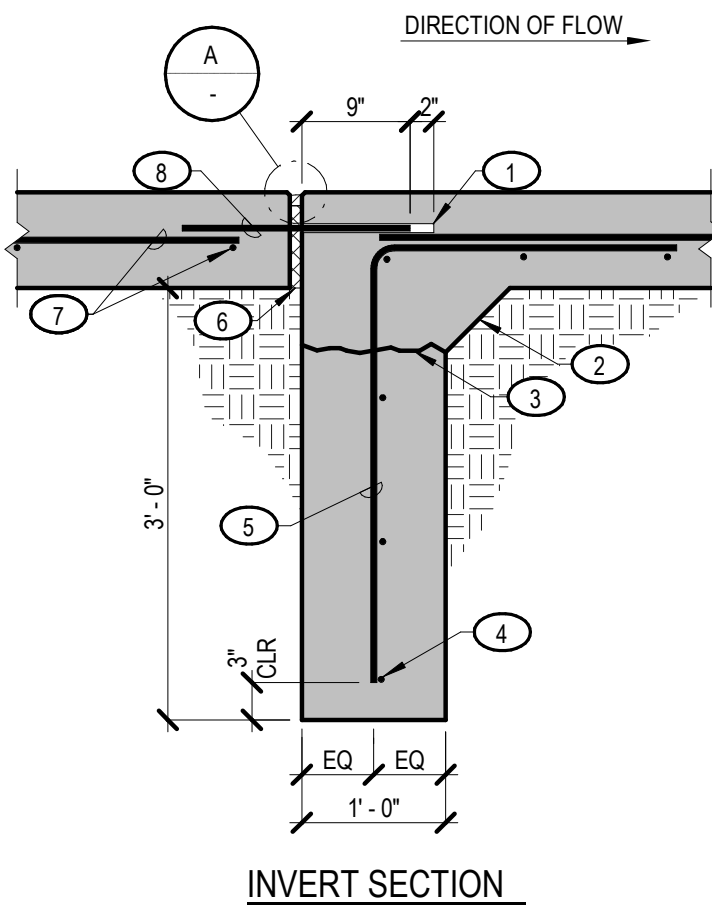
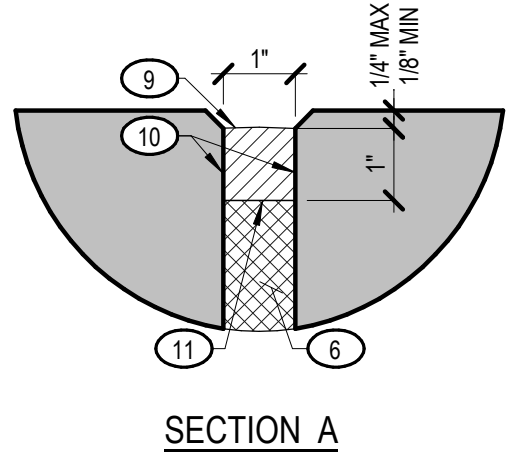
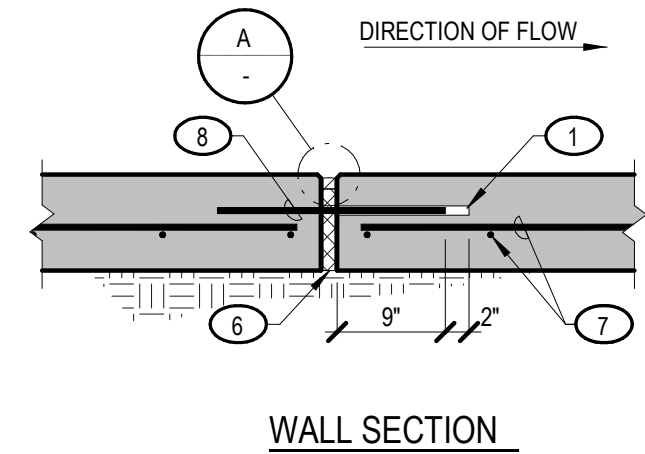


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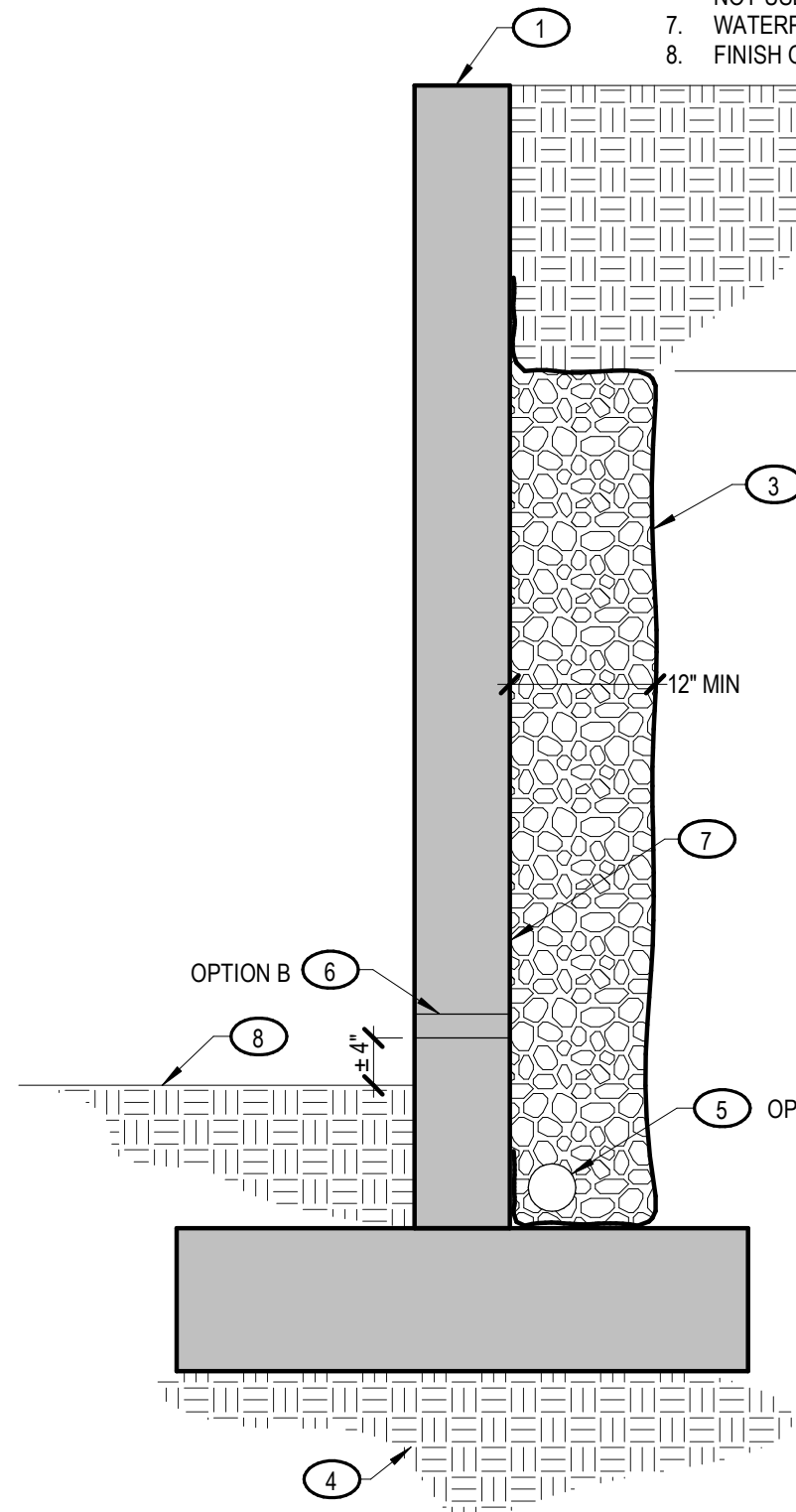


- KEYNOTES:**
- 5/8" ID PLASTIC SLEEVE MFD BY SPEED DOWEL OR APPROVED EQ
 - CHAMFER
 - CONSTRUCTION JOINT AT CONTRACTOR'S OPTION
 - #4 HORIZ AT 12" O.C. CONT
 - #4 BENT DOWEL TO LAP AND MATCH SLAB REINF
 - PREFORMED SPONGE RUBBER
 - REINF PER DETAILS
 - 5/8"x19" SMOOTH EPOXY COATED DOWELS AT 12" O.C. ALIGN ALL DOWELS TO BE SQUARE W/ JOINT FACE. HORIZ AND VERT DOWEL ALIGNMENT TO BE CHECKED BEFORE CONC IS PLACED
 - 1" DEEP PHYZITE 380 COMPRESSION SEAL MFD BY E-POXY ENGINEERED MATERIALS LLC OR APPROVED EQ. THE WIDTH OF THE SEAL SHALL BE 25% GREATER THAN THE WIDTH OF THE JOINT AT THE TIME OF INSTALLATION. MEASURE WIDTH OF JOINT AFTER INITIAL SHRINKAGE AND THERMAL MOVEMENT HAS OCCURED. ORDER SEALER MATERIAL WIDTH PLUS 25% AND INSTALL INTO JOINT AS SOON AS POSSIBLE AFTER DELIVERY TO JOB SITE. BRUSH BLAST ALL SURFACES IN DIRECT CONTACT W/ JOINT SEAL. BLOW DEBRIS FROM THE JOINT SURFACES W/ OIL FREE COMPRESSED AIR. ALL JOINTS IN THE COMPRESSION SEAL SHALL BE HEAT WELDED
 - EVA-POX BONDER #1 OR APPROVED EQ APPLIED TO BOTH SURFACES OF THE COMPRESSION SEAL AND BOTH CONC SURFACES. BONDER SHALL FILL THE GROOVES ON THE COMPRESSION SEAL
 - BOND BREAKER TAPE



11 TYPICAL EXPANSION JOINT IN CHANNEL INVERT AND WALL

S1.10 TCV132

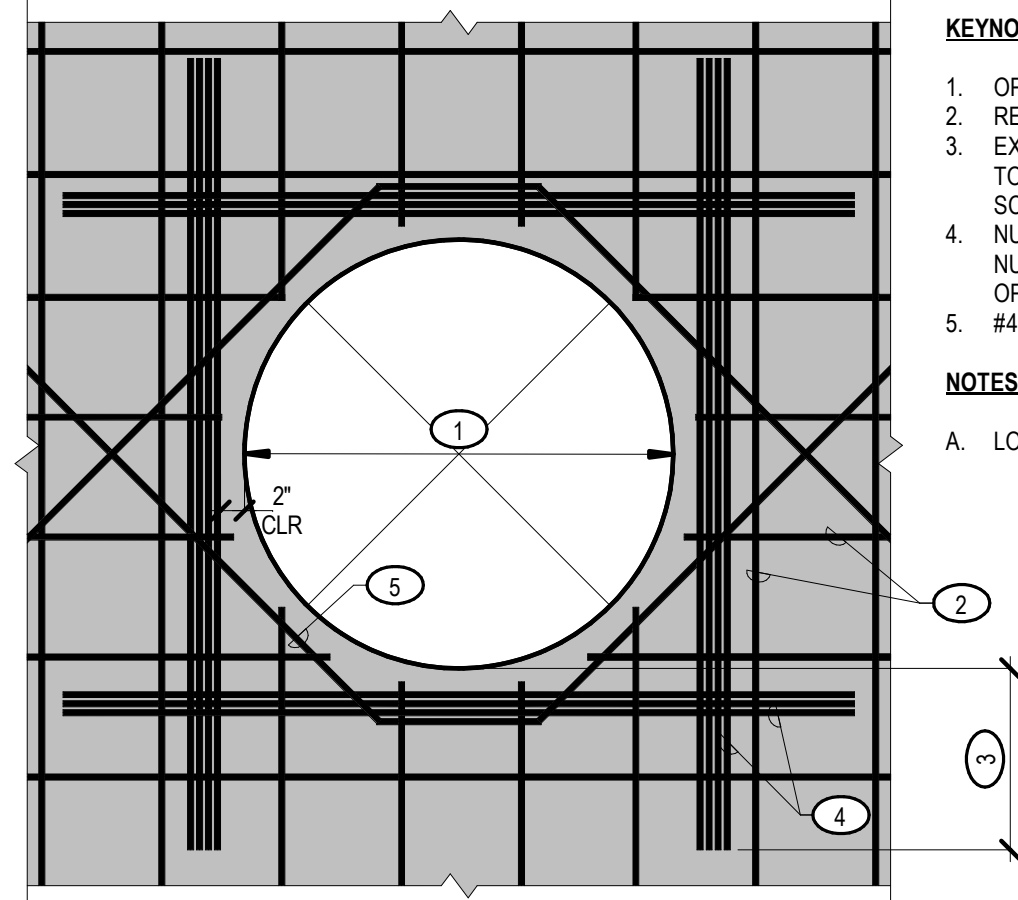


- NOTES:**
- CONTRACTOR SHALL CONSULT GEOTECH REPORT PRIOR TO SELECTING OPTION A OR OPTION B FOR WALL DRAIN SYSTEM
 - BACKFILL DETAIL IS A MIN. ADDL REQUIREMENTS SPECIFIED IN THE GEOTECHNICAL REPORT SHALL BE FOLLOWED WHEN A REPORT IS PROVIDED
 - MFD ALTERNATIVES TO A FREE-DRAINING ROCK SYSTEM SHALL BE REVIEWED AND PRE-APPROVED BY GEOTECHNICAL ENGINEER

- KEYNOTES:**
- RETAINING WALL PER PLAN
 - TERMINATE FREE-DRAINING BACKFILL W/ LAYER OF COMPACTED, IMPERVIOUS FILL
 - FREE-DRAINING UNIFORMLY-GRADED BACKFILL SHALL BE 3/4" TO 1 1/2" CLEAN CRUSHED ROCK WRAPPED IN FILTER FABRIC
 - COMPACTED SUBGRADE PER GSN
 - OPTION A: 4" Ø PERFORATED PIPE DRAIN SYSTEM. CONTRACTOR SHALL ENSURE THAT PIPE DAYLIGHTS OR TERMINATES AT SUMP PIT
 - OPTION B: PROVIDE 2" Ø WEEP HOLE AT 8'-0" O.C. W/ FILTER FABRIC WHERE PERFORATED PIPE IS NOT USED
 - WATERPROOF BACK OF WALL
 - FINISH GRADE

9 TYPICAL RETAINING WALL BACKFILL AND DRAINAGE

S1.10 TDC405

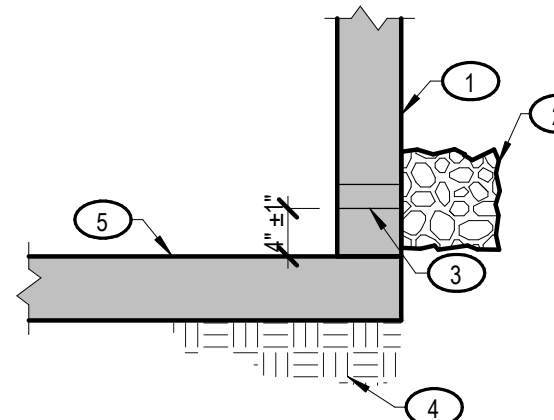


- KEYNOTES:**
- OPENING DIA 4'-0" MAX UNO
 - REINF PER PLAN
 - EXTEND BARS PAST EDGE OF OPENING EQ TO LAP LENGTH OF BAR UNO, SEE LAP SCHED
 - NUMBER OF ADDED BARS EQ TO THE NUMBER OF BARS INTERRUPTED BY OPENING
 - #4 DIAG BARS AROUND OPENING AS SHOWN

- NOTES:**
- LOCATION AS SHOWN PER CIVIL

6 TYPICAL REINFORCING AT OPENING

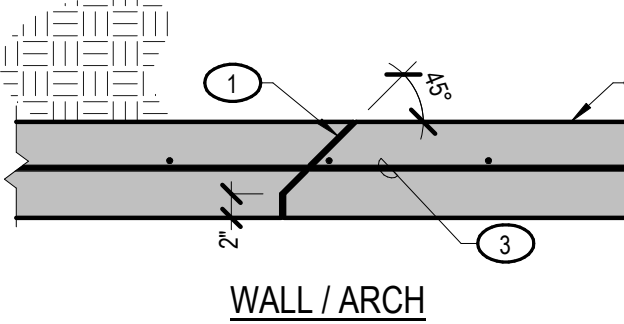
S1.10 TCV109



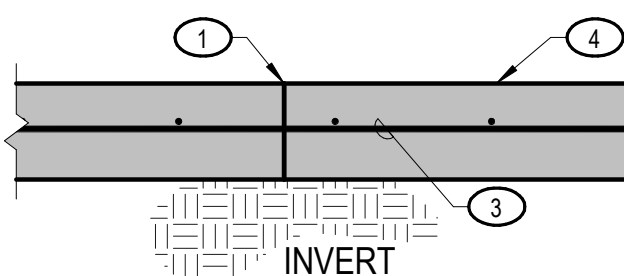
- KEYNOTES:**
- CONC WALL PER PLAN
 - (2) CUBIC FT OF FREE DRAIN MATERIAL WRAPPED IN FILTER FABRIC AT EA WEEP HOLE
 - 2" Ø WEEP HOLE EA SIDE OF STRUCTURE, LOCATE PER PLAN
 - SUBGRADE PREPARATION PER TYP DETAIL
 - STRUCTURE INVERT AS OCCURS

7 TYPICAL WEEP HOLE DRAIN REQUIREMENTS

S1.10 TCV101

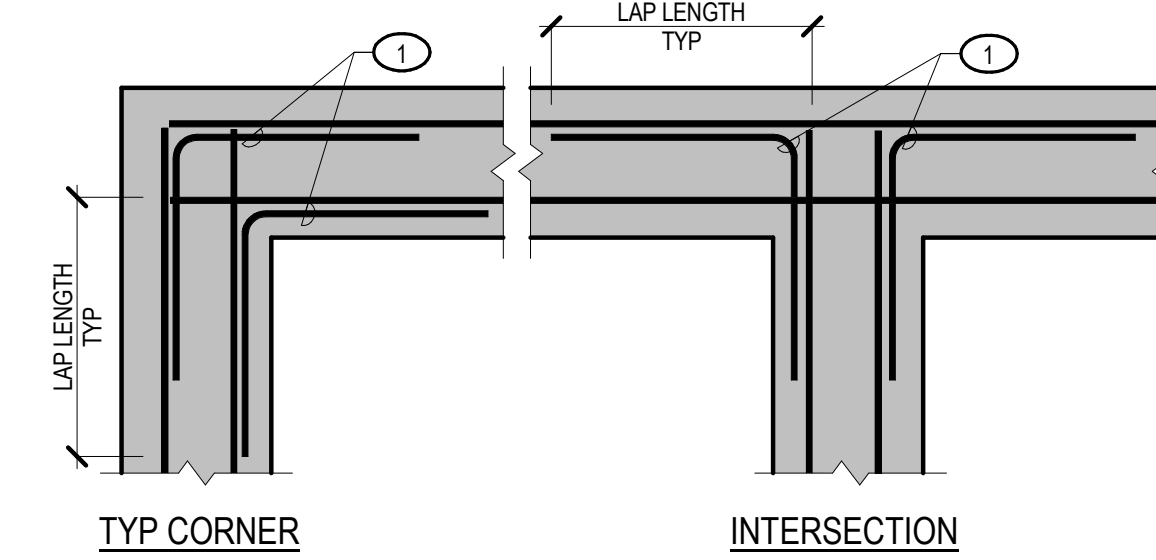


- KEYNOTES:**
- CONSTRUCTION JOINT
 - CONC WALL OR ARCH PER PLAN
 - REINF TO EXTEND THROUGH JOINT PER PLAN
 - INVERT PER CIVIL



7 TYPICAL CONSTRUCTION JOINT IN ARCH WALL OR INVERT

S1.10 TCV102



- KEYNOTES:**
- PROVIDE CORNER DOWEL TO MATCH FTG LONG REINF (LAP PER GSN)

5 TYPICAL CONCRETE FOOTING REINFORCING AT INTERSECTIONS

S1.10 TDC106

REBAR LAP LENGTH SCHEDULE NORMAL-WEIGHT CONCRETE (145 PCF)						
BAR	MIN CLR COVER	MIN BAR SPACING	F _c >= 2500 PSI		F _c >= 4000 PSI	
			TOP *	OTHER	TOP *	OTHER
#3	1.5	4.5	20	16	16	14
#4	1.5	4.0	26	20	20	16
#5	1.5	3.8	32	24	26	20
#6	2.0	3.0	46	36	38	28
#7	2.0	3.5	68	52	54	42
#8	2.0	3.0	102	78	82	62
#9	2.0	3.4	116	88	92	70
#10	2.0	3.8	130	100	102	80
#11	2.0	4.2	144	110	114	88

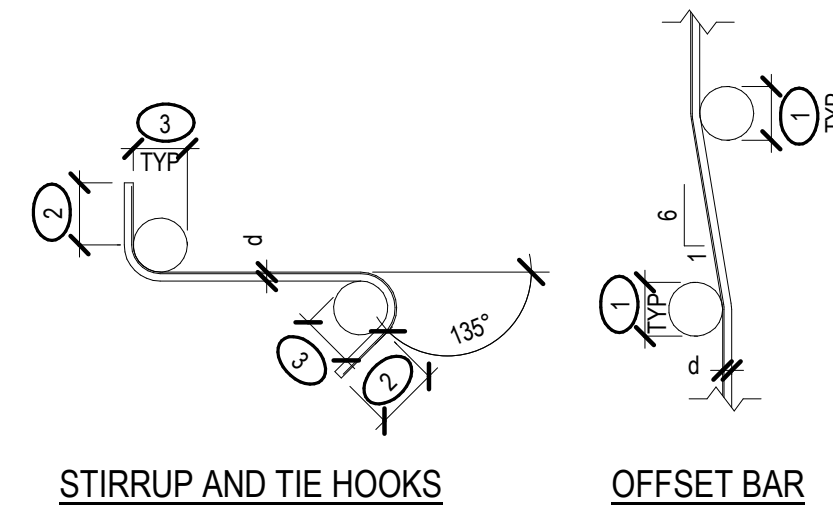
CONCRETE REBAR LAP SCHEDULE

S1.10 TDC101

MINIMUM REINFORCING COVER		
STRUCTURAL ELEMENT	COVER	TOLERANCE
FOOTING AND SLAB ON GRADE	3"	3/8"
WALLS (#5 OR SMALLER)	1 1/2"	3/8"
WALLS (#6 OR LARGER)	2"	1/2"
BEAMS AND COLUMNS	1 1/2"	3/8"
ELEVATED SLABS	3/4"	3/8"

