Sub-Slab Depressurization System Expansion Design Work Plan

Former Lockheed Martin Corporation French Road Facility 525 French Road Utica, New York

Prepared for:

Lockheed Martin Corporation

Prepared by:

Tetra Tech, Inc.

SEPTEMBER 2020

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ACRONYMS

CVOCs	chlorinated volatile organic compounds
Ft	feet
ICM	interim corrective measure
in. W.C.	inches of water column
Lockheed Martin	Lockheed Martin Corporation
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OM&M	operation, maintenance, and monitoring
PVC	polyvinyl chloride
SCH	schedule
SDR	standard dimension ratio
SDS	sub-slab depressurization sump
SSDS	sub-slab depressurization system
SVI	soil vapor intrusion
USEPA	United States Environmental Protection Agency
VI	vapor intrusion
VOC	volatile organic compound
VPGAC	vapor-phase granular activated carbon

Section 1
Introduction

1.1 GENERAL

On behalf of Lockheed Martin Corporation (Lockheed Martin), Tetra Tech, Inc. (Tetra Tech) has prepared this design package to describe the proposed expansion of the sub-slab depressurization system (SSDS) currently operating in the eastern portion of the ConMed facility at the Former Lockheed Martin French Road Facility (Site) located in Utica, New York (Figure 1).

This plan describes the means and methods for the expansion of the SSDS in the ConMed facility.

1.2 BACKGROUND

The SSDS was initially installed in November 2007 and was operated as a pilot test to evaluate the system's effectiveness in addressing sub slab concentrations of chlorinated volatile organic compounds (CVOCs) requiring mitigation per the New York State Department of Health (NYSDOH) Soil Vapor Intrusion Guidance at the Site. Based on the pilot test results and supplemental indoor air/sub slab analytical results (Revised Work Plan for the Interim Corrective Measure, ARCADIS, 2008), the pilot test system was expanded as part of an interim corrective measures (ICM) plan. The SSDS began continuous operation with sub-slab depressurization sump (SDS)-1, -2, and -3 in July 2008, and operated through November 2010.

As presented in the Sub-Slab Depressurization System 100% Design Work Plan (ARCADIS, 2010), operation, maintenance and monitoring (OM&M) activities during 2009 indicated that the ICM SSDS was not meeting operational goals in all areas. Beginning in September 2010, the SSDS was expanded to include four additional sub-slab depressurization sumps (SDS-4 through SDS-7) and major components of the system were also upgraded to expand the capture area of sub-slab vapor from areas of the main building. Upgrade activities continued into February 2011, at which point the expanded system began full-scale operation. To improve capture around vacuum monitoring point (VMP)-7A, the eighth sump (SDS-8) was installed in 2013. The current

system layout is shown on Figure 2. A detailed description of the upgraded system is documented in the revised SSDS OM&M Plan (Tetra Tech, 2019).

1.3 OPERATIONAL SUMMARY

During SSDS operation, soil vapor is extracted from each SDS, which creates a vacuum under the floor slab. The piping system directs the extracted soil vapor to a common manifold, and then conveys the vapor to the SSDS process equipment in the former pH Neutralization Building (Figure 2). The soil vapor is directed through the moisture separator to remove water vapor, through an inline air filter to remove particulates, by means of the regenerative blower, then to a heat exchanger and finally through vapor phase granular activated carbon (VPGAC) vessels for volatile organic compound (VOC) removal including targeted CVOCs before discharge to the atmosphere. Note that the VPGAC may be removed in the near future pending NYSDEC approval of a proposal to do so because of the low level of VOCs removed. The vacuum under the floor slab mitigates the potential for soil vapor to enter the indoor air.

1.3.1 Performance Summary

The instantaneous differential pressures have been recorded at each VMP during the quarterly OM&M inspections with a handheld digital micromanometer; the area of influence induced by Sumps 1 through 7 continues to include the eastern and northern Molding Facilities, CET Room in the north, and a main hallway and Warehouse Area J to the south and east. With the installation of SDS-8 at the end of 2013, the applied vacuum in the Warehouse Area J room was strengthened and the system's overall area of influence expanded to include the Molding Offices and a portion of the Molding Raw Material Storage Room to the south. Average readings from monitoring for the year 2019 of VMP-8C and VMP-8D show that these points appear to be located at the southern extent of the area of vacuum influence generated by SDS-7 and SDS-8.

In addition to recording instantaneous differential pressures, continuous datalogging micromanometers were also used during quarterly OM&M inspections to monitor differential pressure over a 24-hour period. The differential pressures recorded at VMP-8C in July 2019 and October 2019 exhibited vacuums below the design criteria of 0.004 inches of water column (in. W.C.) for a portion of the 24-hour tests.

