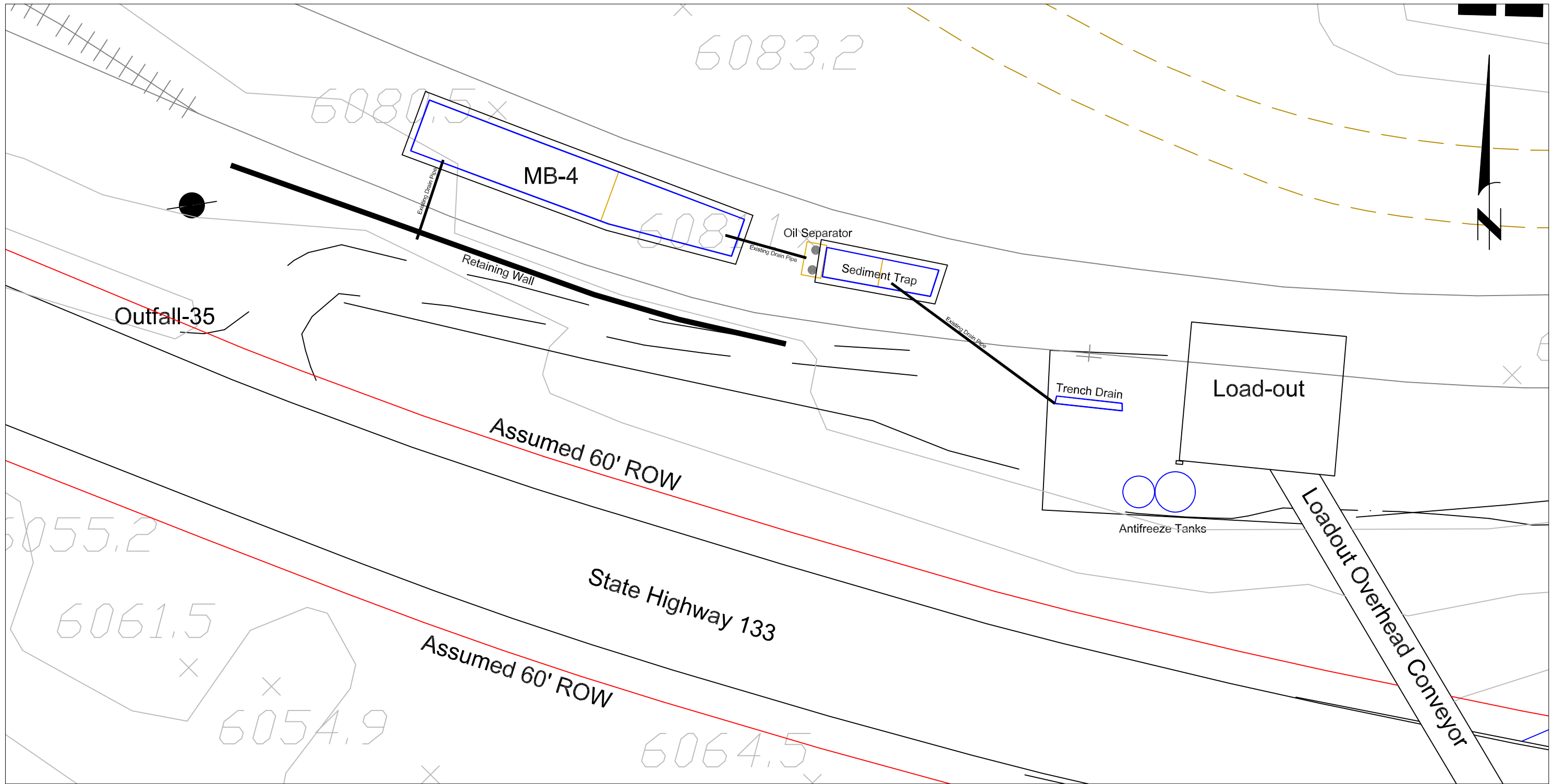




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REV	1	06/08/24



MOUNTAIN COAL
COMPANY, LLC

CLIENT

WEST ELK MINE
P.O. BOX 591, 5174 HWY. 133
SOMERSET, CO. 81434

PROJECT NAME

Outfall 35 Modifications

HPM Contracting

9781 S. Meridian Blvd. Englewood CO 80112

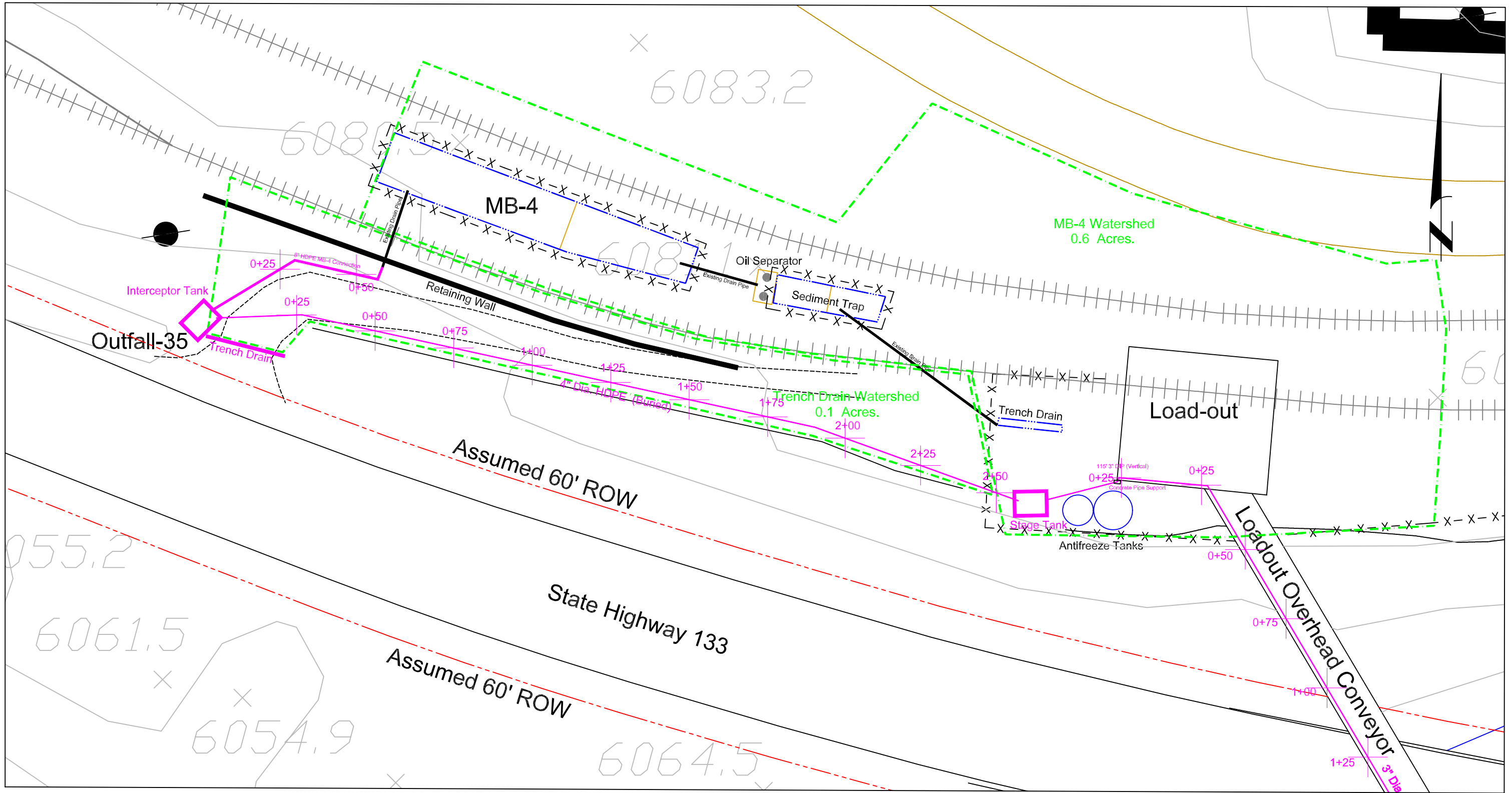
GA-Existing Facilities

PROJECT NUMBER
005-24007

SCALE
1" = 30'

DRAWING NUMBER
1 of 16

REVISION
1



	BY	DATE
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MOUNTAIN COAL
COMPANY, LLC

PROJECT NAME

Outfall 35 Modifications

WEST ELK MINE

P.O. BOX 591, 5174 HWY. 133

SOMERSET, CO. 81434

HPM Contracting

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GA-Proposed Facilities

PROJECT NUMBER

005-24007

SCALE

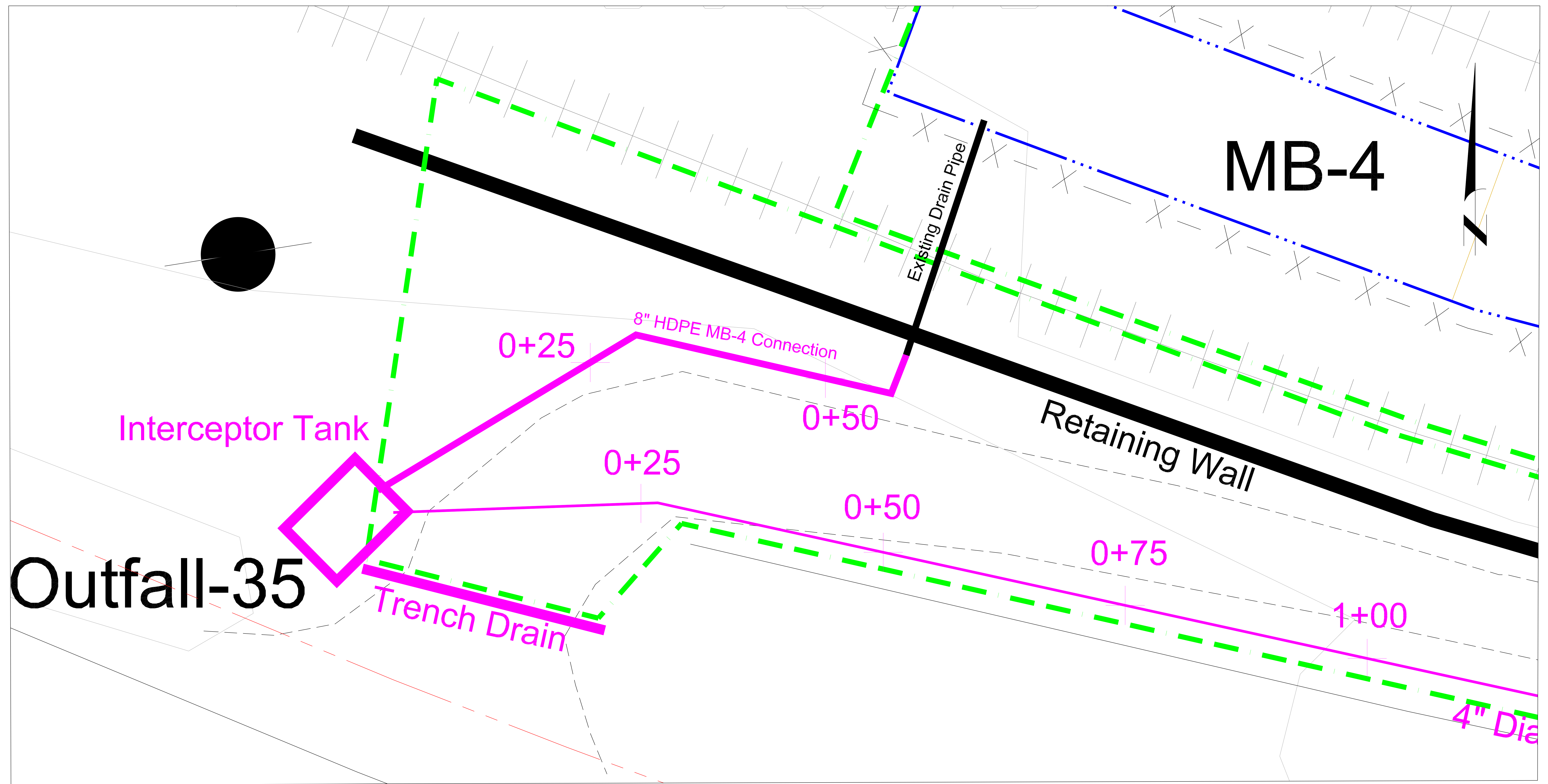
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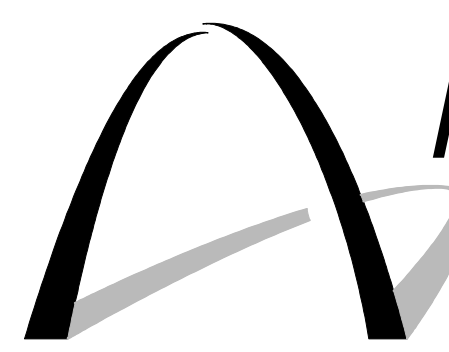
2 of 16

