Fluor-BWXT | Portsmouth

Immediate Procedure Change (IPC) Form

Procedure Number: FBP-OS-PRO-00022 Procedure Rev. Number: 9 IPC Rev. Number: 9.1

Procedure Title: Excavation/Penetration

Change description:
Clarified step 6.3.12 to better align with the relevant OSHA requirement.

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VERIFIED EMA
DATE 5/23/23

List affected portions (steps, pages, sections, attachments, etc.) of the procedure: *(Attach additional pages as necessary)*
Page 24, Step 6.3.12.

Supervisor print/sign: ELIZABETH ALLISON (Affiliate)	Digitally signed by ELIZABETH ALLISON (Affiliate) Date: 2023.05.22 16:46:11 -04'00'	**Date:**
FM/NFM/SME print/sign: JEFFREY MIDDAUGH (Affiliate)	Digitally signed by JEFFREY MIDDAUGH (Affiliate) Date: 2023.05.22 16:11:16 -04'00'	**Date:**
FAM Validation/Concurrence print/sign: ELIZABETH ALLISON (Affiliate)	Digitally signed by ELIZABETH ALLISON (Affiliate) Date: 2023.05.22 16:46:32 -04'00'	**Date:**

Review and Concurrence

(Attach additional pages as necessary)

Function	Printed Name/Signature	Date
NMC&A	N/A	
NCS	N/A	
OS&H	JEFFREY MIDDAUGH (Affiliate) Digitally signed by JEFFREY MIDDAUGH (Affiliate) Date: 2023.05.22 16:12:33 -04'00'	
Cognizant Eng.	N/A	
USQD Reviewer	STEPHEN BECK-MONTGOMERY (Affiliate) Digitally signed by STEPHEN BECK-MONTGOMERY (Affiliate) Date: 2023.05.22 16:50:31 -04'00'	

FAM print/sign:	ELIZABETH ALLISON (Affiliate)	Digitally signed by ELIZABETH ALLISON (Affiliate) Date: 2023.05.22 16:54:13 -04'00'	**Date:**	**Effective Date:** 5/23/23

Working Expedited Copy Preparation and IPC Submittal

The following will be performed to complete the IPC:

- X-300, EOC, and affected personnel/facility receive working expedited copies of the procedure and FBP-BS-PRO-00135-F01 to resume work.
- A working expedited copy of the procedure, FBP-BS-PRO-00135-F01, and all supporting paperwork will be forwarded to PerformanceDocuments@ports.pppo.gov.

FAM/Designee print/sign: ELIZABETH ALLISON (Affiliate)	Digitally signed by ELIZABETH ALLISON (Affiliate) Date: 2023.05.22 17:01:39 -04'00'	**Date:**

DOCUMENT NO.: FBP-OS-PRO-00022	REV. NO. 9.1	EFFECTIVE DATE: 03/22/23
TITLE: Excavation/Penetration	5 YR PERIODIC REVIEW DATE: 12/07/26	
	APPROVED BY: Elise Allison DATE: 03/15/23 (Signature on File)	

R9.1 EMA 5/22/23

USE CATEGORY:	INFORMATION USE	Page 1 of 55
SME: Jeff Middaugh	Writer: Kim Noel-Evens	

Level 2 Administrative Procedure

Revision	Record of Issue/Revision	Affected Pages
9	Revision: Update document to current template and format; revise 1.1 to remove bulleted documents; revise 5.20.2, 5.20.3, 6.3.23, 6.4.2 (associated Note Box and 6.4.2A, 6.4.2B, & 6.4.2D), and 6.4.4 to include "work pause"; revise 6.3.23 and 6.4.2E to include Onsite Waste Disposal Facility (OSWDF); correct references from Nuclear Safety Engineer(ing) to Responsible Engineer throughout; revise FBP-OS-PRO-00022-F02, *Excavation & Penetration Permit*, page 6, to correct to "Responsible Engineer Signature" instead of "Nuclear Safety Engineer Signature"; revise FBP-OS-PRO-00022-F03, *Excavation/Trench Inspection and Entry Authorization Form*; update Acronyms list; update Source References; grammatical/editorial changes as needed.	All

Previous Record of Issue/Revision information is available from the history files.

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CONTENTS

1.0 PURPOSE

1.1 This procedure has been developed to provide applicable requirements for performing safe excavations and penetrations.

1.2 This document implements applicable regulatory requirements. They are listed in Appendix A, *Regulatory Requirements Flow Down.*

2.0 SCOPE AND APPLICABILITY

2.1 This Level 2 procedure applies to all penetrations or excavations that are 1 ½ inches (in.) or greater into a building floor, wall, or ceiling; that are 3 in. or greater into outdoor concrete or pavement; or that are 12 in. or greater into outdoor soil that are performed by Fluor-BWXT Portsmouth LLC (FBP) and contracted labor resources at the Portsmouth Gaseous Diffusion Plant (PORTS).

2.2 This procedure applies to all new utility installations that require penetrating of a building's floor, wall, or ceiling; penetrating of outdoor concrete or pavement; or penetrating of outdoor soil.

2.3 This procedure applies to instructions for employees performing administration, planning, and field execution of excavation and penetration-type work; as well as protection of the environment, facilities, and of personnel who work in or around excavations/trenches, penetrations into the earth's surface, concrete or pavement, and interior penetrations into building walls, floors, and ceilings.

Exceptions:

This procedure does not apply to the following excavations or penetrations at PORTS:

> **WARNING**
>
> **Utilities have been discovered less than 12 in. deep in soil, less than 3 in. deep in exterior concrete/pavement slabs, and less than 1 ½ in. deep embedded in building floors. The Facility Manager (FM), Responsible Engineer, Occupational Safety & Health (OS&H) Professional, and other personnel cognizant with the area to be excavated or penetrated should be consulted to try to identify any hidden interferences prior to the start of the work activity.**

- A new permit is not required when re-excavating an area if the initial excavation permit is not yet closed.

- Replacements of embedded items of the same location, depth, and size as the original items provided that the existing penetration is not expanded (e.g., replacement of a road sign or post or utility pole) – Existing poles or utility poles that have a conduit, insulated wire, or cable running down the pole into the ground shall require a permit prior to replacement so that the routing of the conduit, wire, or cable can be determined in order that they can be protected from damage during the pole replacement.

- Maintenance, removal, or replacement of roadways/driveways, railroads, or sidewalks
- Excavations in active designated landfills for the purpose of waste disposition or grading
- Excavations in a designated soil borrow area or a temporary soil, coal, or aggregate storage pile where the original permanent grade has not been disturbed

3.0 GENERAL INFORMATION

None

4.0 USE REFERENCES

A. FBP-BS-PRO-00062, *Records Management Process*

B. FBP-IH-PRO-00024, *Industrial Hygiene Sampling*

C. FBP-NSE-PRO-00002, *Pre-Job Briefing and Post-Job Review*

D. FBP-NSE-PRO-00085, *Engineering Drawings*

E. FBP-NSE-PRO-00114, *Unreviewed Safety Question Process*

F. FBP-OS-PRD-00002, *Competent Person Program*

G. FBP-OS-PRO-00028, *Work Stoppage Due to Environmental, Safety, Health and Quality Concerns*

H. FBP-OS-PRO-00029, *Construction and Work Zone Barricades and Signs*

I. FBP-OS-PRO-00068, *Instructions for Lockout/Tagout*

J. FBP-QP-PRO-00020, *Problem Reporting and Issues Management*

5.0 RESPONSIBILITIES

5.1 Excavation Competent Person

NOTE

An Excavation Competent Person is not required for penetration activities.

5.1.1 Completes excavation competent person training and be approved by FBP Environment, Safety, Health, and Quality (ESH&Q) Management in accordance with FBP-OS-PRD-00002, *Competent Person Program.*

5.1.2 Identifies existing and predictable hazards in surroundings and working conditions that are unsanitary, hazardous, or dangerous to employees.

5.1.3 Conducts prompt corrective measures to eliminate any hazards found.

5.1.4 Conducts a documented daily inspection of excavation(s), 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. A documented inspection shall be conducted by the competent person prior to the start of work and as needed throughout the shift. Documented inspections shall also be made after every rainstorm, other hazard increasing occurrence, or other change of working conditions that creates a potential hazard. Subsequent daily inspections of the excavation or changes of conditions shall be documented on a new daily inspection form. These inspections are only required when employee exposure can be reasonably anticipated.

5.1.5 Gathers evidence of a situation that could result in a possible cave-in, indications of a failure of protective systems, hazardous atmospheres, or other hazardous conditions; exposed employees shall be removed from the hazardous area until necessary precautions have been taken to ensure their safety.

5.1.6 Conducts tests for soil classification.

5.1.7 Understands standards, regulations, and any data provided.

5.1.8 Determines and directs the installation of the protective system to be used. Sloping, benching, shoring, trench-box, or combinations of sloping, benching, shoring, or trench-box are the only means of worker protection that an excavation competent person is permitted to use. All other protective means (i.e., sheet-piling or protective methods for excavations greater than 20 feet [ft] in depth) shall be designed and approved by a Registered Professional Engineer (RPE).

5.1.9 Recognizes and reclassifies soil after changes in conditions.

5.1.10 Determines whether damage to excavation safety equipment renders equipment unusable.

5.1.11 Works with the OS&H Professional and/or Industrial Hygiene (IH) Professional for assistance in the determination for the need for atmospheric evaluation for the excavation activity. This evaluation is based on the defined work scope, work location, depth of the excavation or trench; the potential hazards present; and the type of tools and/or equipment to be utilized within the excavation. This evaluation is completed on a case by case basis in accordance with Step 6.3.24 of this procedure.

5.1.12 Ensures safe egress into and out of all excavations that are 4 ft or greater in depth. Safe egress can include ladders, ramps, slopes (no steeper than 1 ½ horizontal [H] to 1 vertical [V] or 34 degrees), steps cut into excavation face, pre-manufactured steps, scaffold stair towers, or other approved safe means of egress.

5.1.13 Monitors water removal equipment and operation.

5.1.14 Determines the necessity for a protective system when excavation is less than 5 ft deep and requires the use of a protective system when excavation is 5 ft or greater in depth.

5.1.15 Immediately notifies the supervisor and employees if evidence of a situation is found that could present Immediately Dangerous to Life or Health (IDLH) situation or serious hazard to the affected employees.

5.1.16 Remains available on the PORTS site during excavation/penetration activities and available to conduct any additional inspections as identified in Step 5.1.4 of this procedure.

5.1.17 Takes prompt actions to ensure corrective measures have been taken to eliminate hazards.

5.1.18 Participates in walk-down of excavation area along with other excavation permit reviewers/approvers.

5.2 Requester

5.2.1 Determines Scope of Work (SOW), depth of excavation (if known), location, and any other pertinent information regarding the excavation activity.

5.2.2 Initiates the Excavation/Penetration Permit process.

5.2.3 Reviews and approves FBP-OS-PRO-00022-F02, *Excavation and Penetration Permit.*

5.2.4 Initiates FBP-OS-PRO-00022-F06, *Excavation and Penetration Permit Exemption Approval.*

5.3 Issuing Authority (IA)

5.3.1 Provides required information on FBP-OS-PRO-00022-F02.

5.3.2 Reviews and approves FBP-OS-PRO-00022-F02.

5.3.3 Participates in walk-down of excavation/penetration area along with other excavation permit reviewers/approvers.

5.4 Facility Manager (FM)

5.4.1 Identifies Safety Systems, Technical Safety Requirements (TSRs), or Nuclear Criticality Safety (NCS) controls that may be affected by excavations/penetrations.