Section 2
Basis of Design

The design objective for the proposed SSDS expansion is to consistently maintain a vacuum of 0.004 inches of water column or greater in the area of VMP-8C. To achieve this design goal, one vertical SDS will be installed in the location shown on Figure 2. The proposed SDS location was reviewed and confirmed with Waill Ayoub and Sean Tuzzolino of ConMed during a site meeting conducted on June 16, 2020. The proposed location will be cleared with a geophysical utility investigation.

Section 3
Proposed Expansion Design

The main components of the SSDS expansion include one vertical SDS, piping and fitting connections, and pipe supports.

3.1 NEW SDS

The new SDS will be installed in the Molding Raw Material Storage Room as shown on Figure 2. As the SDSs have been numbered sequentially, the new SDS will be designated as SDS-9. Prior to any intrusive activities, a ground-penetrating radar (GPR) survey will be conducted to determine utility clearance in the proposed SDS location.

An electric, water-fed core drill equipped with an 8-inch diameter bit will be used to core through the existing concrete slab. Once through the slab, hand tools will be used to create a roughly 6-inch diameter borehole in the materials below the slab (i.e., gravels and native soils) deep enough to facilitate the installation of the 1.5-foot long well screen below the bottom of the existing slab. The sump will be constructed of 3-inch diameter schedule (SCH) 40 polyvinyl chloride (PVC) well casing with 1.5 feet of 10-slot PVC well screen placed vertically in the hole. The annular space between the well casing and the borehole will be filled with 3/8-inch pea gravel from the bottom of the borehole to the bottom of the concrete slab. The remaining annulus will be filled with non-shrink grout to the floor surface to create a vacuum seal.

The SDS-9 well casing will be fitted with monitoring/control devices consistent with those used for the existing SDS's. These include a vapor sampling port, vacuum gauge, flow control valve, and orifice plate. As done during previous SDS installations, three short sections of 3-inch diameter, standard dimension ratio (SDR) 11, high-density polyethylene (HDPE) pipes accompanied by flanged ends will be utilized to connect the monitoring/control devices to one another. Vertical piping of 3-inch diameter SCH 40 PVC material will be extended up the wall to an elevation sufficient for extension of piping overhead to connect to the existing 6-inch diameter vacuum header pipe via new 4-inch diameter SCH 40 PVC pipe.

3.2 PIPING

The three-inch diameter pipe from SDS will be brought above ground at the columns/walls shown on Figure 3. As discussed above, the riser pipe will have a measuring point for sampling, flow and vacuum monitoring, and a lockable diaphragm valve for throttling or shutting off flow. Approximately 60 feet of 4-inch diameter schedule 40 PVC pipe will be run overhead across the western wall of the Molding Raw Material Storage Room to the north to tie-in with the existing 6-inch diameter vacuum header pipe located adjacent to SDS-7. All PVC pipe connections will be made without the use of solvent-welding techniques by utilizing dry-fitting socket-style connections (i.e., Ferncos) and reducing rubber couplings to seal joints. Wall-mounted pipe clamps and overhead pipe hangers will be used to provide the SDS-9 piping with support. All piping will be level, or sloped back towards SDS-9 to prevent condensate accumulation in low points in pipe runs.

Following installation of the piping, audio leak testing of the piping will be performed using an ultrasound detector. In addition, SDS-9 and the piping will be surveyed to provide an as-built drawing of the expanded SSDS.

Section 4
Expanded System Startup and Testing

Following the installation of SDS-9, the valve for SDS-9 will be opened fully and vacuum and air flow rates will be measured. Following confirmation of adequate vacuum and flow at SDS-9, the instantaneous vacuum readings at VMP-8C and VMP-8D will be collected. The vacuum reading at VMP-8D will be compared to the normal readings observed during OM&M inspections. The vacuum at VMP-8C will be measured to confirm the design criteria of a vacuum of 0.004 inches of water column or greater. The entire system will then be checked by taking vacuum and flow rate measurements from each SDS and vacuum monitoring points, and comparing to normal observed readings and making any adjustments, as needed.

In addition to recording instantaneous differential pressures, a continuous datalogging micromanometer will be used on VMP-8C to monitor differential pressure over a 24-hour period following confirmation of an adequate vacuum and flow at SDS-9 and overall SSDS operation. The results of startup testing will be compiled and included in a submittal documenting installation completion.

