FREEPORT-McMoRan

Appendix A - HDPE Pipeline Handling Permit

Before completing the permit it is necessary to thoroughly review applicable policies and SOP's with all affected employees to ensure concrete understanding. Think carefully about the entire task to identify, evaluate, and control all energy sources and prevent incidents . This permit is not required for off-loading of pipe.

Date:	Time:	Project Lead:	Permit Requestor:
Department/Shop:		Location of Activity:	
Purpose of Activity:			
Pipeline Contents:		Pipeline Destination: From:	To:

1. Pipeline Handling Hazard Analysis	**Yes**	**No**	**N/A**
Are all personnel working on this task properly trained to perform this task?	☐	☐	☐
Does the pipe length or route of travel require spotters or blockers?	☐	☐	☐
Has the travel path been communicated?	☐	☐	☐
If the pipe will be pulled has the appropriate equipment been identified for the task?	☐	☐	☐
If pipe must be pushed have steps been identified to control energy or exposure to the energy? (exemption required)	☐	☐	☐
If path of travel has potential to create bends in the pipe have steps been identified to control energy or exposure?	☐	☐	☐
Are substantial barriers required to protect personnel and are they adequate for the task?	☐	☐	☐
Is the pipe line buried or earth work needed?	☐	☐	☐
Is a Blue Stake Permit Required?	☐	☐	☐
Has the Pipeline Been Isolated? **LOTOTO Points:**	☐	☐	☐
Is a Hot Work permit required?	☐	☐	☐
Have notifications been given to other affected Departments?	☐	☐	☐
Have the contents of the pipe been identified and appropriate Environmental and Safety actions taken?	☐	☐	☐
Is a safety attendant necessary for the protection of employees from potential stored energy due to job scope?	☐	☐	☐
Have all cut points been clearly marked and initialed by Supervisor or Designated Qualified Individual?	☐	☐	☐
Have all tie-in points been clearly marked and initialed by Supervisor or Designated Qualified Individual?	☐	☐	☐
Have all energized lines near the work area been clearly identified and marked?	☐	☐	☐
Has appropriate equipment been identified per the load chart? **Equipment Used:**	☐	☐	☐
Is appropriate pulling or lifting rigging available and been inspected?	☐	☐	☐
Have area access issues been identified and controls put in place?	☐	☐	☐
If contractors are used have they been approved and received adequate training	☐	☐	☐
Name of Contractor used:			

2. Energy Source Review (if the anwer to any question is yes, list hazard controls)

No	Yes	**Hazard**	**Controls**
		High walls or material at natural angle of repose	
		Active pipelines in close proximity	
		Traffic in the area	
		Weather (wind, heat, cold, etc.)	
		Lighting	
		Heavy equipment being used	
		Material handling hazards	
		Falls or falling objects	
		Pre-work hazards	
		Any others? If so, what?	

Designated Qualified Person Approval to Begin Daily Work (Signature):

Supervisor Approval to Begin Daily Work (Signature):

	Yes	**No**
Is the Pipeline 12" diameter or greater?	☐	☐
Does the path of travel have the potential to create bends in the pipe that will store significant potential energy?	☐	☐
If either of the next two questions is "Yes", an exemption form must be reviewed by engineering and signed by the Division Manager:		
Will the pipeline be pushed into place?	☐	☐
Does the job scope fall outside the guidelines of Appendix C?	☐	☐

If the answer to any of the four above questions is <u>YES</u>, then a Superintendent signature is required

Superintendent Approval to Begin Project Work and As Conditions Change (Signature):

Contractor Supervisor Approval to Begin Daily Work (Signature):

Project Lead Upon Project Completion (Signature):

Appendix C - HDPE Pipe Pulling Guidelines

Pipe Length and Rigging Selection Chart

Pipe Diameter (inches)	SDR Rating 7/7.3	9	11	13.5	15.5	17
12	400 M	400 M	400 M	400 M	400 M	400 M
14	400 M	400 M	400 M	400 M	400 M	400 M
16	400 M	400 M	400 M	400 M	400 M	400 M
18	400 M	400 M	400 M	400 M	400 M	400 M
20	400 M	400 M	400 M	400 M	400 M	400 M
22	400 L	400 M	400 M	400 M	400 M	400 M
24	400 L	400 M	400 M	400 M	400 M	400 M
26		400 L	400 M	400 M	400 M	400 M
28		400 L	400 M	400 M	400 M	400 M
30		400 L	400 L	400 L	400 L	400 L
32		300 L	400 L	400 L	400 L	400 L
34			300 L	400 L	400 L	400 L
36			300 L	400 L	400 L	400 L
42	Exemption Required					
48	Exemption Required					

