

# **Attachment 1**

## **Standard Details and Typical Drawings**

## **NOTICE**

**THE INFORMATION CONTAINED IN THIS DOCUMENT IS PART OF AN APPLICATION FOR A PIPELINE EASEMENT. AGDC MAKES NO REPRESENTATION OR WARRANTY THAT THIS EASEMENT WILL BE GRANTED OR THAT ANY PIPELINE WILL BE AUTHORIZED. ANY ACTION TAKEN OR NOT TAKEN OR EXPENDITURE MADE BY ANY PERSON BASED ON THE INFORMATION INCLUDED HEREIN IS AT HIS OWN RISK AND RESPONSIBILITY AND NO LIABILITY SHALL ARISE AGAINST AGDC AS A CONSEQUENCE THEREOF.**

**Attachment 1 – Standard Details and Typical Drawings**

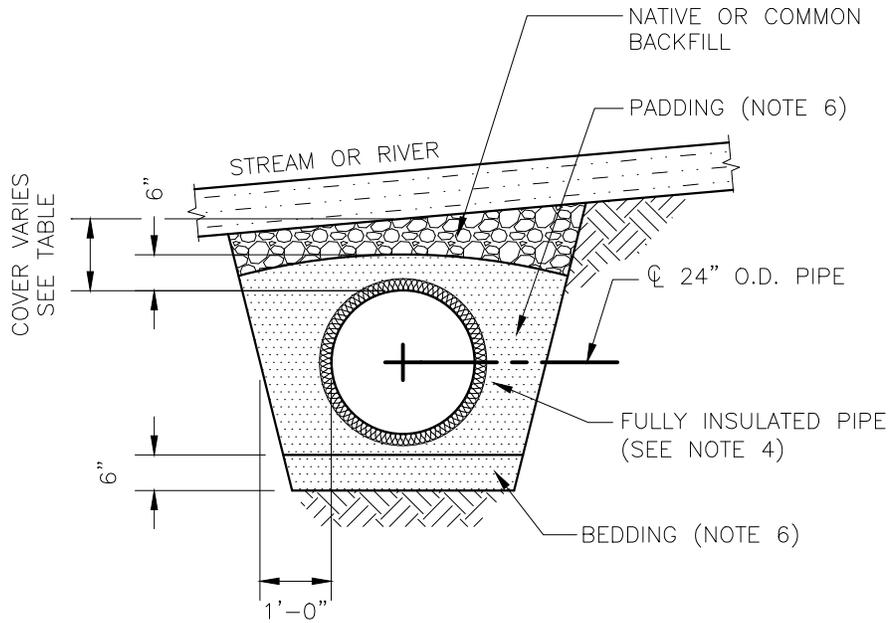
<b>SHEET</b>	<b>TITLE</b>
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DB-ACC-01	Typical Access Road Section
DB-ACC-02	Typical Access Road Plan
	Gas Conditioning Facility Layout
	Compressor Station Typical Layout
	Straddle and Off-Take Facility Layout
	Cook Inlet NGL Extraction Facility











STREAM CROSSING	ASSUMED SCOUR COVER
TYPE A & B	10 FEET
TYPE C	5 FEET

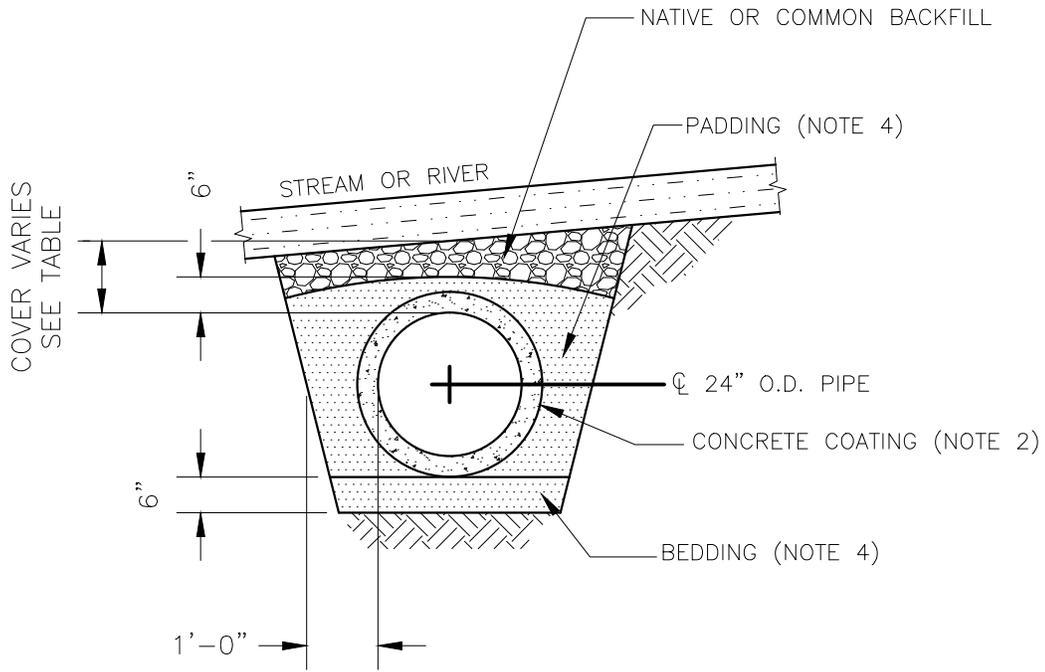
NOTES:

1. MINIMUM DEPTH OF COVER, BUOYANCY CONTROL, AND SCOUR CONSIDERATIONS TO BE DETERMINED. SEE TABLE FOR ASSUMED SCOUR COVER.
2. ASSUME BUOYANCY CONTROL BY SET ON WEIGHTS.
3. DITCH WALL SLOPES WILL BE AS VERTICAL AS FIELD CONDITIONS WILL ALLOW.
4. PIPE INSULATION THICKNESS WILL BE DETERMINED BY GEOTHERMAL ANALYSES.
5. ASSUME 2" INSULATION WITH 0.25 HDPE JACKET.
6. NATIVE SOILS MAY BE USED FOR PADDING AND BEDDING IF THEY MEET THE PADDING AND BEDDING SPECIFICATIONS.
7. DITCH PLUGS WILL BE PLACED ON EACH SIDE OF CROSSING.
8. ASSUME CATHODIC PROTECTION USING ANODES.



MODE V – STREAM OR RIVER CROSSING  
 BURIED INSULATED PIPE  
 ALASKA STAND ALONE GAS PIPELINE PROJECT

DRAWING DATE:	PLOT DATE:	SCALE:	SHEET No.
3/01/10	8/17/2010	NTS	DB-MODE-05



STREAM CROSSING	ASSUMED SCOUR COVER
TYPE A & B	10 FEET
TYPE C	5 FEET

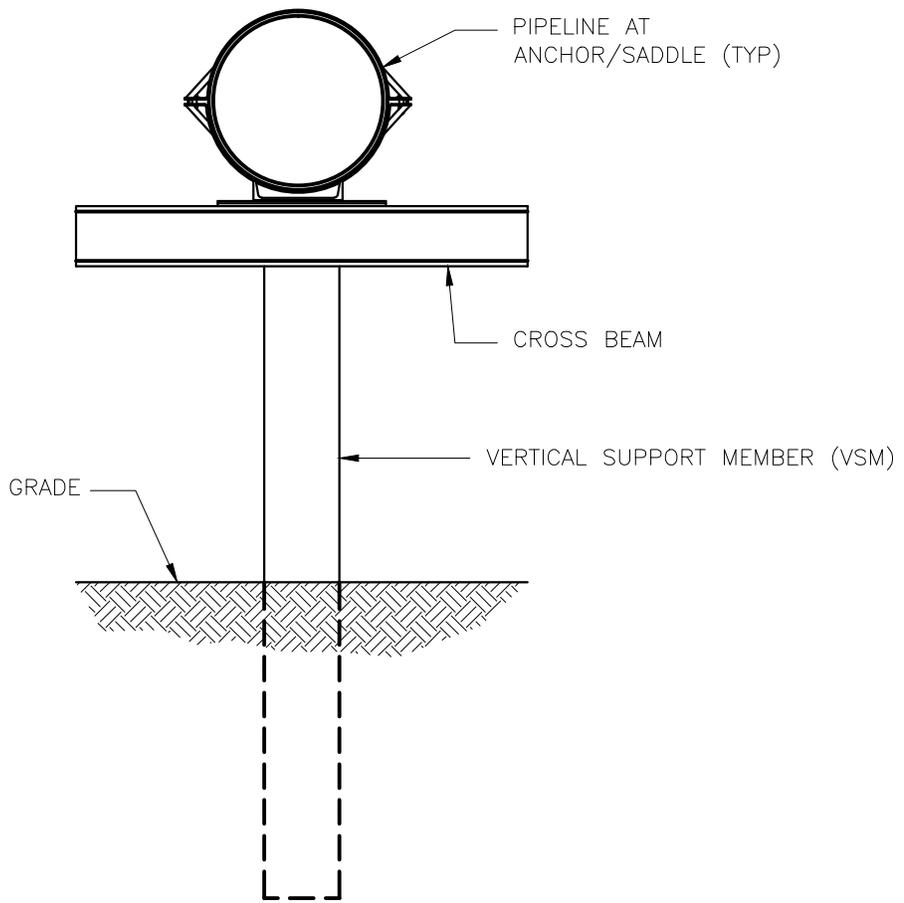
NOTES:

1. MINIMUM DEPTH OF COVER, BUOYANCY CONTROL, AND SCOUR CONSIDERATIONS TO BE DETERMINED. SEE TABLE FOR ASSUMED SCOUR COVER.
2. ASSUME 2.5" CONCRETE COATING FOR BUOYANCY CONTROL.
3. DITCH WALL SLOPES WILL BE AS VERTICAL AS FIELD CONDITIONS WILL ALLOW.
4. NATIVE SOILS MAY BE USED FOR PADDING AND BEDDING IF THEY MEET THE PADDING AND BEDDING SPECIFICATIONS FOR CONCRETE COATED PIPE.
5. DITCH PLUGS WILL BE PLACED ON EACH SIDE OF CROSSING.
6. FOR STREAMS OR RIVERS WHERE NO ANTICIPATED ADVERSE EFFECTS ARE EXPECTED DUE TO A BURIED CHILLED GAS PIPE OR AUFELS DEVELOPMENT.

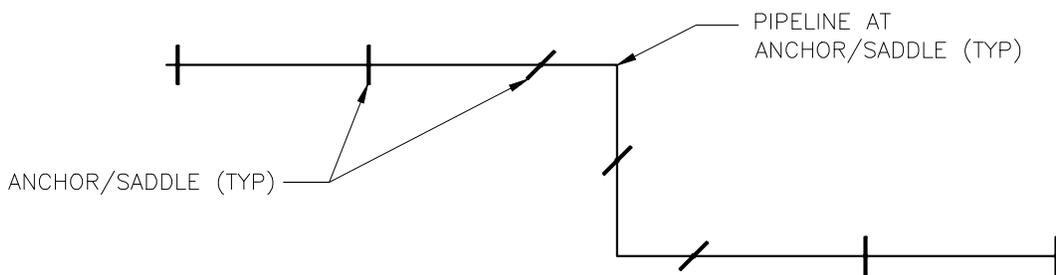


MODE VI – STREAM OR RIVER CROSSING  
 BURIED UNINSULATED PIPE  
 ALASKA STAND ALONE GAS PIPELINE PROJECT

<b>DRAWING DATE:</b> 3/01/10	<b>PLOT DATE:</b> 8/17/2010	<b>SCALE:</b> NTS	<b>SHEET No.</b> DB-MODE-06
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TYPICAL EXPANSION LOOP SECTION



TYPICAL EXPANSION LOOP PLAN VIEW

P:\117293 - DB-Mode VII - Stand Alone Gas Pipeline Project Description (Gasline) - 10-1005-07.dwg



MODE VII – ABOVE GROUND ON VSM  
ALASKA STAND ALONE GAS PIPELINE PROJECT

DRAWING DATE: 3/01/10	PLOT DATE: 8/17/2010	SCALE: NTS	SHEET No. DB-MODE-07
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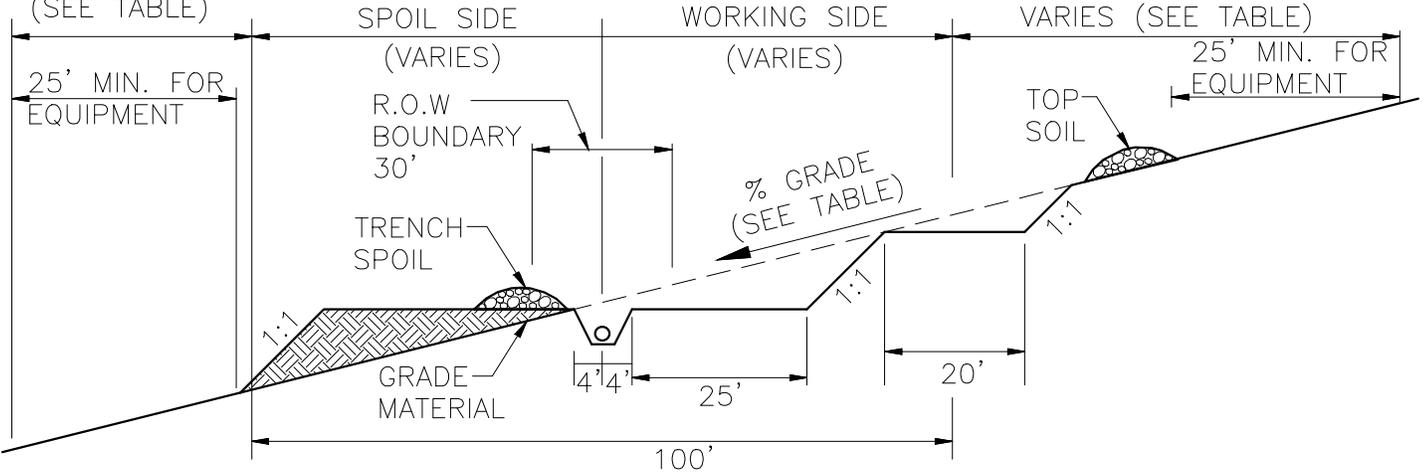








EXTRA TEMPORARY  
WORK SPACE VARIES  
(SEE TABLE)



EXTRA TEMPORARY  
WORK SPACE  
VARIES (SEE TABLE)

25' MIN. FOR  
EQUIPMENT

**TYPICAL SECTION**

TWO TONED ROW  
25% GRADE AS DRAWN

CROSS SLOPE	CUT cu.yd	TRENCH SPOIL cu.yd	ETWS		TOTAL DISTURBANCE
			Spoil side	Working side	
%	1:1		1:1		1:1
25%	9.29	1.10	30'	50'	180'
24%	8.80	1.10	30'	50'	180'
22%	7.85	1.10	30'	50'	180'
20%	6.95	1.10	30'	45'	175'
18%	6.15	1.10	30'	40'	170'
16%	5.30	1.10	25'	40'	165'
14%	4.55	1.10	25'	40'	165'
12%	3.80	1.10	25'	40'	165'
10%	3.10	1.10	25'	40'	165'
8%	2.45	1.10	20'	40'	160'
6%	1.75	1.10	20'	35'	155'
4%	1.15	1.10	20'	35'	155'
2%	0.55	1.10	20'	30'	150'

\* 15% SWELL / BULK NOT INCLUDED.

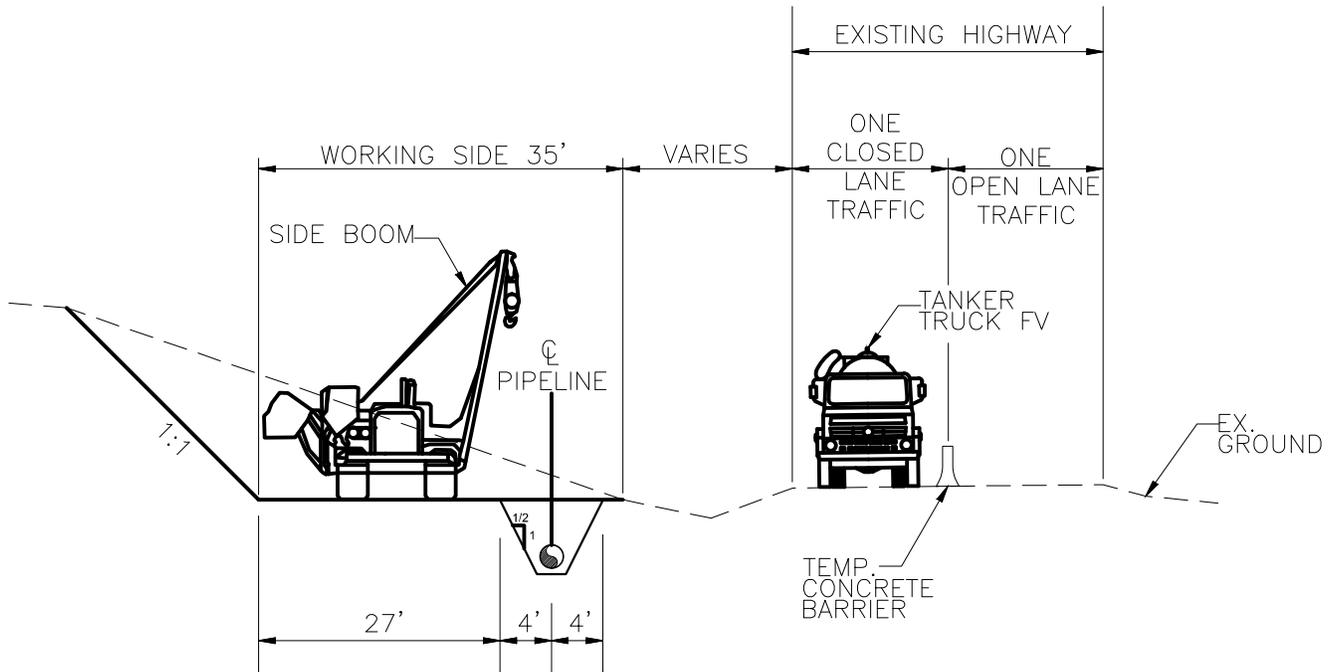


**Baker**

Michael Baker Jr., Inc.

