

C:\USERS\HDEBRUN\DESKTOP\TERRE ARCH PROJECTS\2300216-TA\RUTTER STORE #106\TERRE ARCH TA48\RUTTER'S #106 BASIN #2-REV.1.DWG 21/02/2024 11:48 AM



ASSEMBLY
 SCALE: NA
 LOADING: HS25
 BOTTOM OF ARCH ELEV. = 494.00
 BOTTOM OF STONE ELEV. = 492.00

WRAP STONE IN MIRAFI 140N OR
 EQUAL, PROVIDED BY OTHERS.
 APPROX AREA = 4750 SY

THE UNDERSIGNED HEREBY APPROVES THE ATTACHED (9) PAGES.

 CUSTOMER

 DATE

MARK	DATE	REVISION DESCRIPTION	BY

A TRADITION OF EXCELLENCE SINCE 1919



TERRE HILL
 CONCRETE PRODUCTS

USPTO PATENT # 7,798,747

TERRE ARCH™

Toll Free: 800.242.1509 Online: www.terrehill.com

TERRE ARCH TA48
 SAMPLE PROJECT

TERRE HILL OR NON-TERRE HILL

PROJECT No.: 2300216-TA	SEQ. No.: XXX	DATE: 23/2/08
DESIGNED: XXX	DRAWN: HdB	
CHECKED: XXX	APPROVED: XXX	
SHEET NO.: 1 OF 9		

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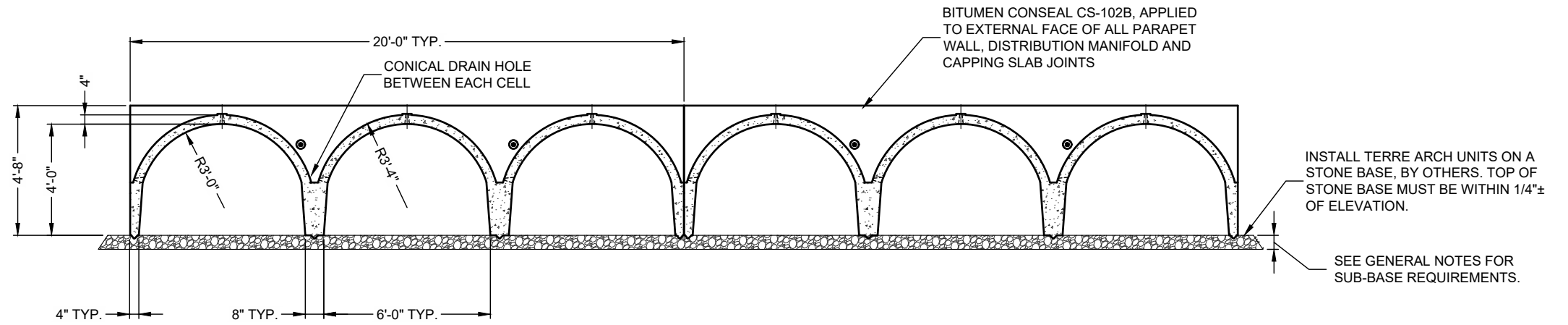
BILL OF MATERIALS TA-48							
C:\Users\hdebruijn\Terre Arch Projects\2300216-TA-Rutter store #106\[BOM-TA 48-2300216-TA.xlsx]TA-48					LENGTH	WIDTH	HEIGHT
PIECE	QTY	DESCRIPTION	SIZE		170 Ft	102 Ft	92 INCH
ALL		ARCH ASSEMBLY MATRIX			HEIGHT		
			NUMBER OF 8 Ft ROWS = 20	NUMBER OF 20 Ft COLUMNS ROWS = 5			
	100	TERRE ARCH 48	7'-11 3/4" X 19'-11 1/2"		4'-8"		
	0	CAPPING SLAB	0'-4" X 9'-11 3/4"		4'-8"		
	4	EJIW#41600389, OR FRAME & COVER					
	4 PC	ANTI-SCOUR MAT (TEN CATE GFF 58600 WHITE-CC-HONEYCOMB FILTER)	6'8" X 15' (11.1 SQFT PER PC)		N/A		
	4 PC	EROSION GRID (TENSAR BX1200)	13' x 22' (31.8 SQFT PER PC)		N/A		
A	1	1 PIPE END-DISTRIBUTION MANIFOLD-ONE OPEN SIDE.			4'-8"		
B	5	TWO OPEN ENDS-DISTRIBUTION MANIFOLD-ONE OPEN SIDE			4'-8"		
C	1	1 PIPE SIDE-DISTRIBUTION MANIFOLD-ONE OPEN SIDE-ONE OPEN END			4'-8"		
D	1	1 OPEN END-DISTRIBUTION MANIFOLD-ONE OPEN SIDE			4'-8"		
E	1	2 OPEN ENDS-DISTRIBUTION MANIFOLD-ONE OPEN SIDE-ONE PIPE SIDE			4'-8"		
F	1	DISTRIBUTION MANIFOLD			4'-8"		
					HEIGHT		
A	1	RISER A			3'-0"		
C	1	RISER C			3'-0"		
E	1	RISER E			3'-6"		
F	1	RISER F			4'-0"		
	2527 Ft	CONSEAL CS102-B (1.5 INCH) + 10 %			N/A		

STRUCTURE WEIGHTS
 HEAVIEST PICK WEIGHT = 25000 LBS
 ARCH = 19000 LBS EACH
 MANIFOLD = 25000 LBS MAX
 CAPPING SLAB = 2500 LBS EACH

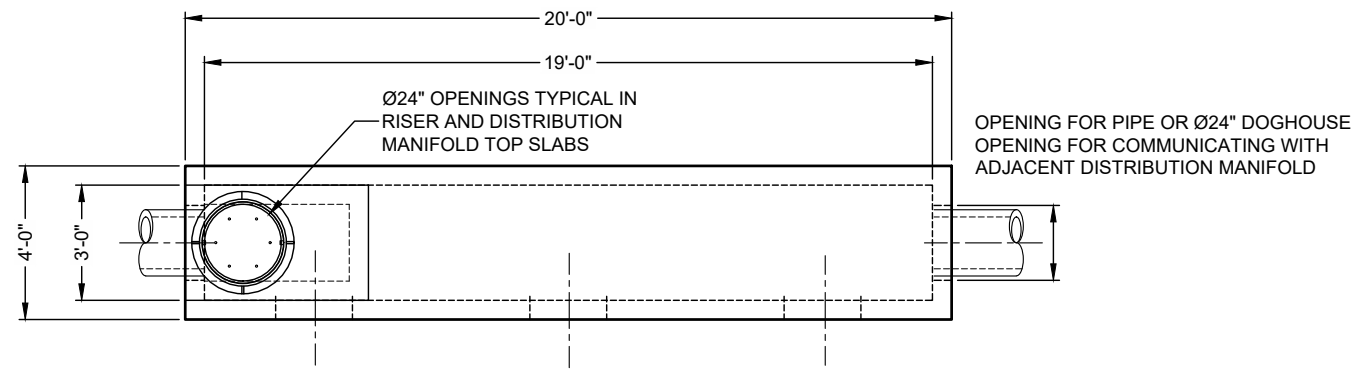
* ALL MATERIALS INSTALLED BY CONTRACTOR, UNLESS NOTED OTHERWISE.

TERRE HILL OR NON-TERRE HILL

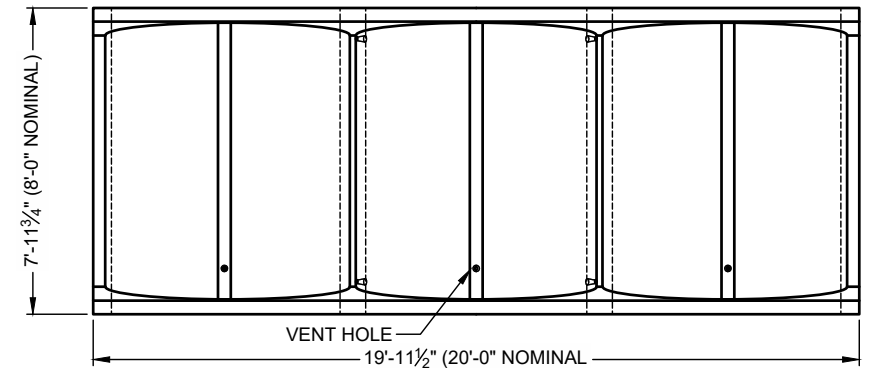
				 TERRE HILL CONCRETE PRODUCTS <small>USPTO PATENT # 7,798,747</small>		TERRE ARCH™ <small>USPTO PATENT # 7,798,747</small>		TERRE ARCH TA48 SAMPLE PROJECT		PROJECT No.: 2300216-TA	SEQ. No.: XXX	DATE: 23/2/08
				Toll Free: 800.242.1509 Online: www.terrehill.com				DESIGNED: XXX		DRAWN: HdB		
								CHECKED: XXX		APPROVED: XXX		
								SHEET NO.: 2		OF 9		
MARK	DATE	REVISION DESCRIPTION	BY									



