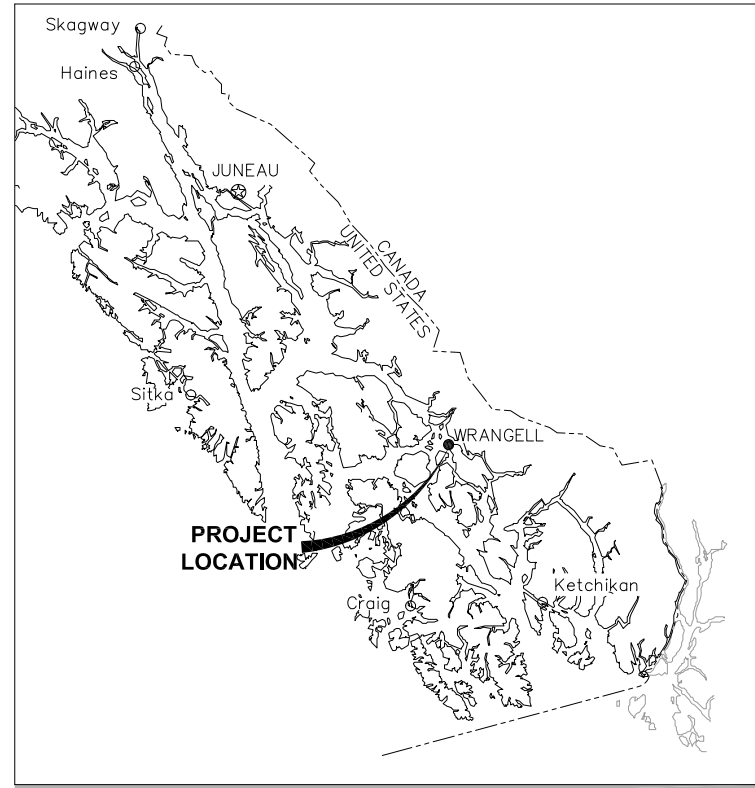


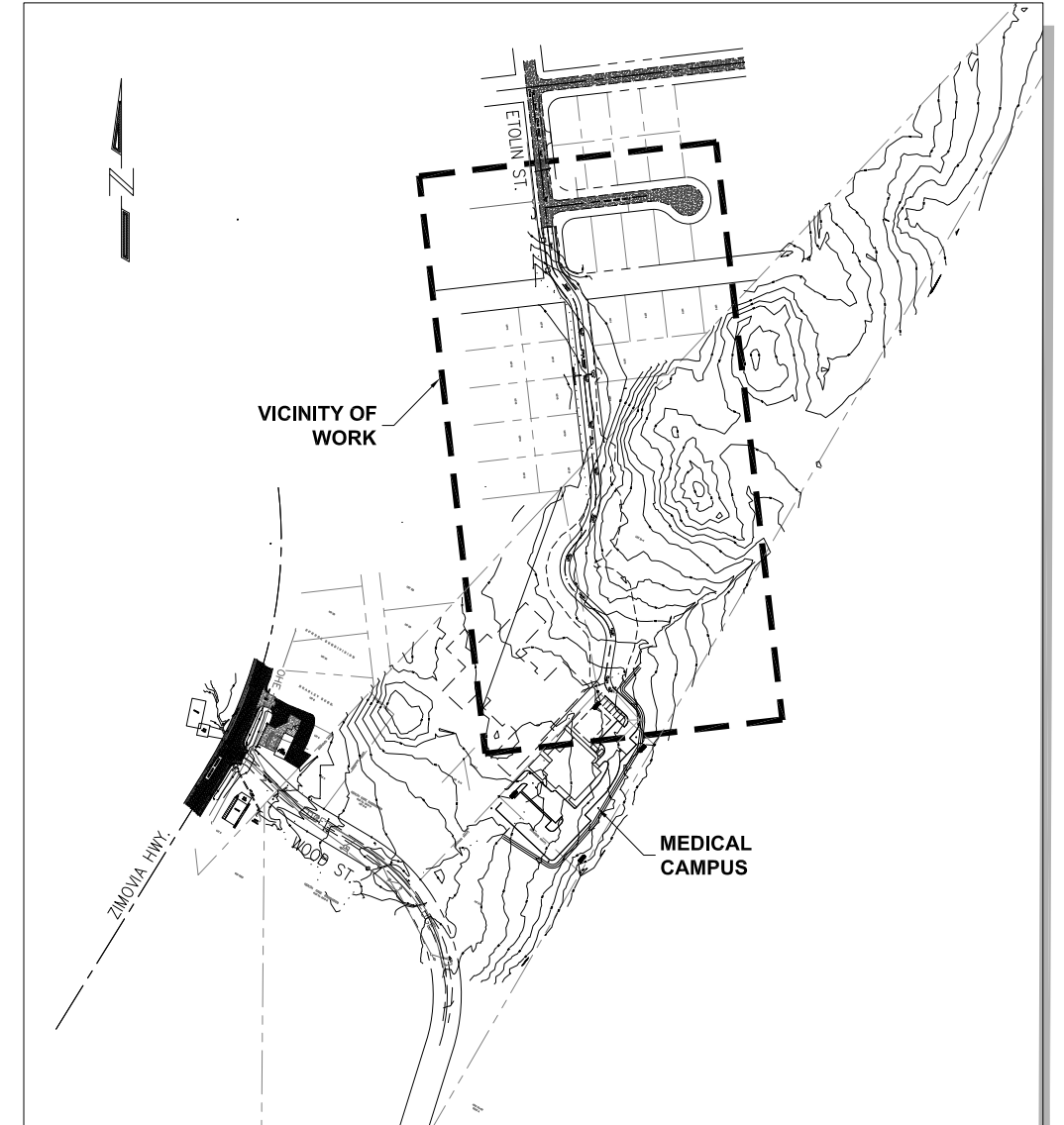
# ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE



LOCATION MAP



VICINITY MAP



KEY PLAN

FOR BID



811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.

REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

PROJECT: <b>ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE</b>			
TITLE: <b>TITLE SHEET</b>			
DESIGNED BY:	SR	PROJECT NO:	114018.01
DRAWN BY:	DRH	DATE:	DEC. 2011
CHECKED BY:	GW	SCALE:	NOTED
			SHEET NO: <b>T1.01</b>

12/21/11 Drawings 2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Rebid\114018.02-G1.01.dwg

**SHEET INDEX**

DWG. NO.	REV. NO.	SHEET NO.	SHEET NAME
GENERAL			
T1.01	1	1	TITLE SHEET
G1.01	1	2	SHEET INDEX
G2.01	1	3	ETOLIN STREET SITE SURVEY
G3.01	1	4	PND TEST PIT LOCATION PLAN
G3.02	1	5	TEST PIT LOGS
G3.03	1	6	TEST PIT LOGS
G3.04	1	7	TEST PIT LOGS
G3.05	1	8	TEST PIT LOGS
G4.01	1	9	KEY PLAN
CIVIL			
C1.01	1	10	ETOLIN STREET SITE PREPARATION PLAN
C1.02	1	11	MEDICAL CAMPUS SITE PREPARATION PLAN
C1.03	1	12	TESC DETAILS
C2.01	1	13	ETOLIN STREET PLAN AND PROFILE
C2.02	1	14	MEDICAL CAMPUS ROADWAY PLAN AND PROFILE
C2.03	1	15	ROADWAY DETAILS
C2.04	1	16	ROADWAY DETAILS
C3.01	1	17	ETOLIN STREET STORMWATER PLAN
C3.02	1	18	MEDICAL CAMPUS STORMWATER PLAN AND PROFILE
C3.03	1	19	CULVERT PROFILES
C3.04	1	20	CULVERT DETAILS
C3.05	1	21	STORMWATER DETAILS
C4.01	1	22	ETOLIN STREET WATER MAIN PLAN AND PROFILE
C4.02	1	23	MEDICAL CAMPUS WATER MAIN PLAN AND PROFILE
C4.03	1	24	WATER MAIN DETAILS
C5.01	1	25	ETOLIN STREET FORCE MAIN PLAN AND PROFILE
C5.02	1	26	MEDICAL CAMPUS FORCE MAIN PLAN AND PROFILE
C5.03	1	27	FORCE MAIN DETAILS
C5.04	1	28	FORCE MAIN DETAILS
C5.05	1	29	UTILITY DETAILS
C6.01	1	30	ETOLIN STREET SIGNAGE AND STRIPING PLAN
C6.02	1	31	MEDICAL CAMPUS SIGNAGE PLAN
C6.03	1	32	SIGNAGE DETAILS

**CIVIL SYMBOLS**

SYMBOL	DESCRIPTION (ABBR)	SYMBOL	DESCRIPTION (ABBR)
⊙ TP-XXX	TEST PIT LOCATION	-----	ROCKWALL
⊙	FOUND REBAR W/ AL. CAP	----- W -----	EXISTING WATER MAIN
⊙	FOUND 1" BC ON 3/4" IP	----- SS -----	EXISTING SANITARY SEWER
⊙	FOUND #5 REBAR	----- FM -----	EXISTING FORCEMAIN
●	PND SPIKE W/ PND YPC	----- W -----	NEW WATER MAIN
▲	PND PK NAIL W/ SHINER	----- SS -----	NEW SANITARY SEWER
( )	RECORD INFO.	----- FM -----	NEW FORCEMAIN
⊠	ELECTRIC VAULT	----- SD -----	NEW STORM DRAIN
○	POWER POLE	----- UGE -----	STREAM THALWEG
⌋	GUY ANCHOR	----- OHE -----	UNDERGROUND ELECTRIC
⊠	ELECTRIC PEDESTAL	~~~~~	OVERHEAD ELECTRIC
⌋	WATER VALVE	~~~~~	VEGETATION LINE
⌋	CAP/PLUG	-----	EDGE OF GRAVEL ROAD
⊙	FORCEMAIN CLEANOUT	-----	SLOPE BREAK LINE
⊙	GUARD POST	-----	DITCH FLOW CENTERLINE
▽	REDUCER	-----	EXISTING PAVEMENT
▽	THRUST BLOCK	-----	CONCRETE
⊠	WATER METER	-----	GRAVEL
⊠	FIRE HYDRANT	-----	CONCRETE
⊠	GATE VALVE	-----	DRAIN ROCK
⊠	UTILITY VAULT	-----	PROPERTY LINE
⊠	WATER VAULT	-----	RIGHT-OF-WAY LINE
⊠	SEWER MANHOLE	-----	CUT SLOPE
⊠	STORM DRAIN CATCH BASIN	-----	FILL SLOPE
⊠	CATCH BASIN TYPE 2	-----	GEOTEXTILE
⊠	GATE POST	-----	GUARDRAIL
⊠	SIGN	-----	
⊠	HC RAMP	-----	



811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.



REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

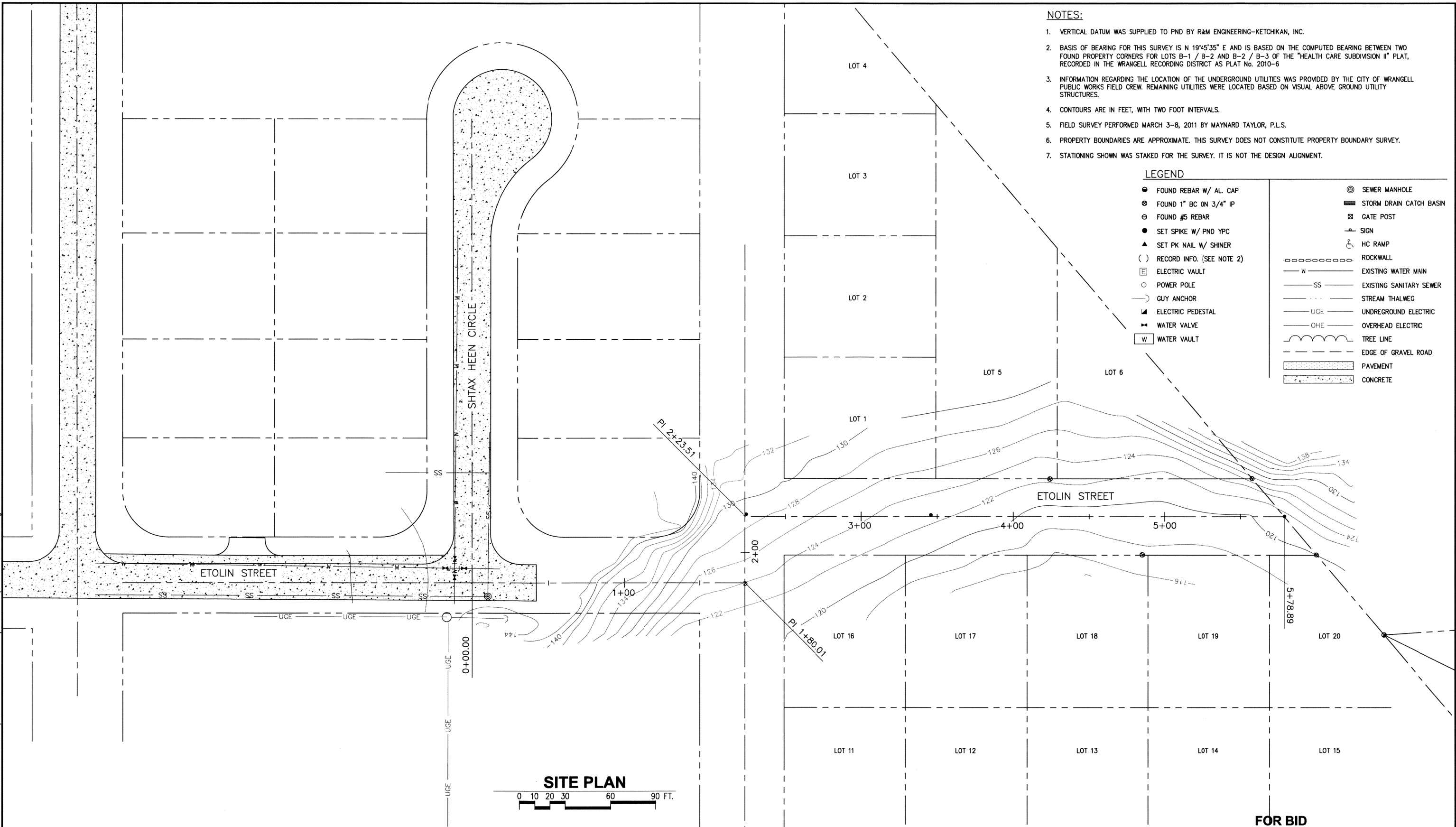
**FOR BID**

**ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE**

**SHEET INDEX**

DESIGNED BY:	SR	PROJECT NO:	114018.02	SHEET NO:	<b>G1.01</b>
DRAWN BY:	DRH	DATE:	DEC. 2011		
CHECKED BY:	GW	SCALE:	NOTED		

12/19/11 Drawings\2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Rebid\114018.02-02.01.dwg



811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.

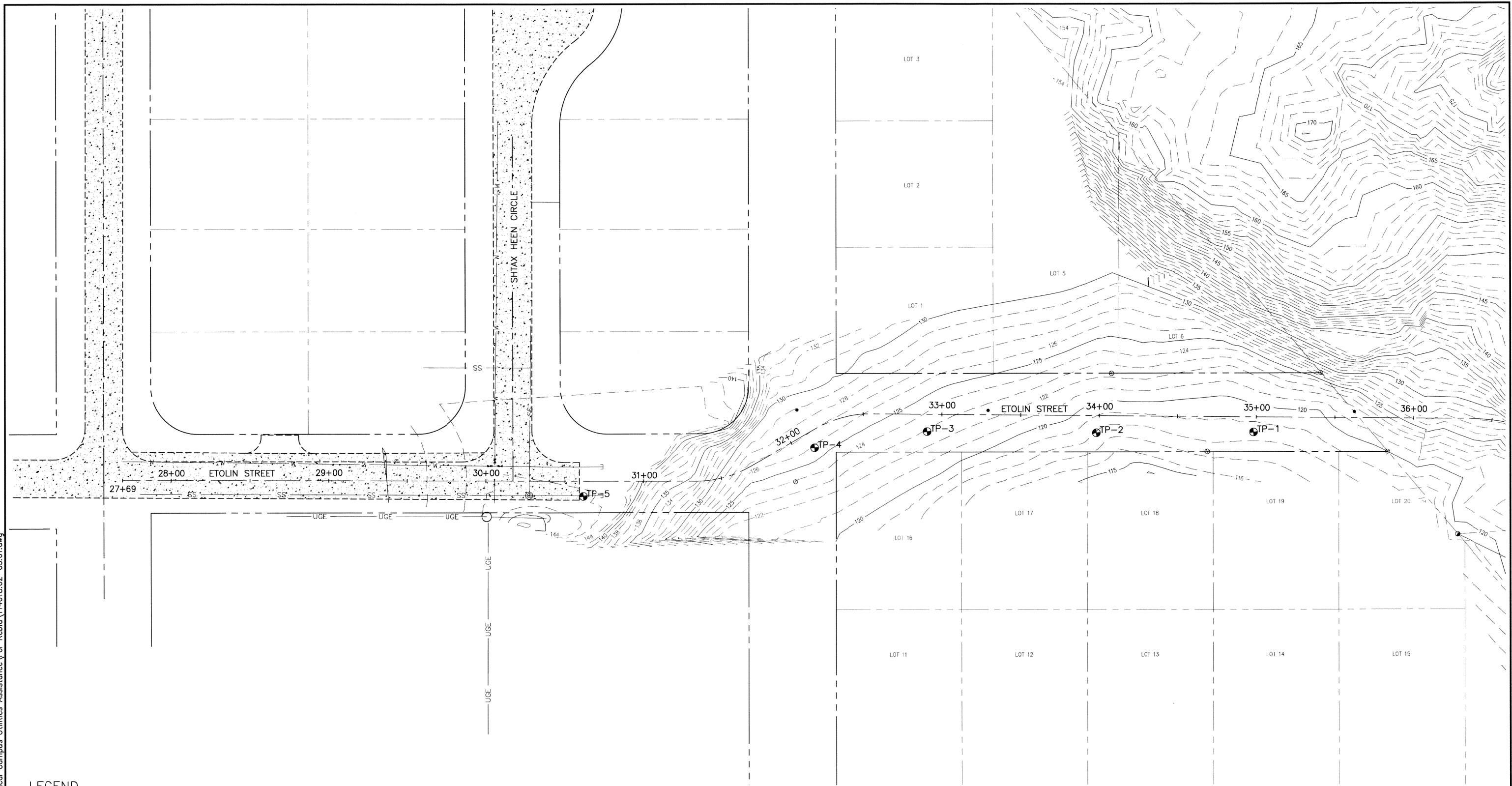


REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

PROJECT: <b>ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE</b>			
TITLE: <b>ETOLIN STREET SITE SURVEY</b>			
DESIGNED BY:	MT	PROJECT NO:	114018.02
DRAWN BY:	DRH	DATE:	DEC. 2011
CHECKED BY:	SR	SCALE:	NOTED
			SHEET NO: <b>G2.01</b>



12/19/11 Drawings\2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Rebid\114018.02-G3.01.dwg



**LEGEND**

● TP-X TEST PIT LOCATION

----- PROJECT BASELINE



**FOR BID**



811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.



REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

PROJECT: <b>ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE</b>			
TITLE: <b>PND TEST PIT LOCATION PLAN</b>			
DESIGNED BY:	SR	PROJECT NO:	114018.02
DRAWN BY:	DRH	DATE:	DEC. 2011
CHECKED BY:	GW	SCALE:	NOTED
			SHEET NO: <b>G3.01</b>



## SOILS CLASSIFICATION, CONSISTENCY AND SYMBOLS

### CLASSIFICATION

Identification and classification of the soil is accomplished in general accordance with the ASTM version of the Unified Soil Classification System (USCS) as presented in ASTM Standard D 2487. The standard is a qualitative method of classifying soil into the following major divisions (1) coarse grained (2) fine-grained, and (3) highly organic soils. Classification is performed on the soils passing the 75 mm (3 inch) sieve and if possible the amount of oversize material (> 75 mm particles) is noted on the soil logs. This is not always possible for drilled test holes because the oversize particles are typically too large to be captured in the sampling equipment. Oversize materials greater than 300 mm (12 inches) are termed boulders, while materials between 75 mm and 300 mm are termed cobbles. Coarse grained soils are those having 50% or more of the non-oversize soil retained on the No. 200 sieve; if a greater percentage of the coarse grains is retained on the No. 4 sieve the coarse grained soil is classified as gravel, otherwise it is classified as sand. Fine grained soils are those having more than 50% of the non-oversize material passing the No. 200 sieve; these may be classified as silt or clay depending their Atterberg liquid and plastic limits or observations of field consistency. Refer to ASTM D 2487-93 for a complete discussion of the classification method.

### SOIL CONSISTENCY - CRITERIA

Soil consistency as defined below and determined by normal field and laboratory methods applies only to non-frozen material. For these materials, the influence of such factors as soil structure, i.e. fissure systems, shrinkage cracks, slickensides, etc., must be taken into consideration in making any correlation with the consistency values listed below. In permafrost zones, the consistency and strength of frozen soils may vary significantly and unexplainably with ice content, thermal regime and soil type.

Relative Density of Sands According to results of Standard Penetration Test		Consistency of Clay in Terms of Unconfined Compressive Strength (tsf)	
N*(Blows/ft)	Relative Density		
Loose 0 - 10	0 - 40%	Very Soft	0.0 - 0.25
Dense 10 - 30	40 - 70%	Soft	0.25 - 0.5
Medium Dense 30 - 60	70 - 90%	Stiff	0.5 - 1.0
Very Dense > 60	90 - 100%	Firm	1.0 - 2.0
		Very Firm	2.0 - 4.0
		Hard	> 4.0

\* Standard Penetration, "N": Blows per foot of a 140-pound hammer falling 30 inches on a 1.4" ID split-spoon sampler except where noted.

### SAMPLER TYPE SYMBOLS

St ..... 1.4" Split Spoon W/ 47# Hammer	Ts ..... Shelby Tube
Ss ..... 1.4" Split Spoon W/ 140# Hammer	Tm ..... Modified 2.5" O.D. Shelby Tube
Sl ..... 2.5" Split Spoon W/ 140# Hammer	Pb ..... Pitcher Barrel
Sm ..... 2.5" Split Spoon W/ 300# Hammer	Cs ..... Core Barrel W/ Single Tube
Sh ..... 2.5" Split Spoon W/ 340# Hammer	Cd ..... Core Barrel W/ Double Tube
Sp ..... 2.5" Split Spoon, Pushed	Bs ..... Bulk Sample
Hs ..... 1.4" Split Spoon Driven W/ Air Hammer	A ..... Auger Sample
Hl ..... 2.5" Split Spoon Driven W/ Air Hammer	G ..... Grab Sample
Sx ..... 2.0" Split Spoon Driven W/ 140# Hammer	
Sz ..... 1.4" Split Spoon Driven W/ 340# Hammer	

### NOTES

1. Split spoon sampler sizes presented above refer to the inside diameter of the sampler.



Designed: MH  
Drawn: ALR  
Checked: MH  
Project No.: -  
Date: DEC. 2003

### STANDARD BOREHOLE LOG DETAILS

**BOREHOLE LOGS      FIGURE B-01**

Depth (Feet)	Water Table	GRAPHIC SYMBOL	SOIL DESCRIPTION				SAMPLES			GRAPH				COMMENTS		Elevation (Feet)	
			Soil Name, Color, Moisture Content, Relative Density, Soil Structure, Mineralogy, Other Information				Number	Type	Location	Recovery (%)	Penetration Blows per 6/Inch (per Foot)*	BLOW COUNT (BPF)* 20 40 60 80 POCKET PEN. (TSF) 1 2 3 4 VANE SHEAR (TSF) 2 4 6 8					Casing Depth, Drilling Rate, Fluid Loss, Drill Pressure, Tests, Instrumentation Additional Information
0			0' - 0.30' A.C. PAVEMENT														24.43
2			POORLY-GRADED GRAVEL W/ SILT AND SAND Gray, Dry, Subangular, Medium Dense, GP-GM				1	Ss		30	6-6-5-4 (9)					Begin drilling 10/24/03 8:00 a.m. 2' to 3' - Hard, loud drilling 1-ft min. boulder encountered	22.43

### COLUMN DESCRIPTIONS

- 1 Depth Depth (in feet) below the ground surface.
- 2 Water Level Groundwater level recorded while drilling. Depths and times are recorded in comments column.
- 3 Graphic Log Graphic depiction of materials encountered.
- 4 Soil Description Description of materials encountered, including USCS soil descriptions.
- 5 Sample Number Sample identification number.
- 6 Sample Type Type of soil sample collected at depth interval depicted; symbols explained on Fig. B-01.
- 7 Sample Location Location soil sample taken.
- 8 Sample Recovery Percentage of sample recovered.
- 9 Sample Blows Number of blows to advance driven sampler each 6-inch interval using sampler type specified with a 30-inch drop. Blows per foot given in parentheses.
- 10 Graphs Graphic log depicting blow counts per foot with a specified split spoon, Pocket Penetration and Vane Shear tests depicted where taken on fine grained soils.
- 11 Comments Comments or observations on drilling/sampling by driller or PND field personnel.
- 12 Elevation Elevation (in feet) with respect to Mean Lower Low Water (MLLW) or other datum where specified.

### GENERAL NOTES

1. Soil Classifications are base on the Unified Soil Classification System. Field descriptions may have been modified to reflect laboratory test results.
2. Descriptions on these boring logs apply only at the specific locations at the time the borings were drilled. They are not warranted to be representative of subsurface conditions at other locations or times.
3. Split spoon blow counts shown are uncorrected raw data. Various hammer sizes and split spoon sizes were used and have not been corrected to a Standard Penetration Test (SPT). Blow counts may vary substantially between SPT and these methods.



Designed: MH  
Drawn: ALR  
Checked: MH  
Project No.: -  
Date: DEC. 2003

### STANDARD BOREHOLE LOG DETAILS

**BOREHOLE LOGS      FIGURE B-02**

FOR BID



811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.

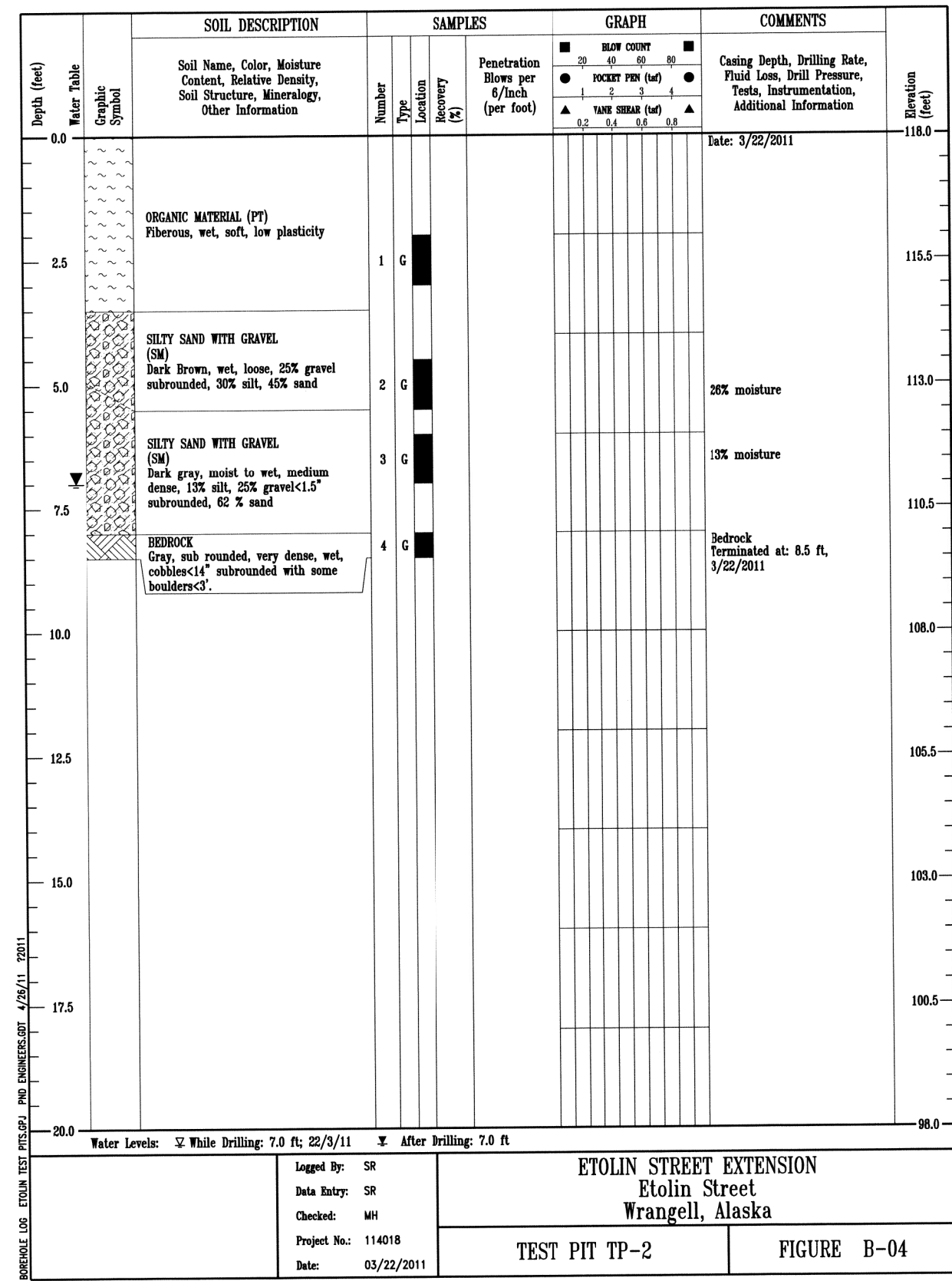
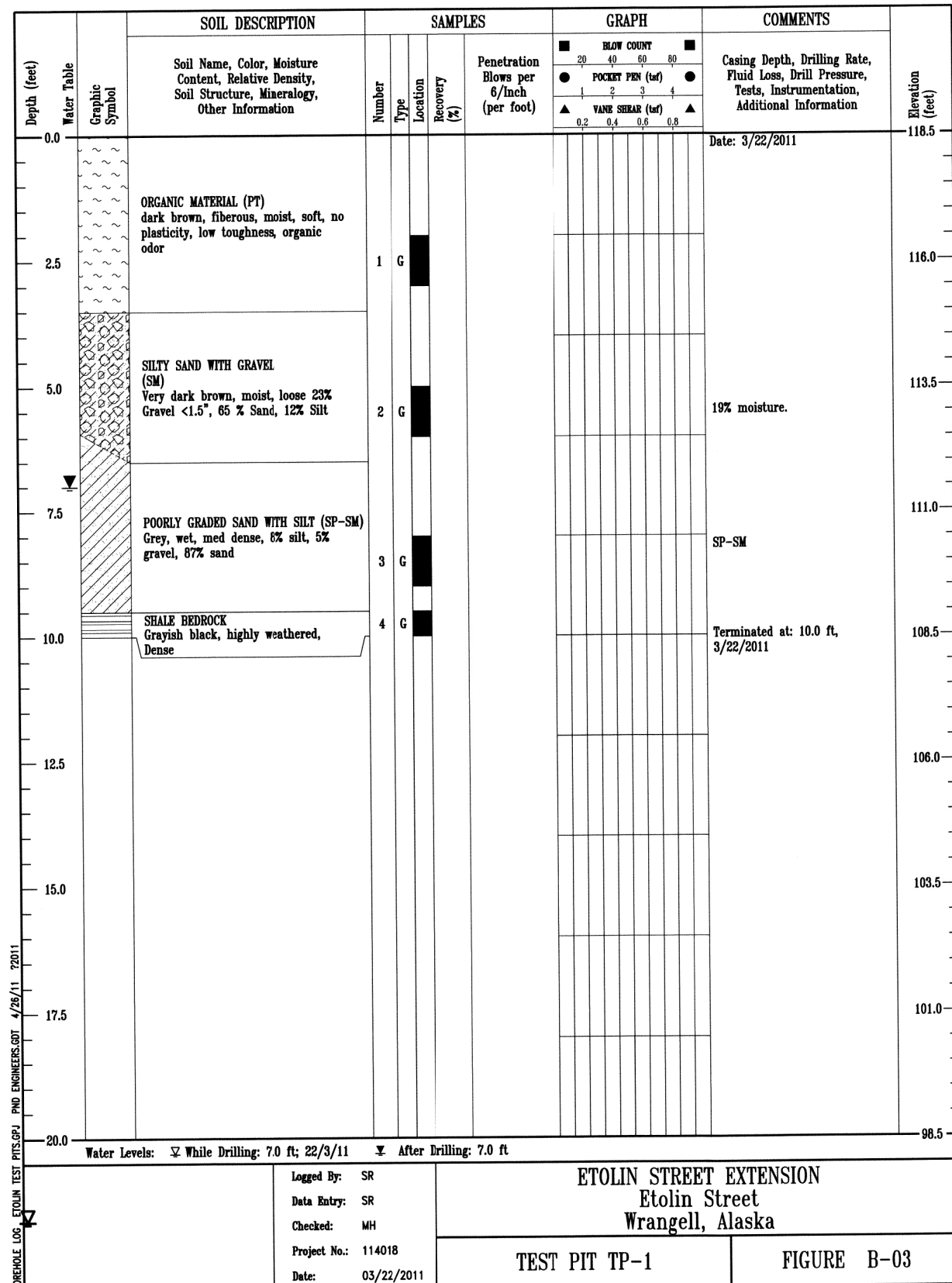


REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

PROJECT: ETOLIN STREET AND MEDICAL CAMPUS ROADWAY UTILITY ASSISTANCE			
TITLE: TEST PIT LOGS			
DESIGNED BY:	SR	PROJECT NO:	114018.02
DRAWN BY:	DRH	DATE:	DEC. 2011
CHECKED BY:	GW	SCALE:	NOTED

**G3.02**

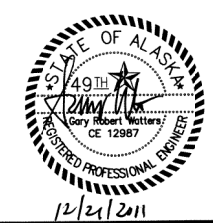
12/19/11 Drawings 2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Rebid\114018.02-G3.03.dwg



FOR BID

**PND ENGINEERS, INC.**  
 811 First Avenue, Suite 570  
 Seattle, Washington 98104  
 Phone: 206-624-1387  
 Fax: 206-624-1388  
 mail@pndengineers.com

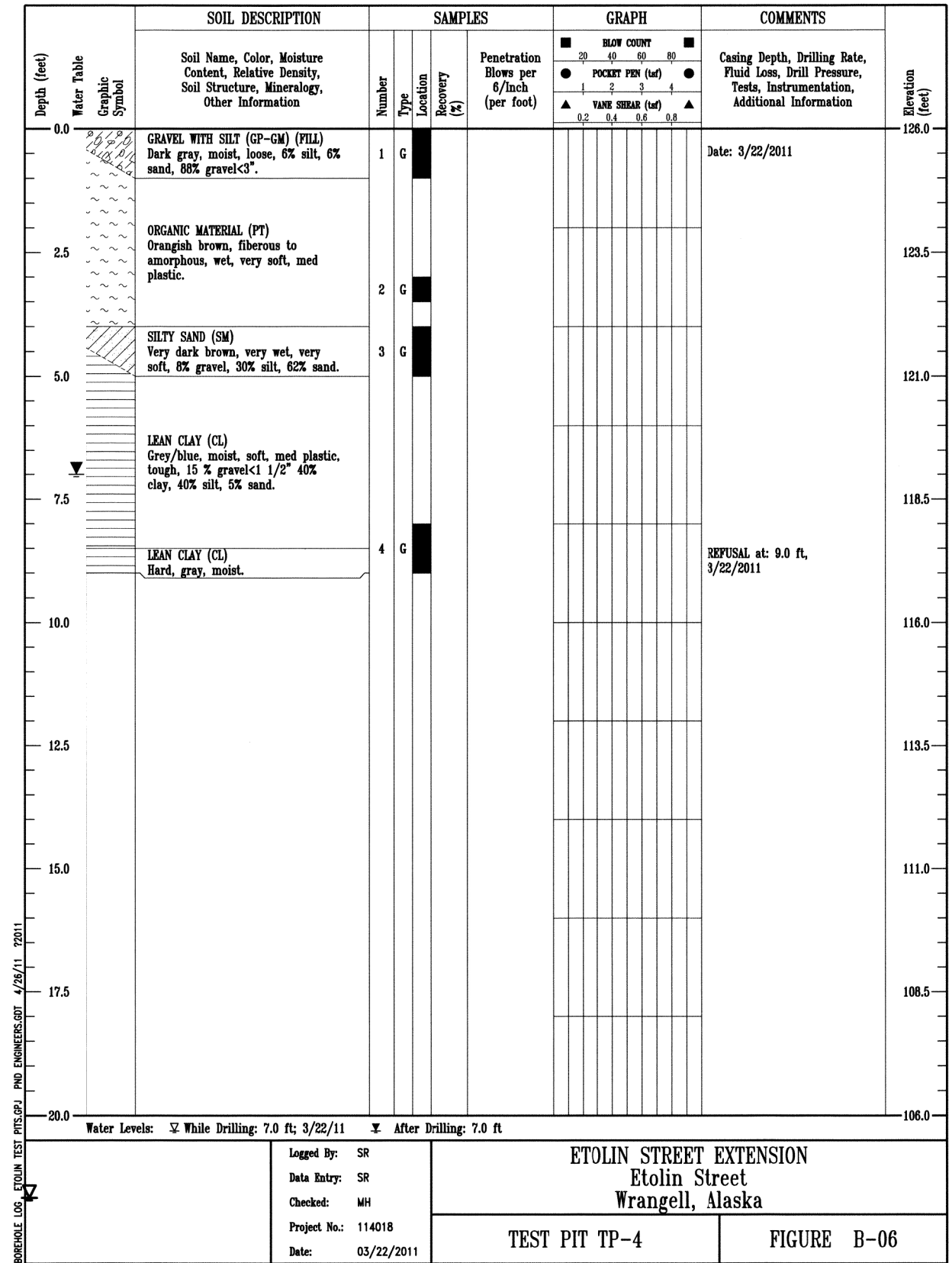
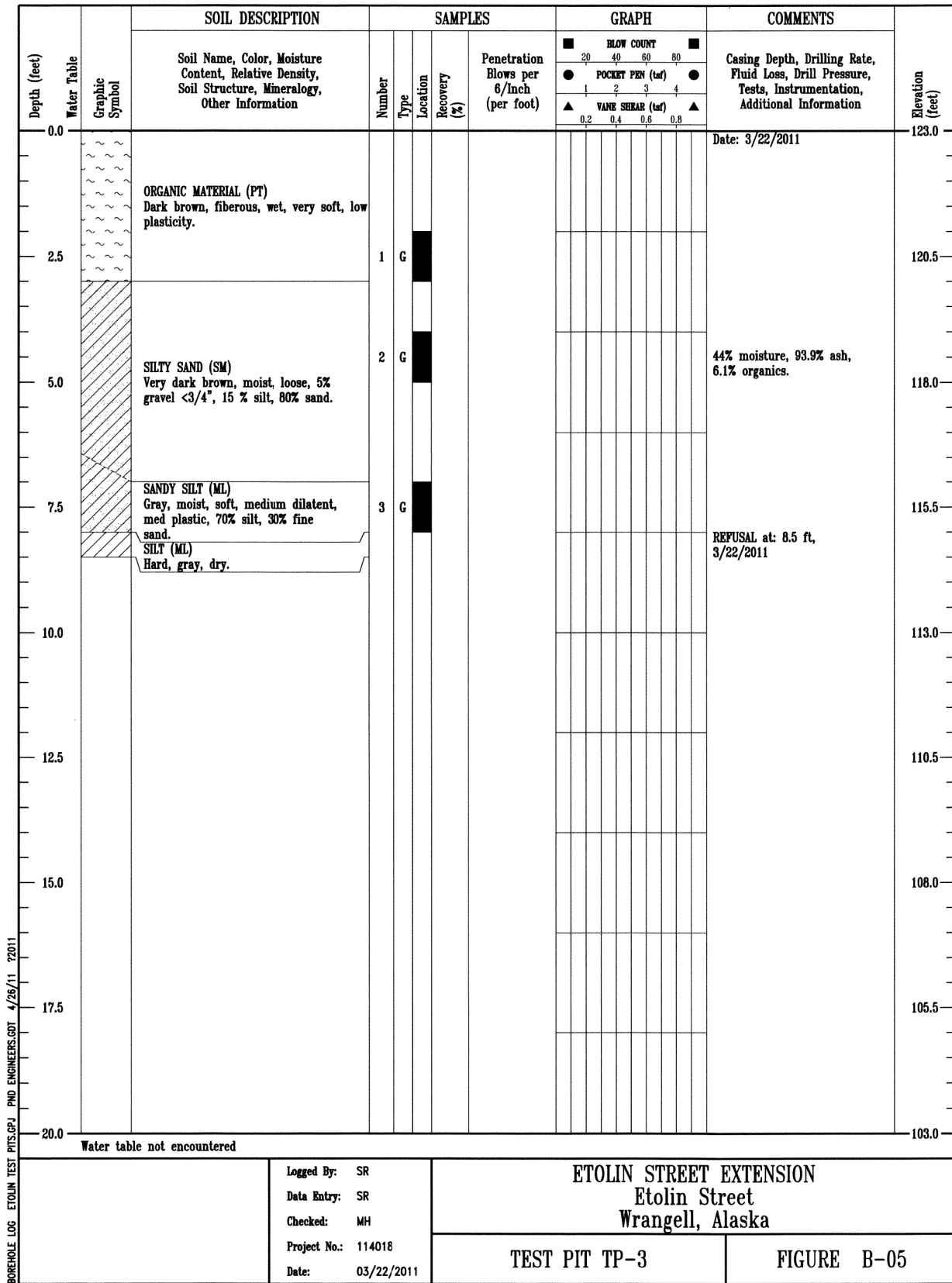
PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.



REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

<b>ETOLIN STREET AND MEDICAL CAMPUS ROADWAY UTILITY ASSISTANCE</b>			
<b>TEST PIT LOGS</b>			
DESIGNED BY: SR	PROJECT NO: 114018.02	SHEET NO: <b>G3.03</b>	
DRAWN BY: DRH	DATE: DEC. 2011		
CHECKED BY: GW	SCALE: NOTED		

12/19/11 Drawings\2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Rebid\114018.02-63.04.dwg



FOR BID



811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.

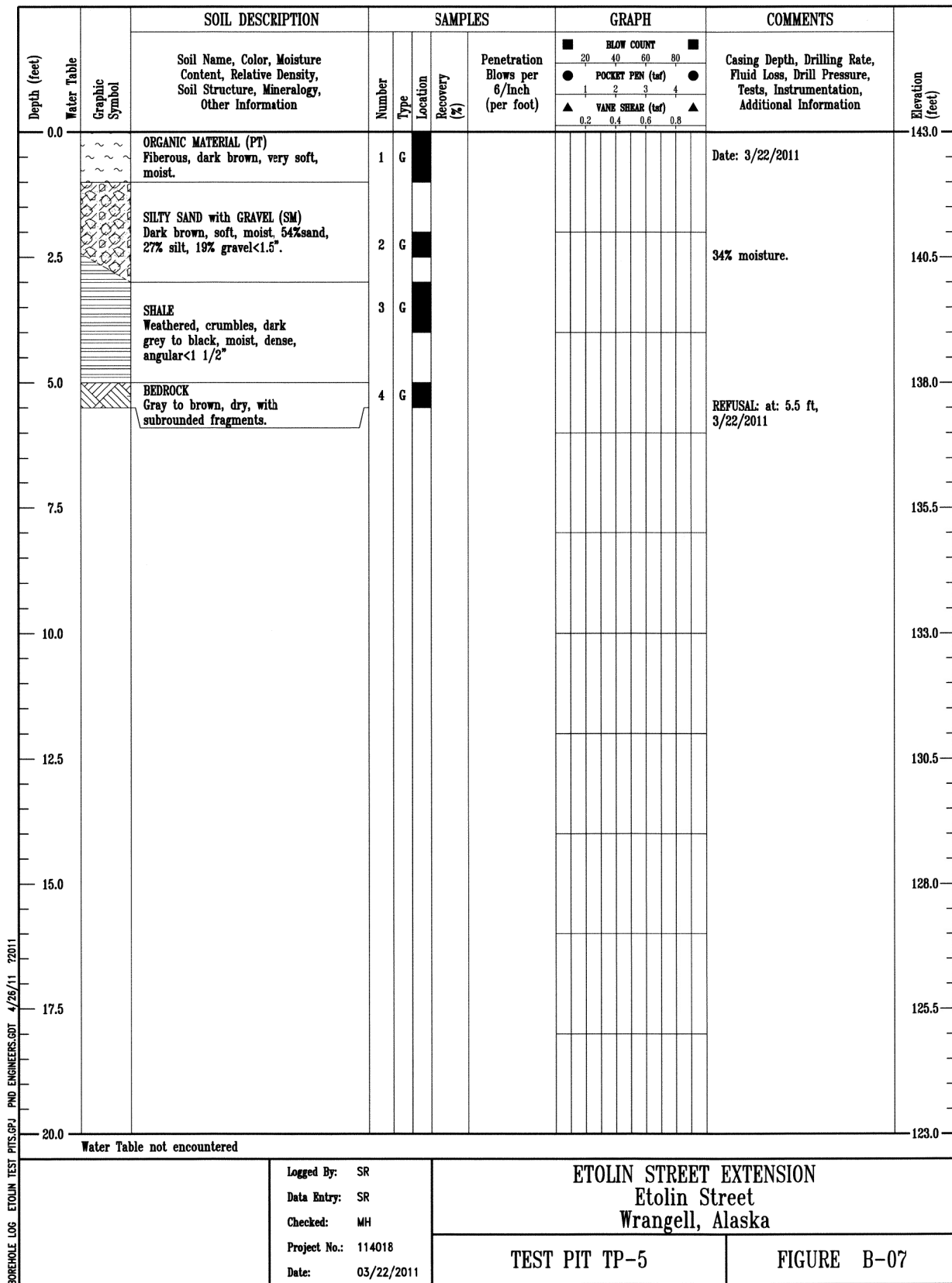


REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

PROJECT: <b>ETOLIN STREET AND MEDICAL CAMPUS ROADWAY UTILITY ASSISTANCE</b>			
TITLE: <b>TEST PIT LOGS</b>			
DESIGNED BY: SR	PROJECT NO: 114018.02	SHEET NO:	
DRAWN BY: DRH	DATE: DEC. 2011	<b>G3.04</b>	
CHECKED BY: GW	SCALE: NOTED		



12/19/11 Drawings\2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Rebid\114018.02 - G3.05.dwg



Logged By: SR Data Entry: SR Checked: MH Project No.: 114018 Date: 03/22/2011	<b>ETOLIN STREET EXTENSION</b> <b>Etolin Street</b> <b>Wrangell, Alaska</b>
	<b>TEST PIT TP-5</b> <b>FIGURE B-07</b>

**P | N | D**  
ENGINEERS, INC.  
811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

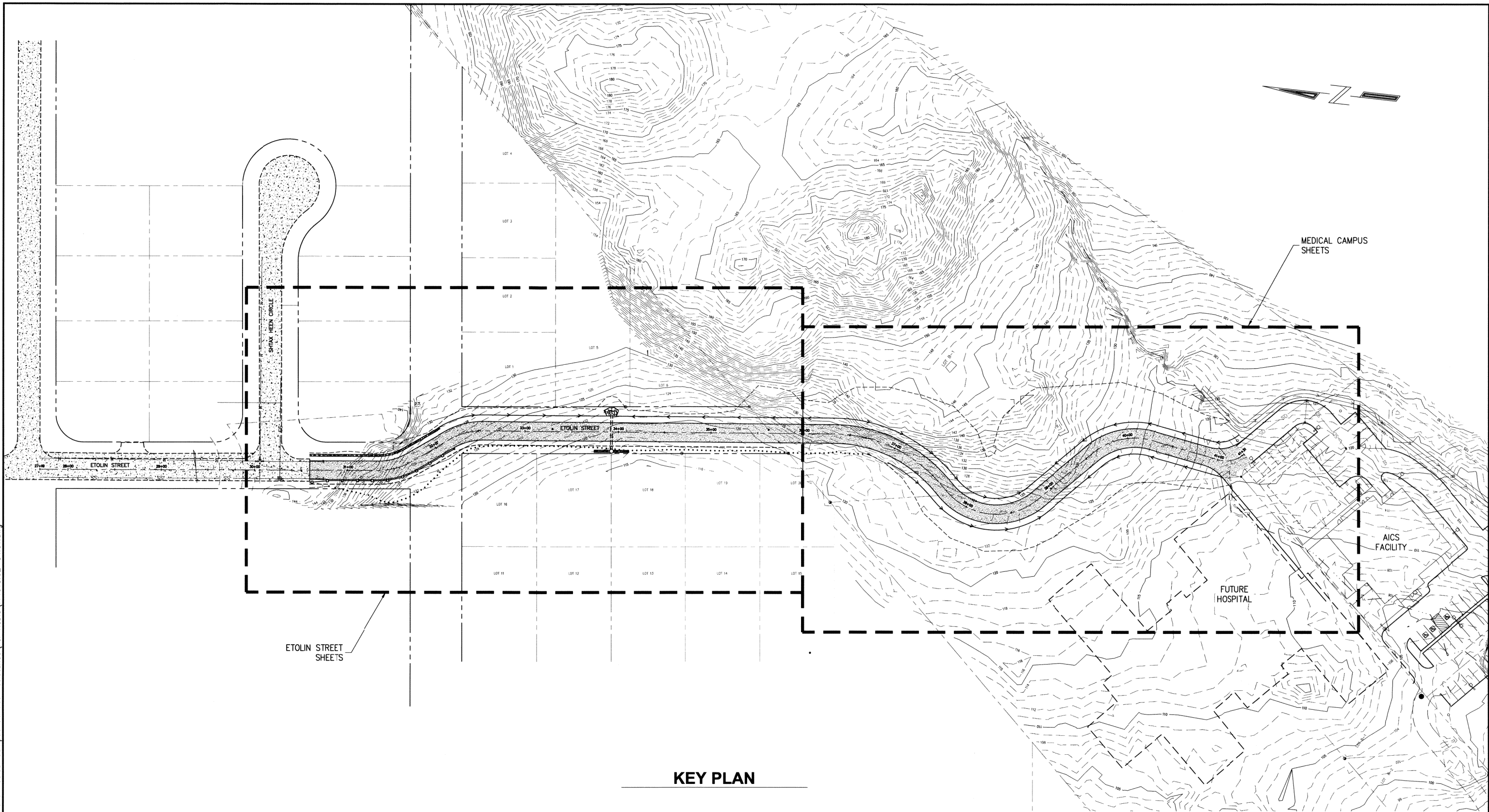
PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.



REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

<b>FOR BID</b>			
PROJECT: <b>ETOLIN STREET AND MEDICAL CAMPUS ROADWAY UTILITY ASSISTANCE</b>			
TITLE: <b>TEST PIT LOGS</b>			
DESIGNED BY: SR	PROJECT NO: 114018.02	SHEET NO:	
DRAWN BY: DRH	DATE: DEC. 2011	<b>G3.05</b>	
CHECKED BY: GW	SCALE: NOTED		

12/20/11 Drawings\2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Rebid\114018.02-G4.01.dwg



**KEY PLAN**

**FOR BID**



811 First Avenue, Suite 570  
 Seattle, Washington 98104  
 Phone: 206-624-1387  
 Fax: 206-624-1388  
 mail@pndengineers.com

PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.