MINIMUM COVER FOR REINFORCING STEEL

S1.10 TDC102



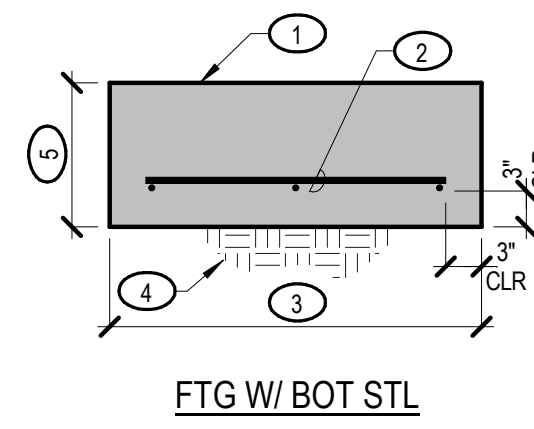
- KEYNOTES:**
- MIN FINISHED BEND DIA: 6d FOR #3 THRU #8; 8d FOR #9, #10 AND #11; 10d FOR #14 AND #18
 - EXTENSION FOR STIRRUPS AND TIES ONLY: 90°: 6d FOR #5 AND SMALLER, 12d FOR #6 THRU #8 (3" MIN); 135°: 6d (3" MIN); 180°: 4d (2 1/2" MIN)
 - MIN FINISHED BEND DIA FOR STIRRUPS AND TIES ONLY: 4d FOR #5 AND SMALLER; 6d FOR #6 THRU #8

- NOTES:**
- d = BAR DIA
 - ALL REINF SHALL BE BENT COLD UNO ON PLANS OR DETAILS
 - REINF SHALL NOT BE UN-BENT OR RE-BENT UNO

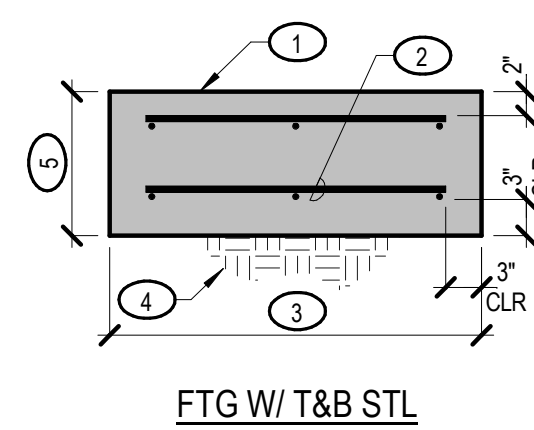
ALL OTHER REINF

STANDARD REBAR BENDING DETAILS

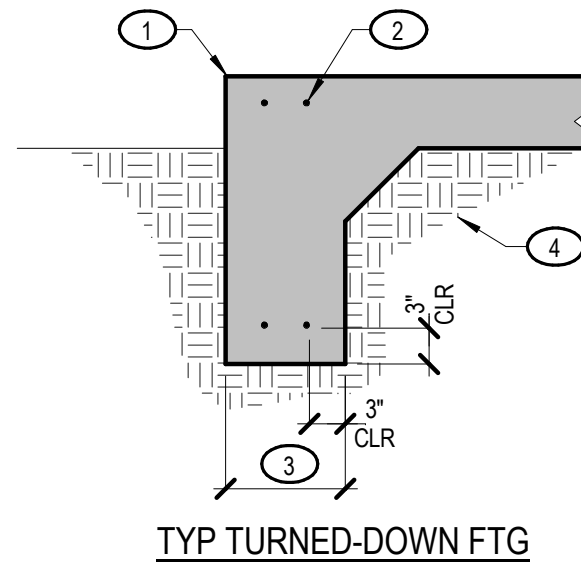
S1.10 TDC103



FTG W/ BOT STL



FTG W/ T&B STL



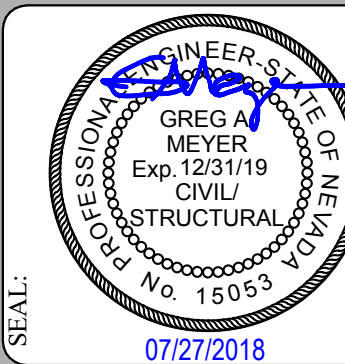
TYP TURNED-DOWN FTG

TYPICAL FOOTING

S1.10 TDC104

SECTION AT DROP INLET

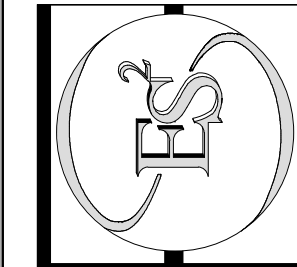
S1.10 D103



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SKYE CANYON II PHASE 3A
HYDRO-ARCH
HENDERSON, NV

TYPICAL DETAILS

PROJECT:

ISSUE:
SUBMIT FOR PERMIT 07/26/2018

REVISIONS:
DESCRIPTION DATE

DRAWN: PF CHECKED: GM

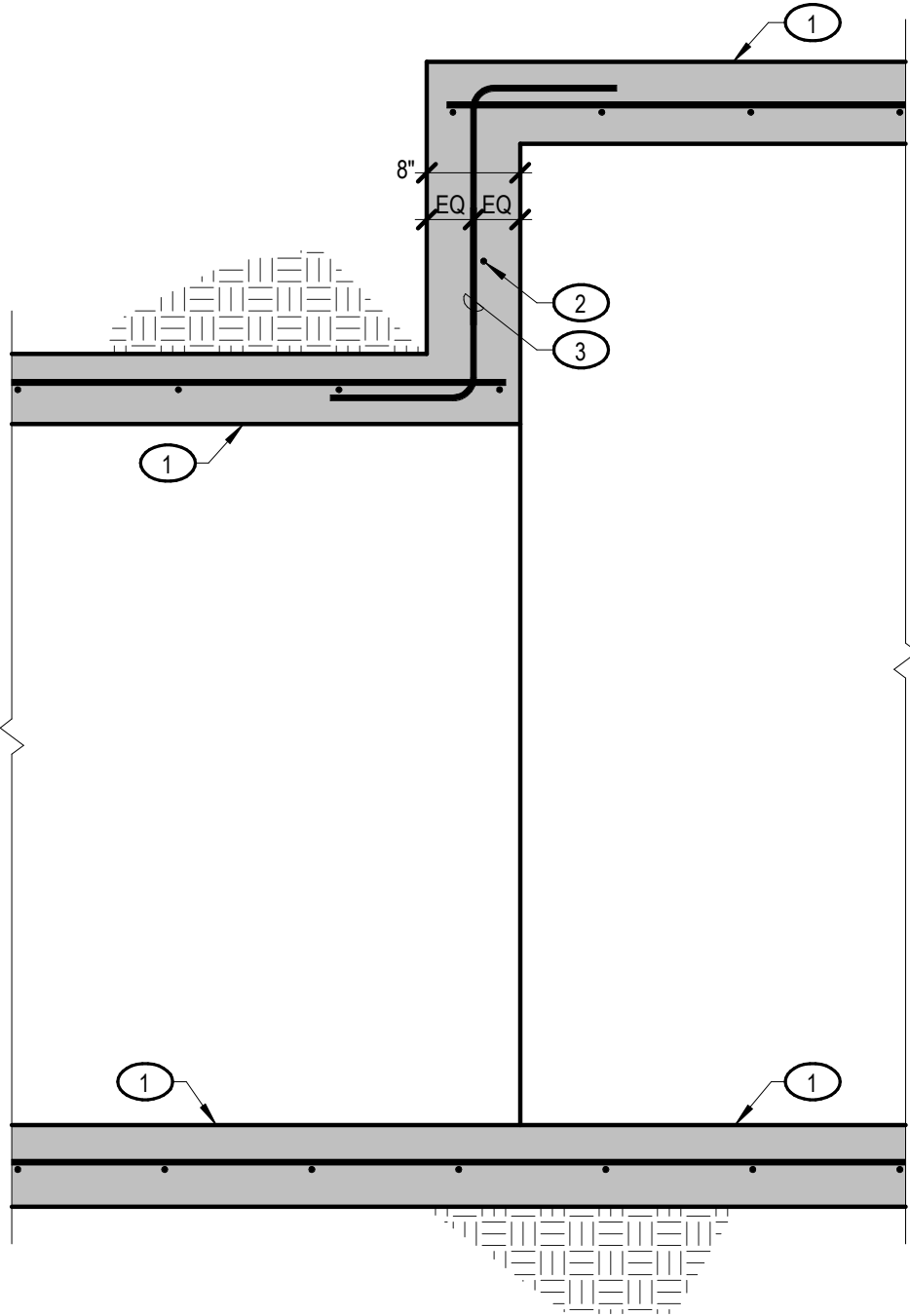
PROJECT NUMBER: 18.2620
SHEET NUMBER:

S1.10

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KEYNOTES:

1. ARCH PER PLAN AND DETAILS
2. #4 HORIZ AT 12" O.C.
3. #4 VERT DOWEL W/ 12" HOOK T&B AT 12" O.C.



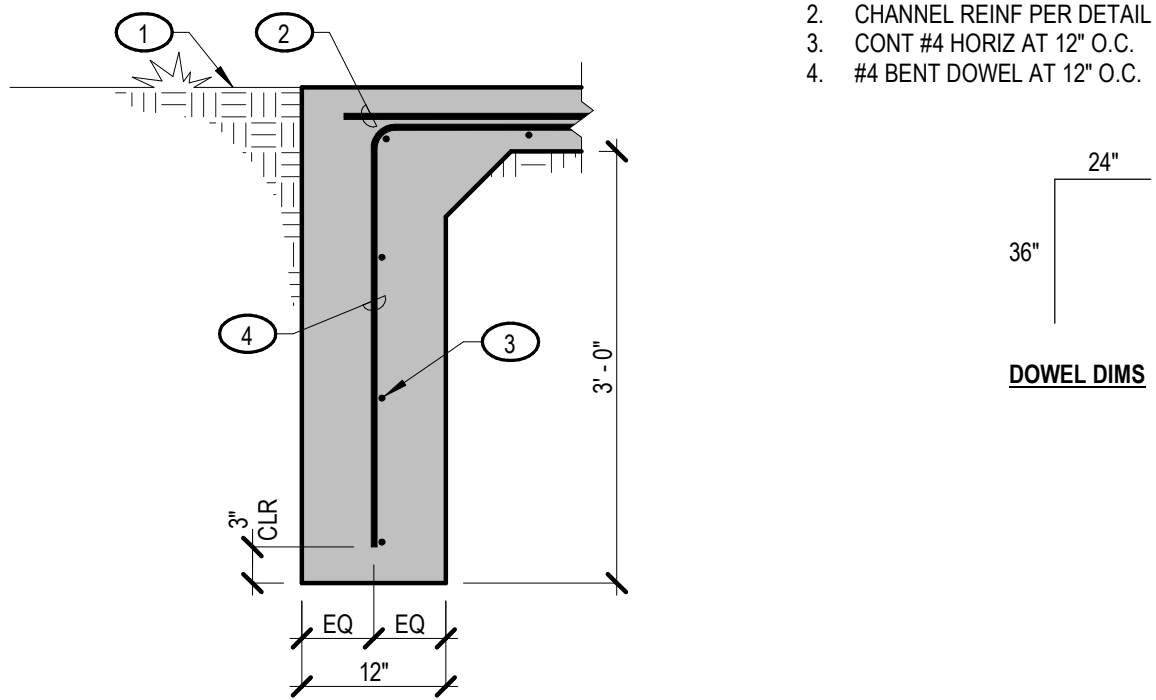
ARCH TO ARCH TRANSITION

S1.11

RCA231

KEYNOTES:

1. LOWEST ADJACENT FINAL COMPACTED SUBGRADE
2. CHANNEL REINF PER DETAIL
3. CONT #4 HORIZ AT 12" O.C.
4. #4 BENT DOWEL AT 12" O.C.



SECTION

S1.11

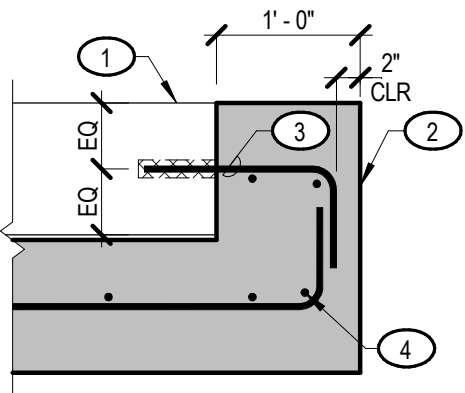
OOD4R

KEYNOTES:

1. SIDEWALL OF PRECAST RCB PER PLAN
2. CONC ENCLOSURE CAP, FULL HT OF RCB'S
3. #4 DOWELS AT 18" O.C. W/ STD HOOK, DRILL AND EPOXY INTO PRECAST RCB 6" MIN EMBED
4. (4) #5 VERT BARS W/ STD HOOK T&B

NOTES:

- A. EPOXY INSTALLATION PER MFR RECOMMENDATIONS AND SPECS. SPECIAL INSPECTION REQ'D



TYPICAL PRECAST WALL END CAP - PLAN VIEW

S1.11

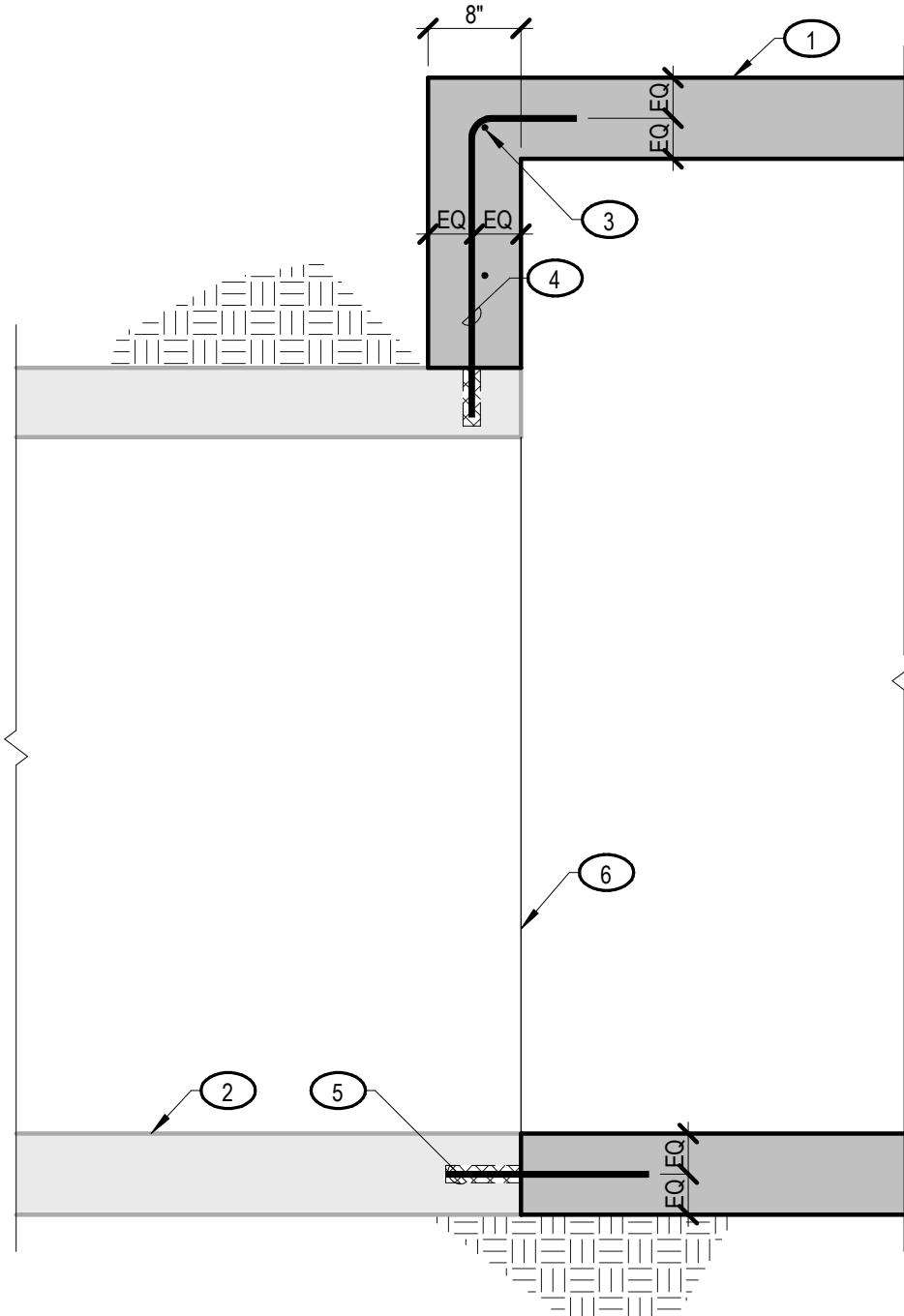
TOV111

NOTES:

- A. EPOXY CONSTRUCTION PER MFR RECOMMENDATIONS AND SPECIFICATIONS. SPECIAL INSPECTION REQ'D.
- B. REINF AT ARCH NOT SHOWN FOR CLARITY. SEE APPROPRIATE DETAILS

KEYNOTES:

1. ARCH PER PLAN AND DETAILS
2. (E) RCB
3. #4 HORIZ AT 12" O.C.
4. #4 VERT DOWEL W/ STD HOOK AT 12" O.C. DRILL AND EPOXY INTO (E) RCB. 4" MIN EMBED
5. #4x30" DOWEL AT 12" O.C. DRILL AND EPOXY INTO END OF (E) RCB AROUND ENTIRE PERIMETER. 4" MIN EMBED
6. END OF ARCH PER PLAN



NEW ARCH CONNECTION TO EXISTING RCB

S1.11

RCA222

EQUIPMENT OVER ARCH CULVERT:

BEFORE MIN DESIGN COVER IN PLACE:
NO EQUIPMENT SHALL BE PERMITTED TO PASS OVER THE ARCH CULVERT UNTIL BACKFILL MATERIAL ALONG BOTH SIDES OF THE ARCH CULVERT HAS BEEN PROPERLY PLACED UP TO 80% OF THE OVERALL ARCH HEIGHT.

EQUIPMENT WEIGHING LESS THAN OR EQUAL TO AN EMPTY 3 CU. YARD RUBBER TIRE LOADER (928 CATERPILLAR OR EQUIVALENT (13,000 LB AXLES SPACED 9'-6" MIN APART)) MAY PASS OVER THE ARCH PRIOR TO THE MINIMUM DESIGN SOIL COVER OVER THE ARCH BEING PLACED.

AFTER MIN DESIGN COVER IN PLACE:
AFTER THE MINIMUM DESIGN SOIL COVER OVER THE ARCH CULVERT HAS BEEN PROPERLY PLACED, EQUIPMENT MAY BE ALLOWED TO PASS OVER THE ARCH, PROVIDED THE EQUIPMENT DOES NOT EXCEED AASHTO HS-20 VEHICLE LOADING.

VEHICLES AND EQUIPMENT EXCEEDING THE AASHTO HS-20 LOADING (32,000 LB AXLES SPACED 14' MIN APART) SHALL NOT BE ALLOWED TO PASS OVER THE ARCH CULVERT WITHOUT PRIOR WRITTEN CONSENT FROM THE ENGINEER.

TYPICAL EQUIPMENT OVER ARCH CULVERT

S1.11

TOV123

NOTES:

- A. PLACEMENT OF THE FILL AT THE STEM WALLS AND OVER THE CULVERT MAY BEGIN WHEN THE CONC STRENGTH HAS REACHED 80% OF THE REQ'D COMPRESSIVE STRENGTH. FILL SHALL BE PLACED IN 8" MAX VERT LIFTS AND COMPACTED TO 95% OF DRY DENSITY PER ASTM D1557 (MODIFIED PROCTOR). LIFTS SHALL BE PLACED SYMMETRICALLY EA SIDE ALONG THE FULL LENGTH OF CULVERT W/ A MAX BACKFILL LIFT HT DIFFERENTIAL OF 1'-0". MAX DRY DENSITY SHALL BE DETERMINED PER TEST METHOD AASHTO T310 OR PER THE GEOTECHNICAL REPORT
- B. CONTRACTOR SHALL CONSULT GEOTECHNICAL REPORT PRIOR TO COMMENCING BACKFILL
- C. SHOTCRETE REBOUND MAY BE USED AS BACKFILL

STRUCTURAL FILL BACKFILL GRADATION REQUIREMENTS	
SIEVE SIZES	PERCENTAGE PASSING BY MASS
75 MM (3 IN.)	100
4.75 MM (NO. 4)	35-85
1200 µM (NO.16)	25-75
75 µM (NO. 200)	5-15
NATIVE SOILS SHALL BE FREE OF CLAYS AND SILTS AND MEET A MIN SOIL CLASS OF SM OR SP PER THE UNIFIED CLASSIFICATION SYSTEM.	

STRUCTURAL FILL SOIL REQUIREMENTS		
TEST	TEST METHOD	REQUIREMENTS
SIEVE ANALYSIS	AASHTO T27	SEE TABLE
LIQUID LIMIT	AASHTO T89	35 MAX
PLASTICITY INDEX	AASHTO T90	SEE TABLE
TOTAL AVAILABLE WATER SOLUBLE SULFATES	AWWA 4550E	LESS THAN 0.3% BY DRY SOIL WT

STRUCTURAL FILL PLASTIC LIMITS	
PERCENTAGE BY WEIGHT PASSING 200 SIEVE	PLASTICITY INDEX MAXIMUM
0.1 TO 3.0	15
3.1 TO 4.0	12
4.1 TO 5.0	9
5.1 TO 8.0	6
8.1 TO 11.0	4
11.1 TO 15.0	3

ZONE OF SUBGRADE PREPARATION	
DEPTH OF OVEREXCAVATION	PER GEOTECH REPORT
DEPTH OF SCARIFY AND RECOMPACTION	PER GEOTECH REPORT
DEPTH OF STRUCTURAL FILL	PER GEOTECH REPORT

KEYNOTES:

1. FINISHED GRADE
2. STRUCTURAL BACKFILL WITHIN THE ENVELOPE AS SHOWN SHALL CONSIST OF BACKFILL MEETING THE GRADATION REQUIREMENTS AND PLASTIC LIMIT AS SPECIFIED
- FOR FILL HT LESS THAN 2'-0", THE FINISH GRADE SHALL BE THE BOUNDARY LINE FOR THE BACKFILL ZONE
- GRANULAR BACKFILL SHALL CONSIST OF NATURAL SAND OR A MIXTURE OF SAND W/ GRAVEL, CRUSHED GRAVEL, OR CRUSHED STONE AND CONFORM TO GRADATION, SOIL, AND PLASTIC LIMIT REQUIREMENTS SPECIFIED IN THE TABLES
- DO NOT USE PEA GRAVEL AS GRANULAR BACKFILL. PEA GRAVEL IS TYPICALLY A BYPRODUCT OF AGGREGATE CRUSHING AND/OR SCREENING OPERATIONS. IT IS UNIFORMLY GRADED, NORMALLY HAVING A NOMINAL SIZE OF 9.5 MM (3/8 IN.)
3. BACKFILLING OPERATIONS OUTSIDE THE STRUCTURAL BACKFILL ZONE SHALL BE PER THE GEOTECHNICAL REPORT AND/OR SPECS
4. ZONE OF SUBGRADE PREPARATION PER TABLE:

OVEREXCAVATION:

OVEREXCAVATION PER TABLE. OVEREXCAVATION SHOULD EXTEND A MIN OF 2'-0" BEYOND EDGE OF STRUCTURE.

SCARIFY AND RECOMPACTION:

THE EXPOSED SUBGRADE SHALL BE SCARIFIED PER TABLE, MOISTURE CONDITIONED AND COMPACTED TO 95% OF MAX DRY DENSITY.

