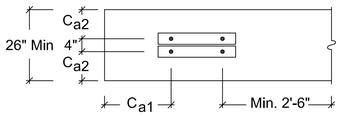
BACK TO BACK REINFORCED ANCHORAGE (BB-RA)

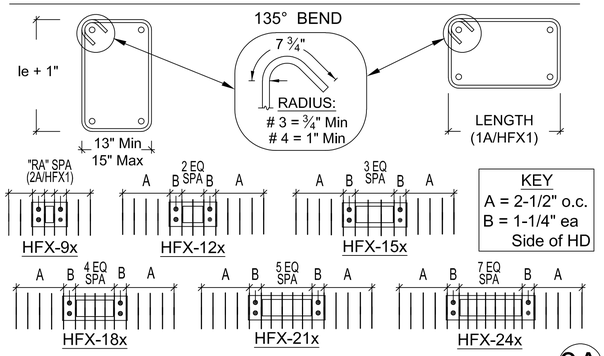
Model	Panel Width (in)	Anchorage[1]	Rod Dia (in)	Rod Grade[2,3]	BB-RA le[4] (in)	BB-RA C_{a1}[5] (in)	BB-RA C_{a2}[6] (in)	Stirrups[9] (in)	Shear Ties[7]
HFX-9x	9	1-1/8-STD-BB-RA	1-1/8	STD	15	19-3/4	11	8 - # 4	# 3 (min) @ 3-3/4" OC
HFX-12x	12	1-1/8-STD-BB-RA		STD	23			13 - # 4	# 3 (min) @ 4" OC
		1-1/8-HS-BB-RA		HS					
HFX-15x	15	1-1/8-STD-BB-RA		STD		20-5/8		14 - # 4	# 4 (min) @ 4" OC
		1-1/8-HS-BB-RA		HS					
HFX-18x	18	1-1/8-STD-BB-RA		STD				15 - # 4	
		1-1/8-HS-BB-RA		HS					
HFX-21x	21	1-1/8-STD-BB-RA		STD				16 - # 4	
		1-1/8-HS-BB-RA		HS					
HFX-24x	24	1-1/8-STD-BB-RA		STD				18 - # 4	
		1-1/8-HS-BB-RA		HS					

BACK TO BACK REINFORCED ANCHORAGE NOMENCLATURE

1-1/8 - STD - BB - RA
- REINFORCED ANCHORAGE
- "BACK TO BACK" INSTALLATION
- ROD GRADE
- ROD DIAMETER

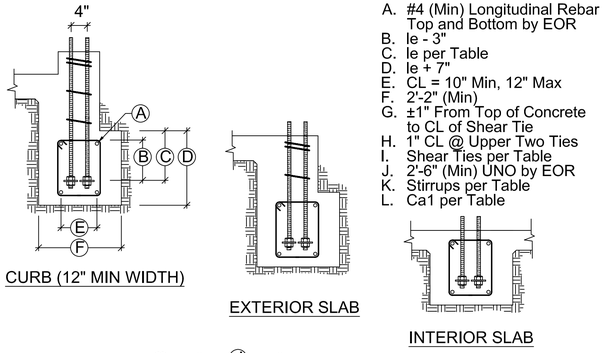


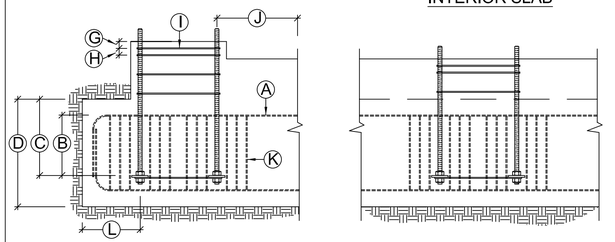
3



BB-RA SHEAR TIES & STIRRUPS

3A





BB-RA SECTIONS & ELEVATIONS

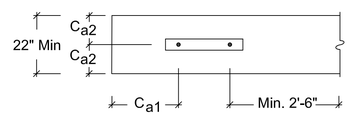
3B

REINFORCED ANCHORAGE (RA)

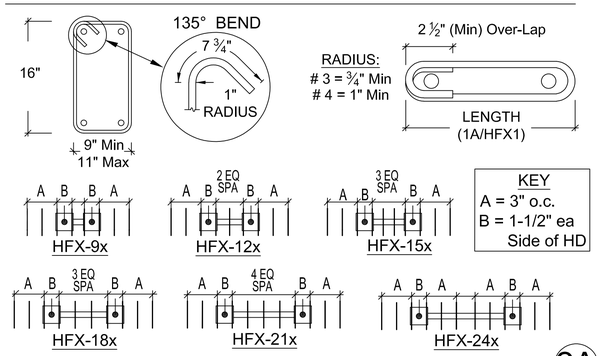
Model	Panel Width (in)	Anchorage[1]	Rod Dia (in)	Rod Grade[2,3]	RA le[4] (in)	RA C_{a1}[5] (in)	RA C_{a2}[6] (in)	Stirrups[9] (in)	Shear Ties[7]
HFX-9x	9	1-1/8-STD-RA	1-1/8	STD	15	19-3/4	11	8 - # 4	# 3 (min) @ 3-3/4" OC
HFX-12x	12	1-1/8-STD-RA		STD				9 - # 4	# 3 (min) @ 4" OC
		1-1/8-HS-RA		HS					
HFX-15x	15	1-1/8-STD-RA		STD		20-5/8		10 - # 4	
		1-1/8-HS-RA		HS					
HFX-18x	18	1-1/8-STD-RA		STD					
		1-1/8-HS-RA		HS					
HFX-21x	21	1-1/8-STD-RA		STD				11 - # 4	
		1-1/8-HS-RA		HS					
HFX-24x	24	1-1/8-STD-RA		STD				12 - # 4	# 4 (min) @ 4" OC
		1-1/8-HS-RA		HS					

REINFORCED ANCHORAGE NOMENCLATURE

1-1/8 - STD - RA
- REINFORCED ANCHORAGE
- ROD GRADE
- ROD DIAMETER

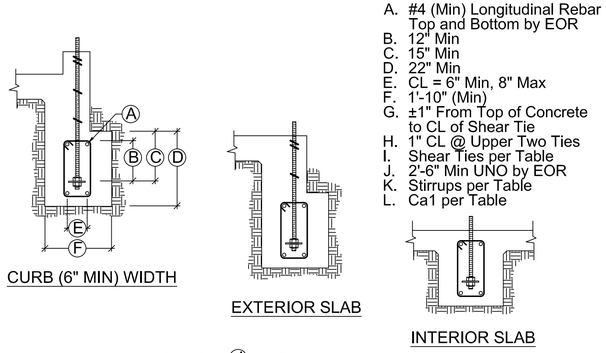


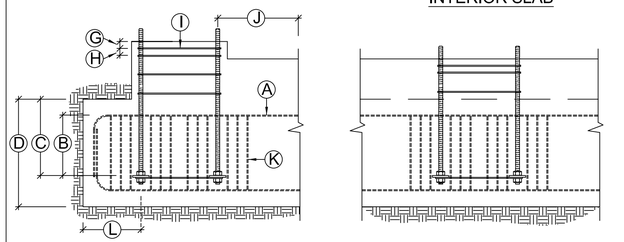
2



RA SHEAR TIES & STIRRUPS

2A





RA SECTIONS & ELEVATIONS

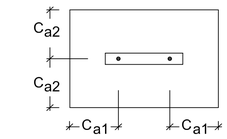
2B

UNREINFORCED ANCHORAGE (UA)

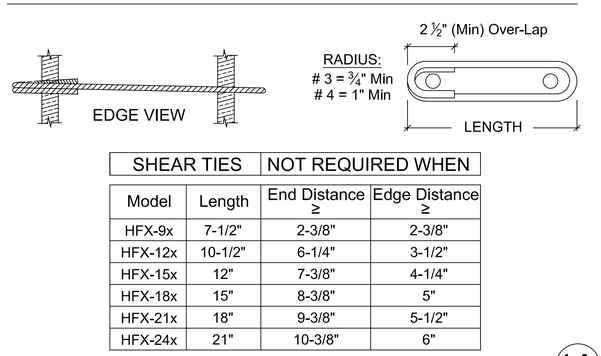
Model	Panel Height	Anchorage[1]	Rod Dia (in)	Rod Grade[2,3]	UA le[4] (in)	UA C_{a1}[5] & C_{a2}[6] (in)	Shear Ties[7,8]
HFX-9x	79.5" - 8'	1-1/8-STD-13-19	1-1/8	STD	13	19	1 - # 3
HFX-12x	78" - 10'	1-1/8-HS-20-30		HS	20	30	
HFX-15x, 18x	78" - 13'	1-1/8-STD-14-20		STD	14	20	
HFX-15x, 18x Balloon	14' - 20'	1-1/8-HS-20-30		HS	20	30	
HFX-21x, 24x	78" - 13'	1-1/8-STD-14-20		STD	14	20	
		1-1/8-HS-23-34			23	34	2 - # 3
HFX-21x, 24x Balloon	14' - 20'	1-1/8-HS-20-30		HS	20	30	

UNREINFORCED ANCHORAGE NOMENCLATURE

1-1/8 - STD - 14 - 20
- END & EDGE DISTANCE (C_{a1} & C_{a2})
- EMBEDMENT DEPTH (l_e)
- ROD GRADE
- ROD DIAMETER



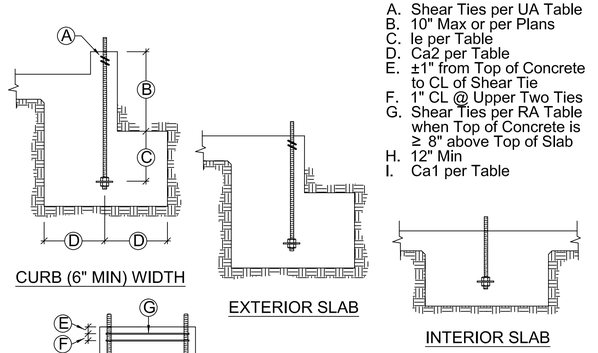
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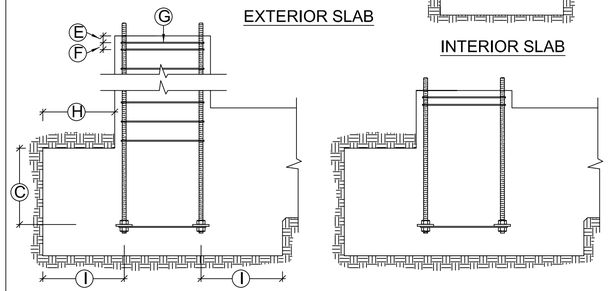


SHEAR TIES	NOT REQUIRED WHEN	
Model	Length	End Distance ≥	Edge Distance ≥
HFX-9x	7-1/2"	2-3/8"	2-3/8"
HFX-12x	10-1/2"	6-1/4"	3-1/2"
HFX-15x	12"	7-3/8"	4-1/4"
HFX-18x	15"	8-3/8"	5"
HFX-21x	18"	9-3/8"	5-1/2"
HFX-24x	21"	10-3/8"	6"

UA SHEAR TIES

1A

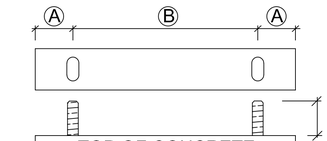




UA SECTIONS & ELEVATIONS

1B

1. DESIGNS ARE TO RESIST LOADING PER ACI 318-19, SEC 17.10.5.3.
2. STD INDICATES ANCHORS COMPLYING WITH ASTM F1554 GRADE 36 WITH A HARDY FRAME BOLT BRACE (HFXBB) INSTALLED WITH STD OR GRADE 8 DOUBLE NUTS ON THE EMBED END.
3. HS INDICATES ANCHORS COMPLYING WITH ASTM A193 GRADE B7 WITH A 1/2"x3"x3"(MIN) HFPW PLATE WASHER INSTALLED WITH DOUBLE NUTS ON THE EMBED END (HFXBB NOT REQUIRED).
4. LE = LENGTH OF EMBEDMENT FROM THE TOP OF FOOTING OR GRADE BEAM TO THE TOP OF THE HFXBB BOLT BRACE (TOP OF THE EMBEDDED HFPW PLATE WASHER @ HS ANCHORS)
5. CA1 = DISTANCE FROM HD CENTERLINE TO THE END OF THE FOOTING OR GRADE BEAM.
6. CA2 = DISTANCE FROM HD CENTERLINE TO BOTH THE FRONT AND THE BACK FACE OF THE FOOTING OR GRADE BEAM.
7. SHEAR TIES ARE GRADE 60 (MIN) REBAR AND REQUIRED FOR NEAR EDGE DISTANCE CONDITIONS PER ACI 318-19, F'C = 2,500 PSI. CURBS AND STEM WALLS MUST BE 6 INCH (MIN) WIDTH FOR UA AND RA, 12 INCH (MIN) WIDTH FOR BB-RA.
8. FOR UA APPLICATIONS, ADDITIONAL TIES MAY BE REQUIRED AT STEM WALLS. SHEAR TIES ARE NOT REQUIRED FOR INSTALLATION AWAY FROM EDGE (SEE DETAIL 1A), INSTALLATION ON WOOD FRAMING, OR FOR IRC BRACED WALL PANEL APPLICATIONS.
9. STIRRUPS ARE GRADE 60 (MIN) REBAR. SEE TABLE FOR SIZE AND SPACING. SEE "STIRRUP LAYOUT" DIAGRAMS AND "KEY" FOR LAYOUT PATTERNS.
10. CONCRETE EDGE DISTANCES MUST COMPLY WITH ACI 318-19, SECTION 17.9.2. COATED REINFORCEMENT MAY BE SPECIFIED BY THE EOR TO LIMIT EXPOSURE AND THEREFORE REDUCE MINIMUM CONCRETE COVER. COATED REINFORCEMENT MUST COMPLY WITH ACI 318-19, SECTION 20.5.2.



Model	Width	Ⓐ	Ⓑ
HFX-9x	9"	1-3/4"	5-1/2"
HFX-12x	12"		8-1/2"
HFX-15x	15"	2-5/8"	9-3/4"
HFX-18x	18"		12-3/4"
HFX-21x	21"		15-3/4"
HFX-24x	24"		18-3/4"

HFX ANCHOR CENTERLINES

A

IMPORTANT!

1. ANCHORAGE IS DESIGNED FOR TENSION AND SHEAR TRANSFER ONLY, FOUNDATION DESIGN PER EOR.
2. REINFORCEMENT SHOWN IS THE MINIMUM REQUIREMENT AND IS NOT INTENDED TO REPLACE REINFORCEMENT DESIGNED BY THE EOR.
3. FOR RA AND BB-RA INSTALLATIONS, THE HFXBB BOLT BRACE MAY BE PLACED ON TOP OF THE STIRRUPS WITH DOUBLE-NUTS INSTALLED AT EMBED END OF STANDARD GRADE ANCHOR RODS. (NOTE: ½" x 3" x 3" MIN. HFPW PLATE WASHERS ARE REQUIRED TO BE DOUBLE-NUTTED AT EMBED END OF HIGH STRENGTH ANCHOR RODS.)
4. HIGH STRENGTH ALL-THREAD RODS PROVIDED BY HARDY FRAMES ARE STAMPED ON BOTH ENDS. (HF B7)

IMPORTANT NOTES

B

REVISIONS	DATE

ANCHORAGE DETAILS - HFX PANELS

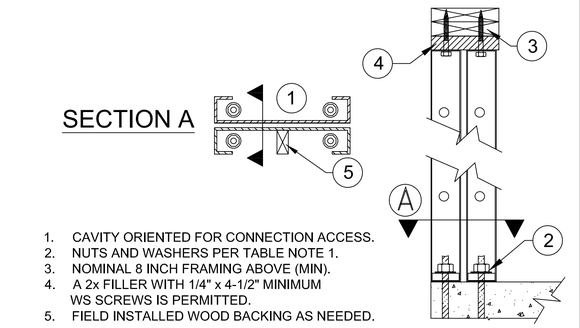
THIS DETAIL SHEET IS NOT PROPRIETARY AND IS NOT REQUIRED FOR PLAN SUBMITTAL WITH *HARDY FRAME* PRODUCTS

HARDY FRAME SHEAR WALL SYSTEMS
16023 SWINGLEY RIDGE RD
CHESTERFIELD, MO 63017
(800) 325-8075
WWW.HARDYFRAME.COM

MiTek®

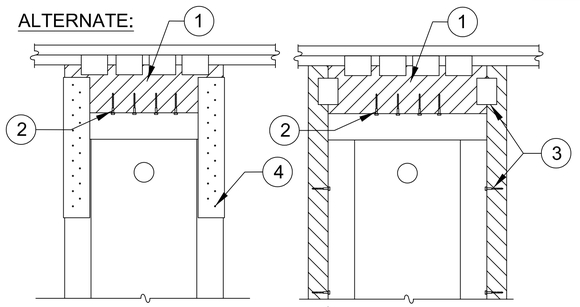
DATE:
1-1-2023

HFX1



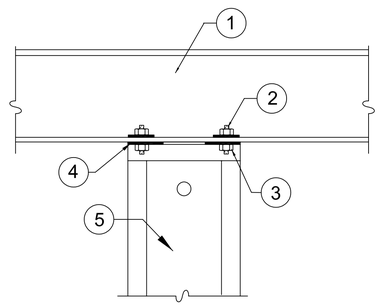
1. CAVITY ORIENTED FOR CONNECTION ACCESS.
2. NUTS AND WASHERS PER TABLE NOTE 1.
3. NOMINAL 8 INCH FRAMING ABOVE (MIN).
4. A 2x FILLER WITH 1/4" x 4-1/2" MINIMUM WS SCREWS IS PERMITTED.
5. FIELD INSTALLED WOOD BACKING AS NEEDED.

BACK TO BACK INSTALLATION 3



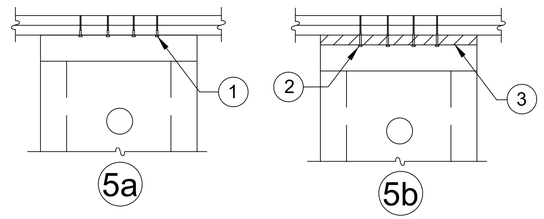
1. WOOD FILLER (13 3/8" MAX DEPTH) WITH USP MP4F CONNECTORS BOTH SIDES, QUANTITY BY BUILDING DESIGN PROFESSIONAL.
2. 1/4" x 3" (MINIMUM) WS SCREWS, QUANTITY PER TABLES
3. ADJACENT FRAMING WITH 1/4" DIAMETER SCREWS INSTALLED THROUGH PRE-PUNCHED HOLES IN PANEL EDGES REQ'D WHEN INSTALLING A FILLER GREATER THAN 1-1/2" ABOVE TO BRACE OUT-OF-PLANE HINGE OR WHEN SPECIFIED BY THE DESIGN PROFESSIONAL.
4. MiTek HFFB FILLER BRACE WITH 1/4" x 1-1/2" WS SCREWS TO FILLER (FILL ALL HOLES) AND 1/4" SELF-TAPPING SCREWS TO PANEL (5 MIN. EACH FACE) REQ'D WHEN INSTALLING A FILLER GREATER THAN 3-1/4" ABOVE TO BRACE OUT-OF-PLANE HINGE OR WHEN SPECIFIED BY THE BUILDING DESIGN PROFESSIONAL.

FILLER GREATER THAN 1-1/2 IN. 6



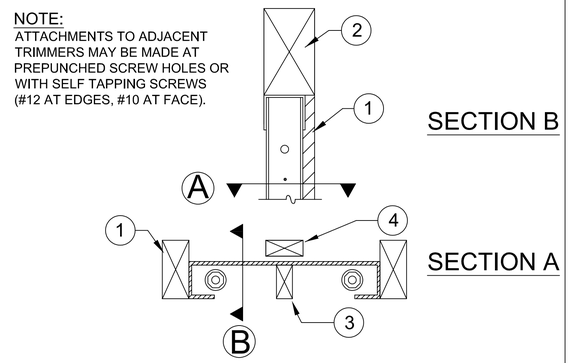
1. STEEL BEAM PER PLANS
2. ALL THREAD RODS THRU-BOLTED TO STEEL BEAM BY BUILDING DESIGN PROFESSIONAL.
3. NUTS AND WASHERS PER TABLE NOTE 1.
4. *HARDY FRAME*® STACKING WASHERS (HFSW) REQUIRED TO BE WELDED INSIDE TOP CHANNEL OF LOWER PANEL.
5. *HARDY FRAME*® "STK" PANEL WITH STACKING WASHERS WELDED INSIDE THE TOP CHANNEL BY MANUFACTURER.

STEEL BEAM ABOVE THRU-BOLT 2



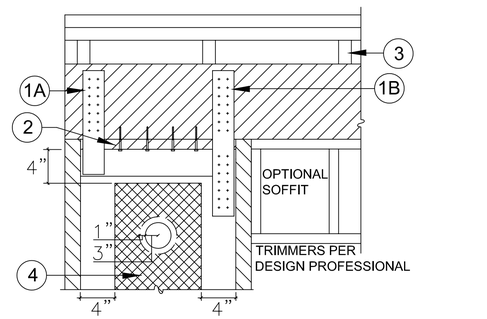
1. 1/4" x 3" (MINIMUM) WS SCREWS, QUANTITY PER TABLES
2. 1/4" x 4-1/2" (MINIMUM) WS SCREWS, QUANTITY PER TABLES
3. 2x WOOD FILLER.

TOP PLATE CONNECTIONS 5



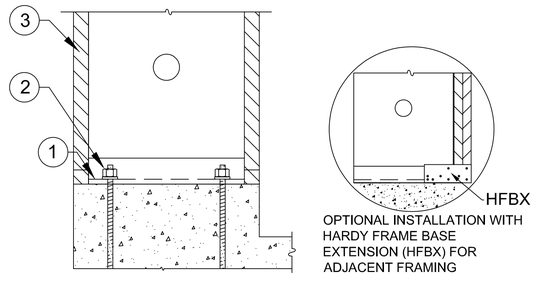
1. TRIMMERS PROVIDE FULL BEARING FOR HEADER ABOVE, DESIGN AND CONNECTIONS BY BUILDING DESIGN PROFESSIONAL.
2. 6x HEADER.
3. WOOD MEMBERS FOR BACKING MAY BE INSERTED VERTICALLY OR HORIZONTALLY IN THE PANEL CAVITY AS NEEDED.
4. WOOD MEMBER FLUSH TO FACE OF WALL FOR BACKING AS NEEDED.

6x HEADER ABOVE-SECTIONS 1



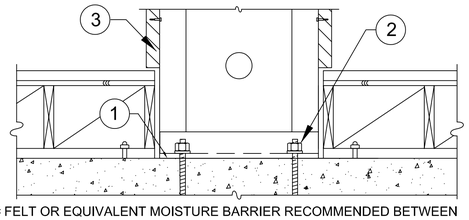
1. (A) PRE-WELDED STRAPS ARE PROVIDED ON 78" AND 79-1/2" PANEL HEIGHTS. THEY ARE AVAILABLE FOR OTHER HEIGHTS UPON REQUEST.
   (B) FIELD INSTALLED STRAPS WITH SELF TAPPING SCREWS ARE PERMITTED. THE DESIGN AND CONNECTION IS BY THE DESIGN PROFESSIONAL.
2. A 2x WOOD FILLER WITH 1/4"x4-1/2" (MIN.) WS SCREWS IS PERMITTED.
3. WHEN CRIPPLE STUDS OCCUR, SHEAR TRANSFER DESIGN TO BE PER THE BUILDING DESIGN PROFESSIONAL.
4. A 1" DIA. HOLE MAY BE ADDED IN THE PANEL FACE WHEN IT IS LOCATED IN THE UPPER HALF OF THE PANEL HEIGHT AND IS 4" MINIMUM FROM ANY EDGE. FOR PANELS MORE THAN 12" WIDE, ADDITIONAL HOLES MUST BE OFFSET 1" MINIMUM FROM THE 3" DIA. PREPUNCHED HOLE. FOR HOLES LARGER THAN 1" DIAMETER OR TO ADD MORE THAN ONE HOLE CONTACT MITEK HARDY FRAME TECHNICAL SUPPORT AT (800) 754-3030.

TOP CONNECTION TO HEADER 4



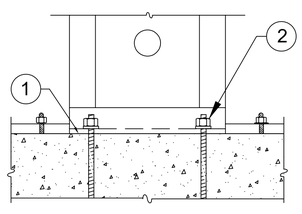
1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND CONCRETE.
2. NUTS AND WASHERS PER TABLE NOTE 1.
3. ADJACENT FRAMING OPTIONAL U.N.O. BY BUILDING DESIGN PROFESSIONAL.

INSTALLATION ON CURB 9



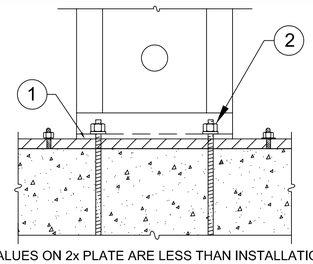
1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND CONCRETE.
2. NUTS AND WASHERS PER TABLE NOTE 1.

RAISED FLOOR HEAD-OUT 8



1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND CONCRETE.
2. NUTS AND WASHERS PER TABLE NOTE 1.

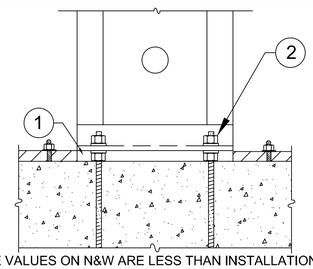
INSTALLATION ON CONCRETE 7



ALLOWABLE VALUES ON 2x PLATE ARE LESS THAN INSTALLATION ON CONCRETE

1. 15# FELT OR EQUIVALENT MOISTURE BARRIER RECOMMENDED BETWEEN PANEL BASE AND TREATED PLATE.
2. NUTS AND WASHERS PER TABLE NOTE 1.

INSTALLATION ON 2x PLATE 11



ALLOWABLE VALUES ON N&W ARE LESS THAN INSTALLATION ON CONCRETE

1. PLUS OR MINUS 1-1/2" GAP TO BE FILLED WITH 5,000 PSI NON-SHRINK GROUT (MINIMUM).
2. NUT AND WASHER GRADES PER TABLE NOTE 1.

