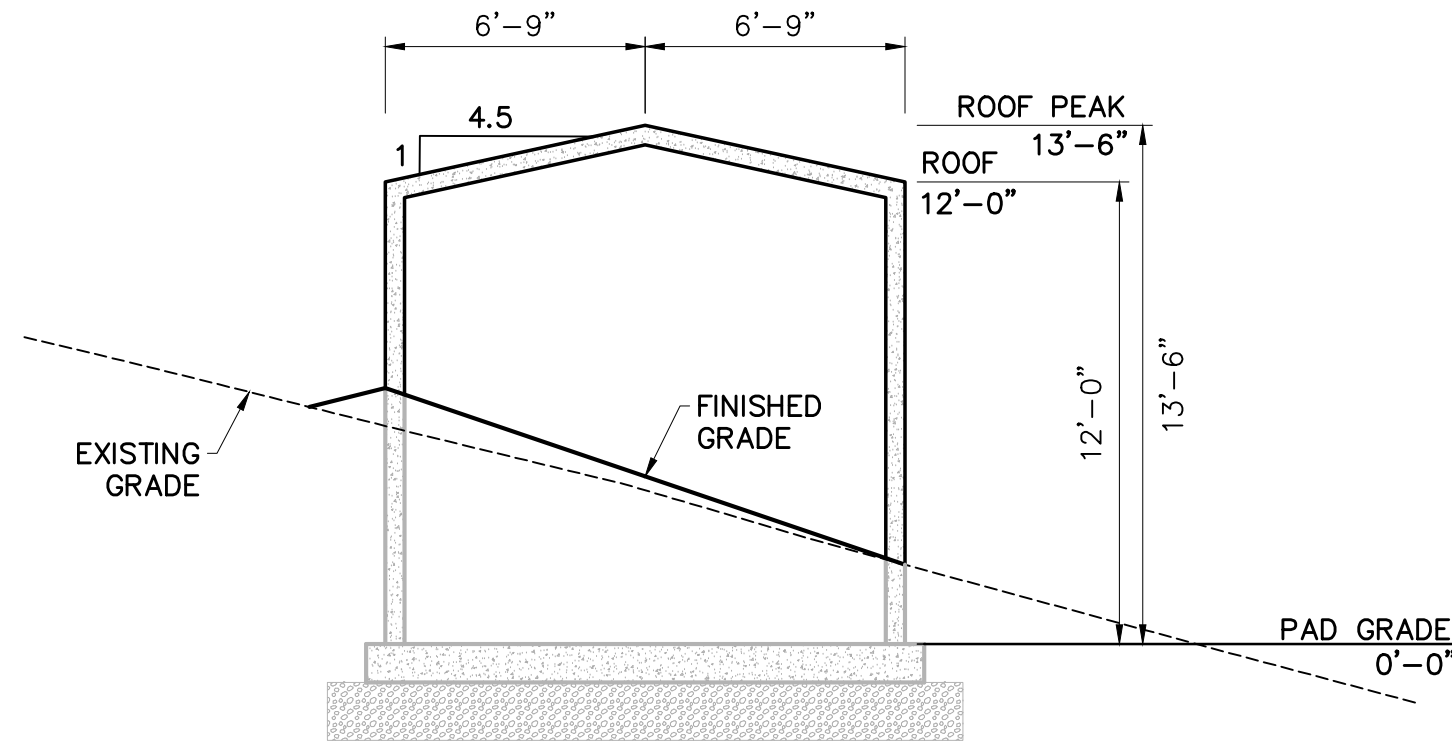
TANK 1 - NORTH ELEVATION



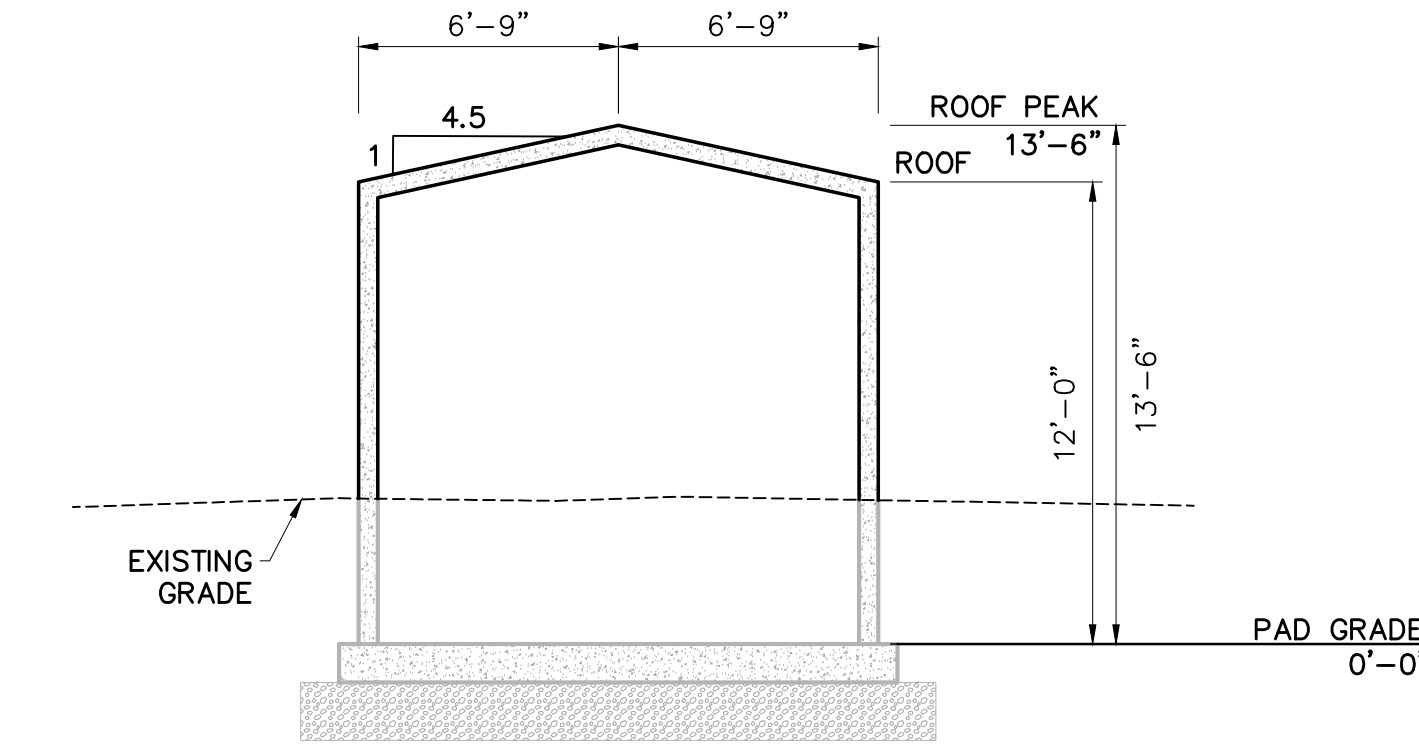
TANK 1 - SOUTH ELEVATION



