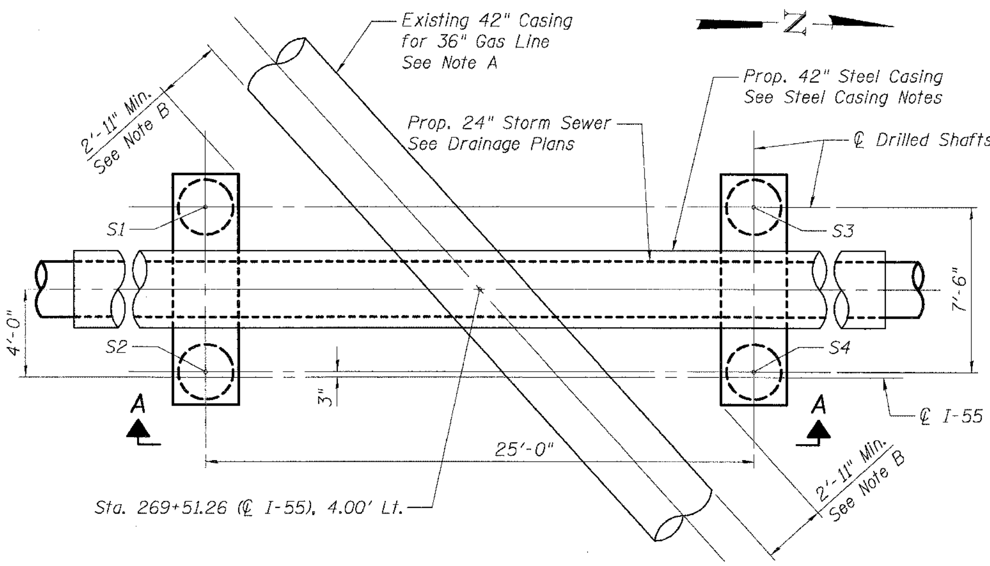
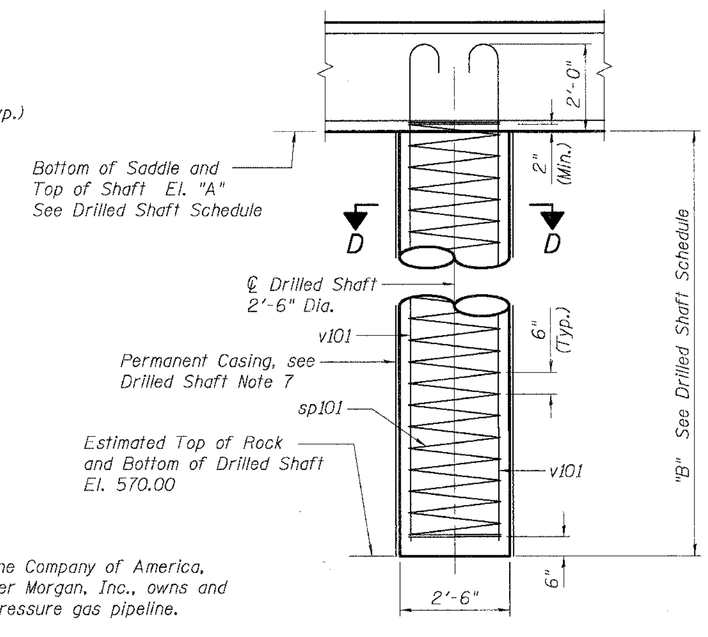
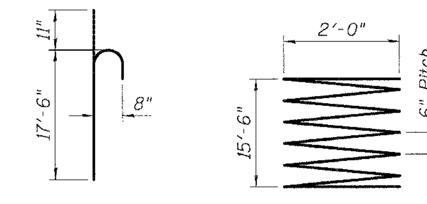


DRILLED SHAFT AND SADDLE PLAN LAYOUT AT KINDER MORGAN GAS MAIN AM #4 *

* Natural Gas Pipeline Company of America, a subsidiary of Kinder Morgan, Inc., owns and operates this high pressure gas pipeline.



DRILLED SHAFT ELEVATION



Spiral Notes:

1. Provide 1½ extra turns top and bottom of spiral. Dimensions are out-to-out. Min. lap length = 2'-0".
2. Extend spiral 2" min. into saddle. Provide 4-#5 spacers or equivalent for spirals. Cost of spacers included with Reinforcement Bars.

