



## Submittal Review Response

Project Name: **Hilo WWTP Rehabilitation and Replacement Project Phase 1**  
Submittal No.: **03200-002.0**  
Date: **9/4/2025**

Client: County of Hawai'i Carollo Project No.: 203975  
Contractor: Nan, Inc.  
Submittal Name: Shop Drawings(CMC).Concrete Reinforcing Accessories  
Reviewed By: Marissa Kurniawan, Hipom Caleb Che

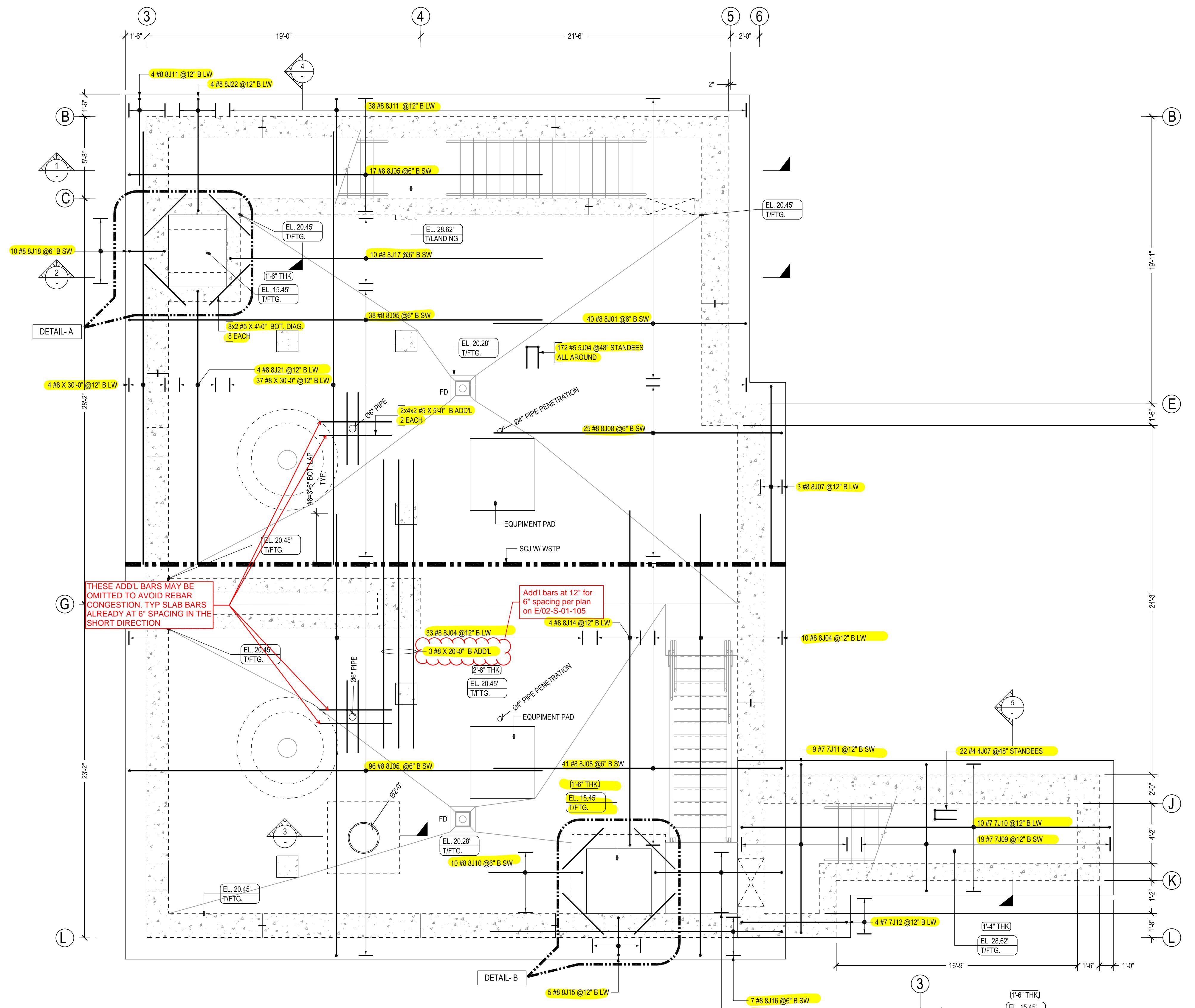
### SUBMITTAL REVIEW

Review is for general compliance with contract documents. No responsibility is assumed by Carollo for correctness of quantities, dimensions, and details. No deviation or variation is approved unless specifically addressed in these review comments. Refer to Section 01330 for additional requirements. The Contractor shall assume full responsibility for coordination with all other trades and deviations from contract requirements.

Approved	<input type="checkbox"/> No Exceptions
	<input type="checkbox"/> Make Corrections Noted - See Comments
	<input type="checkbox"/> Make Corrections Noted - Confirm
Not Approved	<input checked="" type="checkbox"/> Correct and Resubmit
	<input type="checkbox"/> Rejected - See Remarks
Receipt Acknowledged	<input type="checkbox"/> Filed for Record
	<input type="checkbox"/> With Comments - Resubmit

### Review Comments:

1. Refer to attached PDF for comments. Verify and address all comments.
2. The Contractor shall verify and/or confirm all clouded items, unless otherwise noted.
3. The Contractor shall verify and confirm locations, dimensions, and height of all equipment pads.
4. Refer to Keynote 3 on Drawing 02-S-01-106. The Contractor shall verify and confirm diameter and wall thickness of grit basin tank structures.
5. The Contractor shall verify and coordinate all openings required per the mechanical and electrical drawings and provide additional reinforcement per S144/TYP.



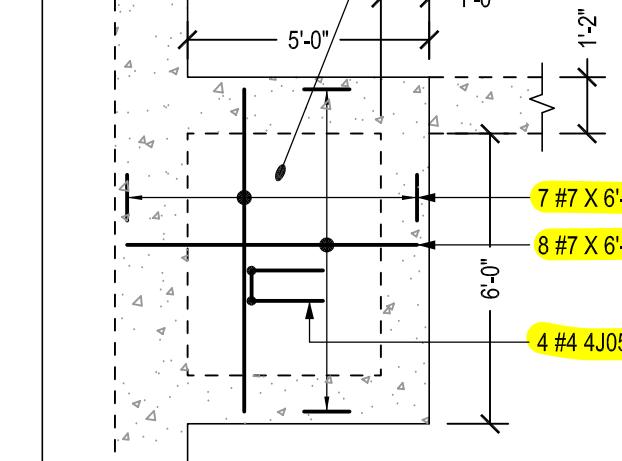
BOTTOM EACH WAY REINFORCEMENT DETAILS  
GRIT BASINS - BASE SLAB REINFORCEMENT LAYOUT

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

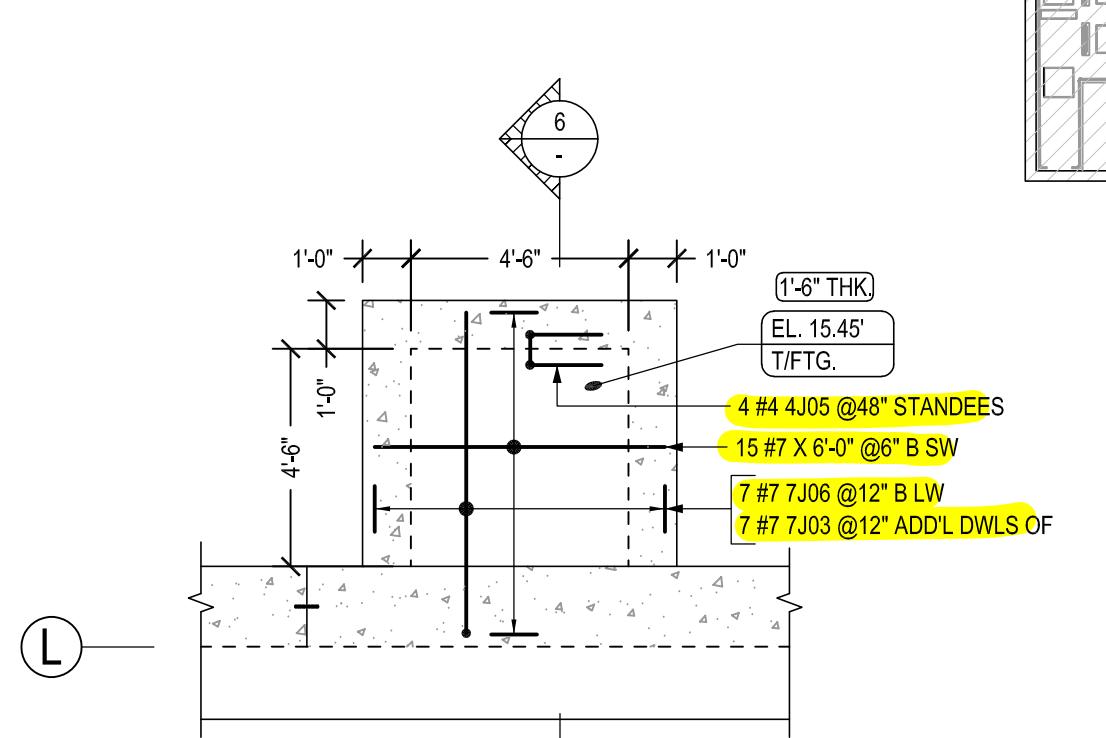
REF:02-S-01-105



DETAIL A  
SCALE - 1/4"=1'-0"  
REF:02-S-01-105



DETAIL B  
SCALE - 1/4"=1'-0"  
REF:02-S-01-105



BAR LIST										
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'
J005	8	#4	5'-4 X 4"	P01	1'-6"	0'-10"	0'-8"	0'-10"	1'-6"	
J007	22	#4	5'-0 X 4"	P01	1'-6"	0'-8"	0'-8"	0'-8"	1'-6"	
J004	172	#5	7'-6 X 4"	P01	1'-6"	1'-10"	0'-10"	1'-10"	1'-6"	
J003	7	#7	15'-11" 17		6'-8"	9'-3"				
J006	19	#7	19'-2"		6'-8"	12'-6"				
J009	19	#7	10'-8" 17		0'-11"	8'-10"	0'-11"			
J010	10	#7	27'-5" 17		0'-11"	25'-7"	0'-11"			
J011	9	#7	13'-7" 17		0'-11"	11'-9"	0'-11"			
J012	4	#7	9'-2" 17		0'-11"	7'-2"	0'-11"			
J001	40	#8	18'-10" 2		1'-4"	17'-6"				
J004	43	#8	32'-0" 2		1'-4"	30'-8"				
J005	15	#8	30'-0" 2		1'-4"	28'-8"				
J007	3	#8	13'-8" 2		1'-4"	12'-4"				
J008	66	#8	21'-4" 2		1'-4"	20'-0"				
J010	10	#8	7'-10" 2		1'-4"	6'-6"				
J011	42	#8	7'-4" 2		1'-4"	6'-0"				
J014	4	#8	24'-7" 2		1'-4"	23'-3"				
J015	5	#8	5'-4" 2		1'-4"	2'-6"				
J016	7	#8	21'-7" 2		1'-4"	20'-3"				
J017	10	#8	23'-0" 2		1'-4"	21'-8"				
J018	10	#8	5'-2" 2		1'-4"	2'-6"				
J021	4	#8	20'-4" 2		1'-4"	19'-0"				
J022	4	#8	10'-6" 2		1'-4"	7'-10"				
J023	10	#8	11'-6" 2		1'-4"	8'-10"				

Bar list produced by RebarCAD 2020

FIELD USE:  
ALL DRAWINGS ARE FOR FIELD USE ONLY.  
DO NOT USE AS A CONTRACT DOCUMENT.  
DO NOT USE AS A CONTRACT DOCUMENT.

Approval Authority:  
All items that are clearly marked "VERIFIED" or "OK" are considered correct and acceptable. Items marked "REVIEW" will be assumed correct as submitted. Items marked "NOT OK" are incorrect and must be corrected before being submitted. Items marked "REWORK" are unacceptable and must be reworked before being submitted. Items marked "REOPEN" are open to further review and may require additional information or changes before being submitted.

Request Information:

For further questions, contact the project manager or lead designer.

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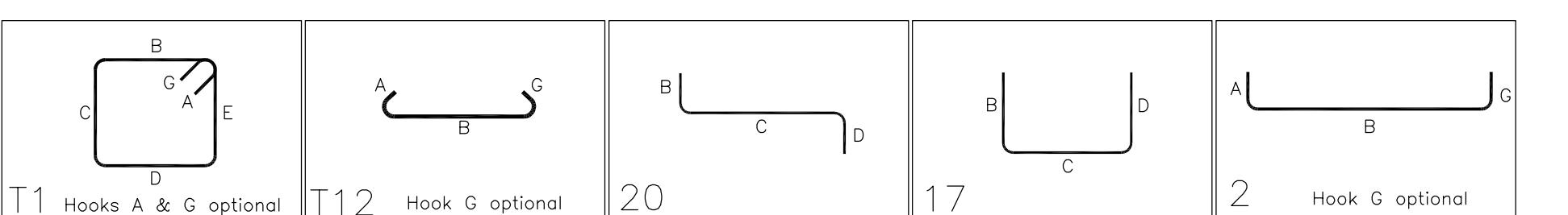
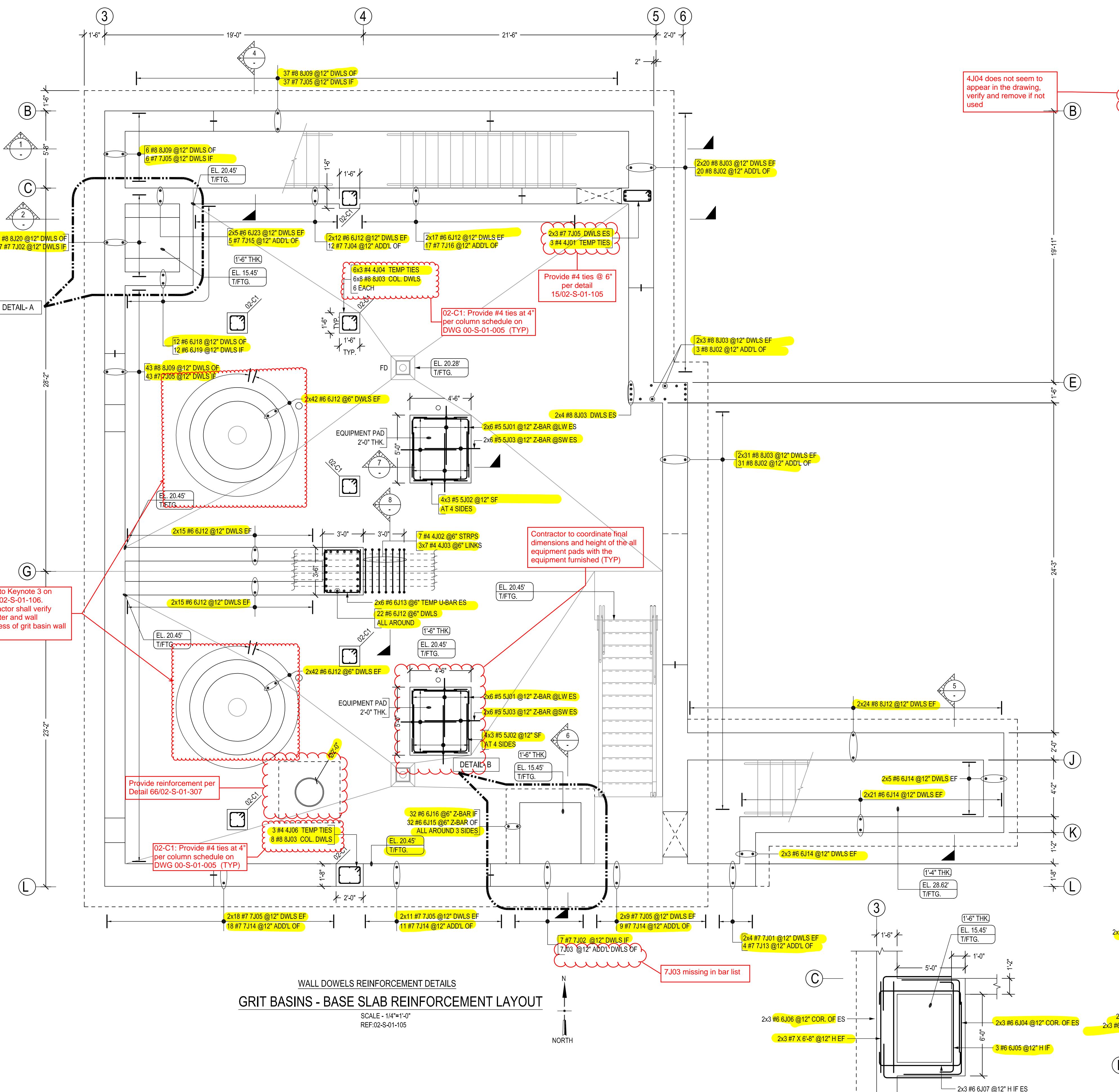
For further questions, contact the project manager or lead designer.

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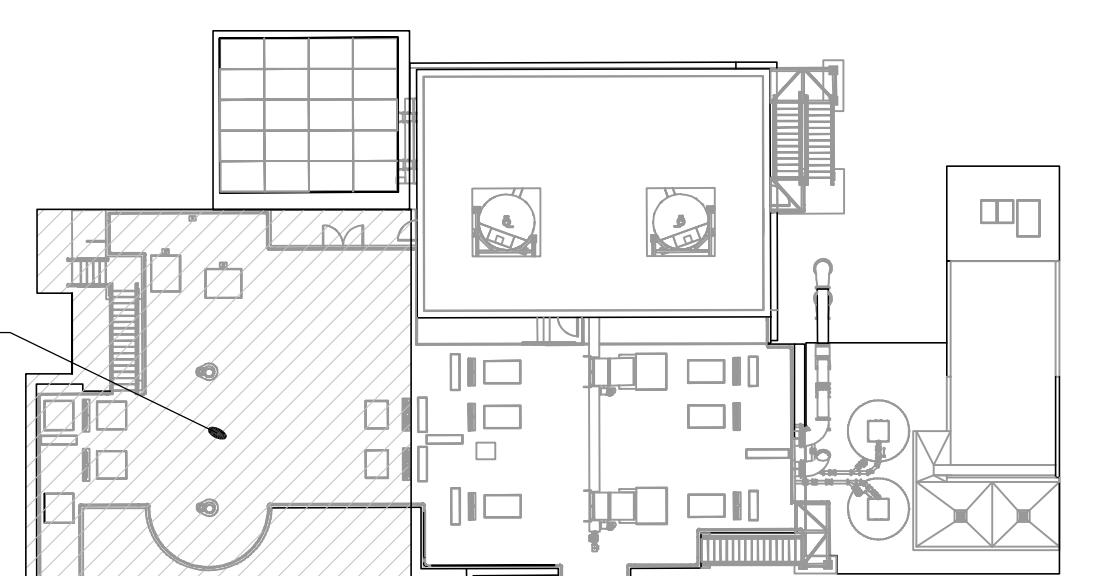
For further questions, contact the project manager or lead designer.





LAP SCHEDULE		
SIZE	4000 PSI	
	TOP	OTHERS
#4	20"	16"
#5	26"	20"
#6	30"	24"
#7	43"	33"
#8	50"	38"
#9	56"	42"
#10	62"	48"
#11	69"	54"

BREVIATIONS	
	B
TOM	T&B
OUS	CONT.
BAR	COR.
TAL	H
Y	EW
CE	EF
CE	IF
ACE	OF
E	ES
	DWL.
Y BAR	LW
AY BAR	SW
CE	REF



SHOWING HORIZONTAL REINFORCEMENT ONLY

**DETAIL A**

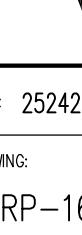
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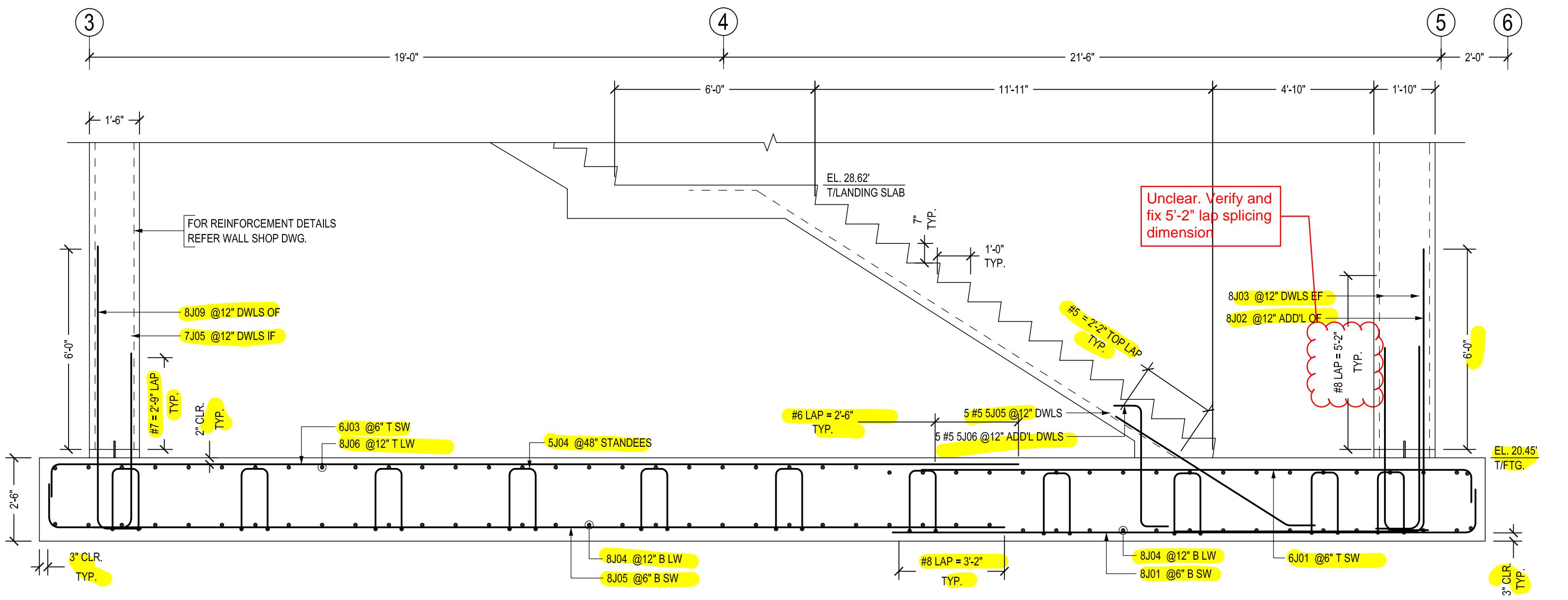
SHOWING HORIZONTAL REINFORCEMENT ONLY

**DETAIL B**

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

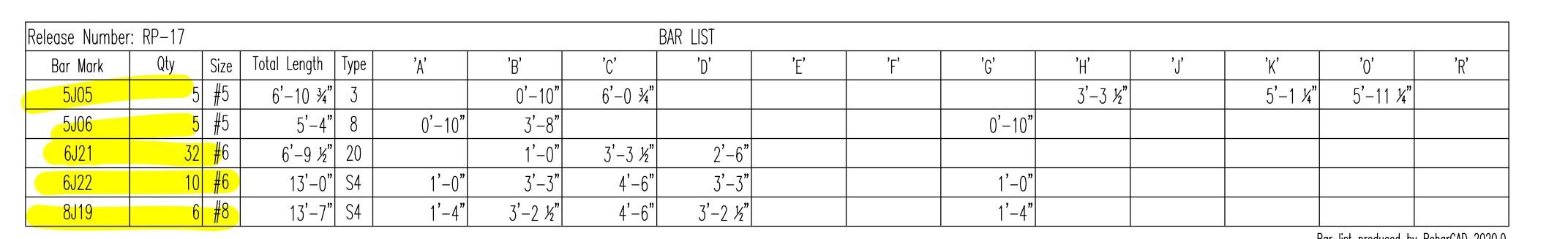
REINFORCEMENTS ARE A615 GR.60 U.N.O

		CMC REBAR MEMBER	
JOB #: 2524240001			
DRAWING: RP-16			
<p><b>CUSTOMER:</b> -      <b>JOB NAME:</b> Hilo WWTP      <b>LOCATION:</b> COUNTY OF HAWAII      <b>DESCRIPTION:</b> GRIT BASINS – BASE SLAB REINFORCEMENT DETAILS</p> <p><b>JOB #:</b> 2524240001      <b>DATE:</b> 07/03/25      <b>FOR:</b> APPROVAL</p> <p><b>DETAILER:</b> MKR      <b>DATE:</b> .      <b>FOR:</b> .</p> <p><b>EMAIL:</b> wil@mcmasterrebar.com      <b>DATE:</b> .      <b>FOR:</b> .</p> <p><b>PHONE:</b> (360)-346-6729      <b>DATE:</b> .      <b>FOR:</b> .</p> <p>REF: NOTED      1 DATE: .      2 DATE: .      3 DATE: .</p>			
<p><b>APPROVAL AUTHORITY:</b></p> <p>ALL ITEMS THAT ARE CLOUDED &amp;/OR MARKED "VERIFY" REFER TO QUESTIONS, OMISSIONS, CONFLICTS OR ERRORS IN THE CONTRACT DOCUMENTS. UNLESS CORRECTIVE ACTION IS INDICATED ON THIS APPROVAL, ALL ITEMS SO MARKED WILL BE ASSUMED CORRECT AS SUBMITTED, AND FURNISHED AS DETAILED. CMC REBAR ASSUMES NO RESPONSIBILITY FOR ERRORS CAUSED BY LACK OF REQUESTED INFORMATION.</p>			
<p><b>FIELD USE:</b></p> <p>THIS DRAWING TO BE USED IN CONJUNCTION w/ STRUCTURAL AND ARCHITECTURAL DOCUMENTS TO FACILITATE PLACING OF REINFORCING BARS ONLY. DO NOT USE THIS DRAWING FOR LAYOUT OR CONSTRUCTION. ANY DIMENSIONS OR ELEVATIONS NOTED IN THIS DOCUMENT ARE FOR REFERENCE ONLY TO FACILITATE APPROVAL &amp;/OR PLACEMENT OF REBAR. DISCREPANCIES SHOULD BE NOTED AT THE TIME OF APPROVAL. CMC REBAR ASSUMES NO LIABILITY FOR DIMENSIONAL ERRORS IN THE LAYOUT OF THE BUILDING OR FORMS.</p>			



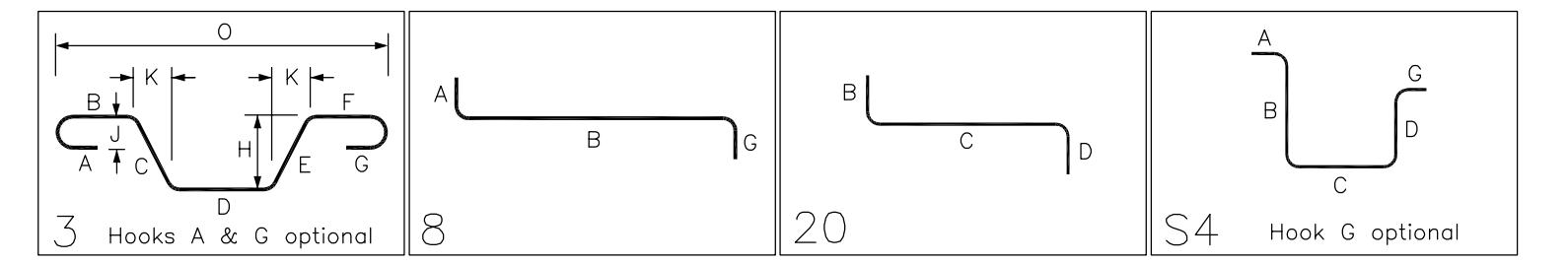
**SECTION**  
SCALE - 3/8"=1'-0"  
REF:H/02-S-01-304 & 1

REF:H/02-S-01-304 &  
44/02-S-01-507



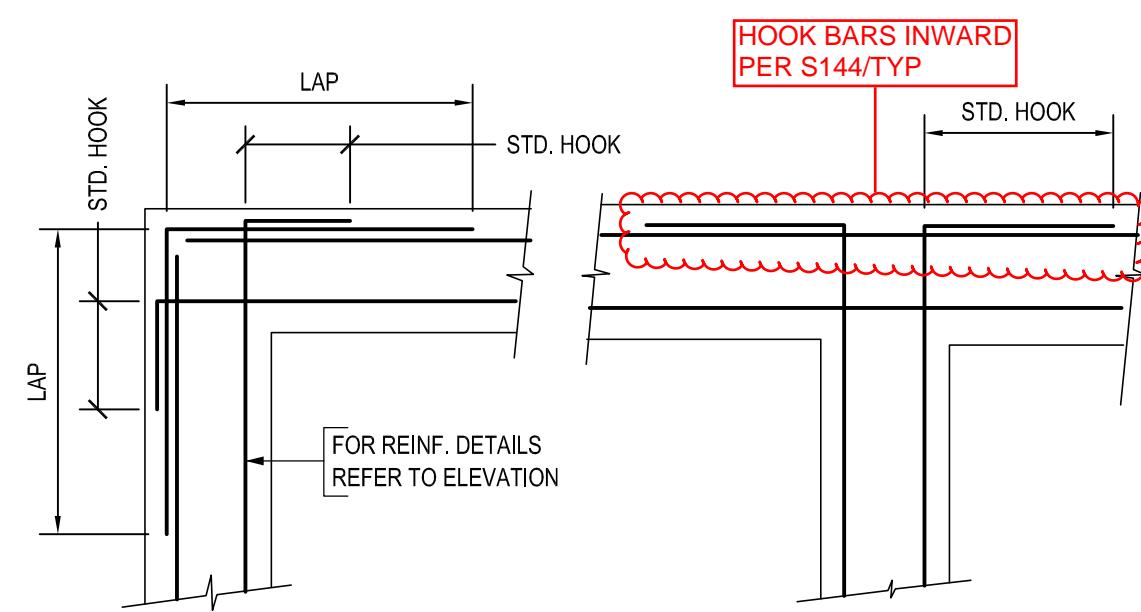
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Produced by RebarCAD 2020.0



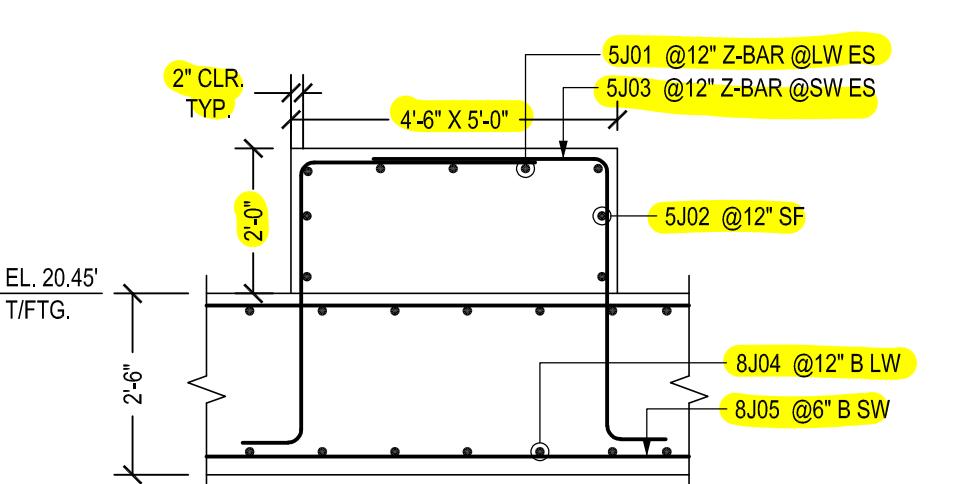
ABBREVIATIONS		LAP
BOTTOM	B	SIZE
TOP&BOTTOM	T&B	#4
CONTINUOUS	CONT.	#5
CORNER BAR	COR.	#6
HORIZONTAL	H	#7
EACH WAY	EW	#8
EACH FACE	EF	#9
INNER FACE	IF	#10
OUTER FACE	OF	#11
EACH SIDE	ES	
DOWEL	DWL.	
LONG WAY BAR	LW	
SHORT WAY BAR	SW	
REFERENCE	RFF	

LAP SCHEDULE		
SIZE	4000 PSI	
	TOP	OTHERS
#4	20"	16"
#5	26"	20"
#6	30"	24"
#7	43"	33"
#8	50"	38"
#9	56"	42"
#10	62"	48"

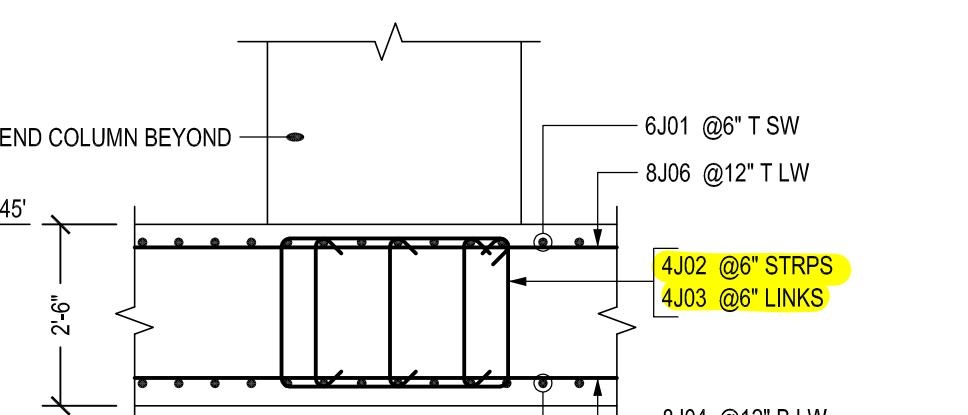


## TYPICAL WALL CORNER BAR DETAILS

SCALE - 1/2"=1'-0"

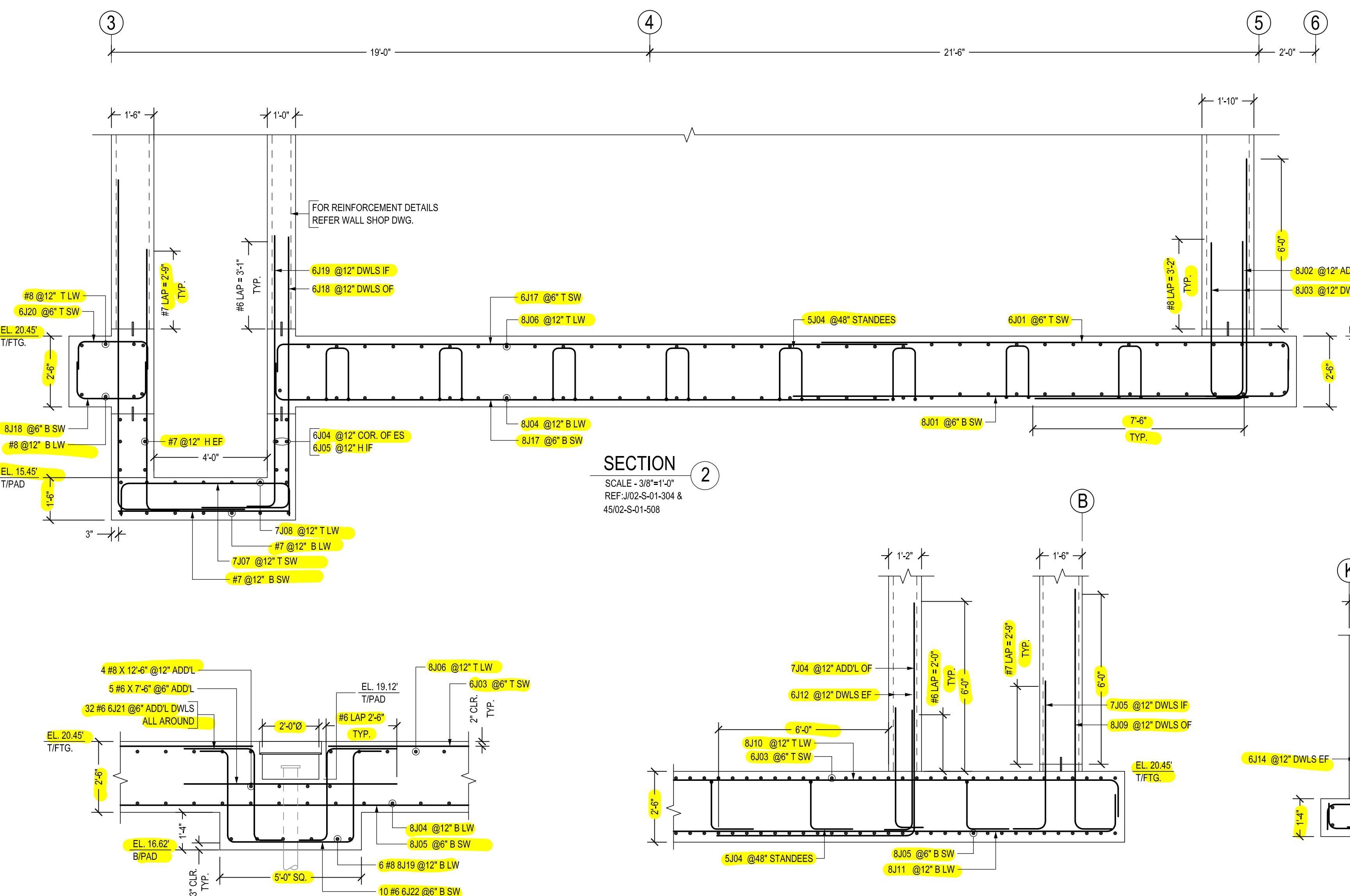


**SECTION**  7  
SCALE - 3/8"=1'-0"



# SECTION

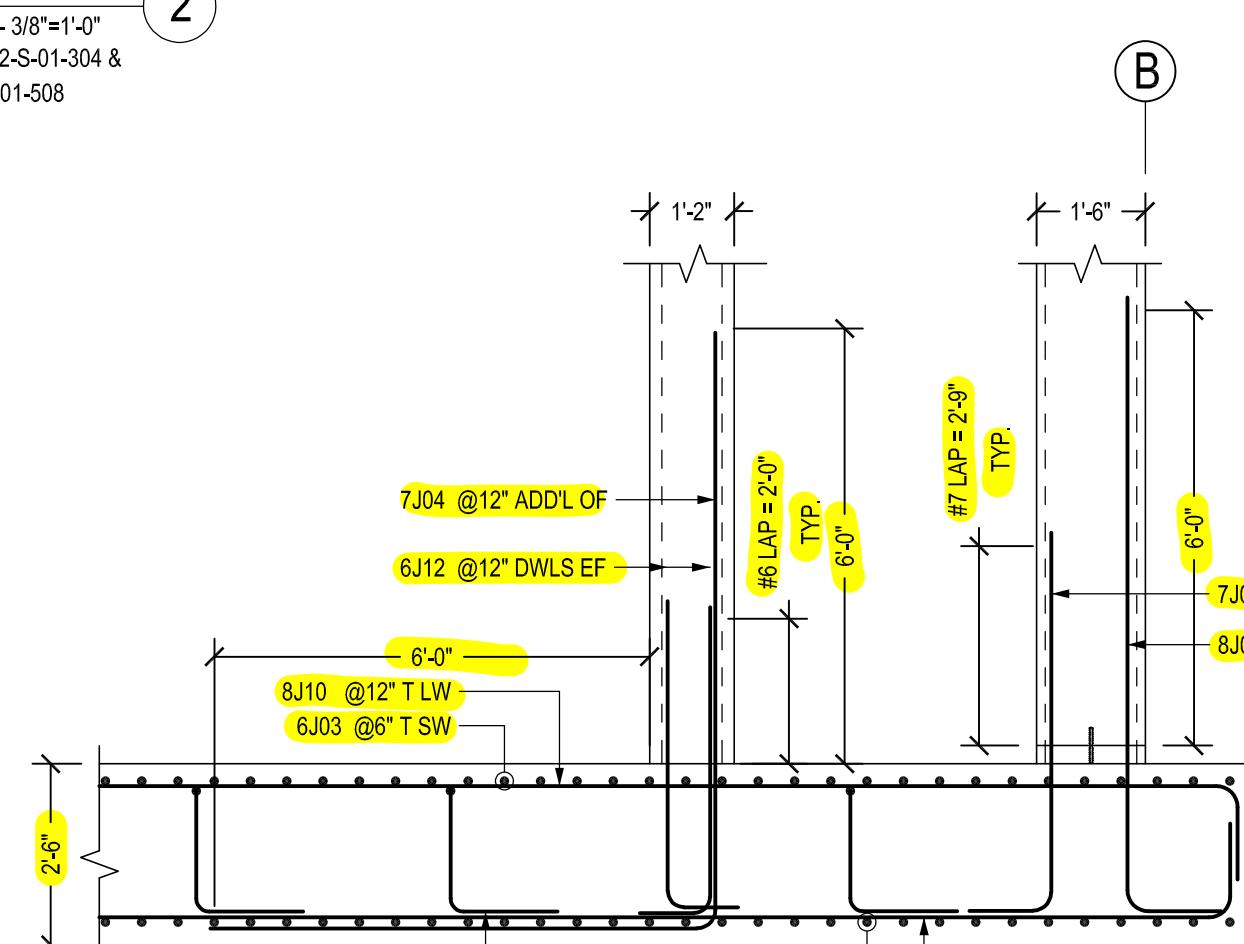
SCALE - 3/8"=1'-0"



**SECTION**  
SCALE 3/8"-1' 0"  
**2**

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SCALE - 3/8"=1'-0"

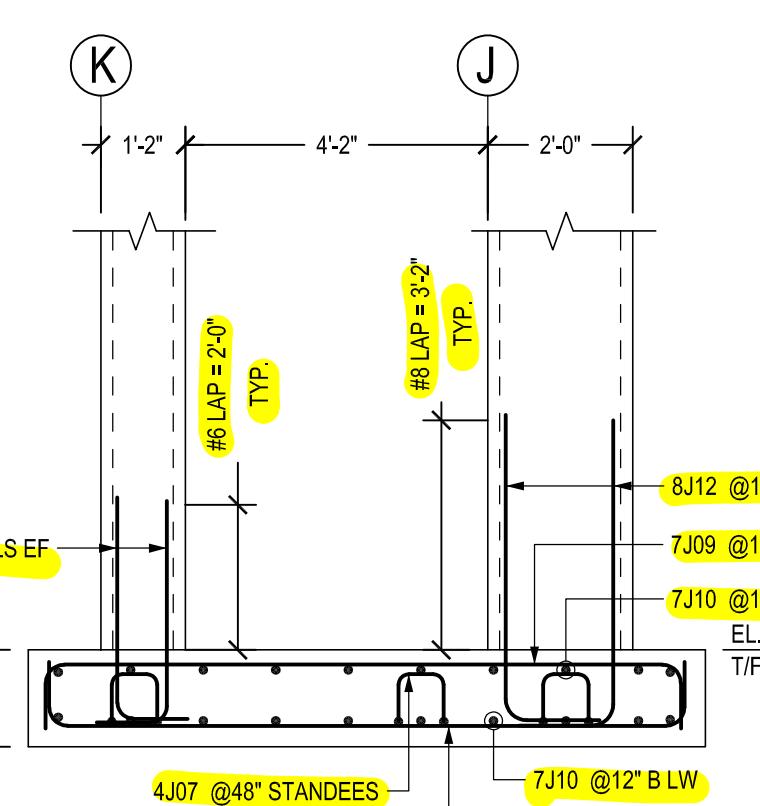


# SECTION

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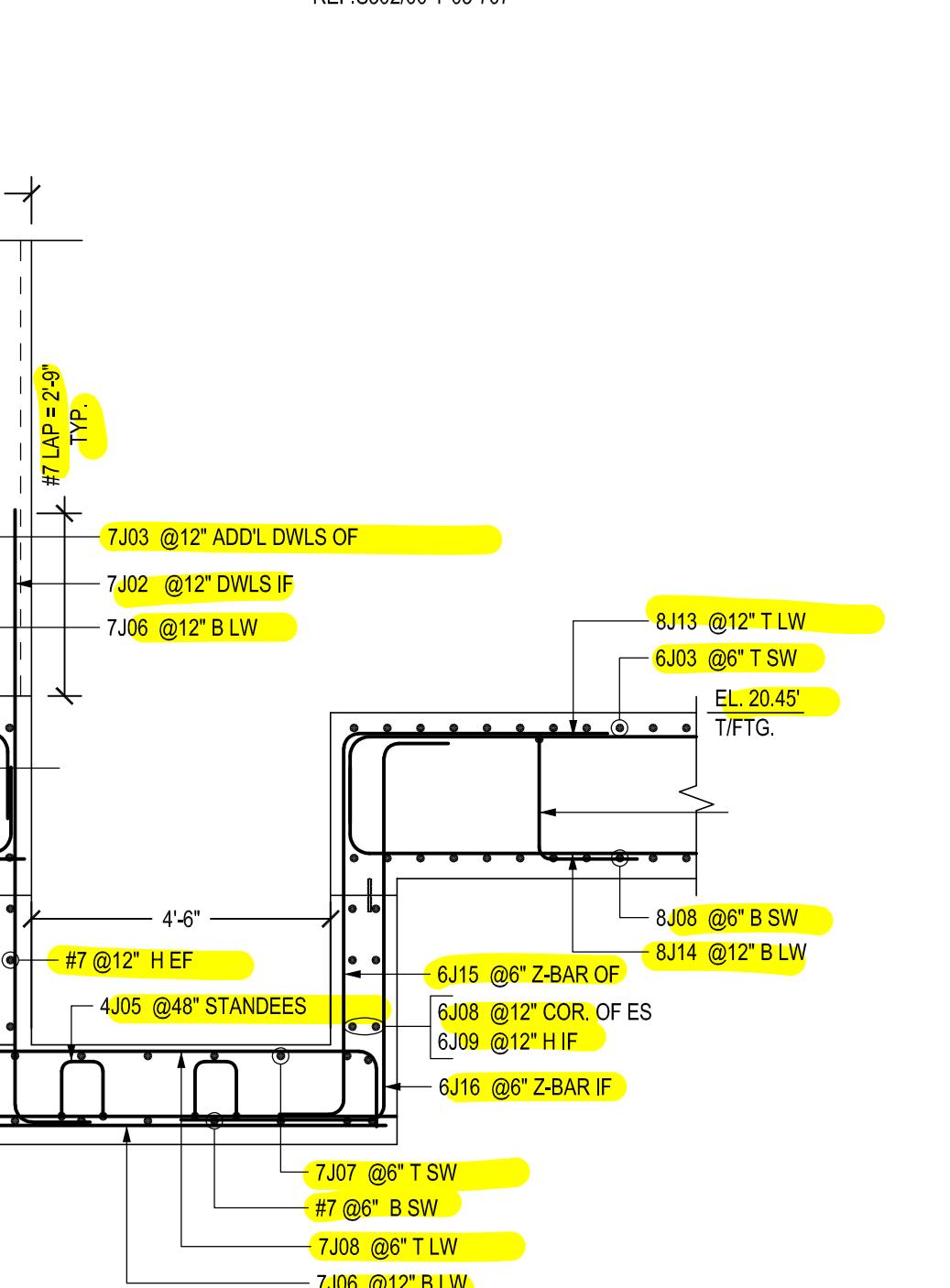
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REF:C02 S.01.301.8

SCALED  
REF:CA  
27/02-S



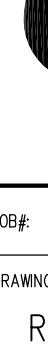
**SECTION**  
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REF:E02 S.01.302 & 5

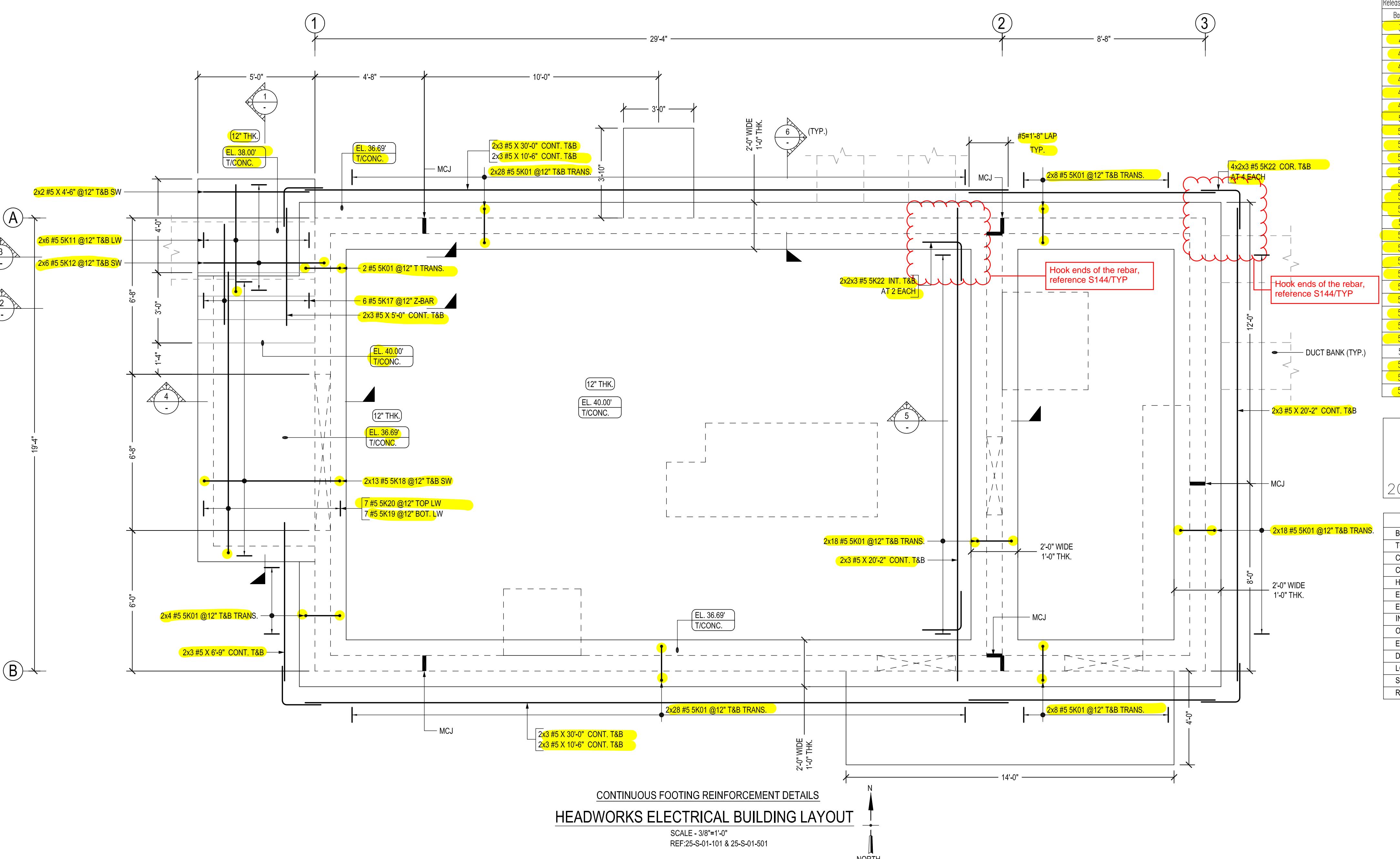
SCREW 3/8  
REF:E/02-S-0  
37/02-S-01-50



**SECTION**  
SCALE - 3/8"=1'-0"  
REF:28/02 S.01.504  
**6**

REF:28/02-S-01-

PROJECT INFORMATION		SUBMITTAL RECORD		APPROVAL AUTHORITY	FIELD USE
 <b>JOB#:</b> 2524240001		<b>JOB #:</b> 2524240001 <b>DETAILER:</b> MKR <b>EMAIL:</b> will@mcmasterrebar.com <b>PHONE:</b> (360)-346-6729	<b>DATE:</b> 07/03/25 <b>FOR:</b> APPROVAL <b>DATE:</b> . <b>FOR:</b> . <b>DATE:</b> . <b>FOR:</b> . <b>DATE:</b> . <b>FOR:</b> .	<u>ALL ITEMS THAT ARE CLOUDED &amp;/OR MARKED "VERIFY"</u> <u>REFER TO QUESTIONS, OMISSIONS, CONFLICTS, OR ERRORS</u> <u>IN THE CONTRACT DOCUMENTS. UNLESS CORRECTIVE</u> <u>ACTION IS INDICATED ON THIS APPROVAL, ALL ITEMS</u> <u>SO MARKED WILL BE ASSUMED CORRECT AS SUBMITTED,</u> <u>AND FURNISHED AS DETAILED. CMC REBAR ASSUMES NO</u> <u>RESPONSIBILITY FOR ERRORS CAUSED BY LACK OF</u> <u>REQUESTED INFORMATION.</u>	<u>THIS DRAWING TO BE USED IN CONJUNCTION w/ STRUCTURAL</u> <u>AND ARCHITECTURAL DOCUMENTS TO FACILITATE PLACING</u> <u>OF REINFORCING BARS ONLY. DO NOT USE THIS DRAWING</u> <u>FOR LAYOUT OR CONSTRUCTION. ANY DIMENSIONS OR</u> <u>ELEVATIONS NOTED IN THIS DOCUMENT ARE FOR REFERENCE</u> <u>ONLY, TO FACILITATE APPROVAL &amp;/OR PLACEMENT OF REBAR.</u> <u>DISCREPANCIES SHOULD BE NOTED AT THE TIME OF APPROVAL.</u> <u>CMC REBAR ASSUMES NO LIABILITY FOR DIMENSIONAL ERRORS</u> <u>IN THE LAYOUT OF THE BUILDING OR FORMS.</u>
<b>DRAWING:</b> <b>RP-17</b>	<b>LOCATION:</b> COUNTY OF HAWAII <b>DESCRIPTION:</b> GRIT BASINS – BASE SLAB REINFORCEMENT DETAILS			<b>REF:</b> NOTED <b>DATE:</b> □ <b>DATE:</b> □ <b>DATE:</b> □	



BAR LIST																
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'J'	'K'	'O'	'R'
3K01	144	#3	3'-2 1/4"	20			1'-0"	0'-10 1/4"	1'-4"							
4K01	4	#4	5'-2"	17			0'-7"	4'-0"	0'-7"							
4K02	5	#4	3'-8"	17			0'-7"	2'-6"	0'-7"							
4K03	1	#4	9'-4"	17			3'-6"	2'-4"	3'-6"							
4K04	15	#4	4'-8"	17			0'-7"	3'-6"	0'-7"							
4K05	5	#4	14'-8"	17			0'-7"	13'-6"	0'-7"							
4K06	1	#4	20'-6"	17			3'-6"	13'-6"	3'-6"							
5K01	226	#5	2'-8"	17			0'-7"	1'-6"	0'-7"							
5K02	39	#5	20'-0"	17			0'-7"	18'-10"	0'-7"							
5K03	11	#5	11'-7"	17			0'-7"	11'-0"								
5K04	133	#5	6'-1"	17			0'-9"	3'-8"	1'-8"							
5K07	24	#5	4'-4"	17			2'-2"	2'-2"								
5K08	6	#5	6'-1"	3			0'-10"	5'-3"					2'-4 3/4"		4'-8 1/4"	5'-6 1/4"
5K09	4	#5	3'-4"	2			0'-10"	2'-6"								
5K10	2	#5	6'-3 1/4"	4			0'-10"	1'-8"	2'-1 1/4"	1'-8"			1'-6 1/4"		1'-5 1/2"	4'-9 1/2"
5K11	12	#5	5'-5"	2			0'-10"	4'-7"								
5K12	12	#5	5'-9"	17			0'-7"	5'-2"								
5K13	18	#5	4'-8 1/2"	17			1'-8"	3'-0 1/2"								
5K14	18	#5	4'-1"	17			1'-8"	2'-5"								
5K15	10	#5	16'-10"	2			0'-10"	16'-0"								
5K16	5	#5	10'-6"	17			0'-7"	9'-11"								
5K17	6	#5	5'-0 1/4"	3			0'-10"	2'-6 1/4"	1'-8"				1'-10"		1'-9"	4'-3"
5K18	26	#5	7'-0"	17			0'-7"	5'-10"	0'-7"							
5K19	7	#5	12'-7"	17			0'-7"	12'-0"								
5K20	7	#5	13'-0"	17			0'-7"	12'-5"								
5K21	21	#5	30'-0"	2			0'-10"	29'-2"								
5K22	36	#5	3'-4"	17			1'-8"	1'-8"								
5K23	6	#5	4'-3"	3			1'-8"	2'-7"					1'-2 1/2"		2'-3 1/2"	3'-11 1/2"
5K24	6	#5	4'-0"	2			0'-10"	2'-4"					0'-10"			

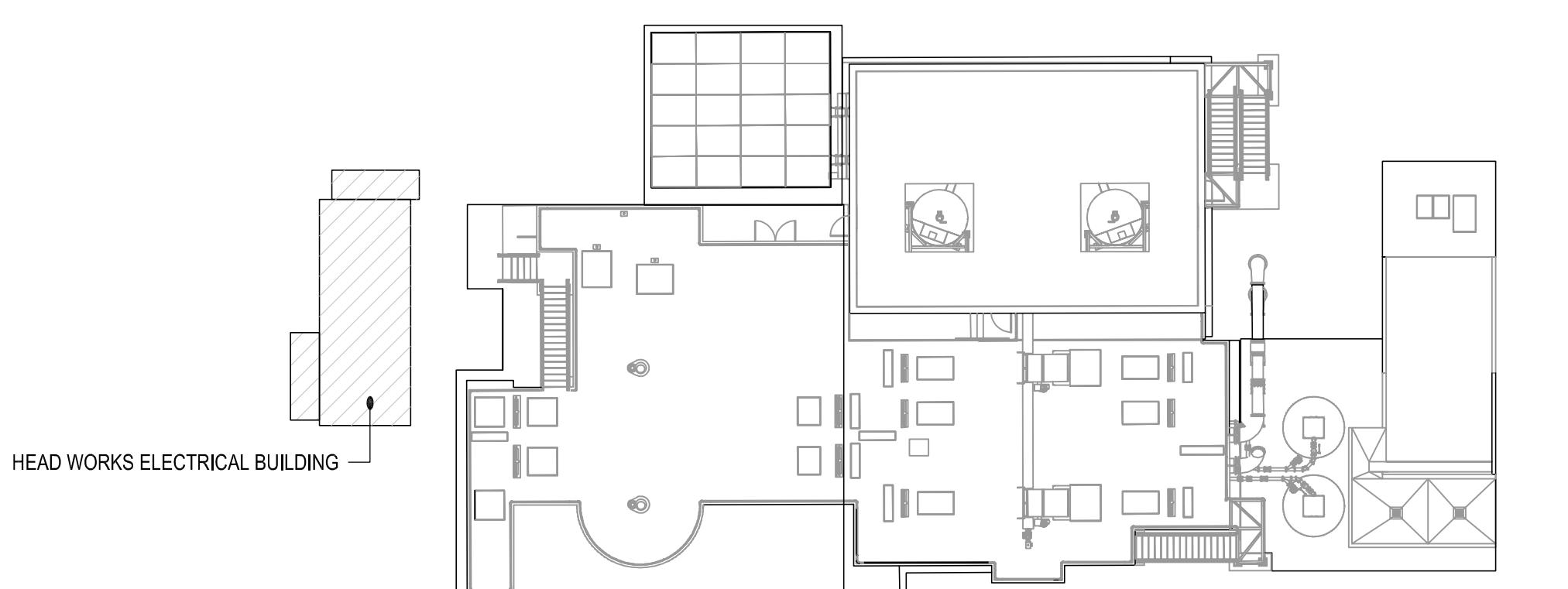
**FIELD USE:** THIS DRAWING TO BE USED IN CONJUNCTION w/ STRUCTURAL AND ARCHITECTURAL DOCUMENTS TO FACILITATE PLACING OF REINFORCING BARS ONLY. DO NOT USE THIS DRAWING FOR LAYOUT OR CONSTRUCTION. ANY DIMENSIONS OR ELEVATIONS NOTED IN THIS DOCUMENT ARE FOR REFERENCE ONLY, TO FACILITATE APPROVAL &/OR PLACEMENT OF REBAR. DISCREPANCIES SHOULD BE NOTED AT THE TIME OF APPROVAL. CMC REBAR ASSUMES NO LIABILITY FOR DIMENSIONAL ERRORS IN THE LAYOUT OF THE BUILDING OR FORMS.

BAR LIST																
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'J'	'K'	'O'	'R'
3K01	144	#3	3'-2 1/4"	20			1'-0"	0'-10 1/4"	1'-4"							
4K01	4	#4	5'-2"	17			0'-7"	4'-0"	0'-7"							
4K02	5	#4	3'-8"	17			0'-7"	2'-6"	0'-7"							
4K03	1	#4	9'-4"	17			3'-6"	2'-4"	3'-6"							
4K04	15	#4	4'-8"	17			0'-7"	3'-6"	0'-7"							
4K05	5	#4	14'-8"	17			0'-7"	13'-6"	0'-7"							
4K06	1	#4	20'-6"	17			3'-6"	13'-6"	3'-6"							
5K01	226	#5	2'-8"	17			0'-7"	1'-6"	0'-7"							
5K02	39	#5	20'-0"	17			0'-7"	18'-10"	0'-7"							
5K03	11	#5	11'-7"	17			0'-7"	11'-0"								
5K04	133	#5	6'-1"	17			0'-9"	3'-8"	1'-8"							
5K07	24	#5	4'-4"	17			2'-2"	2'-2"								
5K08	6	#5	6'-1"	3			0'-10"	5'-3"					2'-4 1/4"		4'-8 1/4"	5'-6 1/4"
5K09	4	#5	3'-4"	2	0'-10"		2'-6"									
5K10	2	#5	6'-3 1/4"	4	0'-10"		1'-8"	2'-1 1/4"	1'-8"				1'-6 1/4"		1'-5 1/2"	4'-9 1/2"
5K11	12	#5	5'-5"	2	0'-10"		4'-7"									
5K12	12	#5	5'-9"	17			0'-7"	5'-2"								
5K13	18	#5	4'-8 1/2"	17			1'-8"	3'-0 1/2"								
5K14	18	#5	4'-1"	17			1'-8"	2'-5"								
5K15	10	#5	16'-10"	2	0'-10"		16'-0"									
5K16	5	#5	10'-6"	17			0'-7"	9'-11"								
5K17	6	#5	5'-0 1/4"	3			0'-10"	2'-6 1/4"	1'-8"				1'-10"		1'-9"	4'-3"
5K18	26	#5	7'-0"	17			0'-7"	5'-10"	0'-7"							
5K19	7	#5	12'-7"	17			0'-7"	12'-0"								
5K20	7	#5	13'-0"	17			0'-7"	12'-5"								
5K21	21	#5	30'-0"	2	0'-10"		29'-2"									
5K22	36	#5	3'-4"	17			1'-8"	1'-8"								
5K23	6	#5	4'-3"	3			1'-8"	2'-7"					1'-2 1/2"		2'-3 1/2"	3'-11 1/2"
5K24	6	#5	4'-0"	2	0'-10"		2'-4"						0'-10"			

ABBREVIATIONS	
BOTTOM	B
TOP&BOTTOM	T&B
CONTINUOUS	CONT.
CORNER BAR	COR.
HORIZONTAL	H
EACH WAY	EW
EACH FACE	EF
INNER FACE	IF
OUTER FACE	OF
EACH SIDE	ES
DOWEL	DWL.
LONG WAY BAR	LW
SHORT WAY BAR	SW
REFERENCE	REF.

