



FINAL  
APPROVED FOR  
FABRICATION OR CONSTRUCTION

# 72"Ø UNDERGROUND DETENTION SYSTEM

WALGREENS #11519  
ROCKWALL, TX

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3				
2				
1	03/04/08	REVISED FINAL FOR FABRICATION	FR	
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RECORD DRAWINGS  
THIS RECORD DRAWING HEREIN REFLECTS TO THE BEST OF THE DESIGN ENGINEER'S KNOWLEDGE, THE APPROXIMATE LOCATION OF THE CONSTRUCTED WORK, USING INFORMATION AS PROVIDED BY THE CONTRACTORS AND SURVEYED GRADES.

## INSTALLATION SPECIFICATION

### PRE-CONSTRUCTION MEETING

PRIOR TO INSTALLATION OF THE DETENTION SYSTEM A PRE-CONSTRUCTION MEETING SHALL BE CONDUCTED. THOSE REQUIRED TO ATTEND ARE THE SUPPLIER OF THE DETENTION SYSTEM, THE GENERAL CONTRACTOR, SUB CONTRACTORS AND THE ENGINEER.

### FOUNDATION/BEDDING PREPARATION

PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEY SHALL BE REMOVED AND BROUGHT BACK TO THE GRADE WITH A FILL MATERIAL AS APPROVED BY THE ENGINEER. ONCE THE FOUNDATION PREPARATION IS COMPLETE, THE 4 INCHES OF A WELL-GRADED GRANULAR MATERIAL SHALL BE PLACED AS THE BEDDING.

### BACKFILL

THE BACKFILL SHALL BE AN A1, A2 OR A3 GRANULAR FILL PER AASHTO M-145 OR A WELL-GRADED GRANULAR FILL AS APPROVED BY THE ENGINEER (SEE INSTALLATION GUIDELINES). THE MATERIAL SHALL BE PLACED IN 8-INCH LOOSE LIFTS AND COMPACTED TO 90% AASHTO T99 STANDARD PROCTOR DENSITY. WHEN PLACING THE FIRST LIFTS OF BACKFILL IT IS IMPORTANT TO MAKE SURE THAT THE BACKFILL IS PROPERLY COMPACTED UNDER AND AROUND THE PIPE HAUNCHES. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO LIFT DIFFERENTIAL BETWEEN ANY OF THE PIPES AT ANY TIME DURING THE BACKFILL PROCESS. THE BACKFILL SHALL BE ADVANCED ALONG THE LENGTH OF THE DETENTION SYSTEM AT THE SAME RATE TO AVOID DIFFERENTIAL LOADING ON THE PIPE.

OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS. REFER TO TYPICAL BACKFILL DETAIL WITHIN THIS SET OF PLANS FOR TYPE OF MATERIAL REQUIRED.

### MINIMUM COVER

BACKFILL SHALL BE PLACED TO THE PROPER ELEVATION OVER THE SYSTEM AS OUTLINED IN THE PLANS. MINIMUM COVER FOR CONSTRUCTION LOADING NEEDS TO BE DETERMINED BASED ON THE TYPE OF EQUIPMENT THAT IS PLANNED FOR CONSTRUCTION. PROPER COVER FOR CONSTRUCTION EQUIPMENT SHALL BE DETERMINED PRIOR TO THE PRE-CONSTRUCTION MEETING BY THE ENGINEER.

CONTECH PROJECT ID # 31623

## SPECIFICATION FOR CORRUGATED STEEL PIPE--ALUMINIZED TYPE 2 STEEL:

### SCOPE:

THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE CORRUGATED STEEL PIPE (CSP) DETAILED IN THE PROJECT PLANS.

### MATERIAL:

THE ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M 274 OR ASTM A 929.

### PIPE:

THE CSP SHALL BE MANUFACTURED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF AASHTO M-36 OR ASTM A760. THE PIPE SIZES, GAUGES AND CORRUGATIONS SHALL BE AS SHOWN ON THE PROJECT PLANS.

ALL FABRICATION OF THE PRODUCT SHALL OCCUR WITHIN THE UNITED STATES.

### HANDLING & ASSEMBLY:

SHALL BE IN ACCORDANCE WITH NCSPA'S (NATIONAL CORRUGATED STEEL PIPE ASSOCIATION) RECOMMENDATIONS.

### INSTALLATION:

SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II OR ASTM A 798 AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE PROJECT ENGINEER.

IT IS ALWAYS THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

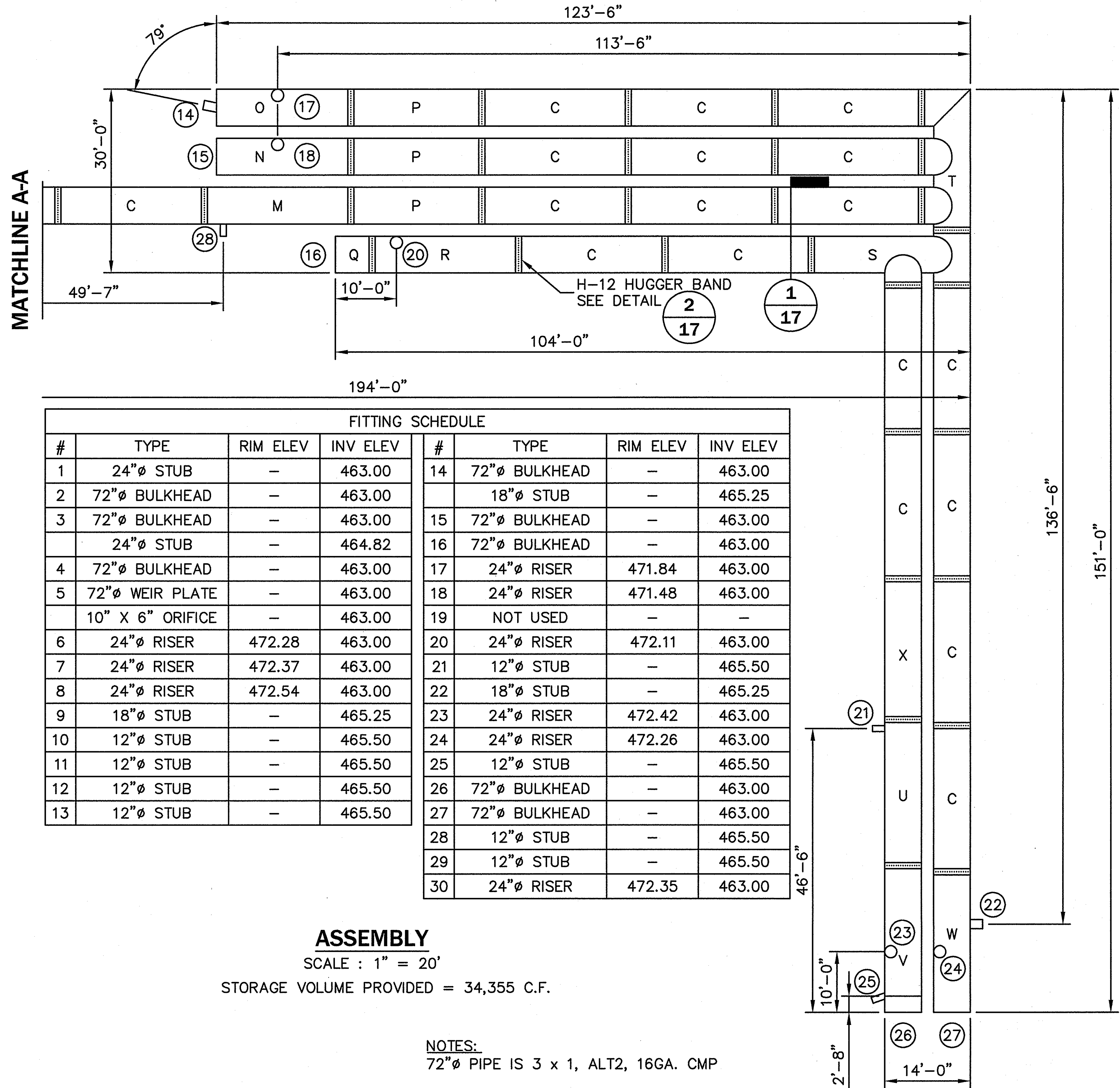
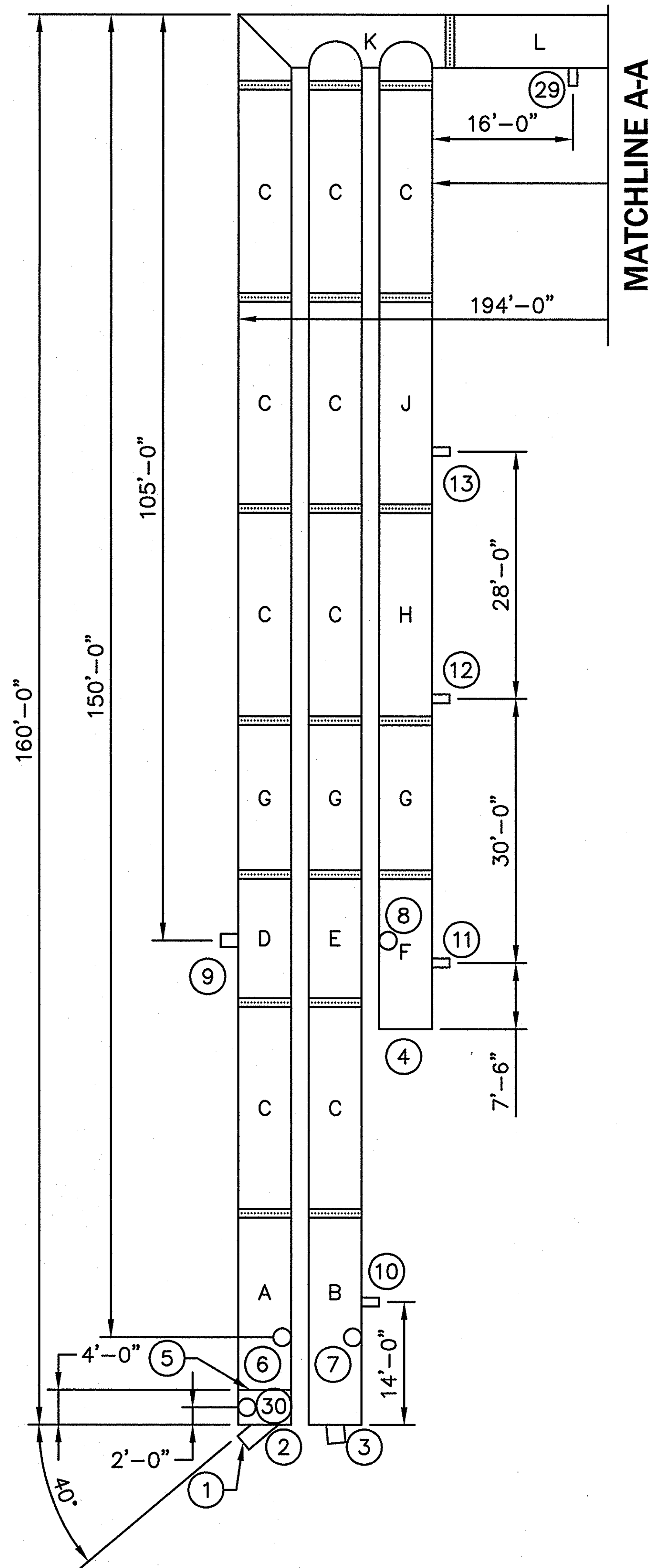
### CONSTRUCTION LOADS:

CONSTRUCTION LOADS MAY BE HIGHER THAN FINAL LOADS. FOLLOW THE MANUFACTURER'S OR NCSPA GUIDELINES.

## NOTES:

- 1) ALL ELEVATIONS, DIMENSIONS AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER PRIOR TO RELEASING FOR FABRICATION.
- 2) IN SITUATIONS WHERE A FINE-GRAINED BACKFILL MATERIAL IS USED ADJACENT TO THE PIPE SYSTEM, AND ESPECIALLY IN SITUATIONS INVOLVING HIGH GROUNDWATER TABLES, CONSIDERATION SHOULD BE GIVEN TO THE USE OF GASKETED PIPE JOINTS. AT THE VERY LEAST, THE PIPE JOINTS SHOULD BE WRAPPED IN A SUITABLE, NON-WOVEN GEOTEXTILE FABRIC TO PREVENT INFILTRATION OF FINES INTO THE PIPE SYSTEM.
- 3) ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- 4) SYSTEM MADE FROM: 72"Ø, 3 x 1, ALT2, 16ga., CSP.
- 5) MINIMUM COVER HEIGHT FOR PIPE DESCRIBED IN NOTE #4 IS 12".
- 6) CONSIDERATIONS FOR CONSTRUCTION EQUIPMENT LOADS MUST BE TAKEN INTO ACCOUNT. SEE DETAIL 4, PAGE 19.
- 7) ALL PIPE DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES.
- 8) ALL RISERS AND STUBS ARE 2 ⅔" X ½" CORRUGATION AND 16 GAGE, UNLESS OTHERWISE NOTED.
- 9) RISERS TO BE FIELD TRIMMED TO FINAL GRADE AND FITTED WITH LADDER AS REQUIRED BY ENGINEER OF RECORD. FOR MANHOLE CAP DETAIL SEE DETAIL 5, PAGE 19.
- 10) SYSTEM IS DESIGNED FOR H20 AND H25 LOADING.

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FITTING SCHEDULE							
#	TYPE	RIM ELEV	INV ELEV	#	TYPE	RIM ELEV	INV ELEV
1	24"Ø STUB	-	463.00	14	72"Ø BULKHEAD	-	463.00
2	72"Ø BULKHEAD	-	463.00		18"Ø STUB	-	465.25
3	72"Ø BULKHEAD	-	463.00	15	72"Ø BULKHEAD	-	463.00
	24"Ø STUB	-	464.82	16	72"Ø BULKHEAD	-	463.00
4	72"Ø BULKHEAD	-	463.00	17	24"Ø RISER	471.84	463.00
5	72"Ø WEIR PLATE	-	463.00	18	24"Ø RISER	471.48	463.00
	10" X 6" ORIFICE	-	463.00	19	NOT USED	-	-
6	24"Ø RISER	472.28	463.00	20	24"Ø RISER	472.11	463.00
7	24"Ø RISER	472.37	463.00	21	12"Ø STUB	-	465.50
8	24"Ø RISER	472.54	463.00	22	18"Ø STUB	-	465.25
9	18"Ø STUB	-	465.25	23	24"Ø RISER	472.42	463.00
10	12"Ø STUB	-	465.50	24	24"Ø RISER	472.26	463.00
11	12"Ø STUB	-	465.50	25	12"Ø STUB	-	465.50
12	12"Ø STUB	-	465.50	26	72"Ø BULKHEAD	-	463.00
13	12"Ø STUB	-	465.50	27	72"Ø BULKHEAD	-	463.00
				28	12"Ø STUB	-	465.50
				29	12"Ø STUB	-	465.50
				30	24"Ø RISER	472.35	463.00

#### ASSEMBLY

SCALE : 1" = 20'

STORAGE VOLUME PROVIDED = 34,355 C.F.

#### NOTES:

72"Ø PIPE IS 3 x 1, ALT2, 16GA. CMP

SPACING BETWEEN PIPES IS 2'-0"

SYSTEM INVERT IS 463.00'

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CONTECH ID# 31623

**CONTECH**  
STORMWATER  
SOLUTIONS INC.  
9025 CENTRE POINTE DRIVE, SUITE 400  
WEST CHESTER, OHIO 45069  
PH: 1.800.338.1122 FAX: 513.645.7399

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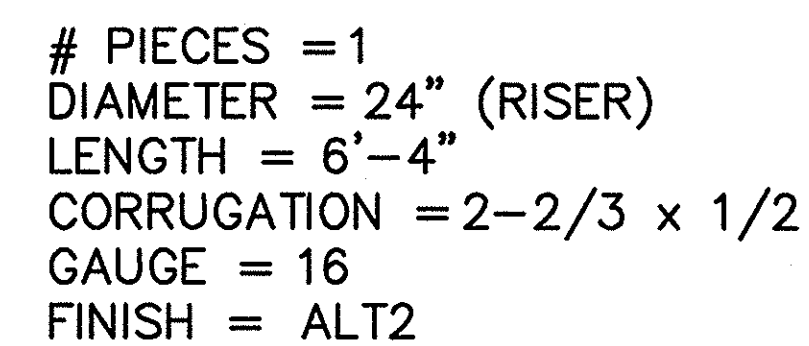
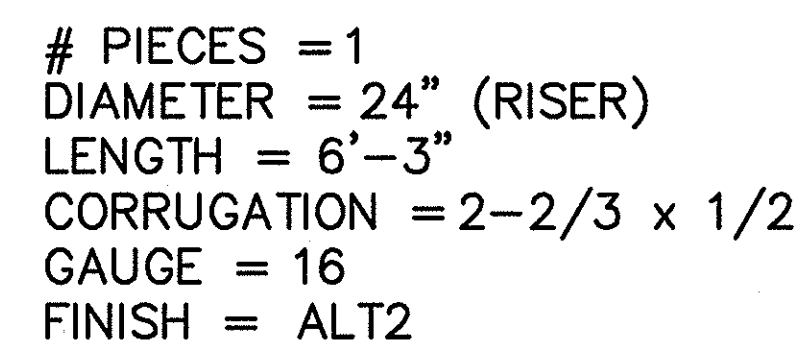
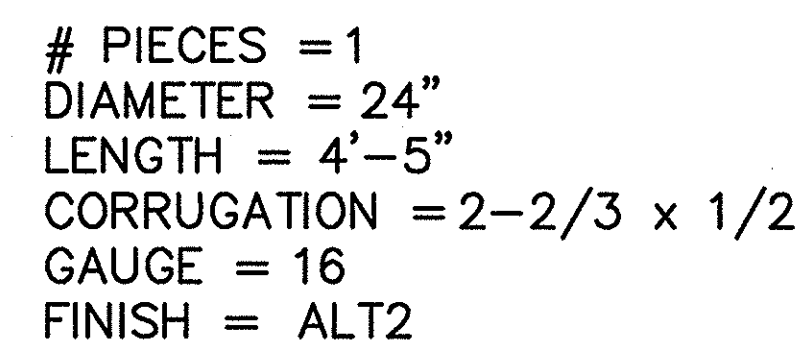
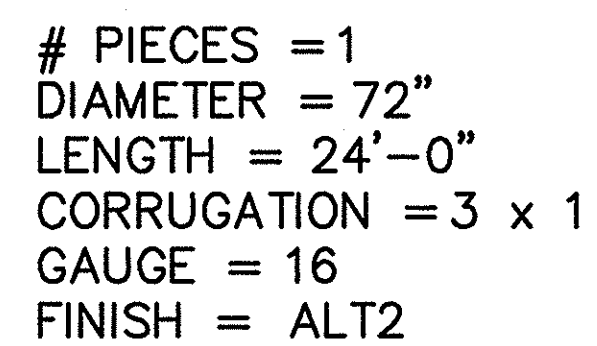
#### ASSEMBLY

**72"Ø UNDERGROUND DETENTION SYSTEM**  
**WALGREENS #11519**  
**ROCKWALL, TX**

**RECORD DRAWINGS**  
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THE BEST OF THE DESIGN ENGINEER'S  
KNOWLEDGE, THE APPROXIMATE LOCATION OF  
THE CONSTRUCTED WORK, USING INFORMATION  
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SCALE: AS SHOWN  
DRAWN BY: FR  
DATE: 02/28/08  
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SHEET:  
**2 OF 20**

3					
2					
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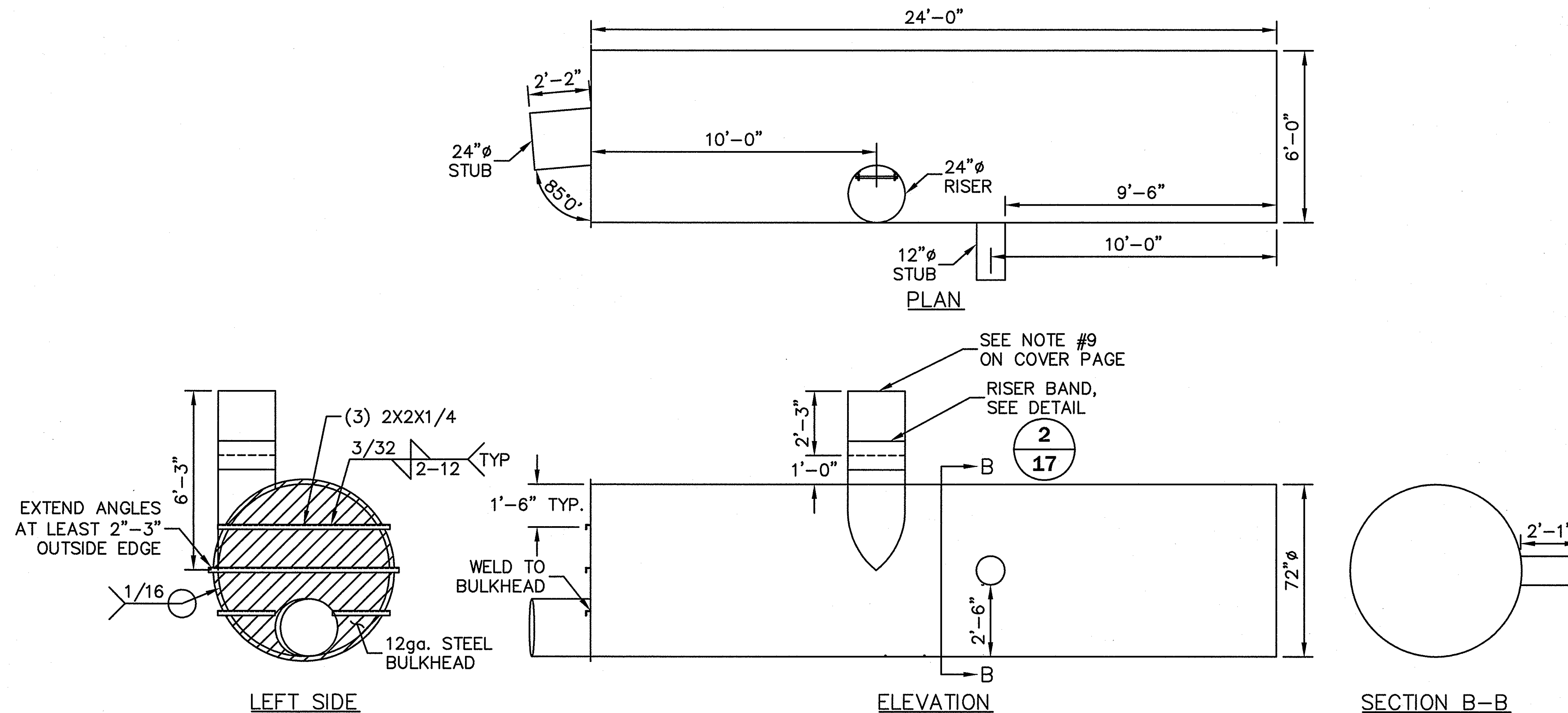
## PART DETAIL

**72"Ø UNDERGROUND DETENTION SYSTEM**  
**WALGREENS #11519**  
**ROCKWALL, TX**

SCALE:	AS SHOWN
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2x2x1/4 REINFORCEMENT ANGLE  
TOTAL LENGTH REQUIRED: 16'-8"

**PART B**  
SCALE : 1" = 5'

# PIECES = 1  
DIAMETER = 72"  
LENGTH = 24'-0"  
CORRUGATION = 3 x 1  
GAUGE = 16  
FINISH = ALT2

# PIECES = 1  
DIAMETER = 24"  
LENGTH = 2'-2"  
CORRUGATION = 2-2/3 x 1/2  
GAUGE = 16  
FINISH = ALT2

# PIECES = 1  
DIAMETER = 24" (RISER)  
LENGTH = 6'-3"  
CORRUGATION = 2-2/3 x 1/2  
GAUGE = 16  
FINISH = ALT2

# PIECES = 1  
DIAMETER = 12"  
LENGTH = 2'-1"  
CORRUGATION = 2-2/3 x 1/2  
GAUGE = 16  
FINISH = ALT2

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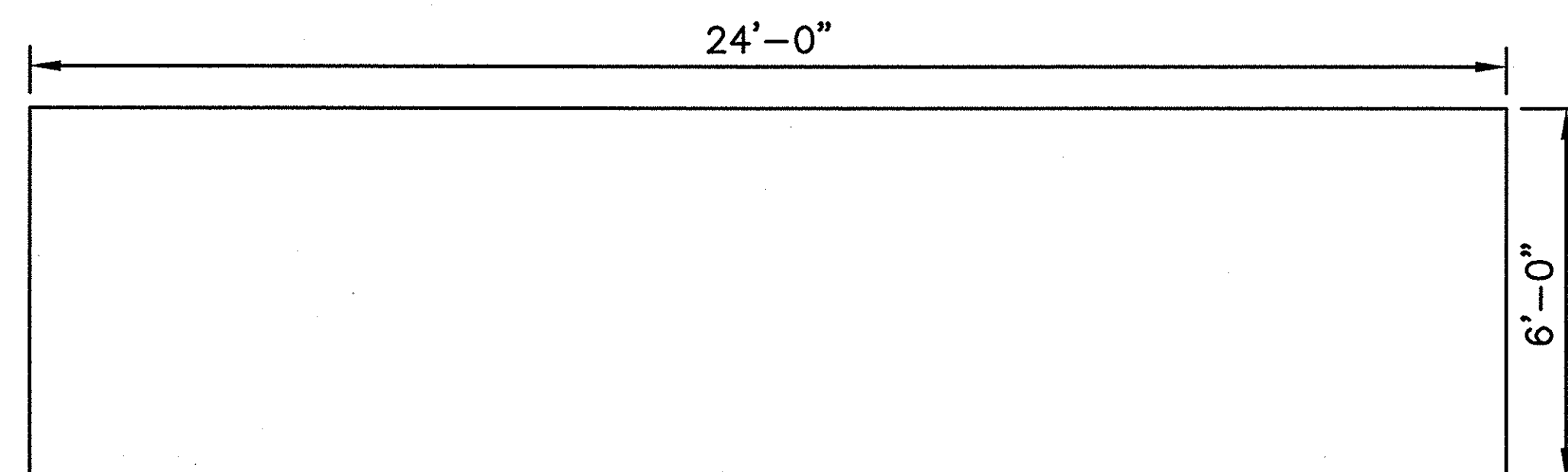
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ROCKWALL, TX

