LA FITNESS (NORTHWEST PORTION) SUB-SLAB DEPRESSURIZATION SYSTEM DESIGN

FORMER UNISYS FACILITY
LAKE SUCCESS, NEW YORK
NYSDEC Site ID #130045

Prepared for:
Lockheed Martin Corporation

Prepared by:
AMEC E&E, P.C.

December 2018

Revision: 3

William Weber, P.E. Project Manager

Ryan Belcher, P.E. Design Lead

I, William J. Weber, certify that I am currently a NYS registered professional engineer as defined in 6 New York Codes, Rules, and Regulations (NYCRR) Part 375 and *that this Design Report was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.*

Dec. 11, 2018

William Weber, P.E. Date
Project Manager

P.E. Stamp

TABLE OF CONTENTS

Section **Page**

APPENDICES

ACRONYMS AND ABBREVIATIONS

CAMP	Community Air Monitoring Plan
CFM	cubic feet per minute
Lockheed Martin	Lockheed Martin Corporation
NYCRR	New York Codes, Rules, and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
P&ID	Piping and Instrumentation Diagram
RSM	Room Status Monitor
SSDS	Sub-slab depressurization system
TCE	Trichloroethylene
µg/m3	micrograms per cubic meter
VFD	Variable Frequency Drive
WC	Water Column

SECTION 1
INTRODUCTION

This Design Report has been prepared for the proposed sub-slab depressurization system (SSDS) for the LA Fitness building at 1111 Marcus Avenue, Lake Success (Unisys Site No. 130045). The objectives and approach presented are consistent with Lockheed Martin Corporation's Revised Proposal for LA Fitness Mitigation System submitted October 29, 2018 and as conditionally approved by the New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH). The conditions of the approval were that: *The diagnostic test will be performed following installation of the two extraction points with inline blowers to confirm that extraction radius of influence and the minimum required vacuum of 0.004 inches of water is being achieved in the mitigation required northwest portion of the LA Fitness building.* This Revision of the Design Report incorporates comments received December 11, 2018 from the NYSDEC on Revision 2.

SECTION 2
BACKGROUND

Sub-slab soil vapor and indoor air sampling completed at the LA Fitness building in November 2017 and March 2018 for selected analytes, consisting of tetrachloroethylene, trichloroethylene (TCE), cis-1,2-dichloroethene, and vinyl chloride. Indoor air sample results have consistently over time have not presented a concern. Sub-slab concentrations have been compared to the NYSDOH mitigation action thresholds which were reduced from 250 micrograms per cubic meter (µg/m3) to 60 µg/m3 in May 2017. The November 2017 and March 2018 results indicate sub-slab concentrations above the revised TCE mitigation threshold at sub-slab monitoring points SS-E2, SS-D3, SS-D5, and SS-C7. These sub-slab monitoring points are located in the northwestern portion of the LA Fitness building and this extent constitutes the area requiring mitigation.

SECTION 3
MITIGATION OBJECTIVES

The proposed mitigation of the LA Fitness building consists of the sealing of potential infiltration points and maintaining a pressure differential between the building's interior and exterior on a continuous basis. The design objective for vapor intrusion mitigation in the LA Fitness building is to maintain a differential pressure of at least -0.004 inches water column (WC) between the sub-slab and the interior of the northwestern portion of the LA Fitness building where TCE concentrations are above the mitigation threshold. The extent of this area is approximately 10,000 square feet. This differential pressure will be achieved with active sub-slab depressurization. Prior to construction, an inspection of the LA Fitness facility will be conducted to identify potential infiltration points, with any findings incorporated into the mitigation activities.

The proposed LA Fitness SSDS has been designed, and will be operated, maintained, monitored, and terminated consistent with the guidance set forth in Section 4.0 of NYSDOH's Guidance for Evaluating Soil Vapor Intrusion in the State of New York.

The SSDS will remain in place and operating efficiently to address the potential for exposure via soil vapor intrusion. A determination to discontinue/decommission the SSDS will be based on a review of subsequent data and in conjunction with the NYSDEC and the NYSDOH (State agencies). Any proposal for SSDS shutdown/decommissioning will be provided to the State Agencies for review, comment and approval. In general, typical evaluation of "rebound effects" requires an operating mitigation system to be shut down for prolonged periods of time, with additional rounds of soil vapor intrusion sampling conducted to verify that a rebound effect is not occurring.

SECTION 4
BASIS OF DESIGN

Extraction Point Locations.

The mitigation will consist of sub-slab depressurization consisting of vertical sub-slab vapor extraction points. The design flow, vacuum, and extraction point spacing is based upon the layout and successful performance of the existing SSDS for the main building. The extraction points for the existing main building are located approximately 120 feet apart. It has been demonstrated during the operation of the existing main building SSDS that a sub-slab vacuum of at least -0.004 inches WC has been maintained across the entire main building with this spacing design. Based upon communication testing conducted in support of the design and construction of the existing main building SSDS, the design radius of influence for the proposed sub-slab extraction points is 80 feet (refer to Figure 1 in Appendix A). The proposed LA Fitness SSDS will consist of two sub-slab vapor extraction points as shown on Drawing C-101 and Figure 1. The proposed location for vertical sub-slab vapor extraction point, EP-LAFE2, is in proximity to sub-slab monitoring points SS-D3 and SS-E2. The proposed location for vertical sub-slab vapor extraction point, EP-LAFC7, is in proximity to sub-slab monitoring point SS-C7. Sub-slab monitoring point SS-D5 is located approximately one-half the distance between EP-LAFE2 and EP-LAFC7, which are approximately 80 feet apart.

Target Sub-Slab Vapor Extraction Flow Rates.

The target flow rate for the LA Fitness SSDS is 100 cubic feet per minute (CFM) for each proposed extraction point, consistent with the design value used to size the piping in the main building. Based upon operating data for the existing main building SSDS, extraction blowers capable of 50 inches WC vacuum at 100 CFM have been chosen, one for each extraction point. To provide flexibility with regards to maintaining the target sub-slab depressurization, the blowers will be equipped with variable frequency drives (VFDs) to slow the motor and reduce the extraction flow rate as may be appropriate. The extraction blowers will be FPZ Model SCL K05 60 Hz regenerative blowers with 2 horsepower 3 phase motors, or approved equivalent. Cut sheets for

the proposed FPZ blowers are provided in Appendix B, and as indicated have a maximum flow capacity of 156 CFM, and a capacity of 120 CFM at 50 inches WC. There are two existing electrical panels in an adjacent electrical room that provide the required power and have additional available capacity (refer to Drawing C-101).

Piping, Instrumentation and Controls.

Extraction point, riser piping, and roof penetration details are presented in Drawings C-301 and 302. Piping and Instrumentation Diagrams (P&IDs) are presented on Drawing D-301. Electrical single line diagrams for the blowers is provided in Drawing E-601.

To monitor the system and provide notification in the event of operational issues, each extraction point will have instrumentation to detect and provide alarm notification for low flow or low vacuum conditions. Alarm setpoints will be established during the start-up and commissioning based upon sub-slab depressurization field measurements. The instrumentation will be sized based upon the performance curve of the proposed blowers and will be connected to an auto-dialer providing remote monitoring and notification capabilities. A Room Status Monitor (RSM) will be installed at a location determined during start-up to monitor the sub-slab depressurization and provide indication in the event that the target sub-slab depressurization (-0.004 inches WC) is not being achieved. The RSM alarm output will be connected to the autodialer. It is proposed that both the auto-dialer and a control panel with local alarm readout be installed in a storage room adjacent to aforementioned electrical room. The storage room is open up to the underside of the roof and will allow access for installation of electrical and instrumentation conduit to the roof-top (refer to Drawing C-102).

Health and Safety

The primary hazards related to implementation of the scope of work are working at height and installation of the extraction points, specifically the cutting of the floor slab. A Health and Safety Plan has been prepared by Lockheed Martin consultants for the construction of the SSDS to address these and other potential hazards and is provided in Appendix E.

The extraction point installation activities will be completed during overnight hours when the LA Fitness facility is closed and will be conducted using wet methods to control dust, within an

enclosure with ventilation to the exterior of the building to maintain negative pressure at the floor penetration locations to control organic vapors. Real-time monitoring of organic vapor and dust/particulates will be conducted during construction activities consistent with NYSDOH's Community Air Monitoring Plan (CAMP) requirements. Implementation of CAMP, including monitoring and corrective actions, will be conducted in accordance with the New York State Department of Health Generic Community Air Monitoring Plan and Fugitive Dust and Particulate Monitoring requirements provided in Appendix F.

Organic vapors will be monitored using MultiRAE PLUS photoionization detector (PID) units with 10.6 eV lamps, or equivalent, to monitoring for target organic contaminants. The instruments will be calibrated on daily basis prior to start of the field work as needed and will be capable of calculating 15-minute running average concentrations. PID readings will also be measured in the breathing zone of the most exposed worker (e.g., the worker closest to the potential organic vapor source).

Particulate (PM10) monitoring will be conducted on a continuous, real-time, basis, using a TSI DustTrak II, or equivalent. The readings will be logged for download and reported daily. Equipment calibrations will also be completed and documented daily.

Since the work is being done indoors, one of each instrument will be utilized per extraction point (i.e., upwind and downwind monitoring would not be applicable), with a third monitoring point maintained between the work area and the location of the on-site child care. Refer to the annotated version of Drawing C-103 provided in Appendix F for location of CAMP monitoring unit locations. CAMP units will be maintained throughout the construction period for each individual extraction point. Weekly CAMP data from the monitoring stations will be provided to the NYSDEC and the NYSDOH PM, Ms. Renata Ockerby, for review. CAMP exceedances and corrective actions will be documented and reported within 24 hours to the NYSDEC and the NYSDOH.

Permitting.

As presented in Appendix C, calculations of air emissions from the two proposed extraction points indicate emissions will be well below the Division of Air Resources, Annual Guidance Concentrations and Short-Term Guidance Concentrations. The proposed LA Fitness SSDS will directly discharge extracted sub-slab vapor to the atmosphere. In accordance with 6 NYCRR Chapter 3 Part 201-3.3(c)(29), the proposed SSDS is exempt from permitting requirements related to air emissions. No other permits are applicable to operations of the proposed SSDS.

The LA Fitness building is solely within the Town of North Hempstead. For the construction of the proposed SSDS, the Town of North Hempstead requires:

1) A Commercial Building Permit; and

2) A Plumbing, Heating, Drainage, Sewage Disposal, and Heating, Ventilation and Air Conditioning Permit.

Performance Monitoring.

Following installation and start-up, diagnostic testing will be performed to confirm that extraction radius of influence and the minimum required vacuum of 0.004 inches of water is being achieved and to inform the balancing and adjustment of the blowers as necessary.

Effluent sampling will be collected during startup at Day 1, 7, 14 and 28 days and monthly thereafter with 24-hour turnaround time for lab analysis to confirm the air emissions are below the Division of Air Resources, Annual Guidance Concentrations and Short-Term Guidance Concentrations. Differential pressure monitoring will be conducted daily for first week then weekly for remainder of first month, then transitioning to monthly for remainder of first six months. The performance monitoring will then transition to monthly effluent sampling and quarterly differential pressuring monitoring for LA Fitness integrated into the site-wide monitoring program.

The analysis of potential air emissions from the two proposed extraction points in accordance with DAR-1 (refer to Appendix C) will be updated with the post-startup effluent sampling results as they become available and will be submitted to the NYSDEC for confirmation.

Contingency Planning.

Concurrent to the final design and construction of the in-line blowers, Lockheed Martin consultants will develop a detailed design for connecting the extraction points to the main building SSDS as a contingent action. The design is anticipated to be completed in mid-2019. The system will be designed to allow for additional extraction points, if required in the LA Fitness Building at a later date, they could be integrated into the SSDS. Should it be required, construction of the connected system will be completed by December 2019.

Schedule (On hold pending LA Fitness Access Agreement).

Description	Duration
Equipment and Material Mobilization. Setup Temporary Controls	12/14/2018
Install Extraction Point EP-LAFE2, including floor penetration	12/14/2018 Night Work
Install Extraction Point EP-LAFC7, including floor penetration	12/15/2018 Night Work
Install interior piping and complete roof penetrations	12/17/2018 – 12/19/2018
Commissioning and Start-up	Prior to 1/18/2019

APPENDIX A

DESIGN DRAWINGS

FIGURE 1 PROPOSED EXTRACTION POINT LAYOUT
G-001 COVER SHEET
C-101 FLOOR PLAN
C-102 ROOF PLAN
C-103 WORK AREA AND CONTRACTOR LAYDOWN
C-301 DETAILS
C-302 DETAILS
D-301 DETAILS
E-601 SINGLE LINE ELECTRICAL DIAGRAM

SS-C4		
Analyte	**2017**	**2018**
1,1,1-Trichloroethane	160	8.1
1,1-Dichloroethene	6.6 U	4.0 U
Carbon tetrachloride	1.8 U	1.1 U
cis-1,2-Dichloroethene	1.2 U	0.70 U
Methylene Chloride	15 U	8.7 U
Tetrachloroethene	11 U	6.8 U
Trichloroethene	5.1	6.5
Vinyl chloride	0.75 U	0.45 U

SS-C1		
Analyte	**2017**	**2018**
1,1,1-Trichloroethane	3.5	1.1 U
1,1-Dichloroethene	0.79 U	0.79 U
Carbon tetrachloride	0.33	0.43
cis-1,2-Dichloroethene	1.1	0.14 U
Methylene Chloride	1.7 U	1.7 U
Tetrachloroethene	1.4	2.6
Trichloroethene	36	43
Vinyl chloride	0.089 U	0.089 U

SS-C7		
Analyte	**2017**	**2018**
1,1,1-Trichloroethane	4.8	3.1
1,1-Dichloroethene	0.79 U	0.79 U
Carbon tetrachloride	0.42	0.43
cis-1,2-Dichloroethene	0.14 U	0.14 U
Methylene Chloride	1.7 U	1.7 U
Tetrachloroethene	2.2	1.4 U
Trichloroethene	**64**	49
Vinyl chloride	0.089 U	0.089 U

SS-D3			
Analyte	**2017**	**2018**	**2018 (DUP)**
1,1,1-Trichloroethane	6.5	9.8	8.5
1,1-Dichloroethene	1.6 U	0.79 U	0.79 U
Carbon tetrachloride	0.45 U	0.33	0.35
cis-1,2-Dichloroethene	0.29 U	0.14 U	1.9
Methylene Chloride	3.6 U	1.7 U	1.7 U
Tetrachloroethene	6.8	7.9	7.0
Trichloroethene	**200**	**190 D**	**180**
Vinyl chloride	0.18 U	0.089 U	0.089 U

SS-D5		
Analyte	**2017**	**2018**
1,1,1-Trichloroethane	6.4	13
1,1-Dichloroethene	1.4	0.79 U
Carbon tetrachloride	0.43	0.36
cis-1,2-Dichloroethene	**620**	0.14 U
Methylene Chloride	2.6 U	1.7 U
Tetrachloroethene	6.3	9.3
Trichloroethene	**110**	**250**
Vinyl chloride	35	0.089 U

SS-D1		
Analyte	**2017**	**2018**
1,1,1-Trichloroethane	4.9	NS
1,1-Dichloroethene	0.79 U	NS
Carbon tetrachloride	0.35	NS
cis-1,2-Dichloroethene	0.14 U	NS
Methylene Chloride	1.7 U	NS
Tetrachloroethene	2.1	NS
Trichloroethene	53	NS
Vinyl chloride	0.089 U	NS

NS - Not Sampled

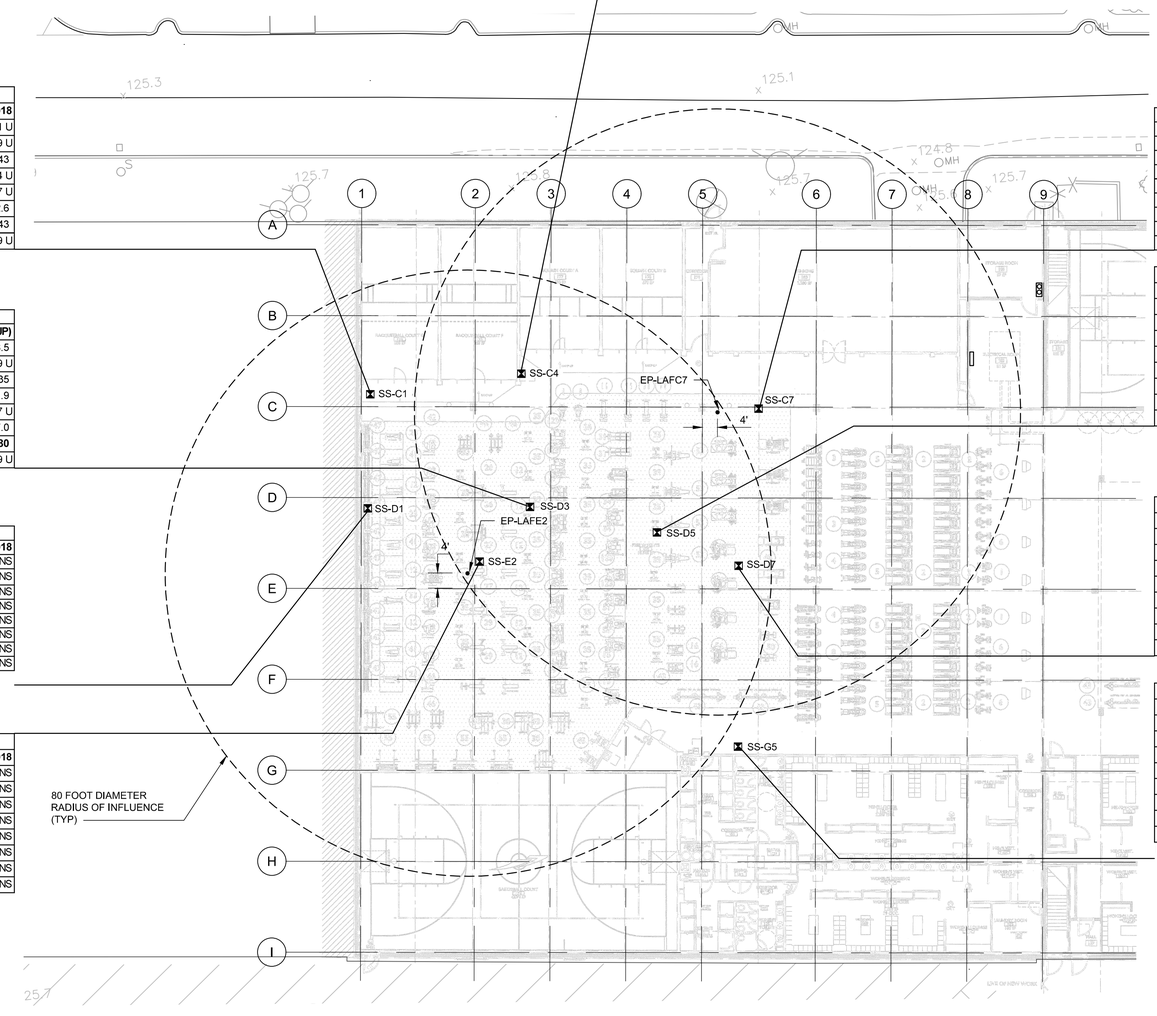
SS-D7		
Analyte	**2017**	**2018**
1,1,1-Trichloroethane	1.2	2.9
1,1-Dichloroethene	0.79 U	0.79 U
Carbon tetrachloride	0.3	0.38
cis-1,2-Dichloroethene	0.51	0.36
Methylene Chloride	1.7 U	3.0
Tetrachloroethene	1.8	1.4 U
Trichloroethene	18	16
Vinyl chloride	0.089 U	0.089 U

SS-E2		
Analyte	**2017**	**2018**
1,1,1-Trichloroethane	9.4	NS
1,1-Dichloroethene	3.3 U	NS
Carbon tetrachloride	0.92 U	NS
cis-1,2-Dichloroethene	0.58 U	NS
Methylene Chloride	7.3 U	NS
Tetrachloroethene	5.7 U	NS
Trichloroethene	**380**	NS
Vinyl chloride	0.37 U	NS

NS - Not Sampled

SS-G5		
Analyte	**2017**	**2018**
1,1,1-Trichloroethane	1.1 U	NS
1,1-Dichloroethene	0.79 U	NS
Carbon tetrachloride	0.59	NS
cis-1,2-Dichloroethene	47	NS
Methylene Chloride	3.5	NS
Tetrachloroethene	1.4	NS
Trichloroethene	2	NS
Vinyl chloride	3	NS

NS - Not Sampled



NOTES:

1. EXISTING FLOOR PLAN LAYOUT BASED UPON "ADDITION & RENOVATION TO EXISTING LA FITNESS CLUB AT I-PARK, PROJECT #0513, WEBER AND COMPANY ARCHITECTS, FOR RECORD, JANUARY 02, 2007, SHEET A-3.7 EQUIPMENT PLAN LAYOUT".
2. EXISTING SUB-SLAB VAPOR LOCATIONS SS-C1, SS-D1, SS-C4, SS-E2, SS-D3, SS-D5, SS-D7 AND SS-C7 BASED UPON AMEC FIELD MEASUREMENTS NOVEMBER 1, 2018.
3. EXISTING SUB-SLAB VAPOR LOCATIONS NOT LISTED ABOVE BASED UPON INFORMATION PROVIDED BY TETRATECH.
4. DATA FROM 2017 AND 2018 SUPPLEMENTAL VI SAMPLING.
5. RESULTS SHOWN IN MICROGRAMS PER LITER. BOLD RESULTS EXCEED THRESHOLD FOR MITIGATION.

NO.	DATE	DESIGN	DR	CHK	APVD
A	11/29/18	REVISION	RJR	RTB	APVD
DSGN	RTB				

BY	APVD
RJR	RTB
	WJW

PROFESSIONAL ENGINEER
LICENSE NUMBER

LA FITNESS MITIGATION SYSTEM
1111 MARCUS AVENUE
LAKE SUCCESS, NEW YORK 11042

DRAWING STATUS
DESIGN

ENVIRONMENTAL
PROPOSED EXTRACTION
POINT LAYOUT

amec
AMEC E & E, PC
214-25 42nd Avenue Suite 3R,
Bayside, NY, 11361

VERIFY SCALE
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DATE NOVEMBER 2018
PROJ 3617-18-7448
DWG C-101

DESIGN DRAWINGS

LA FITNESS MITIGATION SYSTEM

REFERENCE: BASE MAP USGS 7.5 MINUTE QUADRANGLE., SEA CLIFF, NY, 1968 (PHOTOREVISED 1979)

LOCATION MAP

0 2000' 4000'
GRAPHIC SCALE

AREA LOCATION

NEW YORK

DATE ISSUED

DECEMBER 2018

LOCKHEED MARTIN CORPORATION
FORMER UNISYS FACILITY
LAKE SUCCESS, NEW YORK

DRAWING LIST

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NO.	DATE	REVISION	BY	APVD
A	12/04/18	100% DESIGN TO NYSDEC	RJR	RTB
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GENERAL
COVER SHEET

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DATE	DECEMBER 2018
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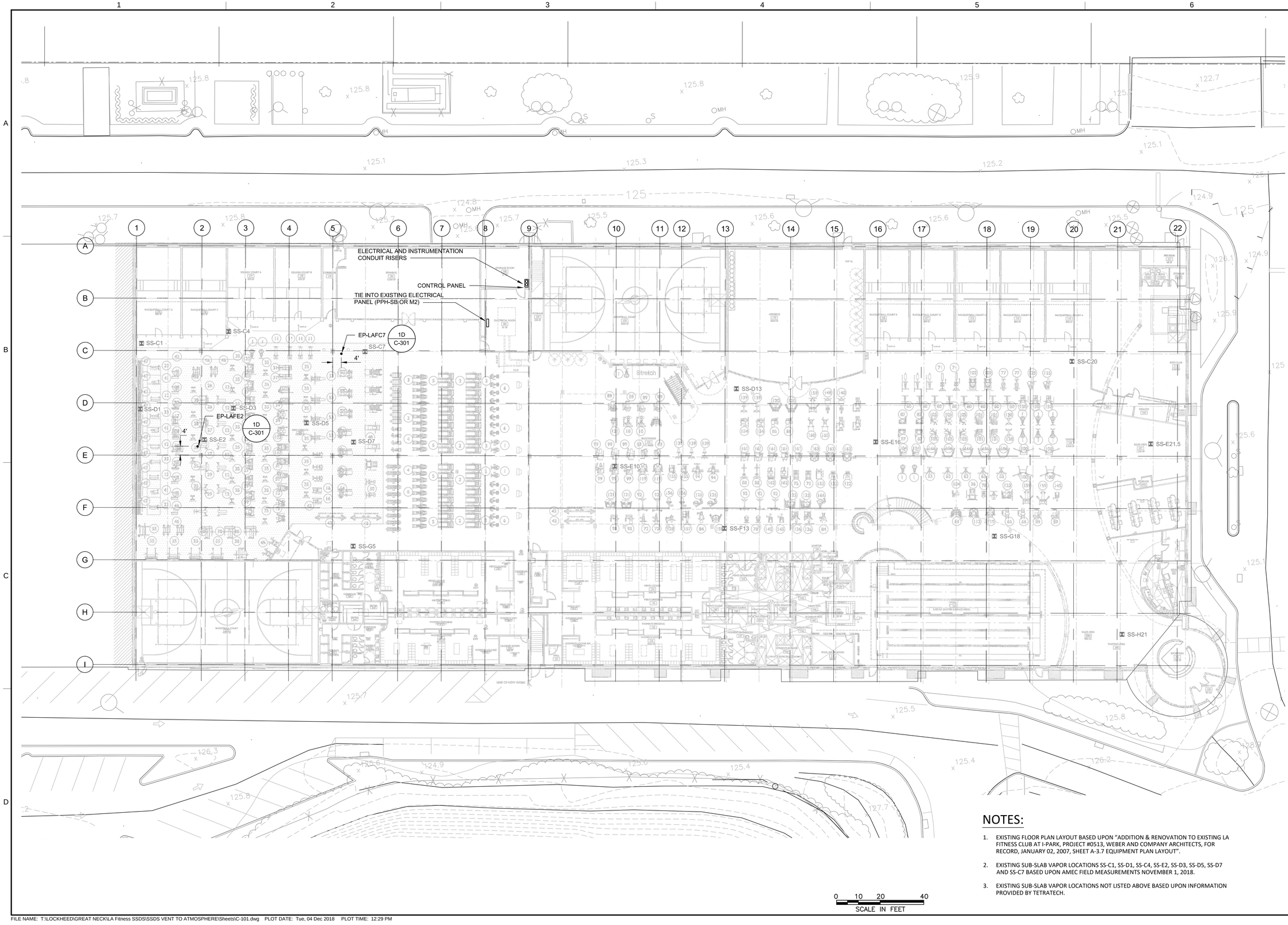