TYPICAL RIGHT OF WAY (TWO TONED)  
FOR SIDE HILL CUTS  
ALASKA STAND ALONE GAS PIPELINE PROJECT

DRAWING DATE:	PLOT DATE:	SCALE:	SHEET No.
3/01/10	8/17/2010	NTS	DB-ROW-04A



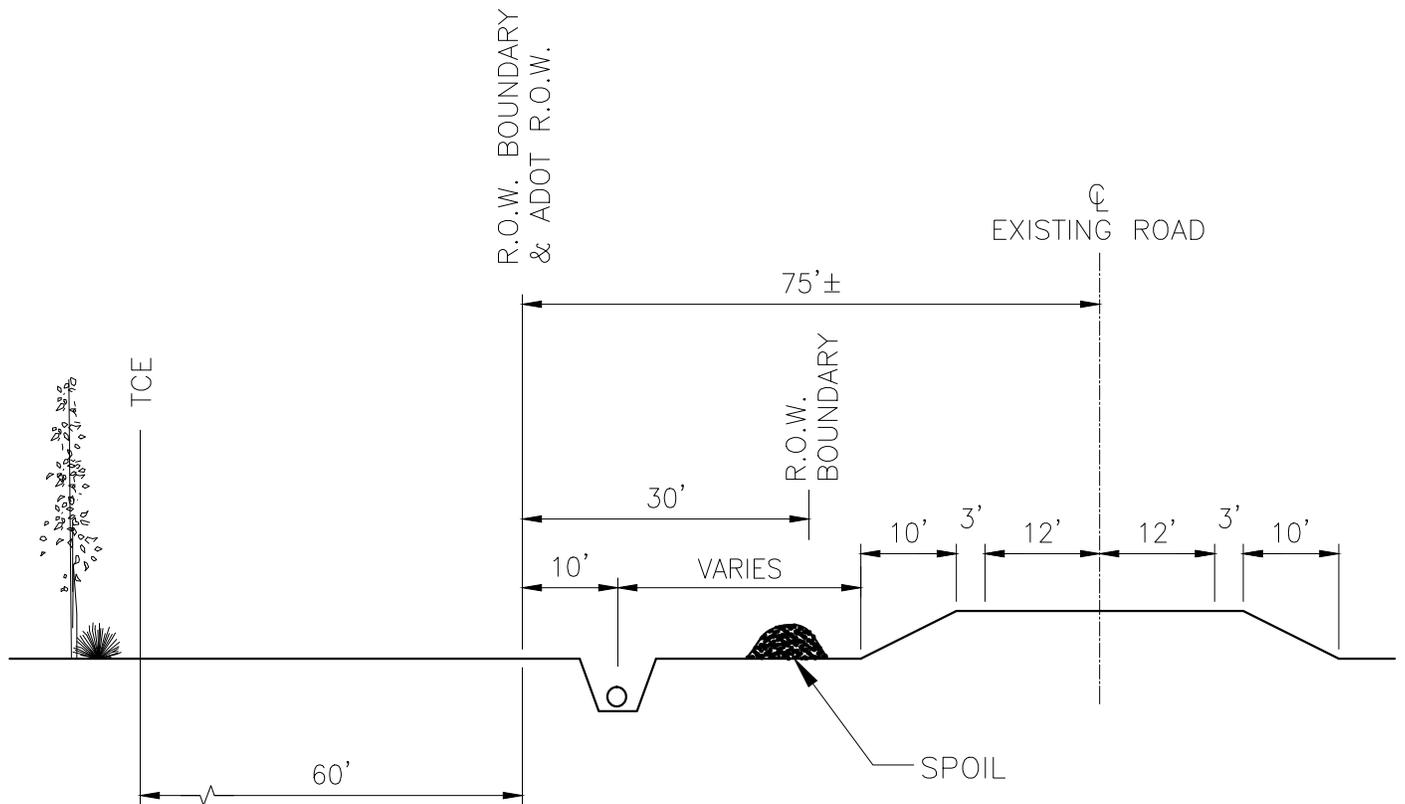
NOTES

1. CROSS SECTION BASED ON:
  - NO TOPSOIL STRIPPING REQUIRED
  - TRENCH OVER-EXCAVATION: 6" FOR PADDING
  - DEPTH OF COVER: 36" - CLASS 1; 42" - CLASS 2,3,4
  - TRENCH SLOPE: 0.50H:1V
  - TRENCH SPOIL BULK FACTOR: 15%
  - TRENCH SPOIL SLOPE: 1H:1V
2. DEPTH OF COVER MEASURED FROM TOP OF PIPE TO EXISTING GRADE.









NOTES

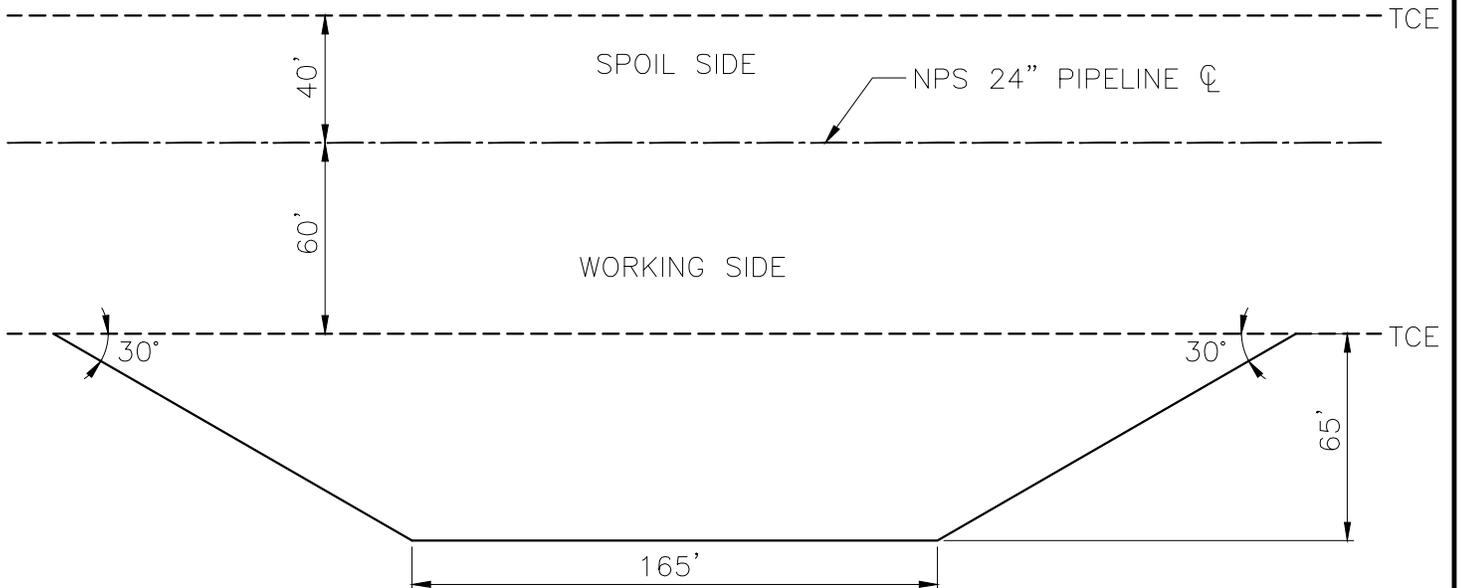
1. CROSS SECTION BASED ON:
  - NO TOPSOIL STRIPPING REQUIRED
  - TRENCH OVER-EXCAVATION: 6" FOR PADDING
  - DEPTH OF COVER: 52" - CLASS 1; 52" - CLASS 2,3,4
  - TRENCH SLOPE: 0.25H:1V
  - TRENCH SPOIL BULK FACTOR: 15%
  - TRENCH SPOIL SLOPE: 1H:1V
  - TOPSOIL BULK FACTOR: 15%
  - TOPSOIL SLOPE: 2H:1V
2. DEPTH OF COVER MEASURED FROM TOP OF PIPE TO EXISTING GRADE.
3. ROADWAY ALIGNMENT MAY VARY WITHIN THE R.O.W.



TYPICAL RIGHT OF WAY  
FOR ENCROACHMENT  
ALASKA STAND ALONE GAS PIPELINE PROJECT

DRAWING DATE:	PLOT DATE:	SCALE:	SHEET No.
3/01/10	8/17/2010	NTS	DB-ROW-08

P:\117293 - DB-ROW-09 - Alaska Gas Line\Work Products\Project Description (Grids)\Grids\Grids\117293-09 - DB-ROW-09.dwg

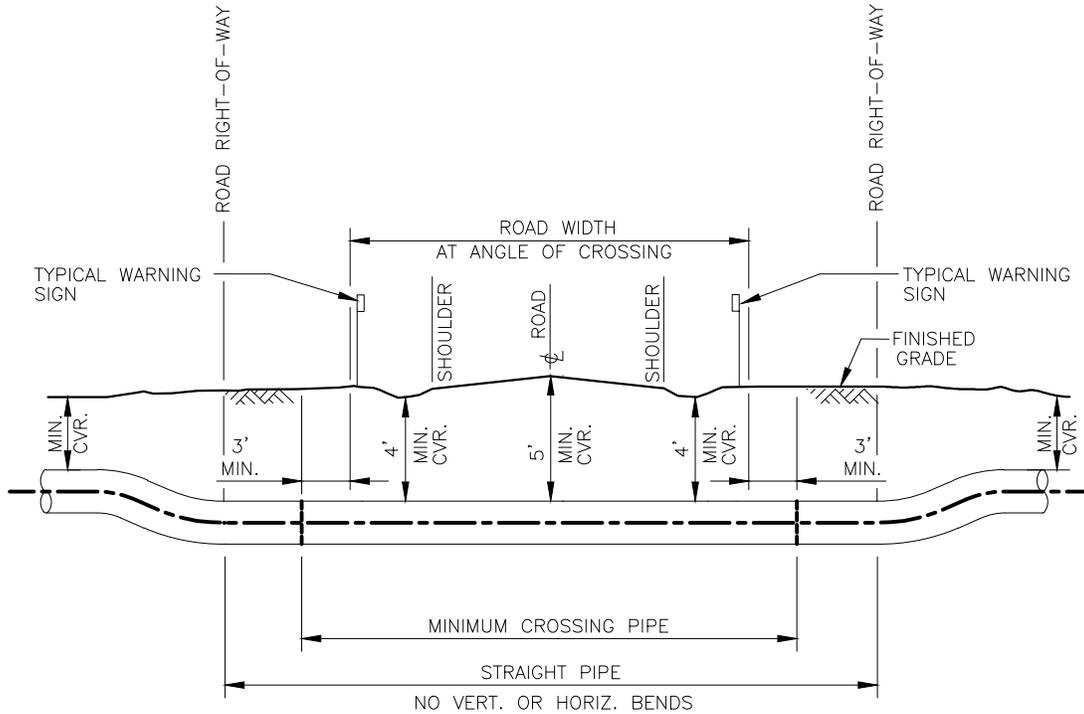


NOTES:

- 1. TURN AROUNDS WILL BE PLACED AT EVERY MILE AS REQUIRED.
- 2. TOPOGRAPHY WILL DICTATE THE EXACT LOCATION OF THE TURN AROUNDS.



RIGHT OF WAY TURN AROUNDS ALASKA STAND ALONE GAS PIPELINE PROJECT			
<b>DRAWING DATE:</b> 3/01/10	<b>PLOT DATE:</b> 8/17/2010	<b>SCALE:</b> NTS	<b>SHEET No.</b> DB-ROW-09



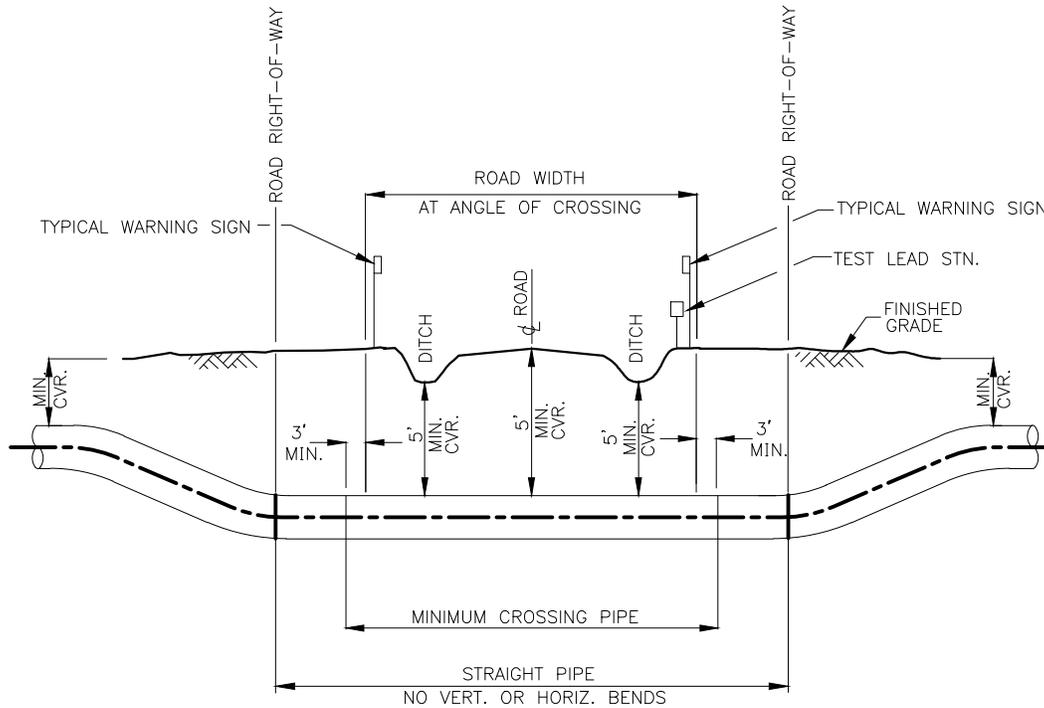
**NOTES:**

1. LOCAL ROAD, TYPICALLY A MINOR 2 LANE PAVED OR UNPAVED ROAD WITH SMALL SHOULDERS AND DITCHES. INCLUDES STATE & BOROUGH ROADS, PRIVATE, LEASE OR ACCESS ROADS. ASSUME 10' LANES, 2' SHOULDERS AND 10' DITCHES. TYPICAL CROSSING PIPE LENGTH FOR LOCAL ROAD = 50' AT 90° CROSSING ANGLE.
2. CROSSING SHALL BE CONSTRUCTED BY OPEN CUT METHOD, UNLESS OTHERWISE SPECIFIED. ALL TAPS PUMP STATION ACCESS ROADS SHALL BE BORED.
3. FOR TYPICAL EXTRA TEMPORARY WORKSPACE SEE DRAWING SD-ROW-05.
4. THE CONSTRUCTED PIPELINE SHALL BE STRAIGHT WITH NO VERTICAL OR HORIZONTAL BENDS BETWEEN ROAD RIGHT-OF-WAY BOUNDARYS.



ROAD CROSSINGS  
LOCAL ROADS  
ALASKA STAND ALONE GAS PIPELINE PROJECT

<b>DRAWING DATE:</b> 3/01/10	<b>PLOT DATE:</b> 8/17/2010	<b>SCALE:</b> NTS	<b>SHEET No.</b> DB-XING-01
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**NOTES:**

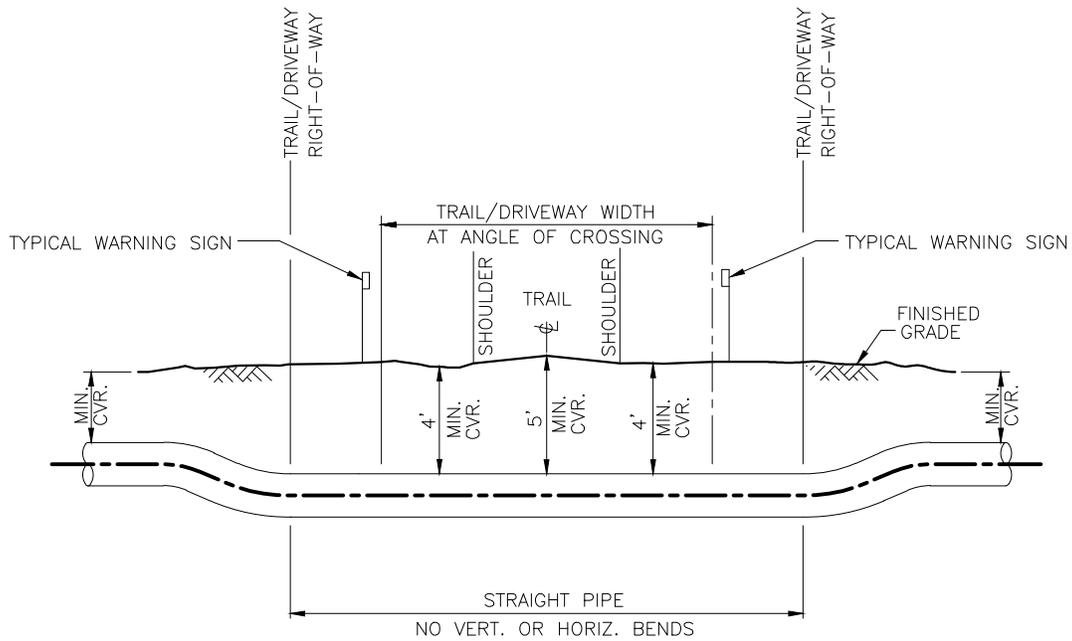
1. ARTERIAL ROAD, TYPICALLY A 2 OR 4 LANE PAVED, UNDIVIDED OR DIVIDED HIGHWAY WITH SHOULDERS AND DITCHES. INCLUDES THE DALTON, ELLIOT AND PARKS HIGHWAYS. TYPICAL CROSSING PIPE LENGTH FOR 4 LANE ARTERIAL ROAD = 160' AT 90° CROSSING. TYPICAL CROSSING PIPE LENGTH FOR 2 LANE ARTERIAL ROAD = 80' AT 90° CROSSING.
2. COLLECTOR ROAD TYPICALLY A 2 LANE UNPAVED OR PAVED, UNDIVIDED HIGHWAY WITH SHOULDERS AND DITCHES. INCLUDES STATE HIGHWAY, U.S. HIGHWAY AND BOROUGH ROADS. TYPICAL CROSSING PIPE LENGTH FOR SECONDARY ROAD = 80' AT 90° CROSSING.
3. MEDIAN AND ADDITIONAL 2 LANES FOR ARTERIAL ROAD, NOT SHOWN. ASSUME 12' LANES, 4' SHOULDERS, 20' DITCHES, 50' MEDIAN (ARTERIAL ONLY)
4. CROSSING SHALL BE CONSTRUCTED USING BORE METHOD UNLESS OTHERWISE SPECIFIED.
5. THE CONSTRUCTED PIPELINE SHALL BE STRAIGHT WITH NO VERTICAL OR HORIZONTAL BENDS BETWEEN ROAD RIGHT-OF-WAY BOUNDARIES.
6. FOR TYPICAL EXTRA TEMPORARY WORKSPACE FOR ARTERIAL AND COLLECTOR ROAD CROSSINGS SEE DRAWING SD-ROW-05.