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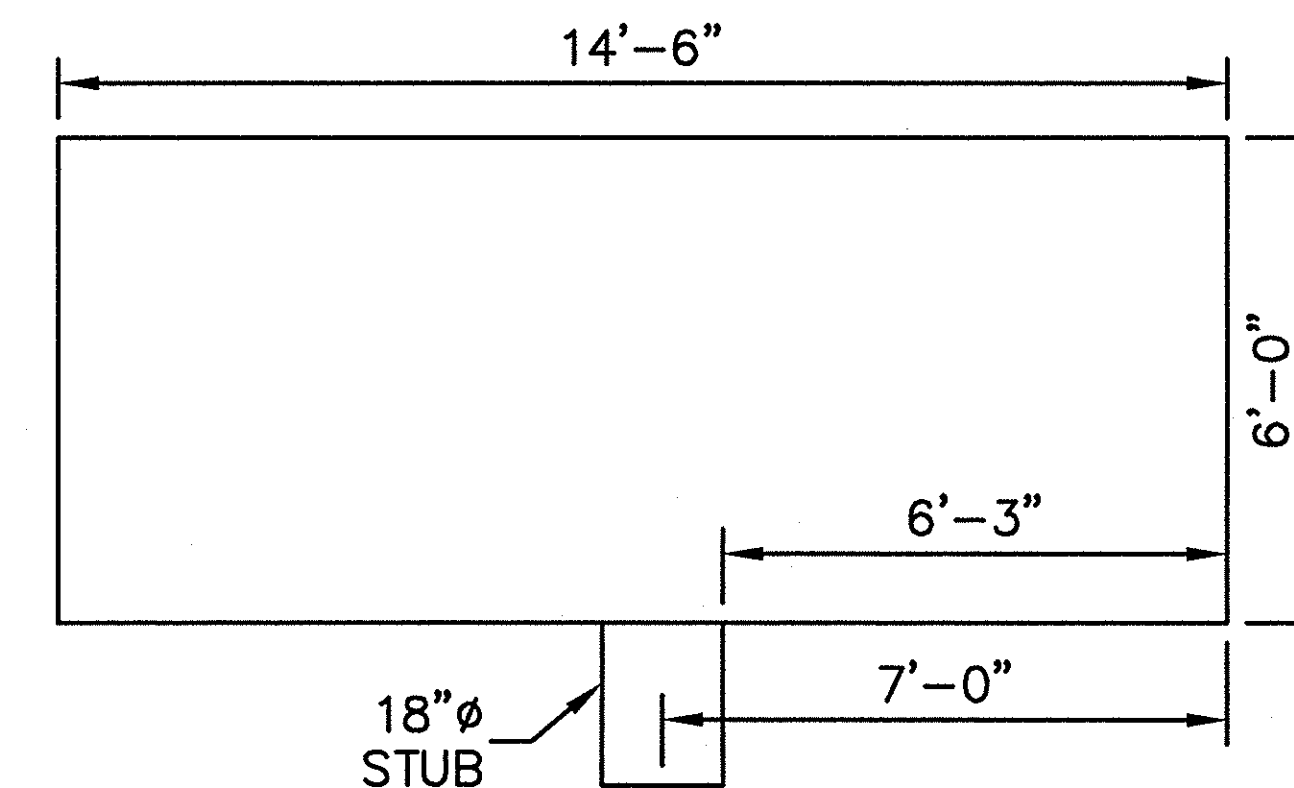


PLAN

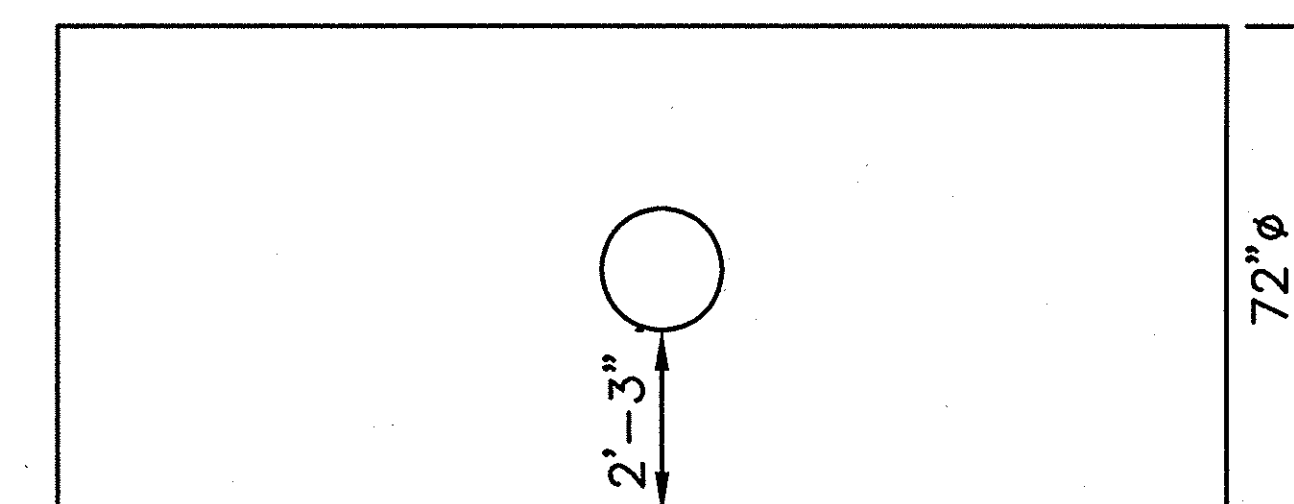
**PART C**

SCALE : 1" = 5'

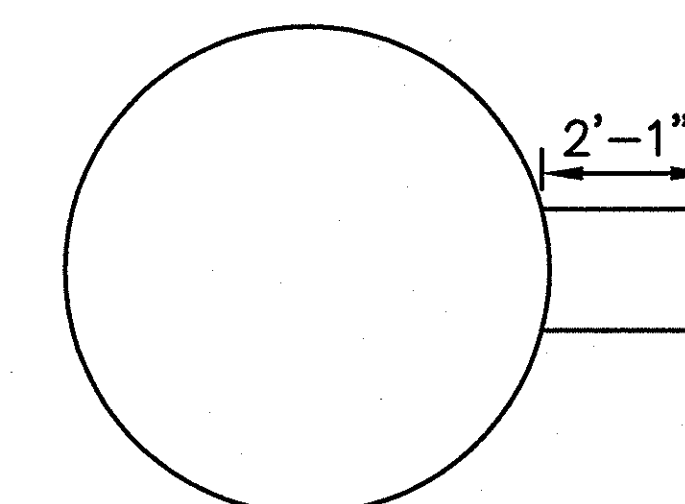
# PIECES = 27  
DIAMETER = 72"  
LENGTH = 24'-0"  
CORRUGATION = 3 x 1  
GAUGE = 16  
FINISH = ALT2



PLAN



ELEVATION



RIGHT SIDE

**PART D**

SCALE : 1" = 5'

# PIECES = 1  
DIAMETER = 72"  
LENGTH = 14'-6"  
CORRUGATION = 3 x 1  
GAUGE = 16  
FINISH = ALT2

# PIECES = 1  
DIAMETER = 18"  
LENGTH = 2'-1"  
CORRUGATION = 2-2/3 x 1/2  
GAUGE = 16  
FINISH = ALT2

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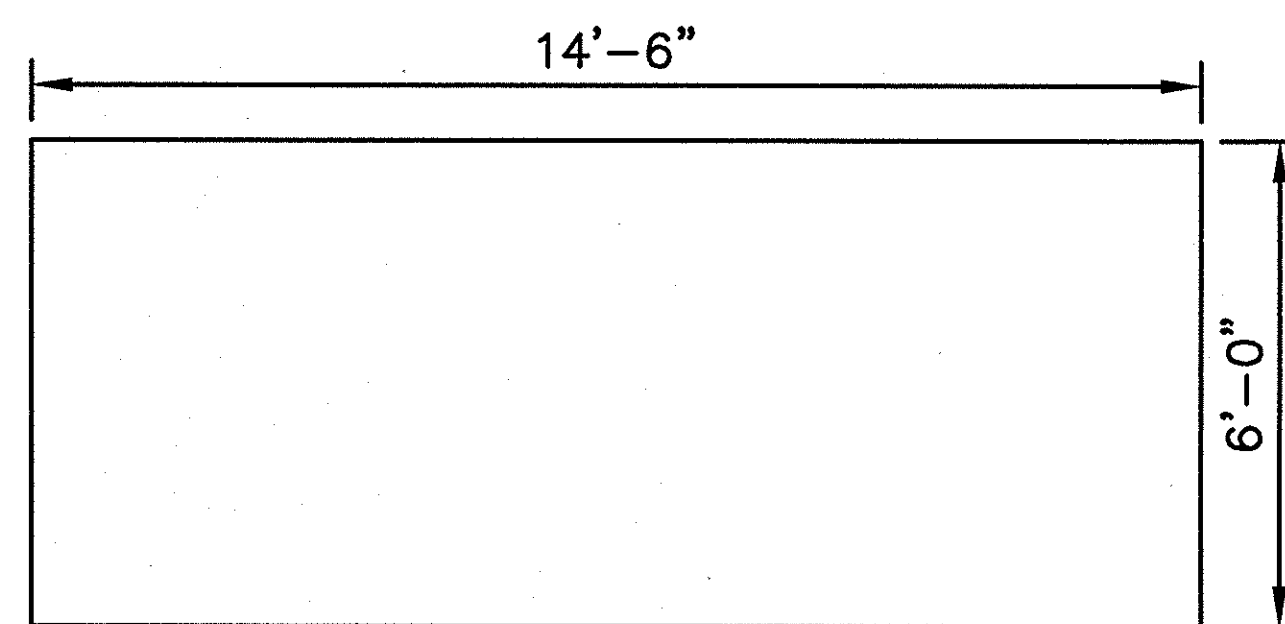
**PART DETAILS**

72"Ø UNDERGROUND DETENTION SYSTEM  
WALGREENS #11519  
ROCKWALL, TX

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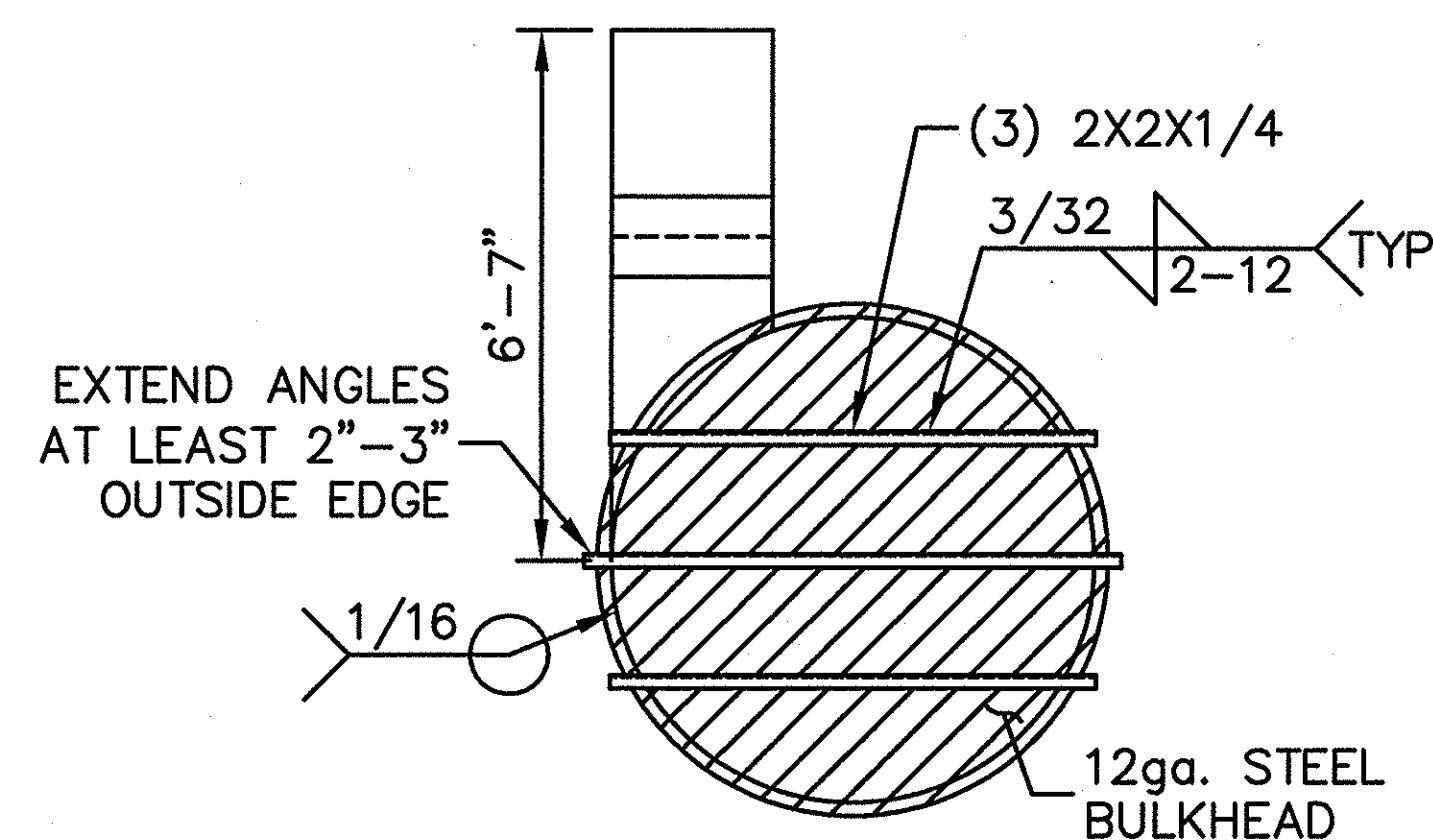


PLAN

**PART E**

SCALE : 1" = 5'

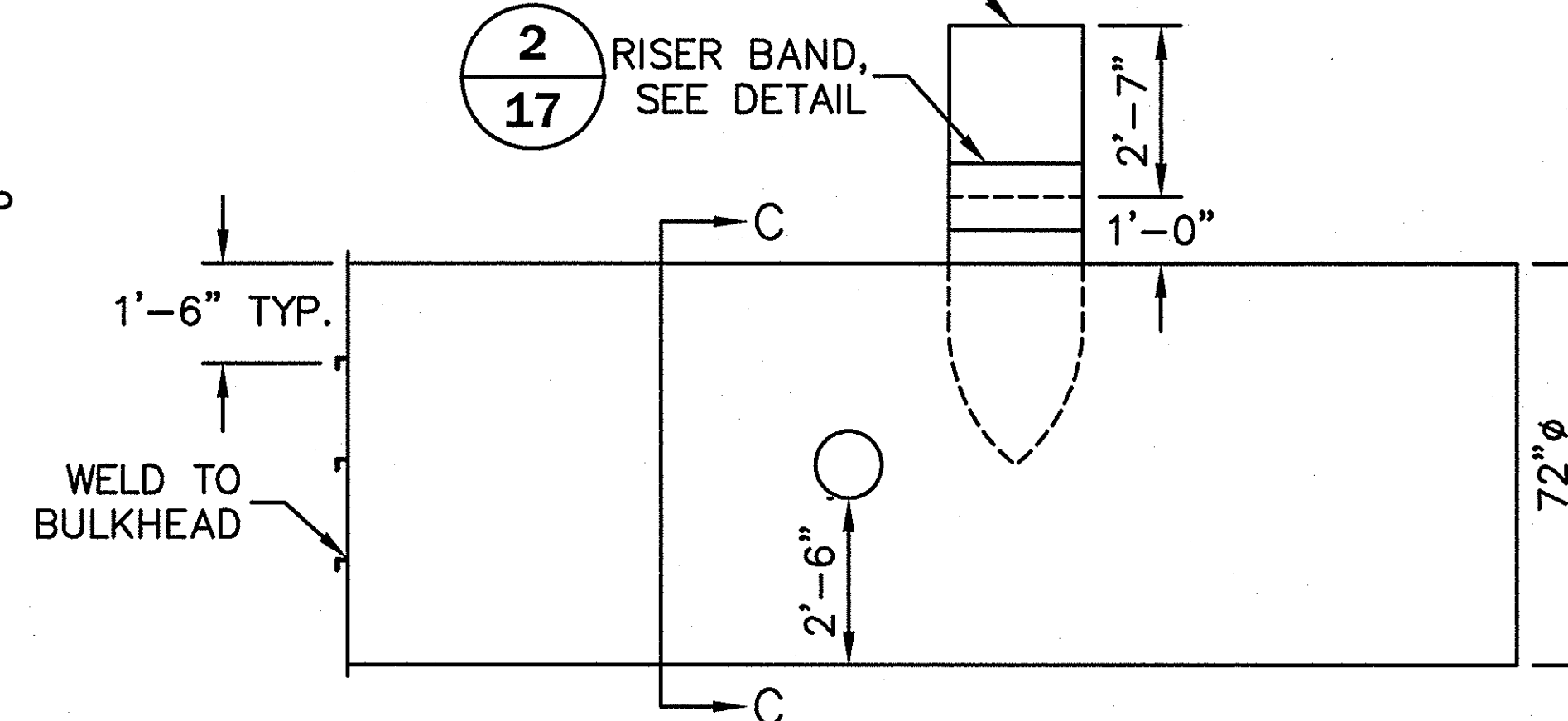
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DIAMETER = 72"  
LENGTH = 14'-6"  
CORRUGATION = 3 x 1  
GAUGE = 16  
FINISH = ALT2



LEFT SIDE

2x2x1/4 REINFORCEMENT ANGLE  
TOTAL LENGTH REQUIRED: 15'-6"

# PIECES = 1  
DIAMETER = 72"  
LENGTH = 17'-6"  
CORRUGATION = 3 x 1  
GAUGE = 16  
FINISH = ALT2



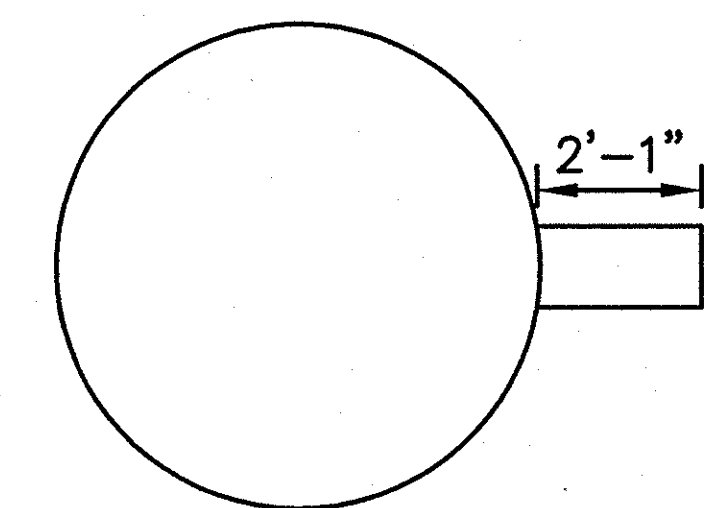
ELEVATION

**PART F**

SCALE : 1" = 5'

# PIECES = 1  
DIAMETER = 12"  
LENGTH = 2'-1"  
CORRUGATION = 2-2/3 x 1/2  
GAUGE = 16  
FINISH = ALT2

# PIECES = 1  
DIAMETER = 24"  
LENGTH = 6'-7"  
CORRUGATION = 2-2/3 x 1/2  
GAUGE = 16  
FINISH = ALT2



SECTION C-C

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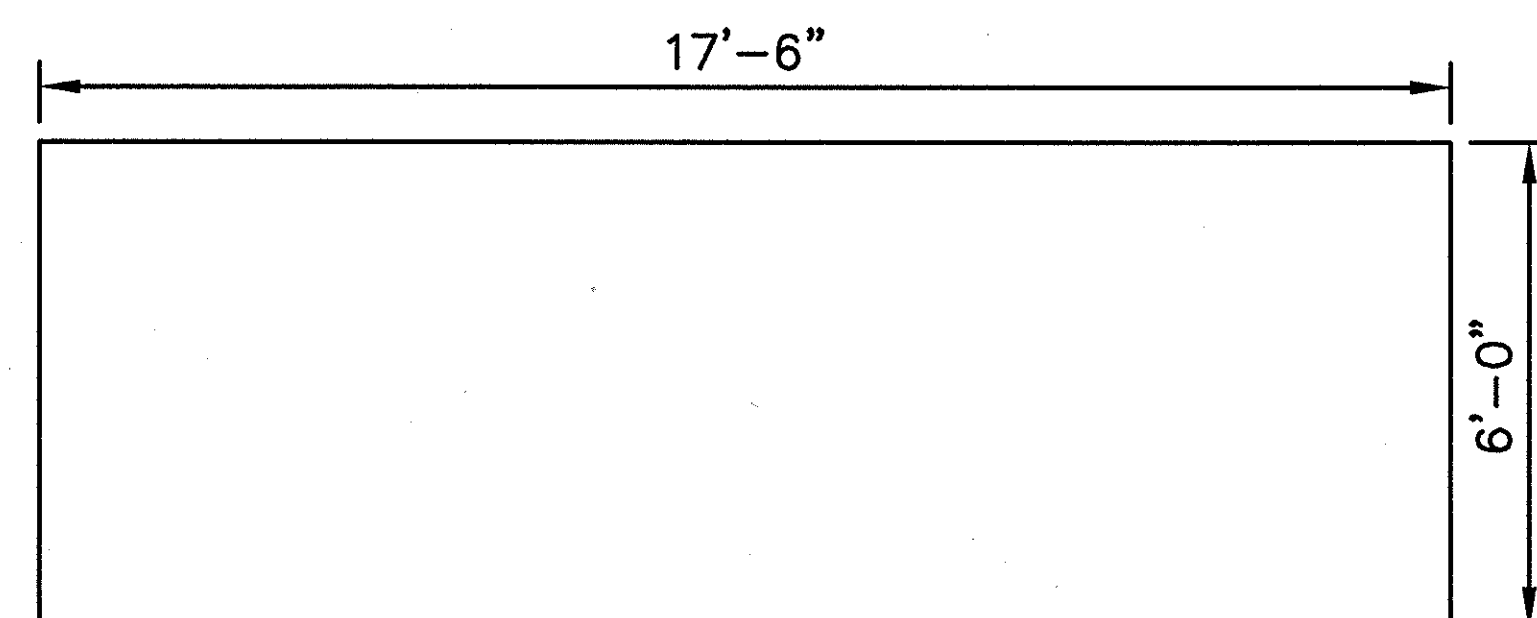
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72"Ø UNDERGROUND DETENTION SYSTEM  
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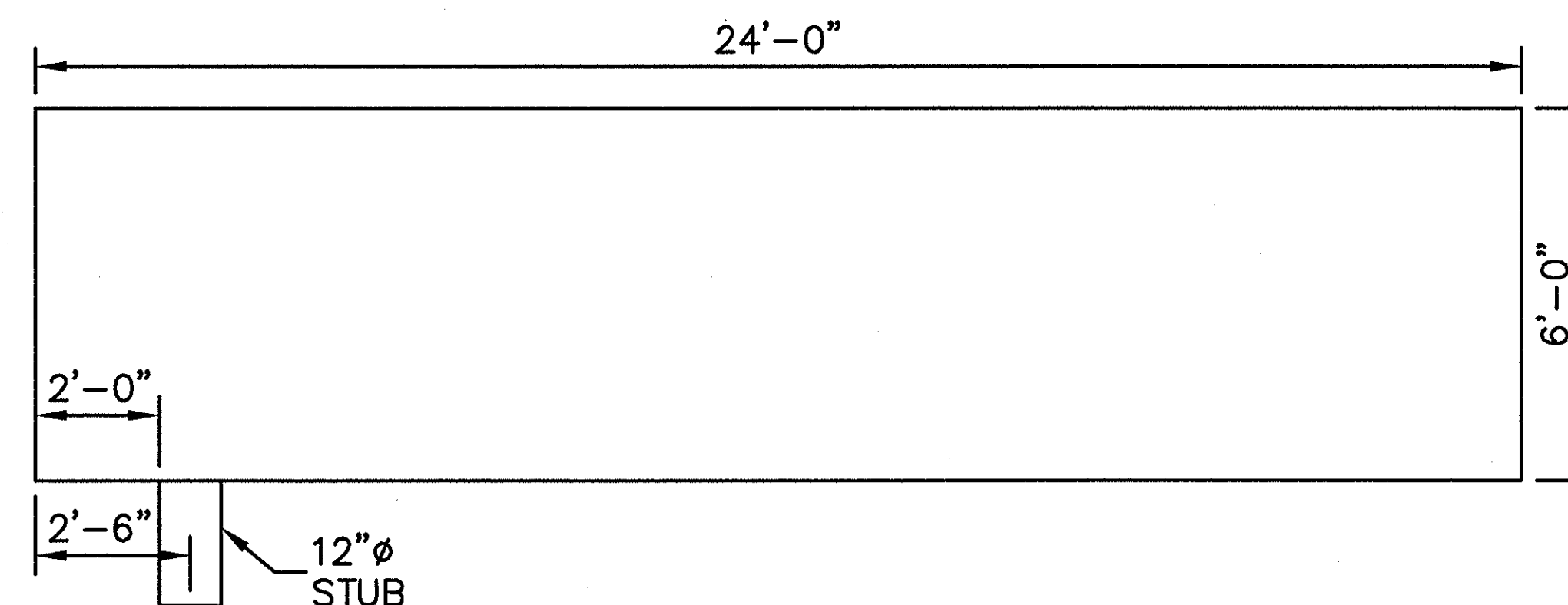


