

April 21, 2026

New York State Department of Environmental Conservation
Division of Environmental Remediation, Remedial Bureau C
625 Broadway, 12th Floor
Albany, NY 12233

Attn: Greta Kowalski, P.G. – Project Manager
P: (518) 402-2029
E: great.kowalski@dec.ny.gov

Re: Excavation Work Plan Notification – Brownfield Cleanup Program Site No. C360174
New Generator Pad and Apron Replacement – Hangar F
FlexJet at Westchester County Airport
240 Airport Road, West Harrison, NY 10604
Terracon Project No. J2267023

Dear Greta:

Terracon Consultants-NY, Inc. (Terracon) is pleased to submit this Excavation Work Plan Notification (EWP) to the New York State Department of Environmental Conservation (NYSDEC) for review and approval.

Terracon has prepared this EWP for East Construction Corporation (East and our Client) on behalf of Flexjet who operates as a Tenant (Flexjet) within Hangar F at the Westchester County Airport (the Airport and HPN). This EWP supports planned construction-related tenant improvements at Hangar F located with the overall Brownfield Cleanup Program (BCP) Site No. C360174 on the Airport property. Please refer to **Exhibits 1 and 2** for an overall plan of the Airport site and the project-specific work zones for the New Generator Pad and Apron Replacement project, respectively.

This EWP generally conforms to the NYSDEC Division of Environmental Remediation "*Technical Guidance for Site Investigation and Remediation*" (DER-10) and the approved *Interim Site Management Plan (ISMP)* dated June 2025 for the Airport. Flexjet and East understand that the ISMP supports the mitigation of potential environmental conditions encountered during planned site-related construction activities.

The ISMP will provide the basis for the final Site Management Plan (SMP) that will be approved by NYSDEC at such time as the Airport's BCP obligations have been satisfied. The final SMP will govern future environmental mitigation and monitoring actions at the Westchester County Airport (HPN).

1.0 Project Information

The New Generator Pad and Apron Replacement work zones are adjacent to Hangar F at the Airport (refer to **Exhibit 2**).

The Apron Replacement work will not require excavation or trenching into underlying soil subgrade materials. As indicated in the project plans, the existing concrete apron will be removed, the underlying existing subbase will be removed and temporarily stockpiled, and the subgrade will be proof-rolled. The existing subbase will then be re-installed and supplemented by new crushed stone where needed to maintain a minimum 8-inch thickness of subbase. A new 8-inch thick concrete apron will be placed onto the prepared subbase.

The New Generator Pad construction activities to the east of Hangar F will include excavation of an approximately 28-ft x 10-ft footprint to a minimum depth of 4.5-feet for the placement of spread footings. Additional 2-ft x 4-ft deep excavations will be completed for the placement of 14 bollards around the perimeter of the generator pad.

The construction drawings are included in **Attachment A**.

2.0 Excavation Work Plan

The sections below outline the components from the ISMP applicable to this project.

2.1 Backfilling from Off-Site Sources

Off-site backfill material imported for the project will be pre-approved by NYSDEC in accordance with DER-10. *Request to Import/Reuse Fill* forms will be provided to NYSDEC for approval prior to import to the site.

2.2 Soil Screening Methods

For the New Generator Pad ground intrusive activities, visual, olfactory and instrument-based soil screening will be performed by a Terracon Scientist or Geologist. If field evidence of potentially impacted material is encountered during intrusive work, the contractor will be instructed to stockpile material separately on polyethylene sheeting. Terracon will coordinate with East, Flexjet, and the Airport to ensure appropriate notifications, if warranted, are made to NYSDEC.

2.3 Excavated Soil Temporary Stockpiling and Staging

Based on anticipated limits and depths of excavation, a volume of 50-75 cubic yards of soil may require staging and stockpiling. Soils will be stockpiled and staged on an impervious surface, placed on polyethylene sheeting, and covered. Silt socks or hay bales will be used around the stockpiled soils for erosion control methods as necessary.

2.4 Excavated/Stockpiled Soil Characterization

Terracon will sample excavated soils from the New Generator Pad work area. Based on the anticipated volume of soil, one (1) soil characterization sample will be obtained for the following full suite of disposal analyses as per DER-10:

- ❖ Target Compound List (TCL) Volatile Organic Compounds (VOC) by EPA Method 8260.
- ❖ TCL Semi-VOC by EPA Method 8270.
- ❖ Target Analyte List (TAL) Metals (arsenic, barium, beryllium, cadmium, hexavalent and trivalent chromium, copper, total cyanide, lead, manganese, total mercury, nickel, selenium, silver and zinc) by EPA Methods 6000/7000.
- ❖ Polychlorinated Biphenyls (PCBs) by EPA Method 8082.
- ❖ Pesticides by EPA Method 8081.
- ❖ Herbicides by EPA Method 8151.
- ❖ Total petroleum hydrocarbon by EPA Method 8015.
- ❖ Hazardous waste characteristic analyses for pH, Reactivity, Ignitability, and Toxicity Characteristic Leaching Procedure (TCLP) for Metals; TCLP testing for additional parameters will be performed if warranted.
- ❖ PFAS by EPA Method 1633A.

VOC samples will be discreet/grab while the remainder of the analyses above will be from a composite soil sample generated from no fewer than 5 sample aliquots to be representative of the material being profiled.

Upon receipt of stockpiled soil testing results, Terracon will coordinate with East and the Airport to identify an on-site location for on-Airport reuse if supported by analytical testing results. Alternatively, a proposed off-site facility will be identified to accept the excess material requiring off-site export. Terracon will request NYSDEC approval for either on-site reuse or off-site export.

2.5 Materials Load-out and Transport Off-Site

Upon receipt of NYSDEC approval for the off-site export of excess materials generated during this project (or on-Airport reuse), a Terracon Scientist or Geologist will observe and document excavation and load-out activities. For off-site export, transport of materials will be performed

by licensed haulers in accordance with applicable local, state, and federal regulations. Haulers will be appropriately licensed and trucks properly placarded. Material transported by trucks exiting the site will be secured with truck covers. If loads contain wet material capable of producing free liquid, truck liners will be used. Egress points for truck and equipment transport from the site will be kept clean of dirt and materials during construction. Depending on the requirements of the receiving facility, Terracon personnel will perform onsite soil screening as the material is being shipped offsite.

2.6 Materials Disposal Off-Site

Materials requiring off-site export will be characterized and disposed of in accordance with local, state, and federal regulations. The Contractor shall obtain and submit electronic copies of all transport manifests, bills of lading, and certified weigh tickets of all materials to Terracon. Approximately 50-75 cubic yards of excess soil may be generated during construction activities requiring off-site export.

2.7 Fluids Management

Groundwater is not expected to be encountered during this project.

In the event limited or temporary dewatering is required for the placement of imported backfill, dewatered fluids will be contained by a vacuum truck or above ground frac tank for off-site disposal. Any fluids management such as excavation dewatering will be handled, transported, and disposed of in accordance with applicable local, state, and federal regulations.

2.8 Cover System Restoration

After the completion of the intrusive activities the cover system will be restored, pursuant to the project plans in **Attachment A**.

2.9 Community Air Monitoring

Continuous air monitoring for volatile organic compounds and particulates in accordance with the Community Air Monitoring Plan (CAMP) for the site will be conducted at upwind and downwind locations during ground intrusive activities associated with the New Generator Pad installation. CAMP monitoring will not be performed during the Apron Replacement portion of the project.

The Community Air Monitoring Plan is provided in **Attachment 2**. The NYSDEC and NYSDOH will be notified of exceedances of CAMP action levels.

2.10 Health and Safety

Terracon is committed to the safety of all its employees. As such, and in accordance with our *Incident and Injury Free*® safety goals, fieldwork covered under this EWP will be performed in accordance with the site-specific Health and Safety Plan (HASP) included in the ISMP. The HASP identifies site-specific job hazards and proper pre-task planning and mitigation procedures, and is provided in **Attachment 3**.

2.11 Reporting

At the conclusion of the project, Terracon will provide a Construction Completion Report (CCR) documenting all field activities and providing soil/materials management documentation.

If you have any questions regarding this Excavation Work Plan or you would like to discuss the proposed scope of services, please do not hesitate to contact us.

Sincerely,

Terracon Consultants, Inc.-NY



Catherine G. Johnson, P.G., LSP
Senior Project Manager



Donald L. Pomeroy, CPG, LEP
Operations Manager

Attachments:

- Exhibit 1 – Topographic Map
- Exhibit 2 – Site Diagram with Project Work Zones
- Attachment 1 – New Generator Pad and Apron Replacement Construction Drawings
- Attachment 2 – Site-specific Community Air Monitoring Plan (CAMP)
- Attachment 3 – Site-specific Health and Safety Plan (HASP)

Copy:

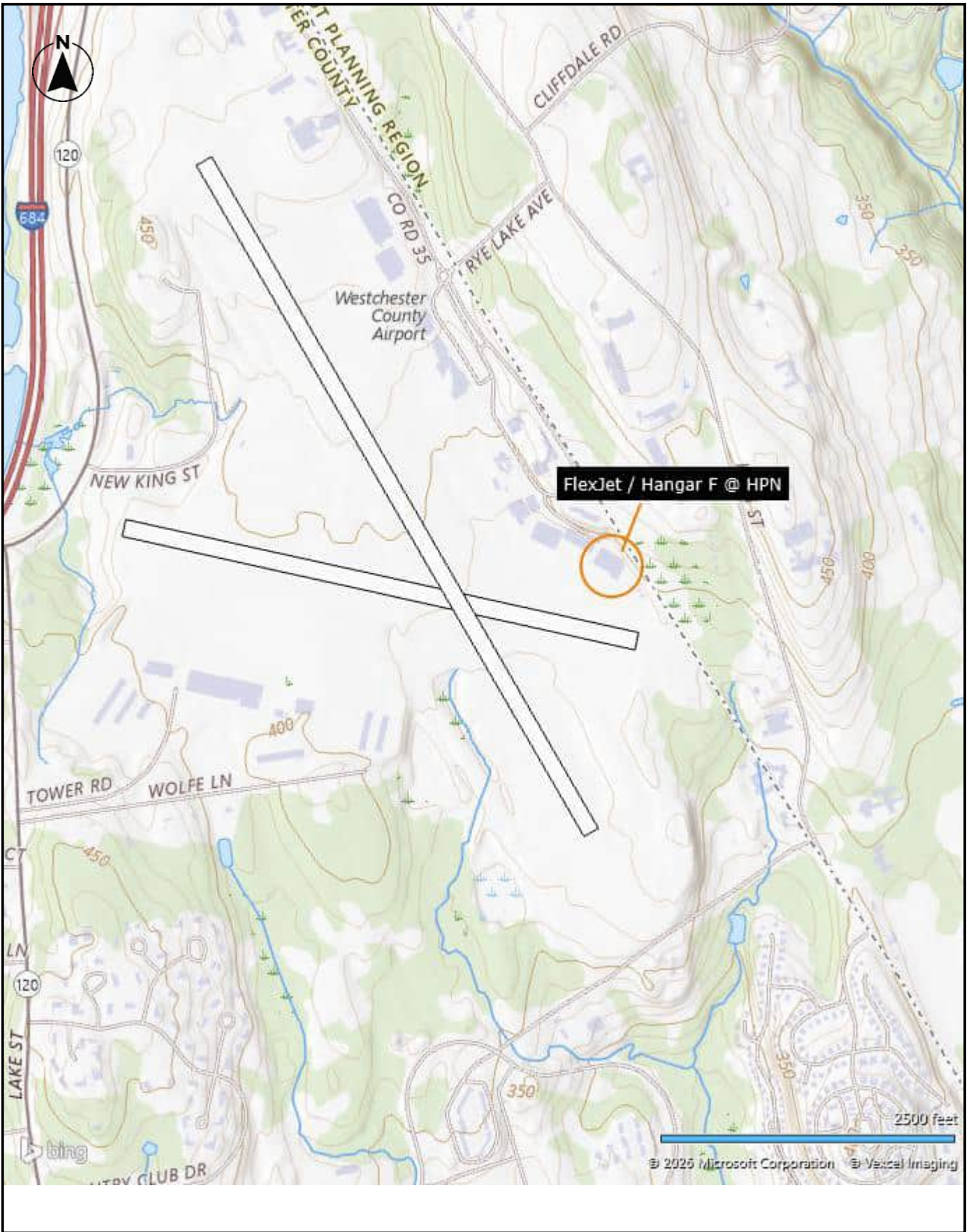
- Gino P Lucadamo, President and Clement Blair, Comptroller / East Construction Corp.
- Christopher Prashad, Program Manager - Avports / Westchester County Airport
- Jeffrey A. Dean, P.E., Associate Engineer / Westchester County Department of Public Works and Transportation
- Francisco Tejada, Airport Manager / Westchester County Airport (HPN)
- April L. Gasparri, Director of Aviation / Westchester County Airport (HPN)
- Michele Patterson-Wittman and Kris Charney / Terracon



EXHIBITS

Exhibit 1 – Topographic Map

Exhibit 2 – Site Diagram with Project Work Zones



Project No.	J2267023
Scale:	AS SHOWN
Client:	East Construction Corporation
Date:	April 2026

Terracon

201 Hammer Mill Rd, Ste B
Rocky Hill, CT 06067-3768

TOPOGRAPHIC MAP

Flexjet / Hangar F - Westchester Airport
240 Airport Road Westchester Airport
West Harrison, NY

Exhibit	1
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Approximate Limits of New Apron Work Zone

 Approximate Limits of New Generator Pad Work Zone

Project No.	J2267023
Scale:	AS SHOWN
Client:	East Construction Corporation
Date:	April 2026


 201 Hammer Mill Rd, Ste B
 Rocky Hill, CT 06067-3768

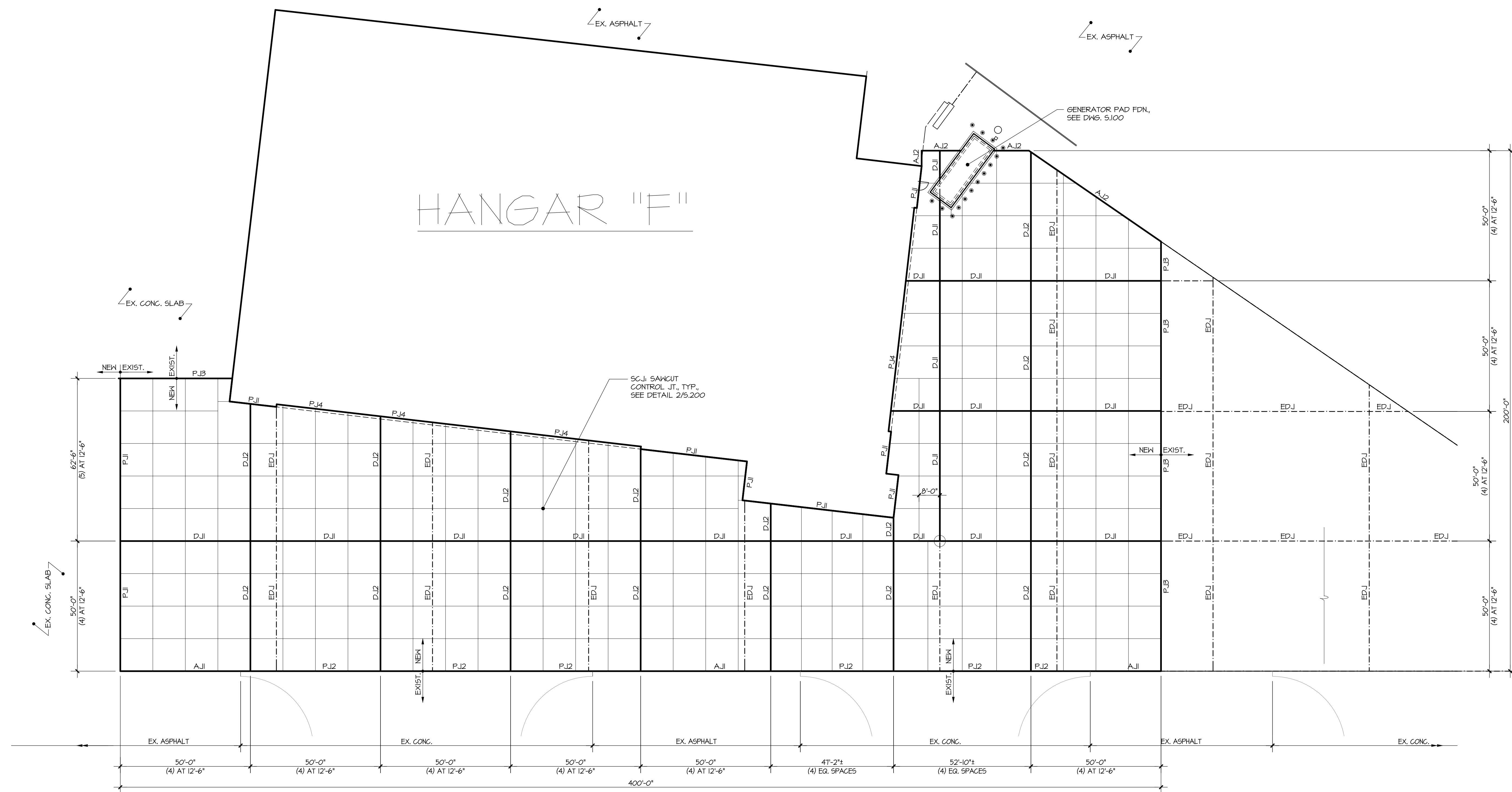
SITE DIAGRAM
 Flexjet / Hangar F - Westchester Airport
 240 Airport Road Westchester Airport
 West Harrison, NY

Exhibit
2



Attachment 1

New Generator Pad and Apron Replacement Construction Drawings



CONCRETE APRON SLAB REPLACEMENT PLAN

1" = 20'-0"

- TOP OF CONCRETE APRON REPLACEMENT SLAB SHALL MATCH EXISTING ADJACENT SLAB ELEVATION. MAINTAIN EXISTING SLAB ELEVATION AND SLOPE.
- SLAB CONSTRUCTION: 8" THICK PLAIN CONCRETE SLAB ON GRADE WITH SANGUT CONTROL JOINTS AND DOVELED CONSTRUCTION JOINTS. SEE GENERAL NOTES AND DETAILS.
- CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS BEFORE PROCEEDING WITH ANY WORK.
- SEE GENERAL NOTES FOR ADDITIONAL INFORMATION.

APRON SLAB JOINT LEGEND:

- SC.J NEW SANGUT CONTROL JOINT, SEE 2/5.200
- ED.J EXISTING DOVELED JOINT, SEE 3/5.200 AND 4/5.200
- D.J NEW JOINT AT EX. DOVELED JT. LOCATION, SEE 3/5.200 AND 4/5.200
- D.J2 NEW DOVELED JT. IN FIELD OF EX. SLAB, SEE 5/5.200
- A.J1 THICKENED NEW SLAB EDGE TO EX. ASPHALT, SEE 6/5.200
- A.J2 NEW 8" SLAB TO EX. ASPHALT, SEE 7/5.200
- P.J1 NEW 8" SLAB TO EX. CONG. SLAB OR EX. BLDG. FDN. WALL, SEE 8/5.200
- P.J2 NEW THICKENED SLAB EDGE TO EX. CONG. THICKENED SLAB EDGE, SEE 9/5.200
- P.J3 NEW DOVELED JT. W/ ADHESIVE TO EX. SLAB, SEE 10/5.200
- P.J4 NEW 8" SLAB TO EX. CONG. GRADE BEAM AT HANGAR DOORS, SEE 11/5.200

No.	Date	Description
Issue/Revisions		

OWNERSHIP, USE AND ALTERATION OF DOCUMENTS:

The Client acknowledges that the documents, drawings, specifications including electronic media files are instruments of The DiSalvo Engineering Group's services and shall remain the property of The DiSalvo Engineering Group. The Client or any person or entity that acquires or obtains the drawings and specifications from or through The Client shall not use them on any other project, shall not modify, alter or change the drawings and specifications without written authorization from The DiSalvo Engineering Group. Furthermore, The Client agrees to the fullest extent permitted by law to indemnify and hold harmless The DiSalvo Engineering Group, its officers, directors and employees from any and all claims, suits, liability, demands or costs, including attorney fees arising out of or resulting therefrom.

The Di Salvo Engineering Group
Structural Engineers
93 Lake Avenue, Suite 201
Danbury, CT 06810
[203] 490-4140 | www.tdeg.com

Seal

Exp. 05/31/26

NEW GENERATOR PAD AND APRON REPLACEMENT

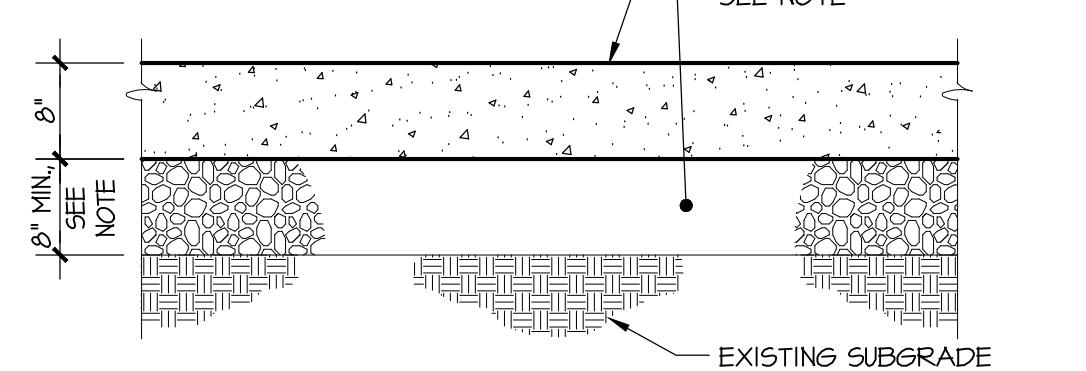
HANGAR F
WESTCHESTER CO. AIRPORT
WHITE PLAINS, NY

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Concrete Apron Slab Replacement Plan

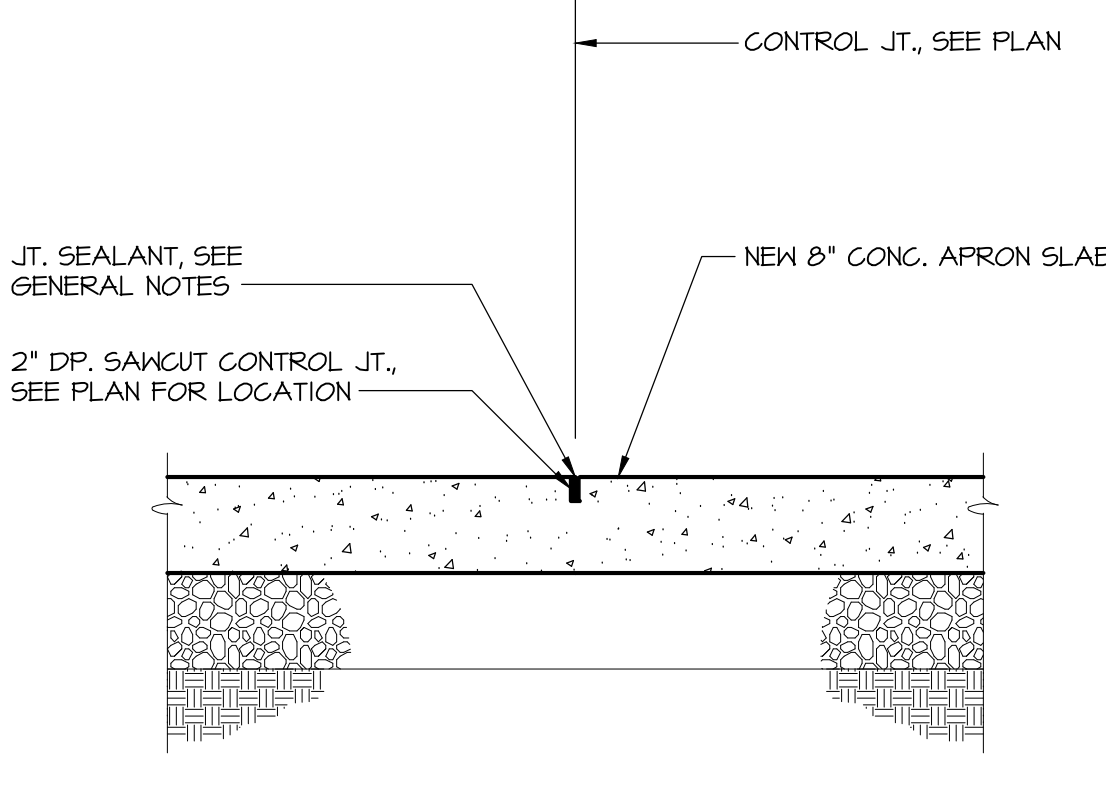
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Date	1/20/2026
Drawn By	JM
Checked By	RBW
Job Number	25272.00

Drawing Number
S.101

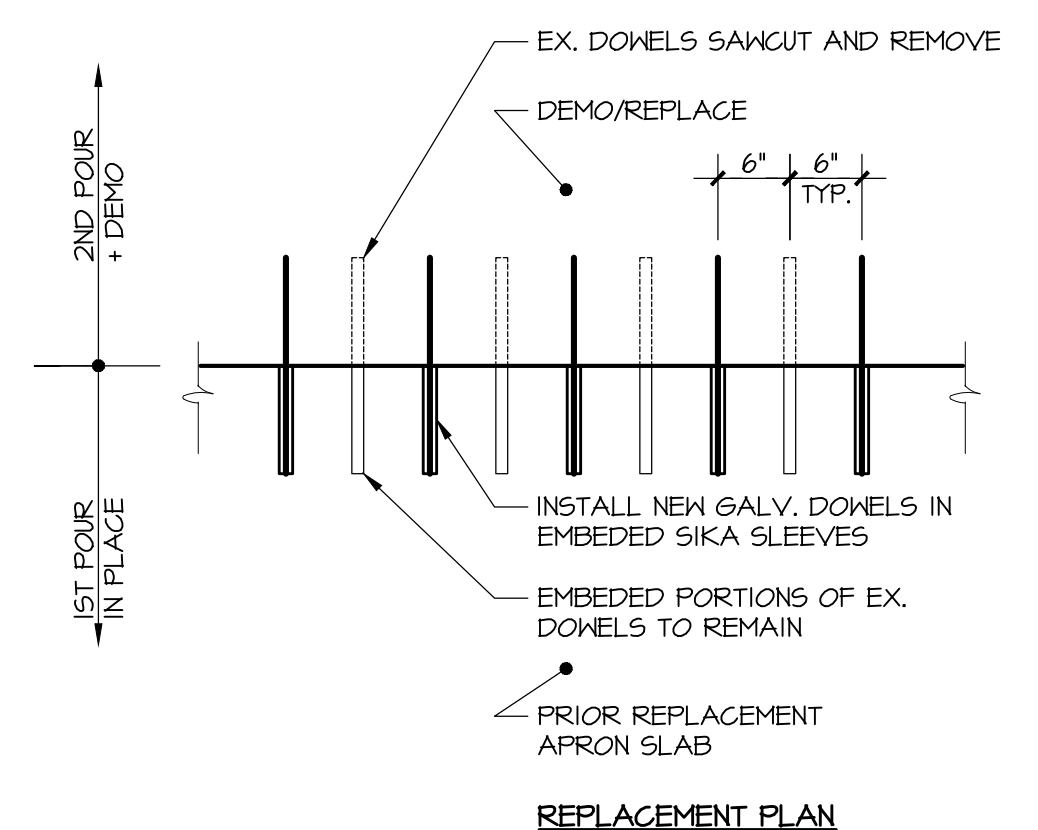
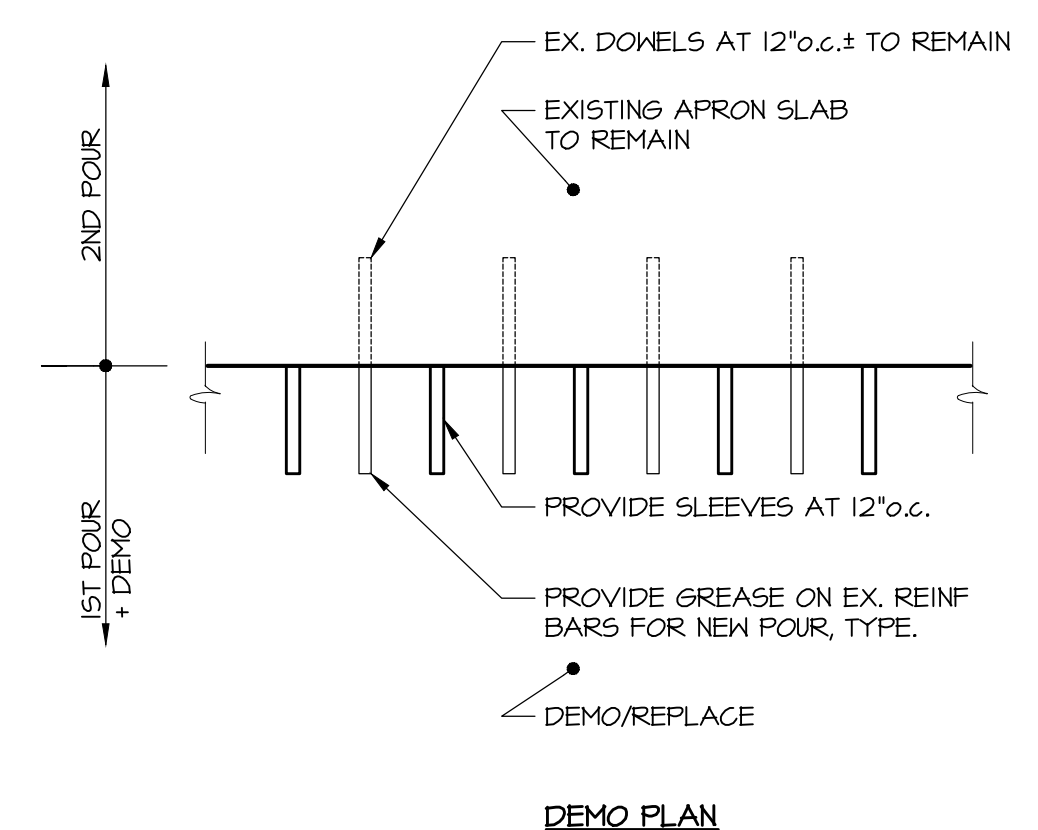
NOTE:
EXISTING SUB-BASE SHALL BE REMOVED, STOCKPILED, AND RE-INSTALLED FOLLOWING THE PROOF ROLLING OF THE EXPOSED EXISTING SUBGRADE. SUPPLEMENT THE SUB-BASE W/ CRUSHED STONE AS REQUIRED TO PROVIDE A MIN. THICKNESS OF 8".



