# 2.0 PROPOSED ACTION

## 2.1 PROPOSED FACILITIES

MEP proposes to construct, operate, and maintain approximately 506.1 miles of new 30-, 36-, and 42-inch-diameter interstate natural gas transmission pipeline and associated ancillary facilities. The proposed Midcontinent Express Pipeline Project pipeline would extend from a receipt point near Bennington in Bryan County, Oklahoma, to a terminus at an interconnect with the existing Transcontinental Gas Pipe Line Corporation (Transco) pipeline system near Butler in Choctaw County, Alabama. In addition to these mainline pipeline facilities, MEP proposes to construct, operate, and maintain an approximately 4.2-mile-long, 16- or 24-inch-diameter lateral pipeline in Richland and Madison Parishes, Louisiana. This pipeline, hereafter referred to as the CenterPoint Lateral, would extend from an interconnect with the Project mainline pipeline in Madison Parish, Louisiana, to an existing natural gas pipeline owned by CenterPoint Energy Gas Transmission Company (CEGT) in Richland Parish, Louisiana.

In total, the proposed pipeline facilities would interconnect with up to 14 natural gas pipelines owned by Enogex, Natural Gas Pipeline Company of America (NGPL, two interconnects), Energy Transfer Partners, LP (ETC), Texas Gas Transmission, LLC (TGT), ANR Pipeline Company (ANR), Columbia Gulf Transmission Company (CGT, two interconnects), Texas Eastern Transmission, L.P. (TETCO), Southern Natural Gas Company (SONAT), Tennessee Gas Pipeline Company (TGP), Destin Pipeline Company, LLC (Destin), Transco, and CEGT.

The general location of the proposed Project facilities is shown in Figure 2.1-1, and Appendix B of this EIS provides more detailed facility location maps. Throughout this EIS, the locations of specific features along the proposed mainline pipeline route, such as Project facilities and environmental resources, are identified by milepost (MP) with an additional prefix (OK, TX, LA, MS, or AL) that indicates the state in which the feature occurs. Similarly, the locations of specific features along the proposed CenterPoint Lateral route are identified by MP CenterPoint Lateral (CL). Table 2.1-1 provides the location, MP, and length information for the pipeline facilities associated with the proposed Project.

In addition to the proposed pipeline facilities, MEP proposes to construct and operate a total of approximately 111,720 horsepower (hp) of compression at one booster and four new mainline compressor stations, as well as various meter station, mainline valve, and pig[1] launcher/receiver facilities. Table 2.1-2 identifies and describes the aboveground facilities associated with the proposed Project and provides location and MP information for these facilities.

Natural gas is transported through a pipeline under pressure. The maximum allowable operating pressure (MAOP) of the proposed Project mainline pipeline would be 1,480 pounds per square inch gauge (psig) for all segments of the Project pipeline, with the exception of the 30-inch-diameter pipeline (MP OK 0.0 to MP TX 25.7), which would have an MAOP of 1,440 psig. The MAOP of the CenterPoint Lateral would also be 1,480 psig. As natural gas flows through a pipeline, friction causes a reduction in pressure. Compressor stations are used to increase the pressure and keep the flow of natural gas moving through the pipeline at an appropriate rate.

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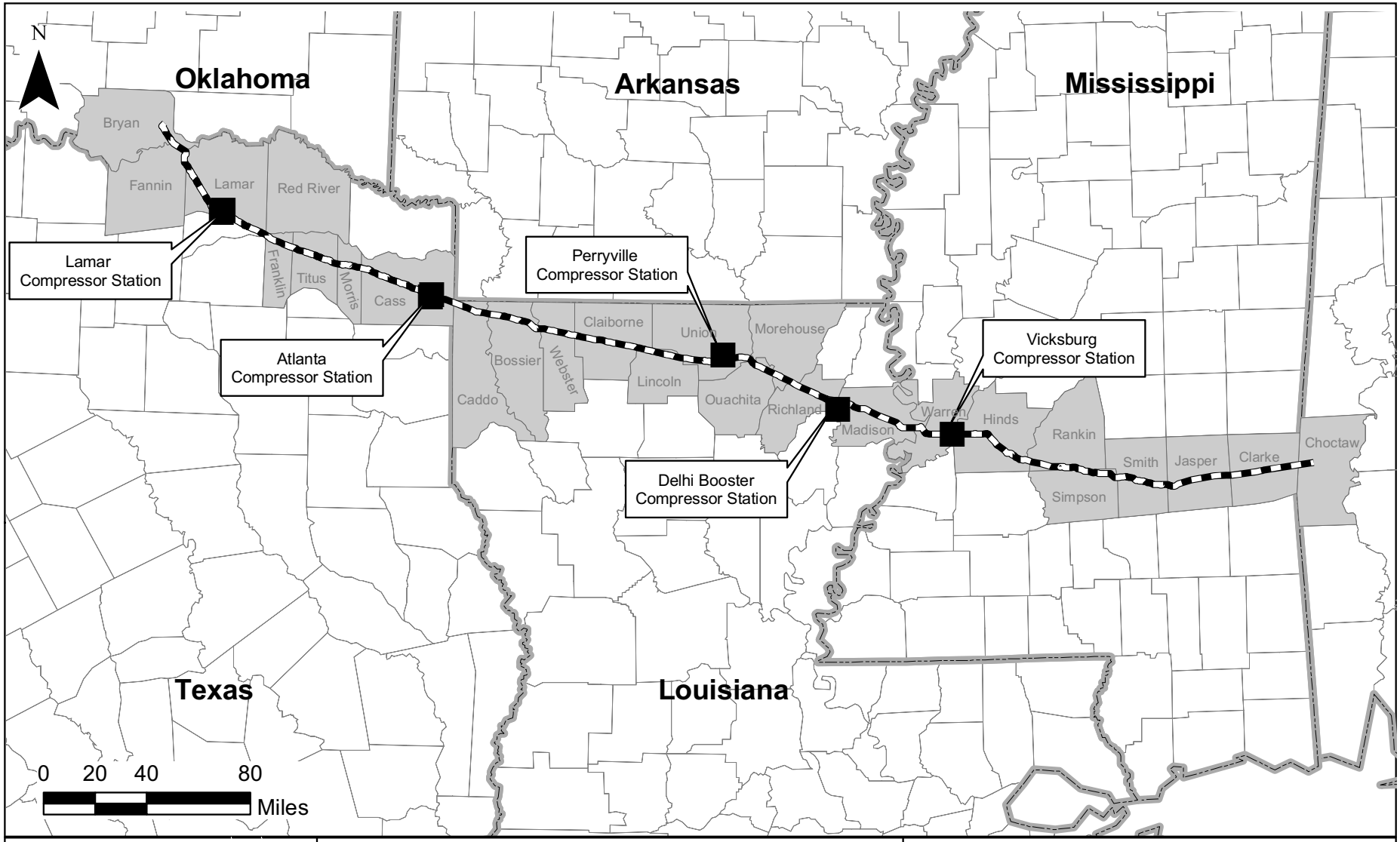
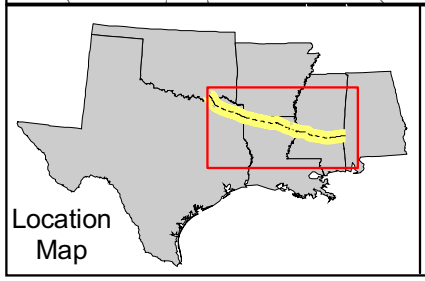
[1] A pig is a mechanical tool used to clean and/or inspect the interior of a pipeline.




## Legend

Compressor Station

Proposed Project Route

**MIDCONTINENT EXPRESS PIPELINE PROJECT**

GENERAL LOCATION MAP

DATE: May 2008

Figure 2.1-1

**TABLE 2.1-1**
**Pipeline Facilities for the Proposed Midcontinent Express Pipeline Project**

| County/Parish | Milepost Begin | Milepost End | Diameter (inches) | Length (miles)[a] |
|---|---|---|---|---|
| **Mainline Facilities** | | | | |
| Bryan, OK | OK 0.0 | OK 8.4 | 30 | 8.2 |
| Fannin, TX | TX 0.0 | TX 3.8 | 30 | 7.9 |
| Lamar, TX | TX 3.8 | TX 25.7 | 30 | 23.5 |
| Lamar, TX | TX 25.7 | TX 46.8 | 42 | 21.1 |
| Red River, TX | TX 46.8 | TX 50.7 | 42 | 4.0 |
| Franklin, TX | TX 50.7 | TX 58.7 | 42 | 8.1 |
| Titus, TX | TX 58.7 | TX 78.1 | 42 | 19.7 |
| Morris, TX | TX 78.1 | TX 87.6 | 42 | 9.9 |
| Cass, TX | TX 87.6 | TX 126.8 | 42 | 39.7 |
| Caddo, LA | LA 0.0 | LA 13.0 | 42 | 13.5 |
| Bossier, LA | LA 13.0 | LA 35.6 | 42 | 23.9 |
| Webster, LA | LA 35.6 | LA 49.1 | 42 | 13.6 |
| Claiborne, LA | LA 49.1 | LA 77.3 | 42 | 28.3 |
| Lincoln, LA | LA 77.3 | LA 92.0 | 42 | 15.1 |
| Union, LA | LA 92.0 | LA 119.6 | 42 | 28.2 |
| Ouachita, LA | LA 119.6 | LA 130.5 | 42 | 11.1 |
| Morehouse, LA | LA 130.5 | LA 141.0 | 42 | 10.7 |
| Richland, LA | LA 141.0 | LA 158.7 | 42 | 18.6 |
| Madison, LA | LA 158.7 | LA 160.2 | 42 | 2.5 |
| Madison, LA | LA 160.2 | LA 194.2 | 36 | 34.3 |
| Warren, MS | MS 0.0 | MS 12.8 | 36 | 13.7 |
| Hinds, MS | MS 12.8 | MS 44.8 | 36 | 33.2 |
| Rankin, MS | MS 44.8 | MS 70.1 | 36 | 26.4 |
| Simpson, MS | MS 70.1 | MS 81.8 | 36 | 11.7 |
| Smith, MS | MS 81.8 | MS 102.3 | 36 | 20.9 |
| Jasper, MS | MS 102.3 | MS 127.2 | 36 | 25.2 |
| Clarke, MS | MS 127.2 | MS 154.3 | 36 | 27.6 |
| Choctaw, AL | AL 0.0 | AL 5.5 | 36 | 5.5 |

**TABLE 2.1-1 (continued)**
**Pipeline Facilities for the Proposed Midcontinent Express Pipeline Project**

| County/Parish | Milepost Begin | Milepost End | Diameter (inches) | Length (miles)[a] |
|---|---|---|---|---|
| **Lateral Facilities (CenterPoint Lateral)** | | | | |
| Richland/ Madison, LA | CL 3.5 | CL 4.1 | 16 | 0.9 |
| Madison, LA | CL 0.0 | CL 3.5 | 16 | 3.3 |
| **Mainline Total** | | | | **506.1** |
| **Lateral Total** | | | | **4.2** |
| **Pipeline Total** | | | | **510.3** |

Notes:

OK = Oklahoma; TX = Texas; LA = Louisiana; MS = Mississippi; AL = Alabama; and CL = CenterPoint Lateral.

[a] Due to the incorporation of several minor route variations, subtraction of the reported milepost begin and end values may not equal the reported pipeline lengths; rounding may affect totals

**TABLE 2.1-2**
**Aboveground Facilities for the Proposed Midcontinent Express Pipeline Project**

| Facility | County/ Parish | Milepost | Description |
|---|---|---|---|
| **Compressor Stations** | | | |
| Lamar Compressor Station | Lamar, TX | TX 28.7 | Install 38,855-hp of reciprocating internal combustion engine-driven compression, gas coolers, filter/separators, one mainline valve, and office/warehouse |
| Atlanta Compressor Station | Cass, TX | TX 117.4 | Install 12,270-hp of reciprocating internal combustion engine-driven compression, filter/separators, one mainline valve, and office/warehouse |
| Perryville Compressor Station | Union, LA | LA 109.0 | Install 32,720-hp of reciprocating internal combustion engine-driven compression, filter/separators, one mainline valve, and office/warehouse |
| Vicksburg Compressor Station | Warren, MS | MS 11.8 | Install 18,405-hp of reciprocating internal combustion engine-driven compression, gas coolers, filter/separators, one mainline valve, and office/warehouse |
| Delhi Booster Station | Richland, LA | CL 3.6 | Install 9,470-hp of reciprocating internal combustion engine-driven compression, gas coolers, filter/separators, one mainline valve, and office/warehouse |

| TABLE 2.1-2 (continued)<br>Aboveground Facilities for the Proposed Midcontinent Express Pipeline Project | | | |
|---|---|---|---|
| **Facility** | **County/ Parish** | **Milepost** | **Description** |
| **Meter Stations** | | | |
| Enogex Interconnect | Bryan, OK | OK 0.00 | Install less than 50 feet of 16-inch-diameter interconnecting pipeline, metering and pressure regulation facilities, and tie-in at Enogex pipeline receipt point |
| NGPL Interconnect No. 1 | Lamar, TX | TX 25.7 | Install less than 50 feet of 12-inch-diameter interconnecting pipeline, metering and pressure regulation facilities, and tie-in at bidirectional NGPL pipeline receipt/delivery point |
| ETC Interconnect | Lamar, TX | TX 25.7 | Install less than 50 feet of 24-inch-diameter interconnecting pipeline, metering and pressure regulation facilities, and tie-in at ETC pipeline receipt point |
| NGPL Interconnect No. 2 | Cass, TX | TX 117.4 | Install approximately 85 feet of 12-inch diameter interconnecting pipeline, metering and pressure regulation facilities, and tie-in at bidirectional NGPL pipeline receipt/delivery point |
| TGT Interconnect | Ouachita, LA | LA 124.6 | Install approximately 300 feet of 12-inch-diameter interconnecting pipeline, metering and pressure regulation facilities, and tie-in at TGT pipeline delivery point |
| ANR Interconnect | Richland, LA | LA 152.3 | Install approximately 50 feet of 12-inch-diameter interconnecting pipeline, metering and pressure regulation facilities, and tie-in at ANR delivery point |
| CGT Interconnect | Madison, LA | LA 160.2 | Install approximately 350 feet of 16-inch-diameter interconnecting pipeline, metering and pressure regulation facilities, and tie-in at CGT delivery point |
| TETCO Interconnect | Hinds, MS | MS 35.4 | Install less than 50 feet of 16-inch-diameter interconnecting pipeline, metering and pressure regulation facilities, and tie-in at TETCO pipeline delivery point |
| SONAT Interconnect | Smith, MS | MS 98.5 | Install less than 50 feet of 16-inch-diameter interconnecting pipeline, metering and pressure regulation facilities, and tie-in at SONAT pipeline delivery point |
| TGP Interconnect | Jasper, MS | MS 126.4 | Install less than 50 feet of 12-inch-diameter interconnecting pipeline, metering and pressure regulation facilities, and tie-in at TGP pipeline delivery point |
| Destin Interconnect | Clarke, MS | MS 131.4 | Install approximately 260 feet of 12-inch-diameter interconnecting pipeline, metering and pressure regulation facilities, and tie-in at Destin pipeline delivery point |

| TABLE 2.1-2 (continued)<br>Aboveground Facilities for the Proposed Midcontinent Express Pipeline Project | | | |
|---|---|---|---|
| **Facility** | **County/ Parish** | **Milepost** | **Description** |
| **Meter Stations (continued)** | | | |
| Transco Interconnect | Choctaw, AL | AL 5.8 | Install less than 50 feet of 24-inch-diameter interconnecting pipeline, metering and pressure regulation facilities, and tie-in at Transco pipeline delivery point |
| CGT Meter Station | Madison, LA | CP 0.3 | Install interconnecting pipeline, metering and pressure regulation facilities, and tie-in at CGT delivery point |
| CEGT Interconnect | Madison, LA | CL 4.1 | Install metering and pressure regulation facilities and tie-in at CEGT pipeline receipt point |
| **Pig Launcher/Receivers** | | | |
| Pig Launcher Site | Bryan, OK | OK 0.0 | Install pig launcher at origin of the 30-inch-diameter pipeline segment within the confines of the Enogex Interconnect |
| Pig Launcher/Receiver Site | Lamar, TX | TX 25.7 | Install pig receiver and launcher at transition from 30- to 42-inch-diameter pipeline segment within the confines of the ETC and NGPL Interconnect No. 1 facilities |
| Pig Launcher/Receiver Site | Cass, TX | TX 123.4 | Install intermediate pig receiver and launcher facilities along 42-inch-diameter pipeline segment |
| Pig Launcher/Receiver Site | Lincoln, LA | LA 80.6 | Install intermediate pig receiver and launcher facilities along 42-inch-diameter pipeline segment |
| Pig Launcher Site | Richland, LA | CL 4.3 | Install pig launcher at origin of 16-inch-diameter CenterPoint Lateral within the confines of the CEGT Interconnect |
| Pig Receiver Site | Madison, LA | CL 0.0 | Install pig receiver at terminus of 16-inch-diameter CenterPoint Lateral within the confines of the CGT Interconnect |
| Pig Launcher/Receiver Site | Madison, LA | LA 161.3 | Install pig receiver and launcher at transition from 42- to 36-inch-diameter pipeline segment |
| Pig Launcher/Receiver Site | Rankin, MS | MS 58.9 | Install intermediate pig receiver and launcher facilities along 36-inch-diameter pipeline segment |
| Pig Receiver Site | Choctaw, AL | AL 5.8 | Install pig receiver at end of 36-inch-diameter pipeline segment within the confines of the Transco Interconnect |
| **Mainline Valves (MLV)** | | | |
| MLV No. 30-01 | Bryan OK | OK 0.0 | Install mainline valve within confines of the Enogex Interconnect at Project origin |
| MLV No. 30-02 | Lamar, TX | TX 5.5 | Install mainline valve within the permanent pipeline right-of-way |
| MLV No. 30-03 | Lamar, TX | TX17.6 | Install mainline valve within the permanent pipeline right-of-way |

| TABLE 2.1-2 (continued)<br>Aboveground Facilities for the Proposed Midcontinent Express Pipeline Project | | | |
|---|---|---|---|
| **Facility** | **County/ Parish** | **Milepost** | **Description** |
| **Mainline Valves (MLV) (continued)** | | | |
| MLV No. 30-04 | Lamar, TX | TX 25.7 | Install mainline valve at terminus of 30-inch-diameter pipeline within confines of the ETC and NGPL Interconnect No. 1 facilities |
| MLV No. 42-01 | Lamar, TX | TX 25.7 | Install mainline valve at origin of 42-inch-diameter pipeline within confines of the ETC and NGPL Interconnect No. 1 facilities |
| MLV No. 42-02 | Lamar, TX | TX 28.7 | Install mainline valve within confines of the Lamar Compressor Station |
| MLV No. 42-03 | Lamar, TX | TX 46.1 | Install mainline valve within the permanent pipeline right-of-way |
| MLV No. 42-04 | Titus, TX | TX 65.4 | Install mainline valve within the permanent pipeline right-of-way |
| MLV No. 42-05 | Morris, TX | TX 85.2 | Install mainline valve within the permanent pipeline right-of-way |
| MLV No. 42-06 | Cass, TX | TX 105.0 | Install mainline valve within the permanent pipeline right-of-way |
| MLV No. 42-07 | Cass, TX | TX 123.4 | Install mainline valve within the confines of a pig launcher/receiver site |
| MLV No. 42-08 | Bossier, LA | LA 15.2 | Install mainline valve within the permanent pipeline right-of-way |
| MLV No. 42-09 | Bossier, LA | LA 35.0 | Install mainline valve within the permanent pipeline right-of-way |
| MLV No. 42-10 | Claiborne, LA | LA 53.0 | Install mainline valve within the permanent pipeline right-of-way |
| MLV No. 42-11 | Claiborne, LA | LA 61.7 | Install mainline valve within the permanent pipeline right-of-way |
| MLV No. 42-12 | Lincoln, LA | LA 80.6 | Install mainline valve within the confines of a pig launcher/receiver site |
| MLV No. 42-13 | Union, LA | LA 100.2 | Install mainline valve within the permanent pipeline right-of-way |
| MLV No. 42-14 | Union, LA | LA 109.6 | Install mainline valve within the limits of the Perryville Compressor Station Property |
| MLV No. 42-15 | Ouachita, LA | LA 125.2 | Install mainline valve within the permanent pipeline right-of-way |
| MLV No. 42-16 | Richland, LA | LA 145.2 | Install mainline valve within the permanent pipeline right-of-way |
| MLV No. 42-17 | Madison, LA | LA 161.3 | Install mainline valve within the confines of a pig launcher/receiver site at terminus of 42-inch-diameter pipeline segment |
| MLV No. 36-01 | Madison, LA | LA 161.3 | Install mainline valve within the confines of a pig launcher/receiver site at origin of 36-inch-diameter pipeline segment |

| TABLE 2.1-2 (continued)<br>Aboveground Facilities for the Proposed Midcontinent Express Pipeline Project | | | |
|---|---|---|---|
| **Facility** | **County/ Parish** | **Milepost** | **Description** |
| **Mainline Valves (MLV) (continued)** | | | |
| MLV No. 36-02 | Madison, LA | LA 181.1 | Install mainline valve within the permanent pipeline right-of-way on west side of Mississippi River crossing |
| MLV No. 36-03 | Warren, MS | MS 4.1 | Install mainline valve within the permanent pipeline right-of-way on east side of Mississippi River crossing |
| MLV No. 36-04 | Hinds, MS | MS 24.1 | Install mainline valve within the permanent pipeline right-of-way |
| MLV No. 36-05 | Hinds, MS | MS 42.9 | Install mainline valve within the permanent pipeline right-of-way |
| MLV No. 36-06 | Rankin, MS | MS 58.9 | Install mainline valve within the confines of a pig launcher/receiver site |
| MLV No. 36-07 | Simpson, MS | MS 77.6 | Install mainline valve within the permanent pipeline right-of-way |
| MLV No. 36-08 | Smith, MS | MS 91.6 | Install mainline valve within the permanent pipeline right-of-way |
| MLV No. 36-09 | Jasper, MS | MS 110.9 | Install mainline valve within the permanent pipeline right-of-way |
| MLV No. 36-10 | Clarke, MS | MS 128.0 | Install mainline valve within the permanent pipeline right-of-way |
| MLV No. 36-11 | Clarke, MS | MS 146.1 | Install mainline valve within the permanent pipeline right-of-way |
| MLV No. 36-12 | Choctaw, AL | AL 5.8 | Install mainline valve within the confines of the Transco Interconnect at Project terminus |

Notes:

OK = Oklahoma; TX = Texas; LA = Louisiana; MS = Mississippi; AL = Alabama; and CL = CenterPoint Lateral.

