Section 01.01 - Introduction to Using and Revising Manuals
Section 01.02 - Procedure Deviation Process
Section 01.03 - Manual Review/Publication Process
Section 01.04 - Manual Revision Log

Section 1 - Administrative
Section 2 - Encroachment Definition and Prevention
Section 3 - Right of Way Patrols – Encroachment Identification and Reporting
Section 4 - Encroachment Abatement
Section 5 - One Call
Section 6 - Line Locating and Marking Procedures
Section 7 - Excavation Preparation
Section 8 - Excavating
Section 9 - Sloping, Shielding and Shoring Excavations
Section 10 - Supports
Section 11 - Underground Structure Clearance
Section 12 - Rock Removal Guidelines
Section 13 - Backfilling
Section 14 - Blasting and Seismic Vibrating Activity
Section 15 - Pipeline Protection at Vehicular and Utility Crossings
Section 16 - Incidents
Section 17 - Preventing Damage inside Terminals
Section 18 - Maximum Cover
Section 19 - Second Party Contractor Excavation

Change Log

For an overview of the manual revision process, please refer to 1.01 – Introduction to Using and Revising Manuals.

For a log of all revisions to this manual, please refer to 1.04 – Log of Revisions.

Rev #	Date	Prepared by (Name/Title)	Reviewed by (Name/Title)	Approved by (Name/Title)	Summary of Change(s)
6	8/19/21	L. Hughes – Codes, Standards, and Publications Lead	N/A	N/A	Conversion to new template.

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1. Introduction

Buckeye Partners, LP maintains an integrated set of operating policy and procedure manuals. These manuals have been designed to complement each other. Used in conjunction, the manuals provide personnel with the Company's policies, procedures, and requirements needed to safely operate, maintain, and repair Buckeye's pipeline systems and facilities, and to comply with all sections of 49 CFR Parts 192 and 195 requirements. All employees are expected to comply with these manuals. Pertinent regulations and standards are referenced and interpreted.

2. Manual System

The manual set consists of the following manuals:

2.1 **192 Integrity Management Program Manual** - contains policies covering the integrity management program and procedures for Buckeye Development and Logistics.

2.2 **195 Integrity Management Program Manual** - contains the Company's integrity management program and procedures. This manual complies with the Pipeline Integrity Management in High Consequence Areas Rule.

2.3 **192 O&M Manual** - contains policies that address federal regulations pertaining to operating and maintaining gas pipelines

2.4 **195 O&M Manual** - contains policies that address federal regulations pertaining to operating and maintaining liquid pipelines.

2.5 **Asset Maintenance Prioritization Manual (AMP)** - supports overall asset maintenance efforts by defining the methods for planning and prioritizing maintenance activities.

2.6 **Contractor Safety Manual** - contains applicable portions of Buckeye's Maintenance, Safety, and Human Resources Manuals for use by contractors.

2.7 **Control Center Fatigue Management Manual** - defines the methods and training strategies for Buckeye Shift Supervisors and Controllers to provide adequate protection against the onset of Controller fatigue during a work shift.

2.8 **Control Room Alarm Management Manual** - to provide a written framework that defines how the Buckeye Partners L.P. (Buckeye) alarm system is to be designed, operated, maintained, and reviewed.

2.9 **Control Room Operating Manual** - defines the roles and responsibilities for Buckeye Controllers during the course of normal, abnormal, and emergency operating conditions.

2.10 **Control Room Management Plan (CRMP) Manual** - contains policies and procedures that address the Control Room Management regulations outlined in 192.631 and195.446.

2.11 **Corrosion Manual** - contains policies relating to corrosion control

2.12 **Damage Prevention Procedure Manual (DPPM)** - contains policies and procedures that address state and federal Damage Prevention regulations.

2.13 **Document Management Manual** - serves as Buckeye's integrated project-related asset records policy describing in detail all the workflows, timelines, and requirements that shall be followed for projects.

2.14 **Environmental Manual** - contains the Company's environmental policies and procedures along with guidance and references to other environmental information.

2.15 **Guidance Documents** - provide general management expectations and direction to employees without the detailed step-by-step instructions included in policies and procedures.

2.16 **Human Resources Policies** - contain policies related to employment, benefit, and administrative issues.

2.17 **Maintenance Manual** - contains procedures performed in conducting inspections, and safe work practices for implementing preventative maintenance and repair procedures.

2.18 **Maintenance Development and Execution Requirements Manual** - describes the minimum requirements for the initiation and execution of Buckeye's maintenance activities throughout a standardized lifecycle.

2.19 **Measurement Manual** - provides maintenance and calibration policies for all measurement-related devices, including meters, provers, temperature transmitters, and pressure gauges.

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2.20 **Operating Manual** - contains operating instructions and policies that are applicable system-wide.

2.21 **Pipeline Emergency Response Manual** - contains notification information, the Company's response organization, and site-specific response planning information.

2.22 **Project Development and Execution Requirements Manual** - describes the minimum requirements for the initiation and execution of a Buckeye project throughout a standardized lifecycle.

2.23 **Public Education Program (PEP) Manual** - incorporates information related to Buckeye's PEP program into one manual.

2.24 **Safety Manual** - contains the Company's safety policies, procedures, and rules.

2.25 **Terminal Manual** - standardizes general procedures at the terminals for activities that differ from policies covered in the general manuals.

2.26 **Training Manual** - contains the Company's training program and procedures including: Skills Training Program, Operator Qualification Program, Engineering Training Program, Field Technician Policy, Course Catalog, and Control Center Training Program.

2.27 **Welding Manual** - outlines welding policy, procedures, and welder qualification.

2.28 **Local Terminal Operating Manuals** - written to provide site-specific information that differs from the general Terminal Manual.

2.29 **System/Location Operating Manuals** - written for the Control Center and individual operating locations. They contain Control Center and site-specific operating instructions and policies that may differ from the general instructions in the Operating Manual. They are applicable to Control Center operations as they pertain to a particular system and to the specific location for which the manual is written.

3. Distribution

The manuals are available to all employees on Buckeye’s SharePoint site and are also available on the computer desktop of applicable employees via a Buckeye Manuals link. For the latest published version of a policy, always check the Publications section on the SharePoint site.

4. Manual Modification

Any employee who wishes to propose a modification to the Company's manuals may do so by submitting a revision workflow.

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Regulatory Compliance SOP 064 - Submitting a Revision Via the Manual Revision Workflow details how to initiate a workflow.

NOTE: If the procedural change impacts the scheduled inspection frequency found in the 195 O&M Manual, Section F-34 Exhibit A - Comprehensive Scheduling Chart Regulatory Inspections or Exhibit B - Company Scheduled Inspections, the employee must also submit changes to the impacted exhibit.

5. Review

5.1 Operations Managers and Transportation Services Managers shall remain familiar with the manuals by:

- Reviewing all manual updates.
- Involvement in Work Procedure Reviews.
- Using the manuals as a reference for daily operating activities.

Any employee who finds a situation where the manual does not adequately or correctly cover a procedure should submit a Manual Modification Form to Regulatory Compliance.

5.2 Operations Managers or Team Leads and Transportation Services Managers should review the contents of applicable System/Local Operating Manuals and Local Terminal Operating Manuals (LTOM) for accuracy during the first quarter of each year and submit changes using the System Manual updating process.

5.3 Manual revisions shall be reviewed with or read by appropriate personnel after distribution. The review shall be documented on a Training Activity Report. See 1-03 – Manual Review/Publication Process.

5.4 Manuals required under 49 CFR Parts 192 and 195 shall be reviewed once each calendar year, not to exceed 15 months, in accordance with the process outlined in 1-03 – Manual Review/Publication Process. The Codes, Standards, and Publications Lead shall verify that all Manuals have been reviewed and that the status has been documented on the appropriate annual review work orders.

6. Forms and Exhibits

This section is not applicable.

7. Change Log

Rev #	Date	Prepared by	Reviewed by	Approved by	Summary of Change(s)

		(Name/Title)	(Name/Title)	(Name/Title)	
15	8/19/21	L. Hughes – Codes, Standards, and Publications Lead			• New template • Added 'and facilities' in Section 1 - Introduction • Added these manuals in Section 2: ◦ Asset Maintenance Prioritization Manual (AMP) ◦ Control Center Fatigue Management Manual ◦ Control Room Alarm Management Manual ◦ Control Room Operating Manual ◦ Document Management Manual ◦ Facility Integrity Management Program Manual ◦ Maintenance Development and Execution Requirements Manual ◦ Project Development and Execution Requirements Manual • Updated Section 4 to include new workflow process

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1. Policy

Company policies, procedures, and standards may not be deviated from unless the condition has been evaluated and affected management personnel have approved the deviation.

2. Purpose

2.1 Conditions may periodically necessitate deviating from established Company policies, procedures, and standards in order to complete a construction, maintenance, or operating activity.

2.2 The procedure deviation process ensures that deviations to policies, procedures, and standards are evaluated and that the deviation is necessary and performed in a safe and prudent manner.

3. Process

The individual proposing a policy, procedure, or standard deviation shall:

3.1 Evaluate existing conditions and determine **why** the deviation is necessary.

3.2 Identify **which** policy, procedure, standard, or regulation requires deviation.

3.3 Determine **how** the deviation will be safely performed and evaluate the impact of the deviation on the following requirements and safeguards:

- Safety of personnel and public
- Protection against environmental or facility damage
- Facility or systems operations and limits
- Regulatory compliance
- Economic feasibility

NOTE: Contact functional experts or program specialists for input, if needed.

3.4 Inform the following employees of the proposed deviation and how it will be performed and acquire their approval to proceed:

- Sr. VP - Operations and Engineering (or designee)
- Appropriate Regional Vice President, Operations* (or designee)
- VP HSSE (or designee)
- Director or Sr. Director - Transportation Operations (or designee)
- Director - Asset Integrity (or designee)

*GMT & Texas Processing default to the respective Sr. Director

Deviations from regulatory requirements for any Federal, State, or local agency shall also involve Corporate Management for that program. Several Regulatory Authorities require a Special Permit or reporting requirement for deviations from a regulatory requirement. Therefore, the person requesting the deviation shall involve the appropriate Corporate Program Manager or Subject Matter Expertise (SME) and provide this information as part of a deviation request when applicable.

Deviation notification and agreement may take place via personal notification, telephone, e-mail, or other communication method as long as affected Field Operations, Transportation, Engineering and Construction, Asset Integrity, and HSSE management personnel are involved. The specific deviation agreed upon shall be promptly documented and mailed or e-mailed to all affected parties as soon as practical. A copy should also be sent to the Codes, Standards, and Publications Lead for retention.

3.5 Advise all affected personnel and departments of the approved deviation as necessary via personal notification, telephone, e-mail, or other appropriate communication method.

3.6 Perform the approved deviation.

3.7 Inform the affected managers of the Field Operations, Transportation, Engineering and Construction, Asset Integrity, and HSSE departments of the outcome of the completed deviation and any additional follow-up if needed.

4. Change Log

For an overview of the manual revision process, please refer to 1.01 – Introduction to Using and Revising Manuals.

Rev #	Date	Prepared by (Name/Title)	Reviewed by (Name/Title)	Approved by (Name/Title)	Summary of Change(s)
7	8/19/21				• New template • Title updates per MOC 301

01.03 – Manual Review/Publication Process
Prior Version: 5/11/17
Updated: 10/30/18

1. Objective

This document summarizes Buckeye Partners, L.P.'s (Buckeye) process and practices for creating and updating procedures in Buckeye's Manuals to ensure they are up to date and meet all regulatory requirements and business needs. Buckeye's procedure review process consists of two parts as follows:

- Process for conducting an annual review not to exceed 15 months of existing manual procedures as required by Department of Transportation (DOT) Parts 192 and 195 regulations; and,
- Process for submitting new procedures or making revisions to existing procedures on an ad-hoc basis at any time during the year.

All manuals and their procedures are posted on SharePoint under Publications.

The current listing of Buckeye's Manuals, Manual Owners, Manual Review Teams and Sr. Management Approvers are shown in Exhibit A.

2. Annual Review Process

The following process will be followed for procedures included in any DOT Parts 192 or 195 required manual.

2.1 Once each calendar year, not to exceed 15 months, the Manual Owner will assign the Manual Review Team and selected subject matter experts to review the procedures included in the specified manual. This review will generally take place during the first quarter of the year. The Manuals that fall within the annual review not to exceed 15 month regulatory required review process are highlighted in Exhibit A. Any required modifications to a procedure will be submitted to the Codes, Standards, and Publications Lead for revision.

2.2 The Codes, Standards, and Publications Lead will submit proposed changes to the applicable Sr. Management Approvers for review.

2.3 The Sr. Management Approvers will review the proposed procedure revisions and advise the Codes, Standards, and Publications Lead of approval, approval with modification, or rejection of the proposed procedure revision within 30 days. A copy of an approval with modification or rejection shall be sent to the Manual Owner.

2.4 The Manual Owner will be responsible for reviewing all approvals with modification and will inform the Codes, Standards, and Publications Lead if in agreement with the modifications. Should the Manual Owner not be in agreement with the modifications, the Manual Owner will so inform the Codes, Standards, and Publications Lead and will contact the Sr. Management Approvers to resolve the issue. Once resolved the Sr. Management Approver will notify the Codes, Standards, and Publications Lead.

2.5 The Manual Owner will also be responsible for resolving a proposed procedure revision rejection with the Sr. Management Approvers. Once the rejection is resolved, the revised procedure will be sent back to the Codes, Standards, and Publications Lead for repeat of the approval process.

NOTE: This same process can be used for the review of any Buckeye Manual that is not required by DOT Part 192 and 195 regulations.

3. Process for Ad-hoc Procedure Additions or Procedure Revisions

The following process can be used to either add a new procedure or make revisions to any existing procedure at any time throughout the year and outside the Annual Review process described in Section 2.

3.1 New or proposed procedure revisions will be submitted to the Codes, Standards, and Publications Lead using the Manual Modification Form A. These changes may come as a result of a change in the regulations or to update the procedure to reflect current and/or best practices.

Refer to the table below for descriptions of the fields in Form A.

Procedure(s)	Name of new procedure(s) or procedure(s) being revised.
Date	Date the new or revised procedure(s) were submitted.
Contact	Name, job title, job location, phone number, and email address of individual proposing the new or revised procedure(s).
Source of Modification	Source of the modification – for example, an audit, suggestion from asset team, new regulation needed, improved process, or other source.
Business Impact	Business impact of the decision – is the change cost neutral, will it result in additional costs, or cost savings. If there is a change in costs, how significant it may be.
Rationale	Rationale behind the modification such as how it may enhance safety, generate better compliance with regulations, improve a process, or other improvement to the organization.
Specific Section(s)	Specific section(s) within the procedure(s) being revised

3.2 The Codes, Standards, and Publications Lead will forward the proposed new or revised procedure to the applicable Manual Owner for review by the Manual Review Team and any selected Subject Matter Experts.

3.3 The Manual Owner, Manual Review Team and any selected Subject Matter Experts will meet quarterly to review and determine if the new or proposed procedure revisions are acceptable. Such quarterly meetings will only be necessary if any proposed new or revised procedure has been submitted in the quarter.

NOTE: If the Manual Owner determines that the change is a significant procedural change, Maintenance Manual Section I-02 shall be followed to submit a Management of Change (MOC) for the procedural change.

3.4 With agreement from the Manual Owner, the Codes, Standards, and Publications Lead will edit the proposed manual change for clarity and consistency (titles, format, etc.) and send the draft to the Manual Owner for review.

3.5 The Manual Owner will send any subsequent changes (if any) to the Codes, Standards, and Publications Lead who will make any changes and route the draft to the designated Sr. Management Approvers for approval.

3.6 The process described in Sections 2.3 through 2.5 will be followed for review and final approval.

4. Publishing, Communication, and Review of Procedure Revisions

4.1 The Codes, Standards, and Publications Lead will issue approved new or revised procedure revisions via the Quarterly Manuals Update unless directed by the Manual Owner to send out the revised procedure on a different schedule.

4.2 The Codes, Standards, and Publications Lead will be responsible for preparing a summary of the revisions and for ensuring that all revisions have been posted to the Publications SharePoint site.

4.3 Directors, District Advisers, District Project Managers, and Managers will ensure their personnel review the applicable Quarterly Manuals Update within 30 days of being issued. A Training Activity Report (TAR) will be completed signifying each person who has reviewed the Quarterly Manual Update.

NOTE: Should a new or revised procedure be issued earlier than the Quarterly Manuals Update, best efforts should be made to conduct the employee review process in 4.3 within 30 days of issuance.

4.4 Revised procedures which are not due to a change in regulations will take effect 30 days after the Quarterly Manuals Update has been issued.

4.5 New or substantially revised procedures that are not due to a change in regulations will take effect 90 days after issuance to allow for full communication, training, and any equipment acquisition.

4.6 New or revised procedures that are due to changes in regulations will take effect in a timeframe as directed by the regulations or as advised by the Manual Owner.

4.7 The Codes, Standards, and Publications Lead will be responsible for tracking receipt of TARs to document the review and communication of revisions.

5. Manuals, Manual Owners, Manual Review Teams and Sr. Management Approvers

The table of Buckeye's Manuals, Manual Owners, Manual Review Teams and Sr. Management Approvers is found in Exhibit A.

6. Related Information

6.1 A revision log will be maintained by the Codes, Standards, and Publications Lead and included in the introductory section of each manual as Section 1.04. This log will include when any required annual reviews were completed along with a summary of revisions to specific procedures.

6.2 Additional information relating to the implementation of this procedure will be maintained by the Codes, Standards, and Publications Lead on the Regulatory Compliance SharePoint site and other folders as necessary.

Forms and Exhibits

Exhibit A
Manual Owners, Manual Review Teams and Sr. Management Approvers

Form A
Manual Modification Form

Exhibit A – Manuals Review Program

The following are those positions and individuals responsible for the performance of the manuals/procedures review process:

- Program Owner – Lee Hughes, Codes, Standards, and Publications Lead
- Program Director – Claudia Pankowski, Director, Regulatory Compliance
- Sr. Management Sponsor – Meridith Wilson, VP, HSSE

The table below provides the current list of Manuals, Manual Owners, Manual Review Teams and Sr. Management Approvers.

NOTE: The manuals highlighted in Table 1 are those that require an annual review not to exceed 15 months as per DOT regulations. Per SOMS-06-01 Document and Records Management Standard, all documents have a defined review cycle as stated in the header of each file.

Table 1 - Manuals Review Program Assignments

Manual	Manual Owner	Manual Review Team	Sr. Management Approver
192 Integrity Management Program Manual	Senior Manager Asset Integrity (Joel Bassani)	Senior Manager Asset Integrity (Joel Bassani) Senior Operations Manager (Mark Collins) Director, Regional Operations (Kevin Jones) External Resource	Director Asset Integrity (Mark Shook) VP Operations (Kevin Burke)
192 O&M Manual	Manager Pipeline Safety & DOT Compliance (Hope Sandler)	Manager Pipeline Safety & DOT Compliance (Hope Sandler) Director, Regional Operations (Kevin Jones) Senior Regional Compliance Specialist (Mark Copeland)	VP HSSE (Meridith Wilson) VP Operations (Kevin Burke) Director Regulatory Compliance (Claudia Pankowski)
195 Integrity Management Program Manual	Senior Manager Asset Integrity (Joel Bassani)	Senior Manager Asset Integrity (Joel Bassani) Maintenance Program Manager (Dave Clark) Regional Engineering Manager (Britt Klusman) Senior Engineer Pipeline Integrity (Nick Bartal)	Director Asset Integrity (Mark Shook) VP Operations Services (Carl Ostach)
195 O&M Manual	Manager Pipeline Safety & DOT Compliance (Hope Sandler)	Manager Pipeline Safety & DOT Compliance (Hope Sandler) Regional Operations Advisor (Brian Loy) Senior Regional Compliance Specialist (Dina Conway) Operations Manager (George Gailey) Manager Design (Matt Finney)	VP HSSE (Meridith Wilson) VP Operations Services (Carl Ostach) Director Regulatory Compliance (Claudia Pankowski)
Control Room Management Manuals (4)	Director Transportation Operations (Jesse Burdett)	Director Transportation Operations (Jesse Burdett) Manager Control Center Applications (Rick Schupp) Manager Regulatory Compliance (Bob Osika) PL System Controller IV (Relief) (Shawn Kiefer) Control Center Manager (Mike Heidemann) Senior Control Center Manager (Tyler DeLong)	VP Operations (Mike Ricke) VP Domestic Pipelines (David Arnold) Director Regulatory Compliance (Claudia Pankowski)
Corrosion Manual	Manager Corrosion Control (Rob Geib)	Manager Corrosion Control (Rob Geib) Regional Engineering Manager (Travis Gardner) Senior Corrosion Specialist (Jeff Brown) Senior Corrosion Specialist (Mike Wirfs) VP Operations (Mike Ricke)	Director Asset Integrity (Mark Shook) VP Engineering & Construction Services (Jeff Crone)

Manual	Manual Owner	Manual Review Team	Sr. Management Approver
Damage Prevention Procedure Manual	Senior Manager ROW, Real Estate, & Damage Prevention Services (David Boone)	Senior Manager ROW, Real Estate, & Damage Prevention Services (David Boone) Senior Specialist Right-of-Way (David Jones) Senior Specialist Right-of-Way (Chris McPike) Senior Director SOMS Implementation & Program Support (Dave McGuire) Senior Compliance Specialist (John Reinbold)	Director Transportation Operations (Jesse Burdett) VP Operations Services (Carl Ostach)
Drug and Alcohol Procedures Manual	Senior Director Employee Relations (Charlene Tennison)	Senior Director Employee Relations (Charlene Tennison) Director Regulatory Compliance (Claudia Pankowski) Regional Safety & Environmental Advisor (Pat Robinson) HR Business Partner (Jon Ehrlich)	Senior VP Human Resources (Mark Esselman) Senior VP Operations & Engineering (Joe Sauger)
Facility Integrity Management Program Manual	Manager Facility Integrity (Elaine Aiken)	Manager Facility Integrity (Elaine Aiken) Senior Manager Asset Integrity (Joel Bassani) Manager Process Safety & Risk Management Programs (Danielle Brown)	Director Asset Integrity (Mark Shook) VP Operations Services (Carl Ostach)
Operator Qualification Manual (Training Manual Section G)	Senior Compliance Specialist (John Reinbold)	Senior Compliance Specialist (John Reinbold) Senior Manager Technical Training (Bob Orischak) Manager Pipeline Safety & DOT Compliance (Hope Sandler) Regulatory Compliance Specialist (Kristen Howett) Regional Operations Advisor (Mike Cirjak)	Director Operations Management Systems & Services (Jen Walls) Director Regulatory Compliance (Claudia Pankowski)
Pipeline Emergency Response Manual	Manager Emergency Preparedness (Paul Bissaillon)	Manager Emergency Preparedness (Paul Bissaillon) Senior Director Regional Operations (Joe Votta) Director Organizational Effectiveness (Chris Corcoran)	VP Operations (Bill Serra) VP HSSE (Meridith Wilson)
Public Education Program Manual	Senior Compliance Specialist (Tracy Hoffman)	Senior Compliance Specialist (Tracy Hoffman) Director Organizational Effectiveness (Chris Corcoran) Manager Pipeline Safety & DOT Compliance (Hope Sandler) Senior Specialist Right-of-Way (David Jones)	VP HSSE (Meridith Wilson) VP Operations Services (Carl Ostach) Director Regulatory Compliance (Claudia Pankowski)
Training Manual	Senior Manager Technical Training (Bob Orischak)	Senior Manager Technical Training (Bob Orischak) PL System Controller IV (Relief) (Shawn Kiefer) Senior Director Regional Operations (Joe Votta) Manager Talent Development (Monica Betancourt) Director Organizational Effectiveness (Chris Corcoran)	VP Operations Services (Carl Ostach) Senior VP Operations & Engineering (Joe Sauger)
Welding Manual	Manager ARPM (Vince Kolbuck)	Manager ARPM (Vince Kolbuck) Regional Engineering Manager (Britt Klusman) Director Asset Integrity (Mark Shook) Senior Manager Asset Integrity (Joel Bassani)	VP Operations (Bill Serra) VP Engineering & Construction Services (Jeff Crone)
Local Terminal Op Manuals	Manager Terminal Operations (Mike Younce)	Manager Terminal Operations (Mike Younce) Regional Terminal Specialist II (Rob Lunk) Regional Terminal Specialist II (David Gandee) Director Organizational Effectiveness (Chris Corcoran)	Ops Directors OMs
System Operating Manuals	Manager Regulatory Compliance (Bob Osika)	Manager Regulatory Compliance (Bob Osika) Control Center Manager (Mike Heidemann) Senior Control Center Manager (Tyler DeLong) VP Operations (Mike Ricke)	Director Transportation Operations (Jesse Burdett) Ops Directors OMs
Contractor Safety Manual	Senior Manager Health & Safety (Buddy Lewis)	Senior Manager Health & Safety (Buddy Lewis) Senior Construction Manager Engineering & Construction (Ed Senavaitis) Regional Engineering Manager (Travis Gardner) Senior Project Manager (Brian Parker)	VP Engineering & Construction Services (Jeff Crone) VP Operations (Mike Ricke)

Manual	Manual Owner	Manual Review Team	Sr. Management Approver
Document Management Manual	Senior Project Manager Document Control (Kelly Paulus)	Senior Project Manager Document Control (Kelly Paulus) Specialist Document Control (Joan Felchock) Manager ARPM (Vince Kolbuck) Senior Project Manager (Dave DeSocio)	Director Regulatory Compliance (Claudia Pankowski) VP Operations Services (Carl Ostach)
Environmental Manual	Director Environmental Compliance & Remediation (Katie Zeth)	Director Environmental Compliance & Remediation (Katie Zeth) Senior Manager Environmental Program (Rich Boyer) Manager Remediation (Krista Manley) Senior Manager Air Compliance (Keith Ocheski) Lead Specialist Environmental Program Compliamce (Mark Bonenberger) Senior Operations Manager (Mark Collins) Senior Manager Health & Safety (Buddy Lewis)	VP HSSE (Meridith Wilson) Director Operations Management Systems & Services (Jen Walls)
Maintenance Manual	Maintenance Program Manager (Dave Clark)	Maintenance Program Manager (Dave Clark) Manager ARPM (Vince Kolbuck) Manager Pumps & Hydraulics (Dan Posipanko) Director Project Execution - Pipelines & Terminals (Matt Logan) Manager Regulatory Compliance (Mike Yourkawitch) VP Operations (Kevin Burke)	Senior Director Regional Operations (Joe Votta) VP Operations Services (Carl Ostach)
Measurement Manual	Manager Measurement & Quality Control (Jason Mengel)	Manager Measurement & Quality Control (Jason Mengel) Senior M&QC Engineer (James Yezik) Director BBH Operations (Tom Nash) Regional Safety & Environmental Advisor (Pat Robinson) Regional Operations Advisor (Mike Cirjak)	VP Domestic Pipelines (Dave Arnold) VP Operations (Bill Serra)
Operations (Pipeline) Manual	Director, Regional Operations (Kevin Jones)	Director, Regional Operations (Kevin Jones) Operations Manager (Dan Defee) Control Center Manager (Mike Heidemann) Manager Regulatory Compliance (Bob Osika) Director Operations Management Systems & Services (Jen Walls)	VP Domestic Pipelines (Dave Arnold) VP Operations Services (Carl Ostach)
Safety Manual	Senior Manager Health & Safety (Buddy Lewis)	Senior Manager Health & Safety (Buddy Lewis) Senior Operations Manager (Mark Collins) Director Health Safety & Security (Tim Manning) Senior Construction Manager Engineering & Construction (Ed Senavaitis) Senior Director Regional Operations (Joe Votta)	VP Operations (Mike Ricke) Senior VP Operations & Engineering (Joe Sauger)
Terminal Manual	Manager Terminal Operations (Mike Younce)	Manager Terminal Operations (Mike Younce) Senior Manager. Operational Excellence & Integration (Sam Belmar) Assistant Operations Manager (William Blow) Senior Director Regional Operations (Joe Votta) Regulatory Compliance Specialist (Kristen Howett) Manager Design (Matt Finney)	Senior VP Operations & Engineering (Joe Sauger) VP Operations Services (Carl Ostach)

1.0 Table of Revisions

The following table provides information related to approved revisions to Buckeye's Damage Prevention Procedure Manual.

Manual Section	Revision Date	Revision Summary/Justification
Entire Manual	5/13	Manual created to condense all Damage Prevention procedures and policies into one document.
	5/16	Manual split into individual sections (1 through 17) for ease of printing. Content not changed aside from updating links. Revision date of 2/16 left on each procedure.
1.01 - Intro to Using and Revising Manuals	9/13	Descriptions of additional new manuals added. Paragraph 3 revised to remove references to CD and to mention availability of manual via Buckeye Manuals link.
	5/11/17	**Section 4 - Manual Modification** • added 'NOTE: If the procedural change impacts the scheduled inspection frequency found in the 195 O&M Manual, Section F-34 Exhibit A - Comprehensive Scheduling Chart Regulatory Inspections or Exhibit B - Company Scheduled Inspections, the employee must also submit changes to the impacted exhibit.'
1.01 Form A, Manual Modification Form	11/15	Updated formatting and instructions for ease of use
	10/30/18	Entire form has been revised. Descriptions for each field to be filled out added to '1.03 - Manual Review/Publication Process'.
1.02 - Procedure Deviation Process	5/25/18	**Section 3 - Process** • 3.4 updated: old → 'Inform the affected managers of the Field Operations, Transportation, Engineering and Construction, Performance Assurance, and Health, Safety, Security and Environmental (HSSE) departments of the proposed deviation and how it will be performed and acquire their approval to proceed. Deviation notification and agreement may take place via personal notification, telephone, e-mail, or other communication method as long as affected Field Operations, Transportation, Engineering and Construction, Performance Assurance, and HSSE management personnel are involved. The specific deviation agreed upon shall be promptly documented and mailed or e-mailed to all affected parties as soon as practical but no later than the next business day.' new → 'Inform the following employees of the proposed

		deviation and how it will be performed and acquire their approval to proceed: • VP or Sr. VP – Engineering and Construction (or designee) • VP or Sr. VP – Performance Assurance (or designee) • Appropriate District Director* (or designee) • Director or Sr. Director – HSSE (or designee) • Director or Sr. Director – Transportation Operations (or designee) *GMT & Texas Processing default to the respective Sr. Director Deviation notification and agreement may take place via personal notification, telephone, e-mail, or other communication method as long as affected Field Operations, Transportation, Engineering and Construction, Performance Assurance, and HSSE management personnel are involved. The specific deviation agreed upon shall be promptly documented and mailed or e-mailed to all affected parties as soon as practical but no later than the next business day. A copy should also be sent to the Codes, Standards, and Publications Lead for retention.
	8/12/19	**Section 3 - Process** • 3.4, updated 'VP or Sr. VP – Performance Assurance (or designee)' to 'Director – Asset Integrity (or designee)' • 3.4, second paragraph, updated 'Performance Assurance' to 'Asset Integrity' • 3.7, updated 'Performance Assurance' to 'Asset Integrity'
	7/31/20	**Section 3 - Process** • 3.2 updated: old → 'Identify which policy, procedure, or standard requires deviation.' new → 'Identify which policy, procedure, standard, or regulation requires deviation.' • 3.4, bulleted list, updated 'Director or Sr. Director – HSSE (or designee)' to 'Executive Director – HSSE (or designee)' • 3.4, 2nd paragraph is new, 'Deviations from regulatory requirements for any Federal, State, or local agency shall also

		involve Corporate Management for that program. Several Regulatory Authorities require a Special Permit or reporting requirement for deviations from a regulatory requirement. Therefore, the person requesting the deviation shall involve the appropriate Corporate Program Manager or Subject Matter Expertise (SME) and provide this information as part of a deviation request when applicable.' • 3.4, 3rd paragraph updated: old → '…The specific deviation agreed upon shall be promptly documented and mailed or e-mailed to all affected parties as soon as practical but no later than the next business day. A copy should also be sent to the Codes, Standards, and Publications Lead for retention.' new → '…The specific deviation agreed upon shall be promptly documented and mailed or e-mailed to all affected parties as soon as practical. A copy should also be sent to the Codes, Standards, and Publications Lead for retention.'
1.03 - Manual Review/Publication Process	9/13	Revised paragraphs 2 and 3 of review process required by DOT Parts 192 and 195; removed references to CDs (paragraph 5)
	12/15	Entire process revised.
	5/11/17	**Section 3 - Process for Ad-hoc Procedure Additions or Procedure Revisions** • 3.3, added 'NOTE: If the Manual Owner determines that the change is a significant procedural change, Maintenance Manual Section I-02 shall be followed to submit an MOC for the procedural change.'
	10/30/18	**Section 1 - Objective** • updated '…meet all regulatory requirements…' to '…meet all regulatory requirements and business needs...' **Section 3 - Process for Ad-hoc Procedure Additions or Procedure Revisions** • 3.1, the table is new **Section 4 - Publishing, Communication, and Review of Procedure Revisions** • 4.1, updated '…approved revised procedure revisions…' to '…approved new or revised procedure revisions…'
1-03 Ex A - Manuals	10/13	Updated to reflect current list of approvers.
	12/15	Entire list revised to match updated 1.03 - Manual

Review Program		Review/Publication Process. Also changed name to 'Manuals Review Program'.
	2/27/17	Updated list of Manual Owners, Manual Review Teams, and Senior Management Approvers
	7/30/18	**Safety Manual and 192 O&M Manual** • replaced 'Dale Corbello' with 'Kirby Smith' on the Manual Review Team **192 Integrity Management Program Manual** • replaced 'Mark Collins' with 'Greg Bare' as the owner of the manual • replaced 'Dale Corbello' with 'Bill Serra' as one of the Senior Management Approvers
	10/30/18	• replaced 'Bill Serra' with 'Kirby Smith' as one of the Senior Management Approvers for the 192 Integrity Management Program Manual
	3/1/19	**Corrosion Manual** • added Mike Ricke to the Manual Review Team **Damage Prevention Procedure Manual** • replaced Marty White with David Jones on the Manual Review Team • replaced Mike Norris with Chris McPike on the Manual Review Team **195 IMP Manual** • replaced Mark Collins with Greg Bare on the Manual Review Team **Maintenance Manual** • added Kevin Burke to the Manual Review Team **Measurement Manual** • added Mike Cirjak to the Manual Review Team **Operating Manual** • replaced Joe Votta with Kevin Jones as the Manual Owner • added Jen Walls to the Manual Review Team • removed Mat Ellman from the Manual Review Team **Safety Manual** • replaced Ed Senavaitis with Dominick Falini as the Manual Owner

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		<u>Terminal Manual</u> • replaced Bob Gaffney with Joe Votta on the Manual Review Team **<u>195 O&M Manual</u>** • replaced Mat Ellman with Dina Conway on the Manual Review Team **<u>Local Terminal Operating Manuals</u>** • replaced Kevin Coleman with Roger New on the Manual Review Team **<u>System Operating Manuals</u>** • replaced Kevin Coleman with Roger New on the Manual Review Team • replaced Joe Votta with Mike Ricke on the Manual Review Team **<u>Environmental Manual</u>** • replaced Pat King with Mark Collins on the Manual Review Team • replaced Jon Kiggans with Rob Lamrouex on the Manual Review Team **<u>Document Management Manual</u>** • added Dave DeSocio to the Manual Review Team
	6/7/19	• added Matt Finney to the Manual Review Teams of the 195 O&M Manual and the Terminal Manual
	8/12/19	• Sr. Management Sponsor, replaced 'Scott Collier, Vice President, Performance Assurance' with 'Meridith Wilson, Sr. Director, HSSE' **<u>Corrosion Manual</u>** • Sr. Management Approver, replaced 'Scott Collier' with 'Mark Shook' **<u>Damage Prevention Procedure Manual</u>** • Sr. Management Approver, replaced 'Scott Collier' with 'Jesse Burdett' **<u>Pipeline Emergency Response Manual</u>** • Manual Review Team, replaced 'Ed Senavaitis, Bill Serra, Jesse

		Burdett' with 'Dave McGuire, Chris Corcoran' • Sr. Management Approver, replaced 'Scott Collier' with 'Bill Serra' **195 Integrity Management Program Manual** • Manual Review Team, replaced 'Bill Serra' with 'Steve Koehler' • Sr. Management Approver, replaced 'Scott Collier' with 'Mark Shook' **Maintenance Manual** • Sr. Management Approver, replaced 'Scott Collier' with 'Joe Votta' **Safety Manual** • Manual Review Team, added 'Ed Senavaitis' **192 O&M Manual** • Sr. Management Approver, replaced 'Scott Collier' with 'Meridith Wilson' **195 O&M Manual** • Sr. Management Approver, replaced 'Scott Collier' with 'Meridith Wilson' **Control Room Management Manuals** • Manual Owner, replaced 'Jeff Mattis' with 'Jesse Burdett' • Manual Review Team, replaced 'Jeff Mattis' with 'Rick Schupp' • Sr. Management Approver, replaced 'Scott Collier' with 'Mike Ricke' **Public Education Program Manual** • Manual Review Team, replaced 'Jesse Burdett' with 'Chris Corcoran' • Manual Review Team, Sr. Management Approver, replaced 'Scott Collier' with 'Meridith Wilson' **Welding Manual** • Sr. Management Approver, replaced 'Scott Collier' with 'Bill Serra' **Operator Qualification Manual** • Sr. Management Approver, replaced 'Scott Collier, Carl Ostach' with 'Jen Walls'

		Environmental Manual • Sr. Management Approver, replaced 'Scott Collier' with 'Jen Walls' **Document Management Manual** • Manual Review Team, removed 'Mark Shook' • Sr. Management Approver, replaced 'Scott Collier' with 'Mark Shook' **192 Integrity Management Program Manual** • Sr. Management Approver, replaced 'Scott Collier' with 'Mark Shook'
	10/22/19	**System Operating Manuals** • Sr. Management Approver, replaced 'Jeff Mattis' with 'Jesse Burdett'
	7/31/20	**195 Integrity Management Program Manual** • Manual Review Team, replaced 'Elaine Aiken' with 'Nick Bartal' **Measurement Manual** • Manual Review Team, replaced 'Jeff Charles' with 'Tom Nash' **Operations (Pipeline) Manual** • Manual Review Team, replaced 'Hank Austin, Chris Strickler' with 'Mike Heidemann, Bob Osika' **Safety Manual** • Manual Review Team, replaced 'Kirby Smith' with 'Mark Collins' **192 O&M Manual** • Manual Review Team, replaced 'Kirby Smith' with 'Kevin Jones' **Control Room Management Manuals** • Manual Review Team, replaced 'Chris Strickler, Hank Austin' with 'Bob Osika, Mike Heidemann' **System Operating Manuals** • Manual Owner, replaced 'Chris Strickler' with 'Bob Osika' • Manual Review Team, replaced 'Chris Strickler, Hank Austin' with 'Bob Osika, Mike Heidemann'

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		Operator Qualification Manual • Manual Review Team, replaced 'Kevin Jones' with 'Mike Cirjak' **Contractor Safety Manual** • Manual Review Team, replaced 'Kirby Smith' with 'Travis Gardner' **Drug and Alcohol Procedures Manual** • Manual Review Team, replaced 'Rita Schantz' with 'Jon Ehrlich'
	1/29/21	**195 Integrity Management Program Manual** • Manual Review Team, replaced 'Greg Bare' and 'Mark Collins' with 'Britt Klusman' **Operating Manual** • Manual Review Team, replaced 'Rick Bishop' with 'Dan Defee' **Terminal Manual** • Manual Owner, replaced 'Jimmy Hausman' with 'Mike Younce' • Manual Review Team, replaced 'Hope Sandler' with 'Kristen Howett' **Public Education Program Manual** • Manual Owner, replaced 'John Reinbold' with 'Tracy Hoffman' **Local Terminal Operating Manuals** • Manual Owner, replaced 'Jimmy Hausman' with 'Mike Younce' **Operator Qualification Manual** • Manual Review Team, replaced 'Mike Yourkawitch' with 'Hope Sandler' and 'Kristen Howett' **Environmental Manual** • Manual Review Team, updated 'Krista Snyder' to 'Krista Manley' • Manual Review Team, replaced 'Rob Lamrouex' with 'Buddy Lewis' **192 Integrity Management Program Manual** • Manual Owner, replaced 'Greg Bare' with 'Mark Collins' • Sr. Management Approver, replaced 'Kirby Smith' with 'Kevin

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		Jones' **Drug and Alcohol Procedures Manual** • Manual Owner, replaced 'Michelle Brown' with 'Alicia Blaszak'
Section 1 - Administrative	2/15	**Introduction** • changed "Protector" to Pipeline Protector"
	2/15	**Section 1.2 - Procedure Deviation Process** • updated to say that the Procedure Deviation Process 'shall' be followed (when applicable), instead of 'should'
	12/1/16	**Introduction** • 1st paragraph updated: old → 'The Damage Prevention Procedure Manual brings together the various components and practices to apply and enforce Damage Prevention procedures consistent with the Buckeye operating model to inhibit and mitigate third party damage to facilities and pipelines.' new → 'The Damage Prevention Procedure Manual brings together the various components and practices to apply and enforce Damage Prevention procedures consistent with the Buckeye operating model to inhibit and mitigate first party (Buckeye), second party (Buckeye contractors or agents) and third party (non-Buckeye contractors and public) damage to facilities and pipelines.'
	1/29/21	**Section - Introduction** • 1st paragraph updated: old → '…The Damage Prevention Procedure Manual synchronizes and coordinates the implementation of damage prevention measures across all Asset Teams of each business unit. The Damage Prevention Procedure Manual fosters a "Pipeline Protector" culture, attitude, and heightened damage prevention awareness for all operations personnel in the field.' new → '…The Damage Prevention Procedure Manual synchronizes and coordinates the implementation of damage prevention measures across all Asset Teams and contractors of each business unit. The Damage Prevention Procedure Manual fosters a "Pipeline and Terminal Protector" culture, attitude, and heightened damage prevention awareness for all operations personnel in the field.' • 2nd paragraph is new: 'Pipeline and Terminal Protectors are qualified Buckeye

<table>
<tr><td></td><td></td><td>employees or qualified Buckeye representatives who have completed and maintained the following:
• All applicable Damage Prevention related Operator Qualification Tasks:<table><tr><td>702</td><td>One Call Notification, Investigation and Marking</td></tr><tr><td>703</td><td>Line Locating</td></tr><tr><td>704</td><td>Foreign Crossing Specifications</td></tr><tr><td>705</td><td>Reporting and Inspecting Third Party Operations</td></tr><tr><td>706</td><td>Visual Pipe Inspection</td></tr><tr><td>708</td><td>Pipeline ROW Patrol/Maintenance/Line Marker Installation</td></tr><tr><td>726</td><td>Excavation, Supporting and Backfilling</td></tr><tr><td>736</td><td>Navigable Waterway Crossings Inspection</td></tr><tr><td>745</td><td>Conduct Leak Surveys - Gas Pipelines</td></tr><tr><td>746</td><td>Population Density Survey for Class Location - Gas Pipelines</td></tr><tr><td>749</td><td>Natural Gas Odorization Monitoring</td></tr><tr><td>1019</td><td>Inspect Normally Exposed Pipe</td></tr></table>• Training on the Damage Prevention Procedure Manual</td></tr>
<tr><td></td><td>5/3/21</td><td>MOC 301 Operations Organizational Consolidation updates.</td></tr>
<tr><td></td><td>4/22/22</td><td><u>Section 4 - Procedure</u>
• 4.1, 3rd bullet is new, ‘A Buckeye Pipeline and Terminal Protector may also be a Buckeye Inspector who has been trained by Buckeye on Buckeye’s Damage Prevention Procedure Manual and to inspect and ensure compliance with the above applicable Operator Qualification tasks. The Buckeye Inspector may, but is not required to, be qualified in the applicable OQ tasks listed above.’</td></tr>
<tr><td>Section 2 - Encroachment Definition and Prevention</td><td>2/15</td><td><u>Section 2.4 - Line Markers</u>
• 2.4.1.1 – added definition for ‘line of sight’
• 2.4.5 – added requirements for Navigable Waterway Sign
• 2.4.6 – added inspection and maintenance requirements for line markers
• 2.4.8 – entire section is new – use of double fence post markers where needed</td></tr>
<tr><td></td><td>2/16</td><td><u>Section 2.4 - Line Markers</u>
2.4.2 – additional requirements for line markers added</td></tr>
<tr><td></td><td>12/1/16</td><td><u>Section 2.3 - Design Review</u>
• 2.3.1.3, the 2nd paragraph is new – “When a Buckeye Project Manager is planning and designing…”

<u>Section 2.4 - Line Markers</u>
• 2.4.1, ‘waterway crossings’ updated to ‘navigable waterway crossings’
• 2.4.1.1, the NOTE is new – ‘Section 5 and 6 of this manual shall</td></tr>
</table>

		be followed…' • 2.4.1.2, 'waterways' updated to 'non-navigable waterways'
	12/29/17	**Section 2.2 - Land Rights** • 1st paragraph, deleted the last sentence, 'Buckeye is currently implementing a database to manage its property rights agreements with the goal of reducing the occurrence of expired agreements.' **Section 2.4 - Line Markers** • 2.4.1.2 updated: old → 'Line markers are NOT required for buried pipelines offshore or at crossings of or under non-navigable waterways and other bodies of water.' new → 'Unless otherwise required by State law, line markers are NOT required for buried pipelines offshore or at crossings of or under non-navigable waterways and other bodies of water.'
	3/1/19	**Section 2.3 - Design Review** • 2.3.1.4 is new, 'All third-party construction activities proposed to occur on Buckeye-owned or controlled property shall require either a temporary access license, easement…prior to any access and the commencement of any construction activities.'
	1/10/20	**Section 2.3 - Design Review** • 3rd paragraph updated: old → '…The document shall be distributed to parties seeking guidance for how Buckeye intends to manage its rights in its pipeline and its rights of way, and shall include requirements for submission of plans for review by Buckeye. The ROWUR is a guidance document only...' new → '…The document shall be distributed to parties seeking guidance for how Buckeye intends to ensure its pipeline assets and rights of way are adequately protected, and shall include requirements for submission of plans for review by Buckeye. The ROWUR is a guidance document only...' • 2.3.1.1 updated: old → '…In addition, Buckeye should ensure that the right of way remain as clear as possible during and after land development/improvement, encumbered with only authorized sidewalk, roadway, parking, and utility line crossings. Only under the most unusual circumstances...'

		new → …In addition, Buckeye should ensure that the right of way remain as clear as possible during and after land development/improvement, encumbered with only authorized structures, such as sidewalks, roadways, parking lots, and buildings, and utility line crossings. Only under the most unusual circumstances...'
	1/29/21	• replaced 'Pipeline Protectors' with 'Pipeline and Terminal Protectors' throughout
	5/3/21	MOC 301 Operations Organizational Consolidation updates.
	12/29/21	**Section 4 - Procedure** • 4.4.5 updated: old → '…The Navigable Waterway Sign shall state "Do Not Anchor or Dredge", Operator Name, Emergency Phone Number, Petroleum Pipeline. A sign shall be present on both sides of the navigable waterway facing the waterway.' new → '…The Navigable Waterway Sign shall state "Do Not Anchor or Dredge", Operator Name, Emergency Phone Number, Petroleum Pipeline or Natural Gas (or other product). A sign shall be present on both sides of the navigable waterway facing the waterway.'
DPPM, Exhibit B - Road Marking Symbol	2/15	Specifies using 3M tape for the arrow. Revised to include that yellow paint may also be used instead of the tape.
Section 3 - Right of Way Patrols - Encroachment Identification and Reporting	2/15	**Section 3.2 - Inspections** • all text prior to 3.2.1 Aerial Patrol is new • 3.2.1.1 – further defined who is managing the aerial patrols • 3.2.1.2 – added reference to the new text in Section 3.2. • 3.2.1.2 – added instructions for aerial patrol pilot in cases where the right of way cannot be observed • 3.2.1.2 and 3.2.1.3 – added reference to Section 3, Form C - Aerial Pipeline Patrol Inspection and Surface Response Encroachment Control Report • 3.2.1.5 – added requirement for the employee to accompany the pilot during the summer foliage season, and that the flight is to be documented using the Line Inspection Report. Also, nominations for clearing will be submitted via the ROW Clearing SharePoint site as soon as practical following the flight. Section 3, Form B and the Clearing Nomination Report shall be attached

		to the JDE work order for that aerial patrol. • 3.2.2 – entire section is new (some of last paragraph moved from 3.2.3) – policy to be followed when the aerial patrol pilot cannot observe the right of way • 3.2.3 – Added clarification in first paragraph – how much of the right of way can be walked each year pertaining to Tri-Annual Inspections
	12/1/16	**Section 3.2 - Inspections** • 1st paragraph, second sentence is new – 'For Aerial Patrol Surface Response Procedure specified in 3.2.1.2, the Asset Team may use the Irth Work Order system to document the right of way inspection as the Irth Work Order system becomes available for their pipeline segments in lieu of the JDE Work Order.' • 3.2.1.2, 2nd paragraph: old → 'If for any reason the aerial patrol pilot is unable to observe and inspect the pipeline right of way during the inspection over flight due to overgrown vegetation or tree canopy or other obstructions, he or she shall immediately arrange for surface patrol inspections in accordance with 3.2.2.' new → 'If for any reason the aerial patrol pilot is unable to observe and inspect the pipeline right of way during the inspection over flight due to overgrown vegetation or tree canopy or other obstructions, he or she shall immediately notify the Asset Team, who shall then arrange for surface patrol inspections in accordance with 3.2.2. • 3.2.1.3 updated: old → 'The aerial patrol pilot shall complete a Pipeline Aerial Patrol Report for each line section patrolled and forward it to the Aerial Patrol Program Manager and local Offices using Section 3, Form C.' new → 'The aerial patrol pilot shall complete a Pipeline Aerial Patrol Report for each line section patrolled and forward it to the Aerial Patrol Program Manager and the Asset Team(s) for the pipeline segments that were patrolled, using Section 3, Form C. • 3.2.3, bulleted list: old → 'Record the location, line section, and stake number on the back of the photograph. Attach the photograph to a Work Order (WO) for appropriate distribution and

		evaluation.' new → 'Record the location, line section, and stake number. Include this information, along with the photograph, in the Work Order (WO) for appropriate distribution and evaluation.' **Section 3.3 - Encroachment Reporting** • 3.3.5 updated: old → 'Attach a sheet of notepaper or Section 3, Form B and/or WOs to a copy of the map for comments and photographs.' new → 'Attach the map and a completed Section 3, Form B to the Work Order and enter relevant comments.'
	12/29/17	**Section 3.2 - Inspections** • 3.2.1.1 updated: old → 'The aerial patrol for the Central, East, Northeast, and West Districts shall be managed by the Corporate Aerial Program Manager. The Aerial Patrol Program for the South District shall be managed by the South District Regulatory Compliance Specialist.' new → 'The Aerial Patrol Program for both Buckeye owned and operated assets in the Central, East, Northeast, South, South Texas, and West Districts shall be managed by the Corporate Aerial Program Manager. The Aerial Patrol Program for the South District third-party owned assets shall be managed by the South District Regulatory Compliance Specialist.' • 3.2.3 updated: old → '• Check for soil erosion caused by heavy rains or natural drainage along the rights of way. • Check creek crossings, river crossings, and adjacent fields for soil erosion (washout) which has reduced cover, exposed the pipeline, or washed away line markers.' new → '• Check for soil erosion caused by heavy rains or natural drainage along the rights of way. If a pipeline has a depth of cover of twenty-four inches (24") or less, see Section 3.2.5 Shallow Pipe. • Check creek crossings, river crossings, and adjacent fields for soil erosion (washout) which has reduced cover, exposed the pipeline, or washed away line markers. If a pipeline has a depth of cover of twenty-

		four inches (24") or less, see Section 3.2.5 Shallow Pipe.' • Section 3.2.5 is new **Section 3.3 - Encroachment Reporting** • 3.3.2 updated: old → '….Local Field Operations shall investigate each reported observation that involves activity not already known, and document their investigation by creating a Work Order (WO).' new → '….Local Field Operations shall investigate each reported observation that involves activity not already known, and document their investigation by completing Section 3, Form B and creating a Work Order (WO).'
	7/30/18	**Section 3.2 - Inspections** • 3.2.3, updated title of section from 'Tri-Annual Inspections' to 'Triennial Inspections'. The content of the section is correct (once every three years), but the correct term is triennial.
	3/1/19	**Section 3.2 - Inspections** • 3.2.1.2 updated: old → 'The aerial patrol shall fly along the pipeline right of way and look for any signs of activity that may be potentially hazardous to the pipeline and the operation thereof in accordance with Section 3.2…' new → 'The aerial patrol shall fly along the pipeline right of way and look for any signs of activity that may be potentially hazardous to the pipeline and its operation in accordance with Section 3.2…' • 3.2.4 updated: old → 'In the event of any natural or manmade force that may cause ground movement that could affect the support, protection, or general integrity of a pipeline, the specific areas of rights of way either known or suspected to be affected shall be patrolled during and after the event as soon as safety and practicality allow. Personnel dispatched for such patrols...' new → 'In the event of any natural or manmade force that may cause ground movement that could affect the support, protection, or general integrity of a pipeline, the specific

		areas of rights of way either known or suspected to be affected shall be patrolled during the event if the affected area(s) can be safely accessed, and/or after the event within 72 hours or as soon as the affected area(s) can be safely accessed by personnel and equipment. Personnel dispatched for such patrols...' • 3.2.4.1 was relocated from 3.3.4, 'The District Director/Manager shall be informed in writing that a special inspection due to a natural disaster or manmade force has been completed.' **Section 3.3 - Encroachment Reporting** • 3.3, first paragraph, updated 'Operations Manager' to 'Field Operations Asset Team' • 3.3.2 updated: old → 'The aerial patrol pilot shall report their observed irregular activities to the nearest Field Operations location and the One Call Center, depending on the geographic area, as soon as practical...' new → 'The aerial patrol pilot shall report their observed irregular activities to the local Field Operations Asset Team and the One Call Center via telephone call, as soon as practical...' • 3.3.4 removed, 'The District Director/Manager shall be informed in writing that a special inspection due to a natural disaster has been completed.'
	1/10/20	**Section 3.2 - Inspections** • 3.2.1.5 updated: old → '…This report shall include the line segment and location (right of way number, road crossing, GPS coordinates or mile marker) of any areas where air-to-ground visibility is restricted by an overgrown tree canopy, residential yard trees, or other excessive vegetation. Section 3, Form B and the Clearing Nomination Report on SharePoint shall be attached to the JDE Work Order.' new → '…This report shall include the line segment and location (right of way number, road crossing, GPS coordinates or mile marker) of any areas where air-to-

<table>
<tr><td></td><td></td><td>ground visibility is restricted by an overgrown tree canopy, residential yard trees, or other excessive vegetation. Section 3, Form B shall be attached to the JDE Work Order.'