INSTALLATION ON NUTS & WASHERS 10

HFX PANELS 78 IN. THROUGH NOMINAL 13 FEET

Model Number	Net Height (in)	Depth (in)	Hold Down Diameter[1] (in)	Top Screw Qty[2] (ea)	Screw Qty Available at Edges (ea)[3]
HFX-12,15,18,21 & 24x78	78	3-1/2	1-1/8	9" Width = 5 12" Width = 6 15" Width = 8	4
HFX-9x79.5	79-1/2				
HFX-12,15,18,21 & 24x8	92-1/4				
HFX-9x8	93-3/4				
HFX-12,15,18,21 & 24x9	104-1/4				
HFX-12,15,18,21 & 24x10	116-1/4			18" Width = 10 21" Width = 12	5
HFX-15,18,21 & 24x11	128-1/4				
HFX-15,18,21 & 24x12	140-1/4			24" Width = 14	6
HFX-15,18,21 & 24x13	152-1/4				

BALLOON PANELS 14 FEET THROUGH 20 FEET

Model Number	Net Height (in)	Depth (in)	Hold Down Diameter[1] (in)	Top Screw Qty[2] (ea)	Screw Qty Available at Edges (ea)[3]
HFX-15,18,21 & 24x14	164-1/4	3-1/2	1-1/8	15" Width = 8 18" Width = 10 21" Width = 12 24" Width = 14	6 7 8
HFX-15,18,21 & 24x15	176-1/4				
HFX-15,18,21 & 24x16	188-1/4				
HFX-15,18,21 & 24x17	200-1/4				
HFX-15,18,21 & 24x18	212-1/4				
HFX-15,18,21 & 24x19	224-1/4				
HFX-15,18,21 & 24x20	236-1/4				

TABLE NOTES

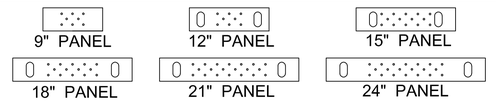
1. FOR STD OR HS GRADE HOLD DOWN ANCHOR BOLTS CONNECT TO THE PANEL BASE WITH HARDENED ROUND WASHERS BELOW GRADE 8 NUTS. ALTERNATE WASHERS ARE (2 EA) ROUND-FLAT OR (2 EA) SAE WASHERS ON EACH BOLT. ALTERNATE NUTS ARE 2H HEAVY HEX.
2. 1/4" DIAMETER MITEK® PRO SERIES™ WS SCREWS. LENGTH IS 3" (MINIMUM) WHEN ATTACHED DIRECTLY TO THE COLLECTOR AND 4-1/2" (MINIMUM) WHEN INSTALLING A 2x FILLER ABOVE THE PANEL.
3. ADJACENT FRAMING WITH 1/4" DIAMETER SCREWS IS REQUIRED AT THE PANEL EDGES WHEN INSTALLING A FILLER ABOVE THE TOP CHANNEL THAT IS GREATER THAN 1-1/2" OR WHEN SPECIFIED BY THE DESIGN PROFESSIONAL.

A

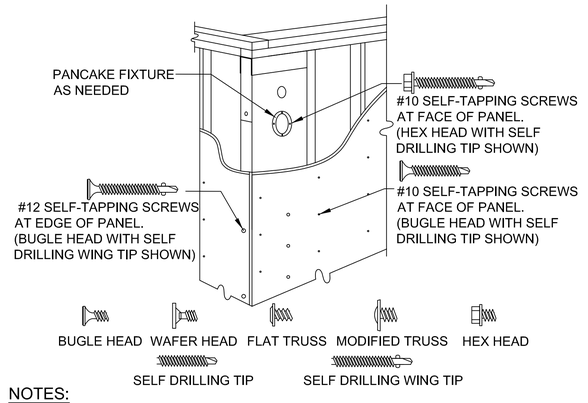
INSTALLATION INSTRUCTIONS

1. WHEN INSTALLING ON CONCRETE CONNECT WITH (1 EA) HARDENED ROUND WASHER BELOW (1 EA) GRADE 8 NUT, SECURE WITH A DEEP SOCKET (RECOMMENDED) UNTIL SNUG TIGHT. ALTERNATE WASHERS AND NUTS ARE PROVIDED IN TABLE NOTE 1.
2. INSTALLATION ON CONCRETE PROVIDES THE HIGHEST ALLOWABLE VALUES. CONFIRM WITH THE DESIGN PROFESSIONAL BEFORE INSTALLING ON OTHER SUPPORTING SURFACES.
3. USE 1/4"X4-1/2" MITEK® PRO SERIES™ WS SCREWS AT TOP CONNECTIONS WITH A 2x FILLER. IF THE TOP OF PANEL IS IN DIRECT CONTACT WITH THE COLLECTOR ABOVE (TOP PLATES, HEADER, BEAM, ETC.) USE1/4 x 3" (MIN)
4. FOR INSTALLATIONS WITH A FILLER GREATER THAN 1-1/2" ABOVE, OR WHEN SPECIFIED BY THE DESIGN PROFESSIONAL, ADJACENT KING POSTS TO BRACE THE OUT-OF-PLANE HINGE CAN BE CONNECTED WITH 1/4" DIA. SCREWS THROUGH PRE-PUNCHED HOLES AT THE PANEL EDGES.

B



C



NOTES:

A. SURFACE FINISHES, CONNECTORS AND FIXTURES ARE ATTACHED TO THE PANEL FACE WITH # 10 SELF-TAPPING SCREWS SPACED NO LESS THAN 2-1/4" OC.
B. ATTACHMENTS TO THE PANEL EDGES ARE MADE WITH # 12 SELF-TAPPING SCREWS.
C. STRUCTURAL CONNECTIONS ARE TO BE DESIGNED BY THE DESIGN PROFESSIONAL.
D. STRUCTURAL HARDWARE USED TO TRANSFER LOADS SHOULD NOT EXCEED 12 GAUGE.

D

REVISIONS	DATE

FRAMING DETAILS - HFX PANELS

THIS DETAIL SHEET IS NOT PROPRIETARY AND IS NOT REQUIRED FOR PLAN SUBMITTAL WITH MITEK® *HARDY FRAME*® PRODUCTS

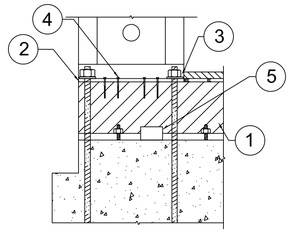
HARDY FRAME SHEAR WALL SYSTEMS
16023 SWINGLEY RIDGE RD
CHESTERFIELD, MO 63017
(800) 325-8075
WWW.HARDYFRAME.COM

MiTek®

DATE: 1-1-2023

HFX2

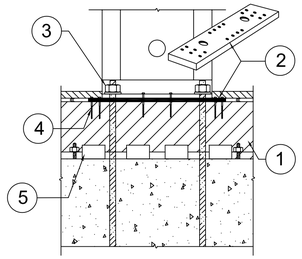
NOTES:
A. INSTALLATION WITHOUT *HARDY FRAME*® BEARING PLATE (HFXBP) MAY INCREASE DEFLECTION AND RESULT IN A DECREASE OF ALLOWABLE SHEAR VALUE, BUILDING DESIGN PROFESSIONAL MUST ANALYZE EFFECTS
B. COUPLERS MAY BE USED WHEN THREADED ROD IS SUBJECT TO TENSION LOADS ONLY.



1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. NOTCH FLOOR SHEATHING THEN INSTALL *HARDY FRAME*® PANEL DIRECTLY ON RIM.
3. NUTS AND WASHERS PER TABLE NOTE 1.
4. 1/4" x 4-1/2" (MINIMUM) WS SCREWS THROUGH BOTTOM OF PANEL MINIMUM QUANTITY PER TABLE.
5. USP MP4F CONNECTORS, QUANTITY BY BUILDING DESIGN PROFESSIONAL.

RAISED-OS CORNER 4

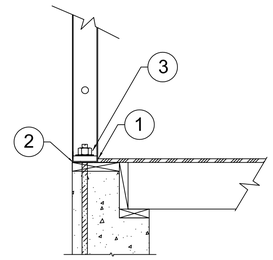
NOTE:
COUPLERS MAY BE USED WHEN THREADED ROD IS SUBJECT TO TENSION LOADS ONLY.



1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. NOTCH FLOOR SHEATHING THEN INSTALL *HARDY FRAME*® BEARING PLATE (HFXBP) AND PANEL PER INSTALLATION NOTES 3-6, DETAIL B/HFX3.
3. NUTS AND WASHERS PER TABLE NOTE 1.
4. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
5. USP MP4F CONNECTORS, QUANTITY BY BUILDING DESIGN PROFESSIONAL.

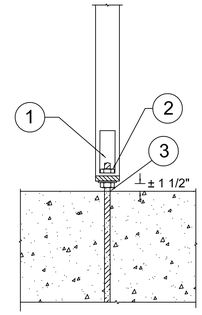
RAISED BEARING PLATE 3

NOTES:
A. CHECK WALL HEIGHT, *HARDY FRAME*® BEARING PLATES BELOW THE PANEL BASE OR CUSTOM HEIGHT PANELS ARE AVAILABLE TO AVOID FILLERS GREATER THAN 1-1/2".
B. FOR MAXIMUM ALLOWABLE VALUES INSTALL PANEL ON CONCRETE



1. FLOOR SHEATHING NOTCHED, INSTALL PANEL ON WOOD PLATE.
2. 15# FELT OR EQUIVALENT RECOMMENDED BETWEEN PANEL BASE AND TREATED MUDSILL.
3. NUTS AND WASHERS PER TABLE NOTE 1.

RAISED STEM WALL 2



1. ACCESS HOLE LOCATED AT EDGE OF POST.
2. NUTS AND WASHERS PER TABLE NOTE 1.
3. PLUS OR MINUS 1-1/2" GAP TO BE FILLED WITH 5,000 PSI STRENGTH NON-SHRINK GROUT (MIN).

POST ON N&W 1

Model Number	Net Height (in)	Depth (in)	Hold Down Diameter[1] (in)	Screw Quantity			Screw Qty[4] Available at Edges (ea)
				Panel	Top[2] (ea)	Bott[3] (ea)	
HFX-12,15,18,21 & 24x8	92-1/4	3-1/2	1-1/8	12" Width	6	6	4
HFX-12,15,18,21 & 24x9	104-1/4			15" Width	8	8	
HFX-12,15,18,21 & 24x10	116-1/4			18" Width	10	10	5
HFX-15,18,21 & 24x11	128-1/4			21" Width	12	12	
HFX-15,18,21 & 24x12	140-1/4			24" Width	14	14	6
HFX-15,18,21 & 24x13	152-1/4						

NOTE: *HARDY FRAME*® STACKING WASHERS (HFSW) ARE REQUIRED IN THE TOP OF PANELS WHEN CONNECTING TO TENSION ANCHORS FROM ABOVE. *HARDY FRAME*® "STK PANELS" INCLUDE HFSW WASHERS PRE-WELDED IN THE TOP CHANNEL.

1. HOLD DOWN TENSION ANCHORS SPECIFIED AS STANDARD GRADE (STD) MUST COMPLY WITH ASTM F1554 GRADE 36 (OR EQUAL). HOLD DOWN TENSION ANCHORS SPECIFIED AS HIGH STRENGTH (HS) MUST COMPLY WITH ASTM A 193 GRADE B7 (OR EQUAL). TENSION ANCHORS (BOTH GRADES) CONNECT TO THE UPPER AND LOWER PANELS WITH HARDENED ROUND WASHERS AND GRADE 8 NUTS. A *HARDY FRAME*®'HFSW" STACKING WASHER IS REQUIRED IN THE TOP CHANNEL OF THE LOWER PANEL (AVAILABLE PRE-WELDED IN A *HARDY FRAME*®"STK" PANEL). ALTERNATE WASHERS ARE (2 EA) ROUND-FLAT OR (2 EA) SAE WASHERS AT EACH ANCHOR CONNECTION. ALTERNATE NUTS ARE 2H HEAVY HEX.
2. 1/4" DIAMETER MITEK® PRO SERIES™ WS SCREWS. LENGTH IS 3" (MINIMUM) WHEN ATTACHING DIRECTLY TO THE COLLECTOR AND 4-1/2" (MINIMUM) WHEN INSTALLING A 2x FILLER ABOVE THE PANEL.
3. 1/4" DIAMETER MITEK® PRO SERIES™ WS SCREWS. LENGTH IS 4-1/2" (MINIMUM) AT CONNECTIONS TO FLOOR SYSTEMS AND BEAMS BELOW.
4. 1/4" DIAMETER SCREWS ARE REQUIRED AT THE EDGES WHEN INSTALLING A FILLER GREATER THAN 1-1/2 INCH ABOVE OR WHEN SPECIFIED BY THE DESIGN PROFESSIONAL.

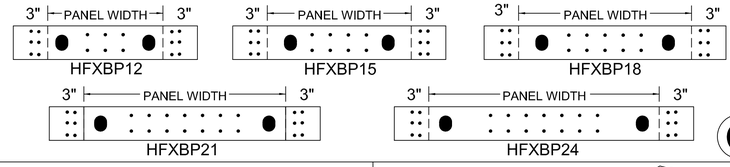
A

INSTALLATION ON FLOOR SYSTEMS WITH *HARDY FRAME*® BEARING PLATE (HFXBP)

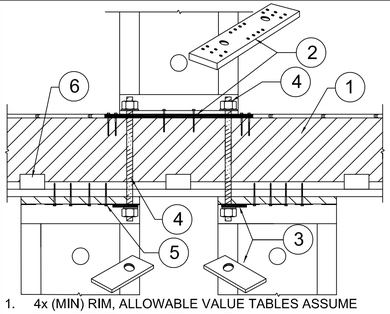
1. WITH HOLES PRE-DRILLED FOR 1-1/8" DIA.TENSION ANCHORS, INSTALL A SOLID 4x (MINIMUM) RIM IN FLOOR SYSTEM AT PANEL LOCATION. ALLOWABLE VALUE TABLES ASSUME THE RIM IS ENGINEERED WOOD PRODUCT (EWP).
2. NOTCH FLOOR SHEATHING THEN INSTALL HFXBP ON RIM WITH 6 EACH 1/4"X4-1/2" (MIN) "WS" SCREWS AT EACH END.
3. PLACE PANEL ON HFXBP.
4. WHEN STACKING PANELS, INSTALL "HFSW" STACKING WASHERS IN THE TOP CHANNEL OF THE LOWER PANEL. CONNECT LOWER TO UPPER PANELS WITH TENSION ANCHORS (GRADE PER PLANS) AND SECURE AT BOTH ENDS WITH HARDENED ROUND WASHERS AND GRADE 8 NUTS TO BE SNUG TIGHT. *HARDY FRAME* "STK" PANELS THAT INCLUDE "HFSW" STACKING WASHERS PRE-WELDED IN THE TOP CHANNEL ARE AVAILABLE,
5. WHEN MORE THAN 12 SCREWS ARE REQUIRED FOR THE BOTTOM CONNECTION OR JOINTS IN FRAMING MEMBERS OCCUR AT SCREW LOCATIONS, INSTALL ADDITIONAL 1/4"x4-1/2" WS SCREWS THROUGH THE BASE OF PANEL WHERE THEY ALIGN WITH HOLES IN THE HFXBP.
6. FOR STANDARD WALL HEIGHTS, INSTALL A 2x FILLER ABOVE PANEL (DTL 5/HFX2). FOR FILLERS GREATER THAN 1-1/2 IN. SEE DETAIL 6/HFX2.

NOTE: INSTALLATIONS MAY VARY WITH JOB SPECIFIC CONDITIONS AND/OR SPECIFICATIONS BY THE BUILDING DESIGN PROFESSIONAL.

B



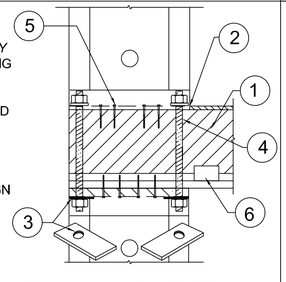
C



1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. NOTCH FLOOR SHEATHING THEN INSTALL *HARDY FRAME*® BEARING PLATE (HFXBP) AND PANEL PER INSTALLATION NOTES 3-6, DETAIL B/HFX3.
3. *HARDY FRAME*® STACKING WASHER (HFSW) AT TOP OF PANEL REQUIRED WHEN CONNECTING TO TENSION ANCHOR FROM ABOVE.
4. 1-1/8 IN. DIA HOLD DOWN, HFSW AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME*® HFTC KIT.
5. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
6. USP MP4F CONNECTORS, QUANTITY BY BUILDING DESIGN PROFESSIONAL.

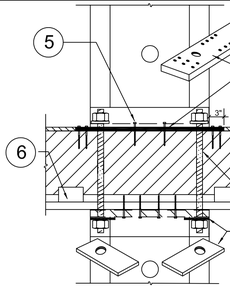
PYRAMID STACK 8

NOTE:
INSTALLATION WITHOUT *HARDY FRAME*® BEARING PLATE (HFXBP) MAY INCREASE DEFLECTION AND RESULT IN A DECREASE OF ALLOWABLE SHEAR VALUE, BUILDING DESIGN PROFESSIONAL MUST ANALYZE EFFECTS.



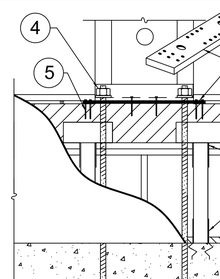
1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. NOTCH FLOOR SHEATHING THEN INSTALL *HARDY FRAME*® PANEL DIRECTLY ON RIM.
3. *HARDY FRAME*® STACKING WASHER (HFSW) AT TOP OF PANEL REQUIRED WHEN CONNECTING TO TENSION ANCHOR FROM ABOVE.
4. 1-1/8" DIA. HOLD DOWN, HFSW AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME*® HFTC KIT.
5. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
6. USP MP4F CONNECTORS, QUANTITY BY BUILDING DESIGN PROFESSIONAL.

STACK @ OS CORNER 7



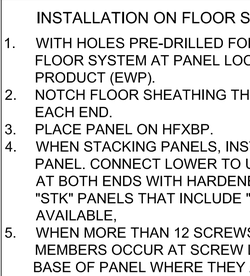
1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. NOTCH FLOOR SHEATHING THEN INSTALL *HARDY FRAME*® BEARING PLATE (HFXBP) AND PANEL PER INSTALLATION NOTES 3-6, DETAIL B/HFX3.
3. *HARDY FRAME*® STACKING WASHER (HFSW) AT TOP OF PANEL REQUIRED WHEN CONNECTING TO TENSION ANCHOR FROM ABOVE.
4. 1-1/8" DIA. HOLD DOWN, HFSW AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME*® HFTC KIT.
5. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
6. USP MP4F CONNECTORS, QUANTITY BY BUILDING DESIGN PROFESSIONAL.

STRAIGHT STACK 6



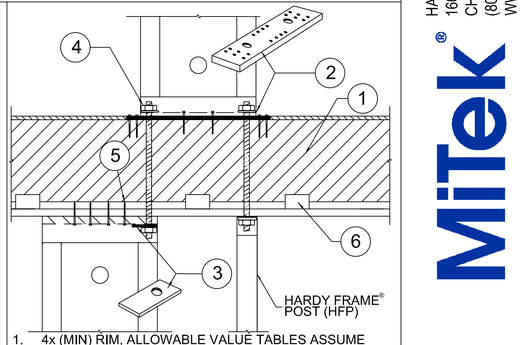
1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. NOTCH FLOOR SHEATHING THEN INSTALL *HARDY FRAME*® BEARING PLATE (HFXBP) AND PANEL PER INSTALLATION NOTES 3-6, DETAIL B/HFX3.
3. USP POST CAP AND POST BASE BY THE BUILDING DESIGN PROFESSIONAL.
4. NUTS AND WASHERS PER TABLE NOTE 1.
5. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.

CRIPPLE WALL 5



1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. NOTCH FLOOR SHEATHING THEN INSTALL *HARDY FRAME*® BEARING PLATE (HFXBP) AND PANEL PER INSTALLATION NOTES 3-6, DETAIL B/HFX3.
3. *HARDY FRAME*® STACKING WASHER (HFSW) AT TOP OF PANEL REQUIRED WHEN CONNECTING TO TENSION ANCHOR FROM ABOVE.
4. 1-1/8" DIA. HOLD DOWN, HFSW AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME*® HFTC KIT.
5. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
6. USP MP4F CONNECTORS, QUANTITY BY BUILDING DESIGN PROFESSIONAL.

STAGGERED THRU-BOLT 10



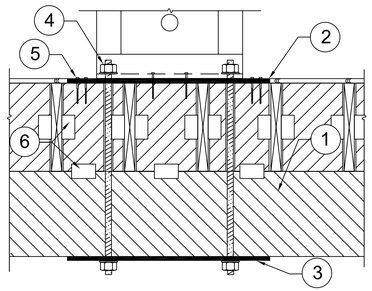
1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. NOTCH FLOOR SHEATHING THEN INSTALL *HARDY FRAME*® BEARING PLATE (HFXBP) AND PANEL PER INSTALLATION NOTES 3-6, DETAIL B/HFX3.
3. *HARDY FRAME*® STACKING WASHER (HFSW) AT TOP OF PANEL REQUIRED WHEN CONNECTING TO TENSION ANCHOR FROM ABOVE.
4. 1-1/8" DIA. HOLD DOWN, HFSW AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME*® HFTC KIT.
5. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
6. USP MP4F CONNECTORS, QUANTITY BY BUILDING DESIGN PROFESSIONAL.

STAGGERED-HFP POST 9



1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. NOTCH FLOOR SHEATHING THEN INSTALL *HARDY FRAME*® BEARING PLATE (HFXBP) AND PANEL PER INSTALLATION NOTES 3-6, DETAIL B/HFX3.
3. *HARDY FRAME*® STACKING WASHER (HFSW) AT TOP OF PANEL REQUIRED WHEN CONNECTING TO TENSION ANCHOR FROM ABOVE.
4. 1-1/8" DIA. HOLD DOWN, HFSW AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME*® HFTC KIT.
5. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
6. USP MP4F CONNECTORS, QUANTITY BY BUILDING DESIGN PROFESSIONAL.

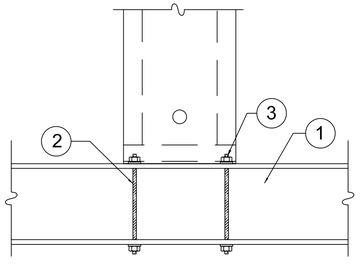
LOAD PATH FROM BEAM TO FOUNDATION AND CHECK THAT PANEL DRIFT IS WITHIN CODE LIMIT BY BUILDING DESIGN PROFESSIONAL.



1. DROP BEAM WITH FLOOR JOIST ABOVE PER PLAN.
2. NOTCH FLOOR SHEATHING THEN INSTALL *HARDY FRAME*® BEARING PLATE (HFXBP) AND PANEL PER INSTALLATION NOTES 3-6, DETAIL B/HFX3.
3. *HARDY FRAME*® BEARING PLATE (HFXBP) OR BEARING PLATE WASHER AT UNDERSIDE OF BEAM SIZED PER BUILDING DESIGN PROFESSIONAL TO LIMIT CRUSHING FROM TENSION ANCHOR FORCES.
4. NUTS AND WASHERS PER TABLE NOTE 1.
5. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
6. USP CONNECTORS BY DESIGN PROFESSIONAL

DROP BM - FL SYSTEM 14

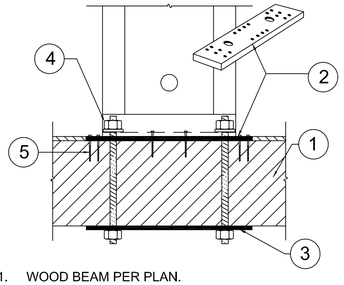
LOAD PATH FROM BEAM TO FOUNDATION AND CHECK THAT PANEL DRIFT IS WITHIN CODE LIMIT BY BUILDING DESIGN PROFESSIONAL.



1. STEEL BEAM PER PLANS
2. HOLD DOWN ALL THREAD RODS THRU-BOLTED TO BOTTOM FLANGE OF STEEL BEAM BY BUILDING DESIGN PROFESSIONAL.
3. NUTS AND WASHERS AT PANEL BASE PER TABLE NOTE 1

STEEL BM THRU-BOLT 13

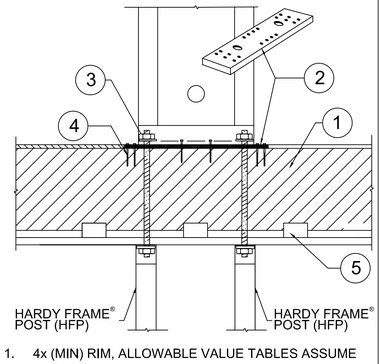
LOAD PATH FROM BEAM TO FOUNDATION AND CHECK THAT PANEL DRIFT IS WITHIN CODE LIMIT BY BUILDING DESIGN PROFESSIONAL.



1. WOOD BEAM PER PLAN.
2. NOTCH FLOOR SHEATHING THEN INSTALL *HARDY FRAME*® BEARING PLATE (HFXBP) AND PANEL PER INSTALLATION NOTES 3-6, DETAIL B/HFX3.
3. *HARDY FRAME*® BEARING PLATE (HFXBP) OR BEARING PLATE WASHER AT UNDERSIDE OF BEAM SIZED PER BUILDING DESIGN PROFESSIONAL TO LIMIT CRUSHING FROM TENSION ANCHOR FORCES.
4. 1-1/8" DIA. HOLD DOWN, HFSW AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME*® HFTC KIT.
5. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.

WOOD BM THRU-BOLT 12

LOAD PATH FROM BEAM TO FOUNDATION AND CHECK THAT PANEL DRIFT IS WITHIN CODE LIMIT BY BUILDING DESIGN PROFESSIONAL.



1. 4x (MIN) RIM, ALLOWABLE VALUE TABLES ASSUME ENGINEERED WOOD PRODUCT.
2. NOTCH FLOOR SHEATHING THEN INSTALL *HARDY FRAME*® BEARING PLATE (HFXBP) AND PANEL PER INSTALLATION NOTES 3-6, DETAIL B/HFX3.
3. 1-1/8" DIA. HOLD DOWN, HFSW AND N&W PER TABLE NOTE 1 ARE PROVIDED IN *HARDY FRAME*® HFTC KIT.
4. 1/4" x 4-1/2" (MIN) WS SCREWS, QUANTITY PER TABLE.
5. USP MP4F CONNECTORS, QUANTITY BY BUILDING DESIGN PROFESSIONAL.