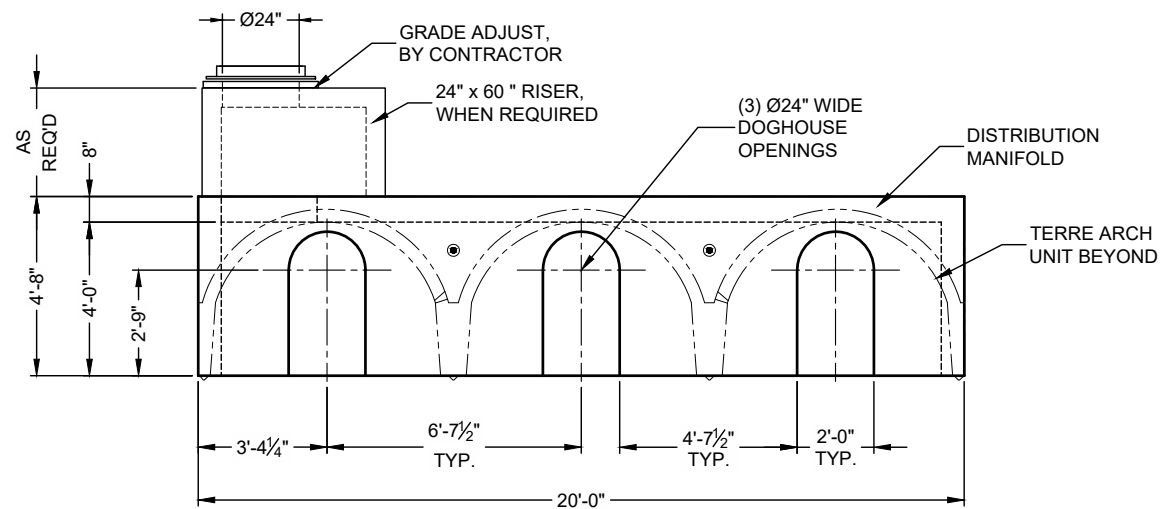
TYPICAL ASSEMBLY SECTION
(STONE BASE)



PLAN VIEW

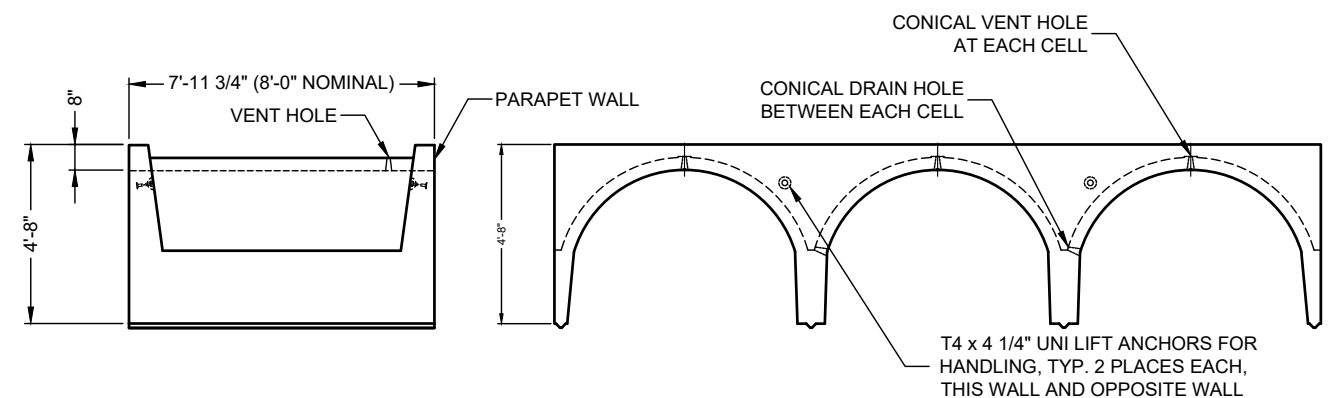


PLAN VIEW



ELEVATION VIEW

TYPICAL DISTRIBUTION MANIFOLD
(TERRE HILL PRECAST)



SIDE VIEW

ELEVATION VIEW

TYPICAL TERRE ARCH 48 DETAIL
(STONE BASE)

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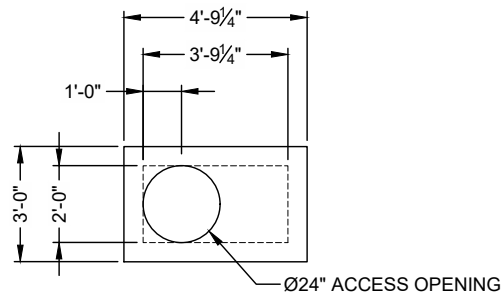
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USPTO PATENT # 7,798,747

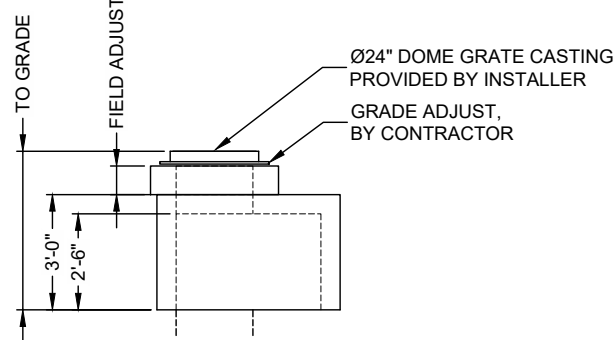
TERRE ARCH TA48
SAMPLE PROJECT

PROJECT No.: 2300216-TA	SEQ. No.: XXX	DATE: 23/2/08
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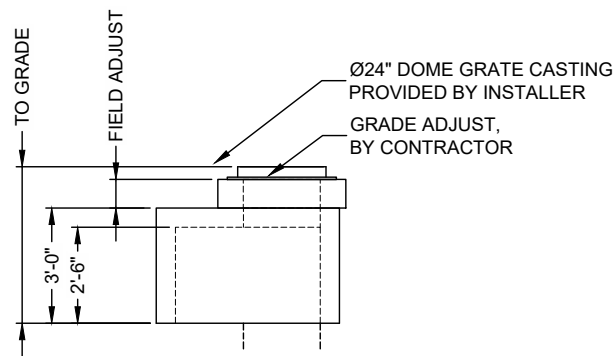


