



## AGENCY COMMENT REQUEST

Date 11/19/2025

We request your comments regarding the attached application currently under review.

**DISTRIBUTION**

INTERNAL

☒ Building Inspection      Grading Inspection  
Advance Planning      Housing Programs  
Trans. Planning      Telecom Planner  
ALUC Staff      HCP/NCCP Staff  
County Geologist

HEALTH SERVICES DEPARTMENT

☒ Environmental Health      Hazardous Materials

PUBLIC WORKS DEPARTMENT

Engineering Services      Special Districts  
Traffic  
Flood Control (Full-size)

LOCAL

☒ Fire District \_\_\_\_\_  
    ☒ San Ramon Valley – (email) [rwendel@srvfire.ca.gov](mailto:rwendel@srvfire.ca.gov)  
    Consolidated – (email) [fire@cccfdpd.org](mailto:fire@cccfdpd.org)

☒ Sanitary District Central San

☒ Water District EBMUD

City of \_\_\_\_\_  
School District(s) \_\_\_\_\_  
LAFCO  
Reclamation District # \_\_\_\_\_  
East Bay Regional Park District  
Diablo/Discovery Bay/Crockett CSD

☒ MAC/TAC Alamo

☒ Improvement/Community Association **(AIA)**  
    CC Mosquito & Vector Control Dist (email)

OTHERS/NON-LOCAL

CHRIS (email only: [nwic@sonoma.edu](mailto:nwic@sonoma.edu)) \_\_\_\_  
Fish and Wildlife, Region 3 – Bay Delta \_\_\_\_  
ive American Tribes

ADDITIONAL RECIPIENTS

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

*Please submit your comments to:*

Project Planner Joseph Lawlor  
Phone # 925-655-2872  
E-mail joseph.lawlor@dcd.cccounty.us  
County File # CDVR25-01055  
Prior to 12/19/2025

\*\*\*\*\*

We have found the following special programs apply to this application:

Landslide      Active Fault Zone (A-P)  
Liquefaction      Flood Hazard Area

☒ 60-dBA Noise Control  
CA EPA Hazardous Waste Site  
High or Very High FHSZ

\*\*\*\*\*

**AGENCIES:** Please indicate the applicable code section for any recommendation required by law or ordinance. Please send copies of your response to the Applicant and Owner.

Comments:      None      Below      Attached

Print Name \_\_\_\_\_

Signature \_\_\_\_\_ DATE \_\_\_\_\_

Agency phone # \_\_\_\_\_



# CONTRA COSTA

## CONSERVATION & DEVELOPMENT

### Planning Application Summary

**County File Number: CDVR25-01055**

**File Date: 11/3/2025**

**Applicant:**

taylor hawkins Hawkins Enterprises  
6 crow canyon ct suite 110  
san ramon, CA 94583

taylor@hawkinspools.com  
(925) 415-5258

**Property Owner:**

TODD A MCGREGOR  
208 VALLEY OAKS DR  
ALAMO, CA 94507 204

taylor@hawkinspools.com  
(213) 393-3633

**Project Description:** The applicant requests a variance permit to allow an approximately 8 ft. 9 in. side yard setback (where 20 ft. is the minimum required), for construction of a pool with raised bond beams

**Project Location: (Address: 208 VALLEY OAKS DR, ALAMO, CA 94507 204), (APN: 197371014)**

**Additional APNs:**

**General Plan Designation(s):** RVL

**Zoning District(s):** A-2 : R-40 **AP**

**Flood Hazard Areas:** X

**Fault Zone:** No

**60-dBA Noise Control:** Yes

**MAC/TAC:** Alamo

**Sphere of Influence:** N/A

**Fire District:** SAN RAMON VLY FIRE

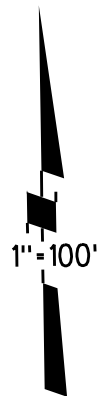
**Sanitary District:** CENTRAL SANITARY

**Housing Inventory Site:** NO

**Specific Plan:** N/A

**Fees:**

Fee Item	Description	Account Code	Total Fee	Paid
052B	Notification Fee (\$30)	002606-9660-REV-000-5B052B	30.00	30.00
VRS0044	Zone Variance - DCD	002606-9660-REV-000-5B0044	3250.00	3250.00
<b>Total:</b>			<b>3280.00</b>	<b>3280.00</b>



NOTE: THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY. NO LIABILITY IS ASSUMED FOR THE ACCURACY OF THE INFORMATION DELINEATED HEREON. ASSESSOR'S PARCELS MAY NOT COMPLY WITH LOCAL LOT SPLIT OR BUILDING SITE ORDINANCES.

7-28-87

11-4-78 FM.197-18

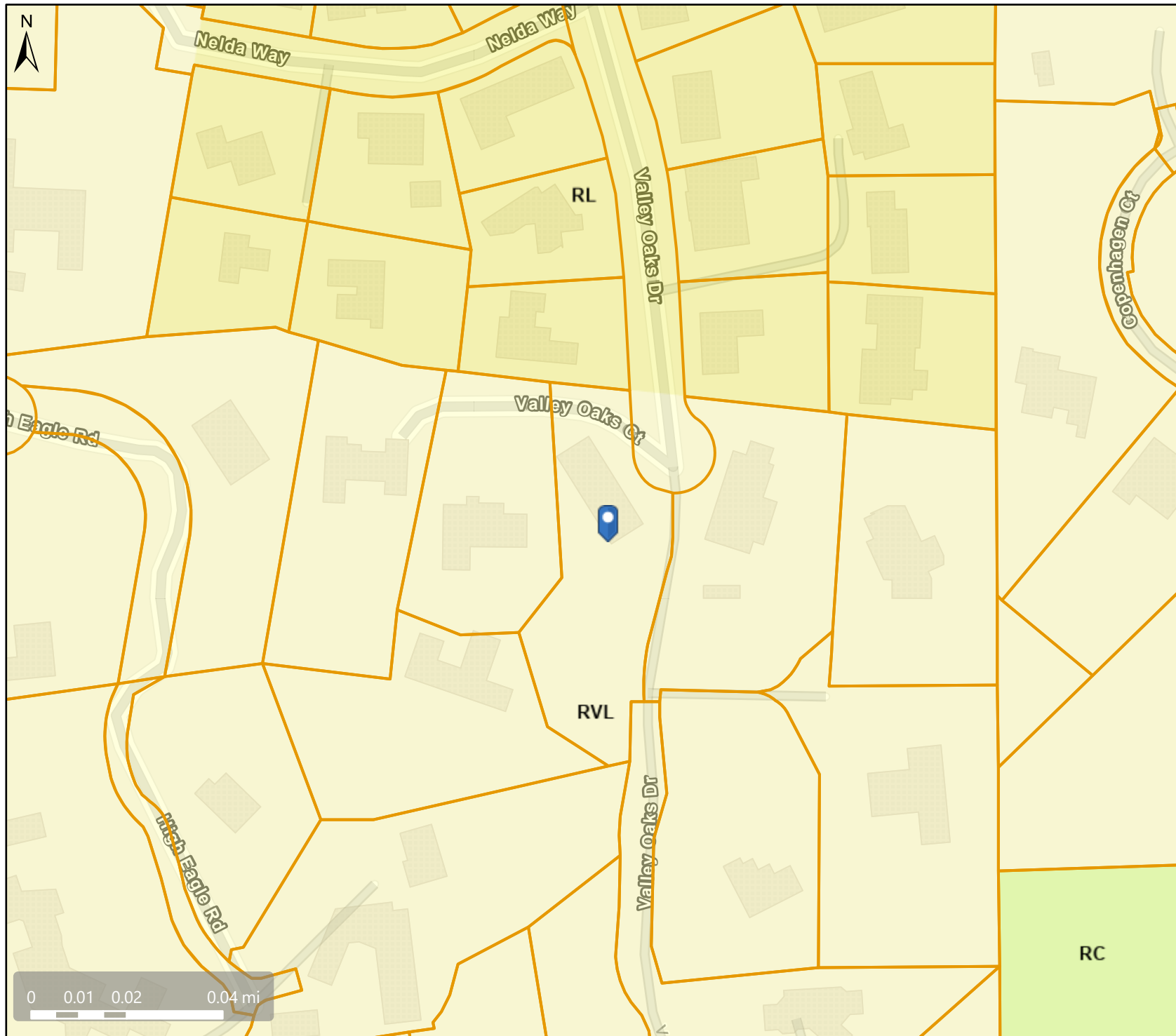
## ASSESSOR'S MAP

BOOK 197 PAGE 37

CONTRA COSTA COUNTY, CALIF.