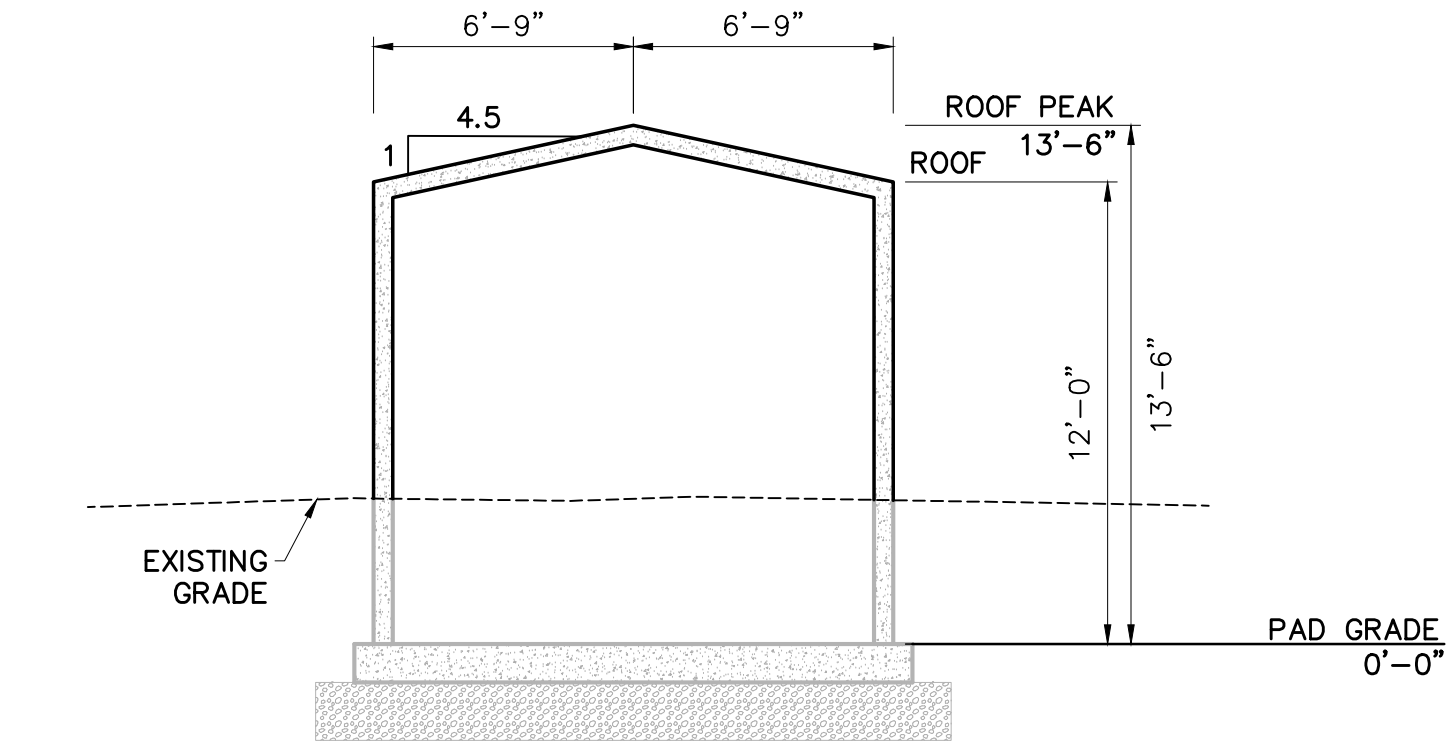
TANK 2 - WEST ELEVATION



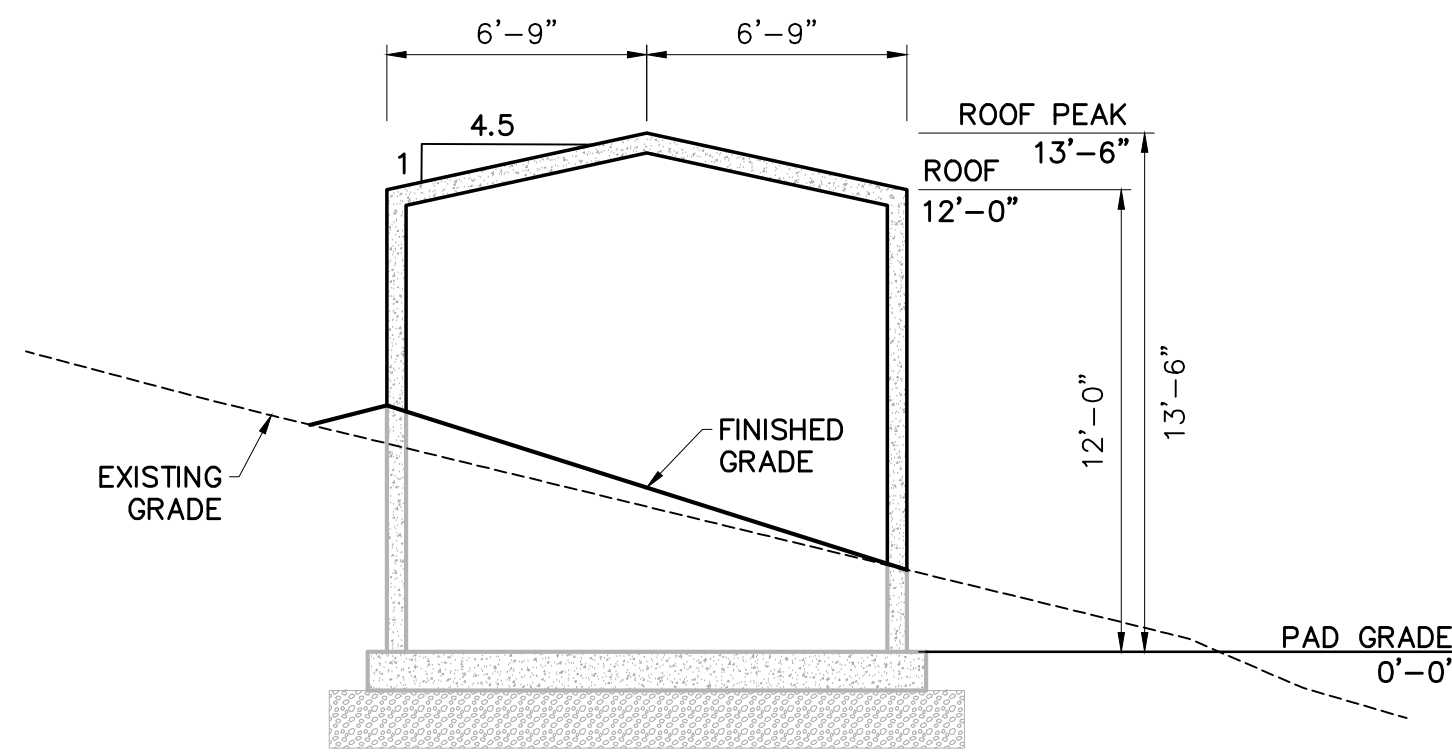
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