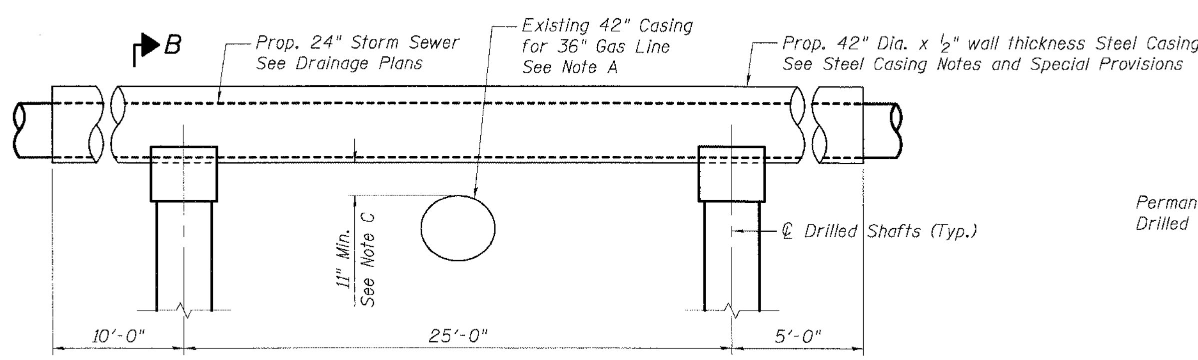
BAR LIST

Bar	No.	Size	Length	Shape
p101	12	#6	6'-6"	
p102	6	#6	10'-2"	
p103	16	#8	10'-2"	
s101	32	#4	10'-5"	
s102	4	#4	9'-11"	
s103	4	#4	9'-5"	
s104	14	#4	8'-11"	
sp101	4	#4	15'-6" ***	
v101	32	#8	18'-5"	

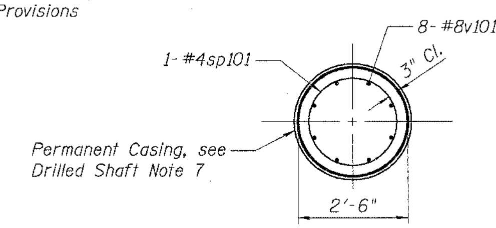
*** Length is height of spiral, not the actual bar length. The mass of spiral bars is based upon a 30 ft. maximum bar length with 2'-0" minimum lap splices.

DRILLED SHAFT SCHEDULE

Location	Shaft No.	Station	Offset	El. "A"	"B"
AM #4	S1	269+38.76	7.75' Lt.	585.62	15.62 Ft.
	S2	269+38.76	0.25' Lt.	585.62	15.62 Ft.
	S3	269+63.76	7.75' Lt.	585.82	15.82 Ft.
	S4	269+63.76	0.25' Lt.	585.82	15.82 Ft.



ELEVATION A-A



SECTION D-D

Drilled Shaft Notes:

1. The maximum applied bearing pressure at the bottom of the drilled shaft is 12 tsf.
2. The allowable bearing pressure is 30 tsf.
3. The bottom of the drilled shaft shall be founded on top of rock.
4. The quantities and reinforcement detailing are based on the top of shaft and the estimated top of rock elevations shown and may change based on the actual top of rock encountered at each shaft and the final top of shaft elevation.
5. Provide a positive seal between the bottom of permanent casing and top of bedrock.
6. See Shts. 257, 261 and 262 for boring locations and boring logs.
7. Permanent Casing shall have 30" min. inside diameter.

TOTAL BILL OF MATERIAL

Item	Unit	Total
Structure Excavation **	Cu. Yd.	41
Concrete Structures	Cu. Yd.	5.5
Reinforcement Bars	Pound	3,190
Permanent Casing	Foot	63
Drilled Shaft in Soil	Cu. Yd.	11.5
Steel Casings 42"	Foot	40