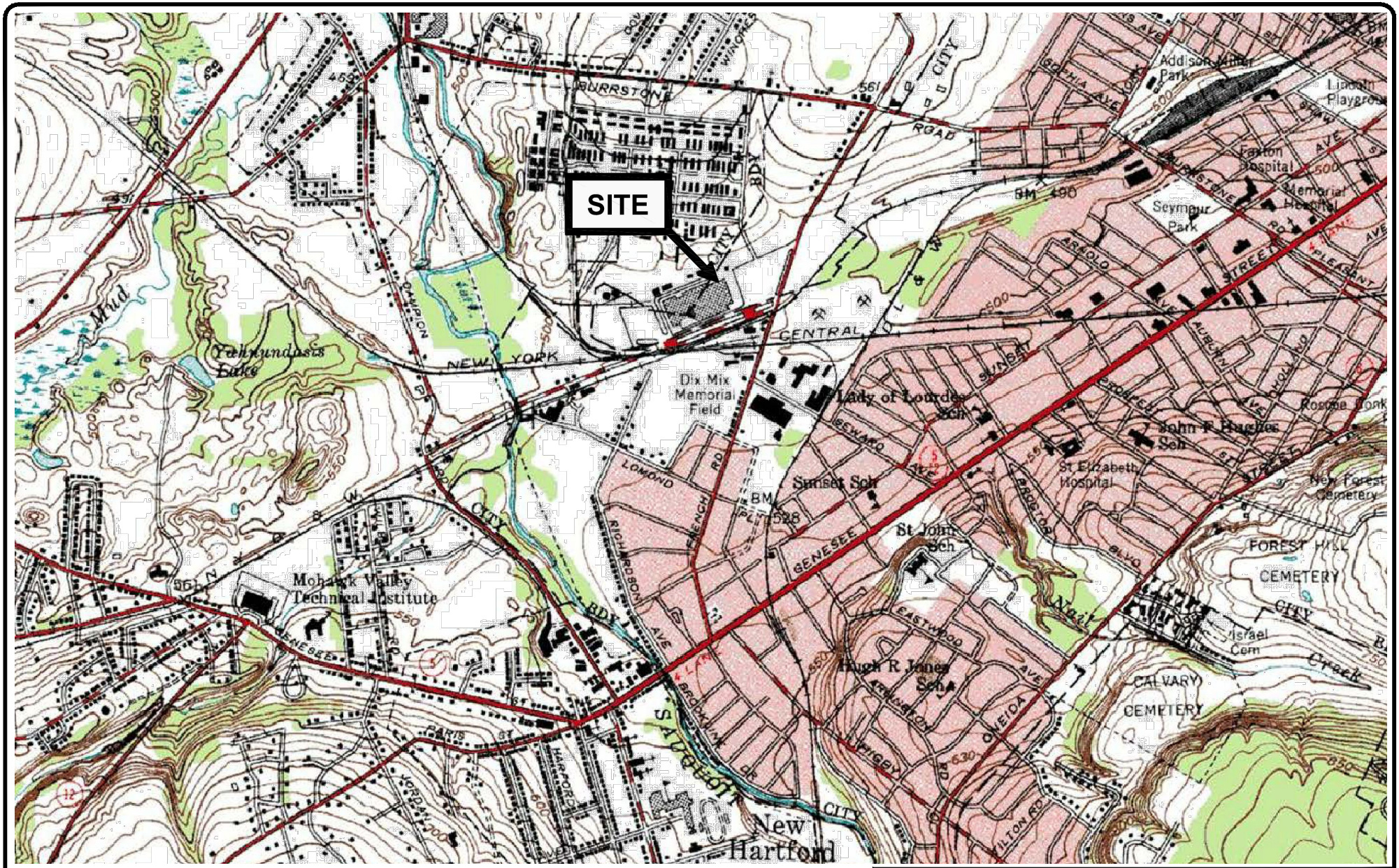
Section 5
References

ARCADIS, 2008 Revised Work Plan for the Interim Corrective Measure, Solvent Dock Area, Former Lockheed Martin French Road Facility, Utica, New York. [revised] April 30, 2008.

ARCADIS, 2010 Sub-Slab Depressurization System 100% Design Work Plan, Former Lockheed Martin French Road Facility, Utica, New York. February 16, 2010.

Tetra Tech, 2019 Sub Slab Depressurization System Operational, Maintenance, and Monitoring Plan, Former Lockheed Martin French Road Facility, Utica, New York. April 2019.