5.4.2 Provides required information on FBP-OS-PRO-00022-F02.

5.4.3 Reviews and approves FBP-OS-PRO-00022-F02.

5.4.4 When requested, assists with the identification of hidden interferences for areas that do not require a penetration or excavation permit due to not exceeding the pre-determined depth identified in Section 2.0, *Scope and Applicability,* of this procedure.

5.4.5 Participates in walk-down of excavation/penetration area along with other excavation permit reviewers/approvers.

5.4.6 Reviews and approves FBP-OS-PRO-00022-F06.

5.5 Responsible Engineer

5.5.1 Assigns number to FBP-OS-PRO-00022-F02.

5.5.2 Reviews scope of permits and provides boundaries/limits to the excavation/penetration.

5.5.3 Reviews design information associated with the proposed permit area (drawings, design change files, etc.) to identify specific potential interferences.

5.5.4 Provides written direction with sufficient detail when specific direction, precautions, or information is provided in "Section II – *Engineering Drawing Research*" of FBP-OS-PRO-00022-F02 such that all involved personnel understand the additional instructions that are provided (i.e., expected interferences, when and/or where hand digging or probing is required, etc.).

5.5.5 Provides initial working copy drawings of all referenced drawings in the permit.

5.5.6 Ensures System Engineer is informed of permits that impact safety-related systems.

5.5.7 For selected permits (as decided by management):

- Briefs the subsurface surveyor on what they can expect to find during the survey based upon the results of the drawing research.
- Obtains all pre-walk-down signatures on the permit.

5.5.8 Identifies requirements in the event that two of three sub-surface investigation techniques cannot be used (see Step 6.2.37).

5.5.9 Reconciles sub-site survey with drawing research.

5.5.10 Reviews and approves FBP-OS-PRO-00022-F02.

5.5.11 Provides a summary of subsurface survey findings on FBP-OS-PRO-00022-F02 and signs permit.

5.5.12 Participates in walk-down of excavation/penetration area along with other excavation permit reviewer/approvers.

5.5.13 Reviews and approves FBP-OS-PRO-00022-F06.

5.6 Registered Professional Engineer (RPE)

5.6.1 Registers as a professional engineer in the state where the work is to be performed.

5.6.2 Designs and approves all protective systems utilized in excavations that are greater than 20 ft in depth.

5.6.3 Designs and approves all protective systems that do not utilize sloping, benching, shoring, trench boxes, or systems that do not meet the requirements that are identified in 29 CFR 1926.652 (b), *Design of Sloping and Benching Systems*, and 29 CFR 1926.652(c), *Design of Support Systems, Shield Systems, and Other Protective Systems*, and are normally approved by an Excavation Competent Person.

5.7 Environmental Protection Professional

5.7.1 Determines potential for environmental impacts and appropriate mitigation measures.

5.7.2 Ensures that all environmental requirements and applicable permits have been addressed or obtained.

5.7.3 Reviews and approves FBP-OS-PRO-00022-F02.

5.8 Supervisor/Contract Technical Representative (CTR)

5.8.1 Oversees all excavation activities.

5.8.2 Ensures that all permits are completed.

5.8.3 Ensures that the walk-down was completed within two weeks of the start of the actual excavation activities. **IF** this time period is exceeded, **THEN** holds another walk-down.

5.8.4 Conducts periodic site walk-downs.

5.8.5 Ensures that all workers have necessary qualifications and have completed necessary training.

5.8.6 Ensures a project-specific Excavation Competent Person is assigned.

5.8.7 Reviews and approves FBP-OS-PRO-00022-F02.

5.8.8 Participates in walk-down of excavation/penetration area along with other excavation permit reviewer/approvers and signs permit.

5.8.9 Conducts a pre-job meeting to assure that the affected excavation workers, including support personnel, are briefed on all requirements and special conditions in the excavation area. Includes a discussion of the protective systems to be utilized.

5.9 Occupational Safety and Health (OS&H) Professional

5.9.1 Conducts periodic job-site inspections.

5.9.2 Identifies hazards and coordinates their mitigation.

5.9.3 Reviews and approves FBP-OS-PRO-00022-F02.

5.9.4 Works with the Excavation Competent Person and/or IH Professional for assistance in the determination for the need for atmospheric evaluation for the excavation activity. This evaluation is based on the defined work scope, work location, depth of the excavation or trench, the potential hazards present, and the type of tools and/or equipment to be utilized within the excavation. This evaluation is completed on a case by case basis in accordance with Step 6.3.24 of this procedure.

5.9.5 Monitors excavation atmosphere and documents results when oxygen deficiency (atmospheres containing less than 19.5% oxygen) or a hazardous atmosphere exists or could reasonably be expected to exist, such as in excavations in landfill areas or in areas where hazardous substances are stored nearby. These atmospheres in the excavation shall be tested before employees enter excavations that are greater than 4 ft in depth.

5.9.6 Documents monitoring results in accordance with FBP-IH-PRO-00024, *Industrial Hygiene Sampling*. Copies of completed forms shall be maintained in the project files and originals forwarded to IH.

5.9.7 Participates in walk-down of excavation/penetration area along with other excavation permit reviewer/approvers and signs permit.

5.10 OS&H Manager

Reviews and approves FBP-OS-PRO-00022-F06.

5.11 Industrial Hygiene (IH) Professional

Works with the OS&H Professional and/or Excavation Competent Person for assistance in the determination for the need for atmospheric evaluation for the excavation activity. This evaluation is based on the defined work scope, work location, depth of the excavation or trench, the potential hazards present, and the type of tools and/or equipment to be utilized within the excavation. This evaluation is completed on a case by case basis in accordance with Step 6.3.24 of this procedure.

5.12 Radiation Protection (RP) Professional

5.12.1 Performs Radiological Assessments, as necessary.

5.12.2 Reviews and approves FBP-OS-PRO-00022-F02.

5.13 CTR/Construction Engineer

5.13.1 Initiates subsurface survey, as necessary, to detect and document the presence of concealed utilities.

5.13.2 Participates in walk-down of excavation/penetration area along with other excavation permit reviewer/approvers.

5.14 Work Control Planner/CTR

5.14.1 Coordinates final walk-down of excavation/penetration area prior to work start.

5.14.2 Ensures permit is in the work control document.

5.15 Nuclear Safety Professional

5.15.1 Completes Nuclear Safety evaluations on TSRs or safety systems that may be affected by excavations/penetrations, as necessary.

5.15.2 Reviews and approves FBP-OS-PRO-00022-F02, if required.

5.16 Nuclear Criticality Safety (NCS) Professional

5.16.1 Completes NCS evaluations on NCS controls that may be affected by excavations/penetrations, as necessary.

5.16.2 Reviews and approves FBP-OS-PRO-00022-F02, if required.

5.17 Engineering Manager

5.17.1 Reviews and approves FBP-OS-PRO-00022-F06.

5.17.2 Reviews and approves FBP-OS-PRO-00022-F02.

5.18 Subsurface Surveyor

5.18.1 Reviews concealed utility locations identified from the drawing research.

5.18.2 Performs subsurface surveys to detect concealed utilities/anomalies.

5.18.3 Provides a Subsurface Survey Report that documents the survey findings.

5.18.4 Applies site approved ground markings to identify all detected items found during the subsurface survey.

5.19 Utility Operations Supervisor/Power Operations Supervisor

5.19.1 Determines if there is any known information regarding hidden utilities, structures, or obstructions; and provides details on FBP-OS-PRO-00022-F02.

5.19.2 Reviews and approves FBP-OS-PRO-00022-F02.

5.19.3 Participates in walk-down of excavation/penetration area along with other excavation permit reviewer/approvers.

5.20 Employee/Worker

5.20.1 Follows the direction provided by the Supervisor.

5.20.2 Notifies changing conditions to Supervisor and requests a work stop/pause when there are conditions present, near, or within the excavation that could lead to a safety condition, environmental issue, property damage, or quality issue.

5.20.3 Exercises stop/pause work authority when serious or imminent conditions arise in the excavation or near the excavation. Exits the excavation or excavation area and places the equipment in a safe configuration when possible. Notifies Supervisor and initiates emergency response when appropriate.

6.0 ACTIONS

6.1 Preparation for Excavation/Penetration Permit

> **NOTE**
>
> Permit reviewers and approvers from the disciplines involved with the development and approval of the individual permit sections shall provide detailed descriptions when specifying specific instructions, requirements, controls, pre-requisites, or actions to be taken during excavation/penetration activities when completing their respective sections of FBP-OS-PRO-00022-F02, also referred to as the Excavation & Penetration Permit.

CTR/Construction Engineer/Supervisor

6.1.1 Prior to any excavation, ensure a project-specific Excavation Competent Person is identified and ensure that the Excavation Competent Person has been advised of any known hazards in the area of the excavation. Ensure the Excavation Competent Person is authorized in accordance with FBP-OS-PRD-00002.

6.1.2 Contact RP prior to starting any excavation, including excavations not requiring an excavation permit, for the determination of radiological (RAD) support and RAD requirements.

6.1.3 Contact RP prior to any penetration within a Radiological Area, any Fixed Contamination Area (FCA), or Radiological Material Area (RMA) for the determination of RAD support and RAD requirements.

Requestor

6.1.4 Physically identify the proposed excavation location by distinguishing features, paint, stakes, or pin flag field markings consistent with the area identified on provided sketches and/or drawings and include in work scope description in work request entered in Computerized Maintenance Management System (CMMS).

RP Professional

6.1.5 Provide RAD assistance and perform Radiological Assessments, as necessary.

6.2 Permit Process

> **NOTE**
>
> Multiple excavations and/or penetrations for the same job may be addressed by a single permit with the approval of the IA when excavations/penetrations are in reasonable proximity to each other and all utility outages associated with the excavation/penetration can be performed at once. Grouping of excavations and/or penetrations under a single permit may also be allowed in other circumstances as determined on a case-by-case basis by the IA and the Engineering Manager.

Requestor

6.2.1 Determine scope of work, depth of excavation (if known), location, and any other pertinent information regarding the excavation activity.

6.2.2 Inform the IA.

6.2.3 Identify project funding source and supply Work Authorization Document to Engineering and/or Work Control Planner.

6.2.4 Submit an Engineering Service Order (ESO) Request to Engineering to initiate the permit process.

6.2.5 With assistance from the Responsible Engineer, as necessary, complete and sign "Section I – *General Information*" of FBP-OS-PRO-00022-F02 and provide form to Responsible Engineer.

FM

6.2.6 Ensure changes that may affect Safety Authorization Basis requirements are documented according to FBP-NSE-PRO-00114, *Unreviewed Safety Question Process.*

Responsible Engineer

6.2.7 Assign a unique identifying number to each excavation/penetration permit and enter applicable information into the Engineering Database.

WARNING

Utilities have been discovered less than 12 in. deep in soil, less than 3 in. deep in exterior concrete/pavement slabs, and less than 1 ½ in. deep embedded in building floors. The FM, Responsible Engineer, OS&H Professional, and other personnel cognizant with the area to be excavated or penetrated should be consulted to try to identify any hidden interferences prior to the start of the work activity.