**ROAD CROSSINGS**  
**ARTERIAL/COLLECTOR ROADS**  
**ALASKA STAND ALONE GAS PIPELINE PROJECT**

<b>DRAWING DATE:</b> 3/01/10	<b>PLOT DATE:</b> 8/17/2010	<b>SCALE:</b> NTS	<b>SHEET No.</b> DB-XING-02
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P:\117293 - DRG Alaska Gas Line\Work Products\Project Description (Gasline)\CAD\Title Block Drawing\117293-02.dwg



**NOTES:**

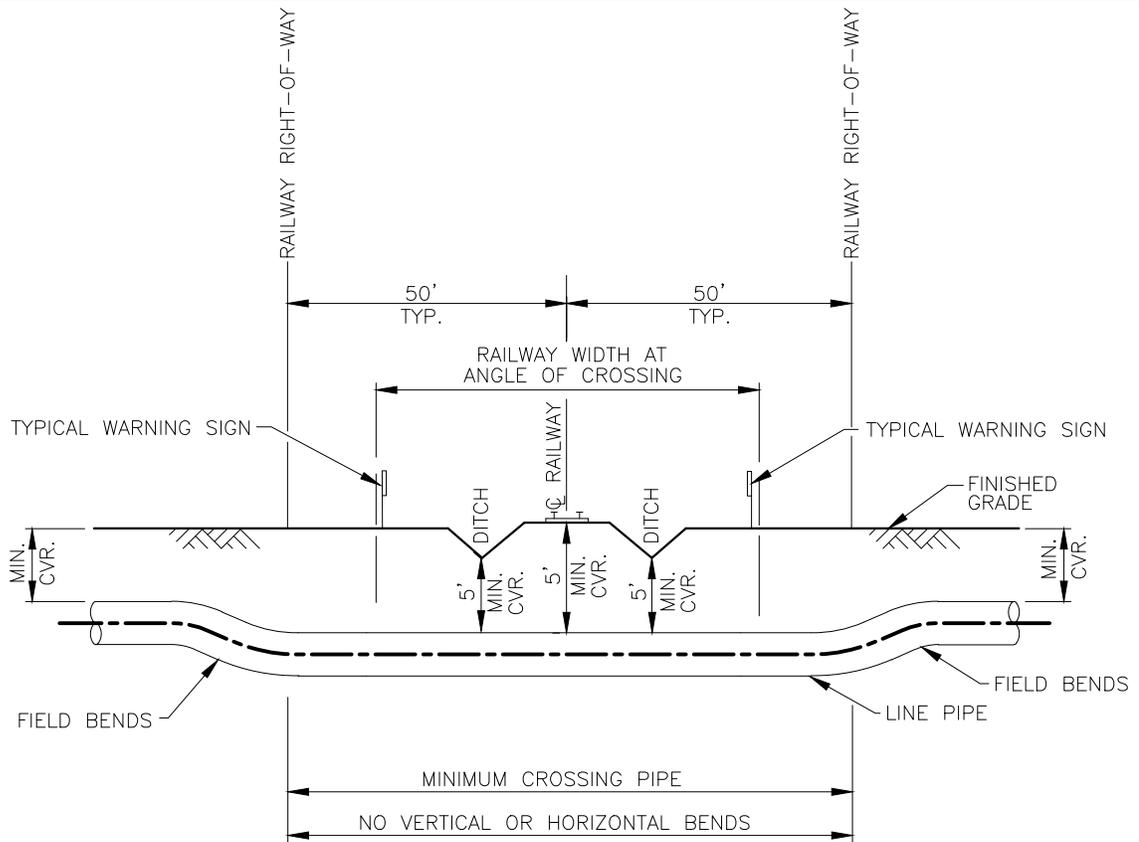
1. TRAIL/DRIVEWAY CROSSINGS SHALL BE CONSTRUCTED BY OPEN CUT METHOD, UNLESS OTHERWISE SPECIFIED.
2. FOR EXTRA TEMPORARY WORKSPACE, SEE DRAWING SD-ROW-05.
3. ASSUME A 20' TRAIL/DRIVEWAY WIDTH AT 90°.
4. THE CONSTRUCTED PIPELINE SHALL BE STRAIGHT WITH NO VERTICAL OR HORIZONTAL BENDS BETWEEN TRAIL/DRIVEWAY RIGHT-OF-WAY.



Michael Baker Jr., Inc.

ROAD CROSSINGS  
TRAILS/DRIVEWAYS  
ALASKA STAND ALONE GAS PIPELINE PROJECT

<b>DRAWING DATE:</b> 3/01/10	<b>PLOT DATE:</b> 8/17/2010	<b>SCALE:</b> NTS	<b>SHEET No.</b> DB-XING-03
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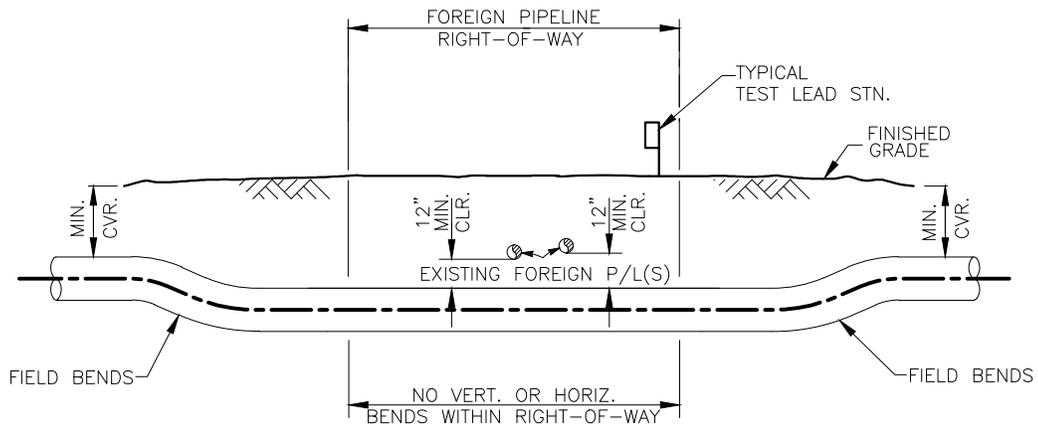
**NOTES:**

1. ALL RAILWAY CROSSINGS SHALL BE BORED.
2. THE CONSTRUCTED PIPELINE SHALL BE STRAIGHT WITH NO VERTICAL OR HORIZONTAL BENDS BETWEEN RAILWAY RIGHT-OF-WAY.
3. ASSUMED CROSSING PIPE LENGTH= 120' TO ALLOW FOR SKEWED CROSSINGS.



ROAD CROSSINGS  
RAILWAY CROSSING  
ALASKA STAND ALONE GAS PIPELINE PROJECT

<b>DRAWING DATE:</b> 3/01/10	<b>PLOT DATE:</b> 8/17/2010	<b>SCALE:</b> NTS	<b>SHEET No.</b> DB-XING-04
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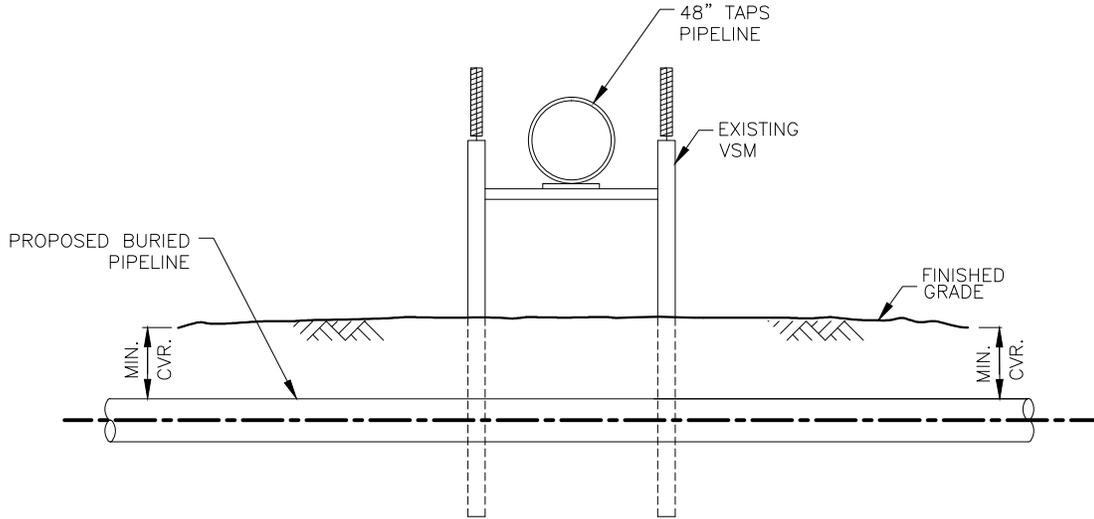
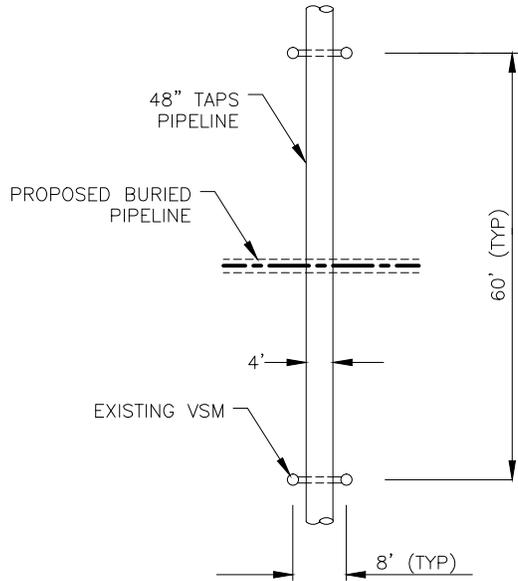
NOTE:

1. FOREIGN PIPELINE LOCATIONS & DEPTHS TO BE DETERMINED IN ADVANCE OF PIPELINE CONSTRUCTION AND CONFIRMED BY EXPOSING THE FOREIGN PIPELINES.
2. SEE DB-XING-06 & DB-XING-07 FOR TAPS PIPELINE CROSSINGS.



FOREIGN PIPELINE CROSSINGS  
ALASKA STAND ALONE GAS PIPELINE PROJECT

<b>DRAWING DATE:</b> 3/01/10	<b>PLOT DATE:</b> 8/17/2010	<b>SCALE:</b> NTS	<b>SHEET No.</b> DB-XING-05
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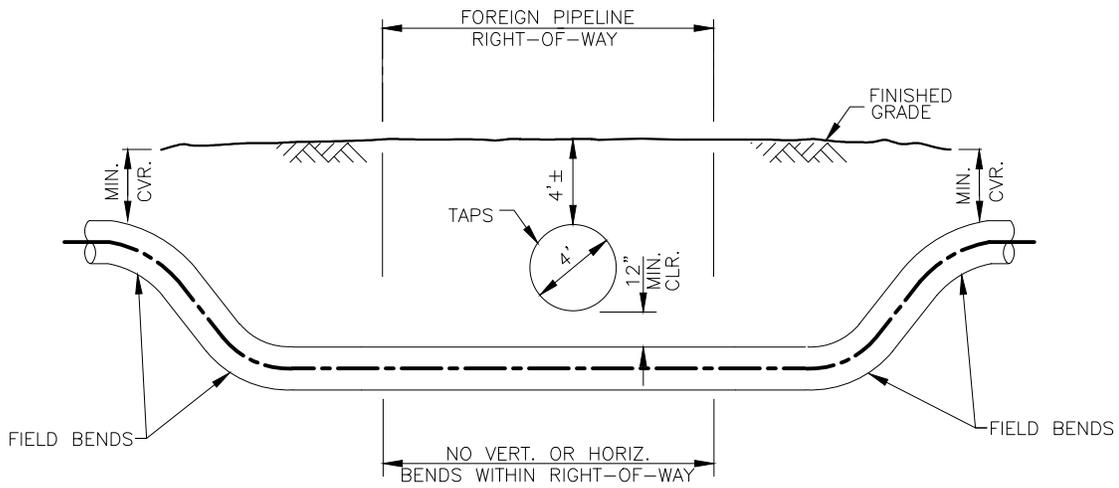
NOTE:

1. ALIGNMENT SHALL BISECT VSM BENTS WHERE POSSIBLE.



FOREIGN PIPELINE CROSSINGS  
TAPS ABOVE GROUND  
ALASKA STAND ALONE GAS PIPELINE PROJECT

<b>DRAWING DATE:</b> 3/01/10	<b>PLOT DATE:</b> 8/17/2010	<b>SCALE:</b> NTS	<b>SHEET No.</b> DB-XING-06
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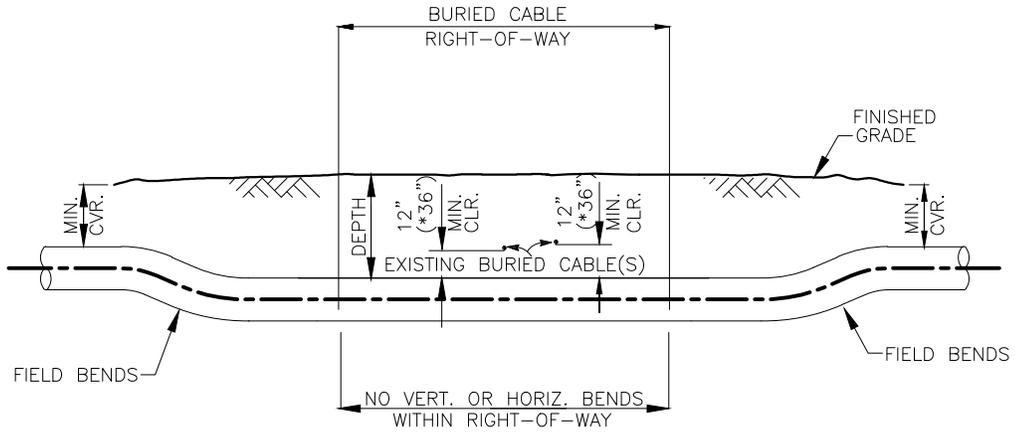
NOTE:

1. FOREIGN PIPELINE LOCATIONS & DEPTHS TO BE DETERMINED IN ADVANCE OF PIPELINE CONSTRUCTION AND CONFIRMED BY EXPOSING THE FOREIGN PIPELINES.
2. MIN. CLEAR SPACING ASSUMED 12" (MIN. CODE REQUIREMENT) ALYESKA MAY REQUIRE MORE FOR TAPS.



FOREIGN PIPELINE CROSSINGS  
TAPS BELOW GROUND  
ALASKA STAND ALONE GAS PIPELINE PROJECT

<b>DRAWING DATE:</b> 3/01/10	<b>PLOT DATE:</b> 8/17/2010	<b>SCALE:</b> NTS	<b>SHEET No.</b> DB-XING-07
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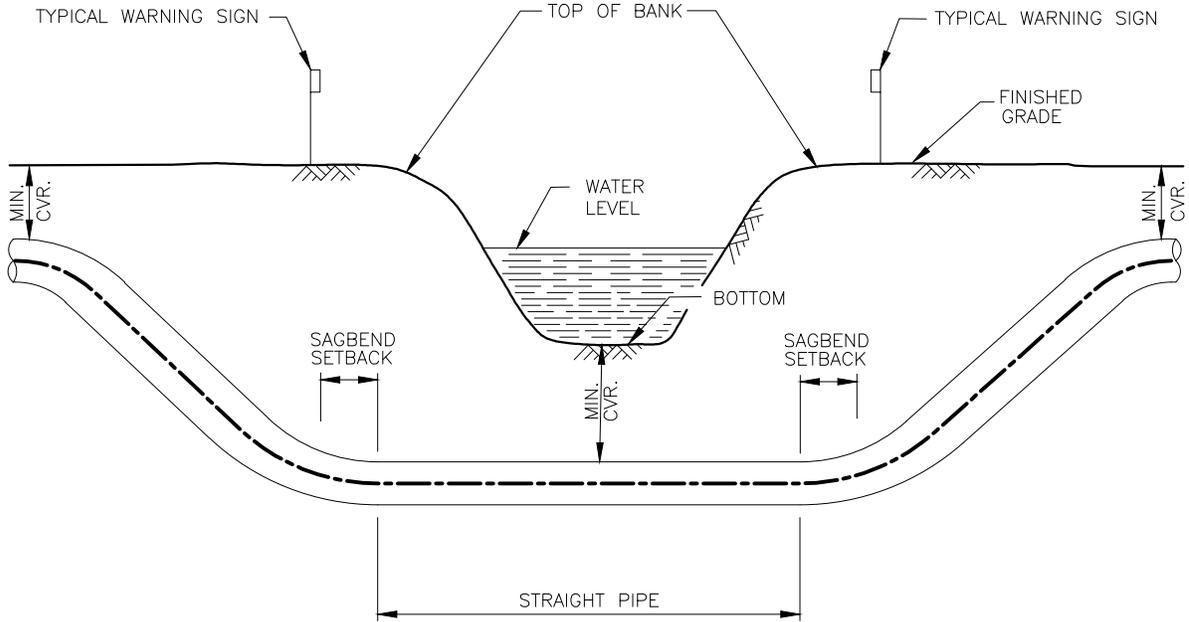
NOTE:

1. BURIED CABLE LOCATIONS & DEPTHS TO BE DETERMINED IN ADVANCE OF PIPELINE CONSTRUCTION AND CONFIRMED BY EXPOSING THE BURIED CABLES.
2. \* MINIMUM CLEARANCE SHALL BE 36" WHERE THE PIPELINE CROSSES UNINSULATED PRIMARY ELECTRICAL CROSSINGS.