Sanborn Date : 11/06/1999

# General Plan RVL



## Map Legend

Assessment  
Parcels

## Planning

### General Plan

RVL (Residential  
Very-Low  
Density) ( $\leq 1$  du/  
na)

RL (Residential  
Low Density)  
(1-3 du/na)

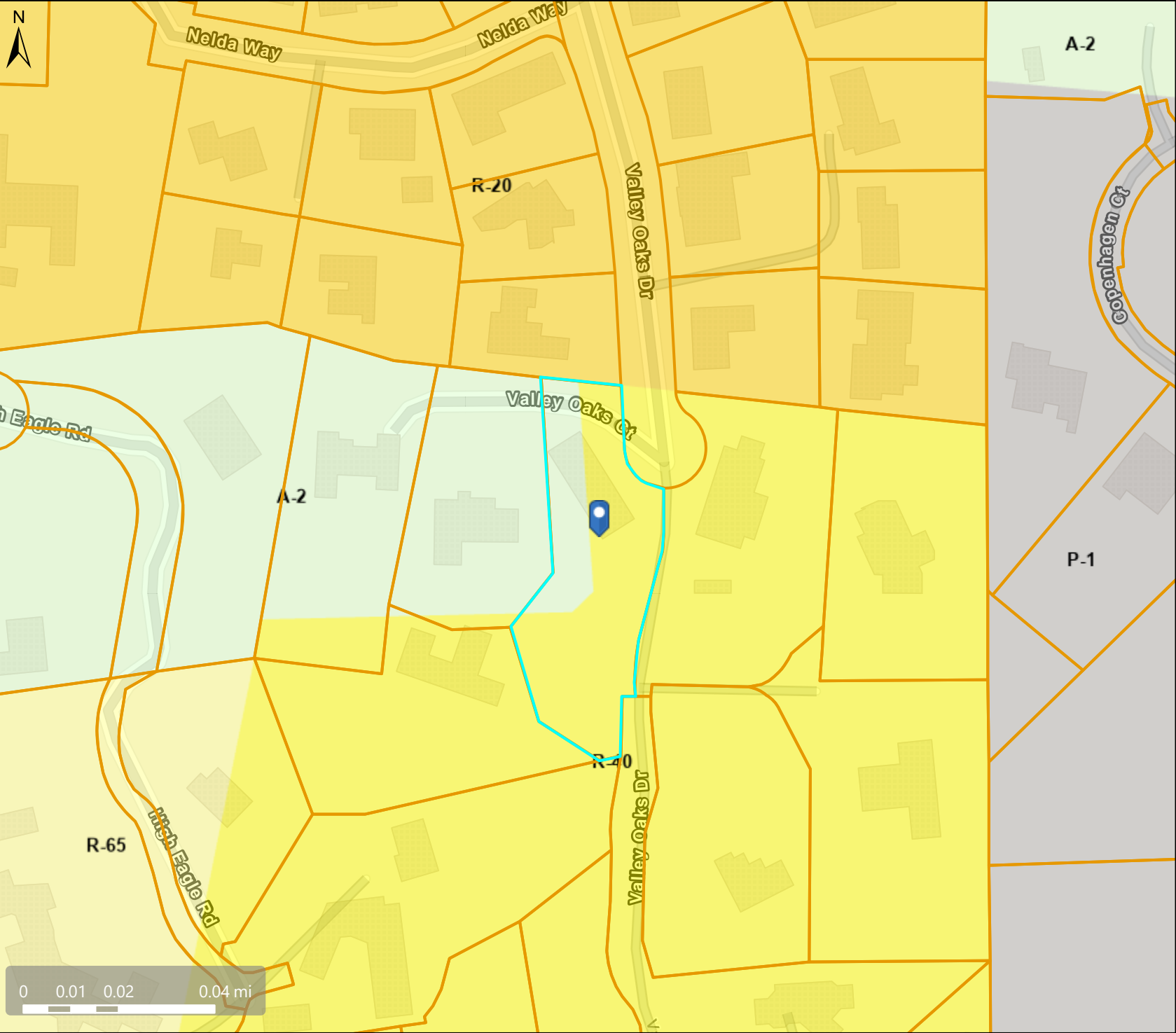
RC (Resource  
Conservation)

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THIS MAP IS NOT TO BE USED FOR NAVIGATION.  
CCMap is maintained by Contra Costa County Department of Information Technology, County GIS. Data layers contained within the CCMap application are provided by various Contra Costa County Departments. Please direct all data inquiries to the appropriate department.

Spatial Reference  
PCS: WGS 1984 Web Mercator Auxiliary Sphere  
Datum: WGS 1984

Zoning R-40 and A-2



**Map Legend**

Assessment

Parcels

Planning

Zoning

ZONE\_OVER

R-20 (Single Family Residential)

R-40 (Single Family Residential)

R-65 (Single Family Residential)

A-2 (General Agriculture)

P-1 (Planned Unit)

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Datum: WGS 1984



# Aerial



## Map Legend

Assessment  
Parcels

### Planning

Unincorporated

Board of  
Supervisors'  
Districts

### Base Data

Address Points

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\* PLEASE VERIFY THAT THE SUGGESTED  
SETBACK ON THE BACK WEST SIDE MUST BE 20'  
REQUIRING A VARIANCE AND NOT THE NORMAL 5'  
PER PUBLISHED GUIDELINES FOR SWIMMING POOLS

PROJECT NOTES:

1. PROPOSED SWIMMING POOL WITH ELECTRIC HEAT PUMP (NO GAS HEATER).
2. NO TREES ARE WITHIN 20' OF THE PROPOSED PROJECT.

VARIANCE APPLICATION NOTES:

1. THE NORTH (SIDE) AND EAST (FRONT) SETBACKS ARE IN COMPLIANCE WITH THE REQUIRED DISTANCES.
2. THE REAR SETBACK REQUEST IS FOR 5' FROM THE WEST (BACK) PROPERTY LINE.

REASON FOR VARIANCE:

1. ALL OTHER AREAS OF THE PROPERTY ARE STEEP SLOPES AND NOT ACCESSIBLE OR BUILDABLE.
2. VALLEY OAK CT. WAS NOT CORRECTLY BUILT IN THE REQUIRED EASEMENT AND ALMOST ENTIRELY ENCROACHES ONTO THE MCGREGOR PROPERTY.
3. THE LOCATION OF THE PROPOSED POOL IS RESTRICTED DUE TO THE LOCATION OF VALLEY OAKS CT. BEING BUILT IN THE WRONG LOCATION OUTSIDE OF THE ALLOCATED EASEMENT.
4. IF VALLEY OAKS CT WAS NOT ENCROACHING ON THE PROPERTY THERE WOULD BE ROOM FOR THE POOL TO MEET THE 20' SUGGESTED SETBACK.

CONTACT:

TAYLOR HAWKINS  
taylor@hawkinspools.com  
(925) 415-5258

L-1 - SWIMMING POOL

L-2 - SITE PLAN

## L-3 - NOTES

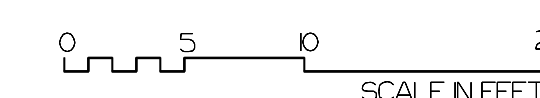
S-I - ENGINEERING COVER SHEET

## 100 - POOL STRUCTURAL DETAILS

## 400 - WALL SURCHARGE DETAILS

## 440 - RAISED BOND BEAM DETAILS

## 501 - FREESTANDING WALL DETAILS



NOTES

# THE AWKINS POOL

80 S. BUCHANAN CIR. SUITE A

PRACHECO, CA. 94553

OFFICE (925) 886-1300

LIC# 454213

[illegible]

# SWIMMING POOL

\* THIS PLAN IS THE EXCLUSIVE PROPERTY OF HAWKINS POOLS. ANY UNAUTHORIZED USE OF THIS PLAN IN PART OR IN WHOLE WILL RESULT IN A MINIMUM FEE OF \$5,000 PAYABLE BY OWNER OR USER TO HAWKINS POOLS.

McGREGOR,  
TODD & NATALIE

208 VALLEY OAKS DR  
ALAMO, CA

213-393-3633

hypoxidoc@gmail.com

SCALE  $1/8" = 1'-0"$

DRAWN BY JEFF JONES

CHECKED BY


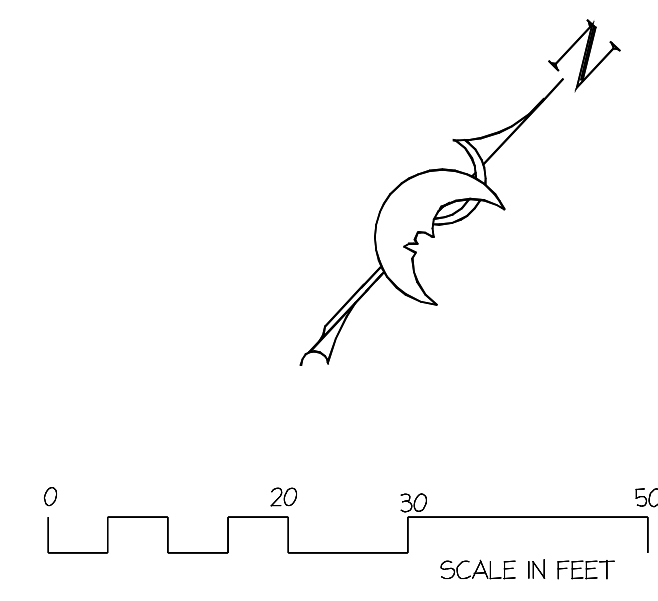
DATE 10-28-25

DATE OF PRINT:

PROJECT NO.

SHEET NO.

