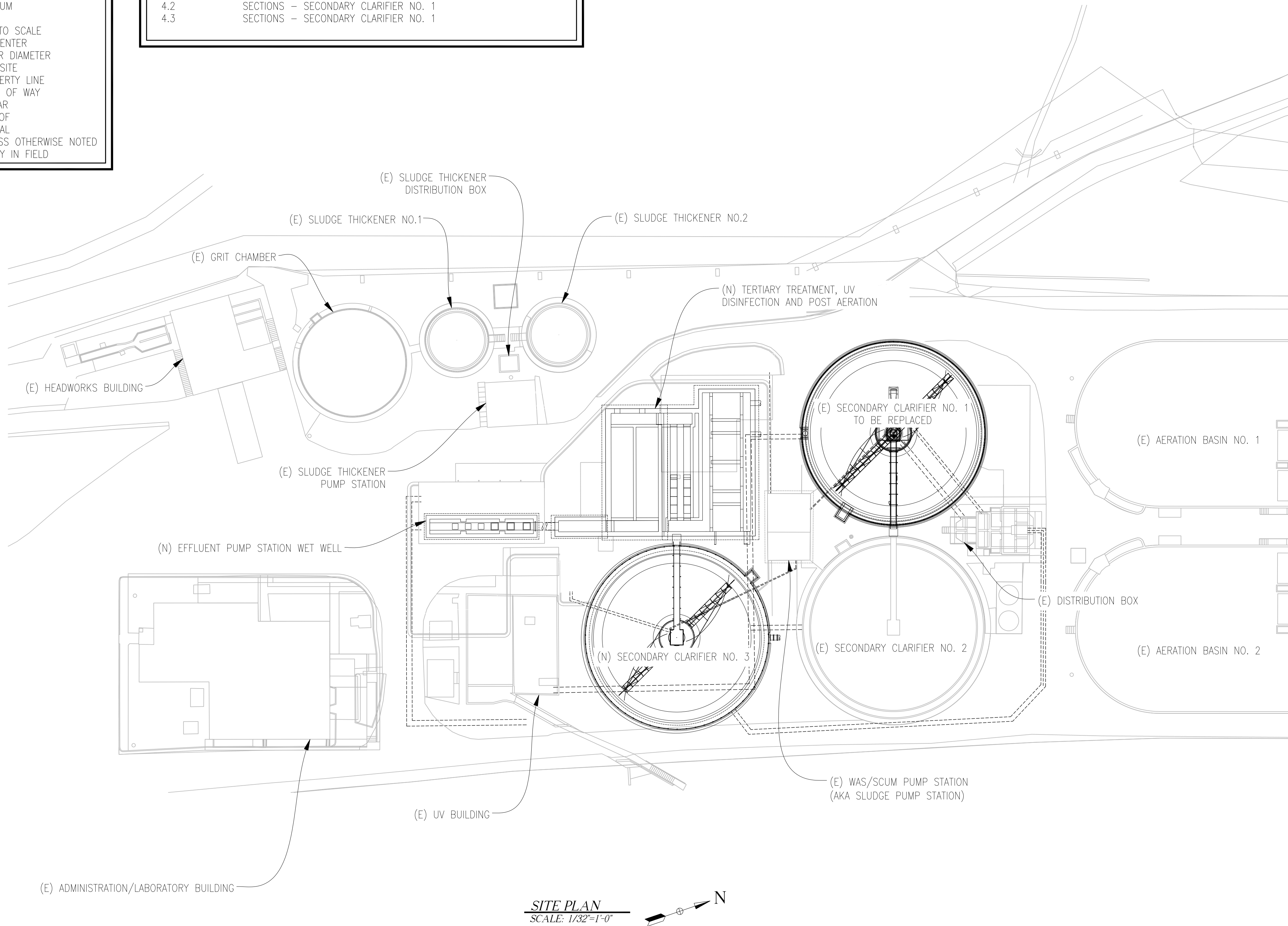


- NOTES:**
- SHORING DESIGN IS BASED ON SOILS CONSISTING OF MEDIUM DENSE SAND UNDERLAIN BY HARD LIMESTONE ROCK, AS OUTLINED IN THE BORELOGS PROVIDED BY THE CONTRACTOR. CONTRACTOR'S COMPETENT PERSON SHALL CONFIRM SITE SOILS AND CONTACT ENGINEER IF DIFFERING SOIL CONDITIONS ARE ENCOUNTERED.
 - PROVIDE ACCESS, BARRICADING, AND FALL PROTECTION, IN ACCORDANCE WITH ALL OSHA GUIDELINES.
 - STEEL BEAMS TO BE ASTM A572 GR. 50 OR A992 STEEL, MIN Fy = 50 KSI. STEEL PLATES AND STEEL ANGLE TO BE ASTM A36, MIN Fy = 36 KSI. STEEL PIPE TO BE ASTM A53 GR. B, MIN Fy = 35 KSI.
 - TIMBER LAGGING SHALL BE ROUGH-CUT DOUGLAS FIR NO. 2 OR APPROVED EQUAL. LAGGING SHALL BE CUT SO THAT IT BEARS AT LEAST 3" ON FLANGE OF EACH SUPPORTING PILE, AND SHALL BE RIGIDLY SECURED IN PLACE BEHIND PILE FLANGES SO THAT IT CANNOT BE DISLODGED. CLEAT LAGGING TO PILE FLANGES WITH 16d NAILS AS NEEDED.
 - COMPLETELY INSTALL WALES AND STRUTS PRIOR TO EXCAVATION PROCEEDING BEYOND TWO FEET BELOW THE VERTICAL CENTERLINE OF THE WALE LEVEL.
 - CONTRACTOR RESPONSIBLE FOR SUPPORT OF WALES AT ELEVATIONS SHOWN.
 - SHORING MUST BE PROPERLY INSTALLED PRIOR TO WORKERS ENTERING EXCAVATION. WORKERS MAY ONLY ENTER, EXIT, AND WORK WITHIN SHORED AREAS.
 - PRE-DRILL 36" DIAMETER HOLES FOR PILES AND BACKFILL WITH 1,500 PSI (MIN) COMPRESSIVE STRENGTH CONCRETE.
 - WELDING FILLER METAL SHALL HAVE A MINIMUM TENSILE STRENGTH OF 70 KSI. ALL WELDING SHALL BE PERFORMED BY A CERTIFIED WELDER IN ACCORDANCE WITH LATEST EDITION OF THE AWS D1.1.
 - ALL VOIDS BETWEEN THE EXCAVATED SOIL AND THE FACE OF THE SHORING SYSTEM MUST BE BACKFILLED WITH EXCAVATED SOIL OR OTHER APPROVED BACKFILL PRIOR TO WORKERS ENTERING THE EXCAVATION. FOR EXCAVATIONS ADJACENT TO TRAFFIC LOADING, ALL VOIDS SHALL BE BACKFILLED WITH SAND OR CLASS II AGGREGATE BASE MATERIAL.
 - STEEL SHAPES SHALL BE IN GOOD CONDITION, AND FREE OF ANY HOLES OR VISUAL DEFECTS. SPLICES IN WALERS ARE ACCEPTABLE AS LONG AS THE JOINT HAS NO KINK OR BEND AND PRE-QUALIFIED COMPLETE JOINT PENETRATION WELDS ALL AROUND THE SPLICE ARE PROVIDED.
 - DURING REMOVAL OF SHORING, THE BACKFILL MATERIAL SHALL BE PLACED AND COMPACTED, SO IT HAS AT LEAST THE SAME STRENGTH AND DENSITY AS THE ORIGINAL SOIL. REFER TO PROJECT BORELOGS FOR ORIGINAL SOIL STRENGTH OR CONTACT SHORING ENGINEER.
 - ALL SOLDIER PILES SHALL BEAR FULLY AGAINST WALES. IF GAPS EXIST BETWEEN SOLDIER PILES AND WALES, PROVIDE SOLID PACKING (SHIMS/BLOCKING) ACROSS THE FULL HEIGHT OF THE WALE FLANGE WITH A MINIMUM WIDTH OF FOUR INCHES CENTERED ON THE PILE WEB TO FILL THE GAPS. THIS IS ONLY APPLICABLE AT LOCATIONS WHERE THIS IS NO WALER SUPPORT BEAM. AT WALER SUPPORT BEAM LOCATIONS, FOLLOW THE DETAILS SHOWN ON THE PLANS.
 - GROUNDWATER LEVEL MUST BE MAINTAINED AT OR BELOW THE MINIMUM LEVEL SHOWN ON THESE PLANS AT ALL TIMES. IF DEWATERING SYSTEM IS NECESSARY TO ACHIEVE THIS, IT IS THE CONTRACTOR'S RESPONSIBILITY FOR DEVELOPING, INSTALLING, AND MONITORING DEWATERING SYSTEM, AND VERIFYING THAT THE GROUNDWATER LEVEL BEHIND THE SHORING WALLS HAS BEEN LOWERED AT LEAST TO THE MINIMUM LEVEL SHOWN ON THESE PLANS AT ALL TIMES. IF CONTRACTOR IS UNABLE TO LOWER THE GROUNDWATER TO THE LEVEL SHOWN, CONTACT THE SHORING ENGINEER IMMEDIATELY.
 - D.H. CHARLES ENGINEERING, INC. WILL NOT SUPERVISE, DIRECT, CONTROL OR HAVE AUTHORITY OVER OR BE RESPONSIBLE FOR CONTRACTOR'S MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES OF CONSTRUCTION, OR THE SAFETY PRECAUTIONS AND PROGRAMS INCIDENT THERETO, OR FOR ANY FAILURE OF CONTRACTOR TO COMPLY WITH LAWS AND REGULATIONS APPLICABLE TO THE FURNISHING OR PERFORMANCE OF WORK.
 - VERIFY THE ACCURACY OF ALL DIMENSIONS FOR BOTH EXISTING AND PROPOSED WORK. VERIFY THAT REQUIRED CLEARANCES ARE OBTAINED PRIOR TO COMMENCEMENT OF THE WORK.
 - VERIFY THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING THE EXCAVATION.
 - D.H. CHARLES ENGINEERING, INC. BEARS NO RESPONSIBILITY OR LIABILITY FOR ANY SETTLEMENT, MOVEMENT, OR DAMAGE OF ANY KIND THAT MAY OCCUR TO SURROUNDING SOILS, EXISTING BUILDING STRUCTURES, OR UTILITIES DUE TO SHORING INSTALLATION, DEFLECTION, REMOVAL, OR OTHER CONSTRUCTION ACTIVITIES.
 - ADEQUACY OF EXISTING/NEW STRUCTURE (BUILT DURING PHASING OF EXCAVATION SHORING) TO UNDERGO SHORING OPERATIONS, AND TO SUPPORT SHORING AT LOCATIONS SHOWN HAS NOT BEEN VERIFIED BY D.H. CHARLES ENGINEERING, INC. AND IS THE RESPONSIBILITY OF OTHERS.
 - SHORING SHALL NOT ACTIVELY SUPPORT LOAD FOR LONGER THAN 1 YEAR. SHORING MAY BE ABANDONED IN PLACE.

ABBREVIATIONS:	
Ø	DIAMETER
B.O.	BOTTOM OF
CL/CL	CENTERLINE
E	EXISTING
EA	EACH
EL	ELEVATION
E.O.R.	ENGINEER OF RECORD
E.W.	EACH WAY
EMBED	EMBEDMENT
EQ	EQUAL
FT	FEET
GR	GRADE
I.D.	INNER DIAMETER
IN	INCHES
LB/LBS	POUND/S
M	METERS
MAX	MAXIMUM
MIN	MINIMUM
N	NEW
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
O.D.	OUTER DIAMETER
OPP	OPPOSITE
PL	PROPERTY LINE
R.O.W.	RIGHT OF WAY
SIM	SIMILAR
T.O.	TOP OF
TYP	TYPICAL
U.O.N.	UNLESS OTHERWISE NOTED
V.I.F.	VERIFY IN FIELD

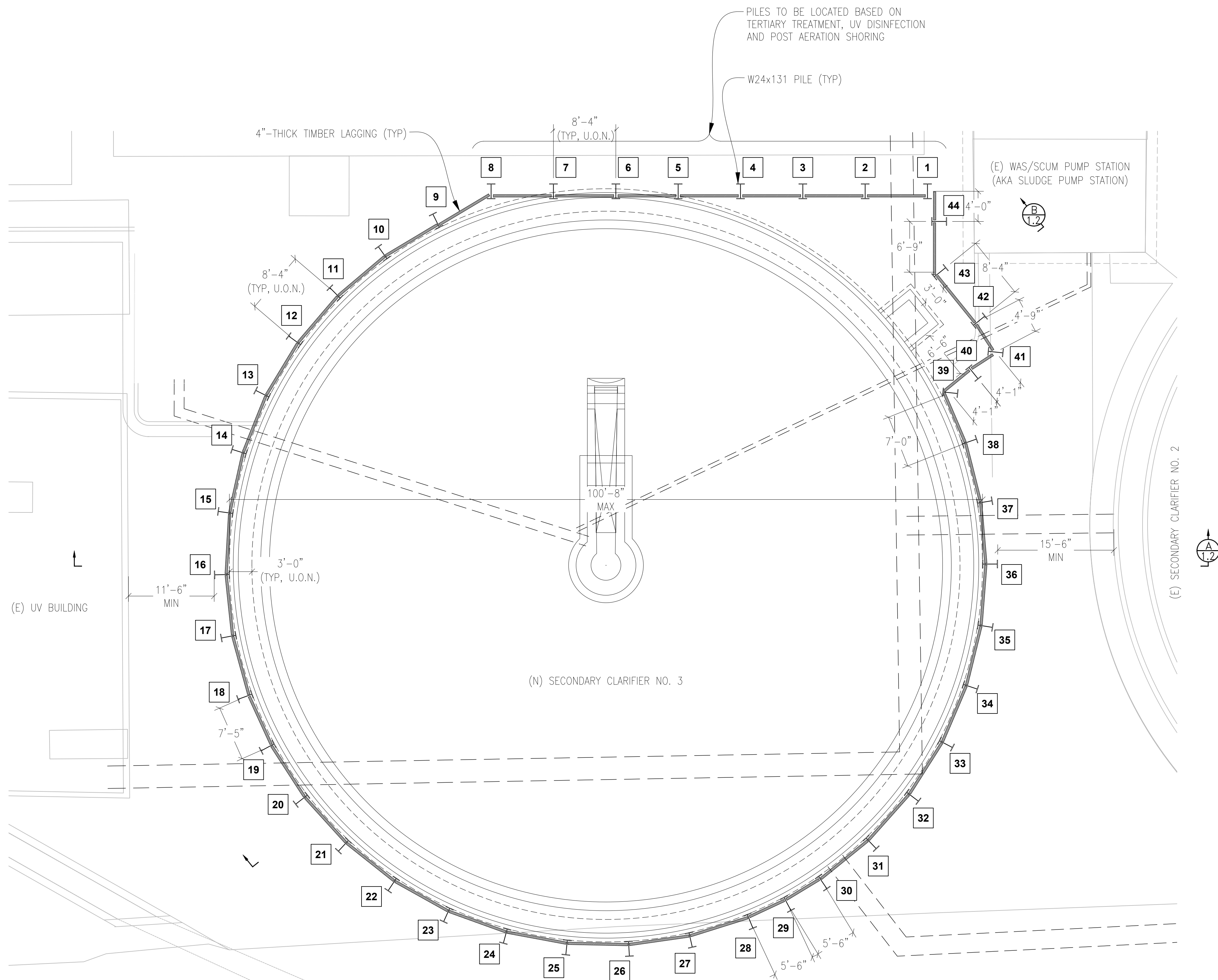
DRAWING INDEX:	
SHEET	DESCRIPTION
0.1	GENERAL NOTES/DRAWING INDEX/SITE PLAN
1.1	PLAN VIEW – SECONDARY CLARIFIER NO. 3
1.2	SECTIONS – SECONDARY CLARIFIER NO. 3
2.1	PLAN VIEW/SECTION – EFFLUENT PUMP STATION WET WELL
2.2	SECTIONS – EFFLUENT PUMP STATION WET WELL
2.3	DETAILS – EFFLUENT PUMP STATION WET WELL
3.1	PLAN VIEW – TERTIARY TREATMENT, UV DISINFECTION, POST AERATION
3.2	SECTIONS – TERTIARY TREATMENT, UV DISINFECTION, POST AERATION
3.3	SECTIONS – TERTIARY TREATMENT, UV DISINFECTION, POST AERATION
3.4	DETAILS – TERTIARY TREATMENT, UV DISINFECTION, POST AERATION
4.1	PLAN VIEW – SECONDARY CLARIFIER NO. 1
4.2	SECTIONS – SECONDARY CLARIFIER NO. 1
4.3	SECTIONS – SECONDARY CLARIFIER NO. 1



SITE PLAN
SCALE: 1/32"=1'-0"



REVISIONS	
NO.	DATE
24x36 SHEET IF THIS BAR IS NOT 1" DRAWING IS NOT TO SCALE	
SHORING DESIGN PLAN BENTONVILLE WATER RESOURCE RECOVERY FACILITY (WRRF) IMPROVEMENTS BENTONVILLE, AR CROSSLAND HEAVY CONTRACTORS	
CROSSLAND HEAVY CONTRACTORS 14149 E. ADMIRAL PLACE, TULSA, OK 74116 PHONE: (918) 438-2800 www.crossland.com	
D.H.C. D.H. CHARLES ENGINEERING, INC. 4706 Ikon Avenue Santa Rosa, CA 95405 (707) 537-5232 www.charlesengineering.com	
DATE:	2-28-25
DRAWN BY:	CMY
CHECKED BY:	NLB
SHEET	0.1
DRAWING NO.:	24-0729B
REV	0



PILE SCHEDULE					
PILE NO.	PILE SIZE	MIN PILE LENGTH (FEET)	TOP OF PILE ELEVATION (FEET)	MAX RETAINED HEIGHT (FEET)	MIN EMBEDDED LENGTH WITH CONCRETE (FEET)
1	W24x131	40	1138	16.63	18.37
2	W24x131	40	1138	16.63	18.37
3	W24x131	40	1138	16.63	18.37
4	W24x131	40	1138	16.63	18.37
5	W24x131	40	1138	16.63	18.37
6	W24x131	40	1138	16.63	18.37
7	W24x131	40	1138	16.63	18.37
8	W24x131	40	1138	16.63	18.37
9	W24x131	35	1133	16.63	18.37
10	W24x131	35	1133	16.63	18.37
11	W24x131	35	1133	16.63	18.37
12	W24x131	35	1133	16.63	18.37
13	W24x131	35	1133	16.63	18.37
14	W24x131	35	1133	16.63	18.37
15	W24x131	35	1133	16.63	18.37
16	W24x131	35	1133	16.63	18.37
17	W24x131	35	1133	16.63	18.37
18	W24x131	35	1133	16.63	18.37
19	W24x131	35	1133	16.63	18.37
20	W24x131	35	1133	16.63	18.37
21	W24x131	35	1133	16.63	18.37
22	W24x131	35	1133	16.63	18.37
23	W24x131	35	1133	16.63	18.37
24	W24x131	35	1133	16.63	18.37
25	W24x131	35	1133	16.63	18.37
26	W24x131	35	1133	16.63	18.37
27	W24x131	35	1133	16.63	18.37
28	W24x131	35	1133	16.63	18.37
29	W24x131	35	1133	16.63	18.37
30	W24x131	35	1133	16.63	18.37
31	W24x131	35	1133	16.63	18.37
32	W24x131	35	1133	16.63	18.37
33	W24x131	35	1133	16.63	18.37
34	W24x131	35	1133	16.63	18.37
35	W24x131	35	1133	16.63	18.37
36	W24x131	35	1133	16.63	18.37
37	W24x131	35	1133	16.63	18.37
38	W24x131	35	1133	16.63	18.37
39	W24x131	35	1133	16.63	18.37
40	W24x131	35	1133	16.63	18.37
41	W24x131	35	1133	16.63	18.37
42	W24x131	35	1133	16.63	18.37
43	W24x131	35	1133	16.63	18.37
44	W24x131	35	1133	16.63	18.37

REVISIONS

NO.	DATE

SHORING DESIGN PLAN

BENTONVILLE WATER RESOURCE RECOVERY FACILITY (WRRF)

IMPROVEMENTS

BENTONVILLE AR

CROSSLAND HEAVY CONTRACTORS

CROSSLAND

HEAVY CONTRACTORS

14149 E. ADMIRAL PLACE, TULSA, OK 74116

PHONE: (918) 438-2800 www.crossland.com

DHIC

D.H. CHARLES ENGINEERING, INC.