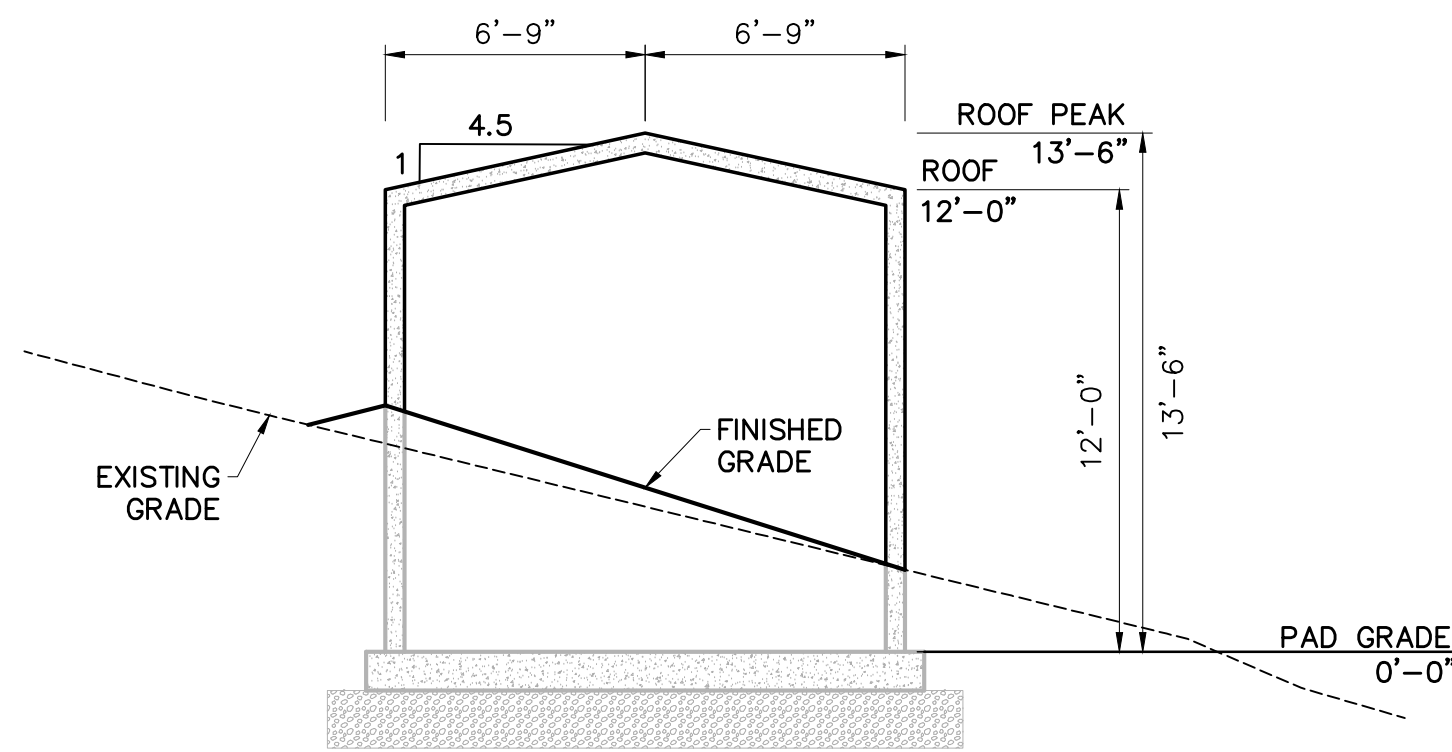
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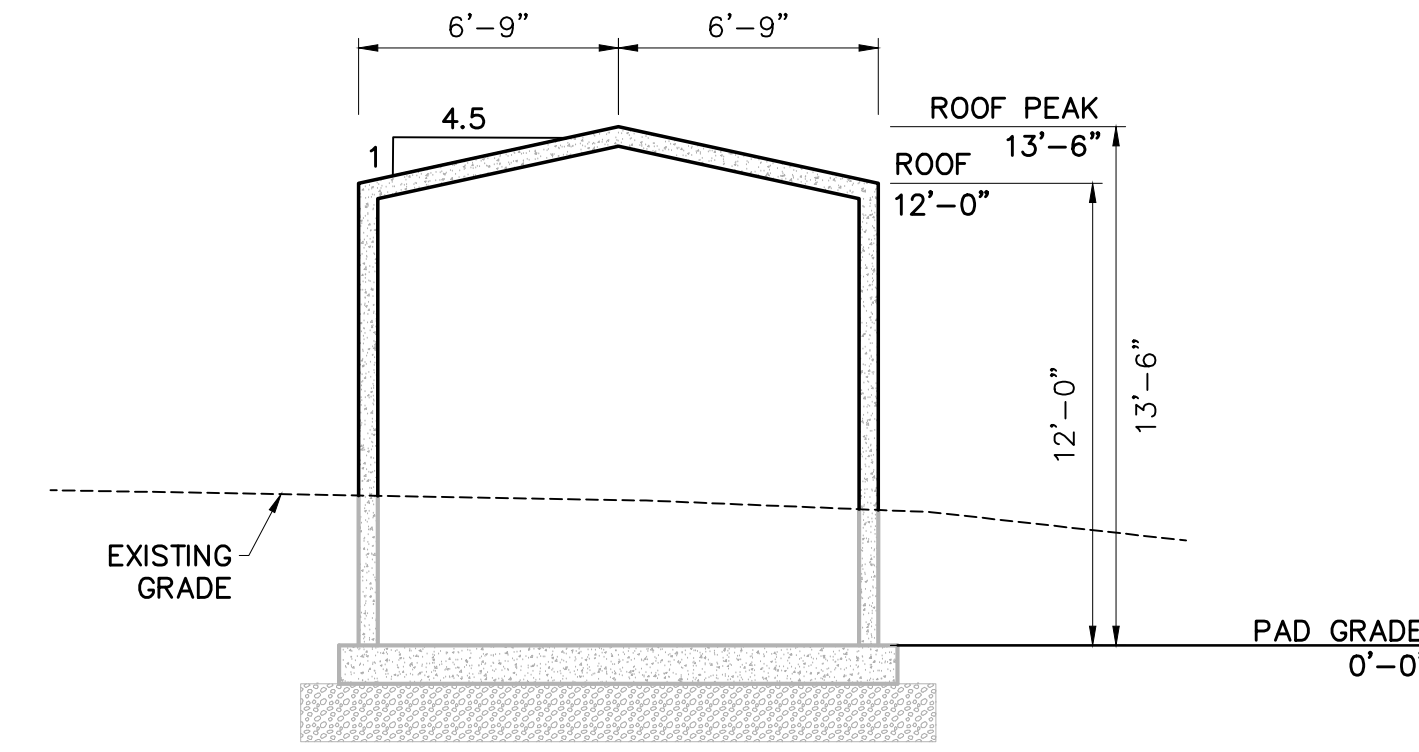