PLAN VIEW



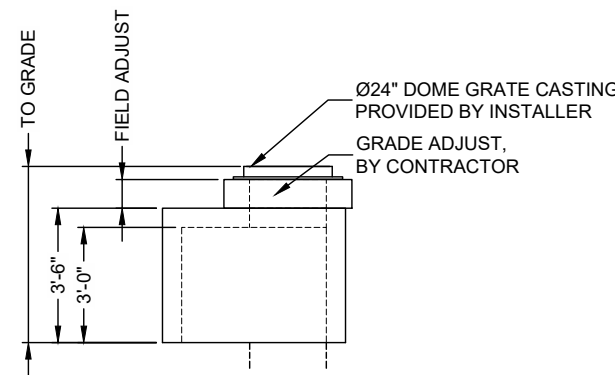
ELEVATION VIEW

RISER A



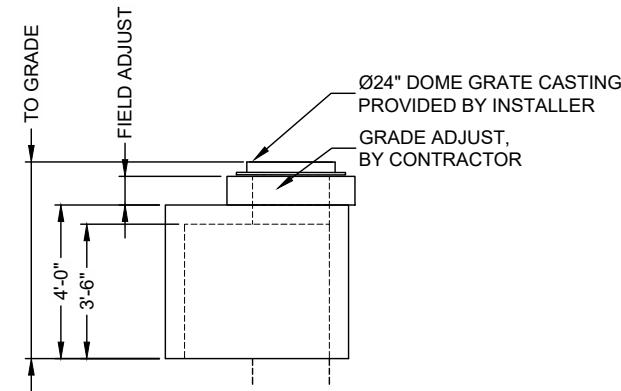
ELEVATION VIEW

RISER C



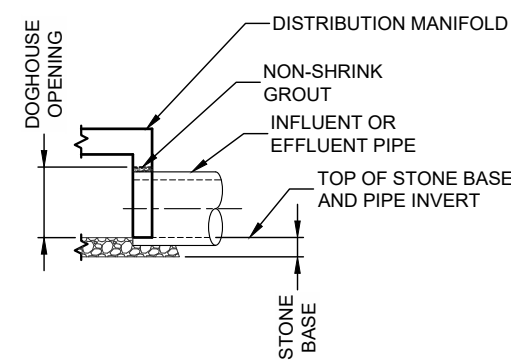
ELEVATION VIEW

RISER E

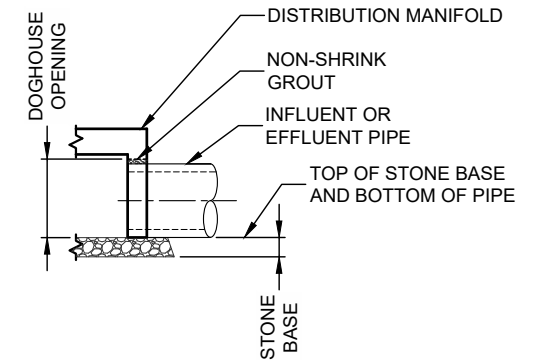


ELEVATION VIEW

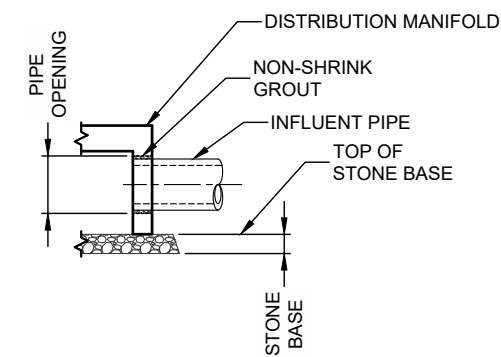
RISER F



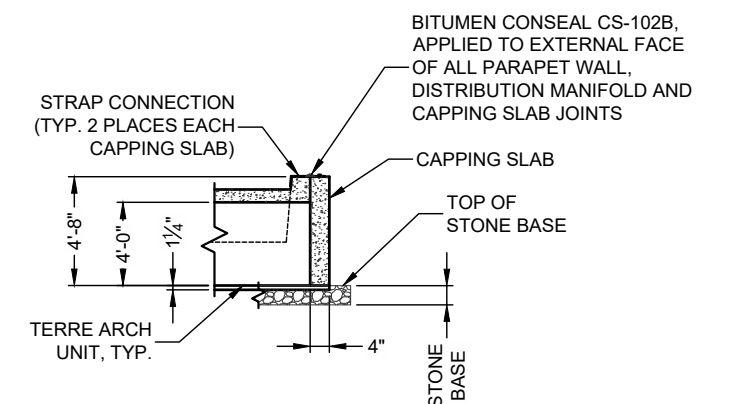
DETAIL A



DETAIL B



DETAIL C



DETAIL AT CAPPING SLAB

PIPE AND CAPPING SLAB DETAILS

(STONE BASE)

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TERRE ARCH™
USPTO PATENT # 7,798,747

TERRE ARCH TA48
SAMPLE PROJECT

PROJECT No.: 2300216-TA	SEQ. No.: XXX	DATE: 23/2/08
DESIGNED: XXX	DRAWN: HdB	
CHECKED: XXX	APPROVED: XXX	
SHEET NO.: 4 OF 9		

TERRE ARCH PLAN NOTES

TERRE ARCH, USPTO PATENT # 7,798,747 stormwater capture module, underground storage system manufactured by **Terre Hill Concrete Products**.
www.terrehill.com

Terre Hill Concrete Products shall submit shop drawings and such other information requested by Engineer to verify Performance and Design Specifications.

Terre Arch Design Specifications

Cement conforms to ASTM C150 (type III)
 CONCRETE F'C= 6,000 PSI AT 28 DAYS;
 Self-compacting Concrete conforms to ASTM C1611
 Air-entrained Concrete conforms to ASTM C 260
 Aggregate conforms to ASTM C-33 #57 OR #67 coarse aggregate and fiber reinforcing.

Deformed steel reinforcing conforms to ASTM A615 GRADE 60.
 Welded wire fabric conforms to ASTM A-185.
 Deformed welded wire fabric of equal size or equal size ASTM A-497 may be substituted for smooth welded wire fabric and shall conform to ASTM A-1064.
 Epoxy Coated Steel Reinforcement:
 Bars shall conform to ASTM A-775
 Welded Wire shall conform to ASTM A-884

ConSeal Butyl Rubber Sealant (CS-102)
 Shall meet or exceed the hydrostatic performance requirement set forth in ASTM C-990, section 10.1;
 Shall meet or exceed all of the requirements of Federal Specification SS-S-210 (210-A0, AASHTO M-198B, and ASTM C-990-91
 ConSeal Polyolefin Backed Exterior Joint Wrap (CS-212)
 Shall meet or exceed ASTM E-1745, C877, C-990, Federal Specification SS-S210 (210-A). AASHTO M-198B

UNI LIFT ANCHORS TYPICAL FOR HANDLING; MANUFACTURER SHALL LOAN THE LIFTING HARDWARE TO CONTRACTOR, WHICH SHALL BE THE PROPERTY OF MANUFACTURER.

PA THREADED INSERTS ARE MANUFACTURED BY PENNSYLVANIA INSERT CORPORATION.

FRAME AND COVER LID SHALL MEET OR EXCEED ASTM A 48, CLASS 35 GRAY ASTM A 536, GGRADE 60-40-18, DUCTILE IRON UNLESS OTHERWISE INDICATED; MARKED "TERRE HILL STORMWATER SYSTEMS"

TERRE ARCH PERFORMANCE SPECIFICATIONS

HS-25 LOAD RATING ON THE CROWN OF THE ARCH; (12" PERIMETER STONE FILL REQUIRED)

ONE FOOT MINIMUM (TOP OF ARCH) COVER OR FILL; MAXIMUM COVER IS 10 FEET.

TERRE ARCH (TA-26) NOMINAL DIMENSIONS:
 152 SQUARE FEET (8'X19') INFILTRATION SURFACE PER STRUCTURE;
 236 CUBIC FEET OF DYNAMIC STORAGE CAVITY

TERRE ARCH (TA-48) NOMINAL DIMENSIONS:
 160 SQUARE FEET (8'X20') INFILTRATION SURFACE PER STRUCTURE;
 480 CUBIC FEET OF DYNAMIC STORAGE CAVITY

TA-26 13,500 LBS. 3 STRUCTURES PER TRUCK

TA48 18,000 LBS. 2 STRUCTURES PER TRUCK

VENTILATION AND DRAINING ORIFICES IN TOP AND VALLEY AREAS OF TERRE ARCH.

DISTRIBUTION MANIFOLDS ARE REQUIRED WHERE INLET/OUTLET PIPES ARE LOCATED.

RISERS WITH ACCESS OPENINGS TO FINISHED GRADE MAY BE REQUIRED FOR SYSTEM ACCESS.

END CAPS WITH CAPPING STRAPS MAY BE REQUIRED.

TERRE ARCH INSTALLATION INSTRUCTIONS

EXCAVATION, COMPACTED STONE BASE, BACKFILLING, GRADING, DEWATERING AND SHORING OF EXCAVATION IN ACCORDANCE WITH APPROVED DRAWINGS, PROJECT SPECIFICATIONS APPROVED BY ENGINEER OF RECORD AND IN ACCORDANCE WITH OSHA REQUIREMENTS BY OTHERS.

UNDERLYING SOIL AND SUB-GRADE MATERIAL SHALL HAVE DESIGN LOADING OF NOT LESS THAN 3,000 POUNDS PER SQUARE FOOT (PSF), AS ESTABLISHED BY PROJECT ENGINEER; (MINIMUM STONE BED SHALL BE 10" OF #5 STONE, TOPPED WITH 2" OF #8 STONE) LEVEL TOLERANCE +/- 1/4".

TERRE ARCH STRUCTURES SHALL BE OFF-LOADED FROM TRUCK WITH CRANE AND PLACED INTO POSITION USING UNI-LIFT ANCHORS TYPICAL FOR HANDLING; MANUFACTURER SHALL LOAN THEIR LIFTING HARDWARE TO THE CONTRACTOR, WHICH IS SHIPPED WITH THE FIRST DELIVERY TRUCK.

EROSION MAT TO BE TENSAR BX-1200 BIAXIAL GEOGRID; OR EQUAL AT ALL INLET PIPES.

ANTI-SCOUR MAT TO BE TENCATE NICOLON, OR EQUAL AT ALL INLET PIPES.

USE FILTER FABRIC OR GEOTEXTILE TO PREVENT WHERE SILT MIGRATION INTO THE STONE AND DYNAMIC VOID SPACE IS POSSIBLE.

PLACE CONSEAL ON THE JOINTS OF PRECAST COMPONENTS TO PREVENT MIGRATION OF PARTICULATES INTO THE JOINT SPACES.

PRIOR TO ALLOWING TOP LOADING ALL PERIMETER EXCAVATION CAVITIES SHALL BE FILLED WITH STONE TO PROVIDE LATERAL SUPPORT TO THE TOP LEVEL OF THE PARAPET OF THE TERRE ARCH.

AFTER A MINIMUM OF EIGHT (8) INCHES OF SYSTEM COVER IS PRESENT, SMALL DOZERS (D4 OR SMALLER) MAY BE USED TO REACH FINISH GRADE.

USE LIGHT VIBRATORY EQUIPMENT TO STABILIZE THE TOP STONE AND SETTLE THE ARCHES INTO THE SUB-BASE.

FINALIZE COVERING THE SYSTEM WITH SPECIFIED STONE TOP LOADING AND COVER WITH FILTER FABRIC TO PREVENT MIGRATION OF FINES INTO THE STONE VOIDS.

PLACE ADDITIONAL GRADING MATERIALS AS REQUIRED.

CONTRACTOR SHALL REMOVE ALL FOREIGN MATERIAL(S) FROM THE TERRE ARCH DETENTION CAVITY.