The natural gas-fired compressor units and associated equipment at each Project compressor station would be housed in buildings constructed on a slab foundation. Each compressor station would also include a natural gas-fired generator to provide back-up electrical power at the facility. MEP would also construct office/control/utility and storage/maintenance buildings and a parking lot at each compressor station site. Additional aboveground facilities would include a gas and utility piping, filter separators, gas coolers (at some locations), pig launcher/receivers, mainline valves, and blowdown stacks. Most natural gas piping at the facilities would be installed below grade, and the perimeter of the compressor stations would be fenced. Portions of these sites may be paved, covered with gravel, or landscaped, depending on facility operations and maintenance requirements.

Metering and flow control of natural gas between the Project pipeline and interconnects with existing natural gas pipelines would be accomplished via meter and regulation facilities provided at meter stations located at each proposed interconnect. Each meter station would include a custody-transfer flow

meter, pressure regulator, a filter separator (at some locations), isolation block valves, line heaters (if required), and instrumentation and controls housed within a fenced and gated perimeter.

Thirty-three intermediate mainline valves (block valves) would be installed along proposed pipeline to enable portions of the pipeline to be shut down or isolated, if necessary, and provide for controlled venting during planned system blowdowns. The mainline valves would be installed in areas easily accessible to operating personnel and at intervals specified in U.S. Department of Transportation (DOT) safety standards for natural gas pipelines. Each mainline valve assembly would consist of a below-ground valve with piping with valve operators and bypass extending above ground. Line break detection systems capable of closing the valve upon sensing a significant drop in pressure potentially indicative of a pipeline rupture would be installed at each mainline valve site, and blowdown systems at each site would be designed to rapidly disperse any released gases. Security fencing and a lockable gate would surround the aboveground piping and valves at each mainline valve site.

Pig launcher/receiver facilities would be installed at the Project origin and terminus and at other intermediate points along the proposed pipeline route. These facilities would consist of a section of aboveground flanged piping where mobile pigging equipment could be temporarily installed to accommodate periodic internal cleaning and inspection of the pipeline during operations. In most instances, the pig/launcher receivers would be installed at the locations of other aboveground facilities such as compressor stations or meter stations, but these facilities would also be required at points of pipeline diameter change (e.g., where the diameter increases from 30 to 42 inches). Additionally, pig/launcher receiver facilities could also be required at other intermediate locations to accommodate the maximum practical distance that can be recorded by a pig during internal inspections. The approximate locations of the proposed pig launcher/receiver facilities are provided in Table 2.1-2.

The Project would consist of two natural gas transport capacity zones. The initial transport capacity of Zone 1, which would include the 30-, 36-, and 42-inch-diameter portions of the pipeline facilities, would be 1,400,000 Dth/d. However, as described in Section 2.4, additional supporting contracts could provide for expansion of the Zone 1 transport capacity to 1,500,000 Dth/d. Zone 2, which would include the balance of the pipeline facilities, would have an initial transport capacity of 1,000,000 Dth/d, with the potential for expansion to 1,200,000 Dth/d.

## 2.2 LAND REQUIREMENTS

The land requirements of the proposed Project are summarized in Table 2.2-1. This summary identifies the construction and operational land requirements of the proposed pipeline, aboveground facilities, and extra work areas. Temporary land requirements for the proposed Project during construction would total approximately 8,310.3 acres, including the proposed pipeline construction right-of-way, construction areas for aboveground facilities, extra workspaces, pipe storage and contractor yards, and access roads. Of this total, approximately 3,158.3 acres would be retained as permanent easements associated with operation of the proposed pipeline and aboveground facilities. Following construction, the remaining 5,152.0 acres would be restored to preconstruction condition or allowed to revert to its former use. The land requirements of the proposed Project facilities are discussed further below, and additional information is provided in Section 3.8.

**TABLE 2.2-1**
**Locations and Land Requirements for the Proposed Midcontinent Express Pipeline Project**

| Facility | Land Affected during Construction (acres) | Land Affected during Operation (acres) |
|---|---|---|
| **Pipeline Facilities** | | |
| Mainline Pipeline | 5,884.6[a] | 3,046.3[b] |
| CenterPoint Lateral | 24.3[a] | 18.6[b] |
| **Subtotal Pipeline Facilities** | **5,908.9** | **3,064.9** |
| **Aboveground Facilities** | | |
| Compressor Stations[c] | | |
| Lamar Compressor Station | 16.0 | 15.0 |
| Atlanta Compressor Station | 12.2 | 11.7 |
| Perryville Compressor Station | 16.9 | 13.7 |
| Vicksburg Compressor Station | 11.9 | 11.2 |
| Delhi Booster Station | 16.5 | 15.9 |
| Meter Stations | 17.7 | 3.6 |
| Mainline Valves[d] | 0.0 | 0.0 |
| Pig Launcher/Receiver Facilities | 10.8 | 7.5 |
| **Subtotal Aboveground Facilities** | **102.0[f]** | **78.7[f]** |
| **Extra Work Areas** | | |
| Extra Workspace | 1,434.5 | 0.0 |
| Pipe Storage and Contractor Yards | 465.2 | 0.0 |
| Access Roads[e] | 399.5 | 14.7 |
| **Subtotal Extra Work Areas** | **2,299.2** | **14.7** |
| **Total** | **8,310.3[f]** | **3,158.3[f]** |

Notes:

[a] Acreage for the mainline pipeline reflects a nominal 100 -foot-wide construction right-of-way through uplands for the 30-, 36-, and 42-inch-diameter sections, respectively, and a 75-foot-wide construction right-of-way through wetlands. Acreage for the CenterPoint Lateral pipeline reflects a nominal 75-foot-wide construction right-of-way through uplands and a 60-foot-wide construction right-of-way through wetlands.

[b] Acreages based on engineering footprints of the proposed 50- or 60-foot-wide permanent pipeline right-of-way that would be maintained along the entire pipeline following construction.

[c] During construction, only a portion of the land purchased at each proposed compressor station site would be disturbed. Following construction, the actual compressor station facility footprint at each site would encompass approximately 4 acres, but the entire parcel would be retained as a buffer and for material storage, as needed.

[d] Minor land requirements associated with these facilities would be contained entirely within other aboveground facilities or the construction and permanent pipeline rights-of-way and are thus already included in the acreage estimates for those facilities.

[e] Temporary and permanent land requirements associated with access roads to be constructed at the proposed compressor station sites are already included in the acreage estimates for those facilities.

[f] Totals may not match due to rounding.

### 2.2.1 Pipeline Facilities

As proposed by MEP, the nominal construction right-of-way width along upland sections of the proposed pipeline that would be installed using conventional, open-cut trenching techniques (see Section 2.3.1) would be 100, 110, and 125 feet for the 30-, 36-, and 42-inch-diameter sections of the Project pipeline, respectively. The typical construction right-of-way width for the CenterPoint Lateral would be 75 feet. However, these construction right-of-way widths could be expanded to account for site-specific construction requirements, such as full right-of-way topsoil segregation, or to ensure safe working conditions in areas of rugged terrain (see Section 2.3.2). In wetland areas, the typical construction right-of-way width would be reduced to 75 and 60 feet for the mainline and CenterPoint Lateral pipeline facilities, respectively. The construction right-of-way width would encompass the permanent pipeline right-of-way and an additional temporary construction work area of varying width.

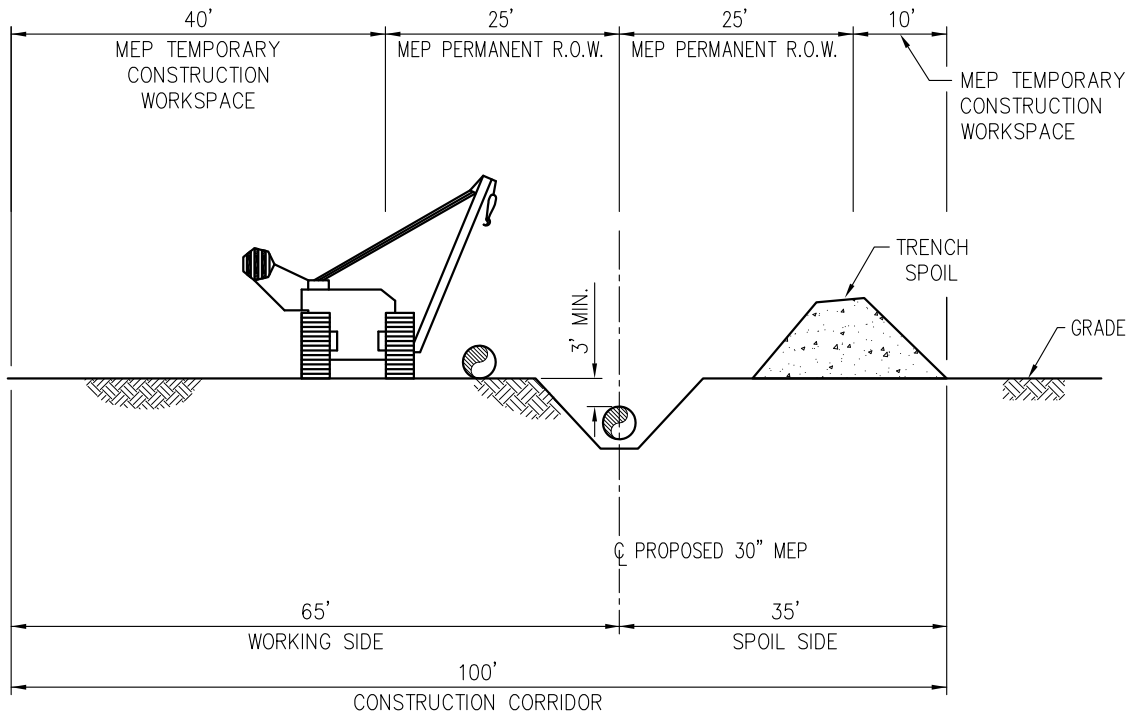
Following construction, MEP would generally retain a 50-foot-wide permanent right-of-way for operation of the pipeline, though MEP proposes to expand the maintained permanent right-of-way width to 60 feet along approximately 69.2 miles of the proposed Project route based on site-specific conditions. Figures 2.2.1-1 through 2.2.1-4 illustrate the typical construction and permanent pipeline right-of-way configurations proposed by MEP. Additional drawings depicting the proposed construction and permanent pipeline right-of-way configurations for portions of the proposed Project that would be collocated with existing utilities are provided in Appendix C.

Along some sections of the proposed Project route (e.g., at some major waterbody, special use areas, roads, and/or railway crossings), pipeline installation would be accomplished via horizontal directional drill (HDD) or horizontal bores (see Section 2.3.2). In these areas, the only land requirements would consist of the 50-foot-wide permanent pipeline right-of-way although typically this easement would not be disturbed unless specifically requested by MEP for access to a water source to facilitate drilling or testing.

Land requirements for the Project mainline and CenterPoint Lateral construction rights-of-way, as proposed by MEP, would total approximately 5,908.9 acres (Table 2.2-1). Following construction and restoration of the construction rights-of-way, the permanent right-of-way retained by MEP along the length of the proposed pipeline facilities would encompass approximately 3,064.9 acres.

#### 2.2.1.1 Right-of-way Considerations

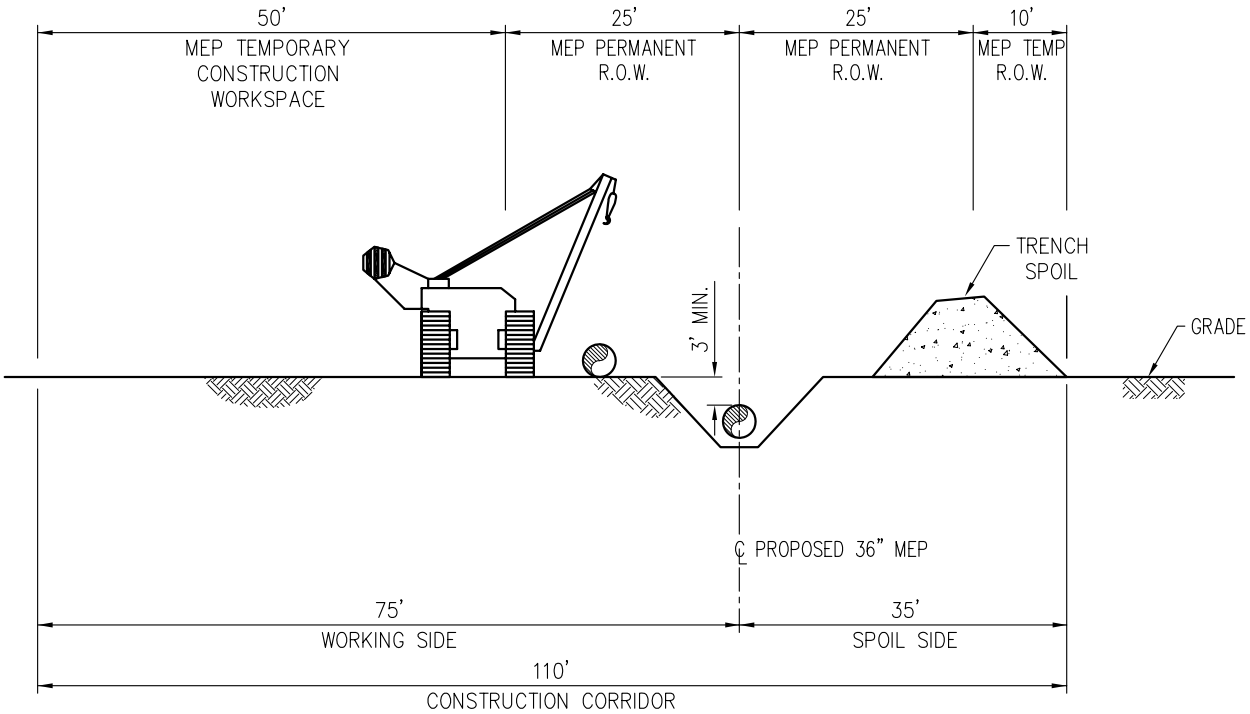
During the pre-filing and scoping periods, we received numerous comments from potentially affected landowners and federal and state agencies expressing an interest in minimizing the temporary and permanent impacts and land requirements associated with construction and operation of the proposed Project pipeline facilities. Some commentors recommended that the pipeline be collocated with, or parallel, existing or planned utilities and rights-of-way to avoid or minimize the development of new corridors. In its scoping comments on the Project, FWS also recommended that the proposed Project pipeline be collocated with existing rights-of-way to the extent practicable since collocation could reduce habitat fragmentation. However, the property of many potentially affected landowners is encumbered by existing natural gas pipeline and/or other utility rights-of-way, and multiple commentors expressed concern regarding the potential for additional or expanded rights-of-way across their property. Many commentors also requested that, where collocated with existing rights-of-way, the Project pipeline work areas be configured to make use of the existing rights-of-way to minimize the need for additional temporary construction workspace outside of the permanent pipeline right-of-way. Some commentors also questioned whether the width of the permanent pipeline right-of-way could be reduced by




NOTES:

1. WORKING SIDE ON NORTH.
2. SPOIL SIDE ON SOUTH.

| | | |
|---|---|---|
| Not to Scale | | MIDCONTINENT EXPRESS PIPELINE PROJECT<br>Typical Proposed 30-inch diameter Pipeline Right-of-Way |
| | | DATE: May 2008 / FIGURE: 2.2.1-1 |




NOTES:

1. WORKING SIDE ON NORTH.
2. SPOIL SIDE ON SOUTH.

Not to Scale

NOTE:

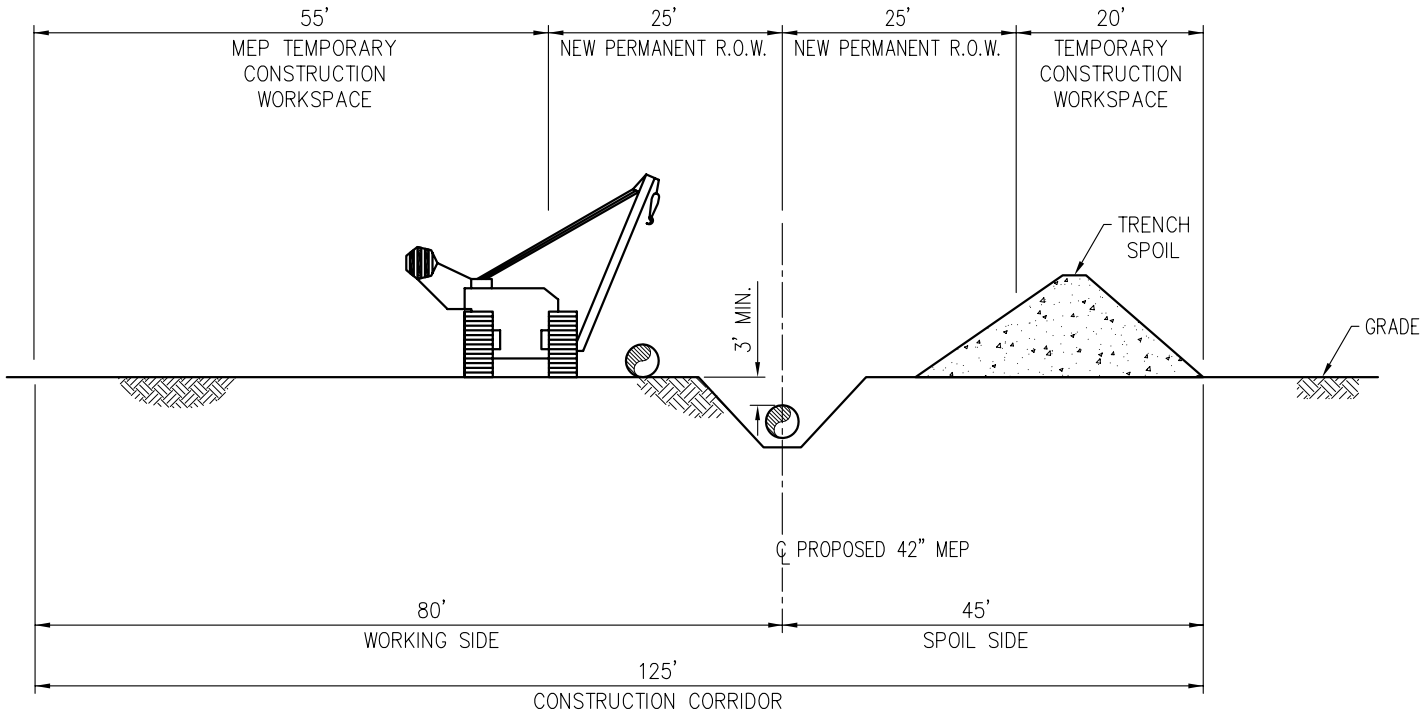
In accordance with our recommendation in the Draft EIS, MEP has filed revised alignment sheets depicting a 100-foot nominal right-of-way for Project construction. This 100 foot construction right-of-way is not depicted in this right-of-way typical.

MIDCONTINENT EXPRESS PIPELINE PROJECT

Typical Proposed 36-inch diameter Pipeline Right-of-Way

DATE: May 2008

FIGURE: 2.2.1-2




NOTE:

1. WORKING SIDE IS NORTH OF PROPOSED MEP, SPOIL SIDE ON SOUTH.

Not to Scale

NOTE:

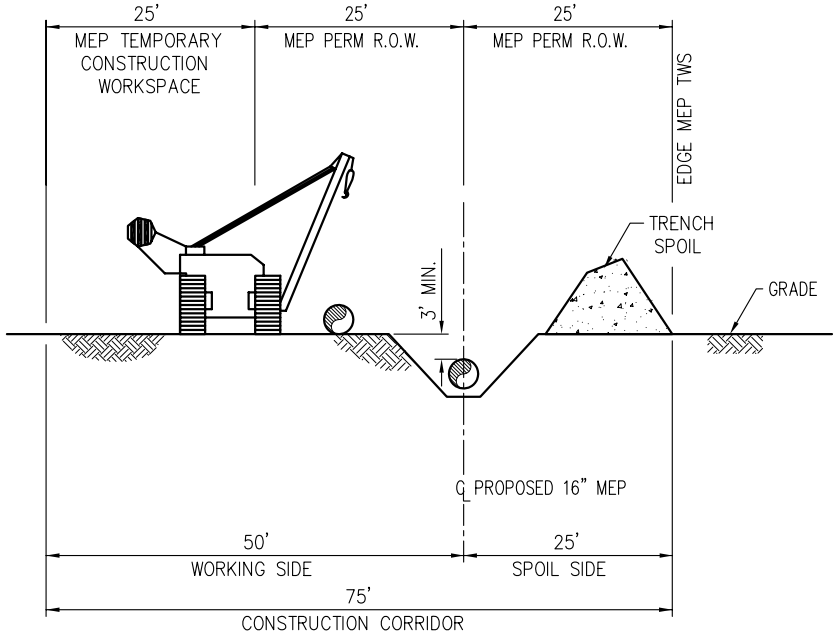
In accordance with our recommendation in the Draft EIS, MEP has filed revised alignment sheets depicting a 100-foot nominal right-of-way for Project construction. This 100 foot construction right-of-way is not depicted in this right-of-way typical.