FIGURES



SUB-SLAB DEPRESSURIZATION SYSTEM

FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY, UTICA, NY

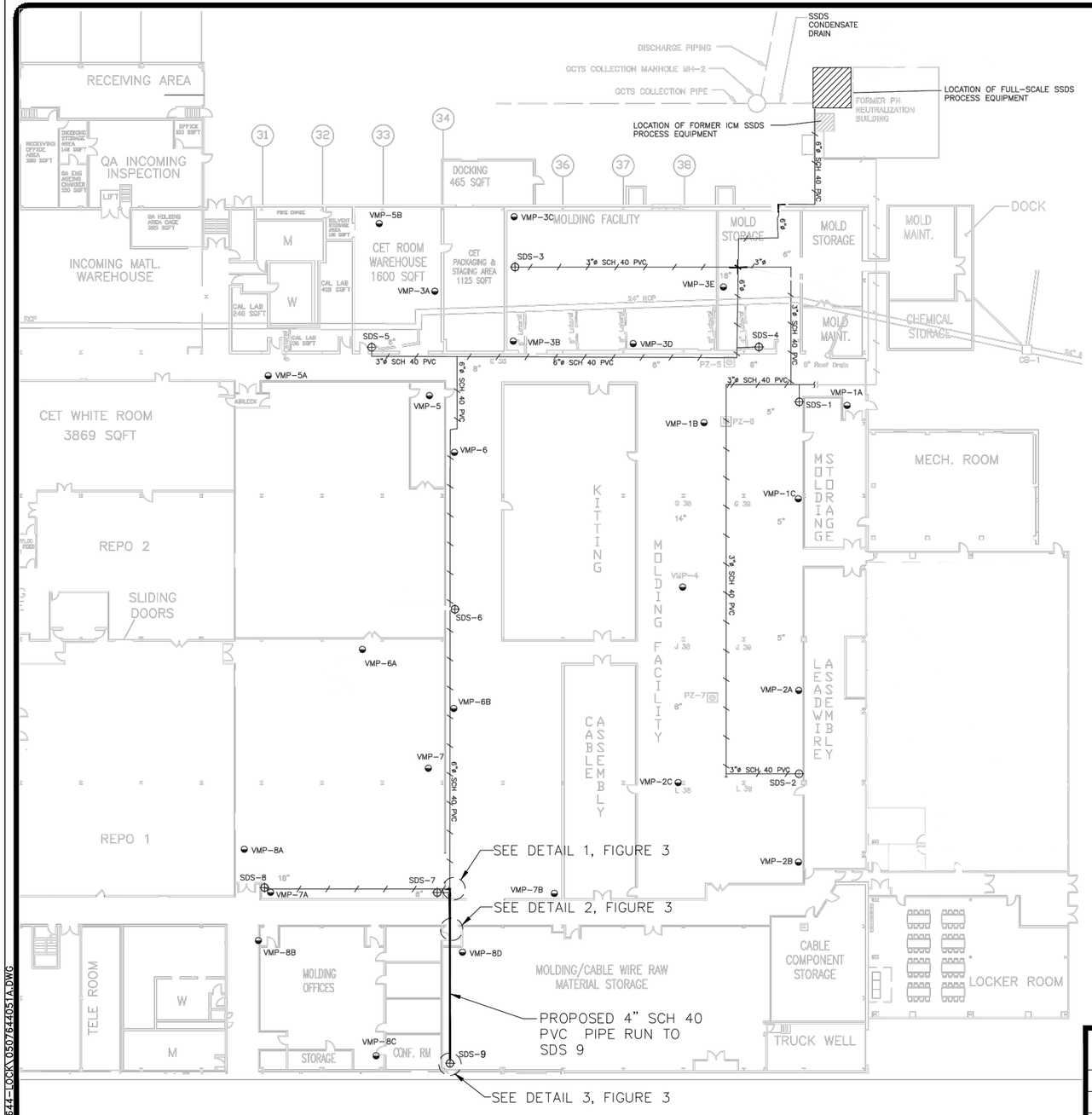
SITE LOCATION MAP

TETRA TECH

CHECKED	MRN
DRAFTED	HJW
PROJECT	117-0507677
DATE	9/1/20

FIGURE: 1

S:\CAD\LOCKHEED MARTIN\UTICA\1-9-18\FIGURE 1.DWG



LEGEND

PZ-7	LOCATION OF EXISTING PIEZOMETER
SDS-1	LOCATION OF SUBSLAB DEPRESSURIZATION SUMP (SDS)
VMP-1A	LOCATION OF VACUUM MONITORING POINT (VMP)
	LOCATION OF SUBSLAB DEPRESSURIZATION ABOVE GRADE PIPING 6"ø HEADER
	LOCATION OF SUBSLAB DEPRESSURIZATION ABOVE GRADE PIPING 3"ø LATERALS
5"	SLAB THICKNESS BASED ON RECORD DRAWINGS PROVIDED BY CONMED CORPORATION AND/OR FIELD OBSERVATIONS
35	BUILDING COLUMN LINE IDENTIFICATION
24" RCP	ACTIVE FACILITY STORM SEWER

NOTE:

1. BASE DRAWING SOURCE: CONMED, TITLE: FRENCH ROAD BLOCK PLAN PROPOSED SPACE UTILIZATION, DRAWING NO:FR001, DATE: 01/28/94. CONMED SOURCE DRAWING: LOCKHEED MARTIN DRAWING NUMBER RFABLK.DWG JEG 310CT94.
2. SDS AND VMP LOCATIONS SURVEYED BY THEW ASSOCIATES, LPS IN 2011. REFERENCE DRAWING UK156-10-07.
3. THIS SURVEY IS REFERENCED HORIZONTALLY TO THE NORTH AMERICAN DATUM OF 1983 (NAD83) AND PROJECTED ON THE NEW YORK STATE PLAN COORDINATE SYSTEM (CENTRAL ZONE).
4. THE REFERENCED HORIZONTAL CONTROL STATION IS A GPS CONTINUOUSLY OPERATING REFERENCE STATION (CORS) DESIGNATED AS "ROME CORS ARP" (NYRM). NYRM IS A SPECIAL HORIZONTAL AND VERTICAL CONTROL STATION ESTABLISHED BY NATIONAL GEODETIC SURVEY IN JULY 1997.
5. THE SDS AND VMP LOCATIONS SHOWN HERE ARE BASED ON AN INSTRUMENT SURVEY COMPLETED IN 2010 BY THEW ASSOCIATES, LPS.
6. THE PROPOSED PIPING JOINTS AND FITTINGS SHALL BE DRY FITTING AND SEALED WITH RUBBER COUPLERS MANUFACTURED BY FERNCO UNLESS OTHERWISE NOTED.

DATE	REVISION	APRD.

LOCATION:
FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY SUB-SLAB DEPRESSURIZATION SYSTEM

TITLE:
PROPOSED LOCATION OF SDS-9

TETRA TECH

APPROVED	GN
DRAFTED	
PROJECT#	
DATE	SEPTEMBER 2020

FIGURE 2

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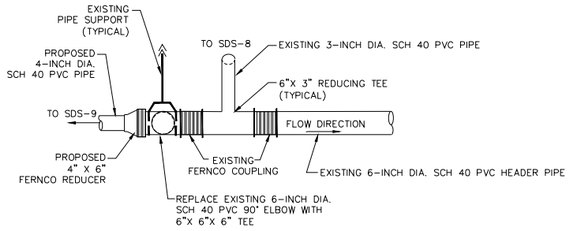
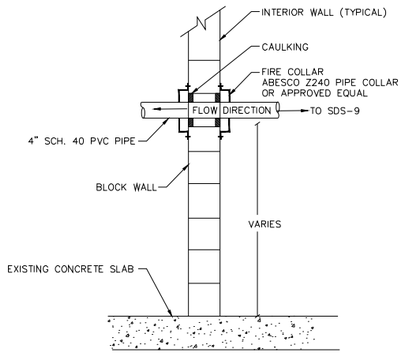


NOTES:

1. THE CONTRACTOR SHALL FIELD VERIFY EXISTING PIPING AND FITTINGS.

DETAIL 1
PROPOSED SSDS LATERAL/HEADER TIE-IN FOR SDS-9

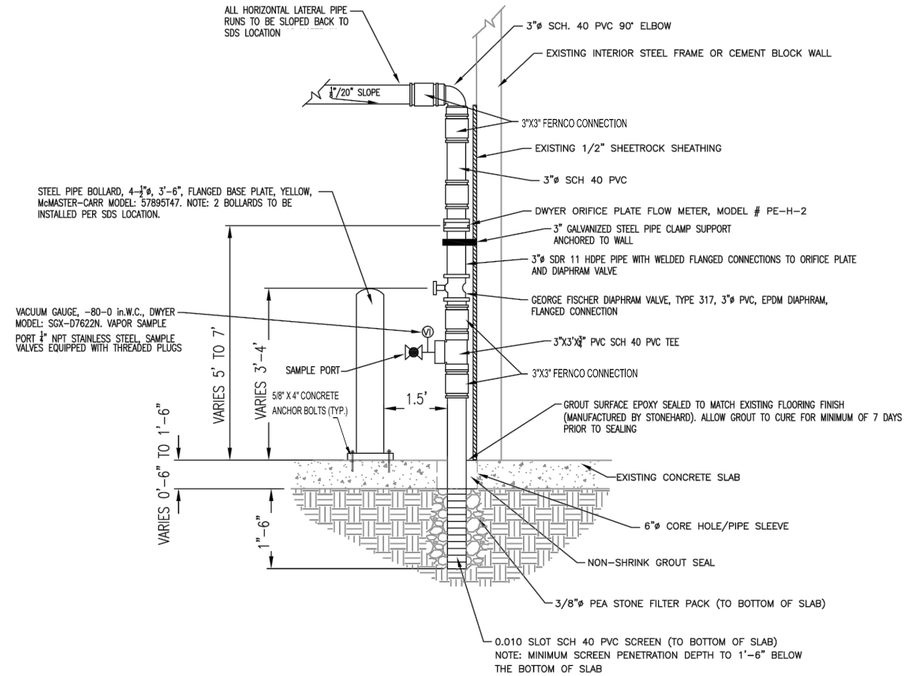


DETAIL 2
TYPICAL INTERIOR WALL PENETRATION

GENERAL CONSTRUCTION NOTES:

1. ALL INTERIOR WALL PENETRATIONS THROUGH SHEET ROCK FINISHED AND CLOSED OFF WITH JOINT COMPOUND AND PAINTED TO MATCH EXISTING.