REVISION

1



	BY	DATE
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P.O. BOX 591, 5174 HWY. 133
SOMERSET, CO. 81434

PROJECT NAME

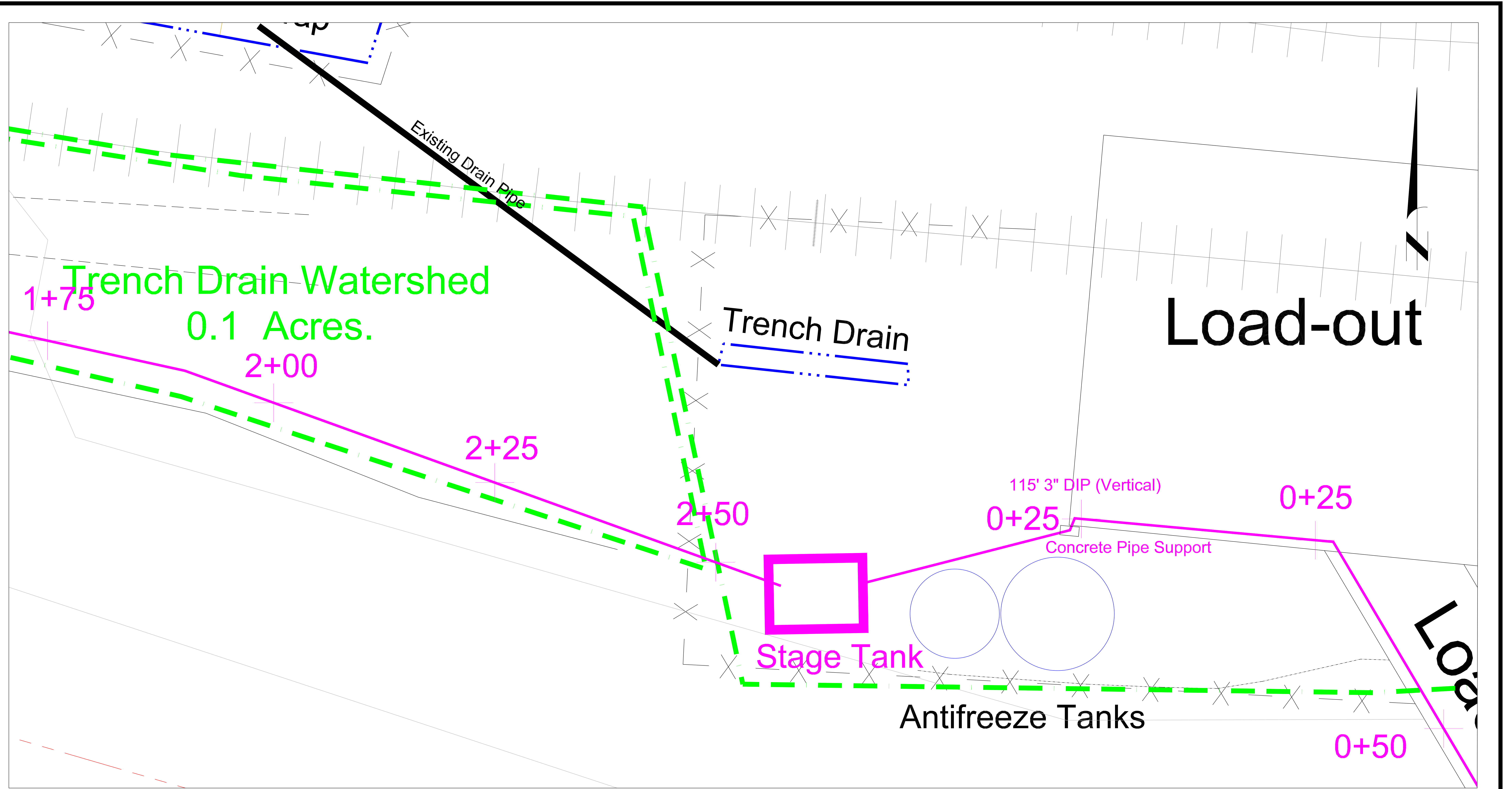
Outfall 35 Modifications

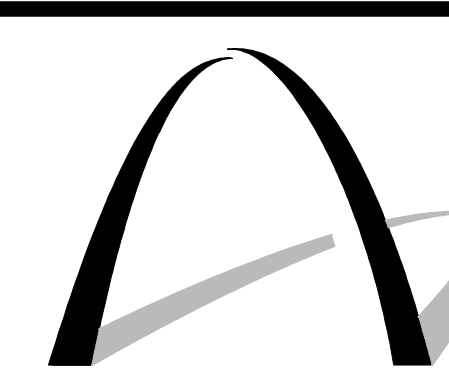
HPM Contracting

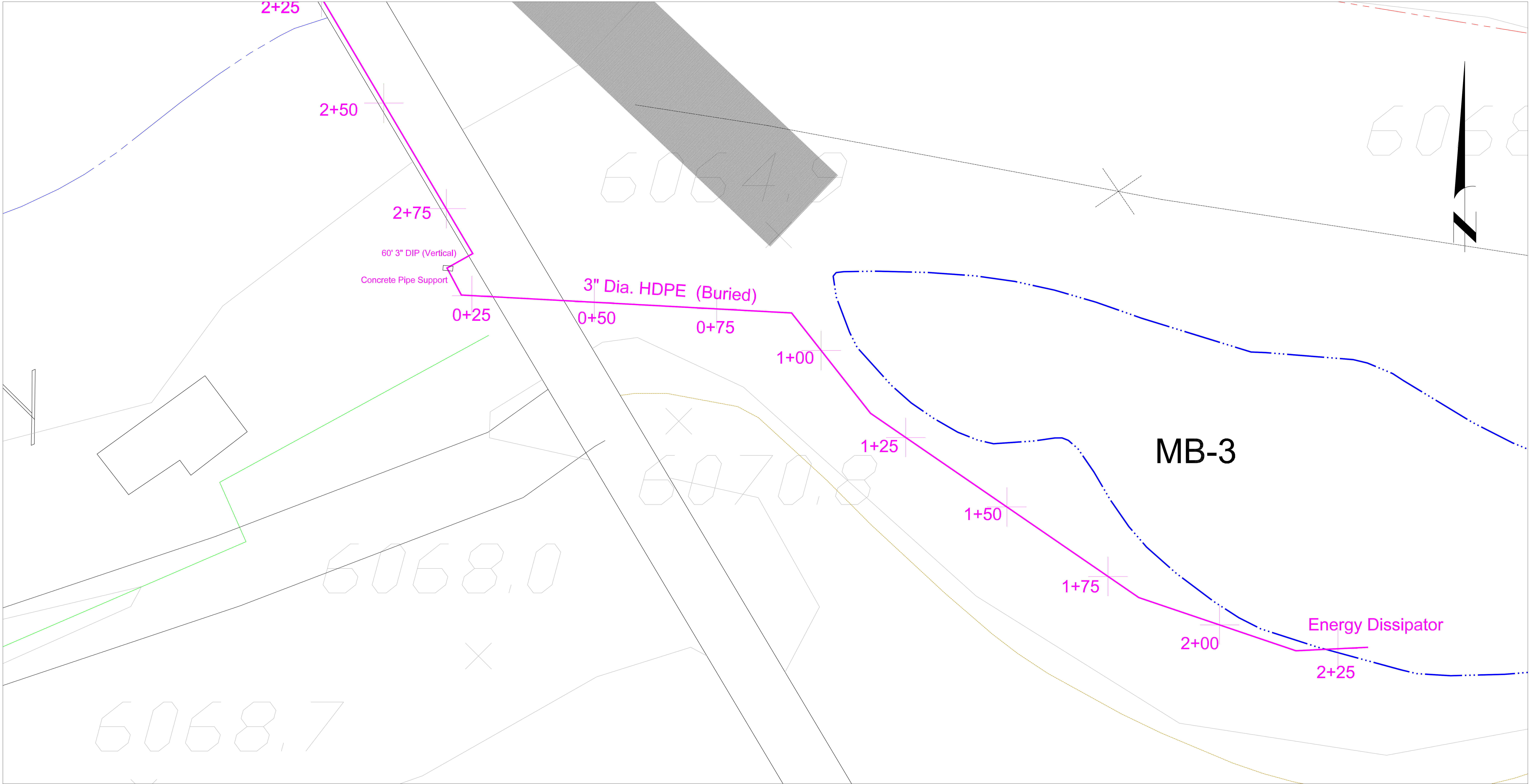
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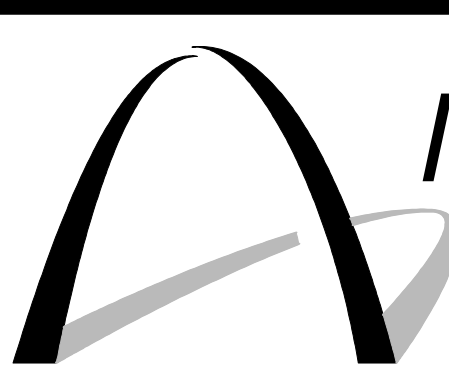
Planview-Interceptor Tank