BURIED CABLE CROSSINGS  
ALASKA STAND ALONE GAS PIPELINE PROJECT

DRAWING DATE:	PLOT DATE:	SCALE:	SHEET No.
3/01/10	8/17/2010	NTS	DB-XING-08



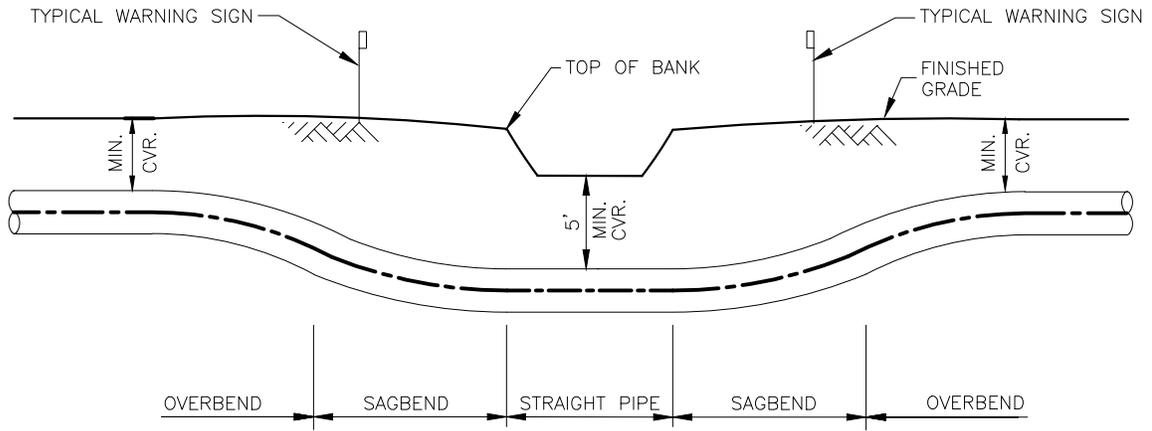
NOTES:

1. WATERBODY CROSSINGS WILL BE INSTALLED BY THE OPEN-CUT METHOD, UNLESS OTHERWISE NOTED.
2. BUOYANCY CONTROL REQUIREMENTS, MINIMUM COVER AND SAGBEND SETBACK TO BE DETERMINED DURING DETAILED ENGINEERING.
3. FOR PHASE 1 ESTIMATE ASSUME MINIMUM COVER = 10'.
4. TYPE A & B STREAMS WILL REQUIRE SITE SPECIFIC DESIGNS.

P:\117293 - DB-ALaska Gas Line\Work Products\Project Description (Gasline)\CADD\Title\Drawings\117293-09 - DB-XING-09.dwg



WATERBODY CROSSINGS TYPE A & B STREAMS ALASKA STAND ALONE GAS PIPELINE PROJECT			
DRAWING DATE:	PLOT DATE:	SCALE:	SHEET No.
3/01/10	8/17/2010	NTS	DB-XING-09



NOTES:

1. WATER CROSSING WILL BE INSTALLED BY THE OPEN-CUT METHOD.
2. BUOYANCY CONTROL REQUIREMENTS TO BE DETERMINED DURING DETAILED ENGINEERING.

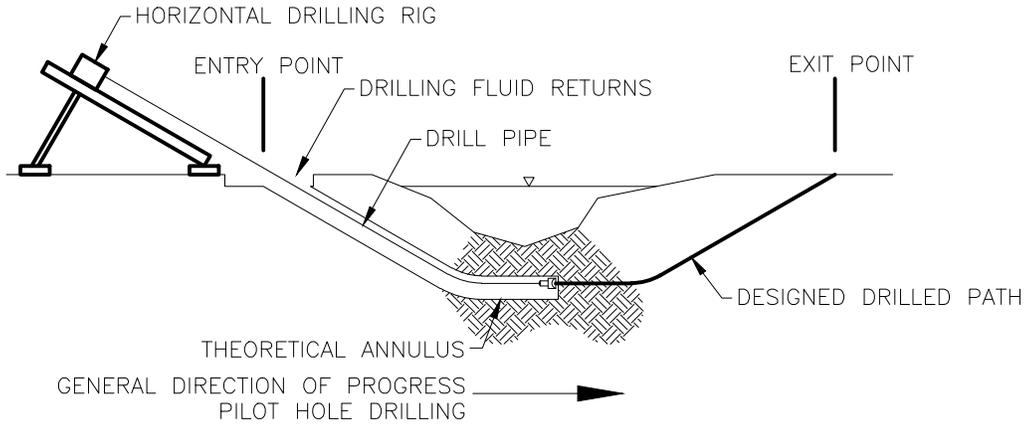


WATERBODY CROSSINGS  
 TYPE C STREAMS  
 ALASKA STAND ALONE GAS PIPELINE PROJECT

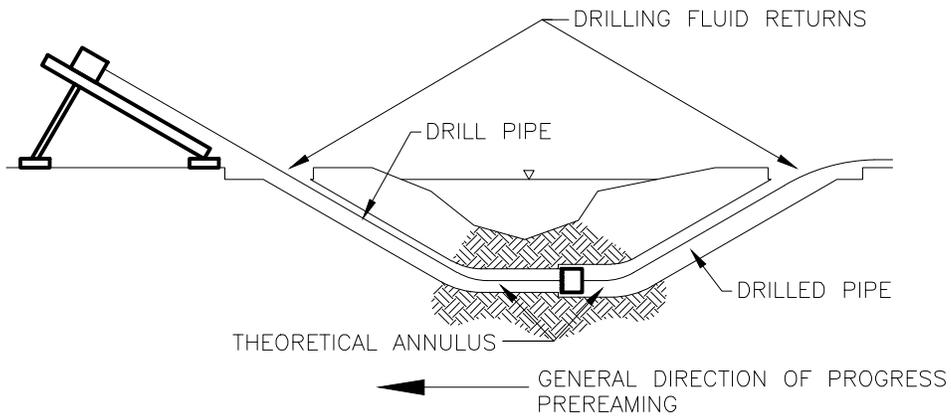
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P:\17293 - DB-XING-10 - Stand Alone Gas Line\Work Products\Project Description - Graphics\01\01-010-01 - DB-XING-10.dwg

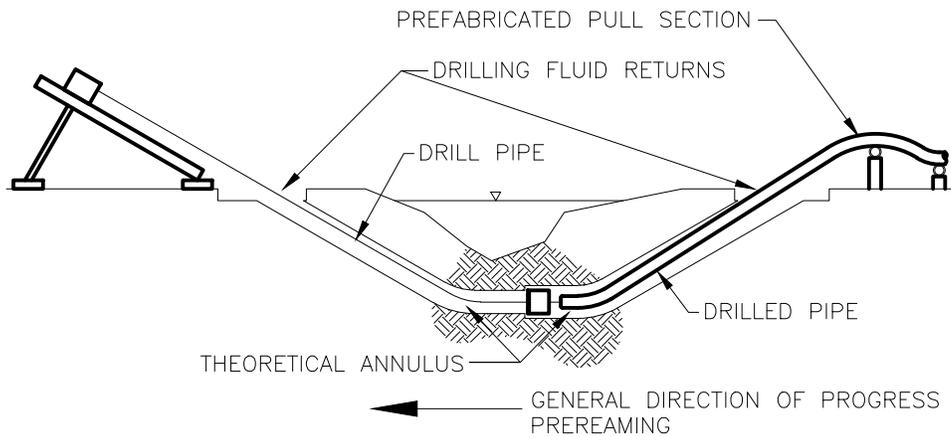
**PILOT HOLE**



**PREREAMING**



**PULLBACK**



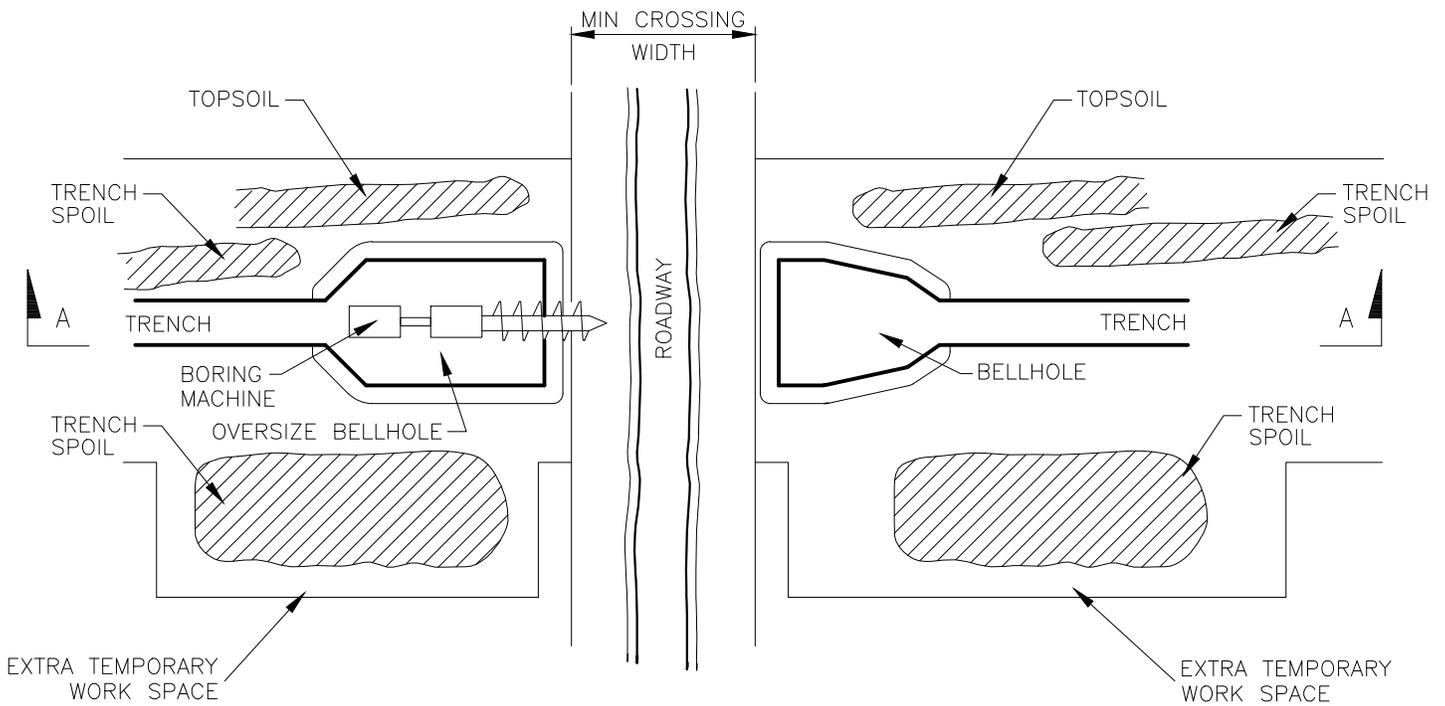
P:\117493 - DB-Xing Gas Line\Work Products\Project Description (Gasline)\CAD\Title Drawings\DB-XING-11 - DB-XING-11.dwg



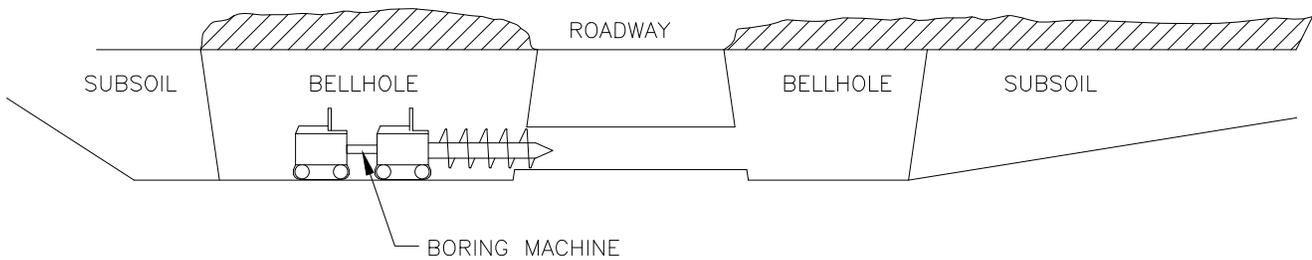
Michael Baker Jr., Inc.

HORIZONTAL DIRECTIONAL  
DRILL CROSSING  
ALASKA STAND ALONE GAS PIPELINE PROJECT

<b>DRAWING DATE:</b> 3/01/10	<b>PLOT DATE:</b> 8/17/2010	<b>SCALE:</b> NTS	<b>SHEET No.</b> DB-XING-11
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PLAN



SECTION A-A

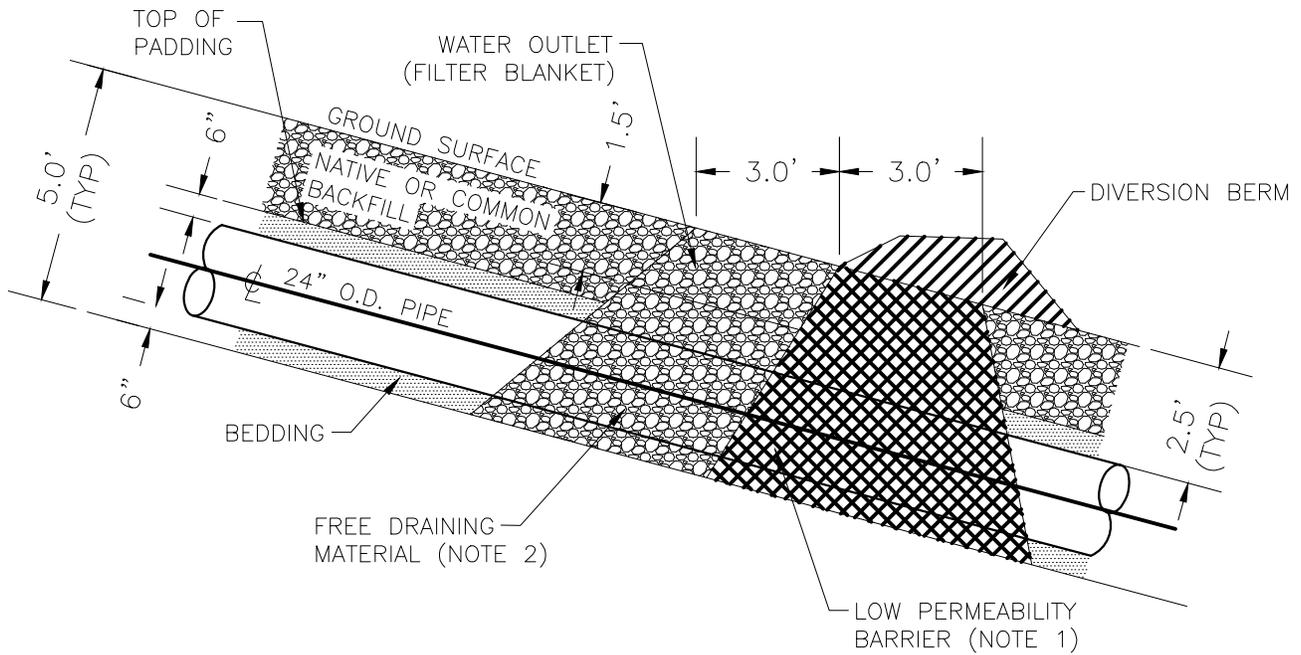
NOTES:

1. THE SIDES OF THE BORE PITS SHALL BE SLOPED BACK TO STABLE CONFIGURATION OR SUPPORTED BY TRENCH BOXES, SHEET PILING OR OTHER SHORING MEANS.
2. INSTALL SAFETY FENCE AROUND BORE PITS AS NECESSARY.
3. INSTALL TEMPORARY EROSION CONTROL PROCEDURES AS SPECIFIED IN CONSTRUCTION SPECIFICATION.
4. DEWATER BORE PIT TO CONTROL SEEPAGE WATER FLOW. DEWATER INTO AN APPROPRIATE DEWATERING STRUCTURE TO PREVENT ENTRY OF SILT LADEN WATER INTO THE RECEIVING WATERBODY.
5. BORE PIT SPOIL SHALL BE COMPACTED ON BACKFILLING TO MINIMIZE SETTLEMENT. REDISTRIBUTE SALVAGED TOPSOIL.