PRODUCT SUBSTITUTION PROCEDURES

NO UNDERGROUND STORMWATER STORAGE SYSTEM SHALL BE APPROVED AS AN EQUIVALENT SUBSTITUTION FOR A TERRE ARCH SYSTEM UNLESS THE ENGINEER OF RECORD SHALL RECEIVE AND APPROVE DRAWINGS AND SPECIFICATIONS STAMPED AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHEREIN THE PROJECT IS LOCATED SHOWING THE FOLLOWING:

- PROJECT SPECIFIC SIZING CALCULATIONS CLEARLY SHOWING THAT THE UNIT MEETS OR EXCEEDS THE PERFORMANCE AND DESIGN SPECIFICATIONS OF THE TERRE ARCH

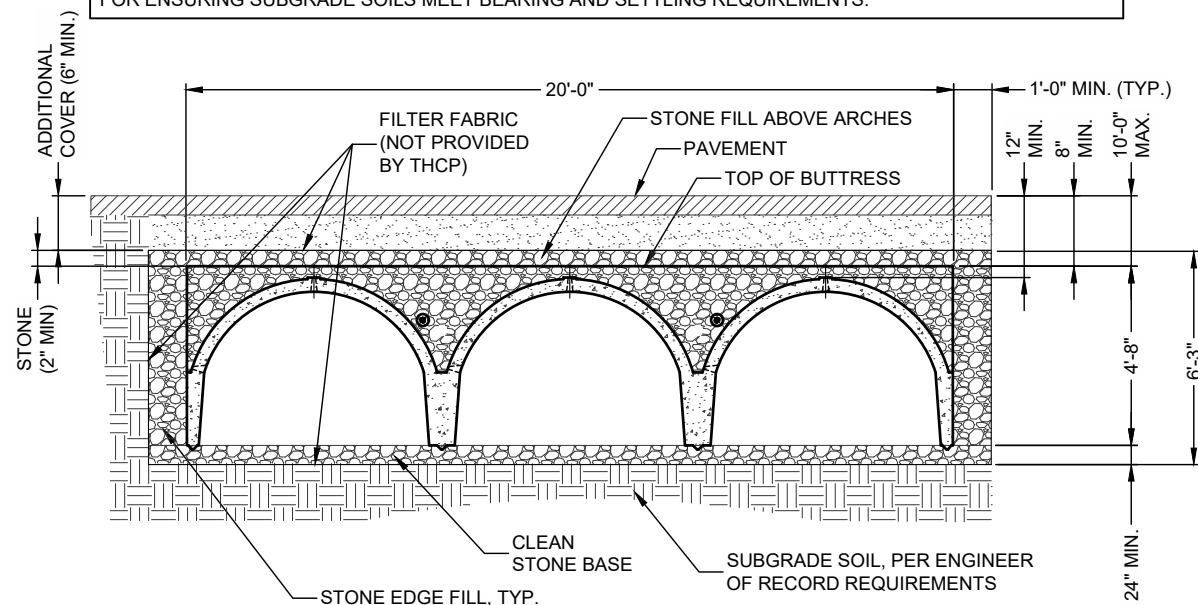
MAINTENANCE PROCEDURES

- WHEN A STORMWATER TREATMENT SYSTEM IS PLACED IN FRONT OF THE TERRE ARCH SYSTEM NO CLEAN OUT OR MAINTENANCE IS ANTICIPATED, AS LONG AS THE STORMWATER TREATMENT SYSTEM IS PROPERLY MAINTAINED
- INSPECTION CAN BE ACCOMPLISHED FROM GRADE WITH PROPER EQUIPMENT BY ENTRY THROUGH THE ACCESS OPENING(S)
- SYSTEM SHALL CONTAIN SUFFICIENT DISTRIBUTION MANIFOLDS TO ALLOW ENTRY FOR INSPECTION AND MAINTENANCE INTO EACH TERRE ARCH

SUBJECT TO CHANGE WITHOUT NOTICE.

TERRE ARCH 48 MINIMUM STONE BEDDING DEPTH										
COVER DEPTH (FT.)	1	2	3	4	5	6	7	8	9	10
MINIMUM BEDDING DEPTH (IN.)	12	12	12	12	14	16	17	19	20	22

COVER DEPTH BASED ON AN ALLOWABLE BEARING CAPACITY OF 3000 PSF.
 IF COVER DEPTH IS BETWEEN 2 VALUES, USE THE HIGHER VALUE. ENGINEER OF RECORD RESPONSIBLE FOR ENSURING SUBGRADE SOILS MEET BEARING AND SETTLING REQUIREMENTS.



TYPICAL BACKFILL DETAIL
(STONE BASE)