PROJECT NUMBER	SCALE	DRAWING NUMBER	REVISION
005-24007	1" = 10'	3 of 16	1

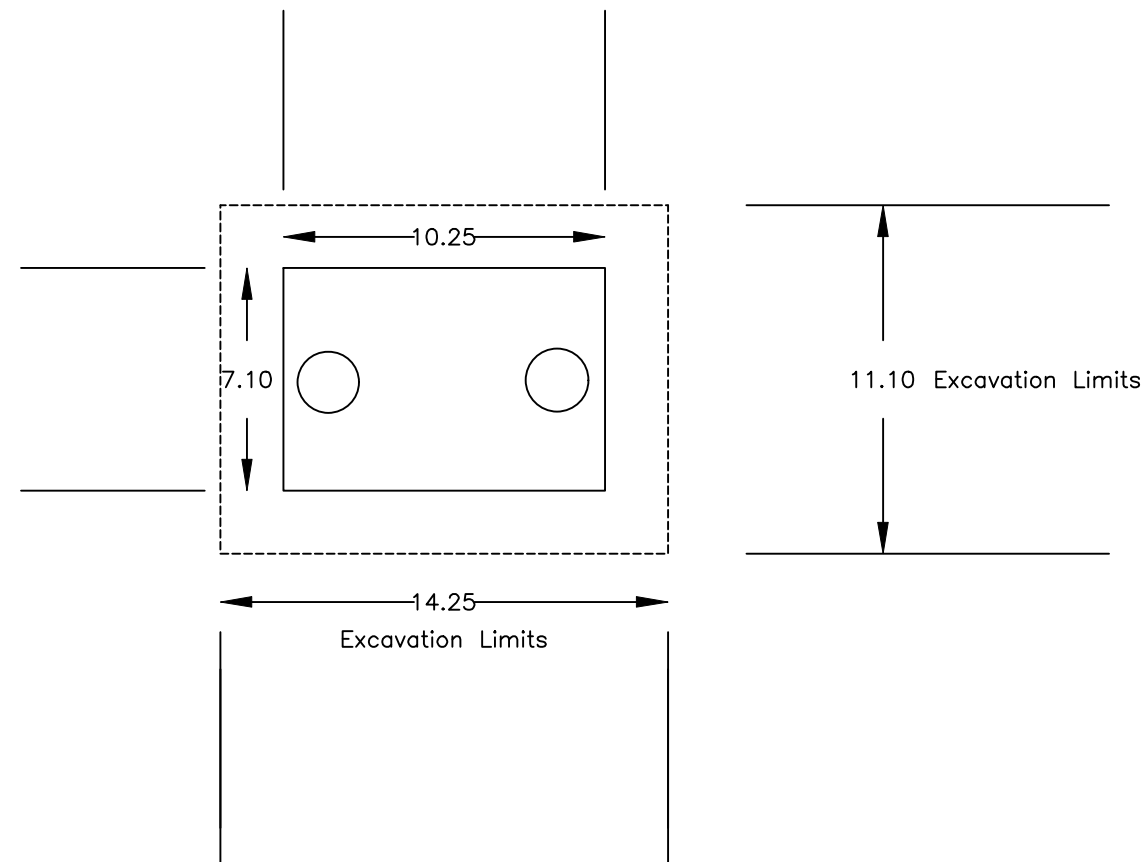


		BY	DATE	 MOUNTAIN COAL COMPANY, LLC	CLIENT WEST ELK MINE P.O. BOX 591, 5174 HWY. 133 SOMERSET, CO. 81434	HPM Contracting							
	DRAWN	DJD	10/31/23			9781 S. Meridian Blvd. Englewood CO 80112							
	CHECK	–	–										
	REV	1	06/08/24										
										PROJECT NAME			
										Outfall 35 Modifications			
				Planview-Staging Tank									
				PROJECT NUMBER	SCALE	DRAWING NUMBER	REVISION						
				005-24007	1" = 10'	4 of 16	1						

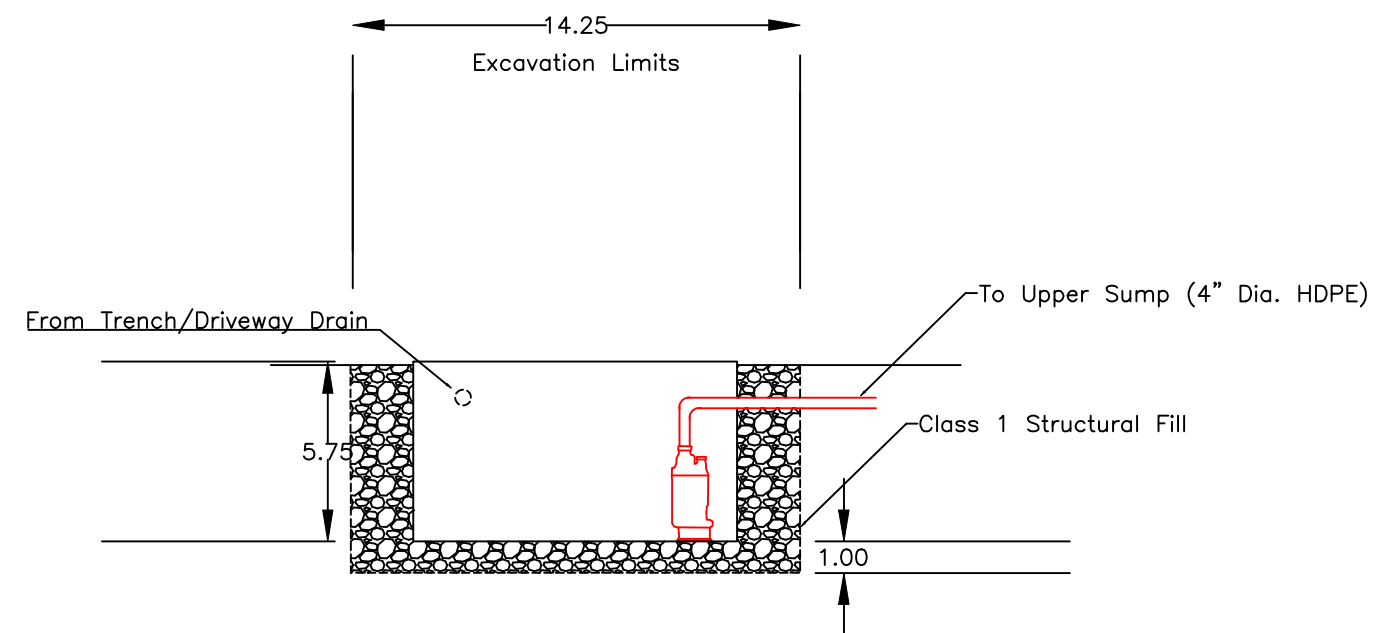


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	DRAWN	DJD	10/31/23			9781 S. Meridian Blvd. Englewood CO 80112			
	CHECK	-	-	PROJECT NAME Outfall 35 Modifications		Planview-Discharge Area			
	REV	1	06/08/24			PROJECT NUMBER 005-24007	SCALE 1" = 20'	DRAWING NUMBER 5 of 16	REVISION 1

Planview



Section



	BY	DATE
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REV	1	06/08/24



**MOUNTAIN COAL
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P.O. BOX 591, 5174 HWY. 133
SOMERSET, CO. 81434

PROJECT NAME

Outfall 35 Modifications

HPM Contracting

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Interceptor Tank Detail

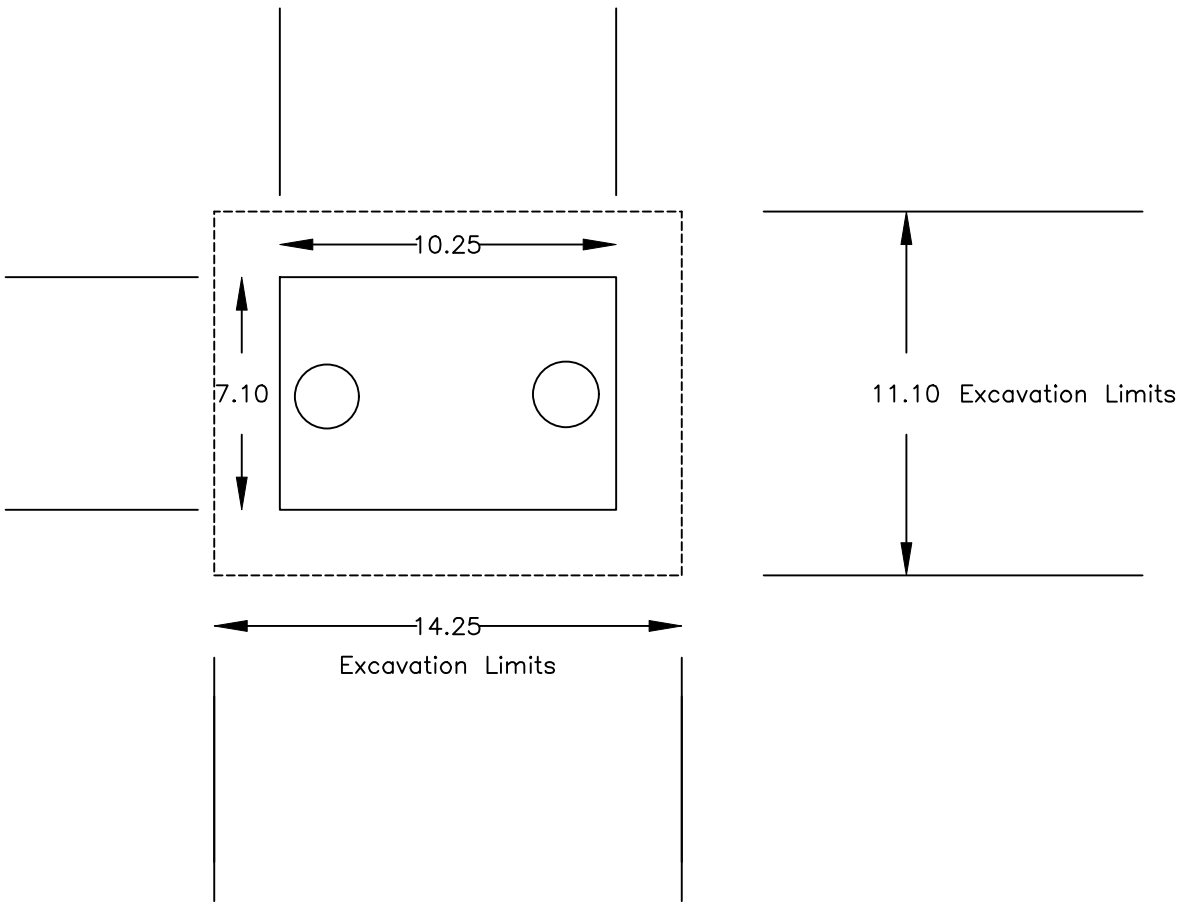
PROJECT NUMBER
005-24007

SCALE
NTS

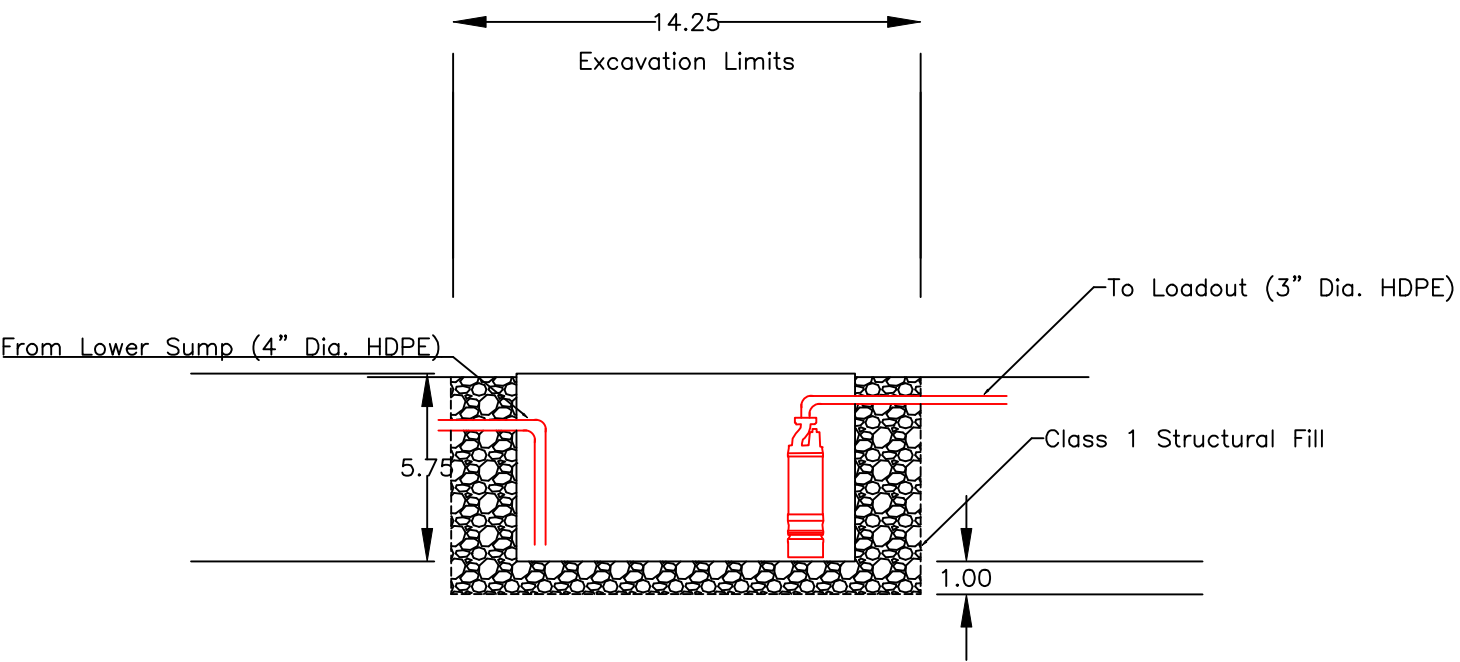
DRAWING NUMBER
6 of 16

REVISION
1

Planview



Section



	BY	DATE
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REV	1	06/08/24



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SOMERSET, CO. 81434

PROJECT NAME

Outfall 35 Modifications

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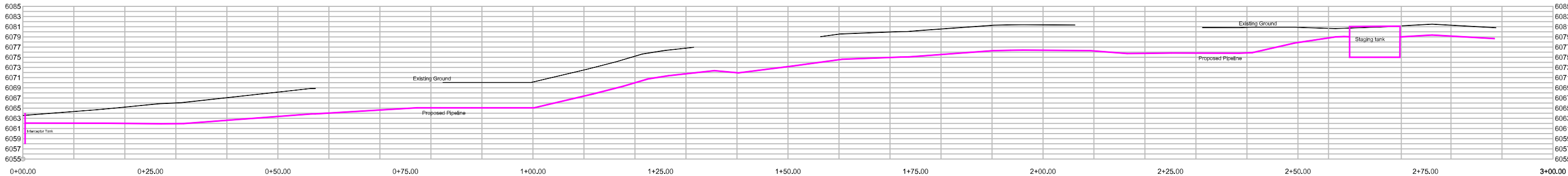
Staging Tank Detail