LAP SCHEDULE		
SIZE	4000 PSI	
	TOP	OTHERS
#4	20"	16"
#5	26"	20"
#6	30"	24"
#7	43"	33"
#8	50"	38"
#9	56"	42"
#10	62"	48"
#11	69"	54"

<b>LAP SCHEDULE</b>	
REF: (S400)	
(FOR MASONRY WALLS)	
IZE	CENTERED IN WALL
#4	18"
#5	27"
#6	50"
#7	69"
#8	108"



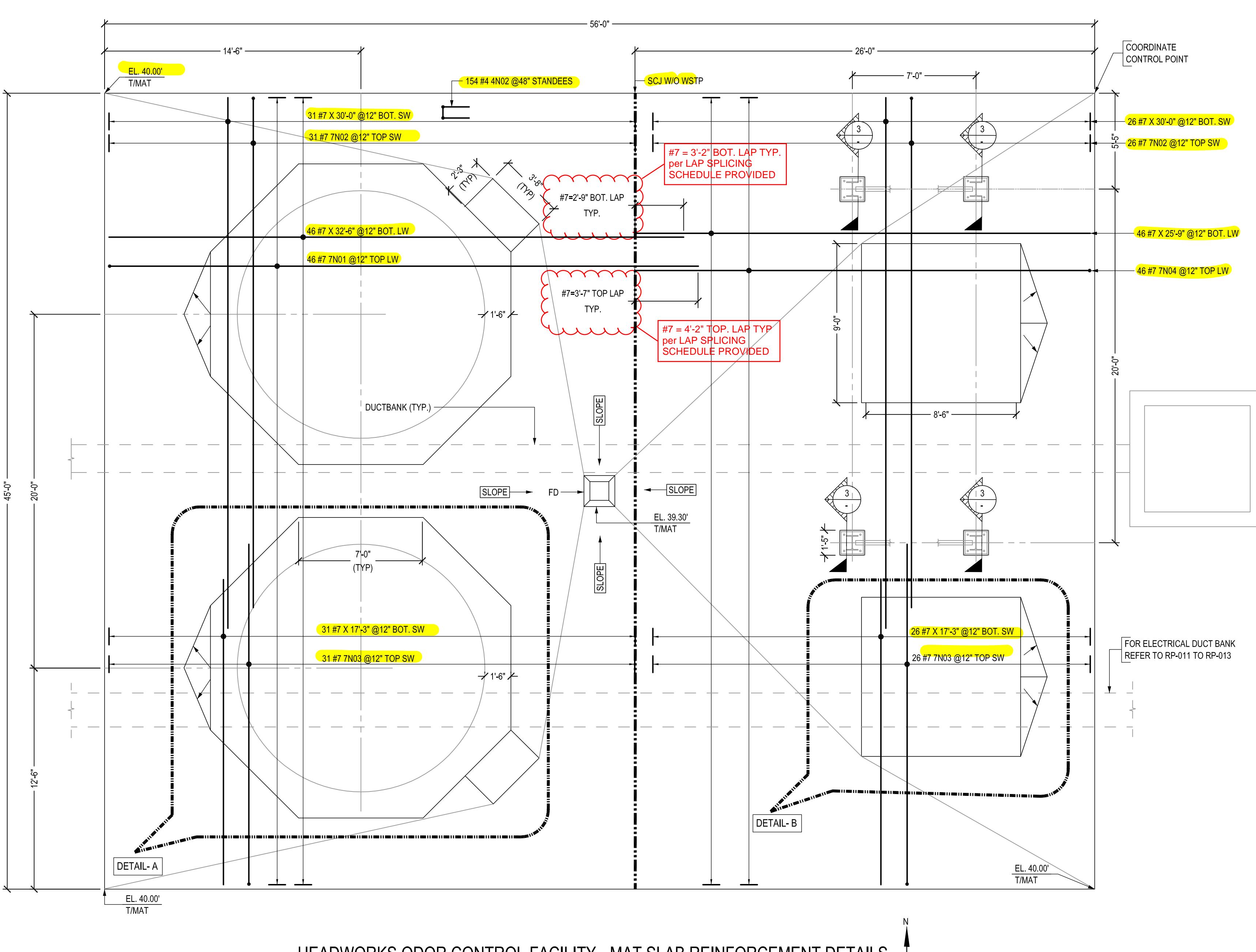
# KEY PLAN

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SALE - N.T.S  
F:02-M-01-105

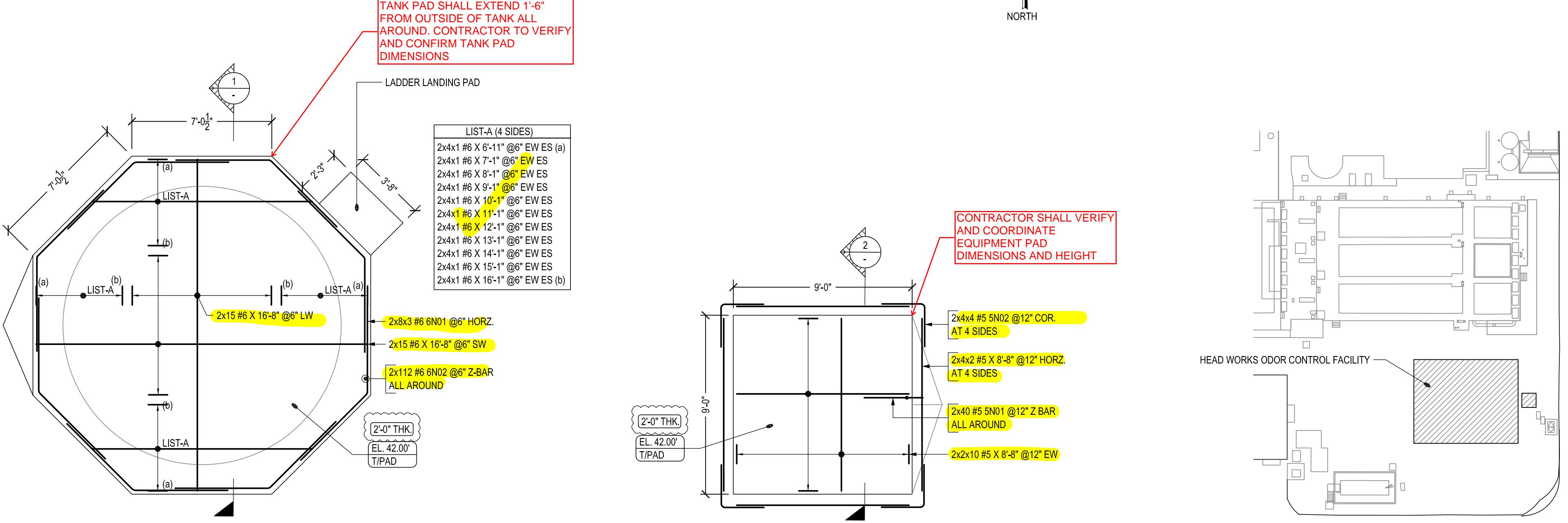
PROJECT INFORMATION		SUBMITTAL RECORD	
CUSTOMER:	-	JOB #:	252424001
JOB NAME:	HILO WWTP	DATE:	07/16/25
LOCATION:	COUNTY OF HAWAII	FOR:	APPROVAL
DESCRIPTION:	HEAD WORKS ELECTRICAL BUILDING REINFORCEMENT DETAILS		
		<b>CMC REBAR</b> <small>CMC MEMBER</small>	
JOB#:		2524240001	
DRAWING:		RP-018	





## **HEADWORKS ODOR CONTROL FACILITY - MAT SLAB REINFORCEMENT DETAILS**

SCALE - 1/4"=1'-0"  
REF:07-S-01-101 & 07-S-01-3



## TANK PADS - 2 EACH

**DETAIL**  SCALE - 1/4"=1'-0" PEE:07 S.01.101 .07 S.01.201 & S202/00 T.02.701

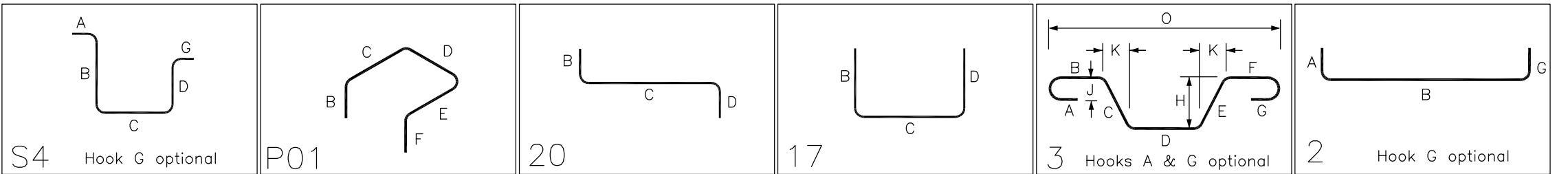
## EQUIPMQNT PADS - 2 E

**DETAIL**  
SCALE - 1/4"=1'-0"  
REF:07 S.01.101 .07 S.01.201 & S202/00 T.02

KEY PLAN

**SCALE - 1/4"=1'-0"**  
**REF:07-S-01-101 & 07-S-01-301**

roduced by RebarCAD 2020.0



<b>LAP SCHEDULE</b>		
REF: (S101/00-T-03-701)		
(FOR FOUNDATION)		
SIZE	4000 PSI	
	TOP	OTHERS
#3	20"	16"
#4	26"	20"
#5	30"	24"
#6	43"	33"
#7	50"	38"
#8	56"	42"
#9	62"	48"
#10	69"	54"

ABBREVIATIONS	
OTTOM	BOT.
P&BOTTOM	T&B
RNER BAR	COR.
ERTICAL	VERT.
RIZONTAL	HORZ.
CH WAY	EW
CH SIDE	ES
ONG WAY BAR	LW
HORT WAY BAR	SW
EFERENCE	REF.

ACCESSORIES	
IGHT	QUANTITY
O DOBIES (5000 PSI)	155 NOS. @4'-0" C/C.

SUBMITTAL RECORD		APPROVAL
DATE: 07/31/25	FOR: APPROVAL	ALL ITEMS TO REFER TO Q IN THE CONT ACTION IS IN SO MARKED AND FURNISH RESPONSIBILI REQUESTED !!
DATE: .	FOR: .	
DATE: .	FOR: .	
 DATE: .		
 DATE: .		
 DATE: .		

The diagram shows a cross-section of a foundation wall. The wall has a height of 42' 0" above grade. At the top, there is a horizontal reinforcement bar labeled "6N02 @ 6" Z-BAR". Below the wall, there are two horizontal reinforcement bars labeled "6N01 @ 6" HORZ.". On the left side, there is a note: "ENG. PLEASE VERIFY THE PAD THICKNESS" with a callout to a dimension of "2'-0"". On the right side, there is a note: "EL. 40.00' T/MAT" with a callout to a dimension of "4N02 @ 48" STANDEES". At the bottom, there are two horizontal reinforcement bars labeled "#7 @ 12" BOT. SW" and "#7 @ 12" BOT. LW". Vertical dimensions include "2" CLR. TYP." at the top and "3" CLR. TYP." at the bottom. A red arrow points from the top left towards the "ENG. PLEASE VERIFY THE PAD THICKNESS" note.

## CTION

SECTION 1  
SCALE - 1/2"=1'-0"  
EE-07-S-01-301 & S314/00-T-03-707

Diagram illustrating the structural details of a foundation pad. The pad is 9'-0" wide and 2'-0" thick. Key components include:

- Top Rebar:** #5 @12" EW (horizontal) and #5 @12" HORZ. (vertical).
- Z-Bar:** 5N01 @12" Z BAR.
- Bottom Rebar:** 5N01 @12" Z BAR.
- Side Rebar:** #5 @12" HORZ. (top and bottom), 7N02 @12" TOP SW, and 7N01 @12" TOP LW.
- Standees:** 4N02 @48" STANDEES.
- Vertical Dimensions:** The top of the pad is at EL. 42.00' T/PAD, and the bottom of the pad is at EL. 40.00' T/MAT.
- Notes:** A red box with a callout states: "Eng. please verify the pad thickness". Another note at the top left says: "Please coordinate final thickness and height of the pad with the contractor furnished".

#7 @12" BOT. S

SECTION

**SECTION 2**

SCALE - 1/2"=1'-0"

REF:07-S-01-301 & S302/00-T-03-707

Contractor shall coordinate to provide cast-in place anchor bolts as required per Detail 3/07-S-01-101

2'0" CLR TYP.

2" CLR TYP.

#7 @12" BOT. SW

#7 @12" BOT. LW

7N02 @12" TOP SW

7N01 @12" TOP LW

EL. 40.00' T/MAT

4N02 @48" STANDEES

4x2x2 #4 4N01 U-BAR EW AT 4 EACH

U-bar 4N01 shall be placed with 1" clearance from the anchor bolt locations

SECTION 3

SECTION  
SCALE 1/2"-1' 0"  
3

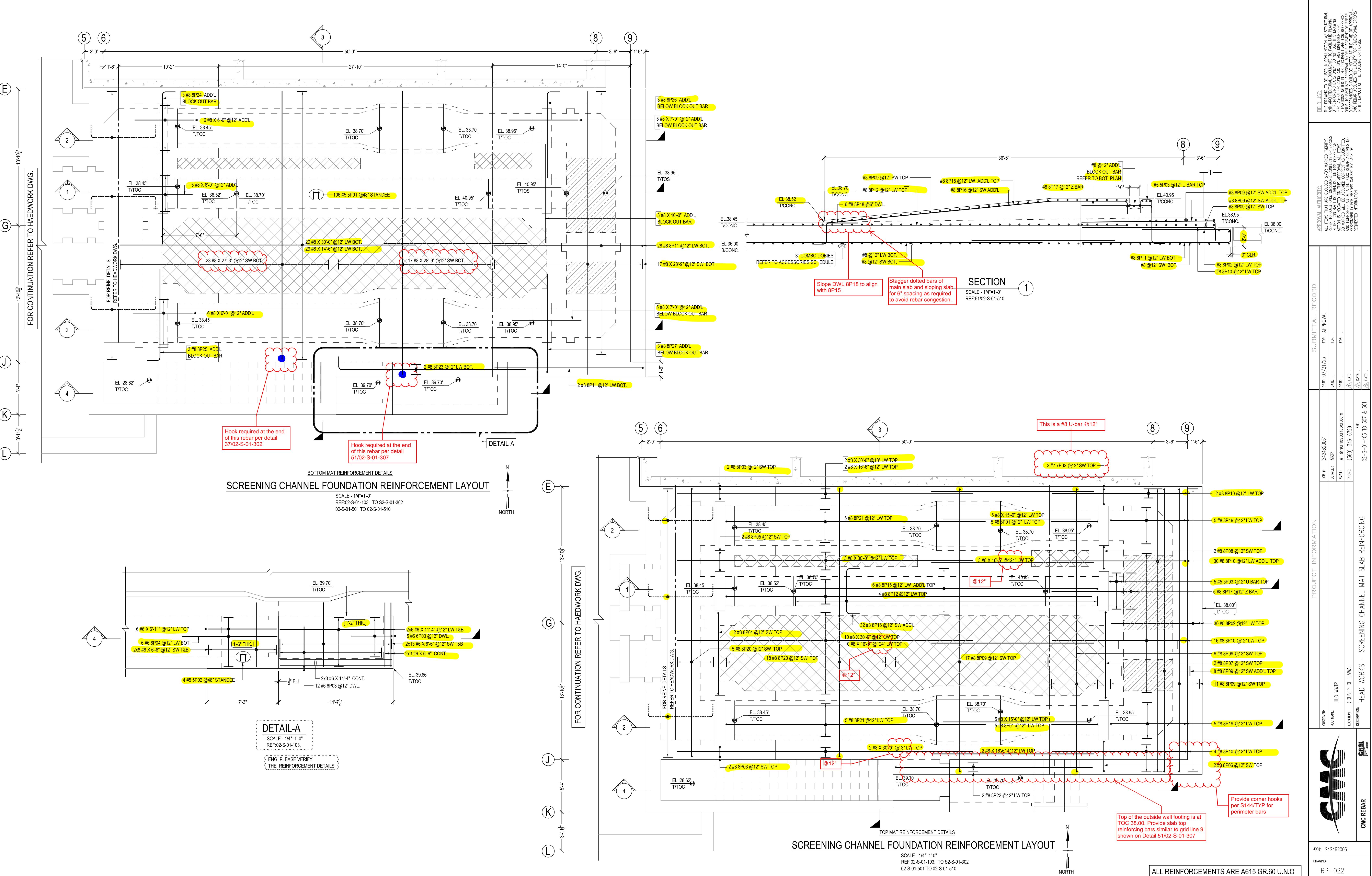
EF:07-S-01-301

ALL REINFORCEMENTS ARE A615 G

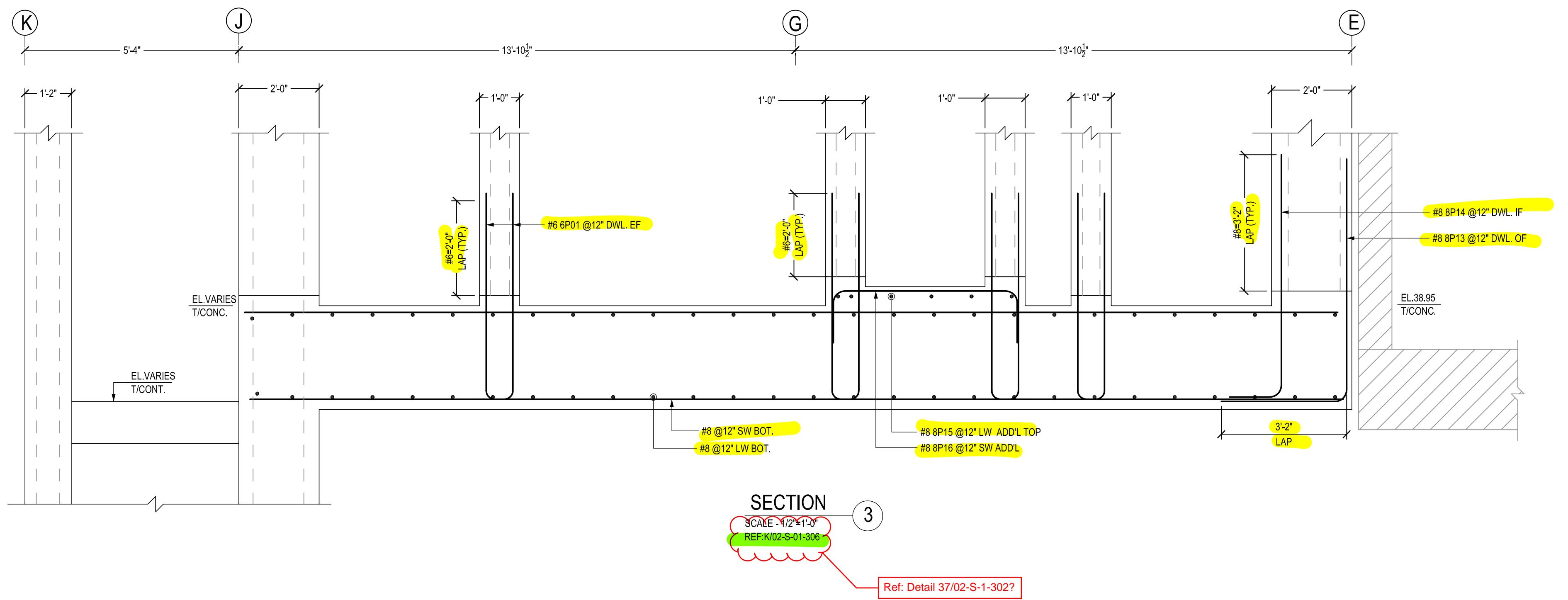
ALL REINFORCEMENTS ARE A615 GR.60 U.N.O

PROJECT INFORMATION

PROJECT			
CUSTOMER:	-	JOB NAME:	HILO WWTP
LOCATION:	COUNTY OF HAWAII	DESCRIPTION:	HEAD WORKS ODOUR CONTROL FACILITY
		<b>CMC REBAR</b> 	
JOB #: 2524240001			
DRAWING:			
RP-021			



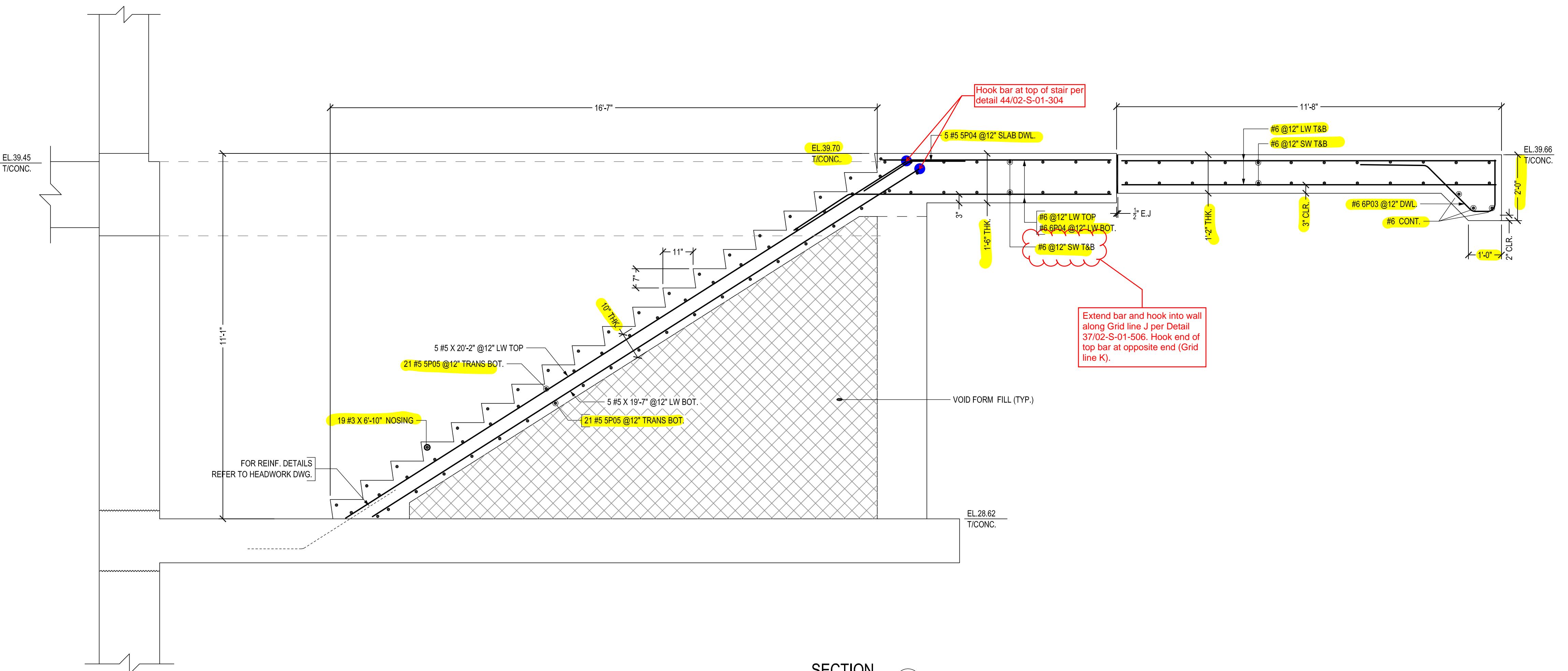




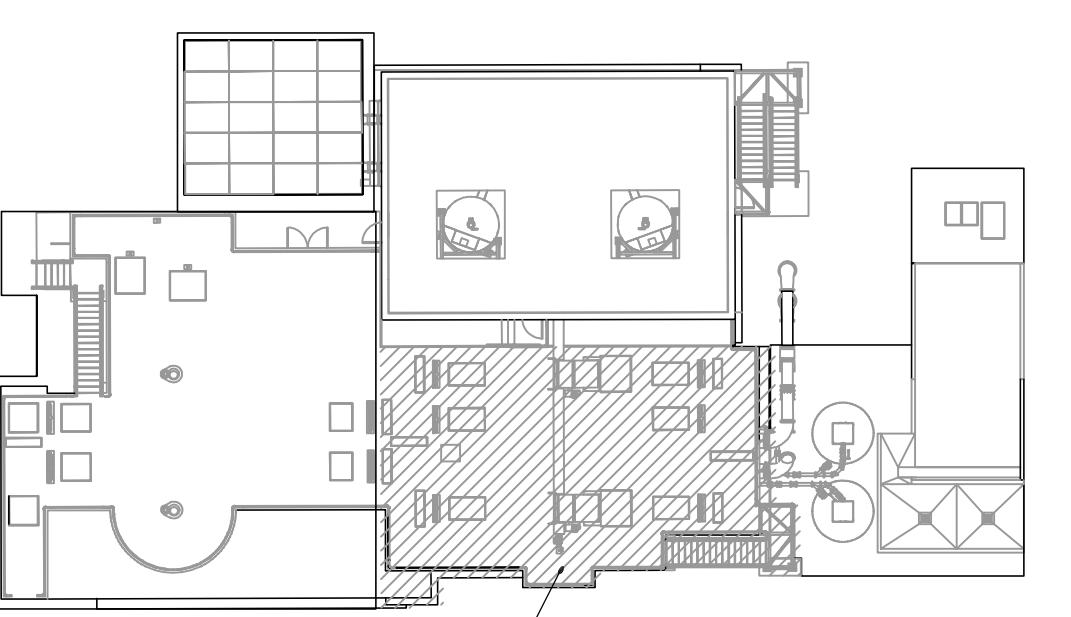
**SECTION**  
SCALE - 1/2" = 1'-0"  
REF ID: C202-0-01-200

REF:K/02-S-01-300

Ref: Detail 37/02-S-1-302?



**SECTION**  
SCALE - 1/2"=1'-0"  
REF:02-S-01-307 , 49/02-S-01-510

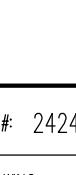


# KEY PLAN

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SCALE - N.T.S

REF:02-M-01-105

PROJECT INFORMATION		SUBMITTAL RECORD	
 <b>CUSTOMER:</b> JOB NAME: HILO WWTP		<b>JOB #:</b> 2424620061 <b>DETAILER:</b> MKR <b>EMAIL:</b> will@nmcmasterrebar.com <b>PHONE:</b> (360)-346-6729	<b>DATE:</b> 07/31/25 <b>FOR:</b> APPROVAL <b>DATE:</b> . <b>FOR:</b> . <b>DATE:</b> . <b>FOR:</b> . <b>DATE:</b> . <b>FOR:</b> . <b>DATE:</b> . <b>FOR:</b> .
<b>LOCATION:</b> COUNTY OF HAWAII <b>DESCRIPTION:</b> SCREENING CHANNEL FOUNDATION REINFORCING		<b>REF:</b> 02-S-01-103 TO 307 & 501 <b>DATE:</b> □/□/□	
<b>DRAWING:</b> RP-024		<b>JOB #:</b> 2424620061	

High Priority

## CONTRACTOR SUBMITTAL TRANSMITTAL FORM REV. A

**Owner:** County of Hawaii  
**Contractor:** Nan, Inc.  
**Project Name:** Hilo WWTP Phase 1  
**Submittal Title:**  
**TO:**  
**From:** Nan Inc.

**Project No.:** WW-4705R  
**Submittal Number:**  
For Information Only

Specification No. and Subject of Submittal / Equipment Supplier	
Spec:	Paragraph:
Authored By:	Date Submitted:

Submittal Certification		
<b>Check Either (A) or (B):</b>		
<input type="checkbox"/> (A)	We have verified that the equipment or material contained in this submittal meets all the requirements specified in the project manual or shown on the contract drawings with <u>no exceptions</u> .	
<input type="checkbox"/> (B)	We have verified that the equipment or material contained in this submittal meets all the requirements specified in the project manual or shown on the contract drawings <u>except</u> for the deviations listed.	
Certification Statement: By this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data, and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements.		
<b>General Contractor's Reviewer's Signature:</b>		
<b>Printed Name and Title:</b>		
In the event, Contractor believes the Submittal response does or will cause a change to the requirements of the Contract, Contractor shall immediately give written notice stating that Contractor considers the response to be a Change Order.		
<b>Firm:</b>	<b>Signature:</b>	<b>Date Returned:</b>

PM/CM Office Use	
Date Received GC to PM/CM:	
Date Received PM/CM to Reviewer:	
Date Received Reviewer to PM/CM:	
Date Sent PM/CM to GC:	

Nan, Inc

PROJECT: HILO WWTP REHABILITATION  
AND REPLACEMENT PROJECT - PHASE 1

JOB NO. WW-4705R

THIS SUBMITTAL HAS BEEN CHECKED BY  
THIS CONTRACTOR. IT IS CERTIFIED  
CORRECT, COMPLETE, AND IN  
COMPLIANCE WITH CONTRACT  
DRAWINGS AND SPECIFICATIONS. ALL  
AFFECTED CONTRACTORS AND  
SUPPLIERS ARE AWARE OF, AND WILL  
INTEGRATE THIS SUBMITTAL (UPON  
APPROVAL) INTO THEIR OWN WORK.

DATE RECEIVED \_\_\_\_\_  
SPECIFICATION SECTION # \_\_\_\_\_  
SPECIFICATION \_\_\_\_\_  
PARAGRAPH \_\_\_\_\_  
DRAWING \_\_\_\_\_  
SUBCONTRACTOR \_\_\_\_\_  
SUPPLIER \_\_\_\_\_  
MANUFACTURER \_\_\_\_\_

CERTIFIED BY CQCM or Designee : \_\_\_\_\_

**SECTION 03200**  
**CONCRETE REINFORCING**

**PART 1 GENERAL**

**1.01 SUMMARY**

- A. Section includes:
  - 1. Reinforcing bars:
    - a. Carbon steel.
  - 2. Thread bars.
  - 3. Bar supports.
  - 4. Tie wires.
  - 5. Welded wire fabric.
  - 6. Mechanical reinforcing bar couplers.

**1.02 REFERENCES**

- A. American Concrete Institute (ACI):
  - 1. 318 - Building Code Requirements for Structural Concrete and Commentary.
  - 2. SP-66 - ACI Detailing Manual.
- B. American Iron and Steel Institute (AISI).
- C. American Welding Society (AWS):
  - 1. D1.4 - Structural Welding Code - Reinforcing Steel.
- D. ASTM International (ASTM):
  - 1. A493 - Standard Specification for Stainless Steel Wire and Wire Rods for Cold Heading and Cold Forging.
  - 2. A615 - Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement.
  - 3. A706 - Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.
  - 4. A1064 - Standard Specification of Carbon-Steel wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
- E. Concrete Reinforcing Steel Institute (CRSI):
  - 1. Manual of Standard Practice.
- F. ICC Evaluation Service (ICC-ES):
  - 1. AC133 - Acceptance Criteria for Mechanical Connector Systems for Steel Reinforcing Bars.

## **1.03 DEFINITIONS**

- A. Architectural Concrete: Concrete surfaces that will be exposed to view in the finished work.
  - 1. Additionally, for purposes of this Section, includes:
    - a. Concrete surfaces that are designated to receive paints or coatings.
    - b. Exposed concrete in open basins, channels, and similar liquid containing structures: Surfaces shall be considered exposed to view if located above a line 2 feet below the normal operating water surface elevation in that structure.
- B. Bars: Reinforcement or reinforcing bars as specified in this Section.
- C. Evaluation Report: Report prepared by ICC-ES , or by other testing agency acceptable to the Engineer and to the Building Official, that documents testing and review of a product to confirm that it complies with the requirements of designated ICC-ES Acceptance Criteria, and its acceptance for use under the Building Code specified in Section 01410 - Regulatory Requirements.
- D. Give Away Bars: Reinforcing bars that are not required by the Contract Documents, but are installed by the Contractor to provide support for the required reinforcing bars.
- E. Wire Supports: Metal reinforcing supports constructed of steel wire as specified. Includes individual high chairs, continuous high chairs, bolsters and other similar configurations and shapes.

## **1.04 SUBMITTALS**

- A. General:
  - 1. Submit in accordance with Section 01330 - Submittal Procedures.
  - 2. Changes to reinforcement in Contract Documents:
    - a. Indicate in a separate letter submitted with shop drawings any changes to reinforcement indicated on the Drawings or specified.
    - b. Such changes will not be acceptable unless Engineer has accepted them in writing.
- B. Product data:
  - 1. Bar supports:
    - a. Wire bar supports:
      - 1) Schedule of support materials to be provided and locations of use.
      - b. Precast concrete bar supports ("dobies"):
        - 1) Manufacturer's data indicating compression strength of concrete and confirming dimensions and thickness(es).height(s) to be provided for each location where used.
    - 2. Mechanical reinforcing bar couplers. For each type and/or series to be provided:
      - a. Evaluation Report documenting compliance with the requirements of ICC-ES AC133.

Provided in  
03200-001.0

- b. Details, properties, and dimensions of couplers. Include type or size identification, and bar size(s) and grade(s) for which the coupler is suitable.
- c. Manufacturer's installation and testing instructions.
- d. Manufacturer's statement that products installed in accordance with manufacturer's recommended procedures will develop strengths and limit slip as specified in this Section.

C Shop drawings:

- 1. Reinforcement shop drawings:
    - a. Submit drawings showing bending and placement of reinforcement required by the Contract Documents.
    - b. Clearly indicate structures or portions of structures covered by each submittal.
      - 1) Submit reinforcement shop drawings for each structure as a complete package. Submittals addressing only a portion of a structure will be rejected and returned without review, unless such presentation is accepted by Engineer in advance.
    - c. Shop drawings shall conform to the recommendations of the CRSI Manual of Standard Practice and ACI SP-66.
    - d. Use the same bar identification marks on bending detail drawings, placement drawings, and shipping tags.
    - e. Submittals consisting solely of reinforcing bar schedules, without accompanying placement drawings, will not be accepted unless accepted under prior written agreement with Engineer.
  - 2. Reinforcement placement drawings:
    - a. Clearly show placement of each bar listed in the bill of materials, including additional reinforcement at corners and openings, and other reinforcement required by details in the Contract Documents.
    - b. Clearly identify locations of reinforcement with coatings (e.g., galvanized or epoxy) and with yield strength other than ASTM A615, Grade 60.
    - c. Show anchor bolt locations based on anchor bolt templates for approved equipment.
    - d. Show splice locations.
    - e. Show locations of mechanical reinforcing couplers, if used.
  - 3. Reinforcement fabrication drawings:
    - a. If bend types or nomenclature differs from that recommended in the CRSI Manual of Standard Practice, provide details showing bend types and dimensional designations.  
Clearly identify reinforcement with coatings and with yield strength other than ASTM A615, Grade 60.
- D. Samples (when requested by Engineer):
- 1. Bar supports/wire reinforcement supports: Samples of each type of chair and bolster proposed for use. Submit with letter stating where each type will be used.
  - 2. Precast concrete bar supports: Samples of each type of precast support proposed for use. Submit with letter stating where each will be used.

Not included in  
this submittals

**E. Test reports:**

- Not included in this submittals. Will be provided for each shipping
1. Certified copy of mill test for each steel used. Show physical properties and chemical analysis.
    - a. Mill test reports may be submitted as record documents at the time the reinforcement from that heat of steel is shipped to the site.
    - b. In such cases, submit certificates under the shop drawing submittal number with the letter "R" (for record date) appended to the end (e.g., if the reinforcement was submitted as 03200-002-1, deliver the associated mill certificate as submittal 03200-002-1R).
  2. Mechanical reinforcing bar couplers:
    - a. Current Evaluation Report confirming that couplers provide specified tension and compression strength and conform to specified limits on total slip within the coupler.
    - b. Certified copy of mill tests for heat(s) of steel incorporated into the reinforcing bar couplers shipped.
    - c. For threaded sleeve type couplers, heat treatment lot numbers for each shipment.

Provided by submittal  
03200-001.0

**F. Manufacturer's instructions:**

1. Mechanical reinforcing bar couplers:
  - a. Manufacturer's installation instructions.
  - b. Manufacturer's instructions for confirmation testing of couplers after reinforcing bars have been inserted into the couplers.

**G. Special procedures:**

1. Welding procedures conforming to AWS D1.4 for reinforcement to be field welded.
  - a. Procedures qualification record.

Not included in this submittals.  
Subcontractor has no plan to  
use welding so far, will provide  
if needed

**H. Qualifications statements:**

1. Welder qualifications.

**I. Closeout documents:**

1. Field quality control and inspection reports.
2. Field quality assurance special inspection and testing reports.

## 1.05 DELIVERY, STORAGE, AND HANDLING

**A. Packing and shipping:**

1. Deliver bars bundled and tagged with identifying tags.

**B. Acceptance at site:**

1. Reinforcing bars: Deliver reinforcing bars lacking grade identification marks with letter containing manufacturer's guarantee of grade.

## 1.06 SEQUENCING AND SCHEDULING

**A. Bar supports:**

1. Do not place concrete until samples and product data for bar supports have been accepted by Engineer.

## PART 2 PRODUCTS

### 2.01 DESIGN AND PERFORMANCE CRITERIA

- A. The drawings contain notes describing the size and spacing of reinforcement and its placement, details of reinforcement at wall corners and intersections, and details of extra reinforcement around openings in concrete, and other related information.

### 2.02 MATERIALS

- A. Reinforcing bars:
  - 1. Provide reinforcement of the grades and quality specified, fabricated from new stock, free from excessive rust or scale, and free from unintended bends or other defects affecting its usefulness.
  - 2. Reinforcing bars:
    - a. ASTM A615 Grade 60 deformed bars, including the following requirements, or ASTM A706 Grade 60 deformed bars.
      - 1) Actual yield strength based on mil tests of reinforcement provided shall not exceed the minimum yield strength specified in this Section by more than 18,000 pounds per square inch.
      - 2) Ratio of actual ultimate tensile strength to actual tensile yield strength shall not be less than 1.25.
    - 3. Reinforcing bars designated or required to be welded:
      - a. Low-alloy, ASTM A706 Grade 60, deformed bars.
- B. Bar supports:
  - 1. Wire supports:
    - a. All stainless steel bar supports:
      - 1) Conforming to CRSI Manual of Standard Practice recommendations for types and details, but custom fabricated entirely from stainless steel wire conforming to ASTM A493, AISI Type 316.
    - b. Stainless steel protected bar supports:
      - 1) Conforming to CRSI Manual of Standard Practice Class 2, Type B, and consisting of bright basic wire support fabricated from cold-drawn carbon steel wire with stainless steel ends attached at the bottom of each leg.
      - 2) Stainless steel wire ends shall conform to ASTM A493, AISI Type 316 and shall extend at least 3/4 inch inward from the formed surface of the concrete.
    - c. Bright basic wire bar supports.
      - 1) Conforming to CRSI Manual if Standard Practice, Class 3.
  - 2. Plastic supports:
    - a. Manufacturers: The following or equal:
      - 1) Aztec Concrete Accessories.
  - 3. Deformed steel reinforcing bar supports:
    - a. Fabricated of materials and to CRSI details recommended for typical reinforcement embedded in concrete and bent to dimensions required to provide specified clearances and concrete cover.
  - 4. Precast concrete bar supports ("dobies"):
    - a. Pre-manufactured, precast concrete blocks with cast-in annealed steel wires, 16-gauge or heavier.

- b. Compression strength of concrete: Equal to or exceeding the compression strength of the surrounding concrete.
    - c. Block dimensions:
      - 1) Height to provide specified concrete cover.
      - 2) Footprint not less than 3 inches by 3 inches, and adequate to support the weight of the reinforcement and maintain specified concrete cover without settling into the underlying surface.
  - 5. Stainless steel wire supports on stainless steel plates:
    - a. Type 304 stainless steel wire bar support chairs or bolsters supported on Type 304 stainless steel plates resting on the ground surface.
      - 1) Weld plates to at least 2 legs of wire support chairs.
- C. Tie wires:
- 1. General use: Black annealed steel wire, 16-gauge or heavier.
- D. Welded wire fabric reinforcement:
- 1. Material:
    - a. Carbon steel conforming to ASTM A1064.
  - 2. Provide welded wire reinforcement in flat sheet form. Rolled wire fabric is not permitted.
  - 3. Fabric may be used in place of reinforcing bars if accepted by Engineer:
    - a. Provide welded wire fabric having cross-sectional area per linear foot not less than the cross-sectional area per linear foot of reinforcing bars indicated on the Drawings.
- E. Mechanical reinforcing bar couplers:
- 1. General:
    - a. Only products conforming to the requirements of ACI 318 for mechanical splices, and holding a current Evaluation Report that documents the following performance characteristics, will be considered for use.
    - b. Strength of coupler: Capable of developing tension and compression strength not lower than the lesser of the following:
      - 1) ACI 318 "Type 2" units: In static tension and compression:
        - a) Minimum 125 percent of the ASTM-specified minimum yield strength of the reinforcement being spliced.
        - b) Minimum 100 percent of the ASTM-specified minimum ultimate strength of the reinforcement being spliced.
    - c. Slip of reinforcing bars within coupler: Total slip of the reinforcing bars within the splice sleeve limited as follows:
      - 1) For bar sizes #14 and smaller, elongation between gauge points measured clear of the splice sleeve not exceeding 0.010 inches after coupler has been loaded to a tension of 30,000 pounds per square inch and load relaxed to a tension of 3,000 pounds per square inch.
    - d. Fabrication:
      - 1) Threaded joints:
        - a) Provide threaded ends designed so that cross-threading of bars will not occur during assembly.
        - b) Fabricate male ends for female couplers using coupler manufacturer's bar threading equipment to ensure proper taper and thread engagement.
      - 2) Mark each sleeve with heat treatment lot number.

2. Couplers: Threaded - Reinforcing bar splice at construction joints.
  - a. Steel sleeve butt splice with tapered internal threads in forged or swaged head, and nailing flange for attaching to forms. Provide with matching, tapered male-threaded dowels for insertion and tightening into threaded sleeve after form removal.
    - 1) Provide sleeve with factory-installed plugs to prevent concrete mortar from entering internally threaded coupler.
    - 2) Provide optional clipped nailing flanges as required to maintain minimum specified concrete cover over surfaces of coupler.
  - b. Holding current Evaluation Report demonstrating acceptance under ICC-ES AC133.
  - c. Manufacturers: One of the following or equal:
    - 1) Dayton Superior, DBDI Splice System.
    - 2) ERICO-Pentair, Lenton Form Saver.
3. Couplers: Threaded - reinforcing bar splice:
  - a. Steel sleeve butt splice with tapered internal threads at each end for joining to matching tapered male threads on reinforcing bars.
  - b. Holding current Evaluation Report demonstrating acceptance under ICC-ES AC133.
  - c. Manufacturers: One of the following, or equal:
    - 1) Dayton Superior: Taper-Lock System.
    - 2) ERICO-Pentair: Lenton Taper Threaded Splicing System.

## **2.03 FABRICATION**

- A. Shop fabrication and assembly:
  1. Cut and bend bars in accordance with provisions of ACI 318 and the CRSI Manual of Standard Practice.
  2. Bend bars cold. Use bending collars to develop the recommended bend radius.
  3. Provide bars free from defects and kinks and from bends not indicated on the Drawings.
  4. Circumferential and radiused reinforcement: Roll to the radius required for its location in the structure before installation.
  5. Bars to be fitted with mechanical couplers:
    - a. Fabricate threaded ends for connections in shop using manufacturer's recommended tools. Field fabrication is not allowed.
    - b. Cut ends square.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verification of conditions:
  1. Reinforcing bars and welded wire reinforcement:
    - a. Verify that reinforcement is new stock, free from rust scale, loose mill scale, excessive rust, dirt, oil, and other coatings that will adversely affect bonding capacity when placed in the Work.
  2. Welded wire fabric:
    - a. Verify that sheets are not curled or kinked before or after installation.

## **3.02 PREPARATION**

- A. Surface preparation:
1. Reinforcing bars - uncoated:
    - a. Clean reinforcement of concrete, dirt, oil and other coatings that will adversely affect bond before embedding bars in subsequent concrete placements.
    - b. Thin coating of red rust resulting from short exposure will not be considered objectionable. Thoroughly clean bars having rust scale, loose mill scale, or thick rust coat.
    - c. Partially embedded reinforcement: Remove concrete or other deleterious coatings from dowels and other projecting bars by wire brushing or sandblasting before bars are embedded in subsequent concrete placements.

## **3.03 INSTALLATION**

- A. Reinforcing bars: General:
1. Field-cutting of reinforcing bars is not permitted.
  2. Field-bending of reinforcing bars, including straightening and rebending, is not permitted.
- B. Placing reinforcing bars:
1. Accurately place bars to meet position and cover requirements indicated on the Drawings and specified. Secure bars in position.
  2. Tolerances for placement and minimum concrete cover: As listed in Table 1.

**Table 1 - Reinforcement Placing Tolerances**

<b>Member</b>	<b>Tolerance on Reinforcement Location <sup>(1)</sup></b>	<b>Tolerance on Minimum Concrete Cover <sup>(1,2)</sup></b>
Slabs, beams, walls and columns except as noted below:		
10 inches thick and less	$\pm$ 3/8 inch	- 3/8 inch
More than 10 inches thick	$\pm$ 1/2 inch	- 1/2 inch
Formed soffits:	As noted above	- 1/4 inch
Longitudinal location of bends and ends of reinforcement:		
Conditions not listed below:	$\pm$ 2 inches	- 1/2 inch
At discontinuous ends of brackets and corbels	$\pm$ 1/2 inch	- 1/4 inch
At discontinuous ends of other members:	$\pm$ 1 inch	- 1/2 inch
Notes:		
(1) $\pm$ indicates "plus or minus;" - indicates "minus;" + indicates "plus."		
(2) Tolerance on cover is limited as noted, but decrease in cover shall not exceed one third of the minimum cover indicated on the Drawings.		

3. Spacing between bars:
    - a. Minimum clear spacing between bars in a layer:
      - 1) As indicated on the Drawings, but not less than the larger of 1.5 times the bar diameter or 1-1/2 inches.
    - b. Minimum clear spacing between bars in 2 or more parallel layers:
      - 1) Place bars in upper layers directly above bars in lower layers.
      - 2) Minimum spacing between layers: As indicated on the Drawings, but not less than the larger of 1.5 times the bar diameter or 1-1/2 inches.
    - c. Limits on minimum clear spacing between bars also applies to the clear spacing between a lap splice and the adjacent bars and/or lap splices.
  4. Lap splices for bars:
    - a. Lap splice locations and lap splice lengths: as indicated on the Drawings. Where lap lengths are not indicated, provide in accordance with ACI 318.
    - b. Unless otherwise specifically indicated on the Drawings (and noted as "non-contact lap splice"), install bars at lap splices in contact with each other and fasten together with tie wire.
    - c. Where bars are to be lap spliced at concrete joints, ensure that bars project from the first concrete placement a length equal to or greater than minimum lap splice length indicated on the Drawings.
    - d. Stagger lap splices where indicated on the Drawings.
    - e. Where lap splice lengths are not indicated on the Drawings, provide lap splice lengths in accordance with ACI 318.
- C. Reinforcing supports:
1. Provide supports of sufficient numbers, sizes, and locations to maintain concrete cover, to prevent sagging and shifting, and to support loads during construction without displacement and without gouging or indentation into forming surfaces.
    - a. Quantities and locations of supports shall not be less than those indicated in ACI SP-66 and the CRSI Manual of Standard Practice.
  2. Do not use brick, concrete masonry units, concrete spalls, rocks, wood, or similar materials for supporting reinforcement.
  3. Do not use "give away bars" that have less cover than that required by the Contract Documents. Do not adjust the location of reinforcement required by the Contract Documents to provide cover for give away bars.
  4. Provide bar supports of height required to maintain the clear concrete cover indicated on the Drawings.
  5. Provide bar supports at formed vertical faces to maintain the clear concrete cover indicated on the Drawings.

6. Schedule of reinforcement support materials: Provide bar supports as indicated in Table 2.

<b>Table 2 - Reinforcement Support Materials</b>		
<b>Case</b>	<b>Location</b>	<b>Material</b>
a.	Concrete placed over earth and concrete seal slabs ("mud mats"):	Precast concrete bar supports.
b.	Concrete placed against forms and exposed to water or wastewater process liquids (whether or not such concrete received additional linings or coatings):	All stainless steel bar supports.
c.	Concrete placed against forms and exposed to earth, weather, frequent washdown, or groundwater in the finished work:	All stainless steel bar supports.
d.	Concrete placed against forms and exposed to interior equipment/piping areas in the finished work:	All stainless steel bar supports.
e.	Between mats of reinforcement, and fully embedded within a concrete member:	Bright basic wire bars supports, or deformed steel reinforcing bars.

D. Tying of reinforcing:

1. Fasten reinforcement securely in place with wire ties.
2. Tie reinforcement at spacings sufficient to prevent shifting.
  - a. Provide at least 3 ties in each bar length. (Does not apply to dowel lap splices or to bars shorter than 4 feet, unless necessary for rigidity).
3. Tie slab bars at every intersection around perimeter of slab.
4. Tie wall bars and slab bar intersections other than around perimeter at not less than every fourth intersection, but at not more than the spacing indicated in Table 3:

<b>Table 3 - Maximum Spacing of Tie Wires for Reinforcement</b>		
<b>Bar Size</b>	<b>Slab Bar Spacing (inches)</b>	<b>Wall Bar Spacing (inches)</b>
Bars Number 5 and Smaller	60	48
Bars Number 6 through Number 9	96	60
Bars Number 10 and Number 11	120	96

5. After tying:

- a. Bend ends of wires inward towards the center of the concrete section. Minimum concrete cover for tie wires shall be the same as cover requirements for reinforcement.
- b. Remove tie wire clippings from inside forms before placing concrete.

**E. Welded wire fabric reinforcement:**

1. Install only where indicated on the Drawings or accepted in advance by Engineer.
2. Install necessary tie wires, spacing chairs, and supports to keep welded wire fabric at its designated position in the concrete section while concrete is being placed.
3. Straighten welded wire fabric to make sheets flat in the Work.
4. Do not allow wire fabric to drape between supports unless such a configuration is specifically indicated on the Drawings.
  - a. If fabric is displaced during placement of concrete, make provisions to restore it to the designated location using methods acceptable to Engineer.
5. Bend welded wire fabric as indicated on the Drawings or required to fit Work.
6. Lap splice welded wire fabric as indicated on the Drawings.
  - a. If lap splice length is not indicated, splice in accordance with ACI 318, but not less than 1 1/2 courses of fabric or 8 inches minimum. Tie laps at ends and at not more than 12 inches on center.

**F. Welding reinforcing bars:**

1. Weld reinforcing bars only where indicated on the Drawings or where acceptance is received from Engineer prior to welding.
2. Perform welding in accordance with AWS D1.4 and welding procedures accepted by Engineer.
  - a. Conform to requirements for minimum preheat and interpass temperatures.
3. Submit:
  - a. Welding procedures specification.
  - b. Procedures qualification record.
  - c. Welder qualification test record.
4. Do not tack weld reinforcing bars except where specifically indicated on the Drawings.

**G. Reinforcing bar mechanical couplers:**

1. Install only at locations indicated on the Drawings or where prior approval has been obtained from Engineer.
2. Install in accordance with manufacturer's instructions and requirements of Evaluation Report.
  - a. Make splices using manufacturer's standard equipment, jigs, clamps, and other required accessories.
  - b. After assembly of the splice, tighten using torque load not less than that recommended by the manufacturer.
3. Unless greater cover is indicated on the Drawings, provide clear cover from surface of concrete to outside face of couplers that is not less than the minimum concrete cover specified for typical reinforcement.
  - a. If cover is less than required, contact Engineer for evaluation of conditions before modifying locations of bars or placing concrete.
  - b. Modifications to maintain or provide required concrete cover, such as addition of concrete ; re-positioning of stirrups, ties, etc., may be completed only after approval by Engineer.

### **3.04 FIELD QUALITY CONTROL**

- A. Provide quality control for the Work of this Section as specified in Section 01450 -Quality Control.
- B. Field inspections and testing:
  - 1. Submit records of inspections and testing to Engineer in electronic format within 24 hours after completion.
- C. Manufacturer's services:
  - 1. Furnish manufacturer's technical representative to conduct jobsite training regarding proper storage, handling, and installation of mechanical reinforcing bar couplers for personnel who will perform the installation. Engineer may attend training session.

### **3.05 FIELD QUALITY ASSURANCE**

- A. Provide quality assurance as specified in Section 01450 - Quality Control.
- B. Special inspections and tests:
  - 1. Provide as specified in Section 01455 - Regulatory Quality Assurance.
  - 2. Frequency of inspections:
    - a. Unless otherwise indicated on the Drawings or in this Section, provide periodic special inspection as required by the Building Code specified in Section 01410 - Regulatory Requirements.
  - 3. Preparation:
    - a. Review Drawings and Specification for the Work to be observed.
    - b. Review approved submittal sand shop drawings.
  - 4. Inspections: Special inspection shall include, but is not limited to, the following items.
    - a. Reinforcement: General:
      - 1) Type (material) and location of reinforcement supports.
      - 2) Bar material/steel grade and bar size.
      - 3) Location, placement, and spacing of bars.
      - 4) Clear concrete cover over reinforcement.
      - 5) Lap splice: Location and lap length. Bars within tolerances for contact (unless non-contact splice is indicated on the Drawings).
      - 6) Bar hooks and development lengths embedded within concrete sections as indicated on the Drawings.
      - 7) Reinforcement tired in position and tie wire legs turned inward toward the center of the concrete section.
    - b. Reinforcement: Welding:
      - 1) Inspector qualification and inspections shall be in accordance with the requirements of AWS D1.4.
      - 2) Provide periodic inspection for:
        - a) Weldability of reinforcement other than ASTM A706.
        - b) Single pass fillet welds with thickness less than or equal to 5/16 inch.
      - 3) Provide continuous inspection for:
        - a) Other welds.
        - b) Welds at mechanical reinforcing bar couplers and end anchors.

- 4) In addition to visual inspection, Owner may inspect reinforcing bar welds by other methods, including radiographic inspection.
5. Mechanical reinforcing bar couplers:
  - a. Special inspection shall include, but is not limited to, the following items:
    - 1) Coupler model and identification.
    - 2) Couplers are installed in accordance with the requirements of the Engineering Report for each product.
    - 3) Confirmation of the following:
      - a) Grade and size of reinforcing bars.
      - b) Position of couplers.
      - c) Insertion length of reinforcement.
      - d) Tightening of bars in the couplers.
  6. Records of inspections:
    - a. Provide a written record of each inspection using forms acceptable to the Engineer and to the Building Official.
    - b. Submit electronic copies of inspection reports to Engineer within 24 hours after completion of inspections.

### **3.06 NON-CONFORMING WORK**

- A. Before placing concrete, adjust or remove and re-install reinforcement to conform to the requirements of the Contract Documents.

END OF SECTION

# SHOP DRAWINGS

Nan, Inc

PROJECT: HILO WWTP REHABILITATION  
AND REPLACEMENT PROJECT - PHASE 1

JOB NO. WW-4705R

THIS SUBMITTAL HAS BEEN CHECKED BY  
THIS CONTRACTOR. IT IS CERTIFIED  
CORRECT, COMPLETE, AND IN  
COMPLIANCE WITH CONTRACT  
DRAWINGS AND SPECIFICATIONS. ALL  
AFFECTED CONTRACTORS AND  
SUPPLIERS ARE AWARE OF, AND WILL  
INTEGRATE THIS SUBMITTAL (UPON  
APPROVAL) INTO THEIR OWN WORK.

DATE RECEIVED 8/12/2025

SPECIFICATION SECTION # 03200

SPECIFICATION CONCRETE REINFORCING

PARAGRAPH 1.04

DRAWING SHOP DRAWING

SUBCONTRACTOR CMC

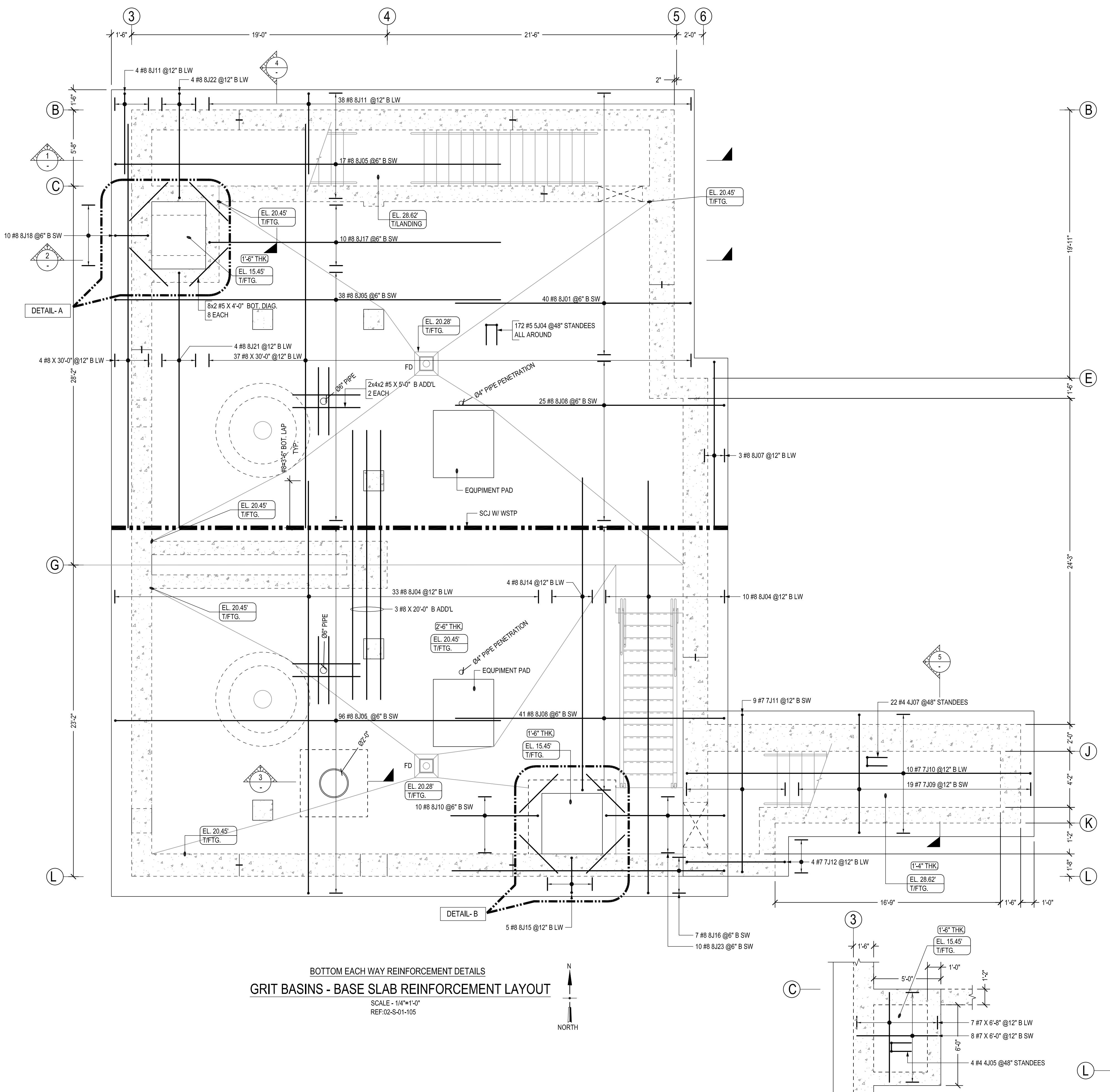
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MANUFACTURER N/A

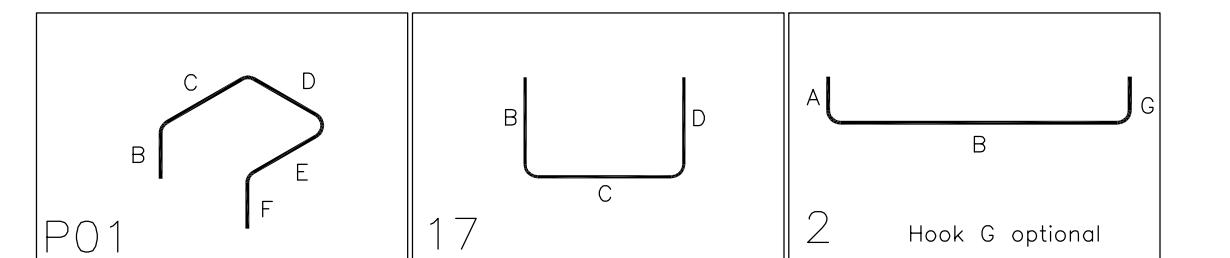
CERTIFIED BY: \_\_\_\_\_

# TABLE OF CONTENTS

SHEET NUMBER	TITLE
RP -14	GRIT BASINS - BASE SLAB REINFORCEMENTS DETAILS
RP -15	GRIT BASINS - BASE SLAB REINFORCEMENTS DETAILS
RP -16	GRIT BASINS - BASE SLAB REINFORCEMENTS DETAILS
RP -17	GRIT BASINS - BASE SLAB REINFORCEMENTS DETAILS
RP -18	GRIT BASINS - ELECTRICAL BUILDING REINFORCEMENTS DETAILS
RP -19	GRIT BASINS - ELECTRICAL BUILDING REINFORCEMENTS DETAILS
RP -20	NOT USED
RP -21	HEAD WORKS ODOR CONTROL FACILITY
RP -22	HEAD WORKS - SCREENING CHANNEL MAT SLAB REINFORCING
RP -23	HEAD WORKS - SCREENING CHANNEL MAT SLAB REINFORCING
RP -24	HEAD WORKS - SCREENING CHANNEL MAT SLAB REINFORCING

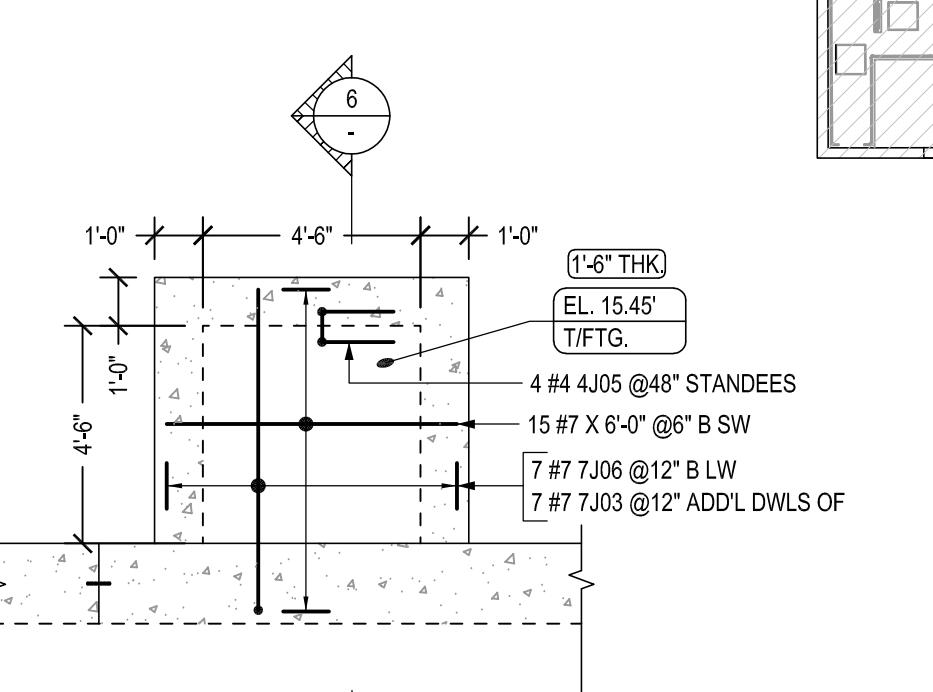
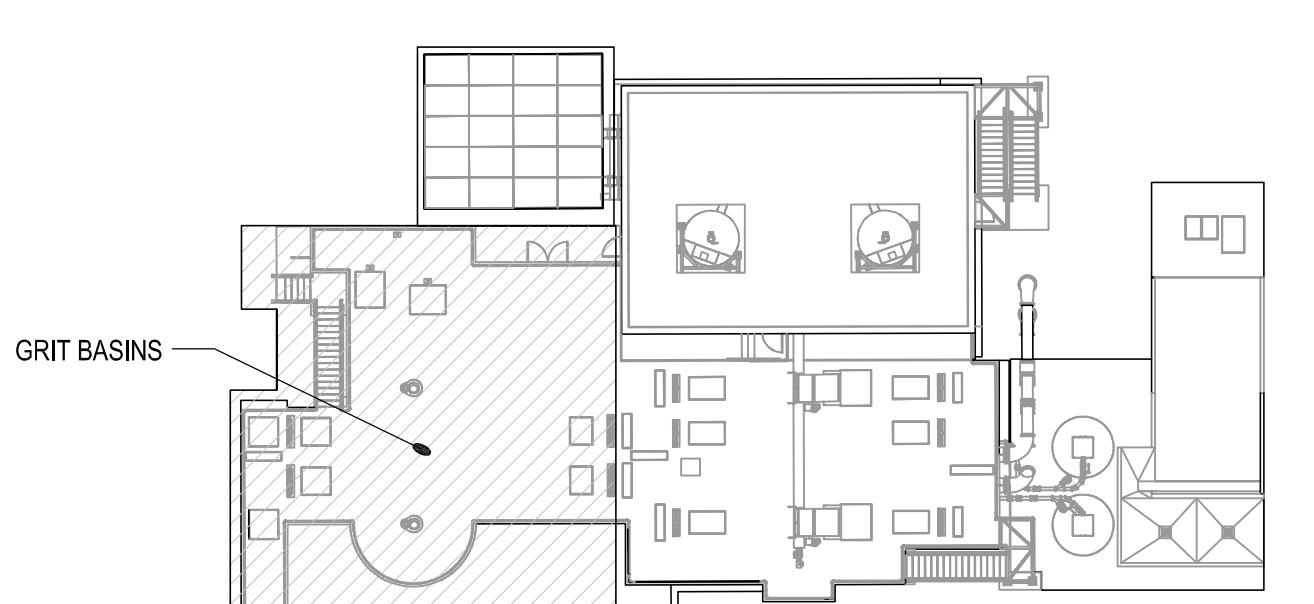


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4J05	8	#4	5'-4 1/2"	P01		1'-6"	0'-10 1/4"	0'-8"	0'-10 1/4"	1'-6"						
4J07	22	#4	5'-0 1/2"	P01		1'-6"	0'-8 1/4"	0'-8"	0'-8 1/4"	1'-6"						
5J04	172	#5	7'-6 1/2"	P01		1'-6"	1'-10 1/4"	0'-10"	1'-10 1/4"	1'-6"						
7J03	7	#7	15'-11"	17		6'-8"	9'-3"									
7J06	7	#7	19'-2"	17		6'-8"	12'-6"									
7J09	19	#7	10'-8"	17		0'-11"	8'-10"	0'-11"								
7J10	10	#7	27'-5"	17		0'-11"	25'-7"	0'-11"								
7J11	9	#7	13'-7"	17		0'-11"	11'-9"	0'-11"								
7J12	4	#7	9'-2"	17		0'-11"	7'-4"	0'-11"								
8J01	40	#8	18'-10"	2	1'-4"	17'-6"										
8J04	43	#8	32'-0"	2	1'-4"	30'-8"										
8J05	151	#8	30'-0"	2	1'-4"	28'-8"										
8J07	3	#8	13'-8"	2	1'-4"	12'-4"										
8J08	66	#8	21'-4"	2	1'-4"	20'-0"										
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8J11	42	#8	7'-4"	2	1'-4"	6'-0"										
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8J22	4	#8	10'-6"	2	1'-4"	7'-10"					1'-4"					
8J23	10	#8	11'-6"	2	1'-4"	8'-10"					1'-4"					



ABBREVIATIONS	
BOTTOM	B
TOP&BOTTOM	T&B
CONTINUOUS	CONT.
CORNER BAR	COR.
HORIZONTAL	H
EACH WAY	EW
EACH FACE	EF
INNER FACE	IF
OUTER FACE	OF
EACH SIDE	ES
DOWEL	DWL.
LONG WAY BAR	LW
SHORT WAY BAR	SW
REFERENCE	REF.