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FLOOR PLAN

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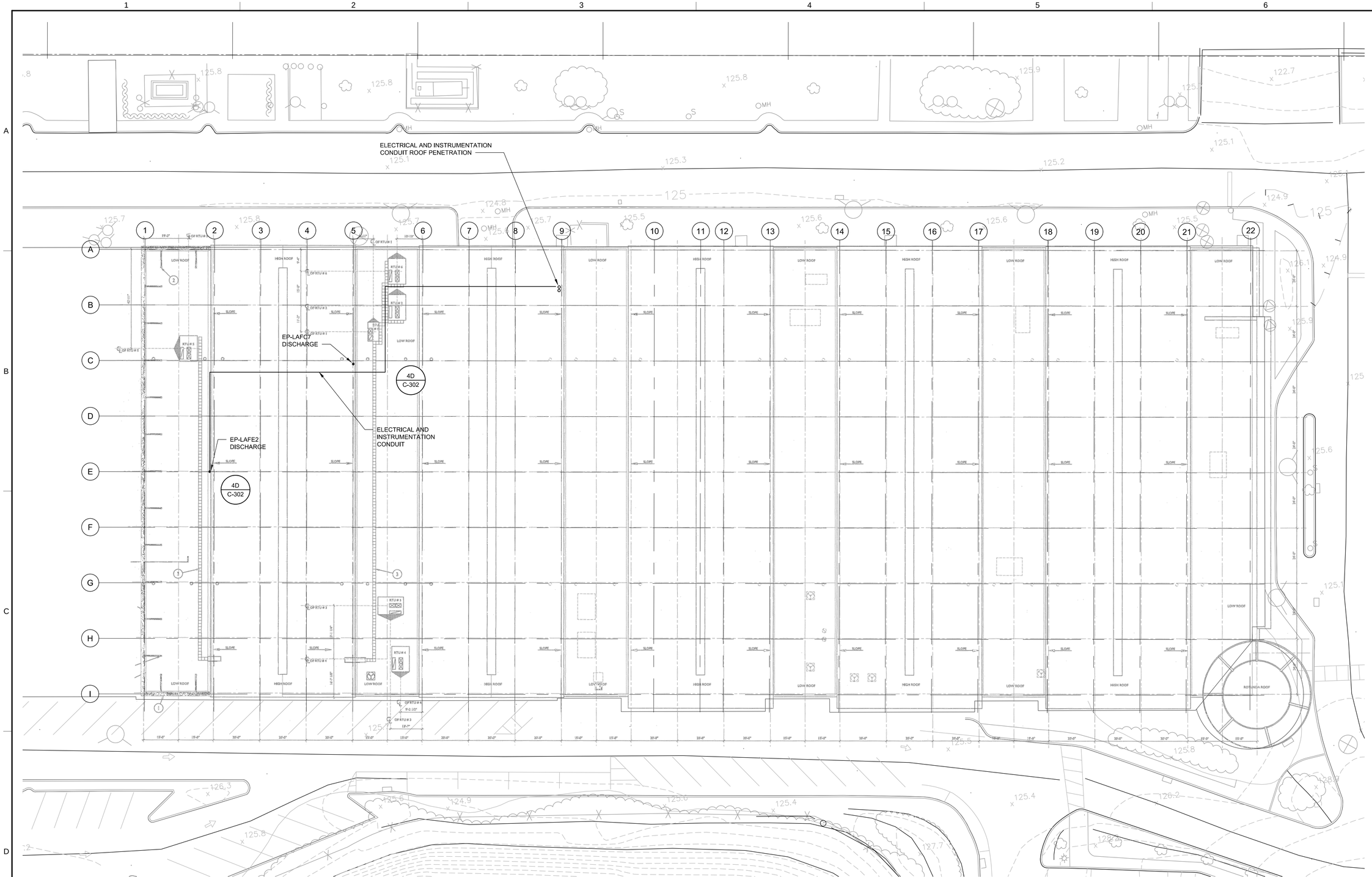

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ROOF PLAN

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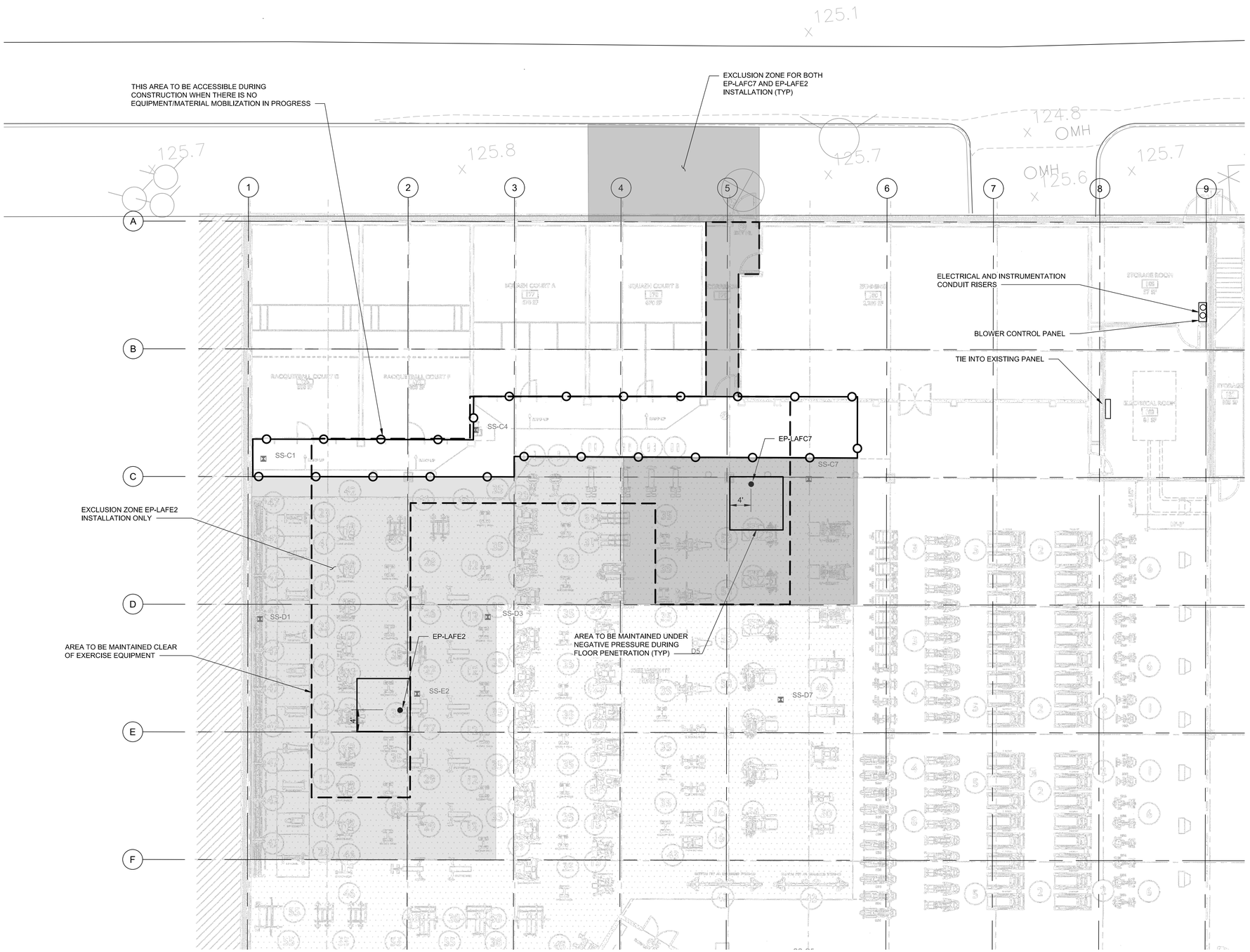

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WILLIAM J. WEBER
STATE OF NEW YORK * WILLIAM J. WEBER * 073883 * LICENSED PROFESSIONAL ENGINEER
PROFESSIONAL ENGINEER
New York License No. 073883

NO.	DATE	REVISION	DR	CHK	APVD	BY	APVD
A	12/04/18	100% DESIGN TO NYSDEC	RTB	RJR	RTB	RJR	RTB
DSGN	RTB	DR RJR CHK RTB APVD				WJW	APVD

LA FITNESS MITIGATION SYSTEM
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LAKE SUCCESS, NEW YORK 11042

DRAWING STATUS
100% DESIGN

CIVIL
WORK AREA AND
CONTRACTOR LAYDOWN

AMEC E & E, P.C
214-25 42nd Avenue Suite 3R,
Bayside, NY, 11361

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DATE	DECEMBER 2018
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DWG	C-103
SHEET	4 OF 8

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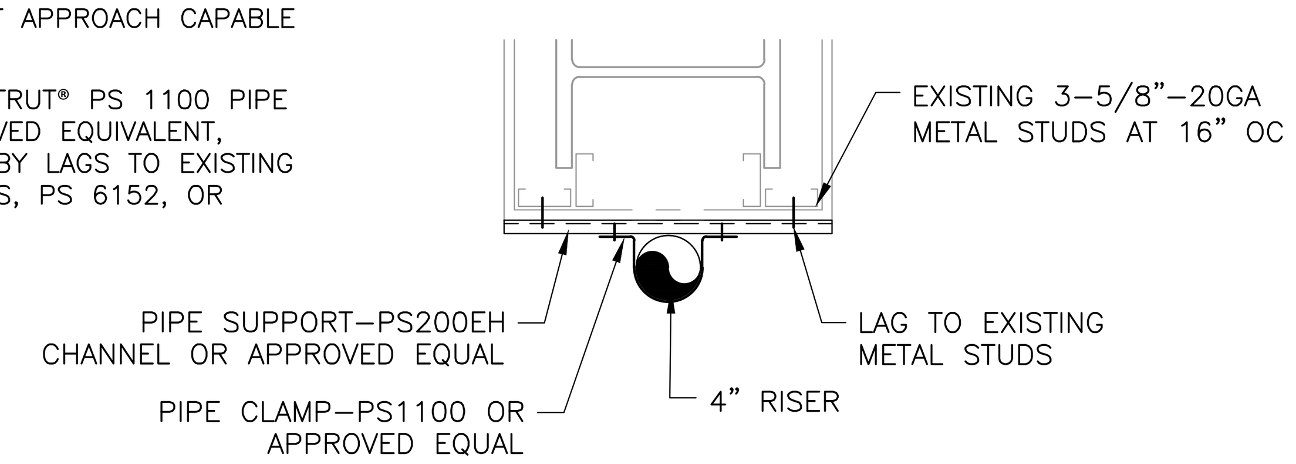
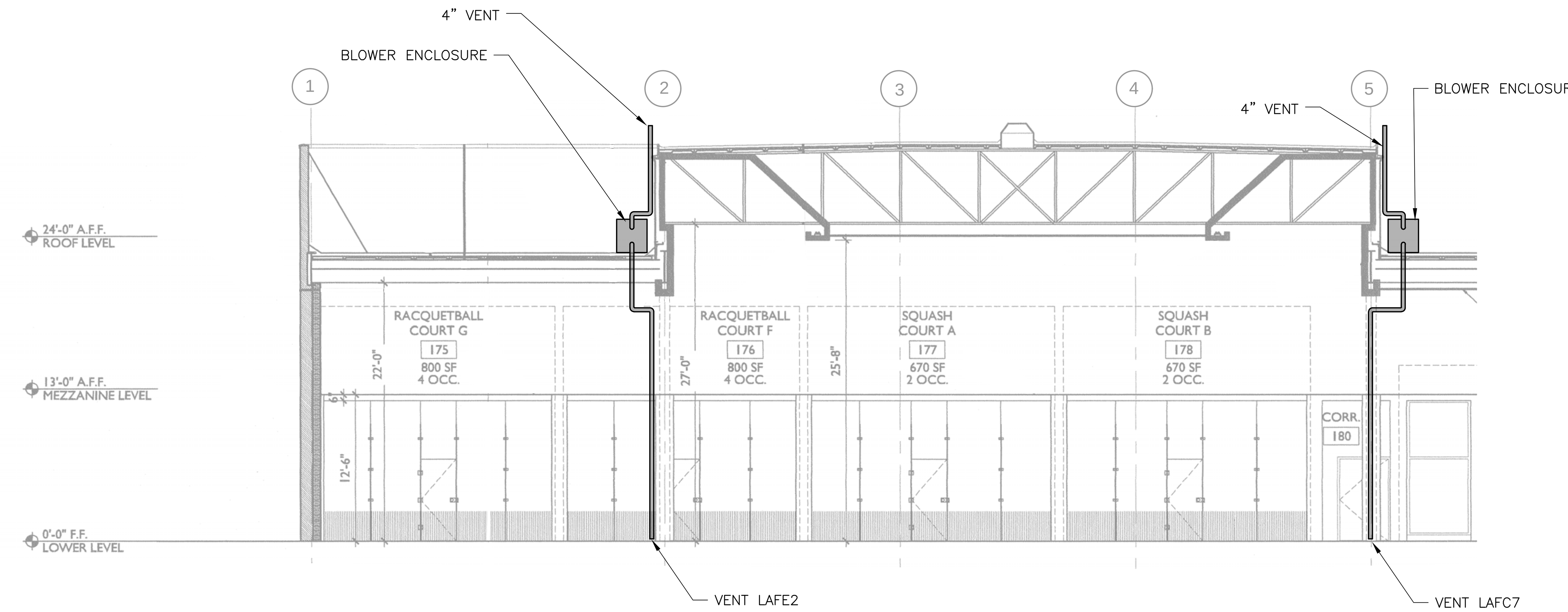
NOTES:

1. PIPING RISERS TO BE SUPPORTED AT THE BASE WITH A STANCHION INSTALLED SUB–SLAB, OR APPROVED EQUIVALENT APPROACH CAPABLE OF SUPPORTING THE PIPING RISER WEIGHT.
2. PIPING RISERS TO BE SUPPORTED BY POWER–STRUT® PS 1100 PIPE CLAMPS AND PS 200 EH CHANNELS, OR APPROVED EQUIVALENT, INSTALLED 48 INCHES ON CENTER, CONNECTED BY LAGS TO EXISTING STEEL STUDS. INSTALL STRUT SAFETY END CAPS, PS 6152, OR APPROVED EQUIVALENT.



2A PIPE SUPPORT AT INTERIOR COLUMN (TYP)

NOT TO SCALE



3B BUILDING SECTION

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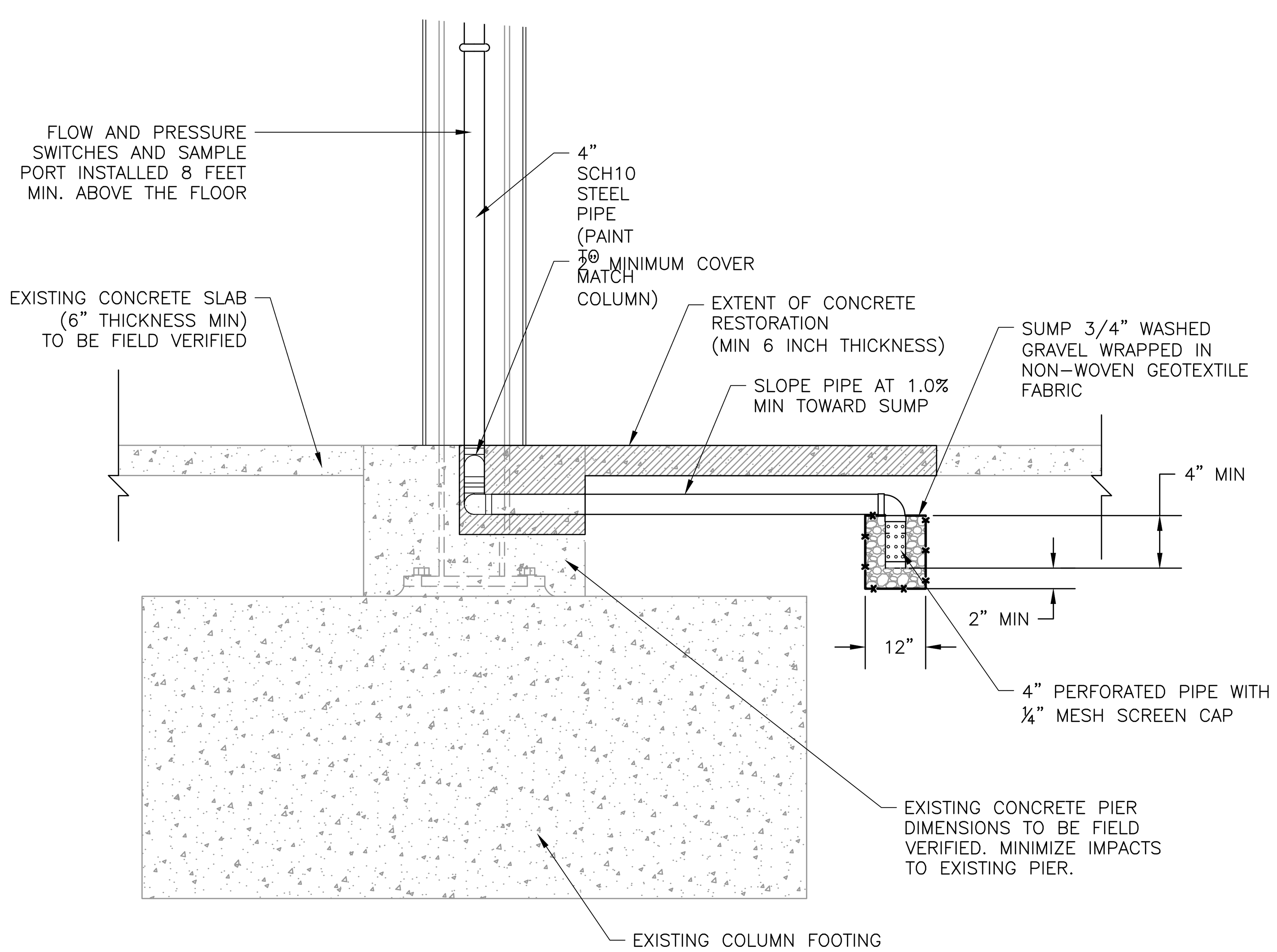

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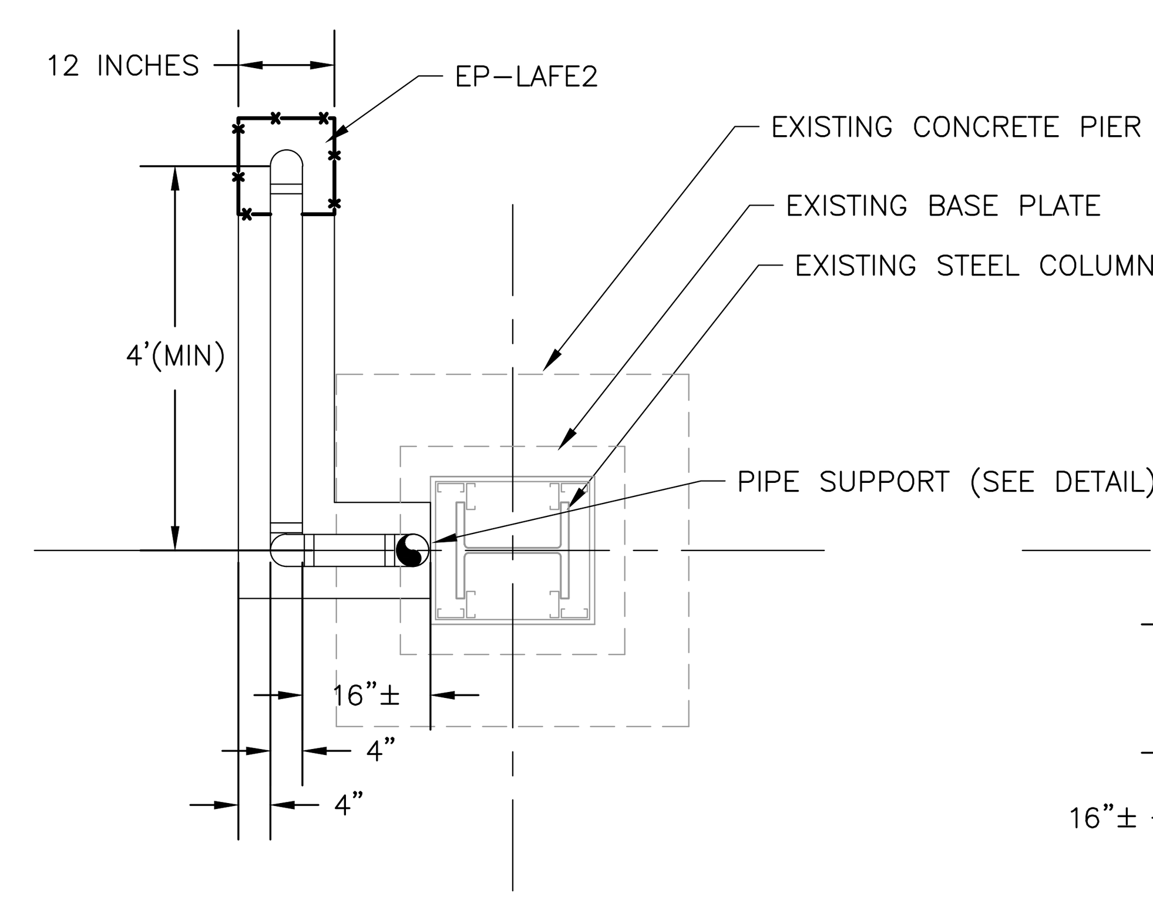
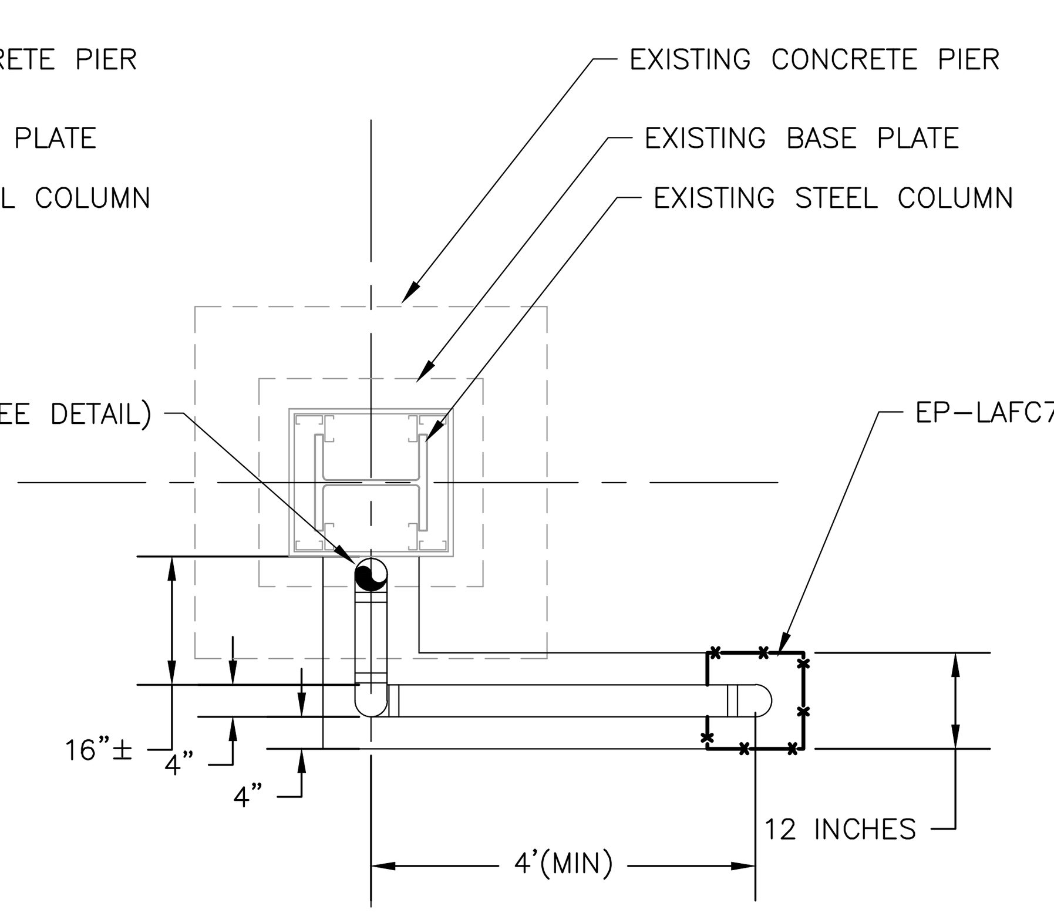


PLAN–LAFE2



PLAN–LAFC7

1D EXTRACTION POINT AT COLUMN (TYP)

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STATE OF NEW YORK — LICENSED PROFESSIONAL ENGINEER — 073863
PROFESSIONAL ENGINEER
New York License No. 073863

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DSGN RJR / BY RTB / APVD WJW