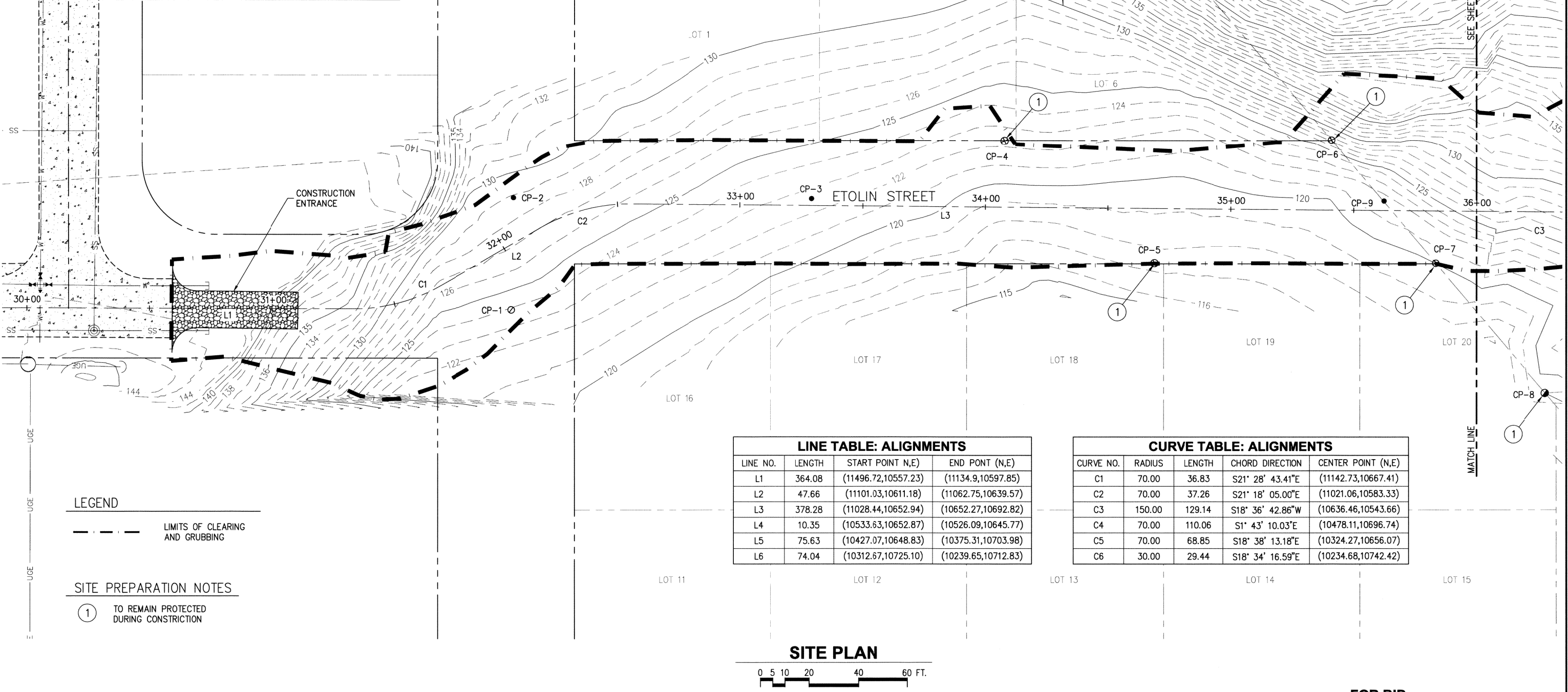


REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

PROJECT: <b>ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE</b>			
TITLE: <b>KEY PLAN</b>			
DESIGNED BY:	SR	PROJECT NO:	114018.02
DRAWN BY:	DRH	DATE:	DEC. 2011
CHECKED BY:	GW	SCALE:	NOTED
			SHEET NO: <b>G4.01</b>

**PROJECT CONTROL TABLE**

POINT No.	NORTHING	EASTING	DESCRIPTION
CP-1	11071.31	10604.73	FOUND 1" BC ON 3/4" IP
CP-2	11075.58	10650.06	SPIKE WITH PND YPC
CP-3	10954.85	10663.54	SPIKE WITH PND YPC
CP-4	10879.55	10695.97	SPIKE WITH PND YPC
CP-5	10813.30	10653.53	FOUND 1" BC ON 3/4" IP
CP-6	19747.25	10711.50	FOUND 1" BC ON 3/4" IP
CP-7	10699.47	10666.56	FOUND 1" BC ON 3/4" IP
CP-8	10649.24	10619.38	FOUND REBAR WITH ALUMINUM CAP
CP-9	10723.17	10689.20	SPIKE WITH PND YPC
CP-10	10213.17	10697.65	



**LEGEND**

--- LIMITS OF CLEARING AND GRUBBING

**SITE PREPARATION NOTES**

① TO REMAIN PROTECTED DURING CONSTRUCTION

**LINE TABLE: ALIGNMENTS**

LINE NO.	LENGTH	START POINT (N,E)	END POINT (N,E)
L1	364.08	(11496.72,10557.23)	(11134.9,10597.85)
L2	47.66	(11101.03,10611.18)	(11062.75,10639.57)
L3	378.28	(11028.44,10652.94)	(10652.27,10692.82)
L4	10.35	(10533.63,10652.87)	(10526.09,10645.77)
L5	75.63	(10427.07,10648.83)	(10375.31,10703.98)
L6	74.04	(10312.67,10725.10)	(10239.65,10712.83)

**CURVE TABLE: ALIGNMENTS**

CURVE NO.	RADIUS	LENGTH	CHORD DIRECTION	CENTER POINT (N,E)
C1	70.00	36.83	S21° 28' 43.41"E	(11142.73,10667.41)
C2	70.00	37.26	S21° 18' 05.00"E	(11021.06,10583.33)
C3	150.00	129.14	S18° 36' 42.86"W	(10636.46,10543.66)
C4	70.00	110.06	S1° 43' 10.03"E	(10478.11,10696.74)
C5	70.00	68.85	S18° 38' 13.18"E	(10324.27,10656.07)
C6	30.00	29.44	S18° 34' 16.59"E	(10234.68,10742.42)

**SITE PLAN**



**FOR BID**



811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.



REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

PROJECT: <b>ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE</b>			
TITLE: <b>ETOLIN STREET SITE PREPARATION PLAN</b>			
DESIGNED BY:	SR	PROJECT NO:	114018.02
DRAWN BY:	DRH	DATE:	DEC. 2011
CHECKED BY:	GW	SCALE:	NOTED
			<b>SHEET NO: C1.01</b>

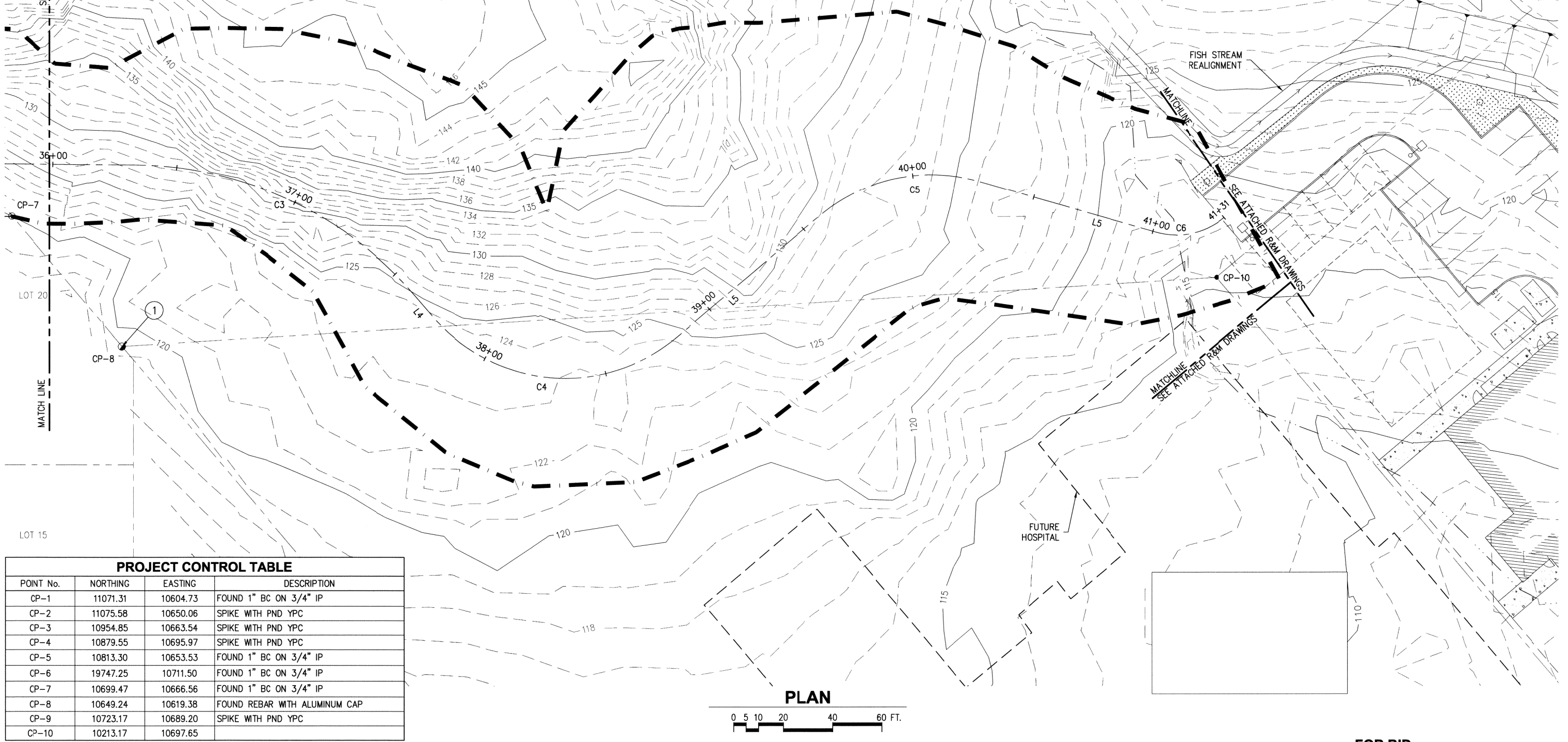
12/21/11 Drawings\2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Rebid\114018.02-C1.01.dwg



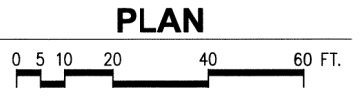
12/21/11 Drawings\2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Rebid\114018.02-C1.02.dwg

LINE TABLE: ALIGNMENTS			
LINE NO.	LENGTH	START POINT (N,E)	END POINT (N,E)
L1	364.08	(11496.72,10557.23)	(11134.9,10597.85)
L2	47.66	(11101.03,10611.18)	(11062.75,10639.57)
L3	378.28	(11028.44,10652.94)	(10652.27,10692.82)
L4	10.35	(10533.63,10652.87)	(10526.09,10645.77)
L5	75.63	(10427.07,10648.83)	(10375.31,10703.98)
L6	74.04	(10312.67,10725.10)	(10239.65,10712.83)

CURVE TABLE: ALIGNMENTS				
CURVE NO.	RADIUS	LENGTH	CHORD DIRECTION	CENTER POINT (N,E)
C1	70.00	36.83	S21° 28' 43.41"E	(11142.73,10667.41)
C2	70.00	37.26	S21° 18' 05.00"E	(11021.06,10583.33)
C3	150.00	129.14	S18° 36' 42.86"W	(10636.46,10543.66)
C4	70.00	110.06	S1° 43' 10.03"E	(10478.11,10696.74)
C5	70.00	68.85	S18° 38' 13.18"E	(10324.27,10656.07)
C6	30.00	29.44	S18° 34' 16.59"E	(10234.68,10742.42)



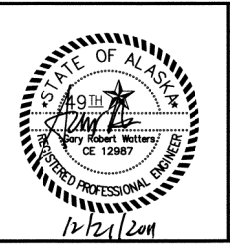
PROJECT CONTROL TABLE			
POINT No.	NORTHING	EASTING	DESCRIPTION
CP-1	11071.31	10604.73	FOUND 1" BC ON 3/4" IP
CP-2	11075.58	10650.06	SPIKE WITH PND YPC
CP-3	10954.85	10663.54	SPIKE WITH PND YPC
CP-4	10879.55	10695.97	SPIKE WITH PND YPC
CP-5	10813.30	10653.53	FOUND 1" BC ON 3/4" IP
CP-6	19747.25	10711.50	FOUND 1" BC ON 3/4" IP
CP-7	10699.47	10666.56	FOUND 1" BC ON 3/4" IP
CP-8	10649.24	10619.38	FOUND REBAR WITH ALUMINUM CAP
CP-9	10723.17	10689.20	SPIKE WITH PND YPC
CP-10	10213.17	10697.65	



**P | N | D**  
ENGINEERS, INC.

811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.



REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

**FOR BID**

**ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE**

**TITLE: MEDICAL CAMPUS SITE PREPARATION PLAN**

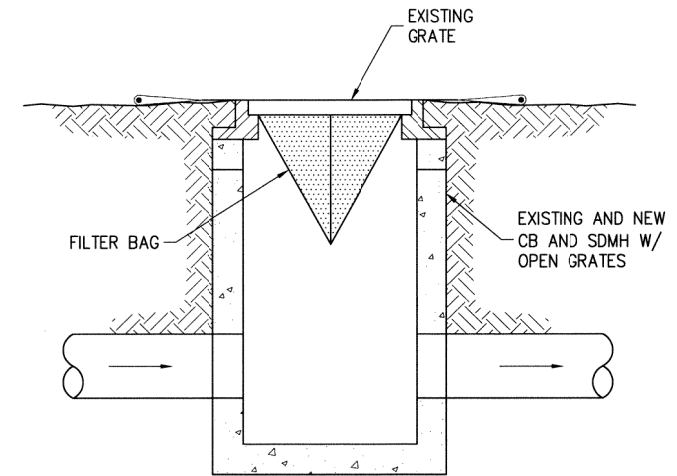
DESIGNED BY:	SR PROJECT NO:	114018.02	SHEET NO:
DRAWN BY:	DRH DATE:	DEC. 2011	<b>C1.02</b>
CHECKED BY:	GW SCALE:	NOTED	

GENERAL EROSION AND SEDIMENT CONTROL NOTES

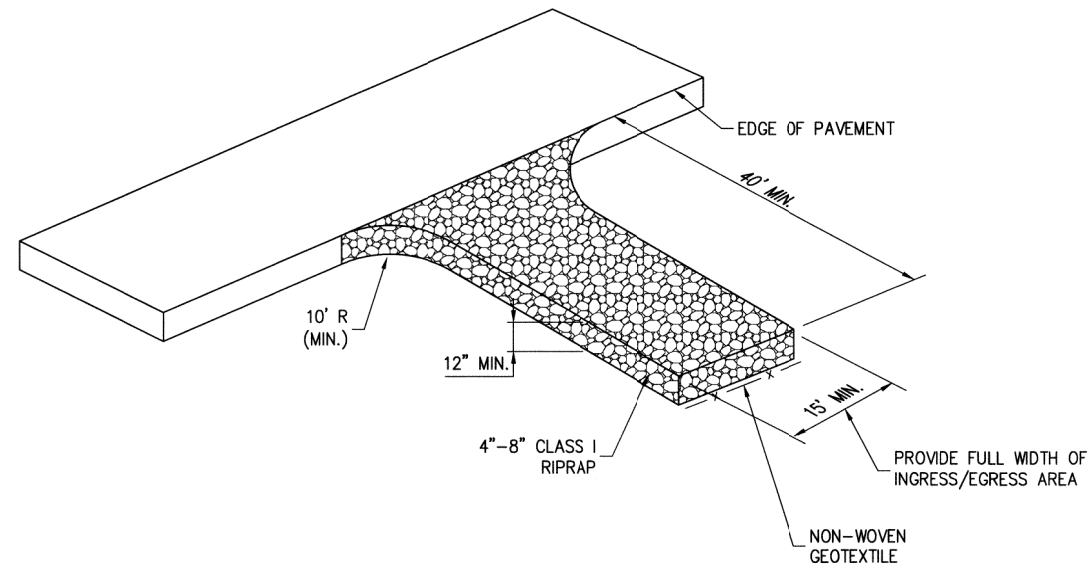
- 1) The implementation of these TESC plans and the construction, maintenance, replacement, and upgrading of these TESC facilities is the responsibility of the contractor until all construction is approved.
- 2) The TESC facilities shown on this plan must be constructed prior to or in conjunction with all clearing and grading so as to ensure that the transport of sediment to surface waters, drainage systems, and adjacent properties is minimized.
- 3) The TESC facilities shown on this plan are the minimum requirements for anticipated site conditions. During the construction period, these TESC facilities shall be upgraded as needed for unexpected storm events and modified to account for changing site conditions (e.g., additional sump pumps, relocation of ditches and silt fences, etc.).
- 4) The TESC facilities shall be inspected daily by the Contractor and maintained to ensure continued proper functioning. Written records shall be kept of weekly reviews of the TESC facilities during the wet season.
- 5) Any areas of exposed soils, including roadway embankments, that will not be disturbed for two days during the wet season or seven days during the dry season shall be immediately stabilized with the approved TESC methods (e.g., mulching, plastic covering, etc.).
- 6) Any area needing TESC measures not requiring immediate attention shall be addressed within fifteen (15) days.
- 7) The TESC facilities on inactive sites shall be inspected and maintained a minimum of once a month or within forty-eight (48) hours following a storm event.
- 8) At no time shall more than one (1) foot of sediment be allowed to accumulate within a catch basin. All catch basins and conveyance lines shall be cleaned prior to paving. The cleaning operation shall not flush sediment-laden water into the downstream system.
- 9) Stabilized construction entrances and roads shall be installed at the beginning of construction and maintained for the duration of the project. Additional measures, such as wash pads, may be required to ensure that all paved areas are kept clean for the duration of the project. Where mulch for temporary erosion control is required, it shall be applied at a minimum thickness of 2 to 3 inches. No straw or hay bales permitted.
- 10) During the period of November 1 through March 31, all project disturbed areas greater than 5,000 square feet and where no further work is anticipated for a period of fifteen (15) days, shall be covered by one of the following cover measures: mulch or plastic covering.

SITE SPECIFIC EROSION CONTROL NOTES

- 1) Contractor is required to ensure no tracking of mud onto paved surfaces and will be required to install a wheel wash if tracking is persistent and can not be prevented.
- 2) Contractor is required to clean any debris and tracked mud on paved surfaces immediately.
- 3) All erosion control work required to maintain a clean site and prevent the discharge of sediment and tracking from the site shall be considered incidental to the project.
- 4) Install filter bag in new catch basins to minimize siltation. Bags to remain installed when earthwork is being done within a 100-foot radius of the structure.



**INLET PROTECTION**



**CONSTRUCTION ENTRANCE**

FOR BID

**ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE**

**TESC DETAILS**

DESIGNED BY:	SR	PROJECT NO:	114018.02	SHEET NO:
DRAWN BY:	DRH	DATE:	DEC. 2011	<b>C1.03</b>
CHECKED BY:	GW	SCALE:	NOTED	

REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

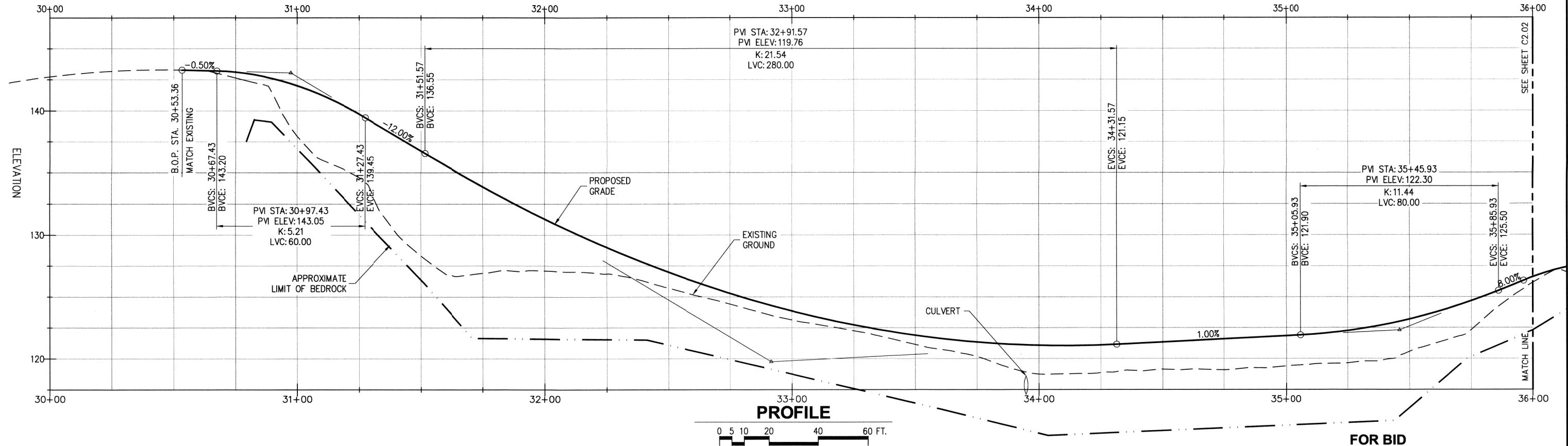
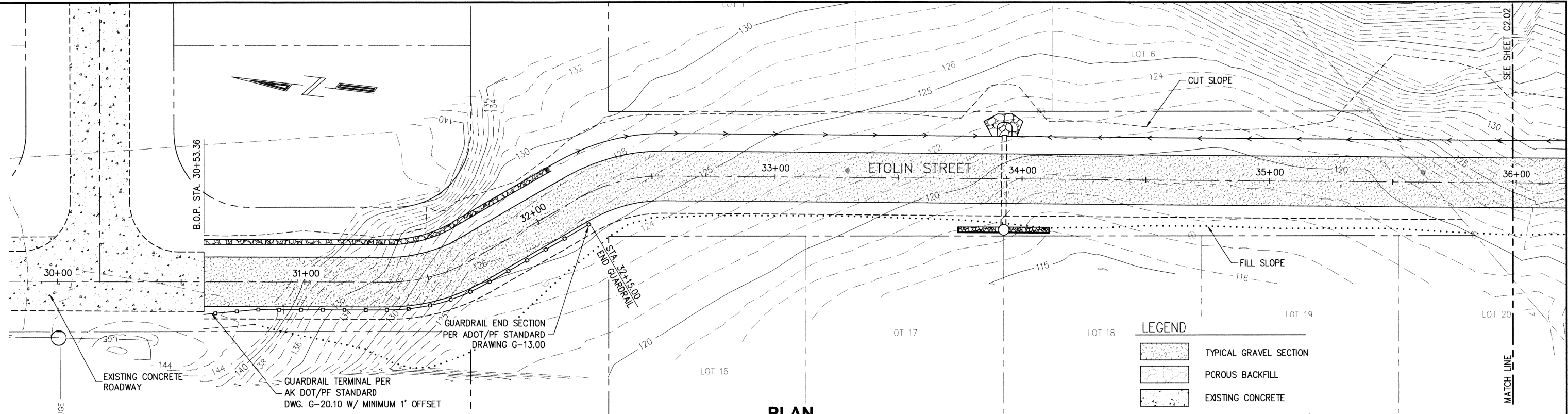


PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.



811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

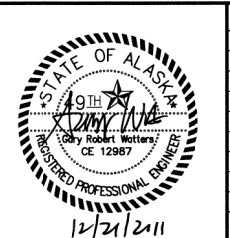
12/20/11 Drawings\2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Rebid\114018.02-C2.01.dwg



**PND ENGINEERS, INC.**

811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.



REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

**ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE**

**ETOLIN STREET PLAN AND PROFILE**

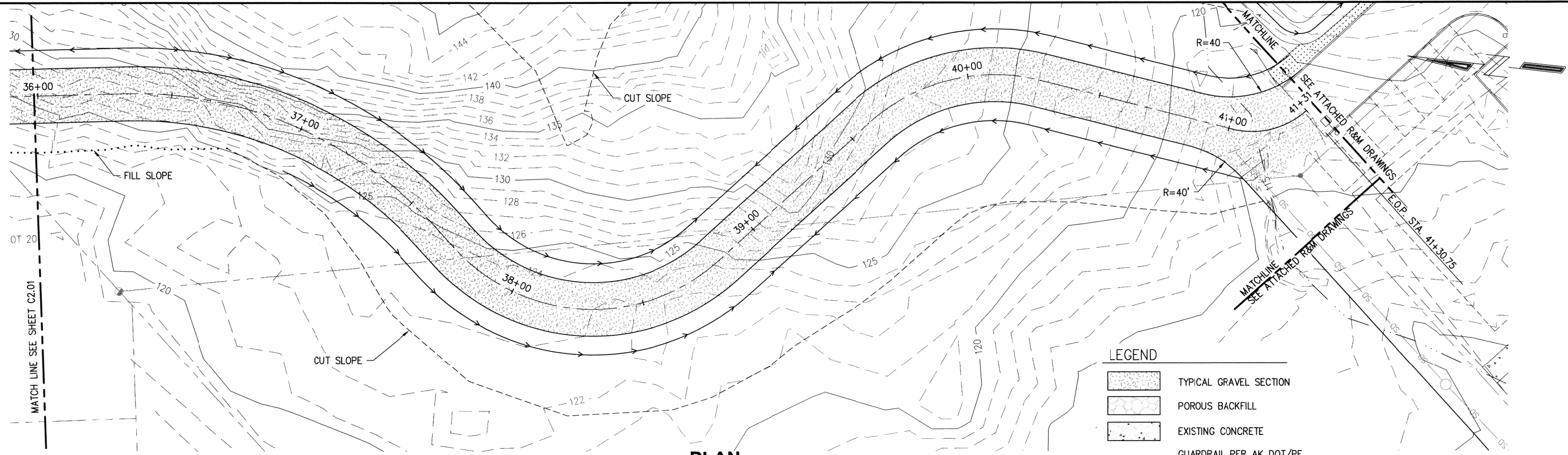
DESIGNED BY: SR PROJECT NO: 114018.02 SHEET NO: **C2.01**

DRAWN BY: DRH DATE: DEC. 2011

CHECKED BY: GW SCALE: NOTED



12/21/11 Drawings\2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Rebid\114018.02-C2.02.dwg

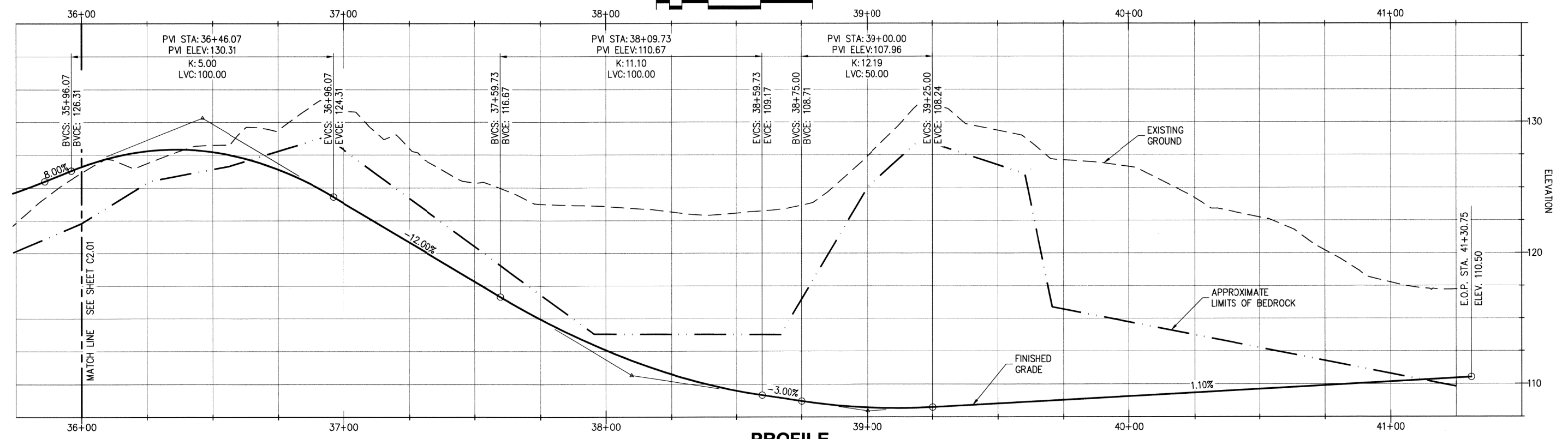


**PLAN**



**LEGEND**

- TYPICAL GRAVEL SECTION
- POROUS BACKFILL
- EXISTING CONCRETE
- GUARDRAIL PER AK DOT/PF STD. DWG. G-04.07W



**PROFILE**



**FOR BID**



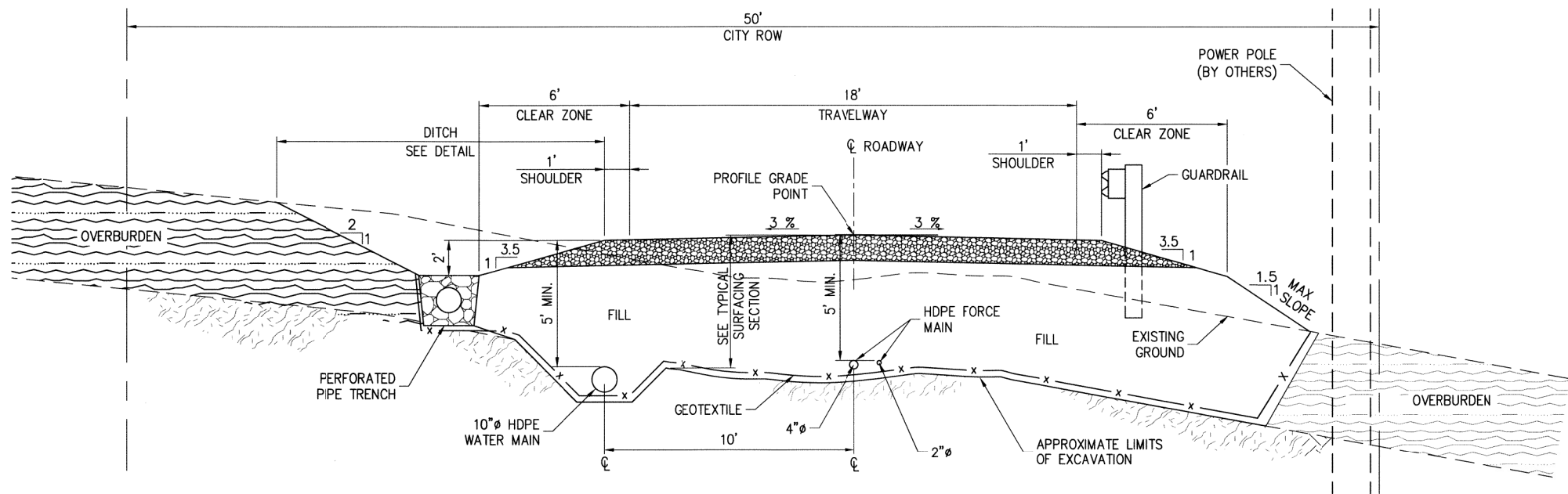
811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.

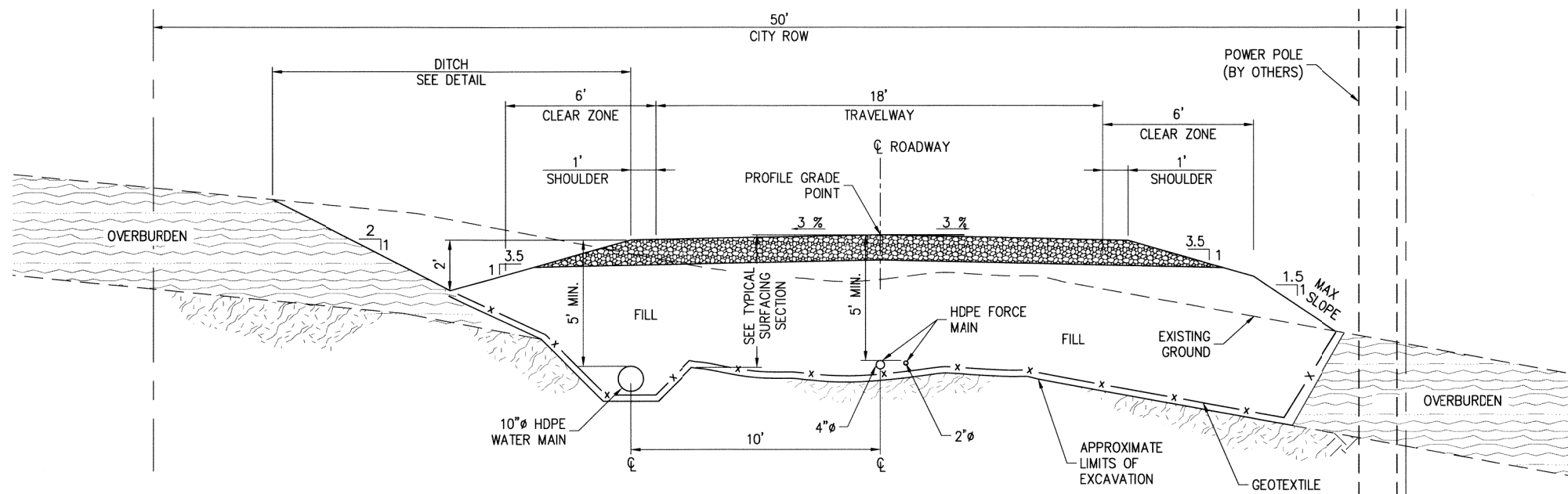


REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

PROJECT: <b>ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE</b>			
TITLE: <b>MEDICAL CAMPUS ROADWAY PLAN AND PROFILE</b>			
DESIGNED BY:	SR	PROJECT NO:	114018.02
DRAWN BY:	DRH	DATE:	DEC. 2011
CHECKED BY:	GW	SCALE:	NOTED
			SHEET NO: <b>C2.02</b>



**TYPE A  
ROADWAY SECTION**



**TYPE B  
ROADWAY SECTION**

ROADWAY SECTION TABLE		
BEGIN STA.	END STA.	ROADWAY SECTION
30+53.36	32+15.00	TYPE A
32+15.00	35+65.00	TYPE B
35+65.00	41+31.00	TYPE C

FOR BID

PROJECT:  
**ETOLIN STREET AND MEDICAL CAMPUS  
UTILITIES ASSISTANCE**

TITLE:  
**ROADWAY DETAILS**

DESIGNED BY:	SR	PROJECT NO:	114018.02	SHEET NO:
DRAWN BY:	DRH	DATE:	DEC. 2011	<b>C2.03</b>
CHECKED BY:	GW	SCALE:	NOTED	

PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.

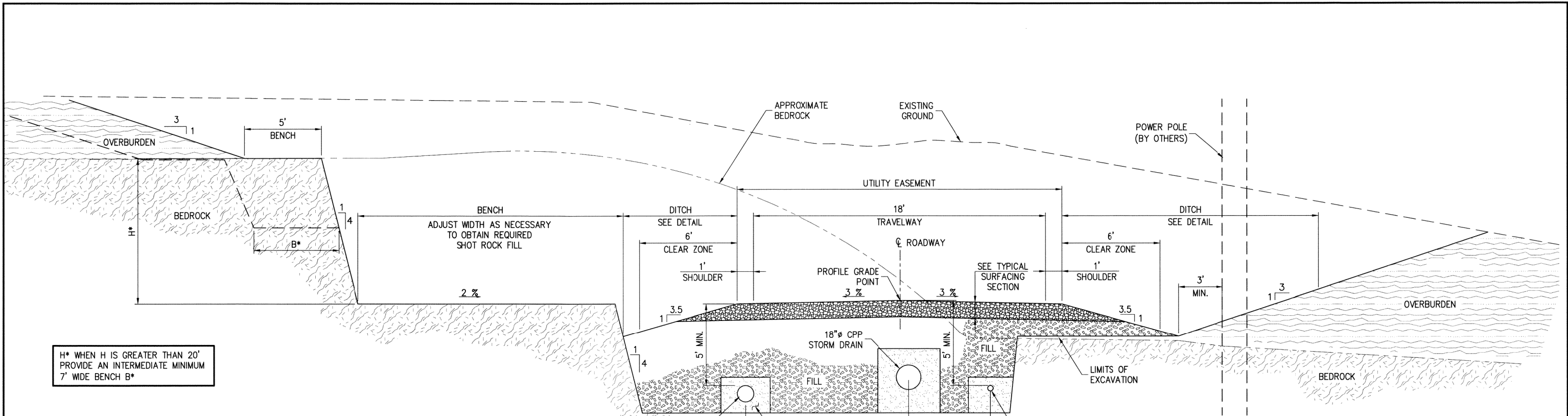


REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

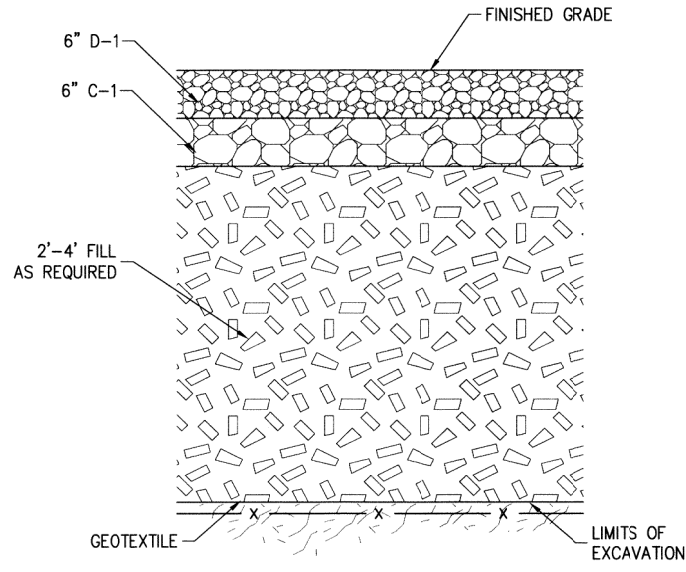


811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

12/19/11 Drawings 2011\114018.02 - Etoin St. and Medical Campus Utilities Assistance\For Rebid\114018.02-C2.04.dwg



H\* WHEN H IS GREATER THAN 20'  
PROVIDE AN INTERMEDIATE MINIMUM  
7' WIDE BENCH B\*



**TYPICAL SURFACING SECTION**

**TYPE C ROADWAY SECTION**

FOR BID



811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.

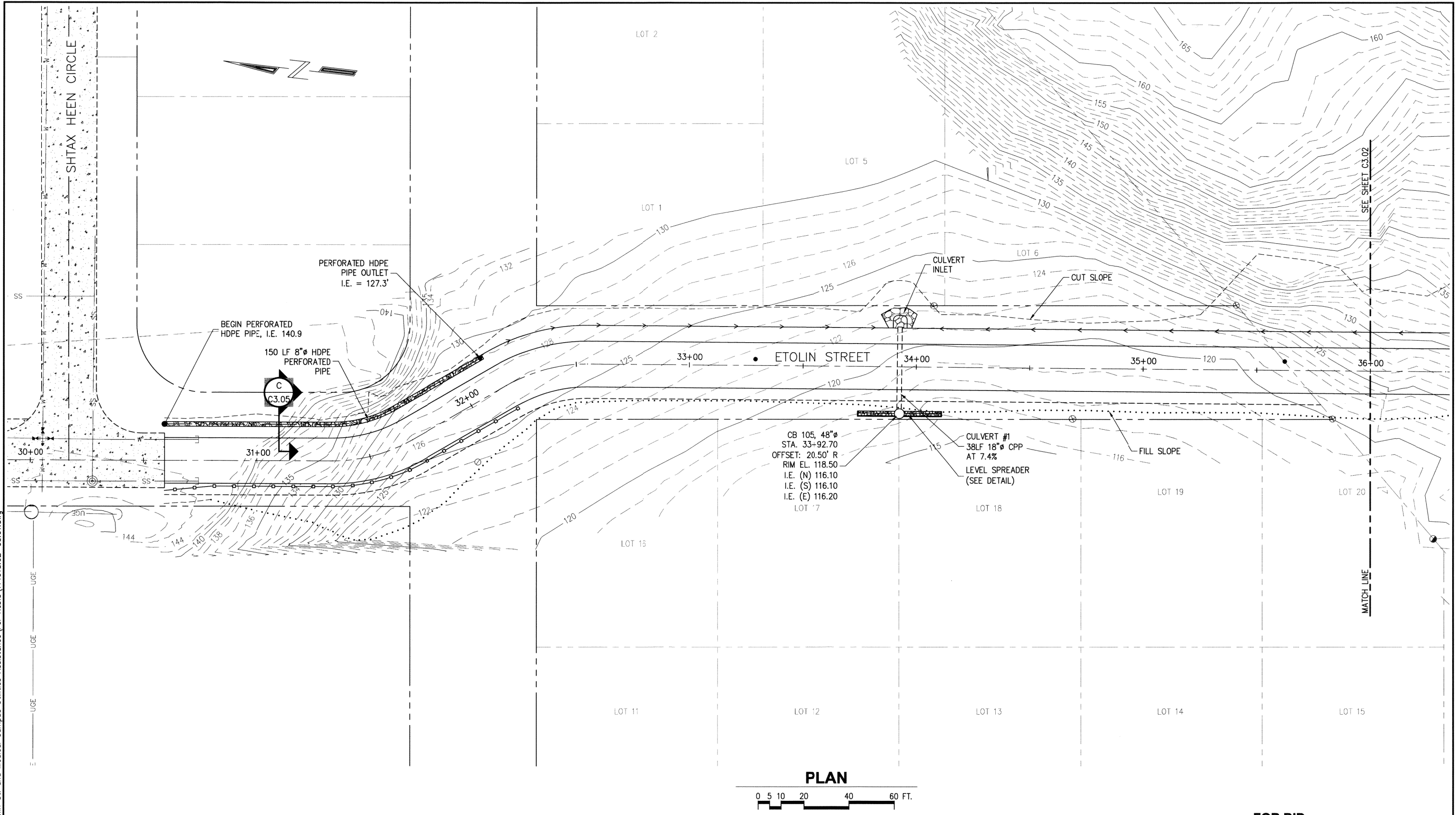


REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

PROJECT: <b>ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE</b>			
TITLE: <b>ROADWAY DETAILS</b>			
DESIGNED BY:	SR	PROJECT NO:	114018.02
DRAWN BY:	DRH	DATE:	DEC. 2011
CHECKED BY:	GW	SCALE:	NOTED
			SHEET NO: <b>C2.04</b>



12/20/11 Drawings\2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Rebid\114018.02-C3.01.dwg



**PLAN**  
0 5 10 20 40 60 FT.

**FOR BID**



811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

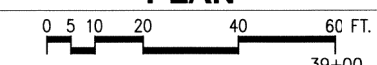
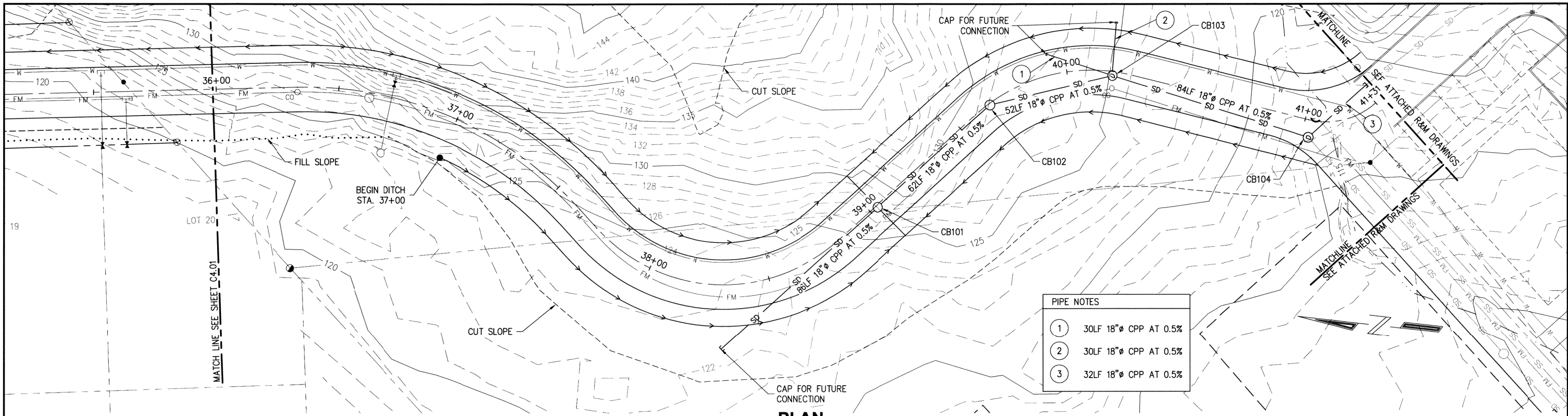
PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.



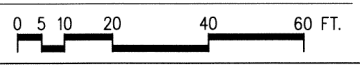
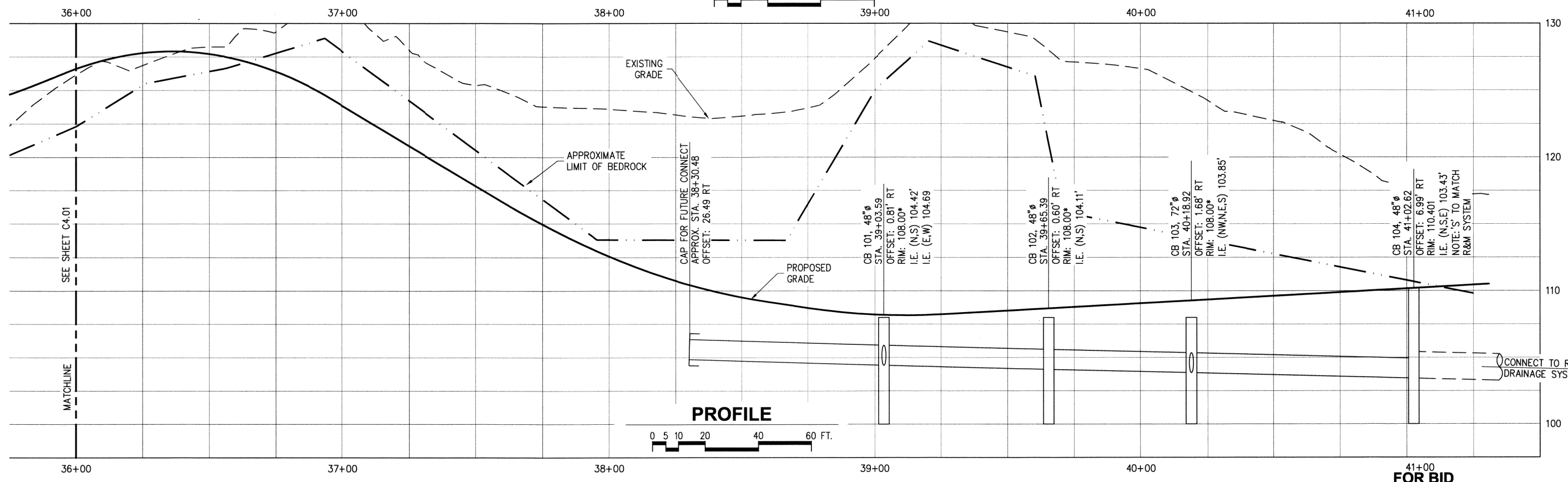
REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

PROJECT: <b>ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE</b>			
TITLE: <b>ETOLIN STREET STORMWATER PLAN</b>			
DESIGNED BY:	SR	PROJECT NO:	114018.02
DRAWN BY:	DRH	DATE:	DEC. 2011
CHECKED BY:	GW	SCALE:	NOTED
			SHEET NO: <b>C3.01</b>

12/21/11 Drawings\2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Rebid\114018.02-C3.02.dwg



\* SET RIM BELOW GRADE



811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

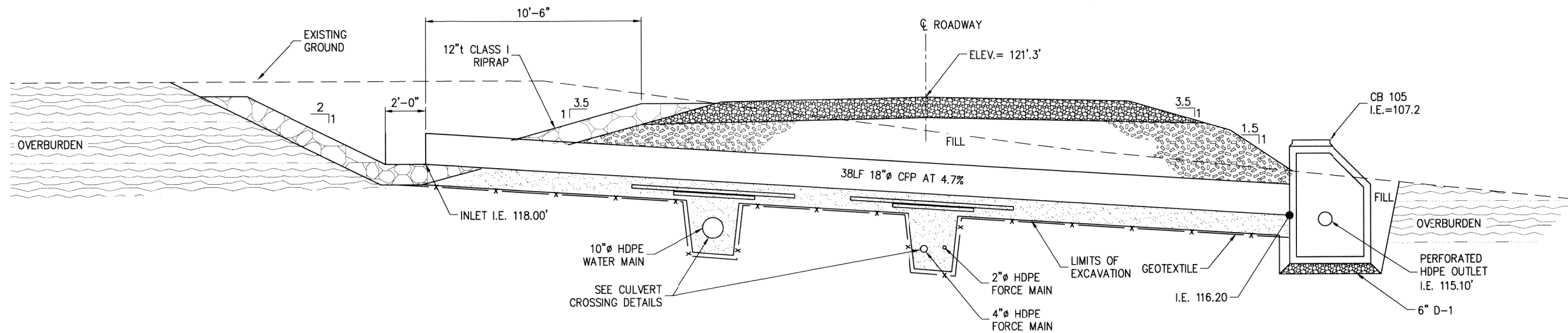
PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.



REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

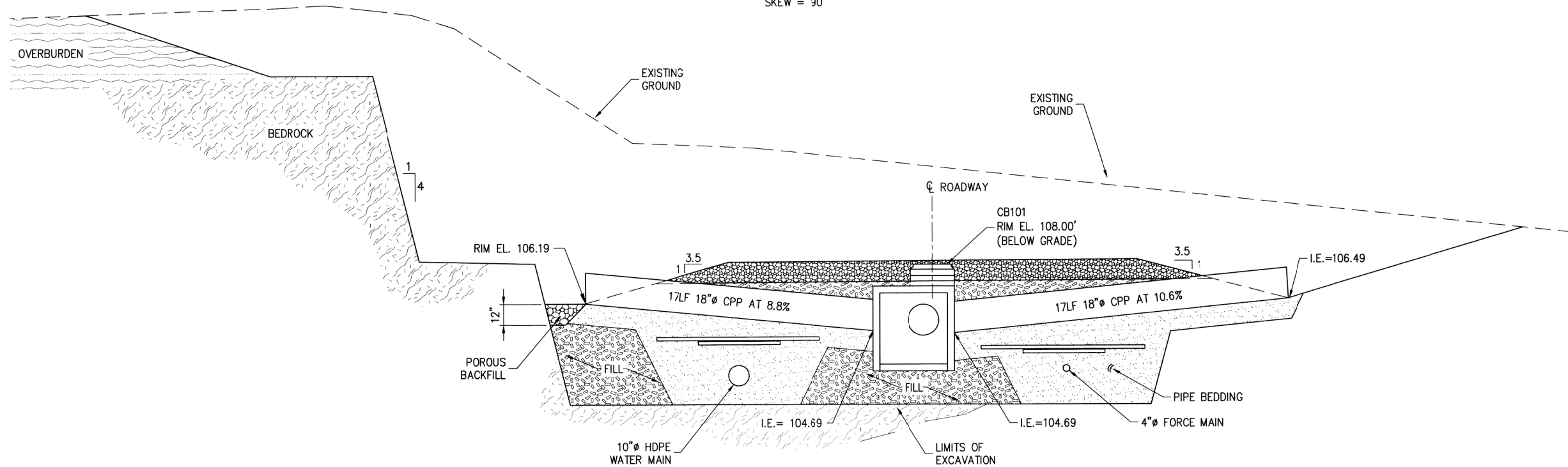
PROJECT: <b>ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE</b>	
TITLE: <b>MEDICAL CAMPUS STORMWATER PLAN AND PROFILE</b>	
DESIGNED BY: SR	PROJECT NO: 114018.02 SHEET NO:
DRAWN BY: DRH	DATE: OCT. 2011
CHECKED BY: GW	SCALE: NOTED

**C3.02**



**CULVERT 1**

STA. 33+92.70  
SKEW = 90°



**CULVERT 2**

STA. 39+03.54  
SKEW = 90°

FOR BID



811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.