HFP POSTS BELOW 11

REVISIONS	DATE

FLOOR SYSTEM DETAILS - HFX PANELS

THIS DETAIL SHEET IS NOT PROPRIETARY AND IS NOT REQUIRED FOR PLAN SUBMITTAL WITH MITEK® *HARDY FRAME*® PRODUCTS

HARDY FRAME SHEAR WALL SYSTEMS
16023 SWINGLEY RIDGE RD
CHESTERFIELD, MO 63017
(800) 325-8075
WWW.HARDYFRAME.COM

MiTek®

DATE:
1-1-2023

HFX3

STANDARD QUALITY ASSURANCE PLAN

I. PURPOSE

The Standard Quality Assurance Plan (hereinafter referred to as "Standard QA Plan") for steel moment frames provides specifications, procedures, and illustrative details to comply with the requirements of the 2016 California Building Code. The quality assurance requirements described in this Standard QA Plan are intended to promote public safety and welfare by standardizing inspections, tests, and all other applicable measures that ensure substantial compliance with the code performance objectives of steel moment frame connections.

II. HOW TO USE THIS STANDARD QA PLAN

To use the Standard QA Plan, follow the steps outlined below:

1. *Standard QA Plan shall be attached to or incorporated in the structural plan.*
2. *Where the Standard QA Plan is attached to the structural plan, the Engineer of Record shall:*
   a. *Identify the type of steel moment frame to be used in the building or structure by placing an "X" mark in the box below:*

      ☒ *SPECIAL MOMENT FRAME (SMF)*

      ☐ *INTERMEDIATE MOMENT FRAME (IMF)*

      ☐ *ORDINARY MOMENT FRAME (OMF)*

   b. *Place a NOTE on the structural plan stating "All specifications, tables, and notes in the CBC 2016' Standard Quality Assurance Plan for Steel Moment Frames shall be part of this approved structural plan."*
   c. *Sign and stamp the Standard QA Plan in the box provided at the lower right corner of each sheet.*
3. *Where the Standard QA Plan is incorporated directly in the structural plan, the Engineer of Record shall place a NOTE on the structural plan to clearly indicate the type of steel moment frame to be used in the building or structure.*
4. *All of the quality assurance requirements listed in the Standard QA Plan shall be applied to special moment frames, intermediate moment frames, and ordinary moment frames, unless noted otherwise herein.*
5. *Organize and submit all reports required in Table 1 on Sheet 2 to the City Building Inspector in a timely manner for review and approval.*
6. *The procedures, specifications and illustrative details as described in the Standard QA Plan shall not exempt the Engineer of Record from using engineering judgment in determining the suitability of applying the Standard QA Plan to any welded connections. Any deviations in the quality assurance requirement as specified in the Standard QA Plan shall comply with Part III Item 5 of the Standard QA Plan.*

III. GENERAL REQUIREMENTS

1. Referenced Documents
The design and construction of steel moment frames shall be in compliance with the following:
   a. California Building Code, 2016 Edition (hereinafter referred to as "CBC").
   b. AISC Seismic Provisions for Structural Steel Buildings, Part I dated June 22, 2010 (hereinafter referred to as "AISC Seismic").
   c. AWS D1.1/D1.1M:2010 and AWS D1.8/D1.8M:2009 Structural Welding Code - Steel (hereinafter referred to as "AWS").

2. Material Specifications
   a. Structural steel shall comply with the following ASTM standard specifications:
      i. Wide flange shapes.....ASTM A36, A529(50), A572 (42)(50), A588, A913 (50), A992 (50)
      Note: minimum yield stress shall not exceed 50 ksi, except column per AISC 341 sec 6.1
      ii. Continuity, doubler and column base plates, shear tabs....ASTM A283/A293M Grade D
      iii. Anchor bolts at column base plates.....ASTM F1554 or per AISC 360-10 A4
      iv. Fabricate and erect structural steel in compliance with the AISC 360-10 "Specification for Structural Steel Buildings" (hereinafter referred to as "AISC Specification").
      v. Steel having dual ASTM designation shall be clearly identified on each specific plan detail.
   b. High strength bolts shall comply with the following requirements and ASTM standard specifications:
      i. High strength bolts, nuts, and washers.....ASTM A325, A490
      ii. Installed bolts in accordance with the "Specifications for Structural Joints using ASTM A325 or A490 Bolts."
      iii. Tighten bolts to a snug tight condition then further tighten to the minimum specified tension and verify using a calibrated tension measuring device. Twist-Off and Direct-Tensio Indicator methods shall also be permitted.
      iv. Slip critical high strength bolts are required.
      v. All faying surfaces of connections with high strength fasteners shall be prepared as required for Class A per the AISC Seismic Section 7.2.
   c. Filler metal properties and specifications shall be as follows:
      i. Electrodes shall be of a low-hydrogen type meeting requirement of H-16 as tested in accordance with AWS A4.3 and conforming to AWS specifications as referenced in Table 7 on Sheet 2.
      ii. Filler metals shall be classified for nominal 70 ksi tensile strength.
      iii. The maximum permitted electrode diameter shall be in accordance with Table 5 on Sheet 2.
      iv. Filler metals shall have a minimum Charpy V-Notch (CVN) toughness of 20 ft-lbf at 0°F using AWS A5 classification test methods.
      v. The use of intermixed welds shall not occur unless it can be demonstrated by testing in accordance with AWS Section 4.
      vi. The parameters established by the electrode manufacturer shall be reflected in the approved WPS.
   d. Other materials not listed in LABC Chapter 35 and CBC equivalent are not permitted without specific approval from the Department.

3. Welding Processes
Structural welding shall be limited to the Shielded Metal Arc Welding or Flux Cored Arc Welding processes.

4. Base Metal Repairs or Restorations
Any repair or restoration of base metal shall comply with all of the following:
   a. Engineer of Record shall review and approve the WPS for repair procedures prior to welding.
   b. Ensure that repair procedures meet the requirements outlined in AWS Section 5.26 and ASTM A6/A6M-02 Section 9.2, 9.3, 9.4 and 9.5.
   c. All welding shall be performed using low-hydrogen electrodes or with SMAW using low-hydrogen electrodes.
   d. Provide continuous visual inspection by the Deputy Inspector.
   e. Provide non-destructive testing upon completion of the repair work.

5. Deviations From the Standard Quality Assurance Plan
Deviations from any part of the Standard QA Plan may be made provided the procedures outlined below are followed:
   a. Deviations from the Standard QA Plan must be reviewed and approved by the Engineer of Record.
   b. Engineer of Record shall provide alternate procedures, specifications, and/or details to justify the deviations.
   c. Submit the proposed deviations from the Standard QA Plan to the Department for review and approval prior to commencement of work.
   d. Supplemental testing and additional specifications may be required to justify the deviation.
   e. Conformance with all applicable provisions of the CBC, AISC, and AWS is required.

IV. QUALITY ASSURANCE

1. Certification
   a. Inspectors shall be BDBS Certified Deputy Inspectors per CBC Section 1704.2 and Information Bulletin P/BC 2011-035 "Regulations Regarding Registration for Deputy and Controlled Activities Inspection." Employment shall be in accordance with Information Bulletin P/BC 2014-034 "Employment and Duties of a Registered Deputy Inspector."
   b. Welders shall be BDBS Certified Welders for the Structural Steel classification per CBC Section 2204.1, and Information Bulletin P/BC 2014-045 "Welder Certification Rules and Regulations."
   c. Shop welds shall be performed in an BDBS Certified Fabricator's Shop per LAMC Section 96.204(g) and Information Bulletin P/BC 2014-042 "Application for Approval as Fabricator."
   d. Technicians performing Non Destructive Testing (NDT) shall be certified for Level II in accordance with ASNT SNT-TC-1A (Current Edition) by a Testing Agency approved per LAMC Section 98.0503 and Information Bulletin P/BC 2017-028 "Guidelines for Recognition of Testing Agencies."

2. Pre-Construction Meeting
   a. The Owner (or owner's representative) shall arrange a pre-construction meeting(s) with the Engineer of Record (or Structural Observer designated by the Engineer of Record), the Contractor (or affected Sub-Contractor), and the Deputy Inspector to discuss and review welding procedures, bolting procedures, and inspection requirements for all welding and bolting operations.
   b. The City Building Inspector shall be notified of such meeting(s) and may participate at his/her discretion.
   c. Meeting record(s) shall be included in the first report submitted to the City Building Inspector.

3. Structural Observation
Structural observation shall be performed in accordance with Information Bulletin P/BC 2017-024. The Structural Observer shall:
   a. Perform structural observation listed in Table 6 on Sheet 2.
   b. Perform structural observation prior to placement of decking, covering by fireproofing, encasement in concrete or placement of other finishes.
   c. Submit observation report(s) to the City Building Inspector at each stage observed and upon completion of the structural system.
   d. State in the report that the steel moment frame system substantially conforms with the approved structural plans and specifications.
   e. Use the Department's Structural Observation Report Form to report all observations. Structural Observation Report Form can be obtained at www.burbankca.gov, keyword "Information Bulletin P/BC 2017-024".

4. Deputy Inspection
The following are the basic Quality Assurance responsibilities of the Deputy Inspectors:
   a. Arrive on the job in sufficient time to verify the permit information, check for prior inspections and/or approvals by the City Building Inspector or previous Deputy Inspectors, check the quality of all materials and become familiar with the approved structural plans and specifications.
   b. Verify that structural steel delivered is from a fabricator currently licensed by the Department.
   c. Identify material from an offsite fabricator in accordance with CBC Section 2203 and compare to the approved plans and specifications.
   d. Verify that each steel piece is labeled with the approved fabricator's shop name and license number.
   e. Visual check shop welds, joint preparation, faying surfaces, indentation stamps and color codes of high strength steel, excessive mill scale or lamination, and dimensional conformity with the approved plans.
   f. Before any welding begins, inspect joint preparation, fit-up, condition of surfaces to be welded, storage and use of electrodes, current license of all welders, and voltage/amperage of welding machines.
   g. Ensure that all welding and inspection activities complies with AWS.
   h. Measure voltage/amperages near the arc with a hand held calibrated averaging type meter. The meter shall be calibrated not less than once a year. This equipment shall be used by the Fabricator, Erector, and Deputy Inspector.
   i. During welding operation, provide continuous inspection particularly on multiple pass welds to assure that each pass has been prepared correctly, preheat and interpass temperatures are maintained and that finished welds shall be the correct size and without rejectable discontinuities.
   j. Mark steel near the weldment to indicate that inspection was made.
   k. Verify type and size of bolts and washers, check mill certificates, and verify faying surfaces are free of burrs, scale, rust, grease or anything that may inhibit full contact.
   l. Verify connections involving high strength bolts and welds are fabricated per Part III Item 2(b) and 2(c) and erected in a sequence per Part V Item 2, unless specified otherwise by the Engineer of Record.
   m. Verify high strength bolts are not welded or damaged by preheating.
   n. Verify washers are always installed with all bolts, except A-490 bolts which require washers under both elements.
   o. Verify that any deficiency noted in the Structural Observation Report Form has been corrected.
   p. Verify that the Engineer of Record has approved the written Welding Procedure Specification (WPS) prepared by the Fabricator or Erector. The WPS shall include the following:
      i. All applicable requirements from the codes, the Standard QA Plan, and any other information necessary to produce the welds.
      ii. List the applicable base metal types and thicknesses.
      iii. List the welding joint detail, including joint type, weld type, joint geometry, and applicable dimensions. Individual weld passes shall be identified in sketches and numbered to identify the sequence of their deposition (see Detail 13 on Sheet 3 for example). The sketches shall identify the maximum layer thicknesses and bead widths. In no case shall layer thicknesses exceed 1/4 inch nor shall the maximum bead widths exceed 5/8 inch.
      iv. List the welding processes.
      v. Specify the required welding positions.
      vi. List the filler metal per AWS for electrode specification and classification (see Table 7 on Sheet 2), as well as information regarding shielding material to be used.
      vii. Indicate the minimum preheat and interpass temperatures (see Table 4 on Sheet 2) and post weld heat treatment per Part V Item 5.
      viii. List all applicable electrical characteristics for the welding process employed. WPS shall clearly indicate the specific values required for each welding pass. These electrical characteristics shall include at minimum the following:
         (1) Electrode diameter (see Table 5 on Sheet 2),
         (2) Type of current, and acceptable ranges of current measured in amperage,
         (3) Voltage,
         (4) Travel speed (range), and
         (5) Amperage, voltage and electrode extension (as applicable) shall be within the filler metal manufacturer's recommendations.
      ix. A copy of the electrode manufacturer's technical information with ID # listed shall be attached to the WPS .
   q. Weld joints not conforming to AWS Chapter 3 must be tested by an approved testing agency, accepted by the Engineer of Record, and approved by the Department's Material Control Section before the weld is performed. Material Control Section can be contacted at:

      BDBS Material Control Section
      221 N. Figueroa St., Suite 1540
      Los Angeles, CA 90012
      (213) 482-0380 or 1-888-LA-4BUILD

   r. Notify the Contractor, Engineer of Record, and City Building Inspector of any deviations or non-compliance with the approved WPS, plans or specifications.
   s. "Deputy Inspection Report Form B-94" shall be submitted on a weekly basis to the City Building Inspector and Engineer of Record, unless determined otherwise by the City Building Inspector.
   t. During the execution of the work, the Deputy Inspector shall not undertake or engage in any other task or occupation which will interfere with the proper performance of the duties of such inspection.
   w. Visual welding inspections, bolting inspections and other inspections shall be conducted at locations and frequencies a specified in table 8 on sheet 2 of 3.

5. Electrode Storage and Atmospheric Exposure
   a. Electrodes are considered to be exposed to the atmoshpere if:
      i. the manufacturer's sealed electrode containers or packagings are opened or damaged, or
      ii. outside of baking or storage ovens.
   b. Modification or lubrication of electrodes are not permitted.
   c. Drying of electrodes in baking or storage ovens are permitted as recommended by the manufacturer.
   d. Electrodes shall be identified to facilitate monitoring of total atmospheric exposure time.
   e. Storage and atmospheric exposure of AWS A5.1-91 and A5.5-96 low-hydrogen SMAW electrodes shall be in accordance with AWS Section 5.3.2.
   f. FCAW electrodes not consumed within 24 hrs of accumulated atmospheric exposure time shall not be used. Manufacturer's recommendations that show that drying effectively removes moisture and restores electrodes to their designated diffusible hydrogen levels are permitted.
   g. FCAW electrode welding suspended more than 8 hrs shall be removed from the machines and stored in an electrode wire baking or storage oven maintained at a temperature between 250° and 550°F, or as recommended by the electrode manufacturer.

6. Plastic Hinging Zone Protection
   a. The plastic hinging zone shall be identified diagrammatically, as illustrated in Detail 15 on Sheet 3, on the structural plans by the Engineer of Record.
   b. The Engineer of Record and Contractor shall be responsible for reviewing shop drawings of ALL relevant trades to ensure compliance. This shall be discussed and documented in pre-construction meetings.
   c. The Contractor shall be responsible for developing a program to ensure that all workers on the project, including their subcontractors, are aware of and understand this requirement. Failure to comply with these requirements may cause the replacement of steel.
   d. Plastic hinging zones shall be defined by permanent markings such as paint or ink.
   e. A note, as illustrated in Detail 15 on Sheet 3, shall be prominently placed on the structural plans (general note sheet and adjacent to moment frame detail) and the construction documents of ALL trades.
   f. Welded, bolted, screwed, or shot-in (powder driven) attachments for perimeter edge angles, shear studs, exterior facades, partitions, duct work, piping, or other connections shall not be permitted within the plastic hinging zones.
   g. Any penetrations or damage from temporary welded attachments within the plastic hinging zones shall be repaired as required by the Engineer of Record and comply with Part III Item 4.
   h. Initially, the plastic hinging zone "Warning Sign", as illustrated in Detail 15 on Sheet 3, may be temporary. However, the temporary "Warning Sign" shall be replaced by a permanent "Warning Sign" before project completion. This sign and identification of the plastic hinging zone shall be maintained during construction; and may require repair after operations such as fireproofing.
   i. Signs shall be affixed to the beam and located within the plastic hinging zone. The City Building Inspector may accept alternate methods of attaching the "Warning Sign" to the plastic hinging zones.

7. Additional Charpy V-Notch Toughness
a. Demand Critical Welds
For steel frame with service temperature at 50°F or higher welds atthe locations indicated below shall be made with filler metal having a CVN toughness of 20 ft-lbf at -20°F AND 40 ft-lbf at 70°F as determined by test procedure prescribed in the AISC Seismic sec. 9.1-5 "Weld Metal / Welding Procedure Specification Toughness Verification Test."
For steel with service temperature below 50°F, the qualification temperature for AISC Seismic Provision X shall be 20°F above the lowest anticipated service temperature or at a lower temperature.
   i. Beam flanges to columns,
   ii. Single plate shear connections to columns,
   iii. Beam webs to columns, and
   iv. Column splices.
   v. Column bases

b. Heavy Section CVN Requirements
For structural steel in the SLRS, in addition to the requirements of AISC Specification Section A.3.1c, hot rolled shapes with flanges 1.5 in thick and thicker shall have a min. CVN toughness of 20 ft-lb at 70°F, tested in the alternate core location as described in ASTM A6 supplemental requirement S30. Plates 2 in thick and thicker shall have a min CVN toughness of 20 ft-lb at 70°F, measured at any location permitted by ASTM A673, where the plate is used in the following:
   i. Member built-up from plate
   ii. Connection plates wihere inelastic strain under seismic loading is expected.

8. Non-Destructive Testing (NDT) Requirements
The following NDT requirements, which shall be considered as a minimum, are to be included in the QA Agency Document(s)(See part 1, IV 9 below)
   a. The minimum non-destructive testing at each weld joints or parts shall be conducted at the locations and frequencies as specified in Table 2 and Table 3 on Sheet 2 respectively.
   b. A copy of each NDT report shall be provided to the Contractor, Engineer of Record, Deputy Inspector, and City Building Inspector with the following information:
      i. Document the accepted and rejected welds, parts, or joints.
      ii. Identify the tested weld by piece mark and location in the piece.
      iii. Identify the tested weld location in the structure.
   c. NDT Technician shall perform the following tasks:
      i. Coordinate the NDT scope and schedule with the Deputy Inspector.
      ii. Perform NDT in a timely manner (so as not to hinder construction work) and to detect welding problems soon after occurrence so that corrective measures can be taken by the Contractor.
      iii. Mark the inspected and accepted welds, parts, and joints with a distinguishing mark or die stamp.
   d. Reduction Rate for NDT
      i. The rate of UT testing on CJP groove welds may be reduced if approved by the Engineer of Record and the Department. No reduction is permitted for demand critical welds. Where the initial rate for UT is 100%, the NDT rate for an individual welder or welding operator may be reduced to 25%, provided the reject rate is demonstrated to be 5% or less of the welds tested for the welder or welding operator. A sampling of at least 40 completed welds for a job shall be made for such reduction evaluation.For evaluating the reject rate of continuous welds over 3 feet in length where the effective throat us 1 in or less, each 12 in increment or fraction thereof shall be considered as one weld. For evaluating the reject rate on continuous welds over 3 ft in length where the effective throat is greater than 1 in, each 6 in of length or fraction thereof shall be considered one weld.
      ii. The rate of MT testing on CJP groove welds may be reduced if approved by the Engineer of Record and the Department. The MT rate for an individual welder or welding operator may be reduced to 10%, provided the reject rate is demonstrated to be 5% or less of the welds tested for the welder or welding operator. A sampling of at least 20 completed welds for a job shall be made for such a reduction evaluation. This reduction is not permitted on welds in the k-area, at repair sites, weld tab and backing removal sites and access holes.
      iii. Reject rate shall mean the number of welds containing rejectable defects divided by the number of welds completed.

9. Quality Assurance Agency Documentations
i. Submit Fabricator and Erector document for review by EOR prior to fabrication erection per AISC 341-10 Sec J2.
ii. Submit quality assurance agency document to EOR, owner, and City building inspector per AISC 341-10 sec J3.
iii. The reports listed in Table 1 on Sheet 2 shall be submitted to the City Building Inspector in a timely manner.
iv. The requirements stated in section 8 are to be included in the QA agency Document(s).

V. WELDING PROCEDURES

1. Bottom Beam Flange Moment Connection Welding
Where welding of the bottom beam flange to the column flange is in the flat welding position, welding shall be completed with the following sequence:
   a. Start welding from Side A (one side of the beam) with a maximum 1/4 inch thick root pass beyond the center of the joint on Side B (other side of the beam), reaching past the beam web through the weld access hole.
   b. After the arc is initiated, electrode travel shall progress toward the edge of the Side A beam flange, terminating on the Side A weld tab.
   c. The Side A root pass, and the root pass deposit on Side B, shall be thoroughly cleaned to allow the Deputy Inspector to verify that the resulting bead profile is suitable for obtaining good fusion by the subsequent root pass to be initiated from Side B. If the profile is not conducive to good fusion, the start of the first root pass shall be grounded, gouged, chipped, or otherwise prepared to ensure adequate profile to achieve fusion.
   d. Complete the root pass on Side B before any other weld passes are performed.
   e. The arc shall be initiated at the start of the first Side A root pass, and electrode travel shall progress toward the edge of the Side B beam flange, terminating on the Side B weld tab.
   f. The above sequence shall be repeated for subsequent weld layers, and each weld layer shall be completed on both sides of the joint before a new layer is deposited. The order of operations (Side A, then Side B, or vice versa) is not restricted and may vary for each weld layer. Weld passes shall be placed in horizontal layers. Each pass shall be thoroughly cleaned of slag and wire brushed. Each pass shall be visually inspected by the Deputy Inspector, as described above in Step (c). An alternate welding sequence may be made provided the Welder or Contractor submits in writing an alternate sequence that is approved by the Engineer of Record and complies with the requirements of Part III Item 5 of the Standard QA Plan.

2. Sequence for Welding at Multiple Locations
When welding occur at multiple locations of welded steel moment frame connections, the following sequence shall be followed:
a. Weld both top and bottom beam flanges prior to any supplemental welding to the beam web or shear tab.
b. Engineer of Record shall review and approve all field welding sequences prior to the start of work.
c. Field welding of web shear plates with bolts shall occur after field welding of beam flanges to column flange.
d. High strength bolts shall be in the snug tight condition prior to welding.
e. Notwithstanding AISC LRFD Specification Section J1.9 to the contrary, high strength bolts shall be fully tensioned upon completion of all welding activities.

3. Welding Technique
a. Stringer beads shall be used during all welding operations. Maximum bead width, bead thickness, and layer thickness shall be considered. Weaving is not permitted, except when the WPS approved by the Engineer of Record limits electrode oscillation transverse to the weld axis to a maximum of:
   i. 3d for 1G/1F, 2G/2F, and 4G/4F weld positions, or
   ii. 5d for the 3G/3f position, where d = electrode diameter.
b. Welding layers should progress from the face of the column flange outward toward the groove face of the beam flange as illustrated in Detail 13 on Sheet 3.

4. Preheat and Interpass Temperature
a. The minimum preheat and interpass temperature requirements in Table 4 of Sheet 2 shall be observed. Special attention shall be given to AWS Section 3.5.1 and Section 5.6 for the thickness of the base metal to be welded.
b. Preheat and all subsequent interpass temperatures shall be maintained during the welding operation for a distance at least equal to the thickness of the thicker welded part, but not less than 3", in all directions from the point of welding.
c. Where base metals are of different thickness, the higher minimum preheat and interpass temperature requirements of the thicker plate shall govern.
d. Maximum preheat and interpass temperature shall not exceed the lesser of:
   i. 550°F, or
   ii. The maximum temperature recommended by the manufacturer.

5. Post Weld Heat Treatment
Unless specified otherwise in an approved WPS, the minimum post weld heat treatment shall be provided as follows:
a. Apply temperature in the 400°F to 600°F range immediately after completion of welding to prevent the weld metal from cooling below the minimum preheat and interpass temperature.
b. Maintain temperature for approximately 1 hour per inch of thickness of weld metal or 2 hours, whichever is less.
c. Conditions specified in AWS Section 3.14 and Section 5.8 should carefully be considered when applying post weld heat treatment. Alternatively, the use of insulating blankets after the completion of welding in lieu of post weld heat treatment may be permitted to control the cooling of the welded connection to ambient temperature if recommended by the Engineer of Record and approved by the City Building Inspector; unless required otherwise by an approved WPS.

VI. WELDING AND FABRICATION DETAILS

1. Base Metal Joint Preparation
   a. Base metal preparation shall be in comply with AWS Section 5.15.
   b. All beam flange to column flange welds are to be made with an AWS prequalified CJP groove welded joint detail.
   c. Bevel, fit-up and detail tolerances shall be as required by the selected prequalified welded joint detail.
   d. Whenever possible, use the AWS prequalified CJP groove welded joint detail as illustrated in Detail 14 on Sheet 3 and the following:
      i. Use single bevel CJP groove welds made with a 30° groove angle or double bevel CJP groove welds when flange thickness exceed 1-1/2 inch.
      ii. "As Fit-Up" and "As Detailed" shall be the maximum tolerances.
      iii. Meet all prequalified WPS variables in Table 5 on Sheet 2.

2. Weld Access Hole
   a. Where weld access holes are provided, they shall be detailed as illustrated in Detail 12 on Sheet 3.
   b. Notches and gouges shall be repaired following a WPS approved by ther Engineer of Record.
   c. Weld access holes shall be prepared by grinding to a suitable finish in accordance with AISC LRFD Specification Section J1.6 and provided with a minimum radius of 3/8 inch as illustrated in Detail 12 on Sheet 3.

3. Backing Bar
   a. Backing bar used in connections with a CJP groove weld of beam flange to column flange shall be removed except that top flange backing bar attached to the column by a continuous fillet weld on the edge below thee CJP groove weld need not be removed.
   b. Following removal of backing bar, the root pass shall be backgouged to sound weld metal, and back welded. A reinforcing fillet weld with a minimum leg size of 5/16 inch or the root opening plus 1/16 inch, whichever is larger, shall be provided. The reinforcing fillet weld need not be grounded.

SITE ADDRESS:

OWNER:

STANDARD QUALITY ASSURANCE PLAN
For Steel Moment Frames

The specifications and illustrative details presented in this Standard Quality Assurance Plan have been prepared in accordance with recognized engineering principles and are for general information use only. They should not be used without competent professional examination and verification of its accuracy, suitability, and applicability by a licensed engineer or architect. By using the information in this Standard Quality Assurance Plan, the Engineer or Architect of Record assumes full responsibility for the application of all of the specifications and illustrative details presented in this Standard Quality Assurance Plan. The Engineer or Architect of Record acknowledge that the City of Los Angeles assumes no responsibility for the application of any of the specifications and illustrative details presented in this Standard Quality Assurance Plans and all liability arising from such use.