4706 Hoon Avenue

Santa Rosa, CA 95405

(707) 537-5232 www.charlesengineering.com

CERTIFICATE OF AUTHORIZATION

D.H. CHARLES ENGINEERING, INC.

No. 1475

ARKANSAS

STATE OF ARKANSAS

LICENSED PROFESSIONAL ENGINEER

W. R. GRIFFIN

DATE: 2-28-25

DRAWN BY: CMY

CHECKED BY: NLB

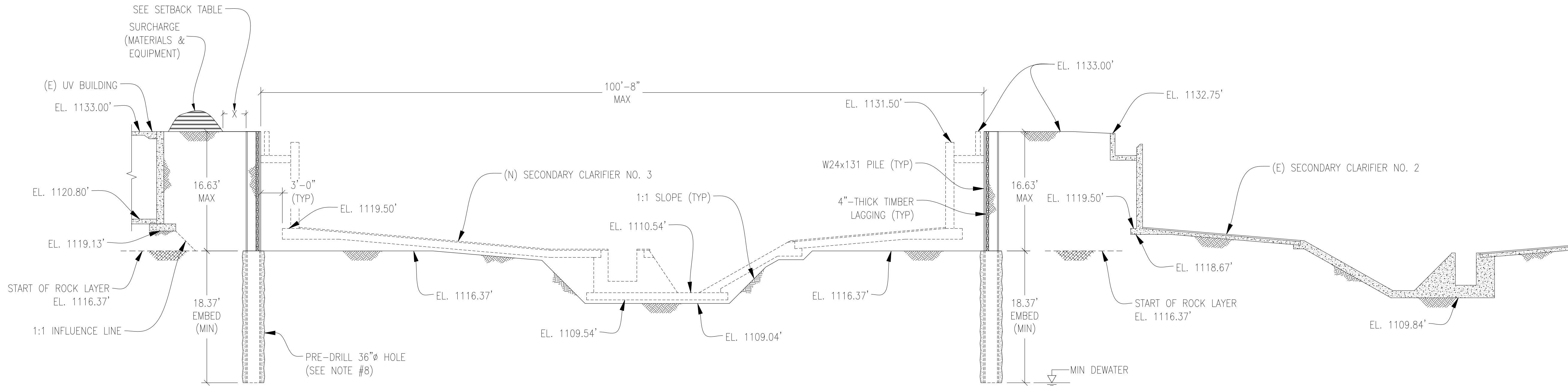
SHEET 1.1

DRAWING NO.: 24-0729B

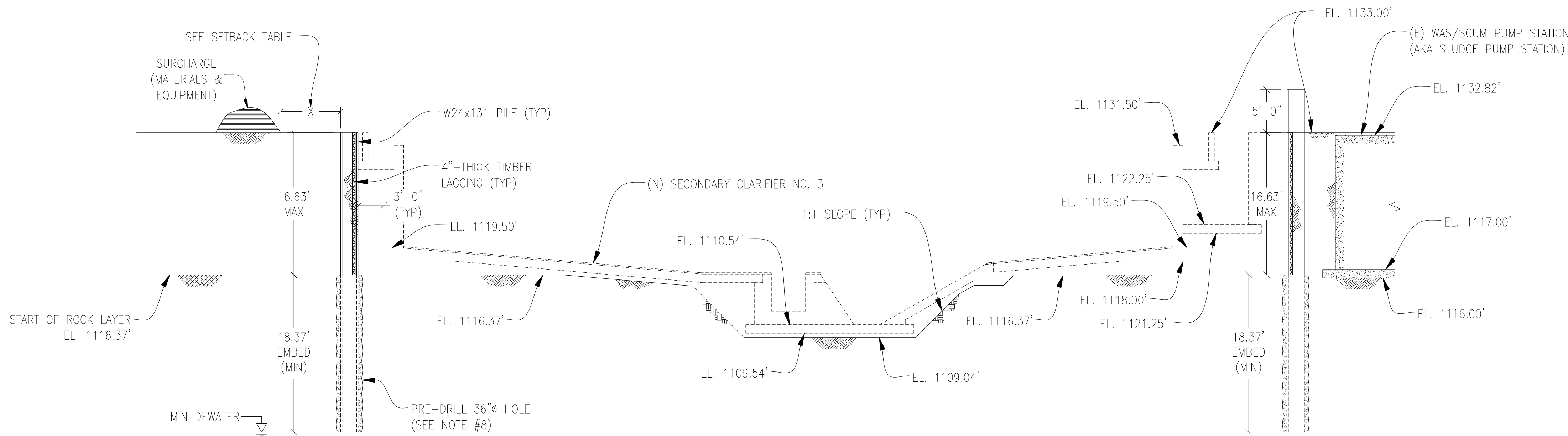
REV 0

SETBACK TABLE	
CRANE TO 30 TON MAX	X = 12'
CAT 325 EXCAVATOR	X = 7'
CAT 345 EXCAVATOR	X = 10'
CAT 365 EXCAVATOR	X = 12'
5 CY LOADER	X = 5'
DUMPTRUCK	X = 5'
SPOIL PILE (4'-TALL)	X = 6'
CONCRETE TRUCK	X = 8'
RAILROAD TRACKS	X = 100'
STREET TRAFFIC	X = 15'

ABOVE LISTED SETBACKS SHALL BE MAINTAINED A DISTANCE "X" FROM ALL EDGES OF SHORING AND ALL TOPS OF SLOPES AT ALL TIMES.

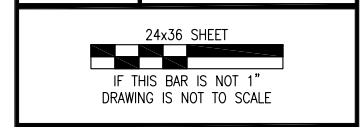


A
SECTION
SCALE: 1/8"=1'-0"



B
SECTION
SCALE: 1/8"=1'-0"

REVISIONS	
NO.	DATE

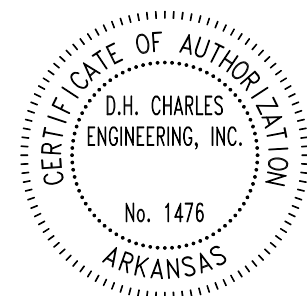


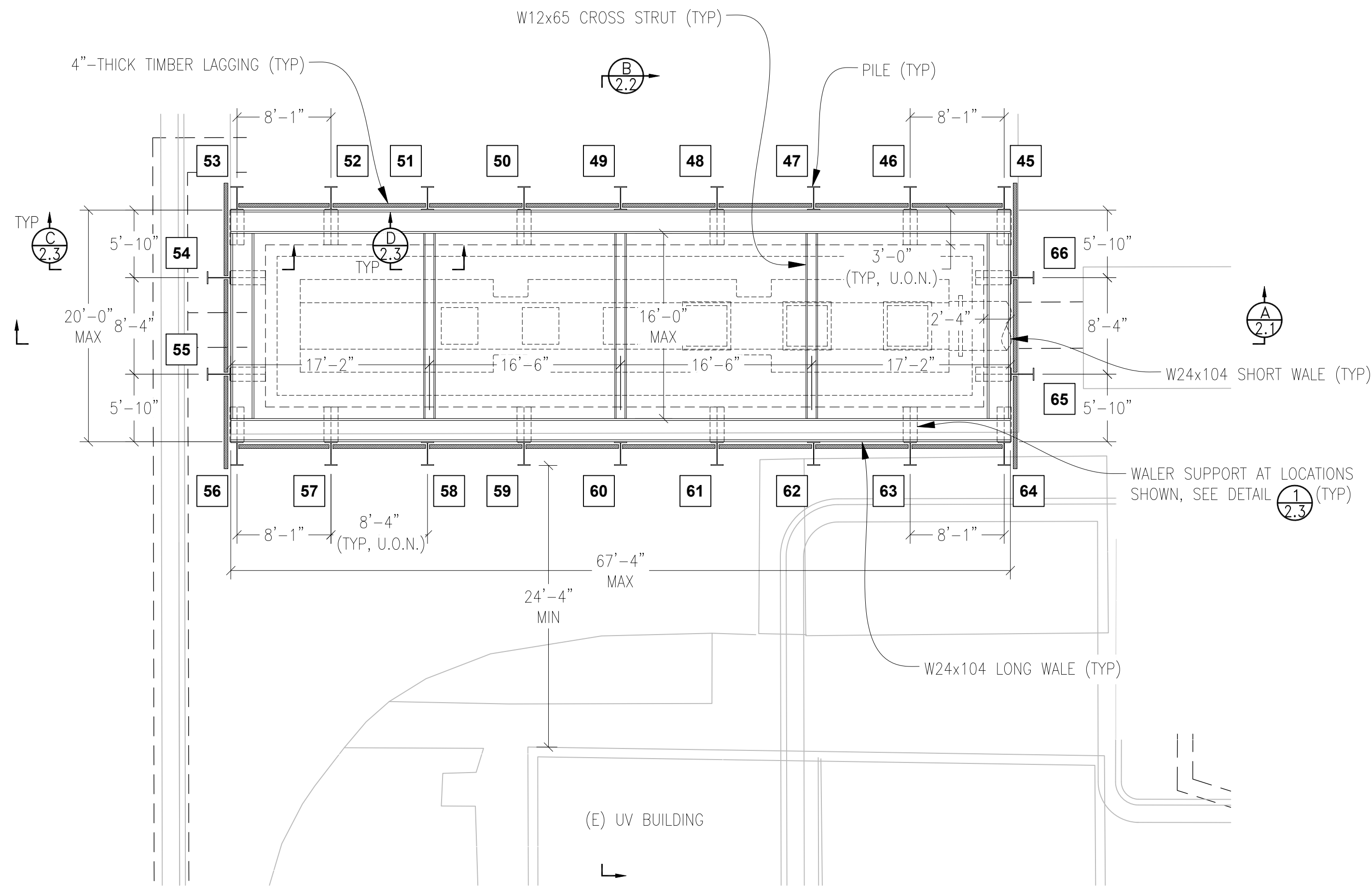
SHORING DESIGN PLAN
BENTONVILLE WATER RESOURCE RECOVERY FACILITY (WRRF)
IMPROVEMENTS
BENTONVILLE, AR
CROSSLAND HEAVY CONTRACTORS

CROSSLAND
HEAVY CONTRACTORS
14149 E. ADMIRAL PLACE, TULSA, OK 74116
PHONE: (918) 438-2800 www.crossland.com

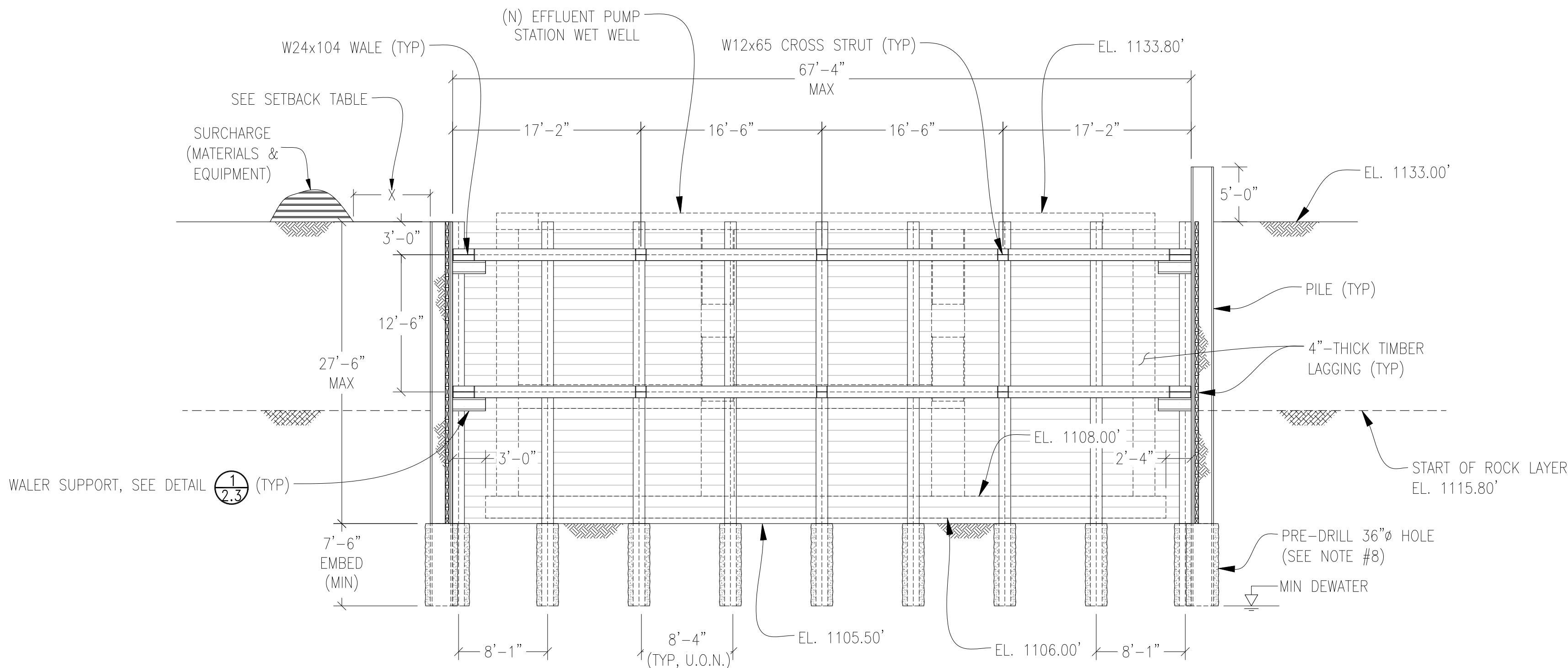
DHIC
D.H. CHARLES ENGINEERING, INC.
4706 Hoon Avenue
Santa Rosa, CA 95405
(707) 537-5232 www.charlesengineering.com

DATE:	2-28-25
DRAWN BY:	CMY
CHECKED BY:	NLB
SHEET	1.2
DRAWING NO.:	24-0729B
REV	0





PLAN VIEW - EFFLUENT PUMP STATION WET WELL
SCALE: 1/8"=1'-0"



SECTION
2.1
SCALE: 1/8"=1'-0"

PILE SCHEDULE					
PILE NO.	PILE SIZE	MIN PILE LENGTH (FEET)	TOP OF PILE ELEVATION (FEET)	MAX RETAINED HEIGHT (FEET)	MIN EMBEDDED LENGTH WITH CONCRETE (FEET)
45	W24x104	35	1133	27.5	7.5
46	W24x104	35	1133	27.5	7.5
47	W24x104	35	1133	27.5	7.5
48	W24x104	35	1133	27.5	7.5
49	W24x104	35	1133	27.5	7.5
50	W24x104	35	1133	27.5	7.5
51	W24x104	35	1133	27.5	7.5
52	W24x104	35	1133	27.5	7.5
53	W24x104	35	1133	27.5	7.5
54	W24x104	35	1133	27.5	7.5
55	W24x104	35	1133	27.5	7.5
56	W24x104	35	1133	27.5	7.5
57	W24x104	35	1133	27.5	7.5
58	W24x104	35	1133	27.5	7.5
59	W24x104	35	1133	27.5	7.5
60	W24x104	35	1133	27.5	7.5
61	W24x104	35	1133	27.5	7.5
62	W24x104	35	1133	27.5	7.5
63	W24x104	35	1133	27.5	7.5
64	W24x104	35	1133	27.5	7.5
65	W24x131	40	1138	27.5	7.5
66	W24x131	40	1138	27.5	7.5

SETBACK TABLE	
CRANE TO 30 TON MAX	X = 12'
CAT 325 EXCAVATOR	X = 7'
CAT 345 EXCAVATOR	X = 10'
CAT 365 EXCAVATOR	X = 12'
5 CY LOADER	X = 5'
DUMPTRUCK	X = 5'
SPOIL PILE (4'-TALL)	X = 6'
CONCRETE TRUCK	X = 8'
RAILROAD TRACKS	X = 100'
STREET TRAFFIC	X = 15'

REVISIONS

NO.	DATE

SHORING DESIGN PLAN
BENTONVILLE WATER RESOURCE RECOVERY FACILITY (WRRF)
IMPROVEMENTS
BENTONVILLE, AR
CROSSLAND HEAVY CONTRACTORS