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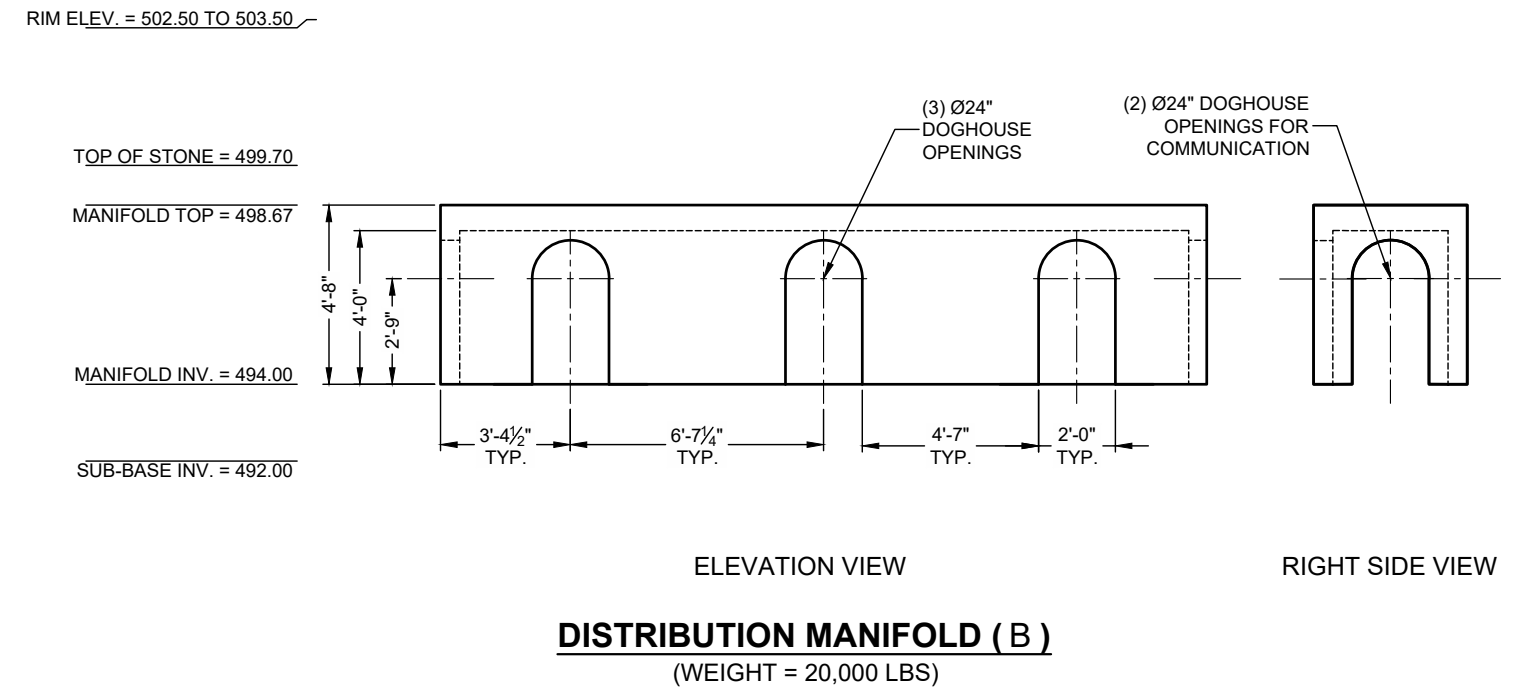
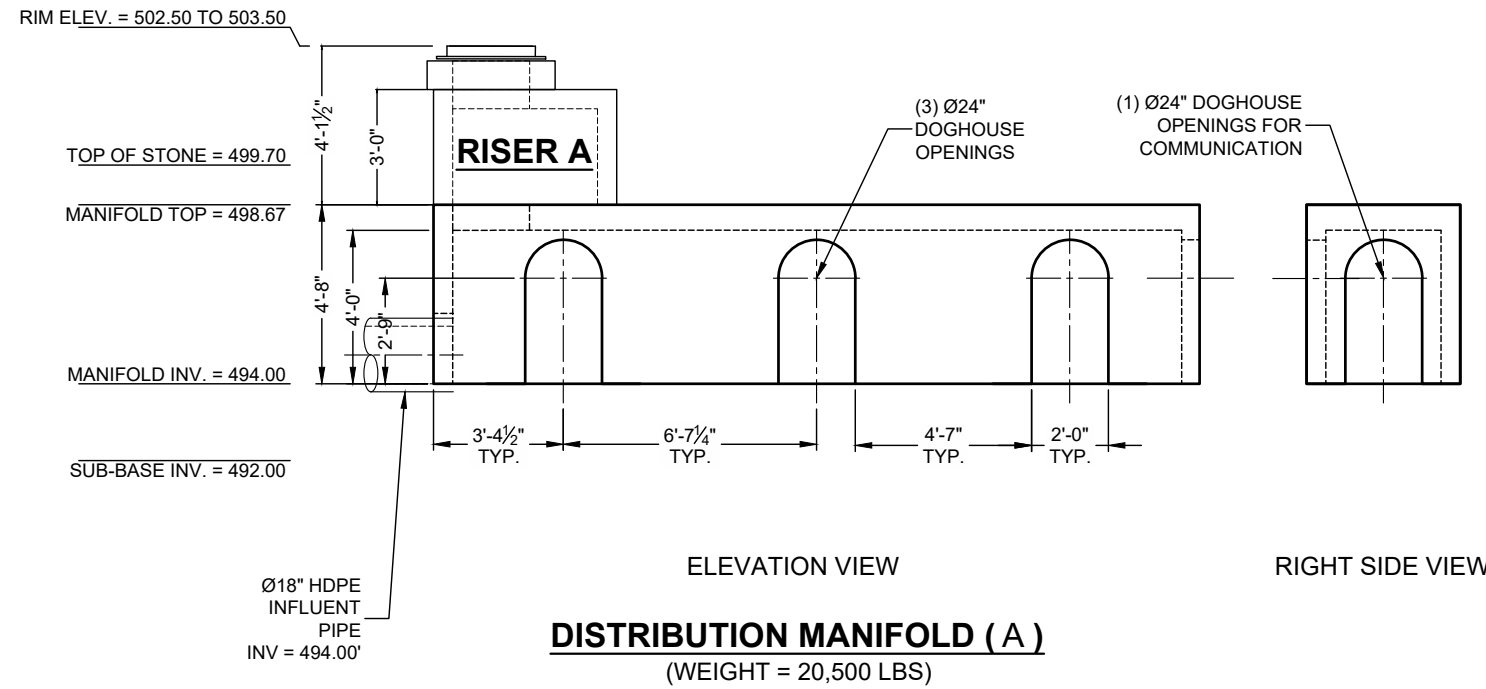
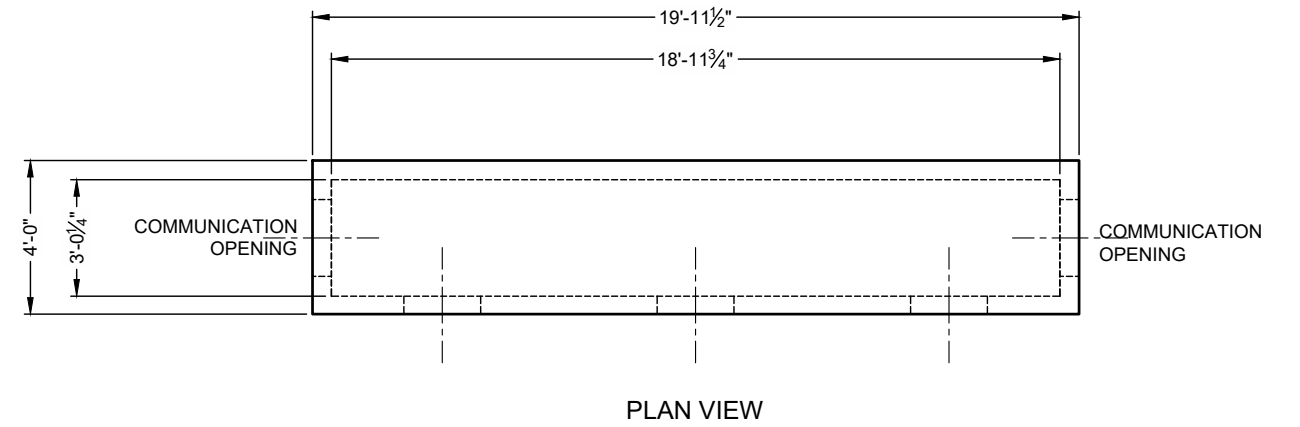
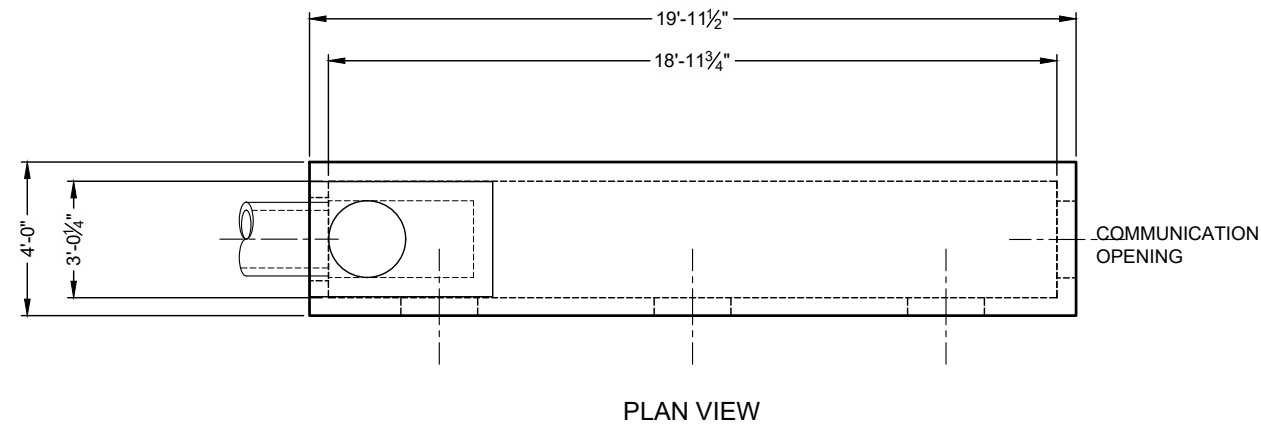
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TERRE ARCH™
USPTO PATENT # 7,798,747

TERRE ARCH TA48
SAMPLE PROJECT

PROJECT No.: 2300216-TA	SEQ. No.: XXX	DATE: 23/2/08
DESIGNED: XXX	DRAWN: HdB	
CHECKED: XXX	APPROVED: XXX	
SHEET NO.: 5 OF 9		