MIDCONTINENT EXPRESS PIPELINE PROJECT

Typical Proposed 42-inch diameter Pipeline Right-of-Way

DATE: May 2008

FIGURE: 2.2.1-3




NOTES:

1. WORKING SIDE ON EAST SPOIL SIDE ON WEST.
2. FOR TOP SOIL CONSERVATION, SEVERAL AREAS WITH ADDITIONAL TEMPORARY WORKSPACE (ATWS) WILL BE CREATED ALONG PIPELINE ROUTE FOR TOP SOIL STORAGE.
3. IN WETLANDS, TOP SOIL OVER DITCH AREA WILL BE PRESERVED WITHOUT THE CREATION OF ATWS.

| | | |
|---|---|---|
| Not to Scale | | MIDCONTINENT EXPRESS PIPELINE PROJECT<br>Typical Proposed 16-inch diameter Pipeline Right-of-Way |
| | | DATE: May 2008 / FIGURE: 2.2.1-4 |

overlapping existing rights-of-way where collocated. These comments and recommendations are considered further below.

**Nominal Construction Right-of-way Width**

As described in Section 2.2.1, MEP originally proposed the use of 110- and 125-foot-wide nominal construction rights-of-way in upland areas to install the 36- and 42-inch-diameter portions of the Project pipeline, respectively. MEP stated that, given the large diameter of these pipelines and the anticipated construction conditions, the proposed construction right-of-way widths were necessary to accommodate large construction equipment and the temporary storage of trench spoils. MEP anticipated the use of automatic welding for the majority of the proposed Project pipeline. Automatic welding operations are typically conducted in portable shelters moved by sidebooms in a leapfrog manner during mainline welding operations. MEP indicated that a narrower construction right-of-way could require that automatic welding operations be completed in a tandem sequence, which could result in a slower rate of overall construction progress and a longer period of construction disturbance. Further, MEP indicated that "rainy season" construction could result in wet working conditions, sloughing of trench walls, and wet spoil piles that would collectively result in wider trench widths and the need for large work areas to contain spoils and prevent off-right-of-way disturbance. MEP contended that an overly narrow construction right-of-way could sacrifice safety, reduce productivity, and require that equipment and personnel handle materials multiple times. MEP also estimated that a wider construction right-of-way could lessen the overall impact on the environment by reducing the duration of construction-related disturbance and associated fuel consumption and emissions.

Based on our review of MEP's proposal and supporting rationale, the justification used to support MEP's proposed construction right-of-way requirements for 36- and 42-inch-diameter portions of the Project pipeline generally appear to rely on atypical construction conditions and/or highly conservative assumptions. One of the underlying assumptions used to support MEP's proposal is that construction of the Project pipeline would occur during the "rainy season." Though rainfall patterns vary across the Project area, the proposed construction schedule of August 2008 to February 2009 (see Section 2.4), which encompasses the late summer, fall, and early winter seasons, appears to include months with low to moderate average monthly precipitation values. In general, the months with the highest average precipitation values in the Project area are the winter and spring months (National Climatic Data Center 2002). Though there may be differences in precipitation intensity and quantity throughout the proposed 8-month construction period, there appears to be insufficient justification to expect that all or most of the proposed construction period would be characterized by abnormally wet climatic conditions.

MEP has repeatedly stated that much of the soils that would be encountered during excavation activities associated with construction of the proposed Project would be cohesive soils. A study of typical construction right-of-way width requirements conducted by the Interstate Natural Gas Association of America Foundation, Inc. (INGAA Foundation 1999) indicates that construction through cohesive soils would result in near-vertical trench walls, with trench top widths of 5 to 10 and 6 to 12 feet for 36- and 42-inch-diameter pipe, respectively. However, the assumed trench top widths used to support MEP's proposed construction workspace requirements are 25 and 28 feet for 36- and 42-inch-diameter pipe, respectively. Therefore, the assumed trench dimensions (i.e., trench top widths and angles of repose) used to support MEP's proposed construction right-of-way widths appear to be based on construction through unstable or non-cohesive soils rather than upland soil conditions likely to be encountered during construction of the proposed Project. Such assumptions could result in an overestimation of typical construction workspace requirements.

MEP also references the INGAA Foundation (1999) study to support its proposed construction right-of-way widths. While that study does recommend 110- and 125-foot-wide typical construction

rights-of-way for 36- and 42-inch-diameter pipe, respectively, we note that the construction right-of-way widths recommended in that study also account for stripping and storage of topsoil. We also note that workspace for topsoil storage, which accounts for 23 feet of the workspace requirements identified in the INGAA Foundation study, are not accounted for in MEP's proposed nominal construction rights-of-way. Rather, MEP indicates that topsoil storage would result in the need for extra workspace areas in addition to the proposed construction right-of-way widths.

We further note that multiple interstate natural gas pipeline projects have recently been constructed and/or approved to construct 42-inch-diameter pipelines using a nominal construction right-of-way width of 100 feet within the general Project area (i.e., northeastern Texas, northern Louisiana, and central Mississippi). These projects, which are described further in Section 3.13, include the Carthage to Perryville (Docket No. CP06-85-000), East Texas to Mississippi Expansion (Docket No. CP06-446-000), and Southeast Expansion (Docket No. CP07-32-000) Projects. Based on our experience with these and other similar projects, as well as our understanding of pipeline construction equipment and procedures, we believe that a 100-foot-wide nominal construction right-of-way is sufficient to safely and efficiently construct 36- and 42-inch-diameter natural gas pipelines. We also believe that implementation of a 100-foot-wide nominal construction right-of-way would result in significant reductions in construction-related land requirements and associated environmental impacts (e.g., clearing of forest land), while also minimizing potentially adverse restrictions on land use during construction. Given that 36- and 42-inch-diamter pipeline would comprise approximately 465 miles of the proposed Project pipeline length, implementation of a 100-foot nominal construction right-of-way width could reduce the overall Project land requirements by more than 1,000 acres. Additionally, we consider that such a reduction in land requirements would be responsive to numerous public comments received during the pre-filing and scoping periods for the Project. For these reasons, we recommended in the Draft EIS that MEP should file revised alignment sheets that reflected a reduction in the width of the nominal construction right-of-way to 100 feet along the 36- and 42-inch-diameter segments of the proposed Project pipeline (MP TX 25.7 to MP AL 5.5). MEP filed this information during the Draft EIS comment period along with a table identifying the location, extent, and site-specific justification for areas where the expansion of the nominal construction right-of-way would be required due to site-specific circumstances.

If certificated, we recognize that unanticipated conditions, such as saturated or non-cohesive soils in uplands, could be encountered during construction that would result in the need for additional site-specific expansions of the nominal construction right-of-way and/or addition of extra workspace areas. However, implementation of an Environmental Compliance Monitoring and Reporting Program (ECMR Program) during construction would facilitate timely and efficient processing of variance requests for the use of such construction work areas, as described in Section 2.5.

**Collocation with Existing and Planned Rights-of-way**

The FERC regulations (18 CFR Section 380.15[d][1]) give primary consideration to the use, enlargement, or extension of existing rights-of-way over developing a new right-of-way in order to reduce potential impacts on potentially sensitive resources. In general, installation of new pipeline along existing, cleared rights-of-way (e.g., pipeline, powerline, road, or railroad) may be environmentally preferable to construction along new rights-of-way. Construction-related effects and cumulative impacts can normally be reduced by use of previously cleared rights-of-way. However, in congested or environmentally sensitive areas, it may be advantageous to deviate from an existing right-of-way. Additionally, collocation may be unfeasible in some areas due to a lack of or unsuitably oriented existing corridors, engineering and design considerations, or constructability issues. The majority of the proposed Project route would collocate with existing utility rights-of-way. As proposed, approximately 259.8 miles (excluding collocation with fencelines), or 51.3 percent, of the Project mainline and about 3.1 miles, or 73.8 percent, of the CenterPoint Lateral would be collocated with existing or planned utility corridors.

The locations and lengths of the proposed Project route that would collocate with existing or planned utility corridors are identified in Appendix D. Alternative pipeline routes that would increase collocation opportunities or deviate from existing rights-of-way are considered in Section 4.0 of this EIS.

As described in Appendix D and where collocated, approximately 150.1 miles of the proposed Project mainline construction right-of-way would overlap existing rights-of-way by 0 to 30 feet. Additionally, a total of 0.7 mile of the proposed pipeline construction right-of-way would overlap an existing NGPL pipeline right-of-way by 40 feet at four separate locations in Oklahoma and Texas, 0.4 miles of the proposed pipeline construction right-of-way would overlap an existing Entergy Corporation (Entergy) electric transmission line right-of-way by 90 feet in the vicinity of Fisher Ferry Road (MP MS 4.0 to MP MS 4.4), and 0.9 miles of the proposed construction right-of-way would overlap an existing Kinder Morgan pipeline right-of-way by 100 feet at MP OK 6.6 to 7.5.. In locations where extra workspace is required, MEP also indicates that such work areas could overlap existing rights-of-way along portions of the proposed pipeline facilities. However, approximately 107.7 miles of the proposed Project mainline and approximately 3.1 miles of the CenterPoint Lateral construction rights-of-way would abut but not overlap existing rights-of-way, and overlap of extra workspace would not be allowed along the majority of that distance. In general, MEP indicates that construction right-of-way and extra workspace overlap would not be feasible in some areas due to potential pipeline integrity and safety issues associated with operation of heavy construction equipment over, or in proximity to, existing pipelines or electric transmission lines/towers.

At our request, MEP provided a site-specific explanation of why overlap of existing rights-of-way would not be feasible where the proposed construction right-of-way would abut but not overlap existing rights-of-way. We have reviewed MEP's site-specific justifications, and we find them reasonable. We believe that our recommendation for reduction of MEP's proposed construction right-of-way to 100 feet along the 36- and 42-inch-diameter segments of the proposed Project pipeline would adequately minimize construction-related land requirements, including that along portions of the proposed Project route where construction work areas would abut not overlap existing rights-of-way.

**Permanent Pipeline Right-of-way Requirements**

Following construction, MEP would generally retain a 50-foot-wide permanent right-of-way for operation of the pipeline, but as discussed previously and identified in Appendix D, MEP proposes to maintain a 60-foot-wide permanent right-of-way along approximately 69.2 miles of the proposed 42-inch-diameter pipeline facilities, which represents about 13.7 percent of the proposed Project mainline length. MEP indicates that the wider permanent right-of-way is required along some portions of the pipeline due to site-specific conditions such as collocation with mechanically coupled (e.g., dresser coupled and bell and spigot) pipelines or other utilities with narrow (30-feet-wide) existing rights-of-way. For example, approximately 45.7 miles of the proposed Project pipeline where MEP proposes to maintain an expanded permanent right-of-way would collocate with an existing mechanically coupled pipeline operated by Gulf South Pipeline Company, LP (Gulf South). It is industry practice to minimize the amount of ground disturbance in proximity to pipe joints that are joined using a mechanical coupling. In addition, most mechanically coupled pipelines are older pipelines, which are typically not coated and require significant cathodic protection to resist corrosion. Interference of the cathodic protection system can occur if adjacent pipelines are installed too closely together. For these reasons, MEP has stated that its standard construction procedures require that the edge of a trench line be located a minimum of 25 feet from a mechanically coupled pipeline. However, we note that Right-of-way Typical 42.3 (Appendix C) indicates that the proposed pipeline centerline would be located approximately 65 feet from the existing Gulf South pipeline centerline. MEP has also stated that it intends to minimize the risk to mechanically coupled pipelines by not performing any work within the permanent right-of-way associated with those lines (i.e., by not allowing extra workspace areas within the dresser-coupled pipeline right-of-way).

We believe that construction of the proposed Project pipeline could be safely conducted within the confines of a more narrow construction right-of-way than that proposed by MEP, as discussed and recommended above. We also believe that, with careful Project planning and design, the proposed Project pipeline could be constructed safely alongside existing mechanically coupled pipelines and other utilities without the need for expansion or offset of the permanent pipeline right-of-way. Additionally, we do not believe that the permanent maintenance of a 60-foot-wide right-of-way is necessary for operation of the proposed pipeline. Based on our experience and review of similar projects, as well as our understanding of pipeline operations and maintenance procedures, we believe that a permanently maintained 50-foot-wide right-of-way is sufficient to safely and efficiently operate large diameter natural gas pipelines. Further, we have received numerous comments expressing an interest in minimizing the permanent impacts and land requirements associated with the operation of the proposed Project pipeline, particularly in instances where multiple rights-of-way may occur within a common corridor. For these reasons, **we recommend that:**

- **MEP should not exercise the eminent domain authority granted under Section 7(h) of the NGA to acquire a permanent pipeline right-of-way exceeding 50 feet in width, and where collocated, the 50-foot-wide permanent right-of-way should abut the existing right-of-way.**

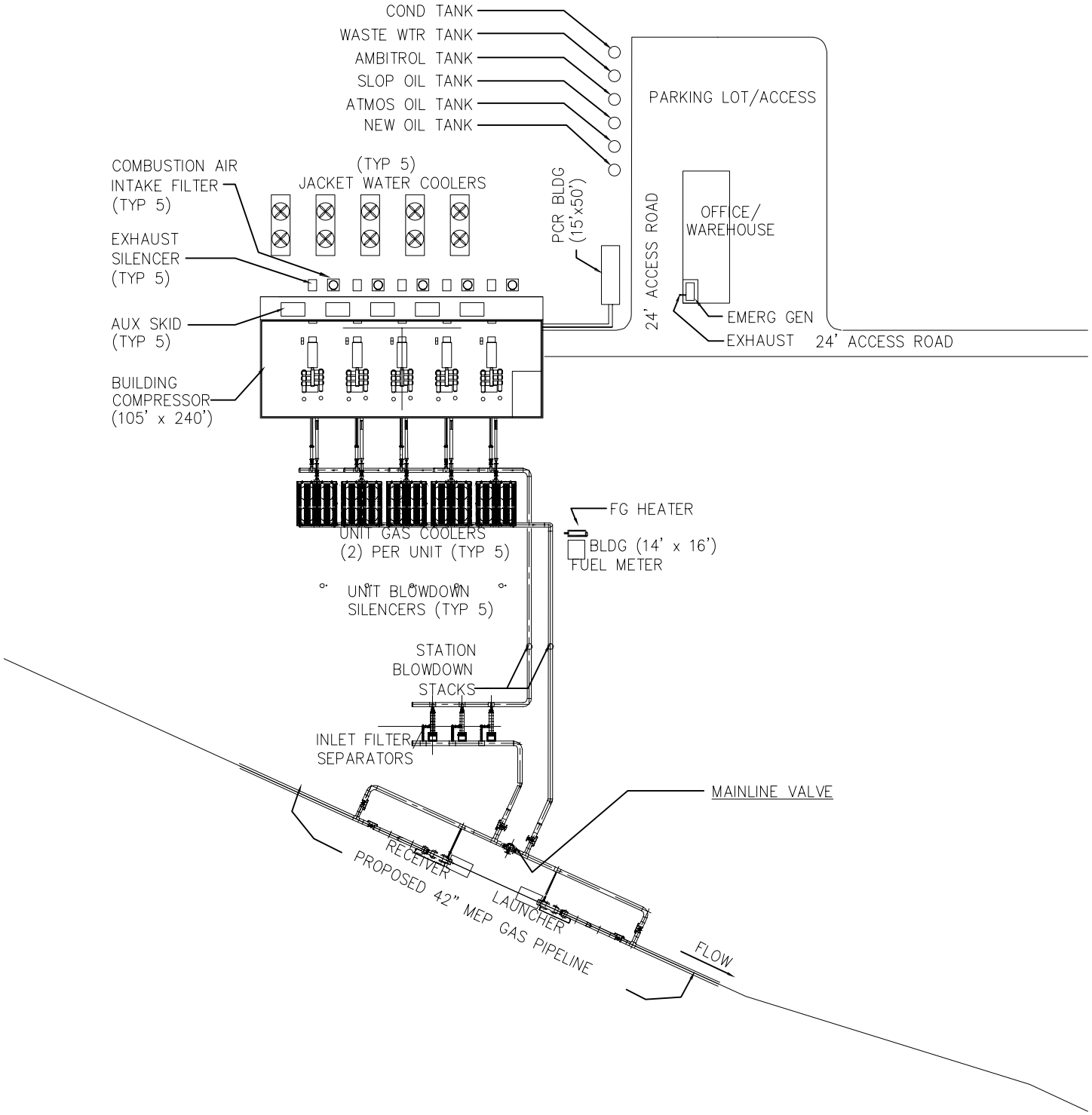
Limiting the permanent pipeline right-of-way to 50 feet in width would allow MEP to acquire through the condemnation process, if necessary (see Section 2.3.1), sufficient land to operate the proposed pipeline facilities and would minimize permanent impacts to adjacent resources and land uses. Although MEP's use of eminent domain authority to condemn lands, should the proposed Project be certificated, would be limited to a 50-foot-wide permanent pipeline right-of-way, MEP would be able to negotiate with willing landowners for the use of additional lands to operate the proposed Project.

### 2.2.2 Aboveground Facilities

The land requirements for the proposed aboveground facilities would total 102.2 and 78.7 acres during construction and operation, respectively (Table 2.2-1). The proposed aboveground facilities include one booster and four new mainline compressor stations, 14 meter stations, 33 mainline valves, and nine pig launcher/receiver facilities.

MEP would purchase land parcels comprising approximately 157.1 acres at the proposed compressor station sites, but only a portion of these parcels would actually be affected by construction and operation of these aboveground facilities. MEP indicates that the actual facility footprint at each site during operation would range from 11.2 to 15.9 acres, but the entire parcel would be retained as a buffer and for material storage, as needed. Three of the proposed meter stations, the NGPL No. 1, ETC, and CGT Interconnects, would be sited within the permanent right-of-way of other Project facilities and operation of those facilities would not result in encumbrance of new lands. The construction and operational land requirements of the remaining meter station facilities would total 17.7 and 3.6 acres, respectively. The location of the proposed meter and tap to CGT has been modified since the Draft EIS. As proposed, it would now connect from the CEGT lateral near Highway 80. A 24-inch-diameter pipeline would now be used for the first 1,800 feet of the CEGT lateral instead of the 16-inch-diameter pipeline originally proposed. Drawings of typical compressor and meter stations are provided as Figures 2.2.2-1 and 2.2.2-2, respectively.

A pig launcher and receiver would be located at the origin and terminus, respectively, of the Project mainline and the CenterPoint Lateral, which would be occupied by the proposed Enogex, Transco, CEGT, and CGT Interconnects. Similarly, a pig launcher/receiver facility would also be located at the



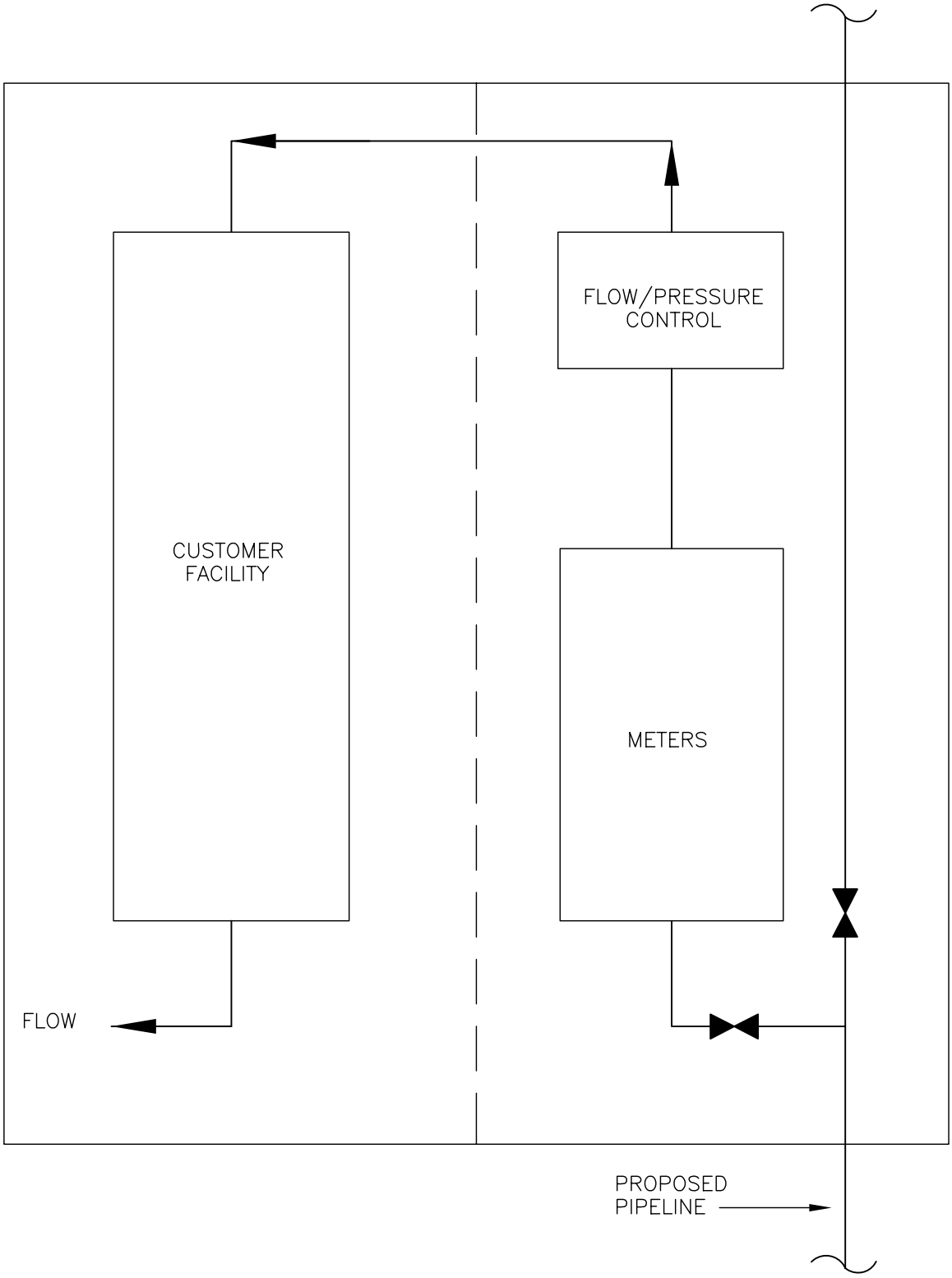

Not to Scale

MIDCONTINENT EXPRESS PIPELINE PROJECT

Typical Compressor Station Configuration

DATE: May 2008

FIGURE: 2.2.2-1




Not to Scale

MIDCONTINENT EXPRESS PIPELINE PROJECT

Typical Meter Station Site

DATE: May 2008

FIGURE: 2.2.2-2

transition point form 30- to 42-inch-diameter pipeline, which would occur within the confines of the proposed NGPL No. 1 and ETC Interconnects. Thus, the land requirements associated with those pig launcher/receiver facilities are accounted for in that reported for those meter station facilities. The construction and operational land requirements of the remaining pig launcher/receiver facilities, which would typically consist of a fenced area that would partially overlap the permanent pipeline right-of-way, would total 10.8 and 7.5 acres, respectively. These sites would measure either 100 feet by 200 feet or 100 feet by 350 feet, depending on whether a pig launcher, a pig receiver, or both would be installed at that location (Figures 2.2.2-3 and 2.2.2-4).