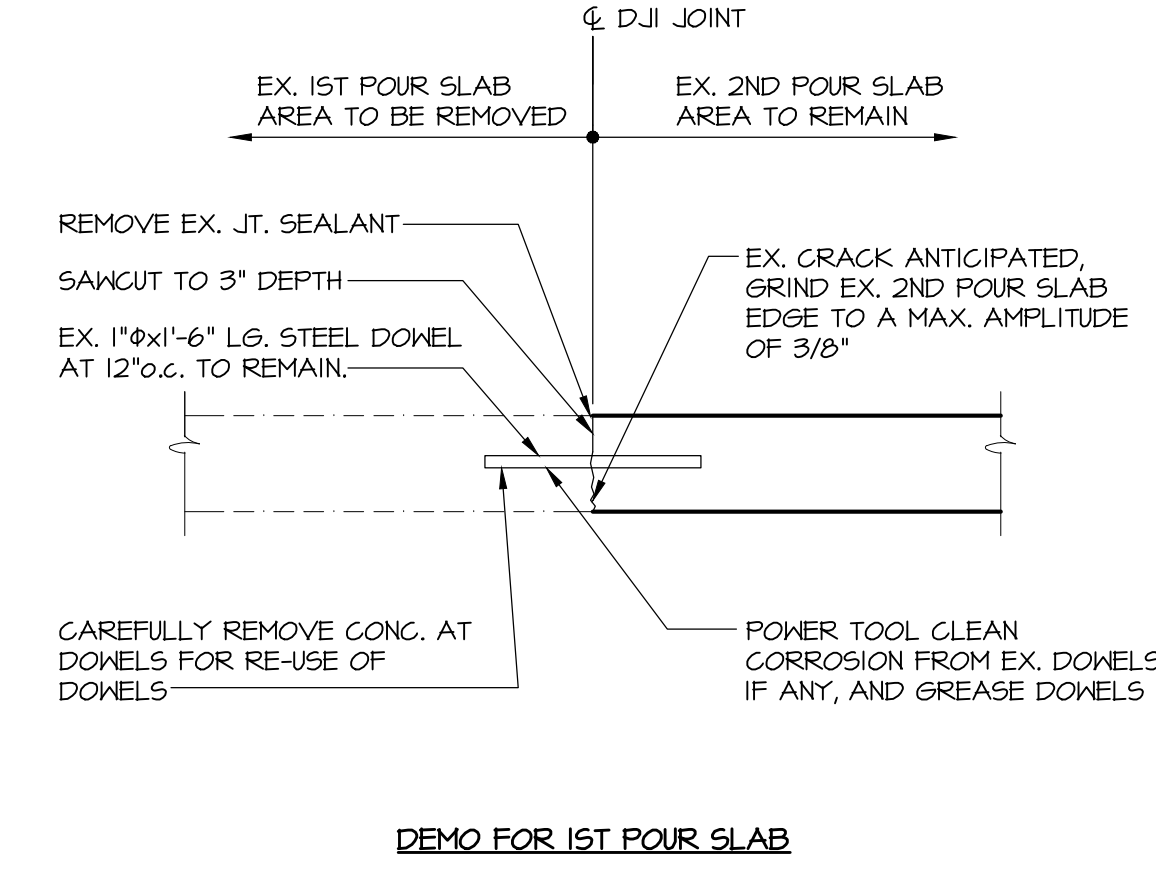
APRON SLAB CONSTRUCTION DETAIL
3/4" = 1'-0" (1) S200



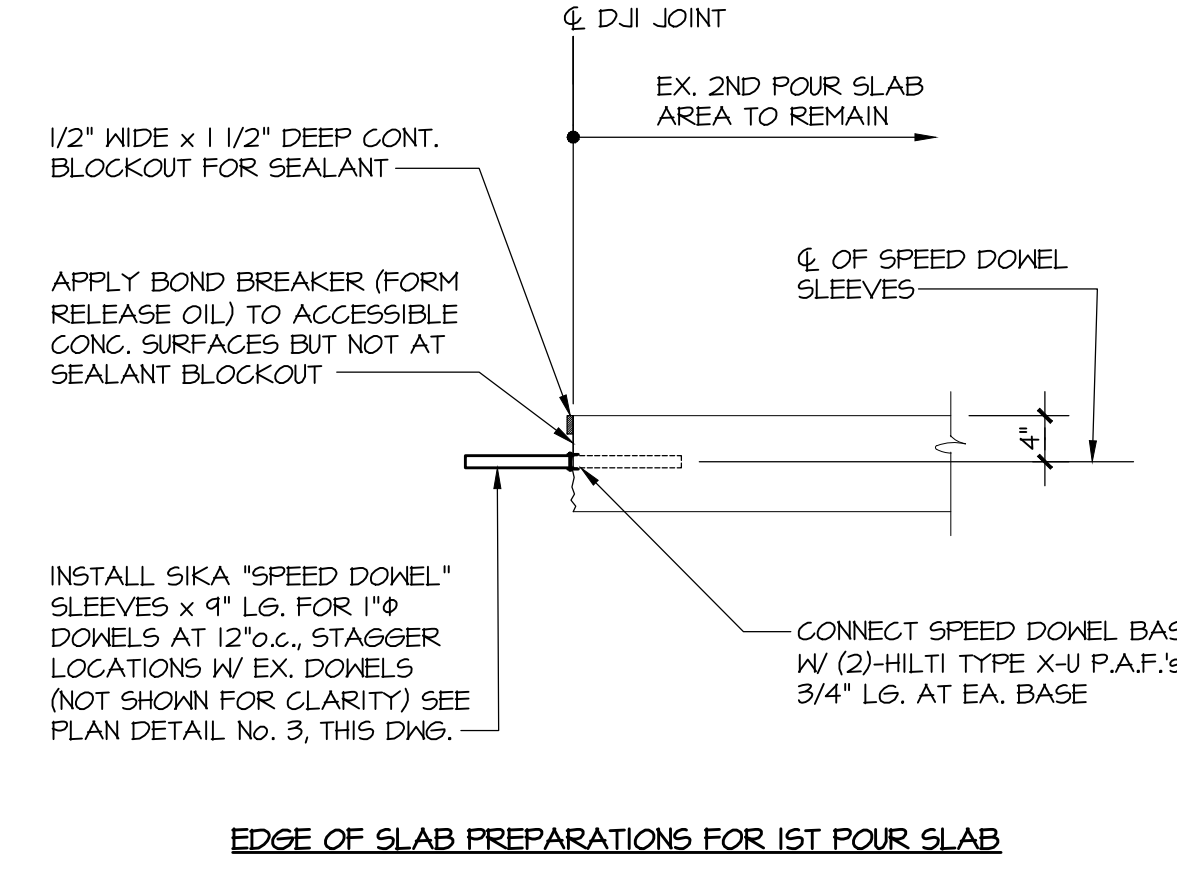
APRON SLAB CONTROL JT. DETAIL
3/4" = 1'-0" (2) S200



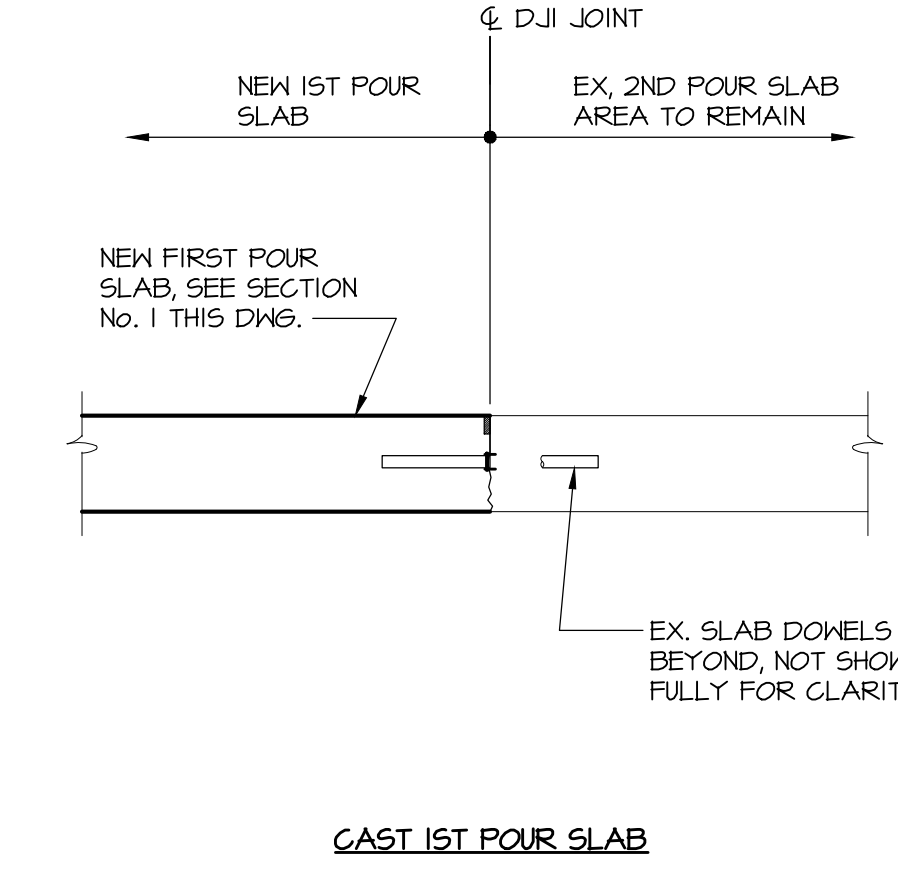
APRON SLAB JOINT "DJI" PLAN DETAILS
3/4" = 1'-0" (3) S200



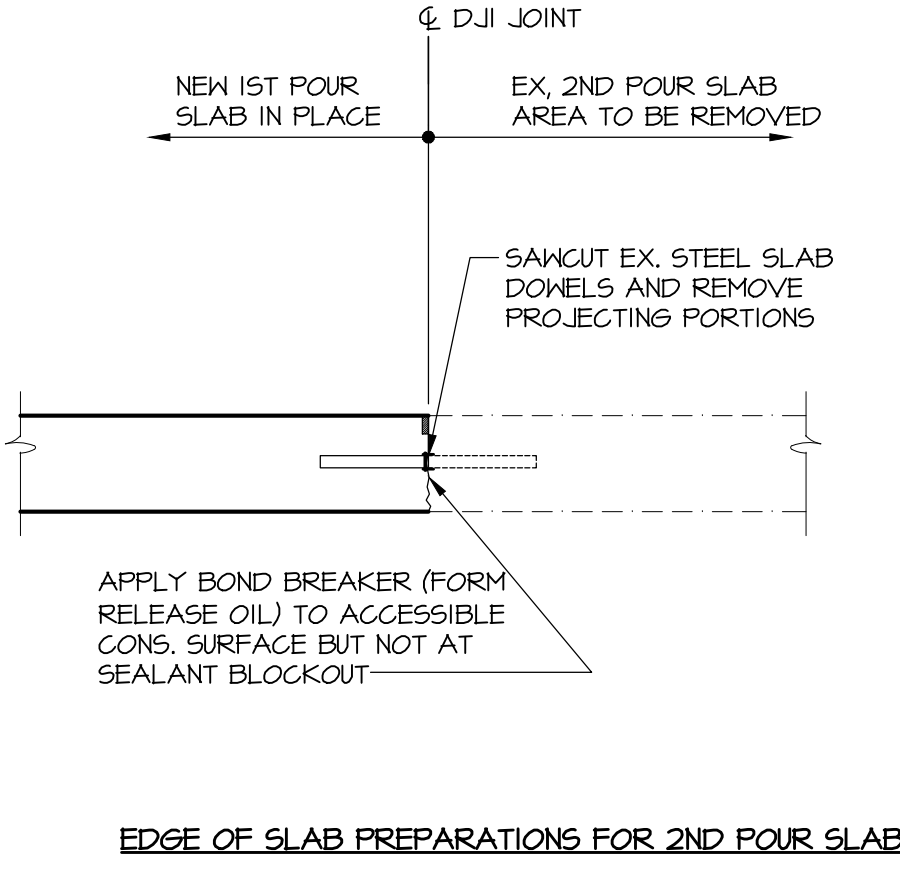
DEMO FOR 1ST POUR SLAB



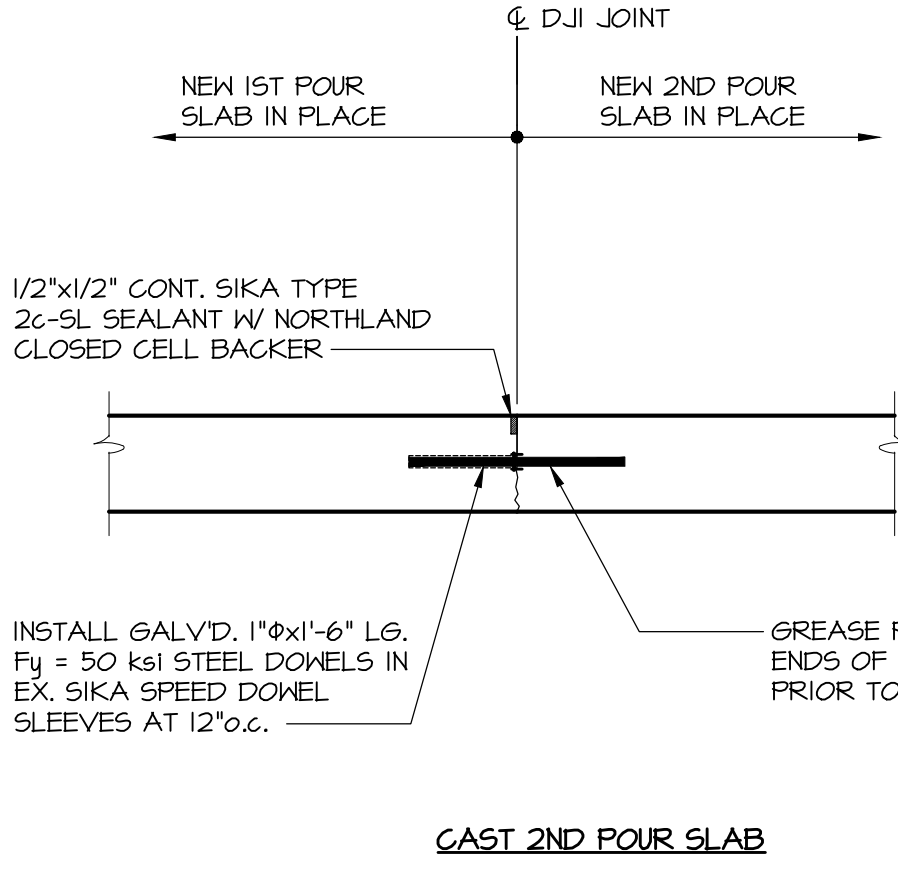
EDGE OF SLAB PREPARATIONS FOR 1ST POUR SLAB



CAST 1ST POUR SLAB

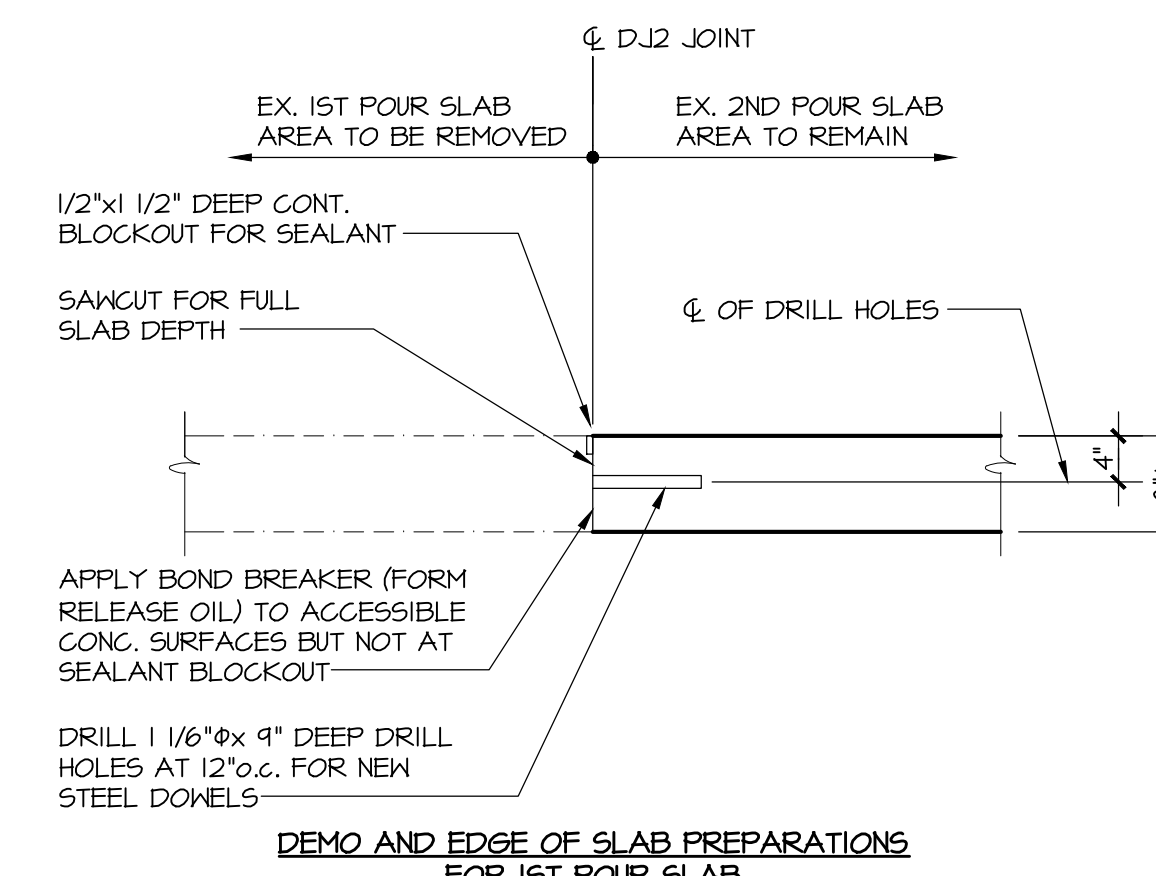


EDGE OF SLAB PREPARATIONS FOR 2ND POUR SLAB

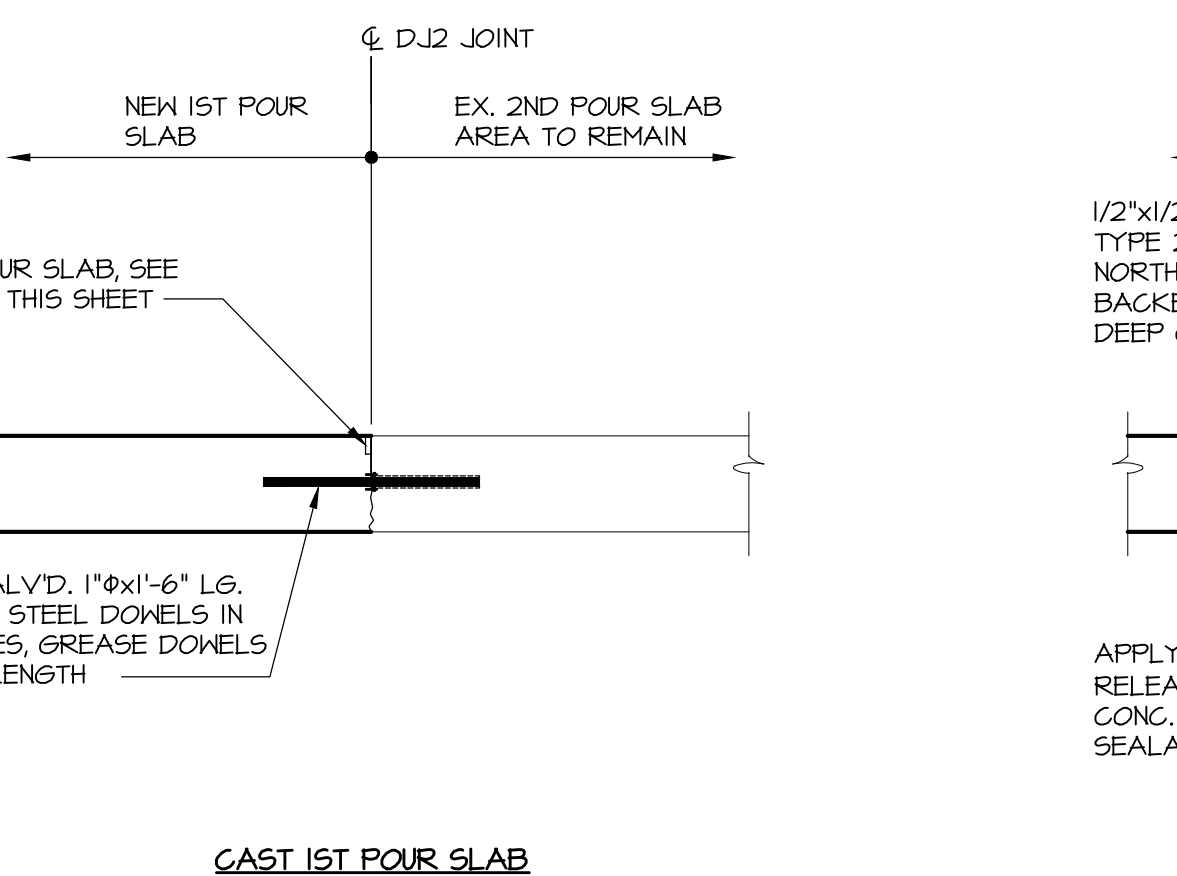


CAST 2ND POUR SLAB

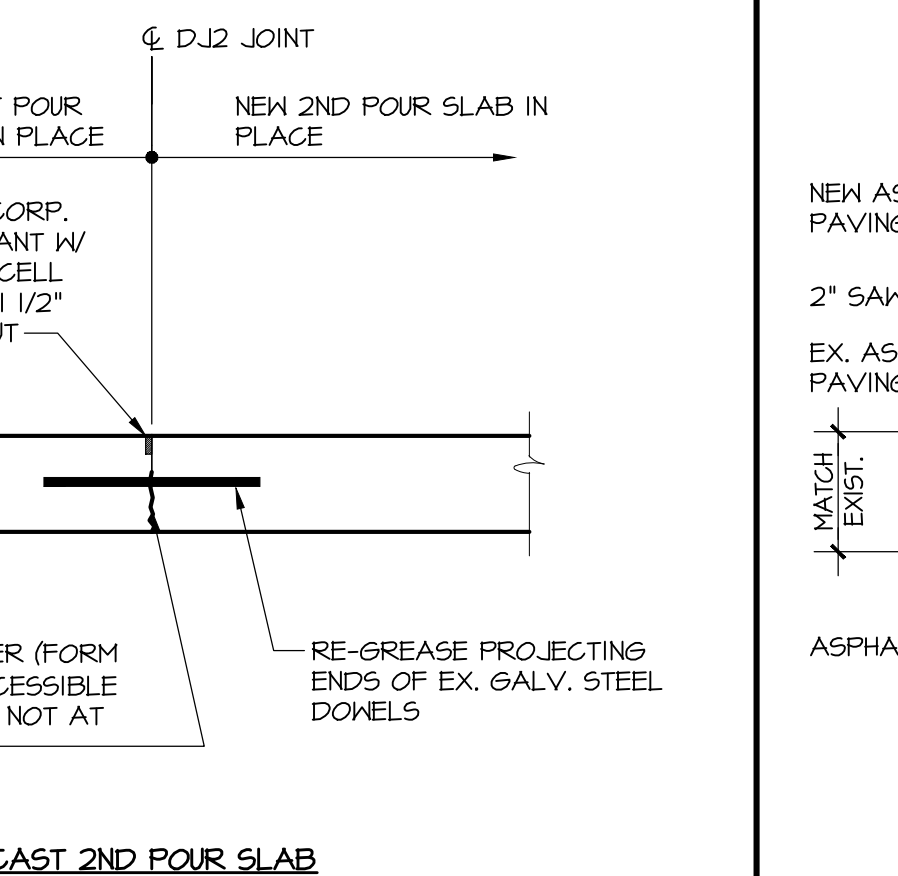
APRON SLAB JOINT "DJI" DETAILS
3/4" = 1'-0" (4) S200



DEMO AND EDGE OF SLAB PREPARATIONS FOR 1ST POUR SLAB

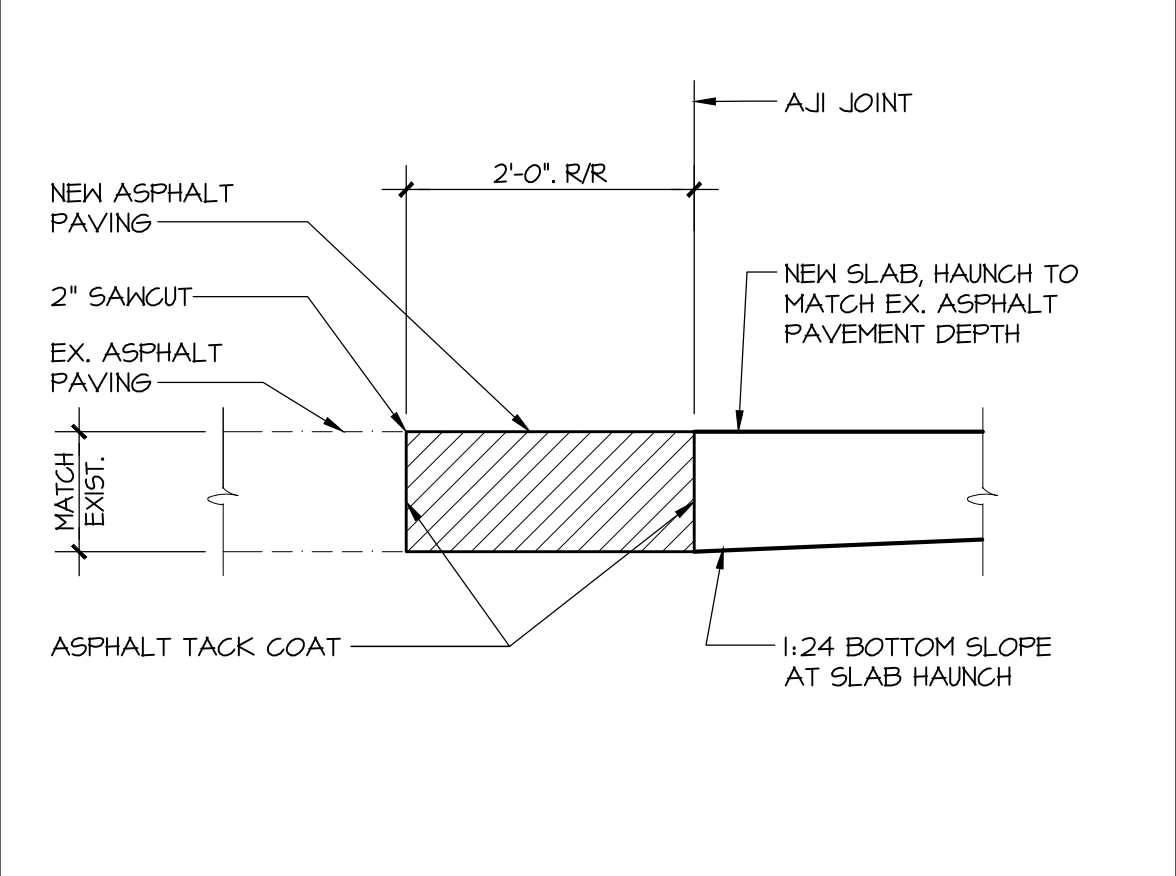


CAST 1ST POUR SLAB

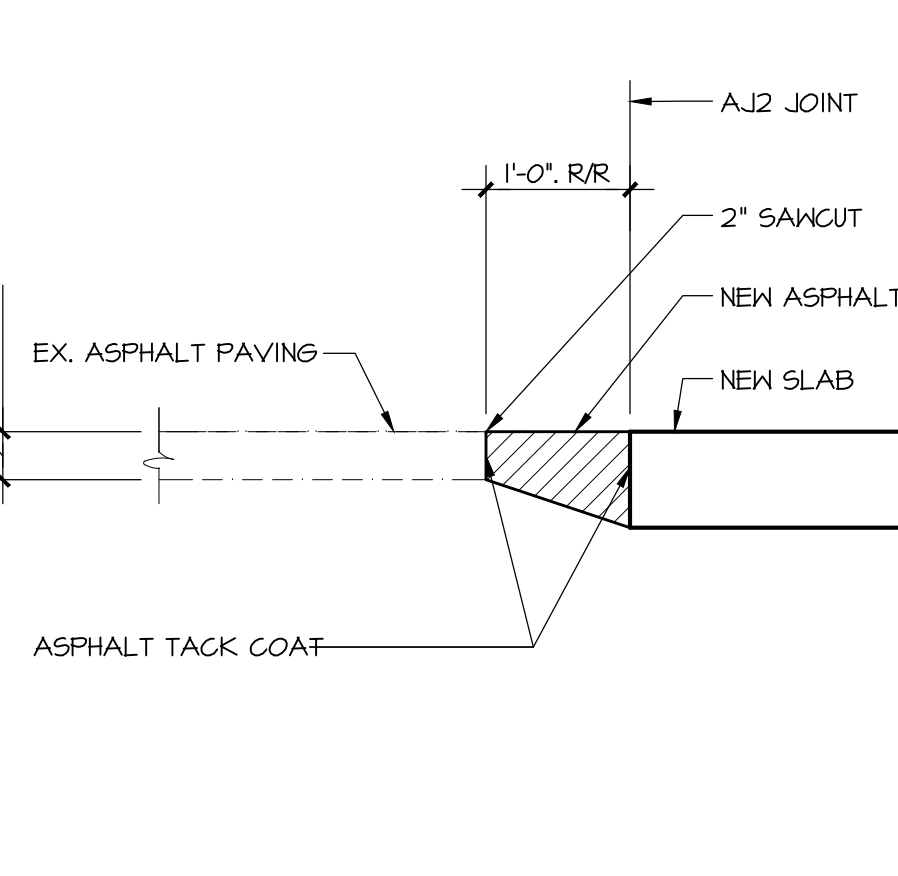


CAST 2ND POUR SLAB

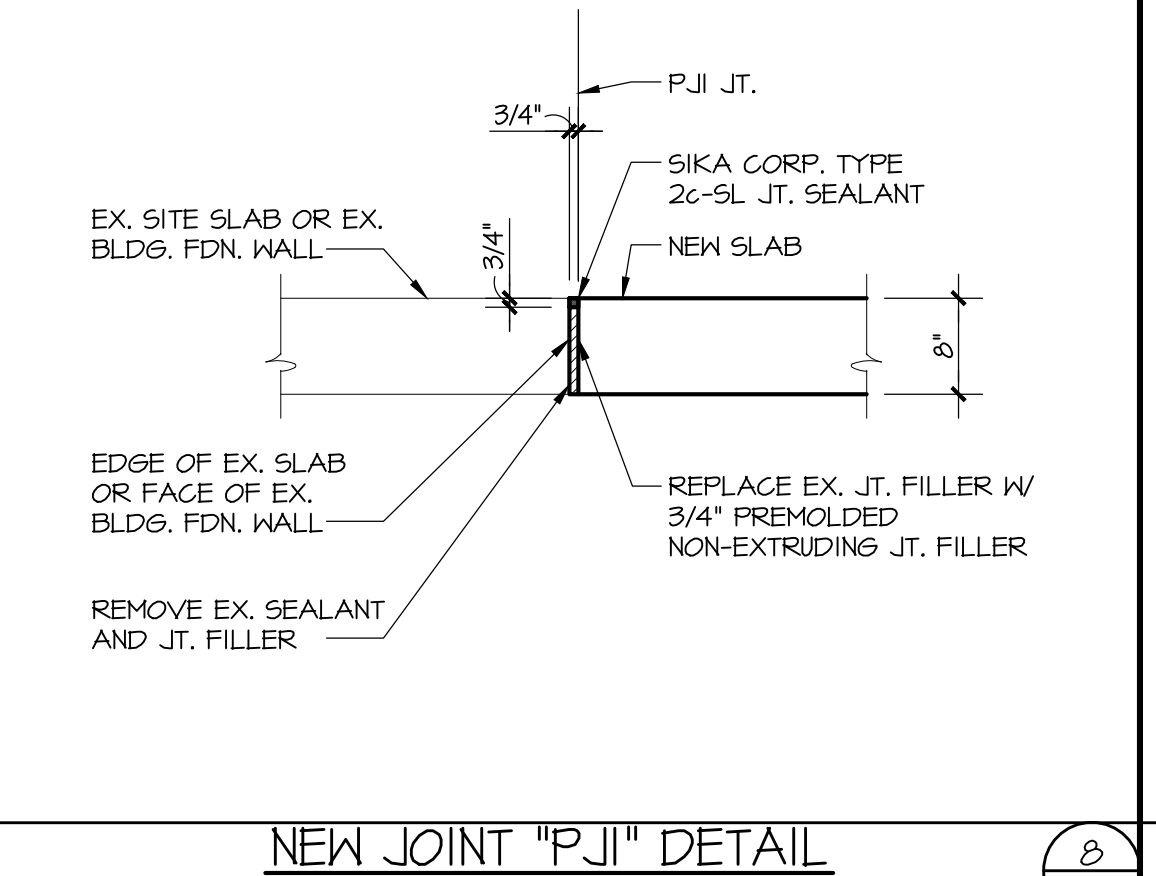
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3/4" = 1'-0" (5) S200