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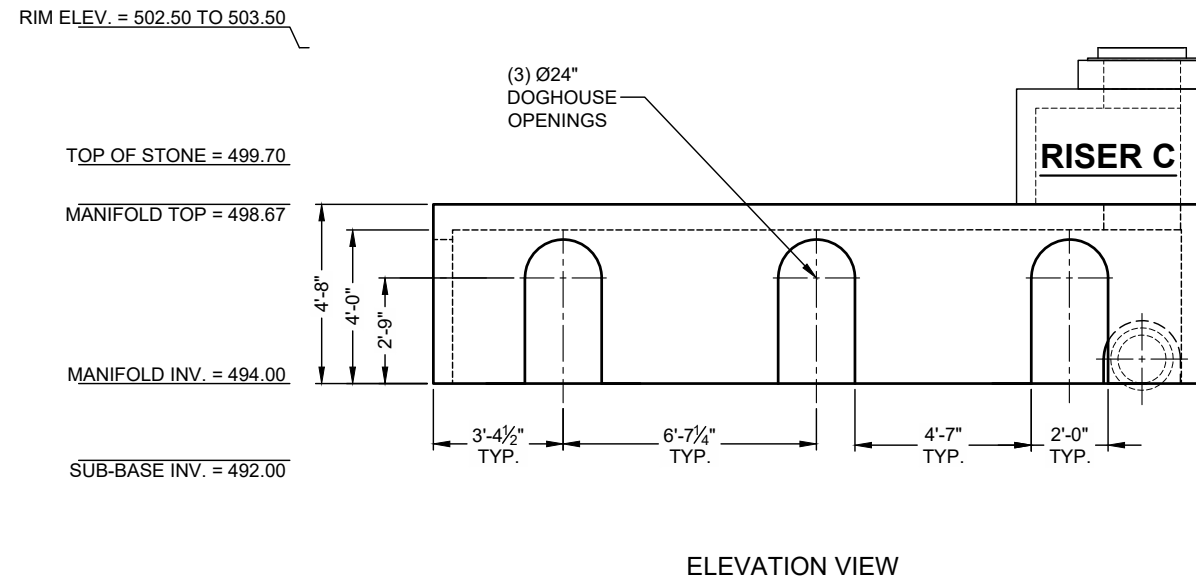
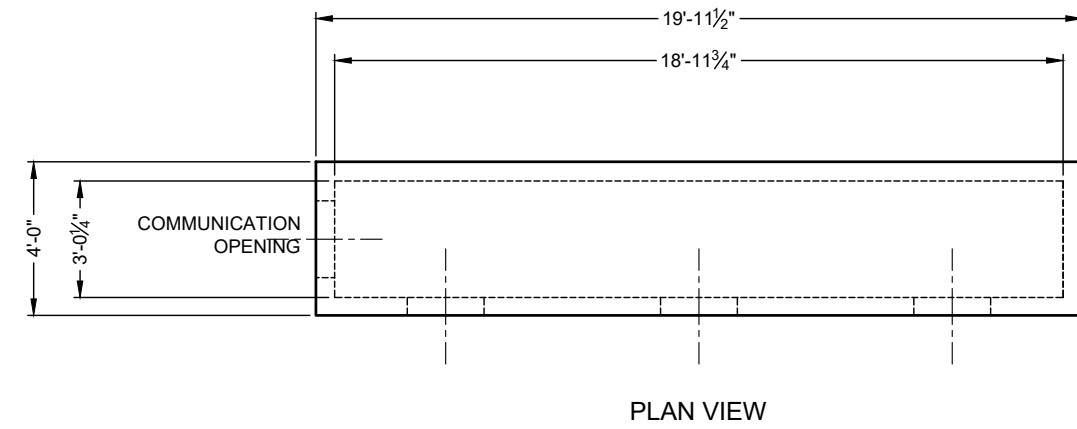
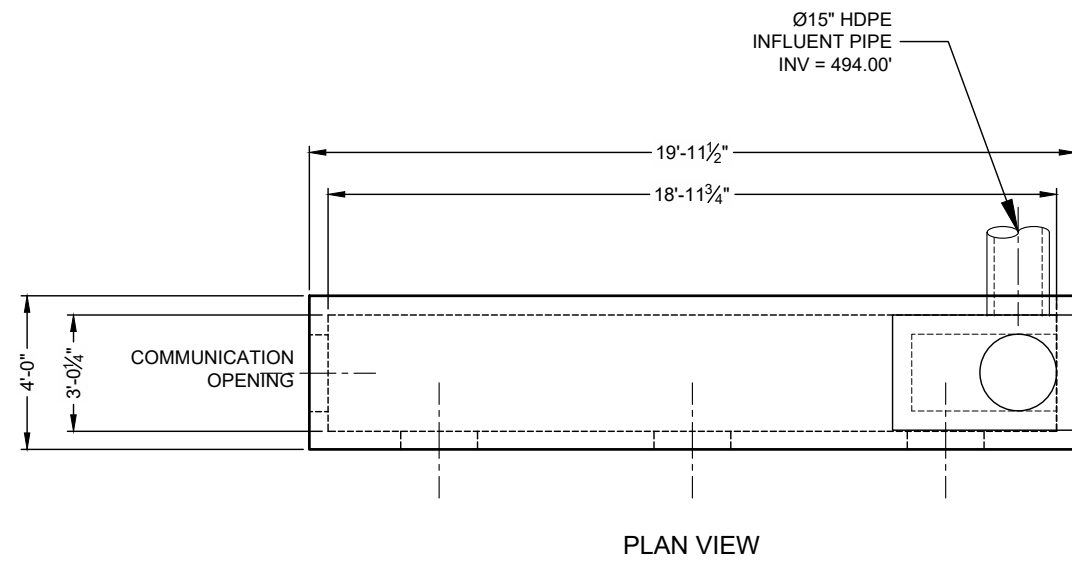
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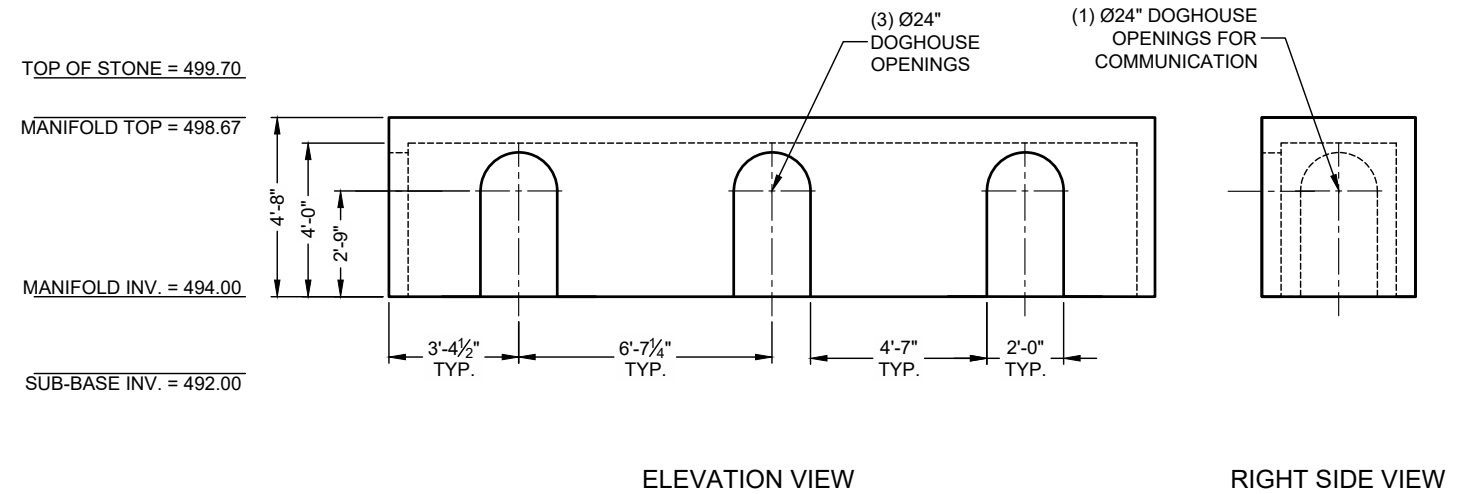
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DISTRIBUTION MANIFOLD (C)
(WEIGHT = 20,500 LBS)

RIM ELEV. = 502.50 TO 503.50



DISTRIBUTION MANIFOLD (D)
(WEIGHT = 20,500 LBS)