LAP SCHEDULE		
SIZE	4000 PSI	
	TOP	OTHERS
#4	20"	16"
#5	26"	20"
#6	30"	24"
#7	43"	33"
#8	50"	38"
#9	56"	42"
#10	62"	48"
#11	69"	54"



## BOTTOM EACH WAY REINFORCEMENT DETAILS

### GRIT BASINS - BASE SLAB REINFORCEMENT LAYOUT

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SCALE -  
REF:02-

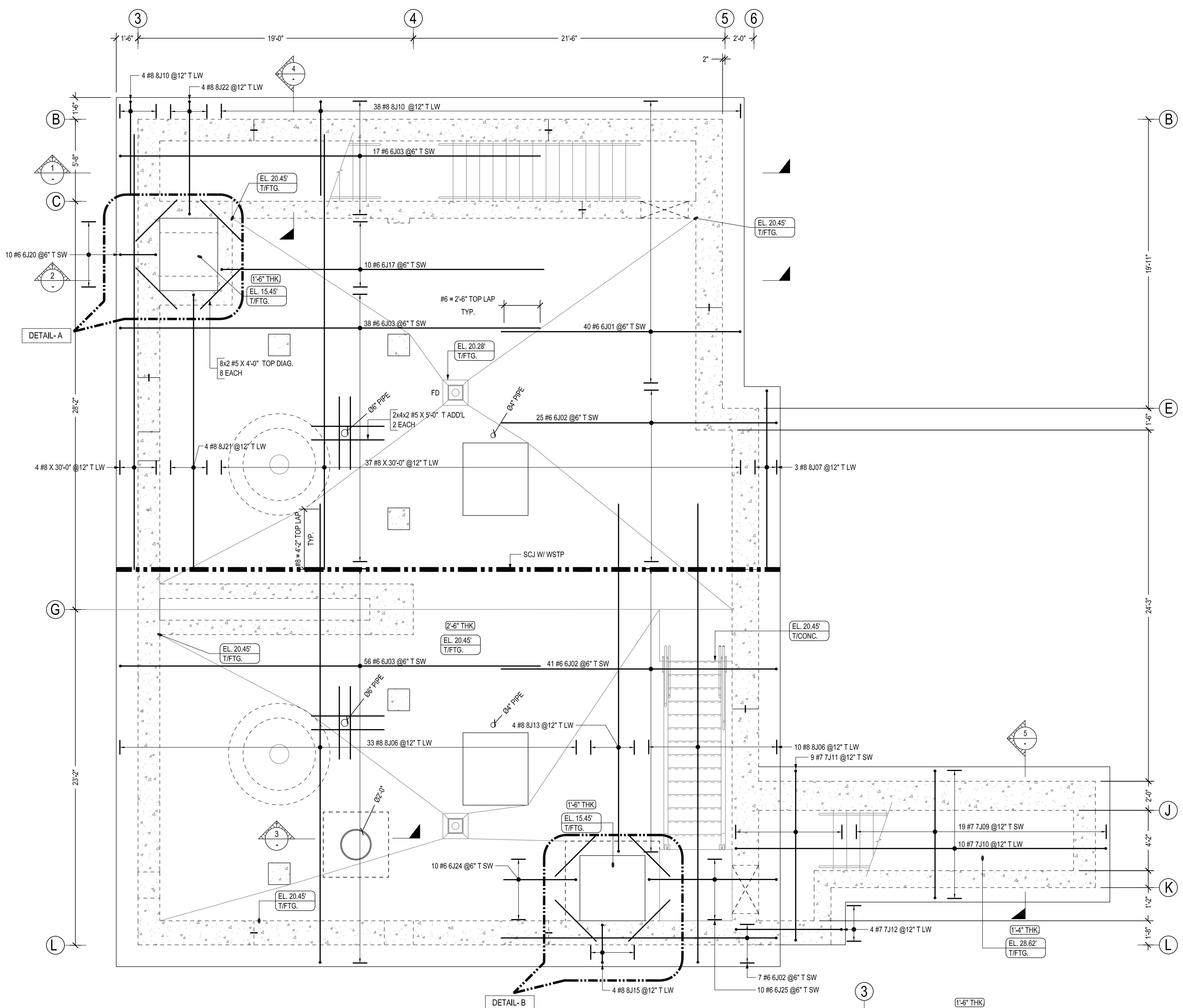
OUT

**DETAIL**  
SCALE - 1/4"=1'-0"  
REF:02-S-01-105

**DETAIL**  
SCALE - 1/4"=1'-0"  
REF:02-S-01-105

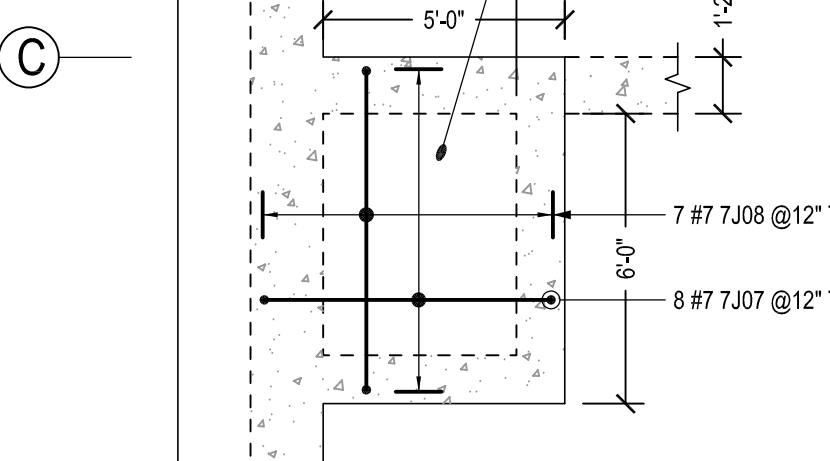
L REINFORCEMENTS ARE A615 GR.60 U.N.O

 <b>CMC REBAR</b> <b>STRUCTURAL CONTRACTORS</b>		<b>JOB #: 2524240001</b> <b>DATE: 07/03/25</b> <b>FOR: APPROVAL</b>	
<b>CUSTOMER:</b> — <b>JOB NAME:</b> HILO WWTP <b>LOCATION:</b> COUNTY OF HAWAII <b>DESCRIPTION:</b> GRIT BASINS – BASE SLAB REINFORCEMENT DETAILS		<b>DETAILER:</b> MKR <b>EMAIL:</b> will@mcmasterrebar.com <b>PHONE:</b> (360)–346–6729	<b>DATE:</b> . <b>FOR:</b> .
		<b>DATE:</b> . <b>FOR:</b> .	<b>DATE:</b> . <b>FOR:</b> .
		<b>DATE:</b> . <b>FOR:</b> .	<b>DATE:</b> . <b>FOR:</b> .
			<b>REF: NOTED</b>
<b>FIELD USE:</b> <p>ALL ITEMS THAT ARE CLOUDED &amp;/OR MARKED "VERIFY" REFER TO QUESTIONS, OMISSIONS, CONFLICTS OR ERRORS IN THE CONTRACT DOCUMENTS. UNLESS CORRECTIVE ACTION IS INDICATED ON THIS APPROVAL, ALL ITEMS SO MARKED WILL BE ASSUMED CORRECT AS SUBMITTED, AND FURNISHED AS DETAILED. CMC REBAR ASSUMES NO RESPONSIBILITY FOR ERRORS CAUSED BY LACK OF REQUESTED INFORMATION.</p>			
<b>APPROVAL AUTHORITY:</b> <p>THIS DRAWING TO BE USED IN CONJUNCTION w/ STRUCTURAL AND ARCHITECTURAL DOCUMENTS TO FACILITATE PLACING OF REINFORCING BARS ONLY. DO NOT USE THIS DRAWING FOR LAYOUT OR CONSTRUCTION. ANY DIMENSIONS OR ELEVATIONS NOTED IN THIS DOCUMENT ARE FOR REFERENCE ONLY, TO FACILITATE APPROVAL &amp;/OR PLACEMENT OF REBAR. DISCREPANCIES SHOULD BE NOTED AT THE TIME OF APPROVAL. CMC REBAR ASSUMES NO LIABILITY FOR DIMENSIONAL ERRORS IN THE LAYOUT OF THE BUILDING OR FORMS.</p>			
<b>FIELD USE:</b> <p>THIS DRAWING TO BE USED IN CONJUNCTION w/ STRUCTURAL AND ARCHITECTURAL DOCUMENTS TO FACILITATE PLACING OF REINFORCING BARS ONLY. DO NOT USE THIS DRAWING FOR LAYOUT OR CONSTRUCTION. ANY DIMENSIONS OR ELEVATIONS NOTED IN THIS DOCUMENT ARE FOR REFERENCE ONLY, TO FACILITATE APPROVAL &amp;/OR PLACEMENT OF REBAR. DISCREPANCIES SHOULD BE NOTED AT THE TIME OF APPROVAL. CMC REBAR ASSUMES NO LIABILITY FOR DIMENSIONAL ERRORS IN THE LAYOUT OF THE BUILDING OR FORMS.</p>			

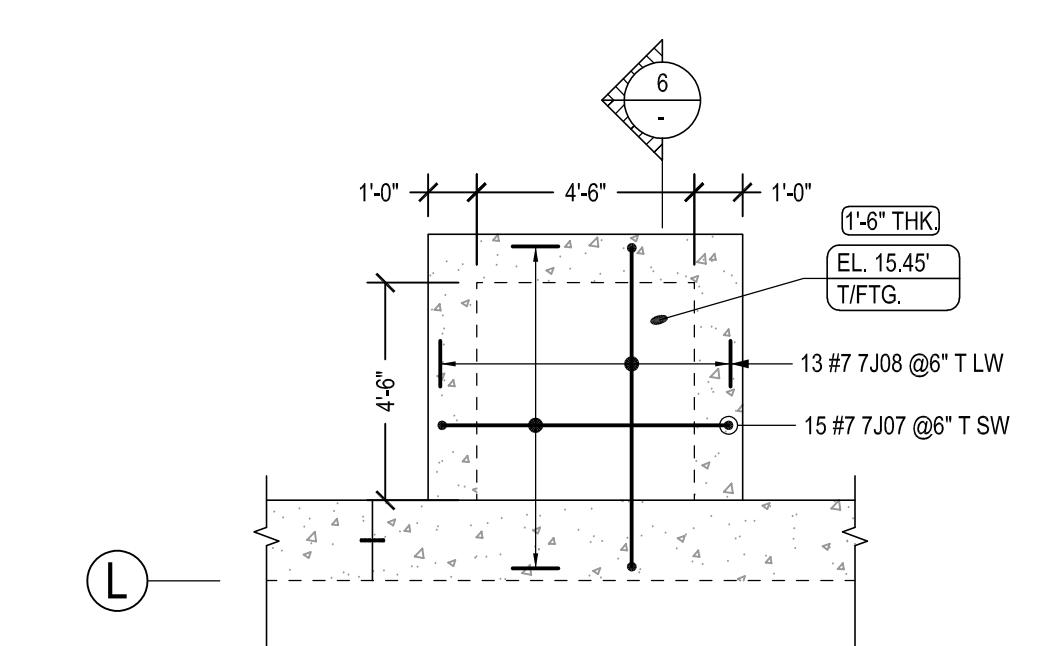


TOP EACH WAY REINFORCEMENT DETAILS  
GRIT BASINS - BASE SLAB REINFORCEMENT LAYOUT  
SCALE - 1/4"=1'-0"  
REF:02-S-01-105

NORTH



DETAIL A  
SCALE - 1/4"=1'-0"  
REF:02-S-01-105



DETAIL B  
SCALE - 1/4"=1'-0"  
REF:02-S-01-105

BAR LIST									
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'
6J01	40	#6	17'-6"	2	1'-0"	16'-6"			
6J02	73	#6	20'-0"	2	1'-0"	19'-0"			
6J03	111	#6	30'-0"	2	1'-0"	29'-0"			
6J17	10	#6	23'-3"	2	1'-0"	22'-3"			
6J20	10	#6	4'-6"	2	1'-0"	2'-6"			
6J24	10	#6	6'-0"	2	1'-0"	5'-0"			
6J25	10	#6	10'-0"	2	1'-0"	8'-10"			
7J07	23	#7	8'-4"	2	1'-2"	6'-0"			
7J08	20	#7	9'-0"	2	1'-2"	6'-8"			
7J09	19	#7	10'-8"	17	0'-11"	8'-10"	0'-11"		
7J10	10	#7	27'-5"	17	0'-11"	25'-7"	0'-11"		
7J11	9	#7	13'-7"	17	0'-11"	11'-9"	0'-11"		
7J12	4	#7	9'-2"	17	0'-11"	7'-4"	0'-11"		
8J06	43	#8	33'-0"	2	1'-4"	31'-8"			
8J07	3	#8	13'-8"	2	1'-4"	12'-4"			
8J10	42	#8	7'-10"	2	1'-4"	6'-6"			
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Bar list produced by RebarCAD 2020

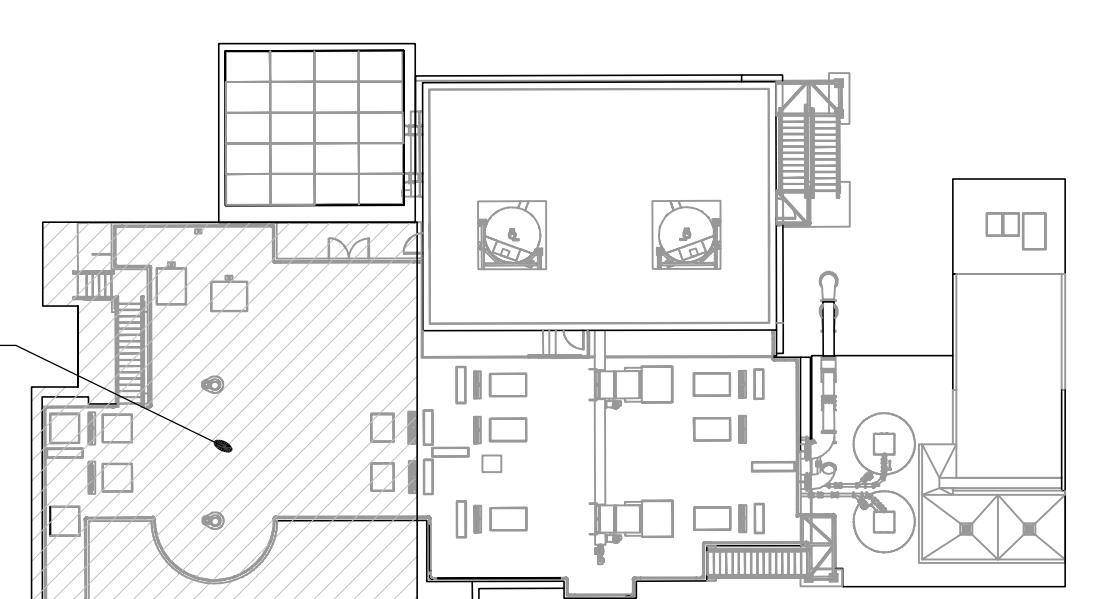
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THIS DRAWING IS TO BE USED IN CONSTRUCTION TO ACCURATELY PLACING AND SUPPORTING THE STRUCTURAL AND ARCHITECTURAL DOCUMENTS. ANY CHANGES MADE TO THIS DRAWING IN THE FIELD ARE THE RESPONSIBILITY OF THE CONTRACTOR. THIS DRAWING IS FOR CONSTRUCTION USE ONLY. ANY CHANGES MADE TO THIS DRAWING IN THE FIELD ARE THE RESPONSIBILITY OF THE CONTRACTOR.

ALL ITEMS THAT ARE CLARIFIED & OR MARKED AS "X" REFER TO QUESTIONS, OMISSIONS, CONFLICTS OR ERRORS THAT MAY HAVE BEEN NOTED DURING CONSTRUCTION. THESE ITEMS WILL BE ASSUMED CORRECT AS SUBMITTED. ANY ITEM NOTED ON THIS DRAWING AS AN "X" WILL BE ASSUMED AS INCORRECT AND WILL NOT BE CONSIDERED AS A REQUEST FOR CHANGES. CONTRACTOR IS RESPONSIBLE FOR EVIDENCE PROVIDED BY THE CONTRACTOR.

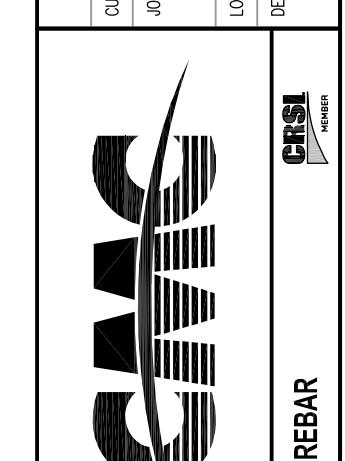
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DET. #: 2524240001	DATE:
DESIGNER: WKR	DATE:
E MAIL: will@cmcrebar.com	DATE:
PHONE: (360)-346-5729	DATE:
REF: NOTED	DATE:

PROJECT INFORMATION  
GRIT BASINS - BASE SLAB REINFORCEMENT DETAILS

CUSTOMER: -	JOB #: 2524240001
JOB NAME: HILO WMP	DET. #: WKR
LOCATION: COUNTY OF HAWAII	E MAIL: will@cmcrebar.com
DESCRIPTION: GRIT BASINS	PHONE: (360)-346-5729
CMC REBAR	REF: NOTED

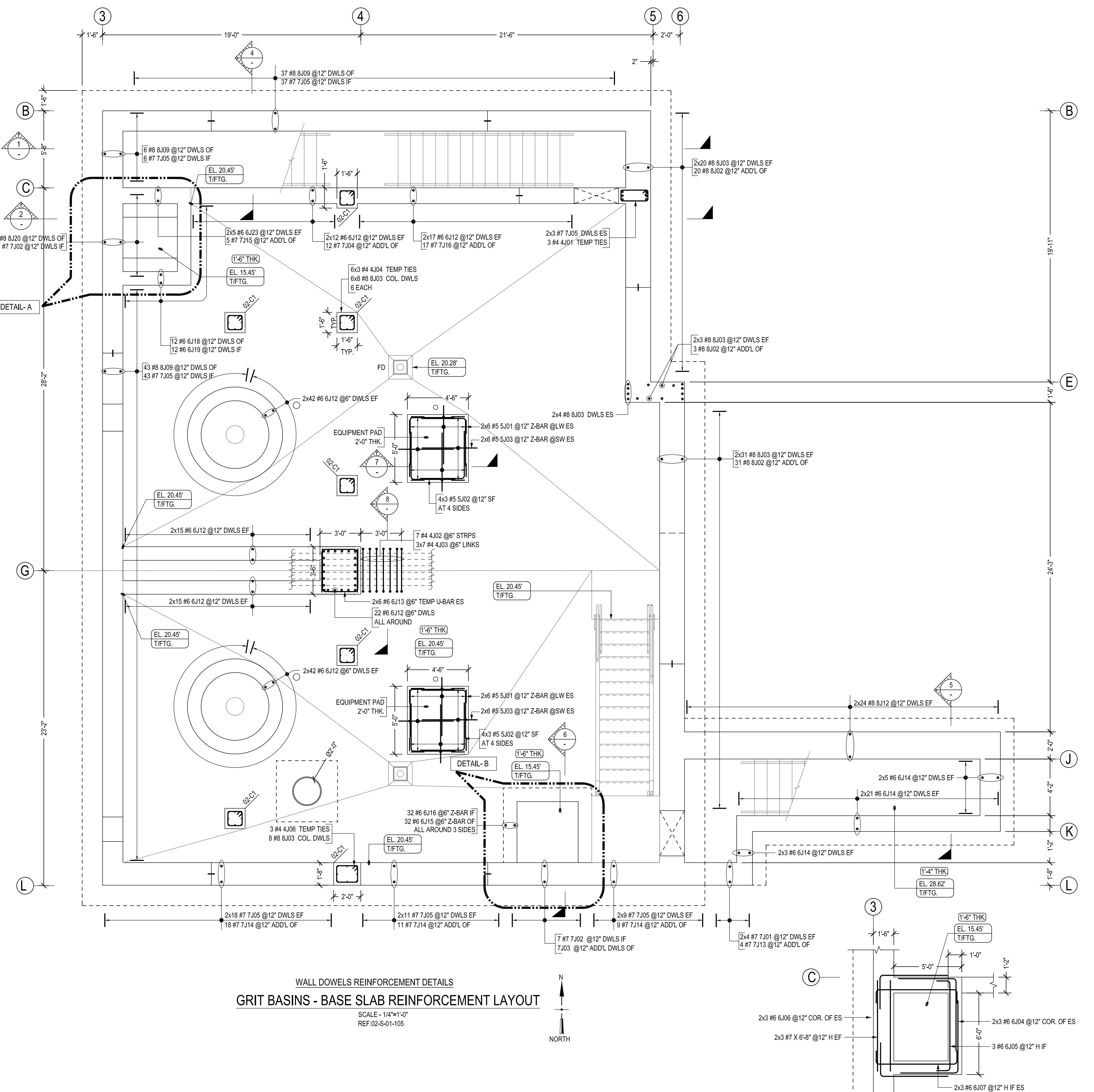


KEY PLAN  
SCALE - N.T.S.  
REF:02-M-01-105



ALL REINFORCEMENTS ARE A615 GR.60 UN.O

DRAWING: RP-15



BAR LIST											
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'	'G'
4J01	3	#4	6'-5"	T1	0'-4"	0'-10"	2'-0"	0'-10"	2'-0"	0'-4"	0'-4"
4J02	7	#4	11'-3"	T1	0'-4"	2'-1"	3'-2"	2'-1"	3'-2"	0'-4"	0'-4"
4J03	21	#4	2'-10"	T12	0'-4"	2'-1"					0'-4"
4J04	18	#4	5'-1"	T1	0'-4"	1'-1"	1'-1"	1'-1"	1'-1"	0'-4"	0'-4"
4J06	3	#4	6'-5"	T1	0'-4"	1'-7"	1'-3"	1'-7"	1'-3"	0'-4"	0'-4"
5J01	24	#5	8'-3"	20		0'-10"	3'-11"	3'-6"			
5J02	24	#5	6'-9"	17		3'-3"	3'-6"				
5J03	24	#5	8'-0"	20		0'-10"	3'-11"	3'-3"			
6J04	6	#6	9'-7"	17		4'-3"	5'-4"				
6J05	3	#6	8'-8"	2		1'-0"	2'-6"	5'-0"			
6J06	6	#6	7'-6"	17		1'-0"	2'-6"	5'-0"			
6J07	6	#6	8'-0"	2		1'-0"	2'-6"	5'-0"			
6J08	6	#6	10'-0"	17		4'-6"	5'-6"				
6J09	3	#6	8'-2"	2		1'-0"	2'-6"	5'-0"			
6J10	6	#6	8'-10"	2		1'-0"	2'-6"	5'-0"			
6J11	6	#6	8'-0"	17		2'-6"	5'-6"				
6J12	308	#6	5'-3"	2		1'-0"	4'-3"				
6J13	12	#6	9'-0"	17		3'-3"	2'-8"	3'-2"			
6J14	58	#6	4'-1"	2		1'-0"	3'-1"				
6J15	32	#6	10'-9"	20		4'-0"	5'-9"	1'-0"			
6J16	32	#6	9'-9"	20		3'-1"	5'-8"	1'-0"			
6J18	12	#6	12'-8"	17		3'-1"	9'-7"				
6J19	12	#6	10'-7"	2		1'-0"	9'-7"				
6J23	10	#6	10'-4"	2		1'-0"	9'-4"				
7J01	8	#7	7'-0"	2		1'-2"	5'-10"				
7J02	14	#7	10'-5"	2		1'-2"	9'-3"				
7J04	12	#7	15'-3"	17		7'-0"	8'-3"				
7J05	168	#7	6'-5"	2		1'-2"	5'-3"				
7J13	4	#7	15'-0"	17		7'-6"	7'-6"				
7J14	38	#7	16'-0"	17		7'-6"	8'-6"				
7J15	5	#7	16'-9"	17		4'-6"	12'-3"				
7J16	17	#7	17'-3"	17		7'-0"	10'-3"				
8J02	54	#8	16'-0"	17		7'-6"	8'-6"				
8J03	172	#8	6'-10"	2		1'-4"	5'-6"				
8J09	86	#8	9'-10"	2		1'-4"	8'-6"				
8J12	48	#8	5'-7"	2		1'-4"	4'-3"				
8J20	7	#8	16'-2"	17		4'-6"	11'-8"				

Bar list produced by RebarCAD 2020

FIELD USE:  
STRUCTURAL DOCUMENTS TO ACCURATE PLACING  
AND ARCHITECTURAL DOCUMENTS FOR CONCRETE  
CONSTRUCTION. DO NOT USE FOR ELEVATIONS OR  
PLAN VIEWS. THIS DOCUMENT ARE FOR REFERENCED  
DIMENSIONS. NO LIABILITY FOR DIMENSIONAL  
DIFFERENCES SHALL BE NOTED AT THE TIME OF APPROVAL.  
ONE REBAR ASSUMES NO LIABILITY FOR DIMENSIONAL  
ERRORS IN THE LAYOUT OR THE BUILDING OR DRAFTS.

## SUBMITTAL RECORD

DATE: 07/03/25 FOR APPROVAL

DATE:

FOR:

DATE:

REF:

NOTE:

DATE:

REF:

## PROJECT INFORMATION

REF: 252424001

DETAILS: WKR

EMAIL: will@cmcrebar.com

PHONE: (360)-346-5729

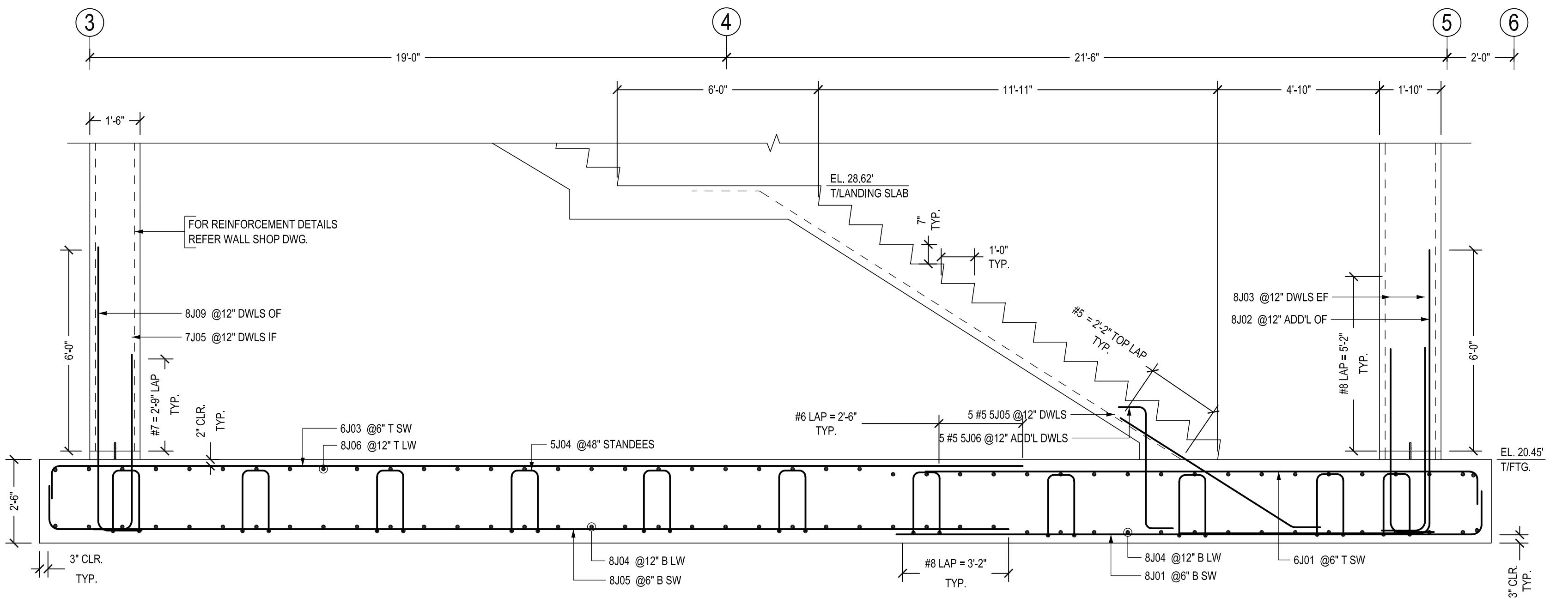
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NOTED

DATE:

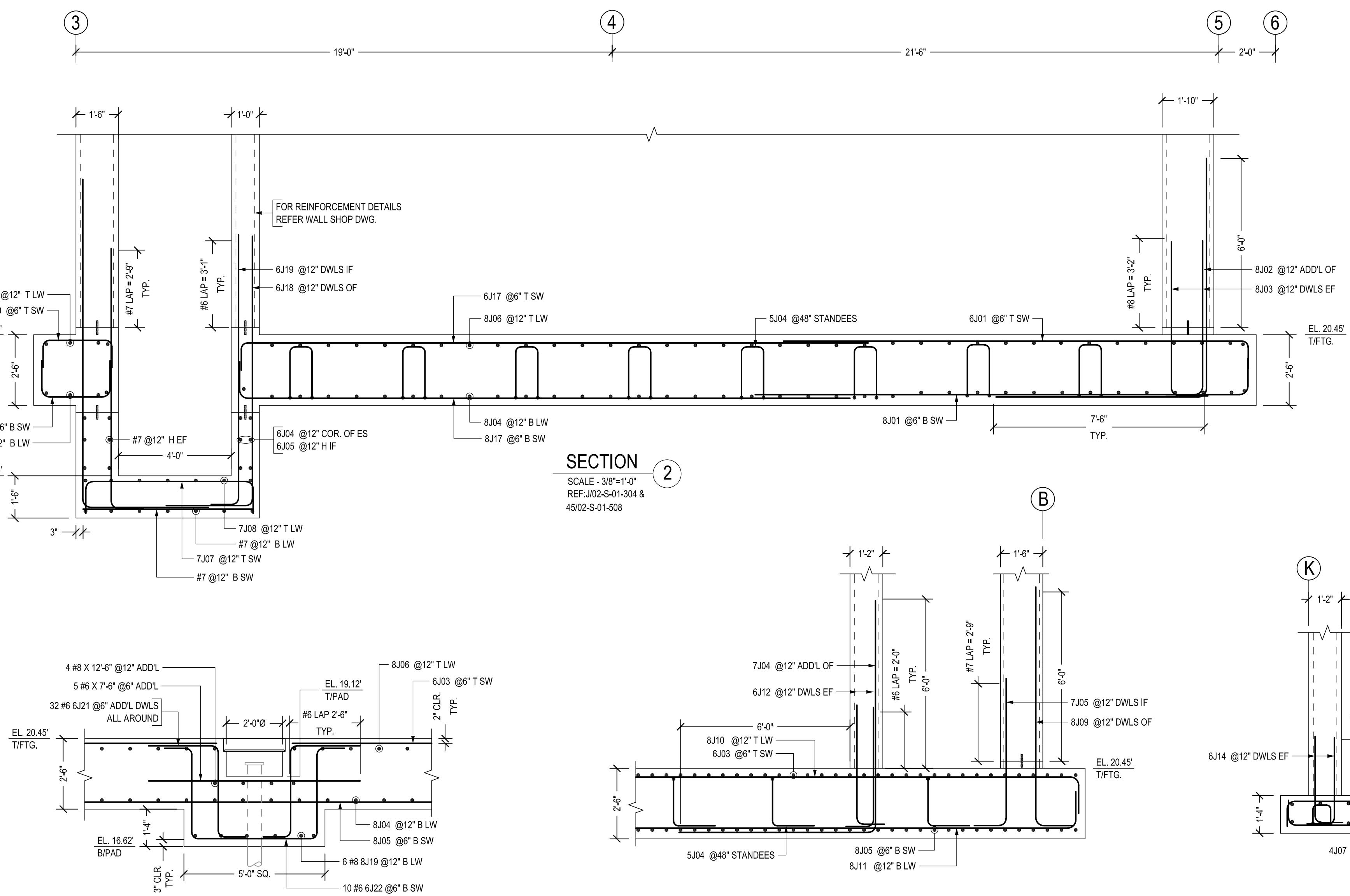
REF:

NOTE:



**SECTION**  
SCALE - 3/8"=1'-0"  
REF:H/02 S.01.204.8  
**1**

SCALE - 3/8 = 1-0  
REF:H/02-S-01-304 &  
44/02-S-01-507

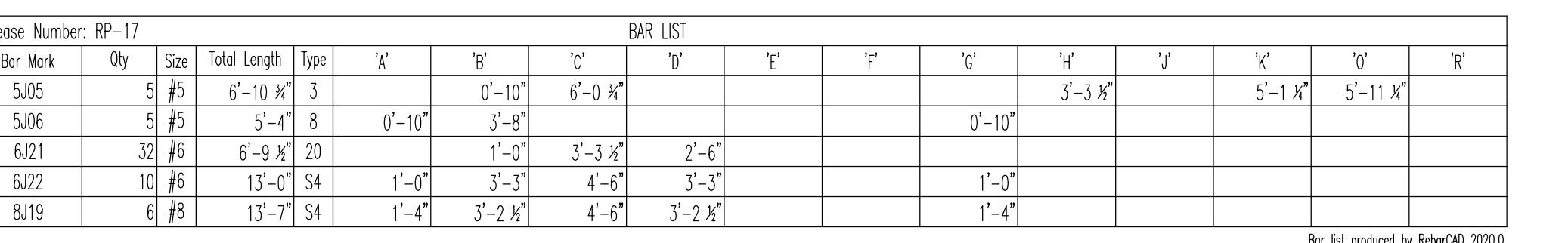


**SECTION**  
SCALE - 3/8"=1'-0"  
3

SCALE - 3/8"=1'-0"  
REF 66/22-2-24-512

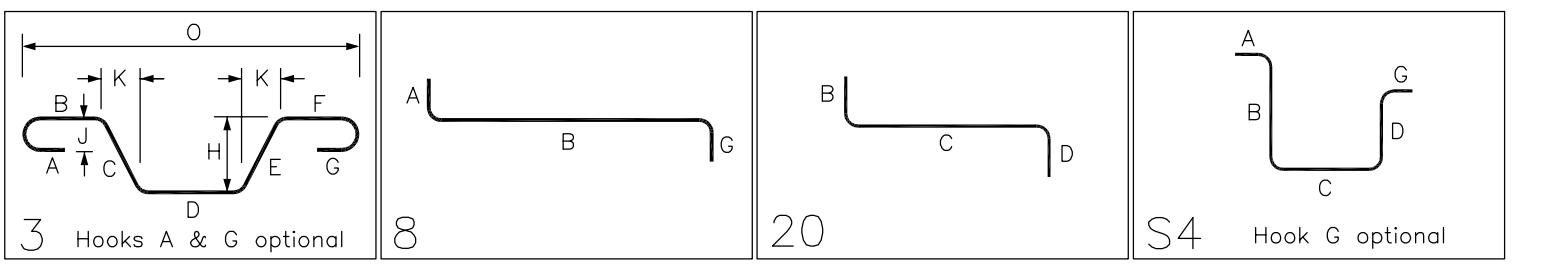


REF:CA  
27/02-S



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Produced by RebarCAD 2020.0

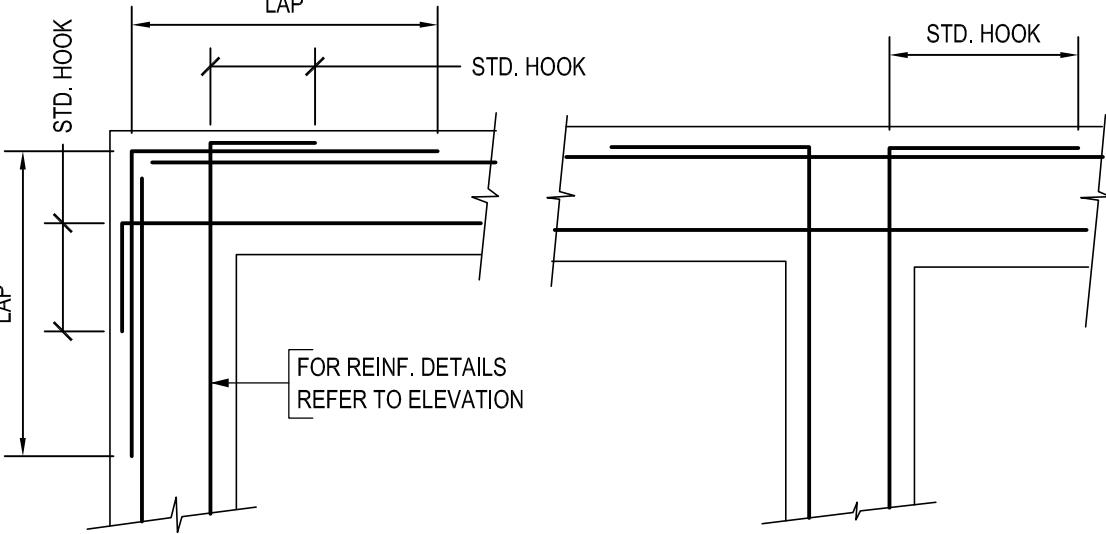


## ABBREVIATIONS

EAT SCHEDULE		
SIZE	4000 PSI	
	TOP	OTHERS
#4	20"	16"
#5	26"	20"
#6	30"	24"
#7	43"	33"
#8	50"	38"
#9	56"	42"
#10	62"	48"
#11	69"	54"

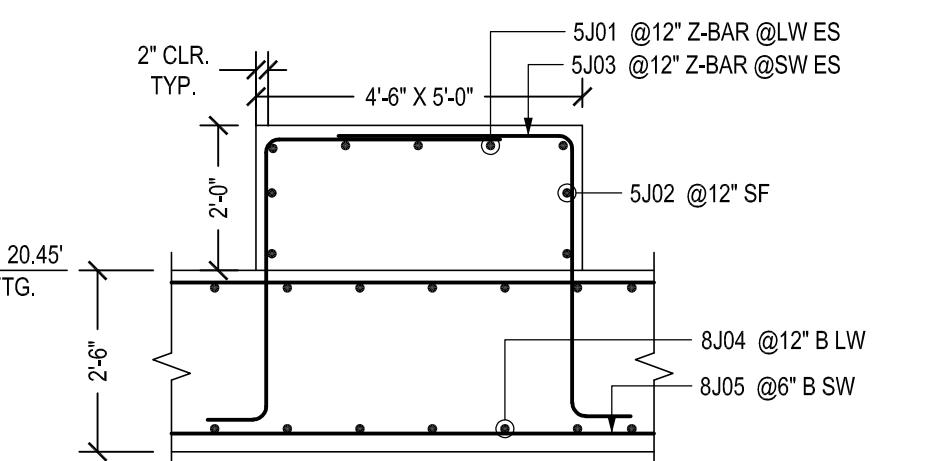
## JAP SCHEDULE

SIZE	4000 PSI	
	TOP	OTHERS
#4	20"	16"
#5	26"	20"
#6	30"	24"
#7	43"	33"
#8	50"	38"
#9	56"	42"
#10	62"	48"
#11	69"	54"



## YPLICAL WALL CORNER BAR DETAILS

SCALE - 1/2"=1'-0"

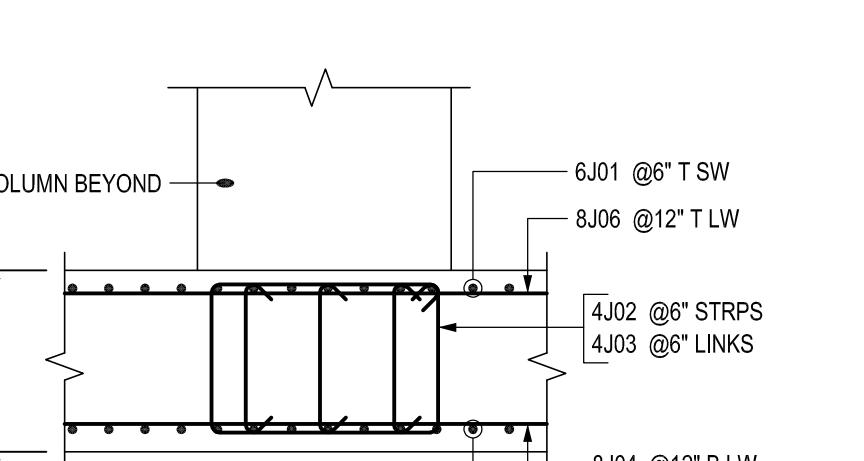


# SECTION

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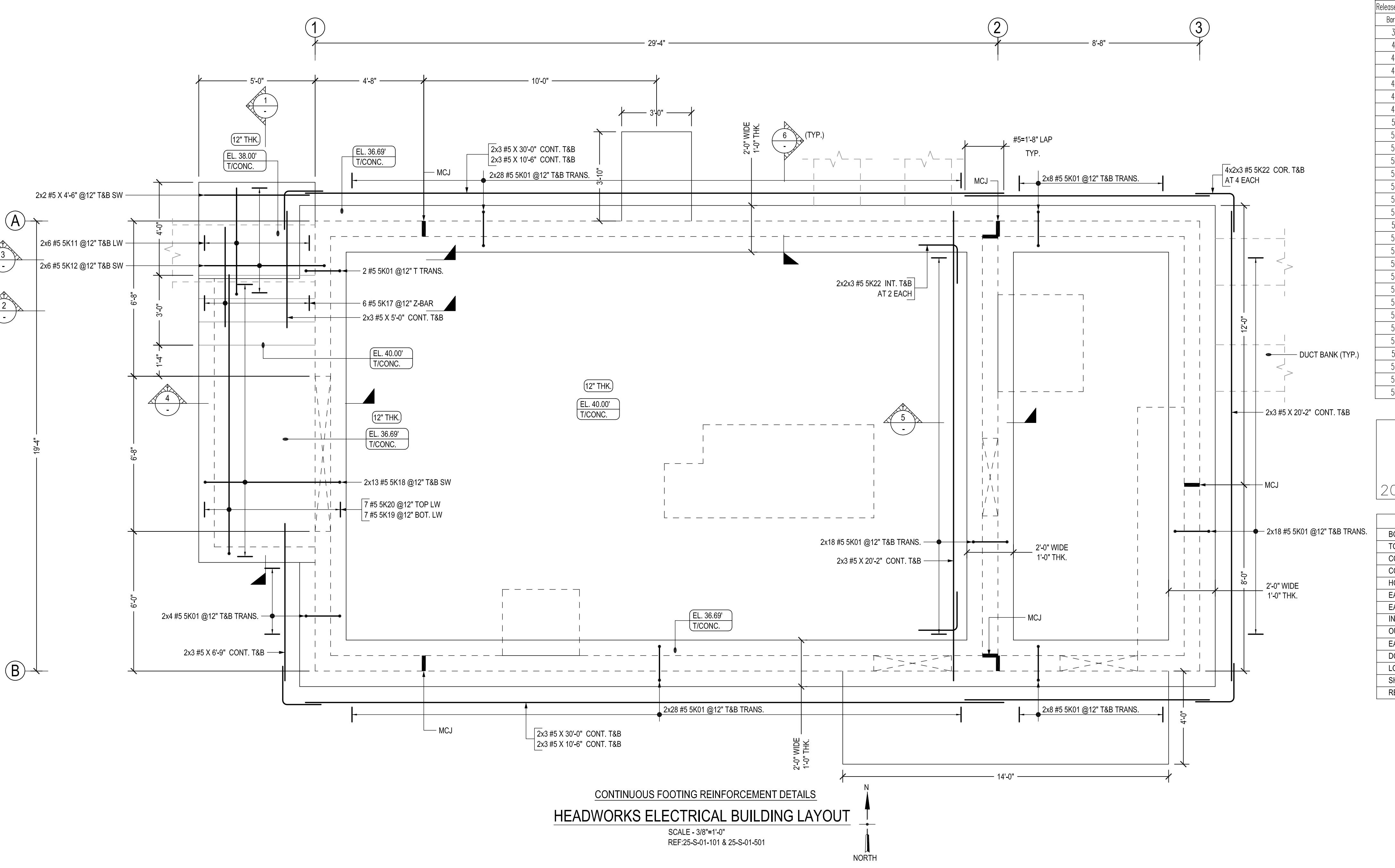
SCALE - 3/8"=1'-0"

ALE - 3/8"=1'-0"



SECTION  
E - 3/8" = 1'-0"  
**8**

$$\Xi - 3/8"=1$$



BAR LIST									
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'
JK01	144	#3	3'-2 1/8"	20	1'-0"	0'-10"	X"	1'-4"	
4K01	4	#4	5'-2"	17	0'-7"	4'-0"	0'-7"		
4K02	5	#4	3'-8"	17	0'-7"	2'-6"	0'-7"		
4K03	1	#4	9'-4"	17	3'-6"	2'-4"	3'-6"		
4K04	15	#4	4'-8"	17	0'-7"	3'-6"	0'-7"		
4K05	5	#4	14'-8"	17	0'-7"	13'-6"	0'-7"		
4K06	1	#4	20'-6"	17	3'-6"	13'-6"	3'-6"		
5K01	226	#5	2'-8"	17	0'-7"	1'-6"	0'-7"		
5K02	39	#5	20'-0"	17	0'-7"	18'-10"	0'-7"		
5K03	11	#5	11'-7"	17	0'-7"	11'-0"			
5K04	133	#5	6'-1"	17	0'-9"	3'-8"	1'-8"		
5K07	24	#5	4'-4"	17	2'-2"	2'-2"			
5K08	6	#5	6'-1"	3	0'-10"	5'-3"			
5K09	4	#5	3'-4"	2	0'-10"	2'-6"			
5K10	2	#5	6'-3 1/8"	4	0'-10"	1'-8"	2'-1 X"	1'-8"	
5K11	12	#5	5'-5"	2	0'-10"	4'-7"			
5K12	12	#5	5'-9"	17	0'-7"	5'-2"			
5K13	18	#5	4'-8 1/8"	17	1'-6"	3'-0 X"			
5K14	18	#5	4'-1"	17	1'-8"	2'-5"			
5K15	10	#5	16'-10"	2	0'-10"	9'-11"			
5K16	5	#5	10'-6"	17	0'-7"	2'-6 X"	1'-8"		
5K17	6	#5	5'-0 X"	3	0'-10"	5'-10"	0'-7"		
5K18	26	#5	7'-0"	17	0'-7"	12'-0"			
5K19	7	#5	17'-7"	17	0'-7"	12'-5"			
5K20	7	#5	13'-0"	17	0'-7"	29'-2"			
5K21	21	#5	30'-0"	2	0'-10"	1'-8"	1'-8"		
5K22	36	#5	3'-4"	17	0'-7"	2'-7"			
5K23	6	#5	4'-3"	3	0'-10"	2'-3 X"			
5K24	6	#5	4'-0"	2	0'-10"	2'-4"			

Bar list produced by RebarCAD 2020

FIELD USE:

THIS DRAWING IS TO BE USED IN CONSTRUCTION / STRUCTURAL

AND ARCHITECTURAL DOCUMENTS TO FACILITATE ERECTING

OR REINFORCING OF CONCRETE. DO NOT USE THIS DRAWING

AS THE CONTRACT DOCUMENTS. UNLESS SPECIFICALLY

STATED, THIS DRAWING IS FOR INFORMATION ONLY.

ALL INFORMATION CONTAINED IN THIS DRAWING IS SUBJECT

TO THE CONTRACT DOCUMENTS. UNLESS SPECIFICALLY

STATED, THIS DRAWING IS FOR INFORMATION ONLY.

CNC REBAR ASSUMES NO LIABILITY FOR DIMENSIONAL ERRORS

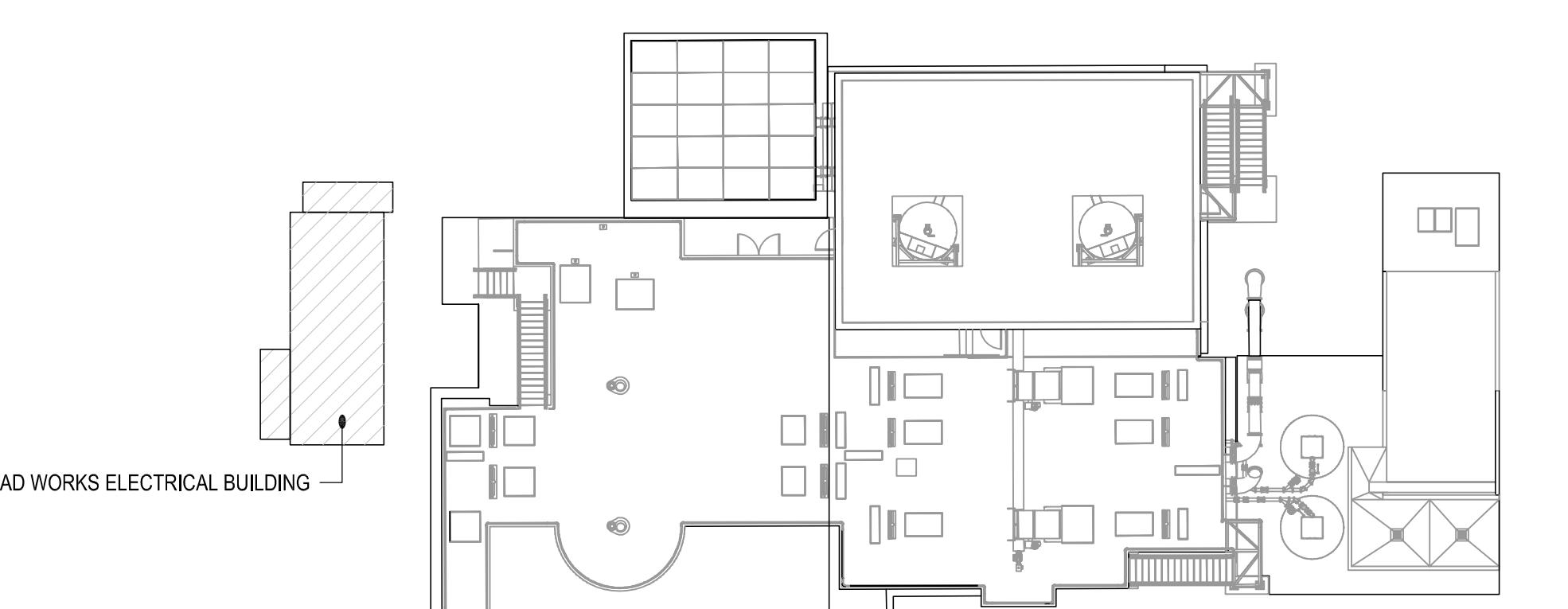
IN THE LAYOUT OR THE BUILDING OR FORMS.

SUBMITTAL RECORD		
DATE: 07/16/25	FOR APPROVAL	
DETAILER: WMR	FOR:	
EMAIL: will@cncrebar.com	FOR:	
PHONE: (301)-346-6729	△ DATE:	REF: NOTED

ABBREVIATIONS		
BOTTOM	B	
TOP&BOTTOM	T&B	
CONTINUOUS	CONT.	
CORNER BAR	COR.	
HORIZONTAL	H	
EACH WAY	EW	
EACH FACE	EF	
INNER FACE	IF	
OUTER FACE	OF	
EACH SIDE	ES	
DOWEL	DWL.	
LONG WAY BAR	LW	
SHORT WAY BAR	SW	
REFERENCE	REF.	

LAP SCHEDULE		
SIZE	4000 PSI (FOR MASONRY WALLS)	
TOP	16"	
OTHERS		
#4	20"	
#5	26"	
#6	30"	
#7	33"	
#8	38"	
#9	42"	
#10	46"	
#11	54"	

LAP SCHEDULE		
REF: (S400) (FOR MASONRY WALLS)		
SIZE	CENTERED IN WALL	
#4	18"	
#5	27"	
#6	30"	
#7	38"	
#8	42"	
#9	46"	
#10	54"	
#11	60"	



KEY PLAN  
SCALE - N.T.S  
REF: 02-M-01-105

PROJECT INFORMATION

CUSTOMER: -

JOB NAME: HILO WMP

LOCATION: COUNTY OF HAWAII

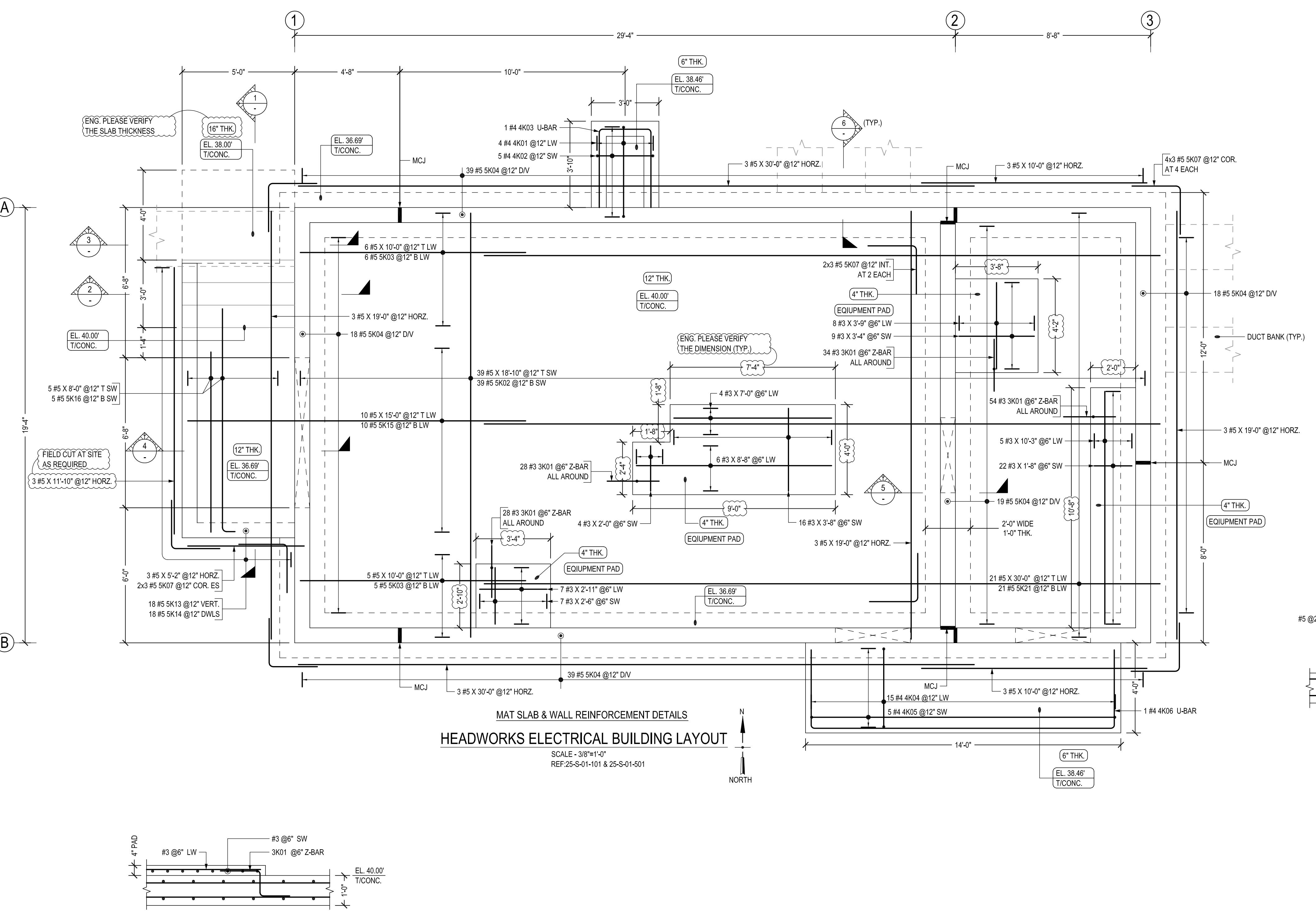
DESCRIPTION: HEAD WORKS ELECTRICAL BUILDING REINFORCEMENT DETAILS

CMC REBAR

JO# 2524240001

DRAWING:  
RP-018

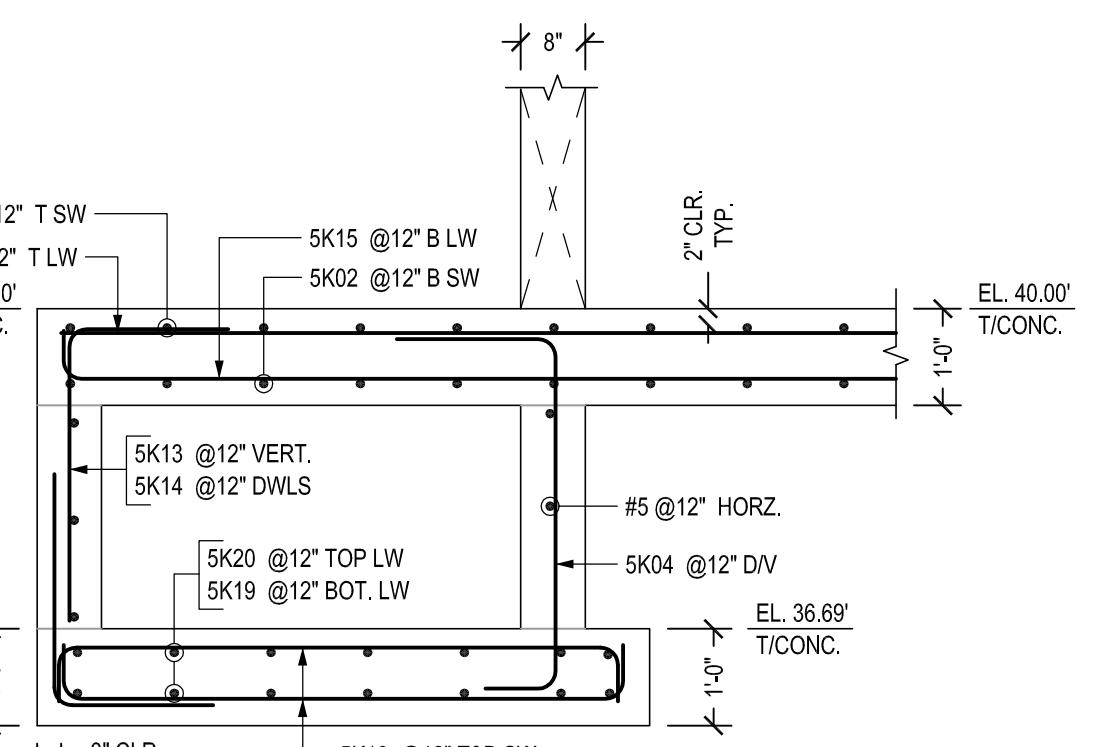
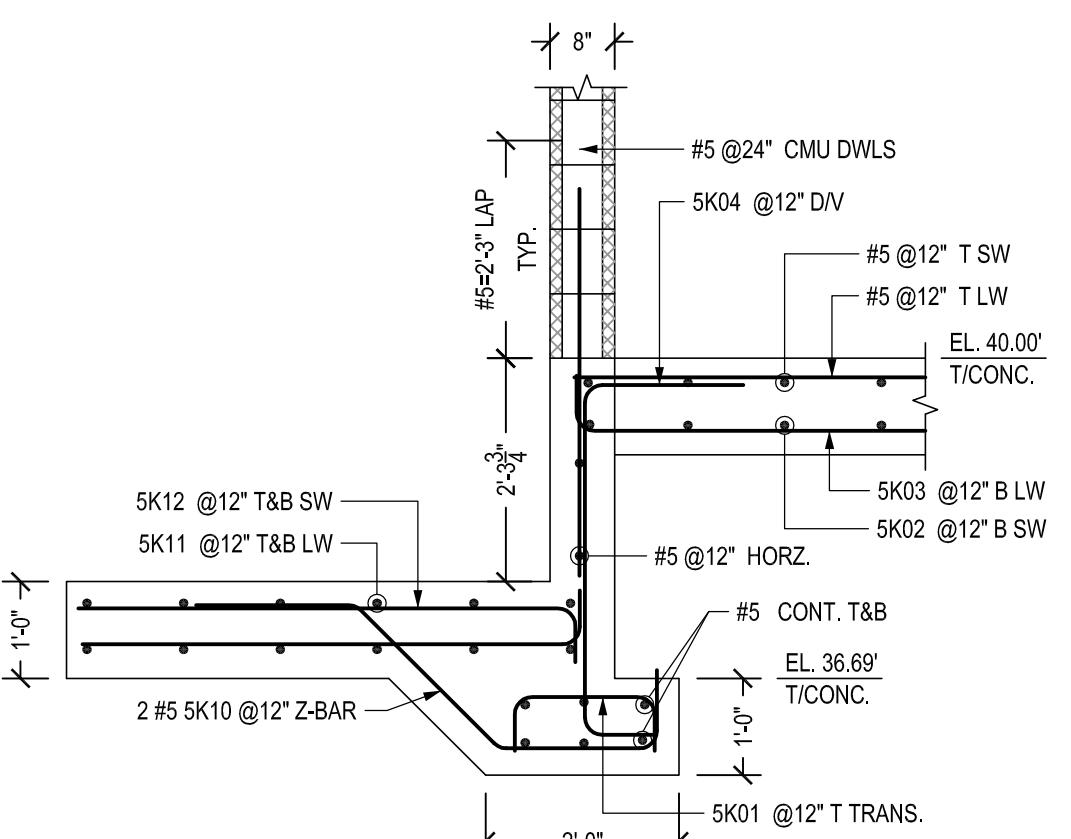
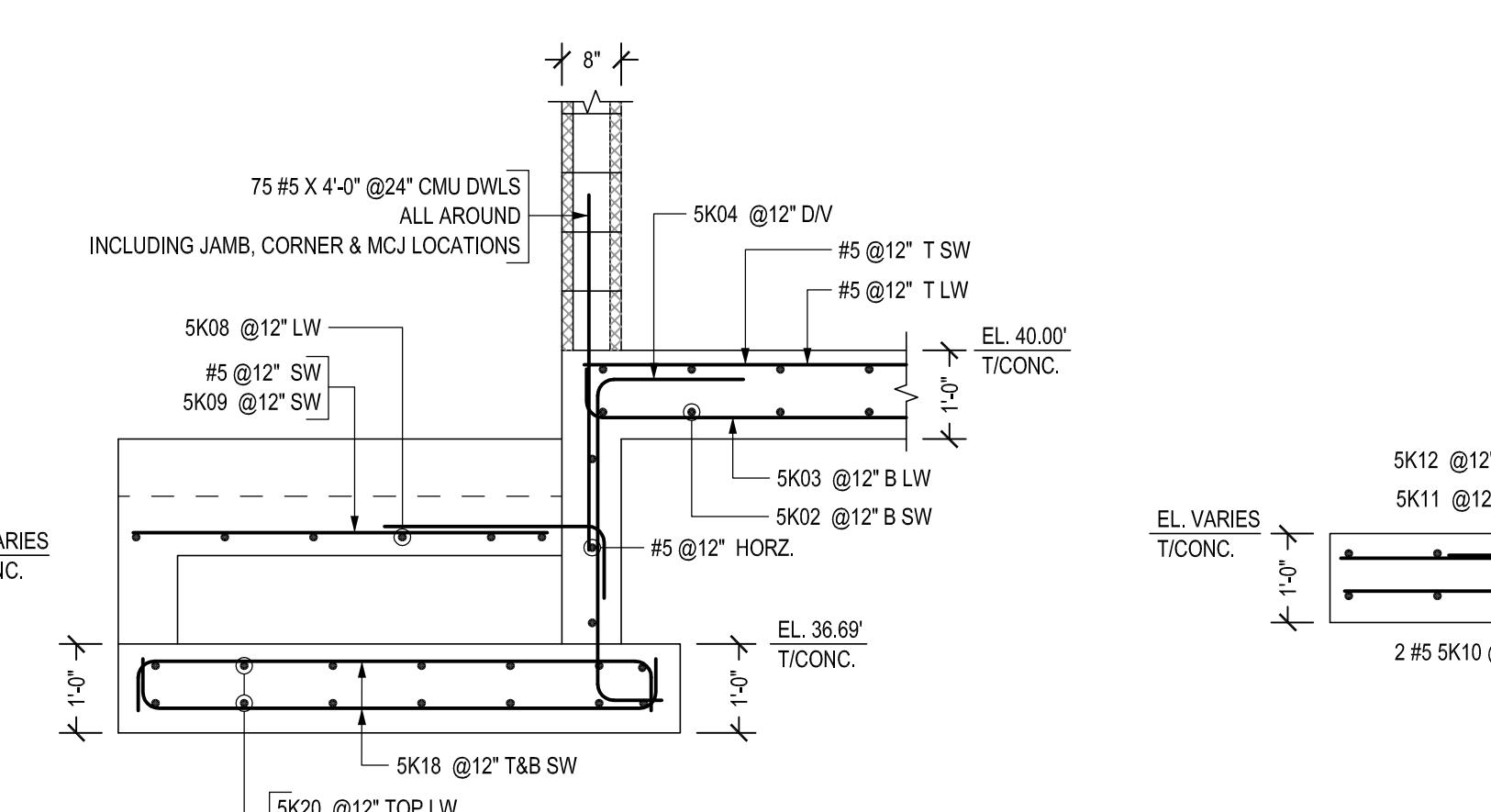
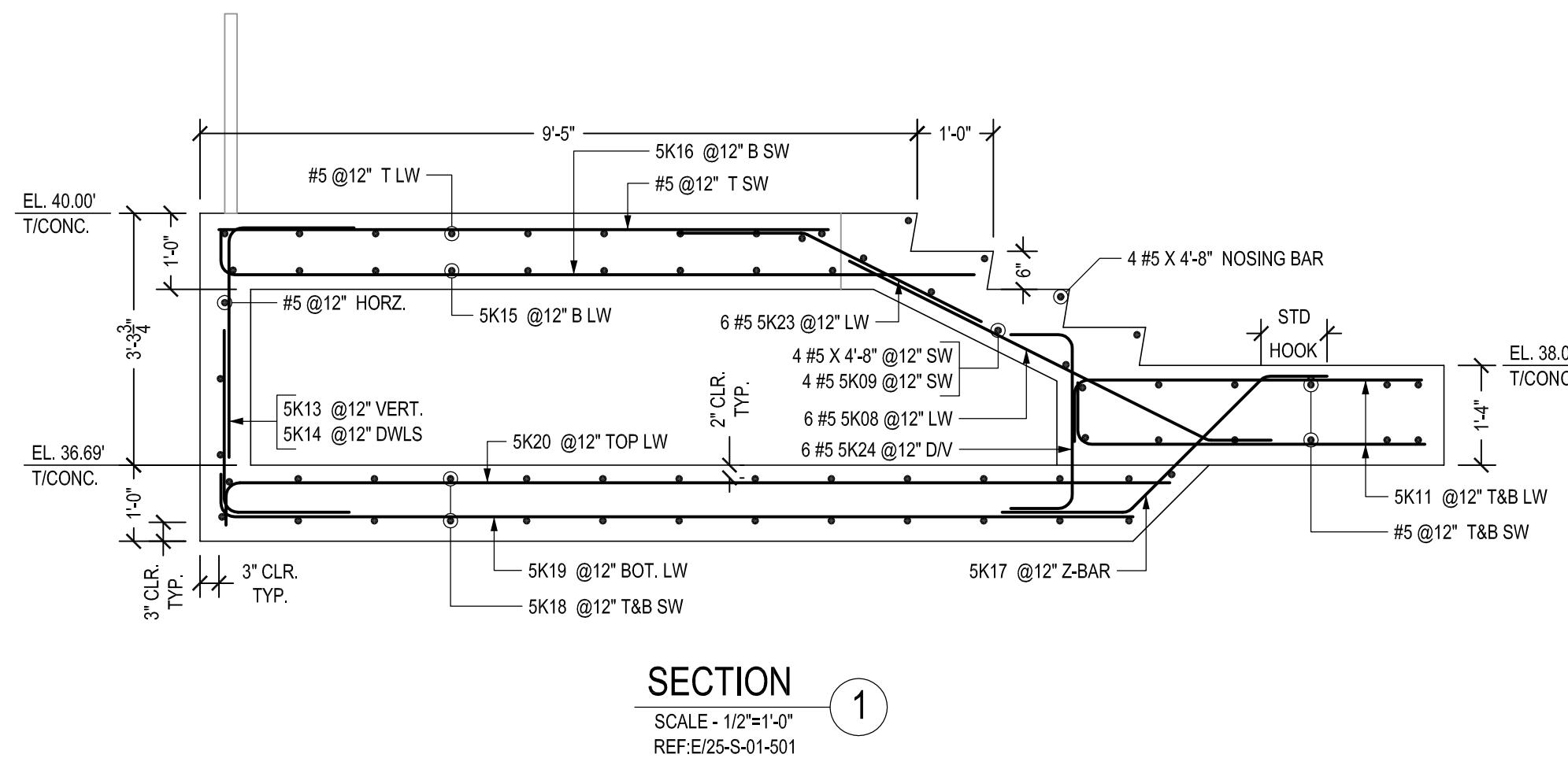
ALL REINFORCEMENTS ARE A615 GR.60 U.NO

