

# **Appendix A**

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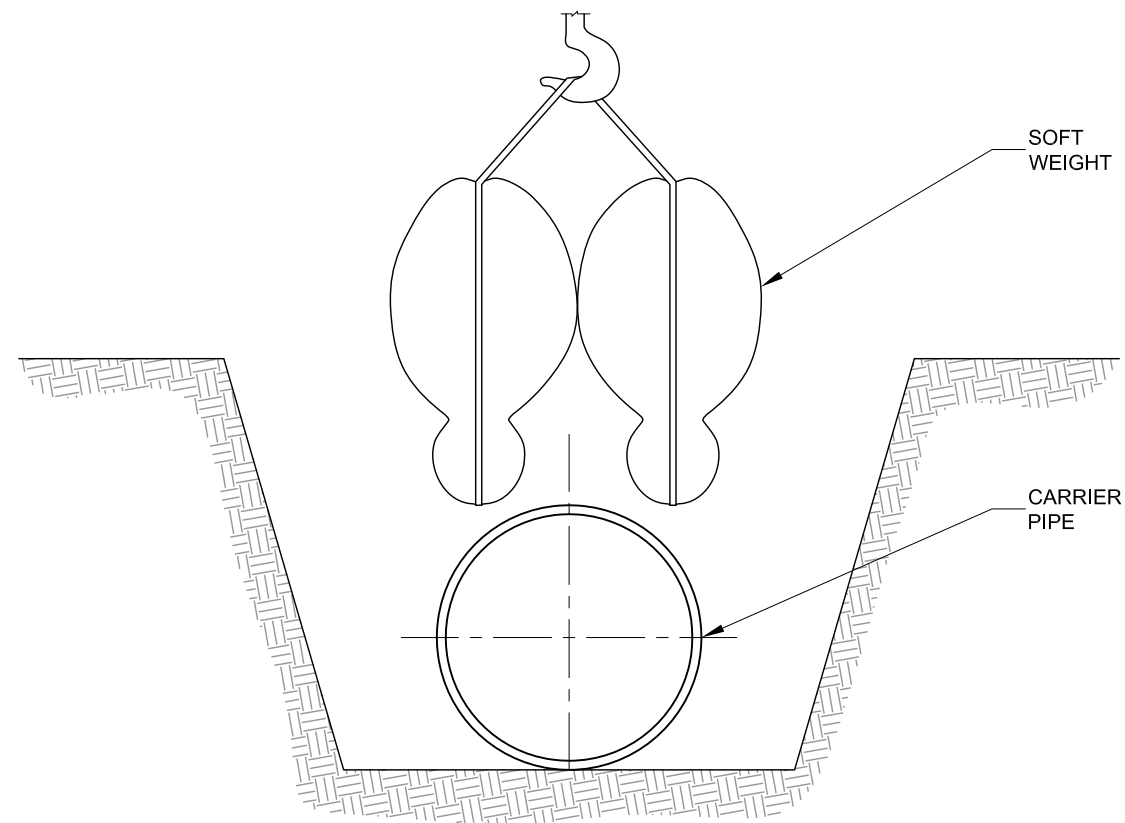
## Engineering Documents

## Table of Contents

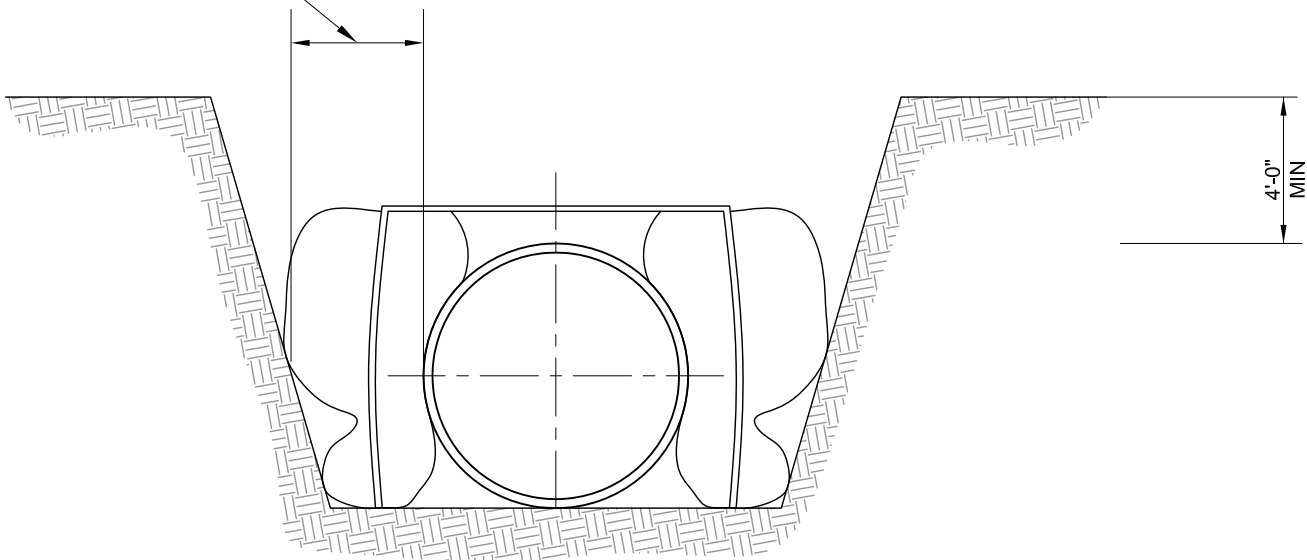
### Engineering Drawings for Nelson to Ross Pipeline

Sheet or Drawing #	Description
15765-A-0007	Pipeline set on Type Saddle Bag Weight
15765-A-0010	Open Cut Crossing for Unimproved Roads
15765-A-0011	Bored Crossing for Unimproved Roads
15765-A-0029	Type 1 Stream Crossing Detail
15765-A-0030	Type 2 Low Water/ Wet Sand/Low Impact Crossing Detail
15765-A-0031	Type 3 Drainage Crossing Detail
15765-A-0032	Type 4 Wetland Crossing Detail

# TYPICAL INSTALLATION DRAWING




EXTRA TRENCH  
TYPICALLY 1/2  
PIPE DIAMETER  
EACH SIDE.



W:\Plains\02826 - Nelson to Ross\CAD\TYPICALS\15765-A-0007\_Rev0.dwg Pete.J Thu, 01/12/12 9:45 AM

DRAWN	CHECKED	APPROVED	DATE	REV NO.	DESCRIPTION
CJH	BLT	QLB	01/12/12	0	ISSUED FOR CONSTRUCTION

THIS DRAWING PREPARED BY:  
**ROONEY ENGINEERING, INC**  
 12201 E. Arapahoe Road, Suite C-10  
 Centennial, Colorado 80112  
 (303) 792-5911