PROJECT NUMBER
005-24007

SCALE
NTS

DRAWING NUMBER
7 of 16

REVISION
1



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SOMERSET, CO. 81434

PROJECT NAME

Outfall 35 Modifications

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Pipeline Profile

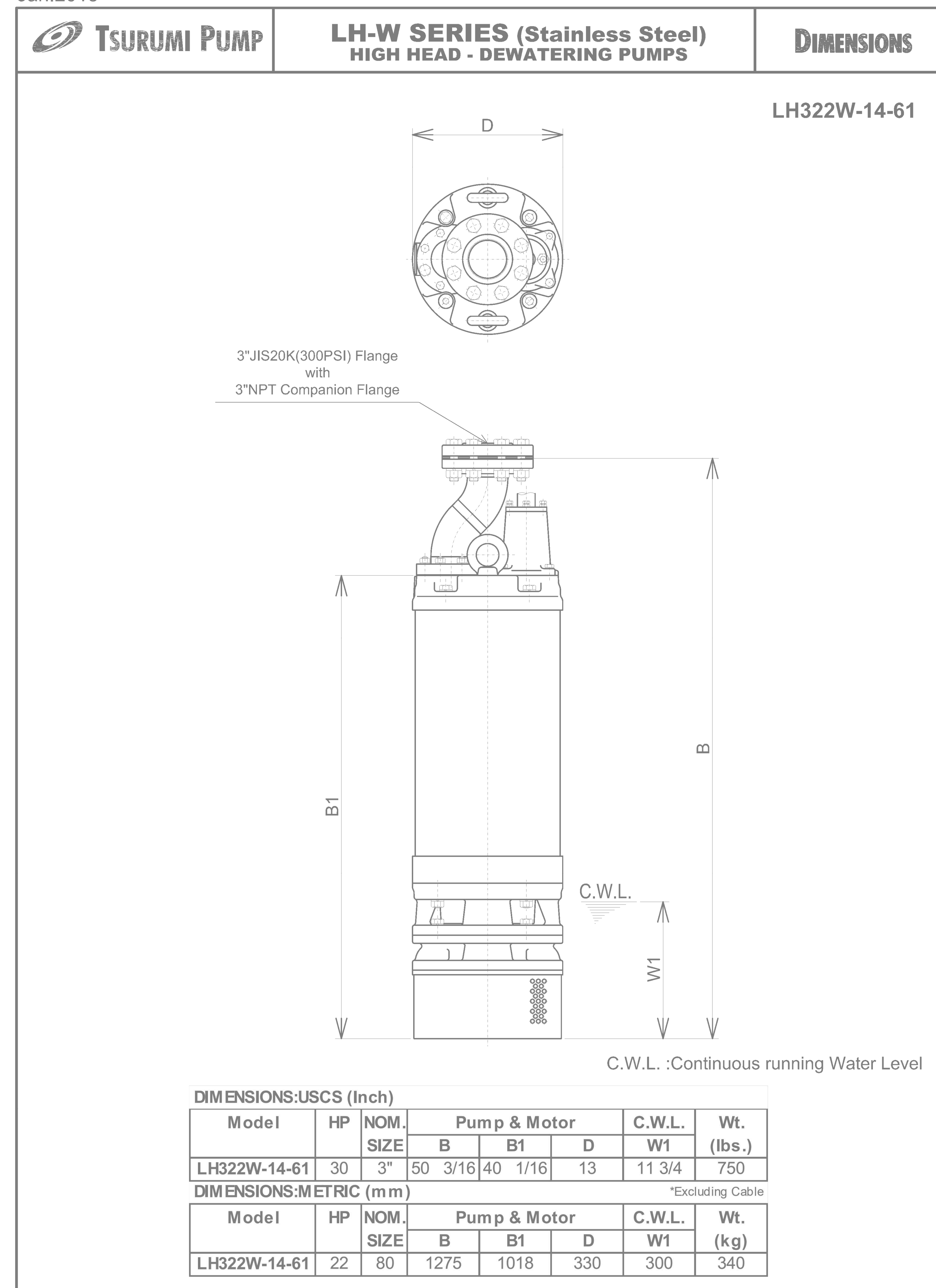
PROJECT NUMBER
005-24007

SCALE
1' = 20'

DRAWING NUMBER
8 of 16

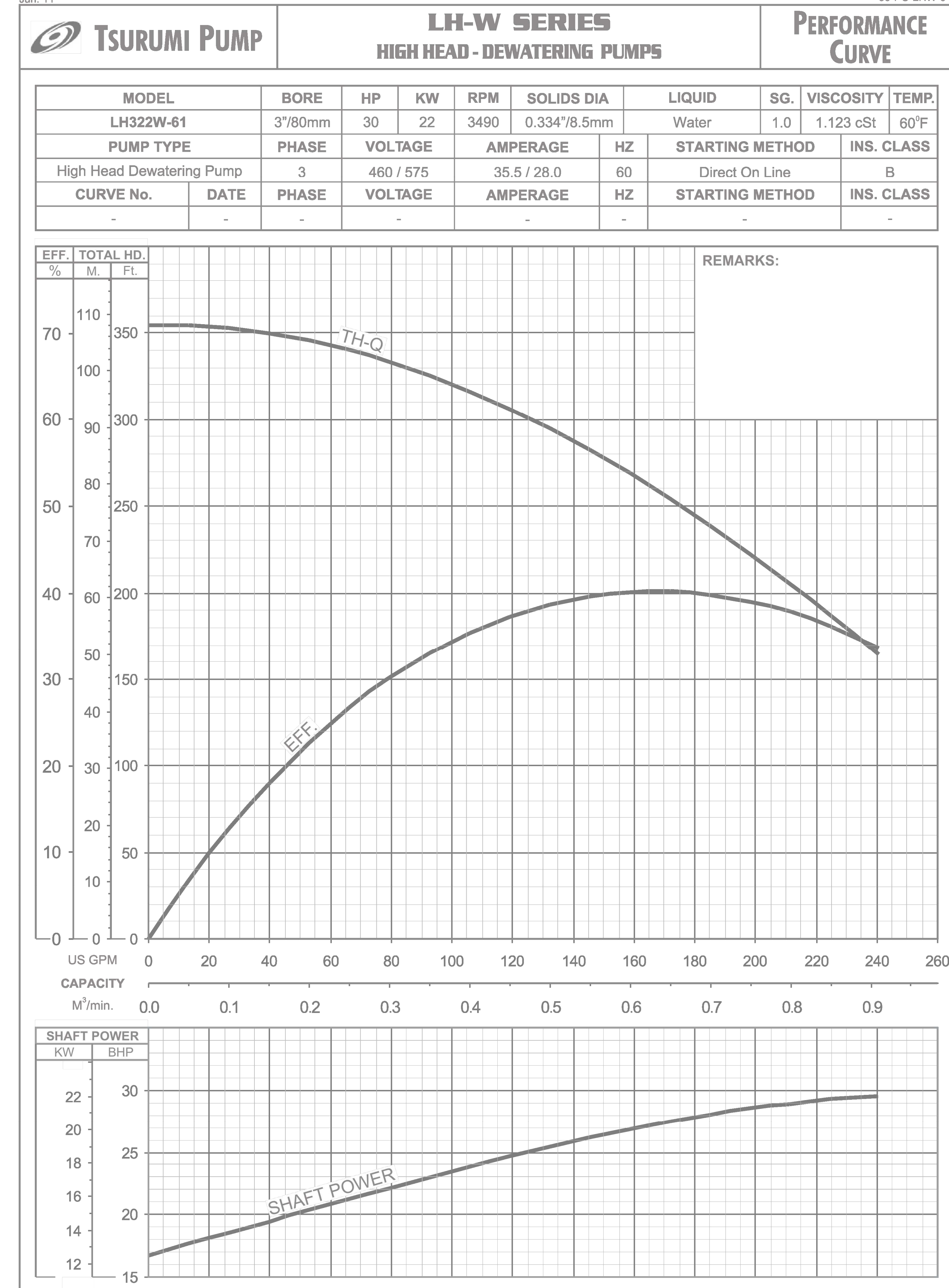
REVISION
1

Jan.2018



Jun. 11

60-PC-LHW-04



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P.O. BOX 591, 5174 HWY. 133
SOMERSET, CO. 81434