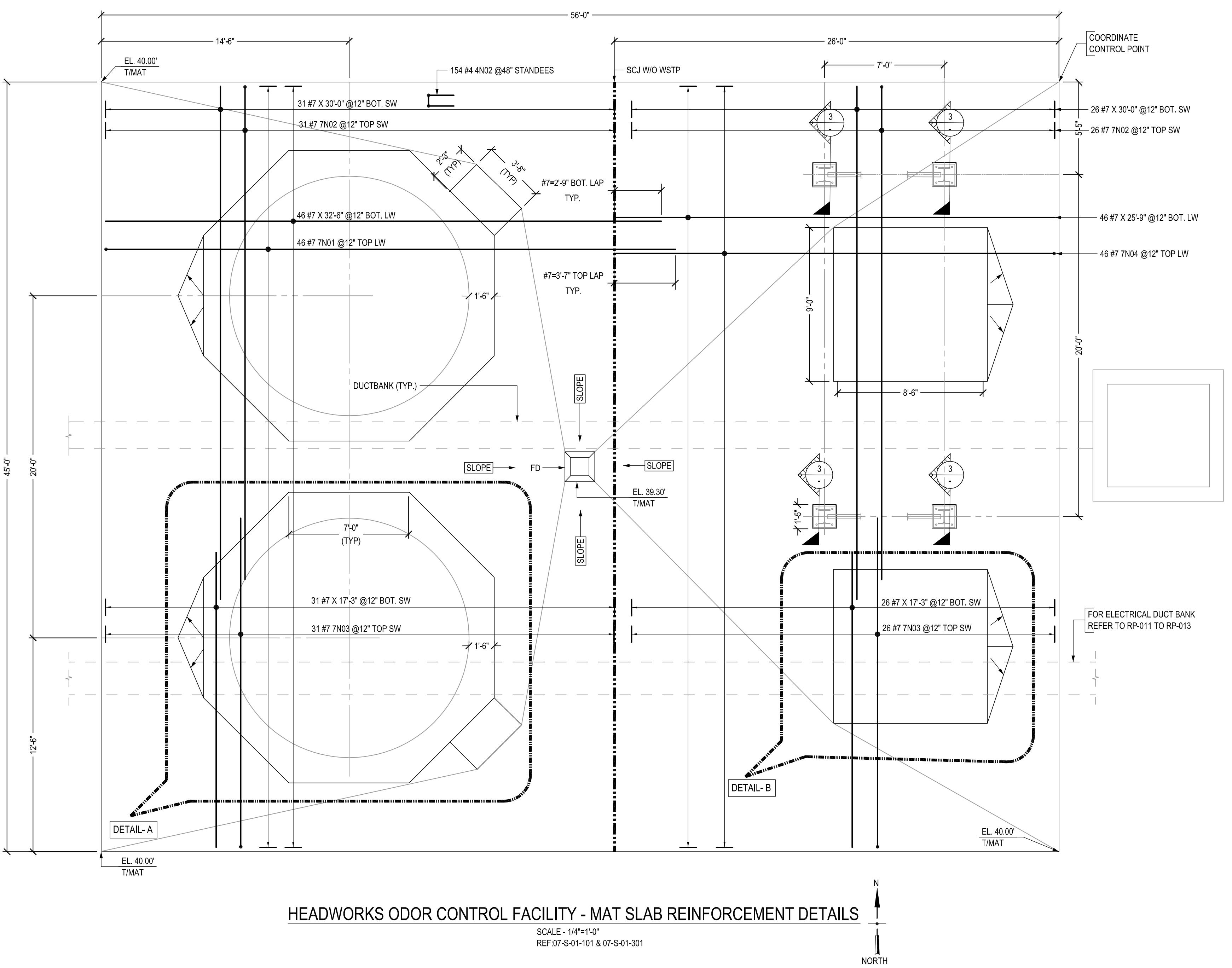


## TYPICAL EQUIPMENT HOUSEKEEPING PAD DETAILS

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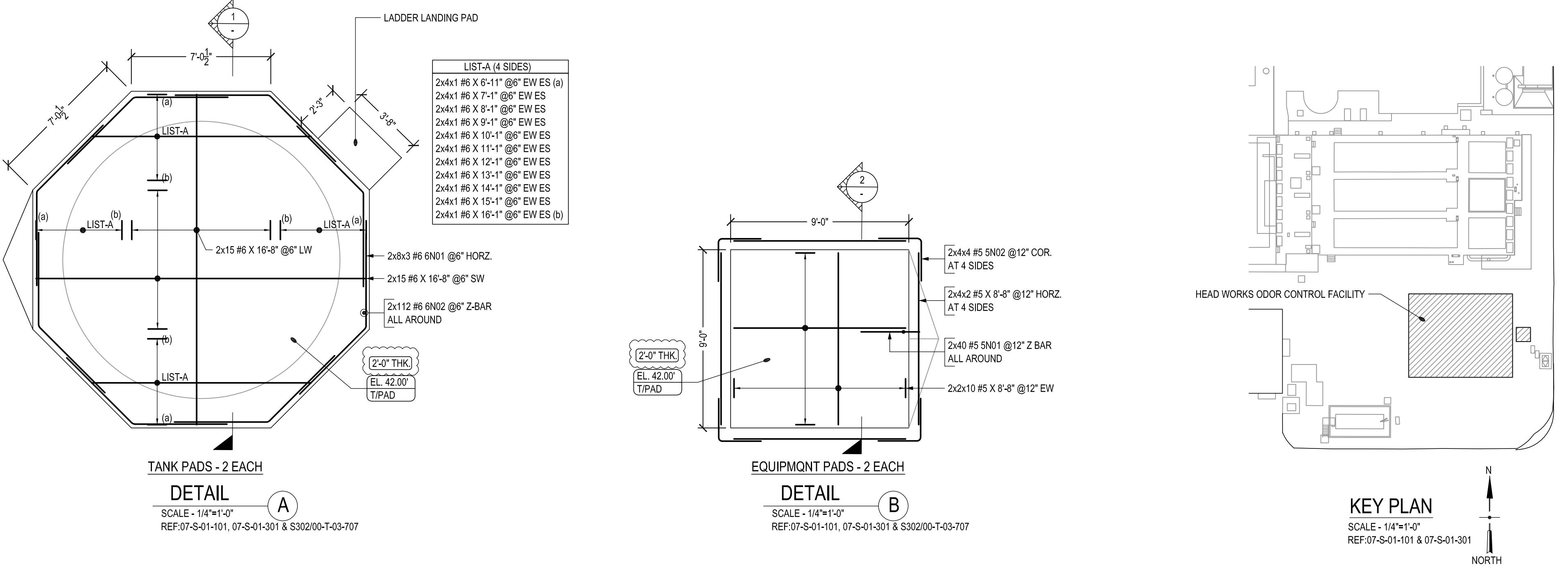
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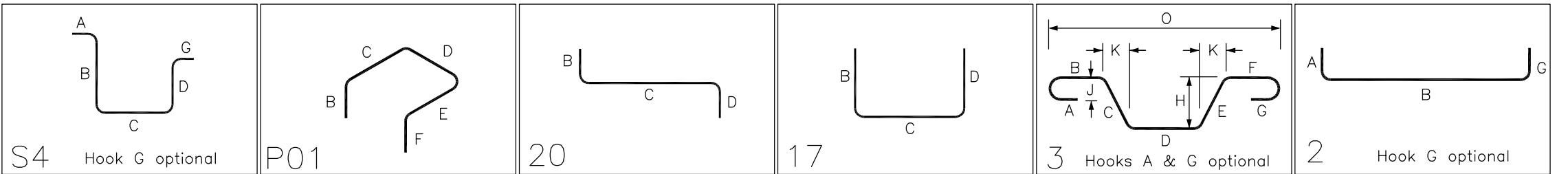
## HEADWORKS ODOR CONTROL FACILITY - MAT SLAB REINFORCEMENT DETAILS

SCALE - 1/4"=1'-0"  
REF:07-S-01-101 & 07-S-01-301



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Created by RebarCAD 2020.0

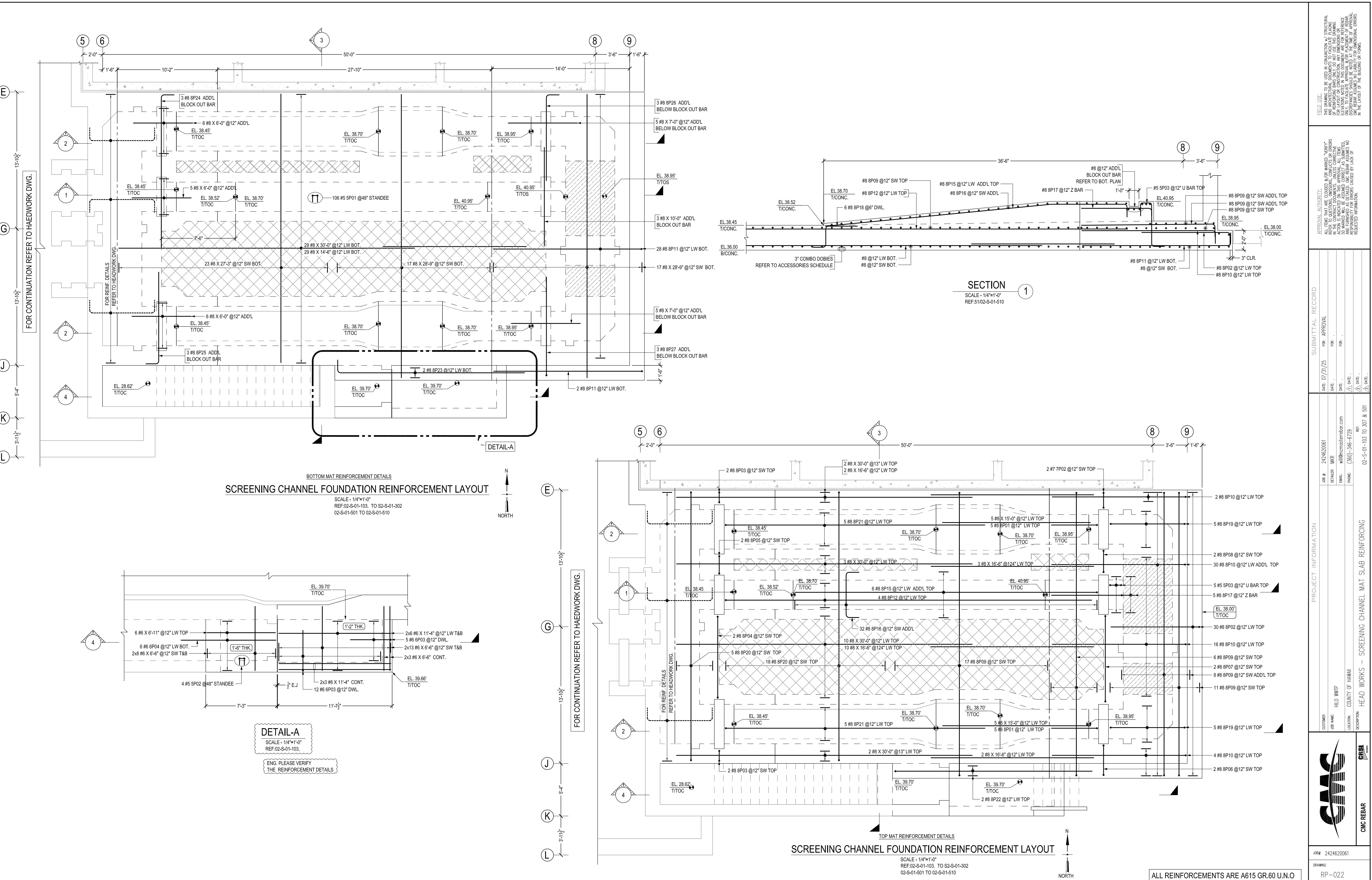


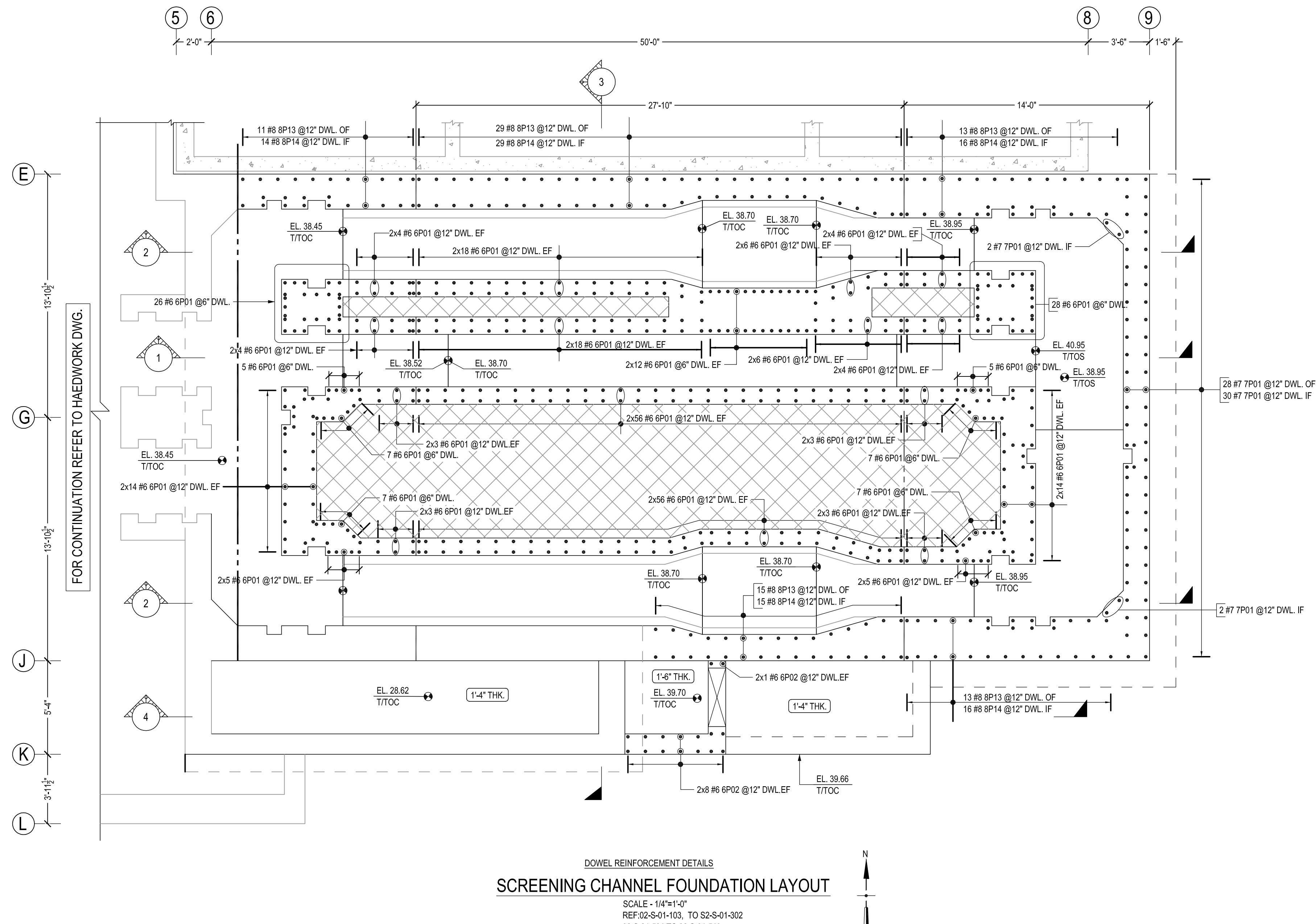
<b>LAP SCHEDULE</b>		
REF: (S101/00-T-03-701)		
(FOR FOUNDATION)		
SIZE	4000 PSI	
	TOP	OTHERS
#3	20"	16"
#4	26"	20"
#5	30"	24"
#6	43"	33"
#7	50"	38"
#8	56"	42"
#9	62"	48"
#10	69"	54"

ABBREVIATIONS	
OTTOM	BOT.
OP&BOTTOM	T&B
ORNER BAR	COR.
ERTICAL	VERT.
RIZONTAL	HORZ.
ACH WAY	EW
ACH SIDE	ES
ONG WAY BAR	LW
HORT WAY BAR	SW
EFERENCE	REF.

ACCESSORIES	
ITEM	QUANTITY
DOBBIES (5000 PSI)	155 NOS. @4'-0" C/C.

PROJECT INFORMATION		SUBMITTAL RECORD	
 <b>JOB#:</b> 2524240001 <b>DRAWING:</b> RP-021		<b>DATE:</b> 07/31/25 <b>FOR:</b> APPROVAL <b>JOB NAME:</b> HILO WWTP <b>LOCATION:</b> COUNTY OF HAWAII <b>DESCRIPTION:</b> HEAD WORKS ODOUR CONTROL FACILITY	<b>JOB #:</b> 2524240001 <b>DETAILER:</b> MKR <b>EMAIL:</b> will@mcmasterrebar.com <b>PHONE:</b> (360)-346-6729  <b>REF:</b> NOTED <b>DATE:</b> <input type="text"/> <b>2</b> <b>REF:</b> DATE: <input type="text"/> <b>3</b>
<b>APPROVAL AUTHORITY:</b> ALL ITEMS THAT ARE CLOUDED &/OR MARKED "VERIFY" REFER TO QUESTIONS, OMISSIONS, CONFLICTS OR ERRORS IN THE CONTRACT DOCUMENTS. UNLESS CORRECTIVE ACTION IS INDICATED ON THIS APPROVAL, ALL ITEMS SO MARKED WILL BE ASSUMED CORRECT AS SUBMITTED AND FURNISHED AS DETAILED. CMC REBAR ASSUMES NO RESPONSIBILITY FOR ERRORS CAUSED BY LACK OF REQUESTED INFORMATION.			
<b>FIELD USE:</b> THIS DRAWING IS TO BE USED IN CONJUNCTION w/ STRUCTURAL AND ARCHITECTURAL DOCUMENTS TO FACILITATE PLACING OF REINFORCING BARS ONLY. DO NOT USE THIS DRAWING FOR LAYOUT OR CONSTRUCTION. ANY DIMENSIONS OR ELEVATIONS NOTED IN THIS DOCUMENT ARE FOR REFERENCE ONLY, TO FACILITATE APPROVAL &/OR PLACEMENT OF REBAR. DISCREPANCIES SHOULD BE NOTED AT THE TIME OF APPROVAL. CMC REBAR ASSUMES NO LIABILITY FOR DIMENSIONAL ERRORS IN THE LAYOUT OF THE BUILDING OR FORMS.			



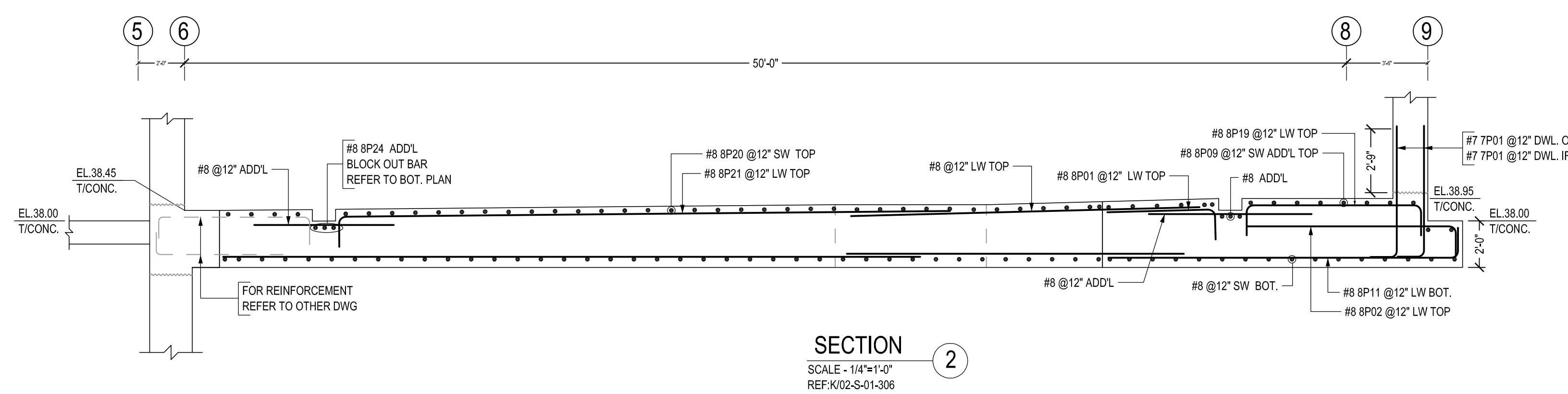


# DOWEL REINFORCEMENT DETAILS

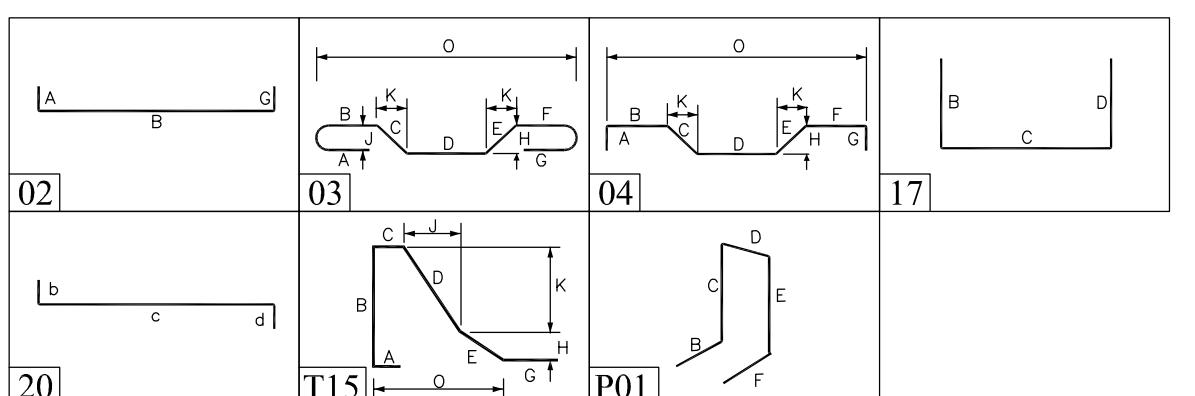
## SCREENING CHANNEL FOUNDATION LAYOUT

SCALE - 1/4"=1'-0"  
REF:02-S-01-103, TO S2-S-01-302  
02 S 01 501 TO 02 S 01 510

T



**SECTION**  
SCALE - 1/4"=1'-0"  
REF:K02-S-01-306

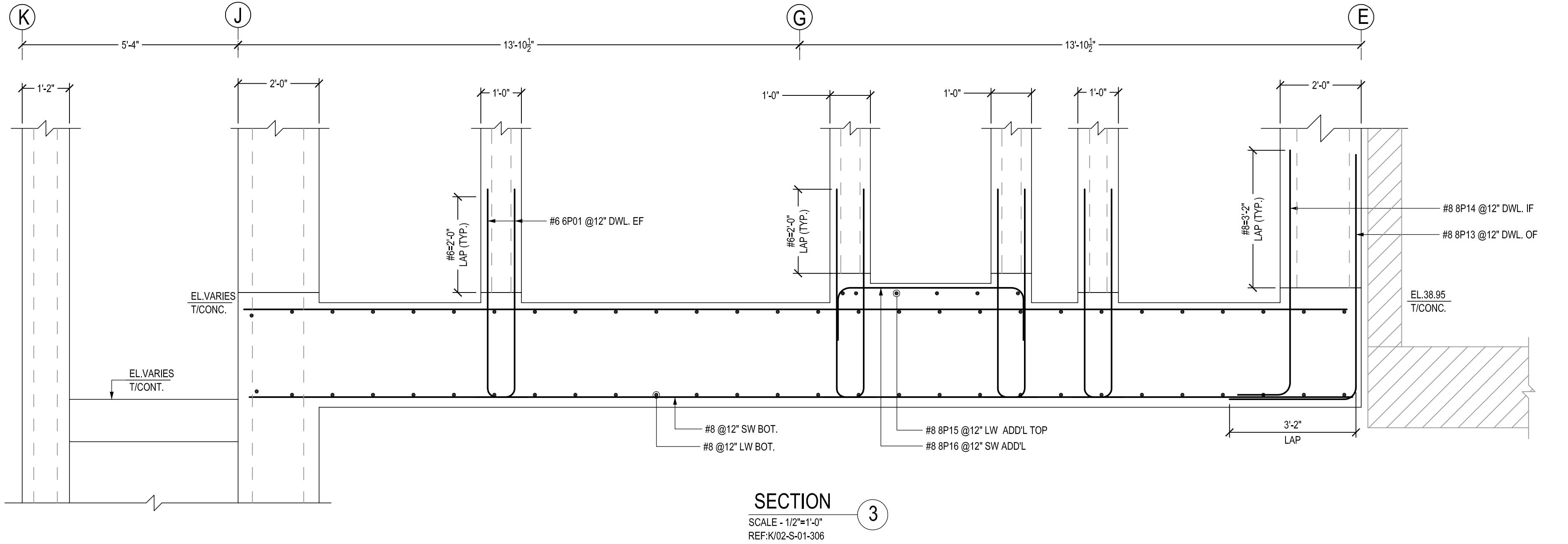


LAP SCHEDULE		
REF;S110/00-T-03-701		
SIZE	4000 PSI	
	TOP	OTHERS
#4	20"	16"
#5	26"	20"
#6	30"	24"
#7	43"	33"
#8	50"	38"
#9	56"	42"
#10	62"	48"

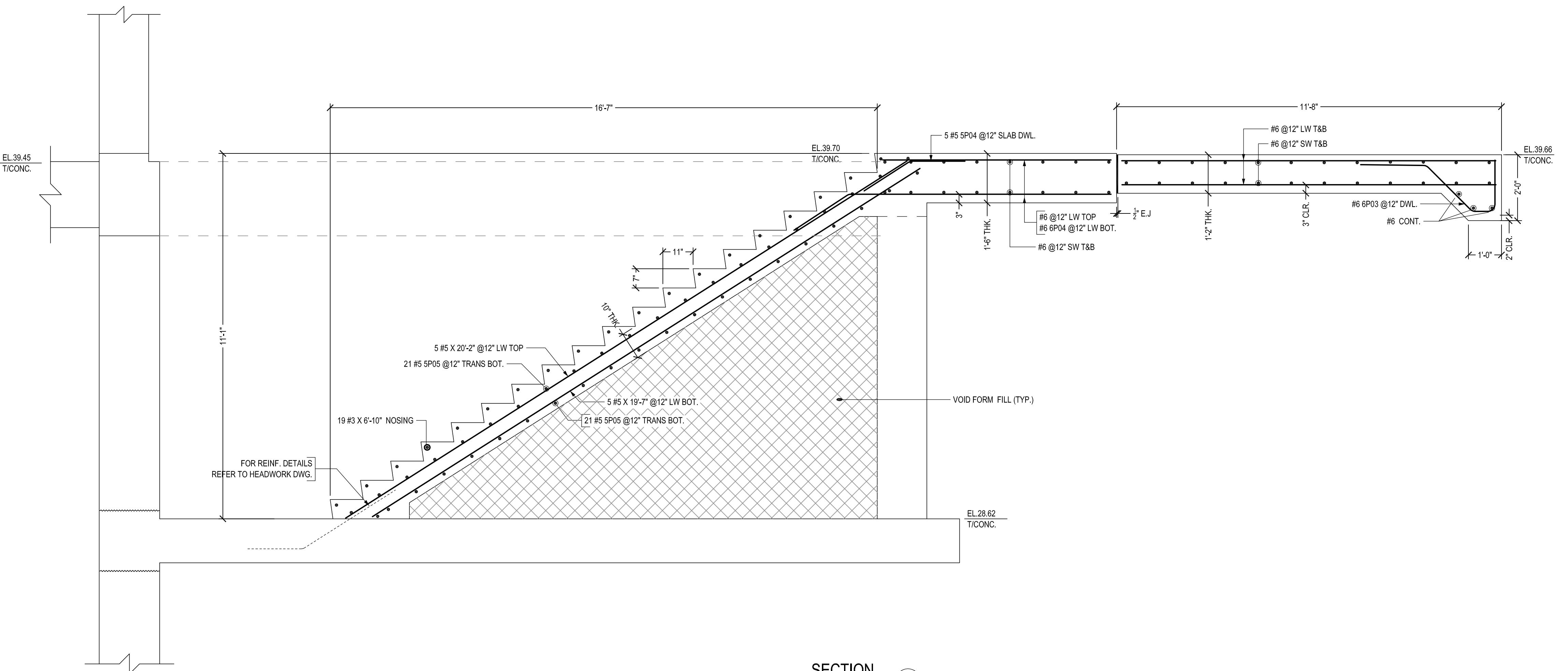
ABBREVIATIONS	
OTTOM	BOT.
P&BOTTOM	T&B
CONTINUOUS	CONT.
C E BAR	-
DRNER BAR	COR.
ERTICAL	VERT.
ORIZONTAL	HORZ.
IRRUPS	STPS.
CH WAY	EW
CH FACE	EF
NER FACE	IF
UTER FACE	OF
CH SIDE	ES
CH END	EE
OWEL	DWL.
OWEL/VERTICAL	D/V
ANSVERSE	TRANS.
ONG WAY BAR	LW
IORT WAY BAR	SW
RILL & EPOXY	D&E
EERENCE	REF

ACCESSORIES	
HEIGHT	QUANTITY
COMBO DOBIES (5000 PSI)	120 NOS. @4'-0" C/C.

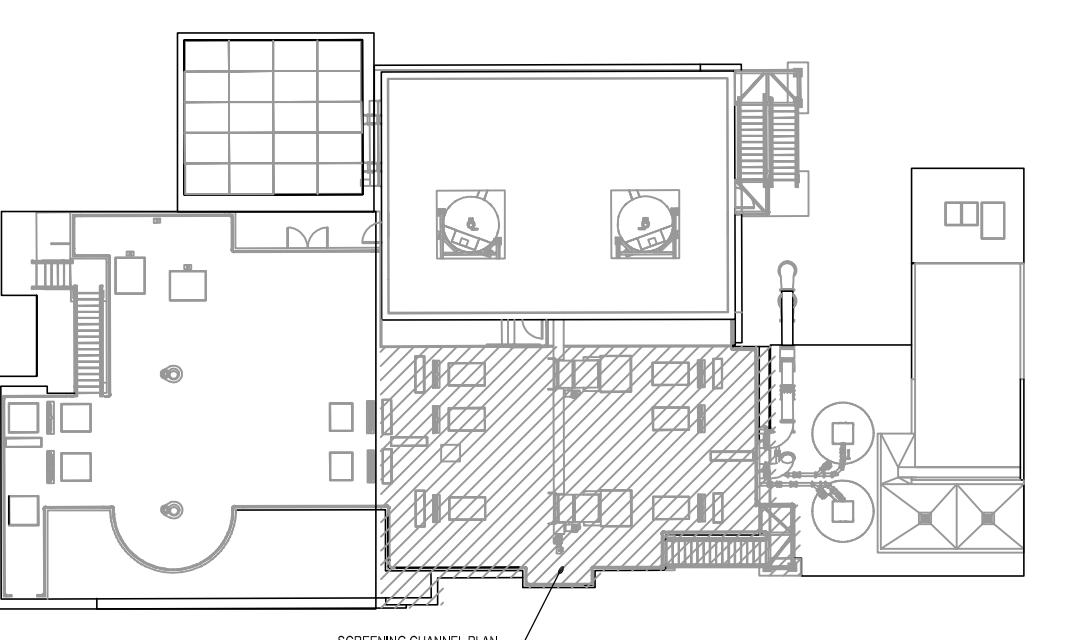
PROJECT INFORMATION		SUBMITTAL RECORD	
 <b>JOB#:</b> 2424620061		<b>DATE:</b> 07/31/25 <b>FOR:</b> APPROVAL	<b>FIELD USE:</b> THIS DRAWING IS TO BE USED IN CONJUNCTION w/ STRUCTURAL AND ARCHITECTURAL DOCUMENTS TO FACILITATE PLACING OF REINFORCING BARS ONLY. DO NOT USE THIS DRAWING FOR LAYOUT OR CONSTRUCTION. ANY DIMENSIONS OR ELEVATIONS NOTED IN THIS DOCUMENT ARE FOR REFERENCE ONLY, TO FACILITATE APPROVAL &/OR PLACEMENT OF REBAR. CMC REBAR ASSUMES NO LIABILITY FOR DIMENSIONAL ERRORS IN THE LAYOUT OF THE BUILDING OR FORMS.
<b>CUSTOMER:</b> HILO WWTP	<b>JOB NAME:</b> COUNTY OF HAWAII	<b>DETAILER:</b> MKR <b>EMAIL:</b> will@nmcmasterrebar.com <b>PHONE:</b> (360)-346-6729	<b>APPROVAL AUTHORITY:</b> ALL ITEMS THAT ARE CLOUDED &/OR MARKED "VERIFY" REFER TO QUESTIONS, OMISSIONS, CONFLICTS OR ERRORS IN THE CONTRACT DOCUMENTS. UNLESS CORRECTIVE ACTION IS INDICATED ON THIS APPROVAL, ALL ITEMS SO MARKED WILL BE ASSUMED CORRECT AS SUBMITTED AND FURNISHED AS DETAILED. CMC REBAR ASSUMES NO RESPONSIBILITY FOR ERRORS CAUSED BY LACK OF REQUESTED INFORMATION.
<b>DESCRIPTION:</b> HEAD WORKS – SCREENING CHANNEL MAT SLAB REINFORCING		<b>REF:</b> 02-S-01-103 TO 307 & 501	<b>DATE:</b> □ DATE: □ DATE: □ DATE:
			



SECTION  
SCALE - 1/2"=1'-0"  
REF:K/02-S-01-306



SECTION  
SCALE - 1/2"=1'-0"  
REF:02-S-01-307, 49/02-S-01-510



KEY PLAN  
SCALE - N.T.S.  
REF:02-M-01-105

ALL REINFORCEMENTS ARE A615 GR.60 U.N.O.

Customer: JOB NAME: LOCATION: RESPONSIBILITY:	PROJECT INFORMATION		SUBMITTAL RECORD	
	Job #:	2424620061	Date: 07/31/25	For: APPROVAL
DETAILS: MNR EMAIL: will@cmcrebar.com PHONE: (360) 346-6729	DATE: . DATE: . △ DATE: . △ DATE: .	FOR: . FOR: . △ DATE: . △ DATE: .		
CNC REBAR	REF: 02-S-01-103 TO 307 & 501			
CMC REBAR				

FIELD USE:  
THIS DRAWING IS TO BE USED IN CONSTRUCTION / STRUCTURAL  
AND ARCHITECTURAL DOCUMENTS TO FACILITATE PLACEMENT  
OF REINFORCING BARS ONLY. DO NOT USE THIS DRAWING  
ELEVATIONS NOTED IN THE DOCUMENT ARE FOR REFERENCE  
ONLY. TO FACILITATE PLACEMENT, CMC REBAR  
CNC REBAR ASSUMES NO LIABILITY FOR DIMENSIONAL ERRORS  
IN THE LAYOUT OR THE BUILDING OR FORMS.

High Priority

**CONTRACTOR SUBMITTAL TRANSMITTAL FORM REV. A**

**Owner:** County of Hawaii  
**Contractor:** Nan, Inc.  
**Project Name:** Hilo WWTP Phase 1  
**Submittal Title:**  
**TO:**  
**From:** Nan Inc.

**Project No.:** WW-4705R  
**Submittal Number:**  
For Information Only

<b>Specification No. and Subject of Submittal / Equipment Supplier</b>	
<b>Spec:</b>	<b>Paragraph:</b>
<b>Authored By:</b>	<b>Date Submitted:</b>

<b>Submittal Certification</b>		
<b>Check Either (A) or (B):</b>		
<input type="checkbox"/> (A)	We have verified that the equipment or material contained in this submittal meets all the requirements specified in the project manual or shown on the contract drawings with <u>no exceptions</u> .	
<input type="checkbox"/> (B)	We have verified that the equipment or material contained in this submittal meets all the requirements specified in the project manual or shown on the contract drawings <u>except</u> for the deviations listed.	
Certification Statement: By this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data, and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements.		
<b>General Contractor's Reviewer's Signature:</b>		
<b>Printed Name and Title:</b>		
In the event, Contractor believes the Submittal response does or will cause a change to the requirements of the Contract, Contractor shall immediately give written notice stating that Contractor considers the response to be a Change Order.		
<b>Firm:</b>	<b>Signature:</b>	<b>Date Returned:</b>

<b>PM/CM Office Use</b>	
Date Received GC to PM/CM:	
Date Received PM/CM to Reviewer:	
Date Received Reviewer to PM/CM:	
Date Sent PM/CM to GC:	

Nan, Inc

PROJECT: HILO WWTP REHABILITATION  
AND REPLACEMENT PROJECT - PHASE 1

JOB NO. WW-4705R

THIS SUBMITTAL HAS BEEN CHECKED BY  
THIS CONTRACTOR. IT IS CERTIFIED  
CORRECT, COMPLETE, AND IN  
COMPLIANCE WITH CONTRACT  
DRAWINGS AND SPECIFICATIONS. ALL  
AFFECTED CONTRACTORS AND  
SUPPLIERS ARE AWARE OF, AND WILL  
INTEGRATE THIS SUBMITTAL (UPON  
APPROVAL) INTO THEIR OWN WORK.

DATE RECEIVED \_\_\_\_\_  
SPECIFICATION SECTION # \_\_\_\_\_  
SPECIFICATION \_\_\_\_\_  
PARAGRAPH \_\_\_\_\_  
DRAWING \_\_\_\_\_  
SUBCONTRACTOR \_\_\_\_\_  
SUPPLIER \_\_\_\_\_  
MANUFACTURER \_\_\_\_\_

CERTIFIED BY CQCM or Designee : \_\_\_\_\_

**SECTION 03200**  
**CONCRETE REINFORCING**

**PART 1 GENERAL**

**1.01 SUMMARY**

- A. Section includes:
  - 1. Reinforcing bars:
    - a. Carbon steel.
  - 2. Thread bars.
  - 3. Bar supports.
  - 4. Tie wires.
  - 5. Welded wire fabric.
  - 6. Mechanical reinforcing bar couplers.

**1.02 REFERENCES**

- A. American Concrete Institute (ACI):
  - 1. 318 - Building Code Requirements for Structural Concrete and Commentary.
  - 2. SP-66 - ACI Detailing Manual.
- B. American Iron and Steel Institute (AISI).
- C. American Welding Society (AWS):
  - 1. D1.4 - Structural Welding Code - Reinforcing Steel.
- D. ASTM International (ASTM):
  - 1. A493 - Standard Specification for Stainless Steel Wire and Wire Rods for Cold Heading and Cold Forging.
  - 2. A615 - Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement.
  - 3. A706 - Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.
  - 4. A1064 - Standard Specification of Carbon-Steel wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
- E. Concrete Reinforcing Steel Institute (CRSI):
  - 1. Manual of Standard Practice.
- F. ICC Evaluation Service (ICC-ES):
  - 1. AC133 - Acceptance Criteria for Mechanical Connector Systems for Steel Reinforcing Bars.

## 1.03 DEFINITIONS

- A. Architectural Concrete: Concrete surfaces that will be exposed to view in the finished work.
  - 1. Additionally, for purposes of this Section, includes:
    - a. Concrete surfaces that are designated to receive paints or coatings.
    - b. Exposed concrete in open basins, channels, and similar liquid containing structures: Surfaces shall be considered exposed to view if located above a line 2 feet below the normal operating water surface elevation in that structure.
- B. Bars: Reinforcement or reinforcing bars as specified in this Section.
- C. Evaluation Report: Report prepared by ICC-ES , or by other testing agency acceptable to the Engineer and to the Building Official, that documents testing and review of a product to confirm that it complies with the requirements of designated ICC-ES Acceptance Criteria, and its acceptance for use under the Building Code specified in Section 01410 - Regulatory Requirements.
- D. Give Away Bars: Reinforcing bars that are not required by the Contract Documents, but are installed by the Contractor to provide support for the required reinforcing bars.
- E. Wire Supports: Metal reinforcing supports constructed of steel wire as specified. Includes individual high chairs, continuous high chairs, bolsters and other similar configurations and shapes.

## 1.04 SUBMITTALS

- A. General:
  - 1. Submit in accordance with Section 01330 - Submittal Procedures.
  - 2. Changes to reinforcement in Contract Documents:
    - a. Indicate in a separate letter submitted with shop drawings any changes to reinforcement indicated on the Drawings or specified.
    - b. Such changes will not be acceptable unless Engineer has accepted them in writing.
- B. Product data:
  - 1. Bar supports:
    - a. Wire bar supports:
      - 1) Schedule of support materials to be provided and locations of use.
      - b. Precast concrete bar supports ("dobies"):
        - 1) Manufacturer's data indicating compression strength of concrete and confirming dimensions and thickness(es).height(s) to be provided for each location where used.
    - 2. Mechanical reinforcing bar couplers. For each type and/or series to be provided:
      - a. Evaluation Report documenting compliance with the requirements of ICC-ES AC133.

Provided in  
03200-001.0

- b. Details, properties, and dimensions of couplers. Include type or size identification, and bar size(s) and grade(s) for which the coupler is suitable.
- c. Manufacturer's installation and testing instructions.
- d. Manufacturer's statement that products installed in accordance with manufacturer's recommended procedures will develop strengths and limit slip as specified in this Section.

C Shop drawings:

- 1. Reinforcement shop drawings:
    - a. Submit drawings showing bending and placement of reinforcement required by the Contract Documents.
    - b. Clearly indicate structures or portions of structures covered by each submittal.
      - 1) Submit reinforcement shop drawings for each structure as a complete package. Submittals addressing only a portion of a structure will be rejected and returned without review, unless such presentation is accepted by Engineer in advance.
    - c. Shop drawings shall conform to the recommendations of the CRSI Manual of Standard Practice and ACI SP-66.
    - d. Use the same bar identification marks on bending detail drawings, placement drawings, and shipping tags.
    - e. Submittals consisting solely of reinforcing bar schedules, without accompanying placement drawings, will not be accepted unless accepted under prior written agreement with Engineer.
  - 2. Reinforcement placement drawings:
    - a. Clearly show placement of each bar listed in the bill of materials, including additional reinforcement at corners and openings, and other reinforcement required by details in the Contract Documents.
    - b. Clearly identify locations of reinforcement with coatings (e.g., galvanized or epoxy) and with yield strength other than ASTM A615, Grade 60.
    - c. Show anchor bolt locations based on anchor bolt templates for approved equipment.
    - d. Show splice locations.
    - e. Show locations of mechanical reinforcing couplers, if used.
  - 3. Reinforcement fabrication drawings:
    - a. If bend types or nomenclature differs from that recommended in the CRSI Manual of Standard Practice, provide details showing bend types and dimensional designations.  
Clearly identify reinforcement with coatings and with yield strength other than ASTM A615, Grade 60.
- D. Samples (when requested by Engineer):
- 1. Bar supports/wire reinforcement supports: Samples of each type of chair and bolster proposed for use. Submit with letter stating where each type will be used.
  - 2. Precast concrete bar supports: Samples of each type of precast support proposed for use. Submit with letter stating where each will be used.

Not included in  
this submittals

**E. Test reports:**

- Not included in this submittals. Will be provided for each shipping
1. Certified copy of mill test for each steel used. Show physical properties and chemical analysis.
    - a. Mill test reports may be submitted as record documents at the time the reinforcement from that heat of steel is shipped to the site.
    - b. In such cases, submit certificates under the shop drawing submittal number with the letter "R" (for record date) appended to the end (e.g., if the reinforcement was submitted as 03200-002-1, deliver the associated mill certificate as submittal 03200-002-1R).
  2. Mechanical reinforcing bar couplers:
    - a. Current Evaluation Report confirming that couplers provide specified tension and compression strength and conform to specified limits on total slip within the coupler.
    - b. Certified copy of mill tests for heat(s) of steel incorporated into the reinforcing bar couplers shipped.
    - c. For threaded sleeve type couplers, heat treatment lot numbers for each shipment.

Provided by submittal  
03200-001.0

**F. Manufacturer's instructions:**

1. Mechanical reinforcing bar couplers:
  - a. Manufacturer's installation instructions.
  - b. Manufacturer's instructions for confirmation testing of couplers after reinforcing bars have been inserted into the couplers.

**G. Special procedures:**

1. Welding procedures conforming to AWS D1.4 for reinforcement to be field welded.
  - a. Procedures qualification record.

Not included in this submittals.  
Subcontractor has no plan to  
use welding so far, will provide  
if needed

**H. Qualifications statements:**

1. Welder qualifications.

**I. Closeout documents:**

1. Field quality control and inspection reports.
2. Field quality assurance special inspection and testing reports.

## 1.05 DELIVERY, STORAGE, AND HANDLING

**A. Packing and shipping:**

1. Deliver bars bundled and tagged with identifying tags.

**B. Acceptance at site:**

1. Reinforcing bars: Deliver reinforcing bars lacking grade identification marks with letter containing manufacturer's guarantee of grade.

## 1.06 SEQUENCING AND SCHEDULING

**A. Bar supports:**

1. Do not place concrete until samples and product data for bar supports have been accepted by Engineer.

## PART 2 PRODUCTS

### 2.01 DESIGN AND PERFORMANCE CRITERIA

- A. The drawings contain notes describing the size and spacing of reinforcement and its placement, details of reinforcement at wall corners and intersections, and details of extra reinforcement around openings in concrete, and other related information.

### 2.02 MATERIALS

- A. Reinforcing bars:
  - 1. Provide reinforcement of the grades and quality specified, fabricated from new stock, free from excessive rust or scale, and free from unintended bends or other defects affecting its usefulness.
  - 2. Reinforcing bars:
    - a. ASTM A615 Grade 60 deformed bars, including the following requirements, or ASTM A706 Grade 60 deformed bars.
      - 1) Actual yield strength based on mil tests of reinforcement provided shall not exceed the minimum yield strength specified in this Section by more than 18,000 pounds per square inch.
      - 2) Ratio of actual ultimate tensile strength to actual tensile yield strength shall not be less than 1.25.
    - 3. Reinforcing bars designated or required to be welded:
      - a. Low-alloy, ASTM A706 Grade 60, deformed bars.
- B. Bar supports:
  - 1. Wire supports:
    - a. All stainless steel bar supports:
      - 1) Conforming to CRSI Manual of Standard Practice recommendations for types and details, but custom fabricated entirely from stainless steel wire conforming to ASTM A493, AISI Type 316.
    - b. Stainless steel protected bar supports:
      - 1) Conforming to CRSI Manual of Standard Practice Class 2, Type B, and consisting of bright basic wire support fabricated from cold-drawn carbon steel wire with stainless steel ends attached at the bottom of each leg.
      - 2) Stainless steel wire ends shall conform to ASTM A493, AISI Type 316 and shall extend at least 3/4 inch inward from the formed surface of the concrete.
    - c. Bright basic wire bar supports.
      - 1) Conforming to CRSI Manual if Standard Practice, Class 3.
  - 2. Plastic supports:
    - a. Manufacturers: The following or equal:
      - 1) Aztec Concrete Accessories.
  - 3. Deformed steel reinforcing bar supports:
    - a. Fabricated of materials and to CRSI details recommended for typical reinforcement embedded in concrete and bent to dimensions required to provide specified clearances and concrete cover.
  - 4. Precast concrete bar supports ("dobies"):
    - a. Pre-manufactured, precast concrete blocks with cast-in annealed steel wires, 16-gauge or heavier.

- b. Compression strength of concrete: Equal to or exceeding the compression strength of the surrounding concrete.
    - c. Block dimensions:
      - 1) Height to provide specified concrete cover.
      - 2) Footprint not less than 3 inches by 3 inches, and adequate to support the weight of the reinforcement and maintain specified concrete cover without settling into the underlying surface.
  - 5. Stainless steel wire supports on stainless steel plates:
    - a. Type 304 stainless steel wire bar support chairs or bolsters supported on Type 304 stainless steel plates resting on the ground surface.
      - 1) Weld plates to at least 2 legs of wire support chairs.
- C. Tie wires:
- 1. General use: Black annealed steel wire, 16-gauge or heavier.
- D. Welded wire fabric reinforcement:
- 1. Material:
    - a. Carbon steel conforming to ASTM A1064.
  - 2. Provide welded wire reinforcement in flat sheet form. Rolled wire fabric is not permitted.
  - 3. Fabric may be used in place of reinforcing bars if accepted by Engineer:
    - a. Provide welded wire fabric having cross-sectional area per linear foot not less than the cross-sectional area per linear foot of reinforcing bars indicated on the Drawings.
- E. Mechanical reinforcing bar couplers:
- 1. General:
    - a. Only products conforming to the requirements of ACI 318 for mechanical splices, and holding a current Evaluation Report that documents the following performance characteristics, will be considered for use.
    - b. Strength of coupler: Capable of developing tension and compression strength not lower than the lesser of the following:
      - 1) ACI 318 "Type 2" units: In static tension and compression:
        - a) Minimum 125 percent of the ASTM-specified minimum yield strength of the reinforcement being spliced.
        - b) Minimum 100 percent of the ASTM-specified minimum ultimate strength of the reinforcement being spliced.
    - c. Slip of reinforcing bars within coupler: Total slip of the reinforcing bars within the splice sleeve limited as follows:
      - 1) For bar sizes #14 and smaller, elongation between gauge points measured clear of the splice sleeve not exceeding 0.010 inches after coupler has been loaded to a tension of 30,000 pounds per square inch and load relaxed to a tension of 3,000 pounds per square inch.
    - d. Fabrication:
      - 1) Threaded joints:
        - a) Provide threaded ends designed so that cross-threading of bars will not occur during assembly.
        - b) Fabricate male ends for female couplers using coupler manufacturer's bar threading equipment to ensure proper taper and thread engagement.
      - 2) Mark each sleeve with heat treatment lot number.

2. Couplers: Threaded - Reinforcing bar splice at construction joints.
  - a. Steel sleeve butt splice with tapered internal threads in forged or swaged head, and nailing flange for attaching to forms. Provide with matching, tapered male-threaded dowels for insertion and tightening into threaded sleeve after form removal.
    - 1) Provide sleeve with factory-installed plugs to prevent concrete mortar from entering internally threaded coupler.
    - 2) Provide optional clipped nailing flanges as required to maintain minimum specified concrete cover over surfaces of coupler.
  - b. Holding current Evaluation Report demonstrating acceptance under ICC-ES AC133.
  - c. Manufacturers: One of the following or equal:
    - 1) Dayton Superior, DBDI Splice System.
    - 2) ERICO-Pentair, Lenton Form Saver.
3. Couplers: Threaded - reinforcing bar splice:
  - a. Steel sleeve butt splice with tapered internal threads at each end for joining to matching tapered male threads on reinforcing bars.
  - b. Holding current Evaluation Report demonstrating acceptance under ICC-ES AC133.
  - c. Manufacturers: One of the following, or equal:
    - 1) Dayton Superior: Taper-Lock System.
    - 2) ERICO-Pentair: Lenton Taper Threaded Splicing System.

## **2.03 FABRICATION**

- A. Shop fabrication and assembly:
  1. Cut and bend bars in accordance with provisions of ACI 318 and the CRSI Manual of Standard Practice.
  2. Bend bars cold. Use bending collars to develop the recommended bend radius.
  3. Provide bars free from defects and kinks and from bends not indicated on the Drawings.
  4. Circumferential and radiused reinforcement: Roll to the radius required for its location in the structure before installation.
  5. Bars to be fitted with mechanical couplers:
    - a. Fabricate threaded ends for connections in shop using manufacturer's recommended tools. Field fabrication is not allowed.
    - b. Cut ends square.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verification of conditions:
  1. Reinforcing bars and welded wire reinforcement:
    - a. Verify that reinforcement is new stock, free from rust scale, loose mill scale, excessive rust, dirt, oil, and other coatings that will adversely affect bonding capacity when placed in the Work.
  2. Welded wire fabric:
    - a. Verify that sheets are not curled or kinked before or after installation.

## **3.02 PREPARATION**

- A. Surface preparation:
1. Reinforcing bars - uncoated:
    - a. Clean reinforcement of concrete, dirt, oil and other coatings that will adversely affect bond before embedding bars in subsequent concrete placements.
    - b. Thin coating of red rust resulting from short exposure will not be considered objectionable. Thoroughly clean bars having rust scale, loose mill scale, or thick rust coat.
    - c. Partially embedded reinforcement: Remove concrete or other deleterious coatings from dowels and other projecting bars by wire brushing or sandblasting before bars are embedded in subsequent concrete placements.

## **3.03 INSTALLATION**

- A. Reinforcing bars: General:
1. Field-cutting of reinforcing bars is not permitted.
  2. Field-bending of reinforcing bars, including straightening and rebending, is not permitted.
- B. Placing reinforcing bars:
1. Accurately place bars to meet position and cover requirements indicated on the Drawings and specified. Secure bars in position.
  2. Tolerances for placement and minimum concrete cover: As listed in Table 1.

**Table 1 - Reinforcement Placing Tolerances**

<b>Member</b>	<b>Tolerance on Reinforcement Location <sup>(1)</sup></b>	<b>Tolerance on Minimum Concrete Cover <sup>(1,2)</sup></b>
Slabs, beams, walls and columns except as noted below:		
10 inches thick and less	$\pm$ 3/8 inch	- 3/8 inch
More than 10 inches thick	$\pm$ 1/2 inch	- 1/2 inch
Formed soffits:	As noted above	- 1/4 inch
Longitudinal location of bends and ends of reinforcement:		
Conditions not listed below:	$\pm$ 2 inches	- 1/2 inch
At discontinuous ends of brackets and corbels	$\pm$ 1/2 inch	- 1/4 inch
At discontinuous ends of other members:	$\pm$ 1 inch	- 1/2 inch
Notes:		
(1) $\pm$ indicates "plus or minus;" - indicates "minus;" + indicates "plus."		
(2) Tolerance on cover is limited as noted, but decrease in cover shall not exceed one third of the minimum cover indicated on the Drawings.		

3. Spacing between bars:
    - a. Minimum clear spacing between bars in a layer:
      - 1) As indicated on the Drawings, but not less than the larger of 1.5 times the bar diameter or 1-1/2 inches.
    - b. Minimum clear spacing between bars in 2 or more parallel layers:
      - 1) Place bars in upper layers directly above bars in lower layers.
      - 2) Minimum spacing between layers: As indicated on the Drawings, but not less than the larger of 1.5 times the bar diameter or 1-1/2 inches.
    - c. Limits on minimum clear spacing between bars also applies to the clear spacing between a lap splice and the adjacent bars and/or lap splices.
  4. Lap splices for bars:
    - a. Lap splice locations and lap splice lengths: as indicated on the Drawings. Where lap lengths are not indicated, provide in accordance with ACI 318.
    - b. Unless otherwise specifically indicated on the Drawings (and noted as "non-contact lap splice"), install bars at lap splices in contact with each other and fasten together with tie wire.
    - c. Where bars are to be lap spliced at concrete joints, ensure that bars project from the first concrete placement a length equal to or greater than minimum lap splice length indicated on the Drawings.
    - d. Stagger lap splices where indicated on the Drawings.
    - e. Where lap splice lengths are not indicated on the Drawings, provide lap splice lengths in accordance with ACI 318.
- C. Reinforcing supports:
1. Provide supports of sufficient numbers, sizes, and locations to maintain concrete cover, to prevent sagging and shifting, and to support loads during construction without displacement and without gouging or indentation into forming surfaces.
    - a. Quantities and locations of supports shall not be less than those indicated in ACI SP-66 and the CRSI Manual of Standard Practice.
  2. Do not use brick, concrete masonry units, concrete spalls, rocks, wood, or similar materials for supporting reinforcement.
  3. Do not use "give away bars" that have less cover than that required by the Contract Documents. Do not adjust the location of reinforcement required by the Contract Documents to provide cover for give away bars.
  4. Provide bar supports of height required to maintain the clear concrete cover indicated on the Drawings.
  5. Provide bar supports at formed vertical faces to maintain the clear concrete cover indicated on the Drawings.

6. Schedule of reinforcement support materials: Provide bar supports as indicated in Table 2.

<b>Table 2 - Reinforcement Support Materials</b>		
<b>Case</b>	<b>Location</b>	<b>Material</b>
a.	Concrete placed over earth and concrete seal slabs ("mud mats"):	Precast concrete bar supports.
b.	Concrete placed against forms and exposed to water or wastewater process liquids (whether or not such concrete received additional linings or coatings):	All stainless steel bar supports.
c.	Concrete placed against forms and exposed to earth, weather, frequent washdown, or groundwater in the finished work:	All stainless steel bar supports.
d.	Concrete placed against forms and exposed to interior equipment/piping areas in the finished work:	All stainless steel bar supports.
e.	Between mats of reinforcement, and fully embedded within a concrete member:	Bright basic wire bars supports, or deformed steel reinforcing bars.

D. Tying of reinforcing:

1. Fasten reinforcement securely in place with wire ties.
2. Tie reinforcement at spacings sufficient to prevent shifting.
  - a. Provide at least 3 ties in each bar length. (Does not apply to dowel lap splices or to bars shorter than 4 feet, unless necessary for rigidity).
3. Tie slab bars at every intersection around perimeter of slab.
4. Tie wall bars and slab bar intersections other than around perimeter at not less than every fourth intersection, but at not more than the spacing indicated in Table 3:

<b>Table 3 - Maximum Spacing of Tie Wires for Reinforcement</b>		
<b>Bar Size</b>	<b>Slab Bar Spacing (inches)</b>	<b>Wall Bar Spacing (inches)</b>
Bars Number 5 and Smaller	60	48
Bars Number 6 through Number 9	96	60
Bars Number 10 and Number 11	120	96

5. After tying:

- a. Bend ends of wires inward towards the center of the concrete section. Minimum concrete cover for tie wires shall be the same as cover requirements for reinforcement.
- b. Remove tie wire clippings from inside forms before placing concrete.

**E. Welded wire fabric reinforcement:**

1. Install only where indicated on the Drawings or accepted in advance by Engineer.
2. Install necessary tie wires, spacing chairs, and supports to keep welded wire fabric at its designated position in the concrete section while concrete is being placed.
3. Straighten welded wire fabric to make sheets flat in the Work.
4. Do not allow wire fabric to drape between supports unless such a configuration is specifically indicated on the Drawings.
  - a. If fabric is displaced during placement of concrete, make provisions to restore it to the designated location using methods acceptable to Engineer.
5. Bend welded wire fabric as indicated on the Drawings or required to fit Work.
6. Lap splice welded wire fabric as indicated on the Drawings.
  - a. If lap splice length is not indicated, splice in accordance with ACI 318, but not less than 1 1/2 courses of fabric or 8 inches minimum. Tie laps at ends and at not more than 12 inches on center.

**F. Welding reinforcing bars:**

1. Weld reinforcing bars only where indicated on the Drawings or where acceptance is received from Engineer prior to welding.
2. Perform welding in accordance with AWS D1.4 and welding procedures accepted by Engineer.
  - a. Conform to requirements for minimum preheat and interpass temperatures.
3. Submit:
  - a. Welding procedures specification.
  - b. Procedures qualification record.
  - c. Welder qualification test record.
4. Do not tack weld reinforcing bars except where specifically indicated on the Drawings.

**G. Reinforcing bar mechanical couplers:**

1. Install only at locations indicated on the Drawings or where prior approval has been obtained from Engineer.
2. Install in accordance with manufacturer's instructions and requirements of Evaluation Report.
  - a. Make splices using manufacturer's standard equipment, jigs, clamps, and other required accessories.
  - b. After assembly of the splice, tighten using torque load not less than that recommended by the manufacturer.
3. Unless greater cover is indicated on the Drawings, provide clear cover from surface of concrete to outside face of couplers that is not less than the minimum concrete cover specified for typical reinforcement.
  - a. If cover is less than required, contact Engineer for evaluation of conditions before modifying locations of bars or placing concrete.
  - b. Modifications to maintain or provide required concrete cover, such as addition of concrete ; re-positioning of stirrups, ties, etc., may be completed only after approval by Engineer.

### **3.04 FIELD QUALITY CONTROL**

- A. Provide quality control for the Work of this Section as specified in Section 01450 -Quality Control.
- B. Field inspections and testing:
  - 1. Submit records of inspections and testing to Engineer in electronic format within 24 hours after completion.
- C. Manufacturer's services:
  - 1. Furnish manufacturer's technical representative to conduct jobsite training regarding proper storage, handling, and installation of mechanical reinforcing bar couplers for personnel who will perform the installation. Engineer may attend training session.

### **3.05 FIELD QUALITY ASSURANCE**

- A. Provide quality assurance as specified in Section 01450 - Quality Control.
- B. Special inspections and tests:
  - 1. Provide as specified in Section 01455 - Regulatory Quality Assurance.
  - 2. Frequency of inspections:
    - a. Unless otherwise indicated on the Drawings or in this Section, provide periodic special inspection as required by the Building Code specified in Section 01410 - Regulatory Requirements.
  - 3. Preparation:
    - a. Review Drawings and Specification for the Work to be observed.
    - b. Review approved submittal sand shop drawings.
  - 4. Inspections: Special inspection shall include, but is not limited to, the following items.
    - a. Reinforcement: General:
      - 1) Type (material) and location of reinforcement supports.
      - 2) Bar material/steel grade and bar size.
      - 3) Location, placement, and spacing of bars.
      - 4) Clear concrete cover over reinforcement.
      - 5) Lap splice: Location and lap length. Bars within tolerances for contact (unless non-contact splice is indicated on the Drawings).
      - 6) Bar hooks and development lengths embedded within concrete sections as indicated on the Drawings.
      - 7) Reinforcement tired in position and tie wire legs turned inward toward the center of the concrete section.
    - b. Reinforcement: Welding:
      - 1) Inspector qualification and inspections shall be in accordance with the requirements of AWS D1.4.
      - 2) Provide periodic inspection for:
        - a) Weldability of reinforcement other than ASTM A706.
        - b) Single pass fillet welds with thickness less than or equal to 5/16 inch.
      - 3) Provide continuous inspection for:
        - a) Other welds.
        - b) Welds at mechanical reinforcing bar couplers and end anchors.

- 4) In addition to visual inspection, Owner may inspect reinforcing bar welds by other methods, including radiographic inspection.
5. Mechanical reinforcing bar couplers:
  - a. Special inspection shall include, but is not limited to, the following items:
    - 1) Coupler model and identification.
    - 2) Couplers are installed in accordance with the requirements of the Engineering Report for each product.
    - 3) Confirmation of the following:
      - a) Grade and size of reinforcing bars.
      - b) Position of couplers.
      - c) Insertion length of reinforcement.
      - d) Tightening of bars in the couplers.
  6. Records of inspections:
    - a. Provide a written record of each inspection using forms acceptable to the Engineer and to the Building Official.
    - b. Submit electronic copies of inspection reports to Engineer within 24 hours after completion of inspections.

### **3.06 NON-CONFORMING WORK**

- A. Before placing concrete, adjust or remove and re-install reinforcement to conform to the requirements of the Contract Documents.

END OF SECTION

# SHOP DRAWINGS

Nan, Inc

PROJECT: HILO WWTP REHABILITATION  
AND REPLACEMENT PROJECT - PHASE 1

JOB NO. WW-4705R

THIS SUBMITTAL HAS BEEN CHECKED BY  
THIS CONTRACTOR. IT IS CERTIFIED  
CORRECT, COMPLETE, AND IN  
COMPLIANCE WITH CONTRACT  
DRAWINGS AND SPECIFICATIONS. ALL  
AFFECTED CONTRACTORS AND  
SUPPLIERS ARE AWARE OF, AND WILL  
INTEGRATE THIS SUBMITTAL (UPON  
APPROVAL) INTO THEIR OWN WORK.