CROSSLAND

HEAVY CONTRACTORS

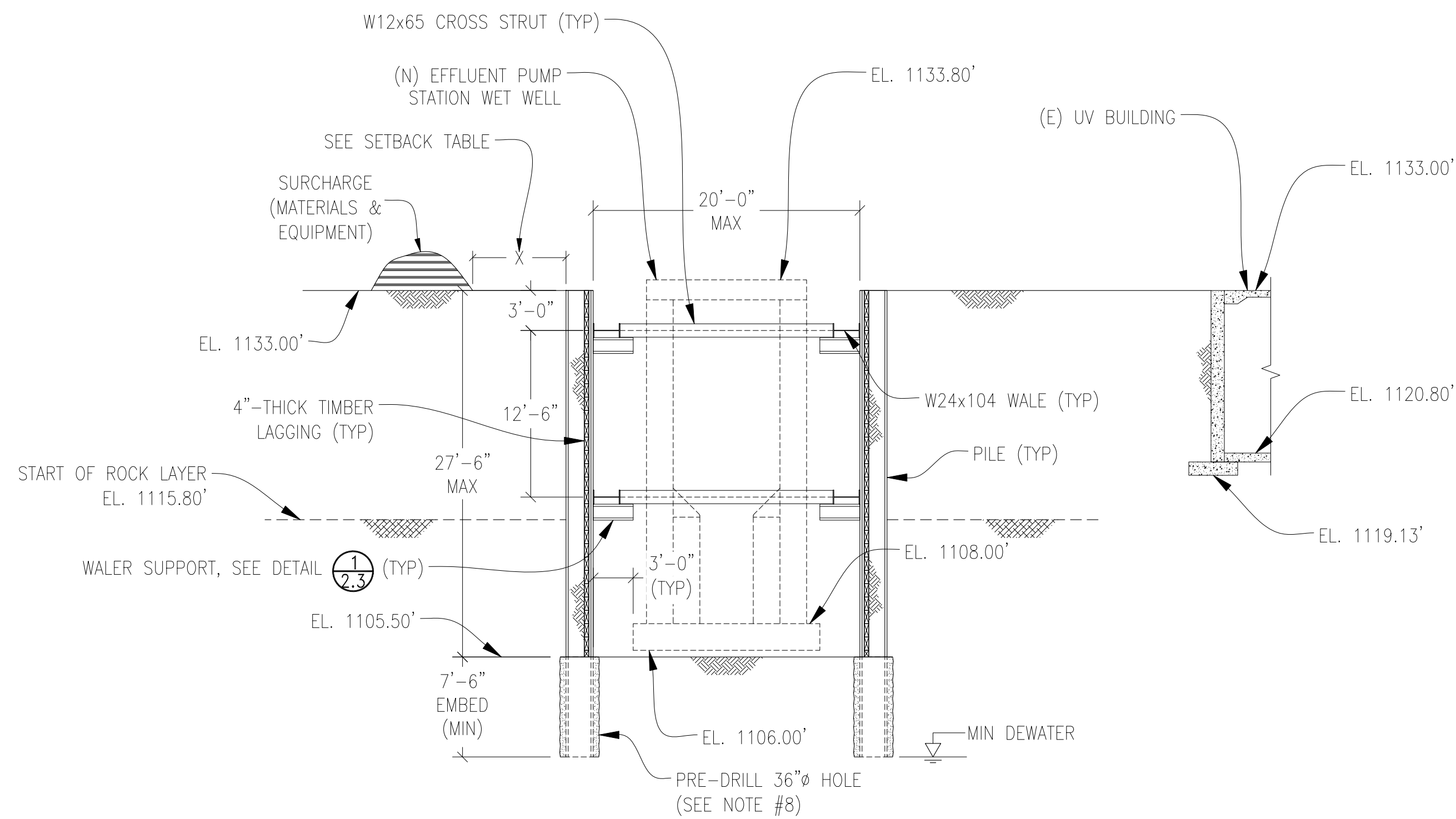
14149 E. ADMIRAL PLACE, TULSA, OK 74116
PHONE: (918) 438-2800 www.crossland.com

D.H.C.

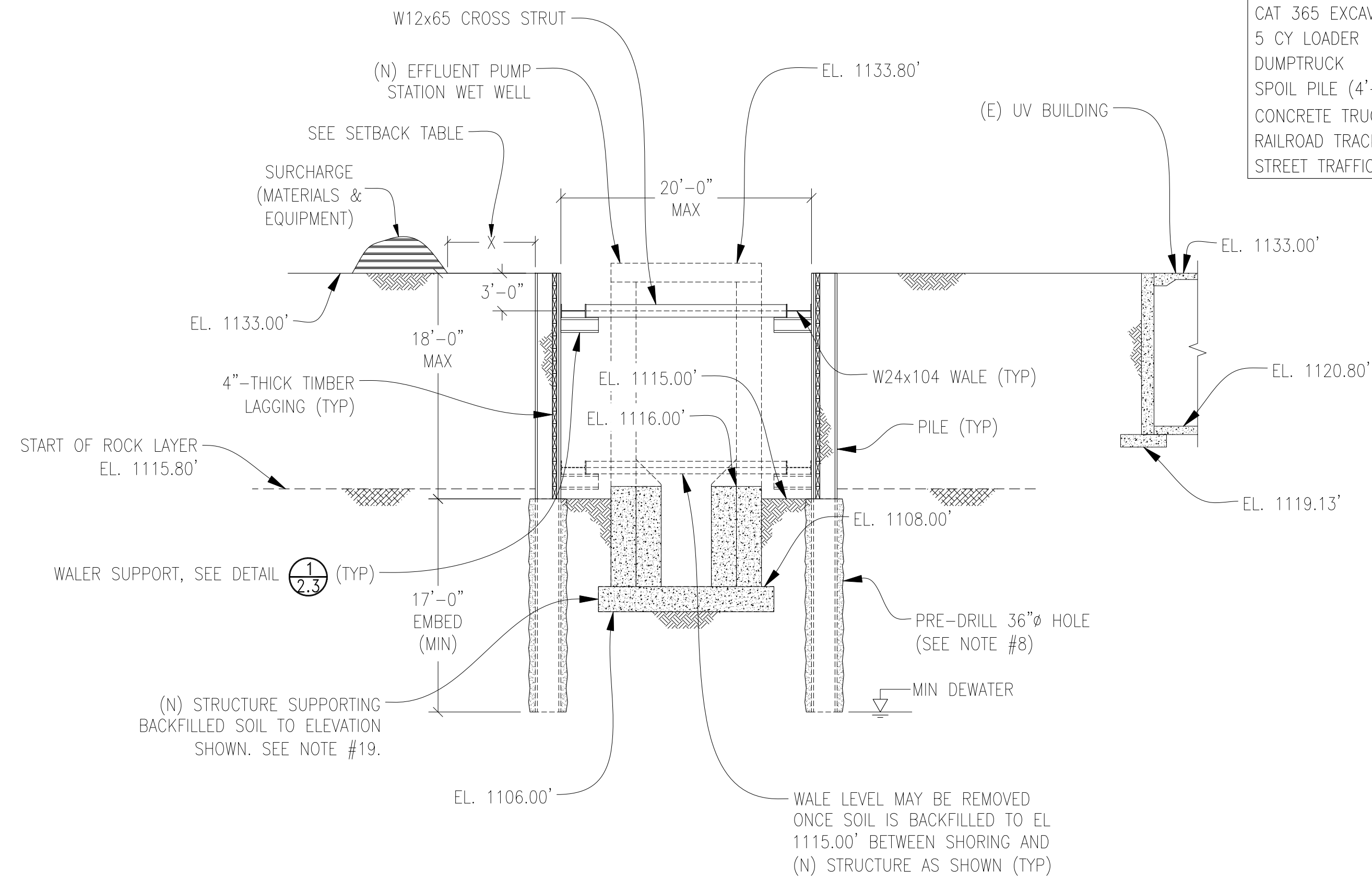
D.H. CHARLES ENGINEERING, INC.

4706 Hoon Avenue
Santa Rosa, CA 95405
(707) 537-5232 www.charlesengineering.com

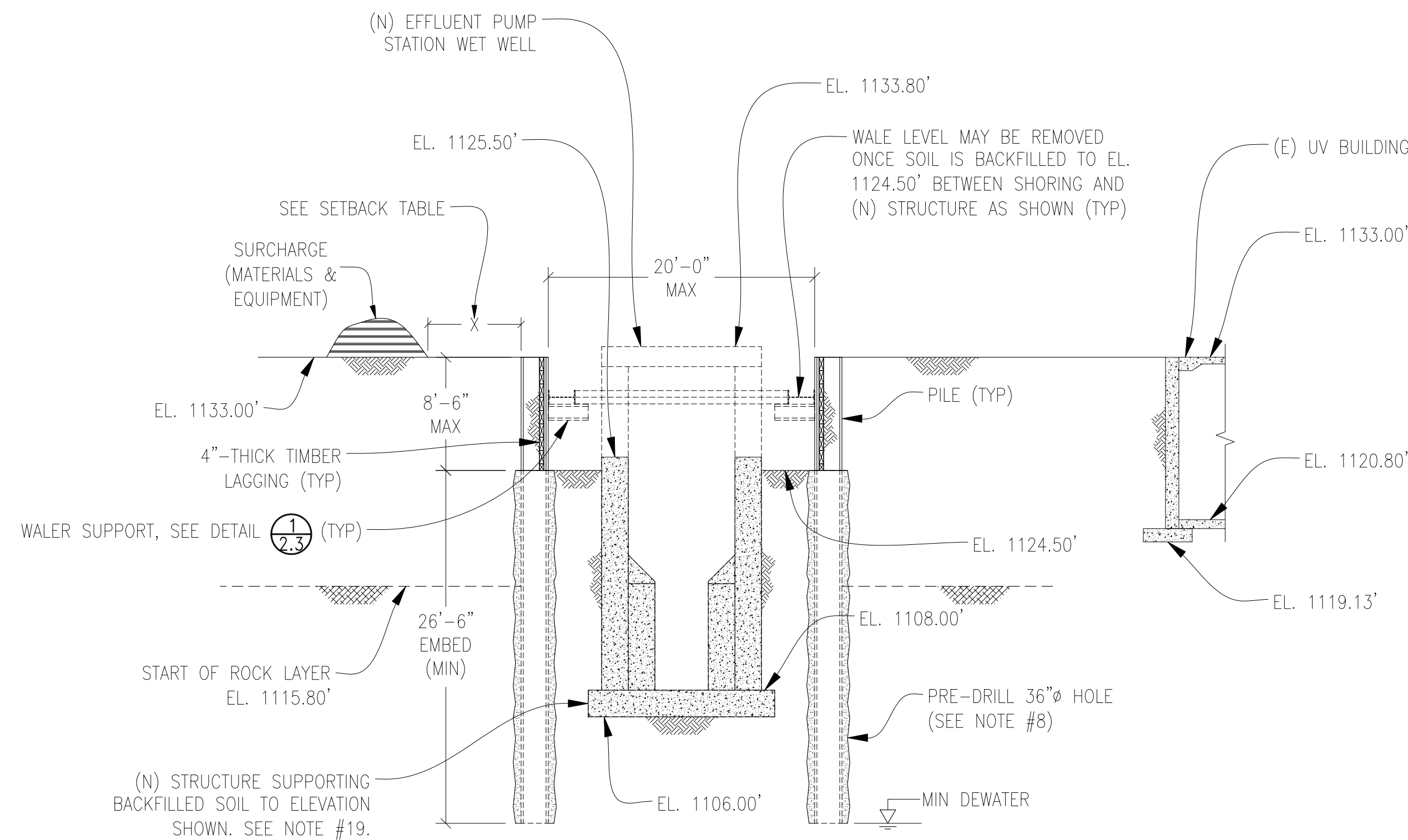
DATE: 2-28-25
DRAWN BY: CMY
CHECKED BY: NLB
SHEET 2.1
DRAWING NO.: 24-0729B REV 0



B
2.2 SECTION - PHASE 1
SCALE: 1/8"=1'-0"



B
2.2 SECTION - PHASE 2
SCALE: 1/8"=1'-0"



B
2.2 SECTION - PHASE 3
SCALE: 1/8"=1'-0"

SETBACK TABLE	
CRANE TO 30 TON MAX	X = 12'
CAT 325 EXCAVATOR	X = 7'
CAT 345 EXCAVATOR	X = 10'
CAT 365 EXCAVATOR	X = 12'
5 CY LOADER	X = 5'
DUMPTRUCK	X = 5'
SPOIL PILE (4'-TALL)	X = 6'
CONCRETE TRUCK	X = 8'
RAILROAD TRACKS	X = 100'
STREET TRAFFIC	X = 15'

REVISIONS	
NO.	DATE

SHORING DESIGN PLAN
BENTONVILLE WATER RESOURCE RECOVERY FACILITY (WRRF)
IMPROVEMENTS
BENTONVILLE, AR
CROSSLAND HEAVY CONTRACTORS

CROSSLAND
HEAVY CONTRACTORS
14149 E. ADMIRAL PLACE, TULSA, OK 74116
PHONE: (918) 438-2800 www.crossland.com

D.H.C.
D.H. CHARLES ENGINEERING, INC.
4706 Hoon Avenue
Santa Rosa, CA 95405
(707) 537-5232 www.charlesengineering.com

DATE: 2-28-25
DRAWN BY: CMY
CHECKED BY: NLB
SHEET: 2.2
DRAWING NO.: 24-0729B
REV: 0

REVISIONS

NO. DATE

MAX. SHEET
IF THIS BAR IS NOT 1"
DRAWING IS NOT TO SCALESHORING DESIGN PLAN
BENTONVILLE WATER RESOURCE RECOVERY FACILITY (WRRF)
IMPROVEMENTS
BENTONVILLE, AR
CROSSLAND HEAVY CONTRACTORS**CROSSLAND**
HEAVY CONTRACTORS
14149 E. ADMIRAL PLACE, TULSA, OK 74116
PHONE: (918) 438-2800 www.crossland.com**DHIC**
D.H. CHARLES ENGINEERING, INC.
4706 Hoon Avenue
Santa Rosa, CA 95405
(707) 537-5232 www.charlesengineering.com