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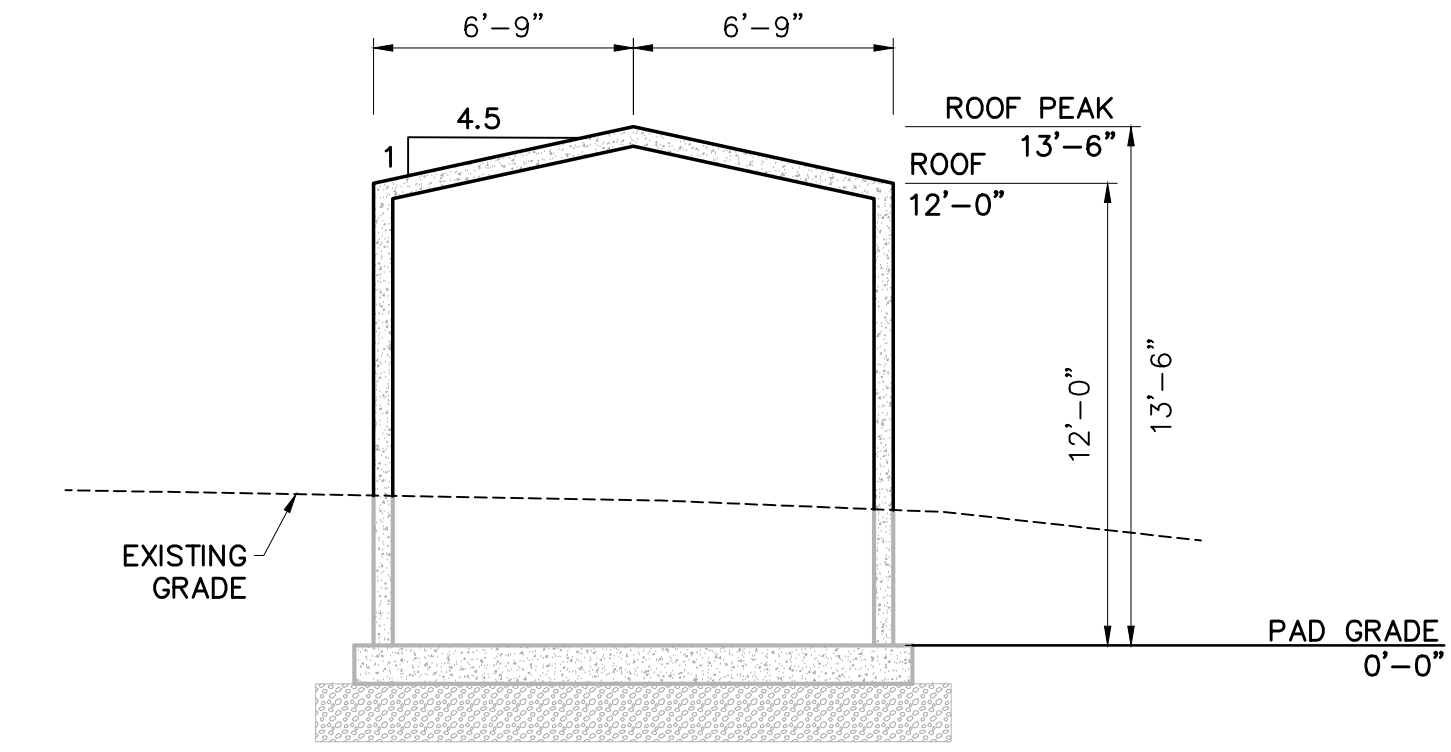
TANK 3 - WEST ELEVATION