DATE RECEIVED 8/12/2025

SPECIFICATION SECTION # 03200

SPECIFICATION CONCRETE REINFORCING

PARAGRAPH 1.04

DRAWING SHOP DRAWING

SUBCONTRACTOR CMC

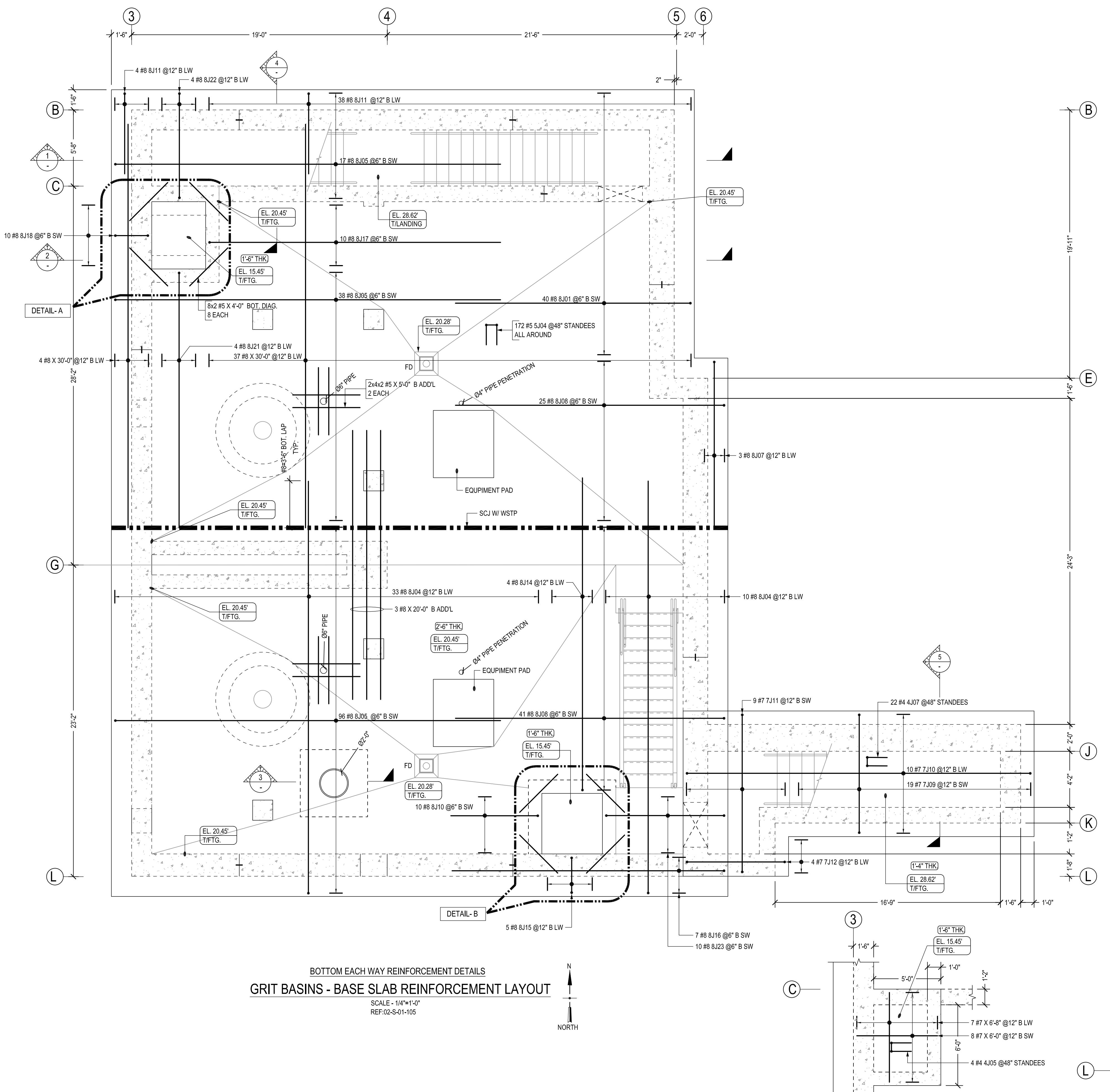
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MANUFACTURER N/A

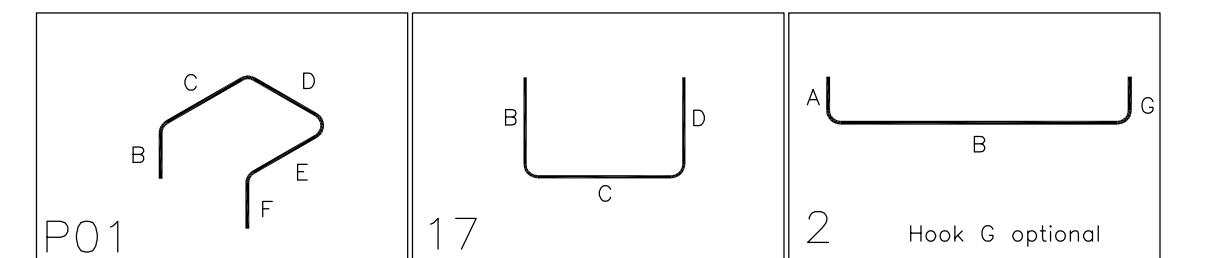
CERTIFIED BY: \_\_\_\_\_

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RP -15	GRIT BASINS - BASE SLAB REINFORCEMENTS DETAILS
RP -16	GRIT BASINS - BASE SLAB REINFORCEMENTS DETAILS
RP -17	GRIT BASINS - BASE SLAB REINFORCEMENTS DETAILS
RP -18	GRIT BASINS - ELECTRICAL BUILDING REINFORCEMENTS DETAILS
RP -19	GRIT BASINS - ELECTRICAL BUILDING REINFORCEMENTS DETAILS
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RP -21	HEAD WORKS ODOR CONTROL FACILITY
RP -22	HEAD WORKS - SCREENING CHANNEL MAT SLAB REINFORCING
RP -23	HEAD WORKS - SCREENING CHANNEL MAT SLAB REINFORCING
RP -24	HEAD WORKS - SCREENING CHANNEL MAT SLAB REINFORCING

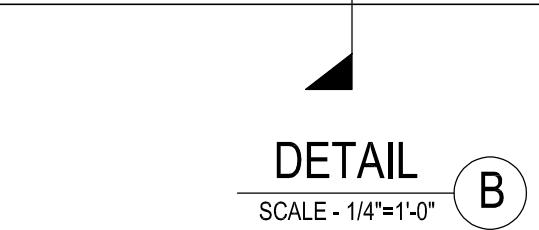
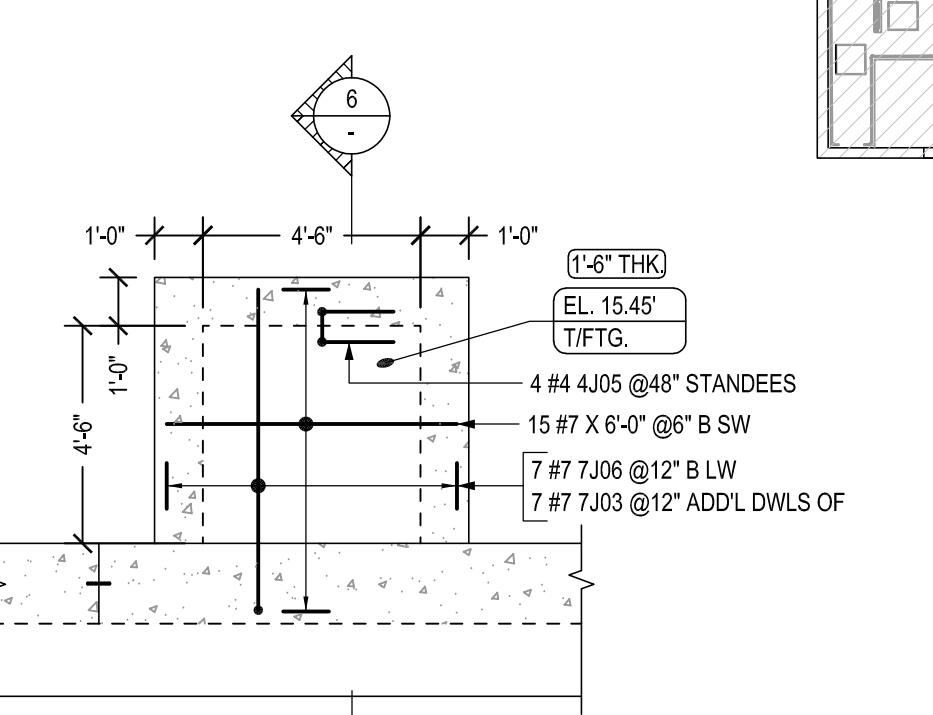
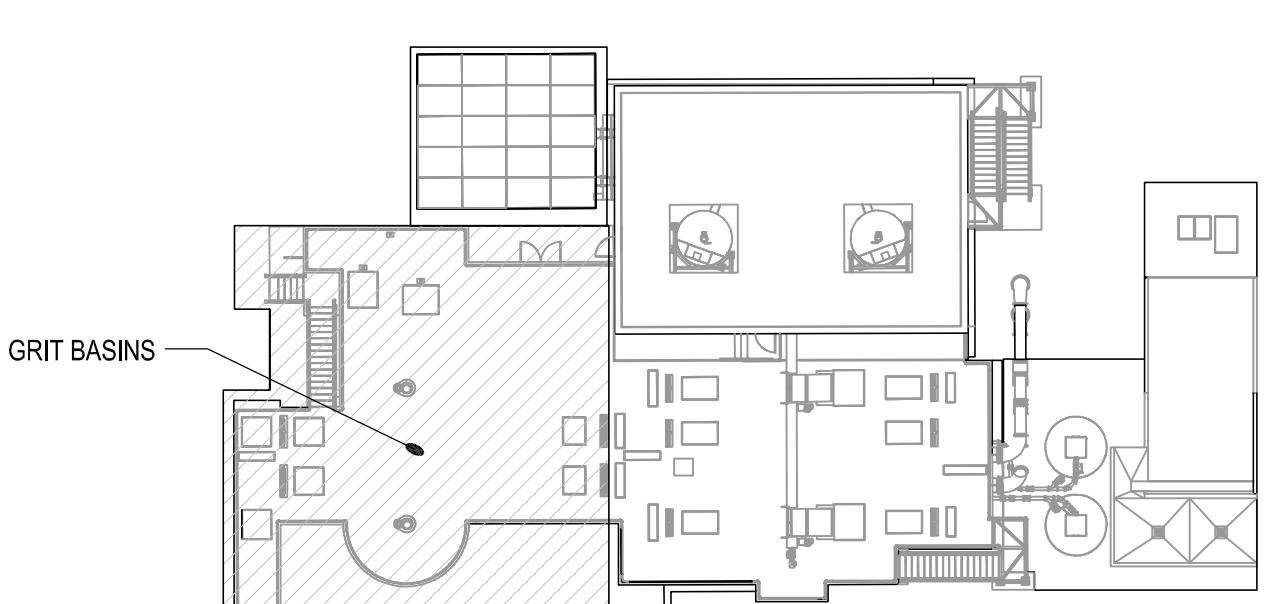


Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'J'	'K'	'O'	'R'
4J05	8	#4	5'-4 1/2"	P01		1'-6"	0'-10 1/4"	0'-8"	0'-10 1/4"	1'-6"						
4J07	22	#4	5'-0 1/2"	P01		1'-6"	0'-8 1/4"	0'-8"	0'-8 1/4"	1'-6"						
5J04	172	#5	7'-6 1/2"	P01		1'-6"	1'-10 1/4"	0'-10"	1'-10 1/4"	1'-6"						
7J03	7	#7	15'-11"	17		6'-8"	9'-3"									
7J06	7	#7	19'-2"	17		6'-8"	12'-6"									
7J09	19	#7	10'-8"	17		0'-11"	8'-10"	0'-11"								
7J10	10	#7	27'-5"	17		0'-11"	25'-7"	0'-11"								
7J11	9	#7	13'-7"	17		0'-11"	11'-9"	0'-11"								
7J12	4	#7	9'-2"	17		0'-11"	7'-4"	0'-11"								
8J01	40	#8	18'-10"	2	1'-4"	17'-6"										
8J04	43	#8	32'-0"	2	1'-4"	30'-8"										
8J05	151	#8	30'-0"	2	1'-4"	28'-8"										
8J07	3	#8	13'-8"	2	1'-4"	12'-4"										
8J08	66	#8	21'-4"	2	1'-4"	20'-0"										
8J10	10	#8	7'-10"	2	1'-4"	6'-6"										
8J11	42	#8	7'-4"	2	1'-4"	6'-0"										
8J14	4	#8	24'-7"	2	1'-4"	23'-3"										
8J15	5	#8	5'-4"	2	1'-4"	2'-8"					1'-4"					
8J16	7	#8	21'-7"	2	1'-4"	20'-3"										
8J17	10	#8	23'-0"	2	1'-4"	21'-8"										
8J18	10	#8	5'-2"	2	1'-4"	2'-6"					1'-4"					
8J21	4	#8	20'-4"	2	1'-4"	19'-0"										
8J22	4	#8	10'-6"	2	1'-4"	7'-10"					1'-4"					
8J23	10	#8	11'-6"	2	1'-4"	8'-10"					1'-4"					



ABBREVIATIONS	
BOTTOM	B
TOP&BOTTOM	T&B
CONTINUOUS	CONT.
CORNER BAR	COR.
HORIZONTAL	H
EACH WAY	EW
EACH FACE	EF
INNER FACE	IF
OUTER FACE	OF
EACH SIDE	ES
DOWEL	DWL.
LONG WAY BAR	LW
SHORT WAY BAR	SW
REFERENCE	REF.

LAP SCHEDULE		
SIZE	4000 PSI	
	TOP	OTHERS
#4	20"	16"
#5	26"	20"
#6	30"	24"
#7	43"	33"
#8	50"	38"
#9	56"	42"
#10	62"	48"
#11	69"	54"



# BOTTOM EACH WAY REINFORCEMENT DETAILS

## GRIT BASINS - BASE SLAB REINFORCEMENT LAYOUT

SCALE -  
REF:02

OUT

**DETAIL**  
SCALE - 1/4"=1'-0"  
REF:02 S.01.105

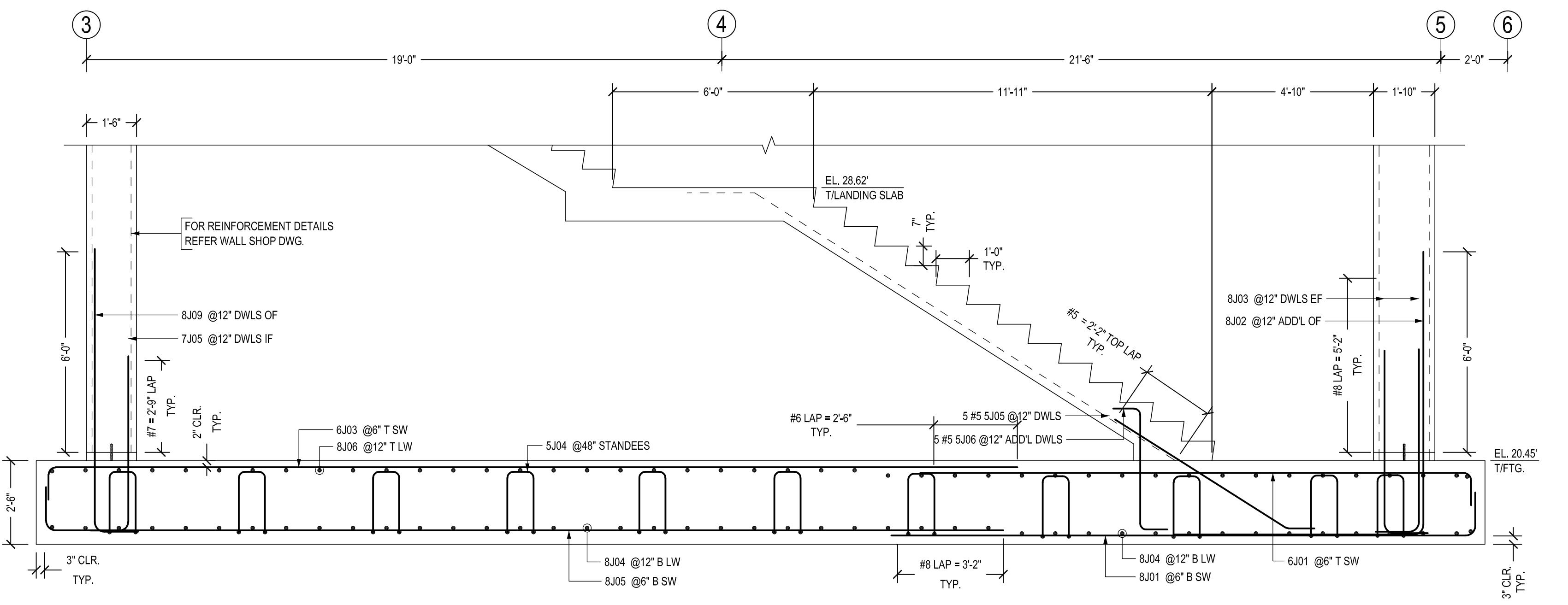
**DETAIL B**  
SCALE - 1/4"=1'-0"  
PEE:02 S 01 105

L REINFORCEMENTS ARE A615 GR.60 U.N.O

PROJECT INFORMATION		SUBMITTAL RECORD		FIELD USE:	
JOB#:	2524240001	JOB #:	2524240001	THIS DRAWING TO BE USED IN CONJUNCTION w/ STRUCTURAL AND ARCHITECTURAL DOCUMENTS TO FACILITATE PLACING OF REINFORCING BARS ONLY. DO NOT USE THIS DRAWING FOR LAYOUT OR CONSTRUCTION. ANY DIMENSIONS OR ELEVATIONS NOTED IN THIS DOCUMENT ARE FOR REFERENCE ONLY, TO FACILITATE APPROVAL &/OR PLACEMENT OF REBAR. DISCREPANCIES SHOULD BE NOTED AT THE TIME OF APPROVAL.	
DRAWING:	RP-14	DETAILER:	MKR	CMC REBAR ASSUMES NO LIABILITY FOR DIMENSIONAL ERRORS IN THE LAYOUT OF THE BUILDING OR FORMS.	
		DATE:	07/03/25	FOR:	APPROVAL
		DATE:	.	EMAIL:	<a href="mailto:will@mcmasterrebar.com">will@mcmasterrebar.com</a>
		DATE:	.	PHONE:	(360)-346-6729
		DATE:	.	REF:	NOTED
		DATE:	.	DATE:	.
		DATE:	.	DATE:	.
CMC REINFORCEMENT DETAILS					
 <b>CMC</b> <b>REINFORCEMENT</b> <b>CONTRACTS</b> <b>MANUFACTURE</b> <b>CONSTRUCTION</b> <b>MANAGEMENT</b>					

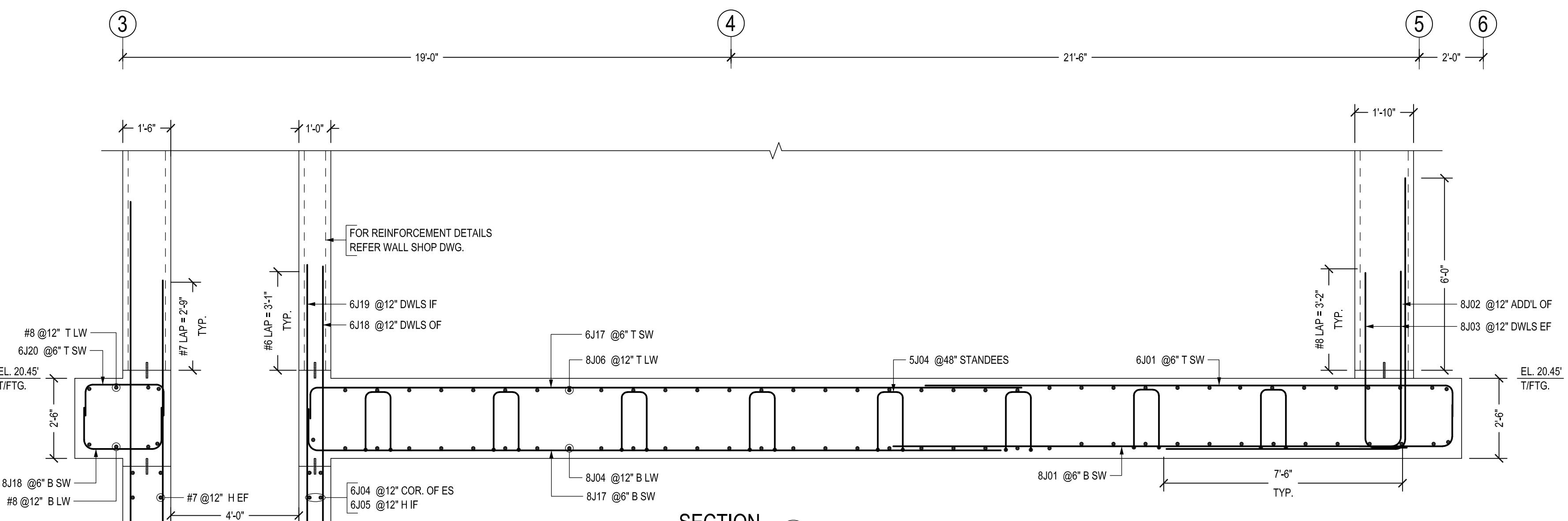






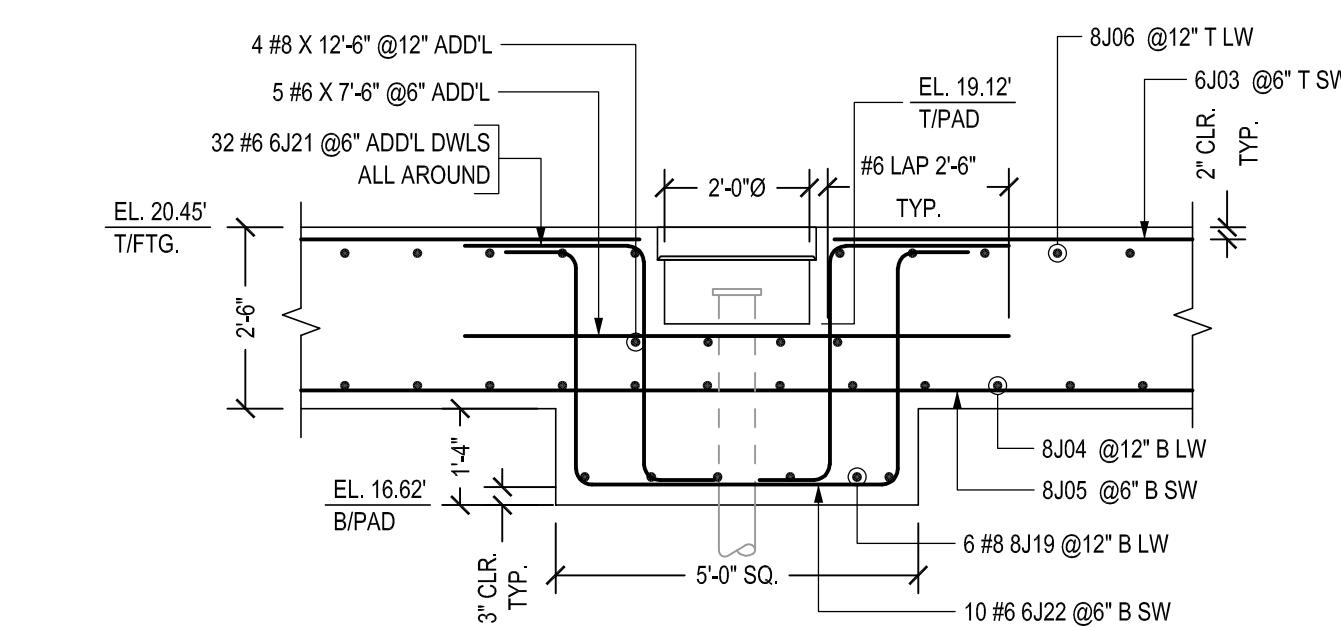
**SECTION 1**

SCALE - 3/8"=1'-0"  
REF:H02-S-01-304 &  
44/02-S-01-507



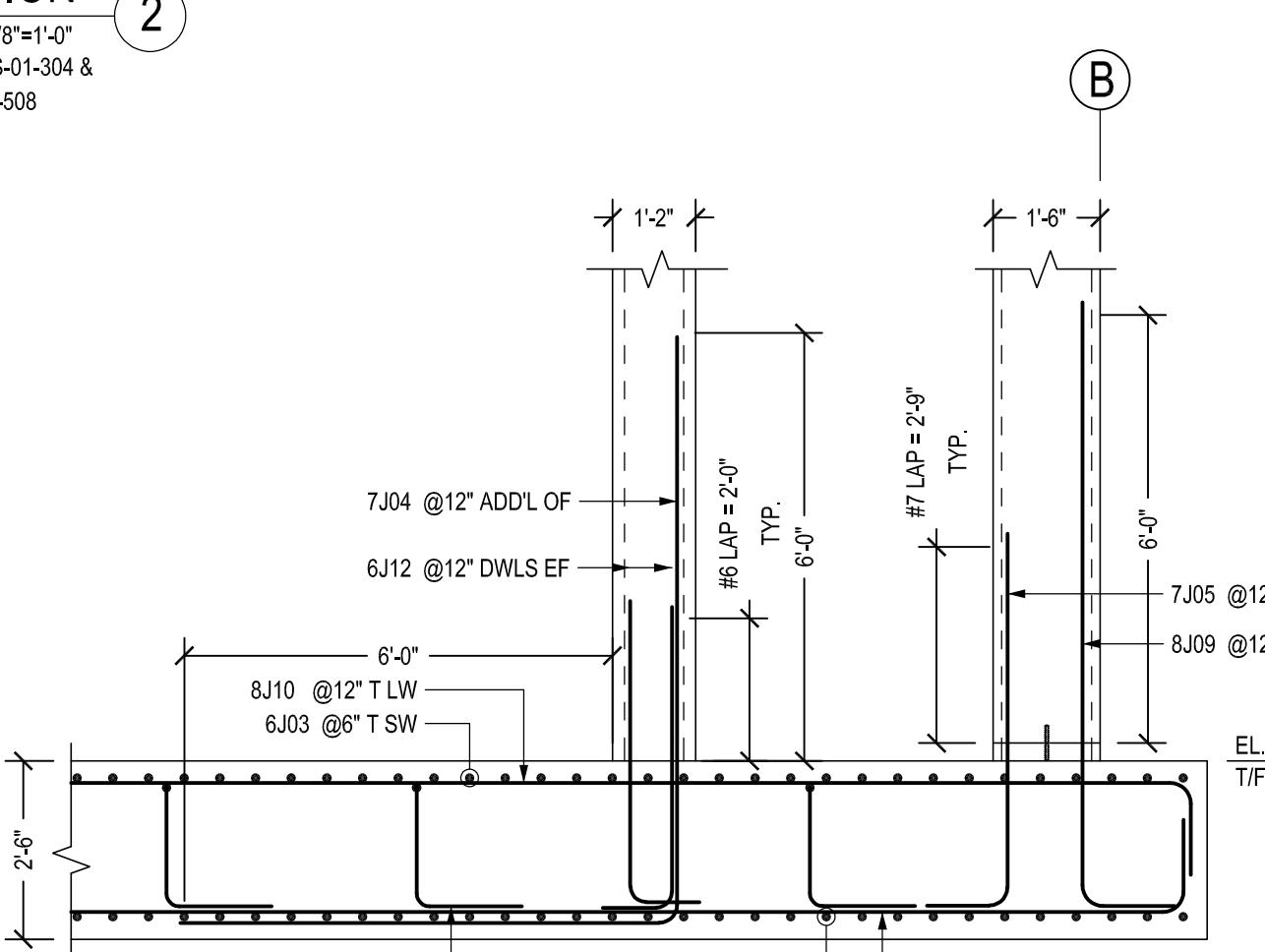
**SECTION 2**

SCALE - 3/8"=1'-0"  
REF:J02-S-01-304 &  
45/02-S-01-508



**SECTION 3**

SCALE - 3/8"=1'-0"  
REF:86/02-S-01-512

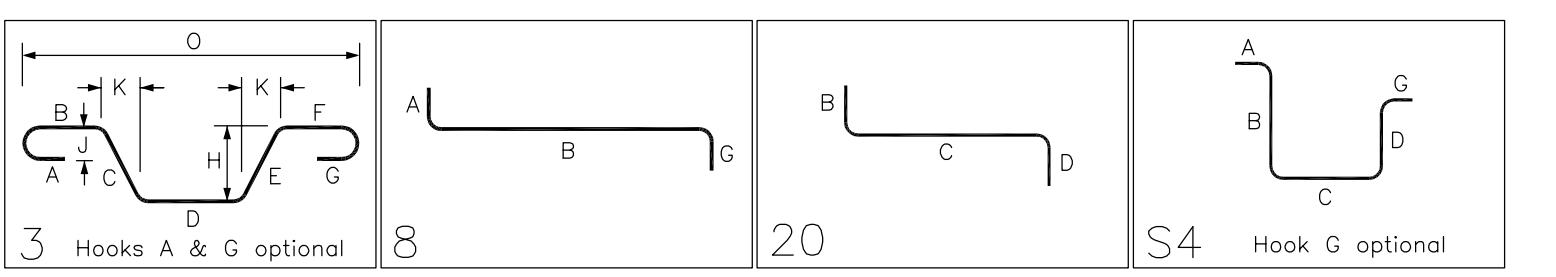


**SECTION 4**

SCALE - 3/8"=1'-0"  
REF:C02-S-01-301 &  
27/02-S-01-504

Release Number: RP-17											
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'	'G'
5J05	5	#5	6'-10" X 3"	J	0'-10"	6'-0" X 4"					3'-3" X 4"
5J06	5	#5	5'-4"	8"	0'-10"	3'-8"					0'-10"
6J21	32	#6	6'-9" X 20"	EF	1'-0"	3'-3" X 20"	2'-6"				
6J22	10	#6	13'-0" X 10"	EF	1'-0"	4'-6"	3'-3"				1'-0"
8J19	6	#8	13'-7" X 7"	S4	1'-4"	3'-2" X 7"	4'-6"	3'-2" X 7"			1'-4"

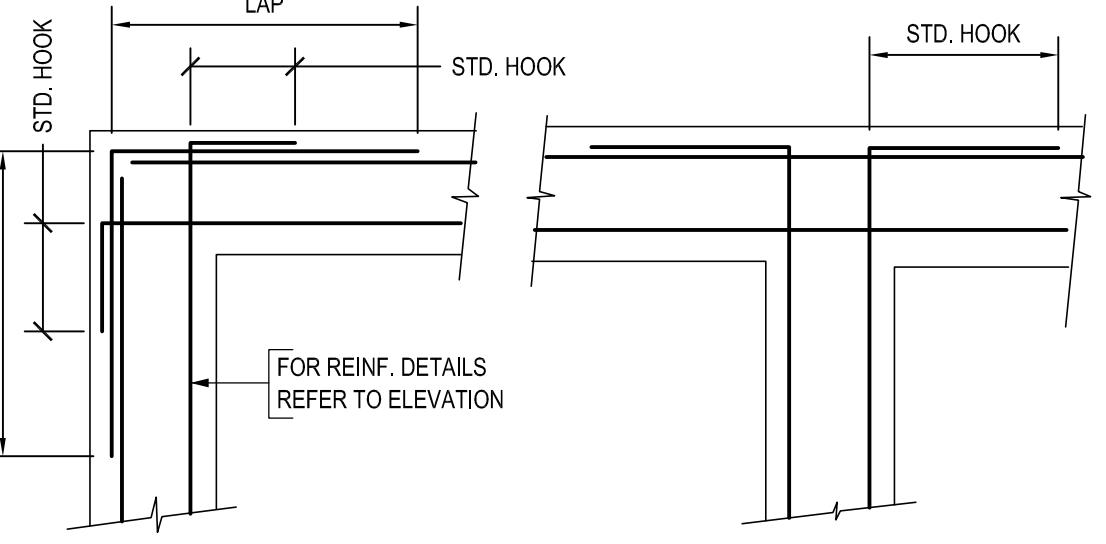
Bar list produced by RebarCAD 2020



ABBREVIATIONS	
BOTTOM	B
TOP&BOTTOM	T&B
CONTINUOUS	CONT.
CORNER BAR	COR.
HORIZONTAL	H
EACH WAY	EW
EACH FACE	EF
INNER FACE	IF
OUTER FACE	OF
EACH SIDE	ES
DOWEL	DWL
LONG WAY BAR	LW
SHORT WAY BAR	SW
REFERENCE	REF.

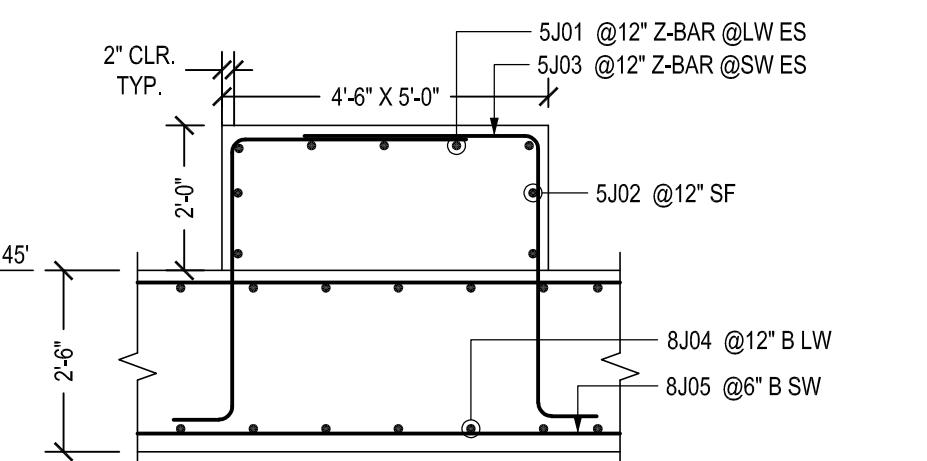
### LAP SCHEDULE

SIZE	4000 PSI		
	TOP	OTHERS	
#4	20"	16"	
#5	26"	20"	
#6	30"	24"	
#7	43"	33"	
#8	50"	38"	
#9	56"	42"	
#10	62"	48"	
#11	69"	54"	



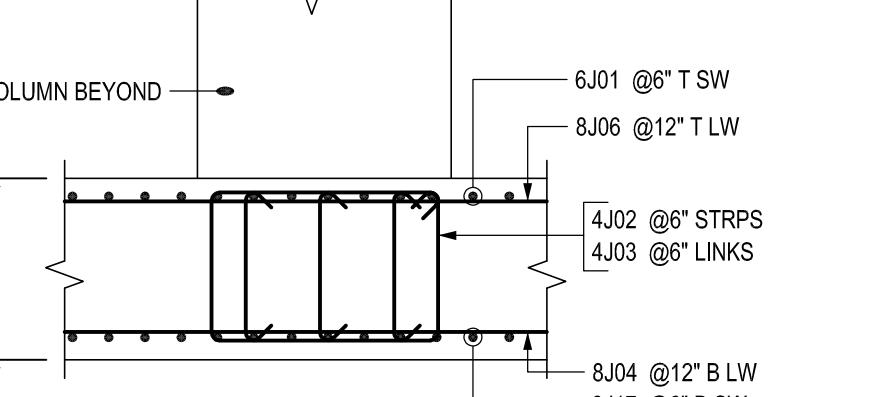
### TYPICAL WALL CORNER BAR DETAILS

SCALE - 1/2"=1'-0"  
REF:00-T-03-703



**SECTION 7**

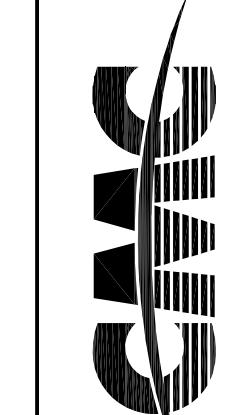
SCALE - 3/8"=1'-0"  
REF:S302/00-T-03-707



**SECTION 8**

SCALE - 3/8"=1'-0"  
REF:S302/00-T-03-707

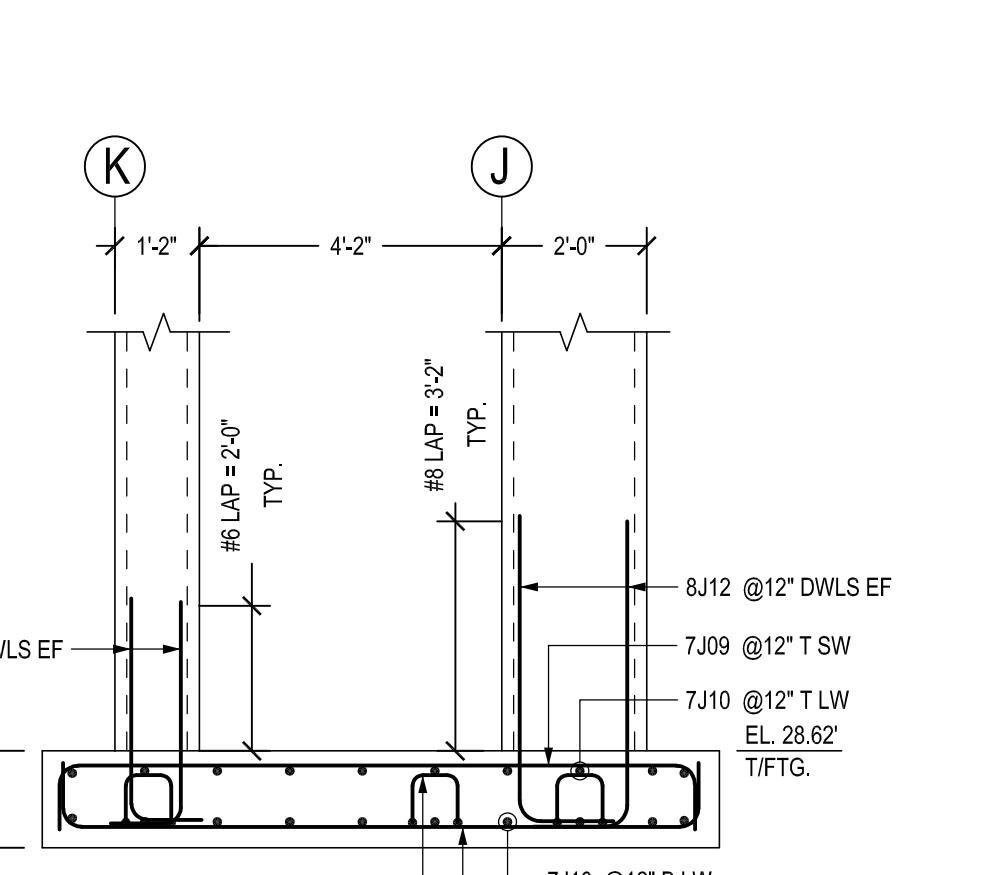
PROJECT INFORMATION	
CUSTOMER:	-
JOB NAME:	HILCO WTP
LOCATION:	COUNTY OF HAWAII
DESCRIPTION:	GRT BASINS - BASE SLAB REINFORCEMENT DETAILS
CMC REBAR	CMC



JOB# 2524240001

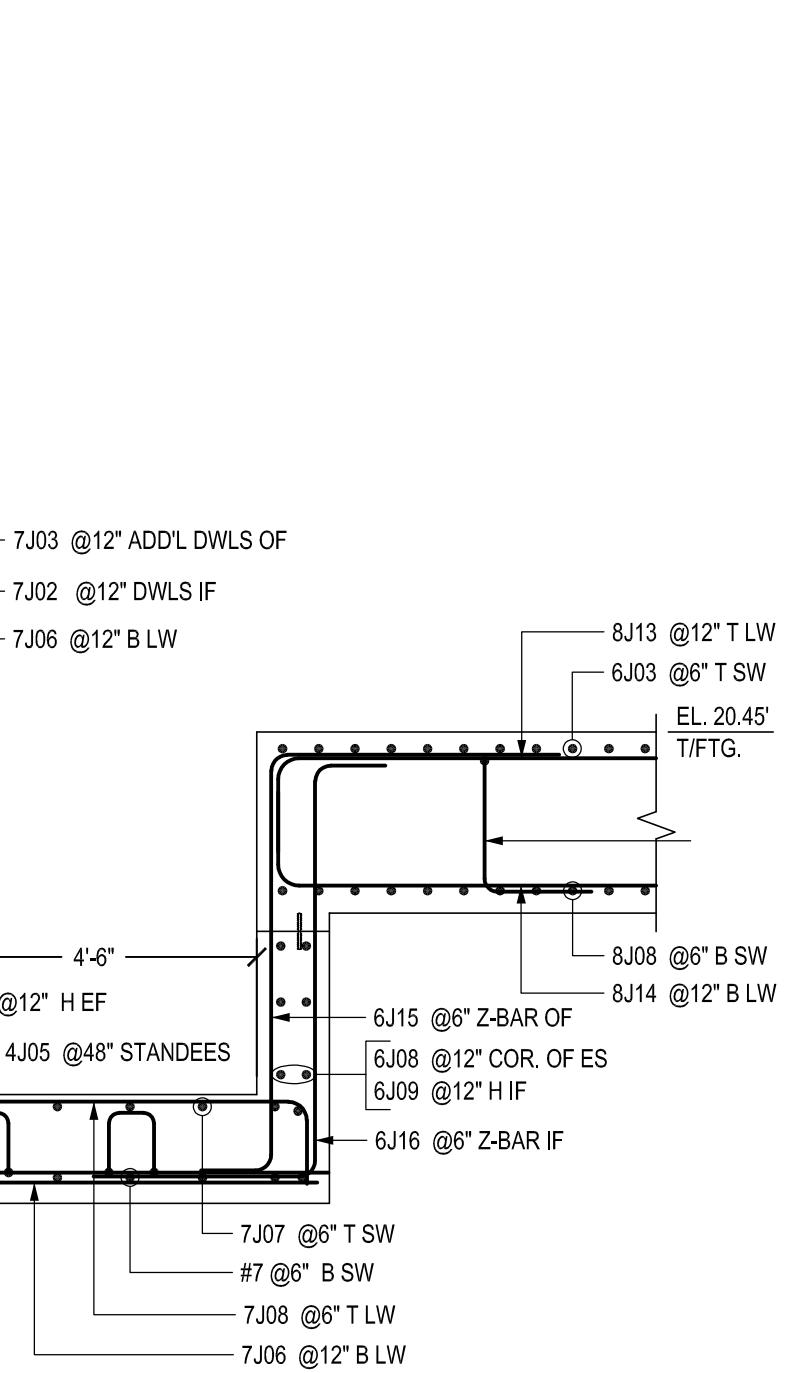
DRAWING:  
RP-17

FIELD USE:  
THIS DRAWING IS TO BE USED IN CONSTRUCTION, PLACEMENT AND ARCHITECTURAL DOCUMENTS. IT IS NOT FOR FIELD USE. ANY CHANGES OR MODIFICATIONS MADE IN THE FIELD ARE THE RESPONSIBILITY OF THE CONTRACTOR. THIS DRAWING IS FOR THE USE OF THE CONTRACTOR ONLY. NO LIABILITY IS ASSUMED FOR DIMENSIONAL ERRORS OR REINFORCING BARS ASSUMED BY THE CONTRACTOR. NO LIABILITY IS ASSUMED FOR ERRORS CAUSED BY LOSS OF REQUESTED INFORMATION.



**SECTION 5**

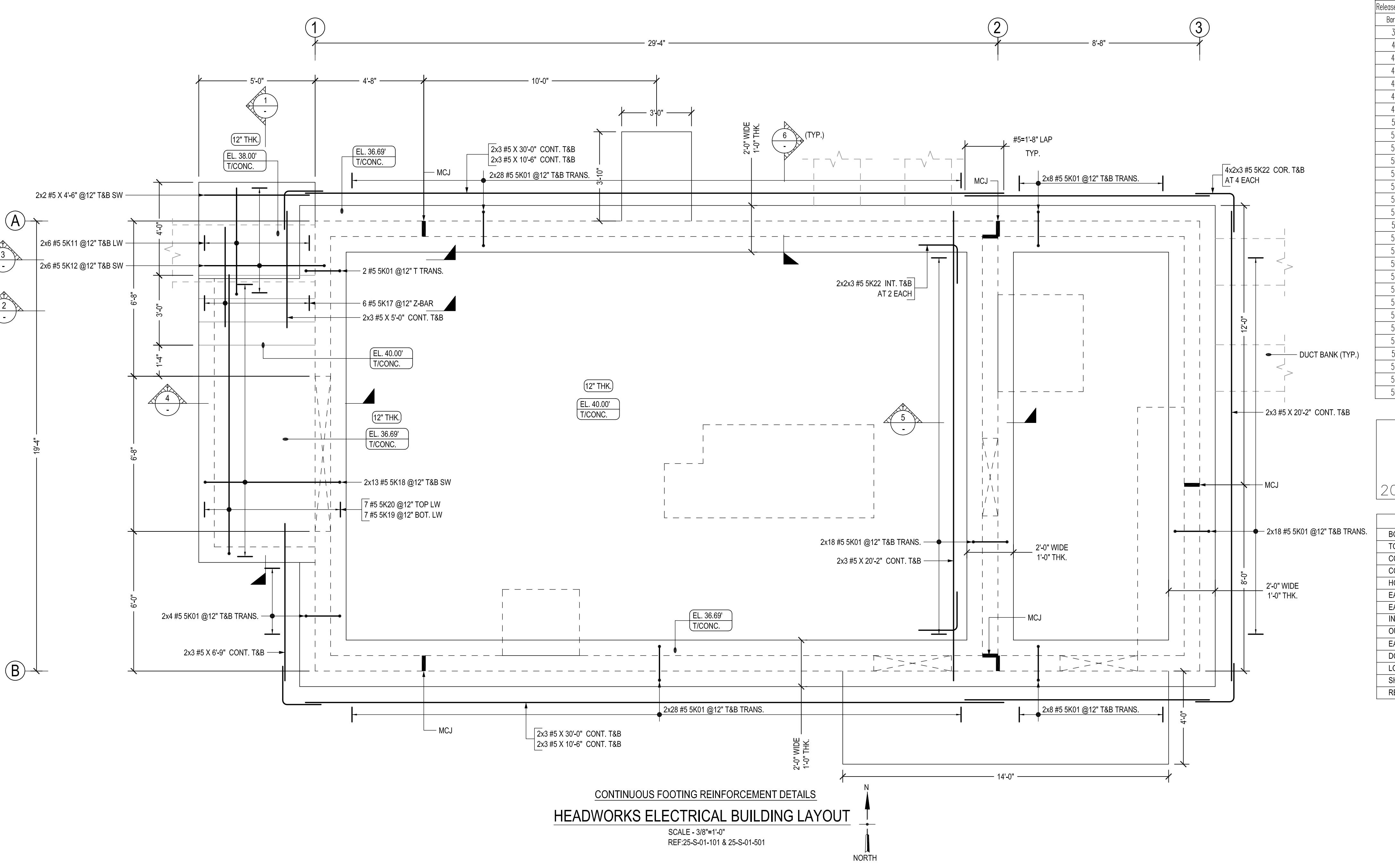
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REF:C02-S-01-302 &  
37/02-S-01-506



**SECTION 6**

SCALE - 3/8"=1'-0"  
REF:28/02-S-01-504

ALL REINFORCEMENTS ARE A615 GR.60 UN.O



BAR LIST									
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'
JK01	144	#3	3'-2 1/8"	20	1'-0"	0'-10"	X"	1'-4"	
4K01	4	#4	5'-2"	17	0'-7"	4'-0"	0'-7"		
4K02	5	#4	3'-8"	17	0'-7"	2'-6"	0'-7"		
4K03	1	#4	9'-4"	17	3'-6"	2'-4"	3'-6"		
4K04	15	#4	4'-8"	17	0'-7"	3'-6"	0'-7"		
4K05	5	#4	14'-8"	17	0'-7"	13'-6"	0'-7"		
4K06	1	#4	20'-6"	17	3'-6"	13'-6"	3'-6"		
5K01	226	#5	2'-8"	17	0'-7"	1'-6"	0'-7"		
5K02	39	#5	20'-0"	17	0'-7"	18'-10"	0'-7"		
5K03	11	#5	11'-7"	17	0'-7"	11'-0"			
5K04	133	#5	6'-1"	17	0'-9"	3'-8"	1'-8"		
5K07	24	#5	4'-4"	17	2'-2"	2'-2"			
5K08	6	#5	6'-1"	3	0'-10"	5'-3"			
5K09	4	#5	3'-4"	2	0'-10"	2'-6"			
5K10	2	#5	6'-3 1/8"	4	0'-10"	1'-8"	2'-1 X"	1'-8"	
5K11	12	#5	5'-5"	2	0'-10"	4'-7"			
5K12	12	#5	5'-9"	17	0'-7"	5'-2"			
5K13	18	#5	4'-8 1/8"	17	1'-6"	3'-0 X"			
5K14	18	#5	4'-1"	17	1'-8"	2'-5"			
5K15	10	#5	16'-10"	2	0'-10"	9'-11"			
5K16	5	#5	10'-6"	17	0'-7"	2'-6 X"	1'-8"		
5K17	6	#5	5'-0 X"	3	0'-10"	5'-10"	0'-7"		
5K18	26	#5	7'-0"	17	0'-7"	12'-0"			
5K19	7	#5	17'-7"	17	0'-7"	12'-5"			
5K20	7	#5	13'-0"	17	0'-7"	29'-2"			
5K21	21	#5	30'-0"	2	0'-10"	1'-8"	1'-8"		
5K22	36	#5	3'-4"	17	0'-7"	2'-7"			
5K23	6	#5	4'-3"	3	0'-10"	2'-3 X"			
5K24	6	#5	4'-0"	2	0'-10"	2'-4"			

Bar list produced by RebarCAD 2020

FIELD USE:

THIS DRAWING IS TO BE USED IN CONSTRUCTION / STRUCTURAL

AND ARCHITECTURAL DOCUMENTS TO FACILITATE ERECTING

OR REINFORCING OF CONCRETE. DO NOT USE THIS DRAWING

AS A CONTRACT DOCUMENT. CONFLICTS OR ERRORS

IN THE CONTRACT DOCUMENTS, DRAWINGS, SPECIFICATIONS,

AND COMMENTS MADE BY THE OWNER, ENGINEER, OR

CONTRACTOR WILL BE ASSUMED CORRECT AS SUBMITTED.

ONCE FURNISHED, THIS DRAWING IS THE PROPERTY OF THE

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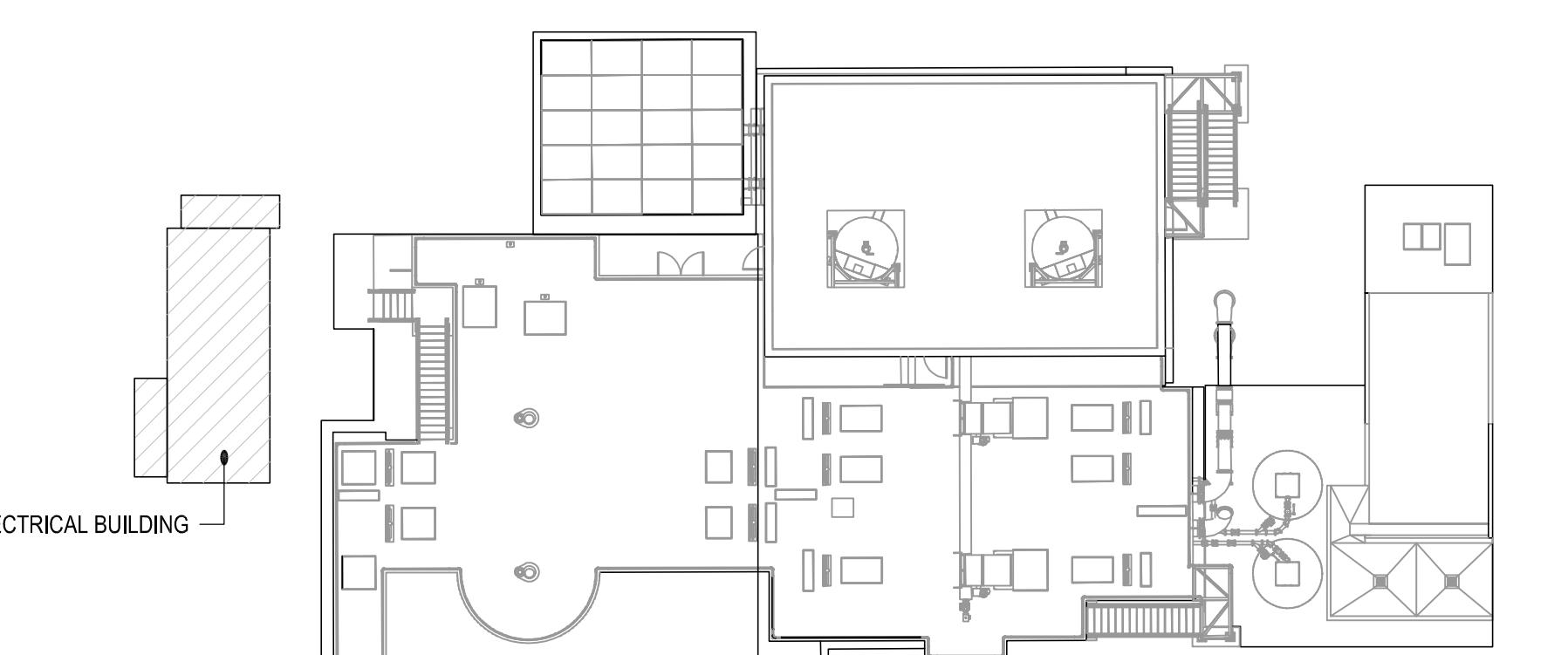
IN THE LAYOUT OR THE BUILDING OR FORMS.

SUBMITTAL RECORD		
DATE: 07/16/25	FOR APPROVAL	
DETAILS: WKR	FOR:	
EMAIL: will@cncrebar.com	FOR:	
PHONE: (30) 346-6729	△ DATE:	REF: NOTED

ABBREVIATIONS		
BOTTOM	B	
TOP&BOTTOM	T&B	
CONTINUOUS	CONT.	
CORNER BAR	COR.	
HORIZONTAL	H	
EACH WAY	EW	
EACH FACE	EF	
INNER FACE	IF	
OUTER FACE	OF	
EACH SIDE	ES	
DOWEL	DWL.	
LONG WAY BAR	LW	
SHORT WAY BAR	SW	
REFERENCE	REF.	

LAP SCHEDULE		
SIZE	4000 PSI (FOR MASONRY WALLS)	
TOP	16"	
OTHERS		
#4	20"	
#5	26"	
#6	30"	
#7	33"	
#8	38"	
#9	42"	
#10	46"	
#11	54"	

LAP SCHEDULE		
REF: (S400) (FOR MASONRY WALLS)		
SIZE	CENTERED IN WALL	
#4	18"	
#5	27"	
#6	38"	
#7	42"	
#8	46"	
#9	54"	



PROJECT INFORMATION

CUSTOMER: -

JOB NAME: HILO WRP

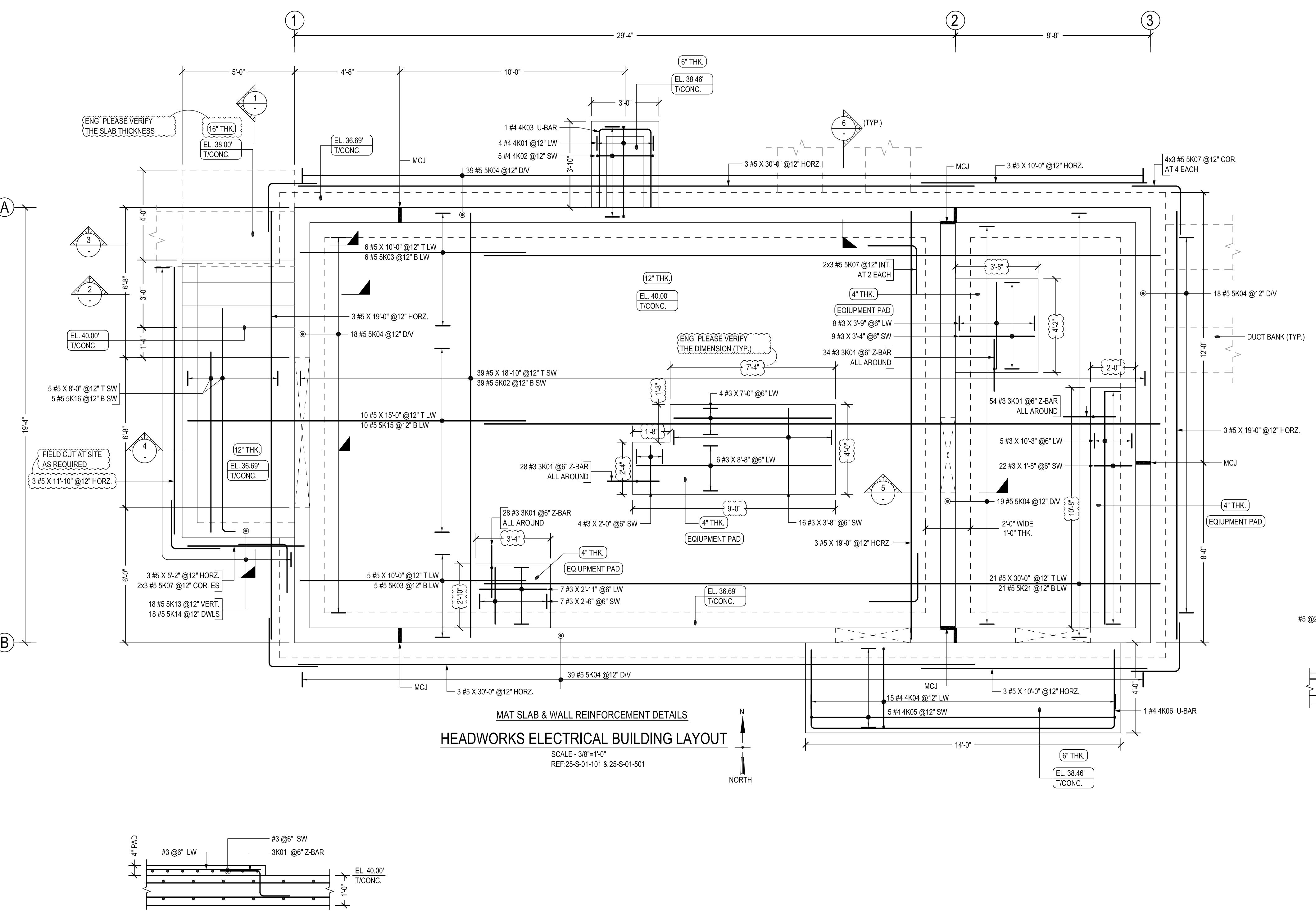
LOCATION: COUNTY OF HAWAII

DESCRIPTION: HEAD WORKS ELECTRICAL BUILDING REINFORCEMENT DETAILS

CMC REBAR

ALL REINFORCEMENTS ARE A615 GR.60 U.NO

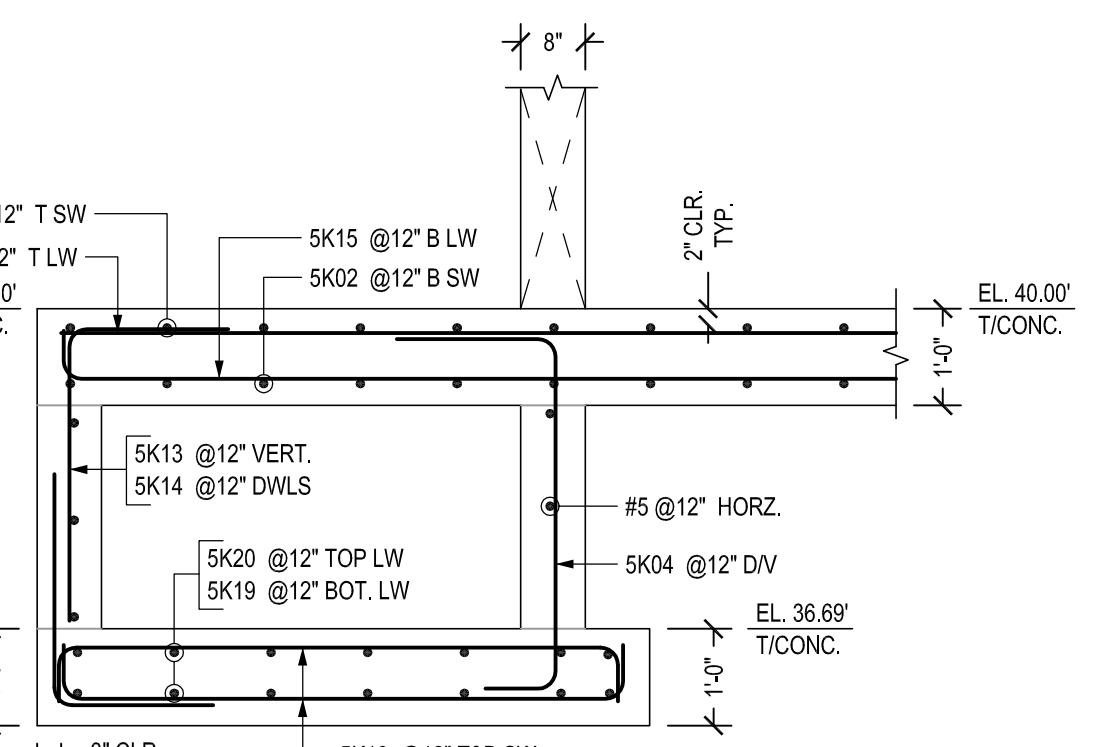
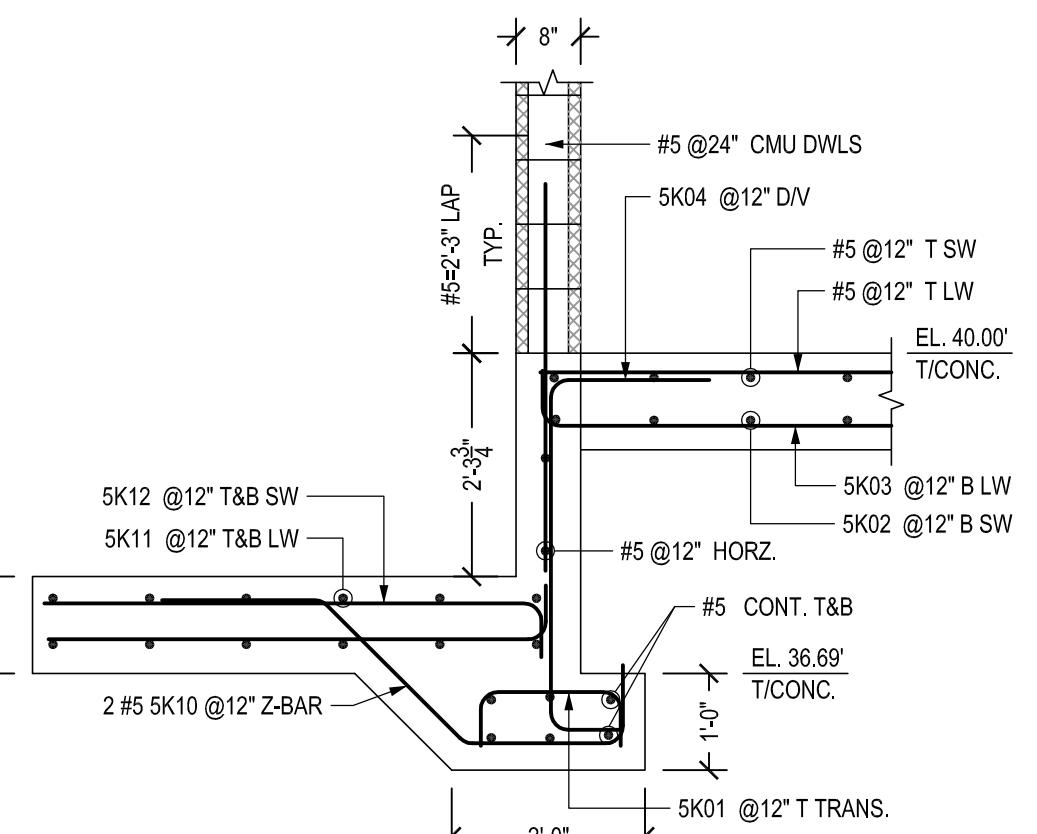
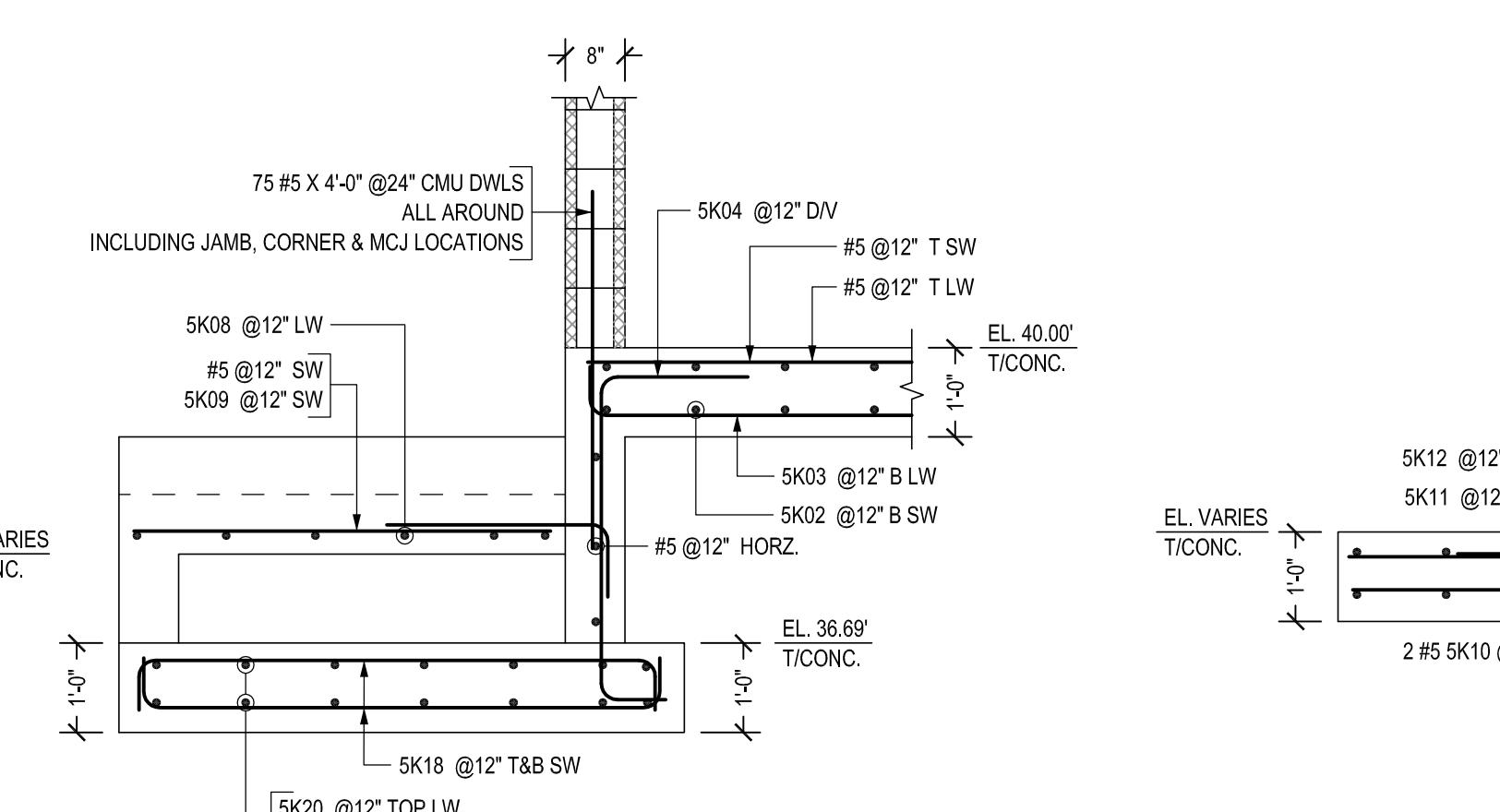
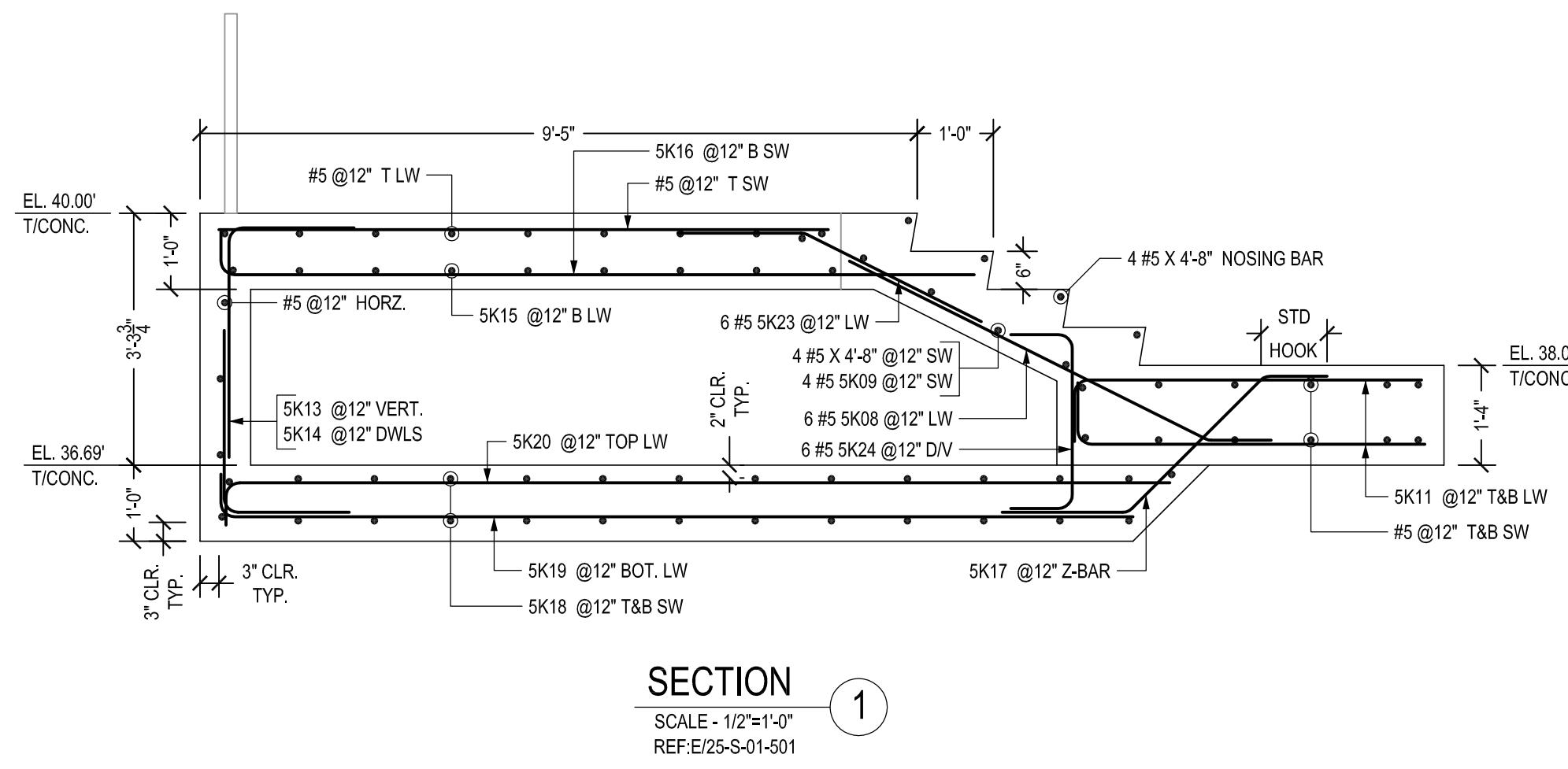
DRAWING:  
RP-018