6.2.8 Prior to initiation of the sub-site survey, review reference drawings of the excavation or penetration area to identify utilities that are expected to be present and note utilities in comments block in "Section II" of FBP-OS-PRO-00022-F02. Include all known concealed utilities not shown on engineering drawings.

6.2.9 Determine if past projects have been performed in the work area. **IF** drawings are available for past projects, **THEN** perform the following:

A. Retrieve available drawings for review.

B. **IF** no drawings are available, **THEN** note this fact in the Comments space in "Section II" of FBP-OS-PRO-00022-F02.

6.2.10 **IF** drawings indicate underground, embedded, or concealed utilities exist at or adjacent to the excavation(s) or penetration(s), **THEN** check "Yes" in the checklist in "Section II" of FBP-OS-PRO-00022-F02. For any utilities marked "Yes", include details in the block below the checklist.

6.2.11 **IF** drawings do not indicate underground, embedded, or concealed utilities exist at or adjacent to the excavation(s) or penetration(s), **THEN** check "No" in the checklist in "Section II" of FBP-OS-PRO-00022-F02.

6.2.12 List all drawing numbers referenced in "Section II" of FBP-OS-PRO-00022-F02 and provide working copy drawings for use with the completed permit in the field.

6.2.13 Provide all drawings researched for the permit, whether or not they show interferences; however, **IF** detailed drawings of a system's piping/conduit are included in the permit, **THEN** higher-level, more general drawings may be left out of the permit.

NOTE

A walk-down of the excavation/penetration area is strongly recommended as an aid to identify aboveground/exposed indications of underground/hidden systems in the excavation/penetration area.

6.2.14 Indicate in the boxes at the top of "Section II" whether or not a walk down was performed as part of the drawing research.

6.2.15 Identify any recommended excavation/penetration precautions in the appropriate block in "Section II". Examples of such precautions for excavations are isolating energized systems close to or within the excavation area, use of hand digging, use of hydro excavation, probing prior to digging, etc. An example of such precautions for penetrations are (for drilling through hollow masonry or stud-and-sheetrock) drilling through one side of the wall, then inspecting the hollow wall core for any obstructions or interferences before proceeding to drill the other side of the wall. **IF** no precautions are needed, **THEN** enter "N/A" in this block.

6.2.16 Identify necessary actions to protect the affected systems, structures, or components; and provide details in the appropriate block of "Section II" of FBP-OS-PRO-00022-F02.

6.2.17 **IF** any Safety-Related Systems are impacted by the excavation/penetration, **THEN** inform the associated System Engineer of the excavation/penetration work. Check the appropriate Yes/No box to note whether or not the System Engineer was notified.

6.2.18 Review, sign, and date "Section II" of FBP-OS-PRO-00022-F02 and forward to Engineering Manager.

Engineering Manager

6.2.19 Review, sign, and date "Section II" of FBP-OS-PRO-00022-F02 and return it to the Responsible Engineer.

Responsible Engineer

6.2.20 Electronically scan the permit and save the electronic file in the designated Engineering Folder for Excavation or Penetration Permits. Update the Permit Tracking Database as needed.

6.2.21 **IF** permit requires a shared-site review because work is being performed in an area not controlled by FBP, **THEN** route the permit to the appropriate reviewer(s) and have them sign in the block at the bottom of "Section II". **IF** this does not apply, **THEN** write "N/A" in this block.

6.2.22 Forward the FBP-OS-PRO-00022-F02 for further reviews/approvals.

NOTE

The following Sections III, IV, and VI may be completed out of sequence by non-Engineering personnel for project-related permits, or be coordinated by Engineering if the work is to be performed by in-house maintenance. Determine who is to perform the work and follow the appropriate steps.

Responsible Engineer

6.2.23 Submit FBP-OS-PRO-00022-F02 to the following group representatives for their review/signatures. These reviews do NOT need to occur in the order shown below or the order shown on the form:

- Environmental Protection
- Utility Operations Supervisor
- Power Operations Supervisor
- FM
- OS&H
- RP
- NCS

Environmental Protection Professional

6.2.24 Review "Section I" of FBP-OS-PRO-00022-F02 to:

A. Determine potential for environmental impacts and appropriate mitigation measures.

B. Ensure that all environmental requirements and applicable permits have been addressed or obtained.

6.2.25 Complete "Section III – *Environmental Protection Review*" of FBP-OS-PRO-00022-F02 and list in the section any special work requirements, including information concerning hold points, soil sampling, and/or soil handling or disposal direction necessary to accomplish work.

6.2.26 Sign and date "Section III" of FBP-OS-PRO-00022-F02.

Utility Operations Supervisor/Power Operations Supervisor

6.2.27 Review "Section I" of FBP-OS-PRO-00022-F02 to:

A. Determine potential for Utilities impacts and appropriate mitigation measures.

B. Ensure all utilities requirements and applicable permits have been addressed or obtained.

6.2.28 **IF** there is any known additional information not identified in "Section II" regarding hidden utilities, structures, or obstructions, **THEN** return the permit to Responsible Engineer to provide drawings that show the additional interferences.

6.2.29 **IF** no additional drawings can be found, **THEN** provide details in "Section IV – *Utilities Owner Review*" of FBP-OS-PRO-00022-F02.

6.2.30 **IF** a critical plant utility system could be affected by excavation activities, **THEN** take necessary actions to move the excavation to an area with no utilities or indicate the location specifying that hand excavation is required in that area.

6.2.31 Sign and date "Section IV" of FBP-OS-PRO-00022-F02.

FM

6.2.32 Contact the affected owner and owners of various utilities listed in "Section II" and "Section IV" of FBP-OS-PRO-00022-F02 at or adjacent to the excavation site.

6.2.33 Sign and date "Section IV" of FBP-OS-PRO-00022-F02.

Responsible Engineer

6.2.34 Determine if a Subsurface Survey is needed.

A. Some Excavations/Penetrations may have the Subsurface Survey waived, depending on the specific circumstances of the work. Examples of situations where a survey might be waived are:

- Excavation Area is located in a remote area where it is known that the soil is relatively undisturbed, and that there are no underground utilities
- Penetrations of building walls or ceilings where it is difficult to survey
- Excavation method only employs techniques that will not damage any underground utilities if they are encountered (i.e., hydro excavation, hand-digging, etc.)

B. **IF** needed, **THEN** check the box in "Section V" as "Yes" and contact the Supervisor/CTR to initiate the survey.

C. **IF** the survey may be waived, **THEN** check the box as "No", provide a justification, sign the block at the bottom of the section, and skip forward to obtaining the Engineering Manager's review/signature.

Supervisor/CTR

> **WARNING**
>
> **Penetrations into the floor, ceiling, or walls of a building may encounter concealed electrical equipment or other utilities or hazards, such as asbestos, that may not be shown on building drawings.**

6.2.35 Initiate subsurface survey to detect and document the presence of concealed utilities. The subsurface survey shall only be performed after Responsible Engineer has completed the existing drawing research.

6.2.36 Provide the Subsurface Surveyor with the results of the drawing research so that these results may be used as an input while surveying for hidden utilities.

Subsurface Surveyor

> **NOTE**
>
> The three subsurface survey methods shown below are mainly intended for use for excavations into dirt, concrete, or pavement. However, they may also be employed for building interior floor penetrations, if desired. Alternately, if the floor penetration is not to penetrate all the way through the floor slab, a survey using a rebar/pipe/conduit locator may be used. Also, Engineering has other tools to survey building walls and floors (such as borescopes and wall scanners). Engineering should be contacted for the best survey method for interior floors, walls, and ceilings.

6.2.37 Use at least two of the following three subsurface survey technologies to determine the location of utilities unless approval to use fewer technologies is obtained by the Engineering Manager or designee:

- Ground Penetrating Radar (GPR)
- Electromagnetic Induction
- Pipe and cable locator

6.2.38 Perform a subsurface survey and provide markings on the surface for any located utilities or anomalies. **IF** nature of utility or anomaly is known, **THEN** mark the utility using the color codes designated in **Table 1**, *Underground Utility Line Identification*, of this procedure.

Responsible Engineer

6.2.39 Attach the completed Subsurface Survey to the permit. Complete the checkboxes in "Section V".

> **NOTE**
>
> Use of alternative excavation techniques (e.g., vacuum excavation, air jetting, hydro-drilling) to avoid disturbing concealed utilities or anomalies may warrant an exception, as described in Step 6.2.40.

6.2.40 **IF** two of three subsurface surveys cannot be performed or is not necessary due to use of alternative excavation techniques, due to physical interferences, or based on subject matter evaluation, **THEN** document the reason for the exception of a second subsurface survey method in "Section V" of FBP-OS-PRO-00022-F02.

6.2.41 **IF** the Subsurface Survey is inadequate (i.e., the results did not adequately match those of the drawing research – this might be due to soil conditions, snow coverage on the area being surveyed, etc.), **THEN** check "No" on the checkbox in "Section V", and provide compensatory measures (such as hand digging, probing before digging, etc.).

6.2.42 Sign and date "Section V" of FBP-OS-PRO-00022-F02.

Engineering Manager

6.2.43 Review any Subsurface Survey waivers, exceptions to use of two of the three approved Subsurface Survey methods, and other checkboxes and comments in "Section V" of FBP-OS-PRO-00022-F02.

6.2.44 Sign and date "Section V" of FBP-OS-PRO-00022-F02.

FM

6.2.45 Determine if the excavation/penetration will affect any Safety Systems, TSRs, or NCS controls. Check the appropriate boxes in "Section VI – *Work Requirement/Precautions*" of FBP-OS-PRO-00022-F02. Where boxes are checked "No," the respective reviewing group (Nuclear Safety and/or NCS does NOT need to be contacted.

6.2.46 Sign and date "Section VI" of FBP-OS-PRO-00022-F02.

Nuclear Safety Professional

A. **IF** safety systems or TSRs may be affected by the excavation/penetration, **THEN** complete a Nuclear Safety evaluation and sign in "Section VI".

B. **IF** these systems are not affected, **THEN** confirm that this block and signature have been marked "N/A" by the FM.

NCS Professional

C. **IF** NCS controls may be affected by the excavation/penetration, **THEN** complete an NCS evaluation in "Section VI" of FBP-OS-PRO-00022-F02.

D. **IF** these systems are not affected, **THEN** confirm that this block and signature have been marked "N/A" by the FM.

OS&H Professional

6.2.47 Based on the defined work scope, work location, the potential hazards present, and the type of tools and/or equipment to be utilized within the excavation, and with the guidance of Subject Matter Experts (SMEs), identify all special requirements which will be required to complete the defined work.

6.2.48 Review, sign, and date "Section VI" of FBP-OS-PRO-00022-F02.

RP Professional

6.2.49 Review "Section I" of FBP-OS-PRO-00022-F02.

6.2.50 Establish radiological controls for the excavation/penetration, if necessary.

6.2.51 Sign and date "Section VI" of FBP-OS-PRO-00022-F02.

Work Control Planner/CTR

6.2.52 Within two weeks prior to commencement of excavation/penetration work, ensure walk-downs are performed, at a minimum (all required walk-down personnel shall participate in the walk-down together; having separate walk-downs is not allowed). The minimum personnel required for the walk-down are:

- FM (REQUIRED)
- Maintenance Supervisor or Contractor Foreman (REQUIRED)
- OS&H Professional (REQUIRED)
- Excavation Competent Person (REQUIRED for Excavations; not applicable for floor/wall/ceiling penetrations)
- Responsible Engineer (REQUIRED)
- If needed, Project Manager (PM), RP, Utility Operations, Power Operations, or Work Control Planner

6.2.53 Have walk-down participants sign and date "Section VII – *Walkdown and Review*" of FBP-OS-PRO-00022-F02 and write "N/A" in signature blocks not used.