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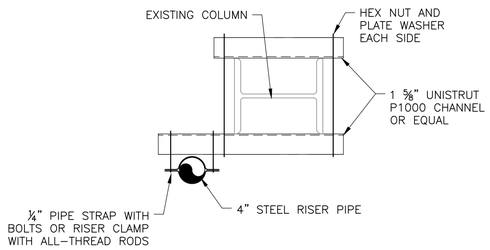
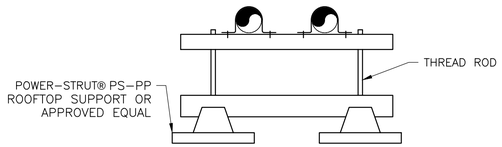
DATE	DECEMBER 2018
PROJ	3617-18-7448
DWG	C-301
SHEET	5 OF 8

FILE NAME: T:\LOCKHEED\GREAT NECK\LA Fitness SSDS\SSDS VENT TO ATMOSPHERE\Sheets\C-301.dwg PLOT DATE: Tue, 04 Dec 2018 PLOT TIME: 11:43 AM



1A DISCHARGE PIPE COLUMN FLANG MOUNTING

NOT TO SCALE



3A ROOFTOP CONDUIT SUPPORT

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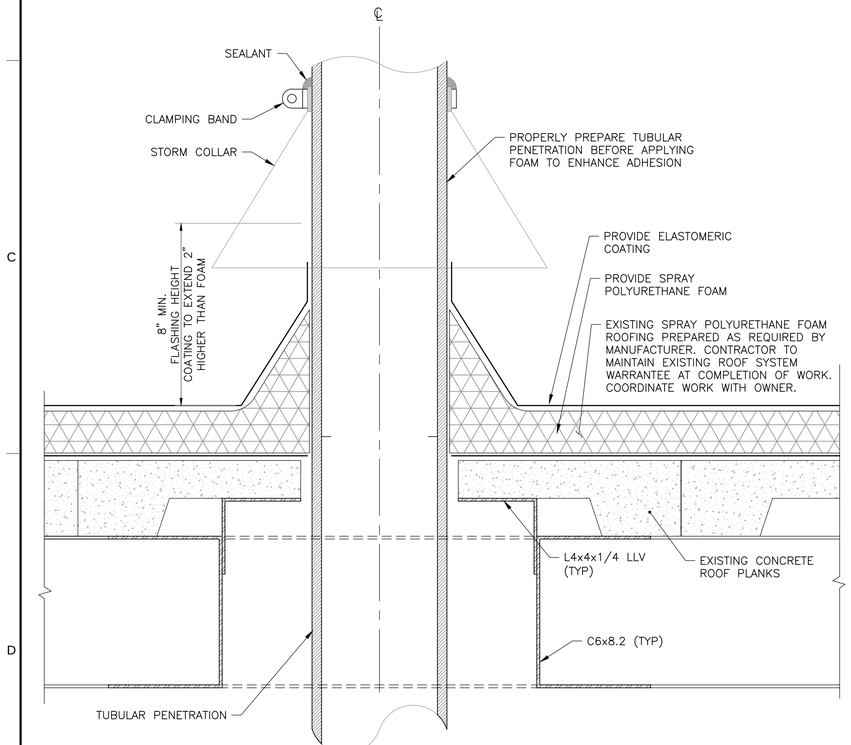

1D ROOF PENETRATION (TYP)

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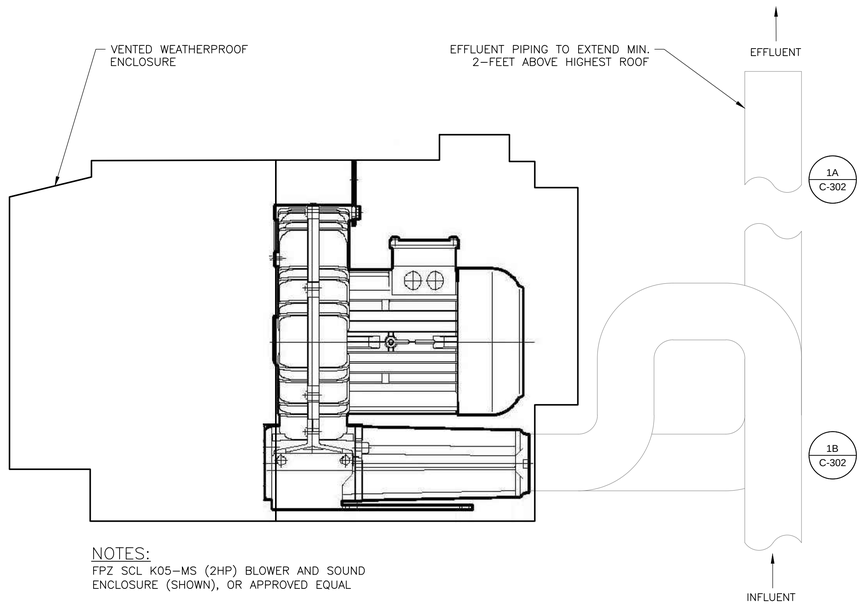

NOTES:
FPZ SCL K05-MS (2HP) BLOWER AND SOUND ENCLOSURE (SHOWN), OR APPROVED EQUAL

4D BLOWER AND ENCLOSURE PROFILE (TYP)

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PROFESSIONAL ENGINEER
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A	12/04/18	RTB	RJR	RTB	APVD	RJR
			REVISION			RTB
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						WJW

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DWG	C-302
SHEET	6 OF 8

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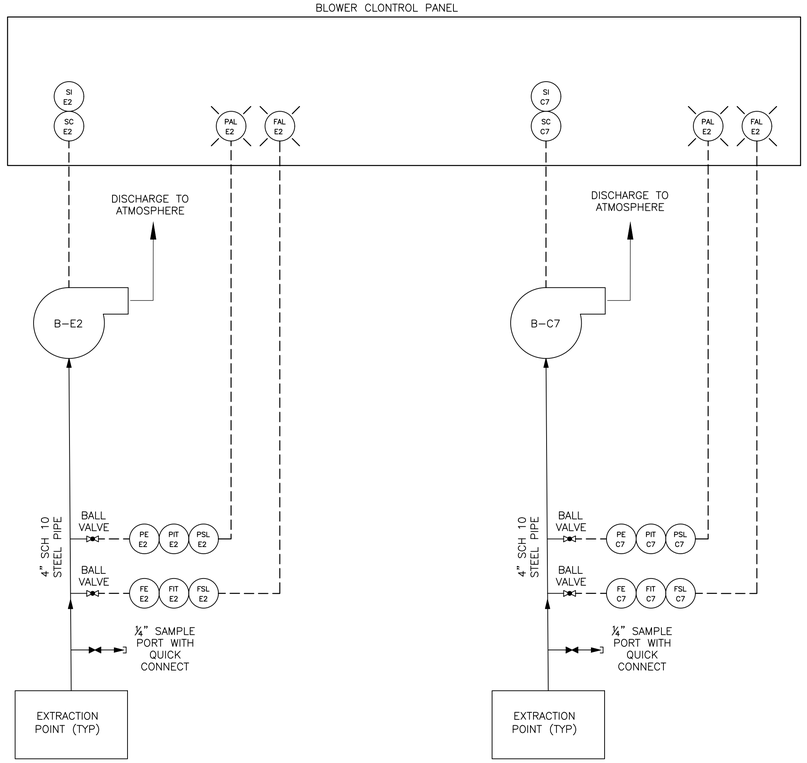

LEGEND:

SC	SPEED CONTROL-VARIABLE FREQUENCY DRIVE (VFO)
SI	SPEED INDICATOR
PE	PRESSURE ELEMENT
PIT	INDICATING PRESSURE TRANSMITTER
PSL	PRESSURE SWITCH LOW
PAL	PRESSURE ALARM LOW ON FRONT OF PANEL
FE	FLOW ELEMENT
FIT	INDICATING FLOW TRANSMITTER
FSL	FLOW SWITCH LOW
FAL	FLOW ALARM LOW ON FRONT OF PANEL

1D PIPING AND INSTRUMENTATION

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WILLIAM J. WEBER
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PROFESSIONAL ENGINEER
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NO.	DATE	REVISION	BY	APVD
A	12/04/18	100% DESIGN TO NYSDEC	RJR	RTB

DSGN RTB DR RJR CHK RTB APVD WJW

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LAKE SUCCESS, NEW YORK 11042

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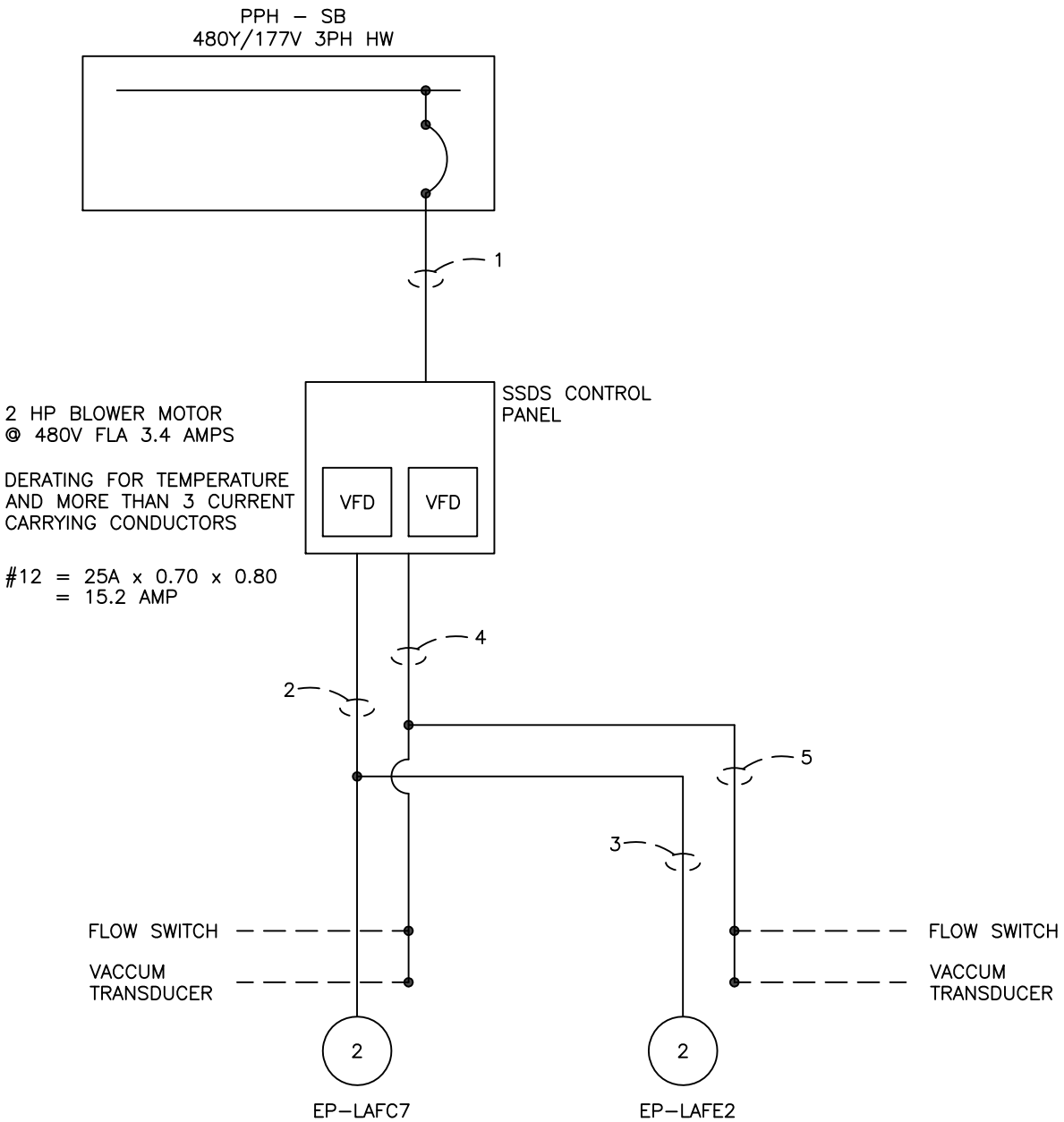
DATE DECEMBER 2018
PROJ 3617-18-7448
DWG D-301
SHEET 7 OF 8

FILE NAME: T:\LOCKHEED\GREAT NECK\LA Fitness SSDS\SSDS VENT TO ATMOSPHERE\Sheets\D-301.dwg PLOT DATE: Tue, 04 Dec 2018 PLOT TIME: 11:25 AM



CONDUIT SCHUDULE		
ITEM	CONDUITS	CONDUCTORS
# 1	3/4 EMT C	3/C # 12 + 1G
# 2	3/4 EMT C	6/C # 12 + 1G
# 3	3/4 EMT C	3/C # 12 + 1G
# 4	3/4 EMT C	4 TSP #18
# 5	3/4 EMT C	2 TSP #18

NO.	REVISIONS	DATE
A	FOR PERMIT APPLICATION	11/19/18

LA FITNESS
SINGLE LINE ELECTRICAL DIAGRAM

SCALE: NONE	APPROVED BY: –	DRAWN BY: TLO	
DATE: 11/19/18		JOB #: –	

GROUND/WATER TREATMENT & TECHNOLOGY
627 Mt. Hope Road
Wharton, NJ 07885

DWG SIZE: A	SHEET: 1 OF 1	DRAWING NUMBER: E–01	A

C:\Users\tlo\OneDrive – GWTT LLC\Work\(4) KK\LA–Fitness\Electrical Diagram.dwg

APPENDIX B

MANUFACTURER'S LITERATURE FOR PROPOSED EXTRACTION BLOWERS

FPZ BLOWER TECHNOLOGY

REGENERATIVE BLOWERS - VACUUM

SCL K03 / K04 / K05 / K06

MS SERIES

SN 1879-9 1/2

TECHNICAL CHARACTERISTICS

- Aluminium alloy construction
- Smooth operation
- High efficiency impeller
- Maintenance free
- Mountable in any position
- Recognized TEFC - cURus motor

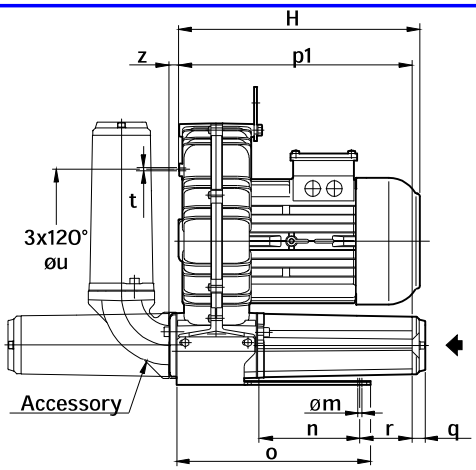
OPTIONS

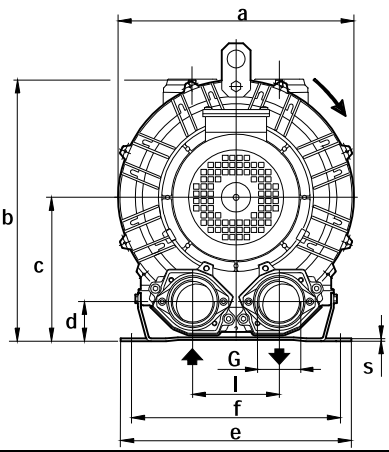
- Special voltages (IEC 38)
- Surface treatments

ACCESSORIES

- Inlet and/or inline filters
- Additional inlet/outlet silencers
- Safety valves
- Flow converting device
- Optional connectors

Dimensions in inches.
Dimension for reference only.





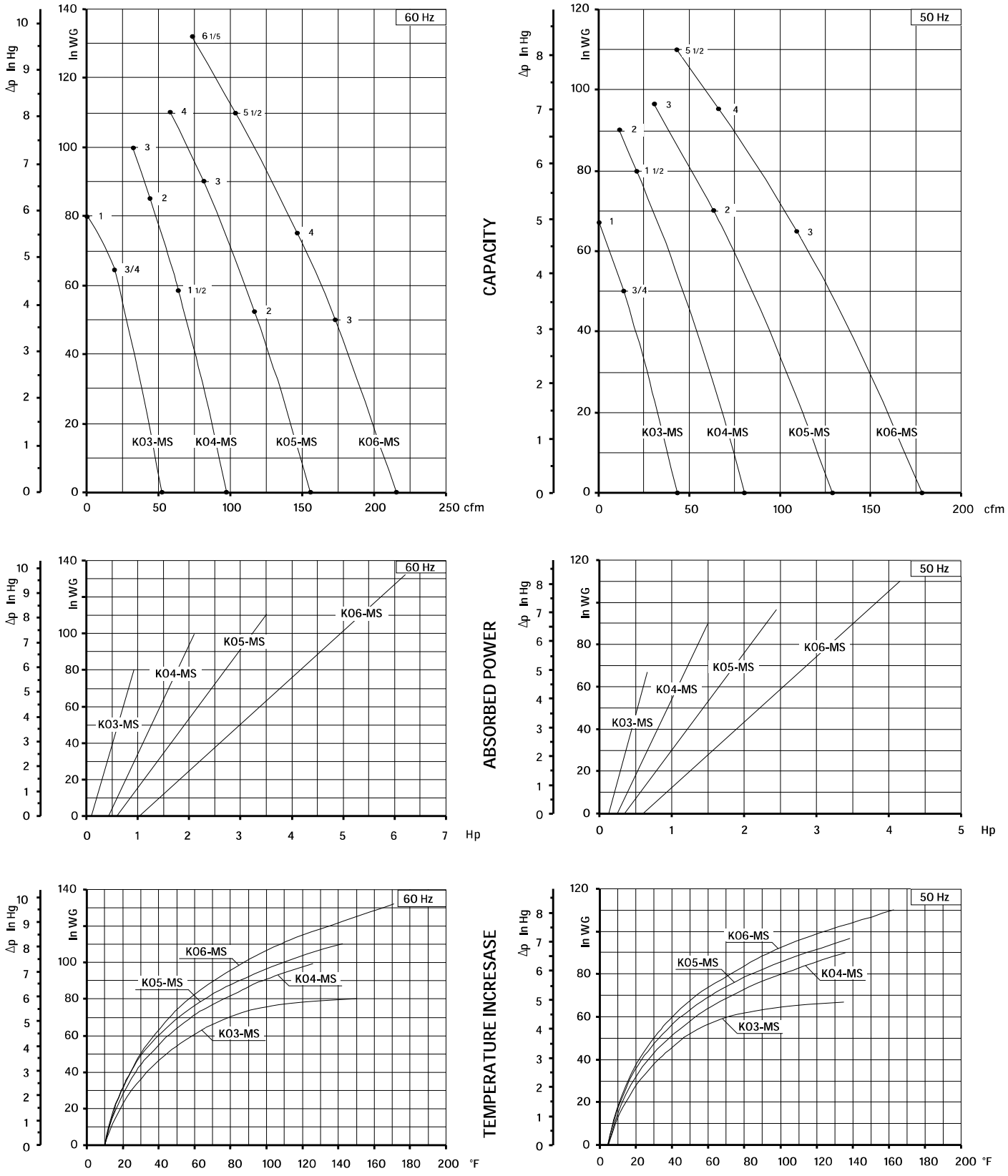
Model	a	b	c	d	e	f	G	l	m	n	o	p1	q	r	s	t	u	z
K03-MS	9.49	10.55	5.79	1.69	9.06	8.07	1" ¼ NPT	3.39	0.39	3.27	5.59	8.07	0.71	2.95	0.16	M6	5.51	0.47
K04-MS	11.22	12.40	6.77	1.93	10.04	8.86	1"1/2 NPT	4.02	0.47	3.74	6.73	8.74	0.71	2.76	0.16	M6	6.89	0.71
K05-MS	12.87	14.37	7.87	2.13	12.60	10.24	2" NPT	4.72	0.59	4.53	10.43	12.60	0.71	3.86	0.16	M8	7.87	0.75
K06-MS	14.80	15.47	8.07	2.13	12.80	11.42	2" NPT	4.92	0.59	5.51	10.71	13.15	0.71	3.35	0.16	M8	9.45	0.75

Model	Maximum flow cfm		Installed power Hp		Maximum differential pressure Δp (In Hg)		Noise level Lp dB (A) (1)		Overall dimensions H	Weight
	60 Hz 3500 rpm	50 Hz 2900 rpm	60 Hz 3500 rpm	50 Hz 2900 rpm	60 Hz 3500 rpm	50 Hz 2900 rpm	60 Hz 3500 rpm	50 Hz 2900 rpm	Inches	Lbs
K03-MS	52	43	3/4	3/4	4.7	3.7	61.0	59.0	10.43	24.30
			1	1	5.9	4.9	61.3	59.3	11.97	26.50
K04-MS	98	81	1 ½	1 ½	4.3	5.9	63.8	61.8	11.65	36.40
			2	2	6.3	6.6	64.0	62.0	13.78	43.00
			3	-	7.4	-	64.2	-	13.78	49.60
K05-MS	156	129	2	2	3.8	5.1	69.5	67.5	13.20	51.80
			3	3	6.6	7.1	69.8	67.8	13.20	58.40
			4	-	8.1	-	70.1	-	14.40	67.20
K06-MS	216	179	3	3	3.7	4.8	72.0	70.0	13.54	68.70
			4	4	5.5	7.0	72.3	70.3	14.17	71.65
			5 ½	5 ½	8.1	8.1	72.6	70.6	14.17	77.60
			6 1/5 (2)	-	9.6	-	72.9	-	14.45	77.60

(1) Noise measured at 1 m distance with inlet and outlet ports piped, in accordance to ISO 3744.
(2) No cURus motor

- For proper use, the blower should be equipped with inlet filter and safety valve; other accessories available on request.
- Ambient temperature from +5° to +104°F.
- Specifications subject to change without notice.

SCL KO3 / KO4 / KO5 / KO6
MS SERIES
SN 1879-9 2/2



Curves refer to air at 68° F temperature, measured at inlet port and 29.92 In Hg atmospheric backpressure (abs).
Values for flow, power consumption and temperature rise: +/-10% tolerance.
Data subject to change without notice.

APPENDIX C

AIR EMISSIONS CALCULATIONS AND ASSESSMENT

Air Guide Analysis - DAR-1, Stand-Alone Blower Operation, LA Fitness

Updated by: RTB
Checked by: WJW

Basis of Calculations:

1. Calculations are conservatively based on the highest sub-slab soil vapor sample concentrations detected in sub-slab soil vapor samples collected from the LA Fitness building for each individual constituent based on a review of sub-slab soil vapor analytical data collected in November 2017 and March 2018.
2. Annual Guideline Concentration (AGCs) values and Short-Term Guideline Concentrations (SGCs) were obtained from the August 10, 2016 *Guidelines* for the Evaluation and Control of Ambient Air Contaminants Under Part 212 prepared by the New York State Department of Environmental Conservation.
3. 1,1,1-Trichloroethane concentration of 13 micrograms per cubic meter ($\mu g/m^3$) detected at SS-C7 (November 2017).
4. 1,1-Dichloroethane (1,1-DCE) was not detected at a concentration above the reporting limit. Concentration was conservatively set to the reporting limit of 0.79 $\mu g/m^3$ (November 2017).
5. Carbon Tetrachloride concentration of 0.91 $\mu g/m^3$ detected at SS-G18 (November 2017).
6. cis-1,2-DCE concentration of 47 $\mu g/m^3$ detected at SS-G5 (November 2017).
7. Methylene Chloride concentration of 3.7 $\mu g/m^3$ detected at SS-E10 (November 2017).
8. Tetrachloroethylene (PCE) concentration of 260 $\mu g/m^3$ detected at SS-E16DUP (Duplicate Sample; March 2018).
9. Trichloroethylene (TCE) concentration of 380 $\mu g/m^3$ detected at SS-E2 (November 2017).
10. Vinyl Chloride (VC) concentration of 3.0 $\mu g/m^3$ detected at SS-G5 (November 2017).