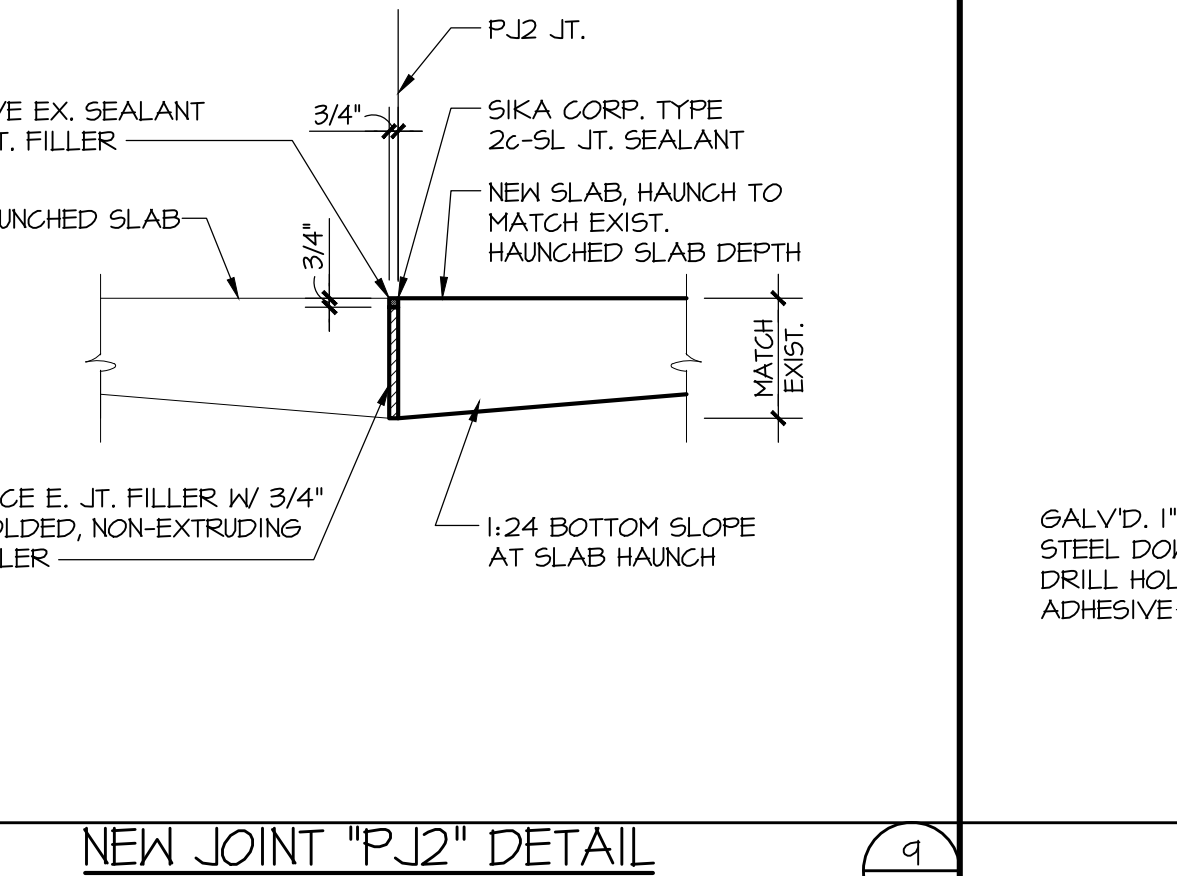
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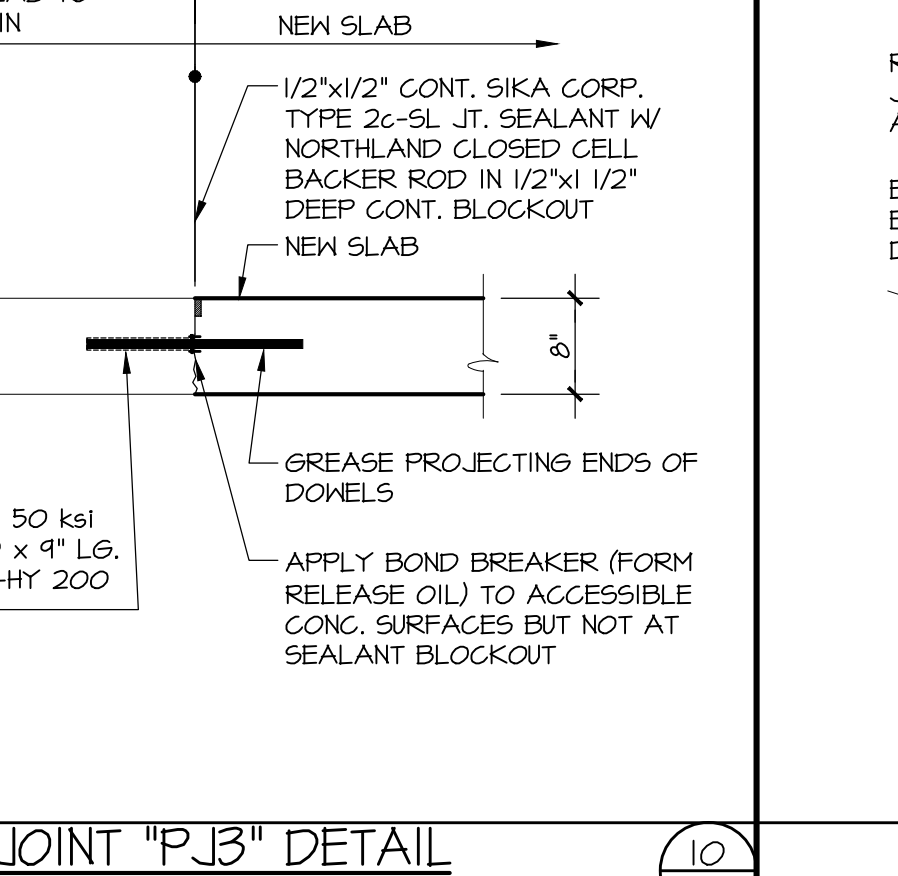
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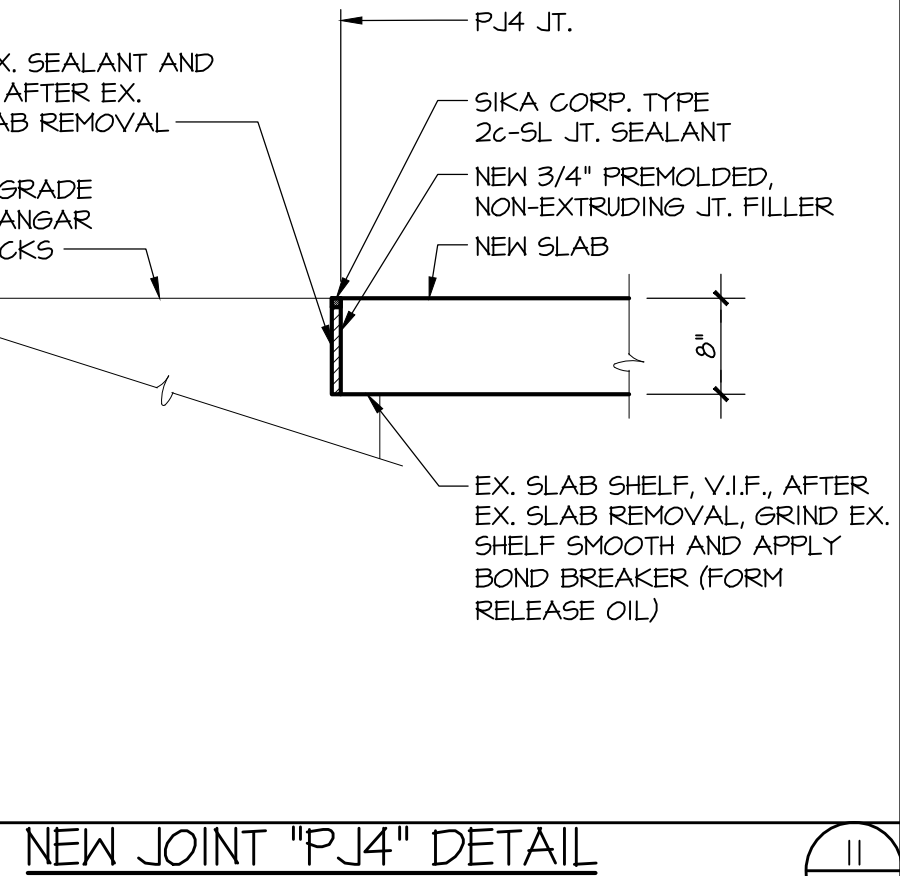
NEW JOINT "PJ1" DETAIL
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NEW JOINT "PJ2" DETAIL
3/4" = 1'-0" (9) S200



NEW JOINT "PJ3" DETAIL
3/4" = 1'-0" (10) S200



NEW JOINT "PJ4" DETAIL
3/4" = 1'-0" (11) S200

No.	Date	Description
Issue/Revisions		
OWNERSHIP, USE AND ALTERATION OF DOCUMENTS:		
The Client acknowledges that the documents, drawings, specifications including electronic media files are instruments of The DiSalvo Engineering Group's services and shall remain the property of The DiSalvo Engineering Group. The Client or any person or entity that acquires or obtains the drawings and specifications from or through The Client shall not use them on any other project, shall not modify, alter or change the drawings and specifications without written authorization from The DiSalvo Engineering Group. Furthermore, the Client agrees to the fullest extent permitted by law to indemnify and hold harmless The DiSalvo Engineering Group, its officers, directors and employees from any and all claims, suits, liability, demands or costs, including attorney fees arising out of or resulting therefrom.		

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STATE OF NEW YORK
WYMAN B. WALSH
LICENSED PROFESSIONAL ENGINEER
094509
Exp. 05/31/26

NEW GENERATOR PAD AND APRON REPLACEMENT
HANGAR F
WESTCHESTER CO. AIRPORT
WHITE PLAINS, NY

Drawing Title
Sections & Details

Scale	AS NOTED
Date	1/20/2026
Drawn By	JM
Checked By	RBW
Job Number	25272.00

Drawing Number
S.200



Attachment 2

Site-specific Community Air Monitoring Plan (CAMP)

COMMUNITY AIR MONITORING PLAN

Westchester County Airport

Site No. C360174

West Harrison, New York

West Harrison, New York

June 2025 | Terracon Project No. JA257006

Prepared for:

County of Westchester
148 Martine Avenue
White Plains, New York 10601

Prepared by:

Terracon Consultants-NY, Inc.
Rochester, New York



Nationwide
Terracon.com

- Facilities
- Environmental
- Geotechnical
- Materials

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List of Appendices

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Appendix B	- FUGITIVE DUST AND PARTICULAT MONITORING	1B

1.0 INTRODUCTION

The CAMP requires real-time monitoring of volatile organic compounds (VOCs) and particulates (dust) at downwind perimeter of each designated work area. The CAMP will be implemented during any subsurface activities associated with interim remedial actions, remedial investigation, excavation or other site actions. This CAMP will be completed in general accordance with NYSDEC DER-10 Appendix 1A, as included in Attachment A. Proposed locations include one upwind and one downwind location within the working area. Monitoring points and map locations will be determined prior to intrusive activities. In addition, wind conditions will be observed during intrusive activities, which may influence the locations of the monitoring points.

2.0 VOLATILE ORGANIC COMPOUND (VOCS) AIR MONITORING

Intrusive activities will have active VOC monitoring in the form of perimeter air monitors, running continuously throughout any soil or material disturbances. For a more detailed outline pertaining to intrusive work, refer to the Excavation Work Plan in Appendix C of the ISMP. VOC monitoring will be done using an organic vapor meter (OVM) equipped with a photoionization detector (PID) to provide real-time recordable air monitoring data. VOC air monitoring will not be required during non-intrusive activities.

VOCs will also be monitored and recorded at the downwind perimeter of the immediate work area(s). Upwind concentrations will be measured at the beginning of each day before activities begin and periodically throughout the day to establish background conditions. The downwind VOC monitoring device will also be checked periodically throughout the day to assess emissions and the need for corrective action. VOC monitoring action levels as per *DER-10 Technical Guidance for Site Investigations and Remediation* are as follows:

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per

instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

If the organic vapor level at the perimeter of the work area persists at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions take to abate emissions and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less; but in no case than that 20 feet, is below 5 ppm over background for the 15-minute average.

- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shut down.

3.0 PARTICULATE AIR MONITORING

The remediation and/or investigation crew will make all efforts to suppress dust and particulate matter during the handling of contaminated soil. Fugitive dust and particulate monitoring will be completed in accordance with DER-10 Appendix 1B, as included in Attachment 1B. The following techniques have been shown to be effective for the controlling the generation and migration of dust during construction activities:

- (a) Applying water on haul roads;
- (b) Wetting equipment and excavation faces;
- (c) Spraying water on buckets during excavation and dumping;
- (d) Hauling materials in properly tarped or watertight containers;
- (e) Restricting vehicle speeds to 10 mph;
- (f) Covering excavated areas and material after excavation activity ceases; and/or
- (g) Reducing the excavation size and/or number of excavations.

Care will be taken not to use excess water, which can result in unacceptably wet site conditions. Use of atomizing sprays will prevent overly wet conditions, conserve water and provide an effective means of suppressing fugitive dust.

Weather conditions will be evaluated during remedial work. When extreme wind conditions make dust control ineffective, as a last resort, remedial actions may need to be suspended.

Dust and particulate monitoring will be conducted near approximate upwind and downwind perimeters of the work area, when possible. If visual evidence of dust is apparent in other locations, monitoring equipment will be placed where necessary. Dust monitoring may be suspended during period of precipitation and snow cover.

Particulate air monitoring will be done with a DataRAM-4 (or similar), which will be capable of reading particles less than 10 micrometers in size (PM-10) and equipped with an audible alarm feature which will indicate exceedances. Dust monitoring devices will be recorded periodically throughout the day to assess emissions and the need for corrective actions. Particulate monitoring action levels as per *DER-10 Technical Guidance for Site Investigations and Remediation* is as follows:

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) greater than background for a 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 ($\mu\text{g}/\text{m}^3$) above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 ($\mu\text{g}/\text{m}^3$) above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m³ of the upwind level and in preventing visible dust migration.

If any exceedances occur, or public health complaints filed, they will be relayed within 24-hours to NYSDEC and NYSDOH. Exceedances of any action levels listed will be reported to NYSDEC and NYSDOH Project Managers.

4.0 DOCUMENTATION

All 15-minute readings will be recorded and be available for or State (NYSDEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

5.0 WIND DIRECTION

Prevailing wind direction will be recorded at the beginning of each work day by visual observations of an on-site windsock. As wind direction may change throughout the work day, direction will be reestablished if a significant change in direction is observed. The wind direction results will be utilized to determine the placement of the monitoring equipment.

APPENDIX A
Attachment 1A
GENERIC COMMUNITY AIR MONITORING PLAN

Appendix 1A

New York State Department of Health Generic Community Air Monitoring Plan

Overview

A Community Air Monitoring Plan (CAMP) requires real-time monitoring for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when certain activities are in progress at contaminated sites. The CAMP is not intended for use in establishing action levels for worker respiratory protection. Rather, its intent is to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. The action levels specified herein require increased monitoring, corrective actions to abate emissions, and/or work shutdown. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

The generic CAMP presented below will be sufficient to cover many, if not most, sites. Specific requirements should be reviewed for each situation in consultation with NYSDOH to ensure proper applicability. In some cases, a separate site-specific CAMP or supplement may be required. Depending upon the nature of contamination, chemical-specific monitoring with appropriately-sensitive methods may be required. Depending upon the proximity of potentially exposed individuals, more stringent monitoring or response levels than those presented below may be required. Special requirements will be necessary for work within 20 feet of potentially exposed individuals or structures and for indoor work with co-located residences or facilities. These requirements should be determined in consultation with NYSDOH.

Reliance on the CAMP should not preclude simple, common-sense measures to keep VOCs, dust, and odors at a minimum around the work areas.

Community Air Monitoring Plan

Depending upon the nature of known or potential contaminants at each site, real-time air monitoring for VOCs and/or particulate levels at the perimeter of the exclusion zone or work area will be necessary. Most sites will involve VOC and particulate monitoring; sites known to be contaminated with heavy metals alone may only require particulate monitoring. If radiological contamination is a concern, additional monitoring requirements may be necessary per consultation with appropriate DEC/NYSDOH staff.

Continuous monitoring will be required for all ground intrusive activities and during the demolition of contaminated or potentially contaminated structures. Ground intrusive activities include, but are not limited to, soil/waste excavation and handling, test pitting or trenching, and the installation of soil borings or monitoring wells.

Periodic monitoring for VOCs will be required during non-intrusive activities such as the collection of soil and sediment samples or the collection of groundwater samples from existing monitoring wells. "Periodic" monitoring during sample collection might reasonably consist of taking a reading upon arrival at a sample location, monitoring while opening a well cap or

overturning soil, monitoring during well baling/purging, and taking a reading prior to leaving a sample location. In some instances, depending upon the proximity of potentially exposed individuals, continuous monitoring may be required during sampling activities. Examples of such situations include groundwater sampling at wells on the curb of a busy urban street, in the midst of a public park, or adjacent to a school or residence.

VOC Monitoring, Response Levels, and Actions

Volatile organic compounds (VOCs) must be monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis or as otherwise specified. Upwind concentrations should be measured at the start of each workday and periodically thereafter to establish background conditions, particularly if wind direction changes. The monitoring work should be performed using equipment appropriate to measure the types of contaminants known or suspected to be present. The equipment should be calibrated at least daily for the contaminant(s) of concern or for an appropriate surrogate. The equipment should be capable of calculating 15-minute running average concentrations, which will be compared to the levels specified below.

1. If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.

2. If total organic vapor levels at the downwind perimeter of the work area or exclusion zone persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions taken to abate emissions, and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less - but in no case less than 20 feet, is below 5 ppm over background for the 15-minute average.

3. If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shutdown.

4. All 15-minute readings must be recorded and be available for State (DEC and NYSDOH) personnel to review. Instantaneous readings, if any, used for decision purposes should also be recorded.

Particulate Monitoring, Response Levels, and Actions

Particulate concentrations should be monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations. The particulate monitoring should be performed using real-time monitoring equipment capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The equipment must be equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration should be visually assessed during all work activities.

1. If the downwind PM-10 particulate level is 100 micrograms per cubic meter (mcg/m^3) greater than background (upwind perimeter) for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed $150 \text{ mcg}/\text{m}^3$ above the upwind level and provided that no visible dust is migrating from the work area.

2. If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than $150 \text{ mcg}/\text{m}^3$ above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within $150 \text{ mcg}/\text{m}^3$ of the upwind level and in preventing visible dust migration.

3. All readings must be recorded and be available for State (DEC and NYSDOH) and County Health personnel to review.

December 2009

APPENDIX B

Attachment 1B

FUGITIVE DUST AND PARTICULATE MONITORING

Appendix 1B

Fugitive Dust and Particulate Monitoring

A program for suppressing fugitive dust and particulate matter monitoring at hazardous waste sites is a responsibility on the remedial party performing the work. These procedures must be incorporated into appropriate intrusive work plans. The following fugitive dust suppression and particulate monitoring program should be employed at sites during construction and other intrusive activities which warrant its use:

1. Reasonable fugitive dust suppression techniques must be employed during all site activities which may generate fugitive dust.
2. Particulate monitoring must be employed during the handling of waste or contaminated soil or when activities on site may generate fugitive dust from exposed waste or contaminated soil. Remedial activities may also include the excavation, grading, or placement of clean fill. These control measures should not be considered necessary for these activities.
3. Particulate monitoring must be performed using real-time particulate monitors and shall monitor particulate matter less than ten microns (PM10) with the following minimum performance standards:
 - (a) Objects to be measured: Dust, mists or aerosols;
 - (b) Measurement Ranges: 0.001 to 400 mg/m³ (1 to 400,000 :ug/m³);
 - (c) Precision (2-sigma) at constant temperature: +/- 10 :g/m³ for one second averaging; and +/- 1.5 g/m³ for sixty second averaging;
 - (d) Accuracy: +/- 5% of reading +/- precision (Referred to gravimetric calibration with SAE fine test dust (mmd= 2 to 3 :m, g= 2.5, as aerosolized);
 - (e) Resolution: 0.1% of reading or 1g/m³, whichever is larger;
 - (f) Particle Size Range of Maximum Response: 0.1-10;
 - (g) Total Number of Data Points in Memory: 10,000;
 - (h) Logged Data: Each data point with average concentration, time/date and data point number
 - (i) Run Summary: overall average, maximum concentrations, time/date of maximum, total number of logged points, start time/date, total elapsed time (run duration), STEL concentration and time/date occurrence, averaging (logging) period, calibration factor, and tag number;
 - (j) Alarm Averaging Time (user selectable): real-time (1-60 seconds) or STEL (15 minutes), alarms required;
 - (k) Operating Time: 48 hours (fully charged NiCd battery); continuously with charger;
 - (l) Operating Temperature: -10 to 50° C (14 to 122° F);
 - (m) Particulate levels will be monitored upwind and immediately downwind at the working site and integrated over a period not to exceed 15 minutes.
4. In order to ensure the validity of the fugitive dust measurements performed, there must be appropriate Quality Assurance/Quality Control (QA/QC). It is the responsibility of the remedial party to adequately supplement QA/QC Plans to include the following critical features: periodic instrument calibration, operator training, daily instrument performance (span) checks, and a record keeping plan.
5. The action level will be established at 150 ug/m³ (15 minutes average). While conservative,

this short-term interval will provide a real-time assessment of on-site air quality to assure both health and safety. If particulate levels are detected in excess of 150 ug/m³, the upwind background level must be confirmed immediately. If the working site particulate measurement is greater than 100 ug/m³ above the background level, additional dust suppression techniques must be implemented to reduce the generation of fugitive dust and corrective action taken to protect site personnel and reduce the potential for contaminant migration. Corrective measures may include increasing the level of personal protection for on-site personnel and implementing additional dust suppression techniques (see paragraph 7). Should the action level of 150 ug/m³ continue to be exceeded work must stop and DER must be notified as provided in the site design or remedial work plan. The notification shall include a description of the control measures implemented to prevent further exceedances.

6. It must be recognized that the generation of dust from waste or contaminated soil that migrates off-site, has the potential for transporting contaminants off-site. There may be situations when dust is being generated and leaving the site and the monitoring equipment does not measure PM₁₀ at or above the action level. Since this situation has the potential to allow for the migration of contaminants off-site, it is unacceptable. While it is not practical to quantify total suspended particulates on a real-time basis, it is appropriate to rely on visual observation. If dust is observed leaving the working site, additional dust suppression techniques must be employed. Activities that have a high dusting potential--such as solidification and treatment involving materials like kiln dust and lime--will require the need for special measures to be considered.

7. The following techniques have been shown to be effective for the controlling of the generation and migration of dust during construction activities:

- (a) Applying water on haul roads;
- (b) Wetting equipment and excavation faces;
- (c) Spraying water on buckets during excavation and dumping;
- (d) Hauling materials in properly tarped or watertight containers;
- (e) Restricting vehicle speeds to 10 mph;
- (f) Covering excavated areas and material after excavation activity ceases; and
- (g) Reducing the excavation size and/or number of excavations.

Experience has shown that the chance of exceeding the 150ug/m³ action level is remote when the above-mentioned techniques are used. When techniques involving water application are used, care must be taken not to use excess water, which can result in unacceptably wet conditions. Using atomizing sprays will prevent overly wet conditions, conserve water, and provide an effective means of suppressing the fugitive dust.

8. The evaluation of weather conditions is necessary for proper fugitive dust control. When extreme wind conditions make dust control ineffective, as a last resort remedial actions may need to be suspended. There may be situations that require fugitive dust suppression and particulate monitoring requirements with action levels more stringent than those provided above. Under some circumstances, the contaminant concentration and/or toxicity may require additional monitoring to protect site personnel and the public. Additional integrated sampling and chemical analysis of the dust may also be in order. This must be evaluated when a health and safety plan is developed and when appropriate suppression and monitoring requirements are established for protection of health and the environment.



Attachment 3

Site-specific Health and Safety Plan (HASP)

HEALTH & SAFETY PLAN

Westchester County Airport

Site No. C360174

West Harrison, New York

June 2025 | Terracon Project No. JA257006

Prepared for:

County of Westchester
148 Martine Avenue
White Plains, New York 10601



Nationwide
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- Materials

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1.0 INTRODUCTION & BACKGROUND

Terracon Consultants, Inc. (Terracon) has prepared this Site-Specific Health & Safety Plan (SSHASP) to support ongoing environmental assessment and/or remedial response actions to be undertaken at the Westchester County Airport (the “Airport” or “Site”). The Site is located at 240 Airport Road in White Plains, Westchester County, New York.

The County of Westchester has been accepted into the New York State Department of Environmental Conservation (NYSDEC) Brownfield Cleanup Program (BCP) as a Participant, Site No. C360174. The purpose of this SSHASP is to prevent adverse health effects from potential contaminants and safety hazards which may be present at this site during environmental assessment and/or remediation response actions and general construction activities on the site.

Figure 1 in **Appendix A** shows the site location on a US Geological Survey Topographic Map. A site diagram depicting the general layout of the site, and adjoining properties is provided as **Figure 2** in **Appendix A**.

1.1. Purpose

The purpose of this SSHASP is to provide information for managing known or encountered environmental conditions at the site and best management practices (BMP) associated with impacted media (soil, groundwater, and/or vapors) that may be encountered during assessment and/or remediation response actions, and excavation, redevelopment and

general construction activities on the site. This SSHASP is intended for Terracon staff and to inform General Contractors (GC), subcontractors, and site workers of conditions of potential and documented environmental impacts.

1.2. Contractor Notification

Contractors anticipated to be working at the site are hereby notified that soil, groundwater, sediments, surface waters, or soil gas/vapor they encounter could contain concentrations of regulated substances resulting from historical operations at the site. It should be understood by contractors and site workers that the concentrations of regulated substances that may be encountered can range from generally low to greater than applicable regulatory levels. Impacted material encountered may or may not exhibit visual or olfactory indications of impact. Exposure, and thereby potential hazard, can be reduced if certain work practices/precautions are followed.

1.3. Prior Report Review

Site history and conditions have been documented through multiple reports prepared by previous consultants for the Site. A summary of the site and known environmental conditions is provided below.

The topography at the Airport is generally flat and slopes gently to the south. The elevation at the northern end of the Project Area is approximately 425 feet above mean sea level (msl) and slopes to 375 feet above msl at the southern extent of the Airport property. The surface elevation of Rye Lake, located approximately 500 feet beyond Purchase Street/Route 120 to the west of the Site, is approximately 354 feet above msl. Rye Lake is part of the Kensico Reservoir that serves as a drinking water reservoir for New York City. The west adjoining area is comprised primarily of woodlands and includes Route 120 and Interstate 684 beyond which is Rye Lake.

The New York Air National Guard (NYANG) was a tenant at the Airport from 1947 to 1983. As part of its operations, the NYANG performed aircraft firefighting training operations on a regular basis. These firefighting exercises and training activities were performed at a "Burn

Pit” that was located near the NYANG’s former hanger (hereafter referred to as the “NYANG Burn Pit”) on County property adjacent to the NYANG’s leasehold.

The NYANG conducted these exercises from as early as 1968 until 1983 when they vacated the Airport. The NYANG, as part of its firefighting exercises, used Aqueous Film-Forming Foam (AFFF), which historically contained compounds referred to as per- and polyfluoroalkyl substances (PFAS). Only recently has there been a reduction in the use of PFAS chemicals in AFFF. The duration of AFFF use at the NYANG Burn Pit and the fact that the NYANG Burn Pit was unlined resulted in groundwater at this location exhibiting the highest concentrations of PFAS contamination at the Site.

PFAS-contaminated soil, groundwater, sediments and surface waters have been documented at the site in the *Site Characterization Report* prepared for the site dated February 2023. PFAS compounds are deemed to be the primary contaminants of concern. In addition to PFAS compounds, detectable concentrations of volatile organic compounds (VOCs); semi-VOCs; metals; 1-4 dioxane have been reported during site investigations completed at the site, however, reported concentrations have been generally below applicable NYSDEC cleanup objectives applicable to the site.

2.0 SAFETY AND HEALTH ADMINISTRATION

The Project Manager is ultimately responsible for ensuring that work on this project is performed in accordance with the safety and health provisions contained in this Plan. The designated Site Safety and Health Officer (SSO) or their designee will monitor compliance with this Plan during field activities. All field team members engaged in project activities will be required to sign the "Acknowledgment of Instruction" form included in **Appendix B**. The SSO will maintain a copy of this Plan on site for the duration of project activities.

Contractors engaged in project activity at this site will comply with the applicable provisions of the Occupational Safety and Health Act of 1970, the safety and health requirements set forth in Occupational Safety and Health Administration regulation 29 CFR 1910.120, where applicable, and any applicable state, city or local safety codes. Each subcontractor will be responsible for supplying a Competent Person to oversee designated project work at this site. Each

subcontractor has primary responsibility for utilizing equipment and work practices necessary to protect the safety of the subcontractor's employees engaged in this project.

Each subcontractor will maintain an orderly and safe work area around heavy equipment to minimize the potential for accidents. In addition, the subcontractors shall provide whatever safety barricades or warning devices are deemed necessary by the General Contractor (GC) to prevent accidents or injury to site personnel and the general public.

Contractors engaged on this project site may utilize this SSHASP for their employees, or each Contractor may develop and utilize their own SSHASP provided the provisions of the Contractor's SSHASP are at least as stringent as the requirements contained in this SSHASP. Decisions regarding equivalence of safety and health requirements shall be made by the Site Safety Officer. Adoption of this HASP by subcontractor employers shall not relieve any site subcontractor for the responsibility for the health and safety of its employees.

The GC and subcontractor task leaders (if any) will be responsible for:

- Providing subordinate personnel a copy of this SSHASP and briefing them on its content.
- Enforcing the applicable provisions of this SSHASP.
- Inspecting and maintaining equipment in compliance with applicable federal, state or local safety regulations.
- Enforcement of corrective actions.
- Investigation of accidents or injuries.

The following individuals will be responsible for implementation and enforcement of Work Plan in relation to the Site. . The List of Key personnel will be updated as appropriate based on the future work, activities, and work zones at the larger HPN Site.

Table 1
Key Personnel

TITLE	NAME	PHONE
Project Manager	Michele Patterson-Wittman	(716) 574-1513
Corporate Safety & Health Manager	Jim Wright	(913) 523-5044
Site Safety & Health Officer (SSO)	Don Pomeroy	(401)-602-8959

If hazardous conditions develop during the course of project activity, the SSO will coordinate actions required to safeguard site personnel and members of the general public. Additional safety measures will be verbally communicated to all project personnel, recorded in writing and appended to this Plan.

3.0 TRAINING REQUIREMENTS & MEDICAL SURVEILLANCE

3.1. Training Requirements

In addition to Terracon staff on site, General Contractors will have a Superintendent/Foreman onsite full-time that has completed 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER) Training per the requirements of OSHA 29 CFR 1910.120. In addition, any subcontractor company conducting earthwork activities, digging into the ground up to or through the impacted soils, groundwater or handling impacted materials shall have a Foreman/Supervisor onsite full-time that has completed 40-hour HAZWOPER Training. A current 8-hour annual refresher training certificate is required for all 40-hour trained personnel.

All Site workers that may be exposed to impacted soil or groundwater must be made aware of the onsite COCs. Each subcontractor shall have a written site-specific Safety Plan or Job Hazard Analysis addressing the contaminated soil and groundwater and how to protect their employees potentially from potential exposures.

Prior to the start of site activities, the SSO will conduct a pre-project Site-specific safety and health orientation for all project participants. The personnel responsible for project safety and health will be addressed, as will site history, scope of work, site control measures, emergency procedures and site communications. The briefing will address site contaminants, air monitoring protocols and results and the level of personal protective equipment to be employed for each project task.

Daily "tailgate" safety and health briefings will be presented by the SSO at the start of each workday. In addition to a general review of the proposed daily activity and safety requirements, the results of previous air monitoring and any procedural changes will be addressed. A daily tailgate safety meeting documentation form is attached in Appendix B.