REGISTERED PROFESSIONAL ENGINEER
SEAN ALMALEL
No. C058024
Exp. 06.30.24
CIVIL
STATE OF CALIFORNIA

Wayne Marks Project Architecture Planning Building

Date: 12/18/2019

Scale: Not to Scale

Sheet:

Sheet 1 of 3

CONTINUED FROM SHEET 1

c. When backing bar is other than AWS Table 3.1 and Section 5.2.2 approved base metal is used, the following shall apply:
i. Ceramic, flux or glass tape may be used provided the manufacture's recommendations are followed.
ii. When a non-metallic backing bar is used, the WPS and the Welder shall be qualifed using the type of backing bar intended for welding.
iii. Nonferrous metallic (e.g. copper) backing materials are not permitted.

1. Weld Tab
a. Weld tabs shall be aligned parallel to the joint preparation.
b. No weld dams are allowed.
c. Weld tabs shall extend beyond the edge of the joint a minimum distance equal to the part thickness, but not less than one inch nor exceed two inches
d. Weld tab shall be removed upon completion of the welded joint as follows:
i. No more than 1/8 inch beyond the edge of the joint shall remain, except at continuity plate where up to 1/4 inch is acceptable.
ii. Edges of the weld tab shall be finished to a surface roughness value of 500 micro inch or better. Grinding to a flush condition is not required.
e. Gouges and notches are not permitted. The transitional slope of any area where gouges and notches have been removed shall not exceed 1:5.
f. Material removed by grinding that extends more than 1/16 inch below the surface of the base metal shall be filled with weld metal. The contour of the weld at the ends shall provide a smooth transition, free of notches and sharp corners.

5. Continuity Plate
a. Continuity plates shall be detailed as illustrated in Detail 11 on Sheet 3.
b. The weld attaching the continuity plate to the column flange shall be as follows:
i. Use a CJP groove weld for the full length of the groove preparation.
ii. When backing bars are omitted, the root shall be backgouged and back welded.
iii. When backing bars are used and remain in place, backing bars shall be attached to the column flanges with a reinforcing fillet weld.
iv. Fillet weld shall not be used to connect backing bars to continuity plates.
v. The fillet weld size need not exceed the minimum size requirements of AWS Table 5.8.
c. Weld terminations near the end of the column flange tips may be completed using weld tabs as follows:
i. Weld tabs may be steel or nonfusible material.
ii. Weld terminations near the radius of the column need not be made using weld tabs. The use of small nonfusible weld tabs to assist in weld terminations is permitted.
iii. Weld tabs shall be removed following completion of welding.
d. Continuity plates may be welded to the column web with groove welds, fillet welds, or a combination of the two. Fillet welds shall terminate a minimum distance of 1/4 inch from each end of the joint.

6. Doubler Plate
Web doubler plates, as illustrated in Detail 2, 3, or 4 on Sheet 3, shall be welded using either Detail 5, 6, or 7 on Sheet 3.

7. Requirements for "k" Area
Welds shall terminate short of the "k" area for continuity plates as illustrated in Detail 11 on Sheet 3.

8. **Tack Welds**
i. Tack welds attaching backing bars and weld tabs shall be placed where they will be incorporated in the final weld.
ii. Tack welds shall be subject to the same welding procedure requirements as the final welds including preheat requirements.
iii. Tack welds are fully inspected prior to install the final welds.

VII. EXEMPTIONS

1. Reduction from certain quality assurance components of this Standard QA Plan, as listed in Part VII Item 2, are permitted for the following buildings or structures:
a. One or two family dwellings not more than 1 story in height and 2,500 sf of floor area,
b. Buildings or structures accessory to residential uses (such as carport, storage, garage), and
c. Miscellaneous structures (such as walkway, canopy, patio cover, gazebo, storage rack).

2. Buildings or structures, as listed in Part VII Item 1, are exempt from providing the following quality assurance components:
a. Electrode Storage and Atmospheric Exposure, Part IV Item 5(f) and 5(g).
b. Plastic Hinging Zone Protection, Part IV Item 6.
c. Additional CVN Notch Toughness Testing, Part IV Item 7.
d. Non-Destructive Testing, Part IV Item 8.
e. Preheat and Interpass Temperature, Part V Item 4.
f. Post Weld Heat Treatment, Part V Item 5.

NOTE : (Refer to AISC 341-10 Section J, "COPY R[GHT © Amerian Institute of Steel Construction, Reprint with permission, All right reserved")

The following entries are used in the tables:
- Observe (O) - The inspector shall observe these functions on a random, daily basis, Welding operations need not be delayed pending observations.
- Perform (P) - These inspections shall be performed prior to the final acceptance of the item, Where a task is noted to be performed by both OC and OA, it shall be permitted to coordinate the inspection function between QC and QA so that the inspection functions need be performed by only one party, Where QA is to rely upon inspection functions performed by QC, the approval of the engineer of record and the authority having jurisdiction is required.
- Document (D) - The inspector shall prepare reports indicating that the work has been performed in accordance with the contract documents, The report need not provide detailed measurements for joint fit-up, WPS settings, completed welds, or other individual items listed in the Tables of 8-a, 8-b, 8-c, For shop fabrication, the report shall indicate the piece mark of the piece inspected, For field work, the report shall indicate the reference gride lines and floor or elevation inspected, Work not in compliance with the contract documents and wether the noncompliance has been satisfactorily repaired shall be noted in the inspection report,

Table 8-a Location and Frequencies of bolting inspections

Inspection Tasks Prior to Bolting	QC Task	QC Doc.	QA Task	QA Doc.
Proper bolt selected for the joint detail	O	-	O	-
Proper bolting procedure selected for joint detail	O	-	O	-
Connecting elements are fabricated properly, including the appropriate faying surface condition and hole preparation, if specified, meets appliable requirements	O	-	O	-
Pre-installation verification testing conducted for fastener assemblies and method used.	P	D	O	D
Proper storage provided for bolts, nuts, washers, and other fastener components.	O	-	O	-
Inspection Tasks During Bolting	**QC Task**	**QC Doc.**	**QA Task**	**QA Doc.**
Fastener assemblies placed in all holes and washers (if required) are properly positioned	O	-	O	-
Joint bought to a snug tight condition prior to pretensioning operation	O	-	O	-
Fastener component not turned by the wrench prevented from rotating	O	-	O	-
Bolts are pretensioned progressing systematically from most rigid point toward free edges	O	-	O	-
Inspection Tasks After Bolting	**QC Task**	**QC Doc.**	**QA Task**	**QA Doc.**
Document accepted and rejected connections	P	D	P	D

Table 8-b Location and Frequencies of welding inspections

Visual Inspection Tasks Before Welding	QC Task	QC Doc.	QA Task	QA Doc.
Material Identification (Type/Grade)	O	-	O	-
Welder identification system	O	-	O	-
Fit-up of Grove Welds (including joint geometry) - Joint preparation - Dimensions (alignment, root opening, root face, bevel) - Cleanliness (condition of steel surface) - Tacking (tack weld quality and location) - Backing type and fit (if applicable)	P/O**	-	O	-
Configuration and finish of access holes	O	-	O	-
Fit-up of fillet welds - Dimensions (alignment, gaps at root) - Cleanliness (condition of steel surfaces) - Tacking (tack weld quality and location)	P/O**		O	
** Following performance of this inspection task for ten welds to be made by a given welder, with the welder demonstrating adequate understanding of the requirements and possession of skills and tools to verify these items, the Perform designation of this task shall be reduced to Observe, and the welder shall perform this task. Should the inspector determine that the welder has discontinued adequate performance of this task, the task shall be returned Perform until such time as the inspector has reestablished adequate assurance that the welder will perform the inspection tasks listed.				
Visual Inspection Tasks During Welding	**QC Task**	**QC Doc.**	**QA Task**	**QA Doc.**
WPS followed - Settings on welding equipment - Travel Speed - Selected welding materials - Shielding gas type/flow rate - Preheat applied - Interpass temperature manitained (min./max.) - Proper position (F,V,H,OH) - Intermix of filler metals avoided unless approved	O	-	O	-
Use of qualified welders	O	-	O	-
Control and handling of welding consumables - Packaging - Exposure control	O	-	O	-
Environment conditions - Wind speed within limits - Precipitation and temperature	O	-	O	-
Welding techniques - Interpass and final cleaning - Each pass within profile limitations - Each pass meets quality requirements	O		O	
No welding over cracked tacks	O	-	O	-
Visual Inspection Tasks After Welding	**QC Task**	**QC Doc.**	**QA Task**	**QA Doc.**
Welds cleaned	O	-	O	-
Verify size, length, and location of welds	P	-	P	-
Visually inspect welds to acceptance criteria - Crack prohibition - Weld/base-metal fusion - Crater cross-section - Weld profiles - Weld size - Undercut - Porosity	P	D	P	D
Placement of reinforcing or contouring fillet welds (if required)	P	D	P	D
Backing removed, weld tabs removed and finished, and fillet welds added (if required)	P	D	P	D
Repair activities	P	-	P	D

Table 7. PREQUALIFIED BASE METAL - FILLER METAL COMBINATIONS FOR MATCHING STRENGTH (1, 2, 3, 4)

BASE METAL		FILLER METAL		
Group	Steel Specification	Welding Process	AWS Electrode Specification	Electrode Classification
I	ASTM A36 < 3/4 in. ASTM A53 (Grade B) ASTM A500 (Grade B or C) ASTM A501	SMAW	A5.1	E70XX
			A5.5 (6)	E70XX-X
		FCAW	A5.20 (5)	E70XT-X, E7XT-XM
			A5.29 (6)	E70XTX-X, E7XTX-XM
II	ASTM A36 ≥ 3/4 in. ASTM A529 ASTM A572, A588 ASTM A913 ASTM A992 A1011 HSLAS	SMAW	A5.1	E7015, E7016, E7018, E7028
			A5.5 (6)	E7015-X, E7016-X, E7018-X
		FCAW	A5.20 (5)	E70XT-X, E7XT-XM
			A5.29 (6)	E70XTX-X, E7XTX-XM
RELATIONSHIP	**BASE METAL(S)**		**FILLER METAL STRENGTH RELATIONSHIP REQUIRED**	
Matching	Any steel to itself or any steel to another in the same group		Any filler metal listed in the same group	
	Any steel in one group to any steel in another		Any filler metal listed for a lower strength group [SMAW electrodes shall be the low-hydrogen classification]	
Under-Matching	Any steel to any steel to any group			

NOTES:
1. The base metal/filler metal strength relationships above shall be used to determine whether matching or under-matching filler metals are required. Refer to AWS D1.1/D1.1M:2010, Section 3.3.
2. Preheating of joints involving base metals of different groups shall be in conformance with the requirements applicable to the higher strength group.
3. When welds are to be stress-relieved, the deposited weld metal shall not exceed 0.05 percent vanadium.
4. Adapted with permission from the AWS D1.1 Committee on Structural Welding, Structural Welding Code - Steel, AWS D1.1/D1.1M: 2010, Miami: American Welding Society, Table 3.1.
5. FCAW electrodes with the -2, -2M, -3, -4, -7, -10, -11, -13, -14, G, -GS suffix shall be excluded and electrodes with the -11 suffix shall be excluded for thicknesses greater than 1/2 in.
6. Filler metals of alloy group B3, B3L, B4, B4L, B5, B5L, B6, B6L, B7, B7L, B8, B8L, B9, or any BXH grade in AWS A5.5 or A5.29 are not prequalified for use in the as-weld condition.

Table 5. PREQUALIFIED WPS REQUIREMENTS (1, 2, 3)

VARIABLE	POSITION OF WELD	WELD TYPE	SMAW	FCAW
Maximum Electrode Diameter	Flat (F)	Fillet (4)	5/16 in.	1/8 in.
		Groove (4)	1/4 in.	
		Root Pass	3/16 in.	
	Horizontal (H)	Fillet	1/4 in.	1/8 in.
		Groove	3/16 in.	
	Vertical (V)	All	3/16 in.	3/32 in.
	Overhead (OH)	All	3/16 in.	5/64 in.
Maximum Current	All	Fillet	Within the range of recommended operation by the filler metal manufacturer and a WPS approved by engineer of record.	Within the range of recommended operation by the filler metal manufacturer and a WPS approved by engineer of record.
	All	Groove weld root pass with opening		
		Groove weld root pass without opening		
		Groove weld fill passes		
		Groove weld cap pass		
Maximum Root Pass Thickness (5)	Flat (F)	All	3/8 in.	3/8 in.
	Horizontal (H)		5/16 in.	5/16 in.
	Vertical (V)		1/2 in.	1/2 in.
	Overhead (OH)		5/16 in.	5/16 in.
Maximum Fill Pass Thickness	All	All	3/16 in.	1/4 in.
Maximum Single Pass Fillet Weld Size	Flat (F)	Fillet	3/8 in.	1/2 in.
	Horizontal (H)		5/16 in.	3/8 in.
	Vertical (V)		1/2 in.	1/2 in.
	Overhead (OH)		5/16 in.	5/16 in.
Maximum Single Pass Layer Width	All	Root opening >1/2 in.	Not applicable.	Split layers
		Any layer of width w		(6)

NOTES:
1. Applicable provisions of AWS D1.1/D1.1M:2010 Section 3 "Prequalification of WPSs" must be maintained for prequalified status of SMAW and FCAW WPSs.
2. Refer to Detail 13 on Sheet 3 for diagram of weld pass sequence.
3. Adapted with permission from the AWS D1.1 Committee on Structural Welding, Structural Welding Code - Steel, AWS D1.1/D1.1M: 2010, Miami: American Welding Society, Table 3.7.
4. Except root passes.
5. See AWS D1.1/D1.1M:2010, Section 3.7.2, for width-to-depth limitations.
6. In the F, H, or OH positions for nontubulars, split layers when the layer width w > 5/8 inch. In the V position for nontubulars or the 5G or 6G for tubulars, split layers when the width w > 1inch.
7. See AWS D1.1/D1,1M 2010 Sec 3.7.3 for requirements for welding unpainted and exposed ASTM A588

Table 6. STRUCTURAL OBSERVATION CHECKLIST

STRUCTURAL OBSERVATION PROGRAM (Steel Moment Frame for Seismic Application)
☒ Orientation and placement of connected components.
☐ Removal of backing bars, as required on the plans.
☐ Removal of runoff tabs, as required on the plans.
☒ Presence of continuity plates, as required on the plans.
☒ Presence of doubler plates, as required on the plans.
☐ Configuration and finish of weld access holes, if applicable.
☐ Contour of RBS profile, if applicable.
☐ Verify that no welded attachments occur in the plastic hinging region.
☐ Review NDT and deputy inspection reports for general compliance.

NOTES:
1. Weld qualities shall be verified by the Deputy Inspector.
2. The structural observations listed in this Table are in addition to the structural observations that may be required on the structural plans.

Table 8-c Location and Frequencies of other inspections

Other Inspection Task	QC Task	QC Doc.	QA Task	QA Doc.
Reduced beam section (RBS) requirements, if appliable - contour and finish - dimensional tolerances	P	D	P	D
Protected zone - no holes and unapproved attachments made by fabricator or erector, as applicable	P	D	P	D

Table 1. REPORTS TO BE SUBMITTED TO THE CITY BUILDING INSPECTOR

	PREPARED BY	TYPE OF REPORT
1.	Structural Observer(s)	Structural Observation Reports
2.	Deputy Inspector(s)	Deputy Inspection Reports
3.	NDT Technician(s)	Non-Destructive Testing Reports

Table 2. NON-DESTRUCTIVE TEST LOCATIONS

	REQUIRED LOCATIONS	OMF	IMF	SMF
1.	**CJP Groove Weld** Ultrasonic test shall be performed on all CJP groove welds in materials 5/16 inch (8 mm) thick or greater. In addition, magnetic particle test shall be performed on all beam-to-column CJP groove welds.	B	A	A
2.	**"k" Area** When welding of doubler plates, continuity plates, or stiffeners has been performed in the k-area, the web shall be tested for cracks using magnetic particle testing. The magnetic particle test area shall include the k-area base metal within 3 in. (75 mm) of the weld.	C	B	B
3.	**Beam Cope and Access Hole** At welded splices and connections, thermally cut surfaces of beam copes and access holes shall be tested using magnetic particle testing, when the flange thickness exceeds 1-1/2 in. (38 mm) for rolled shapes.	C	B	B
4.	**Reduced Beam Section Repair** Magnetic particle testing shall be performed on any weld and adjacent area of the RBS plastic hinge region that has been repaired by welding, or on the base metal of the RBS plastic hinge region if a sharp notch has been removed by grinding.	B	B	B
5.	**Base Metal Lamellar Tearing and Laminations at CJP Groove Weld** Base metal thicker than 1-1/2 in. (38 mm) shall be ultrasonically tested for discontinuities behind and adjacent to the fusion line when the base metal is loaded in tension in the through thickness direction in tee and corner joints and the connected material is greater than 3/4 in. (19 mm). Any base metal discontinuities found within t/4 of the steel surface shall be accepted or rejected on the basis of criteria of AWS D1.1 Table 6.2, where t is the thickness of the part subjected to the through-thickness strain.	B	B	A*
6.	**End of Weld at Weld Tab Removal Site** Magnetic particle testing shall be performed on the end of welds from which the weld tabs have been removed, except for continuity plate weld tabs.	C	B	B
7.	**PJP Groove Weld** Ultrasonic testing shall be performed on PJP groove welds used in column splices with an effective throat of 3/4 in. (19.1 mm) thick or greater.	C	B	B

NOTE: 1) A, B, and C are the frequencies of non-destructive tests listed in Table 3.
2) Non-destructive testing of welds shall be performed by quality assurance personnel
3) UT shall be performed according to procedures described in Appendix W sec W4.1 of AISC 341-10
4) MT shall be performed according to procedures described in Appendix W sec W4.1 of AISC 341-10
* Ultrasonic test only

Table 3. NON-DESTRUCTIVE TEST FREQUENCY

	Frequency Designation A	B	C
Ultrasonic Testing (UT)	100% of joints	0% of joints	25% of joints
Magnetic Particle Testing (MT)	25% of joints	100% of joints	Not Required

NOTES:
1. Refer to Table 2 for locations of non-destructive testing.
2. Rate of non-destructive testing may be reduced as permitted in Sheet 1, Part IV, Item 8(d).
3. No reduction is permitted for demand critical welds for ultrasonic testing.
4. No reduction is permitted for welds in the k-area, at repair sites, backing removal sites, and access holes for magnetic particle testing.

Table 4. PREQUALIFIED MINIMUM PREHEAT AND INTERPASS TEMPERATURE

STEEL SPECIFICATION	WELDING PROCESS	THICKNESS OF THICKEST PART AT POINT OF WELDING (in.)	MINIMUM PREHEAT AND INTERPASS TEMPERATURE (°F)
ASTM A36 ASTM A572 Grade 50 ASTM A913 Grade 50 ASTM A992	SMAW with low-hydrogen electrodes, FCAW	1/8 to 3/4 incl.	32
		Over 3/4 to 1-1/2 incl.	50
		Over 1-1/2 to 2-1/2 incl.	150
		Over 2-1/2	225

NOTES:
1. Surfaces to be welded and surfaces adjacent to welds shall be free of moisture pursuant to AWS D1.1/D1.1M:2010 Section 5.15. Use a higher preheat temperature from this Table to remove moisture.
2. Adapted with permission from the AWS D1.1 Committee on Structural Welding, Structural Welding Code - Steel, AWS D1.1/D1.1M: 2010, Miami: American Welding Society, Table 3.2
3. The minimum preheat or interpass temperature applied to a joint composed of base metals with different minimum preheats (based on category and thickness) shall be the highest of these minimum preheat temperatures.

SITE ADDRESS:

OWNER:

STANDARD QUALITY ASSURANCE PLAN
For Steel Moment Frames

The specifications and illustrative details presented in this Standard Quality Assurance Plan have been prepared in accordance with recognized engineering principles and are for general information only. The Standard Quality Assurance Plan is not to be used in connection with any specific project without the review by competent professional examination and verification of its accuracy, suitability, and applicability by a registered professional engineer and/or licensed architect. Use of and reliance upon this Standard Quality Assurance Plan, information contained therein, or omissions from it is the full responsibility for the application of all of the specifications and illustrative details. Neither the City of Los Angeles nor any officer or employee thereof makes any warranty of this Standard Quality Assurance Plan. The Engineer or Architect of Record acknowledge that the City of Los Angeles assumes no responsibility for the application of any of the specifications and illustrative details contained herein and will not be liable for any loss or damages arising from such use.

REGISTERED PROFESSIONAL ENGINEER
SEAN ALMALA
No. C058024
Exp. 06.30.24
CIVIL
STATE OF CALIFORNIA

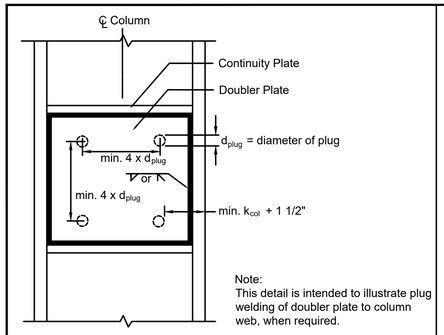
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Date: 12/18/2019

Scale: Not to Scale

Sheet:

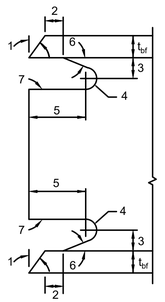
Sheet 2 of 3



Note:
This detail is intended to illustrate plug welding of doubler plate to column web, when required.

(refer to AWS D1.1/D1.1M:2010 Section 2.3.5, 2.9, and 3.10 for minimum plug weld requirements)

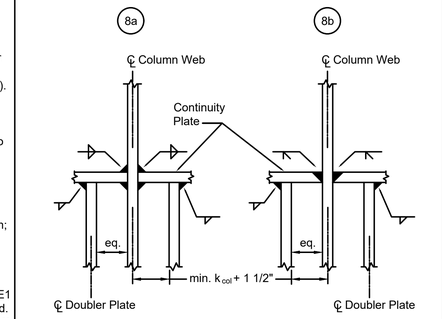
Plug Welding of Doubler Plate to Column — Detail 16
Scale: Not to Scale



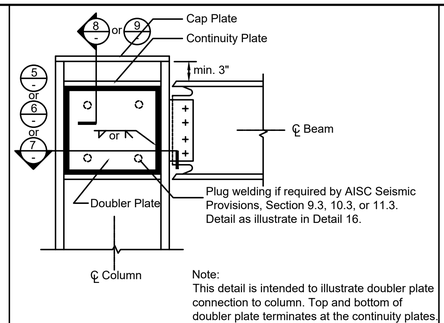
Notes:
1. Bevel as required by a selected AWS prequalified CJP groove welded joint detail.
2. Larger of t_{bf} or 1/2" (plus 1/2 t_{bf} , or minus 1/4 t_{bf}).
3. 3/4 t_{bf} to t_{bf} , 3/4" minimum (± 1/4").
4. 3/8" minimum radius (plus not limited, or minus 0).
5. 3 t_{bf} (±1/2").
6. Tolerances shall not accumulate to the extent that the angle of the access hole cut to the flange surface exceed 25°.
7. Weld access hole shall be ground smooth to a surface roughness value not to exceed 500 micro inch; and shall be free of notches and gouges.
8. This detail is required for FR (fully restrained) connection for OMF per AISC 341-10 seismic provisions sec E1 where weld access holes are provided.

(Required per ASIC 341-10 sec E1, for OMF application, may use as alternative for RBS application per AISC 358-10 sec 6.6/C6.6)

Weld Access Hole Detail — Detail 12
Scale: Not to Scale



Doubler Plate Welds to Continuity Plate — Detail 8
Scale: Not to Scale



Note:
This detail is intended to illustrate doubler plate connection to column. Top and bottom of doubler plate terminates at the continuity plates.

(Refer to commentary E3 from the 2010 AISC Seismic Provisions, "For Structural Steel Buildings")

Web Doubler Plate Detail — Detail 4
Scale: Not to Scale

TYPICAL SHEET 3 GENERAL NOTES:

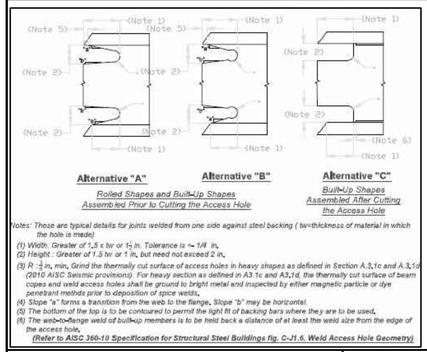
1. The illustrative details provided herein are intended to highlight the minimum fabrication and welding details that should be reflected on the structural plan. It shall not be used as a substitute for or in lieu of structural details that the Engineer or Architect of Record must provide on the structural plan.
2. The illustrative details does not provide information such as, but not limited to, size of columns or beams, continuity or doubler plate thicknesses, size and length of the fillet welds, the type of beam to column moment connections, steel column frame to foundation connections, or length and location of plastic hinging zones. This information shall be determined by the Engineer or Architect of Record and specified on the structural plan.
3. Where the illustrative details provide information such as weld type to use at a particular weld joint, minimum or maximum dimensions for length, weld size, or gap between base metals, it should be appropriately reflected on the structural plan by the Engineer or Architect of Record.
4. Engineer of Record shall indicate on this plan which Weld Access hole detail to be used. See detail 12 and 17 of sheet 3.