Sub-Slab Soil Vapor Analytical Results:	**µg/m3**	**PPMv**
1,1,1-TCA concentration:	13	0.0023437
1,1-DCE concentration:	0.79	0.000196
Carbon Tetrachloride concentration:	0.91	0.0001423
cis 1,2-DCE (DCE) concentration:	47	0.011
Methylene Chloride concentration:	3.7	0.0010477
Tetrachloroethene (PCE) concentration:	260	0.038
Trichloroethene (TCE) concentration:	380	0.070
Vinyl chloride concentration:	3	0.001
Air flow rate (cubic feet per minute [cfm]):	200	

Calculate Emission Rate in Pounds/Hour (lb/hr):

Flow Rate = 200 cfm

Emission Rate (lb/hr) = flow rate * concentration (PPMv) * molecular weight * 1.581E-07

Note that 1.581E-07 = $1/10^6$ ppm-v * 60 minutes/hour * 1 lb-mole/379.5 ft^3

Emission Rate for 1,1,1-TCA (lb/hr) = 200 cfm * 0.00234 PPMv * 133.4 * 1.581E-07 =	0.000010	**lb/hr**	**or**	0.0866	**lb/yr**	0.00024 **lb/day**
Emission Rate for 1,1-DCE (lb/hr) = 200 cfm * 0.0002 PPMv * 96.94 * 1.581E-07 =	0.0000006	**lb/hr**	**or**	0.0053	**lb/yr**	0.000014 **lb/day**
Emission Rate for Carbon Tetrachloride (lb/hr) = 200 cfm * 0.00014 PPMv * 153.82 * 1.581E-07 =	0.000001	**lb/hr**	**or**	0.0061	**lb/yr**	0.000017 **lb/day**
Emission Rate for cis-1,2-DCE (lb/hr) = 200 cfm * 0.011 PPMv * 96.94 * 1.581E-07 =	0.000035	**lb/hr**	**or**	0.3037	**lb/yr**	0.00083 **lb/day**
Emission Rate for Methylene Chloride (lb/hr) = 200 cfm * 0.00105 PPMv * 84.93 * 1.581E-07 =	0.0000028	**lb/hr**	**or**	0.0246	**lb/yr**	0.000068 **lb/day**
Emission Rate for PCE (lb/hr) = 200 cfm * 0.013 PPMv * 165.8 * 1.581E-07 =	0.0002	**lb/hr**	**or**	1.7	**lb/yr**	0.0047 **lb/day**
Emission Rate for TCE (lb/hr) = 200 cfm * 0.070 PPMv * 131.4 * 1.581E-07 =	0.0003	**lb/hr**	**or**	2.5	**lb/yr**	0.0069 **lb/day**
Emission Rate for Vinyl Chloride (lb/hr) = 200 cfm * 0.001 PPMv * 62.50 * 1.581E-07 =	0.000002	**lb/hr**	**or**	0.02	**lb/yr**	0.000055 **lb/day**
					Total	0.0125 **lb/day**

Standard Point Source Method (Appendix B – Division of Air Resources):

Hs (Height of Stack) = 34' Hb (Height of Building) = 24'

Hs/Hb = 1.4 < 1.5 No Plume Rise

Therefore effective stack height = Hs, H_E= 34 feet

Calculate Maximum Annual Impact (Ca)

Ca ($\mu g/m^3$) = $6 * Q_a/H_E^{2.25}$

Q_a = Emission Rate in pounds per year calculated above

Ca for 1,1,1-TCA ($\mu g/m^3$) =	0.00019
Ca for 1,1-DCE ($\mu g/m^3$) =	0.000011
Ca for Carbon Tetrachloride ($\mu g/m^3$)	0.000013
Ca for cis-1,2-DCE ($\mu g/m^3$)	0.0007
Ca for Methylene Chloride $\mu g/m^3$) =	0.00005
Ca for PCE ($\mu g/m^3$) =	0.0037
Ca for TCE ($\mu g/m^3$) =	0.005
Ca for Vinyl Chloride ($\mu g/m^3$) =	0.000043

Calculate Maximum Potential Annual Impact (Cp)

Cp ($\mu g/m^3$) = $52{,}500*Q/H_E^{2.25}$

Q = Emission Rate in pounds per hour calculated above

Cp for 1,1,1-TCA (µg/m3) =	0.00019
Cp for 1,1-DCE (µg/m3) =	0.000011
Cp for Carbon Tetrachloride (µg/m3) =	0.000013
Cp for cis-1,2-DCE (µg/m3) =	0.0007
Cp for Methylene Chloride (µg/m3) =	0.00005
Cp for PCE ($\mu g/m^3$) =	0.0037
Cp for TCE ($\mu g/m^3$) =	0.005
Cp for Vinyl Chloride ($\mu g/m^3$)	0.000043

Since Hs/Hb < 1.5 -- No Stack Reduction Factors Apply

AGC for 1,1,1-TCA = 5,000 $\mu g/m^3$	Ca for 1,1,1-TCA < AGC -- OK!
AGC for 1,1-DCE = 200 $\mu g/m^3$	Ca for 1,1-DCE < AGC -- OK!
AGC for Carbon Tetrachloride = 0.17 $\mu g/m^3$	Ca for Carbon Tetrachloride < AGC -- OK!
AGC for cis-1,2-DCE = 63 $\mu g/m^3$	Ca for cis-1,2-DCE < AGC -- OK!
AGC for Methylene Chloride = 60 $\mu g/m^3$	Ca for Methylene Chloride < AGC -- OK!
AGC for PCE = 4.0 $\mu g/m^3$	Ca for PCE < AGC -- OK!
AGC for TCE = 0.2 $\mu g/m^3$	Ca for TCE < AGC -- OK!
AGC for Vinyl Chloride = 0.11 $\mu g/m^3$	Ca for Vinyl Chloride < AGC -- OK!

Calculate Maximum Short Term Impact (Cst)

Cst ($\mu g/m^3$) = Cp * 65

Cst for 1,1,1-TCA ($\mu g/m^3$) =	0.012
Cst for 1,1-DCE ($\mu g/m^3$) =	0.0007
Cst for Carbon Tetrachloride ($\mu g/m^3$) =	0.0008
Cst for 1,2-DCE ($\mu g/m^3$) =	0.042
Cst for Methylene Chloride ($\mu g/m^3$) =	0.0034
Cst for PCE ($\mu g/m^3$) =	0.24
Cst for TCE ($\mu g/m^3$) =	0.35
Cst for Vinyl Chloride ($\mu g/m^3$) =	0.0028

SGC for 1,1,1-TCA = 9,000 $\mu g/m^3$	Cst for 1,1,1-TCA < SGC -- OK!
SGC for 1,1-DCE = No Standard	No SGC exists for this compound.
SGC for Carbon Tetrachloride = 1,900 $\mu g/m^3$	Cst for Carbon Tetrachloride < SGC -- OK!
SGC for 1,2-DCE = No Standard	No SGC exists for this compound.
SGC for Methylene Chloride = 14,000 $\mu g/m^3$	Cst for Methylene Chloride < 14,000 $\mu g/m^3$
SGC for PCE = 300 $\mu g/m^3$	Cst for PCE < SGC -- OK!
SGC for TCE = 20 $\mu g/m^3$	Cst for TCE < SGC -- OK!
SGC for Vinyl Chloride = 180,000 $\mu g/m^3$	Cst for Vinyl Chloride < SGC -- OK!

Since the estimated emissions for each constituent detected in soil vapor are less than their respective AGC and SGC values, no vapor phase carbon units are necessary.

APPENDIX D

MARCH 2018 SUPPLEMENTAL VAPOR INTRUSION SAMPLING RESULT

Table 1
March 2018 - LA Fitness Sampling Results
Former Unisys Facility, Lake Success, New York

Sample ID	**SS-C7_20180312**			**IA-C7_20180312**			**IA-C7_20180312DUP**			**SS-C1_20180312**			**IA-C1_20180312**			**SS-D5_20180312**			**IA-D5_20180312**			**SS-G18_20180312**			**IA-G18_20180312**		
Lab Sample ID	200-42614-1			200-42614-13			200-42614-14			200-42614-18			200-42614-2			200-42614-3			200-42614-12			200-42614-11			200-42614-4		
Sampling Date	03/12/2018 08:25:00			03/12/2018 08:25:00			03/12/2018 08:25:00			03/12/2018 08:40:00			03/12/2018 08:40:00			03/12/2018 09:20:00			03/12/2018 09:20:00			03/12/2018 08:05:00			03/12/2018 08:05:00		
Matrix	Air			Air			Air			Air			Air			Air			Air			Air			Air		
Dilution Factor	1			1			1			1			1			1			1			1			1		
Unit	ug/m3			ug/m3			ug/m3			ug/m3			ug/m3			ug/m3			ug/m3			ug/m3			ug/m3		
AIR - GC/MS VOA-TO-15-UG/M3	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL
AIR BY TO-15																											
1,1,1-Trichloroethane	3.1		0.14	1.1	U	0.14	1.1	U	0.14	1.1	U	0.14	1.1	U	0.14	13		0.14	1.1	U	0.14	1.1	U	0.14	1.1	U	0.14
1,1,2,2-Tetrachloroethane	1.4	U	0.18	1.4	U	0.18	1.4	U	0.18	1.4	U	0.18	1.4	U	0.18	1.4	U	0.18	1.4	U	0.18	1.4	U	0.18	1.4	U	0.18
1,1,2-Trichloroethane	1.1	U	0.093	1.1	U	0.093	1.1	U	0.093	1.1	U	0.093	1.1	U	0.093	1.1	U	0.093	1.1	U	0.093	1.1	U	0.093	1.1	U	0.093
1,1-Dichloroethane	0.14	U	0.069	0.14	U	0.069	0.14	U	0.069	0.14	U	0.069	0.14	U	0.069	0.14	U	0.069	0.14	U	0.069	0.14	U	0.069	0.14	U	0.069
1,1-Dichloroethene	0.79	U	0.14	0.79	U	0.14	0.79	U	0.14	0.79	U	0.14	0.79	U	0.14	0.79	U	0.14	0.79	U	0.14	0.79	U	0.14	0.79	U	0.14
1,2,4-Trichlorobenzene	3.7	U	1.4	3.7	U	1.4	3.7	U	1.4	3.7	U	1.4	3.7	U	1.4	3.7	U	1.4	3.7	U	1.4	3.7	U	1.4	3.7	U	1.4
1,2,4-Trimethylbenzene	0.98	U	0.28	0.98	U	0.28	0.98	U	0.28	0.98	U	0.28	0.98	U	0.28	0.98	U	0.28	0.98	U	0.28	0.98	U	0.28	0.98	U	0.28
1,2-Dibromoethane	1.5	U	0.18	1.5	U	0.18	1.5	U	0.18	1.5	U	0.18	1.5	U	0.18	1.5	U	0.18	1.5	U	0.18	1.5	U	0.18	1.5	U	0.18
1,2-Dichlorobenzene	1.2	U	0.27	1.2	U	0.27	1.2	U	0.27	1.2	U	0.27	1.2	U	0.27	1.2	U	0.27	1.2	U	0.27	1.2	U	0.27	1.2	U	0.27
1,2-Dichloroethane	0.81	U	0.14	0.81	U	0.14	0.81	U	0.14	0.81	U	0.14	0.81	U	0.14	0.81	U	0.14	0.81	U	0.14	0.81	U	0.14	0.81	U	0.14
1,2-Dichloroethene, Total	1.6	U	0.11	1.6	U	0.11	1.6	U	0.11	1.6	U	0.11	1.6	U	0.11	1.6	U	0.11	1.6	U	0.11	1.6	U	0.11	1.6	U	0.11
1,2-Dichloropropane	0.92	U	0.16	0.92	U	0.16	0.92	U	0.16	0.92	U	0.16	0.92	U	0.16	0.92	U	0.16	0.92	U	0.16	0.92	U	0.16	0.92	U	0.16
1,2-Dichlorotetrafluoroethane	1.4	U	0.29	1.4	U	0.29	1.4	U	0.29	1.4	U	0.29	1.4	U	0.29	1.4	U	0.29	1.4	U	0.29	1.4	U	0.29	1.4	U	0.29
1,3,5-Trimethylbenzene	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20
1,3-Butadiene	0.44	U	0.082	0.44	U	0.082	0.44	U	0.082	0.44	U	0.082	0.44	U	0.082	0.44	U	0.082	0.44	U	0.082	0.44	U	0.082	0.44	U	0.082
1,3-Dichlorobenzene	1.2	U	0.30	1.2	U	0.30	1.2	U	0.30	1.2	U	0.30	1.2	U	0.30	1.2	U	0.30	1.2	U	0.30	1.2	U	0.30	1.2	U	0.30
1,4-Dichlorobenzene	1.2	U	0.38	1.2	U	0.38	1.2	U	0.38	1.2	U	0.38	1.2	U	0.38	1.2	U	0.38	1.2	U	0.38	1.2	U	0.38	1.2	U	0.38
1,4-Dioxane	18	U	2.7	18	U	2.7	18	U	2.7	18	U	2.7	18	U	2.7	18	U	2.7	18	U	2.7	18	U	2.7	18	U	2.7
3-Chloropropene	1.6	U	0.20	1.6	U	0.20	1.6	U	0.20	1.6	U	0.20	1.6	U	0.20	1.6	U	0.20	1.6	U	0.20	1.6	U	0.20	1.6	U	0.20
4-Ethyltoluene	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20
Acetone	20		3.1	40		3.1	41		3.1	20		3.1	51		3.1	13		3.1	46		3.1	15		3.1	46		3.1
Benzene	0.64	U	0.089	0.64	U	0.089	0.64	U	0.089	0.64	U	0.089	0.64	U	0.089	0.64	U	0.089	0.64	U	0.089	0.64	U	0.089	0.64	U	0.089
Bromodichloromethane	1.3	U	0.40	1.3	U	0.40	1.3	U	0.40	1.3	U	0.40	1.3	U	0.40	1.3	U	0.40	1.3	U	0.40	1.3	U	0.40	1.3	U	0.40
Bromoform	2.1	U	0.36	2.1	U	0.36	2.1	U	0.36	2.1	U	0.36	2.1	U	0.36	2.1	U	0.36	2.1	U	0.36	2.1	U	0.36	2.1	U	0.36
Bromomethane	0.78	U	0.14	0.78	U	0.14	0.78	U	0.14	0.78	U	0.14	0.78	U	0.14	0.78	U	0.14	0.78	U	0.14	0.78	U	0.14	0.78	U	0.14
Carbon disulfide	1.9		0.087	1.6	U	0.087	1.6	U	0.087	1.6	U	0.087	1.6	U	0.087	1.6	U	0.087	1.6	U	0.087	1.6	U	0.087	1.6	U	0.087
Carbon tetrachloride	0.43		0.069	0.42		0.069	0.41		0.069	0.43		0.069	0.40		0.069	0.36		0.069	0.40		0.069	0.91		0.069	0.41		0.069
Chlorobenzene	0.92	U	0.12	0.92	U	0.12	0.92	U	0.12	0.92	U	0.12	0.92	U	0.12	0.92	U	0.12	0.92	U	0.12	0.92	U	0.12	0.92	U	0.12
Chloroethane	1.3	U	0.34	1.3	U	0.34	1.3	U	0.34	1.3	U	0.34	1.3	U	0.34	1.3	U	0.34	1.3	U	0.34	1.3	U	0.34	1.3	U	0.34
Chloroform	7.1		0.12	8.7		0.12	8.6		0.12	1.7		0.12	8.8		0.12	8.5		0.12	9.4		0.12	95		0.12	23		0.12
Chloromethane	1.0	U	0.33	1.2		0.33	1.3		0.33	1.0	U	0.33	1.3		0.33	1.0	U	0.33	1.2		0.33	1.0	U	0.33	1.2		0.33
cis-1,2-Dichloroethene	0.14	U	0.11	0.14	U	0.11	0.14	U	0.11	0.14	U	0.11	0.14	U	0.11	0.14	U	0.11	0.14	U	0.11	0.14	U	0.11	0.14	U	0.11
cis-1,3-Dichloropropene	0.91	U	0.16	0.91	U	0.16	0.91	U	0.16	0.91	U	0.16	0.91	U	0.16	0.91	U	0.16	0.91	U	0.16	0.91	U	0.16	0.91	U	0.16
Cumene	0.98	U	0.19	0.98	U	0.19	0.98	U	0.19	0.98	U	0.19	0.98	U	0.19	0.98	U	0.19	0.98	U	0.19	0.98	U	0.19	0.98	U	0.19
Cyclohexane	0.69	U	0.15	0.69	U	0.15	0.69	U	0.15	0.69	U	0.15	0.69	U	0.15	0.69	U	0.15	0.69	U	0.15	0.69	U	0.15	0.69	U	0.15
Dibromochloromethane	1.7	U	0.14	1.7	U	0.14	1.7	U	0.14	1.7	U	0.14	1.7	U	0.14	1.7	U	0.14	1.7	U	0.14	1.7	U	0.14	1.7	U	0.14
Dichlorodifluoromethane	2.5	U	0.23	2.5	U	0.23	2.5	U	0.23	2.5	U	0.23	2.5	U	0.23	2.5	U	0.23	2.5	U	0.23	2.5	U	0.23	2.5	U	0.23
Ethylbenzene	0.87	U	0.15	0.87	U	0.15	0.87	U	0.15	0.87	U	0.15	0.87	U	0.15	0.87	U	0.15	0.87	U	0.15	0.87	U	0.15	0.87	U	0.15
Freon 22	1.8	U	0.71	1.8	U	0.71	1.8	U	0.71	1.8	U	0.71	1.8	U	0.71	1.8	U	0.71	1.8	U	0.71	1.8	U	0.71	1.8	U	0.71
Freon TF	2.3		0.21	1.5	U	0.21	1.5	U	0.21	1.5	U	0.21	1.5	U	0.21	10		0.21	1.5	U	0.21	22		0.21	1.5	U	0.21
Hexachlorobutadiene	2.1	U	0.68	2.1	U	0.68	2.1	U	0.68	2.1	U	0.68	2.1	U	0.68	2.1	U	0.68	2.1	U	0.68	2.1	U	0.68	2.1	U	0.68
Isopropyl alcohol	75		0.32	190	E	0.32	200	E	0.32	12	U	0.32	190	E	0.32	12	U	0.32	230	E	0.32	12	U	0.32	180	E	0.32
m,p-Xylene	2.2	U	0.33	2.2	U	0.33	2.2	U	0.33	2.2	U	0.33	2.2	U	0.33	2.2	U	0.33	2.2	U	0.33	2.2	U	0.33	2.2	U	0.33
Methyl Butyl Ketone (2-Hexanone)	2.0	U	0.35	2.0	U	0.35	2.0	U	0.35	2.0	U	0.35	2.0	U	0.35	2.0	U	0.35	2.0	U	0.35	2.0	U	0.35	2.0	U	0.35
Methyl Ethyl Ketone	1.7		0.32	1.5		0.32	1.6		0.32	3.0		0.32	3.1		0.32	2.1		0.32	1.7		0.32	2.2		0.32	1.7		0.32
methyl isobutyl ketone	2.0	U	0.27	2.0	U	0.27	2.0	U	0.27	2.0	U	0.27	2.0	U	0.27	2.0	U	0.27	2.0	U	0.27	2.0	U	0.27	2.0	U	0.27
Methyl tert-butyl ether	0.72	U	0.15	0.72	U	0.15	0.72	U	0.15	0.72	U	0.15	0.72	U	0.15	0.72	U	0.15	0.72	U	0.15	0.72	U	0.15	0.72	U	0.15
Methylene Chloride	1.7	U	0.24	1.9		0.24	2.0		0.24	1.7	U	0.24	1.7	U	0.24	1.7	U	0.24	1.7	U	0.24	1.7	U	0.24	1.7	U	0.24
n-Hexane	0.70	U	0.16	0.70	U	0.16	0.70	U	0.16	0.70	U	0.16	0.70	U	0.16	0.70	U	0.16	0.70	U	0.16	0.70	U	0.16	0.70	U	0.16
Styrene	0.85	U	0.15	0.85	U	0.15	0.85	U	0.15	0.85	U	0.15	0.85	U	0.15	0.85	U	0.15	0.85	U	0.15	0.85	U	0.15	0.85	U	0.15
Tetrachloroethene	1.4	U	0.066	1.4	U	0.066	1.4	U	0.066	2.6		0.066	1.4	U	0.066	9.3		0.066	1.4	U	0.066	30		0.066	1.4	U	0.066
Toluene	1.7		0.13	1.8		0.13	1.3		0.13	1.1		0.13	0.78		0.13	1.6		0.13	0.75	U	0.13	1.4		0.13	0.75	U	0.13
trans-1,2-Dichloroethene	0.79	U	0.20	0.79	U	0.20	0.79	U	0.20	0.79	U	0.20	0.79	U	0.20	0.79	U	0.20	0.79	U	0.20	0.79	U	0.20	0.79	U	0.20
trans-1,3-Dichloropropene	0.91	U	0.17	0.91	U	0.17	0.91	U	0.17	0.91	U	0.17	0.91	U	0.17	0.91	U	0.17	0.91	U	0.17	0.91	U	0.17	0.91	U	0.17
Trichloroethene	49		0.049	0.19	U	0.049	0.19	U	0.049	43		0.049	0.19	U	0.049	250			0.19	U	0.049	2.8		0.049	0.19	U	0.049
Trichlorofluoromethane	1.3		0.17	1.1		0.17	1.1	U	0.17	1.3		0.17	1.1	U	0.17	2.4		0.17	1.1	U	0.17	2.0		0.17	1.1	U	0.17
Vinyl chloride	0.089	U	0.046	0.089	U	0.046	0.089	U	0.046	0.089	U	0.046	0.089	U	0.046	0.089	U	0.046	0.089	U	0.046	0.089	U	0.046	0.089	U	0.046
Xylene (total)	3.0	U	0.17	3.0	U	0.17	3.0	U	0.17	3.0	U	0.17	3.0	U	0.17	3.0	U	0.17	3.0	U	0.17	3.0	U	0.17	3.0	U	0.17
Xylene, o-	0.87	U	0.17	0.87	U	0.17	0.87	U	0.17	0.87	U	0.17	0.87	U	0.17	0.87	U	0.17	0.87	U	0.17	0.87	U	0.17	0.87	U	0.17

NR: Not Analyzed
D : Sample results are obtained from a dilution; the surrogate or matrix spike recoveries reported are calculated from diluted samples.
E : Result exceeded calibration range.
U : Indicates the analyte was analyzed for but not detected.

Table 1
March 2018 - LA Fitness Sampling Results
Former Unisys Facility, Lake Success, New York