3.2. Medical Surveillance

All site workers that may be exposed to COCs above established occupational exposure limits (OELs) shall be enrolled in a health monitoring program in accordance with the provisions of OSHA 29 CFR 1910.120 and 1910.134. Each project participant must be certified by a Doctor of Medicine as fit for respirator and semi-permeable/impermeable protective equipment use. The content and frequency of physical examinations will be determined by the Consulting physician in compliance with the requirements of 29 CFR 1910.120.

Follow-up medical examinations should also be provided by each employer in the event of illness or unprotected exposure to contaminants in excess of eight-hour time weighted average permissible exposure limits.

4.0 SITE HAZARDS

As discussed previously, PFAS compounds are the primary contaminant of concern (COC) currently identified at the site. In addition to PFAS compounds, detectable concentrations of



volatile organic compounds (VOCs); semi-VOCs including Polynuclear Aromatic Hydrocarbons (PAH); metals; and 1-4 dioxane have been reported during site investigations completed at the site, however, reported concentrations have been generally below applicable NYSDEC cleanup objectives applicable to the site.

Petroleum products, including but not limited to aviation fuels and fuel oils for heating, have been and continue to be stored and used on the Site. Accordingly, chemical compounds typically found in petroleum products will also be considered potential COC for the site.

Continued site investigation activities will be performed at the site to fully characterize the nature and extent of contamination, and will include PFAS, VOC, SVOC/PAH testing, as well as 'full-suite' testing in areas previously unassessed at the site. Additional COC may be determined through this continued assessment work, and new/additional COC will be considered and incorporated into future amendments of this SSHASP, as warranted.

A summary of hazards is presented in **Table 2**, below.

Environmental Media	Exposure Pathways				Chemicals of Concern
	Inhalation	Ingestion	Contact	Radiation	
Soil	✓	✓	✓		PFAS, VOC, SVOC/PAH
Groundwater (including perched water table)	✓	✓	✓		PFAS, VOC, SVOC/PAH
Sediments		✓	✓		PFAS, VOC, SVOC/PAH
Surface Waters		✓	✓		PFAS, VOC, SVOC/PAH

4.1. Chemical Hazards

The following sections identify the U.S. Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs) and American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs) of the contaminants of concern. OSHA PELs are legally-enforceable, whereas the ACGIH TLVs are recommended exposure limits and are not enforceable, but utilized when PELs are not established or available for COCs. The PELs and TLVs may be 8-hour time-weighted average (TWA), Short-term Exposure Limits (STELs) of 15 minutes, or Ceiling Limits ©. "Skin" indicates that measures must be taken to prevent skin exposure.

Note on Personal Hygiene - Smoking, drinking, eating, or tobacco chewing are not allowed in the work area. Site personnel will wash face, hands and forearms as soon as possible upon completion of activities. An adequate supply of soap and water should be available for cleaning.

4.1.1. Per- and Polyfluoroalkyl Substances (PFAS)

PFAS are a group of over 12,000 synthetic chemicals that have been used world-wide in industry and consumer products since the 1940's. This includes two perfluoroalkyl compounds, perfluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS), that have been found in soil and groundwater samples previously collected at the Site. Perfluoroalkyls are man-made compounds that are not naturally occurring in the environment. PFOA and PFOS are the two PFAS compounds that have been made in the largest quantities in the United States; however, they are no longer produced in the U.S. PFAS are often called "forever chemicals" because they are not easily broken down due to strong carbon-fluorine bonds. PFAS are heat, water and oil resistant, so they have been added to products to make them water-repellent, stain resistant, or nonstick. They have also been used in fire-fighting foams. Construction workers may be exposed to PFAS by breathing in or ingesting contaminated dust or through skin exposure to contaminated soil, groundwater or surface water.

Exposure to PFAS has been associated with an increased risk in development of some cancers, reproductive issues, increased cholesterol levels, and immune system effects. PFAS are an emerging public and occupational health hazard. Since thousands of PFAS congeners exist, there is currently no standardized method for characterizing PFAS in air samples. Limited occupational exposure data is available for PFAS in the construction industry. OSHA has not established a permissible exposure limit for any of the PFAS chemicals. NIOSH has not established a recommended exposure limit for any of the PFAS chemicals. The U.S. Department of Health and Human Services, Public Health Service through the Centers for Disease Control (CDC), Agency for Toxic Substances and Disease Registry (ATSDR) has published a ToxGuide™ for Perfluoroalkyls, which is included in Appendix C for reference.

The Department of Energy has established Protective Action Criteria for PFOA. The Protective Action Criteria (PAC) for chemicals is used by the U.S. DOE for planning and response to uncontrolled releases of hazardous chemicals. The PAC Database includes available Acute Exposure Guideline Level (AEGL), Emergency Response Planning Guideline (ERPG), and Temporary Emergency Exposure Limits (TEEL) values.

The PAC values below are based on 60-minute exposure durations (as an emergency exposure limit). Each level (PAC-1, 2, 3) represents an increase in severity of biological effects (DOE, 2016).

PAC-1 – 1.1 mg/m³

PAC-2 – 12 mg/m³

PAC-3 – 75 mg/m³

4.1.2. Petroleum Products

Soils/groundwater at this project site may be contaminated with petroleum hydrocarbons. Benzene is the most significant health hazard contained in petroleum blends and typically comprises less than 1% of regular grade gasolines. Specific health hazard information on

petroleum and its most volatile aromatic constituents are provided below. Additional health-hazard information can be found in the chemical information sheets attached to this Plan.

GASOLINE 300 ppm ACGIH TLV

Gasoline is irritating to the skin, eyes and mucous membranes. Dermatitis may result from prolonged contact with the liquid. Gasoline acts as a central nervous system depressant. Exposure may cause staggering gait, slurred speech and mental confusion. Gasoline exposure may affect the liver, kidneys and spleen. Absorption of alkyl lead antiknock compounds contained in many gasolines poses an additional health concern, especially where there is prolonged skin contact.

DIESEL FUEL (No. 2-D) 100 mg/m³ ppm ACGIH TLV (as mist/vapor)

Diesel fuel is a skin and mucous membrane irritant and a central nervous system depressant. Poisoning may affect the liver and kidneys. Skin contact may result in drying and cracking of the skin.

FUEL OIL (No. 6) 400 ppm OSHA PEL (as petroleum distillates/naphtha)
0.2 mg/m³ OSHA PEL (Coal Tar Pitch Volatiles, "PNA's")

Fuel oil No. 6, or "Bunker Fuel", is of low volatility. It can be irritating to the eyes and skin. This substance is likely to contain polynuclear aromatic hydrocarbons (PAHs), some of which are considered carcinogenic. PAH present a skin contact hazard. Avoid skin contact with potentially contaminated site materials.

BENZENE 1 ppm OSHA PEL
5 ppm OSHA 15 min STEL
0.5 ppm OSHA Action Level

Benzene is a central nervous system depressant and an eye and skin irritant. Poisoning may cause hemorrhages and immunosuppression. A relationship has been discovered between benzene exposure and leukemia. Benzene is regulated as an occupational carcinogen. Acute exposure may cause dizziness, excitation, weakness, headache, giddiness, breathlessness and chest constriction.

TOLUENE 20 ppm ACGIH TLV (Skin Absorbable)

Toluene is an eye, skin and mucous membrane irritant and a central nervous system depressant. Poisoning may affect the liver and kidneys. Prolonged exposure may affect the heart and blood. The ingestion of alcoholic beverages may enhance the toxic effects of toluene. Symptoms of exposure include respiratory tract irritation, headache, dizziness and eye irritation. Toluene may be absorbed to the bloodstream via skin contact.

ETHYLBENZENE 20 ppm ACGIH TLV

Ethyl benzene is a skin, eye and mucous membrane irritant. It is moderately toxic by ingestion and slightly toxic by skin absorption. Ethyl benzene is a central nervous system depressant. Poisoning may affect the liver. Symptoms of exposure may include a sense of chest constriction and nervous disorders. Skin contact may result in first and second-degree burns. The odor can be detected at 140 ppm and irritation occurs at ~200 ppm.

XYLENE 100 ppm OSHA PEL

Xylene is a mild eye and mucous membrane irritant, primary skin irritant and a central nervous system depressant. Ingestion causes severe gastrointestinal upset and creates an aspiration hazard. Chronic inhalation results in symptoms that resemble acute poisoning but are more severe systemically.

Polynuclear Aromatic Hydrocarbons (PAH)

PAHs are a group of over 100 different chemicals that are formed during the incomplete burning of coal, oil and gas, or other organic substances. PAHs are usually found as a mixture containing two or more of these compounds, such as soot.

OSHA regulates occupational exposure to some PAHs under 29 CFR 1910.1000. The PEL for chrysene (as coal tar pitch volatile) is 0.2 mg/m³ as an 8-hr TWA. The PEL for naphthalene is 10 parts per million (ppm) as an 8-hr TWA. ACGIH has established a TLV for naphthalene of 10 ppm as an 8-hr TWA. ACGIH has not established TLVs for other PAHs.

4.2. Physical Hazards and Other Site Safety Hazards

Please refer to Appendix D within this document for policies and procedures regarding other site safety hazards, safety procedures and site-specific programs including but not limited to:

Trenching and Excavation Safety, Operation of Mobile Earth-Moving Equipment, Confined Space Entry, Fire Protection and Prevention, Flammable and Combustible Liquids, Slips/Trips/Falls, Lighting, Weather, and Noise. Any Spills and Biological Hazards present on site, that have not been addressed, will be taken into consideration when activities begin.

4.2.1. Heat Stress associated with Protective Clothing

Heat stress can result even when temperatures are moderate. Protective clothing decreases natural body ventilation. Working under various levels of personal protection may require the wearing of low permeability disposable suits, gloves and boots. This clothing will prevent most natural body ventilation. Discomfort due to increased sweating and body temperature (heat stress) will be expected at the work site. Whenever ambient temperature exceeds 70° F heat stress monitoring and preventive measures will be implemented.

- The use of caffeine stimulants and alcoholic beverages in off hours are discouraged.
- Employees must monitor one another for signs of heat stress (excessive perspiration, flushed skin, nausea, etc.).
- Terracon will provide ice, water and electrolyte replenishment drinks. Have at least two gallons of water available for each field employee during each day of site activity. Drinking water for site personnel will be considered an integral component of safety equipment mobilized to the site. Electrolyte replenishment drinks should be consumed in a ratio of 1 pint electrolyte fluid to 2 pints water.
- Provide cooling devices to aid in ventilation (the additional weight may affect efficiency).
- Provide water source facilities to cool clothing and body.
- Shift working hours to early morning and evening, avoiding the hottest time of the day.
- Confirm and designate emergency procedures.
- Maintain effective communication by voice, observation or electronic means.
- Provide access to shade in the form of pop-up canopy, dog house, etc.

4.2.2. Cold Stress

Cold stress can occur in any cold environment, with OSHA defining near freezing temperatures as extreme cold. Cold stress can vary across regions and environments, and many other factors such as wind speed, precipitation and humidity can all increase the effects. Decreased skin temperature, and eventually internal (core) body temperature can be fatal. This is a primary concern on-site during winter months.

- Employees must be properly trained to recognize the signs and symptoms of cold stress.
- Engineering controls, such as space heaters or sheltered areas.
- Dressing properly. Numerous layers, with extra care being given to extremities like the head, face, hands, feet, etc.
- Taking regular breaks to warm up when necessary.
- Preparing in advance and bringing extra clothes.

4.2.3 Slips/Trips/Falls

Slips, trips and falls are the most common injuries when working on-site and in the field. They can occur with anything from slick surfaces, to tools haphazardly strewn about. These incidences are always preventable, and there are many practices to implement to decrease these instances from occurring.

- Good housekeeping
- Safe walking surfaces
- Proper lighting
- Safe footwear
- Awareness and training

4.2.4 Lighting

Lighting is a necessary aspect of completing work safely, and especially important when working at night. Since the site is within the zone of an active airport, it is important to be cognizant of all possible hazards associated with improper lighting. Temporary job site lighting will be available for all work completed on-site, when necessary. Any work completed at night will be properly lit through the use of light plants, flashlights, light meters, head lamps, etc.

4.2.5 Weather

Weather will be monitored daily, with unsafe working conditions being accounted for when going out into the field. Any thunder, lightning, or extreme weather events that will disrupt working in a safe manner, will result in a stop work order.

4.2.6 Noise

Noise limits will be accounted for when completing work utilizing heavy machinery. All employees will wear ear plugs or headphones when necessary. Due to the nature of the Site, any work completed outside and in close proximity to the runway will result in the use of ear protection.

5.0 PERSONAL PROTECTIVE EQUIPMENT

Protective clothing and respiratory protection help prevent site workers from coming in contact with contaminants. It is imperative that personal protective equipment (PPE) be appropriate to protect against the known potential hazards for the Site. The selection of protective equipment will be based upon the types, concentrations, and routes of exposure that may be encountered.

There are four (4) levels of personal protection recommended by the U.S. Environmental Protection Agency (EPA). Level D is used when little or no contamination exists; however, a Modified Level D may be required for additional dermal protection. Upgrading to Level C is required when contamination levels require protection from bodily contact and the filtering of breathing air. Level B will be used when contamination requires protection from bodily contact and the use of a supplied breathable air source. Level A provides the highest available protection from bodily contact, respiratory and eye irritation. The following are descriptions of the equipment required for each level of personal protection.

Level D

- Work uniform (close fitting sleeved shirt, long pants)
- Hi-Vis Leather gloves (when required)
- Safety boots (steel toe and shank)
- Hi-Vis Safety Vests or t-shirts (reflective for night work)
- Hard hat (ANSI Z.89.1 approved)
- Eye protection (ANSI Z.87 approved, chemical splash goggles when operating near splash hazards)
- Hearing protection (minimum NRR 20 within 10 ft. of operating equipment)

Modified Level D - Level D plus the following:

- Chemical resistant, polycoat coveralls
- Inner surgical gloves (latex or nitrile)
- Chemical resistant outer gloves (nitrile)
- Chemical resistant safety boots (steel toe and shank, rubber or nitrile)

Level C – Modified Level D plus the following:

- NIOSH approved, full-face, air purifying respirator (APR)
- P100 cartridges (or combination P100 and H₂S as needed)

Level B:

- Chemically resistant, polycoat coveralls
- Inner surgical gloves (latex or nitrile)
- Chemical resistant outer gloves (nitrile)
- Chemical resistant safety boots (steel toe and shank, rubber or nitrile)
- NIOSH approved, full-face, airline respirator
- Hard hat (ANSI Z.89.1 approved)
- Hearing protection (minimum NRR 20 within 10 ft. of operating equipment)

It is recommended that site workers start in Level D PPE. Site workers should upgrade to Modified Level D PPE if they will come in contact with or will be conducting activities disturbing PFAS contaminated soils or groundwater. Depending on the levels of dust observed/measured (see Section 12.1 for Dust Control Guidelines and Ambient Monitoring

Criteria), a respirator with appropriate filters (i.e., P100 or HEPA filters) may be needed to protect against inhalation of airborne particles.

5.1. Respiratory Protection

If respirators are utilized, they shall be NIOSH approved. Cartridges and filters for air purifying respirators will be appropriate for the contaminant(s) of concern. For earthwork and excavation activities where metals and PFAS will be disturbed, air purifying respirators should be equipped with HEPA/P100 cartridges. Cartridge/filter selection will be made by each individual employer and approved by the SSO. Project personnel required to wear respiratory protection will be medically cleared for respirator use, trained and successfully fit tested in accordance with OSHA 29 CFR 1910.134. Personnel required to wear respirators will demonstrate competence in donning/doffing and inspecting the equipment prior to job assignment. All project tasks requiring the use of supplied air respirators will require properly equipped backup personnel.

At a minimum, air purifying respirator cartridges will be changed daily prior to use. More frequent change of respirator cartridges may be specified based on the results of site air monitoring. Under no circumstances will air purifying respirators be used in areas deficient in oxygen (<19.5%), in areas classified as immediately dangerous to life and health (IDLH) or in areas where contaminants have not been characterized. A full facepiece respirator will prevent eye irritation. If air concentrations are elevated, eye irritation may become a serious issue. If a half-mask respirator is used, tight fitting goggles must also be used.

Respirators will be inspected and required fit checks will be performed prior to use, and any necessary repairs will be made before proceeding to the project site. Respirators will be sanitized daily after use.

6.0 SITE CONTROL

An Exclusion Zone, Contaminant Reduction Zone and a Support Zone will be established whenever project activities require Level C or Level B personal protective equipment. Defined access and egress points will be established and personnel will enter only through those points.

As permitted by site topography, the area within a 100-foot radius of trench or excavation shall be considered the Exclusion Zone. Only those personnel designated by the Project Manager/SSO are allowed to enter the Exclusion Zone. Where practical, or where their use will prevent public injury, temporary signs or barricade fencing will be established to define the Exclusion Zone. **ABSOLUTELY NO SMOKING, EATING, OR CHEWING TOBACCO WILL BE PERMITTED WITHIN THE EXCLUSION OR CONTAMINANT REDUCTION ZONES ON THE SITE.**

If unauthorized personnel attempt to enter the exclusion zone, the SSO will verbally inform the individual(s) to leave the project site. If unauthorized individuals refuse to leave the Exclusion Zone or are considered in danger or pose danger to project personnel, the SSO will cease project activities (i.e., shut down excavation equipment, etc.) and notify the Owner's representative or the local police of the situation. Site activities will not resume until unauthorized personnel have left the project site.

7.0 AIR MONITORING AND SITE ACTION LEVELS

This air monitoring protocol is designed to prevent personnel exposure to airborne contaminants in excess of established PELs. The results of field air monitoring will be used to determine the adequacy of initial personal protective equipment selection.

Note that PFAS are not detectable with a photoionization detector (PID) or combustible gas indicator (CGI) and typically do not present odors or visible staining. Therefore, ambient dust levels will be utilized as an indicator of potential inhalation exposure to PFAS (see Section 12.0 of this SSHASP for ambient PM10 levels set for this project).

Currently known site conditions do not indicate VOC/SVOC to be a primary COC. However, petroleum storage/distribution operations of aviation fuel products are active and ongoing at the HPN. In addition, petroleum underground storage tanks (USTs) were historically in use and continue in select areas of the site until all of HPN is provided with natural gas service. As this SSHASP is intended to apply to the entire HPN site, in anticipation of future ground-intrusive excavation occurring, either as an assessment/remedial response action or as part of planned construction or redevelopment projects at the HPN, and to be consistent with the

Community Air Monitoring Plan (CAMP) for this site, air monitoring for VOC is discussed below.

7.1. Particulate Air Monitoring

Occupational exposure monitoring (air sampling) methods for PFAS are still emerging. However, worker exposure is likely to occur through inhalation of PFAS-contaminated dust. Therefore, personal breathing zone air sampling should be conducted to evaluate worker exposures to total particulate (dust), respirable dust, and PFOA dust.

Particulate air monitoring should be done with a DataRAM-4 (or similar), which will be capable of reading particles less than 10 micrometers in size (PM-10) and equipped with an audible alarm feature which will indicate exceedances. Dust monitoring devices will be recorded periodically throughout the day to assess emissions and the need for corrective actions. Particulate monitoring action levels as per *DER-10 Technical Guidance for Site Investigations and Remediation* is as follows:

- If the downwind PM-10 particulate level is 100 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) greater than background for the 15-minute period or if airborne dust is observed leaving the work area, then dust suppression techniques must be employed. Work may continue with dust suppression techniques provided that downwind PM-10 particulate levels do not exceed 150 ($\mu\text{g}/\text{m}^3$) above the upwind level and provided that no visible dust is migrating from the work area.
- If, after implementation of dust suppression techniques, downwind PM-10 particulate levels are greater than 150 ($\mu\text{g}/\text{m}^3$) above the upwind level, work must be stopped and a re-evaluation of activities initiated. Work can resume provided that dust suppression measures and other controls are successful in reducing the downwind PM-10 particulate concentration to within 150 mcg/m³ of the upwind level and in preventing visible dust migration.

7.2. VOC Air Monitoring

VOCs will be monitored at the downwind perimeter of the work area on a continuous basis and periodically during non-intrusive activities, as needed. VOC monitoring will be done

using an organic vapor meter (OVM) equipped with a photoionization detector (PID) to provide real-time recordable air monitoring data.

VOCs will also be monitored and recorded at the downwind perimeter of the immediate work area(s). Upwind concentrations will be measured at the beginning of each day before activities begin and periodically throughout the day to establish background conditions. The downwind VOC monitoring device will also be checked periodically throughout the day to assess emissions and the need for corrective action. VOC monitoring action levels as per DER-10 Technical Guidance for Site Investigations and Remediation is as follows:

- If the ambient air concentration of total organic vapors at the downwind perimeter of the work area or exclusion zone exceeds 5 parts per million (ppm) above background for the 15-minute average, work activities must be temporarily halted and monitoring continued. If the total organic vapor level readily decreases (per instantaneous readings) below 5 ppm over background, work activities can resume with continued monitoring.
- If the organic vapor level at the perimeter of the work area persist at levels in excess of 5 ppm over background but less than 25 ppm, work activities must be halted, the source of vapors identified, corrective actions take to abate emissions and monitoring continued. After these steps, work activities can resume provided that the total organic vapor level 200 feet downwind of the exclusion zone or half the distance to the nearest potential receptor or residential/commercial structure, whichever is less; but in no case than 20 feet, is below 5 ppm over background for the 15-minute average.
- If the organic vapor level is above 25 ppm at the perimeter of the work area, activities must be shut down.

8.0 DECONTAMINATION

Equipment decontamination is required in accordance with the Quality Assurance Project Plan (QAPP). Personnel decontamination for site workers below personal protective Level C will consist of washing off safety footwear, proper cleaning or disposal of outer and inner gloves and thorough washing of face, arms and hands. A full body shower will be required as soon

as possible upon leaving the project site. For projects involving Level C personal protective equipment, a decontamination station will be established and the following procedures enforced.

8.1. Personal Decontamination

Personnel will establish a decontamination station on the interface of the Exclusion Zone. A Contaminant Reduction Zone will be established and will extend 10 feet beyond from the decontamination station and consist of the following:

- Two Wash Tubs
- Scrub Brush
- Plastic Bags
- Water and Alconox® Detergent

The wash tub on the exclusion zone side of the site will contain a solution of water and Alconox® detergent; the second wash tub will contain clean rinse water. Personnel decontamination will consist primarily of detergent washing and rinsing of reusable exterior protective gear. Coveralls will be removed by turning the clothing inside out.

Personnel may not leave the contaminant reduction zone without proceeding through the decontamination sequence described below. Decontamination station will consist of:

- Wash work gloves, boots and polylaminated protective coveralls,
- Rinse work gloves, boots and coveralls,
- Remove tape at wrists and ankles,
- Remove protective coveralls,
- Remove respirator
- Dispose of spent cartridges, wash and rinse respirator
- Remove outer gloves
- Remove inner gloves

Expendable personal protective equipment will be placed in plastic trash bags, sealed and disposed of per client agreement. Decontamination solutions will be containerized or disposed of as arranged by Project Manager.

8.2. Equipment Decontamination

Decontamination of equipment will be performed to limit the migration of contaminants off-site. All equipment will be cleaned prior to site entry to remove grease, oil and encrusted soil.

Decontamination of large equipment will consist of physically removing gross contamination with shovels, brushes etc. followed by detergent and water high pressure wash with a clean water rinse. Decontamination of hand samplers and similar small equipment will be performed at a designated location within the Contaminant Reduction Zone. All reusable sampling equipment will be thoroughly cleaned with steam or high-pressure wash of hot water and anionic detergent prior to each use. All decontamination fluids will be disposed of as provided in the work plan. Disposable protective clothing will be placed in plastic bags, containerized and left on site. Respirators and boots will be thoroughly cleaned with hot water and anionic detergent.

8.2.1. Tracking Sediment Off-Site

A decontamination pad should be constructed in accordance with the QAPP for all equipment that comes in contact with impacted soils or groundwater. Construction stabilized exits such as rumble strips, filter fabric and 3-inch diameter rock shall be used to knock loose dirt/mud from the wheels of vehicles exiting the site. All trucks exiting the site shall ensure that no spillage of soil occurs off-site and minimize tracking of soil from the site. Truck drivers transporting waste shall be required to inspect the exterior of their trucks and brush off all loose soil. Trucks transporting waste shall limit the load of soil to allow sufficient freeboard (e.g., 6 inches) and shall cover each load prior to leaving the site.

Despite these precautions, should material be tracked off-site, the contractor will be prepared with brooms or hoses to manually clean up any residual sediments. Terracon will also perform site inspections daily, and if material is found outside of the Site limits, clean-up will be addressed within a timely fashion.

9.0 SITE COMMUNICATIONS

Communication between personnel within the Exclusion Zone will be via verbal communication or hand signals. Visual contact between members of task teams should be possible throughout the course of project activities. Contact with the SSO will be through direct verbal communication. The following hand signals will be used by personnel wherever respiratory protection and/or equipment noise limit verbal communication.

<u>Signal</u>	<u>Meaning</u>
Thumbs Up	OK, all is well
Grab throat with both hands	Can't breathe
Shake head, thumbs down	NO, negative
Point right (when facing equipment operator)	Move/steer left
Point left (when facing equipment operator)	Move/steer right
Grab partner's wrist	Leave area immediately

10.0 ACCIDENT PREVENTION

The Site Safety Officer has administrative responsibilities for implementing the provisions of this SSHASP, including but not limited to the following:

- The Site Safety Officer will hold daily safety briefings at the start of each workday.
- If site activities interrupt the normal flow of pedestrian or vehicular traffic, appropriate barricades will be erected field equipment. Traffic safety vests will be worn by personnel working within 10 feet of any active roadway.
- The Site Safety Officer will attempt to prevent unauthorized personnel from entering project exclusion zones. Authorized visitors will be briefed on site contaminants and personal protective equipment requirements of this Plan.
- The Site Safety Officer will periodically inspect the work area for infractions of Health and Safety requirements of this Plan.
- The Site Safety Officer will investigate and promptly report accidents to the Corporate Health and Safety Manager.

- Site activities will be conducted only during daylight hours unless adequate portable lighting is mobilized to the project site.
- The "buddy system" will be observed at all times during intrusive site investigations. A minimum of two people will work together and remain within eyesight or not greater than 100 ft. apart.

11.0 EMERGENCY RESPONSE PROCEDURES

The GC will implement emergency response procedures. Please refer to the Emergency Response Plan for Construction Sites. Emergency response procedures shall follow the Jobsite Emergency Management Manual.

11.1 Contaminated Areas

Where air monitoring indicates the absence of toxic gases or vapors, the ambulance will be directed to the affected employee by GC. If site conditions warrant and as time permits, the wheels of the ambulance will be decontaminated with high pressure wash. The SSO or GC designee will accompany the ambulance to the medical facility and provide guidance concerning additional decontamination which may be required for the injured employee, ambulance or attendants.

Whenever an injury occurs on sites with contamination requiring personal protective equipment greater than Level D modified, a minimum of two employees will don appropriate equipment and proceed to the victim. An ambulance will be called immediately. If the extent of injuries permits, the injured employee will be removed to fresh air. Appropriate first aid will be administered.

If rescuer(s) assess that the victim cannot be removed without a stretcher or other specialized equipment, the victim will be removed at the earliest possible moment by appropriately attired Terracon personnel with the direction and/or assistance of qualified medical response personnel. The injured employee will be immediately decontaminated and transported to the nearest medical facility. A crew member designated by the SSO will inform the ambulance crew of contaminants of concern and provide assistance with additional decontamination if required.

Evacuation and Shutdown Procedures

The SSO will establish and notify site personnel of emergency "rally" points. In the event of a site emergency, personnel will immediately exit the site and assemble at the designated rally point. Evacuation routes will be dependent on-site topography and wind conditions. The routes will be selected and presented by the SSO daily prior to site activity.

If emergency evacuation becomes necessary, the SSO will sound the emergency alarm to include support vehicle horn or compressed air horn with three short blasts. Personnel will safely shut down all electrical and mechanical equipment and quickly proceed to closest designated rally point. The SSO will then account for each crew member on site.

In the event that a site worker does not report to the designated rally point within 5 minutes of the evacuation alarm, the SSO will perform an immediate assessment of site conditions. If site conditions do not pose an immediate hazard to life or health, the SSO will initiate search and rescue efforts utilizing two crew members attired in appropriate personal protective equipment.

12.0 PROJECT CONTROLS

The following control measures should be implemented during earthwork activities.

12.1 Dust Control Measures

Dust generation can be caused by excavation, general movement of equipment throughout the site, stockpiling, and loading/transportation of export material. Fugitive/airborne dust, potentially impacted by PFAS and metals, can create a nuisance and/or a human health hazard for the surrounding community. Contaminants can adhere or adsorb to the dust particles, resulting in potential public exposure. Therefore, dust control measures serve to control public exposure to potential contamination from the site. Visible dust can be readily observed and controlled.

The GC and subcontractors will be responsible for taking actions to prevent, reduce, or mitigate fine particulate matter (PM10) emissions. The work areas will be monitored utilizing

a direct reading instrument (TSI DustTrak or equivalent) to PM10, per Section 7.1. Dust control measures should be employed during development activities at the site to achieve no visible emissions. Personnel operating mobile equipment at the site are instructed to drive slowly to reduce dust generation. Low tipping of excavated loads and covering of soil stockpiles should be implemented to limit the generation of visible airborne dust. Use of a water spray unit to dampen surface materials should be considered if visible dust is generated during excavation and soil movement. Construction personnel should avoid overspraying the area to prevent runoff and muddy work surfaces. Contractors and site workers should plan their work to account for minimal soil movement and to adapt types and application of grading equipment.

This plan focuses on controlling the dispersion of contaminants by controlling dust from work areas and minimizing exposed waste. The primary tool to protect the public from exposure is continuous monitoring for visible dust. The action level for dust is “no visible dust” at the site boundary.

Please refer to Section 7.0 of this SSHASP for site action levels triggering occupational exposure monitoring for the identified COCs at the Site.

13.0 GENERAL COMMENTS AND LIMITATIONS

This document has been developed to inform contractors of the potential for encountering impacted soils, groundwater and soil vapor during redevelopment at the site and proper procedures to minimize impacts. The precautions are intended to reduce the potential for adverse health effects to personnel excavating and managing soil, groundwater, and soil vapor contamination properly at the site. Contractors engaged in activities at the project are responsible for conducting site activities in accordance with federal, state, and local environmental and safety regulations.

It is possible that site information exists beyond the scope of this SSHASP. In addition, events may occur after the preparation of this SSHASP, which may result in contamination of the site. It should not be assumed or inferred that any information presented will be accurate subsequent to the preparation of this document. Additional information that was not reviewed by Terracon prior to preparation of this document could result in a modification of the conclusions and recommendations presented herein.

Findings, conclusions, and recommendations resulting from these services are based on information derived from existing data; such information is subject to change over time. Certain indicators of the presence of hazardous substances, petroleum products, or other constituents may have been latent, inaccessible, unobservable, non-detectable, or not present during past investigations. Subsurface conditions may vary from those encountered at specific borings or wells or during other surveys, tests, assessments, investigations, or exploratory services. The data, interpretations, findings, and our recommendations are based solely upon readily available data and within the scope of these services.

14.0 REFERENCES

USDOE. Temporary Emergency Exposure Limits for Chemicals: Methods and Practice.