Typical Sheet 3 Notes

SITE ADDRESS:

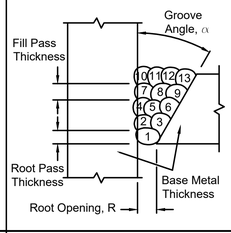
OWNER:

STANDARD QUALITY ASSURANCE PLAN
For Steel Moment Frames



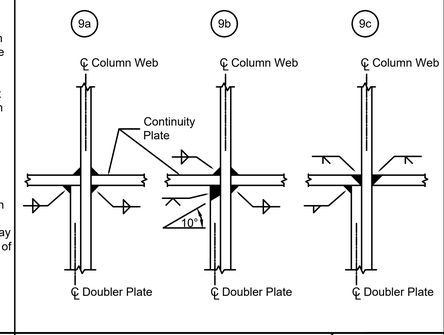
Notes: These are typical details for joints welded from one side against steel backing (tw=thickness of material in which the hole is made)
(1) Width: Greater of 1.5 x tw or ½ in. Tolerance is +¼ in, -0.
(2) Height : Greater of 1.3 tw or 1 in, but need not exceed 2 in.
(3) R -⅛ in, min. Grind the thermally cut surface of access holes in heavy shapes as defined in Section A3.1c and A3.1d (2010 AISC Seismic provisions). For heavy section as defined in A3.1c and A3.1d, the thermally cut surface of beam copes and weld access holes shall be ground to bright metal and inspected by either magnetic particle or dye penetrant methds prior to deposition of spice welds.
(4) Slope "a" forms a transition from the web to the flange. Slope "b" may be horizontal.
(5) The bottom of the top is to be contoured to permit the tight fit of backing bars where they are to be used.
(6) The web-to-flange weld of built-up members is to be held back a distance of at least the weld size from the edge of the access hole.
(Refer to AISC 360-10 Specification for Structural Steel Buildings fig. C-J1.6. Weld Access Hole Geometry)

Weld Access Hole Detail — Detail 17
(Required Per AISC 368-10 sec 5.5/C5.5 for RBS application, may use detail 12 as alternative) Scale: Not to Scale

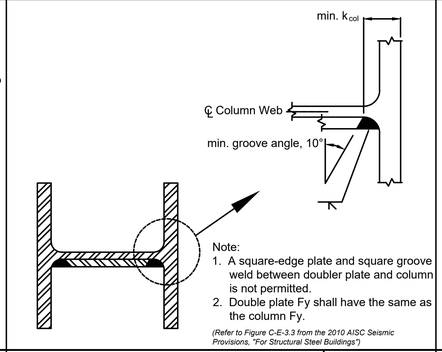


Notes:
1. For maximum fill pass thickness, see Table 5 on Sheet 2.
2. For moment connection at bottom beam flange to column flange, the maximum root pass thickness shall not exceed 1/4" per Part V, Item 1. For welded connection at all other locations, see Table 5 on Sheet 2 for maximum root pass thickness.
3. Root Opening, R, and Groove Angle, α, shall be per selected AWS prequalified CJP groove welded joint detail.
4. Welding pass numbers are shown diagrammatically to indicate sequence. Quantity of passes may vary due to depth and/or position of weld. This figure is intended to illustrate recommended welding sequence for FCAW and SMAW welding process only to reduce stresses due to weld shrinkage.

Weld Pass Sequence — Detail 13
Scale: Not to Scale



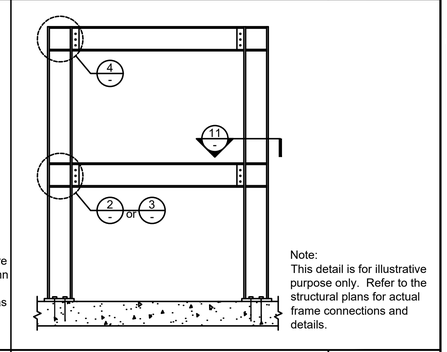
Doubler Plate Welds to Continuity Plate — Detail 9
Scale: Not to Scale



Note:
1. A square-edge plate and square groove weld between doubler plate and column is not permitted.
2. Double plate Fy shall have the same as the column Fy.

(Refer to Figure C-E-3.3 from the 2010 AISC Seismic Provisions, "For Structural Steel Buildings")

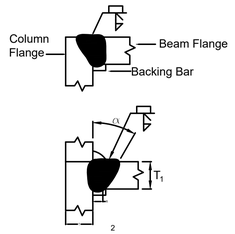
Groove Welded Doubler Plate — Detail 5
Scale: Not to Scale



Note:
This detail is for illustrative purpose only. Refer to the structural plans for actual frame connections and details.

Sample Steel Moment Frame — Detail 1
Scale: Not to Scale

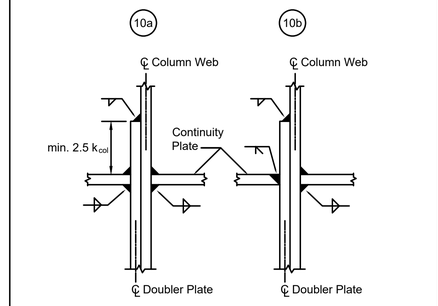
TOLERANCES	
R = +1/16, -0	+1/4, -1/16
α = +10°, -0°	+10°, -5°



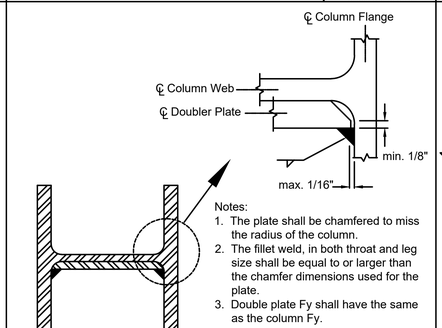
Welding Process	Joint Designation	Base Metal Thickness (U = unlimited) T_1	Base Metal Thickness (U = unlimited) T_2	Groove Preparation: Root Opening	Groove Preparation: Groove Angle	Allowed Welding Positions	Gas Shielding for FCAW
SMAW	TC-U4a	U	U	R = 1/4	α = 45°	All	-
				R = 3/8	α = 30°	F, V, OH	-
FCAW	TC-U4a-GF	U	U	R = 3/16	α = 30°	All	Required
				R = 3/8	α = 30°	F	Not required
				R = 1/4	α = 45°	All	Not required

Notes:
1. Groove welds in corner and T-joints of cyclically loaded structures shall be reinforced with fillet welds equal to T_1 /4, but need not exceed 3/8 inch.
2. For corner joints, the outside groove preparation may be in either or both members, provided the basic groove configuration is not changed and adequate edge distance is maintained to support the welding operations without excessive edge melting.
3. Adapted with permission from the AWS D1.1 Committee on Structural Welding, Structural Welding Code - Steel, AWS D1.1/D1.1M: 2010, Miami: American Welding Society, Figure 3.4 pg. 95 (top left).

AWS Prequalified CJP Groove Welded Joint Detail — Detail 14
Scale: Not to Scale



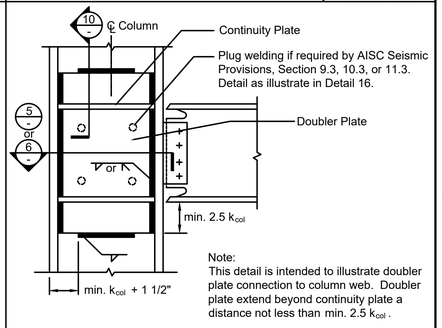
Doubler Plate Welds to Continuity Plate — Detail 10
Scale: Not to Scale



Notes:
1. The plate shall be chamfered to miss the radius of the column.
2. The fillet weld, in both throat and leg size shall be equal to or larger than the chamfer dimensions used for the plate.
3. Double plate Fy shall have the same as the column Fy.

(Refer to Figure C-E-3.3 from the 2010 AISC Seismic Provisions, "For Structural Steel Buildings")

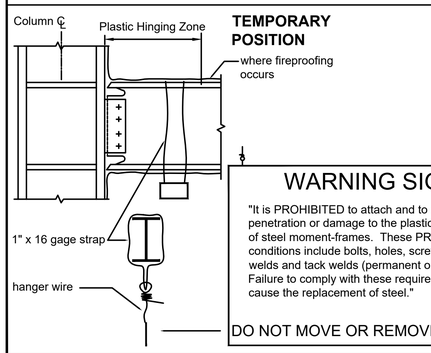
Fillet Welded Doubler Plate — Detail 6
Scale: Not to Scale



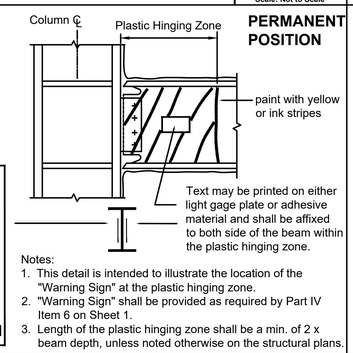
Note:
This detail is intended to illustrate doubler plate connection to column web. Doubler plate extend beyond continuity plate a distance not less than min. 2.5 k_{col} .

(Refer to commentary E3 from the 2010 AISC Seismic Provisions, "For Structural Steel Buildings")

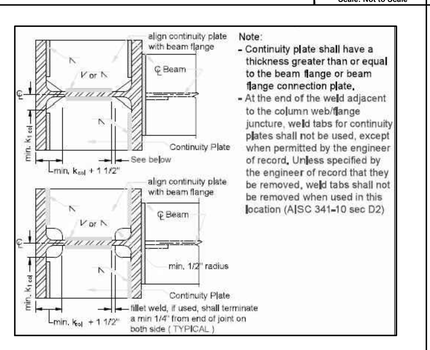
Web Doubler Plate Detail — Detail 2
Scale: Not to Scale



Warning Sign at Plastic Hinging Zone — Detail 15
Scale: Not to Scale

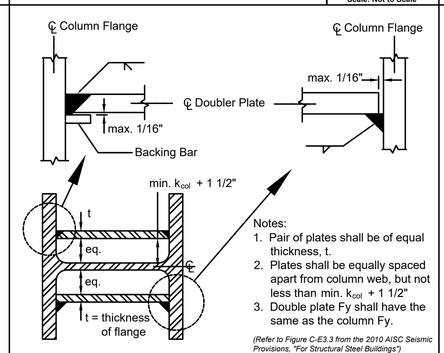


Notes:
1. This detail is intended to illustrate the location of the "Warning Sign" at the plastic hinging zone.
2. "Warning Sign" shall be provided as required by Part IV Item 6 on Sheet 1.
3. Length of the plastic hinging zone shall be a min. of 2 x beam depth, unless noted otherwise on the structural plans.



Note:
- **Continuity plate shall have a thickness greater than or equal to the beam flange or beam flange connection plate,**
- At the end of the weld adjacent to the column web/flange juncture, weld tabs for continuity plates shall not be used, except when permitted by the engineer of record. Unless specified by the engineer of record that they be removed, weld tabs shall not be removed when used in this location (AISC 341-10 sec D2)

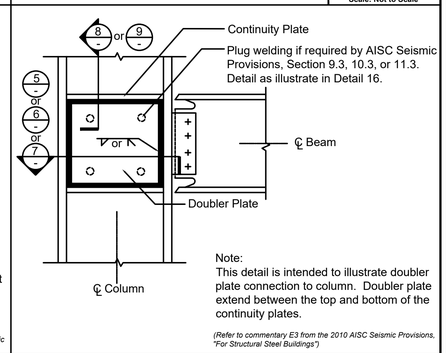
Continuity Plate Detail — Detail 11
Scale: Not to Scale



Notes:
1. Pair of plates shall be of equal thickness, t.
2. Plates shall be equally spaced apart from column web, but not less than min. k_{col} + 1 1/2"
3. Double plate Fy shall have the same as the column Fy.

(Refer to Figure C-E3.3 from the 2010 AISC Seismic Provisions, "For Structural Steel Buildings")

Groove or Fillet Welded Doubler Plate — Detail 7
Scale: Not to Scale



Note:
This detail is intended to illustrate doubler plate connection to column. Doubler plate extend between the top and bottom of the continuity plates.

(Refer to commentary E3 from the 2010 AISC Seismic Provisions, "For Structural Steel Buildings")

Web Doubler Plate Detail — Detail 3
Scale: Not to Scale

The specifications and illustrative details presented in this Standard Quality Assurance Plan have been prepared in accordance with recognized engineering principles and are for general information only. This Standard Quality Assurance Plan should not be used without first securing the services of a registered and competent professional examination and verification of its accuracy, suitability, and applicability by the Engineer or Architect of Record. By signing and sealing this Standard Quality Assurance Plan, the Engineer or Architect of Record assumes full responsibility for the application of all of the specifications and illustrative details associated with the subject property. Furthermore, by signing and sealing this Standard Quality Assurance Plan, the Engineer or Architect of Record acknowledge that the City of Los Angeles assumes no responsibility for the application of any of the specifications and illustrative details contained in this Standard Quality Assurance Plans and all liability arising from such use.



3rd Rigs Visits Project/Wellbore Plan/Guidewire

Date: 12/18/2019

Scale: Not to Scale

Sheet:

Sheet 3 of 3

THIS PLAN HAS BEEN REVIEWED BY LK GEOTECHNICAL ENGINEERING, INC. AND APPEARS TO BE IN GENERAL CONFORMANCE WITH THE RECOMMENDATIONS IN OUR REPORT DATED 1/12/26 &previous
WE MAKE NO REPRESENTATION AS TO THE ACCURACY OF ANY PORTION OF THE DESIGN PREPARED BY OTHERS.
SOILS ENGINEER:
ENGINEERING GEOLOGIST:
DATE REVIEWED: 3/7/2026

REGISTERED PROFESSIONAL ENGINEER CHI HSIN LIN No. 2921 GEOTECHNICAL STATE OF CALIFORNIA

PROFESSIONAL GEOLOGIST MARK KRUGER No. 2345 CERTIFIED ENGINEERING GEOLOGIST STATE OF CALIFORNIA

PROPOSED SWIMMING POOL

2-STORY HOUSE

POOL EQUIPMENT

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

REVISIONS	BY	DATE:

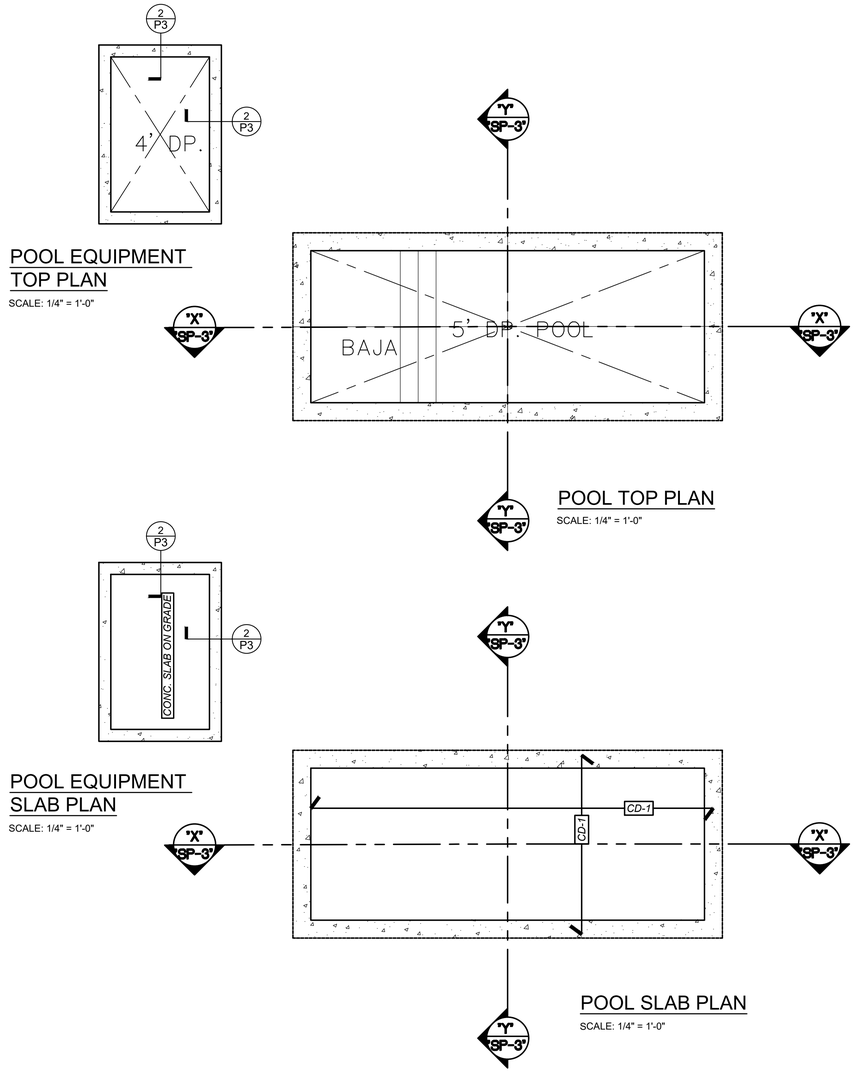
STRUCTURAL DESIGN PLUS, INC.
15053 Ventura Blvd. Suite #205
Sherman Oaks, CA 91403
TEL 818.905.9871
FAX 818.905.9873
Email: designplus@sbcglobal.net
STRUCTURAL
CIVIL
DRAFTING
TITLE-24

SHEET NAME: SITE PLAN

PROJECT: **PROPOSED POOL**
30051 ANDROMEDA LN,
MALIBU, CA 90265

REGISTERED PROFESSIONAL ENGINEER DEAN ALMALEL No. C058024 Exp. 06.30.26 CIVIL STATE OF CALIFORNIA

DATE:	03.04.2026
DRAWN BY:	
PROJECT NO.:	23-PLA-01
SCALE:	AS SHOWN
SHEET NO.:	P1



POOL EQUIPMENT TOP PLAN

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

POOL TOP PLAN

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

POOL EQUIPMENT SLAB PLAN

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

POOL SLAB PLAN

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

NOTES :

1- SWIMMING POOL SHALL BE EQUIPPED WITH A HYDROSTATIC RELIEF VALVE TO REDUCE THE POTENTIAL FOR BUILDUP OF HYDROSTATIC PRESSURES.

2- POOL DECKING SUPPORTED ON GRADE SHOULD BE SEPARATED FROM THE POOL BY A FULL DEPTH CONSTRUCTION JOINT AS PER SOILS REPORT.

THIS PLAN HAS BEEN REVIEWED BY LK GEOTECHNICAL ENGINEERING, INC. AND APPEARS TO BE IN GENERAL CONFORMANCE WITH THE RECOMMENDATIONS IN OUR REPORT DATED 1/12/26 &previous

WE MAKE NO REPRESENTATION AS TO THE ACCURACY OF ANY PORTION OF THE DESIGN PREPARED BY OTHERS.

SOILS ENGINEER: _____

ENGINEERING GEOLOGIST: _____

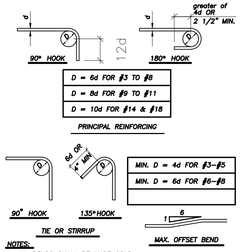
DATE REVIEWED: 3/7/2026

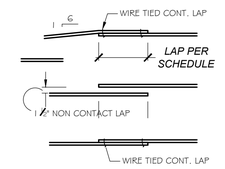
REGISTERED PROFESSIONAL ENGINEER CHI HSIN LIN No. 2921 GEOTECHNICAL STATE OF CALIFORNIA

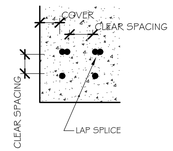
PROFESSIONAL GEOLOGIST MARK KRUGER No. 2345 CERTIFIED ENGINEERING GEOLOGIST STATE OF CALIFORNIA

CONTRACTOR NOTES :

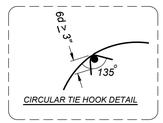
1. IF THERE ARE DISCREPANCIES IN THE PLANS OR DETAILS, CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD FOR CLARIFICATION PRIOR TO BIDDING AND/OR INSTALLATION OF ANY MEMBER.
2. CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OF A WIND OR SEISMIC FORCE RESISTING SYSTEM / COMPONENT LISTED IN THE "STATEMENT OF SPECIAL INSPECTION" SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE MALIBU CITY INSPECTORS AND THE OWNER PRIOR TO THE COMMENCEMENT OF WORK ON SUCH SYSTEM OR COMPONENT.
3. A COPY OF THE LOS ANGELES RESEARCH REPORT AND/OR CONDITIONS OF LISTING SHALL BE MADE AVAILABLE AT THE JOB SITE.







TYP. REBAR BEND & SPLICE



CIRCULAR TIE HOOK DETAIL

NOTES:

1.) CONCRETE STEM WALL
2.) f'c = 3000 PSI.
3.) GRADE 60 STEEL BARS.
4.) SPECIAL INSPECTION REQUIRED.
5.) WATER-PROOF BY DESIGNER.
6.) SEE SOILS REPORT.

DO NOT BACK FILL BEFORE PLACING BOTTOM CONC SLAB

STRUCTURAL OBSERVATION PROGRAM
AND DESIGNATION OF THE
STRUCTURAL OBSERVER

PROJECT ADDRESS: 30051 ANDROMEDA LN, MALIBU, CA 90265 *PERMIT APPL. NO.:* _____

DESCRIPTION OF WORK: PROPOSED POOL

OWNER: _____ *ARCHITECT:* _____ *ENGINEER:* Dean Almalla

STRUCTURAL OBSERVATION (ONLY CHECKED ITEMS ARE REQUIRED)			
Firm or Individual to be responsible for the Structural Observation: Name: Dean Almalla Phone: (818) 905-9871 Calif. Registration: C058024			
FOUNDATION	*WALL*	*FRAME*	*DIAPHRAGM*
☒ *Footing, Stem Walls, Piers*	☒ *Concrete*	☐ *Steel Moment Frame*	☒ *Concrete*
☐ *Mat Foundation*	☐ *Masonry*	☐ *Steel Braced Frame*	☐ *Steel Deck*
☐ *Caisson, Piles, Grade Beams*	☐ *Wood*	☐ *Conc. Moment Frame*	☐ *Wood*
☐ *Stepp'g/'Retain'g Foundation, Hillside Special Anchors*	☐ *Others:*	☐ *Masonry Wall Frame*	☐ *Others: Shear wall 2, 3, 4*
☐ *Others: Anchor Bolts*		☐ *Others:Steel Columns*	

DECLARATION BY OWNER

I, the Owner of the project, declare that the above listed firm or individual is hired by me to be the Structural Observer.

_____ _____
Signature *Date*

DECLARATION BY ARCHITECT OR ENGINEER OF RECORD
(Required if the Structural Observer is different from the Architect or Engineer of Record)

I, the Architect or Engineer of record for the project, declare that the above listed firm or individual is designated by me to be responsible for the Structural Observation.

Signature *C058024* *License No.* *02.25.2026* *Date*

SPLICIES (STANDARD LAPS) SCHEDULE

CONC. f'c= 3000 P.S.I.					
BAR SIZES	LAP CLASS	TOP		OTHER	
		CASE1	CASE2	CASE1	CASE2
#3 TO #6	A	57db	86db	44db	66db
	B	74db	111db	57db	86db
#7 TO #18	A	72db	107db	55db	82db
	B	93db	139db	72db	107db
CONC. f'c= 4000 P.S.I.					
BAR SIZES	LAP CLASS	TOP		OTHER	
		CASE1	CASE2	CASE1	CASE2
#3 TO #6	A	50db	74db	38db	57db
	B	64db	96db	50db	74db
#7 TO #18	A	62db	93db	48db	71db
	B	80db	121db	62db	93db
CONC. f'c= 5000 P.S.I.					
BAR SIZES	LAP CLASS	TOP		OTHER	
		CASE1	CASE2	CASE1	CASE2
#3 TO #6	A	44db	66db	34db	51db
	B	58db	86db	44db	66db
#7 TO #18	A	55db	83db	43db	64db
	B	72db	108db	55db	83db

TABLE NOTES:

1. REBAR LENGHT SHOWN IN THE SCHEDULE SHALL BE INCREASED 50% WHEN COVER IS < OR = 1 BAR DIAMETER OR CLEAR SPACING BETWEEN BARS IS LESS THAN 2 BAR DIAMETERS.

2. 75% OF REBAR LENGHTS SHOWN IN THE SCHEDULE MAY BE USED WHEN COVER IS > 2 BAR DIAMETERS AND CLEAR SPACING BETWEEN BARS IS GREATER THAN 3 BAR DIAMETERS.

3. LAP SPLICE IN MASONRY SHALL BE 40d.

4. ACI 318-19 FACILITATES EXPRESSING TENSION DEVELOPMENT LENGTHS AND TENSION LAP SPLICE LENGTHS AS MULTIPLES OF BAR DIAMETERS .THESE TABLES PRESENT THESE VALUES FOR VARIOUS CONCRETE STRENGHTS.
5. TABULATED VALUES ARE BASED ON A MINIMUM YIELD STRENGTH OF 60,000 PSI [420 MPA].
6. TENSION DEVELOPMENT LENGTHS AND TENSION LAP SPLICE LENGTHS ARE CALCULATED PER ACI 318 , SECTION 25.4 AND 25.5, RESPECTIVELY
7. TABULATED VALUES FOR BEAMS OR COLUMNS ARE BASED ON TRANSVERSE REINFORCEMENT AND CONCRETE COVER MEETING MINIMUM CODE REQUIREMENTS.
8. CASE 1 AND CASE 2 WHICH DEPEND ON THE TYPE OF STRUCTURAL MEMBER , CONCRETE COVER , AND CENTER-TO-CENTER SPACING OF THE BARS , ARE DEFINED AS:

BEAMS , COLUMNS	CASE 1	CONCRETE COVER AT LEAST 1.0db AND c.–c., SPACING AT LEAST 2.0db
	CASE 2	CONCRETE COVER LESS THAN 1.0db AND c.–c., SPACING LESS THAN 2.0db
ALL OTHERS	CASE 1	CONCRETE COVER AT LEAST 1.0db AND c.–c., SPACING AT LEAST 3.0db
	CASE 2	CONCRETE COVER LESS THAN 1.0db AND c.–c., SPACING LESS THAN 3.0db

9. LAP SPLICE LENGTHS (MIN OF 12") ARE MULTIPLES OF TENSION DEVELOPMENT LENGTHS, CLASS A = 1.0 ld AND CLASS B = 1.3 ld (ACI 12.15.1). WHEN DETERMINING LAP SPLICE LENGHT, ld IS CACULATED WITHOUT THE (12") MINIMUM OF ACI 12.2.1
10. ACI 318 DOES NOT ALLOW TENSION LAP SPLICES OF # 14 OR # 18 BARS .THE TABULATED VALUES FOR THOSE BAR SIZES ARE THE TENSION DEVELOPMENT LENGTHS.
11. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12" OF CONC. CAST BELOW THE BARS.
12. FOR GRADE 75 REINFORCING BARS , LENGTHS MUST BE MULTIPLIED BY 1.25 .

IMPORTANT NOTE: USE CLASS B FOR DEVELOPMENT AND LAP SPLICE
(TYP) REBAR BEND, SPLICE

GENERAL NOTES

1. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE DRAWINGS AND THE SPECIFICATIONS.