• 3.2.1.6 is new, 'The following Right of Way Vegetation Maintenance Guideline shall be used to assess the condition of the pipeline right of way for purposes of prioritizing and performing vegetation maintenance.

Right of Way Vegetation Maintenance Guideline:

<table>
<tr><th>Condition Grade</th><th>Action</th></tr>
<tr><td>Acceptable – …</td><td>Continue…</td></tr>
<tr><td>Marginal – …</td><td>Submit…</td></tr>
<tr><td>Critical – …</td><td>Nomination.</td></tr>
</table>

• 3.2.3, 10th bullet updated:
old → 'Refer to Corrosion Manual Section C-06 (Atmospheric Corrosion Procedure) for inspection procedures.'

new → 'When above ground piping is present, refer to Corrosion Manual Section C-06 (Atmospheric Corrosion Procedure) for inspection procedures.'

• 3.2.3, last bullet updated:
old → 'The District Director/Manager shall be informed in writing that the Tri-Annual Line Inspection has been completed (Section 3, Form B). DPPM, Exhibit A - Line Marker and Navigable Waterway Signs or DPPM, Exhibit B - Road Marking Symbol, as well as Section 3, Exhibit C - Macungie Auburn Map…'

new → 'The District Advisor shall be informed in writing that the Tri-Annual Line Inspection has been completed (Section 3, Form B). DPPM, Exhibit A - Line Marker and Navigable Waterway Signs or DPPM, Exhibit B - Road Marking Symbol, as well as Section 3, Exhibit C - Macungie Auburn Map...'</td></tr>
<tr><td></td><td>1/29/21</td><td><u>Section 3.2 - Inspections</u>
• 3.2.1.6, added example photos for each condition grade</td></tr>
<tr><td></td><td>5/3/21</td><td>MOC 301 Operations Organizational Consolidation updates.</td></tr>
<tr><td></td><td>12/29/21</td><td><u>Section 4 - Procedure</u></td></tr>
</table>

		• 4.2, 2nd paragraph, last bullet is new: Blowing gas or debris, loud noise • 4.2.3, the NOTE is new, 'Triennial Line Walking Inspections are not required on idle lines that are free of product.'
Section 3, Form B - ROW Surface Patrol Inspection and Encroachment Control Report	2/15	New form that replaces Section 3 Form B – Line Inspection Report.
	12/29/17	• On the first page, under 'ROW Surface Patrol Inspection Check List': old → 'New exposure of pipeline' new → 'Exposure of pipeline (Select this for ALL exposures found even if exposure was previously reported)'
	5/3/21	MOC 301 Operations Organizational Consolidation updates.
Section 3, Form C - Aerial Pipeline Patrol Inspection and Surface Response Encroachment Control Report	2/15	New form – one consistent form for use by all aerial patrol pilots
Section 3, Form C - Aerial Inspection and Encroachment Control Report	3/1/19	• Form renamed from 'Aerial Pipeline Patrol Inspection and Surface Response Encroachment Control Report' to 'Aerial Inspection and Encroachment Control Report' • On the 'Potential Encroachments Detected or Adverse Conditions Referred for Surface Patrol Inspection Response' page, added a column heading for 'Irth Aerial Patrol Ticket #' to link this form to the Irth Aerial Patrol Ticket finding. For audit purposes, the Inspection Report will be tied to the surface response.
	1/10/20	**<u>Page 1, ROW Aerial Patrol Inspection Check Off List</u>** • Replaced 'Tree canopy needs evaluation for maintenance' with 'Aerial Patrol Inspection Visually Obstructed by Tree Canopy – ROW Surface Patrol Inspection Response Required'
DPPM, Exhibit A - Line Marker and Navigable	12/29/21	Updated Control Center and Phone Number (removal of 'Breinigsville')

Waterway Signs		
Section 3, Exhibit D - Annual Right of Way Inspection Comments	1/29/21	• added sample comments
Section 4 - Encroachment Abatement	2/15	**Section 4.3 - Vegetation Maintenance** • 4.3.3 – added requirement for Pipeline Protector to review the new Right of Way Vegetation Safety Checklist with the contractor prior to vegetation maintenance operations
	12/1/16	**Section 4.2 - Responding to Encroachments** • 4.2.3, entire 2nd paragraph is new – 'Notify the One Call Center, the Operations Manager and the District Right of Way, Real Estate and Damage Prevention Specialist of any non-compliant excavators…'
	12/29/17	**Section 4.3 - Vegetation Maintenance** • 3rd paragraph updated: old → '…as needed. Existing, long-term vegetation encroachments in the Central, East, and West districts shall be brought to the attention of the Vegetation Maintenance Program Manager.' new → '…as needed. Existing, long-term vegetation encroachments in the Northeast, Central, East, West, and Buckeye-owned and operated facilities in the South districts shall be brought to the attention of the Vegetation Maintenance Program Manager.' • 4.3.1 updated: old → 'Vegetation Maintenance in the South District shall be managed by local Field Operations. The Vegetation Maintenance Program Manager shall be responsible for managing this program in the East, Central, and West Districts. The Vegetation Maintenance Program for contract customers in the South District shall be managed by local Field Operations and all other Vegetation Maintenance in the South District shall be centrally managed by the Vegetation Maintenance Program Manager.' new → 'The Vegetation Maintenance Program Manager shall be responsible for managing the Vegetation Maintenance Program for Buckeye-owned and operated

		facilities in the Northeast, East, Central, South, South Texas, and West Districts. The Vegetation Maintenance Program for contract customers in the South and South Texas Districts shall be managed by local Field Operations.
	1/29/21	**Section 4.3 - Vegetation Maintenance** • 4.3.5 is new, 'When a property owner or public authority is planning a controlled fire to burn off unwanted vegetation on a property within fifty (50) feet of the pipeline Right of Way, the property owner or public authority shall submit a plan to the District Project Manager who shall consult with Asset Integrity as to the plan's acceptance. Burning of unwanted vegetation is not permitted within twenty-five (25) feet of the pipeline. Written notice shall be given within fourteen (14) days on consent or objection to such plans.'
	5/3/21	MOC 301 Operations Organizational Consolidation updates.
	12/29/21	Updated 4.3 and 4.3.3 (Pipeline Protector to Pipeline and Terminal Protector)
Section 4, Exhibit A - Stop Work Letter	12/1/16	Letter completely revised.
	5/3/21	MOC 301 Operations Organizational Consolidation updates.
Section 4, Exhibit C - Field Encroachment Process	6/15	Updated the process.
	12/29/17	• Under the triangle 'Is pipeline relocation or facility adjustment required?', updated this box: old → 'District ROW agent and Corporate ROW work with District Project Management to plan work, prepare AFEs, and related documentation' new → 'District ROW agent and Corporate ROW work with Design Engineering, District Project Management, and Field Operations to plan work, prepare AFEs, and related documentation' • Added the note for Design Engineering: 'Works with Corporate ROW, District Project Management, and Field Operations to design any necessary pipeline relocations or protection systems.'
	5/3/21	MOC 301 Operations Organizational Consolidation updates.
Section 4, Exhibit D - Vegetation Maintenance Safety Checklist	2/15	New form – to be used by Buckeye employee to inform Contractor of requirements prior to ROW clearing
	3/1/19	• item 2 updated: old → 'The Buckeye representative verified that the Contractor's mowing equipment (if any) has the appropriate guard devices in place...'

		new → 'Contractor will ensure that mowing equipment (if any) has the appropriate guard devices in place…' • item 3 updated: old → 'The Buckeye representative verified that the Contractor has a current set of alignment sheets for the pipeline segment being cleared.' new → 'The Buckeye representative verified that the Contractor has a current set of alignment sheets for the pipeline segment being cleared. The Buckeye representative informed the Contractor of the diameter of the pipeline, line segment code, operational status (active or idle), and types of products typically carried.' (<- this text moved from another item) • item 4 is new, 'The Buckeye representative informed the contractor of the location of any known, potentially dangerous surface irregularities that may be obscured by high vegetation, such as large depressions, boulders, creek beds, debris piles, etc. The Buckeye representative helped the Contractor locate and mark these locations on the Contractor's set of alignment sheets.' • item 7 updated: old → 'The Buckeye representative explained the need to update any pipeline markers that contain outdated information, how to identify outdated markers, and provided the Contractor with new stickers to place on outdated markers.' new → 'The Buckeye representative explained the need to update any pipeline markers that contain outdated information, how to identify outdated markers, and provided the Operations Qualified Contractor with new stickers to place on outdated markers.' • item 9 is new, 'The pipeline centerline must be located and marked out in advance of ROW clearing activities by an Operations Qualified representative. Mowing a path as needed to complete task is permissible. Edges of ROW shall be marked as necessary to prevent overcutting of ROW.'

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		• item 10 updated: old → 'The Buckeye representative informed the contractor of the location of any known, potentially dangerous surface irregularities that may be obscured by high vegetation, such as large depressions, boulders, creek beds, debris piles, etc. The Buckeye representative helped the Contractor locate and mark these locations on the Contractor's set of alignment sheets.' new → 'The Buckeye representative has reviewed the daily ATW (Authorization to Work) requirements with contractor. Contractors must Check in and Check Out daily with the Buckeye representative.' • item 12 updated: old → 'The Buckeye representative informed the Contractor that any contact with the pipeline, pipeline coating, test station wiring, or anode beds must be reported to Buckeye to permit further inspection of the damage to assure continued safe pipeline operations.' new → 'The Buckeye representative informed the Contractor that any notable work-induced rutting or contact with the pipeline, pipeline coating, test station wiring, or anode beds must be reported to the Buckeye representative to permit further inspection of the damage to assure continued safe pipeline operations and safe ROW surface conditions.' • item 13 is new, 'The Buckeye representative has reviewed expectations for safe ROW surface condition upon completion of vegetation maintenance work to ensure that no large debris piles are left on or across ROW surface, that side trimmings shall be mowed or cut into reasonable sections and windrowed along ROW edges, that stumps must be cut flush to the ROW surface, that mower deck/fecon head should be positioned to ensure debris are adequately mulched for safe ROW surface conditions.'
Section 5 - One Call	2/15	**Section 5.1 - Policy** • 5.1.1 – To clarify that One Calls must also be made for Terminal facilities, added statement – 'This policy shall apply to all Buckeye owned or operated facilities including terminals.' **Section 5.2 - Procedure and Responsibility**

		• 5.2.6.1 – changed 'One-Call screening software' to 'One-Call ticket management system'. • 5.2.6.4 – added reference to Section F Exhibit A • 5.2.6.4 – added reference to Section 5.2.6.5 and requirement to attach the completed Excavation Safety Checklist to the work order for all 'involved' excavations. • 5.2.6.9 – added 'including the photographs of the line marking and a copy of the completed Excavation Safety Checklist.'
	12/1/16	**Section 5.1 - Policy** • 5.1.1 updated: old → 'To prevent damages to pipeline facilities from subsurface excavation, Buckeye participates in "One-Call" organizations in all the states in which Buckeye has operating facilities.' new → 'To prevent damages to pipeline facilities from subsurface excavation or any activity that disturbs or impacts the depth of cover over underground facilities, Buckeye participates in "One-Call" organizations in all the states in which Buckeye has operating facilities. • 5.1.2, added to the bulleted list a number of items contained in Section 5, Exhibit A. **Section 5.2 - Procedure and Responsibility** • 5.2.2 updated: old → 'Proposed date and location of the excavation site.' new → 'Proposed date and location of the excavation site, including such information as latitude and longitude coordinates, street address, and cross streets.' • 5.2.2 updated: old → 'Personnel contact -- name, address, telephone number.' new → 'Site contacts of the Owner and Excavator -- name, address, telephone or cell number and email.' • 5.2.6.2 updated: old → 'Buckeye Field Operations representative shall contact the outside party and advise that Buckeye facilities are involved.' new → 'Buckeye Field Operations representative shall contact the appropriate party identified on the ticket and advise that Buckeye facilities are involved.'

		• 5.2.6.2, the NOTE is new – "Emergency One Call notifications shall be handled as soon as reasonably possible…' • 5.2.6.7 updated: old → 'A qualified Field Operations representative shall observe excavation activity that takes place within 10 feet of a Buckeye pipeline. "Observe" means being physically present at all times during the excavation work up to completion of work, to prevent the pipeline from being damaged by the excavator. This includes a visual inspection of the pipeline to verify that no damage has occurred and the excavation has been backfilled.' new → 'A qualified Field Operations representative shall assess excavation activity that takes place within 10 feet of a Buckeye pipeline. "Assess" means being physically present at all times during the excavation work up to completion of work, to implement damage prevention procedures and protect the pipeline from being damaged by the excavator. This includes a visual inspection of the pipeline if the pipeline is exposed to verify that no damage has occurred and the excavation has been properly backfilled in accordance with Section 13.' • 5.2.7 and 5.2.8 are new
	3/1/19	**<u>Section 5.1 - Policy</u>** • 5.1.2, bulleted list updated: old → '• One-Call organizations toll-free numbers. • Buckeye's receiving locations and telephone numbers. • Minimum notification time frames. • Positive response requirements. • Penalty for non-compliance. • Responsible Buckeye District(s) Work Team • Statutory reference to excavation laws in each state • Tolerance Zone or Approximate Location definitions • Excavator notice requirements • Excavation ticket life • Summary of duties of an excavator within Tolerance Zone • Summary of Operator line marking requirements, best practices, and line marking reference • One Call website new → '• Summary of operator line marking requirements or

		best practices • Excavator Notice Requirements • Excavation Ticket Life • Tolerance Zone or Approximate Location Definition • Duties of Excavator Within Tolerance Zone or Approximate Location • Minimum # of Days for Operator to Respond • Statutory Reference Excavation Law • One Call Web Site • Line Marking Reference **<u>Section 5.2 - Procedure and Responsibility</u>** • 5.2.6.8 updated: old → 'The Work Order generated for the One-Call ticket shall be completed...' new → 'The Work Order or the One-Call ticket management system ticket generated for the One-Call ticket shall be completed...'
	1/10/20	**<u>Section 5.2 - Procedure and Responsibility</u>** • 5.2.5, NOTE updated: old → 'If a site visit is required to determine whether a Buckeye pipeline is or is not involved, as a precautionary measure, the ticket shall be sent via the One Call screening software to Field Operations personnel in the designated area and the pipeline location should be located and marked by a Buckeye Field Operations representative (inspector) in the area of the proposed excavation even though the Buckeye pipeline has been determined not to be involved...' new → 'If a site visit is required to determine whether a Buckeye pipeline is or is not involved, as a precautionary measure, the ticket shall be sent via the One Call screening software to Field Operations personnel in the designated area and the pipeline location should be assessed by a Buckeye Field Operations representative (inspector) in the area of the proposed excavation to determine if the pipeline should be located and marked even though the Buckeye pipeline has been determined not to be involved...' • 5.2.8.3, 2)b), 2nd paragraph is new:

		'The Pipeline Protector must inform the developer of the following: <bulleted list> If location and depth information of Buckeye's involved assets have not yet been obtained, schedule a site meeting...'
	12/29/21	• updated 'Pipeline Protector' to 'Pipeline and Terminal Protector' throughout • updated 'One-Call Screener' to 'One-Call Damage Prevention Coordinator' throughout **<u>Section 4 - Procedure</u>** • 4.2.8.3 2.a) updated: old → '… Minor, low complexity projects will be handled by the Pipeline Protector to completion similar to a routine Involved One Call ticket. Once the One Call design ticket is completed, the Pipeline Protector will add field notes and photographs and close the One Call as "Design Only" in the One Call Ticketing Management System.' new → '… Minor, low complexity projects will be handled by the Pipeline and Terminal Protector to completion similar to a routine Involved One Call ticket. Once the One Call design ticket is completed, the Pipeline and Terminal Protector will select the "Design Involved" response in the One Call Ticketing Management System. The One Call Ticketing Management System will automatically send an Involved One Call letter, the Right of Way Use Restrictions Specification (ROWURS), and a map showing the pipeline location.' • 4.2.8.3 2.b) updated: old → 'The Pipeline Protector will refer major, complex projects to Corporate Right of Way for encroachment review. These projects include but are not limited to:' new → 'If the Pipeline and Terminal Protector determines that the project is complex, he/she should then enter the One Call data into the One Call Design Ticket Module,

		located in the Choose Action drop down menu of the One Call Ticket. The One Call Ticketing Management System will automatically send an Involved One Call Letter, the ROWURS, and a map as well as send an e-mail to the Corporate Encroachment Review Team for further review. Complex projects include but are not limited to:'
Section 5, Exhibit A - One-Call Systems - State Information	2/15	Updated
	12/1/16	• Excavator Notice Requirements updated for Virginia: old → '48 hours, beginning the next business day after the notice is provided. Excluding weekends and holidays.' new → '48 hours, beginning at 7 am of the next business day after notice is provided. Excluding weekends and holidays.'
	3/1/19	Added a column for 'Minimum # of Days for Operator to Respond'
Section 6 - Line Locating and Marking Procedures	2/15	**<u>Section 6.2 - Line Location and Marking Policy</u>** • 6.2.1, 6.2.2, and 6.2.3 – added references to Section 5, Exhibit A - One Call Systems - State Information. **<u>Section 6.3 - Procedures for Locating and Temporarily Marking a Pipeline</u>** • 6.3.5 – replaced instructions for how to mark the line with a reference to Section 5, Exhibit A. The instructions were not workable for all Field conditions • 6.3.6 – updated the requirements for taking photos of the marked line, and attaching photos and the Excavation Safety Checklist to the work order. **<u>Section 6.4 - Procedure for Using a Line Locator</u>** • 6.4.4 and 6.4.5 – updated sequence for attaching the ground cable and conductor cable **<u>Section 6.5 - Procedure for Locating a Pipeline Using an Air or Water Jet and Vacuum Excavation</u>** • 6.5.2 – updated restriction on use of high-pressure air or water jet and vacuum system from pipelines that are deeper than 5 feet, to 10 feet. Added considerations for soil stability, potential groundwater, potential obstructions, or debris in the soil.
	12/1/16	**<u>Section 6.2 - Line Location and Marking Policy</u>** • 6.2.3, 3rd sentence is new – 'Information on abandoned facilities is provided when possible. Line location procedures shall be followed according to the applicable state One Call requirements when the presence of an abandoned pipeline facility is known.'

		Section 6.3 - Procedures for Locating and Temporarily Marking a Pipeline • 6.3.1, 1st paragraph, updated 'dangerous pressure release' to 'release'. • 6.3.1, 3rd paragraph is new – 'Review the area for potential traffic concerns and take appropriate precautionary measures…' • 6.3.1, 4th paragraph is new – 'If the line locating task is being performed by more than one person, conduct a pre-job safety meeting…' • 6.3.5, 2nd sentence is new – 'In the event there are multiple pipelines within a corridor, utilize paint to effectively identify and differentiate among the various pipelines by adding company name and pipe diameter.' • 6.3.6 updated: old → 'Immediately after marking the pipeline, a Buckeye Pipeline Protector shall take a digital photograph (or photographs) of Buckeye's marked pipeline, attach the photograph(s) to the Work Order, and save the photograph file(s) locally on a flash drive…' new → 'After marking the pipeline, a Buckeye Pipeline Protector shall take a digital photograph (or photographs) of Buckeye's marked pipeline. Promptly save the photograph(s) to the Work Order, the One-Call ticket management system, and locally on a flash drive…' • 6.3.6, last sentence added – 'Photographs shall be promptly saved in the manner instructed above to increase the likelihood of their retention.' • 6.3.8 is new – 'Once the pipeline locate is complete, the work area shall be returned to a clean and safe status…'
	12/29/17	**Section 6.3 - Procedures for Locating and Temporarily Marking a Pipeline** • 6.3.6 updated: old → '…Promptly save the photograph(s) to the Work Order, the One-Call ticket management system, and locally on a flash drive or local network drive until the excavation work has been completed at the site, the pipeline has been visually inspected to verify that no damage has occurred, and the excavation has been backfilled. These photographs will serve as proof that a Buckeye pipeline was marked within the required timeframe in case the

		markings are removed without authorization. For all "Involved" excavations within twenty five (25) feet of the pipeline, the Buckeye Pipeline Protector shall ensure that photographs of the line marking and a copy of the completed Excavation Safety Checklist are attached to the Work Order. Photographs shall be...' new → '…Promptly save the photograph(s) to the JDE Work Order ("Work Order") or the One-Call ticket management system. These photographs will serve as proof that a Buckeye pipeline was marked within the required timeframe in case the markings are removed without authorization. For all "Involved" excavations within twenty five (25) feet of the pipeline, the Buckeye Pipeline Protector shall ensure that photographs of the line marking and a copy of the completed Excavation Safety Checklist are attached to the Work Order or the One Call ticket management system. Photographs shall be…' • 6.3.8 NOTE updated: old → 'The location of the pipeline is the Buckeye Pipeline Protector's responsibility…' new → 'The determination of the location of the pipeline is the Buckeye Pipeline Protector's responsibility…'
	10/9/18	**Section 6.3 - Procedures for Locating and Temporarily Marking a Pipeline** • 6.3.1 updated: old → 'Review the local pipeline atlas to get the detailed location of the line you are planning to locate to determine if there are any protruding pipe fittings or related equipment that may reside inside the scope of work. Review facility and construction drawings, the pipeline atlas, and, Buckeye's Geographical Information System (GIS), and Integrity Alignment Sheets (or Smart Pig Logs) to determine the location of line taps, valves, extensions, tubing and any unusual equipment configurations that could become damaged by the excavator and cause a release. Review the area for potential traffic concerns and take appropriate precautionary measures as required by

		Safety Manual Section C-12 - Traffic Control. If the line locating task is being performed by more than one person, conduct a pre-job safety meeting to discuss and address any site-specific hazards that were identified and document the meeting in the Work Order.' new → 'Review the local pipeline atlas to get the detailed location of the pipeline you are planning to locate to determine if there are any protruding pipe fittings or related equipment that may reside inside the project limits of the One Call excavation area. Review the pipeline atlas, facility and construction drawings, Buckeye's Geographical Information System (GIS), and Integrity Alignment Sheets (or Smart Pig Logs) to determine the location of pipeline taps, stopples, flanges, valves, extensions, tubing, and any other appurtenances or any unusual equipment configurations that could become damaged by the excavator and cause a release. These information sources are to be used to also identify any test stations, flanges, valves, or above ground piping that may be used to obtain a direct physical connection of the line locating transmitter to perform a conductive method pipeline location. Review the area for potential traffic concerns and take appropriate precautionary measures as required by Safety Manual Section C-12 - Traffic Control. If the pipeline locating task is being performed by more than one person, conduct a pre-job safety meeting to discuss and address any site-specific hazards that were identified and document the meeting in the Work Order. • 6.3.2 updated: old → 'Use a line locator to locate the line you are identifying. In accordance with Section 6.4, use the conductive method to locate the line. If it is not possible to use this method, then proceed by using the inductive method.' new → 'Use a line locator to locate the pipeline you are identifying. In accordance with Section 6.4, use the

		conductive method to make a direct physical connection of the line locating transmitter to locate and mark the pipeline. If it is not possible to use the conductive method as defined in 6.4.3, then proceed by using the inductive method.' **<u>Section 6.4 - Procedure for Using a Line Locator</u>** • 6.4.3 updated: old → 'DO NOT turn on the transmitter until the cables are properly attached in accordance with 6.4.4 and 6.4.5. Use the conductive method (direct connection) whenever possible to locate the pipeline. When using the inductive method, check for air coupling and position the transmitter at least fifty (50) feet from the project area where you are going to locate and mark the pipeline. NOTE: The inductive method involves positioning a transmitter near the conductor without attaching wires.' new → 'DO NOT turn on the line locating transmitter until the cables are properly attached in accordance with 6.4.4 and 6.4.5. Use the conductive method of making a direct physical connection to the line locating transmitter whenever possible to locate and mark the pipeline. The Pipeline Protector shall walk up to one thousand (1,000) feet both upstream and downstream of the project limits of the One Call excavation location to identify a direct physical connection of the line locating transmitter to any test station, flange, valve, appurtenance, above ground piping, or exposed pipe. If a direct physical connection of the line locating transmitter to the pipeline is not possible within one thousand (1,000) feet upstream and downstream of the project limits of the One Call excavation location, then the inductive method may be used. When using the inductive method, check for air coupling and position the transmitter at least fifty (50) feet from the project area where you are going to locate and mark the pipeline. NOTE: The inductive method involves positioning a transmitter near the conductor without

		attaching wires.'
	3/1/19	**Section 6.3 - Procedures for Locating and Temporarily Marking a Pipeline** • 6.3.1, the CAUTION statement is new, 'Mapping information is for guidance ONLY. The Pipeline Protector must NEVER solely rely on mapping information to locate and mark the pipeline. The procedures prescribed in Section 6 shall be followed to safely locate and mark the pipeline.'
	1/10/20	**Section 6.3 - Procedures for Locating and Temporarily Marking a Pipeline** • prior 6.3.7 removed, 'If the pipeline location project will require more than forty hours to complete, arrange with the contractor to excavate test pits along the pipeline location route within the project limits to verify the pipeline location.'
	12/29/21	Updated 'Pipeline Protector' to 'Pipeline and Terminal Protector' throughout
Section 7 - Excavation Preparation	2/15	**Section 7.1 - Excavation Planning** • 7.1.2.1 through 7.1.2.3 – updated the notification and marking requirements – making a One call is mandatory, facility location and direction must be marked per Section 7 Exhibit A. • 7.1.6 bulleted list – updated the definition of the Tolerance Zone. Also removed the exception that powered excavating equipment may be used between 4" and 12" of the facility's known outside perimeter if Smart Pig data has been reviewed and confirms that no appurtenances are present at the excavation site. Refer instead to State One Call Laws. • 7.1.6 Note – updated requirements for photos and the use of the Excavation Safety Checklist (attaching them to the work order). **Section 7.2 - Determining Location/Excavation Limitations -- Tolerance Zones** • 7.2.4 – existing text removed: 'Soil within 12" of the pipeline shall be removed by hand tools' and replaced with new paragraph to comply with all State One Call Laws. Also removed the Note stating that 'powered excavating equipment may be used between 4" and 12" of the facility's known outside perimeter if Smart Pig data has been reviewed and confirms that no appurtenances are present at the excavation site'.
	12/1/16	**Section 7.1 - Excavation Planning** • 7.1.2.1 updated: old → 'Make a One-Call for notification to underground facility owners (see Section 5).' new → 'Mark the intended excavation site with white paint,

		flags, stakes, or an applicable combination in accordance with Section 5 Exhibit A, and then make a One-Call for notification to underground facility owners (see Section 5). • 7.1.2.1, NOTE is new – 'In the event Buckeye needs to perform an emergency excavation on any facilities, make an emergency…' • 7.1.2.2, 2nd paragraph is new – 'Should Buckeye fail to get a response from facility owners notified through the One Call system…' • 7.1.2.3, 3rd sentence is new – 'It is recommended that the excavator take a digital photograph of the marked worked area to document the placement of the markings provided by the facility owners.'
	12/29/17	**Section 7.1 - Excavation Planning** • 7.1.6 NOTE updated: old → '…Attach photos of the line marking and a copy of the completed Excavation Safety Checklist to the Work Order. Provide the excavator representative with a copy of the Excavation Safety Checklist.' new → '…Attach photos of the line marking and a copy of the completed Excavation Safety Checklist to the JDE Work Order or the One Call Ticket Management System. Provide the excavator representative with a copy of the Excavation Safety Checklist.' • 7.1.8.1, 2nd bullet updated: old → '• Buckeye shall provide guidance to the excavator in locating our pipeline(s). However, Buckeye is not required to conduct the excavation.' new → '• Buckeye shall provide guidance to the excavator in excavating our pipeline(s). However, Buckeye is not required to conduct the excavation.' • 7.1.8.2, 4th bullet updated: old → '• Call your Operations Manager, the District Right of Way Specialist, or the District Director/Manager and request assistance. Discuss the need to call 911, the County Sheriff, or the State Fire Marshall.' new → '• Call your Operations Manager, the District Right of Way Specialist, and the District Director, and request assistance. Discuss the need to call 911, the County

		Sheriff, or the State Fire Marshall. If applicable, the District Director should consider contacting the excavator's senior management to resolve the issue.' • 7.1.8.2, 7th bullet updated: old → '• Call the excavator's supervisor, the principal entity who has hired them (Developer, Township, Municipal Water Department, etc.), or the agency that issued the excavation/drilling permit (Highway Department, State Environmental Agency, etc.) and explain that an immediately hazardous condition exists and that they shall help correct it.' new → '• Call the excavator's supervisor and the principal entity who hired the excavator (Developer, Township, Municipal Water Department, etc.). Explain that an immediately hazardous condition exists and that the supervisor and principal entity shall help correct it.' • 7.1.8.2, 8th bullet updated: old → '• Contact Buckeye's Legal Department for assistance in acquiring an injunction to stop the dangerous activity.' new → '• If the situation persists, contact the Vice President, Operations and Buckeye's Legal Department to discuss whether to notify the agency that issued the excavation/drilling permit (Highway Department, State Environmental Agency, etc.) and to discuss whether to acquire an injunction to stop the dangerous activity.'
	3/1/19	**Section 7.1 - Excavation Planning** • 7.1.2 is new (six paragraphs, including the graphic), 'Determine if the expected excavation methods, dimensions, and workspace requirements are permitted within the rights under the pipeline right-of-way easement...'
	1/10/20	**Section 7.1 - Excavation Planning** • 7.1.3.3 updated: old → 'Facility location and direction shall be marked and identified as per uniform color code and marking symbols (see Section 7, Exhibit A - Uniform Color Code and Marking Symbols)…' new → 'Facility location and direction shall be located (see

		Section 6), marked, and identified as per uniform color code and marking symbols (see Section 7, Exhibit A - Uniform Color Code and Marking Symbols)…'
	1/29/21	**Section 7.2 - Determining Location/Excavation Limitations -- Tolerance Zones** • 7.2.4 updated: old → 'Mechanized power excavation equipment shall not be used within the Tolerance Zone, defined for each State by Section 5, Exhibit A (18", 24" or 24" depending on the State), until the facilities have been located using insulated probe bars in accordance with 7.2.3 and initially exposed using hand tools. After the pipeline is exposed, soil within the Tolerance Zone, defined as Section 5, Exhibit A, shall be removed in a careful, prudent non-destructive manner by using low-impact, low-risk technologies which are defined as hand tools, or where permissible under State One Calls laws, water or air vacuum excavation equipment. Water or air vacuum equipment use is governed in Section 6.5.' new → 'Mechanized power excavation equipment shall not be used within the Tolerance Zone, defined for each State by Section 5, Exhibit A (18", 24", or 30" depending on the State), until the facilities have been located using insulated probe bars in accordance with 7.2.3 and initially exposed using hand tools. After the top and sides of the pipeline are initially exposed using hand tools so that the vertical/horizontal position and the course/direction of the pipeline are known and visually confirmed, soil within the Tolerance Zone, defined by Section 5, Exhibit A (18', 24", or 30") of the facility shall be removed in a careful, prudent, non-destructive manner by using low-impact, low-risk technologies which are defined as hand tools, or other methods where permissible under State One Calls laws, such as water, air vacuum, or mechanized power excavation equipment. Water or air vacuum equipment use is governed in Section 6.5.'
	5/3/21	MOC 301 Operations Organizational Consolidation updates.
	12/29/21	Updated 4.1.7, 4.1.9.1, and 4.1.9.2 ('Pipeline Protector' to 'Pipeline and Terminal Protector')
Section 7,	12/1/16	**Communication with the Excavator and/or Engineer:**

Form A - Excavation Safety Checklist		• 3rd point updated: old → 'The excavator was advised that the Buckeye inspector is required by law to perform an external inspection of any Buckeye pipeline exposed during excavation activity. The excavator understands that he/she is responsible to provide an OSHA compliant excavation, allowing the Buckeye inspector safe ingress and egress to examine our exposed pipeline.' new → 'The excavator was advised that the Buckeye inspector is required by law to perform an external inspection of any Buckeye pipeline exposed during excavation activity. The excavator understands that he/she is responsible as the qualified "Competent Person" who is designated to provide an OSHA compliant excavation under the requirements of 29 CFR Part 1926, Subpart P, and ensuring the Buckeye inspector safe ingress and egress to and from the excavation to examine our exposed pipeline.'
	12/29/17	• updated 'Buckeye inspector' to 'Buckeye pipeline protector' throughout **<u>Section - Communication with the Excavator and/or Engineer</u>** • 7th bullet updated: old → 'The excavator was advised that before any exposed Buckeye pipeline can be backfilled, the Buckeye pipeline protector will direct the placement of an orange warning mesh over the pipeline.' new → 'The excavator was advised that before any exposed Buckeye pipeline can be backfilled, the Buckeye pipeline protector will direct the placement of an orange warning mesh or yellow warning tape over the pipeline.' • last bullet updated: old → 'For excavation activities in CT, FL, IL, IN, MA, MI, MO, NJ, NY, OH, PA, and WI, please call 1-800-331-4115. For excavation activities in LA, NV, TN, TX, and Southern California, please call 1-866-514-8380.' new → 'For excavation activities in IL, IN, MI, MO, NJ, NY, OH, PA, or WI, please call 1-800-331-4115. For excavation activities in CT, FL, IA, LA, MA, ME, NV, TN, TX, or Southern California, please call 1-866-514-8380.'

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	1/29/21	• updated 'pipeline protector' and 'representative' to 'Pipeline and Terminal Protector' throughout **<u>'Communication with the Excavator and/or Engineer' Section</u>** • under the first item, added this bullet point: 'Be a qualified Buckeye Pipeline and Terminal Protector.'
Section 7, Exhibit A - Uniform Color Code and Marking Symbols	12/29/17	• added 'Purple' and 'Fluorescent Pink' to the list of color codes. • NOTE updated: old → 'Buckeye's permanent line markers include white posts with orange tops and/or yellow "Carsonite" posts.' new → 'Buckeye's permanent line markers may include white posts with orange tops and/or yellow "Carsonite" posts.'
DPPM, Exhibit C - Excavation Limitations - Tolerance Zones	2/16	Exhibit was completely revised.
	1/29/21	• Note at the bottom of the exhibit updated: old → 'After the pipeline is exposed, soil within the Tolerance Zone, defined in Section 5, Exhibit A, shall be removed in a careful, prudent non-destructive manner by using low-impact, low-risk technologies which are defined as hand tools, or where permissible under State One Calls laws, water or air vacuum or power excavation equipment.' new → 'After the pipeline is exposed using hand tools, soil within the Tolerance Zone, defined in Section 5, Exhibit A, shall be removed in a careful, prudent, non-destructive manner by using low-impact, low-risk technologies which are defined as hand tools, or where permissible under State One Call laws, water, air vacuum, or power excavation equipment.'
Section 8 - Excavating	2/15	**<u>Section 8.6</u>** Existing text removed: 'All remaining soil within 12" of the facility shall be removed with hand tools, bars, or shovels' and replaced with new paragraph to comply with all State One Call Laws. Also removed the Note stating that 'powered excavating equipment may be used between 4" and 12" of the facility's known outside perimeter if Smart Pig data has been reviewed and confirms that no appurtenances are present at the excavation site'.
	2/16	Sections 8.3.1 and 8.3.2 are new
	12/1/16	• 8.1, 'monitored or observed' updated to 'monitored or assessed' • 8.1.3, 'observe' updated to 'observe and assess' • 8.9, this sentence added – 'For any directional drilling operations, the Pipeline Protector assessing the excavation shall

		require a surface wire tracking system be utilized to verify and monitor the exact location, progress, and direction of the drill head.'
	12/29/17	• 8.1.2 and 8.1.3, first sentence, replaced 'Field personnel' with 'A Buckeye representative' • 8.9 updated: old → 'Precautions shall be taken any time Directional Drilling operations are conducted in the vicinity of underground facilities. Specifically, when directional drilling operations are carried out parallel to and within 10 feet of an existing pipeline, spot holes should be excavated at 25-foot intervals, when possible, so that the exact location of the drill head can be visually determined. For any directional drilling operations, the Pipeline Protector assessing the excavation shall require a surface wire tracking system be utilized to verify and monitor the exact location, progress, and direction of the drill head. When directional drilling operations are carried out perpendicular to and under an existing pipeline, the pipeline shall be excavated at the point of intersection with the drill head so that protection of the pipeline may be visually verified. These spot holes will also allow personnel to verify pipe alignment as the pipe is installed during the back-reaming process.' new → 'Precautions shall be taken any time Directional Drilling operations are conducted in the vicinity of underground facilities. Refer to DPPM Section 15.4.2 for additional requirements.'
	1/29/21	• 8.6 updated: old → 'All remaining soil within the Tolerance Zone as defined by Section 5, Exhibit A (18", 24" or 30") of the facility shall be removed in a careful, prudent non-destructive manner by using low-impact, low-risk technologies which are defined as hand tools, or other methods where permissible under State One Calls laws, such as water or air vacuum excavation equipment. Water or air vacuum equipment use is governed in Section 6.5.' new → 'After the top and sides of the pipeline are initially exposed using hand tools so that the vertical/horizontal position and the course/direction of the pipeline are known and visually confirmed, soil within the Tolerance Zone as defined by Section 5, Exhibit A (18", 24", or

		30") of the facility shall be removed in a careful, prudent, non-destructive manner by using low-impact, low-risk technologies which are defined as hand tools, or other methods where permissible under State One Call laws, such as water, air vacuum, or mechanized power excavation equipment. Water or air vacuum equipment use is governed in Section 6.5.'
	4/27/21	• 8.10 is new, 'Excavation of pipelines on steep slopes (>20% grade) requires special attention. Refer to DPPM Section 10.6 for additional requirements.'
	12/29/21	Updated 4.1 ('Pipeline Protector' to 'Pipeline and Terminal Protector')
Section 9 - Sloping, Shielding and Shoring Excavations	4/14	**Section 9.7 - Benching** Reference to maximum allowable slopes corrected
	12/1/16	**Section 9.1 - Policy** • 9.1.2, completely revised, all bullet points and the NOTE are new. **Section 9.2 - Hazard Recognition and Prevention** • 9.2.2, 2nd sentence is new – 'Buckeye employees are not permitted to enter an open excavation receiving surface water runoff that jeopardizes the safety of the employee or the excavation.' • 9.2.3, 2nd sentence is new – 'Dewatering of the excavated work area shall continue as long as the excavation is occupied and unsafe groundwater conditions are present within the excavation.' **Section 9.5 - Soil Classifications** • 9.5.2, 2nd sentence is new – 'A Competent Person as defined in Section 9.1.2 shall determine soil type by using at least one visual and one manual test. If the soil type cannot be determined, always assume Type C soil.' **Section 9.6 - Sloping** • 9.6.4 and 9.6.5 updated to refer to new exhibit - Section 9, Exhibit P.
	3/1/19	**Section 9.3 - Special Precautions** • 9.3.3 updated: old → 'Keep spoil at least two (2) feet away from the edge of the excavation.' new → 'Keep spoil, materials, and equipment at least two (2)

		feet away from the edge of the excavation.' • 9.3.5 updated: old → 'Where employees are required or permitted to cross over excavations, walkways or bridges with standard guard rails (42 inches high including toe boards) shall be provided.' new → 'Where employees are required or permitted to cross over excavations greater than thirty (30") inches, walkways or bridges shall be provided. When the excavation is six feet (6') or greater in depth, the walkways or bridges shall be provided with standard guard rails (42 inches high including toe boards).' **Section 9.8 - Shielding** • 9.8.5 updated: old → 'Side excavations around a shield shall not exceed two (2) feet below the bottom of the shield.' new → 'Side excavations around a shield shall not exceed two (2) feet below the bottom of the shield only if the system is designed to resist the forces calculated for the full depth of the trench, and there are no indications while the trench is open of a possible loss of soil from behind or below the bottom of the support system.' • 9.8.6 updated: old → 'Employees are not allowed in a shielding system when it is being installed, removed, or moved horizontally.' new → 'Employees are not allowed in a shielding system when it is being installed, removed, or moved horizontally or vertically.' **Section 9.9 - Shoring** • 9.9.2.4 is new, 'When any of the following conditions are present, the members specified in the Tables are not considered adequate: … Either an alternate shoring system must be designed, or another type of protective system designed in accordance with OSHA 1926.652.'

		• 9.9.4.11 is new, 'When any of the following conditions are present, the members specified in the Tables are not considered adequate. … Either an alternate timber shoring system must be designed, or another type of protective system designed in accordance with OSHA 1926.652.'
	12/29/21	Updated 4.1.2 ('Pipeline Protector' to 'Pipeline and Terminal Protector') **<u>Section 4 - Procedure</u>** • 4.1.3 updated: old → 'Excavations more than 20 feet deep require consultation with the Engineering Department for protective system design.' new → 'Excavations more than 20 feet deep require consultation with the Engineering Department and PE stamp approval for protective system design.' • 4.5.1.3 updated: old → 'Type B Soil - Cohesive soil with an unconfined compressive strength greater than 0.5 tsf and less than 1.5 tsf. Granular cohesionless soils such as angular gravel (crushed rock), silt, silt loam, sandy loam and clay loam. Also includes previously disturbed soil, Type A soil that is fissured or subject to vibration, unstable rock, or material that is part of a sloped, layered system where the layers slant toward the excavation on a slope less steep than four horizontal to one vertical.' new → 'Type B Soil - Cohesive soil with an unconfined compressive strength greater than 0.5 tsf and less than 1.5 tsf. Granular cohesionless soils such as angular gravel (crushed rock), silt, silt loam, sandy loam and silty or sandy clay loam. Also includes previously disturbed soil (except those which would otherwise be classified at Type C), Type A soil that is fissured or subject to vibration, unstable rock, or material that is part of a sloped, layered system where the layers slant toward the excavation on a slope less steep than four horizontal to one vertical, but only if the material would otherwise be

		classified as Type B.' • 4.5.1.4 updated: old → 'Type C Soil - Cohesive soil with an unconfined compressive strength of 0.5 tsf or less. Granular soils such as gravel, sand, and sandy loam. Also includes unstable submerged rock...' new → 'Type C Soil - Cohesive soil with an unconfined compressive strength of 0.5 tsf or less. Granular soils such as gravel, sand, and loamy sand. Also includes unstable submerged rock...'
Section 9 Exhibit A - Soil Classification Chart	12/29/21	• TYPE A column, Maximum Allowable Slope (H:V), updated '1/2:1 (63°) Short Term' to '1/2:1 (63°) Short Term, 12 ft. or less' • Added this note: '½:1 Slope for Type A soil is permissible only for short term excavations that are 12 ft or less in depth.'
Section 9, Exhibit B - Selecting a Protective System	12/29/21	• updated 'Classify Soil Per Exhibit I' to 'Classify Soil Per Section 9 Exhibit A'
Section 9, Exhibit H - Minimum Timber Requirements Soil Type B	12/29/21	• column: DEPTH OF TRENCH (FEET) row: 15 to 20 column: HORZ. SPACING (FEET) row: UP TO 10 column: WALES, SIZE (IN) Correct value per 29 CFR 1926, P Table C-1.2 is 12x12. Corrected from 12x10.
Section 9, Exhibit L - Maximum Allowable Slope	12/29/21	• updated to add information on limits for vertical sides for benching.
Section 9, Exhibit M - End Wall Road Crossing Typical Shoring - Ex. XII	12/29/21	• updated references in this note: old → '**FOR SIZING & SPACING REQUIREMENTS OF TIMBER UPRIGHTS, WALERS & PANELS SEE THE APPLICABLE EXHIBIT II, IV, V, VII, VIII, AND IX' new → '**FOR SIZING & SPACING REQUIREMENTS OF TIMBER UPRIGHTS, WALERS & PANELS SEE THE APPLICABLE EXHIBIT C, D, E, G, H, OR I'

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Section 9, Exhibit P - OSHA Part 1926 Subpart P Appendix B	12/1/16	This exhibit is new.
Section 10 - Supports	4/27/21	• 10.6 is new, 'Special care is required for excavation on steep slopes (>20% grade). In addition to horizontal and vertical movement, the pipeline must also be adequately braced to support axial loading. No more than 50' of pipeline may be exposed at any given time, even when supported as per the table in Section 10.3. If more than 50' of pipeline needs to be exposed, earthen plugs shall be utilized to provide axial support. Additional lengths of pipe can then be exposed utilizing additional earthen plugs. See Exhibit A. If the area of the pipeline where the earthen plug is installed also needs to be exposed, then the pipeline shall be backfilled as per Section 13 of this manual sufficiently to allow excavation of the pipeline under the earthen plug, so as not to exceed the maximum 50' of continuously exposed pipeline.'
	12/29/21	**<u>Section 4 - Procedure</u>** • 4.3 updated: old → 'Support spacing for exposed line pipe shall not exceed these distances: <TABLE> NOTES: 1. Span distances apply to all pipe wall thicknesses. Supports shall not be located within five feet of a weld. …' new → 'Support spacing for exposed line pipe shall not exceed these distances, which are based on API RP 1117: <TABLE> NOTES: 1. Span distances apply to all pipe wall thicknesses. Supports shall not be located within five feet of a

		girth weld. …'
Section 10, Exhibit A - Pipeline Support Details on Sloped Excavation	4/27/21	This exhibit is new.
Section 11 - Underground Structure Clearance	5/3/21	MOC 301 Operations Organizational Consolidation updates.
Section 12 - Rock Removal Guidelines	12/1/16	**Section 12.5 - Heavy Equipment** • 1st sentence updated: old → 'Heavy equipment (backhoes/excavators) needs to be used with extreme caution when digging up the line where there is a suspected rock against the pipeline.' new → 'Extreme caution shall be used when excavating with heavy equipment where there is suspected rock. **Section 12.6 - Pipelines Encased in Concrete** • The entire section has been completely rewritten. Potential use of a jackhammer eliminated.
Section 13 - Backfilling	12/1/16	• 13.3.2 updated: old → 'Backfill and tamp void areas under the pipeline to a density equal to that of the adjacent undisturbed soil in 6" lifts until the pipe is firmly supported.' new → 'Backfill and hand tamp void areas under the pipeline to a density equal to that of the adjacent undisturbed soil in 6" lifts until the pipe is firmly supported. Hand tamp is defined as using hand tools to force in, and tightly pack backfill by repeated strokes to compress the backfill material around the pipeline.' • 13.3.3 updated: old → 'Backfill and tamp along the sides of the pipeline to a density equal to that of the adjacent undisturbed soil in 6" lifts until the pipe is covered.' new → 'Backfill and mechanical tamp along the sides of the pipeline to a density equal to that of the adjacent undisturbed soil in 6" lifts until the pipe is covered. Mechanical tamp is defined as using excavation

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		equipment to uniformly consolidate the backfill material around the pipeline.' • 13.5, 'in excess of 4" diameter' updated to 'in excess of 4 inches in any dimension' • 13.8 updated: old → 'All excavations shall be graded and restored in a manner satisfactory to the landowner or governing authority.' new → 'All excavations and disturbed land surfaces shall be restored as nearly as practicable to the condition that existed prior to construction unless there is an agreement specifying otherwise.'
	12/29/17	• 13.3.3 updated: old → '…Mechanical tamp is defined as using excavation equipment to uniformly consolidate the backfill material around the pipeline.' new → '…Mechanical tamp is defined as using power equipment to uniformly consolidate the backfill material around the pipeline.' • 13.6 NOTE updated: old → 'The warning mesh may be ordered from Linemark, P. O. Box 800024, Houston, Texas 77280. Phone 713-460-2414.' new → 'Contact Supply Chain Department to order warning mesh.'
	1/10/20	• 13.3.3 updated: old → '…Mechanical tamp is defined as using power equipment to uniformly consolidate the backfill material around the pipeline.' new → '…Mechanical tamp is defined as using power equipment, such as walk-behind units, to uniformly consolidate the backfill material around the pipeline.' • 13.4 updated: old → 'Place 12" of select fill around the pipe.' new → 'Place 12" of select fill around the pipe and mechanical tamp to a density equal to that of the adjacent undisturbed soil.'

		• 13.5 updated: old → 'Backfill material used above the select fill shall not contain rocks in excess of 4 inches in any dimension.' new → 'Backfill material used above the select fill shall be within ±2% of the soil optimum moisture content per ASTM D1557 and shall not contain rocks in excess of 4 inches in any dimension. Soil optimum moisture content may be field estimated by squeezing a handful of loose soil so as to form a ball. Soil with moisture above optimum moisture content may leave a wet outline of the soil sample ball on the palm of the hand or free water will form on the surface of the sample while squeezing. Soil with moisture below the optimum moisture content will not hold together under pressure or may be dry, loose, powdery and fall through fingers when squeezed or, with clay soils, the sample is too hard to squeeze.' • 13.6 is new, 'Place a maximum 12" of backfill material above the pipe and mechanical tamp to a density equal to that of the adjacent undisturbed soil. Repeat until the depth of the excavation is backfilled. Static compaction rollers may be used overtop of the pipeline when 5-feet or more of cover is achieved.' • 13.8 (prior 13.7) updated: old → 'Backfill the entire excavation until the center of the ditch is high enough to leave a flat surface upon settling.' new → 'Backfill the entire excavation in accordance with Section 13.6 until the center of the ditch is high enough to leave a flat surface upon settling.'
	4/27/21	• 13.3 updated: old → 'Backfill in such a manner that the pipe will be supported at all times…' new → 'Backfill in such a manner that the pipe will be fully supported at all times...' • 13.3.2 updated: old → 'Backfill and hand tamp void areas under the pipeline to a density equal to that of the adjacent undisturbed soil in

		6" lifts until the pipe is firmly supported. Hand tamp is defined as using hand tools to force in, and tightly pack backfill by repeated strokes to compress the backfill material around the pipeline.' new → 'Backfill and hand tamp void areas under the pipeline to a density equal to that of the adjacent undisturbed soil in 6" lifts until the pipe is firmly and fully supported. Hand tamp is defined as using hand tools to force in, and tightly pack backfill by repeated strokes to compress the backfill material around and under the pipeline.' • 13.3.3 updated: old → 'Backfill and mechanical tamp along the sides of the pipeline to a density equal to that of the adjacent undisturbed soil in 6" lifts until the pipe is covered…' new → 'Backfill and mechanical tamp along the sides and under the pipeline to a density equal to that of the adjacent undisturbed soil in 6" lifts until the pipe is covered…' • 13.4 updated: old → 'Place 12" of select fill around the pipe and mechanical tamp to a density equal to that of the adjacent undisturbed soil.' new → 'Place 12" of select fill around and under the pipe and mechanical tamp to a density equal to that of the adjacent undisturbed soil.' • 13.6 updated: old → 'Place a maximum 12" of backfill material above the pipe and mechanical tamp to a density equal to that of the adjacent undisturbed soil. Repeat until the depth of the excavation is backfilled. Static compaction rollers may be used overtop of the pipeline when 5-feet or more of cover is achieved. new → 'Place a maximum 12" of backfill material above the pipe and mechanical tamp to a density equal to that of the adjacent undisturbed soil. Repeat until the depth of the excavation is backfilled. The use of the excavator bucket to achieve nominal compaction above the

		pipeline is acceptable once the pipeline has been properly backfilled to a minimum level of 12" above the pipeline. Static compaction rollers may be used overtop of the pipeline when 5-feet or more of cover is achieved.
Section 14 - Blasting and Seismic Vibrating Activity	3/1/19	**Section 14.1 - Planning/Testing** • 14.1.2, second paragraph is new, 'A Buckeye representative shall complete the Work Impact Management Plan form per Maintenance Manual Section F-01, and monitor the blasting activities.' **Section 14.2 - Special Requirements** • 14.2.3, updated 'seismographic surveys' to 'vibration analysis'.
	5/3/21	MOC 301 Operations Organizational Consolidation updates.
Section 15 - Pipeline Protection at Vehicular and Utility Crossings	12/1/16	**Section 15.1 - Policy** • 15.1.3 updated: old → 'Where specifications and dimensions cannot be met in accordance with Section 15, Exhibit A or situations occur that are not covered by these guidelines, plans shall be submitted to Engineering and Construction Services, prior to installation, for review and engineering approval.' new → 'Where specifications and dimensions cannot be met in accordance with Section 15, Exhibit A or situations occur that are not covered by these guidelines, plans shall be submitted to Right of Way, Real Estate and Damage Prevention, prior to installation, for internal review and approval. **Section 15.2 - General Requirements** • 15.2.2 updated: old → 'Review construction plans and confirm schedules for each proposed activity and, if required, refer plans to Engineering and Construction Services.' new → 'Review construction plans and confirm schedules for each proposed activity and, if required, refer plans to the Corporate Right of Way Department.' **Section 15.6 - Reporting** • 2nd sentence is new – 'The work order shall be completed according to 195 O and M Manual Section F-19 - Record Maintenance to ensure that all applicable records and drawings are updated appropriately.'
	12/29/17	**Section 15.1 - Policy** • 15.1.3 updated:

		old → 'Where specifications and dimensions cannot be met in accordance with Section 15, Exhibit A or situations occur that are not covered by these guidelines, plans shall be submitted to Right of Way, Real Estate and Damage Prevention, prior to installation, for internal review and approval.' new → 'Where specifications and dimensions cannot be met in accordance with this policy or situations occur that are not covered by this policy, prior to installation, plans shall be submitted to Right of Way, Real Estate and Damage Prevention for internal review and approval.' **Section 15.3 - Cover and Protection Requirements** • 15.3.2.3 updated: old → 'If the minimum clearances for the slab installation cannot be obtained, refer the situation to Engineering and Construction Services.' new → 'If the minimum clearances for the slab installation cannot be obtained, refer the situation to Right of Way, Real Estate, and Damage Prevention.' **Section 15.4 - Underground Utility Crossing Requirements** • entire section broken down into 15.4.1 General and 15.4.2 Trenchless Excavations • 15.4.1.4 (previously 15.4.4), added 'Purple' and 'Fluorescent Pink' to the colors of warning tape • 15.4.2.1 (previously 15.4.2) updated: old → 'Power cables, communications cables, and non-metallic natural gas pipelines shall be encased in concrete in accordance with Section 15, Exhibit B.' Precautions shall be taken any time Directional Drilling operations are conducted in the vicinity of underground facilities. When directional drilling operations are carried out parallel to and within 10 feet of an existing pipeline, spot holes should be excavated at 25-foot intervals, when possible, so that the exact location of the drillhead can be visually determined. When directional drilling operations are carried out perpendicular to and under an existing pipeline, the pipeline shall be excavated at the point of intersection with the drillhead so that protection of the pipeline can be visually verified.