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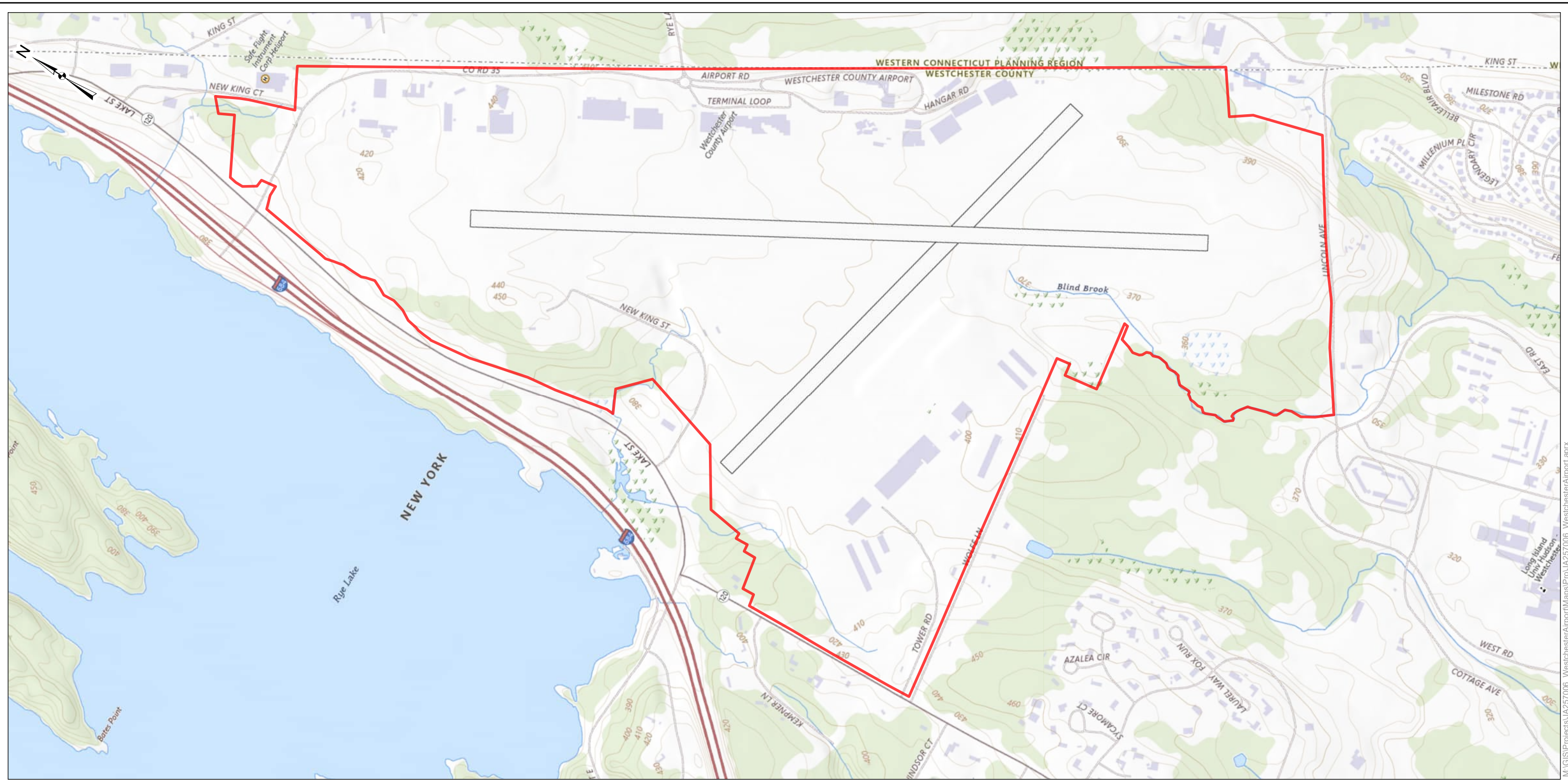
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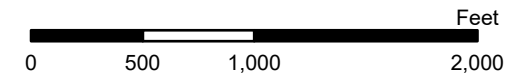
Federal Register 39124. <https://www.govinfo.gov/content/pkg/FR-2024-05-08/pdf/2024-08547.pdf>

Appendix A - Exhibits



Legend
 Airport Boundary

DATA SOURCES:
 ESRI Basemaps
 Westchester County GeoHub



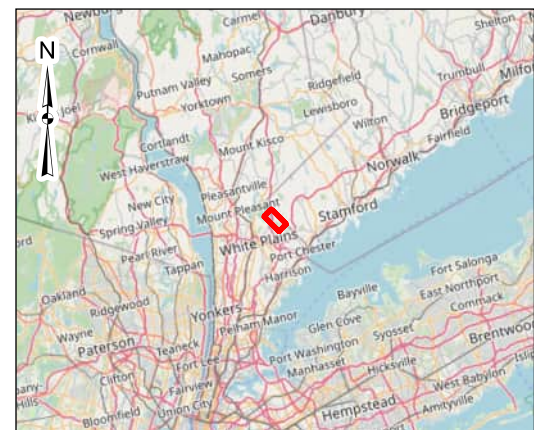
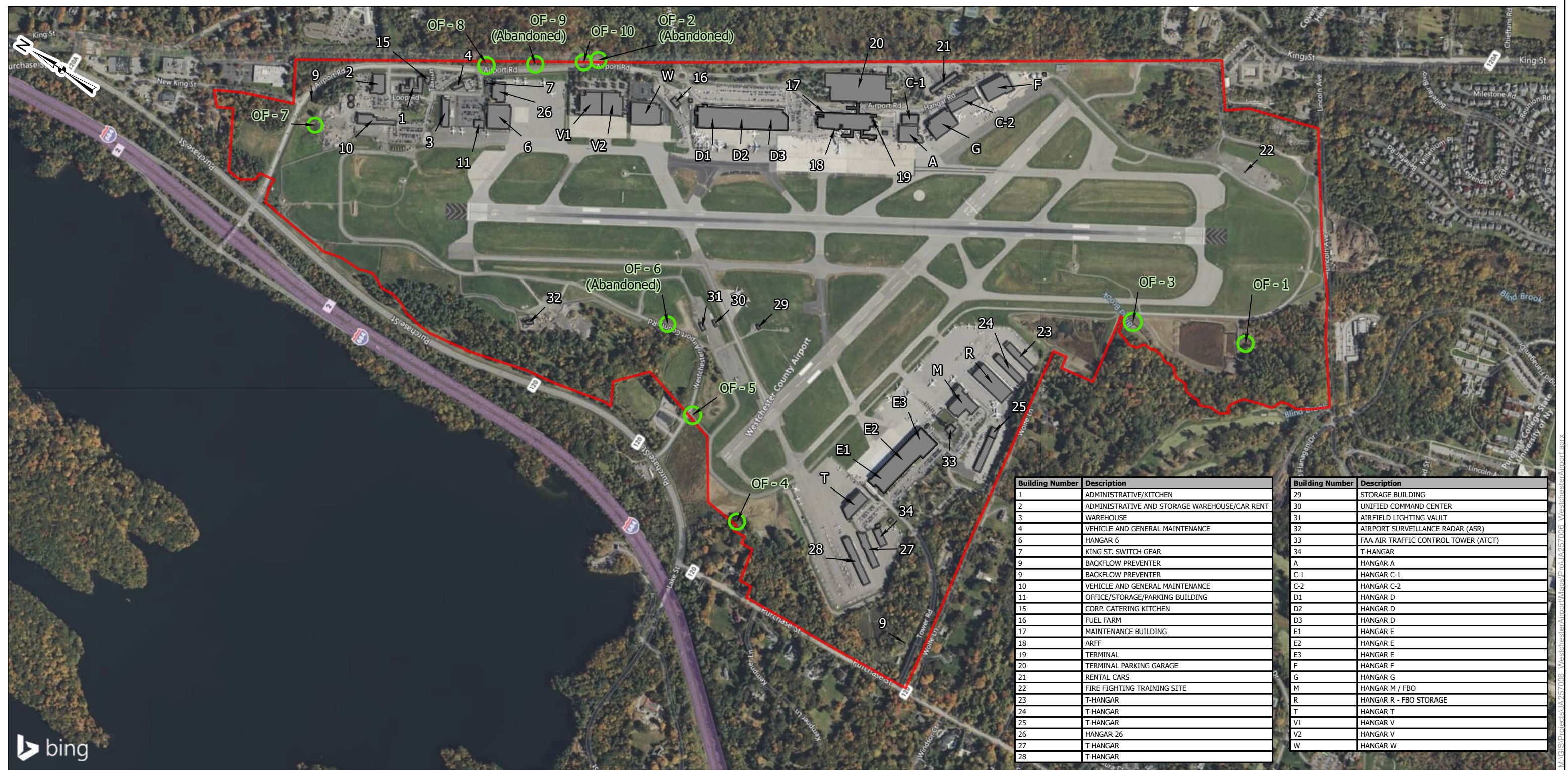
Project No.:
 JA257006
 Date:
 Feb 2025
 Drawn By:
 RS
 Reviewed By:

Terracon
 10841 S Ridgeview Rd
 Olathe, KS
 PH. 913-599-6886 terracon.com

Topographic Map
 Westchester County Airport
 West Harrison, New York

Figure
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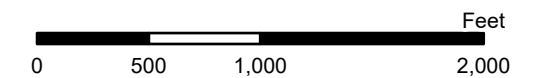
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Legend

- Airport Boundary
- Buildings
- SPDES Outfall

DATA SOURCES:
ESRI Basemaps
Westchester County GeoHub



Project No.:
JA257006
Date:
Feb 2025
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Site Diagram

Westchester County Airport
West Harrison, New York

Figure

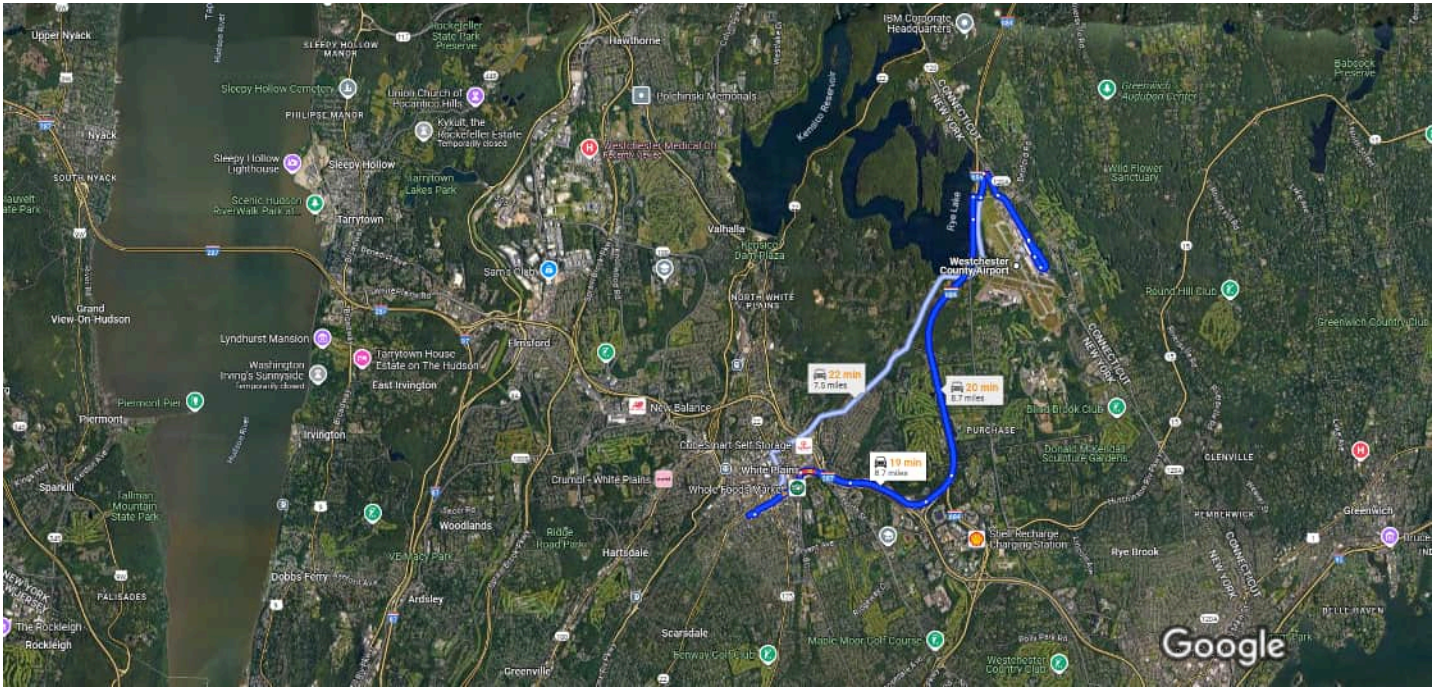
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Appendix B - Emergency Route to Hospital



Westchester County Airport to White Plains Hospital

Drive 8.7 miles, 19 min



Imagery ©2025 Airbus, Landsat / Copernicus, Maxar Technologies, Map data ©2025 Google 1 mi

Westchester County Airport










240 Airport Rd, West Harrison, NY 10604

Take Airport Rd to NY-120 S in North Castle

- 5 min (1.8 mi)
- ↑ 1. Head south on Airport Rd
- 0.2 mi
- ↶ 2. Slight left
- 0.1 mi
- ↶ 3. Slight left onto Airport Rd
- 0.5 mi
- ⤵ 4. At the traffic circle, continue straight to stay on Airport Rd
- 0.7 mi
- ↗ 5. Airport Rd turns slightly right and becomes New King St
- 0.3 mi

Take I-684 S and Westchester Ave to your destination in White Plains

- 12 min (6.8 mi)
- ↶ 6. Turn left onto NY-120 S
- 0.3 mi
- ↗ 7. Turn right onto Airport Rd

-  8. Turn left onto the Interstate 684 S ramp to Interstate 287 489 ft
-  9. Merge onto I-684 S 0.3 mi
-  10. Use the right lane to take the exit toward White Plains 3.3 mi
-  11. Exit onto Westchester Ave 0.4 mi
-  12. Keep left to stay on Westchester Ave 1.0 mi
-  13. Use the 2nd from the left lane to turn left onto Bloomingdale Rd 0.6 mi
-  14. Turn right onto Maple Ave 0.2 mi
-  15. Turn right 0.6 mi
-  **Destination will be on the right** 1 min (440 ft)

White Plains Hospital

41 E Post Rd, White Plains, NY 10601

APPENDIX C

Acknowledgement of Safety Instruction Form



APPENDIX D

TERRACON'S SAFE RIGHT PROCEDURES (SRPS) AND POLICIES

Task or Job:	Housekeeping	Document No:	SRP Gen 17
Analysis Conducted By:	Terracon Safety	Revision Mod:	0424

Task Requirements
Prerequisites – none
Personal Protective Equipment (PPE) – Hard Hat, Eye Protection, Safety Footwear, Gloves (Cut 3, Impact 1), HiVis Apparel (min Class II)
Job Specific Resources – none

Specific Job Steps	Potential Hazards	Tools and Equipment	Risk Assessment			Employees Required	Hazard Control
			Low	Med	High		
1. Walk the job through.	employees not focused on task		✓			all site	Start every job task with pre-task planning and update the plan when personnel or conditions change. (R2)
2. Designate storage areas for tools.	slips and trips, damaged or lost equipment		✓			all site	Return tools to storage area after use. (P4)
3. Roll up hoses or cords.	slips and trips			✓		all site	Ensure work area is free of trip hazards. (P4)
4. Clean spillage and scraps.	slips and trips, chemical, environmental	SDS		✓		all site	All spills and scraps must be cleaned immediately after detection. (P4) Reference applicable SDS. (P4)
5. Keep access/egress to/from work area clear.	slips and trips			✓		all site	Remove obstacles. (P4)
6. Isolate unsafe areas.	slips and trips	caution tape		✓		all site	Secure area if unable to render safe. (P4)
7. Obey chemical management rules.	chemical, environmental	SDS		✓		all site	Ref applicable SDS. (P4)
8. Remove protruding objects.	slips and trips			✓		all site	Remove protruding objects. (P4)
9. Chain gas cylinders. Ensure valve protection and proper separation.	explosion, fire, high pressure	chain, strap, bottle caps, SDS		✓		all site	Chain gas cylinders. (P4) Reference applicable SDS. (P4)
10. Clean, oil and inspect equipment after use. If damaged or in need of repair, tag tool "Out of Service" and secure it.	damaged or lost equipment	"Out of Service" tags		✓		all site	Inspect tools and equipment before, during and after use. If defective, repair, discard, or tag with "Do Not Use" and remove from service. Tell your supervisor. (R8)
11. Keep facilities clean.	slips and trips			✓		all site	Continuous good housekeeping requires effort from all workers. (P4)
12. Keep vehicle cabs neat and tidy.	vehicle control			✓		all site	

Notes
1. Policy documents, Safe Right Procedures, Quality Procedures, client / site specific safety plans and safety data sheets (SDS) provide additional guidance.
2. No changes to the procedures or hazard controls are permitted without the approval of a Terracon supervisor. Terracon requires Pre-Task Planning in order to prevent incidents and address site specific hazards.
3. ALL EMPLOYEES HAVE STOP WORK AUTHORITY. Stop work if you feel unsafe. Tell a supervisor and work together to fix the problem.
4. This document contains information concerning Terracon strategies, personnel and systems. We regard such information as confidential and request that it is not disclosed in whole or in part to any third party without first seeking our consent.

Task or Job:	Field Surveys in Remote Locations	Document No:	SRP GEN 30
Analysis Conducted By:	Terracon Safety	Revision Mod Date:	0425

Task Requirements
Prerequisites – completed TU Service Line curriculum, Supervisor approval
Personal Protective Equipment (PPE) – Eye Protection, Safety Footwear, Gloves (Cut 3), Hard Hat, Hi Vis Apparel (min Class II)
Job Specific Resources – insect repellent, sunscreen, snake chaps, cooling/hydration aids, communication devices

Specific Job Steps	Potential Hazards	Tools and Equipment	Risk Assessment			Employees Required	Hazard Control
			Low	Med	High		
<p><i>This SRP is applicable to any type of work being performed in remote locations including but not limited to environmental planning, wildlife observations, site assessments, wetlands delineations, archaeological studies, etc.</i></p>							
1. Pre-task planning at the office. <ul style="list-style-type: none"> Evaluate staff training, medical conditions, and emergency procedures. Confirm landowner / tenant notifications. Verify site access points. Confirm cellular service / communications. Evaluate lone worker / subcontractor use. Confirm work / rest regimen for heat stress prevention. 	lack of adequate training or qualifications, improper vehicle type or use, site occupants not being aware of our presence in advance		✓			PM, APR, key field staff	<p>When assigning personnel, follow Terracon-required safety training and get authorization before work starts. Plan for employee allergies and medical situations as remote field work can pose challenges for EMS access. (R3)</p> <p>Verify client has alerted all landowners of our planned presence at site. Reference Guidance Document for Landowner Encounters.</p> <p>Confirm property access point(s), availability of and locations of gates, whether crossing barbed wire or other fences will necessary, and other property access specific requirements. (R2)</p> <p>Consider ingress/egress to a project site and positioning of teams and vehicles for support in case an injury or illness is experienced. (R2)</p> <p>When assigning vehicles, consideration should be given to the existing or planned road layout and on-site conditions to ensure that the selected vehicles can operate within their design specifications and capabilities; the abilities and qualifications of the assigned drivers; and the design specifications and capabilities of the selected vehicles for load capacity and project expectations. (R2)</p> <p>Consider the hazards related to working in and on water during pre-task planning. If working on water, reference Gen39 SRP Working on Water.pdf (R2)</p> <p>Conduct a hazard analysis to evaluate the correct types of PPE to be used by staff as it relates to anticipated project work, work duration, site conditions, remoteness, weather, thorny/poisonous vegetation, wildlife, overhead hazards (e.g. tree branches and rocks) and other project-related considerations. (R6)</p> <p>Consider hunting seasons when scheduling remote field work and update PPE accordingly to include orange vests. (R2)</p> <p>Provide site crew with communications plan / equipment. (R2)</p> <p>Lone worker situations in remote locations are highly discouraged. Plan for field work using teams of two or more staff, which can include subcontractors. (P4)</p>

Specific Job Steps	Potential Hazards	Tools and Equipment	Risk Assessment			Employees Required	Hazard Control
			Low	Med	High		
2. Pre-task planning at the site.	employees not focused on task, failure to recognize changing conditions and control associated hazards		✓			all site	<p>Start every job task with pre-task planning and update the plan when personnel or conditions change. (R2)</p> <p>Inspect tools and equipment before, during and after use (R8)</p> <p>Follow Terracon-required safety training and get authorization before work starts. (R3)</p> <p>Warm-Up for work before physical activity. (P3)</p>
3. Personal Protective Equipment <ul style="list-style-type: none"> • Evaluate and confirm all PPE expectations with crew. • Evaluate the need for snake boots or chaps based on risk. 	personal injury from overhead tree limbs, breaking trails through brush, slips and falls, rough terrain, airborne debris	hard hat, gloves, safety glasses, safety footwear, high visibility apparel, hydration and cooling items		✓		all site	<p>Based on injury history and risk, it is required that hard hats be carried on your person and worn during field surveys when site conditions present the risk of head injury. Such conditions include the presence of overhead hazards (e.g., tree limbs and branches) or conditions where slips, trips, or falls present a risk of head injury (e.g., working in streams with bedrock or rocky substrate, working in hilly or mountainous areas, working on or around steep creek banks). In the event such hazards are not expected to be present (e.g., open agricultural or vegetated field, marsh), hard hat use may not be necessary. A hard hat should still be carried on your person for unexpected site conditions. Using a Type 2 ventilated hard hat is approved when working in areas with uneven terrain where slips, trips, and falls, or events that could dislodge a standard hard hat could occur. (R6)</p> <p>Based on injury history and risk, it is Terracon’s expectation that safety glasses be worn at all times. Clear, shaded, transitioning, UV protection, and polarized are all available to protect the eyes. (R6)</p> <p>Based on injury history and risk, it is Terracon’s expectation that gloves be worn at all times. Gloves protect the hands in the events of slips and falls, or inadvertent contact with poisonous plants or animals. (R6)</p> <p>Foot protection may be adjusted with supervisor approval. If no dropped object hazards are present and the primary work is hiking, standard light-weight hiking boots may be substituted for heavier safety toed footwear. Work requiring hip-waders do not require safety toe protection. All safety footwear must have over the ankle support. If any dropped object hazards are present, safety toe protection must be in place during those activities. (R6)</p>

Specific Job Steps	Potential Hazards	Tools and Equipment	Risk Assessment			Employees Required	Hazard Control
			Low	Med	High		
4. General Vehicle Operations Off-Road	uneven terrain, rollovers, encountering unstable roadway <i>Mechanical, Motion</i>	logoed Terracon vehicles		✓		all site	<p>Wear your seat belt while vehicle is in motion and when parked adjacent to or on an active roadway. (R10)</p> <p>Ensure good housekeeping in vehicle cab. Secure loose items. (P1)</p> <p>For security, only Terracon vehicles with logos on door should be used. (R2)</p> <p>Turn on headlights, hazard flashers, strobes – see and be seen! Ensure all lights and windshields are cleared of dust and mud for increased visibility. (R7)</p> <p>Do not operate vehicle within 5’ of open trenches or slopes. Maintain clearance from road shoulders. (P4)</p> <p>Check questionable terrain on foot, before travel with vehicle. (P1)</p> <p>Use caution on unsealed (gravel/dirt) roads. Avoid driving through large pools of water which could hide deep holes and ruts. (P4)</p> <p>Vehicles can enter a road from an unmarked road at any time. Carefully monitor blind corners. (P4)</p>
5. Remote Field Survey Work.	plants, snakes / insects <i>Biological</i>	insect repellent, snake chaps		✓		all site	<p>Snakes - do not reach into or under objects without using caution. Use caution when handling equipment that has rested on the ground. If snakes are encountered, do not attempt to handle or move them. Monitor the snake’s whereabouts until it is away from the work site. Snake chaps must be used in areas where snakes are active. (P4)</p> <p>Insects - evaluate the need for treated clothing or repellants for mosquitoes and ticks. Personnel allergic to bee stings should notify supervision of the location of epinephrine medication. Watch for spiders when reaching into enclosed areas. (P4)</p> <p>Plants – evaluate the site for thorny plants (e.g., greenbrier or wild dewberries or blackberries) and poisonous plants (ivy, oak and sumac). Clear or flatten the site of vegetation as practical. Wear gloves and long sleeve shirts. Be aware that poisonous plant matter is an oil that can stay on clothing, tools or cut plants for long periods. (P4)</p>
	Domestic and Wild Animals <i>Biological</i>			✓		all site	<p>Types of animal hazard vary in specific regions of the country. Address animal risks local to the area in project specific pre-task planning. Terracon personnel must be aware of the potential for encountering wildlife such as deer, moose, elk on these project sites. Although less common mountain lions, bobcats, bears and feral hogs could also be encountered. Site workers should also be aware of domesticated animals like dogs and farm animals like cows, horses, or buffalo. (P4)</p> <p>Be aware of hunting season in the area. Pre-task planning must address worker safety in remote locations during any hunting season, including the use of orange high visibility apparel or safety vests. (P4)</p> <p>Drilling activities generate mechanical noises which will tend to drive off wildlife in the area. During quiet periods, making noise such as whistling, talking, breaking branches can help deter any wildlife in the area. (P4)</p>

Specific Job Steps	Potential Hazards	Tools and Equipment	Risk Assessment			Employees Required	Hazard Control
			Low	Med	High		
6. Remote Field Survey Work.	Adverse Weather <i>Environmental</i>	cellular service		✓		all site	<p>If weather conditions change during work and compromise the safety of the operation, the employees should find a safe location and stop work. Work shouldn't commence until deemed safe by the site supervisor. (P4)</p> <p>Reference SRP Gen22 Extreme Weather Considerations (R2)</p> <p>Lightning – stop work when lightning is visible or within 10 miles of the work area (P4).</p> <p>Rain / Floods – monitor work site, ground conditions and access for saturated soils. Evaluate whether work is occurring in or near a potential flood zone or low-lying area and move to higher elevation as appropriate. Never cross a flooded roadway (P4).</p> <p>Severe Storms (wind) – monitor work activities if they will be affected by high winds e.g., hoisting, work at height, working in forested areas where falling limbs or blowing debris present hazards) (P4).</p> <p>Use phone applications to set National Weather Service severe weather alerts (P4).</p>
	unsafe situations (terroristic threats, confrontation with landowner)			✓		all site	<p>In the event of any confrontation or challenge by a property owner or other 3rd party the crew should egress the site and notify the authorities, Terracon Project Manager and client representative. Reference Guidance Document for Landowner Encounters. (P2)</p>
	Temperature Extremes	drinking water, sunscreen			✓		all site

Notes
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Biological: Poisonous Plants/Flowers

First Aid steps for spider bites: Call Workcare 888.449.7787. Wash exposure area with soap and water to cleanse the area. Take acetaminophen like aspirin or antihistamines (Benadryl) to relieve the minor signs. Monitor the area for any changes or if symptoms worsen within 24 hours. Seek medical attention when symptoms of allergic reaction manifest.



Poison Ivy



Poison Oak



Poison Sumac



Primrose

These plants cause allergic contact dermatitis due to their sticky oil. You can get dermatitis by:

- Touching or brushing against any part of these plants, including the leaves, stems, flowers, berries, and roots, even if the plant is dead.
- Touching anything that has come in contact with these plants, such as clothing, personal protective equipment, tools, etc.




Symptoms: rashes, hives, mild and short-lived redness to swelling, blisters, fever, and/or headache. Call Workcare if you suspect you have contracted a poison plant dermatitis.

Seek Medical Attention immediately if you have: trouble breathing, widespread blister that ooze at a lot of fluid swelling of the face, mouth, neck, extremities and/or other body parts.

Prevention PPE: Wear long pants, long sleeves and closed toed shoes, vinyl or leather gloves, wash well or throw away anything that has contacted these plants.

Lastly **DO NOT BURN THESE PLANTS.** When they burn the oil attaches to the smoke particles, if inhaled this can hurt your lungs.






This plant causes a nondescript rash involving the hands, face, and neck. Characteristically the fingertips are affected as a result of picking off the dead flowers and leaves. This is just an irritant, so there are no serious issues with contacting this plant. Preventive measures for handling or working near this plant is to wear chemical resistant gloves.




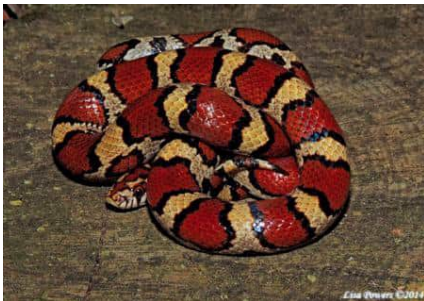

		
<p style="text-align: center;"><u>Dog Fennel</u></p> <p>The leaves contain low levels of the toxin tremetol. The leaves are very thin. This plant also puts off a foul odor.</p> <p>Symptoms: Sensitization may occur, increase in sweating, diarrhea, and this could cause dermatitis</p> <p>Preventative measure are to wear long sleeve shirts, long pants, and gloves when handling or working near this plant.</p>	<p style="text-align: center;"><u>Cow Parsnip</u></p> <p>This plant causes a non-allergic dermatitis. It is only poisonous if the plant sap which contains psoralen, is absorbed into the skin.</p> <p>Symptoms: It causes redness within 24 hours and blisters after that for several days; burning pain, which is short-lived and, reddish or brownish pigmentation to skin which is noticeable for months or years depending on exposure. If rash gets worse, a steroid cream may be prescribed.</p> <p>Preventative measure are to wear long sleeve shirts, long pants, and gloves when handling or working near this plant.</p>	<p style="text-align: center;"><u>Nettle</u></p> <p>The plant is not toxic but the whole plant is covered with stinging hairs which can cause skin lesions. The hairs lining the plant contain tiny vesicles with irritant juice, which is formic acid, histamine, serotonin and acetylcholine. This poison can cause burning and itching. Side effects can be dermatitis, blisters, or vesicles.</p> <p>Preventative measure are to wear long sleeve shirts, long pants, and gloves when handling or working near this plant.</p>

Biological: Snakes

Head Shape: Venomous snakes usually have a triangular or spade-shaped head. Be careful though, many non-venomous snakes, like water snakes flatten their head when threatened, this can confuse people to thinking that these snakes are venomous. Always wear snake chaps when working in wetlands, or heavy forested areas.






If you are bit by a venomous snake CALL 9-1-1 IMMEDIATELY. DO NOT: CUT A BITE WOUND, ATTEMPT TO SUCK OUT VENOM, APPLY TOURNIQUET, ICE OR WATER, GIVE THE PERSON CAFFINATED DRINK OR ANY OTHER MEDICATIONS.