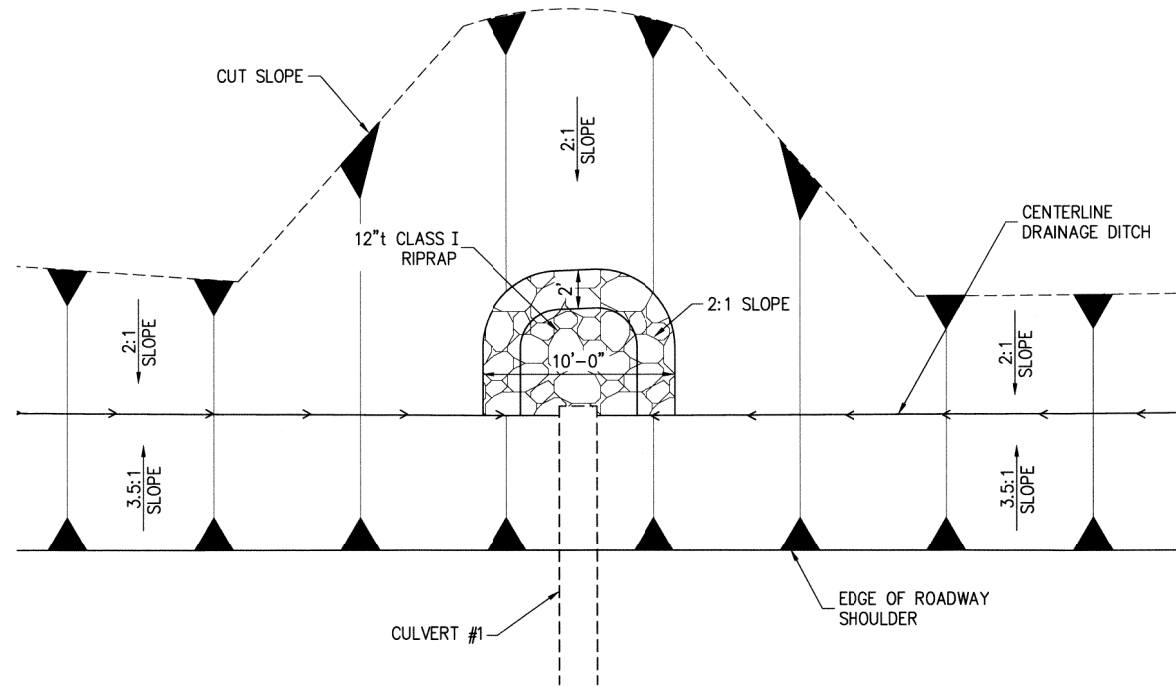


REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

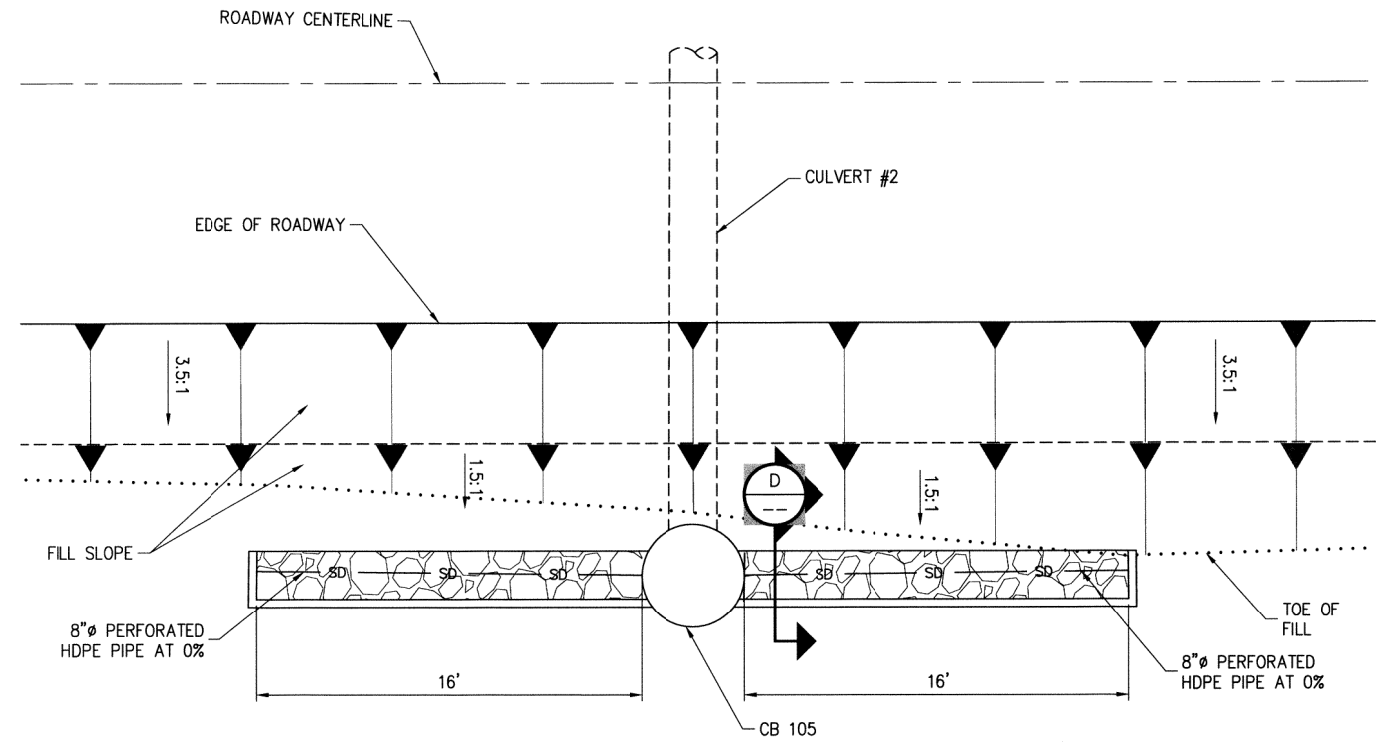
PROJECT: <b>ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE</b>			
TITLE: <b>CULVERT PROFILES</b>			
DESIGNED BY:	SR	PROJECT NO:	114018.02
DRAWN BY:	DRH	DATE:	DEC. 2011
CHECKED BY:	GW	SCALE:	NOTED
			SHEET NO: <b>C3.03</b>

12/21/11 Drawings\2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Bid\114018.02-C3.03.dwg

12/19/11 Drawings\2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Rebid\114018.02-C3.04.dwg

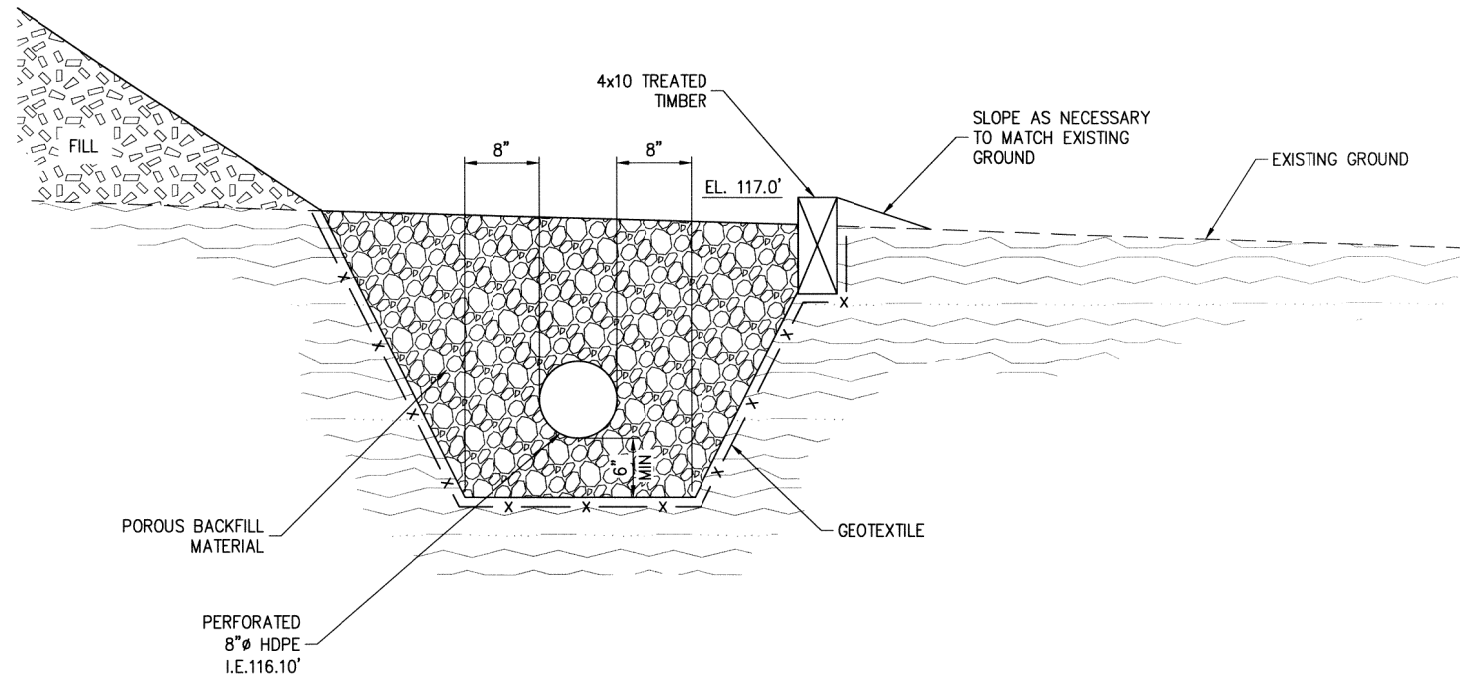


**CULVERT INLET**

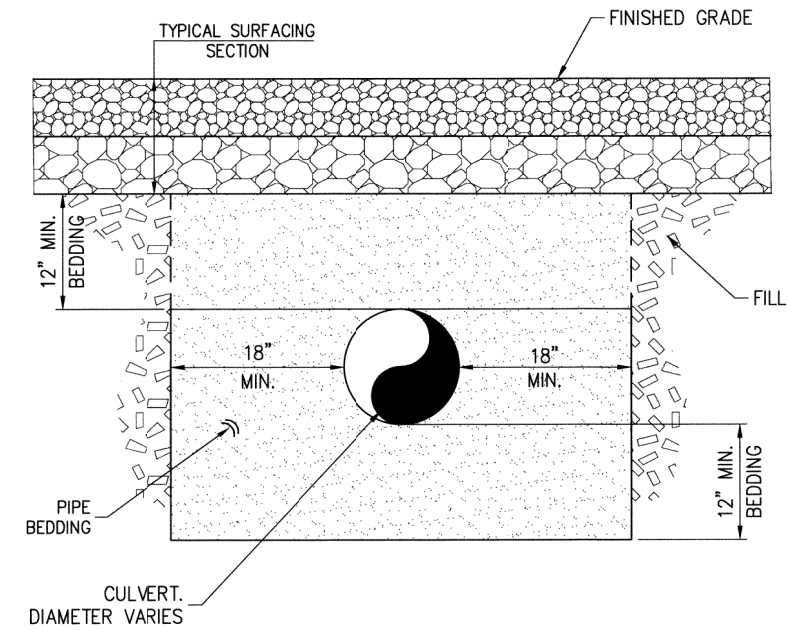


**CULVERT OUTLET PLAN**

SUBEXCAVATION REQUIRED



**LEVEL SPREADER SECTION**



**CULVERT TRENCH**

FOR BID



811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

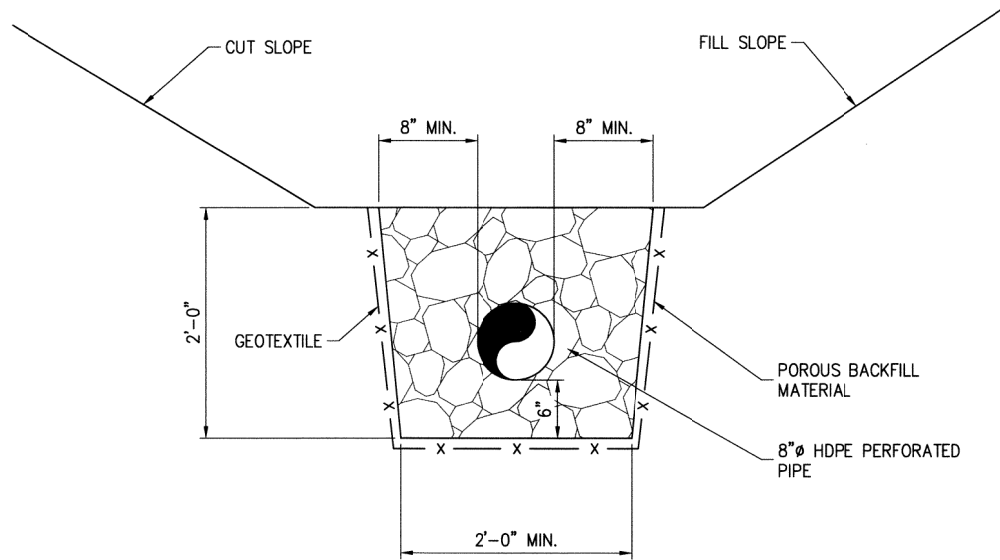
PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.



REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

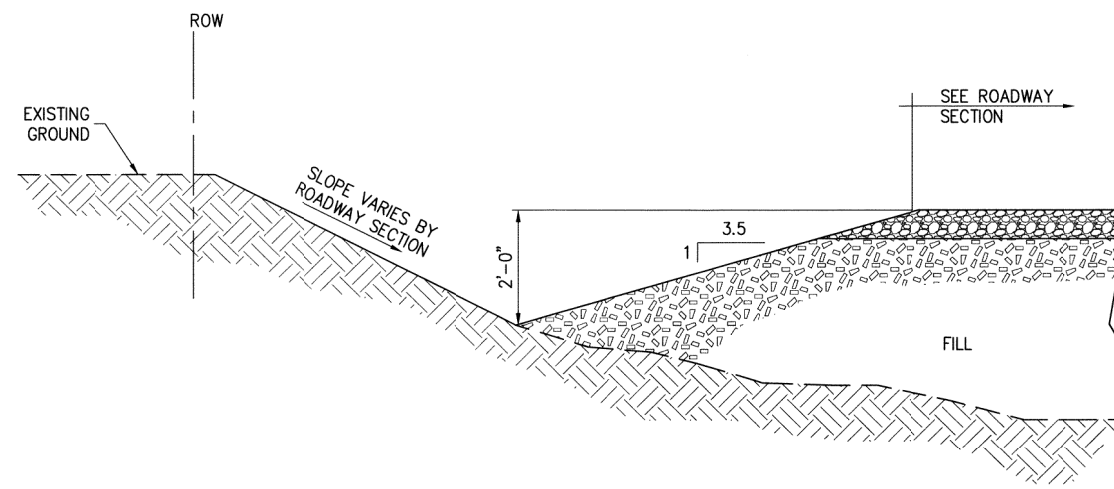
PROJECT: <b>ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE</b>			
TITLE: <b>CULVERT DETAILS</b>			
DESIGNED BY:	SR	PROJECT NO:	114018.02
DRAWN BY:	DRH	DATE:	DEC. 2011
CHECKED BY:	GW	SCALE:	NOTED
			SHEET NO: <b>C3.04</b>





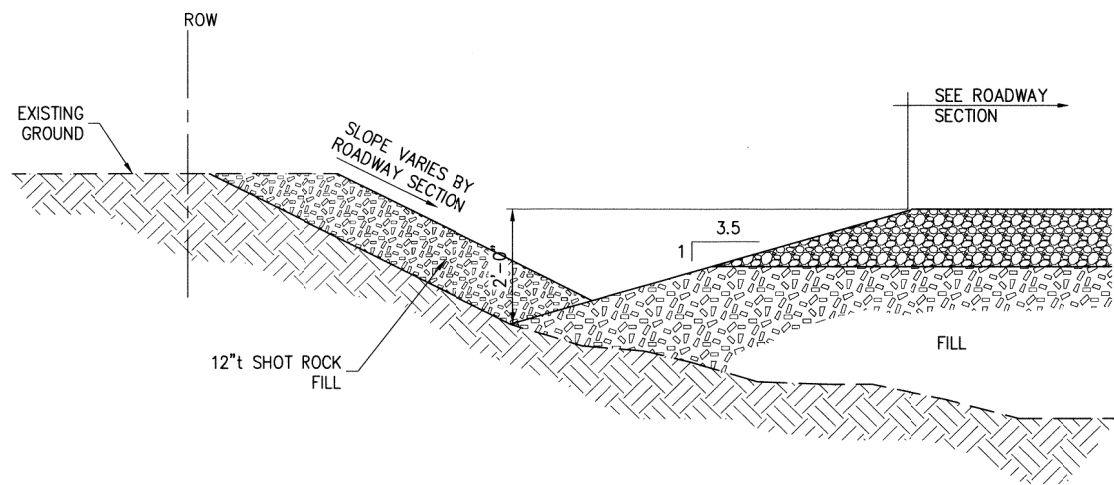
**PERFORATED PIPE TRENCH  
TYPE 1 END SECTION**

C  
C2.02



**DRAINAGE DITCH  
TYPE 2 END SECTION**

END SECTION CONTROL TABLE			
START STATION	END STATION	SECTION RT	SECTION LT
30+53.56	32+15.00	FILL	TYPE 1
32+15.00	33+75.00	FILL	TYPE 3
33+75.00	35+25.00	FILL	TYPE 2
35+25.00	36+90.00	FILL	TYPE 3
36+90.00	39+00.00	TYPE 3	TYPE 3
39+00.00	41+45.00	TYPE 2	TYPE 2



**DRAINAGE DITCH  
TYPE 3 END SECTION**

FOR BID



811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.



REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

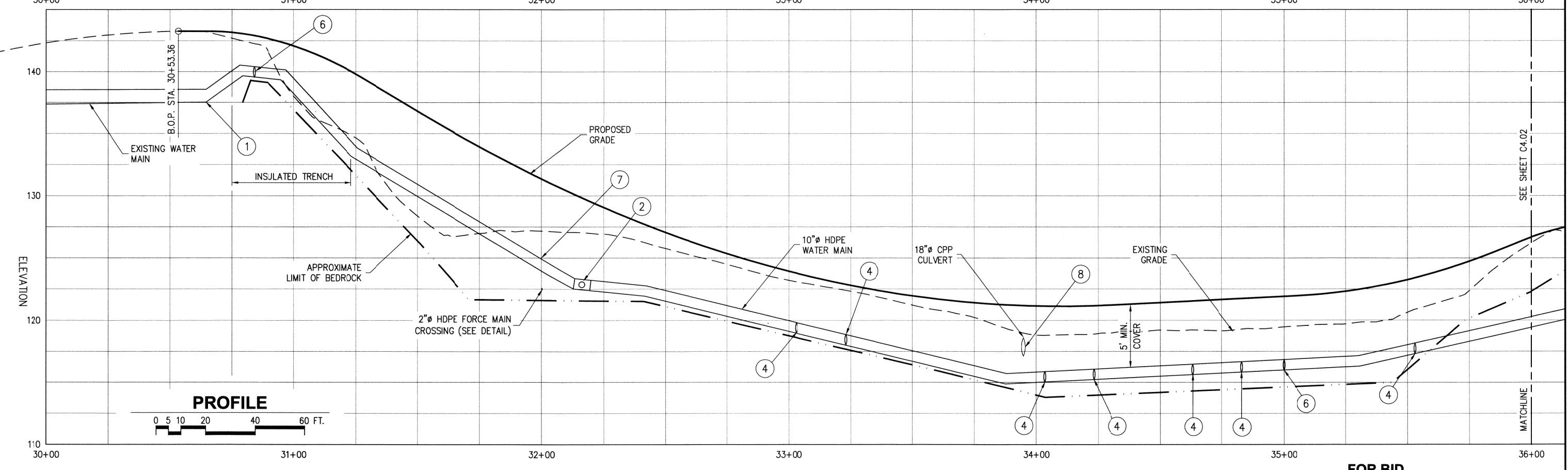
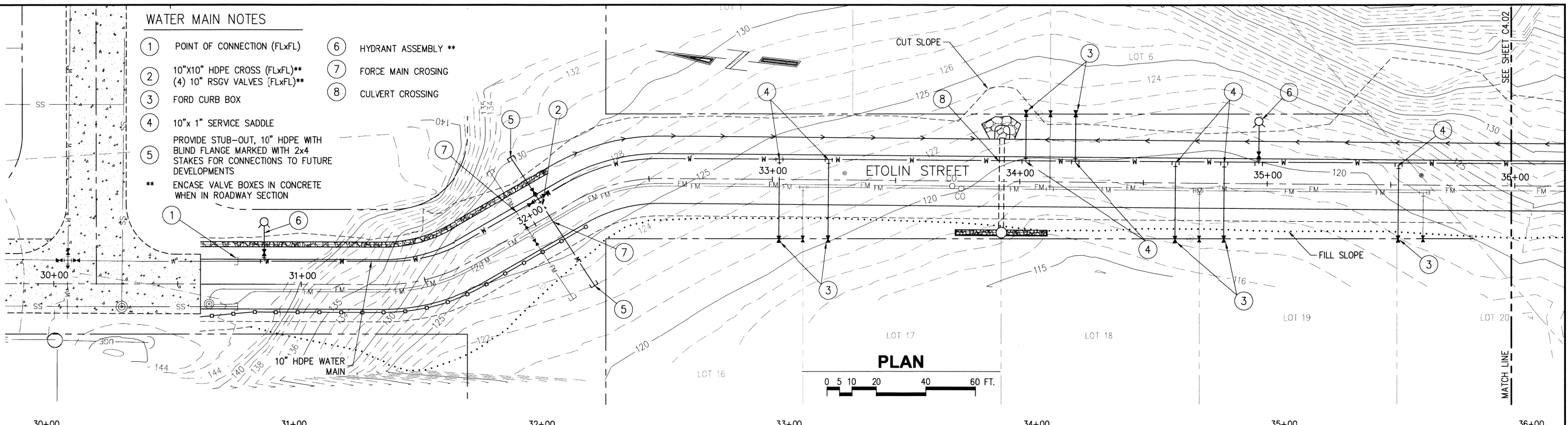
PROJECT: <b>ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE</b>			
TITLE: <b>STORMWATER DETAILS</b>			
DESIGNED BY:	SR	PROJECT NO:	114018.02
DRAWN BY:	DRH	DATE:	DEC. 2011
CHECKED BY:	GW	SCALE:	NOTED
			SHEET NO: <b>C3.05</b>

12/19/11 Drawings\2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Retid\114018.02-C3.05.dwg

**WATER MAIN NOTES**

- ① POINT OF CONNECTION (FLxFL)
- ② 10"x10" HDPE CROSS (FLxFL)\*\*
- ③ FORD CURB BOX
- ④ 10" x 1" SERVICE SADDLE
- ⑤ PROVIDE STUB-OUT, 10" HDPE WITH BLIND FLANGE MARKED WITH 2x4 STAKES FOR CONNECTIONS TO FUTURE DEVELOPMENTS
- ⑥ HYDRANT ASSEMBLY \*\*
- ⑦ FORCE MAIN CROSSING
- ⑧ CULVERT CROSSING

\*\* ENCASE VALVE BOXES IN CONCRETE WHEN IN ROADWAY SECTION



**FOR BID**

12/20/11 Drawings 2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance For Rebid\114018.02-C4.01.dwg



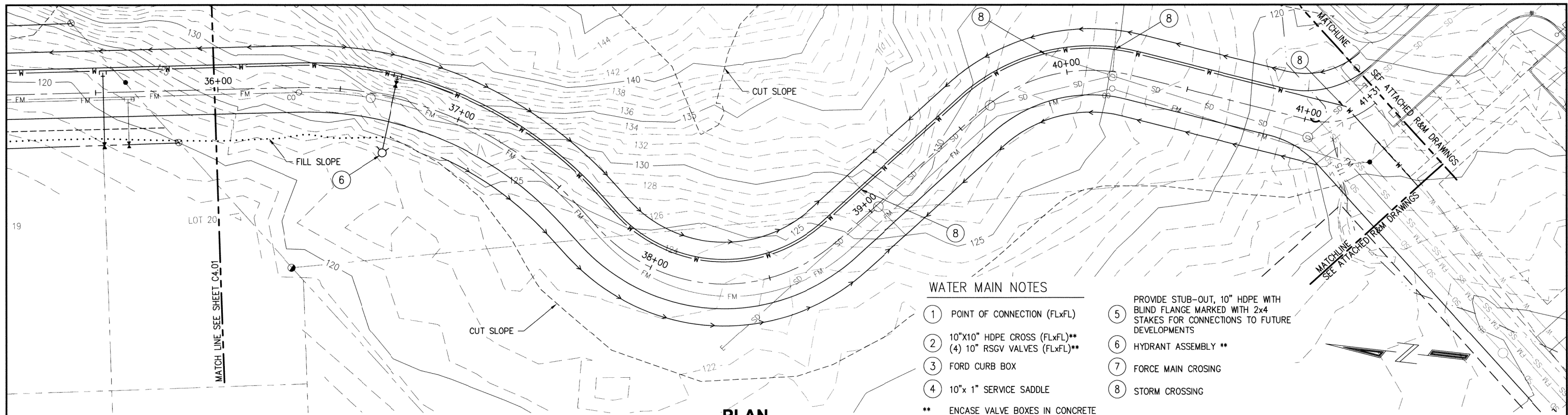
811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.



REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

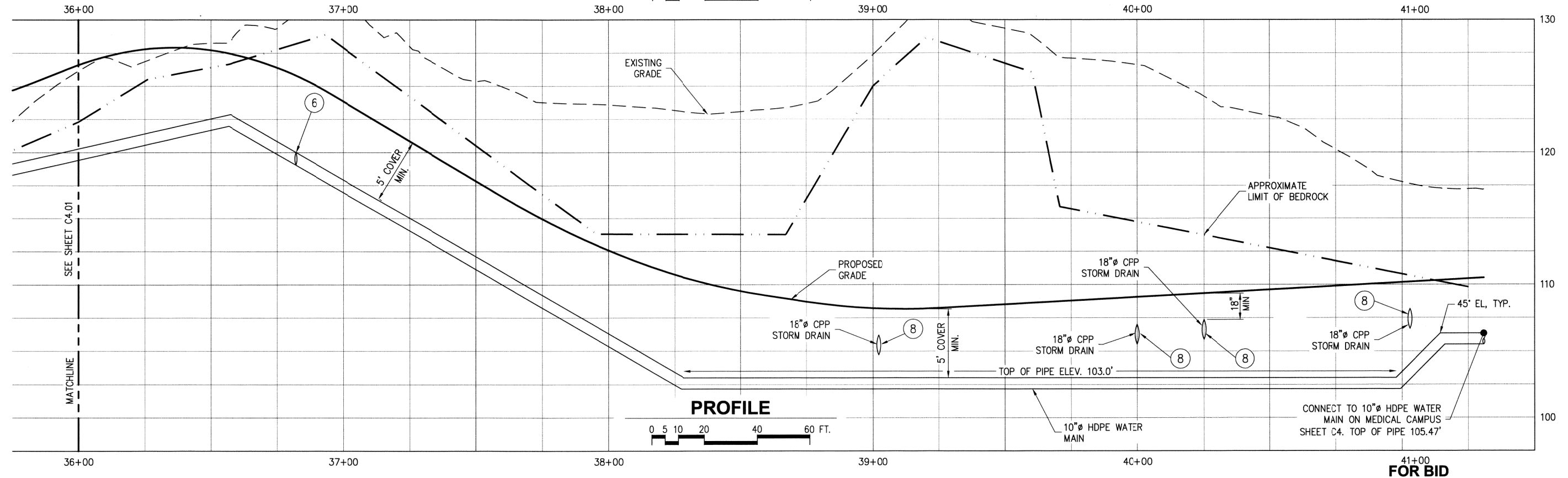
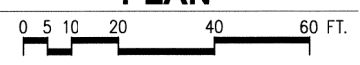
PROJECT: <b>ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE</b>			
TITLE: <b>ETOLIN STREET WATER MAIN PLAN AND PROFILE</b>			
DESIGNED BY:	SR	PROJECT NO:	114018.02
DRAWN BY:	DRH	DATE:	DEC. 2011
CHECKED BY:	GW	SCALE:	NOTED
			SHEET NO: <b>C4.01</b>



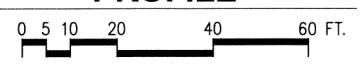
**WATER MAIN NOTES**

- ① POINT OF CONNECTION (FLxFL)
  - ② 10"x10" HDPE CROSS (FLxFL)\*\*
  - ③ FORD CURB BOX
  - ④ 10"x 1" SERVICE SADDLE
  - ⑤ PROVIDE STUB-OUT, 10" HDPE WITH BLIND FLANGE MARKED WITH 2x4 STAKES FOR CONNECTIONS TO FUTURE DEVELOPMENTS
  - ⑥ HYDRANT ASSEMBLY \*\*
  - ⑦ FORCE MAIN CROSSING
  - ⑧ STORM CROSSING
- \*\* ENCASE VALVE BOXES IN CONCRETE WHEN IN ROADWAY SECTION

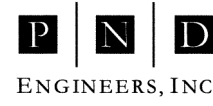
**PLAN**



**PROFILE**



12/21/11 Drawings 2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Rebid\114018.02-C4.02.dwg



811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.



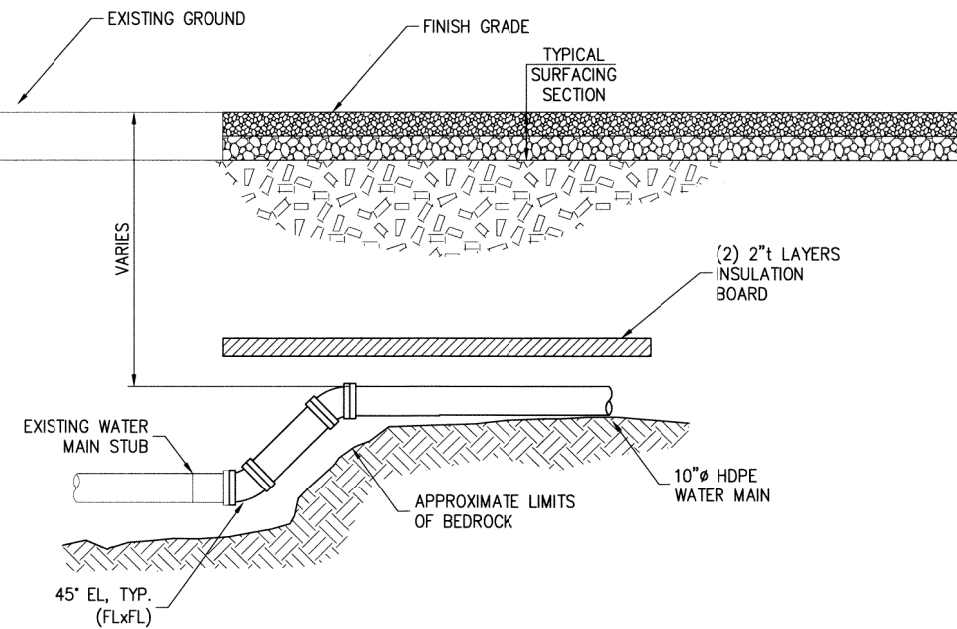
REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

**PROJECT:** ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE

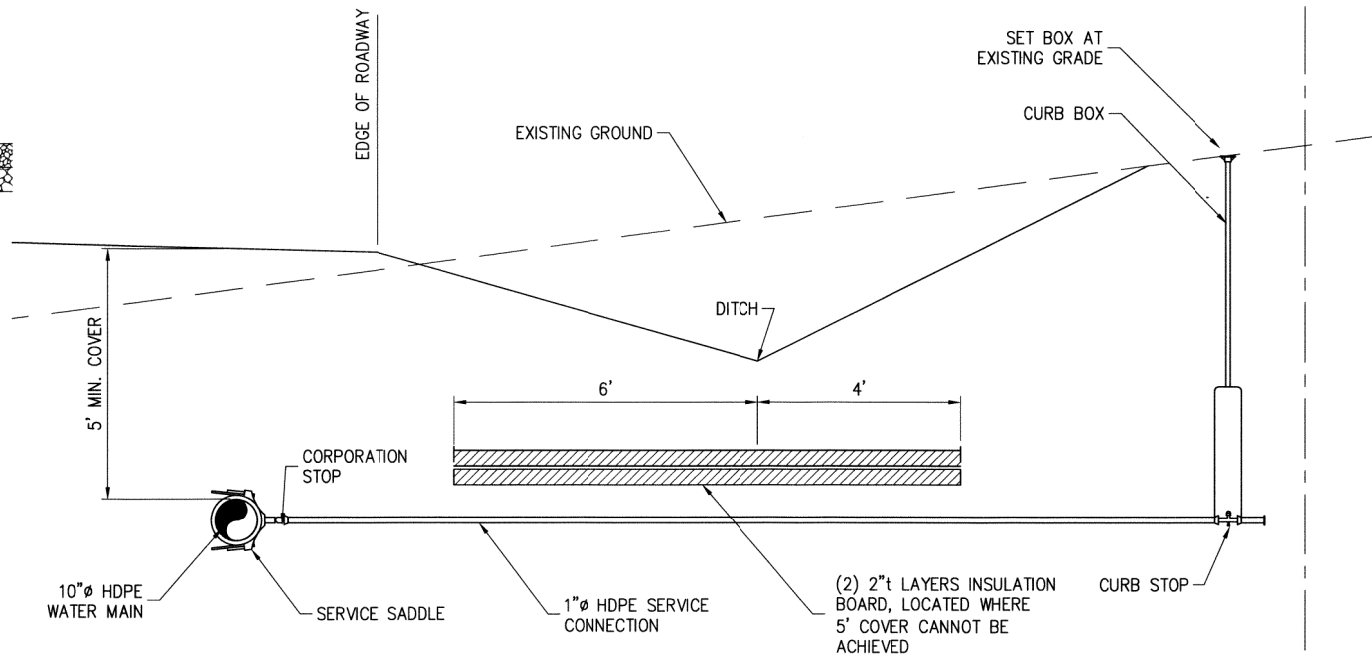
**TITLE:** MEDICAL CAMPUS WATER MAIN PLAN AND PROFILE

DESIGNED BY:	SR	PROJECT NO:	114018.02	SHEET NO:
DRAWN BY:	DRH	DATE:	DEC. 2011	<b>C4.02</b>
CHECKED BY:	GW	SCALE:	NOTED	

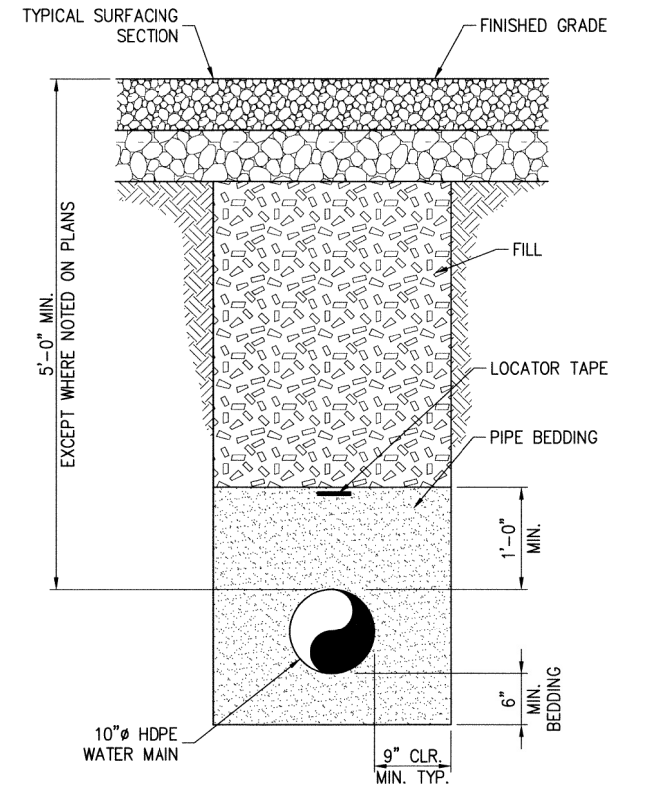
12/21/11 Drawings\2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Rebid\114018.02-C4.03.dwg



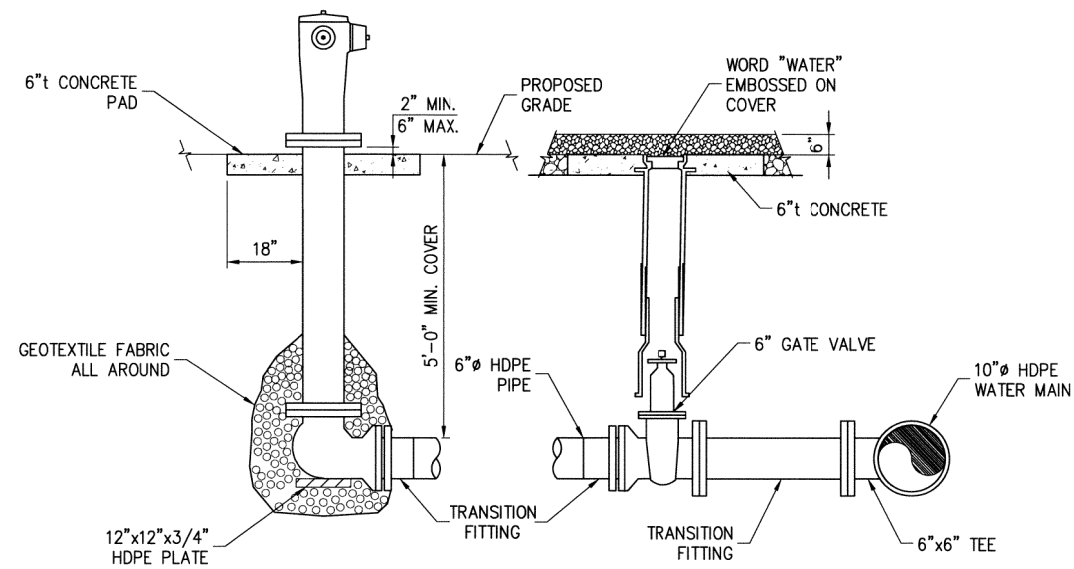
**POINT OF CONNECTION**



**1" SERVICE CONNECTION**



**TYPICAL PIPE TRENCH**



**HYDRANT ASSEMBLY**

FOR BID



811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.



REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

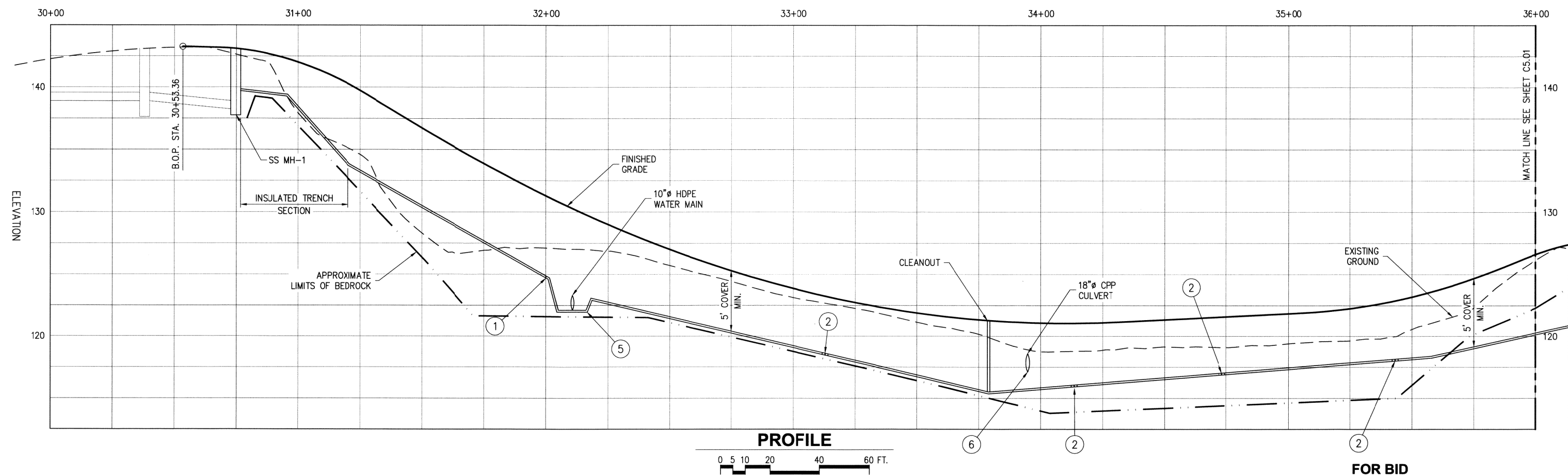
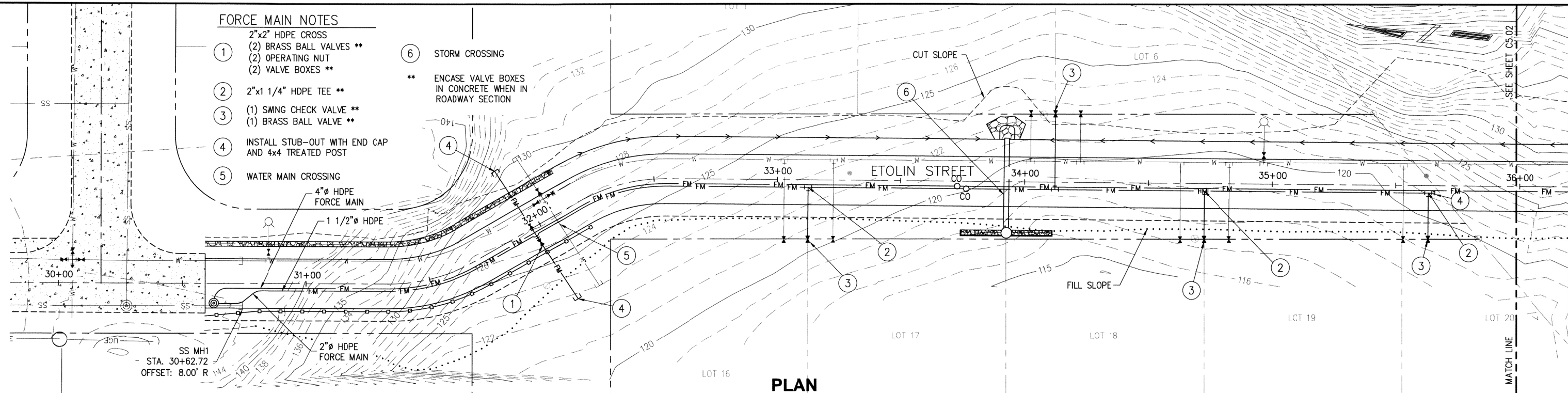
PROJECT: <b>ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE</b>			
TITLE: <b>WATER MAIN DETAILS</b>			
DESIGNED BY: SR	PROJECT NO: 114018.02	SHEET NO:	
DRAWN BY: DRH	DATE: DEC. 2011		<b>C4.03</b>
CHECKED BY: GW	SCALE: NOTED		



12/20/11 Drawings\2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For\_Rebid\114018.02-C5.01.dwg

**FORCE MAIN NOTES**

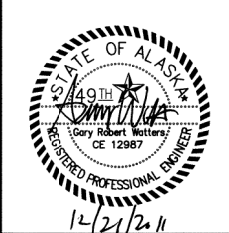
- ① 2"x2" HDPE CROSS  
(2) BRASS BALL VALVES \*\*  
(2) OPERATING NUT  
(2) VALVE BOXES \*\*
  - ② 2"x1 1/4" HDPE TEE \*\*
  - ③ (1) SWING CHECK VALVE \*\*  
(1) BRASS BALL VALVE \*\*
  - ④ INSTALL STUB-OUT WITH END CAP AND 4x4 TREATED POST
  - ⑤ WATER MAIN CROSSING
  - ⑥ STORM CROSSING
- \*\* ENCASE VALVE BOXES IN CONCRETE WHEN IN ROADWAY SECTION



**PND ENGINEERS, INC.**

811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.

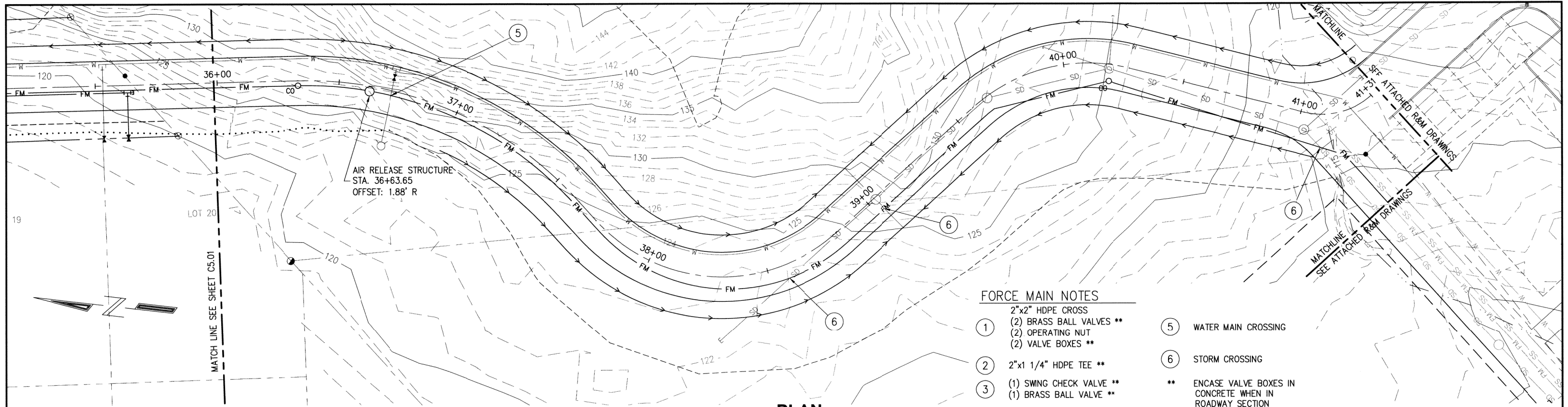


REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

**ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE**

**ETOLIN STREET FORCE MAIN PLAN AND PROFILE**

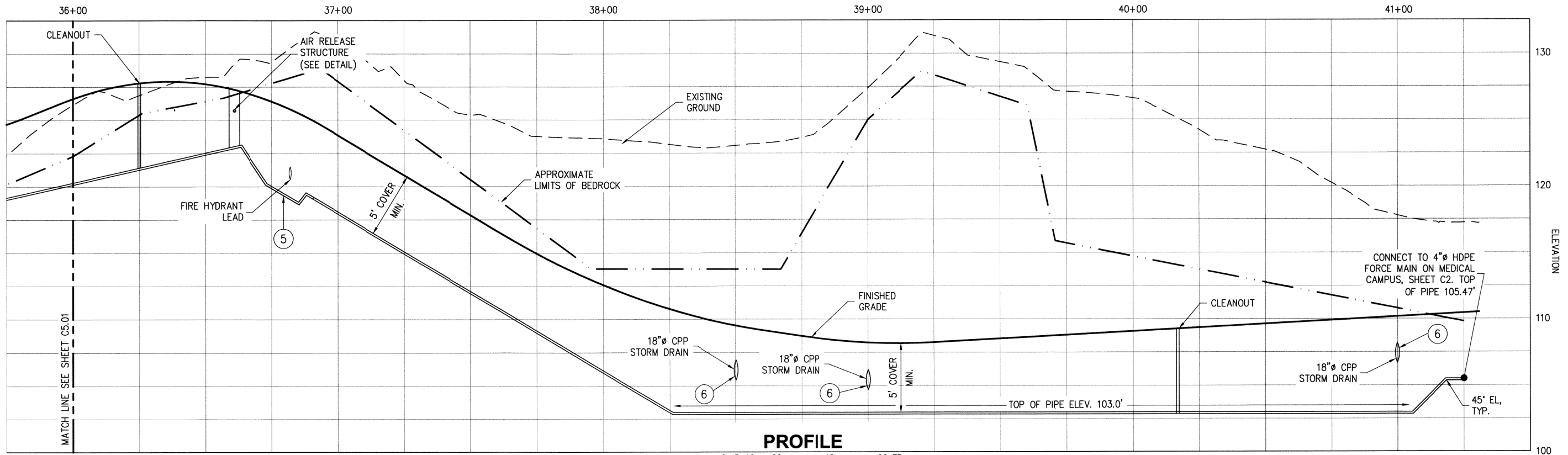
DESIGNED BY: SR PROJECT NO: 114018.02 SHEET NO: C5.01  
 DRAWN BY: DRH DATE: DEC. 2011  
 CHECKED BY: GW SCALE: NOTED



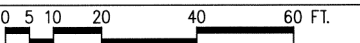
**FORCE MAIN NOTES**

- ① 2"x2" HDPE CROSS  
(2) BRASS BALL VALVES \*\*  
(2) OPERATING NUT  
(2) VALVE BOXES \*\*
  - ② 2"x1 1/4" HDPE TEE \*\*
  - ③ (1) SWING CHECK VALVE \*\*  
(1) BRASS BALL VALVE \*\*
  - ④ INSTALL STUB-OUT WITH END CAP AND 4x4 TREATED POST
  - ⑤ WATER MAIN CROSSING
  - ⑥ STORM CROSSING
- \*\* ENCASE VALVE BOXES IN CONCRETE WHEN IN ROADWAY SECTION

**PLAN**



**PROFILE**



**FOR BID**

12/20/11 Drawings\2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Bid\114018.02-C5.02.dwg

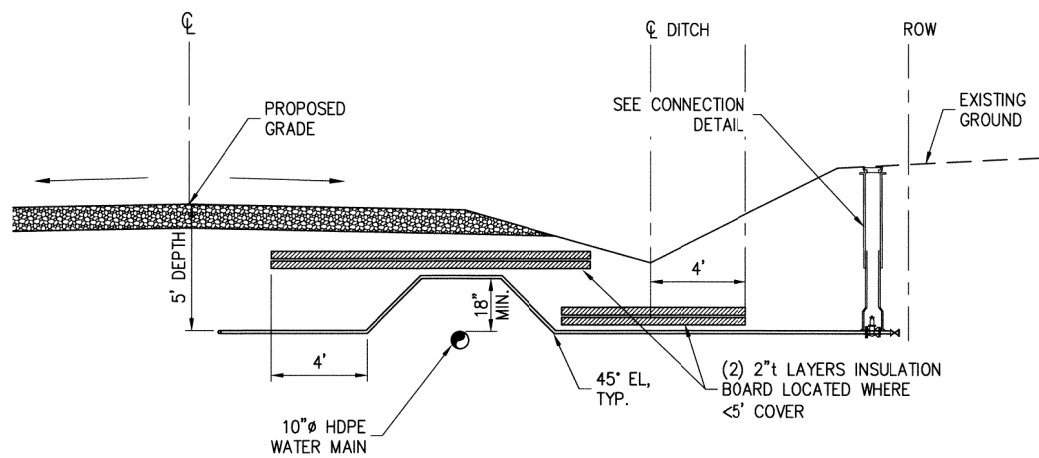
**PND ENGINEERS, INC.**  
 811 First Avenue, Suite 570  
 Seattle, Washington 98104  
 Phone: 206-624-1387  
 Fax: 206-624-1388  
 mail@pndengineers.com

PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.