Four of the mainline valves, Mainline Valve (MLV) Nos. 30-01, 30-04, 42-01, and 36-12 would be located within the confines of the proposed Enogex, NGPL No. 1, ETC, and Transco Interconnect facilities. Similarly, MLV No. 42-02 would be installed within the perimeter of the Lamar Compressor Station, and MLV Nos. 42-07, 42-12, 42-17, 36-01, and 36-06 would be located within the confines of proposed pig launcher/receiver facilities. MLV 42-14 would be located within the perimeter of the proposed Perryville Compressor Station (Table 2.1-2). Thus, construction and operation of these MLVs would not result in additional land requirements beyond that noted for those aboveground facilities. The remaining mainline valve sites would typically consist of a 50-foot by 50-foot fenced area installed within the limits of the permanent pipeline right-of-way (Figure 2.2.2-5). Thus, construction and operation of those MLV facilities would not result in land requirements beyond that already accounted for by the permanent pipeline right-of-way.

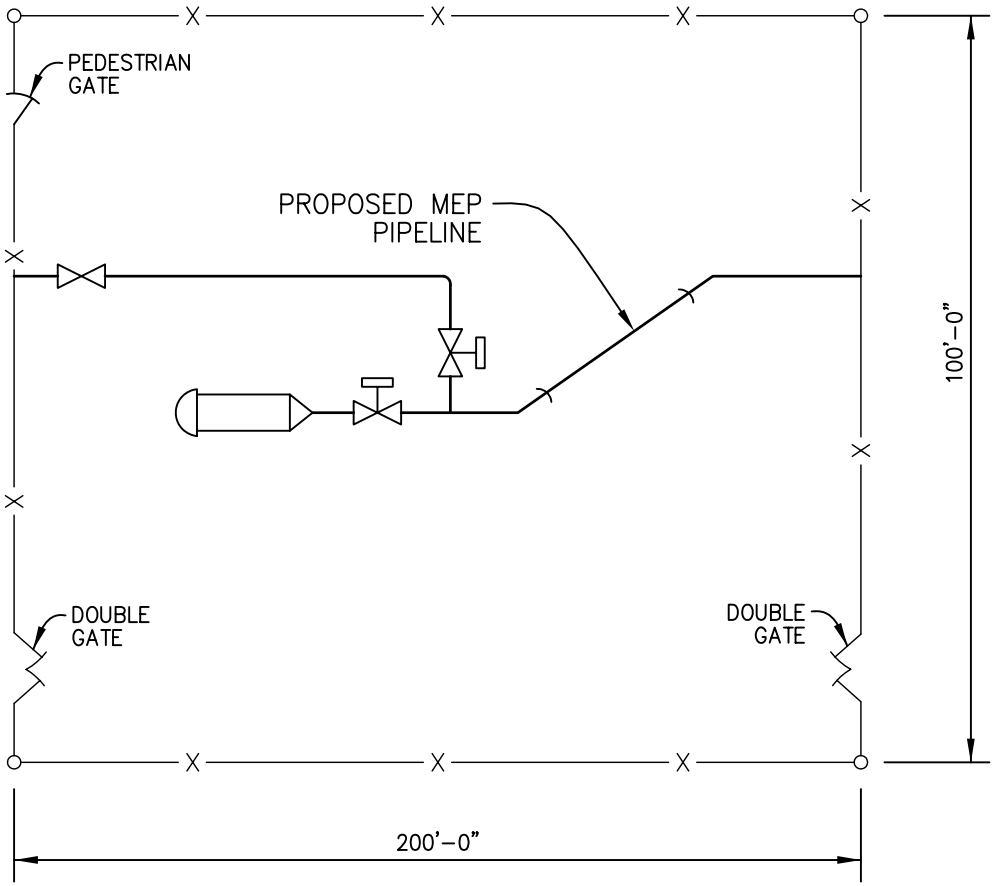
### 2.2.3 Extra Work Areas

#### 2.2.3.1 Extra Workspaces

Additional construction areas, or temporary extra workspaces, would be required for construction at road crossings, railroad crossings, crossings of existing pipelines and utilities, stringing truck turnaround areas, wetland crossings, HDD entrance and exit pits, and open-cut waterbody crossings. These extra workspaces would be located adjacent to the construction right-of-way and could be used for such things as spoil storage, staging, equipment movement, material stockpiles, and pull string assembly associated with HDD installation. The proposed Project would require 5,085 extra workspaces totaling 1,434.5 acres, and individual extra workspaces would range in size from less than 0.1 to 7.4 acres. Extra workspaces would be returned to their preconstruction condition and former usage following completion of construction activities. Additional information on extra workspace areas is provided in Section 3.8.

#### 2.2.3.2 Pipe Storage and Contractor Yards

MEP has proposed the use of 29 offsite pipe storage and contractor yards that would consist of warehouses or open lots located in areas of existing agricultural, commercial, or industrial use. The identified yards would range in size from 2.0 to 53.0 acres, and the total land requirements for these facilities would be approximately 465 acres. The general locations of the proposed yards are identified on the facility location maps included as Appendix B of this EIS. Depending on the existing condition and use of the yards, improvements could include debris removal, surface grading, drainage improvements, placement of surface materials (crushed rock), and creation of internal roadways. All yards would be leased from willing landowners, and upon completion of construction activities, the proposed pipe storage and contractor yards would be returned to their preconstruction condition and former usage.



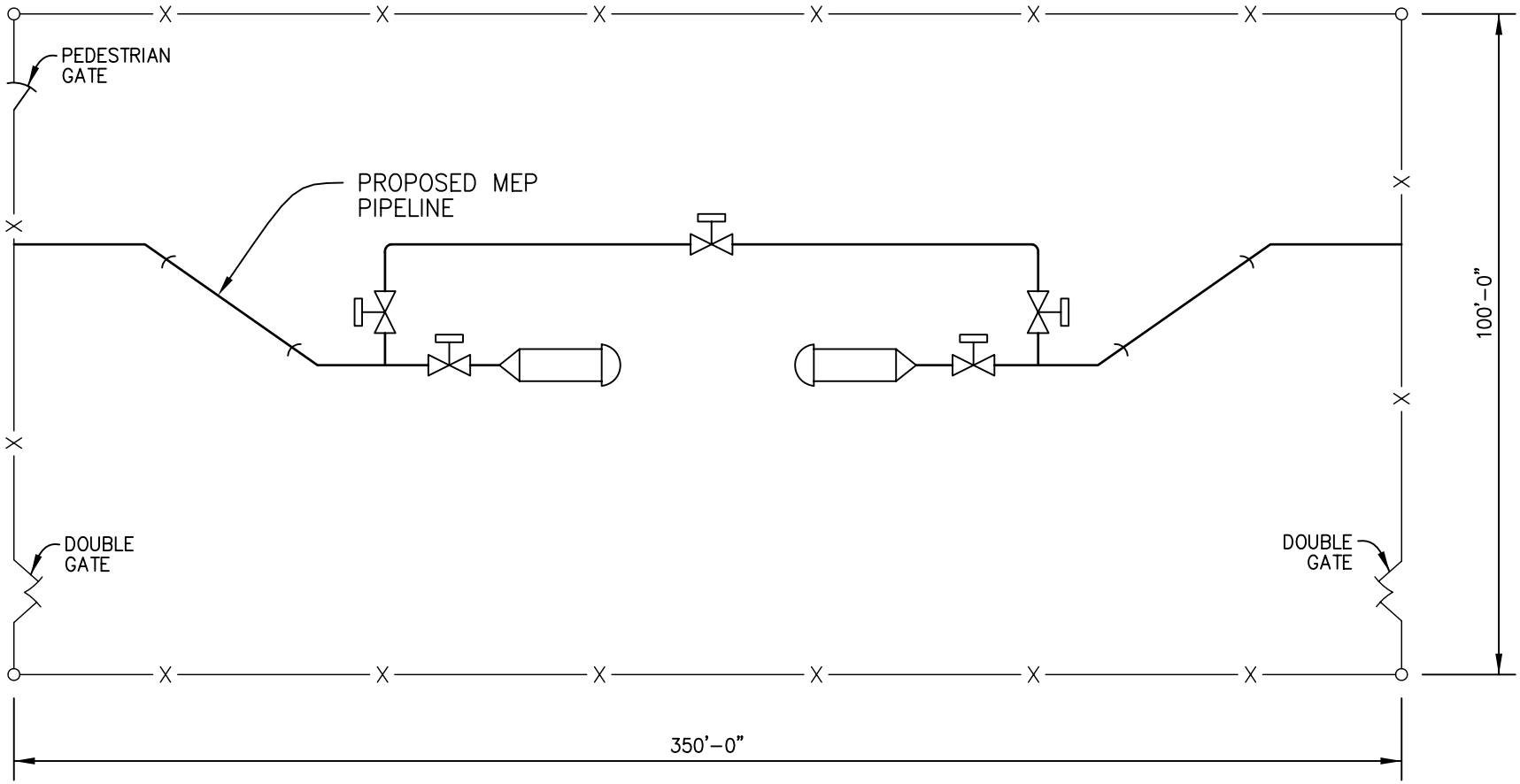

Not to Scale

MIDCONTINENT EXPRESS PIPELINE PROJECT

Typical Pig Launcher or Receiver Site

DATE: May 2008

FIGURE: 2.2.2-3



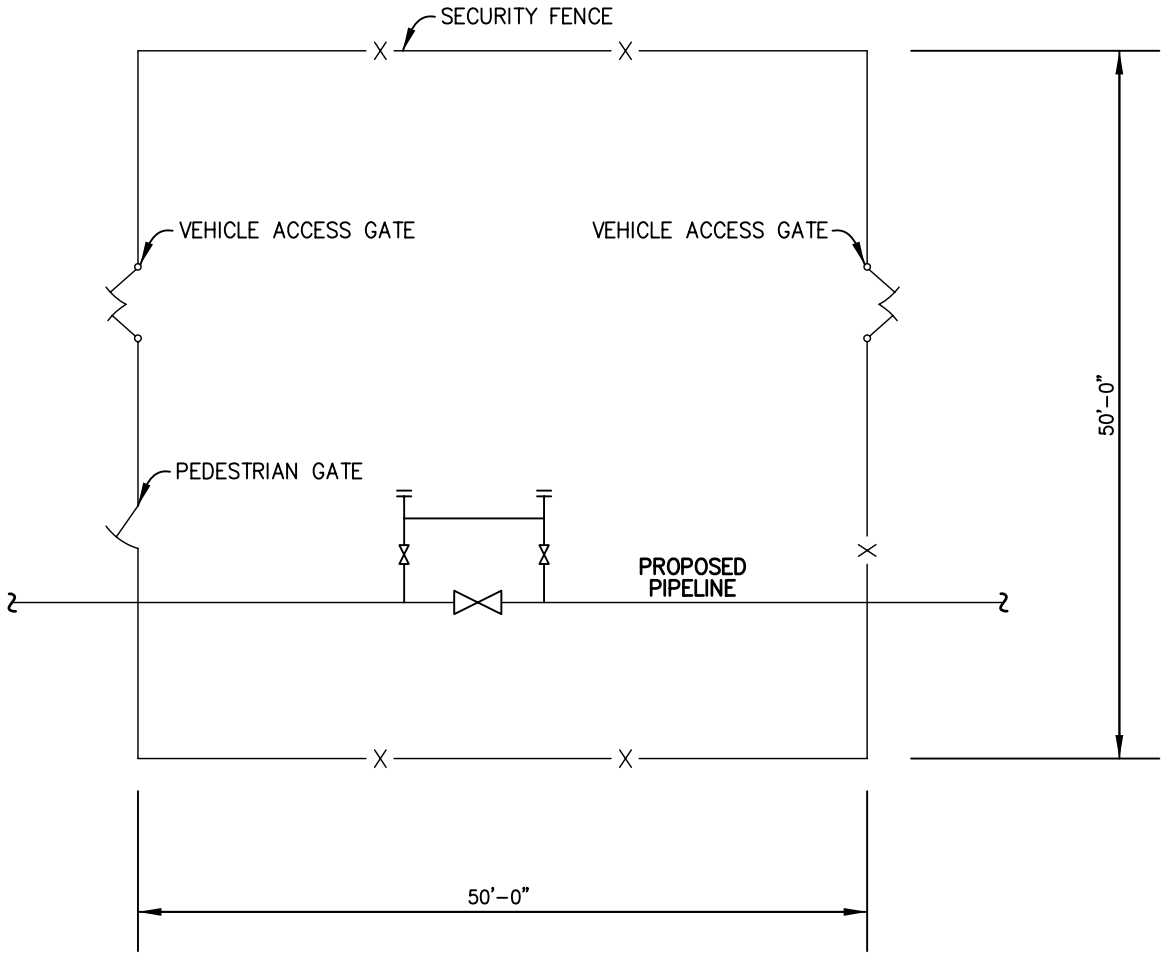

Not to Scale

MIDCONTINENT EXPRESS PIPELINE PROJECT

Typical Pig Launcher/Receiver Site

DATE: May 2008

FIGURE: 2.2.2-4

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MIDCONTINENT EXPRESS PIPELINE PROJECT

Typical Mainline Valve Site

DATE: May 2008

FIGURE: 2.2.2-5

Additional pipe storage and contractor yards beyond those currently identified could be required during construction of the proposed Project. Prior to construction, MEP would be required to file a complete and updated list of all temporary workspace areas, including pipe storage and contractor yards, with the Secretary of the Commission (Secretary) for review and approval prior to use.

#### 2.2.3.3 Access Roads

MEP would use existing roads to the extent possible to facilitate equipment and material access along the proposed Project route. Project-related use of highways, maintained county or parish roads, and other types of public roadways would typically not require improvements or associated, special authorizations. However, MEP has indicated that construction of the proposed Project would require the temporary use of 157 access roads (private roads, drives, lanes, and other roads) of varying lengths and construction, comprising a length of approximately 109.9 miles. MEP reports that all but 10 of the existing access roads would require upgrades to prevent rutting and support the expected loads and size of construction-related equipment and materials. Upgrades that could be required include grading, placement of gravel for stability, topping with board matting, and clearing of overhead vegetation. Similarly, construction of the three new access roads would entail grading, compaction, and placement of gravel. Use of access roads and associated improvements would temporarily affect approximately 399.5 acres during construction. Following construction, all temporary access roads would revert to preconstruction uses. Additional information on access roads is provided in Section 3.8, and the facility location maps provided as Appendix B of this EIS depict the general locations of these roads.

In addition to temporary use of existing access roads along the proposed pipeline right-of-way during construction, construction of permanent access roads would also be required to provide a means of ingress and egress to the proposed compressor and meter station facilities during operations. The construction and operational access road land requirements of the compressor station access roads are already accounted for in the land requirements reported for those facilities. Fifteen access roads comprising a length of approximately 4.0 miles and encumbering approximately 14.6 acres would be retained during operations to provide access to the proposed meter station facilities. The permanent access road constructed at each of these facilities would generally consist of a single, 15- to 25-foot-wide, gravel or paved roadway of the length required to provide access to the nearest public roadway. These permanent access roads would be routed through previously cleared or disturbed areas to the extent practicable.

## 2.3 CONSTRUCTION PROCEDURES

The proposed pipeline facilities would be designed, constructed, operated, and maintained in accordance with the DOT regulations under 49 CFR Part 192, *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards*, and other applicable federal and state regulations. Among other design standards these regulations specify pipeline material selection; minimum design requirements; protection from internal, external, and atmospheric corrosion; and qualification procedures for welders and operations personnel. More detailed safety information is provided in Section 3.12. In addition, MEP would comply with the siting and maintenance requirements in 18 CFR 380.15 and other applicable federal and state regulations.

MEP has developed an Environmental Management and Construction Plan (EMCP), which is comprised of multiple Project-specific plans designed to avoid or minimize environmental impacts during construction. As components of the EMCP, MEP proposes to implement an *Upland Erosion Control, Revegetation, and Maintenance Plan* (MEP's Plan) and *Wetland and Waterbody Construction and Mitigation Procedures* (MEP's Procedures). With the exception of several alternative measures, the appropriateness of which is discussed further in Sections 3.2, 3.3, and 3.4 of this EIS, MEP's Plan and

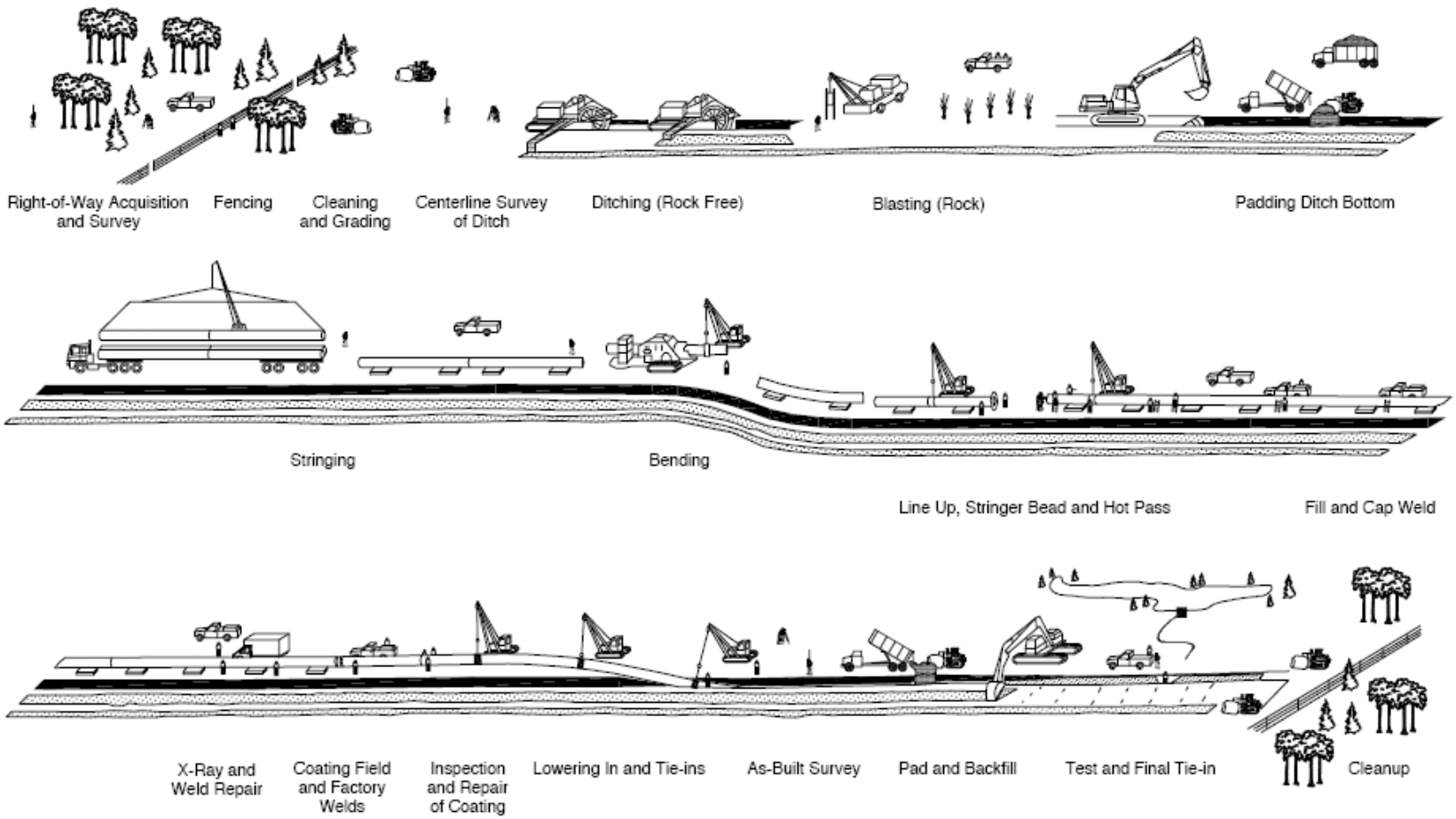
Procedures are consistent with the FERC guidance documents of the same name (the FERC Plan and Procedures). The FERC Plan and Procedures are available for review on the FERC Internet website at www.ferc.gov/industries/gas/enviro/guidelines. The intent of MEP's Plan is to identify baseline mitigation measures for minimizing erosion and enhancing revegetation in upland areas, and the major aspects of MEP's Plan are described in Section 3.2. The intent of MEP's Procedures is to identify baseline mitigation measures for minimizing the extent and duration of construction-related disturbance on wetlands and waterbodies, and the major components of MEP's Procedures are discussed in Sections 3.3 and 3.4. MEP would construct and operate the proposed Project in accordance with MEP's Plan and Procedures.

The EMCP also includes a general Spill Prevention, Containment, and Control (SPCC) Plan that describes the management of hazardous materials, such as fuels, lubricants, and coolants, that would be implemented during construction. Site-specific plans would be developed for each construction spread once the construction contractors have been selected. MEP also developed a Directional Drill Contingency Plan (DDCP) to describe the procedures that would be implemented to monitor for, contain, and clean up any inadvertent releases of drilling fluid during HDD operations. Additionally, MEP developed Unanticipated Discoveries Plans that would guide the treatment of any unanticipated discoveries of paleontological resources (see Section 3.1), contaminated soils or groundwater (see Sections 3.2 and 3.3), or cultural resources or human remains during construction (see Section 3.10). The EMCP and these various component plans described above can be viewed on the FERC Internet website at www.ferc.gov using the "eLibrary" link.