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		These spot holes will also allow personnel to verify pipe alignment as the pipe is installed during the back-reaming process.' new → 'Power cables, communications cables...(this sentence moved to 15.4.1.2) Precautions shall be taken any time trenchless excavations are conducted in the vicinity of underground facilities. When directional trenchless excavations are carried out parallel to and within 10 feet of an existing pipeline, spot holes should be excavated at 25-foot intervals, when possible, so that the exact location of the drillhead can be visually determined. When trenchless excavations are carried out perpendicular to and under an existing pipeline, the pipeline shall be excavated at the point of intersection with the drillhead so that protection of the pipeline can be visually verified. These spot holes will also allow personnel to verify pipe alignment as the pipe is installed during the installation process. Additionally, the Pipeline Protector shall require a tracking system be utilized to verify and monitor the exact location, progress, and direction of the drill head for all directional drilling operations.' • 15.4.2.2 is new.
	3/1/19	**<u>Section 15.3 - Cover and Protection Requirements</u>** • 15.3.3.1 updated: old → 'All alignments of this nature shall be referred to Engineering and Construction Services.' new → 'All alignments of this nature shall be referred to the Right of Way, Real Estate and Damage Prevention Department for internal review and approval.' **<u>Section 15.4 - Underground Utility Crossing Requirements</u>** • 15.4.2.1 updated: old → 'Precautions shall be taken any time trenchless excavations are conducted in the vicinity of underground facilities. When directional trenchless excavations are carried out parallel to and within 10 feet of an existing pipeline, spot holes should be excavated at 25-foot intervals, when possible, so that the exact location of the drillhead can be visually determined. When trenchless

		excavations…' new → 'Precautions shall be taken any time trenchless excavations are conducted in the vicinity of underground facilities. When directional trenchless excavations are carried out parallel to and within 10 feet of an existing pipeline, spot holes should be excavated at 25-foot intervals, when possible, so that the exact location of the pipeline can be visually determined. When trenchless excavations...' **Section 15.5 - Maximum Cover** • Moved to a new section - Section 18.
	1/10/20	**Section 15.3 - Cover and Protection Requirements** • 15.3.1 updated: old → 'Temporary Construction Equipment Crossings' new → 'Temporary Construction Equipment Crossings for (a) wheeled equipment up to 80,000 lbs., a maximum axle weight of 20,000 lbs., and no more than two rear axles, and (b) track equipment with a maximum soil bearing pressure less than 10 psi' • 15.3.3 updated: old → 'Commercial and Industrial Driveways and Public Streets Crossing and all cases of proposed longitudinal occupancy (that is, where the pipeline is parallel to the right of way) within the pipeline right of way width.' new → 'Commercial and Industrial Driveways, Public Streets, all other Vehicular Crossings, all cases of proposed longitudinal occupancy (that is, where the pipeline is parallel to the right of way) within the pipeline right of way width, and any other non-confirming crossings.'
	1/29/21	**Section 15.4 - Underground Utility Crossing Requirements** • 15.4.2.1, updated 'Pipeline Protector' to Pipeline and Terminal Protector' • 15.4.2.2 updated: old → 'At least two weeks before work is to commence, Buckeye shall be provided with a copy of the horizontal directional drill (HDD) plan for the trenchless excavation which specifies how the HDD will be

		tracked, monitored, and controlled. The plan shall detail preventative measures to prevent conflicts with Buckeye's existing facility. The plan shall state the planned HDD bore diameters, rod lengths, ream diameters, method of guidance, method of drill head tracking, etc…Buckeye Operations shall be notified immediately if tolerances are compromised and should be involved in the recommencement of operations after tolerances are exceeded. A Buckeye representative shall consent or object to any submitted HDD Plans.' new → 'All trenchless excavation methods that do not meet the requirements stipulated in Section 15.4.2.1 must include a plan that consists of the proposed vertical separation clearances to the pipeline and any additional risk mitigation measures. Additionally, for any HDD installations that do not meet the requirements in Section 15.4.2.1, Buckeye shall be provided with a copy of the horizontal directional drill (HDD) plan for additional review. The plan shall specify how the HDD will be tracked, monitored, and controlled, and detail preventative measures to prevent conflicts with Buckeye's existing facility. The plan shall state the planned HDD bore diameters, rod lengths, ream diameters, method of guidance, method of drill head tracking, etc…Buckeye Operations shall be notified immediately if tolerances are compromised and should be involved in the recommencement of operations after tolerances are exceeded. A Buckeye Pipeline and Terminal Protector or District Project Manager shall consent or object to any submitted HDD Plans.'
	5/3/21	MOC 301 Operations Organizational Consolidation updates.
Section 15, Exhibit A - Reinforced Concrete Slab for Pipeline Protection	12/1/16	**NOTES section** • Note 1 updated
	12/29/17	• Notes 6 and 7 are new.
Section 15, Exhibit B - Pipeline RW Installation	12/1/16	**NOTES section** • Note 1 updated

Specifications for Utility Crossings		
Section 16 - Incidents	2/15	**Section 16 - Incidents** • removed reference to 49 CFR Part 191 in first paragraph
	2/15	**Section 16.1 - Excavation Damage Reporting** • added requirement to contact the Control Center when any damage is discovered. • revised to say that 911 needs to be contacted when a release occurs (not when damage with no release occurs).
	2/15	**Section 16.2 - Third Party/Outside Contractor Damage Repair and Cost Reimbursement** • The existing section was replaced with an entirely new process.
	6/15	**Section 16.2 - Third Party/Outside Contractor Damage Repair and Cost Reimbursement** • 16.2.5.1 – added requirement for Section 16, Exhibit D to be uploaded to Cintellate
	12/1/16	• 'incident' updated to 'damage incident' throughout the procedure. **Section 16.1 - Excavation Damage Reporting** • 16.1.1 updated: old → 'If damage is caused at the time of excavation, contact the Control Center to have the pressure on the pipeline appropriately reduced. Secure the area and ensure the safety of personnel and the public. If a product release is caused at the time of excavation, 911 shall also be notified. Any damage discovered that was caused by excavation activity, either by second or third parties or Buckeye employees, shall be reported to the Regulatory Compliance Department.' new → 'If damage is caused at the time of excavation, immediately contact the Control Center to have the pressure on the pipeline appropriately reduced. Secure the area and ensure the safety of personnel and the public. If a product release is caused at the time of excavation, 911 shall also be notified. Any damage discovered that was caused by excavation activity, either by second or third parties or Buckeye employees, shall be reported to the Regulatory Compliance Department. Should any damage event become a product release that meets the DOT reporting requirements previously mentioned in this section, follow the incident notification and investigation

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		requirements as directed in accordance with 192 O&M Manual Sections P-191.15 and P.192.617, and 195 O&M Manual Section B-01.' • 16.1.4 updated: old → 'The appropriate District Right of Way Specialist shall send information regarding Buckeye's excavation policies to the excavator. Refer to the Public Education Program Manual, Section I-4e.' new → 'The appropriate District Right of Way Specialist shall send information regarding Buckeye's excavation policies to the excavator, such as the Right of Way Use Restriction Specifications and applicable Public Awareness documents.' • 16.1.5 updated: old → 'The District Right of Way Specialist shall take appropriate steps for reimbursement of all charges due to the incident.' new → 'The District Right of Way Specialist shall take appropriate steps for reimbursement of all physical and financial damages due to the incident or situation caused by the second or third party.' • 16.1.6 updated: old → 'The Regulatory Compliance Department will be responsible for reporting all excavation damage under the above regulations to the proper State agency.' new → 'The Regulatory Compliance Department will be responsible for reporting all excavation damage as per the applicable federal and state regulations.' • 16.1.7 is new – 'The Damage Prevention Team shall review all damage events as appropriate for the purposes of sharing …' – 'The Buckeye representative shall notify the One Call Center and Damage Prevention Team of any non-compliant…'
	12/29/17	• clarified references to JDE in sections 16.2.5.4 and 16.2.9.2.
	3/1/19	**<u>Section 16.1 - Excavation Damage Reporting</u>** • 16.1.1 updated: old → '…Any damage discovered that was caused by excavation activity, either by second or third parties or

		Buckeye employees, shall be reported to the Regulatory Compliance Department. Should any damage event become a product release…' new → '…Any damage discovered that was caused by excavation activity, either by second or third parties or Buckeye employees, shall be reported to the Regulatory Compliance Department and the Right of Way, Real Estate and Damage Prevention Department. Should any damage event become a product release...'
	11/13/20	**Section 16.2 - Third Party/Outside Contractor Damage Repair and Cost Reimbursement** • 16.2.5.1, updated 'Cintellate' to 'BIRD'
	1/29/21	**Section 16.1 - Introduction** • added the '16.1 Introduction' heading, and re-numbered the rest of the procedure • 16.1.4, updated 'barge facility' to 'marine facility' **Section 16.2 - Excavation Damage Reporting** • 16.2.3 updated: old → 'If the damage is caused by a third-party excavator and the excavator is known, contact the District Right of Way Specialist.' new → 'If the damage is caused by a third-party excavator and the excavator is known, contact the District Right of Way Specialist. If the damage is caused by a second-party excavator, contact the responsible Project Manager and the District Right of Way Specialist to conduct an investigation with assistance from the Buckeye Legal Department. The terms of the contract agreement between the second party excavator and Buckeye must be upheld.' • 16.2.7, updated 'representative' to 'Pipeline and Terminal Protector' **Section 16.3- Third Party/Outside Contractor Damage Repair and Cost Reimbursement** • 1st paragraph updated: old → 'This section outlines the procedure for implementing third-party billing reimbursement for violations of Buckeye policy.' new → 'This section outlines the procedure for implementing

		third-party billing reimbursement for Third-Party Damage Incidents and Contract Reimbursable expenses.' • 16.3.2, added 'The District Right of Way Specialist shall provide the incident investigation findings and any corrective actions to the Sr. Manager, Right of Way, Real Estate, & Damage Prevention and the applicable Operations Manager, District Advisor, and Operations Director.'
	5/3/21	MOC 301 Operations Organizational Consolidation updates.
Section 16, Exhibit B - Principal Letter	1/29/21	• heading updated: old → 'GUIDANCE DOCUMENT THIRD-PARTY/OUTSIDE CONTRACTOR DAMAGE: INVESTIGATION/REPAIR/RECLAMATION COST REIMBURSEMENT INITIATIVE SAMPLE PRINCIPAL LETTER' new → 'THIRD-PARTY/OUTSIDE CONTRACTOR DAMAGE: INVESTIGATION/REPAIR/RECLAMATION COST REIMBURSEMENT SAMPLE PRINCIPAL LETTER' • updated 'Field Representative' to 'Buckeye Pipeline and Terminal Protector'
	5/3/21	MOC 301 Operations Organizational Consolidation updates.
Section 16, Exhibit C - Sample Invoice	12/1/16	Completely revised and moved into an Excel format with instructions for creating an invoice.
Section 16, Exhibit D - 3rd Party Damage Incident Responsibility Report Form	5/3/21	MOC 301 Operations Organizational Consolidation updates.
Section 17 - Preventing Damage Inside Terminals	2/15	This is an entirely new section.
	1/29/21	• 17.1, updated 'Applicability of Manual to Terminals' to 'Policy - Applicability of Manual to Terminals' • added section headings 17.2 and 17.3

Section 18 - Maximum Cover	3/1/19	This section is new. Was previously 15.5. • old → '15.5 Maximum Cover Unless written approval has been granted by Engineering and Construction Services, fill will not be allowed over the pipeline if the resulting cover will exceed eight (8) feet. new → 'Section 18 Maximum Cover 18.1 Policy Third parties shall not add fill within the right-of-way where the resulting total depth of cover exceeds eight feet (8') unless written approval has been granted by Engineering and Construction Services.
Section 19 - Second Party Contractor Excavation	1/29/21	This procedure is new.

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1. Purpose

The purpose of this procedure is to bring together various components and practices and apply Damage Prevention procedures.

2. Roles and Responsibilities

See below.

3. Definitions

Not applicable.

4. Procedure

4.1 Introduction

The Damage Prevention Procedure Manual brings together the various components and practices to apply and enforce Damage Prevention procedures consistent with the Buckeye operating model to inhibit and mitigate first party (Buckeye), second party (Buckeye contractors or agents) and third party (non-Buckeye contractors and public) damage to facilities and pipelines. The Damage Prevention Procedure Manual synchronizes and coordinates the implementation of damage prevention measures across all Asset Teams and

contractors of each business unit. The Damage Prevention Procedure Manual fosters a "Pipeline and Terminal Protector" culture, attitude, and heightened damage prevention awareness for all operations personnel in the field.

Pipeline and Terminal Protectors are qualified Buckeye employees or qualified Buckeye representatives (a *Buckeye representative is hereby defined as a Second (2nd) Party Contractor working on behalf of Buckeye*) who have completed and maintained the following:

- Training on the Damage Prevention Procedure Manual
- All applicable Damage Prevention related Operator Qualification Tasks:

702	One Call Notification, Investigation and Marking
703	Line Locating
704	Foreign Crossing Specifications
705	Reporting and Inspecting Third Party Operations
706	Visual Pipe Inspection
708	Pipeline ROW Patrol/Maintenance/Line Marker Installation
726	Excavation, Supporting and Backfilling
736	Navigable Waterway Crossings Inspection
745	Conduct Leak Surveys - Gas Pipelines
746	Population Density Survey for Class Location - Gas Pipelines
749	Natural Gas Odorization Monitoring
1019	Inspect Normally Exposed Pipe

- A Buckeye Pipeline and Terminal Protector may also be a Buckeye Inspector who has been trained by Buckeye on Buckeye's Damage Prevention Procedure Manual and to inspect and ensure compliance with the above applicable Operator Qualification tasks. The Buckeye Inspector may, but is not required to, be qualified in the applicable OQ tasks listed above.

4.2 Introduction to Using and Revising Manuals

Buckeye's policy related to Using and Revising Manuals is linked. For the Damage Prevention Procedure Manual, the manual owner is the Senior Manager, Right of Way, Real Estate and Damage Prevention Services.

4.3 Procedure Deviation Process

In the instance where one of the policies or procedures documented herein should need to be deviated from, the Procedure Deviation Process shall be followed.

5. Flowcharts

Not applicable.

6. Documentation

Not applicable.

7. Remediation

Not applicable.

8. Other Manual References

Not applicable.

9. Appendices

Not applicable.

10. Forms

Not applicable.

11. Exhibits

Not applicable.

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12. Change Log

For an overview of the manual revision process, please refer to 1.01 – Introduction to Using and Revising Manuals.

For a log of all revisions to this manual, please refer to 1.04 – Log of Revisions.

Rev #	Date	Prepared by (Name/Title)	Reviewed by (Name/Title)	Approved by (Name/Title)	Summary of Change(s)
5	11/24/21	Michael Detweiler			New template applied.
6	12/21/21				Annual review – no changes required.
7	4/22/22	L. Hughes - Codes, Standards, and Publications Lead	MRT	• J. Burdett - Director Transportation Operations • C. Ostach - VP Operations Services	**Section 4 - Procedure** • 4.1, 3rd bullet is new

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1. Purpose

The purpose of this procedure is to define and prevent encroachment.

2. Roles and Responsibilities

Not applicable.

3. Definitions

See below.

4. Procedure

4.1 Introduction

Buckeye has defined an encroachment as being any unauthorized building, structure, object, material, tree, or activity on or across Buckeye's pipeline rights of way that interferes with the Buckeye's easement rights, jeopardizes the integrity of its pipelines, or substantially impedes the safe and effective operation and maintenance of pipeline facilities and the identification of pipeline corridors.

Encroachments and property uses that most frequently conflict with pipeline operations and maintenance include but are not limited to:

- Buildings or other structures
- Unauthorized impoundments of water
- Excessive earth fill
- Mining or excavating operations
- Operation of heavy machinery or equipment
- Removal of earth cover
- Foreign utility crossings that fail to meet Buckeye policy
- Water channels
- Unauthorized roadways, streets and other paving, including curbs and sidewalks
- Trees
- Privacy fences

Buckeye proactively maintains the rights of way so as to prevent new encroachments and addresses new encroachments as they are identified. Buckeye's pipelines shall remain readily accessible for routine operations, maintenance and emergencies.

Authorized Field Operations personnel are in full control of the rights of way and are responsible for carrying out this policy within their particular areas of responsibility.

Property owners shall be treated with courtesy and respect while ensuring enforcement of Buckeye's easement rights and safeguarding the integrity of the pipeline.

4.2 Land Rights

Buckeye maintains rights to operate and maintain our pipelines through various types of property rights agreements including easements, license agreements, permits, and leases. These legal documents provide rights to Buckeye to maintain these rights of way so as to facilitate safe operation and clear access for maintenance activities. Buckeye proactively addresses expiring or expired agreements as they are identified.

4.2.1 Property owners along Buckeye's right of way may use their properties as they see fit as long as they do not jeopardize the integrity of pipeline and related facilities or interfere with easement rights to operate, maintain, repair, replace, and remove pipeline and related facilities on, under, and across the surface of the right of way.

4.2.2 Buckeye cannot be required to use extraordinary measures to exercise its easement rights. Only Buckeye may determine what buildings, structures, objects, materials, trees, or activities interfere with the easement rights.

4.2.3 The safety and effectiveness of Buckeye's employees and contractors during routine operations, maintenance or emergencies is of paramount importance in any debate with an outside party concerning encroachments on Buckeye's rights of way.

4.2.4 Maintaining the identity of pipeline corridors is important. To properly patrol rights of way and to have immediate access to the pipeline during routine operations, maintenance and emergencies, clear rights of way are essential.

4.3 Design Review

The process of coordinating, reviewing and, as necessary, preventing planned encroachments into Buckeye's rights of way is critical to the goal of damage prevention.

Buckeye receives inquiries about planned encroachments through the One Call system or through correspondence with local Asset Teams, Regional Right of Way Specialists, or the Corporate Right of Way Department. Although Buckeye has authorized its Field Operations personnel to make decisions regarding the protection of Buckeye's rights of way, some of these potential encroachment projects involve a scope of work that requires additional review and guidance from engineering, corrosion specialists, or others.

Buckeye shall maintain a document, known as the Right of Way Use Restrictions (ROWUR), which shall include general guidelines applicable to third party excavations and other encroachments proposed within Buckeye's rights of way. The document shall be distributed to parties seeking guidance for how Buckeye intends to ensure its pipeline assets and rights of way are adequately protected, and shall include requirements for submission of plans for review by Buckeye. The ROWUR is a guidance document only, and the controlling requirements for all excavation practices are contained in this Damage Prevention Procedure Manual.

4.3.1 Land Development and Improvements

4.3.1.1 Buckeye cannot prevent the construction of residential, commercial, or industrial subdivisions involving portions of the right of way. Instead Buckeye should ensure that the subdivision plans provide ample identification of its right of way and clearly show the pipeline corridor and pipeline. In addition, Buckeye should ensure that the right of way remain as clear as possible during and after land development/improvement, encumbered with only authorized structures, such as sidewalks, roadways, parking lots, and buildings, and utility line crossings. Only under the most unusual circumstances should Buckeye permit a building or other structure inside the right of way corridor.

4.3.1.2 Buckeye shall review subdivision plans to ensure that the pipeline will not suffer physical damage either during the construction process or through long-term factors such as stress or corrosion risks. Consideration shall be given to future safe, effective pipeline operations and maintenance. The pipeline shall remain readily accessible for routine operations, maintenance and emergencies. Paving, fences, additional cover, structures, landscaping features, and the proximity of third-party facilities impact accessibility to the right of way and the pipeline.

4.3.1.3 Authorized Field Operations personnel are in full control of the rights of way within their particular areas of responsibility. Field Operations personnel shall confer with the Senior Manager, Right of Way, Real Estate and Damage Prevention Services, and the Regional Right of Way Specialist on what will be permitted on the right of way. Field Operations personnel are often best suited to determine what property development/improvements constitute a substantial impediment to future safe pipeline operations and maintenance work. These determinations will be passed on to the Regional Right of Way Specialist, or Senior Manager, Right of Way, Real Estate and Damage Prevention Services when outside land development/improvement plans are reviewed, modified, approved, or disapproved.

When a Buckeye Project Manager is planning and designing any major new below surface pipeline construction or relocation projects involving Buckeye owned, operated, leased, licensed, permitted, or easement controlled real estate, the Project Manager shall arrange for the development of a survey plat that includes the location of all underground facilities and their associated easements. These plats shall be provided to the local Operations Manager, the Regional Right of Way Specialist, and the Senior Manager, Right of Way, Real Estate, and Damage Prevention Services for review, comments, and approval. Additionally, the project manager shall arrange for a qualified contractor to perform a minimum ASCE (American Society of Civil Engineers) Sub Surface Utility Engineering Survey at the Class B Quality Level under the current Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, and conduct a pre-bid meeting and subsequent pre-job meetings to discuss the existence and location of existing structures so as to avoid damage during the construction phase. Where the job site is located along, under, close to, or crosses structures already installed, such as electrical cables, other pipelines, sewage systems, drain tiles, poles, anchorage for poles, etc., whether these structures are shown on the drawings or not, whether similar or dissimilar to the foregoing, Contractor shall do the work in a satisfactory and workmanlike manner so that these structures will not be damaged during construction or at some later date through settlement, breakage, or

movement of pipe. The Project Manager shall be responsible for communicating the requirements of the Damage Prevention Procedure Manual to all contractors performing work on behalf of Buckeye and ensuring compliance with the damage prevention procedures.

4.3.1.4 All third-party construction activities proposed to occur on Buckeye-owned or controlled property shall require either a temporary access license, easement, lease, or permit to be issued by the Senior Manager of the Right of Way, Real Estate and Damage Prevention Services (or their authorized designee) prior to any access and the commencement of any construction activities.

4.3.2 Communicating with Individual Property Owners

4.3.2.1 Issues resulting from property owners' plans to develop or to improve property or structures are best handled first by Field Operations with the advice and involvement of the Regional Right of Way Specialist. At a minimum, request that the pertinent right of way document be reviewed by the Regional Right of Way Specialist or Senior Manager, Right of Way, Real Estate and Damage Prevention Services. Pipeline and Terminal Protectors shall be knowledgeable about Buckeye's pipeline rights. Do not hesitate to seek advice on interpreting document language from the Regional Right of Way Specialist or Senior Manager, Right of Way, Real Estate and Damage Prevention Services.

4.3.2.2 Pipeline and Terminal Protectors shall give best efforts to resolve encroachment issues at the local level when possible, balancing the needs of the property owner against Buckeye's rights. When disputes escalate to the point where the Pipeline and Terminal Protector is unable to resolve them, Pipeline and Terminal Protectors shall seek the support and expertise of the Regional Right of Way Specialist to negotiate a resolution to the dispute. Resolve the conflict before it or a potentially detrimental proposal is completed. Section 2, Exhibit A - Property Owner Letter provides a sample letter for informing property owners and developers of what is and is not permitted on, over, and across Buckeye's pipeline right of way. Additionally, an informational pamphlet is available at all maintenance locations throughout Buckeye for distribution to the public.

4.3.2.3 Be courteous and direct with property owners along Buckeye's right of way. Make sure meeting times are met and promises are honored. Strive to develop a cooperative and positive relationship with the property owners.

4.4 Line Markers

4.4.1 Line markers shall accurately identify the rights of way. Line markers shall also be installed at each side of road crossings, navigable waterway crossings, and railroad crossings, and at all locations where the mainline pipe is aboveground and accessible to the public. Pipeline markers shall be installed on both ends of a pipe span.

4.4.1.1 Where feasible, line markers shall be placed along the pipeline right of way at intervals determined by "line of sight." Line of sight shall be defined as the number of line markers such that potential excavators, emergency responders, and members of the public can observe an unobstructed sight line between each line marker along the pipeline right of way and be aware of the **approximate** location of the pipeline.

NOTE: Sections 5 and 6 of this manual shall be followed in order to properly locate the pipeline before any line marker is installed.

4.4.1.2 Unless otherwise required by State law, line markers are NOT required for buried pipelines offshore or at crossings of or under non-navigable waterways and other bodies of water.

Line markers are NOT required in heavily developed urban areas where the placement of line markers would be impractical provided that the local government maintains current substructure records.

Line markers are NOT required within the boundaries of working farm fields where the markers would cause a hindrance to farming activities.

4.4.1.3 Pipeline segments subject to 4.4.1 shall be evaluated for compliance to this policy and equipped with line markers as necessary by December 31, 2015.

4.4.2 Line markers may be metal or plastic posts with a warning sign or decal bearing Buckeye's name and emergency/control center phone number, and location of the control center secured to the post (see DPPM, Exhibit A - Line Marker and Navigable Waterway Signs). Local responsibility locations and phone numbers shall be omitted on decals and signs installed after September 17, 2015.

4.4.3 Yellow fiberglass "Carsonite" or similar markers with a warning sign bearing Buckeye's name and emergency phone number may also be used as line markers.

4.4.4 Flush-mounted signs or concrete monuments with a warning sign bearing Buckeye's name and emergency phone number may also be used in appropriate areas to identify the pipeline.

4.4.5 DPPM, Exhibit A - Line Marker and Navigable Waterway Signs includes an illustration, which should be used to identify the pipeline crossing at navigable waterways where anchoring of large vessels or channel dredging may damage the pipeline. The Navigable Waterway Sign shall state “Do Not Anchor or Dredge”, Operator Name, Emergency Phone Number, Petroleum Pipeline or Natural Gas (or other product). A sign shall be present on both sides of the navigable waterway facing the waterway.

4.4.6 Replace damaged line markers as needed. Line markers should be located on the right of way and near the pipeline(s) but not directly above the pipeline(s). Replace pipeline marker decals that are no longer legible with new decals as needed. Line markers shall be inspected and maintained as needed during any routine activities such as One Call line locates, integrity excavations, encroachment responses, and Surface Patrol Inspections.

4.4.7 The uniform Buckeye road-marking symbol is a yellow arrow (pointing in the direction of the flow) as prescribed in DPPM, Exhibit B - Road Marking Symbol. Where practical, road markers should be applied to assist aerial patrol personnel in locating the pipeline in areas where the rights of way are not immediately obvious or when there is a change in the direction of the pipe.

4.4.8 Double fence post markers should be used where practical in areas of high vegetation to enhance the visibility of the line marker.

5. Flowcharts

Not applicable.

6. Documentation

Not applicable.

7. Remediation

Not applicable.

8. Other Manual References

Not applicable.

9. Appendices

Not applicable.

10. Forms

DPPM, Exhibit A - Line Marker and Navigable Waterway Signs
DPPM, Exhibit B - Road Marking Symbol

11. Exhibits

Section 2, Exhibit A - Property Owner Letter

12. Change Log

For an overview of the manual revision process, please refer to 1.01 – Introduction to Using and Revising Manuals.

For a log of all revisions to this manual, please refer to 1.04 – Log of Revisions.

Rev #	Date	Prepared by (Name/Title)	Reviewed by (Name/Title)	Approved by (Name/Title)	Summary of Change(s)
8	11/24/21	Michael Detweiler			New template applied.
9	12/29/21	L. Hughes - Codes, Standards, and Publications Lead	MRT	• C. Ostach - VP Operations Services • J. Burdett - Director Transportation Operations	Updated 4.4.5

Dear Property Owner or Resident:

Petroleum Pipeline Right-of-Way

A portion of the pipeline right-of-way of Buckeye Partners, L.P. or one of its affiliated companies crosses your property. Please be advised that certain uses of your property may conflict with the safe operation and maintenance of the pipeline facilities.

Before the pipelines were built, a right-of-way agreement was negotiated between the pipeline company and the then-current owner of the property that you now own. The agreement, called an easement or right-of-way agreement, is on file at the Recorder of Deeds Office in your county's courthouse. The agreement is permanent and is not altered by a change in property ownership.

The agreement provides Buckeye with a permanent interest in the land as described in the agreement. The agreement gives Buckeye the right to, among other things, install, operate, maintain, repair, replace, and remove pipelines.

Buckeye is required by the U.S. Department of Transportation to inspect its right-of-way regularly to survey conditions and to detect construction activity or other encroachments that might endanger the pipelines. Buckeye must walk or inspect the right-of-way from the roadway from time to time and must see the ground clearly during frequent aerial patrol inspections. Buckeye strives to keep the right-of-way clear of any structures or trees that would hinder access to any point on the right-of-way in the event of an emergency. Buckeye's right of access is provided for in the agreement and is essential for protecting the integrity of the pipelines, your safety, and that of your neighbors.

Buckeye wants to remain your good neighbor, and to do so requires us to act responsibly in protecting the right-of-way. Buckeye will make every effort to accommodate your desired use of your property. Buckeye's responsibility for public safety and that of our employees is the paramount concern when considering a use of the right-of-way.

Restrictions on Your Use of the Pipeline Right-of -Way

The following are permitted uses of the pipeline right-of-way: flower beds, vegetable gardens, lawns, and low shrubbery. Uses that are not permitted on and across the pipeline right-of-way include trees, buildings, structures, outbuildings, overhanging balconies, patios, swimming pools, wells, septic systems, and storage of permanent objects or materials. Right-of-way uses that require Buckeye's written permission include any fill or excavation activity, all crossings by utilities, roads, driveways, sidewalks, water channels, installation of fences or posts, and installation of children's outdoor gym sets.

The above restrictions of your use of the pipeline right-of-way are Buckeye's policy and comply with regulations set forth by the U.S. Department of Transportation.

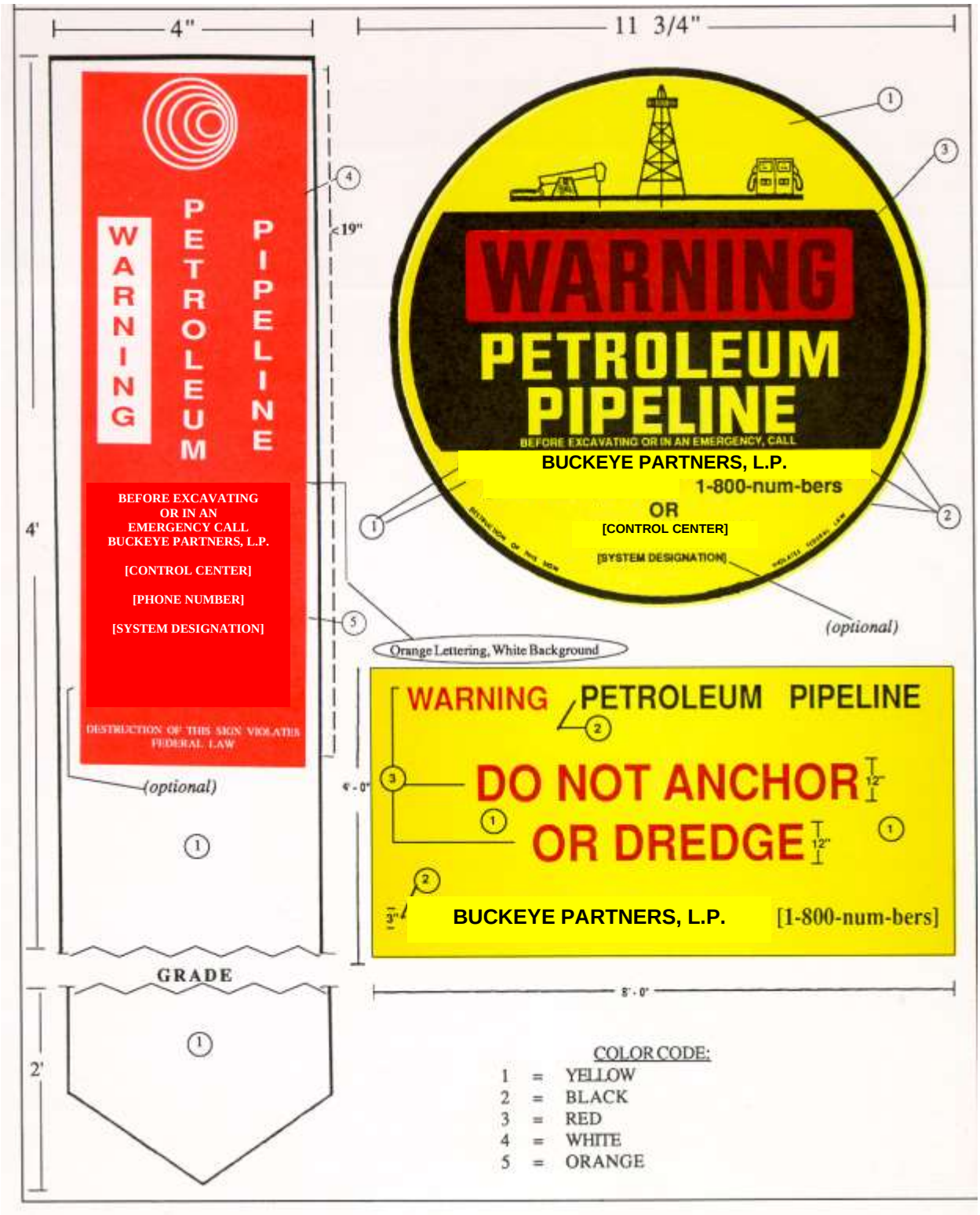
Also, as a matter of (insert name of appropriate State) law, anyone undertaking excavation work is required to notify the (insert name of local one-call or other utility notification service) (1-800-and their telephone number) several working days before the commencement of excavation work. It costs nothing to have utility companies like Buckeye notified so they can mark out or otherwise protect and inspect their facilities ahead of work time. Failure to contact utility notification services or Buckeye may result in your being responsible for dangerous conditions and expensive repairs to Buckeye's buried facilities.

If you plan to use Buckeye's right-of-way on your property for any purpose other than lawn, flower beds, vegetable garden, or low shrubbery, please contact Buckeye's contact (insert name and telephone number of Operations Manager). At that time, an on-site meeting will be arranged to discuss your proposed work and to determine and mark the location of Buckeye's pipeline.

Please be assured that you will receive courteous, prompt attention.

Thank you,

LINE MARKER AND NAVIGABLE WATERWAY SIGNS



NOTE: The letters in the words "Warning" and "Petroleum Pipeline" shall be a minimum of 1" high with an approximate stroke of ¼".

ROAD MARKING SYMBOL

Procedure

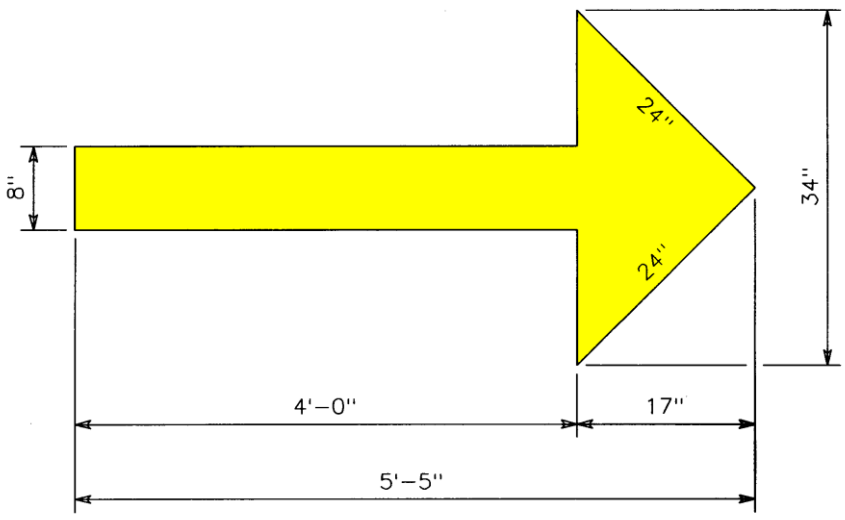
1) Pick out a spot on the highway, keeping to the side of the road. If there is a paved surface, apply the arrow to that section of the road.

2) Sweep the road with a broom or leaf blower.

3) Put 3M E-44 contact cement on the tape described in "materials to be used" section.

4) Put the tape and the arrow portion on the road, using a wallpaper roller to roll it down. Point the arrow in the direction of the pipeline flow.

NOTES: a) Use caution when placing the arrows. Ensure that the road marking does not interfere with traffic control markings.
b) Instead of 3M tape, yellow paint with a template matching the dimensions below may be used.



Material to be used:

- The overall dimension of the arrow should be 5'5", the tail being 4' in length and the arrow tip being 17" from the base to the point.
- To form the point of the arrow, use 24" wide tape (if using tape). Cut the 24 x 24" tape diagonally across the corners to make the point.
- The tail of the arrow should be four feet in length. Use either 8" wide pavement marking tape made by 3M Traffic Control at St. Paul, Minnesota (comes in 90' rolls) or yellow paint.

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1. Purpose

The purpose of this procedure is to address right of way patrols and encroachment identification and reporting.

2. Roles and Responsibilities

Not applicable.

3. Definitions

See below.

4. Procedure

4.1 General

The surface condition of each pipeline right of way, active and idle, shall be inspected within the time frequency listed on the Comprehensive Scheduling Chart in the 195 O and M Manual, Section F-34.

4.1.1 The rights of way should be kept free of debris, obstructions, and overgrowth. Only Buckeye can determine what buildings, structures, objects, materials, vegetation, or activities interfere with its rights.

4.1.2 Methods of inspection include aerial patrol, vehicle patrol, or traversing the pipeline route by walking, All-Terrain vehicle (ATV) or other mechanical method (e.g., boat, swamp buggy).

4.1.3 Residents along the pipeline rights of way should be encouraged to report any irregular or adverse conditions, including any unusual activity on or around the pipeline.

4.2 Inspections

Items identified during right of way inspections shall be investigated and documented in Section 3, Form B - ROW Surface Patrol Inspection and Encroachment Control Report and the JDE Work Order. For Aerial Patrol Surface Response Procedure specified in 4.2.1.2, the Asset Team may use the Irth Work Order system to document the right of way inspection as the Irth Work Order system becomes available for their pipeline segments in lieu of the JDE Work Order.

Observed hazards may include but not are limited to:

- Suspicious liquids, dead vegetation on or near the right of way.
- Sheens in waterways upstream or downstream of crossing.
- Signs of a product release.
- Pipeline exposures, erosion, landslides.
- Any construction activity, materials or excessive debris deposits on or near the right-of-way.
- Heavy traffic crossing over the right-of-way.
- Timber removal.
- Smoke or fire.
- Crop damage.
- Water impoundments.
- Potential unauthorized encroachments such as sheds, swimming pools, decks, garages, trees, etc.
- Blowing gas or debris, loud noise

Inspection methods may include aerial patrol, driving, or walking.

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4.2.1 Aerial Patrol

All pipeline rights of way shall be aerially patrolled by qualified contractors a minimum of twenty-six times per calendar year, at intervals not exceeding three weeks (twenty-one days) between patrols. In areas where aerial patrol is impractical due to airspace restrictions, congestion, or other reasons, these areas shall be patrolled by ground-based methods at the same frequencies and intervals.

4.2.1.1 The Aerial Patrol Program for both Buckeye owned and operated assets in the East, South, and West Regions shall be managed by the Corporate Aerial Program Manager.

4.2.1.2 The aerial patrol shall fly along the pipeline right of way and look for any signs of activity that may be potentially hazardous to the pipeline and its operation in accordance with Section 4.2. The aerial patrol pilot shall record and report the location and description of any such activity to aid Buckeye personnel in investigating the activity on the ground using Section 3, Form C - Aerial Inspection and Encroachment Control Report.

If for any reason the aerial patrol pilot is unable to observe and inspect the pipeline right of way during the inspection over flight due to overgrown vegetation or tree canopy or other obstructions, he or she shall immediately notify the Asset Team, who shall then arrange for surface patrol inspections in accordance with 4.2.2.

4.2.1.3 The aerial patrol pilot shall complete a Pipeline Aerial Patrol Report for each line section patrolled and forward it to the Aerial Patrol Program Manager and the Asset Team(s) for the pipeline segments that were patrolled, using Section 3, Form C.

4.2.1.4 The Corporate Aerial Program Manager shall be responsible for maintaining files of aerial patrol reports.

4.2.1.5 To verify the aerial patrol pilot's reporting procedures and pipeline location, Buckeye shall arrange for an employee to accompany the aerial patrol pilot annually during the summer foliage season to inspect and document the condition of each line section using Section 3, Form B - ROW Surface Patrol Inspection and Encroachment Control Report and to send a nomination report to the Vegetation Maintenance Program Manager using the ROW Clearing SharePoint Site regarding any right of way clearing needs as soon as practical following the aerial inspection. This report shall include the line segment and location (right of way number, road crossing, GPS coordinates or mile marker) of any areas where air-to-ground visibility

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is restricted by an overgrown tree canopy, residential yard trees, or other excessive vegetation. Section 3, Form B shall be attached to the JDE Work Order.

4.2.1.6 The following Right of Way Vegetation Maintenance Guideline shall be used to assess the condition of the pipeline right of way for purposes of prioritizing and performing vegetation maintenance.

Right of Way Vegetation Maintenance Guideline:

Condition Grade	**Action**
Acceptable – Line of sight of ROW markers exists, ROW surface conditions can be inspected and access to ROW is possible. Seasonal weeds, low brush, grasses could be present but: • Corridor is definable from air and ground and, • Vegetation can be walked through, driven through or traversed with a UTV or other equipment and, • Vegetation could be addressed in a matter of several hours as needed.	Continue to monitor.
 	

Condition Grade	Action
Marginal – Line of sight of ROW markers and Inspection of ROW is possible but is degrading, pipeline access can be gained with moderate vegetation maintenance and the canopy is narrowing but conditions of ROW can be assessed by aerial patrol. • Medium level of dense brush with thick patches between open areas, but access to ROW is possible with heavy equipment and/or, • Double high markers barely address seasonal line of sight matters and/or, • Canopy cover is starting to narrow over corridor but ROW can be assessed by aerial patrol.	Submit mowing needs via Clearing Nomination Report. If inspection is via aerial patrol, consider alternate method of inspection if needed.





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Condition Grade	Action
Critical – Line of sight of ROW markers does not exist, the ability to inspect ROW conditions and access to ROW is substantially and continuously compromised. • Density and thickness of vegetation is such that ROW access is not possible without substantial cutting and vegetation maintenance and/or, • No line of sight between ROW markers, ROW markers do not exist, and/or, • Canopy over ROW restricts the ability to assess conditions of ROW by aerial patrol.	Nomination MUST be submitted. If inspection is via aerial patrol, schedule alternate method of inspection until conditions are remediated.







4.2.2 Surface Patrol Inspection

If for any reason the aerial patrol pilot is unable to observe and inspect the pipeline right of way during the inspection over flight due to overgrown vegetation or tree canopy or other obstructions, he or she shall report the condition and affected area via email and telephone immediately following the flight to the Aerial Patrol Program Manager and the local Operations Manager referencing beginning and ending GPS coordinates, pipeline stationing, or other descriptive means to identify the uninspected pipeline right of way.

The Operations Manager shall arrange to conduct pipeline right of way surface patrol inspections at least once every twenty one days until the area in question can be inspected by Aerial Patrol.

The Operations Manager shall ensure that the ROW Surface Patrol Inspection and Encroachment Control Reports (Section 3, Form B) are provided to the Aerial Patrol Program Manager to verify and document policy compliance.

Surface Patrol Inspections can be completed by walking, riding an ATV, driving, or using another applicable method (boat, swamp buggy) provided that the right of way can be visually inspected by an unobstructed line of sight. During the inspections follow Section 4.2.3.

4.2.3 Triennial Inspections

All rights of way shall be walked once every three years to identify soil erosion, maintenance requirements, encroachments, and unauthorized excavations. Asset Teams may conduct walking inspections of a percentage of their assigned rights of way each year provided that the total percentage of the segments walked over a period of three years shall be equal to one hundred percent of the Asset Team's assigned right of way. During the inspections:

- Check for signs of a pipeline release: discolored vegetation or soil, oil slicks, or rainbows on adjacent waterways.
- Check for type of construction, excavation, or subsidence on, near, or across the rights of way.
- Check for encroachments such as structures with or without subsurface foundations, swimming pools, etc. within ten feet on either side of the pipeline. Any such encroachments shall be recorded on Section 3, Form B.
- Check for fence posts, sign posts, utility poles, or guy anchors that are within ten feet on either side of the pipeline. Any such encroachments shall be recorded on Section 3, Form B).

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- Check for soil erosion caused by heavy rains or natural drainage along the rights of way. If a pipeline has a depth of cover of twenty-four inches (24") or less, see Section 3.2.5 Shallow Pipe.
- Check creek crossings, river crossings, and adjacent fields for soil erosion (washout) which has reduced cover, exposed the pipeline, or washed away line markers. If a pipeline has a depth of cover of twenty-four inches (24") or less, see Section 3.2.5 Shallow Pipe.
- Check for any unusual excavation or discolored vegetation, which indicate unauthorized activity by a third party.
- Check road crossings for adequate drainage and proper cover over pipeline.
- Arrange for excavation and inspection of the pipeline if there is any indication that the pipeline may have been exposed or damaged.
- When aboveground piping is present, refer to Corrosion Manual Section C-06 (Atmospheric Corrosion Procedure) for inspection procedures.
- Photograph each pipeline exposure, encroachment, unauthorized excavation, and/or irregular or substantially changed rights of way condition.
- Record the location, line section, and stake number. Include this information, along with the photograph, in the Work Order for appropriate distribution and evaluation.
- Record any dumping of rubbish, concrete, or other materials which may cause excessive external loading on the pipeline, or which may decrease accessibility to the pipeline.
- Record the irregular condition of any valve stations, gravitometer sites, cathodic protection rectifiers, and other visible appurtenances.
- Check all line markers for compliance to Section 4.4 Line Markers of this policy. Check signs for condition as well as proper placement and information. Replace, install, or modify the markers and/or signs as needed. Refer to Section 2.4 Line Markers for placement and information on line markers and signs.
- Provide a copy of the Tri-Annual Inspection Report to the Senior Manager, Right of Way, Real Estate and Damage Prevention Services.
- The Regional Operations Advisor shall be informed in writing that the Tri-Annual Line Inspection has been completed (Section 3, Form B). DPPM, Exhibit A - Line Marker and Navigable Waterway Signs or DPPM, Exhibit B - Road Marking Symbol, as well as Section 3, Exhibit C - Macungie Auburn Map and Section 3, Form A - Annual Right of Way Inspection Comments (see Section 3, Exhibit D example), may be used to facilitate reporting. Contact the local Operations Manager to determine which forms are to be used.

NOTE: Triennial Line Walking Inspections are not required on idle lines that are free of product.

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4.2.4 Unscheduled Inspections

In the event of any natural or manmade force that may cause ground movement that could affect the support, protection, or general integrity of a pipeline, the specific areas of rights of way either known or suspected to be affected shall be patrolled during the event if the affected area(s) can be safely accessed, and/or after the event within 72 hours or as soon as the affected area(s) can be safely accessed by personnel and equipment. Personnel dispatched for such patrols should consider High Consequence Areas in prioritizing the areas to be checked for ground movement. If any condition is discovered that may place the pipeline at risk of damage, it shall be reported immediately to the local Operations Manager. If a condition is discovered that presents an immediate and obvious threat of pipeline failure, notify the local Operations Manager and the appropriate Buckeye Control Center to shut down the pipeline.

Events that could affect the ground supporting and covering the pipeline include, but are not limited to:

- Flooding
- Sinkholes
- Unusually heavy rains of short duration causing erosion
- Light rains of long duration causing saturated and unstable soil on steep slopes
- Sudden collapse of underground mining cavities
- Earthquakes
- Unplanned blasting or explosions
- Train derailment

4.2.4.1 The applicable Regional Operations Director shall be informed in writing that a special inspection due to a natural disaster has been completed.

4.2.5 Shallow Pipe

A Buckeye-operated pipeline with a depth of cover of twenty-four inches (24”) or less is considered shallow pipe. Whenever this condition is discovered, Buckeye employees shall perform the following:

1) Photograph the area consisting of the shallow pipe condition and record the location, line section, and stake number.
2) Enter the photographs and the location information into the shallow pipe reporting tool and notify the appropriate Regional Right of Way Specialist.

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3) The Regional Right of Way Specialist shall evaluate the reported details along with the current land usage for the purpose of determining the associated risk and any necessary mitigating measures.
4) Document all initial assessment data and determination of mitigative measures on the Shallow Pipe Reporting Management Tool.

4.3 Encroachment Reporting

Whenever an employee encounters a construction site or the aerial patrol pilot reports work on the rights of way for which there does not appear to have been any prior notice or review of the proposed activities, prompt and decisive action may be necessary to protect our rights of way and, more importantly, the pipeline from being damaged. The employee or aerial patrol pilot should immediately contact the local Field Operations Asset Team and report the situation.

4.3.1 Any irregular activities or conditions shall be immediately reported to the local Operations Manager and followed up with a Work Order.

4.3.2 The aerial patrol pilot shall report their observed irregular activities to the local Field Operations Asset Team and the One Call Center via telephone call, as soon as practical following the observation. Local Field Operations shall investigate each reported observation that involves activity not already known, and document their investigation by completing Section 3, Form B and creating a Work Order.

4.3.3 Required repairs or maintenance, which cannot be performed immediately, shall be scheduled for correction by completing a Work Order.

4.3.4 Mark an aerial map (or equivalent) indicating which line sections have been walked, the date of the inspection, and the initials of the employee(s) who conducted the inspection. Attach the map and a completed Section 3, Form B to the Work Order and enter relevant comments. Refer to Section 3, Exhibit C - Macungie Auburn Map and Section 3, Exhibit D - Annual Right of Way Inspection Comments for examples of marked maps and photographs.

5. Flowcharts

Not applicable.

6. Documentation

Not applicable.

7. Remediation

Not applicable.

8. Other Manual References

Not applicable.

9. Appendices

Not applicable.

10. Forms

Section 3, Form A - Annual Right of Way Inspection Comments
Section 3, Form B - ROW Surface Patrol Inspection and Encroachment Control Report
Section 3, Form C - Aerial Inspection and Encroachment Control Report

11. Exhibits

DPPM, Exhibit A - Line Marker and Navigable Waterway Signs
DPPM, Exhibit B - Road Marking Symbol
Section 3, Exhibit C - Macungie Auburn Map
Section 3, Exhibit D - Annual Right of way Inspection Comments

12. Change Log

For an overview of the manual revision process, please refer to 1.01 – Introduction to Using and Revising Manuals.

For a log of all revisions to this manual, please refer to 1.04 – Log of Revisions.

Rev #	Date	Prepared by (Name/Title)	Reviewed by (Name/Title)	Approved by (Name/Title)	Summary of Change(s)
9	11/24/21	Michael Detweiler			New template applied.
10	12/29/21	L. Hughes - Codes, Standards, and Publications Lead	MRT	• C. Ostach - VP Operations Services • J. Burdett - Director	• updated 4.2 and 4.2.3

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				Transportation Operations	

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ANNUAL RIGHT-OF-WAY INSPECTION COMMENTS

BY ___ DATE _____ PAGE _____ OF _____ FOR MAP PAGE_____

ROW Surface Patrol Inspection and Encroachment Control Report

(DPPM Section 3, Form B)

Pipeline Name and/or Code			
Asset Team Responsibility			
Inspection Date			
Beginning Station or GPS Coordinates Lat/Long		**Ending Station or GPS Coordinates Lat/Long**	
Miles of Pipe Inspected			
Start Time		**End Time**	
Date and Time Completed			

ROW / Damage Prevention Inspector Name	
Cell Phone	
Email Address	

ROW Surface Patrol Inspection Check List: Encroachment Detects and Adverse Conditions
(Non-Permitted illegal, unapproved or unauthorized activity impact)

***Instructions*: Check any encroachment detects or adverse conditions that apply below then note details as appropriate on ROW Surface Patrol Inspection Log on page 2. Distribute copies to the Operations Manager, Regional ROW Specialist and others as needed.**

For Aerial Patrol – Surface Response provide copies to the Aerial Patrol Program Manager.