2. DURING THE CONSTRUCTION PERIOD THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF THE BUILDING. THE CONTRACTOR SHALL PROVIDE ADEQUATE SHORING AND BRACING IN ACCORDANCE WITH ALL NATIONAL, STATE, AND LOCAL SAFETY ORDINANCES.

3. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL EXCAVATION PROCEDURES INCLUDING LAGGING, SHORING, AND PROTECTION OF ADJACENT PROPERTY, STRUCTURES, STREETS, AND UTILITIES IN ACCORDANCE WITH ALL NATIONAL, STATE, AND LOCAL SAFETY ORDINANCES.

4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK OF ALL TRADES.

5. SHOP DRAWINGS REQUIRED BY THE SPECIFICATIONS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION.

6. INDICATED DRAWINGS ARE GENERAL AND TYPICAL DETAILS OF CONSTRUCTION SIMILAR DETAILS OF CONSTRUCTION SHALL BE USED WHEN CONDITIONS ARE NOT SPECIFICALLY INDICATED, BUT ARE OF SIMILAR CHARACTER TO DETAILS SHOWN.

REINFORCING STEEL:

1. ALL REINFORCING STEEL MUST CONFORM TO ASTM SPECIFICATION A-615 GRADE 60, UNLESS OTHERWISE NOTED. DEFORMATIONS SHALL BE IN ACCORDANCE WITH ASTM A-305. USE ASTM GRADE 40 FOR #3 TIES ONLY.

2. ALL REINFORCING STEEL SHALL BE LAPPED 36 BAR DIAMETERS OR 2'-0" MINIMUM, UNLESS OTHERWISE NOTED IN PLANS. ALL SPLICES SHALL BE LOCATED AS DETAILED IN PLANS

3. ALL REINFORCING STEEL SHALL BE LAPPED AS INDICATED. WHERE LAP/SPLICE LOCATIONS NOT SPECIFICALLY INDICATED, LAPS/SPLICES SHALL BE WELL STAGGERED.

4. ANCHOR BOLTS, DOWELS, AND OTHER EMBEDDED ITEMS MUST BE SECURELY TIED IN PLACE, BEFORE CONCRETE IS POURED.

5. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-185. MINIMUM LAP SHALL BE 6 INCHES OR ONE FULL MESH, WHICHEVER IS GREATER.

CONCRETE MASONRY:

1. CONCRETE BLOCK GRADE N-1 UNITS MUST CONFORM TO ASTM C90-70, MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.

2. MORTAR, TYPE S, MUST CONFORM TO ASTM C270-73, MINIMUM COMPRESSIVE STRENGTH OF 1800 PSI, AT 28 DAYS. MIX 1 PART PORTLAND CEMENT, 1/2 PART LIME PUTTY, AND 4-1/2 PART SAND BY VOLUME.

3. GROUT MUST CONFORM TO ASTM C476-71, MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI, AT 28 DAYS. MIX 1 PART CEMENT, 3 PART SAND, AND 2 PART PEAL GRAVEL. THIS MIX MUST BE OF FLUID CONSISTENCY GROUT; ALL CELLS SHOULD CONTAIN REINFORCEMENT, UNLESS OTHERWISE NOTED.

4.THE THICKNESS OF GROUT BETWEEN BLOCK UNITS AND REINFORCING STEEL SHALL BE NOT LESS THAN 1/2" BETWEEN PARALLEL REINFORCING BARS, NOT LESS THAN 3/4".

5. SEE "REINFORCING STEEL NOTES AND STANDARD DETAILS FOR REBARS".

CONCRETE:

1. ALL CONCRETE, UNLESS OTHERWISE NOTED, SHALL BE REGULAR WEIGHT HARD ROCK TYPE (150#/CUFT.). AGGREGATES SHALL CONFORM TO ASTM C-33 WITH PROVEN SHRINKAGE CHARACTERISTICS OF LESS THAN 0.05%.
2. ULTIMATE COMPRESSIVE STRENGTHS AT 28 DAYS SHALL BE: Fc' = 2,500 PSI FOR SLAB ON GRADE AND CONVENTIONAL FOOTING, Fc' = 3,000 PSI FOR GRADE BEAMS, Fc = 4000 PSI FOR CAISSONS, FRICTION PILES, & STRUCTURAL SLAB (>3000 PSI- SPECIAL INSPECTION REQUIRED.)
3. CEMENT SHALL CONFORM TO ASTM C150 TYPE V. WITH MAXIMUM WATER/CEMENT RATIO OF 0.5 .
4. MAXIMUM SLUMP SHALL NOT EXCEED 5 INCHES.
5. CONCRETE SHALL BE MAINTAINED IN A MOIST CONDITION FOR A MINIMUM OF FIVE (5) DAYS AFTER PLACEMENT. ALTERNATE METHODS WILL BE APPROVED IF SATISFACTORY PERFORMANCE CAN BE ASSURED.
6. KEYED CONSTRUCTION JOINTS SHALL BE USED IN ALL CASES. ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY CLEANED, AND ALL LAITANCE SHALL BE REMOVED. ALL VERTICAL JOINTS SHALL BE THOROUGHLY WETTED AND SLUSHED WITH A COAT OF NEAT CEMENT IMMEDIATELY BEFORE PLACING NEW CONCRETE.
7. PIPES, OTHER THAN ELECTRICAL CONDUITS, SHALL NOT BE EMBEDDED IN STRUCTURAL CONCRETE, EXCEPT WHERE SPECIFICALLY APPROVED.
8. CEMENT SHALL CONFORM TO ASTM C150 TYPE V.

FOUNDATION:

1. FOUNDATION EXCAVATIONS SHALL BE EXAMINED AND CERTIFIED BY THE SOIL ENGINEER PRIOR TO THE PLACEMENT OF ANY REINFORCING STEEL OR CONCRETE.

2. ALL FOOTINGS MINIMUM EMBEDMENT, SHOWN ON PLAN, SHALL BE INTO APPROVED SOIL AS PER SOILS REPORT'S RECOMMENDATIONS

3. THE FOUNDATION DESIGN IS BASED ON SOIL REPORT;
DATED: JANUARY 16, 2026 BY: LK GEOTECHNICAL ENHINEERING, INC.

4. IF FOUNDATION EXCAVATION, UNCOVERS UNFAVORABLE SOIL A GEOTICHNICAL ENGINEER'S SERVICES SHALL BE REQUIRED.

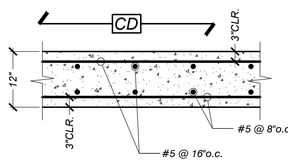
5. IF FOUNDATION EXCAVATION, UNCOVERS EXPANSIVE SOIL, THEN ALL NEW FOUNDATION SHALL HAVE 24" EMBEDMENT @ EXTERIOR FOOTING AND 18" EMBEDMENT @ INTERIOR FOOTING.

6. IF THERE IS AN EXCAVATION OF A GREATER DEPTH THAN ARE THE WALLS OR FOUNDATION OF AN ADJOINING BUILDING OR STRUCTURE AND LOCATED CLOSER TO THE PROPERTY LINE THAN THE DEPTH OF THE EXCAVATION, THE OWNER SHALL PROVIDE THE DEPARTMENT OF BUILDING AND SAFETY WITH EVIDENCE THAT THE ADJACENT PROPERTY OWNER OR OWNERS HAVE BEEN GIVEN 30-DAYS WRITTEN NOTICE BY CERTIFIED MAIL OF SUCH INTENT TO MAKE AN EXCAVATION PRIOR TO THE ISSUANCE OF THE PERMIT. THIS NOTICE SHALL STATE THE DEPTH OF SUCH EXCAVATION AND WHEN IT WILL COMMENCE.

LEGEND :

CD **12" THICK CONC. DECK (f'c= 3000 psi - DEPUTY INSPEC. IS REQUIRED)**

8" NEW CONCRETE WALL



SLAB ON GRADE: **4" THICK CONC. SLAB w/ #4 @ 12" o.c. E.W. o/ MIN. 15 MIL VISQUEEN o/ MIN. 4" THK. BASE OF 1/2" OR LARGER CLEAN AGGREGATE o/ APPROVED SOIL.**

NOTE: ALL FOUNDATION SHALL BE INTO BEDROCK AS PER SOILS REPORT.

REVISIONS	BY	DATE:

STRUCTURAL DESIGN PLUS, INC.
15063 Ventura Blvd, Suite 1205
Sherman Oaks, CA 91403
TEL 818.905.9871
FAX 818.905.9873
Email: designplus@sbcglobal.net

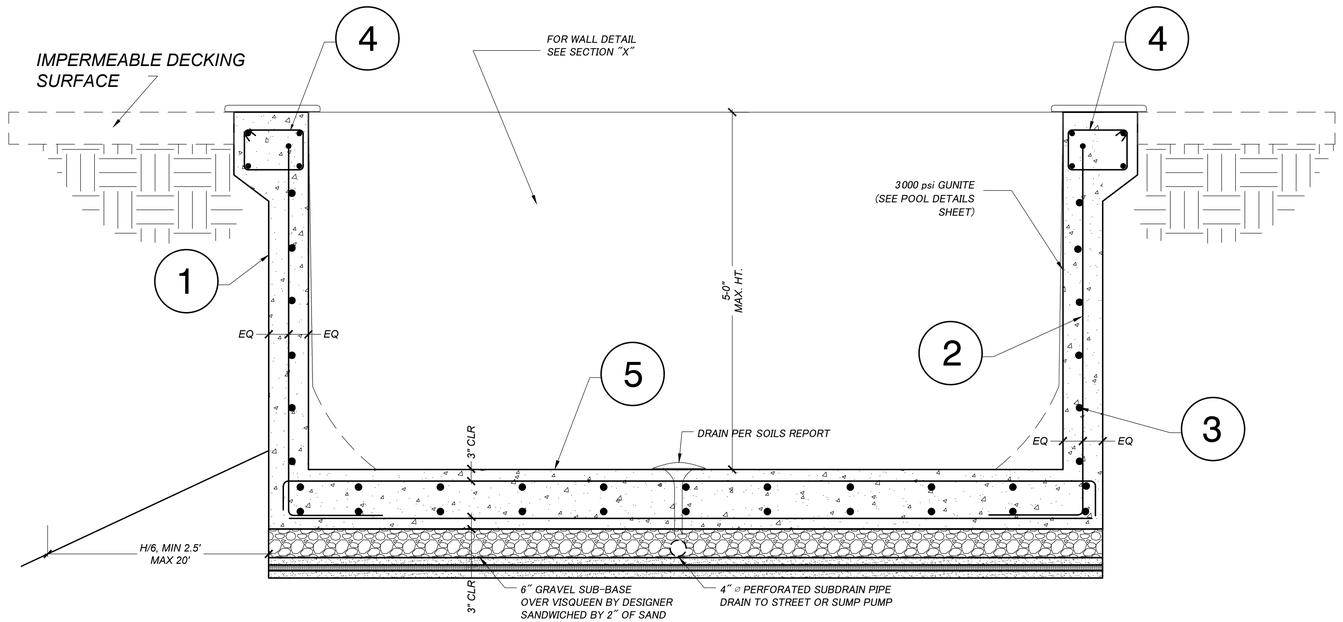
STRUCTURAL
CIVIL
DRAFTING
TITLE-24

SHEET NAME: **STRUCTURAL PLANS & DETAILS**

PROJECT: **PROPOSED POOL**
30051 ANDROMEDA LN,
MALIBU, CA 90265

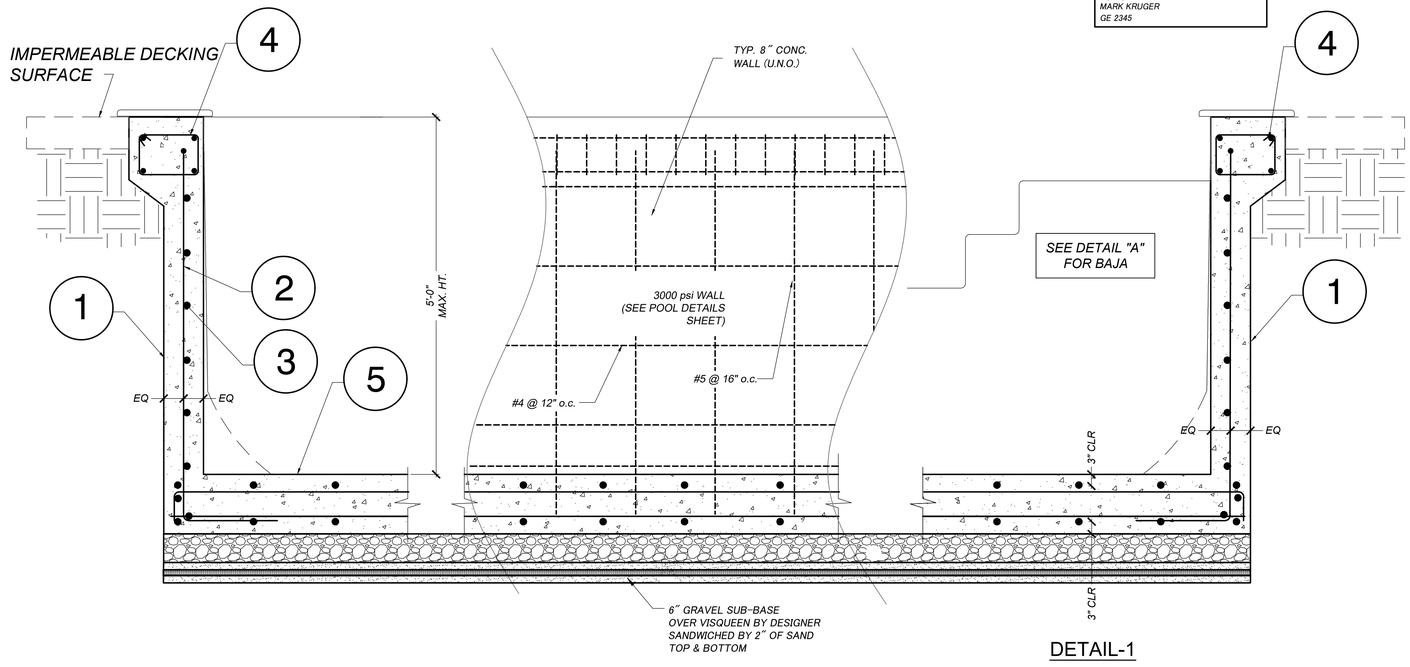
REGISTERED PROFESSIONAL ENGINEER DEAN ALMALLA No. C058024 Exp. 06.30.26 CIVIL STATE OF CALIFORNIA

DATE: **03.04.2026**
DRAWN BY:
PROJECT NO.: **23-PLA-01**
SCALE: **AS SHOWN**
SHEET NO.: **P2**



SECTION ELEVATION THRU "Y"

SCALE: NTS



SECTION ELEVATION THRU "X"

SCALE: NTS

SOILS REPORT:

LK GEOTECHNICAL ENGINEERING, INC.
PROJECT NO: 24-0424-3

10120 NATIONAL BLVD,
LOS ANGELES, CA 90034
(626) 328-4346
MARK KRUGER
GE 2345

THIS PLAN HAS BEEN REVIEWED BY LK GEOTECHNICAL ENGINEERING, INC. AND APPEARS TO BE IN GENERAL CONFORMANCE WITH THE RECOMMENDATIONS IN OUR REPORT DATED 1/12/26 &previous
WE MAKE NO REPRESENTATION AS TO THE ACCURACY OF ANY PORTION OF THE DESIGN PREPARED BY OTHERS.
SOILS ENGINEER:
ENGINEERING GEOLOGIST:
DATE REVIEWED: 3/7/2026

REGISTERED PROFESSIONAL ENGINEER CHI HSIN LIN No. 2921 GEOTECHNICAL STATE OF CALIFORNIA
PROFESSIONAL GEOLOGIST MARK KRUGER No. 2345 CERTIFIED ENGINEERING GEOLOGIST STATE OF CALIFORNIA

DETAIL-1

SCALE: NTS

NOTE:
IF THERE ARE DISCREPANCIES IN THE PLANS OR DETAILS, CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD FOR CLARIFICATION PRIOR TO BIDDING AND/OR INSTALLATION OF ANY MEMBER.

NOTES :

1- SEE SHT. S-1 FOR STRUCTURAL NOTES.

2- STRUCTURAL DETAILS ARE NOT TO SCALE AND ARE INTENDED TO SHOW METHOD OF CONNECTING STRUCTURAL ELEMENTS ONLY. SEE ARCHITECTURAL PLANS, SECTIONS AND DETAILS FOR EXACT DIMENSIONS, FINISHES, AND NON STRUCTURAL ELEMENTS.

3- CONCTRACTOR SHALL BE RESPONSIBLE FOR SHORING & SHORING DESIGN.

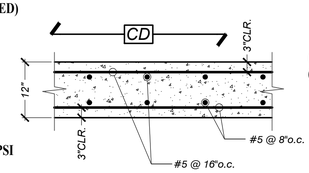
4- PLANS & CONSTRUCTION SHALL COMPLY WITH RECOMMENDATIONS OF ALL SOILS REPORTS, APRROVAL LETTERS, AND GPI REPORT.

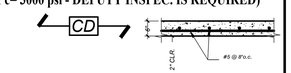
5- THE SOILS ENGINEER IS TO APPROVE THE KEY OR BOTTOM AND LEAVE A CERTIFICATE ON THE SITE FOR THE GRADING INSPECTOR. THE GRADING INSPECTOR IS TO BE NOTIFIED BEFORE ANY GRADING BEGINS AND, FOR BOTTOM INSPECTION, BEFORE FILL IS PLACED. FILL MAY NOT BE PLACED WITHOUT APPROVAL OF THE GRADING INSPECTOR.

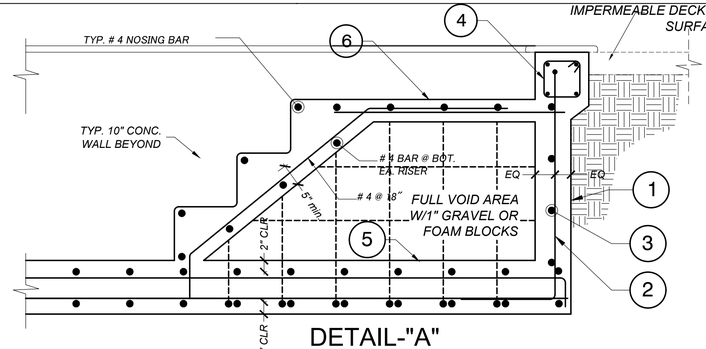
6- IF THERE ARE DISCREPANCIES IN THE PLANS OR DETAILS, CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD FOR CLARIFICATION PRIOR TO BIDDING AND/OR INSTALLATION OF ANY MEMBER.

LEGEND :

1. 8" CONC. WALL (f'c= 3000 psi - DEPUTY INSPEC. IS REQUIRED)
2. #5 @ 16" o.c.
3. #4 @ 12" o.c.
4. 12" WDx12" DP CONC. BOND BEAM w/2-#4 T&B & #3 TIES @ 6" o/c FC'= 3,000 PSI
5. CD 12" THICK CONC. DECK (f'c= 3000 psi - DEPUTY INSPEC. IS REQUIRED)
6. 6" THICK CONC. DECK (f'c= 3000 psi - DEPUTY INSPEC. IS REQUIRED)

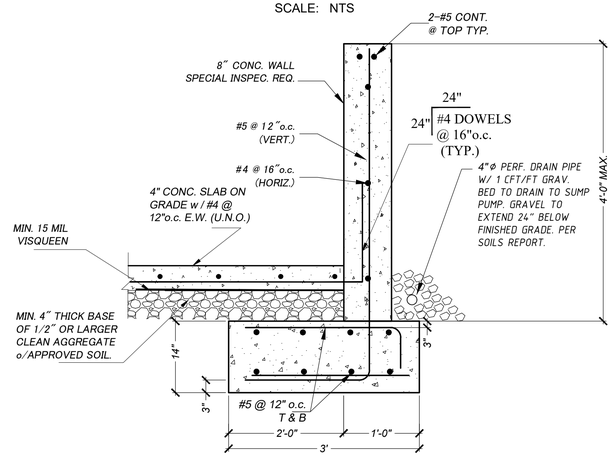






DETAIL-"A"

SCALE: NTS



POOL EQUIPMENT WALL DETAIL

SCALE: NTS

2

REVISIONS | BY | DATE:

STRUCTURAL DESIGN PLUS, INC.
STRUCTURAL
CIVIL
DRAFTING
TITLE-24

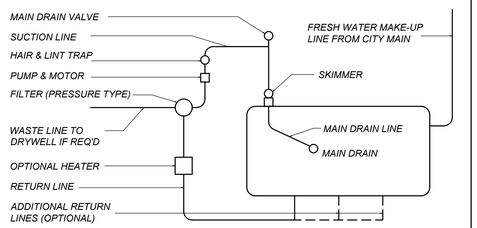
15053 Ventura Blvd, Suite #205
Sherman Oaks, CA 91403
TEL 818.905.9877
FAX 818.905.9873
Email: devdpplus@sbcglobal.net

SHEET NAME: STRUCTURAL PLANS

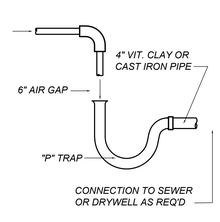
PROJECT:
PROPOSED POOL
30051 ANDROMEDA LN, MALIBU, CA 90265

REGISTERED PROFESSIONAL ENGINEER DEAN ALMALEH No. C058024 Exp. 06.30.26 CIVIL STATE OF CALIFORNIA

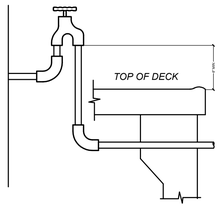
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DRAWN BY:
PROJECT NO.: 23-PLA-01
SCALE: AS SHOWN
SHEET NO.: **P3**



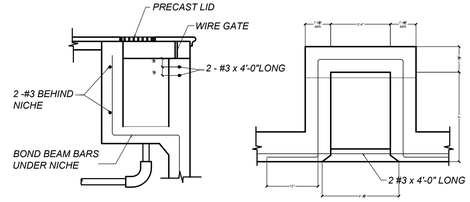
SCHEMATIC PLUMBING DETAIL (1)



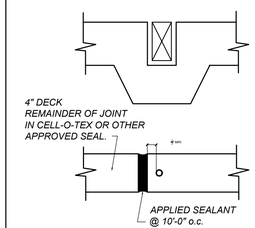
DRYWELL/SEWER CONN (2)



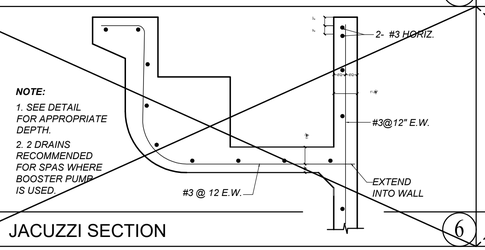
FRESH WATER INLET (3)



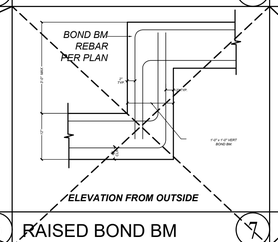
SKIMMER NICHE SECTION/ PLAN (4)



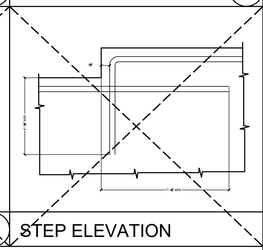
DECK JOINTS EXP. SOIL (5)



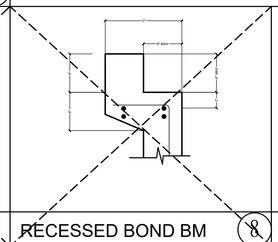
JACUZZI SECTION (6)



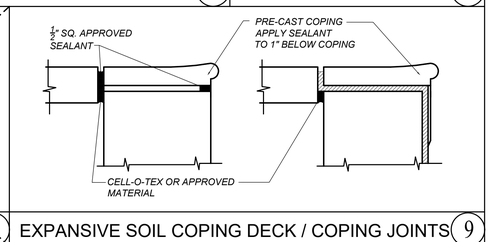
RAISED BOND BM (7)



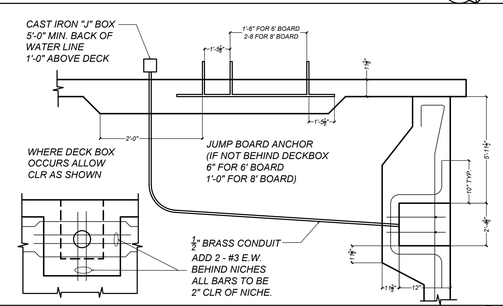
STEP ELEVATION (8)



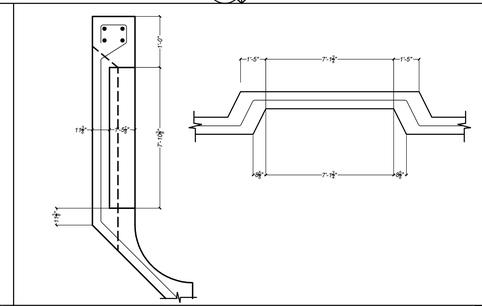
RECESSED BOND BM (8)



EXPANSIVE SOIL COPING DECK / COPING JOINTS (9)



JUMP BOARD ANCHOR & RECESSED LIGHT NICHE (10)

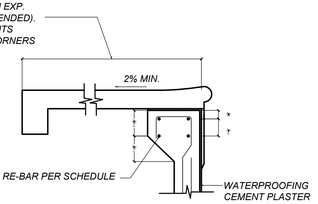


LADDER / STEP SECTION / PLAN (11)

LENGTH OF BOND BM	STND SOIL	EXPANSIVE SOIL
LESS THAN 36'	3 - #3	3 - #4
36' TO 40'	3 - #4	4 - #4
40' TO 45'	4 - #4	5 - #4
45' TO 50'	5 - #4	6 - #4

50' OR MORE USE 6 #4 FOR ENTIRE POOL

4'-0" TO 5'-0" MIN. IN EXP. SOIL (6'-0" RECIMMENDED). PROVIDE EXP. JOINTS @ 10'-0" o.c. & @ CORNERS OF DECK.