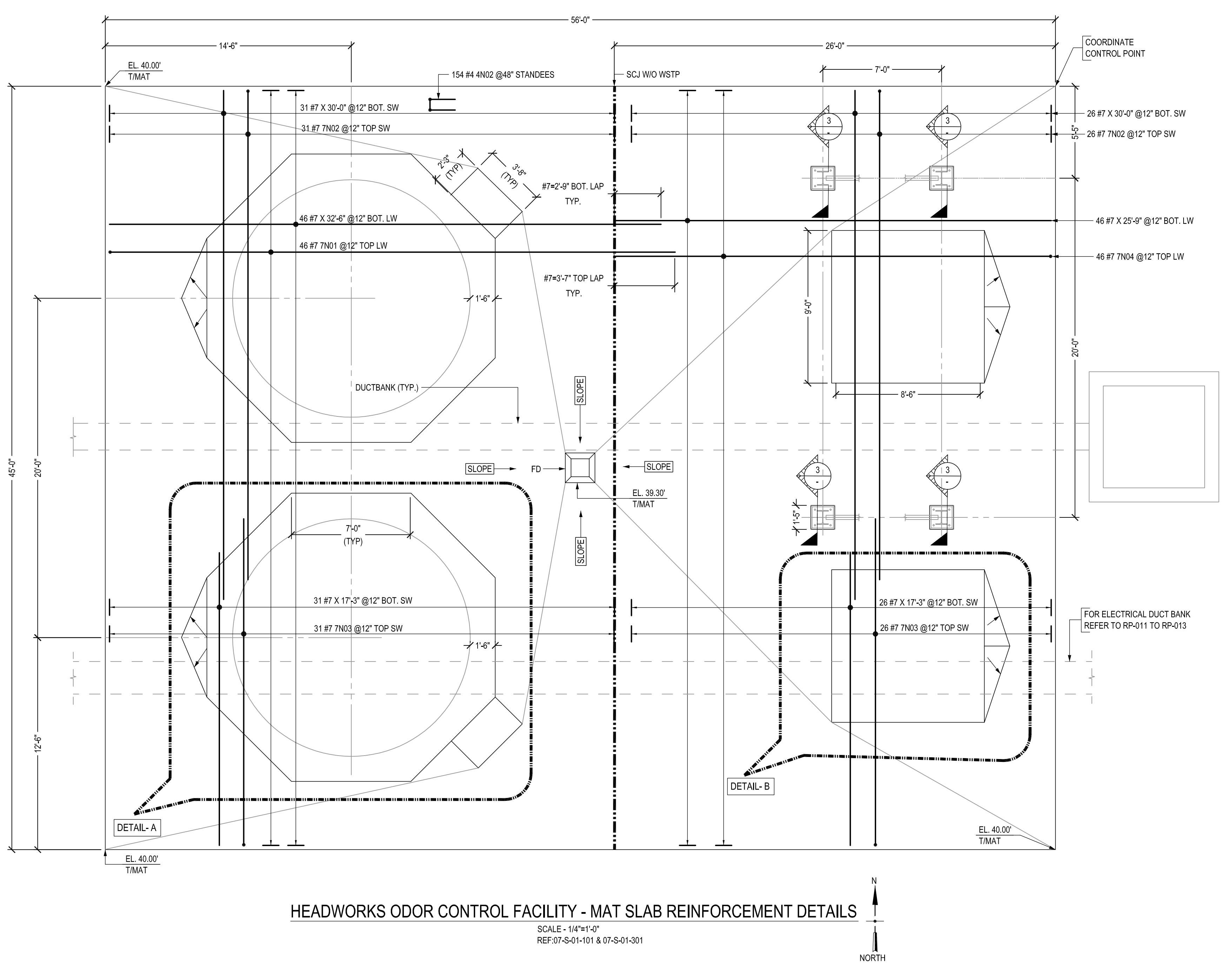


## TYPICAL EQUIPMENT HOUSEKEEPING PAD DETAILS

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SCALE - 1/2"=1'-0"  
REF:S350/00-T-03-708

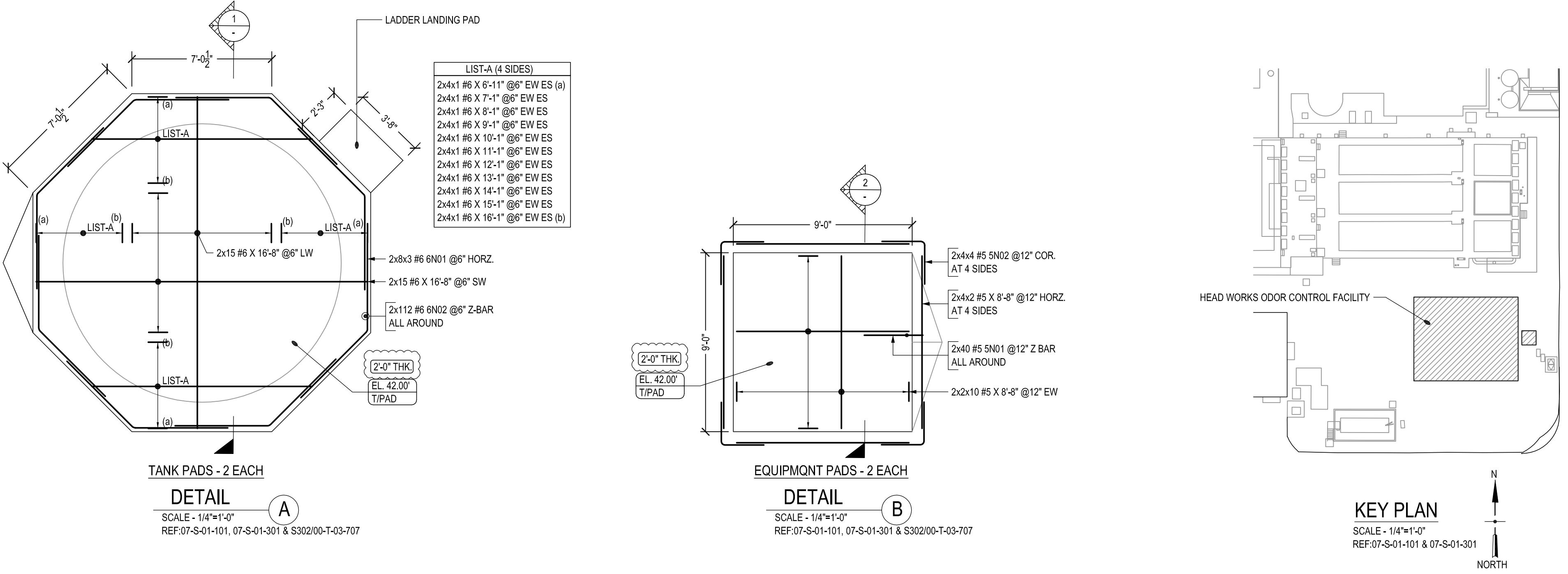




HEADWORKS ODOUR CONTROL FACILITY - MAT SLAB REINFORCEMENT DETAILS

SCALE - 1/4"=1'-0"  
REF:07-S-01-101 & 07-S-01-301

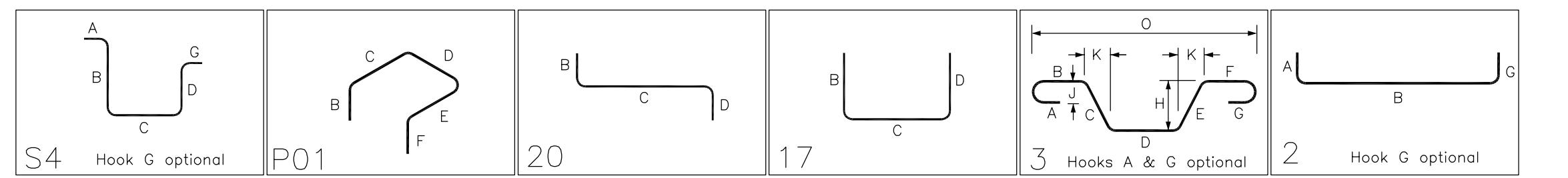
NORTH



BAR LIST										
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'
4N01	16	#4	4'-7 1/2"	S4	0'-4 1/2"	1'-4 1/2"	1'-2"	1'-4 1/2"	0'-4 1/2"	
4N02	154	#4	6'-4 1/2"	P01	1'-6"	1'-4 1/2"	0'-8"	1'-4 1/2"	1'-6"	
5N01	80	#5	6'-4"	20	0'-10"	3'-4"	2'-2"			
5N02	32	#5	4'-4"	17	2'-2"	2'-2"				
6N01	48	#6	9'-5 1/2"	3	4'-9"	4'-8 1/2"				
6N02	224	#6	6'-9 1/2"	20	1'-4"	4'-8 1/2"				
7N01	46	#7	34'-6"	2	1'-2"	33'-4"				
7N02	57	#7	30'-0"	2	1'-2"	28'-10"				
7N03	57	#7	20'-5"	2	1'-2"	19'-3"				
7N04	46	#7	26'-11"	2	1'-2"	25'-9"				

Bar list produced by RebarCAD 2020.0

FIELD USE:  
THIS DRAWING IS TO BE USED IN CONSTRUCTION / STRUCTURAL  
AND ARCHITECTURAL DOCUMENTS TO FACILITATE PLACEMENT  
OF REINFORCING BARS ONLY. DO NOT USE THIS DRAWING  
FOR CONTRACT DOCUMENTS, APPROVALS, CONFLICTS OR ERRORS  
IN THE CONTRACT DOCUMENTS. APPROVALS, CONFLICTS OR ERRORS  
SHOWN HEREIN WILL NOT BE ASSUMED CORRECT, UNLESS SUBMITTED  
ON SEPARATE SHEET AS A SUBMISSION. CMC REBAR ASSUMES NO  
RESPONSIBILITY FOR THE DETAILS PROVIDED IN THIS DRAWING.  
CMC REBAR ASSUMES NO LIABILITY FOR DIMENSIONAL ERRORS  
IN THE LAYOUT OF THE BUILDING OR FORMS.



#### LAP SCHEDULE

REF: (S101000-T03-701) (FOR FOUNDATION)	
SIZE	4000 PSI
TOP	OTHERS
#3	20" 16"
#4	26" 20"
#5	30" 24"
#6	43" 33"
#7	50" 38"
#8	56" 42"
#9	62" 48"
#10	69" 54"

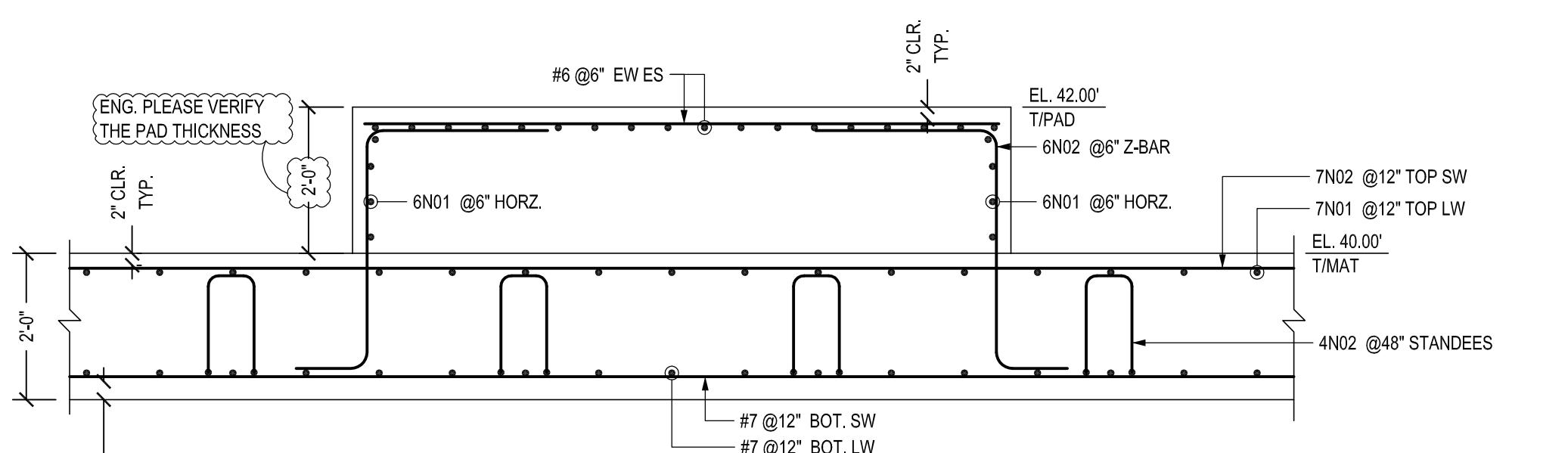
#### ABBREVIATIONS

BOTTOM	BOT.
TOP&BOTTOM	T&B
CORNER BAR	COR
VERTICAL	VERT.
HORIZONTAL	HORZ.
EACH WAY	EW
EACH SIDE	ES
LONG WAY BAR	LW
SHORT WAY BAR	SW
REFERENCE	REF.

#### ACCESSORIES

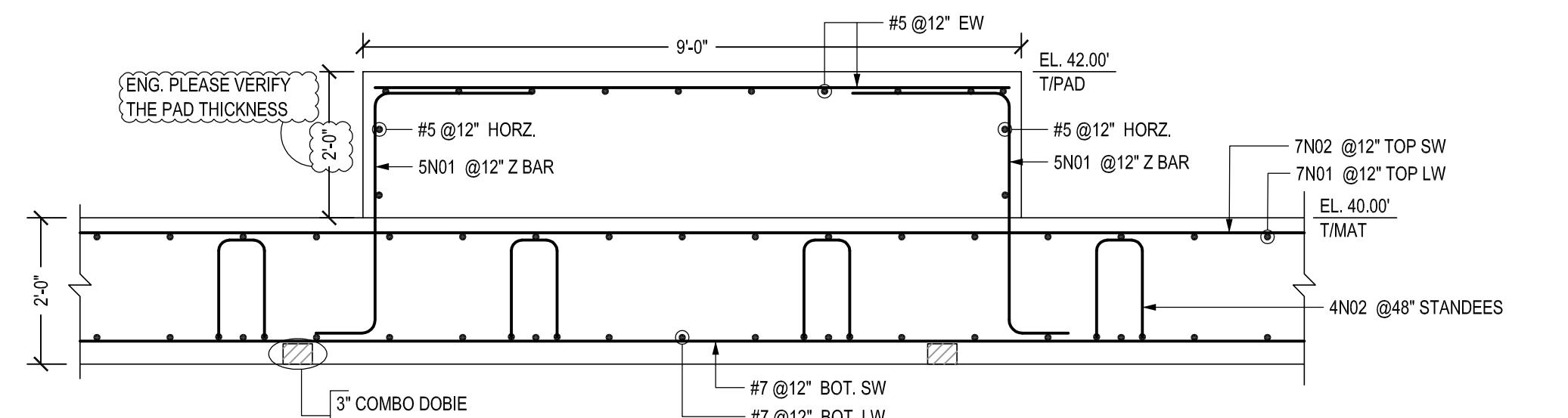
HEIGHT	QUANTITY
3" COMBO DOBIES (5000 PSI)	155 NOS. @4'-0" C.C.

APPROVAL AUTHORITY:  
HILCO HOLDINGS INC. APPROVED: 4/20/2020  
REFER TO SECTION 8 FOR APPROVALS, CONFLICTS OR ERRORS  
IN THE CONTRACT DOCUMENTS. APPROVALS, CONFLICTS OR ERRORS  
SHOWN HEREIN WILL NOT BE ASSUMED CORRECT, UNLESS SUBMITTED  
ON SEPARATE SHEET AS A SUBMISSION. CMC REBAR ASSUMES NO  
RESPONSIBILITY FOR THE DETAILS PROVIDED IN THIS DRAWING.  
CMC REBAR ASSUMES NO LIABILITY FOR DIMENSIONAL ERRORS  
IN THE LAYOUT OF THE BUILDING OR FORMS.



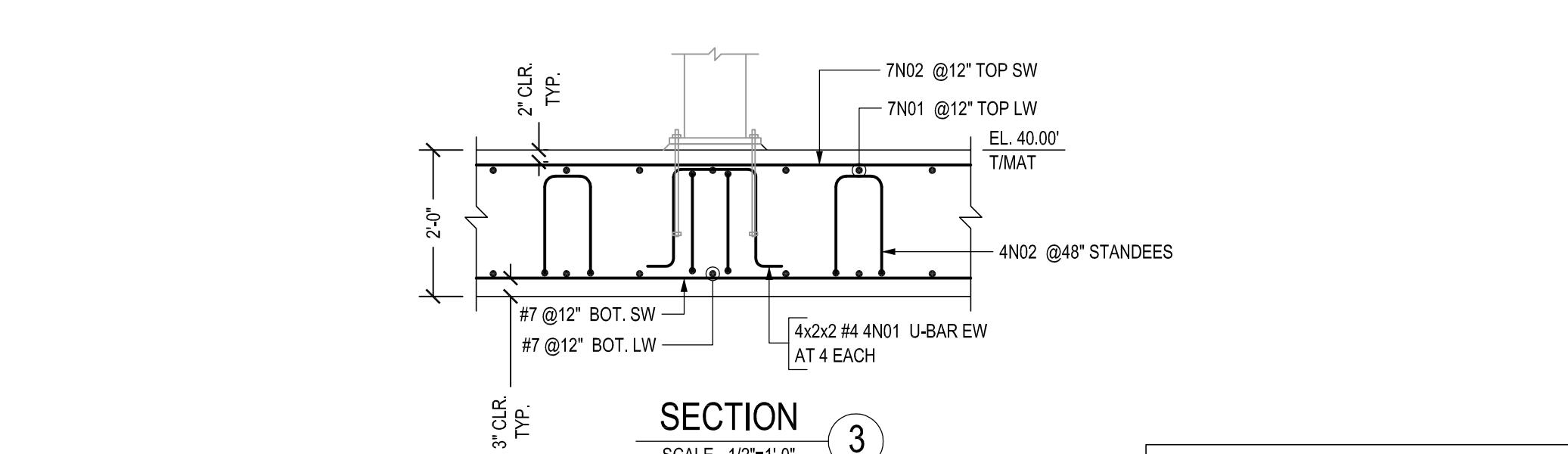
#### SECTION 1

SCALE - 1/2"=1'-0"  
REF:07-S-01-301 & S314/00-T-03-707



#### SECTION 2

SCALE - 1/2"=1'-0"  
REF:07-S-01-301 & S302/00-T-03-707



#### SECTION 3

SCALE - 1/2"=1'-0"  
REF:07-S-01-301

ALL REINFORCEMENTS ARE A615 GR.60 U.N.O

PROJECT INFORMATION

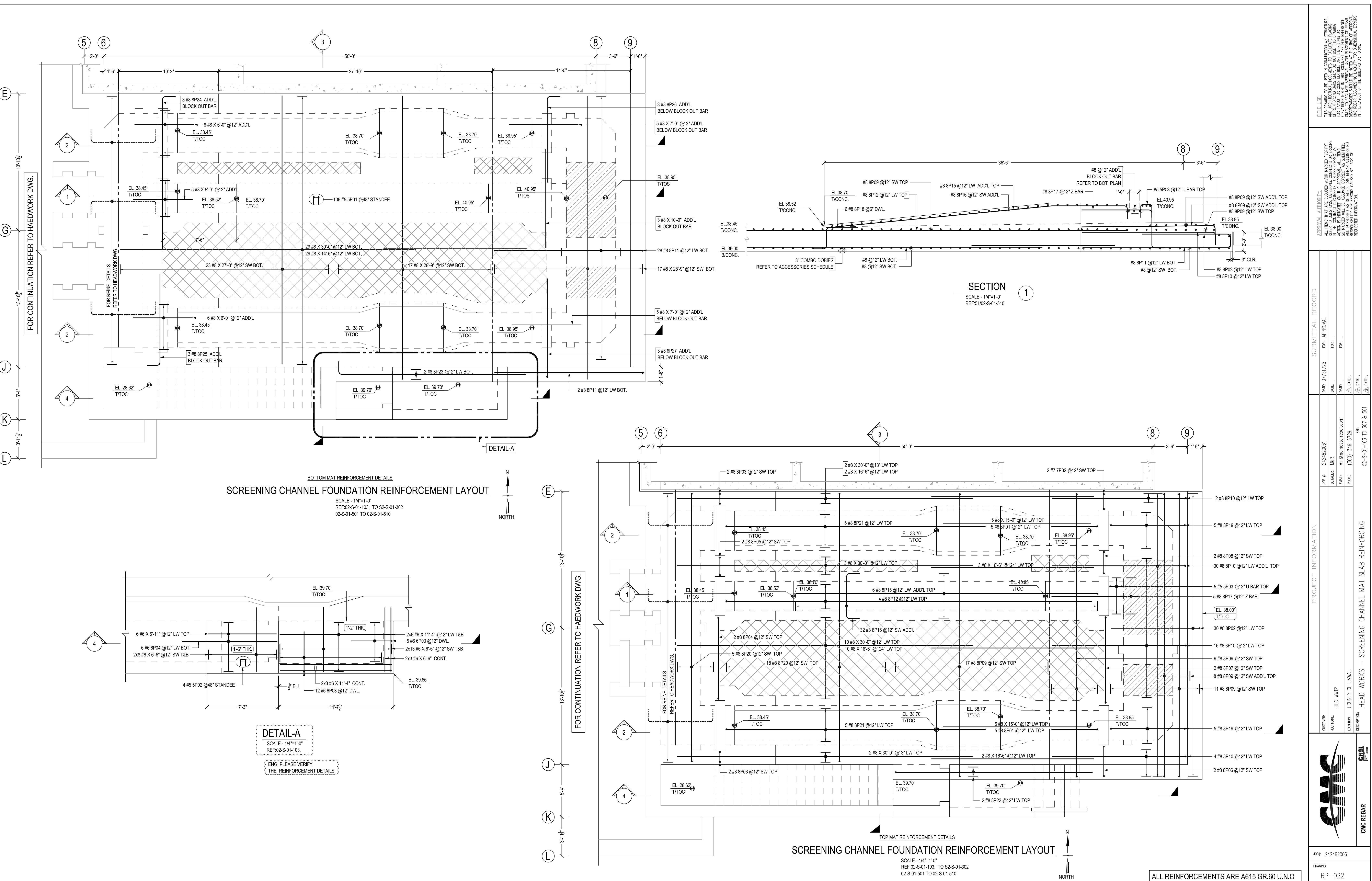
CUSTOMER: -	DATE: 07/31/25	FOR APPROVAL
OB NAME: HILCO WMP	DETAIL: WKR	FOR: .
EMAIL: will@cmcrebar.com	PHONE: (30)-346-6729	NOTE: NOTED

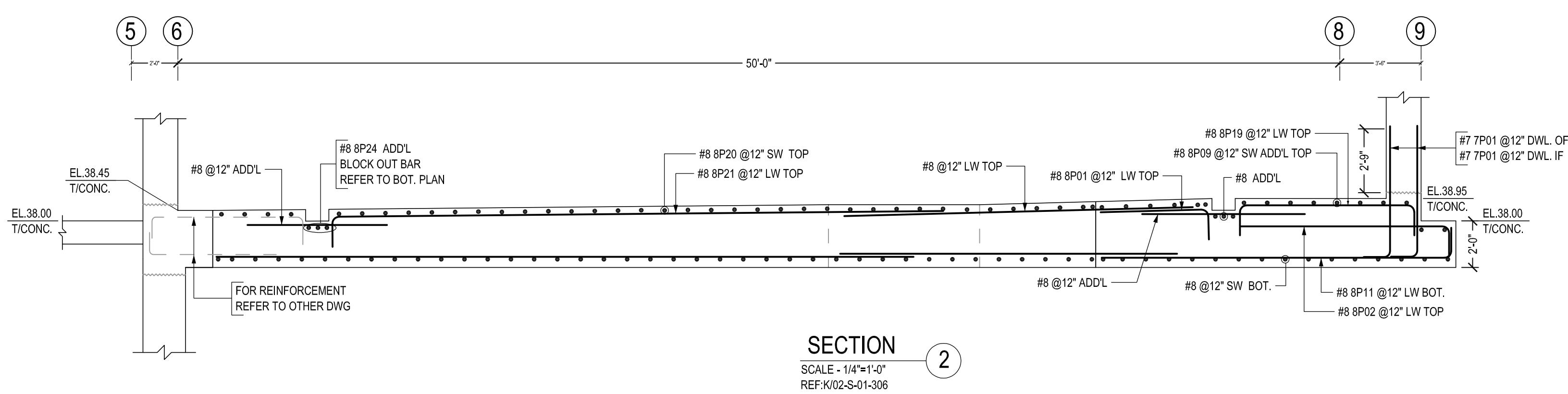
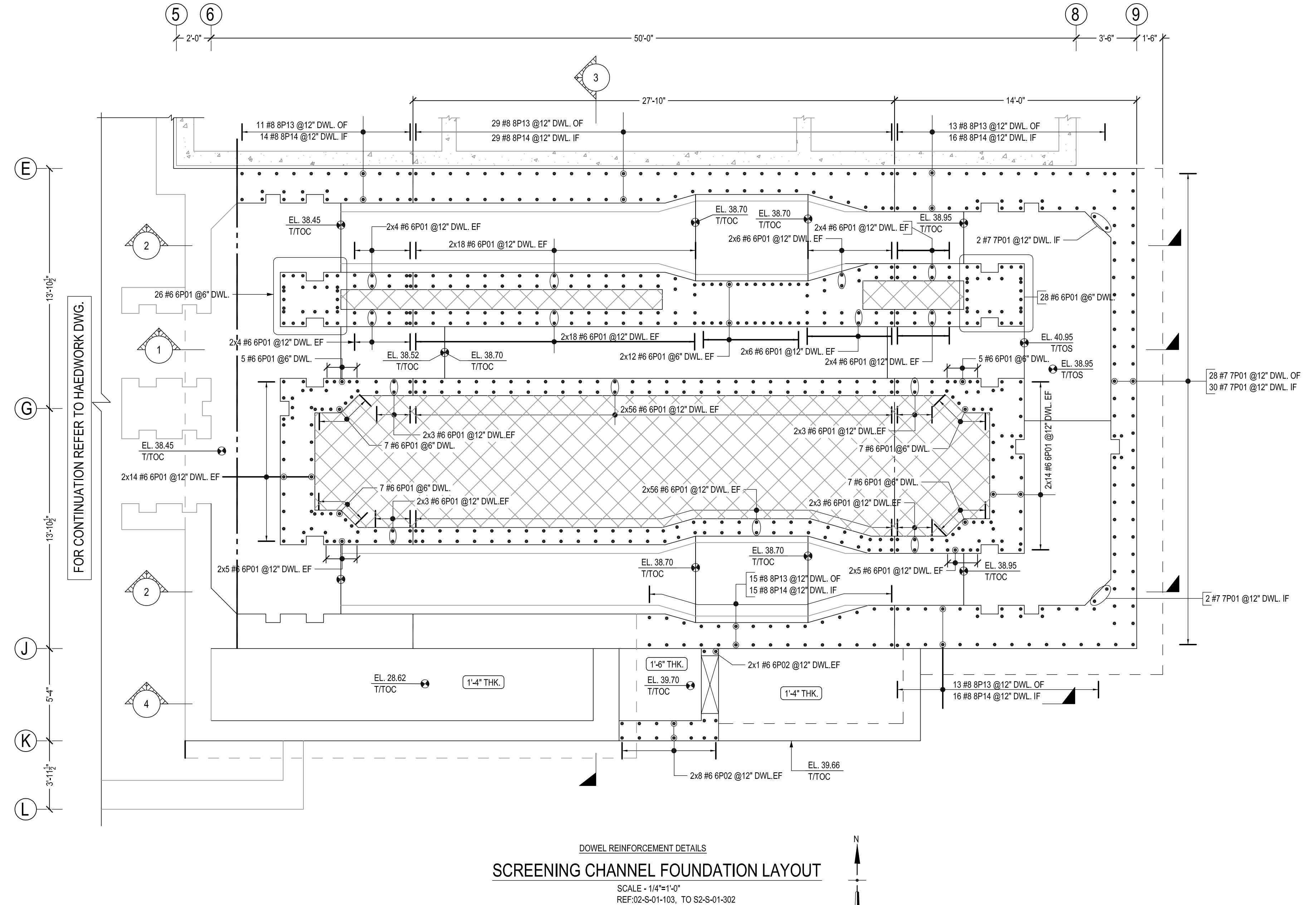
LOCATION: COUNTY OF HAWAII  
DESCRIPTION: HEAD WORKS ODOUR CONTROL FACILITY

CMC REBAR

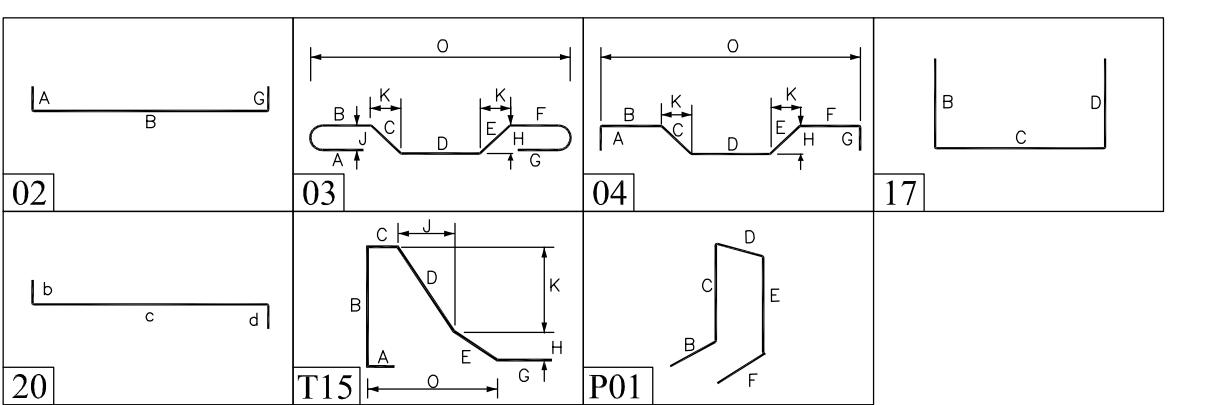
JO# 252440001

DRAWING: RP-021





Bar Mark	Qty	Size	Total length	Type	BENDING DETAILS								
					A'	B'	C'	D'	E'	F'	G'	H'	
SP01	106	5	73'	P01	5"	18 1/2"	10"	18 1/2"	16"				
SP02	4	5	5"	P01	5"	10"	10"	10"	10"				
SP03	5	5	3'10"		14"	12"	14"						
SP04	5	5	3'4"	3	18"	18"					11 1/4"		
SP05	42	5	86'	2	10"	6 1/2"						15"	
GP01	568	6	62'2		10"	5 1/2"						31"	
GP02	18	6	4'5"	2	10"	3 1/2"							
GP03	17	6	62'2	15	3"	8 1/2"	11 1/2"	11 1/2"			1"	14 1/2"	
GP04	6	6	91 1/2	3	7 1/2"	2"					11 1/4"	18"	9 1/2"
TP01	62	7	6'0"	2	12"	5 1/2"							
TP02	2	7	4'3"	2	14"	7"						14"	
RP01	10	8	6'9"	17		4 1/2"	14"						
RP02	30	8	10'4"	2	14"	9 1/2"							
RP03	4	8	3'9"	2	14"	11"						14"	
RP04	2	8	10'11 1/2	2	14"	8 1/2"						14"	
RP05	2	8	4'6"	2	14"	10"						14"	
RP06	2	8	5'9"	2	14"	3 1/2"						14"	
RP07	2	8	11'5"	2	14"	8 3/4"						14"	
RP08	2	8	4'11"	2	14"	2 3/4"						14"	
RP09	42	8	3'15"	2	14"	28 1/2"							
RP10	52	8	4'11"	2	14"	13 1/2"							
RP11	30	8	16'5"	2	14"	15"							
RP12	4	8	3'8"	2	14"	3'7"							
RP13	81	8	9'3"	17		6 1/2"	3 1/2"						
RP14	90	8	7'5"	2	14"	14 1/2"							
RP15	6	8	3'2"	4	14"	7 1/2"	23 9 1/2"				23 1/4"	22 11 1/2"	
RP16	32	8	7'4"	2	14"	4 1/2"						14"	
RP17	5	8	12'5 1/2	20		7 1/4"	3'11 1/2"	7 1/2"					
RP18	6	8	6'9"	20		14"	22 1/2"	33"					
RP19	10	8	10'3"	2	14"	7 1/2"						14"	
RP20	23	8	3'9"	2	14"	27 3/4"						14"	
RP21	10	8	2'7"	2	14"	26 1/4"							
RP22	2	8	2'14"	2	14"	20 3/4"							
RP23	2	8	2'0"	2	14"	19 1/2"							
RP24	3	8	1'6"	2	14"	15 1/2"							
RP25	3	8	1'8"	2	14"	9 1/2"							
RP26	3	8	1'0"	2	14"	8 3/4"							
RP27	3	8	1'14"	2	14"	10 1/2"							



LAP SCHEDULE		
REF:S1100-0-103-701		
SIZE	TOP	OTHERS
4000 PSI		
#4	20"	16"
#5	26"	20"
#6	30"	24"
#7	43"	33"
#8	50"	38"
#9	56"	42"
#10	62"	48"

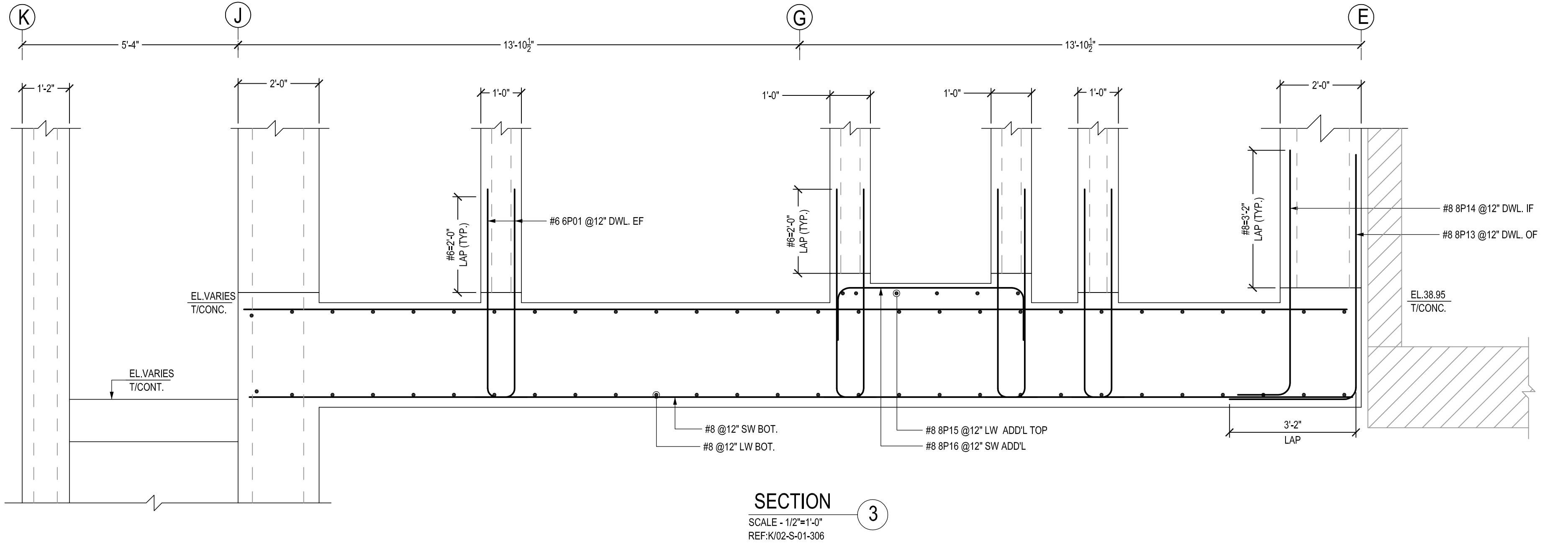
ABBREVIATIONS	
BOTTOM	BOT.
TOP&BOTTOM	T&B
CONTINUOUS	CONT.
FACE BAR	-
CORNER BAR	COR.
VERTICAL	VERT.
HORIZONTAL	HORZ.
STIRRUPS	STPS.
EACH WAY	EW
EACH FACE	EF
INNER FACE	IF
OUTER FACE	OF
EACH SIDE	ES
EACH END	EE
DOWEL	DWL
DOWEL VERTICAL	D/V
TRANSVERSE	TRANS.
LONG WAY BAR	LW
SHORT WAY BAR	SW
DRILL & EPOXY	D&E
REFERENCE	REF.

ACCESSORIES	HEIGHT	QUANTITY
3" COMBO DOBIES (5000 PSI)	120 NOS. @4"0" C/C.	

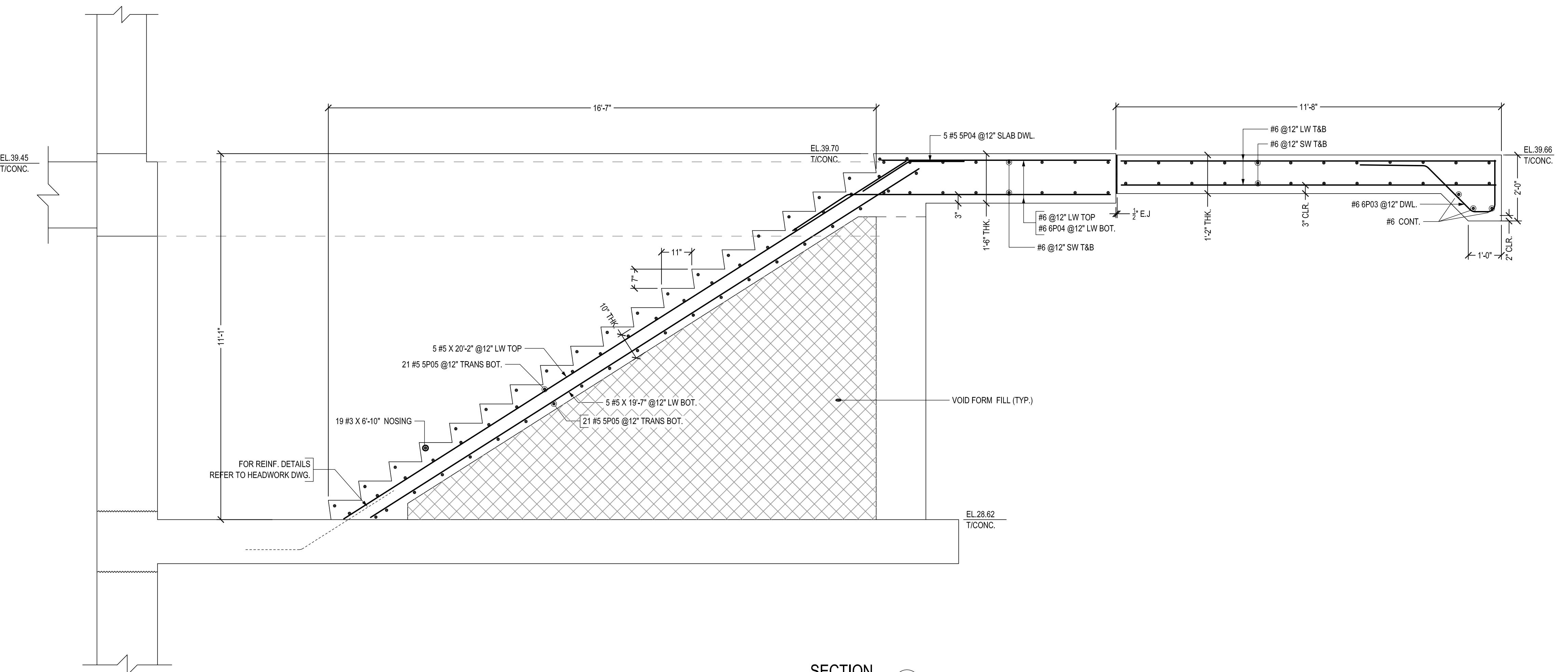
<b>PROJECT INFORMATION</b>	Job #:	242462061	Date:	07/31/25	For Approval
	Customer:	HILO WWP	Date:	.	For:
Ref. Name:	HILO WWP	Date:	.	For:	
Location:	COUNTY OF HAWAII	Date:	.	For:	
Description:	HEAD WORKS - SCREENING CHANNEL MAT SLAB REINFORCING	Date:	.	For:	
CMC REBAR	CMC REBAR	Ref.:	02-S-01-103-10-307 & 501	Date:	
ALL REINFORCEMENTS ARE A615 GR.60 U.N.O					
ALL REINFORCEMENTS ARE A615 GR.60 U.N.O					

**FIELD USE:**  
THIS DRAWING IS TO BE USED IN CONSTRUCTION / STRUCTURAL REINFORCEMENT ONLY. DO NOT USE THIS DRAWING FOR ERECTING OR DEMOLITION WORKS. CONFLICTS OR ERRORS IN THE CONTRACT DOCUMENTS, THIS DRAWING, AND THE FIELD CONDITIONS SHALL BE RESOLVED BY THE OWNER AND CONTRACTOR. ALL CHANGES, CORRECTIONS, AND ADDED WORKS WILL BE ASSUMED CORRECT AS SUBMITTED AND FURNISHED UNLESS OTHERWISE AGREED. NO CHANGES OR ADDED WORKS WILL BE ASSUMED CORRECT UNLESS REQUESTED IN THE DRAWING.

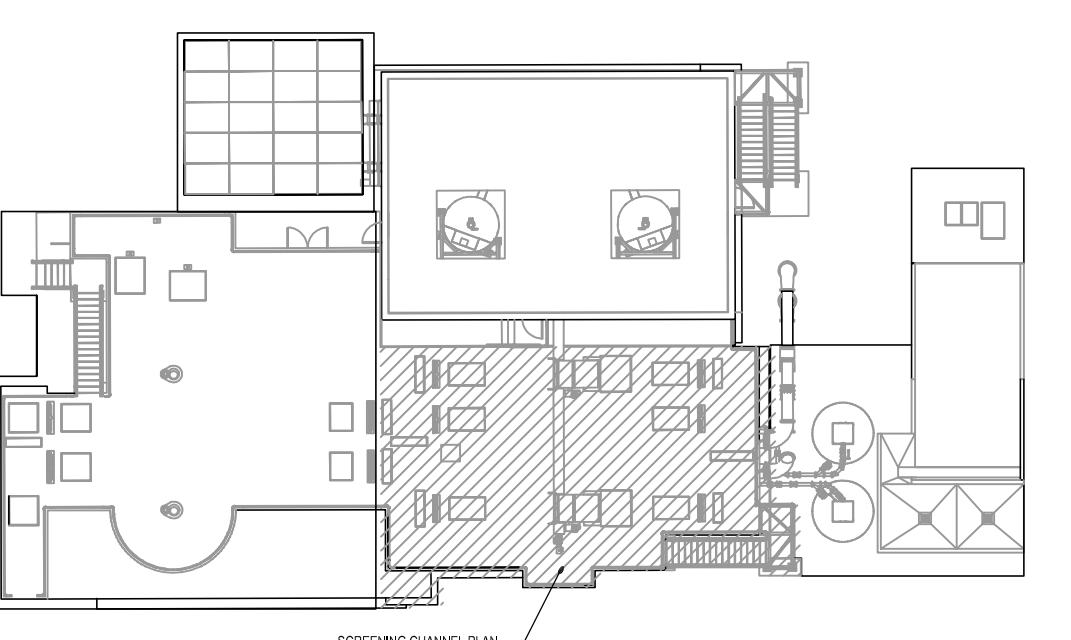
**CMC REBAR ASSUMES NO LIABILITY FOR DIMENSIONAL ERRORS IN THE LAYOUT OR THE DRAWINGS.**



SECTION  
SCALE - 1/2"=1'-0"  
REF:K/02-S-01-306



SECTION  
SCALE - 1/2"=1'-0"  
REF:02-S-01-307, 49/02-S-01-510



KEY PLAN  
SCALE - N.T.S.  
REF:02-M-01-105

ALL REINFORCEMENTS ARE A615 GR.60 U.N.O.

Customer: JOB NAME: LOCATION: RESPONSIBILITY:	PROJECT INFORMATION		SUBMITTAL RECORD	
	Job #:	242462061	Date: 07/31/25	For: APPROVAL
DETAILS: MCR EMAIL: will@cmcrebar.com PHONE: (360) 346-6729	DETAILS: MCR EMAIL: will@cmcrebar.com PHONE: (360) 346-6729	DATE: _____ △ DATE: _____ REF: 02-S-01-103 TO 307 & 501	FOR: _____ △ DATE: _____ REF: _____	FOR: _____ △ DATE: _____ REF: _____
CNC REBAR	CMC REBAR	DATE: _____ △ DATE: _____ REF: _____	DATE: _____ △ DATE: _____ REF: _____	DATE: _____ △ DATE: _____ REF: _____
CMC REBAR	CMC REBAR	DATE: _____ △ DATE: _____ REF: _____	DATE: _____ △ DATE: _____ REF: _____	DATE: _____ △ DATE: _____ REF: _____

FIELD USE:  
THIS DRAWING IS TO BE USED IN CONSTRUCTION / STRUCTURAL  
AND ARCHITECTURAL DOCUMENTS TO FACILITATE PLACEMENT  
OF REINFORCING BARS ONLY. DO NOT USE THIS DRAWING  
ELEVATIONS NOTED IN THE DOCUMENT ARE FOR REFERENCE  
ONLY. TO FACILITATE PLACEMENT OF REINFORCING BARS,  
ONE SHOULD REFER TO THE CONTRACT DOCUMENTS. CMC REBAR  
CO. ASSUMES NO LIABILITY FOR DIMENSIONAL ERRORS  
IN THE LAYOUT OR THE BUILDING OR FORMS.

PROJECT INFORMATION

CMC REBAR

DRAWING

RP-024

High Priority

## CONTRACTOR SUBMITTAL TRANSMITTAL FORM REV. A

**Owner:** County of Hawaii  
**Contractor:** Nan, Inc.  
**Project Name:** Hilo WWTP Phase 1  
**Submittal Title:**  
**TO:**  
**From:** Nan Inc.

**Project No.:** WW-4705R  
**Submittal Number:**  
For Information Only

Specification No. and Subject of Submittal / Equipment Supplier	
Spec:	Paragraph:
Authored By:	Date Submitted:

Submittal Certification		
<b>Check Either (A) or (B):</b>		
<input type="checkbox"/> (A)	We have verified that the equipment or material contained in this submittal meets all the requirements specified in the project manual or shown on the contract drawings with <u>no exceptions</u> .	
<input type="checkbox"/> (B)	We have verified that the equipment or material contained in this submittal meets all the requirements specified in the project manual or shown on the contract drawings <u>except</u> for the deviations listed.	
Certification Statement: By this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data, and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements.		
<b>General Contractor's Reviewer's Signature:</b>		
<b>Printed Name and Title:</b>		
In the event, Contractor believes the Submittal response does or will cause a change to the requirements of the Contract, Contractor shall immediately give written notice stating that Contractor considers the response to be a Change Order.		
<b>Firm:</b>	<b>Signature:</b>	<b>Date Returned:</b>

PM/CM Office Use	
Date Received GC to PM/CM:	
Date Received PM/CM to Reviewer:	
Date Received Reviewer to PM/CM:	
Date Sent PM/CM to GC:	

Nan, Inc

PROJECT: HILO WWTP REHABILITATION  
AND REPLACEMENT PROJECT - PHASE 1

JOB NO. WW-4705R

THIS SUBMITTAL HAS BEEN CHECKED BY  
THIS CONTRACTOR. IT IS CERTIFIED  
CORRECT, COMPLETE, AND IN  
COMPLIANCE WITH CONTRACT  
DRAWINGS AND SPECIFICATIONS. ALL  
AFFECTED CONTRACTORS AND  
SUPPLIERS ARE AWARE OF, AND WILL  
INTEGRATE THIS SUBMITTAL (UPON  
APPROVAL) INTO THEIR OWN WORK.

DATE RECEIVED \_\_\_\_\_  
SPECIFICATION SECTION # \_\_\_\_\_  
SPECIFICATION \_\_\_\_\_  
PARAGRAPH \_\_\_\_\_  
DRAWING \_\_\_\_\_  
SUBCONTRACTOR \_\_\_\_\_  
SUPPLIER \_\_\_\_\_  
MANUFACTURER \_\_\_\_\_

CERTIFIED BY CQCM or Designee : \_\_\_\_\_

**SECTION 03200**  
**CONCRETE REINFORCING**

**PART 1 GENERAL**

**1.01 SUMMARY**

- A. Section includes:
  - 1. Reinforcing bars:
    - a. Carbon steel.
  - 2. Thread bars.
  - 3. Bar supports.
  - 4. Tie wires.
  - 5. Welded wire fabric.
  - 6. Mechanical reinforcing bar couplers.

**1.02 REFERENCES**

- A. American Concrete Institute (ACI):
  - 1. 318 - Building Code Requirements for Structural Concrete and Commentary.
  - 2. SP-66 - ACI Detailing Manual.
- B. American Iron and Steel Institute (AISI).
- C. American Welding Society (AWS):
  - 1. D1.4 - Structural Welding Code - Reinforcing Steel.
- D. ASTM International (ASTM):
  - 1. A493 - Standard Specification for Stainless Steel Wire and Wire Rods for Cold Heading and Cold Forging.
  - 2. A615 - Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement.
  - 3. A706 - Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.
  - 4. A1064 - Standard Specification of Carbon-Steel wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
- E. Concrete Reinforcing Steel Institute (CRSI):
  - 1. Manual of Standard Practice.
- F. ICC Evaluation Service (ICC-ES):
  - 1. AC133 - Acceptance Criteria for Mechanical Connector Systems for Steel Reinforcing Bars.

## 1.03 DEFINITIONS

- A. Architectural Concrete: Concrete surfaces that will be exposed to view in the finished work.
  - 1. Additionally, for purposes of this Section, includes:
    - a. Concrete surfaces that are designated to receive paints or coatings.
    - b. Exposed concrete in open basins, channels, and similar liquid containing structures: Surfaces shall be considered exposed to view if located above a line 2 feet below the normal operating water surface elevation in that structure.
- B. Bars: Reinforcement or reinforcing bars as specified in this Section.
- C. Evaluation Report: Report prepared by ICC-ES , or by other testing agency acceptable to the Engineer and to the Building Official, that documents testing and review of a product to confirm that it complies with the requirements of designated ICC-ES Acceptance Criteria, and its acceptance for use under the Building Code specified in Section 01410 - Regulatory Requirements.
- D. Give Away Bars: Reinforcing bars that are not required by the Contract Documents, but are installed by the Contractor to provide support for the required reinforcing bars.
- E. Wire Supports: Metal reinforcing supports constructed of steel wire as specified. Includes individual high chairs, continuous high chairs, bolsters and other similar configurations and shapes.

## 1.04 SUBMITTALS

- A. General:
  - 1. Submit in accordance with Section 01330 - Submittal Procedures.
  - 2. Changes to reinforcement in Contract Documents:
    - a. Indicate in a separate letter submitted with shop drawings any changes to reinforcement indicated on the Drawings or specified.
    - b. Such changes will not be acceptable unless Engineer has accepted them in writing.
- B. Product data:
  - 1. Bar supports:
    - a. Wire bar supports:
      - 1) Schedule of support materials to be provided and locations of use.
      - b. Precast concrete bar supports ("dobies"):
        - 1) Manufacturer's data indicating compression strength of concrete and confirming dimensions and thickness(es).height(s) to be provided for each location where used.
    - 2. Mechanical reinforcing bar couplers. For each type and/or series to be provided:
      - a. Evaluation Report documenting compliance with the requirements of ICC-ES AC133.

Provided in  
03200-001.0

- b. Details, properties, and dimensions of couplers. Include type or size identification, and bar size(s) and grade(s) for which the coupler is suitable.
- c. Manufacturer's installation and testing instructions.
- d. Manufacturer's statement that products installed in accordance with manufacturer's recommended procedures will develop strengths and limit slip as specified in this Section.

C Shop drawings:

- 1. Reinforcement shop drawings:
    - a. Submit drawings showing bending and placement of reinforcement required by the Contract Documents.
    - b. Clearly indicate structures or portions of structures covered by each submittal.
      - 1) Submit reinforcement shop drawings for each structure as a complete package. Submittals addressing only a portion of a structure will be rejected and returned without review, unless such presentation is accepted by Engineer in advance.
    - c. Shop drawings shall conform to the recommendations of the CRSI Manual of Standard Practice and ACI SP-66.
    - d. Use the same bar identification marks on bending detail drawings, placement drawings, and shipping tags.
    - e. Submittals consisting solely of reinforcing bar schedules, without accompanying placement drawings, will not be accepted unless accepted under prior written agreement with Engineer.
  - 2. Reinforcement placement drawings:
    - a. Clearly show placement of each bar listed in the bill of materials, including additional reinforcement at corners and openings, and other reinforcement required by details in the Contract Documents.
    - b. Clearly identify locations of reinforcement with coatings (e.g., galvanized or epoxy) and with yield strength other than ASTM A615, Grade 60.
    - c. Show anchor bolt locations based on anchor bolt templates for approved equipment.
    - d. Show splice locations.
    - e. Show locations of mechanical reinforcing couplers, if used.
  - 3. Reinforcement fabrication drawings:
    - a. If bend types or nomenclature differs from that recommended in the CRSI Manual of Standard Practice, provide details showing bend types and dimensional designations.  
Clearly identify reinforcement with coatings and with yield strength other than ASTM A615, Grade 60.
- D. Samples (when requested by Engineer):
- 1. Bar supports/wire reinforcement supports: Samples of each type of chair and bolster proposed for use. Submit with letter stating where each type will be used.
  - 2. Precast concrete bar supports: Samples of each type of precast support proposed for use. Submit with letter stating where each will be used.

Not included in  
this submittals

**E. Test reports:**

- Not included in this submittals. Will be provided for each shipping
1. Certified copy of mill test for each steel used. Show physical properties and chemical analysis.
    - a. Mill test reports may be submitted as record documents at the time the reinforcement from that heat of steel is shipped to the site.
    - b. In such cases, submit certificates under the shop drawing submittal number with the letter "R" (for record date) appended to the end (e.g., if the reinforcement was submitted as 03200-002-1, deliver the associated mill certificate as submittal 03200-002-1R).
  2. Mechanical reinforcing bar couplers:
    - a. Current Evaluation Report confirming that couplers provide specified tension and compression strength and conform to specified limits on total slip within the coupler.
    - b. Certified copy of mill tests for heat(s) of steel incorporated into the reinforcing bar couplers shipped.
    - c. For threaded sleeve type couplers, heat treatment lot numbers for each shipment.

Provided by submittal  
03200-001.0

**F. Manufacturer's instructions:**

1. Mechanical reinforcing bar couplers:
  - a. Manufacturer's installation instructions.
  - b. Manufacturer's instructions for confirmation testing of couplers after reinforcing bars have been inserted into the couplers.

**G. Special procedures:**

1. Welding procedures conforming to AWS D1.4 for reinforcement to be field welded.
  - a. Procedures qualification record.

Not included in this submittals.  
Subcontractor has no plan to  
use welding so far, will provide  
if needed

**H. Qualifications statements:**

1. Welder qualifications.

**I. Closeout documents:**

1. Field quality control and inspection reports.
2. Field quality assurance special inspection and testing reports.

## 1.05 DELIVERY, STORAGE, AND HANDLING

**A. Packing and shipping:**

1. Deliver bars bundled and tagged with identifying tags.

**B. Acceptance at site:**

1. Reinforcing bars: Deliver reinforcing bars lacking grade identification marks with letter containing manufacturer's guarantee of grade.

## 1.06 SEQUENCING AND SCHEDULING

**A. Bar supports:**

1. Do not place concrete until samples and product data for bar supports have been accepted by Engineer.

## PART 2 PRODUCTS

### 2.01 DESIGN AND PERFORMANCE CRITERIA

- A. The drawings contain notes describing the size and spacing of reinforcement and its placement, details of reinforcement at wall corners and intersections, and details of extra reinforcement around openings in concrete, and other related information.

### 2.02 MATERIALS

- A. Reinforcing bars:
  - 1. Provide reinforcement of the grades and quality specified, fabricated from new stock, free from excessive rust or scale, and free from unintended bends or other defects affecting its usefulness.
  - 2. Reinforcing bars:
    - a. ASTM A615 Grade 60 deformed bars, including the following requirements, or ASTM A706 Grade 60 deformed bars.
      - 1) Actual yield strength based on mil tests of reinforcement provided shall not exceed the minimum yield strength specified in this Section by more than 18,000 pounds per square inch.
      - 2) Ratio of actual ultimate tensile strength to actual tensile yield strength shall not be less than 1.25.
    - 3. Reinforcing bars designated or required to be welded:
      - a. Low-alloy, ASTM A706 Grade 60, deformed bars.
- B. Bar supports:
  - 1. Wire supports:
    - a. All stainless steel bar supports:
      - 1) Conforming to CRSI Manual of Standard Practice recommendations for types and details, but custom fabricated entirely from stainless steel wire conforming to ASTM A493, AISI Type 316.
    - b. Stainless steel protected bar supports:
      - 1) Conforming to CRSI Manual of Standard Practice Class 2, Type B, and consisting of bright basic wire support fabricated from cold-drawn carbon steel wire with stainless steel ends attached at the bottom of each leg.
      - 2) Stainless steel wire ends shall conform to ASTM A493, AISI Type 316 and shall extend at least 3/4 inch inward from the formed surface of the concrete.
    - c. Bright basic wire bar supports.
      - 1) Conforming to CRSI Manual if Standard Practice, Class 3.
  - 2. Plastic supports:
    - a. Manufacturers: The following or equal:
      - 1) Aztec Concrete Accessories.
  - 3. Deformed steel reinforcing bar supports:
    - a. Fabricated of materials and to CRSI details recommended for typical reinforcement embedded in concrete and bent to dimensions required to provide specified clearances and concrete cover.
  - 4. Precast concrete bar supports ("dobies"):
    - a. Pre-manufactured, precast concrete blocks with cast-in annealed steel wires, 16-gauge or heavier.

- b. Compression strength of concrete: Equal to or exceeding the compression strength of the surrounding concrete.
    - c. Block dimensions:
      - 1) Height to provide specified concrete cover.
      - 2) Footprint not less than 3 inches by 3 inches, and adequate to support the weight of the reinforcement and maintain specified concrete cover without settling into the underlying surface.
  - 5. Stainless steel wire supports on stainless steel plates:
    - a. Type 304 stainless steel wire bar support chairs or bolsters supported on Type 304 stainless steel plates resting on the ground surface.
      - 1) Weld plates to at least 2 legs of wire support chairs.
- C. Tie wires:
- 1. General use: Black annealed steel wire, 16-gauge or heavier.
- D. Welded wire fabric reinforcement:
- 1. Material:
    - a. Carbon steel conforming to ASTM A1064.
  - 2. Provide welded wire reinforcement in flat sheet form. Rolled wire fabric is not permitted.
  - 3. Fabric may be used in place of reinforcing bars if accepted by Engineer:
    - a. Provide welded wire fabric having cross-sectional area per linear foot not less than the cross-sectional area per linear foot of reinforcing bars indicated on the Drawings.
- E. Mechanical reinforcing bar couplers:
- 1. General:
    - a. Only products conforming to the requirements of ACI 318 for mechanical splices, and holding a current Evaluation Report that documents the following performance characteristics, will be considered for use.
    - b. Strength of coupler: Capable of developing tension and compression strength not lower than the lesser of the following:
      - 1) ACI 318 "Type 2" units: In static tension and compression:
        - a) Minimum 125 percent of the ASTM-specified minimum yield strength of the reinforcement being spliced.
        - b) Minimum 100 percent of the ASTM-specified minimum ultimate strength of the reinforcement being spliced.
    - c. Slip of reinforcing bars within coupler: Total slip of the reinforcing bars within the splice sleeve limited as follows:
      - 1) For bar sizes #14 and smaller, elongation between gauge points measured clear of the splice sleeve not exceeding 0.010 inches after coupler has been loaded to a tension of 30,000 pounds per square inch and load relaxed to a tension of 3,000 pounds per square inch.
    - d. Fabrication:
      - 1) Threaded joints:
        - a) Provide threaded ends designed so that cross-threading of bars will not occur during assembly.
        - b) Fabricate male ends for female couplers using coupler manufacturer's bar threading equipment to ensure proper taper and thread engagement.
      - 2) Mark each sleeve with heat treatment lot number.