PROJECT NAME

Outfall 35 Modifications

HPM Contracting

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Detail Sheet 1

PROJECT NUMBER

005-24007

SCALE

NTS

DRAWING NUMBER

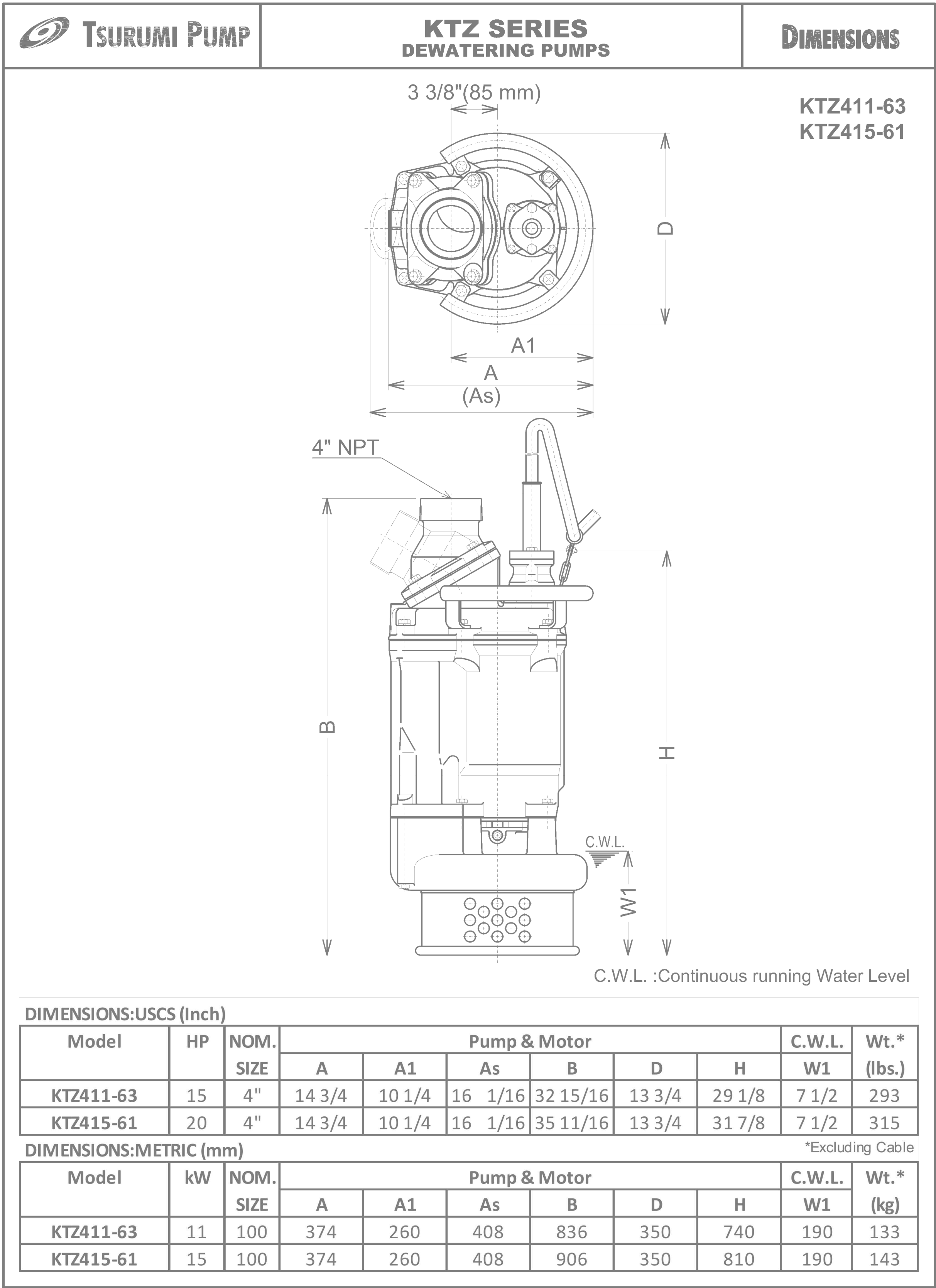
9 of 16

REVISION

1

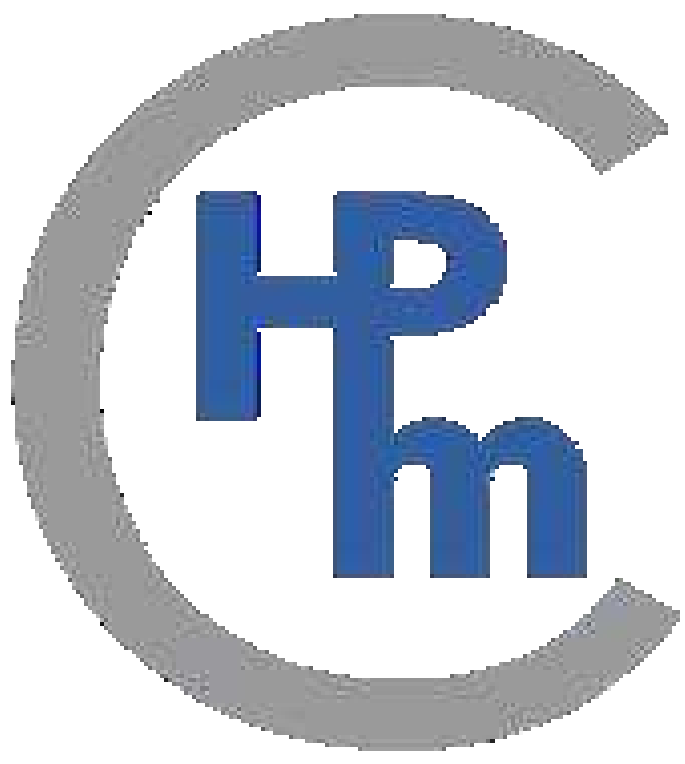
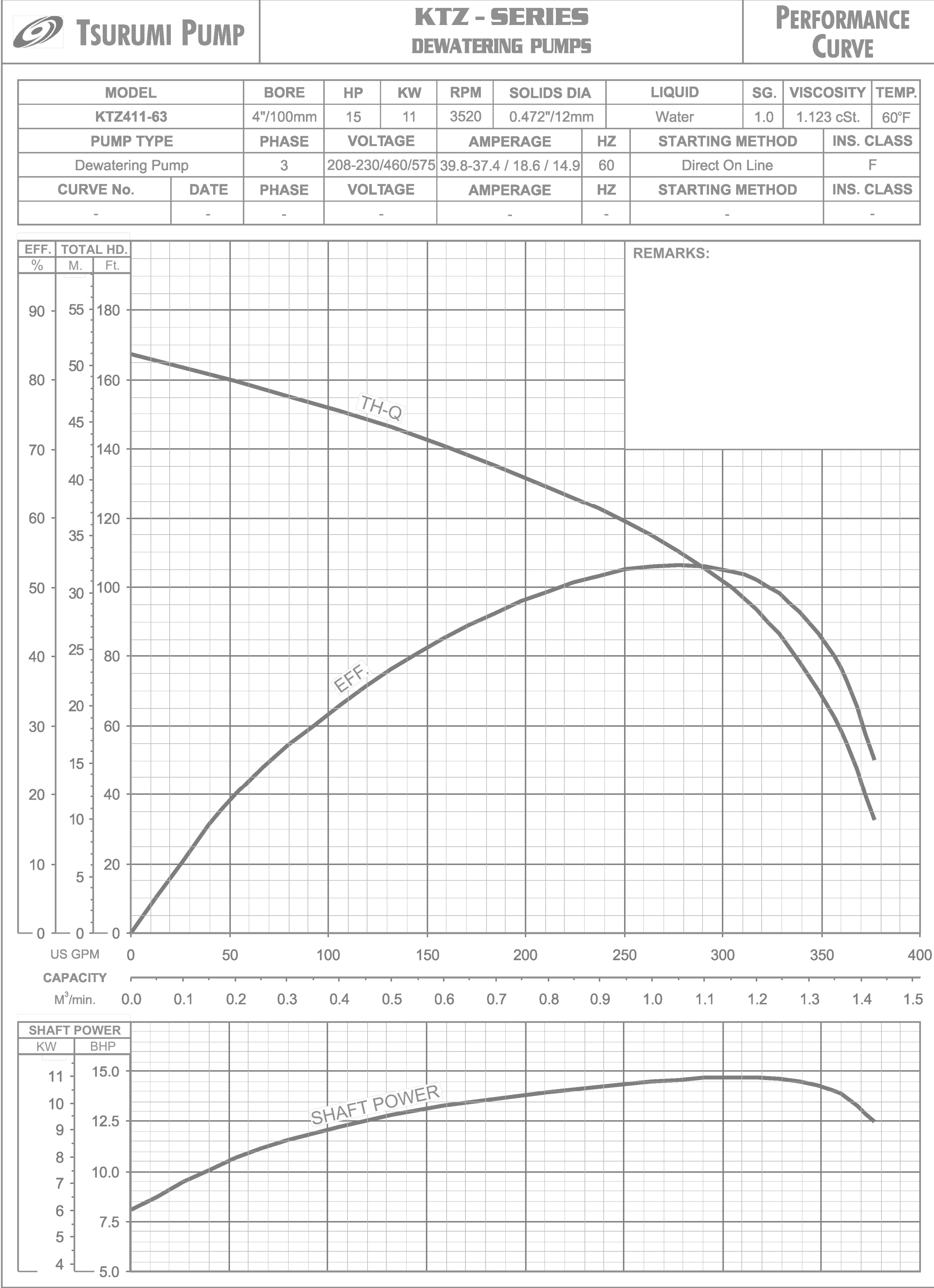
Aug.2018

DM-KTZ-06

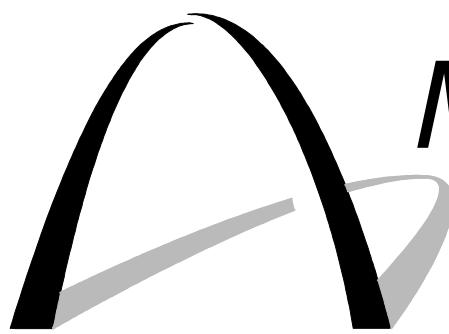


Mar. 13

60-PC-KTZ-12



	BY	DATE
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WEST ELK MINE
P.O. BOX 591, 5174 HWY. 133
SOMERSET, CO. 81434