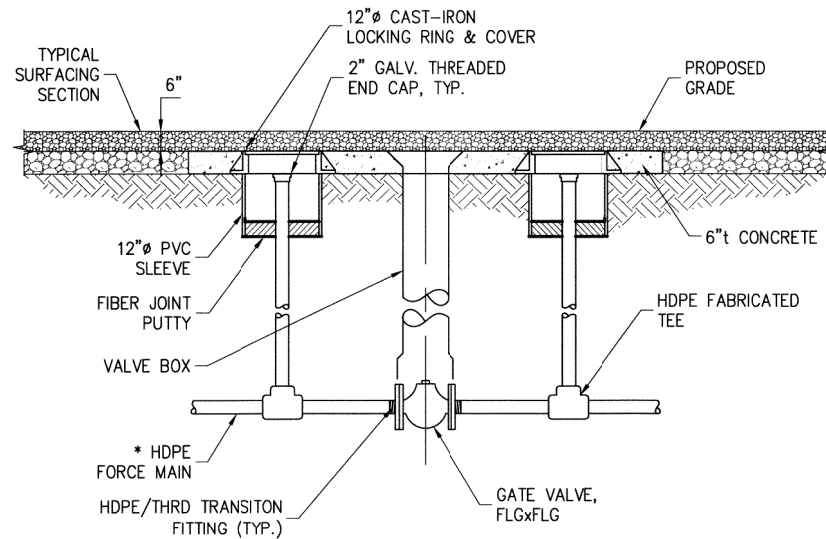


REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

PROJECT: <b>ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE</b>			
TITLE: <b>MEDICAL CAMPUS FORCE MAIN PLAN AND PROFILE</b>			
DESIGNED BY:	SR	PROJECT NO:	114018.02
DRAWN BY:	DRH	DATE:	OCT. 2011
CHECKED BY:	GW	SCALE:	NOTED
			SHEET NO: <b>C5.02</b>

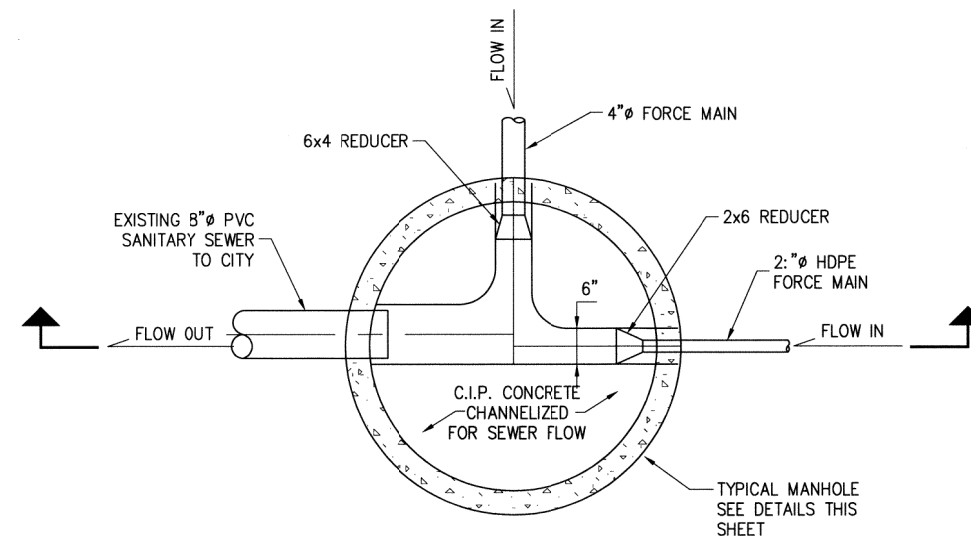


**FORCEMAIN SERVICE CONNECTION**

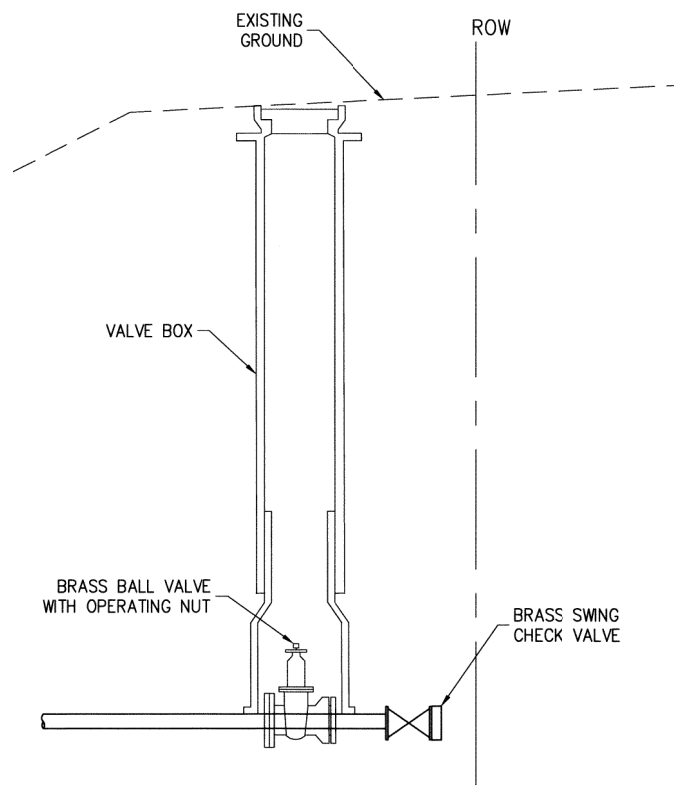


**SEWER FORCEMAIN CLEAN OUT DETAIL**

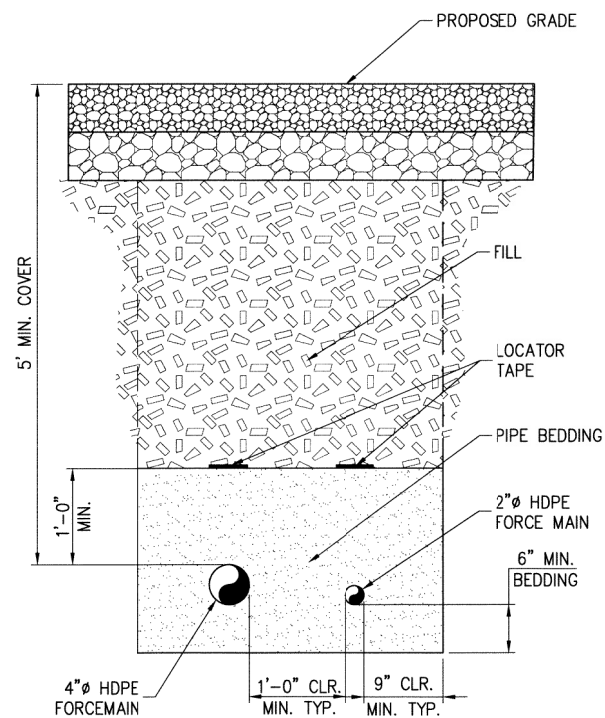
\* PIPE DIAMETER VARIES



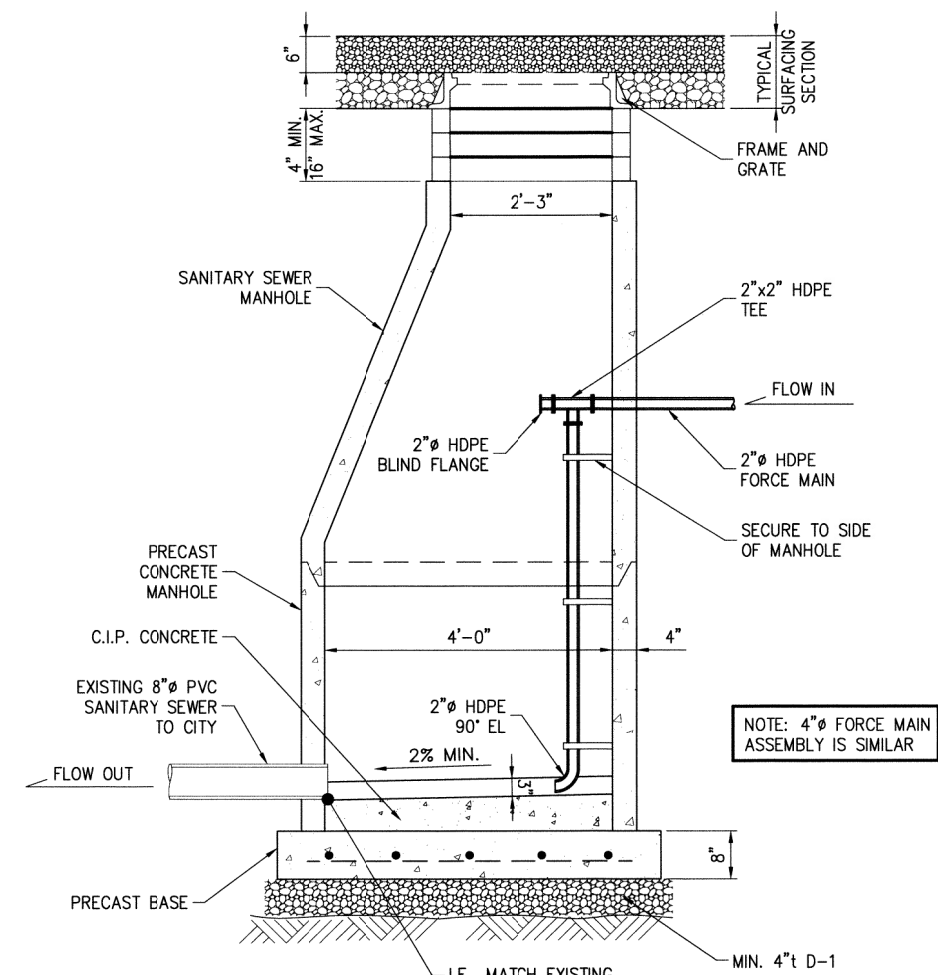
**SANITARY SEWER MANHOLE 1 PLAN**



**CONNECTION DETAIL**



**TYPICAL FORCEMAIN TRENCH**



**MANHOLE 1 SECTION**

FOR BID

NOTE: 4" Ø FORCE MAIN ASSEMBLY IS SIMILAR

12/19/11 Drawings\2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Rebid\114018.02-C5.03.dwg



811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

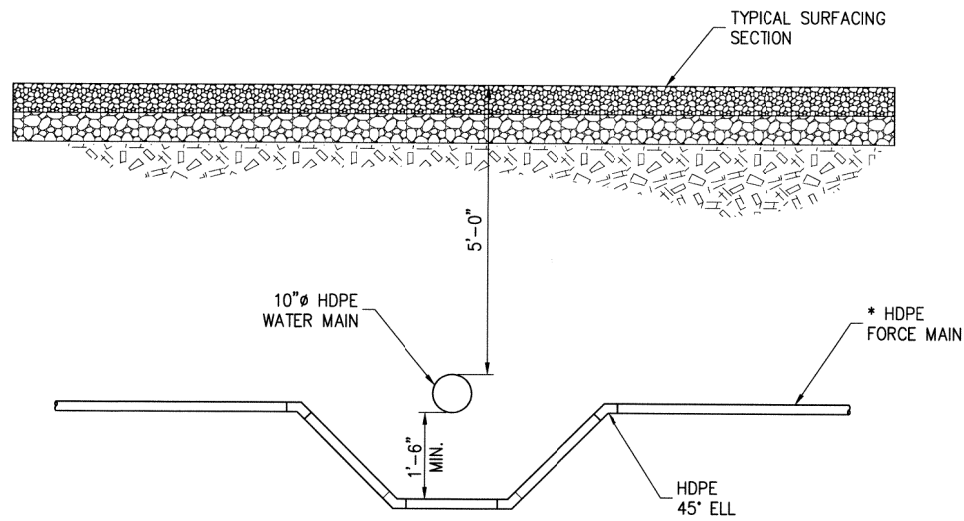
PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.



REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

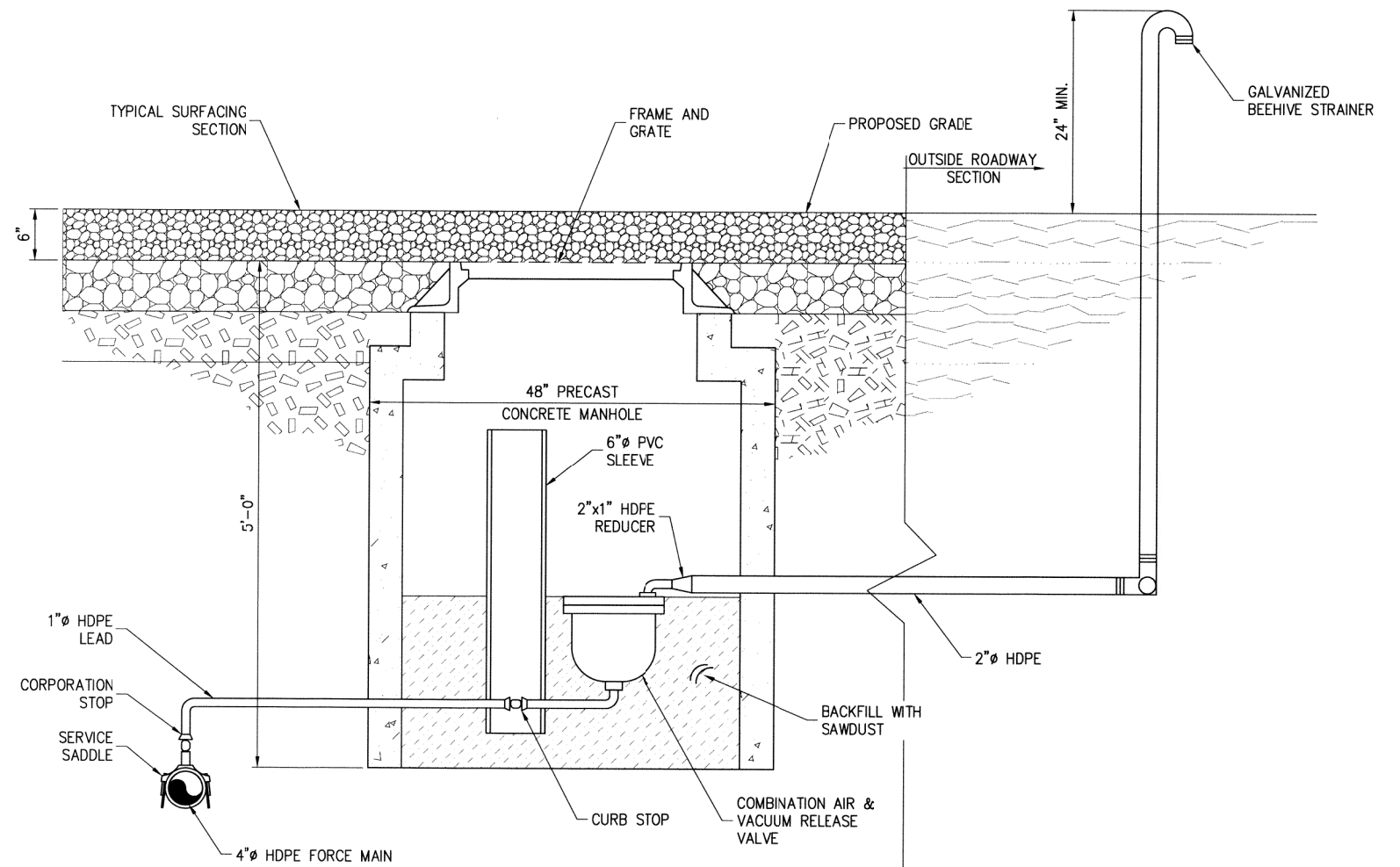
PROJECT: <b>ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE</b>			
TITLE: <b>FORCE MAIN DETAILS</b>			
DESIGNED BY:	SR	PROJECT NO:	114018.02
DRAWN BY:	DRH	DATE:	DEC. 2011
CHECKED BY:	GW	SCALE:	NOTED
			SHEET NO: <b>C5.03</b>

10/14/11 Drawings 2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance For Bid\114018.02-C5.04.dwg



**WATER MAIN CROSSING DETAIL**

\* DIAMETER VARIES



**AIR RELEASE STRUCTURE**

FOR BID



811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

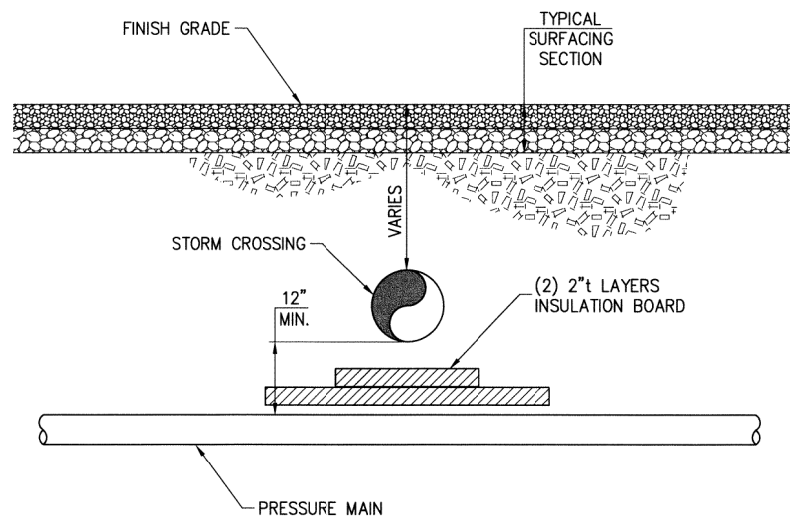
PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.



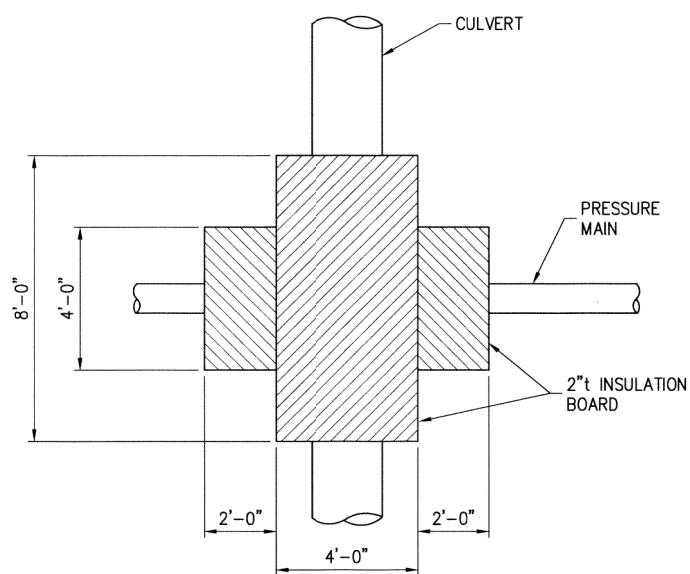
REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

PROJECT: <b>ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE</b>			
TITLE: <b>FORCE MAIN DETAILS</b>			
DESIGNED BY: SR	PROJECT NO: 114018.02	SHEET NO: <b>C5.04</b>	
DRAWN BY: DRH	DATE: DEC. 2011		
CHECKED BY: GW	SCALE: NOTED		

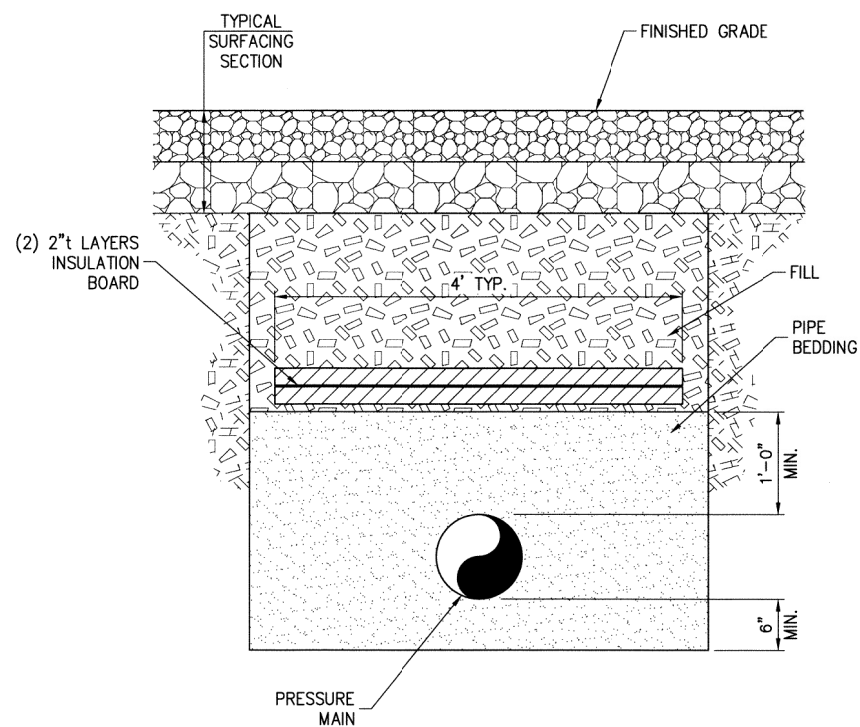




**STORM CROSSINGS**



**INSULATION PLAN**



**INSULATED TRENCHING**

(IF LESS THAN 5' OF COVER)

FOR BID



811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.

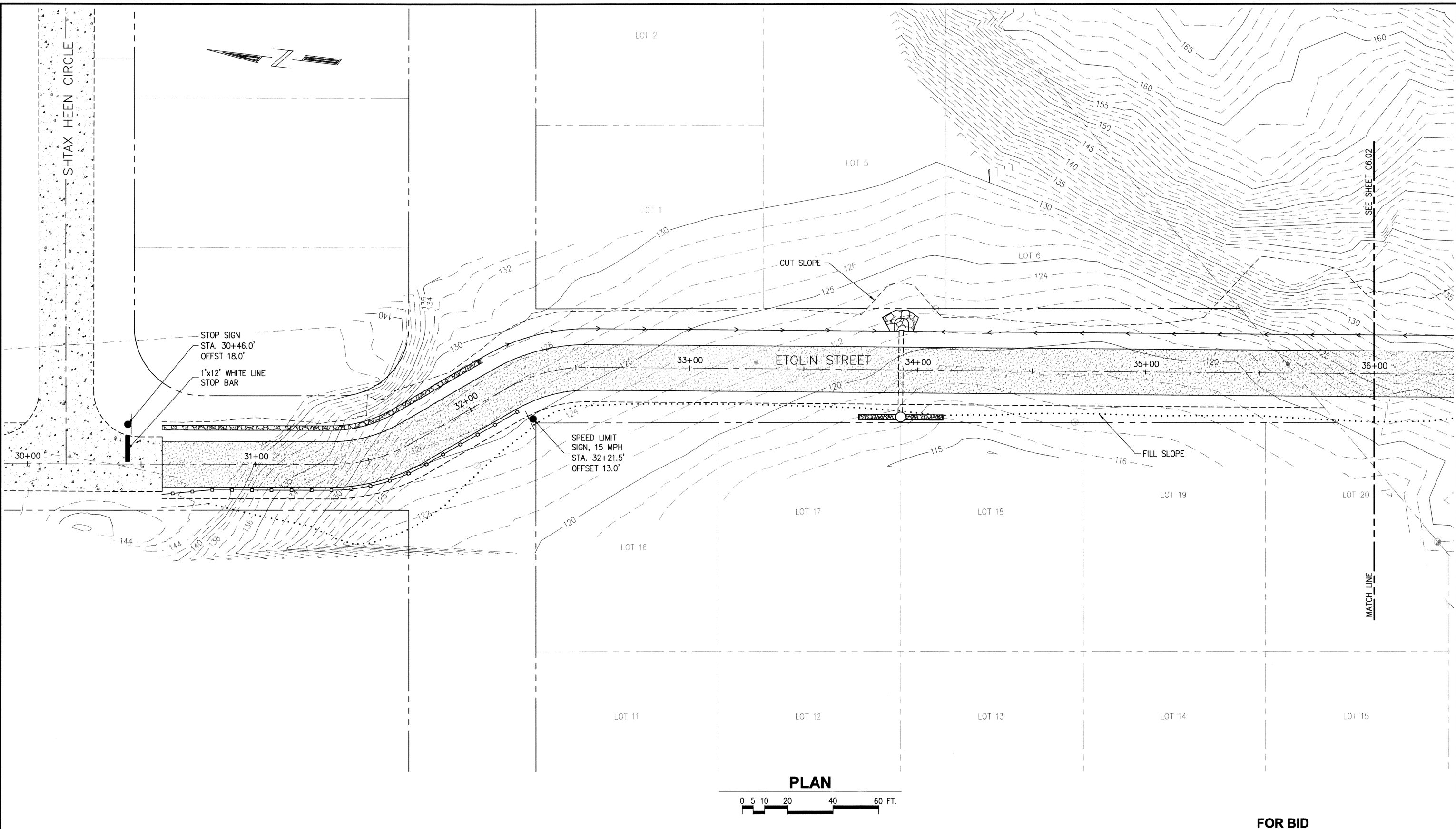


REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

PROJECT: <b>ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE</b>			
TITLE: <b>UTILITY DETAILS</b>			
DESIGNED BY: SR	PROJECT NO: 114018.02	SHEET NO: <b>C5.05</b>	
DRAWN BY: DRH	DATE: DEC. 2011		
CHECKED BY: GW	SCALE: NOTED		

12/20/11 Drawings:2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Rebid\114018.02-C5.05.dwg

12/19/11 Drawings\2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Rebid\114018.02-C6.01.dwg



**PLAN**



**FOR BID**



811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

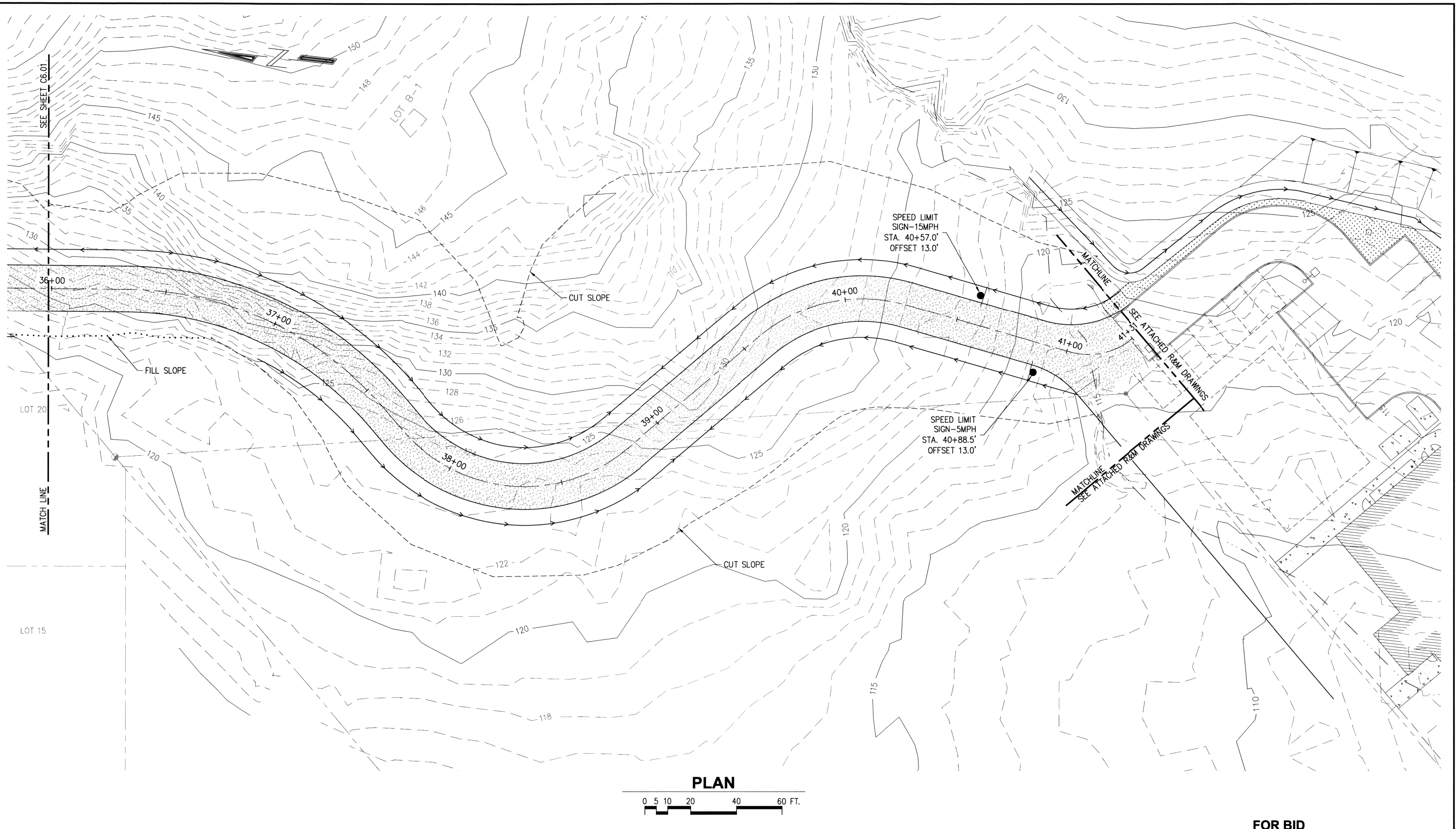
PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.



REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

PROJECT: <b>ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE</b>			
TITLE: <b>ETOLIN STREET SIGNAGE AND STRIPING PLAN</b>			
DESIGNED BY:	SR	PROJECT NO:	114018.02
DRAWN BY:	DRH	DATE:	DEC. 2011
CHECKED BY:	GW	SCALE:	NOTED
			SHEET NO: <b>C6.01</b>

12/21/11 Drawings\2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Rebid\114018.02-C6.02.dwg



**PLAN**



**FOR BID**



811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

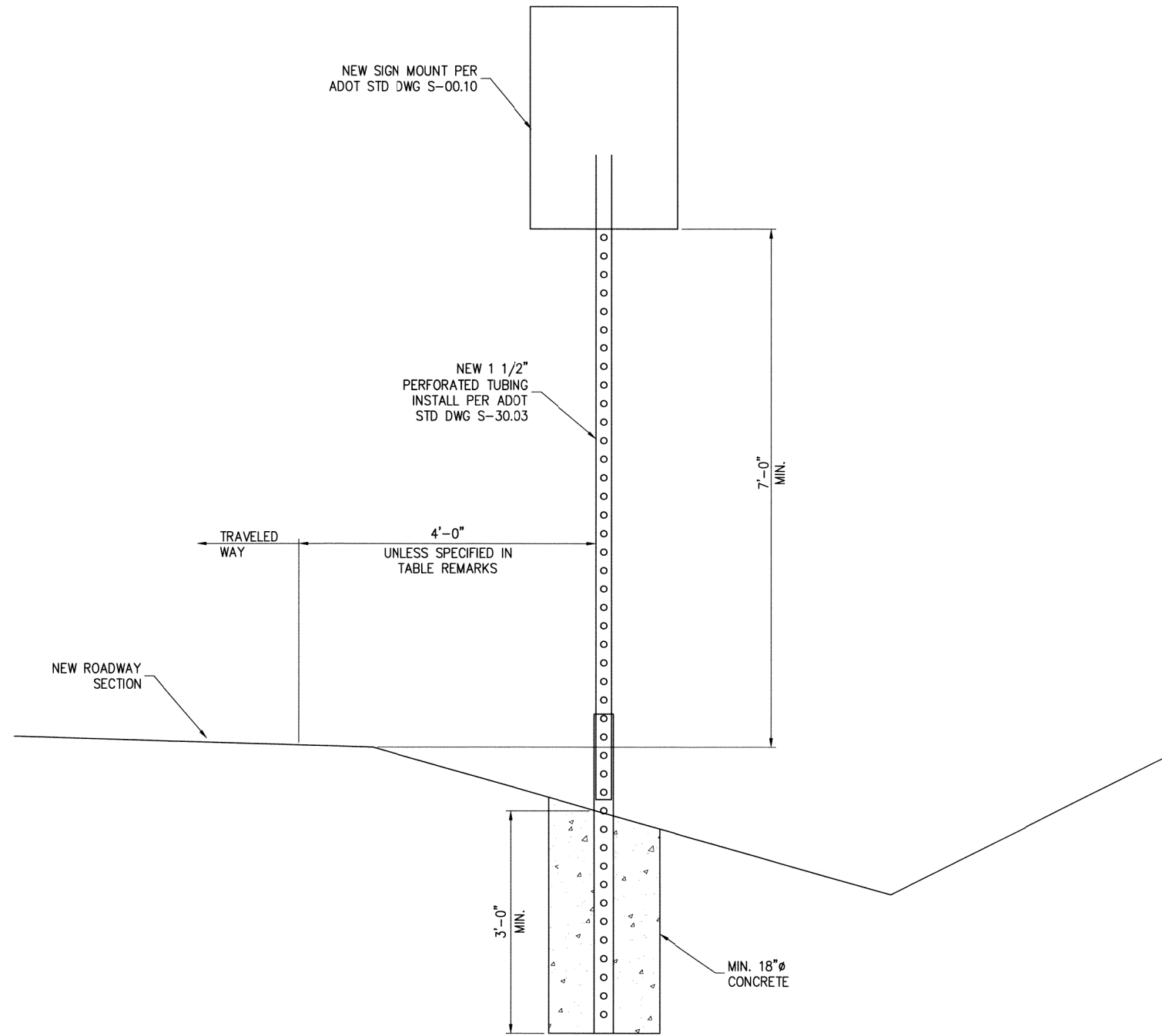
PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.



REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

<b>ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE</b>			
<b>MEDICAL CAMPUS SIGNAGE PLAN</b>			
DESIGNED BY:	SR	PROJECT NO:	114018.02
DRAWN BY:	DRH	DATE:	DEC. 2011
CHECKED BY:	GW	SCALE:	NOTED
			<b>SHEET NO: C6.02</b>

12/19/11 Drawings\2011\114018.02 - Etolin St. and Medical Campus Utilities Assistance\For Rebid\114018.02-06.03.dwg



**SIGN INSTALLATION**

FOR BID



811 First Avenue, Suite 570  
Seattle, Washington 98104  
Phone: 206-624-1387  
Fax: 206-624-1388  
mail@pndengineers.com

PND ENGINEERS, INC. IS NOT RESPONSIBLE FOR SAFETY PROGRAMS, METHODS OR PROCEDURES OF OPERATION, OR THE CONSTRUCTION OF THE DESIGN SHOWN ON THESE DRAWINGS. WHERE SPECIFICATIONS ARE GENERAL OR NOT CALLED OUT, THE SPECIFICATIONS SHALL CONFORM TO STANDARDS OF INDUSTRY. DRAWINGS ARE FOR USE ON THIS PROJECT ONLY AND ARE NOT INTENDED FOR REUSE WITHOUT WRITTEN APPROVAL FROM PND. DRAWINGS ARE ALSO NOT TO BE USED IN ANY MANNER THAT WOULD CONSTITUTE A DETRIMENT DIRECTLY OR INDIRECTLY TO PND.



REVISIONS		
REV	DATE	DESCRIPTION
1	12/11	ISSUED FOR BID

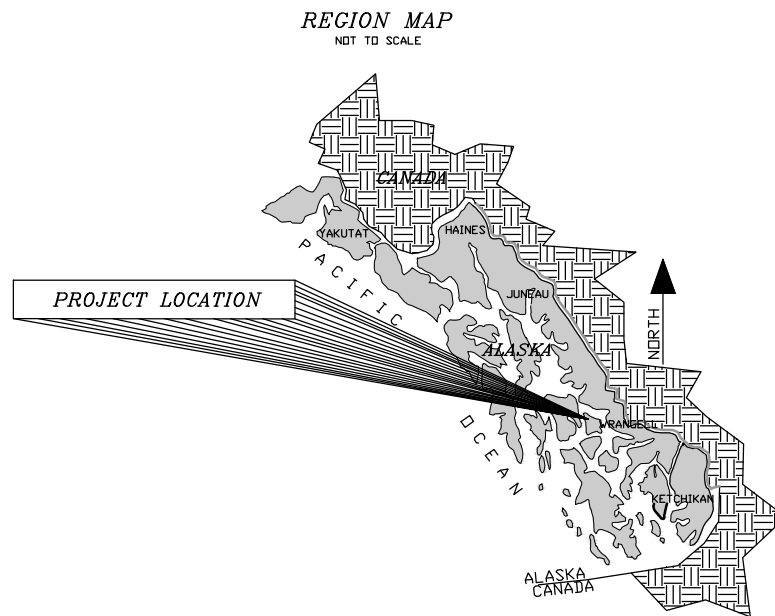
PROJECT: <b>ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE</b>			
TITLE: <b>SIGNAGE DETAILS</b>			
DESIGNED BY:	SR	PROJECT NO:	114018.02
DRAWN BY:	DRH	DATE:	DEC. 2011
CHECKED BY:	GW	SCALE:	NOTED
			SHEET NO: <b>C6.03</b>



# CITY AND BOROUGH OF WRANGELL

## ETOLIN STREET AND MEDICAL CAMPUS UTILITIES ASSISTANCE

SHEET INDEX	
GENERAL DRAWINGS	
G1	TITLE & VICINITY MAP
G2	SURVEY CONTROL MAP
CIVIL DRAWINGS	
C1	ACIS SANITARY SEWER PLAN AND PROFILE STA 0+00 - 4+00
C2	ACIS SANITARY SEWER PLAND AND PROFILE STA 4+00 - END
C3	ACIS WATER MAIN PLAN AND PROFILE STA 0+00 - 4+00
C4	ACIS WATER MAIN PLAN AND PROFILE STA 4+00 - END
C5	LIFT STATION LAYOUT AND GRADING PLAN
C6	MEDICAL CAMPUS STORM MAIN P&P STA 0+00 - 4+00
C7	MEDICAL CAMPUS STORM MAIN P&P STA 4+00 - END
LS1	LIFT STATION PLAN AND SECTIONS
LS2	LIFT STATION DETAILS
D1	WATER DETAILS
D2	WATER DETAILS
D3	SANITARY SEWER DETAILS
D4	STORM MAIN DETIALS
LIFT STATION POWER AND CONTROLS DRAWINGS	
E-01	BREAKER FUSE RELAY LIST
E-02	CONTROL NETWORK
E-03	CONTROL PANEL LAYOUT
E-04	POWER SCHEMATIC
E-05	CONTROL POWER & UPS SCHEMATIC
E-06	PUMP CONTROL SCHEMATIC
E-07	ANALOG DEVICES
E-08	HIGH-LEVEL FLOAT AND DEPTH TRANSDUCER SCHEMATIC
E-09	PLC DISCRETE I-O
E-10	SITE PLAN AND CONTROL PANEL SHELTER
E-11	WETWELL ELECTRICAL LAYOUT
E-12	CONTROL PANEL CONDUITS
E-13	ONE-LINE ELECTRICAL DIAGRAM



VICINITY MAP  
NDT TO SCALE



Designed: RKB	Approved: RKB		Client: CITY AND BOROUGH OF WRANGELL PO BOX 531 WRANGELL, ALASKA 99929	Project: ETOLIN STREET & MEDICAL CAMPUS UTILITIES ASSISTANCE	Sheet Description: TITLE & VICINITY MAP	Sheet No. G1
Drawn: RKB	Date: DECEMBER 2011					
Date	No.	Description	By	Checked: TSS	PROJECT #: 112342	
		REVISION				

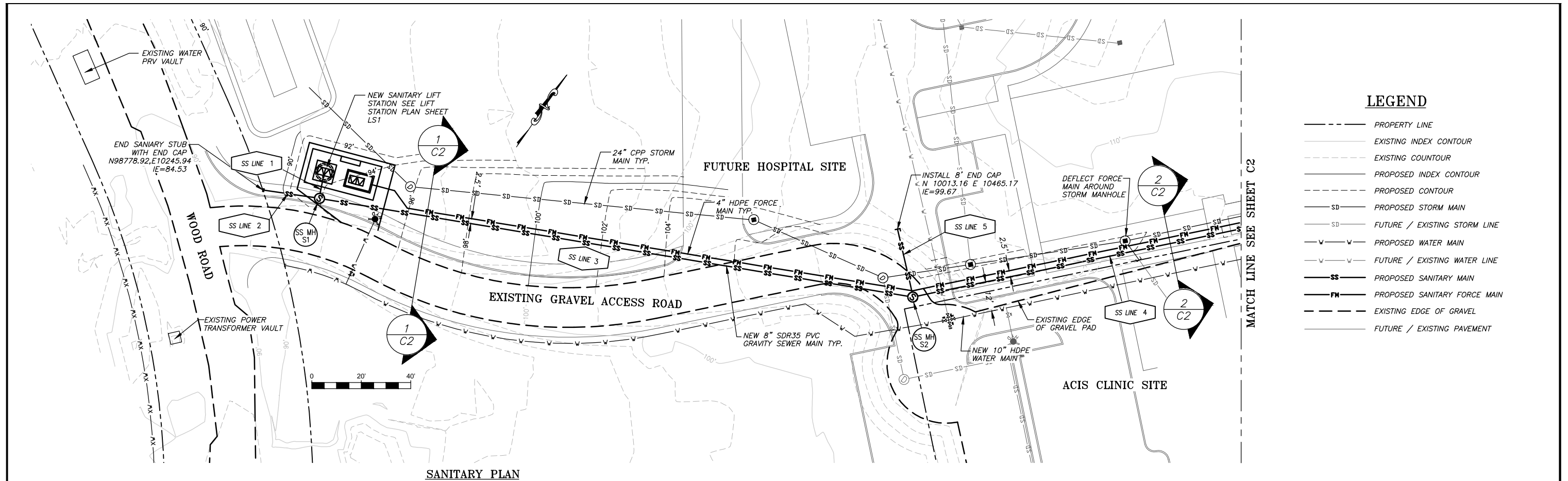


**SURVEY CONTROL POINTS**

POINT #	NORTHING	EASTING	ELEV.	DESCRIPTION
2	10058.6	9926.05	67.90	60D SPIKE
14	9798.21	10296.96	92.35	60D SPIKE
20	9494.56	10375.95	107.59	60D SPIKE



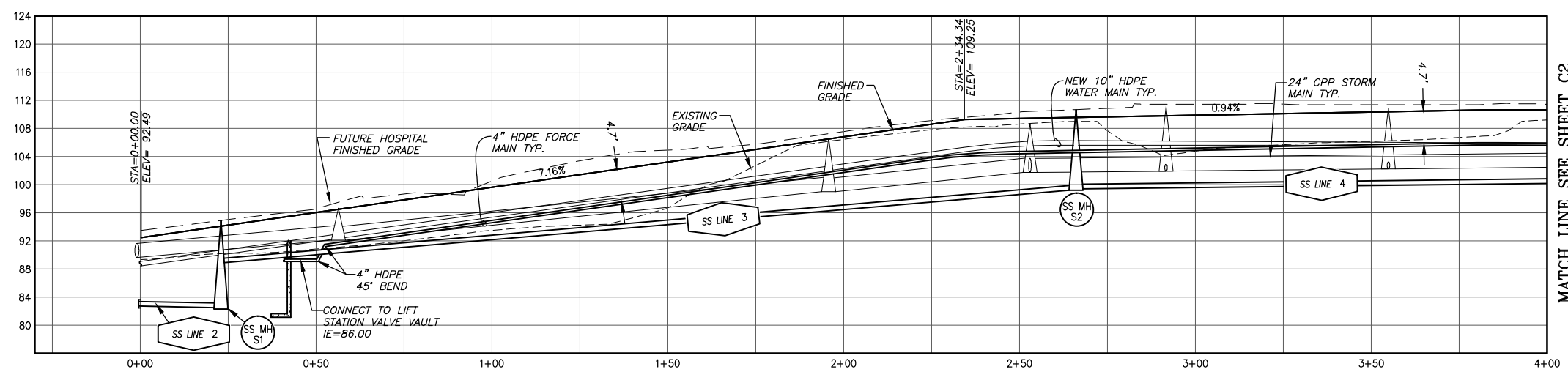
Designed: RKB		Approved: RKB			Client: CITY AND BOROUGH OF WRANGELL PO BOX 531 WRANGELL, ALASKA 99929	Project: ETOLIN STREET & MEDICAL CAMPUS UTILITIES ASSISTANCE	Sheet Description: KEY MAP / SURVEY CONTROL PLAN	Sheet No. G2
Drawn: RKB		Date: DECEMBER 2011						
Date	No.	Description	By	Checked: TSS	PROJECT #: 112342			
		REVISION						



**LEGEND**

- PROPERTY LINE
- - - EXISTING INDEX CONTOUR
- - - EXISTING COUNTOUR
- - - PROPOSED INDEX CONTOUR
- - - PROPOSED COUNTOUR
- SD --- PROPOSED STORM MAIN
- SD --- FUTURE / EXISTING STORM LINE
- W --- PROPOSED WATER MAIN
- W --- FUTURE / EXISTING WATER LINE
- SS --- PROPOSED SANITARY MAIN
- FM --- PROPOSED SANITARY FORCE MAIN
- - - EXISTING EDGE OF GRAVEL
- - - FUTURE / EXISTING PAVEMENT

**SANITARY PLAN**



**SANITARY PROFILE**

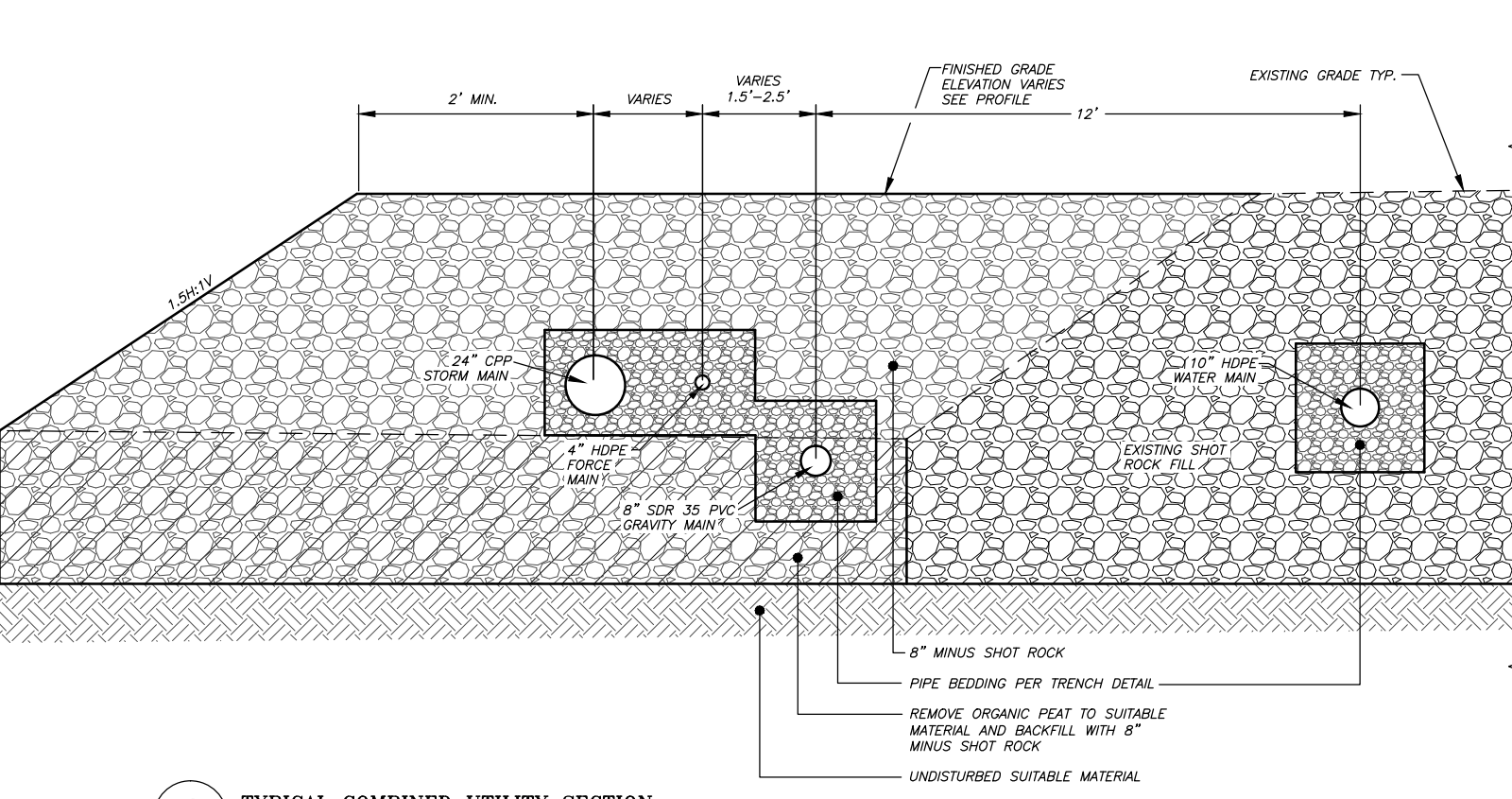
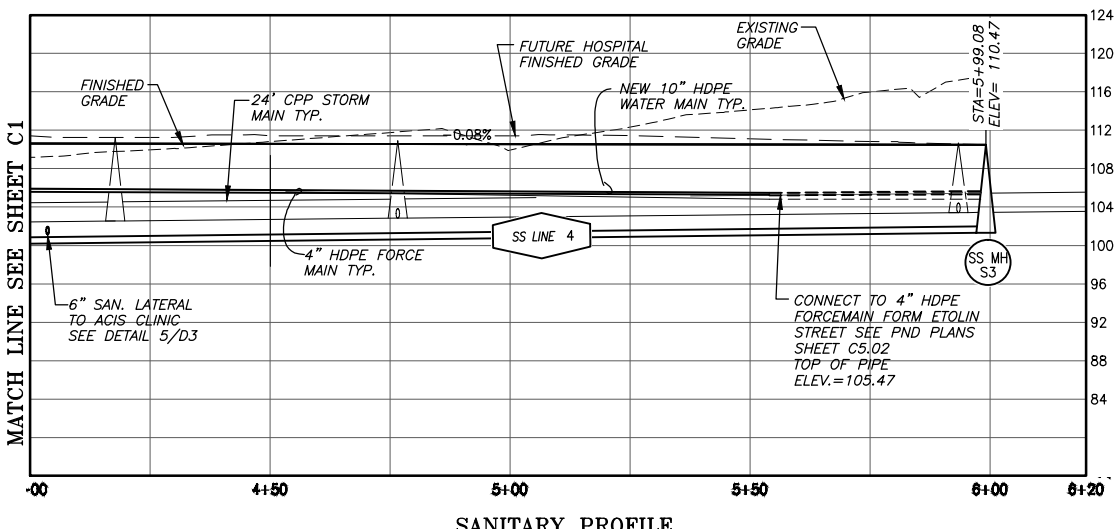
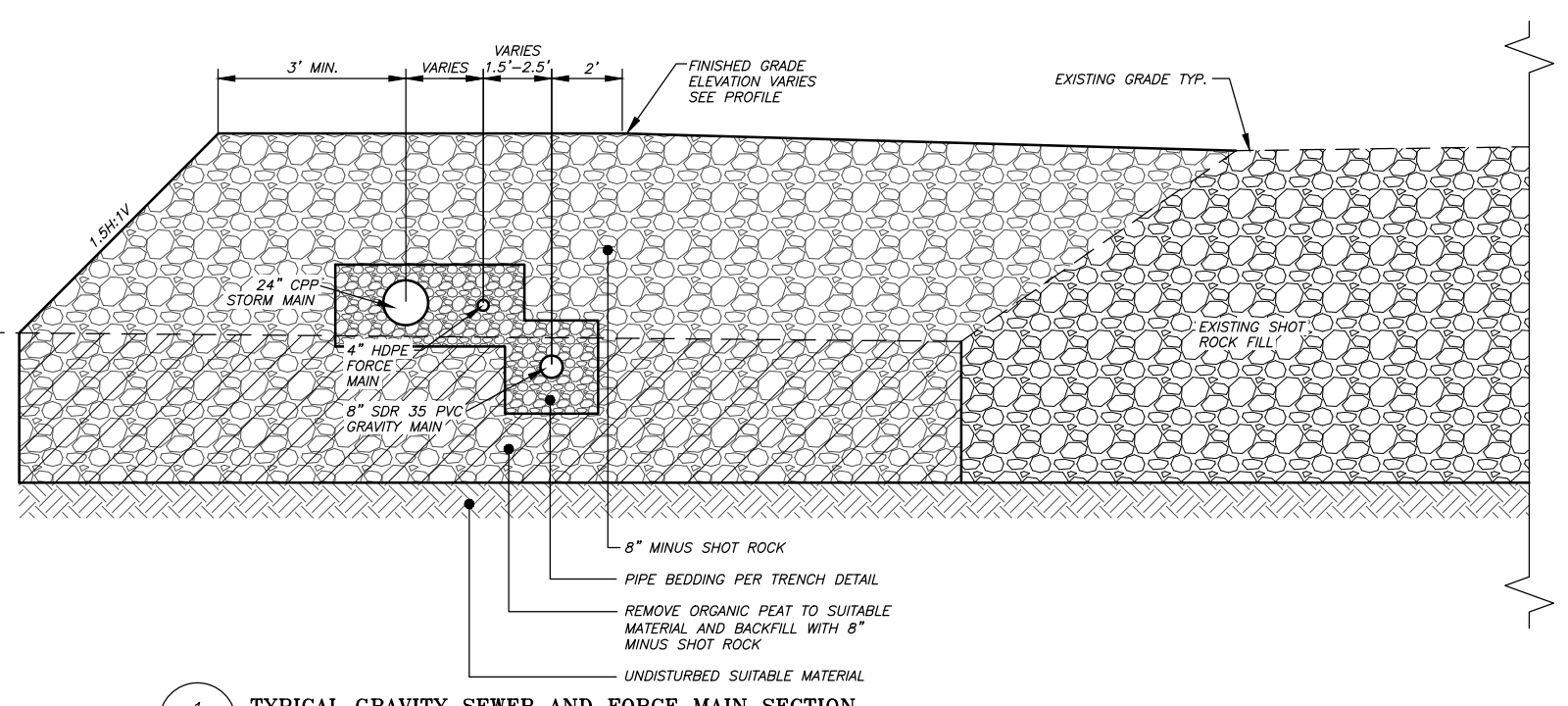
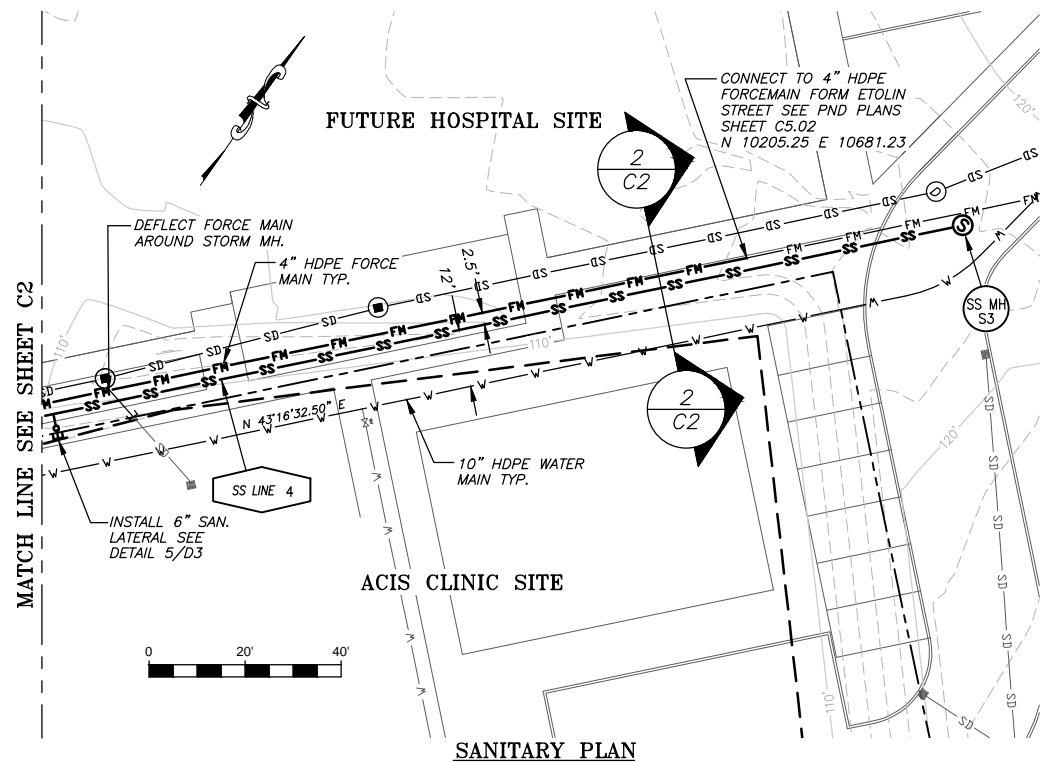
**SANITARY MAIN CONSTRUCTION NOTES**