HORIZONTAL BORING  
FOR ROAD & RAILWAY CROSSINGS  
ALASKA STAND ALONE GAS PIPELINE PROJECT

DRAWING DATE:	PLOT DATE:	SCALE:	SHEET No.
3/01/10	8/17/2010	NTS	DB-XING-12



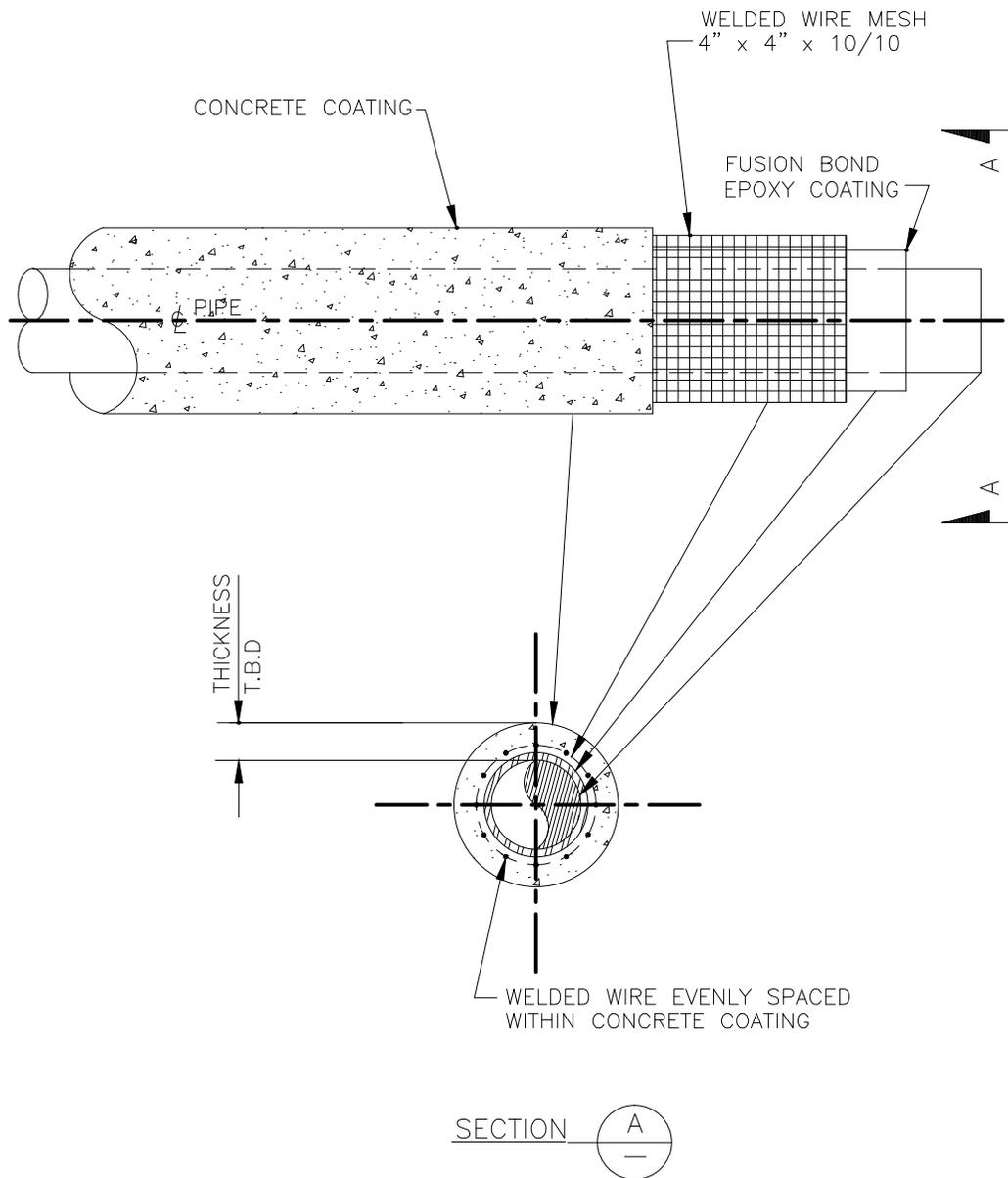
SPACING CRITERIA

<u>SLOPE</u>	<u>SPACING</u>
< 5%	N/A
5 TO 15%	150 FEET
15 TO 30%	100 FEET
> 30%	50 FEET

NOTES:

1. LOW PERMEABILITY BARRIER MAY BE COMPOSED OF POLYURETHANE FOAM MATERIAL OR SAND BAGS AND/OR GRAVEL WITH A LOW PERMEABILITY LAYER AT THE UPSLOPE SIDE. THE LAYER MAY BE PLASTIC, ASPHALTIC, GUNITE OR OTHER MATERIAL THAT WILL MEET THE SPECIFICATIONS FOR LOW PERMEABILITY.
2. MAY BE COMPOSED OF BEDDING, PADDING OR BACKFILL MATERIAL IF THE FREE DRAINING REQUIREMENT IS ACCOMODATED.
3. DITCH PLUGS MAY REQUIRE KEYING INTO THE DITCH WALLS AND BOTTOM WITH SUFFICIENT DEPTH TO TAKE INTO CONSIDERATION POROUS INSITU SOILS AND THE POTENTIAL DEVELOPMENT OF A THAW BULB.





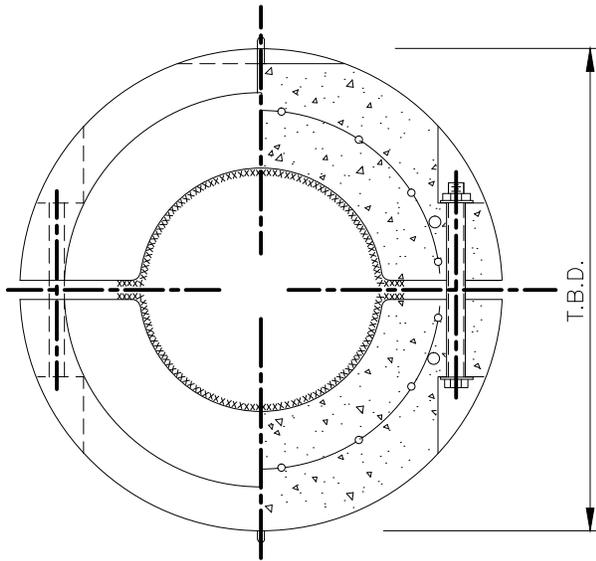
**NOTES:**

1. CONCRETE SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 2500 psi AT 28 DAYS. MINIMUM CONCRETE DENSITY SHALL BE 150 lbs/ft<sup>3</sup>. CONCRETE SHALL BE PLACED TO ENSURE A UNIFORM CONSISTENCY.
2. PIPE SHALL BE HANDLED TO PREVENT DAMAGE TO EXTERNAL COATING AND PIPE ENDS. CONCRETE COATING SHALL BE APPLIED DIRECTLY TO PROTECTIVE COATING AND PLACED IN A MANNER THAT THE PIPE PROTECTIVE COATING WILL NOT BE DAMAGED.
3. SKETCHES SHOWN ARE FOR YARD COATED PIPE. FOR FIELD COATING ON SITE, 1 LAYER OF WELDED WIRE MESH IS SUFFICIENT.

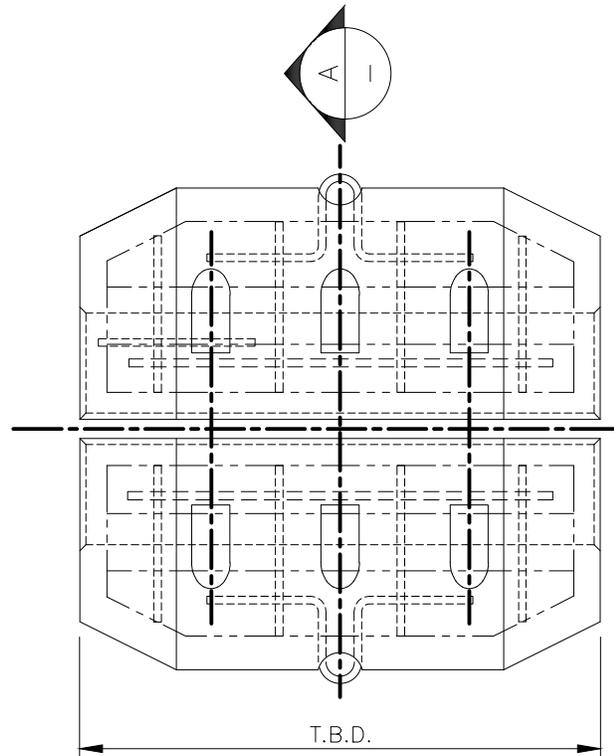


BUOYANCY CONTROL  
CONTINUOUS CONCRETE COATING  
ALASKA STAND ALONE GAS PIPELINE PROJECT

<b>DRAWING DATE:</b> 3/01/10	<b>PLOT DATE:</b> 8/17/2010	<b>SCALE:</b> NTS	<b>SHEET No.</b> DB-BC-01
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SECTION A-A



SIDE

NOTES:

1. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2500 psi AFTER 28 DAYS.
2. CONCRETE SHALL HAVE A MINIMUM DENSITY OF 150 lbs/ft<sup>3</sup>
3. SET-ON CONCRETE WEIGHT SHALL HAVE A MINIMUM MASS OF (T.B.D.) lbs

P:\17293 - DB-BC-02 - Alaska Gas Line - Baker Gas Line - Products\Project Description (Graphics)\CADD\Title Drawings\02-BC-02.dwg

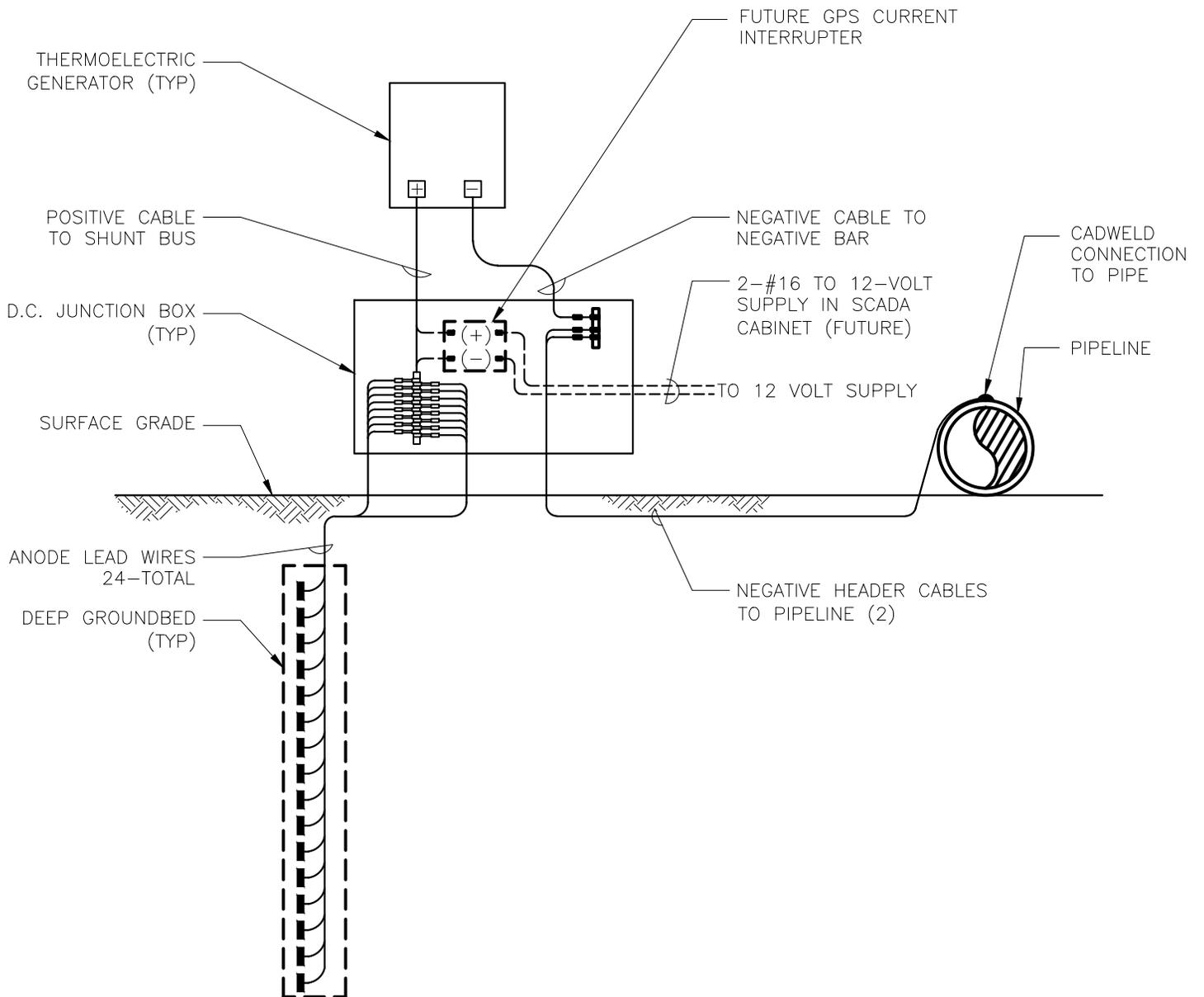


BUOYANCY CONTROL  
BOLT-ON CONCRETE RIVER WEIGHT  
ALASKA STAND ALONE GAS PIPELINE PROJECT

DRAWING DATE:	PLOT DATE:	SCALE:	SHEET No.
3/01/10	8/17/2010	NTS	DB-BC-02





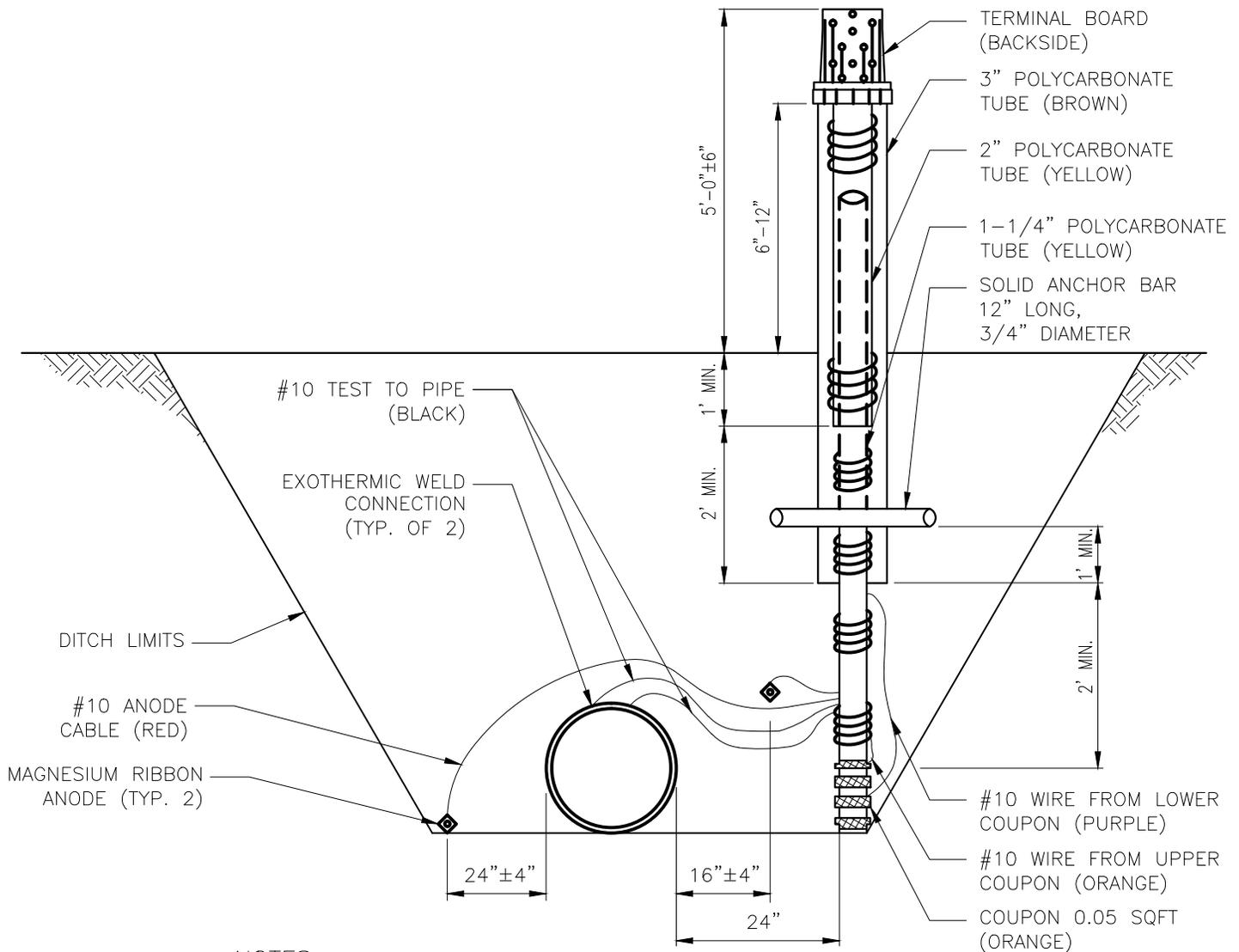


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CATHODIC PROTECTION – TYPICAL  
 GROUND BED SCHEMATIC DETAIL  
 ALASKA STAND ALONE GAS PIPELINE PROJECT

DRAWING DATE:	PLOT DATE:	SCALE:	SHEET No.
3/01/10	8/17/2010	NTS	DB-CC-02



**NOTES:**

1. TEST STATION SHALL BE FINKPROBE, AS MANUFACTURED BY COTT INDUSTRIES. ALL TUBES TO BE MADE OF SINJET R-204 POLYCHROMATIC.
2. TEST STATION CAP - WHITE, OUTER TUBE - BROWN
3. UNDERGROUND CABLES UTILIZED FOR THE CATHODIC PROTECTION CIRCUIT SHALL BE #10 AWG, STRANDED COPPER CONDUCTOR WITH HMWPE OR RHH-RHW INSULATION RATED FOR 600 VOLTS AND BELOW GRADE USE. CABLE SPLICES SHALL NOT BE PERMITTED UNLESS OTHERWISE SPECIFIED OR SHOWN. CABLES SHALL BE COLOR CODED AS SHOWN. COLOR SHALL LABELLED WITH THE FOLLOWING IDENTIFIERS:
  - CONDUCTOR SIZE
  - TYPE OF INSULATION
4. SOIL TO BE IN FULL CONTACT WITH THE COUPONS. SOIL IN CONTACT WITH THE COUPONS SHALL BE THE SAME AS THAT IN CONTACT WITH THE PIPELINE.
5. REMOVE PACKAGING TAPE FROM COUPONS PRIOR TO INSTALLATION.
6. PLACE ONE HALF OF A TEST STATION CAP FULL OF SCREENED NATIVE SOIL DOWN THE 1" TUBE.
7. LEAVE THE SHORTING BAR DISCONNECTED FROM THE TERMINAL BLOCK FOR A MINIMUM OF 4 WEEKS AFTER COUPON TEST STATION INSTALLATION.