Sample ID	SS-C4_20180312			IA-C4_20180312			SS-E16_20180312			IA-E16_20180312			SS-E16_20180312DUP			SS-C20_20180312			IA-C20_20180312			IA-C20_20180312DUP		
Lab Sample ID	200-42614-9			200-42614-5			200-42614-7			200-42614-6			200-42614-8			200-42614-16			200-42614-17			200-42614-21		
Sampling Date	03/12/2018 08:55:00			03/12/2018 08:55:00			03/12/2018 08:10:00			03/12/2018 08:10:00			03/12/2018 08:10:00			03/12/2018 08:50:00			03/12/2018 08:50:00			03/12/2018 08:50:00		
Matrix	Air			Air			Air			Air			Air			Air			Air			Air		
Dilution Factor	5			1			1			1			1			1			1			1		
Unit	ug/m3			ug/m3			ug/m3			ug/m3			ug/m3			ug/m3			ug/m3			ug/m3		
AIR - GC/MS VOA-TO-15-UG/M3	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL
AIR BY TO-15																								
1,1,1-Trichloroethane	8.1		0.71	1.1	U	0.14	1.1	U	0.14	1.1	U	0.14	1.1	U	0.14	1.1	U	0.14	1.1	U	0.14	1.1	U	0.14
1,1,2,2-Tetrachloroethane	6.9	U	0.89	1.4	U	0.18	1.4	U	0.18	1.4	U	0.18	1.4	U	0.18	1.4	U	0.18	1.4	U	0.18	1.4	U	0.18
1,1,2-Trichloroethane	5.5	U	0.46	1.1	U	0.093	1.1	U	0.093	1.1	U	0.093	1.1	U	0.093	1.1	U	0.093	1.1	U	0.093	1.1	U	0.093
1,1-Dichloroethane	1.2		0.34	0.14	U	0.069	0.14	U	0.069	0.14	U	0.069	0.14	U	0.069	0.14	U	0.069	0.14	U	0.069	0.14	U	0.069
1,1-Dichloroethene	4.0	U	0.69	0.79	U	0.14	0.79	U	0.14	0.79	U	0.14	0.79	U	0.14	0.79	U	0.14	0.79	U	0.14	0.79	U	0.14
1,2,4-Trichlorobenzene	19	U	7.1	3.7	U	1.4	3.7	U	1.4	3.7	U	1.4	3.7	U	1.4	3.7	U	1.4	3.7	U	1.4	3.7	U	1.4
1,2,4-Trimethylbenzene	4.9	U	1.4	0.98	U	0.28	0.98	U	0.28	0.98	U	0.28	0.98	U	0.28	0.98	U	0.28	0.98	U	0.28	0.98	U	0.28
1,2-Dibromoethane	7.7	U	0.88	1.5	U	0.18	1.5	U	0.18	1.5	U	0.18	1.5	U	0.18	1.5	U	0.18	1.5	U	0.18	1.5	U	0.18
1,2-Dichlorobenzene	6.0	U	1.4	1.2	U	0.27	1.2	U	0.27	1.2	U	0.27	1.2	U	0.27	1.2	U	0.27	1.2	U	0.27	1.2	U	0.27
1,2-Dichloroethane	4.0	U	0.69	0.81	U	0.14	0.81	U	0.14	0.81	U	0.14	0.81	U	0.14	0.81	U	0.14	0.81	U	0.14	0.81	U	0.14
1,2-Dichloroethene, Total	7.9	U	0.57	1.6	U	0.11	1.6	U	0.11	1.6	U	0.11	1.6	U	0.11	1.6	U	0.11	1.6	U	0.11	1.6	U	0.11
1,2-Dichloropropane	4.6	U	0.81	0.92	U	0.16	0.92	U	0.16	0.92	U	0.16	0.92	U	0.16	0.92	U	0.16	0.92	U	0.16	0.92	U	0.16
1,2-Dichlorotetrafluoroethane	7.0	U	1.4	1.4	U	0.29	1.4	U	0.29	1.4	U	0.29	1.4	U	0.29	1.4	U	0.29	1.4	U	0.29	1.4	U	0.29
1,3,5-Trimethylbenzene	4.9	U	0.98	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20
1,3-Butadiene	2.2	U	0.41	0.44	U	0.082	0.44	U	0.082	0.44	U	0.082	0.44	U	0.082	0.44	U	0.082	0.44	U	0.082	0.44	U	0.082
1,3-Dichlorobenzene	6.0	U	1.5	1.2	U	0.30	1.2	U	0.30	1.2	U	0.30	1.2	U	0.30	1.2	U	0.30	1.2	U	0.30	1.2	U	0.30
1,4-Dichlorobenzene	6.0	U	1.9	1.2	U	0.38	1.2	U	0.38	1.2	U	0.38	1.2	U	0.38	1.2	U	0.38	1.2	U	0.38	1.2	U	0.38
1,4-Dioxane	90	U	14	18	U	2.7	18	U	2.7	18	U	2.7	18	U	2.7	18	U	2.7	18	U	2.7	18	U	2.7
3-Chloropropene	7.8	U	0.99	1.6	U	0.20	1.6	U	0.20	1.6	U	0.20	1.6	U	0.20	1.6	U	0.20	1.6	U	0.20	1.6	U	0.20
4-Ethyltoluene	4.9	U	0.98	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20
Acetone	4600	D	610	36		3.1	12		3.1	53		3.1	12		3.1	76		3.1	170	D	9.2	150	D	7.7
Benzene	3.3		0.45	0.64	U	0.089	0.64	U	0.089	0.77		0.089	0.64	U	0.089	0.63		0.089	0.64	U	0.089	0.64	U	0.089
Bromodichloromethane	6.7	U	2.0	1.3	U	0.40	1.3	U	0.40	1.3	U	0.40	1.3	U	0.40	1.3	U	0.40	1.3	U	0.40	1.3	U	0.40
Bromoform	10	U	1.8	2.1	U	0.36	2.1	U	0.36	2.1	U	0.36	2.1	U	0.36	2.1	U	0.36	2.1	U	0.36	2.1	U	0.36
Bromomethane	3.9	U	0.70	0.78	U	0.14	0.78	U	0.14	0.78	U	0.14	0.78	U	0.14	0.78	U	0.14	0.78	U	0.14	0.78	U	0.14
Carbon disulfide	7.8	U	0.44	1.6	U	0.087	1.6	U	0.087	1.6	U	0.087	1.6	U	0.087	1.6	U	0.087	1.6	U	0.087	1.6	U	0.087
Carbon tetrachloride	1.1	U	0.35	0.37		0.069	0.43		0.069	0.43		0.069	0.51		0.069	0.49		0.069	0.46		0.069	0.48		0.069
Chlorobenzene	4.6	U	0.58	0.92	U	0.12	0.92	U	0.12	0.92	U	0.12	0.92	U	0.12	0.92	U	0.12	0.92	U	0.12	0.92	U	0.12
Chloroethane	6.6	U	1.7	1.3	U	0.34	1.3	U	0.34	1.3	U	0.34	1.3	U	0.34	1.3	U	0.34	1.3	U	0.34	1.3	U	0.34
Chloroform	4.9	U	0.61	8.1		0.12	18		0.12	19		0.12	21		0.12	12		0.12	21		0.12	19		0.12
Chloromethane	5.2	U	1.7	1.3		0.33	1.0	U	0.33	2.7		0.33	1.0	U	0.33	1.0	U	0.33	1.5		0.33	1.5		0.33
cis-1,2-Dichloroethene	0.70	U	0.57	0.14	U	0.11	0.14	U	0.11	0.14	U	0.11	0.14	U	0.11	0.14	U	0.11	0.14	U	0.11	0.14	U	0.11
cis-1,3-Dichloropropene	4.5	U	0.82	0.91	U	0.16	0.91	U	0.16	0.91	U	0.16	0.91	U	0.16	0.91	U	0.16	0.91	U	0.16	0.91	U	0.16
Cumene	4.9	U	0.96	0.98	U	0.19	0.98	U	0.19	0.98	U	0.19	0.98	U	0.19	0.98	U	0.19	0.98	U	0.19	0.98	U	0.19
Cyclohexane	3.4	U	0.77	0.69	U	0.15	0.69	U	0.15	1.0		0.15	0.69	U	0.15	0.69	U	0.15	0.69	U	0.15	0.69	U	0.15
Dibromochloromethane	8.5	U	0.72	1.7	U	0.14	1.7	U	0.14	1.7	U	0.14	1.7	U	0.14	1.7	U	0.14	1.7	U	0.14	1.7	U	0.14
Dichlorodifluoromethane	12	U	1.2	2.5	U	0.23	2.5	U	0.23	2.5	U	0.23	2.5	U	0.23	2.5	U	0.23	2.5	U	0.23	2.5	U	0.23
Ethylbenzene	4.3	U	0.74	0.87	U	0.15	0.87	U	0.15	0.87	U	0.15	0.87	U	0.15	0.87	U	0.15	0.87	U	0.15	0.87	U	0.15
Freon 22	8.8	U	3.5	1.8	U	0.71	1.8	U	0.71	1.8	U	0.71	1.8	U	0.71	1.8	U	0.71	1.8	U	0.71	1.8	U	0.71
Freon TF	7.7	U	1.0	1.5	U	0.21	1.5	U	0.21	1.5	U	0.21	1.5	U	0.21	71		0.21	1.5	U	0.21	1.5	U	0.21
Hexachlorobutadiene	11	U	3.4	2.1	U	0.68	2.1	U	0.68	2.1	U	0.68	2.1	U	0.68	2.1	U	0.68	2.1	U	0.68	2.1	U	0.68
Isopropyl alcohol	110		1.6	210	E	0.32	12	U	0.32	160	E	0.32	12	U	0.32	37		0.32	290	E	0.32	270	E	0.32
m,p-Xylene	11	U	1.7	2.2	U	0.33	2.2	U	0.33	2.2	U	0.33	2.2	U	0.33	2.2	U	0.33	2.2	U	0.33	2.2	U	0.33
Methyl Butyl Ketone (2-Hexanone)	10	U	1.8	2.0	U	0.35	2.0	U	0.35	2.0	U	0.35	2.0	U	0.35	2.0	U	0.35	2.0	U	0.35	2.0	U	0.35
Methyl Ethyl Ketone	220		1.6	1.5	U	0.32	2.0		0.32	2.1		0.32	2.1		0.32	3.3		0.32	1.5		0.32	1.5		0.32
methyl isobutyl ketone	12		1.3	2.0	U	0.27	2.0	U	0.27	2.0	U	0.27	2.0	U	0.27	2.0	U	0.27	2.0	U	0.27	2.0	U	0.27
Methyl tert-butyl ether	3.6	U	0.74	0.72	U	0.15	0.72	U	0.15	0.72	U	0.15	0.72	U	0.15	0.72	U	0.15	0.72	U	0.15	0.72	U	0.15
Methylene Chloride	8.7	U	1.2	1.7	U	0.24	1.8		0.24	1.7	U	0.24	1.8		0.24	1.7	U	0.24	1.7	U	0.24	1.7	U	0.24
n-Hexane	11		0.81	0.70	U	0.16	0.70	U	0.16	0.88		0.16	0.70	U	0.16	0.70	U	0.16	0.70	U	0.16	0.70	U	0.16
Styrene	4.3	U	0.75	0.85	U	0.15	0.85	U	0.15	0.85	U	0.15	0.85	U	0.15	0.85	U	0.15	0.85	U	0.15	0.85	U	0.15
Tetrachloroethene	6.8	U	0.33	1.4	U	0.066	87		0.066	1.4	U	0.066	260	D	0.10	9.1		0.066	1.4	U	0.066	1.4	U	0.066
Toluene	5.3		0.66	0.75	U	0.13	1.2		0.13	3.6		0.13	1.5		0.13	2.4		0.13	1.3		0.13	2.0		0.13
trans-1,2-Dichloroethene	4.0	U	0.99	0.79	U	0.20	0.79	U	0.20	0.79	U	0.20	0.79	U	0.20	0.79	U	0.20	0.79	U	0.20	0.79	U	0.20
trans-1,3-Dichloropropene	5.5		0.86	0.91	U	0.17	0.91	U	0.17	0.91	U	0.17	0.91	U	0.17	0.91	U	0.17	0.91	U	0.17	0.91	U	0.17
Trichloroethene	6.5		0.24	0.19	U	0.049	0.60		0.049	0.26		0.049	1.0		0.049	0.19	U	0.049	0.19	U	0.049	0.19	U	0.049
Trichlorofluoromethane	5.6	U	0.87	1.1	U	0.17	1.2		0.17	1.1	U	0.17	1.2		0.17	1.1	U	0.17	1.1		0.17	1.3		0.17
Vinyl chloride	0.45	U	0.23	0.089	U	0.046	0.089	U	0.046	0.089	U	0.046	0.089	U	0.046	0.089	U	0.046	0.089	U	0.046	0.089	U	0.046
Xylene (total)	15	U	0.87	3.0	U	0.17	3.0	U	0.17	3.0	U	0.17	3.0	U	0.17	3.0	U	0.17	3.0	U	0.17	3.0	U	0.17
Xylene, o-	4.3	U	0.87	0.87	U	0.17	0.87	U	0.17	0.92		0.17	0.87	U	0.17	0.87	U	0.17	0.87	U	0.17	0.87	U	0.17

NR: Not Analyzed
D : Sample results are obtained from a dilution; the surrogate or matrix spike recoveries reported are calculated from diluted samples.
E : Result exceeded calibration range.
U : Indicates the analyte was analyzed for but not detected.

Table 1
March 2018 - LA Fitness Sampling Results
Former Unisys Facility, Lake Success, New York

Sample ID	SS-D3_20180312			SS-D3_20180312DUP			IA-D3_20180312			SS-D7_20180312			IA-D7_20180312			IA-12_20180312			AA_20180312		
Lab Sample ID	200-42614-22			200-42614-23			200-42614-19			200-42614-24			200-42614-20			200-42614-10			200-42614-15		
Sampling Date	03/12/2018 09:00:00			03/12/2018 09:00:00			03/12/2018 09:00:00			03/12/2018 09:15:00			03/12/2018 09:15:00			03/12/2018 09:25:00			03/12/2018 08:00:00		
Matrix	Air			Air			Air			Air			Air			Air			Air		
Dilution Factor	1			1			1			1			1			1			1		
Unit	ug/m3			ug/m3			ug/m3			ug/m3			ug/m3			ug/m3			ug/m3		
AIR - GC/MS VOA-TO-15-UG/M3	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL
AIR BY TO-15																					
1,1,1-Trichloroethane	9.8		0.14	8.5		0.14	1.1	U	0.14	2.9		0.14	1.1	U	0.14	1.1	U	0.14	1.1	U	0.14
1,1,2,2-Tetrachloroethane	1.4	U	0.18	1.4	U	0.18	1.4	U	0.18	1.4	U	0.18	1.4	U	0.18	1.4	U	0.18	1.4	U	0.18
1,1,2-Trichloroethane	1.1	U	0.093	1.1	U	0.093	1.1	U	0.093	1.1	U	0.093	1.1	U	0.093	1.1	U	0.093	1.1	U	0.093
1,1-Dichloroethane	0.14	U	0.069	0.14	U	0.069	0.14	U	0.069	0.14	U	0.069	0.14	U	0.069	0.14	U	0.069	0.14	U	0.069
1,1-Dichloroethene	0.79	U	0.14	0.79	U	0.14	0.79	U	0.14	0.79	U	0.14	0.79	U	0.14	0.79	U	0.14	0.79	U	0.14
1,2,4-Trichlorobenzene	3.7	U	1.4	3.7	U	1.4	3.7	U	1.4	3.7	U	1.4	3.7	U	1.4	3.7	U	1.4	3.7	U	1.4
1,2,4-Trimethylbenzene	0.98	U	0.28	7.5		0.28	0.98	U	0.28	0.98	U	0.28	0.98	U	0.28	0.98	U	0.28	0.98	U	0.28
1,2-Dibromoethane	1.5	U	0.18	1.5	U	0.18	1.5	U	0.18	1.5	U	0.18	1.5	U	0.18	1.5	U	0.18	1.5	U	0.18
1,2-Dichlorobenzene	1.2	U	0.27	1.2	U	0.27	1.2	U	0.27	1.2	U	0.27	1.2	U	0.27	1.2	U	0.27	1.2	U	0.27
1,2-Dichloroethane	0.81	U	0.14	0.81	U	0.14	0.81	U	0.14	0.81	U	0.14	0.81	U	0.14	0.81	U	0.14	0.81	U	0.14
1,2-Dichloroethene, Total	1.6	U	0.11	1.9		0.11	1.6	U	0.11	1.6	U	0.11	1.6	U	0.11	1.6	U	0.11	1.6	U	0.11
1,2-Dichloropropane	0.92	U	0.16	0.92	U	0.16	0.92	U	0.16	0.92	U	0.16	0.92	U	0.16	0.92	U	0.16	0.92	U	0.16
1,2-Dichlorotetrafluoroethane	1.4	U	0.29	1.4	U	0.29	1.4	U	0.29	1.4	U	0.29	1.4	U	0.29	1.4	U	0.29	1.4	U	0.29
1,3,5-Trimethylbenzene	0.98	U	0.20	2.0		0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20
1,3-Butadiene	0.44	U	0.082	0.44	U	0.082	0.44	U	0.082	0.44	U	0.082	0.44	U	0.082	0.44	U	0.082	0.44	U	0.082
1,3-Dichlorobenzene	1.2	U	0.30	1.2	U	0.30	1.2	U	0.30	1.2	U	0.30	1.2	U	0.30	1.2	U	0.30	1.2	U	0.30
1,4-Dichlorobenzene	1.2	U	0.38	1.2	U	0.38	1.2	U	0.38	1.2	U	0.38	1.2	U	0.38	1.2	U	0.38	1.2	U	0.38
1,4-Dioxane	18	U	2.7	18	U	2.7	18	U	2.7	18	U	2.7	18	U	2.7	18	U	2.7	18	U	2.7
3-Chloropropene	1.6	U	0.20	1.6	U	0.20	1.6	U	0.20	1.6	U	0.20	1.6	U	0.20	1.6	U	0.20	1.6	U	0.20
4-Ethyltoluene	0.98	U	0.20	2.2		0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20	0.98	U	0.20
Acetone	260	D	15	230	D	12	45		3.1	17		3.1	50		3.1	12	U	3.1	12	U	3.1
Benzene	0.69		0.089	1.1		0.089	0.64	U	0.089	0.64	U	0.089	0.64	U	0.089	0.64	U	0.089	0.64	U	0.089
Bromodichloromethane	1.3	U	0.40	1.3	U	0.40	1.3	U	0.40	1.3	U	0.40	1.3	U	0.40	1.3	U	0.40	1.3	U	0.40
Bromoform	2.1	U	0.36	2.1	U	0.36	2.1	U	0.36	2.1	U	0.36	2.1	U	0.36	2.1	U	0.36	2.1	U	0.36
Bromomethane	0.78	U	0.14	0.78	U	0.14	0.78	U	0.14	0.78	U	0.14	0.78	U	0.14	0.78	U	0.14	0.78	U	0.14
Carbon disulfide	4.4		0.087	2.3		0.087	1.6	U	0.087	1.6	U	0.087	1.6	U	0.087	1.6	U	0.087	1.6	U	0.087
Carbon tetrachloride	0.33		0.069	0.35		0.069	0.40		0.069	0.38		0.069	0.43		0.069	0.44		0.069	0.37		0.069
Chlorobenzene	0.92	U	0.12	0.92	U	0.12	0.92	U	0.12	0.92	U	0.12	0.92	U	0.12	0.92	U	0.12	0.92	U	0.12
Chloroethane	1.3	U	0.34	1.3	U	0.34	1.3	U	0.34	1.3	U	0.34	1.3	U	0.34	1.3	U	0.34	1.3	U	0.34
Chloroform	5.4		0.12	4.7		0.12	7.2		0.12	6.4		0.12	9.7		0.12	5.7		0.12	0.98	U	0.12
Chloromethane	1.0	U	0.33	1.0	U	0.33	1.2		0.33	1.0	U	0.33	1.4		0.33	1.0	U	0.33	1.1		0.33
cis-1,2-Dichloroethene	0.14	U	0.11	1.9		0.11	0.14	U	0.11	0.36		0.11	0.14	U	0.11	0.14	U	0.11	0.14	U	0.11
cis-1,3-Dichloropropene	0.91	U	0.16	0.91	U	0.16	0.91	U	0.16	0.91	U	0.16	0.91	U	0.16	0.91	U	0.16	0.91	U	0.16
Cumene	0.98	U	0.19	0.98	U	0.19	0.98	U	0.19	0.98	U	0.19	0.98	U	0.19	0.98	U	0.19	0.98	U	0.19
Cyclohexane	0.75		0.15	1.5		0.15	0.69	U	0.15	0.69	U	0.15	0.69	U	0.15	0.69	U	0.15	0.69	U	0.15
Dibromochloromethane	1.7	U	0.14	1.7	U	0.14	1.7	U	0.14	1.7	U	0.14	1.7	U	0.14	1.7	U	0.14	1.7	U	0.14
Dichlorodifluoromethane	2.5	U	0.23	2.5	U	0.23	2.5	U	0.23	2.5	U	0.23	2.5	U	0.23	2.5	U	0.23	2.5	U	0.23
Ethylbenzene	0.87	U	0.15	4.6		0.15	0.87	U	0.15	0.87	U	0.15	0.87	U	0.15	0.87	U	0.15	0.87	U	0.15
Freon 22	1.8	U	0.71	1.8	U	0.71	1.8	U	0.71	1.8	U	0.71	1.8	U	0.71	1.8	U	0.71	1.8	U	0.71
Freon TF	6.2		0.21	5.6		0.21	1.5	U	0.21	3.9		0.21	1.5	U	0.21	1.5	U	0.21	1.5	U	0.21
Hexachlorobutadiene	2.1	U	0.68	2.1	U	0.68	2.1	U	0.68	2.1	U	0.68	2.1	U	0.68	2.1	U	0.68	2.1	U	0.68
Isopropyl alcohol	39		0.32	34		0.32	210	E	0.32	22		0.32	280	E	0.32	12	U	0.32	12	U	0.32
m,p-Xylene	2.2	U	0.33	14		0.33	2.2	U	0.33	2.2	U	0.33	2.2	U	0.33	2.2	U	0.33	2.2	U	0.33
Methyl Butyl Ketone (2-Hexanone)	2.0	U	0.35	2.0	U	0.35	2.0	U	0.35	2.0	U	0.35	2.0	U	0.35	2.0	U	0.35	2.0	U	0.35
Methyl Ethyl Ketone	7.1		0.32	8.5		0.32	1.9		0.32	2.0		0.32	1.6		0.32	1.5		0.32	1.5	U	0.32
methyl isobutyl ketone	2.0	U	0.27	2.0	U	0.27	2.0	U	0.27	2.0	U	0.27	2.0	U	0.27	2.0	U	0.27	2.0	U	0.27
Methyl tert-butyl ether	0.72	U	0.15	0.72	U	0.15	0.72	U	0.15	0.72	U	0.15	0.72	U	0.15	0.72	U	0.15	0.72	U	0.15
Methylene Chloride	1.7	U	0.24	1.7	U	0.24	1.7	U	0.24	3.0		0.24	1.7	U	0.24	9.1		0.24	1.7	U	0.24
n-Hexane	0.93		0.16	1.5		0.16	0.70	U	0.16	0.70	U	0.16	0.70	U	0.16	0.70	U	0.16	0.70	U	0.16
Styrene	0.85	U	0.15	0.85	U	0.15	0.85	U	0.15	0.85	U	0.15	0.85	U	0.15	0.85	U	0.15	0.85	U	0.15
Tetrachloroethene	7.9		0.066	7.0		0.066	1.4	U	0.066	1.4	U	0.066	1.4	U	0.066	1.4	U	0.066	1.4	U	0.066
Toluene	1.9		0.13	11		0.13	2.5		0.13	2.8		0.13	0.94		0.13	0.78		0.13	0.75	U	0.13
trans-1,2-Dichloroethene	0.79	U	0.20	0.79	U	0.20	0.79	U	0.20	0.79	U	0.20	0.79	U	0.20	0.79	U	0.20	0.79	U	0.20
trans-1,3-Dichloropropene	0.91	U	0.17	0.91	U	0.17	0.91	U	0.17	0.91	U	0.17	0.91	U	0.17	0.91	U	0.17	0.91	U	0.17
Trichloroethene	190	D	15	180		0.049	0.19	U	0.049	16		0.049	0.19	U	0.049	0.97		0.049	0.19	U	0.049
Trichlorofluoromethane	1.5		0.17	1.4		0.17	1.1		0.17	1.9		0.17	1.2		0.17	1.2		0.17	1.1		0.17
Vinyl chloride	0.089	U	0.046	0.089	U	0.046	0.089	U	0.046	0.089	U	0.046	0.089	U	0.046	0.089	U	0.046	0.089	U	0.046
Xylene (total)	3.0	U	0.17	20		0.17	3.0	U	0.17	3.0	U	0.17	3.0	U	0.17	3.0	U	0.17	3.0	U	0.17
Xylene, o-	0.87	U	0.17	5.5		0.17	0.87	U	0.17	0.87	U	0.17	0.87	U	0.17	0.87	U	0.17	0.87	U	0.17

NR: Not Analyzed
D : Sample results are obtained from a dilution; the surrogate or matrix spike recoveries reported are calculated from diluted samples.
E : Result exceeded calibration range.
U : Indicates the analyte was analyzed for but not detected.

APPENDIX E

PROJECT-SPECIFIC HASP

HEALTH AND SAFETY PLAN
LA FITNESS SSDS CONSTRUCTION
(NORTHWEST AREA)

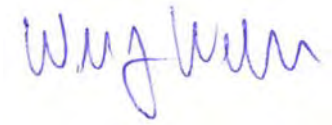
Former Unisys Facility
Lake Success, New York
NYSDEC Site No. 130045

Prepared for:
Lockheed Martin Corporation

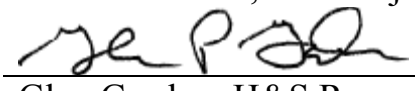
Prepared by:
AMEC E&E, P.C.

Approved by:
Lockheed Martin Corporation

Revision: 0 December 2018



William Weber, P.E. Project Manager



Glen Gordon, H&S Representative

Site:	LA Fitness (Former Unisys Facility)	Job #/Task #	3617187448
Street Address:	1111 Marcus Avenue, Lake Success, NY 11042		
Proposed Date(s) of Investigation:	December 2018 through February 2019		
Prepared by:	Ryan Belcher	Date:	12/6/2018
*Approved by:	Glen Gordon	Date:	12/7/2018
Site Description: **(attach map)**	Former manufacturing facility. Current building is operated by LA Fitness International LLC.		
Comments:			

*Approval also serves as certification of a Hazard Assessment as required by 29 CFR 1910.132

EMERGENCY CONTACTS

NAME	TELEPHONE NUMBERS		DATE OF PRE-EMERGENCY NOTIFICATION (if applicable)
Fire Department: Manhasset-Lakeville Fire Department	516-466-4411		
Hospital: Long Island Jewish Medical Center	516-470-7500		
WorkCare (Early case management)	1-888-449-7787		
Police Department:	911		
	Office	**Cell**	
Site Health And Safety Officer: Ryan Belcher	207-828-3530	207-289-4213	
Client Contact: Glenda Clark	817-378-2573	817-901-9933	
Project Manager: William Weber	207-828-3381	207-232-9802	
*Eastern Group HSE Manager: Cindy Sundquist	207-828-3309	207-650-7593 (Cell) 207-892-4402 (Home)	
Corporate VP of HSE – Vlad Ivensky	610-877-6144	484-919-5175 (Cell) 215-947-0393 (Home)	
Region 2, US EPA	1-877-251-4575		
Ambulance – Manhasset-Lakeville Fire Department	516-466-4411		
Health & Safety Coordinator – Glen Gordon	207-828-3348		

*See Incident Flow Chart for additional Group HSE Manager's Contact Information

TASKS:

AMEC	Other contractor	Task Description	AHA
☒	☐	Construction Oversight/Management	
☐	☒	Construction of Extraction Points / SSDS	
☐	☐		
☐	☐		

AHAs: Check and attach all that apply (add applicable AHAs not already listed):

Activity Specific AHAs:

☒	Mobilization/Demobilization and Site Preparation
☒	Field Work - Oversight
☐	Decontamination
☒	Utility Clearance Activities
☐	Groundwater Sampling
☐	Soil Sampling
☐	Drilling Operation (Driller)
☐	Geoprobe (Geoprobe Operator)
☐	Excavations and Backfilling
☒	Construction Inspection

Hazard Specific AHAs:

☐	Insect Stings and Bites
☐	Gasoline
☐	Working with Preservatives (Acids)
☐	
☐	
☐	
☐	
☐	
☐	
☐	
☐	

Dates of Required Training and Medical Surveillance (add additional training topics, as required**):**

Job duties:	**Field Oversight**	**Health and Safety Officer**	**Technical Lead**
Names:	**Jeffrey Tweeddale**	**Glen Gordon**	**Ryan Belcher**
	Dates	**Dates**	**Dates**
Medical Surveillance	7/19/2018	2/1/2018	12/5/2018
-Exam Type (A[4], B, C)	B	C	C
40-Hour Initial	10/18/2002	7/24/1993	1/1/2018
8-Hour Supervisor [3]	2/27/2007	11/25/1997	8/2/2014
8-Hour Refresher	2/28/2018	10/12/2018	10/12/2018
First Aid	6/5/2017		
CPR	6/5/2017		
Hazard Communication	2/28/2018		10/12/2018

[2] At least one worker must be trained in First Aid/CPR and should received Bloodborne Pathogen Training
[3] Required for Site Manager and Site Health and Safety Officer
[4] **Medical Surveillance Exam A has no respiratory clearance so can only be used for Level D PPE.** . Exam A (basic HAZWOPER), Exam B (respirator & HAZWOPER under 40 years old), Exam C (respirator & HAZWOPER over 40 years old), Exam E (DOT), Exam F (asbestos monitoring), Exam G (lead monitoring) etc. **Contact HSE Coordinator or Cindy Sundquist to determine type of exam employee received.**

Known or Suspected Contaminants (include PELs/TLVs):

Contaminants of Concern (COC) (Attach Fact Sheets*)	**Maximum Concentrations**		**PEL/TLV**
	Soil (mg/kg)	**Water/Groundwater (µg/l)**	
Perchloroethylene	N/A	N/A	25 ppm
Trichloroethylene	N/A	N/A	10 ppm
Cis-1,2 dichloroethylene	N/A	N/A	200 ppm
Vinyl chloride	N/A	N/A	1 ppm

*Workers must be made aware of the signs, symptoms, and first aid for each COC. Information is located on the COC fact sheets.

Air Monitoring Action Levels:

PID/FID Reading[1]	Detector Tube[1]	Dust Meter[1]	LEL[2]/O_2[1]	Action
Below 1 ppm in worker breathing zone (above background)				Continue work.
At or above 1 ppm (above background) sustained in worker breathing zone for more than 15 minutes				Leave work area, let area ventilate and re-assess. If total VOCs remain above 1 ppm, then assess for vinyl chloride with Draeger tube or Chip Measurement System. If vinyl chloride is detected at or above 0.5 ppm, stop work and leave work area. Contact PM and HSR for guidance.
		Monitoring Only – refer to Action description		Continuous monitoring and logging/documentation of PM10 using dedicated monitoring equipment.