Check Applicable Items

☐	**Encroachment Detect or Response**		☐	**Adverse condition potentially impacting safe operations**
☐	**Leak(s) or spill(s)**		☐	**Markers obstructed from line of sight view**
☐	**Exposure of pipeline (Select this for ALL exposures found even if exposure was previously reported)**		☐	**Markers unreadable or needing maintenance/replacement**
☐	**Excavation in or near pipeline ROW**		☐	**People at or near unattended facility**
☐	**Aboveground construction in or near pipeline ROW**		☐	**Debris on ROW**
☐	**Maintenance activities in roads, streams, canals, irrigation systems, etc. crossing pipeline ROW**		☐	**Tree canopy needs evaluated for maintenance**
☐	**Washouts or soil subsidence**		☐	**Vegetation growth on ROW needs evaluated for maintenance**
☐	**Fires at or adjacent to pipeline facilities**		☐	**Sections of pipeline not patrolled**
☐	**Missing or damaged markers**		☐	**Other observations/concerns to investigate or address**

Inspection Method	Walking ☐	ATV ☐	Vehicle ☐	Other (Boat, etc.) ☐

ROW Surface Patrol Inspection Log Potential Encroachments Detected or Adverse Conditions Identified During Surface Patrol Inspection and Actions Taken						
#	ROW # TO ROAD	From Station or GPS Coordinates Lat/Long	To Station or GPS Coordinates Lat/Long	Description of Potential Encroachment/Adverse Conditions/Maintenance Needed	Date/Time of Property Owner Contact and/or Actions Taken	Photo YES/NO and #
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

Aerial Inspection and Encroachment Control Report (Section 3 – Form C)
Week ending _____

Inspected - YES or NO	Line Ref.	Pipeline Name(s) & Code (s)	Pipeline Mileage per segment	Pipeline miles inspected for the week	Inspection Date	Missed Patrol Miles	Description of missed line portion	Pilot Inspector Name
		Region Name		**0.0**				
	1	Official pipeline segment name and code listed here. Section A						
	2	Official pipeline segment name and code listed here. Section B						
	3	Official pipeline segment name and code listed here. SectionC						
	4	Official pipeline segment name and code listed here. Section D						
	5	Official pipeline segment name and code listed here. Section E						
	6	Official pipeline segment name and code listed here. Section F						
	7	Official pipeline segment name and code listed here. Section G						
	8	Official pipeline segment name and code listed here. Section H						

ROW Aerial Patrol Inspection Check Off List: Encroachment Detects and Adverse Conditions
(Non-Permitted illegal, unapproved or unauthorized activity impact)

YES/NO	Mark Applicable Items (Yes or No) as observed	YES/NO		COMMENTS
	Encroachment Detect or Response		**Adverse condition impacting safe operations**	
	Leak(s) or spill(s)		**Markers obstructed from line of sight**	
	New exposure of pipeline		**Markers unreadable or needing maintenance/replacement**	
	Excavation in or near pipeline ROW		**People at or near unattended facility**	
	Aboveground construction in or near pipeline ROW		**Debris on ROW**	
	Maintenance activities in roads, streams, canals, irrigation systems, etc. crossing pipeline ROW		**Aerial Patrol Inspection Visually Obstructed by Tree Canopy – ROW Surface Patrol Inspection Response Required**	
	Washouts or soil subsidence		**Vegetation growth on ROW needs evaluation for maintenance**	
	Fires at or adjacent to pipeline facilities		**Sections of pipeline not patrolled**	
	Missing or damaged markers		**Other observations/concerns to investigate or address**	

Potential Encroachments Detected or Adverse Conditions Referred for Surface Patrol Inspection Response

Date	Line Ref.	Pipeline Name(s) & Code (s)		Previous Report	Description of Potential Encroachment / Adverse Condition	Longitude & Lattitude	Photo ID YES or NO	Name of Asset Team member contacted	Time Reported	Irth Aerial Patrol Ticket #

Aerial Inspection and Encroachment Control Report (Section 3 – Form C)
Week ending _____

Pipeline Name(s) & Code (s)	Inspection Date	Miles of Pipe Inspected	Asset Team	Contact for Surface Response	Actual person contacted	Time Report Submitted
Official pipeline segment name and code listed here. Section A						
Official pipeline segment name and code listed here. Section B						
Official pipeline segment name and code listed here. SectionC						
Official pipeline segment name and code listed here. Section D						
Official pipeline segment name and code listed here. Section E						
Official pipeline segment name and code listed here. Section F						
Official pipeline segment name and code listed here. Section G						
Official pipeline segment name and code listed here. Section H						

Pilot Inspector & Equipment Information

Pilot Name	DOT OQ ExpreDate	Cell	Email	FAA Licence #	Aircraft Tail No.	Aircraft Type

Name of Buckeye Observer Onboard		**Observer Email & Cell #:**		**Date of Observer flight**	
Asset Team Contact Name for Surface Response:		**Email & Cell #:**			

MACUNGIE AUBURN MAP

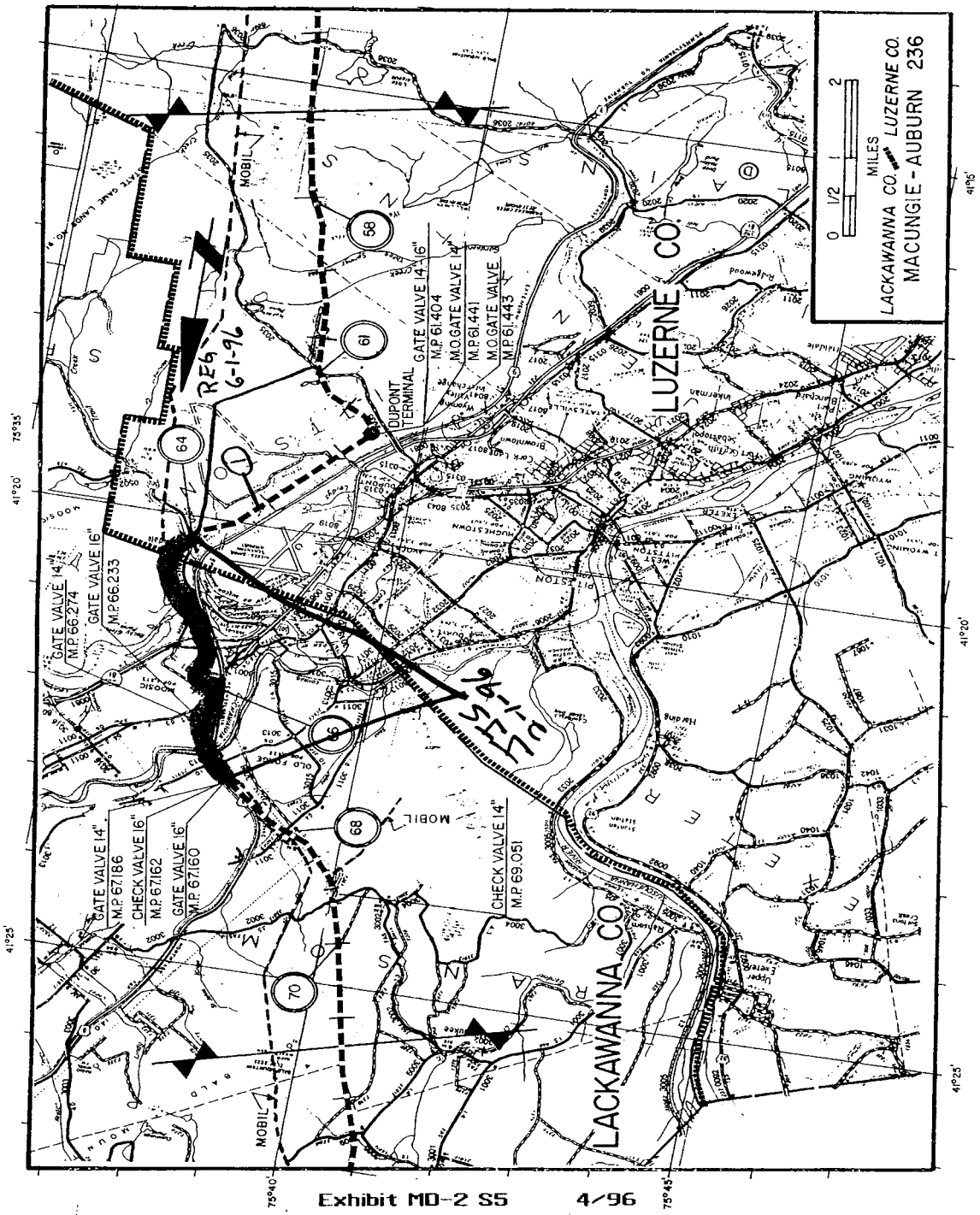


Exhibit MD-2 S5 4/96

ANNUAL RIGHT-OF-WAY INSPECTION COMMENTS

1	Jane Smith	
	123 Elm Street	
	Newtown, PA 12345	
	Observed encroachments including concrete	
	wall and some trees.	
2	John Smith	
	123 Chestnut Hill Rd.	
	Springfield Township	
	Bucks Co.	
	ROW# 87-1	
	Art sculpture encroachment observed over	
	the 16” & 20”.	
3	123 Main Street	
	Mantua, OH 45678	
	Observed trees in 521L right if way.	

Table of Contents

1. Purpose
2. Roles and Responsibilities
3. Definitions
4. Procedure
5. Flowcharts
6. Documentation
7. Remediation
8. Other Manual References
9. Appendices
10. Forms
11. Exhibits
12. Change Log

1. Purpose

The purpose of this procedure is to address encroachment abatement.

2. Roles and Responsibilities

Not applicable.

3. Definitions

See below.

4. Procedure

4.1 Identified Encroachments

All encroachments that are found should be reported to the local Operations Manager and reviewed with the Regional Right of Way Specialist as required.

4.1.1 If the item is determined **not** to be an encroachment, the property owner information shall be maintained by Field Operations personnel or the Regional Right of Way Specialist.

4.1.2 If the item is determined to be an encroachment, Field Operations personnel shall contact the property owner to negotiate its removal. The Regional Right of Way Specialist shall be responsible for resolving escalated disputes where the Field Operations personnel are unable to reach a settlement with the property owner.

4.1.3 If the property owner's approval is obtained, Field Operations personnel or the Regional Right of Way Specialist shall arrange for its removal/relocation.

4.1.4 If the property owner's approval is **not** obtained, the Regional Right of Way Specialist shall consult with the Senior Manager, Right of Way, Real Estate and Damage Prevention Services, and the Legal Department to determine the next steps.

4.1.5 After negotiations have concluded, all relevant documentation shall be maintained in the Right of Way Department's files.

4.2 Responding to Encroachments

4.2.1 Most encroachments come to Buckeye's attention through aerial patrol, vehicular patrol, line walking, or One-Call notices. Discovery of an encroachment area requires prompt, decisive action to protect the right of way from being permanently encroached upon and, more importantly, to protect the pipeline from possible damage. In such cases, an Encroachment Notice should be issued and, if necessary, a stop-work demand made with a copy sent to the Regional Right of Way Specialist. See Maintenance Manual, MA C-02 Form A - Encroachment Notice for a sample of the Encroachment Notice Form used by Buckeye.

4.2.2 When the integrity of the pipeline is in jeopardy, Field Operations personnel may park vehicles in such a way as to protect the pipeline from excavating equipment if necessary. Contact the Operations Manager or Regional Right of Way Specialist immediately for assistance in dealing with such situations. If necessary, contact local law enforcement to prevent unsafe conditions or violence.

4.2.3 As an immediate follow-up to the Encroachment Notice, a form letter, Section 4, Exhibit A may be used to order an excavator or other contractor to stop work in an encroachment situation. This letter should be issued by email, telephone facsimile or by certified or registered overnight mail to the property owner, the offices of the excavator, the municipal building code official, and/or other officials or engineering firms involved with the unauthorized work being done on the right of way with a copy to the Regional Right of Way Specialist. The Field Operations Assistant, Regional Right of Way Specialist, or Senior Manager, Right of Way, Real Estate and Damage Prevention Services may assist in preparing and transmitting the stop work letter. Issue this letter only after confirmation of Buckeye's easement rights on the premises through the Regional Right of Way Specialist or Senior Manager, Right of Way, Real Estate and Damage Prevention Services.

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Notify the One Call Center, the Operations Manager, and the Regional Right of Way Specialist of any non-compliant excavators (i.e. excavators who refuse to stop work, excavators working without an active One Call ticket, etc.). The One Call Center and/or Damage Prevention Team will work with Regulatory Compliance to add any non-compliant excavators to the Public Awareness program.

4.2.4 For a comprehensive overview of the encroachment surveillance process, see Section 4, Exhibit C - Field Encroachment Process.

4.3 Vegetation Maintenance

Trees, brush, large shrubs, and other undesirable vegetation can be significant encroachments within the right of way. The Vegetation Maintenance Program covers all rights of way not under roads, waterways, or agricultural lands, or impervious cover. They shall have vegetation controlled by an approved contractor. This work may include mowing brush, trimming trees, removing trees, applying herbicide, and related types of work. Vegetation Maintenance work is inherently dangerous and job hazards must be identified and mitigated by approved contractors. However, because Vegetation Maintenance work does not meet the definition of Hazardous work as defined in the Safety Manual Section B-01 Hazardous Work Authorization, paragraph 3.5, the Hazardous Work Authorization Procedure shall not apply. **Vegetation Maintenance is covered by Safety Manual Section B-15 - Authorization to Work (ATW).**

One method of preventing future vegetation maintenance problems is to be proactive at identifying and eliminating newly-planted vegetation encroachments. The Right of Way Use Restrictions (ROWUR) document lists Buckeye's requirements for vegetation, which can be summarized as:

- Trees or large shrubs and bushes are not permitted within the right of way.
- Trees planted outside of the right of way shall be placed so that branches and limbs will not overhang the right of way as the tree matures.
- Flowerbeds, vegetable gardens, lawns, and low shrubbery not exceeding thirty inches in height are permitted within the right of way.

Newly-planted vegetation encroachments shall be addressed at the Right of Way Pipeline and Terminal Protector level, with assistance from the Regional Right of Way Specialist and Vegetation Maintenance Program Manager as needed. Existing, long-term vegetation encroachments in the East, West, and Buckeye-owned and operated facilities in the South regions shall be brought to the attention of the Vegetation Maintenance Program Manager.

4.3.1 The Vegetation Maintenance Program Manager shall be responsible for managing the Vegetation Maintenance Program for Buckeye-owned and operated facilities in the East, South, and West regions. The Vegetation Maintenance Program for contract customers in the South region shall be managed by local Field Operations.

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4.3.2 The Vegetation Maintenance Program Manager (if applicable), with assistance from local Asset Teams and the Regional Right of Way Specialists shall determine which segments of the rights of way shall be included in the Vegetation Maintenance program each year. The determination of which right of way segments shall be maintained in a given year will be made by considering a variety of factors, including the Asset Maintenance Program, upcoming close-interval survey/smart pig/hydrotesting activities, and the ability of the Aerial Patrol pilot to adequately inspect the ground conditions of the right of way.

4.3.3 The vegetation maintenance contractor or Buckeye shall notify property owners along the rights of way of the impending work. Prior to the start of work, the Pipeline and Terminal Protector shall review Section 4, Exhibit D - Vegetation Maintenance Safety Checklist with the contractor. Upon completion of the checklist, the contractor is permitted to start vegetation maintenance operations along the rights of way. After contacts are made, the vegetation maintenance contractor shall start vegetation maintenance operations along the rights of way.

- If the property owner's approval to perform vegetation maintenance on a particular property is not obtained, the contractor shall notify the Vegetation Maintenance Program Manager and Regional Right of Way Specialist and submit all information pertaining to the situation.
- The Vegetation Maintenance Program Manager or Regional Right of Way Specialist shall contact the property owner to negotiate maintenance of the vegetation.
- If approval is obtained, the Vegetation Maintenance Program Manager or Regional Right of Way Specialist shall direct the contractor to proceed with the work.
- If approval is **not** obtained, the Vegetation Maintenance Program Manager or Regional Right of Way Specialist shall consult with the Senior Manager, Right of Way, Real Estate, and Damage Prevention Services or the Legal Department to determine the next steps.
- After negotiations with a property owner have concluded, all relevant documentation shall be sent to the Vegetation Maintenance Program Manager to be filed for future reference.

4.3.4 After the vegetation maintenance contractor has completed the project, any property owner notification documentation forms shall be sent to the Vegetation Maintenance Program Manager and filed for future reference.

4.3.5 When a property owner or public authority is planning a controlled fire to burn off unwanted vegetation on a property within fifty (50) feet of the pipeline Right of Way, the property owner or public authority shall submit a plan to the Regional Engineering Manager who shall consult with Asset Integrity as to the plan's

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acceptance. Burning of unwanted vegetation is not permitted within twenty-five (25) feet of the pipeline. Written notice shall be given within fourteen (14) days on consent or objection to such plans.

5. Flowcharts

Not applicable.

6. Documentation

Not applicable.

7. Remediation

Not applicable.

8. Other Manual References

Not applicable.

9. Appendices

Not applicable.

10. Forms

Not applicable.

11. Exhibits

Section 4, Exhibit A - Stop Work Letter
Section 4, Exhibit C - Field Encroachment Process
Section 4, Exhibit D - Vegetation Maintenance Safety Checklist

12. Change Log

For an overview of the manual revision process, please refer to 1.01 – Introduction to Using and Revising Manuals.

For a log of all revisions to this manual, please refer to 1.04 – Log of Revisions.

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Rev #	Date	Prepared by (Name/Title)	Reviewed by (Name/Title)	Approved by (Name/Title)	Summary of Change(s)
6	11/24/21	Michael Detweiler			New template applied.
7	12/29/21	L. Hughes - Codes, Standards, and Publications Lead	MRT	• C. Ostach - VP Operations Services • J. Burdett - Director Transportation Operations	Updated 4.3 and 4.3.3 (Pipeline Protector to Pipeline and Terminal Protector)

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January 1, 2016

Acme Excavating Incorporated
849 Canal Street
Toledo, OH 45663

RE: STOP WORK NOTICE
[Third-Party Project Name or Acitvity]
[Buckeye Partners, L.P. Entity] R/W No. 443
Troy Twp., Wood Co., OH; DS302CG

Dear Sir or Madam:

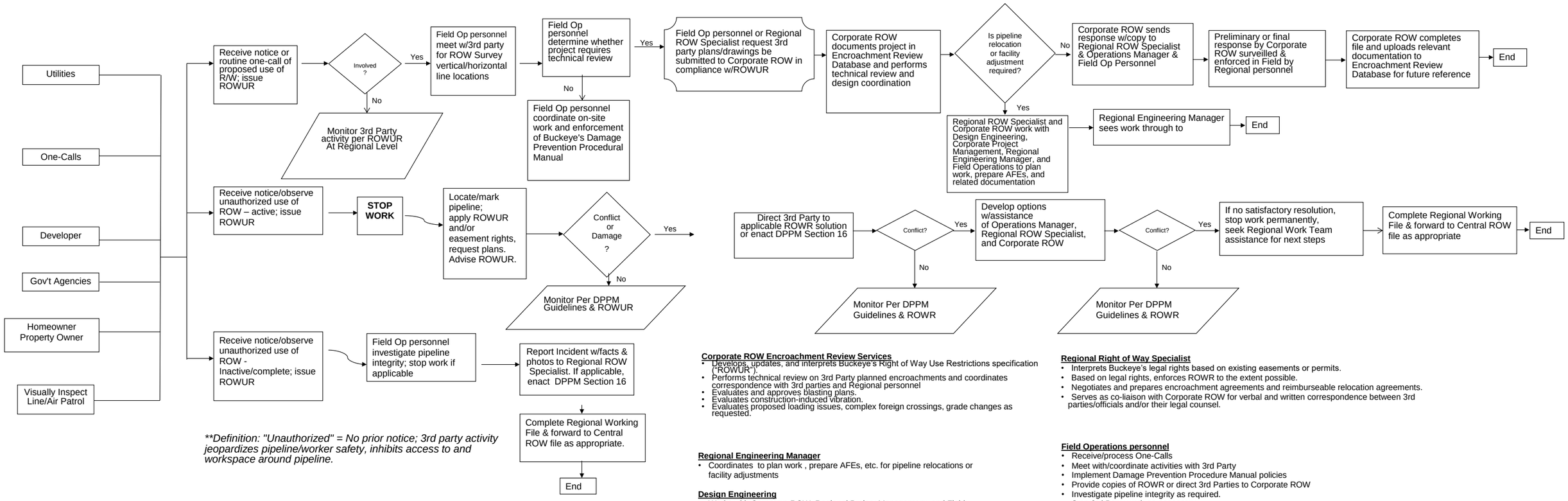
[Buckeye Partners, L.P. entity] operates and maintains a pipeline system used for the transportation of petroleum products. Your development and construction of [name or description of encroachment item] affecting [entity's] pipeline(s) and associated right of way is a violation of the Company's easement rights. Such rights allow [entity] unimpeded access to and workspace around its facilities during routine or emergency pipeline maintenance situations. [Entity] personnel have not granted any approval for use of its right of way in the conduct of your project. Consequently, YOU ARE ORDERED TO STOP WORK IMMEDIATELY until such time [entity] personnel have reviewed and approved your construction or earth work plans and procedures.

Your unauthorized actions upon the pipeline right of way at present jeopardize public safety and pipeline integrity. Please contact [entity's] Regional Right of Way Specialist _____ _____ at _____ to present your plans which incorporate [entity's] pipeline right of way for review and approval. Any work within 10 feet of a [entity] facility requires the presence of a [entity] inspector. The 'Right of Way Use Restrictions Specification of [entity] is enclosed for your information and reference.

Sincerely yours,

CC: Appropriate Building/Zoning Official; Municipal Fire Chief
Engineering/construction firm
Right of Way Point Person; Operations Manager

Field Encroachment Process



***Definition: "Unauthorized" = No prior notice; 3rd party activity jeopardizes pipeline/worker safety, inhibits access to and workspace around pipeline.*

Corporate ROW Encroachment Review Services

- Develops, updates, and interprets Buckeye's Right of Way Use Restrictions specification ("ROWUR").
- Performs technical review on 3rd Party planned encroachments and coordinates correspondence with 3rd parties and Regional personnel
- Evaluates and approves blasting plans.
- Evaluates construction-induced vibration.
- Evaluates proposed loading issues, complex foreign crossings, grade changes as requested.

Regional Engineering Manager

- Coordinates to plan work , prepare AFEs, etc. for pipeline relocations or facility adjustments

Design Engineering

- Works with Corporate ROW, Regional Project Management, and Field Operations to design any necessary pipeline relocations or protection systems.

Regional Right of Way Specialist

- Interprets Buckeye's legal rights based on existing easements or permits.
- Based on legal rights, enforces ROWR to the extent possible.
- Negotiates and prepares encroachment agreements and reimburseable relocation agreements.
- Serves as co-liaison with Corporate ROW for verbal and written correspondence between 3rd parties/officials and/or their legal counsel.

Field Operations personnel

- Receive/process One-Calls
- Meet with/coordinate activities with 3rd Party
- Implement Damage Prevention Procedure Manual policies
- Provide copies of ROWR or direct 3rd Parties to Corporate ROW
- Investigate pipeline integrity as required.
- Stop 3rd Party work as necessary
- Perform routine pipeline inspections/surveys
- Assist Corporate ROW and Regional R/W Specialist as Company liaison with 3rd Parties
- Gather, provide site information as part of R/W surveillance/investigation scenarios

Right of Way Vegetation Maintenance Safety Checklist

Section 4, Exhibit D – Vegetation Maintenance Safety Checklist

☐	**The Buckeye representative provided the Contractor with his or her contact information, contact information for an alternate Buckeye representative, the local Asset Team office location and phone number, and the Buckeye emergency phone number.**
☐	**Contractor will ensure that mowing equipment (if any) has the appropriate guard devices in place to prevent flying debris from being discharged. The Contractor understands that even with a guard device in place, reasonable care must be taken to avoid pointing the discharge end of the machine in the direction of people, buildings, roads, etc**
☐	**The Buckeye representative verified that the Contractor has a current set of alignment sheets for the pipeline segment being cleared. The Buckeye representative informed the Contractor of the diameter of the pipeline, line segment code, operational status (active or idle), and types of products typically carried.**
☐	**The Buckeye representative informed the contractor of the location of any known, potentially dangerous surface irregularities that may be obscured by high vegetation, such as large depressions, boulders, creek beds, debris piles, etc. The Buckeye representative helped the Contractor locate and mark these locations on the Contractor's set of alignment sheets.**
☐	**The Buckeye representative discussed Buckeye's requirements for Personal Protective Equipment ("PPE") while working on pipeline right of way, and verified that all crew members have appropriate PPE.**
☐	**The Buckeye representative informed the Contractor of the location of any known areas of exposed or shallow pipe on the segment to be cleared. The Contractor was informed of the hazards of operating equipment around exposed or shallow pipe and how to avoid causing damage. The Buckeye representative helped the Contractor locate and mark these locations on the Contractor's set of alignment sheets.**
☐	**The Buckeye representative explained the need to update any pipeline markers that contain outdated information, how to identify outdated markers, and provided the Operations Qualified Contractor with new stickers to place on outdated markers.**
☐	**The Buckeye representative verified that the Contractor knows the location of the nearest hospital or emergency medical facility.**
☐	**The pipeline centerline must be located and marked out in advance of ROW clearing activities by an Operations Qualified representative. Mowing a path as needed to complete task is permissible. Edges of ROW shall be marked as necessary to prevent overcutting of ROW.**
☐	**The Buckeye representative has reviewed the daily ATW (Authorization to Work) requirements with contractor. Contractors must Check in and Check Out daily with the Buckeye representative.**
☐	**The Buckeye representative informed the Contractor of the need to report any unusual or hazardous conditions that are found on the right of way that were not previously identified at this meeting.**
☐	**The Buckeye representative informed the Contractor that any notable work-induced rutting or contact with the pipeline, pipeline coating, test station wiring, or anode beds must be reported to the Buckeye representative to permit further inspection of the damage to assure continued safe pipeline operations and safe ROW surface conditions.**
☐	**The Buckeye representative has reviewed expectations for safe ROW surface condition upon completion of vegetation maintenance work to ensure that no large debris piles are left on or across ROW surface, that side trimmings shall be mowed or cut into reasonable sections and windrowed along ROW edges, that stumps must be cut flush to the ROW surface, that mower deck/fecon head should be positioned to ensure debris are adequately mulched for safe ROW surface conditions.**
☐	**The Buckeye representative informed the Contractor that no one may work alone while clearing the right of way, and that there must be an operational vehicle and cell phone on site at all times.**

Buckeye Information		Contractor Information	
Date:		**Name:**	
Name:		**Cell Phone:**	
Cell Phone:		**Company Name:**	
Line Segment Code:		**Signature:**	

Table of Contents

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1. Purpose

The purpose of this procedure is to address the policy, procedure, and responsibility for one-call.

2. Roles and Responsibilities

See below.

3. Definitions

See below.

4. Procedure

4.1 Policy

4.1.1 To prevent damages to pipeline facilities from subsurface excavation or any activity that disturbs or impacts the depth of cover over underground facilities, Buckeye participates in "One-Call" organizations in all the states in which Buckeye has operating facilities. This policy shall apply to all Buckeye owned or operated facilities, including terminals.

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4.1.2 A list of the One-Call organizations Buckeye participates in is listed on Section 5, Exhibit A - One-Call Systems - State Information. Other information listed on Exhibit A includes:

- Summary of operator line marking requirements or best practices
- Excavator Notice Requirements
- Excavation Ticket Life
- Tolerance Zone or Approximate Location Definition
- Duties of Excavator Within Tolerance Zone or Approximate Location
- Minimum # of Days for Operator to Respond
- Statutory Reference Excavation Law
- One Call Web Site
- Line Marking Reference

4.2 Procedure and Responsibility

4.2.1 Buckeye shall file the following information with each state's One-Call organization:

4.2.1.1 Pipeline route -- grid, township, borough or municipality in which the pipelines are located within the state or any other method the One-Call organization uses to screen excavator notifications to underground facility owners.

4.2.1.2 The fax or e-mail address of the One-Call screening computer and phone number of Buckeye's location which has been designated to receive One-Call messages for each state along with any other information required by the One-Call organization.

4.2.2 Each excavator, contractor, or builder (including Buckeye) shall notify the One-Call System and provide the following information regarding planned excavation activities:

- Proposed date and location of the excavation site, including such information as latitude and longitude coordinates, street address, and cross streets.
- Any other pertinent information that can help in locating the excavation site.
- Brief description of work requiring excavation.
- Site contacts of the Owner and Excavator -- name, address, telephone or cell number and email.

4.2.3 The One-Call organization will relay the above information to Buckeye screening software via e-mail to a centralized One-Call screening location. A One-Call Damage Prevention Coordinator shall promptly determine Buckeye’s degree of involvement.

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4.2.4 Using Buckeye's One-Call software, local maps, the pipeline atlas, Geographical Information System (GIS), and any other applicable information, the One-Call Damage Prevention Coordinator shall verify the location of the excavation to determine possible pipeline involvement. Additional information may be acquired by contacting the excavator.

4.2.5 If the pipeline is **not** involved at the planned excavation site, Buckeye shall notify the excavator through the One-Call screening software that no Buckeye pipelines are affected. A reasonable attempt for positive response notification will be made by e-mail, fax, or telephone.

NOTE: If a site visit is required to determine whether a Buckeye pipeline is or is not involved, as a precautionary measure, the ticket shall be sent via the One Call screening software to Field Operations personnel in the designated area and the pipeline location should be assessed by a Buckeye Field Operations representative (inspector) in the area of the proposed excavation to determine if the pipeline should be located and marked even though the Buckeye pipeline has been determined not to be involved. During excavations with uncertain circumstances, such as a large third-party product release or an unclear dig plan from the contractor, Buckeye shall maintain a presence onsite and mark its lines even if Buckeye is not otherwise involved.

4.2.6 If it is determined that the pipeline **is involved** at the planned excavation site:

4.2.6.1 The ticket shall be marked as involved in the One-Call ticket management system. A Work Order shall be generated in the JDE System from the One-Call ticket management system with pertinent information from the involved One-Call ticket.

4.2.6.2 Buckeye Field Operations representative shall contact the appropriate party identified on the ticket and advise that Buckeye facilities are involved.

NOTE: Emergency One Call notifications shall be handled as soon as reasonably possible. Contact the excavator during the timeframe required by the appropriate State's One Call law to coordinate site meeting, mark outs, or other instructions to ensure the integrity of affected facilities.

4.2.6.3 A Buckeye Field Operations representative shall locate and mark all pipelines at the location of planned excavation according to Section 6.

4.2.6.4 A Buckeye Field Operations representative shall schedule and conduct an on-site meeting with the excavator prior to excavation work occurring and shall re-verify the pipeline location and line markings. If the excavator's schedule changes, a Buckeye Field Operations representative shall reschedule the on-site meeting. Buckeye Field representative shall contact the excavator regularly as needed (daily if necessary) until the on-site meeting is conducted. The excavator shall have a clear understanding that no excavation work is to start until a Buckeye Field Operations representative is on site.

4.2.6.5 A Buckeye Field Operations representative shall monitor excavation activity that takes place anywhere from 10 to 25 feet from a Buckeye pipeline. "Monitor" is defined as inspecting the excavation site at least daily to ensure the pipeline is not in danger of being damaged by the excavator.

4.2.6.6 A qualified Field Operations representative shall assess excavation activity that takes place within 10 feet of a Buckeye pipeline. "Assess" means being physically present at all times during the excavation work up to completion of work, to implement damage prevention procedures and protect the pipeline from being damaged by the excavator. This includes a visual inspection of the pipeline if the pipeline is exposed to verify that no damage has occurred and the excavation has been properly backfilled in accordance with Section 13.

4.2.6.7 During pre-excavation site meetings, excavation and backfill activities that involve a Buckeye pipeline, Buckeye's Excavation and Backfill requirements shall be followed.

4.2.6.8 The Work Order or the One-Call ticket management system ticket generated for the One-Call ticket shall be completed along with other pertinent information including the photographs of the line marking and a copy of the completed Excavation Safety Checklist.

4.2.7 One Call Forecasting/Planning

The One Call Department will track the number of One Calls for the purpose of identifying trends and improvement opportunities.

4.2.8 Design One Call Tickets

4.2.8.1 When Buckeye One Call receives a design ticket notification, the ticket is pre-screened by the One Call Damage Prevention Coordinator. If there is no involvement, the design One Call ticket is cleared and no further response is

required. If there is potential involvement, the One Call ticket is assigned and placed in the appropriate Asset Team folder for further investigation and handling.

4.2.8.2 The Pipeline and Terminal Protector makes contact with the contractor / developer placing the One Call design ticket to discuss the scope of work and degree of Buckeye involvement. The Pipeline and Terminal Protector can provide a GIS-based diagram showing approximate location of the pipeline and the Right of Way Use Restrictions for general reference, but the contractor / developer shall be advised not to rely on the diagram for purposes of safe excavation.

4.2.8.3 The Pipeline and Terminal Protector will determine the level of involvement, type of project, and how the One Call design ticket will be processed based on the following procedure.

1. If not involved, the ticket can be cleared using the One Call Ticketing Management System.

2. If involved, the Pipeline and Terminal Protector determines further handling based on the scope of excavation work and complexity of the project associated with the One Call design ticket.

    a) The Pipeline and Terminal Protector will handle minor, low complexity projects in accordance with the Right of Way Use Restriction Specifications and the Damage Prevention Procedure Manual. These projects include but are not limited to:

    - single line crossings
    - vegetation planting
    - facility location and depth verification
    - nor road resurfacing

    Minor, low complexity projects will be handled by the Pipeline and Terminal Protector to completion similar to a routine Involved One Call ticket. Once the One Call design ticket is completed, the Pipeline and Terminal Protector will select the “Design Involved” response in the One Call Ticketing Management System. The One Call Ticketing Management System will automatically send an Involved One Call letter, the Right of Way Use Restrictions Specification (ROWURS), and a map showing the pipeline location.

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b) If the Pipeline and Terminal Protector determines that the project is complex, he/she should then enter the One Call data into the One Call Design Ticket Module, located in the Choose Action drop down menu of the One Call Ticket. The One Call Ticketing Management System will automatically send an Involved One Call Letter, the ROWURS, and a map as well as send an e-mail to the Corporate Encroachment Review Team for further review. Complex projects include but are not limited to:

- extensive site development and excavation
- new residential, commercial or industrial subdivisions
- new road or utility construction
- large underground construction projects that consist of multiple crossings and structures
- other similar types of projects which require engineering load calculations or design review

The Pipeline and Terminal Protector must inform the developer of the following:

- Right of Way Use Restriction Specification
- encroachment review application and review process
- basic information required to be included on the design plans, such as the Field-verified location and depth of any involved Buckeye assets

If location and depth information of Buckeye's involved assets have not yet been obtained, schedule a site meeting with the developer to coordinate the safe exposure and surveying of the affected pipeline assets.

Major, complex projects are to then be referred to One Call for encroachment review by placing the One Call in the Design Ticket folder of the One Call Ticketing Management System, and then adding notes explaining the project and any communication with the contractor or developer. Upon notification, One Call will then send an Engineering Design Review Packet, a Right of Way Use Restriction Specifications, and an Involved Confirmation Letter to the contractor / developer. The One Call design ticket is then closed by One Call as Design Only.

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5. Flowcharts

Not applicable.

6. Documentation

Not applicable.

7. Remediation

Not applicable.

8. Other Manual References

Not applicable.

9. Appendices

Not applicable.

10. Forms

Not applicable.

11. Exhibits

Section 5, Exhibit A - One-Call Systems - State Information

12. Change Log

For an overview of the manual revision process, please refer to 1.01 – Introduction to Using and Revising Manuals.

For a log of all revisions to this manual, please refer to 1.04 – Log of Revisions.

Rev #	Date	Prepared by (Name/Title)	Reviewed by (Name/Title)	Approved by (Name/Title)	Summary of Change(s)
5	11/24/21	Michael Detweiler			New template applied.
6	12/29/21	L. Hughes - Codes, Standards,	MRT	• C. Ostach - VP Operation	• Updated 'Pipeline Protector' to 'Pipeline and Terminal Protector' throughout

		and Publications Lead		s Services • J. Burdett - Director Transportation Operations	• updated ‘One-Call Screener’ to ‘One-Call Damage Prevention Coordinator’ throughout • updated 4.2.8.3 2.a) and 4.2.8.3 2.b)

STATE ONE-CALL REQUIREMENTS FOR LINE MARKING AND TOLERANCE ZONE SPECIFICATIONS

State	District	Summary of Operator Line Marking Requirements or Best Practices	Excavator Notice Requirements	Excavation Ticket Life	Tolerance Zone or Approximate Location Definition	Duties of Excavator Within Tolerance Zone or Approximate Location	Minimum # of Days for Operator to Respond	Statutory Reference Excavation Law	One Call Web Site	Line Marking Reference
Alabama	South	Use of stakes, flags, paint, buoys or clearly identifiable materials placed on the surface of the ground or water to show the approximate location of underground facilities. Marks shall indicate the name, initials or logo of the owner and operator of the underground facility and the width of the underground facility if it is greater than two inches.	2 full days (24 hours) excluding Saturdays, Sundays, holidays but not more than 10 days in advance. Or 2 days but not more than 30 prior to demolition or blasting operations for excavation or demolition.	10 Calendar Days	18 inches on either side plus the width of the facility on a horizontal plane	Utilize non-invasive methods to determine approximate location of underground facilities and maintain a clearance between the cutting edge or point of any mechanized equipment, taking into account the known limit of control of said cutting edge or point. Include but not limited to hand digging, pot holing, soft digging, vacuum excavation methods or other methods approved by the operator.	2	Alabama Act 94-487	www.al811.com	AL Line Marking
Bahamas	South	-							-	-
California	West	Yellow paint , color stakes, lath, pennants, or chalk line should be marked 12"-18" (spread 4'-50', as necessary). Operator markings of facilities include; the appropriate color for their facility type; their company identifier (name, initials, or abbreviation) when other companies are using the same color, the number and width of their facilities and a description of the facility (HP, FO, STL etc). Use paint, flags, stakes, whiskers or a combination to identify the operator's facility(s) at or near an excavation site.	2 full working days excluding weekends and holidays but not more than 14 days.	28 Calendar Days	24 inches on either side of the exterior surface of the subsurface installation	When the excavation is within the approximate location of subsurface installation, the excavator shall determine the exact location of subsurface installations with hand tools within the area of the approximate location of subsurface installations as provided by the operators before using any power-operated or power-driven excavating or boring equipment. Approximate location does not mean depth.	2	California Code § 4216 to 4216.9	USA North 811 (North&Central CA) or www.digalert.org (South CA)	CA Line Marking
Connecticut	Northeast	Marked or staked clearly identifying facility type by color with letter designation (e.g. P or PP) showing location and course.	2 full working days excluding weekends and holidays.	30 Calendar Days	18 inches on either side of the facility	If combustible or other hazardous fluid or gas line facilities are likely to be exposed, only hand digging shall be employed. Mechanical equipment for the removing of concrete or bituminous surfaces only. Excavator shall exercise reasonable care when working in proximity of underground facilities. Verification with hand dug test hole until facility is exposed to view.	2	Connecticut Gen. Statute Conn. Gen. Stat. Ann. § 16345 to 16-359	www.cbyd.com	CT Line Marking
Florida	South	Member operator shall identify the horizontal route by marking to within 24 inches from the outer edge of either side of the underground facility by the use of stakes, non-permanent paint, flags, or other suitable means	2 full business days and not less than 10 full business days if excavation is underwater.	30 Calendar Days	24 inches from the outer edge of either side of the exterior surface of a marked underground facility	Excavator shall use increased caution to protect underground facilities. The protection requires hand digging, pot holing, soft digging, vacuum excavation methods, or other similar procedures to identify underground facilities. Any use of mechanized equipment within the tolerance zone must be supervised by the excavator.	2	FL Underground Facility Damage Prevention and Safety Statute Fla. Stat. Ann. § 556.101 to 556.116	www.sunshine811.com	FL Line Marking
Georgia	South	Staking, flagging, permanent markers, any additional requires promulgated by GAPUC and CGA best practices.	48 hours, beginning the next business day after the notice is provided.	21 Calendar Days	The width utility facility or sewer lateral plus 24 inches on either side of the outside edge of the utility facility or sewer lateral on a horizontal plane.	Reasonable care as may be necessary for the protection of the utility facility. This protection shall include, but may not be limited to, hand digging, pot holing, soft digging, vacuum excavation methods, pneumatic hand tools, other mechanical methods with the approval of the facility owner or operator, or other generally accepted methods.	2	GA Utility Facility Protection Act Chapter Ga. Code Ann. § 25-9-1 to 25-9-13	www.georgia811.com	
Illinois	West	May utilize a combination of flags, stakes, and paint when possible on non-paved surfaces. Width of each mark should be approximately 2"wide, 12"- 18" in length, company identification should be painted at reasonable intervals.	At least 48 hours, but no more than 14 calendar days excluding holidays.	28 Calendar Days	18 inches on either side plus the width of the facility	Extra care within the tolerance zone by utilizing such precautions that include, but are not limited to, hand excavation, vacuum excavation methods, and visually inspecting the excavation while in progress until clear of the existing marked facility.	2	IL Underground Utility Facilities Damage Prevention Act 220 ILCS 50/1 to 14	www.illinois1call.com (Outside Chicago) egov.cityofchicago.org (Chicago)	IL Line Marking
Indiana	West	Facility locate markings must consist of paint, flags, or stakes or any combination that mark the approximate location of the underground facilities. Marking should include the diameter and material type of the facility being located.	At least 2 full working days, but not more than 20 calendar days	20 Calendar Days	24 inches on the outside edge plus the width of the facility	Exposure of the underground facility may be accomplished only by the use of hand excavation, air cutting, or vacuum excavation when clearance is less than 2 feet.	2	IN Damage to Underground Facilities Ind. Code § 8-1-26	www.indiana811.org	
Iowa	West	Mark horizontal location last minimum of five working days on any nonpermanent surface or a minimum of ten working days on any permanent surface.	At least 48 hours prior to the commencement of the excavation, excluding Saturdays, Sundays, and legal holidays.	20 Calendar Days	18 inches on either side of the facility	If, in the opinion of the operator, the planned excavation requires that the precise location of the underground facilities be determined, the excavator, unless otherwise agreed upon between the excavator and the operator, shall hand dig test holes to determine the location of the facilities unless the operator specifies an alternate method.	2	IA Underground Facilities Information Iowa Code § 480.1-480.9	www.iowaonecall.com	
Kentucky	Central	Shall consist of paint, chalk, flags, stakes, or any combination thereof with appropriate facility color.	At least 2 business days but not more than 10 business days.	21 Calendar Days	18 inches from the outer edge of each side plus the width of the facility	Within the tolerance zone the excavator shall hand-dig or use nonintrusive means, i.e. hand tools or equipment that uses air or water pressure as the direct means to break up soil for removal by hand tools or vacuum excavation; to avoid damage to the underground facilities.	2	KY Call Before You Dig Law Ky. Rev. Stat. Ann. § 367.4901 - 4917	www.kentucky811.org	
Louisiana	South	Marked by the operator by color coded paint, flags, or stakes or similar means Mark direction of the line with yellow dashed lines. Include company flag that indicates name, log, number.	At least 48 hours, but not more than 120 hours, excluding weekends and holidays, in advance of the commencement of any excavation or demolition activity.	20 Calendar Days or 30 Calendar Days if markings are requested by forestry or agricultural excavator	18 inches on either side of the facility plus the width of the facility	Any excavation within the tolerance zone should be performed with hand tools until the marked facility is exposed. Maintain a safe clearance between the underground utilities or facilities and the cutting edge or point of any power or mechanized equipment, taking into account the known limit of control of the cutting edge or point to avoid damage to utilities or facilities.	2	LA Underground Utilities and Facilities Damage Prevention Law La. Rev. Statute Ann. § 40:1749.11-1749.26	www.laonecall.com	LA Line Marking

STATE ONE-CALL REQUIREMENTS FOR LINE MARKING AND TOLERANCE ZONE SPECIFICATIONS

State	District	Summary of Operator Line Marking Requirements or Best Practices	Excavator Notice Requirements	Excavation Ticket Life	Tolerance Zone or Approximate Location Definition	Duties of Excavator Within Tolerance Zone or Approximate Location	Minimum # of Days for Operator to Respond	Statutory Reference Excavation Law	One Call Web Site	Line Marking Reference
Maine	East	Mark with paint, stakes, flags, or other customary methods and where possible indicate width of facility.	72 hours but not more than 30 days in advance excluding Saturday, Sunday and official Maine holidays.	60 Calendar Days	18 inches on either side of the facility	No use of mechanical means of excavation within tolerance zone until facility is exposed by hand tools or air vacuum excavation. After facility has been exposed reasonable precautions must be taken.	2	ME Protection of Underground Facilities Me. Rev. Stat. Ann. Tit 23, § 3360-A	www.digsafe.com	ME Line Marking
Maryland	East	A facility owner shall mark the location of its underground facility by marking on the ground within 18" on a horizontal plane on either side of the UG facility. The Owner shall mark using the APW uniform color sode	2 (Code of Md, Pub. Util. §12–126.(c) and §12–127.(a))	12 (Code of Md, Pub. Util. § 12–124.(c)(3))	18" (Code of Md, Pub. Util. § 12–126.(b)(1))	Code of Md, Pub. Util. §12–127. (c) (1) A person performing an excavation or demolition shall exercise due care to avoid interference with or damage to an underground facility that an owner–member has marked in accordance with § 12–126 of this subtitle. (2) Before using mechanized equipment for excavation or demolition within 18 inches of an underground facility marking, a person shall expose the underground facility to its outermost surfaces by hand or other nondestructive techniques. (3) A person may not use mechanized equipment to excavate within 18 inches of the outermost surface of an exposed underground facility.	2	See Maryland Statutes, Article: Public Utilities (gpu), Section 12-101 to 12–135 (http://mgaleg.maryland.gov/webmga/frm1st.aspx?tab=home) Also see One-Call Center Website for Information on State Law.	www.missutility.net	
Massachusetts	East/ Northeast	Single paint mark 2"x18" long (spaced 3 paces or 10ft) and/or stakes or flags that include pipe diameter. If involved, markers indicating Company name/number/logo is required.	At least 72 hours, exclusive of Saturdays, Sundays and legal holidays but not more than 30 days before the proposed excavation.	30 Calendar Days	18 inches on either side plus the width of the facility	Excavating in close proximity to the underground facilities of any company, nonmechanical means shall be employed, as necessary, to avoid damage in locating such facility, and any further excavation shall be performed employing reasonable precautions to avoid damage.	3	MA Dig Safe Law Mass. Gen. Laws ch. 82, § 40 to 40E	www.digsafe.com	MA Line Marking
Michigan	Central	A facility owner or facility operator shall mark the location of each facility with paint, stakes, flags, or other customary methods using the uniform color code of the American national standards. Michigan Damage Prevention Board has best practices with follow APWA and CGA.	At least 72 hours, but not more than 14 calendar days	21 Calendar Days	Caution zone 48 inches. Approximate location 18 inches plus the width of the facility. See revised statute effective April 1, 2014	An excavator shall expose all marked facilities in the caution zone by soft excavation, use of hand tools, vacuum excavation, . If conditions make complete exposure of the facility impractical, an excavator shall consult with the facility owner or facility operator to reach agreement on how to protect the facility. An excavator may use power tools and power equipment in a caution zone only after the facilities are exposed or the precise location of the facilities is established.	3	MI Underground Facility Damage Prevention and Safety Act 174 § 460.721 to 460.733	www.missdig.org	MI Best Practices
Missouri	West	Use of paint, flags, stakes, or other clearly identifiable materials to show the field location of underground facilities, or the area of proposed excavation, in accordance with CGA best practices and color code standards.	At least two working days (beginning at 12:00am), but not more than ten working days.	10 Calendar Days, or as long as marks are visible	24 inches on either side plus the width of the facility	Working within the approximate location hand digging, pot holing when practical, soft digging, vacuum methods, use of pressurized air or water, pneumatic hand tools or other noninvasive methods to confirm the location.	2	MO Underground Facility Safety and Damage Prevention Act Mo. Rev. Stat. § 319.010 to 319.050	www.mo1call.org	MO Best Practices
Nevada	West	An operator shall make a reasonable effort to make the markings in a manner consistent with industry standards. The operator shall use the identifying criteria and colors set forth by the Nevada PUC and the APWA	2	28 (NAC 455.165.1)	24" (NRS 455.082)	NRS 455.137. 1. Except as otherwise provided in subsection 2, the person responsible for an excavation or demolition shall, before using any mechanical equipment, determine the exact location of a subsurface installation that is affected by the excavation or demolition by excavating with hand tools or by any other method agreed upon by the person responsible for the excavation or demolition and the operator within the approximate location of the subsurface installation as designated by markings made in accordance with NRS 455.133.	2	Nevada Revised Statutes (NRS), Chapter 455, §§ 455.080 to 455.180. Excavation or Demolition Near Subsurface Installations (http://www.leg.state.nv.us/NRS/NRS-455.html) Also see One-Call Center Website for Information on State Law.	www.usanorth.org	
New Jersey	East/ Northeast	Paint, stakes or marking material that makes suitable mark, 'whisker' where paint is not suitable. Approx. 2" wide 8"-10" long, no more than 25 feet apart. Facility type, (e.g. P, PP). Flags of suitable color with operator initials/name and 811.	3 working days but not more than 10 days	45 Calendar Days	24 inches from the outside wall of the facility	Mechanized equipment shall not be operated within 2 feet horizontally of the outside wall of any underground facility marked unless it has been first located by hand digging. Mechanized equipment shall be used with proper care and adequate supervision.	3	NJ Underground Facilities Act Law N.J. Stat. Ann. §48:2-73 to 48:2-91	www.nj1-call.org	NJ Line Marking
New York	East/ Northeast	Mark with stakes or surface markings over center of facility. Indicate size of facility and or casing. Indicated facility type (e.g. PP)	2 but not more than 10 days in advance of start date, not counting date of call. Excluding holidays and weekends.	10 calender days if excavation does not start or is postponed for more than 10	One-half of the known diameter plus two feet, on either side of the designated center line or, if the diameter of the underground facility is not known, two feet on either side of the designated center line.	After verifying the location of an underground facility, the excavator shall not employ powered or mechanical excavating equipment closer than 4 inches in any direction from the staked, marked or otherwise designated or known outside diameter or perimeter of such facility or its protective coating unless agreed to in writing by the operator of the affected underground facility. Any such written agreement shall be furnished to the excavator by the operator, upon request Operators or their agents may use powered equipment within their own tolerance zone.	2	NY Protection of Underground Facilities N.Y. Industrial Code Rule 753-1 to 753-6.9	www.digsafelynewyork.com (north of 5 Boroughs) www.newyork-811.com (5 Boroughs and Long Island)	NY Line Marking
North Carolina	South	Marked with stakes or by other physical means by APWA color standards.	Not less than two nor more than 10 working days prior to starting.	15 Calendar Days (Updates must be done on 13th day if going to continue past 15 days)	The width of the location tolerance zone includes 24 inches on each side of the utility plus the width of the utility itself.	Maintain a clearance between an underground utility and the cutting edge or point of any mechanized equipment, taking into account the known limit of control of that cutting edge or point, as is reasonably required to avoid damage.	3	NC Underground Damage Prevention N.C. Gen. Stat. §87-101 to 87-114	www.nc811.org	NC Line Marking

STATE ONE-CALL REQUIREMENTS FOR LINE MARKING AND TOLERANCE ZONE SPECIFICATIONS

State	District	Summary of Operator Line Marking Requirements or Best Practices	Excavator Notice Requirements	Excavation Ticket Life	Tolerance Zone or Approximate Location Definition	Duties of Excavator Within Tolerance Zone or Approximate Location	Minimum # of Days for Operator to Respond	Statutory Reference Excavation Law	One Call Web Site	Line Marking Reference
Ohio	Central	Paint, stakes or marking material that makes suitable mark, 'whisker' where paint is not suitable. Approx. 2" wide 8"-10" long, min of 2 feet but no more than 50 apart and clearly identify the route of the facility. If flags are used its recommended operator name and phone number are on the flag.	At least 48 hours but not more than 10 working days.	Indefinite, as long as marks are visible	18 inches on each side plus the width of the facility	When approaching and excavating within the tolerance zone of underground utility facilities with powered equipment, require an individual other than the equipment operator, to visually monitor the excavation activity for any indication of the underground utility facility; "Nondestructive manner" means using low-impact, lowrisk technologies such as hand tools, or hydro or air vacuum excavation equipment.	2	OH Building Standards Code Ohio Rev. Code §3781.25 to 3781.32	www.oups.org	OH Line Marking
Pennsylvania	Central/ East	Mark with stakes or surface markings over center of facility. Indicate size of facility, owner by initials (e.g. BPL) and type (e.g. PP)	Not less than three nor more than ten business days in advance, excluding weekends and holidays. Business day begins at 12:00am.	If an excavator removes their equipment and vacates a site for more than 2 days, One Call center must be notified again.	The horizontal space within 18 inches of the outside wall or edge of a line or facility.	To exercise due care; and to take all reasonable steps necessary to avoid injury to or otherwise interfere with all lines where positions have been provided to the excavator by the facility owners. Within the tolerance zone the excavator shall employ prudent techniques, which may include hand-dug test holes to ascertain the precise position of such facilities. Refer statute when facility location has NOT been provided by owner.	2	PA Underground Utility Line Protection Law Act 287 73 P. S. § 176 et. Seq	www.paonecall.org	PA Line Marking
Puerto Rico	South									
South Carolina	South	The location shall be marked by stakes, paint, flags, or any combination thereof with appropriate color by facility type. Show width if greater than 3 inches in diameter, the dimension of the facility will be indicated at least every twenty-five feet. Operators who operate multiple facilities in the same trench shall locate each facility individually.	Within 3 to 12 full working days before commencing excavation, not including day of the call.	15 Calendar Days	One half the known diameter of the facility plus 24 inches on either side of the designated center line; if unknown, 24 inches on either side of the outside edge of the mark indicating a facility; or for subaqueous facilities (rivers, streams, lakes, waterways, swamps, bogs) , a clearance of 15 feet on either side of the indicated facility.	An excavator may not perform any excavation or demolition within the tolerance zone unless the following conditions are met: no use of mechanized equipment, except non-invasive equipment specifically designed or intended to protect the integrity of the facility, within the marked tolerance zone of an existing facility until: the excavator has visually identified the precise location of the facility, or has visually confirmed that no facility is present up to the depth of excavation; and reasonable precautions are taken to avoid any substantial weakening of the facility's structural or lateral support, or both, or penetration or destruction of the facilities or their protective coatings	3	South Carolina Underground Facility Damage Prevention Act S.C. Code §58-36-10 to 58-36-120	www.sc811.org	SC Line Marking
Tennessee	South	By means of stakes, paint, flags, or a combination thereof identifying type of facility by color and operator initials.	Within 3 to 10 working days, not including weekends or holidays.	15 Calendar Days	Saftey zone means a strip of land at least four feet (4') wide, but not wider than the width of the utility plus two feet (2') on either side of the utility.	Maintain a clearance between an underground utility and the cutting edge or point of any mechanized equipment, taking into account the known limit of control of such cutting edge or point, as may be reasonably necessary to avoid damage to such facility.	3	TN Underground Utility Damage Prevention Act Tenn. Code Ann. §65-31-101 to 6531-113	www.tennessee811.com	TN Line Marking
Texas	South	APWA standard, ANSI Color, a locator shall mark by means of stakes, paint, flags, or a combination of two or more of these 8" to 10" Length 1"-2 " Wide; Max 20 ft. Spacing and except when spot marking or other suitable marking is necessary	Not earlier than the 14th day or later than the 48th hour before excavation is to begin excludes weekends and holidays.	14 Calendar Days	Half the nominal diameter of the underground pipeline plus a minimum of 18 inches on either side of the outside edge of the underground pipeline on a horizontal plane.	An excavator shall exercise such reasonable care as may be necessary to prevent damage to any underground pipeline in or near the excavation area, to include hand digging when practical, soft digging, vacuum excavation methods, pneumatic hand tools.	2	TX Underground Pipeline Damage Prevention TAC Chapter 18 AND Underground Facility Damage Prevention and Safety Tex. Util Cod Ann. §251.001 to 251.203	www.texas811.org	TX Line Marking
Virginia	East	By means of stakes, paint, flags, or a combination thereof identifying type of facility by color. Use of operator initials. Refer to Virginia Underground Utility Marking Standards for specific standards.	48 hours, beginning at 7 am of the next business day after notice is provided. Excluding weekends and holidays.	15 Calendar Days, excavator must renotify 3 working days prior to end of 15 days to continue work	2 feet or 24 inches on either side of the facility	Within the tolerance zone an excavator duties shall include but not limited to: Exposing the underground utility line to its extremities by hand digging; not utilizing mechanized equipment within two feet of the extremities of all exposed utility lines; and protecting the exposed utility lines from damage.	3	VA Code Underground Utility Damage Prevention Act Va. Code Ann. §56-265.14 to 56265.32	www.va811.com	VA Line Marking
Wisconsin	West	Facility is marked with paint, flags, stakes or other physical means, width of facility to be indicated, sufficient quantity to identify route.	Not less than 3 working days but not more than 10	Repeat notice if excavation does not commence or is interrupted for more than 10 Calendar Days	18 inches on either side of the facility	Within the tolerance zone you must hand dig. When the underground transmission facility becomes exposed or if the transmission facility is already exposed, the excavator may reduce the clearance to 2 times the known limit of control of the cutting edge or point of the equipment or 12 inches, whichever is greater.	3	WI Damage to Transmission Facilities Wis. Stat. Ann. §182.175	www.diggershotline.com	WI Line Marking

Flag Requirements:				APWA Line Practice:	
Operator Phone Number High Pressure Product Diameter and Depth Logo				Yellow lines of 18" to 24" length and 2" width 6" high BPL initials every 100 feet, or at start and end of the line. Indicate number of lines or use "H" for corridor marking. Indicate the Diameter and Depth of the line if known. Pressure of and termination points should be marked if known.	
Overall Marking Req:			APWA Appendix A Pg. 5		

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1. Purpose

The purpose of this procedure is to address the policy, procedure, and responsibility for line locating and marking procedures.

2. Roles and Responsibilities

See below.

3. Definitions

See below.