TANK 3 - EAST ELEVATION

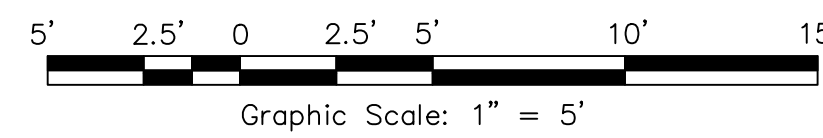


TANK 3 - NORTH ELEVATION



TANK 3 - SOUTH ELEVATION

TANK ELEVATIONS

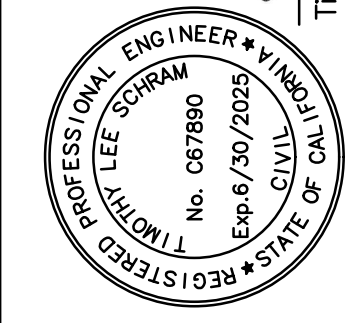


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 Date: January 23, 2024  
 Design by: RMS/CJ  
 Drawn by: CJ  
 Checked by: BC

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**C4.0**  
 4 of 6 Sheets  
 Job 23204

SHALLOW BEACH  
 WATER STORAGE TANKS  
 BUILDING ELEVATIONS

Shallow Beach Road, California  
 APN 109-410-011



Timothy L. Schram, RCE 67890  
 My license expires 6/30/2025

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|-----|----------|--|----------|
| 1   | 03/06/24 | PRE DEMO & UTILITY UPDATE QUANTITIES AND UTILITY LOCATIONS | CT       |
| 2   | 04/25/24 | QUANTITIES AND UTILITY LOCATIONS                           | CT       |