** See Note 2 below.

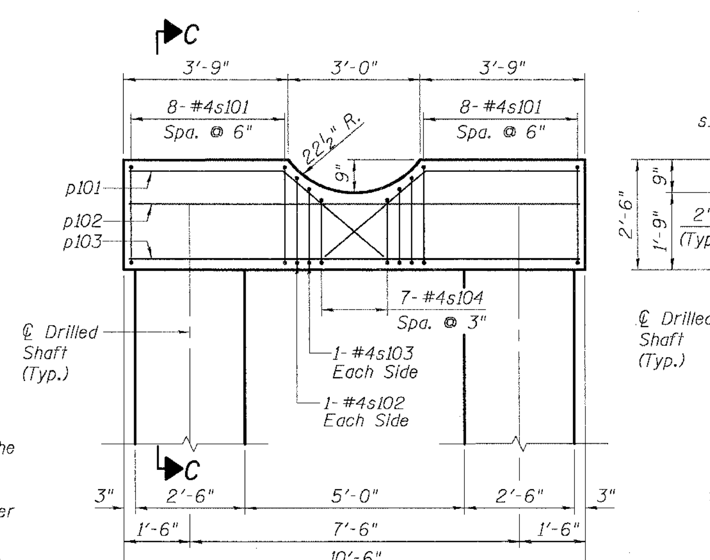
Note A: The drilled shaft and saddle design and details accommodate the existing utility lines as shown based on the available record documents. The Contractor shall field verify the exact location and elevation of the utility lines prior to proceeding with any construction activities that may affect the subject utility. If the Contractor finds conflict with the proposed construction, they should inform the Engineer of the conflict, provide relevant information/measurements, and ask for modifications to the proposed design and details.

Note B: A minimum of 35" horizontal clearance shall be maintained between drilled shaft/saddle and gas main.

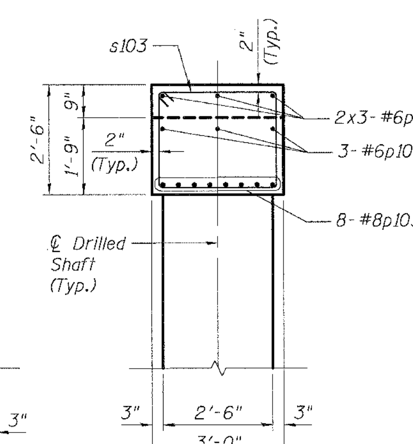
Note C: A minimum of 11" vertical clearance shall be maintained between proposed storm sewer and gas main.

Steel Casing Notes:

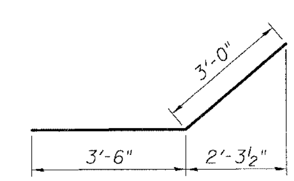
1. The Contractor shall provide cathodic protection as required by Kinder Morgan, Inc., including but not limited to the installation of cathodic protection test leads and interference testing. Cost shall be included in the contract unit price for STEEL CASINGS 42".
2. The steel casing pipe shall be coated with a suitable pipe coating as required by Kinder Morgan, Inc. for a distance of at least 10 feet on either side of the location where the sewer crosses the Kinder Morgan facility. Cost shall be included in the contract unit price for STEEL CASINGS 42".
3. The contractor shall plug the space between the outside of the sewer pipe and the inside of the steel casing pipe with bricks and mortar for a minimum of 18" along the length of the pipes. Cost shall be included in the contract unit price for STEEL CASINGS 42"



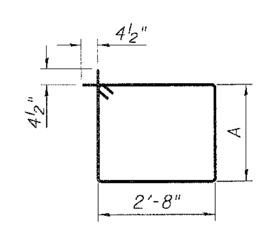
SADDLE ELEVATION B-B



SECTION C-C



Bar p101



Bars s101 thru s104

Bar	A
s101	2'-2"
s102	1'-11"
s103	1'-8"
s104	1'-5"

Notes:

1. All edges shall have a ¾" chamfer unless noted otherwise.
2. Structure Excavation shall be measured and paid for according to Section 502 of Standard Specifications except the vertical dimension for Structure Excavation will be the average depth from the surface of the material to be excavated to the bottom of the saddle.

REVISIONS	
NAME	DATE

ILLINOIS DEPARTMENT OF TRANSPORTATION

FAI ROUTE 55 (I-80 TO BLACK ROAD) WIDENING AND RESURFACING

DRAINAGE DETAILS - X STORM SEWER SADDLES AT KINDER MORGAN GAS MAIN

SCALE:
DRAWN BY MDB
DATE 02/23/07
CHECKED BY MJK

TENG
TENG & ASSOCIATES, INC. ENGINEERS/ARCHITECTS/PLANNERS CHICAGO, ILLINOIS