4. Procedure

4.1 Introduction

A fundamental element of Damage Prevention is accurately locating and clearly marking the pipeline in response to One Call locations. Buckeye's policy is that pipelines shall be accurately identified and marked in compliance with State One Call requirements prior to Buckeye or Contractor excavation activity. Location by the procedures outlined in this

section is necessary because maps and geographic information systems often lack the pinpoint precision needed to ensure safe and proper clearances. There is no room for error in Line Locating and Marking Procedures. Mastery of the line locating and marking skill sets is required and essential to the life safety of Buckeye employees and the public at large.

4.2 Line Location and Marking Policy

4.2.1 Pipelines shall be accurately identified and marked in compliance with State One-Call requirements identified in Section 5, Exhibit A prior to Buckeye or Contractor excavation activity.

4.2.2 When located, pipelines shall be marked with paint and flags, or wood stakes per the applicable State requirements within the project limits found in Section 5, Exhibit A. The "project limits" is defined as area in which the excavation and construction activity is to take place. Buckeye or Contractor shall be notified that the pipeline location has been completed.

4.2.3 Follow Section 5 – One Call as necessary. Buckeye Pipeline and Terminal Protectors shall be knowledgeable of the applicable State One Call marking requirements and mark the lines in according with State One Call Marking Procedures specified in Section 5, Exhibit A. Information on abandoned facilities is provided when possible. Line location procedures shall be followed according to the applicable state One Call requirements when the presence of an abandoned pipeline facility is known.

4.3 Procedures for Locating and Temporarily Marking a Pipeline

4.3.1 Review the local pipeline atlas to get the detailed location of the pipeline you are planning to locate to determine if there are any protruding pipe fittings or related equipment that may reside inside the project limits of the One Call excavation area.

Review the pipeline atlas, facility and construction drawings, Buckeye's Geographical Information System (GIS), and Integrity Alignment Sheets (or Smart Pig Logs) to determine the location of pipeline taps, stopples, flanges, valves, extensions, tubing, and any other appurtenances or any unusual equipment configurations that could become damaged by the excavator and cause a release. These information sources are to be used to also identify any test stations, flanges, valves, or above ground piping that may be used to obtain a direct physical connection of the line locating transmitter to perform a **conductive method** pipeline location.

CAUTION: Mapping information is for guidance ONLY. The Pipeline and Terminal Protector must NEVER solely rely on mapping information to locate and mark the pipeline. The procedures prescribed in Section 6 shall be followed to safely locate and mark the pipeline.

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Review the area for potential traffic concerns and take appropriate precautionary measures as required by Safety Manual Section C-12 - Traffic Control.

If the pipeline locating task is being performed by more than one person, conduct a pre-job safety meeting to discuss and address any site-specific hazards that were identified and document the meeting in the Work Order.

4.3.2 Use a line locator to locate the pipeline you are identifying. In accordance with Section 4.4, use the conductive method to make a direct physical connection of the line locating transmitter to locate and mark the pipeline. If it is not possible to use the conductive method as defined in 4.4.3, then proceed by using the inductive method.

4.3.3 Once the line has been electronically located and an approximate depth has been determined with the line locator using the conductive or inductive method, use a probe to search for the line and verify that the pipeline location is correct.

4.3.4 If the line is less than twenty four (24) inches in depth, excavate the line with hand tools if probing cannot be used to verify the pipeline's location.

4.3.5 Once the pipeline location has been determined, mark the entire location within the project limits with paint and flags or wooden stakes as specified in Section 5, Exhibit A. In the event there are multiple pipelines within a corridor, utilize paint to effectively identify and differentiate among the various pipelines by adding company name and pipe diameter.

4.3.6 After marking the pipeline, a Buckeye Pipeline and Terminal Protector shall take a digital photograph (or photographs) of Buckeye's marked pipeline. Promptly save the photograph(s) to the JDE Work Order ("Work Order") or the One-Call ticket management system. These photographs will serve as proof that a Buckeye pipeline was marked within the required timeframe in case the markings are removed without authorization. For all "Involved" excavations within twenty five (25) feet of the pipeline, the Buckeye Pipeline and Terminal Protector shall ensure that photographs of the line marking and a copy of the completed Excavation Safety Checklist are attached to the Work Order or the One Call ticket management system. Photographs shall be promptly saved in the manner instructed above to increase the likelihood of their retention.

4.3.7 Once the pipeline locate is complete, the work area shall be returned to a clean and safe status. All test pits and tripping hazards shall be addressed to ensure that all potential hazards are removed before vacating the premises.

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NOTE: The determination of the location of the pipeline is the Buckeye Pipeline and Terminal Protector's responsibility. The Buckeye Pipeline and Terminal Protector shall be certain the pipeline has been located correctly. If there is any uncertainty regarding the exact pipeline location, the Buckeye Pipeline and Terminal Protector shall have the pipeline excavated to verify its precise location.

4.4 Procedure for Using a Line Locator

4.4.1 Carefully read and develop proficiency with the material continued in the owner's manual supplied with your line locator for specific operating instructions.

4.4.2 Inspect line locating equipment prior to use. Check the battery charge level in the transmitter and the receiver and verify that you have adequate battery level for the work tasks scheduled for the day. Obtain a spare back-up battery if available before travelling to the project site.

4.4.3 DO NOT turn on the line locating transmitter until the cables are properly attached in accordance with 4.4.4 and 4.4.5. Use the conductive method of making a direct physical connection to the line locating transmitter whenever possible to locate and mark the pipeline. The Pipeline and Terminal Protector shall walk up to one thousand (1,000) feet both upstream and downstream of the project limits of the One Call excavation location to identify a direct physical connection of the line locating transmitter to any test station, flange, valve, appurtenance, above ground piping, or exposed pipe. If a direct physical connection of the line locating transmitter to the pipeline is not possible within one thousand (1,000) feet upstream and downstream of the project limits of the One Call excavation location, then the inductive method may be used. When using the inductive method, check for air coupling and position the transmitter at least fifty (50) feet from the project area where you are going to locate and mark the pipeline.

NOTE: The inductive method involves positioning a transmitter near the conductor without attaching wires.

4.4.4 Using the transmitter, connect the ground cable (usually black) to a ground stake or plate placed perpendicular (90-degree angle) to the line. The ground wire shall not pass over any other conductor.

4.4.5 Before connecting the positive conductor cable, make sure there are no product vapors present in the connection area as there may be potential for a spark upon connection due to stray current. Using the transmitter, connect the conductor cable (usually red) to wires in a test station, flange, valve, or exposed pipe. Do not attach the conductor cable to a green casing wire.

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4.4.6 Turn on the transmitter and the receiver.

CAUTION: When changing conductor wires, turn the transmitter off prior to switching the connection to eliminate the potential for sparks.

4.4.7 Sweep the area to find the null (mute) tone point on the receiver and/or the highest number displayed. Locate a number of points in sequence to determine the direction and location of the pipeline.

4.4.8 When using the inductive method, switch the position of the transmitter with a located site to verify the initial pipeline position.

4.4.9 When locating a Buckeye pipeline within a multiple pipeline corridor, use the multi-frequency pipeline locator setting. First, set the frequency range to its lowest setting. Using the low setting prevents the signal from mistakenly identifying other pipeline facilities.

4.4.9.1 Closely monitor frequency, voltage, and depth readings. If these indicators change drastically, you have most likely located an adjacent pipeline instead of Buckeye's pipeline.

4.4.10 Consider the pipe depth reading to be only an estimated depth to the center line. Do not rely on this reading as an accurate measurement.

4.4.11 Use approved excavation methods (See Sections 07 through 13 - Excavation and Backfill) to verify the location of parallel lines in a multiple pipeline corridor.

4.4.12 When line separation activities are necessary, follow the safety procedures in the Safety Manual, Section B-04 - Line Separation and Valve Removal to ensure the correct line has been identified.

4.5 Procedure for Locating a Pipeline Using an Air or Water Jet and Vacuum Excavation

4.5.1 The intent of this procedure is to protect the pipeline coating from damage during a technique used to locate and determine the depth of a pipeline using a high-pressure air or water jet. The high-pressure jets shall be prevented from contacting the pipe coating during the excavation to locate the pipeline. Monitor the excavation closely to prevent pipeline contact.

4.5.2 The technique uses a high-pressure air or water jet and vacuum system to remove the dirt and water from a small diameter hole over the pipeline. This method should not be used for pipelines deeper than ten (10) feet. Consider soil stability, potential groundwater and potential obstructions or debris in the soil that may prevent the completion of the test hole.

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4.5.3 Excavating equipment typically used in this type of work includes: Badger Daylighting, Jet-Vacs by Ring-O-Matic Manufacturing, Inc. and Vac-Tron by American Manufacturing and Machine, Inc.

4.5.4 Use a line locator to locate the pipeline and determine its estimated depth.

4.5.5 If present, remove pavement over the pipeline to create two (2) openings eighteen (18) inches in diameter and not less than three (3) feet apart.

4.5.6 Excavate a twelve (12) inch diameter hole to a depth no greater than eighteen (18) inches directly above the pipeline. Mark the air or water jet wand with tape for a visual reference; be keenly aware that the water jet extends beyond the end of the wand.

4.5.7 The air or water jet **SHALL NOT** be allowed to contact or expose the pipeline.

4.5.8 Locate the pipeline through the remaining eighteen (18) inches of soil with a non-conducting hard rubber/plastic tipped probe. Probe the width of the pipeline. If the pipeline is operating, place the probe bar on the pipeline and listen for the flow of the product.

4.5.9 Do not expose the pipeline.

4.5.10 Repeat the procedure at the second location approximately three (3) feet away from the original excavation to verify the alignment and depth of the pipeline. Compare the depth observed at each location. If there is a difference of more than four (4) inches between the two depths, one of the pipeline locations may be incorrect.

4.5.11 If elevation of the pipeline is needed, the pipeline should be located and the probe left in contact with the pipe; survey readings should be taken on the handle of the probe and the length of the probe should be measured. The surveyor can then determine the proper elevation of the pipeline from these measurements.

4.5.12 If the excavation is in a roadway, backfill the excavation with approved granular fill and compact as required. If the backfill material is not specified, fill the excavation with a free-flowing sand and gravel mix and tamp the backfill every eight (8) inches.

4.5.13 If the excavation is not in the roadway, backfill with sand and tamp periodically; mound the sand over the hole. Material excavated from the hole can be used for backfill if the material is granular and can be compacted.

4.5.14 Do not leave excavations uncovered or open when the locating is complete.

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4.5.15 At no time should an air or water jet operating at a pressure greater than one hundred fifty (150) pounds per square inch be allowed to contact the pipeline. If an air or water jet at a pressure more than one hundred fifty (150) pounds per square inch contacts the pipeline, the pipeline shall be exposed and the coating examined for damage and repair.

5. Flowcharts

Not applicable.

6. Documentation

Not applicable.

7. Remediation

Not applicable.

8. Other Manual References

Not applicable.

9. Appendices

Not applicable.

10. Forms

Not applicable.

11. Exhibits

Not applicable.

12. Change Log

For an overview of the manual revision process, please refer to 1.01 – Introduction to Using and Revising Manuals.

For a log of all revisions to this manual, please refer to 1.04 – Log of Revisions.

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Rev #	Date	Prepared by (Name/Title)	Reviewed by (Name/Title)	Approved by (Name/Title)	Summary of Change(s)
7	11/24/21	Michael Detweiler			New template applied.
8	12/29/21	L. Hughes - Codes, Standards, and Publications Lead	MRT	• C. Ostach - VP Operations Services • J. Burdett - Director Transportation Operations	Updated 'Pipeline Protector' to 'Pipeline and Terminal Protector' throughout

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1. Purpose

The purpose of this procedure is to address excavation preparation.

2. Roles and Responsibilities

See below.

3. Definitions

Not applicable.

4. Procedure

4.1 Excavation Planning

4.1.1 Review facility drawings, the pipeline atlas, Buckeye's Geographical Information System (GIS), and Integrity Alignment Sheets (or Smart Pig Logs) to determine the location of appurtenances (line taps, valves, extensions, tubing) and any unusual equipment configurations that could become unintentionally damaged by the excavator and cause a dangerous pressure release.

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4.1.2 Determine if the expected excavation methods, dimensions, and workspace requirements are permitted within the rights under the pipeline right-of-way easement, license, lease, or permit. Verify pipeline right-of-way widths are sufficient to provide adequate area for trench excavation, spoil storage, workspace, etc. Revise the excavation plan if necessary or contact the associated Regional Right of Way, Real Estate and Damage Prevention Specialist to acquire additional workspace or right-of-way.

Refer to the guide for estimated disturbance widths.

The Estimated Width of Disturbance Table below should be used by the Right of Way, Real Estate, and Damage Prevention Specialist to:

- Determine the total top width of trench prior to mobilizing excavation crews
- Estimate the minimum width of construction workspace needed
- Determine how much additional temporary easement width is needed related to pipeline maintenance activities when the permanent easement width is insufficient to accommodate maintenance activity work
- Identify areas where alternate construction methods will need to be utilized due to lack of sufficient workspace
- Justify permanent easement widths for new pipeline installations
- Justify permanent easement widths for existing pipeline relocations

This ROW Construction Width Guideline should be applied where practical with the understanding the application of this Guideline may not be possible for all field conditions.

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ROW Construction Width Guideline for Permanent or Temporary Easement Work Space

Estimated Width of Disturbance

Pipe Depth of Cover

(feet)

Pipe Diameter (inches)	3		4		5		6		7		8		9		10		11		12	
	Width (feet)		Width (feet)		Width (feet)		Width (feet)		Width (feet)		Width (feet)		Width (feet)		Width (feet)		Width (feet)		Width (feet)	
	Top of Trench	Total	Top of Trench	Total	Top of Trench	Total	Top of Trench	Total	Top of Trench	Total	Top of Trench	Total	Top of Trench	Total	Top of Trench	Total	Top of Trench	Total	Top of Trench	Total
4	20	65	23	74	26	84	29	94	32	105	35	117	38	130	41	144	44	158	47	174
6	21	67	24	76	27	86	30	97	33	108	36	120	39	133	42	147	45	162	48	177
8	22	69	25	78	28	88	31	99	34	111	37	123	40	136	43	150	46	165	49	180
10	22	71	25	80	28	90	31	101	34	113	37	126	40	139	43	153	46	168	49	184
12	23	73	26	82	29	93	32	104	35	116	38	129	41	142	44	156	47	172	50	187
14	24	75	27	85	30	95	33	106	36	119	39	131	42	145	45	160	48	175	51	191
16	24	77	27	87	30	97	33	109	36	121	39	134	42	148	45	163	48	178	51	195
18	25	79	28	89	31	100	34	112	37	124	40	137	43	151	46	166	49	182	52	198
20	26	81	29	91	32	102	35	114	38	127	41	140	44	154	47	170	50	185	53	202
24	27	85	30	96	33	107	36	119	39	132	42	146	45	161	48	176	51	192	54	209
30	29	92	32	103	35	115	38	128	41	141	44	156	47	171	50	187	53	203	56	221
36	31	99	34	111	37	123	40	136	43	150	46	165	49	181	52	197	55	215	58	233

Assumptions: Total width includes spoil pile width, top of trench width and equipment work space width of 10 feet.
Open trench excavation in Type C soils, slopped 1.5H : 1V

Example: a Pipe Diameter of twelve inches (12”) with a Depth of Cover of three feet (3’) indicates a Top Width of Trench excavation of twenty-three feet (23’) and a Total Width of seventy-three feet (73’) needed to accommodate the construction activity.

4.1.3 Contact all underground utility companies in the proximity of the proposed excavation and advise them of Buckeye's intent to excavate. Maintain a written record of these contacts.

4.1.3.1 Mark the intended excavation site with white paint, flags, stakes, or an applicable combination in accordance with Section 5, Exhibit A, and then make a One-Call for notification to underground facility owners (see Section 5).

NOTE: In the event Buckeye needs to perform an emergency excavation on any facilities, make an emergency One Call notification to the appropriate State One Call Center. Proceed as permitted under applicable state one call laws and internal procedures.

4.1.3.2 Work with the affected underground utility companies to locate and mark their facilities and ensure that no underground facility conflicts exist.

Should Buckeye fail to get a response from facility owners notified through the One Call system, Buckeye shall notify the appropriate state One Call center of the issue and seek further guidance as directed through the appropriate state one call laws.

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4.1.3.3 Facility location and direction shall be located (see Section 6), marked, and identified as per uniform color code and marking symbols (see Section 7, Exhibit A - Uniform Color Code and Marking Symbols). The excavator shall maintain all established reference stakes and markings during excavation activities. It is recommended that the excavator take a digital photograph of the marked working area to document the placement of the markings provided by the facility owners.

4.1.4 Before any excavation work may begin, Buckeye or contracted excavator shall:

4.1.4.1 Obtain all required permits and notify the affected property owners of the need to enter their property to maintain Buckeye's facilities.

4.1.4.2 Whenever one acre or more is disturbed at a particular construction site, a Notice of Intent (NOI), Storm Water Pollution Prevention Plan (SWPP), and Notice of Termination (NOT) under EPA's National Pollutant Discharge Elimination System (NPDES) Construction Storm Water Program shall be prepared and submitted to the proper regulatory agency (exception: if runoff from the site can be controlled to prevent a discharge to receiving waters, an NPDES permit is not required). Additional State requirements shall also be followed (public notice, municipal and county notification, Soil Conservation District SWP/E&S Plan Approval, Post Construction Storm Water Management Plan, and Fees).

4.1.4.3 For projects potentially disturbing wetlands, obtain appropriate wetland permits and notify the Health, Safety, Security and Environmental (HSSE) department before commencing any activities.

4.1.5 Determine the location of the nearest pipeline emergency shut-off valves and review emergency response procedures.

4.1.6 Advise the nearest attended upstream location and Control Center of the proposed and/or ongoing work. Request and obtain system operational status, pressure data, and petroleum or product type from the Control Center.

4.1.7 Buckeye's Pipeline and Terminal Protector shall review all the applicable items on Section 7, Form A - Excavation Safety Checklist with the excavator prior to beginning excavation work and emphasize:

- Advising the Contractor or property owner (as applicable) to notify the One Call Center by calling 811 if they haven't already done so.
- Acquiring a copy of written project plans and drawings.

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- Correctly identifying all underground facilities prior to digging.
- The hazards of digging near a high-pressure petroleum or gas pipeline.
- The procedure for safely excavating near a high-pressure pipeline.
- A representative from Buckeye shall monitor (visit) the site daily when work is performed within 25 feet of a Buckeye pipeline.
- A representative from Buckeye shall be present continuously to observe when excavation activity occurs within 10 feet of a Buckeye pipeline.
- The excavator shall call 800-331-4115 if he/she is ready to excavate and a Buckeye representative is not present. A Buckeye representative will be sent to the site free of charge.
- No powered excavation equipment may be used within the Tolerance Zone of the pipeline until its exact depth and size are verified by probe bar inspection and placement. See Section 5, Exhibit A. The Tolerance Zone is 18", 24" or 30" depending on the State where the excavation is occurring.
- Soil within the Tolerance Zone as defined by Section 5, Exhibit A (either 18", 24" or 30" depending on the State where the excavation is occurring) shall be removed first by using low risk, low impact technologies such as hand tools, or air vacuum or water vacuum excavation (unless expressly prohibited by State One Call laws) until the pipeline's exact location, depth, size, and course are verified. See Section 5, Exhibit A for State Law guidance.
- Any damage to the pipe coating or pipeline shall be reported immediately to Buckeye, inspected by a Buckeye representative, and repaired prior to backfilling.
- The excavator is responsible for any damage to the pipeline. Buckeye will report non-compliant excavators to the authorities and may seek monetary compensation for all repair-related costs.

NOTE: Record work site description activity and contact information at the bottom of the Section 7, Form A - Excavation Safety Checklist. Request that the excavator representative sign the Excavation Safety Checklist to confirm that it was reviewed with him/her. If he/she refuses to sign, note this refusal in the Signature box. Attach photos of the line marking and a copy of the completed Excavation Safety Checklist to the JDE Work Order or the One Call Ticket Management System. Provide the excavator representative with a copy of the Excavation Safety Checklist.

4.1.8 Submission of a Work Impact Management Plan (WIMP) is required for any work being performed on any Buckeye-owned or operated asset, where such work may have an impact on active pipeline operations or may generate SCADA alarms that would be received by the Control Center. The requirements and forms for WIMPs are located in Maintenance Manual Section F-01 - Work Impact Management Plan.

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4.1.9 Buckeye's Rights Regarding Safe Pipeline Excavation

4.1.9.1 Buckeye's Pipeline and Terminal Protector shall be familiar with Buckeye's rights regarding safe pipeline excavation, communicate them to the excavator as applicable, and take the appropriate actions as identified below:

- It is the excavator's responsibility not to damage Buckeye's pipeline(s).
- Buckeye shall provide guidance to the excavator in excavating our pipeline(s). However, Buckeye is not required to conduct the excavation.
- Buckeye personnel shall professionally insist that Buckeye's applicable policy requirements (One Calls, Line Locating, Excavation and Backfill, Utility Crossing, and Right of Way Encroachments) are followed.
- The excavator shall comply with any special protective steps required by Buckeye to prevent damage to our pipeline(s).

4.1.9.2 When an excavator will not comply with Buckeye requirements:

- Warn the excavator that it is conducting a dangerous activity that can harm itself, the public, and the environment.
- Inform the excavator that Buckeye, as an underground utility operator, has extensive rights that are protected by Federal and State laws (Office of Pipeline Safety, Environmental Protection Agency, Occupational Safety and Health Administration, and State One-Call regulations).
- Warn the excavator that it is violating the law and that if it proceeds and damages Buckeye's pipeline(s) our Pipeline and Terminal Protector and other Buckeye personnel involved in attempting to prevent the unlawful and dangerous activity will participate in a formal complaint against the excavator.
- Call your Operations Manager, the Regional Right of Way Specialist, and the applicable Regional Operations Director, and request assistance. Discuss the need to call 911, the County Sheriff, or the State Fire Marshall. If applicable, the Regional Operations Director should consider contacting the excavator's senior management to resolve the issue.
- Collect names of the excavator's personnel and vehicle license plates and take photographs of the prohibited activity.
- Find out the name and phone number of the excavator's supervisor or the principal entity that has hired the excavator.
- Call the excavator's supervisor and the principal entity who hired the excavator (Developer, Township, Municipal Water Department, etc.). Explain that an immediately hazardous condition exists and that the supervisor and principal entity shall help correct it.

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- If the situation persists, contact the applicable Regional Vice President, Operations and Buckeye's Legal Department to discuss whether to notify the agency that issued the excavation/drilling permit (Highway Department, State Environmental Agency, etc.) and to discuss whether to acquire an injunction to stop the dangerous activity.

5. Flowcharts

Not applicable.

6. Documentation

Not applicable.

7. Remediation

Not applicable.

8. Other Manual References

Not applicable.

9. Appendices

Not applicable.

10. Forms

Planning
Section 7, Form A - Excavation Safety Checklist

11. Exhibits

Planning
Section 7, Exhibit A - Uniform Color Code and Marking Symbols
Determining Location
DPPM, Exhibit C - Excavation Limitations - Tolerance Zones

12. Change Log

For an overview of the manual revision process, please refer to 1.01 – Introduction to Using and Revising Manuals.

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For a log of all revisions to this manual, please refer to 1.04 – Log of Revisions.

Rev #	Date	Prepared by (Name/Title)	Reviewed by (Name/Title)	Approved by (Name/Title)	Summary of Change(s)
8	11/24/21	Michael Detweiler			New template applied.
9	12/29/21	L. Hughes - Codes, Standards, and Publications Lead	MRT	• C. Ostach - VP Operations Services • J. Burdett - Director Transportation Operations	Updated 4.1.7, 4.1.9.1, and 4.1.9.2 (Pipeline Protector to Pipeline and Terminal Protector)

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DPPM Section 7, FORM A – EXCAVATION SAFETY CHECKLIST

The information noted on this form is intended to communicate general information about our pipeline(s) and is not intended to be solely relied upon by any party for the purpose of excavation or any similar purpose.

By law, to enable all participating utilities time to mark their facilities, the **One Call Center** in your state requires notification by calling 811 prior to any excavation. Buckeye Partners, L.P. is a member of this One Call enterprise and will automatically be notified through this system. In addition, a Buckeye Pipeline and Terminal Protector will perform and/or review with the excavator representative the applicable checklist items below.

Pipeline Locate Activity:

☐ If plans are available, requested a copy of the written project plans and drawings for review with the excavator and/or engineer. Had the excavator and/or engineer explain the extent of the work area, location and depth of the excavation, type of proposed utilities, location of proposed utilities, number of utility crossings, etc.

☐ Established the pipeline(s) location and marked the line(s) per state One Call requirements throughout the entire work area.

☐ Photographed all established pipeline markings throughout the work area.

Communication with the Excavator and/or Engineer:

☐ **The excavator and/or engineer was advised that a Buckeye Pipelineand Terminal Protector must:**

- **Be a qualified Buckeye Pipeline and Terminal Protector.**
- **Monitor the excavation site daily when work is performed within 25 feet of a Buckeye pipeline.**
- **Observe continuously all excavation and backfill activity performed within 10 feet of a Buckeye pipeline or during the installation of any utility across a Buckeye pipeline facility.**
- **In addition, the excavator was instructed to call 800-331-4115 if they were ready to excavate within either above distance of a Buckeye pipeline and a Buckeye Pipeline and Terminal Protector was not present. When called a Buckeye Pipeline and Terminal Protector will be sent to perform the inspection, which is free of charge.**

☐ The excavator was advised that only backhoes or trackhoes with a steel plate welded across the teeth of the bucket are permitted to be used during excavation work around a Buckeye pipeline.

☐ The excavator was advised that the Buckeye Pipeline and Terminal Protector is required by law to perform an external inspection of any Buckeye pipeline exposed during excavation activity. The excavator understands that he/she is responsible as the qualified "Competent Person" who is designated to provide an OSHA compliant excavation under the requirements of 29 CFR Part 1926, Subpart P, ensuring the Buckeye Pipeline and Terminal Protector safe ingress and egress to and from the excavation to examine our exposed pipeline.

☐ Walked through the work area with the excavator and communicated the locations of all Buckeye pipelines in the planned work area.

☐ Discussed the number of pipelines, pipe size(s), approximate pressures, approximate depths, excavation tolerance zones, hand digging requirements, and the hazards and characteristics of product(s) in the pipeline system(s) located in the planned work area.

☐ The excavator was advised to call the One Call Center 811 or contact Buckeye, if the Buckeye markings are destroyed or need to be refreshed in the planned work area. This service is provided free of charge.

☐ The excavator was advised that before any exposed Buckeye pipeline can be backfilled, the Buckeye Pipeline and Terminal Protector will direct the placement of an orange warning mesh or yellow warning tape over the pipeline.

☐ The excavator was advised that **any contact** with the pipeline, pipeline coating, test station wiring, or anode beds **must be reported to Buckeye prior to backfilling the excavation** to permit further inspection of the damage to ensure continued safe pipeline operations.

☐ The excavator was advised that failure to comply with the conditions outlined above would result in Buckeye requiring the excavator to expose the pipeline again to allow an examination of the pipeline at the excavator's expense. If damage to the pipeline is discovered, Buckeye may seek monetary compensation for all repair costs. Buckeye may also report this activity to all concerned parties (State One Call Center, Regulatory Agencies, Principal Contractor, Excavator's Insurance Company, etc.).

If you are unable to reach the Buckeye Pipeline and Terminal Protector designated below, or **in case of an emergency,** request assistance as follows:

For excavation activities in IL, IN, MI, MO, NJ, NY, OH, PA, or WI, please call 1-800-331-4115.
For excavation activities in CT, FL, IA, LA, MA, ME, NV, TN, TX, or Southern California, please call 1-866-514-8380.
For excavation activities in Northern California, please call 1-800-307-1107.

One Call Ticket:		Line Segments:		
Work Order:		Mile Posts:		
Address				

Buckeye Information		Property Owner / Excavator /Engineer	
Date:		Name:	
Name:		Phone:	
Cell Phone:		Signature:	

UNIFORM COLOR CODE AND MARKING SYMBOLS

Utilize the following uniform color code and marking symbols (for temporary staking and street marking) to designate the location of underground facilities.

Yellow: Gas (G), Oil (O), Petroleum Products (PP), Steam (ST), Compressed Air (CA), Compressed Gases (CG), and all other hazardous liquid or gaseous materials.

Red: Electric Power Lines or Conduits (E).

Orange: Communication Lines or Cables including but not limited to Telephone (T), Telegraph (TG), Fire Signals (FS), Cable Television (CTV), Civil Defense, Data Systems, Electronic Controls, and other instrumentation.

Blue: Water (W) and High Pressure Water Lines (HPW) containing pressures in excess of 100 psig.

Green: Storm and Sanitary Sewer (S) including force mains and other nonhazardous materials.

White: Marking(s) for excavation limit(s) as indicated by on-site contractor.

Purple: Reclaimed Water, Irrigation and Slurry Lines

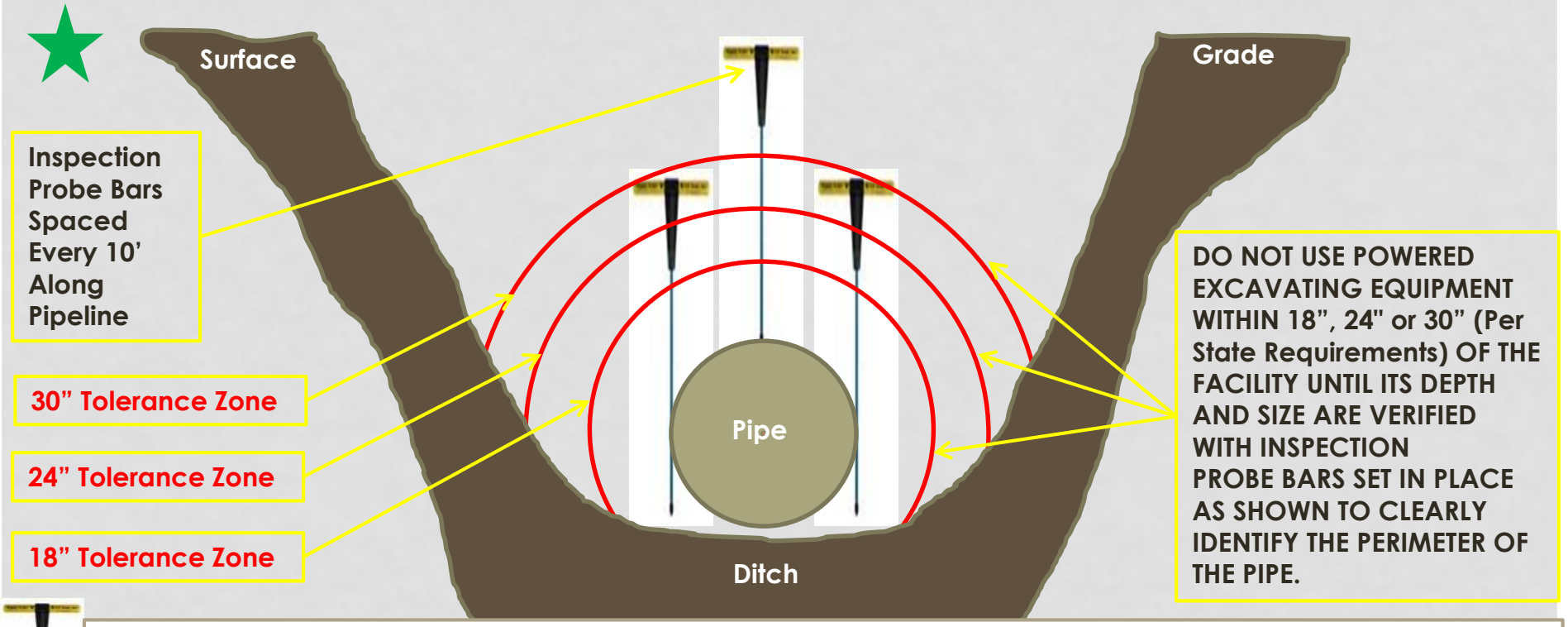
Fluorescent Pink: Temporary Survey Markings

NOTE: Buckeye's permanent line markers may include white posts with orange tops and/or yellow "Carsonite" posts.

Reference: 195.402(c)(14)
Reference: APWA Uniform Color Code

SECTION 7 DPPM, EXHIBIT C – EXCAVATION LIMITATIONS - TOLERANCE ZONES

NO mechanized power excavation can be used within Tolerance Zone as defined in Section 5, Exhibit A (18", 24" or 30") until facilities have been located using insulated probe bars (7.2.3) and initially exposed using hand tools.





After the pipeline is exposed using hand tools, soil within the Tolerance Zone, defined in Section 5, Exhibit A, shall be removed in a careful, prudent, non-destructive manner by using low-impact, low-risk technologies which are defined as hand tools, or where permissible under State One Call laws, water, air vacuum, or power excavation equipment.

** Not to scale*

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1. Purpose

The purpose of this procedure is to address excavation requirements.

2. Roles and Responsibilities

See below.

3. Definitions

Not applicable.

4. Procedure

4.1 All excavation activities that involve a Buckeye pipeline shall be monitored or assessed by a qualified Buckeye employee or representative (Pipeline and Terminal Protector).

4.1.1 "Involved" is defined as any excavation within 25 feet of a Buckeye pipeline.

4.1.2 A Buckeye representative shall monitor excavation activity that takes place anywhere from 10 to 25 feet from a Buckeye pipeline. “Monitor” is defined as inspecting the

excavation site at least daily to ensure the pipeline is not in danger of being damaged by the excavator.

4.1.3 A Buckeye representative shall observe and assess excavation activity that takes place within 10 feet of a Buckeye pipeline. “Observe and assess” is defined as being physically present at all times during the excavation work to prevent the pipeline from being damaged by the excavator. If a Buckeye representative is not present to probe and identify the pipeline, excavation activity may not begin within 10 feet of a Buckeye pipeline.

4.2 Only competent power equipment operators under continuous inspection by designated Buckeye personnel shall excavate within ten (10) feet of a Buckeye pipeline.

4.3 The excavator and Buckeye representative shall take all necessary precautions to prevent damaging underground facilities. Any accidental damage to pipe, coating, valves, corrosion protection wires, or other appurtenances shall be reported immediately to the Operations Manager. All damage shall be repaired prior to backfilling.

4.3.1 The Buckeye representative should take readings at any test stations or rectifiers at the work site to verify wires are functional prior to excavation.

4.3.2 The Buckeye representative should verify readings after excavation is complete, before the backfill, and once backfill is complete.

4.4 Type of excavation equipment (powered or hand tool) to be used for near proximity excavation with corresponding excavation limits is defined by DPPM, Exhibit C - Excavation Limitations - Tolerance Zones.

4.5 Carefully excavate at least twenty-four inches (24”) to a safe side of the facility (pipeline) being uncovered.

4.5.1 The Buckeye representative shall probe down and probe toward the side of the pipeline to identify its location. Excavation activity may continue after the Buckeye representative indicates when, where, how far, and in which direction it is safe to excavate with powered excavation equipment.

4.5.2 The Buckeye representative should enter the excavated area and continue to probe for the pipeline facility and determine and communicate to the excavator when, where, how far, and in which direction it is safe to excavate.

4.5.3 The Buckeye representative or assistants shall continue to probe for the facility and hand dig until the exact depth and position of the pipeline is positively verified and identified by positioning probe bars on both sides and immediately above the pipeline.

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4.6 After the top and sides of the pipeline are initially exposed using hand tools so that the vertical/horizontal position and the course/direction of the pipeline are known and visually confirmed, soil within the Tolerance Zone as defined by Section 5, Exhibit A (18", 24", or 30") of the facility shall be removed in a careful, prudent, non-destructive manner by using low-impact, low-risk technologies which are defined as hand tools, or other methods where permissible under State One Call laws, such as water, air vacuum, or mechanized power excavation equipment. Water or air vacuum equipment use is governed in Section 6.5.

4.7 Precautions shall be taken to protect against the hazards of soil instability and unsafe accumulation of vapors.

4.7.1 A protective sloping, shielding, or shoring system shall be installed in excavations five (5) feet or more deep, or as soil conditions warrant (see Section 9).

4.7.2 Unsloped vertical trenches five (5) feet or more deep require implementation of Hazardous Work Authorization Procedures (Safety Manual B-01) for Confined Space Entry (Safety Manual B-06), including continuous atmospheric monitoring, and the use of appropriate respiratory protection, a safety harness and lifeline by each entrant. Mechanical retrieval equipment shall be immediately available. If the trench contains a hazardous atmosphere, a standby entrant--in addition to the attendant--shall be equipped to immediately enter the trench and perform rescue functions.

4.7.3 Properly sloped excavations (regardless of depth) are not considered confined spaces and do not require special respiratory or rescue precautions unless free product is visible, vapor/gas seepage is probable, or a hazardous atmosphere exists.

4.8 Only backhoes and trackhoes with a steel plate welded across the teeth of the bucket are permitted to be used during excavation work within two feet of a Buckeye pipeline. This will lessen the potential to puncture the pipeline or create harmful gouges.

4.9 Precautions shall be taken any time Directional Drilling operations are conducted in the vicinity of underground facilities. Refer to DPPM Section 15 for additional requirements.

4.10 Excavation of pipelines on steep slopes (>20% grade) requires special attention. Refer to DPPM Section 10 for additional requirements.

5. Flowcharts

Not applicable.

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6. Documentation

Not applicable.

7. Remediation

Not applicable.

8. Other Manual References

Not applicable.

9. Appendices

Not applicable.

10. Forms

Not applicable.

11. Exhibits

Section 10, Exhibit A - Pipeline Support Details on Sloped Excavation
DPPM, Exhibit D - Support and Backfill Requirements

12. Change Log

For an overview of the manual revision process, please refer to 1.01 – Introduction to Using and Revising Manuals.

For a log of all revisions to this manual, please refer to 1.04 – Log of Revisions.

Rev #	Date	Prepared by (Name/Title)	Reviewed by (Name/Title)	Approved by (Name/Title)	Summary of Change(s)
7	11/24/21	Michael Detweiler			New template applied.
8	12/29/21	L. Hughes - Codes, Standards, and Publications Lead	MRT	• C. Ostach - VP Operations Services • J. Burdett - Director Transport	Updated 4.1 (‘Pipeline Protector’ to ‘Pipeline and Terminal Protector’)

				ation Operations	

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1. Purpose

The purpose of this procedure is to address sloping, shielding, and shoring excavations.

This procedure satisfies the following referenced regulation:

29 CFR, Part 1926, Subpart P – Excavations

2. Roles and Responsibilities

See below.

3. Definitions

See below.

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4. Procedure

4.1 Policy

4.1.1 To protect employees against cave-ins, a protective sloping, shielding, or shoring system shall be installed in each excavation five feet or more deep, unless the excavation is made entirely in stable rock. A protective system shall also be installed in excavations less than five feet deep if there is any indication of a potential cave-in. Shielding and shoring systems shall be designed and constructed to withstand the anticipated loads.

4.1.2 A Competent Person as defined in OSHA 29 CFR Part 1926, Subpart P who is capable of identifying existing and predictable hazards in the surroundings, and who can take prompt corrective measures to eliminate such hazards, shall be present while work is being conducted. A Competent Person is responsible for:

- Conducting soil testing by a visual and a manual method to determine the protective system(s) to be used in the excavation, and documenting the results;
- Removal of employees from the hazardous area where evidence of possible cave-in, failure of protective systems, hazardous atmospheres, or other hazardous conditions exists;
- Completing daily inspections of excavations that will be entered by personnel, the adjacent areas, and protective systems for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, and maintaining the documentation at the work site; and
- Identifying hazards and taking prompt corrective measures to eliminate identified and predictable hazards which endanger excavation entrants.

NOTE: When the Pipeline and Terminal Protector has any concerns about the safety of the excavation or the performance of the excavator, the Pipeline and Terminal Protector shall resolve these issues with the Competent Person. When these issues cannot be resolved with the Competent Person, follow Section 4 paragraph 4.2.2 and Section 7 paragraph 4.1.9.2 and promptly contact the owner of the excavation company and the Operations Manager to resolve these issues.

4.1.3 Excavations more than 20 feet deep require consultation with the Engineering Department and PE stamp approval for protective system design.

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4.2 Hazard Recognition and Prevention

4.2.1 The excavation shall be inspected daily prior to the start of work and after every hazard-increasing occurrence (rainstorm, equipment vibration, or surcharge loads) to detect potential cave-ins, failure of protective systems, and hazardous atmospheres.

4.2.1.1 Potential cave-ins are indicated by soil subsidence, cracking, shifting, or water undermining and seepage.

4.2.1.2 Corrective action shall be taken immediately to protect all employees.

4.2.2 Diversion ditches or dikes should be used to prevent natural drainage from entering an excavation. Buckeye employees are not permitted to enter an open excavation receiving surface water runoff that jeopardizes the safety of the employee or the excavation.

4.2.3 Accumulated water shall be pumped out of the excavation before employees are permitted to enter or continue work in the excavation. Dewatering of the excavated work area shall continue as long as the excavation is occupied and unsafe groundwater conditions are present within the excavation.

4.3 Special Precautions

4.3.1 Ladders or ramps (earthen or structural) shall be used to enter and exit excavations that are four (4) feet or more deep. Ladders or ramps shall be positioned at 25-foot intervals or less.

4.3.2 Keep heavy equipment and vehicles as far away from the edge of the excavation as practical.

4.3.3 Keep spoil, materials, and equipment at least two (2) feet away from the edge of the excavation.

4.3.4 Do not work under loads being handled by lifting or digging equipment.

4.3.5 Where employees are required or permitted to cross over excavations greater than thirty (30”) inches, walkways or bridges shall be provided. When the excavation is six feet (6’) or greater in depth, the walkways or bridges shall be provided with standard guard rails (42 inches high including toe boards).

4.3.6 Unattended excavations shall be covered and/or barricaded.

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4.4 Support Systems

4.4.1 Where the stability of adjacent structures (buildings, walls, utility lines) is jeopardized by excavation operations, support systems such as shoring or bracing shall be installed to ensure the stability of the structures.

4.4.2 Do not undermine the base of a foundation unless a support system is installed.

4.4.3 Sidewalks, pavement, and other similar structures shall not be undermined unless a support system is installed to protect against collapsing.

4.4.4 All surface encumbrances (large rock, equipment, poles) in the excavation area shall be removed or supported.

4.5 Soil Classifications

4.5.1 The soil exposed by an excavation may be homogenous or composed of multiple layers with various stabilities. The stability of each layer shall be classified as (in decreasing order of stability) Stable Rock, Type A, Type B, or Type C. Soil types are defined below and examples are provided on Section 9, Exhibit A.

4.5.1.1 **Stable Rock** - Solid mineral matter that can be excavated with vertical sides and remain intact while exposed.

4.5.1.2 **Type A Soil** - Cohesive soils with an unconfined compressive strength of at least 1.5 tons per square foot (tsf). Examples are clay, silty clay, sandy clay, and clay loam. Soil **cannot** be classified Type A if it is fissured, subject to vibration, previously disturbed, or part of a sloped, layered system where the layers slant toward the excavation on a slope of four horizontal to one vertical or steeper.

4.5.1.3 **Type B Soil** - Cohesive soil with an unconfined compressive strength greater than 0.5 tsf and less than 1.5 tsf. Granular cohesionless soils such as angular gravel (crushed rock), silt, silt loam, sandy loam and silty or sandy clay loam. Also includes previously disturbed soil (except those which would otherwise be classified at Type C), Type A soil that is fissured or subject to vibration, unstable rock, or material that is part of a sloped, layered system where the layers slant toward the excavation on a slope less steep than four horizontal to one vertical, but only if the material would otherwise be classified as Type B.

4.5.1.4 **Type C Soil** - Cohesive soil with an unconfined compressive strength of 0.5 tsf or less. Granular soils such as gravel, sand, and loamy sand. Also

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includes unstable submerged rock, submerged soil, soil from which water is seeping, or material in a sloped, layered system where the layers slant toward the excavation on a slope of four horizontal to one vertical or steeper.

4.5.2 Soil shall be classified based on a visual and a manual analysis. A Competent Person as defined in Section 4.1.2 shall determine soil type by using at least one visual and one manual test. If the soil type cannot be determined, always assume Type C soil.

4.5.2.1 **Visual Test** - Observe the excavation site, soil adjacent to the excavation, soil forming the sides of the excavation, and soil samples from excavated material.

- Soil that is primarily composed of fine-grained material is cohesive material. It will remain in clumps when excavated.
- Soil composed primarily of coarse-grained sand or gravel is granular material. It breaks up easily when excavated.
- Check the sides and surface of the excavation for cracks (fissures), fallen chunks of soil, layered systems and water run-off or seepage. Observe the excavation and the adjacent area for evidence of previously disturbed soil and sources of vibration (traffic or equipment).

4.5.2.2 **Manual Test** - To estimate the unconfined compressive strength of cohesive soils, pick up a large clump of undisturbed soil and apply pressure with your thumb.

- Type A soil can be readily indented by the thumb; however, it can be penetrated only with great effort.
- Type B soil can be penetrated by the thumb with regular effort.
- Type C soil can be easily penetrated several inches by the thumb, and can be molded by light finger pressure.

4.5.3 Soil shall be reclassified when factors or conditions affecting its classification change in any way (rain, flooding, vibration).

4.6 Sloping

4.6.1 Where field conditions permit, sloping is the preferred protective system. (See Section 9, Exhibit B - Selecting a Protective System.)

4.6.2 The slope of an excavation face is expressed as the ratio of horizontal distance to vertical rise (H:V).

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4.6.3 All unsupported excavations more than five (5) feet deep shall be sloped at an angle not steeper than the maximum allowable slope (see Section 9, Exhibit L - Maximum Allowable Slope).

4.6.4 Maximum allowable slopes also apply to layered soil conditions. However, when a less stable soil layer is located below a more stable soil layer, the less stable soil layer shall determine the degree of slope for all of the excavation above that layer (see Section 9, Exhibit P).

4.6.5 In type A soil only, trenches with an unsupported vertically sided lower portion may not exceed dimensions specified in Section 9, Exhibit P.

4.6.6 Never work above other employees on the face of a sloped excavation.

4.6.7 Retaining barriers (plywood or equivalent) should be installed as needed on the excavation slope to stop and contain any falling rocks, materials or equipment.

4.7 Benching

The maximum allowable slopes listed in paragraph 4.6.3 may not be exceeded when incorporating benching with a protective sloping system. The vertical sides of the benches may not exceed the dimensions specified in Section 9, Exhibit L.

4.8 Shielding

4.8.1 Shielding systems (trench boxes) are designed to protect employees in case of a cave-in. They are not designed to support the sides of an excavation.

4.8.2 A pre-manufactured or job-built shielding system made of wood or steel may be used in narrow trenches.

4.8.2.1 Pre-manufactured shielding systems shall be used in accordance with the manufacturer's specifications, recommendations and limitations.

4.8.2.2 Job-built shielding systems shall be constructed in accordance with tabulated data designed or approved by a registered professional engineer.

4.8.3 Shields shall be installed in a manner to restrict lateral movement.

4.8.4 Shields shall extend at least 18 inches above the top of the vertical side of the excavation.

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4.8.5 Side excavations around a shield shall not exceed two (2) feet below the bottom of the shield only if the system is designed to resist the forces calculated for the full depth of the trench, and there are no indications while the trench is open of a possible loss of soil from behind or below the bottom of the support system.

4.8.6 Employees are not allowed in a shielding system when it is being installed, removed, or moved horizontally or vertically.

4.9 Shoring

4.9.1 An aluminum pneumatic, aluminum hydraulic, or timber shoring system shall be installed in trenches (except stable rock) to prevent the trench walls from collapsing.

4.9.1.1 Soil shall be classified prior to installing a protective shoring system.

4.9.1.2 Support members of a shoring system may include cross braces, wales, uprights, and wood or steel sheeting.

4.9.1.3 Members of the support system shall be securely connected together, starting at the top of the excavation and working downward.

4.9.1.4 The shoring system shall be installed tight against the walls of the trench to avoid impact loading.

4.9.1.5 Keep all members of the shoring system as straight as possible.

4.9.1.6 Do not walk or climb on support members.

4.9.1.7 Side excavations shall not exceed two (2) feet below the bottom of support members.

4.9.1.8 Removal of shoring shall start at the bottom of the trench and work upward.

4.9.1.9 Backfilling shall progress with the removal of the shoring system.

4.9.2 Aluminum Hydraulic Shoring

4.9.2.1 Aluminum hydraulic shoring may be used as a protective system provided the manufacturer's specifications, recommendations and limitations are followed, or if the system is designed as described below.

4.9.2.2 The maximum vertical and horizontal spacings that may be used with various aluminum member sizes and hydraulic cylinder sizes are listed in

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Section 9, Exhibit C - Aluminum Hydraulic Vertical Shores, Section 9, Exhibit D - Waler Systems for Soil Type B, and Section 9, Exhibit E - Waler Systems for Soil Type C.

- Section 9, Exhibit C - Aluminum Hydraulic Vertical Shores contains information for vertical shores in Types A and B soils that do not require sheeting.
- Section 9, Exhibit D - Waler Systems for Soil Type B and Exhibit E - Waler Systems for Soil Type C contain data for horizontal waler systems in Type B soils that may require sheeting and Type C soils that always require sheeting.
- Section 9, Exhibit F - Aluminum Hydraulic Shoring Typical Installations provides illustrations of typical aluminum hydraulic shoring systems.

4.9.2.3 After classifying the soil, use the appropriate exhibit to select the size and spacing of the members. (All spacing is measured center to center.)

- Selection is based on the depth and width of the trench.
- Vertical spacing remains constant at four (4) feet.
- When vertical shores are used, at least three (3) shores spaced equally, horizontally shall be used in a group.

4.9.2.4 When any of the following conditions are present, the members specified in the Tables are not considered adequate:

A. When vertical loads imposed on cross braces exceed a 100 Pound gravity load distributed on a one-foot section of the center of the hydraulic cylinder.

B. When surcharge loads are present from equipment weighing in excess of 20,000 pounds.

C. When only the lower portion of a trench is shored and the remaining portion of the trench is sloped or benched unless: The sloped portion is sloped at an angle less steep than three horizontal to one vertical; or the members are selected from the tables for use at a depth which is determined from the top of the overall trench, and not from the toe of the sloped portion.

Either an alternate shoring system must be designed, or another type of protective system designed in accordance with OSHA 1926.652.

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4.9.3 Aluminum Pneumatic Shoring

4.9.3.1 Aluminum pneumatic shoring may be used as a protective system provided the manufacturer's specifications, recommendations and limitations are followed.

4.9.3.2 Aluminum pneumatic shoring systems consist of independent cross braces (struts), timber uprights and/or sheeting.

4.9.3.3 Compressed air expands the cross brace and exerts pressure on the trench walls.

4.9.3.4 A locking pin and an aluminum collar secure the cross brace as a fixed mechanical strut when the pneumatic pressure is released.

4.9.3.5 The maximum vertical and horizontal spacings that may be used for airshore pneumatic struts are listed on Section 9, Exhibit K - Airshore Safety Limit Table.

4.9.4 Timber Shoring

4.9.4.1 A timber shoring system may be used to protect employees against cave-ins, provided the members of the shoring system are selected and installed per Section 9, Exhibit G - Minimum Timber Requirements Soil Type A, Section 9, Exhibit H - Minimum Timber Requirements Soil Type B or Section 9, Exhibit I - Minimum Timber Requirements Soil Type C.

4.9.4.2 Members to be selected are cross braces, uprights and wales (where required).

4.9.4.3 The actual (not nominal) minimum sizes of members are specified for use in different types of soil.

4.9.4.4 After classifying the soil, use the appropriate exhibit to select the size and spacing of members. (All spacing is measured center to center.)

- Selection is based on the depth and width of the trench.
- When applicable, choose the horizontal spacing of cross braces first.
- Determine the size and vertical spacing of cross braces.
- Determine the size and vertical spacing of wales.
- Determine the size and horizontal spacing of uprights.

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4.9.4.5 Section 9, Exhibit J - Example Timber Installations, Soil Type A and C provides timber shoring illustrations for trenches dug in Type A Soil and Type C Soil. Multiple timber arrangements may be used for each condition; refer to the appropriate exhibit for timber dimension selection and spacing.

4.9.4.6 Aluminum pneumatic struts and screw jacks of equivalent strength may be used instead of or in combination with timber cross braces.

4.9.4.7 The top cross brace should not be placed more than two (2) feet below the top of the trench.

4.9.4.8 If the distance from the lowest cross brace to the bottom of the trench exceeds 2.5 feet, uprights shall be firmly embedded.

4.9.4.9 Close sheeting (side-by-side uprights), 1.125 inch soft plywood or 0.75 inch, 14-ply arctic birch plywood should be used to help keep constant pressure between the shoring and trench.

4.9.4.10 When soil is saturated or submerged, tight sheeting (tongue and groove planks) at least three (3) inches thick or steel sheet piling shall be installed to resist the lateral pressure of water and to prevent the loss of backfill material.

4.9.4.11 When any of the following conditions are present, the members specified in the Tables are not considered adequate.

A. When loads imposed by structures or by stored material adjacent to the trench weigh in excess of the load imposed by a two-foot soil surcharge. The term "adjacent" as used here means the area within a horizontal distance from the edge of the trench equal to the depth of the trench.

B. When vertical loads imposed on cross braces exceed a 240-pound gravity load distributed on a one-foot section of the center of the crossbrace.

C. When surcharge loads are present from equipment weighing in excess of 20,000 pounds.

D. When only the lower portion of a trench is shored and the remaining portion of the trench is sloped or benched unless: The sloped portion is sloped at an angle less steep than three horizontal to one vertical; or the members are selected from the tables for use at a depth which is determined from the top of the overall trench, and not from the toe of the sloped portion.

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Either an alternate timber shoring system must be designed, or another type of protective system designed in accordance with OSHA 1926.652.

4.10 Shoring Road Crossings

4.10.1 Shoring the end and side walls of a road crossing trench requires a specific shoring system design. Airshore pneumatic struts, timber wales and timber uprights (or ShorForm panels) shall be used in conjunction to provide adequate support to both the end and side walls of the trench.

4.10.2 Section 9, Exhibit M - End Wall Road Crossing Typical Shoring - Ex. XII details a shoring system for road crossings with trenches up to 12 feet wide and 10 feet deep.

4.10.3 Section 9, Exhibit N - End Wall Road Crossing Typical Shoring - Ex XIII details a shoring system for road crossings with trenches up to 20 feet deep.

4.10.4 Section 9, Exhibit O - Strut Anchor Bracket for Diagonal Installation of Airshore Struts - Ex. XIV provides a strut anchor bracket design to handle the load of diagonally installed Airshore struts.

5. Flowcharts

Not applicable.

6. Documentation

Not applicable.

7. Remediation

Not applicable.

8. Other Manual References

Not applicable.

9. Appendices

Not applicable.

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10. Forms

Not applicable.