**PLAINS**  
ALL AMERICAN  
PIPELINE, L.P.

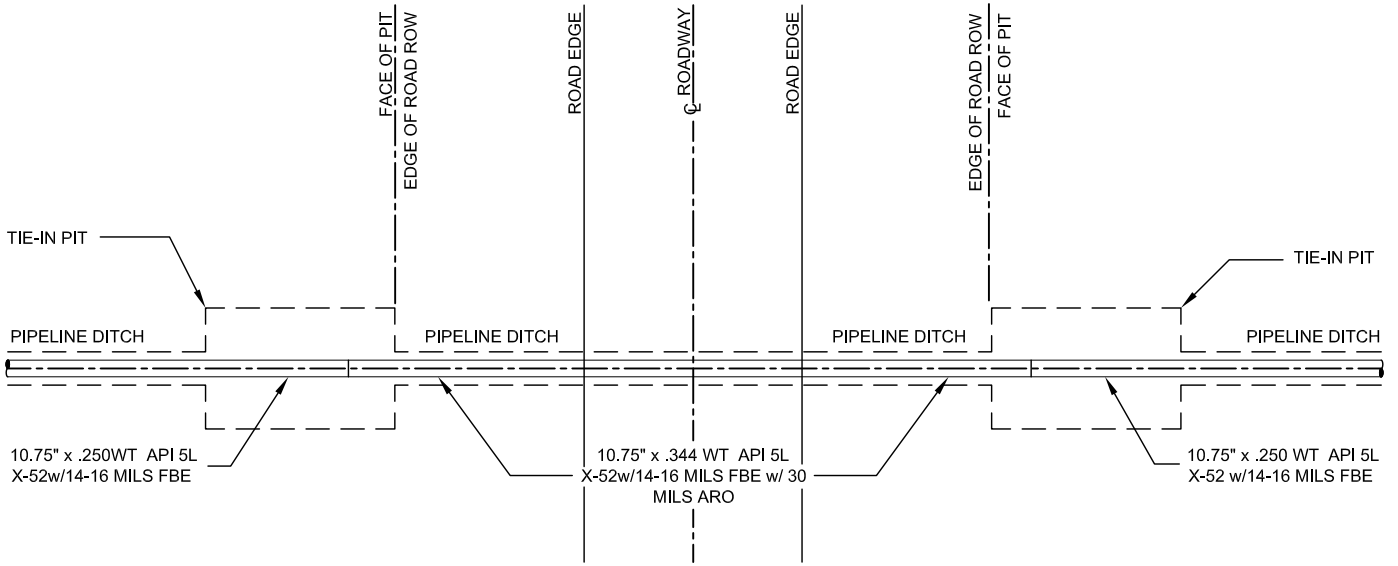
**NELSON TO ROSS PROJECT**  
AFE#15765

TYPICAL CONSTRUCTION DETAIL

**PIPELINE SET ON TYPE  
SADDLE BAG WEIGHT**

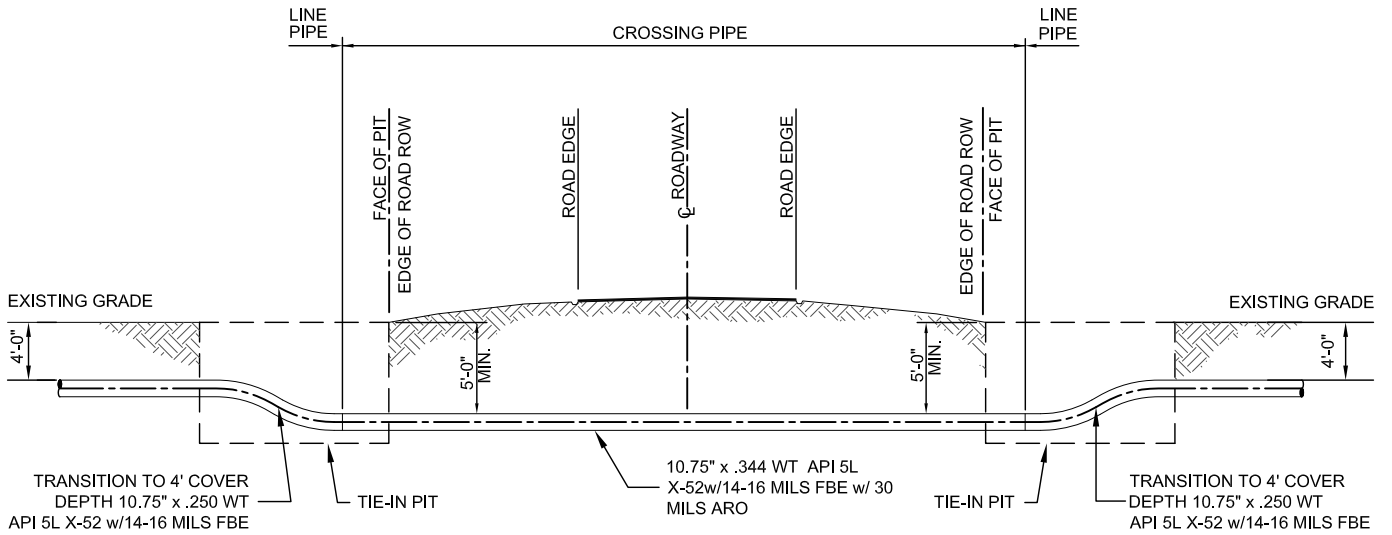
DRAWN	CJH	CHECKED	QLB	DRFT. APPV.
DATE	03/15/2011	SCALE	NTS	ENGR. APPV.

15765-A-0007



NOTE 1

**TYPICAL OPEN CUT CROSSING**  
(PLAN)



**TYPICAL OPEN CUT CROSSING**  
(ELEVATION)

- NOTES:  
 1. TRAFFIC CONTROL PLAN BY CONTRACTOR AS REQUIRED BY CROSSING PERMIT  
 2. ROAD SHALL BE RESTORED AS REQUIRED BY CROSSING PERMIT.

W:\Plains\02826 - Nelson to Ross\CAD\TYPICALS\15765-A-0010\_Rev0.dwg PeteJ Tue, 01/17/12 9:12 AM

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CJH	BLT	QLB	01/12/12	0	ISSUED FOR CONSTRUCTION

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 Centennial, Colorado 80112  
 (303) 792-5911

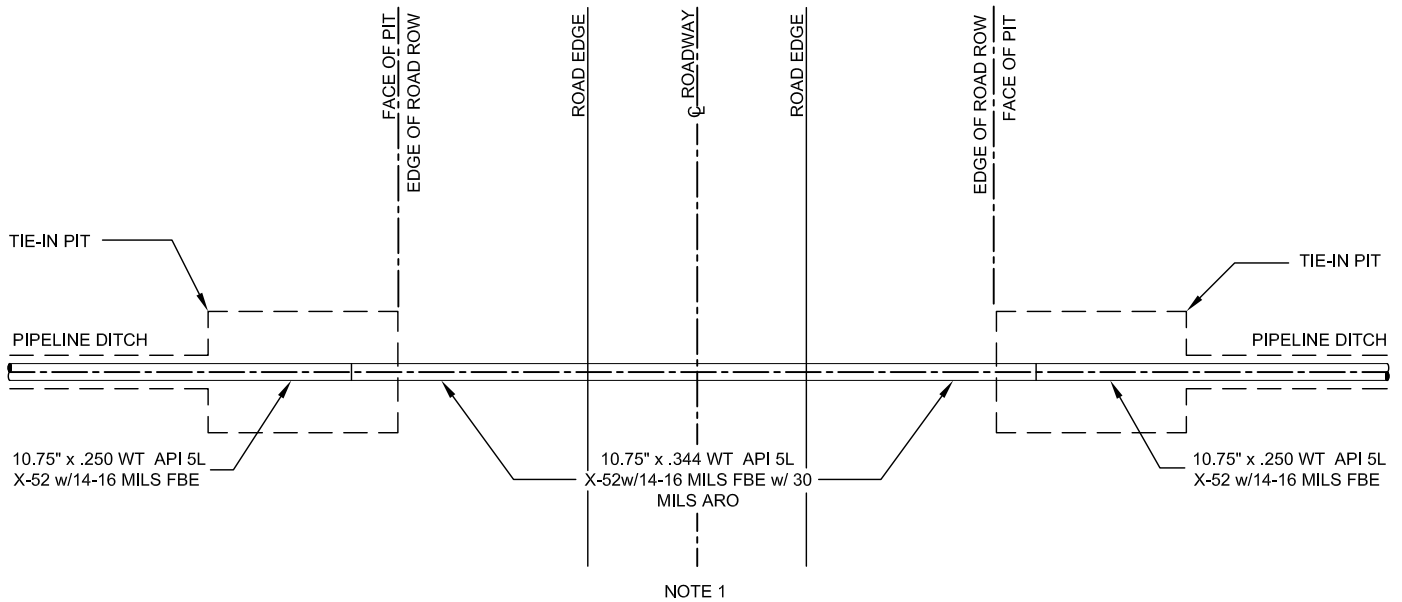
**PLAINS**  
ALL AMERICAN  
PIPELINE, L.P.