PLAN

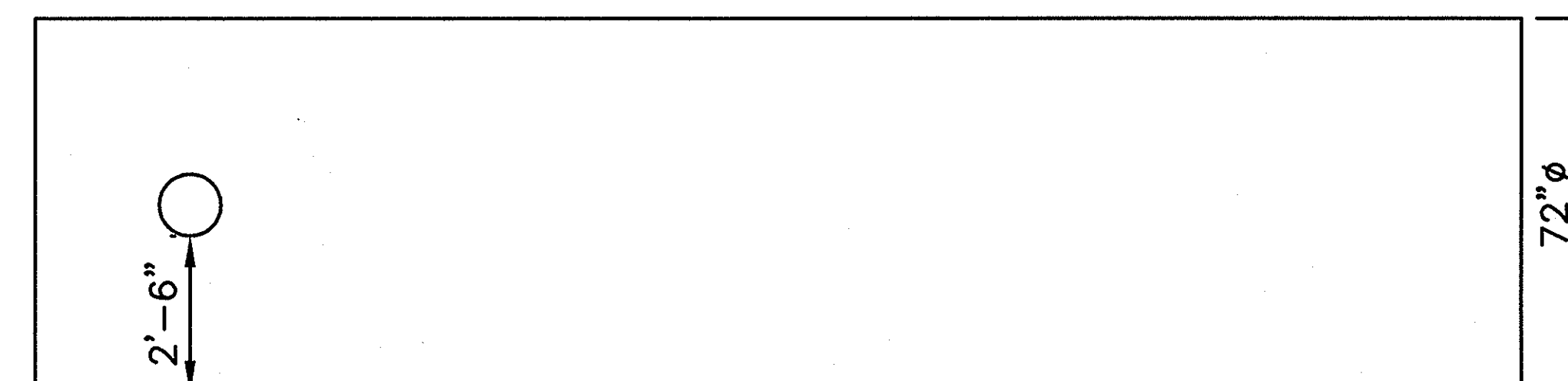
**PART G**

SCALE : 1" = 5'

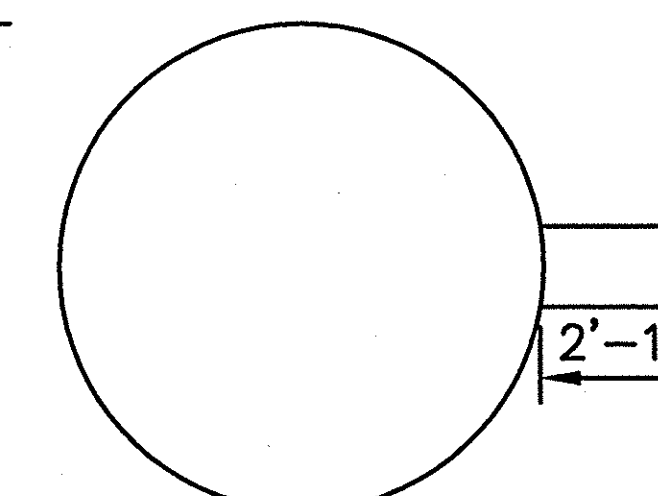
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LENGTH = 17'-6"  
CORRUGATION = 3 x 1  
GAUGE = 16  
FINISH = ALT2



PLAN



ELEVATION



RIGHT SIDE

**PART H**

SCALE : 1" = 5'

# PIECES = 1  
DIAMETER = 72"  
LENGTH = 24'-0"  
CORRUGATION = 3 x 1  
GAUGE = 16  
FINISH = ALT2

# PIECES = 1  
DIAMETER = 12"  
LENGTH = 2'-1"  
CORRUGATION = 2-2/3 x 1/2  
GAUGE = 16  
FINISH = ALT2

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**CONTECH**  
STORMWATER  
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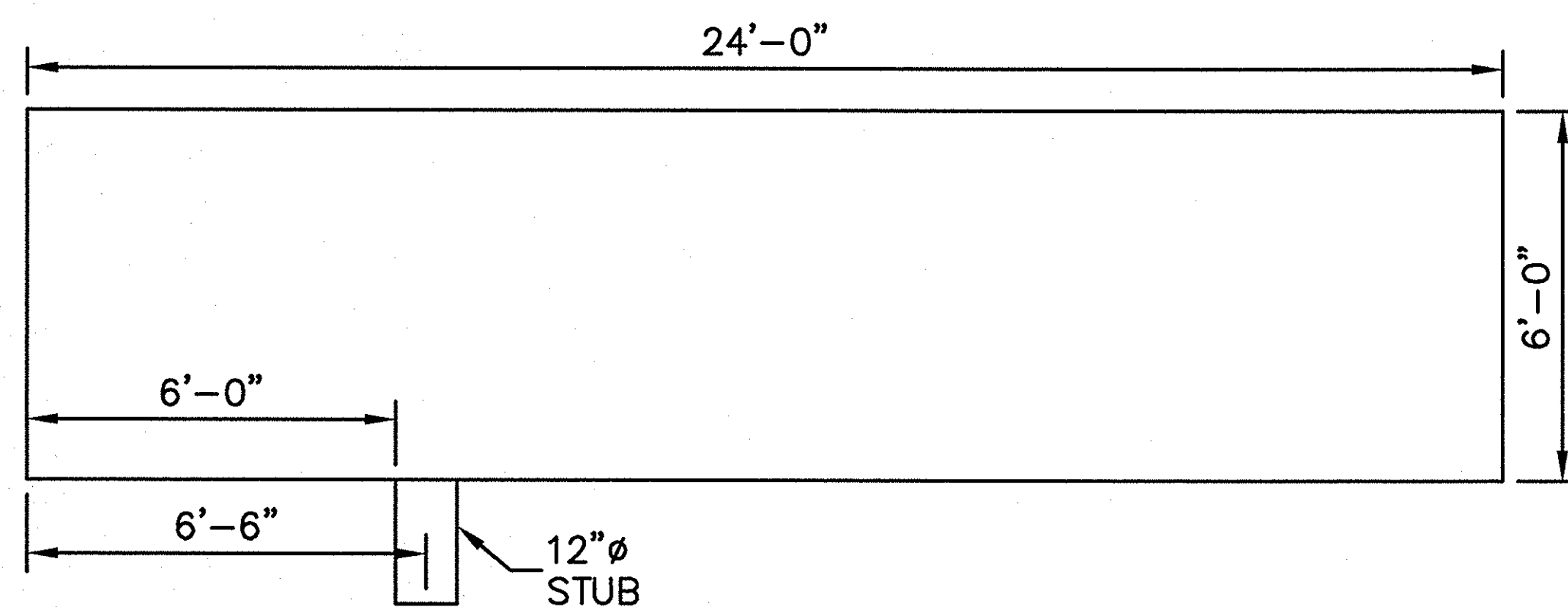
**PART DETAILS**

**72"Ø UNDERGROUND DETENTION SYSTEM**  
**WALGREENS #11519**  
**ROCKWALL, TX**

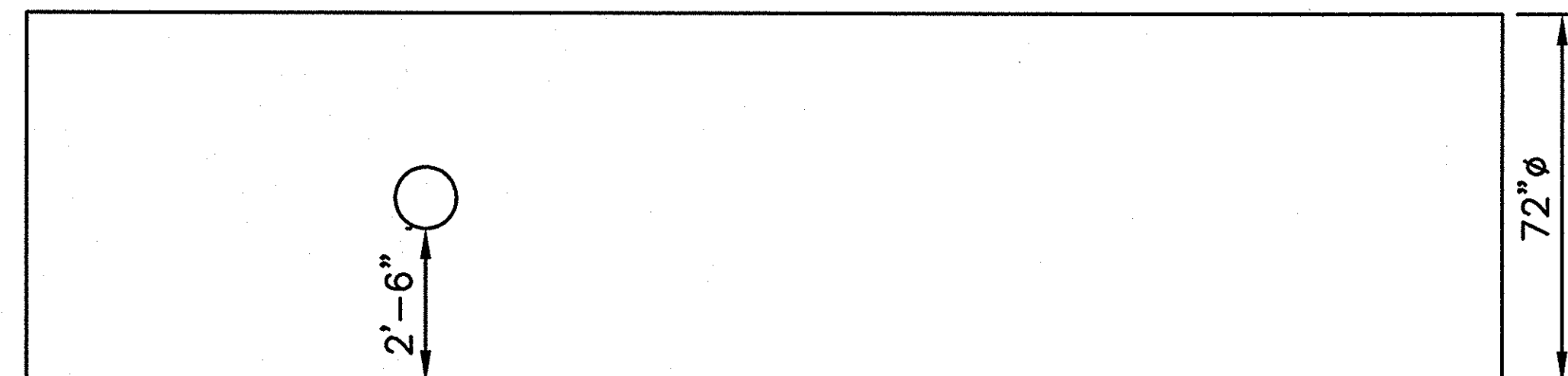
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DATE: 02/28/08  
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DATE: 03/04/08  
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**7 OF 20**

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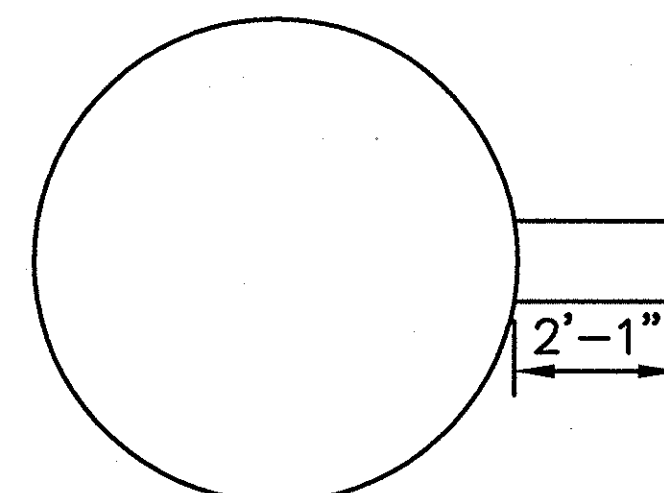
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PLAN



ELEVATION



RIGHT SIDE

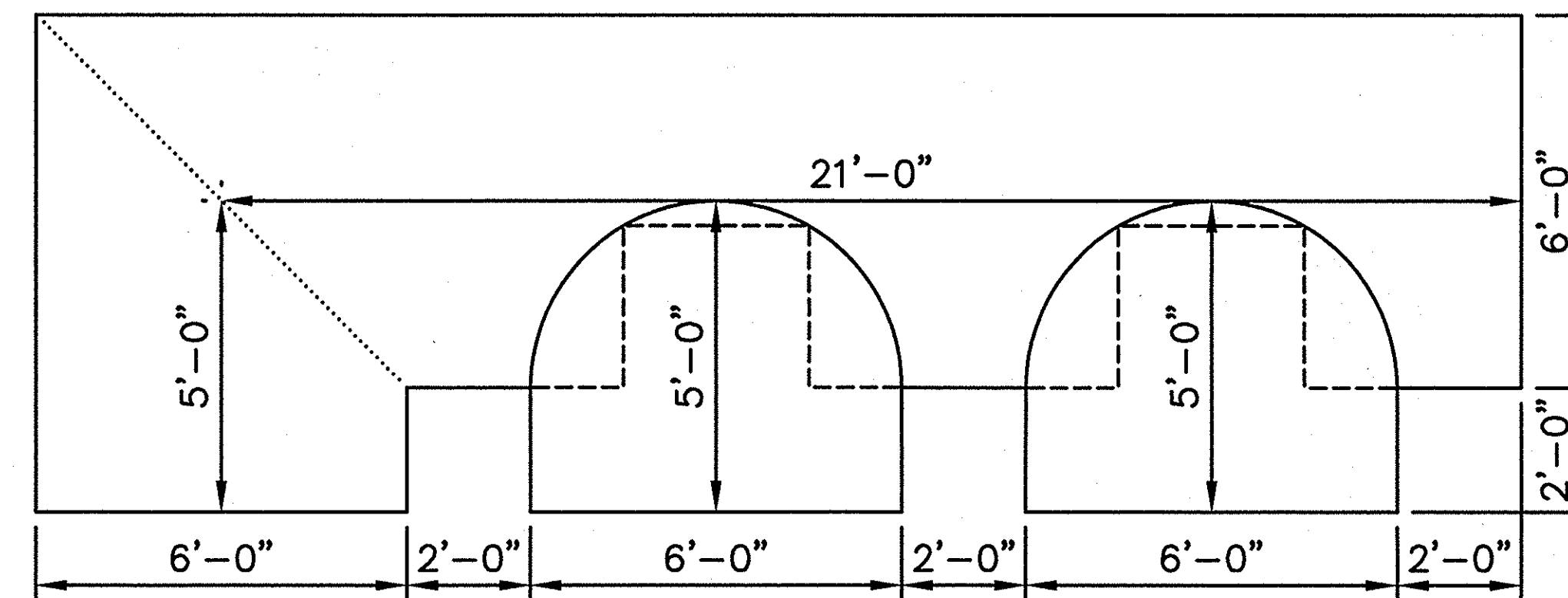
### PART J

SCALE : 1" = 5'

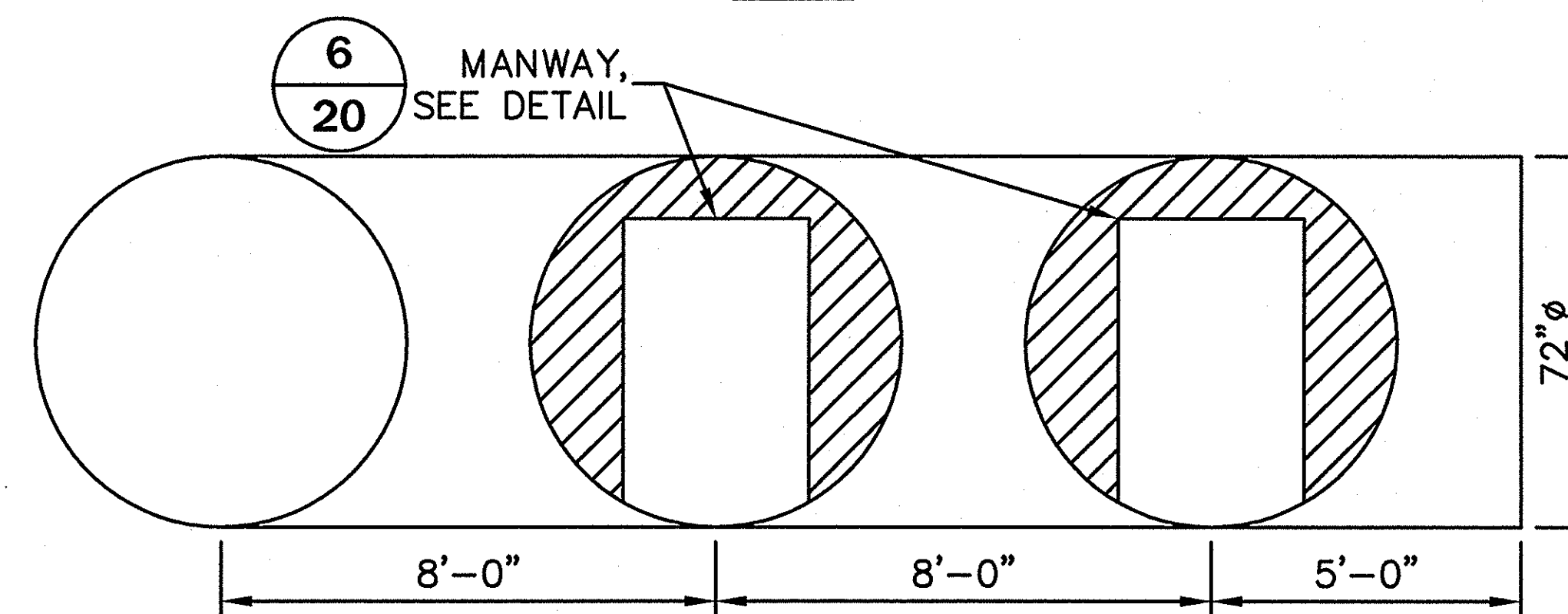
# PIECES = 1	# PIECES = 1
DIAMETER = 72"	DIAMETER = 12"
LENGTH = 24'-0"	LENGTH = 2'-1"
CORRUGATION = 3 x 1	CORRUGATION = 2-2/3 x 1/2
GAUGE = 16	GAUGE = 16
FINISH = ALT2	FINISH = ALT2

**FINAL**  
**APPROVED FOR**  
**FABRICATION OR CONSTRUCTION**

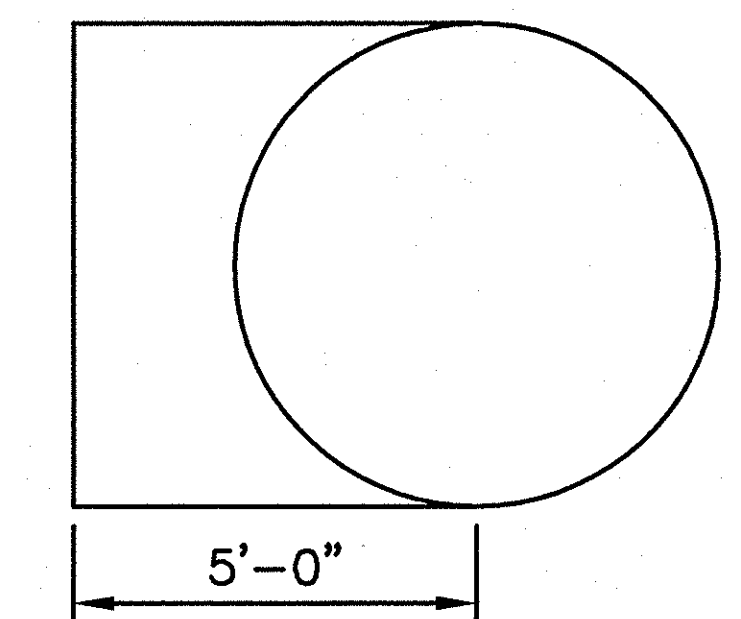
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0	02/28/08	FINAL FOR FABRICATION	FR	
NO.	DATE	DESCRIPTION	DRAWN BY	APPROVED BY



PLAN



ELEVATION



RIGHT SIDE

### PART K

SCALE : 1" = 5'

# PIECES = 1
DIAMETER = 72"
LENGTH = 36'-0"
CORRUGATION = 3 x 1
GAUGE = 16
FINISH = ALT2

### RECORD DRAWINGS

THIS RECORD DRAWING REFLECTS TO THE BEST OF THE DESIGN ENGINEER'S KNOWLEDGE, THE APPROXIMATE LOCATION OF THE CONSTRUCTED WORK, USING INFORMATION AS PROVIDED BY THE CONTRACTORS AND SURVEYED GRADES.

**CONTECH**  
STORMWATER  
SOLUTIONS INC.

9025 CENTRE POINTE DRIVE, SUITE 400  
WEST CHESTER, OHIO 45069  
PH: 1.800.338.1122 FAX: 513.645.7399

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### PART DETAILS

72"Ø UNDERGROUND DETENTION SYSTEM

WALGREENS #11519  
ROCKWALL, TX

SCALE: AS SHOWN

DRAWN BY: FR  
DATE: 02/28/08

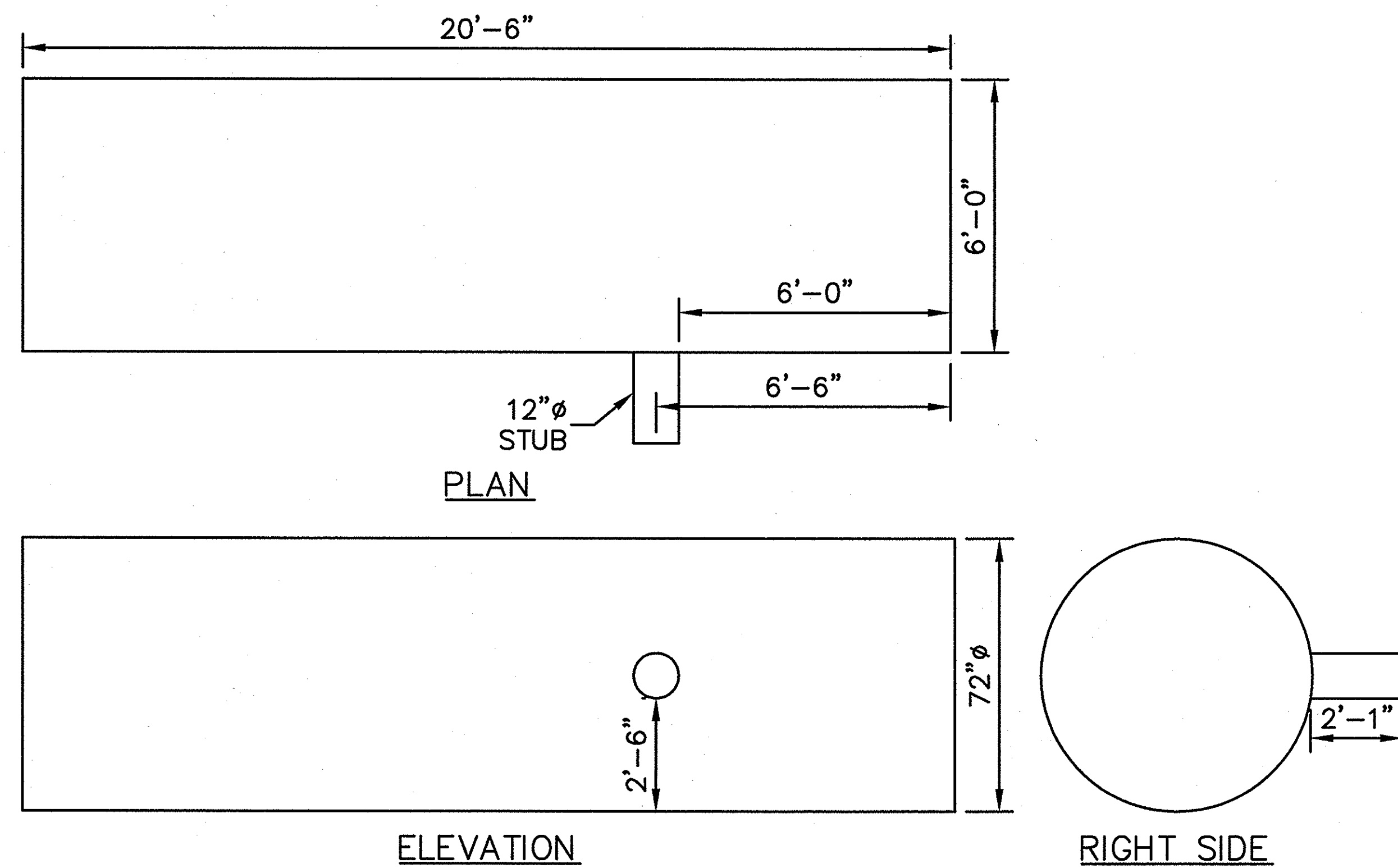
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DATE: 03/04/08

SHEET:  
8 OF 20

CONTECH ID# 31623



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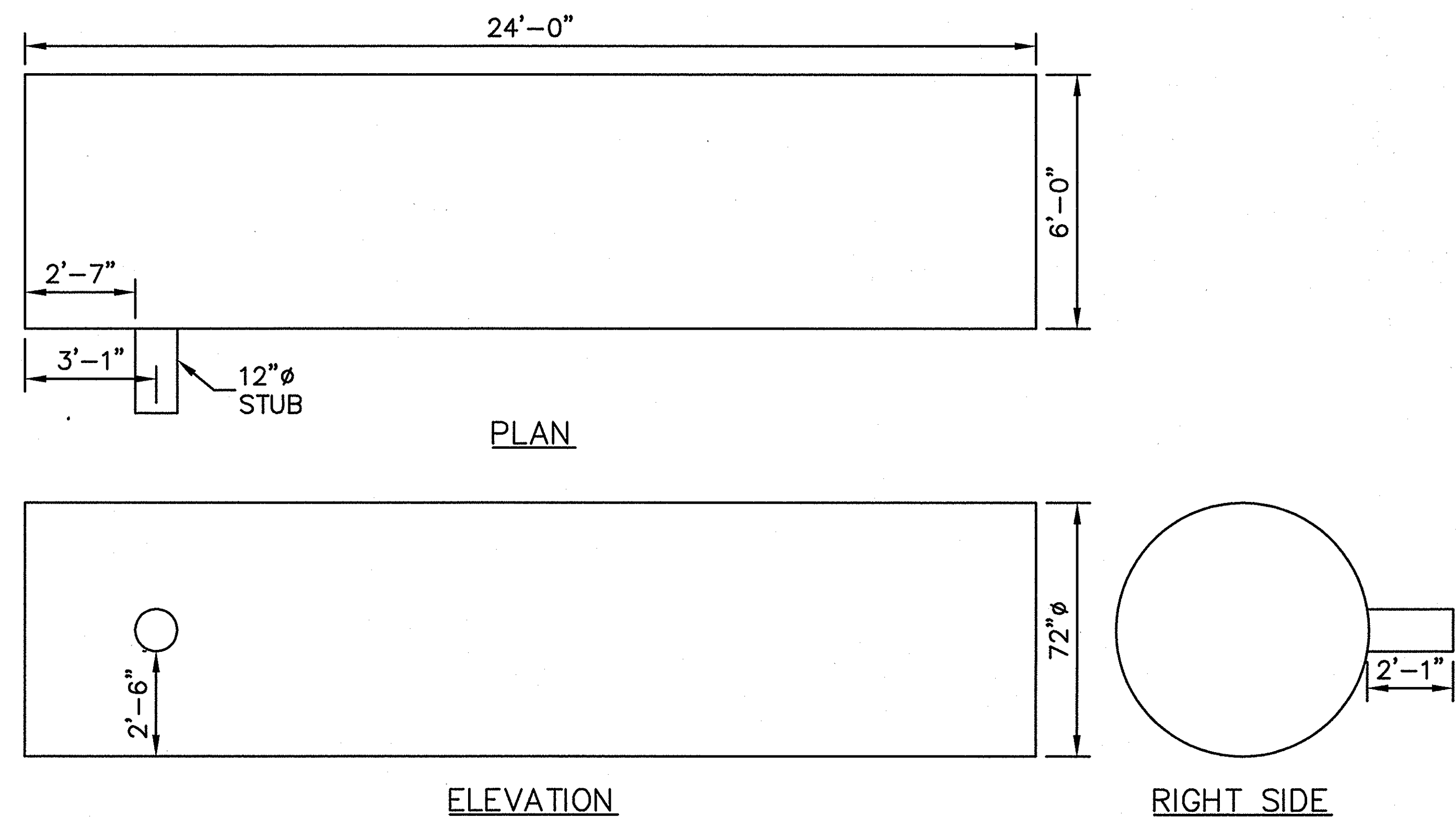
### PART L