2. ALL PVC PIPING JOINTS AND FITTING DRY FITTED AND SEALED WITH RUBBER COUPLERS MANUFACTURED BY FERNCO UNLESS OTHERWISE NOTED ON THIS SHEET.



DETAIL 3
SUBSLAB DEPRESSURIZATION SUMP DETAIL SDS-9

Notes:

1. The final sump location will be subject to the findings of the geophysical investigation.
2. The non-shrink grout shall be manufactured by Quikrete Part No. 1585-09 or approved equal.

DATE	REVISION	APRD.

LOCATION:
FORMER LOCKHEED MARTIN FRENCH ROAD FACILITY SUB-SLAB DEPRESSURIZATION SYSTEM

TITLE:
SSDS SUMP AND MISCELLANEOUS PIPING DETAILS

TETRA TECH

APPROVED	GN	FIGURE
DRAFTED		3
PROJECT#		
DATE	SEPTEMBER 2020	

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APPENDIX A- TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS

Sub-Slab Depressurization System Expansion
Former Lockheed Martin French Road Facility
525 French Road, Utica, NY

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SECTION 01 01 00 – SUMMARY OF WORK

PART 1 – GENERAL

1.01 DESCRIPTION

A. The purpose of this section is to summarize the expansion of the sub-slab depressurization system (SSDS) related work (Work) to be performed at the Former Lockheed Martin French Road Facility in Utica, New York. This section is not all-inclusive and is intended to describe only the general performance requirements of the Work. Contractor shall be entirely responsible to perform all Work described in these Technical Specifications and Design Drawings, whether or not specifically or fully described in this section.

B. DEFINED TERMS

Terms used in these Technical Specifications, which are defined herein, have the same meanings assigned to them in all the Subcontract Documents.

1. Contractor – The selected contractor performing the SSDS expansion work contracted directly to the Engineer.

2. Client – Lockheed Martin Corporation

3. Client's Representative – the Remediation Technical Operations (RTO) Contractor, CDM Smith.

4. Owner – ConMed Corporation, owner of the building where work is being conducted.

5. Engineer/Engineer-of-Record – Tetra Tech, Inc.

6. Design Drawings – Figures 2 and 3 depicting the SSDS expansion details in the Work Plan.

C. The Site is located at 525 French Road in Utica, New York. The work to be performed at the Site is within the ConMed facility. All Work shall be in accordance with the requirements of the SSDS Expansion Work Plan and these Technical Specifications.

D. The Engineer shall provide oversight of the Contractor's work. The Engineer shall document the Work with field logs and reports with photographic documentation.

E. The Contractor shall be responsible to coordinate, schedule, and sequence all other Work as required by the Contract Documents not specifically noted in the Summary of Work.

F. The Contractor shall supply any labor and materials required for the removal and disposal of concrete debris and soil removed during the course of the Work.

1.02 SUMMARY OF WORK

A. The scope of work will consist of the following:

1. Obtain all necessary permits, insurance, and licenses required to complete all Work and pay all necessary fees for the permits obtained.

2. Verification of utility locations.

3. Prepare the Lockheed Martin required Dig Permit and Risk Handling Checklist for intrusive work.

4. Mobilization to the Site and the provision of all temporary facilities.

5. Coordinate installation activities with ConMed management and staff to minimize disruptions to their facility operations.

6. Provision of health and safety services for Contractor's employees.

7. Provide and install one new sub-slab depressurization sump (SDS) as shown on the Design Drawings including all associated piping, valve, gauge, and flow meter in accordance with the Design Drawings and these Technical Specifications.

8. Provide and install new above-grade conveyance piping between the new SDS sump and the existing piping connection as shown on the Design Drawings including all associated piping, fittings, and pipe supports in accordance with the Design Drawings and these Technical Specifications.

6. Offsite transportation and disposal of all waste and debris generated during the performance of the Work.

7. Personnel, equipment, and tool decontamination.

8. Site restoration and demobilization from the Site.

1.03 WORK BY OTHERS

A. As part of this project, work items will be performed by Others including:

1. The ground penetrating radar (GPR) investigation to identify utility locations.

2. The post-installation survey of the new SDS and piping.

1.04 SEQUENCE OF WORK

A. The general sequence of construction activities shall be as follows:

1. Mobilization and Site preparation;

2. Installation of new SDS with associated monitoring and control devices;

3. Installation of new above-ground piping between new SDS and existing piping connection with dry-fittings (no solvent glue).