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**GENERAL NOTES:**

- SITE CONDITIONS REQUIRING DIFFERENT CRITERIA SHALL BE REVIEWED AND APPROVED BY GEOTECHNICAL ENGINEER BASED UPON SPECIFIC SITE TOPOGRAPHY AND SOILS CONDITIONS.
- TANK DESIGN FOR NORTHERN CALIFORNIA, INCLUDING SONOMA, MARIN, LAKE, SOLANO, NAPA & MENDOCINO COUNTIES USES THE FOLLOWING SEISMIC VALUES (SEE ATTACHED GEOTECHNICAL REPORT & REVIEW LETTER BY BAUER ASSOCIATES, INC. DATED MAY 13, 2023 AND OCTOBER 25, 2023):
  - $S_s = 2.47$  (MAX) USED FOR DESIGN (ACTUAL VALUE = 2.411)
  - $S_1 = 1.04$  (MAX) USED FOR DESIGN (ACTUAL VALUE = 1.011)
  - SITE CLASSIFICATION B
  - SITE SOILS SHALL BE CLASS 1, 2, 3, OR 4 OF 2022 CBC TABLE 1806.2. SUBJECT TO GEOTECHNICAL REVIEW.
  - ROOF LIVE LOAD = 20 PSF
  - RESPONSE COEFFICIENT (SDS) = 1.647G
  - RESPONSE COEFFICIENT (SD1) = 1.05G
  - IMPORTANCE FACTOR (I) = 1.25
  - $R_i = 2.25$  ANCHORED; = 3.25, IF BURIED
  - $R_c = 1.0$
  - RISK CATEGORY = III
  - SEISMIC DESIGN CATEGORY = D
  - BASIC SEISMIC FORCE RESISTING SYSTEM = CONCRETE SHEARWALL PER ACI 350.3-06
  - DESIGN BASE SHEAR - ANCHORED  
 $V = 106,080\#$  (10,500 GAL TANK)
  - $C_w = 0.1625$  (10,500 GAL TANK)
  - $C_i = 1.647$  (ALL TANKS)  
 $C_c = 0.77$  (ALL TANKS)  
 $C_t = 1.647$  (ALL TANKS)
  - ANALYSIS PROCEDURE USED: ACI 305.3-06 SEISMIC DESIGN OF LIQUID CONTAINING STRUCTURES & COMMENTARY
- TANKS ARE TO BE USED FOR NON-HAZARDOUS STORAGE.
- FOUNDATIONS:
  - FOUNDATIONS TO BE EXCAVATED TO FIRM UNDISTURBED SOIL AS REQUIRED. IN-SITU SOILS MAY BE USED UNEXCAVATED PER GEOTECHNICAL ENGINEER.
  - MINIMUM BEARING CAPACITY FOR DESIGN OF 2000 PSF MIN., PER 2022 CBC TABLE 1806.2
  - DRILLED PIER (IF NEEDED) MINIMUM PASSIVE RESISTANCE FOR DESIGN IS 150 PCF. SEE SHEET S2.
- UNIFORM FILL AROUND TANK, UP TO 1' FROM BOTTOM OF ROOF SLAB W/NO ADDITIONAL SURCHARGE PERMITTED. FILL TO BE PLACED IN 6"-8" UNIFORM LIFTS AROUND TANK W/APPROPRIATE SUBDRAINAGE.
- THE EDGE OF THE BOTTOM OF THE TANK SLAB SHALL NOT BE CLOSER THAN 7' TO A TOP OF BANK OR SLOPE OF BANK, OR THE GEOTECHNICAL ENGINEER SHALL BE CONTACTED TO REVIEW SITE CONDITIONS.
- CONSTRUCTION DATA:
  - OCCUPANCY GROUP = U
  - TYPE OF CONSTRUCTION = V-8
  - STORIES = 1
  - AREA OF WORK = 200 SF
  - SPRINKLERS = N/A
  - REINFORCING STEEL SHALL BE SPECIAL INSPECTED BEFORE PLACING CEMENT
- WIND DESIGN DATA
  - $V = 110$  MPH
  - $V_{asd} = 78$  MPH
  - RISK CATEGORY = III
  - INTERNAL PRESSURE COEFFICIENT = 1.3 (MAX)