<p><b>SS LINE 1</b></p> <p>8" SDR 35 PVC L=7.8', SL=0.005</p>	<p><b>SS LINE 2</b></p> <p>8" SDR 35 PVC L=32.7', SL=0.01</p>	<p><b>SS LINE 3</b></p> <p>8" SDR 35 PVC L=235.1', SL=0.065</p>	<p><b>SS LINE 4</b></p> <p>8" SDR 35 PVC 329.0 LF, S=0.0058</p>
<p><b>SS MH S1</b></p> <p>48" SAN. MH STA=0+22.97 N9889.30, E10266.65 RIM= 110.66 IE IN(N)=88.87 IE IN(S)=84.20 E OUT(W)=84.00</p>	<p><b>SS MH S2</b></p> <p>48" SAN. MH STA=2+66.07 N9994.20, E10485.95 RIM= 110.47 IE IN= 99.42 IE OUT= 99.22</p>	<p><b>SS MH S3</b></p> <p>48" SAN. MH STA=5+99.08 N10236.65, E10714.24 RIM= 110.47 IE IN= 101.53 IE OUT= 101.33</p>	<p><b>SS LINE 5</b></p> <p>8" SDR 35 PVC 25.0 LF, S=0.01</p>

MATCH LINE SEE SHEET C2

<p>Designed: RKB Drawn: RKB Checked: TSS</p>	<p>Approved: RKB Date: DECEMBER 2011 PROJECT #: 112342</p>	<p><b>R&amp;M</b> R&amp;M ENGINEERING-KETCHIKAN, INC. 355 CARLANNA LAKE ROAD KETCHIKAN, ALASKA 99901</p>	<p>Client: CITY AND BOROUGH OF WRANGELL PO BOX 531 WRANGELL, ALASKA 99929</p>	<p>Project: ETOLIN STREET &amp; MEDICAL CAMPUS UTILITIES ASSISTANCE</p>	<p>Sheet Description: ACIS SANITARY SEWER PLAN &amp; PROFILE STA 0+00 - 4+00</p>	<p>Sheet No. C1</p>
--	--	--	---	---	--	-------------------------





**SANITARY MAIN CONSTRUCTION NOTES**

<b>SS LINE 1</b> 8" SDR 35 PVC L=7.8', SL=0.005	<b>SS LINE 2</b> 8" SDR 35 PVC L=32.7', SL=0.01	<b>SS LINE 3</b> 8" SDR 35 PVC L=235.1', SL=0.065	<b>SS LINE 4</b> 8" SDR 35 PVC 329.0 LF, S=0.0058
<b>SS MH S1</b> 48" SAN. MH STA=0+22.97 N9889.30, E10266.65 RIM= 110.66 IE IN(N)=88.87 E IN(S)=84.20 E OUT(W)=84.00	<b>SS MH S2</b> 48" SAN. MH STA=2+66.07 N9994.20, E10485.95 RIM= 110.66 IE IN= 99.42 IE OUT= 99.22	<b>SS MH S3</b> 48" SAN. MH STA=5+99.08 N10236.65, E10714.24 RIM= 110.47 IE IN= 101.53 IE OUT= 101.33	<b>SS LINE 5</b> 8" SDR 35 PVC 25.0 LF, S=0.01

- LEGEND**
- PROPERTY LINE
  - - - EXISTING INDEX CONTOUR
  - - - EXISTING COUNTOUR
  - - - PROPOSED INDEX CONTOUR
  - - - PROPOSED CONTOUR
  - SD- PROPOSED STORM MAIN
  - SD- FUTURE / EXISTING STORM LINE
  - W- PROPOSED WATER MAIN
  - W- FUTURE / EXISTING WATER LINE
  - SS- PROPOSED SANITARY MAIN
  - FM- PROPOSED SANITARY FORCE MAIN
  - - - EXISTING EDGE OF GRAVEL
  - - - FUTURE / EXISTING PAVEMENT

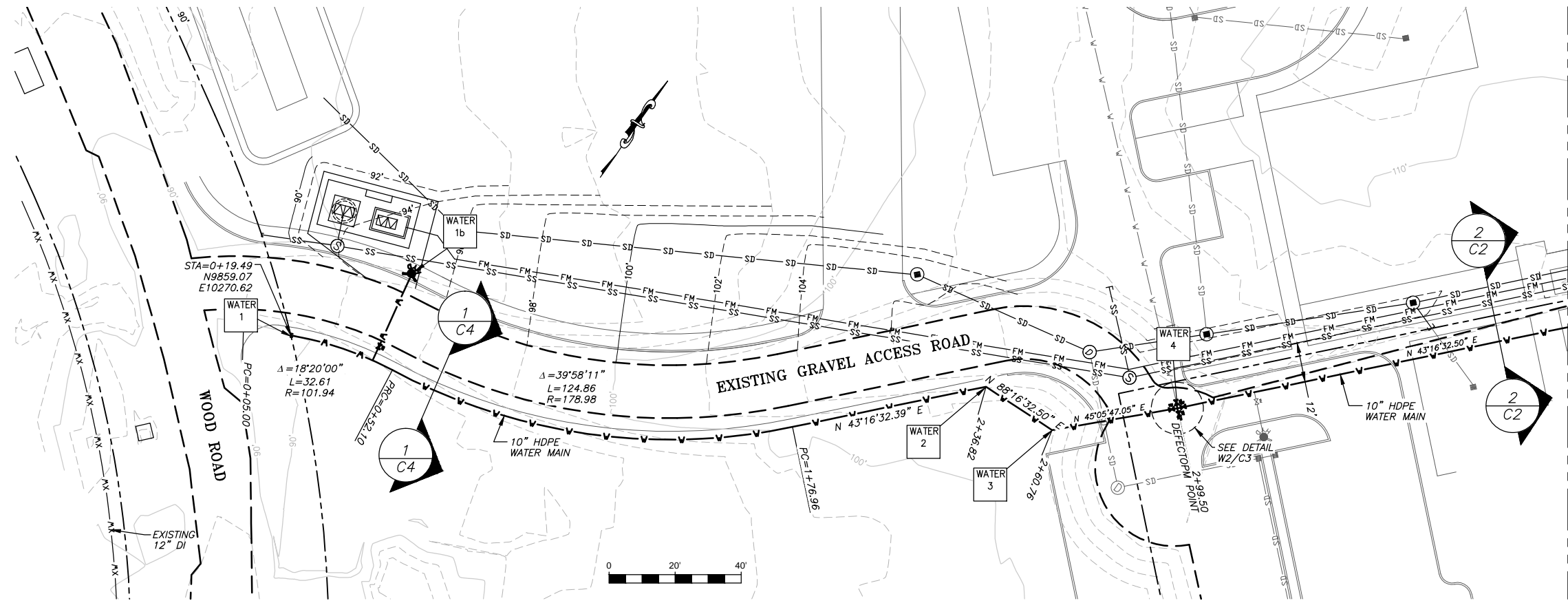
1  
C2

2  
C2



Designed: RKB	Approved: RKB		Client: CITY AND BOROUGH OF WRANGELL PO BOX 531 WRANGELL, ALASKA 99929	Project: ETOLIN STREET & MEDICAL CAMPUS UTILITIES ASSISTANCE	Sheet Description: ACIS SANITARY SEWER PLAN & PROFILE STA 4+00 - END	Sheet No. C2
Drawn: RKB	Date: DECEMBER 2011					
Date	No.	Description	By	Checked: TSS	PROJECT #: 112342	

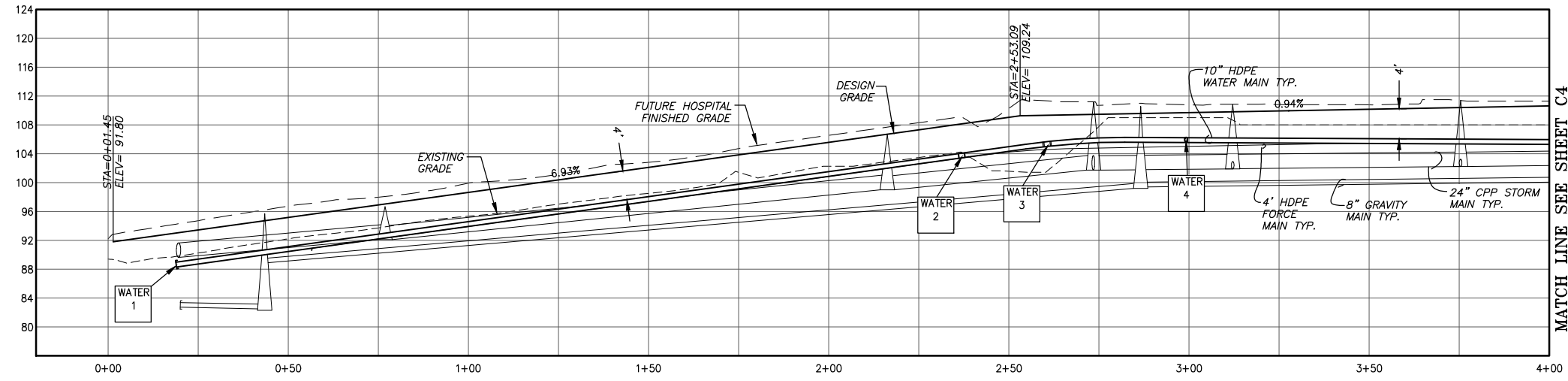




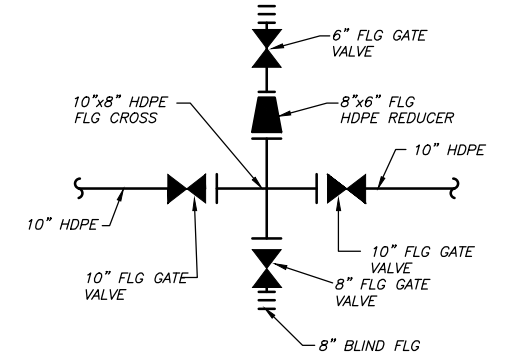
**WATER PLAN**

**LEGEND**

- PROPERTY LINE
- - - EXISTING INDEX CONTOUR
- - - EXISTING COUNTOUR
- - - PROPOSED INDEX CONTOUR
- - - PROPOSED CONTOUR
- SD PROPOSED STORM MAIN
- SD FUTURE / EXISTING STORM LINE
- W-W PROPOSED WATER MAIN
- W-W FUTURE / EXISTING WATER LINE
- SS PROPOSED SANITARY MAIN
- FM PROPOSED SANITARY FORCE MAIN
- - - EXISTING EDGE OF GRAVEL
- - - FUTURE / EXISTING PAVEMENT



**WATER PROFILE**

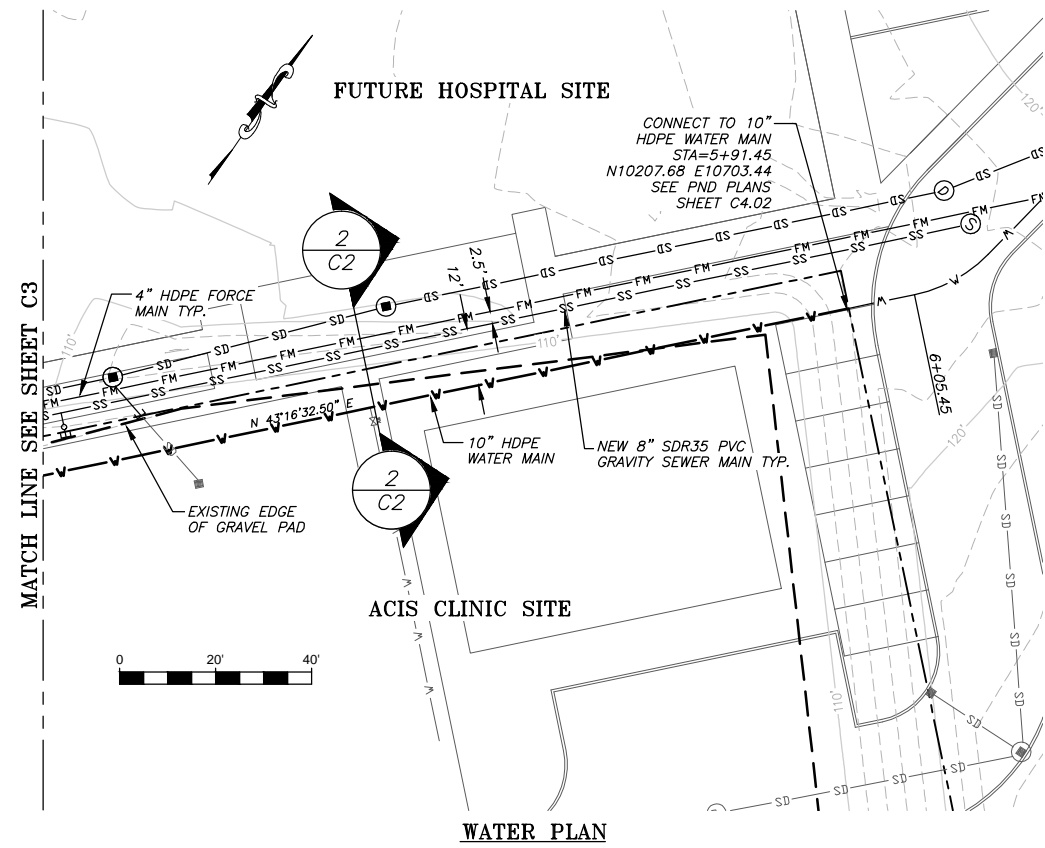


**WATER NOTES**

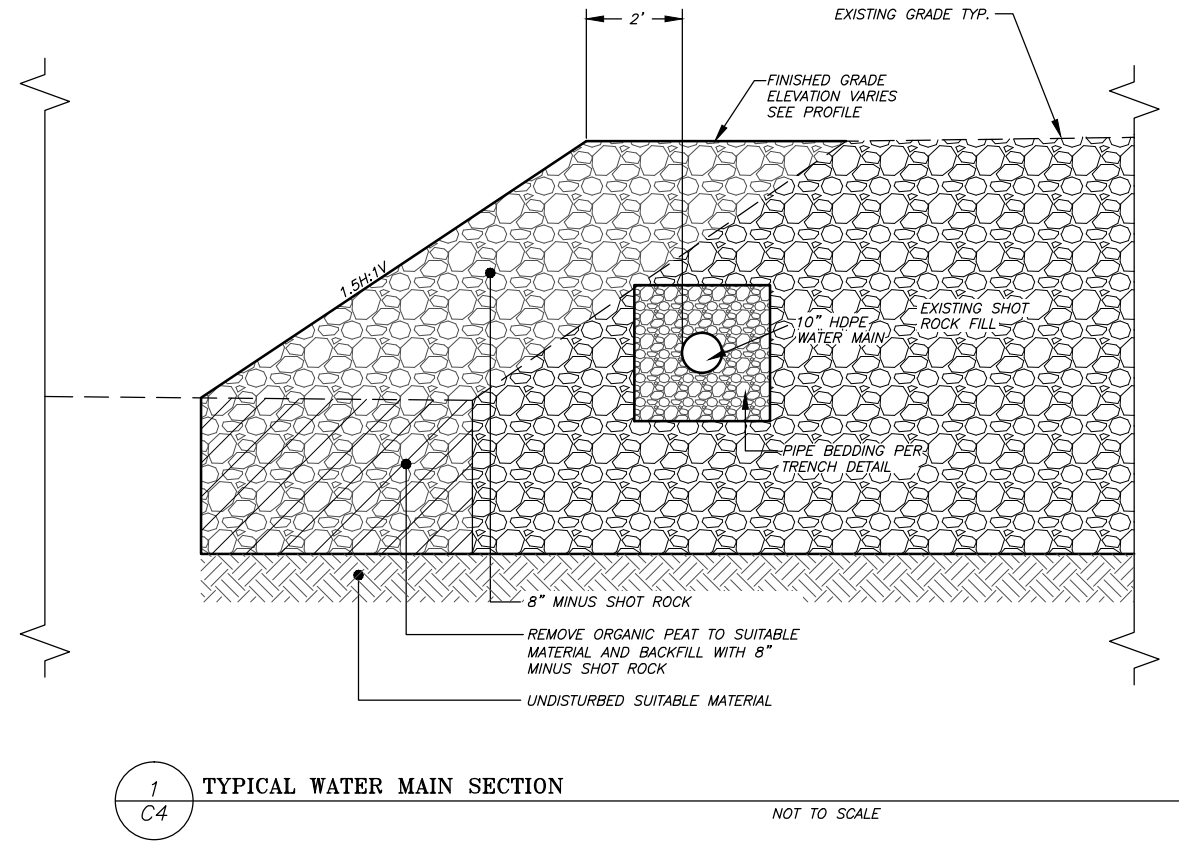
<b>WATER 1</b>	INSTALL: (1) BLIND FLANGE N9859.07 E10270.62	<b>WATER 2</b>	INSTALL: (1) 10" 45' HDPE BEND N9966.85 E10445.58	<b>WATER 4</b>	INSTALL: (1) 10"x8" HDPE FLG. CROSS (1) 8"x6" FLG REDUCER (2) 10" GATE VALVE (1) 8" GATE VALVE (1) 6" GATE VALVE N9994.95 E10503.14 SEE DETAIL W1/C202
<b>WATER 1b</b>	INSTALL: (1) FIRE HYDRANT ASSEMBLY N9895.33 E10289.81	<b>WATER 3</b>	INSTALL: (1) 10" 22.5' HDPE BEND N9967.82 E10477.60		





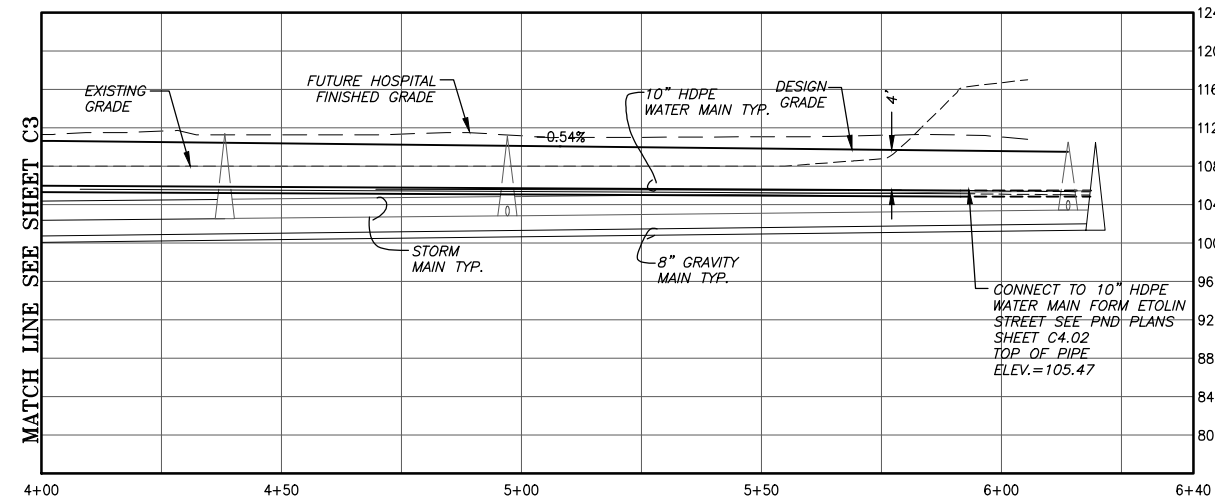


**WATER PLAN**



**1 TYPICAL WATER MAIN SECTION**  
C4

NOT TO SCALE



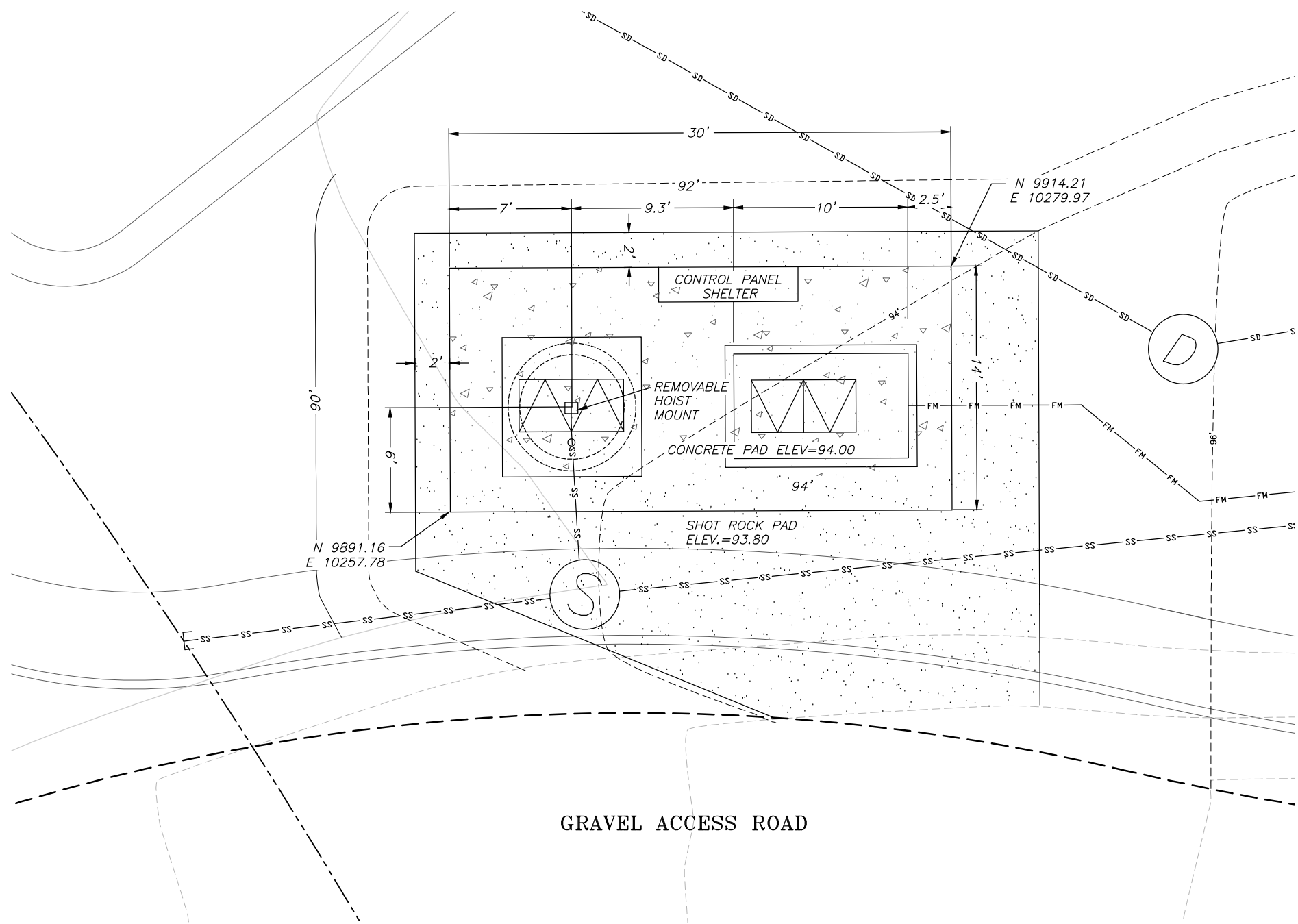
**WATER PROFILE**

**LEGEND**

- PROPERTY LINE
- - - EXISTING INDEX CONTOUR
- - - EXISTING CONTOUR
- - - PROPOSED INDEX CONTOUR
- - - PROPOSED CONTOUR
- SD PROPOSED STORM MAIN
- SD FUTURE / EXISTING STORM LINE
- W PROPOSED WATER MAIN
- W FUTURE / EXISTING WATER LINE
- SS PROPOSED SANITARY MAIN
- FM PROPOSED SANITARY FORCE MAIN
- - - EXISTING EDGE OF GRAVEL
- - - FUTURE / EXISTING PAVEMENT



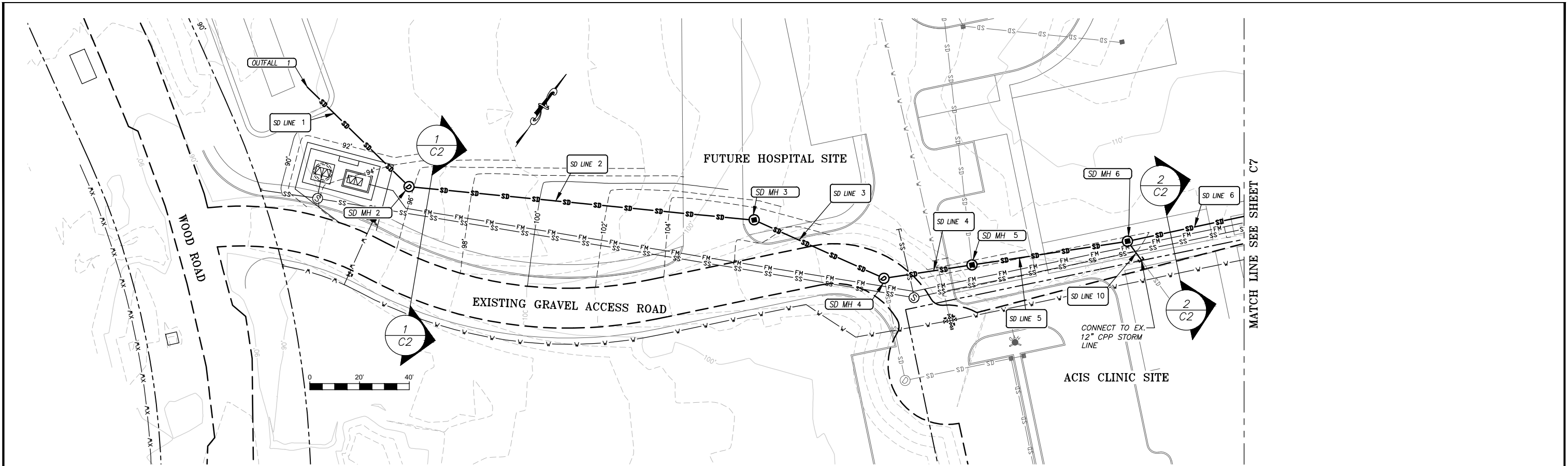
Designed: RKB		Approved: RKB			Client: CITY AND BOROUGH OF WRANGELL PO BOX 531 WRANGELL, ALASKA 99929	Project: ETOLIN STREET & MEDICAL CAMPUS UTILITIES ASSISTANCE	Sheet Description: ACIS WATER MAIN PLAN & PROFILE STA 4+00 - END	Sheet No. C4
Drawn: RKB		Date: DECEMBER 2011						
Date	No.	Description	By	Checked: TSS	PROJECT #: 112342			



GRAVEL ACCESS ROAD



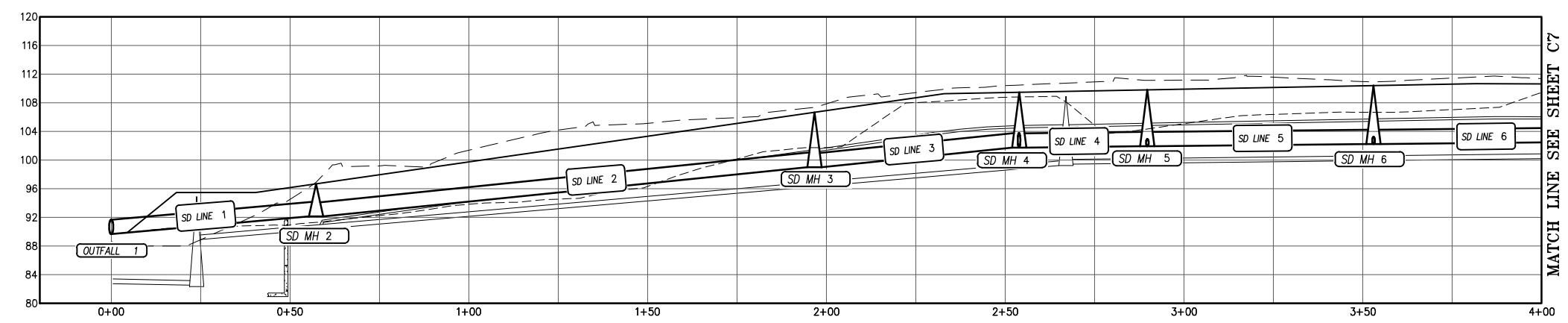
Designed: RKB		Approved: RKB			Client: CITY AND BOROUGH OF WRANGELL PO BOX 531 WRANGELL, ALASKA 99929	Project: ETOLIN STREET & MEDICAL CAMPUS UTILITIES ASSISTANCE	Sheet Description: LIFT STATION LAYOUT AND GRADING PLAN	Sheet No. C5
Drawn: RKB		Date: DECEMBER 2011						
Date	No.	Description	By	Checked: TSS	PROJECT #: 112342			
		REVISION						



STORM MAIN PLAN

**LEGEND**

- PROPERTY LINE
- - - EXISTING INDEX CONTOUR
- - - EXISTING COUNTOUR
- - - PROPOSED INDEX CONTOUR
- - - PROPOSED CONTOUR
- SD --- PROPOSED STORM MAIN
- SD --- FUTURE / EXISTING STORM LINE
- - - PROPOSED WATER MAIN
- - - FUTURE / EXISTING WATER LINE
- SS --- PROPOSED SANITARY MAIN
- FM --- PROPOSED SANITARY FORCE MAIN
- - - EXISTING EDGE OF GRAVEL
- - - FUTURE / EXISTING PAVEMENT

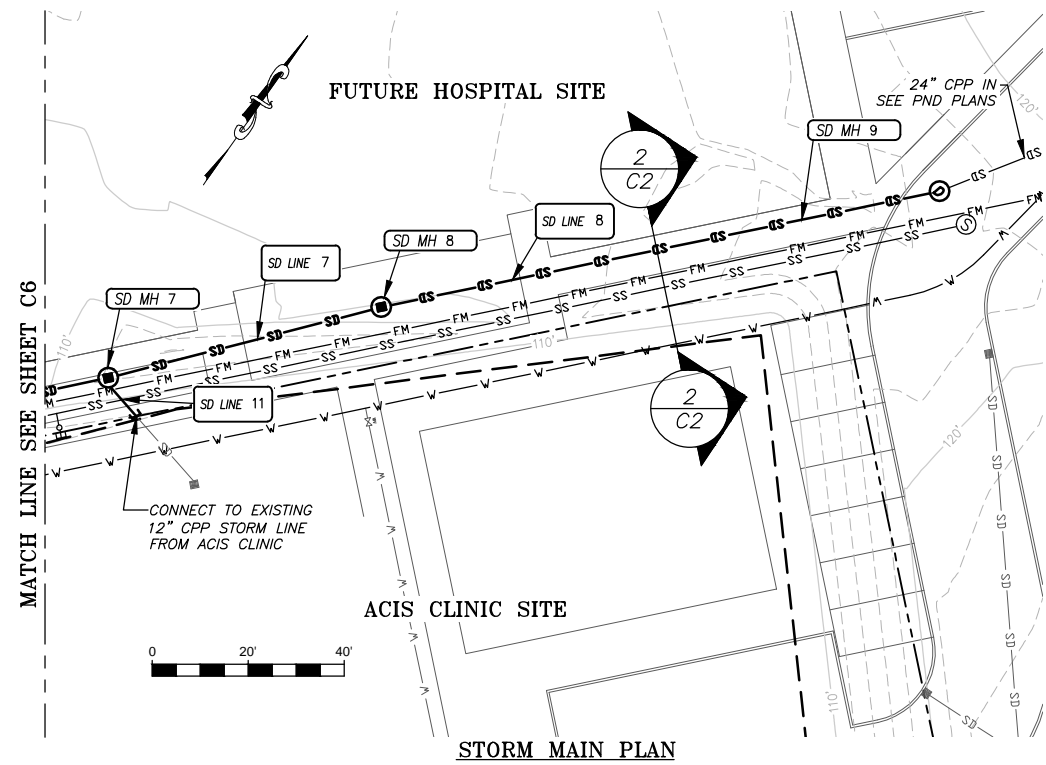


MATCH LINE SEE SHEET C7

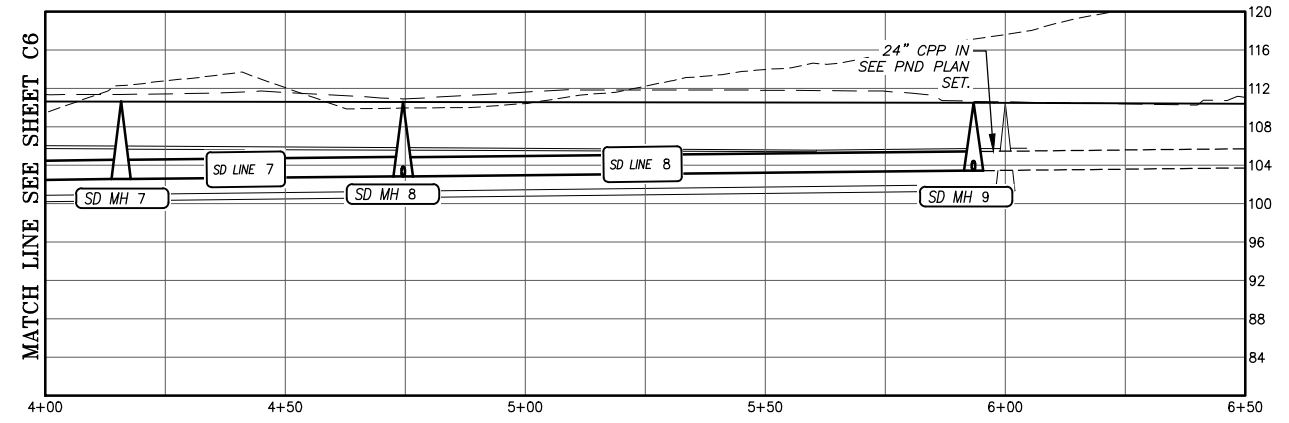
**STORM MAIN CONSTRUCTION NOTES**

<b>OUTFALL 1</b> STA=0+00.00 N9923.56 E10237.58 IE=89.67	<b>SD MH 2</b> INSTALL 48" MH FLAT TOP MANHOLE STA=0+57.29 N9914.28 E10294.12 RIM=96.68, IE=92.41	<b>SD MH 3</b> INSTALL 48" MH W/ GRATED RIM STA=1+96.68 N9982.93 E10415.43 RIM=106.67, IE=99.11	<b>SD MH 4</b> INSTALL 48" MH W/ GRATED RIM STA=2+53.92 N9993.64 E10471.65 RIM=109.46, IE=101.74	<b>SD MH 5</b> INSTALL 48" MH W/ GRATED RIM STA=2+89.74 N10018.36 E10497.58 RIM=109.80, IE=101.90	<b>SD MH 6</b> INSTALL 48" MH W/ GRATED RIM STA=3+52.98 N10062.03 E10543.32 RIM=110.39, IE=102.20	
<b>SD LINE 1</b> 24" CPP L=55.3', SL=0.0495	<b>SD LINE 2</b> 24" CPP L=135.4, SL=0.0495	<b>SD LINE 3</b> 24" CPP L=53.2, SL=0.0495	<b>SD LINE 4</b> 24" CPP L=31.8, SL=0.005	<b>SD LINE 5</b> 24" CPP L=59.2, SL=0.005	<b>SD LINE 6</b> 24" CPP L=58.8, SL=0.005	<b>SD LINE 10</b> 12" CPP L=15, SL=0.005 (FIELD VERIFY)





- LEGEND**
- PROPERTY LINE
  - - - EXISTING INDEX CONTOUR
  - - - EXISTING COUNTOUR
  - - - PROPOSED INDEX CONTOUR
  - - - PROPOSED CONTOUR
  - SD— PROPOSED STORM MAIN
  - - - SD - - - FUTURE / EXISTING STORM LINE
  - W—W— PROPOSED WATER MAIN
  - - - W - - - FUTURE / EXISTING WATER LINE
  - SS— PROPOSED SANITARY MAIN
  - FM— PROPOSED SANITARY FORCE MAIN
  - - - EXISTING EDGE OF GRAVEL
  - - - FUTURE / EXISTING PAVEMENT



**STORM MAIN CONSTRUCTION NOTES**

<b>SD MH 7</b> INSTALL 48" MH W/ GRATED RIM STA=4+15.82 N10108.02 E10586.15 RIM=110.63, IE=102.49	<b>SD MH 8</b> INSTALL 48" MH W/ GRATED RIM STA=4+74.58 N10152.72 E10624.28 RIM=110.90, IE=102.76	<b>SD MH 9</b> INSTALL 48" MH STA=5+93.36 N10239.19 E10705.70 RIM=110.49, IE=103.33
<b>SD LINE 7</b> 24" CPP L=54.8, SL=0.005	<b>SD LINE 8</b> 24" CPP L=114.8, SL=0.005	<b>SD LINE 11</b> 12" CPP L=15, SL=0.005 (FIELD VERIFY)

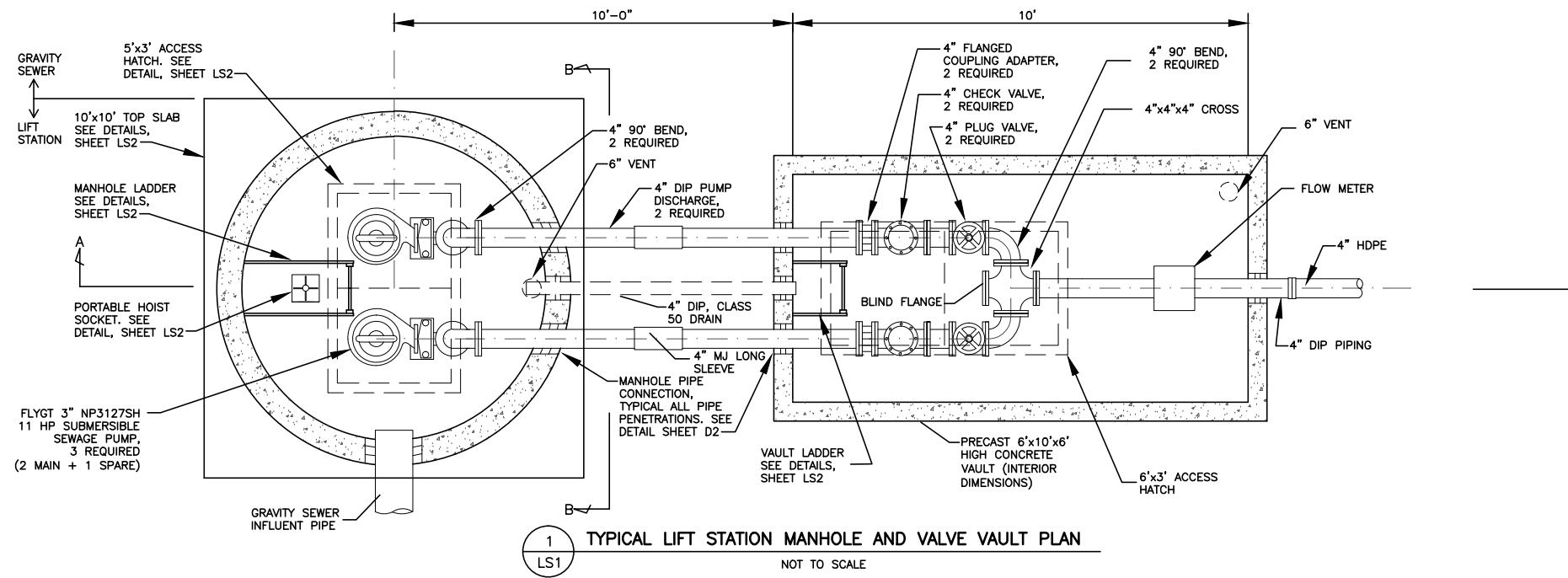


Designed: RKB		Approved: RKB			Client: CITY AND BOROUGH OF WRANGELL PO BOX 531 WRANGELL, ALASKA 99929	Project: ETOLIN STREET & MEDICAL CAMPUS UTILITIES ASSISTANCE	Sheet Description: STORM MAIN PLAN & PROFILE STA 4+00 - END	Sheet No. C7
Drawn: RKB		Date: DECEMBER 2011						
Date	No.	Description	By	Checked: TSS	PROJECT #: 112342			

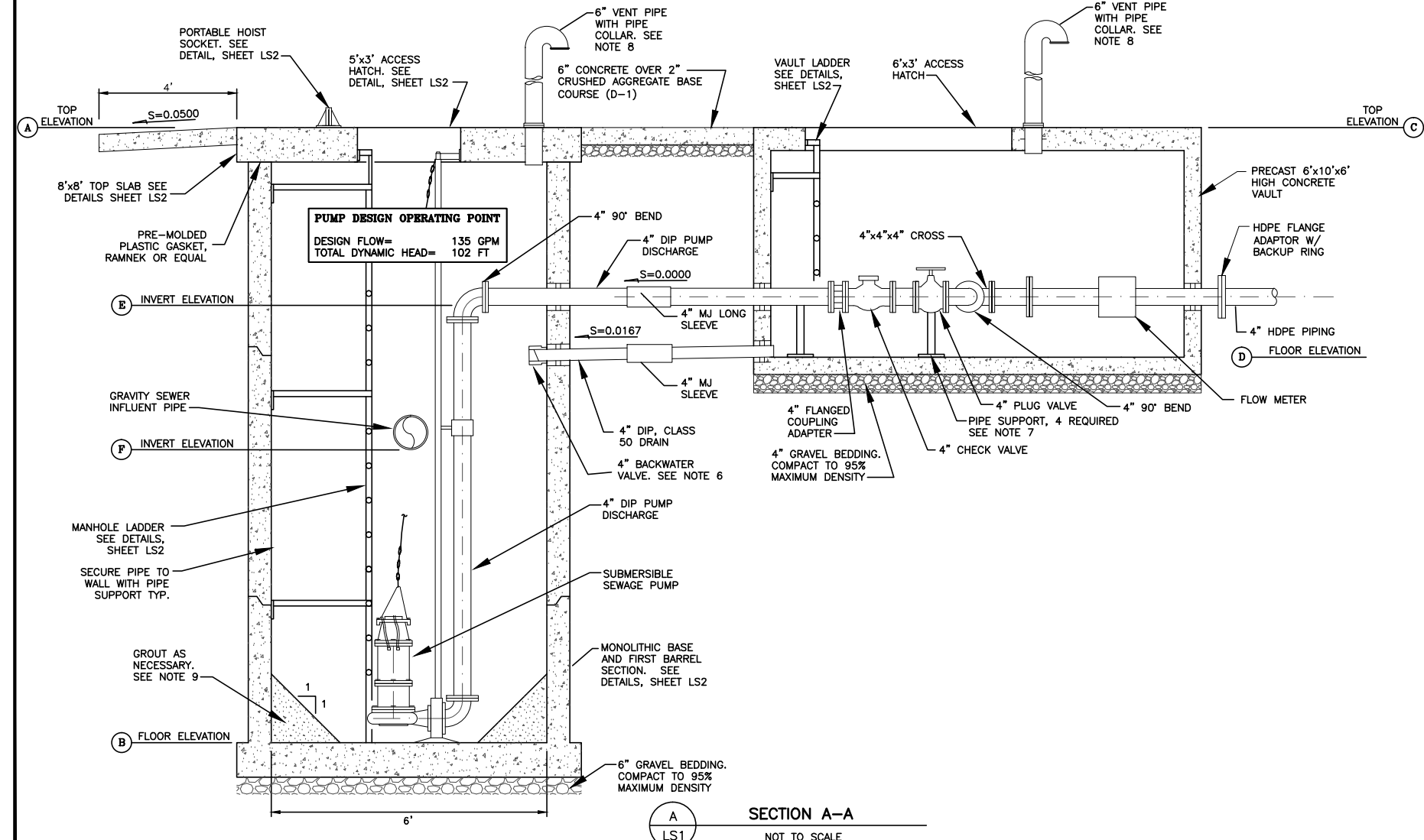
DIMENSION	DESCRIPTION	LIFT STATION
A	LIFT STATION MANHOLE TOP ELEVATION	94.0
B	LIFT STATION MANHOLE FLOOR ELEVATION	76.0
C	VALVE VAULT TOP ELEVATION	94.0
D	VALVE VAULT FLOOR ELEVATION	87.33
E	PUMP DISCHARGE PIPE INVERT ELEVATION	90.0
F	INFLUENT PIPE INVERT ELEVATION	83.96
G	NOT USED	N/A
H	HIGH WET WELL ALARM ELEVATION	82.0
I	LAG PUMP ON ELEVATION	81.5
J	LEAD PUMP ON ELEVATION	81.0
K	ALL PUMPS OFF ELEVATION	77.0
L	ALL PUMPS OFF (REDUNDANT)	76.0

LIFT STATION NOTES:

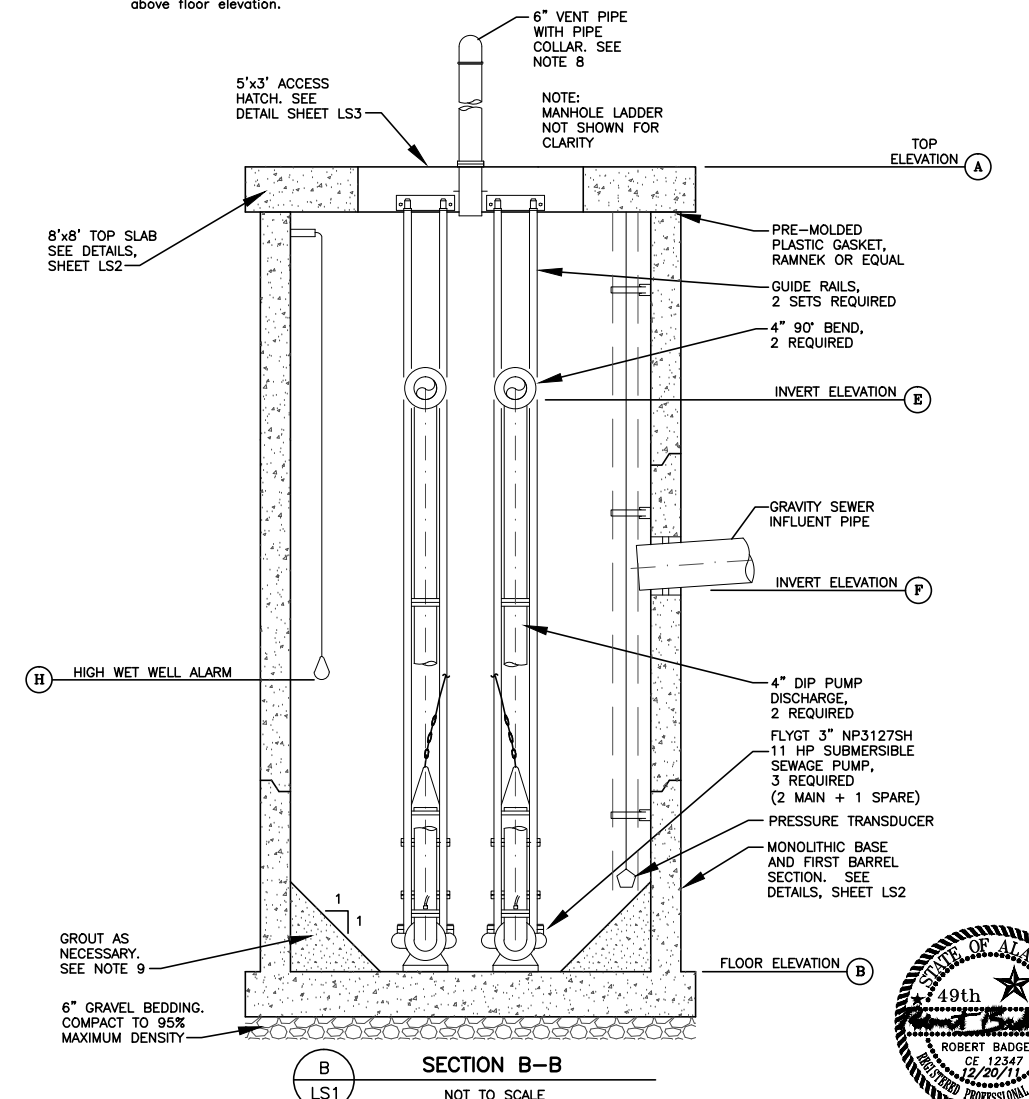
- Lift Station orientation and piping layout shown are typical. See Lift Station Site Plans for individual Lift Station orientation and piping layouts.
- All lift station riser sections shall conform to ASTM C-478, latest edition, including minimum steel requirements.
- All lift station riser section joints shall include a pre-molded rubber gasket such as "Ram-Nek", or equal. The exterior of joints shall be plastered with a least 1" of portland cement sealing plaster.
- Excavations adjacent to Lift Station and Valve Vault shall be backfilled with native material as approved by the Engineer. Place in 8" lifts and compact to 95% of maximum density. Use light hand compaction equipment as necessary to avoid damage to structures and appurtenances.
- All Lift Station piping shall be Class 52 DIP except as shown. All fittings inside Lift Station and Valve Vault shall be flanged.
- Furnish and install backwater terminal valve, TIDFLEX or equal.
- Furnish and install pipe supports, Grinnel figure 264 with 3" pipe and floor flange or equal.
- Vent pipe shall be hot dip galvanized, Schedule 40 steel pipe with pipe collar. Cast pipe and collar into top slab, terminate vent 4" above top slab with 180° return bend. Install 1/4" galvanized mesh insect screen over bend opening.
- Grout bottom of wet well to provide minimum 1:1 slope to pump suction. Height of grout shall not exceed 30" above floor elevation.