THIS PLAN HAS BEEN REVIEWED BY LK GEOTECHNICAL ENGINEERING, INC. AND APPEARS TO BE IN GENERAL CONFORMANCE WITH THE RECOMMENDATIONS IN OUR REPORT DATED: 1/12/26 &previous
WE MAKE NO REPRESENTATION AS TO THE ACCURACY OF ANY PORTION OF THE DESIGN PREPARED BY OTHERS.
SOILS ENGINEER:
ENGINEERING GEOLOGIST:
DATE REVIEWED: 3/7/2026

REGISTERED PROFESSIONAL ENGINEER CHI HSIN LIN No. 2921 GEOTECHNICAL STATE OF CALIFORNIA

PROFESSIONAL GEOLOGIST MARK KRUGER No. 3345 CERTIFIED ENGINEERING GEOLOGIST STATE OF CALIFORNIA

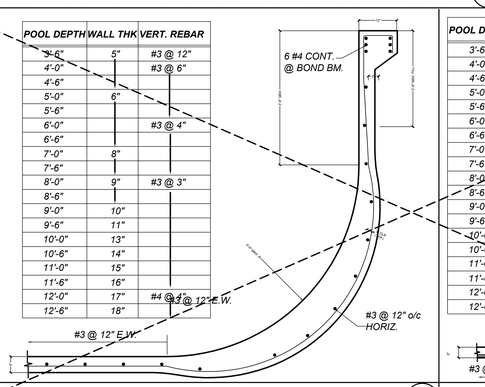
BOND BEAM SCHEDULE / DETAIL (12)

GENERAL NOTES

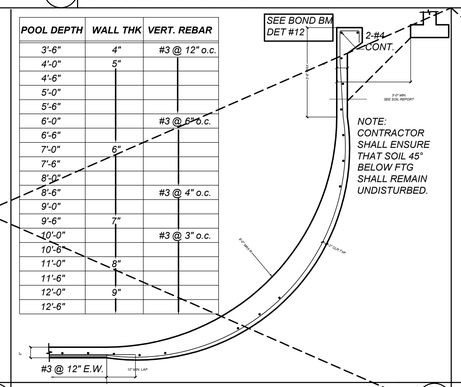
1. POOLS MAY NOT BE PLACED IN REQUIRED FRONT OR SIDE YARDS.
2. ALL SURFACE WATER SHALL DRAIN AWAY FROM THE POOL.
3. BEFORE FILLING THE POOL, IT SHALL BE ENCLOSED WITH AN APPROVED FENCE WITH SELF CLOSING GATE, EQUIPPED WIT A SELF CLOSING LATCH.
4. GUNITE SHALL BE MACHINE-MIXED Fc' = 3000 psi. IT SHALL CONSIST OF 1 PART PORTLAND CEMENT, ASTM DESIGN. C150, 4.5 PARTS SAND, AND 3.5 GALLONS WATER PER SACK OF CEMENT. GUNITE SHALL BE KEPT CONSTANTLY WET FOR 14 DAYS MINIMUM, BY OWNER.
5. POOL SHALL NOT BE LOCATED WHERE GROUND WATER EXISTS ABOVE BOTTOM OF POOL UNLESS HYDROSTATIC VALVE IS INSTALLED AT LOW POINT IN POOL. NO FREE WATER IS PERMITTED IN POOL DURING CONSTRUCTION.
6. POOL MAY NOT BE LOCATED CLOSER TO THE BOTTOM OF FOOTINGS OF BUILDINGS OR OTHER SURCHARGE LOADINGS UP TO A LIMIT OF 4'-0" EXCEPT AS DETAILED IN STANDARD PLAN.
7. SPRINGBOARD NOT PERMITTED IN WATER LESS THAN 7'-0" DEEP.
8. REINFORCING BARS SHALL BE DEFORMED, INTERMEDIATE GRADE, AND CONFORM TO ASTM DESIGN. A615 GRADE 60 BARS TO LAP 30 DIAMETER MINIMUM AT SPLICES. F's = 20,000 psi.

LOS ANGELES CITY REQUIREMENTS

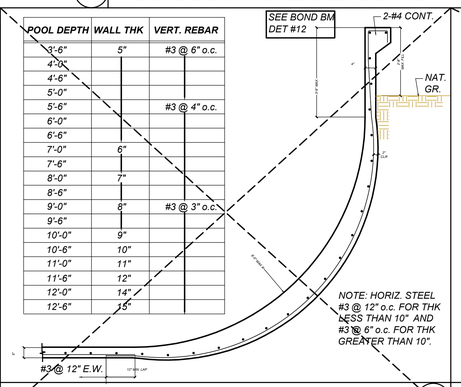
1. GROUND WATER EXISTS IN AREAS DES. WATER TABLE ON LA CITY MAP.
2. PROVIDE CONTINUOUS INSPECTION OF GUNITE BY DEPUTY BUILDING INSPECTOR.
3. GRADING INSPECTION SHALL BE NOTIFIED OF LOCATION OF SOIL AREA BEFORE STARTING EXCAVATION IN LA CITY.
4. ELECTRICAL INSPECTION CLEARANCE FOR GROUNDING PRIOR TO BUILDING INSPECTION APPROVAL OF STEEL REINFORCING.
5. SEPARATE PERMITS REQUIRED FOR PLUMBING AND ELECTRICAL WORK.
6. PLUMBING DIVISION APPROVAL REQUIRED WHERE SEWERS ARE NOT AVAILABLE.
7. DRY WELLS IN EXPANSIVE SOILS MUST BE AT LEAST 10'-0" FROM POOL & 10'-0" DEEP MINIMUM. LINE WITH MASONRY HAVING SOLID MORTAR JOINT TO A POINT 2'-0" BELOW EXPANSIVE SOIL. DRY WELLS ARE NOT PERMITTED IN GRADING AREAS.
8. HEALTH DEPARTMENT APPROVAL REQUIRED PRIOR TO ISSUANCE OF PERMIT FOR ANY PUBLIC POOL.
9. EQUIPMENT NOT ALLOWED IN FORNT OF SIDE YARD.
10. IN HILLSIDE GRADING AREAS, PLANS SHALL BE SUBMITTED TO GRADING DIVISION PRIOR TO PLAN CHECK.



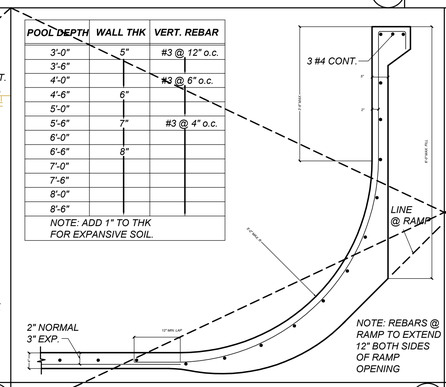
DEEP END EXPANSIVE SOIL, NO DECK (13)



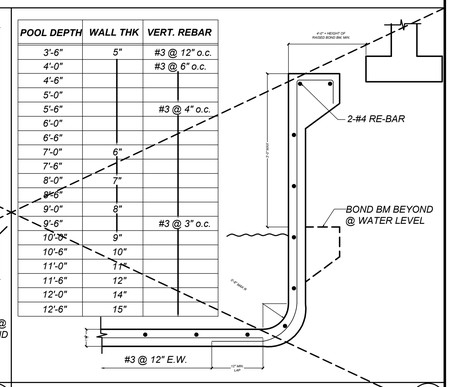
DEEP END, BLDN'G. SURCHARGE (14)

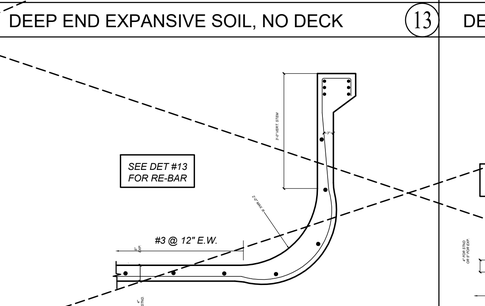


DEEP END, EXPANSIVE SOILS (15)

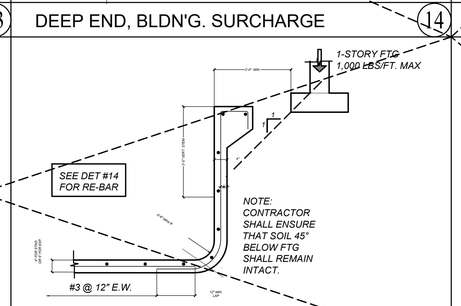


RAISED BOND BM, NON-EXPANSIVE (16)

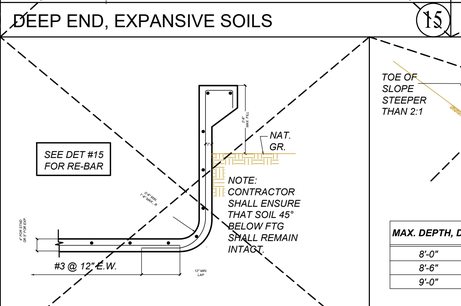




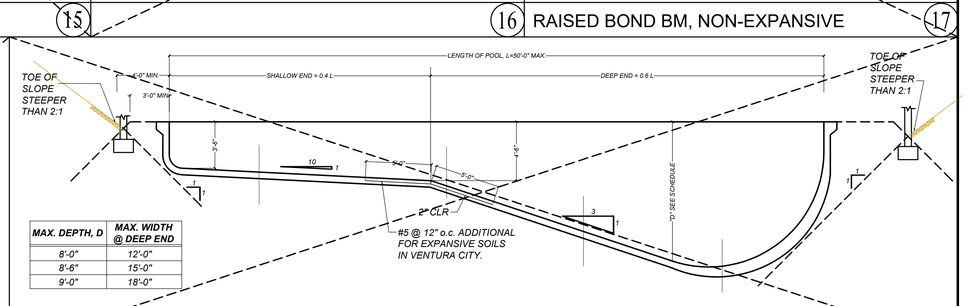
SHALLOW END EXPANSIVE SOIL,NO DECK (18)



SHALLOW END, BLDN'G. SURCHARGE (19)



SHALLOW END, EXPANSIVE SOILS (20)



MAX. DEPTH, D	MAX. WIDTH @ DEEP END
8'-0"	12'-0"
8'-6"	15'-0"
9'-0"	18'-0"

LONGITUDINAL SECTION @ CENTER OF POOL (21)

REVISIONS	BY	DATE:

STRUCTURAL DESIGN PLUS, INC.
15053 Ventura Blvd. Suite #205
Sherman Oaks, CA 91403
TEL 818.905.9873
FAX 818.905.9873
Email: dlcopplus@sbcglobal.net
STRUCTURAL
CIVIL
DRAFTING
TITLE-24

SHEET NAME: SECOND FLOOR FRAMING PLAN

PROJECT: PROPOSED POOL
30051 ANDROMEDA LANE
MALIBU, CA

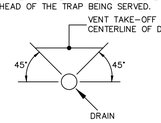
REGISTERED PROFESSIONAL ENGINEER DEAN ALMALUEL No. C058024 Exp. 06.30.26 CIVIL STATE OF CALIFORNIA

DATE:	03.04.2026
DRAWN BY:	
PROJECT NO.:	23-PLA-01
SCALE:	AS SHOWN
SHEET NO.:	P4

PLUMBING NOTES

1. THE PLUMBING CONTRACTOR SHALL OBTAIN ALL PERMITS REQUIRED FOR THE PLUMBING WORK UNLESS PROVIDED BY OWNER.
2. ALL WORK SHALL CONFORM TO ALL LOCAL CODES; THE UNIFORM PLUMBING CODE, HEALTH AGENCY REGULATIONS, STATE BUILDING CODE REQUIREMENTS FOR ACCESS TO THE HANDICAPPED AND STATE ENERGY CONSERVATION REQUIREMENTS AND ALL OTHER GOVERNING LAWS OR CODES.
3. STRAP TANKS SECURELY TO STRUCTURE.
4. INSULATE ALL HOT WATER PIPING AS REQUIRED BY C.P.C.–2022. (1)
5. LAVATORIES IN REST ROOMS OF PUBLIC FACILITIES SHALL BE EQUIPPED WITH:
   A. OUTLET DEVICES THAT LIMIT THE FLOW OF HOT WATER (MIN. 120 DEG.F) TO A MAXIMUM OF 0.5 GALLONS PER MINUTE, OR WITH;
   B. SELF–CLOSING FAUCETS THAT LIMIT DELIVERY TO A MAXIMUM OF 0.25 GALLONS OF HOT WATER FOR RECIRCULATING SYSTEMS AND TO A MAXIMUM OF 0.50 GALLONS FOR NON–RECIRCULATING SYSTEMS .
6. CROSS SECTIONAL AREA OF VENTS THRU ROOF SHALL NOT BE LESS THAN LARGEST REQUIRED BUILDING SEWER .
7. PROVIDE CLEAN–OUTS ON ALL BRANCHES OVER 5'–0".
8. SIZE OF TRAPS AND TRAP ARMS SHALL COMPLY WITH 2022 C.P.C.
9. PROVIDE VACUUM BREAKERS ON ALL HOSE BIBBS.
10. PROVIDE Shutoff VALVE ON COLD WATER SIDE OF WATER HEATER
11. COORDINATE SIZE AND LOCATION OF METER, INCOMING WATER AND SEWER LINES WITH LOCAL UTILITY AGENCIES. NOTIFY OWNER'S REPRESENTATIVE OF THE UTILITY HOOK–UP FEES OR ASSESSMENT COSTS AS SOON AS THEY CAN BE DETERMINED. NOTIFY OWNER'S REPRESENTATIVE AT ONCE IF PUBLIC SEWER OR WATER SERVICE IS NOT AVAILABLE TO THE SITE.
12. THE PLUMBER SHALL CONNECT ALL WATER PIPING TO FOOD SERVICE EQUIPMENT, ICE MAKER, HAND SINK AND SERVICE SINK. FURNISH AND INSTALL ALL FAUCETS AND CONNECT ALL PIPING AND DRAINS. FURNISH AND INSTALL THE SHORT HOSE AND HANGAR REQUIRED AT THE MOP SINK.
13. REFER TO THE FIXTURE SCHEDULE FOR EQUIPMENT LOCATION AND SPECIFICATIONS. REFER TO THE HVAC, WALK–IN COOLER AND ROOF PLANS FOR LOCATION AND SIZE OF Condensate DRAINS.
14. WHERE PRACTICAL LOCATE ALL WATER LINES OUT OF THE CONCRETE FLOOR SLAB. INSTALL ABOVE CEILING WITH RISERS WITHIN WALLS TO FACILITATE FUTURE PLUMBING WORK INSTALLATION.
15. LOCATE ALL PLUMBING VENTS A MINIMUM OF 10' HORIZ. OR MINIMUM 3' ABOVE MECH. AIR INTAKES AT AIR COND. UNIT S & HOOD MAKE UP AIR BLOWER.

    INVOLVED TRADES, EQUIPMENT INSTALLERS AND CONTRACTOR'S. THE PLUMBING CONTRACTOR SHALL PICK UP AFTER HIS OWN WORK AND EACH DAY LEAVE THE FACILITY IN A BROOM CLEAN CONDITION.
17. SERVICE SINK AND/OR FLOOR SINKS SHALL ACCEPT CONDENSATION DISCHARGE FROM ROOF MOUNTED AIR CONDITIONER AND COOLER FAN UNIT, AND DISCHARGE FROM WATER HEATER PRESSURE RELIEF VALVE. SINK TO BE USED SHALL BE DETERMINED.
18. FLOOR SINKS INTENDED FOR FUTURE USE (NOT KNOWN AT THIS TIME) SHALL HAVE A TRAP PRIMER LINE CONNECTED FROM DRAIN LINE TO COLD WATER LINE WITH TRAP PRIMER.
19. FABRICATOR TO FURNISH AND INSTALL ESCUTCHEON PLATES AT EVERY LOCATION WHERE A PIPE PASSES THRU A WALL.
20. ALL WASTE AND VENT LINES TO BE CAST IRON PIPE.
21. EACH FIXTURE TRAP SHALL NOT EXCEED 36" FOR 1 1/2" o LINE, 60" FOR 2" o LINE OR 72" FOR 3" % LINE.
22. UNLESS PROHIBITED STRUCTURALLY, EACH VENT SHALL RISE VERTICALLY NOT LESS THAN 6" ABOVE FINISHED FLOOR.
23. WHERE VENTS CONNECT TO A HORIZONTAL DRAINAGE PIPE, EACH VENT PIPE SHALL HAVE ITS INVERT TAKEN OFF ABOVE CENTERLINE OF SUCH PIPE AND AHEAD OF THE TRAP BEING SERVED.



    IS MAINTAINED IN FRONT OF CLEAN–OUTS AT 12" FOR 2" o LINE AND 18" GOT 3" o LINE.
25. HORIZONTAL DRAINAGE PIPING SHALL MAINTAIN A UNIFORM SLOPE OF 1/4" PER FOOT AND PROVIDE A CLEAN–OUT FOR EACH AGGREGATE CHANGE OF DIRECTION EXCEEDING 135.
26. VENT LINES EXTENDING TO ROOF SHALL EXTEND THROUGH ITS FLASHING AND SHALL TERMINATE VERTICALLY NOT LESS THAN 6" ABOVE THE ROOF NOR LESS THAN 12" FROM ANY VERTICAL SURFACE.
27. ALL WASTE AND VENT LINE SUNDER BUILDING TO BE SUPPLIED AND INSTALLED BY FABRICATOR.
28. ALL LINES THAT ARE DROPPED BELOW THE BASE FRAME WILL BE REMOVED FOR SHIPPING, REINSTALLED AND TESTED IN THE FIELD BY GENERAL CONTRACTOR.
29. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS AT THE SITE, NOTIFY SHELL REPRESENTATIVES OF ANY DISCREPANCIES BETWEEN SITE AND PLANS, PRIOR TO COMMENCING WORK.
30. ALL BACKFILL OF UTILITY TRENCHES SHALL BE CLEANED WASHED SAND OR PEA GRAVEL.
31. CONTRACTOR SHAL FEILD VERIFY EXACT DEPTH AND LOCATION OF EXISTING SEWER LATERAL PRIOR TO EXCAVATION OF FOUNDATIONS AND TRENCHES.
32. SLOPE SEWER LINE 1/4" PER MINIMUM TO BUILDING.
33. POT SINKS, SCULLERY SINKS, DISHWASHER SINKS, SILVERWARE SINKS, COMMERCIAL DISHWASHING MACHINES AND OTHER SIMILAR FIXTURES SHALL BE CONNECTED DIRECTLY TO THE DRAINAGE SYSTEM AS REQUIRED BY C.P.C. SECTION 703.3

CONSTRUCTION NOTES:

1. ALL REQUIRED CLEANOUTS SHALL BE INSTALLED AS PER SEC. 707.0 & 719.0 OF 2022 CPC.
2. EACH PLUMBING VENT SHALL TERMINATE NOT LESS THAN TEN (10) FEET FROM OR AT LEAST THREE (3) FEET ABOVE ANY WINDOW, DOOR, OPENING, AIR INTAKE OR VENT SHAFT.
3. ALL PROPOSED FIXTURES SHOULD BE WATER CONCERVING PLUMBING FIXTURES. (CIVIL CODE SECTION 1101.5).
4. CONDENCING DRAIN FOR WALK–IN FREEZER SHALL NOT BE DIRECTLY CONNECTED TO THE SEWER. (N/A)
5. AIR CONDITIONING CONDENSATE DRAIN, SIZE AND POINT OD DISCHARGE SHOULD BE PROVIDED IN COMPLIANCE WITH TABLE 814.1 OF THE PLUMBING CODE
6. FOOD PREPARATION SINKS SHALL BE INDIRECTLY CONNECTED TO THE DRAINAGE SYSTEM BY MEANS OF AN AIRGAP.
7. INDIRECT WASTE PIPING FROM FOOD HANDLING FIXTURES OR EQUIPMENT SHALL BE SEPARATELY PIPED BY MEANS OF AN AIRGAP TO THE INDIRECT WASTE RECEPTOR AND SHALL NOT BE COMBINED WITH ANY OTHER INDIRECT WASTE PIPING.
8. POT SINKS, SCULLERY SINKS & COMMERCIAL DISHWASHING MACHINES AND OTHER SIMILAR FIXTURES SHALL BE CONNECTED DIRECTLY TO THE DRAINAGE SYSTEM PER C.P.C. SECTION A FLOOR DRAIN SHALL BE PROVIDED UPSTREAM OF THE FIXTURE CONNECTION AND ADJACENT TO THE FIXTURE.
9. POTABLE WATER SUPPLY TO BEVERAGE DISPENSERS, CARBONATORS, OR COFFEE MACHINES SHALL BE PROTECTED BY AN AIR GAP OR VENTED BACKFLOW PREVENTER IN ACCORDANCE WITH ASSE 1022
10. NEW OR REPAIRED POTABLE WATER SYSTEMS SHALL BE DISINFECTED PRIOR TO USE ACCORDING TO THE METHOD SET IN THE SECTION 609.9 OF THE CPC
11. WATER HEATER SHALL BE STRAPPED TO THE WALL IN TWO PLACES. ONE IN THE UPPER 1/3 OF THE TANK AND ONE IN THE LOWER 1/3 OF THE TANK. THE LOWER POINT SHALL BE A MINIMUM OF 4 INCHES ABOVE CONTROLS.

PLUMBING CONSTRUCTION NOTES

CONTRACTORS ARE RESPONSIBLE FOR ALL WORK REGARDLESS OF THE LOCATION OF THE INFORMATION IN THE DOCUMENTS.

REVIEW ALL DRAWINGS AND SPECIFICATIONS BEFORE BEGINNING ANY WORK. NOTIFY THE ARCHITECT OF ANY DISCREPANCIES IN THE DRAWINGS, SPECIFICATIONS, OR ANY EXISTING CONDITIONS.

CONTRACTOR SHALL GIVE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, CODES, RULES, AND REGULATIONS BEARING ON THE CONDUCT OF THE WORK. IF CONTRACTOR OBSERVES THAT ANY PORTION OF THE CONTRACT DOCUMENTS ARE AT VARIANCE THEREWITH, IT SHALL PROMPTLY NOTIFY THE DESIGNER AND ARCHITECT IN WRITING, AND ALL NECESSARY CHANGES SHALL BE MADE IN ACCORDANCE WITH THE GENERAL CONDITIONS.

THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING ALL DIMENSIONS AND EXISTING CONDITIONS THEREON BEFORE COMMENCING WORK. REPORT ANY DISCREPANCIES AND/OR POTENTIAL PROBLEMS TO THE ARCHITECT PRIOR TO PROCEEDING WITH AFFECTED WORK.

IN CASE OF CONFLICTS WITHIN CONTRACT DOCUMENTS, THE MOST RESTRICTIVE REQUIREMENTS SHALL GOVERN, UNLESS CONTRACTOR IS SPECIFICALLY DIRECTED OTHERWISE BY ARCHITECT IN WRITING. DRAWINGS ARE DIAGRAMMATIC AND INDICATE ONLY THE GENERAL ARRANGEMENT OF MANY SYSTEMS. ALL EXISTING SERVICES ARE NOT SHOWN ON THE DRAWINGS. PROVIDE ALL ITEMS (OFFSET, TRANSITIONS, FITTINGS, ETC.) REQUIRED AT NO ADDITIONAL COST TO THE OWNER TO ACCOMMODATE NEW WORK.

THE MAJORITY OF NEW WORK IS SHOWN ON THE DISCIPLINE DRAWINGS. HOWEVER, SOME WORK MAY BE REQUIRED OUTSIDE THE CONTRACT AREA TO ACCOMMODATE NEW WORK. THE CONTRACTOR IS INSTRUCTED TO REVIEW ALL DRAWINGS, SPECIFICATIONS AND SITE TO FULLY REALIZE THE ENTIRE NEW WORK SCOPE PRIOR TO BIDDING, AS NO ADDITIONAL PAYMENTS WILL BE MADE REGARDING THIS TYPE OF WORK. SEE RELATED ARCHITECTURAL, PLUMBING, MECHANICAL, ELECTRICAL, STRUCTURAL, AND FIRE PROTECTION DRAWINGS.

ALL WORK TO COMPLY WITH 2022 CALIFORNIA PLUMBING CODE, 2022 ENERGY EFFICIENCY STANDARDS, 2022 CALIFORNIA GREEN BUILDING STANDARDS, AND ANY LOCAL CITY AMENDMENTS TO THE CODES. (1)

FIELD VERIFY ALL CONDITIONS

DESIGN DRAWINGS ARE SCHEMATIC. THIS CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING OR AWARD OF CONTRACT TO INSPECT EXISTING FIELD CONDITIONS. THIS CONTRACT SHALL INCLUDE ALL LABOR AND MATERIALS NECESSARY FOR FIELD MODIFICATIONS DUE TO EXISTING CONDITIONS.

THE CONTRACTOR SHALL CONTACT THE ARCHITECT, ENGINEER OR OWNER PRIOR TO BIDDING FOR INTERPRETATIONS AND CLARIFICATIONS OF THE DESIGN AND INCLUDE IN HIS BID ALL COSTS TO MEET THE DESIGN INTENT. CLARIFICATIONS MADE BY THE ARCHITECT, ENGINEER OR OWNER AFTER BIDDING WILL BE FINAL AND SHALL BE IMPLEMENTED AT CONTRACTORS COST.

BIDDING CONTRACTORS SHALL HAVE A WORKING KNOWLEDGE OF LOCAL CODES AND ORDINANCES AND SHALL INCLUDE IN THEIR BIDS THE COSTS FOR ALL WORK INSTALLED IN STRICT ACCORDANCE WITH GOVERNING CODES, THE PLANS AND SPECIFICATIONS NOT WITHSTANDING. THE CONTRACTOR SHALL ALERT ARCHITECT, ENGINEER OR OWNER OF ANY APPARENT DISCREPANCIES BETWEEN GOVERNING CODES AND DESIGN INTENT.

