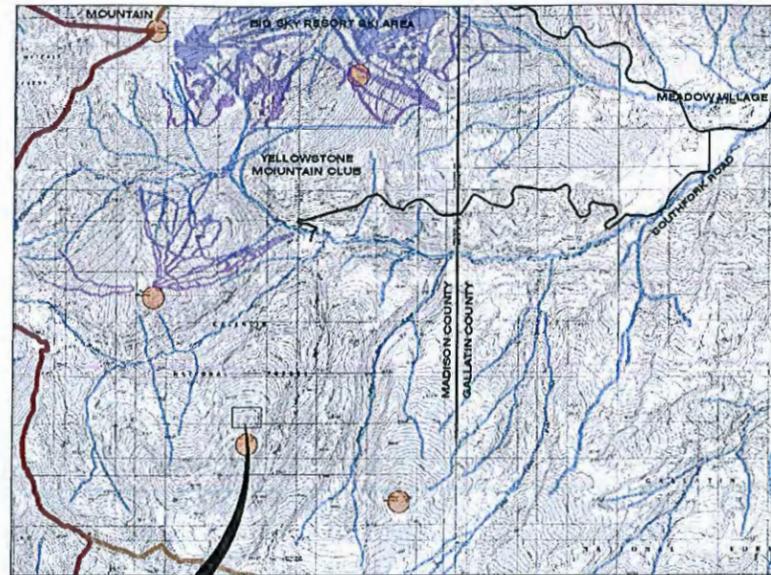


# CONSTRUCTION DRAWINGS FOR YELLOWSTONE MOUNTAIN CLUB EFFLUENT STORAGE POND - 2016 IMPROVEMENTS

BIG SKY, MONTANA  
MARCH 2016



PROJECT LOCATION

VICINITY MAP  
NO SCALE

### SHEET INDEX

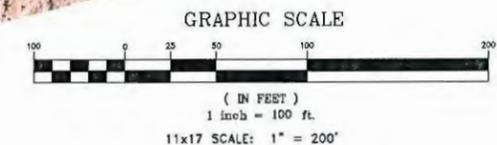
SHEET	DRAWING	TITLE
1	G1	COVER SHEET
2	C1	OVERALL CIVIL PLAN
3	D1	DETAIL SHEET #1
4	D2	DETAIL SHEET #2
5	D3	DETAIL SHEET #3
6	D4	DETAIL SHEET #4

Montana Department of Environmental Quality

These plans and specifications have been reviewed and are in compliance with applicable rules and regulations promulgated and/or administered by the Montana Department of Environmental Quality and are hereby approved. These plans and specifications employ sound engineering design principles. All engineering details and operations performance are the responsibility of the design engineer and the owner.

<div style="display: inline-block; vertical-align: middle;"> <p style="font-size: 1.2em; font-weight: bold;">Morrison Maierle</p> <p style="font-size: 0.8em;">Authorized Signature <i>Jerry Raddick</i> Date <i>3/16/16</i></p> </div>	
QUALITY ASSURANCE	
<p>PROJECT MANAGER</p>	<p><i>5/10/2016</i></p> <p>Q.A. APPROVAL DATE</p>
<p>OFFICE MANAGER OR Q.A. COORDINATOR</p>	<p>Q.A. PROJECT NUMBER</p>
<p>PEER REVIEWER</p>	

SET NO. \_\_\_\_\_  
MMI PROJECT NO. 3017.133.004  
EQ# 16-1759

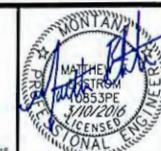


VERIFY SCALE		REVISIONS			
NO.	DESCRIPTION	DATE	BY		
1	MDEQ REVIEW	03/2016	ELB		
<small>THESE PRINTS MAY BE REDUCED. LINE BELOW MEASURES ONE INCH ON ORIGINAL DRAWING.</small> <small>MODIFY SCALE ACCORDINGLY</small>					

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DSGN. BY: MEE  
APPR. BY: JRN  
DATE: 03/2016  
Q.C. REVIEW BY:  
DATE:

YELLOWSTONE MOUNTAIN CLUB

BIG SKY MONTANA

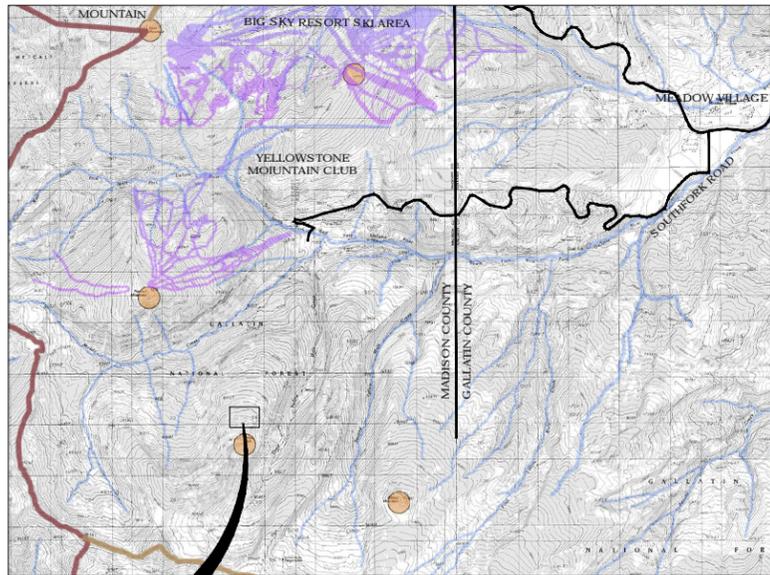
EFFLUENT STORAGE POND - 2016 IMPROVEMENTS

PROJECT NUMBER 3017.133  
SHEET NUMBER 1  
DRAWING NUMBER **G1**

# CONSTRUCTION DRAWINGS FOR YELLOWSTONE MOUNTAIN CLUB EFFLUENT STORAGE POND - 2016 IMPROVEMENTS

BIG SKY, MONTANA  
MARCH 2016

GOLF PUMP HOUSE



PROJECT  
LOCATION

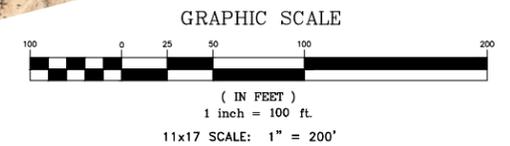
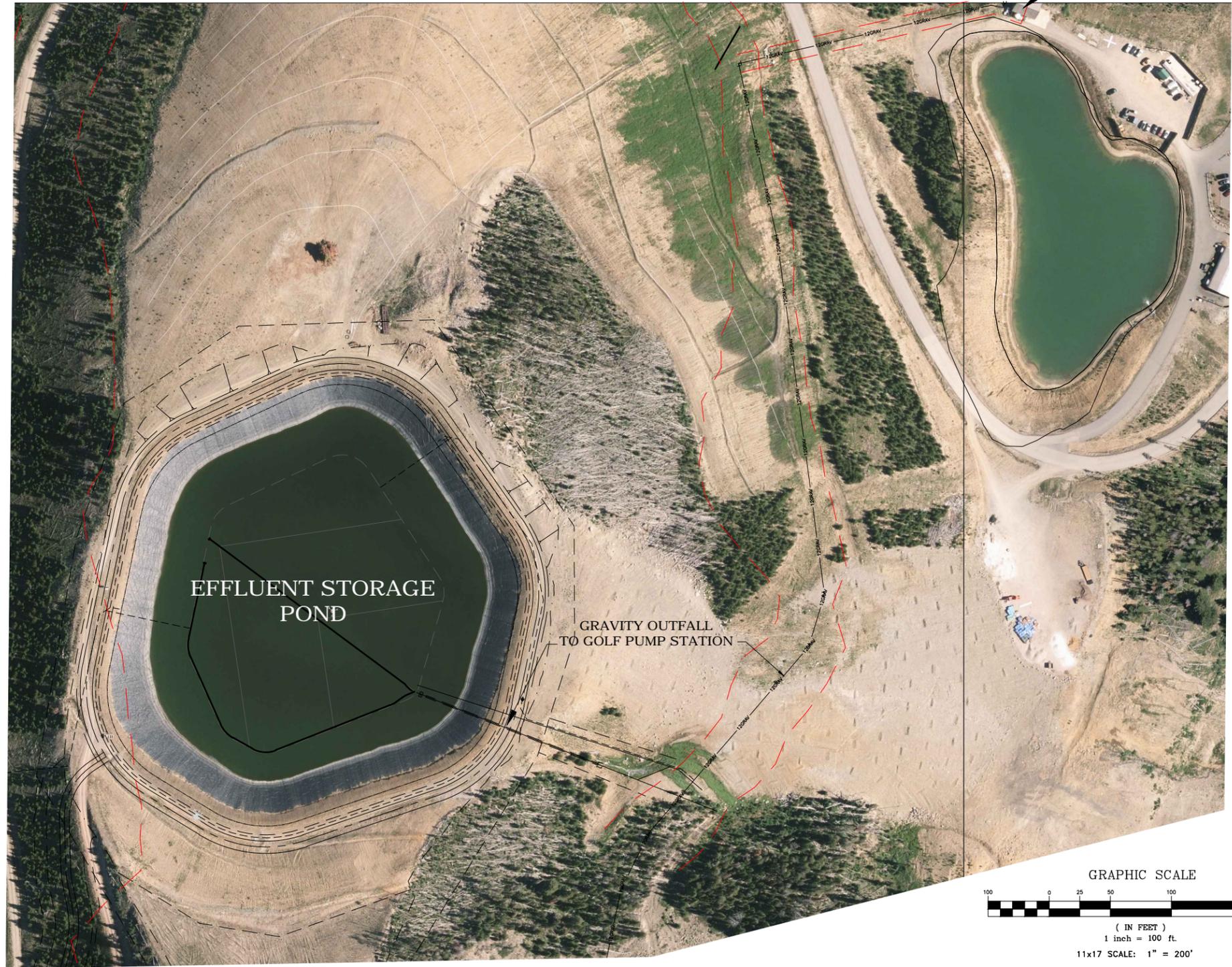
**VICINITY MAP**  
NO SCALE

### SHEET INDEX

SHEET	DRAWING	TITLE
1	G1	COVER SHEET
2	C1	OVERALL CIVIL PLAN
3	D1	DETAIL SHEET #1
4	D2	DETAIL SHEET #2
5	D3	DETAIL SHEET #3
6	D4	DETAIL SHEET #4

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QUALITY ASSURANCE	
 PROJECT MANAGER	3/10/2016 Q.A. APPROVAL DATE
 OFFICE MANAGER OR Q.A. COORDINATOR	Q.A. PROJECT NUMBER
PEER REVIEWER	

SET NO. \_\_\_\_\_  
MMI PROJECT NO. 3017.133.004  
EQ# 16-1759



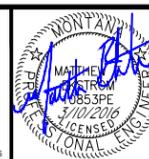
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N:\3017.133\ACAD\SHEETS\G1.DWG PLOTTED BY: DEAN SQUIRES ON Mar/16/2016

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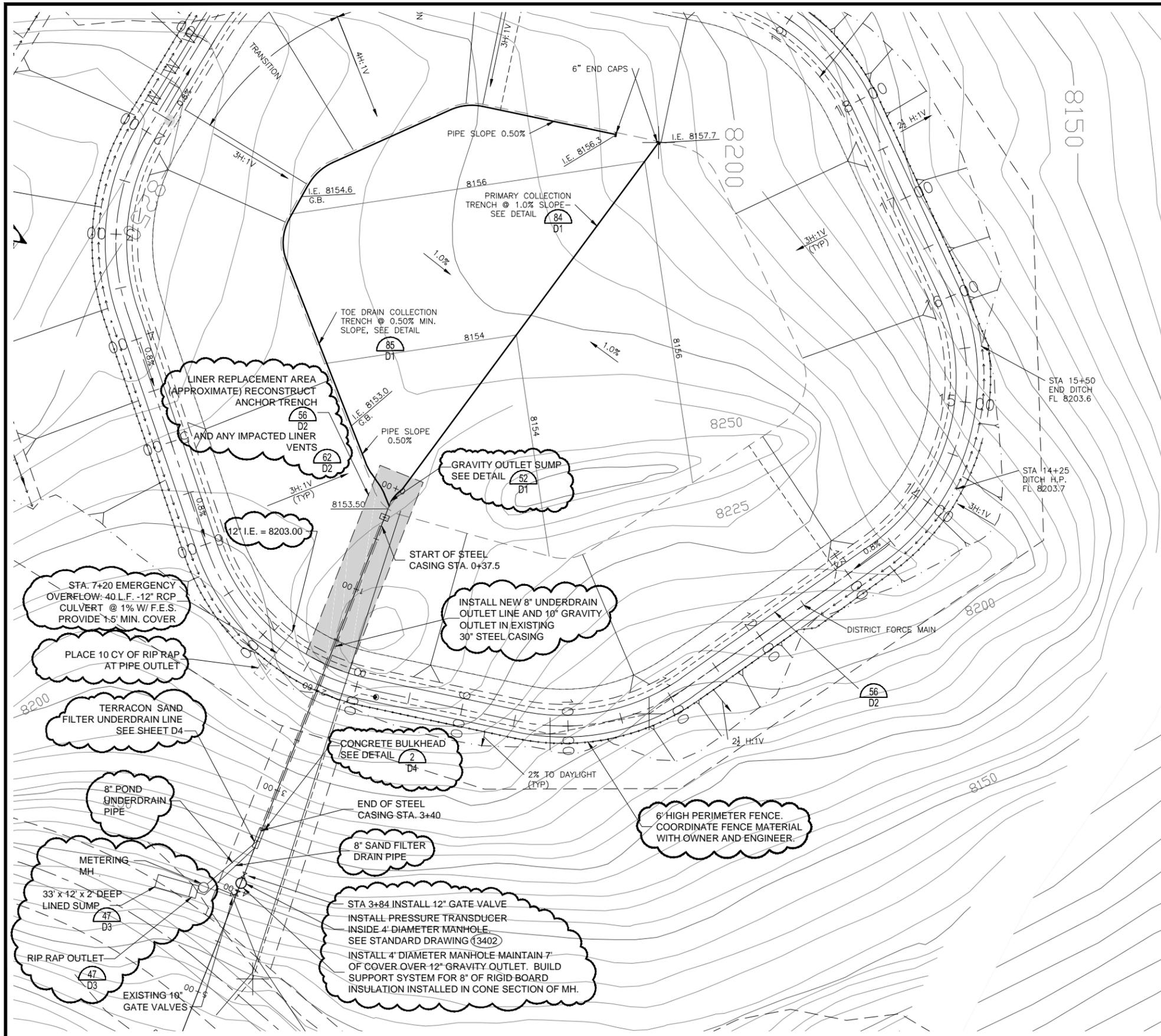
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APPR. BY: JRN  
DATE: 03/2016  
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DATE:

BIG SKY

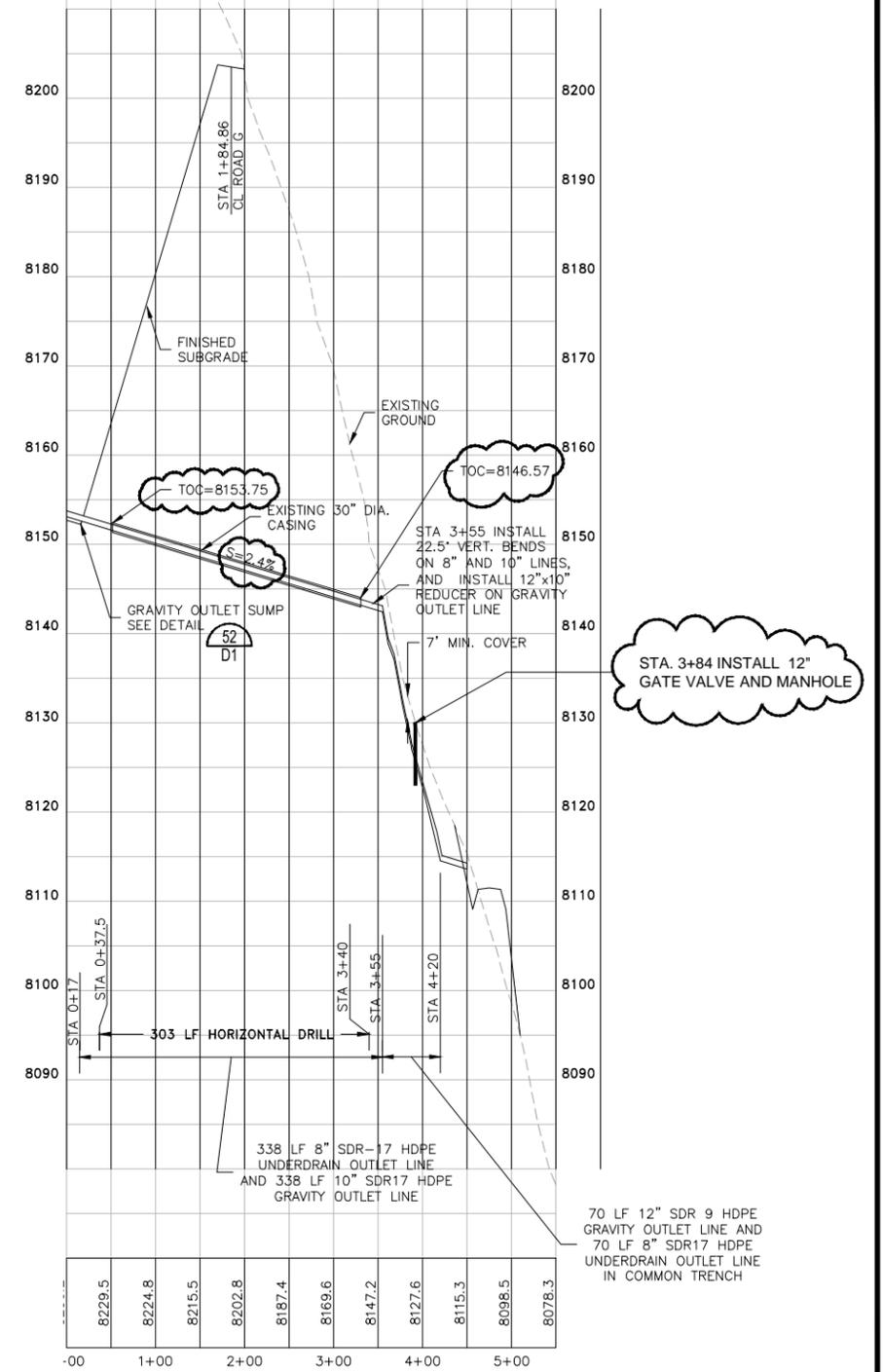
YELLOWSTONE MOUNTAIN CLUB  
EFFLUENT STORAGE POND - 2016 IMPROVEMENTS

MONTANA

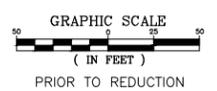
PROJECT NUMBER  
3017.133  
SHEET NUMBER  
1  
DRAWING NUMBER  
**G1**



UNDERDRAIN OUTLET LINE AND GRAVITY OUTLET LINE



- NOTES:
1. PROVIDE 16" WIDE GATES WITH LOCKS ON POND PERIMETER FENCE AT EACH ROAD CROSSING.
  2. INSTALL WARNING SIGNS (MIN. SIZE 18" x 24") ON POND PERIMETER FENCE ON ALL GATES AND AT 6 OTHER LOCATIONS AS SHOWN. WARNING SIGNS SHALL READ "WARNING: SEWAGE EFFLUENT POND - DO NOT ENTER".
  3. INSTALL BMP MEASURES TO PREVENT SOIL EROSION
  4. PROVIDE HYDRAULIC LEAK TESTING OF POND PER SPECIFICATION SECTION 02120



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MAINE  
REGISTERED PROFESSIONAL ENGINEER  
NO. 10853  
EXPIRES 12/31/2016

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DSGN. BY: MEE  
APPR. BY: JRN  
DATE: 03/2016

Q.C. REVIEW BY:  
DATE:

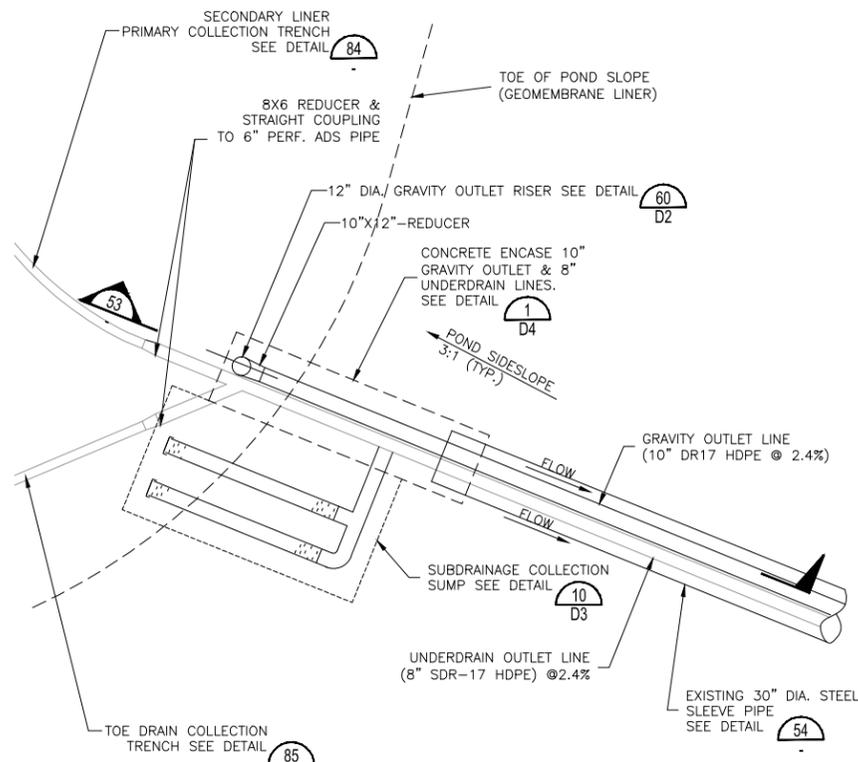
BIG SKY

YELLOWSTONE MOUNTAIN CLUB

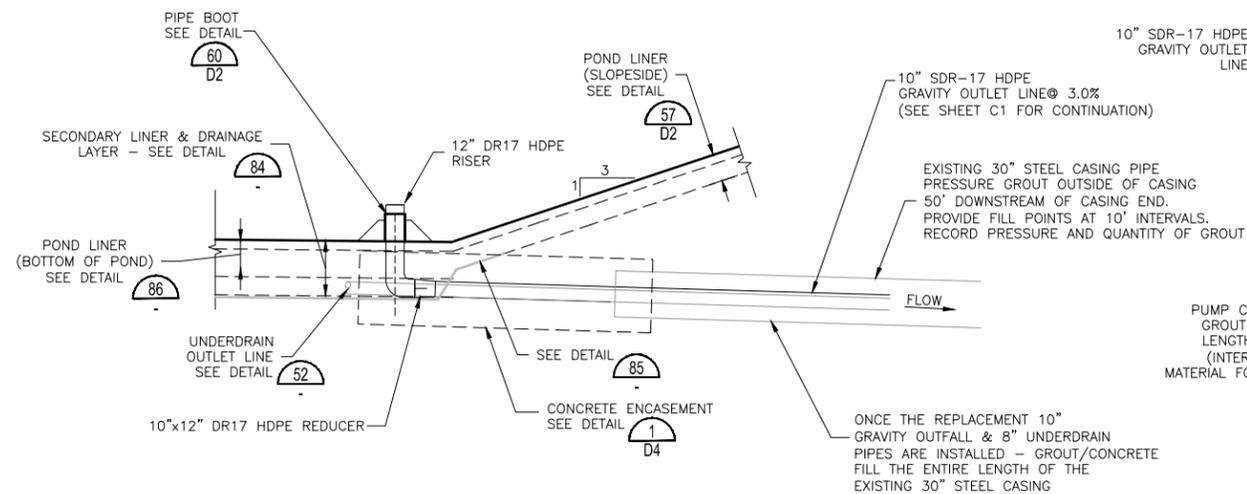
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EFFLUENT STORAGE POND - 2016 IMPROVEMENTS  
OVERALL CIVIL PLAN

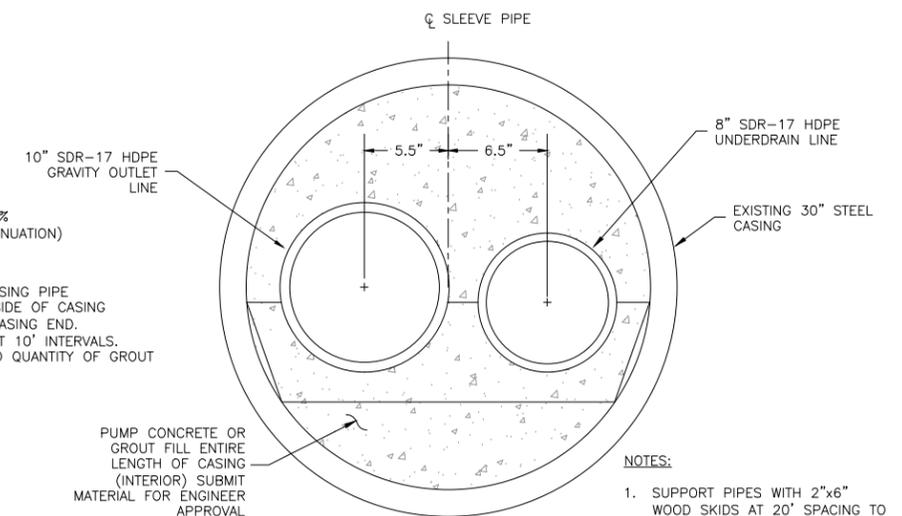
PROJECT NUMBER 3017.133  
SHEET NUMBER 2  
DRAWING NUMBER C1



52 GRAVITY OUTLET SUMP - PLAN  
C1 NTS

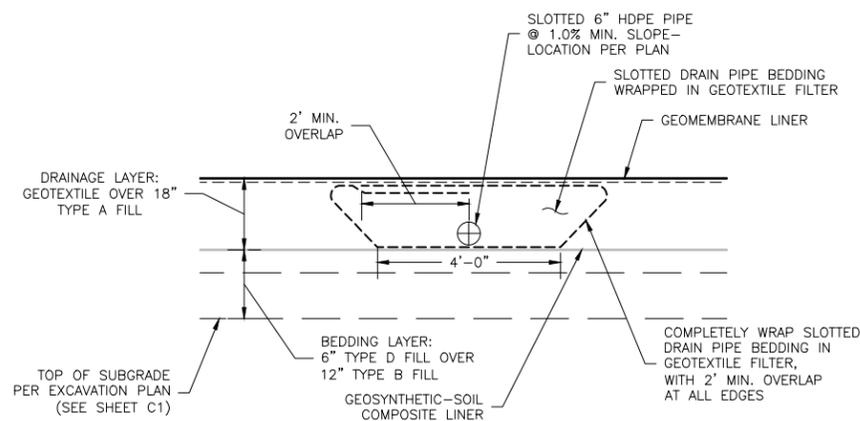


53 GRAVITY/UNDERDRAIN SUMP - SECTION  
SCALE: 1" = 5'

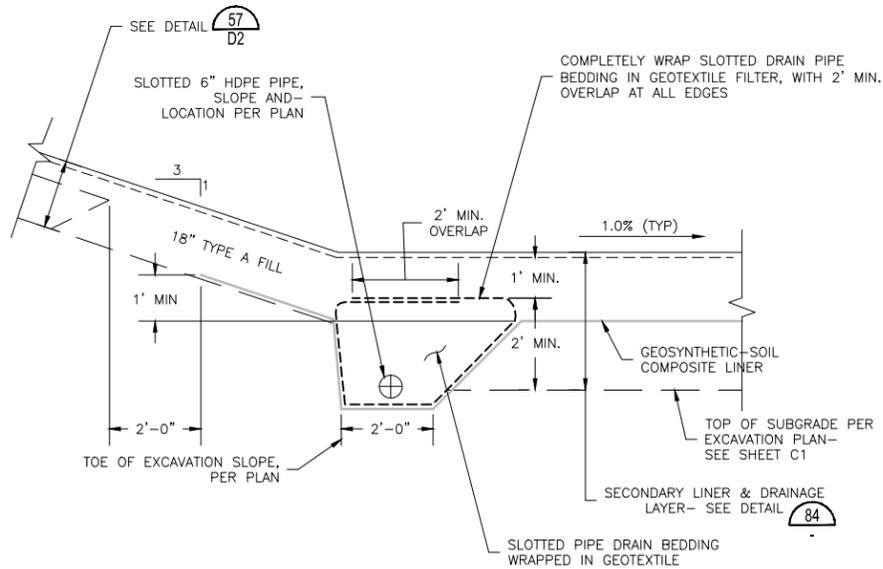


54 30" CASING - TYP. SECTION  
SCALE: 1" = 1'-0'

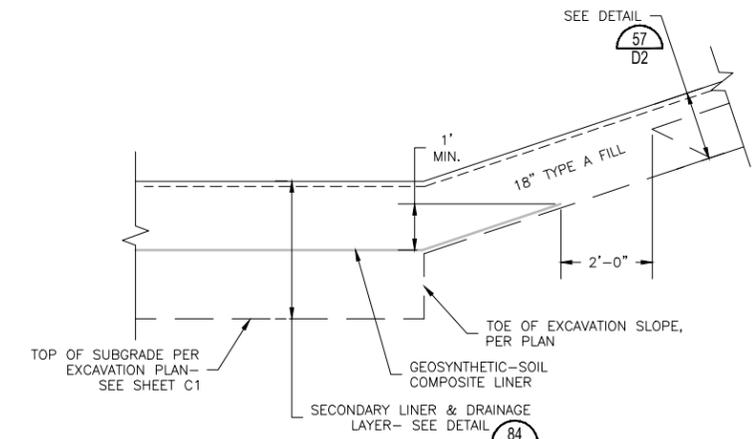
- NOTES:
- SUPPORT PIPES WITH 2"x6" WOOD SKIDS AT 20' SPACING TO ASSURE PIPES ARE NOT IN CONTACT WITH CASING OR EACH OTHER. ATTACH TO SKIDS WITH STAINLESS STEEL BANDS.
  - GROUT/CONCRETE TO BE INSTALLED IN 3 LIFTS/POURS. EACH POUR SHALL USE APPROXIMATELY 13.4 CY OF MATERIAL. CONTRACTOR TO PROVIDE LOAD TICKETS TO VERIFY QUANTITY.



84 STORAGE POND #2 - SECONDARY LINER AND PRIMARY COLLECTION TRENCH  
C1 SCALE: 1/2" = 1'-0"



85 STORAGE POND #2 - TOE DRAIN COLLECTION TRENCH  
C1 SCALE: 1/2" = 1'-0"



86 STORAGE POND #2 - EDGE OF SECONDARY LINER  
SCALE: 1/2" = 1'-0"

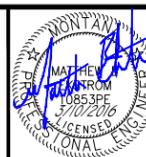
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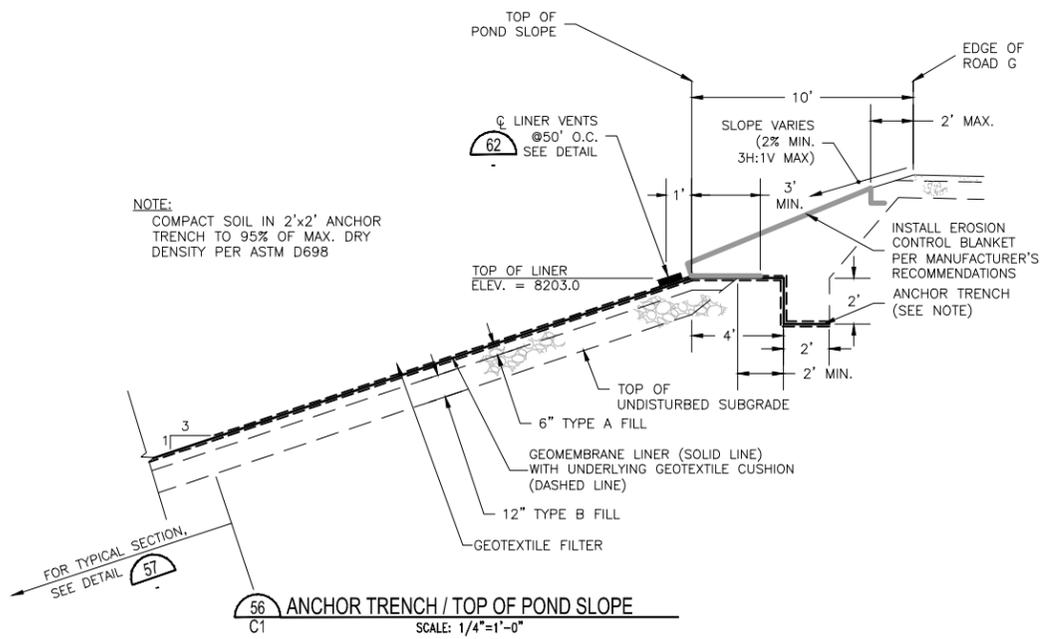
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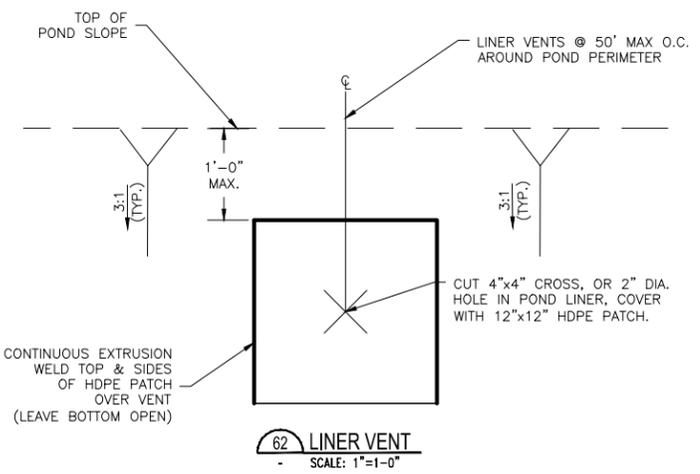
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APPR. BY: JRN  
DATE: 03/2016  
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DATE:

YELLOWSTONE MOUNTAIN CLUB  
BIG SKY MONTANA  
EFFLUENT STORAGE POND - DETAIL SHEET #1

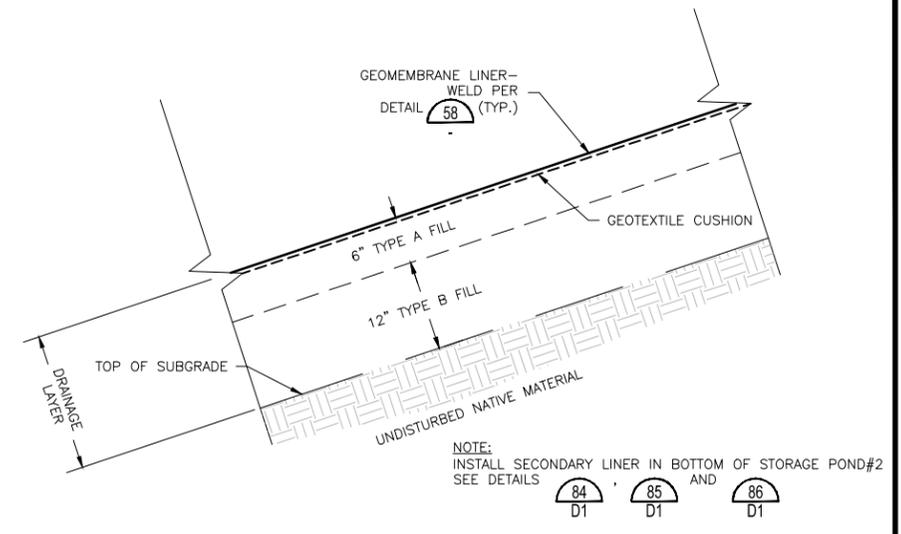
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SHEET NUMBER 3  
DRAWING NUMBER D1



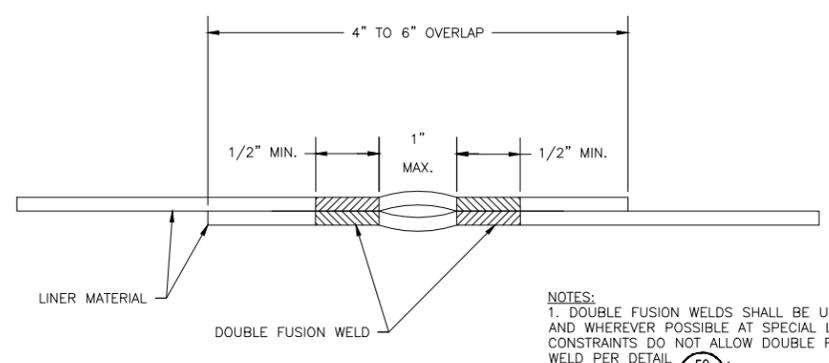
56 ANCHOR TRENCH / TOP OF POND SLOPE  
SCALE: 1/4"=1'-0"



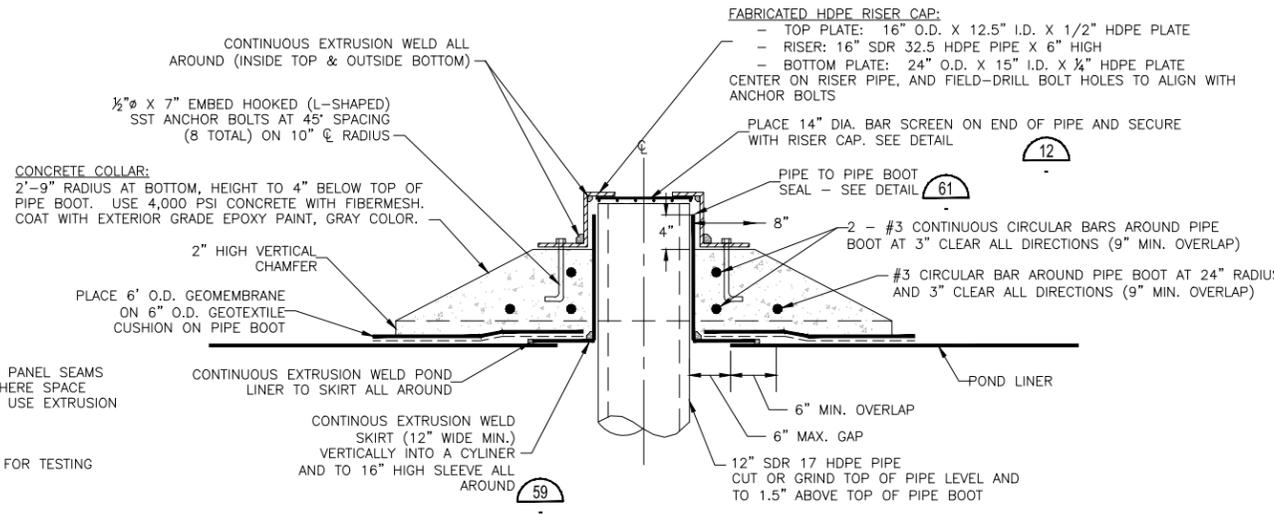
62 LINER VENT  
SCALE: 1"=1'-0"



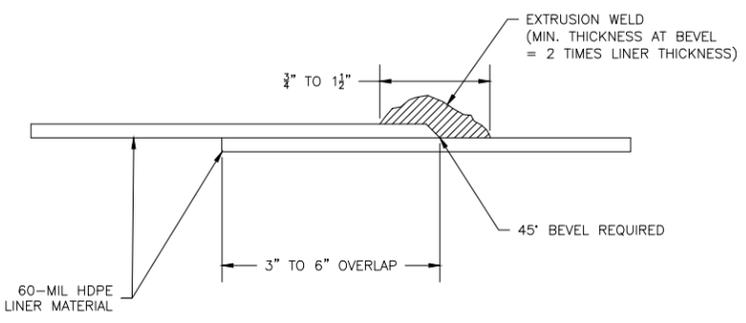
57 TYP. SECTION - POND LINER (SIDESLOPE)  
SCALE: 1"=1'-0"