1 TYPICAL LIFT STATION MANHOLE AND VALVE VAULT PLAN  
LS1 NOT TO SCALE



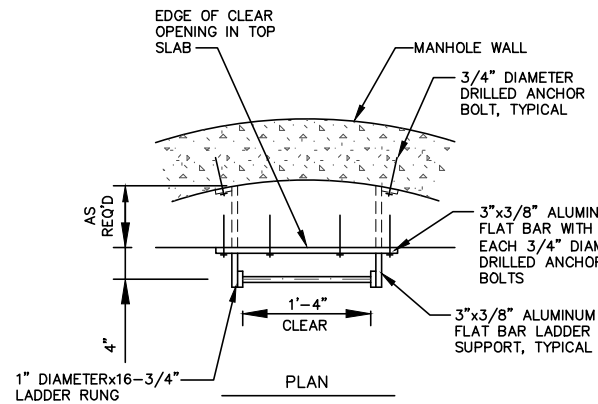
A SECTION A-A  
LS1 NOT TO SCALE



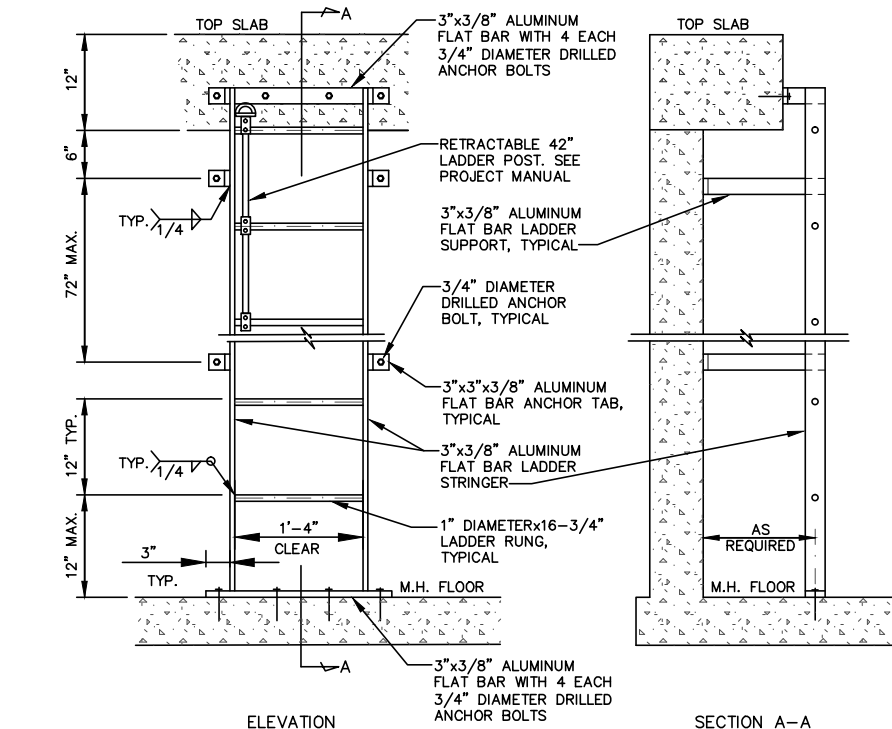
B SECTION B-B  
LS1 NOT TO SCALE



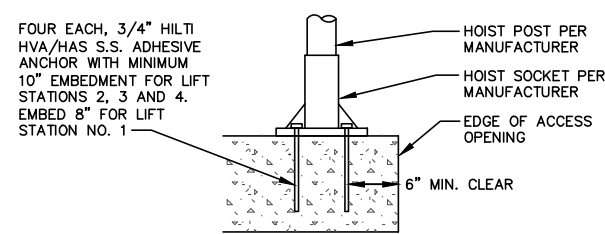




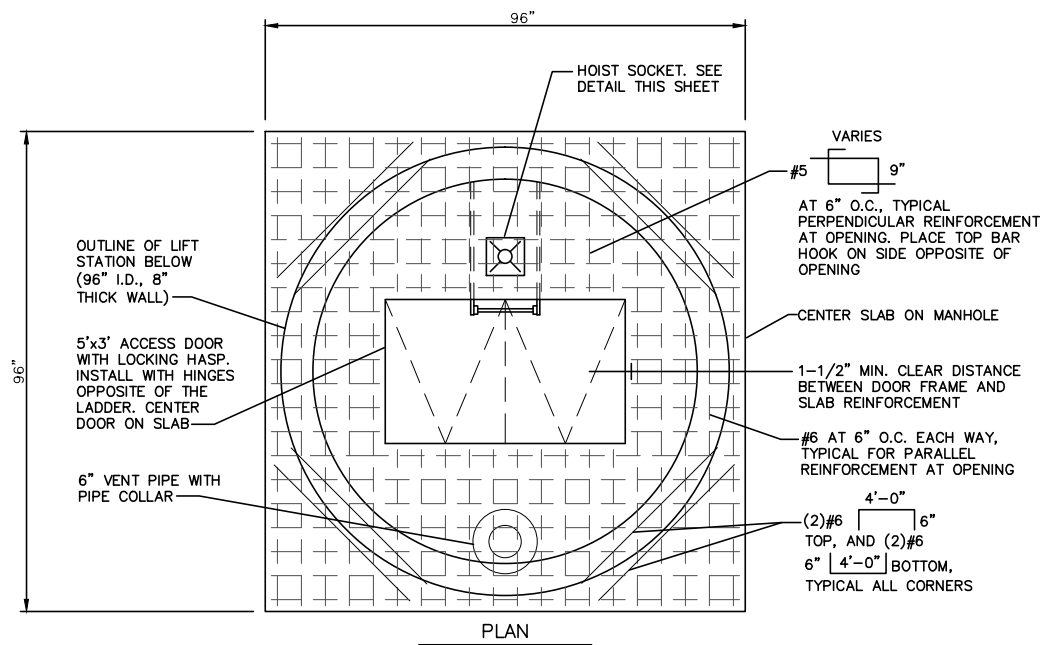
- MANHOLE LADDER NOTES:**
1. Drill 1-1/16" diameter holes in ladder stringers to support ladder rungs prior to welding.
  2. All sharp corners and edges shall be rounded off.
  3. Ladder rungs shall be of extruded aluminum, non-slip, 800 lb.
  4. Connectors and anchor bolts shall be stainless steel.
  5. Embedment = 4" for anchor bolts in concrete.
  6. Ladder shall accommodate Retractable Ladder Post assembly.



**1 LIFT STATION LADDER DETAILS**  
LS2 NOT TO SCALE

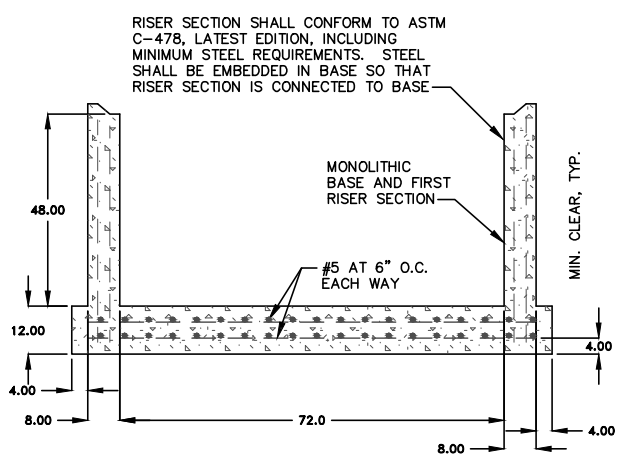


**3 LIFT STATION HOIST SOCKET DETAIL**  
LS2 NOT TO SCALE



- TOP SLAB NOTES:**
1. Cast top slab with access door frame in place.
  2. Cast top slab with vent pipe and collar in place.
  3. Provide eye bolts as required for lifting and placement. Fabricate eye bolts with top slab and weld to the rebar; cut flush with top surface after placement.
- $F'c=4000$  psi minimum  
 $Fy=60$  ksi (ASTM A615, Grade 60)

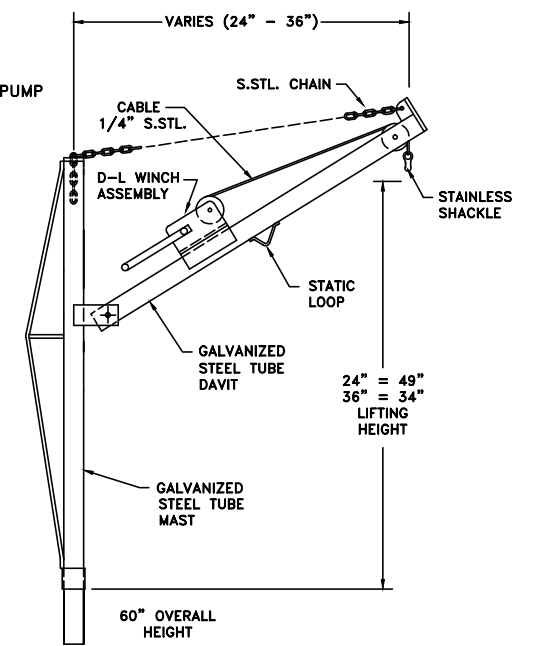
**2 LIFT STATION TOP SLAB DETAILS**  
LS2 NOT TO SCALE



**4 LIFT STATION BASE DETAIL**  
LS2 NOT TO SCALE

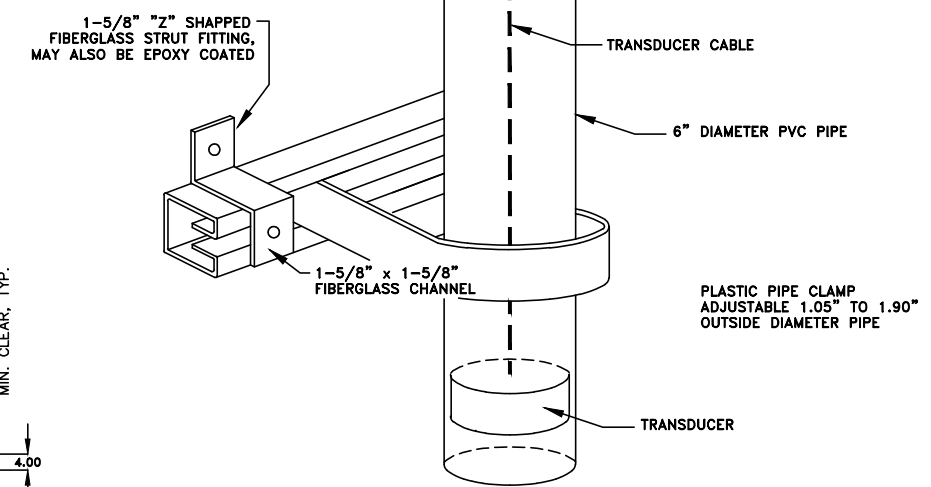
**WINCH SHALL INCLUDE:**  
GALVANIZED STEEL CONSTRUCTION  
ADJUSTABLE REACH  
25 FEET OF STAINLESS CABLE FOR EACH PUMP  
DUTTON-LAINSON HAND WINCH  
EMBEDDED FLOOR MOUNTED

MODEL NO.	MAST DIA.	LOAD (MAX.)	UNIT WEIGHT
D2B36B	3 1/2"	1000 LBS.	96 LBS.



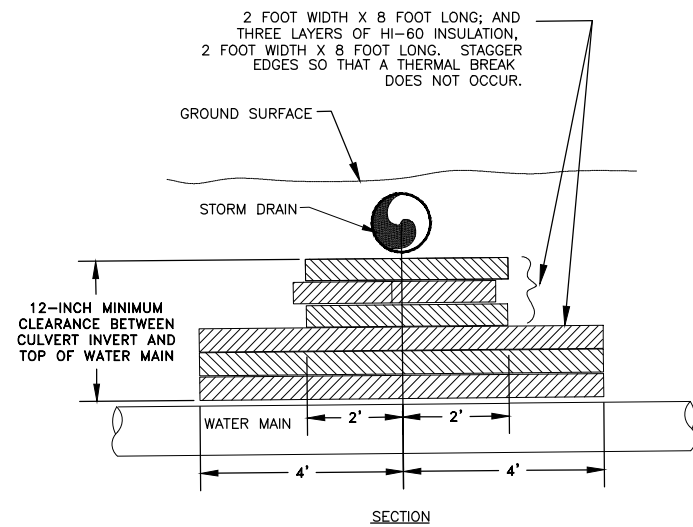
EACH PUMP SHALL BE EQUIPPED WITH STAINLESS CABLE SO THAT CABLE CAN BE FED INTO EMPTY HOIST SPOOL DURING EACH USE

**5 ADJUSTABLE PORTABLE HOIST**  
LS2 NOT TO SCALE

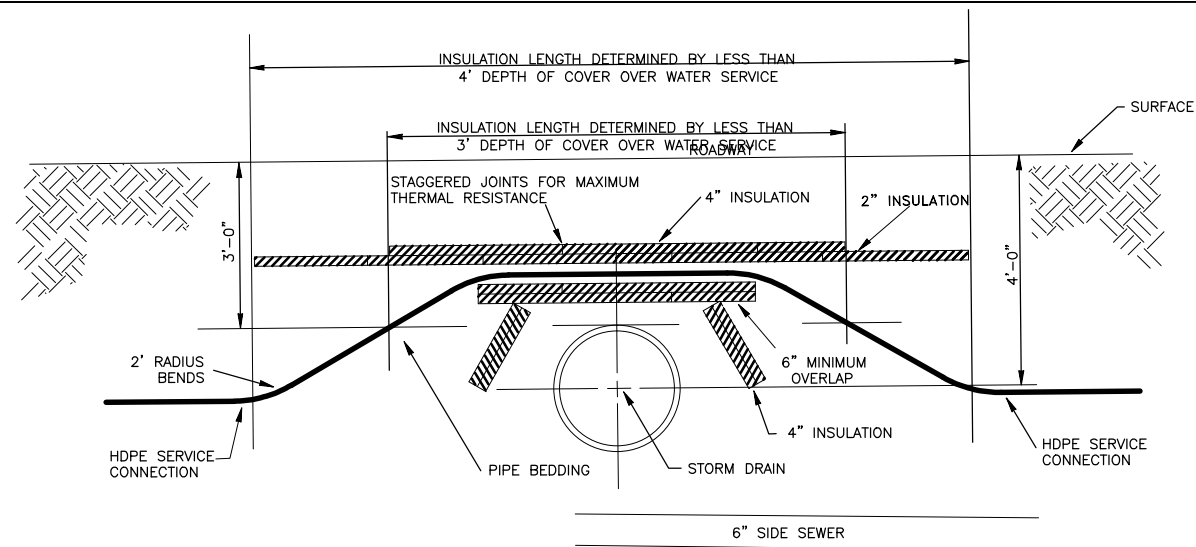


**5 FTRANSUCER DETAIL**  
LS2 NOT TO SCALE



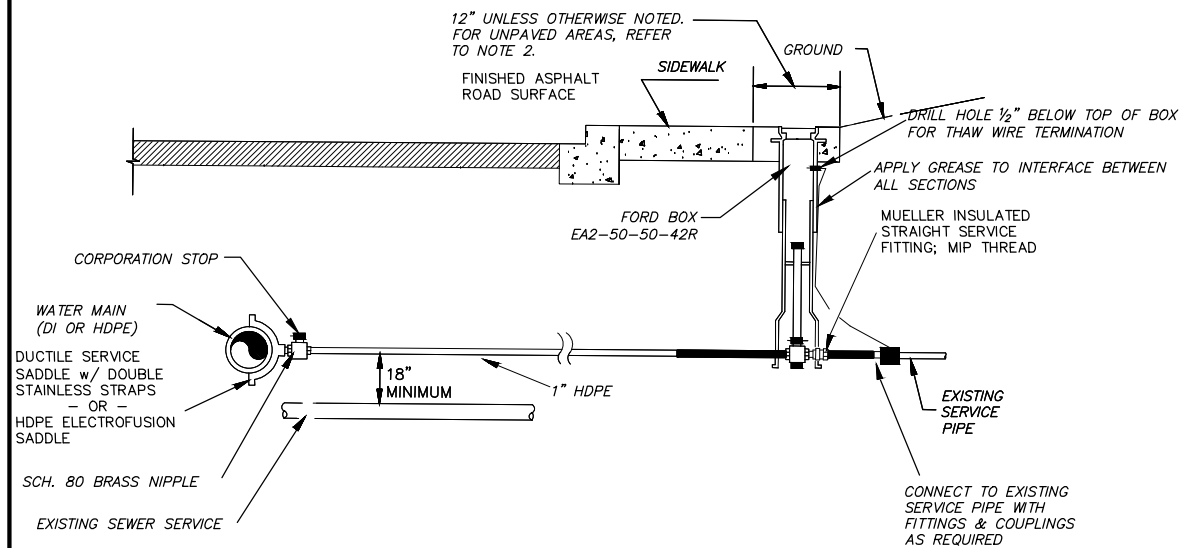


1 RIGID INSULATION DETAIL  
D1 NOT TO SCALE



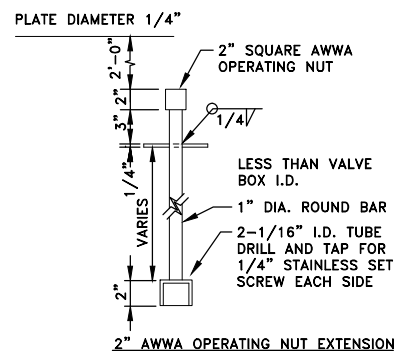
- NOTES:
1. MINIMUM WIDTH OF HI-60 PROTECTING THE SERVICE LINE IN THE TRENCH IS 2 FEET.
  2. INSULATION BOARDS SHALL BE HI-60 AND MEET AASHTO M-230 EXCEPT THAT EXTRUSION IS NOT REQUIRED.
  3. INDIVIDUAL SIDE SEWER SERVICES REMAIN BELOW THE STORM DRAIN. SIDE SEWERS TO BE OFFSET FROM AND AT LEAST 12 INCHES BELOW THE WATER SERVICE

2 WATER SERVICE INSULATION DETAIL  
D1 NOT TO SCALE

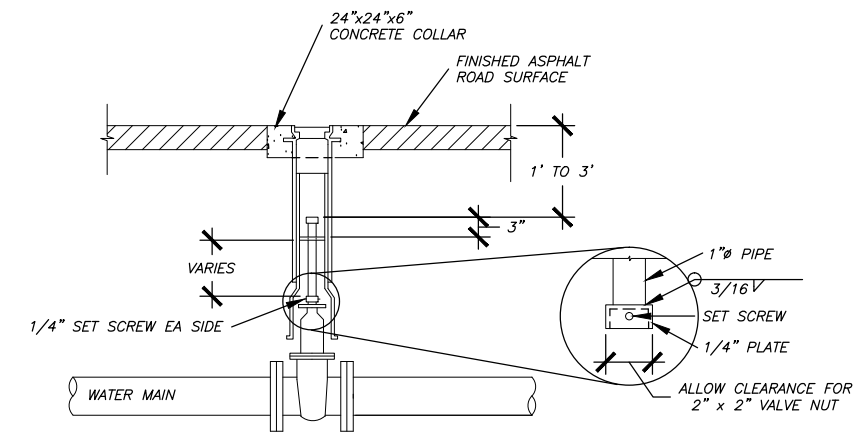


- NOTES:
1. INSTALL TOP OF VALVE BOX IN SIDEWALK AS SHOWN, 1/4" BELOW TOP OF PAVED SURFACE.
  2. IN AREAS WITHOUT SIDEWALK, INSTALL VALVE BOX 6" BEHIND CURB, 1/4" BELOW PAVED SURFACE OR 3" BELOW UNPAVED SURFACES.
  3. ALLOW 12" FOR RAISING VALVE BOX. GREASE THE OVERLAPPING PORTION.
  4. A SERVICE VALVE ROD EXTENSION IS REQUIRED ON ALL SERVICE VALVES 6' OR MORE BELOW FINISHED GRADE.
  5. EXTEND SERVICE PAST SERVICE VALVE TO EXISTING SERVICE PIPE AS REQUIRED TO ESTABLISH SERVICE OR AS INDICATED ON THE PLANS. WHERE SERVICE EXTENSION IS ABOVE GROUND, PIPE SHALL BE INSULATED WITH 2" OF FOAM INSULATION WITH PROTECTIVE COATING.
  6. PLACE BOARD INSULATION w/ BURIED UTILITY WARNING TAPE ABOVE AS REQUIRED.
  7. IN UNPAVED STREETS OR AREAS WITHOUT SIDEWALKS, EACH VALVE BOX TO BE SUPPORTED BY A 12"x 12"x 6" CONCRETE PAD POURED AROUND THE UPPER SERVICE BOX TOP.

3 WATER SERVICE 1"  
D1 NOT TO SCALE



4 VALVE EXTENSION  
D1 NOT TO SCALE

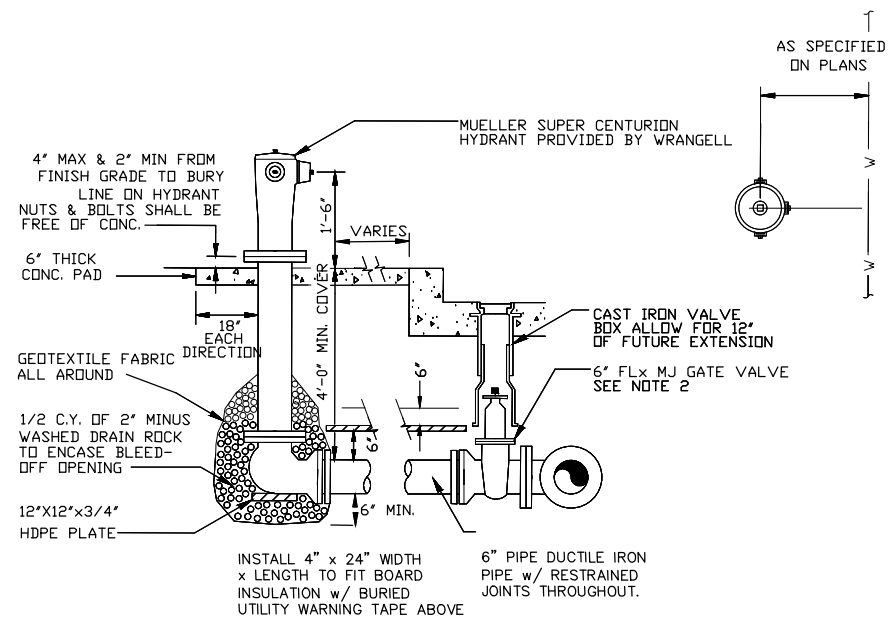


- NOTE: EXTENSION IS REQUIRED ON ALL VALVES WHERE OPERATING NUT IS 6 FT OR MORE BELOW FINISHED SURFACE.
- NOTES:
1. NEW VALVE BOX TO ALLOW FOR 12" MINIMUM VERTICAL ADJUSTMENT
  2. THREADED VALVE BOX SECTIONS ARE NOT ALLOWED. CONTRACTOR SHALL REMOVE THREADED PORTIONS OF THE VALVE BOX WITH CUT-OFF SAW
  3. CONTRACTOR SHALL APPLY GREASE TO ALL INTERFACES BETWEEN VALVE BOX SECTIONS.
  4. COMPACTION AROUND VALVE BOX INSTALLATION IS CRITICAL. CONTRACTOR SHALL EMPLOY MECHANICAL TAMPING METHODS TO ENSURE THAT MATERIAL AROUND VALVE BOX REACHES 95% OF MAXIMUM COMPACTION.
  5. CONTRACTOR SHALL INSTALL A 6" MINIMUM THICKNESS OF D-1 BEDDING AROUND VALVE BOX DURING BACKFILL.
  6. EXTENSION IS REQUIRED ON ALL VALVES WHERE OPERATING NUT IS 6.0' OR MORE BELOW FINISHED SURFACE.

5 MAIN LINE VALVE W/ OPERATING ROD TYP.  
D1 NOT TO SCALE



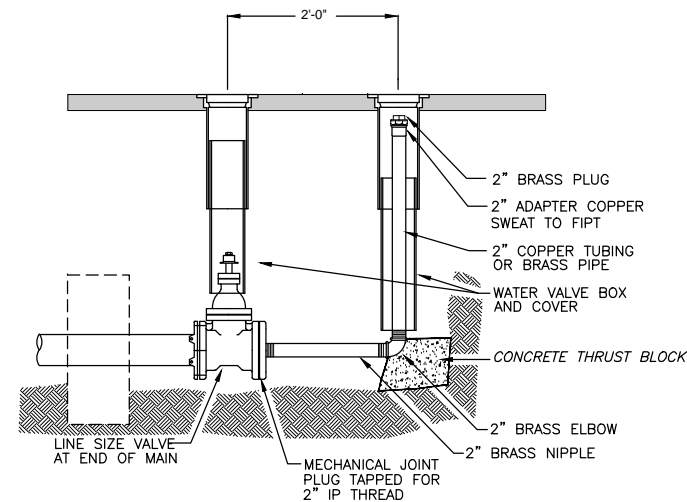
Designed: RKB	Approved: RKB	R&M ENGINEERING-KETCHIKAN, INC. 355 CARLANNA LAKE ROAD KETCHIKAN, ALASKA 99901	Client: CITY AND BOROUGH OF WRANGELL PO BOX 531 WRANGELL, ALASKA 99929	Project: ETOLIN STREET & MEDICAL CAMPUS UTILITIES ASSISTANCE	Sheet Description: WATER DETAILS	Sheet No. D1
Drawn: RKB	Date: DECEMBER 2011					
Date	No.	Description	By	Checked: TSS	PROJECT #: 112342	
		REVISION				



NOTES:

1. ALL BOLT THREADS TO BE GREASED PRIOR TO INSTALLATION.
2. MECHANICAL RESTRAINED JOINTS TO BE USED THROUGHOUT.
3. HYDRANT PAINT SHALL BE SPECIFIED BY THE ENGINEER.
4. DOUBLE DIPPED GALVANIZED NUTS AND BOLTS SHALL BE FREE OF CONCRETE.
5. PLACE BURIED UTILITY WARNING TAPE 6" ABOVE THE HYDRANT LEAD.
6. THRUST BLOCK MAY BE OMITTED IF PIPE BEYOND VALVE IS CONNECTED TOGETHER w/ RESTRAINED JOINTS 40 FEET EACH WAY
7. D-1 MUST BE PLACED AROUND ALL VALVE BOXES

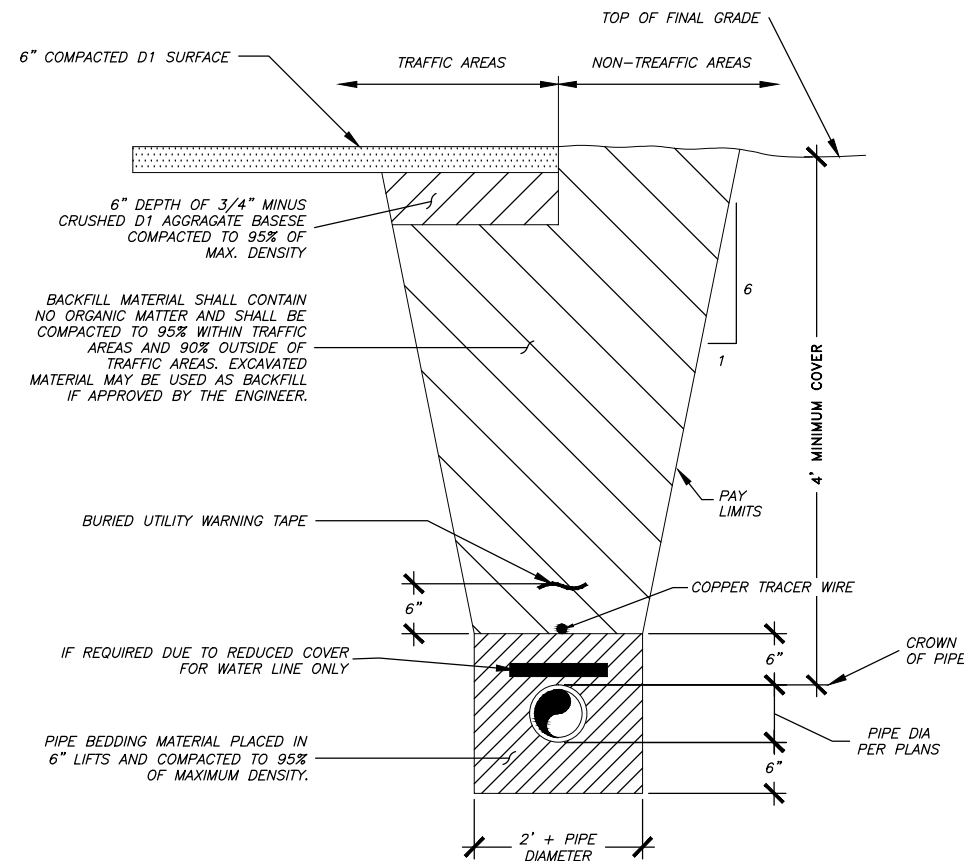
1 TYP. FIRE HYDRANT DETAIL  
D2 NOT TO SCALE



NOTES:

1. This blowoff is to be used at the ends of cul-de-sacs and at the end of water lines that may be extended in the future.
2. Blowoff size must be in accordance with AWWA flushing flow rates, but not less than 2 inches for 8 inch lines and smaller with 4 inches being the next approved size.
3. Blowoff is not to be located in gutter or ditch.
4. The 2 inch fittings shall be brass.
5. Use copper or brass for all piping.

3 2" BLOWOFF ASSEMBLY  
D2 NOT TO SCALE



NOTES (A):

1. BACKFILL MATERIAL SHALL BE PLACED IN 12" MAXIMUM LIFTS AS STATED IN SPECIFICATIONS.
2. PIPE BEDDING MATERIAL MUST BE PLACED IN 6" MAX LIFTS BETWEEN COMPACTION.
3. TRENCH EXCAVATION AND SHORING SHALL COMPLY WITH LOCAL, STATE, AND OSHA REGULATIONS AND REQUIREMENTS. INDICATED SLOPE IS FOR PAY QUANTITY DETERMINATION ONLY FOR IMPORTED BACKFILL GRAVEL AND RESURFACING REQUIREMENTS.
4. IF UNSUITABLE PIPE FOUNDATION MATERIAL IS ENCOUNTERED DURING EXCAVATION, ENGINEER MAY DIRECT THE CONTRACTOR TO OVER-EXCAVATE AND BACKFILL WITH SUITABLE MATERIAL.
5. THE DITCHLINE, IF ONE EXISTS, SHALL BE RESHAPED IN SUCH A MANNER TO ALLOW POSITIVE DRAINAGE TO MATCH PRE-CONSTRUCTION CONDITIONS.
6. TRENCH SECTION APPLICABLE FOR BOTH SEWER, WATER PIPE AND STORM.

NOTES (B):

1. INSULATION BOARD JOINTS SHALL BE LAPPED.
2. MINIMUM DEPTH OF COVER SHALL BE 3'-0" UNLESS SHOWN OTHERWISE ON DRAWINGS OR PRIOR APPROVAL IS GRANTED FROM ENGINEER.
3. ALL INSULATION SHALL BE DOW HI-60 EXTRUDED POLYSTYRENE (BLUE BOARD) OR APPROVED EQUAL.

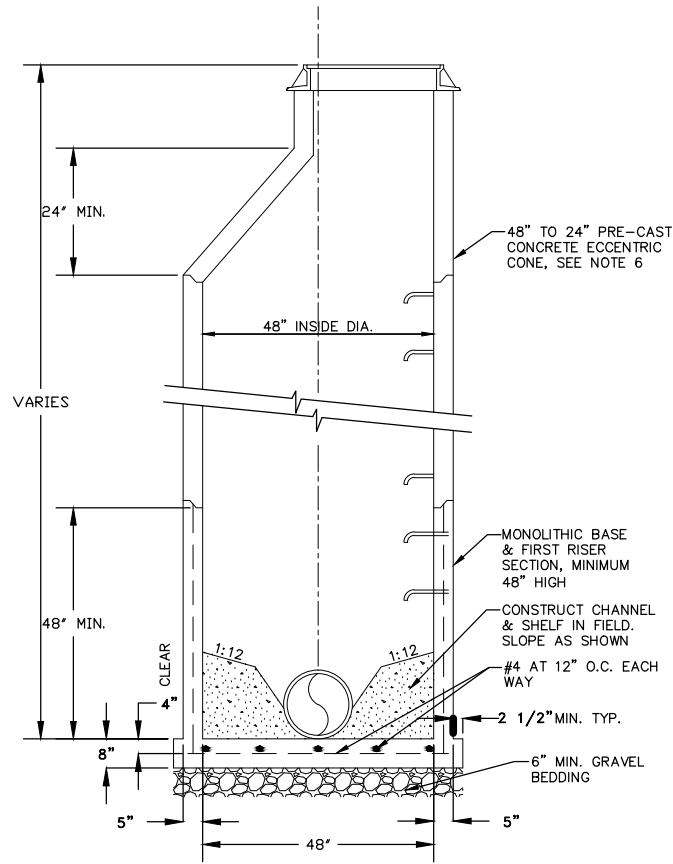
"H" DEPTH OF COVER	"I" INSULATION THICKNESS
4'-0" OR GREATER	NONE REQUIRED
3'-6" OR GREATER	2 INCHES
3'-0" OR GREATER	4 INCHES

2 TYPICAL TRENCH DETAIL  
D2 NOT TO SCALE

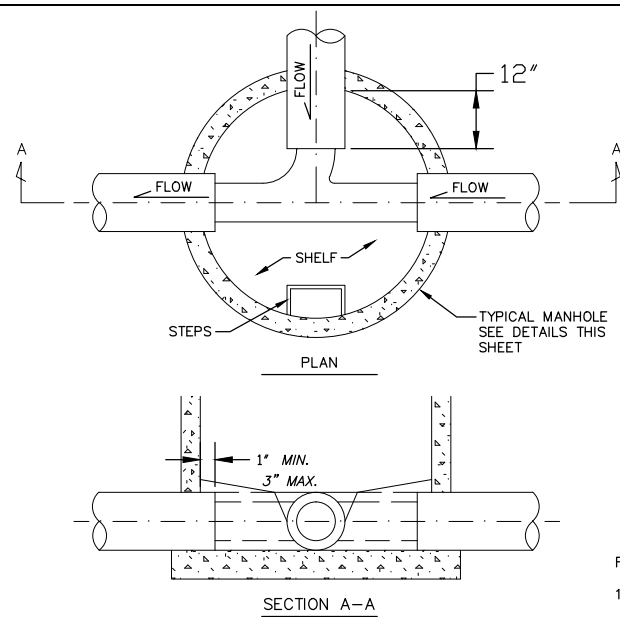


**SANITARY SEWER MANHOLE NOTES:**

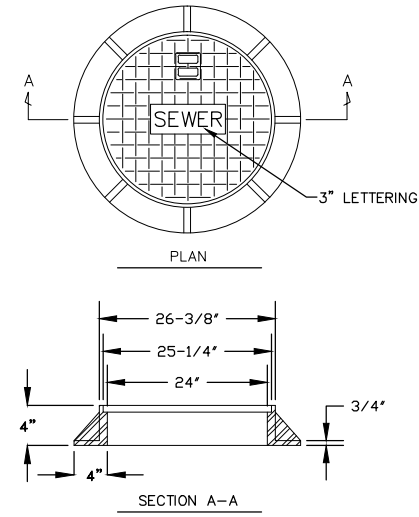
- All manhole sections shall conform to ASTM C-478, latest edition, including minimum steel requirements. Steel shall be embedded in base so that first riser section is connected to base.
- All joints shall include a pre-molded rubber gasket such as "Ram-Nek", or equal. The exterior of all joints shall be plastered with at least 1" of bentonite cement sealing plaster.
- Channel depth shall be equal to the pipe diameter or greater. Channel and shelf shall have a broom finish.
- Ends of pipe shall extend between 1" and 3" into the manhole.
- Seal manhole at pipe connections as shown in Detail 7/D3 and as recommended by the seal manufacturer. No steel reinforcement shall extend into pipe openings.
- When manhole height is less than 7', replace concrete cone section with pre-cast reducing slab. See Detail 9/D3.
- Install orange utility marker per Detail 8/D5.
- Manhole riser rings shall be LADTEC plastic risers. Joints on riser shall be watertight using butyl set in bed of mortar.
- For manholes accepting a flexible connector for 30" C90sewer pipe, manholes shall be 60" inside diameter.



**1 TYPICAL SANITARY SEWER MANHOLE**  
D3 NOT TO SCALE



**2 SEWER MANHOLE CHANNELING DETAIL**  
D3 NOT TO SCALE



- FRAME & COVER NOTES:**
- Cover and frame shall be heavy duty and rated for H-20 Loading. Minimum total weight shall be 360 pounds.
  - Lockdown bolts shall not be allowed.
  - Frame shall be machined to fit watertight cover. Cover shall have the word "SEWER" cast in, and shall be provided with an integral lift handle.
  - Frame and cover dimensions shall be in accordance with the guidelines indicated. Variations shall be approved by the Engineer.
  - All frames and covers shall be identical for all manhole installations.

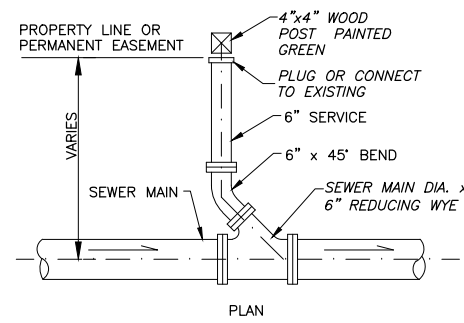
**3 MANHOLE FRAME AND COVER**  
D3 NOT TO SCALE

**MANHOLE HEIGHT TABLE**

LOCATION	A	B
GRAVEL ROADWAYS, BACKYARDS, UNPAVED ROADWAY SHOULDERS, TRAVELED WAY OF ALLEYS		6"
WETLANDS, UNDEVELOPED AREAS	24"	
HIGHWAY R.O.W. - 10 FEET OUTSIDE OF PAVED ROADWAY	6"	
PAVED ROADWAYS, PAVED PARKING AREAS		1/4"

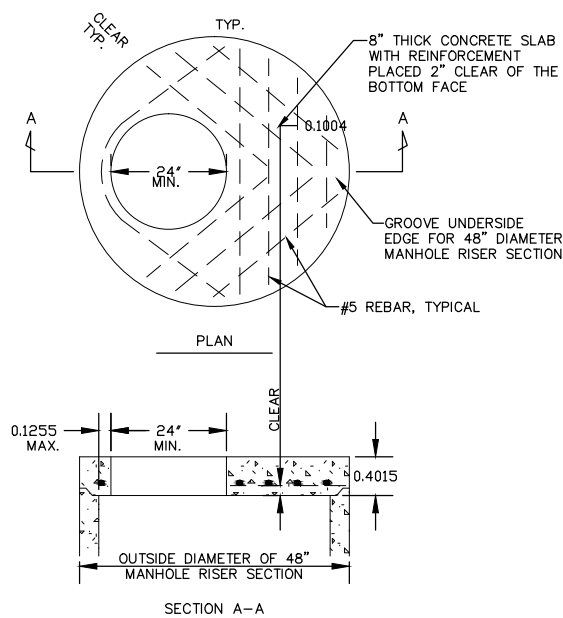
- MANHOLE HEIGHT NOTES:**
- Where installed in paved roadways or paved parking areas, manhole lid shall conform to the grade and cross slope of the pavement. Dimension is to the top of embossed lettering if lettering is higher than the frame.
  - Typical manhole heights shall be applied to the top of any sanitary sewer cleanout covers installed.
  - Buried manholes or cleanouts shall be marked with an orange carsonite marker. See special provisions.

**4 TYPICAL MANHOLE HEIGHTS**  
D3 NOT TO SCALE

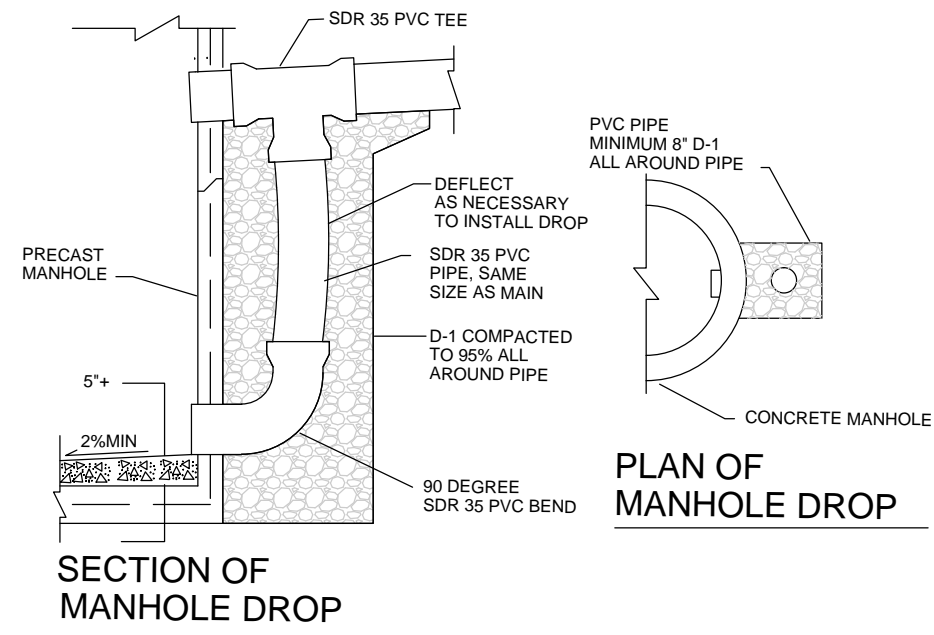


- NOTES:**
- MINIMUM SLOPE OF .02 FT/FT
  - CONNECTIONS FROM ROOF DOWNSPOUTS, AREA DRAINS, ETC. ARE PROHIBITED
  - TRENCH MUST BE DE-WATERED
  - PIPE MUST BE LAID ON AND BEDDED WITH COMPACTED AND COMPETENT MATERIAL

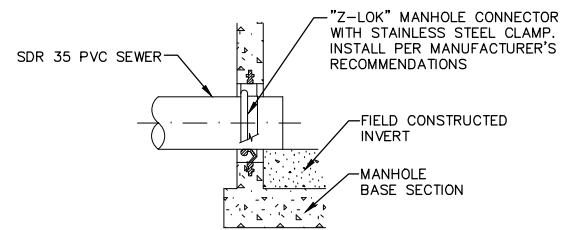
**5 SEWER LATERAL PROFILE - CONNECT TO EXISTING**  
D3 NOT TO SCALE



**7 PRE-CAST REDUCING SLAB (48\"/>**

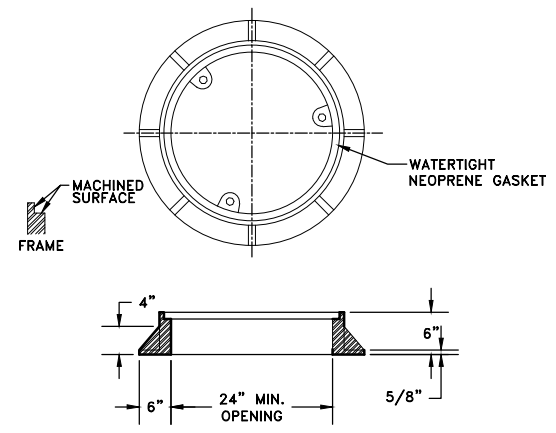


**8 OUTSIDE DROP MANHOLE SECTION**  
D3 NOT TO SCALE

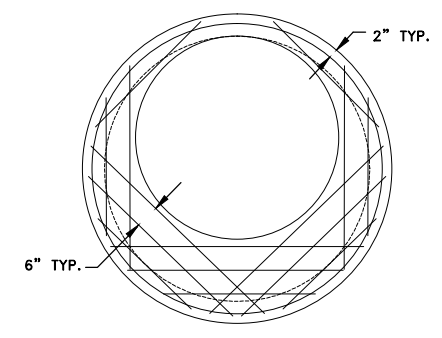


**6 MANHOLE PIPE CONNECTION**  
D3 NOT TO SCALE

ALL REBAR TO BE #4 BAR  
SPACED 6" O.C. IN REDUCING SLAB.

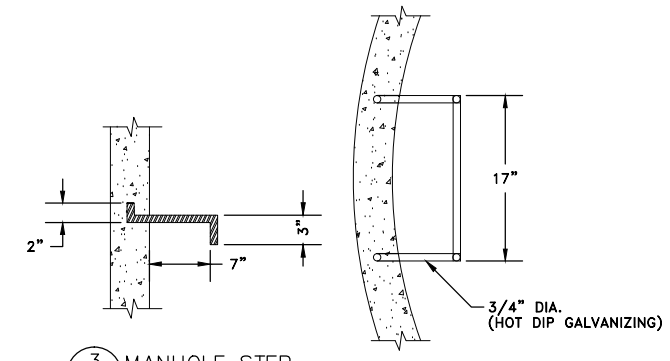


1 WATERTIGHT MANHOLE FRAME  
D5 NOT TO SCALE

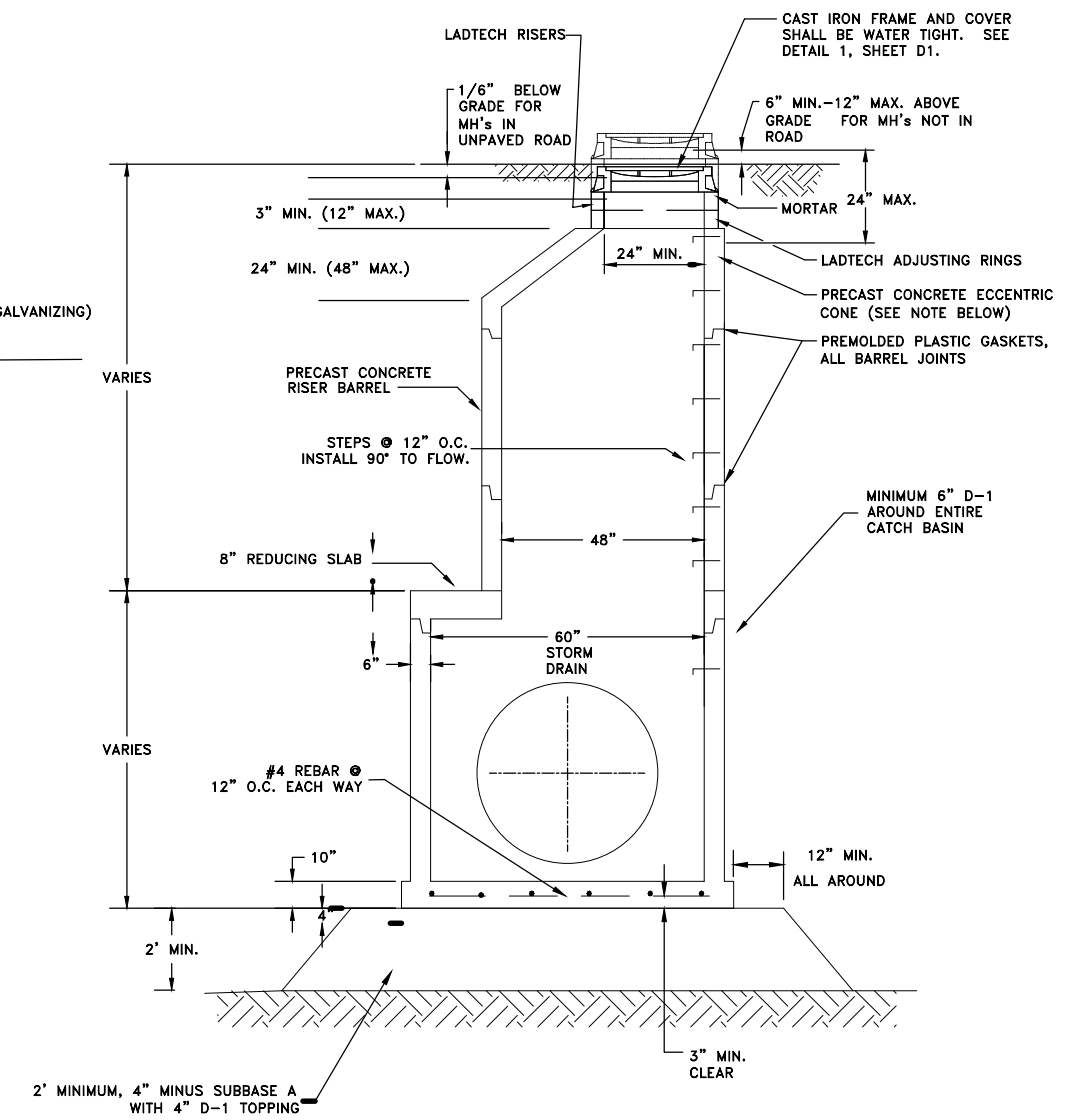


2 REDUCING SLAB  
D4 NOT TO SCALE

NOTES:  
1. COMPRESSIVE STRENGTH OF CONC. SHALL BE MINIMUM 4000 P.S.I.  
2. SEE ASTM C-478 FOR DESIGN REQUIREMENTS.

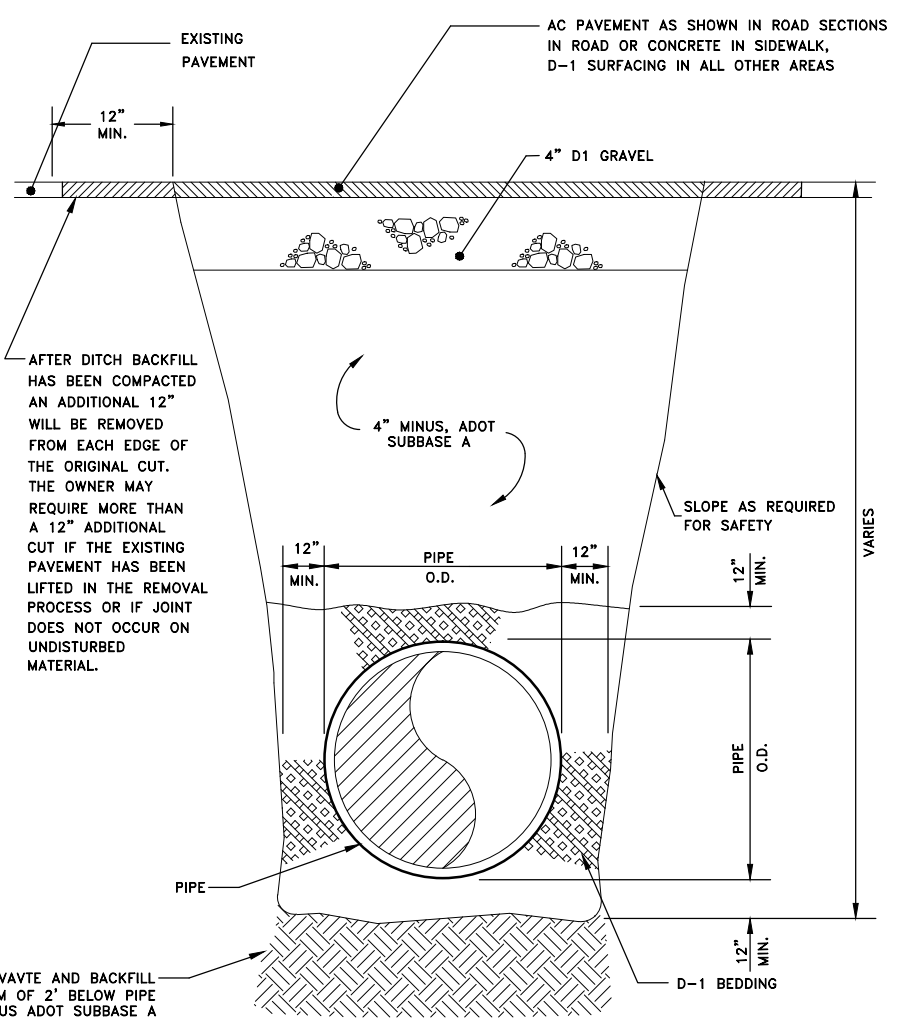


3 MANHOLE STEP  
D4 NOT TO SCALE



- MANHOLE NOTES:**
- ALL MANHOLE SECTIONS SHALL CONFORM TO A.S.T.M. A-48 & A-438.
  - MIN. STEEL REQUIRED FOR BARREL PER ASTM C-76 SHALL BE EMBEDDED IN BASE SO THAT FIRST BARREL SECTION IS CONNECTED WITH BASE.
  - NO REBAR TO EXTEND INTO PIPE OPENINGS.
  - PIPE CONNECTIONS SHALL BE SEALED WITH "JET SET", "FALL CRETE" OR EQUAL TYPE MORTAR. REFER TO PIPING MANUFACTURERS RECOMMENDATIONS FOR CONNECTIONS AT MANHOLE.
  - MANHOLES SHALL HAVE WATERTIGHT FRAMES AND COVERS.
  - COMPACT MATERIAL BELOW MANHOLE TO 95% MAXIMUM DRY DENSITY.