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No.	Date	Description
REVISIONS		

SCALE	$1/16" = 1' - 0"$	PROJECT NO.
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DATE	10-28-25	L-2
DATE OF PRINT		



ENERGY NOTES

PUMP SIZING AND FLOW RATES

1. PUMP FLOW RATES SHALL BE CALCULATED USING THE FOLLOWING EQUATION:  $H = C \times F^2$

WHERE:

H = THE TOTAL SYSTEM HEAD IN FEET OF WATER

F= THE FLOW RATE IN GALLONS PER MINUTE (GPM)

C= A COEFFICIENT BASED ON THE VOLUME OF THE POOL

0.0167 FOR POOLS LESS THAN OR EQUAL TO 17,000 GALLONS.

0.0082 FOR POOLS GREATER THAN 17,000 GALLONS.

2. FILTRATION PUMPS SHALL BE SIZED, OR IF PROGRAMMABLE, SHALL BE PROGRAMMED, SO THAT THE FILTRATION FLOW RATE IS NOT GREATER THAN THE RATE NEEDED TO TURN OVER THE POOL WATER VOLUME IN 6 HOURS OR 36 GPM, WHICHEVER IS GREATER.

3. PUMP MOTORS USED FOR FILTRATION WITH A CAPACITY OF 1 HP OR MORE SHALL BE MULTI-SPEED.

4. EACH AUXILIARY POOL LOAD SHALL BE SERVED BY EITHER SEPERATE PUMPS OR THE SYSTEM SHALL BE SERVED BY A MULTI-SPEED PUMP. EXCEPTION: PUMPS LESS THAN 1 HP MAY BE SINGLE SPEED.

5. MULTI-SPEED PUMPS SHALL HAVE CONTROLS WHICH DEFAULT TO THE FILTRATION FLOW RATE WHEN NO AUXILIARY POOL LOADS ARE OPERATING.

6. FOR MULTI-SPEED PUMPS, THE CONTROLS SHALL DEFAULT TO THE FILTRATION FLOW RATE SETTTING WITHIN 24 HOURS AND SHALL HAVE AN OVERRIDE CAPABILITY FOR SERVICING.

SYSTEM PIPING.

7. A LENGTH OF STRAIGHT PIPE THAT IS GREATER THAN OR EQUAL TO AT LEAST 4 PIPE DIAMETERS SHALL BE INSTALLED BEFORE THE PUMP.

8. POOL PIPING SHALL BE SIZED SO THAT THE VELOCITY OF THE WATER AT MAXIMUM FLOW FOR AUXILIARY POOL LOADS DOES NOT EXCEED 8 FEET PER SECOND IN THE RETURN LINE AND 6 FEET PER SECOND IN THE SUCTION LINE.

9. ALL ELBOWS SHALL BE SWEEP ELBOWS OR OF AN ELBOW-TYPE THAT HAS A PRESSURE DROP OF LESS THAN THE PRESSURE DROP OF STRAIGHT PIPE WITH A LENGTH OF 30 PIPE DIAMETERS.

VALVES

10. MINIMUM DIAMETER OF BACKWASH VALVES SHALL BE 2 INCHES OR THE DIAMETER OF THE RETURN PIPE, WHICHEVER IS GREATER.

SWIMMING POOL AND

SPA HEATER REQUIREMENTS

POOL AND SPA HEATER SHALL BE CERTIFIED BY THE ENERGY COMMISSION TO COMPLY WITH 110.4 AND 110.5 TO INCLUDE THE FOLLOWING:

1. MINIMUM HEATING EFFICIENCY TO APPLIANCE EFFICIENCY REGULATIONS.

2. THE ON / OFF SWITCH IS OUTSIDE OF THE HEATER.

3. PERMANENT AND WEATHERPROOFF OPERATING INSTRUCTIONS.

4. NO ELECTRIC RESITANCE HEATING.

5. ELECTRIC SPARK IGNITION, NO CONTINUOUSLY BURNING PILOT LIGHTS.

6. THE POOL AND SPA TO HAVE A FITTED COVER INSTALLED PRIOR TO THE FINAL INSPECTION.

PROJECT NOTES

OCCUPANCY – RESIDENTIAL GROUP R-3

THE PROJECT WILL MEET ALL CURRENT LOCAL CITY, COUNTY, AND STATE BUILDING CODES.

THE FOLLOWING CODES AND NOTES APPLY:

1. PER CRC R106.11

THE FOLLOWING CODES SHALL APPLY

2022 CALIFORNIA RESIDENTIAL CODE

2022 CALIFORNIA MECHANICAL CODE

2022 CALIFORNIA ELECTRICAL CODE

2022 CALIFRONIA PLUMBING CODE

2. ALL CURRENT MUNICIPAL CODES

3. SMOKE AND CARBON MONOXIDE ALARMS SHALL COMPLY WITH CRC R314.3 AND R315.3 TO BE VERIFIED IN FIELD.

4. THE SWIMMING POOL AND SPA SUCTION LINES WILL HAVE ANTI-ENTRAPMENT GRATES PER CRC AV100.8

5. IF AN AUTOMATIC POOL COVER IS SHOWN THE POOL AUTOMATIC COVER SHALL COMPLY WITH ASTM F1346.CRC AV 100.2

6. POOL & SPA LIGHTING IS LED LOW VOLT AND MEETS ALL 2022 CALIFORNIA ELECTRICAL CODES.

7. GAS LINE TRENCHING: MIN 18" DEEP. POLYETHELENE PIPE WITH METALIC TRANSITIONAL RISERS. 14 GAUGE TRACER WIRE

8. DRAINAGE NOTE: THE SITE IS NOT BEING REGRADED. THE EXISTING GRADES REMAIN. THE NEW DECKS WILL TIE INTO THE EXISTING DRAIN SYSTEM. STORM WATER PATTERNS WILL NOT BE ALTERED.

9. ALL WIRING THE IS BURIED MUST BE LISTED AS WET RATED.

10. THE POOL WILL BE FENCED PER POOL CODES CBC SECTION 3109.4.4.3 THE PROJECT WILL MEET ALL CURRENT SAFETY ORDINACE CODES.

11. SAFETY FENCING SPECIFICATIONS: 60" HIGH MIN. NO OPENINGS OR VOIDS TO EXCEED 4". THE FENCE TO HAVE A 2" X 4" TOP AND BOTTOM RAIL WITH 4" X 4" MIN. PTDF POST. THE BOTTOM RAIL NOT TO EXCEED 2" ABOVE GRADE. THE GATES TO OPEN OUT AWAY FROM THE POOL, TO BE SELF CLOSING AND SELF LATCHING. THE LATCH A MIN. OF 60" ABOVE GRADE.

12. STATE OF CALIFORNIA DROWNING PREVENTION SAFETY FEATURES PER CBC SEC. 3109.4.4.2 & BUILDING STANDARDS INFORMATION BULLETIN 17-8 EFFECTIVE 1-1-18: THIS PROJECT WILL BE EQUIPPED WITH DOOR ALARMS THAT MEET THE CODE REQUIRMENTS AND POOLGUARD MODEL PGRM-2' NSF CERTIFIED TO THE ASTM SAFTEY SPECIFICATION F 2208.

13. POOL COVER PROVIDED PER CA ENERGY CODE 110.4(b)2. LOCATION- ON THE POOL.

14. THE POOL LIGHTS ARE LED LOW VOLT. THERE ARE NO LIGHTS, OUTLETS, OR ELECTRICAL SERVICE WITHIN 15' OF THE WATER OF THE POOL PER CEC Art.680.22 (B)

15. BONDING- PER CEC Sec.680.26(C) THE POOL WATER WILL BE BONDED WITH A 4" SQUARE STAINLESS STEEL 316L (9 SQ. INCHES) ROPE CUP ANCHOR. MOUNTED BELOW WATER SURFACE. ALL POOL LIGHTS ARE PLASTIC LOW VOLT.

ALL ADDITIONAL BONDING PER STRUCTURAL NOTES ON SHEET 100 IF PROVIDED.

16. THE ELECTICAL FROM THE MAIN PANEL TO THE POOL SUB-PANEL SHALL USE #8 AWG CONDUCTOR HOUSED IN 1 1/4" CONDUIT AND BURRIED AT A DEPTH NO LESS THAN 18". PER CEC TABLE 300.5

17. THE MOTOR FOR POOL COVER SHALL BE AT LEAST 5 FEET FROM THE INSIDE WALL OF THE POOL UNLESS SEPARATED BY A WALL, COVER, OR OTHER PERMANENT BARRIER. THE DEVICE THAT CONTROLS THE OPERATION OF THE MOTOR FOR AN ELECTRICALLY OPERATED POOL COVER SHALL BE IN A LOCATION SUCH THAT THE OPERATOR HAS FULL VIEW OF THE POOL. CEC 680.27(B) (1)

18. OUTLETS SUPPLYING POOL PUMP MOTORS CONNECTED TO SINGLE-PHASE, 120-VOLT THROUGH 240-VOLT BRANCH CIRCUITS, SHALL BE PROVIDED WITH GFCI PROTECTION FOR PERSONNEL. CEC 680.21 (C)

19. ALL RECEPTACLES WITHING 20' OF THE POOL MUST BE GFCI

20. OVERHEAD WIRES SHALL NOT CROSS THE POOL CEC 680.9 (A)

21. POOL LIGHTS TO HAVE GFCI PROTECTION ON A SEPERATE BRANCH CIRCUIT CEC 680.23(A)(3)

NOTES

HAWKINS POOLS

80 S. BUCHANAN CIR. SUITE A  
PACHECO, CA. 94553

OFFICE (925) 886-1300  
LIC# 454213



No.	Date	Description
REVISIONS		

NOTES

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213-393-3633

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DATE
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SHEET NO. L-3