11. Exhibits

Section 9, Exhibit A - Soil Classification Chart
Section 9, Exhibit B - Selecting a Protective System
Section 9, Exhibit C - Aluminum Hydraulic Vertical Shores
Section 9, Exhibit D - Waler Systems for Soil Type B
Section 9, Exhibit E - Waler Systems for Soil Type C
Section 9, Exhibit F - Aluminum Hydraulic Shoring Typical Installations
Section 9, Exhibit G - Minimum Timber Requirements Soil Type A
Section 9, Exhibit H - Minimum Timber Requirements Soil Type B
Section 9, Exhibit I - Minimum Timber Requirements Soil Type C
Section 9, Exhibit J - Example Timber Installations, Soil Type A and C
Section 9, Exhibit K - Airshore Safety Limit Table
Section 9, Exhibit L - Maximum Allowable Slope
Section 9, Exhibit M - End Wall Road Crossing Typical Shoring - Ex. XII
Section 9, Exhibit N - End Wall Road Crossing Typical Shoring - Ex XIII
Section 9, Exhibit O - Strut Anchor Bracket for Diagonal Installation of Airshore Struts- Ex. XIV
Section 9, Exhibit P - OSHA Part 1926 Subpart P Appendix B

12. Change Log

For an overview of the manual revision process, please refer to 1.01 – Introduction to Using and Revising Manuals.

For a log of all revisions to this manual, please refer to 1.04 – Log of Revisions.

Rev #	Date	Prepared by (Name/Title)	Reviewed by (Name/Title)	Approved by (Name/Title)	Summary of Change(s)
4	11/24/21	Michael Detweiler			New template applied.
5	12/29/21	L. Hughes - Codes, Standards, and Publications Lead	MRT	• C. Ostach - VP Operations Services • J. Burdett - Director Transportation	• Updated 4.1.2 (‘Pipeline Protector’ to ‘Pipeline and Terminal Protector’) • updated 4.1.3, 4.5.1.3, and 4.5.1.4

				Operations	

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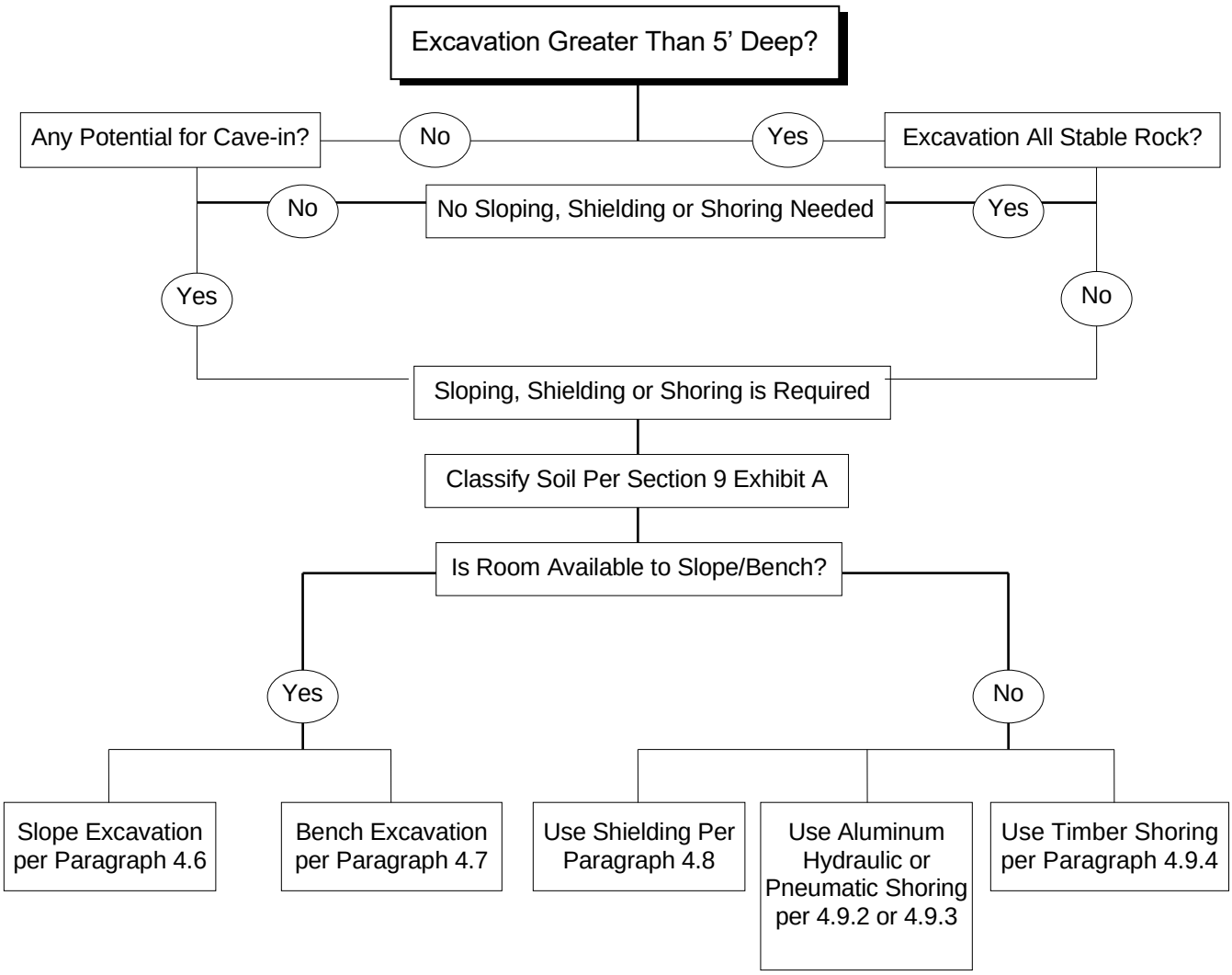
SOIL CLASSIFICATION CHART

	STABLE ROCK	TYPE A	TYPE B	TYPE C
Unconfined Compressive Strength	N/A	1.5 tsf or more	More than 0.5 tsf and Less than 1.5 tsf	0.5 tsf or less
Examples	Solid mineral matter. Can be excavated with vertical sides and remain intact.	• Cohesive soil • Clay • Silty clay • Sandy clay • Clay loam	• Cohesive soil • Granular cohesionless soils such as angular gravel, silt, silty loam and sandy loam. • Unstable dry rock • Previously disturbed	• Cohesive soil • Granular soil such as gravel, sand and loamy sand. • Submerged soil • Submerged unstable rock • Water seeping soil
Restrictions	N/A	• If previously disturbed, fissured or subject to vibration, downgrade to Type B or less. • Type A Soil that is part of a sloped, layered system where the layers slant toward the excavation on a slope of 4:1 or more must be downgraded to Type C Soil.	• Type B Soil that is part of a sloped, layered system where the layers slant toward the excavation on a slope of 4:1 or more must be downgraded to Type C soil.	• Any soil that is part of a sloped, layered system where the layers slant toward the excavation on a slope of 4:1 or more is Type C soil.
Maximum Allowable Slope (H:V)	90°	1/2:1 (63°) Short Term, 12 ft. or less _____ 3/4:1 (53°) Regular	1:1 (45°)	1 1/2:1 (34°)

tsf - tons per square foot
Loam - soil consisting of a friable mixture of clay, silt and sand

NOTE: '½:1 Slope for Type A soil is permissible only for short term excavations that are 12 ft or less in depth.

SELECTING A PROTECTIVE SYSTEM



ANY EXCAVATION **20** FEET OR MORE DEEP MUST BE REFERRED TO THE ENGINEERING DEPARTMENT FOR PROTECTIVE SYSTEM DESIGN.

VERTICAL SHORES FOR TYPE A SOIL

	HYDRAULIC CYLINDERS				
			Width of Trench		
Depth of Trench	Maximum Horizontal Spacing	Maximum Vertical Spacing	Up to 8'	8' to 12'	12' to 15'
5' to 10'	8'	4 feet	2 inch Diameter	2 inch Diameter*	3 inch Diameter
10' to 15'	8'				
15' to 20'	7'				

VERTICAL SHORES FOR TYPE B SOIL

	HYDRAULIC CYLINDERS				
			Width of Trench		
Depth of Trench	Maximum Horizontal Spacing	Maximum Vertical Spacing	Up to 8'	8' to 12'	12' to 15'
5' to 10'	8'	4 feet	2 inch Diameter	2 inch Diameter*	3 inch Diameter
10' to 15'	6.5'				
15' to 20'	5.5'				

* Must have structural steel (3.5" x 3.5" x 0.1875") oversleeves, or structural oversleeves of manufacturer's specifications, extending the full collapsed length.

Reference: 29 CFR, Part 1926, Subpart P - Excavations.

NOTE: All vertical rails must have a minimum section modulus of 0.4 inch.

ALUMINUM HYDRAULIC SHORING
WALER SYSTEMS
FOR SOIL TYPE B

DEPTH OF TRENCH (FEET)	WALES		HYDRAULIC CYLINDERS						TIMBER UPRIGHTS		
			WIDTH OF TRENCH (FEET)						MAX. HORIZ. SPACING (ON CENTER)		
			UP TO 8		OVER 8 UP TO 12		OVER 12 UP TO 15				
	VERTICAL SPACING (FEET)	SECTION MODULUS (IN³)●	HORIZ. SPACING	CYLINDER DIAMETER	HORIZ. SPACING	CYLINDER DIAMETER	HORIZ. SPACING	CYLINDER DIAMETER	SOLID SHEET	2 FT.	3 FT.
OVER 5 UP TO 10	4	3.5	8.0	2 IN	8.0	2 IN●●	8.0	3 IN	- -	- -	3x 12
		7.0	9.0	2 IN	9.0	2 IN●●	9.0	3 IN			
		14.0	12.0	3 IN	12.0	3 IN	12.0	3 IN			
OVER 10 UP TO 15	4	3.5	6.0	2 IN	6.0	2 IN●●	6.0	3 IN	- -	3x 12	- -
		7.0	8.0	3 IN	8.0	3 IN	8.0	3 IN			
		14.0	10.0	3 IN	10.0	3 IN	10.0	3 IN			
OVER 15 UP TO 20	4	3.5	5.5	2 IN	5.5	2 IN●●	5.5	3 IN	3x 12	- -	- -
		7.0	6.0	3 IN	6.0	3 IN	6.0	3 IN			
		14.0	9.0	3 IN	9.0	3 IN	9.0	3 IN			

● Consult product manufacturer or registered professional engineer for Section Modulus

●●Must have steel oversleeves (3.5x3.5x0.1875), or structural oversleeves of manufacturer's specifications, extending the full collapsed length.

Reference 29 CFR, Part 1926, Subpart P - Excavations

ALUMINUM HYDRAULIC SHORING
WALER SYSTEMS
FOR SOIL TYPE C

DEPTH OF TRENCH (FEET)	WALES		HYDRAULIC CYLINDERS						TIMBER UPRIGHTS		
	VERTICAL SPACING (FEET)	● SECTION MODULUS (IN^3)	WIDTH OF TRENCH (FEET)						MAX. HORIZ. SPACING (ON CENTER)		
			UP TO 8		OVER 8 UP TO 12		OVER 12 UP TO 15				
			HORIZ. SPACING	CYLINDER DIAMETER	HORIZ. SPACING	CYLINDER DIAMETER	HORIZ. SPACING	CYLINDER DIAMETER	SOLID SHEET	2 FT.	3 FT.
OVER 5 UP TO 10	4	3.5	6.0	2 IN	6.0	2 IN●●	6.0	3 IN	3x 12	--	--
		7.0	6.5	2 IN	6.5	2 IN●●	6.5	3 IN			
		14.0	10.0	3 IN	10.0	3 IN	10.0	3 IN			
OVER 10 UP TO 15	4	3.5	4.0	2 IN	4.0	2 IN●●	4.0	3 IN	3x 12	--	--
		7.0	5.5	3 IN	5.5	3 IN	5.5	3 IN			
		14.0	8.0	3 IN	8.0	3 IN	8.0	3 IN			
OVER 15 UP TO 20	4	3.5	3.5	2 IN	3.5	2 IN●●	3.5	3 IN	3x 12	--	--
		7.0	5.0	3 IN	5.0	3 IN	5.0	3 IN			
		14.0	6.0	3 IN	6.0	3 IN	6.0	3 IN			

● Consult product manufacturer or registered professional engineer for Section Modulus
●● Must have steel oversleeves (3.5x3.5x0.1875), or structural oversleeves of manufacturer's specifications, extending the full collapsed length.

Reference 29 CFR, Part 1926, Subpart P – Excavations

ALUMINUM HYDRAULIC SHORING
TYPICAL INSTALLATIONS

FIGURE NO. 1
VERTICAL ALUMINUM HYDRAULIC SHORING (SPOT BRACING)

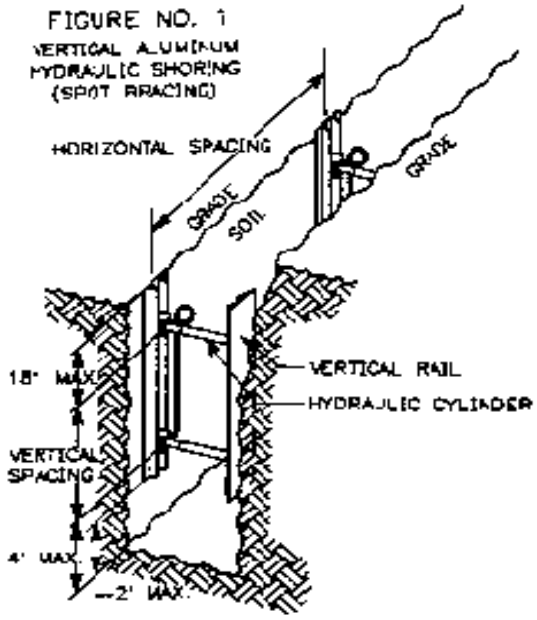


FIGURE NO. 2
VERTICAL ALUMINUM HYDRAULIC SHORING (WITH PLYWOOD)

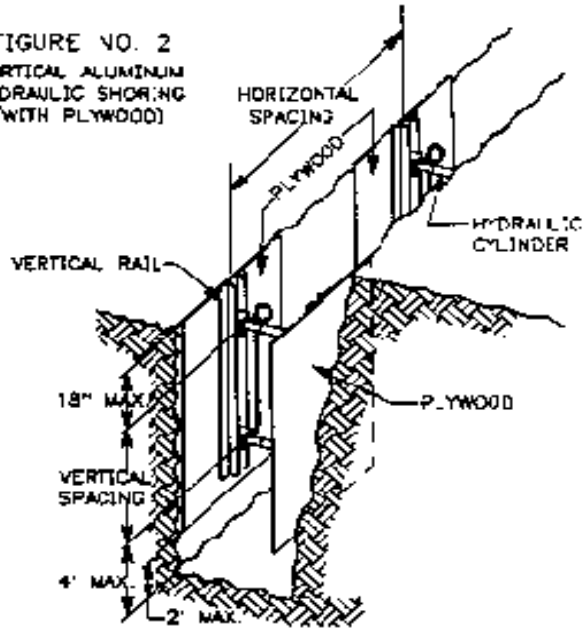


FIGURE NO. 3
VERTICAL ALUMINUM HYDRAULIC SHORING (STACKED)

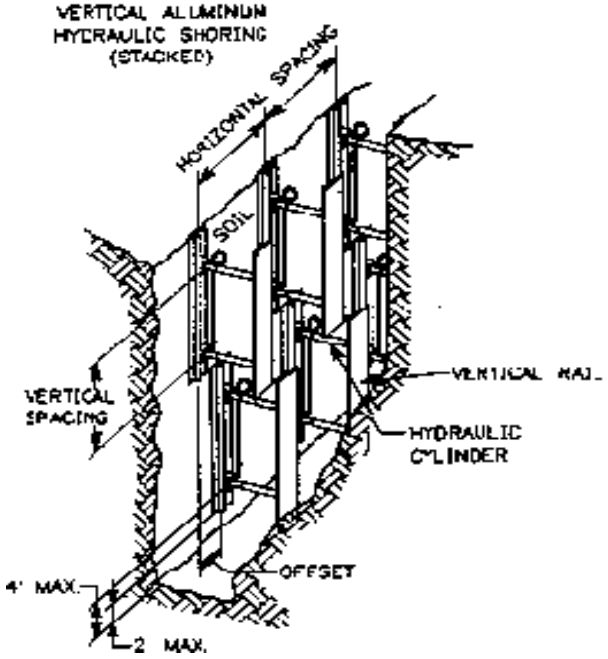
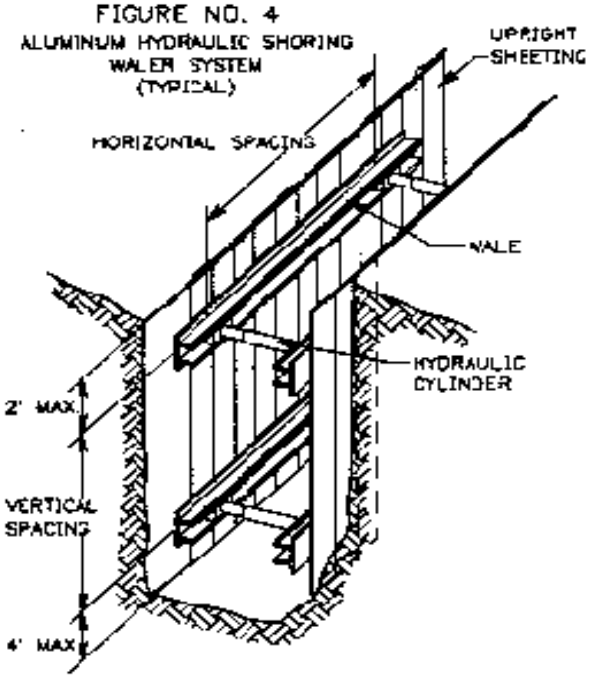


FIGURE NO. 4
ALUMINUM HYDRAULIC SHORING WALER SYSTEM (TYPICAL)



TIMBER TRENCH SHORING – MINIMUM TIMBER REQUIREMENTS*
TYPE A SOIL

DEPTH OF TRENCH (FEET)	SIZE (ACTUAL) AND SPACING OF MEMBERS**													
	CROSS BRACES							WALES		UPRIGHTS				
	HORZ. SPACING (FEET)	WIDTH OF TRENCH (FEET)					VERT SPACING (FEET)	SIZE (IN)	VERT. SPACING (FEET)	MAX. ALLOWABLE HORIZ. SPACING (FEET)				
		UP TO 4	UP TO 6	UP TO 9	UP TO 12	UP TO 15				CLOSE	4	5	6	8
5 TO 10	UP TO 6	4x4	4x4	4x6	6x6	6x6	4	Not req'd	--				2x6	
	UP TO 8	4x4	4x4	4x6	6x6	6x6	4	Not req'd	--					2x8
	UP TO 10	4x6	4x6	4x6	6x6	6x6	4	8x8	4			2x6		
	UP TO 12	4x6	4x6	6x6	6x6	6x6	4	8x8	4				2x6	
10 TO 15	UP TO 6	4x4	4x4	4x6	6x6	6x6	4	Not req'd	--				3x8	
	UP TO 8	4x6	4x6	6x6	6x6	6x6	4	8x8	4		2x6			
	UP TO 10	6x6	6x6	6x6	6x8	6x8	4	8x10	4			2x6		
	UP TO 12	6x6	6x6	6x6	6x8	6x8	4	10x10	4				3x8	
15 TO 20	UP TO 6	6x6	6x6	6x6	6x8	6x8	4	6x8	4	3x6				
	UP TO 8	6x6	6x6	6x6	6x8	6x8	4	8x8	4	3x6				
	UP TO 10	8x8	8x8	8x8	8x8	8x10	4	8x10	4	3x6				
	UP TO 12	8x8	8x8	8x8	8x8	8x10	4	10x10	4	3x6				

* Mixed Oak or equivalent with a bending strength not less than 850 psi.
** Manufactured members of equivalent strength may be substituted for wood.

Reference: 29 CFR, Part 1926, Subpart P, Excavations

TIMBER TRENCH SHORING – MINIMUM TIMBER REQUIREMENTS*
TYPE B SOIL

DEPTH OF TRENCH (FEET)	SIZE (ACTUAL) AND SPACING OF MEMBERS**													
	CROSS BRACES							WALES		UPRIGHTS				
	HORZ. SPACING (FEET)	WIDTH OF TRENCH (FEET)					VERT SPACING (FEET)	SIZE (IN)	VERT. SPACING (FEET)	MAX. ALLOWABLE HORIZ. SPACING (FEET)				
		UP TO 4	UP TO 6	UP TO 9	UP TO 12	UP TO 15				CLOSE	2	3		
5 TO 10	UP TO 6	4x6	4x6	6x6	6x6	6x6	5	6x8	5			2x6		
	UP TO 8	6x6	6x6	6x6	6x8	6x8	5	8x10	5			2x6		
	UP TO 10	6x6	6x6	6x6	6x8	6x8	5	10x10	5			2x6		
	See Note 1													
10 TO 15	UP TO 6	6x6	6x6	6x6	6x8	6x8	5	8x8	5		2x6			
	UP TO 8	6x8	6x8	6x8	8x8	8x8	5	10x10	5		2x6			
	UP TO 10	8x8	8x8	8x8	8x8	8x10	5	10x10	5		2x6			
	See Note 1													
15 TO 20	UP TO 6	6x8	6x8	6x8	8x8	8x8	5	8x10	5	3x6				
	UP TO 8	8x8	8x8	8x8	8x8	8x10	5	10x12	5	3x6				
	UP TO 10	8x10	8x10	8x10	8x10	10x10	5	12x12	5	3x6				
	See Note 1													

Note 1: Member sizes at spacings other than indicated shall be approved by a registered professional engineer.

* Mixed Oak or equivalent with a bending strength not less than 850 psi.

** Manufactured members of equivalent strength may be substituted for wood.

Reference: 29 CFR, Part 1926, Subpart P, Excavations

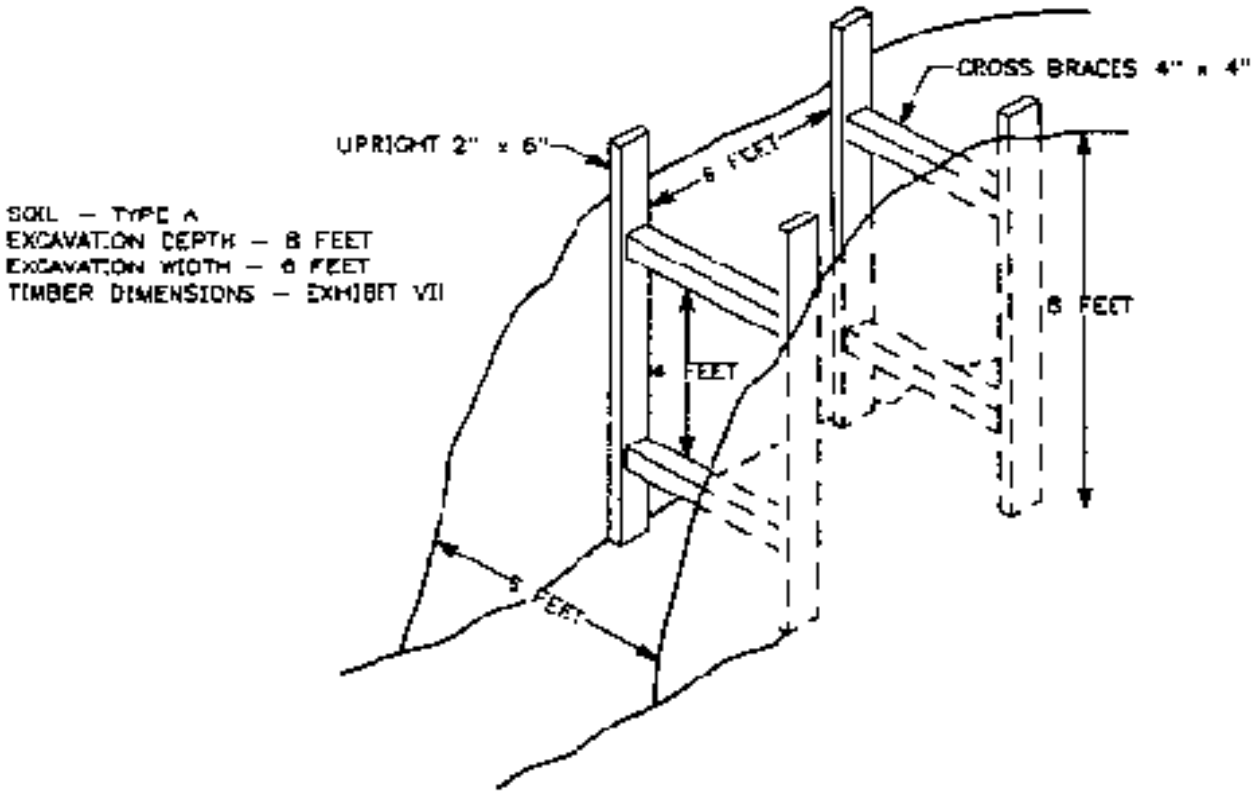
TIMBER TRENCH SHORING – MINIMUM TIMBER REQUIREMENTS*
TYPE C SOIL

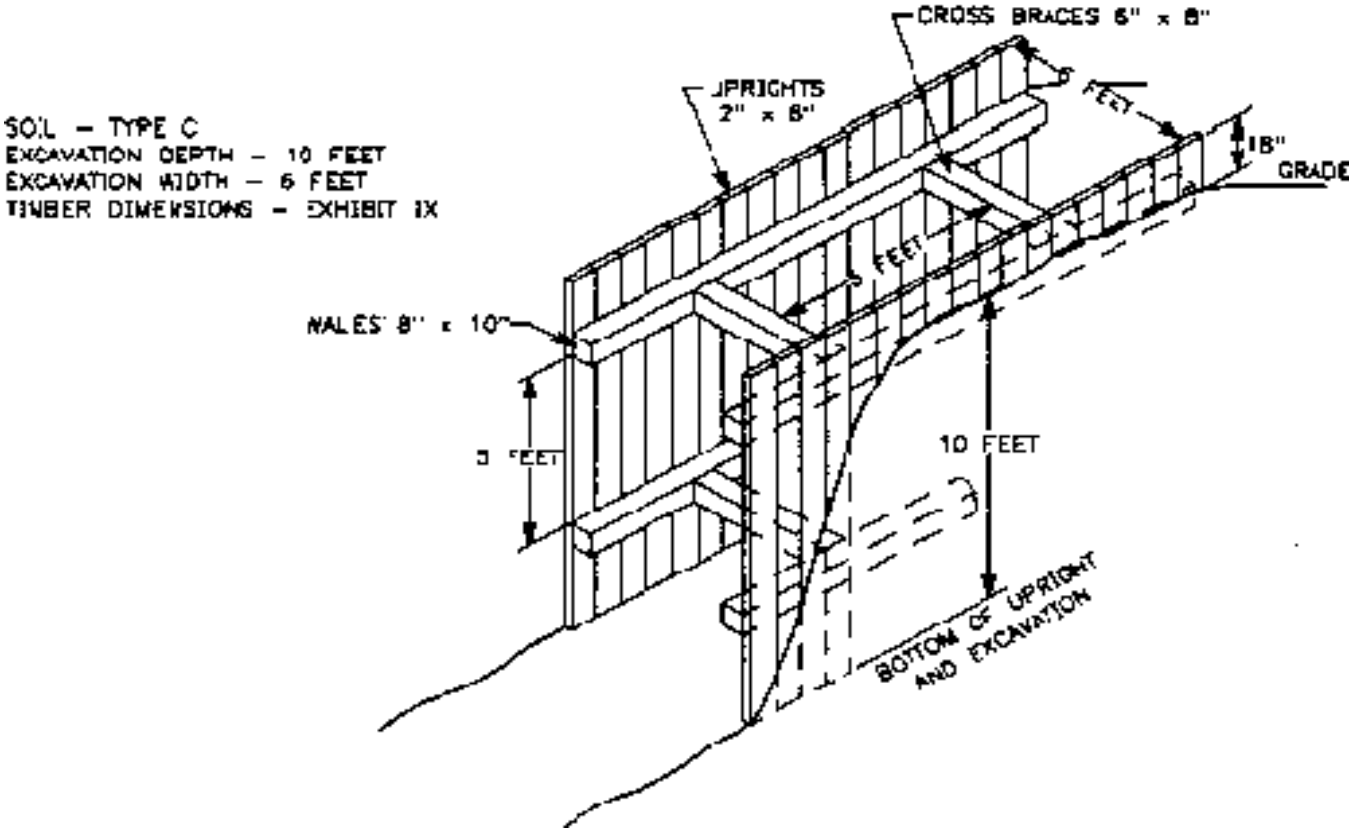
DEPTH OF TRENCH (FEET)	SIZE (ACTUAL) AND SPACING OF MEMBERS**													
	CROSS BRACES							WALES		UPRIGHTS				
	HORIZ. SPACING (FEET)	WIDTH OF TRENCH (FEET)					VERT SPACING (FEET)	SIZE (IN)	VERT. SPACING (FEET)	MAX. ALLOWABLE HORIZ. SPACING (FEET)(See Note 2)				
		UP TO 4	UP TO 6	UP TO 9	UP TO 12	UP TO 15				CLOSE				
5 TO 10	UP TO 6	6x8	6x8	6x8	8x8	8x8	5	8x10	5	2x6				
	UP TO 8	8x8	8x8	8x8	8x8	8x10	5	10x12	5	2x6				
	UP TO 10	8x10	8x10	8x10	8x10	10x10	5	12x12	5	2x6				
	See Note 1													
10 TO 15	UP TO 6	8x8	8x8	8x8	8x8	8x10	5	10x12	5	2x6				
	UP TO 8	8x10	8x10	8x10	8x10	10x10	5	12x12	5	2x6				
	See Note 1													
	See Note 1													
15 TO 20	UP TO 6	8x10	8x10	8x10	8x10	10x10	5	12x12	5	3x6				
	See Note 1													
	See Note 1													
	See Note 1													

Note 1: Member sizes at spacings other than indicated shall be approved by a registered professional engineer.
Note 2: When conditions are saturated or submerged use tight sheeting.
* Mixed Oak or equivalent with a bending strength not less than 850 psi.
** Manufactured members of equivalent strength may be substituted for wood.

Reference: 29 CFR, Part 1926, Subpart P, Excavations

EXAMPLE TIMBER INSTALLATIONS, SOIL TYPE A and C





NOTE: The above illustrations have multiple timber arrangements which may be used for each condition. Refer to the appropriate exhibit for timber dimensions selection and spacing.

AIRSHORE SAFETY LIMIT TABLE

SOIL TYPE	DEPTH OF TRENCH (Feet)	WIDTH OF TRENCH (Feet)	MAXIMUM HORIZONTAL SPACING (Feet)	MAXIMUM VERTICAL SPACING (Feet)
A	Over 5	Up to 6	12	4
	Up to 10	6 to 12	6	4
	Over 10	Up to 6	12	4
	Up to 15	6 to 12	6	4
	Over 15	Up to 6	6	4
		6 to 9	4.5	4
	Up to 20	9 to 12	4	4
B	Over 5	Up to 6	8	4
	Up to 10	6 to 12	6	4
	Over 10	Up to 6	6	4
	Up to 15	6 to 12	5	4
	Over 15	Up to 6	5	4
		6 to 9	4	4
	Up to 20	9 to 12	3.5	4
C	Over 5	Up to 6	8	4
	Up to 10	6 to 12	6	4
	Over 10	Up to 6	6	4
	Up to 15	6 to 12	4	4
	Over 15	Up to 6	4	4
		6 to 9	3	4
	Up to 20	9 to 12	2.75	4
USERS ARE ADVISED TO CHECK LOCAL SHORING AND SAFETY REQUIREMENTS				

FOR USE IN EXCAVATIONS SHORED IN ACCORDANCE WITH
THE DEPARTMENT OF LABOR
OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
CONSTRUCTION INDUSTRY STANDARD -- SUBPART P OF PART 1926

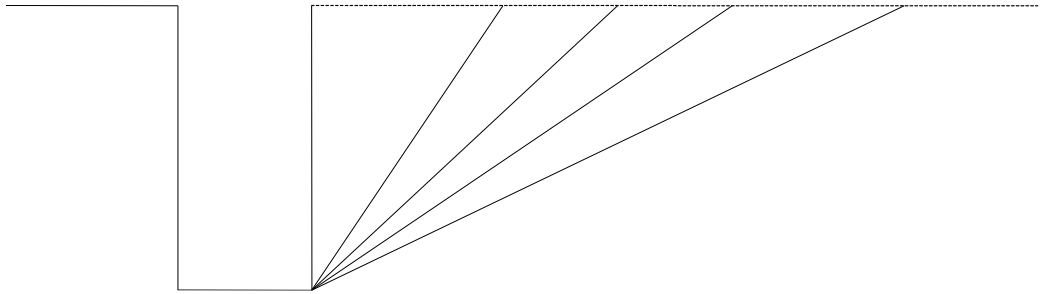
Shoring Configurations Deviating from this Table are not Allowed
Unless in Accordance with the Requirements of Part 1926.652.

SLOPES: MAXIMUM ALLOWABLE SLOPES

Maximum allowable slopes for unsupported excavations greater than 5 feet and less than 20 feet deep

Soil or Rock Type	Maximum Allowable Slope (H:V)
Stable Rock	Vertical (90°)
Type A*	3/4:1 (53°)
Type B	1:1 (45°)
Type C	1 1/2:1 (34°)

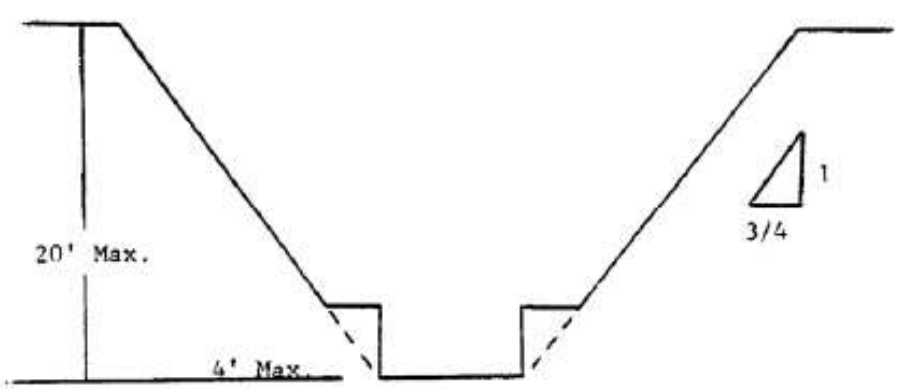
			1/2:1	3/4:1	1:1	1 1/2:1
Ground Line		90°	63°	53°	45°	34°

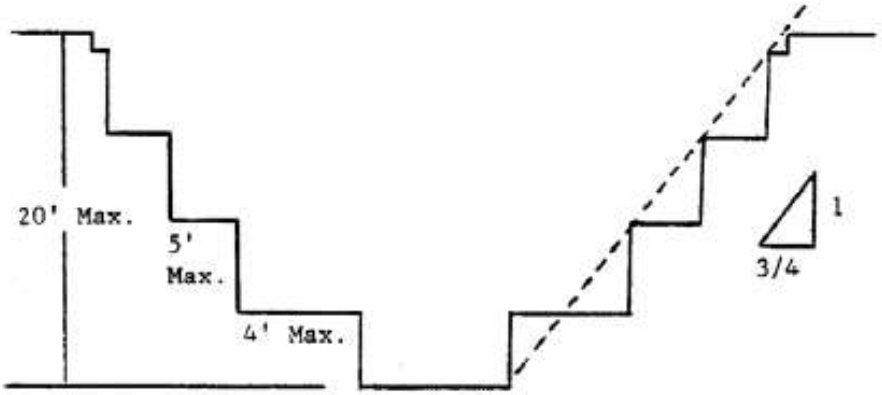


* A short-term excavation (open 24 hours or less) in Type A soil which is 12 feet deep or less has a maximum allowable slope of 1/2:1 (63º).

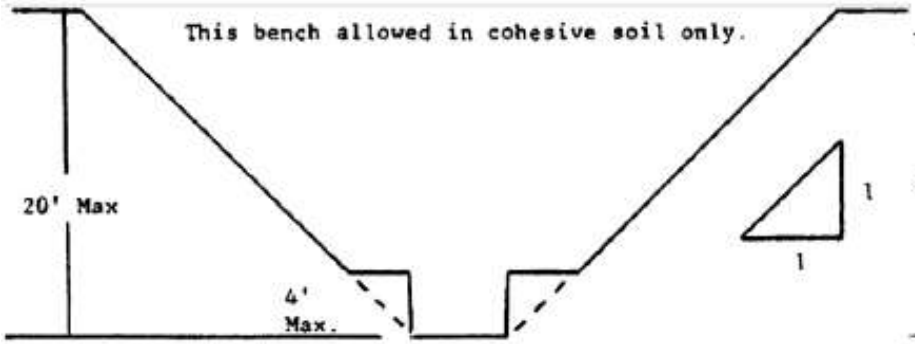
BENCHING: MAXIMUM DIMENSIONS

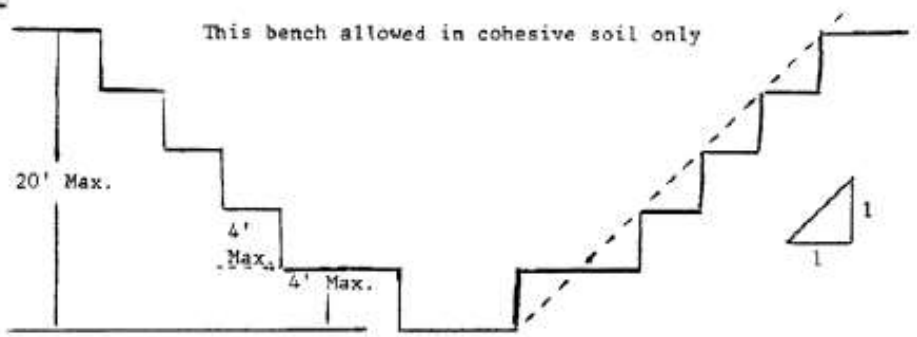
Type A soil: Maximum bench dimensions for simple and multiple benches are as follows:

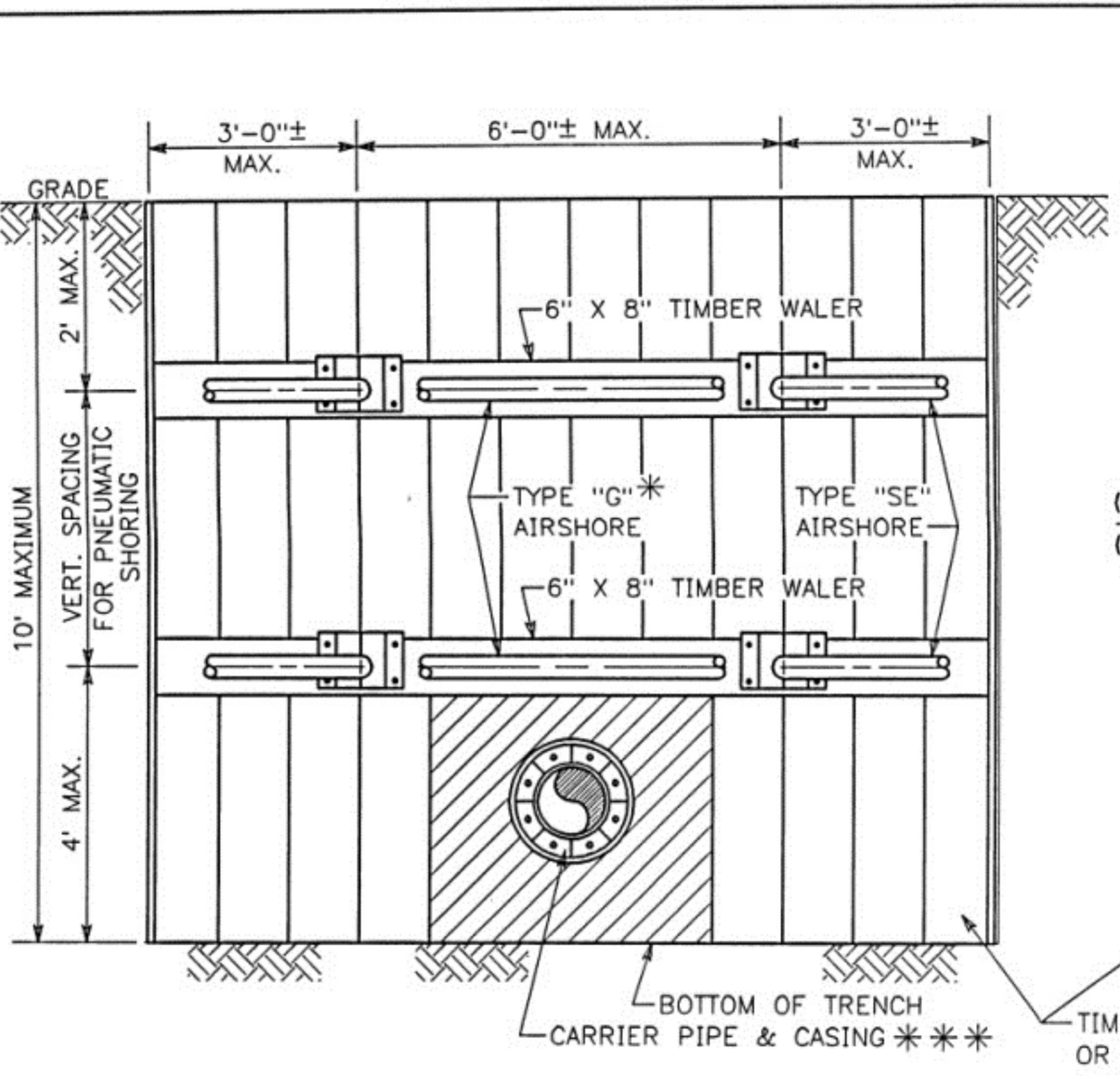


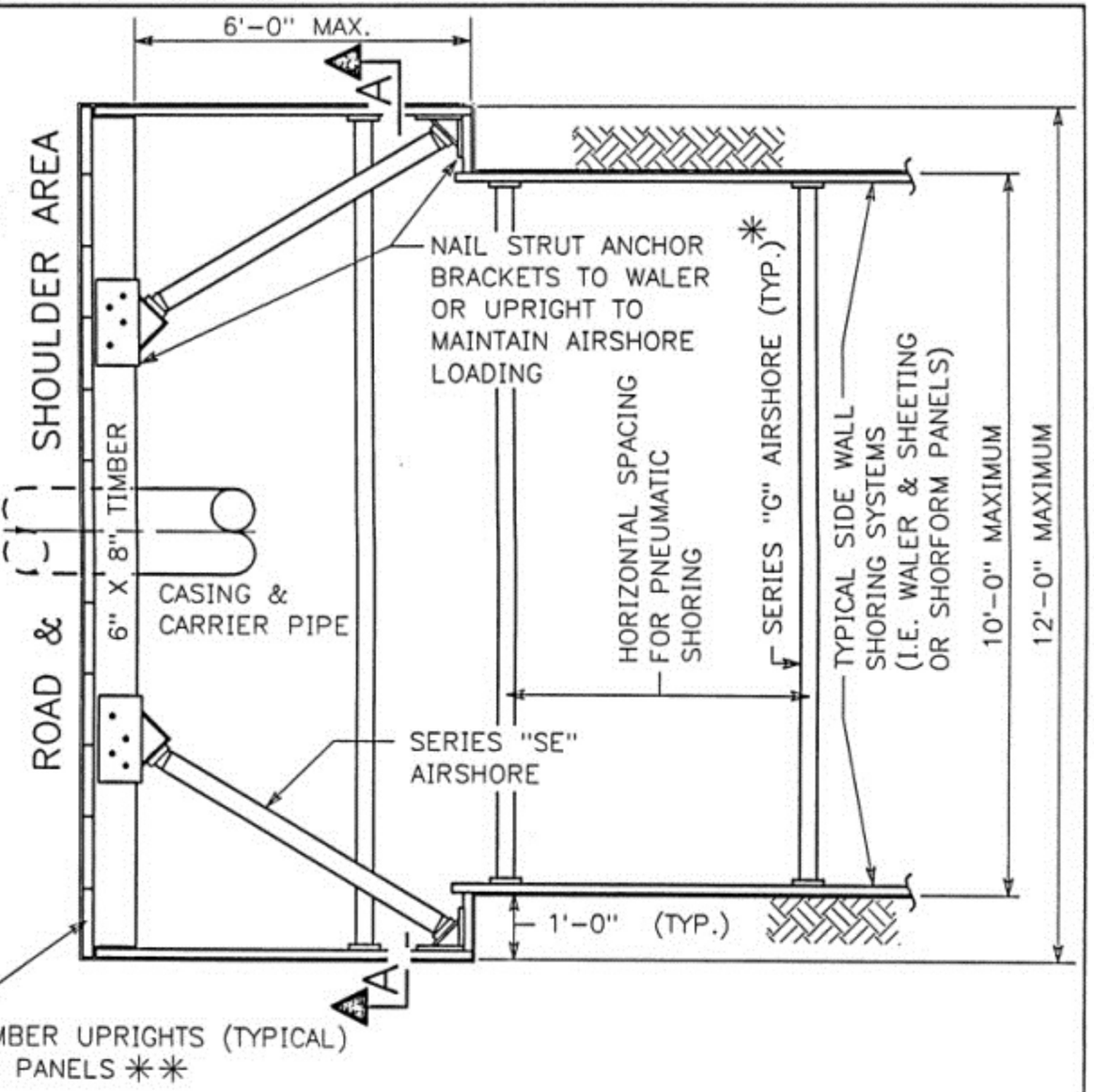


Type B soil: Maximum bench dimensions for simple and multiple benches are as follows:









SECTION A–A

END WALL ELEVATION VIEW

* SERIES "G" AIRSHORE STRUTS CAN BE REMOVED & REPLACED ONE AT A TIME (I.E. FOR BORINGS) WITHOUT COMPROMISING SHORING SYSTEM INTEGRITY.

** FOR SIZING & SPACING REQUIREMENTS OF TIMBER UPRIGHTS, WALERS & PANELS SEE THE APPLICABLE EXHIBIT **C, D, E, G, H, or I.**

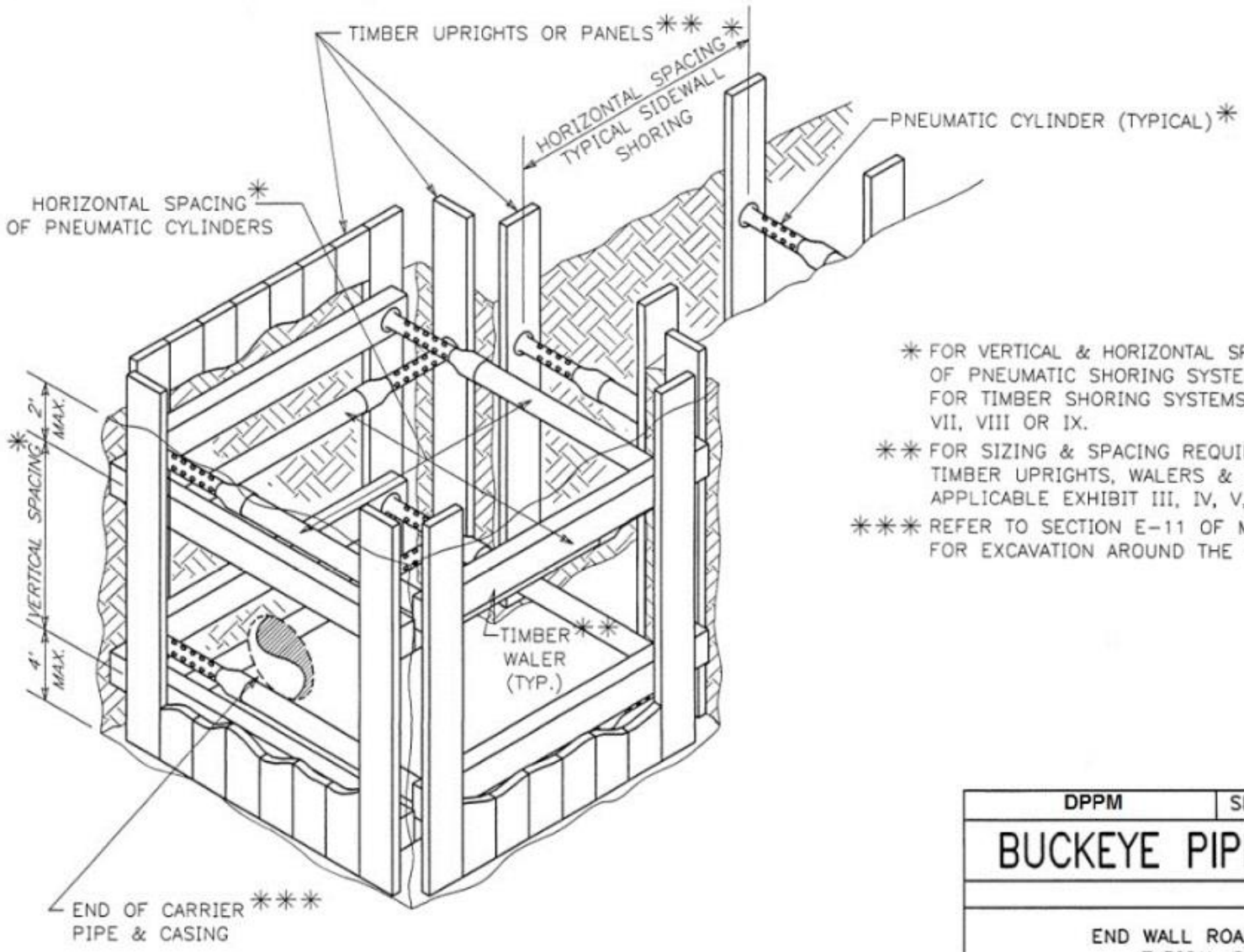
*** REFER TO SECTION E–11 OF MAINTENANCE MANUAL FOR EXCAVATION AROUND THE PIPELINE.

DPPM	SECT. 9	PG. 21

BUCKEYE PIPE LINE CO.

EXHIBIT: **M (XII)** DATE: **12/29/21**

END WALL ROAD CROSSING
TYPICAL SHORING DETAIL
(FOR TRENCHES UP TO 12' WIDE & 10' DEEP)



* FOR VERTICAL & HORIZONTAL SPACING REQUIREMENTS OF PNEUMATIC SHORING SYSTEMS SEE EXHIBIT XI. FOR TIMBER SHORING SYSTEMS SEE EXHIBITS VII, VIII OR IX.

** FOR SIZING & SPACING REQUIREMENTS OF TIMBER UPRIGHTS, WALERS & PANELS SEE THE APPLICABLE EXHIBIT III, IV, V, VII, VIII OR IX.

*** REFER TO SECTION E-11 OF MAINTENANCE MANUAL FOR EXCAVATION AROUND THE PIPELINE.

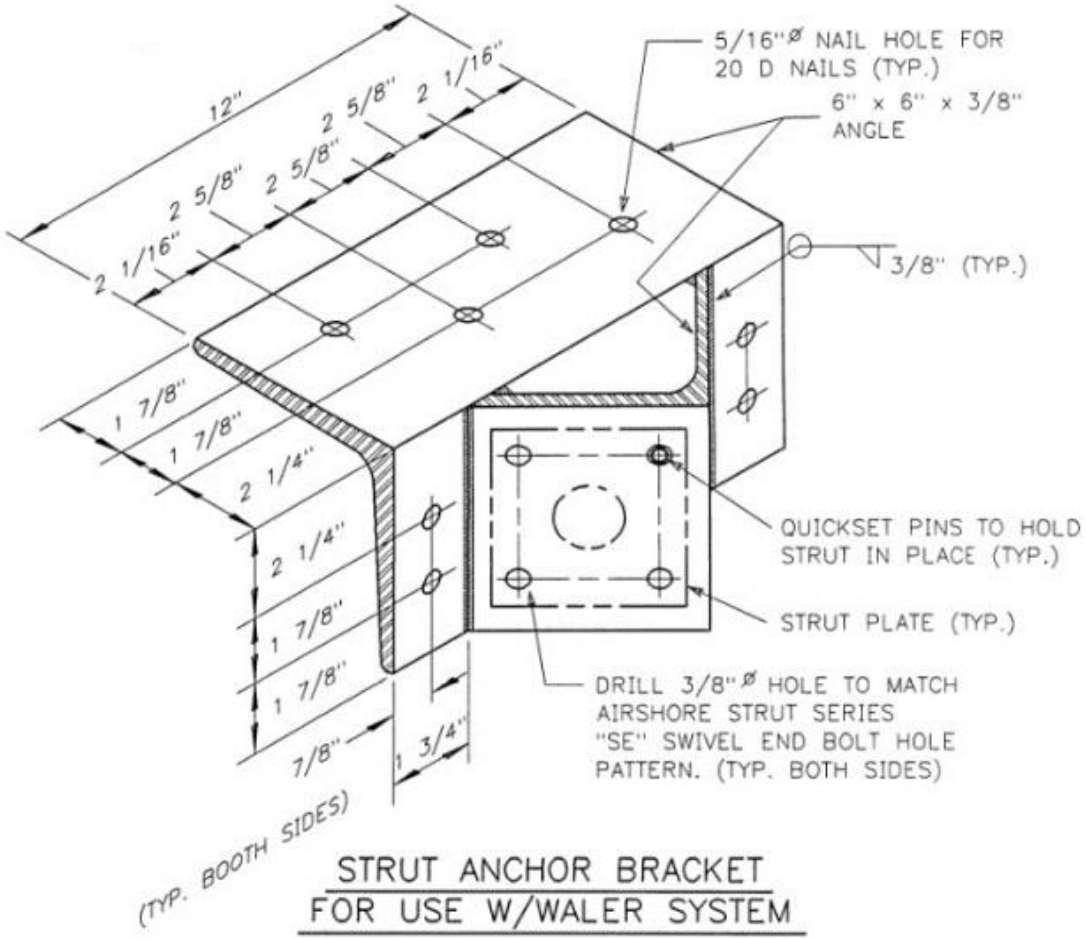
DPPM	SECT. 9	PG. 22

BUCKEYE PIPE LINE CO.