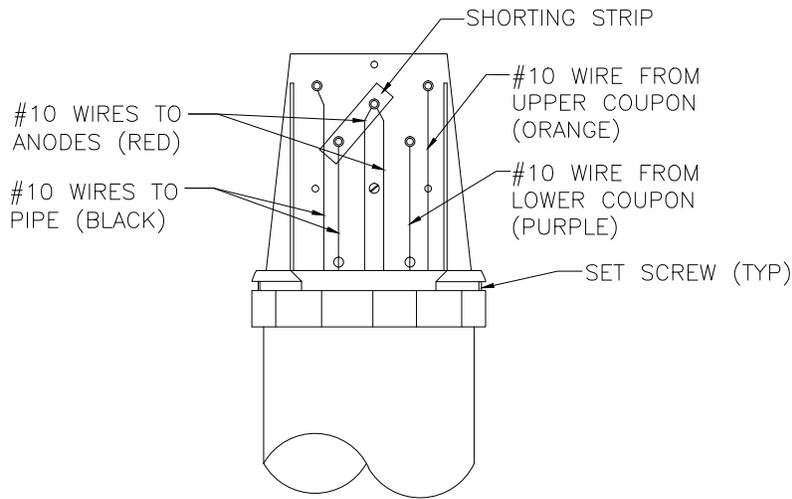
BANANA PLUGS, PLUGS COLOR  
 CODED THE SAME AS THE WIRE  
 CONNECTED TO THEM (TYP)

SET SCREW

6" - 12"

2" POLYCARBONATE TUBE  
 1/4" POLYCARBONATE TUBE

FRONT VIEW



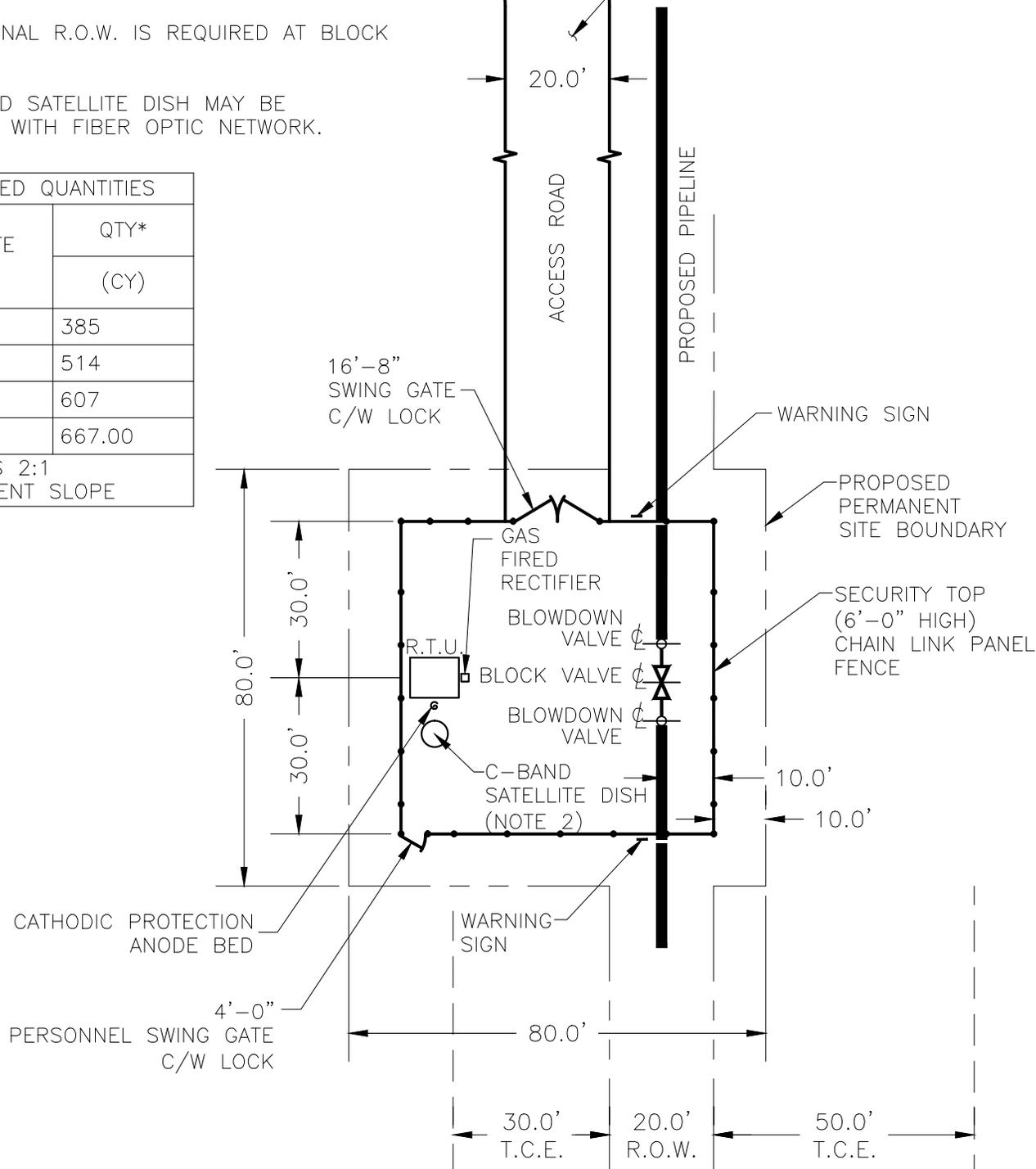
BACK VIEW

EXISTING ROAD

SEE DWG DB-ACC-01 AND DB-ACC-02 FOR ACCESS ROAD DETAILS

- NOTES:
1. ADDITIONAL R.O.W. IS REQUIRED AT BLOCK VALVES.
  2. C-BAND SATELLITE DISH MAY BE REPLACED WITH FIBER OPTIC NETWORK.

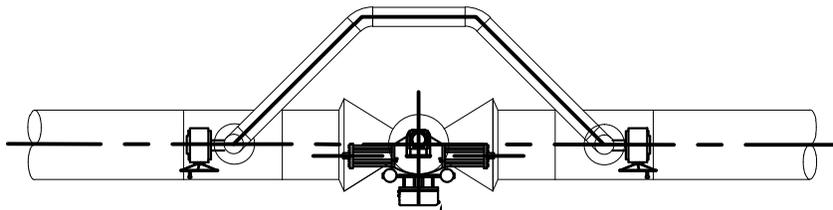
ASSUMED QUANTITIES	
AGGREGATE DEPTHS	QTY* (CY)
2	385
3	514
4	607
5	667.00
*ASSUMES 2:1 EMBANKMENT SLOPE	



P:\117293 - DB-ACC-01 - Block Gas Line\Work Products\Project Description (Gasline)\CAD\Title Drawings\DB-ACC-01 - DB-FAC-01.dwg

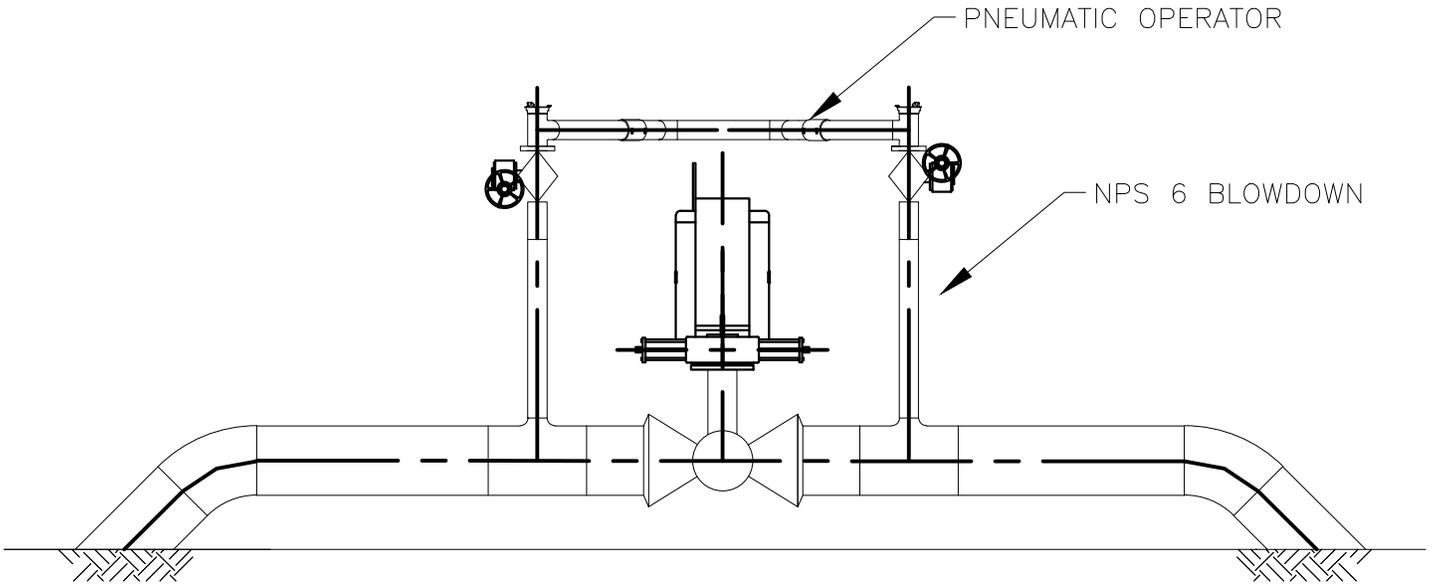


<b>FACILITIES</b> BLOCK VALVE SITE PLAN ALASKA STAND ALONE GAS PIPELINE PROJECT			
<b>DRAWING DATE:</b>	<b>PLOT DATE:</b>	<b>SCALE:</b>	<b>SHEET No.</b>
3/01/10	8/17/2010	NTS	DB-FAC-01



NPS 24 BLOCK VALVE

**PLAN**



PNEUMATIC OPERATOR

NPS 6 BLOWDOWN

**ELEVATION**

NOTE

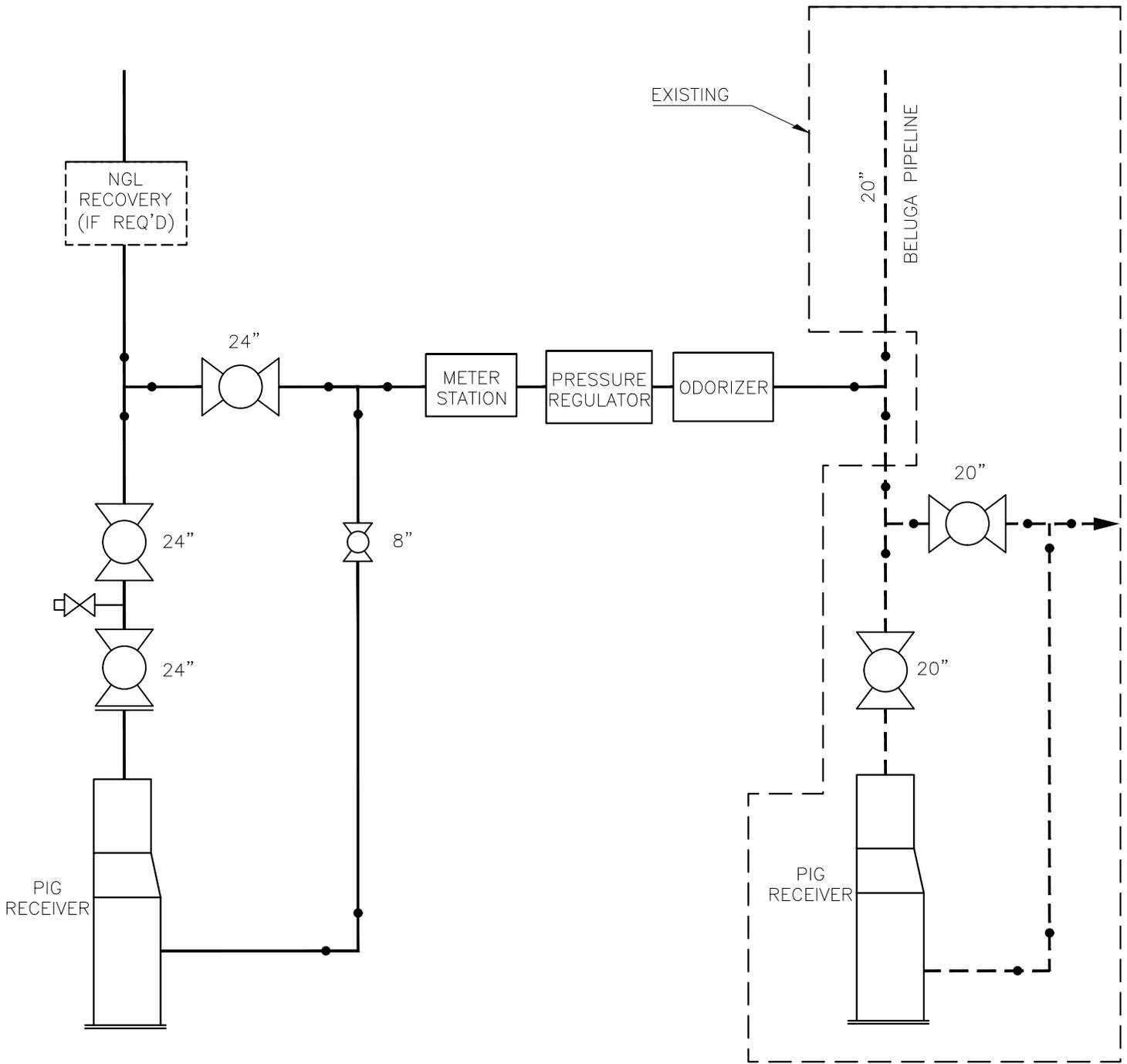
1. FOUNDATION DESIGN TO BE FINALIZED DURING DETAILED ENGINEERING.

P:\17293 - DB- Alaska Gas Line\Work Products\Project Description (Gasline)\CAD\Title Blocks\Title Blocks\DB-FAC-02 - DB-FAC-02.dwg



FACILITIES BLOCK VALVE ALASKA STAND ALONE GAS PIPELINE PROJECT			
DRAWING DATE:	PLOT DATE:	SCALE:	SHEET No.
3/01/10	8/17/2010	NTS	DB-FAC-02

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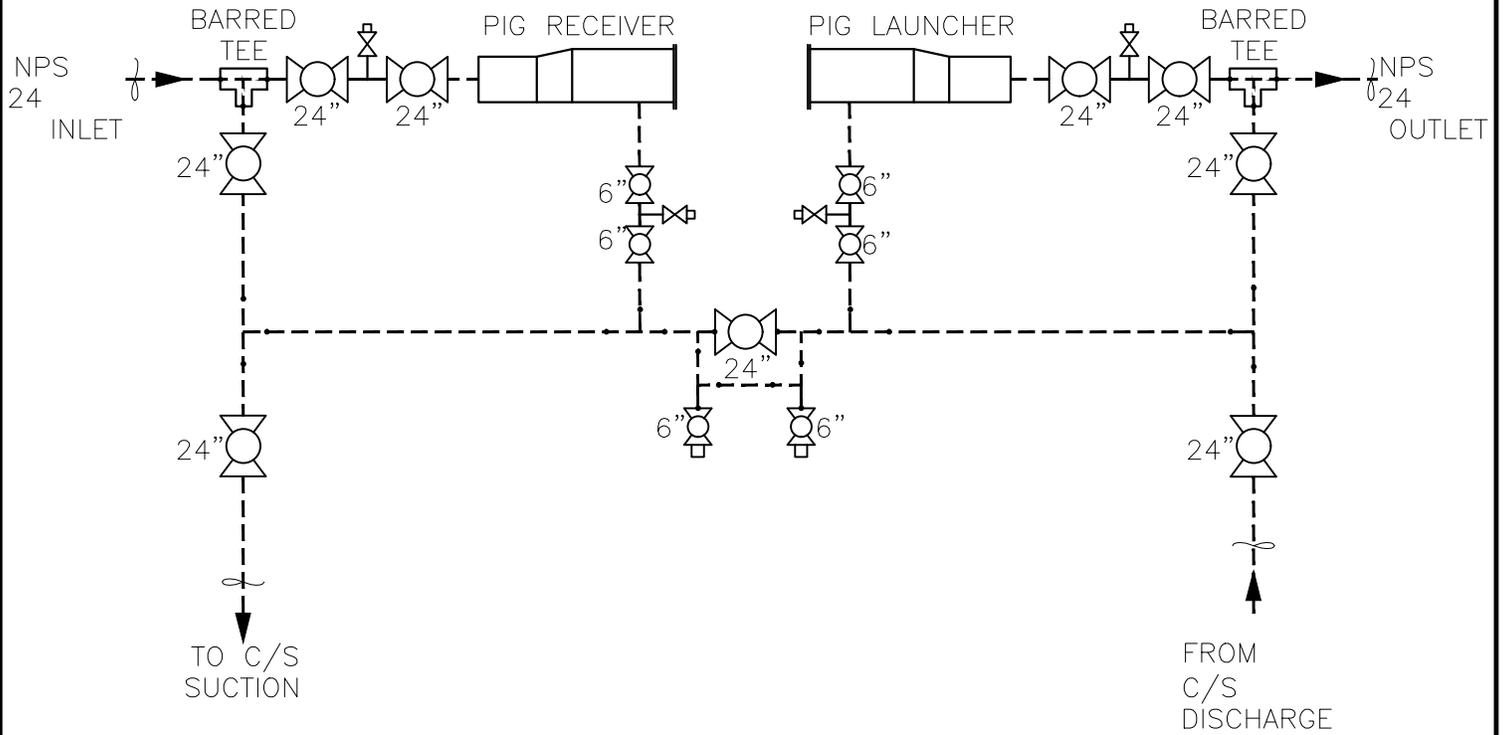


Michael Baker Jr., Inc.