**NELSON TO ROSS PROJECT**  
AFE#15765

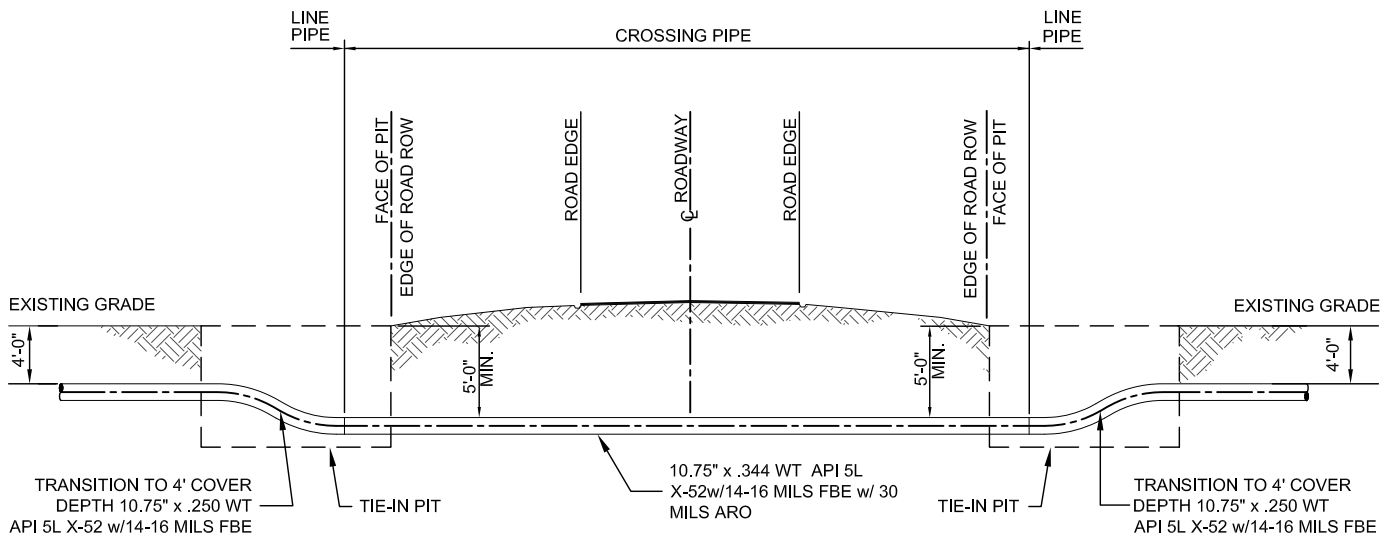
TYPICAL CONSTRUCTION DETAIL  
**OPEN CUT CROSSING FOR UNIMPROVED ROADS**

DRAWN CJH	CHECKED QLB	DRFT. APPV.
DATE 03/15/2011	SCALE NTS	ENGR. APPV.

15765-A-0010



**TYPICAL BORED CROSSING**  
(PLAN)



**TYPICAL BORED CROSSING**  
(ELEVATION)

- NOTES:  
 1. TRAFFIC CONTROL PLAN BY CONTRACTOR AS REQUIRED BY CROSSING PERMIT  
 2. ROAD SHALL BE RESTORED AS REQUIRED BY CROSSING PERMIT.

W:\Plains\02826 - Nelson to Ross\CAD\TYPICALS\15765-A-0011\_Rev1.dwg PeteJ Tue, 01/17/12 9:14 AM

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CJH	BLT	QLB	01/12/12	0	ISSUED FOR CONSTRUCTION

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 Centennial, Colorado 80112  
 (303) 792-5911

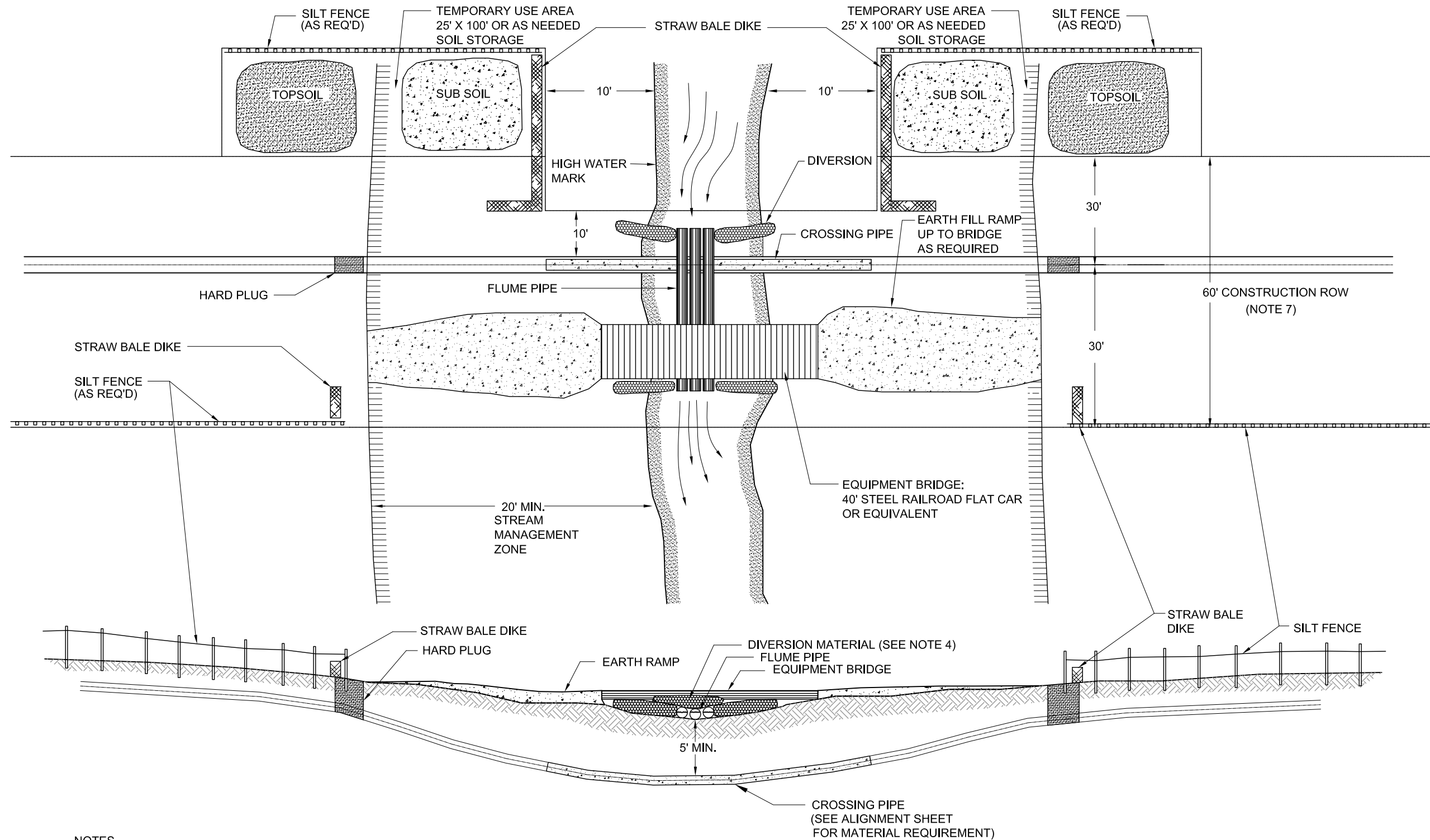
**PLAINS**  
ALL AMERICAN  
PIPELINE, L.P.

NELSON TO ROSS PROJECT  
AFE#15765

TYPICAL CONSTRUCTION DETAIL  
**BORED CROSSING FOR UNIMPROVED ROADS**

DRAWN CJH	CHECKED QLB	DRFT. APPV.
DATE 03/15/2011	SCALE NTS	ENGR. APPV.