6.2.54 Ensure the subsurface survey results are attached to FBP-OS-PRO-00022-F02.

IA

6.2.55 Fill in the "Permit Issued To" portion of "Section VIII – *Permit Issuance*" of FBP-OS-PRO-00022-F02.

6.2.56 Sign and date the "Permit Issued By" portion of "Section VIII" of FBP-OS-PRO-00022-F02 to issue the permit.

6.2.57 Ensure Engineering has a copy of the issued FBP-OS-PRO-00022-F02.

6.2.58 Provide the completed FBP-OS-PRO-00022-F02 and attachments to the Supervisor/Competent Person for use at the work site.

6.3 Excavation/Penetration – Field Implementation

> **NOTE**
>
> All actions required for the applicable work scope noted in the following sections must be included in the appropriate work document and/or Job Hazard Analysis (JHA).

Supervisor/CTR

6.3.1 Verify all workers have completed the training necessary to safely complete the excavation/penetration.

6.3.2 Conduct and document a pre-job briefing with all personnel involved in the work activities, in accordance with FBP-NSE-PRO-00002, *Pre-Job Briefing and Post-Job Review*. The pre-job briefing will consist of:

- Communicating information on the permit to the workers.
- Reviewing applicable lessons learned.
- Ensuring all involved workers have been briefed to the Work Control and JHA documents before work starts.
- Walking down the area and performing the drawing review.

6.3.3 **WHEN** necessary, **THEN** isolate any hazardous energy that is at or adjacent to the excavation/penetration location in accordance to FBP-OS-PRO-00068, *Instructions for Lockout/Tagout*.

6.3.4 Install barricades and signage according to FBP-OS-PRO-00029, *Construction and Work Zone Barricades and Signs*.

NOTE

Since the purpose of subsequent walk-down(s) is to confirm no additional interferences have been installed since the initial walk-down, subsequent walk-downs may be performed without all parties being present at one time. Also, only the required walk-down personnel need sign (instead of all of the groups that attended the initial walk-down).

6.3.5 Confirm that the walk-down documented in "Section VII" on FBP-OS-PRO-00022-F02 has not expired. That is, the walk-down occurred less than two weeks before the excavation groundbreaking. **IF** more than two weeks has elapsed before groundbreaking, **THEN** another walk-down must be performed.

Excavation Competent Person

NOTE

The following step does not apply to penetrations.

6.3.6 Classify soil types according to 29 CFR 1926, Subpart P, Appendix A, *Soil Classification.* At least one manual method and one visual test method shall be utilized when classifying the soil. Document initial inspection of excavation using FBP-OS-PRO-00022-F03, *Excavation/Trench Inspection and Entry Authorization Form.*

NOTE

All soils on the PORTS site are classified as Type C soil unless additional classification test(s) are performed by an excavation competent person or registered professional engineer determines the soil to be of a different classification and meets the requirements of 29 CFR 1926, Subpart P.

Inspections described in Step 6.3.7 are only required when employee exposure to excavation related hazards can be reasonably anticipated.

The following step does not apply to penetrations.

6.3.7 Remain available on the PORTS site and conduct daily inspections of the excavations, the adjacent areas, and the protective systems utilized prior to personnel entering the excavation. Inspect excavation at least daily prior to personnel entry into the excavation, and after any rain event or other hazard increasing event, and complete FBP-OS-PRO-00022-F03. A new FBP-OS-PRO-00022-F03 is required each time the excavation is inspected.

A. Conduct and document the inspection prior to the start of work and as needed throughout the shift, as well as after any rainstorm or other hazard-increasing occurrence.

B. Conduct and document inspections necessary to identify situations that could result in a change of conditions or any hazardous conditions (e.g., cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions) and ensure that corrective measures are taken.

C. **WHEN** one project encompasses multiple excavations/penetrations, **THEN** ensure FBP-OS-PRO-00022-F02 clearly states the expectations for on-scene presence of the Competent Person. Make inspections necessary to identify situations that could result in hazardous conditions (e.g., cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions) and ensure that corrective measures are taken.

D. Immediately notify the supervisor and employees of evidence of a situation that could present IDLH situation or serious hazard and contact the appropriate OS&H professional to assist.

E. Implement appropriate safety measures while employees are working around suspended or raised loads and materials.

6.3.8 Verify that excavation monitoring has been performed and documented for oxygen deficiency (atmospheres containing less than 19.5% oxygen) or when a hazardous atmosphere exists or could reasonably be expected to exist, such as in excavations in landfill areas or in areas where hazardous substances are stored nearby. When testing hazardous atmospheres in the excavation, it shall be tested before employees enter any excavation greater than 4 ft in depth. Monitoring can be performed at depths less than 4 ft when a hazardous atmosphere is suspected to exist.

6.3.9 Verify all materials, spoils, and equipment are maintained at a distance of at least 2 ft from the edge.

6.3.10 **IF** personnel entry into excavation/trench is required, **THEN** ensure means of egress is provided.

6.3.11 Ensure any excavation slope used to enter the excavation is no steeper than one and one-half horizontal to one vertical (1½H:1V) (34 degrees or less when measured from the horizontal) and ensure soil is compacted (no loose dirt or clumps) prior to the slope being used for egress to or from the excavation.

6.3.12 **WHEN** used for egress, **THEN** verify ladders remain within all trench ~~or~~ excavations that are 4 ft or more in depth, and ladders or other safe means of egress within trench excavations shall require no more than 25 ft of lateral travel distance to reach the ladder or other safe means of egress.

RQ.1
EMA
5/22/23

Supervisor

6.3.13 Ensure all precautions necessary to locate buried utilities or objects and recognize changing conditions that may indicate hand work in lieu of machine or equipment use, including changes in the following:

- Soil
- Color
- Sand
- Gravel
- Warning tape located around or adjacent to other underground services

6.3.14 **WHEN** changing soil conditions are observed, or **WHEN** digging is within 2 ft in any direction from the outer edge of an identified buried utility, **THEN** stop all mechanical digging, initiate hand digging with non-conducting hand-tools with probing (non-conductive probe), and continue hand-digging until the buried utility or object has been exposed and identified. Resume mechanical dogging outside the established 2 ft zone in all directions of the identified buried utility only with written approval of Responsible Engineer, Excavation Competent Person, and OS&H representative.

6.3.15 **WHEN** changing soil conditions are observed in an area where no identified buried utilities or objects have been previously identified on system drawings or in the issued Excavation Permit (FBP-OS-PRO-00022-F02); **THEN** follow guidance in Subsection 6.4, *Unusual Conditions/Unexpected Obstructions*.

6.3.16 After removal of each lift (of compacted soil), perform a thorough visual inspection for abandoned, direct, buried cable, piping, and legacy installations, which may include:

- Expansion joints
- Thrust blocks
- Manholes
- Similar features not indicated on available system drawings

6.3.17 **IF** employees are exposed to a fall hazard due to excavations that are 6 ft or greater, **THEN** ensure that a means of fall protection is utilized to protect the employees. Fall protection is not needed for excavations sloped at an angle not steeper than one and one-half horizontal to one vertical (1½H:1V) (34 degrees measures from the horizontal).

6.3.18 **WHEN** excavation reaches twenty (20) or more feet in depth, **THEN** stop work and notify the RPE for the design and approval the protective measures to be utilized.

RPE

6.3.19 Design and approve all worker protective systems utilized in excavations that an Excavation Competent Person is not permitted to design and approve. Design and approve all worker protection systems for excavations that are greater than 20 ft in depth.

Excavation Competent Person

6.3.20 To protect excavations 5 ft and deeper from a "cave in," perform one of the following:

A. Slope the sides, according to the following requirements:

1) For Type A soil, 3/4 foot horizontal by 1 foot vertical (¾H:1V) – An exception would be an allowable slope of ½ foot horizontal to 1 foot vertical (½H:1V) for an excavation in Type A soil that is 12 ft or less in depth and open for a time period of 24-hours or less

2) For Type B soil, 1 foot horizontal by 1 foot vertical (1H:1V)

3) For Type C soil, 1½ feet horizontal by 1 foot vertical (1½H:1V)

B. Benching or stepping of the sides of the excavation: Benching is only permitted in Type A soil and Type B cohesive soil in accordance with 29 CFR 1926, Subpart P, Appendix B, *Sloping and Benching,* and Appendix C, *Requirements For Sloping Or Benching/Stepping An Excavation*, of this procedure.

C. Install a protective system (approved shoring or trench box).

D. Utilize a protective system designed by an RPE when the protective system does not meet the criteria found in item A, B, or C above.

6.3.21 Verify that the protective system utilized has been properly installed prior to employees entering into the excavation.

Supervisor

6.3.22 Obtain concurrence from Excavation Competent Person, excavation qualified person/RPE (when required), and the OS&H professional prior to commencing work to ensure that all hazard control measures are in place.

6.3.23 **IF** utilities are exposed, **THEN** consider arranging with Infrastructure and Site Maintenance (I&SM) or Onsite Waste Disposal Facility (OSWDF) to have a Global Positioning System (GPS) shot taken of exposed utilities prior to backfilling so that coordinates can be verified with site drawings; forward survey results to Engineering.

OS&H/IH Professional

6.3.24 Conduct atmospheric monitoring of the excavation when an excavation reaches 4 ft or deeper in depth and an oxygen deficiency (atmosphere containing less than 19.5% oxygen), or a hazardous atmosphere exists or could reasonably be expected to exist, such as in excavations in landfill areas or in areas where hazardous substances are stored nearby. The need for atmospheric monitoring for excavations that are less than 4 ft in depth should be evaluated on a case-by-case basis and completed by the OS&H or IH Professional.

6.3.25 Document monitoring results in accordance with FBP-IH-PRO-00024. Copies of completed forms shall be maintained in the project files and originals forwarded to IH.

6.4 Unusual Conditions/Unexpected Obstructions

Supervisor

6.4.1 Consult Responsible Engineer, OS&H Professional, IA, the Excavation Competent Person, and/or other available expertise to evaluate any unusual conditions found either during subsurface survey efforts or during actual excavation.

CAUTION

Stop/pause work immediately, place equipment and work area in a safe configuration when feasible, and ensure that exposed employees are removed from the hazardous area when they reasonably believe that an IDLH or serious hazard condition exists or the Excavation Competent Person and/or OS&H Professional finds evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions until the necessary precautions have been taken to ensure the employees' safety.

6.4.2 **IF** unexpected obstructions are encountered or potential damage to utilities or other structures occur, **THEN** perform the following:

A. Stop or pause work immediately, place equipment and work area in a safe configuration when feasible, and ensure that exposed employees are removed from the hazardous area when they reasonably believe that an IDLH or serious hazard condition exists or the Excavation Competent Person and/or OS&H Professional finds evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions until the necessary precautions have been taken to ensure the employees' safety.

B. When warranted, initiate a formal work stop, according to FBP-OS-PRO-00028, *Work Stoppage Due to Environmental, Safety, Health, and Quality Concerns*.