PROJECT NAME

Outfall 35 Modifications

HPM Contracting

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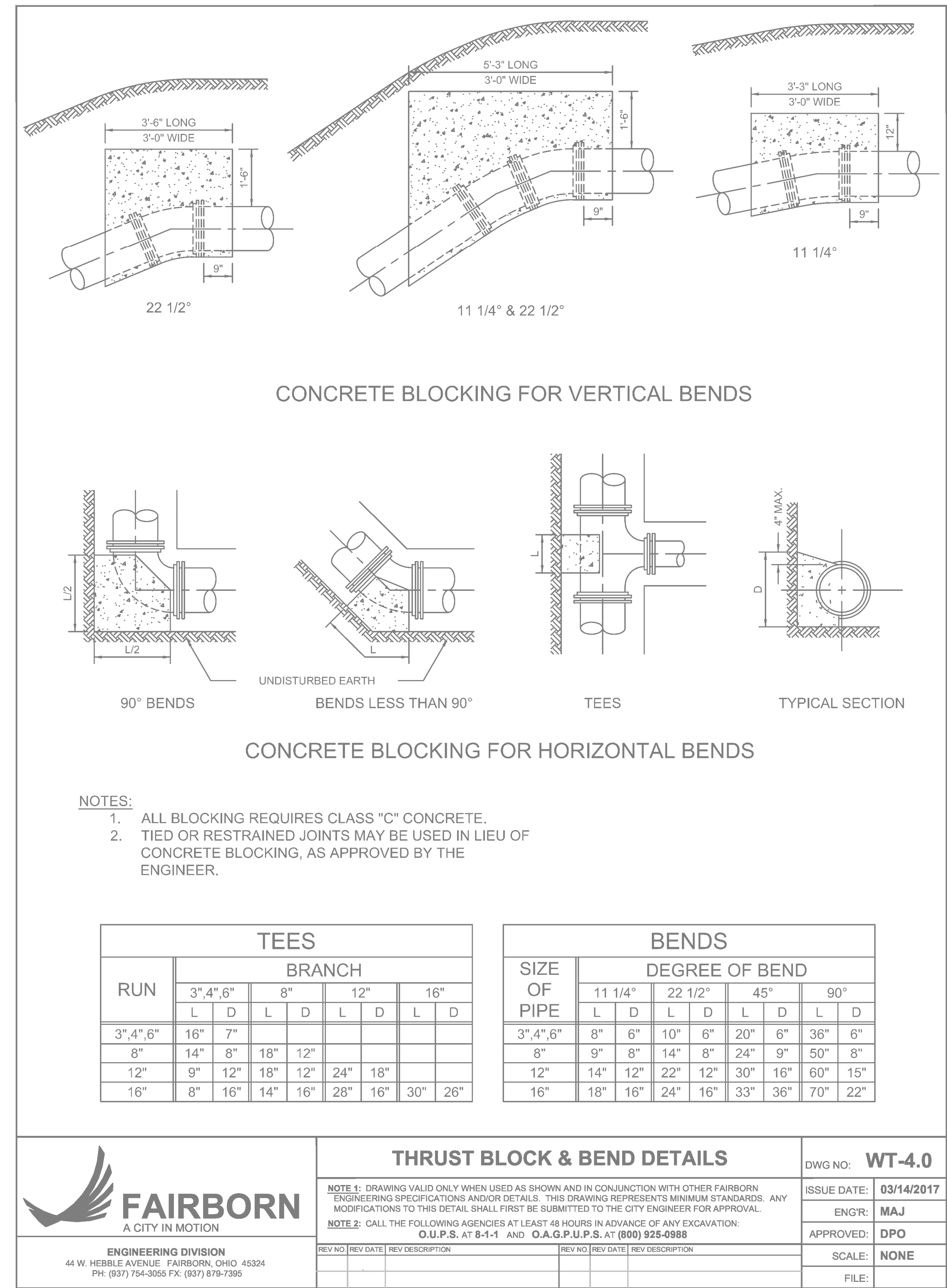
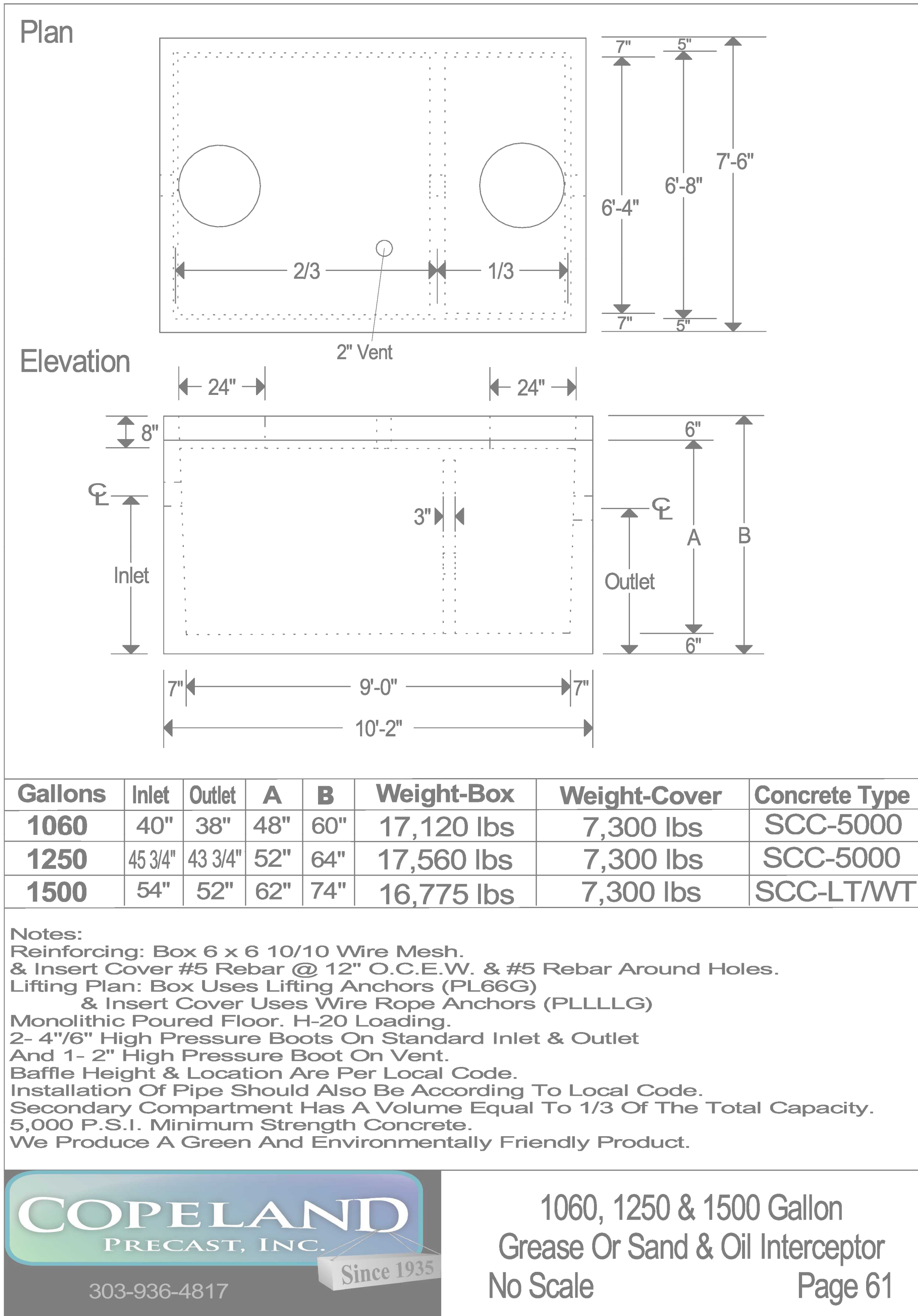
Detail Sheet 2

PROJECT NUMBER
005-24007

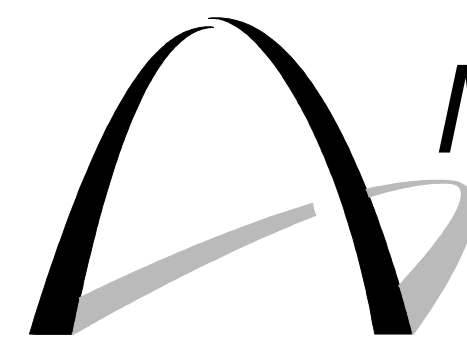
SCALE
NTS

DRAWING NUMBER
10 of 16

REVISION
1



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MOUNTAIN COAL
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CLIENT

WEST ELK MINE
P.O. BOX 591, 5174 HWY. 133
SOMERSET, CO. 81434

PROJECT NAME

Outfall 35 Modifications

HPM Contracting

9781 S. Meridian Blvd, Englewood CO 80112

Detail Sheet 3

PROJECT NUMBER

005-24007

SCALE

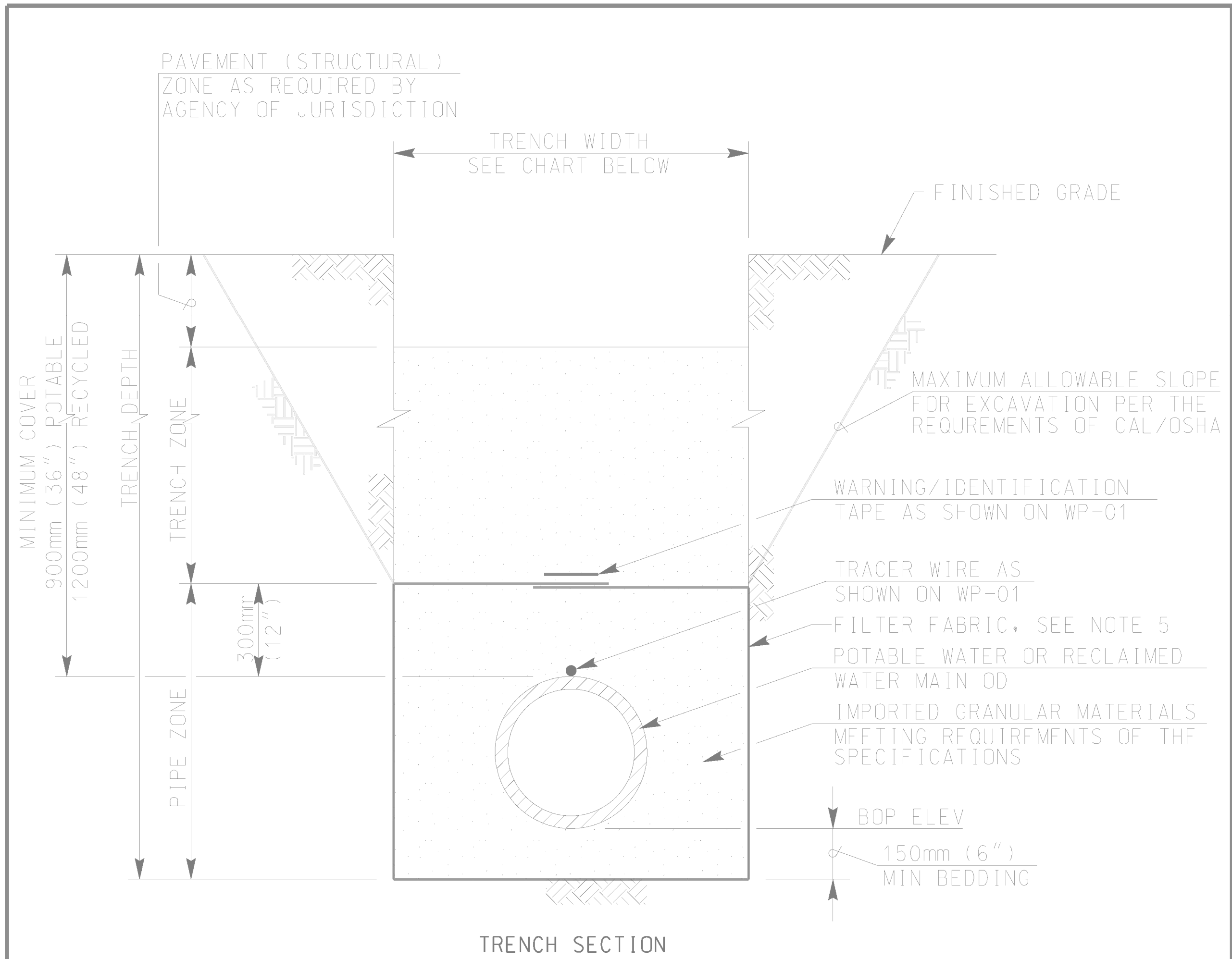
NTS

DRAWING NUMBER

11 of 16

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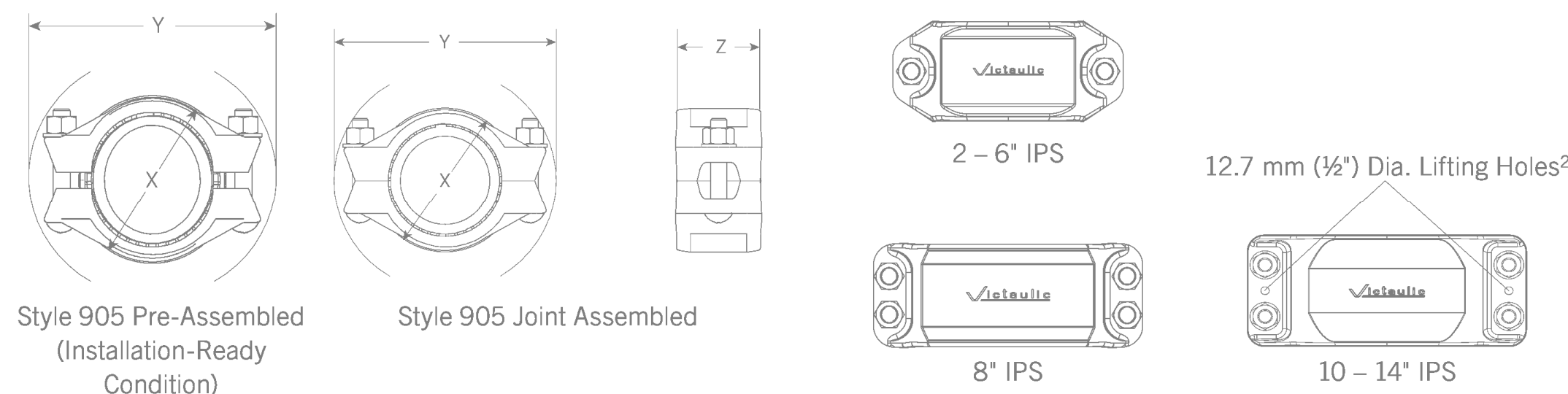
- NOTES:
- 1) REFER TO SECTION 02223 OF THE SPECIFICATIONS
 - 2) PAVING OR PAVEMENT REPAIR TO BE DONE IN ACCORDINACE TO CITY OR COUNTY STANDARDS
 - 3) EXCAVATE BELL HOLES AT EACH PIPE JOINT TO PERMIT PROPER ASSEMBLY AND INSPECTION OF THE ENTIRE JOINT
 - 4) ALL PIPELINE TRENCHES SHALL BE EXCAVATED SO THAT THE DISTANCE BETWEEN TRENCH WALLS AT THE TOP OF PIPE SHALL BE AS SHOWN BELOW:
- | TRENCH WIDTH | | |
|---------------------------------|--------------------|--------------------|
| NOMINAL PIPE INSIDE DIAMETER | MINIMUM DISTANCE | MAXIMUM DISTANCE |
| 100mm (4") & SMALLER | 450mm (18") | 700mm (28") |
| 150mm & 200mm (6" & 8") | 600mm (24") | 800mm (32") |
| 250mm & 300mm (10" & 12") | 700mm (28") | 900mm (36") |
| 400mm THRU 900mm (16" THRU 36") | OD PLUS 600mm(24") | OD PLUS 900mm(36") |
- 5) FILTER FABRIC (BURRITO WRAP) AS REQUIRED IN SECTION 02223 OF THE SPECIFICATIONS WITH A MINIMUM 300mm (12") OVERLAP
 - 6) FOR BEDDING AND BACKFILL OF SEWER FACILITIES SEE SP-02