4. Leak testing of piping using ultrasound detector.

5. Transportation and Offsite Disposal of any debris generated during the course of the work; and

6. Demobilization.

B. The general sequence of construction activities may be altered with the approval of the Engineer.

1.05 QUALITY ASSURANCE

A. Contractor and their employees responsible for performing the Work shall be familiar with the most recent versions of the following:

1. All applicable safety rules and regulations; and

2. Regulations related to the handling of contaminated liquid and solid wastes.

B. Contractor shall be responsible at all times for carrying out all Work operations in a safe and prudent manner so that unreasonable hazards to workers, ConMed personnel and facility operations, and the public are minimized. Contractor shall observe all applicable federal, state, and local requirements.

C. Construction quality assurance and quality control requirements are a component of the Contract Documents and Contractor shall adhere to the requirements herein.

D. The Engineer will notify Contractor of any non-compliance and the required action to be taken. Contractor shall immediately inform Engineer of the proposed corrective action and take such action as may be approved at no additional cost to Client. If Contractor fails or refuses to comply promptly, Engineer may issue an order stopping all or part of the Work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for additional costs or damages by Contractor unless it is determined that Contractor was in compliance.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

(END OF SECTION)

SECTION 01 03 50 – HEALTH AND SAFETY

PART 1 GENERAL

1.01 SCOPE OF WORK

A. This Section describes the minimum health and safety requirements for the performance of work specified under this Contract. These requirements do not supersede, but are in addition to any federal, Occupation Safety and Health Administration (OSHA), state or local regulations. If a conflict occurs between these requirements and current regulations, the more stringent shall apply.

B. The work includes installation of a new sub-slab depressurization suction (SDS) point, aboveground piping and fittings, valves, gauges, and flow meters.

1.02 DESCRIPTION OF REQUIREMENTS

A. Site-specific health and safety procedures are required due to potentially hazardous conditions that may be encountered during the work of the Contract. These job hazard analysis (JHA) procedures shall be described in a Contractor's Health and Safety Plan (CHASP) and include at a minimum JHAs for working at heights, and concrete coring. The CHASP shall be submitted to the Engineer and Client for review, before any work covered in the specific procedures can be initiated. The Contractor is responsible for the health and safety of all on-site personnel. The Contractor shall implement, maintain and enforce these procedures at the appropriate times prior to and during all phases of the work.

B. The CHASP must establish in detail the protocols necessary for protecting workers, on-site personnel, visitors and potential off-site receptors from potential hazards encountered during installation of a new SDS, aboveground piping, and transportation and disposal of construction debris.

C. All personnel that will work in potentially affected areas shall comply with OSHA Hazardous Waste Operations and Emergency Response, Interim Final Rule (29 CFR 1910.120), as applicable to the specific tasks.

D. The CHASP shall be kept on-site in an accessible location and reviewed daily by all on-site personnel.

1.03 SUBMITTALS

A. Submit a CHASP prior to the start of work. Submittal shall include the following:

1. Qualifications of the CHASP writer.

2. Qualifications of the Contractor's Site Safety and Health Officer (SSHO).

3. Documentation, as part of the CHASP, that all workers employed at the Site are 40-hour Hazardous Waste Operations and Emergency Response (HAZWOPER)-certified. This shall include "fit for duty" letters signed by a medical doctor for all workers to be employed at the Site.

B. Submit logs and reports as described in Paragraph 1.07 below, including but not limited to protective equipment used by personnel at the Site, and documentation of daily safety meetings.

1.04 SITE SAFETY AND HEALTH OFFICER

A. The CHASP shall be reviewed, approved, and administered by the SSHO. The SSHO shall be assigned to the site on a full-time basis and shall report to the Contractor in matters pertaining to site safety and health. The SSHO shall be responsible for preparing and maintaining daily CHASP site logs and reports.

1.05 DEFINITIONS

A. The following definitions shall be used throughout the CHASP:

1. Contractor Personnel- Contractor employees and representatives, and employees and representatives of subcontractors to the Contractor.

2. Visitor - Anyone other than Contractor Personnel.

3. Monitoring - The use of direct reading field instrumentation or visual observations to provide information regarding the levels of gases, vapors, and dust which are released during construction.

4. Physician - A licensed physician with experience in the practice of occupational medicine.

1.06 REGULATORY REQUIREMENTS AND APPLICABLE PUBLICATIONS

A. The site-specific CHASP shall be consistent with the requirements of:

1. OSHA Standards and Regulations contained in Title 29, Code of Federal Regulations, Parts 1910 "Occupational Safety and Health Standards" and 1926 "Safety and Health Regulations for Construction" (29 CFR 1910 and 1926), including amendments as stated in Federal Register March 6, 1989: 9294-9336 (Final Rule, 29 CFR 1910.120 “Hazardous Waste Operations and Emergency Response”).