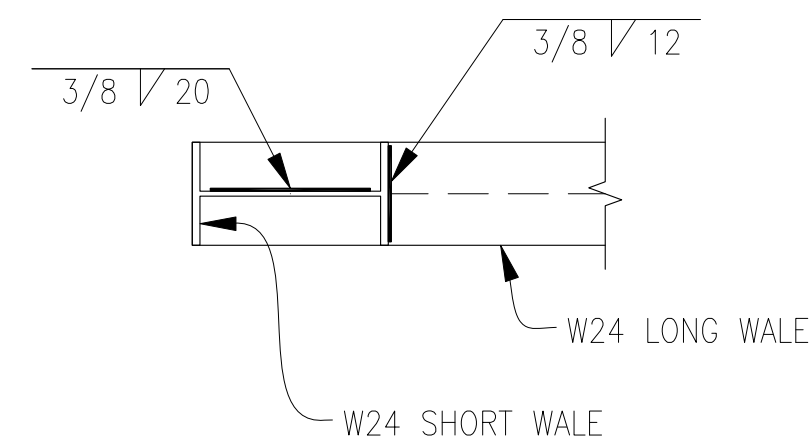
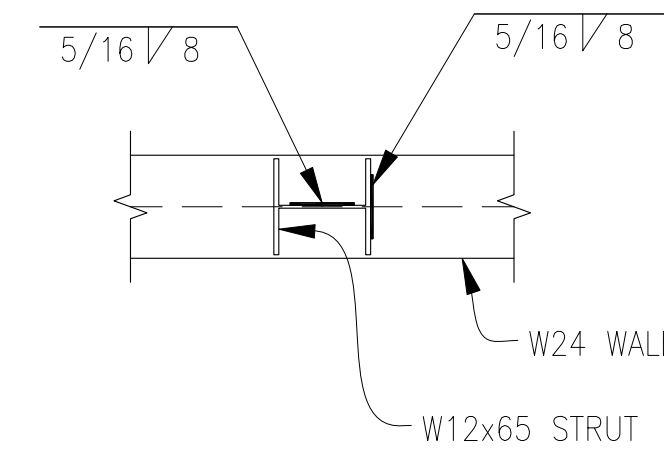
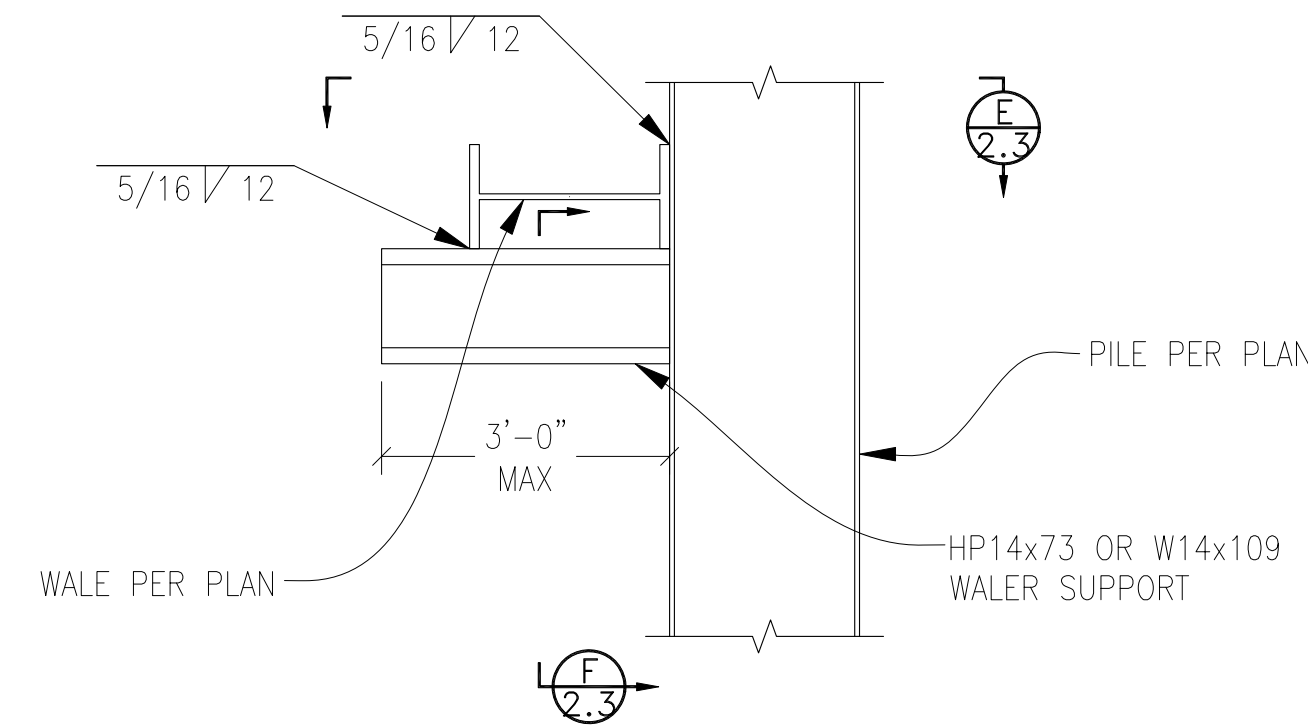
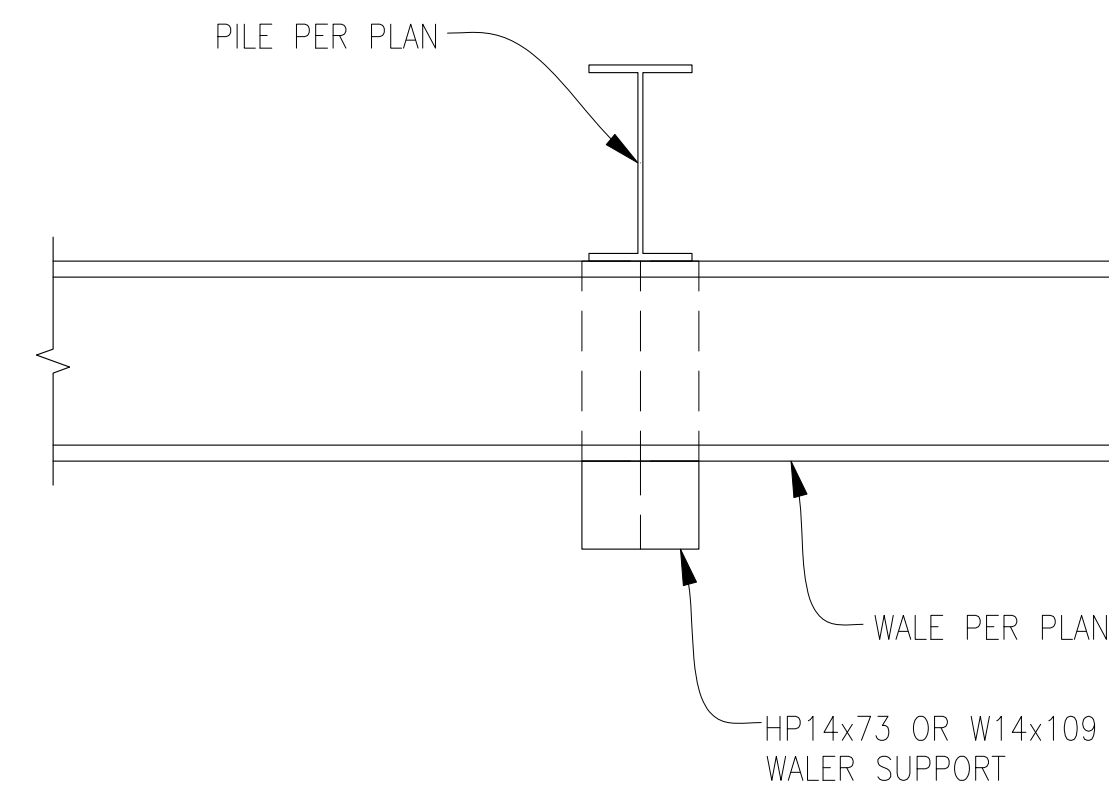
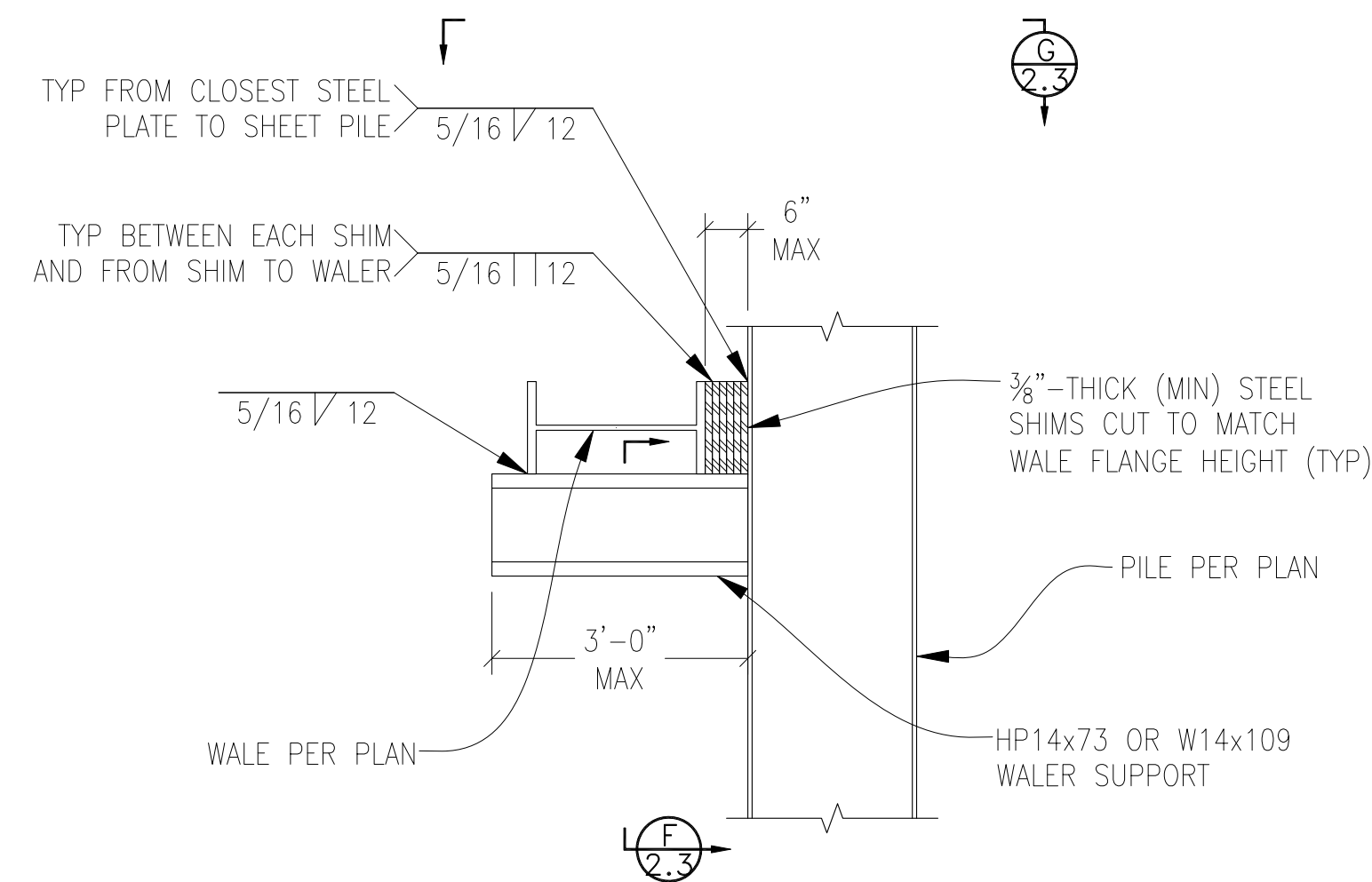
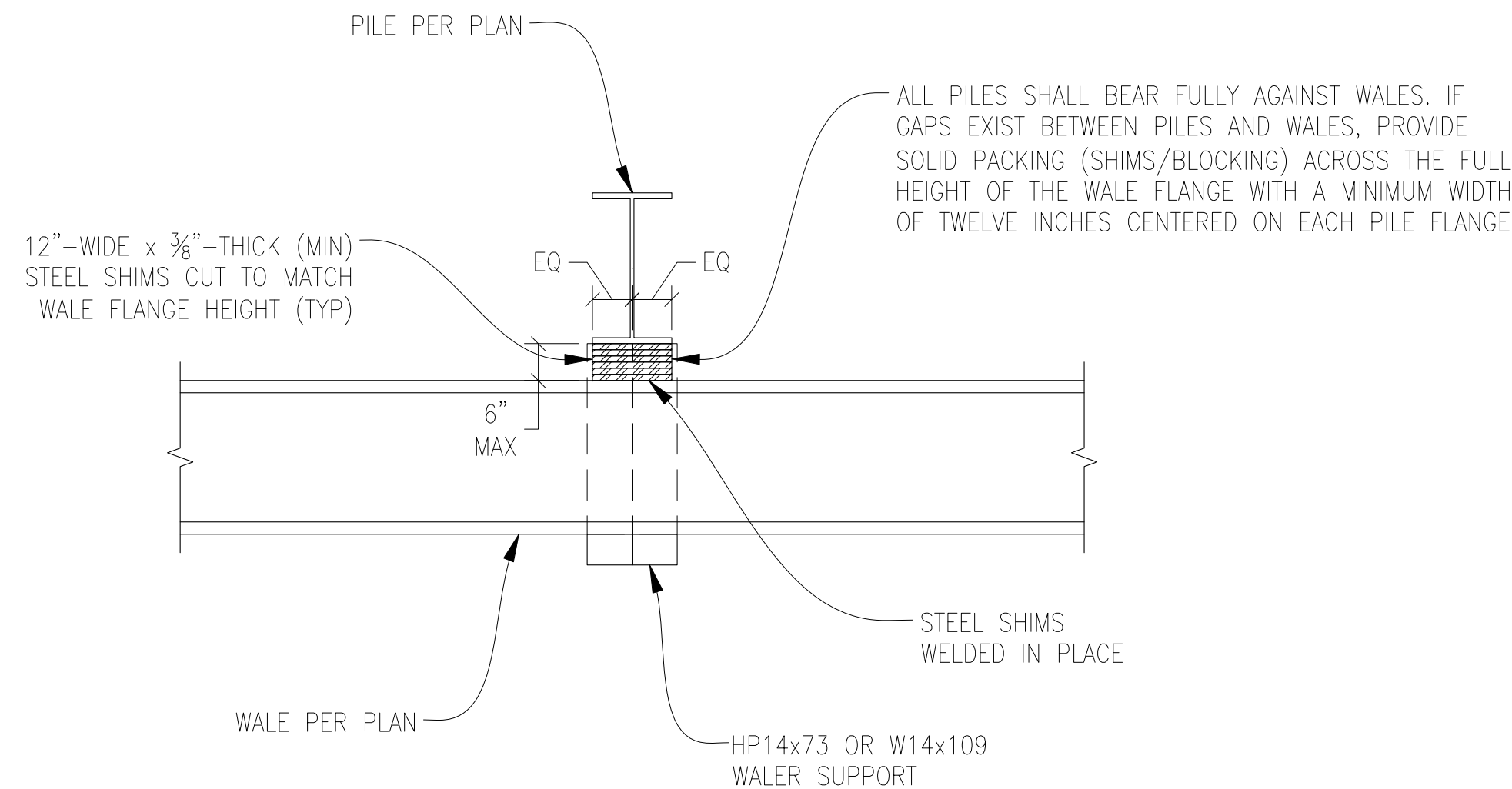
DATE: 2-28-25

DRAWN BY: CMY

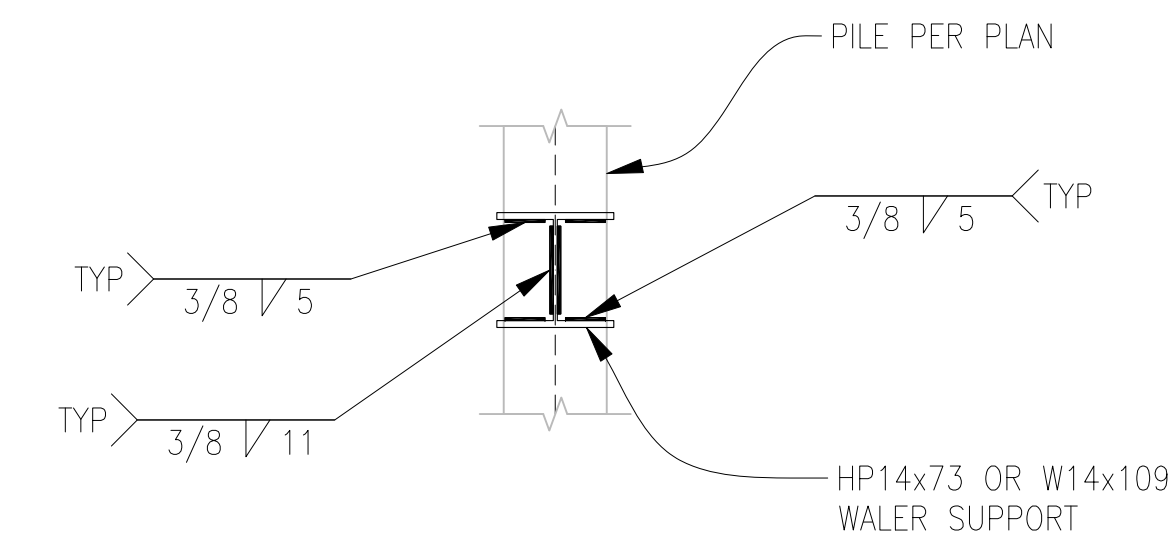
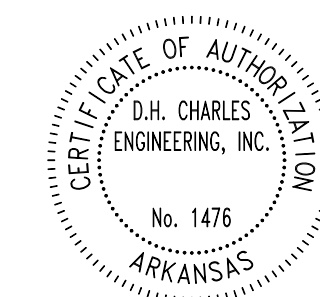
CHECKED BY: NLB

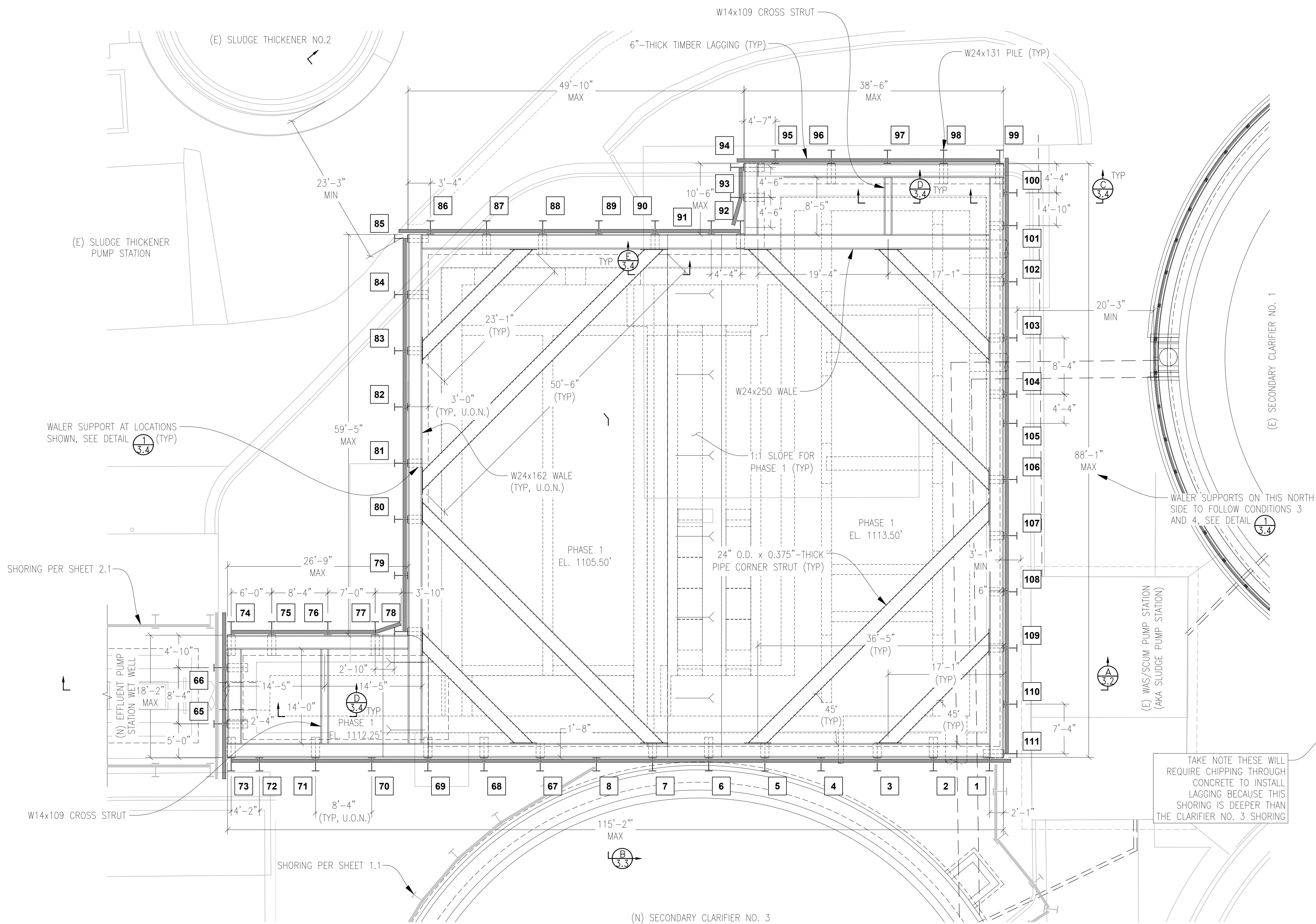
SHEET 2.3

DRAWING NO.: 24-0729B REV 0

**C**
2.3 SECTION
SCALE: 1/2"=1'-0"**D**
2.3 SECTION
SCALE: 1/2"=1'-0"**I**
2.3 DETAIL - WITHOUT SHIMS
SCALE: 1/2"=1'-0"**E**
2.3 SECTION - WITHOUT SHIMS
SCALE: 1/2"=1'-0"**I**
2.3 DETAIL - WITH SHIMS (6" GAP MAX)
SCALE: 1/2"=1'-0"**G**
2.3 SECTION - WITH SHIMS (6" GAP MAX)
SCALE: 1/2"=1'-0"

NOTE: WALERS NOT SHOWN FOR CLARITY

**F**
2.3 SECTION
SCALE: 1/2"=1'-0"



PLAN VIEW - TERTIARY TREATMENT, UV DISINFECTION AND POST AERATION
SCALE: 1/8"=1'-0"