C. Initiate a problem report, according to FBP-QP-PRO-00020, *Problem Reporting and Issues Management.*

D. Notify the OS&H Professional, Subcontractor Supervision, or FBP Supervision (if work performed by FBP maintenance personnel), Subcontractor Safety Representative, Engineering, and the FM that work has been stopped/paused.

E. **IF** unexpected utilities are encountered, **THEN** consider arranging I&SM or OSWDF to take a GPS shot of the unexpected utility so that its coordinates can be added to site drawings.

F. Work with OS&H Professional, Subcontractor Safety Representative, Engineering, and the FM, as appropriate, to evaluate the situation and develop appropriate follow-up actions, such as personnel protection (e.g., Lockout/Tagout) or support systems for exposed utilities.

G. **IF** the scope of work changes or field conditions change that are not covered by the permit or the JHA, **THEN** perform the following:

1) Contact the appropriate FM and IA.

2) Do NOT perform any work associated with new scope(s) of work or field condition changes until a new FBP-OS-PRO-00022-F02 has been approved that includes the new work scope(s) and/or addresses the field condition changes.

3) Follow guidance in Subsection 6.5, *Field Changes or Work Scope Changes.*

Employee/Worker

6.4.3 Report conditions to supervisor and request a work stop when there are conditions present in the excavation or near the excavation that could lead to a safety, environmental, property, or quality issue.

6.4.4 Exercise stop/pause work authority when imminent danger conditions or serious conditions arise in the excavation or near the excavation, exit the excavations or excavation area, notify other affected employees, place equipment in a safe condition (when possible), notify supervisor, and initiate emergency response (when appropriate).

6.5 Field Changes or Work Scope Changes

NOTE

Field Changes may be made to the permit as conditions warrant, provided the interference identifications made by the drawing research and the subsurface survey remain valid. Specifically, if the change involves adding a new (or moving an already planned) excavation/penetration:

- If the new/moved location is inside the boundary evaluated during the drawing research and also inside the boundary evaluated by the subsurface survey, the change may be processed as a Field Change. The new location is added to the marked-up drawings that are already in the permit, and any interference at the new location shown on either the drawings or the subsurface survey is identified.
- If the new/moved location is outside the boundary evaluated during the drawing research but inside the boundary evaluated by the subsurface survey, the change may be processed as a Field Change. The new location is added to the marked-up drawings, any new drawings, if needed, are pulled and marked up to show the new location. Any interference at the new location shown on either the drawings or the subsurface survey is identified.
- If the new/moved location is outside the boundary evaluated by the subsurface survey, a new subsurface survey will be needed; a new permit should be prepared.

Typically, a Field Change is the minimum amount of documentation required to process a new or moved excavation/penetration location. However, in a few circumstances, a Field Change may be waived. Waivers can only be made by the Engineering Manager and will be considered on a case-by-case basis.

Field changes are evaluated by OS&H Professional because they may introduce additional hazards.

IA

6.5.1 **IF** a Field Change that does not involve a change to the SOW is required, **THEN** perform the following:

A. Discuss the Field Change with representatives of Engineering, FM, and others, as needed.

B. Obtain signatures from OS&H Professional, Responsible Engineer, and IA, including an RPE (if the excavation or trench is more than 20 ft deep), on FBP-OS-PRO-00022-F04, *Excavation and Penetration Permit Field Change Approval.*

C. Sign FBP-OS-PRO-00022-F04 in the space indicated.

6.5.2 **IF** a work scope change is required, **THEN** perform the following:

A. Prepare a new FBP-OS-PRO-00022-F02 that incorporates the new or changed work scope.

B. Have a JHA prepared, if required, to address all new hazards and controls that have resulted from the new or changes to the work scope.

C. Re-brief the work crew to the changed conditions.

6.6 Excavation/Penetration Permit Exemption Approval

NOTE

FBP-OS-PRO-00022-F06 is also referred to as the Excavation and Penetration Exemption Approval throughout Subsection 6.6, *Excavation/Penetration Permit Exemption Approval*.

Requestor

6.6.1 An Excavation and Penetration Permit Exemption Approval is required for any of the below listed conditions:

- Installation of new utilities embedded in a building floor, wall, or ceiling at a depth of less than 1½ in. from the surface
- Installation of new utilities embedded in outdoor concrete or pavement at a depth of less than 3 in. from the surface
- Installation of new utilities embedded in outdoor soil at a depth of less than 12 in. from the surface
- Performance of any excavation or penetration activity within a facility or area that has been determined to be "Cold and Dark" without the issuance of an excavation or penetration permit

6.6.2 Complete FBP-OS-PRO-00022-F06 and sign the form.

6.6.3 Route exemption form to the Engineering Manager, OS&H Manager, and the PM/Supervisor.

Engineering Manager

6.6.4 Review and approve by signing the Excavation and Penetration Permit Exemption Approval Form. **IF** request is rejected, **THEN** return form to the requestor for revision and re-submittal.

OS&H Manager

6.6.5 Review and approve by signing the Excavation and Penetration Permit Exemption Approval Form. **IF** request is rejected, **THEN** return form to the requestor for revision and re-submittal.

FM

6.6.6 Review and approve by signing the Excavation and Penetration Permit Exemption Approval Form. **IF** request is rejected, **THEN** return form to the requestor for revision and re-submittal.

Requestor

6.6.7 Submit approved exemption form to CTR/Supervisor for field execution of the work.

6.7 Underground Warning Tape for All New Construction and Modification of Existing Underground Utilities

Supervisor

6.7.1 Ensure underground warning tapes and/or utility identification is installed above all new underground utility lines at PORTS (including temporary services).

6.7.2 Installation of such marking shall be as follows:

- Directly above each new utility line in the same excavation trench
- Approximately 18" below the final finish grade in the area of the new utility line
- At least 12" above the top elevation of the utility line

6.7.3 **IF** any of the controls listed in Step 6.7.2 cannot be met, **THEN** contact OS&H Professional, Responsible Engineer, and the FM to provide additional direction.

6.7.4 **WHEN** required, **THEN** install a Tracer Wire of #12 copper conductor between the warning tape and utility.

6.7.5 For tie-ins to existing underground utility lines, identify the exposed existing lines, according to **Table 1**.

Table 1. Underground Utility Line Identification

Utility Line (Pipe Material)	Warning Type	Color of Tape	Electric Conductor
Gas Line (metal)	Polyethylene	Yellow	Not Required
Gas Line (plastic)	Aluminum	Yellow	Required
Electric, direct burial	Aluminum	Red	Required
Electric, conduit, or concrete encased	Polyethylene	Red	Required
Telephone, direct burial	Polyethylene	Orange	Not Required
Telephone, conduit, or concrete encased	Polyethylene	Orange	Required
Data/optical, conduit, or concrete encased	Polyethylene	Orange	Required
Fire or Sanitary Water (metal)	Polyethylene	Blue	Not Required
Fire or Sanitary Water (plastic)	Aluminum	Blue	Not Required
Sanitary Sewer, Air, RCW, RHW, TCW, All other (metal)	Polyethylene	Green (or approved color)	Not Required
Sanitary Sewer, Air, RCW, RHW, TCW, All other (plastic)	Aluminum	Green (or approved color)	Not Required
Storm Sewer (metal)	Polyethylene	Green (or approved color)	Not Required
Storm Sewer (plastic)	Aluminum	Green (or approved color)	Not Required
If utility line being worked is not listed, contact Engineering for guidance.			

6.8 Excavation/Penetration – Site Closure

Supervisor

6.8.1 Verify all work involving excavation activities is completed as required in the SOW and the site is left in a safe condition.

6.8.2 Release FBP-OS-PRO-00022-F02 by providing signature and date in the "*Feedback*" Section of the original form.

6.8.3 On FBP-OS-PRO-00022-F02, answer if unexpected utilities, unexpected obstructions, and/or unusual conditions were encountered in the "*Feedback*" Section and, if "Yes", list and describe what was encountered and include drawing number references, if applicable.

6.8.4 Insert the FBP-OS-PRO-00022-F02 into the work control document for closeout. **IF** unexpected interferences were encountered during the work, **THEN** forward a copy to Engineering.

IA

6.8.5 Document any special notes or observations on FBP-OS-PRO-00022-F02.

6.8.6 Forward a copy of the closed excavation permit with any red-lined prints to the Engineering Manager for updating as-built drawings.

Requestor

6.8.7 Submit original copy of FBP-OS-PRO-00022-F02 (with attachments) and any copies of FBP-OS-PRO-00022-F03 to Records Management and Document Control (RMDC) for record retention and disposition.

7.0 RECORDS

7.1 Records Generated

A. FBP-OS-PRO-00022-F02, *Excavation and Penetration Permit*

B. FBP-OS-PRO-00022-F03, *Excavation/Trench Inspection and Entry Authorization Form*

C. FBP-OS-PRO-00022-F04, *Excavation/Penetration Permit Field Change Approval*

D. FBP-PRO-00022-F06, *Excavation And Penetration Permit Exemption Approval*

7.2 Requirements

Records generated or received as a result of performing this procedure shall be managed according to FBP-BS-PRO-00062, *Records Management Process.*

8.0 DEFINITIONS/ACRONYMS

8.1 Definitions

A. **Anomaly** – An unexpected detection of an object not reflected on site drawings, found during the subsurface survey.

B. **Benching System** – A method of sloping designed to protect employees 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. When benching systems are utilized, the proper angle for the soil classification determined by the Excavation Competent Person shall be maintained in accordance with 29 CFR 1926 Subpart P, Appendix B.

C. **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/or immobilize a person.

D. **Confined Space** – A space that has the following characteristics:

- Is not designed for continuous employee occupancy,
- Has limited or restricted entry or exit, and
- Is large enough and configured to allow an employee to bodily enter and perform assigned work.

E. **Contractor** – A company, corporation, or individual that has a contract with FBP and has overall responsibility for all work associated with that contract or purchase order.

F. **Critical Plant Utility** – A plant utility system (e.g., firewater), which, if disrupted, could cause hazards to personnel and/or disruption of plant operations.

G. **Designated Landfills or Burial Sites** – A landfill or burial site that has been developed and approved for use, and where new waste is authorized to be buried.

H. **Excavation** – Any man-made cut, cavity, trench, boring, or depression in an earth surface, formed by earth removal. Subsurface penetrations (e.g., installing ground rods, trailer anchors) are considered to be excavations for the purpose of this procedure.

I. **Excavation Competent Person** – One who is approved by FBP OS&H Management in accordance with FBP-OS-PRD-00002, and whom bears a certificate, or has specific training in, and is knowledgeable of or recognized as an expert in: soils analysis; the use of protective systems; and the requirements of 29 CFR 1926, Subpart P, *Safety and Health Regulations for Construction - "Excavations"*; is capable of identifying existing, predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees; and who has the authority to take prompt corrective measures to eliminate them. Penetrations do not require an Excavation Competent Person.

J. **Excavation Permit** – A permit used to document the excavation location, reason for the excavation related work, package or project number, and required drawings changes. It also documents conditions for, and review/ acceptance of, the excavation activities.

K. **Facility Manager (FM)** – The manager having jurisdiction over a facility or system.

L. **Issuing Authority (IA)** – The governing facility manager where the excavation/penetration is to take place, and an individual authorized by management to issue excavation/penetration permits. The IA may, in some cases, also be the Requestor.