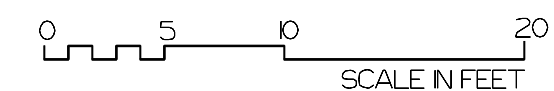
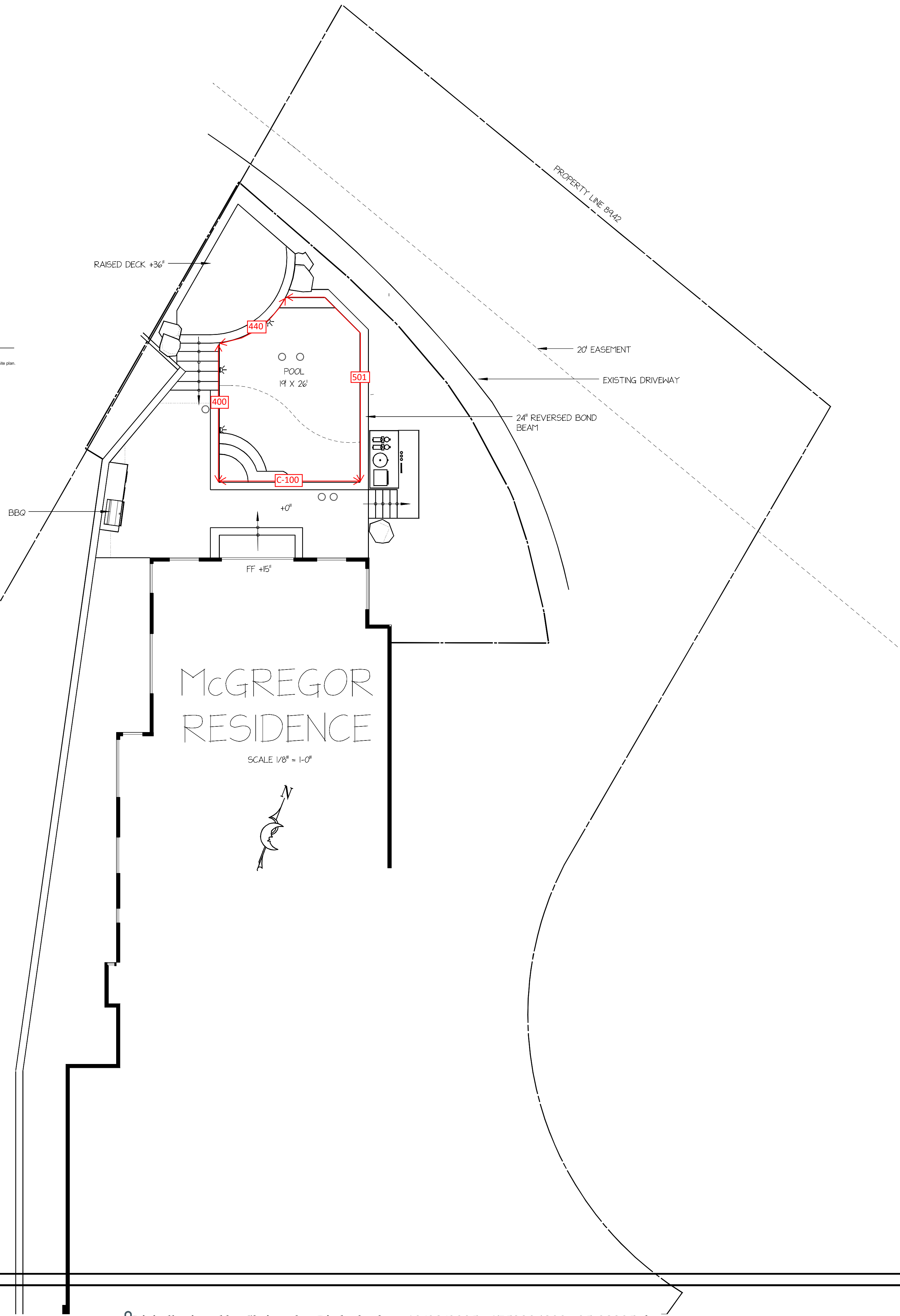




25-08905-dg

SITE PLAN REVIEWED  
for conformance to structural details  
*Christopher J. Biedenbach*  
Christopher J. Biedenbach R.C.E.  
Pool Engineering, Inc.  
Structural details shall take precedence over conflicts with site plan.

10/08/2025



NOTES

HAWKINS POOLS  
80 S. BUCHANAN CIR. SUITE A  
PACHECO, CA. 94553  
OFFICE (925) 886-1300  
LIC# 454213

No.	Date	Description
REVISIONS		



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DATE 7-8-25  
DATE OF PRINT

PROJECT NO.  
SHEET NO.  
S-1







CALCULATIONS

METHODOLOGY:

(SURCHARGE LOADING BASED ON BOUSSINESQ METHOD, MODIFIED BY TERZAGI FOR TYPICAL BUILDING/FOOTING, 1,000 P.S.F. BEARING PRESSURE).

γ = EQUIVALENT FLUID PRESSURE

OTM = 1/6 γ H³ + Σ[(P)(r)]

WHERE γ = 60 p.c.f. AND

P<sub>i</sub> = 1/2(σ<sub>i</sub> + σ<sub>i-1</sub>)(6 in)

r<sub>i</sub> = vertical dist. from P<sub>i</sub> to z depth.

NET MOM = OTM - RESISTING MOMENT

fs =  $\frac{M(12 \text{ in/ft})}{As j d} = \frac{Mt (12)}{As (0.887) d}$

fc =  $\frac{M(2) 12 \text{ in/ft}}{j k b d^2} = \frac{Mt (2)(12)}{(0.887)(0.339)(12) d^2} < 1125 \text{ psi}$

vc =  $\frac{(1/2) \gamma H^2}{(12 \text{ in/ft}) j d} = \frac{\gamma H^2}{(2)(12)(0.887) d} < 55 \text{ psi}$

f'c = 2,500 p.s.i.

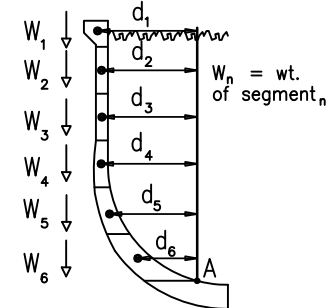
Fs = 20,000 p.s.i.

fc = 0.45 f'c = 1125 p.s.i.

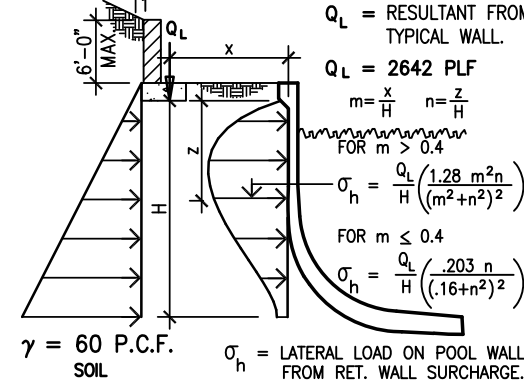
Vc = 1.1 √f'c = 55 p.s.i.

RESISTING MOMENT:

RESISTING MOMENT ABOUT POINT A  
RM = W<sub>1</sub>d<sub>1</sub> + W<sub>2</sub>d<sub>2</sub> + ... W<sub>n</sub>d<sub>n</sub>



LOADING DIAGRAM:



CALCULATION RESULTS:

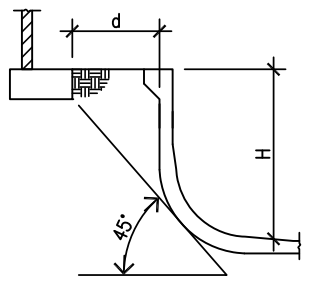
RETAINING WALL SURCHARGE, E.F.P. = 60 P.C.F.  
RESULTS FOR 'X' = 1'-0" W/ NO RAISED BOND BEAM

DEPTH 'D'	SOIL OTM ft-#	LOAD OTM ft-#	SOIL RM ft-#	NET Mom	t	VERTICAL STEEL	fs p.s.i.	fc p.s.i.	vc p.s.i.
2'-0"	80	56	78	95	6"	#3 @ 12"	3985	110	8.3
2'-6"	156	176	89	349	7"	#3 @ 6"	5492	189	11.2
3'-6"	429	674	123	1301	9"	"	13191	356	14.8
4'-6"	911	1486	214	2710	10"	#3 @ 3"	11981	440	19.0
5'-6"	1664	2531	443	4329	11"	"	16589	562	21.8
6'-6"	2746	3734	925	5755	13"	add 3 #4	11280	439	21.6
7'-6"	4219	5045	1935	7329	13"	"	14367	560	26.0
8'-6"	6141	6431	6214	6358	13 1/2"	"	11828	447	29.1

RESULTS FOR 'X' = 1'-0" W/ 2'-6" RAISED BOND BEAM

HEIGHT 'H'	SOIL OTM ft-#	LOAD OTM ft-#	SOIL RM ft-#	NET Mom	t	VERTICAL STEEL	fs p.s.i.	fc p.s.i.	vc p.s.i.
2'-0"	80	33	78	95	6"	#3 @ 12"	3985	110	6.4
2'-6"	156	106	89	349	7"	#3 @ 6"	5492	189	8.5
3'-6"	429	433	123	1301	9"	"	13191	356	11.9
4'-6"	911	1021	172	2784	10"	#3 @ 3"	12307	452	16.1
5'-6"	1664	1839	227	4739	11"	"	18160	615	19.5
6'-6"	2746	2839	320	6770	13"	add 3 #4	13270	517	20.0
7'-6"	4219	3976	582	8536	13"	"	16731	652	24.6
8'-6"	6141	5215	1127	10532	13 1/2"	"	19591	741	28.0
9'-0"	7290	5864	1563	11674	13 1/2"	add 3 #5	15116	723	30.6
10'-0"	10000	7211	3023	14187	13 1/2"	"	18370	879	35.8
11'-0"	13310	8608	8719	13200	14"	"	16251	755	39.4

THIS DETAIL IS NOT NEEDED WHEN 'd' IS GREATER THAN 'H'.