SCALE : 1" = 5'

# PIECES = 1	# PIECES = 1
DIAMETER = 72"	DIAMETER = 12"
LENGTH = 20'-6"	LENGTH = 2'-1"
CORRUGATION = 3 x 1	CORRUGATION = 2-2/3 x 1/2
GAUGE = 16	GAUGE = 16
FINISH = ALT2	FINISH = ALT2

**FINAL**  
**APPROVED FOR**  
**FABRICATION OR CONSTRUCTION**

3				
2				
1	03/04/08	REVISED FINAL FOR FABRICATION	FR	
0	02/28/08	FINAL FOR FABRICATION	FR	
NO.	DATE	DESCRIPTION	DRAWN BY	APPROVED BY



### PART M

SCALE : 1" = 5'

# PIECES = 1	# PIECES = 1
DIAMETER = 72"	DIAMETER = 12"
LENGTH = 24'-0"	LENGTH = 2'-1"
CORRUGATION = 3 x 1	CORRUGATION = 2-2/3 x 1/2
GAUGE = 16	GAUGE = 16
FINISH = ALT2	FINISH = ALT2

#### RECORD DRAWINGS

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### PART DETAILS

72"Ø UNDERGROUND DETENTION SYSTEM

WALGREENS #11519  
ROCKWALL, TX

SCALE: AS SHOWN

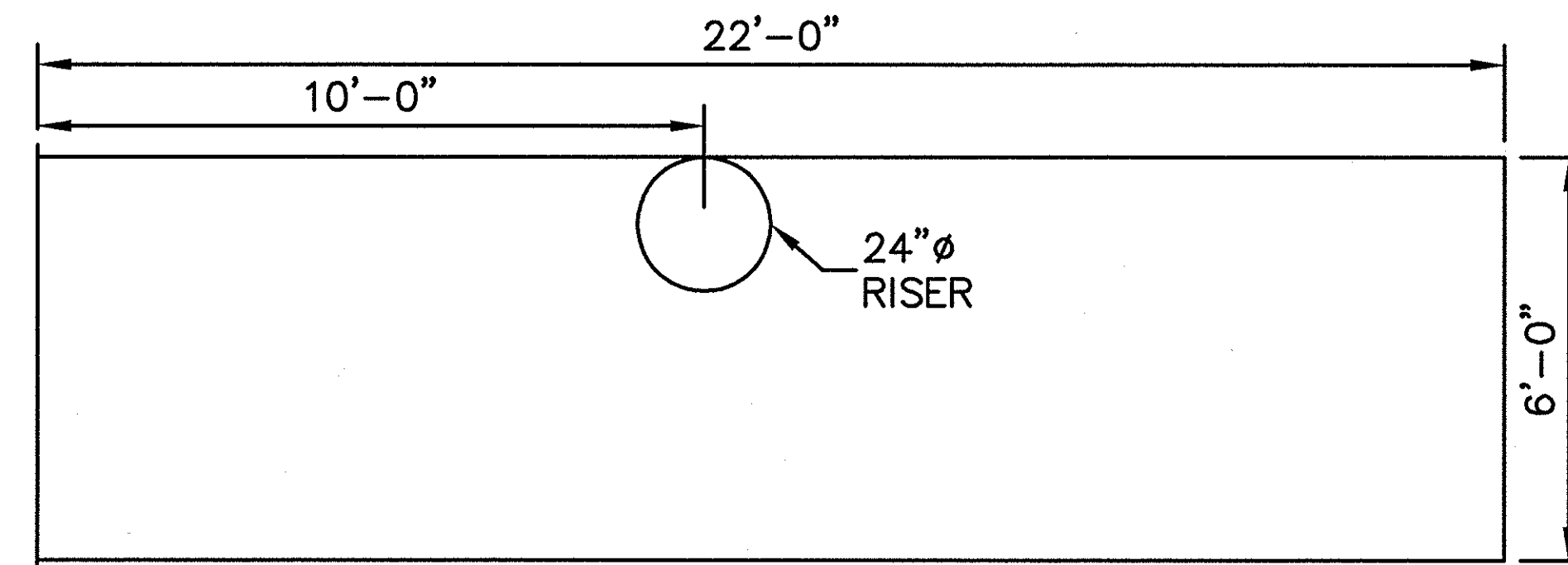
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DATE: -

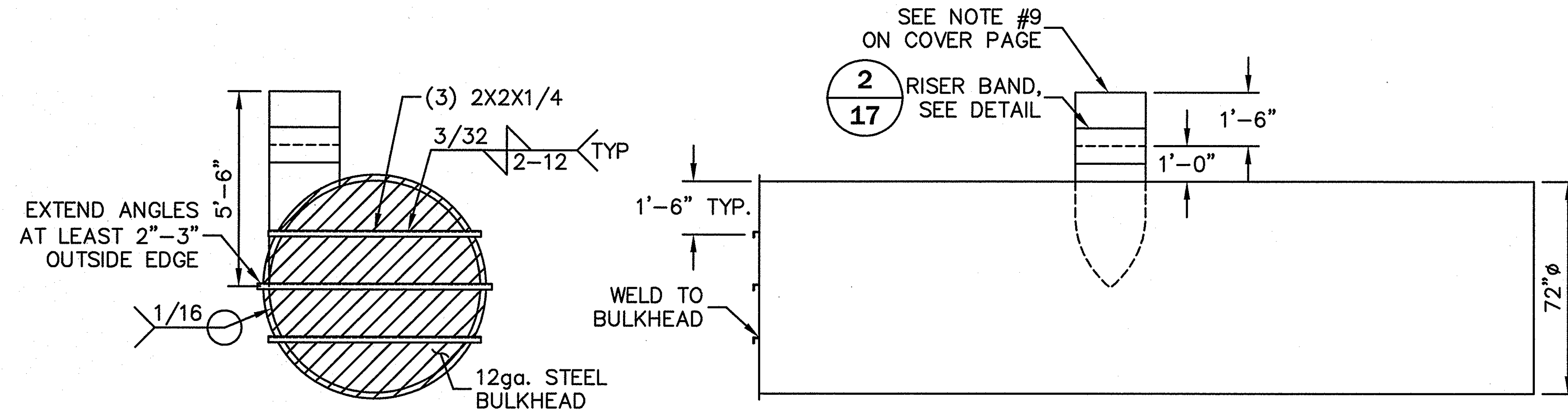
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CONTECH ID# 31623

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PLAN



LEFT SIDE

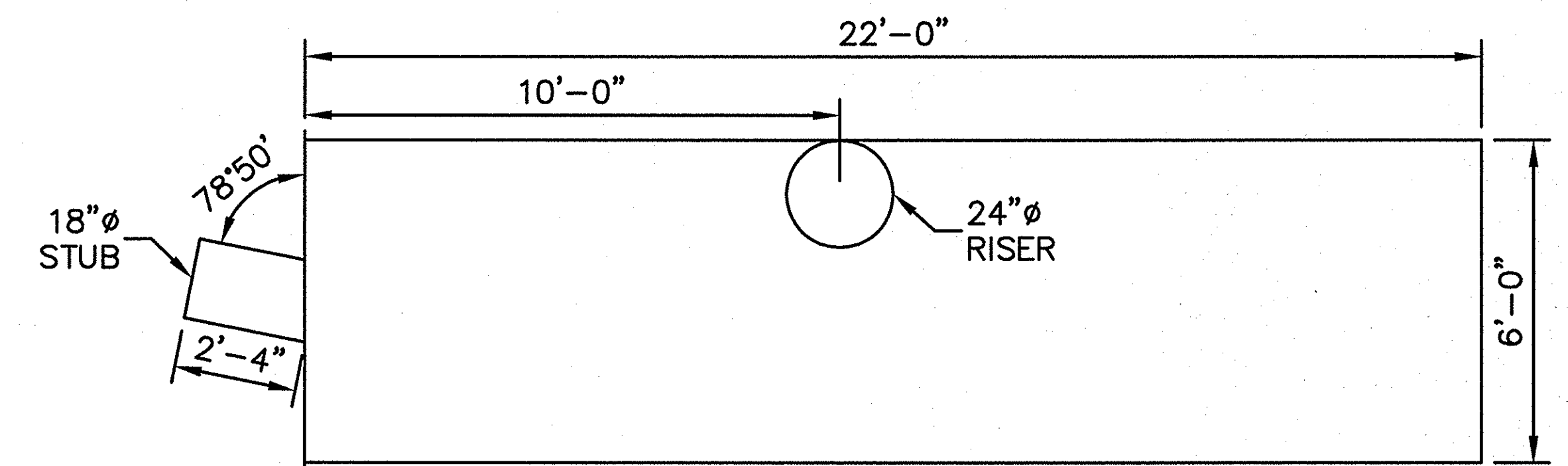
ELEVATION

2x2x1/4 REINFORCEMENT ANGLE  
TOTAL LENGTH REQUIRED: 18'-8"

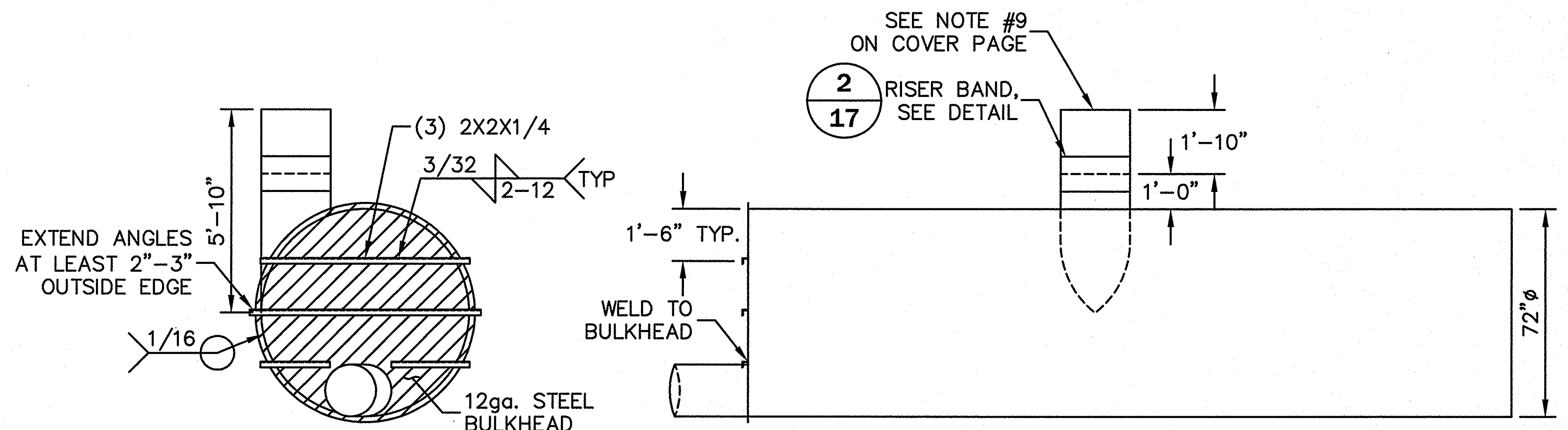
**PART N**

SCALE : 1" = 5'

# PIECES = 1	# PIECES = 1
DIAMETER = 72"	DIAMETER = 24"
LENGTH = 22'-0"	LENGTH = 5'-6"
CORRUGATION = 3 x 1	CORRUGATION = 2-2/3 x 1/2
GAUGE = 16	GAUGE = 16
FINISH = ALT2	FINISH = ALT2



PLAN



LEFT SIDE

ELEVATION

2x2x1/4 REINFORCEMENT ANGLE  
TOTAL LENGTH REQUIRED: 16'-8"

**PART O**

SCALE : 1" = 5'

# PIECES = 1	# PIECES = 1	# PIECES = 1
DIAMETER = 72"	DIAMETER = 18"	DIAMETER = 24"
LENGTH = 22'-0"	LENGTH = 2'-4"	LENGTH = 5'-10"
CORRUGATION = 3 x 1	CORRUGATION = 2-2/3 x 1/2	CORRUGATION = 2-2/3 x 1/2
GAUGE = 16	GAUGE = 16	GAUGE = 16
FINISH = ALT2	FINISH = ALT2	FINISH = ALT2

**FINAL**  
**APPROVED FOR**  
**FABRICATION OR CONSTRUCTION**

3				
2				
1	03/04/08	REVISED FINAL FOR FABRICATION	FR	
0	02/28/08	FINAL FOR FABRICATION	FR	
NO.	DATE	DESCRIPTION	DRAWN BY	APPROVED BY

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**CONTECH**  
STORMWATER  
SOLUTIONS inc.

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**PART DETAILS**

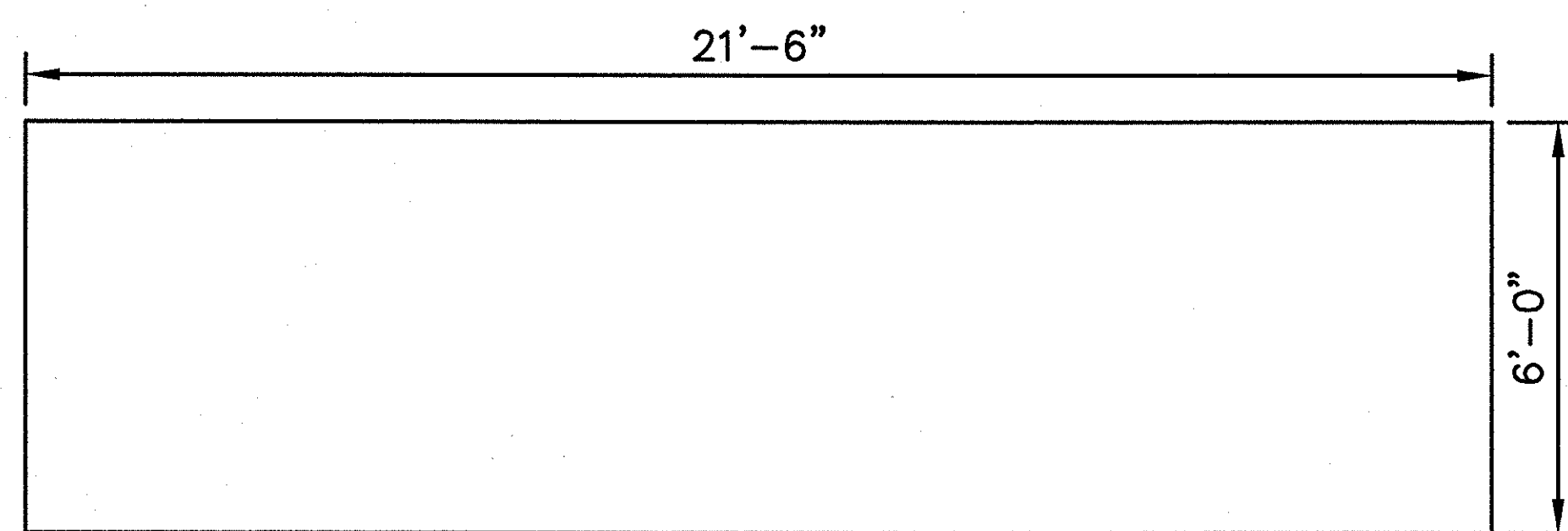
72"Ø UNDERGROUND DETENTION SYSTEM

WALGREENS #11519  
ROCKWALL, TX

SCALE: AS SHOWN  
DRAWN BY: FR  
DATE: 02/28/08  
REV. BY: -  
DATE: -  
SHEET:  
10 OF 20

CONTECH ID# 31623

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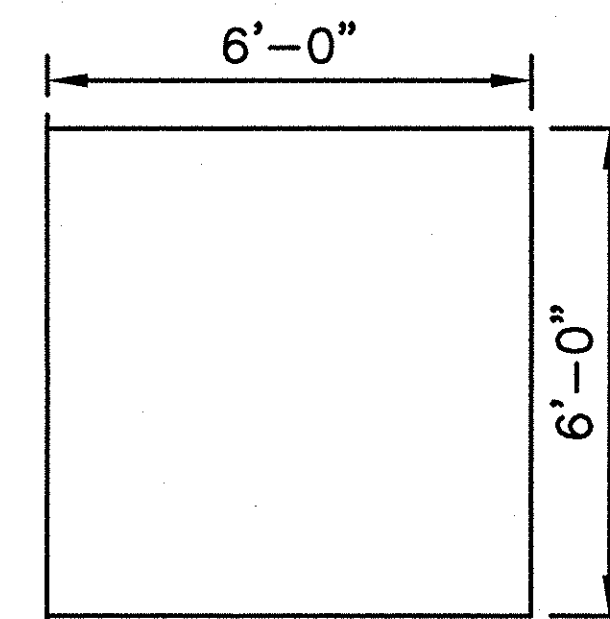


PLAN

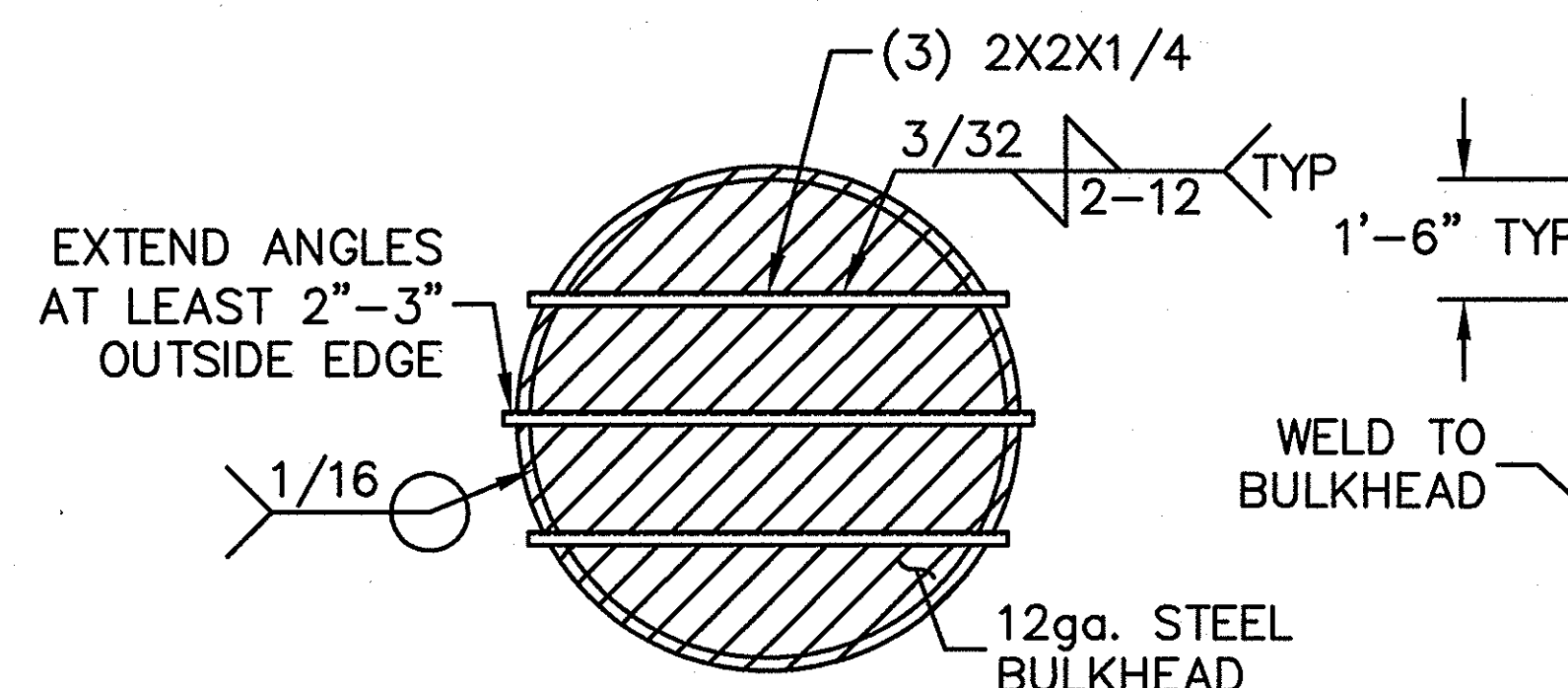
**PART P**

SCALE : 1" = 5'

# PIECES = 3  
DIAMETER = 72"  
LENGTH = 21'-6"  
CORRUGATION = 3 x 1  
GAUGE = 16  
FINISH = ALT2



PLAN



LEFT SIDE

ELEVATION

2x2x1/4 REINFORCEMENT ANGLE  
TOTAL LENGTH REQUIRED: 18'-8"

**PART Q**

SCALE : 1" = 5'

# PIECES = 1  
DIAMETER = 72"  
LENGTH = 6'-0"  
CORRUGATION = 3 x 1  
GAUGE = 16  
FINISH = ALT2

**FINAL**  
**APPROVED FOR**  
**FABRICATION OR CONSTRUCTION**

3				
2				
1	03/04/08	REVISED FINAL FOR FABRICATION	FR	
0	02/28/08	FINAL FOR FABRICATION	FR	
NO.	DATE	DESCRIPTION	DRAWN BY	APPROVED BY

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STORMWATER  
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9025 CENTRE POINTE DRIVE, SUITE 400  
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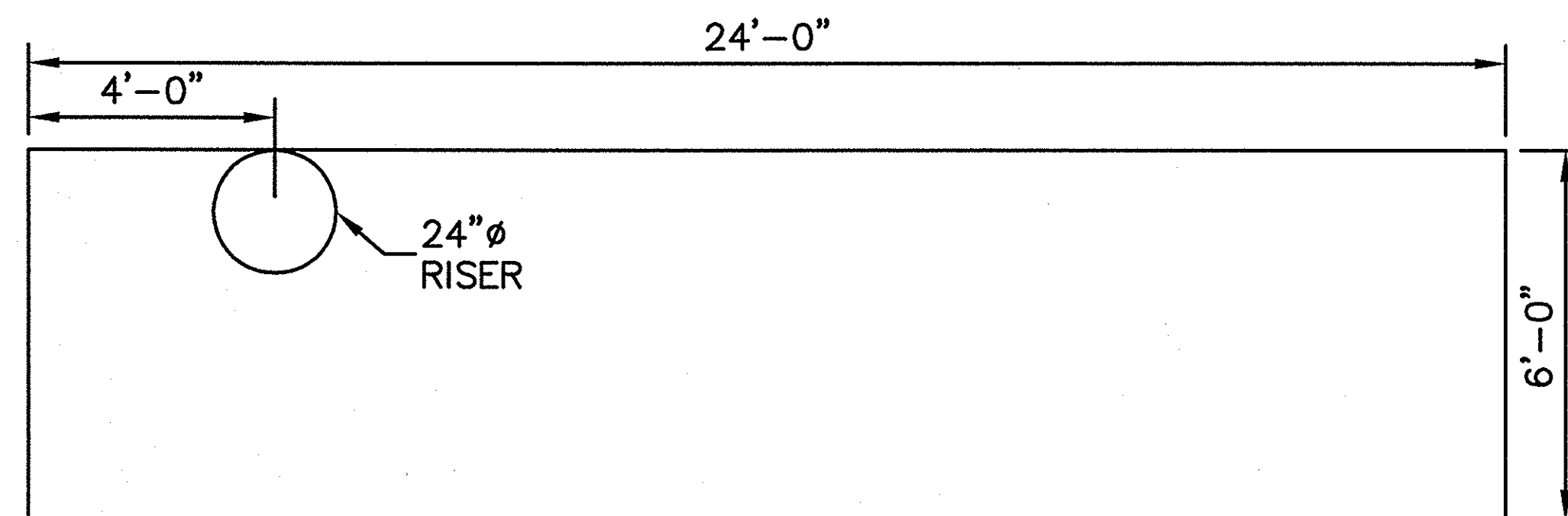
**PART DETAILS**