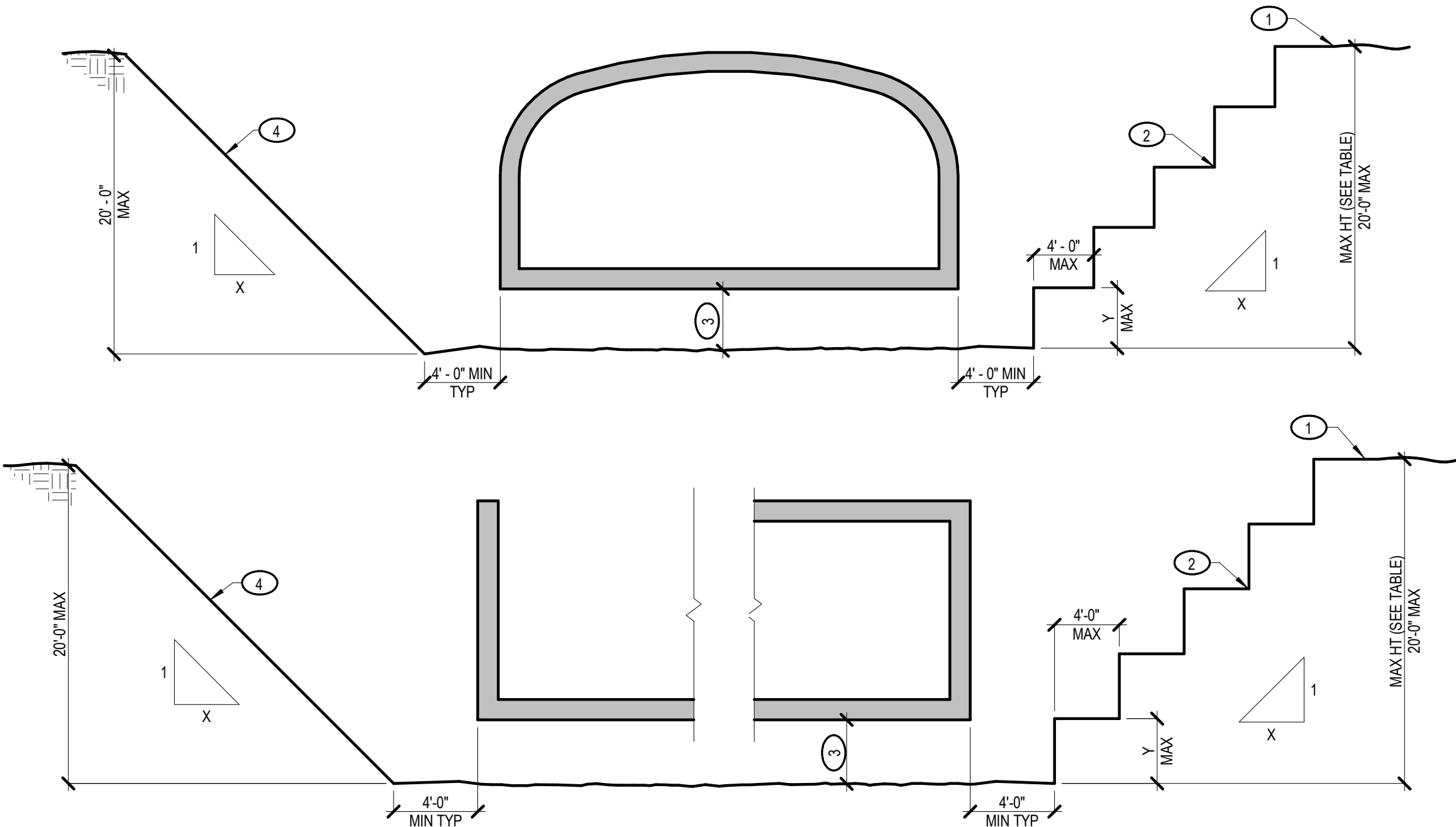
STRUCTURAL FILL:

PLACE A LAYER OF STRUCTURAL FILL PER TABLE ATOP THE COMPACTED (E) SUBBASE AND COMPACT TO 95% MAX DRY DENSITY. COMPACTION SHALL BE PER ASTM D1557 (MODIFIED PROCTOR). PLACE IN 8" MAX LIFTS.

TYPICAL BACKFILL AND SUBGRADE PREPARATION REQUIREMENTS

S1.11

TOV121



KEYNOTES:

1. HIGHEST ADJACENT GRADE
2. MULTIPLE BENCH EXCAVATION (SEE TABLE)
3. OVER EXCAVATE AS REQ'D FOR SUBGRADE PREPARATION. REFER TO GEOTECHNICAL REPORT OR TYP DETAIL
4. OPTIONAL SIMPLE SLOPE EXCAVATION

NOTES:

- A. COORDINATE EXCAVATION SOIL W/ OSHA 29 CFR 1926 SUBPART P TO DETERMINE SOIL TYPE A, B, OR C
- B. CONTRACTOR SHALL CONSULT GEOTECHNICAL REPORT PRIOR TO EXCAVATION
- C. THE INFO PRESENTED IS A GUIDELINE TO EXCAVATION BASED ON OSHA 29 CFR 1926 SUBPART P. TO DETERMINE WHERE SHORING IS REQ'D AND FOR FURTHER INFO SEE OSHA 29 CFR 1926

SOIL TYPE	(X) HORIZ	(Y) MULT BENCH
A	3/4	5'-0"
B	1	4'-0"
C	1 1/2	N/A

RECOMMENDED EXCAVATION GUIDELINES PER OSHA 29 CFR 1926 SUBPART P



SEAL:

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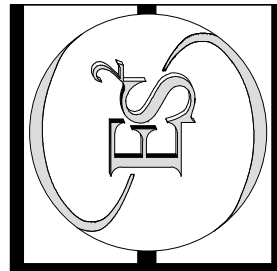
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REVISIONS:

DESCRIPTION DATE

DRAWN:

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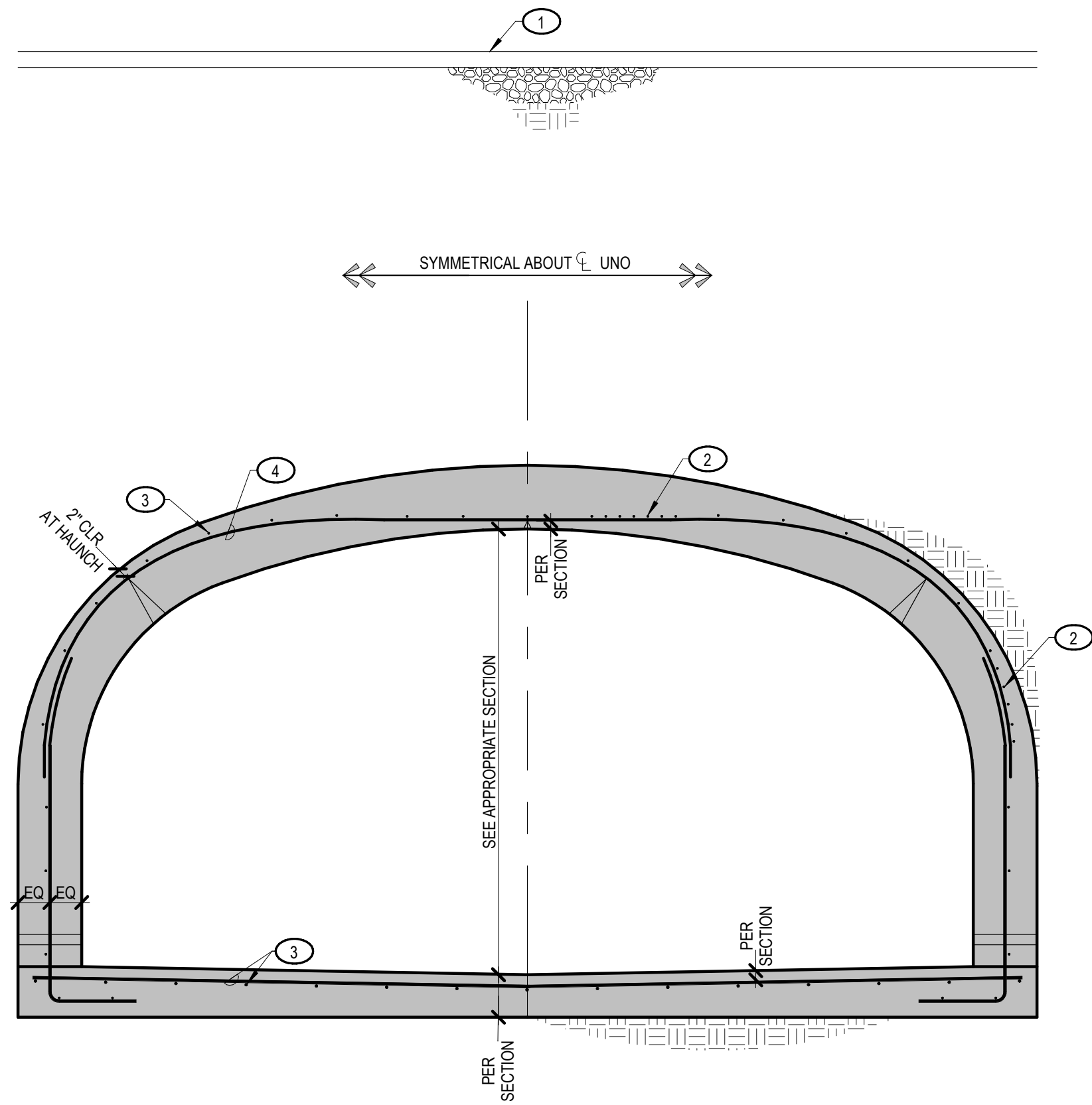
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SHEET NUMBER:

S1.11

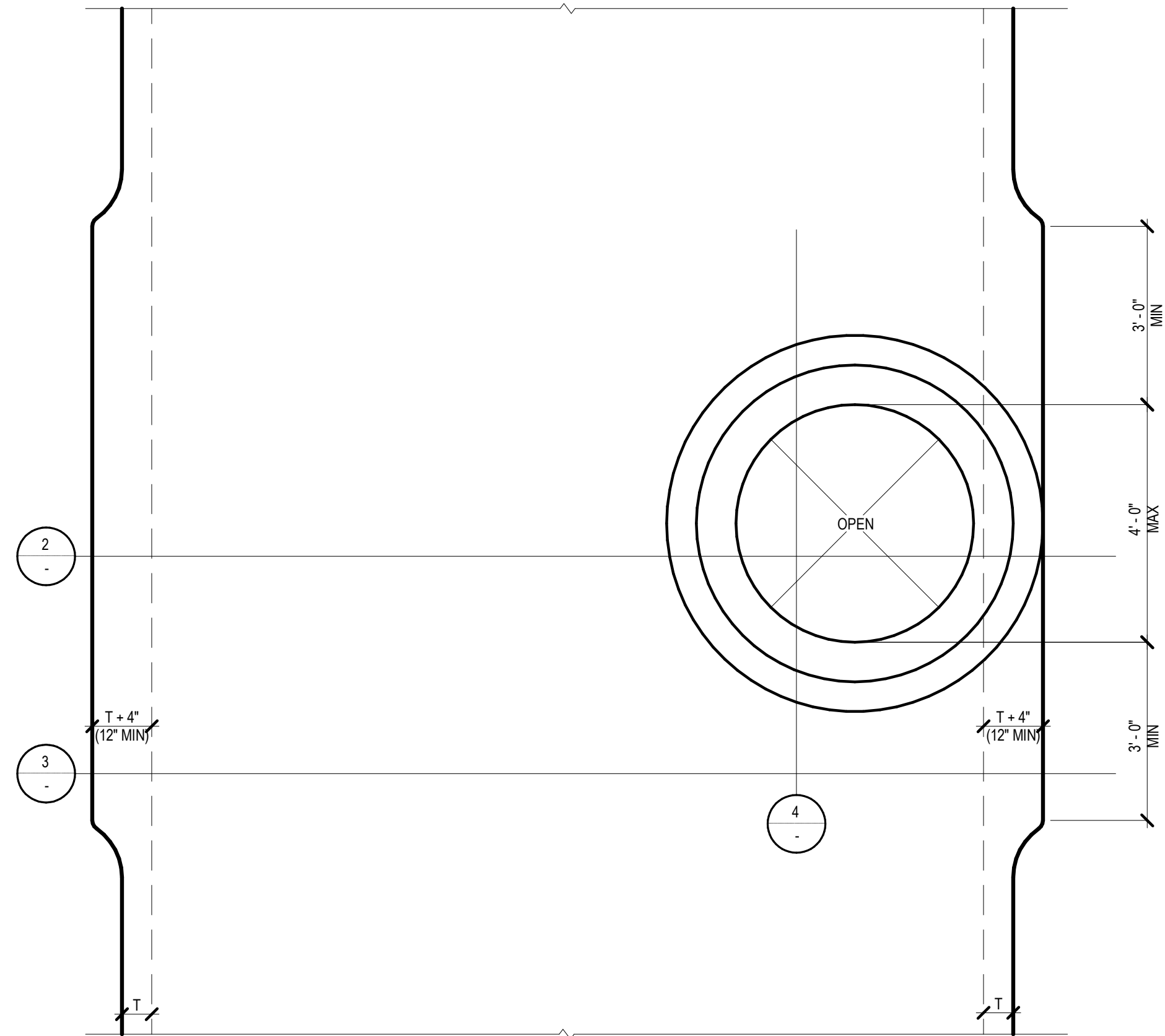
TYPICAL DETAILS



KEYNOTES:

1. FINISHED GRADE PER CIVIL
2. ADDL LONG BARS ADJACENT TO MANHOLE OPENING PER DETAIL 2
3. REINF PER CULVERT SECTION
4. ADDL BARS EA SIDE OF MANHOLE OPENING EQ TO HALF THE NUMBER OF TRANS BARS INTERRUPTED. DISTRIBUTE ADDL BARS OVER 3'-0". COMBINE AND SPACE EQUALLY W/ TYP REINF *

*EXAMPLE: #4 @ 6" O.C. TRANS TYP AT 48"Ø MANHOLE OPENING. (8) TRANS BARS INTERRUPTED. (4) ADDL BARS REQ'D EA SIDE PLUS (6) TYP BARS. DISTRIBUTE (10) TOTAL BARS IN 3' WIDTH



NOTES:

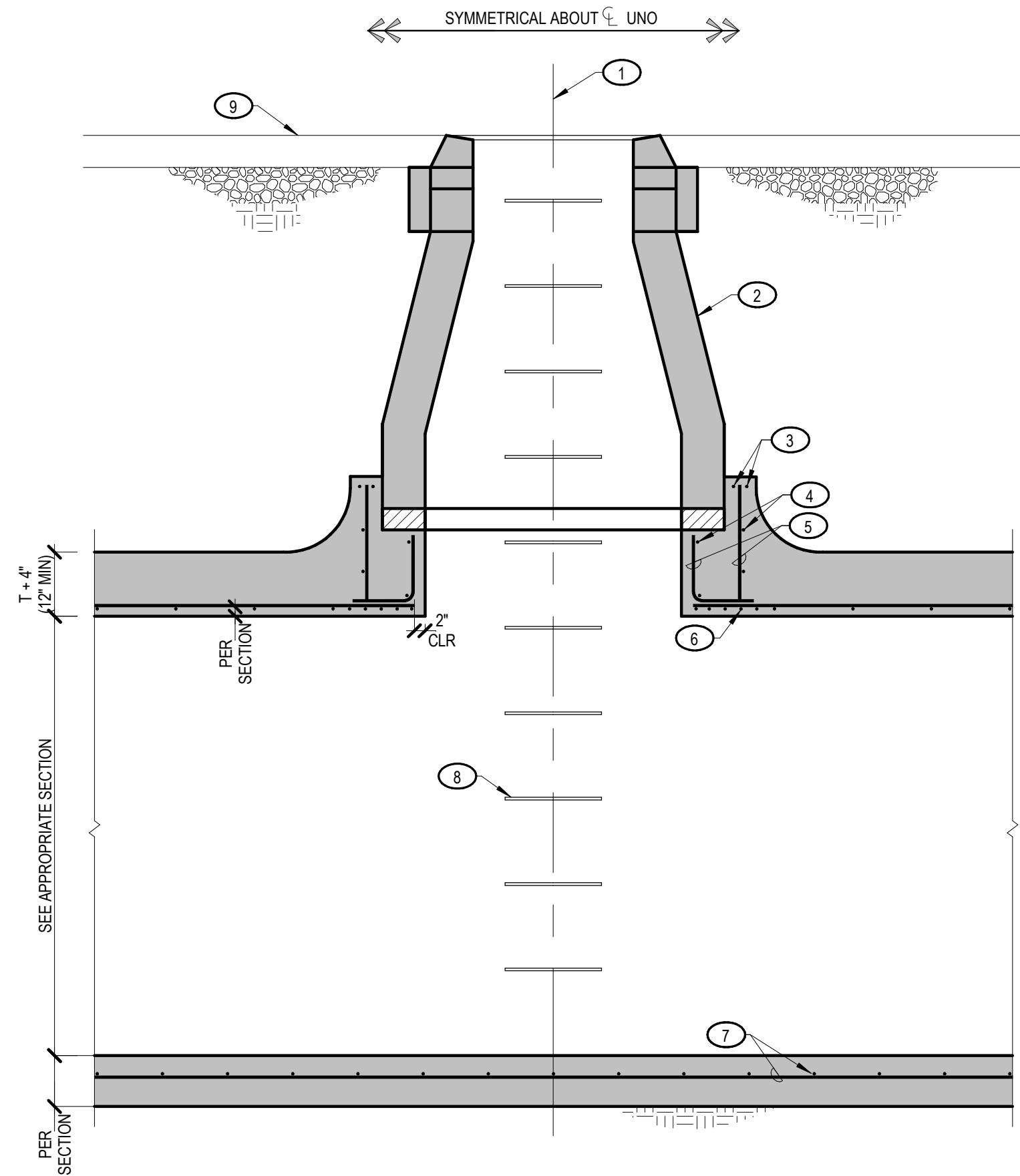
- A. T DESIGNATES TYP ARCH WALL THICKNESS PER APPROPRIATE SECTION
- B. EXACT STATION AND LOCATION OF MANHOLE PER CIVIL PLANS
- C. MANHOLE DIA PER CIVIL PLANS

3
S1.12
TYPICAL SECTION AT THICKENED ARCH AT MANHOLE

RCA313

1
S1.12
TYPICAL PLAN AT MANHOLE

RCA311

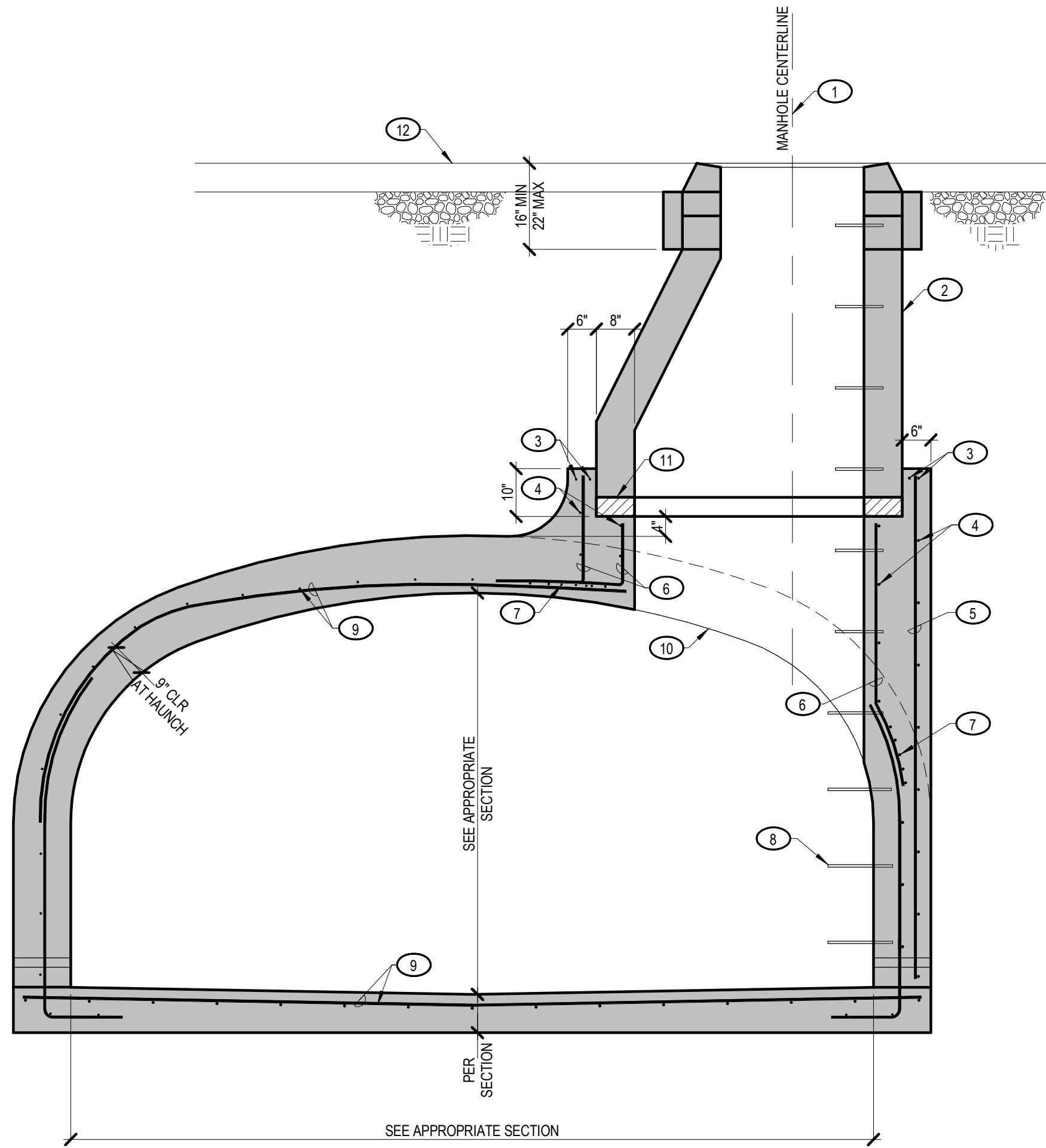


KEYNOTES:

1. MANHOLE STATIONING PER CIVIL DWGS
2. MANHOLE AND RISER PER DETAIL 2
- (2) #4 CONT AT T.O. WALL
- #4 HORIZ AT 8" O.C.
- #4 AT 8" O.C. PROVIDE 18" LONG HOOK INTO ARCH
- ADDL BARS EA SIDE OF MANHOLE PER DETAIL 3
- REINF PER CULVERT SECTION
- STEPS PER DETAIL 2
- FINISHED GRADE PER CIVIL

NOTES:

- A. FOR ITEMS SHOWN BUT NOT NOTED, SEE DETAILS 1, 2, AND 3 THIS SHEET
- B. "T" INDICATES TYP ARCH WALL THICKNESS PER APPROPRIATE SECTION



KEYNOTES:

1. MANHOLE STATIONING PER CIVIL DWGS
2. 48"Ø MAX TYPE I OR IA MANHOLE ASSEMBLY PER CLARK COUNTY UNIFORM STANDARD DRAWING NO. 403/403.1 OR 404/404.1. USE OF TYPE I OR IA SHALL BE DETERMINED BASED ON THE FINAL COVER REQ'D
- (2) #4 CONT AT T.O. WALL
- #4 HORIZ AT 8" O.C.
- #4 VERT AT 8" O.C.
- #4 AT 8" O.C. PROVIDE 18" LONG HOOK INTO ARCH
- (5) #5 x 10'-0" LONG AT 3" O.C. LONGITUDINAL EA SIDE OF OPENING
- MANHOLE STEPS PER CLARK COUNTY UNIFORM STANDARD DRAWING NO. 410
- REINF PER CULVERT SECTION
- ARCH BEYOND
- STYROFOAM FILL BETWEEN CULVERT AND MANHOLE ASSEMBLY
- FINISHED GRADE PER CIVIL

NOTES:

- A. FOR ITEMS SHOWN BUT NOT KEYNOTED, REFER TO APPROPRIATE ARCH SECTION
- B. "T" INDICATES TYP ARCH WALL THICKNESS PER APPROPRIATE SECTION

4
S1.12
TYPICAL LONGITUDINAL SECTION AT MANHOLE

RCA314

2
S1.12
TYPICAL TRANSVERSE SECTION AT MANHOLE

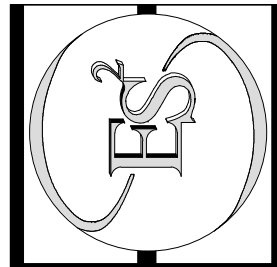
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SKYE CANYON II PHASE 3A
HYDRO-ARCH
HENDERSON, NV

TYPICAL DETAILS

PROJECT:

ISSUE:
SUBMIT FOR PERMIT 07/26/2018

REVISIONS:

#	DESCRIPTION	DATE
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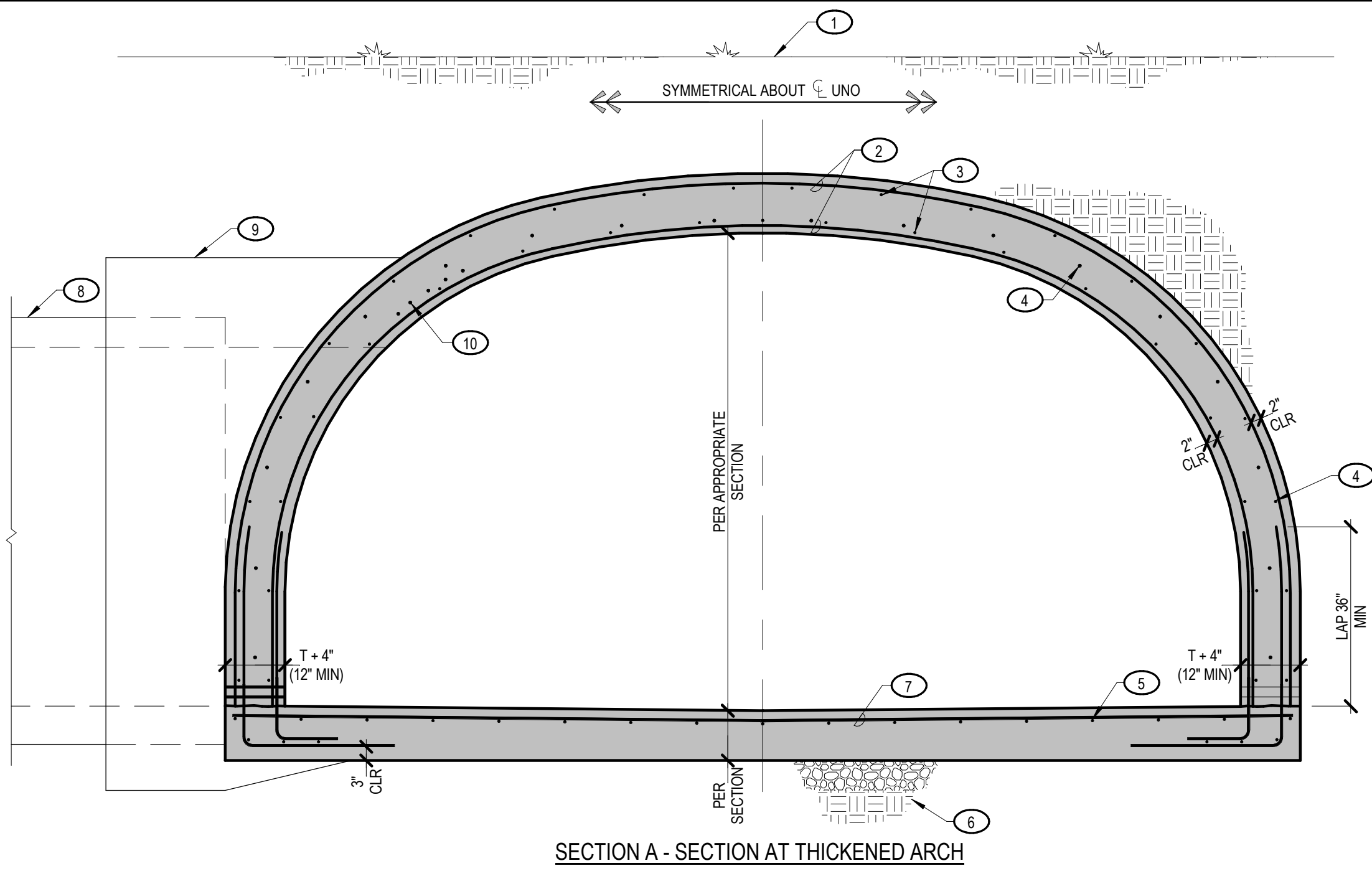
CHECKED:

GM

PROJECT NUMBER: 18.2620
SHEET NUMBER:

S1.12

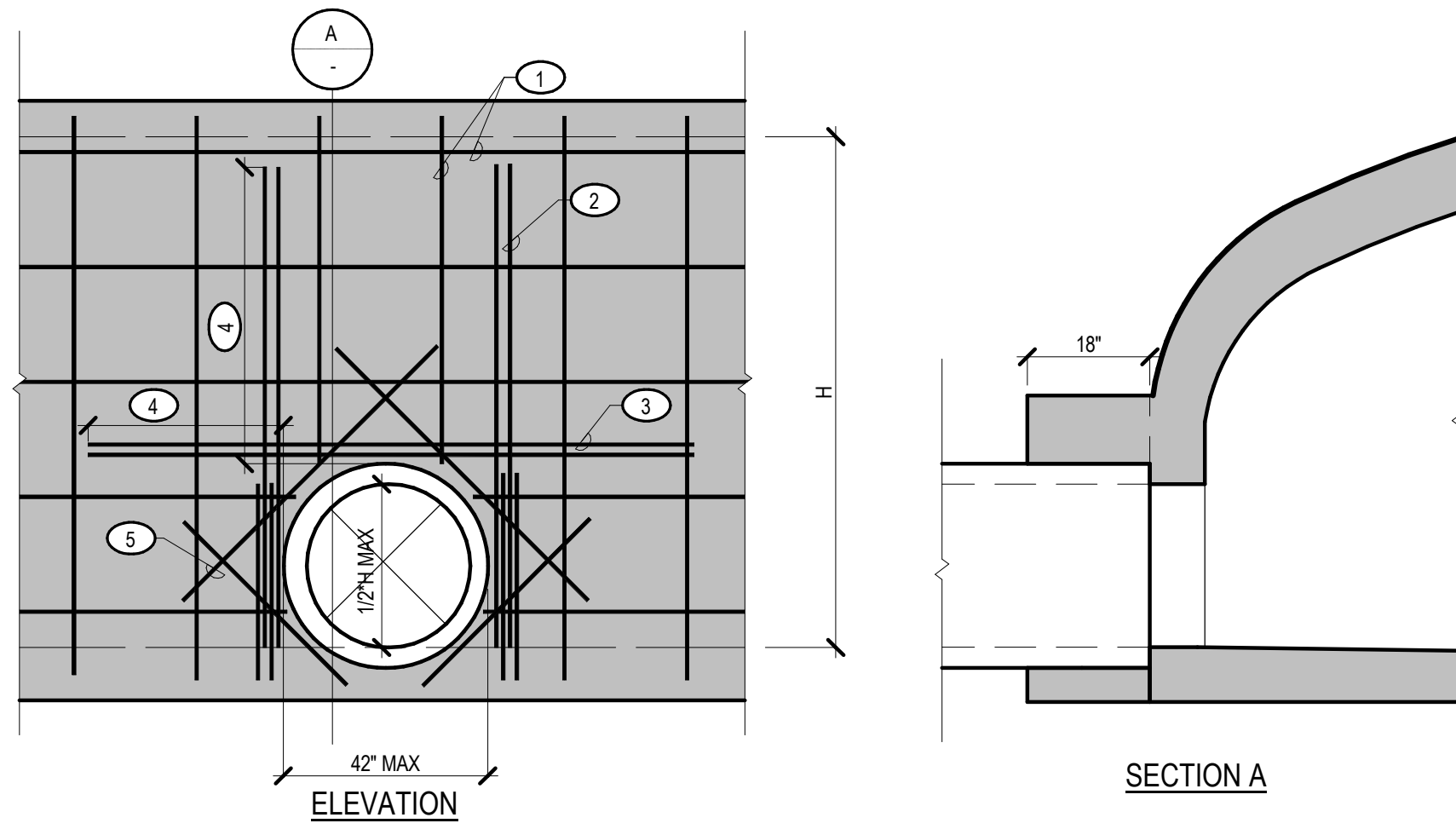
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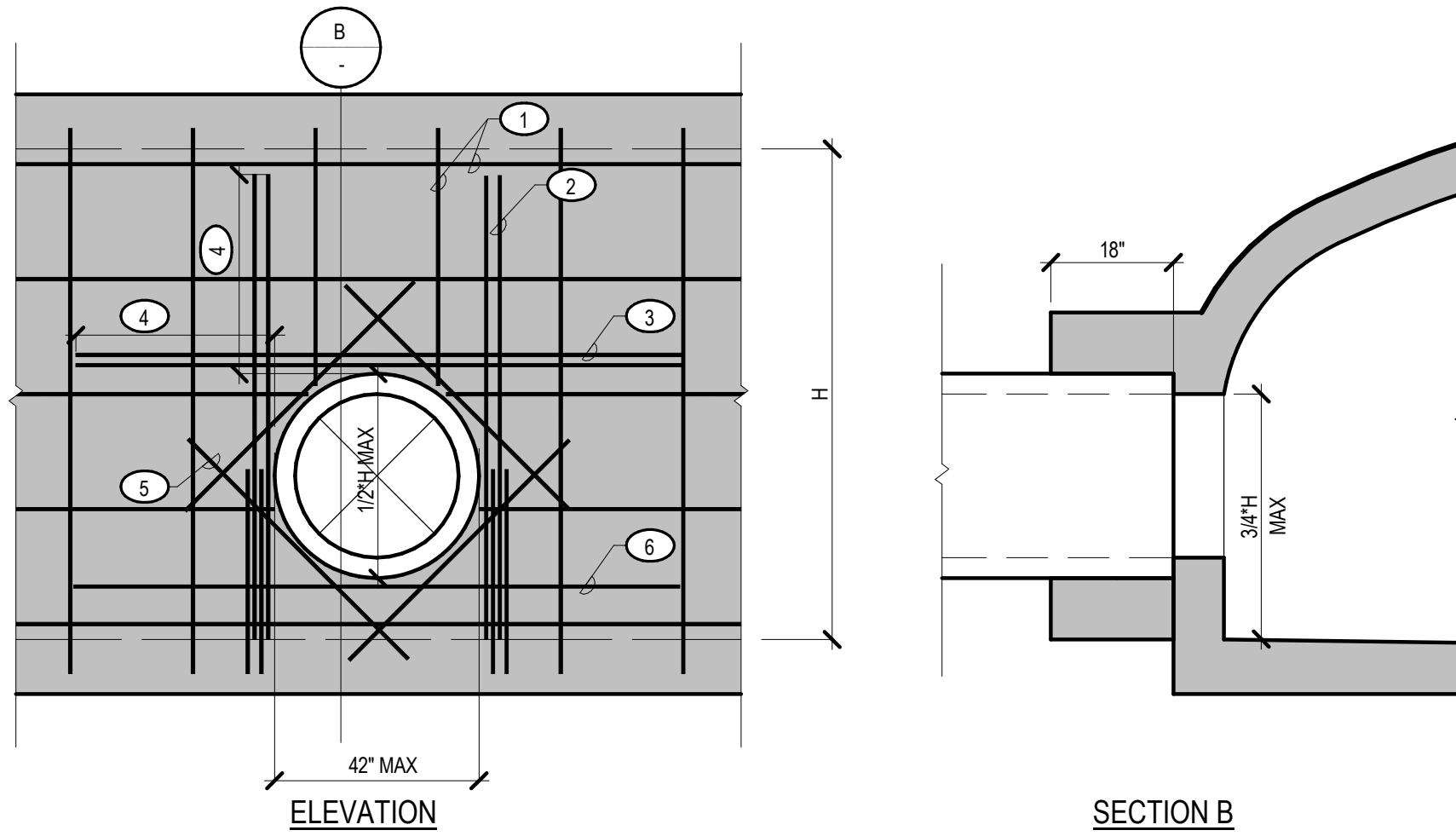
- KEYNOTES:**
1. FINAL GRADE PER CIVIL
 2. (10) #5 AT 4" O.C. EA FACE TO REPLACE TYP TRANS REINF W/ HOOKED DOWEL TO MATCH AND LAP AT BASE. 36" LONG HOOK AT OUTSIDE DOWEL
 3. #4 x 15'-0" LONG AT 18" O.C. EA FACE
 4. TYP LONG REINF. EXTEND AND LAP INTO THICKENED SECTION PER APPROPRIATE SECTION
 5. TYP LONG REINF PER APPROPRIATE SECTION
 6. SUBGRADE PREPARATION PER TYP DETAIL
 7. TYP TRANS REINF PER APPROPRIATE SECTION
 8. RCP PER PLAN
 9. COLLAR AT RCP
 10. (5) #5 x 15'-0" LONG AT 4" O.C. ABOVE RCP OPENING
 11. EXTEND BARS 18" INTO INVERT AS SHOWN
 12. #4 AT 8" O.C.
 13. #4 AT 8" O.C. PLACE RADIALLY AROUND COLLAR

VARIES 18"

- NOTES:**
- A. "T" DESIGNATES TYP ARCH WALL THICKNESS PER APPROPRIATE SECTION



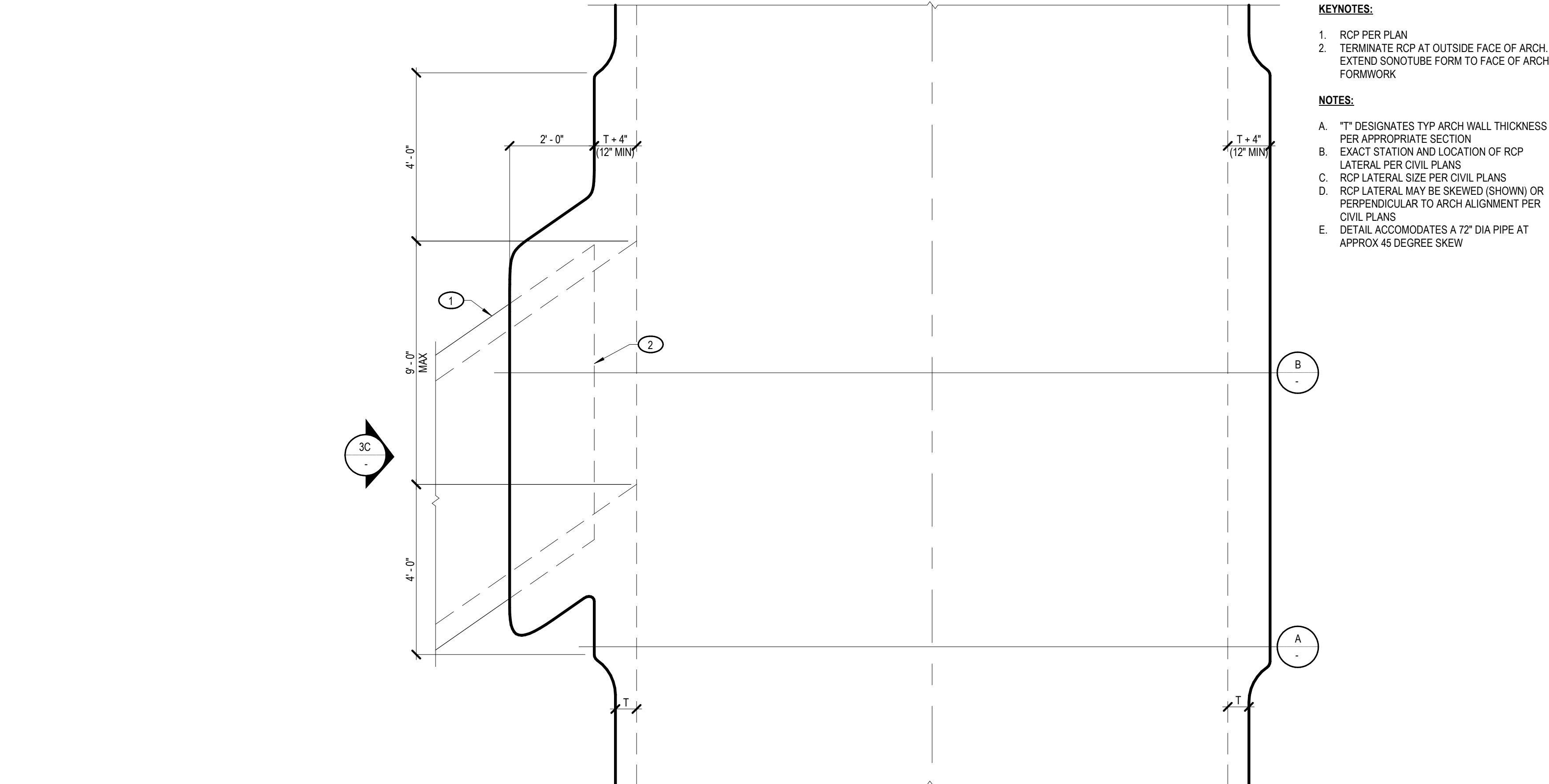
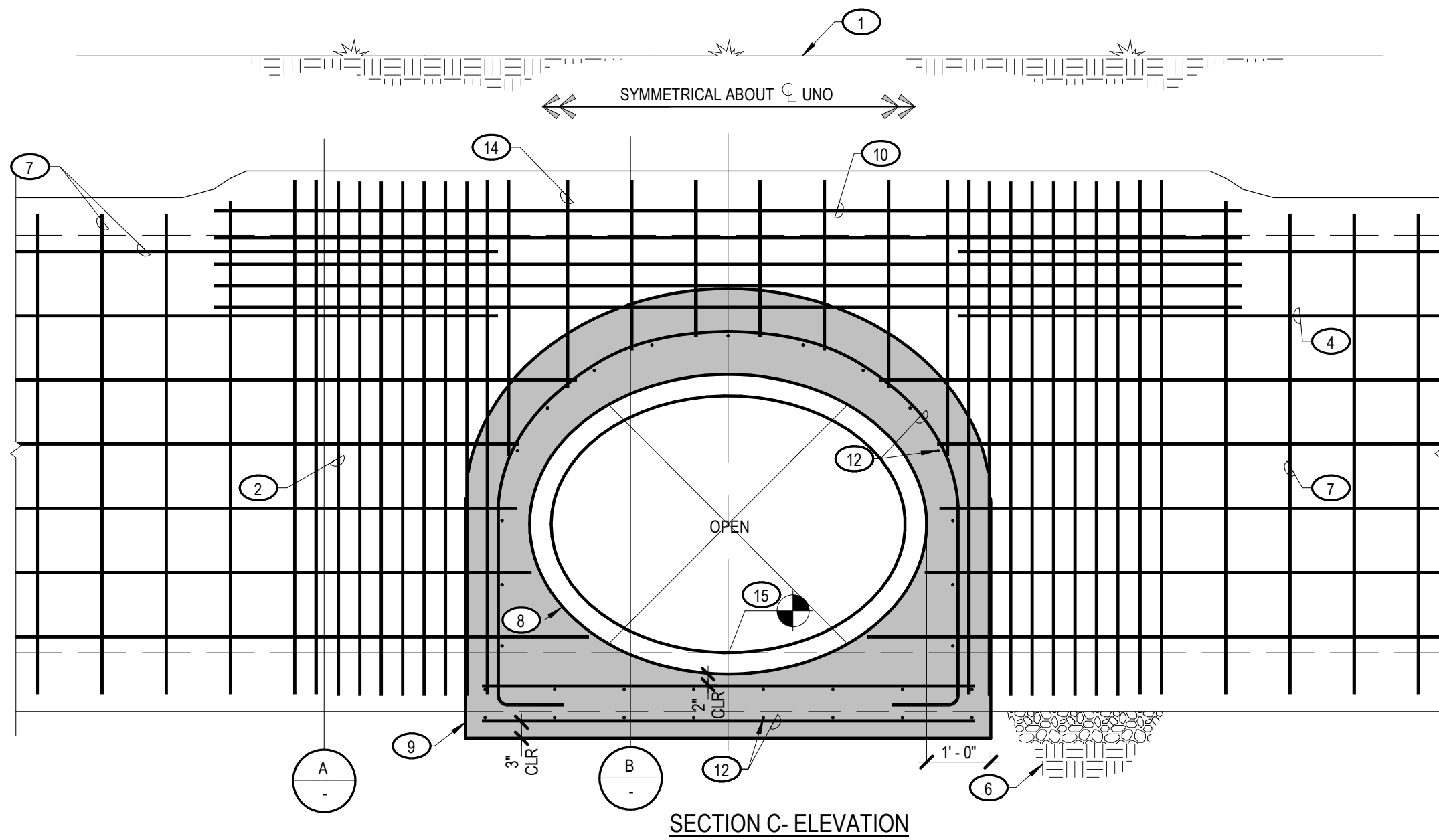
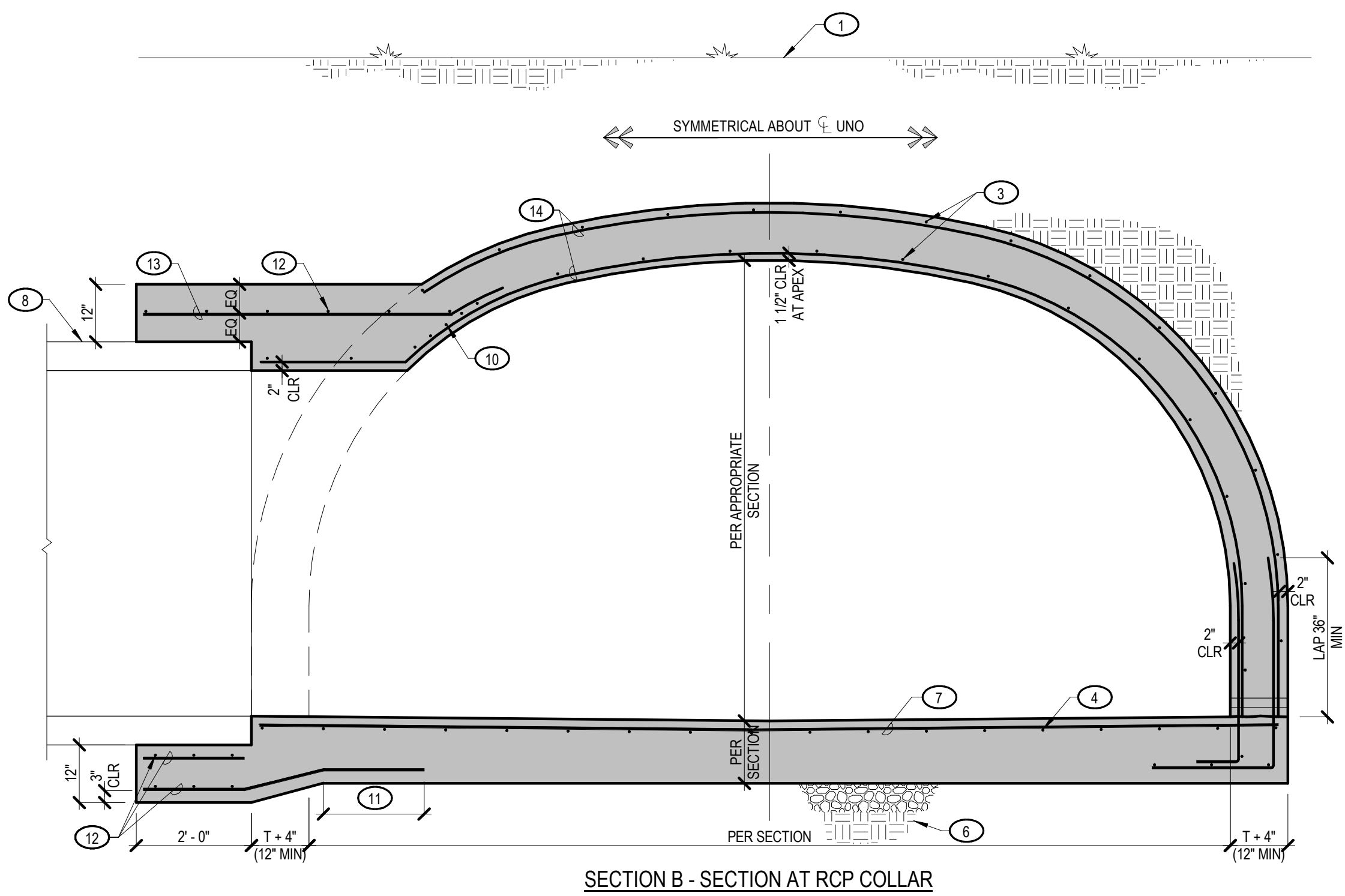
CONDITION A: LATERAL INVERT MATCHES ARCH INVERT