### 2.3.1 General Pipeline Construction Procedures

Prior to initiating construction-related activities, MEP would secure right-of-way easements from private landowners and managers of public lands whose properties would be crossed by the pipeline route. All owners, tenants, and lessees of private land, and lessees and managers of public lands along the right-of-way would be notified in advance of construction activities that could affect their property, business, or operations. If the necessary land rights or easements could not be obtained through good faith negotiations with landowners and the proposed Project has been certificated by the FERC, MEP may use the right of eminent domain granted to it under Section 7(h) of the NGA to obtain a right-of-way. MEP would still be required to compensate the landowners for the rights-of-way, as well as for any damages incurred during construction. However, the level of compensation would be determined by the court according to state laws that set forth the procedures for the use of eminent domain once the FERC issues a Certificate. MEP must proceed through the appropriate state or federal court to condemn land for which it has received a Certificate from the FERC. The FERC does not take part in such proceedings.

The majority of the proposed pipeline construction process would be accomplished using conventional open-cut methods, which typically include the steps described below. The proposed methods for accomplishing pipeline installation across waterbodies and wetlands, as well as other specialized construction procedures are described in Section 2.3.2. Conventional overland installation of pipeline is best represented as a moving assembly line with a construction spread (crew and equipment) proceeding along the construction right-of-way in a continuous operation, as depicted in Figure 2.3.1-1. Construction at any single point along the pipeline, from right-of-way surveying and clearing to backfill and finish grading, would last about 6 to 10 weeks. The entire process would be coordinated so as to limit the time of disturbance to an individual area, thereby minimizing the potential for erosion and the loss of normal use. MEP indicates that construction of the pipeline would entail the simultaneous activity of seven individual construction spreads over the proposed Project route.




Not to Scale

**MIDCONTINENT EXPRESS PIPELINE PROJECT**

Typical Pipeline Construction Sequence

DATE: May 2008

FIGURE: 2.3.1-1

**Right-of-way Survey and Fence Crossings**

After right-of-way easements have been obtained, the pipeline centerline, construction right-of-way, and additional temporary workspaces would be surveyed and staked. MEP would contact the appropriate state One Call system to have existing underground utilities located, identified, and flagged to prevent accidental damage during pipeline construction. Other sensitive resources such as wetland boundaries, cultural resources, and any areas of protected species habitat would also be marked.

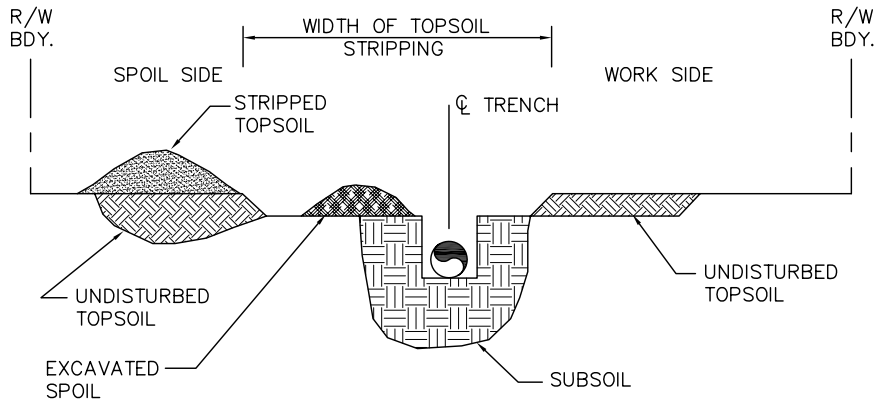
Where fences are encountered along the construction right-of-way, a fence crew would install temporary fences to confine livestock to existing areas off the right-of-way and to prohibit or otherwise control public access across the right-of-way. This work would include installing new posts to brace the areas on either side of the proposed cut to avoid damage to the existing fence or wall. Temporary gates would be installed, as necessary.

**Clearing and Grading**

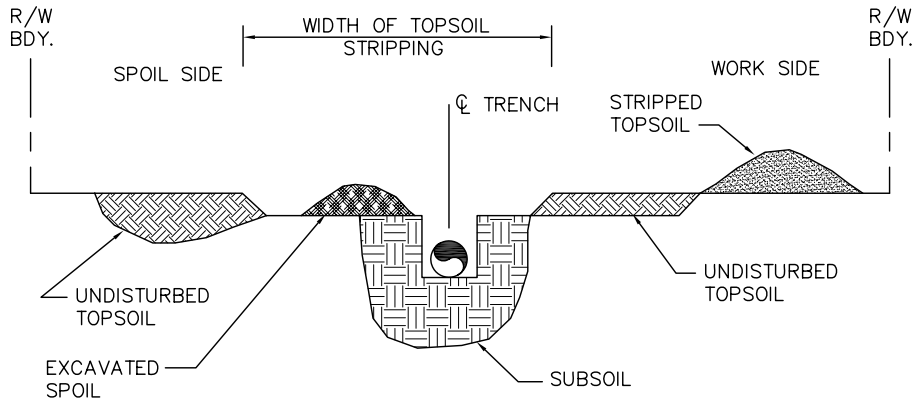
The construction right-of-way and temporary extra workspaces would be cleared and graded, where necessary, to provide a relatively level surface for trench-excavating equipment and the movement of other construction equipment, but natural drainage patterns would be preserved to the extent possible. Brush, trees, roots, and other obstructions such as large rocks and stumps would be cleared from all construction work areas. Non-woody vegetation, such as crops and grasses, in areas where grading is not required would be mowed to avoid damage to root systems. To protect properties located adjacent to the proposed Project corridor, brush and trees would be felled parallel to and within the construction right-of-way where feasible. Timber would be removed only where necessary for construction purposes, and any marketable timber would be cut to standard lengths and stacked at the edge of the right-of-way or removed based on landowner agreements. Tree stumps would be removed from within the permanent right-of-way. Within the temporary construction right-of-way, stumps would either be removed or ground to a suitable height to allow safe passage of equipment. Cleared woody debris would be chipped and left in place, burned, or otherwise disposed of according to local restrictions, regulatory requirements, and landowner agreements. Any burning would be conducted in a manner so as to minimize fire hazard and prevent heat damage to surrounding vegetation.

Topsoil would be stripped and segregated according to MEP's Plan and Procedures in residential areas, actively cultivated or rotated croplands and pastures, hayfields, and other areas where requested by a land management agency or landowner. Topsoil would be removed to its actual depth, up to a maximum of 12 inches, and stockpiled separately from the subsoil excavated from the pipeline trench. Topsoil would be stripped from directly over the pipeline ditch and the adjacent subsoil spoil storage area, as depicted in Figure 2.3.1-2, or across the full construction work area. Additional information on topsoil segregation is provided in Section 3.2.

To contain disturbed soils in upland areas and minimize the potential for sediment loss to wetlands and waterbodies, temporary erosion controls would be installed immediately after initial disturbance of soils and maintained throughout construction. Erosion and sedimentation control devices would be installed in accordance with MEP's Plan and any state, county, or parish requirements for the control of stormwater during construction.




TYPICAL TOPSOIL STRIPPING




ALTERNATE TOPSOIL STRIPPING

1. Remove topsoil from over the trench and under the spoil pile. Store topsoil adjacent to stripped area. Topsoil may also be stored on working side.
2. Excavate trench subsoil and store on spoil side adjacent to the trench. Allow for a 3-foot separation between the topsoil pile and the trench spoil.
3. Return trench spoil to trench and compact. Feather out excess spoil over stripped area leaving a low roach centered over the trench. alleviate compaction of clay rich subsoils over the stripped area.
4. Return topsoil evenly over the stripped area after trench has sufficently settled or has been compacted.
5. Alleviate compaction of topsoil over entire right of way.

| | |
|---|---|
| Not to Scale | MIDCONTINENT EXPRESS PIPELINE PROJECT<br>Typical Trench And Spoil Area Topsoil Stripping |
| | DATE: May 2008 / FIGURE: 2.3.1-2 |

**Trenching**

Before beginning excavation, MEP would contact the appropriate state one-call system to have existing underground utilities located, identified, and flagged. A trench would then be excavated using rotary wheel ditching machines, track-mounted backhoes, or similar equipment. Excavated materials would normally be stored on the non-working side of the trench away from construction traffic and pipe assembly areas (Figure 2.3.1-2). Where collocated with existing pipelines, spoil would be placed on the same side of the trench as, but not directly over, the existing pipeline to prevent equipment from working over the in-service pipeline. Temporary trench plugs (or barriers) would be used to create segments within the open trench to reduce erosion and allow access across the trench. Trench plugs would typically consist of either compacted subsoil or sandbags placed across the ditch (soft plugs) or short, unexcavated portions of trench (hard plugs). Trench dewatering may also be required along portions of the route.

The base of the trench would be excavated at least 12 inches wider than the diameter of the pipe to be installed, and the sides of the trench would be sloped based on the stability of the soils encountered. The excavated trench would allow space for the pipeline, pipeline bedding, and the minimum amount of top cover required by DOT specifications. The trench would typically be excavated to a sufficient depth to enable the proposed pipeline to be installed at a minimum depth of 3 feet (measured from the top of the pipeline) below the ground surface. The actual installation depth of the pipeline would vary and would range from these minimum depth requirements to that depth required for safe crossing of a feature such as a road, highway, railroad, or waterbody. Additionally, increased pipeline installation depth could be affected by landowner-identified issues such as established crossings for logging equipment and other site-specific concerns. These issues and concerns could be addressed during individual landowner easement negotiations. At crossings of utilities or foreign pipelines, the proposed pipeline would also generally be installed at a greater depth, so as to provide for a minimum clearance of 12 inches, or that depth that may be required by state or local regulations, whichever provides greater protection.

Areas of bedrock that might be encountered along the proposed Project route should be easily workable with standard construction equipment and techniques, and MEP does not anticipate the need for blasting associated with trench excavation. However, if blasting were to be required, such work would be accomplished in accordance with MEP's Procedures, as well as all other applicable regulations (see Section 3.1).

**Pipe Stringing, Bending, and Welding**

Sections of pipe would be delivered to the job site in 40- to 60- foot lengths, or joints, though most 40-foot joints will be double joined into 80-foot-long lengths. The delivered joints of pipe would be temporarily placed or "strung" along the excavated pipeline trench, where they would be bent as necessary to follow the natural grade and direction changes of the right-of-way. Following stringing and bending, the ends of the pipeline would be carefully aligned and welded together. The welds would be visually inspected and tested to ensure structural integrity using non-destructive examination methods such as radiography (x-ray) or ultrasound. Those welds that do not meet established specifications would be repaired or replaced.

A factory-applied, fusion-bonded epoxy external coating (or similar coating technique) would cover and protect the delivered pipeline sections. Following welding, the previously uncoated ends of the pipe at all joints would be coated with material compatible with the factory-applied coating in preparation for installation. The coating on the remainder of the completed pipe section would be inspected for defects, and repairs would be made to any damaged areas prior to lowering the pipe into the trench. At locations with saturated soils, the pipeline would be coated with concrete to provide negative buoyancy, if required.

### Lowering-in and Backfilling

Prior to lowering the pipeline, the trench would be cleaned of debris and foreign material, and dewatered as necessary. Trench dewatering, which would entail pumping accumulated groundwater or rainwater from the trench to stable upland areas, would be performed in accordance with applicable local, state, and federal permitting requirements, as well as MEP's Procedures. In areas of rock, the bottom of the trench may be padded with sand, gravel, screened soils, sandbags, or support pillows to protect the pipe coating. However, topsoil would not be used as padding material. The pipeline would then be lowered into the trench by appropriately spaced, sideboom tractors working in unison to avoid buckling of the pipe. Trench breakers would be installed at regular intervals where appropriate to prevent subsurface erosion and flow of water between the trench and crossed waterbodies, wetlands, and near-surface groundwater.

After the pipeline is lowered into the trench and adequately protected, previously excavated materials would be used to backfill the trench. Any excess excavated materials or materials deemed unsuitable for backfill would be evenly spread over the right-of-way or disposed of in accordance with applicable regulations and landowner requirements. Backfilling would occur to existing grade or higher to accommodate future soil settlement.

### Hydrostatic Testing

Once installation and backfilling are completed and before the Project begins operation, the pipeline would be hydrostatically pressure tested in accordance with DOT safety standard (49 CFR Part 192) to verify its integrity and to ensure its ability to withstand the MAOP. Hydrostatic testing consists of installing a hydrostatic test cap and manifold, filling the pipeline with water, pressurizing the pipeline to its MAOP, and maintaining that test pressure for a specified minimum period of time. The entire pipeline would be tested, but typically extended segments of pipeline would be tested individually. Any leaks or loss of pressure detected during the test would be repaired and that segment of pipeline would be re-tested.

Water used for hydrostatic testing would be obtained from surface water sources, and no biocides or other hydrostatic test water additives would be added to the test water. After hydrostatic testing is completed, the test water would either be pumped to the next segment of pipeline to be tested or discharged. MEP indicates that hydrostatic test water would either be discharged to upland areas using energy dissipation devices to minimize erosion or discharged directly to waterbodies to minimize the potential for overland erosion and sedimentation. Hydrostatic test water would be obtained and discharged in accordance with applicable regulations, as well as MEP's Procedures. Additional information on hydrostatic testing is provided in Section 3.3.

Once a segment of pipe has been successfully tested, it would be cleaned and dried using mechanical tools (pigs) moved through the pipeline with pressurized, dry air. The hydrostatic test cap and manifold would then be removed, and the pipe would be connected to the remainder of the pipeline using the welding and inspection procedures described above.

### Cleanup and Restoration

Within 20 days, or as soon as possible, of completion of backfilling the trench, all remaining trash, debris, surplus materials, and temporary structures would be removed from the right-of-way and disposed in accordance with applicable federal, state, and local regulations. All disturbed areas would be finish graded and restored as closely as possible to preconstruction contours. Permanent erosion control measures would also be installed during this phase in accordance with MEP's Plan and Procedures.

Topsoil previously segregated from the trench material in all agricultural and residential areas would be spread uniformly across the construction right-of-way and the topsoil and subsoil in these areas would be tested for compaction along the disturbed corridor.

Vegetation restoration would be accomplished according to MEP's Plan and Procedures, and would begin within 6 days of final grading. After the soil is readied for planting or seeding in areas where MEP and landowners have negotiated agreements, MEP would reseed or replant according to those agreements. To provide permanent erosion control along the right-of-way, all other upland areas disturbed by construction would be fertilized, limed, and seeded in accordance with NRCS Critical Area Planting Specifications, which are included as a component of the EMCP, or the prescribed dates and seed mixes specified by the local soil conservation authorities or land management agencies. Wetland areas would not be fertilized, limed, or mulched unless MEP is directed to do so by state or local regulatory agencies. Additional information on revegetation procedures in wetland and upland areas is provided in Sections 3.4 and 3.5, respectively.

Disturbed pavement and other road surfaces along access roads would be restored to preconstruction or better conditions, unless otherwise specified by the property owner and approved by applicable regulatory agencies. Likewise, any private or public property damaged during construction, such as fences, gates, and driveways, would also be restored to original or better condition, consistent with individual landowner agreements.

Pipeline markers and/or warning signs would be installed along the pipeline centerline at specified intervals to identify the pipeline location, specify MEP as the operator of the pipeline, and provide telephone numbers for emergencies and inquiries.

### 2.3.2 Specialized Pipeline Construction Procedures

#### 2.3.2.1 Waterbody Crossings

The FERC Procedures define a waterbody as any natural or artificial stream, river, or drainage with perceptible flow at the time of crossing, and other permanent waterbodies such as ponds and lakes. Installation of the proposed Project pipeline across rivers and streams would be accomplished in accordance with MEP's Procedures and all applicable permits. MEP's Procedures identify the baseline mitigation measures, from preconstruction planning through construction, restoration, and monitoring, for minimizing the extent and duration of Project-related disturbance to waterbodies. The waterbody crossing measures specified in MEP's Procedures are based on industry standard practices.

Installation of the pipeline across waterbodies would be accomplished using either a "wet" or "dry" construction technique. A "wet" or open-cut crossing involves trenching and installing the pipeline without isolating the construction work area from stream flow. The objective of this method is to complete the crossing as quickly as practical to minimize the duration of impacts on aquatic resources. A "dry" crossing involves isolating the construction zone from the stream flow by directing water flow through a flume pipe (flume crossing), by damming the flow and pumping the water around the construction area (dam and pump crossing), or by boring or directionally drilling and installing the pipeline beneath the waterbody (HDD or horizontal bore). The primary objectives of these methods are to minimize siltation of the waterbody and allow for a more extended construction period. Each of these techniques is discussed further below.

A total of 1,046 individual waterbody crossings would be required in association with the proposed Project. MEP has proposed the use of either open-cut or HDD construction techniques for all of these crossings. However, MEP has also indicated that, except for those streams for which HDD is

proposed, the actual method of waterbody crossing would be subject to change based on the site-specific conditions and waterbody characteristics encountered at the time of construction. Further, MEP has indicated that the pipeline would be installed using dry construction techniques at crossings of waterbodies up to 30 feet wide (as measured at the water's edge at the time of construction) to minimize impacts where specific resources have been identified or other applicable agency requests have been received. Additional information on the proposed waterbody crossing procedures and potential environmental consequences is presented in Section 3.3.

**Open-cut Crossing**

In general, an open-cut waterbody crossing would be conducted using methods similar to conventional open-cut trenching. The open-cut construction method would involve excavation of the pipeline trench across the waterbody, installation of a prefabricated segment of pipeline, and backfilling of the trench with native material with no effort to isolate flow from construction activities. Figure 2.3.2-1 illustrates a typical open-cut waterbody crossing. Excavation and backfilling of the trench would generally be accomplished using backhoes or other excavation equipment operating from one or both banks of the waterbody. If required, the use of equipment operating in the waterbody would be limited to that needed for construction of the crossing. All other construction equipment would cross the waterbody using equipment bridges, unless otherwise allowed by MEP's Procedures for minor waterbodies.

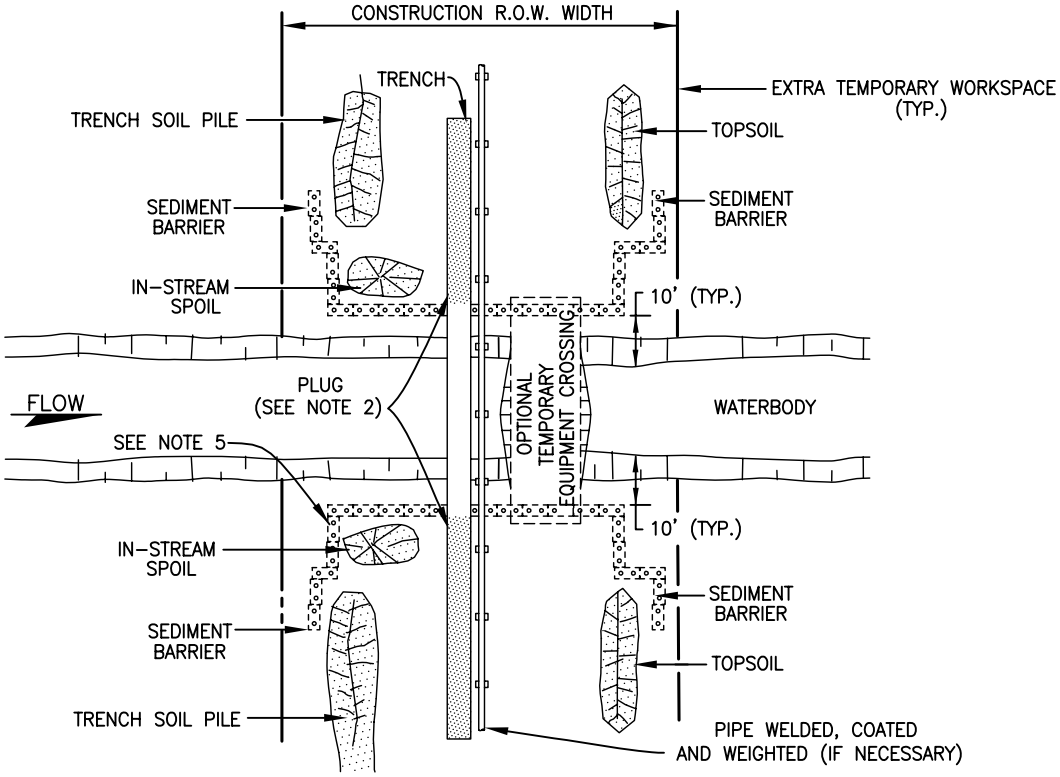
Mitigation measures would be implemented to minimize impacts to the aquatic environment during construction, as described in MEP's Procedures. Construction would be scheduled so that the trench would be excavated immediately prior to pipelaying activities. The duration of construction across minor waterbodies would be limited to 24 hours for minor waterbodies (10 feet wide or less) and 48 hours for intermediate waterbodies (greater than 10 feet wide but less than or equal to 100 feet in width). In accordance with MEP's Procedures, excavated spoil would be stockpiled in the construction right-of-way at least 10 feet from the stream bank or in approved additional work areas, and would be surrounded by sediment control devices to prevent sediment from returning to the waterbody. The waterbody banks would be returned to as near preconstruction conditions as possible within 24 hours of completing all open-cut crossings.

**Flume Crossing**

This procedure would consist of temporarily directing the flow of water through one or more flume pipes placed over the area to be excavated. This procedure would allow trenching across the waterbody to be completed underneath the flume pipes without disruption of water flow. Stream flow would be diverted through the flumes by constructing two bulkheads, using sand bags or plastic dams, to direct the stream flow through the flume pipes. Following completion of pipeline installation, backfill of the trench, and restoration of stream banks, the bulkheads and flume pipes would be removed. This crossing method generally minimizes downstream turbidity by allowing excavation of the pipeline trench under relatively dry conditions.