6 60" STORMDRAIN MANHOLE  
D4 NOT TO SCALE



4 36" CULVERT TRENCH DETAIL (PAVED AREA)  
D4 NOT TO SCALE



Designed: RKB		Approved: RKB		Client: CITY AND BOROUGH OF WRANGELL PO BOX 531 WRANGELL, ALASKA 99929	Project: ETOLIN STREET & MEDICAL CAMPUS UTILITIES ASSISTANCE	Sheet Description: STORM MAIN DETAILS	Sheet No. D4
Drawn: RKB		Date: DECEMBER 2011					
Date	No.	Description	By	Checked: TSS	PROJECT #: 112342	R&M ENGINEERING-KETCHIKAN, INC. 355 CARLANNA LAKE ROAD KETCHIKAN, ALASKA 99901	



**DESCRIPTION OF CONTROL RELAY (PUMP CONTROL PANEL)**

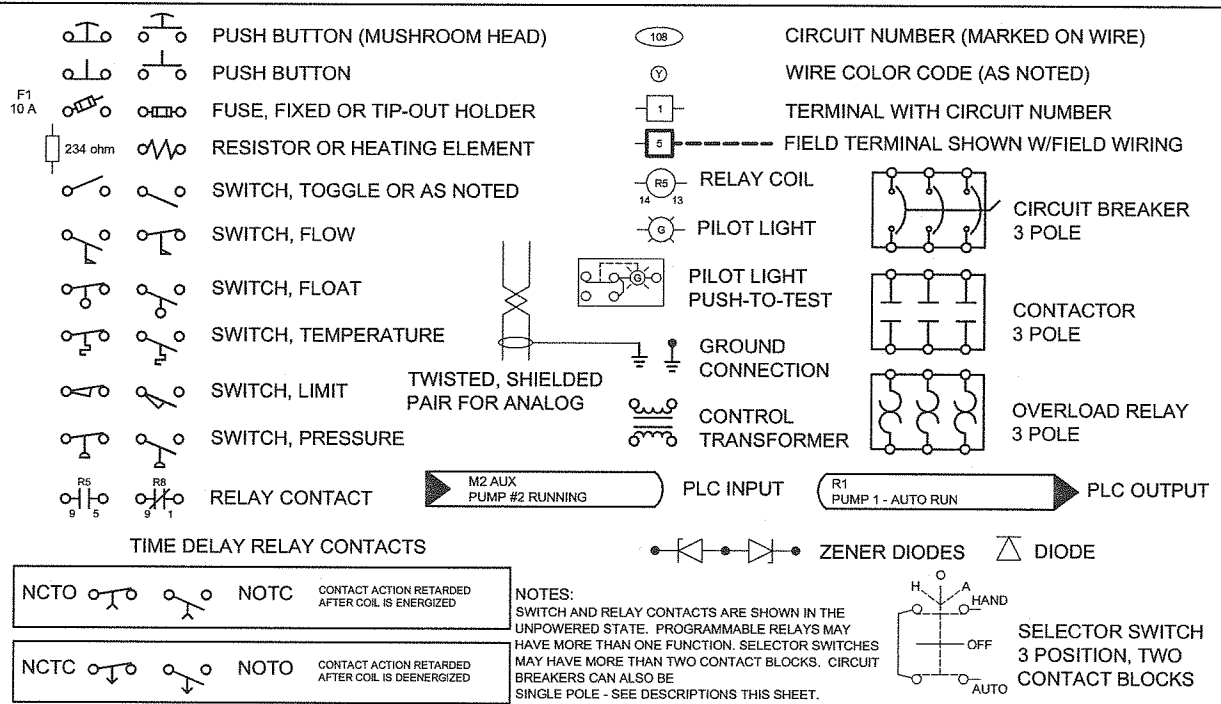
R1.	PUMP 1 RUN IN AUTO FROM PLC	120 VAC, 2 POLE
TDR1.	PUMP 1 RUN IN AUTO FROM HIGH FLOAT, PROGRAMMABLE, TIME ADJUSTABLE	MULTIVOLT, 2 POLE
R2.	PUMP 2 RUN IN AUTO FROM PLC	120 VAC, 2 POLE
TDR2.	PUMP 2 RUN IN AUTO FROM HIGH FLOAT, PROGRAMMABLE, TIME ADJUSTABLE	MULTIVOLT, 2 POLE
R8.	EXTERNAL ALARM (COIL POWERED WHEN NOT IN ALARM)	120 VAC, 2 POLE
R5.	POWER FAIL (COIL POWERED WHEN POWER ON)	120 VAC, 2 POLE
R6.	PUMP 1 SEAL FAIL AND OT, PUMPCON INTERNATIONAL MOS-1P	120 VAC, 2 POLE
R7.	PUMP 2 SEAL FAIL AND OT, PUMPCON INTERNATIONAL MOS-1P	120 VAC, 2 POLE
ISR1.	INTRINSICALLY SAFE RELAY	24 VDC, 2 POLE

**TYPE OF RELAY**

**FUSES AND CIRCUIT BREAKERS (PUMP CONTROL PANEL)**

CKT	SIZE/TYPE	FUNCTION OF FUSE OR CIRCUIT BREAKER
CB1	3 POLE, 60 A, 240VAC	PUMP 1 MOTOR
CB2	3 POLE, 60 A, 240VAC	PUMP 2 MOTOR
CB3	1 POLE, 15 A, 120 VAC	MAIN CONTROL POWER
CB4	1 POLE, 5 A, 120 VAC	RECEPTACLE FOR COMPUTER POWER
CB5	1 POLE, 5 A, 120 VAC	PUMP RELAYS AND ALARM LIGHTS
CB6	1 POLE, 2A, 120 VAC	FLOW METER POWER
CB7	1 POLE, 5A, 120 VAC	POWER SUPPLY
CB10	1 POLE, 5 A, 24VDC	MAIN DC POWER
CB11	1 POLE, 5 A, 24VDC	MAIN DISCONNECT FOR 24VDC BATTERY
CB12	1 POLE, 5 A, 24VDC	RADIO POWER SOURCE
CB13	1 POLE, 5 A, 24VDC	PLC AND I/O POWER SOURCE
CB14	1 POLE, 5 A, 24VDC	PILOT LIGHTS AND MISC. POWER REQUIREMENTS
CB15	1 POLE, 2 A, 24VDC	PRIMARY LEVEL SENSOR AND EMERGENCY FLOAT
CB16	1 POLE, 2 A, 24VDC	SPARE

**LIST OF SCHEMATIC DIAGRAM SYMBOLS**



0	9/14/2011	SRS	95% SUBMITTAL
REV	DATE	BY	DESCRIPTION

SCALE	NONE
DESIGNED	SRS
DRAWN	SRS
CHECKED	GSS
DATE	SEPTEMBER 14, 2011

**RSM**  
**R&M ENGINEERING-KETCHIKAN, INC.**  
 355 CARLANNA LAKE ROAD  
 KETCHIKAN, ALASKA 99901

CITY AND BOROUGH OF WRANGELL  
 P.O. BOX 531  
 WRANGELL, ALASKA 99929

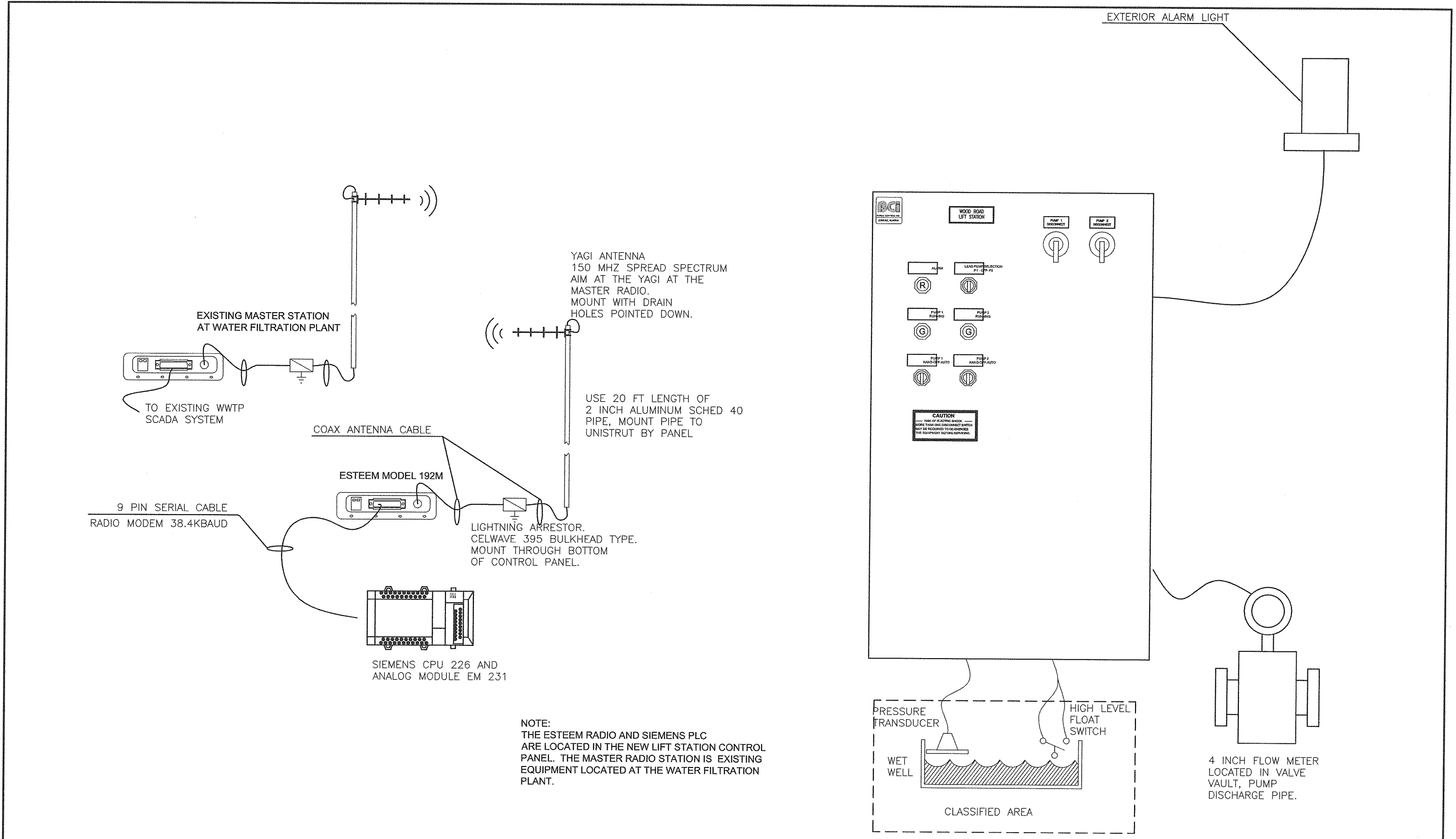
ETOLIN STREET AND ACIS UTILITIES  
 LIFT STATION POWER AND CONTROLS  
 BREAKER FUSE RELAY LIST

**BCi**  
 BOREAL CONTROLS, INC.  
 JUNEAU, ALASKA

3100 Channel Dr. Ste. 210N  
 Juneau, AK 99801  
 Phone: 907-586-8367  
 FAX: 907-586-4010



9/26/2011  
 DRAWING  
**173-06**  
**E-01**  
 SHEET No.  
 1 of X



REV	DATE	BY	DESCRIPTION
0	9/14/2011	SRS	SUBMITTAL

SCALE NONE  
 DESIGNED SRS  
 DRAWN SRS  
 CHECKED GSS  
 DATE SEPTEMBER 14, 2011

**R&M**  
 R&M ENGINEERING-KETCHIKAN, INC.  
 355 CARLANNA LAKE ROAD  
 KETCHIKAN, ALASKA 99901

CITY AND BOROUGH OF WRANGELL  
 P.O. BOX 531  
 WRANGELL, ALASKA 99929

ETOLIN STREET AND ACIS UTILITIES  
 LIFT STATION POWER AND CONTROLS  
 CONTROL NETWORK

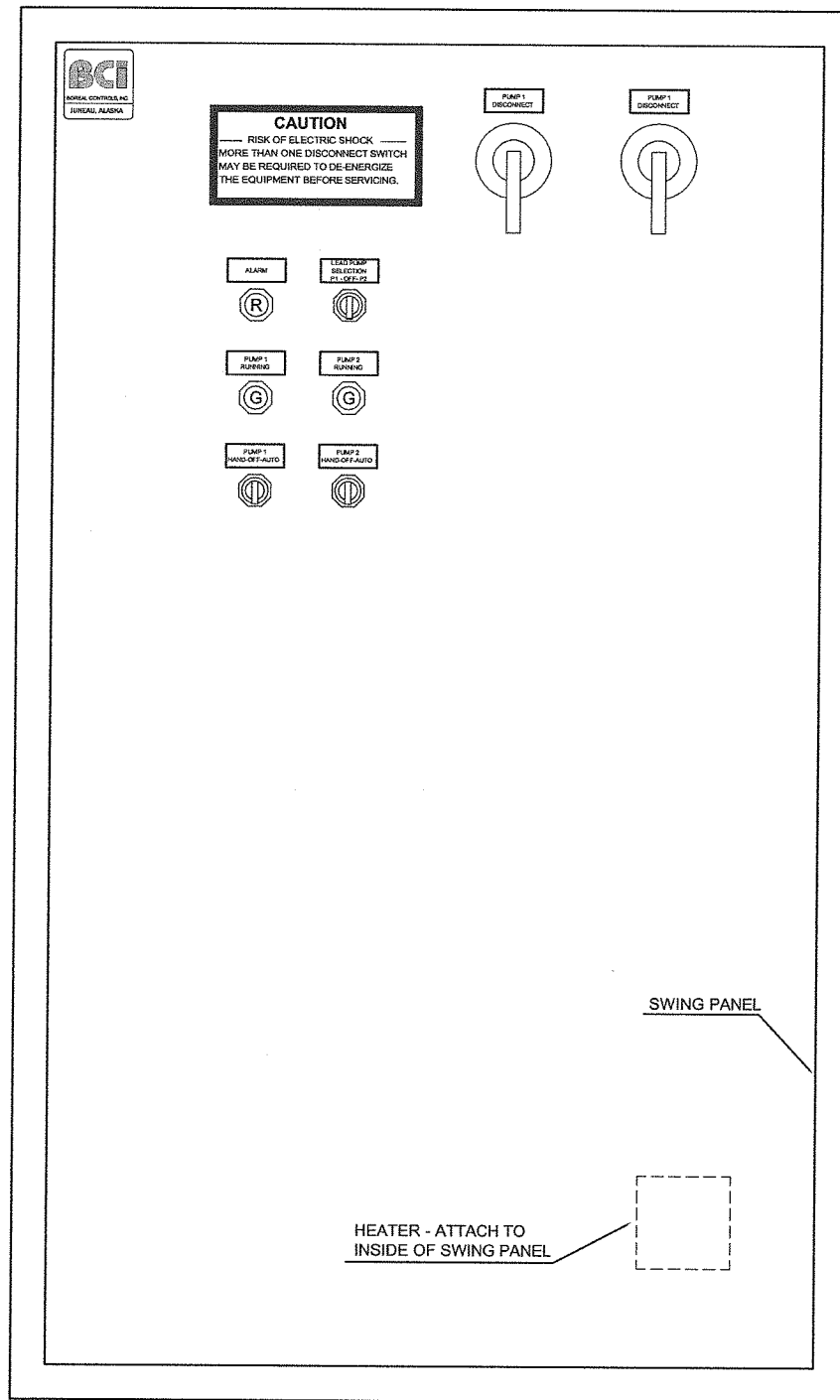
**BCI**  
 BOREAL CONTROLS, INC.  
 JUNEAU, ALASKA

3100 Channel Dr. Ste. 210N  
 Juneau, AK 99801  
 Phone: 907-586-8367  
 FAX: 907-586-4010

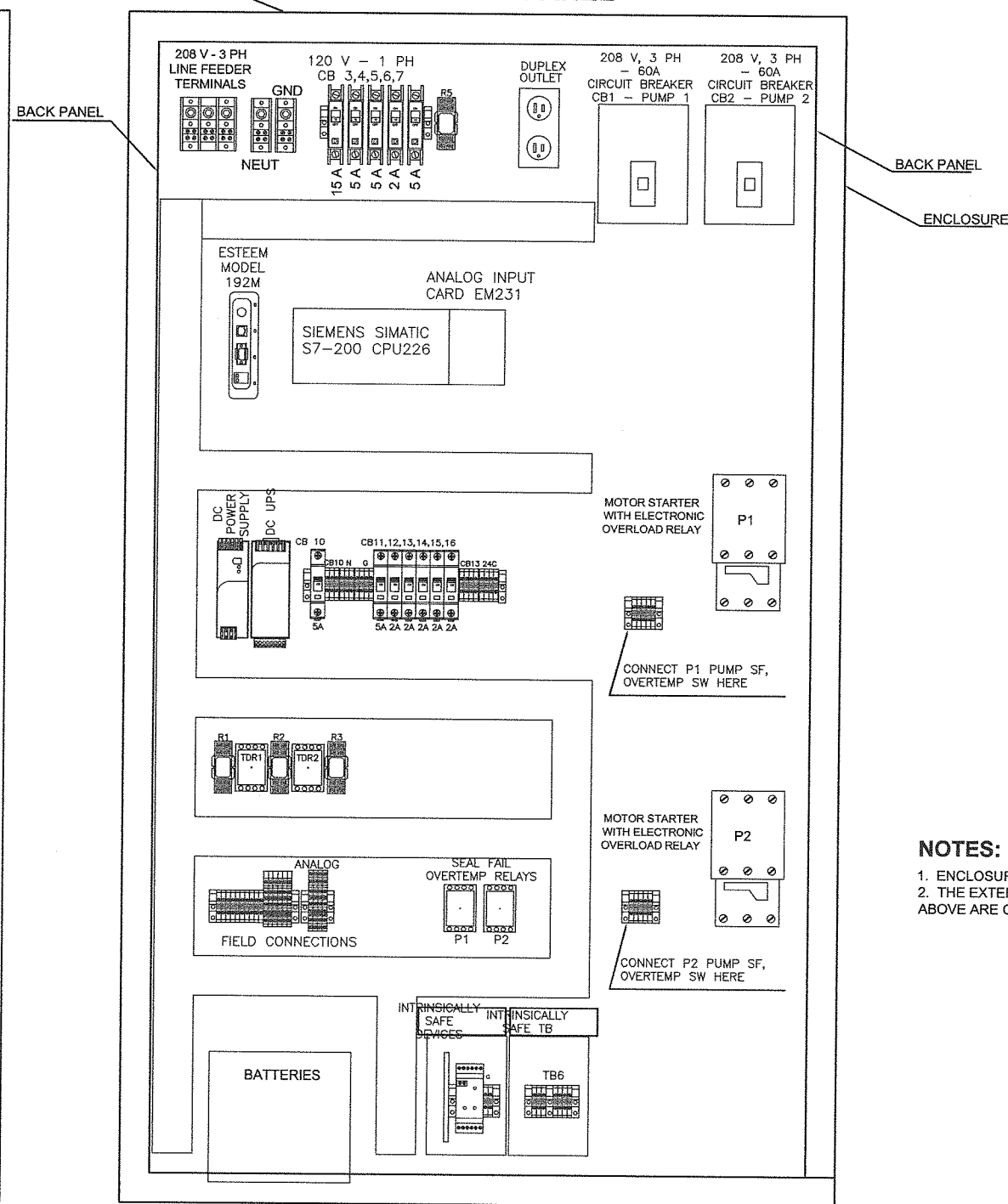


9/28/2011  
 DRAWING 173-06  
 E-02  
 SHEET No. 2 of X

**SWING OUT PANEL**



**BACK PANEL**



**NOTES:**

- ENCLOSURE IS 36" WIDE X 60" HIGH X 16" DEEP, NEMA 4X STAINLESS STEEL
- THE EXTERIOR DOOR OF THIS ENCLOSURE IS BLANK, FEATURES SHOWN ABOVE ARE ON SWING-OUT PANEL.

1			
REV	DATE	BY	DESCRIPTION
0	9/14/2011	SRS	SUBMITTAL

SCALE	NONE
DESIGNED	SRS
DRAWN	SRS
CHECKED	GSS
DATE	SEPTEMBER 14, 2011

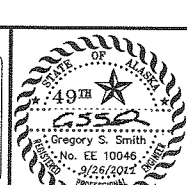
**R&M**  
R&M ENGINEERING-KETCHIKAN, INC.  
355 CARLANNA LAKE ROAD  
KETCHIKAN, ALASKA 99901

CITY AND BOROUGH OF WRANGELL  
P.O. BOX 531  
WRANGELL, ALASKA 99929

ETOLIN STREET AND ACIS UTILITIES  
LIFT STATION POWER AND CONTROLS  
CONTROL PANEL LAYOUT

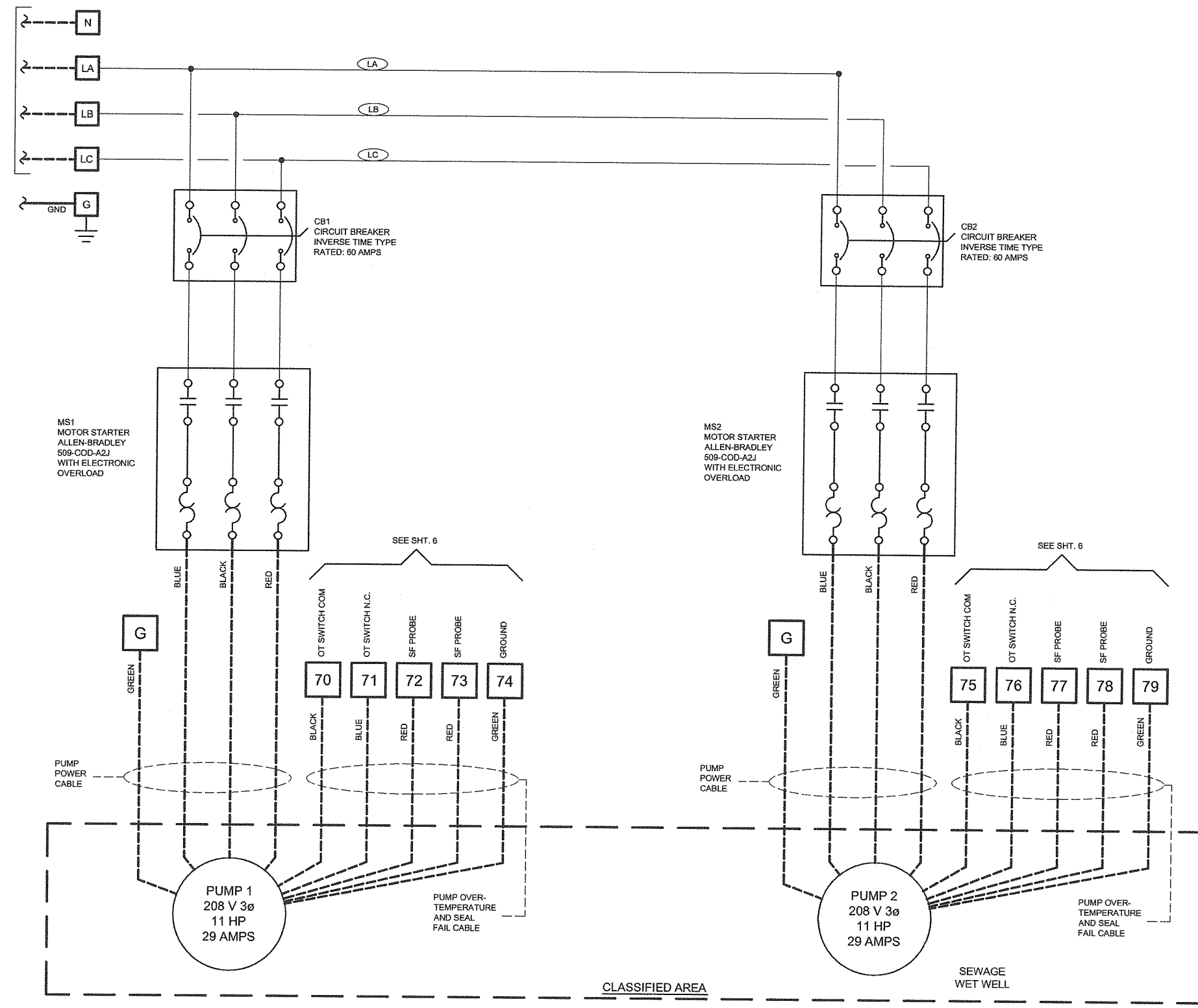
**BCI**  
BOREAL CONTROLS, INC.  
JUNEAU, ALASKA

3100 Channel Dr. Ste. 210N  
Juneau, AK 99801  
Phone: 907-586-8367  
FAX: 907-586-4010



9/14/2011	DRAWING
	173-06
	E-03
	SHEET No.
	3 of X

120/208 VAC Y  
3 PHASE  
100 AMP CIRCUIT  
  
PANEL RATED  
FOR CIRCUIT  
DELIVERING NOT  
MORE THAN 5,000  
SHORT CIRCUIT  
CURRENT AMPS.



NOTE  
1. CIRCUIT BREAKERS CB1 AND CB2 SHALL BE EQUIPPED WITH  
DOOR-MOUNTED OPERATING HANDLES THAT CAN BE LOCKED OUT.

REV	DATE	BY	DESCRIPTION
0	9/14/2011	SRS	SUBMITTAL

SCALE NONE  
DESIGNED SRS  
DRAWN SRS  
CHECKED GSS  
DATE SEPTEMBER 14, 2011

**R&M**  
R&M ENGINEERING-KETCHIKAN, INC.  
355 CARLANNA LAKE ROAD  
KETCHIKAN, ALASKA 99901

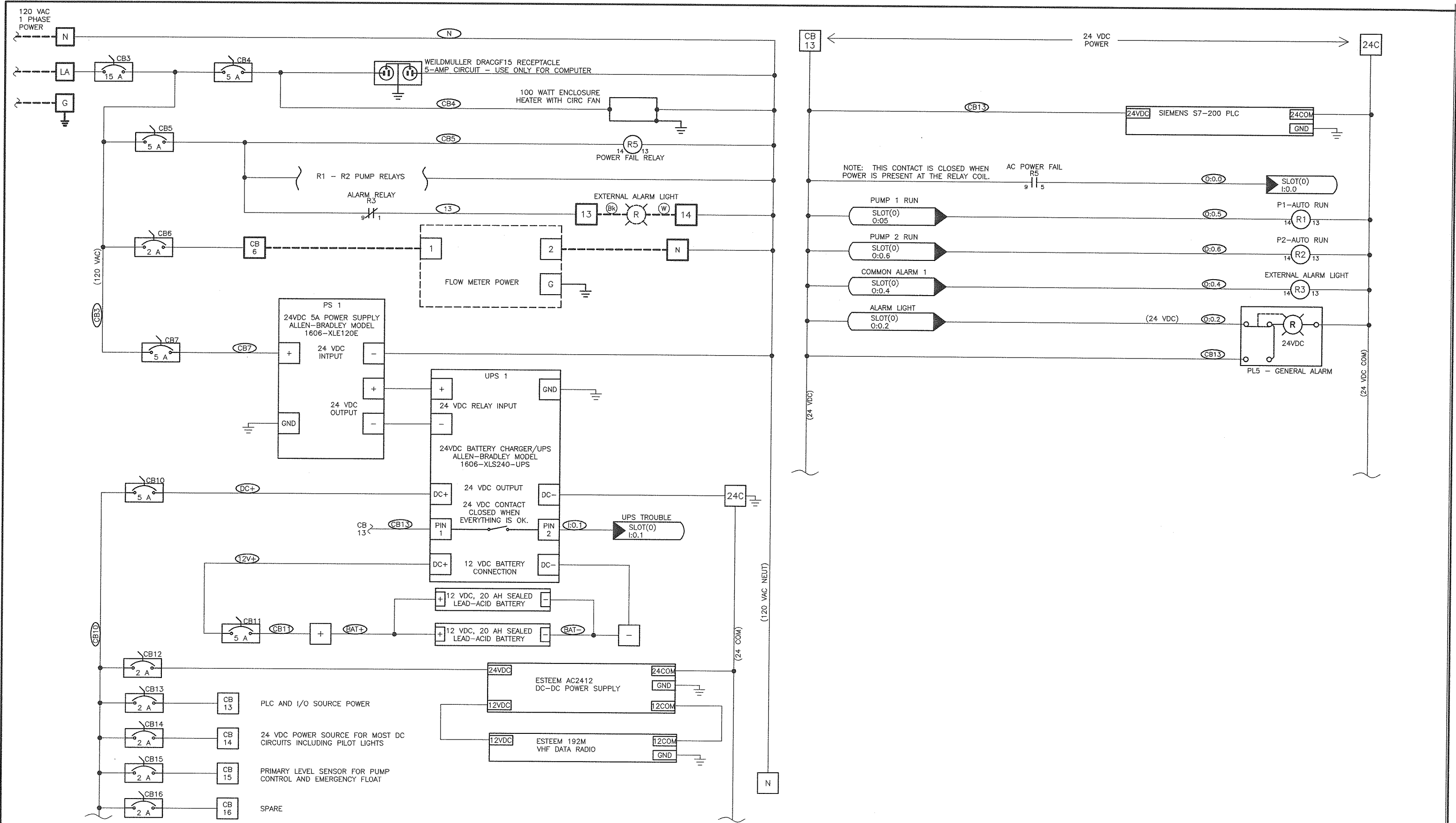
CITY AND BOROUGH OF WRANGELL  
  
P.O. BOX 531  
WRANGELL, ALASKA 99929

ETOLIN STREET AND ACIS UTILITIES  
LIFT STATION POWER AND CONTROLS  
POWER SCHEMATIC

**BCi**  
BOREAL CONTROLS, INC.  
JUNEAU, ALASKA  
3100 Channel Dr. Ste. 210N  
Juneau, AK 99801  
Phone: 907-586-8367  
FAX: 907-586-4010



9/14/2011  
DRAWING  
173-06  
E-04  
SHEET No.  
4 of X



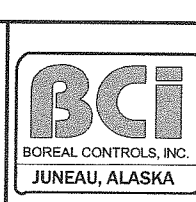
REV	DATE	BY	DESCRIPTION
0	9/14/2011	SRS	SUBMITTAL

SCALE NONE  
 DESIGNED SRS  
 DRAWN SRS  
 CHECKED GSS  
 DATE SEPTEMBER 14, 2011

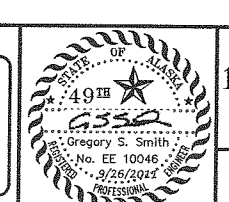
**R&M**  
 R&M ENGINEERING-KETCHIKAN, INC.  
 355 CARLANNA LAKE ROAD  
 KETCHIKAN, ALASKA 99901

CITY AND BOROUGH OF WRANGELL  
 P.O. BOX 531  
 WRANGELL, ALASKA 99929

ETOLIN STREET AND ACIS UTILITIES  
 LIFT STATION POWER AND CONTROLS  
 CONTROL POWER AND UPS SCHEMATIC

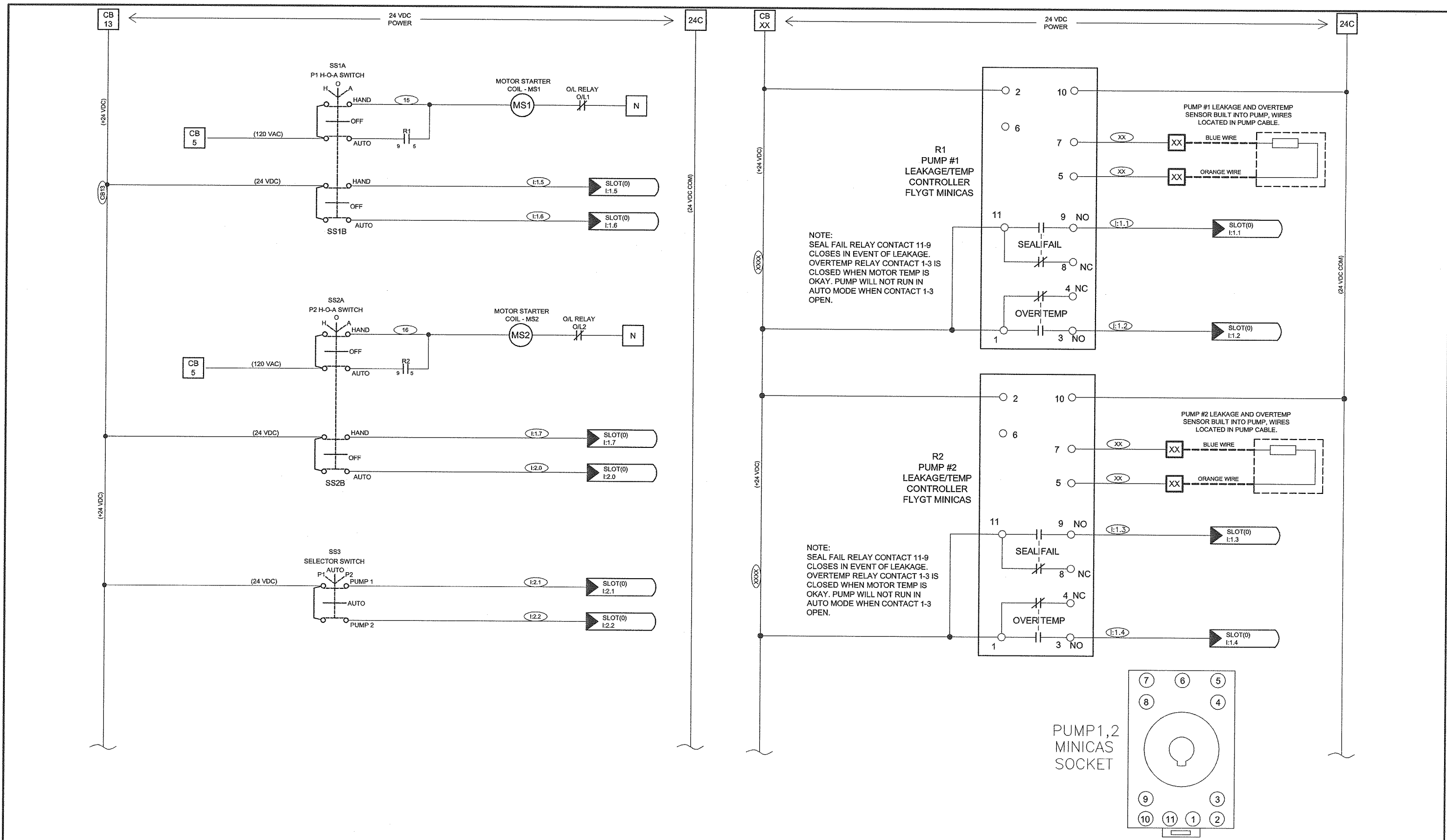


3100 Channel Dr. Ste. 210N  
 Juneau, AK 99801  
 Phone: 907-586-8367  
 FAX: 907-586-4010



9/26/2011  
 DRAWING 173-06 E-05  
 SHEET No. 5 of X





REV	DATE	BY	DESCRIPTION
0	9/14/2011	SRS	SUBMITAL

SCALE NONE  
 DESIGNED SRS  
 DRAWN SRS  
 CHECKED GSS  
 DATE SEPTEMBER 14, 2011

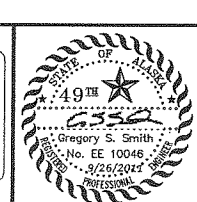
**R&M ENGINEERING-KETCHIKAN, INC.**  
 355 CARLANNA LAKE ROAD  
 KETCHIKAN, ALASKA 99901

**CITY AND BOROUGH OF WRANGELL**  
 P.O. BOX 531  
 WRANGELL, ALASKA 99929

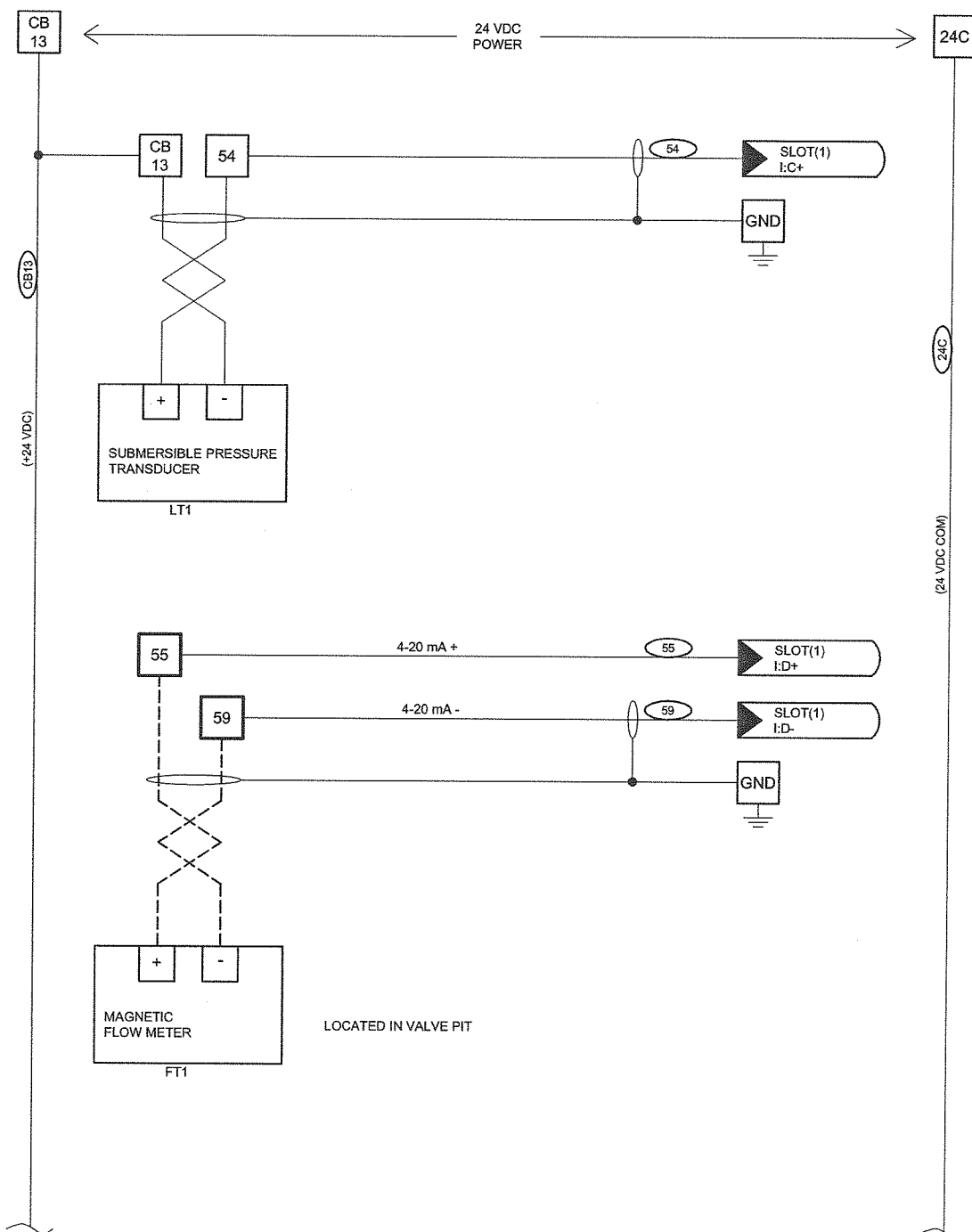
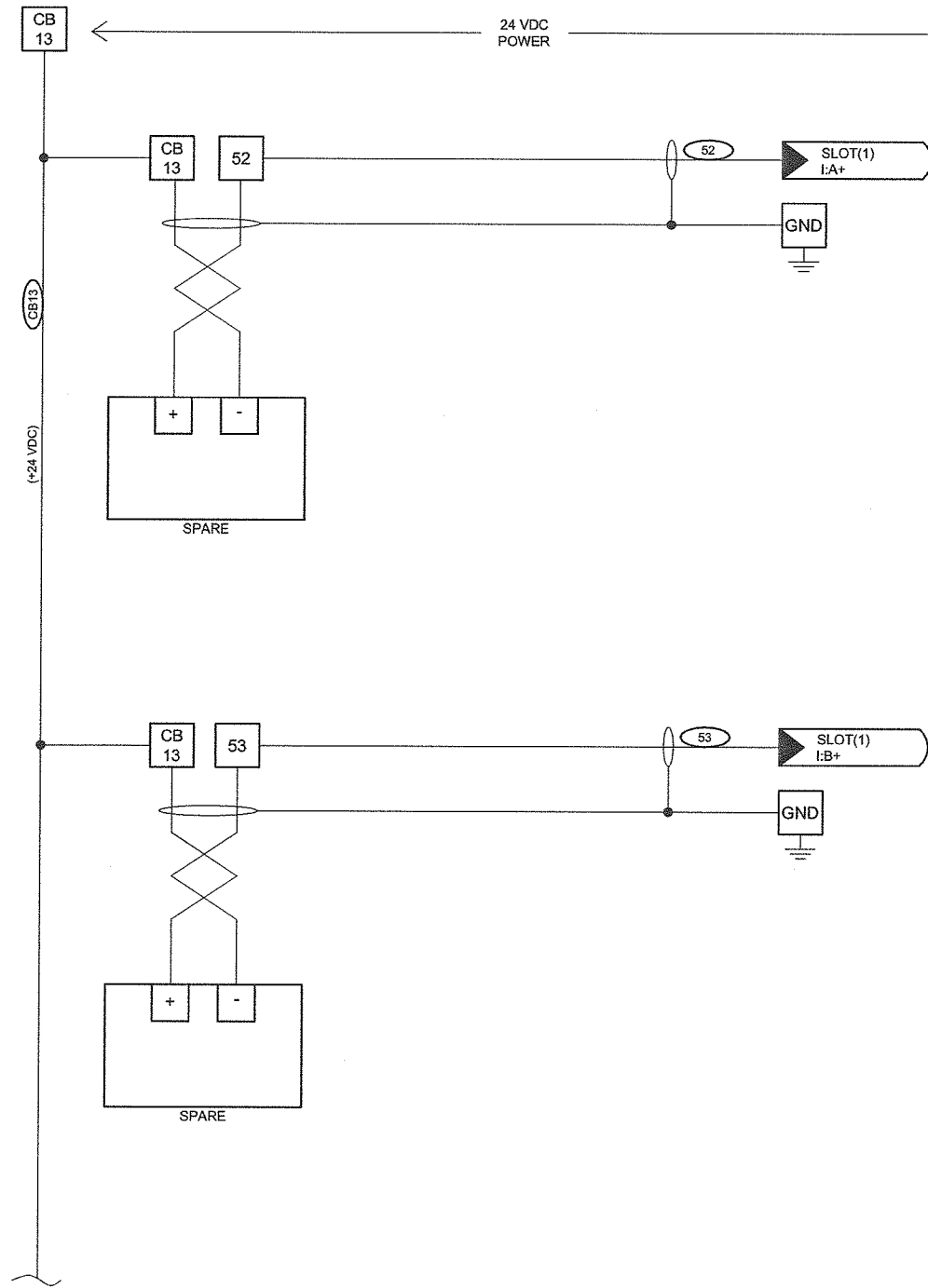
**ETOLIN STREET AND ACIS UTILITIES**  
 LIFT STATION POWER AND CONTROLS  
 PUMP CONTROL SCHEMATIC

**BCI**  
 BOREAL CONTROLS, INC.  
 JUNEAU, ALASKA

3100 Channel Dr. Ste. 210N  
 Juneau, AK 99801  
 Phone: 907-586-8367  
 FAX: 907-586-4010



9/26/2011  
 DRAWING 173-06 E-06  
 SHEET No. 6 of X



NOTES:  
 1. THE ANALOG INPUT MODULE IS A SIEMENS EM231  
 4-CHANNEL MODULE MODEL # 6ES7 231-OHC21-OXAO

REV	DATE	BY	DESCRIPTION
0	9/14/2011	SRS	SUBMITTAL

SCALE NONE  
 DESIGNED SRS  
 DRAWN SRS  
 CHECKED GSS  
 DATE SEPTEMBER 14, 2011

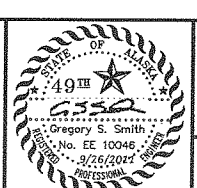
**R&M**  
 R&M ENGINEERING-KETCHIKAN, INC.  
 355 CARLANNA LAKE ROAD  
 KETCHIKAN, ALASKA 99901

CITY AND BOROUGH OF WRANGELL  
 P.O. BOX 531  
 WRANGELL, ALASKA 99929

ETOLIN STREET AND ACIS UTILITIES  
 LIFT STATION POWER AND CONTROLS  
 ANALOG DEVICES

**BCI**  
 BOREAL CONTROLS, INC.  
 JUNEAU, ALASKA

3100 Channel Dr. Ste. 210N  
 Juneau, AK 99801  
 Phone: 907-586-8367  
 FAX: 907-586-4010



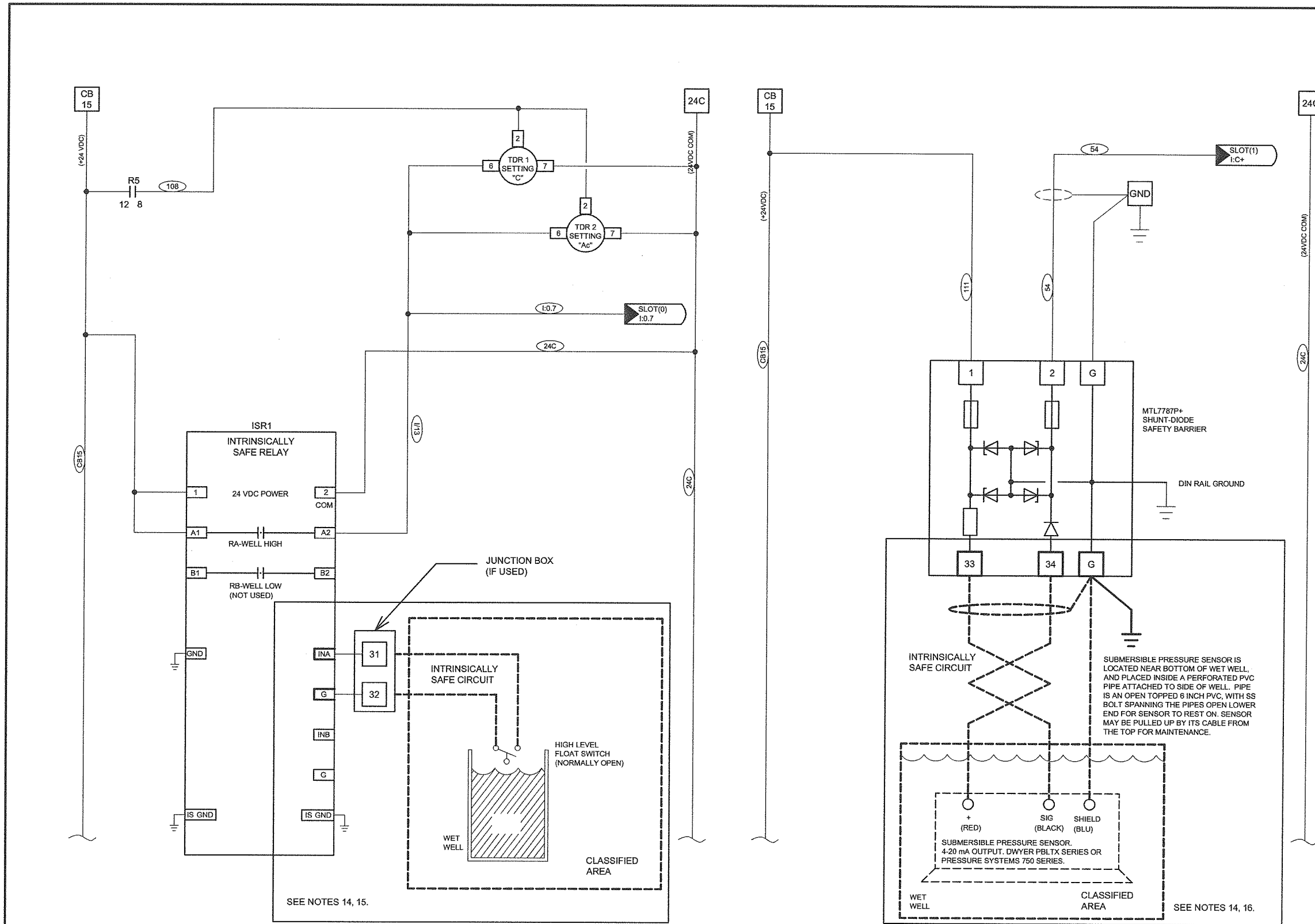
9/26/2011  
 DRAWING 173-06  
 E-07  
 SHEET No. 7 of X

**NOTES ON HIGH FLOAT CIRCUIT**

1. TDR1 IS DELAY ON DE-ENERGIZE TYPE. USE RELAY SETTING 'C' AND 6-60 SECOND TIME RANGE. PUMP 1 WILL START WHEN FLOAT SWITCH CLOSES AND RUN FOR THE TIME SETTING AFTER THE FLOAT OPENS.
2. TDR2 IS DELAY ON ENERGIZE/ DELAY ON DE-ENERGIZE TYPE. USE RELAY SETTING 'Ac' AND 6-60 SECOND TIME RANGE. PUMP 2 WILL START AFTER TIME SETTING WHEN FLOAT SWITCH CLOSES AND RUN FOR THE TIME SETTING AFTER THE FLOAT OPENS.
3. SET TIMERS TO DIFFERENT TIME VALUES SO PUMPS DO NOT STOP AT THE SAME TIME. TDR1 = ABOUT 15 SEC. TDR2 = ABOUT 20 SEC.
4. HIGH LEVEL FLOAT SWITCH IS LOCATED IN THE WET WELL. SET ABOVE NORMAL LAG PUMP CUT-IN LEVEL. FLOAT SWITCH IS OPEN WHEN HANGING AND CLOSED WHEN FLOATING.
5. RELAY CONTACT R5 IS CLOSED WHEN UTILITY POWER IS PRESENT. IF UTILITY POWER ISNT PRESENT THE TIME DELAY RELAY SEQUENCE WONT BE INITIATED WITH A HIGH LEVEL EVENT UNTIL UTILITY POWER IS RESTORED.