15765-A-0011



**NOTES**

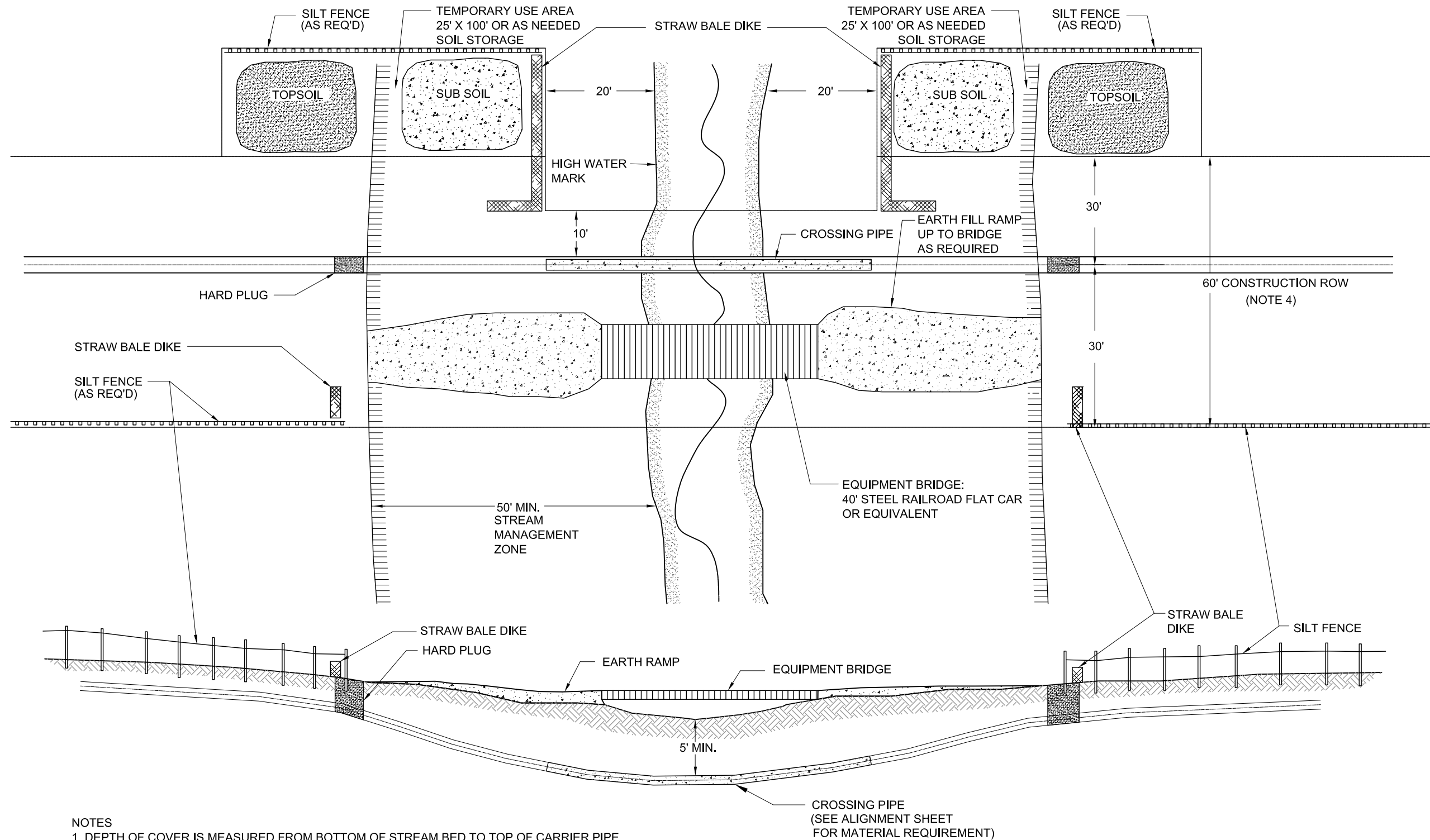
1. DEPTH OF COVER IS MEASURED FROM BOTTOM OF FLUME PIPE TO TOP OF CARRIER PIPE.
2. FLUME PIPE SHALL BE STRONG ENOUGH TO SUPPORT WEIGHT OF WATER, AND SPAN DITCH EXCAVATION IN ONE SEGMENT.
3. NUMBER OF FLUME PIPES AS REQUIRED TO CARRY FLOW.
4. DIVERSION SHALL BE EARTH OR ROCK-FILLED BAGS OR ROCK COVERED WITH A PLASTIC COVERING DRAPED SO AS TO PREVENT STREAM FLOW INTO DITCH EXCAVATION
5. TOPSOIL AND SUB SOIL TO BE STORED SEPERATELY TO PREVENT CONTAMINATION OF TOPSOIL.
6. STREAM MANAGEMENT ZONE SHALL EXTEND 20' MIN. BEYOND HIGH WATER MARK OR 20' BEYOND ADJACENT, MARKED WETLAND LIMIT.
7. FOOTAGES ARE BASED ON 60' ROW. ADJUSTMENT WILL BE MADE FOR DIFFERING ROW WIDTH.

W:\Plains\02826 - Nelson to Ross\CAD\TYPICALS\15765-A-0029\_Rev0.dwg PeteJ Thu, 01/12/12 9:36 AM

TITLE OF REFERENCE DRAWING	DRAWING NO.	DRAWN	CHECKED	APPROVED	DATE	REV NO.	DESCRIPTION
		CJH	BLT	QLB	01/12/12	0	ISSUED FOR CONSTRUCTION

PREPARED BY:  
 ROONEY ENGINEERING, INC.  
 12201 E. Arapahoe Road, Suite C-10  
 Greenwood Village, Colorado 80112  
 (303) 792-5911

		<b>NELSON TO ROSS PROJECT</b> AFE # 15765	
TYPICAL CONSTRUCTION DETAIL <b>TYPE 1 FLUMED STREAM</b> <b>STREAM CROSSING DETAIL</b>			
DRAWN CJH	CHECKED QLB	DRFT. APPV.	ENGR. APPV.
DATE 03/15/2011	SCALE NTS		
<b>15765-A-0029</b>			



**NOTES**

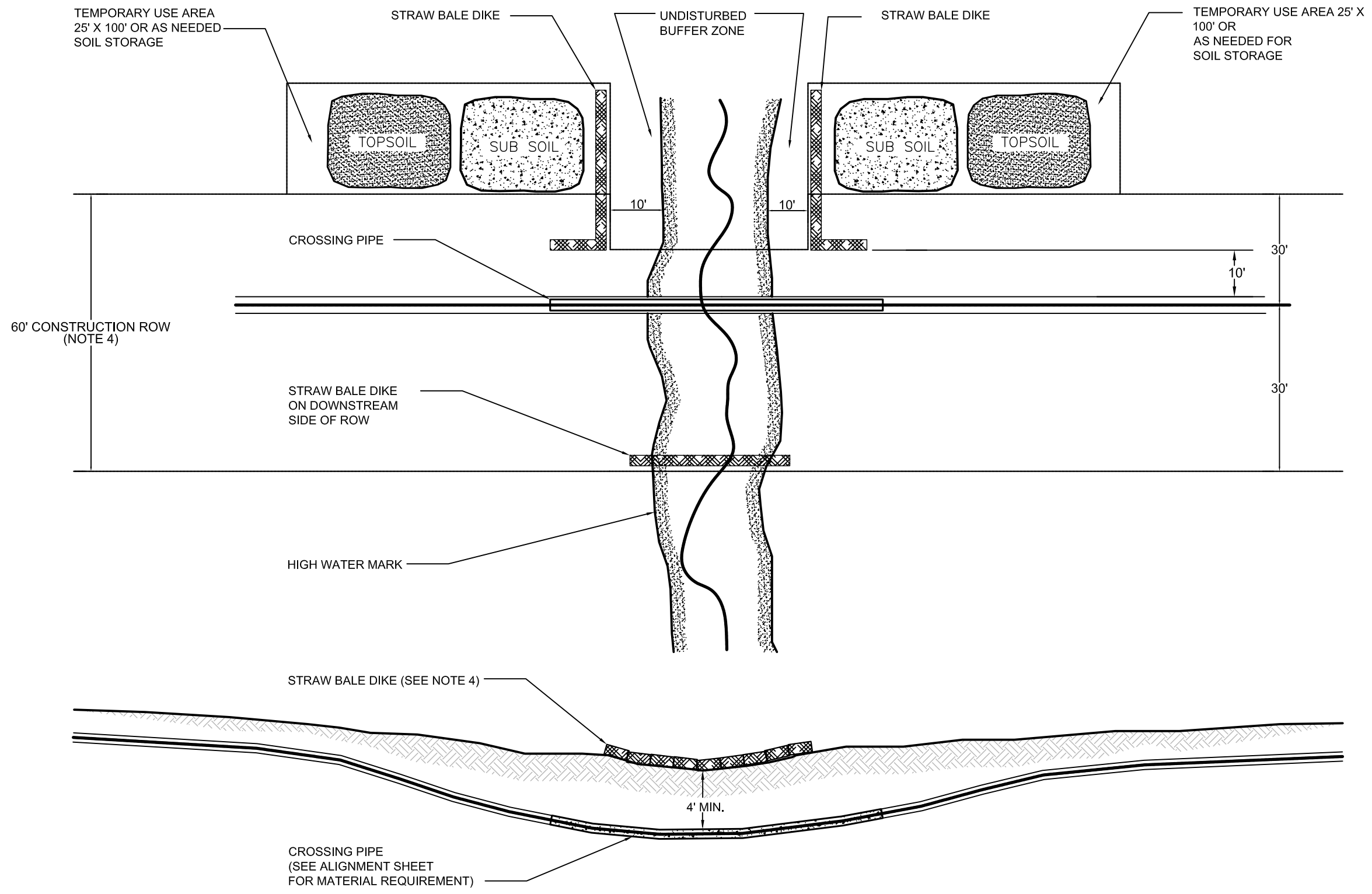
1. DEPTH OF COVER IS MEASURED FROM BOTTOM OF STREAM BED TO TOP OF CARRIER PIPE.
2. TOPSOIL AND SUB SOIL TO BE STORED SEPERATELY TO PREVENT CONTAMINATION OF TOPSOIL.
3. STREAM MANAGEMENT ZONE SHALL EXTEND 50' MIN. BEYOND HIGH WATER MARK OR 50' BEYOND ADJACENT, MARKED WETLAND LIMIT.
4. FOOTAGES ARE BASED ON 60' ROW. ADJUSTMENT WILL BE MADE FOR DIFFERENT ROW WIDTH.