**Dam and Pump Crossing**

The dam and pump method involves installing temporary dams upstream and downstream of the proposed waterbody crossing. The temporary dams would typically be constructed using sandbags and plastic sheeting. Following dam installation, appropriately sized pumps would be used to dewater and transport the stream flow around the construction work area and trench. Intake screens would be installed at the pump inlets to prevent entrainment of aquatic life, and energy dissipating devices would be




**PLAN VIEW**
N.T.S.

**NOTES:**

1. SCHEDULE CROSSINGS DURING LOW FLOW PERIOD, IF POSSIBLE.
2. USE TRENCH PLUGS TO PREVENT DIVERSION OF WATER INTO UPLAND PORTIONS OF THE PIPELINE TRENCH AND TO KEEP ACCUMULATED TRENCH WATER OUT OF THE WATERBODY.
3. NO REFUELING OF MOBILE EQUIPMENT OR CONCRETE COATING ACTIVITIES WITHIN 100 FEET OF WATERBODY.
4. IN AGRICULTURAL LAND, STRIP TOPSOIL FROM TRENCH SOIL STORAGE AREA. STOCKPILE TOPSOIL AND TRENCH SOIL SEPARATELY, TOPSOIL AND TRENCH SOIL WILL NOT BE STOCKPILED IN THE CROSSING CHANNEL AND WILL BE PLACED A MINIMUM OF 10 FEET FROM CROSSING BANKS WITHIN THE CONSTRUCTION R.O.W.
5. CONSTRUCT SEDIMENT BARRIERS ALONG THE SIDES OF TRENCH SOIL AND TOPSOIL PILES AND ACROSS THE ENTIRE CONSTRUCTION R.O.W. TO PREVENT SILT LADEN WATER AND TRENCH SOIL FROM FLOWING BACK INTO WATERBODY. BARRIERS MAY BE TEMPORARILY REMOVED TO ALLOW CONSTRUCTION ACTIVITIES BUT MUST BE REPLACED AT THE END OF EACH WORKING DAY.
6. STORE IN-STREAM TRENCH SOIL OUT OF THE STREAM CHANNEL A MINIMUM OF 10 FEET FROM THE WATER'S EDGE AND WITHIN THE CONSTRUCTION R.O.W., UNLESS DEPICTED OTHERWISE IN SITE-SPECIFIC CROSSING PLANS.
7. BACKFILL WITH NATIVE MATERIAL EXCEPT WHERE NATIVE MATERIAL FAILS THE NO. 230 SIEVE TEST.
8. RESTORE WATERBODY CHANNEL AS NEAR AS PRACTICAL TO PRE-CONSTRUCTION PROFILE AND SUBSTRATE.
9. RESTORE STREAM BANK AS NEAR AS PRACTICAL TO ORIGINAL CONDITION AND STABILIZE AS REQUIRED. STABILIZE WATERBODY BANKS AND INSTALL TEMPORARY SEDIMENT BARRIERS WITHIN 24 HOURS OF COMPLETING THE CROSSING.

| | | |
|---|---|---|
| Not to Scale | MIDCONTINENT EXPRESS PIPELINE PROJECT<br>Typical Open-cut<br>Waterbody Crossing | |
| | DATE: May 2008 | FIGURE: 2.3.2-1 |

installed at the pump discharge point to minimize erosion and stream bed scour. Trench excavation and pipeline installation would then commence through the dewatered portion of the waterbody channel. Following completion of pipeline installation, backfill of the trench, and restoration of stream banks, the temporary dams would be removed, and flow through the construction work area would be restored. This method is generally only appropriate for those waterbody crossings where pumps can adequately transfer stream flow volumes around the work area and there are no concerns about sensitive species passage.

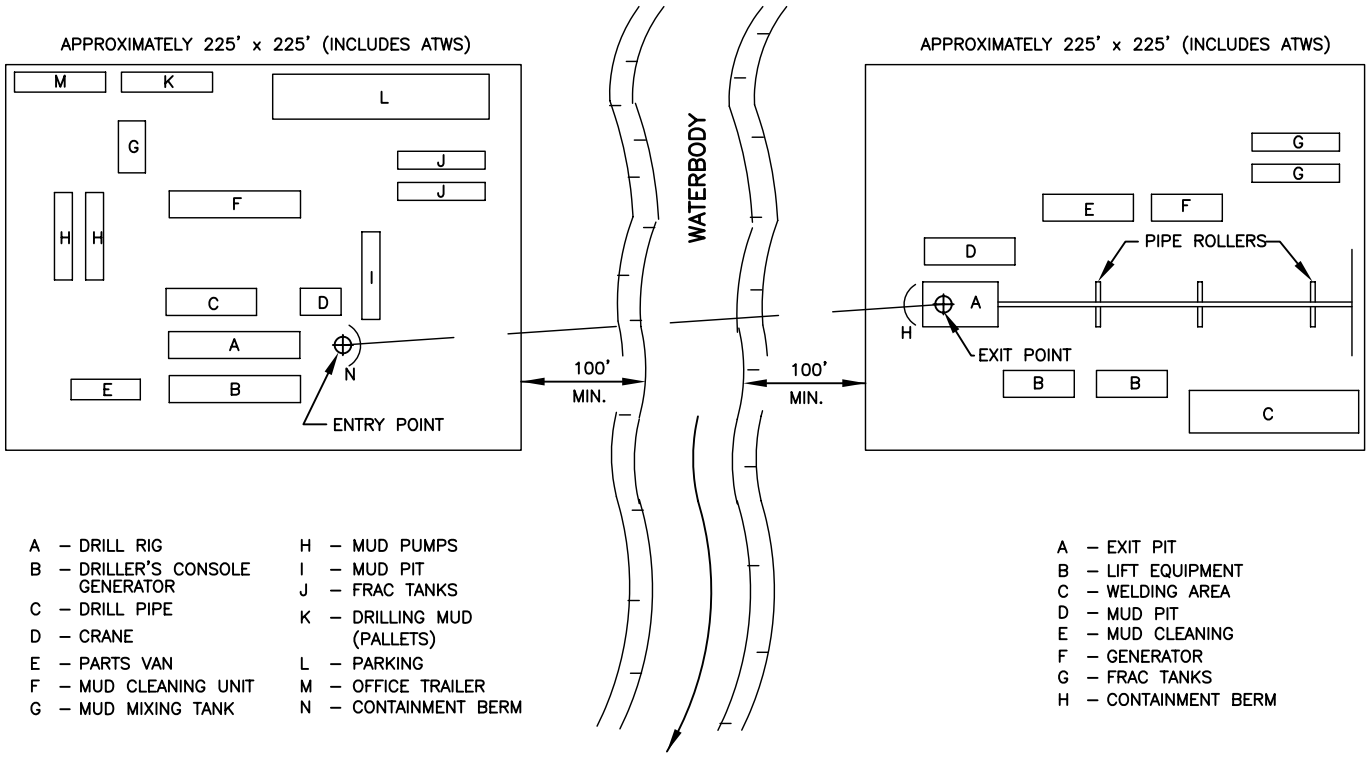
**Horizontal Directional Drill**

HDD is a trenchless crossing method that may be used to avoid direct impacts to sensitive resources, such as waterbodies and wetlands, or infrastructure (e.g., roads and railways) by directionally drilling beneath them. HDD installation on the proposed Project would result in a pipeline that is installed beneath the ground surface by pulling the pipeline through a pre-drilled bore hole. HDD installation is typically carried out in three stages: (1) directional drilling of a small-diameter pilot hole; (2) enlarging the pilot hole to a sufficient diameter to accommodate the pipeline; and (3) pulling the prefabricated pipeline, or pull string, into the enlarged bore hole. Figure 2.3.2-2 illustrates a typical HDD installation process.

The pilot hole (approximately 12-inch diameter depending on drill head and soil characteristics) would be drilled along a predetermined HDD bore path. The drill head for the pilot hole would have a down-hole, hydraulic motor-powered drill bit attached to the drill string (pipe connecting the drill rig to the drill head). The hydraulic motor would convert hydraulic energy from drilling fluid, or drilling mud, pumped from the surface to mechanical energy at the drill head, allowing for bit rotation without drill string rotation. Drill string would be added as the pilot hole progressed.

Directional control of the pilot hole drill is achieved by using a non-rotating drill string with an asymmetrical leading edge. The asymmetry of the edge creates a steering bias, while the non-rotating aspect of the drill string allows the steering bias to be held in a specific position during advancement. The path of the drill head would be controlled using a magnetic steering tool positioned behind the drill head and, if needed, an electromagnetic survey system. The magnetic steering tool would measure the position (azimuth and inclination) of the drill head and transmit that information to a console at the drill station. If magnetic interference were encountered, an electromagnetic survey system would be used to monitor the path and progress of the drill head. This system would consist of a small diameter cable (less than 0.5 inch) laid out on the ground surface to form a rectangular coil. The long axis of the coil would be oriented along the path of the pilot hole. The coil would be energized to produce an electromagnetic field of known intensity and location. The position of the magnetic steering tool would be measured relative to the induced field. Minor surface clearing could be required along the path of the proposed bore to install the cable and/or other related equipment (e.g., water pumps and hosing to supply HDD-related water requirements), but such clearing would be limited and no ground disturbance would be anticipated in association with those activities. All equipment and materials would be removed following successful installation of the HDD pipeline section.

After completion of the pilot hole, the HDD bore would be progressively reamed to a diameter about 12 inches larger than the pipeline diameter. Drilling fluid would be pumped through the reaming tools to aid in cutting, support the bore hole, transport spoil back to the surface, and lubricate the trailing pipe. Upon completion of drilling and reaming, the drill string would extend from the entrance pit to the exit pit. Concurrent with reaming the bore, the pull string to be inserted in the HDD bore would be fabricated and laid out within the construction right-of-way or extra workspace areas extending from the HDD exit pit. The pull string would be connected to the drill string and pulled back through the bore.

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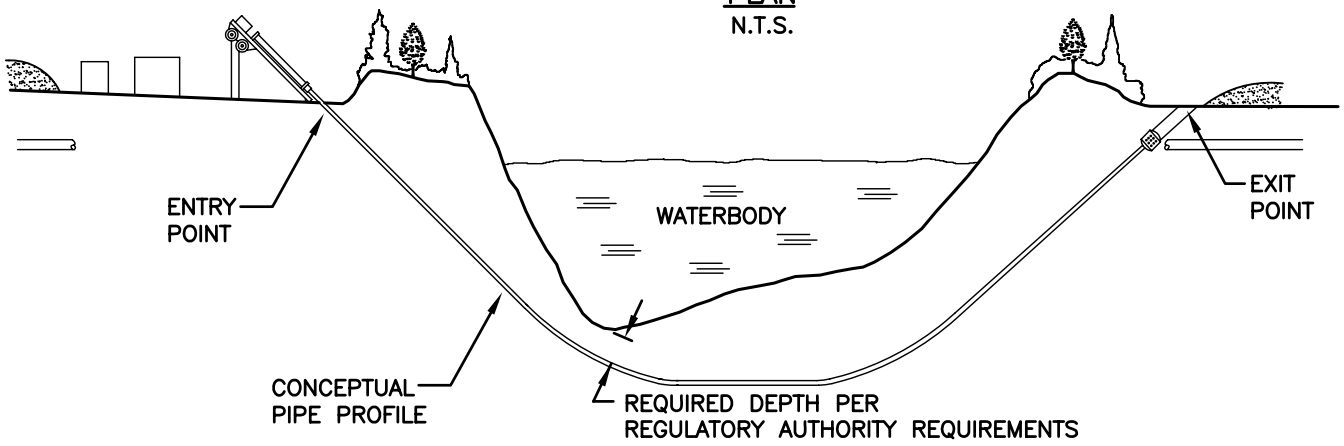


PROFILE
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## NOTES:

1. INSTALL CROSSING AND DEVELOP SITE DETAILS IN ACCORDANCE WITH PERMIT REQUIREMENTS.
2. SET UP DRILLING EQUIPMENT A MINIMUM OF 100 FEET FROM THE EDGE OF THE WATERCOURSE. DO NOT CLEAR OR GRADE WITHIN THE 100 FOOT ZONE. INSTALL SUITABLE SEDIMENT BARRIERS AROUND ENTRY AND EXIT SITES.
3. ENSURE THAT ONLY BENTONITE BASED DRILLING MUD IS USED. DO NOT ALLOW THE USE OF ANY ADDITIVES TO THE DRILLING MUD WITHOUT THE APPROVAL OF APPROPRIATE REGULATORY AUTHORITIES AND CLIENT'S REPRESENTATIVE.
4. INSTALL SUITABLE DRILLING MUD TANKS OR SUMPS TO PREVENT CONTAMINATION OF WATERCOURSE.
5. INSTALL BERMS DOWNSLOPE FROM THE DRILL ENTRY AND ANTICIPATED EXIT POINTS TO CONTAIN ANY RELEASE OF DRILLING MUD. WATER PUMPS WILL BE REQUIRED TO ACHIEVE SECONDARY CONTAINMENT.
6. DISPOSE OF DRILLING MUD IN ACCORDANCE WITH THE APPROPRIATE REGULATORY AUTHORITY REQUIREMENTS.

| | | |
|---|---|---|
| Not to Scale | MIDCONTINENT EXPRESS PIPELINE PROJECT<br>Typical HDD Installation Process | |
| | DATE: May 2008 | FIGURE: 2.3.2-2 |

The pipeline would be neutrally buoyant in the drilling fluid, allowing it to be pulled through the HDD bore hole.

Drilling fluid circulated through the bore during the pilot hole drilling and reaming process would be collected at the surface and processed to remove spoils, allowing the fluid to be reused. Excess spoils and drilling fluid would be treated for disposal and disposed of at an approved location in accordance with regulatory requirements, agreements, and permit conditions. The proposed HDD drilling fluid would consist of water and bentonite. Bentonite is a mixture of non-toxic clays and rock particles consisting of about 85 percent montmorillonite clay; 10 percent quartz and feldspars; and 5 percent accessory materials, such as calcite and gypsum. Potentially toxic additives are added to drilling fluids used in some applications, but MEP has stated that it would not use any synthetic or potentially toxic drilling fluid additives.

A successful HDD would result in little or no impact to the waterbody being crossed. HDD is not without risk; however, as inadvertent drilling fluid releases could result if the fluid escapes containment at pits that would be excavated at the HDD entrance and exit points or if a "frac-out" occurs. A frac-out occurs when drilling fluids escape the drill bore hole and are forced through the subsurface substrate to the ground surface. Frac-outs occur most often in highly permeable soils during the entrance and exit phases of the pilot hole drill, as this is when the greatest pressures are exerted on the bore walls in shallow soils. Drilling fluid pressures in the bore hole and drilling fluid pumping and return flow rates would be monitored to detect the potential occurrence of a frac-out. If survey and monitoring procedures indicate that a frac-out may have occurred, MEP would implement the corrective measures identified in the DDCP, which is included as a component of the EMCP. In the event of a complete loss of drilling fluid circulation, which is potentially indicative of a frac-out, the DDCP specifies that the HDD operator would cease pumping of drilling fluids immediately, any surfaced drilling fluids would be contained, and clean-up procedures would commence. A discussion of the potential impacts of HDD on waterbodies and wetlands is provided in Sections 3.3 and 3.4.

MEP proposes to implement 40 separate HDDs in association with the proposed Project; and HDD would be used to accomplish pipeline installation across 39 individual waterbodies, including the Mississippi River and 27 additional major waterbodies (greater than 100 feet in width), three Louisiana Natural and Scenic Rivers (Bayou Dorcheat, Bayou D'Arbonne [two separate crossings], and Bayou D'Loutre), and six streams listed in the Nationwide Rivers Inventory (NRI) (Bayou D'Arbonne [two separate crossings], Bayou D'Loutre, Big Black River, Chickasawhay River, Pearl River, and Strong River). The waterbodies that would be crossed using HDD techniques are identified in Appendix E and described further in Section 3.3. In addition, various wetlands, roadways, railroads, and special use areas, including Wetlands Reserve Program (WRP) easements and the Natchez Trace Parkway (MP MS 26.0) would be crossed via HDD, as described in Table 2.3-1.

The crossing of the Mississippi River would be the longest HDD associated with the proposed Project, extending to over 3,125 feet in length. MEP would install the pipeline over the top of the levee on the west side of the Mississippi River due to restrictions regarding levee disturbance. The proposed crossing point at the levee is adjacent to and just north of an existing Entergy electric transmission line right-of-way. Inside of the levee, the pipeline would be installed using open-cut methods until reaching the proposed HDD exit point just west of the Mississippi River (MP LA 193.7). The HDD entry point would be located on the east side of the Mississippi River (MP MS 0.3). The pipeline pull string and associated extra workspace would be located on the west side of the Mississippi River within a wetland area. MEP has not indicated that there are any special construction constraints or risks associated with the length of this HDD. However, MEP would develop site-specific crossing plans for the Mississippi River and all other HDD crossings and provide those for our review and approval prior to construction, as specified in MEP's Procedures. These site-specific plans would identify the proposed HDD bore path and

alignment, as well as the locations of equipment, drilling mud pits, pipe assembly areas, and all other areas to be disturbed or cleared during implementation of the HDD.

**TABLE 2.3-1**
**Proposed Horizontal Directional Drill Locations for the Proposed Midcontinent Express Pipeline Project**

| Features Crossed | Begin MP | End MP | Length (feet) |
|---|---|---|---|
| **Mainline Pipeline** | | | |
| Red River | OK 8.3 | TX 0.1 | 2,100 |
| Bois D'Arc Creek and Wetland Reserve Program (WRP) easement | TX 2.7 | TX 3.0 | 3,500 |
| Archeological site | TX (confidential) | TX (confidential) | 900 |
| Sanders Creek | TX 9.4 | TX 9.5 | 800 |
| Brushy Creek and associated forested and scrub-shrub wetlands | TX 46.3 | TX 47.1 | 4,250 |
| Brushy Creek, Sulphur River, two unnamed tributaries, and associated forested and scrub-shrub wetlands | TX 50.0 | TX 50.5 | 2,300 |
| Sulphur River (three separate crossings), two unnamed tributaries, and associated forested wetlands | TX 51.4 | TX 52.3 | 4,720 |
| White Oak Creek | TX 59.7 | TX 60.0 | 1,700 |
| Two unnamed ponds | TX 114.4 | TX 114.7 | 1,580 |
| Black Bayou | TX 122.8 | TX123.2 | 2,100 |
| Red River | LA 12.7 | LA 13.3 | 3,650 |
| Long Lake/Bodcau Bayou and associated forested wetland | LA 35.5 | LA 36.0 | 2,300 |
| Bayou Dorcheat and associated emergent and scrub-shrub wetlands | LA 42.0 | LA 42.3 | 2,100 |
| Forested wetland and bird rookery | LA 42.6 | LA 42.9 | 1,600 |
| Bayou D'Arbonne and associated forested wetland | LA 90.5 | LA 90.9 | 2,400 |
| Bayou D'Arbonne and associated forested wetland | LA 106.4 | LA 107.1 | 3,800 |
| Bayou D'Loutre | LA 113.0 | LA 113.4 | 2,160 |
| Ouachita River and River Road | LA 119.5 | LA 119.8 | 1,500 |
| Highway 165 (Sterlington area) | LA 121.8 | LA 122.2 | 1,950 |
| Bayou de Siard (Presiaro Bayou), forested wetlands, Louisiana Highway 136, and a railroad | LA 123.1 | LA 124.1 | 5,100 |
| Little Bayou Boeuf, associated scrub-shrub wetland, and the Union Pacific Railroad | LA 130.4 | LA 130.8 | 2,160 |
| Bayou Lafourche and Louisiana Highway 137 | LA 140.9 | LA 141.2 | 1,800 |
| Boeuf River and Adcock Road | LA 143.8 | LA 144.0 | 1,170 |
| Macon Bayou and associated forested wetland | LA 158.5 | LA 158.8 | 1,490 |
| Joe's Bayou, Louisiana Highway 577, and Frazier Road | LA 162.9 | LA 163.1 | 1,000 |
| WRP easement | LA 165.2 | LA 165.6 | 2,100 |

| TABLE 2.3-1 (continued)<br>Proposed Horizontal Directional Drill Locations for the Proposed<br>Midcontinent Express Pipeline Project | | | |
|---|---|---|---|
| **Features Crossed** | **Begin MP** | **End MP** | **Length (feet)** |
| Tensas River, wetland and Charles Brown Road | LA 166.0 | LA 166.3 | 1,100 |
| Mississippi River and associated forested wetland | LA 193.7 | MS 1.2 | 5,150 |
| Mississippi Highway 61, three unnamed tributaries, and an associated scrub-shrub wetland | MS 2.0 | MS 2.3 | 2,520 |
| Big Black River and associated forested and emergent wetlands | MS 12.5 | MS 12.9 | 2,500 |
| Natchez Trace Parkway, Turkey Creek, two unnamed tributaries, and associated forested wetlands | MS 25.7 | MS 26.1 | 2,100 |
| Interstate 55 | MS 42.1 | MS 42.3 | 1,350 |
| Pearl River and associated forested wetland | MS 44.6 | MS 44.9 | 1,620 |
| Strong River | MS 73.0 | MS 73.2 | 1,000 |
| Leaf River | MS 96.9 | MS 97.2 | 1,550 |
| Chickasawhay River, associated forested wetland, Mississippi Highway 145/18, and Kansas City Southern Railroad | MS 137.7 | MS 138.1 | 2,070 |
| **CenterPoint Lateral** | | | |
| Scrub-shrub and emergent wetlands, Louisiana Highway 80, and Kansas City Southern Railroad | CL 0.4 | CL 0.6 | 1,000 |
| WRP easement, an unnamed tributary to Macon Bayou and associated wetland scrub-shrub and emergent wetlands, and Interstate 20 | CL 1.4 | CL 2.1 | 3,320 |
| WRP easement and Indian Mound Road | CL 2.7 | CL 3.0 | 1,300 |
| Macon Bayou and associated forested wetland | CL 3.5 | CL 3.6 | 500 |

### Horizontal Bore

Horizontal bores are similar to HDDs in that they avoid direct surface impacts to sensitive resources by installing the pipeline beneath the feature. Horizontal bores are typically much shorter and are used to cross such features as roads or railroads. Some waterbodies directly adjacent to or associated with roads or railroads that would be crossed by horizontal bores may also be included in the length of the planned bore. Similarly, some elevated or channelized waterbodies (e.g., irrigation drains or ditches) could also be crossed using horizontal boring, if groundwater conditions permit. In these instances, bores beneath these waterbodies would be accomplished by excavating pits on both sides of the feature and boring a horizontal hole equivalent to the diameter of the pipe (or casing, if required) at the depth of the pipeline installation. The pipeline section and/or casing would then be pushed through the bore. If additional pipeline sections were required, they would be welded to the first section of the pipeline in the bore pit before being pushed through the bore.