**NOTES ON INTRINSICALLY SAFE CIRCUITS**

10. THIS IS THE UL508A REQUIRED "PANEL CONTROL DRAWING" FOR INDUSTRIAL CONTROL PANELS RELATING TO HAZARDOUS LOCATIONS.
11. CONNECT NON-INTRINSICALLY-SAFE TERMINALS IN THE FOLLOWING MANNER: MAINTAIN 2 INCH SPACING FROM ANY INTRINSICALLY SAFE CIRCUIT (WIRE) AND 5 INCH SPACING FROM ANY INTRINSICALLY SAFE TERMINAL BLOCK.
12. CONNECT INTRINSICALLY-SAFE TERMINALS IN THE FOLLOWING MANNER: MAINTAIN 2 INCH SPACING FROM ANY NON-INTRINSICALLY SAFE CIRCUIT (WIRE) AND 5 INCH SPACING FROM ANY NON-INTRINSICALLY SAFE TERMINAL BLOCK.
13. INSTALL PANEL AND RELATED PARTS IN ACCORDANCE WITH ARTICLE 504 OF THE NATIONAL ELECTRICAL CODE (NEC).
14. WIRES CONNECTED TO INTRINSICALLY SAFE RELAY OR BARRIER ARE TO BE NO LONGER THAN: 70 FT.
15. INSTALL INTRINSICALLY SAFE RELAY IN ACCORDANCE WITH INGRAM PRODUCTS INC CONTROL DRAWING A6757-4.
16. INSTALL INTRINSICALLY SAFE ZENER BARRIER IN ACCORDANCE WITH MTL INDUSTRIES INSTRUCTION MANUAL #INM7700. and DRAWING SCI-991.
17. FLOAT AND DEPTH SENSOR MAY BE INSTALLED IN CLASS 1 DIVISION 1, GROUP A,B,C,D AREAS, INCLUDING SEWER WET WELLS.
18. CONNECT ONLY THE COMPONENTS LISTED IN THIS DRAWING TO THE INTRINSICALLY SAFE RELAY OR INTRINSICALLY SAFE BARRIER.
19. JUNCTION BOXES IN INTRINSICALLY SAFE CIRCUITS MAY BE USED. SEAL-OFF CONDUIT FITTINGS ARE NOT SHOWN HERE. WHEN USING A JUNCTION BOX, PLACE IT SO THAT THE DEPTH SENSOR OR HIGH LEVEL FLOAT SWITCH MAY BE CHANGED WITHOUT DISTURBING THE SEAL-OFF. BOXES AND SEAL OFF FITTINGS ARE TO BE PLACED IN ACCORDANCE WITH ENGINEERS SPECIFICATIONS AND NEC REQUIREMENTS.



1					
0	9/14/2011	SRS	SUBMITTAL		
REV	DATE	BY	DESCRIPTION	DATE	

SCALE NONE  
 DESIGNED SRS  
 DRAWN SRS  
 CHECKED GSS  
 DATE SEPTEMBER 14, 2011

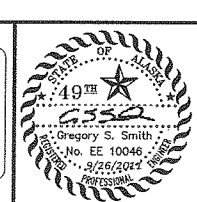
**R&M**  
 R&M ENGINEERING-KETCHIKAN, INC.  
 355 CARLANNA LAKE ROAD  
 KETCHIKAN, ALASKA 99901

CITY AND BOROUGH OF WRANGELL  
 P.O. BOX 531  
 WRANGELL, ALASKA 99929

ETOLIN STREET AND ACIS UTILITIES  
 LIFT STATION POWER AND CONTROLS  
 HIGH-LEVEL FLOAT AND  
 DEPTH TRANSDUCER SCHEMATIC

**BCi**  
 BOREAL CONTROLS, INC.  
 JUNEAU, ALASKA

3100 Channel Dr. Ste. 210N  
 Juneau, AK 99801  
 Phone: 907-586-8367  
 FAX: 907-586-4010



9/26/2011  
 DRAWING 173-06 E-08  
 SHEET No. 8 of X

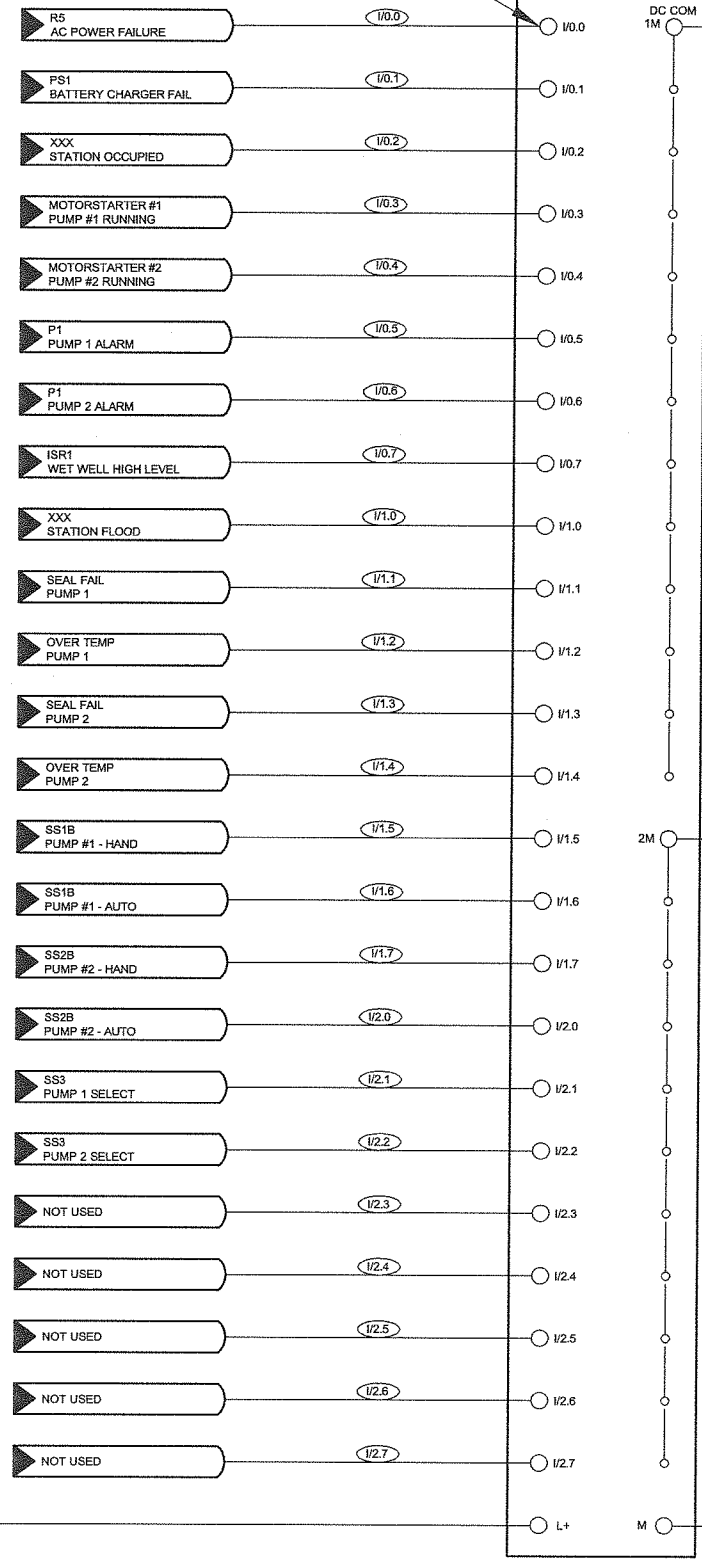
CB 13

(+24VDC)  
CB13

THIS INPUT NORMALLY ENERGIZED UNLESS IN ALARM.  
(REVERSE LOGIC)

SLOT 0  
SIEMENS CPU 226  
6ES7 216-2AD23-0XB0  
INPUT SECTION  
24 VDC (14-30 VDC)

24C

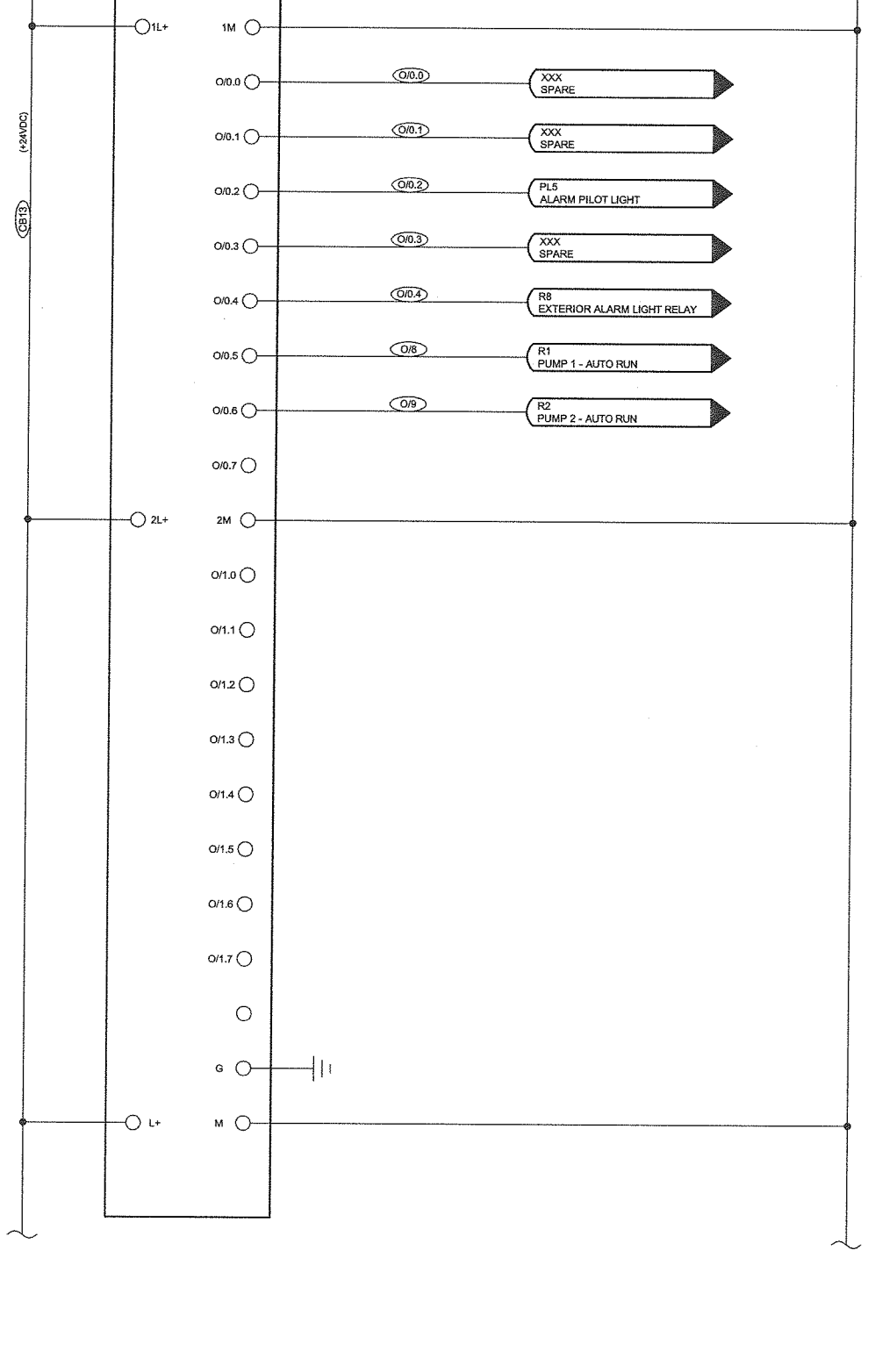


CB 13

(+24VDC)  
CB13

SLOT 0  
SIEMENS CPU 226  
6ES7 216-2AD23-0XB0  
DISCRETE OUTPUT SECTION  
FET TYPE  
24 VDC (14-30 VDC)

24C



REV	DATE	BY	DESCRIPTION
0	9/14/2011	SRS	SUBMITTAL

SCALE NONE  
 DESIGNED SRS  
 DRAWN SRS  
 CHECKED GSS  
 DATE SEPTEMBER 14, 2011

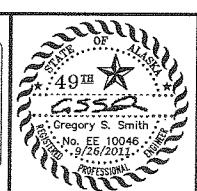
**R&M**  
 R&M ENGINEERING-KETCHIKAN, INC.  
 355 CARLANNA LAKE ROAD  
 KETCHIKAN, ALASKA 99901

CITY AND BOROUGH OF WRANGELL  
 P.O. BOX 531  
 WRANGELL, ALASKA 99929

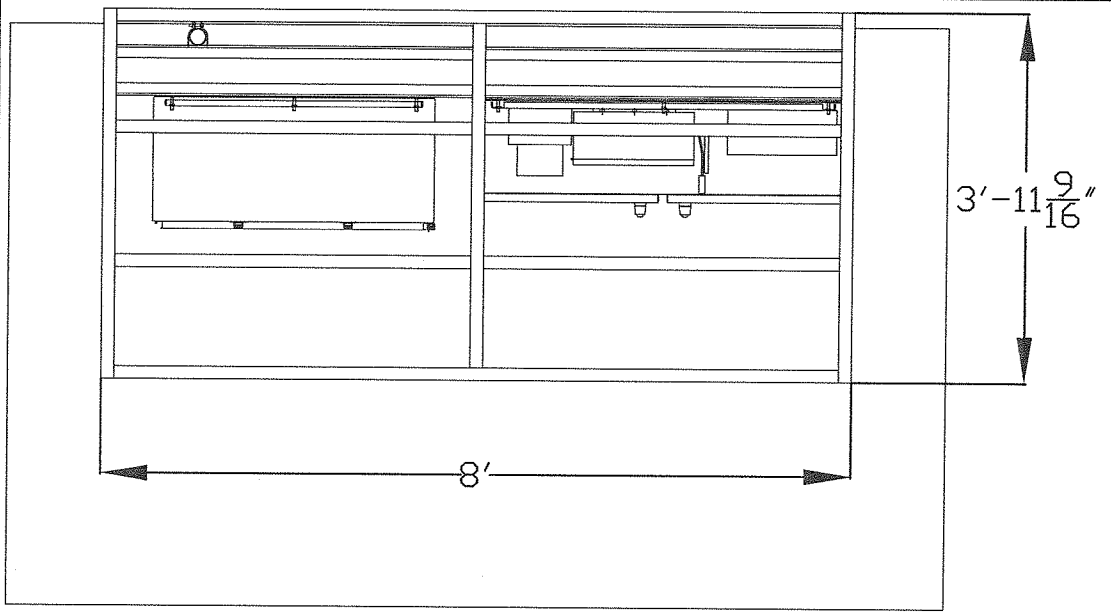
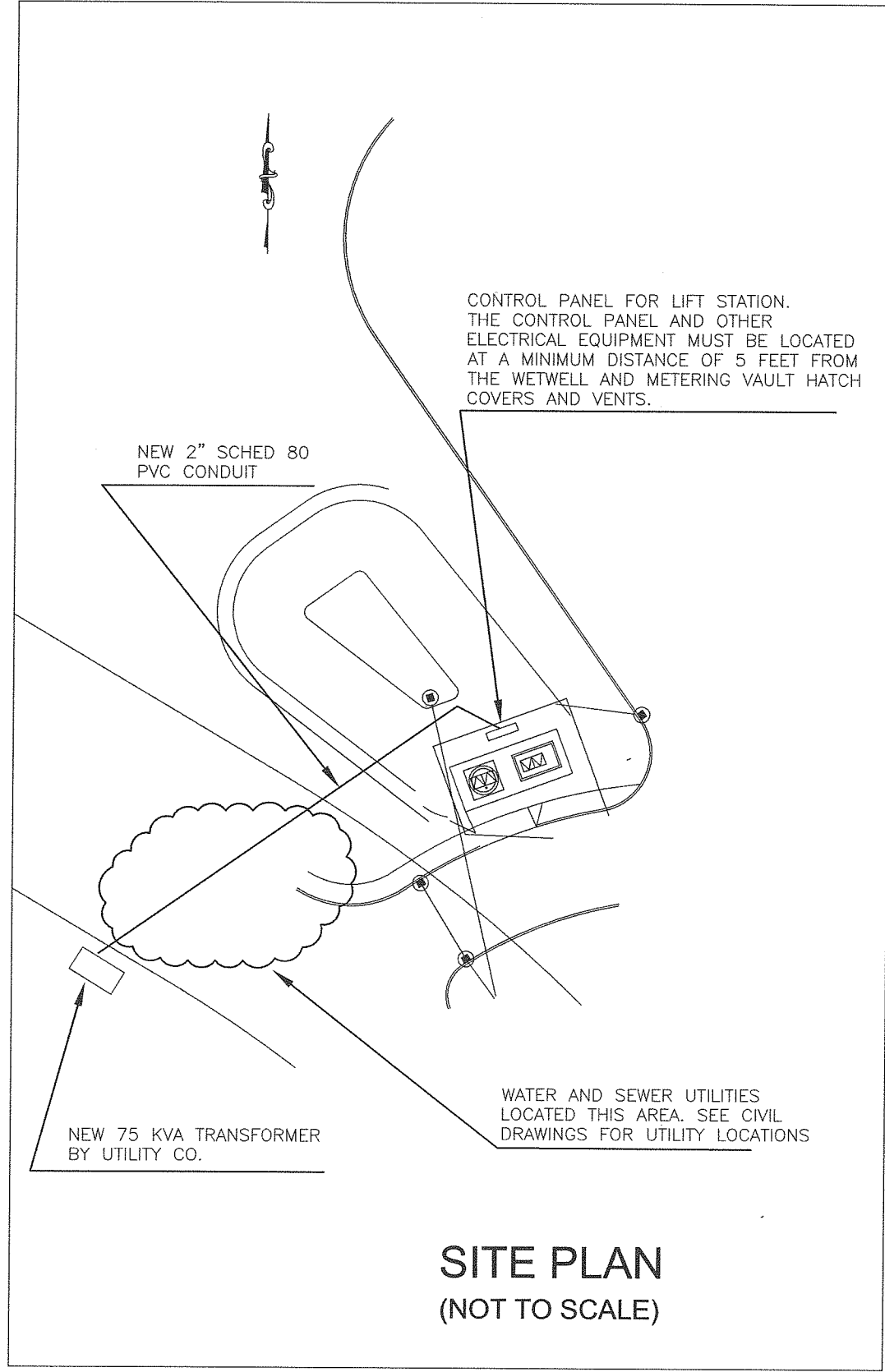
ETOLIN STREET AND ACIS UTILITIES  
 LIFT STATION POWER AND CONTROLS  
 PLC DISCRETE I-0

**BCI**  
 BOREAL CONTROLS, INC.  
 JUNEAU, ALASKA

3100 Channel Dr. Ste. 210N  
 Juneau, AK 99801  
 Phone: 907-586-8367  
 FAX: 907-586-4010

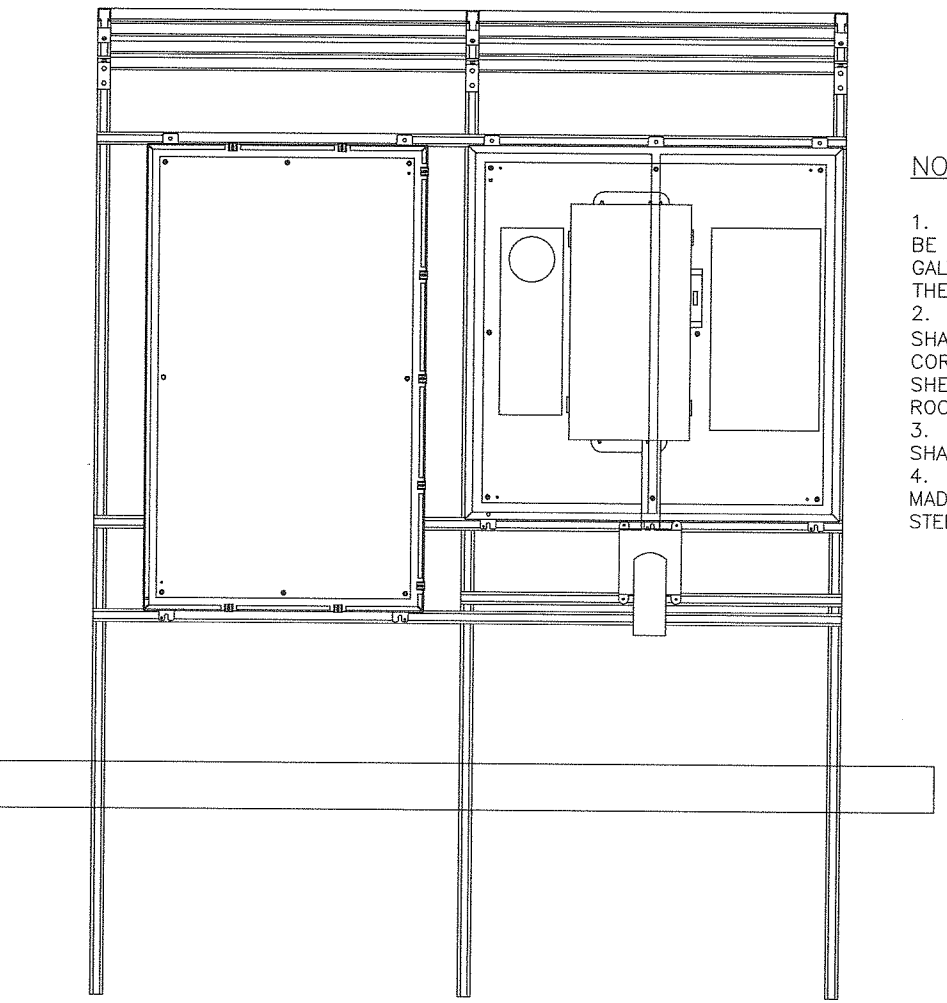
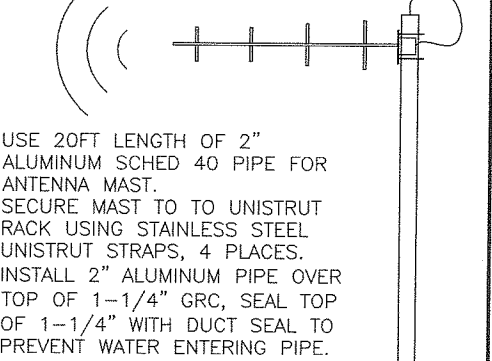


9/26/2011  
 DRAWING 173-06 E-09  
 SHEET No. 9 of X

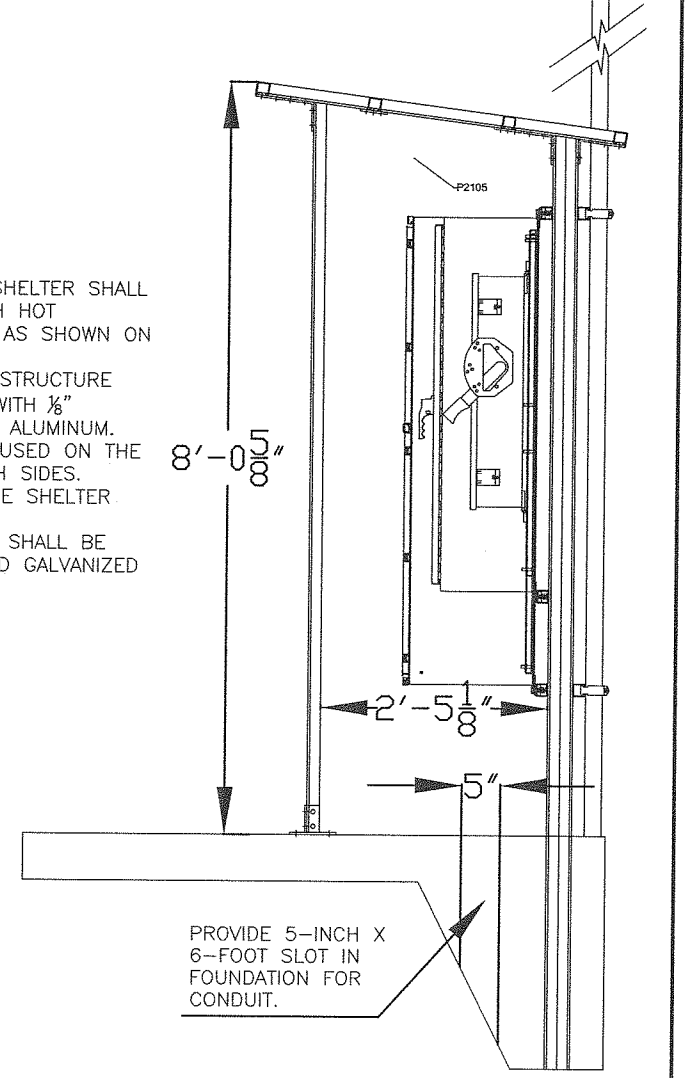


YAGI ANTENNA FOR VHF RADIO. MOUNT WITH DRAIN HOLES POINTED DOWN.

PROVIDE 2 FOOT SERVICE LOOP OF COAX CABLE AT TOP OF ANTENNA MAST



- NOTES:**
1. THE PROTECTIVE SHELTER SHALL BE CONSTRUCTED WITH HOT GALVANIZED UNISTRUT AS SHOWN ON THE DRAWING.
  2. THE SUPPORTING STRUCTURE SHALL BE SHEATHED WITH 1/8" CORROSION RESISTANT ALUMINUM. SHEATHING SHALL BE USED ON THE ROOF, BACK AND BOTH SIDES.
  3. THE FRONT OF THE SHELTER SHALL BE LEFT OPEN.
  4. ALL CONNECTIONS SHALL BE MADE WITH HOT DIPPED GALVANIZED STEEL PARTS.



REV	DATE	BY	DESCRIPTION
0	9/14/2011	SRS	SUBMITTAL

SCALE NONE  
 DESIGNED SRS  
 DRAWN SRS  
 CHECKED GSS  
 DATE SEPTEMBER 14, 2011

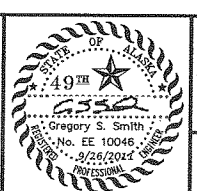
**R&M**  
 R&M ENGINEERING-KETCHIKAN, INC.  
 355 CARLANNA LAKE ROAD  
 KETCHIKAN, ALASKA 99901

CITY AND BOROUGH OF WRANGELL  
 P.O. BOX 531  
 WRANGELL, ALASKA 99929

ETOLIN STREET AND ACIS UTILITIES  
 LIFT STATION POWER AND CONTROLS  
 SITE PLAN AND  
 CONTROL PANEL SHELTER

**BCI**  
 BOREAL CONTROLS, INC.  
 JUNEAU, ALASKA

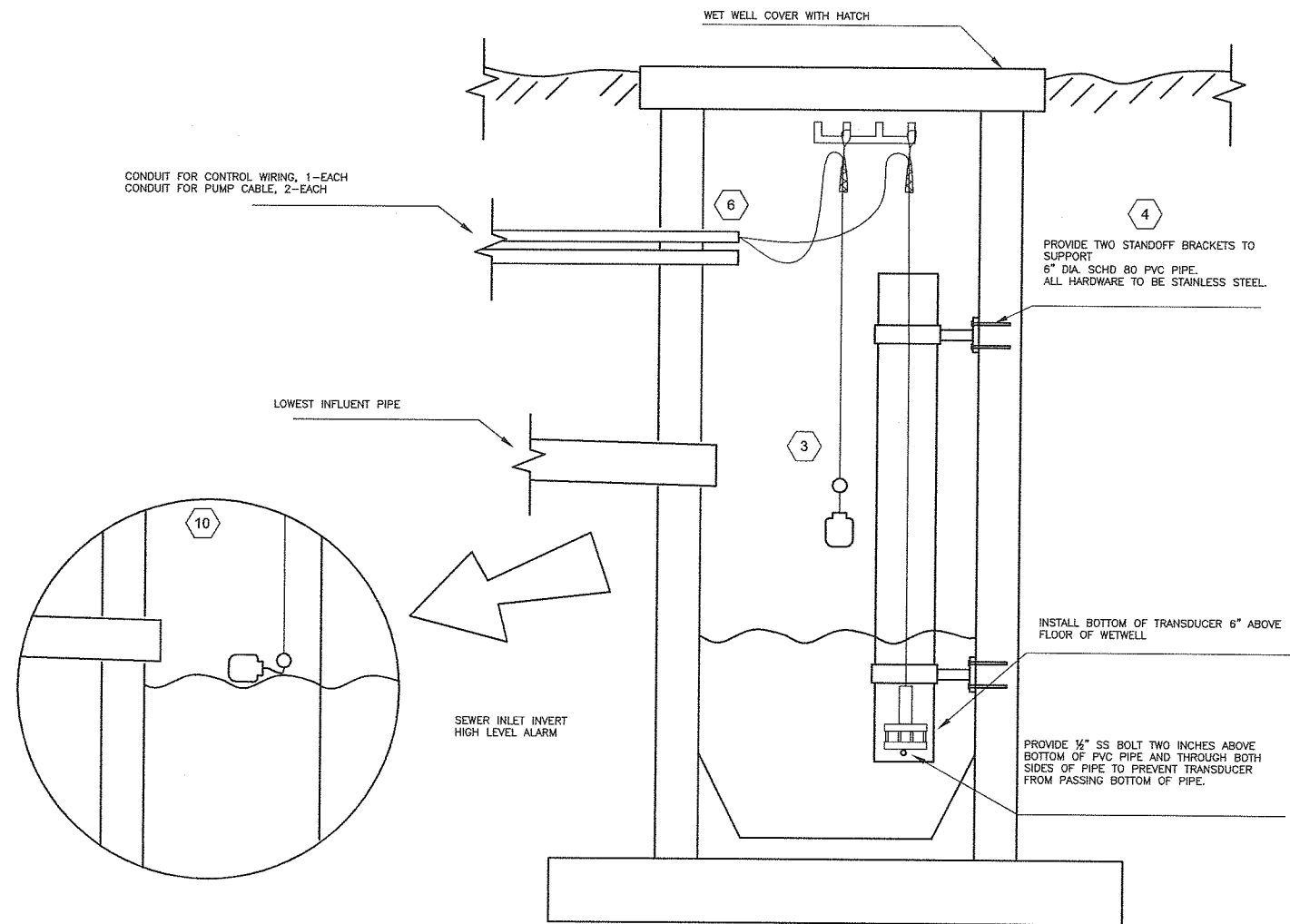
3100 Channel Dr. Ste. 210N  
 Juneau, AK 99801  
 Phone: 907-586-8367  
 FAX: 907-586-4010



9/26/2011  
 DRAWING  
 173-06  
 E-10  
 SHEET No.  
 10 of X



ELEVATION VIEW OF WET WELL SHOWING SENSING EQUIPMENT  
NOT TO SCALE.



GENERAL NOTES:

- 1 USE THIS DETAIL FOR INSTALLATION OF HIGH LEVEL FLOAT AND WELL DEPTH SENSOR.
- 2 FLOAT USES WEIGHT ON CABLE SO THAT IT CAN BE SUSPENDED FROM ABOVE WITHOUT ANY OTHER ATTACHMENT. FLOAT IS NORMALLY OPEN WHEN HANGING AND CLOSED WHEN FLOATING.
- 3 SUSPEND FLOAT SO THAT IT ACTUATES AT A WELL DEPTH SPECIFIED BY CITY OF WRANGELL OPERATORS, GENERALLY JUST BELOW THE INLET PIPE INVERT. SWITCH SHOWN HANGING.
- 4 THE DEPTH SENSOR SHOULD BE PLACED INSIDE A 6 INCH SCHEDULE 80 PVC PIPE. SUPPORT CABLE SO THAT THE ATTACHMENT POINT IS WITHIN EASY REACH FROM THE HATCH.
- 5 DEPTH SENSOR CABLE HAS AN INTEGRAL BREATHER TUBE. SUPPORT CABLE SO THAT IT IS NOT KINKED AND MAINTAINS A MINIMUM BEND RADIUS OF 4 INCHES.
- 6 INSTALL FLOAT SWITCH LEAD AND DEPTH SENSOR CABLE IN CONDUIT SEPARATE FROM PUMP POWER CABLES.
- 7 INSTALL FLOAT SO THAT IT MOVES FREELY AND DOES NOT BECOME ENTANGLED IN OTHER CABLES OR DEVICES IN THE WELL.
- 8 FLOAT SWITCH AND DEPTH SENSOR TO BE PLACED AND SUSPENDED SO THAT THEY MAY BE PULLED UP FROM ABOVE WITHOUT ENTERING THE WELL.
- 9 THE SUBMERSIBLE PUMPS ARE NOT SHOWN FOR CLARITY. MAKE SURE THEY REMAIN COVERED BY LIQUID AT PUMP SHUT OFF LEVEL.
- 10 WEIGHTED TYPE FLOAT SWITCH WILL TYPICALLY ACTUATE WHEN FLOATING HORIZONTALLY. SUSPEND FLOAT SWITCH SO THAT IT ACTUATES WHEN WELL LEVEL IS ALMOST TO LOWEST INFLUENT PIPE INVERT. SET FLOAT HEIGHT AT STATION COMMISSIONING AND WITH APPROVAL OF CITY OF WRANGELL OPERATOR.
- 11 PLEASE SEE SHEET E-10 FOR ADDITIONAL DETAILS RELATING TO CONDUIT AND WIRE ENTRY INTO WET WELL.

REV	DATE	BY	DESCRIPTION
0	9/14/2011	SRS	SUBMITTAL

SCALE NONE  
 DESIGNED SRS  
 DRAWN SRS  
 CHECKED GSS  
 DATE SEPTEMBER 14, 2011

**R&M**  
 R&M ENGINEERING-KETCHIKAN, INC.  
 355 CARLANNA LAKE ROAD  
 KETCHIKAN, ALASKA 99901

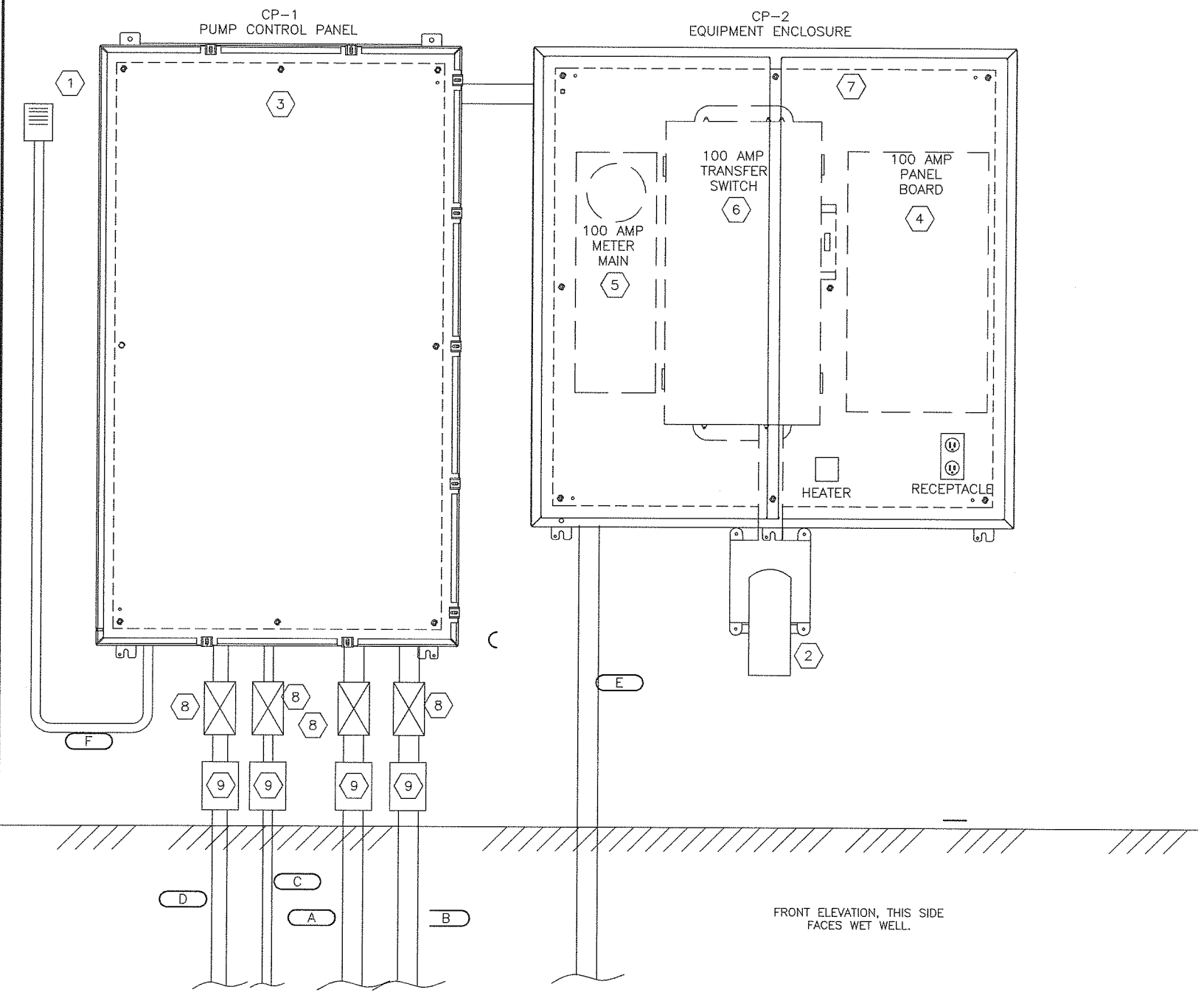
CITY AND BOROUGH OF WRANGELL  
 P.O. BOX 531  
 WRANGELL, ALASKA 99929

ETOLIN STREET AND ACIS UTILITIES  
 LIFT STATION POWER AND CONTROLS  
 WETWELL ELECTRICAL LAYOUT

**BCI**  
 BOREAL CONTROLS, INC.  
 JUNEAU, ALASKA  
 3100 Channel Dr. Ste. 210N  
 Juneau, AK 99801  
 Phone: 907-586-8367  
 FAX: 907-586-4010

Professional Engineer  
 Gregory S. Smith  
 No. EE 10046  
 9/26/2011

9/26/2011  
 DRAWING  
 173-06  
 E-11  
 SHEET No.  
 11 of X



NOTES:

- 1 STROBE TYPE ALARM LIGHT, MOUNTS ON END OF 0.5 INCH RIGID CONDUIT. STROBE HAS PIGTAIL LEADS. NEMA 4X 120V POWER.
- 2 SGENERATOR RECEPTACLE - APPLETON ADJA20034-200.
- 3 CP-1 PUMP CONTROL PANEL.
- 4 PANELBOARD
- 5 100 AMP METER MAIN
- 6 100 AMP TRANSFER SWITCH
- 7 CP-2 ELECTRICAL EQUIPMENT ENCLOSURE
- 8 SEAL-OFF FITTING, SIZE TO CONDUIT (TYP)
- 9 J-BOX (4 PLACES)

CONDUIT NOTES:

- A 2 INCH GRS CONDUIT, PUMP 1 CABLE, ROUTE 18 INCHES UNDER GRADE MIN AND USE SWEEP ELL TO TURN CONDUIT INTO WET WELL, STUB OUT 6 INCHES INTO WELL. SINGLE 1.1" DIA. CABLE CONTAINING ALL POWER AND MOTOR SENSOR CONDUCTORS.
- B 2 INCH GRS CONDUIT, PUMP 2 CABLE, ROUTE 18 INCHES UNDER GRADE MIN AND USE SWEEP ELL TO TURN CONDUIT INTO WET WELL, STUB OUT 6 INCHES INTO WELL. SINGLE 1.1" DIA. CABLE CONTAINING ALL POWER AND MOTOR SENSOR CONDUCTORS.
- C 0.75 INCH GRS CONDUIT, HAS CIRCUITS FOR FLOW METER POWER AND FOR FLOW METER SIGNAL (TWISTED SHIELDED PAIR). (2) #12, (1) #12 GROUND, (1) BELDEN 1120A TWISTED SHIELDED PAIR.
- D 1 INCH GRS CONDUIT, CONTAINS DEPTH SENSOR AND HIGH LEVEL FLOAT CABLES. ROUTE THROUGH J-BOX TO INTRINSICALLY SAFE AREA IN PUMP CONTROL PANEL. USE SWEEP ELL TO TURN CONDUIT INTO WET WELL, STUB OUT 6 INCHES INTO WELL. (2) #12, (1) #12 GROUND, CABLE ATTACHED TO DEPTH SENSOR.
- E 2 INCH GRS/PVC CONDUIT TO UTILITY TRANSFORMER. GRS TO BE USED FROM CP-2 TO DEPTH OF 18 INCHES. USE SCHED 80 PVC FOR REMAINDER OF DISTANCE TO TRANSFORMER. USE 30 INCH COVER WHERE PVC IN ROAD R.O.W. USE 4 EACH #2 CU CONDUCTORS PLUS #2 GROUND.
- F 0.75 INCH GRS CONDUIT TO ALARM STROBE. MOUNT OUTSIDE OF SHELTER. (2) #12, (1) #12 GROUND,

REV	DATE	BY	DESCRIPTION
0	9/14/2011	SRS	SUBMITAL

SCALE NONE  
 DESIGNED SRS  
 DRAWN SRS  
 CHECKED GSS  
 DATE SEPTEMBER 14, 2011

**R&M**  
 R&M ENGINEERING-KETCHIKAN, INC.  
 355 CARLANNA LAKE ROAD  
 KETCHIKAN, ALASKA 99901

CITY AND BOROUGH OF WRANGELL  
 P.O. BOX 531  
 WRANGELL, ALASKA 99929

ETOLIN STREET AND ACIS UTILITIES  
 LIFT STATION POWER AND CONTROLS  
 CONTROL PANEL CONDUITS



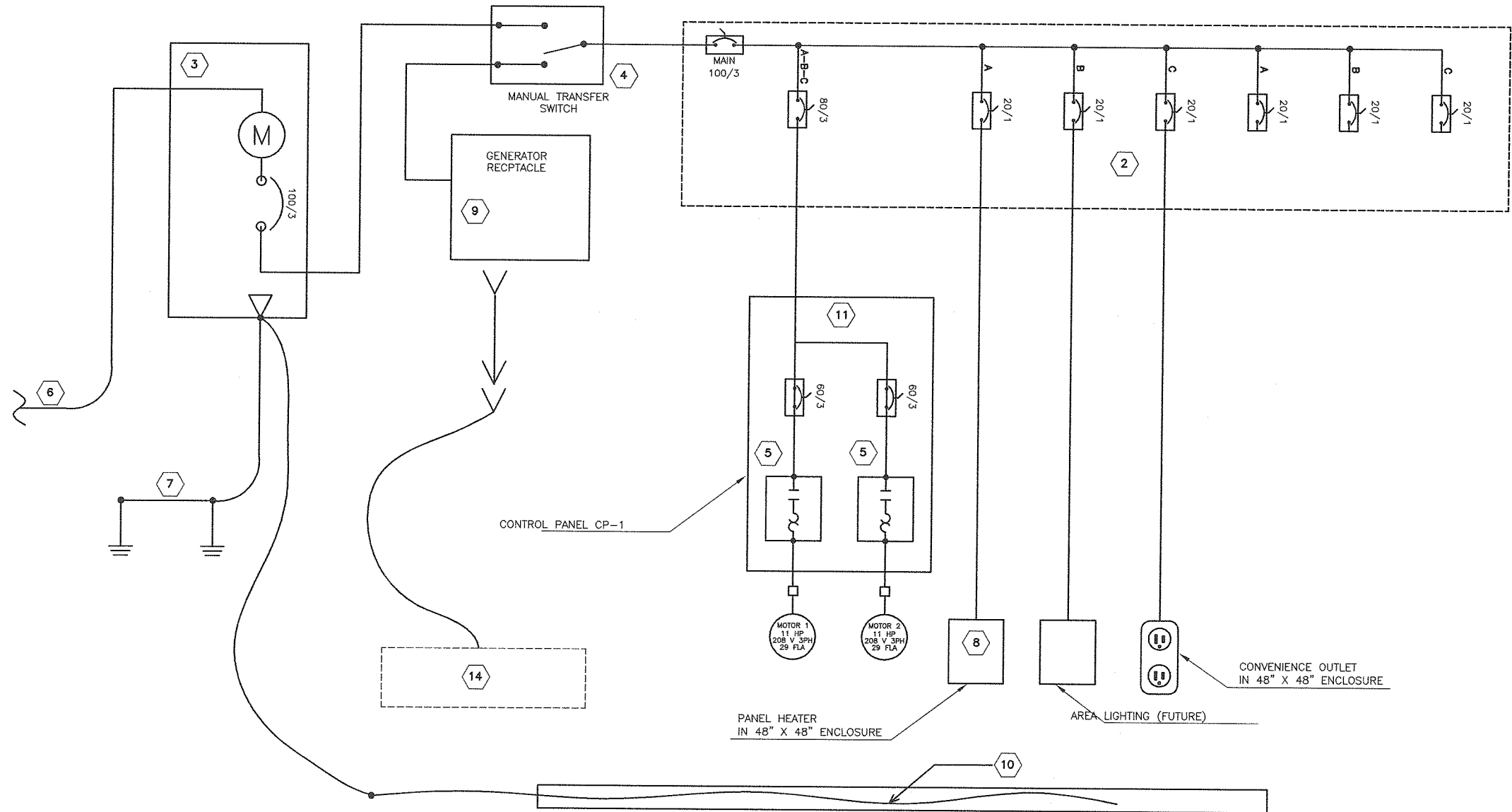
3100 Channel Dr. Ste. 2  
 Juneau, AK 99801  
 Phone: 907-586-8367  
 FAX: 907-586-4010



9/14/2011  
 DRAWING 173-06 E-12  
 SHEET No. 12 of X

**NOTES**

- 0 UNLESS SPECIFICALLY EXCLUDED IN THE CONTRACT DOCUMENTS, ALL EQUIPMENT SHOWN ON THE DRAWINGS INCLUDING CONTROL PANEL CP-1, ENCLOSURE CP-2, TRANSFER SWITCH, PANEL BOARD, METER MAIN, WETWELL AND VAULT SENSORS, GENERATOR RECEPTACLE, ENCLOSURE HEATER, RECEPTACLE, CONDUIT, CONDUIT FITTINGS, HARDWARE, WIRE, STRUT AND GROUND RODS WILL BE FURNISHED BY CONTRACTOR. CONTRACTOR TO MOUNT COMPONENTS AND WIRE TO MAKE A COMPLETE WORKING PUMP STATION. PLC AND SCADA PROGRAMMING WILL BE ACCOMPLISHED BY THE OWNER.
- 1 ALL POWER CONDUCTORS SHALL BE STRANDED COPPER, XHHW-2 INSULATION, EXCEPT GROUND WHICH MAY BE BARE COPPER.
- 2 SQUARE D 100 AMP, 24 SPACE, NEMA 1 SURFACE MOUNT PANEL BOARD MODEL: NQOD424M100CU WITH 100 AMP MAIN CIRCUIT BREAKER. AIC RATING: 10 KAMPS. MOUNTED IN NEMA 4X ENCLOSURE (CP-2)
- 3 NEW TOP FEED METER MAIN: COOPER B-LINE #1M1R7, 7 JAW TOP FEED, NEMA 1 HOUSING WITH 100 AMP MAIN CIRCUIT BREAKER. AIC RATING: 10 KAMPS. MOUNTED IN NEMA 4X ENCLOSURE (CP-2). IF SERVICE CONDUIT IS UNDERGROUND, CONDUCTORS SHOULD BE EXTENDED ALONG THE SIDE OF CP-2 AND ENTER THE METER MAIN AT THE TOP.
- 4 MANUAL TRANSFER SWITCH, SQUARE D DT323 WITH NEUTRAL KIT SNO310, NEMA 1 ENCLOSURE MOUNTED IN STAINLESS STEEL ENCLOSURE (CP-2).
- 5 ALLEN-BRADLEY MOTOR STARTER WITH ELECTRONIC OVERLOAD. 509-COD-A2J. RATED 45 AMPS AT 208 VAC, 3 PHASE
- 6 NEW CONDUIT FROM UTILITY TRANSFORMER TO METER MAIN, 2 IN SCHEDULE 80 PVC BELOW GROUND. CONDUCTORS (#2 AWG Cu or #1/0 COPPER CLAD ALUMINUM, XHHW2 INSULATION) INSTALLED BY CONTRACTOR. TRANSFORMER PROVIDED BY AND INSTALLED BY LOCAL UTILITY. CONNECTIONS AT TRANSFORMER AND METER MAIN BY LOCAL UTILITY CO. CONDUIT SHALL BE BURIED A MINIMUM OF 30 INCHES BELOW GROUND WHEN BELOW ROADWAYS AND SHALL MEET OTHER REQUIREMENTS OF THE LOCAL UTILITY.
- 7 NEW COPPER CLAD STEEL GROUND RODS. TWO, 8 FT COPPER CLAD RODS
- 8 HOFFMAN DAH1001A, 100W HEATER WITH FAN AND THERMOSTAT. MOUNT HEATER NEAR BOTTOM OF CP2.
- 9 GENSET RECEPTACLE, APPLETON ADJA20034-200 INCLUDING MOUNTING BOX.
- 10 20 FT OF #4 COPPER IN SLAB OR 20 FT OF 0.5 INCH RE-BAR IN SLAB, CONNECT TO GROUND IN METER MAIN WITH #8 COPPER.
- 11 CONTROL PANEL CP1 SHALL BE FABRICATED AS SHOWN ON THE DRAWINGS. THE CONTROL PANEL SHALL BE FABRICATED IN A UL 508 SHOP AND SHALL BE UL 508 LISTED FOR EXTENSIONS INTO HAZARDOUS AREAS. THE ENCLOSURE SHALL BE A HOFFMAN TYPE 4X, LOCKABLE STAINLESS STEEL ENCLOSURE 36"x60"x16" WITH AN INTERNAL SWING PANEL.
- 12 ENCLOSURE CP2 SHALL BE A HOFFMAN 2-DOOR, TYPE 4X, LOCKABLE STAINLESS STEEL ENCLOSURE 48"x48"x12". THE METER MAIN, TRANSFER SWITCH, PANEL BOARD, RECEPTACLE AND HEATER SHALL BE MOUNTED IN CP2.
- 13 THE PROTECTIVE SHELTER SHALL BE CONSTRUCTED WITH HOT GALVANIZED UNISTRUT AS SHOWN ON THE DRAWING. THE SUPPORTING STRUCTURE SHALL BE SHEATHED WITH 1/8" ALUMINUM MATERIAL. SHEATHING SHALL BE USED ON THE ROOF, BACK AND BOTH SIDES.
- 14 EXISTING PLUG AND GENSET (FOR REFERENCE).



PANEL BOARD												
	DESCRIPTION	CB	LOAD	A	B	C	LOAD	CB	DESCRIPTION			
1	PUMPS 1&2 (11 HP EACH)	80/3	7800	7900			100	20/1	CP-2 ENCLOSURE HEATER			
3			7000		7500		500	20/1	AREA LIGHTING			
5			7000			7500	500	20/1	RECEPTACLE			
7		BLANK		0				20/1	SPARE			
9		BLANK			0			20/1	SPARE			
11		BLANK				0		20/1	SPARE			
13		BLANK		0				BLANK				
15		BLANK			0			BLANK				
17		BLANK				0		BLANK				
19		BLANK		0				BLANK				
21		BLANK			0			BLANK				
23		BLANK				0		BLANK				
				Φ KVA	7.90	7.50	7.50	PANEL INFORMATION				
				Φ AMPERES	65.83	62.50	62.50	TYPE: SQUARE D NQOD424M100CU				
				TOTAL KVA	22.90				3PH, 4W 208Y/120 100A			
				TOTAL AMPERES	63.61				MAIN CB: 100A / 3			
										PANEL VOLTAGE		
										120/208		

0	9/14/2011	SRS	SUBMITAL
REV	DATE	BY	DESCRIPTION

**RSM**  
**R&M ENGINEERING-KETCHIKAN, INC.**  
 355 CARLANNA LAKE ROAD  
 KETCHIKAN, ALASKA 99901

**CITY AND BOROUGH OF WRANGELL**  
 P.O. BOX 531  
 WRANGELL, ALASKA 99929

**ETOLIN STREET AND ACIS UTILITIES**  
 LIFT STATION POWER AND CONTROLS  
 ONE-LINE ELECTRICAL DIAGRAM

**BCi**  
 BOREAL CONTROLS, INC.  
 JUNEAU, ALASKA

3100 Channel Dr. Ste. 210N  
 Juneau, AK 99801  
 Phone: 907-586-8367  
 FAX: 907-586-4010



9/27/2011  
 DRAWING  
**173-06**  
**E-13**  
 SHEET No.  
 13 of X