PILE SCHEDULE					
PILE NO.	PILE SIZE	MIN PILE LENGTH (FEET)	TOP OF PILE ELEVATION (FEET)	MAX RETAINED HEIGHT (FEET)	MIN EMBEDDED LENGTH WITH CONCRETE (FEET)
67	W24x131	40	1138	27.5	7.5
68	W24x131	40	1138	27.5	7.5
69	W24x131	40	1138	27.5	7.5
70	W24x131	40	1138	27.5	7.5
71	W24x131	35	1138	20.75	9.25
72	W24x131	35	1138	20.75	9.25
73	W24x131	35	1138	20.75	9.25
74	W24x131	35	1138	20.75	9.25
75	W24x131	35	1138	20.75	9.25
76	W24x131	35	1138	20.75	9.25
77	W24x131	40	1138	27.5	7.5
78	W24x131	40	1138	27.5	7.5
79	W24x131	40	1138	27.5	7.5
80	W24x131	40	1138	27.5	7.5
81	W24x131	40	1138	27.5	7.5
82	W24x131	40	1138	27.5	7.5
83	W24x131	40	1138	27.5	7.5
84	W24x131	40	1138	27.5	7.5
85	W24x131	40	1138	27.5	7.5
86	W24x131	40	1138	27.5	7.5
87	W24x131	40	1138	27.5	7.5
88	W24x131	40	1138	27.5	7.5
89	W24x131	40	1138	27.5	7.5
90	W24x131	40	1138	27.5	7.5
91	W24x131	40	1138	27.5	7.5
92	W24x131	40	1138	27.5	7.5
93	W24x131	35	1138	19.5	10.5
94	W24x131	35	1138	19.5	10.5
95	W24x131	35	1138	19.5	10.5
96	W24x131	35	1138	19.5	10.5
97	W24x131	35	1138	19.5	10.5
98	W24x131	35	1138	19.5	10.5
99	W24x131	35	1138	19.5	10.5
100	W24x131	35	1138	19.5	10.5
101	W24x131	35	1138	19.5	10.5
102	W24x131	35	1138	19.5	10.5
103	W24x131	35	1138	19.5	10.5
104	W24x131	35	1138	19.5	10.5
105	W24x131	35	1138	19.5	10.5
106	W24x131	35	1138	19.5	10.5
107	W24x131	35	1138	19.5	10.5
108	W24x131	35	1138	19.5	10.5
109	W24x131	35	1138	19.5	10.5
110	W24x131	35	1138	19.5	10.5
111	W24x131	35	1138	19.5	10.5

PILE SCHEDULE (FROM CLARIFIER NO. 3 SHORING ON SHEET 1.1)					
PILE NO.	PILE SIZE	MIN PILE LENGTH (FEET)	TOP OF PILE ELEVATION (FEET)	MAX RETAINED HEIGHT (FEET)	MIN EMBEDDED LENGTH WITH CONCRETE (FEET)
1	W24x131	40	1138	16.63	18.37
2	W24x131	40	1138	16.63	18.37
3	W24x131	40	1138	16.63	18.37
4	W24x131	40	1138	16.63	18.37
5	W24x131	40	1138	16.63	18.37
6	W24x131	40	1138	16.63	18.37
7	W24x131	40	1138	16.63	18.37
8	W24x131	40	1138	16.63	18.37

PILE SCHEDULE (FROM EFFLUENT PUMP STATION SHORING ON SHEET 2.1)					
PILE NO.	PILE SIZE	MIN PILE LENGTH (FEET)	TOP OF PILE ELEVATION (FEET)	MAX RETAINED HEIGHT (FEET)	MIN EMBEDDED LENGTH WITH CONCRETE (FEET)
65	W24x131	40	1138	27.5	7.5
66	W24x131	40	1138	27.5	7.5

REVISIONS	
NO.	DATE
SHORING DESIGN PLAN BENTONVILLE WATER RESOURCE RECOVERY FACILITY (WRRF) IMPROVEMENTS BENTONVILLE, AR CROSSLAND HEAVY CONTRACTORS	

CROSSLAND
HEAVY CONTRACTORS

14149 E. ADMIRAL PLACE, TULSA, OK 74116
PHONE: (918) 438-2800 www.crossland.com

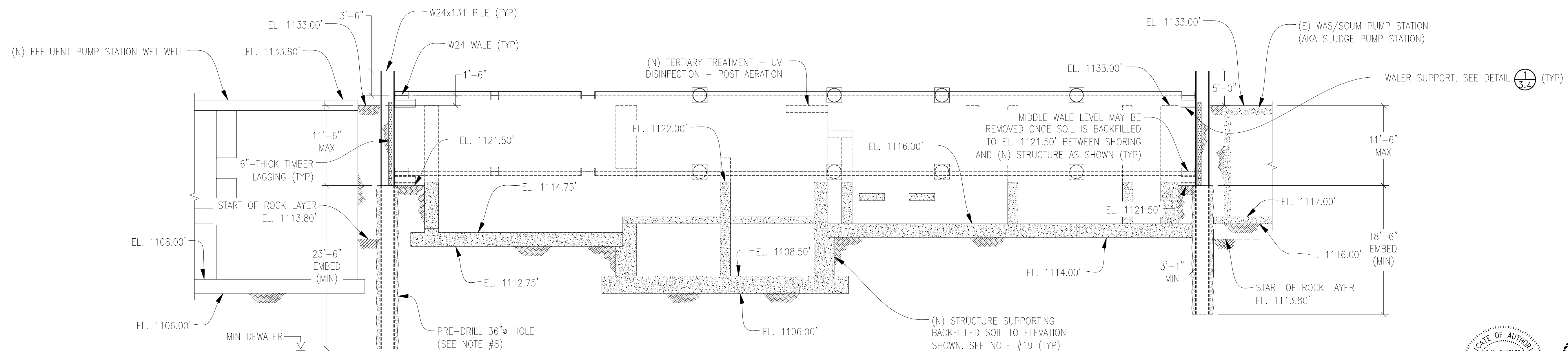
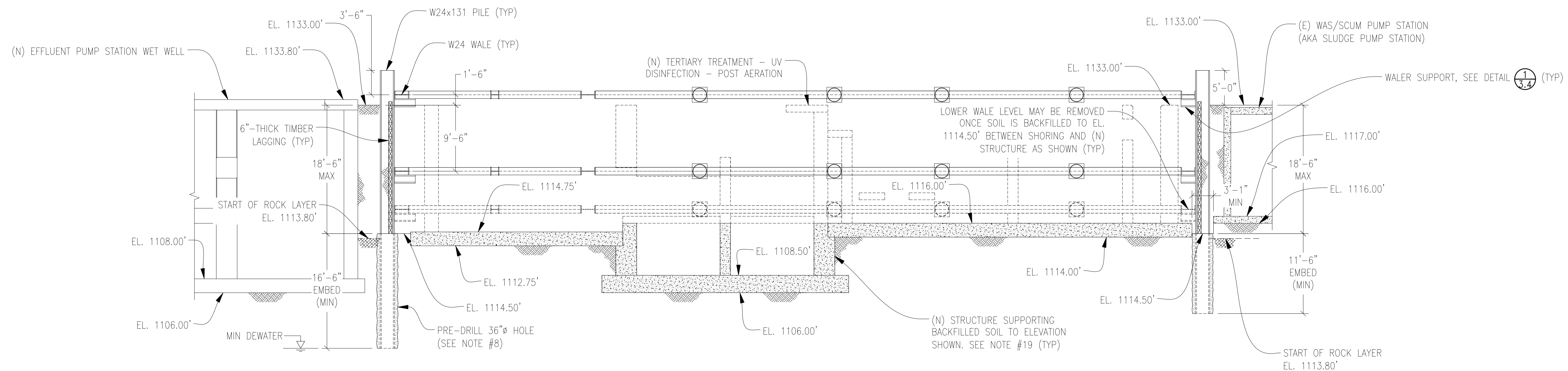
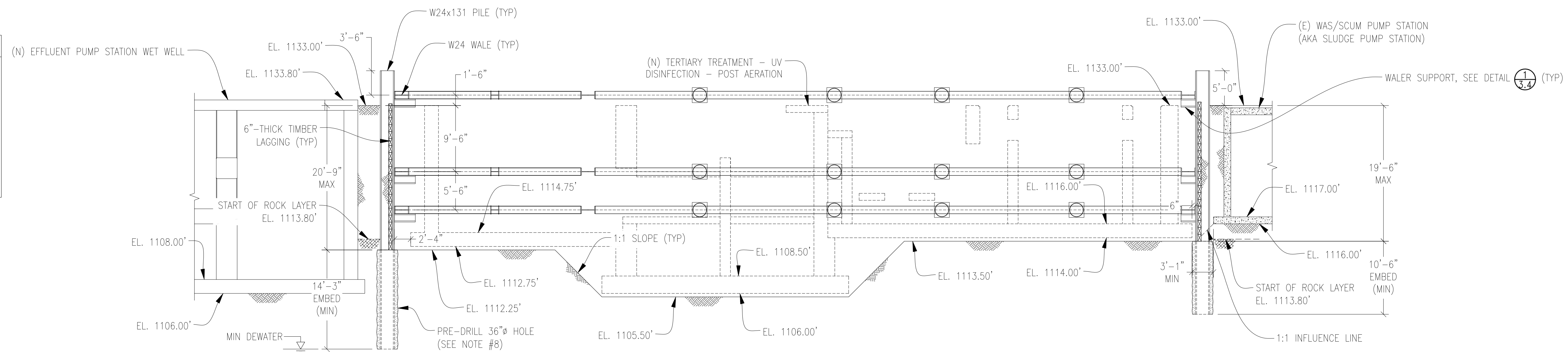
DHIC
D.H. CHARLES ENGINEERING, INC.

4706 Hoon Avenue
Santa Rosa, CA 95405
(707) 537-5232 www.charlesengineering.com

DATE:	2-28-25
DRAWN BY:	CMY
CHECKED BY:	NLB
SHEET	3.1
DRAWING NO.:	24-0729B
REV	0



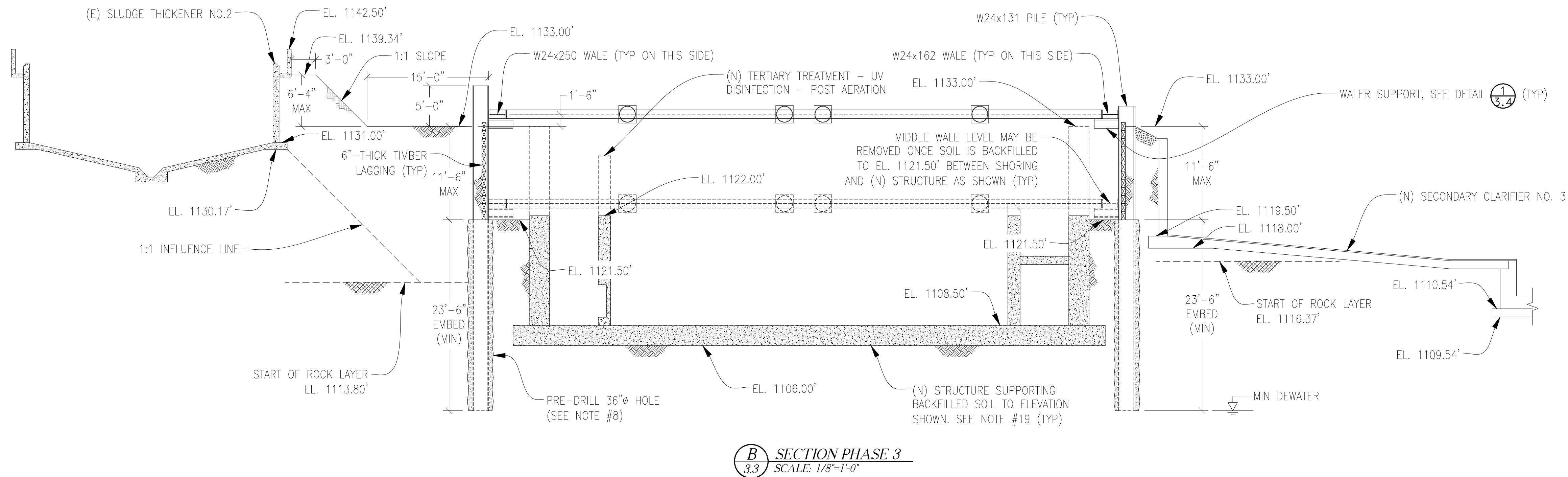
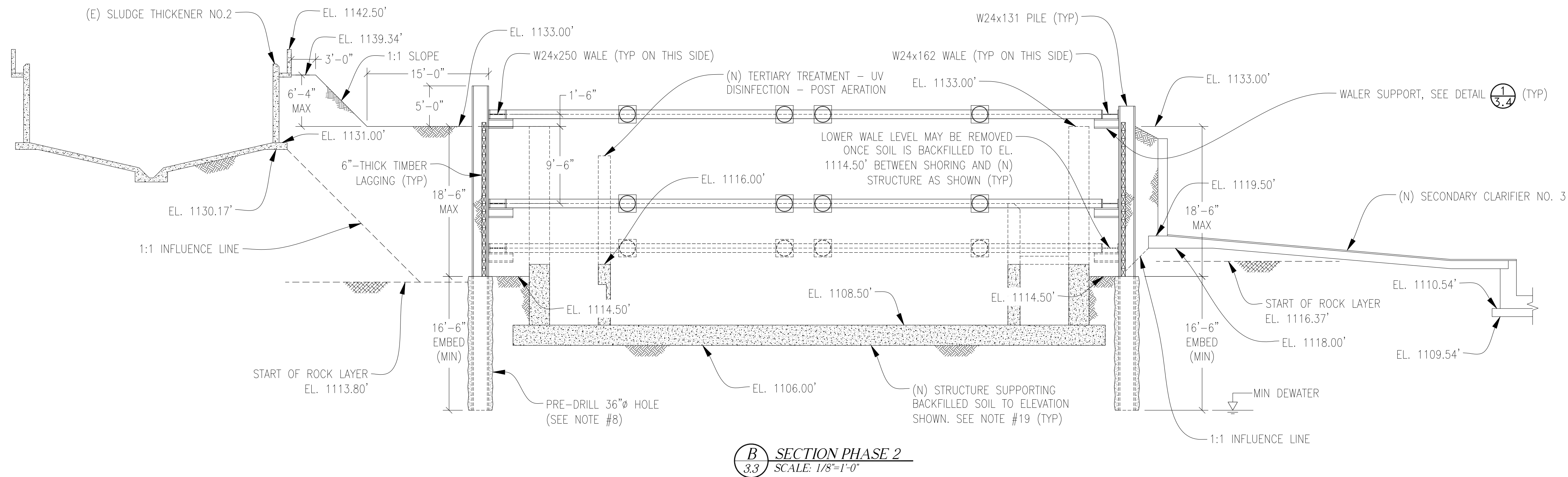
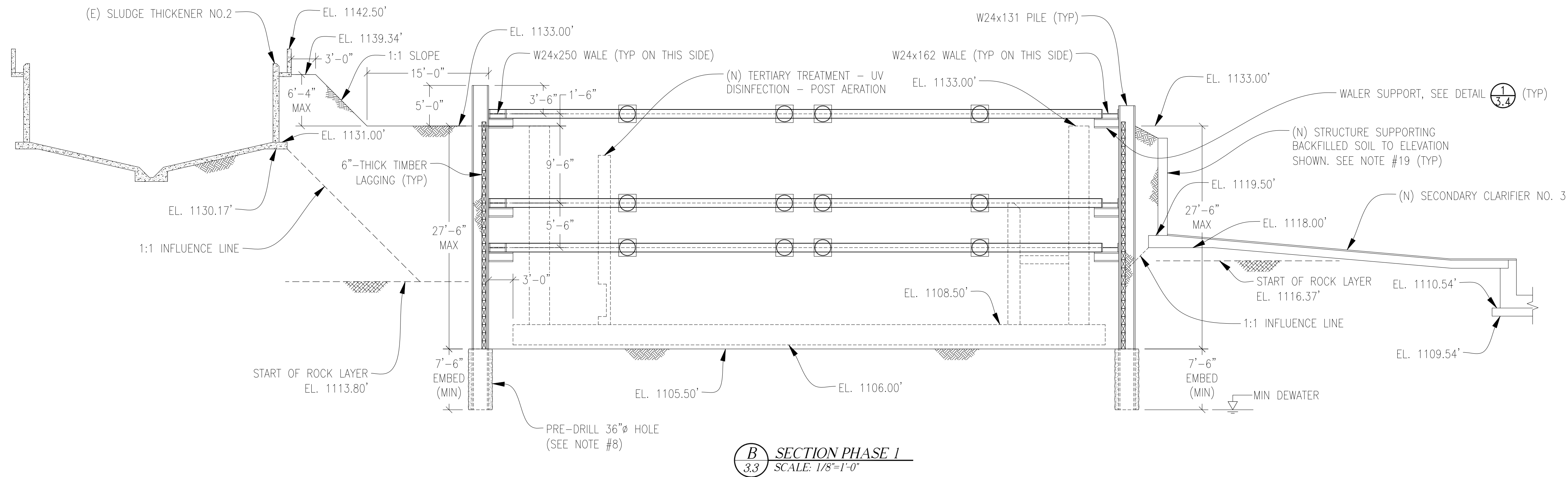
SETBACK TABLE	
CRANE TO 30 TON MAX	X = 12'
CAT 325 EXCAVATOR	X = 7'
CAT 345 EXCAVATOR	X = 10'
CAT 365 EXCAVATOR	X = 12'
5 CY LOADER	X = 5'
DUMPRUCKER	X = 5'
SPOIL PILE (4'-TALL)	X = 6'
CONCRETE TRUCK	X = 8'
RAILROAD TRACKS	X = 100'
STREET TRAFFIC	X = 15'



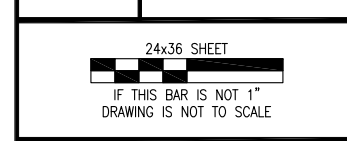
REVISIONS	
NO.	DATE
NORTH THIS DRAWING IS NOT TO SCALE DRAWING IS NOT TO SCALE	
SHORING DESIGN PLAN BENTONVILLE WATER RESOURCE RECOVERY FACILITY (WRRF) IMPROVEMENTS BENTONVILLE, AR CROSSLAND HEAVY CONTRACTORS	CROSSLAND HEAVY CONTRACTORS 14149 E. ADMIRAL PLACE, TULSA, OK 74116 PHONE: (918) 438-2800 www.crossland.com D.H. CHARLES ENGINEERING, INC. 4706 Hoot Avenue Santa Rosa, CA 95405 (707) 537-8282 www.charlesengineering.com
DATE: 2-28-25 DRAWN BY: CMY CHECKED BY: NLB SHEET 3.2 DRAWING NO.: 24-0729B REV 0	

SETBACK TABLE	
CRANE TO 30 TON MAX	X = 12'
CAT 325 EXCAVATOR	X = 7'
CAT 345 EXCAVATOR	X = 10'
CAT 365 EXCAVATOR	X = 12'
5 CY LOADER	X = 5'
DUMPTRUCK	X = 5'
SPOIL PILE (4'-TALL)	X = 6'
CONCRETE TRUCK	X = 8'
RAILROAD TRACKS	X = 100'
STREET TRAFFIC	X = 15'

ABOVE LISTED SETBACKS SHALL BE MAINTAINED A DISTANCE "X" FROM ALL EDGES OF SHORING AND ALL TOPS OF SLOPES AT ALL TIMES.