**72"Ø UNDERGROUND DETENTION SYSTEM**  
**WALGREENS #11519**  
**ROCKWALL, TX**

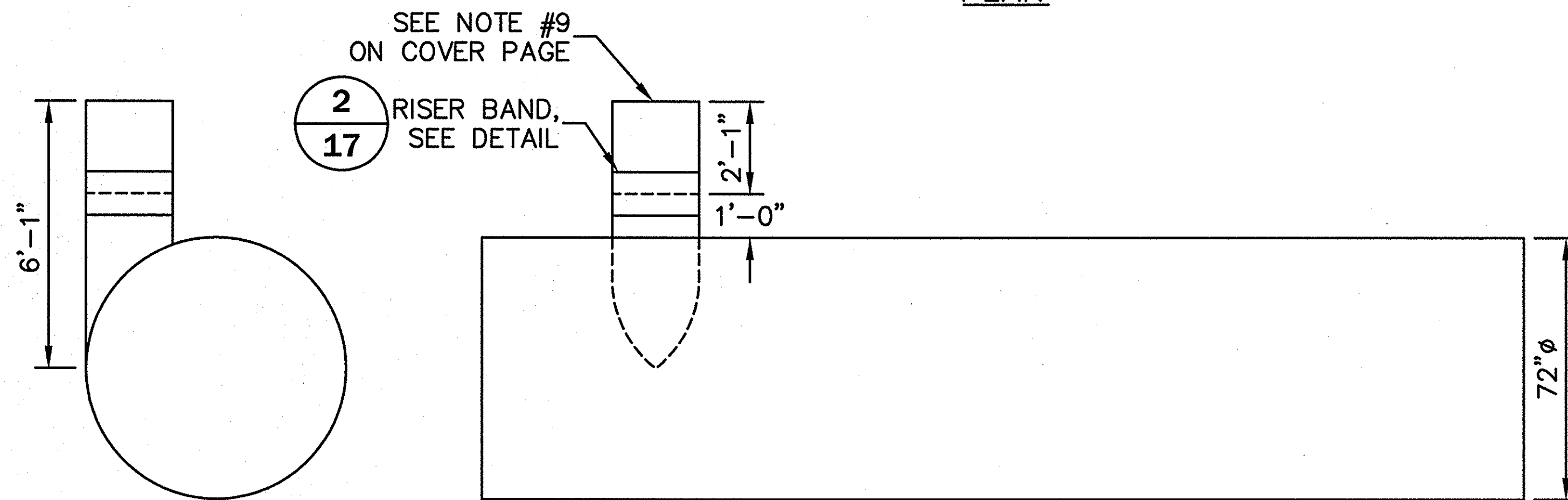
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DATE: 02/28/08  
REV. BY: -  
DATE: -  
SHEET: 11 OF 20

CONTECH ID# 31623

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PLAN



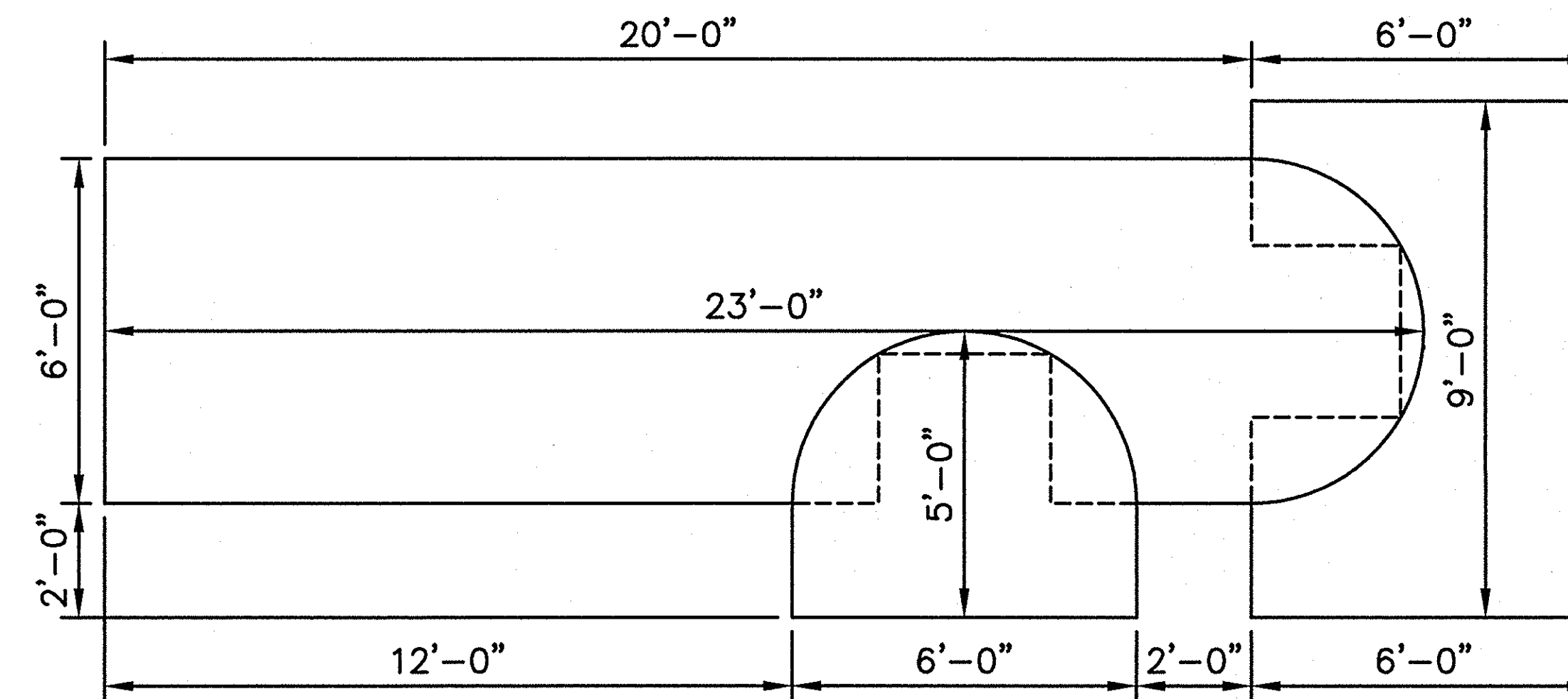
LEFT SIDE

ELEVATION

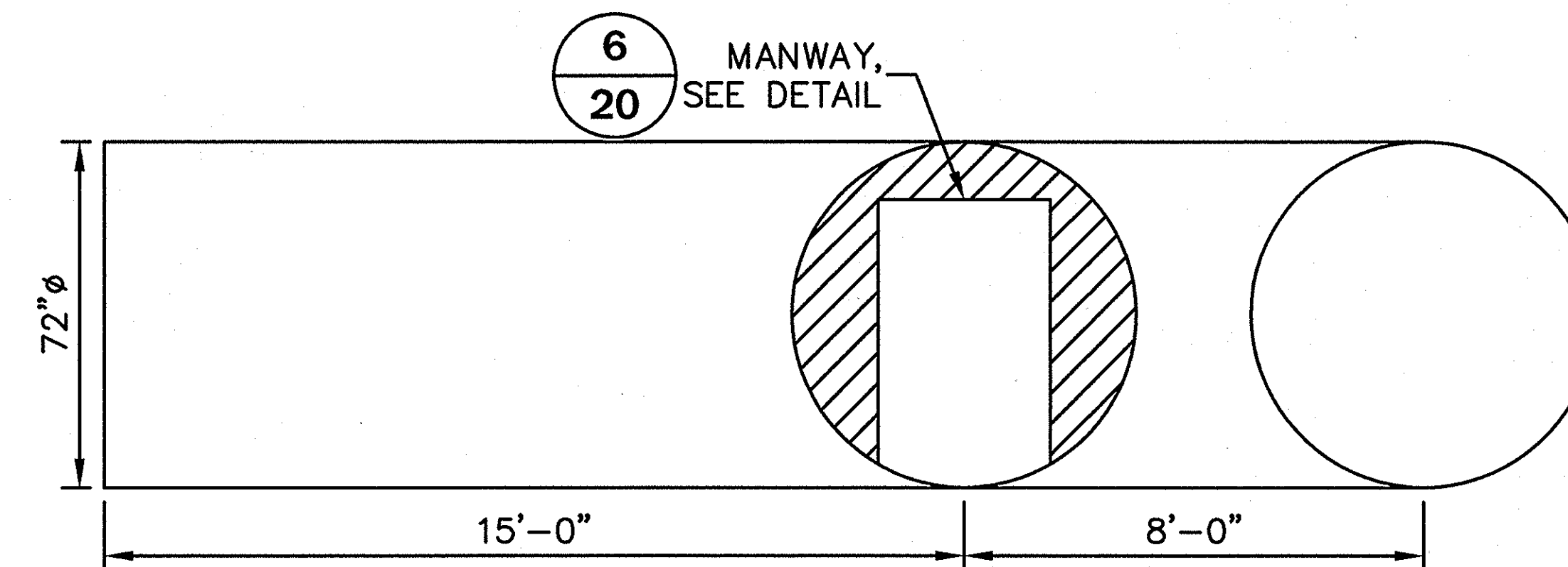
**PART R**

SCALE : 1" = 5'

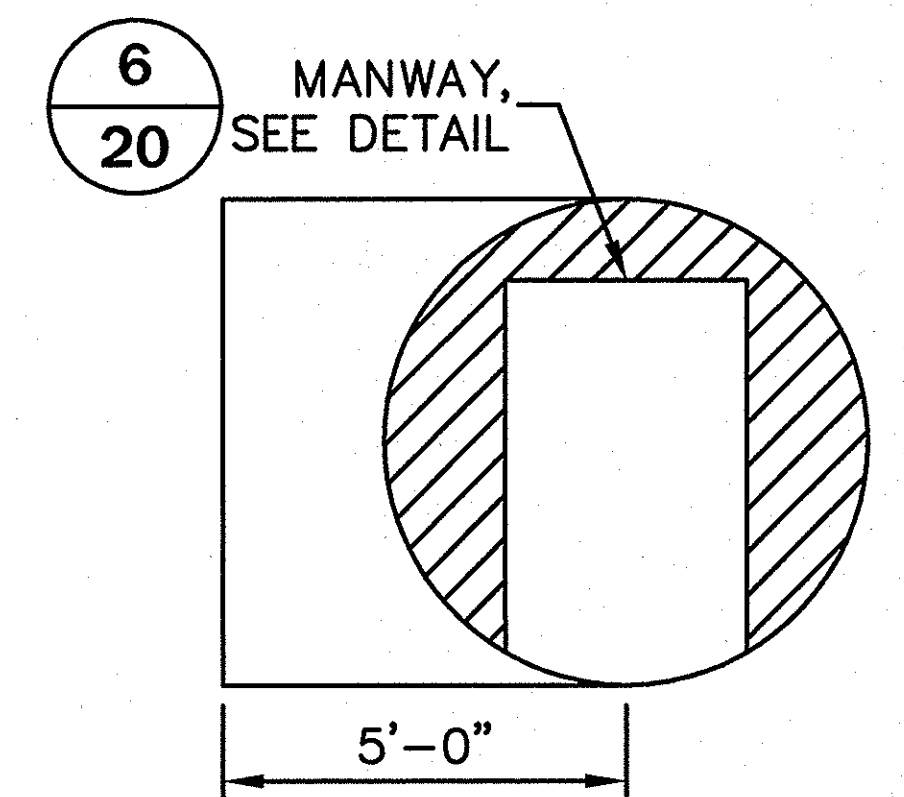
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DIAMETER = 72"	DIAMETER = 24"
LENGTH = 24'-0"	LENGTH = 6'-1"
CORRUGATION = 3 x 1	CORRUGATION = 2-2/3 x 1/2
GAUGE = 16	GAUGE = 16
FINISH = ALT2	FINISH = ALT2



PLAN



ELEVATION



RIGHT SIDE

**PART S**

SCALE : 1" = 5'

# PIECES = 1
DIAMETER = 72"
LENGTH = 37'-0"
CORRUGATION = 3 x 1
GAUGE = 16
FINISH = ALT2

**FINAL**  
**APPROVED FOR**  
**FABRICATION OR CONSTRUCTION**

3				
2				
1	03/04/08	REVISED FINAL FOR FABRICATION	FR	
0	02/28/08	FINAL FOR FABRICATION	FR	
NO.	DATE	DESCRIPTION	DRAWN BY	APPROVED BY

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WEST CHESTER, OHIO 45069  
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**PART DETAILS**

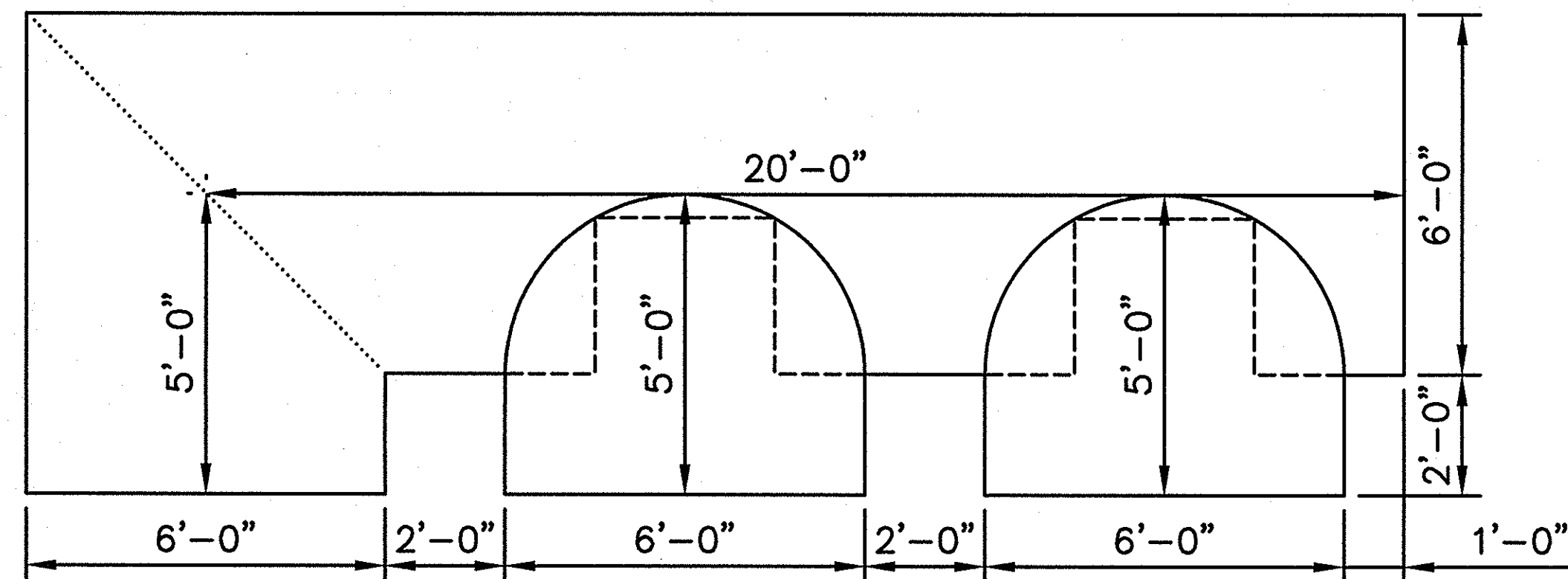
**72"Ø UNDERGROUND DETENTION SYSTEM**  
**WALGREENS #11519**  
**ROCKWALL, TX**

**RECORD DRAWINGS**  
THIS RECORD DRAWING HEREIN REFLECTS TO  
THE BEST OF THE DESIGN ENGINEER'S  
KNOWLEDGE, THE APPROXIMATE LOCATION OF  
THE CONSTRUCTED WORK, USING INFORMATION  
AS PROVIDED BY THE CONTRACTORS AND  
SURVEYED GRADES.

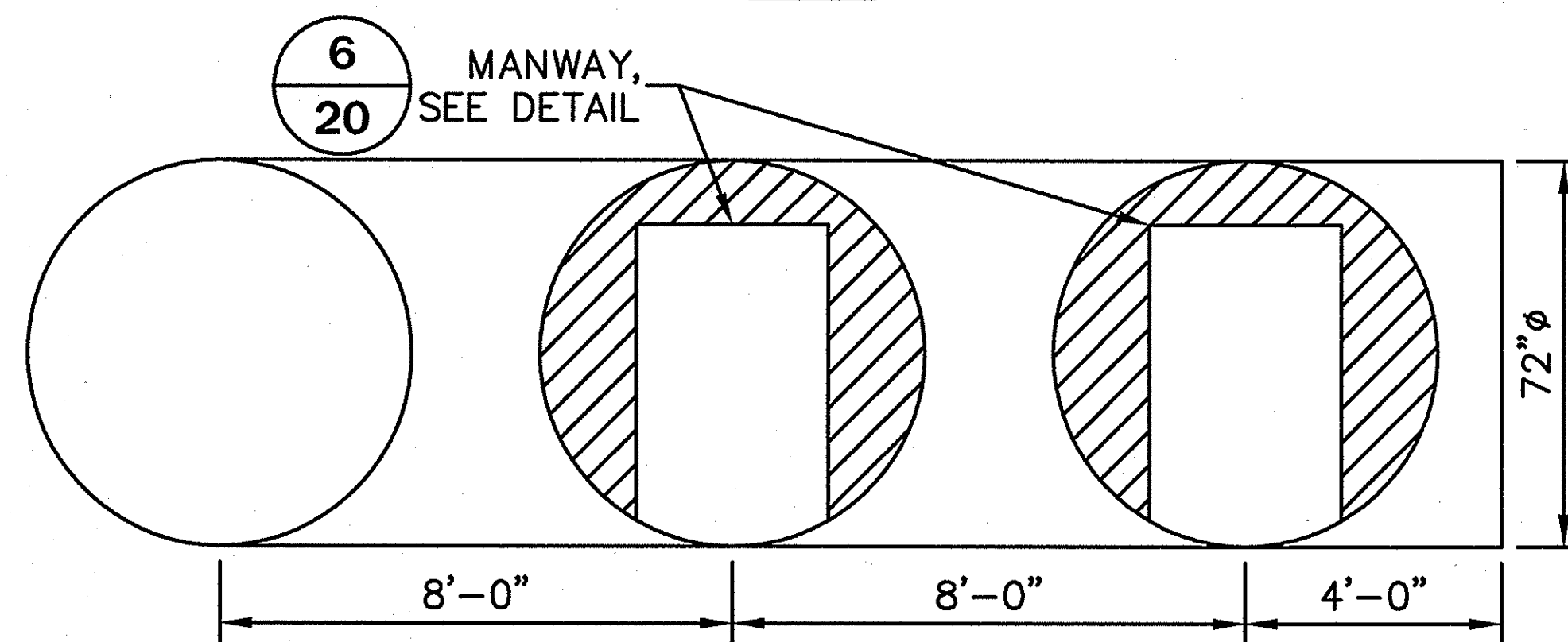
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SHEET:	12 OF 20



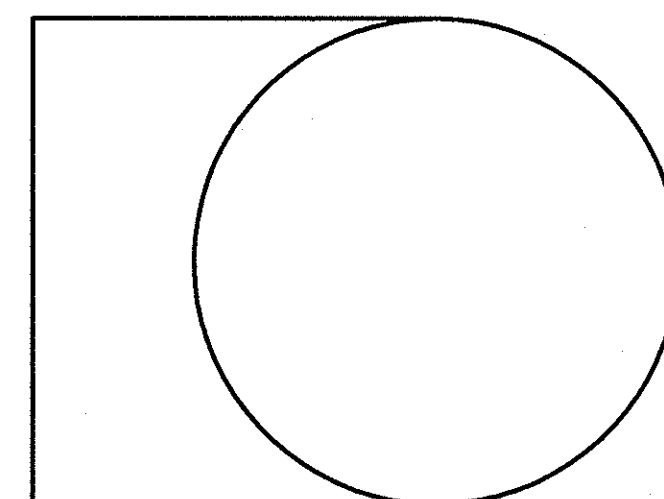
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PLAN



ELEVATION

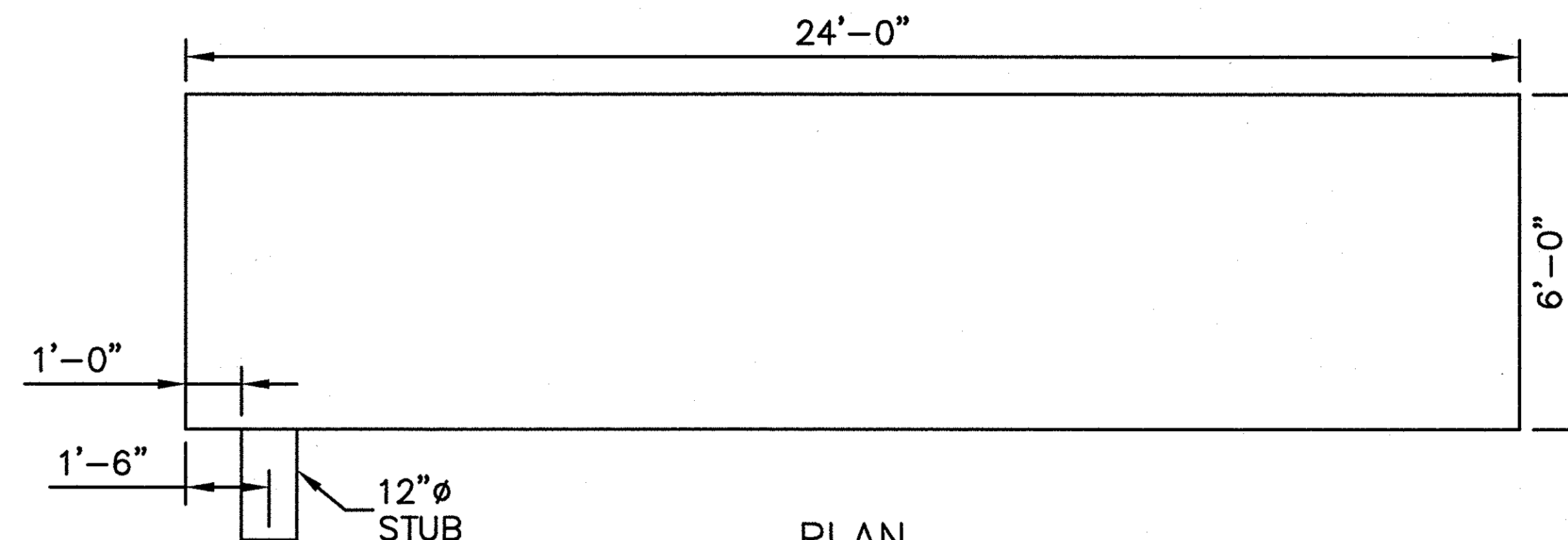


RIGHT SIDE

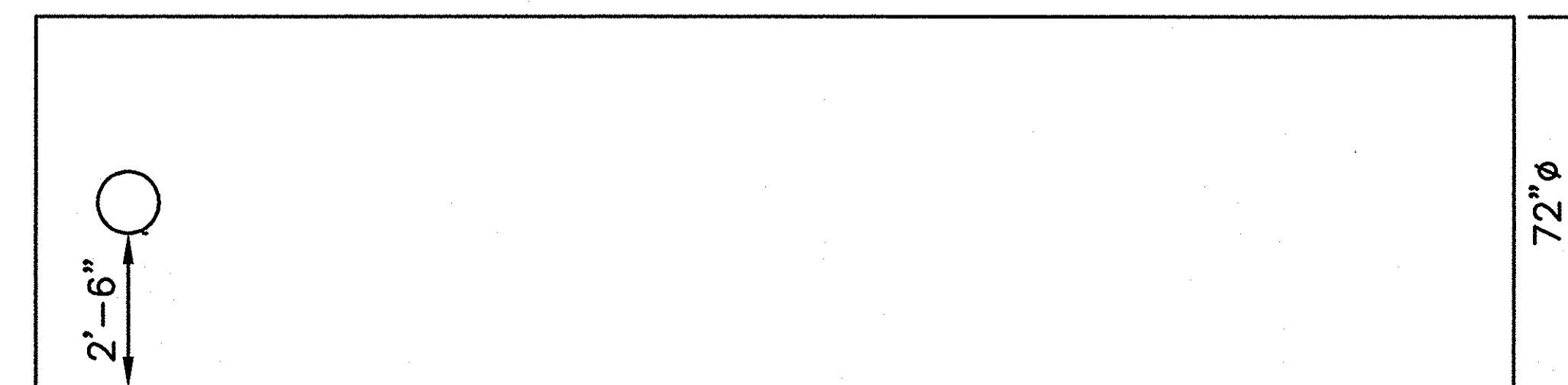
**PART T**

SCALE : 1" = 5'

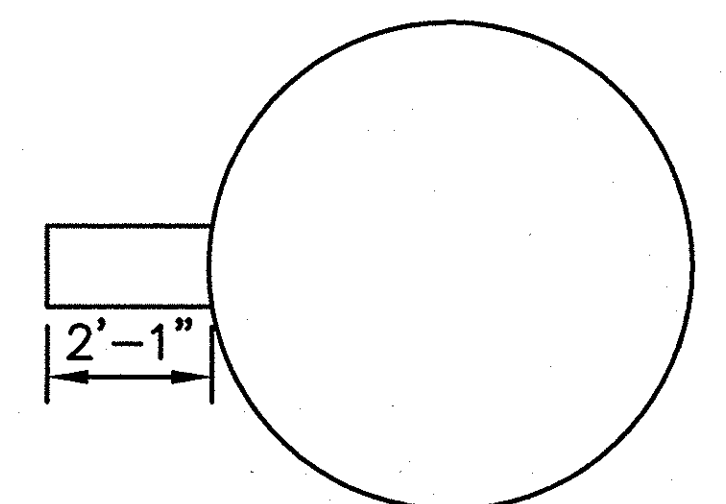
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DIAMETER = 72"  
LENGTH = 35'-0"  
CORRUGATION = 3 x 1  
GAUGE = 16  
FINISH = ALT2



PLAN



ELEVATION



RIGHT SIDE

**PART U**

SCALE : 1" = 5'

# PIECES = 1  
DIAMETER = 72"  
LENGTH = 24'-0"  
CORRUGATION = 3 x 1  
GAUGE = 16  
FINISH = ALT2

# PIECES = 1  
DIAMETER = 12"  
LENGTH = 2'-1"  
CORRUGATION = 2-2/3 x 1/2  
GAUGE = 16  
FINISH = ALT2

**FINAL**  
**APPROVED FOR**  
**FABRICATION OR CONSTRUCTION**

3				
2				
1	03/04/08	REVISED FINAL FOR FABRICATION	FR	
0	02/28/08	FINAL FOR FABRICATION	FR	
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**PART DETAILS**