2. United States Environmental Protection Agency (EPA) Standard Operating Guidelines, Revised November 1984.

3. National Institute of Occupational Safety and Health (NIOSH)/OSHA/U.S. Coast Guard (USCG)/EPA Occupational Safety and Health Guidance (OSHG) Manual for Hazardous Site Activities, October 1985, Department of Health and Human Services (DHHS) NIOSH Publ. No. 85-115.

B. The CHASP shall include, but not necessarily be limited to, the following components as required by OSHA 29 CFR 1910.120(b):

1. Site Description and Evaluation.

2. Names of key personnel and alternate responsible for site safety and health (responsibilities and chain of command).

3. Safety and health hazard assessment and risk analysis for each site task and operator (Accident Prevention Plan).

4. Education and Training.

5. Personal Protective Equipment.

6. Emergency and First Aid Equipment and Requirements.

7. Medical Surveillance.

8. Air Monitoring.

9. Standard Operating Procedures, Engineering Controls and Work Practices.

10. Site Control Measures (Work Zones, Communications and Security).

11. Logs, Reports and Record Keeping.

12. COVID-19 precautions.

13. Temporary Facilities and Site Control Plan including as needed definition of work zones (support, exclusion and contamination reduction zones), controls, details of movement through the work zones, and operational procedures.

C. The SSHO shall conduct an initial site survey to determine the appropriate safety procedures and level of worker safety equipment. The SSHO shall maintain a continuous health and safety monitoring program throughout the performance of the work. It shall be the SSHO's responsibility to notify the Engineer of any deviations in the health and safety monitoring program required for the performance of the work

D. Requirements delineated in this Section are in addition to, or an amplification of, procedures and requirements of the above-referenced regulations and documents.

E. The SSHO shall notify the Contractor personnel orally and in writing as quickly as possible should any unforeseen safety hazard or condition become evident during the performance of the work. In the interim, take prudent action to establish and maintain safe working conditions and to safeguard employees, the public and the environment.

F. Should the Contractor seek relief from, or substitution for, any portion or provision of the CHASP, such relief or substitution shall be submitted to the Engineer in writing, for review. The Engineer shall forward the proposed modification to the NYSDEC and the Client and RTO for review and acceptance.

G. Any disregard for the provision of these specifications shall be deemed just and sufficient cause for termination of the Contractor or any Subcontractor without compromise or prejudice to the rights of the Contractor.

1.07 PERSONAL PROTECTIVE EQUIPMENT

A. Provide on-site personnel, when required by the CHASP, with appropriate personal safety equipment and protective clothing and ensure that all safety equipment and protective clothing are kept clean and well maintained.

B. All personal protective equipment worn on site in designated areas shall be decontaminated or properly disposed of at the end of the work day. The SSHO shall be responsible for ensuring all personal protective equipment is decontaminated before being reissued.

1.08 LOGS, REPORTS, AND RECORDKEEPING

A. Maintain daily logs and reports covering the implementation of the CHASP. The format shall be developed by the Contractor to include daily tailgate health and safety meeting

documentation, daily logs, weekly reports and a phase out report. Provide the Engineer with copies of all logs and reports on a daily basis. The Engineer shall maintain daily logs and reports of the CAMP including a description of the area being monitored including, at a minimum:

1. Date.

2. Area (site specific) checked.

3. Employees in a particular area.

4. Equipment being utilized by employees.

6. Protective clothing being worn by employees.

7. Protective devices being used by:

   a. Site Personnel

   b. Designated State and Federal Representatives

8. Safety related issues/concerns and resolutions.

9. Site Safety and Health Officer signature and date.

B. Daily Safety Meetings/Briefings: Conduct and record daily tailgate health and safety meetings at the start and end of each work day and when site conditions or activities change to assess hazards and reflect on safety observations, near misses, or incidents.

C. Employer Obligation: Comply with all Federal laws such as OSHA (29 CFR) which require chemical exposure records and medical records be maintained by employer for a specified length of time after the termination of the job.

D. Near Miss and Accident Reports: If near misses, death, serious injuries, or serious damages are caused, the near miss or accident shall be reported immediately to the SSO, Engineer, Contractor, and the Client. In addition, promptly report in writing to the SSO and Engineer all accidents or near-miss incidents whatsoever arising out of, or in connection with, the performance of the Work whether on, or adjacent to, the Site, giving full details and statements of witnesses and a description of corrective action(s) taken. If a claim is made by anyone against the Contractor or any subcontractor on account of any accident, the Contractor shall promptly report the facts in writing to the Engineer, giving full details of the claim. The format of the accident reports shall be developed by the Contractor and be presented as part of the CHASP. