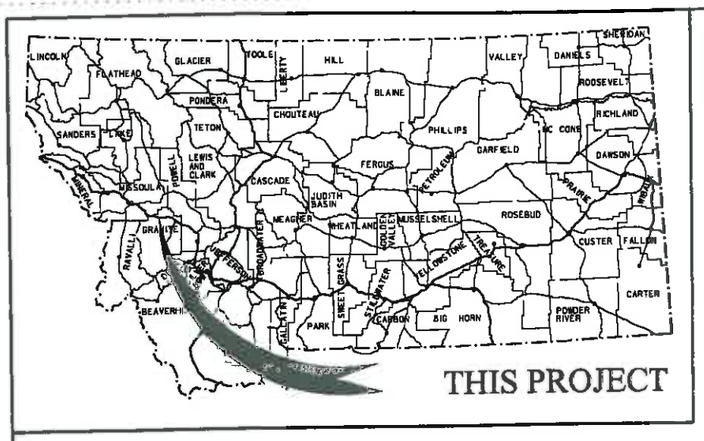


MONTANA DEPARTMENT OF TRANSPORTATION

FEDERAL AID PROJECT IM 90-3(110)143
WASTEWATER TREATMENT SYSTEM
BEARMOUTH REST AREA PHASE 1
GRANITE COUNTY

PRESENT A.D.T.	= N/A
LETTING A.D.T.	= N/A
DESIGN A.D.T.	= N/A
D.H.V.	= N/A
TRUCKS	= N/A
V.	= N/A
18 KIP ESAL'S	= N/A
GROWTH RATE	= N/A

CSF= 0.99922734

LENGTH 0.0 FEET

SCALES

VERTICAL: 1" : 10

HORIZONTAL: 1" : 50

CROSS SECTION - HORIZONTAL & VERTICAL: 1" : 10

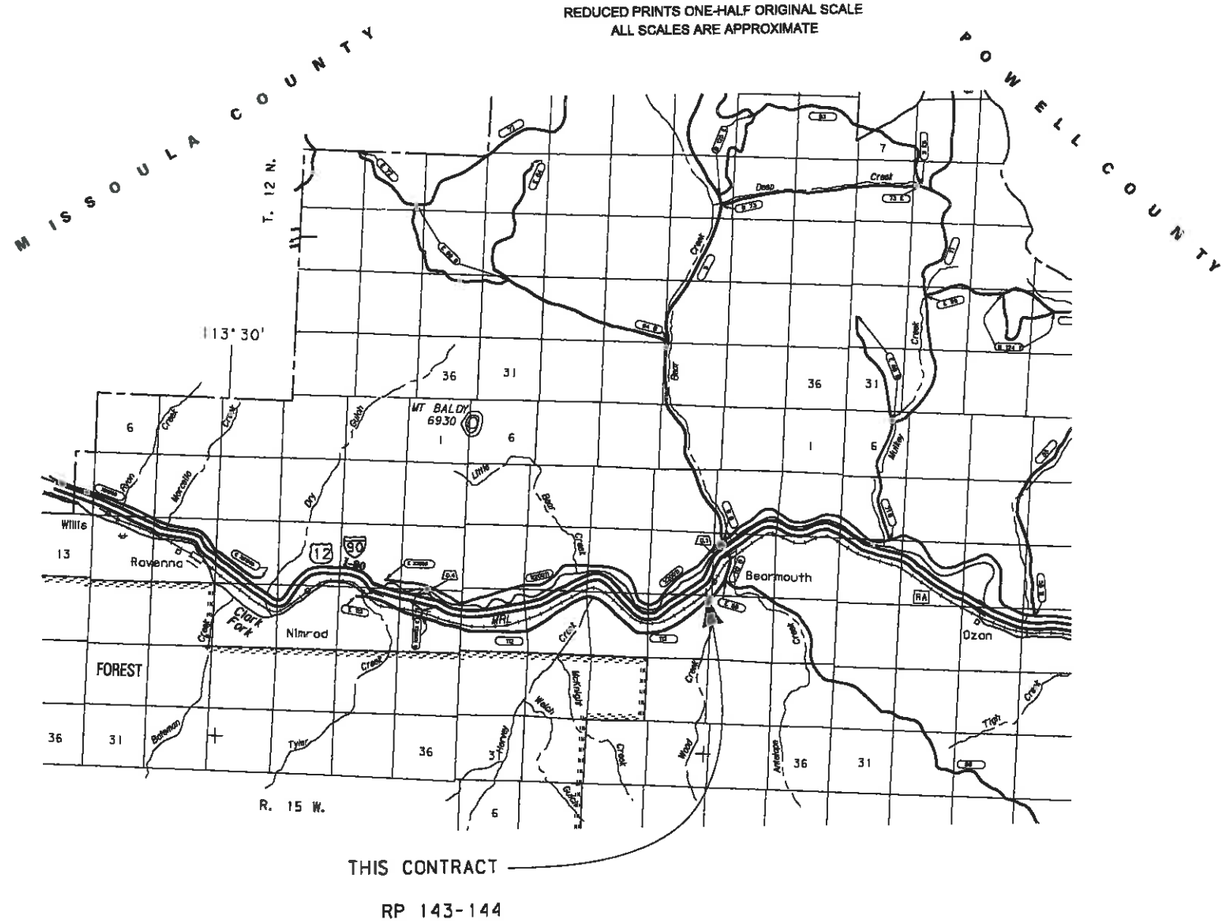
REDUCED PRINTS ONE-HALF ORIGINAL SCALE

ALL SCALES ARE APPROXIMATE

RECEIVED
SEP 11 2012
By KM

APPROVED
Montana Department of
Environmental Quality
Permitting and Compliance Division
Rachel Clark 9-18-12
Reviewer Date

RECEIVED
SEP 18 2012
MT DEQ PUBLIC WATER
& SUBDIVISION BUREAU



PLANS PREPARED BY
GreatWest engineering

RELATED PROJECTS

ASSOCIATED PROJECT AGREEMENT NUMBERS	
R/W & I.C.	
P.E.	IM 90-3(109)143

GREAT WEST ENGINEERING, INC.	
BY Todd K. Kuxhaus	MONTANA TODD K. KUXHAUS 14589 PE PROFESSIONAL ENGINEER
DATE 9/10/2012	

MONTANA
DEPARTMENT OF TRANSPORTATION

RECEIVED :

BY _____ _____
CONSULTANT DESIGN ENGINEER DATE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED :

_____ _____
DIVISION ADMINISTRATOR DATE

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	...\4449\RD\4449002rdTTL201.DGN
2		9/10/2012
1		8:27:58 AM clalty

DEQ REVIEW SUBMITTAL

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NOTES

TEMPORARY EROSION AND SEDIMENT CONTROL

IF SITUATIONS ARE OBSERVED DURING CONSTRUCTION THAT MAY POTENTIALLY IMPACT WATER QUALITY, INCLUDING WETLAND AREAS, UTILIZE BEST MANAGEMENT PRACTICES (BMP) AND/OR TEMPORARY EROSION CONTROL MEASURES AS NECESSARY TO PROTECT THE RESOURCE.
REFER TO SECTION 208 OF THE MDT DETAILED DRAWINGS FOR EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES. CURRENT EDITION

ABBREVIATIONS

@	AT
Δ	ANGLE OF DEFLECTION, DELTA ANGLE
<PT	ANGLE POINT
AB	ANCHOR BOLT
ABDN	ABANDON
AC	ASBESTOS CONCRETE
ADDN	ADDITIONAL
ADJ	ADJACENT
AFF	ABOVE FINISHED FLOOR
ALT	ALTERNATE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
APVD	APPROVED
ARCH	ARCHITECTURE, ARCHITECTURAL
ASPH	ASPHALT
AVE	AVENUE
AVG	AVERAGE
BFV	BUTTERFLY VALVE
BLDG	BUILDING
BLK	BLOCK
BLVD	BOULEVARD
BM	BEAM, BENCHMARK
BOT	BOTTOM
BRG	BEARING
BRKT	BRACKET
BVC	BEGIN VERTICAL CURVE
C-C	CENTER TO CENTER
CHAN	CHANNEL
CHK	CHECK
CI	CAST IRON
CIPC	CAST-IN-PLACE CONCRETE
CIRC	CIRCULAR
CJ	CONSTRUCTION JOINT, CONTROL JOINT
℄	CENTER LINE
CLR	CLEAR, CLEARANCE
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNITS
CO	CLEANOUT
COL	COLUMN
CONC	CONCRETE
CONSTR	CONSTRUCTION
CONT	CONTINUE, CONTINUED, CONTINUOUS
CONTR	CONTRACTOR
COORD	COORDINATE
CP	CONTROL PANEL, CONTROL POINT
CPLG	COUPLING
CTR	CENTER
CTV	CABLE TELEVISION
CU	CUBIC, COPPER
CF	CUBIC FEET
CULV	CULVERT
CY	CUBIC YARD
DET	DETAIL
DI	DUCTILE IRON, DRAIN INLET
DIA, ø	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DR	DRIVE
DWG	DRAWING
E	EAST
EA	EACH
EL, ELEV	ELEVATION
ELB	ELBOW
ELEC	ELECTRIC, ELECTRICAL
ENCL	ENCLOSE
ENGR	ENGINEER
EOP	EDGE OF PAVEMENT
EQ	EQUAL, EQUALLY
EQ SP	EQUALLY SPACED
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
EVC	END VERTICAL CURVE
EW	EACH WAY
EXC	EXCAVATE
EXP	EXPANSION
EXP JT	EXPANSION JOINT
EXST	EXISTING
FCV	FLOW CONTROL VALVE
FD	FLOOR DRAIN
FDN	FOUNDATION
FES	FLARED END SECTION
FET	FLARED END TERMINAL
FF	FINISHED FLOOR
FG	FINISH GRADE
FHYD	FIRE HYDRANT
FJ	FLANGE JOINT
FL	FLOW LINE
FLEX	FLEXIBLE
FM	FORCEMAIN
FT	FOOT, FEET
FO	FIBER OPTIC
FTG	FOOTING, FITTING
G	NATURAL GAS
GA	GAGE, GAUGE
GAL	GALLON
GALV	GALVANIZED
GND	GROUND
GVL	GRAVEL
HB	HOSE BIB
HDPE	HIGH DENSITY POLYETHYLENE
HOR, HORIZ	HORIZONTAL
HWY	HIGHWAY
HYD	HYDRANT
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IN	INCH
INV	INVERT
JB	JUNCTION BOX
JT	JOINT
K	RATE OF VERTICAL CURVATURE
LBS	POUNDS
LF	LINEAR FEET
LN	LANE
LPG	LIQUID PROPANE GAS
LT	LEFT
MAX	MAXIMUM
MD	MEASURE DOWN
MFD	MANUFACTURED
MFR	MANUFACTURE, MANUFACTURER
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MOV	MOTOR OPERATED VALVE
MPWSS	MONTANA PUBLIC WORKS STANDARD SPECIFICATIONS
N	NORTH
NE	NORTHEAST
NG	NATURAL GAS
NIC	NOT IN CONTRACT
NO	NUMBER
NOM	NOMINAL
NTS	NOT TO SCALE
NW	NORTHWEST
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF	OVERFLOW
OH	OVERHEAD
OHP	OVERHEAD POWER
OHT	OVERHEAD TELEPHONE
OPNG	OPENING
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PE	PLAIN END, POLYETHYLENE
PERP	PERPENDICULAR
PI	POINT OF INTERSECTION
PL	PROPERTY LINE
PNL	PANEL
PRC	POINT OF REVERSE CURVATURE
PREFAB	PREFABRICATED
PRELIM	PRELIMINARY
PREP	PREPARE, PREPARATION
PROP	PROPERTY
PRV	PRESSURE REDUCING VALVE
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT, POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
R, RAD	RADIUS
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDCR	REDUCER
REBAR	REINFORCEMENT BAR
REF	REFERENCE
REINF	REINFORCE
REQD	REQUIRED
RR	RAILROAD
RST	REINFORCING STEEL
RT	RIGHT
R/W	RIGHT-OF-WAY
S	SOUTH, SANITARY SEWER
SAN	SANITARY
SCH	SCHEDULE
SD	STORM DRAIN
SDWK	SIDEWALK
SE	SOUTHEAST
SECT	SECTION
SF	SQUARE FOOT
SHT	SHEET
SIM	SIMILAR
SLP	SLOPE
SPEC	SPECIFICATION
SQ	SQUARE
SSTL	STAINLESS STEEL
STA	STATION
SS	SANITARY SEWER SERVICE
STD	STANDARD
ST	STREET
STL	STEEL
STRUCT	STRUCTURE
SW	SOUTHWEST
SYM	SYMMETRICAL
TB	THRUST BLOCK
TBC	TOP BACK OF CURB
TBM	TEMPORARY BENCH MARK
TEL	TELEPHONE
TEMP	TEMPORARY
THRU	THROUGH
TYP	TYPICAL
UG	UNDERGROUND
UGP	UNDERGROUND POWER
UGT	UNDERGROUND TELEPHONE
UTIL	UTILITY
V	VALVE, VOLT
VB	VALVE BOX
VERT	VERTICAL
VOL	VOLUME
W	WEST, WATER
WTR	WATER
WD	WOOD
W/	WITH
W/O	WITHOUT
WL	WETLAND
WM	WIRE MESH, WATER METER
WS	WATERSTOP, WATER SURFACE, WATER SERVICE
WT	WEIGHT
WV	WATER VALVE
WWF	WELDED WIRE FABRIC
WWM	WELDED WIRE MESH
XFMR	TRANSFORMER
X-ING	CROSSING
XS	CROSS SECTION
YD	YARD

LEGEND

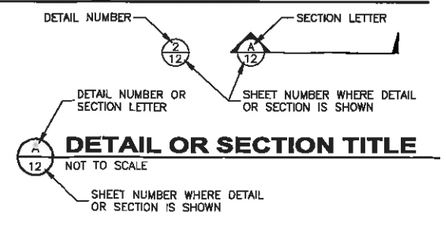
EXISTING	PROPOSED	DESCRIPTION
		MAJOR CONTOUR
		MINOR CONTOUR
OHT	OHT	OVERHEAD TELEPHONE
UGT	UGT	UNDERGROUND TELEPHONE
CTV	CTV	CABLE TELEVISION
FO	FO	FIBER OPTIC
G	G	NATURAL GAS
OHP	OHP	OVERHEAD POWER
UGP	UGP	UNDERGROUND POWER
S	S	SANITARY SEWER
SS	SS	SANITARY SEWER SERVICE
FM	FM	SANITARY SEWER FORCEMAIN
SD	SD	STORM DRAIN
		STORM CULVERT
W	W	WATER
WS	WS	WATER SERVICE
		CHAINLINK FENCE
X	X	BARBED WIRE FENCE
		WOOD FENCE
		PAVED ROAD
		GRAVEL ROAD
		PROPERTY/LOT LINE
		PROPERTY EASEMENT
		PROPERTY SETBACK
		RIGHT-OF-WAY
		CITY LIMIT/DISTRICT BOUNDARY
		RAILROAD
		DITCH
		WATER EDGE
WL		WETLAND
		BUILDING
		BENCHMARK
		CONTROL POINT
		PROPERTY PIN
		BORING
		MONITORING WELL
		TEST PIT
		BOLLARD
		MAIL BOX
		SIGN

EXISTING	PROPOSED	DESCRIPTION
		STUMP
		SHRUB/BUSH
		TREE-CONIFER
		TREE-DECIDUOUS
		TREE LINE
		COMMUNICATION MANHOLE
C	C	COMMUNICATION VAULT
T	T	TELEPHONE RISER
TV	TV	CABLE TV RISER
		NATURAL GAS METER
G	G	NATURAL GAS RISER
		NATURAL GAS VALVE
		LIGHT POLE
		STREET LIGHT POLE
P	P	POWER RISER
		PAD MOUNTED TRANSFORMER
P	P	POWER VAULT
		UTILITY POLE
		GUY WIRE
		SANITARY MANHOLE
		SANITARY CLEANOUT
		SANITARY LAMPHOLE
		STORM MANHOLE
		STORM ROUND INLET
		STORM SQUARE INLET
		STORM CATCH BASIN
		11.25° ELBOW
		22.50° ELBOW
		45° ELBOW
		90° ELBOW
		TEE
		CROSS
		CAP
		FIRE HYDRANT
		GATE VALVE
		REDUCER
		WATER METER
W	W	WELL
		CURB STOP
		FROST FREE HYDRANT

GENERAL NOTES:

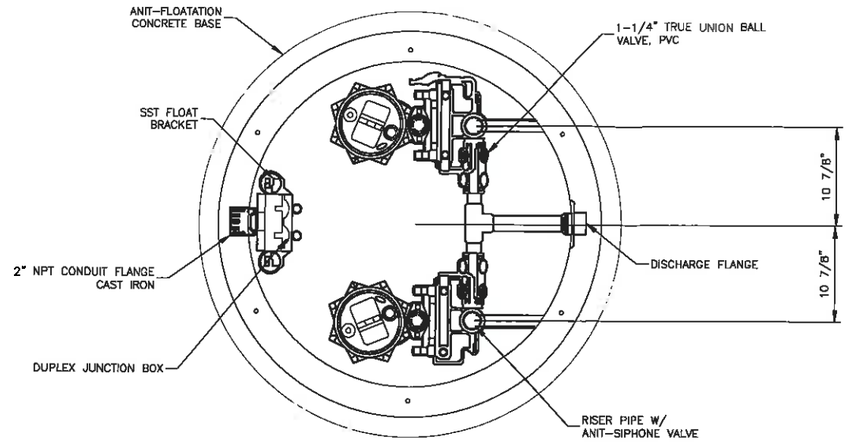
1. THIS IS A STANDARD LEGEND AND ABBREVIATION LIST. THEREFORE, NOT ALL SYMBOLS AND ABBREVIATIONS MAY BE USED ON THIS PROJECT.
2. EXISTING UNDERGROUND UTILITIES SHOWN ARE FROM THE BEST INFORMATION AVAILABLE. THIS INFORMATION IS APPROXIMATE AND MAY BE INCOMPLETE. FOR ACCURATE LOCATION, THE CONTRACTOR SHALL CONTACT, PRIOR TO EXCAVATION, THE UTILITIES UNDERGROUND LOCATION CENTER AT: 1-800-424-5555.

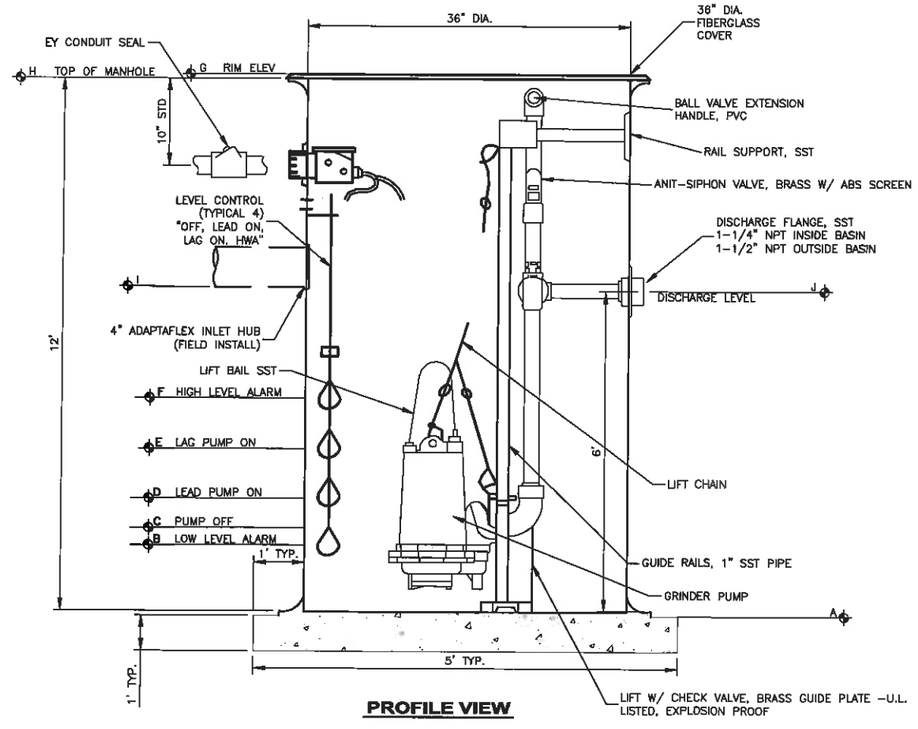
GENERAL DESIGN DESIGNATIONS:



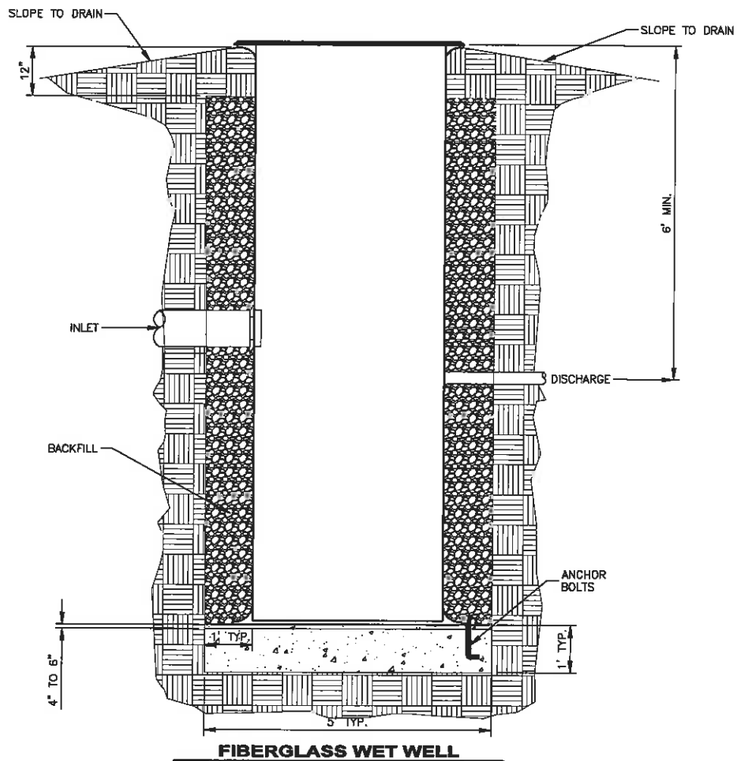
LEGEND, ABBREVIATIONS, & GENERAL NOTES WASTEWATER SYSTEM IMPROVEMENTS

3 / 2	MDT MONTANA DEPARTMENT OF TRANSPORTATION	$FILEABBREV$	DESIGNED BY C. DAVIS 8/2/12	MONTANA		WASTEWATER TREATMENT SYSTEM BEARMOUTH REST AREA	PROJECT NO. IM 90-3(110)143
		$DATE$	REVIEWED BY T. KUXHAUS, PE 8/2/12				
		$TIME$ $username$	CHECKED BY S. BRYANT, PE 8/2/12	GRANITE COUNTY		CSF = 0.99922734 / UPN 4449002	SHEET NO. 4





PROFILE VIEW



FIBERGLASS WET WELL

ELEVATION TABLE			
ELEV.	DESCRIPTION	ELEV	FUTURE
A	BOTTOM OF L.S.	3782.00	
B	LOW LEVEL ALARM	3784.25	3784.25
C	PUMP OFF	3784.50	3784.50
D	LEAD PUMP ON	3785.50	3786.25
E	LAG PUMP ON	3786.25	3786.75
F	HIGH LEVEL ALARM	3786.50	3787.00
G	RIM ELEVATION	3793.00	
H	TOP OF MANHOLE	3792.50	
I	INLET ELEVATION	3789.50	I.E. IN
J	OUTLET ELEVATION	3788.00	I.E. OUT

NOTES:

1) DUPLEX PACKAGE SYSTEM FOR 36" DIAMETER WET WELL AND 2" PIPING WITH 2" BY-PASS CONNECTION. PUMPS TO BE SIZED FOR 75 FT. TOTAL DYNAMIC HEAD AND A FLOW RATE OF 25 GALLONS PER MINUTE.

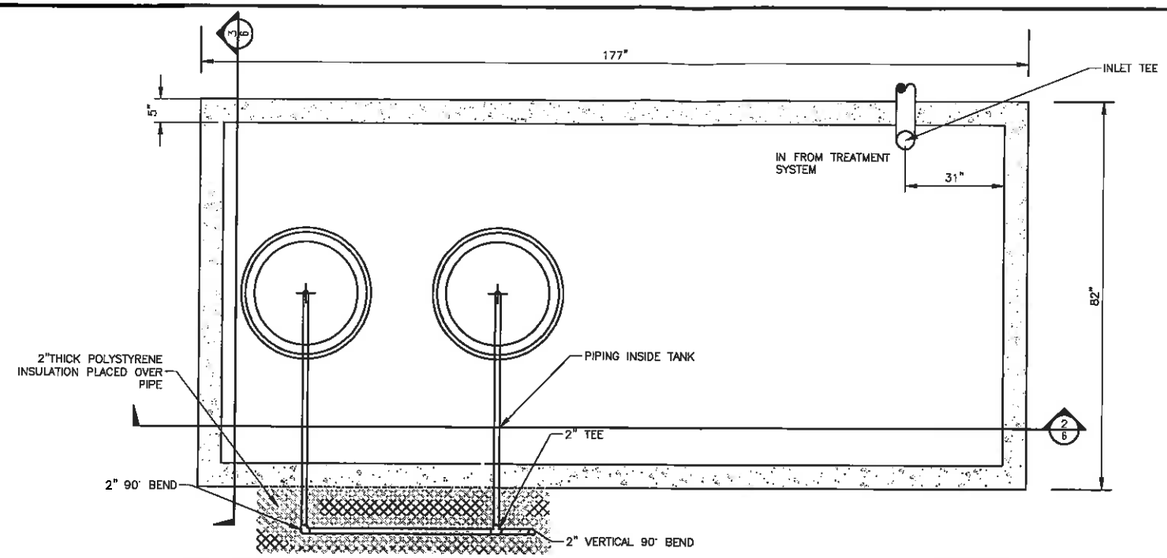
2) PUMPS, MOTORS AND ELECTRICAL WIRING TO BE EXPLOSION PROOF MEETING THE REQUIREMENTS OF NATIONAL ELECTRIC CODE, ARTICLE 500 FOR CLASS 1, DIVISION 1 LOCATIONS.

3) PACKAGED GRINDER PUMP SYSTEM SHALL BE MYERS MODEL WGX20 GRINDER SUBMERSIBLE PUMP OR APPROVED EQUAL.

1/5 **PACKAGE GRINDER PUMP SYSTEM DETAIL**
NOT TO SCALE

GRINDER PUMP STATION DETAILS WASTEWATER SYSTEM IMPROVEMENTS

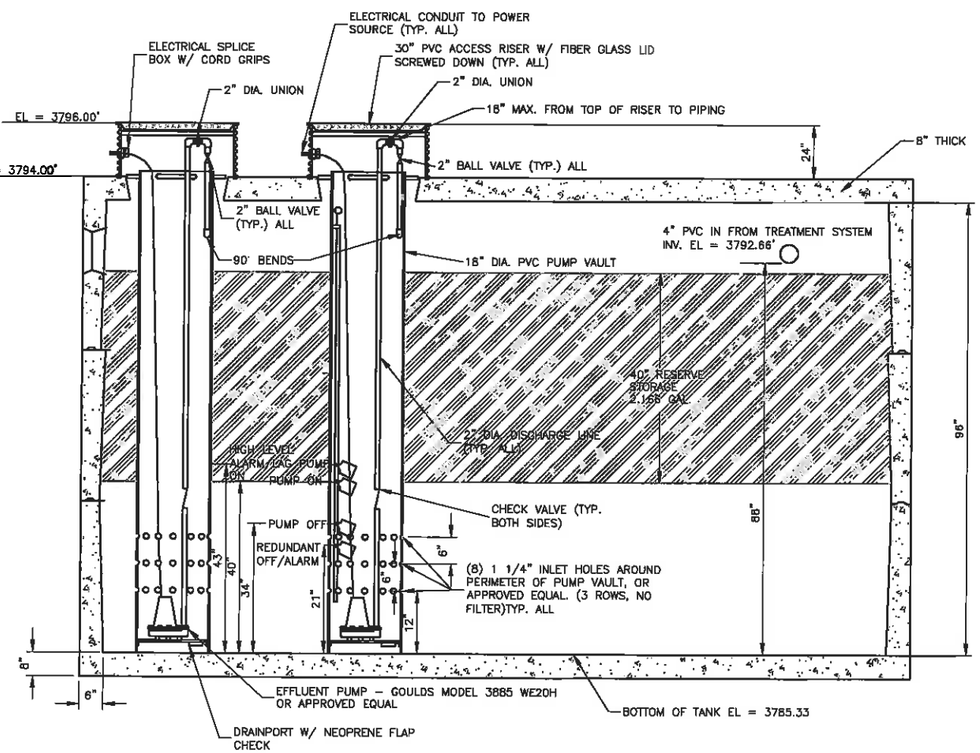
3 / 2	MDT MONTANA DEPARTMENT OF TRANSPORTATION	$FILEABBREV$	DESIGNED BY	C. DAVIS	8/2/12	MONTANA	WASTEWATER TREATMENT SYSTEM BEARMOUTH REST AREA	PROJECT NO. IM 90-3(110)143
		$DATE$	REVIEWED BY	T. KUXHAUS, PE	8/2/12	GRANITE COUNTY	CSF = 0.99922734 / UPN 4449002	SHEET NO. 5
		$TIME$ $username$	CHECKED BY	S. BRYANT, PE	8/2/12			



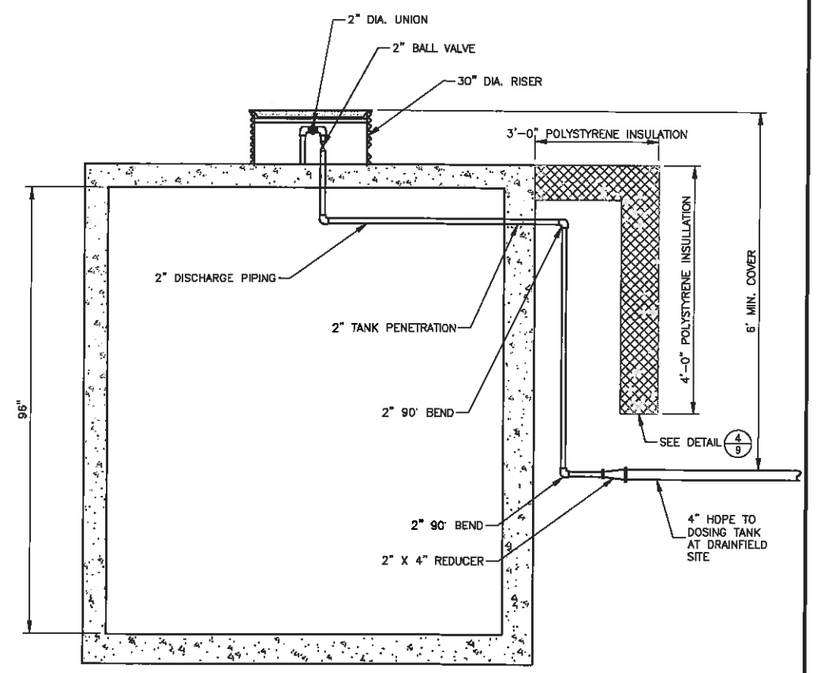
1/6 TREATMENT SYSTEM EFFLUENT PUMPING TANK TOP VIEW
4,000 GALLON SINGLE COMPARTMENT
NOT TO SCALE

NOTES:
1) EFFLUENT PUMP CONTROL PANEL SHALL BE MOUNTED WITHIN THE NEW REST AREA BUILDING.

2) EFFLUENT PUMPS SHALL BE CAPABLE OF PUMPING 70 GPM AT 79 FEET OF TOTAL DYNAMIC HEAD.



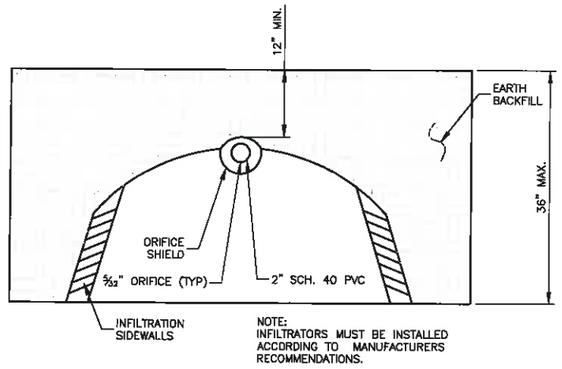
2/6 TREATMENT SYSTEM EFFLUENT PUMPING TANK PROFILE SECTION
4,000 GALLON SINGLE COMPARTMENT
NOT TO SCALE



3/6 EFFLUENT PUMPING TANK END SECTOIN
NOT TO SCALE

EFFLUENT PUMPING TANK
WASTEWATER SYSTEM IMPROVEMENTS

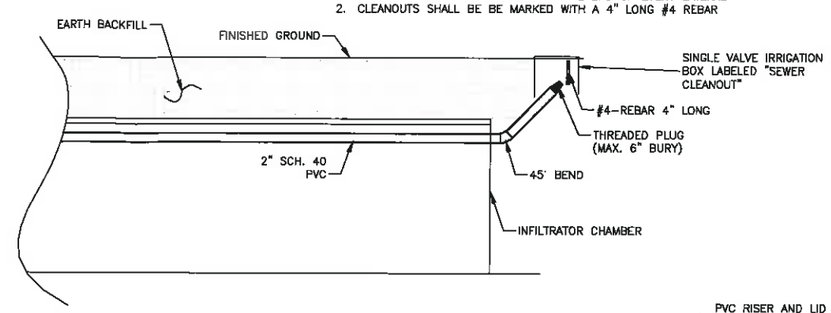
3 2	MDT MONTANA DEPARTMENT OF TRANSPORTATION	$FILEABBREV$	DESIGNED BY	C. DAVIS	8/2/12	MONTANA	WASTEWATER TREATMENT SYSTEM BEARMOUTH REST AREA	PROJECT NO. IM 90-3(110)143
		$DATE$	REVIEWED BY	T. KUXHAUS, PE	8/2/12			
		$TIME$ $username$	CHECKED BY	S. BRYANT, PE	8/2/12	GRANITE COUNTY	CSF = 0.99922734 / UPN 4449002	SHEET NO. 6



1/7 DOSED 36" INFILTRATOR CHAMBER

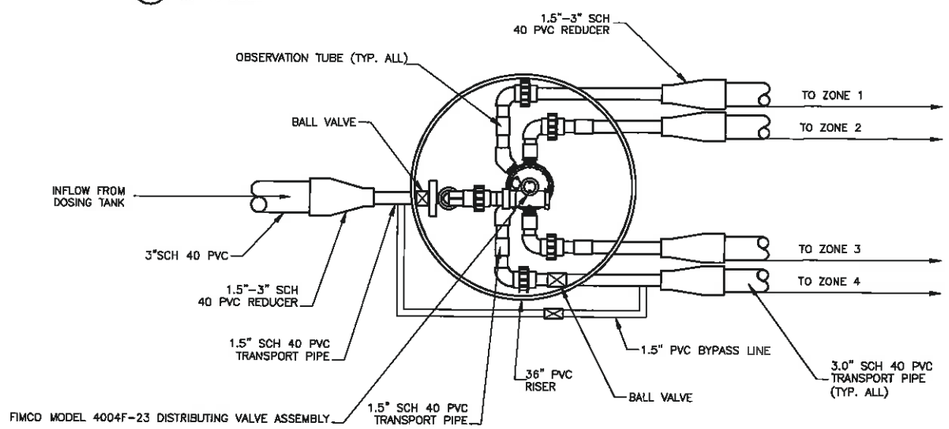
NOT TO SCALE

CLEANOUT NOTES:
1. CLEANOUTS MUST BE PROVIDED AT THE END OF EVERY LATERAL
2. CLEANOUTS SHALL BE BE MARKED WITH A 4" LONG #4 REBAR



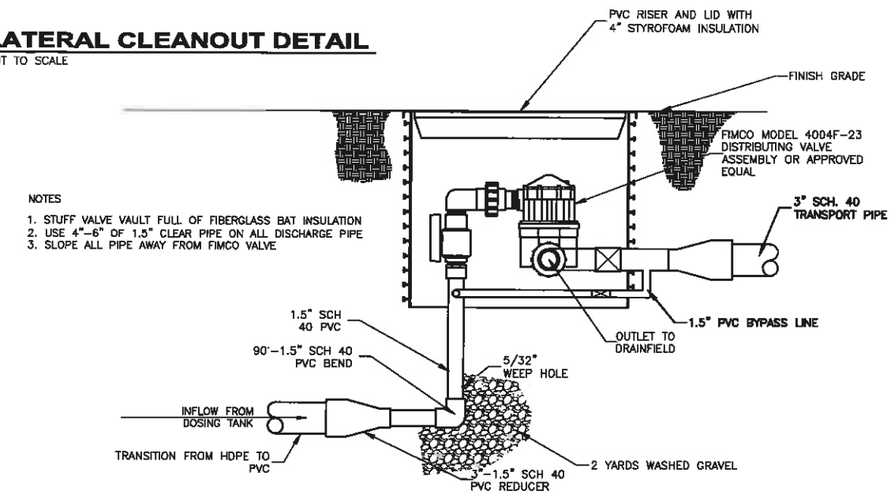
2/7 LATERAL CLEANOUT DETAIL

NOT TO SCALE



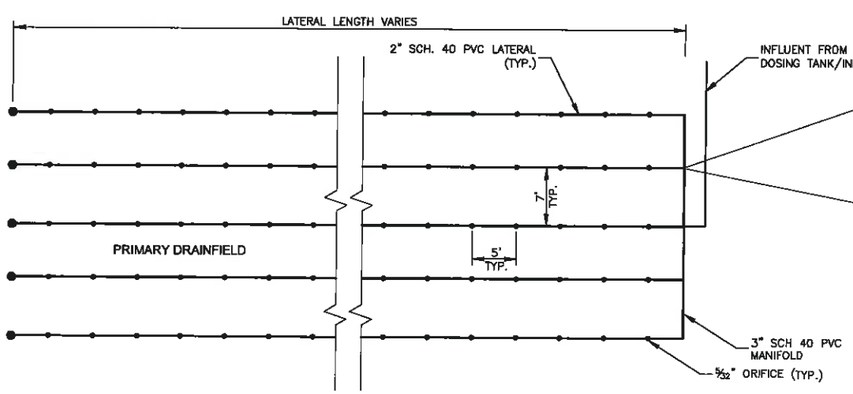
3/7 FIMCO DISTRIBUTING VALVE

NOT TO SCALE



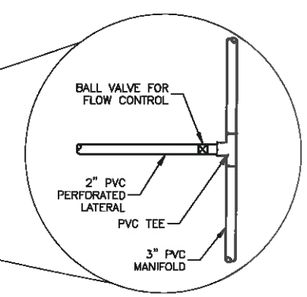
NOTES

1. STUFF VALVE VAULT FULL OF FIBERGLASS BAT INSULATION
2. USE 4"-6" OF 1.5" CLEAR PIPE ON ALL DISCHARGE PIPE
3. SLOPE ALL PIPE AWAY FROM FIMCO VALVE



4/7 DOSED DRAINFIELD LATERALS (SOUTH AREA)

NOT TO SCALE

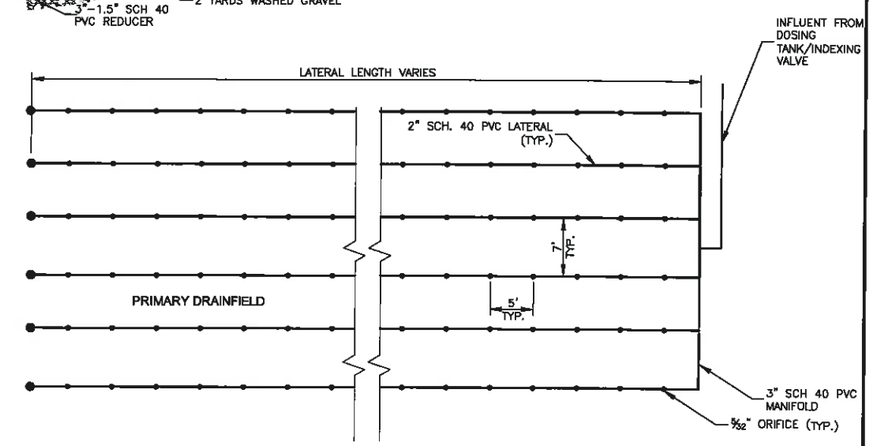


5/7 MANIFOLD/LATERAL CONNECTION

NOT TO SCALE

PRESSURE DISTRIBUTED LATERALS:

1. PLACE 18" LONG #4 REBAR AT EACH CORNER OF THE DRAINFIELD.
2. LATERALS AND TRENCHES SHALL BE LEVEL.
3. TRANSITION CONNECTIONS OF SEWER MATERIALS SHALL BE MADE BY ADAPTER FITTINGS OR ONE-PIECE MOLDED RUBBER COUPLINGS WITH APPROPRIATE BUSHINGS FOR THE RESPECTIVE MATERIALS. ALL FITTINGS MUST BE AT LEAST OF EQUIVALENT DURABILITY AND STRENGTH OF THE PIPE ITSELF.
4. SEE SHEET 12 FOR DRAINFIELD LAYOUT.

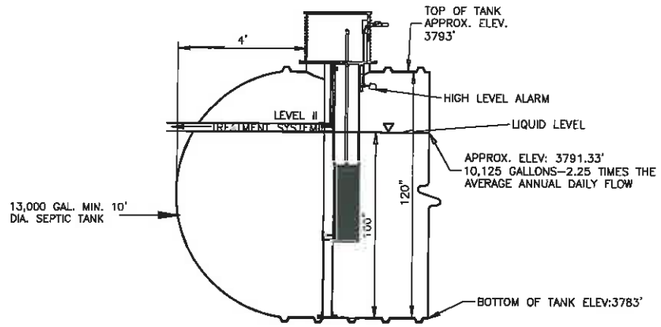


6/7 DOSED DRAINFIELD LATERALS (NORTH AREA)

NOT TO SCALE

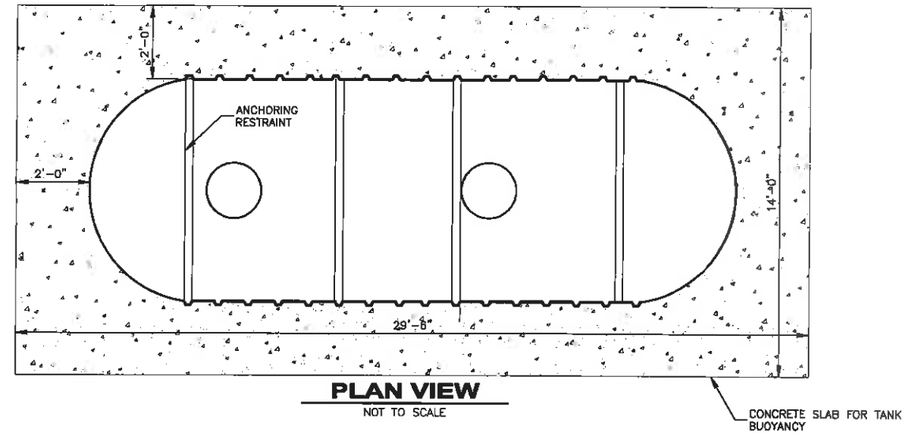
DRAINFIELD DETAILS WASTEWATER SYSTEM IMPROVEMENTS

3 / 2	MDT MONTANA DEPARTMENT OF TRANSPORTATION	$FILEABBREV$	DESIGNED BY	C. DAVIS	8/2/12	MONTANA	WASTEWATER TREATMENT SYSTEM BEARMOUTH REST AREA	PROJECT NO. IM 90-3(110)143
		$DATE$	REVIEWED BY	T. KUXHAUS, PE	8/2/12			
		$TIME$ $username$	CHECKED BY	S. BRYANT, PE	8/2/12	GRANITE COUNTY	CSF = 0.99922734 / UPN 4449002	SHEET NO. 7



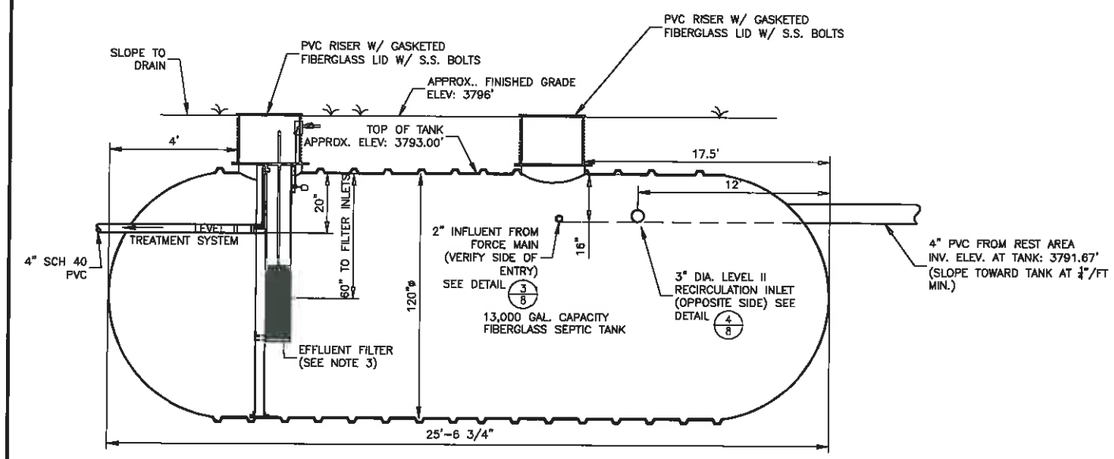
1/8 SEPTIC TANK HYDRAULIC PROFILE

NOT TO SCALE



PLAN VIEW

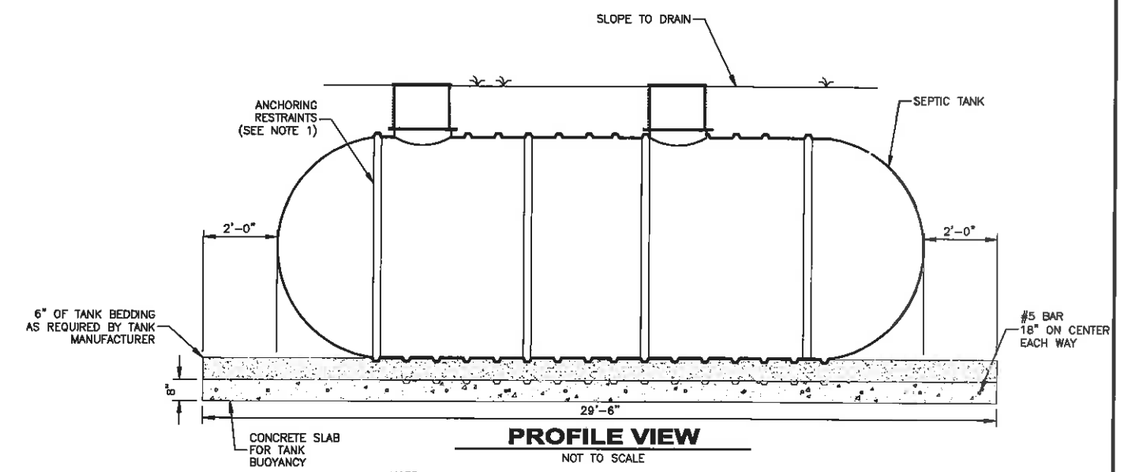
NOT TO SCALE



NOTE:
1. INSTALL SEPTIC TANKS IN ACCORDANCE W/ MANUFACTURER'S RECOMMENDATIONS.
2. SEPTIC TANK MAY BE FIBERGLASS OR CONCRETE WITH A MIN.13,000 GALLON CAPACITY AT ELEVATIONS SHOWN.
3. EFFLUENT FILTER SHALL COMPLY WITH THE REQUIREMENTS OF DEQ–4

2/8 SEPTIC TANK

NOT TO SCALE



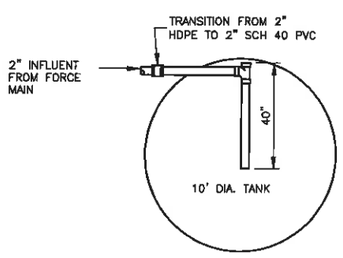
PROFILE VIEW

NOT TO SCALE

NOTE:
1. THE NUMBER AND SIZE OF RESTRAINTS SHALL BE IN ACCORDANCE WITH THE TANK MANUFACTURER'S RECOMMENDATION AND SHALL BE CAPABLE OF RESTRAINING TOTAL FORCES OF 135,000 LBS.

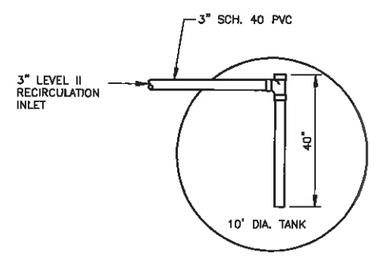
5/8 SEPTIC TANK ANCHORING SLAB

NOT TO SCALE



3/8 2" INFLUENT FROM FORCE MAIN

NOT TO SCALE

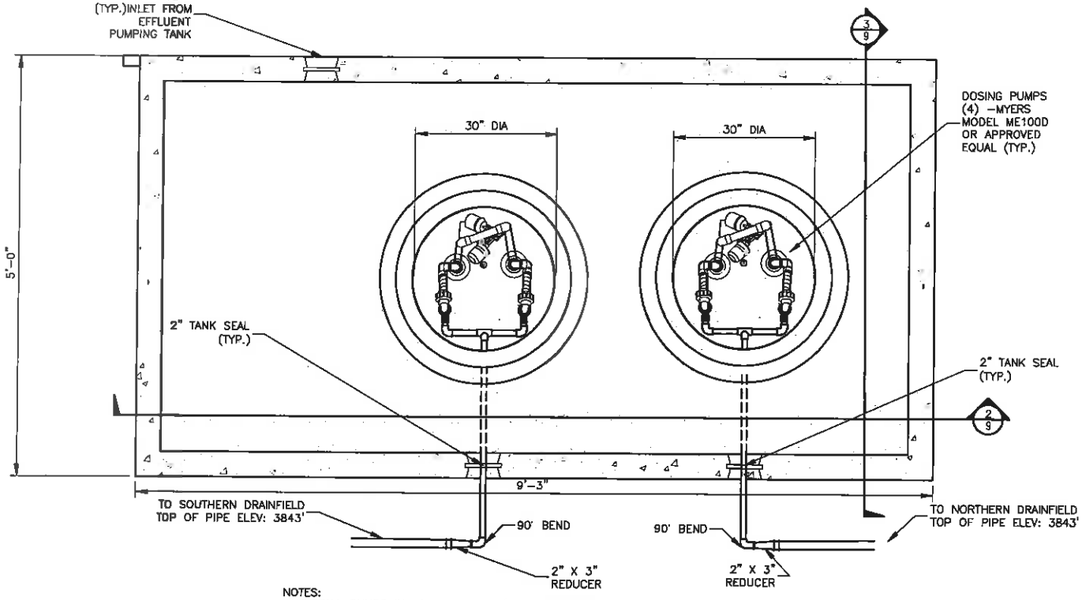


4/8 3" RECIRCULATION INLET

NOT TO SCALE

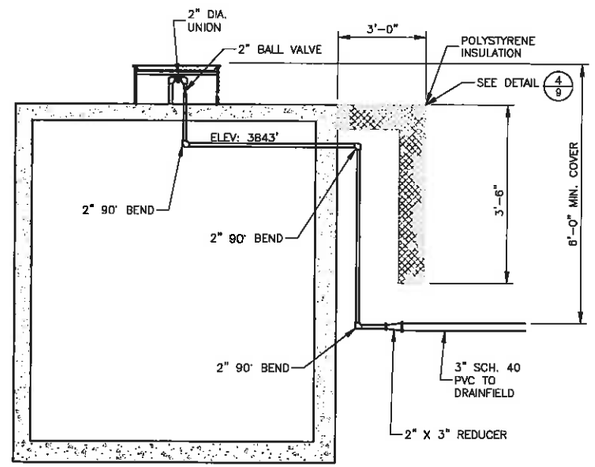
SEPTIC TANK DETAILS
WASTEWATER SYSTEM
IMPROVEMENTS

3/2 MDT MONTANA DEPARTMENT OF TRANSPORTATION	$FILEABBREV$	DESIGNED BY	C. DAVIS	8/2/12	MONTANA	WASTEWATER TREATMENT SYSTEM BEARMOUTH REST AREA	PROJECT NO. IM 90-3(110)143
	$DATE$	REVIEWED BY	T. KUXHAUS, PE	8/2/12			
	$TIME$ $username$	CHECKED BY	S. BRYANT, PE	8/2/12	GRANITE COUNTY	CSF = 0.99922734 / UPN 4449002	SHEET NO. 8

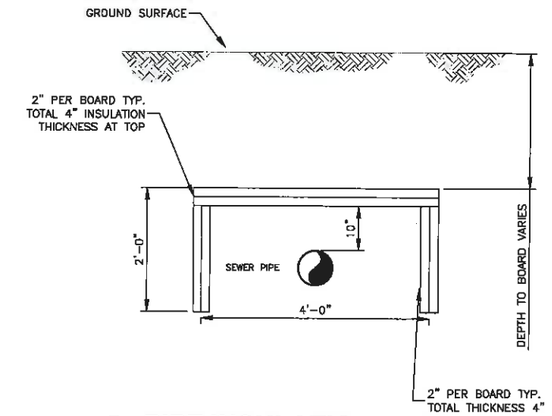


NOTES:
1) INSTALL PUMPS IN ACCORDANCE W/ MANUFACTURERS RECOMMENDATION.
2) TANK SHALL BE DESIGNED AND CONSTRUCTED FOR HS-20 LOADING.
3) LIDS SHALL HAVE A MINIMUM 3 INCH THICKNESS POLYSTYRENE INSULATION.

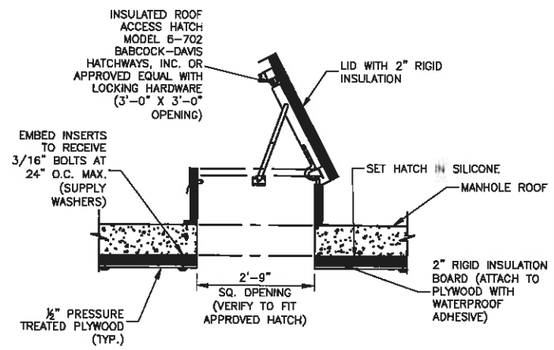
1,000 GALLON DOSING TANK PLAN VIEW
(1/9) NOT TO SCALE



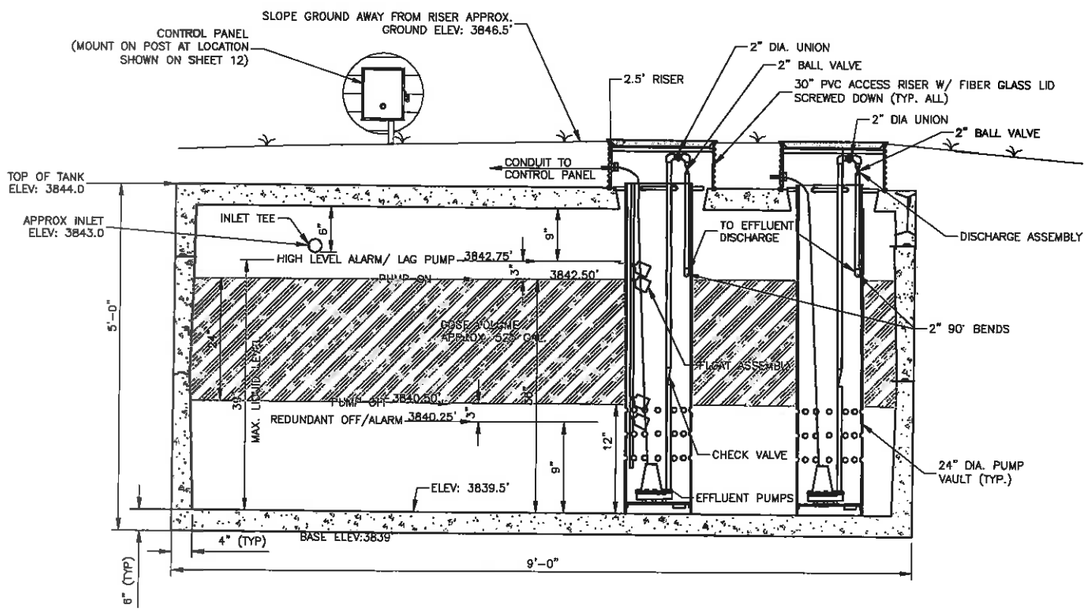
1,000 GALLON DOSING END SECTION
(3/9) NOT TO SCALE



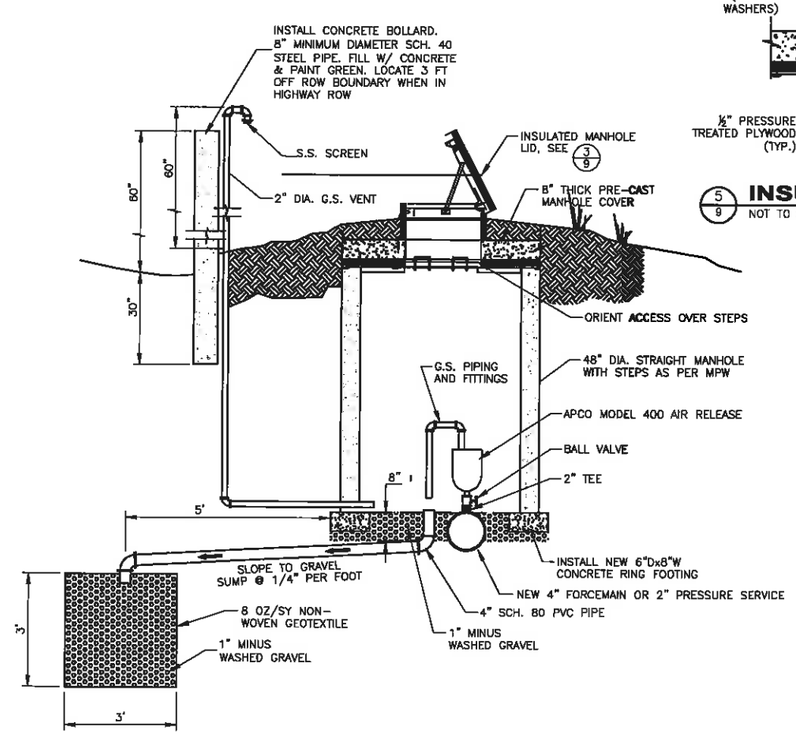
PIPE INSULATION DETAIL
(4/9) NOT TO SCALE



INSULATED MANHOLE LID DETAIL
(5/9) NOT TO SCALE



1,000 GALLON DOSING TANK PROFILE VIEW
(2/9) NOT TO SCALE



AIR RELIEF VALVE STRUCTURE
(6/9) NOT TO SCALE

DOSING TANK AND AIR VALVE DETAILS WASTEWATER SYSTEM IMPROVEMENTS

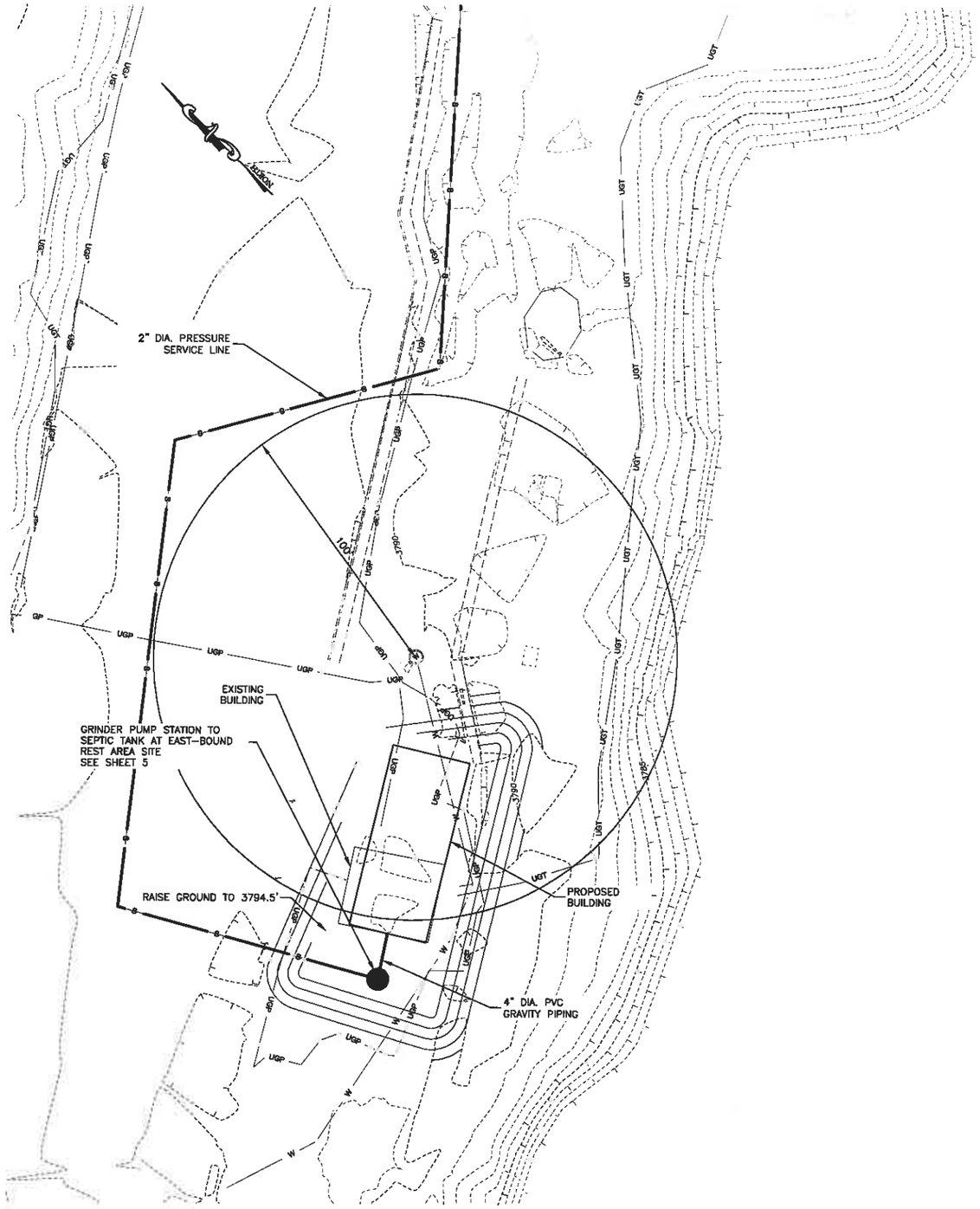
3 2	MDT MONTANA DEPARTMENT OF TRANSPORTATION	$FILEABBREV$	DESIGNED BY	C. DAVIS	8/2/12	MONTANA	WASTEWATER TREATMENT SYSTEM BEARMOUTH REST AREA	PROJECT NO. IM 90-3(110)143
		$DATE$	REVIEWED BY	T. KUXHAUS, PE	8/2/12			
		$TIME$ $username$	CHECKED BY	S. BRYANT, PE	8/2/12	GRANITE COUNTY	CSF = 0.99922734 / UPN 4449002	SHEET NO. 9

PLAN VIEW OF BEARMOUTH REST AREA FORCEMAIN AND DRAINFIELD

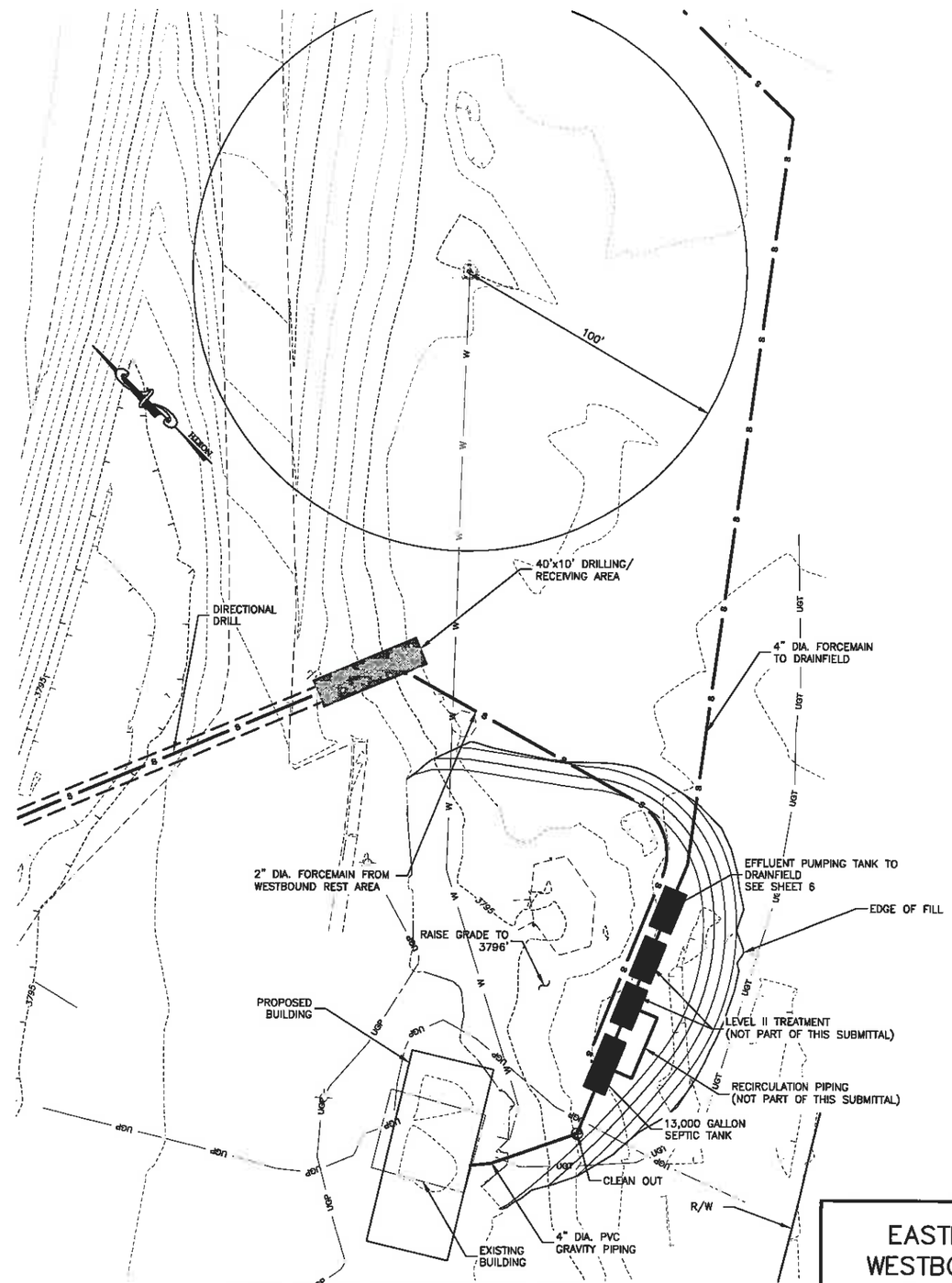
0 200 400
SCALE IN FEET

OVERALL SITE PLAN
WASTEWATER SYSTEM
IMPROVEMENTS

3 / 2	MDT MONTANA DEPARTMENT OF TRANSPORTATION	$FILEABBREV$	DESIGNED BY	C. DAVIS	8/2/12	MONTANA	WASTEWATER TREATMENT SYSTEM BEARMOUTH REST AREA	PROJECT NO. IM 90-3(110)143
		$DATE$	REVIEWED BY	T. KUXHAUS, PE	8/2/12			
		$TIME$ $username$	CHECKED BY	S. BRYANT, PE	8/2/12	GRANITE COUNTY	CSF = 0.99922734 / UPN 4449002	SHEET NO. 10



SITE PLAN WESTBOUND REST AREA

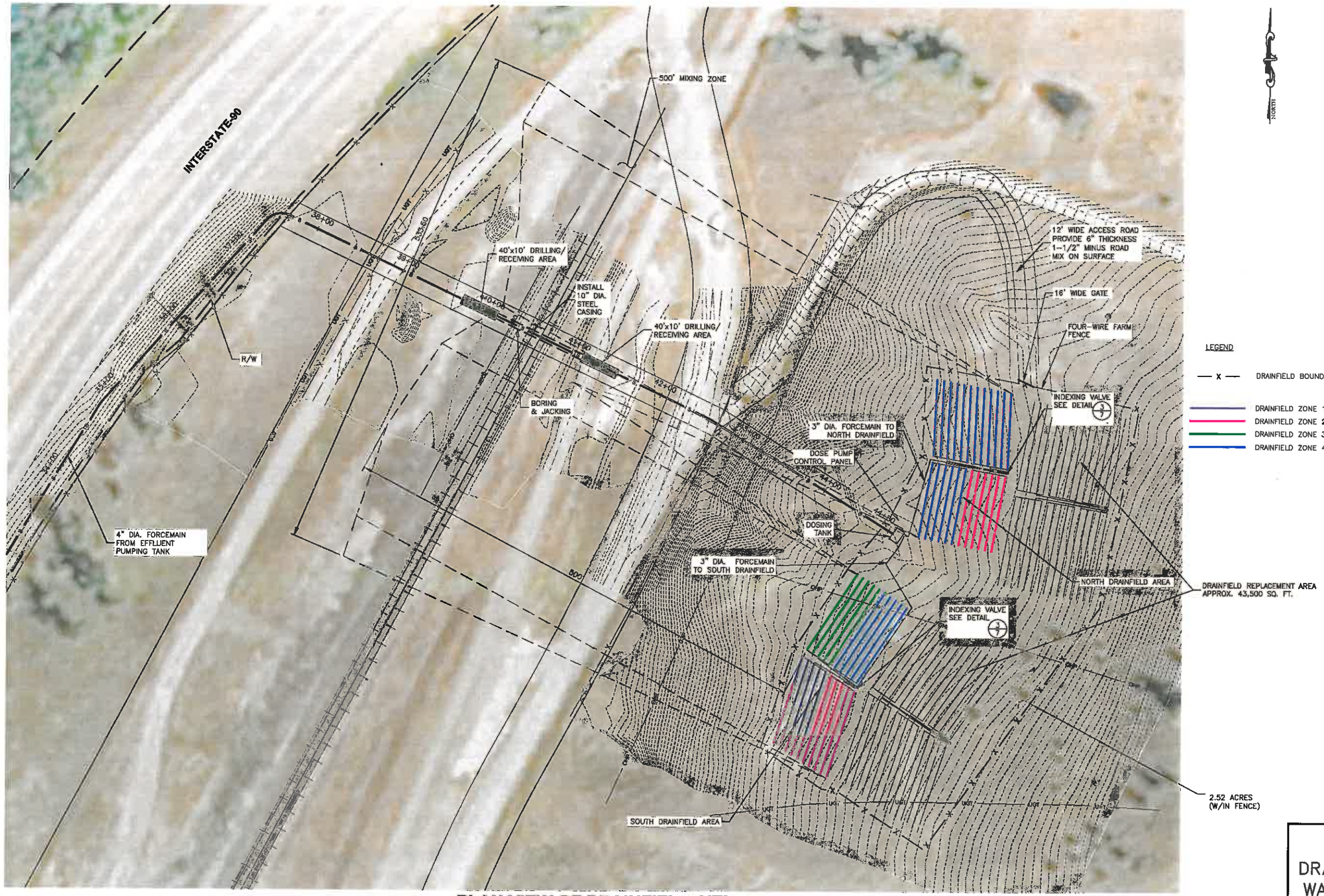


SITE PLAN EASTBOUND REST AREA

0 50 100
SCALE IN FEET

EASTBOUND & WESTBOUND REST AREA SITE PLAN WASTEWATER SYSTEM IMPROVEMENTS

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	$FILEABBREV$	DESIGNED BY	C. DAVIS	8/2/12	MONTANA	WASTEWATER TREATMENT SYSTEM BEARMOUTH REST AREA	PROJECT NO. IM 90-3(110)143
2		$DATE$	REVIEWED BY	T. KUXHAUS, PE	8/2/12	GRANITE COUNTY	CSF = 0.99922734 / UPN 4449002	SHEET NO. 11
		$TIME$ $username$	CHECKED BY	S. BRYANT, PE	8/2/12			



LEGEND

— x — DRAINFIELD BOUNDARY FENCE

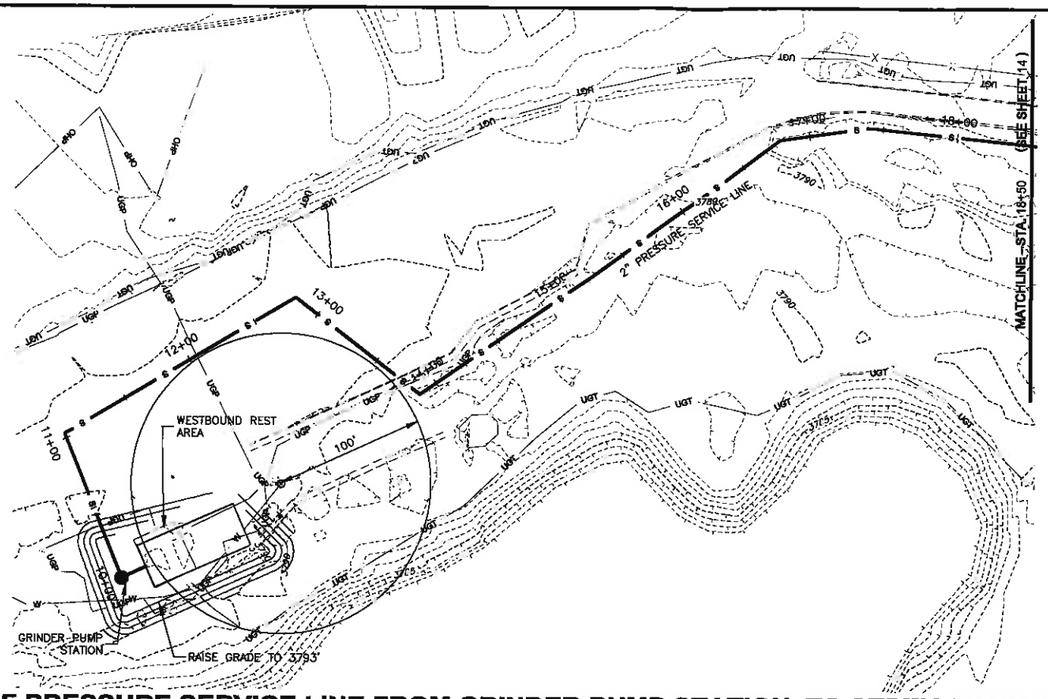
DRAINFIELD ZONE 1
DRAINFIELD ZONE 2
DRAINFIELD ZONE 3
DRAINFIELD ZONE 4

PLAN VIEW OF DRAINFIELD SITE

0 50 100
SCALE IN FEET

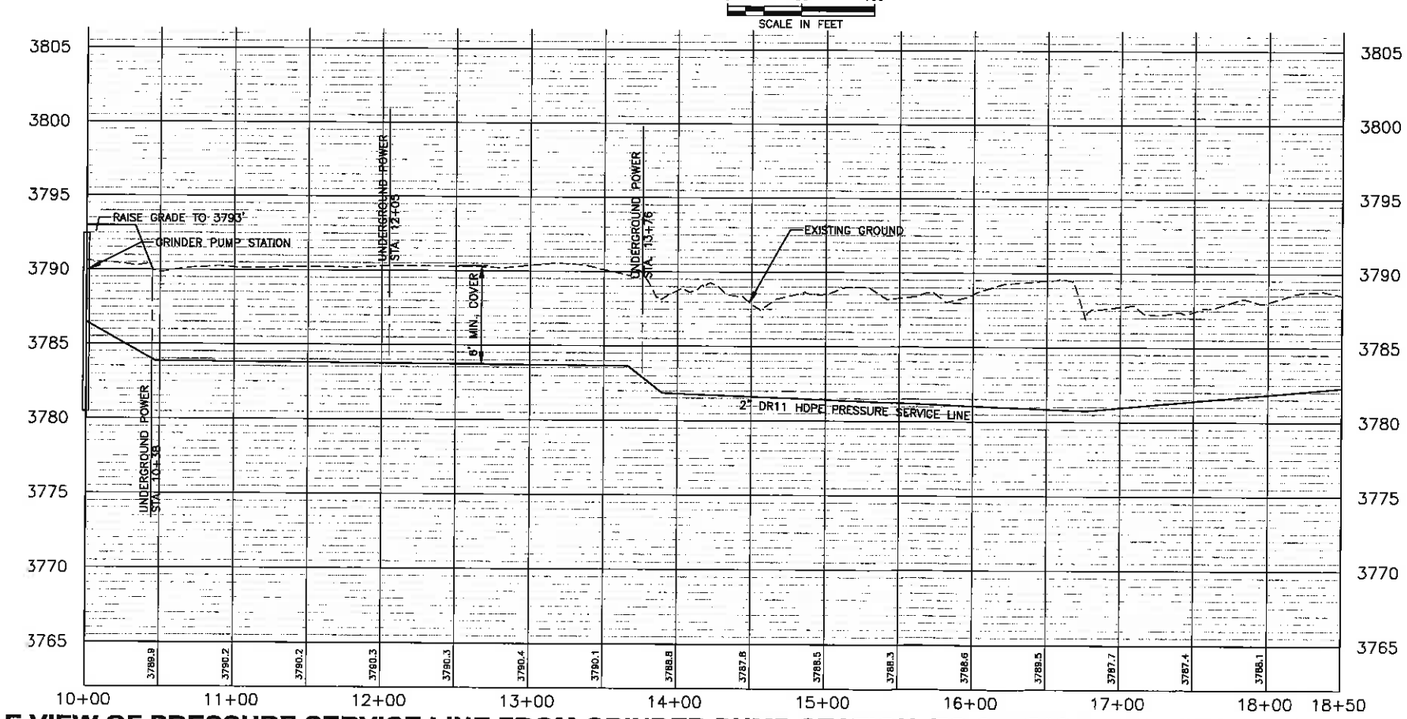
DRAINFIELD SITE PLAN
WASTEWATER SYSTEM
IMPROVEMENTS

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	$FILEABBREV$	DESIGNED BY	C. DAVIS	8/2/12	MONTANA	WASTEWATER TREATMENT SYSTEM BEARMOUTH REST AREA	PROJECT NO. IM 90-3(110)143
2		$DATE$	REVIEWED BY	T. KUXHAUS, PE	8/2/12			
		$TIME$ $username$	CHECKED BY	S. BRYANT, PE	8/2/12	GRANITE COUNTY	CSF = 0.99922734 / UPN 4449002	SHEET NO. 12



PLAN VIEW OF PRESSURE SERVICE LINE FROM GRINDER PUMP STATION TO SEPTIC TANK-STA. 10+00 TO STA. 18+50

0 50 100
SCALE IN FEET



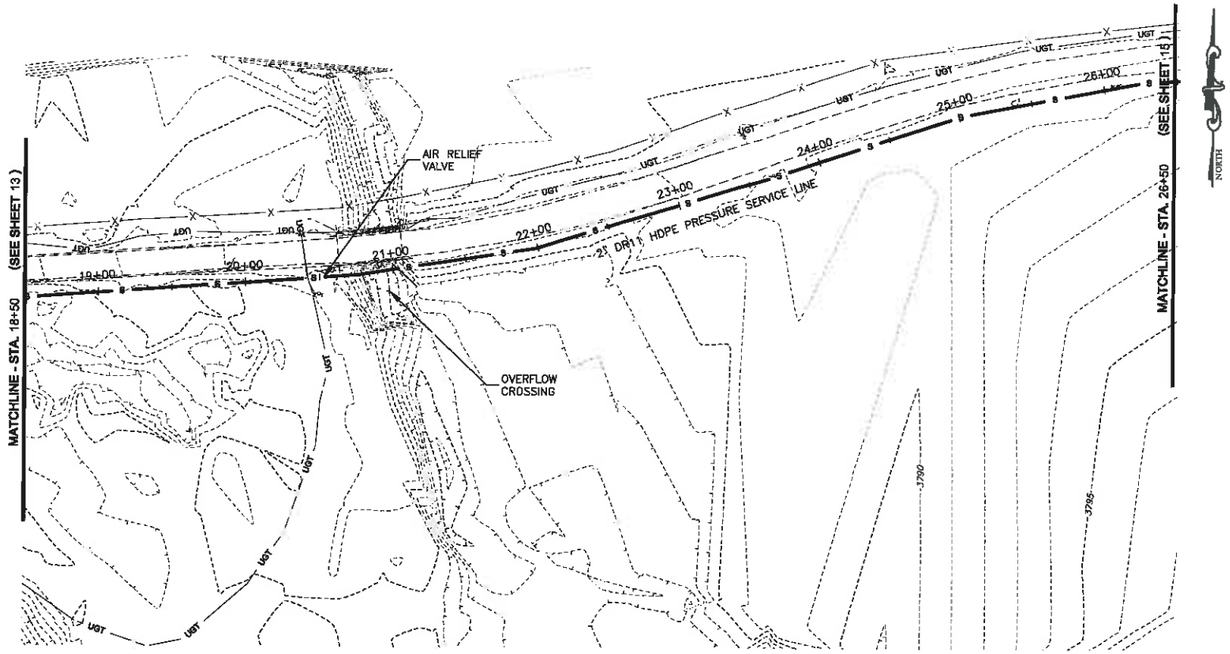
ILE VIEW OF PRESSURE SERVICE LINE FROM GRINDER PUMP STATION TO SEPTIC TANK - STA. 10+00 TO STA. 18+50

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 10'

PRESSURE SERVICE FROM GRINDER PUMP STATION TO SEPTIC TANK WASTEWATER SYSTEM IMPROVEMENTS

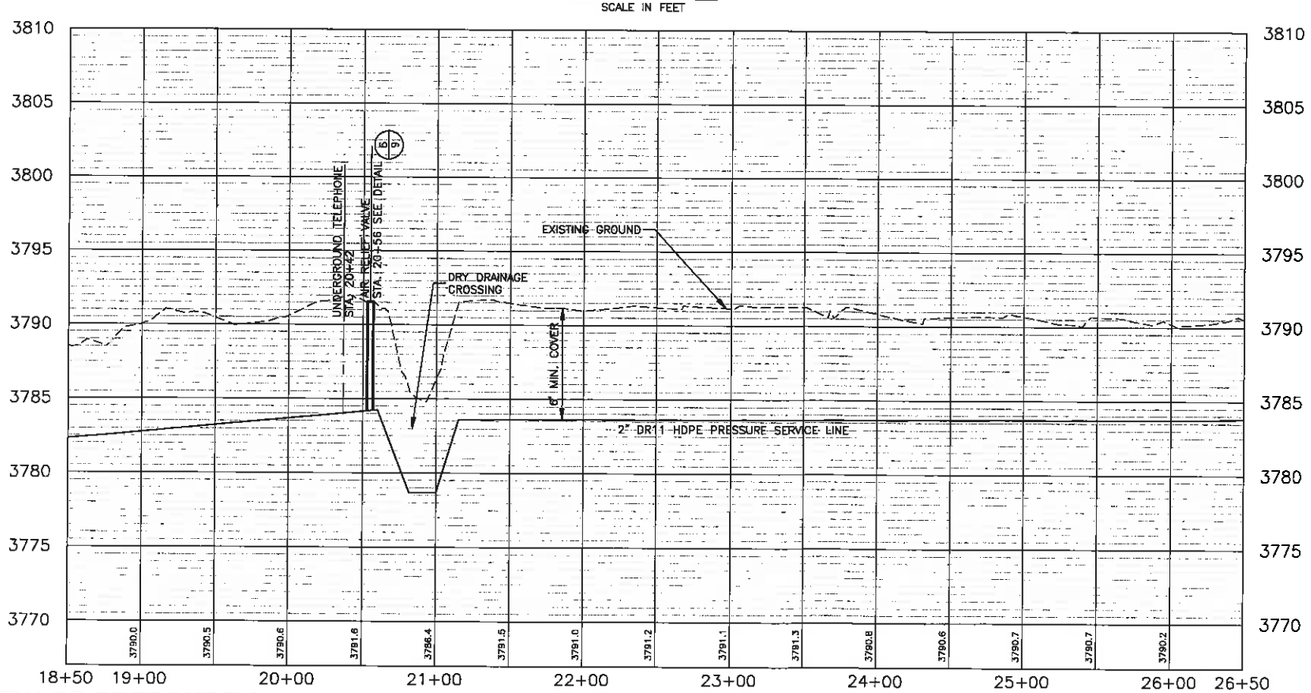
3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	$FILEABBREV$	DESIGNED BY	C. DAVIS	8/2/12	MONTANA	WASTEWATER TREATMENT SYSTEM BEARMOUTH REST AREA	PROJECT NO. IM 90-3(110)143
2		$DATE$	REVIEWED BY	T. KUXHAUS, PE	8/2/12			
		$TIME$ $username$	CHECKED BY	S. BRYANT, PE	8/2/12	GRANITE COUNTY	CSF = 0.99922734 / UPN 4449002	SHEET NO. 13

F:\1-10262 Bearmouth Rest Area\CADD 1-10262 Bearmouth\Sheets\1-10262-12-GRINDER TO SEPTIC.dwg