72"Ø UNDERGROUND DETENTION SYSTEM

WALGREENS #11519  
ROCKWALL, TX

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KNOWLEDGE, THE APPROXIMATE LOCATION OF  
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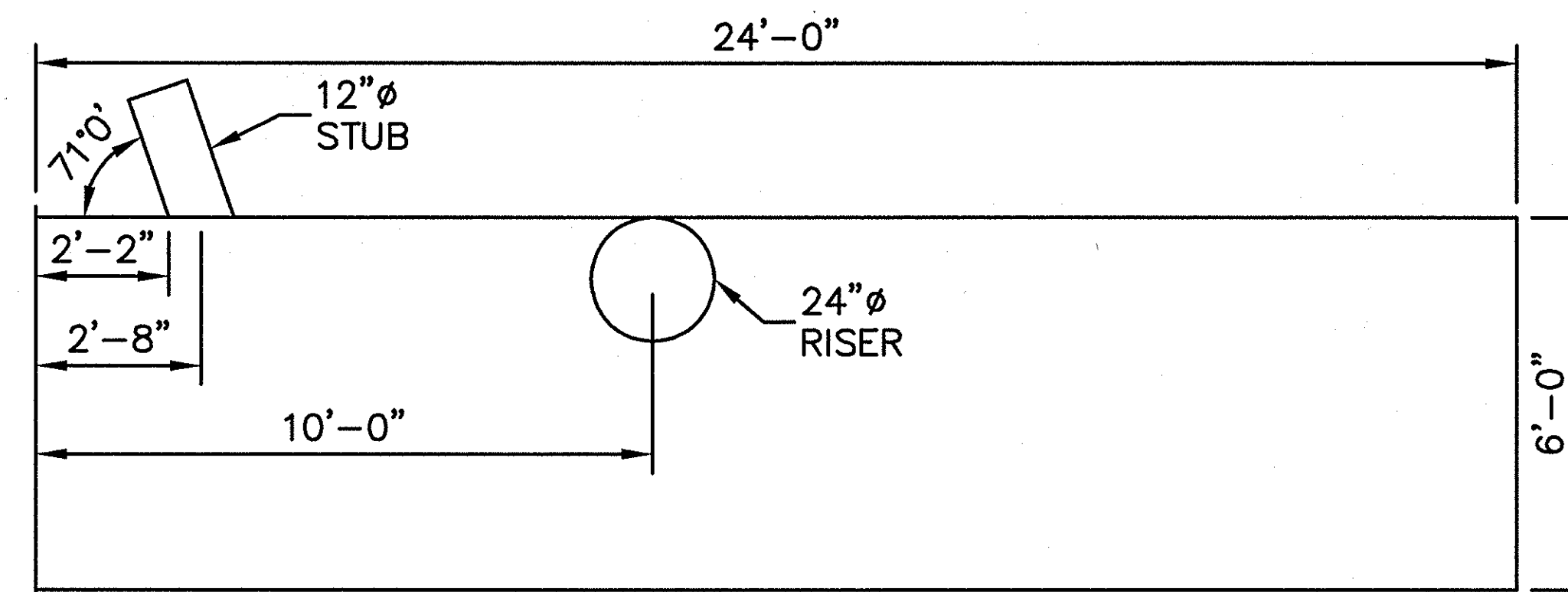
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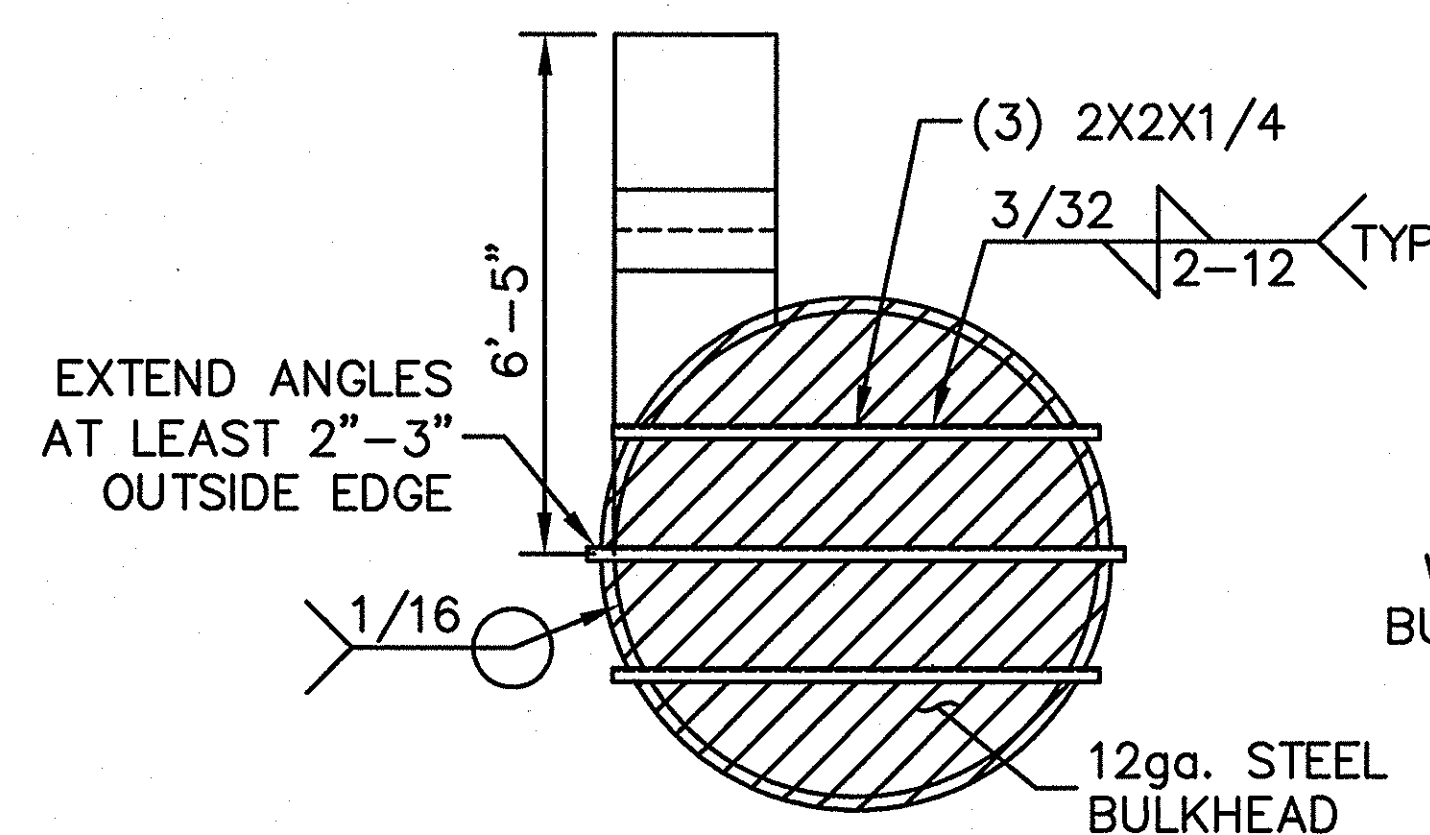
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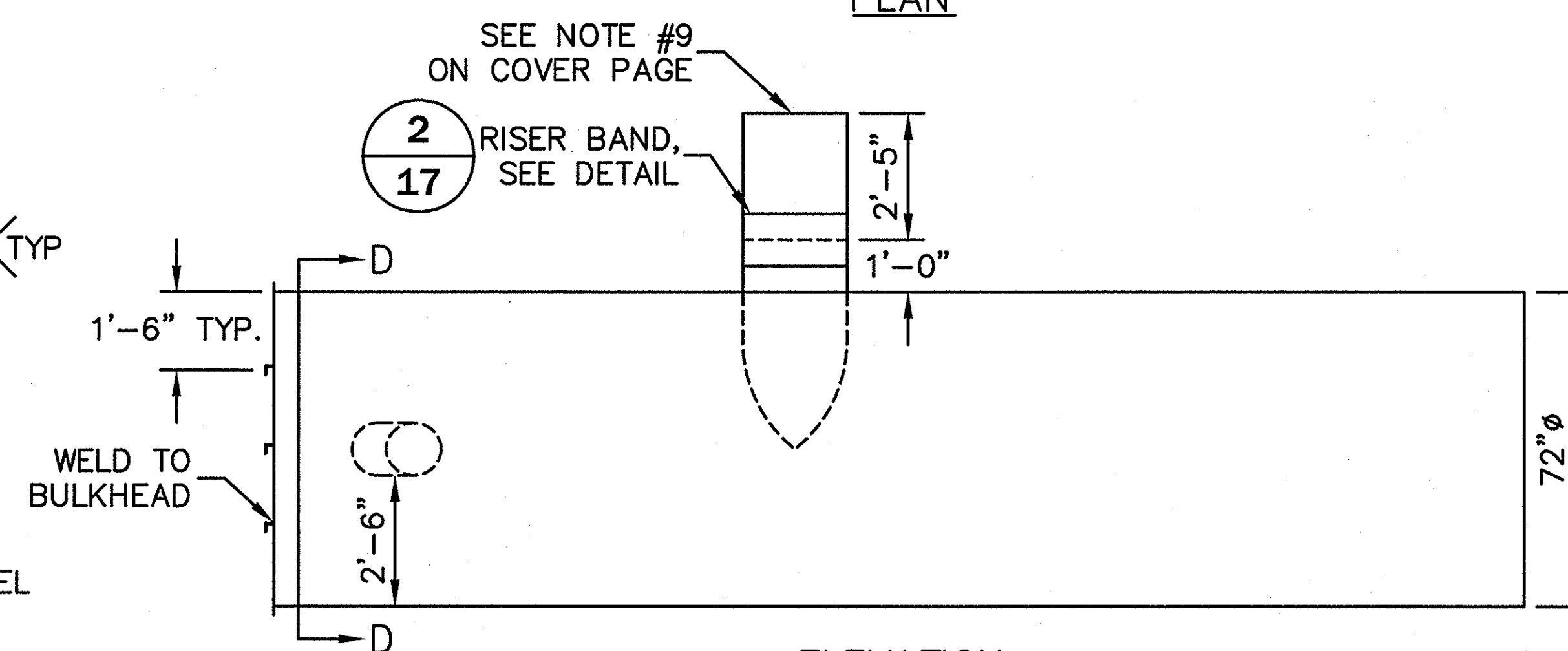


PLAN

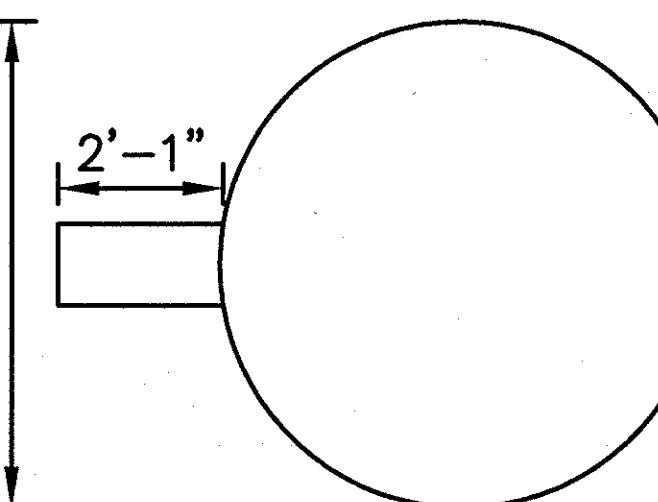


LEFT SIDE

2x2x1/4 REINFORCEMENT ANGLE  
TOTAL LENGTH REQUIRED: 18'-8"



ELEVATION



SECTION D-D

**PART V**

SCALE : 1" = 5'

# PIECES = 1  
DIAMETER = 72"  
LENGTH = 24'-0"  
CORRUGATION = 3 x 1  
GAUGE = 16  
FINISH = ALT2

# PIECES = 1  
DIAMETER = 12"  
LENGTH = 2'-1"  
CORRUGATION = 2-2/3 x 1/2  
GAUGE = 16  
FINISH = ALT2

# PIECES = 1  
DIAMETER = 24"  
LENGTH = 6'-5"  
CORRUGATION = 2-2/3 x 1/2  
GAUGE = 16  
FINISH = ALT2

**FINAL**  
**APPROVED FOR**  
**FABRICATION OR CONSTRUCTION**

3				
2				
1	03/04/08	REVISED FINAL FOR FABRICATION	FR	
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WEST CHESTER, OHIO 45069  
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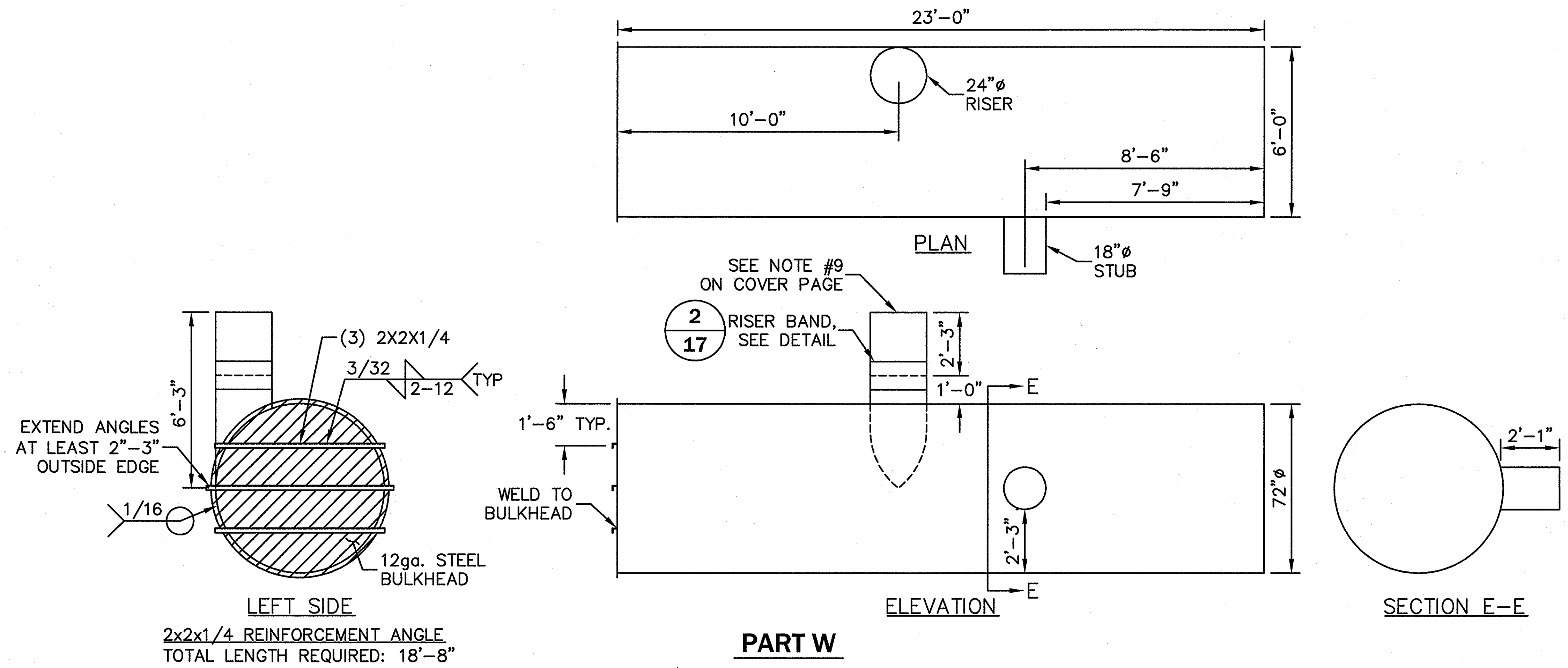
**PART DETAIL**

**72"Ø UNDERGROUND DETENTION SYSTEM**  
**WALGREENS #11519**  
**ROCKWALL, TX**

SCALE: AS SHOWN  
DRAWN BY: FR  
DATE: 02/28/08  
REV. BY: FR  
DATE: 03/04/08  
SHEET:  
**14 OF 20**

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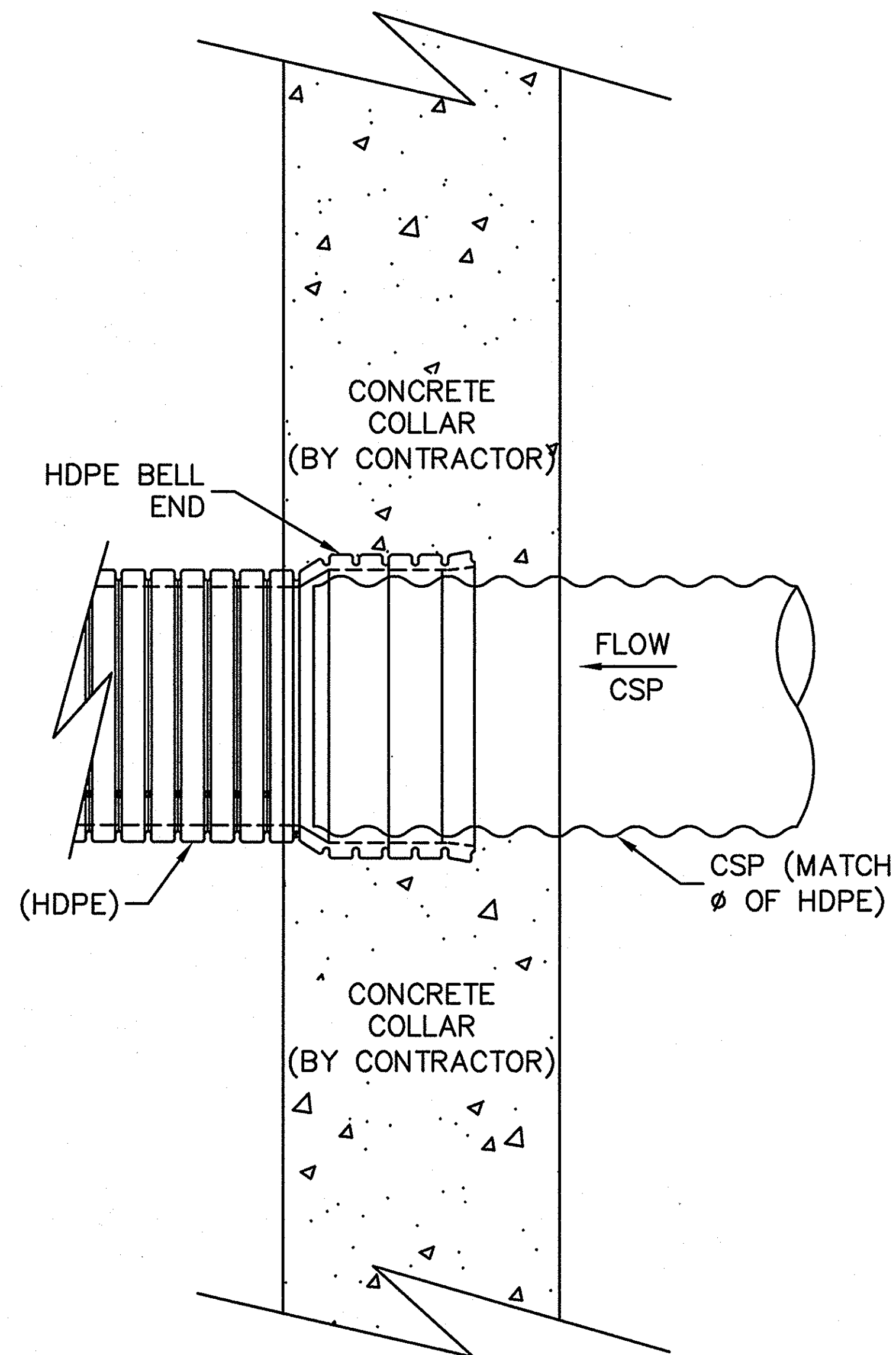
**PART DETAIL**

72"Ø UNDERGROUND DETENTION SYSTEM  
WALGREENS #11519  
ROCKWALL, TX

**RECORD DRAWINGS**  
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SURVEYED GRADES.

SCALE:	AS SHOWN
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REV. BY:	FR
DATE:	03/04/08
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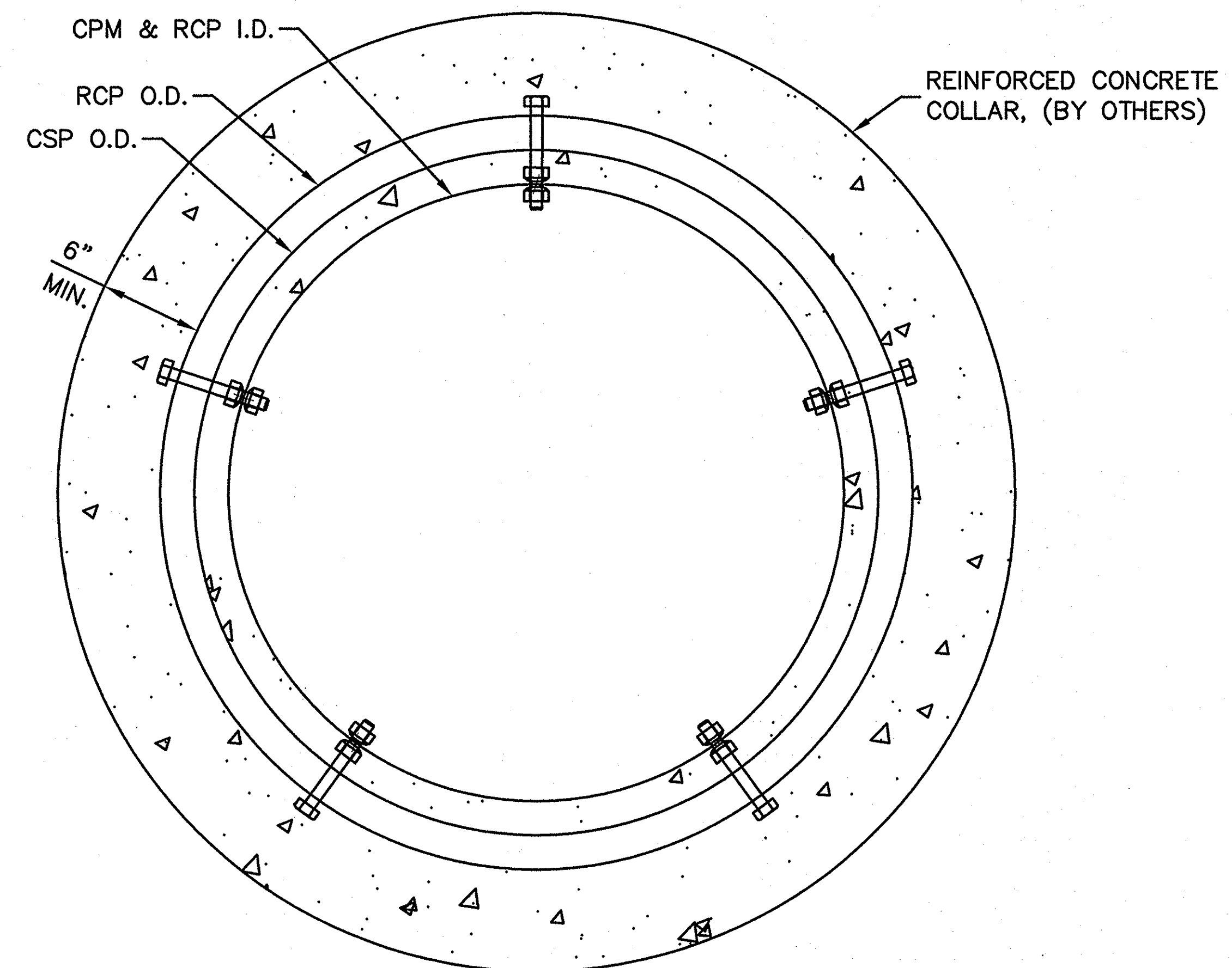
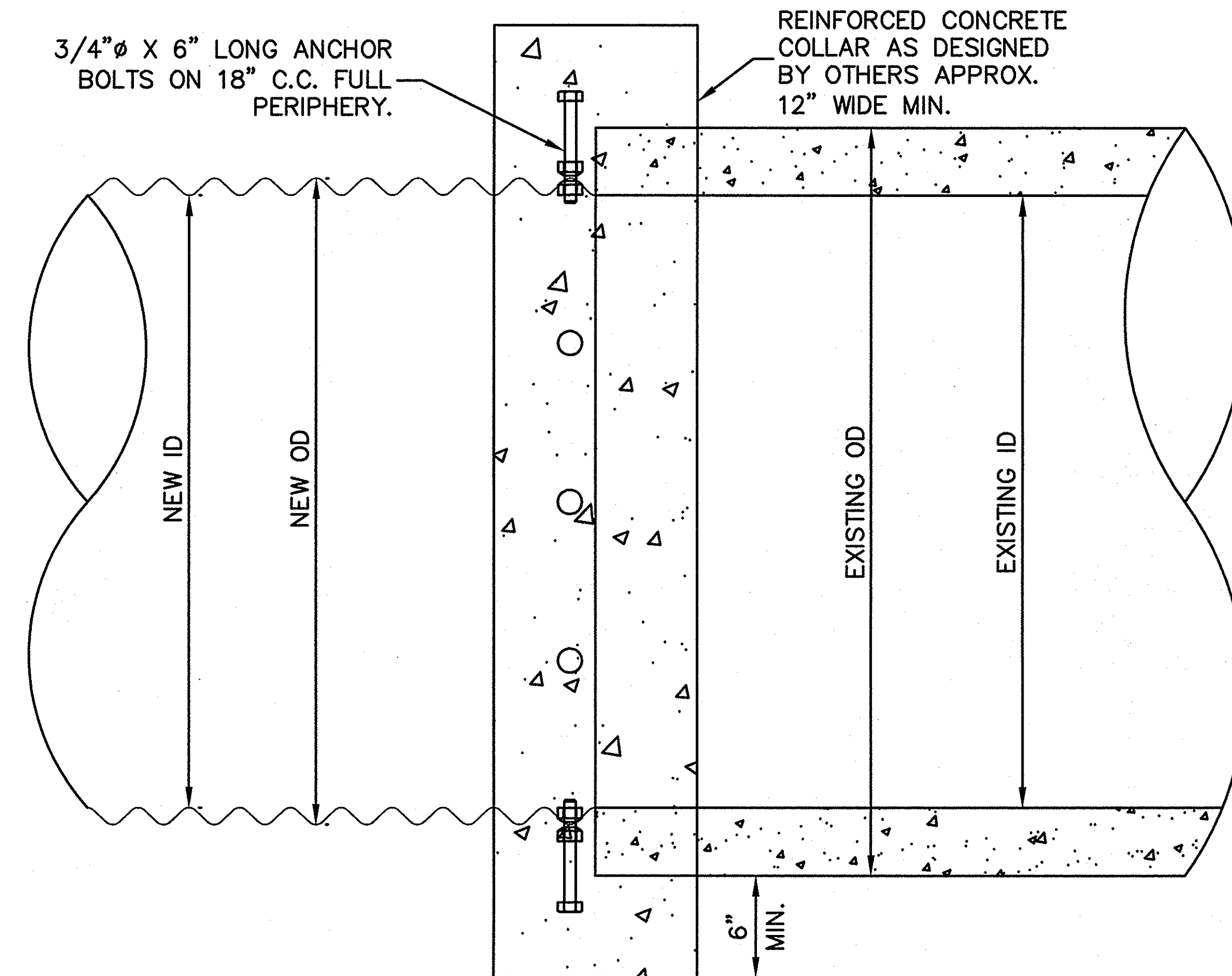


**TYP. CMP TO HDPE TRANSITION DETAIL**

SCALE : N.T.S.