[1] Sustained readings measured in the breathing zone
[2] Readings at measured at the source (borehole, well, etc.)

HAZARD IDENTIFICATION SUMMARY

Complete the checklist for summarizing the hazards identified in the JHAs

Standard Hazards			
☒ Falling Objects	☒ Slips and trips	☒ Pinch points	☒ Rotating equipment
☒ Falls	☒ Power equipment/tools	☒ Elevated work surfaces	☐ _____
Eye Hazards			
☒ Particulates	☐ Liquid splashes	☐ Welding Arc	☐ _____
Hearing Hazards			
☐ None	☒ Impact noise	☐ High frequency noise	☐ High ambient noise

Respiratory Hazards						
☐ None	☒ Dust/aerosols/particulates	☐ Organic Vapors	☐ Acid Gases	☐ O_2 deficient	☐ Metals	☐ Asbestos

Chemical Hazards			
☐ None	☐ Organic solvents	☐ Reactive metals	☐ PCBs
☐ Acids / bases	☐ Oxidizers	☒ Volatiles/Semi-volatiles	☐ _____

Environmental Hazards				
☒ None	☐ Cold Stress	☐ Heat Stress	☐ Wet location	☐ Bio hazards (snakes, insects, spiders, poisonous plants, etc.)
☐ Explosive vapors	☐ Confined space	☐ Engulfment Hazard	☐ _____	

Electrical Hazards				
☐ None	☐ Energized equipment or circuits	☐ Overhead utilities	☒ Underground utilities	☐ Wet location

Fire Hazards			
☒ None	☐ Cutting, welding, or grinding generated sparks or heat sources	☐ Flammable materials present	☐ Oxygen enriched location

Ergonomic Hazards					
☒ Lifting	☒ Bending	☒ Twisting	☐ Pulling/tugging	☐ Repetitive motion	☐ Carrying
Computer Use in the: ☐ Office ☐ Field			☐ _____	☐ _____	

Radiological Hazards						
☒ None	☐ Alpha	☐ Beta	☐ Gamma/X-rays	☐ Neutron	☐ Radon	☐ Non-Ionizing

Other Hazards
☐

PPE and Monitoring Instruments

Initial Level of PPE *			
☒ Level D	☐ Modified Level D	☐ Level C	* Cannot use Short Form HASP for Level B or A work

Standard PPE					
☒ Hard Hat	☒ Safety boots	☒ Safety glasses	☐ Chem. Resistant Boots	☒ High visibility vest	☐ Other:_____

Eye and Face Protection			
☐ Face shield	☐ Vented goggles	☐ Unvented goggles	☐ Indirect vented goggles

Hearing Protection			
☒ Ear plugs	☐ Ear Muffs	☐ Ear plugs and muffs	☐ Other _____

Respiratory Protection					
☒ None	☐ Dust mask	☐ Full Face APR	☐ Half Face APR	Cartridge Type: _____	Change Cartridges: _____

Protective Clothing			
☒ Work uniform	☐ White uncoated Tyvek®	☐ Poly-coated Tyvek®	☐ Saranex®
☐ Boot covers	☒ Reflective vest	☐ Chaps or Snake Legs	☐ Other ___

Hand Protection					
☒ None	☐ Cotton gloves	☐ Leather gloves	☐ Glove liners	☐ Cut-resistant gloves	☐ Other _____
☐ Outer Gloves: List Type_____			☐ Inner Gloves: List Type_____		

Monitoring Instruments Required*

Periodic monitoring shall be conducted when the possibility of an IDLH condition or flammable atmosphere has developed or when there is indication that exposures may have risen over permissible exposure limits or published exposure levels since prior monitoring. Situations where it shall be considered whether the possibility that exposures have risen are as follows:

- When work begins on a different portion of the site.
- When contaminants other than those previously identified are being handled.
- When a different type of operation is initiated (e.g., drum opening as opposed to exploratory well drilling.)
- When employees are handling leaking drums or containers or working in areas with obvious liquid contamination (e.g., a spill or lagoon.)

☐ LEL/O2 Meter	☒ PID: ☒ 10.0-10.6 eV Lamp ☐ 11.7 eV Lamp	☐ FID	☐ Hydrogen Sulfide/Carbon Monoxide
☐ Dräger Pump (or equivalent) List Tubes_____	☐ Dust Meter: ☐ Respirable dust ☐ Total dust		☐ Other _____

*Monitoring instruments will be calibrated daily in accordance with manufacturer's instructions. Results will be recorded in the field logbook.

Chemicals Brought to the Site:
List all chemicals brought to the site (e.g., preservatives, decon solutions, calibration gases, gasoline, etc.).

Chemicals (Note: Name listed must match name on label and SDS)	**SDS Attached?**
ISOBUTYLENE	☒
	☐

Chemicals will be kept in their original containers. If transferred to another container, aside from days use by one individual, the new container will be clearly labeled with the name of the chemical (product identifier), signal word, hazard statement, pictogram(s), precautionary statement, and name, address and telephone number of the chemical manufacturer, importer or other responsible party.

Work Zones:
The work zones will be defined relative to the location of the work activity. The Exclusion Zone is considered the area within a 10-foot diameter of the sampling location. The Contamination Reduction Zone is considered to be the area with in a 20-foot diameter of the sampling location. The Decontamination Zone is to be located upwind of the work area. Work zones will be maintained through the use of:

☒ Warning Tape
☒ Cones and Barriers
☒ Visual Observations

Decontamination Procedures and Equipment:
Note: See Decontamination JHA for further information

Level D Decontamination Procedures

Decontamination Solution:	Detergent and Water
Station 1: Equipment Drop	Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, etc. on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, a cool-down station may be set up within this area.
Station 2: Outer Boots, and Gloves Wash and Rinse (if worn)	Scrub outer boots, and outer gloves decon solution or detergent water. Rinse off using copious amounts of water.
Station 3: Outer Boot and Glove Removal (if worn)	Remove outer boots and gloves. Deposit in plastic bag.
Station 4: Inner glove removal	Remove inner gloves and place in plastic bag.
Station 5: Field Wash	Hands and face are thoroughly washed. Shower as soon as possible.

Modified Level D and Level C PPE Decontamination Procedures

Decontamination Solution:	Detergent and Water
Station 1: Equipment Drop	Deposit equipment used on-site (tools, sampling devices and containers, monitoring instruments, radios, etc. on plastic drop cloths. Segregation at the drop reduces the probability of cross contamination. During hot weather operations, a cool-down station may be set up within this area.
Station 2: Outer Garment, Boots, and Gloves Wash and Rinse	Scrub outer boots, outer gloves, and splash suit with decon solution or detergent water. Rinse off using copious amounts of water.

Station 3:	Outer Boot and Glove Removal	Remove outer boots and gloves. Deposit in container with plastic liner.
Station 4:	Canister or Mask (Level C only) Change	If worker leaves exclusion zone to change canister (or mask), this is the last step in the decontamination procedure. Worker's canister is exchanged, new outer gloves and boot covers are donned, joints are taped, and worker returns to duty.
Station 5:	Boot, Gloves and Outer Garment Removal	Boots, chemical resistant splash suit, and inner gloves are removed and deposited in separate containers lined with plastic.
Station 6:	Face Piece Removal (Level C only)	Facepiece is removed. Avoid touching face with fingers. Facepiece is deposited on plastic sheet.
Station 7:	Field Wash	Hands and face are thoroughly washed. Shower as soon as possible.

Site Communication:

- ☒ Verbal
- ☐ Two-way radio
- ☒ Cellular telephone
- ☒ Hand signals
  - Hand gripping throat _____ Out of air, can't breathe
  - Grip partner's wrist or both hands around waist _____ Leave area immediately
  - Hands on top of head _____ Need assistance
  - Thumbs up _____ OK, I am all right, I understand
  - Thumbs down _____ No, negative
- ☐ Horn
- ☐ Siren
- ☐ Other:

Emergency Equipment:

The following emergency response equipment is required for this project and shall be readily available:

- ☒ Field First Aid Kit (including bloodborne pathogen kit/supplies)
- ☒ Fire Extinguisher (ABC type)
- ☐ Eyewash (Note: 15 minutes of free-flowing fresh water)
- ☐ Other: _____

EMERGENCY PROCEDURES

- The SHSO (or alternate) should be immediately notified via the on-site communication system. The HSO assumes control of the emergency response.
- The SHSO notifies the Project Manager and client contact of the emergency.
- If the emergency involves an injury to an AMEC employee, the HSE Coordinator or Site Manager are to implement the AMEC Early Injury Case Management program. See procedures and Flow Diagram below:
- If applicable, the SHSO shall notify off-site emergency responders (e.g. fire department, hospital, police department, etc.) and shall inform the response team as to the nature and location of the emergency on-site.
- If applicable, the SHSO evacuates the site. Site workers should move to the predetermined evacuation point (See Site Map).
- For small fires, flames should be extinguished using the fire extinguisher. Large fires should be handled by the local fire department.
- In an unknown situation or if responding to toxic gas emergencies, appropriate PPE, including SCBAs (if available), should be donned. If appropriate PPE is unavailable, site workers should evacuate and call in emergency personnel.
- For chemical spills, follow the job specific JHA for spill containment
- If chemicals are accidentally spilled or splashed into eyes or on skin, use eyewash and wash affected area. Site worker should shower as soon as possible after incident.
- If the emergency involves toxic gases, workers will back off and reassess. Prior to re-entering the work zone, the area must be determined to be safe. Entry will be using Level B PPE and utilize appropriate monitoring equipment to verify that the site is safe.
- An injured worker shall be decontaminated appropriately.
- Within 24 hours after any emergency response, the Incident Analysis Report (and Vehicle Incident Report if vehicle incident) shall be completed and returned to the Group HSE Manager. Injuries requiring medical treatment beyond first aid (as well as work-related vehicle incidents) will require the employee to submit a post incident drug test.

AMEC Early Injury Case Management Program

NON-EMERGENCY INCIDENT	EMERGENCY INCIDENT
Steps 1 & 2 must be completed before seeking medical attention other than local first aid. 1. Provide first-aid as necessary. Report the situation to your immediate supervisor AND HSE coordinator (all incidents with the apparent starting event should be reported within 1 hour of occurrence). 2. Injured employee:	1. Provide emergency first aid. Supervisor on duty must immediately call 911 or local emergency number; no employee may respond to outside queries without prior authorization. Any outside media calls concerning this incident must be referred immediately to Lauren Gallagher at 602-757-3211. 2. Once medical attention is sought and provided, the supervisor must:
Call WorkCare 24/7 Hotline* (888) II-XPRTS or (888) 449-7787	
WorkCare will assess the situation and determine whether the incident requires further medical attention. During this process, WorkCare will perform the following: • Explain the process to the caller. • Determine the nature of the concern. • Provide appropriate medical advice to the caller. • Determine appropriate path forward with the caller. • Maintain appropriate medical confidentiality. • Help caller to execute path forward, including referral to the appropriate local medical facility. • Send an email notification to the Corporate HSE Department.	WorkCare will be responsible for performing the following: • Contact the treating physician. • Request copies of all medical records from clinic. • Send an email update to the Corporate HSE Department.
3. IMMEDIATELY after contacting WorkCare send a brief email notification AND inform verbally (direct contact is required) ONE of HSE corporate representatives See Figure 11.3. 4. Make all other local notifications and client notifications. 5. Local Supervisor, HSE Coordinator, SSHO and any applicable safety committees to complete preliminary investigation, along with the initial Incident Report within 24 hours. 6. Corporate Loss Prevention Manager to complete Worker's Compensation Insurance notifications as needed. 7. Corporate HSE to conduct further incident notifications, investigation, include in statistics, classify, and develop lessons learned materials. * - **NOTE: Step 2 is only applicable to the North-American operations and to incidents involving AMEC personnel. High potential near misses, subcontractors' incidents, regulatory inspections, spills and property damages above $1,000 should be reported immediately, following directions from Step 3.**	

Site Specific Procedures are as follows:

INCIDENT FLOW CHART

Incident flow chart

Call immediately

amec foster wheeler

E&I Corporate HSE department contact list

Name/email	Office location	Contact information
Bruce Voss bruce.voss@amecfw.com	Cathedral City, CA	760.202.3737 (office) 951.897.6381 (cell)
Chad Barnes chad.barnes@amecfw.com	Phoenix, AZ	602.733.6000 (office) 480.495.9846 (cell)
Cindy Sundquist cynthia.sundquist@amecfw.com	Portland, ME	207.828.3309 (office) 207.650.7593 (cell) 207.892.4402 (home)
Gabe Sandholm gabe.sandholm@amec.com	Minneapolis, MN	612.252.3785 (office) 206.683.9190 (cell)
John Mazur john.mazur@amec.com	Wilmington, NC	910.444.2978 (office) 910.431.2330 (cell) 910.681.0538 (home)
Lori Dowling lori.dowling@amec.com	Prince George, BC	250.564.3243 (office)
Philip Neville philip.neville@amec.com	Thorold, ON	905.687.6616 (office) 905.380.4465 (cell)
Tim Kihn tim.kihn@amec.com	Edmonton, AB	780.944.6363 (office) 780.717.5058 (cell)
Vladimir Ivensky (can call 24/7) vladimir.ivensky@amec.com	Plymouth Meeting, PA	610.877.6144 (office) 484.919.5175 (cell) 215.947.0393 (home)
Kirby Lastinger kirby.lastinger@amec.com	Lakeland, FL	836-667-2345 x207 (office) 863-272-4775 (cell)

*High potential near misses, subcontractor incidents, regulatory inspections, spills, and property damage should be reported within 60 minutes to one of the above HSE Representatives.
WITHIN 24 HOURS - Local Supervisor, HSE Coordinator, Project HSE Officer, and any applicable safety committees must complete preliminary investigation, along with the initial Incident Analysis Report Form and forward it to the Corporate HSE Department

Rev. Feb15-hb

FIELD TEAM REVIEW: I acknowledge that I understand the requirements of this HASP, and agree to abide by the procedures and limitations specified herein. I also acknowledge that I have been given an opportunity to have my questions regarding the HASP and its requirements answered prior to performing field activities. Health and safety training and medical surveillance requirements applicable to my field activities at this site are current and will not expire during on-site activities.

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Routes to Emergency Medical Facilities

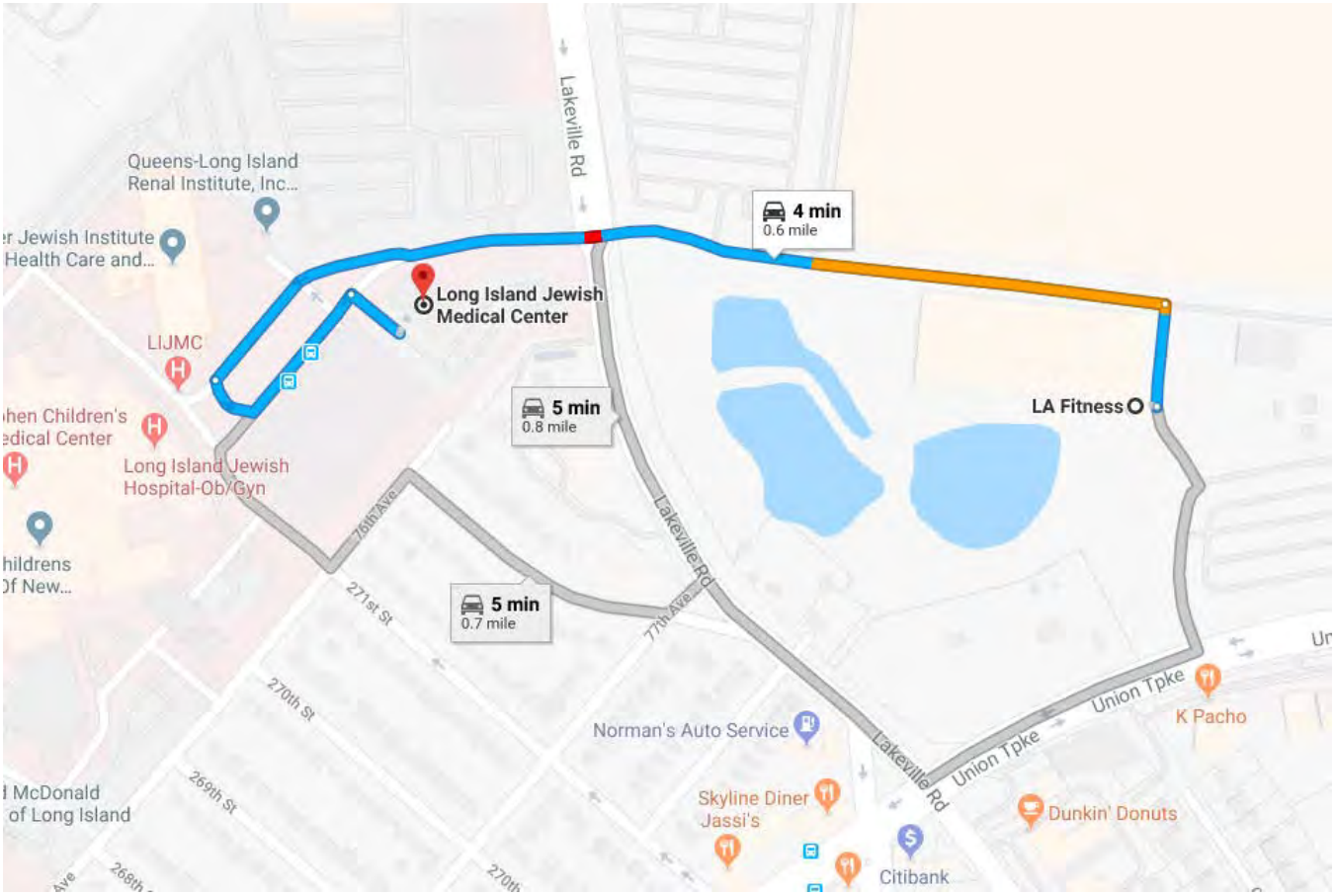
HOSPITAL(for immediate emergency treatment):

Facility Name: Long Island Jewish Medical Center

Address: 270-05 76th Ave, New Hyde Park, NY 11040

Telephone Number: 516.470.7500 (information line)

DIRECTIONS TO PRIMARY HOSPITAL (attach map):



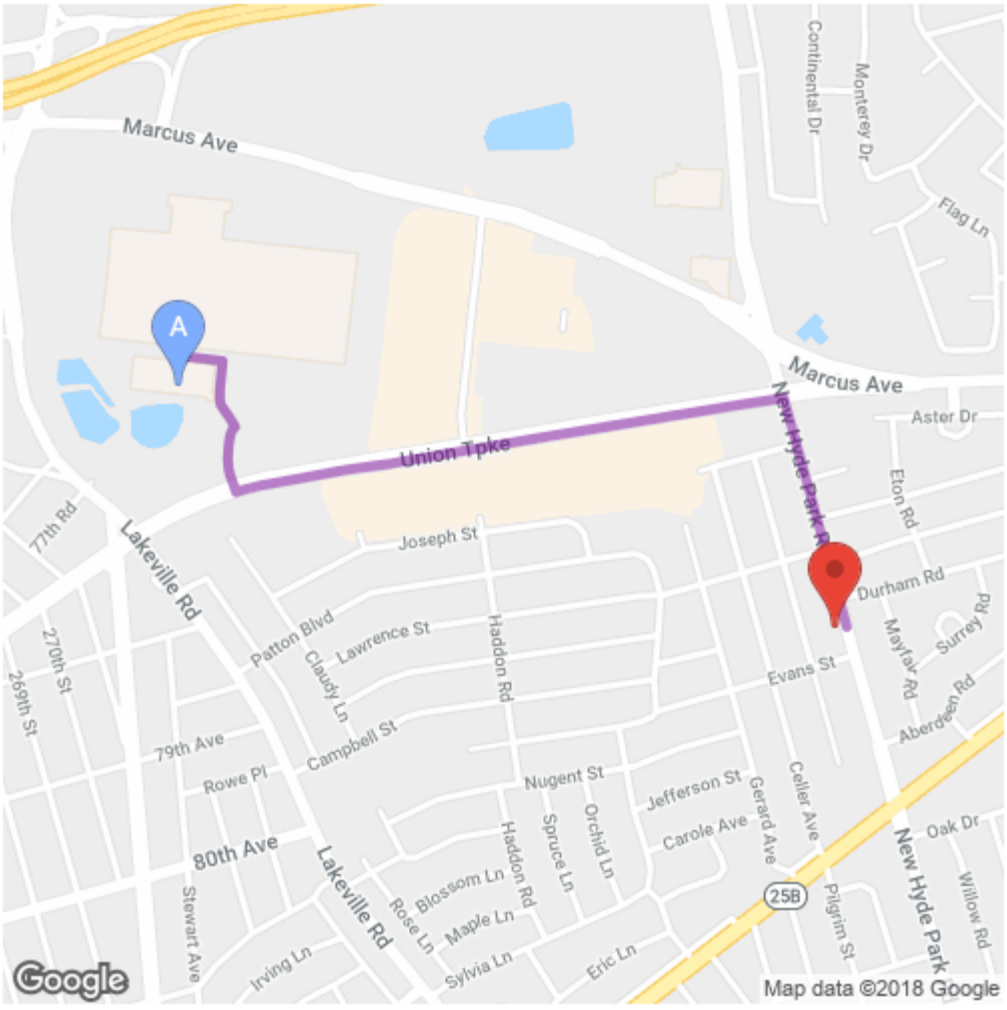
CLINIC (for non-emergency medical treatment)

Facility Name: N/A

Address: 1915 New Hyde Park Rd., New Hyde Park, NY 11040

Telephone Number: 516-775-6640

DIRECTIONS TO CLINIC (attach map):



Driving Directions

From: 1111 Marcus Avenue
New Hyde Park, NY 11040
New Start Address

To: 1915 New Hyde Park Rd
New Hyde Park, NY 11040

1. Head **east** toward **Union Tpke**	236 ft
2. Turn **right** toward **Union Tpke**	413 ft
3. Turn **right** toward **Union Tpke**	371 ft
4. Turn **left** onto **Union Tpke**	0.6 mi
5. Turn **right** onto **New Hyde Park Rd**	0.3 mi
Destination will be on the right	
Estimated driving time: 6 minutes	1.1 mi

Tailgate Safety Meeting Report

Check One:

☐ Initial Kickoff Safety Meeting ☐ Regular/Daily Tailgate Safety Meeting ☐ Unscheduled Tailgate Safety Meeting

Date: _____ Site: _____

Site Manager: _____ Site Health and Safety Officer: _____
Print *Print*

Order of Business

Topics Discussed (Check all that apply)

- ☐ Scope of Work
- ☐ Site History/Site Layout
- ☐ Personnel Responsibilities
- ☐ Training Requirements
- ☐ Hazard Analysis of Work Tasks (chemical, physical, biological and energy health hazard effects)
- ☐ Applicable SOPs (e.g., Hearing Conservation Program, Safe Driving, etc.)
- ☐ Safe Work Practices
- ☐ Engineering Controls
- ☐ Chemical Hazards and Controls
- ☐ Signs and symptoms of over exposure to site chemicals
- ☐ Medical Surveillance Requirements
- ☐ Action Levels
- ☐ Monitoring Instruments and Personal Monitoring
- ☐ Perimeter Monitoring, Type and Frequency
- ☐ PPE Required/PPE Used
- ☐ Define PPE Levels, Donning, Doffing Procedures
- ☐ Decontamination Procedures for Personnel and Equipment
- ☐ Physical Hazards and Controls (e.g., overhead utility lines)
- ☐ Anticipated Weather (snow, high winds, rain)
- ☐ Temperature Extremes (heat or cold stress symptoms and controls)
- ☐ Biological Hazards and Controls (e.g., poison ivy, spiders)
- ☐ Site Control (visitor access, buddy system, work zones, security, communications)
- ☐ Sanitation and Illumination
- ☐ Logs, Reports, Recordkeeping
- ☐ Incident Reporting Procedures
- ☐ Near Misses/Hazard ID including worker suggestions to correct and work practices to avoid similar occurrences
- ☐ General Emergency Procedures (e.g., locations of air horns and what 1 or 2 blasts indicate)
- ☐ General Emergency Response Procedures (e.g., earthquake response, typhoon response, etc.)
- ☐ Medical Emergency Procedures (e.g., exposure control precautions, location of first aid kits, etc.)
- ☐ Route to Hospital and Medical Care Provider Visit Guidelines
- ☐ Site/Regional Emergency Response Procedures (e.g., exposure control precautions, location of first aid kits, etc.)
- ☐ Hazardous Materials Spill Procedures

Safety Suggestions by Site Workers: _____

Action Taken on Previous Suggestions: _____

Injuries/Incidents/Personnel Changes since last meeting: _____

Tailgate Safety Meeting Report

Observations of unsafe work practices/conditions that have developed since previous meeting: _____

Location of (or changes in the locations of) evacuation routes/safe refuge areas: _____

Additional Comments: _____

Attendee signatures below indicate acknowledgment of the information and willingness to abide by the procedures discussed during this safety meeting

Name (Print)	Company	Signature

Meeting Conducted by: _____ Title: _____
Print

Signature: _____ Time: _____
Print

Wood Environment & Infrastructure Solutions, Inc.
Short Form HASP

PPE Selection Guidelines

When selecting the appropriate PPE for the job, consider the following:

- **Safety glasses** – general eye protection – source of hazard, typically coming from straight on, required at most sites
- **Tinted Safety Glasses** – same as above, but when working in direct sunlight. May need two both tinted and un-tinted if working in both sunlight and shade/overcast skies.
- **Safety goggles** – needed for splash hazard, more severe eye exposures coming from all directions. Non-vented or indirect venting for chemical splash, non-vented for hazardous gases or very fine dust, vented for larger particulates coming from all directions.
- **Face shield** – needed to protect face from cuts, burns, chemicals (corrosives or chemicals with skin notation), etc.
- **Safety boots** – needed if danger of items being dropped on foot that could injure foot
- **Hard hat** – danger from items falling on head – any overhead work, tools, equipment, etc. that is above the head and could fall on head of item fails, or falls off work platform. Typically required at most sites as a general PPE
- **Thin, chemical protective inner gloves** (e.g., thin Nitrile, PVC – do not use latex – many people are allergic to latex) –needed to protect hands from incidental contact with low risk contamination at very low concentrations (ppb or low ppm concentrations in groundwater or soil) or used in combination with outer gloves as a last defense against contamination. Need to specify type
- **Outer gloves** – thicker gloves (e.g., Nitrile, Butyl, Viton, etc.) – used when potential for high concentrations of contaminants (e.g., floating product, percent ranges of contaminant, opening drums, handling pure undiluted chemicals, etc.). Need to specify type.
- **Leather gloves, leather palm, cotton** – good in protecting hands against cuts – no protection from chemicals. May be used in combination with chemical protective gloves.
- **Boot Covers –** when there is contamination in surface soils or waking surface in general. When safety boots need protection from contact with contaminants.
- **White (uncoated) Tyveks** – protect clothing from getting dirty, good for protection against solid, non-volatile chemicals (e.g., asbestos, metals) – no chemical protection.
- **Polycoated Tyveks** – least protective of chemical protective clothing. Used when some risk of contamination getting on skin or clothing. Usually, lower ppm ranges of contaminants.
- **Saranex** – Greater protection against contamination than Polycoated Tyveks. Used to protect against PCBs or higher concentrations of contaminants in the soil or groundwater.
- **Other Chemical protective clothing** – if significant risk of dermal exposure, contact H&S to determine best kind.
- **Long sleeved shirts, long pants** – if working in areas with poison ivy/oak/sumac, poisonous insects, etc. and no chemicals exposure. May want to use uncoated Tyveks for work in areas where poisonous plants are known to be to protect clothing.
- **Cartridge Respirator (Level C PPE)** – Need to calculate change schedule (contact Division EH&S Manager for this) to determine length of use. To be able to use cartridge respirators, need to know contaminants, estimate levels to be encountered in the breathing zone, need to ensure that cartridge will be effective against COCs, and need to be able to monitor for COCs using PID, FID, Dräeger tubes, etc. If can't do any of these, then Level B PPE is probably going to be needed.
- **High Visibility Vest** – needed for any road work (within 15 feet of a road) or when working on a site with vehicular traffic or working around heavy equipment. Needed if work tasks would take employee concentration away from movement of vehicles and workers would have to rely on the other driver's ability to see the employee in order not to hit them. This includes heavy equipment as well as cars and trucks, on public roads or the jobsite. Not needed if wearing Polycoated Tyveks – as they are already high visibility.
- **Reflective Vest** – see above, but for use at night.
- **Hearing Protection** – needed if working at noise levels above 85 dBA on a time weighted average. If noise measurements are not available, use around noisy equipment, or in general, if you have to raise your voice to be heard when talking to someone standing two feet away.
- **Protective Chaps –** required when using a machete or chain saw or any other cut hazard to legs.