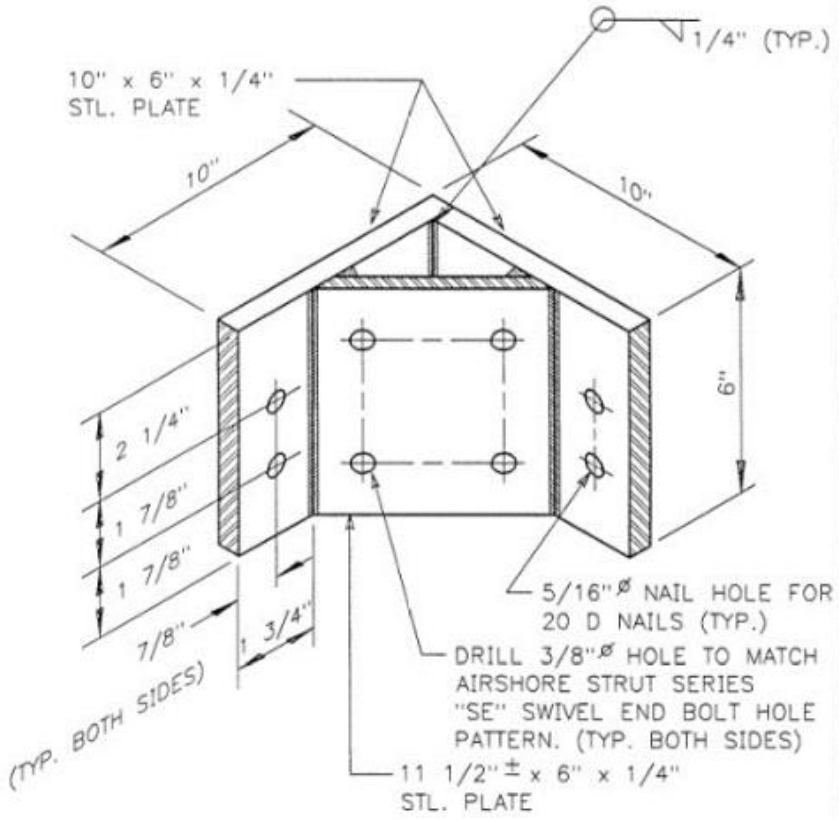
DATE: **06/13**

END WALL ROAD CROSSING
TYPICAL SHORING
(FOR TRENCH UP TO 20' DEEP)

DPPM, Section 9, Exhibit N



STRUT ANCHOR BRACKET FOR USE W/WALER SYSTEM



STRUT ANCHOR BRACKET FOR USE W/UPRIGHTS

DPPM	SECT. 9	PG. 23

BUCKEYE PIPE LINE CO.

DATE: **06/13**

STRUT ANCHOR BRACKET
FOR
DIAGONAL INSTALLATION OF AIRSHORE STRUTS

DPPM, Section 9, Exhibit O

OSHA Part 1926 Subpart P Appendix B

- Part Number: 1926
- Part Title: Safety and Health Regulations for Construction
- Subpart: P
- Subpart Title: Excavations
- Standard Number: 1926 Subpart P App B
- Title: Sloping and Benching
- GPO Source: e-CFR

(a) *Scope and application*. This appendix contains specifications for sloping and benching when used as methods of protecting employees working in excavations from cave-ins. The requirements of this appendix apply when the design of sloping and benching protective systems is to be performed in accordance with the requirements set forth in § 1926.652(b)(2).

(b) *Definitions*.

Actual slope means the slope to which an excavation face is excavated.

Distress means that the soil is in a condition where a cave-in is imminent or is likely to occur. Distress is evidenced by such phenomena as the development of fissures in the face of or adjacent to an open excavation; the subsidence of the edge of an excavation; the slumping of material from the face or the bulging or heaving of material from the bottom of an excavation; the spalling of material from the face of an excavation; and ravelling, i.e., small amounts of material such as pebbles or little clumps of material suddenly separating from the face of an excavation and trickling or rolling down into the excavation.

Maximum allowable slope means the steepest incline of an excavation face that is acceptable for the most favorable site conditions as protection against cave-ins, and is expressed as the ratio of horizontal distance to vertical rise (H:V).

Short term exposure means a period of time less than or equal to 24 hours that an excavation is open.

(c) *Requirements* -- (1) *Soil classification*. Soil and rock deposits shall be classified in accordance with appendix A to subpart P of part 1926.

(2) *Maximum allowable slope*. The maximum allowable slope for a soil or rock deposit shall be determined from Table B-1 of this appendix.

(3) *Actual slope*. (i) The actual slope shall not be steeper than the maximum allowable slope.

(ii) The actual slope shall be less steep than the maximum allowable slope, when there are signs of distress. If that situation occurs, the slope shall be cut back to an actual slope which is at least ½ horizontal to one vertical (½H:1V) less steep than the maximum allowable slope.

(iii) When surcharge loads from stored material or equipment, operating equipment, or traffic are present, a competent person shall determine the degree to which the actual slope must be reduced below the maximum allowable slope, and shall assure that such reduction is achieved. Surcharge loads from adjacent structures shall be evaluated in accordance with § 1926.651(i).

(4) *Configurations*. Configurations of sloping and benching systems shall be in accordance with Figure B-1.

TABLE B-1
MAXIMUM ALLOWABLE SLOPES

SOIL OR ROCK TYPE	MAXIMUM ALLOWABLE SLOPES (H:V)[1] FOR EXCAVATIONS LESS THAN 20 FEET DEEP[3]
STABLE ROCK	VERTICAL (90°)
TYPE A[2]	3/4:1 (53°)
TYPE B	1:1 (45°)
TYPE C	1 ½:1 (34°)

Footnote (1) Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.

Footnote (2) A short-term maximum allowable slope of 1/2H:1V (63°) is allowed in excavations in Type A soil that are 12 feet (3.67 m) or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet (3.67 m) in depth shall be 3/4H:1V (53°).

Footnote (3) Sloping or benching for excavations greater than 20 feet deep shall be designed by a registered professional engineer.

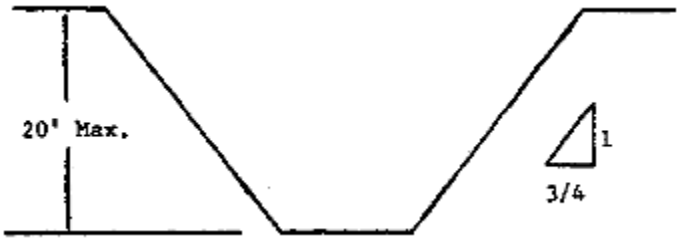
Figure B-1

Slope Configurations

(All slopes stated below are in the horizontal to vertical ratio)

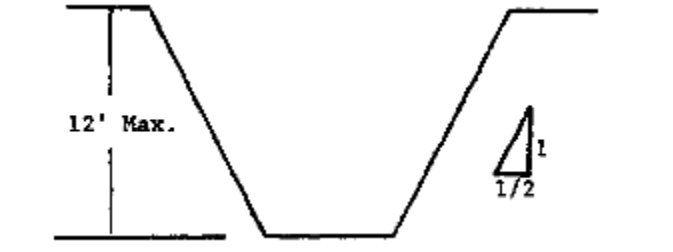
B-1.1 Excavations made in Type A soil.

1. All simple slope excavation 20 feet or less in depth shall have a maximum allowable slope of ¾:1.



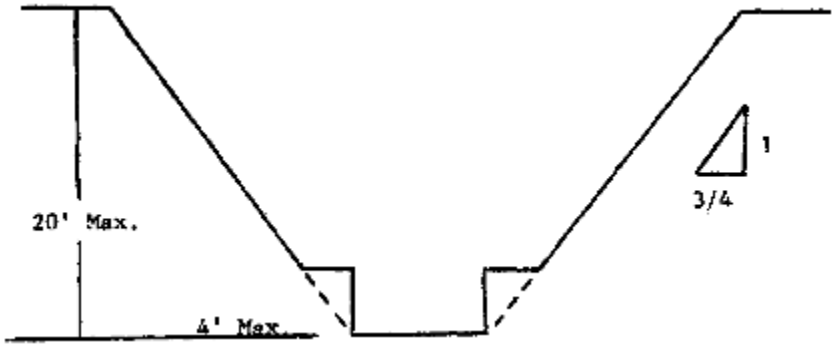
SIMPLE SLOPE -- GENERAL

Exception: Simple slope excavations which are open 24 hours or less (short term) and which are 12 feet or less in depth shall have a maximum allowable slope of ½:1.

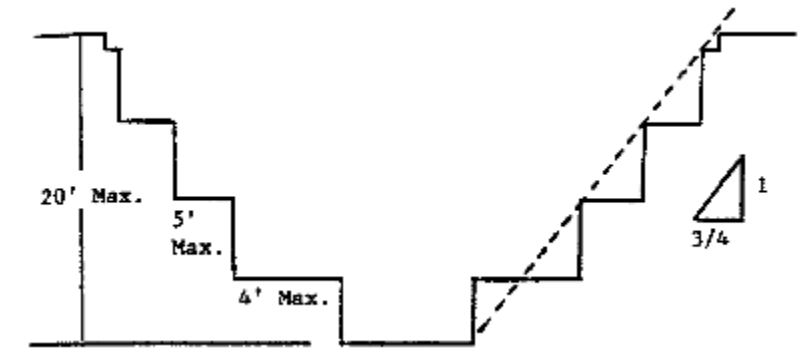


SIMPLE SLOPE -- SHORT TERM

2. All benched excavations 20 feet or less in depth shall have a maximum allowable slope of 3/4 to 1 and maximum bench dimensions as follows:



SIMPLE BENCH



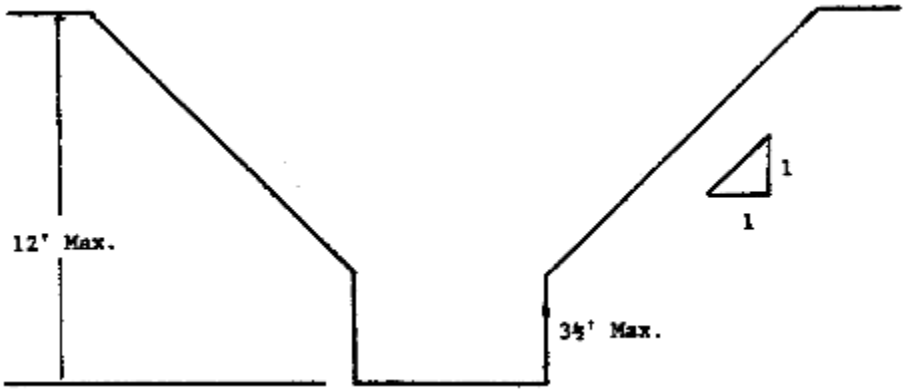
MULTIPLE BENCH

3. All excavations 8 feet or less in depth which have unsupported vertically sided lower portions shall have a maximum vertical side of 3½ feet.



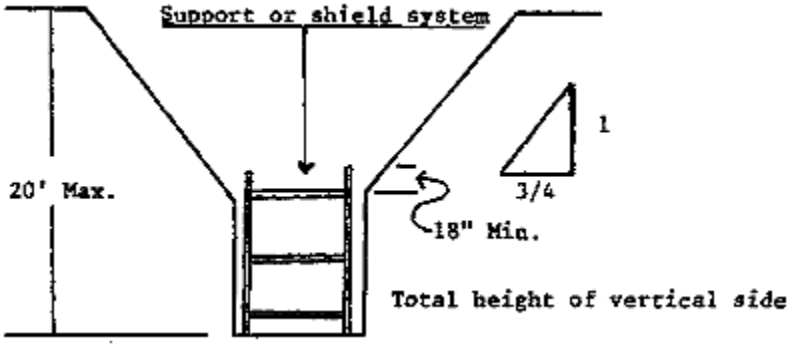
UNSUPPORTED VERTICALLY SIDED LOWER PORTION -- MAXIMUM 8 FEET IN DEPTH)

All excavations more than 8 feet but not more than 12 feet in depth with unsupported vertically sided lower portions shall have a maximum allowable slope of 1:1 and a maximum vertical side of 3½ feet.



UNSUPPORTED VERTICALLY SIDED LOWER PORTION -- MAXIMUM 12 FEET IN DEPTH)

All excavations 20 feet or less in depth which have vertically sided lower portions that are supported or shielded shall have a maximum allowable slope of ¾:1. The support or shield system must extend at least 18 inches above the top of the vertical side.

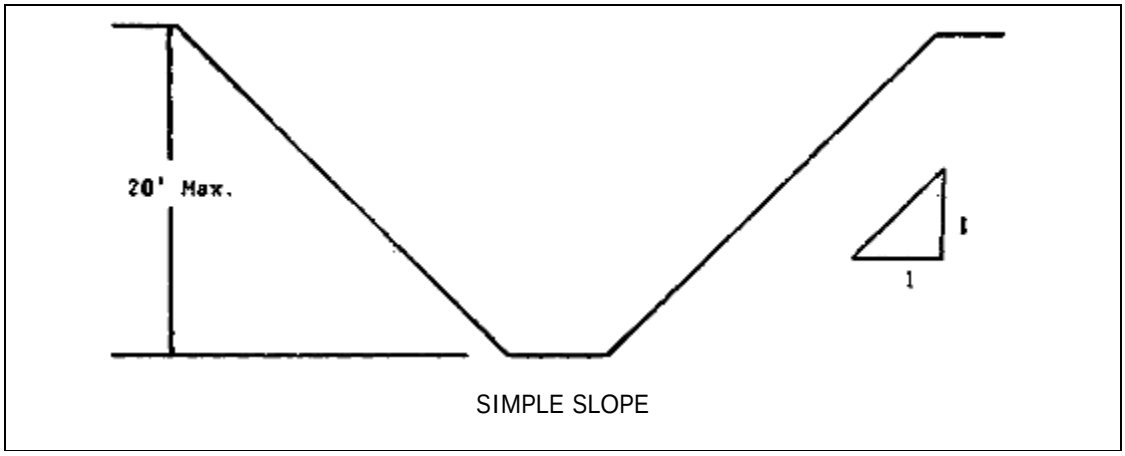


SUPPORTED OR SHIELDED VERTICALLY SIDED LOWER PORTION

4. All other simple slope, compound slope, and vertically sided lower portion excavations shall be in accordance with the other options permitted under § 1926.652(b).

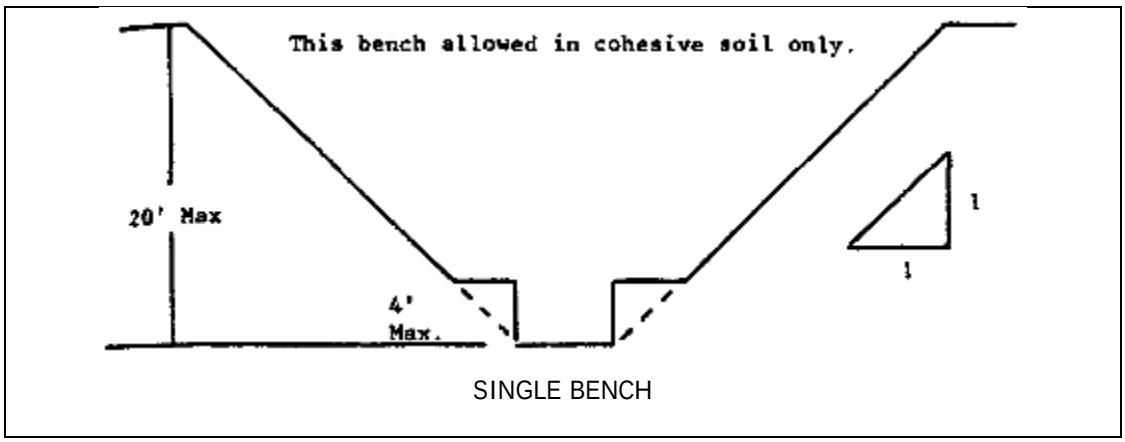
B-1.2 Excavations Made in Type B Soil

1. All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1.

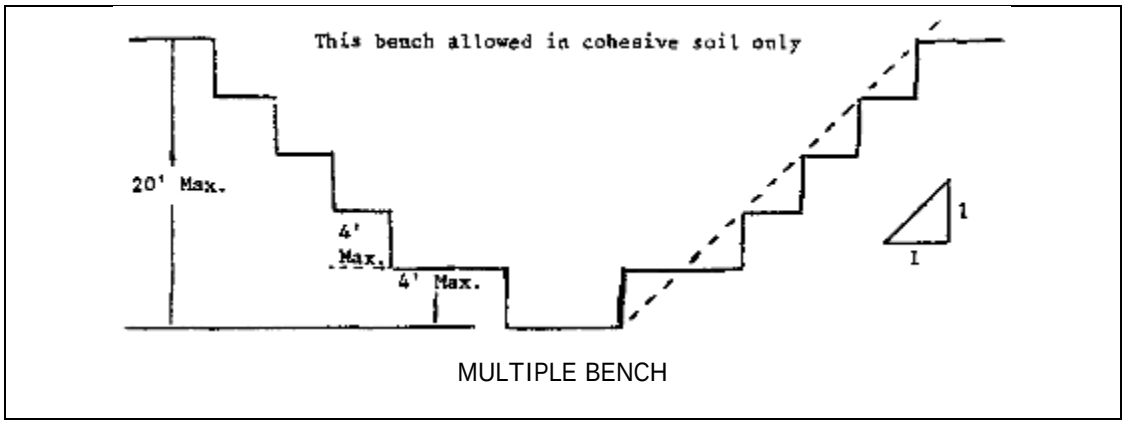


SIMPLE SLOPE

2. All benched excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1 and maximum bench dimensions as follows:

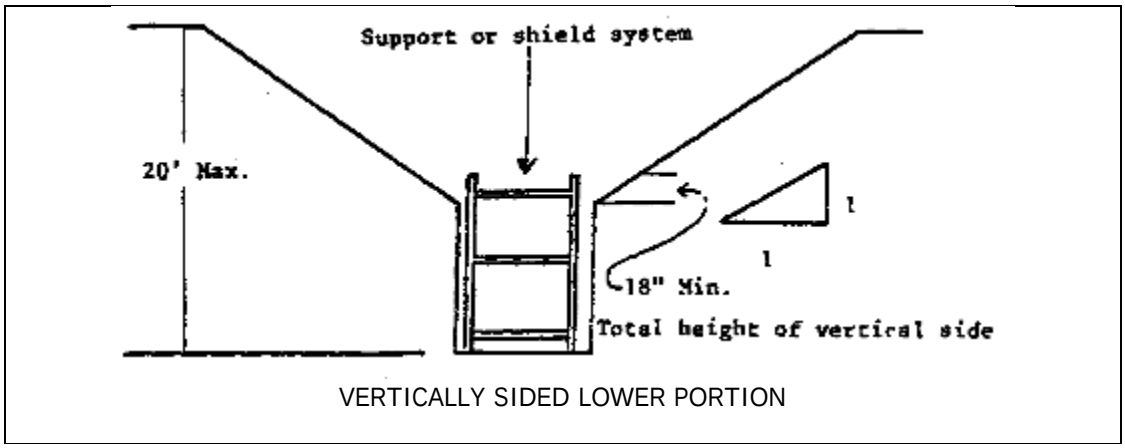


SINGLE BENCH



MULTIPLE BENCH

3. All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1:1.

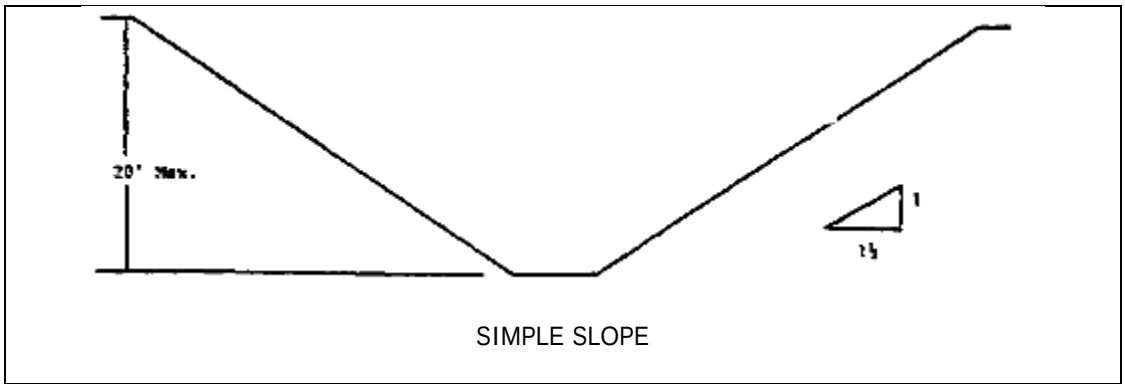


VERTICALLY SIDED LOWER PORTION

4. All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).

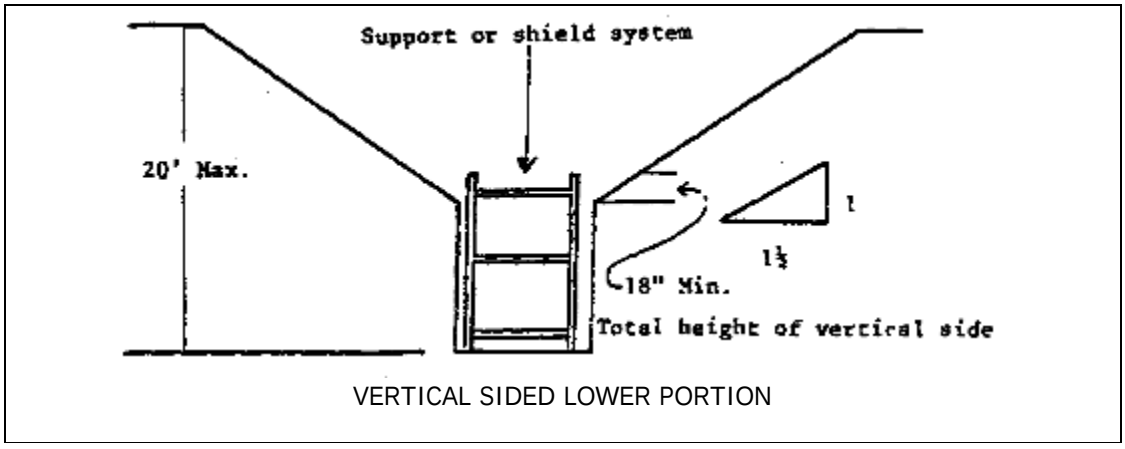
B-1.3 Excavations Made in Type C Soil

1. All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1½:1.



SIMPLE SLOPE

2. All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1½:1.

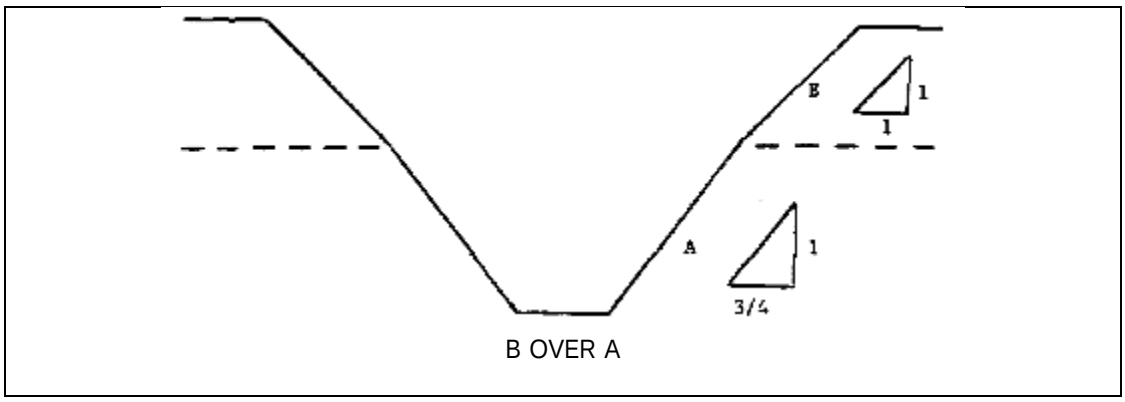


VERTICAL SIDED LOWER PORTION

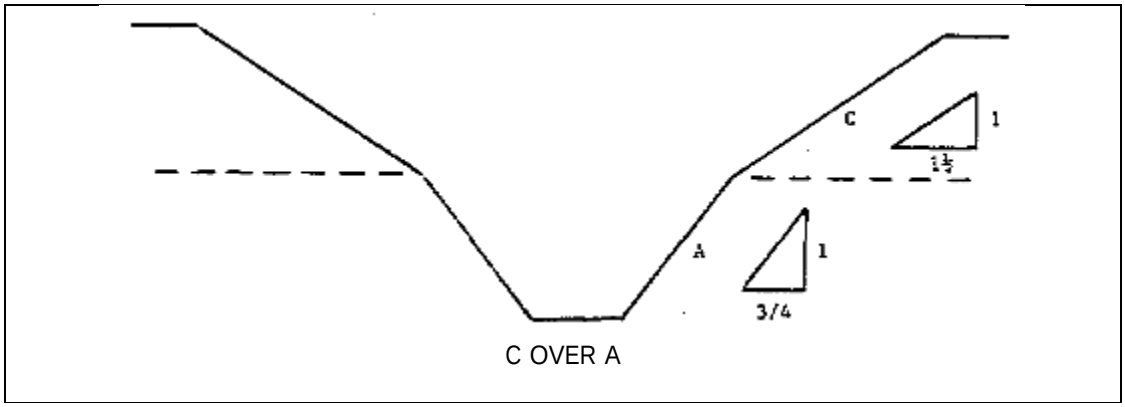
3. All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).

B-1.4 Excavations Made in Layered Soils

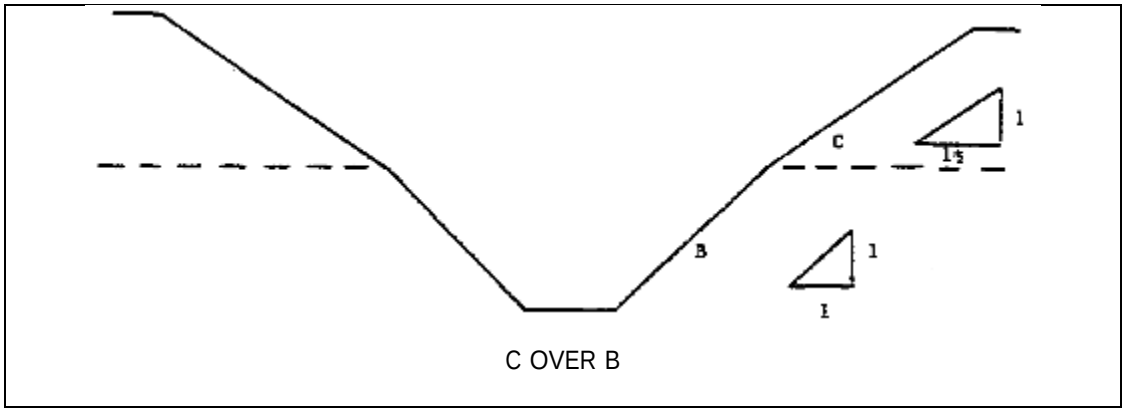
1. All excavations 20 feet or less in depth made in layered soils shall have a maximum allowable slope for each layer as set forth below.



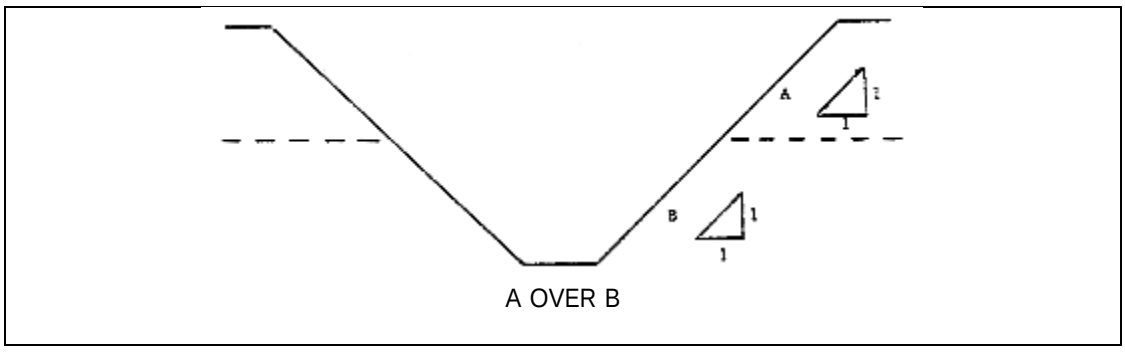
B OVER A



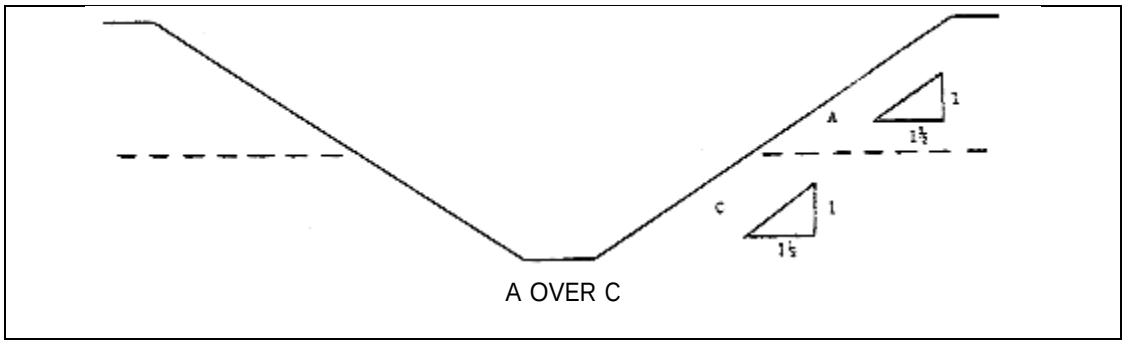
C OVER A



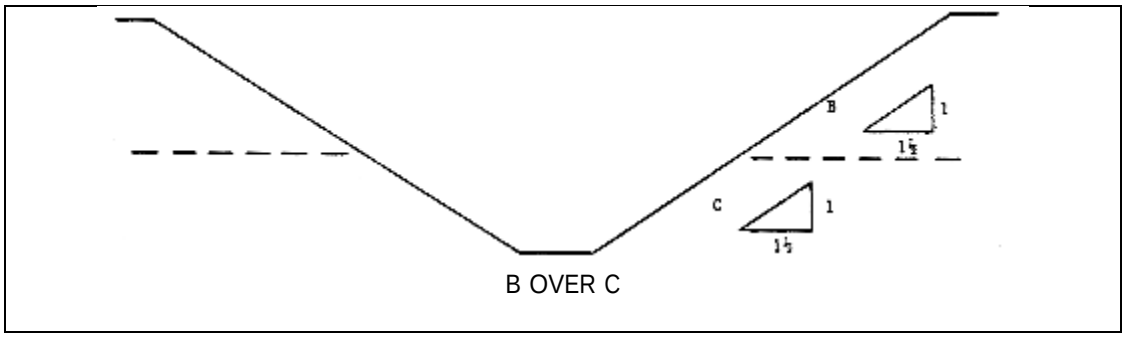
C OVER B



A OVER B



A OVER C



B OVER C

2. All other sloped excavations shall be in accordance with the other options permitted in § 1926.652(b).

Table of Contents

1. Purpose
2. Roles and Responsibilities
3. Definitions
4. Procedure
5. Flowcharts
6. Documentation
7. Remediation
8. Other Manual References
9. Appendices
10. Forms
11. Exhibits
12. Change Log

1. Purpose

The purpose of this procedure is to address supports.

2. Roles and Responsibilities

See below.

3. Definitions

Not applicable.

4. Procedure

4.1 Each underground facility (pipeline, valves, sleeves, and other appurtenances) shall be supported to prevent horizontal and vertical movement. See DPPM, Exhibit D - Support and Backfill Requirements.

4.1.1 Approved **temporary** supports include wooden skids and sheeting.

4.1.2 Approved **permanent** supports include sandbags or "Sakrete" bags.

4.2 Valves, repair sleeves, and other appurtenances shall be supported immediately after being exposed. Place the supports directly under the appurtenance and within 5 feet of each side.

4.3 Support spacing for exposed line pipe shall not exceed these distances, which are based on API RP 1117:

Pipe Size	Preferred Span Feet	Maximum Span Feet
4”	20	40
6” – 8”	25	40
10”	30	40
12” – 18”	35	40
20” – 24”	35	45

NOTES:

1. Span distances apply to all pipe wall thicknesses. Supports shall not be located within five feet of a girth weld.
2. All valves, repair sleeves, and other appurtenances shall be directly supported. Supports shall also be placed under the pipe on each side of the appurtenance and not more than 5 feet from the appurtenance.
3. Pipes supported at maximum span cannot have valves, sleeves, tees, or other appurtenances in the adjacent upstream and downstream spans.
4. Calculations of the maximum support spacing and the longitudinal pipe stresses are on file in Asset Integrity Services.

4.4 A minimum of 6" of padding material (sandbags, air cushions, "Sakrete" bags, or other material as approved by Buckeye) shall be maintained between the pipeline and wooden skids.

4.5 Trench supports and pipe supports shall remain in place along the entire length of the pipeline section until the scheduled maintenance activity is completed.

4.6 Special care is required for excavation on steep slopes (>20% grade). In addition to horizontal and vertical movement, the pipeline must also be adequately braced to support axial loading. No more than 50’ of pipeline may be exposed at any given time, even when supported as per the table in Section 4.3. If more than 50’ of pipeline needs to be exposed, earthen plugs shall be utilized to provide axial support. Additional lengths of pipe can then be exposed utilizing additional earthen plugs. See Exhibit A. If the area of the pipeline where the earthen plug is installed also needs to be exposed, then the pipeline shall be backfilled as per Section 13 of this manual sufficiently to allow excavation of the pipeline under the earthen plug, so as not to exceed the maximum 50’ of continuously exposed pipeline.

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5. Flowcharts

Not applicable.

6. Documentation

Not applicable.

7. Remediation

Not applicable.

8. Other Manual References

Not applicable.

9. Appendices

Not applicable.

10. Forms

Not applicable.

11. Exhibits

Section 10, Exhibit A - Pipeline Support Details on Sloped Excavation
DPPM, Exhibit D - Support and Backfill Requirements

12. Change Log

For an overview of the manual revision process, please refer to 1.01 – Introduction to Using and Revising Manuals.

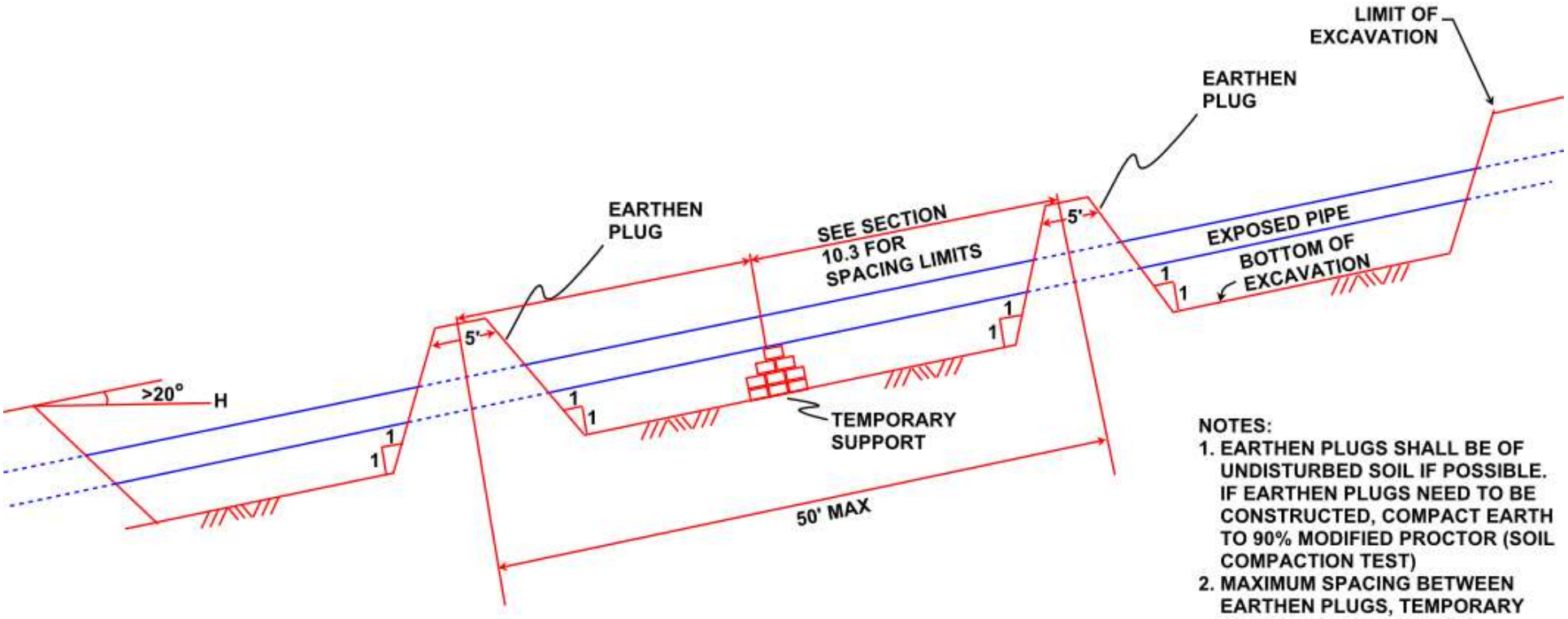
For a log of all revisions to this manual, please refer to 1.04 – Log of Revisions.

Rev #	Date	Prepared by (Name/Title)	Reviewed by (Name/Title)	Approved by (Name/Title)	Summary of Change(s)
5	11/24/21	Michael Detweiler			New template applied.
6	12/29/21	L. Hughes - Codes,	MRT	• C. Ostach - VP	Updated 4.3

		Standards, and Publications Lead		Operations Services • J. Burdett - Director Transportation Operations	

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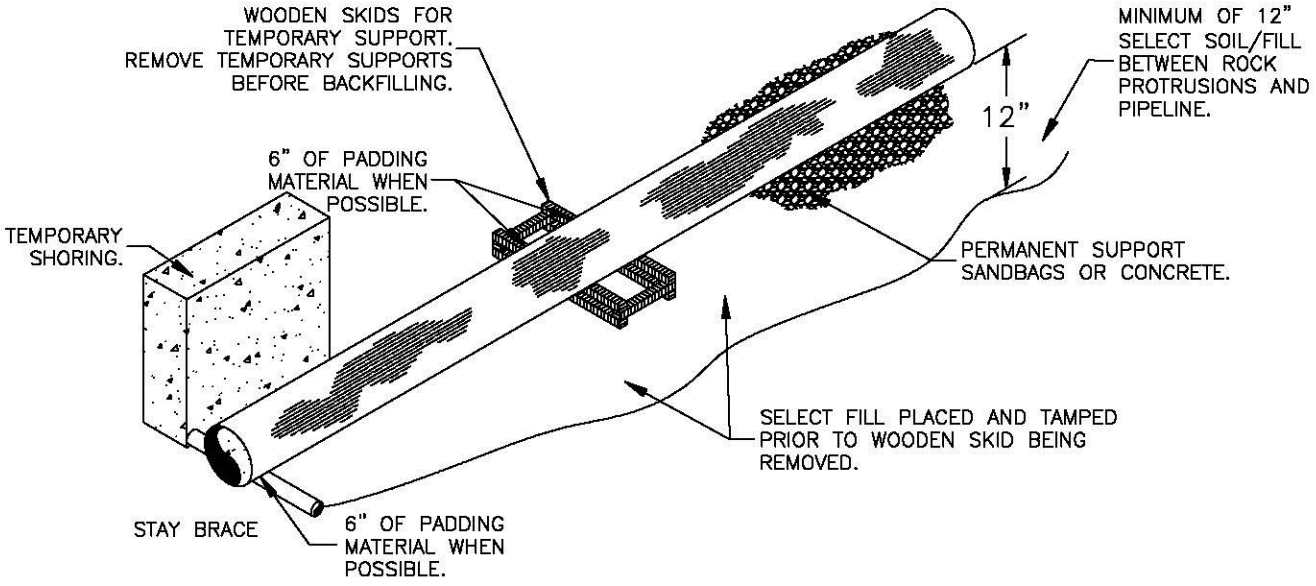
SECTION 10, EXHIBIT A - PIPELINE SUPPORT DETAILS ON SLOPED EXCAVATION



NOTES:

1. EARTHEN PLUGS SHALL BE OF UNDISTURBED SOIL IF POSSIBLE. IF EARTHEN PLUGS NEED TO BE CONSTRUCTED, COMPACT EARTH TO 90% MODIFIED PROCTOR (SOIL COMPACTION TEST)
2. MAXIMUM SPACING BETWEEN EARTHEN PLUGS, TEMPORARY SUPPORTS, OR LIMITS OF EXCAVATION SHALL NOT EXCEED LIMITS AS PER SECTION 10.3

SUPPORT AND BACKFILL REQUIREMENTS



NO.	DESCRIPTION OF REVISION	BY DATE	APPR DATE
4			
3			
2			
1			

BUCKEYE PARTNERS, L.P.

MECHANICAL
SUPPORT AND
BACKFILL REQUIREMENTS

DRAWN S.R.P.	CHKD.	APP'D.
DATE: 07/06/08	NO.DPPM, EXHIBIT D	REV
SCALE: NONE		

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1. Purpose

The purpose of this procedure is to address underground structure clearance.

2. Roles and Responsibilities

See below.

3. Definitions

Not applicable.

4. Procedure

4.1 At least 12" of clearance shall be maintained between the pipeline and any other underground structure unless such clearance is impractical.

4.2 Where 12" of clearance is not practical and cannot be maintained, the clearance may be reduced provided the pipeline has adequate cathodic protection and a Regional Engineering Manager-approved, electrical nonconducting material (e.g., Micarta block) is placed between the pipeline and structure.

4.3 The minimum clearance between pipeline and a drainage tile shall be 2" (inches).

5. Flowcharts

Not applicable.

6. Documentation

Not applicable.

7. Remediation

Not applicable.

8. Other Manual References

Not applicable.

9. Appendices

Not applicable.

10. Forms

Not applicable.

11. Exhibits

Not applicable.

12. Change Log

For an overview of the manual revision process, please refer to 1.01 – Introduction to Using and Revising Manuals.

For a log of all revisions to this manual, please refer to 1.04 – Log of Revisions.

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4	11/24/21	Michael Detweiler			New template applied.

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5	12/21/21				Annual review – no changes required.

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1. Purpose

The purpose of this procedure is to address rock removal guidelines.

2. Roles and Responsibilities

See below.

3. Definitions

Not applicable.

4. Procedure

4.1 Policy

The following guidelines shall be used for removing rocks in close proximity to the pipeline.

- All types of rock removal equipment, from digging bars and picks to jackhammers, rock splitters, and backhoes can do serious damage to our pipelines. Proper use of this equipment is essential to prevent damage to the pipeline.

- Since rocks are different shapes and sizes, there is no “set in stone” or perfect way to remove all rocks. Each rock that is in close proximity to the pipeline poses its own unique threat to the pipeline. Therefore, each rock removal situation is unique and will require experienced personnel and extreme caution from the people involved in the removal process.

NOTE: Rock splitting is pipeline excavation and, therefore, an Operator Qualification covered task.

4.2 General Guidelines

4.2.1 An experienced Buckeye Representative who has previously seen rocks being removed from the pipeline shall always be present when excavation begins to remove the rock from the pipeline.

4.2.2 The Buckeye Representative shall contact the Control Center and communicate the line location of the dig.

4.2.3 The Buckeye Representative shall constantly be available to communicate with the backhoe/excavator operator via hand or audible signal when uncovering the pipeline and exposing the rock. (See Section 8 - Excavating and Section 9 - Sloping, Shielding and Shoring Excavations.)

4.2.4 Check the operating pressure on the line being worked on. It may be necessary to lower the operating pressure before beginning rock removal. (See 195 O&M Manual Section F-31 - Moving In-Service Pipe.)

4.2.5 The Buckeye Representative shall constantly communicate with the person operating the splitter/jackhammer. It may be necessary to use hand signals to stop the operator since he/she may not be able to hear audible signals.

4.2.6 When the rock/concrete is removed from the pipe, a visual pipe inspection shall be done (Corrosion Manual Section C-06 - Atmospheric Corrosion Procedure). If the Buckeye Representative finds damage (dents/cracks) or corrosion, a Nondestructive Inspection (Maintenance Manual Section F-02 - Nondestructive Inspection) shall be done to check the pipeline integrity. Nondestructive Inspection of pipe shall be done by a qualified employee.

NOTE: It is possible, though not common, that removing the rock will cause or reveal a leak in the pipe. Refer to 195 O&M Manual Section F-29 - Damaged or Defective Non-Leaking Pipe and Maintenance Manual Section E-09 - Leak Repair to determine the equipment, personal protective equipment, and procedure required if that occurs.

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4.3 Rock Splitters

Rock splitters are a useful tool in removing rocks from areas close to the pipeline. Before a rock splitter can be used, the rock needs to be exposed and a hole needs to be drilled into the rock. After the hole is drilled, the rock splitter tips shall be well-lubed and then inserted into the drilled hole of the rock. Use caution when splitting a rock that is tight against the pipeline; never split the rock toward the pipeline.

Rock Splitting Steps:

If excavation may result in exceeding the maximum span for the pipe size being exposed, use pipe supports and cribbing on both sides of the pipe. Refer to 195 O&M Manual Section F-31 - Moving In-Service Pipe for exact calculations for pipe size and support.

4.3.1 Remove enough dirt from around the rock so that when the rock splits there is a place for it to move away from the pipe and so you can see how the rock is oriented in the ditch and under the line. Being able to see the rock helps to determine what type of equipment shall be used to safely remove it.

4.3.2 Excavate around the rock in the ditch to a level below the bottom of the pipe. This allows a better look at any rock under or in contact with the pipe.

4.3.3 Drill a hole in the rock for the splitter to fit into; always drill at an angle that will not hit the pipeline.

4.3.4 Before using the rock splitter, be sure to lube the splitter tips that go into the drilled hole of the rock. If the tips are not lubed, they may get stuck in the rock.

4.3.5 When rocks are tight against the line, always split the rock parallel to the pipe. Never split a rock toward the pipeline; this may cause the rock to pierce the line.

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4.3.6 Handle the air drill and splitter with caution and always wear appropriate PPE, which consists of a hard hat, safety glasses, leather gloves, hearing protection, and steel-toed boots.

ELCO Hydraulic Splitter Specifications

Model	#12		#9	
Weight	68 Lbs.		50 lbs.	
Overall Length	50 3/4"		40"	
Maximum Expansion	.75" - 1.87"		.78"	
Size Hole Required	1 3/4"		1 3/4"	
Minimum Hole Depth	26"		18"	
Maximum Splitting Force	385 Tons		220 Tons	

The No. 12 cylinder, the largest and most powerful, is recommended for heavy duty jobs and reinforced concrete. The No. 9 is recommended where work is light or in a confined area.

4.4 Jackhammers

Jackhammers can be a useful tool for removing rocks from pipelines. When using a jackhammer to remove rock, begin breaking at the edge of the rock and continue removing small pieces of the rock making sure that the bit never comes in contact with the pipe. Jackhammers shall be used with caution. The most dangerous attribute of a jackhammer is the person operating it; there is no substitute for experience. If the Buckeye representative does not feel comfortable with whoever is doing the jack hammering, it shall be stopped immediately.

4.5 Heavy Equipment

Extreme caution shall be used when excavating with heavy equipment where there is suspected rock. When uncovering the line with heavy equipment, an experienced Buckeye representative shall be present and make the decision as to whether the rock is loose enough to remove with the heavy equipment or whether to use a tool (jackhammer/rock splitter) to assist in the removal of the rock. In some cases the rocks around the line may be removed with the backhoe/excavator if they are not tightly wedged up against the pipeline. (See Section 8 - Excavating and Section 9 - Sloping, Shielding and Shoring Excavations, and 195 O&M Manual Section F-31 - Moving In-Service Pipe.)

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4.6 Pipelines Encased in Concrete

In situations where pipe is encased in concrete, follow the excavation practices contained in Section 8. Caution shall be taken by the excavator when using excavation equipment to safely expose the pipeline.

In situations where removal of the concrete on in service pipe is necessary, extreme caution shall be taken. The Buckeye representative shall determine the approved method of concrete removal which could include use of hand tools, such as a sledge hammer or pick axe to carefully and methodically fracture the concrete into small pieces and chip the concrete away from the pipeline without creating a safety or integrity hazard. The Buckeye representative shall contact the Control Center to reduce the operating pressure to the safest practical level.

If the Buckeye representative is not confident that the above methods can be performed safely, the pipeline shall be purged and depressurized, the concrete removed as needed, and the pipe segment shall be replaced.

5. Flowcharts

Not applicable.

6. Documentation

Not applicable.

7. Remediation

Not applicable.

8. Other Manual References

Not applicable.

9. Appendices

Not applicable.

10. Forms

Not applicable.

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11. Exhibits

Not applicable.

12. Change Log

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3	11/24/21	Michael Detweiler			New template applied.
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1. Purpose

The purpose of this procedure is to address backfilling requirements.

This procedure satisfies the following regulations:

CFR 49, Sections 192.319, 195.246, 195.250, 195.252, 195.402(c)(3), and 195.402(c)(14)
American Institute of Steel Construction Number 39, Four Span Continuous Beam.
Buckeye Environmental Manual/Water/Erosion Control
Buckeye Environmental Manual/Wetlands

2. Roles and Responsibilities

See below.

3. Definitions

Not applicable.

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4. Procedure

4.1 Select fill may be sand, crushed limestone screenings, or soil which is free of rock, cinders, metal, debris, and organic material.

4.2 Ensure the ditch bottom is smooth and free of any rock protrusions.

4.3 Backfill in such a manner that the pipe will be fully supported at all times and damage will **not** be incurred to the pipe, coating, appurtenances, components, valves, and other structures. See DPPM, Exhibit D - Support and Backfill Requirements.

4.3.1 Remove temporary supports, backfill and tamp as per 4.3.2 through 4.3.3.

4.3.2 Backfill and hand tamp void areas under the pipeline to a density equal to that of the adjacent undisturbed soil in 6" lifts until the pipe is firmly and fully supported. Hand tamp is defined as using hand tools to force in, and tightly pack backfill by repeated strokes to compress the backfill material around and under the pipeline.

4.3.3 Backfill and mechanical tamp along the sides and under the pipeline to a density equal to that of the adjacent undisturbed soil in 6" lifts until the pipe is covered. Mechanical tamp is defined as using power equipment, such as walk-behind units, to uniformly consolidate the backfill material around the pipeline.

4.4 Place 12" of select fill around and under the pipe and mechanical tamp to a density equal to that of the adjacent undisturbed soil.

4.5 Backfill material used above the select fill shall be within ±2% of the soil optimum moisture content per ASTM D1557 and shall not contain rocks in excess of 4 inches in any dimension. Soil optimum moisture content may be field estimated by squeezing a handful of loose soil so as to form a ball. Soil with moisture above optimum moisture content may leave a wet outline of the soil sample ball on the palm of the hand or free water will form on the surface of the sample while squeezing. Soil with moisture below the optimum moisture content will not hold together under pressure or may be dry, loose, powdery and fall through fingers when squeezed or, with clay soils, the sample is too hard to squeeze.

4.6 Place a maximum 12" of backfill material above the pipe and mechanical tamp to a density equal to that of the adjacent undisturbed soil. Repeat until the depth of the excavation is backfilled. The use of the excavator bucket to achieve nominal compaction above the pipeline is acceptable once the pipeline has been properly backfilled to a minimum level of 12” above the pipeline. Static compaction rollers may be used overtop of the pipeline when 5-feet or more of cover is achieved.

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4.7 When the pipeline is excavated, 20”-wide orange plastic warning mesh shall be placed at least 12”, but not more than 24”, below finished grade level along the length of the excavated pipeline to alert future excavators of the buried pipeline below. When the excavation is less than 12” wide, 6”-wide yellow warning tape is an acceptable alternative to the mesh. Whichever of the two is used shall be placed far enough above the pipeline so that it gets uncovered before the pipeline becomes damaged. “Warning, High Pressure Petroleum Pipeline Buried Below. Call 811 for the State One Call System” shall be printed on both the orange warning mesh and the yellow warning tape.

NOTE: Contact Supply Chain Department to order warning mesh.

4.8 Backfill the entire excavation in accordance with Section 4.6 until the center of the ditch is high enough to leave a flat surface upon settling.

4.9 All excavations and disturbed land surfaces shall be restored as nearly as practicable to the condition that existed prior to construction unless there is an agreement specifying otherwise.

4.10 In areas of rock protrusions, blasted rock, or unsuitable soil, 12" of select fill or sand shall be placed and tamped under and along the sides of the pipeline.

4.11 Local authorities may require that the entire ditch be filled with sand and/or limestone screenings. The select fill along the sides and above the pipeline shall be tamped to a density equal to that of the adjacent undisturbed soil in 6" lifts until the specified grade is obtained.

4.12 Valve stations and equipment areas which require periodic maintenance shall be backfilled with sand and/or select fill.

4.13 When backfill with "flowable fill" is required, the pipeline shall first be padded with 6 inches of compacted sand. Flowable fill contains fly ash, which is corrosive to steel.

5. Flowcharts

Not applicable.

6. Documentation

Not applicable.

7. Remediation

Not applicable.

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8. Other Manual References

Not applicable.

9. Appendices

Not applicable.

10. Forms

Not applicable.

11. Exhibits

DPPM, Exhibit D - Support and Backfill Requirements

12. Change Log

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1. Purpose

The purpose of this procedure is to address blasting and seismic vibrating activity.

This procedure satisfies the following regulations:

CFR 49, Part 192.614, Section 195.442(b)(6)(ii), 195.442(c)(6)(ii)
Blasting Regulation Reference: 29 CFR 1926.905h
Seismic Reference Guideline: Department of Mines & Minerals Standards

2. Roles and Responsibilities

See below.

3. Definitions

Not applicable.

4. Procedure

4.1 Planning/Testing

4.1.1 When planning a blasting or seismic vibrating operation within 500 feet of the pipeline Right of Way, an outside party shall submit a plan to the applicable Regional Engineering Manager who shall consult with Asset Integrity as to the plan's acceptance. Verbal and written notice will be given 7 and 14 days respectively on approvals.

NOTE: In many states, there are currently no Miss Dig or mandatory One-Call requirements for contracting companies when using seismic vibrating operations. Further, the operation is non-regulated. Conduct negotiations with the seismic contractors accordingly.

4.1.1.1 A blasting plan shall include size and number of holes, depth, spacing, burden, maximum amount of explosives to be used, depth of blast area, and depth of overburden, if any.

4.1.1.2 A seismic vibrating plan, when using Vibroseis System Vibrators to radiate ground vibrations, shall include information on soil conditions and depth of exploration, the anticipated number and type of vibrations, type and weight of vehicle, and peak force of equipment. Peak force by vehicle weight shall not exceed 45,000 pounds.

4.1.2 If the outside party anticipates using explosives within 300 feet or seismic vibrating within 100 feet of Buckeye's pipeline, testing monitored by a seismograph located directly over the pipeline at its closest point to the blast hole or vibrators shall be conducted. The outside party shall provide monitoring equipment.

A Buckeye representative shall complete the Work Impact Management Plan form per Maintenance Manual Section F-01, and monitor the blasting activities.

4.1.2.1 For blast testing, use a maximum charge of one pound during the initial test blast. Detonate the first test blast with all necessary monitoring equipment in place to observe the results of the contractor's proposed blast design. Each subsequent test blast may be set and detonated only after the seismograph reading from the previous test blast indicates that further blasting can be safely conducted. The particle velocity of any one component of a three-component seismograph shall not exceed 2.0 in/sec as recorded on the seismograph placed directly over the pipeline.