SHORING NOTES:  
1. THIS PLAN DEPICTS THE STRUCTURES IN A COMPLETED STATE ONLY. THE INSTALLER IS RESPONSIBLE FOR JOB SITE CONDITIONS AND THE SAFETY OF ALL PERSONS & PROPERTY DURING THE COURSE OF CONSTRUCTION.  
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SHORING AND PROVIDING BRACING DURING CONSTRUCTION AND/OR ERECTION TO SUPPORT ALL LOADS TO WHICH THE STRUCTURES AND SUPPORTING SOIL MAY BE SUBJECTED.

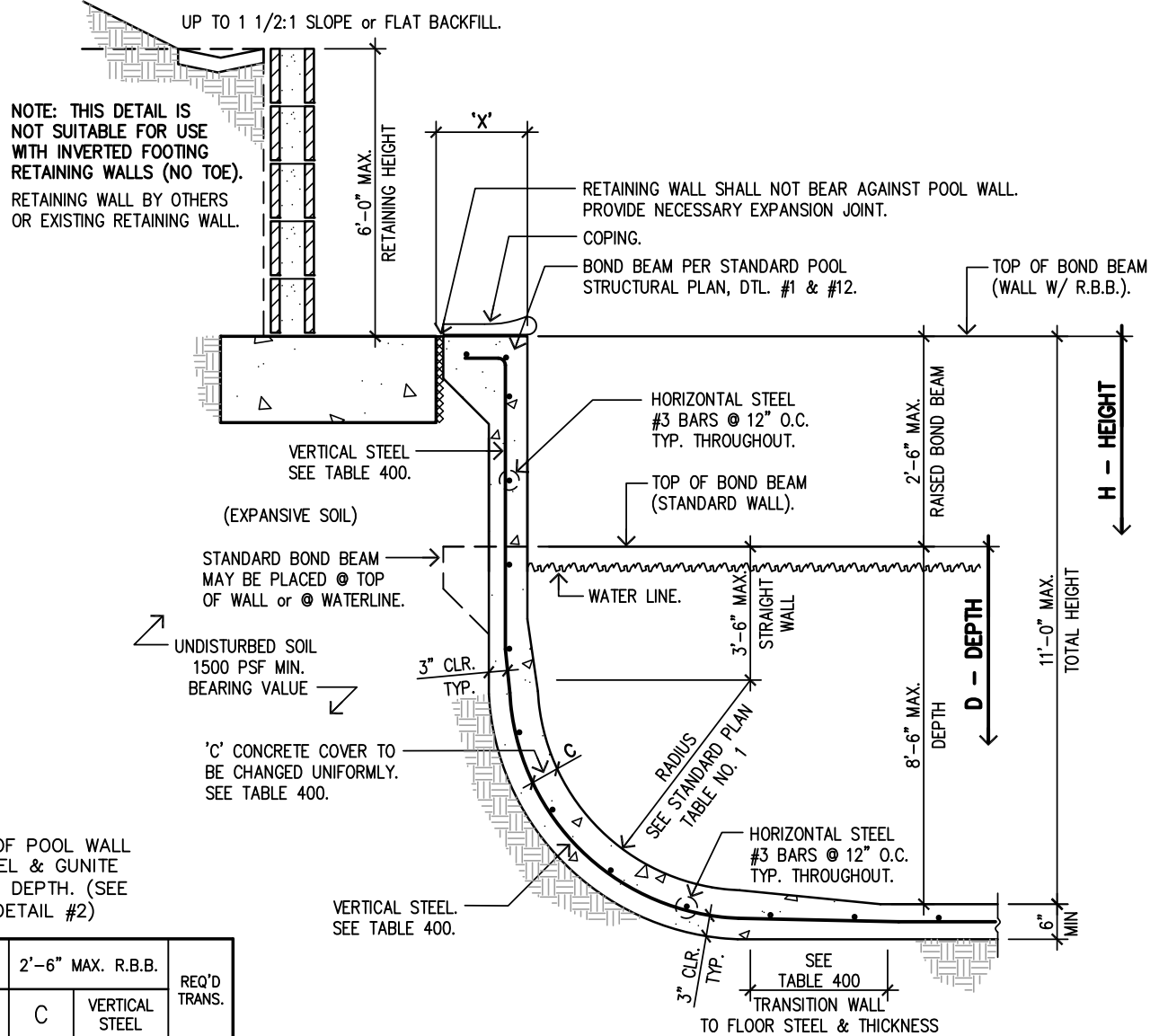
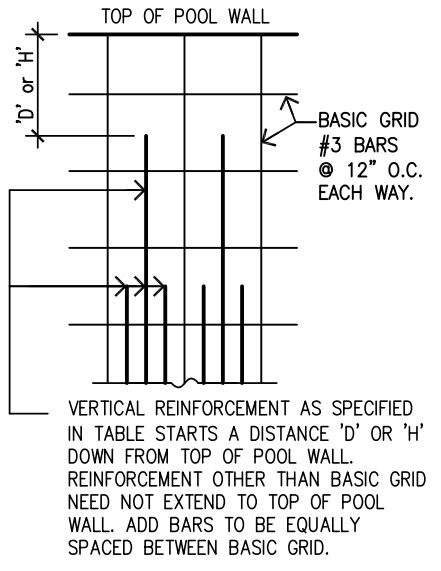
TABLE 400

'D' OR 'H' IS DISTANCE FROM TOP OF POOL WALL DOWNWARD. BEGIN SPECIFIED STEEL & GUNITE THICKNESS AT INDICATED 'D' OR 'H' DEPTH. (SEE STANDARD STRUCTURAL PLAN, DETAIL #2)

POOL DEPTH	NO R.B.B.		REQ'D TRANS.
	C	VERTICAL STEEL	
0 to 2'0"	3"	#3 @ 12"	2'-0"
2'-6"	4"	#3 @ 6"	2'-0"
3'-6"	6"	"	2'-0"
4'-0"	7"	"	2'-0"
4'-6"	7"	#3 @ 3"	2'-5"
5'-0"	7"	"	2'-10"
6'-0"	9"	"	3'-2"
6'-6"	9 1/2"	add 3 #4	3'-3"
7'-6"	9 1/2"	"	3'-3"
8'-0"	9 1/2"	"	3'-3"
8'-6"	10"	"	3'-3"

TOTAL HEIGHT	2'-6" MAX. R.B.B.		REQ'D TRANS.
	C	VERTICAL STEEL	
0 to 2'0"	3"	#3 @ 12"	2'-0"
2'-6"	4"	#3 @ 6"	2'-0"
3'-6"	6"	"	2'-0"
4'-0"	7"	"	2'-0"
4'-6"	7"	#3 @ 3"	2'-5"
5'-0"	7"	"	3'-2"
6'-0"	9"	"	4'-3"
6'-6"	9 1/2"	add 3 #4	4'-8"
7'-6"	9 1/2"	"	4'-11"
8'-0"	9 1/2"	"	4'-11"
8'-6"	10"	"	4'-11"
9'-0"	10"	add 3 #5	4'-11"
10'-0"	10"	"	5'-0"
10'-6"	10 1/2"	"	5'-2"
11'-0"	10 1/2"	"	5'-3"

TYPICAL ADD BAR REINFORCING DIAGRAM

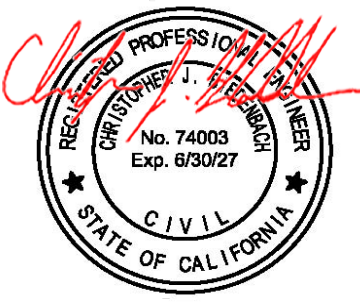


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FOR USE ONLY AT:  
208 Valley Oaks Dr  
Alamo, CA 94507-2046



10/08/2025

RETAINING WALL SURCHARGE  
UPSLOPE OR LEVEL BACKFILL  
MAX. FOOTING BEARING PRESSURE = 1,500 P.S.F.  
EQUIVALENT FLUID PRESSURE = 60 P.C.F.

25-08905-dg

DETAIL #400

# CALCULATIONS

## METHODOLOGY:

(SURCHARGE LOADING BASED ON BOUSSINESQ METHOD, MODIFIED BY TERZAGI FOR TYPICAL BUILDING/FOOTING, 1,500 P.S.F. BEARING PRESSURE).

$\gamma$  = EQUIVALENT FLUID PRESSURE

$$OTM = 1/6 \gamma H^3 + \sum [(P)(r)]$$

WHERE  $\gamma$  = 60 p.c.f. AND

$$P_i = 1/2(\sigma_i + \sigma_{i-1})(6 \text{ in})$$

$r_i$  = vertical dist. from  $P_i$  to z depth.