				
<p><u>Copperhead</u></p> <p>These snakes are venomous. They have a coppery colored head, vertically oriented pupils and facial pits. Their back varies from copper-red to brown. Most have hour-glass-shaped heads, chestnut-colored bands across the back. Dark spots between the bands are common. Babies tend to have a yellowish-greenish tail tip. The belly of the snake is normally pale brown. These snakes are most of the time 2ft in length, but can reach 4 ft. They first instinct of copperheads are to hide when approached. These are found in most areas of the US. These snakes are normally non-aggressive snakes. If you provoke them they will vibrate their tail and strike. The bite is painful but not life-threatening.</p>	<p><u>Pigmy Rattlesnake</u></p> <p>These snakes are venomous. These snakes are gray to grayish brown black, with dark oval-shaped spots along the back and sides. Sometimes these snakes can have a reddish stripe running down the center of their back. These snakes have a dark gray to black trip runs from their eyes to the jaw. They also have a skinny tail and a very small rattle, which sounds like the buzzing of an insect. The belly is light colored with dark blotches. Baby snakes look like adults but have a yellow tipped tail. They are normally 1.5 ft. in length. These snakes are found in wooded areas. Bite is not as dangerous as other snakes.</p>	<p><u>Timber Rattlesnake</u></p> <p>These snakes are venomous. These snakes are stocky and noted for their rattle tip. Their dorsal color can be gray, yellow, brown, or green and normally are patterned with dark crossbands or chevrons that run along the back. The belly is light in color with black dots. There are some snakes that are completely black. These snakes can be 2.5-3.5 ft. in length. These snakes are found in wooded areas. They remain motionless and only rattle when harassed.</p>	<p><u>Western Cottonmouth</u></p> <p>These snakes are venomous. These snakes are normally dark brown to black. In some snakes dark crossbands on the back overlay a brown background. Babies are lighter in color than the adults, normally have a yellow or green tail tip. These snakes can reach 3 ft. in total length. They are found in swamps, wetlands, lakes, and floodplains during warm months. These snakes are normally found in Mid-Western US. <u>Crucial Information for Identification Difference between water snake and cottonmouths (commonly confused):</u> Cottonmouths almost always swim with their heads sticking out of water, water snakes swim with their heads at the water surface. Cottonmouths always vibrate their tails when they are aggravated, water snakes never vibrate their tails. Lastly, Cottonmouths always have their mouth open when approached, aka known as “open-mouth”, most of the time water snakes do not do this.</p>	<p><u>Water Snake</u></p> <p>These snakes are non-venomous. These snakes are variable in color, pattern, and shape. The back is usually brown, gray or black with reddish brown to light brown spots or bands along the body. The snakes belly are cream-colored to yellow with half-moon spots on each belly scale. These snakes are generally 3-4 ft. in length. These snakes are found in most areas of the US. When threatened, these snakes will expand their jaw and flatten their head to make it look larger. They will strike and bite if captured.</p>

				
<p><u>Common Wormsnake</u> These snakes are non-venomous. These snakes are small and slender and have a brown to grayish back with a light pink or white belly. The snakes have small heads that are pointed with tiny eyes and the end of their tails has a small harmless spine. These snakes generally range from 7 to 11 inches in length. These snakes are found in most areas of the US. These snakes do not try to bite when handled, although they will wriggle and release a pungent musk when disturbed. Additionally, they may try to poke you with their tail spine if disturbed.</p>	<p><u>Eastern Black King Snake</u> These snakes are non-venomous. These snakes are moderate to stocky black snakes with yellowish spots on the head and back. Their bellies are a black and white checkered pattern. Their head is not distinct from their neck. Their scales are smooth and shiny. These snakes can get up to 4 feet length, but most are smaller. These snakes are found in most areas of the US. Snakes may vibrate their tails, release musk, and bite if handled or if felt in danger.</p>	<p><u>North American Black Racer</u> These snakes are non-venomous. These snakes are long and slender with solid black to blue-gray back. Their bellies are also solid gray-black with a white patch on their hind and throat. They have a shiny appearance due to their unkeeled scales. Baby racers have gray to blue gray back mottled with dark grey, brown, or rust colored blotches down the center of their back. They are typically 3 feet long but can reach 6 feet in length. These snakes are found in most areas of the US. They usually respond to danger by rapidly fleeing, and when concerned they vibrate their tails and strike.</p>	<p><u>Eastern Milksnake</u> These snakes are non-venomous. These snakes are normally light brown to gray, and they have black-edged, red to reddish-brown blotches down the back. They have a black and white checkered pattern on their belly. These snakes generally range around 2 to 2.5 ft. in length, but they can get larger than 3 ft. These snakes are found in most areas of the US. they will vibrate their tails, release musk, strike and bite if harassed.</p>	<p><u>Common Gartersnake</u> These snakes are non-venomous. They are usually slender to moderately-stocky that vary in appearance. The back of most of the snakes are brown to black. Their distinguishing characteristic is 1 central and 2 lateral cream, yellowish or greenish stripes running the length of their bodies. Their bellies are usually pale yellow to greenish, often with black spots on the border of each belly scale. They also have a dark marking on the lip scales. These snakes are usually less than 2 ft. in length, though they can be longer than 40 inches. These snakes are found in most areas of the US. Most of these snakes don't bite you when threatened but they do release a pungent musk when handled. The larger snakes may attempt to bite.</p>






Biological: Spiders

First Aid steps for spider bites: Call Workcare 888.449.7787. Identify what type of spider bit you. If you have killed it after it bit, you keep it and look at it. If unsure take the dead spider, call 9-1-1 or go to the nearest emergency room. Wash the bite area with soap and water to cleanse the bite area. Cold compress should be applied over the affected area. If the bite is on an extremity, try to elevate it. Take acetaminophen like aspirin or antihistamines (Benadryl) to relieve the minor signs. Monitor the bite for any changes or if symptoms worsen within 24 hours. Seek medical attention when symptoms of allergic reaction manifest.

				
<p><u>Purseweb Spider</u> These spiders are non-venomous. These spiders are medium-sized dark-colored spiders characterized by their oversized chelicerae. These spiders have a low stance and sprawling legs, but in addition to their larger chelicerae they are shiny black, 8 legs and 2 main body segments. They are about 1 ¼" long. They look similar to the wolf spider.</p>	<p><u>Brown Recluse</u> These spiders are venomous. These spiders are tan, long legged spider with a dark pattern on the cephalothorax that resembles a violin or a fiddle. These spiders have 8 legs and 2 body parts. They are the size of ½" long. This spider can be confused with the Yellow Sac Spider, the difference is the yellow sac spider is lighter in color and lacks the fiddle-shaped marking. How do you know if you have been bitten by this spider? Mild stinging sensation and red mark on the area of the bite, painful swelling within the next 8 hours. More symptoms: Slight fever, rashes, nausea and restlessness.</p>	<p><u>Cellar Spiders</u> These spiders are non-venomous. These spiders have long and skinny legs with small bodies. They are usually tan or gray in color. These spiders have 8 legs, 2 body parts, and fang-like mouthparts called chelicerae. These spiders are normally ¼" or less in size. These spiders are not known for biting people.</p>	<p><u>American House Spider</u> These spiders are non-venomous. These spiders generally have 8 eyes, 2 body parts, and 8 legs. Generally, their abdomens are comparatively larger and more spherical than orb-weavers. These spiders vary in color from black to brown. They normally have dark brown to black spots on their backs. They can get up to 1 cm in length.</p>	<p><u>Black Widows</u> These spiders are venomous. They have shiny black bodies and bright red markings. Males have a more vibrant pattern on their abdomen than females, with many red and white spots. Male black widows are rare and are not known to bite humans. These spiders can be up to ½' in length. In the photos above, the male is in the upper photo, the female in the lower.</p>

Biological: Stinging Insects

First Aid steps for stinging insects: Call Workcare 888.449.7787. Take the stingers out, by scraping the area with the edge of a credit card or a straight edge object to remove it. **DO NOT PINCH THE STIGER OR USE TWEEZERS, THAT CAN CAUSE MORE VENOM TO BE INJECTED INTO YOU.** Call 9-1-1 if you have trouble breathing, feelings of faintness or dizziness, hives, a swollen tongue, or history of severe allergic reaction to stings. Next, put ice on the area, to control swelling. Elevate your extremity if stung on the arm or leg. For pain, take over the counter medication, like acetaminophen and for itchiness take an antihistamine.

				
<p><u>American Bumble Bee</u> These bees are black in color and have 1 to 3 striped of yellow that appear on the abdominal segments. They can be .39in to .91 in in length. These bees are not normally aggressive, sting when disturbed.</p>	<p><u>Bald Faced Hornet</u> These hornets have a rather stout body and their markings are more white than yellow. They are mainly black from head, thorax, and abdomen and they have a pattern of white bands. They can be between 12 and 15mm in length. They are very aggressive, if disturbed or near their nest, they will sting repeatedly.</p>	<p><u>Black and Yellow Mud Dauber</u> This stinging insect is black and yellow and they have a needle-thin waist, yellow and black legs, curvy antennae and they have a vibrant yellow throughout their body. This is a less aggressive bug. If disrupted but the stinger does not dis-attach from this bug. They can be 20mm to 25 mm in length.</p>	<p><u>Blue Winged Wasp</u> This bug has blue-black wings and has an orange abdomen with yellow spots close to its waist. This bug is not considered aggressive but will sting you if it is disturbed. It can be 13mm to 25mm in length.</p>	<p><u>Yellow Jackets</u> These stinging insects are yellow and black in color. They are extremely aggressive and will sting repeatedly their stinger as well stays attached. They can be 12mm to 16mm in length.</p>

Task or Job:	Chemical Handling and Use	Document No:	SRP Gen46
Analysis Conducted By:	Terracon Safety	Revision Mod:	0724

Task Requirements
Prerequisites – TU Course Hazardous Communication Training, TU Course DOT Hazmat for shipping and receiving chemicals
Personal Protective Equipment (PPE) – Eye Protection (glasses and face shield), Safety Footwear, Gloves (Cut 3, Impact 1 + Chemical), Chemical Protective Coveralls, Hi Vis Shirt/Vest (min Class II)
Job Specific Resources – SDSs, Eye and Shower Stations

Specific Job Steps	Potential Hazards	Tools and Equipment	Risk Assessment			Employees Required	Hazard Control
			Low	Med	High		
1. Pre-Task Planning.	employees not focused on task unqualified Personnel	SDS	✓			all site	<p>Start every job task with pre-task planning and update the plan when personnel or conditions change. (R2)</p> <p>Follow Terracon-required safety training and get authorization before receiving, shipping and handling chemicals. (R3)</p> <p>All Terracon employees who handle chemicals are trained, fit tested and medically certified for respirator use. (R3)</p>
2. Chemicals (General)	Quality		✓			all site	<p>Maintain inventory records for chemicals received, shipped, used and stored.</p> <p>Clean equipment immediately to prevent damage.</p> <p>Document weights, volume and quantities to ensure the quality of the work.</p> <p>Verify all chemical containers are labeled with the proper shipping name.</p>
	chemical exposure (solid, liquid, vapor, gas, mist)	SDS, air purifying respirator			✓	employees handling chemicals	<p>Ref applicable Safety Data Sheets required for all chemicals.</p> <p>Chemical resistant + cut 3 gloves, boots and aprons. Always evaluate exposure by reviewing manufacturer recommendations and SDS for selecting the correct PPE for use.</p> <p>Use an Air Purifying Respirator (APR) for handling muriatic acid.</p> <p>Only work in well-ventilated areas. Use fume hood with sufficient ventilation air flow for or any chemical with the potential for off gassing. Verify fume hood is vented away from work area. If the hood is vented outdoors, verify the venting tube condition and are constructed away from window or door openings.</p> <p>Ensure chemical resistant PPE is available.</p> <p>Ensure a clean water source for rinsing / flushing chemicals is on site. Wash slowly and carefully to reduce splashing and waste.</p> <p>Flush all equipment immediately after use.</p> <p>No Smoking, no open flame or oven use near storage and testing area.</p>

Specific Job Steps	Potential Hazards	Tools and Equipment	Risk Assessment			Employees Required	Hazard Control
			Low	Med	High		
3. Chemicals (General, Continued)	chemical reactions	instruction sheets			✓	employees handling chemicals	<p>Always mix acid into water supply to reduce reaction strength.</p> <p>Ensure proper labeling of all chemical containers (permanent and temporary).</p> <p>STOP WORK and contact your supervisor if there are ANY concerns. (P3)</p> <p>Keep covers on containers when not in use.</p> <p>Ensure proper mix to maintain quality and reduce waste.</p>
	environmental releases	spill control and neutralization products		✓		employees handling chemicals	<p>Adequate spill control and neutralization products near testing area.</p> <p>NEVER discharge chemicals directly into water sources such as sinks, drains, or sewer system—Consult your supervisor for disposal directions.</p>
4. Chemical Use	fire, chemical burns, inhalation						<p>Only use Terracon approved chemicals for laboratory testing of materials.</p> <p>Never use gasoline as a cleaning product for cleaning tools and equipment.</p> <p>Only trained and approved Terracon employees can handle and use chemicals.</p> <p>Only operate fume hoods if you are trained in operation and use.</p> <p>Never allow your head to enter the plane of the hood opening.</p> <p>Inspect gloves and other personal protective equipment before use. (R6)</p>

Specific Job Steps	Potential Hazards	Tools and Equipment	Risk Assessment			Employees Required	Hazard Control
			Low	Med	High		
5. Chemical Storage	fire, pressure, combustion, gravity, chemical					all site	<p>Store containers away from heat and sources of ignition. Store containers away from machinery and mobile equipment. (P4)</p> <p>Label all chemical containers with the full chemical name(s) of the contents and hazards. Return all chemicals to their assigned storage areas at the end of each workday. Properly label all waste containers.</p> <p>Never store incompatible chemicals together.</p> <p>Store liquids in unbreakable packaging located inside a form of secondary containment, such as a chemical storage cabinet.</p> <p>Never place cardboard inside of a flammable cabinet.</p> <p>Verify storage / cabinet is rated for weight of materials stored.</p> <p>All flammable cabinets must meet NFPA and must be vented with a self-closing door.</p> <p>Use a form of secondary containment when the primary container exceeds 55 gallons or when the total of multiple containers exceeds 100 gallons. Use Clear labeling and secure the secondary containment method to prevent unauthorized access.</p> <p>Not more than 120 gallons of Category 1, 2, 3 and 4 flammable liquids may be stored in a storage cabinet. Of this total, not more than 60 gallons may be of Category 1, 2 and 3 flammable liquids.</p> <p>No more than 25 gallons of flammable liquids shall be stored in a room outside of an approved storage cabinet.</p> <p>A constructed wooden storage cabinet must be approved by Terracon Safety.</p> <p>Fire extinguisher must be within 10' of a flammable storage area.</p> <p>Portable tanks shall not be nearer than 20 feet from any building.</p> <p>Oxygen and Acet</p> <p>All used oil storage requires proper signage. Signs must be visible and indicate used oil and No Smoking.</p> <p>Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease), a minimum distance of 20 feet (6.1 m) or by a noncombustible barrier at least 5 feet (1.5 m) high having a fire-resistance rating of at least one-half hour.</p> <p>Oxygen and Acetylene cylinders must have the required postings indicating "FLAMMABLES, OXYGEN, ACETYLENE, and EMPTY BOTTLES".</p>



**Safe Right Procedure
Chemical Handling and Use**

Specific Job Steps	Potential Hazards	Tools and Equipment	Risk Assessment			Employees Required	Hazard Control
			Low	Med	High		
6. Chemicals (Shipping and Receiving)	damaged containers, lost articles, improper BOL					all site	<p>Ref SRP LAB 01.002 Sample Handling, Receiving, Storage, and Disposal Terracon is not authorized to ship hazardous materials through Fed Ex, USPS or UPS.</p> <p>Confirm all employees who ship or receive chemicals have DOT HAZMAT training.</p> <p>Never accept or sign for a Hazmat package that was not expected or purchased by the office.</p> <p>Consult applicable regulations for hazardous materials before shipping. (R7)</p> <p>Lab staff packaging, shipping or receiving hazardous materials must have DOT Hazmat training (R3)</p> <p>Many samples arrive with broken glass or other sharp objects. Visually observe samples before handling and be alert for sharp objects. (R1, P6)</p>
7. Housekeeping.	chemical exposure, use of damaged tool, slips and trips	"OUT OF SERVICE" tag		✓		all site	<p>Inspect tools and equipment before, during and after use. If defective, repair, discard, or tag with "Do Not Use" and remove from service. Tell your supervisor. (R8)</p> <p>Ensure work area is free of trip hazards.</p> <p>Proper maintenance and repair of tools.</p> <p>Dispose of all trash and PPE as hazardous waste.</p> <p>Store chemicals in an approved container and in an designed area with required postings.</p> <p>Provide employees with wash basin and wipes for personal hygiene when exiting work area.</p>

Notes
1. Policy documents, Safe Right Procedures, Quality Procedures, client / site specific safety plans and safety data sheets (SDS) provide additional guidance.
2. No changes to the procedures or hazard controls are permitted without the approval of a Terracon supervisor. Terracon requires Pre-Task Planning in order to prevent incidents and address site specific hazards.
3. ALL EMPLOYEES HAVE STOP WORK AUTHORITY. Stop work if you feel unsafe. Tell a supervisor and work together to fix the problem.
4. This document contains information concerning Terracon strategies, personnel and systems. We regard such information as confidential and request that it is not disclosed in whole or in part to any third party without first seeking our consent.

Task or Job:	Extinguishing Fires	Document No:	SRP ER 01
Analysis Conducted By:	Terracon Safety	Revision Mod:	0424

Task Requirements
Prerequisites – TU Portable Fire Extinguisher Safety
Personal Protective Equipment (PPE) – Eye Protection, Safety Footwear, Gloves (Cut 3, Impact 1), Hard Hat, Hi Vis Apparel (min Class II)
Job Specific Resources – incident report, fire extinguisher

Specific Job Steps	Potential Hazards	Tools and Equipment	Risk Assessment			Employees Required	Hazard Control
			Low	Med	High		
1. Immediately stop work and shut down nearby equipment.			✓			all site	
2. Notify all personnel in the area. Designate one person to summon help and sound alarms.		phone, radio	✓			all site	Alert all site personnel of incident using established site procedures. Send for professional assistance as soon as possible to reduce loss.
3. If situation puts employees at risk, follow site evacuation procedures.	personal injury		✓			all site	Employees should only attempt to fight fire if they can do so without putting themselves at risk of injury.
4. If situation allows employees to fight fire without putting themselves at risk, select the appropriate fire extinguisher.	fire	fire extinguisher	✓			1	
5. Release safety and test the extinguisher.	equipment non-operational		✓			1	A very short test of extinguisher to ensure operation.
6. Approach the fire from an upwind direction. Ensure a smoke free escape is available.	smoke inhalation				✓	1	Use upwind approach.
7. Activate fire extinguisher and direct towards base of fire. Sweep extinguisher stream back and forth horizontally at base of fire.					✓	1	
8. Continue until fire is out or extinguisher is spent.	fire				✓	1	Evacuate area if extinguisher content cannot handle the size of the fire.
9. Monitor the scene to ensure the fire is contained.	flare-up	fire extinguisher		✓		all site	Monitor the area until help arrives to ensure fire does not flare-up.

Specific Job Steps	Potential Hazards	Tools and Equipment	Risk Assessment			Employees Required	Hazard Control
			Low	Med	High		
10. Barricade area until hazards are eliminated and investigation is complete.	injury to bystanders	barricades, tape		✓		all site	Delineate area with CAUTION tape and post guard to prevent unauthorized entry.
11. House keeping	slips and trips			✓		all site	Inspect tools and equipment before, during and after use. If defective, repair, discard, or tag with "Do Not Use" and remove from service. Tell your supervisor. (R8)
12. Complete incident report form and submit to management. Notify client representative.		incident report	✓			1	Prevention of future incidents.

Notes
1. Plans & procedures as well as standards, codes and safety data sheets (SDS) may all provide additional information and guidance.
2. No changes to the work processes are permitted without the approval of a Terracon supervisor and Terracon Safety. Site specific hazard modifications may be added in the table below. Terracon encourages employees to make field modifications in order to prevent incidents and keep the workplace free of hazards.
3. ALL EMPLOYEES HAVE STOP WORK AUTHORITY. Stop work if you feel unsafe. Tell a supervisor and work together to fix the problem.
4. This document contains information concerning Terracon strategies, personnel and systems. We regard such information as confidential and request that it is not disclosed in whole or in part to any third party without first seeking our consent.

Task or Job:	Hearing Protection	Document No:	SRP PPE 06	Analysis Conducted By:	Terracon Safety	Revision Mod:	0122
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Terracon Core Rule R6 states employees must, “Wear PPE as required by project, task, and/or work environment. Inspect before and during use, repairing or discarding and replacing, if defective.” With respect to hearing protection, there are many different types of ear plugs and you don’t want to use the wrong one for your job task. Traditional ‘ear plugs’ are not always the right choice for hearing protection. Pre-task planning, task specific safe right procedures and this guide should help identify what type of hearing protection is appropriate for your task.

Hearing protection used in Terracon operations is required to meet the requirements of the American National Standards Inc. (ANSI) standard and the Acoustical Society of America standard ANSI/ASA S12.68-2007. This standard specifies three methods, in ascending order of complexity of use and potential accuracy, for the estimation of the sound pressure levels that are effective when a hearing protector is worn. The ANSI/ASA will be marked on all hearing protection packages as an NRR (Noise Reduction Rating) that identifies the noise level protection the selected hearing protection provides.

					
<p><u>Foam Ear Plugs</u> These ear plugs are designed specifically for protecting the ear from continuous exposure to loud noises.</p>	<p><u>Wax Balls</u> These completely seal off the ear canal so you get the sensation of being closed off from the outside world.</p>	<p><u>Ear Muffs</u> The earmuffs cover the ear completely, giving full hearing protection.</p>	<p><u>Silicon Plugs</u> It only covers the auditory canal with these earplugs, you may not insert them into your ear</p>	<p><u>Universal Ear Plugs</u> These completely seal off the auditory canal, but the layer system prevents a sense of being shut off from the outside world. The filter system enables users to determine the muffling themselves</p>	<p><u>PVC Ear Plugs</u> These ear plugs are stiffer, but then they soften from body heat resulting in long term comfort.</p>

Most ear plugs have the option to either have cords or to be cordless. Do not wash your ear plugs unless the ear plugs are reusable. Most of the time ear plugs are disposable - single use only. Remember to properly insert your ear plugs in. If your using the single use foam ear plugs, roll the ear piece into a thin snake shape then lift open your ear with one hand and place the ear piece into your ear and hold it for 15 seconds as you feel the ear piece expand and fill the ear canal. After it expands you can let it go. For the Silicon Plugs you place the ear piece in your ear until it fits snugly.

Notes
1. Policy documents, Safe Right Procedures, Quality Procedures, client / site specific safety plans and safety data sheets (SDS) provide additional guidance.
2. No changes to the procedures or hazard controls are permitted without the approval of a Terracon supervisor. Terracon requires Pre-Task Planning in order to prevent incidents and address site specific hazards.
3. ALL EMPLOYEES HAVE STOP WORK AUTHORITY. Stop work if you feel unsafe. Tell a supervisor and work together to fix the problem.
4. This document contains information concerning Terracon strategies, personnel and systems. We regard such information as confidential and request that it is not disclosed in whole or in part to any third party without first seeking our consent.

Task or Job:	Night Work	Document No:	SRP Gen 20
Analysis Conducted By:	Terracon Safety	Revision Mod:	0424

Task Requirements
Prerequisites – Supervisor approval
Personal Protective Equipment (PPE) – Hard Hat, Eye Protection, Safety Footwear, Gloves (General Purpose), HiVis Apparel (min Class III)
Job Specific Resources – lighting, light meter, flashlights, vehicle strobes, cap mounted head lamp, glow sticks

Job Steps	Potential Hazards	Tools and Equipment	Risk Assessment			Employees Required	Hazard Control
			Low	Med	High		
1. Pre-task planning at the office.	training, qualification		✓			1	When assigning personnel, Follow Terracon-required safety training and get authorization before work starts. (R2) Many clients have rules regarding light colors, PPE usage and reflective striping requirements. Consult with your client before implementing any of these general precautions. (R2)
2. Pre-task planning at the site.	employees not focused on task			✓		all site	Clearly communicate your work to site foremen and other personnel in work area. Make sure there are no conflicts with operations. (R2)
3. Ensure all work area lighting is adequate.	slips, trips and falls. uneven or unstable ground for equipment poor visibility	light plant (or equivalent), flashlights, light meter			✓	all site	Lighting of minimum of 5 foot candles. (R7) Flashlights or lanterns available for site use. (P4)
4. Moving equipment.	moving equipment (site and 3 rd party),	high visibility vests, vehicle strobes		✓		all site	High visibility clothing on all employees. (R6) Spotter use flashlights with traffic wands on vehicle movements. (P4) Ensure all vehicle lights are operational and clean. (P1)
5. Work operations.	poor visibility and communication	hi vis gloves		✓		all site	Use the “buddy system” for all tasks. (P4) Hi Vis gloves to monitor hand positions. (R6)
6. Other general considerations.	see and be seen	see hazard control column & Job Specific Resource box above right		✓		all site	Reflective tape on hard hats. (P4) Hard hat cap lights. (P4) ‘Glow’ sticks on personnel. (P4)
7. Housekeeping. Clean and inspect tool after use.	use of damaged tool, slips and trips	“OUT OF SERVICE” tag		✓		all site	Return tools to storage area after use. (P4) Ensure work area is free of trip hazards. (P4) Inspect tools and equipment before, during and after use. If defective, repair, discard, or tag with "Do Not Use" and remove from service. Tell your supervisor. (R8)

Notes
1. Policy documents, Safe Right Procedures, Quality Procedures, client / site specific safety plans and safety data sheets (SDS) provide additional guidance.
2. No changes to the procedures or hazard controls are permitted without the approval of a Terracon supervisor. Terracon requires Pre-Task Planning in order to prevent incidents and address site specific hazards.
3. ALL EMPLOYEES HAVE STOP WORK AUTHORITY. Stop work if you feel unsafe. Tell a supervisor and work together to fix the problem.
4. This document contains information concerning Terracon strategies, personnel and systems. We regard such information as confidential and request that it is not disclosed in whole or in part to any third party without first seeking our consent.



Safe Right Procedure Extreme Weather Considerations

Task or Job:	Extreme Weather Considerations	Document No:	SRP Gen 22
Analysis Conducted By:	Terracon Safety	Revision Mod:	0125

Task Requirements
Prerequisites – none
Personal Protective Equipment (PPE) – Hard Hat, Eye Protection, Safety Footwear, Gloves (General Purpose Insulated/Non Insulated), HiVis Apparel (min Class II), Ice Cleats
Job Specific Resources – weather app

Specific Job Steps	Potential Hazards	Tools and Equipment	Risk Assessment			Employees Required	Hazard Control
			Low	Med	High		
<p>PLEASE NOTE: This SRP is a guide that establishes the general operational and shut down requirements for Terracon operations in severe weather. Every site and situation is different and may require a more stringent shut down limit. Only the onsite crew can evaluate conditions and shut down work if necessary. When there is a question – STOP WORK, contact your supervisor and err on the side of caution. Clients may have different shut down requirements. When there is a conflict, the more stringent rule will apply.</p>							
1. Walk the job through.	employees not focused on task		✓			all site	Start every job task with pre-task planning and update the plan when personnel or conditions change. (R2)
2. Monitoring the weather.	changing conditions	cell, internet		✓		all site	If there is a question of extreme weather, monitor the local conditions by gaining internet access and logging on www.theweatherchannel.com WeatherBug App or other approved weather monitoring application. If there is no site access, contact your supervisor or client representative and ask that they monitor the local conditions. (P4)
3. Shut down levels - visibility	fog, heavy rain, snow				✓	all site	If trench, fall or overhead hazards are present i.e., cranes, concrete pump booms, drill rig masts and the crew cannot see the hazard or maintain contact of all crew members on site, shut down is required. (P4)
4. Shut down levels – temperature extremes	heat, cold	heat – water, ice cold – warming station			✓	all site	Heat – there is no maximum work temperature. Reference heat stress policies for monitoring and PPE requirements. (P6) Cold – temperatures below -20° F require shut down due to the potential of steel becoming brittle, freezing fluids and the immediate freezing of exposed skin. (P4)
5. Shut down levels – high winds	blowing debris, control of suspended loads	goggles / spoggles			✓	all site	Crew should consider the use of goggles / spoggles when the wind generates a tremendous amount of blowing debris. (P4) Tornado / Hurricane Warnings require immediate shut down and crew egress to safe location. (P4) General Operations - sustained winds of greater than 25 mph and / or gusts or 50 mph require immediate site shut down and evaluation by a supervisor to proceed. (P4) Hoisting Operations (cranes) - sustained winds of greater than 20 mph and / or gusts or 30 mph require immediate site shut down. (P4)



Safe Right Procedure Extreme Weather Considerations

Specific Job Steps	Potential Hazards	Tools and Equipment	Risk Assessment			Employees Required	Hazard Control
			Low	Med	High		
<p>PLEASE NOTE: This SRP is a guide that establishes the general operational and shut down requirements for Terracon operations. Every site and situation is different and may require a more stringent shut down limit. Only the onsite crew can evaluate conditions and shut down work if necessary. When there is a question – STOP WORK, contact your supervisor and err on the side of caution. Clients may have different shut down requirements. When there is a conflict, the more stringent rule will apply.</p>							
6. Shut down levels - lightning	electrocution				✓	all site	Visible lightning requires immediate shutdown. Work may not resume until the area is lightning free for 30 minutes. (P4) If the crew can hear thunder, extreme caution should be taken in continuing operations. (P4)
7. Shut down levels - ice	mast failure, dropping ice				✓	all site	Ice build-up of greater than 1/8 inch on overhead equipment requires immediate shut down. (P4) Wear ice cleats in icy conditions. (P4)
8. The following weather conditions require careful evaluation, but not necessarily shut down: Heavy Rains	flash floods, unstable ground, site access				✓	all site	Continuous monitoring of changing conditions. (P4) Never attempt to drive across flooded roads. (P4)
9. The following weather conditions require careful evaluation, but not necessarily shut down: Snow storms / blizzards	site access, driving conditions, slips and trips	tire chains, ice melt, ice cleats			✓	all site	Continuous monitoring of changing conditions. (P4) Be aware of areas left untreated. Always wear ice cleats. (R6) Always take short steps, shuffle your feet, point toes slightly outward, balance with your arms and look down. (P1) Avoid carrying materials. Always use a Terracart or work vehicle to move tooling or materials. (P4)
10. In the event the site shut down is required, the crew should secure the site and equipment to the best of their ability, then take shelter or egress site based on weather conditions.	unsecured equipment				✓	all site	Secure the site and take shelter or egress site based on local conditions. (P4)
11. Housekeeping. Clean, inspect and return tools to storage area after use.	use of damaged tool, slips and trips	“OUT OF SERVICE” tag			✓	all site	Ensure work area is free of trip hazards. (P4) Inspect tools and equipment before, during and after use. If defective, repair, discard, or tag with "Do Not Use" and remove from service. Tell your supervisor. (R8)

Notes
1. Policy documents, Safe Right Procedures, Quality Procedures, client / site specific safety plans and safety data sheets (SDS) provide additional guidance.
2. No changes to the procedures or hazard controls are permitted without the approval of a Terracon supervisor. Terracon requires Pre-Task Planning in order to prevent incidents and address site specific hazards.
3. ALL EMPLOYEES HAVE STOP WORK AUTHORITY. Stop work if you feel unsafe. Tell a supervisor and work together to fix the problem.
4. This document contains information concerning Terracon strategies, personnel and systems. We regard such information as confidential and request that it is not disclosed in whole or in part to any third party without first seeking our consent.