M. **Occupational Safety and Health (OS&H) Professional** – A person with safety training and experience who is knowledgeable through experience and education with excavation work, and who can determine if additional measures must be considered (such as hand digging or atmospheric monitoring).

N. **On-Site –** Excavation Competent Person is available at the PORTS general work site and can be available to make those inspections described in Step 5.1.4 of this procedure to identify situations that could result in hazardous conditions (e.g., possible cave-ins, indications of failure to protective systems, hazardous atmospheres, or other hazardous conditions), and then to ensure that corrective measures are taken.

O. **Penetration** – Breaching or penetrating any building surface more than 1-½" (unless excluded), any blacktop or concrete pavement surface more than 3", or the earth's surface more than 12" by any means other than those considered excavation or trenching. These methods include, but are not limited to, auguring, drilling, driving, coring, or penetrating. Penetrations include drilling wells and boring for soil samples up to and including 12" in diameter.

P. **Protective System** – A method of protecting employees 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 approved by an RPE that provide the necessary protection.

Q. **Registered Professional Engineer (RPE)** – A person who is registered as a Professional Engineer in the state where the work is to be performed.

R. **Requestor** – The individual requesting initiation of an excavation permit.

S. **Scope of Work (SOW)** – The purpose of the request for the excavation permit and the work associated with the excavation activities.

T. **Shield (Shield System)** – A structure that is able to withstand the forces imposed on it by a cave-in and thereby protect employees within the structure.

U. **Shoring (Shoring System)** – A structure that supports the sides of an excavation and which is designed to prevent cave-ins.

V. **Short Term Exposure** – Means a period of time less than or equal to 24-hours that an excavation is open.

W. **Sloping** – A method of protecting employees from cave-ins by cutting the walls of the excavation to angle out at the top.

X. **Sub-base** – The layer in the pavement system between the subgrade and base course, or between the subgrade and concrete pavement.

Y. **Subgrade** – The uppermost material placed in embankments or unmoved from cuts in normal grading of road beds.

Z. **Subsurface Survey** – Walk-down of a site where excavation activities are to be performed. The walk-down includes using a device or devices used to positively identify the presence of underground obstacles/utilities. Utility locations shall be marked by the service group or subcontractor performing the subsurface survey work.

AA. **Supervisor** – For the purposes of this procedure, the person who has overall responsibility for supervising excavation activities associated with the project. The Supervisor and the Excavation Competent Person may, in some cases, be the same person.

BB. **Trench** – An excavation made below the surface of the ground. In general, the depth is greater than the width at the bottom, but the width of a trench at the bottom is not greater than 15 feet.

8.2 Acronyms

A. **CFR** – Code of Federal Regulations

B. **CTR** – Construction Technical Representative

C. **ESH&Q** – Environment, Safety, Health, and Quality

D. **FBP** – Fluor-BWXT Portsmouth LLC

E. **FM** – Facility Manager (See Definitions)

F. **GPS** – Global Positioning System

G. **H** – Horizontal

H. **I&SM** – Infrastructure and Site Management

I. **IA** – Issuing Authority (See Definitions)

J. **IDLH** – Immediately Dangerous to Life or Health

K. **IH** – Industrial Hygiene

L. **JHA** – Job Hazard Analysis

M. **NCS** – Nuclear Criticality Safety

N. **OS&H** – Occupational Safety and Health

O. **OSWDF** – Onsite Waste Disposal Facility

P. **OSHA** – Occupational Safety and Health Administration

Q. **PM** – Project Manager

R. **PORTS** – Portsmouth Gaseous Diffusion Plant

S. **RAD** – Radiological (as used in this document)

T. **RP** – Radiation Protection

U. **RPE** – Registered Professional Engineer (See Definitions)

V. **SOW** – Scope of Work (See Definitions)

W. **TSR** – Technical Safety Requirement

X. **V** – Vertical

9.0 SOURCE REFERENCES

A. 10 Code of Federal Regulations (CFR) 1021, *National Environmental Policy Act Implementing Procedures*

B. 29 CFR 1926 Subpart P, *Safety and Health Regulations for Construction - "Excavations"*

Appendix A
REGULATORY REQUIREMENTS FLOW DOWN

1. 10 CFR 851, *Worker Safety and Health Program*
2. 29 CFR 1926, *Occupational Safety and Health Administration (OSHA)*, Subpart AA, *Confined Spaces in Construction*
3. 29 CFR 1926, *OSHA*, Subpart P, *Excavations*

Appendix B
EXCAVATION/PENETRATION PERMIT GENERAL INSTRUCTIONS

Error correction to the Permit Form prior to being issued:

If an error is discovered in the permit prior to being issued, perform the following steps:

a. Draw a single line through the error and write in the correction with black ink; initial and date the correction.

b. If the error imposes or implies an intent change to the scope of the permit, void the permit and issue a new one.

Lost Permit

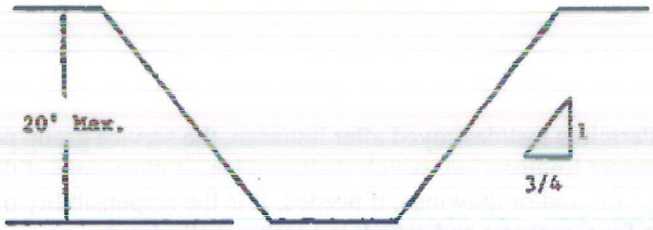
If an Excavation Permit is lost/destroyed after issuance, the service group performing the work shall cease work and contact Engineering, which shall provide another copy of the permit through "Section II", and prints and/or drawings, if needed. It is the responsibility of the service group to re-walk the permit for signatures and schedule another walk-down.

Appendix C
REQUIREMENTS FOR SLOPING OR BENCHING/STEPPING AN EXCAVATION
Page 1 of 5

NOTE: Refer to 29 CFR 1926, *OSHA*, Subpart B, Appendix B, *Sloping and Benching*, for complete requirements for sloping and benching/stepping.

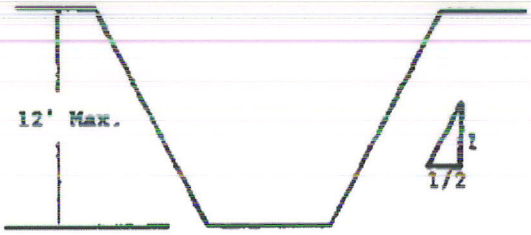
SLOPING REQUIREMENTS:

Sloping in Type A Soil:



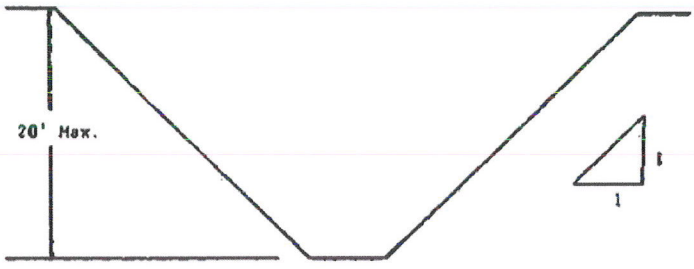
SIMPLE SLOPE – GENERAL

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 horizontal to 1 vertical (½:1).



SIMPLE SLOPE -- SHORT TERM FOR TYPE A SOIL

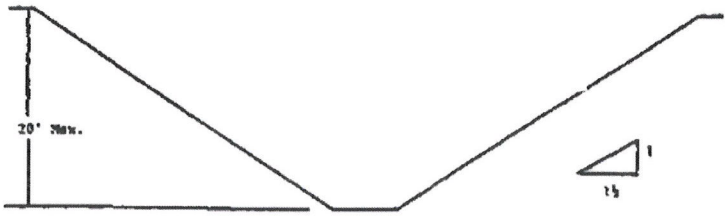
Sloping in Type B Soil:



SIMPLE SLOPE – GENERAL FOR TYPE B SOIL

Appendix C
REQUIREMENTS FOR SLOPING OR BENCHING/STEPPING AN EXCAVATION
Page 2 of 5

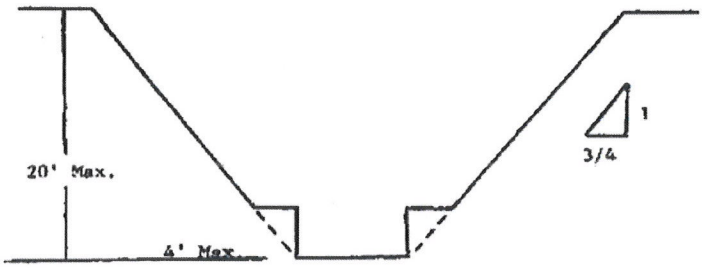
Sloping in Type C Soil:



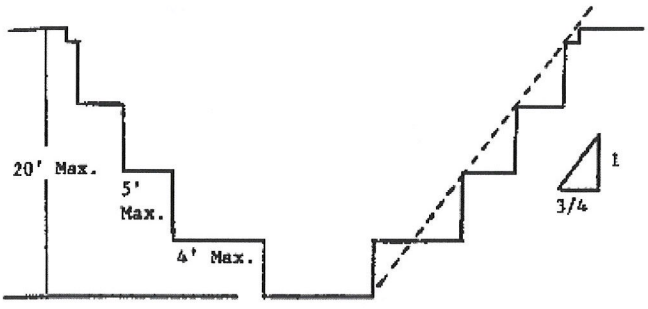
SIMPLE SLOPE – GENERAL FOR TYPE C SOIL

BENCHING OR STEPPING REQUIREMENTS:

Benching in Type A Soil:



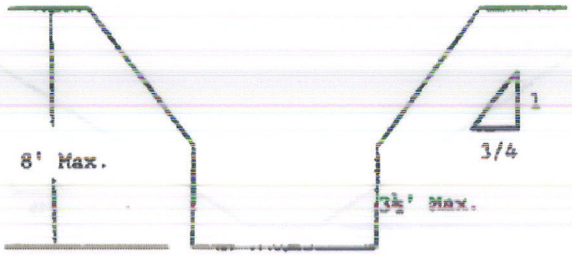
SIMPLE BENCH – GENERAL FOR TYPE A SOIL



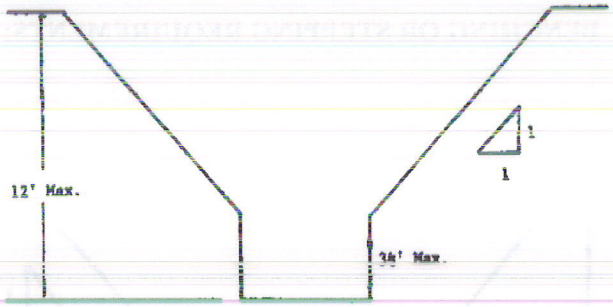
MULTIPLE BENCH – GENERAL FOR TYPE A SOIL

Appendix C
REQUIREMENTS FOR SLOPING OR BENCHING/STEPPING AN EXCAVATION
Page 3 of 5

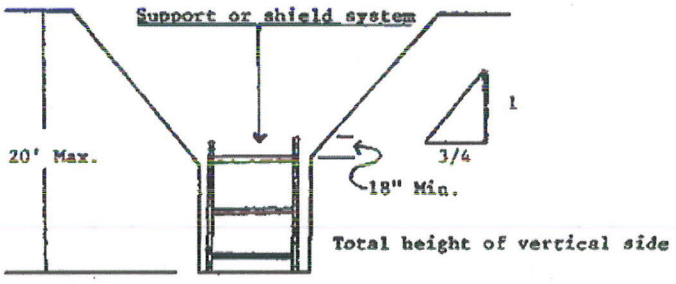
Benching in Type A Soil (continued):



Unsupported Vertically Sloped Lower Portion – Maximum 8-feet in Depth



Unsupported Vertically Sloped Lower Portion – 8-feet in depth to 12-feet in depth



Support or Shield System – For Type A Soil

All excavations 20-feet or less in depth which have vertically sloped lower portions that are supported or shielded shall have a maximum slope of ¾ horizontal to 1 vertical (¾:1) beginning at a point at least 18-inches below the top of the support or shield system.