W:\Plains\02826 - Nelson to Ross\CAD\TYPICALS\15765-A-0030\_Rev0.dwg PeteJ Thu, 01/12/12 9:36 AM

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		CJH	BLT	QLB	01/12/12	0	ISSUED FOR CONSTRUCTION

PREPARED BY:  
 ROONEY ENGINEERING, INC  
 1201 E. Arapahoe Road, Suite C-10  
 Aurora, Colorado 80012  
 (303) 792-5911

		NELSON TO ROSS PROJECT AFE # 15765	
		TYPICAL CONSTRUCTION DETAIL TYPE 2 LOW WATER/WET SAND/ LOW IMPACT CROSSING DETAIL	
DRAWN CJH DATE 03/15/2011	CHECKED QLB SCALE NTS	DRFT. APPV. ENGR. APPV.	15765-A-0030



**NOTES**

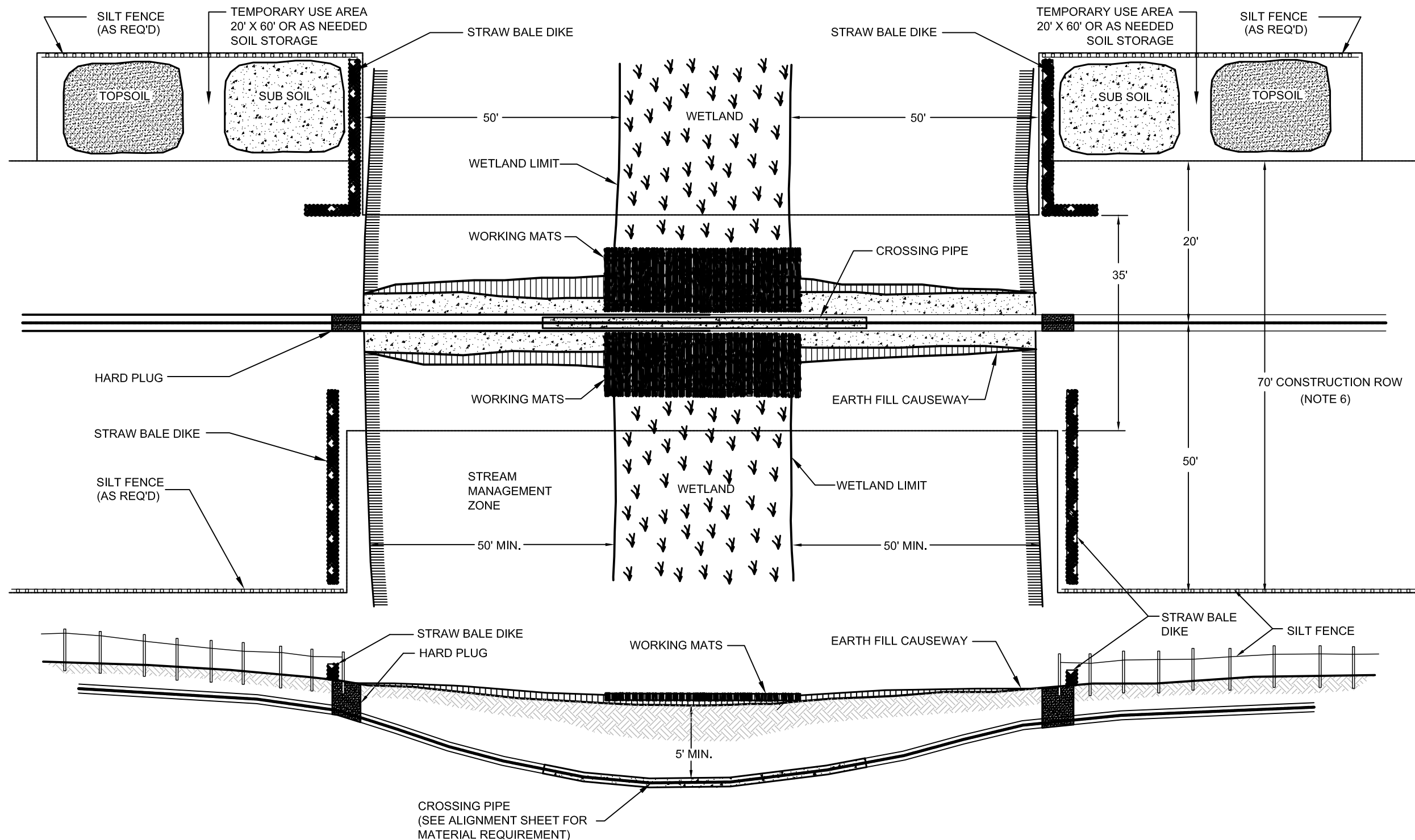
1. DEPTH OF COVER IS MEASURED FROM LOWEST POINT IN DRAINAGE.
2. TOPSOIL AND SUB SOIL TO BE STORED SEPERATELY TO PREVENT CONTAMINATION OF TOPSOIL.
3. STRAW BALES SHALL BE PLACED ON DOWNSTREAM SIDE OF CROSSING. STRAW BALES MAY BE PLACED ON UPSTREAM SIDE AS REQUIRED BY EIS.
4. FOOTAGES ARE BASED ON 60' ROW. ADJUSTMENT WILL BE MADE FOR DIIFERENT ROW WIDTH.

W:\Plains\02826 - Nelson to Ross\CAD\TYPICALS\15765-A-0031\_Rev0.dwg PeteJ Thu, 01/12/12 9:35 AM

TITLE OF REFERENCE DRAWING	DRAWING NO.	DRAWN	CHECKED	APPROVED	DATE	REV NO.	DESCRIPTION
		CJH	BLT	QLB	01/12/12	0	ISSUED FOR CONSTRUCTION

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 Greenwood Village, Colorado 80112  
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		<b>NELSON TO ROSS PROJECT</b> AFE # 15765	
TYPICAL CONSTRUCTION DETAIL <b>TYPE 3 DRAINAGE CROSSING DETAIL</b>			
DRAWN	CJH	CHECKED	QLB
DATE	03/15/2011	SCALE	NTS
DRFT. APPV.		ENGR. APPV.	
15765-A-0031			



**NOTES**

1. WORKING MATS SHALL EXTEND PAST HIGH MARK.
2. REDUCED ROW WIDTH SHALL MEET PERMIT REQUIREMENTS.
3. DEPTH OF COVER IS MEASURED FROM LOWEST POINT IN STREAM BED.
4. TOPSOIL AND SUB SOIL TO BE STORED SEPARATELY TO PREVENT CONTAMINATION OF TOPSOIL.
5. STREAM MANAGEMENT ZONE SHALL EXTEND 50' MIN. BEYOND HIGH WATER MARK OR 50' BEYOND ADJACENT, MARKED WETLAND LIMIT.
6. STRAW BALES SHALL BE PLACED ON DOWNSTREAM SIDE OF CAUSEWAY. (STRAW BALES MAY BE PLACED ON UPSTREAM SIDE AS REQUIRED BY EIS).
7. FOOTAGES ARE BASED ON 70' ROW. ADJUSTMENT WILL BE MADE FOR DIFFERENT ROW WIDTH.