### 2.3.2.2 Wetland Crossings

Construction of the proposed Project pipeline across wetlands would be conducted in accordance with applicable permits and MEP's Procedures. Overall, the wetland crossing methods and mitigation measures identified in MEP's Procedures are designed to minimize the extent and duration of

construction-related disturbance within wetlands. The site-specific crossing procedures used to install the pipeline across wetlands would vary dependent on the level of soil stability and saturation encountered during construction. During crossing of unsaturated wetlands (those wetlands without standing water or saturated soils), construction would primarily be similar to the upland construction procedures described in Section 2.3.1, with the pipeline segment to be installed through the wetland assembled adjacent to the excavated trench. In unstable or saturated conditions construction and excavation equipment would work from temporary work surfaces, and a prefabricated pipeline segment would also be pulled into position from outside the wetland using the "push-pull" technique. Regardless of the installation technique used, several modifications would reduce the potential for pipeline construction to affect wetland hydrology and soil structure.

The construction right-of-way width through wetland areas would be reduced to 75 feet and 60 feet for the Project mainline and CenterPoint Lateral pipeline facilities, respectively, but MEP could request a variance for the use of a greater construction right-of-way width based on soils or site-specific conditions encountered at the time of construction. Figure 2.3.2-3 illustrates a typical wetland crossing construction right-of-way configuration. Within the right-of-way, woody vegetation would be cut off at ground level and removed from the wetlands leaving the root systems intact. Pulling of tree stumps and grading activities would be limited to that area directly over the trenchline, unless it was determined that safety related construction constraints required grading or the removal of tree stumps from under the working side of the construction right-of-way. Temporary erosion control devices would be installed as necessary immediately after initial disturbance of wetlands or adjacent upland areas to prevent sediment flow into wetlands, and would be maintained until revegetation is complete. Trench plugs would be installed as necessary to maintain wetland hydrology.

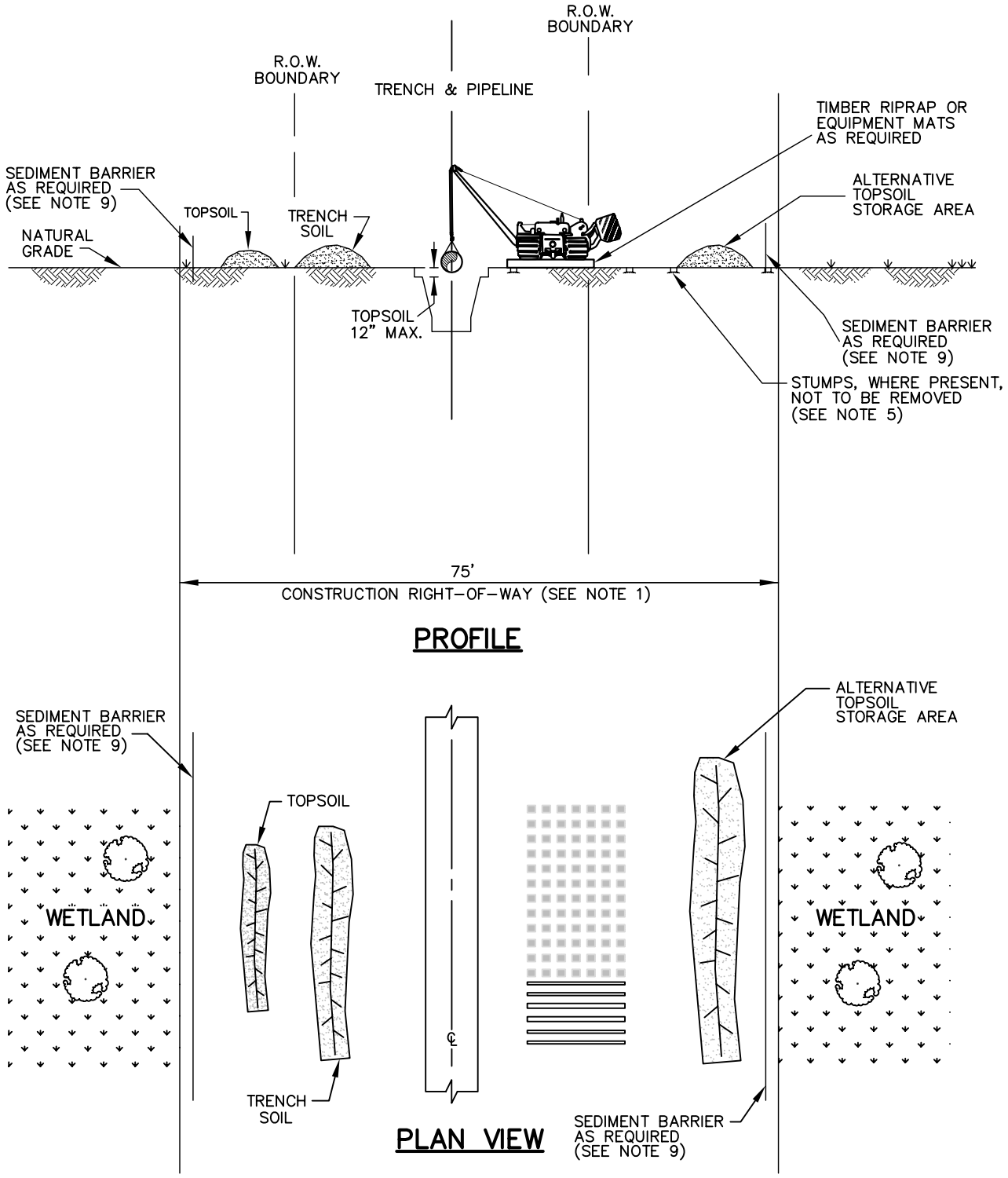
The construction equipment operating in wetland areas would be limited to that needed to clear the construction right-of-way, dig the trench, fabricate and install the pipeline, backfill the trench, and restore the construction right-of-way. If access roads in upland areas did not provide reasonable access, all other construction equipment would be limited to one pass through a wetland using the construction right-of-way. If standing water or saturated soil conditions were present, or if construction equipment caused ruts or mixing of the topsoil and subsoil, construction equipment operating in wetland areas would be further limited to the use of low-ground-pressure equipment or normal equipment operating from timber riprap or prefabricated equipment mats.

Topsoil would be stripped from the area directly over the trench line to a maximum depth of 12 inches in unsaturated soils and stockpiled separately from the subsoil. The segregated topsoil would be restored to its original location immediately following installation of the pipe and backfill of the trench. Materials such as timber mats placed in wetlands during construction would be removed during final cleanup, and the preconstruction contours of the wetland would be restored. Any required permanent erosion control measures would then be installed, and disturbed areas within the wetland would be temporarily stabilized by seeding with native, annual wetland grasses.

The wetlands that would be affected by construction of the proposed Project are identified in Appendix F and described further in Section 3.4. That section also provides further discussion of the wetland restoration and mitigation procedures that would be implemented by MEP.

#### 2.3.2.3 Road, Highway, and Railroad Crossings

The proposed pipeline route would cross numerous paved and unpaved roads, highways, and railroads along the proposed Project route. Construction across these features would be accomplished in




REFER TO SHEET 2 OF 2 FOR NOTES

| | |
|---|---|
| Not to Scale | MIDCONTINENT EXPRESS PIPELINE PROJECT<br>Typical Wetland Crossing Construction Right-of-Way |
| | DATE: May 2008 / FIGURE: 2.3.2-3 |

accordance with MEP's Plan and the requirements of all applicable crossing permits and approvals. During roadway construction, MEP would incorporate any safety precautions required by state and local transportation agencies.

All railroads and approximately 105 major roads, including state and interstate highways, along which traffic could not interrupted would be crossed via subsurface boring techniques (horizontal bore or HDD, which are fully described in Section 2.3.2.1). Section 3.8 provides additional information on the proposed major road crossing locations. Pipeline crossings of lightly traveled paved and unimproved rural dirt roads would typically be crossed via open-cut installation. In all instances, the pipeline would be installed to a depth of at least 5 feet below the road surface and 10 feet below all rail lines (Figures 2.3.2-4 and 2.3.2-5).

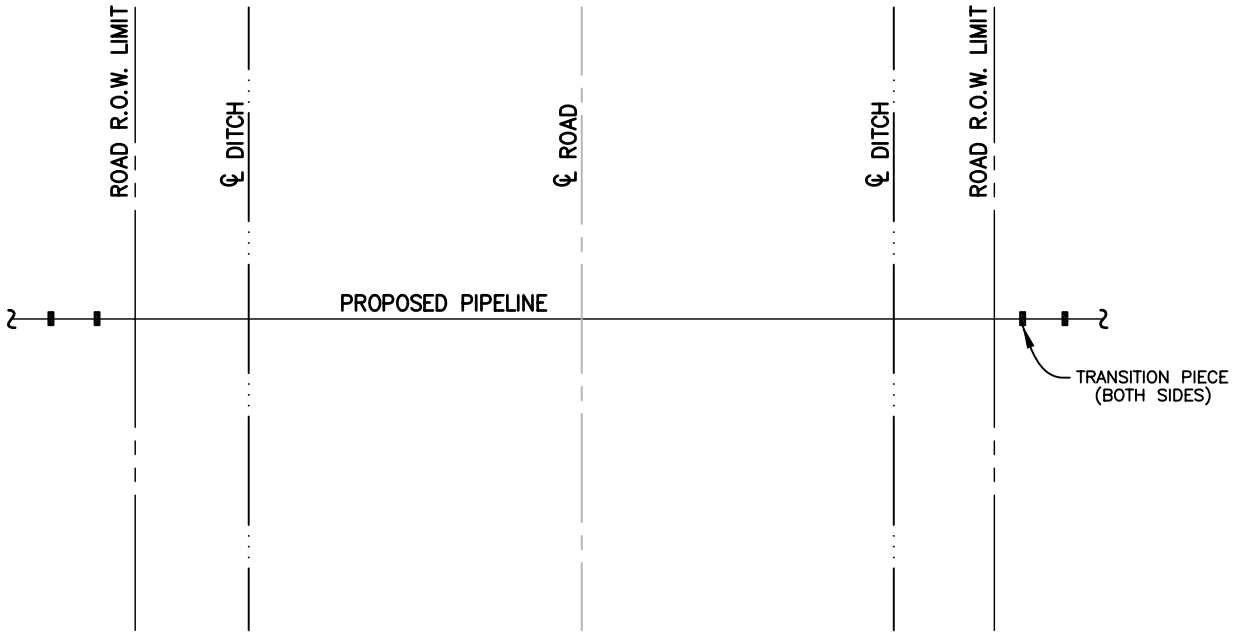
There would likely be little disruption of traffic on roads and railways that are bored. Open-cut pipeline crossings would require the temporary closure of the roads and implementation of detours, where feasible. In the absence of a reasonable detour, construction across the roadway would be staged to allow at least one lane of traffic to remain open except for the limited periods required for installing the pipeline. Efforts would also be made to schedule lane closures outside of peak traffic periods. Attempts will also be made to avoid peak-traffic periods on all road construction. All construction operations at these crossings, including repair and surface restoration, would normally be completed within 1 day.

#### 2.3.2.4 Agricultural Areas

Agricultural areas along the proposed Project route include pasture areas used for livestock grazing, hayfields, fallow fields, and rotated croplands, such as cotton and corn. In these areas MEP would implement special procedures to minimize impacts on current agricultural uses, in accordance with MEP's Plan. Topsoil would be removed to its actual depth, up to a maximum of 12 inches, and stockpiled separately from the subsoil excavated from the pipeline trench. Typically, topsoil would be stripped from directly over the pipeline ditch and the adjacent subsoil spoil storage area (Figure 2.3.1-2), but landowners could request topsoil segregation across the full construction work area. During construction, the natural flow patterns of all fields would be maintained by providing breaks in topsoil and subsoil stockpiles.

During cleanup and restoration, all disturbed areas would be finish-graded and restored as closely as possible to preconstruction contours. Topsoil previously segregated from the trench material in all agricultural and residential areas would be spread uniformly across the construction right-of-way, and any stones or excess rock would be removed from at least the top 12 inches of soil. The topsoil and subsoil in all agricultural areas would also be tested for compaction at regular intervals using penetrometers or other appropriate devices to conduct tests. Any severely compacted areas would be plowed with a paraplow or other deep tillage device. In areas where the topsoil was segregated, the subsoil would also be plowed before replacing the segregated topsoil.

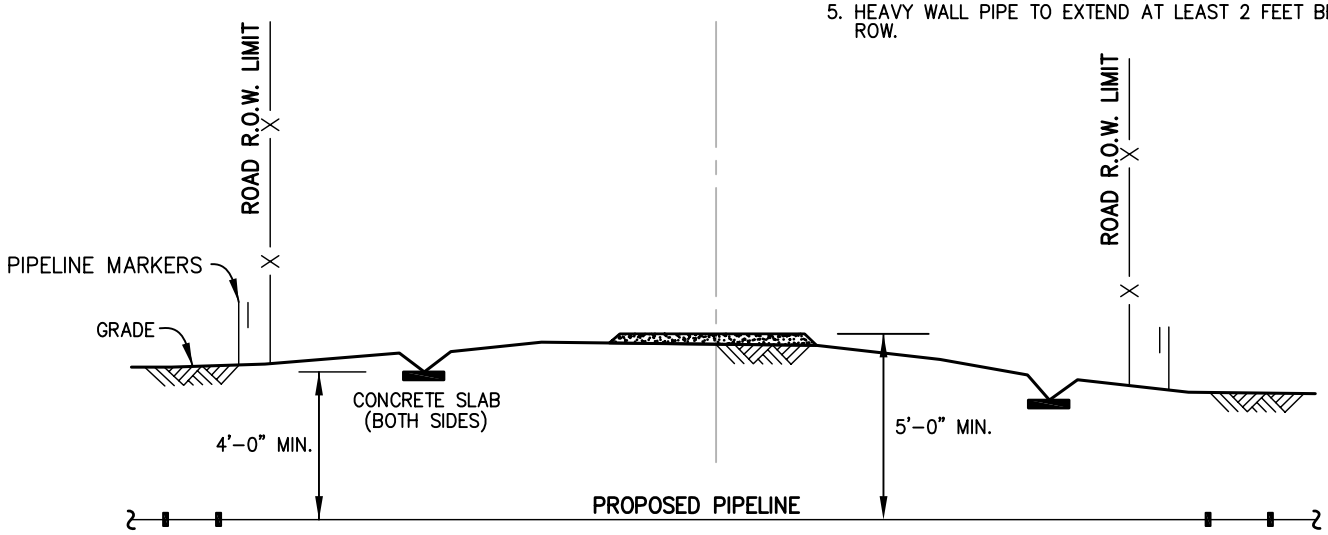
MEP indicates that no known drainage structures or irrigation facilities would be crossed by the proposed Project. However, MEP would work with property owners to identify locations of existing drainage structures and irrigation facilities that could be damaged during construction. Should any damage occur to these facilities, MEP would repair these systems, with the input of the property owners, to their original or better condition. MEP would also work with landowners prior to construction to establish compensation agreements for crop damages and for loss of growing time, as applicable. Additional information on special construction procedures that would be implemented in agricultural areas is provided in Sections 3.2 and 3.8.




## PLAN

NOTES:

1. REFER TO ALIGNMENT SHEETS FOR EXTRA WORK SPACE REQUIREMENTS FOR EACH SPECIFIC ROAD CROSSING.
2. CROSSING ANGLE SHALL BE AS NEAR TO 90° AS PRACTICAL, BUT NO LESS THAN 45°.
3. MAXIMUM JOINT LENGTHS SHALL BE USED TO MINIMIZE NUMBER OF WELDS WITHIN ROW.
4. CONTRACTOR TO NOTIFY RESPONSIBLE PERMITTING AUTHORITY BEFORE PROCEEDING WITH INSTALLATION.
5. HEAVY WALL PIPE TO EXTEND AT LEAST 2 FEET BEYOND ROW.




## PROFILE

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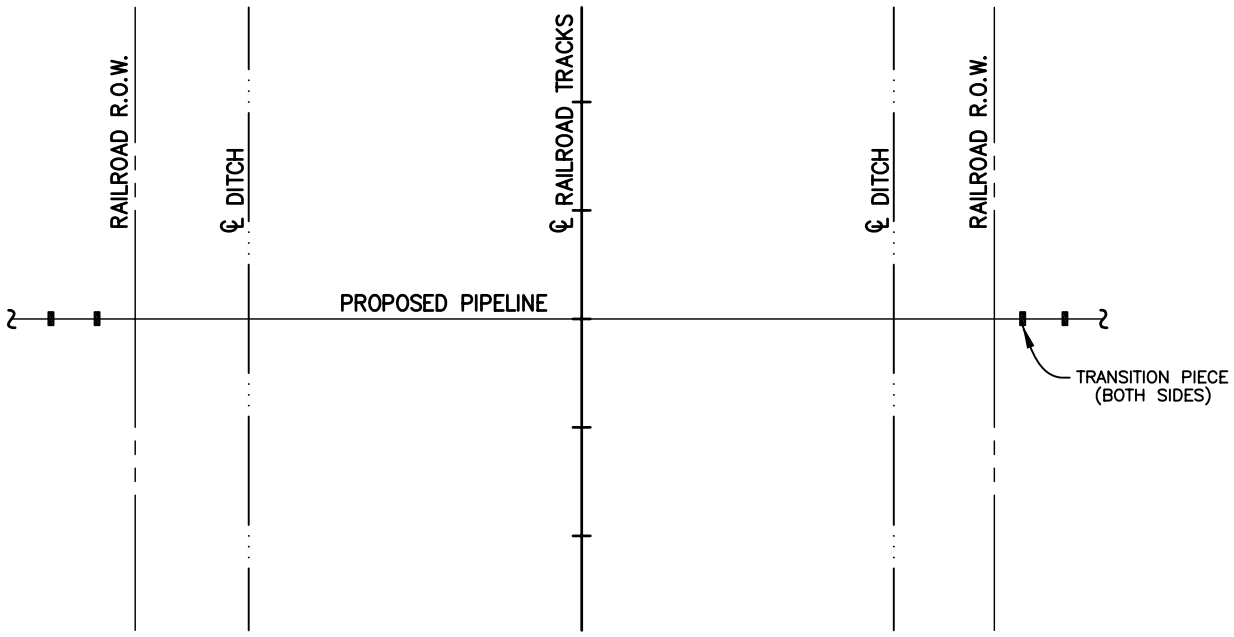
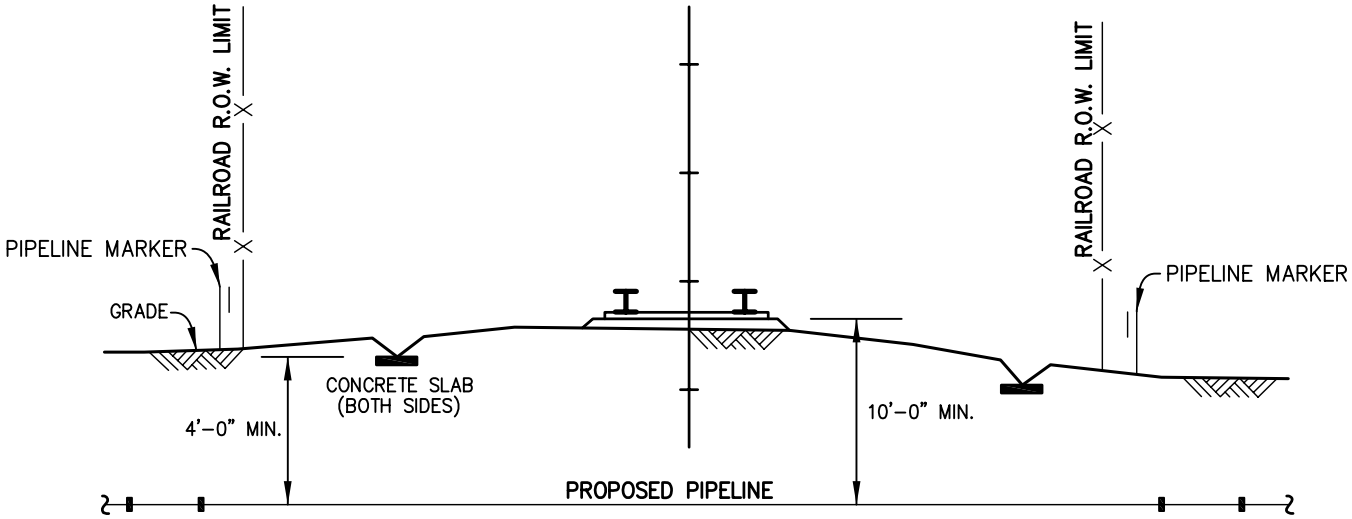
|---|---|
| Not to Scale | MIDCONTINENT EXPRESS PIPELINE PROJECT<br>Typical Road Crossing |
| | DATE: May 2008 / FIGURE: 2.3.2-4 |




## PLAN

NOTES:

1. REFER TO ALIGNMENT SHEETS FOR EXTRA WORK SPACE REQUIREMENTS FOR EACH SPECIFIC ROAD CROSSING.
2. CROSSING ANGLE SHALL BE AS NEAR TO 90° AS PRACTICAL, BUT NO LESS THAN 45°.
3. MAXIMUM JOINT LENGTHS SHALL BE USED TO MINIMIZE NUMBER OF WELDS WITHIN ROW.
4. CONTRACTOR TO NOTIFY RESPONSIBLE PERMITTING AUTHORITY BEFORE PROCEEDING WITH INSTALLATION.
5. HEAVY WALL PIPE TO EXTEND AT LEAST 2 FEET BEYOND ROW.