PLAN VIEW OF PRESSURE SERVICE LINE GRINDER PUMP STATION TO SEPTIC TANK - STA. 18+50 TO STA. 26+50

0 50 100
SCALE IN FEET



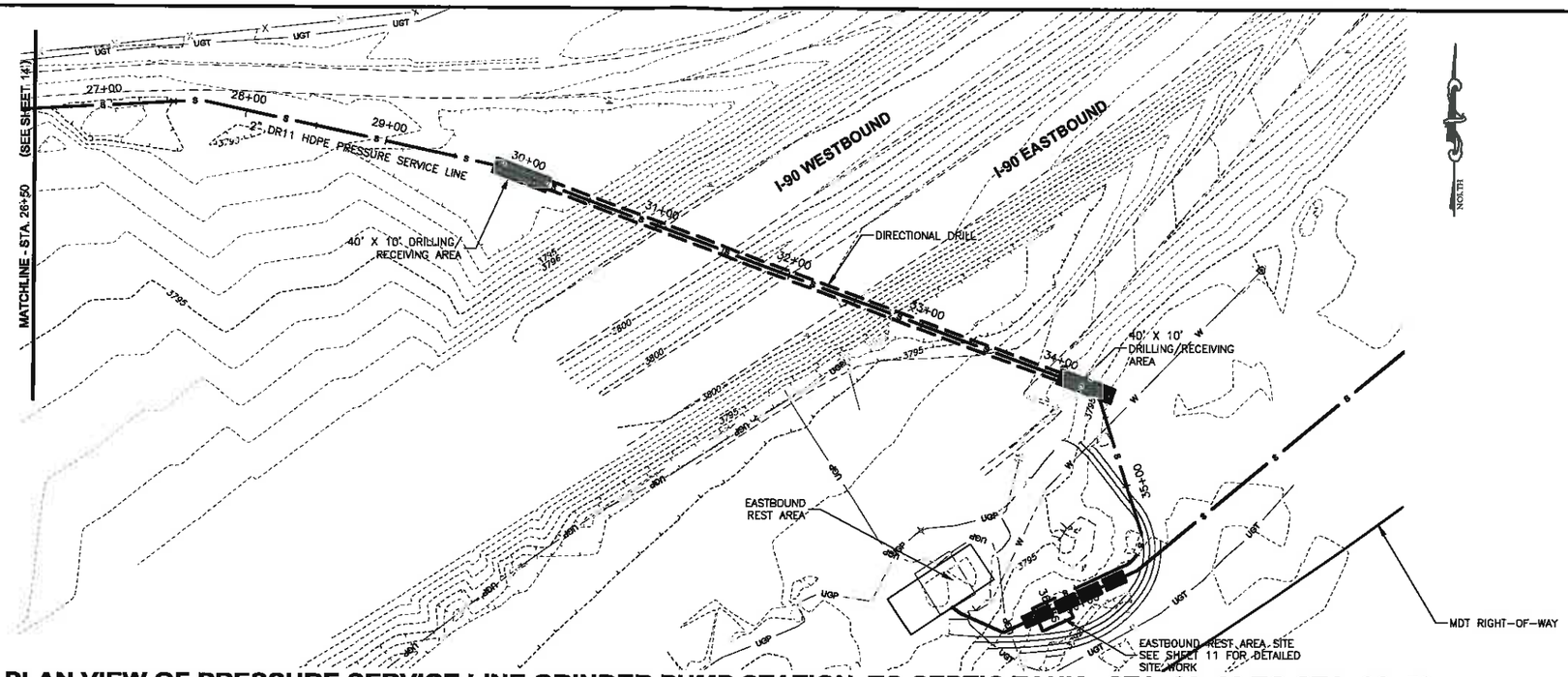
PROFILE VIEW OF PRESSURE SERVICE LINE FROM GRINDER PUMP STATION TO SEPTIC TANK - STA. 18+50 TO STA. 26+50

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 10'

PRESSURE SERVICE FROM GRINDER PUMP STATION TO SEPTIC TANK WASTEWATER SYSTEM IMPROVEMENTS

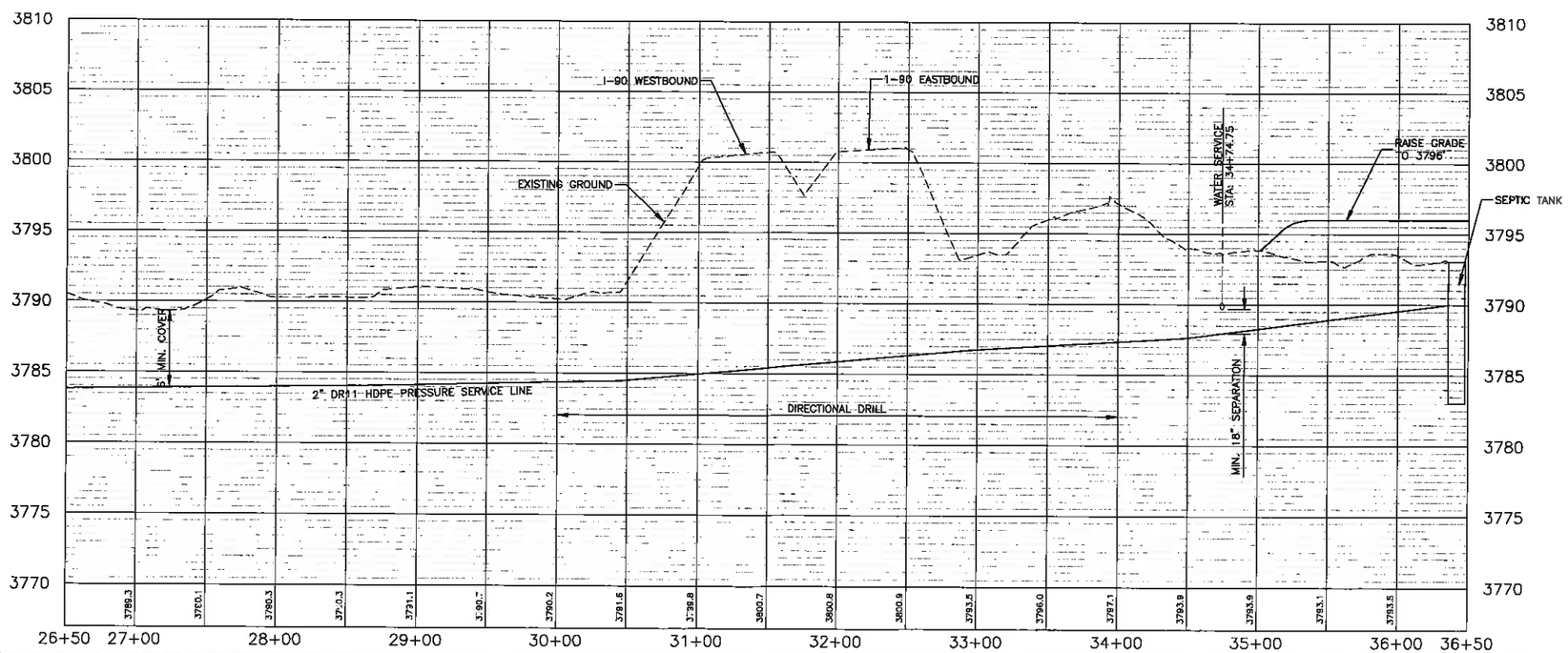
3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	$FILEABBRE$	DESIGNED BY	C. DAVIS	8/2/12	MONTANA	WASTEWATER TREATMENT SYSTEM BEARMOUTH REST AREA	PROJECT NO. IM 90-3(110)143
2		$DATE$	REVIEWED BY	T. KUXHAUS, PE	8/2/12	GRANITE COUNTY	CSF = 0.99922734 / UPN 4449002	SHEET NO. 14
		$TIME$ $username$	CHECKED BY	S. BRYANT, PE	8/2/12			

F:\1-10262 Bearmouth Rest Area\CADD 1-10262 Bearmouth\Sheets\1-10262-13-GRINDER TO SEPTIC.dwg



PLAN VIEW OF PRESSURE SERVICE LINE GRINDER PUMP STATION TO SEPTIC TANK - STA. 22+00 TO STA. 36+50

0 50 100
SCALE IN FEET



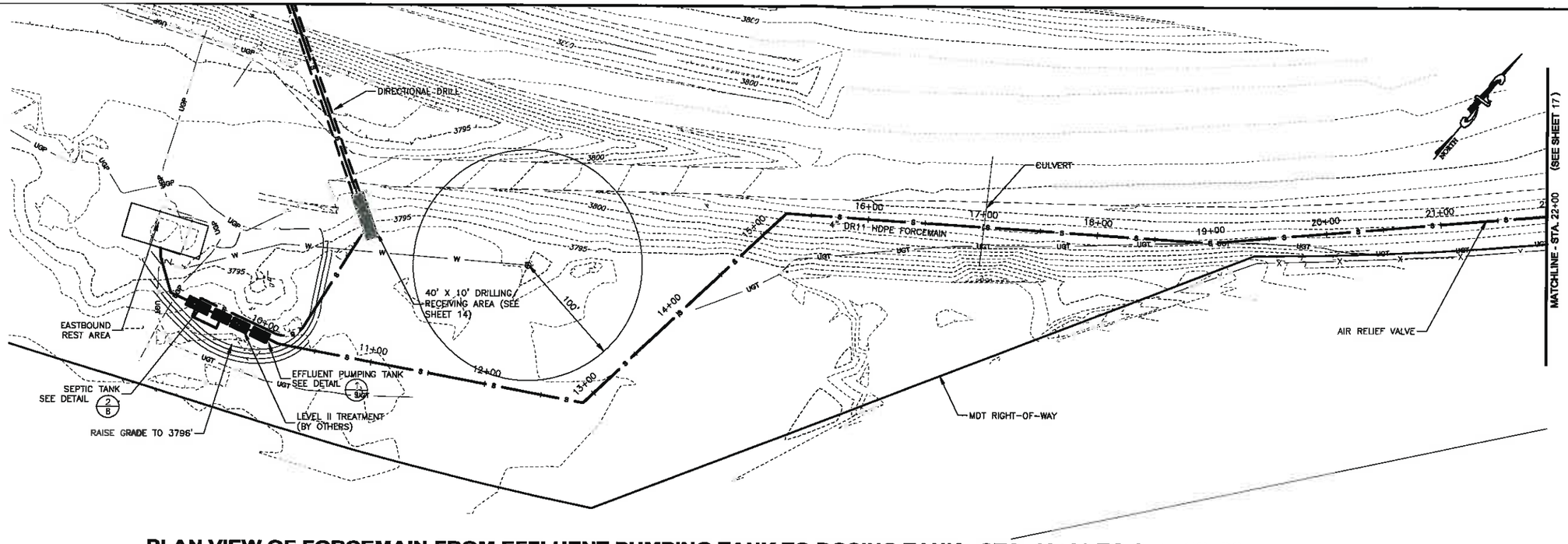
PROFILE VIEW OF PRESSURE SERVICE LINE FROM GRINDER PUMP STATION TO SEPTIC TANK - STA. 26+50 TO STA. 36+50

HORIZONTAL SCALE: 1" = 100'

PRESSURE SERVICE FROM GRINDER PUMP STATION TO SEPTIC TANK WASTEWATER SYSTEM IMPROVEMENTS

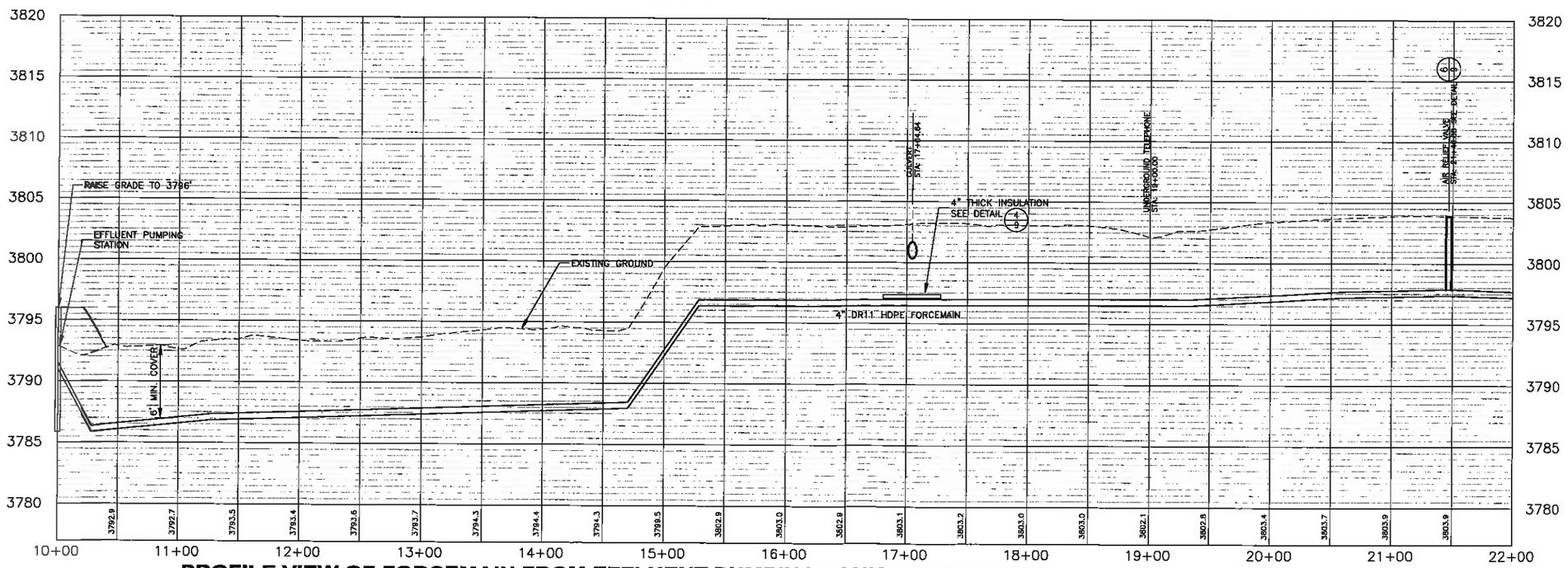
3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	$FILEABBREV$	DESIGNED BY C. DAVIS	8/2/12	MONTANA	WASTEWATER TREATMENT SYSTEM BEARMOUTH REST AREA		PROJECT NO. IM 90-3(110)143
2		$DATE$	REVIEWED BY T. KUXHAUS, PE	8/2/12				
		$TIME$ $username$	CHECKED BY S. BRYANT, PE	8/2/12	GRANITE COUNTY	CSF = 0.99822734	UPN 4449002	SHEET NO. 15

F:\1-10262 Bearmouth Rest Area\CADD 1-10262 Bearmouth\Sheets\1-10262-15-GRINDER TO SEPTIC.dwg



PLAN VIEW OF FORCEMAIN FROM EFFLUENT PUMPING TANK TO DOSING TANK - STA. 10+00 TO STA. 22+00

0 50 100
SCALE IN FEET



PROFILE VIEW OF FORCEMAIN FROM EFFLUENT PUMPING TANK TO DOSING TANK - STA. 10+00 TO STA. 22+00

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 10'