**STRUCTURAL NOTES:**

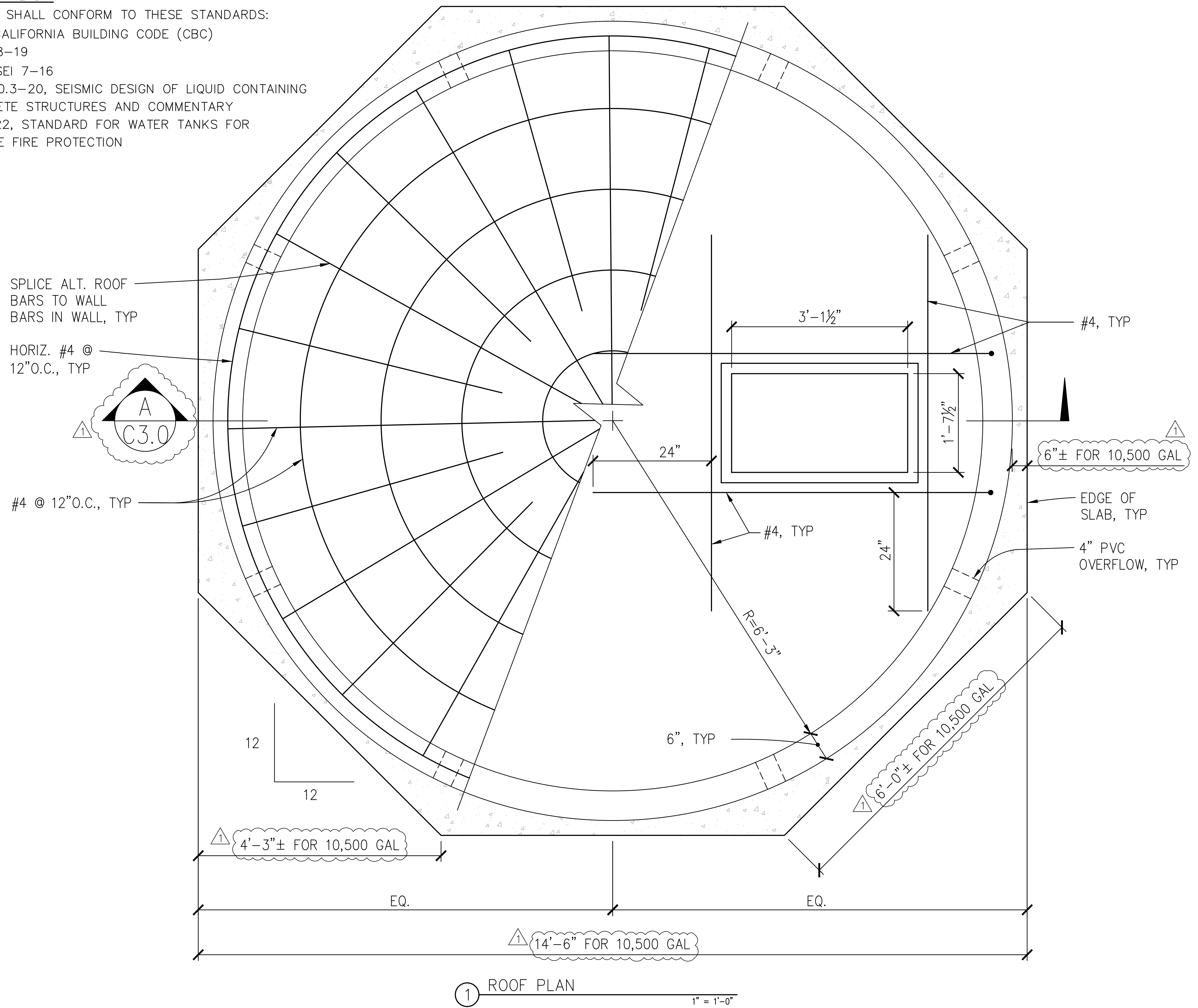
- CONCRETE: SLAB AND TANK 28 DAYS, CONCRETE STRENGTH = 2500 PSI
- REINFORCING STEEL: PER ASTM A615 GRADE 40 STAGGERED ADJACENT HORIZONTAL SPLICES, LAP = 24" MIN.

**SPECIAL INSPECTION:**

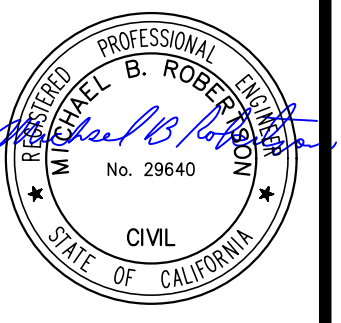
SPECIAL INSPECTION IS REQUIRED FOR REINFORCED CONCRETE CONSTRUCTION AND SEISMIC RESISTANCE OF FOUNDATION AND TANK PER 2022 CBC 1705.3 & 1705.8. BEFORE A PERMIT CAN BE ISSUED, SIGN AND SUBMIT TWO (2) COPIES OF THE REQUIRED AGENCY SPECIAL INSPECTION DOCUMENTS. SPECIAL INSPECTION (8.5x11) WILL BE PROVIDED FOR EVERY WATER TANK SIGNED BY THE ENGINEER AND THE OWNER. THE COUNTY BUILDING OFFICIAL CAN WAIVE THE SPECIAL INSPECTION REQUIREMENTS.

**STANDARDS:**

- ALL WORK SHALL CONFORM TO THESE STANDARDS:
- 2022 CALIFORNIA BUILDING CODE (CBC)
  - ACI 318-19
  - ASCE/SEI 7-16
  - ACI 350.3-20, SEISMIC DESIGN OF LIQUID CONTAINING CONCRETE STRUCTURES AND COMMENTARY
  - NFPA 22, STANDARD FOR WATER TANKS FOR PRIVATE FIRE PROTECTION



|              |          |          |
|--------------|----------|----------|
| DATE:        | 3/6/24   |          |
| SCALE:       | As Shown |          |
| DESIGNED:    | MBR      |          |
| DRAWN:       | KFW      |          |
| CHECKED:     | MBR      |          |
| PROJ. ENGR.: | MBR      |          |
| PROJ. MGR.:  | MBR      |          |
| NO.          | DATE     | REVISION |
|              |          |          |
|              |          |          |
|              |          |          |

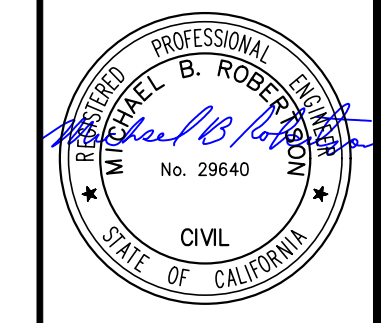


**ROBERTSON ENGINEERING INC.**  
 2455 BENNETT VALLEY ROAD, SUITE B300, SANTA ROSA, CA 95404  
 Telephone 707.791.0030  
 E-mail office@robertsonengineering.net