CONDITION B: LATERAL INVERT ABOVE ARCH INVERT

1
S1.13
RCA322

TYPICAL SMALL LATERAL PENETRATIONS



- KEYNOTES:**
1. RCP PER PLAN
 2. TERMINATE RCP AT OUTSIDE FACE OF ARCH. EXTEND SONOTUBE FORM TO FACE OF ARCH FORMWORK
- NOTES:**
- A. "T" DESIGNATES TYP ARCH WALL THICKNESS PER APPROPRIATE SECTION
 - B. EXACT STATION AND LOCATION OF RCP LATERAL PER CIVIL PLANS
 - C. RCP LATERAL SIZE PER CIVIL PLANS
 - D. RCP LATERAL MAY BE SKEWED (SHOWN) OR PERPENDICULAR TO ARCH ALIGNMENT PER CIVIL PLANS
 - E. DETAIL ACCOMODATES A 72" DIA PIPE AT APPROX 45 DEGREE SKEW

3
S1.13
RCA323

DETAILS AT LARGE RCP LATERAL CONNECTION

2
S1.13
RCA321

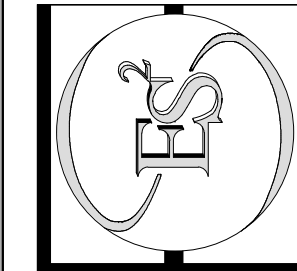
TYPICAL LARGE RCP CONNECTION



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PHONE: (916) 786-2000

SKYE CANYON II PHASE 3A
HYDRO-ARCH
HENDERSON, NV

TYPICAL DETAILS

PROJECT:

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#	DESCRIPTION	DATE
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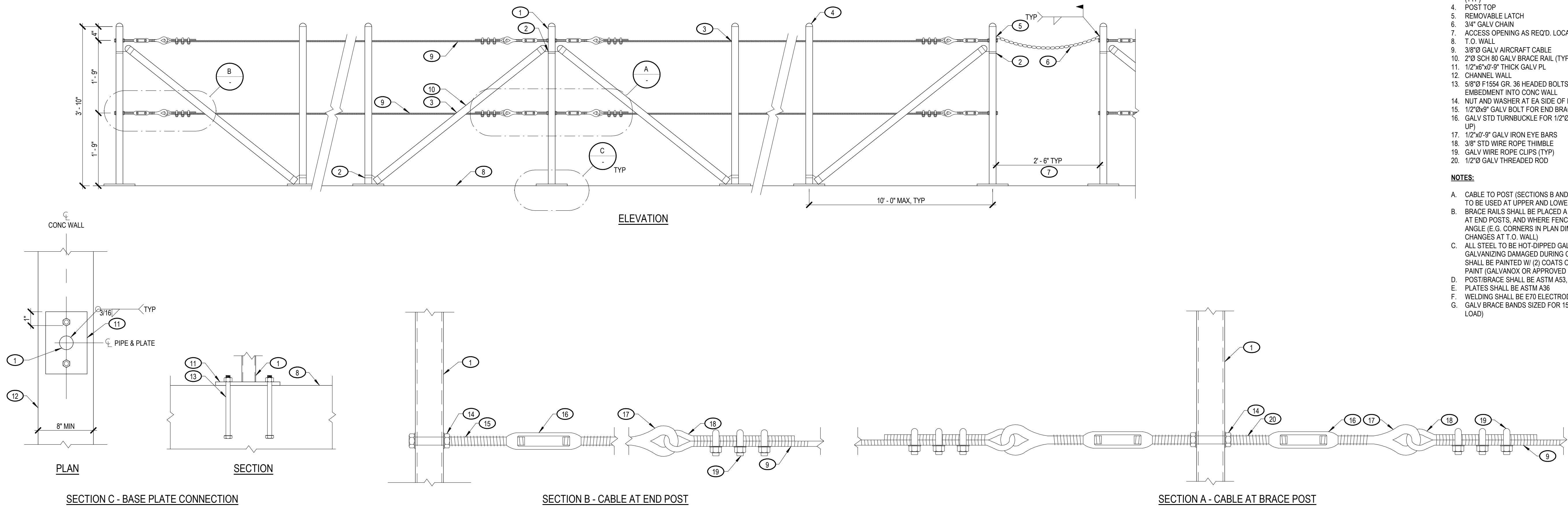
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1
S1.14
TCV141

TYPICAL POST AND CABLE FENCE DETAIL



KEYNOTES:

- 2" SCH 80 GALV POST
- 2" GALV BRACE BAND
- 3/4" HOLE IN POST AND BRACE RAIL FOR CABLE (TYP)
- POST TOP
- REMOVABLE LATCH
- 3/4" GALV CHAIN
- ACCESS OPENING AS REQ'D. LOCATION PER CIVIL
- T.O. WALL
- 3/8" GALV AIRCRAFT CABLE
- 2" SCH 80 GALV BRACE RAIL (TYP)
- 1/2"x8"x0-9" THICK GALV PL
- CHANNEL WALL
- 5/8" F1554 GR. 36 HEADED BOLTS. 8" MIN EMBEDMENT INTO CONC WALL
- NUT AND WASHER AT EA SIDE OF POST
- 1/2"x8" GALV BOLT FOR END BRACE POST
- GALV STD TURNBUCKLE FOR 1/2" BOLTS (12" TAKE UP)
- 1/2"x0'-9" GALV IRON EYE BARS
- 3/8" STD WIRE ROPE THIMBLE
- GALV WIRE ROPE CLIPS (TYP)
- 1/2" GALV THREADED ROD

NOTES:

- A. CABLE TO POST (SECTIONS B AND C) CONNECTIONS TO BE USED AT UPPER AND LOWER CABLES
- B. BRACE RAILS SHALL BE PLACED A MAX OF 200' O.C. AT END POSTS, AND WHERE FENCE CHANGES AT AN ANGLE (E.G. CORNERS IN PLAN DIMS OR SLOPE CHANGES AT T.O. WALL)
- C. ALL STEEL TO BE HOT-DIPPED GALV. ANY GALVANIZING DAMAGED DURING CONSTRUCTION SHALL BE PAINTED W/ (2) COATS OF ALUMINUM PAINT (GALVANOX OR APPROVED EQ)
- D. POST/BRACE SHALL BE ASTM A53, GRADE B
- E. PLATES SHALL BE ASTM A36
- F. WELDING SHALL BE E70 ELECTRODE
- G. GALV BRACE BANDS SIZED FOR 1500 LBS (WORKING LOAD)



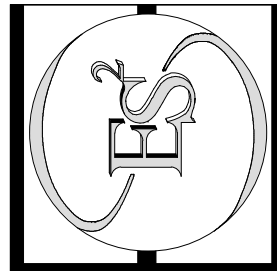
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07/27/2018

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SKYE CANYON II PHASE 3A
HYDRO-ARCH
HENDERSON, NV

PROJECT:

ISSUE:
SUBMIT FOR PERMIT 07/26/2018

REVISIONS:
DESCRIPTION DATE

DRAWN: PF
CHECKED: GM

PROJECT NUMBER: 18.2620
SHEET NUMBER:

S1.14

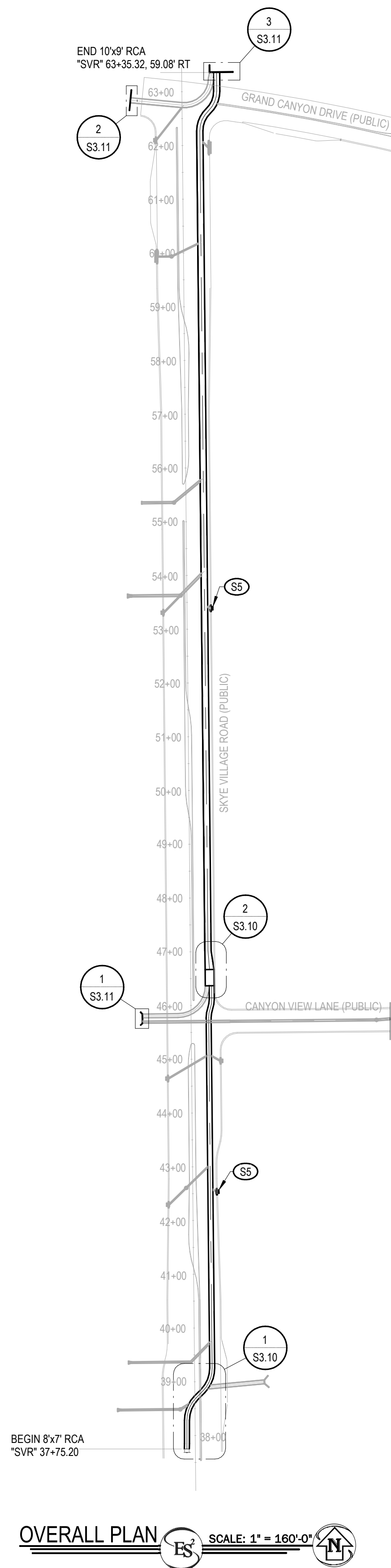
TYPICAL DETAILS

SHEET TITLE:

3632 N RANCHO DRIVE
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1677 EUREKA ROAD, STE. #102
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REINFORCED CONCRETE ARCH CULVERT CONSTRUCTION SCHEDULE				
BEGIN STATION	END STATION	CULVERT SIZE	DETAIL REFERENCE	WEEPHOLE SPACING PER TYP DETAIL
"SVR" 37+75.20, 15.81' LT	"SVR" 45+36.51, 34.08' RT	8'x7' RCA	1/S4.10	24'-0"
"SVR" 45+36.51, 34.08' RT	"SVR" 46+66.51, 35.17' RT	16'x9' RCA CONFLUENCE STRUCTURE	3/S4.10	16'-0"
"SVR" 46+66.51, 35.17' RT	"SVR" 47+01.51, 32.75' RT	16'x9' RCA TRANSITION TO 10'x9' RCA	4/S4.10	16'-0"
"SVR" 47+01.51, 32.75' RT	"SVR" 63+35.32, 59.08' RT	10'x9' RCA	2/S4.10	24'-0"

MANHOLE- DETAIL 1/S1.12	
STATION	TOP OF MANHOLE
"SVR" 41+20.03, 30.75' RT	2851.62
"SVR" 45+20.03, 30.75' RT	2849.29
"SVR" 49+20.03, 29.75' RT	2846.98
"SVR" 53+20.03, 29.75' RT	2844.64
"SVR" 57+20.03, 29.75' RT	2842.31
"SVR" 61+20.03, 29.75' RT	2839.98

SMALL RCP LATERAL SCHEDULE- DETAIL 1/\$1.13		
STATION	INVERT ELEVATION	RCP SIZE
"SVR" 38+58.00	2735.64	30"
"SVR" 39+72.28	2835.00	30"
"SVR" 42+57.39	2833.57	18"
"SVR" 42+99.93	2833.36	18"
"SVR" 45+06.25	2832.33	18"
"SVR" 45+06.25	2832.33	18"
"SVR" 53+41.82	2828.90	18"
"SVR" 60+16.60	2826.20	18"
"SVR" 62+06.13	2826.44	18"

LARGE RCP LATERAL SCHEDULE- DETAIL 2/S1.13		
STATION	INVERT ELEVATION	RCP SIZE
"SVR" 38+89.92	2735.43	72"
"SVR" 54+02.47	2828.66	42"
"SVR" 55+75.47	2827.97	36"

DROP INLET- DETAIL 10/S1.10		
DROP INLET ID	STATION	DROP INLET HEIGHT
2	"SVR" 42+57.39, 36.75' RT	13.95'
6	"SVR" 53+38.50, 45.50' RT	12.93'

KEYNOTES

S5 DROP INLET PER DETAIL 10/S1.10



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 IRVING, TX 76039
 PHONE: (972) 6163107
 FAX: (972) 6163108

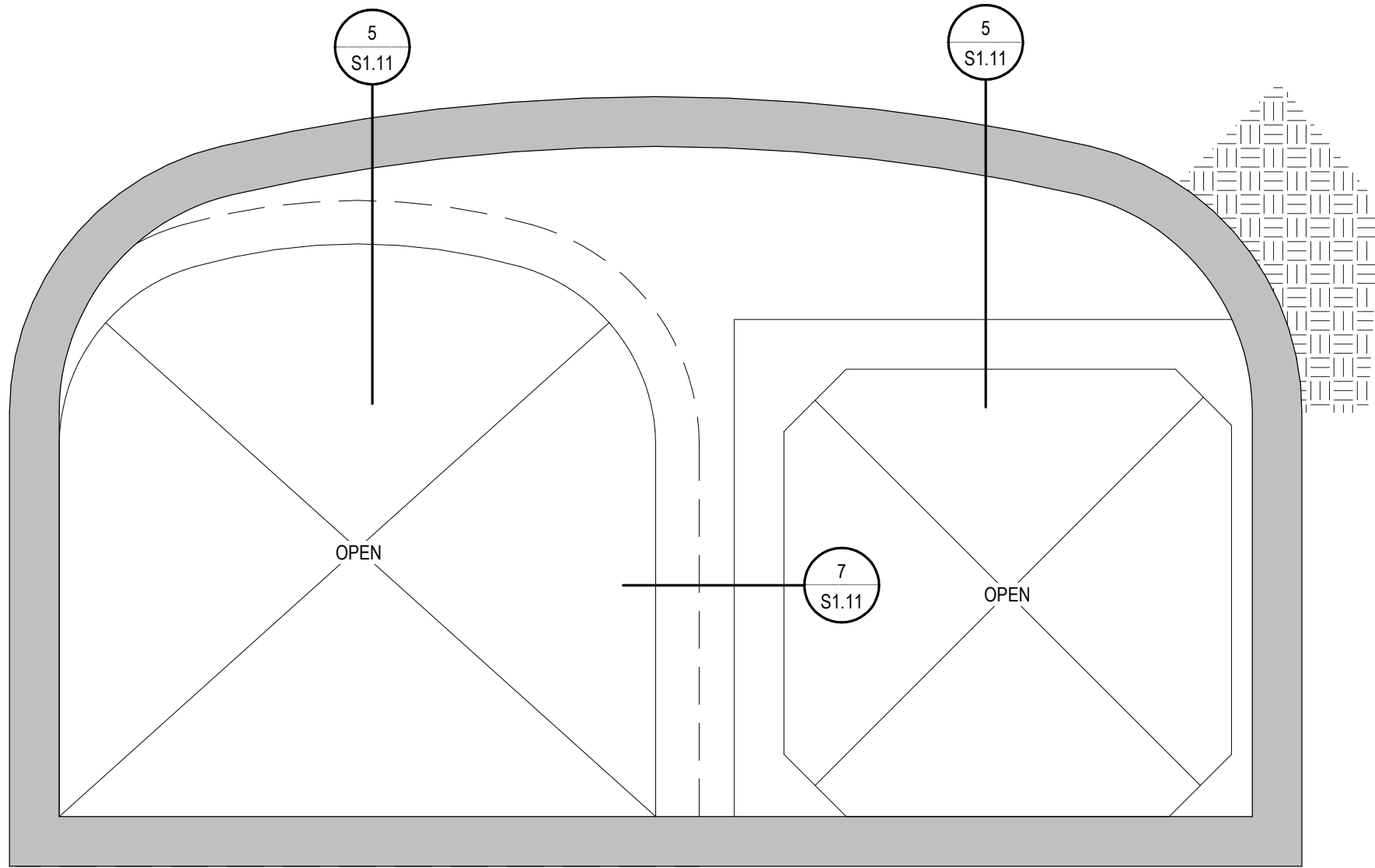
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SKYE CANYON II PHASE 3A
HYDRO-ARCH
HENDERSON, NV

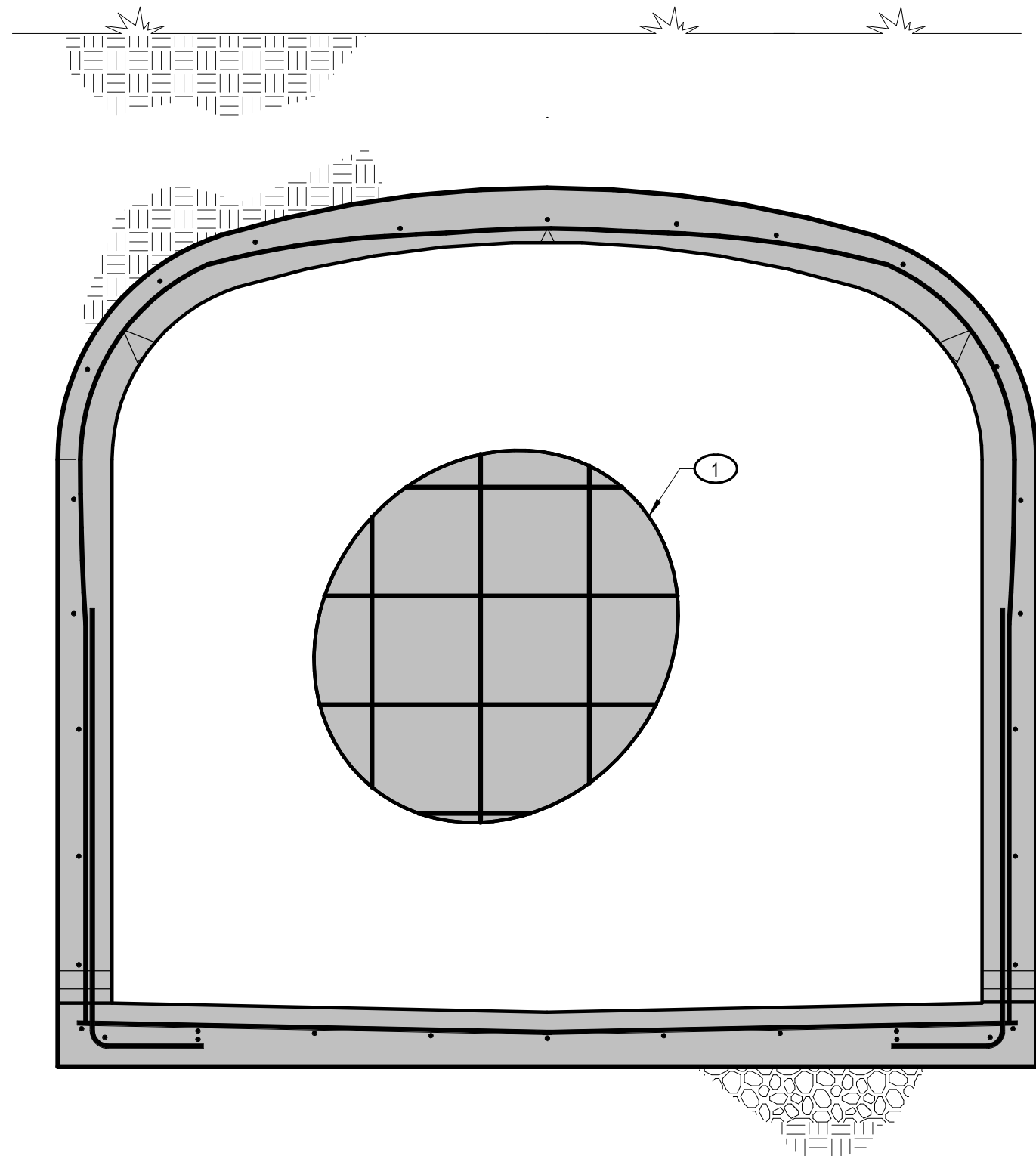
OVERALL PLAN

PROJECT:	SHEET TITLE	
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PROJECT NUMBER:		18.2620
SHEET NUMBER:		
S2.10		