**FINAL  
APPROVED FOR  
FABRICATION OR CONSTRUCTION**

3				
2				
1	03/04/08	REVISED FINAL FOR FABRICATION	FR	
0	02/28/08	FINAL FOR FABRICATION	FR	
NO.	DATE	DESCRIPTION	DRAWN BY	APPROVED BY



**CMP TO RCP TRANSITION DETAIL**

SCALE : N.T.S.

**RECORD DRAWINGS**

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**CONSTRUCTION DETAILS**

**72"Ø UNDERGROUND DETENTION SYSTEM**

**WALGREENS #11519  
ROCKWALL, TX**

SCALE: AS SHOWN

DRAWN BY: FR  
DATE: 02/28/08

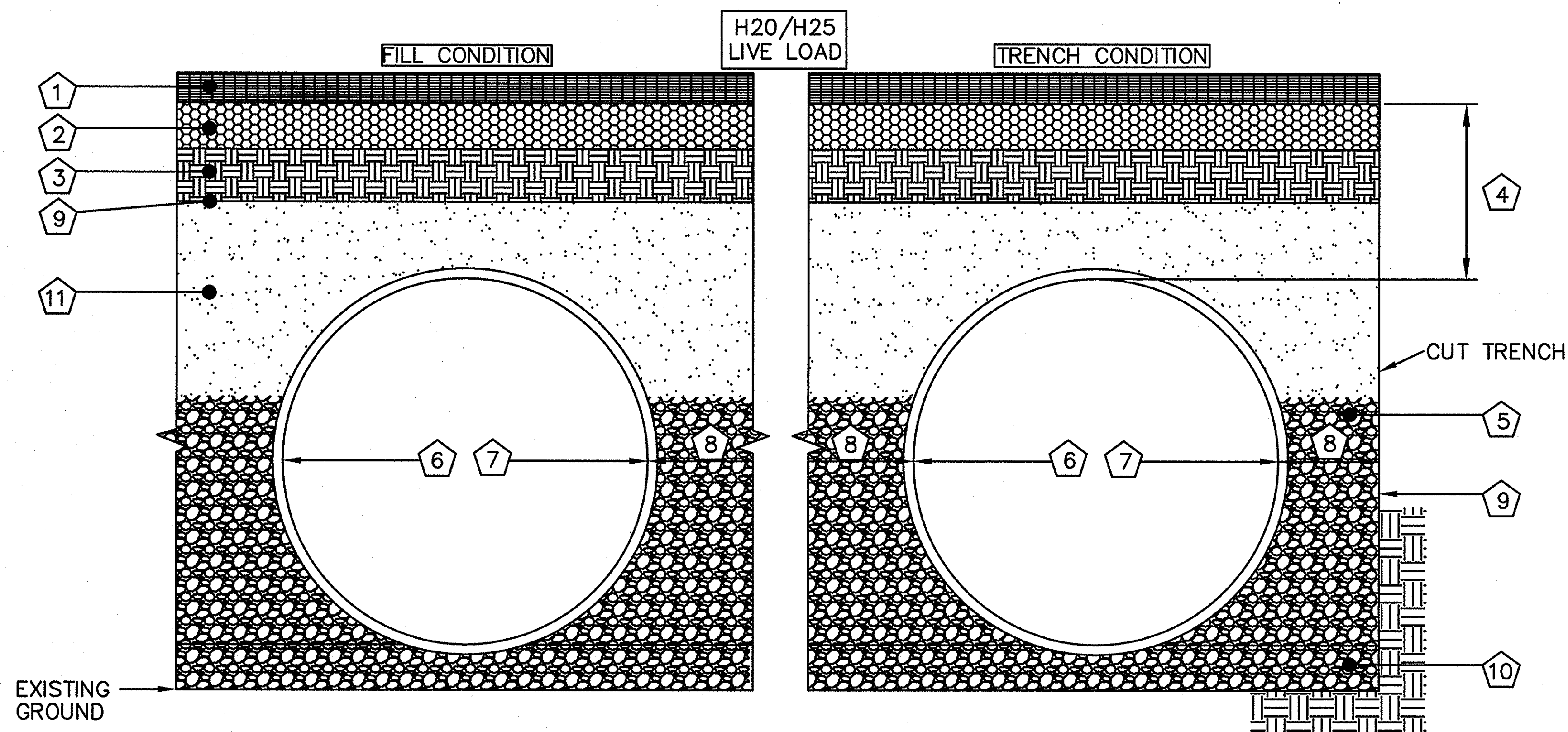
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SHEET:  
**16 OF 20**

CONTECH ID# 31623



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1.) RIGID OR FLEXIBLE PAVEMENT

2.) GRANULAR ROAD BASE

3.) NORMAL ROADWAY EMBANKMENT FILL PLACED IN 8" LIFTS AND COMPACTED TO MIN. 90% STANDARD DENSITY PER AASHTO T-99.

4.) 12" MIN. FOR DIAMETERS THROUGH 96" 18" MIN. FOR DIAMETERS FROM 102" AND UP MEASURED FROM TOP OF RIGID OR BOTT. OF FLEXIBLE PAVEMENT.

5.) SELECT GRANULAR FILL PER AASHTO M145 A-1, A-2 OR A-3 OR APPROVED EQUAL UP TO  $\frac{2}{3}$   $\phi$  OF PIPE. (COMPACTED TO MIN. 90% STANDARD DENSITY PER AASHTO T-99.)

6.) 12"  $\phi$  THRU 84"  $\phi$  2 2/3" X 1/2" CSP, GAGE PER AASHTO SECTION 12.

7.) 54"  $\phi$  THRU 144"  $\phi$  3" X 1" OR 5" X 1" CSP GAGE PER AASHTO SECTION 12.

8.) STANDARD SPACING IN TABLE, SPECIAL SPACING IS SUBJECT TO APPROVAL BY CONTECH CONSTRUCTION PRODUCTS INC.

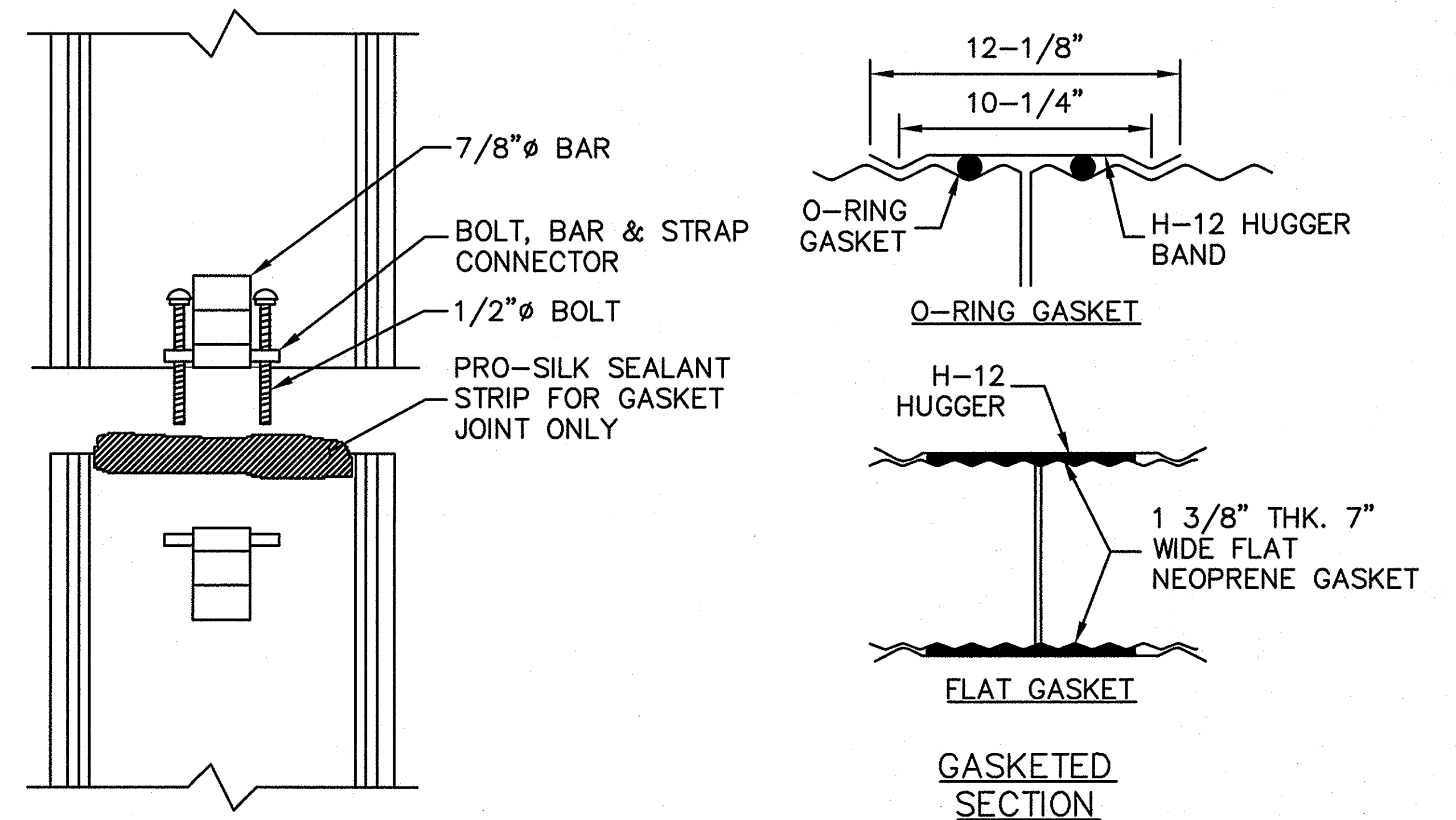
SPACING CHART PER AISI AND NCSPA GUIDELINES	
DIAMETER	REQUIRED SPACING
UP TO 24"	12"
24" - 72"	1/2 PIPE DIA
72" AND UP	36"

9.) CONTECH C40 NON-WOVEN GEOTEXTILE AS REQUIRED TO PREVENT SOIL MIGRATION.

10.) RELATIVELY LOOSE GRANULAR BEDDING, ROUGHLY SHAPED TO FIT BOTTOM OF PIPE, 4" TO 6" IN DEPTH. (#57 OR #8 OR OTHER SUITABLE GRANULAR)

11.) FINE ANGULAR SAND

**1** TYP. BACKFILL DETAIL  
17 SCALE: N.T.S.



CORRUGATIONS	PIPE PRODUCTS
2-2 2/3" X 1/2"	GALVANIZED
3" X 1"	ALUMINIZED
5" X 1"	BITUMINOUS COATED
3/4" X 3/4" X 7-1/2"	SMOOTH-FLO
	CONCRETE-LINER
	ALUMINUM
	STEEL ULTRA-FLO

#### GENERAL NOTES:

- REFER TO CONTECH BAND SELECTION GUIDE FOR BAND WIDTH, GAGE, AND FASTENER TYPES.
- BANDS FOR PIPE-ARCH ARE THE SAME AS FOR EQUIVALENT DIAMETER ROUND PIPE.
- BANDS ARE NORMALLY FURNISHED AS FOLLOWS:  
12" THRU 48" 1-PIECE  
54" THRU 96" 2-PIECE  
102" THRU 144" 3-PIECES.
- BAND FASTENERS ARE ATTACHED WITH SPOT WELDS, RIVETS OR HAND WELDS. ALL ALUMINUM BANDS, BOTH SINGLE AND DOUBLE BB&S, ARE FURNISHED WITH A 14 GAGE ALUMINUM BACK-UP PLATE WELDED TO THE BAND AND THE STRAP.
- REROLLED ANNULAR END CORRUGATIONS ARE NORMALLY 2-2 2/3" X 1/2".
- DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
- ORDER SHALL DESIGNATE GASKET OPTION.

**2** H-12 HUGGER BAND DETAIL  
17 SCALE: N.T.S.

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1	03/04/08	REVISED FINAL FOR FABRICATION	FR	
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**CONTECH**  
STORMWATER  
SOLUTIONS INC.  
9025 CENTRE POINTE DRIVE, SUITE 400  
WEST CHESTER, OHIO 45069  
PH: 1.800.338.1122 FAX: 513.645.7399

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## CONSTRUCTION DETAILS

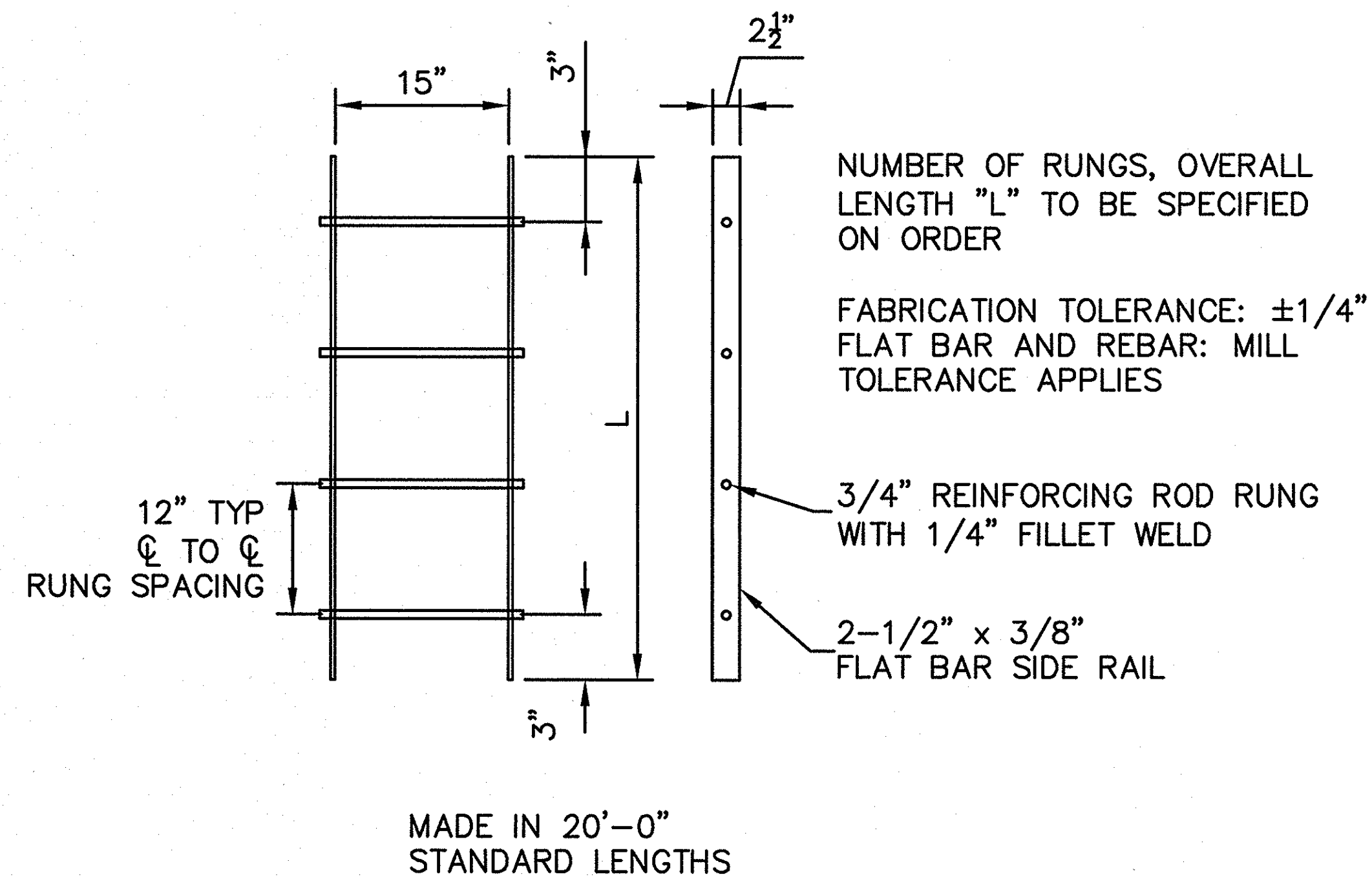
72"  $\phi$  UNDERGROUND DETENTION SYSTEM

WALGREENS #11519  
ROCKWALL, TX

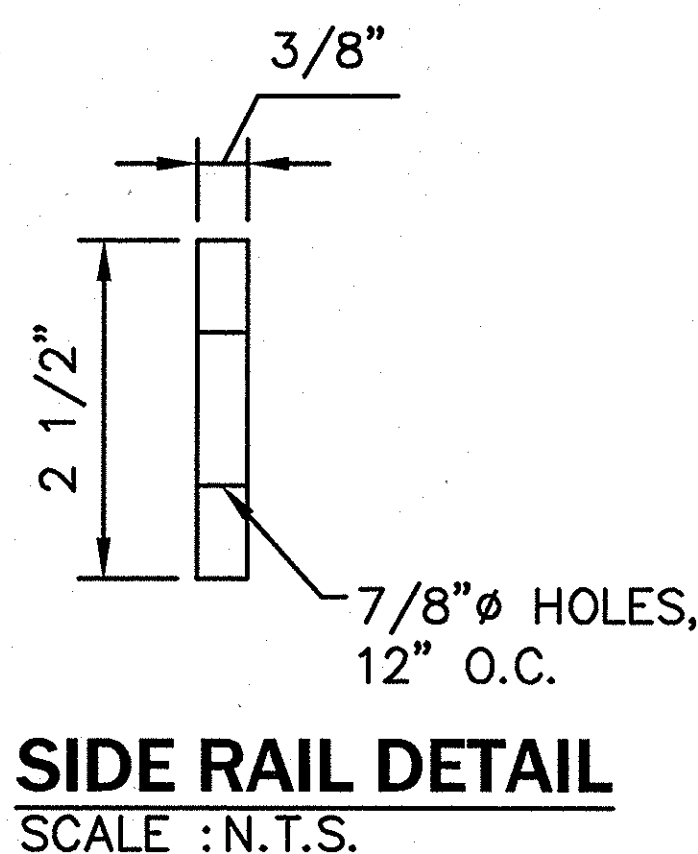
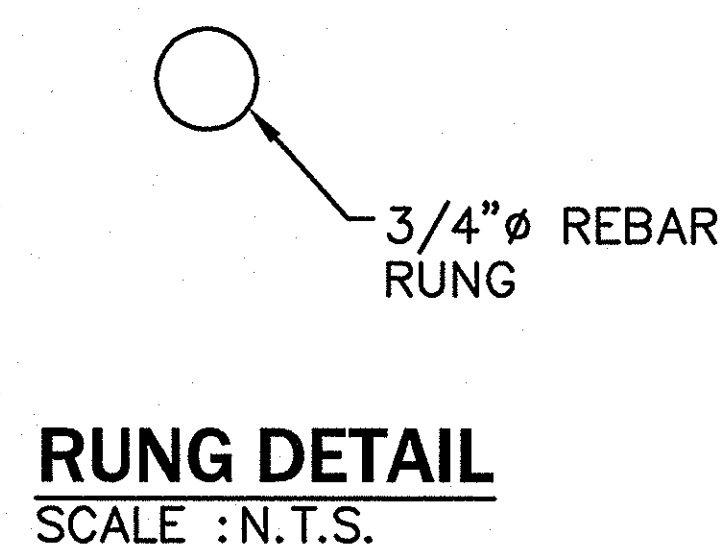
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THE CONSTRUCTED WORK, USING INFORMATION  
AS PROVIDED BY THE CONTRACTORS AND  
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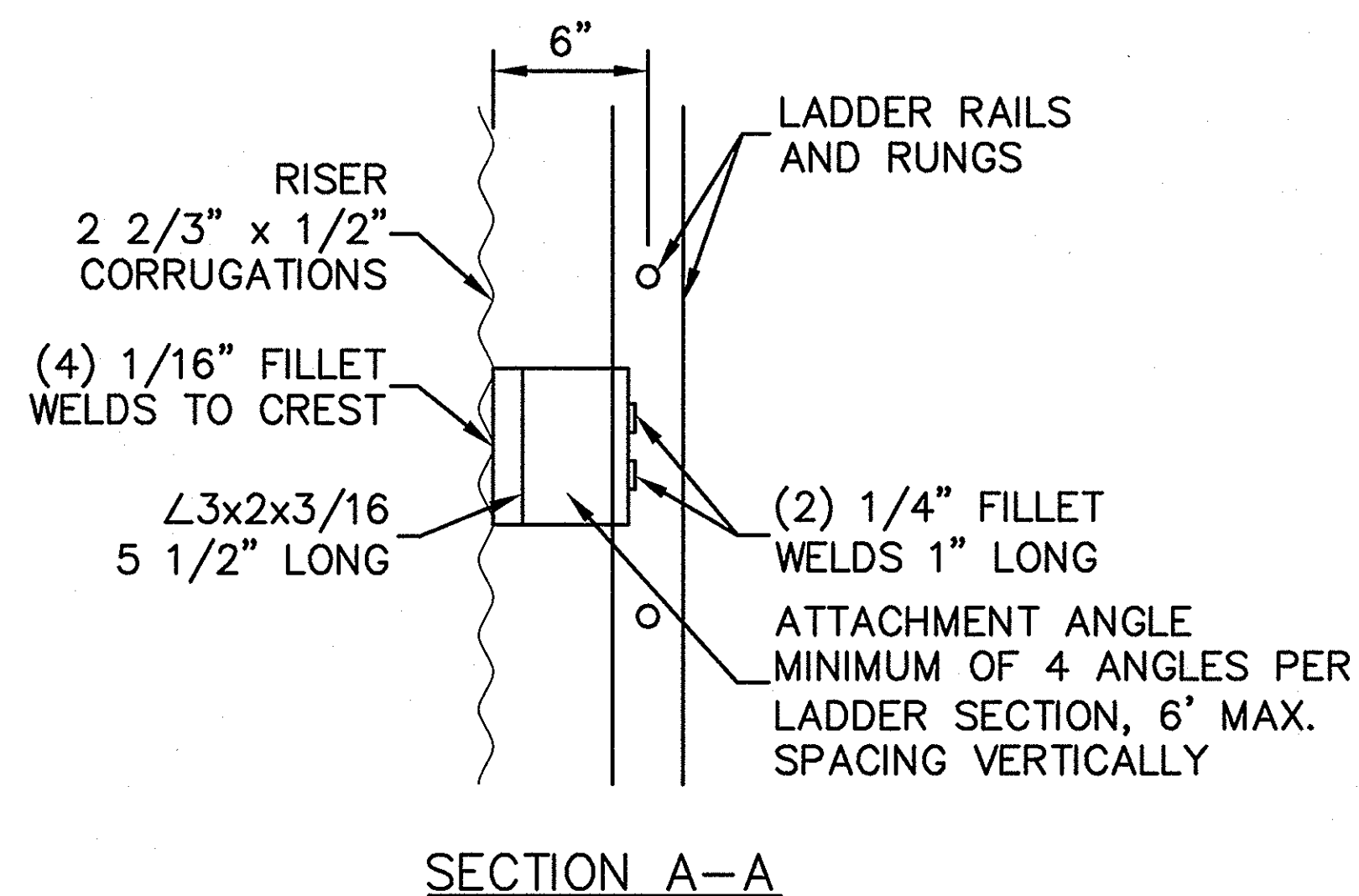
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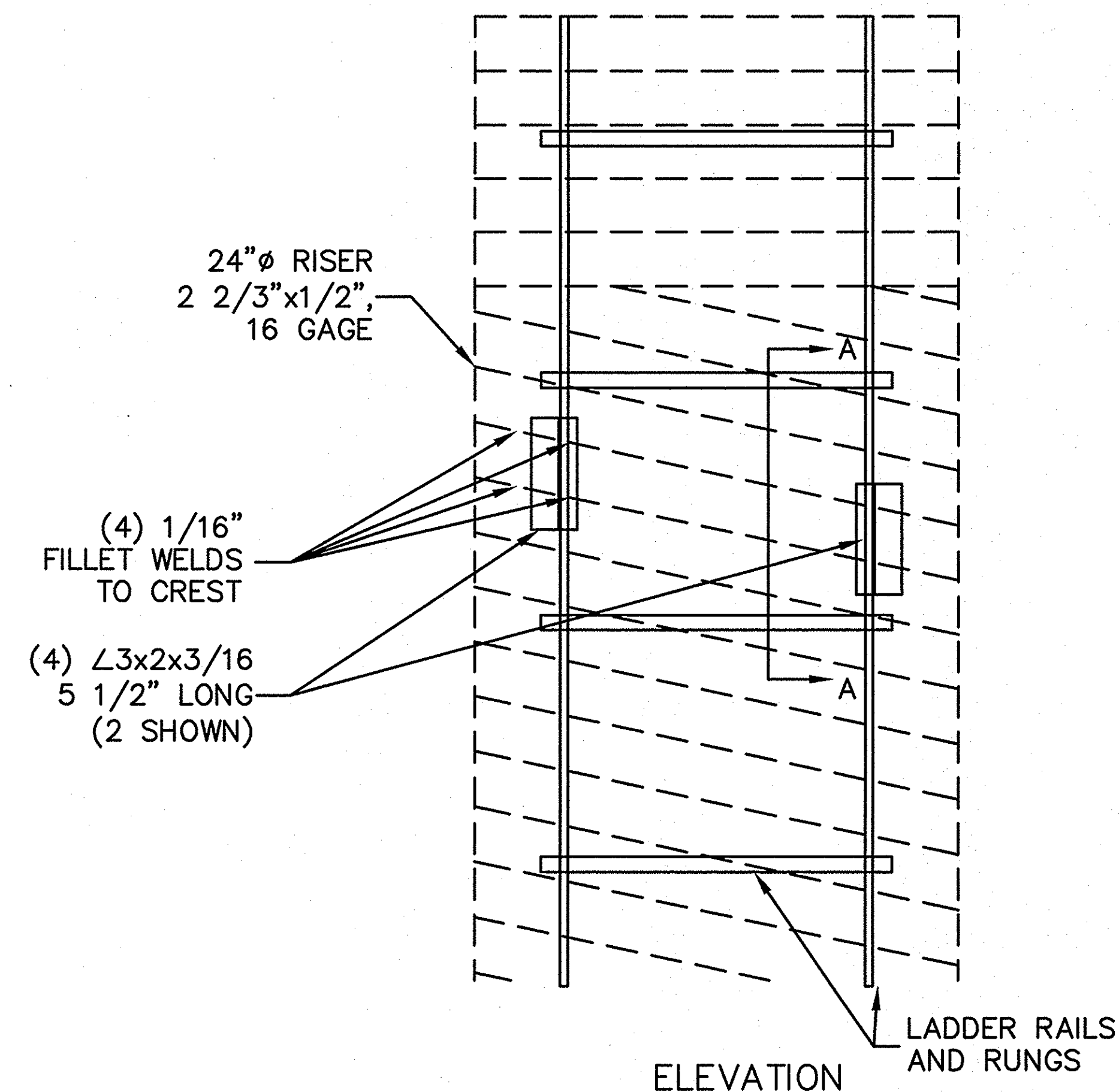
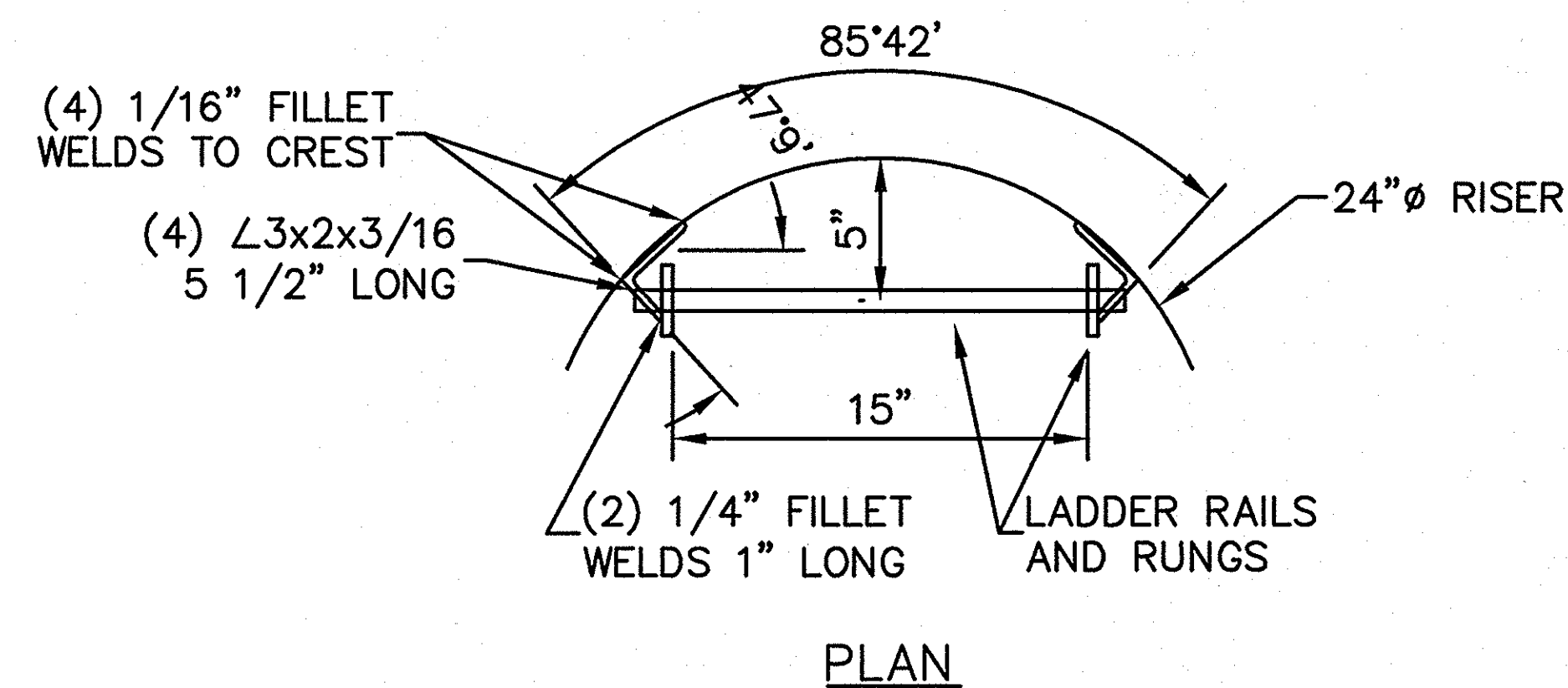
**STANDARD LADDER DETAIL**  
SCALE : N.T.S.