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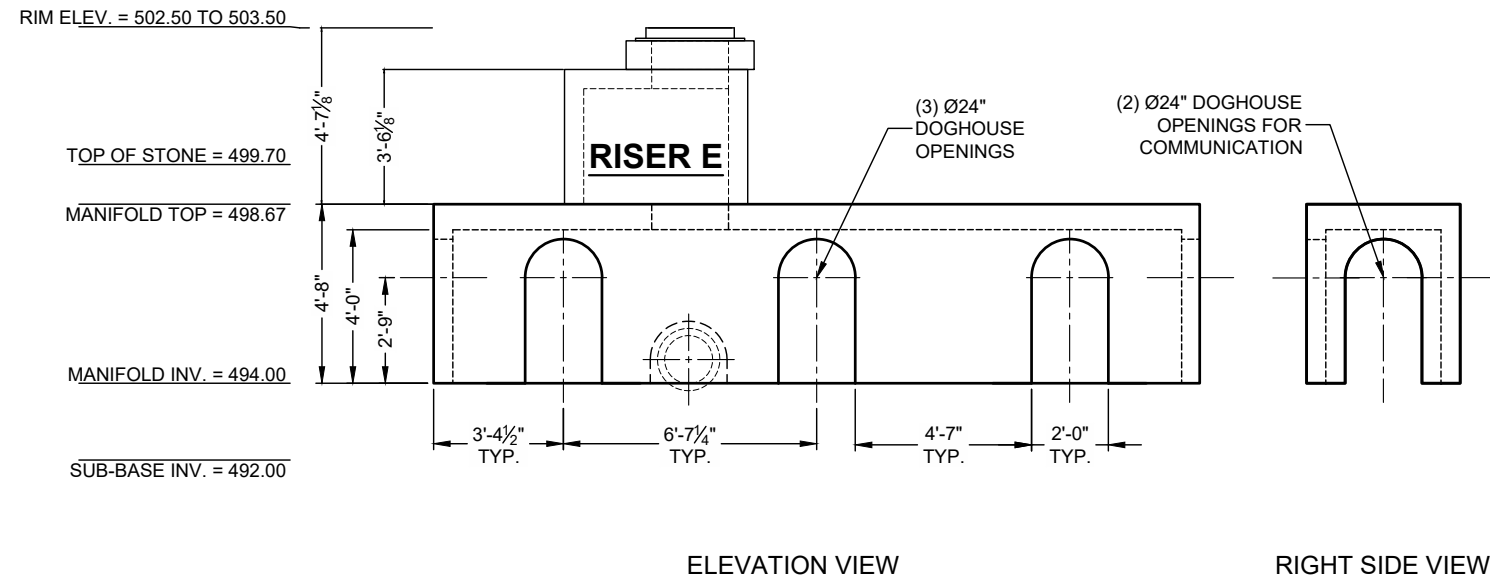
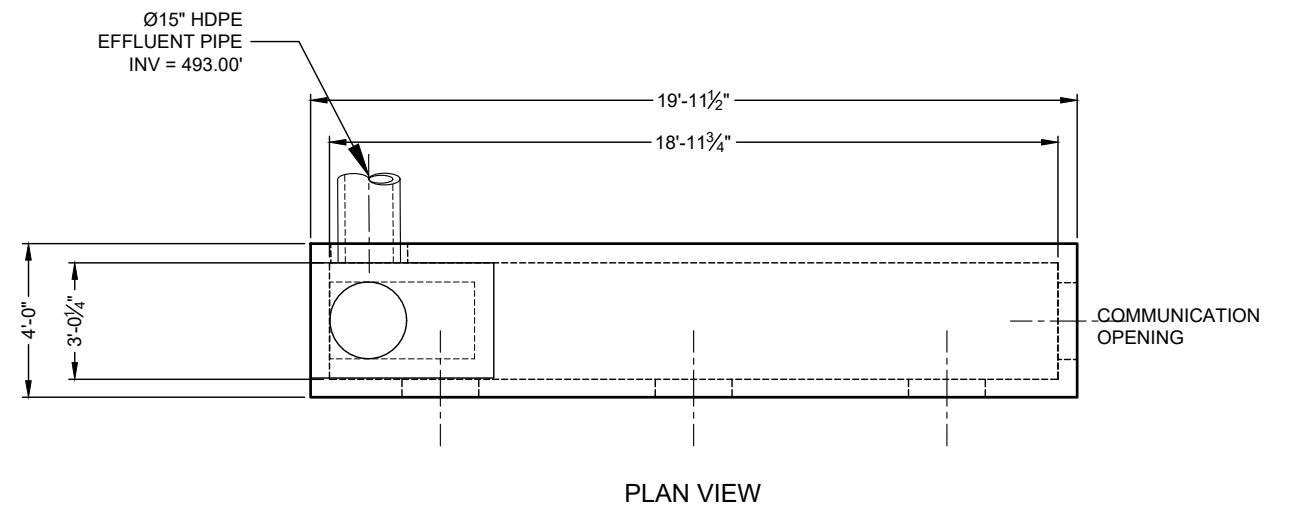
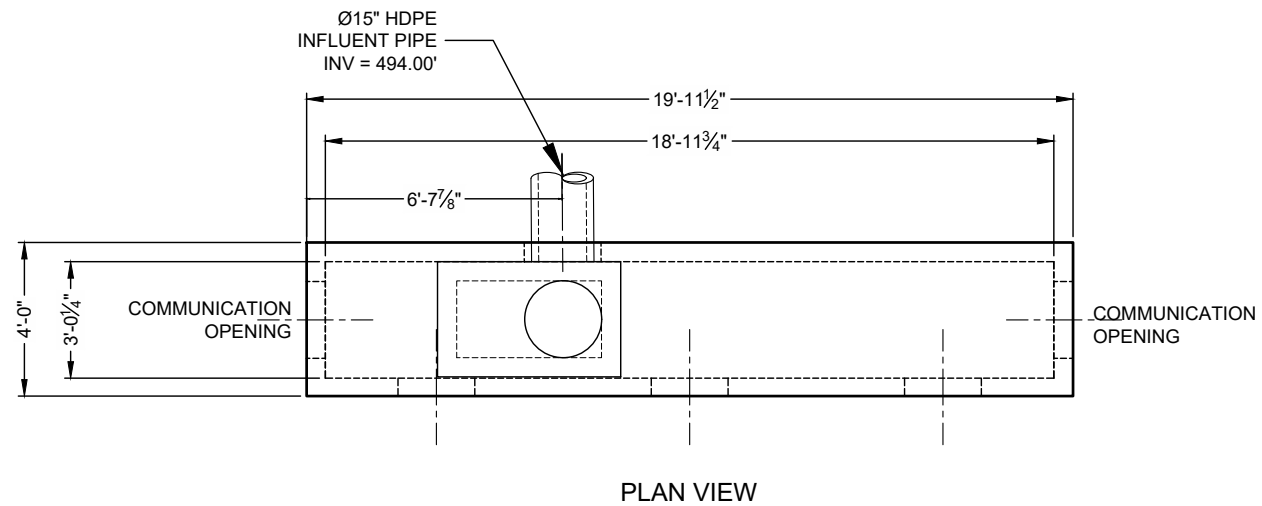
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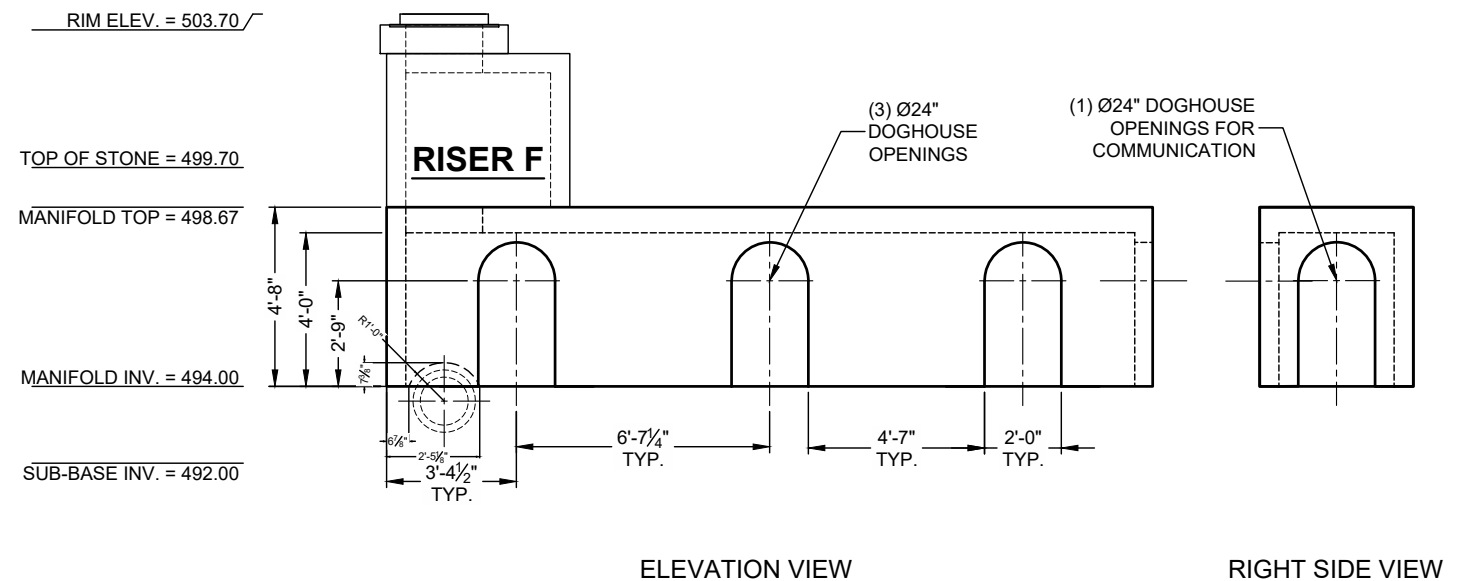
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SAMPLE PROJECT

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DISTRIBUTION MANIFOLD (E)
(WEIGHT = 20,000 LBS)



DISTRIBUTION MANIFOLD (F)
(WEIGHT = 20,500 LBS)