Incident Report Forms

1. Incident Analysis Report (IAR)
2. Vehicle Incident Report (VIR)
3. Ground Disturbance Incident Report(GDR)

Activity Hazard Analysis (AHAs)

1. Mobilization/Demobilization and Site Preparation
2. Field Work – Oversight
3. Utility Clearance Activities
4. Construction Inspection

AHA - - Mobilization/Demobilization and Site Preparation Activity Description

Activity/Work Task:	Mobilization/Demobilization and Site Preparation	Overall Risk Assessment Code (RAC) (Use highest code)	**M**
Project Location:	Lake Success, NY		
Contract Number:	**3617187448**		
Date Prepared:	**11/26/2018** **Date Accepted:** **12/7/2018**		
Prepared by (Name/Title):	Ben Hess / Environmental Technician		
Reviewed by (Name/Title):	Glen Gordon/ Site Safety Officer		

Notes: (Field Notes, Review Comments, etc.)

This AHA involves the following:

- Establishing site specific measures
-

This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

Job Steps	Hazards	Controls	RAC
1. Prepare for Site Visit	1A) N/A	Prior to leaving for site: ▪ Obtain and review HASP prior to site visit, if possible ▪ Determine PPE needs – bring required PPE to the site, if not otherwise being provided at the site (e.g., steel toed boots) ▪ Determine training and medical monitoring needs and ensure all required Health and Safety training and medical monitoring has been received and is current ▪ Ensure all workers are fit for duty (alert, well rested, and mentally and physically fit to perform work assignment) ▪ If respiratory protection is required/potentially required, ensure that training and fit-testing has occurred within the past year. ▪ Familiarize yourself with route to the site	**M**

AHA - - Mobilization/Demobilization and Site Preparation
Activity Description

Job Steps	Hazards	Controls	RAC
	1b) Vehicle defects	Inspect company owned/leased vehicle for defects such as: ▪ Flat tires ▪ Windshield wipers worn or torn ▪ Oil puddles under vehicle ▪ Headlights, brake lights, turn signals not working	**L**
	1c) Insufficient emergency equipment, unsecured loads	Insufficient emergency equipment, unsecured loads: ▪ Ensure vehicle has first aid kit and that all medications are current (if first aid kits are not provided at the site) ▪ Ensure vehicle is equpped with warning flashers and/or flares and that the warning flashers work ▪ Cell phones are recommended to call for help in the event of an emergency ▪ Vehicles carrying tools must have a safety cage in place. All tools must be properly secured ▪ Vehicles must be equipped with chocks if the vehicle is to be left running, unattended. ▪ Ensure sufficient gasoline is in the tank	**L**
2. Operating vehicles	2a) Collisions, unsafe driving conditions	Drive Defensively!: ▪ Seat belts must be used at all times when operating any vehicle on company business. ▪ Drive at safe speed for road conditions ▪ Maintain adequate following distance ▪ Pull over and stop if you have to look at a map ▪ Try to park so that you don't have to back up to leave. ▪ If backing in required, walk around vehicle to identify any hazards (especially low level hazards that may be difficult to see when in the vehicle) that might be present. Use a spotter if necessary	**M**
3. Driving to the jobsite (mobilization)	3a) Dusty, winding, narrow roads	Dusty, winding, narrow roads ▪ Drive confidently and defensively at all times. ▪ Go slow around corners, occasionally clearing the windshield.	**M**

AHA - - Mobilization/Demobilization and Site Preparation
Activity Description

Job Steps	Hazards	Controls	RAC
	3b) Rocky or one-lane roads	Rocky or one-lane roads: ▪ Stay clear of gullies and trenches, drive slowly over rocks. ▪ Yield right-of-way to oncoming vehicles---find a safe place to pull over.	**M**
	3c) Stormy weather, near confused tourists	Stormy weather, near confused tourists: ▪ Inquire about conditions before leaving the office. ▪ Be aware of oncoming storms. ▪ Drive to avoid accident situations created by the mistakes of others.	**L**
	3d) When angry or irritated	When angry or irritated: ▪ Attitude adjustment; change the subject or work out the problem before driving the vehicle. Let someone else drive.	**M**
	3e) Turning around on narrow roads	Turning around on narrow roads: ▪ Safely turn out with as much room as possible. ▪ Know what is ahead and behind the vehicle. ▪ Use a backer if available.	**M**
	3f) Sick or medicated	Sick or medicated: ▪ Let others on the crew know you do not feel well. ▪ Let someone else drive.	**M**
	3g) On wet or slimy roads	On wet or slimy roads ▪ Drive slow and safe, wear seatbelts.	**M**
	3h) Animals on road	Animals on road ▪ Drive slowly, watch for other animals nearby. ▪ Be alert for animals darting out of wooded areas	**M**
4. Gain permission to enter site	4a) Hostile landowner, livestock, pets	Hostile landowner, livestock, pets ▪ Talk to land owner, be courteous and diplomatic ▪ Ensure all animals have been secured away from work area	**L**
5. Mobilization/ Demobilization of	5a) Struck by Heavy Equipment/Vehicles	Struck by heavy equipment: ▪ Be aware of heavy equipment operations.	**M**

AHA - - Mobilization/Demobilization and Site Preparation
Activity Description

Job Steps	Hazards	Controls	RAC
Equipment and Supplies		▪ Keep out of the swing radius of heavy equipment. ▪ Ground personnel in the vicinity of heavy equipment operations will be within the view of the operator at all times ▪ Employees shall wear a high visibility vest or T-shirt (reflective vest required if working at night). ▪ Ground personnel will be aware of the counterweight swing and maintain an adequate buffer zone. ▪ Ground personnel will not stand directly behind heavy equipment when it is in operation.	
	5b) Struck by Equipment/Supplies	Struck by Equipment/Supplies: ▪ Workers will maintain proper space around their work area, if someone enters it, stop work. ▪ When entering another worker's work space, give a verbal warning so they know you are there.	**L**
	5c) Overexertion Unloading/Loading Supplies	Overexertion Unloading/Loading Supplies: ▪ Train workers on proper body mechanics, do not bend or twist at the waist while exerting force or lifting. ▪ Tightly secure all loads to the truck bed to avoid load shifting while in transit.	**M**
	5d) Overexertion Unloading/Loading Supplies	Caught in/on/between: ▪ Do not place yourself between two vehicles or between a vehicle and a fixed object.	**M**
	5e) Slip/Trip/Fall	Slip/Trip/Fall: ▪ Mark all holes and low spots in area with banner tape. Instruct personnel to avoid these areas. ▪ Drivers will maintain 3 point contact when mounting/dismounting vehicles/equipment. ▪ Drivers will check surface before stepping, not jumping down.	**L**
	5f) Vehicle accident	Vehicle accident: ▪ Employees should follow AMEC vehicle operation policy and be aware of all stationary and mobile vehicles.	**L**

AHA - - Mobilization/Demobilization and Site Preparation
Activity Description

Job Steps	Hazards	Controls	RAC
6. Site Preparation	6a) Slip/Trip/Fall	Slip/Trip/Fall: ▪ Mark all holes and low spots in area with banner tape. Instruct personnel to avoid these areas	**L**
7. Installation of soil erosion and sediment controls	7a) Overexertion	Overexertion: ▪ Workers will be trained in the proper method of placing erosion controls. ▪ Do not bend and twist at the waist while lifting or exerting force.	**M**
	7b) Struck by Equipment/Supplies	Struck by Equipment/Supplies: ▪ Workers will maintain proper space around their work area, if someone enters it, stop work. ▪ When entering another worker's work space, give a verbal warning so they know you are there.	**M**
8. Driving back from the jobsite	7c) See hazards listed under item #3	See safe work practices under item #3	**M**

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (1/2 face respirator with P-100 cartridge, Hard Hat, safety glasses, gloves, steel toe work boots, high visibility safety vest, hearing protection) Note: When initially entering the site the following PPE must be donned: • Work Uniform or Work Clothes • Hard Hat • Safety Glasses • Steel Toe Boots • Reflective Vests	**Competent / Qualified Personnel:** Name – Position/Employer **Training requirements:** List specific certification (as applicable) Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting	Daily inspection of equipment per manufacturer's instructions. Tag tools that are defective and remove from service. Inspect power cord sets prior to use. Inspect all PPE prior to use

AHA – Field Work Oversight

Activity/Work Task:	Field Work - Oversight		
Project Location:	Lake Success, NY		
Contract Number:	**3617187448**		
Date Prepared:	**11/26/2018**	**Date Accepted:**	**12/7/2018**
Prepared by (Name/Title):	Ben Hess / Environmental Technician		
Reviewed by (Name/Title):	Glen Gordon / Health and Safety Officer		

Notes: (Field Notes, Review Comments, etc.)

This AHA involves the following:

- Establishing site specific measures
-

This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.

Overall Risk Assessment Code (RAC) (Use highest code) **M**

Risk Assessment Code (RAC) Matrix

Severity	Probability				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	E	E	H	H	M
Critical	E	H	H	M	L
Marginal	H	M	M	L	L
Negligible	M	L	L	L	L

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

AHA – Field Work Oversight

Job Steps	Hazards	Controls	RAC
1. Prepare for site visit	1A) N/A	▪ Obtain and review HASP prior to site visit, if possible ▪ Determine PPE needs – bring required PPE to the site, if not otherwise being provided at the site (e.g., steel toed boots) ▪ Determine training and medical monitoring needs and ensure all required Health and Safety training and medical monitoring has been received and is current ▪ Ensure all workers are fit for duty (alert, well rested, and mentally and physically fit to perform work assignment) ▪ First aid kits shall be available at the work site and on each transport vehicle. ▪ Familiarize yourself with route to the site ▪ Check weather forecast. Pack appropriate clothing and other items (e.g., sunscreen) for anticipated weather conditions ▪ Verify that subsurface utilities have been identified.	**L**
2. Traveling to the site by vehicle	2A) See JHA for Mobilization, Demobilization and Site Preparation	7A) See JHA for Mobilization, Demobilization and Site Preparation	**M**
3. Initial Arrival - Assess Site Conditions	3A) Communication	▪ Talk to each other. Develop communication methods (agree on hand signals, warning alarms) ▪ Log all workers and visitor on and off the site. ▪ Let other crewmembers know when you see a hazard. ▪ Avoid working near known hazards. ▪ Always know the whereabouts of fellow crewmembers. ▪ Carry a radio and spare batteries or cell phone Hold tailgate meetings	**L**
	3B) Insect Bites and Stings	▪ Discuss the types of insects expected at the Site and be able to identify them. ▪ Look for signs of insects. ▪ Inform crew members if allergic to insects and what to do if you need assistance. ▪ Avoid wearing heavy fragrances. ▪ Carry first-aid and sting relief kits. ▪ Carry identification of known allergies and necessary emergency medication. ▪ Spray clothing with insect repellant as a barrier. ▪ Wear light colored clothing that fits tightly at the wrists, ankles, and waist. ▪ Cover trouser legs with high socks or boots. ▪ Tuck in shirt tails.	**L**

	3C) Poisonous plants	▪ Wear long sleeves, long pants and boots ▪ Ensure all field workers can identify the plants. Mark identified poisonous plants with high visibility spray paint if working at a fixed location. ▪ Look for signs of poisonous plants and demark area to aid in avoiding plant. ▪ Do not touch any plant part to any part of your body/clothing. ▪ Use commercially available products such as Ivy Block or Ivy Wash as appropriate.	**M**
	3D) Vermin, leaches, animal borne disease	▪ Survey the area for dens, nests, etc. ▪ Identify areas where biological hazards may be present. ▪ Wear long sleeve shirt and full length pants	**L**
	3E) Chemical Hazards	▪ Wear chemical resistant PPE as identified in the HASP ▪ Use monitoring equipment, as outlined in HASP, to monitor breathing zone ▪ Read MSDSs for all chemicals brought to the site ▪ Be familiar with hazards associated with site contaminants. ▪ Ensure that all containers are properly labeled	**M**
	3F) Overhead Power Lines	▪ Identify the location of all overhead power lines at the site. ▪ Maintain clearances depending on voltage - All equipment will stay a minimum of 10 feet from overhead energized electrical lines (50 kV or less). This distance will increase by 4 inches for each 10 kV above 50 kV. Rule of Thumb: Stay 10 feet away from all overhead power lines known to be 50 kV or less and 35 feet from all others.) ▪ Re-locate work so it is not close to power lines ▪ Avoid storing materials under overhead power lines	**M**
	3G) Underground Utilities	▪ All utilities will be marked prior to excavation activities ▪ For areas where utility locations cannot be verified, workers must hand dig for the first 3 feet ▪ Use lineman's gloves when locating underground power lines ▪ Work at adequate offsets from utility locations ▪ Immediately cease work if unknown utility markings are discovered.	**M**

	3H) Cold Stress	▪ Dress in layers with wicking garments (those that carry moisture away from the body – e.g. synthetics) and a weatherproof slicker. A waterproof breathable outer shell is recommended. ▪ Take layers off as you heat up; put them on as you cool down. ▪ Wear head protection that provides adequate insulation and protects the ears. ▪ Maintain your energy level. Avoid exhaustion and over-exertion which causes sweating, dampens clothing, and accelerates loss of body heat and increases the potential for hypothermia. ▪ Acclimate to the cold climate to minimize discomfort. ▪ Maintain adequate water/fluid intake to avoid dehydration. ▪ Be aware of signs of hypothermia, its prevention, detection and treatment. ▪ Have extra protection available, in case of an emergency such as blankets and heating devices. ▪ Don't work under extremely adverse weather conditions ▪ Stay in tune to current weather and extended forecasts.	**L**
	3I) Heat Stress	▪ Remain constantly aware of the four basic factors that determine the degree of heat stress (air temperature, humidity, air movement, and heat radiation) relative to the surrounding work environmental heat load. ▪ Know the signs and symptoms of heat exhaustion, heat cramps, and heat stroke. Heat stroke is a true medical emergency requiring immediate emergency response action. ▪ Maintain adequate water intake by drinking water periodically in small amounts throughout the day (flavoring water with citrus flavors or extracts enhances palatability). ▪ Lessen work load and/or duration of physical exertion the first days of heat exposure to allow gradual acclimatization. ▪ Alternate work and rest periods. More severe conditions may require longer rest periods and electrolyte fluid replacement.	**L**
	3J) Lightning and Thunder	▪ Monitor weather channels to determine if electrical storms are forecasted. ▪ Plan ahead and identify safe locations to be in the event of a storm. (e.g., sturdy building, vehicle, etc.) ▪ Suspend all field work at the first sound of thunder. You should be in a safe place when the time between the lightning and thunder is less than 30 seconds.	**L**
	3K) Severe Weather	▪ Watch for clouds and incoming weather. ▪ Monitor weather forecasts. ▪ Train workers about weather and appropriate precautions. ▪ Identify a shelter and a safe place in event of tornado etc	**L**

	3L) Sun	▪ Keep body protected ▪ Wear sunscreen, wide brimmed hat or hardhat. ▪ Schedule work for cool part of day. ▪ Take breaks in the shade.	**L**
	3M) High Crime Areas	▪ Do not enter areas where threats are present. ▪ Contract security where applicable. Use the buddy system. ▪ Maintain contact with support such as radio or cell phone ▪ Do not work after dark.	**L**
	3N) Operations conducted at an active facility	▪ Stay well clear of operations being conducted at the facility ▪ Keep alert for moving materials, equipment or vehicles ▪ Determine client specific PPE needs prior to arriving at the site ▪ Determine client specific emergency response procedures and follow as appropriate ▪ Participate in client required safety training ▪ Get copies of Clients SDSs for any client chemicals that workers may be exposed to. ▪ Provide SDSs to client for all chemicals brought to the site.	**M**
	3O) Remote Locations	▪ Carry a two-way radio and know how to use it. ▪ Work in teams. ▪ Make sure someone on crew is certified in first aid. ▪ Carry a first aid kit.	**M**
4. Walk around the Site	4A) Poisonous plants	▪ Wear long sleeves, long pants and boots. ▪ Ensure all field workers can identify the plants. Mark identified poisonous plants with high visibility spray paint if working at a fixed location. ▪ Do not touch any plant part to any part of your body/clothing. ▪ Use commercially available products such as Ivy Block or Ivy Wash as appropriate.	**M**
	4B) Vermin, leaches, animal borne disease	▪ Survey the area for dens, nests, etc. ▪ Identify areas where biological hazards may be present. ▪ Be aware of your surroundings. ▪ Wear long sleeve shirt and full length pants ▪ Wear appropriate footwear (snake boots, etc.) ▪ Avoid high grass areas if possible ▪ Do not put hand/arm into/under an area that you cannot see into/under clearly ▪ Perform routine inspections for ticks, leaches, etc. of yourself and co-workers.	**L**

	4C) Chemical Hazards	▪ See HASP for appropriate level of PPE ▪ Wear chemical resistant PPE as identified in the HASP ▪ Use monitoring equipment, as outlined in HASP, to monitor breathing zone ▪ Read MSDSs for all chemicals brought to the site ▪ Be familiar with hazards associated with site contaminants. ▪ Ensure that all containers are properly labeled	**L**
	4D) Slips/Trips/Falls	▪ Wear slip resistant footwear ▪ Pay attention to where you place your feet ▪ Slow down and use extra caution around logs, rocks, and animal holes. ▪ Extremely steep slopes (>50%) can be hazardous under wet or dry conditions; consider an alternate route. ▪ Site SHSO will inspect the entire work area to identify and mark hazards. ▪ Clear area of trip hazards; mark or barricade those that cannot be moved; ▪ Use caution when walking around excavated areas ▪ Use caution when walking on or around loose soil.	**M**
5. Oversight during drilling, or construction operations	5A) Heavy Equipment/ Vehicles	▪ Spotters will be used when backing up trucks and heavy equipment and when moving equipment. ▪ Ground personnel in the vicinity of vehicles or heavy equipment operations will be within the view of the operator at all times. ▪ Ground personnel will be aware of the swing radius and maintain an adequate buffer zone. ▪ Ground personnel will not stand directly behind heavy equipment when it is in operation. ▪ Personnel are prohibited from riding on the buckets, or elsewhere on the equipment except for designated seats with proper seat belts or lifts specifically designed to carry workers. Ground personnel will stay clear of all suspended loads. ▪ Ground personnel will wear high visibility vests ▪ Eye contact with operators will be made before approaching equipment.	**M**
	5B) Eye Injury	▪ Wear appropriate safety glasses (tinted for sun). ▪ Watch where you walk, especially around trees and brush with protruding limbs.	**L**
	5C) Foot Injury	▪ Wear steel toed boots when working around heavy equipment, materials, and tools. ▪ Wear insulated boots during winter ▪ Ensure shoes/boots have good traction ▪ Pay attention to where you place your feet, especially when walking on uneven terrain	**L**

	5D) Head Injury	▪ Wear hardhat when working around overhead hazards. ▪ Do not walk or work under scaffolding or other elevated work unless there are guardrails and toeboards in place ▪ Flag or mark protruding objects at head level	**L**
	5E) Chemical Hazards	▪ Wear chemical resistant PPE as identified in the HASP ▪ Use monitoring equipment, as outlined in HASP, to monitor breathing zone ▪ Read SDSs for all chemicals brought to the site ▪ Be familiar with hazards associated with site contaminants. ▪ Ensure that all containers are properly labeled ▪ Wash hands and face prior to consumption of food, beverage or tobacco.	**M**
	5F) Dust - particulates (respiratory)	▪ Use dust suppression methods ▪ Stand upwind of point of dust generation	**L**
	5G) Overhead Power Lines	▪ Maintain clearances depending on voltage - All equipment will stay a minimum of 10 feet from overhead energized electrical lines (50 kV or less). This distance will increase by 4 inches for each 10 kV above 50 kV. Rule of Thumb: Stay 10 feet away from all overhead power lines known to be 50 kV or less and 35 feet from all others.)	**M**
	5H) Underground Utilities	▪ All utilities will be marked prior to excavation activities. ▪ Work at adequate offsets from utility locations ▪ Immediately cease work if unknown utility markings are discovered.	**M**
	5I) Standing/Static Posture	▪ Change posture on a frequent basis ▪ Stretch prior to any physical activity	
	5J) Slips/`Trips/Falls	▪ Pay attention to where you place your feet ▪ Slow down and use extra caution around logs, rocks, and animal holes. ▪ Extremely steep slopes (>50%) can be hazardous under wet or dry conditions; consider an alternate route. ▪ Wear laced boots with a minimum 8" high upper and non-skid soles for ankle support and traction. ▪ Clear area of trip hazards; mark or barricade those that cannot be moved. ▪ Use caution when walking around excavated areas ▪ Stay back at least 5 feet from excavated areas ▪ Use caution when walking on or around loose soil. ▪ Be aware of surroundings. Avoid muddy areas if possible.	**L**

6. Sampling Oversight	6A) Chemical Hazards	▪ See HASP for appropriate level of PPE ▪ Wear chemical resistant PPE as identified in the HASP ▪ Use monitoring equipment, as outlined in HASP, to monitor breathing zone ▪ Be familiar with hazards associated with site contaminants. ▪ Wash hands and face prior to consumption of food, beverage or tobacco. ▪ Calibrate meters in a clean, well ventilated area ▪ Store calibration gases in well vented area. Ensure chemical labels and warnings are legible.	**M**
	6B) Decontamination	▪ Refer to SDS for specific hazards associated with decon solutions ▪ Monitor breathing zone for decon solutions (e.g., methanol, hexane, etc.), if appropriate (see HASP) ▪ Removal of PPE will be performed by the following tasks in the listed order: o Gross boot wash and rinse and removal o Outer glove removal o Suit removal o Respirator removal (if worn). o Inner glove removal ▪ Contaminated PPE is to be placed in the appropriate, provided receptacles. ▪ Employees will wash hands, face, and any other exposed areas with soap and water. ▪ Portable eyewash stations and showers will be available should employees come into direct contact with contaminated materials. ▪ Decon solutions will be disposed of according to the work plan.	**M**
	6C) Lifting	▪ Good lifting techniques (lift with legs not back) ▪ Mechanical devices (e.g., hand truck, cart, forklift, etc.) should be used to reduce manual handling of materials. ▪ Team lifting should be utilized if mechanical devices are not available. (mandatory for items over 50 lbs) ▪ Split heavy loads in to smaller loads ▪ Make sure that path is clear prior to lift. ▪ Redesign work area to avoid low lifts ▪ Stretch prior to lifting ▪ Maintain a healthy life style and level of physical fitness.	**M**