FORCEMAIN FROM EFFLUENT PUMPING TANK TO DOSING TANK WASTEWATER SYSTEM IMPROVEMENTS

3	MDT MONTANA DEPARTMENT OF TRANSPORTATION	$FILEABBREV$	DESIGNED BY	C. DAVIS	8/2/12	MONTANA	WASTEWATER TREATMENT SYSTEM BEARMOUTH REST AREA	PROJECT NO. IM 90-3(110)143
2		$DATE$	REVIEWED BY	T. KUXHAUS, PE	8/2/12	GRANITE COUNTY	CSF = 0.99922734 / UPN 4449002	SHEET NO. 16
		$TIME$ $username$	CHECKED BY	S. BRYANT, PE	8/2/12			

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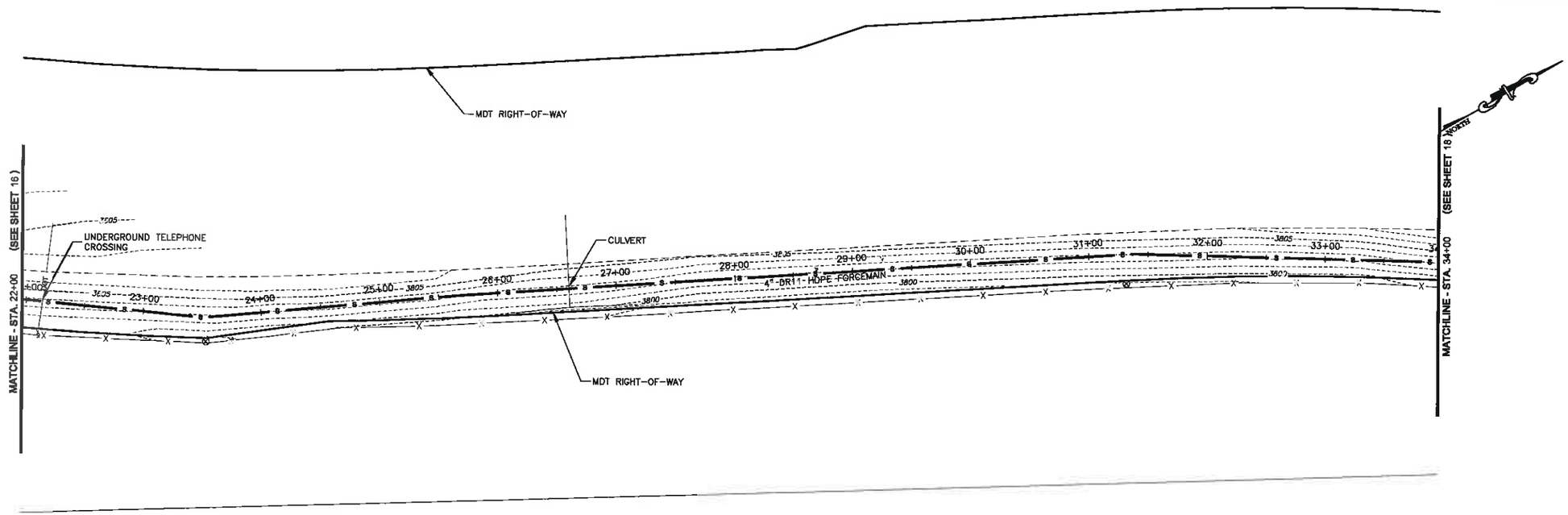
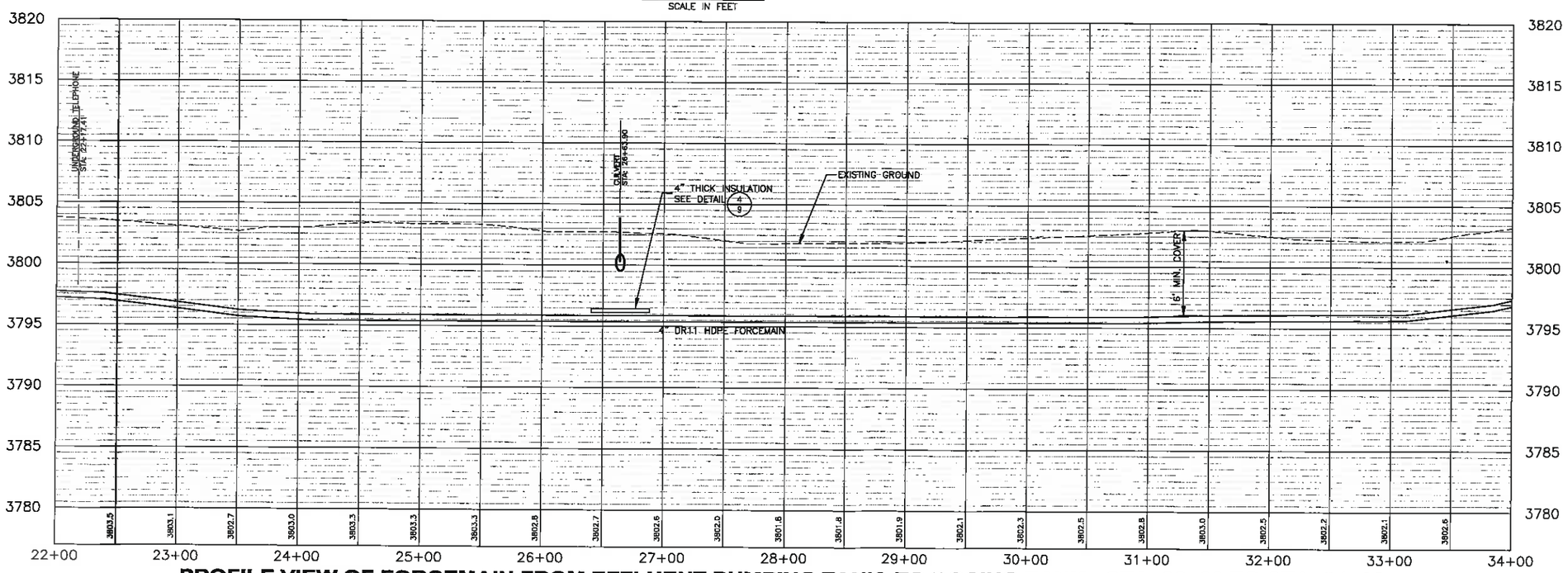


PLAN VIEW OF FORCEMAIN FROM EFFLUENT PUMPING TANK TO DOSING TANK-STA. 22+00 TO STA. 34+00

0 50 100
SCALE IN FEET



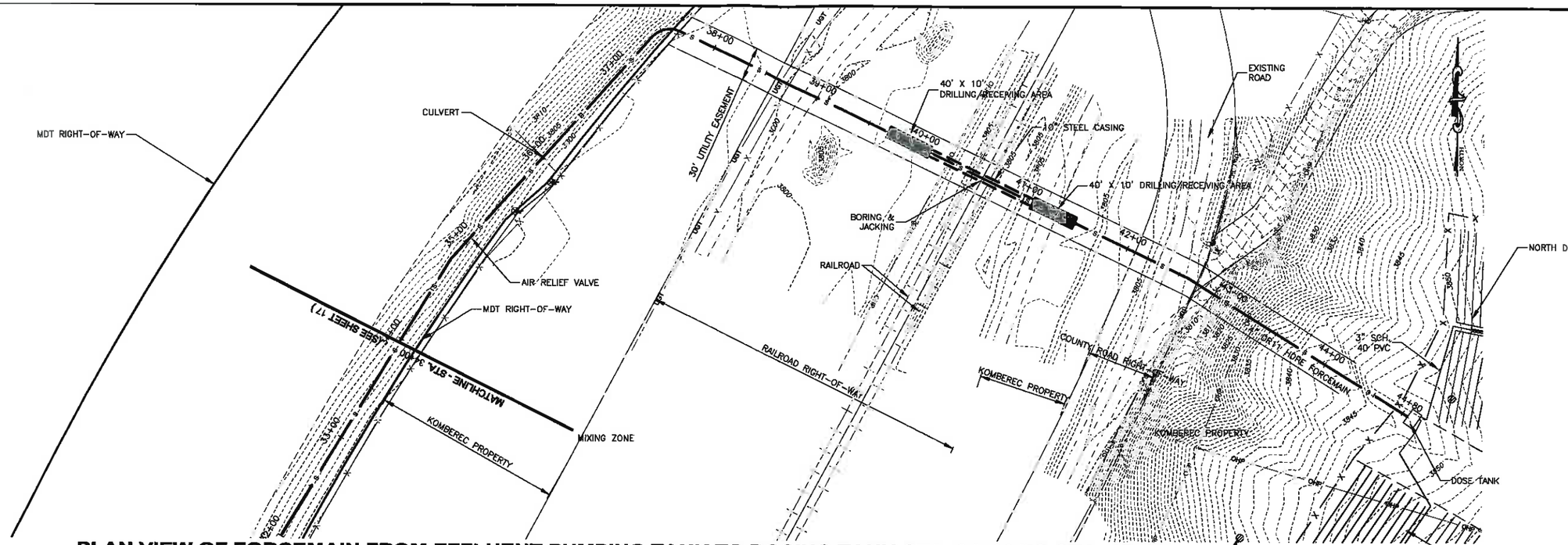
PROFILE VIEW OF FORCEMAIN FROM EFFLUENT PUMPING TANK TO DOSING TANK - STA. 22+00 TO STA. 34+00

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 10'

FORCEMAIN FROM EFFLUENT PUMPING TANK TO DOSING TANK WASTEWATER SYSTEM IMPROVEMENTS

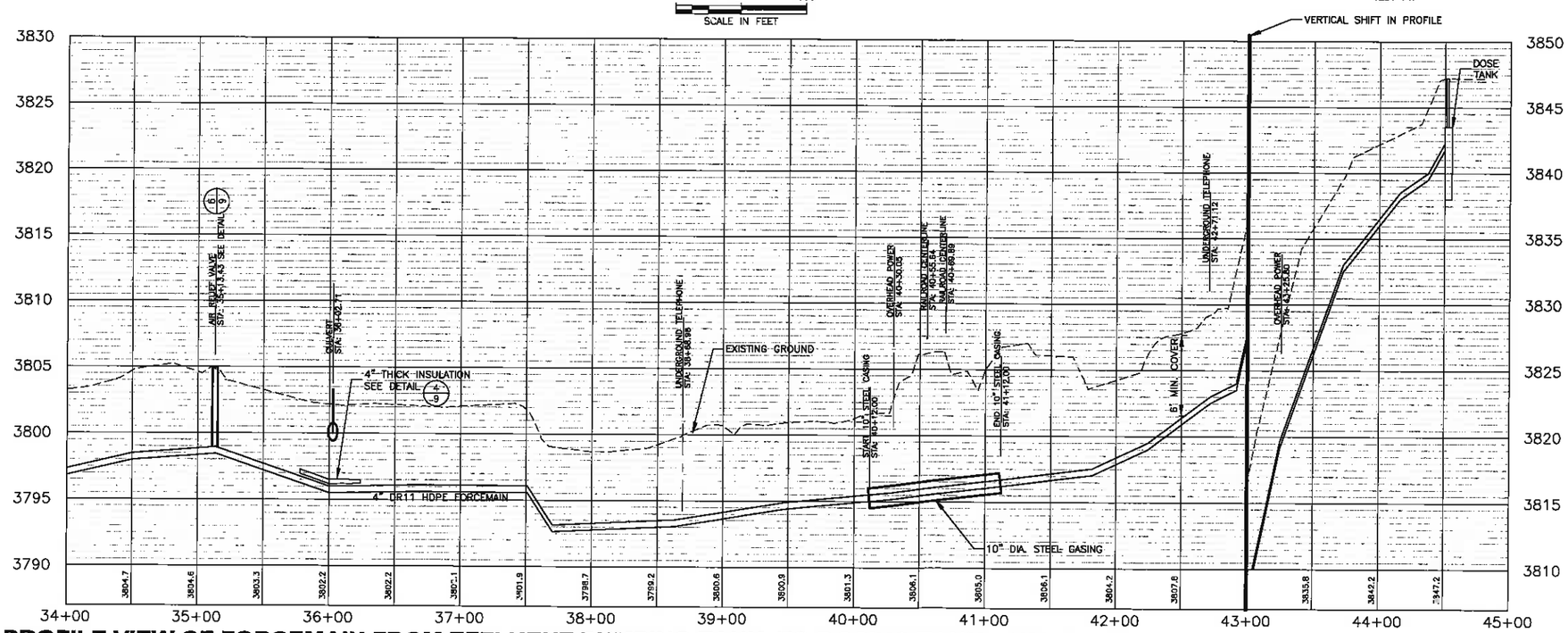
F:\1-10262 Bearmouth Rest Area\CADD 1-10262 Bearmouth\Sheets\1-10262 -15 PP FM - LS to DF.dwg

3 / 2	MDT MONTANA DEPARTMENT OF TRANSPORTATION	$FILEABBREV$	DESIGNED BY C. DAVIS	8/2/12	MONTANA	WASTEWATER TREATMENT SYSTEM BEARMOUTH REST AREA		PROJECT NO. IM 90-3(110)143
		$DATE$	REVIEWED BY T. KUXHAUS, PE	8/2/12				
		$TIME$ $usermame$	CHECKED BY S. BRYANT, PE	8/2/12	GRANITE COUNTY	CSF = 0.99922734	UPN 4449002	SHEET NO. 17



PLAN VIEW OF FORCEMAIN FROM EFFLUENT PUMPING TANK TO DOSING TANK-STA. 34+00 TO STA. 45+00

0 50 100
SCALE IN FEET



PROFILE VIEW OF FORCEMAIN FROM EFFLUENT PUMPING TANK TO DOSING TANK - STA. 34+00 TO STA. 45+00

HORIZONTAL SCALE: 1" = 100'
VERTICAL SCALE: 1" = 10'

FORCEMAIN FROM EFFLUENT PUMPING TANK TO DOSING TANK WASTEWATER SYSTEM IMPROVEMENTS

3 2	MDT MONTANA DEPARTMENT OF TRANSPORTATION	$FILEABBREV$	DESIGNED BY C. DAVIS	8/2/12	MONTANA	WASTEWATER TREATMENT SYSTEM BEARMOUTH REST AREA	PROJECT NO. IM 90-3(110)143
		$DATE$	REVIEWED BY T. KUXHAUS, PE	8/2/12	GRANITE COUNTY	CSF = 0.99922734 / UPN 4449002	SHEET NO. 18
		$TIME$ $username$	CHECKED BY S. BRYANT, PE	8/2/12			

F:\1-10262 Bearmouth Rest Area\CADD 1-10262 Bearmouth\Sheets\1-10262 -16 PP FM - LS to DF.dwg