2. Couplers: Threaded - Reinforcing bar splice at construction joints.
  - a. Steel sleeve butt splice with tapered internal threads in forged or swaged head, and nailning flange for attaching to forms. Provide with matching, tapered male-threaded dowels for insertion and tightening into threaded sleeve after form removal.
    - 1) Provide sleeve with factory-installed plugs to prevent concrete mortar from entering internally threaded coupler.
    - 2) Provide optional clipped nailning flanges as required to maintain minimum specified concrete cover over surfaces of coupler.
  - b. Holding current Evaluation Report demonstrating acceptance under ICC-ES AC133.
  - c. Manufacturers: One of the following or equal:
    - 1) Dayton Superior, DBDI Splice System.
    - 2) ERICO-Pentair, Lenton Form Saver.
3. Couplers: Threaded - reinforcing bar splice:
  - a. Steel sleeve butt splice with tapered internal threads at each end for joining to matching tapered male threads on reinforcing bars.
  - b. Holding current Evaluation Report demonstrating acceptance under ICC-ES AC133.
  - c. Manufacturers: One of the following, or equal:
    - 1) Dayton Superior: Taper-Lock System.
    - 2) ERICO-Pentair: Lenton Taper Threaded Splicing System.

## **2.03 FABRICATION**

- A. Shop fabrication and assembly:
  1. Cut and bend bars in accordance with provisions of ACI 318 and the CRSI Manual of Standard Practice.
  2. Bend bars cold. Use bending collars to develop the recommended bend radius.
  3. Provide bars free from defects and kinks and from bends not indicated on the Drawings.
  4. Circumferential and radiused reinforcement: Roll to the radius required for its location in the structure before installation.
  5. Bars to be fitted with mechanical couplers:
    - a. Fabricate threaded ends for connections in shop using manufacturer's recommended tools. Field fabrication is not allowed.
    - b. Cut ends square.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verification of conditions:
  1. Reinforcing bars and welded wire reinforcement:
    - a. Verify that reinforcement is new stock, free from rust scale, loose mill scale, excessive rust, dirt, oil, and other coatings that will adversely affect bonding capacity when placed in the Work.
  2. Welded wire fabric:
    - a. Verify that sheets are not curled or kinked before or after installation.

## **3.02 PREPARATION**

- A. Surface preparation:
1. Reinforcing bars - uncoated:
    - a. Clean reinforcement of concrete, dirt, oil and other coatings that will adversely affect bond before embedding bars in subsequent concrete placements.
    - b. Thin coating of red rust resulting from short exposure will not be considered objectionable. Thoroughly clean bars having rust scale, loose mill scale, or thick rust coat.
    - c. Partially embedded reinforcement: Remove concrete or other deleterious coatings from dowels and other projecting bars by wire brushing or sandblasting before bars are embedded in subsequent concrete placements.

## **3.03 INSTALLATION**

- A. Reinforcing bars: General:
1. Field-cutting of reinforcing bars is not permitted.
  2. Field-bending of reinforcing bars, including straightening and rebending, is not permitted.
- B. Placing reinforcing bars:
1. Accurately place bars to meet position and cover requirements indicated on the Drawings and specified. Secure bars in position.
  2. Tolerances for placement and minimum concrete cover: As listed in Table 1.

**Table 1 - Reinforcement Placing Tolerances**

<b>Member</b>	<b>Tolerance on Reinforcement Location <sup>(1)</sup></b>	<b>Tolerance on Minimum Concrete Cover <sup>(1,2)</sup></b>
Slabs, beams, walls and columns except as noted below:		
10 inches thick and less	$\pm$ 3/8 inch	- 3/8 inch
More than 10 inches thick	$\pm$ 1/2 inch	- 1/2 inch
Formed soffits:	As noted above	- 1/4 inch
Longitudinal location of bends and ends of reinforcement:		
Conditions not listed below:	$\pm$ 2 inches	- 1/2 inch
At discontinuous ends of brackets and corbels	$\pm$ 1/2 inch	- 1/4 inch
At discontinuous ends of other members:	$\pm$ 1 inch	- 1/2 inch
Notes:		
(1) $\pm$ indicates "plus or minus;" - indicates "minus;" + indicates "plus."		
(2) Tolerance on cover is limited as noted, but decrease in cover shall not exceed one third of the minimum cover indicated on the Drawings.		

3. Spacing between bars:
    - a. Minimum clear spacing between bars in a layer:
      - 1) As indicated on the Drawings, but not less than the larger of 1.5 times the bar diameter or 1-1/2 inches.
    - b. Minimum clear spacing between bars in 2 or more parallel layers:
      - 1) Place bars in upper layers directly above bars in lower layers.
      - 2) Minimum spacing between layers: As indicated on the Drawings, but not less than the larger of 1.5 times the bar diameter or 1-1/2 inches.
    - c. Limits on minimum clear spacing between bars also applies to the clear spacing between a lap splice and the adjacent bars and/or lap splices.
  4. Lap splices for bars:
    - a. Lap splice locations and lap splice lengths: as indicated on the Drawings. Where lap lengths are not indicated, provide in accordance with ACI 318.
    - b. Unless otherwise specifically indicated on the Drawings (and noted as "non-contact lap splice"), install bars at lap splices in contact with each other and fasten together with tie wire.
    - c. Where bars are to be lap spliced at concrete joints, ensure that bars project from the first concrete placement a length equal to or greater than minimum lap splice length indicated on the Drawings.
    - d. Stagger lap splices where indicated on the Drawings.
    - e. Where lap splice lengths are not indicated on the Drawings, provide lap splice lengths in accordance with ACI 318.
- C. Reinforcing supports:
1. Provide supports of sufficient numbers, sizes, and locations to maintain concrete cover, to prevent sagging and shifting, and to support loads during construction without displacement and without gouging or indentation into forming surfaces.
    - a. Quantities and locations of supports shall not be less than those indicated in ACI SP-66 and the CRSI Manual of Standard Practice.
  2. Do not use brick, concrete masonry units, concrete spalls, rocks, wood, or similar materials for supporting reinforcement.
  3. Do not use "give away bars" that have less cover than that required by the Contract Documents. Do not adjust the location of reinforcement required by the Contract Documents to provide cover for give away bars.
  4. Provide bar supports of height required to maintain the clear concrete cover indicated on the Drawings.
  5. Provide bar supports at formed vertical faces to maintain the clear concrete cover indicated on the Drawings.

6. Schedule of reinforcement support materials: Provide bar supports as indicated in Table 2.

<b>Table 2 - Reinforcement Support Materials</b>		
<b>Case</b>	<b>Location</b>	<b>Material</b>
a.	Concrete placed over earth and concrete seal slabs ("mud mats"):	Precast concrete bar supports.
b.	Concrete placed against forms and exposed to water or wastewater process liquids (whether or not such concrete received additional linings or coatings):	All stainless steel bar supports.
c.	Concrete placed against forms and exposed to earth, weather, frequent washdown, or groundwater in the finished work:	All stainless steel bar supports.
d.	Concrete placed against forms and exposed to interior equipment/piping areas in the finished work:	All stainless steel bar supports.
e.	Between mats of reinforcement, and fully embedded within a concrete member:	Bright basic wire bars supports, or deformed steel reinforcing bars.

D. Tying of reinforcing:

1. Fasten reinforcement securely in place with wire ties.
2. Tie reinforcement at spacings sufficient to prevent shifting.
  - a. Provide at least 3 ties in each bar length. (Does not apply to dowel lap splices or to bars shorter than 4 feet, unless necessary for rigidity).
3. Tie slab bars at every intersection around perimeter of slab.
4. Tie wall bars and slab bar intersections other than around perimeter at not less than every fourth intersection, but at not more than the spacing indicated in Table 3:

<b>Table 3 - Maximum Spacing of Tie Wires for Reinforcement</b>		
<b>Bar Size</b>	<b>Slab Bar Spacing (inches)</b>	<b>Wall Bar Spacing (inches)</b>
Bars Number 5 and Smaller	60	48
Bars Number 6 through Number 9	96	60
Bars Number 10 and Number 11	120	96

5. After tying:

- a. Bend ends of wires inward towards the center of the concrete section. Minimum concrete cover for tie wires shall be the same as cover requirements for reinforcement.
- b. Remove tie wire clippings from inside forms before placing concrete.

**E. Welded wire fabric reinforcement:**

1. Install only where indicated on the Drawings or accepted in advance by Engineer.
2. Install necessary tie wires, spacing chairs, and supports to keep welded wire fabric at its designated position in the concrete section while concrete is being placed.
3. Straighten welded wire fabric to make sheets flat in the Work.
4. Do not allow wire fabric to drape between supports unless such a configuration is specifically indicated on the Drawings.
  - a. If fabric is displaced during placement of concrete, make provisions to restore it to the designated location using methods acceptable to Engineer.
5. Bend welded wire fabric as indicated on the Drawings or required to fit Work.
6. Lap splice welded wire fabric as indicated on the Drawings.
  - a. If lap splice length is not indicated, splice in accordance with ACI 318, but not less than 1 1/2 courses of fabric or 8 inches minimum. Tie laps at ends and at not more than 12 inches on center.

**F. Welding reinforcing bars:**

1. Weld reinforcing bars only where indicated on the Drawings or where acceptance is received from Engineer prior to welding.
2. Perform welding in accordance with AWS D1.4 and welding procedures accepted by Engineer.
  - a. Conform to requirements for minimum preheat and interpass temperatures.
3. Submit:
  - a. Welding procedures specification.
  - b. Procedures qualification record.
  - c. Welder qualification test record.
4. Do not tack weld reinforcing bars except where specifically indicated on the Drawings.

**G. Reinforcing bar mechanical couplers:**

1. Install only at locations indicated on the Drawings or where prior approval has been obtained from Engineer.
2. Install in accordance with manufacturer's instructions and requirements of Evaluation Report.
  - a. Make splices using manufacturer's standard equipment, jigs, clamps, and other required accessories.
  - b. After assembly of the splice, tighten using torque load not less than that recommended by the manufacturer.
3. Unless greater cover is indicated on the Drawings, provide clear cover from surface of concrete to outside face of couplers that is not less than the minimum concrete cover specified for typical reinforcement.
  - a. If cover is less than required, contact Engineer for evaluation of conditions before modifying locations of bars or placing concrete.
  - b. Modifications to maintain or provide required concrete cover, such as addition of concrete ; re-positioning of stirrups, ties, etc., may be completed only after approval by Engineer.

### **3.04 FIELD QUALITY CONTROL**

- A. Provide quality control for the Work of this Section as specified in Section 01450 -Quality Control.
- B. Field inspections and testing:
  - 1. Submit records of inspections and testing to Engineer in electronic format within 24 hours after completion.
- C. Manufacturer's services:
  - 1. Furnish manufacturer's technical representative to conduct jobsite training regarding proper storage, handling, and installation of mechanical reinforcing bar couplers for personnel who will perform the installation. Engineer may attend training session.

### **3.05 FIELD QUALITY ASSURANCE**

- A. Provide quality assurance as specified in Section 01450 - Quality Control.
- B. Special inspections and tests:
  - 1. Provide as specified in Section 01455 - Regulatory Quality Assurance.
  - 2. Frequency of inspections:
    - a. Unless otherwise indicated on the Drawings or in this Section, provide periodic special inspection as required by the Building Code specified in Section 01410 - Regulatory Requirements.
  - 3. Preparation:
    - a. Review Drawings and Specification for the Work to be observed.
    - b. Review approved submittal sand shop drawings.
  - 4. Inspections: Special inspection shall include, but is not limited to, the following items.
    - a. Reinforcement: General:
      - 1) Type (material) and location of reinforcement supports.
      - 2) Bar material/steel grade and bar size.
      - 3) Location, placement, and spacing of bars.
      - 4) Clear concrete cover over reinforcement.
      - 5) Lap splice: Location and lap length. Bars within tolerances for contact (unless non-contact splice is indicated on the Drawings).
      - 6) Bar hooks and development lengths embedded within concrete sections as indicated on the Drawings.
      - 7) Reinforcement tired in position and tie wire legs turned inward toward the center of the concrete section.
    - b. Reinforcement: Welding:
      - 1) Inspector qualification and inspections shall be in accordance with the requirements of AWS D1.4.
      - 2) Provide periodic inspection for:
        - a) Weldability of reinforcement other than ASTM A706.
        - b) Single pass fillet welds with thickness less than or equal to 5/16 inch.
      - 3) Provide continuous inspection for:
        - a) Other welds.
        - b) Welds at mechanical reinforcing bar couplers and end anchors.

- 4) In addition to visual inspection, Owner may inspect reinforcing bar welds by other methods, including radiographic inspection.
5. Mechanical reinforcing bar couplers:
  - a. Special inspection shall include, but is not limited to, the following items:
    - 1) Coupler model and identification.
    - 2) Couplers are installed in accordance with the requirements of the Engineering Report for each product.
    - 3) Confirmation of the following:
      - a) Grade and size of reinforcing bars.
      - b) Position of couplers.
      - c) Insertion length of reinforcement.
      - d) Tightening of bars in the couplers.
6. Records of inspections:
  - a. Provide a written record of each inspection using forms acceptable to the Engineer and to the Building Official.
  - b. Submit electronic copies of inspection reports to Engineer within 24 hours after completion of inspections.

### **3.06 NON-CONFORMING WORK**

- A. Before placing concrete, adjust or remove and re-install reinforcement to conform to the requirements of the Contract Documents.

END OF SECTION

# SHOP DRAWINGS

Nan, Inc

PROJECT: HILO WWTP REHABILITATION  
AND REPLACEMENT PROJECT - PHASE 1

JOB NO. WW-4705R

THIS SUBMITTAL HAS BEEN CHECKED BY  
THIS CONTRACTOR. IT IS CERTIFIED  
CORRECT, COMPLETE, AND IN  
COMPLIANCE WITH CONTRACT  
DRAWINGS AND SPECIFICATIONS. ALL  
AFFECTED CONTRACTORS AND  
SUPPLIERS ARE AWARE OF, AND WILL  
INTEGRATE THIS SUBMITTAL (UPON  
APPROVAL) INTO THEIR OWN WORK.

DATE RECEIVED 8/12/2025

SPECIFICATION SECTION # 03200

SPECIFICATION CONCRETE REINFORCING

PARAGRAPH 1.04

DRAWING SHOP DRAWING

SUBCONTRACTOR CMC

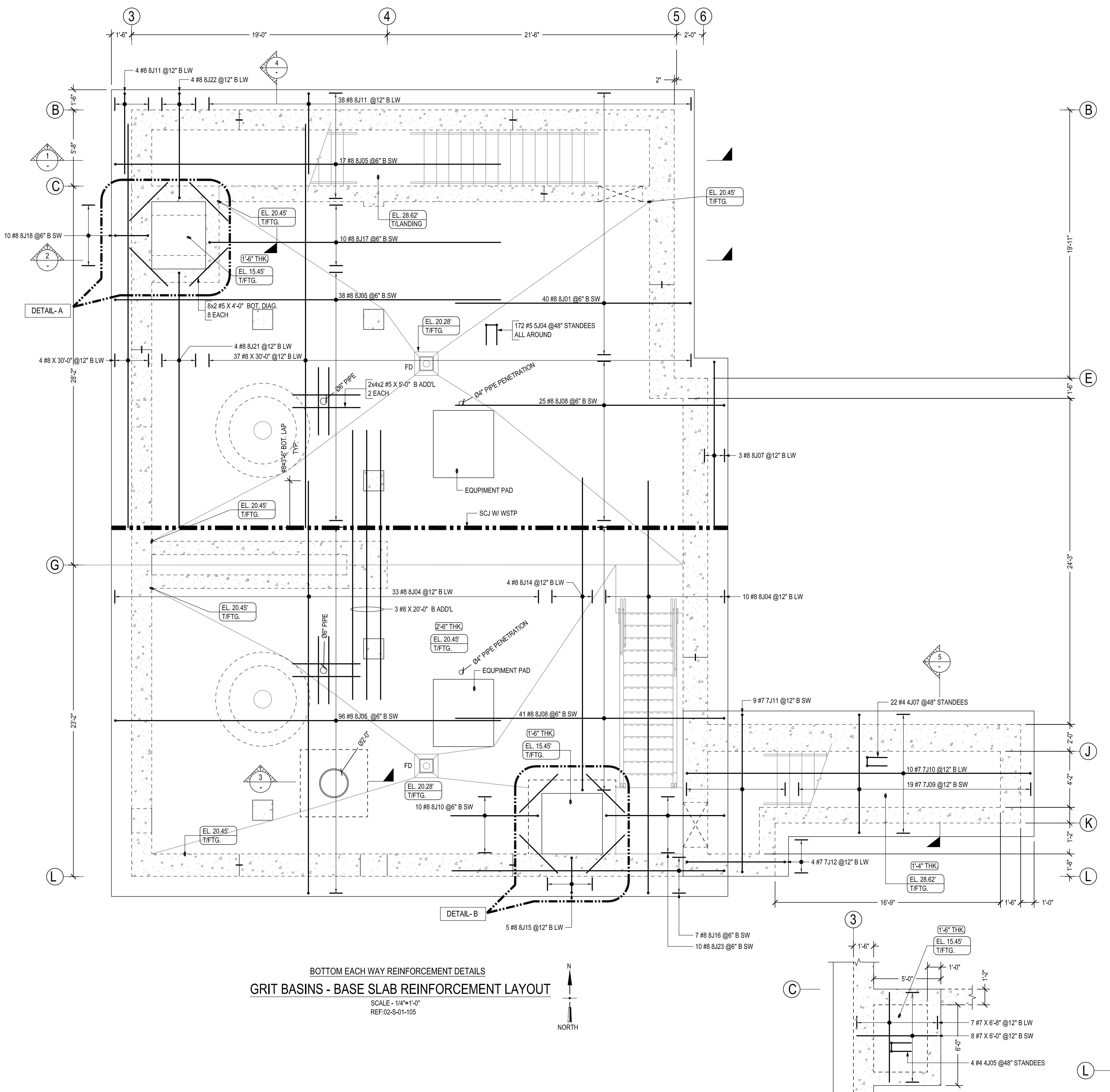
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MANUFACTURER N/A

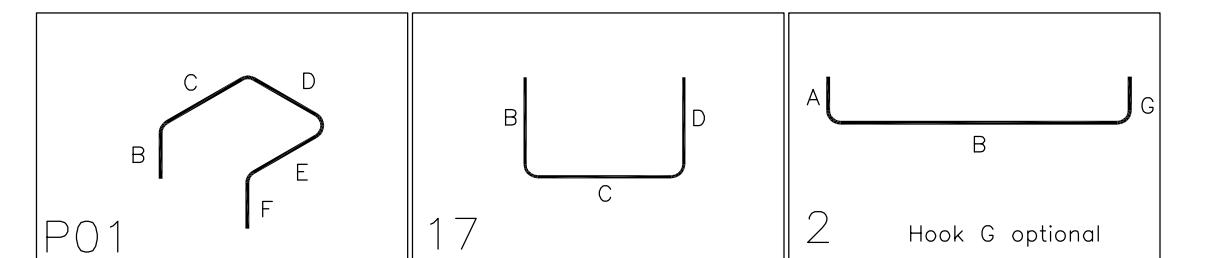
CERTIFIED BY: \_\_\_\_\_

# TABLE OF CONTENTS

SHEET NUMBER	TITLE
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RP -15	GRIT BASINS - BASE SLAB REINFORCEMENTS DETAILS
RP -16	GRIT BASINS - BASE SLAB REINFORCEMENTS DETAILS
RP -17	GRIT BASINS - BASE SLAB REINFORCEMENTS DETAILS
RP -18	GRIT BASINS - ELECTRICAL BUILDING REINFORCEMENTS DETAILS
RP -19	GRIT BASINS - ELECTRICAL BUILDING REINFORCEMENTS DETAILS
RP -20	NOT USED
RP -21	HEAD WORKS ODOR CONTROL FACILITY
RP -22	HEAD WORKS - SCREENING CHANNEL MAT SLAB REINFORCING
RP -23	HEAD WORKS - SCREENING CHANNEL MAT SLAB REINFORCING
RP -24	HEAD WORKS - SCREENING CHANNEL MAT SLAB REINFORCING

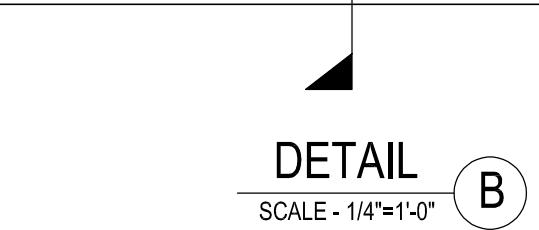
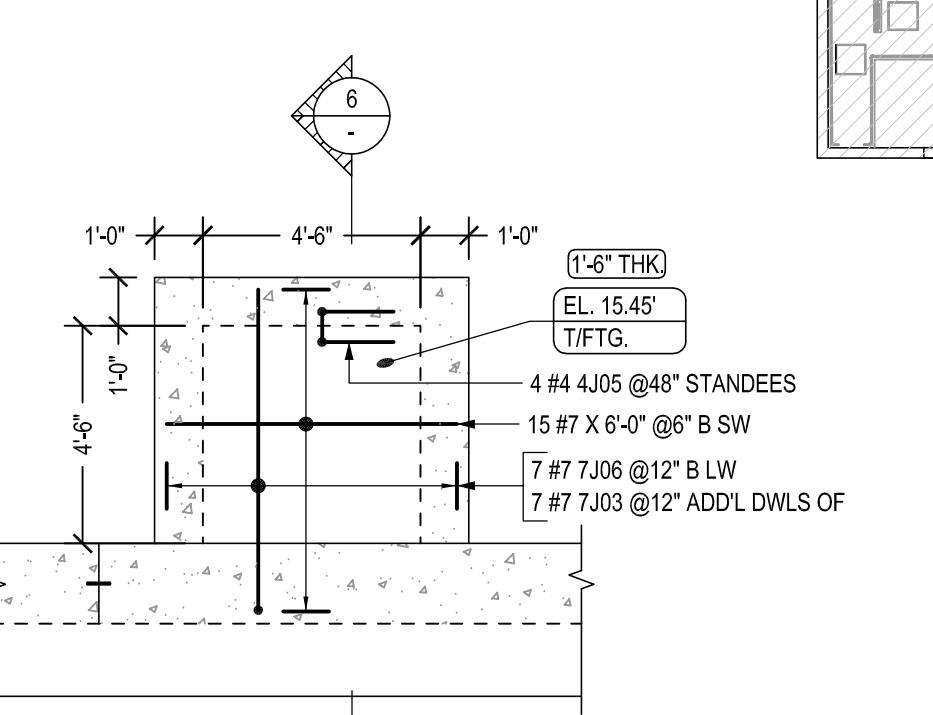
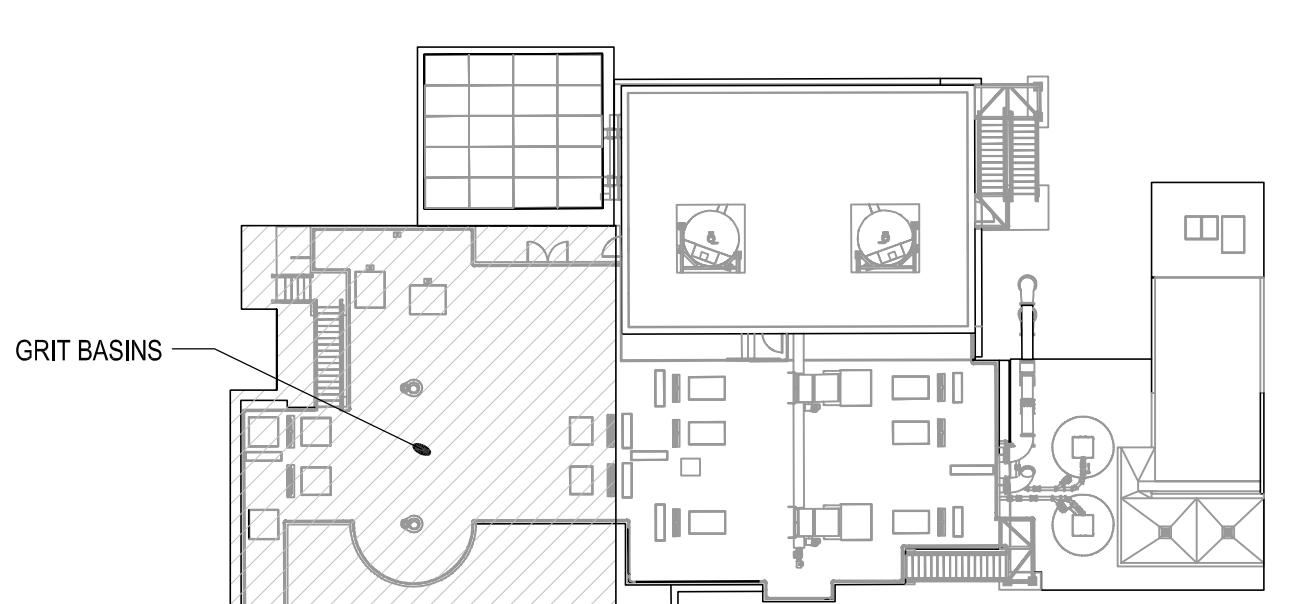


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4J05	8	#4	5'-4 1/2"	P01		1'-6"	0'-10 1/4"	0'-8"	0'-10 1/4"	1'-6"						
4J07	22	#4	5'-0 1/2"	P01		1'-6"	0'-8 1/4"	0'-8"	0'-8 1/4"	1'-6"						
5J04	172	#5	7'-6 1/2"	P01		1'-6"	1'-10 1/4"	0'-10"	1'-10 1/4"	1'-6"						
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7J06	7	#7	19'-2"	17		6'-8"	12'-6"									
7J09	19	#7	10'-8"	17		0'-11"	8'-10"	0'-11"								
7J10	10	#7	27'-5"	17		0'-11"	25'-7"	0'-11"								
7J11	9	#7	13'-7"	17		0'-11"	11'-9"	0'-11"								
7J12	4	#7	9'-2"	17		0'-11"	7'-4"	0'-11"								
8J01	40	#8	18'-10"	2	1'-4"	17'-6"										
8J04	43	#8	32'-0"	2	1'-4"	30'-8"										
8J05	151	#8	30'-0"	2	1'-4"	28'-8"										
8J07	3	#8	13'-8"	2	1'-4"	12'-4"										
8J08	66	#8	21'-4"	2	1'-4"	20'-0"										
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8J22	4	#8	10'-6"	2	1'-4"	7'-10"					1'-4"					
8J23	10	#8	11'-6"	2	1'-4"	8'-10"					1'-4"					



ABBREVIATIONS	
BOTTOM	B
TOP&BOTTOM	T&B
CONTINUOUS	CONT.
CORNER BAR	COR.
HORIZONTAL	H
EACH WAY	EW
EACH FACE	EF
INNER FACE	IF
OUTER FACE	OF
EACH SIDE	ES
DOWEL	DWL.
LONG WAY BAR	LW
SHORT WAY BAR	SW
REFERENCE	REF.

LAP SCHEDULE		
SIZE	4000 PSI	
	TOP	OTHERS
#4	20"	16"
#5	26"	20"
#6	30"	24"
#7	43"	33"
#8	50"	38"
#9	56"	42"
#10	62"	48"
#11	69"	54"



BOTTOM EACH WAY REINFORCEMENT DETAILS

**GRIT BASINS - BASE SLAB REINFORCEMENT LAYOUT**

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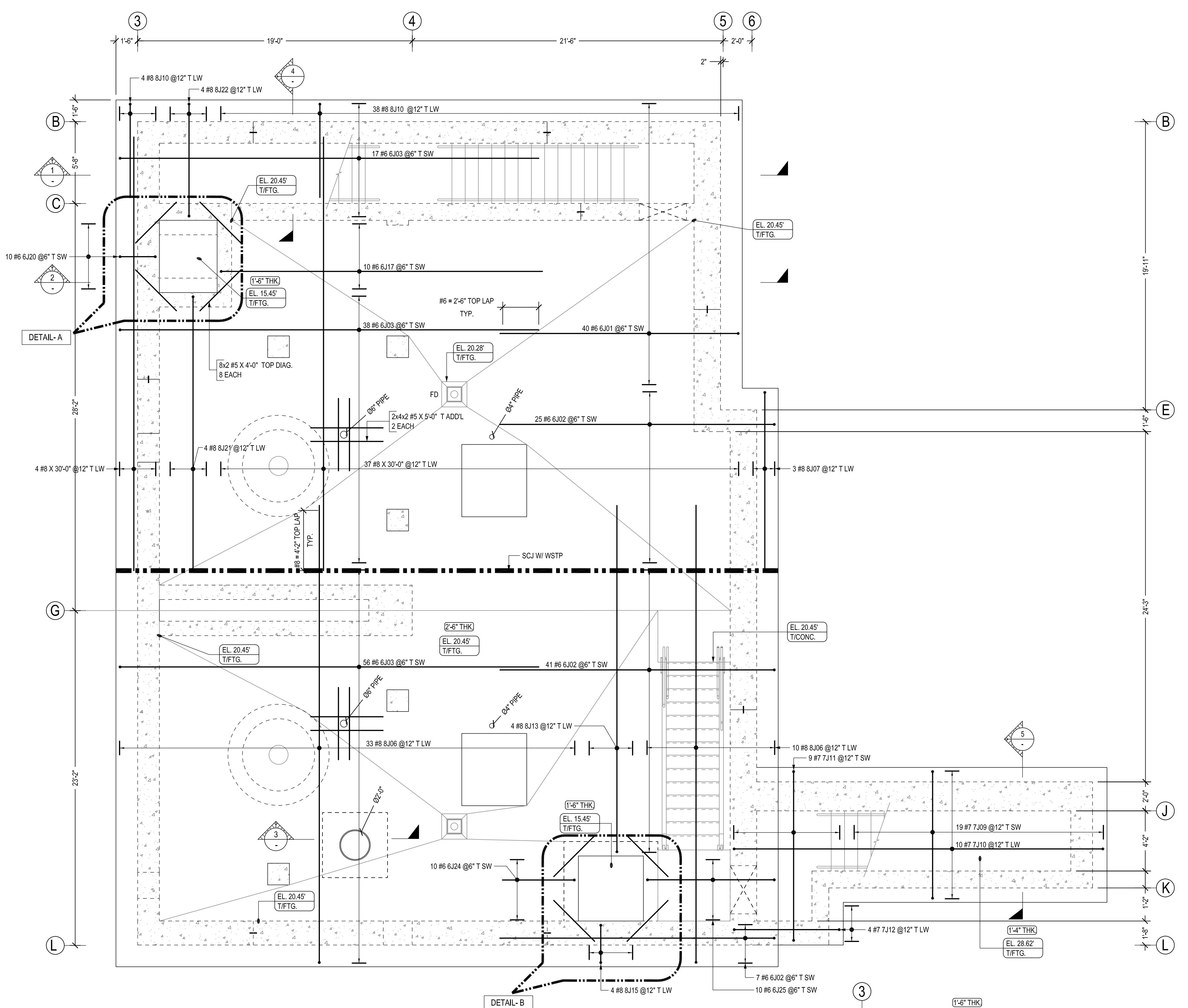
OUT

**DETAIL**  
SCALE - 1/4"=1'-0"  
**A**

**DETAIL**  
SCALE - 1/4"=1'-0"  
**B**

L REINFORCEMENTS ARE A615 GR.60 U.N.O

PROJECT INFORMATION		SUBMITTAL RECORD		FIELD USE	
 <b>JOB#:</b> 2524240001		<b>JOB #:</b> 2524240001 <b>FOR:</b> APPROVAL <b>DATE:</b> 07/03/25		<b>APPROVAL AUTHORITY:</b> THIS DRAWING TO BE USED IN CONJUNCTION w/ STRUCTURAL AND ARCHITECTURAL DOCUMENTS TO FACILITATE PLACING OF REINFORCING BARS ONLY. DO NOT USE THIS DRAWING FOR LAYOUT OR CONSTRUCTION. ANY DIMENSIONS OR ELEVATIONS NOTED IN THIS DOCUMENT ARE FOR REFERENCE ONLY. TO FACILITATE APPROVAL &/OR PLACEMENT OF REBAR, DISCREPANCIES SHOULD BE NOTED AT THE TIME OF APPROVAL. CMC REBAR ASSUMES NO LIABILITY FOR DIMENSIONAL ERRORS IN THE LAYOUT OF THE BUILDING OR FORMS.	
<b>CUSTOMER:</b> - <b>JOB NAME:</b> HILO WWTP <b>LOCATION:</b> COUNTY OF HAWAII <b>DESCRIPTION:</b> GRIT BASINS – BASE SLAB REINFORCEMENT DETAILS	<b>DETLER:</b> MKR <b>EMAIL:</b> will@mcmasterrebar.com <b>PHONE:</b> (360)-346-6729	<b>FOR:</b> . <b>DATE:</b> .	<b>FOR:</b> . <b>DATE:</b> .	<b>REF:</b> NOTED <b>DATE:</b> .	<b>REF:</b> . <b>DATE:</b> .
					



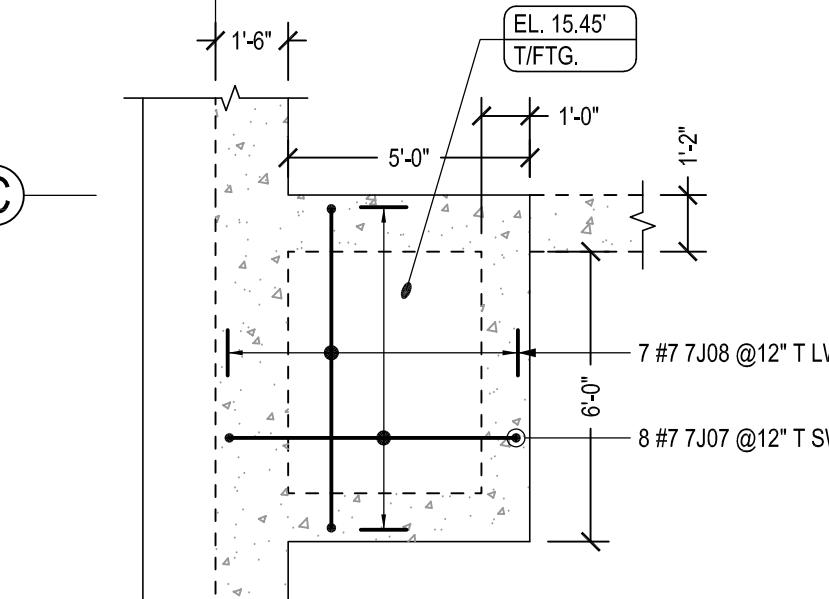
TOP EACH WAY REINFORCEMENT DETAILS

**GRIT BASINS - BASE SLAB REINFORCEMENT LAYOUT**

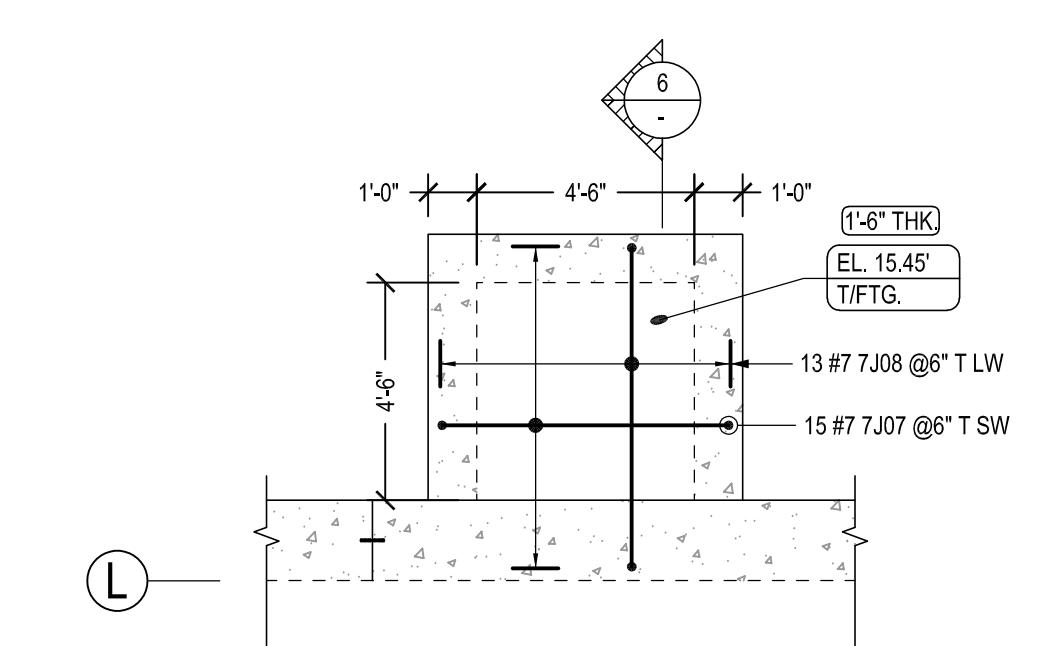
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SCALE - 1/4"=1'-0"

YOU



**DETAIL**  
SCALE - 1/4"=1'-0"  
REF:02-S-01-105



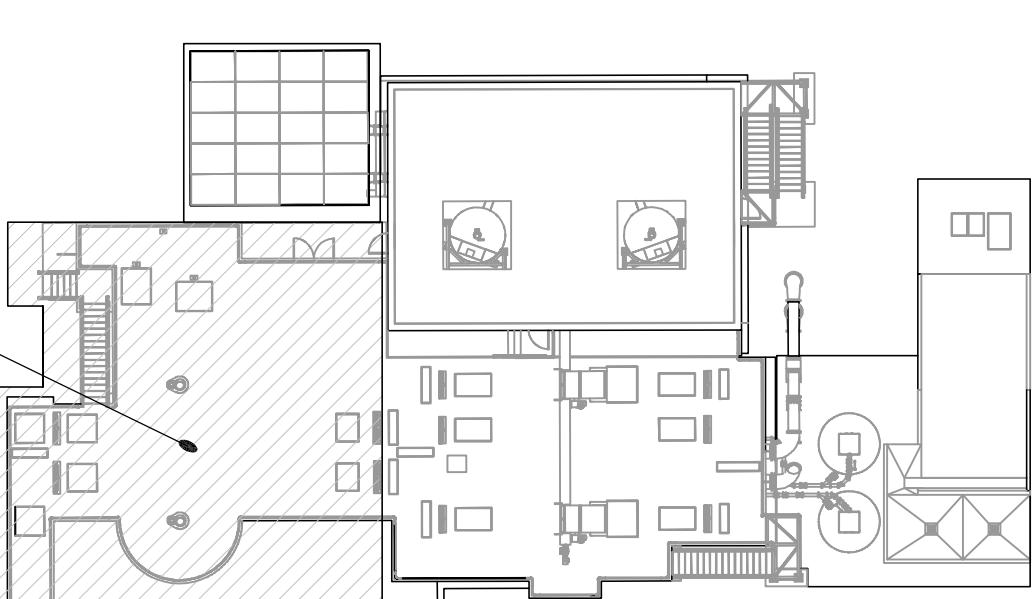
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Release Number: RP-15		BAR LIST																
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6J01	40	#6	17'-6"	2	1'-0"	16'-6"												
6J02	73	#6	20'-0"	2	1'-0"	19'-0"												
6J03	111	#6	30'-0"	2	1'-0"	29'-0"												
6J17	10	#6	23'-3"	2	1'-0"	22'-3"												
6J20	10	#6	4'-6"	2	1'-0"	2'-6"						1'-0"						
6J24	10	#6	6'-0"	2	1'-0"	5'-0"												
6J25	10	#6	10'-10"	2	1'-0"	8'-10"						1'-0"						
7J07	23	#7	8'-4"	2	1'-2"	6'-0"						1'-2"						
7J08	20	#7	9'-0"	2	1'-2"	6'-8"						1'-2"						
7J09	19	#7	10'-8"	17		0'-11"	8'-10"	0'-11"										
7J10	10	#7	27'-5"	17		0'-11"	25'-7"	0'-11"										
7J11	9	#7	13'-7"	17		0'-11"	11'-9"	0'-11"										
7J12	4	#7	9'-2"	17		0'-11"	7'-4"	0'-11"										
8J06	43	#8	33'-0"	2	1'-4"	31'-8"												
8J07	3	#8	13'-8"	2	1'-4"	12'-4"												
8J10	42	#8	7'-10"	2	1'-4"	6'-6"												
8J13	4	#8	25'-4"	2	1'-4"	24'-0"												
8J15	4	#8	5'-4"	2	1'-4"	2'-8"						1'-4"						
8J21	4	#8	20'-4"	2	1'-4"	19'-0"												
8J22	4	#8	10'-6"	2	1'-4"	7'-10"						1'-4"						

Produced by RoboCAD 2020

ABBREVIATIONS	
BOTTOM	B
TOP&BOTTOM	T&B
CONTINUOUS	CONT.
CORNER BAR	COR.
HORIZONTAL	H
EACH WAY	EW
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EACH SIDE	ES
DOWEL	DWL.
LONG WAY BAR	LW
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REFERENCE	REF.

LAP SCHEDULE		
SIZE	4000 PSI	
	TOP	OTHERS
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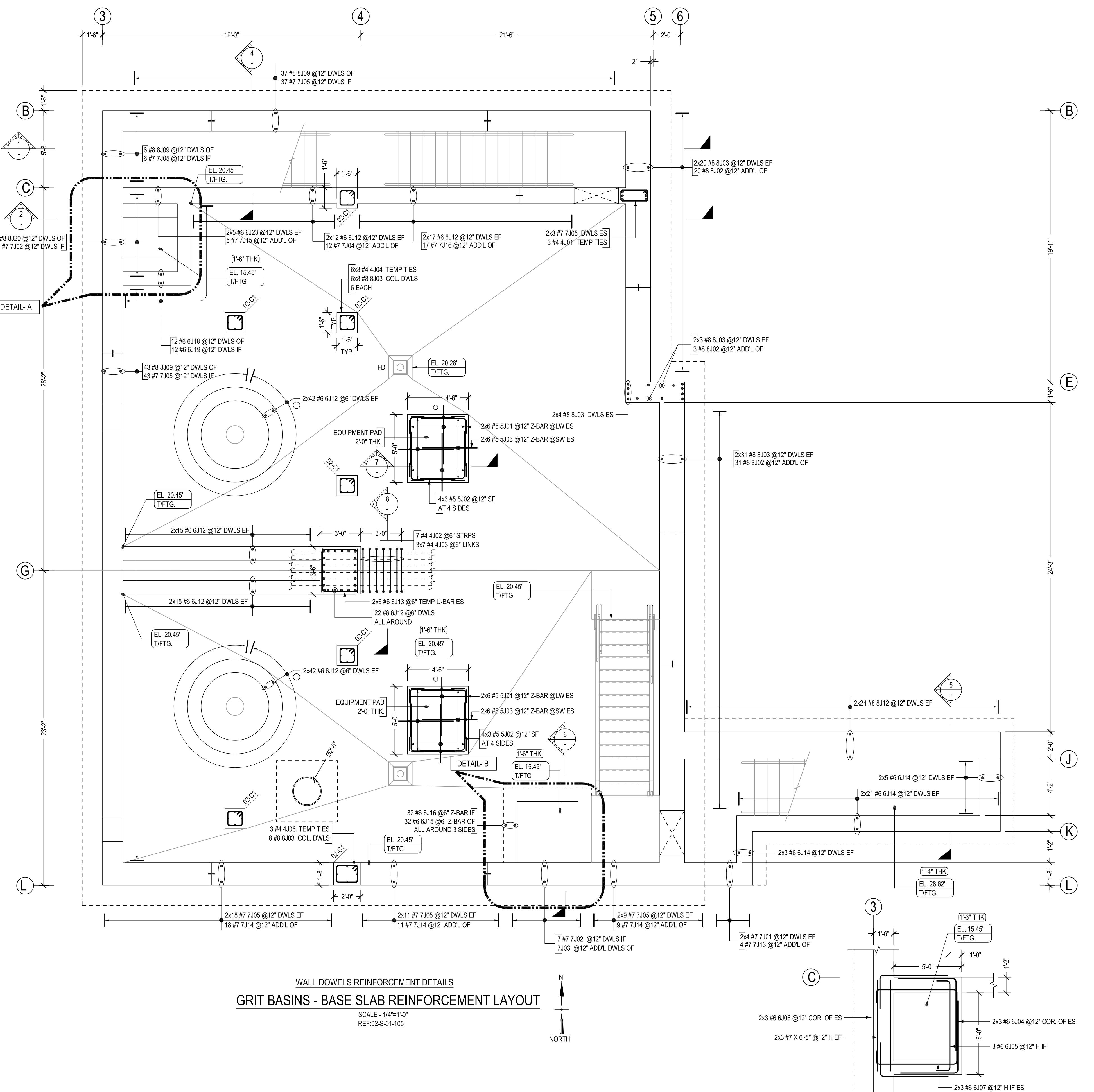


A vertical arrow pointing upwards, with a horizontal line extending from its middle, representing a key plan or north arrow.



REINFORCEMENTS ARE A615 GR.60 U.N.O

PROJECT INFORMATION		SUBMITTAL RECORD	
CUSTOMER:	-	JOB #:	2524240001
JOB NAME:	HILO WWTP	DATE:	07/03/25
LOCATION:	COUNTY OF HAWAII	FOR:	APPROVAL
DESCRIPTION:	GRIT BASINS - BASE SLAB REINFORCEMENT DETAILS		
DRAWING:	RP-15	DETAILER:	MKR
		EMAIL:	will@ncmcmasterrebar.com
		PHONE:	(360)-346-6729
		REF:	NOTED
<b>CMC</b>		<b>CMC REBAR</b>	
			



BAR LIST										
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'
4J01	3	#4	6'-5"	T1	0'-4"	0'-10"	2'-0"	0'-10"	2'-0"	0'-4"
4J02	7	#4	11'-3"	T1	0'-4"	2'-1"	3'-2"	2'-1"	3'-2"	0'-4"
4J03	21	#4	2'-10"	T12	0'-4"	2'-1"				0'-4"
4J04	18	#4	5'-1"	T1	0'-4"	1'-1"	1'-1"	1'-1"	1'-1"	0'-4"
4J06	3	#4	6'-5"	T1	0'-4"	1'-7"	1'-3"	1'-7"	1'-3"	0'-4"
5J01	24	#5	8'-3"	20		0'-10"	3'-11"	3'-6"		
5J02	24	#5	6'-9"	17		3'-3"	3'-6"			
5J03	24	#5	8'-0"	20		0'-10"	3'-11"	3'-3"		
6J04	6	#6	9'-7"	17		4'-3"	5'-4"			
6J05	3	#6	8'-8"	2		1'-0"	2'-6"	5'-0"		
6J06	6	#6	7'-6"	17		1'-0"	2'-6"	5'-0"		
6J07	6	#6	8'-0"	2		1'-0"	2'-6"	5'-0"		
6J08	6	#6	10'-0"	17		4'-6"	5'-6"			
6J09	3	#6	8'-2"	2		1'-0"	2'-6"	5'-0"		
6J10	6	#6	8'-10"	2		1'-0"	2'-6"	5'-0"		
6J11	6	#6	8'-0"	17		2'-6"	5'-6"			
6J12	308	#6	5'-3"	2		1'-0"	4'-3"			
6J13	12	#6	9'-0"	17		3'-3"	2'-8"	3'-2"		
6J14	58	#6	4'-1"	2		1'-0"	3'-1"			
6J15	32	#6	10'-9 1/2"	20		4'-0"	5'-9 1/2"	1'-0"		
6J16	32	#6	9'-9 1/2"	20		3'-1"	5'-8 1/2"	1'-0"		
6J18	12	#6	12'-8"	17		3'-1"	9'-7"			
6J19	12	#6	10'-7"	2		1'-0"	9'-7"			
6J23	10	#6	10'-4"	2		1'-0"	9'-4"			
7J01	8	#7	7'-0"	2		1'-2"	5'-10"			
7J02	14	#7	10'-5"	2		1'-2"	9'-3"			
7J04	12	#7	15'-3"	17		7'-0"	8'-3"			
7J05	168	#7	6'-5"	2		1'-2"	5'-3"			
7J13	4	#7	15'-0"	17		7'-6"	7'-6"			
7J14	38	#7	16'-0"	17		7'-6"	8'-6"			
7J15	5	#7	16'-9"	17		4'-6"	12'-3"			
7J16	17	#7	17'-3"	17		7'-0"	10'-3"			
8J02	54	#8	16'-0"	17		7'-6"	8'-6"			
8J03	172	#8	6'-10"	2		1'-4"	5'-6"			
8J09	86	#8	9'-10"	2		1'-4"	8'-6"			
8J12	48	#8	5'-7"	2		1'-4"	4'-3"			
8J20	7	#8	16'-2"	17		4'-6"	11'-8"			

Bar list produced by RebarCAD 2020

FIELD USE:  
STRUCTURAL DOCUMENTS TO ACCURATELY PLACING  
AND ARCHITECTURAL DOCUMENTS FOR CONSTRUCTION  
FOR LAYOUT AND CONSTRUCTION. ANY  
DIMENSIONS OR DIMENSIONS ARE FOR REFERENCE  
ONLY. NO LIABILITY FOR DIMENSIONAL ERRORS  
OR DEFLECTIONS SHALL BE NOTED AT THE TIME OF APPROVAL.  
ONE READER ASSUMES NO LIABILITY FROM DIMENSIONAL ERRORS  
IN THE LAYOUT OR THE BUILDING OR DRAFTS.

## SUBMITTAL RECORD

DATE: 07/03/25 FOR APPROVAL

DATE:

FOR:

DATE:

REF:

NOTE:

DATE:

REF:

## PROJECT INFORMATION

REF: 252424001

DETAILS: WKR

EMAIL: will@cmcrebar.com

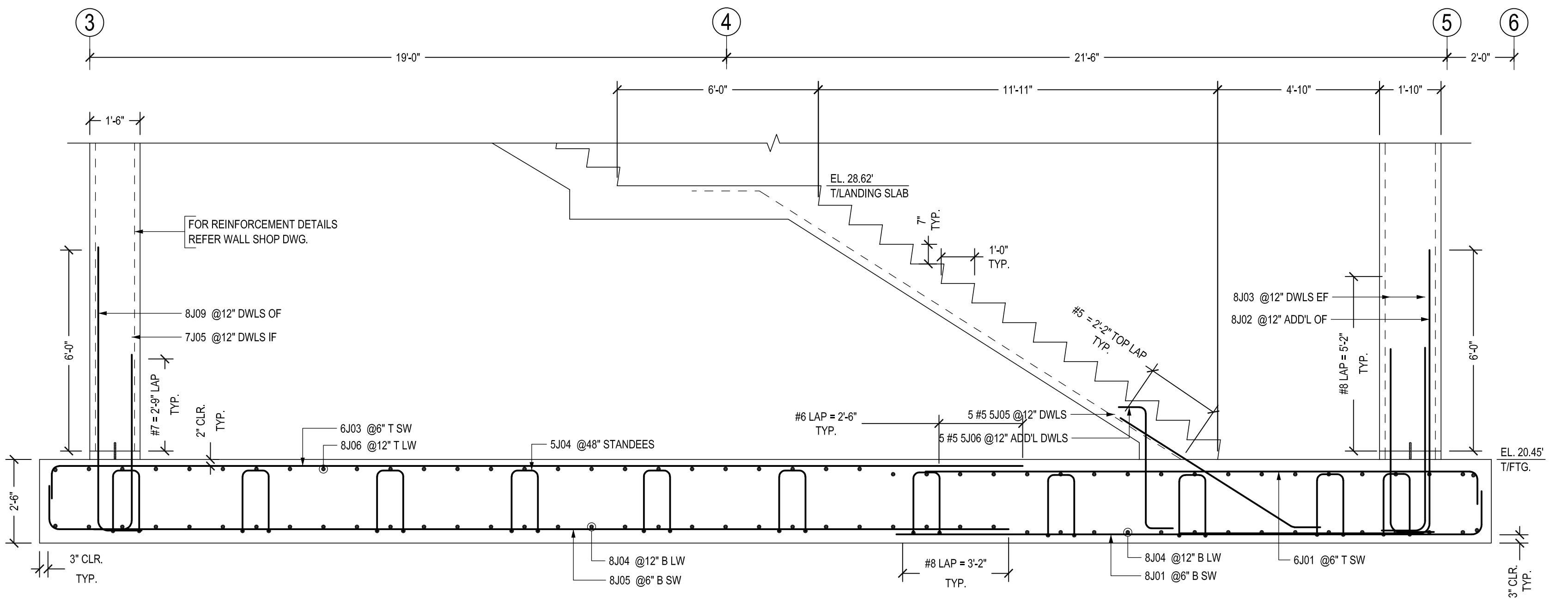
PHONE: (360)-348-5729

REF:

NOTE:

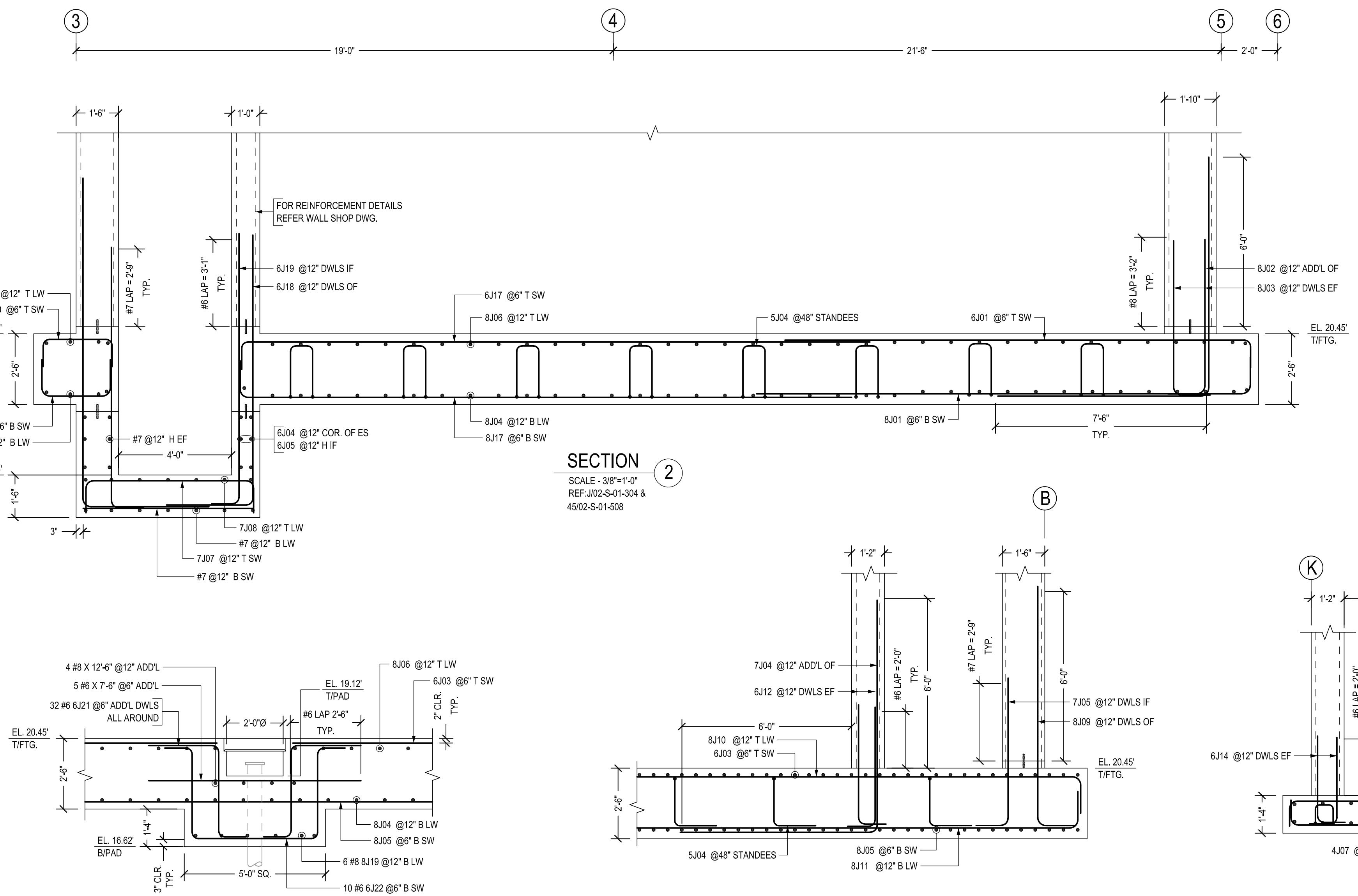
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REF:



**SECTION**  
SCALE - 3/8"=1'-0"  
REF:H/02-S-01-304 & 1

SCALE - 3/8 = 1-0  
REF:H/02-S-01-304 &  
44/02-S-01-507

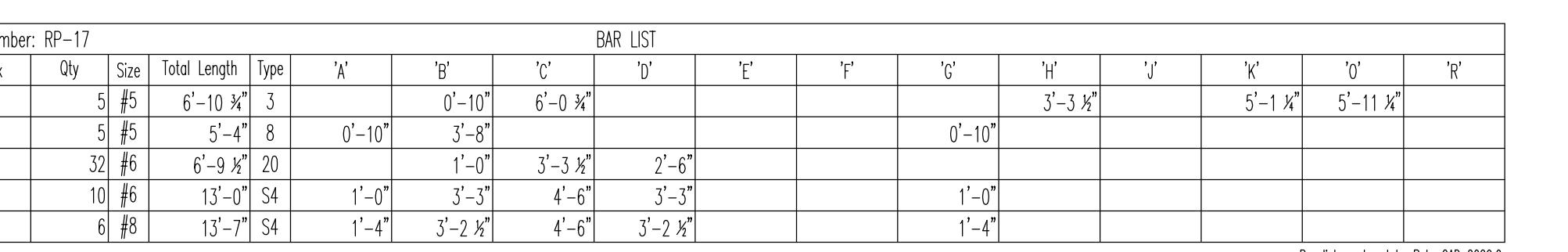


SECTION 3  
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REF. 66/00-2-01-512

SCALE - 3/8"=1'-0"  
REF 66/00-2-01-512

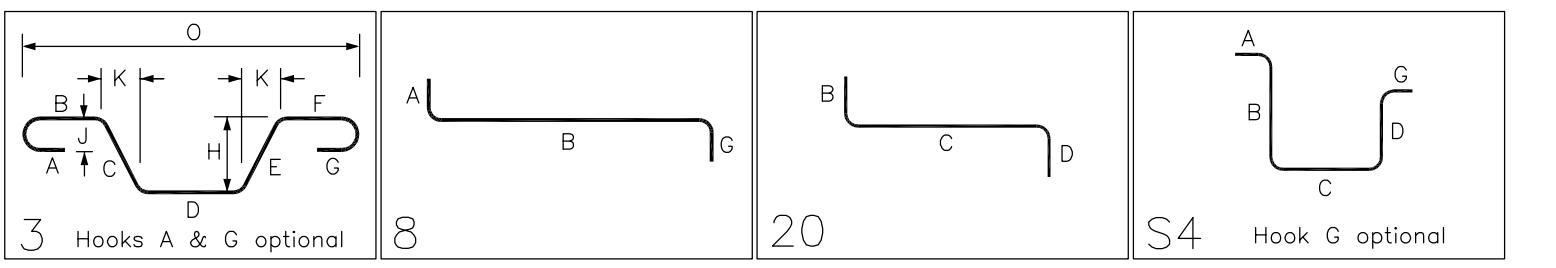


REF:C/02-S-  
27/02-S-01-5



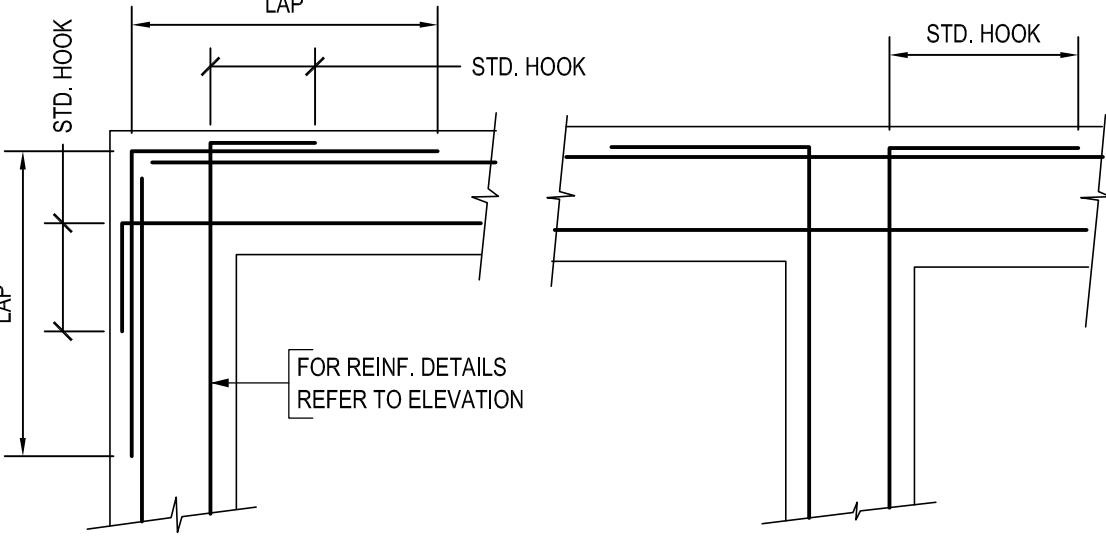
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Produced by RebarCAD 2020.0



ABBREVIATIONS	
BOTTOM	B
TOP&BOTTOM	T&B
CONTINUOUS	CONT.
CORNER BAR	COR.
HORIZONTAL	H
EACH WAY	EW
EACH FACE	EF
INNER FACE	IF
OUTER FACE	OF
EACH SIDE	ES
DOWEL	DWL.
LONG WAY BAR	LW
SHORT WAY BAR	SW
REFERENCE	RFF

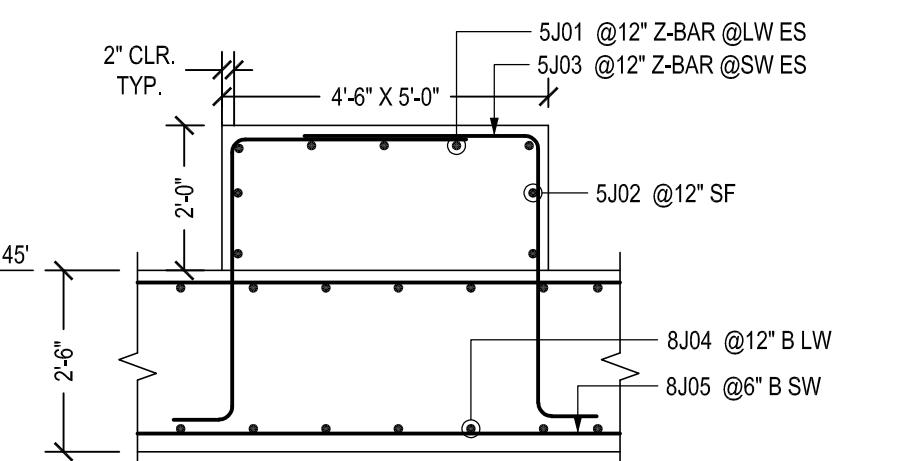
LAP SCHEDULE		
SIZE	4000 PSI	
	TOP	OTHERS
#4	20"	16"
#5	26"	20"
#6	30"	24"
#7	43"	33"
#8	50"	38"
#9	56"	42"
#10	62"	48"
#11	69"	54"



# YICAL WALL CORNER BAR DETAILS

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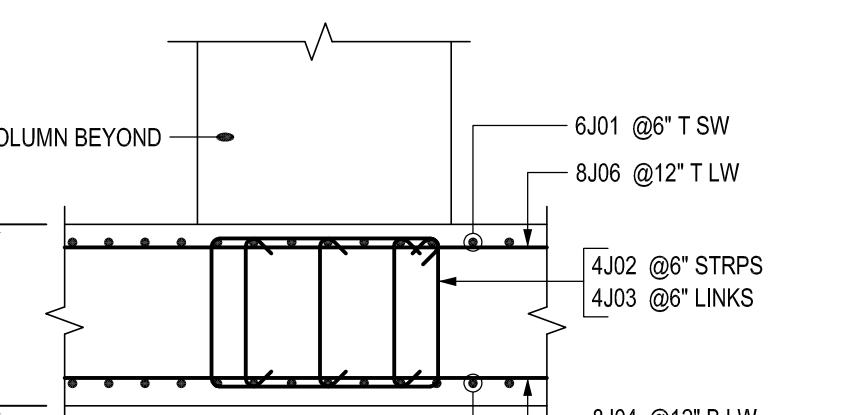
SCALE - 1/2"=1'-0"  
REF:00-T-03-703



# SECTION

SCALE - 3/8"=1'-0"