	6D) Hand Tools	▪ Cut resistant work gloves will be worn when dealing with sharp objects. ▪ All hand and power tools will be maintained in safe condition. ▪ Do not drop or throw tools. Tools shall be placed on the ground or work surface or handed to another employee in a safe manner. ▪ Guards will be kept in place while using hand and power tools. ▪ Daily inspections will be performed. ▪ Remove broken or damaged tools from service and tag out as defective ▪ No tampering with electrical equipment is allowed (e.g., splicing cords, cutting the grounding prong off plug, etc.) ▪ Do not use excessive force or impact ▪ Do not use tool improperly. Ensure all workers are trained	**L**
	6E) Slips/Trips/ Falls	▪ Pay attention to where you place your feet ▪ Slow down and use extra caution around logs, rocks, and animal holes. ▪ Extremely steep slopes (>50%) can be hazardous under wet or dry conditions; consider an alternate route. ▪ Wear laced boots with a minimum 8" high upper and non-skid soles for ankle support and traction. ▪ Clear area of trip hazards; mark or barricade those that cannot be moved; ▪ Use caution when walking around excavated areas ▪ Stay back at least 5 feet from excavated areas ▪ Use caution when walking on or around loose soil. ▪ Be aware of surroundings. Avoid muddy areas if possible.	**L**

	6F) Struck by Vehicle	▪ Ground personnel in the vicinity of vehicles operations will be within the view of the operator at all times. ▪ Ground personnel will not stand directly behind vehicles when it is in operation ▪ Drivers will keep workers on foot in their vision at all times, if you lose sight of someone, Stop! ▪ High visibility vests will be worn when workers are exposed to vehicular traffic at the site or on public roads. ▪ Try to park so that you don't have to back up to leave. ▪ If backing in required, walk around vehicle to identify any hazards (especially low level hazards that may be difficult to see when in the vehicle) that might be present. Use a spotter if necessary ▪ Place cones in the font and rear of the vehicle ▪ Prior to driving off, walk around vehicle to collect cones and identify any hazards - especially low level hazards that may be difficult to see when in the vehicle. ▪ Set up "Workers in the Road" or similar warning signs and cones to alert traffic. ▪ Use emergency flashers and roof top flashing light (recommended) to alert oncoming vehicular traffic. ▪ Remain alert at all times as to the traffic outside the vehicle. Step to the side of the road when distracted by by-standers. Keep unofficial personnel out of the work area. ▪ Exit vehicle with caution. ▪ Wear High Visibility Vest when outside the vehicle. ▪ Utilize vehicle as a shield from oncoming traffic, as practical	**L**
7. IDW pickup oversight	7B) Foot Injury	▪ Wear steel toed boots ▪ Pay attention to where you place your feet, especially when walking on uneven terrain	
	7C) Chemical Hazards	▪ See HASP for appropriate level of PPE ▪ Wear chemical resistant PPE as identified in the HASP ▪ Use monitoring equipment, as outlined in HASP, to monitor breathing zone ▪ Be familiar with hazards associated with site contaminants. ▪ Wash hands and face prior to consumption of food, beverage or tobacco.	**L**
	7D) Lifting	▪ Good lifting techniques (lift with legs not back) ▪ Use mechanical devices (e.g., hand truck, cart, forklift, etc.) to move drums. ▪ Team lifting should be utilized if mechanical devices are not available. (mandatory for items over 50 lbs)	**M**

	7E) Slips/Trips/ Falls	▪ Pay attention to where you place your feet ▪ Slow down and use extra caution around logs, rocks, and animal holes. ▪ Extremely steep slopes (>50%) can be hazardous under wet or dry conditions; consider an alternate route. ▪ Clear area of trip hazards; mark or barricade those that cannot be moved; ▪ Use caution when walking around excavated areas ▪ Stay back at least 5 feet from excavated areas ▪ Use caution when walking on or around loose soil. ▪ Be aware of surroundings. Avoid muddy areas if possible.	**L**
8. Return to office/ home	8A) See Mobilization/ Demobilization and Site Preparation JHA	**See Mobilization/ Demobilization and Site Preparation JHA**	**L**

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (1/2 face respirator with P-100 cartridge, Hard Hat, safety glasses, gloves, steel toe work boots, high visibility safety vest, hearing protection)	**Competent / Qualified Personnel:** Name – Position/Employer – See HASP **Training requirements:** List specific certification (as applicable) Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting	Daily inspection of equipment per manufacturer's instructions. Tag tools that are defective and remove from service. Inspect power cord sets prior to use. Inspect all PPE prior to use

AHA – Utility Clearance

Activity/Work Task:	Utility Clearance Activities		
Project Location:	Lake Success, NY		
Contract Number:	3617187448		
Date Prepared:	**11/26/2018**	**Date Accepted:**	**12/7/2018**
Prepared by (Name/Title):	Ben Hess / Environmental Technician		
Reviewed by (Name/Title):	Glen Gordon / Health and Safety Officer		

Notes: (Field Notes, Review Comments, etc.)

This AHA involves the following:

- Establishing site specific measures
-

This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.

Overall Risk Assessment Code (RAC) (Use highest code)	**H**

Risk Assessment Code (RAC) Matrix

Severity	**Probability**				
	Frequent	Likely	Occasional	Seldom	Unlikely
		E	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

AHA – Utility Clearance

Job Steps	Hazards	Controls	RAC
1. Utility Clearance	1A) **Utilities Not Cleared (damage to utilities, worker injury)**	1A) Do not perform intrusive work until all utilities have been cleared. ▪ Provide sufficient time and budget to ensure that utilities have been adequately located, prior to the start of up of work. ▪ Contact One Call Utility identifier organization at least 6 days prior to the project start date. ▪ Cite or have subcontractor cite a start date of at least 3 working days prior to actual planned start date (provides window to inspect locations prior to job start-up. ▪ Verify via emails or phone that all utilities have visited the site and marked their respective utilities. ▪ If subcontractor calls One Call organization, require them to forward all e-mail responses from member utilities as they receive them. ▪ If verification cannot be done remotely, send worker to site to inspect ground for markings (cheaper to identify issues prior to mobilization to the site). ▪ Document all phone communications with driller about utility clearance issues and requests (e-mail the conversation highlights or document in a field notebook – it becomes part of the file record) ▪ Call any member utilities that have not responded indicating they have cleared or marked-out utilities. Place the call morning of ticket start date (e.g., 3 days prior to actual start date). Document the phone conversations in notes or e-mails to the file. ▪ If town services (e.g., sanitary sewer, storm sewer, water) aren't listed as a One Call member, contact the town office to schedule mark-out, obtain copies of utility networks, and identify the appropriate town contacts. ▪ If town maps have lateral connections to private lots marked and /or if we are drilling along road right-of way opposite developed properties, identify the locations of the lateral connections. This may mean contacting abutters and asking to look in basements for location of pipes. If possible do this during a site visit prior to field start. If not, it should occur during the first day of work so any issues can be identified and decisions made on the risk of proceeding. **Walk all planned locations with the subcontractor, prior to start of excavation/drilling to identify marked utilities and note any uncertainties. Field Lead should call PM and relay any issues. Document this inspection in the field book and note subcontractor's responses to any MACTEC concerns.**	**H**

	1B) **Locating Utilties on Private Property**	1B) Locating Utilities on Private Property ▪ Hire private utility locater company ▪ Locate underground utilities by ground penetrating radar, electromagnetic, deep metal detector, pipe transmitter, vibracator, etc ▪ Review locations with property owner, member of operations and maintenance. ▪ Check as built drawings when available. Be aware possible drawing error or construction drawings may not be representative of actual locations. ▪ Use field clues such as manhole covers, repaved areas, depressions, disturbed areas, signs and postings, etc. as indications of access to utilities or recently installed/moved utilities.	**M**
	1C) Lack of Reliable Data on Utility Locations	1C) Lack of Reliable Data on Utility Locations ▪ If the surveys are not providing reliable data, plan to use non-destructive means to drill/excavate e.g., soil vacuum, water jet, air knife and/or hand tools. ▪ Use caution and proper PPE when using hand tools (hand augers, posthole diggers, shovels, steel rods, etc.). **1)** Involve the Project Manager, Technical Lead and/or Office Manager to make a decision to proceed or move the location	**L**
	1D) Slips/Trips/Falls	1D) Slips/Trips/Falls ▪ Keep work area free of excess material and debris ▪ Remove all trip hazards by keeping materials/objects organized and out of walkways ▪ Keep work surfaces dry when possible ▪ Wear appropriate PPE (see HASP) including non-slip rubber boots if working on wet or slick surfaces ▪ Install rough work surface covers where possible ▪ Stay aware of footing and do not run	**L**
	1E) Heat/Cold Stress	1E) Heat/Cold Stress ▪ Take breaks if feeling faint or overexerted ▪ Consume adequate food/beverages (water, sports drinks) ▪ If possible, adjust work schedule to avoid temperature extremes	**L**

2. Walking Around Site Identifying Utility Clearances.	2A) Biological Hazards: Insects, Snakes, Wildlife, Vegetation	2A) Biological Hazards: Insects, Snakes, Wildlife, Vegetation ▪ Inspect work areas when arrive at site to identify hazard(s) ▪ Use insect repellant if observe mosquitoes/gnats ▪ Survey site for presence of biological hazards and maintain safe distance ▪ Wear appropriate PPE including leather gloves, long sleeves and pants, and snake chaps as warranted by site conditions	**M**
	2B) Traffic (including pedestrian)	2B) Traffic (including pedestrian) ▪ Notify attendant or site owner/manager of work activities and location ▪ Use cones, signs, flags or other traffic control devices ▪ Wear appropriate PPE including high visibility clothing such as reflective vest ▪ Inspect area behind vehicle prior to backing and use spotter	**M**

AHA – Utility Clearance

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (Hard Hat, safety glasses, gloves, steel toe work boots, high visibility safety vest, hearing protection)	**Competent / Qualified Personnel:** Name – Position/Employer See HASP	Daily inspection of equipment per manufacturer's instructions. Tag tools that are defective and remove from service. Inspect power cord sets prior to use. Inspect all PPE prior to use

AHA – Construction Inspection

Activity/Work Task:	Construction Inspection		
Project Location:	Lake Success, NY		
Contract Number:	3617187448		
Date Prepared:	**11/26/2018**	**Date Accepted:**	**12/7/2018**
Prepared by (Name/Title):	Ben Hess / Environmental Technician		
Reviewed by (Name/Title):	Glen Gordon / Health and Safety Coordinator		

Notes: (Field Notes, Review Comments, etc.)

This AHA involves the following:

- Establishing site specific measures for performing construction inspections at Bedford Street for sewer separation project

This AHA is not an exhaustive summary of all hazards associated with the Site. Refer to the site HASP for additional requirements. Contractor to follow general site safety controls for Slips Trips and Falls, Biological hazards, cuts lacerations and pinch points, and emergency procedures.

Overall Risk Assessment Code (RAC) (Use highest code)	**M**

Risk Assessment Code (RAC) Matrix

Severity	**Probability**				
	Frequent	Likely	Occasional	Seldom	Unlikely
Catastrophic	**E**	**E**	**H**	**H**	**M**
Critical	**E**	**H**	**H**	**M**	**L**
Marginal	**H**	**M**	**M**	**L**	**L**
Negligible	**M**	**L**	**L**	**L**	**L**

Step 1: Review each **"Hazard"** with identified safety **"Controls"** and determine RAC (See above)

"Probability" is the likelihood to cause an incident, near miss, or accident and identified as: Frequent, Likely, Occasional, Seldom or Unlikely.

"Severity" is the outcome/degree if an incident, near miss, or accident did occur and identified as: Catastrophic, Critical, Marginal, or Negligible

Step 2: Identify the RAC (Probability/Severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of AHA.

RAC Chart

- **E = Extremely High Risk**
- **H = High Risk**
- **M = Moderate Risk**
- **L = Low Risk**

AHA – Construction Inspection

Job Steps	Hazards	Controls	RAC
1. Prepare for site visit	1A) N/A	▪ Obtain and review HASP prior to site visit. ▪ Determine PPE needs – bring required PPE to the site, if not otherwise being provided at the site (e.g., steel toed boots) ▪ Determine training and medical monitoring needs and ensure all required Health and Safety training and medical monitoring has been received and is current ▪ Ensure all workers are fit for duty (alert, well rested, and mentally and physically fit to perform work assignment) ▪ First aid kits shall be available at the work site and on each transport vehicle. ▪ Familiarize yourself with route to the site ▪ Check weather forecast. Pack appropriate clothing and other items (e.g., sunscreen) for anticipated weather conditions ▪ Verify that subsurface utilities have been identified.	L
2. Traveling to the site by vehicle	2A) See AHA for Mobilization, Demobilization and Site Preparation	See AHA for Mobilization, Demobilization and Site Preparation	L
3. Initial Arrival - Assess Site Conditions	Communication	▪ Talk to each other. Develop communication methods (agree on hand signals, warning alarms) ▪ Log all workers and visitor on and off the site. ▪ Let other crewmembers know when you see a hazard. ▪ Avoid working near known hazards. ▪ Always know the whereabouts of fellow crewmembers. ▪ Carry a radio and spare batteries or cell phone ▪ Hold tailgate meetings	L
	3A) Insect Bites and Stings	▪ Discuss the types of insects expected at the Site and be able to identify them. ▪ Look for signs of insects. ▪ Inform crew members if allergic to insects and what to do if you need assistance. ▪ Avoid wearing heavy fragrances. ▪ Carry first-aid and sting relief kits. ▪ Carry identification of known allergies and necessary emergency medication. ▪ Spray clothing with insect repellant as a barrier. ▪ Wear light colored clothing that fits tightly at the wrists, ankles, and waist. ▪ Cover trouser legs with high socks or boots. ▪ Tuck in shirt tails.	L

	3B) Poisonous plants	▪ Wear long sleeves, long pants and boots ▪ Ensure all field workers can identify the plants. Mark identified poisonous plants with high visibility spray paint if working at a fixed location. ▪ Look for signs of poisonous plants and demark area to aid in avoiding plant. ▪ Do not touch any plant part to any part of your body/clothing. ▪ Use commercially available products such as Ivy Block or Ivy Wash as appropriate.	**M**
	3C) Vermin, leaches, animal borne disease	▪ Survey the area for dens, nests, etc. ▪ Identify areas where biological hazards may be present. ▪ Wear long sleeve shirt and full length pants	**L**
	3D) Chemical Hazards	▪ Wear chemical resistant PPE as identified in the HASP ▪ Use monitoring equipment, as outlined in HASP, to monitor breathing zone ▪ Read MSDSs for all chemicals brought to the site ▪ Be familiar with hazards associated with site contaminants. ▪ Ensure that all containers are properly labeled	**M**
	3E) Overhead Power Lines	▪ Identify the location of all overhead power lines at the site. ▪ Maintain clearances depending on voltage - All equipment will stay a minimum of 10 feet from overhead energized electrical lines (50 kV or less). This distance will increase by 4 inches for each 10 kV above 50 kV. Rule of Thumb: Stay 10 feet away from all overhead power lines known to be 50 kV or less and 35 feet from all others.) ▪ Re-locate work so it is not close to power lines ▪ Avoid storing materials under overhead power lines	**M**
	3F) Underground Utilities	▪ All utilities will be marked prior to excavation activities ▪ See Underground utility location AHA	**M**
	3G) Cold Stress	▪ Dress in layers with wicking garments (those that carry moisture away from the body – e.g., synthetics) and a weatherproof slicker. A breathable water resistant outer garment is recommended. ▪ Take layers off as you heat up; put them on as you cool down. ▪ Wear head protection that provides adequate insulation and protects the ears. ▪ Maintain your energy level. Avoid exhaustion and over-exertion which causes sweating, dampens clothing, and accelerates loss of body heat and increases the potential for hypothermia. ▪ Acclimate to the cold climate to minimize discomfort. ▪ Maintain adequate water/fluid intake to avoid dehydration. ▪ Be aware of signs of hypothermia, its prevention, detection and treatment. ▪ Have extra protection available, in case of an emergency such as blankets and heating devices. ▪ Don't work under extremely adverse weather conditions ▪ Stay in tune to current weather and extended forecasts.	**L**

	3H) Heat Stress	▪ Remain constantly aware of the four basic factors that determine the degree of heat stress (air temperature, humidity, air movement, and heat radiation) relative to the surrounding work environmental heat load. ▪ Know the signs and symptoms of heat exhaustion, heat cramps, and heat stroke. Heat stroke is a true medical emergency requiring immediate emergency response action. ▪ Maintain adequate water intake by drinking water periodically in small amounts throughout the day (flavoring water with citrus flavors or extracts enhances palatability). ▪ Lessen work load and/or duration of physical exertion the first days of heat exposure to allow gradual acclimatization. ▪ Alternate work and rest periods. More severe conditions may require longer rest periods and electrolyte fluid replacement.	**L**
	3I) Lightning and Thunder	▪ Monitor weather channels to determine if electrical storms are forecasted. ▪ Plan ahead and identify safe locations to be in the event of a storm. (e.g., sturdy building, vehicle, etc.) ▪ Suspend all field work at the first sound of thunder. You should be in a safe place when the time between the lightning and thunder is less than 30 seconds.	**L**
	3J) Severe Weather	▪ Watch for clouds and incoming weather. ▪ Monitor weather forecasts. ▪ Train workers about weather and appropriate precautions. ▪ Identify a shelter and a safe place in event of tornado etc	**L**
	3K) Sun	▪ Keep body protected ▪ Wear sunscreen, wide brimmed hat or hardhat. ▪ Schedule work for cool part of day. ▪ Take breaks in the shade.	**L**
	3L) High Crime Areas	▪ Do not enter areas where threats are present. ▪ Contract security where applicable. Use the buddy system. ▪ Maintain contact with support such as radio or cell phone ▪ Do not work after dark.	**L**
4. Walk around the Site	4A) Poisonous plants	▪ Wear long sleeves, long pants and boots. ▪ Ensure all field workers can identify the plants. Mark identified poisonous plants with high visibility spray paint if working at a fixed location. ▪ Do not touch any plant part to any part of your body/clothing. ▪ Use commercially available products such as Ivy Block or Ivy Wash as appropriate.	**M**

	4B) Vermin, leaches, animal borne disease	▪ Survey the area for dens, nests, etc. ▪ Identify areas where biological hazards may be present. ▪ Be aware of your surroundings. ▪ Wear long sleeve shirt and full length pants ▪ Wear appropriate footwear (snake boots, etc.) ▪ Avoid high grass areas if possible ▪ Do not put hand/arm into/under an area that you cannot see into/under clearly ▪ Perform routine inspections for ticks, leaches, etc. of yourself and co-workers.	**L**
	4C) Chemical Hazards	▪ See HASP for appropriate level of PPE ▪ Wear chemical resistant PPE as identified in the HASP ▪ Use monitoring equipment, as outlined in HASP, to monitor breathing zone ▪ Read SDSs for all chemicals brought to the site ▪ Be familiar with hazards associated with site contaminants. ▪ Ensure that all containers are properly labeled	**L**
	4D) Slips/Trips/Falls	▪ Wear slip resistant footwear ▪ Pay attention to where you place your feet ▪ Slow down and use extra caution around logs, rocks, and animal holes. ▪ Extremely steep slopes (>50%) can be hazardous under wet or dry conditions; consider an alternate route. ▪ Site SHSO will inspect the entire work area to identify and mark hazards. ▪ Clear area of trip hazards; mark or barricade those that cannot be moved; ▪ Use caution when walking around excavated areas ▪ Use caution when walking on or around loose soil.	**M**
5. Inspections during construction operations	5A) Heavy Equipment/ Vehicles	▪ Spotters will be used when backing up trucks and heavy equipment and when moving equipment. ▪ Ground personnel in the vicinity of vehicles or heavy equipment operations will be within the view of the operator at all times. ▪ Ground personnel will be aware of the swing radius and maintain an adequate buffer zone. ▪ Ground personnel will not stand directly behind heavy equipment when it is in operation. ▪ Personnel are prohibited from riding on the buckets, or elsewhere on the equipment except for designated seats with proper seat belts or lifts specifically designed to carry workers. Ground personnel will stay clear of all suspended loads. ▪ Ground personnel will wear high visibility vests ▪ Eye contact with operators will be made before approaching equipment.	**M**
	5B) Eye Injury	▪ Wear appropriate safety glasses (tinted for sun). ▪ Watch where you walk, especially around trees and brush with protruding limbs.	**L**

	5C) Foot Injury	▪ Wear steel toed boots when working around heavy equipment, materials, and tools ▪ Wear insulated boots during winter ▪ Ensure shoes/boots have good traction ▪ Pay attention to where you place your feet, especially when walking on uneven terrain	**L**
	5D) Head Injury	▪ Wear hardhat ▪ Do not walk or work under scaffolding or other elevated work unless there are guardrails and toeboards in place ▪ Flag or mark protruding objects at head level	**L**
	5E) Chemical Hazards	▪ Wear chemical resistant PPE as identified in the HASP ▪ Use monitoring equipment, as outlined in HASP, to monitor breathing zone ▪ Read SDSs for all chemicals brought to the site ▪ Be familiar with hazards associated with site contaminants. ▪ Ensure that all containers are properly labeled ▪ Wash hands and face prior to consumption of food, beverage or tobacco.	**M**
	5F) Dust - particulates (respiratory)	▪ Use dust suppression methods ▪ Stand upwind of point of dust generation	**L**
	5G) Overhead Power Lines	▪ Maintain clearances depending on voltage - All equipment will stay a minimum of 10 feet from overhead energized electrical lines (50 kV or less). This distance will increase by 4 inches for each 10 kV above 50 kV. Rule of Thumb: Stay 10 feet away from all overhead power lines known to be 50 kV or less and 35 feet from all others.)	**M**
	5H) Standing/Static Posture	▪ Change posture on a frequent basis ▪ Stretch prior to any physical activity	**L**
	5I) Slips/`Trips/Falls	▪ Pay attention to where you place your feet ▪ Slow down and use extra caution around logs, rocks, and animal holes. ▪ Extremely steep slopes (>50%) can be hazardous under wet or dry conditions; consider an alternate route. ▪ Wear laced boots with a minimum 8" high upper and non-skid soles for ankle support and traction. ▪ Clear area of trip hazards; mark or barricade those that cannot be moved. ▪ Use caution when walking around excavated areas ▪ Stay back at least 5 feet from excavated areas ▪ Use caution when walking on or around loose soil. ▪ Be aware of surroundings. Avoid muddy areas if possible.	**L**

	5J) Excavation Hazards	▪ For excavations over 4 feet in depth, a competent person must inspect the trench daily or as hazardous conditions change. ▪ Trenches over 4 feet in depth must be adequately sloped, benched or shored with protective systems. ▪ Store all materials and soil at least 2 feet away from the side of the trench. ▪ Adequately support utilities crossing a trench. ▪ Wear appropriate PPE and fall protection/rescue equipment.	**M**
6. Return to office/ home	6A)See Mobilization/ Demobilization and Site Preparation JHA	**See Mobilization/ Demobilization and Site Preparation AHA**	**L**

AHA – Construction Inspection

Equipment to be Used	Training Requirements/Competent or Qualified Personnel name(s)	Inspection Requirements
PPE (Hard Hat, safety glasses, gloves, steel toe work boots, high visibility safety vest, hearing protection)	**Competent / Qualified Personnel:** Name – Position/Employer – See HASP **Training requirements:** List specific certification (as applicable) Site Specific HASP Orientation Toolbox safety meeting Task kick-off meeting	Inspect all PPE prior to use

Appendix F

Generic Community Air Monitoring Plan and Fugitive Dust and Particulate Monitoring

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 mcg/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 mcg/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/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 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^{o} C (14 to 122^{o} 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.

THIS AREA TO BE ACCESSIBLE DURING CONSTRUCTION WHEN THERE IS NO EQUIPMENT/MATERIAL MOBILIZATION IN PROGRESS

EXCLUSION ZONE FOR BOTH EP-LAFC7 AND EP-LAFE2 INSTALLATION (TYP)

ELECTRICAL AND INSTRUMENTATION CONDUIT RISERS

BLOWER CONTROL PANEL

TIE INTO EXISTING PANEL

EXCLUSION ZONE EP-LAFE2 INSTALLATION ONLY

AREA TO BE MAINTAINED CLEAR OF EXERCISE EQUIPMENT

AREA TO BE MAINTAINED UNDER NEGATIVE PRESSURE DURING FLOOR PENETRATION (TYP)

SS-C1
SS-C4
SS-C7
SS-D1
SS-D3
SS-D5
SS-D7
SS-E2
EP-LAFC7
EP-LAFE2

X CAMP#1
X CAMP#2
X CAMP#3

>>>> TO DAY CARE >>>>

0 5 10 20
SCALE IN FEET

NOTES:

1. EXISTING FLOOR PLAN LAYOUT BASED UPON "ADDITION & RENOVATION TO EXISTING LA FITNESS CLUB AT I-PARK, PROJECT #0513, WEBER AND COMPANY ARCHITECTS, FOR RECORD, JANUARY 02, 2007, SHEET A-3.7 EQUIPMENT PLAN LAYOUT".
2. EXISTING SUB-SLAB VAPOR LOCATIONS BASED UPON AMEC FIELD MEASUREMENTS NOVEMBER 1, 2018.

WILLIAM J. WEBER
PROFESSIONAL ENGINEER
New York License No. 073883

NO.	DATE	DSGN	DR	CHK	APVD	BY
A	12/04/18	RTB	RJR	RJR	RTB	WJW

REVISION: 100% DESIGN TO NYSDEC

LA FITNESS MITIGATION SYSTEM
1111 MARCUS AVENUE
LAKE SUCCESS, NEW YORK 11042

DRAWING STATUS
100% DESIGN

CIVIL
WORK AREA AND
CONTRACTOR LAYDOWN

AMEC E & E, P.C
214-25 42nd Avenue Suite 3R,
Bayside, NY, 11361

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

DATE	DECEMBER 2018
PROJ	3617-18-7448
DWG	C-103
SHEET	4 OF 8

FILE NAME: T:\LOCKHEED\GREAT NECK\LA Fitness SSDS\SSDS VENT TO ATMOSPHERE\Sheets\C-103.dwg PLOT DATE: Tue, 04 Dec 2018 PLOT TIME: 11:55 AM