Appendix C
REQUIREMENTS FOR SLOPING OR BENCHING/STEPPING AN EXCAVATION
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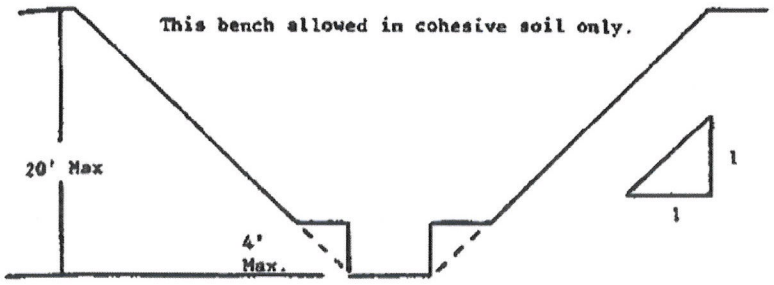
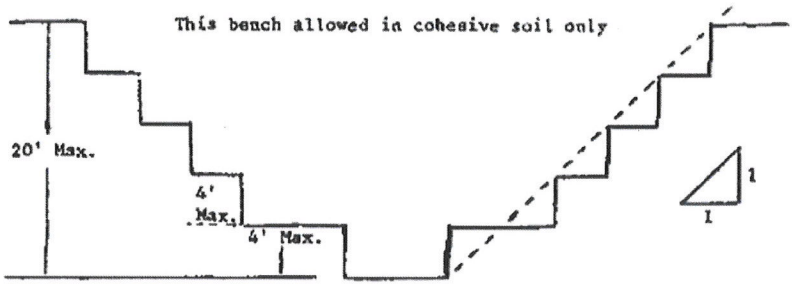
Benching in Type B Soil:



Simple Bench – For Type B Soil

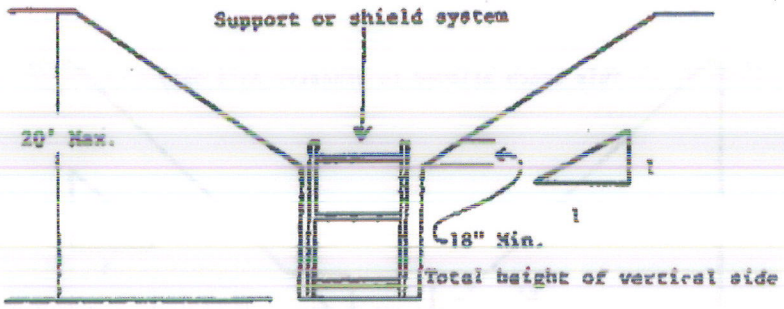
(NOTE: The one horizontal to one vertical slope (1:1) is maintained from the bottom of the excavation through the bench and continuing to the top of the excavation.)



Multiple Bench – For Type B Soil

(NOTE: The one horizontal to one vertical slope (1:1) is maintained from the bottom of the excavation through the bottom bench and then along a line at the edge of all subsequent higher benches to the top of the excavation.)

Appendix C
REQUIREMENTS FOR SLOPING OR BENCHING/STEPPING AN EXCAVATION
Page 5 of 5

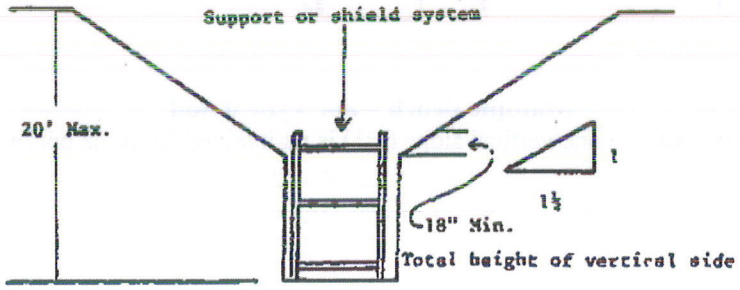


Support or Shield System – Used in Type B Soil

All excavations 20-feet or less in depth which have vertically sloped lower portions that are supported or shielded shall have a maximum slope of 1 horizontal to 1 vertical (1:1) beginning at a point at least 18-inches below the top of the support or shield system.

Benching In Type C Soil:

Benching or Stepping IS NOT permitted in Type C Soil



Support or Shield System – Type C Soil

All excavations 20-feet or less in depth which have vertically sloped lower portions that are supported or shielded shall have a maximum slope of 1.5 horizontal to 1 vertical (1½:1) beginning at a point at least 18-inches below the top of the support or shield system.

Attachment A
EXCAVATION & PENETRATION PERMIT
Page 1 of 6

Fluor-BWXT Portsmouth

EXCAVATION & PENETRATION PERMIT Permit No.:_____Page_____ of_____

Section I – General Information Note: Requester to fill in blocks below as much as possible, but some spaces may be left blank if information is not available				
Project/Job Title:				
Include description/scope of work to be completed (including, as applicable, length/depth of excavation, material to be excavated/penetrated, where displaced material will be staged, etc.):				
Location:	Building:	Floor:	Column:	Other:
Permit Boundaries/Limits:		Work Order/Contract Number:		
Name and Organization:				
Reference Location Drawing/Sketch Numbers, if known:		Phone Number:		
Does the work associated with the excavation/penetration involve the disturbance/generation/use of: ☐ Hazardous Substances ☐ Radioactive Substances ☐ Liquid Effluents ☐ Pesticides/Herbicides ☐ Contaminated Groundwater ☐ Air Emissions				
Describe any disturbances and the control measures such as actions to preclude unpermitted releases, spill prevention, and dust suppression:				
Requestor Name (PRINT):	Requestor Badge No.:	Requestor Signature:		Date:

Attachment A
EXCAVATION & PENETRATION PERMIT
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EXCAVATION & PENETRATION PERMIT Permit No.:_____ Page____ of_____

Section II – Engineering Drawing Research

☐ Yes ☐ No For both penetrations and excavations, was a walk down of the area completed by the Engineer?

IF any utilities below are checked "yes," THEN details are required to be entered in the "Explanation of Interferences/Interfaces" section below.

Yes (✓)	No (✓)	Utility	Drawing No.	Yes (✓)	No (✓)	Utility	Drawing No.
☐	☐	Sanitary/Fire Water		☐	☐	High Pressure Fire Water	
☐	☐	Steam		☐	☐	Communication	
☐	☐	Sanitary Sewer		☐	☐	Electrical	
☐	☐	Storm Drain		☐	☐	Raw Water	
☐	☐	Make-Up Water		☐	☐	Oil	
☐	☐	Cathodic		☐	☐	Acid	
☐	☐	Air		☐	☐	Natural Gas	
☐	☐	Nitrogen		☐	☐	Groundwater Extraction Wells (Pump & Treat)	
☐	☐	Grounding		☐	☐	Other piping/cable/conduit	
☐	☐	Recirculating Heating Water		☐	☐	Other (i.e., structures)	
☐	☐	Recirculating Cooling Water					

On the basis of information available, underground, embedded, utilities checked "yes" in the table above are known to exist at or adjacent to the excavation(s) or penetration(s) covered by this permit. This listing may not be a complete description of all obstructions. Site utilities drawings are not complete and may contain inaccuracies.

Explanation of Interferences/Interfaces (all items checked "yes" above SHALL have an explanation; attach additional pages if needed):

Engineering Recommended Excavation/Penetration precautions (N/A if none):

Have necessary actions to protect the affected SSCs been identified? (Include details below) ☐ Yes ☐ N/A

System Engineer notified? (required for Safety-Related Systems): ☐ Yes ☐ No

Responsible Engineer Signature:	Date:
Engineering Manager Signature:	Date:
Shared Site Reviewer (if needed)	Date:

Attachment A
EXCAVATION & PENETRATION PERMIT
Page 3 of 6

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EXCAVATION & PENETRATION PERMIT Permit No.:_____Page_____ of_____

NOTE
Reviews and signatures on the following sections do NOT need to occur in the order shown, however, the Walkdown and Review in Section VII must not occur until all previous reviews and signatures are completed.

Section III – Environmental Protection Review

This Section to be completed by Environmental Protection (Analyze Hazards and Develop/Implement Controls).

☐ Yes ☐ No ☐ Penetration or N/A For excavations, was a walk down of the area completed by environmental?

☐ Yes ☐ No ☐ Penetration or N/A For excavations, has the Soil Disturbance Form been completed?

Have NEPA and NHPA Section 106 reviews been conducted for this work or been incorporated into CERCLA documentation?
☐ Yes ☐ No ☐ Unknown

The following sensitive resources are near/at the project site:
☐ Yes ☐ No ☐ Unknown 100/500 year floodplain
☐ Yes ☐ No ☐ Unknown Wetlands, streams, creeks, ponds and associated buffer zones
☐ Yes ☐ No ☐ Unknown Historic or Archeological Sites
☐ Yes ☐ No ☐ Unknown Threatened a/o Endangered Species/Habitats

Check as applicable, for the following requirements:
☐ NPDES Permit ☐ LLW/Rad
☐ Air Permit ☐ PCB
☐ RCRA Permit ☐ Mixed
☐ Solid Waste Management Units or CERCLA Areas of Contamination
☐ Section 404 Permits: Aquatic Resources Alternation Permit a/o Corps of Engineers
☐ Asbestos Abatement or Building Demolition/Renovation Regulator Notification

If the project involves alteration to a SWMU or AOC, has the appropriate regulatory notification been made? ☐ Yes ☐ No ☐ N/A

Work control instructions and discussion of other permitting requirements:

Environmental Protection Signature:	Date:

Attachment A
EXCAVATION & PENETRATION PERMIT
Page 4 of 6

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EXCAVATION & PENETRATION PERMIT Permit No.:_____Page_____ of_____

Section IV – Utilities Owner Review

- Contact the affected owners of various utilities listed in "Section II – Engineering Drawing Research" of the Excavation and Penetration Permit at or adjacent to the excavation site and review the excavation activities to be performed with them.
- If no additional information is known, Utility owners to sign below. If additional information is identified during the Utility Owners' reviews, requestor shall return permit to Engineering to include drawings for the additional interferences.
- If no drawings can be found, provide details of interferences below and submit to Utility owners for signatures below:

Utility Operations Supervisor:	Date:	Power Operations Supervisor:	Date:
Facility Manager:	Date:		

Section V – Subsurface Surveys & Drawing Reconciliation

Note: Drawing research shall be completed prior to completing the sub-site survey.