W:\Plains\02826 - Nelson to Ross\CAD\TYPICALS\15765-A-0032\_Rev0.dwg PeteJ Thu, 01/12/12 9:35 AM

TITLE OF REFERENCE DRAWING	DRAWING NO.	DRAWN	CHECKED	APPROVED	DATE	REV NO.	DESCRIPTION
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THE INFORMATION CONTAINED HEREIN IS THE PROPERTY OF ROONEY ENGINEERING, INC. (2201 E. Arapahoe Road, Suite C-10 Aurora, Colorado 80012) (303) 792-5911

		<b>NELSON TO ROSS PROJECT</b> AFE # 15765	
TYPICAL CONSTRUCTION DETAIL <b>TYPE 4 WETLAND CROSSING DETAIL</b>			
DRAWN	CJH	CHECKED	QLB
DATE	03/15/2011	SCALE	NTS
DRFT. APPV.		ENGR. APPV.	
15765-A-0032			



PLAN VIEW  
DATUM: NORTH DAKOTA NORTH STATE PLANE, NAD83, US FEET

NOTES

LEGEND	
PROPOSED ROUTE	
EXISTING PIPELINES	
PARCEL LINES	
SECTION LINES	
TOWNSHIP/RANGE LINES	
SURFACE DRAINAGE	
WATER BODY	

PIPE SUMMARY				PIPE SPECIFICATIONS			
FROM	TO	LIN. FT.	TYPE	FROM	TO	LIN. FT.	TYPE

PIPE SPECIFICATIONS		SPECIFICATIONS	
DESCRIPTION	LIN. FT.	WELDS:	X-RAYS:

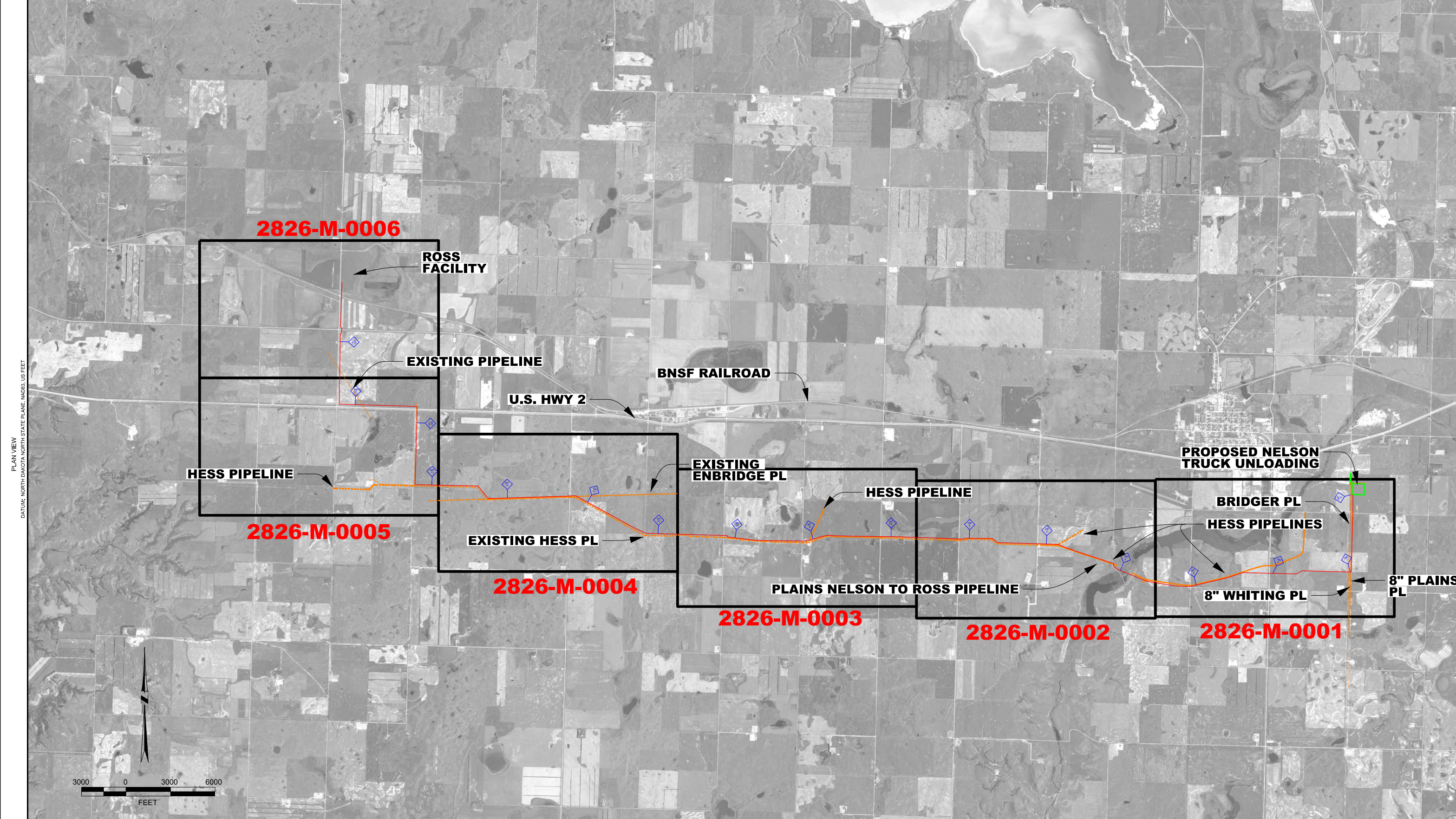
REVISIONS			
REV. NO.	DESCRIPTION	DWN	CHKD
A	ISSUED FOR REVIEW	JW	QB
B	UPDATED FOREIGN PIPELINES FROM SURVEY	JW	QB
C	UPDATED WITH NEW PRIMARY PL ROUTE	JW	QB
D	UPDATED PRIMARY PL ROUTE	JW	QB
E	UPDATED ROSS FACILITY LABEL	JW	QB

**PLAINS**  
ALL AMERICAN  
PIPELINE, L.P.

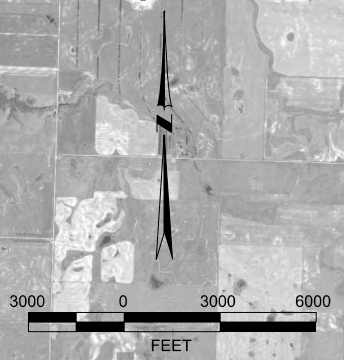
**NELSON TO ROSS PIPELINE  
OVERVIEW MAP**  
MOUNTRAIL COUNTY, NORTH DAKOTA

SCALE: AS SHWN	DATE: 8-9-11	PROJECT NO.:	DRAWING NO.:
DWN BY: JW	8-9-11	02826	2826-M-0000B
CHKD BY: QB	8-9-11		REVISION: E
ENGR:			

PREPARED BY: POLSONY ENGINEERING, INC. PL-CIT/ED: 8/2011



PLAN VIEW  
 DATUM: NORTH DAKOTA NORTH STATE PLANE, NAD83, US FEET



NOTES	
LEGEND	
PROPOSED ROUTE	
EXISTING PIPELINES	
PARCEL LINES	
SECTION LINES	
TOWNSHIP/RANGE LINES	
SURFACE DRAINAGE	
WATER BODY	

PIPE SUMMARY							
FROM	TO	LIN. FT.	TYPE	FROM	TO	LIN. FT.	TYPE

PIPE SPECIFICATIONS		
TYPE	DESCRIPTION	LIN. FT.

SPECIFICATIONS		REVISIONS				
WELDS:	X-RAYS:	REV. NO.	DESCRIPTION	DWN	CHKD	DATE
TEST PRESSURE:		A	ISSUED FOR REVIEW	JW	QB	8-9-11
M.O.P.:		B	UPDATED PL ROUTE	JW	QB	8-30-11
CONST. START DATE:		C	UPDATED PL ROUTE FROM SURVEY DATA	JW	QB	10-3-11
CONST. END DATE:		D	UPDATED FOREIGN PIPELINES FROM SURVEY	JW	QB	10-13-11
FIELD BOOK	PAGES	E	UPDATED PL ROUTE AT BEGINNING OF LINE	JW	QB	1-9-12