SOUND ATTENUATION NOTES

1. All opening or penetrations into party walls or floor/ceiling shall be caulked and sealed with approved acoustical caulking.
2. Openings not specified in the architectural plans are prohibited in any party wall or floor/ceiling.
3. All wall penetrations for plumbing lines shall be as small and neat as possible and when rough plumbing is completed all openings shall be completely sealed with acoustical caulking.
4. Sleeves shall be accurately located and placed in forms before concrete is poured. Sleeves shall be sized for proper fit of pipe.
5. All copper water lines less than 1" shall be isolated from the building with Acousto–Plum isolators by Specialty Products Company. Conventional pipe straps are not acceptable.
6. All waste stacks and copper water lines 1" and larger shall be isolated from all point of the contact with the structure of the building with two thickness of 1/4" heavy plumber's felt. There shall be no point of contact any water carrying plumbing line and the structure including studs, gypboard, plates, headers or any other part of the building.
7. All plumbing traps shall be Deep Seal Traps.
8. All water lines and waste stacks shall be located in the centers of holes drilled for them.
9. All stud bays in all walls containing water pipes or waste stacks shall contain a 3–1/2" layer of fiberglass insulation faced on not more than one side (.75 pcf)
10. All rough–in piping shall result in a free and clear 1/2" minimum, clearance from all studs, plates and drywall surfaces. No piping system shall contact another system, electrical conduit or boxes. In no case shall packing be forced between any pipe and the structural components (studs, drywall, joist, flooring, etc.) to prevent contact.
11. All tub/shower and lavatory valves shall produce an applicable noise level of 20 dBA or less when measured in accordance with ISO Standard 3822–1 at pressure of 50 psi.
12. All voids around pipes shall be packed with rock wool or equivalent sound–deadening material, and all pipes shall be wrapped at all points of contact with any wood or steel members and strap hangers.
13. All water pipes to sinks and laundry facilities shall be installed with water hammer arrestors.
14. Provide accoustical insulation for all pipes in furrings and in bathrooms.

POOL REQUIREMENT NOTES:

POOL COPING SHALL BE WEDGED SHAPED TO AVOID FLAT SURFACES SUITABLE FOR SITTING OR WALKING.

DROWNING PREVENTION SAFETY: AN INTERMEDIATE ENCLOSURE BETWEEN THE HOUSE AND THE SWIMMING POOL THAT MEETS THE REQUIREMENTS OF AX100.3 AND ISOLATES THE SWIMMING SPA FROM THE PRIVATE SINGLE–FAMILY HOME

AN ALARM THAT WHEN PLACED IN A SWIMMING POOL/SPA, WILL SOUND UPON DETECTION OF ACCIDENTAL OR UNAUTHORIZED ENTRANCE INTO THE WATER. THE ALARM SHALL MEET AND BE INDEPENDENTLY CERTIFIED TO ASTM STANDARD F2208. OTHER MEANS OF PROTECTION, IN ACCORDANCE WITH CBC 3109.2. (1)

ALL DOMESTIC HOT WATER PIPING SHALL BE THERMALLY INSULATED FROM SOURCE TO POINT OF USE PER C.En.C. & S.M.M.C."5.

PLUMBER TO FURNISH AND INSTALL ALL SUPPLIES, STOPS, TRAPS, TRAP PRIMERS, VALVES, FAUCET, SHOCK–STOPS, REGULATORS AND BACKFLOW PROTECTION – PER. CODE – TO OWNERS FURNISHED SINKS AND EQUIPMENT.

PLUMBER TO FURNISH AND INSTALL ALL TRAP PRIMERS AND/OR WATER HAMMER ARRESTORS TO EACH FIXTURE AS REQUIRED PER CODE OR LOCAL MUNICIPALITY.

PLUMBING CONTRACTOR TO VERIFY AND PROVIDE TEMPERATURE MIXING VALVE FOR SINKS AND LAVATORIES AS REQUIRED

THE PLUMBING CONTRACTOR SHALL COMPLY WITH ALL STATE AND CITY LAWS, ORDINANCES, RULES AND REGULATIONS PERTAINING TO THE CONSTRUCTION OF THIS OFFICE.

THE DRAWINGS INDICATE THE GENERAL LAYOUT REQUIREMENTS FOR EQUIPMENT, FIXTURES, PIPING, ETC. FINAL LAYOUT SHALL BE GOVERNED BY ACTUAL FIELD CONDITIONS WITH ALL MEASUREMENTS VERIFIED AT THE SITE.

ALL PLUMBING FIXTURES ARE SUBJECT TO LOCAL CITY OF WATER CONSERVATION ORDINANCE

ALL COLD AND HOT WATER TO BE SANITIZED AS REQUIRED PER 2022 CPC

ALL WORK SHOULD COMPLY WITH CALIFORNIA GREEN REQUIREMENT

ALL WORK SHOULD COMPLY WITH ASSE 1070 REQUIREMENT

ALL FIXTURES AND DEVICES SHOULD BE LISTED FOR THEIR INTENDED USE

ALL FITTINGS AND FIXTURES SHOULD COMPLY WITH AB 1953 NO LEAD REQUIREMENT

ALL PLUMBING WORK SHALL COMPLY WITH 2022 CALIFORNIA PLUMBING CODE.

PLUMBING CONNECTIONS

PLUMBING CONTRACTOR TO VERIFY ALL EQUIPMENT PLUMBING ROUGH–INS BEFORE BEGINNING WORK.

CONTRACTOR SHALL VERIFY EXACT LOCATIONS AND DEPTH OF EXISTING LINES, LATERALS, AND WYES BEFORE STARTING. SHOULD IT BE NECESSARY TO REROUTE LINES DUE TO CONDITIONS FOUND ON THE SITE OR IF INDICATED POINTS OF CONNECTIONS CANNOT BE MADE TO THE LINES AS FOUND, THE CONTRACTOR SHALL, BEFORE CONTINUING, NOTIFY THE ARCHITECT PRIOR TO INSTALLING ANY WORK WHICH MAY BE AFFECTED.

PLUMBING LEGEND

SYMBOL	ABBREV.	DESCRIPTION
	S. OR W.	SOIL OR WASTE ABOVE FLOOR
	S. OR W.	SOIL OR WASTE BELOW FLOOR
SD	S.D.	STORM DRAIN
OD	O.D.	OVERFLOW DRAIN
	V.	VENT
·	C.W.	COLD WATER
··	H.W.	HOT WATER
···	H.W.R.	HOT WATER RETURN
IW	I.W.	INDIRECT WASTE
ICW	I.C.W.	INDUSTRIAL COLD WATER
SCW	S.C.W.	SOFT COLD WATER
WSP	W.S.P.	WET STANDPIPE
DSP	D.S.P.	DRY STANDPIPE
CSP	C.S.P.	COMBINATION STANDPIPE
F	F.	FIRE LINE
G	G.	GAS LINE
	F.C.O.	FLOOR CLEANOUT
	W.C.O.	WALL CLEANOUT
·	H.B.	HOSE BIBB
	S.O.V.	SHUT–OFF VALVE
	G.L.V.	GLOBE VALVE
	B.C.	BALANCING COCK
	CH.V.	CHECK VALVE
	P.R.V.	PRESSURE REDUCING VALVE
	P.REL.V.	PRESSURE RELIEF VALVE
	P.T.R.V.	PRESS. TEMP. RELIEF VALVE
	G.C.	GAS COCK
	DN.	DOWN
		RISE
CD		CONDENSATE DRAIN
	A.P.	ACCESS PANEL
	C.F.H.	CUBIC FEET PER HOUR
	BEL.	BELOW
	C.I.	CAST IRON
	CLG.	CEILING
	CONT.	CONTINUATION
	E.	PREFIX "E" DENOTES EXIST.
	EXIST.	EXISTING
	F.H.	FIRE HYDRANT
	FLR.	FLOOR
	FIN.FLR.	FINISHED FLOOR
	FIN.GR.	FINISHED GRADE
	F.U.	FIXTURE UNIT
	G.P.M.	GALLONS PER MINUTE
	G.P.H.	GALLONS PER HOUR
	I.E.	INVERT ELEVATION
	M.H.	MANHOLE
	P.O.C.	POINT OF CONNECTION
	V.T.R.	VENT THRU ROOF
	(E)	EXISTING
	(N)	NEW

PIPE MATERIAL SCHEDULE

SERVICE	MATERIAL	COPPER TYPE "M"	COPPER TYPE "L"	COPPER TYPE "K"	BLACK STEEL	GALVANIZED STEEL (NOTE 2)	CAST IRON SOIL PIPE & FITTINGS	CPVC		
WATER	INSIDE							•		
	OUTSIDE							•		
	BEL. BLDG. SLAB			•						
SANITARY DRAINAGE	INSIDE ABV. FLR.						•			
	OUTSIDE						•			
	BEL. BLDG. SLAB						•			
SAN. VENT	INSIDE					•	•			

RR# 5697 CPVC PIPE & FITTINGS
1/2" TO 2" (CHARLOTTE FLOWGUARD GOLD OR APPROVE EQUAL)
RR# 5717 CPVC PIPE & FITTINGS

DUPLEX PUMP SCHEDULE

MARK	MANUF.	MODEL	FLOW (GPM)	TDH (FT.)	ELECTRICAL HP	ELECTRICAL VOLT	ELECTRICAL PH	ELECTRICAL HZ	REMARKS
P–1	PENTAIR OR EQUAL	INTELLIFLO3	20	8	3	230	1	60	PROVIDE PENTAIR ALTERNATING PACKAGE CONTROL PANEL IN OUTDOOR ENCLOSURE (REFER TO MANUF. FOR MORE INFO)

INDOOR BOILER SCHEDULE

MARK	MANUF.	MODEL	BTUH	ELECTRICAL HP	ELECTRICAL VOLT	ELECTRICAL PH	ELECTRICAL HZ	REMARKS
B–1	PENTAIR ETI OR EQUAL	MASTERTEMP	400K	FRACT	230	1	60	LOW NOX. POOL HEATER. ELECTRONIC IGNITION DIGITAL CONTROL. NATURAL GAS. CONTROL PANEL. (REFER TO MANUF. FOR MORE INFO)

PROVIDE 6" PVC SCHEDULE 40 OR STAINLESS PIPE UP THRU ROOF FOR EXHAUST (COMBUSTION AIR).

CALCULATIONS:
21' X 8.5' =5.5' = 982 CU FT
982 CU FT X 7.48 = 7345 GALLON

ANDROMEDA HOUSE
WOOLSEY FIRE REBUILD

30051 ANDROMEDA LANE, MALIBU, CA 90265

DRAWN: SV
DATE: 01/12/2026

ISSUED FOR

DATE	REMARKS
1	PCC 03/02/2026

OWNER:
Daniel Donovan, Owner's Representative
T: 701-870-0989
E: daniel.patrick.donovan@gmail.com

Worth Capital Holdings 24 LLC, Owner
T: 424-359-9630
E: Holzerpartner@gmail.com

LEGAL INFO:
APN: 4469004017
TRACT:
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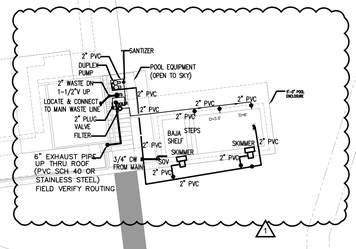
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JENNIFER MARMON, AIA
PLATFORM FOR
ARCHITECTURE + RESEARCH
8549 WILSHIRE BLVD
UNIT 3090
BEVERLY HILLS, CA 90211
323-788-8478
INFO@P-AR.COM

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PLUMBING COVER SHEET

P-1.0

MARS Engineering Group, INC
Electrical • Mechanical • Plumbing
22715 VICTORY BLVD. PH:(818)593–8999
WEST HILLS, CA 91307 FAX:(818)230–7773



SITE PLAN

SCALE: 1/16"-1'-0"

SWIMMING POOL NOTES :

i) Pool coping shall be wedged shaped to avoid flat surfaces suitable for sitting or walking.
b) Two drowning prevention safety features shall be provided per CBC 3109.2. Identify the drowning prevention safety feature to be utilized for this pool installation:

ii) An intermediate enclosure between the house and the swimming pool that meets the requirements of AX100.3 and isolates the swimming spa from the private single-family home.

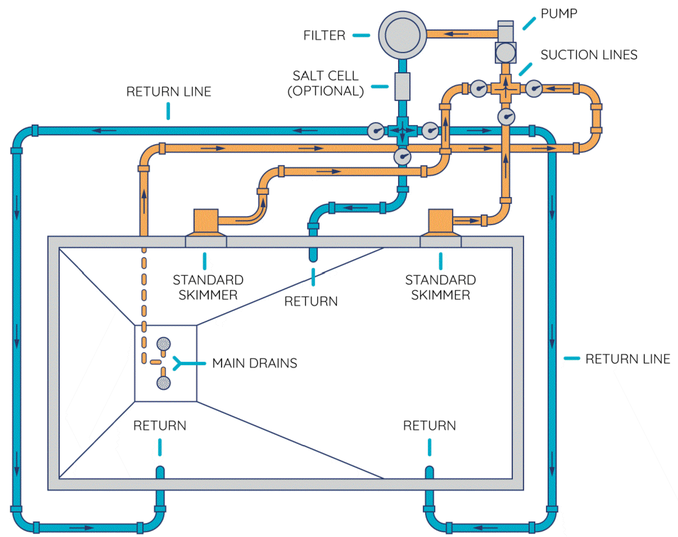
(1) Pool enclosure construction requirements per CBC 3109.2.
i) Removable mesh fencing that meets ASTM Specifications F2286 standards in conjunction with a gate that is self-closing and self-latching and can accommodate a key lockable device.
ii) An approved safety pool cover meeting the performance standards of ASTM Standard F1346-91.
iii) Exit alarms on the private single-family home's doors that provide direct access to the swimming pool. An exit alarm may cause either an alarm noise or verbal warning, such as a repeating notification that the door to the pool is open.
iv) A self-closing, self-latching device with a release mechanism placed no lower than 54 inches above the floor on the private single-family home's door providing direct access to the swimming spa.
v) An alarm that when placed in a swimming pool/spa, will sound upon detection of accidental or unauthorized entrance into the water. The alarm shall meet and be independently certified to ASTM Standard F2208.

b) Provide suction outlets for the swimming pool and spa per CBC 3109.2
i) Circulation system shall have the capacity to be provide a complete turnover of pool water.
ii) Suction outlets shall be covered with anti-entrapment grates, as specified in the ansi/apsp-16 performance standard. Slots of openings in the grates shall be of a shape, area and arrangement that would prevent physical entrapment and would not pose any suction hazard to bathers.
iv) Any backup safety systems that an owner of a new swimming pools or spa may choose to install in addition to the requirements set forth in 3109.2.

Energy Compliance: Contractor to provide:

a) The inspector will be provided with the manufacturer's cutsheet which identifies the thermal efficiency of the pool heating system.
b) A readily accessible on-off switch will be provided for the pool heating system that shuts off the heater without having to adjust the thermostat setting. CEnergyC 110.4(a)(2).
c) A permanent, easily readable and weatherproof plate or card that gives instruction for the energyefficientoperation of the pool heater and for proper care of the pool when a cover is used to be provided. CEnergyC 110.4(a)(3).
d) CEnergyC 110.4(b)(1) – Piping. At least 36 inches of pipe shall be installed between the filter and the heater or dedicated suction and return lines, or built-in or built-up connections shall be installed to allow for the future addition of solar heating equipment.
e) CEnergyC 110.4(b)(2) – Covers. A cover for outdoor pools that have a heat pump or gas heater.
f) CEnergyC 110.4(b)(3) – Directional inlets and time switches for pools. If the system or equipment is for a pool:
i) The pool shall have directional inlets that adequately mix the pool water; and
ii) A time switch or similar control mechanism shall be installed as part of a pool water circulation control system that will allow all pumps to be set or programmed to run only during off-peak electric demand period, and for a minimum time necessary to maintain the water in the condition required by applicable public health standards.

PROVIDE COMBUSTION AIR TO THE BOILER PER CMC 701.4.



POOL PIPINGS DETAIL

SCALE: -

ANDROMEDA HOUSE
WOOLSEY FIRE REBUILD

30051 ANDROMEDA LANE, MALIBU, CA 90265

DRAWN: SV
DATE: 01/12/2026

ISSUED FOR

DATE	REMARKS
1	PCC 03/02/2026

OWNER:

Daniel Donovan, Owner's Representative
T: 701-870-0989
E: daniel.patrick.donovan@gmail.com

Worth Capital Holdings 24 LLC, Owner
T: 424-359-9630
E: Holzerpartner@gmail.com

LEGAL INFO:

APN: 4469004017
TRACT:
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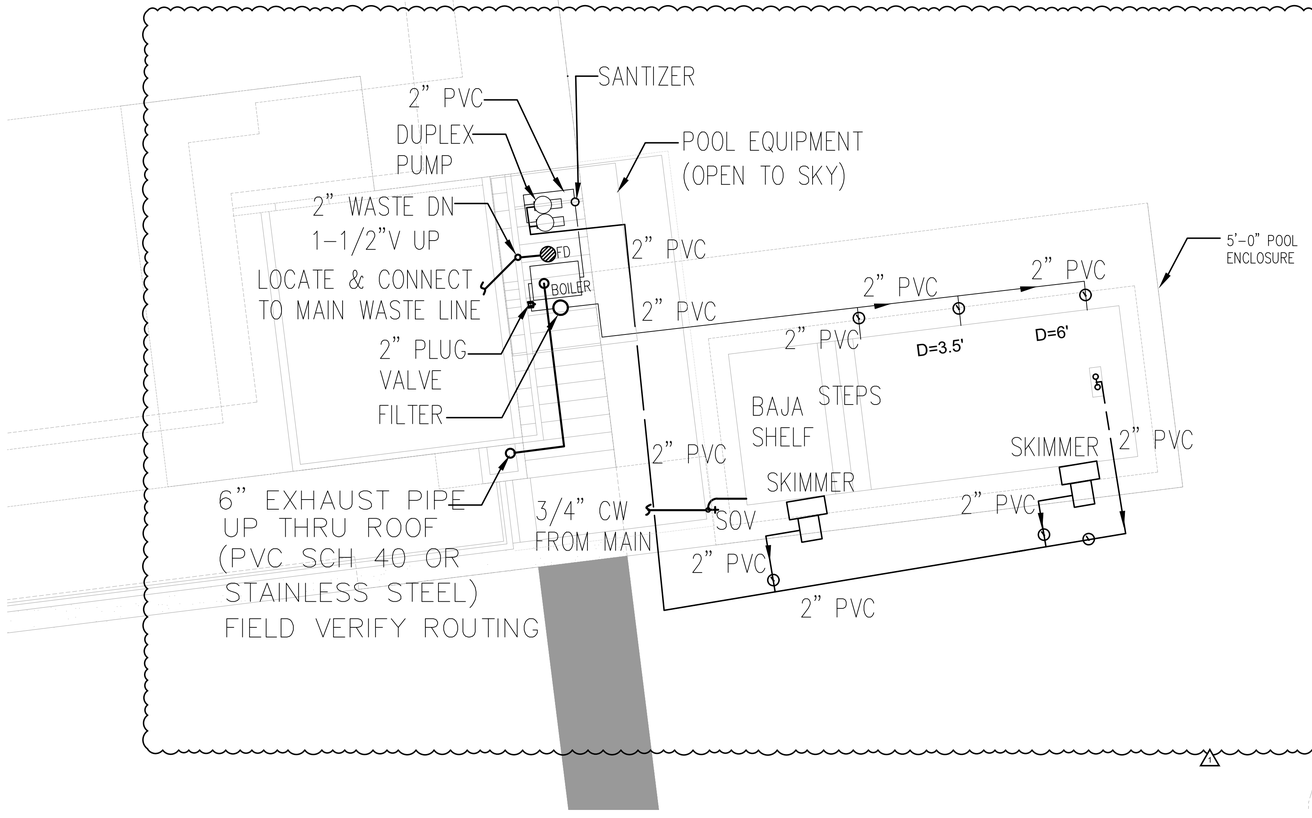
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PLATFORM FOR
ARCHITECTURE + RESEARCH
8549 WILSHIRE BLVD
UNIT 3090
BEVERLY HILLS, CA 90211
323-788-8478
INFO@P-AR.COM

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SIYE PLAN & POOL DETAILS

P-2.0

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WEST HILLS, CA 91307 FAX:(818)230-7773



ENLARGE SITE PLAN

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

ANDROMEDA HOUSE
WOOLSEY FIRE REBUILD

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PLATFORM FOR
ARCHITECTURE + RESEARCH
8549 WILSHIRE BLVD
UNIT 3090
BEVERLY HILLS, CA 90211
323-788-8478
INFO@P-AR.COM

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ENLARGE SITE PLAN

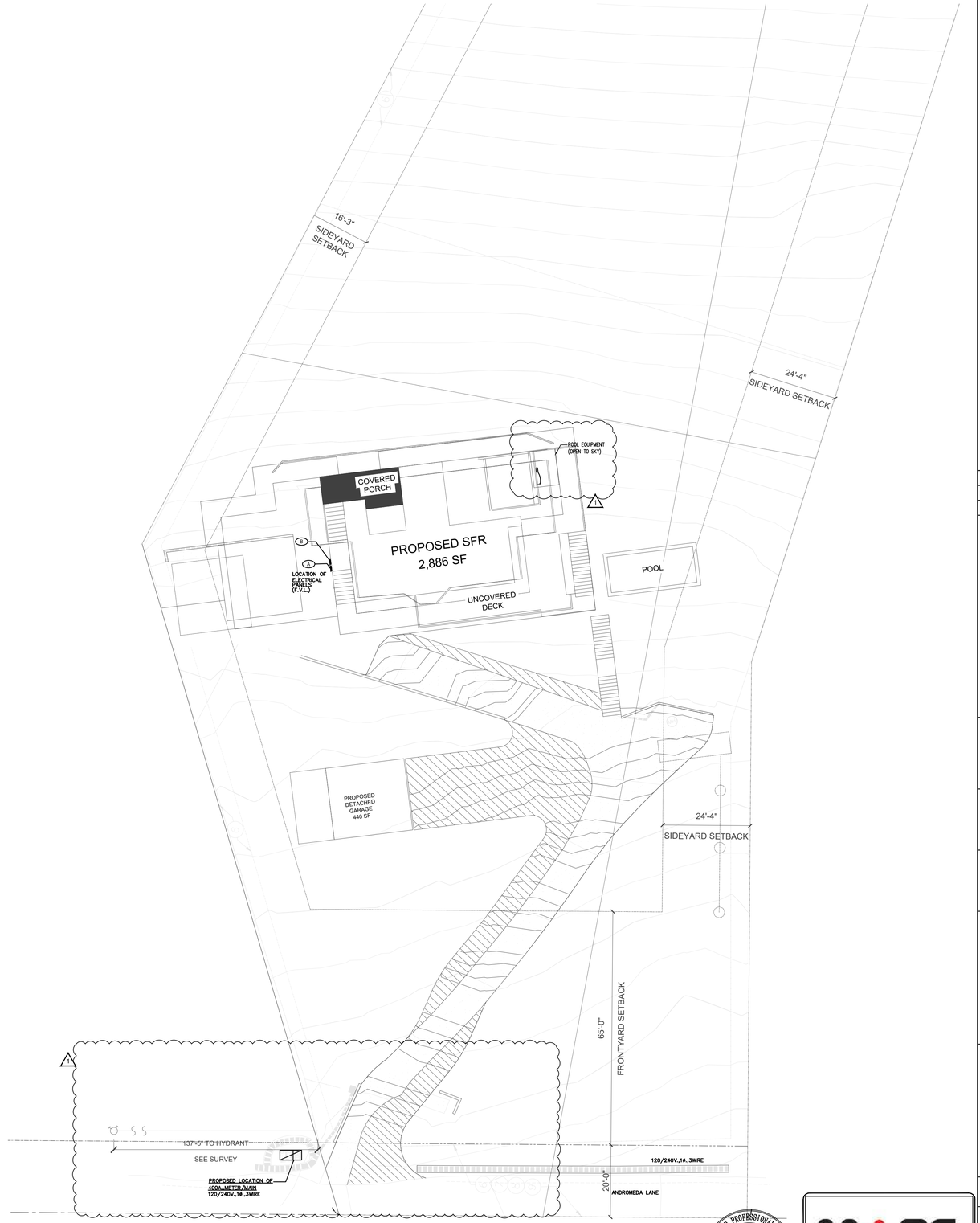
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LOAD CALCULATION NEC 220.80	Main House
Total Sq. Ft. First, Second & Third	4,423
Lighting @3w/Sq.Ft.	13,269
2–Small Appliance Loads @1500w ea.	3,000
1–Laundry Circuits @1500w ea.	1,500
1–Garbage Disposers @900w ea.	900
1–Dishwashers @1200w ea.	1,200
4–Exhaust Fans @36w ea.	144
1–Kitchen Exhaust Fans @300w	300
1–Refrigerator @900w ea.	900
1–Cooktop/Range @8000w ea.	8,000
1–Circulating Pump @400w ea.	400
1–Built–in Microwave @1500w ea.	1,500
1–Electric Dryer @5000w ea.	5,000
1–Garage operator @1200w	1,200
1–Electric Water Heater @4,500w +25% ea.	5,625
Total General Load:	42,938
Demand Calculation:	
1st 10kva @100%	10,000
42,938w – 10,000w = 32,938 Remainder @ 40%	13,175
Sub–Total Net Computed Load	23,175
Others @100% Demand	
Pool Equipment	9,000
Main House HP Units+ FC Units	22,000
1–32amp EVCS @7,680w +25% ea.	9,600
Total Net Computed Load	63,775
Feeder Amps @120/240V.,1ø	265.7
SERVICE FEEDER	400A

ANY WALKING SURFACE WITHIN 3 FT OF THE POOL EDGE TO BE BONDED, INCLUDING UNREINFORCED OR LANDSCAPED AREAS. CEC 680.26.(B)(2).
ANY WALKING SURFACE WITHIN 3 FT OF THE POOL EDGE TO BE BONDED, INCLUDING UNREINFORCED OR LANDSCAPED AREAS. CEC 680.26.(B)(2)?.

THE LIGHT SWITCH FOR THE POOL EQUIPMENT ENCLOSURE TO BE AN ARC FLASH TYPE, SUITABLE FOR A CORROSIVE ENVIRONMENT.



SITE PLAN
SCALE: 1/16"=1'-0"

ANDROMEDA HOUSE
WOOLSEY FIRE REBUILD

30051 ANDROMEDA LANE, MALIBU, CA 90265

DRAWN: SV
DATE: 05/08/2025
ISSUED FOR

DATE	REMARKS
1	PCC 03022026

OWNER:
Daniel Donovan, Owner's Representative
T: 701-870-9989
E: daniel.patrick.donovan@gmail.com

Worth Capital Holdings 24 LLC, Owner
T: 424-359-9630
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8549 WILSHIRE BLVD
UNIT 3090
BEVERLY HILLS, CA 90211
323-788-8478
INFO@P-AR.COM

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SITE PLAN, LOAD CALCS

P4.0

REGISTERED PROFESSIONAL ENGINEER
No. 30001
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ELECTRICAL
STATE OF CALIFORNIA

MARS Engineering Group, INC
Electrical • Mechanical • Plumbing
22715 VICTORY BLVD. PH:(818)593-8999
WEST HILLS, CA 91307 FAX:(818)230-7773