NET MOM = OTM - RESISTING MOMENT

$$f_s = \frac{M(12 \text{ in/ft})}{A_s j d} = \frac{M_t (12)}{A_s (0.887) d}$$

$$f_c = \frac{M(2) 12 \text{ in/ft}}{j k b d^2} = \frac{M_t (2)(12)}{(0.887)(0.339)(12) d^2} < 1125 \text{ psi}$$

$$v_c = \frac{(1/2) \gamma H^2}{(12 \text{ in/ft}) j d} = \frac{\gamma H^2}{(2)(12)(0.887) d} < 55 \text{ psi}$$

$f'_c$  = 2,500 p.s.i.

$F_s$  = 20,000 p.s.i. GR. 40  
32,000 p.s.i. GR. 60

$f_c$  = 0.45  $f'_c$  = 1125 p.s.i.

$v_c$  = 1.1  $\sqrt{f'_c}$  = 55 p.s.i.

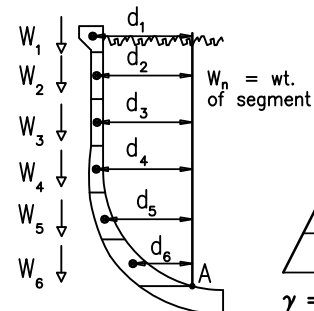
RETAINING WALL SURCHARGE, E.F.P. = 60 P.C.F.  
RESULTS FOR 6'-0" MAX. RAISED BOND BEAM

HEIGHT 'H'	SOIL OTM ft-#	LOAD OTM ft-#	SOIL RM ft-#	NET Mom	t	VERTICAL STEEL	$f_s$ p.s.i.	$f_c$ p.s.i.	$v_c$ p.s.i.
2'-0"	80	18	38	136	6"	#3 @ 12"	5667	163	5.2
2'-6"	156	60	49	390	7"	#3 @ 6"	6102	220	6.7
4'-6"	911	647	132	2824	10"	#3 @ 3"	12425	478	13.4
6'-6"	2746	1987	260	6819	12 1/2"	add 3 #4	14051	591	19.0
9'-0"	7290	4481	516	13228	15 1/2"	add 3 #5	14110	634	24.4
12'-0"	17280	8201	2012	23608	17 1/2"	#5 @ 3"	18191	828	33.2
14'-6"	30486	11647	14000	28134	19 1/2"	#5 @ 3"	18883	795	39.8

INDICATES GRADE  
60 STEEL

## RESISTING MOMENT:

RESISTING MOMENT ABOUT POINT A  
 $RM = W_1 d_1 + W_2 d_2 + \dots W_n d_n$



## LOADING DIAGRAM:

$Q_L$  = RESULTANT FROM  
TYPICAL WALL.

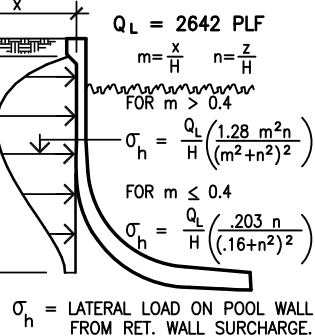


TABLE 440

'D' OR 'H' IS DISTANCE FROM TOP OF POOL WALL DOWNWARD.

BEGIN SPECIFIED STEEL & GUNITE THICKNESS AT INDICATED 'D' OR 'H' DEPTH (SEE STANDARD STRUCTURAL PLAN, DETAIL #2).

TOTAL HEIGHT	3'-0" MAX. R.B.B.	REQ'D TRANS.
H	C	VERTICAL STEEL
0 to 2'-0"	3"	#3 @ 12"
2'-6"	4"	#3 @ 6"
3'-6"	6"	"
4'-0"	7"	"
4'-6"	7"	#3 @ 3"
5'-0"	7"	"
6'-0"	9"	"
6'-6"	9"	add 3 #4
7'-0"	10"	"
7'-6"	10"	"
8'-0"	11"	"
8'-6"	11"	"
9'-0"	12"	add 3 #5
10'-0"	12"	"
11'-0"	14"	"
11'-6"	14"	"

SEE ADD BARS DIAGRAM

TOTAL HEIGHT	4'-0" MAX. R.B.B.	REQ'D TRANS.
H	C	VERTICAL STEEL
0 to 2'-0"	3"	#3 @ 12"
2'-6"	4"	#3 @ 6"
3'-6"	6"	"
4'-0"	7"	"
4'-6"	7"	#3 @ 3"
5'-0"	7"	"
6'-0"	9"	"
6'-6"	9"	add 3 #4
7'-0"	10"	"
7'-6"	10"	"
8'-0"	11"	"
8'-6"	11"	"
9'-0"	12"	add 3 #5
10'-0"	12"	"
11'-0"	14"	#5 @ 3"
12'-0"	14"	"
12'-6"	14"	"

SEE ADD BARS DIAGRAM

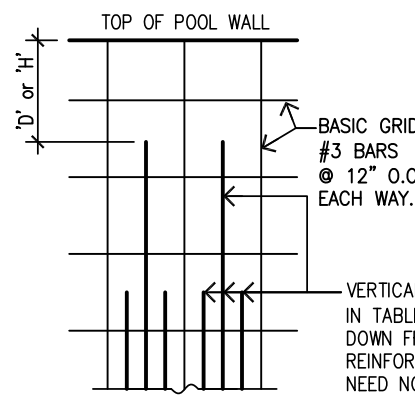
TOTAL HEIGHT	5'-0" MAX. R.B.B.	REQ'D TRANS.
H	C	VERTICAL STEEL
0 to 2'-0"	3"	#3 @ 12"
2'-6"	4"	#3 @ 6"
3'-6"	6"	"
4'-0"	7"	"
4'-6"	7"	#3 @ 3"
5'-0"	7"	"
6'-0"	9"	"
6'-6"	9"	add 3 #4
7'-0"	10"	"
7'-6"	10"	"
8'-0"	11"	"
8'-6"	11"	"
9'-0"	12"	add 3 #5
10'-0"	12"	"
11'-0"	14"	#5 @ 3"
12'-0"	14"	#5 @ 3"
13'-6"	16"	"

SEE ADD BARS DIAGRAM

TOTAL HEIGHT	6'-0" MAX. R.B.B.	REQ'D TRANS.
H	C	VERTICAL STEEL
0 to 2'-0"	3"	#3 @ 12"
2'-6"	4"	#3 @ 6"
3'-6"	6"	"
4'-0"	7"	"
4'-6"	7"	#3 @ 3"
5'-0"	7"	"
6'-0"	9"	"
6'-6"	9"	add 3 #4
7'-0"	10"	"
7'-6"	10"	"
8'-0"	11"	"
8'-6"	11"	"
9'-0"	12"	add 3 #5
10'-0"	12"	"
11'-0"	14"	"
12'-0"	14"	#5 @ 3"
13'-6"	16"	"
14'-6"	16"	"

SEE ADD BARS DIAGRAM

## TYPICAL ADD BAR REINFORCING DIAGRAM



VERTICAL REINFORCEMENT AS SPECIFIED  
IN TABLE STARTS A DISTANCE 'D' OR 'H'  
DOWN FROM TOP OF POOL WALL.  
REINFORCEMENT OTHER THAN BASIC GRID  
NEED NOT EXTEND TO TOP OF POOL  
WALL. ADD BARS TO BE EQUALLY  
SPACED BETWEEN BASIC GRID.