Task or Job:	Working Around Active Construction Sites	Document No:	SRP GEN 42
Analysis Conducted By:	Terracon Safety	Revision Mod Date:	0424

Task Requirements
Prerequisites – completed TU Service Line curriculum
Personal Protective Equipment (PPE) – Eye Protection, Safety Footwear, Gloves (Cut 3, Impact 1), Hard Hat, Hi Vis Apparel (min Class II)
Job Specific Resources – none

Specific Job Steps	Potential Hazards	Tools and Equipment	Risk Assessment			Employees Required	Hazard Control
			Low	Med	High		
1. Pre-task planning at the office.	Training, Qualification, Proper Vehicle		✓			1	When assigning personnel, Follow Terracon-required safety training and get authorization before work starts. (R3) When assigning vehicles, consideration should be given to the existing or planned road layout and conditions on site to ensure that the selected vehicles can operate within their design specifications and capabilities; the abilities and qualifications of the assigned drivers; and the design specifications and capabilities of the selected vehicles for load capacity and project expectations (R2).
2. Once on site, check in with the site contact to prepare for work.	struck by equipment <i>Motion</i>			✓		1	Clearly communicate daily operations to site foremen and other personnel in work area. Make sure there are no conflicts with operations. (R2) If possible, ask the site contact to stop all work in the areas you are accessing. (P4)
3. Pre-task planning at the site.	employees not focused on task		✓			all site	Start every job task with pre-task planning and update the plan when personnel or conditions change. (R2) Follow Terracon-required safety training and get authorization before work starts. (R3) Warm-Up for work before physical activity. (P3)
4. General Vehicle Operations on Construction Sites	uneven terrain, rollovers, encountering unstable roadway <i>Mechanical, Motion</i>			✓		1	Wear your seat belt while vehicle is in motion and when parked adjacent to or on an active roadway. (R10) Ensure good housekeeping in vehicle cab. Secure loose items. (P1) Turn on headlights, hazard flashers, strobes – see and be seen! Ensure all lights and windshields are cleared of dust and mud for increased visibility. (R7) Do not operate vehicle within 5’ of open trenches or slopes. Maintain clearance from road shoulders. (P4) Check questionable terrain on foot, before travel with vehicle. (P1) Use caution on unsealed (gravel/dirt) roads. Avoid driving through large pools of water which could hide deep holes and ruts. (P4) Heavy equipment can enter a road from an unmarked road at any time. Carefully monitor blind corners. (P4)

Specific Job Steps	Potential Hazards	Tools and Equipment	Risk Assessment			Employees Required	Hazard Control
			Low	Med	High		
5. Sharing Roadway On-Site with Heavy Equipment	being struck by large equipment <i>Mechanical, Motion</i>			✓		1	Get operator's attention, make yourself noticed, make eye contact with operator, and communicate with hand gestures. (P4) Does the site have 2-way radio communication available? Borrow a radio if available. (P4) Large equipment always gets the right of way. Never attempt to cut in front of a piece of heavy equipment. (P4) Loaded heavy equipment operators may drive in reverse when descending hills causing an increased in blind spot. (P4)
6. Parking On-Site with Operating Heavy Equipment	heavy equipment being involved in an accident with you <i>Mechanical, Motion</i>	parking cone		✓		1	Never park in the right of ways. Park only in areas where equipment is not traveling. (P4) Operate and park vehicle to prevent the need for backing as a first move. If you <i>must</i> back use a spotter. If working alone, use Terracon-approved self-spotting techniques. (R11) Never park behind heavy machinery, avoid blind spots, park only in safe, designated parking areas, and walk to work area. (P4) Perform a 360° walkaround as your final action before moving any motor vehicle. Use a safety awareness cone or steering wheel cover when parked on Terracon business. (R12)
7. Performing Work (Pedestrian) While Heavy Equipment is Active	being struck or injured by equipment <i>Mechanical, Motion</i>			✓		1	Avoid having your back to traffic or heavy equipment. Position yourself where you can be seen e.g. operators cab side, front side. Do not work directly behind equipment. Practice good situational awareness. (P4) Get operator's attention, make eye contact with operator, and communicate with hand gestures. Remember that if you cannot see the equipment operator, the equipment operator cannot see you. (P4) If possible, ask for equipment to stop operation while heavy machinery is near your work/test area. (R2 / P4) Monitor back-up alarms or nearby equipment. Always track and keep clear of equipment moving in work areas. (R9) See and be seen. Always wear min Class II HiVis. (R6)

Specific Job Steps	Potential Hazards	Tools and Equipment	Risk Assessment			Employees Required	Hazard Control
			Low	Med	High		
8. Performing Work (Pedestrian) While Heavy Equipment is Active (continued)	being struck or injured by equipment <i>Mechanical, Motion</i>			✓		1	<p>Avoid having your back to traffic or heavy equipment. Position yourself where you can be seen e.g. operators cab side, front side. Do not work directly behind equipment. Practice good situational awareness. Monitor back-up alarms or nearby equipment. (R9)</p> <p>In high traffic areas delineate work and parking areas using cones and tape. When possible, position support equipment between the traffic and the work area. While moving equipment, control traffic while maneuvering to the site. (R12 / P4)</p> <p>If night work or low light work is anticipated, carry a flashlight or glow stick for additional visibility. For extended periods in one area consider traffic control flashers and warning signs. (P4)</p> <p>Employees must not be distracted by mobile devices or other equipment. If your task requires the use of a mobile device, equipment, camera or even note taking, find a safe place to perform your task and stand still. Don't walk and use a device. (R2)</p>
9. Adverse Weather	injury, equipment damage, <i>Motion</i>			✓		1	<p>Be aware that heavy equipment can lose traction and stability during changing weather conditions e.g. snow, ice, rain. Give extra clearance in extreme weather conditions. (R2)</p> <p>Ensure your vehicle has the capability to handle the weather conditions. Be aware the stopping distances are increased and visibility decreased. (R2)</p>

Notes
1. Work Procedures, Quality Procedures, client / site specific safety plans, and safety data sheets (SDS) may provide additional safety guidance.
2. No changes to the job steps or hazard controls are permitted without the approval of a Terracon supervisor. Start every job task with pre-task planning and update the plan when personnel or conditions change.
3. ALL EMPLOYEES HAVE STOP WORK AUTHORITY. Stop work if you feel unsafe. Tell a supervisor and work together to fix the problem.
4. This document is specific to Terracon safety processes and systems. We regard such information as confidential and request it not be distributed to any third party without first seeking our consent.



CONFINED SPACE OPERATIONS POLICY

Quality Control

Document Owner		Position		Signature	
Change	Page	Mod.	Authorization		
			Name	Signature	Date
<i>original</i>	<i>all</i>	<i>0316</i>	<i>J. Wright</i>	<i>Jaw & Wright</i>	<i>03-16</i>
<i>review</i>	<i>all</i>	<i>0318</i>	<i>J. Wright</i>	<i>Jaw & Wright</i>	<i>03-18</i>
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<i>review-logo</i>	<i>all</i>	<i>0122</i>	<i>J. Wright</i>	<i>Jaw & Wright</i>	<i>01-22</i>

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Attachments

Confined Space Entry Permit

1.0 Scope

Terracon policy documents meet the needs of employees, clients, and OSHA by laying out safe work expectations; itemizing tools, resources, and methods to be used to meet them; and clarifying accountabilities associated with failure to do so.

All contractors and subcontractors engaged by Terracon must to comply with the requirements of this policy (at a minimum).

Clients may have their own policies, procedures, and forms. Where it is a requirement that client procedures and forms are used, it will be in addition to those required by this policy. This is a minimum standard which may be raised but never lowered by client policy.

Note that though policies often include crucial technical content, they *may not* replace required training.

2.0 Policy

This policy is intended to reduce the likelihood of incident or injury as a result of work in and around confined spaces. It aligns with Terracon's Safety Rules, *Our Rules To Live By*. Specific to confined space operations, the following Rules and Practices apply:

- R2:** Start every job task with pre-task planning and update the plan when personnel or conditions change.
- R3:** Follow Terracon-required safety training and get authorization before work starts.
- R5:** Speak up right away and redirect a co-worker performing an unsafe act to safe work practices.
- R6:** Wear PPE as required by project, task, and/or work environment. Inspect before and during use, repairing or discarding and replacing, if defective.
- R7:** Use Terracon-approved tools and equipment according to manufacturer's instructions, and never modify or override safety devices.
- R8:** Inspect tools and equipment before and during use. If defective, repair, discard, or tag with "Do Not Use" and remove from service. Tell a supervisor.
- R14:** Call WorkCare if injured and tell a supervisor right away.
- P1:** Take the time you need to do the job safely.
- P3:** Stop work if you feel unsafe. Tell a supervisor and work together to fix the problem.
- P4:** Manage controllable hazards and unsafe conditions in your work area. Report hazards you cannot control to a supervisor.

3.0 Definitions

Attendant - employee stationed outside the permit space who is trained in confined space procedures. Duties include:

- Understanding hazards that may be faced during entry,
- Being familiar with signs, symptoms, and consequences of exposure,
- Identifying authorized entrants and maintaining accurate count of authorized entrants in the permit space,

- Preventing unauthorized entrants from entering and informing authorized entrants and the entry supervisor if unauthorized persons do enter the permit space,
- Continuously assessing the safety of the space based on activities and conditions inside and outside,
- Communicating with authorized entrants to assess status and immediately alert them of any need to evacuate the space,
- Remaining outside the permit space until relieved by another attendant and declining assignment of other duties that might interfere with the attendant's ability to protect the authorized entrants,
- Ordering the authorized entrants to evacuate the permit space immediately if conditions warrant from inside or outside the entry space, performing non-entry rescues as specified by the employer's rescue procedure, and
- Summoning rescue and other emergency services as soon as the attendant determines that authorized entrants may need additional assistance to escape from permit space hazards.

Authorized Entrant - employee authorized to enter and perform work in a permit-required confined space. Duties include:

- Understanding hazards that may be faced during entry,
- Being familiar with signs, symptoms, and consequences of exposure
- Proper use of required equipment and attendant communication, and
- Immediate exit of the space when required.

Blanking or Blinding - absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.

Competent Person - OSHA defines a competent person as, "one who can identify existing and future hazards in the work area and has the authority to take immediate actions to eliminate those hazards." Terracon adds to that definition that the employee is approved to plan and organize work in an IIF manner, train employees and operate equipment as defined by specific policies. Example: A Competent Person may set up and operate a suspended scaffold.

Confined Space - any space:

- Large enough and configured that an employee can bodily enter and perform work,
- With limited or restricted means for entry or exit (i.e., tanks, vessels, bins, silos), and
- Not designed for continuous employee occupancy.

Controlling Contractor - company taking the lead on a confined space operation. Terracon is the controlling contractor for any work done by Terracon personnel in a permit-required confined space.

Double block and bleed - closure of a pipe, line, or duct by locking and tagging a drain or vent which is open to the atmosphere in the line between two locked-closed valves.

Emergency - any occurrence (including any failure of hazard control or monitoring equipment) or event internal or external to the permit space that could endanger entrants.

Engulfment - surrounding and effective capture of a person by a liquid or fine particles of a solid that could cause harm by being aspirated or could exert enough force on the body to cause harm by strangulation, constriction, or crushing.

Entry - act of passing through an opening into a permit-required confined space. A person has *entered* a confined space as soon as any part of their face breaks the plane of an opening into the space.

Entry Period – duration of time for which entry is authorized in a *permit-required confined space*.

(Entry) Permit - written document provided by the *controlling contractor* to authorize entry into a permit space. Terracon's Confined Space Entry Permit may be found at the end of this document.

Entry Supervisor - employee responsible for determining if conditions are acceptable for a planned entry to a permit space, authorizing entry and overseeing entry operations, and terminating entry as required by this policy. Duties also include:

- Understanding hazards that may be faced during entry
- Being familiar with signs, symptoms, and consequences of exposure,
- Verifying appropriate entries have been made on the permit, all tests specified by the permit have been conducted, and all procedures and equipment specified by the permit are in place before endorsing the permit and allowing entry to begin,
- Verifying that rescue services are available and means of summoning them are operable, including notifying the *controlling contractor* as soon as the services become unavailable,
- Removing unauthorized individuals from the permit space during entry operations,
- Confirming that entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained whenever responsibility for a permit space entry operation is transferred, and at intervals dictated by the hazards and operations performed within the space, and
- Terminating the entry and canceling or suspending the permit as required.

An entry supervisor also may serve as an attendant or as an authorized entrant as long as that person is trained and equipped as required by this policy for each role he or she fills. The duties of entry supervisor may be passed from one individual to another during an entry operation.

Hazardous Atmosphere - atmosphere which could impair employee ability to self-rescue and/or exposes employees to risk of incapacitation, injury, acute illness, or death from one or more of the following:

- A flammable gas, vapor, or mist in excess of 10% of its lower flammable limit (LFL)
- An airborne combustible dust at a concentration at or above its LFL or that obscures vision at a distance of five feet (1.52 M) or less
- An atmospheric oxygen concentration below 19.5% or above 23%.
- An atmospheric concentration of any substance exceeding a dose published in Group 14 for Radiation and Radioactivity or a permissible exposure limit published in Title 8 CCR, Sect. 5155 for airborne contaminants,
- Any other atmospheric condition recognized as immediately dangerous to life or health.

For air contaminants for which a dose is not published in Group 14 for Radiation and Radioactivity or a permissible exposure limit is not published in CCR Title 8, Section 5155 for airborne contaminants, see other sources of information such as Material Safety Data Sheets that comply with CCR Title 8, Section 5194 and other internal documents for guidance in establishing acceptable atmospheric conditions.

High Hazard Rating - indicates presence of hazards which will cause bodily injury or harm if not appropriately mitigated before work begins in a permit-required confined space, including possible *IDLH* (see below).

Host Employer - company that 'owns' the confined space where work is performed.

Hot Work Permit - controlling contractor's written authorization for operations like riveting, welding, cutting, or burning which could provide a source of ignition.

Immediately Dangerous to Life or Health (IDLH) - describes any condition which poses an immediate threat to life or may result in irreversible or immediate and severe health problems including eye damage, irritation, or other conditions which could impair escape from the permit space. Note: some materials -- hydrogen fluoride gas and cadmium vapor, for example - may produce immediate transient effects that may pass without medical attention but are followed by sudden, possibly fatal collapse 12-72 hours after exposure. In hazardous quantities, such materials are considered to be "immediately" dangerous to life or health.

Inerting – act of rendering the atmosphere of a permit space non-flammable, non-explosive, and otherwise chemically non-reactive by displacing or diluting the original atmosphere with steam or a gas that is non-reactive with respect to that space. Note: inerting produces an *IDLH* oxygen-deficient atmosphere.

Isolation - separation of a permit space from unwanted forms of energy or material which could pose a serious hazard to entrants, usually accomplished by blanking or blinding, removal or misalignment of pipe sections or spool pieces, double block and bleed, or lockout / tagout.

Line Breaking - intentional opening of a pipe, line, or duct that is or has been carrying flammable, corrosive, or toxic material, an inert gas, or any fluid at a volume, pressure, or temperature capable of causing injury.

Low-Hazard Permit Space - a permit space where there is an extremely low likelihood of an *IDLH* or engulfment hazard and where all other serious hazards have been controlled.

Low Hazard Rating - indicates limited hazards and low likelihood of bodily injury or harm or *IDLH* atmosphere.

Moderate Hazard Rating – indicates some hazards with potential to cause bodily injuries or harm but low likelihood of an *IDLH* atmosphere.

Oxygen Deficient Atmosphere - contains less than 19.5% oxygen by volume.

Oxygen Enriched Atmosphere - contains more than 23% oxygen by volume.

Qualified Person - individual who has been trained in and is knowledgeable about the task to be performed.

Permit-Required Confined Space (Permit Space) - a confined space with one or more of the following characteristics:

- Contains or has potential to contain a *hazardous atmosphere*,
- Contains a material with the potential to *engulf* an entrant,
- Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section, or
- Contains any other recognized serious safety or health hazard.

Permit-Required Confined Space Program (Permit Space Program) - program for controlling and protecting employees from permit space hazards and for regulating entry into permit spaces.

Permit System - the written procedure for preparing and issuing permits for confined space entry and for returning the permit space to service following termination of entry.

Prohibited Condition - any condition in a permit space disallowed by the permit during the *entry period*.

Rescue service - the personnel designated to rescue employees from permit spaces.

Retrieval System - equipment such as a line or rope secured at one end to the worker by a chest-waist or full-body harness and at the other end to a lifting device or anchor point outside the entry portal to be used for non-entry rescue of persons from permit spaces.

Testing - process(es) by which hazards that may confront entrants of a permit space are identified and evaluated. Testing enables employers to devise and implement adequate control measures for the protection of authorized entrants and to determine if acceptable entry conditions are present immediately prior to, and during, entry. If electronic or thermal equipment will be used in the permit space to perform tests and there is potential for exposure to an explosive substance or *hazardous atmosphere*, testing equipment must be approved for use in explosive or flammable conditions as required by Title 8 CCR, Section 2540.2.

4.0 Regulatory Requirement

At a minimum, Terracon policies meet the applicable reporting requirements of OSHA 29 CFR 1910.146, OSHA 29 CFR 1926.1201 - .1213 and Cal-OSHA T8 CCR 5156 / 5157. When followed, they will allow Terracon personnel to work safely in and around confined spaces in compliance with OSHA regulations.

5.0 Responsibility

All Employees must work in alignment with this policy and *Our Rules to Live By*, including completing pre-task planning (see R2) and using all PPE provided by Terracon (see R6). Employees who fail to follow these Rules will be subject to disciplinary action as per Terracon's Safety Accountability Policy.

Supervisors must:

- Ensure that documentation of necessary training is on file before an employee may work in confined spaces (see R3 and Section 6.9 below),
- Confirm pre-task planning is conducted, hazards are identified, and appropriate controls are in place before work starts (see R2),
- Ensure PPE is available as required by this policy (see R6),
- Know of and enforce compliance with all relevant client requirements, and
- Make themselves available to answer questions from employees about how to work most safely.

Terracon Safety will:

- Be a resource for technical training and situational troubleshooting as needed,
- Keep all training records,
- Schedule regular auditing to ensure compliance to this policy and identify needs for revision,
- Act as administrator for the policy by being knowledgeable of its complexity, able to conduct evaluations, and up to date on appropriate training.

Management (Office Managers and above) will review all audit reports and determine accountability measures in the case of noncompliance.

In the case of confined space operations at a 3rd party location, the *host employer* will provide details about all permit space location(s), foreseeable hazards, and implemented hazard controls to Terracon as the *controlling contractor*. Terracon will provide this information to the entry contractor and/or any other entity who may enter or be affected by the *confined space*. Terracon will also provide site-specific entry procedures to the entry contractor. In return, the entry contractor must provide specific permit entry procedures. Upon completion of confined space operations, Terracon will debrief with the entry contractor and discuss any concerns noted during entry.

6.0 Procedures

6.1 Identifying Permit Spaces

A *competent person* must evaluate a space to determine if it meets the definition of a *confined space* (see 3.0 Definitions above).

The *competent person* will further evaluate if a *confined space* is a *permit-required confined space (permit space)* (see 3.0 Definitions above).

If a space is classified as a *permit space*, the *competent person* must complete a Permit Space Hazard Assessment / Entry Permit form and confirm that a copy of this policy is available at the permit site location.

When changes in the use or configuration of a *non-permit confined space* might increase potential hazards, a *competent person* must reevaluate that space and, if appropriate, reclassify it as a *permit-required confined space* and complete the requisite Permit Space Hazard Assessment / Entry Permit form.

A *competent person* may reclassify a *permit-required confined space* as a *non-permit confined space* under the following conditions:

1. The *permit space* poses no actual or potential atmospheric hazards and all hazards in the space are eliminated without entry into the space. No atmospheric hazards will be introduced during the entry.
2. Authorized entry to the *permit space* permanently eliminates hazards therein, as confirmed by testing and inspection.

If new hazards arise within a space previously classified as a *permit space* which has since been declassified to a *non-permit space*, all entrants must exit the space immediately and a *competent person* must reevaluate the space and determine whether it must be reclassified as a *permit space*.

Permit- and non-permit required confined spaces common on Terracon job sites include but are not limited to:

- fluid storage tanks
- crawl spaces
- pump houses
- vaults
- caisson holes, drilled shafts
- sewer or water lines

Signs shall be posted near each *permit-required confined space* to notify employees of potential hazards and make clear that only *authorized entrants* may enter the *permit space*.

6.2 *Unauthorized Entry*

If an unauthorized person approaches or attempts to enter a permit space:

1. Warn the unauthorized person that they may not enter the permit space, or, if they have already done so, advise the unauthorized person that they must exit immediately, and
2. Inform the authorized entrants and the entry supervisor if unauthorized persons have entered the permit space.

Unauthorized entry into a permit-required confined space is dangerous and punishable with disciplinary action up to and including termination.

6.3 *Entry Permits*

Prior to entry of any *permit space*, an *entry permit* must be completed which identifies all conditions for safe entry. Terracon's Confined Space Entry Permit may be found at the end of this document.

An *entry permit* includes the following information:

1. Identity of the *permit space* and purpose of entry.
2. Date of the entry and duration of *entry period* (may be up to 1 year if all conditions under which the permit was issued are maintained but should be no longer than necessary to complete planned work).
3. List of *authorized entrants*, eligible *attendants*, and eligible *entry supervisors*.
4. The signature and printed name of the individual authorizing and verifying safe conditions for entry.
5. Identified actual or potential hazards in the *permit space*.
6. Measures taken for *isolation* of the *permit space* prior to entry.
7. Measures used to remove or control identified hazards such as lockout / tagout, purging, *inerting*, ventilating and flushing, etc.
8. Acceptable entry conditions quantified based on identified hazards, which must be maintained during the entire *entry period*.
9. Testing and monitoring equipment and procedures to be used to verify acceptable entry conditions.
10. Results of initial and periodic air monitoring tests performed accompanied by the names or initials of the testers and by an indication of when tests were performed.
11. The *rescue services* to be summoned in case of emergency and the means of summoning and communicating with those services.
12. Inventory of on-site rescue equipment, if relevant.
13. Communication procedures and equipment to be used by *authorized entrants* and *attendants* to maintain contact.
14. Personal protective equipment such as respirators, clothing, and retrieval lines which will be used during entry.
15. Any other information necessary to ensure employee safety.

Note: If hot work will be required inside the *permit space*, this information must be noted on either the entry permit or on a separate *hot work permit* attached to the *entry permit*.

All steps necessary to establish safe conditions for entry must be taken before the *entry supervisor* signs or initials the *entry permit*. The completed permit shall be made available at the time of entry

to all authorized entrants or their authorized representatives, by posting near the entry portal so that is available for ease of reference by all persons involved. As a second check, all *authorized entrants* should confirm that entry conditions have been met before entering the *permit space*.

The *entry supervisor* will terminate entry and cancel the *entry permit* when: (a) operations covered by the permit have been completed, or (b) a condition disallowed under the permit arises in or near the *permit space*.

Cancelled entry permits will be retained for at least 1 year to facilitate review and revision of confined space procedures. Any problems encountered during an entry operation should be noted on the associated permit.

6.4 Permit Space Entry Equipment

Equipment necessary to ensure the safety of employees entering *permit spaces* will be provided at no cost to the employee and should be maintained per manufacturer's recommendations. This equipment may include, but is not limited to:

- Testing and monitoring equipment for permit space atmosphere,
- Ventilation equipment,
- Communications equipment to summon assistance (i.e., cell phone or radio),
- Personal protective equipment (for use where engineering and work practice controls are not feasible or do not adequately protect employees),
- Lighting equipment to illuminate the work space and allow a quick exit in an emergency,
- Barriers and shields to protect authorized entrants from hazards outside the permit space,
- Equipment such as ladders for safe entry into and exit from permit spaces,
- Rescue and emergency equipment including communication devices for emergency assistance notification,
- Safety Data Sheets (SDS) for any chemical substance introduced into or held within the permit space.

Note: Atmospheric testing equipment is acquired through Terracon Safety and will be operated by employees trained on its operation and calibration. All direct reading instruments will be calibrated in accordance with manufacturer specifications. Records of equipment service, maintenance, and calibration are kept by Operations and are available for inspection upon request.

6.5 Entry Procedures – Step by Step Guidelines

Note: Terracon does not perform confined space operations which involve multiple contractors or require entry in potentially hazardous conditions due to increased threat to the safety of personnel and equipment.

The following steps must be taken before entry into a *confined space*:

1. Confirm all personnel have been trained in accordance with this policy (see 6.8 Training).
2. For a *permit-required confined space*, confirm the Confined Space Entry Permit has been completed by the *entry supervisor* per the requirements outlined in 6.3 Entry Permits.
3. Eliminate any conditions making it unsafe to remove the entrance cover before removing the cover. Once an entrance cover is removed, promptly set up guards such as a railing, temporary cover, or other barrier that will prevent an accidental fall through the opening and protect employees working in the space from foreign objects falling from above.

4. Assemble all necessary safety and monitoring equipment for atmospheric testing. Safety equipment may include full body harness for personnel retrieval, life lines, tripods, ladders, boundary markers, and emergency information. Ensure all information is correct, safety equipment is in good condition, and air monitoring equipment has been calibrated according to manufacturer's specifications.
5. Thoroughly and carefully test the atmosphere inside the *confined space* and document results on the *entry permit*. Monitoring must be performed by a *competent person* using properly calibrated instruments and established procedures. All *authorized entrants* will have the opportunity to review monitoring data prior to entry. Three types of atmospheric hazards that will be monitored in confined spaces are, in order: 1) oxygen deficiencies, 2) combustible gases, and 3) presence of toxic gases or vapors. Atmospheric testing must be conducted at two-foot (2') intervals from the top of the confined space to the bottom. This step is critical if hot work is to be performed or any ignition source is present. Monitoring should take place prior to entering the confined space and should be performed on a continuous basis throughout the work period. Results must be recorded and maintained in a permanent file for inspection and reference purposes.
6. Ensure ventilation and other engineering controls are in place and in good working condition prior to anyone entering the space. Mechanical ventilation from a clean air source and/or purging devices are necessary engineering controls if atmospheric testing indicates oxygen deficiency or the presence of flammable or toxic materials in the space. If such conditions exist, no one may enter the space until air is purged and the *hazardous atmosphere* is resolved. The atmosphere will be continually ventilated and monitored during confined space operations. If engineering controls cannot be used to eliminate the atmospheric hazard, respiratory protection is required (see Terracon Respiratory Protection Program for more information).
7. Install and secure entry and exit equipment such as ladders and rescue equipment such as tripods, lifelines, and harnesses. Assemble necessary work tools so the *attendant* does not have to leave the entry area. NOTE: ladders are required if the *confined space* reaches higher than an *authorized entrant's* shoulders.
8. Note all physical hazards and mechanical hazards in and around the *confined space*. Blank off, physically separate, cap, seal, or otherwise secure all connecting pipes. Flush, drain and *isolate* (using block and bleed connection) all pipelines carrying process materials. Mechanical hazards may include rotating equipment or equipment with moving parts (i.e. blenders, mixers, agitators, blades). Other physical hazards include thermal components or heated atmospheres (i.e. hot mixers in blending areas). Hot areas should be allowed to cool prior to entry. Where relevant, implement a comprehensive lockout / tagout program prepared in accordance with OSHA Standard for Control of Hazardous Energy (29 CFR 1910.47) (see Terracon Control of Hazardous Energy Sources Policy for more information).
9. When the *entry permit* has been completed, discuss identified hazards and review the *permit* with involved employees. Once done, the *entry supervisor*, each *authorized entrant*, and the *attendant* will sign the permit.

Work in the confined space may begin after all the above steps have been completed.

Additional notes on confined space entry:

1. Each *permit space* must have an *attendant* responsible for monitoring only that space. The attendant will be trained and immediately available to perform rescue and emergency services.

2. Once work has commenced and one or more *authorized entrant(s)* is/are inside the *permit space* the *attendant* may not leave the entry area until all entrants have exited the space.
3. If a *hazardous atmosphere* or other hazardous condition is detected at any point during entry:
 - All personnel will leave the space immediately;
 - The space will be evaluated to determine how the hazardous condition developed; and
 - Measures will be taken to protect resolve the condition and/or protect employees before any subsequent entry.
4. When the necessary work has been completed the authorizing entry supervisor will cancel the confined space entry permit.

6.6 *Special Permit Spaces*

Special permit spaces meet the following detailed requirements for more limited potential hazards and may therefore be subject to less stringent entry procedures. All of the following conditions must apply for a permit space to be considered a non-hazardous or special permit space:

- No mechanical hazards or entrapment hazards may be present. The only hazard posed by a special permit space is an actual or potential hazardous atmosphere.
- Monitoring and inspection data prove that continuous forced air ventilation alone is sufficient to prevent a hazardous atmosphere, rendering the special permit space safe for entry. (Any entry into the space to gather this data must be completed in accordance with standard requirements for a permit space.)
- Data satisfying the above conditions must be documented and made available to employees entering the non-hazardous or special permit space.

When all the conditions above are met, entry into the special permit space may performed using the procedures above, except that step #8 may be skipped based on the fact that no mechanical or entrapment hazards are present.

Once the atmosphere is confirmed safe, continuous forced air ventilation must ensure that a *hazardous atmosphere* does not arise in the space while an authorized entrant is inside. Accordingly, ventilation should be directed at immediate areas where an employee is or will be present within the space and must continue until all *authorized entrants* have left the space. Air supply for the forced air ventilation must be from a clean source so as to not increase hazards in the space.

Note: Even in the case of special permit spaces, Terracon does not perform confined space operations which involve multiple contractors or require entry in potentially hazardous conditions due to increased threat to the safety of personnel and equipment.

6.7 *Rescue and Emergency Services*

Terracon uses local emergency services as needed for rescue during a *permit space* emergency. These local services are evaluated as part of pre-task planning to ensure a timely response. Rescue services must be either:

- Provided by the host facility, or
- Provided by an outside service which has examined the entry site, practiced rescue, or declined the opportunity to do so, or
- Provided by the employer by selecting a rescue team equipped and trained to perform needed rescue services.

If a client is providing emergency services, this must be stated and agreed to in the Terracon contract for services.

Emergency services phone numbers are posted at each facility or site and included in the Confined Space Entry Permit. The *attendant* is responsible for summoning emergency services and preventing unauthorized rescue attempts.

Rescue service must be on-site for immediately dangerous to life and health (IDLH) conditions while work is being performed.

6.8 Training

Prior to any entry into a *permit space*, all parties involved will be trained on task-specific procedures required for *permit space* work and demonstrate the understanding, knowledge and skills necessary for the safe performance of their duties.

Terracon employees receive the following confined space training:

- For non-permit, low-hazard spaces training is provided through Terracon University – OSHA Confined Space.
- For permit, medium-/high-hazard space entry, employees must have hands-on training from a training provider approved by Terracon Safety.

Training will be in a language which is understandable and will include written examinations and skills tests to ensure comprehension. Training will be conducted by authorized employees and retraining will be done on a regular basis to ensure employees maintain proficiency in this area.

Employees will be trained:

- Before first being assigned *permit space* duties.
- Before a change in assigned duties will require *permit space* work.
- Whenever a change in *permit space* operations requires new equipment or identifies a new hazard not previously addressed in training.
- Whenever there is reason to believe that proper *permit space* entry procedures are not being followed or there are inadequacies in employee knowledge or use of those procedures. If it has been more than three years since their last training.

Documentation will include the names and signatures of trained employees, date of training, and the names and signatures of the trainer(s).

6.9 Record keeping

Training records will be maintained indefinitely by Terracon.

Entry permits will be retained at the local Terracon office for 1 year.

Terracon will use canceled *entry permits* to review entry operations and re-evaluate this policy whenever it seems its safety measures may not sufficiently protect employees, if unauthorized entry occurs, if a previously unidentified permit space is identified, an incident or significant near miss occurs during entry, a change in use or configuration of the permit space or there are employee complaints about the effectiveness of the program.



**TRENCHING, EXCAVATION, AND GROUND
DISTURBANCE POLICY**

Quality Control

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Attachments

SRP Gen21 Underground Utility Clearance

SRP Gen21A Leica Wand Use

SRP GeoEx06 Underground Utility Clearance (Drilling)

SRP Gen40 Working in and Around Excavations and Trenching

Utility Clearance Flowchart

Excavation Permit / PTP Checklist

OSHA Excavation Pocket Card

1.0 Scope

Terracon policy documents meet the needs of employees, clients, and OSHA by laying out safe work expectations; itemizing tools, resources, and methods to be used to meet them; and clarifying accountabilities associated with failure to do so.

All contractors and subcontractors engaged by Terracon must to comply with the requirements of this policy (at a minimum).

Clients may have their own policies, procedures, and forms. Where it is a requirement that client procedures and forms are used, it will be in addition to those required by this policy. This is a minimum standard which may be raised but never lowered by client policy.

Note that though policies often include crucial technical content, they *may not* replace required training.

2.0 Policy

This policy sets out requirements and procedures for reducing Terracon employees' exposure to incidents or injuries related to trenching, excavation, and ground disturbance activities and ensuring compliance with applicable state and federal safety standards.

Terracon generally has no direct control of excavation activities. The general contractor or the excavation contractor usually acts as controlling contractor. Terracon personnel assigned to trenching/excavation projects not under Terracon control will nevertheless remain alert to potential site hazards and conduct themselves according to the standard outlined in this policy.

On rare occasions where an excavation is under the direct control of Terracon, the associated Terracon Project Manager or Office Manager will designate a *competent person* to be responsible for oversight of the excavation and compliance with this policy.

This policy aligns with Terracon's Safety Rules, *Our Rules To Live By*. Specific to trenching and excavations, the following Rules and Practices apply:

- R2:** Start every job task with pre-task planning and update the plan when personnel or conditions change.
- R3:** Follow Terracon-required safety training and get authorization before work starts.
 - In excavations,
 - In confined spaces,
 - When working at heights,
 - And before other job tasks which require it.
- R5:** Speak up right away and redirect a co-worker performing an unsafe act to safe work practices.
- R6:** Wear PPE as required by project, task, and/or work environment. Inspect before and during use, repairing or discarding and replacing, if defective.
- R7:** Use Terracon-approved tools and equipment according to manufacturer's instructions, and never modify or override safety devices.
- P1:** Take the time you need to do the job safely.

P3: Stop work if you feel unsafe. Tell a supervisor and work together to fix the problem.

P4: Manage controllable hazards and unsafe conditions in your work area. Report hazards you cannot control to a supervisor.

3.0 Definitions

Benching - method of protecting against collapse by digging the sides of an excavation to form one or more steps.