Where: 400 M - Medium-Sized Rigging, Up to 400 ft
400 L - Large-Sized Rigging, Up to 400 ft
300 L - Large-Sized Rigging, Up to 300 ft

Note: Large-Sized Rigging may be used in place of Medium-Sized Rigging

For Pulling Heads, only pipe lengths are applicable

Pulling Force Required Chart

Pipe Diameter (inches)	SDR Rating 7/7.3	9	11	13.5	15.5	17
12	10,450	8,450	7,081	5,884	5,181	4,754
14	12,599	10,188	8,538	7,094	6,247	5,732
16	16,456	13,307	11,152	9,266	8,159	7,487
18	20,827	16,841	14,114	11,727	10,326	9,476
20	25,712	20,792	17,424	14,478	12,748	11,699
22	31,112	25,158	21,083	17,518	15,426	14,156
24	37,026	29,940	25,091	20,848	18,358	16,846
26		35,138	29,447	24,468	21,545	19,771
28		40,752	34,152	28,377	24,987	22,930
30		46,781	39,205	32,575	28,684	26,322
32		39,920	44,606	37,063	32,636	29,949
34			37,767	41,841	36,843	33,810
36			44,037	46,908	41,305	37,904
42	Exemption Required					
48	Exemption Required					

Note:
Equipment used for pull must have towing capacity that meets or exceeds pulling force requirement

Approved Rigging List (12"+ Diameter Pipe)

Large-Sized Rigging Assembly

	Item Description	*Supplier*	*Part Number*
2 ea	Sheet Pile Shackle #59, 2" Mod	Certex	CX10-0778-HAG
1 ea	Jaw and Eye Swivel	Certex	CX05-0277
1 ea	Master Link 1-1/2"	Certex	CX06-1116
1 ea	Screw Pin Shackle 1-3/4"	Certex	CX10-0031
	Screw Pin Shackle 1-1/2"	Certex	CX10-0030
1 ea	Polyester Tow Sling UTS10-95T x 5 ft	Certex	CX08-0045-5
	Polyester Round Sling UTS9-77T x 5 ft	Certex	CX08-0044-5

Note: 2-1/2" diameter hole 10" from the end of the pipe required for this assembly

Medium-Sized Rigging Assembly

	Item Description	*Supplier*	*Part Number*
2 ea	Sheet Pile Shackle #59, 1-1/2" Modified	Certex	CX10-0778-HAG1
1 ea	Jaw and Eye Swivel	Certex	CX05-0277
1 ea	Master Link 1-1/2"	Certex	CX06-1116
1 ea	Screw Pin Shackle 1-3/4"	Certex	CX10-0031
	Screw Pin Shackle 1-1/2"	Certex	CX10-0030
1 ea	Polyester Tow Sling UTS10-95T x 5 ft	Certex	CX08-0045-5
	Polyester Round Sling UTS9-77T x 5 ft	Certex	CX08-0044-5

Note: 2" diameter hole 8" from the end of the pipe required for this assembly

Pulling Heads

	Item Description	*Supplier*	*Part Number*
1 ea	16" - 48" 60,000 lb Pulling Head - All SDR	Polywarehouse	See Support Docs
1 ea	Jaw and Eye Swivel	Certex	CX05-0277
1 ea	Master Link 1-1/2"	Certex	CX06-1116
1 ea	Screw Pin Shackle 1-3/4"	Certex	CX10-0031
	Screw Pin Shackle 1-1/2"	Certex	CX10-0030
1 ea	Polyester Tow Sling UTS10-95T x 5 ft	Certex	CX08-0045-5

Notes/Assumptions

- Site SOP's will define rigging and pulling procedures for pipe less than 12" diameter
- Using a sling as a choker is NOT acceptable for pulling pipe 12" diameter or greater
- Pipe slotting to be used as an anchor point is NOT acceptable for pulling pipe 12" diameter or greater
- Friction factor of 0.80 used (Sand/HDPE is published at 0.66)
- Pulling force requirements based on lengths in Pipe Length and Rigging Selection Chart
- Pulling any pipe longer than 400 feet requires an exemption
- All pull lengths are for pulls on top of soil (no buried pipe)
- All rigging assemblies have a maximum working limit of 50,000 lbs
- Pulling lengths are based on a 17.5% (10º) slope with pipe being pulled up grade empty
- Assumed all HDPE pipe fuses meet FCX fusing standards