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**3**  
**18** **TYP. RISER LADDER DETAIL**  
SCALE: N.T.S.



**LADDER ATTACHMENT DETAIL**  
SCALE : N.T.S.

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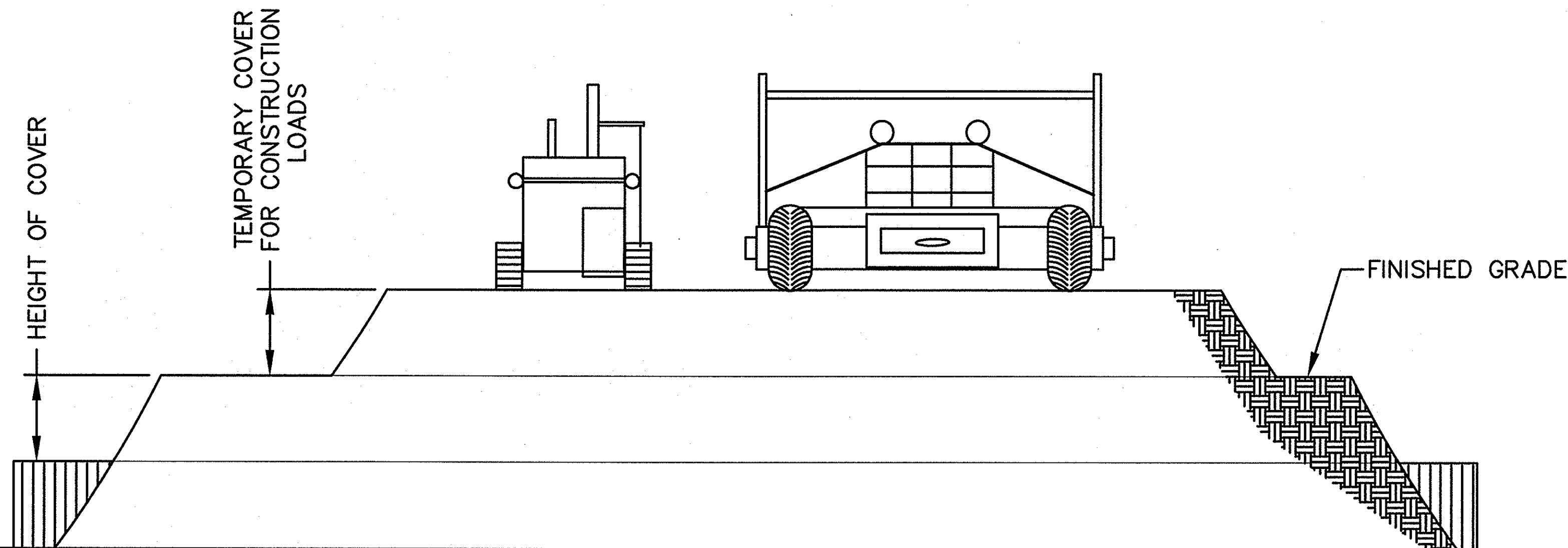
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**CONSTRUCTION DETAILS**  
72"  $\phi$  UNDERGROUND DETENTION SYSTEM  
WALGREENS #11519  
ROCKWALL, TX

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CONSTRUCTION LOADS:  
FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

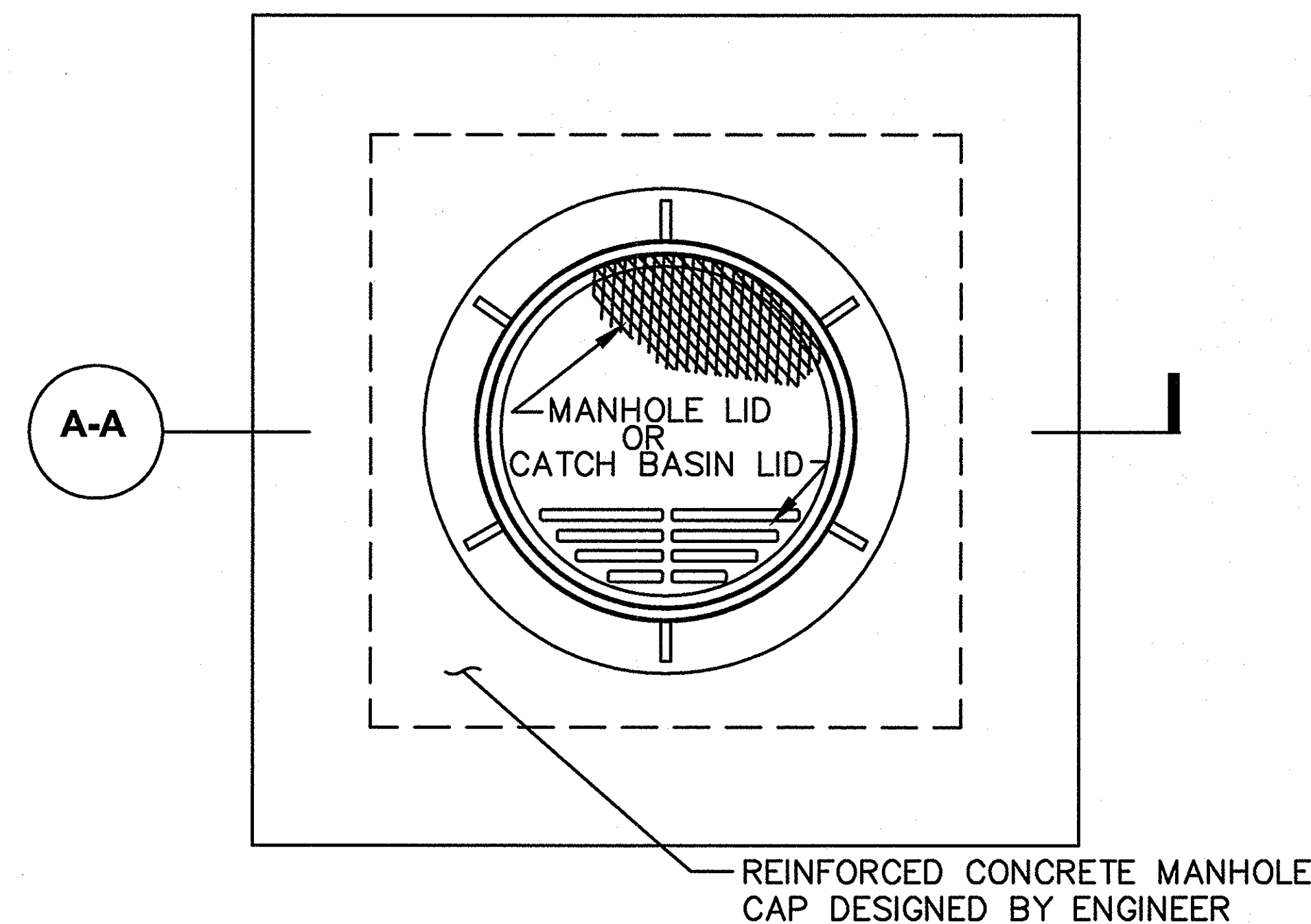
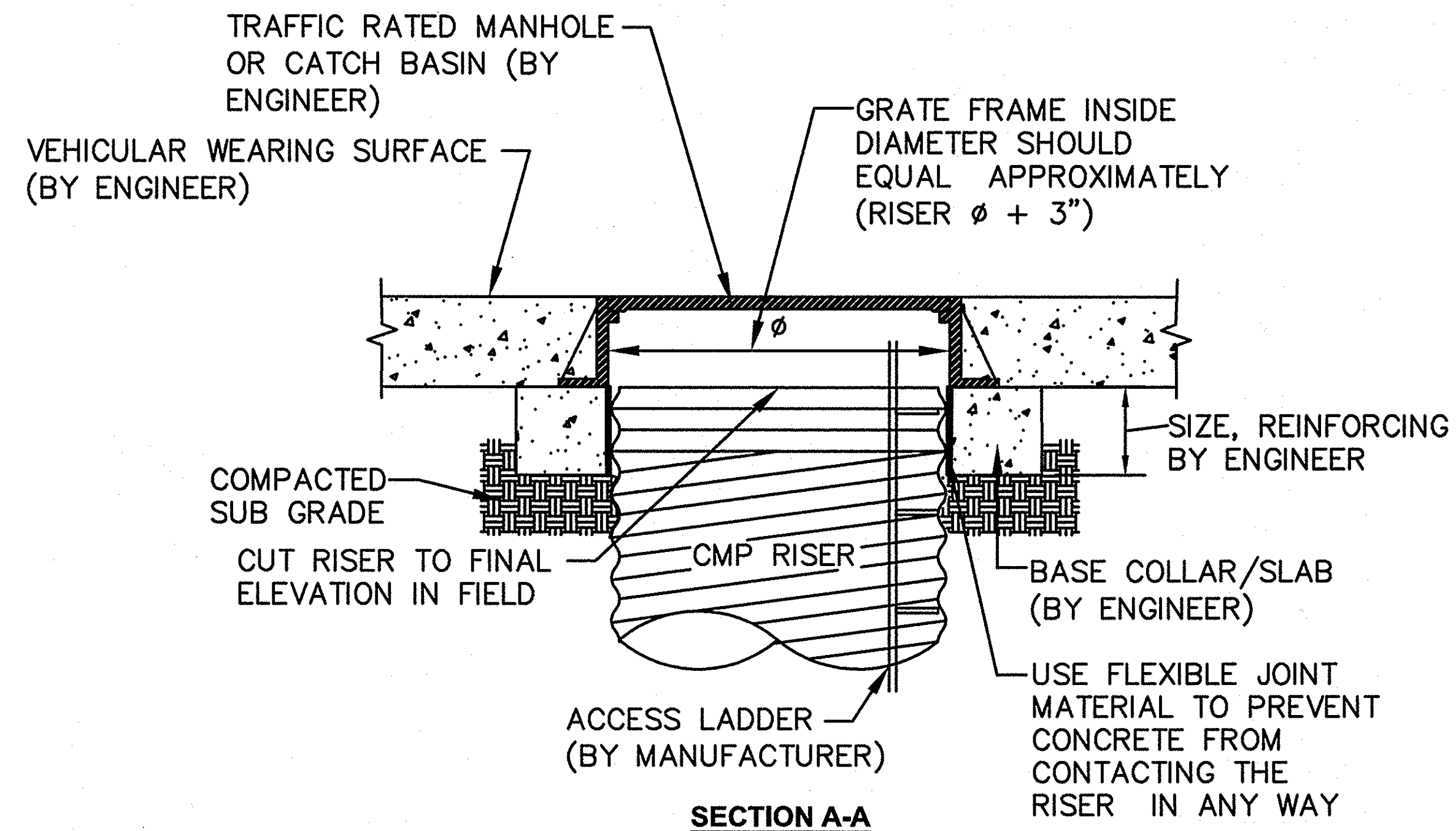
PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

\* MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

**4** **CONSTRUCTION LOADING DIAGRAM**  
**19** SCALE: N.T.S.

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**NOTES:**

1. THE CONCRETE CAP SHALL BE SIZED AND DESIGNED BY OTHERS SO THAT THE LOADS ARE TRANSMITTED TO THE SOIL, AND NOT THE RISER.
2. THE CONCRETE CAP SHALL BE SIZED TO PROVIDE AN ADEQUATE BOTTOM AREA BASED ON THE ALLOWABLE BEARING CAPACITY OF THE SOIL.
3. THE FLEXIBLE JOINT MATERIAL (RECYCLED VINYL OR EQ.) TO BE STIFF ENOUGH SO THAT THE CONCRETE CAN NEVER ENGAGE WITH THE RISER CORRUGATIONS.

**5** **MANHOLE CAP DETAIL**  
**19** SCALE: N.T.S.

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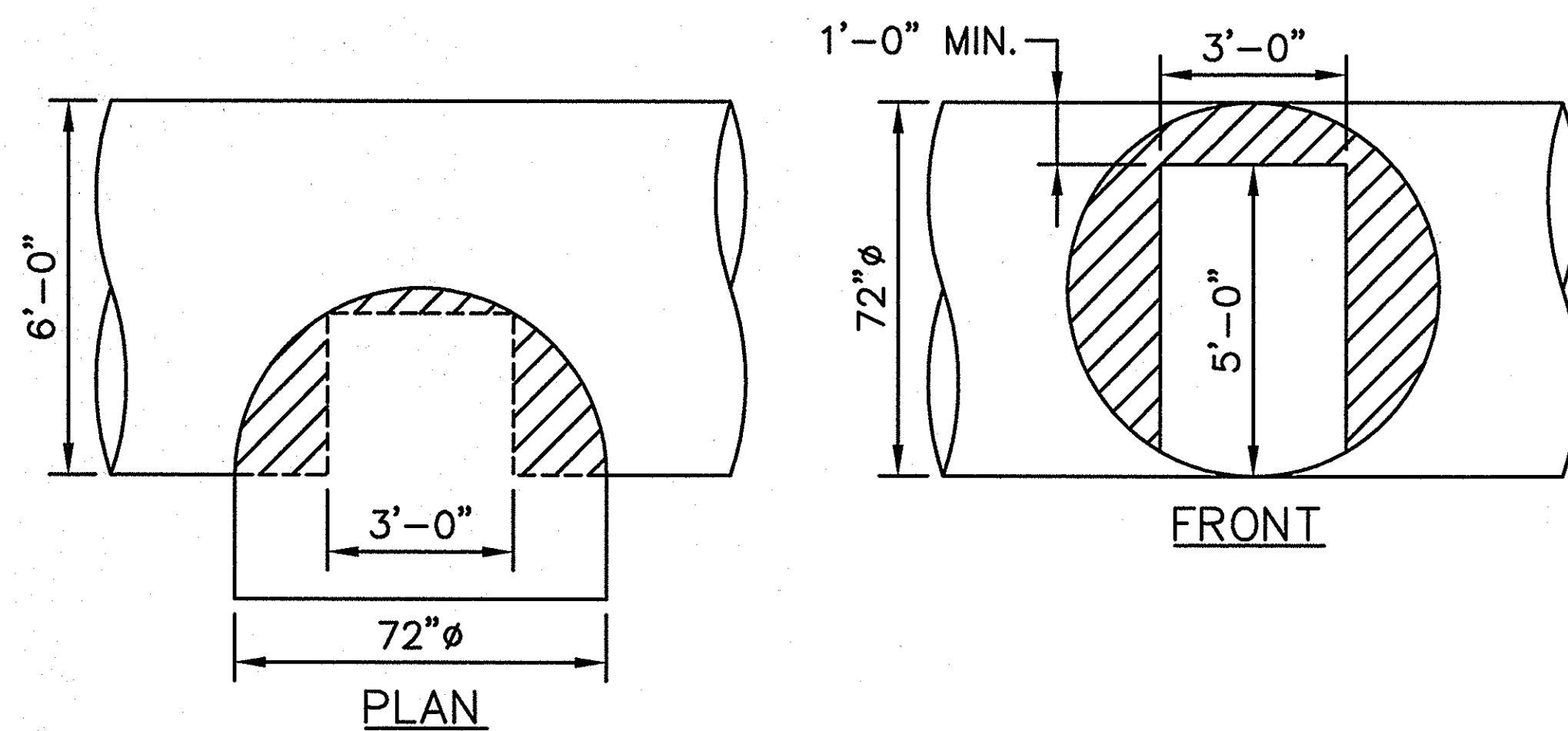
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**CONSTRUCTION DETAILS**  
**72"Ø UNDERGROUND DETENTION SYSTEM**  
**WALGREENS #11519**  
**ROCKWALL, TX**

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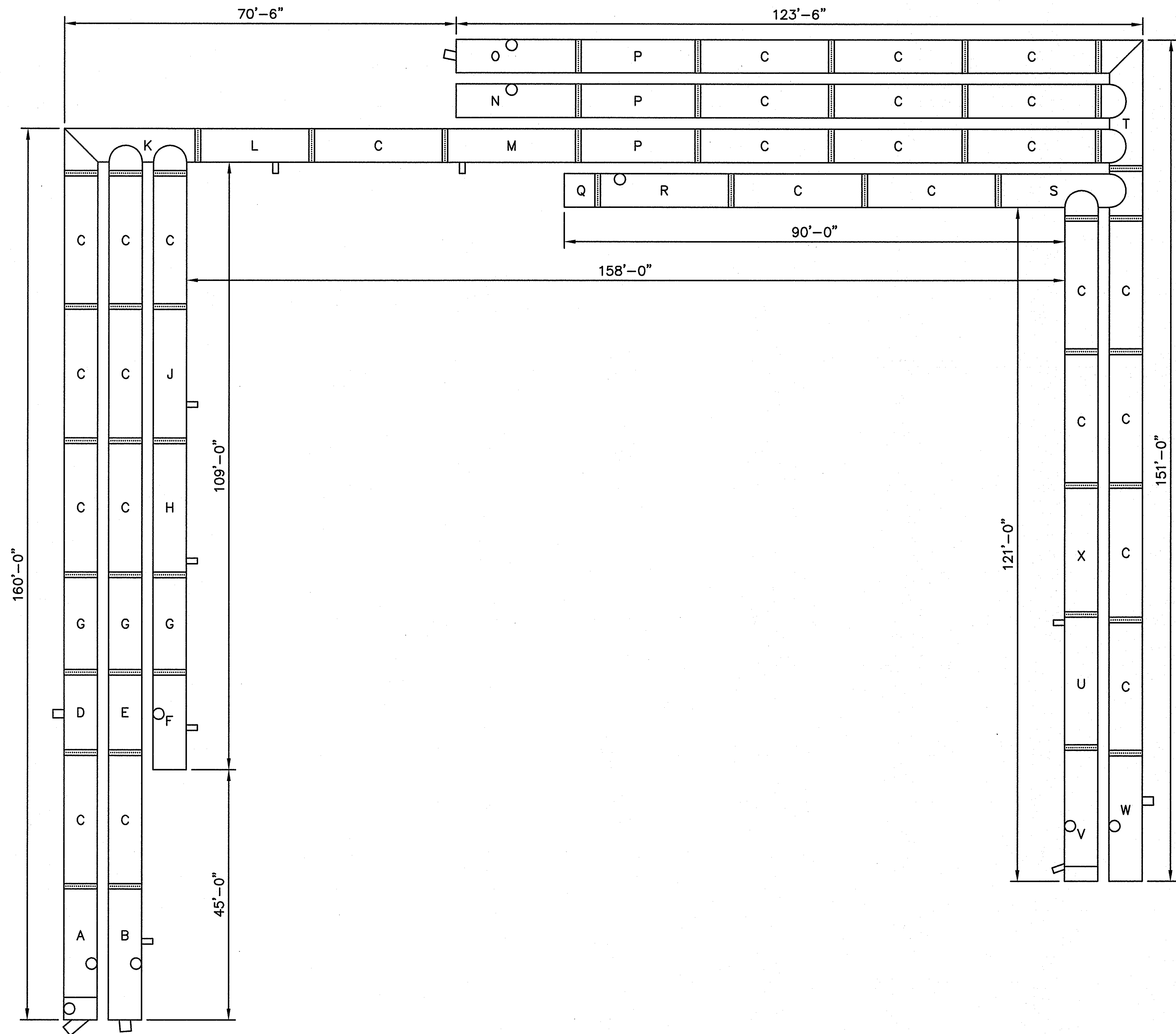
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**6** TYP. MANWAY DETAIL  
**20** SCALE: N.T.S.

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**7** INSTALLATION LAYOUT  
**20** SCALE: N.T.S.

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**INSTALLATION LAYOUT**  
**72"Ø UNDERGROUND DETENTION SYSTEM**  
**WALGREENS #11519**  
**ROCKWALL, TX**

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