REVISIONS	
NO.	DATE

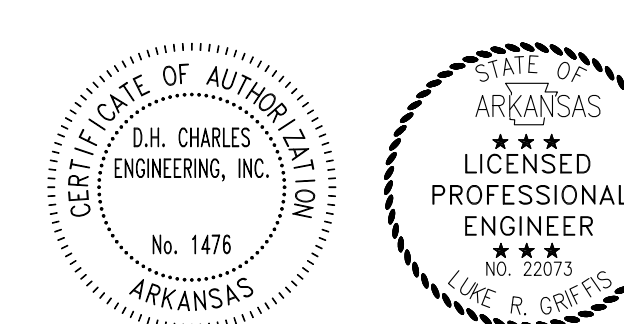


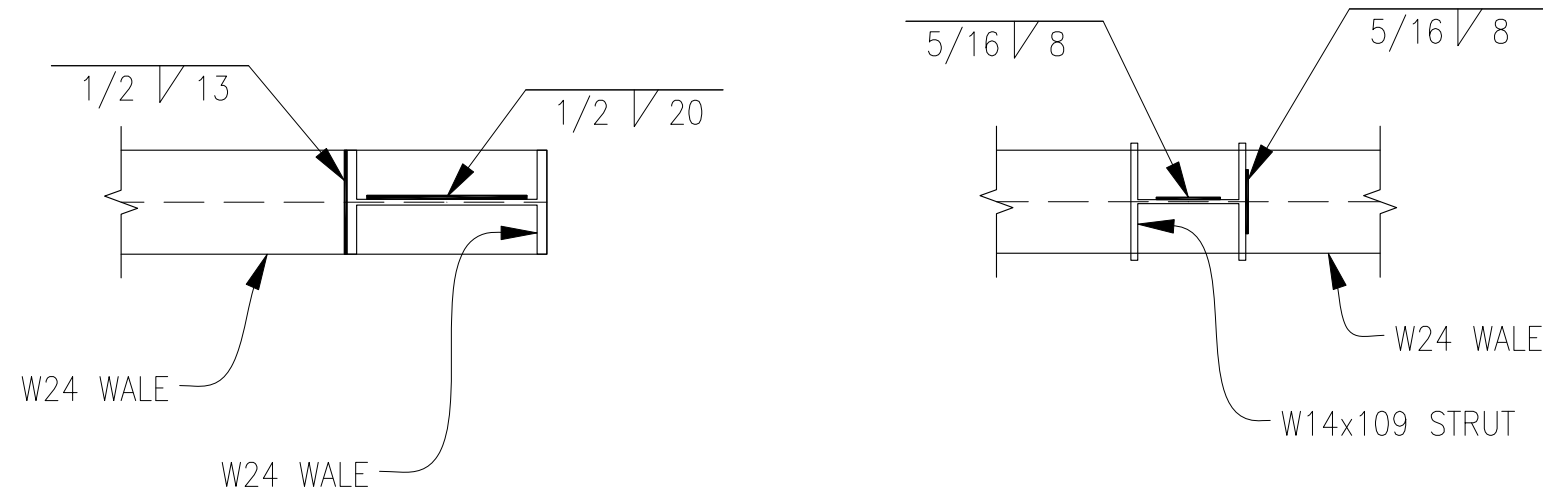
SHORING DESIGN PLAN
BENTONVILLE WATER RESOURCE RECOVERY FACILITY (WRRF)
IMPROVEMENTS
BENTONVILLE, AR
CROSSLAND HEAVY CONTRACTORS

CROSSLAND
HEAVY CONTRACTORS
14149 E. ADMIRAL PLACE, TULSA, OK 74116
PHONE: (918) 438-2800 www.crossland.com

DHC
D.H. CHARLES ENGINEERING, INC.
4706 Hoon Avenue
Santa Rosa, CA 95405
(707) 537-5232 www.charlesengineering.com

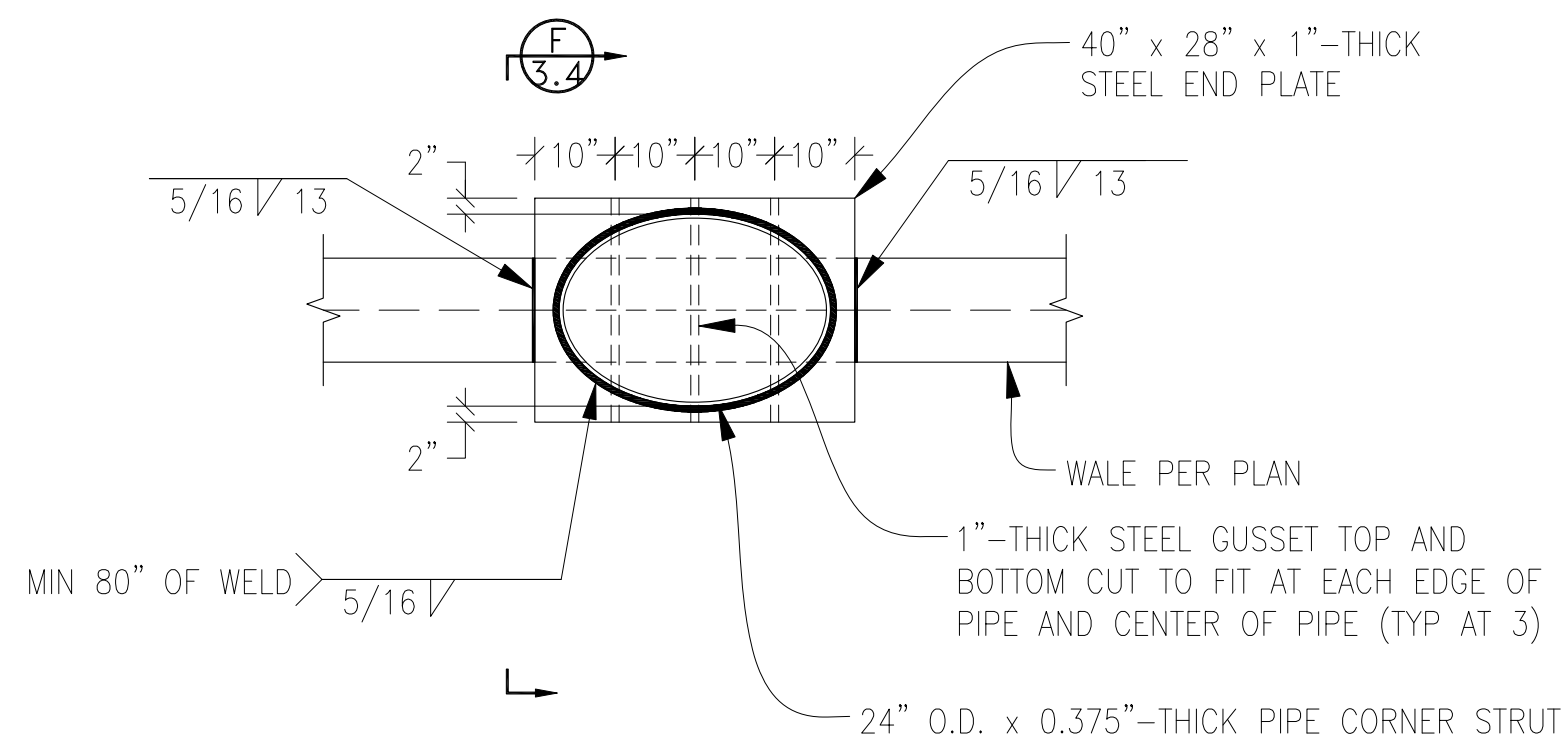
DATE:	2-28-25
DRAWN BY:	CMY
CHECKED BY:	NLB
SHEET	3.3
DRAWING NO.:	24-0729B
REV	0



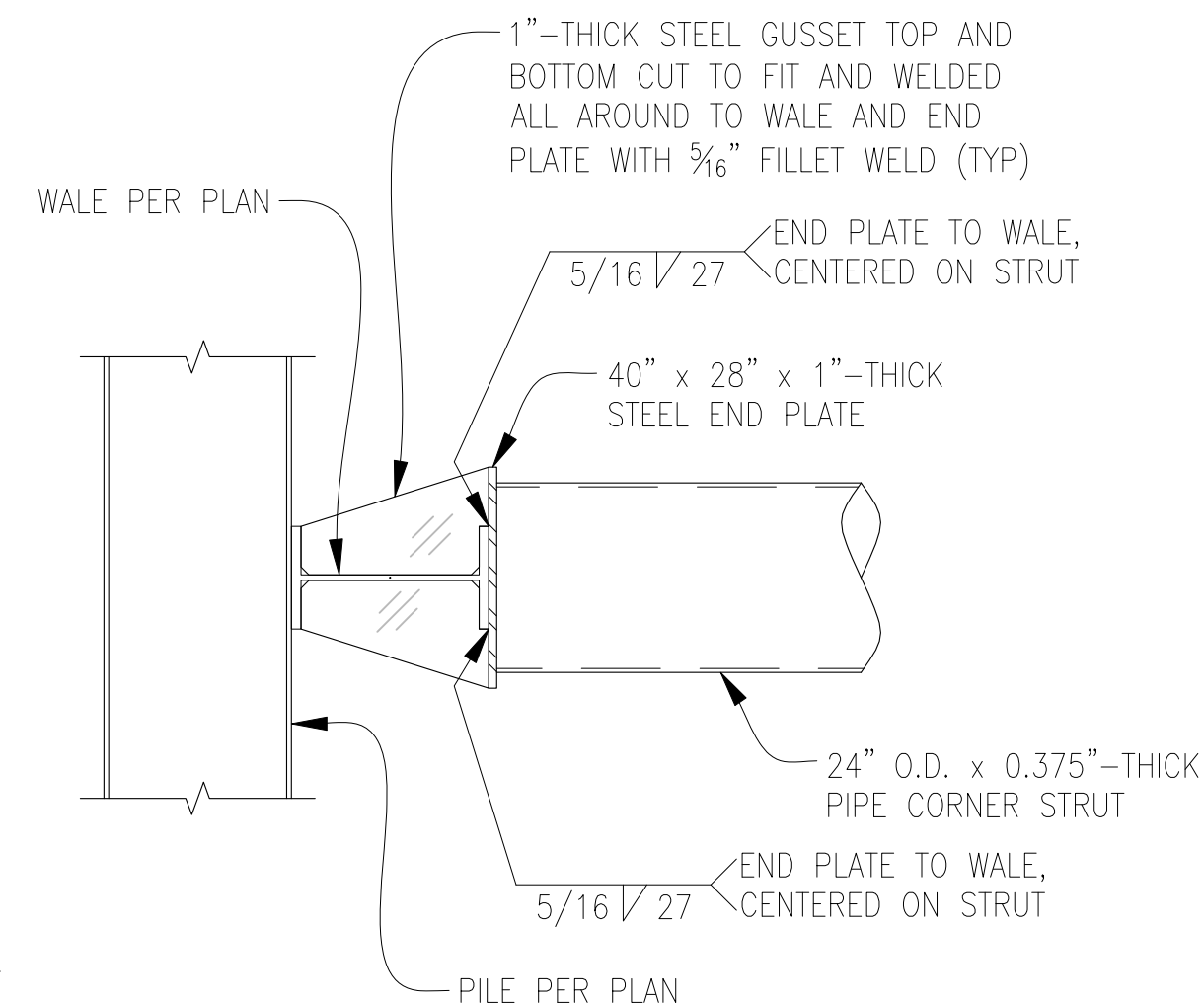


C SECTION
3.4 SCALE: 1/2"=1'-0"

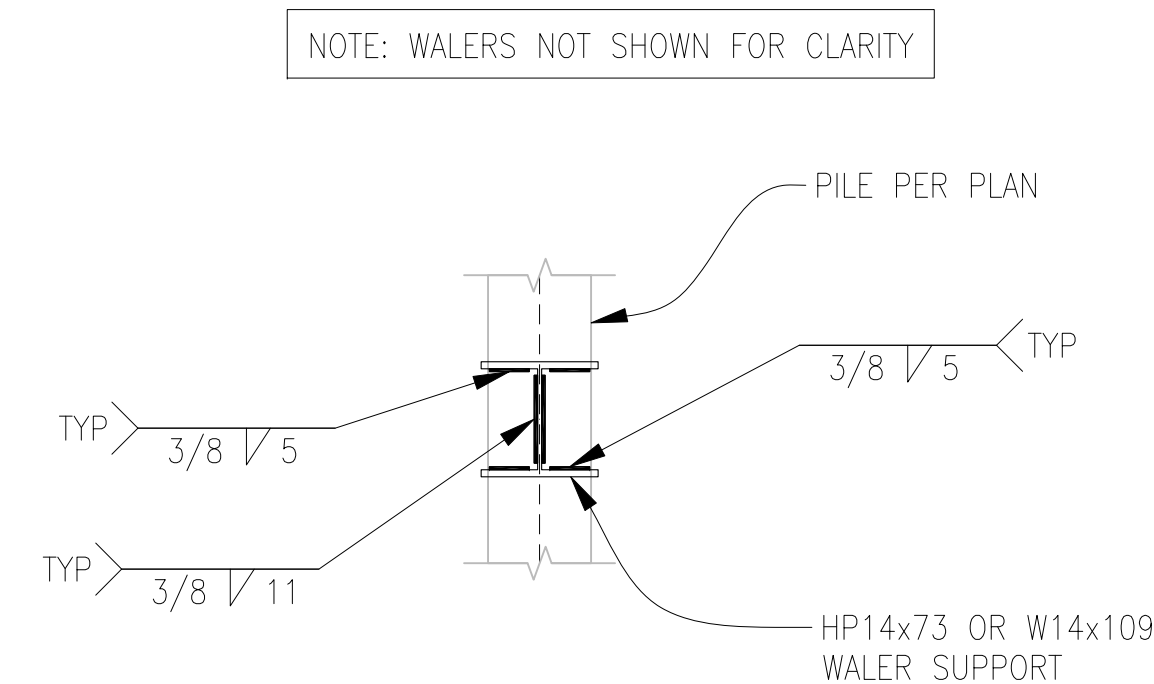
D SECTION
3.4 SCALE: 1/2"=1'-0"



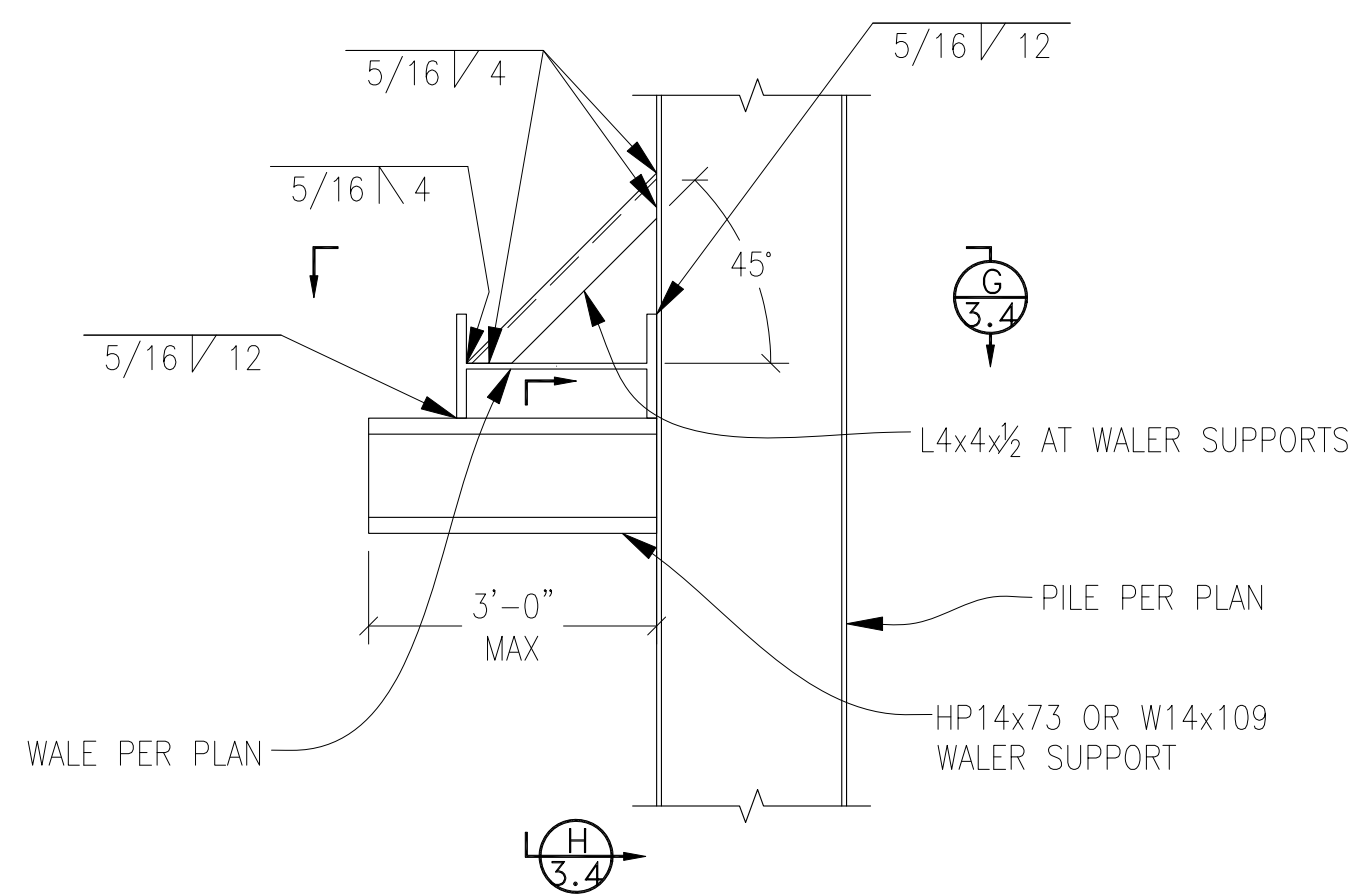
E SECTION
3.4 SCALE: 1/2"=1'-0"