### FACILITIES

TIE-IN TO EXISTING MP39 FACILITIES  
ALASKA STAND ALONE GAS PIPELINE PROJECT

DRAWING DATE:	PLOT DATE:	SCALE:	SHEET No.
3/01/10	8/17/2010	NTS	DB-FAC-03



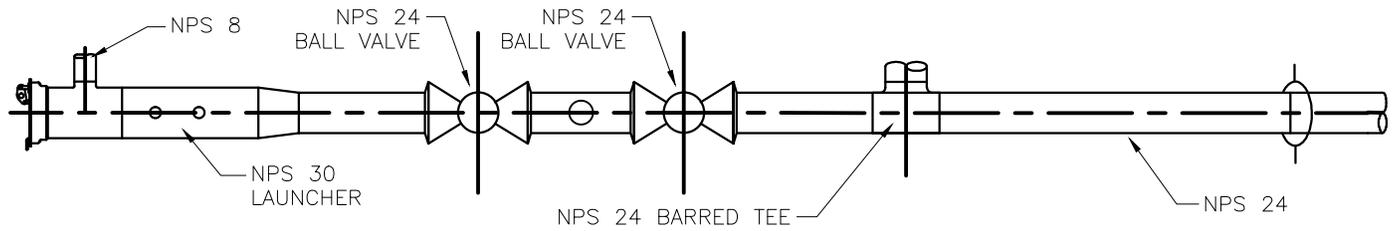
**NOTE:**

1. QUICK OPENING END CLOSURE.
2. PIG TRAP VALVES AND PIPE SIZES ARE PRELIMINARY
3. ALL VALVES AND PIPING ABOVE GRADE

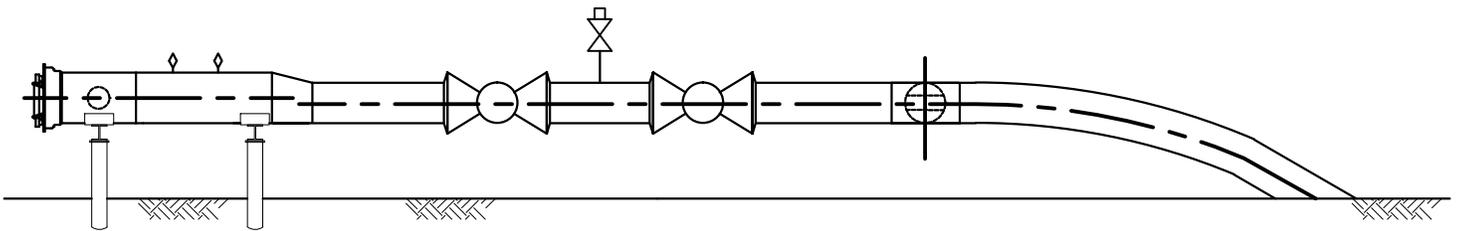


FACILITIES  
C/S PIG TRAP LAYOUT  
ALASKA STAND ALONE GAS PIPELINE PROJECT

<b>DRAWING DATE:</b> 3/01/10	<b>PLOT DATE:</b> 8/17/2010	<b>SCALE:</b> NTS	<b>SHEET No.</b> DB-FAC-04
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**PLAN**



**PROFILE**

NOTE:

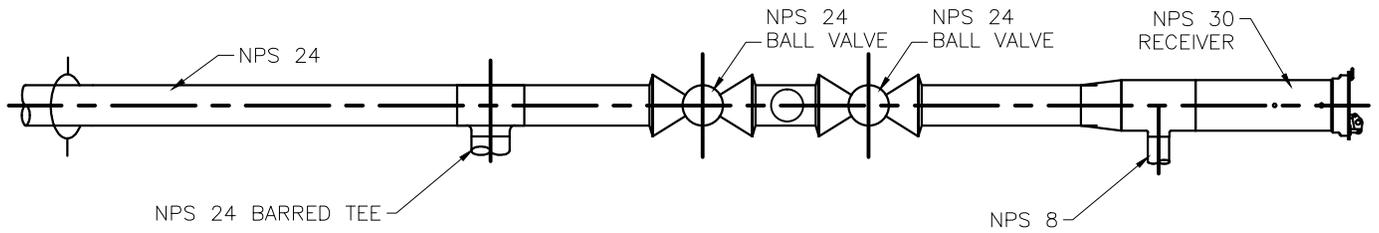
1. FOUNDATION/PIPE SUPPORTS TO BE FINALIZED DURING DETAILED ENGINEERING



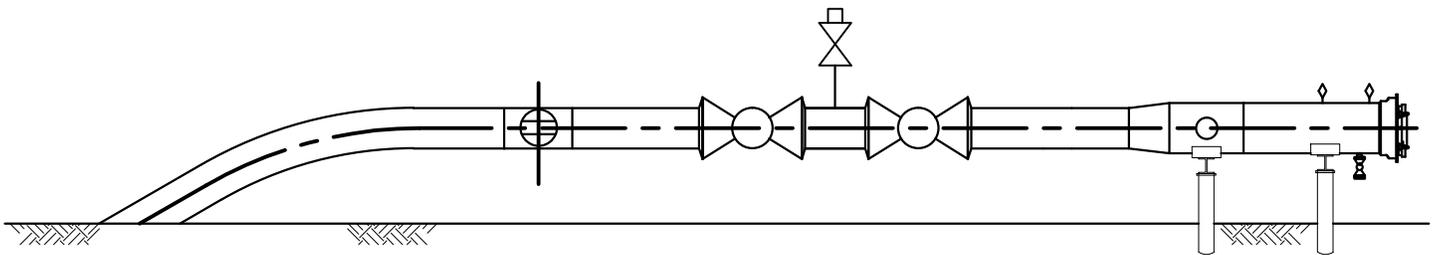
FACILITIES  
LAUNCHER  
ALASKA STAND ALONE GAS PIPELINE PROJECT

<b>DRAWING DATE:</b> 3/01/10	<b>PLOT DATE:</b> 8/17/2010	<b>SCALE:</b> NTS	<b>SHEET No.</b> DB-FAC-05
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**PLAN**



**PROFILE**

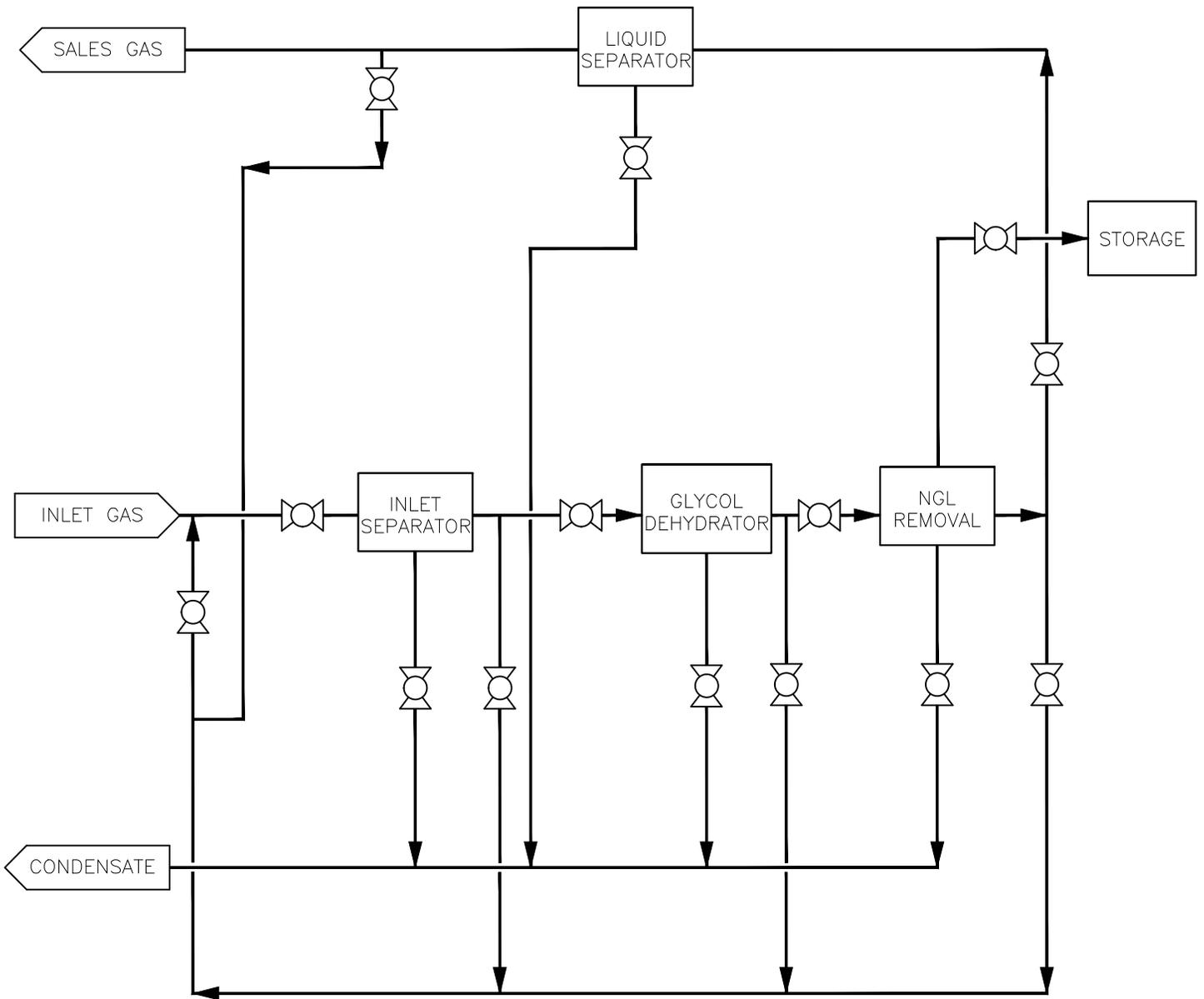


**Baker**  
Michael Baker Jr., Inc.

FACILITIES RECEIVER			
ALASKA STAND ALONE GAS PIPELINE PROJECT			
<b>DRAWING DATE:</b> 3/01/10	<b>PLOT DATE:</b> 8/17/2010	<b>SCALE:</b> NTS	<b>SHEET No.</b> DB-FAC-06

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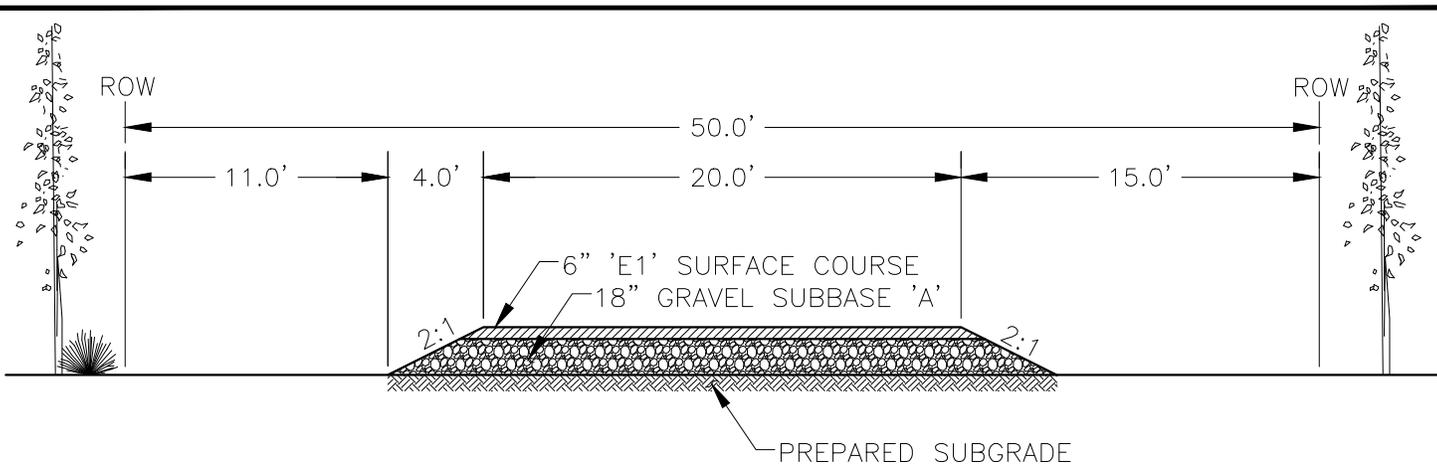
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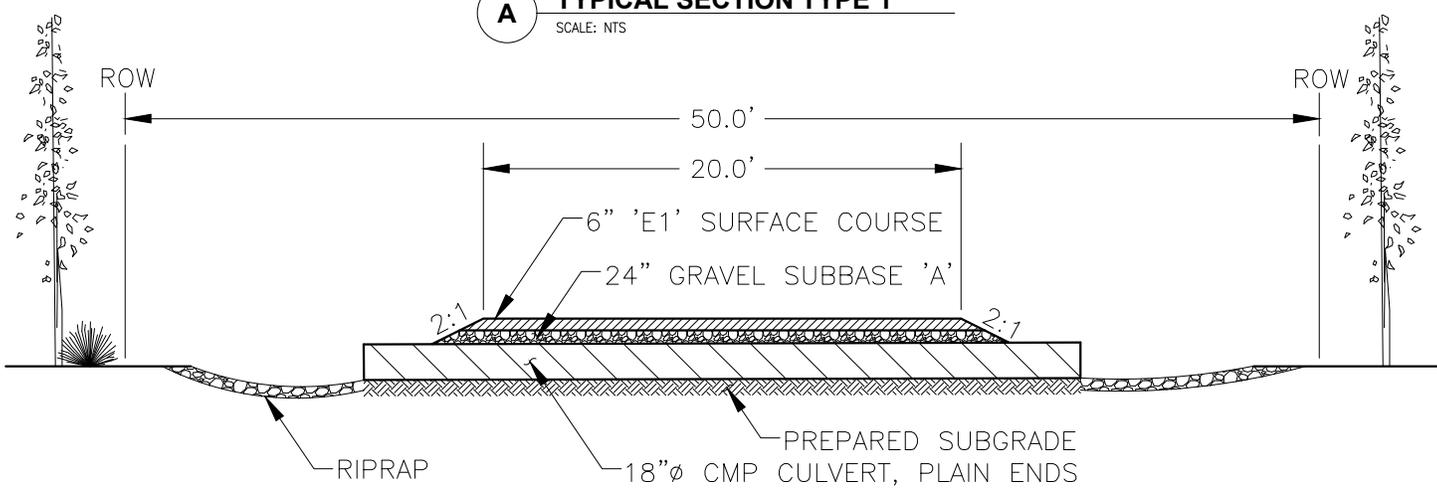
Michael Baker Jr., Inc.

FACILITIES  
 NGL RECOVERY  
 ALASKA STAND ALONE GAS PIPELINE PROJECT

DRAWING DATE:	PLOT DATE:	SCALE:	SHEET No.
3/01/10	8/17/2010	NTS	DB-FAC-10



**A TYPICAL SECTION TYPE 1**  
SCALE: NTS



**B TYPICAL SECTION TYPE 2 WITH 18" CULVERT**  
SCALE: NTS

FUNCTIONAL CLASSIFICATION: RURAL INDUSTRIAL/COMMERCIAL ACCESS ROAD

DESIGN SPEED: 20 MPH

TRAFFIC VOLUME: 100 VEHICLES PER DAY OR LESS

PREPARED SUBGRADE: CLEAR AND GRUB TO TOE OF PROPOSED FILL. SCARIFY TO 12", MOISTURE CONDITION AND COMPACT EXISTING SOILS.

GEOTEXTILE GRIDS/FABRICS CAN BE USED IN LIEU OF SUBGRADE COMPACTION FOR DEEP ORGANIC, WEAK, AND/OR THAW UNSTABLE PERMAFROST SOILS.

SUBBASE: DOT/PF SUBBASE – GRADATION 'A', LESS THAN 4" SIZE

SURFACE COURSE: DOT/PF SURFACE COURSE E-1. BASE COURSE D1 MAY BE USED IF PI=4 TO 6.

RIGHT OF WAY: TOTAL WIDTH = 50 FT. RIGHT OF WAY INCLUDES 15 FEET ADJACENT TO ROADWAY FOR SHOULDERS, INCREASES IN ROAD THICKNESS DUE TO TERRAIN, AND CULVERT INLETS/OUTLETS.