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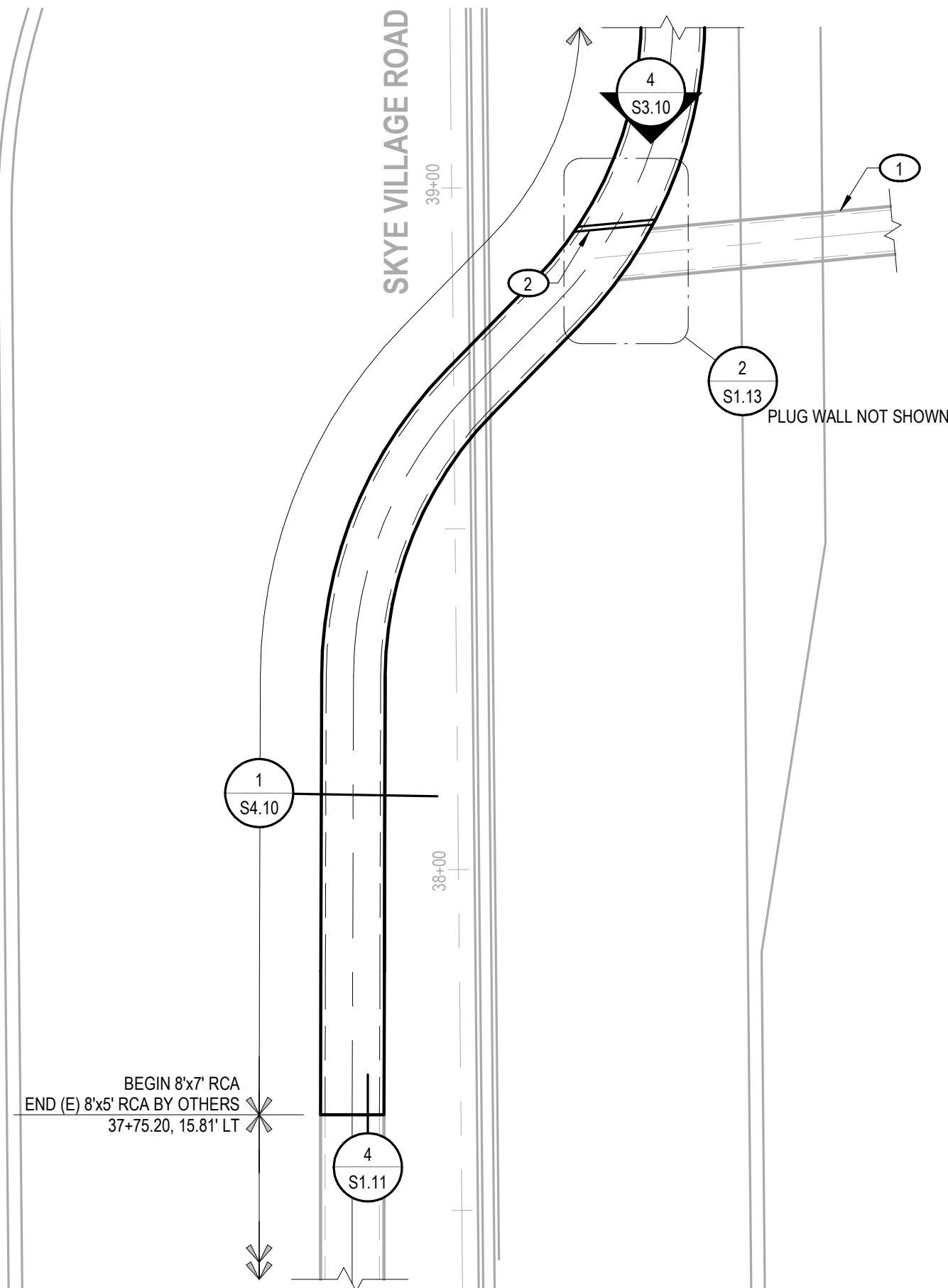


3
S3.10
END WALL AT 6x6 RCB & 8x7 RCA
RCB108

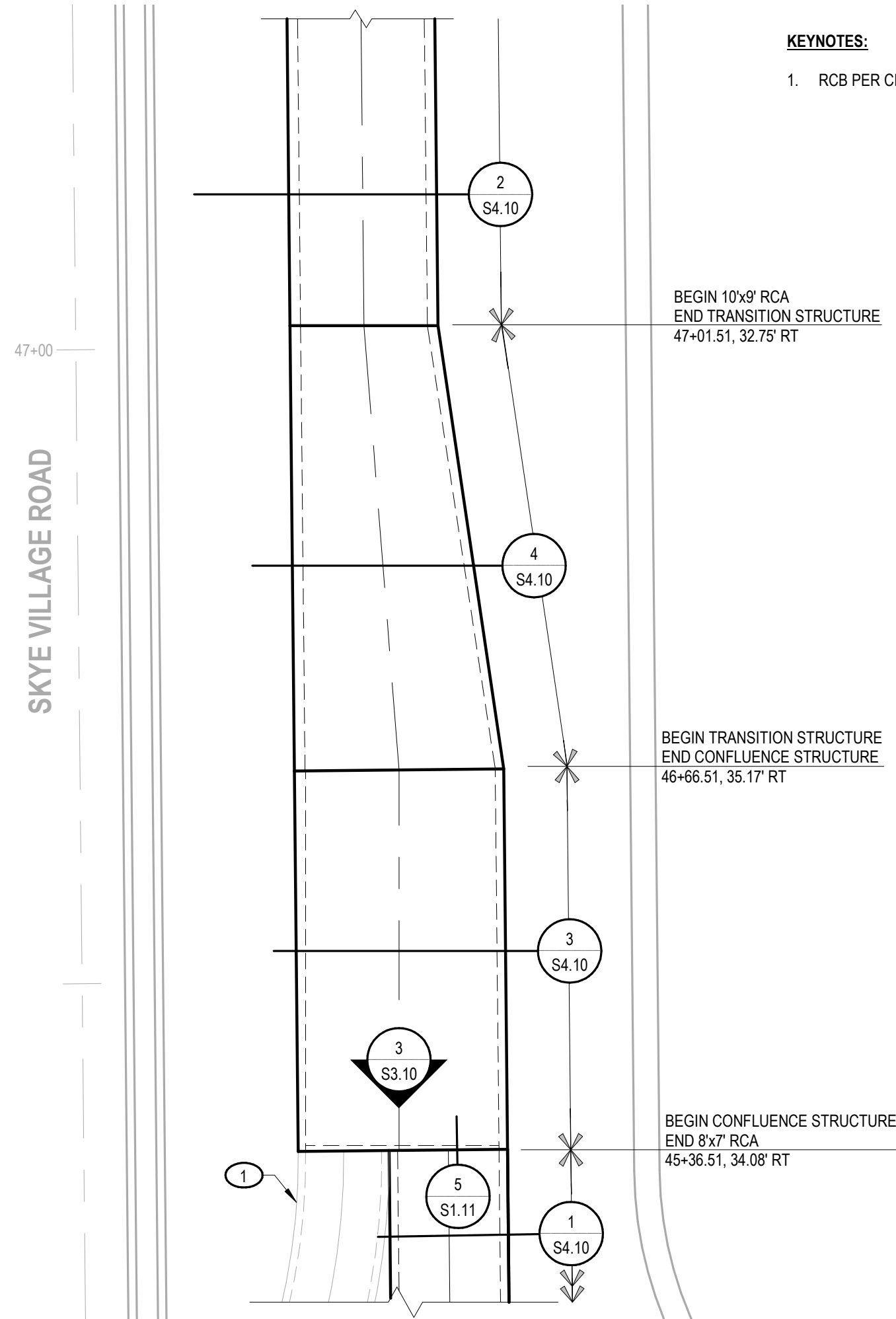


- KEYNOTES:**
- 8" THICK CONCRETE WALL WITH #5 AT 8" O.C. E.W. CENTERED. DRILL AND EPOXY-ANCHOR REBAR AROUND PERIMETER INTO ARCH. 4" MIN EMBED.

4
S3.10
PLUG WALL AT 8x7 RCA



1
S3.10
ENLARGED PLAN AT UPSTREAM CONNECTION

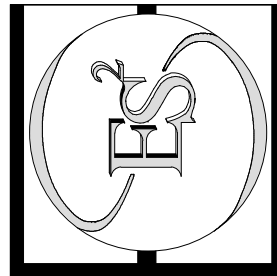


2
S3.10
ENLARGED PLAN AT CONFLUENCE

- KEYNOTES:**
- 72" Ø PIPE PER CIVIL
 - CONSTRUCT PLUG WALL. LOCATE PER CIVIL



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IDAHO FALLS, IDAHO 83401
PHONE: (208) 552-9874

PROJECT:
SKYE CANYON II PHASE 3A
HYDRO-ARCH
HENDERSON, NV

SHEET TITLE:
CONNECTIONS AND TRANSITIONS

ISSUE:
SUBMIT FOR PERMIT 07/26/2018

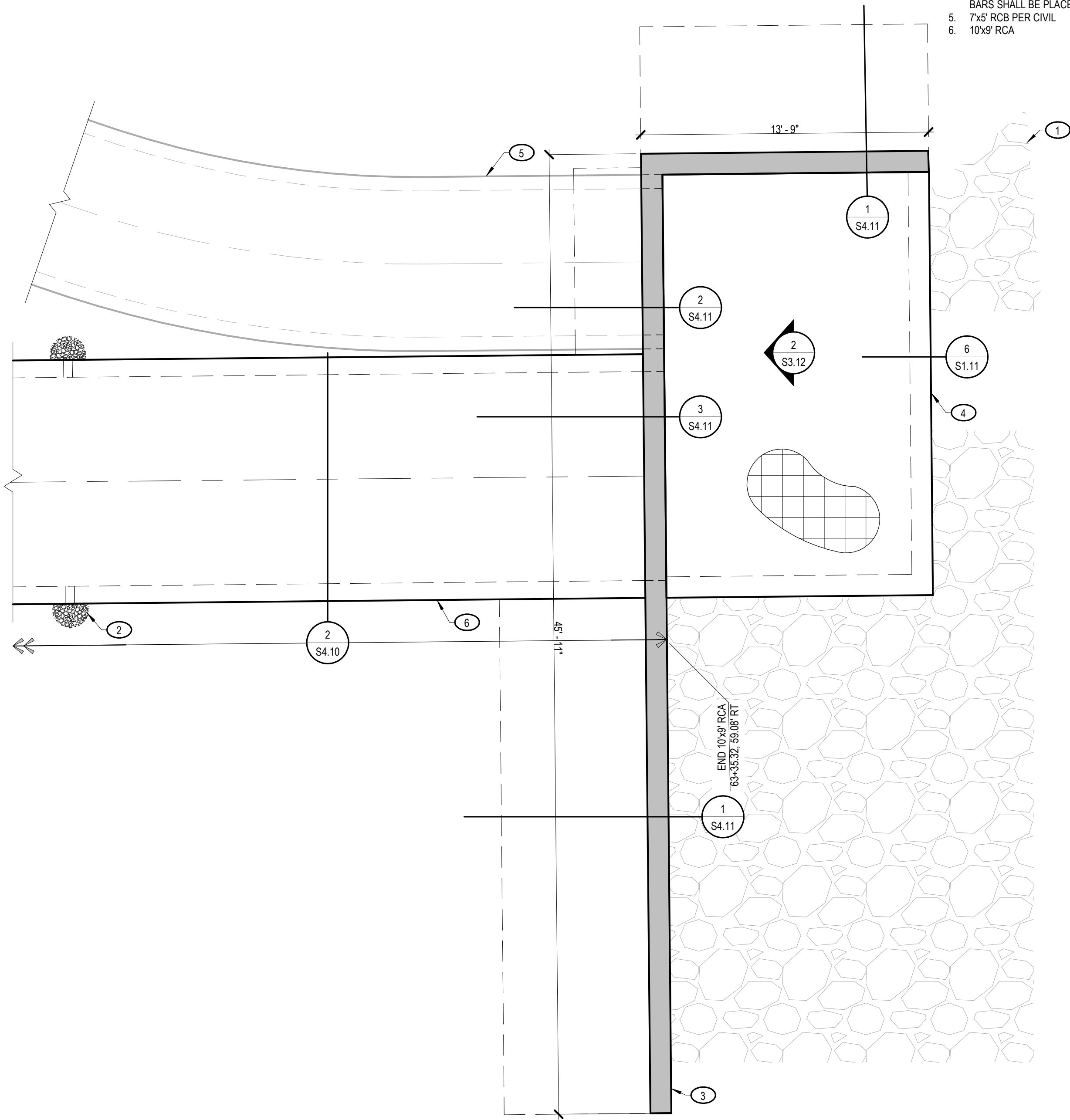
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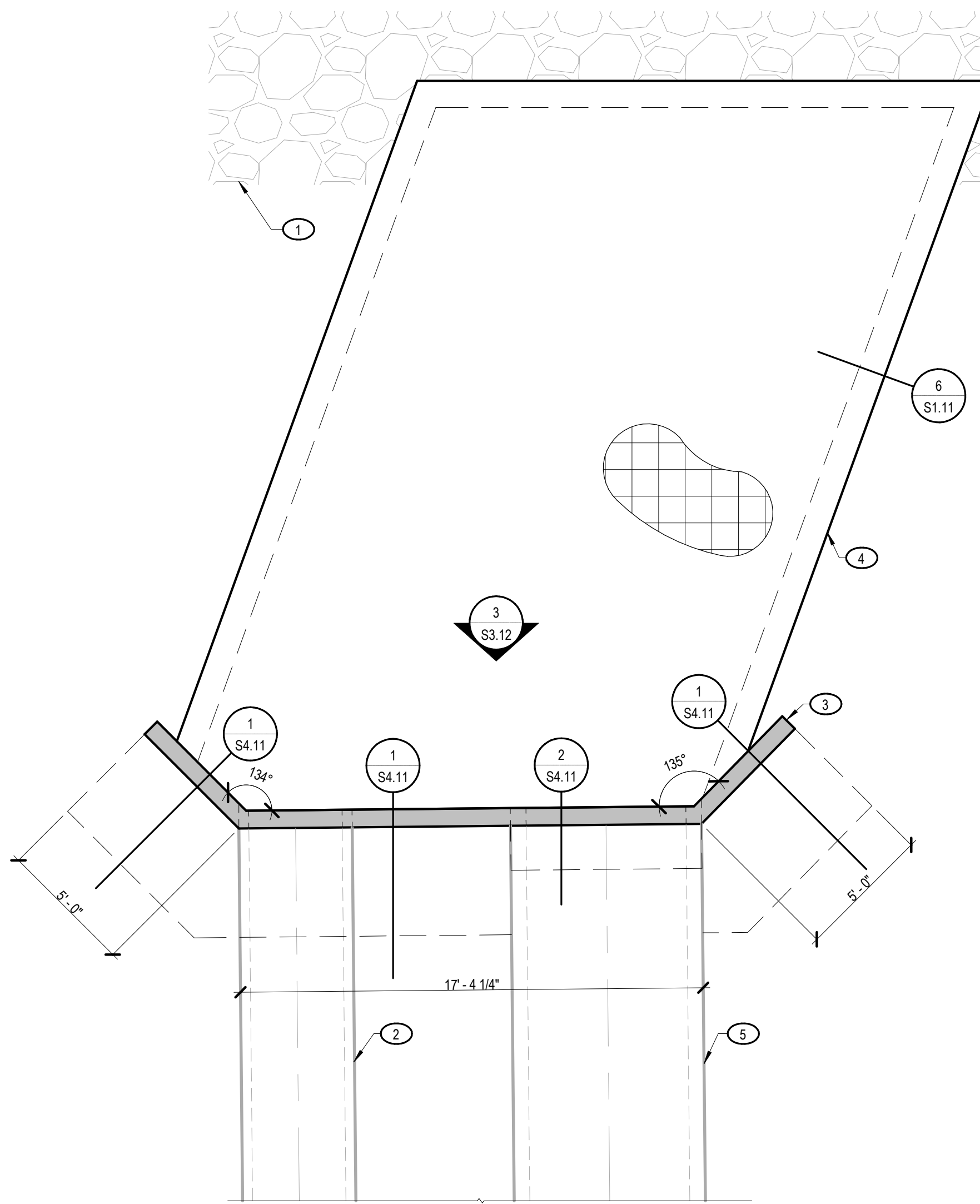
S3.10

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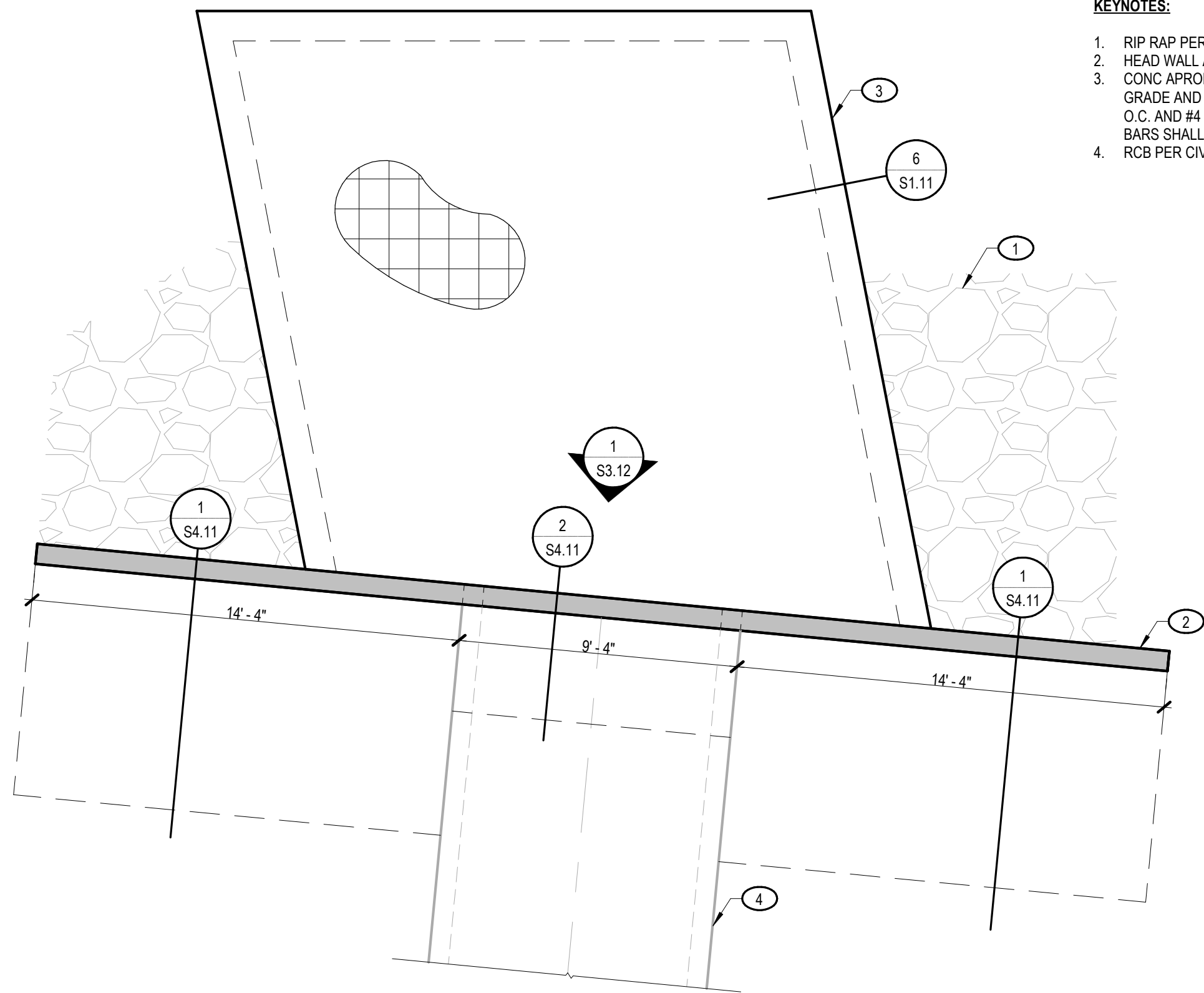
- KEYNOTES:
1. RIP RAP PER CIVIL
 2. WEEPHOLE ROCK POCKET, AND FILTER FABRIC PER TYP DETAIL ALONG ENTIRE LENGTH OF CULVERT EA SIDE. SPACING PER PLAN
 3. HEAD WALL AND WING WALLS
 4. CONC APRON TO BE 6" THICK SLAB ON GRADE AND REINF W/ #4 TRANS AT 12" O.C. AND #4 LONG AT 10" O.C. LONG BARS SHALL BE PLACED ON TOP.
 5. 7x5' RCB PER CIVIL
 6. 10x9' RCA

HEADWALL AT "SVR" 63+35.32, 59.08' RT



- KEYNOTES:
1. RIP RAP PER CIVIL
 2. 42" Ø PIPE PER CIVIL
 3. HEAD WALL AND WING WALLS
 4. CONC APRON TO BE 6" THICK SLAB ON GRADE AND REINF W/ #4 TRANS AT 12" O.C. AND #4 LONG AT 10" O.C. LONG BARS SHALL BE PLACED ON TOP.
 5. 6x6 RCB PER CIVIL

HEADWALL AT "SVR" 45+81.51, 90.19' LT



- KEYNOTES:
1. RIP RAP PER CIVIL
 2. HEAD WALL AND WING WALLS
 3. CONC APRON TO BE 6" THICK SLAB ON GRADE AND REINF W/ #4 TRANS AT 12" O.C. AND #4 LONG AT 10" O.C. LONG BARS SHALL BE PLACED ON TOP.
 4. RCB PER CIVIL

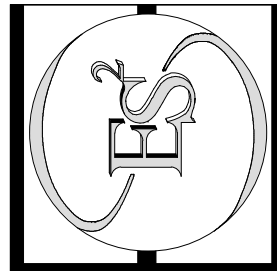
HEADWALL AT "SVR" 62+85.13, 96.62' LT



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SKYE CANYON II PHASE 3A
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ENLARGED HEADWALLS

PROJECT:

SHEET TITLE:

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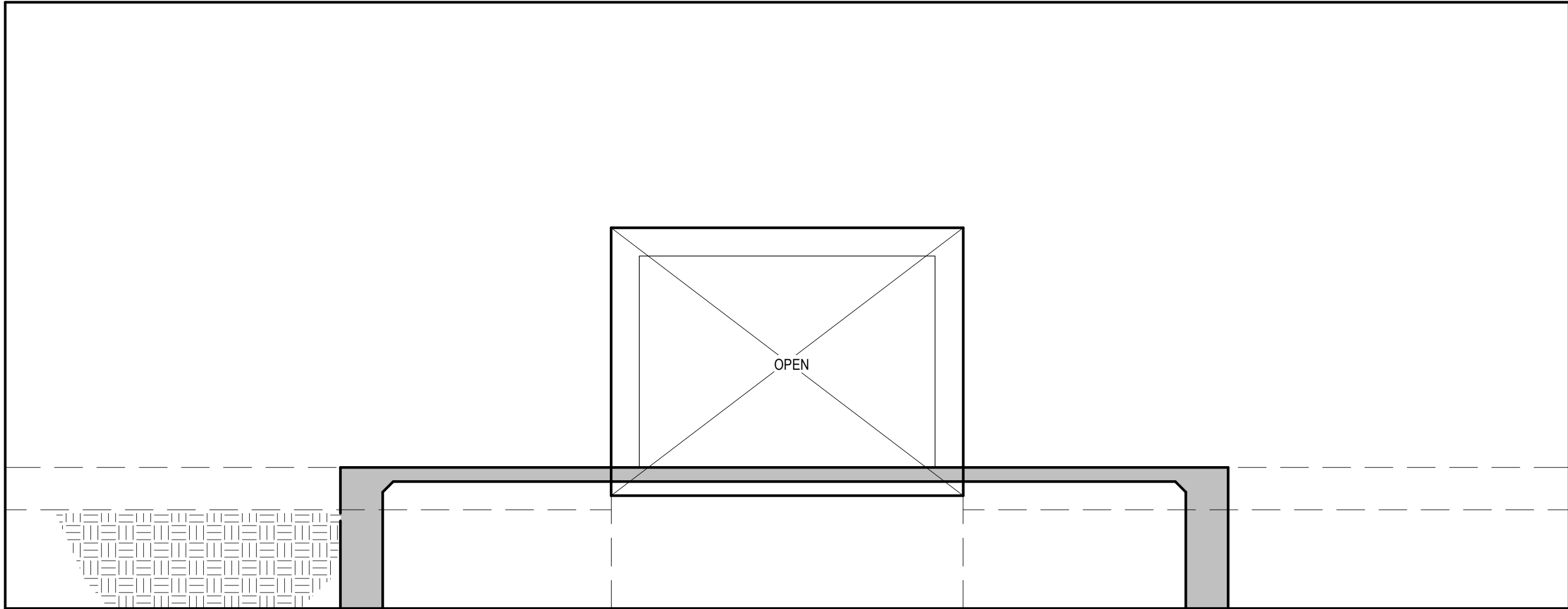
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PROJECT NUMBER: 18.2620