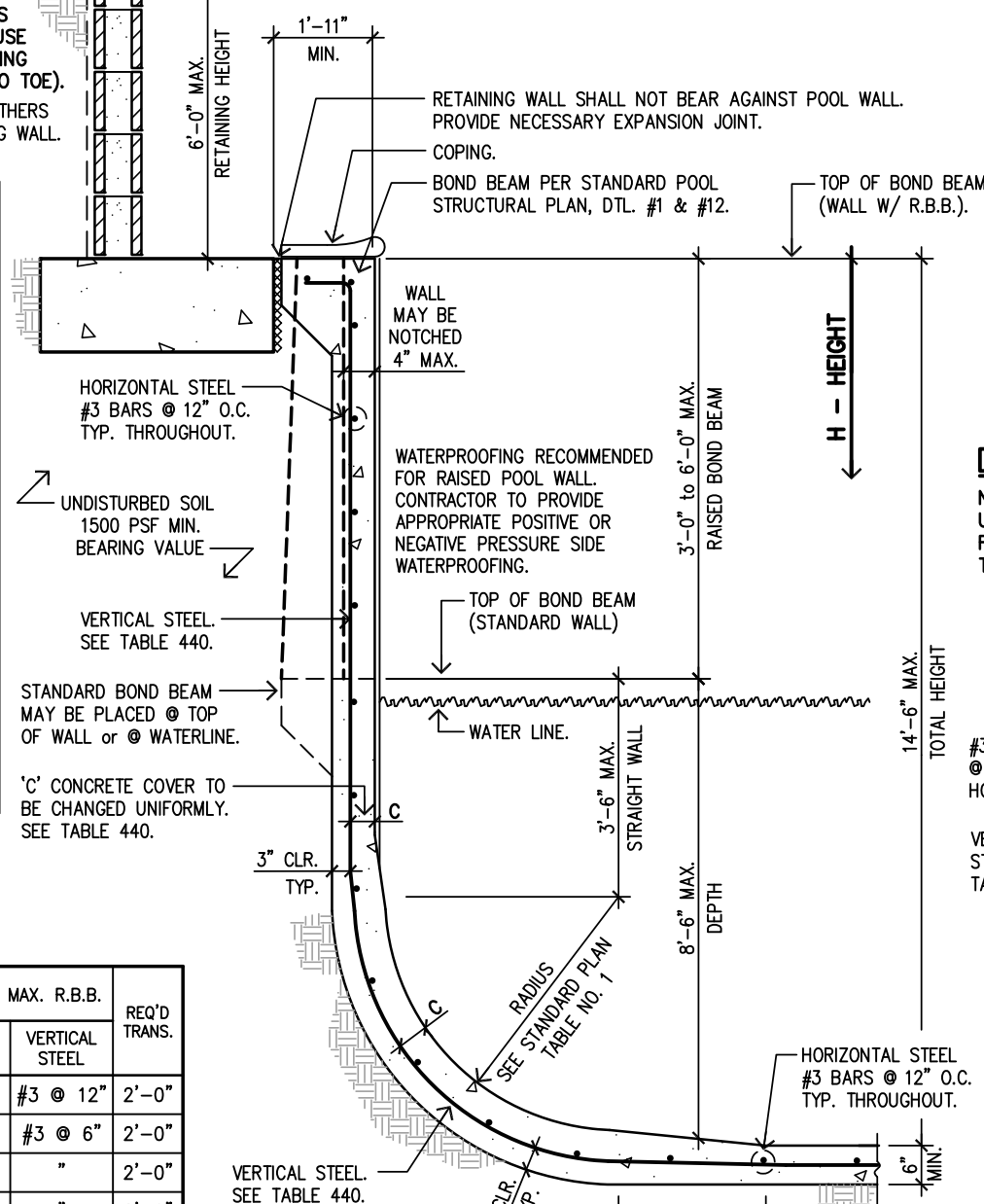
NOTE: THIS DETAIL IS  
NOT SUITABLE FOR USE  
WITH INVERTED FOOTING  
RETAINING WALLS (NO TOE).  
RETAINING WALL BY OTHERS  
OR EXISTING RETAINING WALL.

## SHORING NOTES:

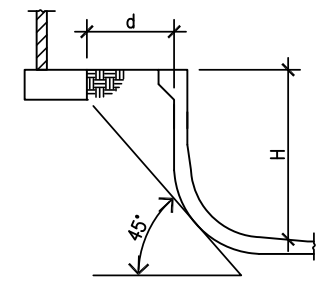
- THIS PLAN DEPICTS  
THE STRUCTURES IN  
A COMPLETED STATE  
ONLY. THE INSTALLER  
IS RESPONSIBLE FOR  
JOB SITE CONDITIONS  
AND THE SAFETY OF  
ALL PERSONS &  
PROPERTY DURING  
THE COURSE OF  
CONSTRUCTION.
- THE CONTRACTOR  
SHALL BE  
RESPONSIBLE FOR  
SHORING AND  
PROVIDING BRACING  
DURING  
CONSTRUCTION  
AND/OR ERECTION TO  
SUPPORT ALL LOADS  
TO WHICH THE  
STRUCTURES AND  
SUPPORTING SOIL  
MAY BE SUBJECTED.

UP TO 1 1/2:1 SLOPE or FLAT BACKFILL.

NOTE: CITY OF SAN DIEGO B.N.L. SECTION  
16-2 REQUIRES A SOILS REPORT FOR ANY  
RETAINING WALL/POOL WALL 12'-0" & HIGHER.

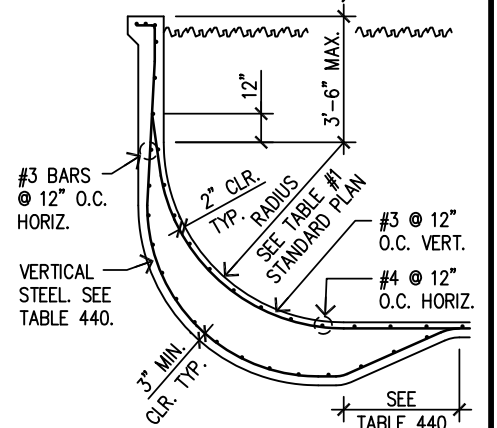


THIS DETAIL IS NOT  
NEEDED WHEN 'd' IS  
GREATER THAN 'H'.



## DOUBLE CURTAIN DETAIL

NOTE:  
USE DOUBLE CURTAIN DETAIL IN RADIUS  
FOR 'C' MORE THAN 11 1/2" (TOTAL  
THICKNESS MORE THAN 15" THICK).



FOR USE ONLY AT:  
208 Valley Oaks Dr  
Alamo, CA 94507-2046



10/08/2025

RETAINING WALL SURCHARGE  
3'-0" to 6'-0" RAISED BOND BEAM  
MAX. FOOTING BEARING PRESS. = 1,500 P.S.F.  
EQUIVALENT FLUID PRESSURE = 60 P.C.F.

25-08905-dg

DETAIL #440

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inc.



PLAN VALID ONLY WITH EMBEDDED QR  
CODE ON DETAIL, WHICH WHEN SCANNED  
DISPLAYS THE INTENDED PROJECT ADDRESS  
THIS DETAIL TO BE USED IN CONJUNCTION  
WITH STANDARD POOL STRUCTURAL PLAN



# CALCULATIONS

## METHODOLOGY:

$\gamma$  = EQUIVALENT FLUID PRESSURE

### CASE I

OTM =  $1/6 \gamma H^3$  WHERE  $\gamma = 60$  pcf  
NET MOM = OTM - RESISTING MOMENT

### CASE II

OTM =  $1/6 \gamma H^3$  WHERE  $\gamma = 62.4$  pcf  
NET MOM = OTM + RESISTING MOMENT

$$f_s = \frac{M(12 \text{ in/ft})}{A_s j d} = \frac{M_t (12)}{A_s (0.887) d}$$

$$f_c = \frac{M(2) 12 \text{ in/ft}}{j k b d^2} = \frac{M_t (2)(12)}{(0.887)(0.339)(12) d^2} < 1125 \text{ psi}$$

$$\nu_c = \frac{(1/2) \gamma H^2}{(12 \text{ in/ft}) j d} = \frac{\gamma H^2}{(2)(12)(0.887) d} < 55 \text{ psi}$$

$$f'_c = 2,500 \text{ psi}$$

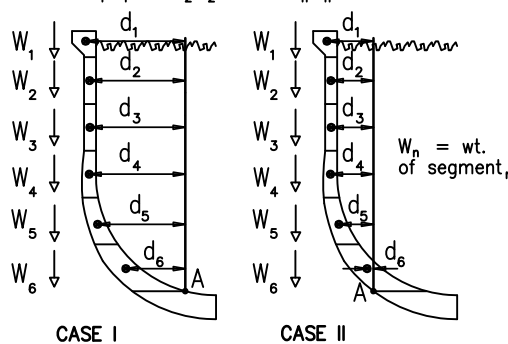
$$F_s = 20,000 \text{ psi}$$

$$f_c = 0.45 f'_c = 1125 \text{ psi}$$

$$\nu_c = 1.1 \sqrt{f'_c} = 55 \text{ psi}$$

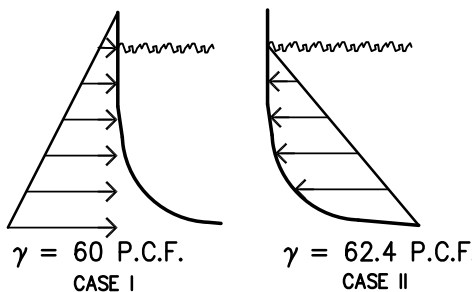
## RESISTING MOMENT:

RESISTING MOMENT ABOUT POINT A  
 $RM = W_1 d_1 + W_2 d_2 + \dots W_n d_n$



## LOADING DIAGRAM:

THIS DETAIL IS DESIGNED FOR EACH OF THE LOAD CASES DEFINED BELOW.