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Routine production blasting may be initiated after completion of a successful test blast design, with allowable charge based on the seismographic vibration recordings of test blasts. However, all blasting shall be continuously monitored by a seismograph. The velocity recorded shall not exceed the 2.0 in/sec limit noted above.

4.1.2.2 For vibration testing, determine the maximum peak force allowed under continuous seismographic vibration monitoring such that the peak particle velocity will not exceed 2.0 inches per second.

4.2 Special Requirements

4.2.1 Do not allow anyone to conduct blasting closer than 50 feet to Buckeye's pipelines without taking special precautions such as hiring a consulting firm that specializes in underground blasting to conduct the seismograph survey and certify the results.

4.2.2 Request that seismic vibration surveys not be conducted closer than 100 feet to Buckeye’s pipelines.

4.2.3 The applicable Regional Engineering Manager, who may consult with Asset Integrity, will approve the contractor’s selection of consulting firms that will conduct the vibration analysis before starting any blasting or seismic vibrating operation.

4.2.4 If seismographic readings above the limit stated in paragraphs 4.1.2.1 and 4.1.2.2 of this section are recorded, a leakage survey composed of exposing and inspecting the pipeline for possible damage and/or product release shall be conducted. The outside party conducting blasting or seismic vibrating operations is responsible for the expense related to the leakage survey and any subsequent repairs necessitated by the operation.

5. Flowcharts

Not applicable.

6. Documentation

Not applicable.

7. Remediation

Not applicable.

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8. Other Manual References

Not applicable.

9. Appendices

Not applicable.

10. Forms

Not applicable.

11. Exhibits

Not applicable.

12. Change Log

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1. Purpose

The purpose of this procedure is to address pipeline protection at vehicular and utility crossings.

This procedure satisfies the following regulations:

CFR 49, Parts 192.317, 192.319, 192.323, 192.325, 192.327, 195.110, 195.248, 195. 256 and ASME B31.4 and ASME B31.8.

2. Roles and Responsibilities

See below.

3. Definitions

Not applicable.

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4. Procedure

4.1 Policy

4.1.1 The pipeline shall be protected against excessive external loading and from potential third-party damage.

4.1.2 To ensure access for maintenance, adequate clearances from foreign utilities and limits on excess cover shall be observed.

4.1.3 Where specifications and dimensions cannot be met in accordance with this policy or situations occur that are not covered by this policy, prior to installation, plans shall be submitted to Right of Way, Real Estate and Damage Prevention Services for internal review and approval.

4.2 General Requirements

4.2.1 A qualified Buckeye representative or contract locator shall locate the pipeline and determine its elevation for the party proposing to cross the pipeline.

4.2.2 The Buckeye representative shall perform the following duties.

- Ensure that the pipeline is satisfactorily protected.
- Review construction plans and confirm schedules for each proposed activity and, if required, refer plans to the Corporate Right of Way Department.
- Remain on site during right of way activity or make frequent checks on work activity and progress.
- Prepare the encroachments template in the JDE Work Order system ("Work Order").

4.3 Cover and Protection Requirements

4.3.1 **Temporary Construction Equipment Crossings for (a) wheeled equipment up to 80,000 lbs., a maximum axle weight of 20,000 lbs., and no more than two rear axles, and (b) track equipment with a maximum soil bearing pressure less than 10 psi.**

4.3.1.1 Temporary (less than 120 days use) heavy construction equipment crossings will be permitted where the pipeline has a minimum of five (5) feet of cover.

4.3.1.2 Where existing cover is insufficient, a compacted earth ramp may be placed to obtain the required cover.

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4.3.1.3 The ground at the construction crossing shall be dry and firm. If wet conditions are present, a geotextile liner and a minimum of 12 inches of crushed stone surface or minimum 10" x 10" timber/swamp mats shall be placed up to the required five (5) feet of cover.

4.3.1.4 Crossings will be periodically visited to ensure that the required cover is being maintained.

4.3.2 Residential and Professional Office Driveway Crossings

4.3.2.1 Where the primary traffic will be automobiles, no additional protection is needed if the pipeline has at least 36 inches of cover at the base of the proposed pavement.

4.3.2.2 If 36 inches of cover at the base of the proposed pavement is not available, a load-distributing concrete slab shall be installed (see Section 15, Exhibit A). The slab shall have a minimum seven-day cure before traffic loads are applied.

4.3.2.3 If the minimum clearances for the slab installation cannot be obtained, refer the situation to Right of Way, Real Estate, and Damage Prevention Services.

4.3.3 Commercial and Industrial Driveways, Public Streets, all other Vehicular Crossings, all cases of proposed longitudinal occupancy (that is, where the pipeline is parallel to the right of way) within the pipeline right of way width, and any other non-confirming crossings.

4.3.3.1 All alignments of this nature shall be referred to Right of Way, Real Estate and Damage Prevention Services for internal review and approval.

4.4 Underground Utility Crossing Requirements

4.4.1 General

4.4.1.1 Where practical, at least 12 inches of clearance is desirable between the pipeline and utility crossings (See Section 11). For high voltage cable over 600 volts and fiber optic communications-type cable crossings, 24" of clearance should be maintained. Where the above clearances are impractical, the clearance may be reduced if adequate provisions are made for corrosion control (that is, use of barrier insulation sheet materials and/or utility bonding). Service entrances for water, gas, electric, and communications should be installed below the pipeline and should cross the right of way at a right angle to the pipeline. Where splicing is a hardship, utilities such as

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cross-country fiber optic or similar communications cables may be installed over the pipeline.

4.4.1.2 Power cables, communications cables, and non-metallic natural gas pipelines shall be encased in concrete in accordance with Section 15, Exhibit B.

4.4.1.3 The concrete shall have a minimum compression strength of 3,000 psi at 28 days. Concrete shall be pigmented or overlaid with colored tape on the concrete surface using the following color convention prescribed by the American Public Works Association Uniform Color Code:

Red	Power Cable
Orange	Communication Cable
Yellow	Natural Gas Pipelines

4.4.1.4 Warning tape shall be installed within the limits of the pipeline right of way and directly above the utility with 12" of burial depth or just below plow depth in fields using the following color conventions:

Red	Power Cable
Orange	Communication Cable
Green	Sewer
Blue	Water
Yellow	Natural Gas and Petroleum Pipelines
Purple	Reclaimed Water, Irrigation and Slurry Lines
Fluorescent Pink	Temporary Survey Markings

4.4.2 Trenchless Excavations

4.4.2.1 Precautions shall be taken any time trenchless excavations are conducted in the vicinity of underground facilities. When directional trenchless excavations are carried out parallel to and within 10 feet of an existing pipeline, spot holes should be excavated at 25-foot intervals, when possible, so that the exact location of the pipeline can be visually determined. When trenchless excavations are carried out perpendicular to and under an existing pipeline, the pipeline shall be excavated at the point of intersection with the drillhead so that protection of the pipeline can be visually verified. These spot holes will also allow personnel to verify pipe alignment as the pipe is installed during the installation process. Additionally, the Pipeline and Terminal Protector shall require a tracking system be utilized to verify and monitor the exact location, progress, and direction of the drill head for all directional drilling operations.

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4.4.2.2 All trenchless excavation methods that do not meet the requirements stipulated in Section 4.4.2.1 must include a plan that consists of the proposed vertical separation clearances to the pipeline and any additional risk mitigation measures.

Additionally, for any HDD installations that do not meet the requirements in Section 4.4.2.1, Buckeye shall be provided with a copy of the horizontal directional drill (HDD) plan for additional review. The plan shall specify how the HDD will be tracked, monitored, and controlled, and detail preventative measures to prevent conflicts with Buckeye's existing facility. The plan shall state the planned HDD bore diameters, rod lengths, ream diameters, method of guidance, method of drill head tracking, etc. Additionally, the plan shall include procedures for continuous monitoring and reporting of the drill head location, and state the appropriate vertical and horizontal deviation tolerances for the HDD operations in accordance with API RP 1172 – "6 Final Design". The procedure shall include reporting requirements and procedures to correct or shut down the HDD trajectory should the operation exceed the established tolerances. Buckeye Operations shall be notified immediately if tolerances are compromised and should be involved in the recommencement of operations after tolerances are exceeded. A Buckeye Pipeline and Terminal Protector or Regional Engineering Manager shall consent or object to any submitted HDD Plans.

4.5 Reporting

A Work Order shall be completed in JDE for all crossings and longitudinal occupancies involving excavations or ramp installations within the pipeline right of way. The Work Order shall be completed according to 195 O and M Manual Section F-19 - Record Maintenance to ensure that all applicable records and drawings are updated appropriately.

5. Flowcharts

Not applicable.

6. Documentation

Not applicable.

7. Remediation

Not applicable.

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8. Other Manual References

Not applicable.

9. Appendices

Not applicable.

10. Forms

Not applicable.

11. Exhibits

Section 15, Exhibit A - Reinforced Concrete Slab for Pipeline Protection
Section 15, Exhibit B - Pipeline RW Installation Specifications for Utility Crossings

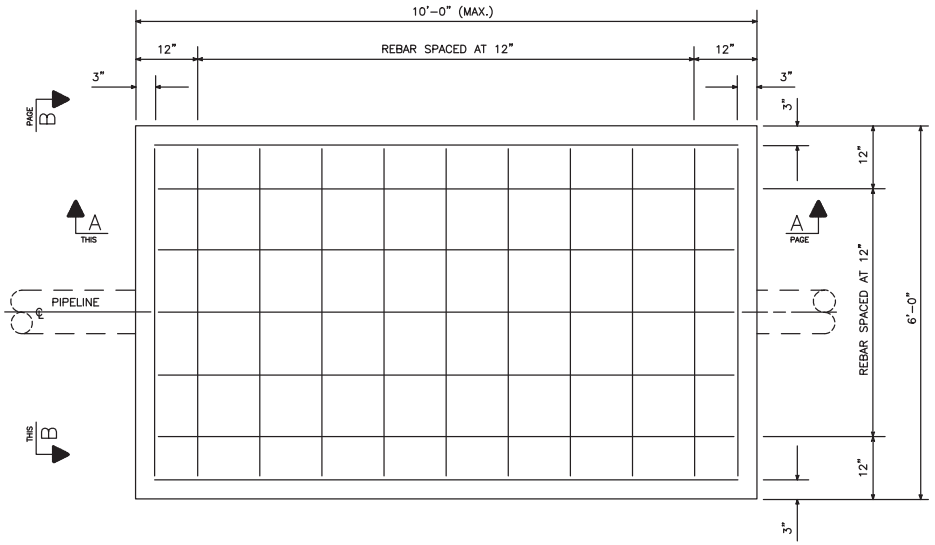
12. Change Log

For an overview of the manual revision process, please refer to 1.01 – Introduction to Using and Revising Manuals.

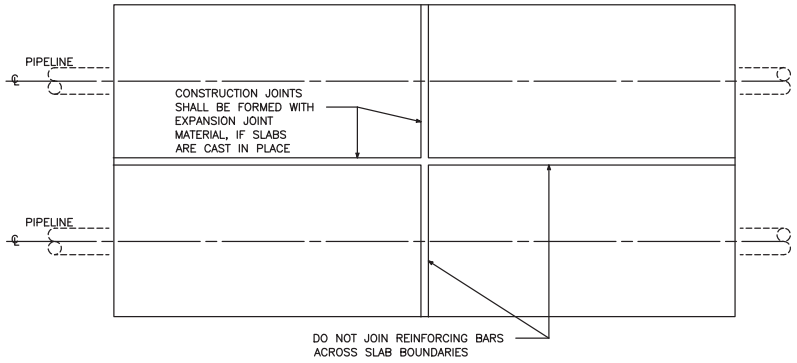
For a log of all revisions to this manual, please refer to 1.04 – Log of Revisions.

Rev #	Date	Prepared by (Name/Title)	Reviewed by (Name/Title)	Approved by (Name/Title)	Summary of Change(s)
8	11/24/21	Michael Detweiler			New template applied.
9	12/21/21				Annual review – no changes required.

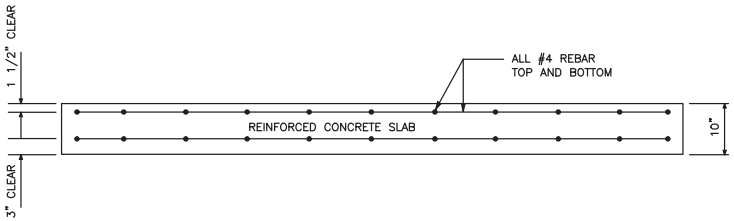
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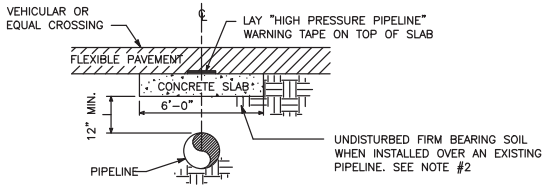
PLAN FOR ONE SLAB



PLAN FOR TWO OR MORE SLABS



SECTION A–A



SECTION B–B

NOTES:

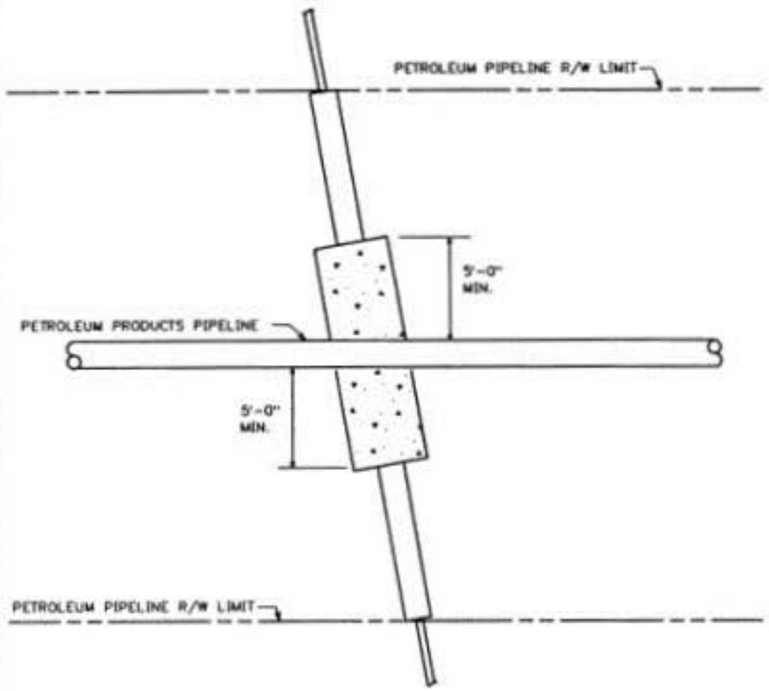
1. WHERE SPECIFICATIONS AND DIMENSIONS CANNOT BE MET IN ACCORDANCE WITH SECTION 15, EXHIBIT A OR SITUATIONS OCCUR THAT ARE NOT COVERED BY THESE GUIDELINES, PLANS SHALL BE SUBMITTED TO RIGHT OF WAY, REAL ESTATE AND DAMAGE PREVENTION, PRIOR TO INSTALLATION, FOR INTERNAL REVIEW AND APPROVAL. FORWARD TWO SETS OF PLANS TO:
   BUCKEYE PARTNERS, L.P.
   5 TEK PARK, 9999 HAMILTON BOULEVARD
   BREINIGSVILLE, PA 18031
   ATTN: ENCROACHMENT REVIEW
2. SLAB INSTALLATION DESIGN IS BASED ON A MINIMUM 1400 P.S.F SOIL BEARING CAPACITY. WHERE INADEQUATE BEARING CONDITIONS ARE ENCOUNTERED, REFER THE SITUATION TO RIGHT OF WAY ENCROACHMENT REVIEW (SEE NOTE 1).
3. ALL STEEL REINFORCEMENT TO BE DEFORMED BILLET STEEL MEETING A.S.T.M A615, GRADE 60
4. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 P.S.I AT 28 DAYS.
5. ALL CONCRETE FORMS, JOINT MATERIAL, WARNING TAPE, AND REINFORCEMENT TO BE SUPPLIED BY CONTRACTOR.
6. THE CONCRETE SLAB SHALL HAVE A MINIMUM SEVEN–DAY CURE BEFORE TRAFFIC LOADS ARE APPLIED.
7. THE CONCRETE SLAB SHALL EXTEND A MINIMUM OF THREE (3) FEET BEYOND THE PROPOSED EDGE OF PAVEMENT.

DPPM	SECT. 15

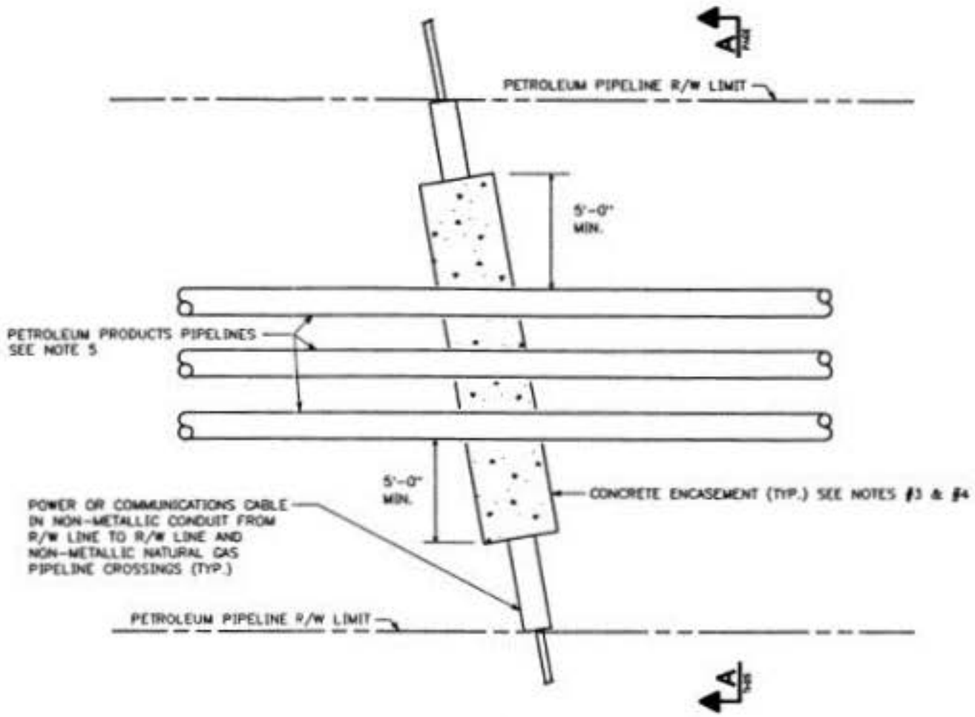
BUCKEYE PIPE LINE CO.

EXHIBIT: A PRIOR VERSION: 12/1/16 REVISED: 12/29/17

REINFORCED CONCRETE SLAB
FOR
PIPELINE PROTECTION



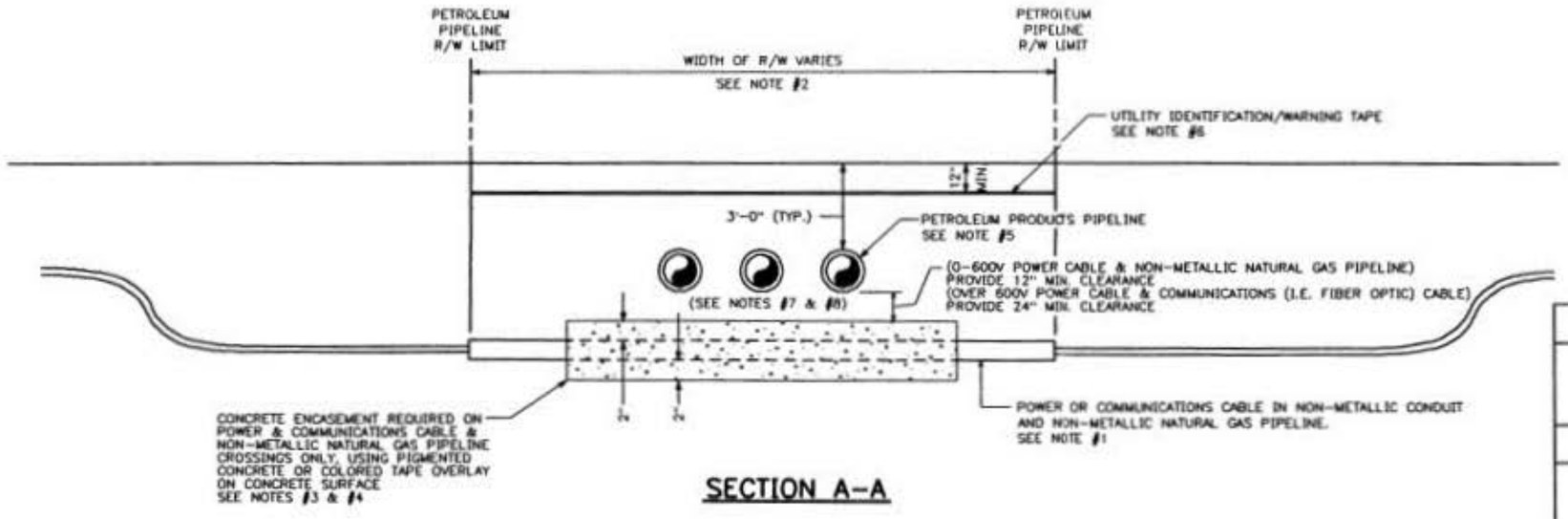
SINGLE LINE



MULTIPLE LINES

NOTES

1. Where specifications and dimensions cannot be met in accordance with Section 15, Exhibit A or situations occur that are not covered by these guidelines, plans shall be submitted to Right of Way, Real Estate and Damage Prevention, prior to installation, for internal review and approval. Forward 2 sets of plans to:
   Buckeye Partners, L.P.
   5 TEK Park, 9999 Hamilton Boulevard
   Breinigsville, PA 18031
   Attn: Encroachment Review
2. PRIOR TO UTILITY CROSSING EXCAVATIONS, BUCKEYE REPRESENTATIVES WILL LOCATE AND STAKE OUT THE PIPELINE(S) AND LIMITS OF PIPELINE R/W. BUCKEYE WILL ALSO ASSIGN A REPRESENTATIVE TO MONITOR UTILITY INSTALLATION WORK AT THE CROSSING.
3. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 P.S.I. AT 28 DAYS. (USE 6 1/4 BAG MIX).
4. CONCRETE SHALL BE PIGMENTED OR OVERLAYED WITH COLORED TAPE ON THE CONCRETE SURFACE USING THE FOLLOWING CONVENTION:
   RED FOR POWER CABLE
   ORANGE FOR COMMUNICATION CABLE
   YELLOW FOR NATURAL GAS PIPELINE
5. PIPE COATING SHALL BE INSPECTED BY B.P.L. FOR DEFECTS PRIOR TO INSTALLATION OF CONCRETE ENCASEMENT AND BACKFILL OPERATIONS.
6. FOR ALL UTILITY CROSSING IDENTIFICATIONS, WARNING TAPE MUST BE BURIED A MINIMUM OF 12" BELOW TOP OF GROUND OR BELOW PLOW DEPTH IN FIELDS AND SHALL BE POSITIONED DIRECTLY OVER THE UTILITY ACROSS THE FULL PIPELINE RIGHT OF WAY WIDTH. WARNING TAPE SHALL BE PROVIDED WITH COLOR CONVENTIONS MEETING AMERICAN PUBLIC WORKS ASSOCIATION UNIFORM COLOR CODE.
7. SUITABLE CLEAN COMPACTED BACKFILL SHALL BE PLACED BETWEEN THE UTILITY AND THE PIPELINE. THE AREA IMMEDIATELY AROUND THE PIPELINE SHALL BE BEDDED WITH 6" OF CLEAN SAND.
8. IF THE FOREIGN UTILITY CROSSING IS UNDER CATHODIC PROTECTION, CONTACT THE B.P.L. AREA CORROSION TECHNICIAN FOR EVALUATION.



SECTION A-A

DPPM	SECT. 15	PG. 6

BUCKEYE PIPE LINE CO.

EXHIBIT: B REVISED: 12/16

PIPELINE R/W INSTALLATION SPECIFICATIONS FOR UTILITY CROSSINGS

/PIPELINE_REPAIR_MANUAL/N_F7_PGS_8595

Table of Contents

1. Purpose
2. Roles and Responsibilities
3. Definitions
4. Procedure
5. Flowcharts
6. Documentation
7. Remediation
8. Other Manual References
9. Appendices
10. Forms
11. Exhibits
12. Change Log

1. Purpose

The purpose of this procedure is to address incidents.

This procedure satisfies the following regulations:

CFR 49, Parts 192.317, 192.319, 192.323, 192.325, 192.327, 195.110, 195.248, 195. 256, Part 198, 192.614, 195.442, and ASME B31.4 and ASME B31.8.

2. Roles and Responsibilities

See below.

3. Definitions

Not applicable.

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4. Procedure

4.1 Introduction

4.1.1 Buckeye investigates all product releases that meet DOT reporting requirements in 49 CFR Parts 192 and 195. The root cause of the incident and corrective action (as applicable) will be determined as part of the incident investigation in accordance with the 195 Operations and Maintenance Manual.

4.1.2 If an investigation determines that an incident was caused by a third-party, Field Operations personnel, whether Terminal or Pipeline Asset Team member, shall implement and follow the requirements below.

4.1.3 It is imperative that personnel involved with suspected third-party damage to Buckeye assets first ensure the safety of the public, environment, and Buckeye property. Stop work, gather the facts, take photographs, and involve the local Asset Team, Operations Manager, and the Regional Right of Way Specialist as a "claims agent" in such an incident. The local Field Operations Assistant shall secure a Work Order number for accumulating expenses related to the incident for potential development of an invoice to the negligent third-party and damage reimbursement.

4.1.4 The Regional Right of Way Specialist is the lead Buckeye person for investigating and developing a claim or invoice for presentation to a third-party who, by the facts, is responsible for a negligent act that has damaged a Buckeye asset. Such damage is not limited to the pipeline right of way. It can be a terminal fence, truck rack apparatus, or marine facility. Pipeline Asset Team members can assist the Regional Right of Way Specialist and his/her claims process by providing evidence that all proper Buckeye policies and procedures were conveyed to the third-party prior to right of way activity and that surveillance of and follow-up with the third-party during their right of way activity was properly carried out.

4.1.5 Depending upon the magnitude of the incident, the Regional Right of Way Specialist shall consult with Buckeye's internal Legal Counsel for assistance with or modification of this damage claim process.

4.2 Excavation Damage Reporting

Several states have damage reporting requirements with which Buckeye shall comply:

New Jersey - One-Call Law
Texas -16 TAC Chapter 18

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4.2.1 If damage is caused at the time of excavation, immediately contact the Control Center to have the pressure on the pipeline appropriately reduced. Secure the area and ensure the safety of personnel and the public. If a product release is caused at the time of excavation, 911 shall also be notified. Any damage discovered that was caused by excavation activity, either by second or third parties or Buckeye employees, shall be reported to the Regulatory Compliance Department and Right of Way, Real Estate and Damage Prevention Services. Should any damage event become a product release that meets the DOT reporting requirements previously mentioned in this section, follow the incident notification and investigation requirements as directed in accordance with 192 O&M Manual Sections P-191.15 and P.192.617, and 195 O&M Manual Section B-01.

4.2.2 A Work Order and the appropriate additional data shall be completed.

4.2.3 If the damage is caused by a third-party excavator and the excavator is known, contact the Regional Right of Way Specialist. If the damage is caused by a second-party excavator, contact the responsible Project Manager and the Regional Right of Way Specialist to conduct an investigation with assistance from the Buckeye Legal Department. The terms of the contract agreement between the second party excavator and Buckeye must be upheld.

4.2.4 The appropriate Regional Right of Way Specialist shall send information regarding Buckeye's excavation policies to the excavator, such as the Right of Way Use Restriction Specifications and applicable Public Awareness documents.

4.2.5 The Regional Right of Way Specialist shall take appropriate steps for reimbursement of all physical and financial damages due to the incident or situation caused by the second or third party.

4.2.6 The Regulatory Compliance Department will be responsible for reporting all excavation damage as per the applicable federal and state regulations.

4.2.7 The Damage Prevention Team shall review all damage events as appropriate for the purposes of sharing organizational knowledge and identifying potential areas for improvement.

The Buckeye Pipeline and Terminal Protector shall notify the One Call Center and Damage Prevention Team of any non-compliant excavators (i.e. excavators who refuse to stop work, excavators working without an active One Call ticket, etc.). The One Call Center and/or Damage Prevention Team will work with Regulatory Compliance to add any non-compliant excavators to the Public Awareness program.

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4.3 Third Party/Outside Contractor Damage Repair and Cost Reimbursement

This section outlines the procedure for implementing third-party billing reimbursement for Third-Party Damage Incidents and Contract Reimbursable expenses.

4.3.1 There are two categories of billable reimbursements:

4.3.1.1 The first category is **Third-Party Damage Incidents** rooted in negligence causing time and expense to investigate **with or without actual damage** to a Company asset. In each instance, discretion shall be used to determine the value derived from creating and presenting an invoice taking into consideration:

- Dollar amount.
- Probability for collection based upon stature of negligent party and status of insurance coverage: today's invoice may be tomorrow's write-off and expense to the local Asset Team.
- Alternatives to invoice creation such as having the negligent party billed directly for curative measures.
- Liability and nature of events among all parties associated with a third-party damage incident: consider whether Company personnel fully and completely follow correct procedures.
- Precedent and consistency with Company's Damage Prevention Policy.
- Eligible expenses include but are not limited to:
  - Pipeline damage.
  - Terminal damage incidents involving fences, gates, card readers, scully cords/rack damages, minor spills.
  - Pipeline markers, aerial mile-post markers, casing vents, cathodic protection test stations and remote bond readers, cathodic rectifier boxes.
  - Valve and gravitometer sites.
  - Settlement loss, i.e., dollar value of released product (received into the Buckeye System but not delivered out) in a third-party incident.
  - Transportation loss, i.e., based upon transportation schedule, the amount of scheduled product batches that were not delivered while Company personnel investigated or repaired third-party negligence and/or damage incident.

4.3.1.2 The second category includes Contract Reimbursable Items such as:

- Pipeline relocation.
- Encroachment Agreement.
- Abandoned pipe removal.

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- Casing removal or casing extension.
- Cathodic test station, bond reader, or rectifier box relocations.
- Services performed due to operational incidents or contract agreements.

4.3.2 The Regional Right of Way Specialist is responsible for third-party investigation and damage issues in the Field with subsequent invoice processing.

The Regional Right of Way Specialist shall provide the incident investigation findings and any corrective actions to the Sr. Manager, Right of Way, Real Estate, & Damage Prevention Services and the applicable Operations Manager, Regional Operations Advisor, and Regional Operations Director.

4.3.2.1 However, for very large damage incidents involving remarkable product release or asset damage reaching into the millions of dollars, assistance or handling may be given by the Risk Management Specialist and/or Corporate Counsel, Legal Department, and the Regional Vice President, Operations.

4.3.3 Corporate Project Management or the Regional Right of Way Specialist is responsible for pipeline or other asset relocation items.

4.3.4 The Project Manager or Subject Matter expert is responsible for the expense reimbursement agreement and invoicing reimbursable expenses per the contract agreement.

4.3.5 Beginning the Cost Reimbursement Process

4.3.5.1 Acquire a work order number for your damage investigation and/or repair or contract reimbursable project. Be sure to communicate to all parties involved that expenses associated with the damage incident or contract shall be coded to the work order. Conduct a field investigation utilizing the Damage Prevention Hit Kit. Sample correspondence forms and the Incident Report Form are noted in Exhibits B, C, and D below.

For tracking purposes, the Regional Right of Way Specialist entering the third party damage incident event into BIRD shall check “Equipment or Pipeline Damage or Loss” under ”Incident Details” and upload/attach the Section 16, Exhibit D - Third Party Damage Incident Responsibility Report Form that is required to be completed for all Third Party Damage Incidents.

4.3.5.2 If the reimbursable project is estimated under $10,000, the Manager, Settlements, and Accountant, Pipelines and Terminals, will utilize solely the work order number for billing purposes and will issue a credit to the affected Asset Team for its expenses summarized under said work order number. If

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estimated reimbursable costs escalate above $10,000, efforts shall be made to create an ‘R’ number and AFE (see Item 3 below.) Once completed, notice shall be given to the Accountant, Pipelines and Terminals, to make a journal entry to reclassify the existing work order charges into the new ‘R’ account/AFE and credit given to the local Asset Team for applicable expenses accumulated under the original work order number.

4.3.5.3 If the reimbursable project is estimated over $10,000, the Project Office Engineer with the assistance of Project Management Office will create an ‘R’ number and associated work order number and an AFE. The Project Office Engineer will designate a Project Manager for the reimbursable project in Primavera as agreed upon by the Project Office Engineer, Regional Engineering Manager or a Regional Project Manager/Project Specialist, and the originator of the reimbursement project. The designated Project Manager will be responsible for posting or providing updates in Primavera associated with the ‘R’ account.

4.3.5.4 Final invoices shall be booked into the JDE Work Order System (“Work order”) so that the cash receipt is credited to the proper project code and the associated accounts receivable amount is ‘net zero’ upon receipt of payment and cleared off the general ledger.

4.3.6 Closing the reimbursement work order or ‘R’ Number/AFE and beginning the invoice creation process

4.3.6.1 The Project Manager verifies to the Accountant, Pipelines and Terminals, that all costs are captured under the applicable work order or ‘R’ number and no outstanding invoices are pending submission to Accounts Payable.

4.3.6.2 The applicable work order is closed and status changed to ‘95’; all purchase orders are closed and statuses changed to ‘9’.

4.3.6.3 The Operational Certificate, Post Construction Inventory, and RITAS (**R**etirements, **I**nventory, **T**ransfers, **A**ssets Created, **S**ales or Potential Sales) forms have been completed and submitted, if applicable.

4.3.6.4 Once an ‘R’ account has been closed and invoiced, all subsequent charges will be allocated as expense against the applicable Asset Team.

4.3.7 Developing and deriving support data for third party billing items which shall be saved and made easily retrievable for use with final invoice presentation are as follows:

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4.3.7.1 The Payroll Manager will provide only a payroll worksheet summary.

4.3.7.2 Accountant, Pipelines and Terminals will provide a copy of the general ledger summarizing all charges to the reimbursable account. Consequently, the Project Manager, subject matter expert ("SME"), or Regional Right of Way Specialist shall provide his/her own invoice support data to aid the billing process.

4.3.7.3 It is recommended that each Region's Field Operations Department establish and maintain its own SharePoint site for placement of invoice support data. In this manner, the Project Manager, SME, or Regional Right of Way Specialist can retrieve these charges from the SharePoint site and include them with the final invoice to speed the payment process.

4.3.8 Types of Reimbursable Expenses

The following are types of reimbursable expenses:

- Buckeye personnel's time as charged to a work order or 'R' Account number and summarized on a worksheet by the Payroll Manager including payroll overhead and administrative fee.
- All outside services as supported by third-party invoices.
- Materials: P-Card and Purchase Order requisitioned items.
- Travel expenses: meals, lodging as charged to the appropriate accounting number.
- Items taken from inventory and replaced with P-Card or Purchase Order requisitioned items.

4.3.9 Final Invoice Presentation and Accounts Receivable Aging

4.3.9.1 The Project Manager, SME, or Regional Right of Way Specialist should secure the final invoice as prepared by the Manager, Settlements including payroll worksheet, expense support data from the designated invoice site, and a cover letter when submitting the final invoice to the negligent third-party or contract reimbursement agreement payor.

4.3.9.2 Project Manager, SME, or Regional Right of Way Specialist should ensure that the final invoice is booked into the Work Order so that payment can be applied correctly.

4.3.9.3 Payment should be sent to the Project Manager, SME, or Regional Right of Way Specialist for purposes of tracking or aging the accounts receivable.

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4.3.9.4 Upon receipt of payment, the Project Manager, SME, or Regional Right of Way Specialist shall send the check to Buckeye's lock box at Buckeye Partners, L.P., P.O. Box 204022, Dallas, TX 75320-4022. If accounts receivable aging is not an issue, the Project Manager, SME, or Regional Right of Way Specialist shall direct that payment be sent directly to the lock box.

4.3.9.5 Difficulties with collection shall be coordinated through the Manager, Settlements and the Accountant, Pipelines and Terminals, and/or Legal Counsel. Decisions to write-off any invoiced amounts shall be a collaborative decision on a case-by-case basis, keeping in mind that amounts ensure that all applicable records and drawings are updated appropriately.

5. Flowcharts

Not applicable.

6. Documentation

Not applicable.

7. Remediation

Not applicable.

8. Other Manual References

Not applicable.

9. Appendices

Not applicable.

10. Forms

Not applicable.

11. Exhibits

Section 16, Exhibit B - Sample Principal Letter
Section 16, Exhibit C - Sample Invoice
Section 16, Exhibit D - Third Party Damage Incident Responsibility Report Form

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12. Change Log

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For a log of all revisions to this manual, please refer to 1.04 – Log of Revisions.

Rev #	Date	Prepared by (Name/Title)	Reviewed by (Name/Title)	Approved by (Name/Title)	Summary of Change(s)
8	11/24/21	Michael Detweiler			New template applied.
9	12/21/21				Annual review – no changes required.

THIRD-PARTY/OUTSIDE CONTRACTOR DAMAGE: INVESTIGATION/REPAIR/RECLAMATION COST REIMBURSEMENT

SAMPLE PRINCIPAL LETTER

December 7, 20__

Mr. Bobby Backhoe
Eastern Technologies, Inc.
123 Main St.
Yourtown, OH 12467

RE: Buckeye Pipe Line Co., L.P. R/W No. 124-A-36
Liberty Twp., Hancock Co., OH; CG413FN
Contractor Negligence, 11/30/05; BPL W.O. No. 164237

Dear Mr. Backhoe:

Buckeye Partners, L.P., through its affiliate _____, operates and maintains a pipeline system used for the transportation of petroleum products. A segment of this system, namely, a __-inch diameter steel-welded, high-pressure pipeline, is located between [city] and [city], [state]. On [date], your contractor, ABC Excavating, hit and damaged this 12-inch pipeline. As principal for this _____ project involving ABC Excavating, it is appropriate to inform you of your shared responsibility with your contractor's negligent work.

[Describe incident, then…] _____ personnel were not present to witness and direct the ABC Excavating work around/across _____ pipeline(s). This is a violation of _____'s directive upon ABC Excavating personnel and of the _____ one-call law (Call Before You Dig), _____ Revised Code 3861.25. [Quote the section of law that the excavator violated] As a strict Company policy, _____'s field personnel will not mark the approximate pipeline location and exit the excavation site. We advise that a Buckeye Pipeline and Terminal Protector must be present at all times while third-party excavation work is in progress around our pipelines. ABC Excavating personnel were advised of this fact by _____ [field rep.] but chose to ignore such safety directive. This is dangerous (may wish to add emphasis here) not only to the economic integrity of your _____ project but to the welfare and safety of the surrounding community and environment. Even if a backhoe operator does not immediately rupture our pipeline, the slightest break in the pipeline's protective coating sets off a potentially dangerous situation of pipeline failure at a future date.

Please address this incident with ABC Excavating to ensure such negligence is not a recurring matter. ABC Excavating will be presented with an invoice for costs _____ incurred in the response to and pipeline repair in this damage incident. While ABC Excavating may not be accountable to _____ [Buckeye Partner's entity], they should be accountable to you in conducting themselves in a reasonable and prudent manner that does not jeopardize human life and the environment. _____ will do its part to safeguard the integrity of its pipeline facilities. Will you assist us with this endeavor?

Sincerely yours,

Bob Bulldozer
Regional Right of Way Agent

CC: ABC Excavating
Others as appropriate

BUCKEYE PARTNERS, L.P.

Five TEK Park, 9999 Hamilton Blvd., Breinigsville, PA 18031
www.buckeye.com

ROW

Phone: (610) 904-4404
Fax: (610) 904-4539

Invoice for Incident Responsibility Damages

Work Order #: Enter Work Order for Incident Respc
Date: January 8, 2019
Responsible Party: Enter Company/Individual Name

Bill To: Name
Company Name
Street Address
Address 2
City, ST ZIP Code

Date	Type	Invoice #	Description	Amount	Payment	Balance
Enter date of Incident	Third Party Damage Claim	Use Work Order #	Summarize damage claim and responsibility and attached Work Order detail and support documentation for business interruption			$ -
					Total	**$ -**

Reminder: Please include the Work Order number on your check.

Terms: Balance due upon receipt.

REMITTANCE	
Customer Name:	Enter Responsible 3rd Party Name
Customer ID:	Enter Company/Individual Name
Statement #:	Enter Work Order for Incident Response
Date:	January 8, 2019
Amount Due:	$0.00
Amount Enclosed:	

BUCKEYE PARTNERS, L.P.

Third Party Damage Incident Responsibility Report Form

REQUIRED FOR ALL THIRD PARTY DAMAGE INCIDENTS

Incident Reporter

Information Being Submitted By	Region	Asset Team	Position	
Address of Person Filing Information	City		State	Zip Code
Telephone Number	Email Address		Date	

Responsible Third Party for Damage to Facilities, Equipment or Pipeline

Name of Responsible Third Party		Telephone Number	Email Address
Address	City	State	Zip Code
Name of Entity for Which Work Was Performed (if Contractor)		Telephone Number	Email Address
Address	City	State	Zip Code
Name of Responsible Third Party's Insurance Carrier		Telephone Number	
Address	City	State	Zip Code

Date, Location, Facilities/Equipment/Pipeline Involved and Summary of the Incident

Date of Incident	Address/Location of the Damage		
County	City	State	Zip Code

Description of Incident and Damages to Facilities, Equipment and/or Pipelines *TAKE AND UPLOAD PHOTOGRAPHS

Was a locate requested from One-Call?

Yes ☐ Locate Ticket Number _____ Start Date on Ticket _____

No ☐

Unknown ☐

Did Third Party / Excavator wait until the start date/time on the ticket before commencing excavation?

Yes ☐ No ☐ Unknown ☐ N/A ☐

Were facilities marked?

Yes ☐ No ☐ Unknown ☐ N/A ☐

Were utility/facility marks visible in the area of excavation/damage?

Yes ☐ No ☐ Unknown ☐ N/A ☐

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1. Purpose

The utilities above and below ground within Buckeye-owned or operated stations and terminals (pipeline delivery, truck, marine, and rail) shall be protected just as are the main transmission pipelines of Buckeye's pipeline network. These utilities include, but are not limited to, product lines, vapor lines, fiber optic lines, water lines, power supplies, and communications lines. Many of the lines inside Buckeye's properties are Buckeye-owned facilities, including services like water and electric connections, which are part of a public utility system outside of Buckeye's property lines. Other utilities on Buckeye property may be owned by other petroleum products.

2. Roles and Responsibilities

See below.

3. Definitions

Not applicable.

4. Procedure

4.1 Policy - Applicability of Manual to Terminals

For purposes of damage prevention, there is no distinction between underground facilities inside or outside of Buckeye's property lines. All policies and procedures contained in this Damage Prevention Procedure Manual, but especially **One Call**, **Excavation Planning**, and **Excavation**, apply to all Buckeye facilities.

4.2 Procedure

A One Call, pursuant to Section 5, is required prior to any planned excavation within Buckeye facilities, and diligent review of all records shall be made prior to any excavation to confirm existence and location of all Buckeye and non-Buckeye owned facilities. Other utility companies will also need to be permitted to enter Buckeye property to mark out their facilities, as applicable.

4.2.1 The entirety of the excavation policies contained in Sections 7 and 8, governing equipment usage, tolerance zones, completion of Section 7, Form A - Excavation Safety Checklist with contractor, and other preventative measures, shall be followed at all times.

5. Flowcharts

Not applicable.

6. Documentation

Not applicable.

7. Remediation

Not applicable.

8. Other Manual References

Not applicable.

9. Appendices

Not applicable.

10. Forms

Not applicable.

11. Exhibits

Not applicable.

12. Change Log

For an overview of the manual revision process, please refer to 1.01 – Introduction to Using and Revising Manuals.

For a log of all revisions to this manual, please refer to 1.04 – Log of Revisions.

Rev #	Date	Prepared by (Name/Title)	Reviewed by (Name/Title)	Approved by (Name/Title)	Summary of Change(s)
4	11/24/21	Michael Detweiler			New template applied.
5	12/21/21				Annual review – no changes required.

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1. Purpose

The purpose of this procedure is to set the policy for maximum cover.

Policy

Third parties shall not add fill within the right-of-way where the resulting total depth of cover exceeds eight feet (8') unless written approval has been granted by Engineering and Construction Services.

2. Roles and Responsibilities

See below.

3. Definitions

Not applicable.

4. Procedure

Not applicable.

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5. Flowcharts

Not applicable.

6. Documentation

Not applicable.

7. Remediation

Not applicable.

8. Other Manual References

Not applicable.

9. Appendices

Not applicable.

10. Forms

Not applicable.

11. Exhibits

Not applicable.

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1. Purpose

The purpose of this procedure is to ensure that all personnel are protected from potential hazards during excavation work.

This procedure is applicable to Buckeye employees and second party contractors (including inspectors) performing administrative activities, planning, and field execution of excavation, on behalf of Buckeye Partners, LP.

2. Roles and Responsibilities

Role	Responsibility
Buckeye Project Manager	• Shall require the second party contractor conducting the excavation to provide a Site-Specific Safety Plan (SSSP) prior to the start of work. • Shall require the second party contractor to provide documentation of the qualifications of the equipment operators prior to start of work. • Shall require the second party contractor to provide documentation of the excavation competent person.

	• Shall ensure that the second party contractor understands the requirements of this procedure. • Shall ensure compliance with Section 4.3.1.3.
Competent Person	• The second party contractor performing the work is responsible to provide the competent person and shall be responsible for compliance with all applicable sections of OSHA 29CFR1926 – Subpart P and Subpart AAA. • The responsibilities of the competent person are defined in Section 4.1.2.
Buckeye Contracted Inspector or Buckeye Employee	• Shall properly plan for safe excavation activities as directed by Section 7.

3. Definitions

Term	Definition
Accepted engineering practices	Requirements which are compatible with standards of practice required by a registered professional engineer.
Aluminum Hydraulic Shoring	A pre-engineered shoring system comprised of aluminum hydraulic cylinders (cross braces) used in conjunction with vertical rails (uprights) or horizontal rails (wales). Such system is designed specifically to support the sidewalls of an excavation and prevent cave-ins.
Bell-bottom pier hole	A type of shaft or footing excavation, the bottom of which is made larger than the cross section above to form a belled shape.
Benching	A method of protecting personnel from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels. **NOTE: Class C soil cannot be benched i.e sand, silt, gravel and loamy soil.**
Cave-in	The separation of a mass of soil or rock material from the side of an excavation, or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury, or otherwise injure and immobilize a person.
Competent person	One who through experience and training is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate or mitigate those hazards.

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Cross braces	The horizontal members of a shoring system installed perpendicular to the sides of the excavation, the ends of which bear against either uprights or wales.
Daylight	The act of exposing the top and sides of the pipeline with hand tools so that the vertical/horizontal position and the course/direction of the pipeline are known and visually confirmed.
Excavation	Any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal. Excavations include any operation in which earth, rock, or other material in the ground (below original grade) is moved, removed, or otherwise displaced by means or use of any hand tools, mechanical equipment, or explosives. This procedure is not intended to address requirements relating to blind penetration work (concrete core drilling), augering for sonotubes or monitoring wells, replacement of posts, or other penetrations that are in the original location and are equal to or less than the original depth and diameter. The performance of such activities may involve hazards similar to traditional excavation work and may require the performance of scope definition, hazard identification, analysis, and mitigation prior to performing work. **NOTE:** For excavations wider than 15' at the base, cave-in protection may not be required.
Faces or sides	The vertical or inclined earth surfaces formed as a result of excavation work.
Facility	Any vessel including pipelines capable of containing petroleum or petrochemical products and that is owned, rented, leased, or operated by Buckeye Partners, LP.
Failure	The breakage, displacement, or permanent deformation of a structural member or connection so as to reduce its structural integrity and its supportive capabilities.
Hazardous atmosphere	An atmosphere which by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic, or otherwise harmful, may cause death, illness, or injury.
Kickout	The accidental release or failure of a cross brace.
Powered and mechanical excavation equipment	Equipment including, but not limited to a backhoe, trackhoe, trencher, or jackhammer.
Protective system	A method of protecting personnel from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.

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Ramp	An inclined walking or working surface that is used to gain access to one point from another, constructed from earth or from structural materials such as steel or wood.
Registered Professional Engineer	A person who is registered as a professional engineer in the state where the work is to be performed. However, a professional engineer, registered in any state is deemed to be a registered professional engineer within the meaning of this standard when approving designs for manufactured protective systems or tabulated data to be used in interstate commerce.
Second Party Contractor	A contractor whose services are secured by Buckeye for work to be completed on behalf of Buckeye.
Second Party Excavation	Any excavation activity contracted by Buckeye occurring in the vicinity of a Buckeye facility. These activities are managed through the direction given in the Damage Prevention Procedure Manual (DPPM).
Shall	The term used where a provision is mandatory.
Shield	A structure able to withstand the forces imposed on it by a cave-in and thereby protect personnel within the structure. Shields used in trenches are usually referred to as trench boxes or trench shields.
Sheeting	The members of a shoring system that retain the earth in position and in turn are supported by other members of the shoring system and that have direct contact with the soil surface or face of the excavation.
Shoring	A structure such as a metal hydraulic, mechanical, or timber shoring system that supports the sides of an excavation and is designed to prevent cave-ins.
Should	The term used where a provision is preferred.
Sloping	A method of protecting personnel from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.
Stable rock	Natural solid mineral material that can be excavated with vertical sides and will remain intact while exposed. Unstable rock is considered to be stable when the rock material on the side or sides of the excavation is secured against caving-in or movement by rock bolts or by another protective system that has been designed by a registered professional engineer.
Structural ramp	A ramp built of steel or wood, usually used for vehicle access. Ramps made of soil or rock are not considered structural ramps.

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Support system	A structure such as underpinning, bracing, or shoring which provides support to an adjacent structure, underground installation, or the sides of an excavation.
Tabulated data	Tables and charts approved by a registered professional engineer and used to design and construct a protective system.
Third Party Excavations	Any excavation activity not contracted by Buckeye occurring in the vicinity of a Buckeye facility. These activities are managed through the direction given in the Damage Prevention Procedure Manual (DPPM).
Trench	Any excavation that is 15’ wide or less at the base. A narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet (4.6 m). If forms or other structures are installed or constructed in an excavation to reduce the dimension measured from the forms or structure to the side of the excavation to 15 feet (4.6 m) or less (measured at the bottom of the excavation), the excavation is also considered to be a trench. **NOTE:** All trenches 5’ or greater in depth require cave-in protection. All other excavations shall be evaluated for the need of a protective system and mitigation of other identified hazards per Section 9.
Uprights	The vertical members of a trench shoring system placed in contact with the earth and usually positioned so that individual members do not contact each other.
Wales	Horizontal members of a shoring system placed parallel to the excavation face whose sides bear against the vertical members of the shoring system or earth.

4. Procedure

4.1 Excavation Procedure

4.1.1 Prior to excavation, follow Section 5 and notify the Buckeye Operations personnel responsible for the area to be excavated i.e. (the local Operations Manager).

4.1.2 Ensure all utilities are located according to Section 6.

4.1.3 The Buckeye Project Manager shall follow Section 4.3.1.3 to ensure all structures are accounted for and considered as part of the excavation plan.

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4.1.4 Prior to conducting excavation activities, the Buckeye Project Manager shall ensure the requirements of Safety Manual Section B-15 - Authorization to Work (ATW) process applicable to the scope of work are reviewed to verify that appropriate requirements are implemented.

4.1.5 Mechanized power excavation equipment shall not be used within the Tolerance Zone, defined for each State by Section 5, Exhibit A (18", 24", or 30" depending on the State) until the facilities have been located using insulated probe bars in accordance with 7.2.3 and initially exposed using hand tools.

NOTE: If work must be done inside the tolerance zone without the ability to expose the pipeline, a procedure deviation shall be obtained per Section 1.02.

4.1.6 Inspection probe bars shall be placed at a maximum of every 10' along the pipeline. Refer to Section 7 Exhibit C.

4.1.7 Do not use powered excavating equipment near the utility until its depth and size are verified with inspection probe bars set in place to clearly identify the perimeter of the pipe. Refer to Section 7 Exhibit C.

4.1.8 Any excavation within the tolerance zone shall be performed with non-powered hand tools or non-invasive methods until the marked facility is exposed per Section 4.2.4.

4.1.9 The tolerance zone is designated on the surface using standard color-coded markings, which contains the width of the utility plus the distance on each side of the utility required by each State.

4.1.10 Mechanical excavation techniques are not allowed in this zone unless pipe or other utilities have been daylighted.

4.1.11 Hydrovac and air knife excavation techniques are allowed within the tolerance/exclusion zone per Section 4.5, when the State One Call regulations permit the use of this equipment within the tolerance zone. See Section 5 Exhibit A.

4.1.12 Once the facilities have been fully exposed, mechanized excavators may be used per Section 4.2.4, provided the State One Call regulations permit the use of mechanized equipment within the tolerance zone. See Section 5 Exhibit A.

4.1.13 The Buckeye Pipeline and Terminal Protector must review all applicable data per Section 7.

4.1.14 All digging in areas with appurtenances shall be performed with non-powered hand tools or non-invasive methods in the tolerance zone.

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4.1.15 A steel plate shall be welded across the teeth of equipment buckets when digging within two feet of the pipeline per Section 4.8.

4.1.16 Excavations and the ongoing management of them shall meet Section 9.

4.2 Emergency Protocol

4.2.1 In the event of an emergency, i.e. hazardous atmosphere, cave-in warning signs, lightning within seven miles, fire, exposure of unidentified underground facilities, personnel illness or injury, everyone must exit the excavation immediately, aiding others only when not endangering his or her own safety. Follow the site emergency action plan.

4.2.2 Report all incidents and emergencies as defined above, equipment damage, environmental releases, or near miss events, to onsite management and follow Section 16.

4.3 Hazards - Recognition and Prevention

Refer to Section 8 and Section 9.

4.4 Soil Classifications and Protective Systems

Refer to Section 9.

4.5 Supports

Refer to Section 10.

4.6 Rock Removal

Refer to Section 12.

4.7 Backfilling

Refer to Section 13.

4.8 Training Requirements

Second party operators of excavation equipment shall be trained and qualified. The employer is responsible to provide the training and qualification as well as its documentation.

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5. Flowcharts

Not applicable.

6. Documentation

Not applicable.

7. Remediation

Not applicable.

8. Other Manual References

Not applicable.

9. Appendices

Not applicable.

10. Forms

Not applicable.

11. Exhibits

Not applicable.

12. Change Log

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