PIPE BEDDING AND TRENCH BACKFILL FOR POTABLE AND RECYCLED WATER	WATER AGENCIES STANDARDS	
	COMMITTEE APPROVAL: 08/03/2018	
	DRAWING NUMBER: WP-02	

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4.0 DIMENSIONS

Style 905 – IPS Standard



IPS Size		Bolt/Nut		Dimensions					Weight
Nominal inches	Actual Outside Diameter inches mm	Qty.	Size inches	Pre-assembled (Installation-Ready™ condition)		Joint Assembled			Approximate (Each) lb kg
				X inches mm	Y inches mm	X inches mm	Y inches mm	Z inches mm	
2	2.375 60.3	2	½ x 3 ¼	3.88 99	6.38 162	3.50 89	6.63 168	4.13 105	5.5 2.5
3	3.500 88.9	2	⅝ x 3 ½	5.13 130	8.13 207	4.63 118	8.13 209	4.13 105	8.5 3.9
4	4.500 114.3	2	¾ x 4 ¼	6.50 165	9.25 235	6.00 152	9.38 238	4.75 121	13.1 5.9
5	5.563 141.3	2	¾ x 4 ¾	7.63 194	10.88 276	6.88 175	11.25 286	4.88 124	18.7 8.5
6	6.625 168.3	2	1 x 5	8.88 226	12.13 308	8.13 207	12.63 321	4.75 121	19.4 8.8
8	8.625 219.1	4	1 ¼ x 6 ¼	11.00 279	14.50 368	10.00 254	14.88 378	5.00 127	28.0 12.7
10	10.750 273.0	4	1 ¾ x 6 ½	13.73 349	17.75 451	12.73 323	18.25 464	7.09 180	73.5 33.3
12	12.750 323.9	4	1 ¾ x 6 ½	15.83 402	19.63 499	14.83 377	20.07 510	7.11 181	86.5 39.2
14	14.000 355.6	4	1 ½ x 7	17.67 449	21.38 543	16.42 417	21.89 556	8.42 214	112.6 51.1

* Unthreaded through holes for appropriately sized lifting eyes or hooks.

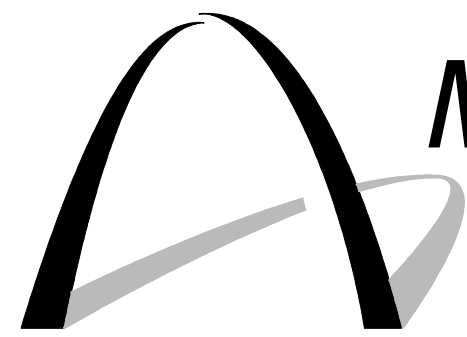
19.07 7969 Rev K Updated 01/2022 © 2022 Victaulic Company. All rights reserved.

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	BY	DATE
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MOUNTAIN COAL
COMPANY, LLC