## CALCULATION RESULTS:

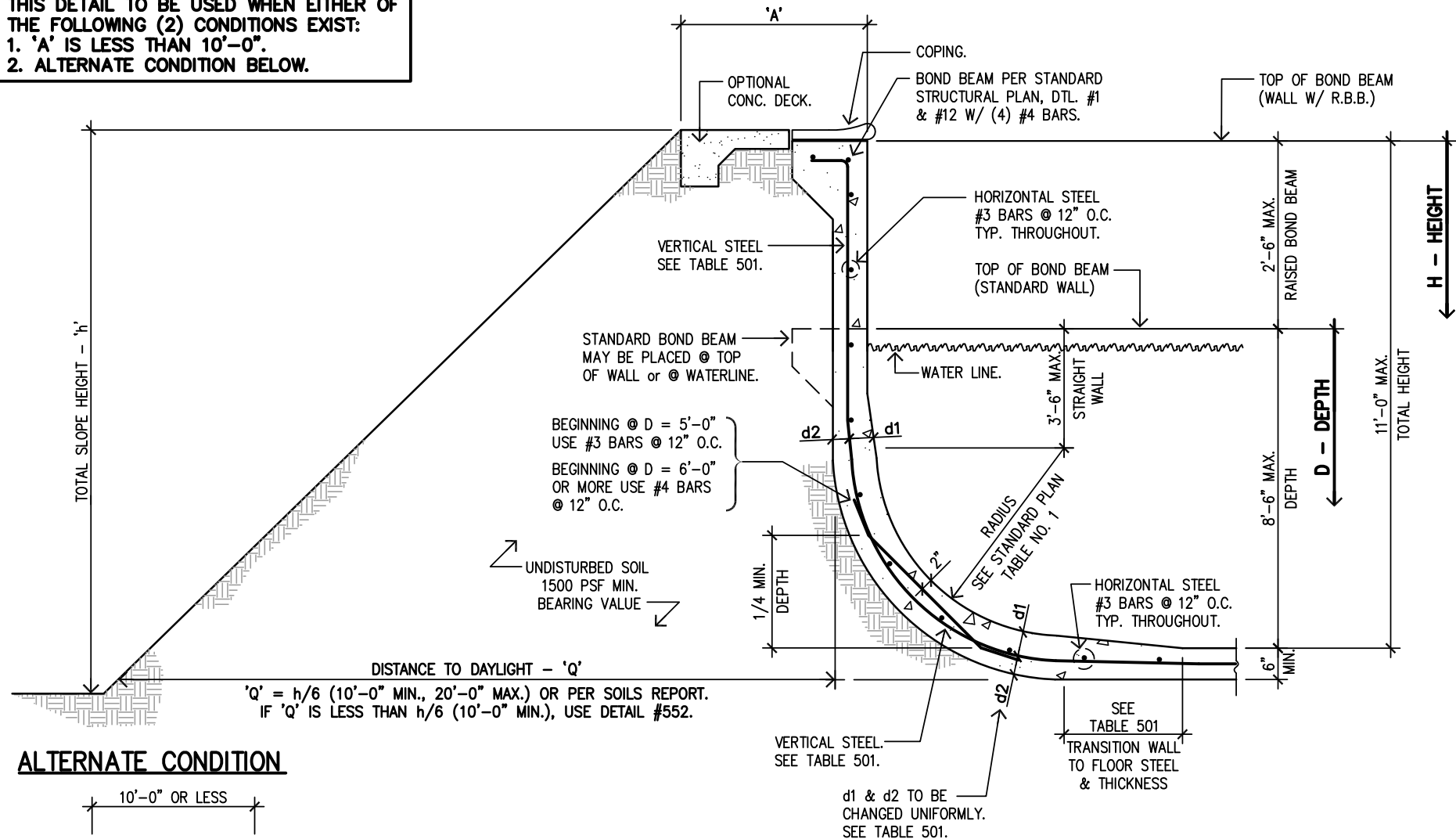
FREESTANDING WALL  
EQUIVALENT FLUID PRESSURE = 60 P.C.F.  
RESULTS FOR NO RAISED BOND BEAM

DEPTH 'D'	SOIL OTM ft-#	WATER OTM ft-#	SOIL RM ft-#	WATER RM ft-#	NET Mom	CASE I d1 SOIL	CASE II d2 WATER	VERTICAL STEEL	f <sub>s</sub> p.s.i.	f <sub>c</sub> p.s.i.	ν <sub>c</sub> p.s.i.
3'-6"	429	446	106	-53	393	3"	3"	#3 @ 12"	15354	427	10.6
4'-0"	640	666	124	-55	611	3"	3"	#3 @ 6"	12275	508	13.9
5'-0"	1250	1300	230	-57	1020	3½"	4½"	"	17454	660	17.9
6'-0"	2160	2246	497	-2	1663	4"	5½"	add 3 #4	8283	580	22.5
7'-0"	3430	3567	1046	315	3882	4"	5½"	"	13807	832	30.6
8'-0"	5120	5325	2259	971	6296	4"	6½"	"	18781	998	40.0
8'-6"	6141	6387	4820	888	7275	4"	7½"	"	18671	889	45.2

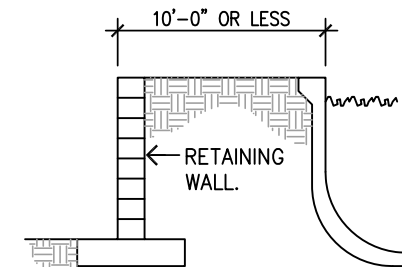
RESULTS FOR 2'-6" MAX. RAISED BOND BEAM

HEIGHT 'H'	SOIL OTM ft-#	WATER OTM ft-#	SOIL RM ft-#	WATER RM ft-#	NET Mom	CASE I d1 SOIL	CASE II d2 WATER	VERTICAL STEEL	f <sub>s</sub> p.s.i.	f <sub>c</sub> p.s.i.	ν <sub>c</sub> p.s.i.
3'-6"	429	10	106	-53	323	3"	3"	#3 @ 12"	12607	351	10.2
4'-0"	640	35	116	-63	524	3"	3"	#3 @ 6"	10537	436	13.3
5'-0"	1250	163	135	-99	1115	3½"	3"	"	19071	722	17.9
6'-0"	2160	446	163	-165	1997	4½"	3"	#3 @ 3"	13563	666	20.0
7'-0"	3430	948	251	-163	3179	5"	3"	"	19325	891	24.5
8'-0"	5120	1730	508	-82	4612	6"	3"	add 3 #4	14965	938	26.7
9'-0"	7290	2856	1031	195	6259	6½"	4"	"	18669	1064	31.2
10'-0"	10000	4388	2082	611	7918	8"	5½"	"	18993	1021	31.3
11'-0"	13310	6387	6678	291	6678	8½"	6½"	"	19921	1034	35.6

THIS DETAIL TO BE USED WHEN EITHER OF THE FOLLOWING (2) CONDITIONS EXIST:  
1. 'A' IS LESS THAN 10'-0".  
2. ALTERNATE CONDITION BELOW.



## ALTERNATE CONDITION



## TYPICAL ADD BAR REINFORCING DIAGRAM

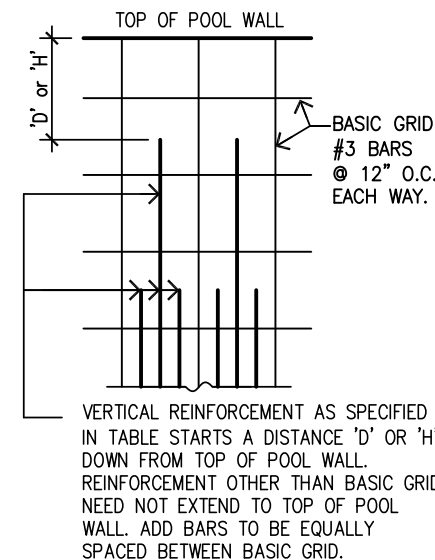


TABLE 501

'D' OR 'H' IS DISTANCE FROM TOP OF POOL WALL DOWNWARD.  
BEGIN SPECIFIED STEEL & GUNITE THICKNESS AT INDICATED 'D' OR 'H' DEPTH.  
(SEE STANDARD STRUCTURAL PLAN, DETAIL #2)

POOL DEPTH	NO RAISED BOND BEAM			REQ'D TRANS.
D	d1	d2	VERTICAL STEEL	
0 to 3'6"	3"	3"	#3 @ 12"	2'-0"
4'-0"	3"	3"	#3 @ 6"	2'-0"
4'-6"	3"	3½"	"	2'-0"
5'-0"	3½"	4½"	"	2'-0"
5'-6"	4"	5½"	"	2'-0"
6'-0"	4"	5½"	add 3 #4	2'-0"
6'-6"	4"	5½"	"	2'-0"
7'-0"	4"	5½"	"	2'-0"
7'-6"	4"	5½"	"	2'-0"
8'-0"	4"	6½"	"	2'-0"
8'-6"	4"	7½"	"	2'-0"

TOTAL HEIGHT	2'-6" MAX. RAISED BOND BEAM			REQ'D TRANS.
H	d1	d2	VERTICAL STEEL	
0 to 3'6"	3"	3"	#3 @ 12"	2'-0"
4'-0"	3"	3"	#3 @ 6"	2'-0"
4'-6"	3"	3"	"	2'-0"
5'-0"	3½"	3"	"	2'-0"
5'-6"	4½"	3"	"	2'-0"
6'-0"	4½"	3"	#3 @ 3"	2'-0"
6'-6"	4½"	3"	"	2'-0"
7'-0"	5"	3"	"	2'-8"
7'-6"	6"	3"	"	2'-8"
8'-0"	6"	3"	add 3 #4	2'-10"
8'-6"	6"	3½"	"	2'-11"
9'-0"	6½"	4"	"	3'-0"
9'-6"	7"	5"	"	3'-2"
10'-0"	8"	5½"	"	3'-2"
10'-6"	8½"	6½"	"	3'-2"
11'-0"	8½"	6½"	"	3'-2"

FOR USE ONLY AT:  
208 Valley Oaks Dr  
Alamo, CA 94507-2046



10/08/2025

FREESTANDING WALL  
EQUIVALENT FLUID PRESSURE = 60 P.C.F.

25-08905-dg

DETAIL #501

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PLAN VALID ONLY WITH EMBEDDED QR  
CODE ON DETAIL, WHICH WHEN SCANNED  
DISPLAYS THE INTENDED PROJECT ADDRESS  
THIS DETAIL TO BE USED IN CONJUNCTION  
WITH STANDARD POOL STRUCTURAL PLAN