## PROFILE

| | |
|---|---|
| Not to Scale | MIDCONTINENT EXPRESS PIPELINE PROJECT<br>Typical Railroad Crossing |
| | DATE: May 2008 / FIGURE: 2.3.2-5 |

#### 2.3.2.5 Residential Areas

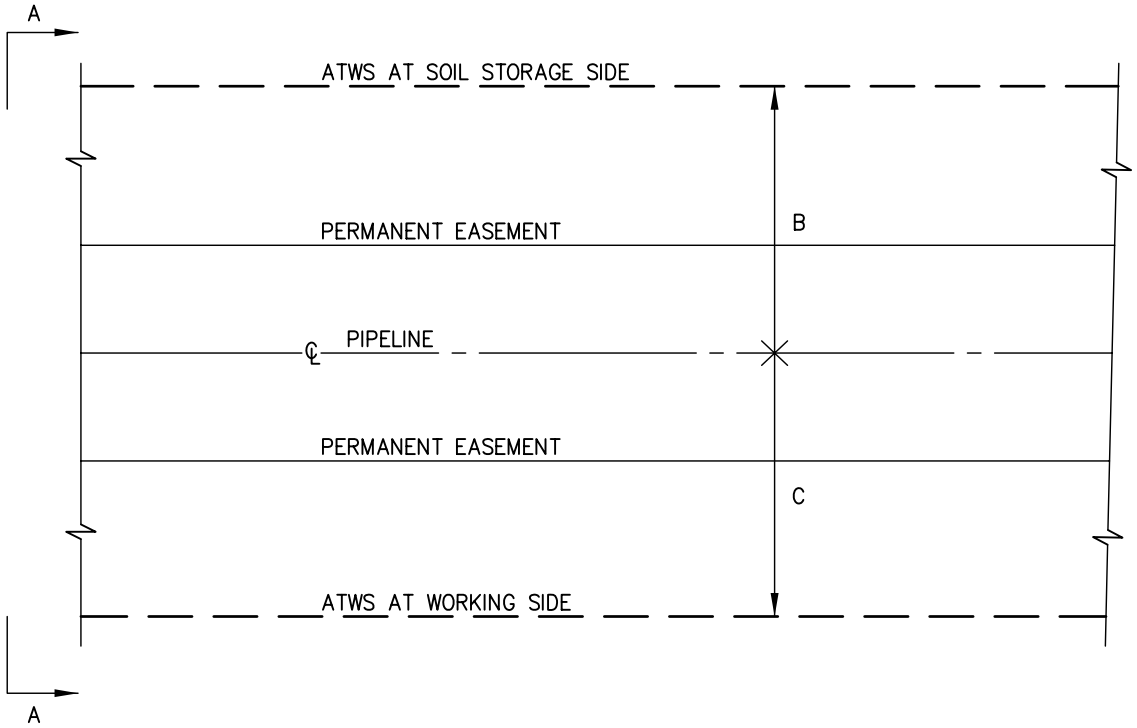
MEP would implement specialized construction techniques within residential areas and close (less than 50 feet) to residences to accommodate limited workspace and minimize construction-related disturbance to residents and structures. In general, construction would proceed through residential areas as quickly as practicable to minimize construction-related disturbance. Open access to residences would be maintained to the extent possible, and coordination with landowners would be conducted to minimize any inconveniences associated with the potential temporary loss of utility services. Safety fencing would also be erected to prevent pedestrian access to the construction site and minimize the hazards associated with an open trench. Mature trees and landscaping within the temporary right-of-way, especially near the outer edge, would be retained to the maximum extent practicable and as safety and construction requirements allow. All lawns and landscaping would be restored consistent with MEP's Plan and/or landowner agreements, and any damages to residential property or structures (e.g., sidewalks, driveways, and septic systems) that result from construction activities would be repaired as soon as practicable or compensation would be provided at fair market value.

MEP has identified 33 residential and 2 business structures within 50 feet of proposed construction work areas, and MEP would attempt to maintain a minimum separation of 25 feet between residences and any construction work area wherever feasible. Where maintenance of such a separation is not feasible, site-specific plans would be developed for each residence within 25 feet of proposed construction work areas and submitted to the FERC for review and approval. These plans would consist of drawings that depict the location of the residence and any other structures or features in relation to nearby, proposed construction work areas. The plans would also depict the site-specific modifications that would be implemented (e.g., modified pipeline alignment, reduced construction right-of-way width or extra workspace) to avoid or minimize impacts to the residence. Additional information on specialized construction procedures that would be implemented in residential areas is provided in Section 3.8.

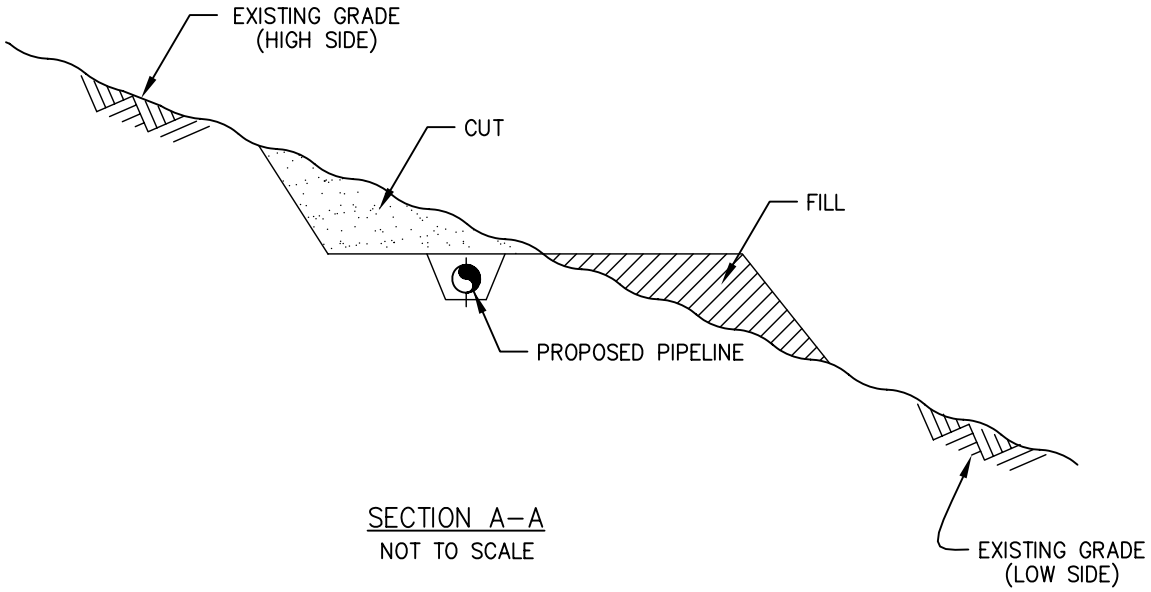
#### 2.3.2.6 Rugged Topography

The proposed Project would not involve construction in areas of excessively rugged topography, such as mountains or canyons. However, some portions of the proposed Project route would traverse areas of side slopes and rolling terrain that could require additional workspace to create level and safe workspaces. Though MEP states that it is not specifically proposing to use "two-tone" construction techniques, two-tone construction is a common method of accomplishing pipeline construction areas of side slopes. Under the two-tone construction technique, the uphill side of the construction right-of-way would be cut during grading. The material removed from the cut would be used to fill the downhill side of the construction right-of-way to provide a safe and level surface from which to operate heavy equipment. The pipeline trench would then be excavated along the newly graded right-of-way. Figure 2.3.2-6 provides a typical cross section of the two-tone construction technique.

The two-tone construction technique would likely require extra workspace areas to accommodate the additional volumes of fill material generated by this technique (see Section 3.8). Following pipeline installation and backfill of the trench, excavated material would be placed back in the cut and compacted to restore the approximate original contours. All disturbed areas would then be stabilized in accordance with MEP's Plan.




NOTE: DIMENSIONS B & C FROM ALIGNMENT DRAWINGS




SECTION A–A
NOT TO SCALE

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|---|---|
| Not to Scale | MIDCONTINENT EXPRESS PIPELINE PROJECT<br>Typical Two-Tone Construction<br>Right of Way Cross Section |
| | DATE: May 2008 / FIGURE: 2.3.2-6 |

### 2.3.3 Aboveground Facilities Construction Procedures

The aboveground facilities, with the exception of the Atlanta and Vicksburg Compressor Stations (as described in Section 2.4), would be constructed concurrent with pipeline installation, but construction would be conducted by special fabrication crews generally working separately from the pipeline construction spreads.

Construction of the compressor stations would involve clearing, grading, and compacting the sites to the surveyed elevations, where necessary, for placement of concrete foundations for buildings and to support skid-mounted equipment. Prefabricated segments of pipe, valves, fittings, and flanges would be shop- or site-welded and assembled at the compressor station site. The compressor units and other large equipment would be mounted on their respective foundations, and the compressor enclosures would be erected around them. Noise abatement measures (including use of sound dampening equipment installed in the walls of the building) and emission control technology would be installed as needed to meet applicable federal, state, and/or local standards. Section 3.11 provides additional information on noise abatement and emission control technology. As necessary, electrical, domestic water and septic, and communications utilities would be installed.

Facility piping, both above and below ground, would be installed and hydrostatically tested before being placed in service. Controls and safety devices such as the emergency shutdown system, relief valves, gas and fire detection facilities, and other protection and safety devices would also be checked and tested. Upon completion of construction, all disturbed areas associated with the aboveground facilities would be finish-graded and seeded or covered with gravel, as appropriate. All roads and parking areas would be graveled. Additionally, the compressor station sites would be fenced for security and protection.

Construction of meter and regulator stations, mainline valves, and pig launcher/receiver facilities not collocated with the compressor stations would generally be similar to that described above for compressor station sites, and would entail site clearing and grading, installation and erection of facilities, hydrostatic pressure testing, cleanup and stabilization, and installation of security fencing around the facilities.

## 2.4 CONSTRUCTION SCHEDULE

MEP proposes to construct the Midcontinent Express Pipeline Project in two phases. As described in Section 2.1, the Project would consist of two natural gas transport capacity zones, Zones 1 and 2, with initial planned transport capacities of 1,400,000 and 1,000,000 Dth/d, respectively, and only those facilities needed to supply that capacity would be constructed initially. The Phase I facilities would include the proposed Project pipeline, the Lamar and Perryville Compressor Stations, the Delhi Booster Station, and the associated ancillary facilities. Under Phase II, construction of the Atlanta and Vicksburg Compressor Stations would add the compression required to increase the transport capacity of Zones 1 and 2 to the fully proposed levels of 1,500,000 and 1,200,000 Dth/d, respectively.

As currently proposed by MEP, construction of the Phase I facilities would be initiated in August 2008 and substantially complete within a period of approximately 7 months. Based on shipper requirements, and assuming receipt of necessary approvals, MEP proposes that the approximately 40 miles of 30-inch-diameter pipeline extending from the Project origin to the NGPL Interconnect No. 1 would be placed in service by October 2008. The remainder of the Phase I facilities would be placed in service by February 2009.

The timing for construction of the Phase II facilities and expansion to the fully proposed transport capacity would be based on shipper demand. MEP reports that a contractual obligation with one of its shippers could trigger the anticipated 100,000 Dth/d capacity increase in Zone 1 within the first 5 years of in-service operations. Although the proposed 200,000 Dth/d capacity increase in Zone 2 is not currently contracted, MEP anticipates that sufficient natural gas would be stranded in the Perryville area and seeking a path to market to support that Project expansion within the first 5 years of in-service operations as well.

The environmental analysis presented in this EIS addresses all those Project facilities (i.e., the Phase I and Phase II facilities) that would be required to support the full transport capacity proposed by MEP.

## 2.5 ENVIRONMENTAL TRAINING AND MONITORING

MEP has indicated that it would conduct environmental training for all company and construction contractor personnel prior to and during construction activities. Such training would focus on implementation of the EMCP and MEP's Plan and Procedures, but would also address Project-specific permit requirements, company policy and commitments, any protection procedures and restrictions associated with cultural resources or sensitive species/habitats, and any other pertinent job-related information.

During Project construction, environmental inspectors (EIs) would be responsible for monitoring and ensuring compliance with all environmental mitigation measures required by the FERC Certificate, if granted, and MEP's Plan and Procedures. The EIs would have the authority to stop activities that violate the environmental conditions of these authorizations, state and federal environmental permit conditions, or landowner requirements and order appropriate corrective actions if needed. MEP has indicated that it would be represented by at least one EI per construction spread, consistent with MEP's Plan. However, MEP's Plan also indicates that the number and experience of EIs assigned to each construction spread should be appropriate for the length of the construction spread and the number/significance of resources affected. If the Project were authorized, MEP would be required to develop and submit an Implementation Plan for our approval prior to construction. The absolute number and qualifications of the EI personnel proposed by MEP would be considered during our review of the Implementation Plan.

In addition to the personnel requirements specified above, we believe that a third-party independent ECMR Program for the proposed Project would provide a number of benefits, both to us and to MEP. If the Project is authorized, MEP has agreed to support an ECMR Program during construction. The overall objective of an ECMR Program would be twofold. The primary task of the compliance monitoring program is to independently assess environmental compliance during construction in order to achieve a high level of environmental compliance throughout the Project. The secondary task of the compliance monitoring program would be in assisting the FERC staff in screening and processing variance requests during construction, such as requests for additional temporary workspaces.

The ECMR Program would involve the use of full-time, third-party compliance monitors representing the Commission at each construction spread to monitor compliance with Project mitigation measures and requirements throughout construction. The monitors would provide continuous feedback on compliance issues to us, as well as to MEP's personnel. Additionally, the monitors would track and document the progress of construction through preparation and submittal of reports to our staff on a regular and timely basis.

MEP established an Internet website (www.midcontinentexpress.com), toll-free telephone number (1-877-327-5515), and email address (pipelineinfo@midcontinentexpress.com) to provide

potentially affected landowners and stakeholders with a venue for providing comments or requesting additional information about the proposed Project. The FERC staff is interested in ensuring that landowner issues are resolved in an effective and timely manner. Therefore, we encourage MEP to continue its commitment to maintain open communications with affected landowners during construction through similar methods, should the Project ultimately be certificated.

## 2.6 OPERATION, MAINTENANCE, AND SAFETY CONTROLS

The proposed Project pipeline and aboveground facilities would be designed, constructed, operated, and maintained to meet or exceed all safety standards set forth in the DOT's *Transportation of Natural and Other Gas By Pipeline: Minimum Federal Safety Standards* (49 CFR Part 192). These safety standards are discussed further in Section 3.12.

The pipeline would be constructed of welded carbon steel that meets or exceeds industry standards, and would be covered with a protective epoxy coating to minimize rust and corrosion. To protect against damage from external forces, the proposed pipeline would be buried at a minimum depth of 3 feet below ground. All welds joining each section of pipe would be visually inspected and tested using non-destructive examination methods such as radiography (x-ray) or ultrasound to ensure the integrity of the welds. Prior to being placed in service, the pipeline would be hydrostatically pressure tested to verify its integrity and to ensure its ability to withstand the maximum designed operating pressure. A cathodic protection system would be installed to protect all underground and submerged pipeline facilities constructed of metallic materials from external, internal, and atmospheric corrosion.

During operations, MEP would conduct regular patrols of the pipeline right-of-way in accordance with the requirements of 49 CFR Part 192. The patrol program would include periodic aerial and vehicle patrols of the pipeline facilities. These patrols would be conducted to survey surface conditions on and adjacent to the pipeline right-of-way for evidence of leaks, unauthorized excavation activities, erosion and wash-out areas, areas of sparse vegetation, damage to permanent erosion control devices, exposed pipe, and other conditions that might affect the safety or operation of the pipeline. The cathodic protection system would also be inspected periodically to ensure that it is functioning properly. In addition, intelligent pigs would regularly be sent through the pipeline to check for corrosion and irregularities in the pipe. MEP would keep detailed records of all inspections and supplement the corrosion protection system as necessary to meet the requirements of 49 CFR Part 192.

Routine operation and maintenance would also be performed at all aboveground facilities by qualified personnel. Safety equipment, such as pressure relief devices, fire detection and suppression systems, and gas detection systems would be maintained throughout the life of each facility. Mainline valves would also be inspected, serviced, and tested to ensure proper functioning. In addition to on-site operation and maintenance activities, the compressor stations, meter stations, and mainline valves would also be linked to a central control system through a Supervisory Control and Data Acquisition (SCADA) system that would monitor the pipeline system on a 24-hour-per-day basis. Activation of any safety systems or alarms would trigger the SCADA system to notify maintenance personnel to investigate and take proper corrective actions.

MEP would establish and maintain a liaison with the appropriate fire, police, and public officials. This program would identify the available resources and responsibilities of each organization that may respond to a natural gas pipeline emergency and assist in developing coordination responsibilities.

Pipeline markers would be placed and maintained at line-of-sight intervals and along the right-of-way and at roadway crossings, railroad crossings, and other highly visible places to alert those

contemplating working in the vicinity of the location of the buried pipeline. The markers would identify MEP as the operator and display telephone numbers to call if any abnormal conditions are detected.

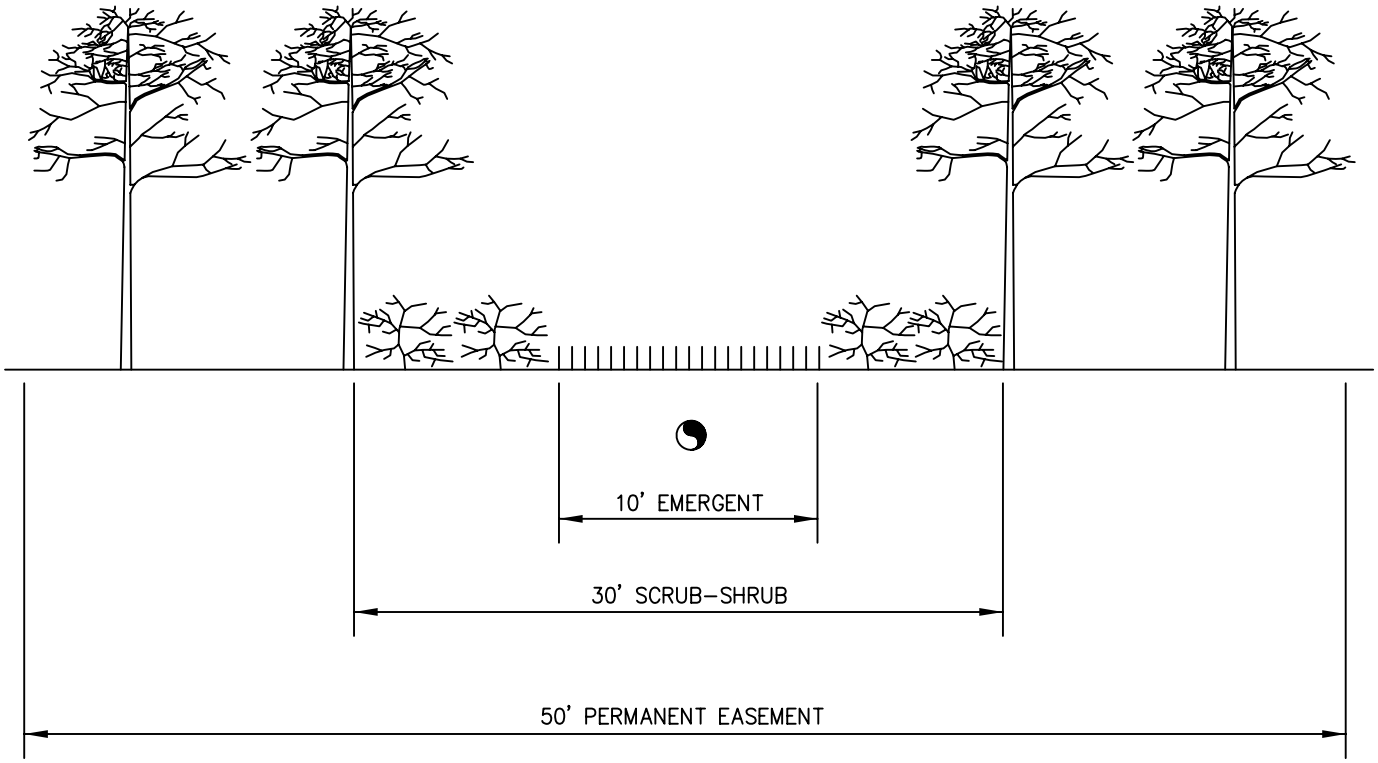
MEP would also participate in the One Call program. This program provides telephone numbers for excavation contractors to call prior to commencing any excavation activities. The One Call operator would notify MEP of any planned excavation in the vicinity of the pipeline so that MEP could flag the location of the pipeline and assign staff to monitor activities if required.

Vegetation management procedures during operation would be performed in accordance with MEP's Plan and Procedures and would include regular mowing, cutting, and trimming of the permanent pipeline right-of-way. Routine vegetative maintenance clearing of the full width of the permanent pipeline right-of-way in uplands would not be performed more frequently than every 3 years, unless requested and or approved by appropriate state and local agencies. MEP would not conduct full right-of-way maintenance clearing in wetlands, but trees within 15 feet of the pipeline that are greater than 15 feet in height would be selectively cut and removed from the right-of-way (Figure 2.6-1). However, a corridor not exceeding 10 feet in width centered on the pipeline would be maintained annually in an herbaceous state across the full length of the pipeline, as required to facilitate periodic corrosion and leak detection surveys. In addition, MEP has also indicated that routine vegetation maintenance would not occur between April 15 and August 1 of any year to minimize the potential for impacts on migratory bird species that may use the permanent right-of-way for nesting. Vegetation management is discussed further in Section 3.5.

## 2.7 FUTURE PLANS AND ABANDONMENT

Other than the Project phased construction schedule and associated capacity expansion described in Sections 2.1 and 2.4, MEP currently has no plans for future expansion of the facilities proposed. If additional demand for natural gas supplies requires future expansion, MEP would seek the appropriate authorizations from the FERC. When and if an application is filed, the environmental impact of the new proposal would be examined at that time.

Abandonment of the pipeline facilities would be subject to the approval of the FERC under Section 7(b) of the NGA and would comply with DOT regulations and specific agreements or stipulations made for the pipeline rights-of-way. An environmental review of any proposed abandonment would be conducted when the application is filed with the FERC.




Not to Scale

MIDCONTINENT EXPRESS PIPELINE PROJECT

Typical Right-of-Way Maintenance in Wetlands

DATE: May 2008

FIGURE: 2.6-1