Competent Person - OSHA defines a competent person as “one who can identify existing and future hazards in the work area and has the authority to take immediate actions to eliminate those hazards.” Terracon adds to that definition that the employee is approved to plan and organize work in an IIF manner, train employees, and operate equipment as defined by specific policies. A designated *competent person* must be on site at all times during trenching/excavation work and will be appointed by the controlling contractor.

Controlling Contractor - company taking the lead on an excavation or other ground disturbance operation (usually a general contractor or excavation contractor, rarely Terracon). The *controlling contractor* is responsible for designating a *competent person* to oversee operations.

Cross brace - horizontal component of a shoring system installed at a 90° angle to the sides of an excavation with ends in contact with *vertical rails*, *sheeting*, or *wales*.

Hazardous Atmosphere - atmosphere which could impair employee ability to self-rescue and/or exposes employees to risk of incapacitation, injury, acute illness, or death because it is explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic, or otherwise harmful.

Immediate or Immediately Prior to – for the purpose of the Leica Wand expectations means within 10 minutes or beginning the excavation.

Mechanical Groundbreaking – any digging, driving, drilling, or other penetration of the ground performed by a mechanical engine powered device.

Sheeting - plywood component of a shoring system that holds back soil on the sides of an excavation and is supported by other parts of a shoring system. *Closed sheeting* is continuous along the sides of an excavation, with each plywood sheet abutting its neighbor.

Shielding – structure or system such as a trench box designed to protect workers should collapse occur.

Shoring – bracing support system for trench faces used to prevent collapse. *Shoring* is used when the location or depth of the cut makes *sloping* impractical.

Sloping - method of protecting against collapse by forming the sides of an excavation along an angle of incline informed by soil type, environmental conditions, and other factors. See Section 6.3 for more information.

Soil Types - three classes listed from most to least stable.

Type A - cohesive soil, clay, sandy clay, hardpan, caliche.

Type B - less-cohesive soil crushed rock, silt, silt loam, sandy loam, previously disturbed soil, unstable rock.

Type C - non-cohesive soil, gravel, sand, loamy sand, soil from which water is seeping.

Vertical Rail - Vertical component of a shoring system placed in contact with sheeting and cross braces.

Wale - horizontal component of a shoring system placed in contact with *sheeting* and cross braces.

4.0 Regulatory Requirement

At a minimum, Terracon policies will meet the applicable requirements of OSHA 29 1926.651 and Cal OSHA T8 CCR 1541. When followed, these requirements allow Terracon personnel to work safely and in compliance with OSHA regulation. There is no OSHA regulation for general ground disturbance activities.

5.0 Responsibility

All Employees must work in alignment with this policy and *Our Rules to Live By*, including completing pre-task planning (see R2) and using all PPE provided by Terracon (see R6). Employees who fail to follow these Rules will be subject to disciplinary action per Terracon's Safety Accountability Policy.

Supervisors must:

- Ensure that documentation of necessary training is on file before an employee may work in excavations or perform ground disturbance activities (see R3 and Section 6.4 below),
- Confirm that pre-task planning is conducted, excavation and ground disturbance hazards are identified to crews, and appropriate controls are in place before work starts (see R2),
- Ensure PPE is available as required by this policy (see R6),
- Know of and enforce compliance with all relevant client requirements, and
- Make themselves available to answer questions from employees about how to work most safely.

Terracon Safety will:

- Be a resource for technical training and situational troubleshooting as needed,
- Keep all training records,
- Schedule regular auditing to ensure compliance to this policy and identify needs for revision,
- Act as administrator for the policy by being knowledgeable of its complexity, able to conduct evaluations, and up to date on appropriate training.

Management (Office Managers and above) will review all audit reports and determine accountability measures in the case of noncompliance.

6.0 Procedures

6.1 General Excavation Requirements

All excavations greater than five (5) feet in depth must be sloped, shored, or shielded unless the excavation is made entirely in stable rock. Terracon employees will not enter unshored excavations with vertical sidewalls in excess of five (5) feet in depth unless the excavation is in stable rock or shielding is provided. Terracon personnel will not enter soil trenches with unshored

vertical sidewalls more than five (5) feet in depth until there is shielding in place and an inspection performed by a competent person approves entry.

If Terracon personnel observe situations which could result in possible cave-ins, slides, failure of protective systems, or other hazardous condition, they will immediately evacuate all personnel from the excavation and surrounding area and report site conditions to the Terracon Project Manager or their Supervisor (P3). The Terracon Project Manager (or senior-level designee) will bring dangerous site conditions to the attention of the excavation contractor and other responsible personnel responsible for prompt hazard mitigation. Terracon employees will not (re)enter the excavation until the hazardous condition has been eliminated.

The following precautions must be taken as part of pre-task planning (R2) and preparation for every excavation:

- Locate underground utilities (sewer, telephone, fuel, electric, water or other subsurface installations) before you dig by calling 811. Check with utility companies to find out where cables and lines are buried. Once uncovered, you must support, protect, or remove the lines. When utility companies or clients cannot respond to a request to locate underground utility installations within 24 hours, or cannot establish exact location of these installations, the employer may proceed, provided the employer does so with caution and provided detection equipment or other acceptable means to locate utility installations are used.
 - All excavations whether performed by subcontractor or Terracon personnel require a valid, Public Utility Locate Ticket in Terracon's and (if applicable) the excavation contractor's name.
 - All excavations whether performed by subcontractor or Terracon personnel require a thorough evaluation of needs for Private locator service.
- Test for *hazardous atmospheres* in any excavation that could contain low oxygen levels, flammable gases, or other dangerous conditions such as landfills or environmental projects. If hazardous atmospheres are detected, no one may enter the space until ventilation is established and the *hazardous atmosphere* is resolved or other mitigation put in place.
- Where there is potential for a *hazardous atmosphere*, confirm that all necessary emergency rescue equipment, such as breathing apparatus, a safety harness and line, or a basket stretcher, is readily available. This equipment must be attended when in use.
- Confirm that any water accumulation is removed from an excavation before entry and that employees working in and around the excavation will be protected from further accumulation by shields or other methods inspected and approved by a *competent person*.
- Where the stability of adjoining buildings, walls, or other structures may be endangered by an excavation, a registered Professional Engineer with geotechnical experience in will be consulted. At a minimum, support systems such as *shoring*, bracing, or underpinning will be provided to ensure structural stability.
- Wear reflective vests or other hi-vis material when near equipment, trucks, and cars. Post signs, barricades, and flag persons as necessary.
- Ensure the plan does not position any workers under any load being lifted or digging equipment.

- Confirm requisite PPE including a hard hat, safety shoes, and safety glasses while on or near a job site (see R6).

Once work begins:

- Perform daily inspections with a competent person who is qualified to identify potential hazards in an excavation. You may need more than one inspection in the same day if it rains or other conditions change. Competent persons should examine the possibility of cave-ins, failures or protective systems, etc. If problems are found, provisions should be made for immediate personnel removal.
- Construct temporary crossovers where employees, pedestrians, or equipment must cross over excavations. All walkways six (6) feet or more above lower levels and covering a space of more than 30 inches will have guardrails.
- Store spoil piles, surface encumbrances, or excavated material at least two (2) feet from the edge of the excavation.
- Provide access into and out of an excavation four (4) or more feet deep with a ladder or ramp. Every worker in an excavation must be within twenty-five (25) feet of a ladder or ramp at all times. Ladders must be secured from sliding or kickout and ramps must be at an incline of no more than 30°.
- Employees entering bell-bottom pier holes or other similar deep and confined footing excavations must wear a harness and lifeline. The lifeline is separate from any line used to handle materials and must be individually attended at all times while the employee is in the excavation.
- Cover or barricade all wells, pits, and shafts when not in active use.

When mobile equipment is in or around an excavation:

- Protect the excavation edge whenever mobile equipment is moving in the area. Use stop logs, barricades, and employee spotters with hand or mechanical signals. If possible, plan for mobile equipment to operate on a grade sloping away from the excavation.
- Set up ventilation in any situation where equipment driven by internal combustion engine is operated inside a shaft or is continually operated near a shaft or excavation.

6.1.1 *Leica Wand Use for Excavations*

For all Service Lines, all mechanical groundbreaking operations performed by Terracon staff, or subcontractors with Terracon employees on site will be checked for live electrical utilities using the Leica Wand immediately prior to breaking ground. Mechanical groundbreaking includes but is not limited to drilling, CPT, direct push, test pit excavation, concrete coring on slabs, coring asphalt or concrete pavements or parking lots when penetrating more than 6 inches into subgrade, pile installation, or any other excavation performed by mechanical methods. Non-mechanical groundbreaking or groundbreaking less than 6 inches into subgrade must be evaluated for wandering during pre-task planning. Non-mechanical groundbreaking includes but is not limited to DCP, density, shoveling, probing, and hand-augering. This act of wandering serves as a final check for the confirmation of electrical underground utilities in no way replaces the requirement to call 811 or pre-task plan for the need of private utility locate services.

Terracon does not require subcontractors to own Leica wands. Terracon will wand the location for subcontractors in advance of excavation for the protection of Terracon employees and the public. Terracon will wand the location immediately prior to excavation. If project scope does not allow this, Terracon will wand the excavation locations when staking or at a time as near as possible to the beginning of excavation work.

This wanding does not imply the location is clear of underground hazards or 'approved' for excavators. We will provide any and all information we have about the location. It is the decision of the excavator to proceed with the excavation if they are comfortable with the location.

Any deviations from this policy must be approved by an Assistant Service Line Director, Service Line Director, or Director of Safety.

6.2 Soil Classification

Classifying the stability of the soil to be excavated is an important part of all site evaluations. Soil must be classified by at least one visual analysis and one manual test. Classification will determine the degree of sloping and the type of shoring required to protect worker safety in the excavation.

6.2.1 Soil Types

Soil is divided into three classes, listed here from most to least stable.

Type A - cohesive soil such as clay, sandy clay, hardpan, or caliche.

Type B - less-cohesive soil such as crushed rock, silt, silt loam, sandy loam, previously disturbed soil, or unstable rock.

Type C - non-cohesive soil such as gravel, sand, loamy sand, or soil from which water is seeping.

6.2.2 Visual Analysis

Visual analysis must include the following:

1. Assessment of soil particle size and associated cohesion. A fine grain texture is more cohesive than a coarse grain.
2. Examination of excavated material for cohesive clumps vs. easily broken granular clumps.
3. Inspection of open trenches for wall sloughing or tension cracks.
4. Survey of area near the excavation for disturbed soil indicating utilities.
5. Evaluation of excavation and surrounding area for seeping water or high-water table.
6. Identification of any sources of vibration in the excavation area which could affect soil stability.

6.2.3 Manual Test

Manual testing must evaluate plasticity, penetration, and dry strength using the following methods:

1. Plasticity: Mold a damp sample of soil into a ball and roll it into threads as thin as possible. Type A soil can form threads 1/8" in diameter where B and C soil cannot.

2. Penetration: Press a thumb into undisturbed soil in the excavation as soon as possible after it has been excavated. Type A soil can be indented only with great effort. Type C soil can be indented and molded with light pressure. Type B soil falls between the two extremes.
3. Dry Strength: Attempt to crumble dry soil. If it crumbles under light pressure, it is granular (Types B or C). If it falls into clumps and the smaller clumps break with difficulty, it may be clay (Type A).

6.3 Sloping

When using sloping as the sole form of protection, maximum allowable slope depends on soil classification:

- Type A: maximum allowable slope 1:1 (45°)
- Type B: maximum allowable slope 1:1 (45°)
- Type C: maximum allowable slope 1 1/2:1 (34°)

6.4 Shoring Guidelines

In situations where *sloping* is unfeasible due to the location or depth of the cut, *shoring* will be used to protect against collapse in any excavation four (4) feet or deeper. *Shoring* must meet the following general requirements:

- Bracing against excavation walls must be of ¾ inch plywood and there must be at least one (1) foot of plywood above the top of the hole or trench to keep rocks and debris from falling in.
- Shoring must use *closed sheeting* (i.e. no soil showing between sections of plywood).
- Only use hydraulic shoring or trench jacks (cross braces). When using trench psi, substitute a 2"x 6" for a vertical rail. When using hydraulic shoring, raise the pressure to 3000 psi as shown on the pump gauge.

6.4.1 Spacing of Vertical Rails

- No more than six (6) feet apart
- No more than two (2) feet from the bottom of the excavation

6.4.2 Spacing of Cross Braces and Wales

- No more than four (4) feet apart vertically
- No more than three (3) feet from the bottom of the excavation
- No more than one and a half (1.5) feet from the top of the excavation

6.5 Training

Note: this document *may not* replace required training.

Terracon employees receive general excavation and ground disturbance training during onboarding through Terracon University in the following courses:

- OSHA Excavation, Trenching and Shoring Safety
- Leica Wand Use (excavators only)

Before being made responsible for overseeing excavations and compliance with this policy as a *competent person*, employees must demonstrate requisite knowledge, skills, and abilities through formal instruction, on-the-job experience, or a combination of both.

Employee retraining will be required if:

- This Policy is revised or there are substantive changes in regulatory compliance;
- Equipment is changed (other than replacements);
- The employee exhibits a lack of understanding or skill needed to work safely; or
- It has been more than three years since their last training.

6.6 Record keeping

Employee training records will include the content and date of training and be maintained indefinitely at Terracon Safety.

Excavation inspection records will be maintained for one year at the local Terracon office.



**PERSONAL PROTECTIVE EQUIPMENT (PPE)
POLICY**

Quality Control











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Attachments

- PPE Free Zone Policy Statement
- SRP PPE 04 Eye Protection
- SRP PPE 05 Foot Protection
- SRP PPE 06 Hearing Protection
- SRP PPE 07 Head Protection
- SRP PPE 08 Hand Protection
- SRP PPE 09 High Visibility Apparel
- Hand Injury Prevention Program – Supervisor Training Guide

1.0 Scope

Terracon policy documents meet the needs of employees, clients, and OSHA (“regulatory bodies?”) by laying out safe work expectations; itemizing tools, resources, and methods to be used to meet them; and clarifying accountabilities associated with failure to do so.

All contractors and subcontractors engaged by Terracon must to comply with the requirements of this policy (at a minimum).

Clients may have their own policies, procedures, and forms. Where it is a requirement that client procedures and forms are used, it will be in addition to those required by this policy. This is a minimum standard which may be raised but never lowered by client policy.

Note that though policies often include crucial technical content, they *may not* replace required training.

2.0 Policy

This policy is aligned with Terracon’s Safety Rules, *Our Rules to Live By*. PPE is addressed explicitly in:

- R6:** Wear PPE as required by project, task, and/or work environment. Inspect before and during use, repairing or discarding and replacing, if defective.

In addition to R6, the following Rules apply to PPE:

- R2:** Start every job task with pre-task planning and update the plan when personnel or conditions change.
- R5:** Speak up right away and redirect a co-worker performing an unsafe act to safe work practices.
- R7:** Use Terracon-approved tools and equipment according to manufacturer's instructions, and never modify or override safety devices.

3.0 Definitions

Hazard Assessment - a survey of a job or task to determine if hazards requiring the use of personal protective equipment are present, or likely to be present.

High Noise - is defined as where a person speaking must raise their voice for someone three feet away to hear them or vice versa.

Personal Protective Equipment (PPE) - all clothing and other work accessories designed to create a barrier against workplace hazards.

PPE Free Zones - are defined as an area where employees are not required to wear PPE, such as eye protection and safety footwear. PPE Free Zones are areas in which no hazards exist, and no work is performed.

4.0 Regulatory Requirement

Guidelines in this program are based on the following standards:

29 CFR 1910.132 Personal Protective Equipment—General Requirements

- 29 CFR 1910.133 Eye and Face Protection
- 29 CFR 1910.134 Respiratory Protection
- 29 CFR 1910.135 Head Protection
- 29 CFR 1910.136 Occupational Foot Protection
- 29 CFR 1910.137 Electrical Protective Devices

Respiratory Protection and Hearing Protection will not be addressed in this program as the need is based on industrial hygiene monitoring results. The requirements for these two types of PPE are addressed in their own respective policies.

5.0 Responsibility

All Employees must work in alignment with this policy and *Our Rules to Live By*, including completing pre-task planning (see R2) and using all PPE provided by Terracon (see R6). Employees who fail to follow these Rules will be subject to disciplinary action per Terracon's Safety Accountability Policy. Terracon provides employees with all required PPE to perform their job function at no cost. All PPE is provided and should be used and maintained in a sanitary and reliable condition.

Supervisors (Department Managers) must:

- Supply all employees with PPE necessary for their job function,
- Ensure all PPE is sanitary and in working condition,
- Confirm that pre-task planning is conducted, hazardous work activities are identified to crews and appropriate controls are in place before work starts (see R2),
- Know of and enforce compliance with all relevant client requirements, and
- Make themselves available to answer questions from employees about how to work most safely.

Terracon Safety will:

- Identify and itemize PPE required for specific job tasks in Safe Right Procedures,
- Be a resource for technical training and situational troubleshooting as needed,
- Keep all training and medical records required for PPE use,
- Schedule regular auditing to ensure compliance to this policy and identify needs for revision,
- Act as administrator for the policy by being knowledgeable of its complexity, able to conduct evaluations, and up to date on appropriate training.

Management (Office Managers and above) will review all audit reports and determine accountability measures in the case of noncompliance.

6.0 Procedures

6.1 Personal Protective Equipment - General

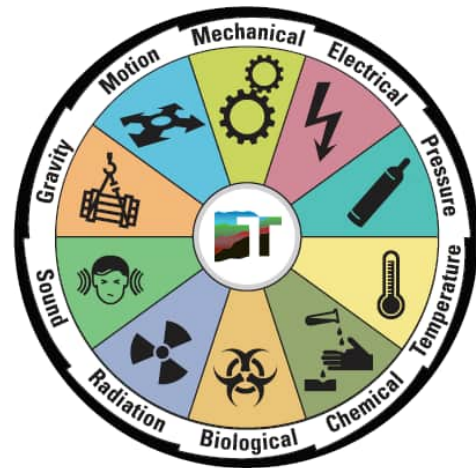
Terracon requires the use of PPE whenever there is a reasonable expectation that injury could be prevented by its use. Core employee PPE includes:

- Safety glasses with lateral protection (ANSI Z.87)

- Approved safety footwear (ASTM F2412, old ANSI Z.41)
- Gloves in accordance with the hand protection chart
- Hard hat on construction sites, around drill rigs and / or anytime overhead or projectile hazards are present (ANSI Z.89.1)
- High visibility apparel (minimum Type R Class II)
- Hearing protection in high noise areas
- Long pants and sleeved (over the shoulder to elbow) shirt

6.2 *Pre-Task Planning (Hazard Assessment)*

During pre-task planning supervisors must ensure that the workplace is assessed to determine which hazards are present, or are likely to be present, which necessitate the use of PPE. Supervisors must make every effort possible to eliminate or mitigate the hazard with engineering or administrative controls. If the hazard cannot be eliminated or reduced to an acceptable level, PPE must be specified for use when workers are performing tasks which will bring them in contact with the hazard(s).



Pre-Task Planning involves an analysis of the job or task for potential hazards. This analysis should consider the basic hazard categories shown on the energy wheel (right).

Additionally, the person conducting the assessment should observe:

- Sources of motion (e.g., machinery or processes where movement of machine components or flying particles could exist, movement of personnel could result in collision with stationary objects);
- Sources of high/low temperatures which may result in injury or compromise the integrity of PPE;
- Types of chemical or biological hazard exposures and associated Safety Data Sheets;
- Sources of light radiation (e.g., welding, brazing, cutting, furnaces);
- Exposure to falling objects or potential for dropping objects;
- Sharp objects which might pierce feet or cut hands;
- Sources of rolling or pinching objects which might crush feet;
- Layout of workplace and location of co-workers and/or other contractors;
- Electrical hazards;
- Statistical incident data on the task under analysis.

Pre-Task Planning should be conducted by using the Safe Right Procedure (SRP) of the associated task. If no SRP is available, PTP must be documented and include the workplace evaluated, the name of the person conducting the assessment, the date of the assessment, and

a statement identifying the document as a hazard assessment. These requirements may be met by using the form in Appendix A of this document.

6.3 Selection of PPE

If the results of a hazard assessment demonstrate hazards that necessitate the use of PPE are present or likely to be present, proper protective equipment must be specified for the task. The selection of PPE will be based on the types, concentrations, and degree of exposure to hazards or contaminants that may be encountered. Selected PPE must be properly fitted to each affected employee. Defective or damaged PPE may not be used. Required PPE will be provided at no charge to the employee.

6.3.1 Head Protection

At a minimum, employees required to wear head protection must wear a Type 1 (G) helmet. Head protection must conform to American National Standards Institute (ANSI) standard ANSI Z89.1-1997 (which replaced the Z89.1-1986 standard). The type of helmet, manufacturer, ANSI designation, and class can be identified by looking inside the shell. Helmets are date stamped by the manufacturer and should be replaced no later than the service life recommended by the manufacturer. The service life begins on the date of manufacture stamped inside the helmet. ANSI Z89.1-1997 defines the following types and classes:

- Type 1 provide protection strictly from blows to the top of the head.
- Type 2 provide protection from blows to both the top and sides of the head.

Terracon requires Type 2 hard hats with chin strap attached for the following work;

- Any work activity requiring fall protection.
- Any work on aerial lifts, scaffolds, or temporary work structures.
- Any work on or climbing of ladders.
- UTV operations (replacing DOT helmet requirement).

Z89.1-1997 also defines hard hats for the classes of electrical performance.

- Class G (General) is equivalent to the Z89.1-1986 Class A and protects against impact, penetration, and low-voltage electrical conductors. For certification, sample shells are proof tested at 2,200 volts of electrical charge.
- Class E (Electrical) is equivalent to the Z89.1-1986 Class B and protects against impact, penetration, and high-voltage electrical conductors. Sample shells are proof tested at 20,000 volts.
- Class C (Conductive) provides no electrical insulation; the alpha designation did not change from the Z89.1-1986 standard.

Note: The voltages stated in Classes G and E are not intended to be an indication of the voltage at which the headgear protects the wearer.

6.3.2 Eye and Face Protection

Suitable eye, face, or eye-and-face protection must be provided where there is a potential for injury to the eyes or face from flying particles, molten metal, liquid chemicals, acids or caustic liquids, chemical gases or vapors, potentially injurious light radiation, or a combination of these

hazards. All eye and face protection equipment must comply with ANSI Z87.1-1989. Compliance with this standard is usually indicated by “Z87.1-1989” (or similar notation) stamped somewhere on the equipment. Eye and face protective equipment include:

- Safety Glasses – have protective lenses, side shields, and special frames to protect the eyes.
- Safety Goggles – a form of eye protection with a higher degree of safety. Goggles usually completely enclose the eyes.
- Face Shields – may be either clear or tinted, flat or contoured, and come in a full-hood style to provide protection for the face and eyes against splashes and flying particles (e.g., grinding operations).
- Filter lenses -- may be necessary to protect the eyes from injurious light radiation associated with tasks such as cutting and welding.

Employees requiring prescription eyewear must wear either over-the-glass protection (OTG) or prescription safety glasses manufactured in accordance with ANSI Z87.1-1989. Adding side shields to prescription glasses **does not** meet the safety glass requirement. Terracon will offer a subsidy to purchase prescription safety eyewear for all full-time employees through a prescription safety eyewear program. Each eligible employee may purchase approved prescription safety eyewear every 12 months. Any exceptions must be approved by the Office Manager.

6.3.3 High Visibility Apparel / Body Protection

High-visibility apparel may be orange or yellow-green and must meet at a minimum ANSI 107-2015 Type R, Class II requirements.

- Employees working on project sites i.e., work locations other than Terracon offices or client office-type environments, are required to wear at minimum ANSI Type R, Class II high-visibility apparel.
- Employees working on project sites where they may be exposed to moving equipment or vehicular traffic and/or are working in temporary traffic control zones are required to wear at minimum ANSI Type R Class III high-visibility apparel. When working in low speed traffic areas such as parking lots, Type R Class II may be worn if pre-task planning finds it provides sufficient protection.
- Employees engaged in night operations exposed to motor vehicle traffic shall wear supplemental Class E trousers/leggings in addition to a Type R Class III high-visibility apparel.

Faded items are not considered highly visible and do not meet minimum standard requirements. Manufacturers allow a limited number of washings for each item; employees must follow manufacturer limits and replace items when necessary.

Other body protection includes garments and accessories intended to protect the body or body parts from exposure to chemicals, cut hazards, fire, or temperature extremes. These garments and/or accessories include fire retardant (e.g., Nomex) work clothes, chemical aprons, coveralls, or splash suits, body cooling apparel, lab coats or aprons, or even, for the highest level of protection, a ‘fully encapsulated’ suit.

6.3.4 Hand Protection

HAND PROTECTION CHART BY HAZARD TYPE				
Hazards/Tasks <small>Check the SRP for task-specific hand protection requirements.</small>	Minimum Cut Level (ANSI)	Impact Protection	Chemical Resistant	Heat Resistant
General purpose work like cylinder handling, moving samples, density gauge operations - abrasion or scrape, back of hand protection	A3	ANSI / EN388 1		
General purpose office work like moving boxes.	A3			
Concrete testing - abrasion or scrape + fluid resistance / chemical protection	A3	ANSI / EN388 1	■	
Lab oven operations - burns from high temperatures	A1			■
Asbestos sampling, utility knife or other sharp edge tool usage. <i>Any cut or laceration hazard risk.</i>	A5			
Chemical Protection ¹ (environmental work, lab chemicals)	A3		■	
Equipment maintenance, hand tool usage, drilling operations, hand auger, or any task with a higher impact, pinch, crush, strike hazard	A3	ANSI / EN388 2		
Environmental soil sampling, ground-water, sediment, surface water ¹	A3		■	
Geotechnical soil sampling, ground-water, sediment, surface water ²	A3			
Electrical	Working with live electrical, other than low voltage, requires specific PPE and electrical training (i.e., NFPA 70E).			

<p>EN388</p> <p>Abrasion Blade Cut Tear Puncture</p> <p>x x x x</p>	<p>A1 ANSI Cut Level</p>
<p>Gloves are rated by either the EN388 or ANSI 2016 standard on abrasion, cut, tear, and puncture resistance. Protection increases as the number increases. Please note that this is cut resistance. No glove is cut-proof.</p>	

¹For environmental contamination / chemical protection more than one glove may be needed to mitigate a hazard. For example, a nitrile inner glove with outer glove for impact/cut protection. Determine hand protection based on the project safety plan, SRP, and pre-task planning.

²For logging geotechnical soil samples gloves may be temporarily removed to determine soil texture, however before doing so, logger must assess soil to be free of contamination or harmful debris.

A wide assortment of gloves is available to protect hands against burns, cuts, abrasions, and contact with chemicals. A single glove, generally, does not provide protection against all potential hand hazards, and commonly available glove materials only provide limited protection against many chemicals. Therefore, it is important to select the most appropriate glove for a particular application and to determine how long it can be worn and whether it can be reused. Consult the Terracon Hand Protection Chart (left) to assist in selection. Glove selection should also be based on information relating to hazard protection such as Safety Data Sheets for the chemical being handled, technical bulletins, pamphlets, publications, or task specific recommendations (e.g., welding gloves for welding, cutting, or brazing). It is also important to know the performance characteristics of gloves relative to the specific hazards anticipated (e.g., chemicals, cut hazards, etc.). Consideration must be given to the degree of dexterity needed, the duration, frequency, and degree of exposure to hazards, and the physical stresses to be applied to the protective material.

6.3.5 Foot Protection

Foot protection, in the form of safety shoes or boots. Safety footwear must be sturdy and have an impact-resistant toe-guard and is required to protect against impact or puncture hazards. Additional protection, such as metatarsal guards (i.e., metal shield which fits over shoe and protects instep from impact), may be found in some types of footwear.

- Safety Footwear (boots) - are required for employees that work in field operations (project sites) and are acceptable for labs, warehouses, and workshops. These boots provide ankle support for unimproved terrain and must be:
 - Lace up (use of 'muck' style boots is approved for use in standing mud / water conditions)
 - Over the ankle
 - Be made of a nonporous material
 - Have a defined heel (steel / rebar inspectors may use flat sole safety footwear)
 - Comply with ASTM F2413 compression standards (previously ANSI Z41-1991)

- Safety Footwear (other than boots) - is acceptable for employees that work in an office setting or in the lab area only. These shoes provide no ankle support and should only be used for flat, smooth work surfaces. Safety footwear other than boots shall:
 - Have a defined heel
 - Comply with ASTM F2413 compression standards (previously ANSI Z41-1991)
- Safety Toe Caps (OSHA Toe / Visitor Footwear) – Toe caps may be provided to lab visitors or Terracon employees who need to visit the lab, warehouse or workshop temporarily and not perform any testing or active work. They are not to be used for full time lab work that requires foot protection. Toe caps must be used per manufacturer’s instructions and must be properly sized to the wearer, fitted over flat sole, closed toe shoes, and only used for visitors. Toe caps may not be used by children or by adults with improper footwear i.e., open toed shoes, heeled shoes, sandals.
- Chemical resistant boots must be worn when contact with a hazardous chemical is possible. Disposable, chemically protective boot covers may be used in instances where extensive decontamination would otherwise be required. These boots will be issued by Terracon.
- Footwear such as snake boots, hip waders for wetlands observations and other specialty footwear will be provided at no cost by Terracon and must be approved by the Project Manager prior to purchase.

Terracon will offer a subsidy to purchase safety footwear for all full-time employees whose work requires safety footwear. Each eligible employee may purchase Terracon-approved safety footwear every 12 months through the authorized safety footwear program vendor. Any exceptions must be approved by the Office Manager.

6.3.6 Hearing Protection

Hearing protection requirements are covered in the Terracon Hearing Conservation Policy. At a minimum, all employees are provided hearing protection (minimum NRR 20) at no charge to be worn in high noise areas.

6.3.7 Respiratory Protection

Respiratory protection requirements are covered in the Terracon Respiratory Protection Policy. At a minimum, all employees required to wear respiratory protection (based on hazard analysis) will be trained in the selected PPE, medically qualified and annually fit tested in the specific respiratory protection to be used.

6.3.8 Fall Protection

Fall protection requirements are covered in the Terracon Working at Heights Policy. Personnel working at unprotected heights above six (6) feet or as required by local regulations must have 100% fall protection which includes the following PPE:

- Full body harness
- Fall restraint lanyard with shock absorber or dual self-retracting lanyard
- Type 2 hard hat with chin strap

6.4 Access/ Egress (formerly PPE-Free) Zones

An Access/Egress Zone (formerly PPE-Free Zone) is defined as an area where employees are not required to wear PPE because minimal or exist and no work is being performed in an area primarily used for access to or egress from active work areas. Access/Egress Zones will be designated by posted maps and lines on the floor on an office-by-office basis. Terracon's policy on Access/Egress Zones can be found in the Attachments section of this Policy.

In the event a task must be performed in an Access/Egress Zone, that area becomes a work area and PPE requirements return. Reinstatement of Access/Egress Zone occurs only after the task is completed and associated hazards are no longer present.

6.5 Training

Terracon employees must be trained in the contents of this policy and receive general personal protective equipment training during onboarding through Terracon University in the following courses:

- OSHA – PPE – Eye and Face Protection
- Personal Protective Equipment (PPE) Overview (US)

Training will include the limitations, the selection, proper use, proper care / maintenance, and how to properly maintain selected PPE.

Supervisors are responsible for ensuring training is completed before an employee may use personal protective equipment.

Face-to-face personal protective equipment training must be conducted by a Competent Person.

Employee retraining will be required if:

- This Policy is revised due to changes in policy or regulatory compliance.
- Equipment is changed (other than replacements).
- The employee exhibits a lack of understanding or skill needed to work safely.
- It has been more than three years since their last training.

6.6 Record keeping

- All medical records relevant to personal protective equipment use are kept confidential and will not be released without written consent of the employee. All records will be maintained indefinitely by Terracon Safety.
- Training records will include the dates of training, the individuals in attendance, a brief summary of the program's contents and the trainer's qualifications. All records will be maintained indefinitely by Terracon Safety.
- All injuries will be investigated and documented. Corrective actions from incident analysis will be incorporated into work procedures to prevent recurrence.