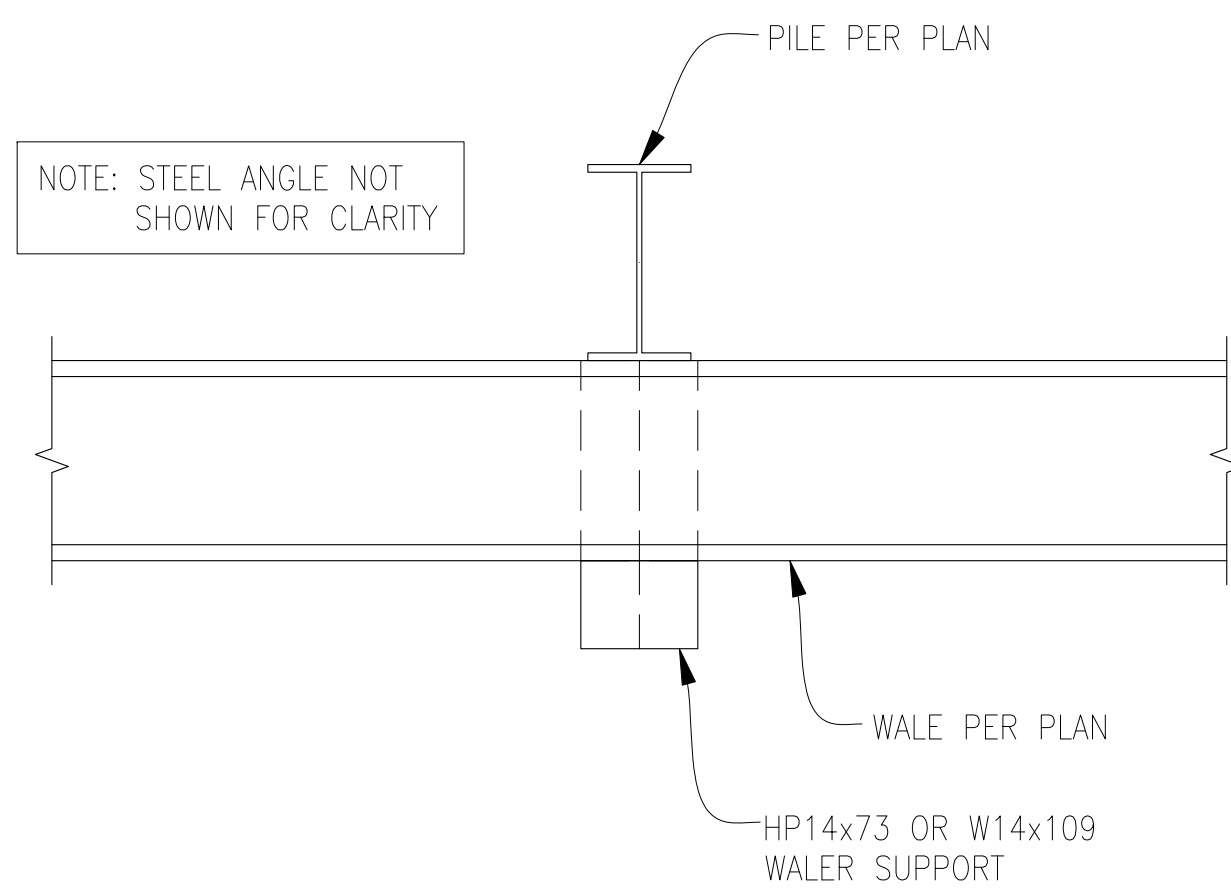
F SECTION
3.4 SCALE: 1/2"=1'-0"



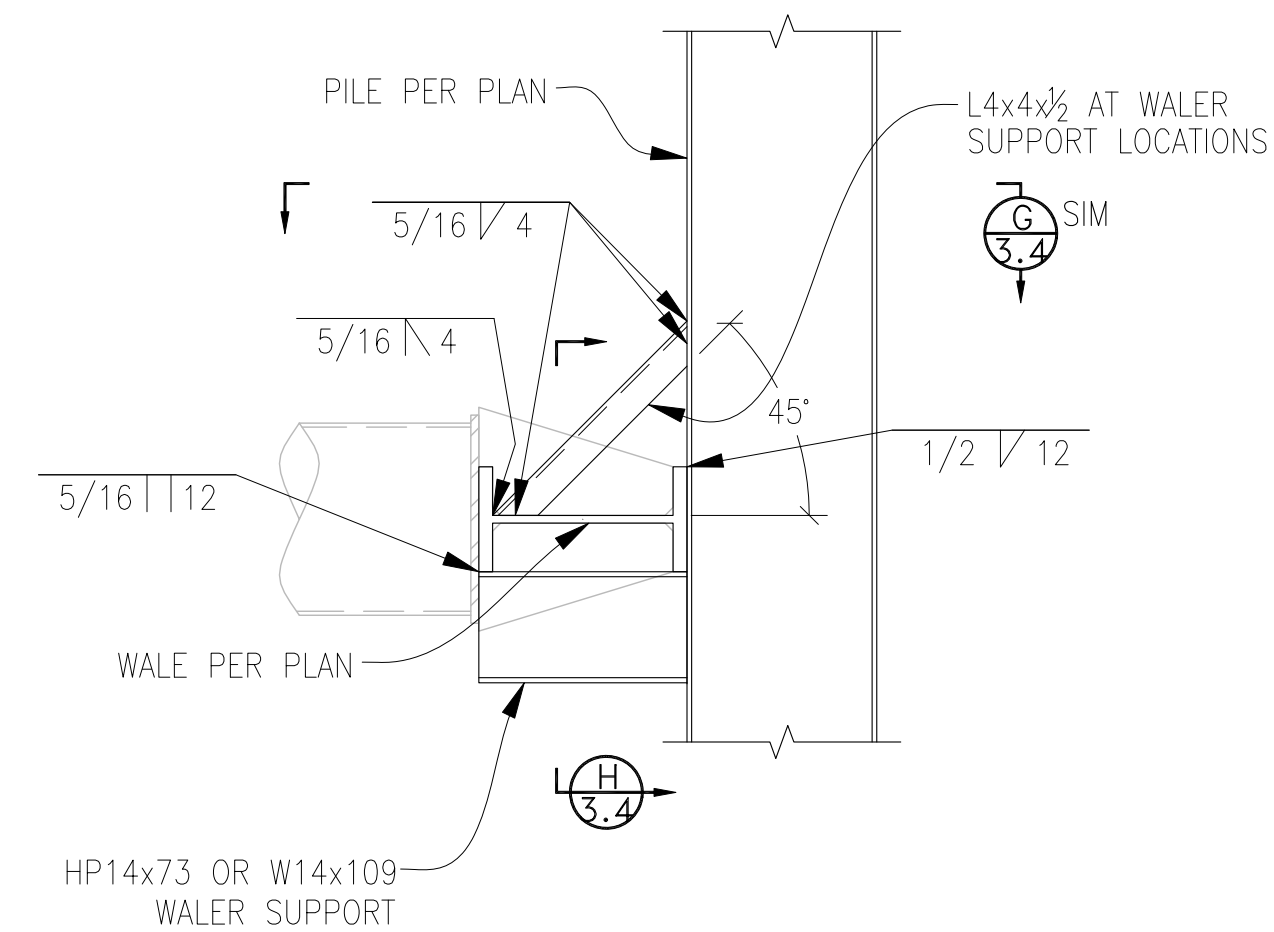
H SECTION
3.4 SCALE: 1/2"=1'-0"



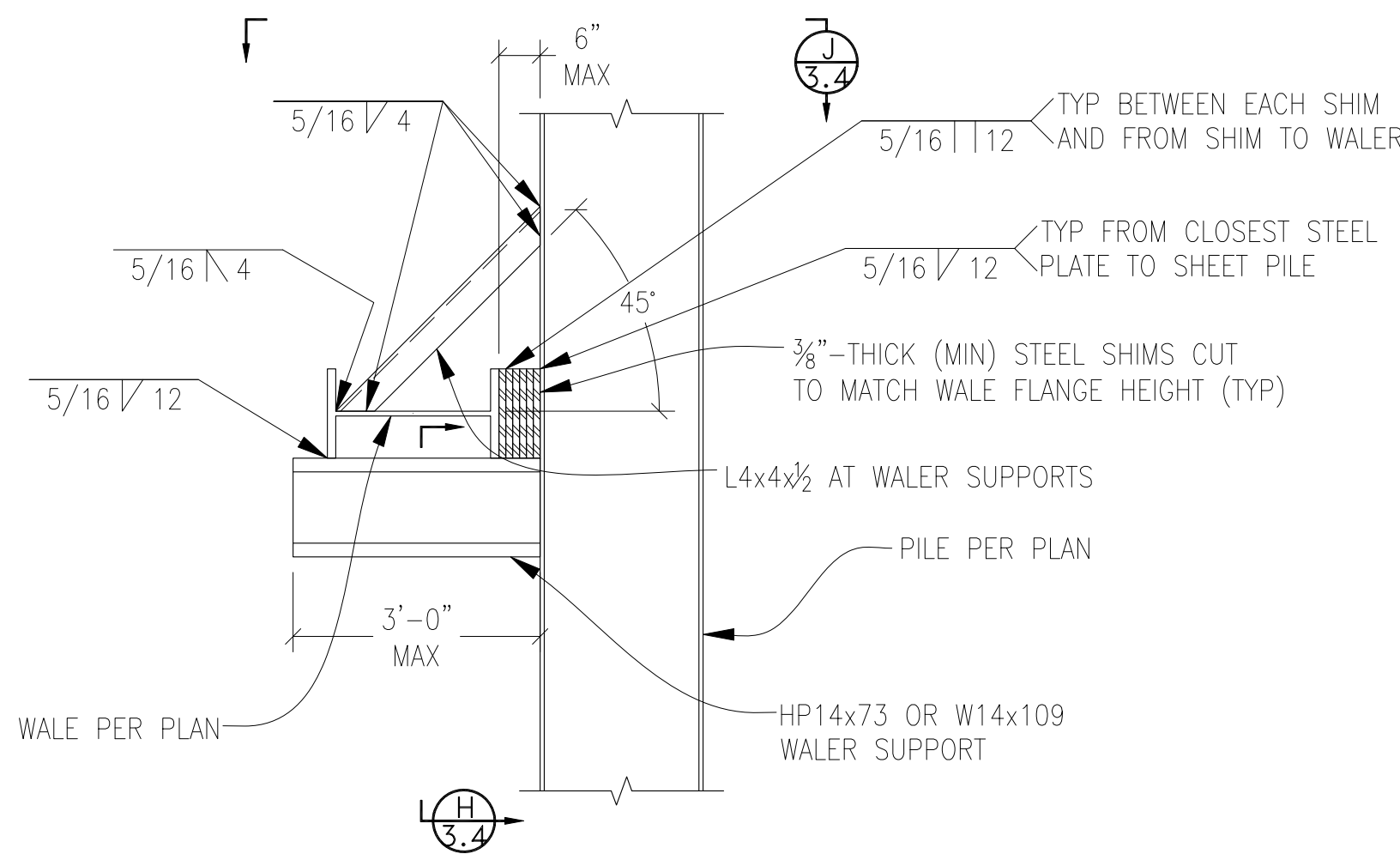
I DETAIL - WITHOUT SHIMS (CONDITION 1)
3.4 SCALE: 1/2"=1'-0"



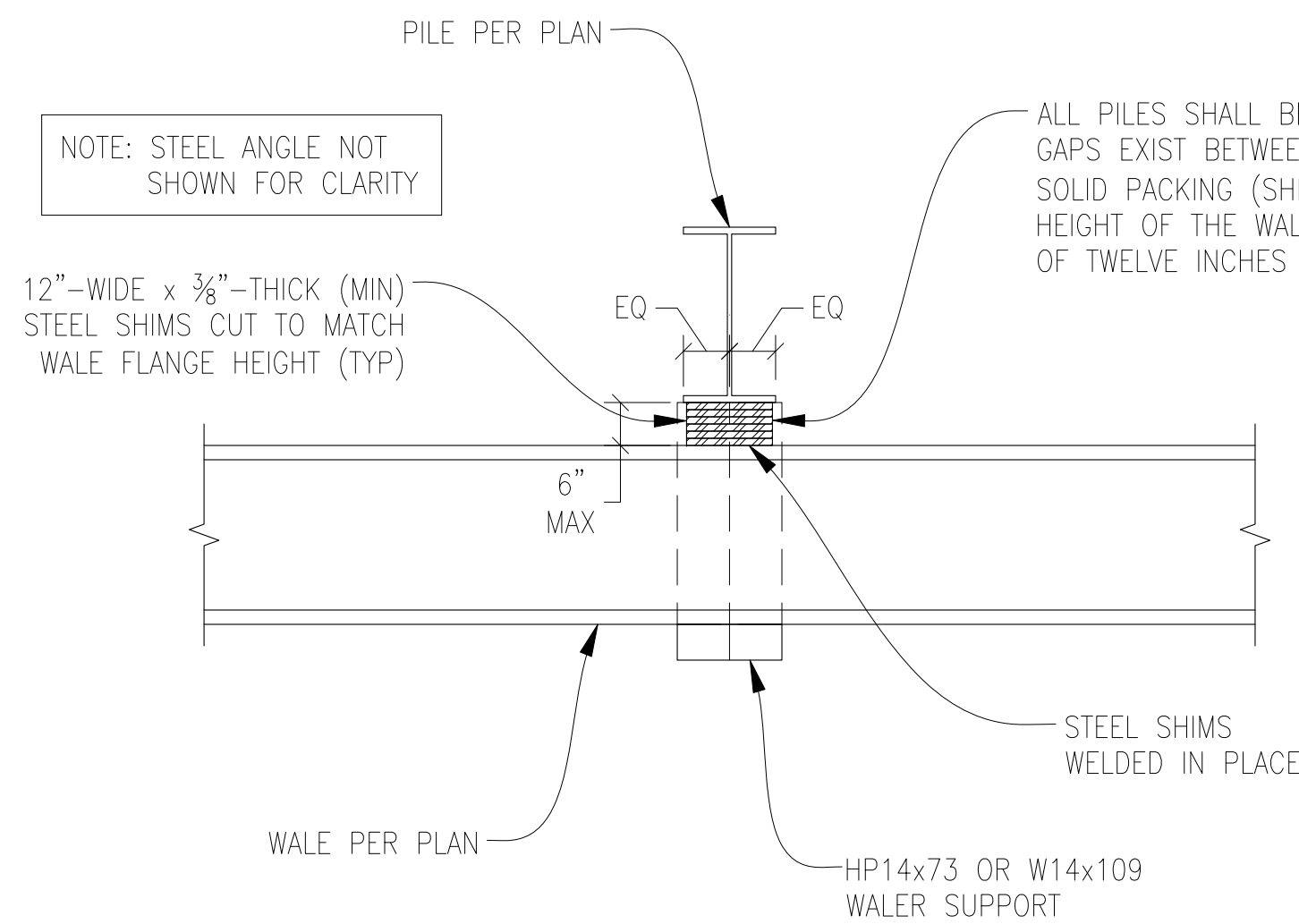
G SECTION - WITHOUT SHIMS
3.4 SCALE: 1/2"=1'-0"



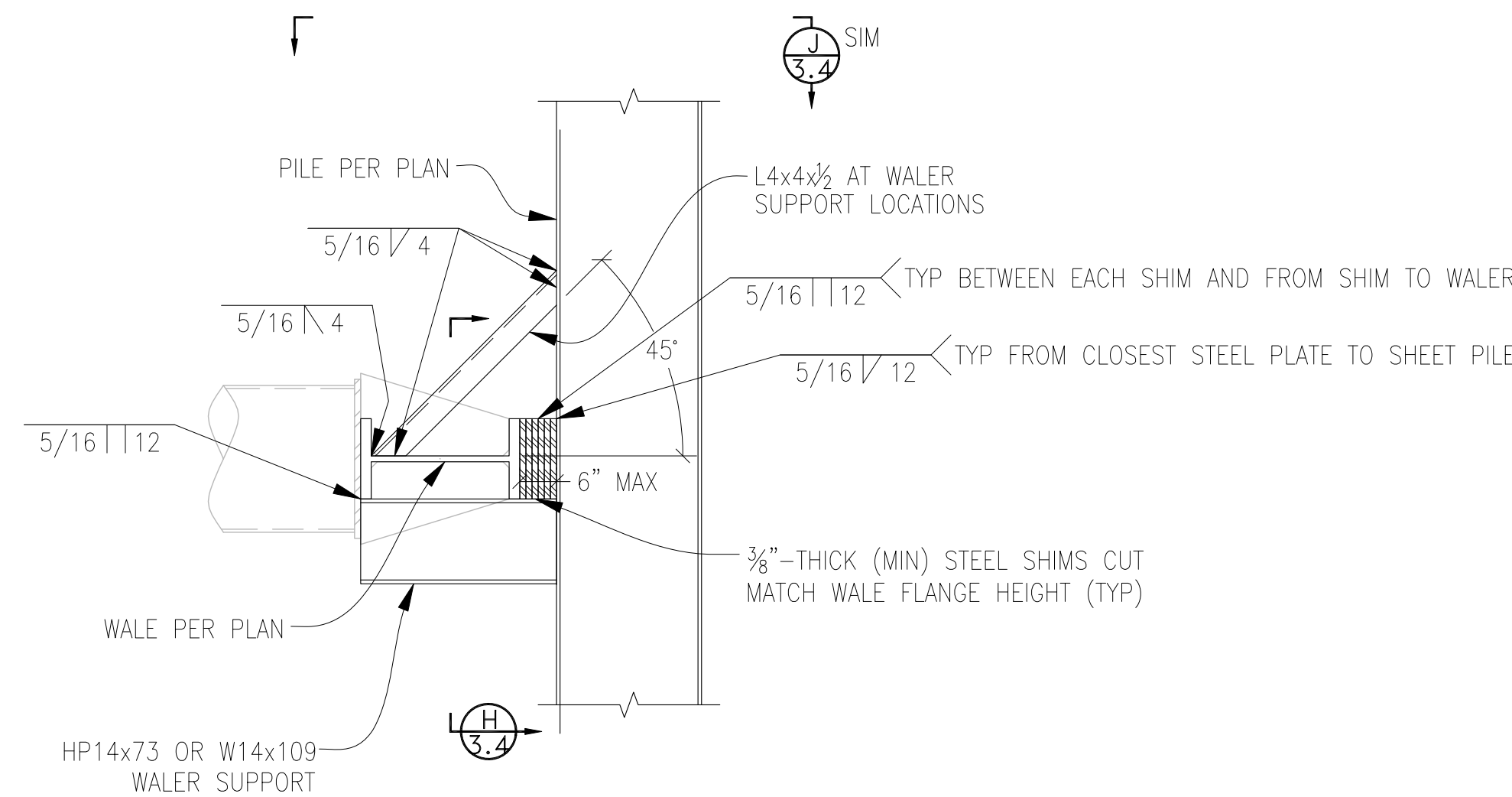
I DETAIL - WALE AT CORNER STRUT LOCATIONS AND NORTH SIDE OF SHORING (CONDITION 3)
3.4 SCALE: 1/2"=1'-0"