☐ Yes ☐ No Is a subsurface survey required for permit? If yes, check the boxes below and obtain signatures at page bottom; If no, provide justification immediately below, cross through the checkbox section below the justification space, and obtain signatures at the bottom of the page:

☐ Yes ☐ No Are the subsurface survey and drawings attached to the permit?

☐ Yes ☐ No Does the subsurface survey agree with the interferences listed in Section II? If no, list discrepancies and resolution (attach additional pages if needed):

Check the subsurface survey methods:

☐ Ground Penetrating Radar
☐ Electromagnetic Metal Detection or Terrain Conductivity Electromagnetic Method
☐ Clamp-On Radio Frequency Utility Locating Method
☐ Other(s):_____

☐ Yes ☐ No Are at least 2 of the methods used in the Subsurface Survey approved for use under procedure FBP-OS-PRO-00022? If no, provide explanation of suitability of unapproved methods:

☐ Yes ☐ No Did the methods used in the Subsurface Survey adequately identify the features, size, type and location? If checked NO, provide compensatory measures below:

☐ Yes ☐ No Have the interferences shown on the drawings/subsurface survey been reviewed with the requestor?

☐ Yes ☐ N/A For new installations, have the interferences shown on the drawings/subsurface survey been reviewed with Construction to confirm constructability?

Responsible Engineer Signature:	Date:
Engineering Manager Signature:	Date:

Attachment A
EXCAVATION & PENETRATION PERMIT
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EXCAVATION & PENETRATION PERMIT Permit No.:_____Page_____ of_____

Section VI – Work Requirement/Precautions	
Per the Facility Manager, is any Safety System or TSR affected? ☐ Yes ☐ No	
Facility Manager Signature:	Date:
If checked Yes, have Nuclear Safety evaluate and provide details below; enter "N/A" if the box above is checked No:	
Nuclear Safety Signature (N/A if the box above is checked "No"):	Date:
Per the Facility Manager, are any NCS Control(s) affected? ☐ Yes ☐ No	
Facility Manager Signature:	Date:
If checked Yes, have Nuclear Criticality Safety evaluate and provide details below; enter "N/A" if the box above is checked No:	
Nuclear Criticality Safety Signature (N/A if the box above is checked "No")	Date:
Have all relevant requirements in the above sections in this permit been forwarded to Planning for inclusion into the Job Hazard Analysis and/or Integrated Work Document? ☐ Yes ☐ No	
Occupational Safety and Health Professional Comments (as required):	
Occupational Safety and Health Professional Signature:	Date:
☐ Yes ☐ No Have necessary radiological controls have been established?	
Radiation Protection Comments (as required):	
Radiation Protection Signature:	Date:

Attachment A
EXCAVATION & PENETRATION PERMIT
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EXCAVATION & PENETRATION PERMIT Permit No.:_____ Page____ of____

Section VII- Walkdown and Review

Excavation/Penetration Walkdown must be completed within two weeks of excavation start (Initial and Re-date if more than one walkdown is needed):
NOTE THIS WALKDOWN SHALL BE CONDUCTED AT THE JOBSITE AS GROUP (SEE SECTION 6.2.51 OF PROCEDURE)

☐ Yes ☐ No Are interferences identified and marked in the field?

Facility Manager Signature and Date (REQ'D)	Maintenance Supervisor or Contractor Foreman Signature and Date (REQ'D)
OS&H Signature and Date (REQ'D)	Excavation Competent Person Signature and Date (REQ'D for excavations; N/A for penetrations))
Responsible Engineer Signature and Date (REQ'D)	FBP Project Manager or designee, as required
RP Signature and Date, as required	FBP Utilities Operations Signature and Date, as required
FBP Power Operations Signature and Date, as required	Other

Section VIII – Permit Issuance

STOP WORK IMMEDIATELY
IF UNUSUAL CONDITIONS OR UNEXPECTED OBSTRUCTION ARE FOUND, AND FOLLOW OTHER REQUIREMENTS PER PLANT PROCEDURES.

Work group supervisor is responsible for providing pertinent information to workers involved in excavation/penetration activities. The permit shall be kept at the work site at all times. **NOTE:** Appropriate off-site utilities must be notified for work outside the site perimeter fences prior to the start of work.

Permit Issued To:	Work Group Supervisor or Designee:	Date:	Discipline/Company Name:
Permit Issued By	Issuing Authority:		Date:

Section IX - Feedback

Excavation/Penetration Work Completed.	Work Group Supervisor or Designee Signature *(Sign and return to the Issuing Authority)*	Date:

Were utilities, unexpected obstructions, and/or unusual conditions encountered? ☐ Yes ☐ No
(If Yes, list and describe on separate sheet with drawing number references.)

NOTE: Issuing authority sends original to the FBP Records Management & Document Control (RMDC) Organization a copy to the Project Engineer, and retains a copy in the Project Files

Attachment B
EXCAVATION/TRENCH INSPECTION AND ENTRY AUTHORIZATION FORM
Page 1 of 2

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EXCAVATION/TRENCH INSPECTION
AND ENTRY AUTHORIZATION FORM

EXCAVATION/TRENCH INSPECTION AND ENTRY AUTHORIZATION FORM
(NOTE: Inspection shall be completed at least daily prior to personnel entry and after any hazard increasing event.)

Location: **Project/Work Order #:**

Initial Inspection: ☐ **Re-Inspection:** ☐ **Date and Time of Inspection:**

Weather Conditions: **Approx. Temp.:**

Competent Person:

Approximate EXCAVATION DIMENTIONS:	**DEPTH =**			
	TOP =	W	L	
	BOTTOM =	W	L	

All soils are Type C soils unless testing allows reclassification

SOIL TYPE: ***(Previously disturbed soil can only be Type B or C)***

☐ **Stable Rock:** No sloping required

☐ **Type A** - Most stable: clay, silty clay **(not previously disturbed)** Maximum slope angle is ¾H:1V or (53°) Degrees
Soil Reading: _____ (must be ≥ 1.5 T/SF)

☐ **Type B** - Medium stability: silt, sandy loam, medium clay soil; can have a maximum slope angle as 1H:1V or (45°) Degrees
Soil Reading: _____ (must be > 0.5 T/SF but < 1.5 T/SF)

☐ **Type C** - Least stable: gravel, loamy sand, soft clay soil; can have a maximum slope angle as 1 ½H:1V or (34°) Degrees
Soil Reading: _____ (must be ≤ 0.5 T/SF)

Method of Soil Test: ☐Visual ☐Manual ☐ Penetrometer (Manual Test) **(minimum of one manual and one visual soil test is required)**

Worker Protection Method to be Utilized (combinations acceptable)
NOTE: Competent Person can only approve these methods up to 20-foot in depth.

☐ Sloping
☐ Benching (Type A and Type B Cohesive Soil Only)
☐ Trench box/Trench Shield
☐ Timber/Hydraulic Shoring
☐ None Required

HAZARDOUS CONDITIONS:	Yes	No	N/A
Bulging Wall(s) present?	☐	☐	☐
Cracked or fissured wall(s)	☐	☐	☐
Saturated soil/Standing or seeping water – Is surface water controlled or diverted? (NOTE: Competent Person must be present during water pumping activity.)	☐	☐	☐
Floor heaving	☐	☐	☐
Frozen soil	☐	☐	☐
Super-imposed loads	☐	☐	☐
Vibration	☐	☐	☐
Depth > 20-foot? (If Yes, RPE is required)	☐	☐	☐
PLACEMENT OF SPOILS & EQUIPMENT:	**Yes**	**No**	**N/A**
Spoils are at least 2 feet from edge of trench	☐	☐	☐
Equipment/Materials are at least 2 feet from edge	☐	☐	☐
ACCESS RAMPS and/or LADDERS (must remain in-place at all times when excavation/trench is occupied):	**Yes**	**No**	**N/A**
Located in a protected area	☐	☐	☐
Within 25 feet of safe travel to egress (trench)	☐	☐	☐
Secured	☐	☐	☐
Leads to safe landing	☐	☐	☐
Extends 36 inches above the landing	☐	☐	☐
Ramp – proper slope (1 ½H:1V) and compacted	☐	☐	☐

Attachment B
EXCAVATION/TRENCH INSPECTION AND ENTRY AUTHORIZATION FORM
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Fluor-BWXT Portsmouth

EXCAVATION/TRENCH INSPECTION AND ENTRY AUTHORIZATION FORM

Yes	No	N/A	HAZARDOUS ATMOSPHERE:	OTHER:	Yes	No	N/A
☐	☐	☐	Are there any activities near that could change the atmosphere within the excavation?	Are known utilities visibly marked/flagged prior to start of excavating?	☐	☐	☐
☐	☐	☐	Is atmospheric monitoring needed for hazardous atmosphere? (Has initial monitoring occurred prior to personnel entry Into the excavation?)	Are personnel exposed to a fall of ≥ 6-feet into the excavation? If yes, is fall protection PPE or other protective means (guard-rails, etc.) utilized to prevent falling into the excavation?	☐	☐	☐
☐	☐	☐	Is any ventilation equipment needed to move air in the excavation?	Are overhead utilities or other overhead hazards present?	☐	☐	☐
☐	☐	☐	Has combustion powered support equipment been positioned at a location where exhaust does not enter the excavation?	Is frozen soil present?	☐	☐	☐

COMMENTS/DRAWINGS, as needed:

N O T E	**All unsafe conditions must be corrected prior to excavation/trench entry. If any hazardous conditions are observed, the excavation/trench must be immediately evacuated and no one is allowed to re-enter until corrective action has been taken. DO NOT ENTER IF NOT SIGNED.**	**EXCAVATION ENTRY AUTHORIZATION** Is excavation/trench SAFE to enter? YES ☐ NO ☐ **Authorized By:** ***(Signature and Badge # of Competent Person)***

Attachment C
EXCAVATION/PENETRATION PERMIT FIELD CHANGE APPROVAL

Fluor-BWXT| Portsmouth

Excavation/Penetration Permit Field Change Approval

The following revisions are being implemented into FBP-OS-PRO-00022-F02, *Excavation and Penetration Permit*, No.

Page No.(s)	Section/Step No.(s)	Description of Change(s)

Issuing Authority will annotate all changes and get approval signatures from all affected and responsible department/groups.

	SIGNATURE	DATE
OS&H Professional*	_____	/ _____
Responsible Engineer*	_____	/ _____
Issuing Authority*	_____	/ _____
Other _____	_____	/ _____
Other _____	_____	/ _____

*** Required signatures**

Attachment D
EXCAVATION AND PENETRATION PERMIT EXEMPTION APPROVAL

Fluor-BWXT Portsmouth

Excavation and Penetration Permit Exemption Approval

ESO Number or WR/WO Number: _____

Project Title: _____

Work Description: _____

_____

_____

Type of Exemption:

- ☐ (A) Install utility embedded in building at a depth of less than $1_{1/2}$"
- ☐ (B) Install utility in outdoor concrete or pavement at a depth of less than 3"
- ☐ (C) Install utility in outdoor soil at a depth of less than 12"
- ☐ (D) Perform excavation or penetration without permit because facility is cold and dark
- ☐ (E) Other

Exemption Justification: _____

_____

_____

Exemption Requestor:

Name (print or type)	Signature	Date

Engineering Design Manager Approval/Concurrence:

Name (print or type)	Signature	Date

OS&H Manager Approval Signature:

Name (print or type)	Signature	Date

Project Manager Signature:

Name (print or type)	Signature	Date