**CONCRETE WATER TANK**  
**10,500 GALLONS - HILLSIDE SITES**  
 APN 109-410-011  
 SHALLOW BEACH ROAD  
 MARIN COUNTY  
 CALIFORNIA  
 INVERNESS

|         |          |
|---------|----------|
| SHEET   | S1       |
| OF      | 2 SHEETS |
| JOB No. | 17019    |

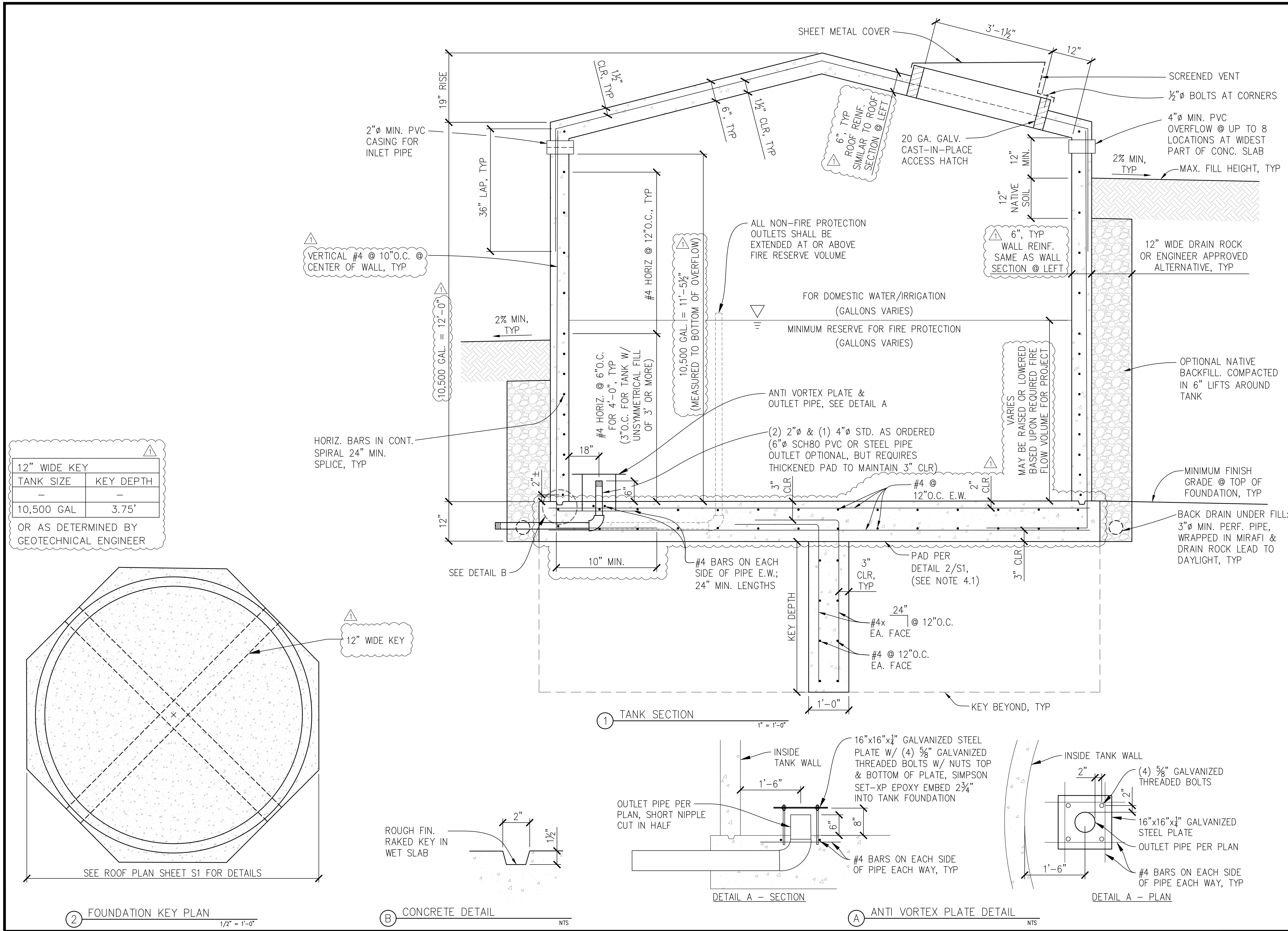
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| DESIGNED:    | MBR      |
| DRAWN:       | KFW      |
| CHECKED:     | MBR      |
| PROJ. ENGR.: | MBR      |
| PROJ. MGR.:  | MBR      |
| REVISION     |          |
| NO.          | DATE     |
| 1            | 2/29/24  |
| 2            |          |



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 Telephone 707.791.0030  
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**CONCRETE WATER TANK**  
 10,500 GALLONS - HILLSIDE SITES  
 APN 109-410-011  
 SHALLOW BEACH ROAD  
 MARIN COUNTY CALIFORNIA  
 INVERNESS

|         |          |
|---------|----------|
| SHEET   | S2       |
| OF      | 2 SHEETS |
| JOB No. | 17019    |



|   |           |
|---|-----------|
| 12" WIDE KEY                              |           |
| TANK SIZE                                 | KEY DEPTH |
| -   | -         |
| 10,500 GAL                                | 3.75'     |
| OR AS DETERMINED BY GEOTECHNICAL ENGINEER |           |