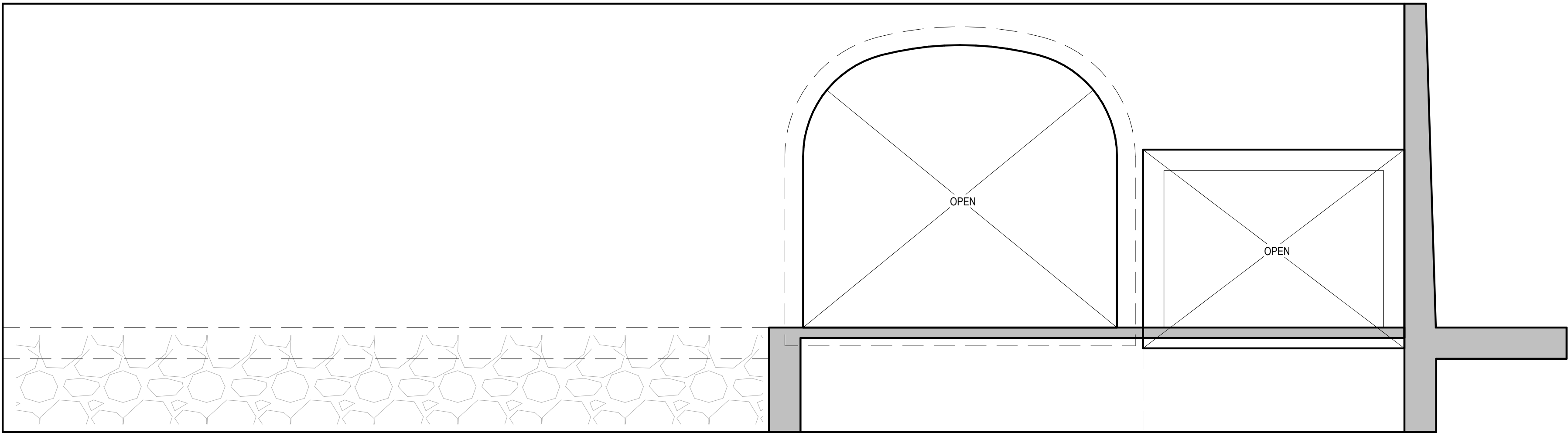
SHEET NUMBER:

S3.11

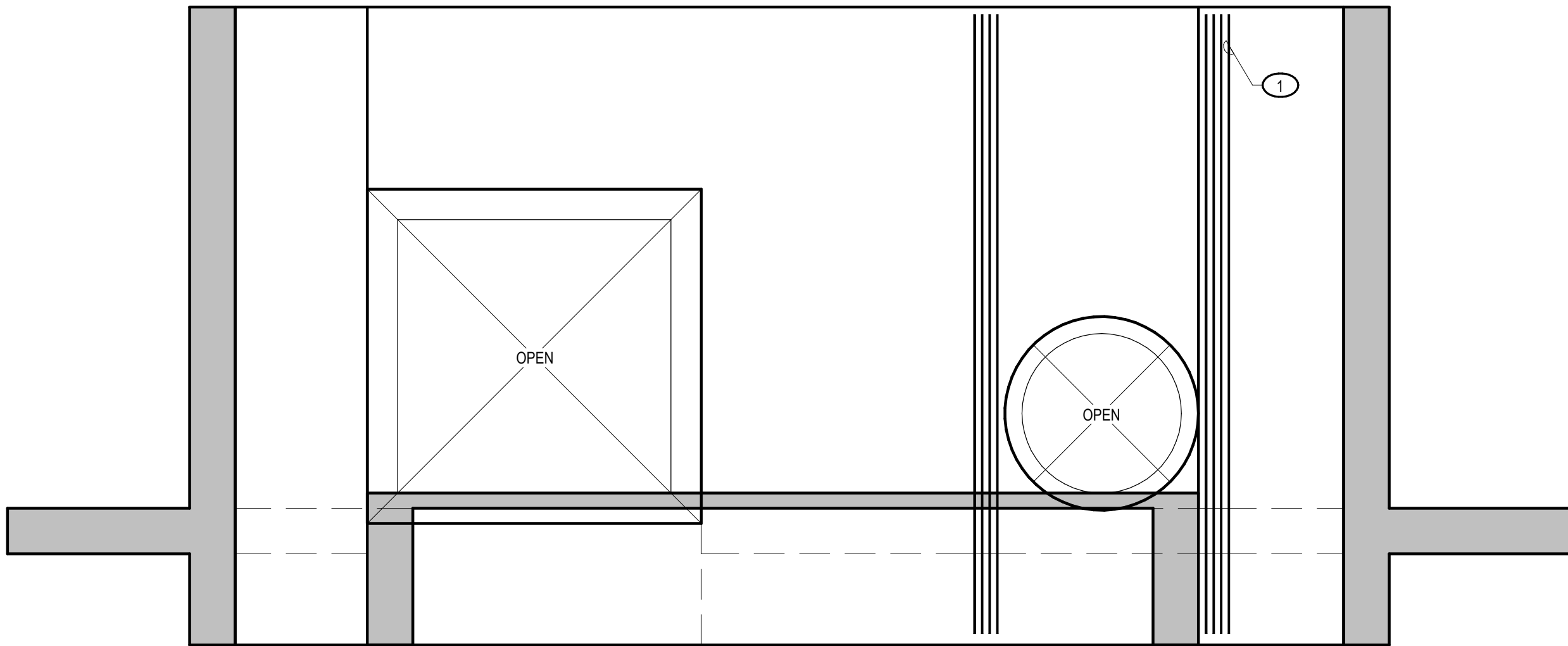
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1 HEADWALL AT "SVR" 62+85.13, 96.62' LT ELEVATION
S3.12 CUSTOM



2 HEADWALL AT "SVR" 63+35.32, 59.08' RT ELEVATION
S3.12



3 HEADWALL AT "SVR" 45+81.51, 90.19' LT ELEVATION
S3.12

KEYNOTES:

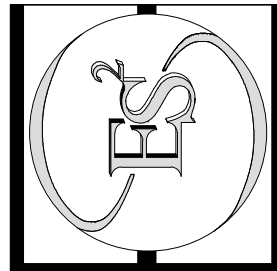
1. PROVIDE (4) VERT BARS EA SIDE OF RCP OPENING PER WALL DETAIL



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SKYE CANYON II PHASE 3A
HYDRO-ARCH
HENDERSON, NV

SHEET TITLE:
HEADWALL ELEVATIONS

ISSUE:
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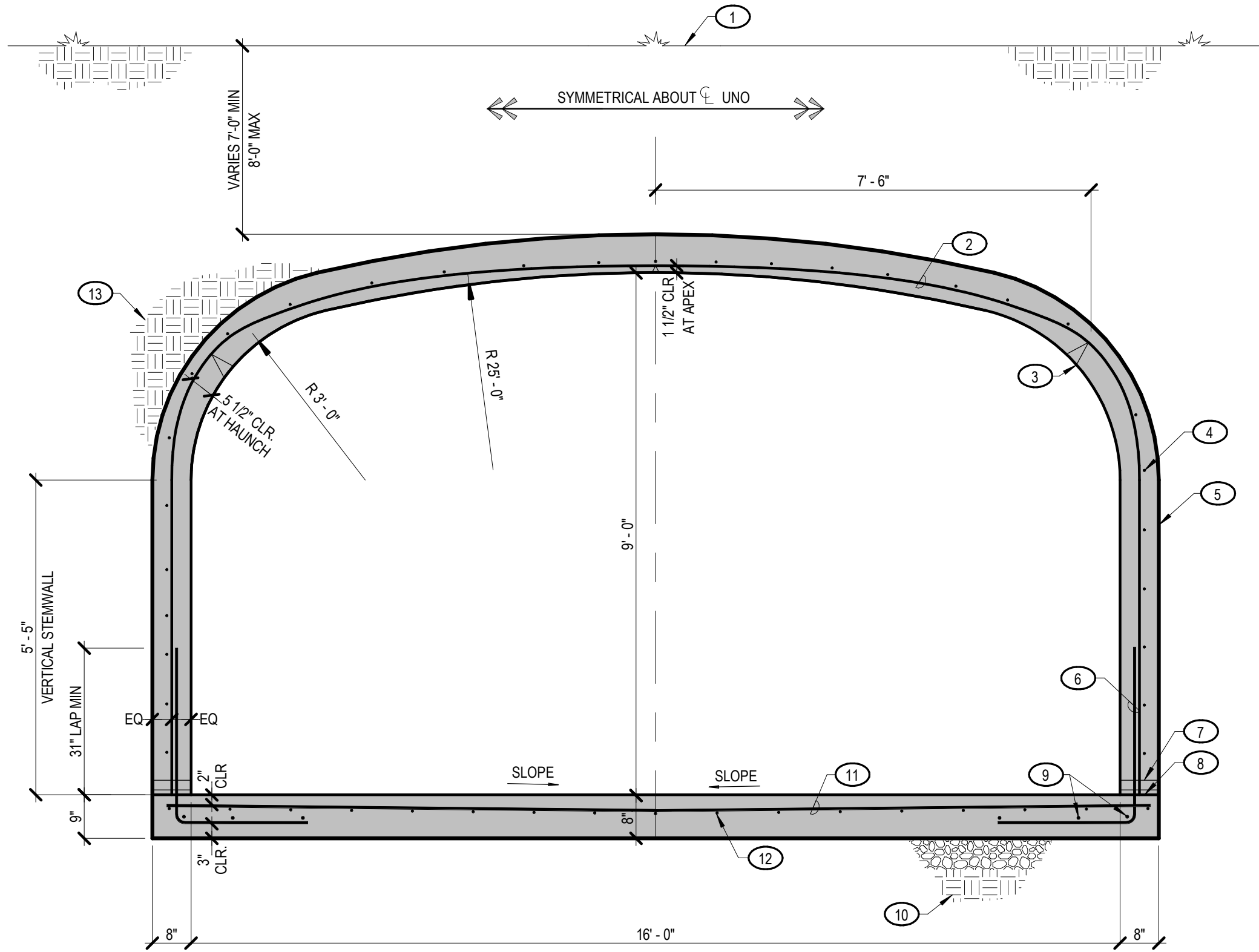
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SHEET NUMBER:

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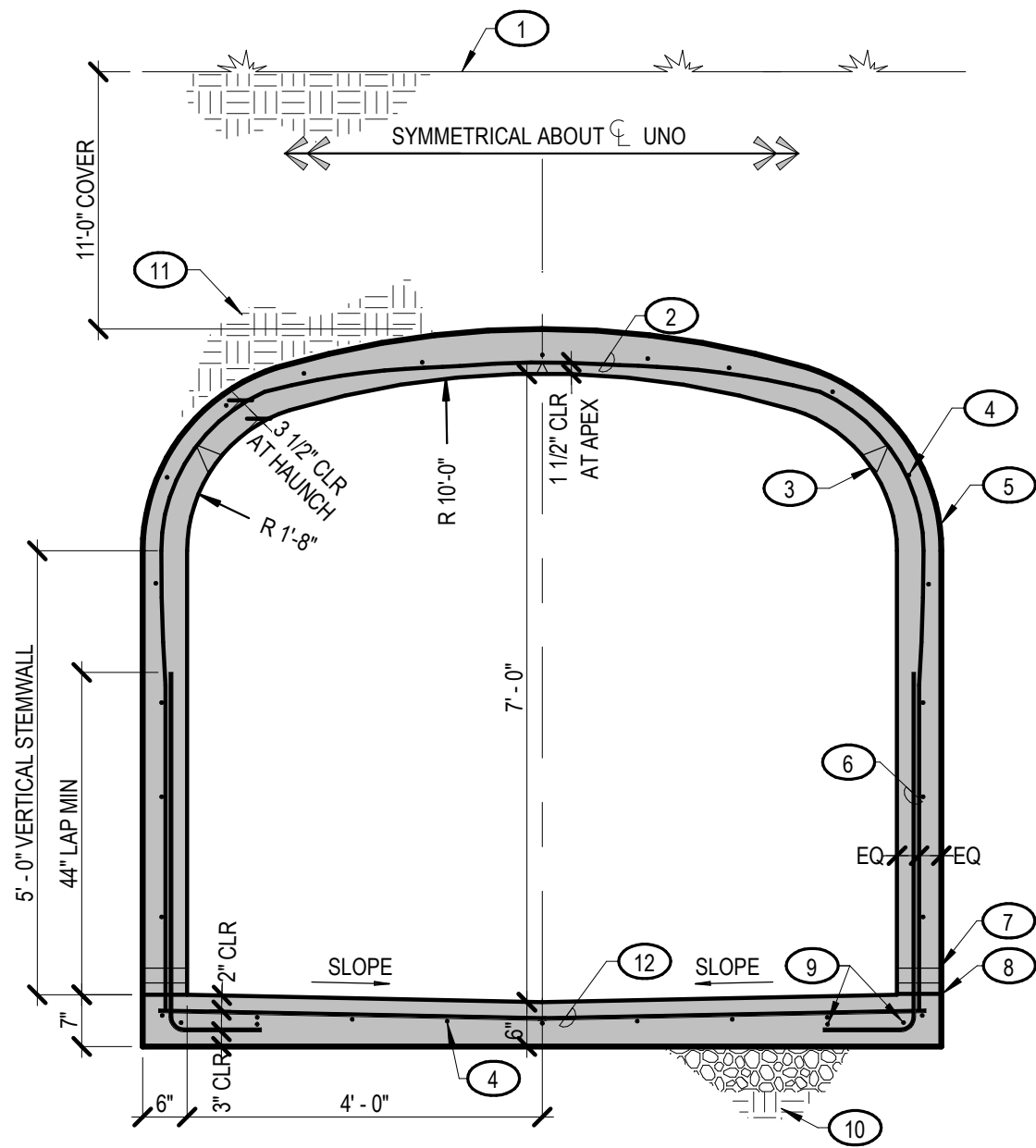
KEYNOTES:

1. FINAL GRADE
2. #4 TRANS AT 8" O.C.
3. REBAR CHAIR POINT
4. #4 LONG AT 10" O.C. LAP 18" MIN
5. WATER PROOF MEMBRANE COVER ARCH AND WALL ONLY
6. #4 DOWEL AT 8" O.C. W/ 36" HOOK AT BASE
7. WEEP HOLE PER PLAN
8. CONSTRUCTION JOINT ROUGHENED TO 1/4" AMPLITUDE
9. (3) #4 LONG. LAP PER TYP DETAIL
10. SUBGRADE PREPARATION PER TYP DETAIL
11. #4 TRANS AT 7" O.C.
12. #4 LONG AT 10" O.C. LAP 18" MIN
13. BACKFILL MATERIAL AND PROCEDURE PER TYP DETAIL

NOTES:

- A. ALTERNATE REINFORCING DETAILING MAY BE ACCEPTABLE PROVIDED SHOP DRAWINGS ARE SUBMITTED TO THE ENGINEER PRIOR TO CONSTRUCTION
- B. BAR LENGTHS IN TABLE ARE APPROXIMATE AND SHOULD BE USED FOR ESTIMATION PURPOSES ONLY

KEYNOTE	BAR LENGTH	SHAPE
2	31' - 5"	



KEYNOTES:

1. FINAL GRADE
2. #4 TRANS AT 8" O.C.
3. REBAR CHAIR POINT
4. #4 LONG AT 10" O.C. LAP 18" MIN
5. WATER PROOF MEMBRANE COVER ARCH AND WALL ONLY
6. #4 DOWEL AT 8" O.C. W/ 36" HOOK AT BASE
7. WEEP HOLE PER PLAN
8. CONSTRUCTION JOINT PER GSN
9. (2) #4 LONG. LAP PER TYP DETAIL
10. SUBGRADE PREPARATION PER TYP DETAIL
11. BACKFILL MATERIAL AND PROCEDURE PER TYP DETAIL
12. #4 TRANS AT 8" O.C.

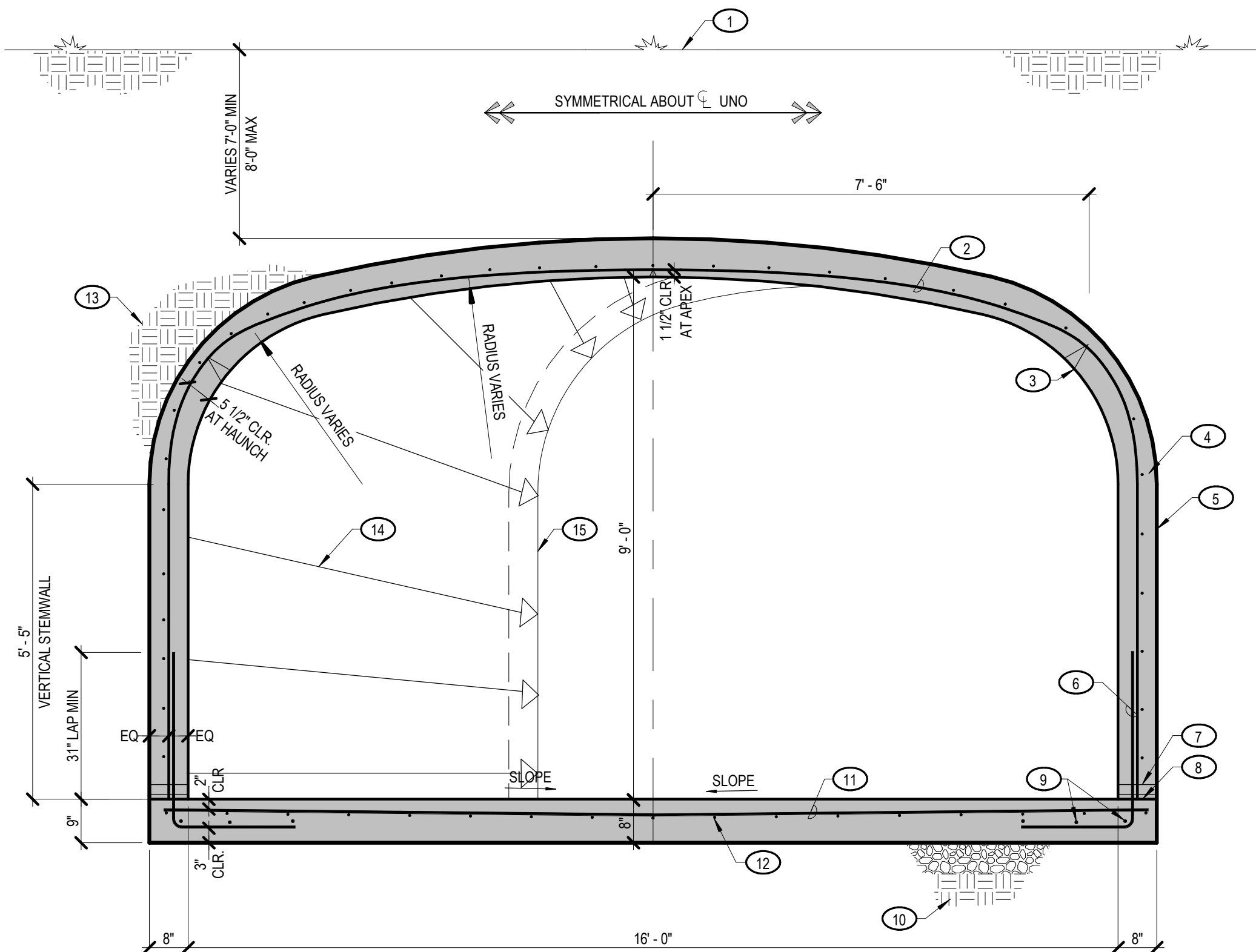
NOTES:

- A. ALTERNATE REINFORCING DETAILING MAY BE ACCEPTABLE PROVIDED SHOP DRAWINGS ARE SUBMITTED TO THE ENGINEER PRIOR TO CONSTRUCTION
- B. BAR LENGTHS IN TABLE ARE APPROXIMATE AND SHOULD BE USED FOR ESTIMATION PURPOSES ONLY

KEYNOTE	BAR LENGTH	SHAPE
2	20' - 9"	

8'x7' ARCH CULVERT SECTION

S4.10 RCA113R



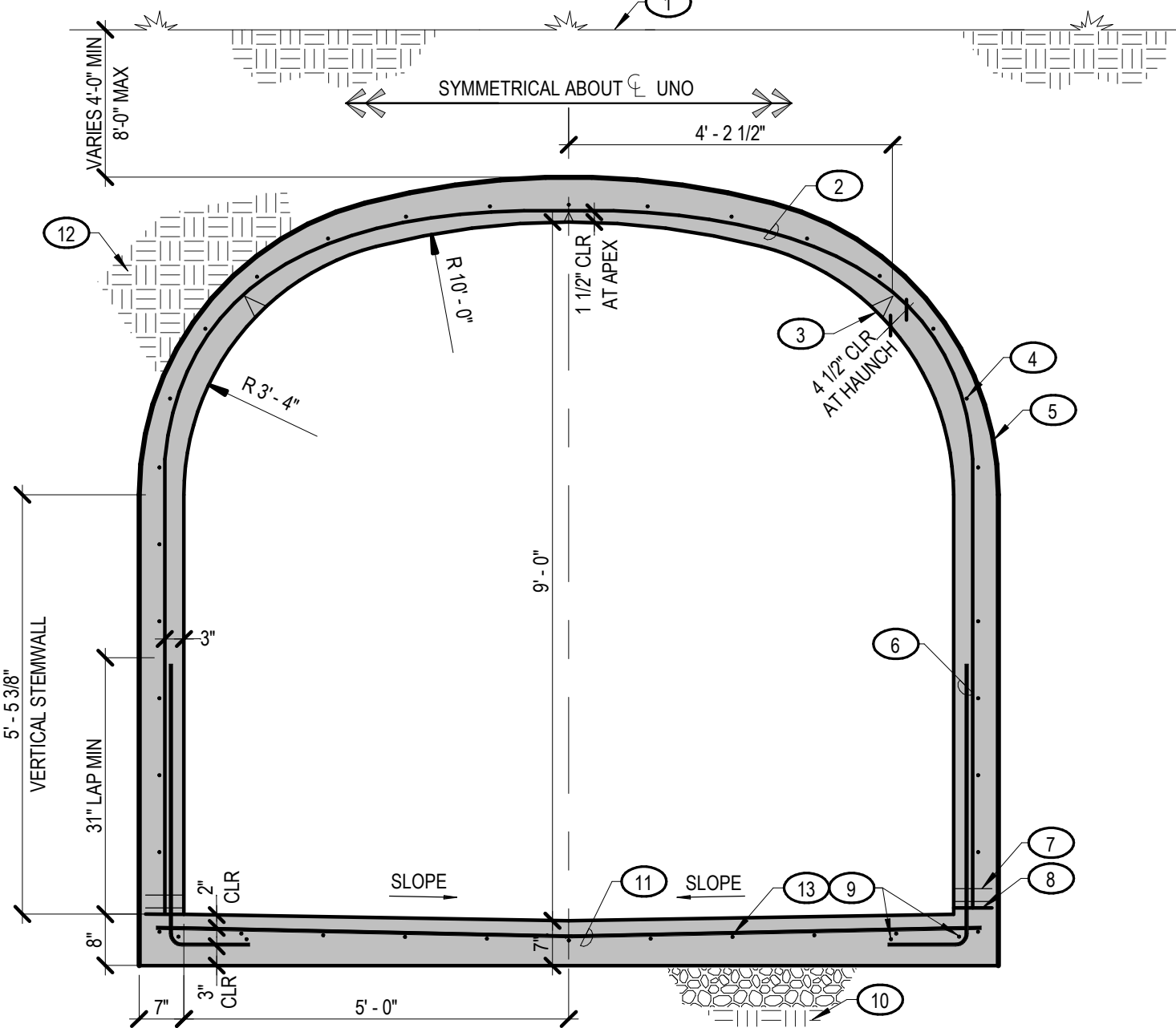
KEYNOTES:

1. FINAL GRADE
2. #4 TRANS AT 8" O.C.
3. REBAR CHAIR POINT
4. #4 LONG AT 10" O.C. LAP 18" MIN
5. WATER PROOF MEMBRANE COVER ARCH AND WALL ONLY
6. #4 DOWEL AT 8" O.C. W/ 12" HOOK AT BASE
7. WEEP HOLE PER PLAN
8. CONSTRUCTION JOINT ROUGHENED TO 1/4" AMPLITUDE
9. (2) #4 LONG. LAP PER TYP DETAIL
10. SUBGRADE PREPARATION PER TYP DETAIL
11. #4 TRANS AT 7" O.C.
12. #4 LONG AT 10" O.C. LAP 18" MIN
13. BACKFILL MATERIAL AND PROCEDURE PER TYP DETAIL
14. WARP CONCRETE ARCH GEOMETRY THROUGH TRANSITION
15. 10x9 RCA BEYOND

NOTES:

- A. ALTERNATE REINFORCING DETAILING MAY BE ACCEPTABLE PROVIDED SHOP DRAWINGS ARE SUBMITTED TO THE ENGINEER PRIOR TO CONSTRUCTION
- B. BAR LENGTHS IN TABLE ARE APPROXIMATE AND SHOULD BE USED FOR ESTIMATION PURPOSES ONLY

KEYNOTE	BAR LENGTH	SHAPE
2	31' - 5"	



KEYNOTES:

1. FINAL GRADE
2. #4 TRANS AT 7 1/2" O.C.
3. REBAR CHAIR POINT
4. #4 LONG AT 12" O.C. LAP 18" MIN
5. WATER PROOF MEMBRANE COVER ARCH AND WALL ONLY
6. #4 DOWEL AT 7 1/2" O.C. W/ 12" HOOK AT BASE
7. WEEP HOLE PER PLAN
8. CONSTRUCTION JOINT ROUGHENED TO 1/4" AMPLITUDE
9. (2) #5 LONG. LAP PER TYP DETAIL
10. SUBGRADE PREPARATION PER TYP DETAIL
11. #4 TRANS AT 9" O.C.
12. BACKFILL MATERIAL AND PROCEDURE PER TYP DETAIL
13. #4 LONG AT 10" O.C. LAP 18" MIN.

NOTES:

- A. ALTERNATE REINFORCING DETAILING MAY BE ACCEPTABLE PROVIDED SHOP DRAWINGS ARE SUBMITTED TO THE ENGINEER PRIOR TO CONSTRUCTION
- B. BAR LENGTHS IN TABLE ARE APPROXIMATE AND SHOULD BE USED FOR ESTIMATION PURPOSES

KEYNOTE	BAR LENGTH	SHAPE
2	25' - 6"	

SECTION AT TRANSITION FROM 16'x9' RCA TO 10'x9' RCA

S4.10 RCA213

10'x9' ARCH CULVERT SECTION

S4.10 RCA115R



SEAL:

07/27/2018

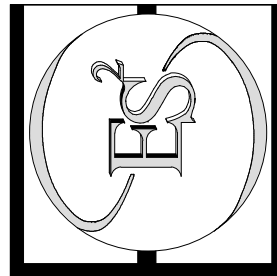
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SKYE CANYON II PHASE 3A
HYDRO-ARCH
HENDERSON, NV

PROJECT:

ISSUE:
SUBMIT FOR PERMIT 07/26/2018

REVISIONS:
DESCRIPTION DATE

DRAWN: PF
CHECKED: GM

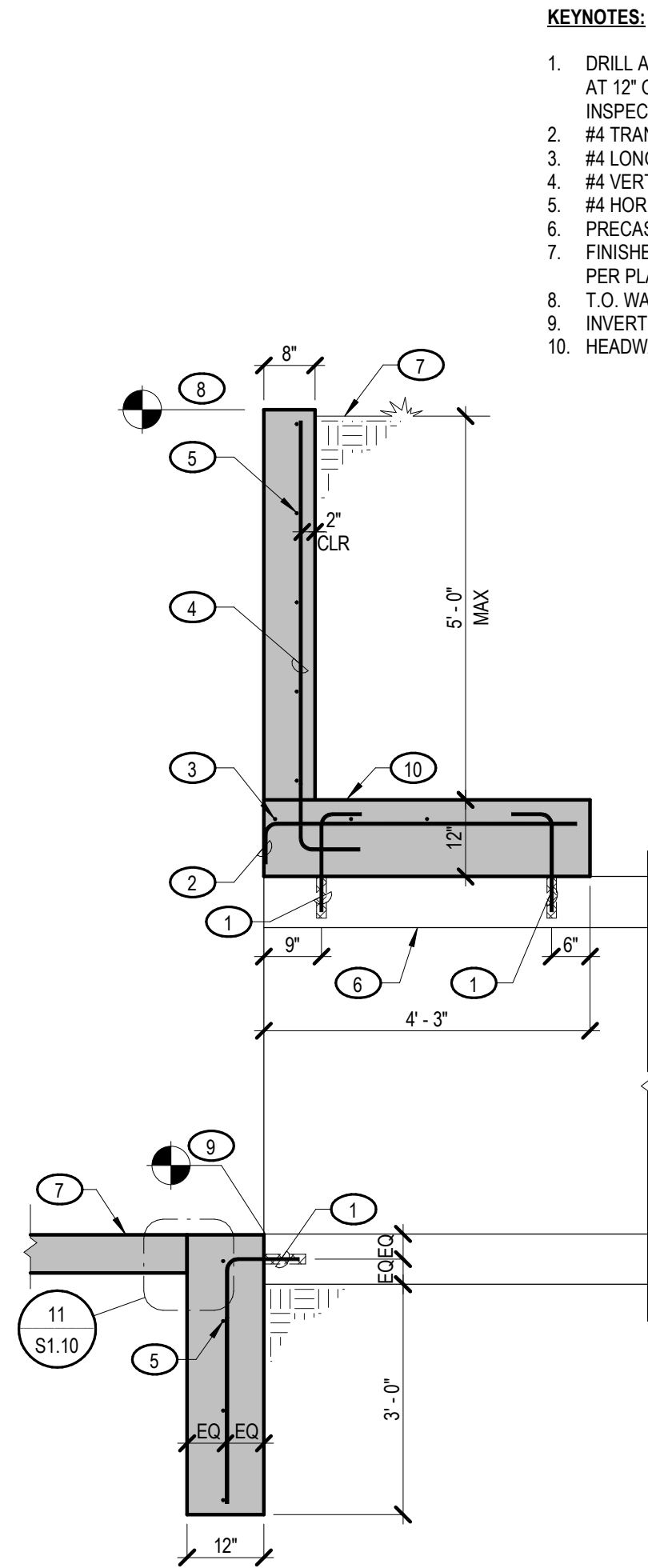
PROJECT NUMBER: 18.2620
SHEET NUMBER:

S4.10

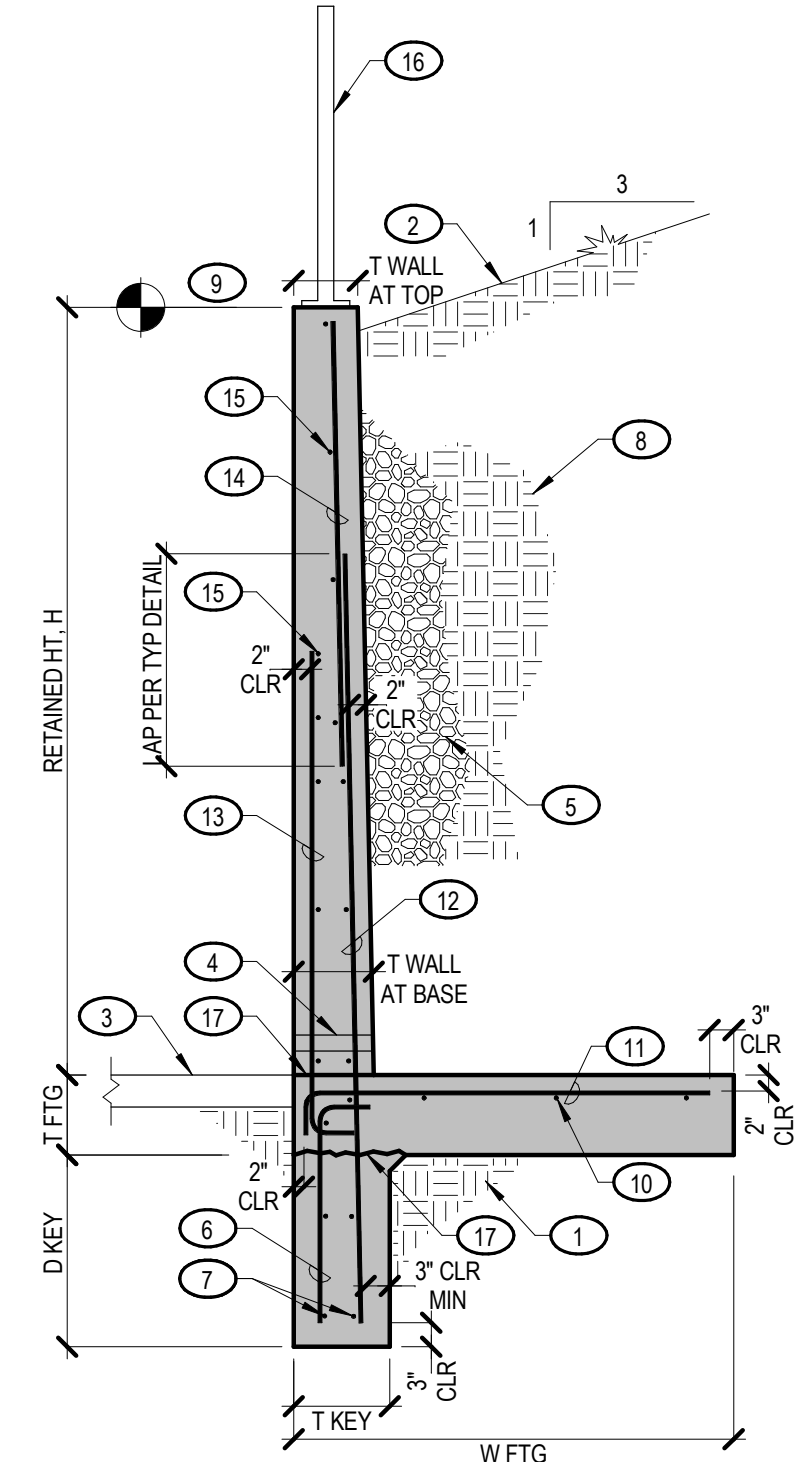
SECTIONS

SHEET TITLE:

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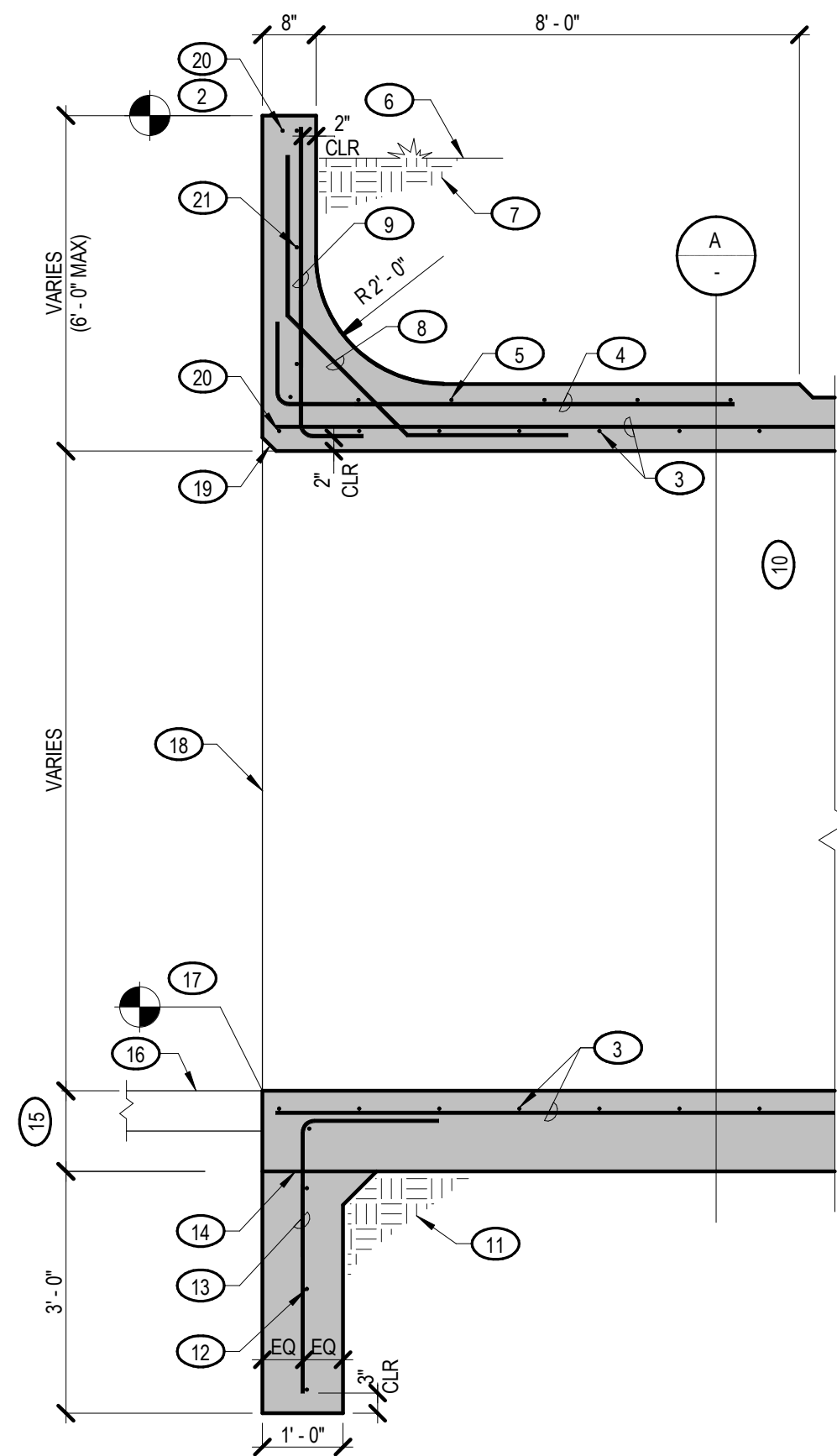
2 HEADWALL AT PRECAST RCB
S4.11 R



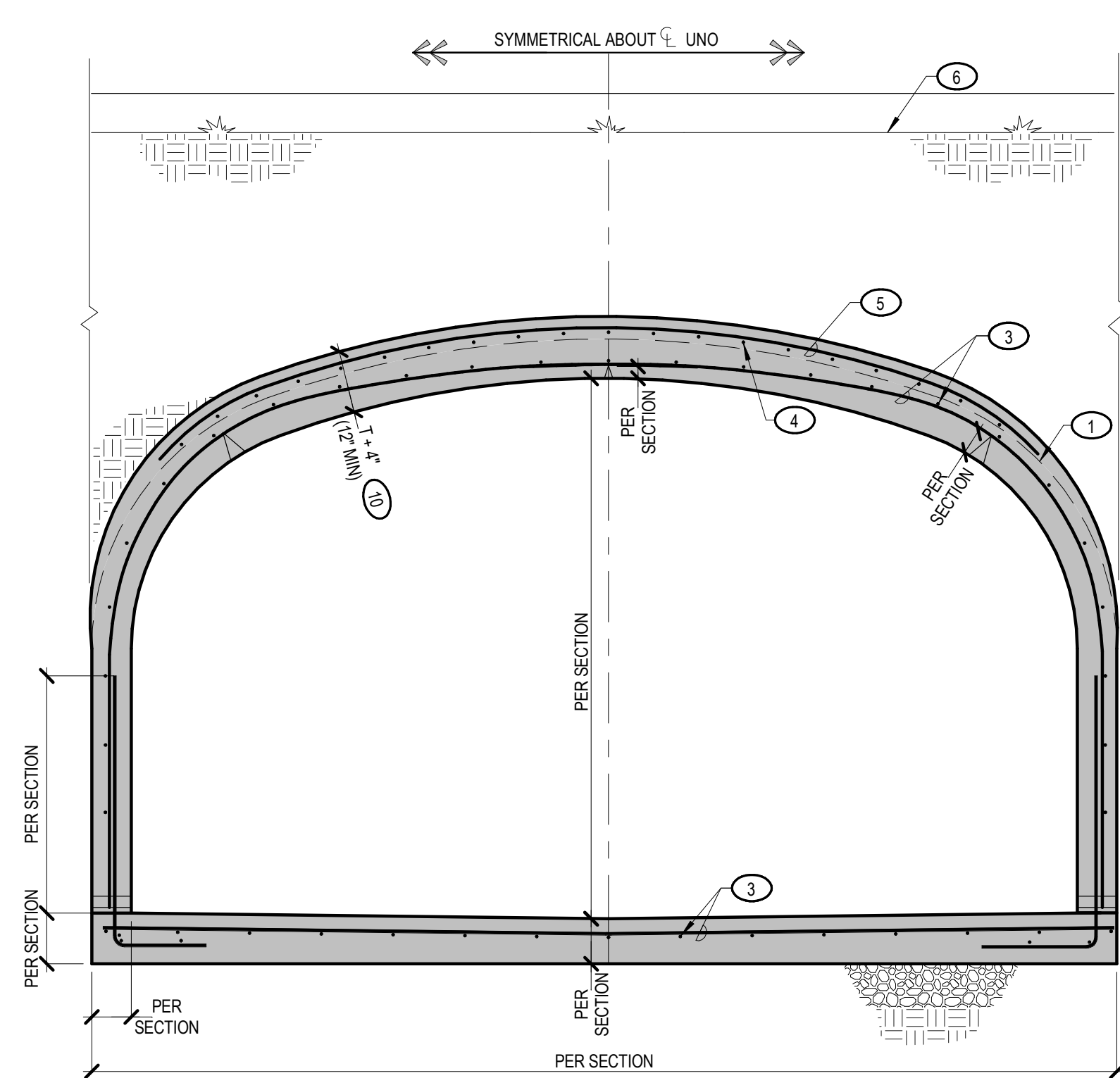
RETAINED HT H	D KEY	T KEY	W FTG	T FTG	T WALL AT TOP	T WALL AT BASE	A	B
UP TO 7'-0"	2'-0"	1'-0"	4'-9"	12"	8"	8"	-	-
UP TO 11'-0"	2'-0"	1'-0"	7'-9"	14"	8"	10"	-	-

RETAINED HT H	(11) FTG TRANS	(12) WALL DOWEL SOIL SIDE	(13) WALL DOWEL OUTSIDE	(14) WALL VERT SOIL SIDE	(15) WALL HORIZ
UP TO 7'-0"	#4 AT 12	#4x65" AT 9	NOT REQUIRED	#4 AT 12	#4 AT 12
UP TO 11'-0"	#6 AT 11	#6x102" AT 6	NOT REQUIRED	#4 AT 12	#4 AT 10

1 SECTION AT WINGWALL/RETAINING WALL
S4.11 W502R



3 TYPICAL THICKENED SECTION AT HEADWALL
S4.11 R A224

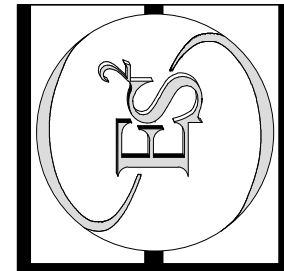


SECTION A

- KEYNOTES:**
1. PROFILE OF TYPICAL ARCH THICKNESS PER APPROPRIATE SECTION
 2. TOP OF HEADWALL ELEV PER CIVIL
 3. TYPICAL ARCH REINF PER APPROPRIATE SECTION
 4. #5x8'-6" W/ STD HOOK AT 12" O.C. PLACE RADIALLY AROUND ARCH
 5. #4 TRANS AT 12" O.C. AT THICKENED SECTION
 6. FINAL GRADE PER CIVIL
 7. BACKFILL MATERIAL AND PROCEDURE PER TYP DETAIL
 8. #4 AT 18" O.C. PLACE RADIALLY AROUND ARCH. BEND 24" ENDS AS REQ'D
 9. #5 VERT DOWEL AT 12" O.C. W/ STD HOOK INTO ARCH
 10. THICKENED CULVERT SECTION TO EXTEND BEYOND HEADWALL AS SHOWN
 11. SUBGRADE PREPARATION PER TYP DETAIL
 12. #4 HORIZ AT 12" O.C.
 13. #4 AT 12" O.C. W/ 24" HOOK INTO INVERT SLAB
 14. CONSTRUCTION JOINT ROUGHENED TO 1/4" AMPLITUDE
 15. INVERT THICKNESS PER ARCH SECTION
 16. FLAT WORK PER CIVIL
 17. INVERT ELEV PER CIVIL
 18. END OF ARCH/FACE OF WING WALL BEYOND 2" CHAMFER
 19. 2" CHAMFER
 20. (2) #5 HORIZ BARS ABOVE OPENING AND AT T.O. WALL. EXTEND 4'-0" MIN PAST EDGE OF OPENING INTO WINGWALLS
 21. #4 HORIZ AT 10" O.C.
- NOTES:**
- A. CHAMFER ALL EXTERIOR CONC EDGES
 - B. AT ARCH MAX HT, HEADWALL WILL BE SHORTEST. ADJUST VERT BARS AS NEEDED
 - C. "PER SECTION" INDICATES TO REFER TO ADJACENT ARCH SECTION



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SKYE CANYON II PHASE 3A
HYDRO-ARCH
HENDERSON, NV

HEADWALL SECTIONS

PROJECT:

ISSUE:
SUBMIT FOR PERMIT 07/26/2018

REVISIONS:
DESCRIPTION DATE

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CHECKED: GM

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S4.11