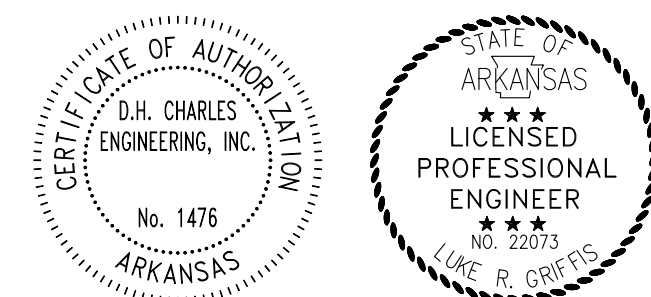
J DETAIL - WITH SHIMS (6" GAP MAX) (CONDITION 2)
3.4 SCALE: 1/2"=1'-0"



J SECTION - WITH SHIMS (6" GAP MAX)
3.4 SCALE: 1/2"=1'-0"



I DETAIL - WALE AT CORNER STRUT LOCATIONS AND NORTH SIDE OF SHORING WITH SHIMS (CONDITION 4)
3.4 SCALE: 1/2"=1'-0"



REVISIONS	
NO.	DATE

SHORING DESIGN PLAN
BENTONVILLE WATER RESOURCE RECOVERY FACILITY (WRRF)
IMPROVEMENTS
BENTONVILLE, AR
CROSSLAND HEAVY CONTRACTORS

CROSSLAND HEAVY CONTRACTORS
14149 E. ADMIRAL PLACE, TULSA, OK 74116
PHONE: (918) 438-2800 www.crossland.com

D.H. Charles Engineering, Inc.
4706 Hoon Avenue
Santa Rosa, CA 95405
(707) 537-5232 www.charlesengineering.com

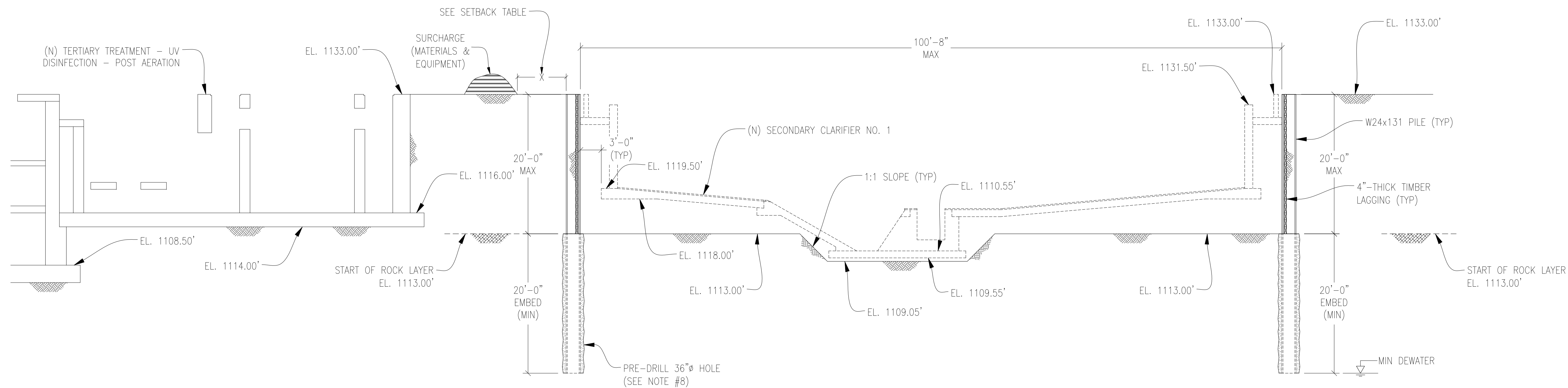
DATE: 2-28-25
DRAWN BY: CMY
CHECKED BY: NLB
SHEET: 3.4
DRAWING NO.: 24-0729B REV: 0



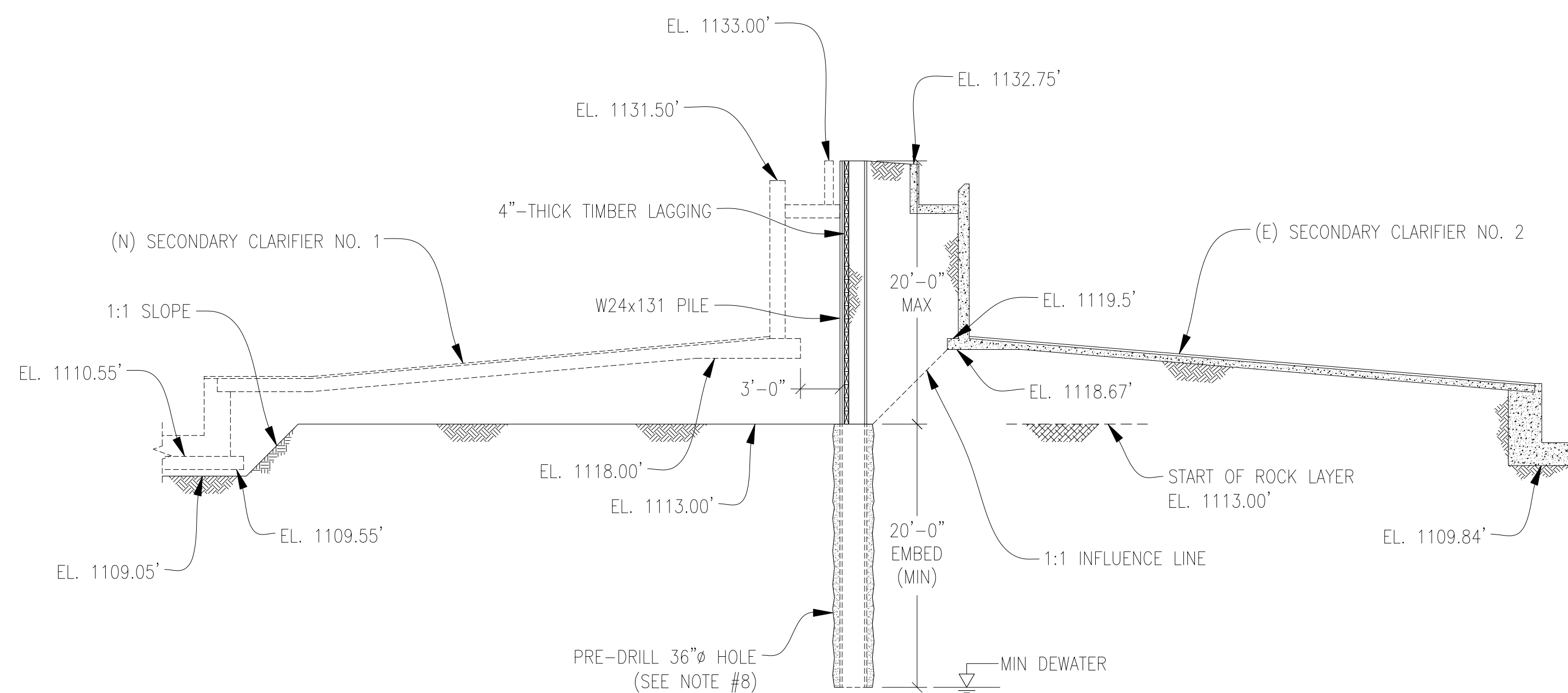
SETBACK TABLE

CRANE TO 30 TON MAX	X = 12'
CAT 325 EXCAVATOR	X = 7'
CAT 345 EXCAVATOR	X = 10'
CAT 365 EXCAVATOR	X = 12'
5 CY LOADER	X = 5'
DUMPTRUCK	X = 5'
SPOIL PILE (4'-TALL)	X = 6'
CONCRETE TRUCK	X = 8'
RAILROAD TRACKS	X = 100'
STREET TRAFFIC	X = 15'

ABOVE LISTED SETBACKS SHALL BE MAINTAINED A DISTANCE "X" FROM ALL EDGES OF SHORING AND ALL TOPS OF SLOPES AT ALL TIMES.

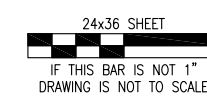


A SECTION
4.2 SCALE: 1/8"=1'-0"



B SECTION
4.2 SCALE: 1/8"=1'-0"

REVISIONS	
NO.	DATE



SHORING DESIGN PLAN
BENTONVILLE WATER RESOURCE RECOVERY FACILITY (WRRF)
IMPROVEMENTS
BENTONVILLE, AR
CROSSLAND HEAVY CONTRACTORS

CROSSLAND
HEAVY CONTRACTORS
14149 E. ADMIRAL PLACE, TULSA, OK 74116
PHONE: (918) 438-2800 www.crossland.com

14149 E. ADMIRAL PLACE, TULSA, OK 74116
PHONE: (918) 438-2800 www.crossland.com

DIHC
D.H. CHARLES ENGINEERING, INC.
4706 Hoen Avenue
Santa Rosa, CA 95405
(707) 537-8282 www.charlesengineering.com

Santa Rosa, CA 95405
(707) 537-8282 www.charlesengineering.com

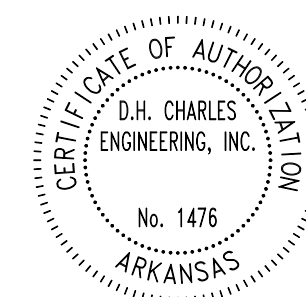
DATE: 2-28-25

DRAWN BY: CMY

CHECKED BY: NLB

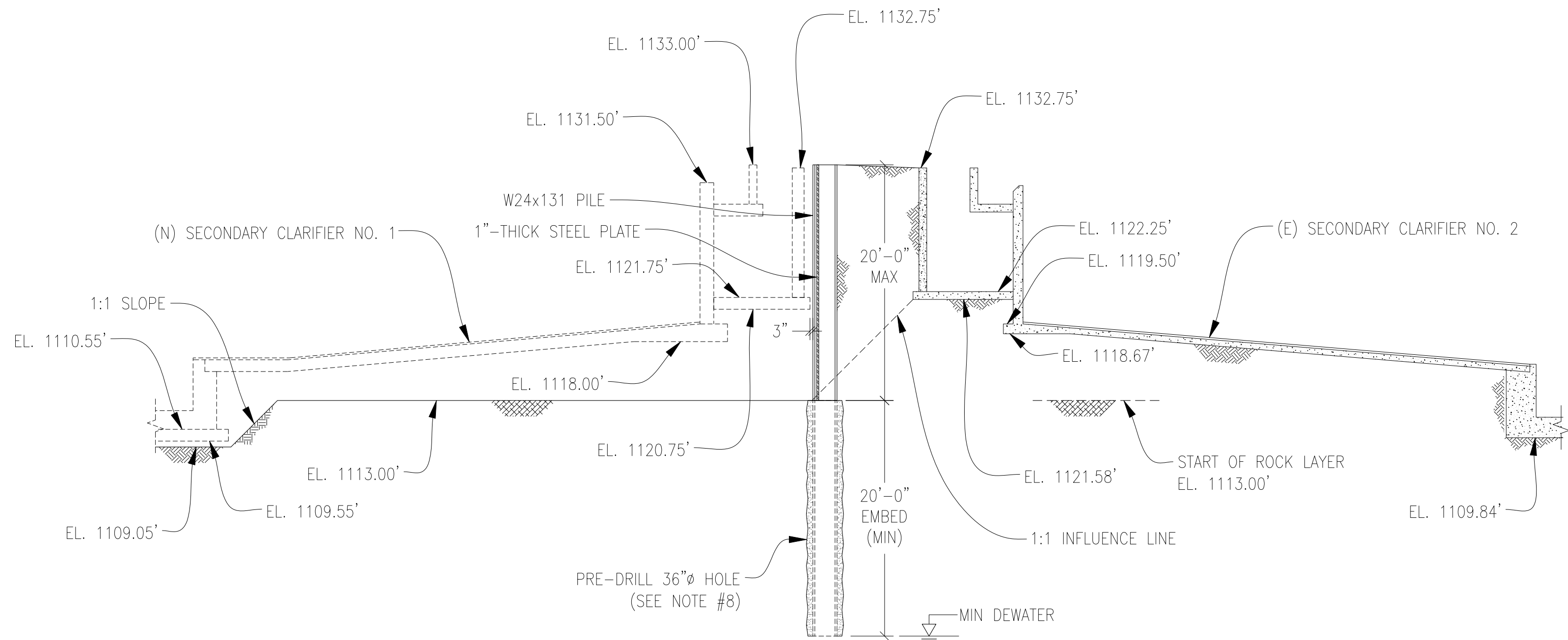
SHEET 4.2

DRAWING NO.:	REV
24-0729B	0

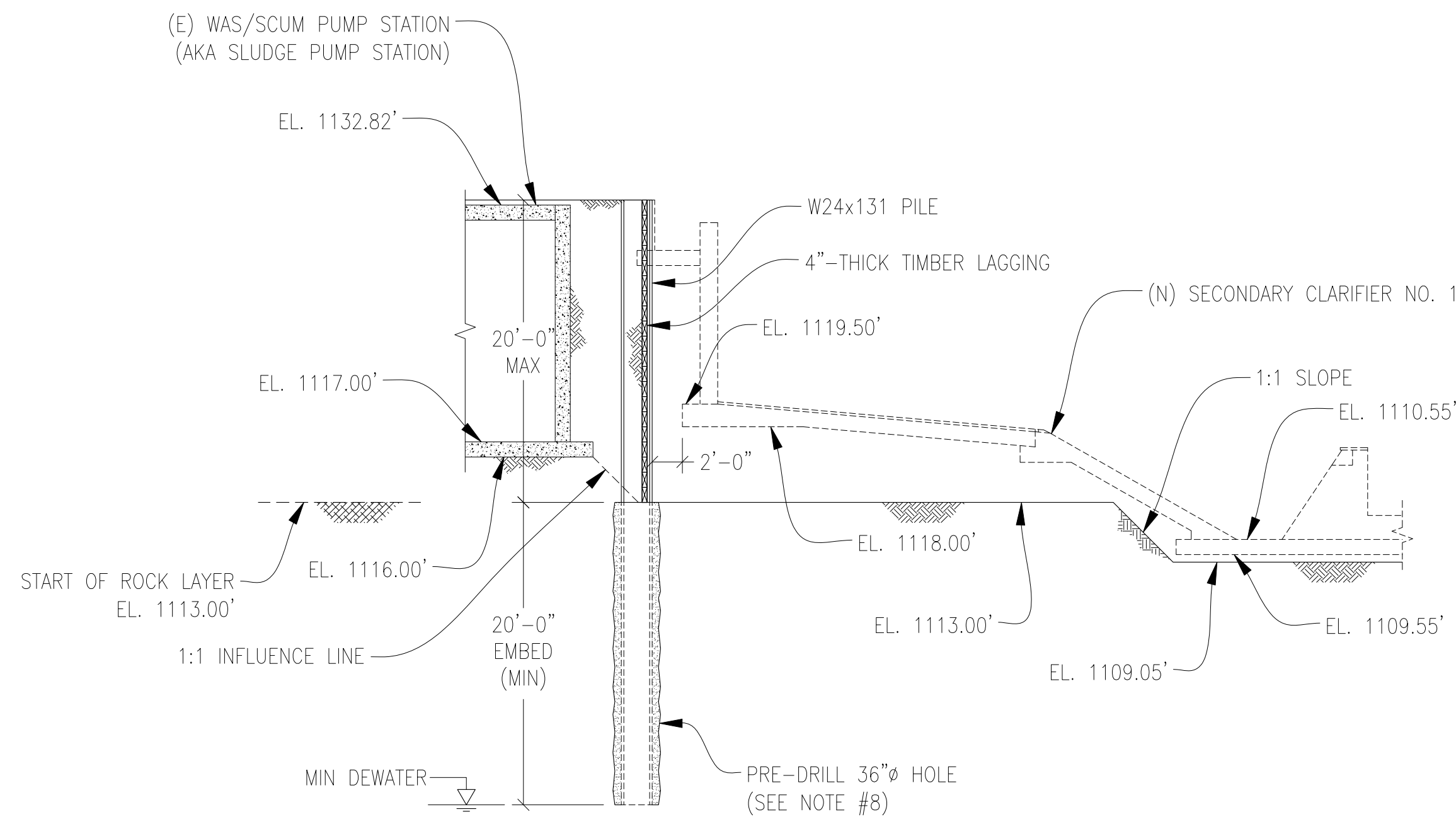
REV
0

SETBACK TABLE	
CRANE TO 30 TON MAX	X = 12'
CAT 325 EXCAVATOR	X = 7'
CAT 345 EXCAVATOR	X = 10'
CAT 365 EXCAVATOR	X = 12'
5 CY LOADER	X = 5'
DUMPTRUCK	X = 5'
SPOIL PILE (4'-TALL)	X = 6'
CONCRETE TRUCK	X = 8'
RAILROAD TRACKS	X = 100'
STREET TRAFFIC	X = 15'

ABOVE LISTED SETBACKS SHALL BE MAINTAINED A DISTANCE "X" FROM ALL EDGES OF SHORING AND ALL TOPS OF SLOPES AT ALL TIMES.

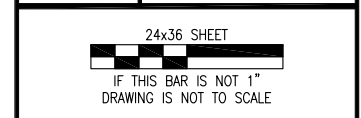


C SECTION
SCALE: 1/8"=1'-0"



D SECTION
SCALE: 1/8"=1'-0"

REVISIONS	
NO.	DATE



SHORING DESIGN PLAN
BENTONVILLE WATER RESOURCE RECOVERY FACILITY (WRRF)
IMPROVEMENTS
BENTONVILLE, AR
CROSSLAND HEAVY CONTRACTORS

CROSSLAND
HEAVY CONTRACTORS
14149 E. ADMIRAL PLACE, TULSA, OK 74116
PHONE: (918) 438-2800 www.crossland.com

DHIC
D.H. CHARLES ENGINEERING, INC.
4706 Hoon Avenue
Santa Rosa, CA 95405
(707) 537-5232 www.charlesengineering.com

DATE:	2-28-25
DRAWN BY:	CMY
CHECKED BY:	NLB
SHEET	4.3
DRAWING NO.:	24-0729B
REV	0