TYPICAL ACCESS ROAD SECTION			
ALASKA STAND ALONE GAS PIPELINE PROJECT			
<b>DRAWING DATE:</b> 3/01/10	<b>PLOT DATE:</b> 8/17/2010	<b>SCALE:</b> NTS	<b>SHEET No.</b> DB-ACC-01

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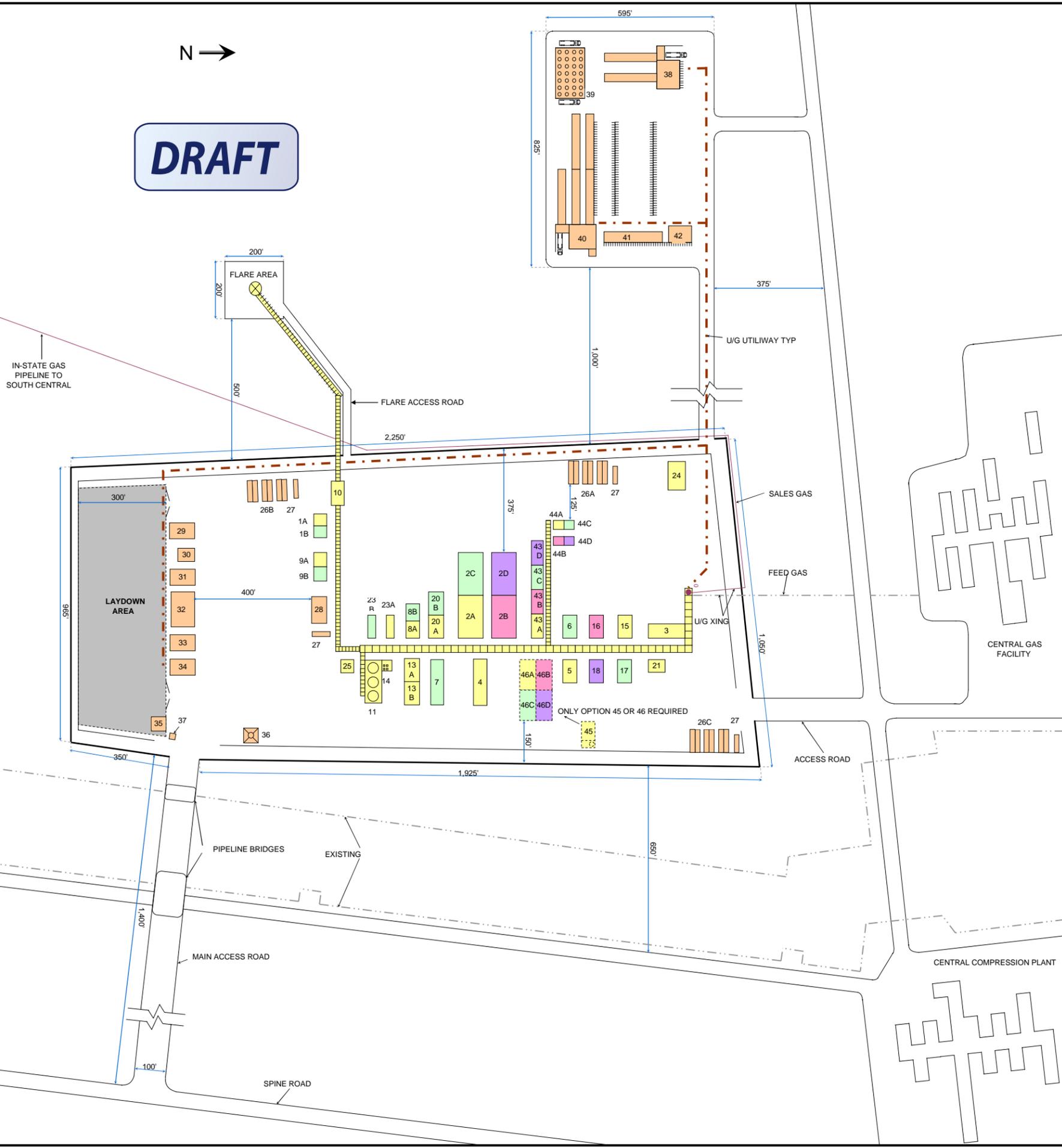


MODULE LIST		
#	DESCRIPTION	SIZE
1	Power Generation	45' X 67'
2A	Amine	80' X 150'
2B	Amine	80' X 150'
2C	Amine	80' X 150'
2D	Amine	80' X 150'
3	Metering & Separation	50' X 125'
4	SG & CO2 TEG / Regeneration	45' X 160'
5	LP CO2 Compressor	45' X 78'
6	LP CO2 Compressor	45' X 78'
7	SG & CO2 TEG / Regeneration	45' X 160'
8	Utility Module	45' X 67'
9	Backup Power Generation	45' X 90'
10	Flare KO Drums	45' X 85'
11	Amine Tanks	65' X 150'
13A	Water Treatment	45' X 67'
13B	Water Treatment	45' X 67'
14	Amine Tank Skid	40' X 40'
15	Sales Gas Compressor	45' X 73'
16	Sales Gas Compressor	45' X 73'
17	Sales Gas Compressor	45' X 73'
18	Sales Gas Compressor	45' X 73'
20A	Water Treatment/Fire Water	45' X 63'
20B	Water Treatment/Fire Water	45' X 63'
21	Feed Gas Separation	35' X 65'
23A	Heat Medium Heater	24' X 80'
23B	Heat Medium Heater	24' X 80'
24	Control Room	60' X 90'
25	Chemicals	90' X 90'
26A	Construction Trailers - Owners	6EA - 16' X 75'
26B	Construction Trailers - Contractors	6EA - 16' X 75'
26C	Construction Trailers - Contractors	6EA - 16' X 75'
27	Envirovacs	4EA - 12' X 60'
28	Warming Shed / Safety Meetings	66' X 82'
29	Mechanic / Piping Shops	40' X 60'
30	Mechanic & Maintenance Shops	40' X 60'
31	E & I Shop	66' X 82'
32	Warm Storage Warehouse	82' X 120'
33	Metal Shop & Tool Room	66' X 82'
34	Cold Storage	66' X 82'
35	Material Receiving	50' X 50'
36	Temp. Fuel Storage & Dispensing	50' x 50'
37	Guard House	14' X 14'
38	Permanent Camp	80/160
39	Potable & Waste Water	560 PPL
40	Construction Camp	400 Beds
41	Light Vehical Storage	40' x 200'
42	Administration Building	60' x 80'
43A	Propane Refrigeration	45' X 80'
43B	Propane Refrigeration	45' X 80'
43C	Propane Refrigeration	45' X 80'
43D	Propane Refrigeration	45' X 80'
44A	Propane Refrigeration Coolers	30' X 80'
44B	Propane Refrigeration Coolers	30' X 80'
44C	Propane Refrigeration Coolers	30' X 80'
44D	Propane Refrigeration Coolers	30' X 80'
45	De-ethanizer (option) (NSDeEth-4)	45' X 90'
46A	NGL Extraction Area (option) (NSNGL-3)	60' X 140'
46B	NGL Extraction Area (option) (NSNGL-3)	60' X 140'
46C	NGL Extraction Area (option) (NSNGL-3)	60' X 140'
46D	NGL Extraction Area (option) (NSNGL-3)	60' X 140'

N →

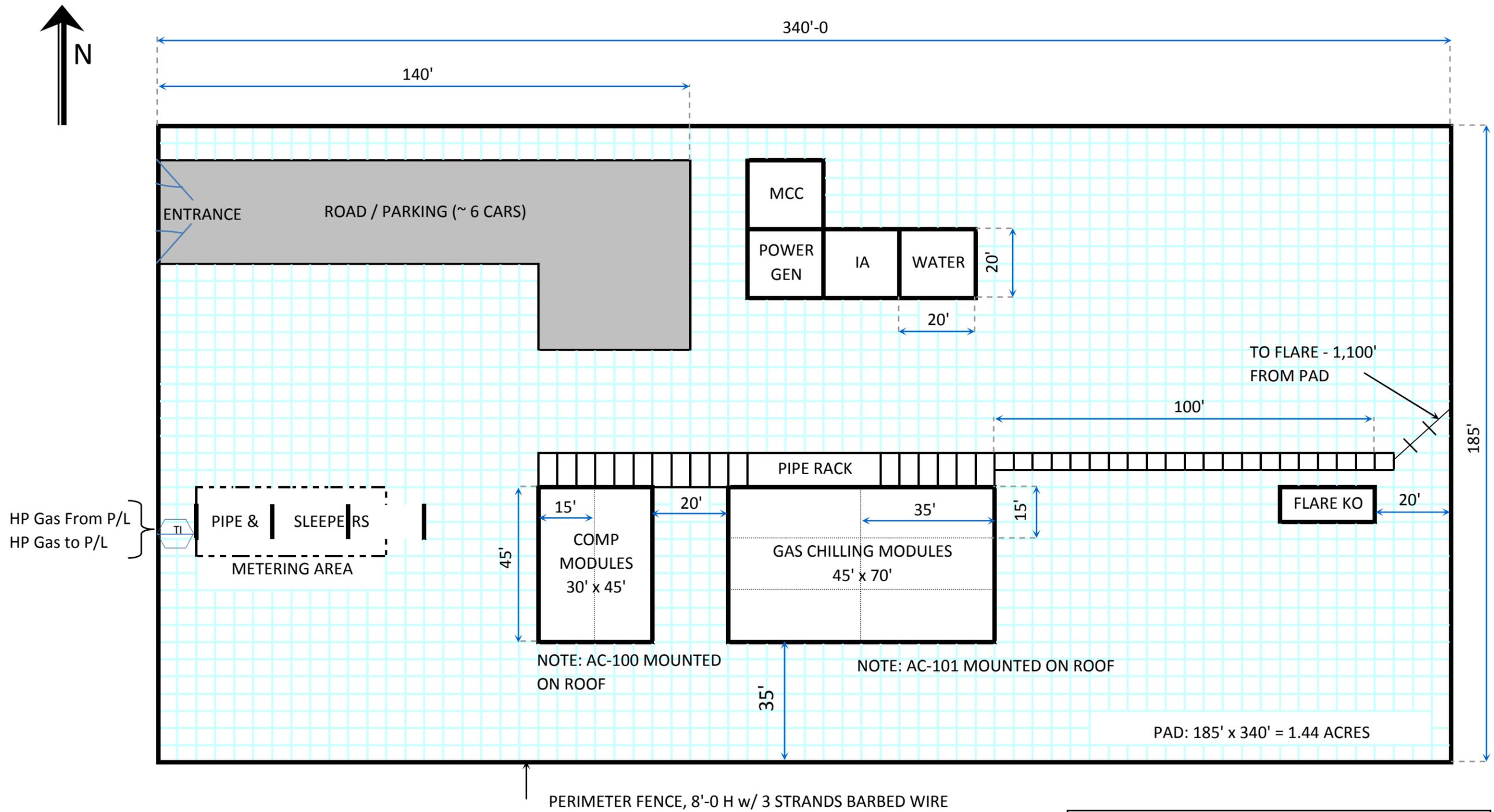
**DRAFT**

INFRASTRUCTURE
250 SCENARIO
500 SCENARIO
750 SCENARIO
1000 SCENARIO



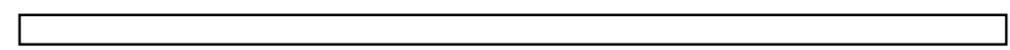
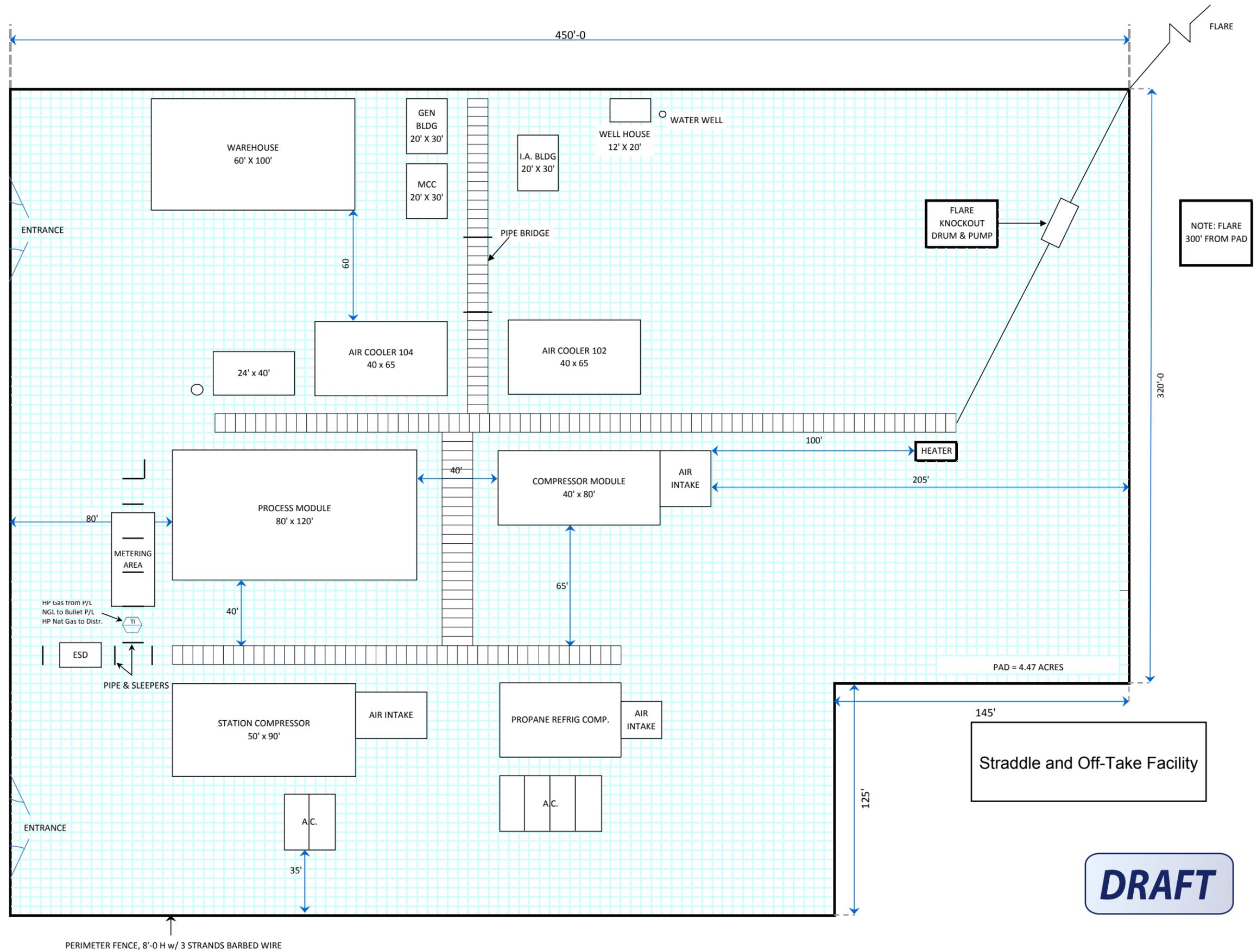
Gas Conditioning Facility Layout

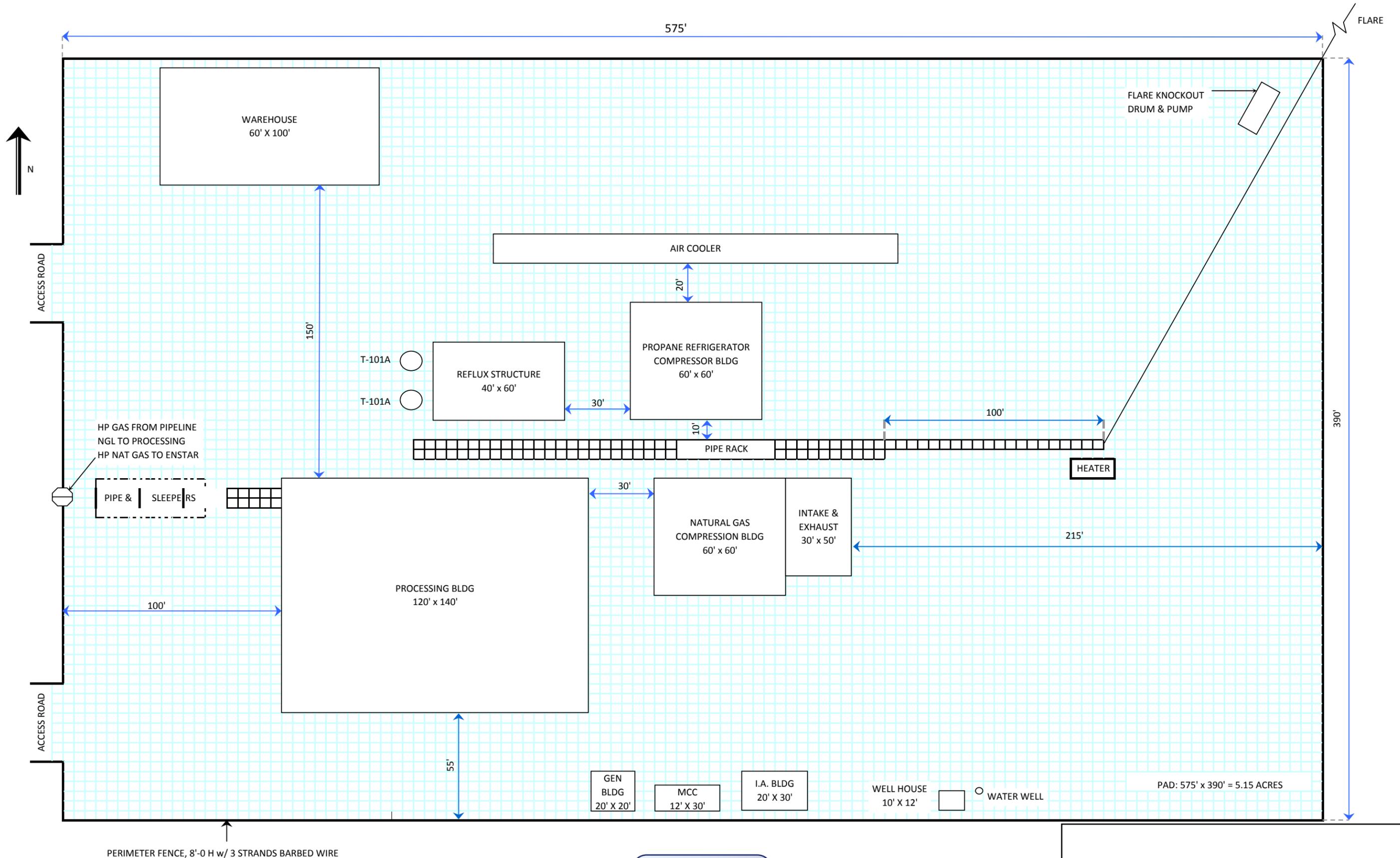
**DRAFT**



Compressor Station Typical Layout







PAD: 575' x 390' = 5.15 ACRES

**DRAFT**

Cook Inlet NGL Extraction Facility