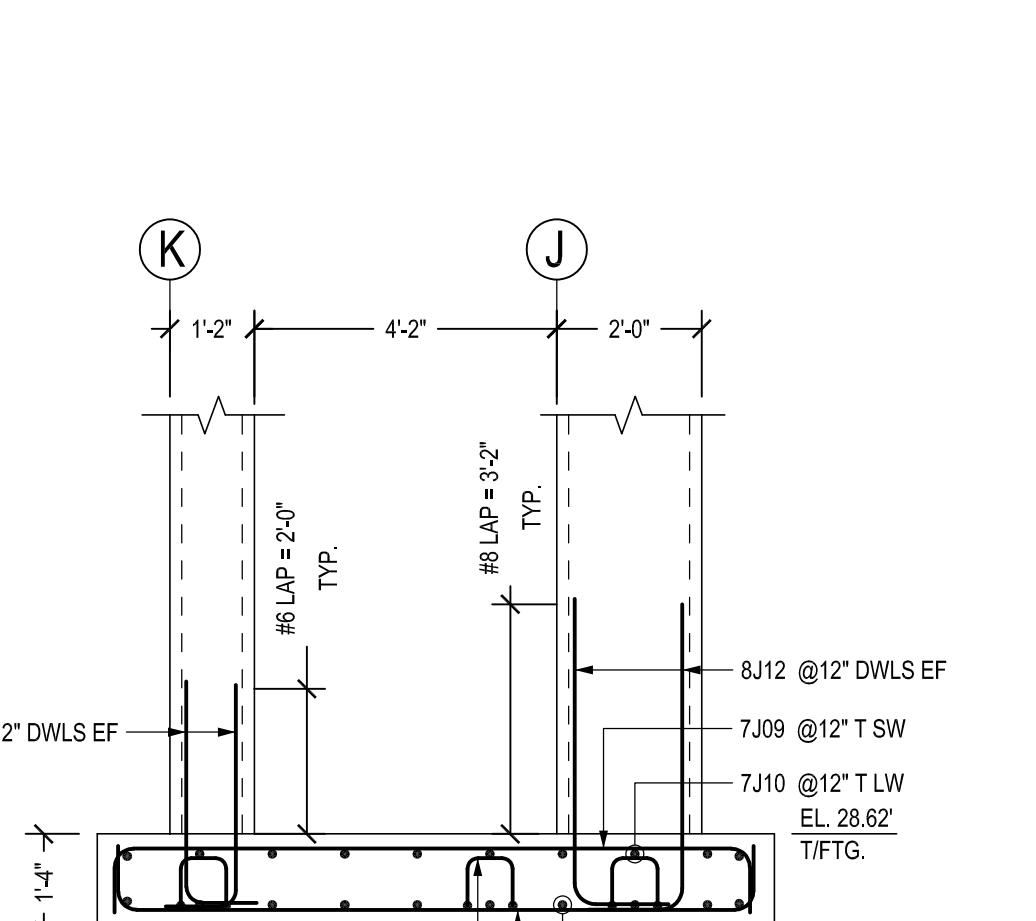
SCALE - 3/8"=1'-0"



# SECTION

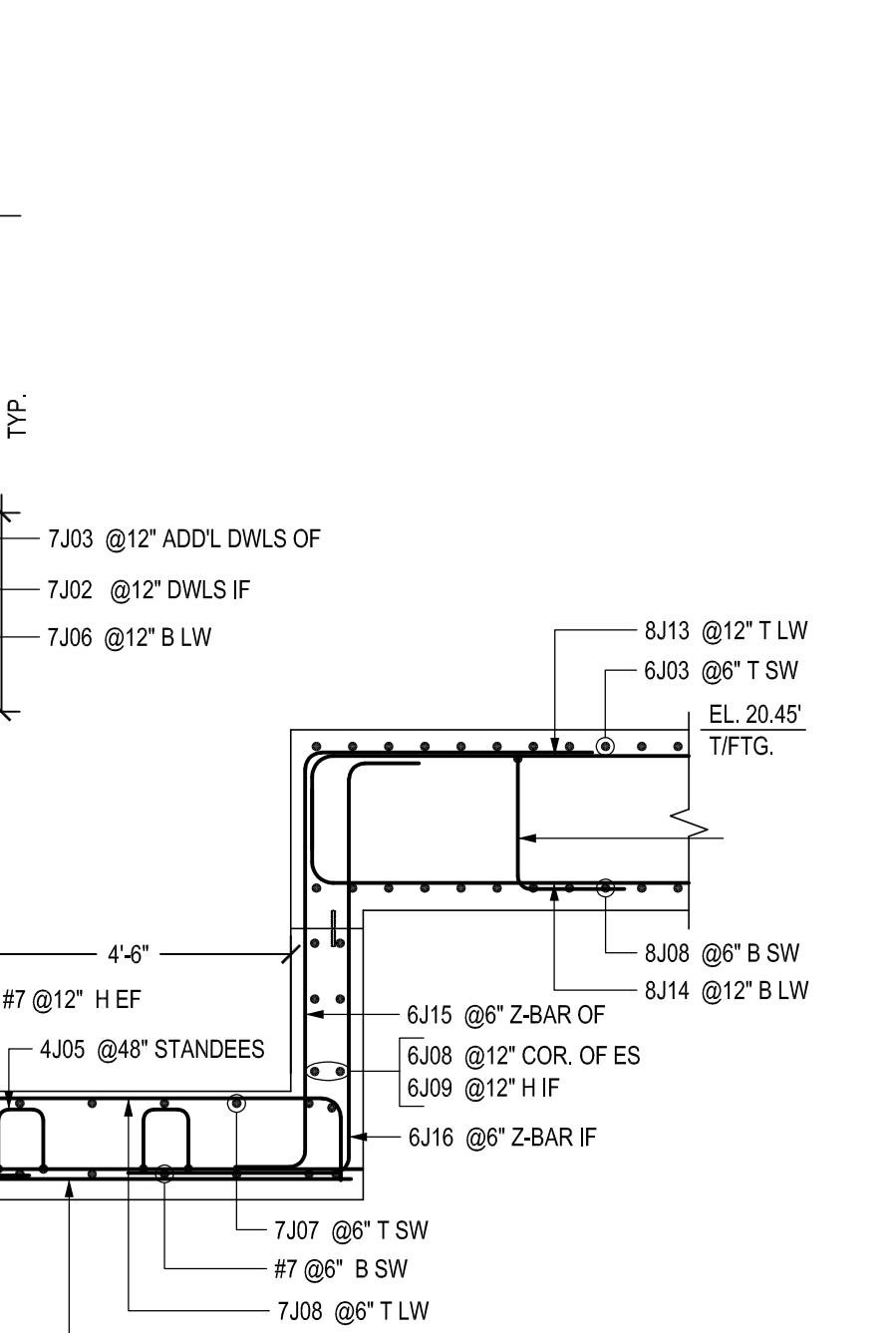
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E - 3/8"=1'-0"



SECTION  
SCALE - 3/8"=1'-0"  
REF E/20.2-01-202-8

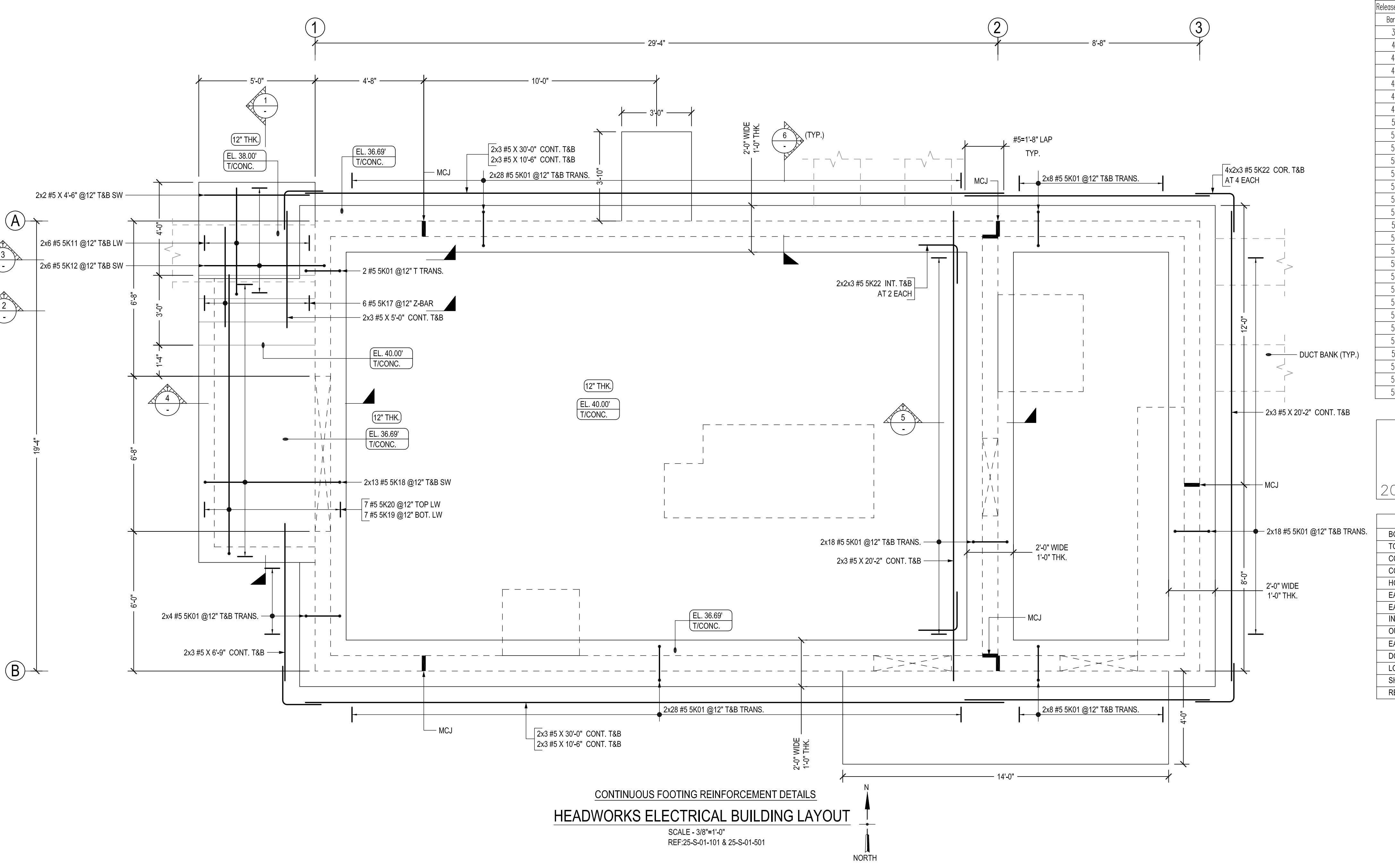
SCALE - 3/8"=1'-0"  
REF E/22 S-01 200-8



**SECTION** 6  
SCALE - 3/8"=1'-0"  
EE 22/22 2-01-504

CALE - 3/8"=1'-0"  
EE 22/22 2-21-504

PROJECT INFORMATION		SUBMITTAL RECORD		APPROVAL AUTHORITY:		FIELD USE:	
 <b>JOB#:</b> 2524240001		<b>CUSTOMER:</b> - <b>JOB NAME:</b> HILO WWTP <b>LOCATION:</b> COUNTY OF HAWAII		<b>JOB #:</b> 2524240001 <b>DETAILER:</b> MKR <b>EMAIL:</b> will@mcmasterrebar.com <b>PHONE:</b> (360)-346-6729		<b>DATE:</b> 07/03/25 <b>FOR:</b> APPROVAL <b>DATE:</b> . <b>FOR:</b> . <b>DATE:</b> . <b>FOR:</b> . <span style="font-size: 2em;">△</span> <b>DATE:</b> . <b>REF:</b> NOTED <b>DATE:</b> . <span style="font-size: 2em;">△</span> <b>DATE:</b> . <span style="font-size: 2em;">△</span> <b>DATE:</b> .	
<b>DRAWING:</b> RP-17						<b>DESCRIPTION:</b> GRIT BASINS – BASE SLAB REINFORCEMENT DETAILS	
						<b>CMC REBAR</b>  <small>MEMBER</small>	



BAR LIST									
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'
JK01	144	#3	3'-2 1/8"	20	1'-0"	0'-10"	X"	1'-4"	
4K01	4	#4	5'-2"	17	0'-7"	4'-0"	0'-7"		
4K02	5	#4	3'-8"	17	0'-7"	2'-6"	0'-7"		
4K03	1	#4	9'-4"	17	3'-6"	2'-4"	3'-6"		
4K04	15	#4	4'-8"	17	0'-7"	3'-6"	0'-7"		
4K05	5	#4	14'-8"	17	0'-7"	13'-6"	0'-7"		
4K06	1	#4	20'-6"	17	3'-6"	13'-6"	3'-6"		
5K01	226	#5	2'-8"	17	0'-7"	1'-6"	0'-7"		
5K02	39	#5	20'-0"	17	0'-7"	18'-10"	0'-7"		
5K03	11	#5	11'-7"	17	0'-7"	11'-0"			
5K04	133	#5	6'-1"	17	0'-9"	3'-8"	1'-8"		
5K07	24	#5	4'-4"	17	2'-2"	2'-2"			
5K08	6	#5	6'-1"	3	0'-10"	5'-3"			
5K09	4	#5	3'-4"	2	0'-10"	2'-6"			
5K10	2	#5	6'-3 1/8"	4	0'-10"	1'-8"	2'-1 X"	1'-8"	
5K11	12	#5	5'-5"	2	0'-10"	4'-7"			
5K12	12	#5	5'-9"	17	0'-7"	5'-2"			
5K13	18	#5	4'-8 1/2"	17	1'-6"	3'-0 X"			
5K14	18	#5	4'-1"	17	1'-8"	2'-5"			
5K15	10	#5	16'-10"	2	0'-10"	9'-11"			
5K16	5	#5	10'-6"	17	0'-7"	2'-6 X"	1'-8"		
5K17	6	#5	5'-0 X"	3	0'-10"	5'-10"	0'-7"		
5K18	26	#5	7'-0"	17	0'-7"	12'-0"			
5K19	7	#5	17'-7"	17	0'-7"	12'-5"			
5K20	7	#5	13'-0"	17	0'-7"	29'-2"			
5K21	21	#5	30'-0"	2	0'-10"	1'-8"	1'-8"		
5K22	36	#5	3'-4"	17	0'-7"	2'-7"			
5K23	6	#5	4'-3"	3	0'-10"	1'-2 X"	2'-3 X"	3'-11 X"	
5K24	6	#5	4'-0"	2	0'-10"	2'-4"			

2020

Bar list produced by RebarCAD

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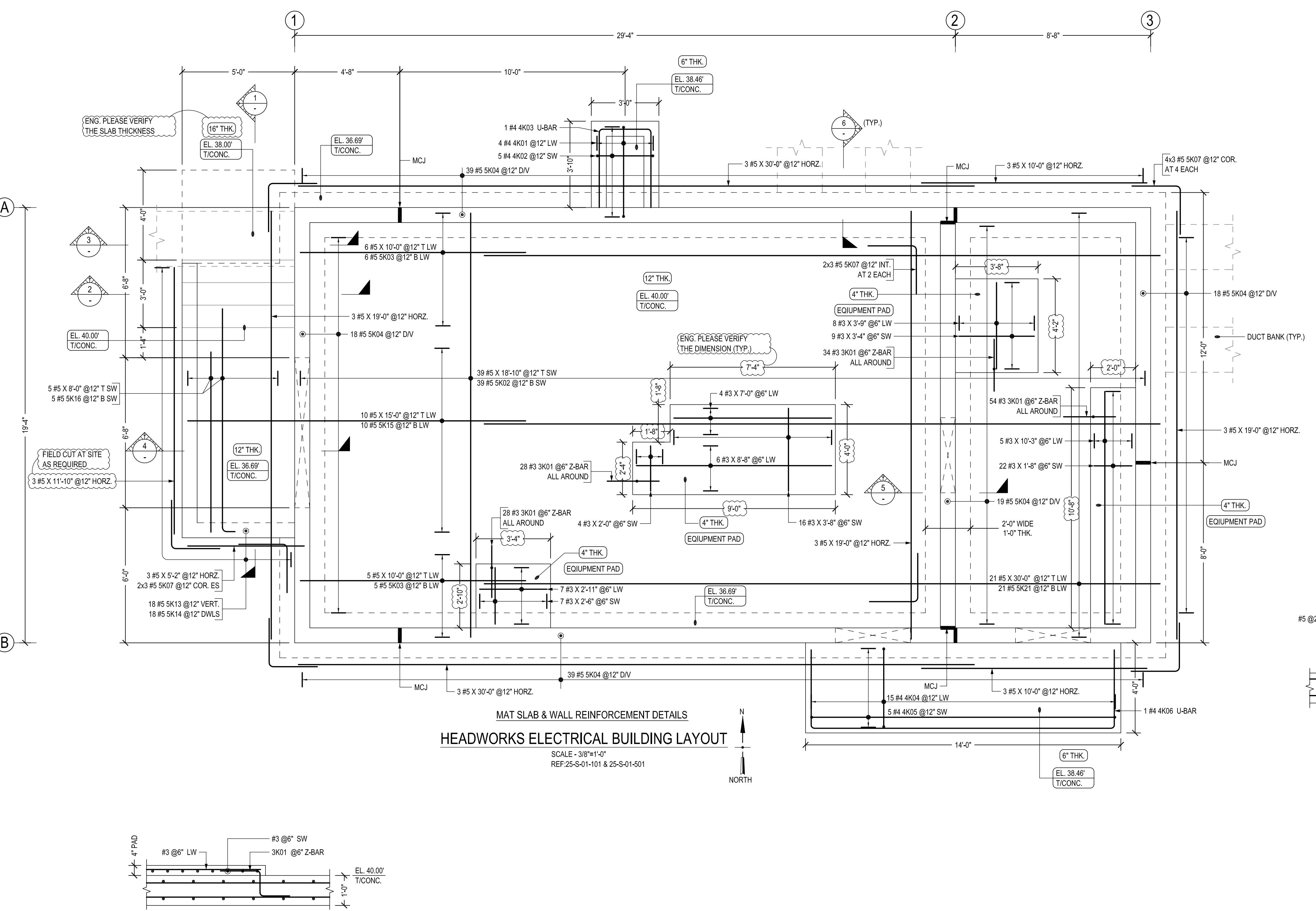
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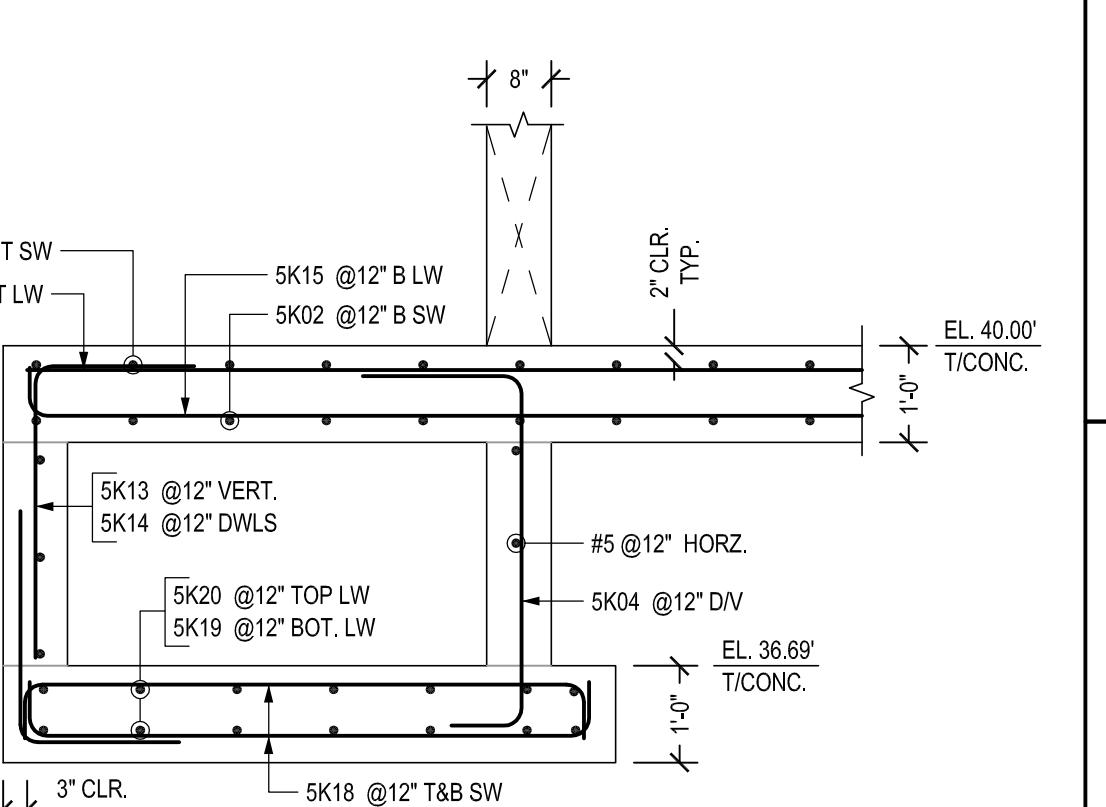
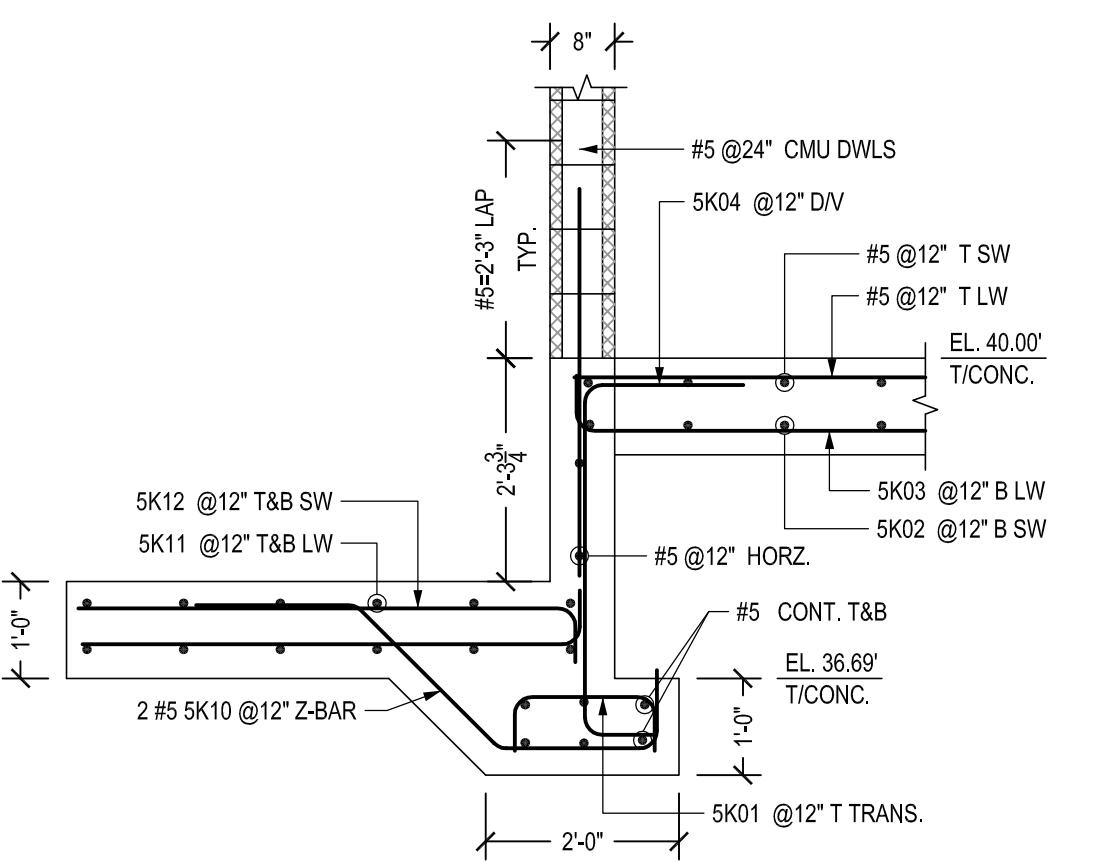
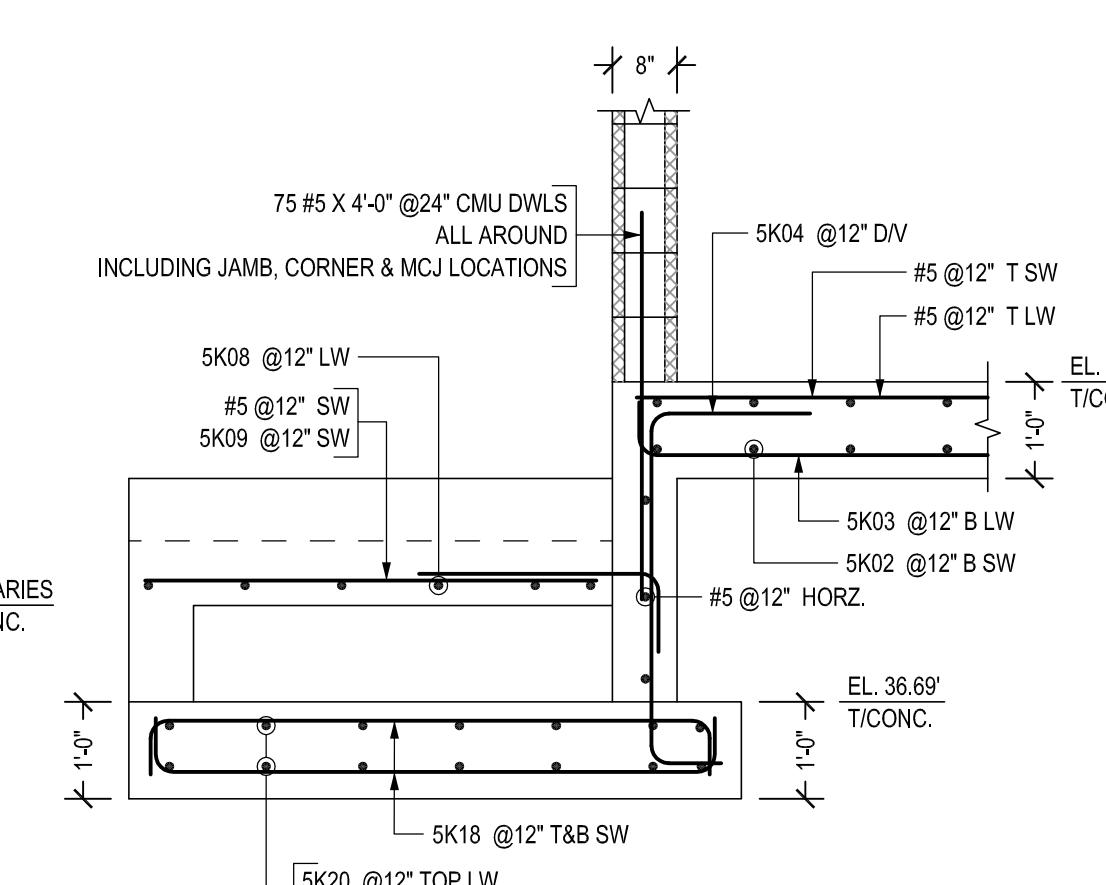
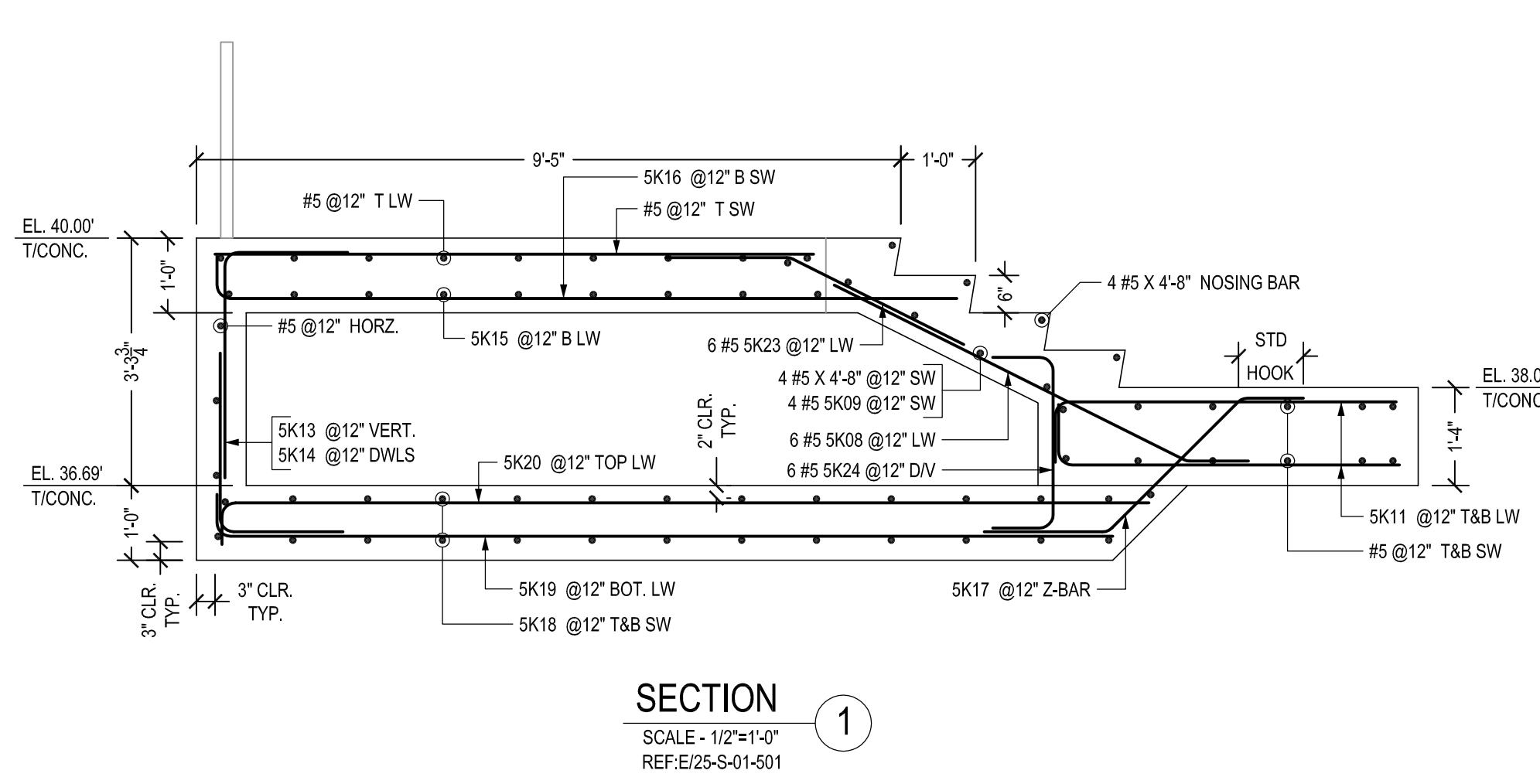
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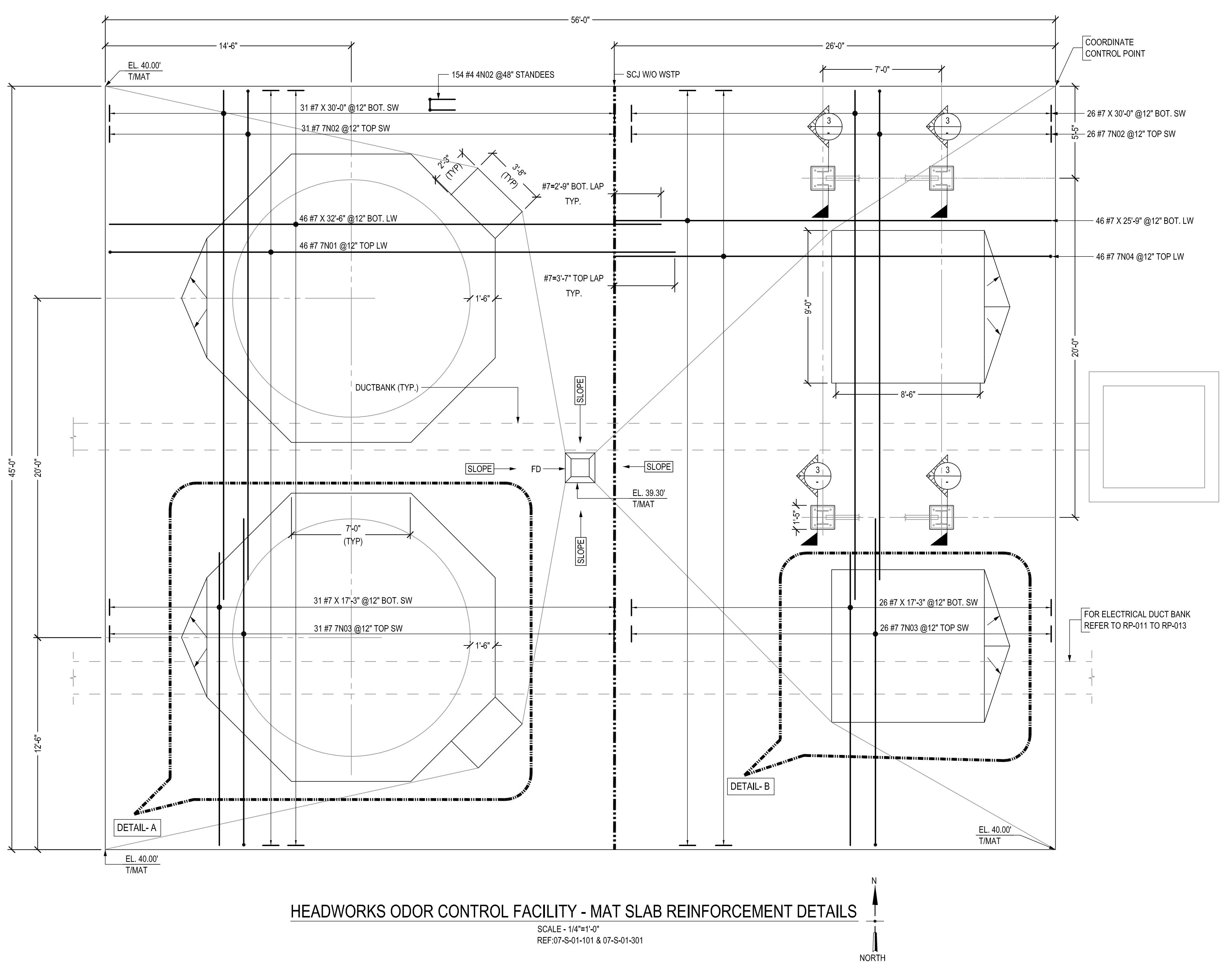


## TYPICAL EQUIPMENT HOUSEKEEPING PAD DETAILS

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SCALE - 1/2"=1'-0"  
REF:S350/00-T-03-708

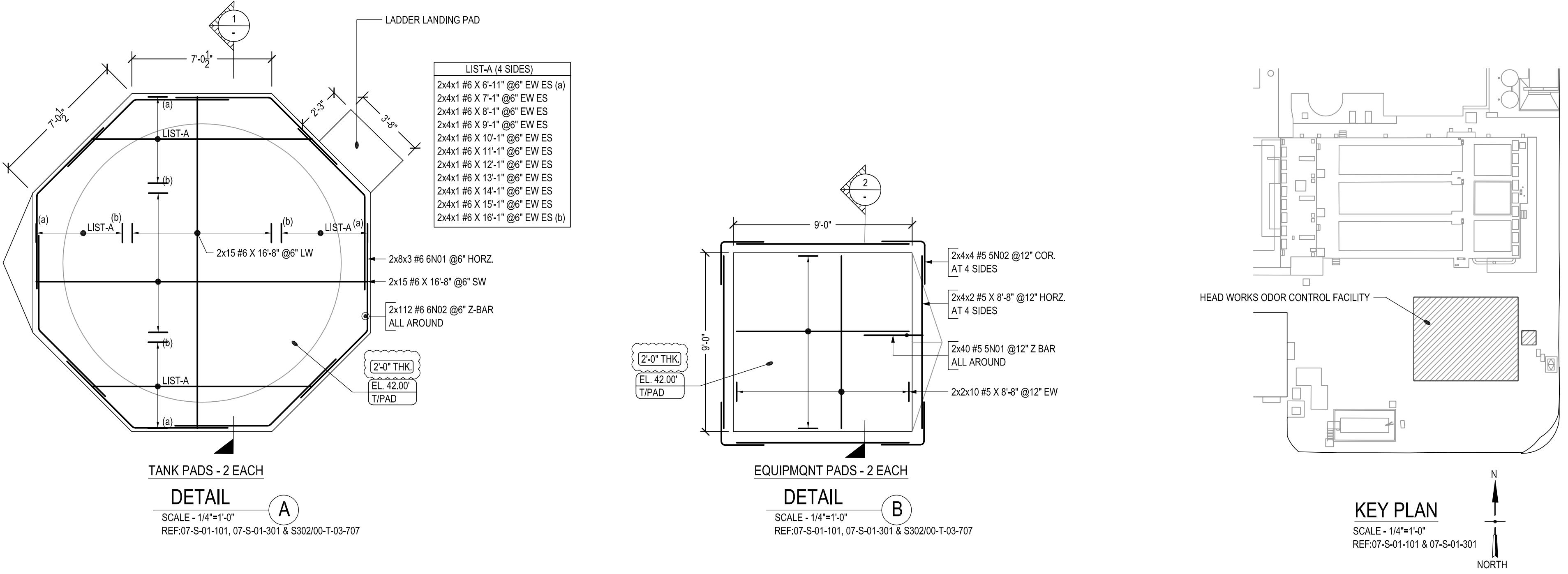




HEADWORKS ODOUR CONTROL FACILITY - MAT SLAB REINFORCEMENT DETAILS

SCALE - 1/4"=1'-0"  
REF:07-S-01-101 & 07-S-01-301

NORTH

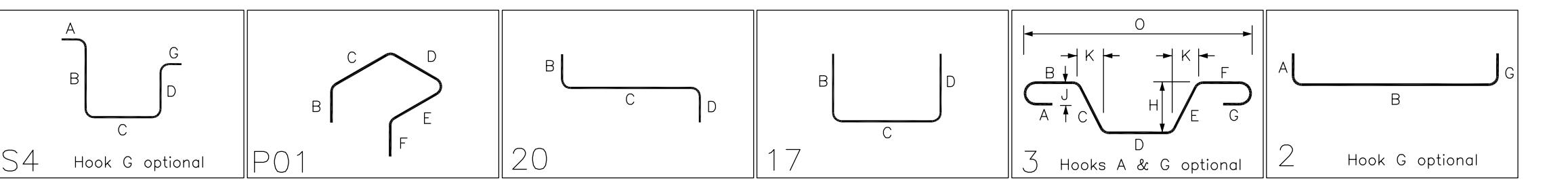


BAR LIST									
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'
4N01	16	#4	4'-7 1/2"	S4	0'-4 1/2"	1'-4 1/2"	1'-2"	1'-4 1/2"	0'-4 1/2"
4N02	154	#4	6'-4 1/2"	P01	1'-6"	1'-4 1/2"	0'-8"	1'-4 1/2"	1'-6"
5N01	80	#5	6'-4"	20	0'-10"	3'-4"	2'-2"		
5N02	32	#5	4'-4"	17	2'-2"	2'-2"			
6N01	48	#6	9'-5 1/2"	3	4'-9"	4'-8 1/2"			
6N02	224	#6	6'-9 1/2"	20	1'-0"	4'-8 1/2"			
7N01	46	#7	34'-6"	2	1'-2"	33'-4"			
7N02	57	#7	30'-0"	2	1'-2"	28'-10"			
7N03	57	#7	20'-5"	2	1'-2"	19'-3"			
7N04	46	#7	26'-11"	2	1'-2"	25'-9"			

Bar list produced by RebarCAD 2020.0

FIELD USE:  
THIS DRAWING IS TO BE USED IN CONSTRUCTION / STRUCTURAL  
AND ARCHITECTURAL DOCUMENTS TO FACILITATE PLACEMENT  
OF REINFORCING BARS ONLY. DO NOT USE THIS DRAWING  
FOR CONTRACT DOCUMENTS, APPROVALS, CONFLICTS OR ERRORS  
IN THE CONTRACT DOCUMENTS. APPROVALS, CONFLICTS OR ERRORS  
SHOULD BE SUBMITTED TO THE OWNER FOR REVIEW.  
DRAWINGS ARE TO BE USED AS REFERENCE ONLY.

CONTRACTOR'S RESPONSIBILITY:  
THIS DRAWING IS FOR INFORMATION ONLY. NO WARRANTY  
OR GUARANTEE IS MADE AS TO THE ACCURACY OF THE  
DRAWINGS. THE CONTRACTOR AGREES TO HOLD CMC REBAR  
HARMLESS FROM ANY AND ALL CLAIMS, ACTIONS, OR  
CAUSES OF ACTION ARISING OUT OF THE USE OF THESE  
DRAWINGS. CMC REBAR ASSUMES NO LIABILITY FOR DIMENSIONAL  
ERRORS IN THE LAYOUT OR THE BUILDING OR FORMS.



#### LAP SCHEDULE

REF: (S101000-T03-701) (FOR FOUNDATION)	
SIZE	4000 PSI
TOP	OTHERS
#3	20"
#4	26"
#5	30"
#6	43"
#7	50"
#8	56"
#9	62"
#10	69"
	54"

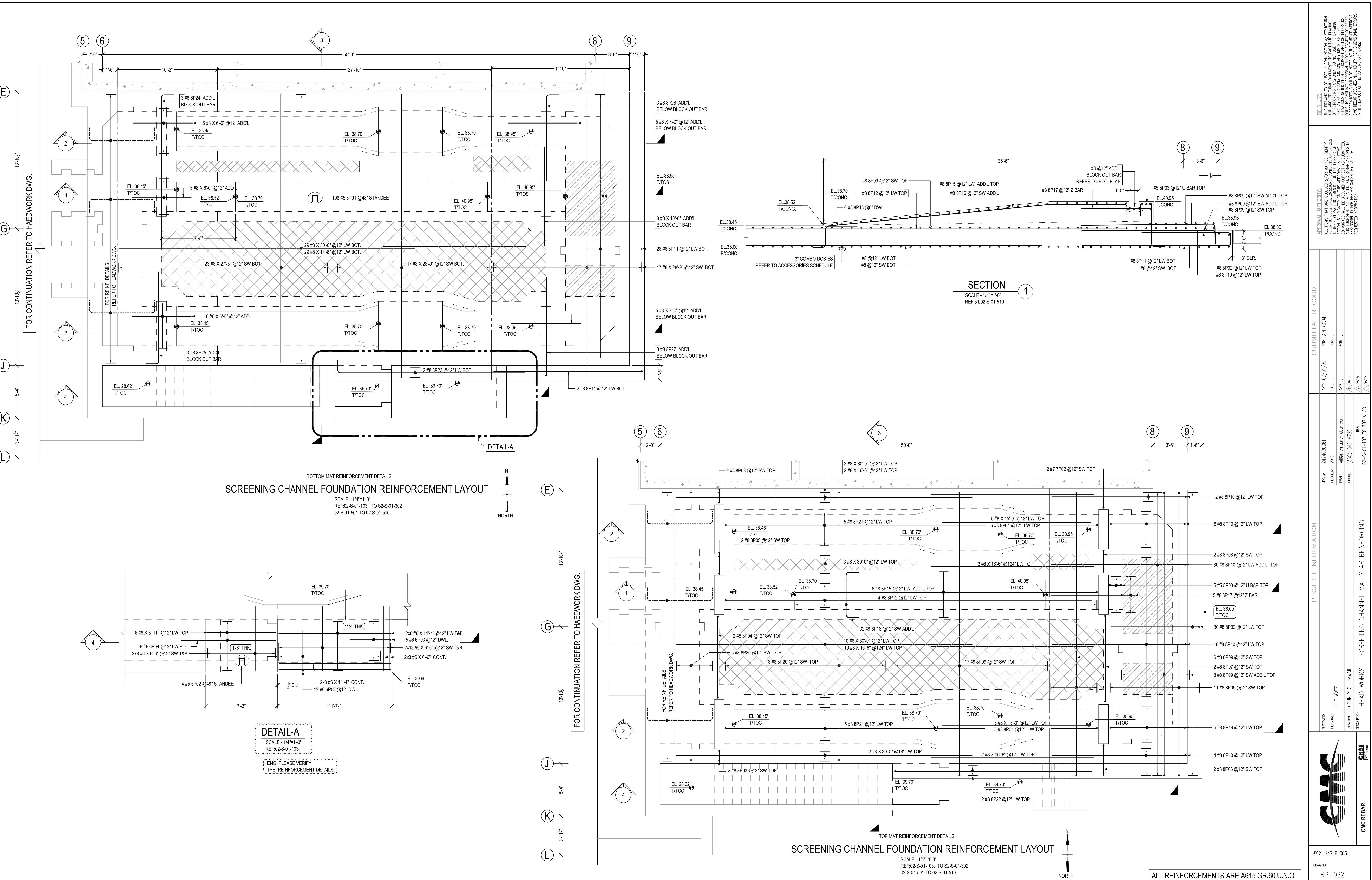
#### ABBREVIATIONS

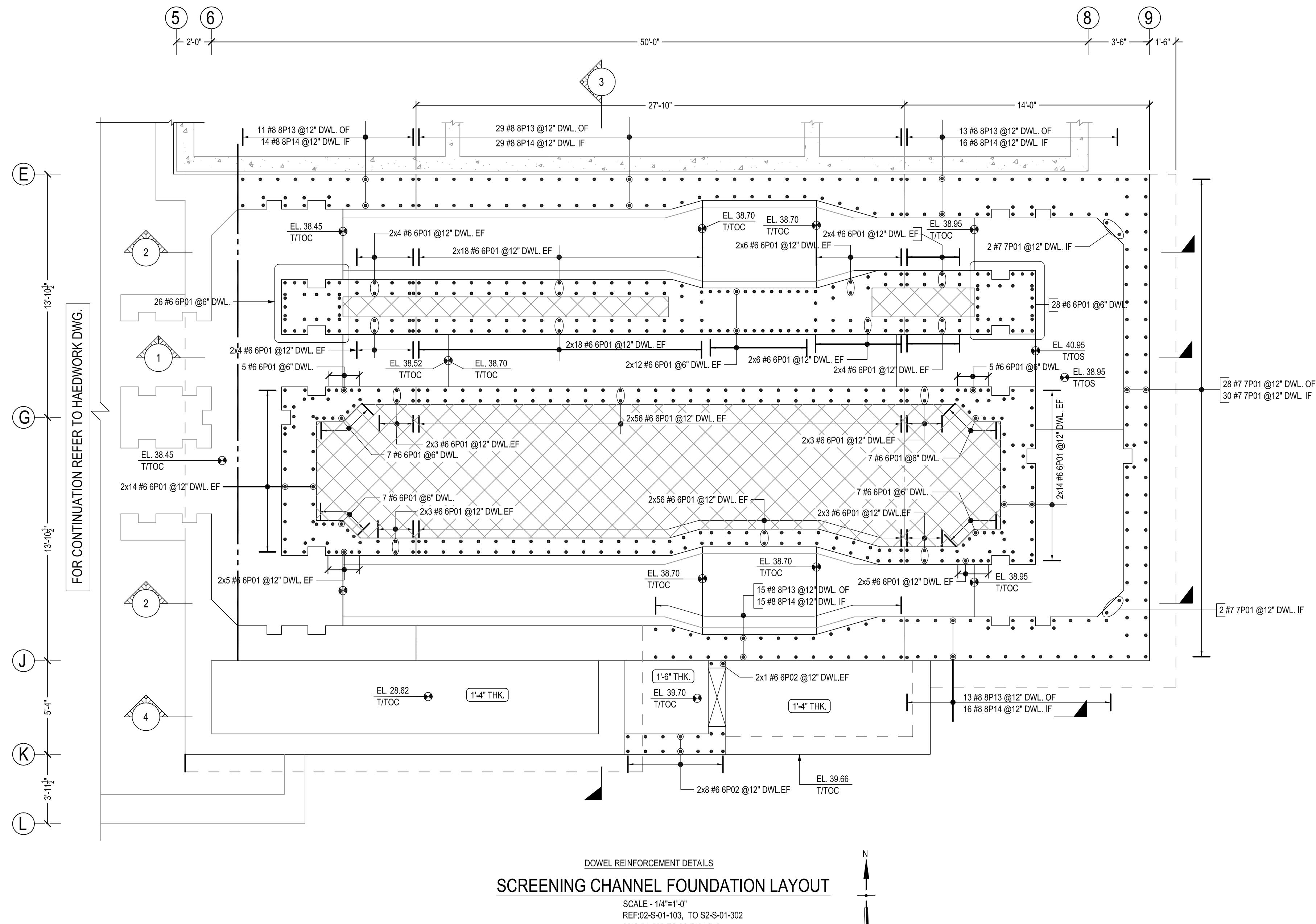
BOTTOM	BOT.
TOP&BOTTOM	T&B
CORNER BAR	COR
VERTICAL	VERT.
HORIZONTAL	HORZ.
EACH WAY	EW
EACH SIDE	ES
LONG WAY BAR	LW
SHORT WAY BAR	SW
REFERENCE	REF.

#### ACCESSORIES

HEIGHT	QUANTITY
3" COMBO DOBIES (5000 PSI)	155 NOS. @ 4'-0" C.C.

PROJECT INFORMATION		DATE: 07/31/25	FOR APPROVAL
Customer: -	Detailer: WKR	DATE: .	FOR: .
Job Name: HILO WTP	Email: will@cmcrebar.com	DATE: .	FOR: .
Location: COUNTY OF HAWAII	Phone: (360)-346-6729	DATE: .	FOR: .
SECTION 1			
SCALE: 1/2"=1'-0" REF:07-S-01-301 & S314/00-T-03-707			
SECTION 2			
SCALE: 1/2"=1'-0" REF:07-S-01-301 & S302/00-T-03-707			
SECTION 3			
SCALE: 1/2"=1'-0" REF:07-S-01-301			
ALL REINFORCEMENTS ARE A615 GR.60 U.NO			
DRAWING: RP-021			



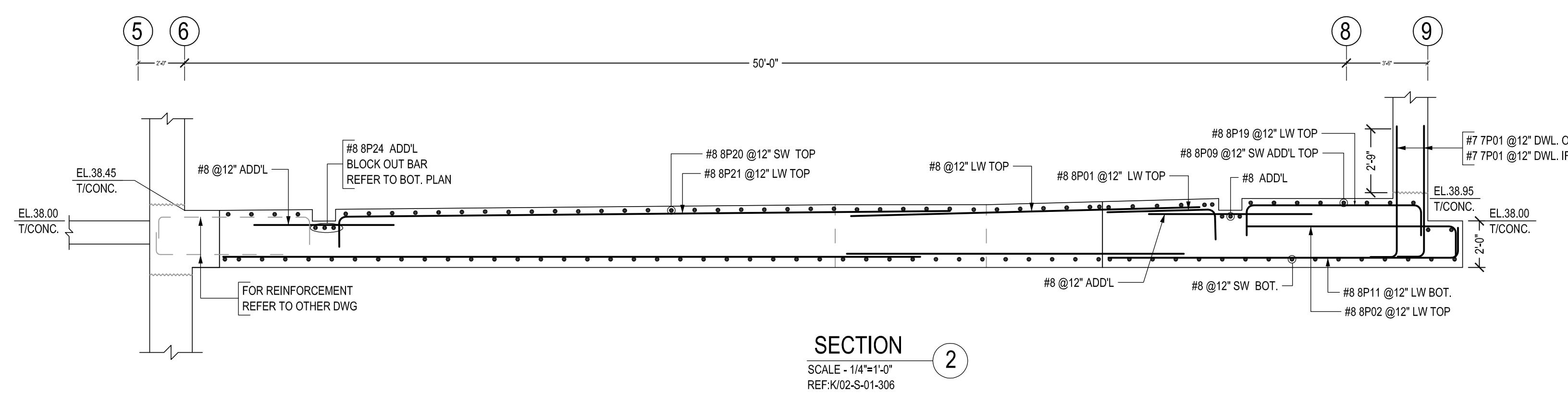


# DOWEL REINFORCEMENT DETAILS

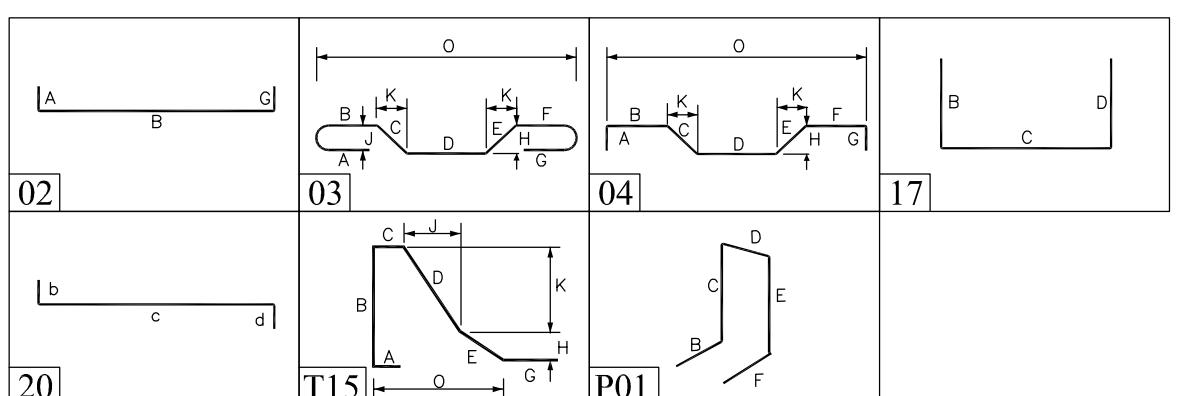
## SCREENING CHANNEL FOUNDATION LAYOUT

SCALE - 1/4"=1'-0"  
REF:02-S-01-103, TO S2-S-01-302  
02 S 01 501 TO 02 S 01 510

T



**SECTION**  
SCALE - 1/4"=1'-0"  
REF:K02-S-01-306



## LAP SCHEDULE

REF;S110/00-T-03-701		
SIZE	4000 PSI	
	TOP	OTHERS
#4	20"	16"
#5	26"	20"
#6	30"	24"
#7	43"	33"
#8	50"	38"
#9	56"	42"
#10	62"	48"

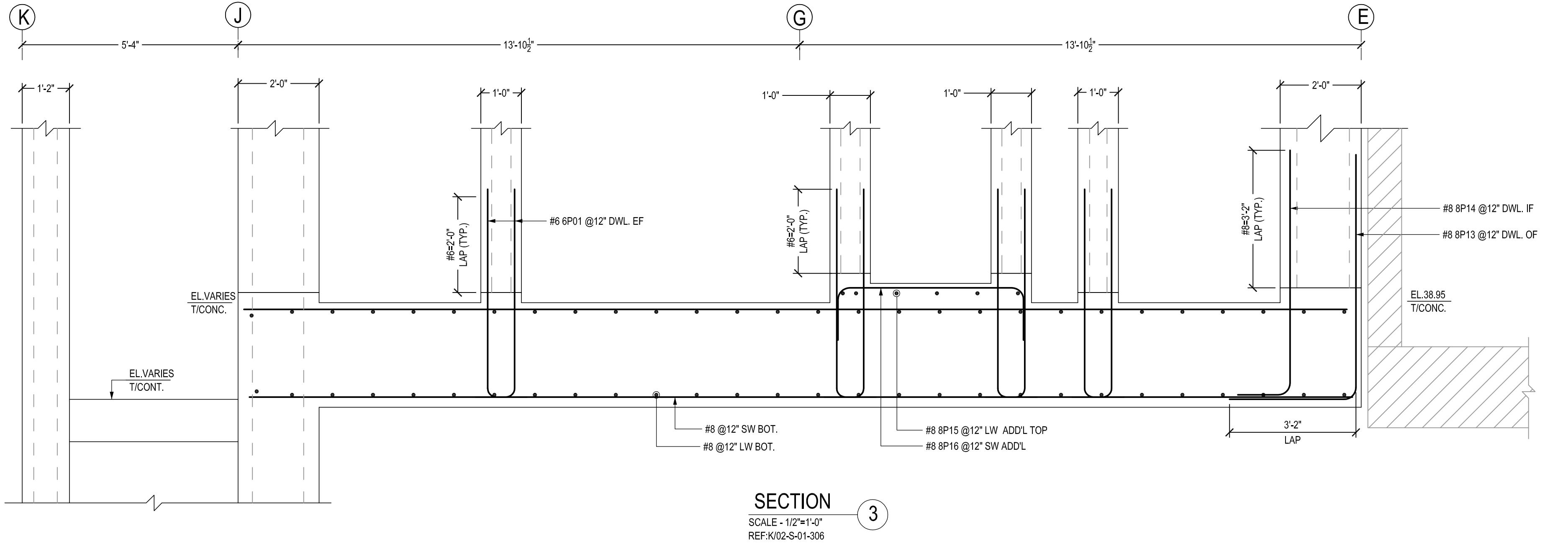
## ABBREVIATIONS

OM	BOT.
BOTTOM	T&B
NUOUS	CONT.
BAR	-
ER BAR	COR.
CAL	VERT.
ONTAL	HORZ.
UPS	STPS.
WAY	EW
FACE	EF
FACE	IF
R FACE	OF
SIDE	ES
END	EE
L	DWL.
L/VERTICAL	D/V
VERSE	TRANS.
WAY BAR	LW
T WAY BAR	SW
& EPOXY	D&E
ENCE	REE

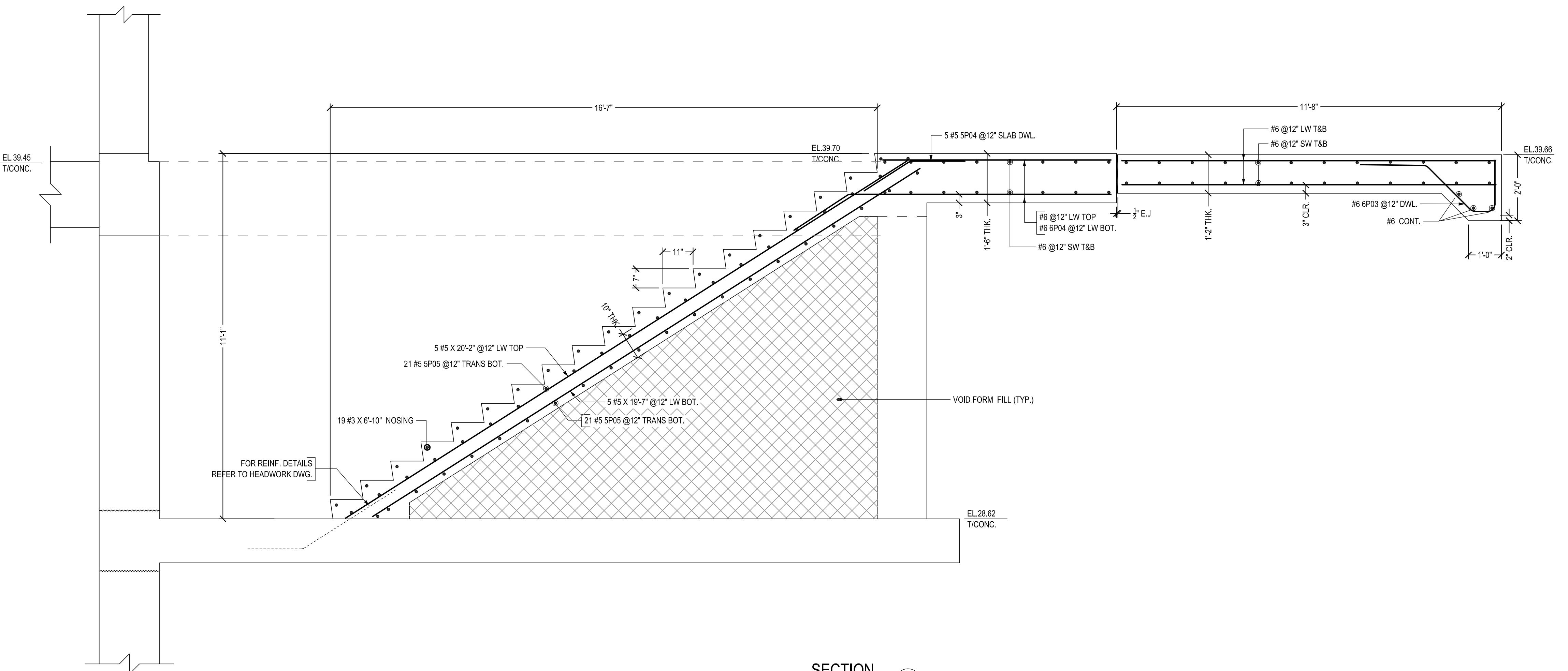
## ACCESSORIES

ACCESSORIES	
HT	QUANTITY
DOBIES (5000 PSI)	120 NOS. @4'-0" C/C.

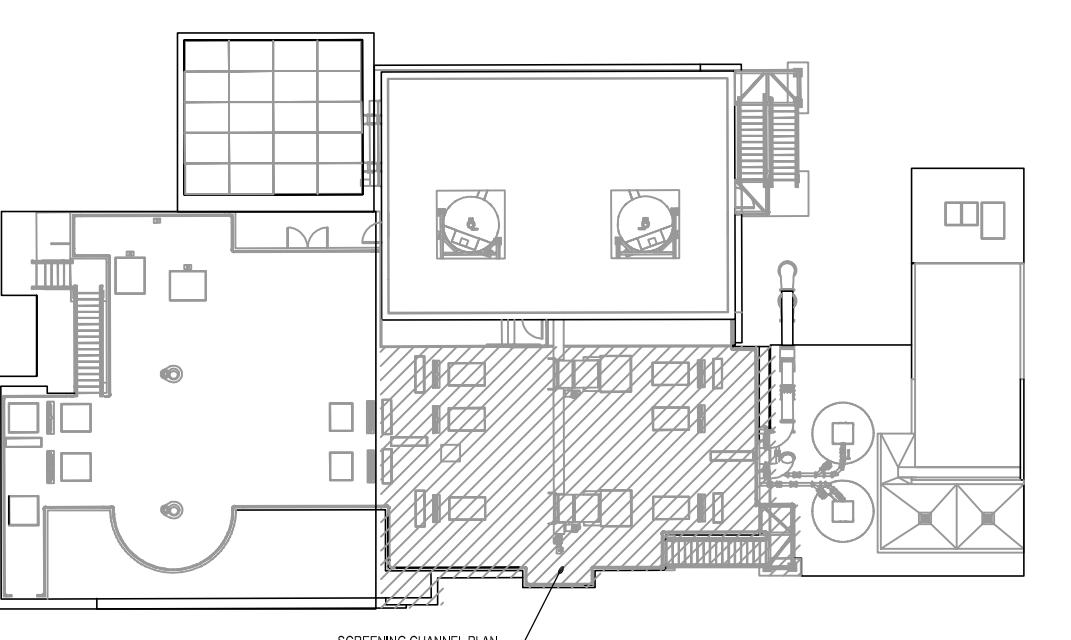
PROJECT INFORMATION		SUBMITTAL RECORD	
 <b>JOB#:</b> 2424620061 <b>DRAWING:</b> RP-023		<b>DATE:</b> 07/31/25 <b>FOR:</b> APPROVAL <b>JOB NAME:</b> HILO WWTP <b>LOCATION:</b> COUNTY OF HAWAII <b>DESCRIPTION:</b> HEAD WORKS – SCREENING CHANNEL MAT SLAB REINFORCING	<b>JOB #:</b> 2424620061 <b>DETAILER:</b> MKR <b>EMAIL:</b> will@nmcmasterrebar.com <b>PHONE:</b> (360)-346-6729 <b>REF:</b> 02-S-01-103 TO 307 & 501 <b>DATE:</b> . <b>DATE:</b> . <b>DATE:</b> .
<b>APPROVAL AUTHORITY:</b> ALL ITEMS THAT ARE CLOUDED &/OR MARKED "VERIFY" REFER TO QUESTIONS, OMISSIONS, CONFLICTS OR ERRORS IN THE CONTRACT DOCUMENTS. UNLESS CORRECTIVE ACTION IS INDICATED ON THIS APPROVAL, ALL ITEMS SO MARKED WILL BE ASSUMED CORRECT AS SUBMITTED AND FURNISHED AS DETAILED. CMC REBAR ASSUMES NO RESPONSIBILITY FOR ERRORS CAUSED BY LACK OF REQUESTED INFORMATION.			
<b>FIELD USE:</b> THIS DRAWING TO BE USED IN CONJUNCTION w/ STRUCTURAL AND ARCHITECTURAL DOCUMENTS TO FACILITATE PLACING OF REINFORCING BARS ONLY. DO NOT USE THIS DRAWING FOR LAYOUT OR CONSTRUCTION. ANY DIMENSIONS OR ELEVATIONS NOTED IN THIS DOCUMENT ARE FOR REFERENCE ONLY, TO FACILITATE APPROVAL &/OR PLACEMENT OF REBAR. CMC REBAR ASSUMES NO LIABILITY FOR DIMENSIONAL ERRORS IN THE LAYOUT OF THE BUILDING OR FORMS.			



SECTION  
SCALE - 1/2"=1'-0"  
REF:K/02-S-01-306



SECTION  
SCALE - 1/2"=1'-0"  
REF:02-S-01-307, 49/02-S-01-510



KEY PLAN  
SCALE - N.T.S.  
REF:02-M-01-105

ALL REINFORCEMENTS ARE A615 GR.60 U.N.O.

Customer: JOB NAME: LOCATION: RESPONSIBILITY:	PROJECT INFORMATION		SUBMITTAL RECORD	
	Job #:	2424620061	Date: 07/31/25	For: APPROVAL
DETAILS: MNR EMAIL: will@cmcrebar.com PHONE: (360) 346-6729	DATE: . DATE: . △ DATE: . △ DATE: .	FOR: . FOR: . △ DATE: . △ DATE: .		
CNC REBAR				
CMC REBAR				
FIELD USE: THIS DRAWING IS TO BE USED IN CONSTRUCTION / STRUCTURAL AND ARCHITECTURAL DOCUMENTS TO FACILITATE PLACEMENT OF REINFORCING BARS ONLY. DO NOT USE THIS DRAWING ELEVATIONS NOTED IN THE DOCUMENT ARE FOR REFERENCE ONLY. TO FACILITATE PLACEMENT, CMC REBAR RESERVES THE RIGHT TO MAKE CHANGES AS NECESSARY. CMC REBAR ASSUMES NO LIABILITY FOR DIMENSIONAL ERRORS IN THE LAYOUT OR THE BUILDING OR FORMS.				