58 DOUBLE FUSION WELD  
SCALE: NTS

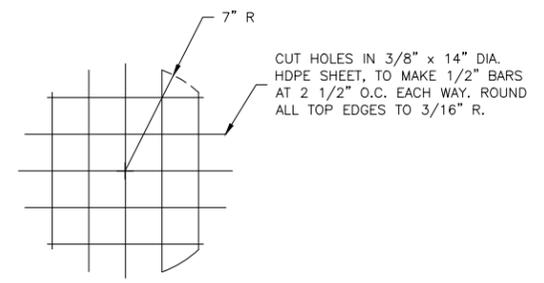


59 PIPE BOOT - GRAVITY OUTLET RISER  
SCALE: 1" = 1'-0"

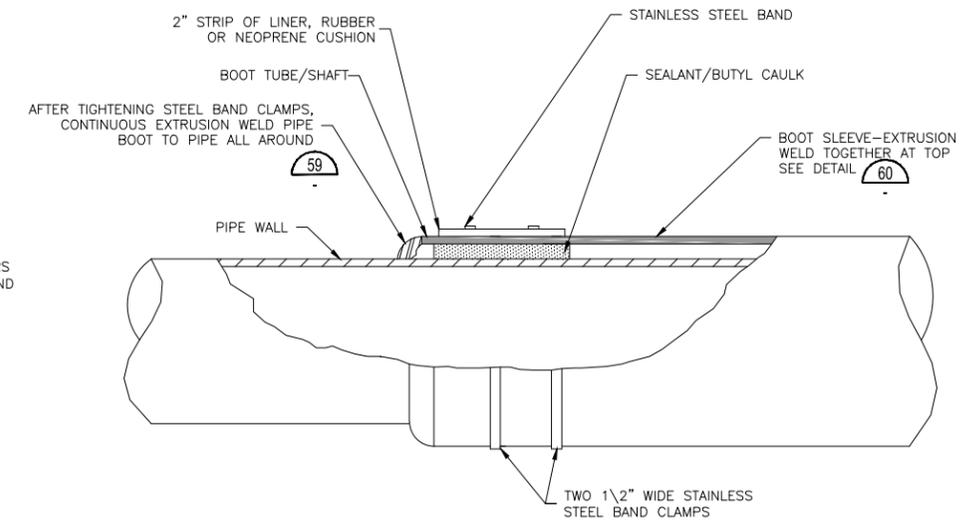


- NOTES:
- EXTRUSION WELDS SHALL ONLY BE USED AT SPECIAL LOCATIONS WHERE SPACE CONSTRAINTS WILL NOT ALLOW ROOM FOR DOUBLE FUSION WELDING EQUIPMENT.
  - TACK WELD LINER SHEETS TOGETHER PRIOR TO WELDING.
  - GRINDING NOT TO EXCEED 1/4" PAST "SQUEEZE-OUT" ON EITHER SIDE. PROPER CARE SHOULD BE TAKEN IN NOT REMOVING TOO MUCH MATERIAL WHEN GRINDING.
  - VACUUM TESTING IS THE NON-DESTRUCTIVE SEAM TEST METHOD TO BE USED FOR EXTRUSION WELDS.

59 EXTRUSION WELD  
SCALE: NTS



12 BAR SCREEN  
SCALE: 1" = 6"



61 PIPE TO PIPE BOOT SEAL  
SCALE: NTS

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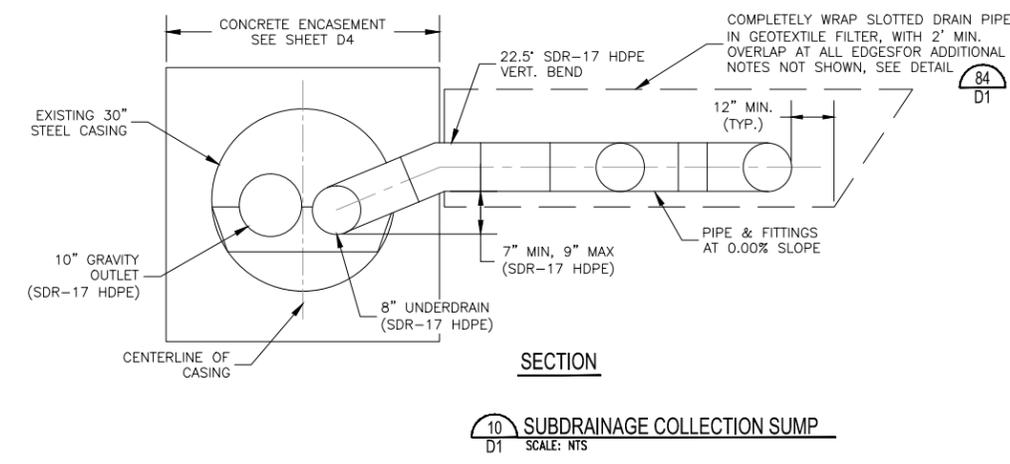
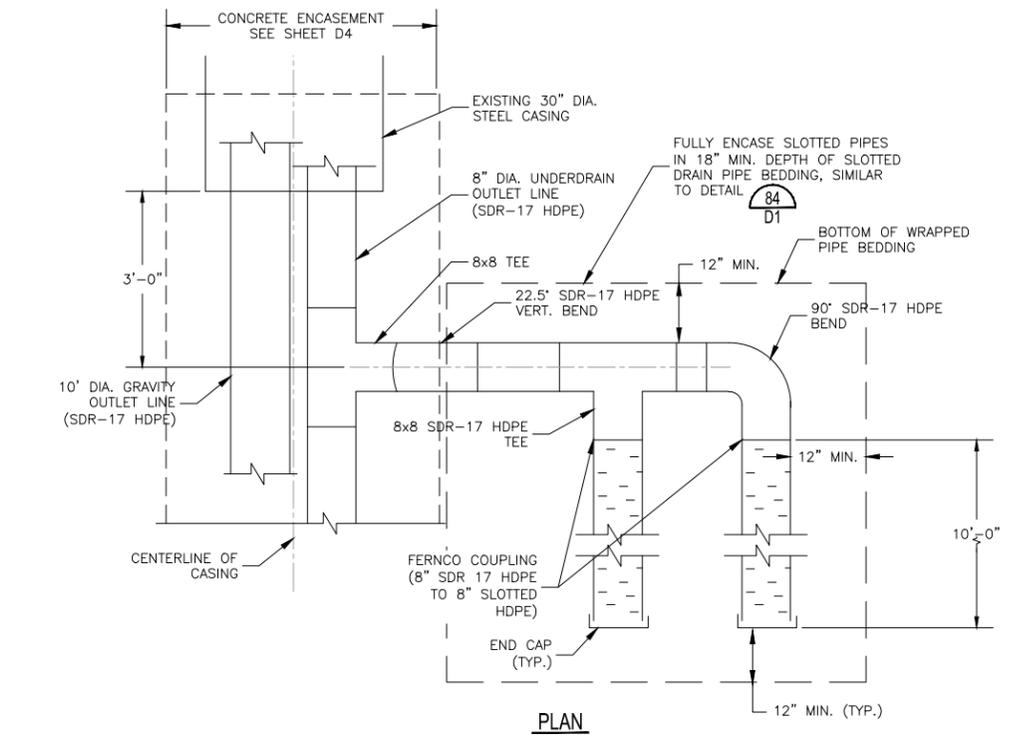
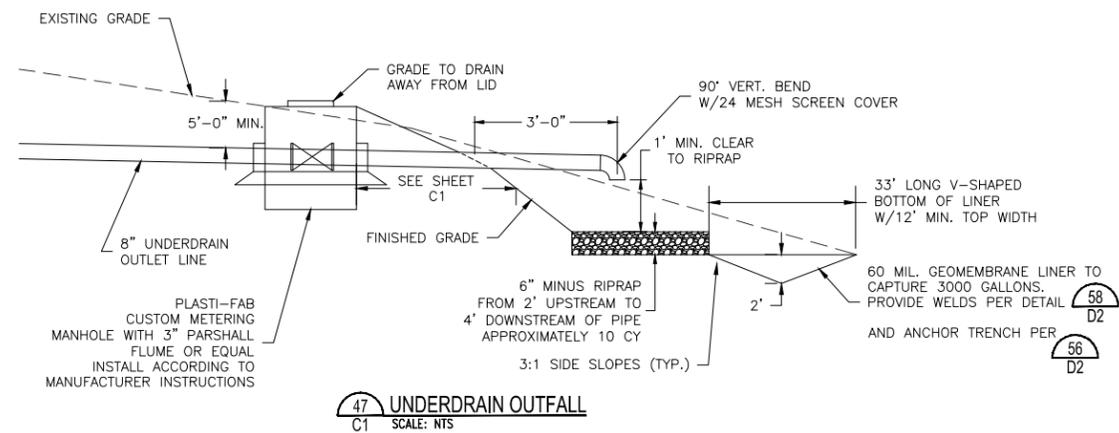
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YELLOWSTONE MOUNTAIN CLUB  
BIG SKY MONTANA

EFFLUENT STORAGE POND - DETAIL SHEET #2

PROJECT NUMBER 3017.133  
SHEET NUMBER 4  
DRAWING NUMBER D2



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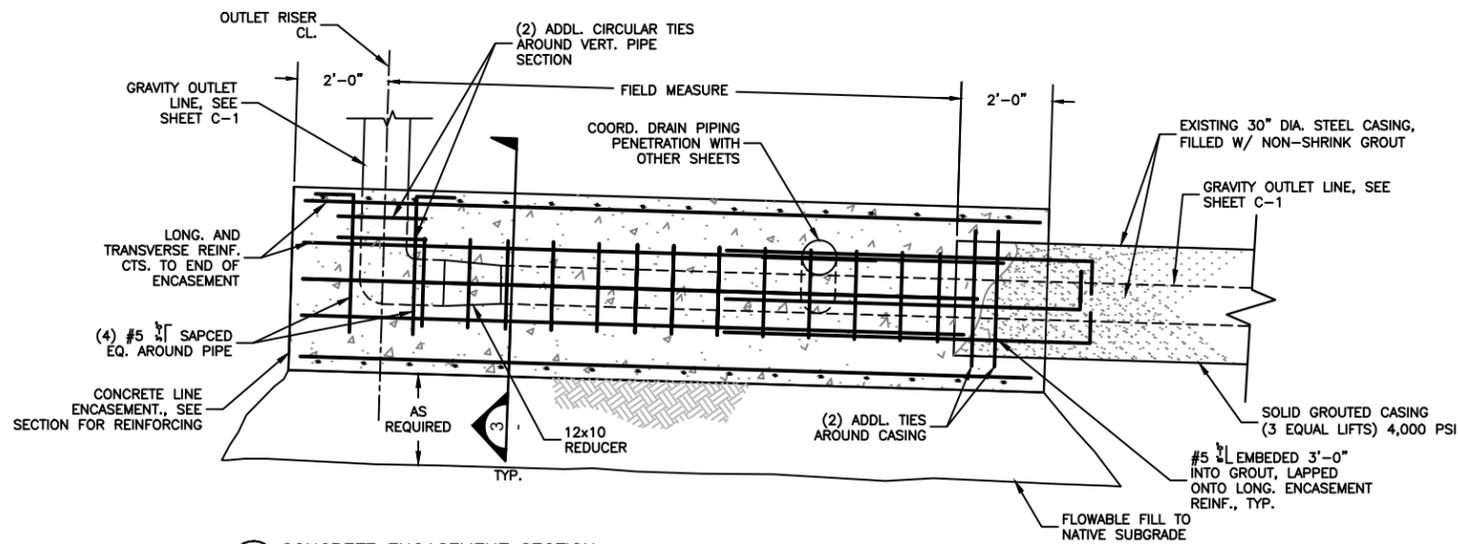
PROFESSIONAL ENGINEER  
MONTANA  
MORRISON MAIERLE  
3/16/2016  
LICENSED PROFESSIONAL ENGINEER

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APPR. BY: JRN	
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DATE:	

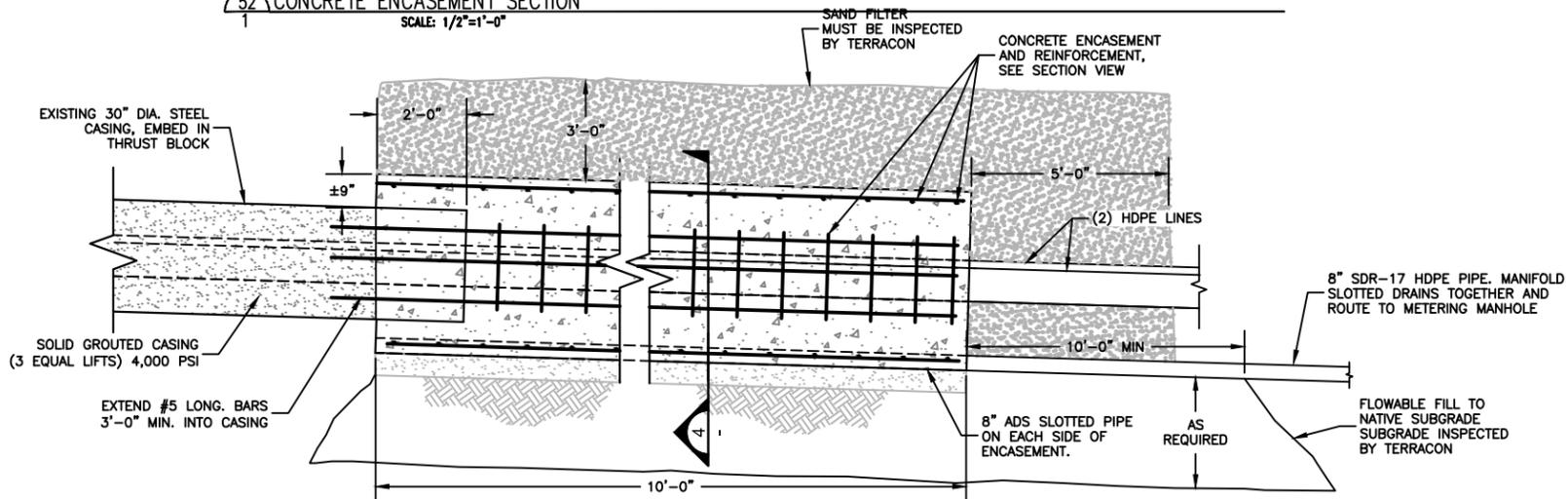
**BIG SKY**      **YELLOWSTONE MOUNTAIN CLUB**      **MONTANA**

**EFFLUENT STORAGE POND - DETAIL SHEET #3**

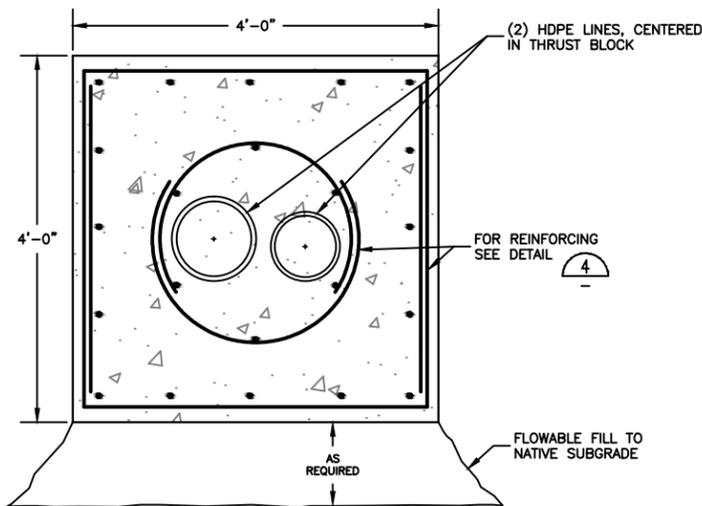
PROJECT NUMBER 3017-133
SHEET NUMBER 5
DRAWING NUMBER <b>D3</b>



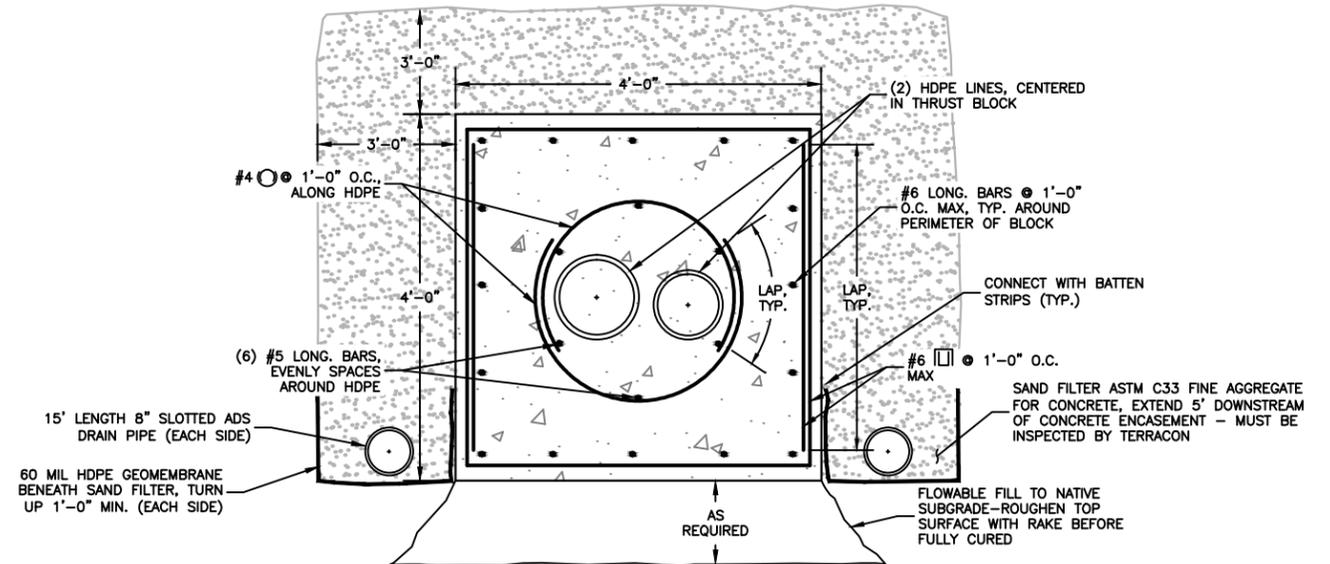
52 CONCRETE ENCASEMENT SECTION  
SCALE: 1/2"=1'-0"



2 CONCRETE BULKHEAD SECTION  
SCALE: 1/2"=1'-0"



3 PIPE ENCASEMENT/THRUST BLOCK SECTION  
SCALE: 1"=1'-0"



4 PIPE ENCASEMENT/THRUST BLOCK SECTION  
SCALE: 1"=1'-0"

**CAST-IN-PLACE CONCRETE NOTES:**

1. CONCRETE PROPERTIES (SEE SPECIFICATIONS FOR ADD'L REQU.):

CAST-IN-PLACE CONCRETE	THRUST BLOCK / ENCASEMENT
MINIMUM 28 DAY COMPRESSIVE STRENGTH	4000 PSI
MAXIMUM WATER-CEMENT RATIO (BY WT.)	0.45
MAXIMUM AGGREGATE SIZE	3/4"
PERCENT RANGE OF AIR CONTENT	6.5% ± 1.5%
MAXIMUM SLUMP	3" ***

\*\*\* MAXIMUM SLUMP MAY BE INCREASED TO 8" W/ THE USE OF WATER-REDUCING ADMIXTURES TO MAINTAIN THE SPECIFIED W/C RATIO.

- CONCRETE PROPERTIES: F'C = 4000 PSI
- ALL CONCRETE REINFORCING SHALL CONFORM TO ASTM A615, GRADE 60, EXCEPT FOR REINFORCING INDICATED AS REQUIRING WELDING, WHICH SHALL CONFORM TO ASTM A706, GR.60.
- CLEARANCE FOR REINFORCING BARS, UNLESS SHOWN OTHERWISE, SHALL BE:  
WHEN PLACED ON GROUND: --- 3"  
EXPOSED TO WATER, WEATHER, BACKFILL OR CONDENSATION:  
#5 BAR OR SMALLER -----1-1/2"  
#6 BAR OR LARGER -----2"
- ALL BENDS, UNLESS OTHERWISE SHOWN, SHALL BE A 90 DEGREE STANDARD HOOK AS DEFINED IN THE LATEST EDITION OF ACI 318. DETAIL ALL REINFORCING IN ACCORDANCE WITH ACI 315.
- ALL REINFORCING LAPS, UNLESS OTHERWISE NOTED, SHALL BE AS FOLLOWS:

DETAIL OF REINFORCEMENT - LAP LENGTHS \*\*

BAR SIZE	#3	#4	#5	#6	#7	#8	#9	#10	#11	
4000 PSI										
GR 60	TOP BAR *	1'-7"	2'-1"	2'-7"	3'-1"	4'-6"	5'-2"	5'-10"	6'-7"	7'-3"
	OTHER BAR	1'-4"	1'-7"	2'-0"	2'-2"	2'-9"	3'-6"	4'-6"	5'-1"	5'-8"

- \* TOP BARS SHALL BE DEFINED AS ANY HORIZONTAL BARS PLACED SUCH THAT MORE THAN 12" OF FRESH CONCRETE IS CAST IN THE MEMBER BELOW THE BAR, IN ANY SINGLE POUR. HORIZONTAL WALL BARS ARE CONSIDERED TOP BARS.
- \*\* INCREASE LAP LENGTHS SHOWN ABOVE BY 25% WHERE BARS ARE SPACED CLOSER THAN 6" O.C. OR WHERE EDGE OF BAR MEASURED IN DIRECTION OF SPACING IS LESS THAN 3" FROM FACE OF MEMBER.
- TOLERANCES IN PLACING REINFORCEMENT SHALL BE: +/- 3/8 IN. FOR MEMBERS WITH D LESS THAN 8 IN. +/- 1/2 IN. FOR MEMBERS WITH D GREATER THAN 8 IN. WHERE D IS THE DISTANCE FROM THE OPPOSITE FACE OF CONCRETE TO THE CENTER OF THE REINFORCING.
  - METAL CLIPS OR SUPPORTS SHALL NOT BE PLACED IN CONTACT WITH THE FORMS OR THE SUBGRADE. CONCRETE BLOCKS OR DOBBIES SUPPORTING BARS ON SUBGRADE SHALL BE IN SUFFICIENT NUMBERS TO SUPPORT THE BARS WITHOUT SETTLEMENT, BUT IN NO CASE SHALL SUCH SUPPORT BE CONTINUOUS.
  - PROVIDE SUPPORTS FOR REINFORCING TO MAINTAIN BAR POSITION IN CONCRETE.
  - DOWELS SHALL BE THE LENGTH INDICATED. DOWELS SHALL BE WIRED IN POSITION PRIOR TO POURING CONCRETE.
  - COLD WEATHER CONCRETING SHALL BE IN ACCORDANCE WITH ACI 306.
  - CASING GROUT SHALL BE 5,000 PSI HS GROUT BY CONCRETE MATERIALS, OR EQUAL. APPROVED SUBMITTALS SHALL BE OBTAINED FROM ENGINEER PRIOR TO BEGINNING WORK. (SEE APPENDIX D OF SPECIFICATIONS).

NO.	DESCRIPTION	DATE	BY
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DSGN. BY: NJM  
APPR. BY: JRN  
DATE: 03/2016  
Q.C. REVIEW BY:  
DATE:

BIG SKY YELLOWSTONE MOUNTAIN CLUB MONTANA  
EFFLUENT STORAGE POND - DETAIL SHEET #4

PROJECT NUMBER 3017.133  
SHEET NUMBER 6  
DRAWING NUMBER D4