MARK	DATE	REVISION DESCRIPTION	BY
1	2/15/2024	F MANIFOLD PIPE INVERT TO 493'	HdB

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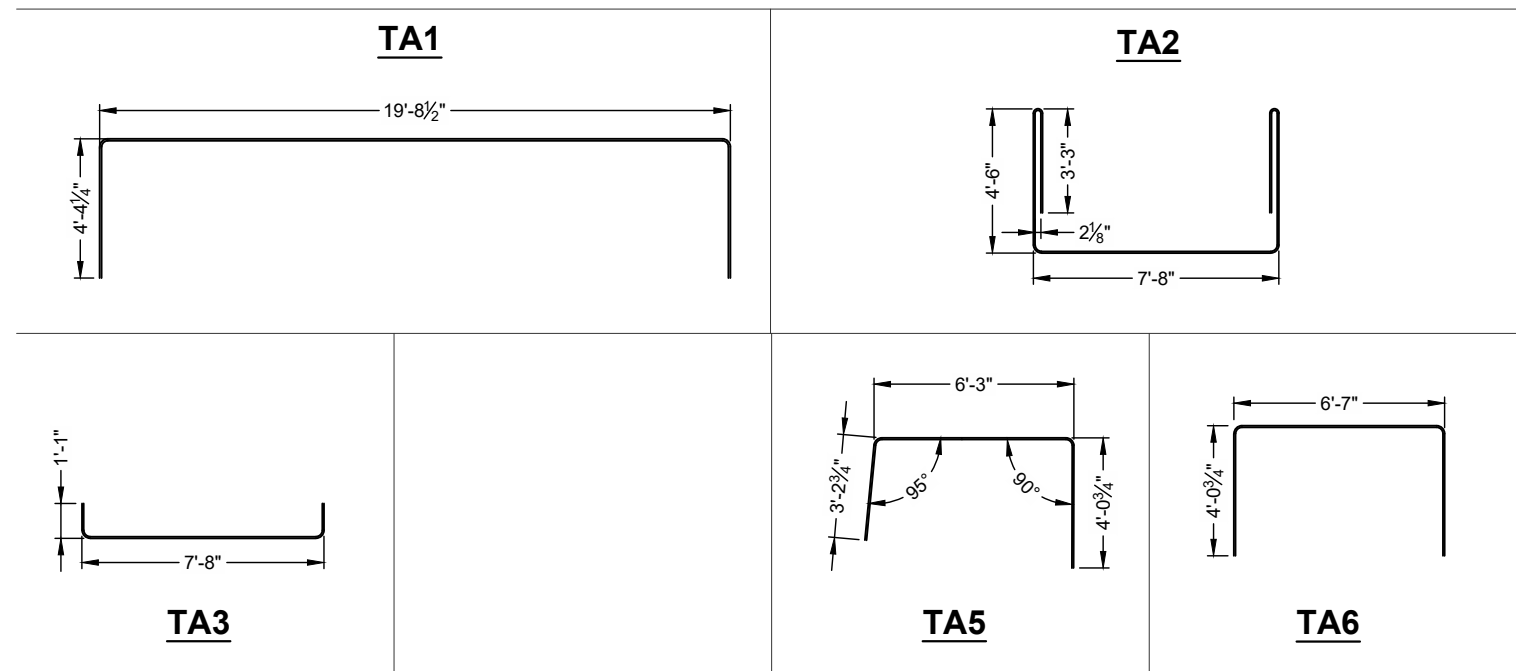
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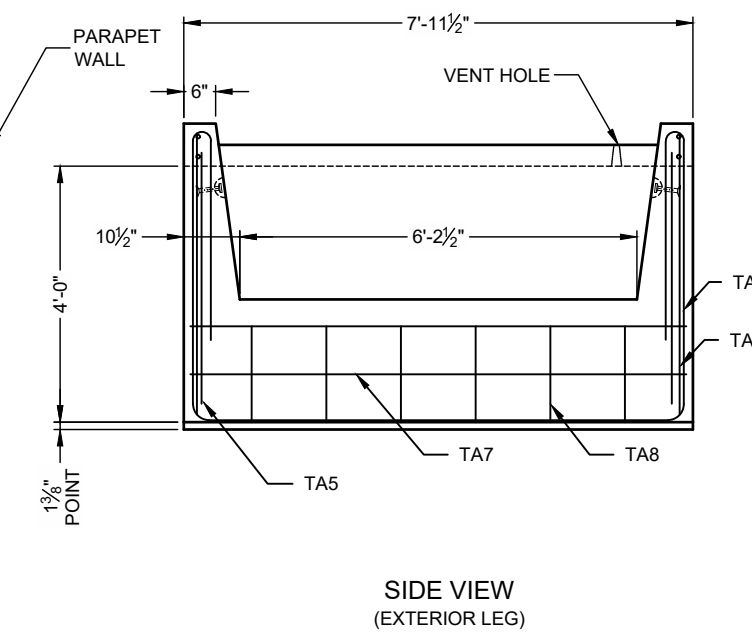
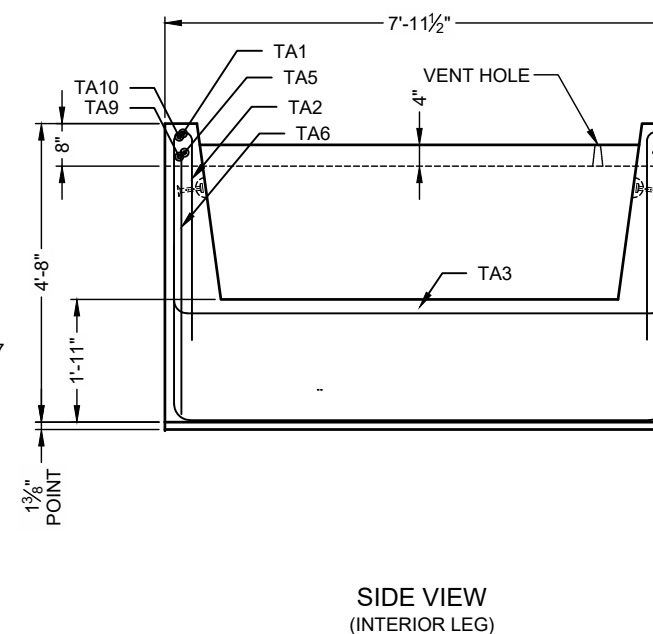
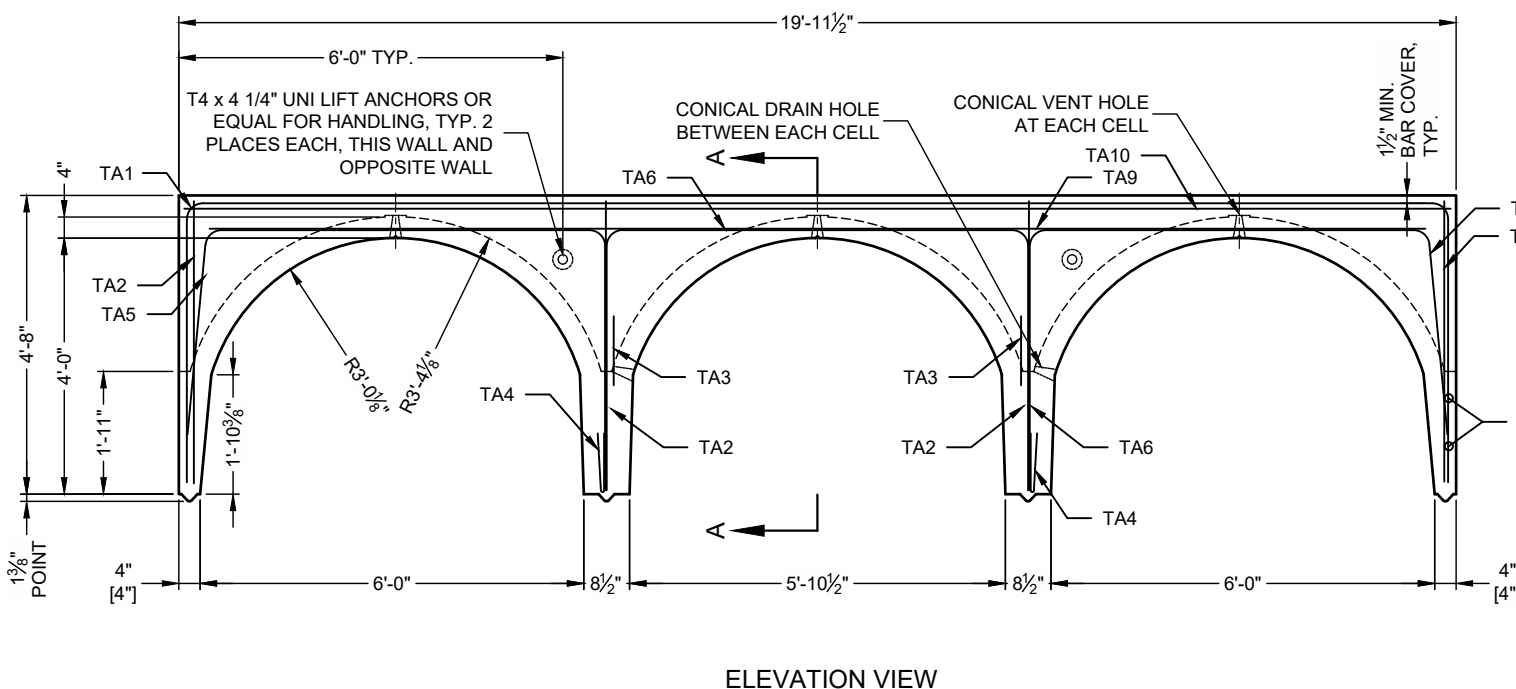
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DESIGNED: XXX	DRAWN: HdB	
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TA48 ARCH - STEEL BOM			
NAME	BAR SIZE	QTY/ LENGTH	TOTAL LENGTH
TA1	EPOXY COATED #6	2 @ 28'-5"	56'-10"
TA2	EPOXY COATED #5	4 @ 23'-2"	92'-8"
TA3	EPOXY COATED #5	2 @ 9'-10"	19'-7"
N/A	N/A		
TA5	EPOXY COATED #5	4 @ 13'-6 1/2"	54'-2"
TA6	EPOXY COATED #5	2 @ 14'-8 1/2"	29'-5"
TA7	EPOXY COATED #4	4 @ 7'-9"	31'-0"
TA8	EPOXY COATED #4	12 @ 1'-6"	18'-0"
TA9	EPOXY COATED #6	2 @ 19'-0"	38'-0"
TA10	EPOXY COATED #6	2 @ 19'-3"	38'-6"

TA48 ARCH - CONCRETE BOM		
DESCRIPTION	QTY	UNIT
6000 PSI SCC ASTM STANDARD	4.75	CU. YD.
FERRO FIBER 2 1/4" (3 LB/CU.YD.)	14.25	LBS.
T4 X 4 1/4 UNI LIFT ANCHORS	4	EA.



TYPICAL TERRE ARCH 48 DETAIL
(STONE BASE)

MARK	DATE	REVISION DESCRIPTION	BY

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SAMPLE PROJECT

PROJECT No.: 2300216-TA	SEQ. No.: XXX	DATE: 23/2/08
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CHECKED: XXX	APPROVED: XXX	
SHEET NO.: 9 OF 9		