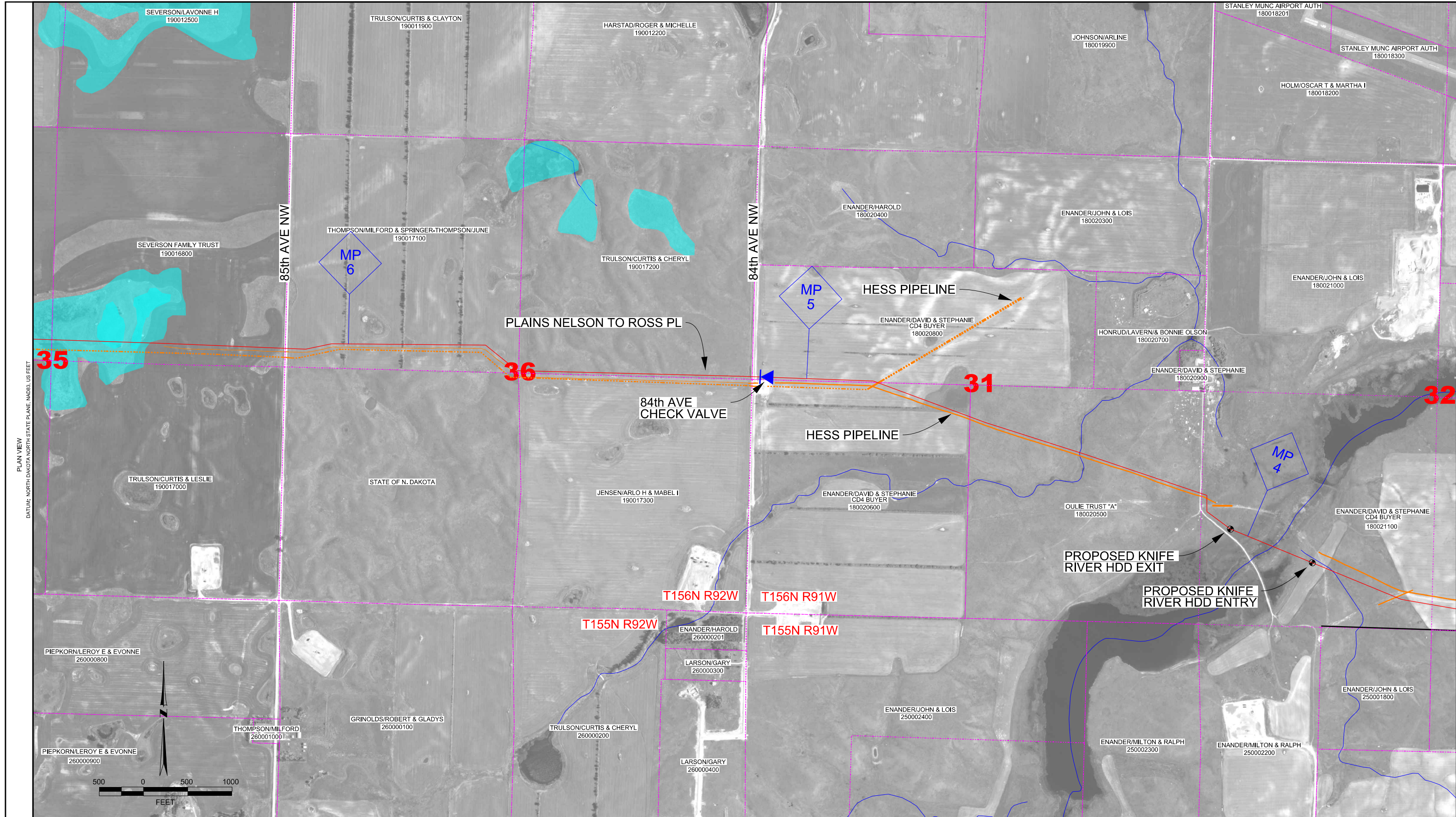
**PLAINS**  
ALL AMERICAN  
PIPELINE, L.P.

**NELSON TO ROSS PIPELINE  
OVERVIEW MAP**  
MOUNTAIN COUNTY, NORTH DAKOTA

SCALE:	AS SHWN	DATE:	PROJECT NO.	DRAWING NO.
DWN BY:	JW	8-9-11	02826	2826-M-0000
CHKD BY:	QB	8-9-11		
ENGR:	QB	8-9-11		

PREPARED BY: PLAINS ENGINEERING, INC. PL/CIT/ED: 8/2011





PLAN VIEW  
DATUM: NORTH DAKOTA NORTH STATE PLANE, NAD83, US FEET

NOTES

LEGEND

- PROPOSED ROUTE
- EXISTING PIPELINES
- PARCEL LINES
- SECTION LINES
- TOWNSHIP/RANGE LINES
- SURFACE DRAINAGE
- WATER BODY

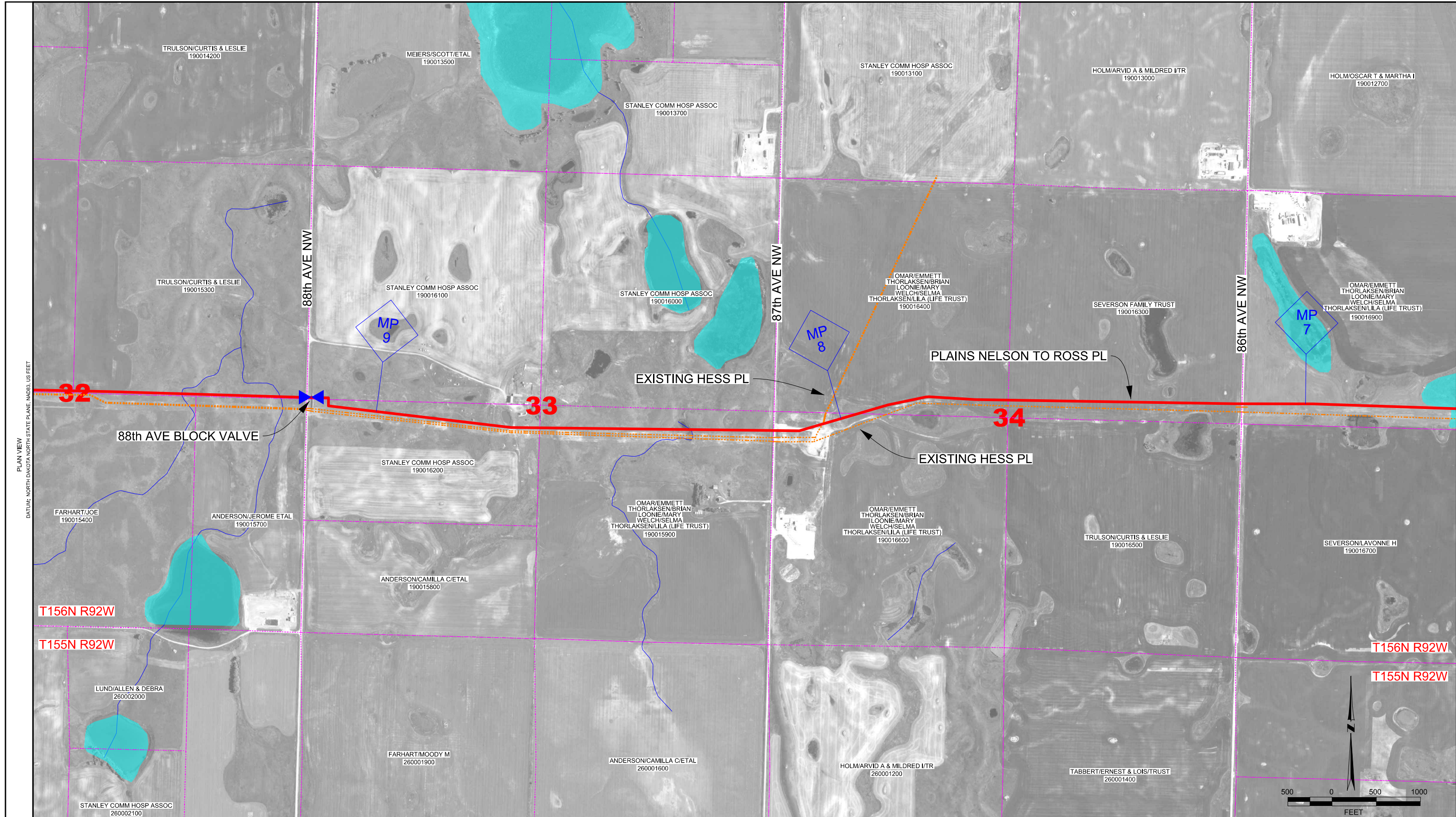
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FROM	TO	LIN. FT.	TYPE	FROM	TO	LIN. FT.	TYPE	TYPE	DESCRIPTION	WELDS:	X-RAYS:	REV. NO.	DESCRIPTION	DWN	CHKD	DATE
												A	ISSUED FOR REVIEW	JW	QB	8-9-11
												B	UPDATED ROUTE, OWNERS' ADDED CK VLV & HDD	JW	QB	8-30-11
												C	UPDATED PIPELINE ROUTE FROM SURVEY	JW	QB	10-3-11
												D	UPDATED FOREIGN PIPELINES FROM SURVEY	JW	QB	10-13-11
												E	ADDED SECTION NUMBERS	JW	QB	10-18-11
												F	UPDATED ROUTE; REMOVED WPA	JW	QB	12-9-11
												G	MOVED CHECK VALVE TO 84TH AVE	JW	QB	1-9-12