CLIENT

WEST ELK MINE
P.O. BOX 591, 5174 HWY. 133
SOMERSET, CO. 81434

PROJECT NAME

Outfall 35 Modifications

HPM Contracting

9781 S. Meridian Blvd. Englewood CO 80112

Detail Sheet 4

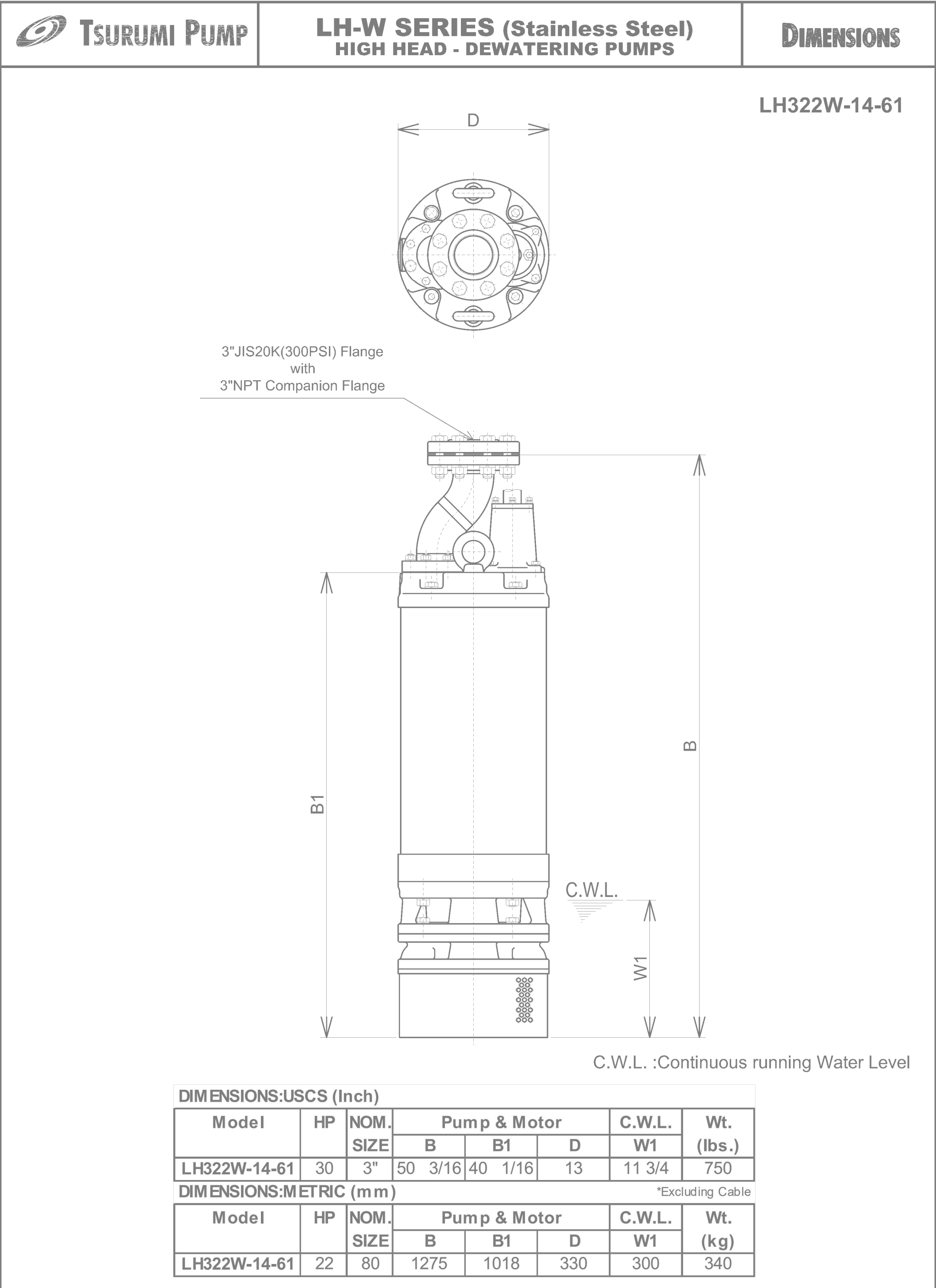
PROJECT NUMBER
005-24007

SCALE
NTS

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1

Jan.2018



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4.5 DIMENSIONS

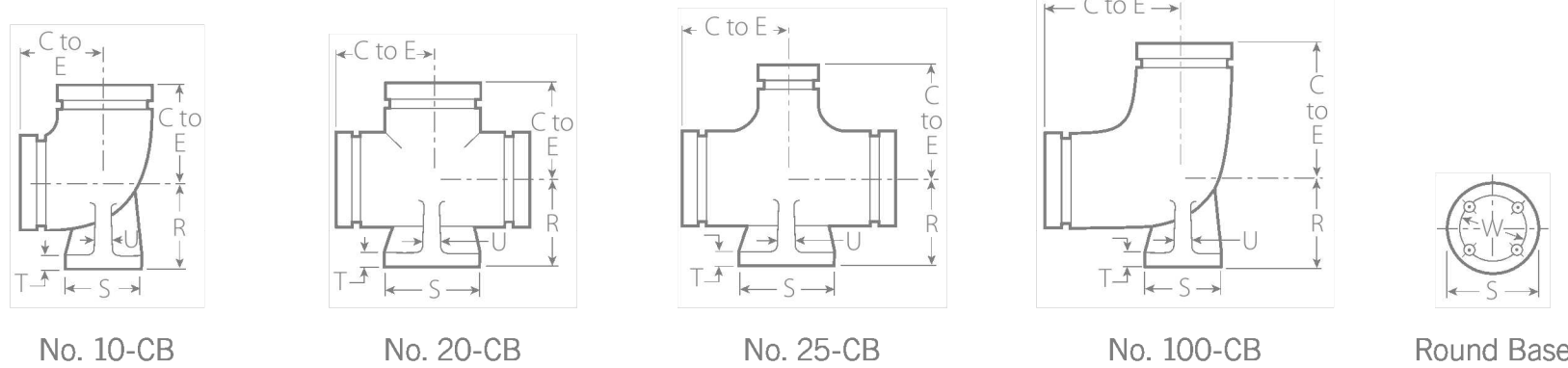
Base Fittings

No. 10-CB Base Elbow

No. 20-CB Base Tee

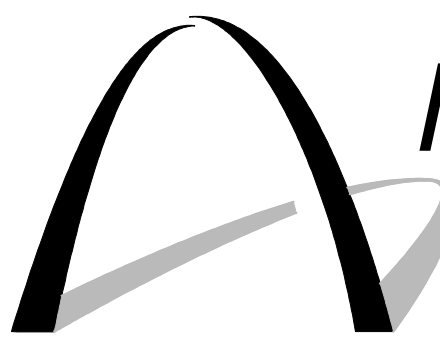
No. 25-CB Reducing Base Tee

No. 100-CB Long Radius Base Elbow





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SOMERSET, CO. 81434

PROJECT NAME

Outfall 35 Modifications

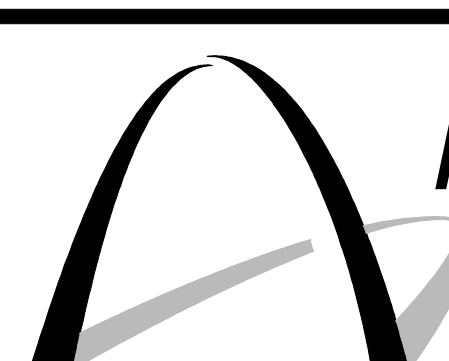
HPM Contracting

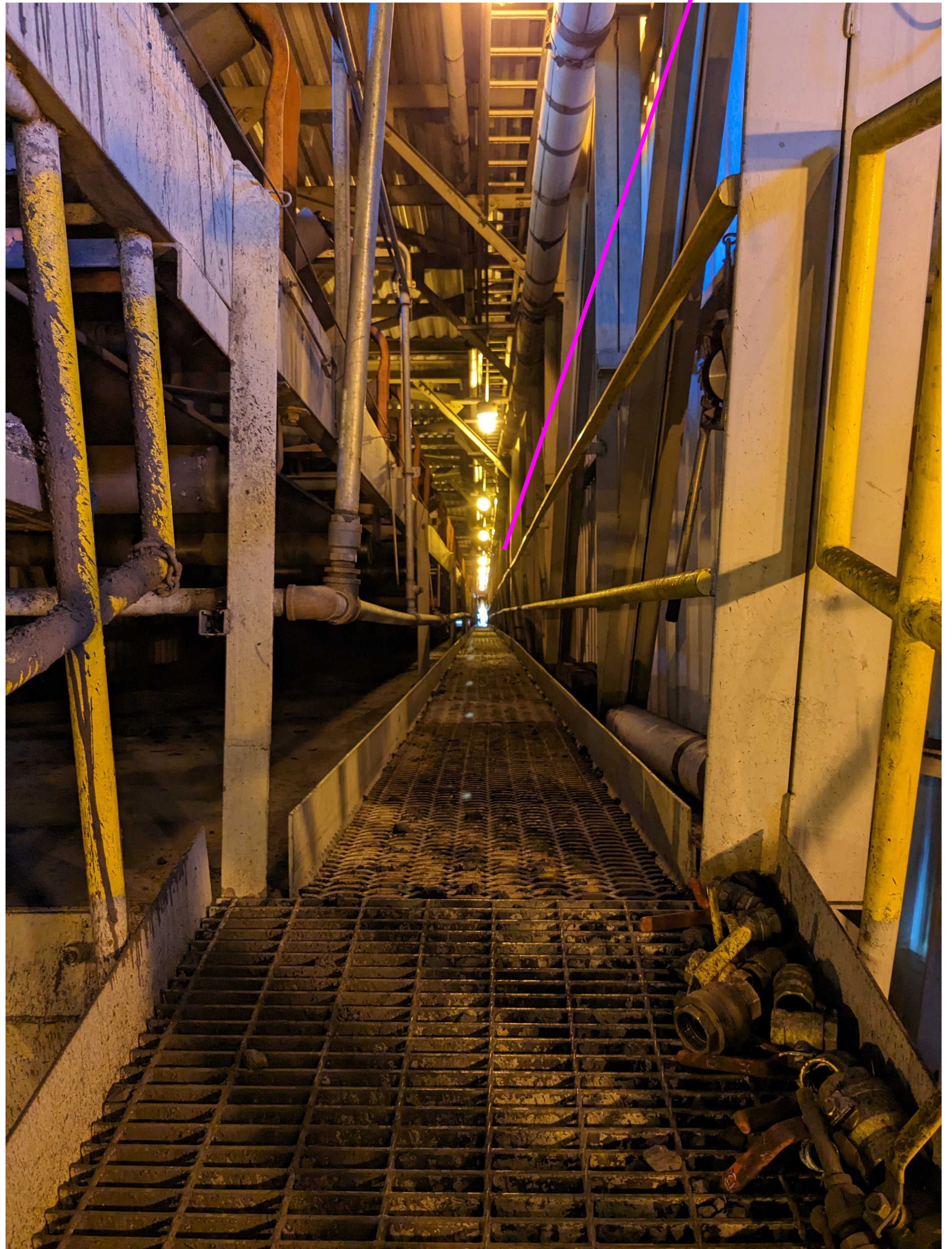
9781 S. Meridian Blvd. Englewood CO 80112

Detail Sheet 6

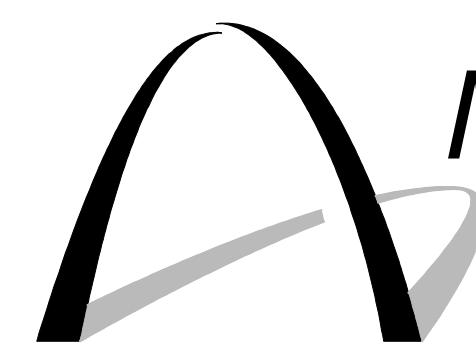
PROJECT NUMBER	SCALE	DRAWING NUMBER	REVISION
005-24007	NTS	14 of 16	1



		BY	DATE	 MOUNTAIN COAL COMPANY, LLC	CLIENT WEST ELK MINE P.O. BOX 591, 5174 HWY. 133 SOMERSET, CO. 81434	HPM Contracting								
	DRAWN	DJD	10/31/23			9781 S. Meridian Blvd. Englewood CO 80112								
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	REV	1	06/08/24											
				PROJECT NAME		Detail Sheet 7								
				Outfall 35 Modifications		PROJECT NUMBER	SCALE	DRAWING NUMBER	REVISION					
						005-24007	NTS	15 of 16	1					



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COMPANY, LLC**

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WEST ELK MINE
P.O. BOX 591, 5174 HWY. 133
SOMERSET, CO. 81434

PROJECT NAME

Outfall 35 Modifications

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Detail Sheet 8

PROJECT NUMBER
005-24007

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OUTFALL 35 CALCULATIONS

06/20/24

FROM SEDCAD RUN 50 yr/6 hr Storm
0.5 CFS INTO SUMP. $\approx$ 224 GPM

SUMP TANKS ARE 1500 GAL

APPROX 7 MIN. TO FILL COMPLETELY @ 224 GPM

TSUMI KTE PUMP CAPABLE OF 300 GPM $\pm$

ASSUMING FLOAT SWITCH SET AT 750 GAL. LEVEL IN
TANK INFLOW 3³ MIN. @ 224 GPM
OUTFLOW 2⁵ MIN @ 300 GPM

PUMPS WILL BE ABLE STAY AHEAD OF "PEAK" INFLOW
OF 0.5 CFS / 224 GPM

West Elk Mine **Outfall 35**

Mountain Coal Company
Arch Resources

Design to eliminate Outfall 35 and pump to MB-3

50-Yr./6-Hr. Storm

Daniel Duche'

Meridiam Partners, LLC
1001 W. Arizona Ave.
Denver, CO 80223

Phone: 303-586-4339
Email: dduche@meridiampartners.com

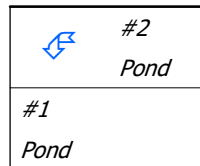
General Information

Storm Information:

Storm Type:	NRCS Type II
Design Storm:	50 yr - 6 hr
Rainfall Depth:	1.580 inches

Structure Networking:

Type	Stru #	(flows into)	Stru #	Musk. K (hrs)	Musk. X	Description
Pond	#1	==>	End	0.000	0.000	Outfall 35 Sump
Pond	#2	==>	#1	0.000	0.000	MB-4



Structure Summary:

		Immediate Contributing Area (ac)	Total Contributing Area (ac)	Peak Discharge (cfs)	Total Runoff Volume (ac-ft)
#2	In			0.75	0.04
	Out	0.600	0.600	0.43	0.04
#1	In			0.55	0.05
	Out	0.100	0.700	0.53	0.05

Structure Detail:

Structure #2 (Pond)

MB-4

Pond Inputs:

Initial Pool Elev:	6,077.00 ft
Initial Pool:	0.03 ac-ft

Straight Pipe

Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Entrance Loss Coefficient	Tailwater Depth (ft)
8.00	20.00	0.50	0.0140	6,077.00	0.90	0.00

Straight Pipe

Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Entrance Loss Coefficient	Tailwater Depth (ft)
12.00	20.00	0.50	0.0140	6,079.00	0.90	0.00

Pond Results:

Peak Elevation:	6,077.44 ft
Dewater Time:	0.15 days

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)
6,076.00	0.030	0.000	0.000	
6,076.50	0.030	0.015	0.000	
6,077.00	0.030	0.030	0.000	Spillway #1
6,077.44	0.032	0.044	0.429	3.70 Peak Stage
6,077.50	0.032	0.046	0.492	
6,078.00	0.035	0.062	1.144	
6,078.50	0.037	0.080	1.604	
6,079.00	0.040	0.100	1.941	Spillway #2
6,079.50	0.042	0.120	3.106	

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)
6,080.00	0.045	0.142	4.338	

Detailed Discharge Table

Elevation (ft)	Straight Pipe (cfs)	Straight Pipe (cfs)	Combined Total Discharge (cfs)
6,076.00	0.000	0.000	0.000
6,076.50	0.000	0.000	0.000
6,077.00	0.000	0.000	0.000
6,077.50	(1)>0.492	0.000	0.492
6,078.00	(6)>1.144	0.000	1.144
6,078.50	(6)>1.604	0.000	1.604
6,079.00	(6)>1.941	0.000	1.941
6,079.50	(6)>2.240	(1)>0.866	3.106
6,080.00	(6)>2.505	(1)>1.833	4.338

Structure #1 (Pond)

Outfall 35 Sump

Pond Inputs:

Initial Pool Elev:	6,063.00 ft
Initial Pool:	0.02 ac-ft

Straight Pipe

Barrel Diameter (in)	Barrel Length (ft)	Barrel Slope (%)	Manning's n	Spillway Elev (ft)	Entrance Loss Coefficient	Tailwater Depth (ft)
8.00	20.00	0.50	0.0140	6,063.00	0.90	0.00

Pond Results:

Peak Elevation:	6,063.53 ft
Dewater Time:	0.16 days

Dewatering time is calculated from peak stage to lowest spillway

Elevation-Capacity-Discharge Table

Elevation	Area (ac)	Capacity (ac-ft)	Discharge (cfs)	Dewater Time (hrs)
6,055.00	0.002	0.000	0.000	
6,055.01	0.002	0.000	0.000	
6,055.50	0.002	0.001	0.000	
6,056.00	0.002	0.002	0.000	
6,056.50	0.002	0.003	0.000	
6,057.00	0.002	0.004	0.000	
6,057.50	0.002	0.005	0.000	
6,058.00	0.002	0.006	0.000	
6,058.50	0.002	0.007	0.000	
6,059.00	0.002	0.008	0.000	
6,059.50	0.002	0.009	0.000	
6,060.00	0.002	0.010	0.000	
6,060.50	0.002	0.011	0.000	
6,061.00	0.002	0.012	0.000	
6,061.50	0.002	0.013	0.000	
6,062.00	0.002	0.014	0.000	
6,062.50	0.002	0.015	0.000	
6,063.00	0.002	0.016	0.000	Spillway #1
6,063.50	0.002	0.017	0.492	3.70
6,063.53	0.002	0.017	0.532	0.05 Peak Stage
6,064.00	0.002	0.018	1.144	
6,064.50	0.002	0.019	1.604	
6,065.00	0.002	0.020	1.941	

Detailed Discharge Table

Elevation (ft)	Straight Pipe (cfs)	Combined Total Discharge (cfs)
6,055.00	0.000	0.000
6,055.01	0.000	0.000
6,055.50	0.000	0.000
6,056.00	0.000	0.000
6,056.50	0.000	0.000
6,057.00	0.000	0.000
6,057.50	0.000	0.000
6,058.00	0.000	0.000
6,058.50	0.000	0.000
6,059.00	0.000	0.000
6,059.50	0.000	0.000

Elevation (ft)	Straight Pipe (cfs)	Combined Total Discharge (cfs)
6,060.00	0.000	0.000
6,060.50	0.000	0.000
6,061.00	0.000	0.000
6,061.50	0.000	0.000
6,062.00	0.000	0.000
6,062.50	0.000	0.000
6,063.00	0.000	0.000
6,063.50	(1)>0.000	0.492
6,064.00	(6)>0.000	1.144
6,064.50	(6)>0.000	1.604
6,065.00	(6)>0.000	1.941

Subwatershed Hydrology Detail:

Stru #	SWS #	SWS Area (ac)	Time of Conc (hrs)	Musk K (hrs)	Musk X	Curve Number	UHS	Peak Discharge (cfs)	Runoff Volume (ac-ft)
#2	1	0.600	0.046	0.000	0.000	91.000	TR55	0.75	0.040
Σ		0.600						0.75	0.040
#1	1	0.100	0.013	0.000	0.000	91.000	TR55	0.12	0.005
Σ		0.700						0.55	0.045

Subwatershed Time of Concentration Details:

Stru #	SWS #	Land Flow Condition	Slope (%)	Vert. Dist. (ft)	Horiz. Dist. (ft)	Velocity (fps)	Time (hrs)
#1	1	7. Paved area and small upland gullies	8.00	22.80	285.00	5.690	0.013
#1	1	Time of Concentration:					0.013
#2	1	7. Paved area and small upland gullies	0.50	1.19	238.00	1.420	0.046
#2	1	Time of Concentration:					0.046