**PLAINS ALL AMERICAN PIPELINE, L.P.**

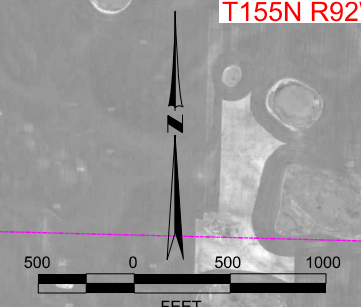
**NELSON TO ROSS PIPELINE PROPOSED ROUTE OVERVIEW #2**  
MOUNTAIN COUNTY, NORTH DAKOTA

SCALE: AS SHWN DATE PROJECT NO. DRAWING NO.  
DWN BY: JW 8-9-11 02826 2826-M-0002  
CHKD BY: QB 8-9-11 REVISION: G  
ENGR:

PREPARED BY: PLAINS ENGINEERING, INC. PL/CIT/ED: 8/2011



PLAN VIEW  
 DATUM: NORTH DAKOTA NORTH STATE PLANE, NAD83, US FEET



NOTES

LEGEND

- PROPOSED ROUTE ———
- EXISTING PIPELINES ———
- PARCEL LINES - - - - -
- SECTION LINES - - - - -
- TOWNSHIP/RANGE LINES —————
- SURFACE DRAINAGE ———
- WATER BODY ———

PIPE SUMMARY				PIPE SPECIFICATIONS			
FROM	TO	LIN. FT.	TYPE	FROM	TO	LIN. FT.	TYPE

PIPE SPECIFICATIONS		SPECIFICATIONS	
DESCRIPTION	LIN. FT.	WELDS:	X-RAYS:

REVISIONS			
REV. NO.	DESCRIPTION	DWN	CHKD
A	ISSUED FOR REVIEW	JW	QB
B	UPDATED PL ROUTE, LAND OWNERS, & BLK VALVE	JW	QB
C	UPDATED PIPELINE ROUTE FROM SURVEY	JW	QB
D	UPDATED FOREIGN PIPELINES FROM SURVEY	JW	QB
E	ADDED SECTION NUMBERS	JW	QB
F	UPDATED MILEPOSTS	JW	QB

**PLAINS**  
ALL AMERICAN  
PIPELINE, L.P.

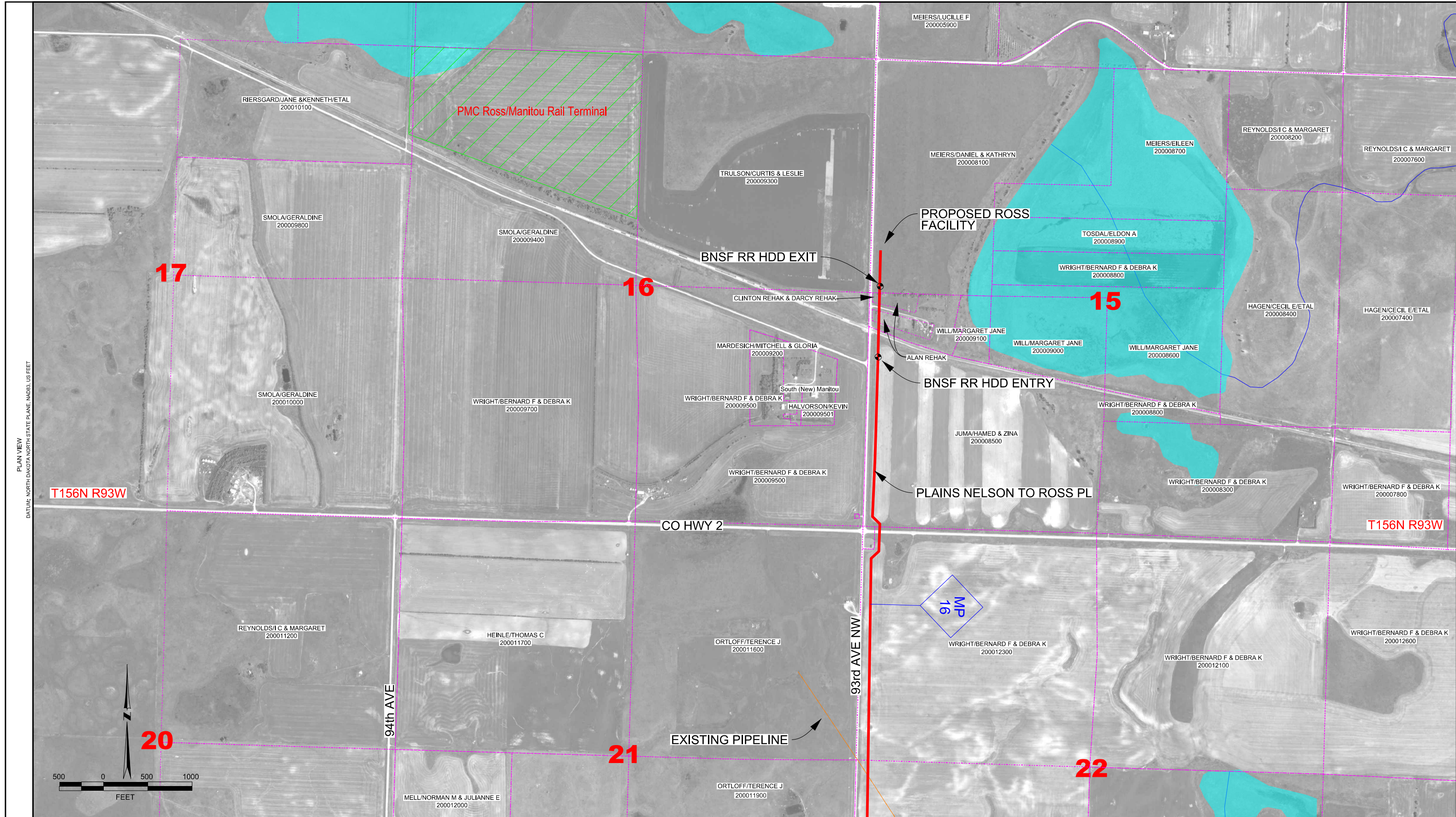
**NELSON TO ROSS PIPELINE  
PROPOSED ROUTE OVERVIEW #3  
MOUNTRAIL COUNTY, NORTH DAKOTA**

SCALE: AS SHWN	DATE: 8-9-11	PROJECT NO. 02826	DRAWING NO. 2826-M-0003
DWN BY: JW	8-9-11		
CHKD BY: QB	8-9-11		
ENGR:			REVISION: F

PREPARED BY: PLAINS ENGINEERING, INC. / PL. CDTED: 8/24/11







PLAN VIEW  
DATUM: NORTH DAKOTA NORTH STATE PLANE, NAD83, US FEET

**NOTES**


**LEGEND**

- PROPOSED ROUTE ———
- EXISTING PIPELINES ———
- PARCEL LINES - - - - -
- SECTION LINES - - - - -
- TOWNSHIP/RANGE LINES —————
- SURFACE DRAINAGE ~~~~~
- WATER BODY [Area]

PIPE SUMMARY				PIPE SPECIFICATIONS			
FROM	TO	LIN. FT.	TYPE	FROM	TO	LIN. FT.	TYPE

PIPE SPECIFICATIONS		SPECIFICATIONS	
DESCRIPTION	LIN. FT.	WELDS:	X-RAYS:

REVISIONS			
REV. NO.	DESCRIPTION	DWN	CHKD
A	ISSUED FOR REVIEW	JW	QB
B	UPDATED PL ROUTE AND LAND OWNER	JW	QB
C	UPDATED PIPELINE ROUTE FROM SURVEY	JW	QB
D	UPDATED FOREIGN PIPELINES FROM SURVEY	JW	QB
E	ADDED SECTION NUMBERS	JW	QB
F	UPDATED ROUTE	JW	QB



**PLAINS**  
ALL AMERICAN  
PIPELINE, L.P.

**NELSON TO ROSS PIPELINE  
PROPOSED ROUTE OVERVIEW #6  
MOUNTAIN COUNTY, NORTH DAKOTA**

SCALE: AS SHWN DATE PROJECT NO. DRAWING NO.  
DWN BY: JW 8-9-11 02826 2826-M-0006  
CHKD BY: QB 8-9-11 REVISION: F  
ENGR:

PREPARED BY: PLAINS ENGINEERING, INC. PL/CTED: 8/21/11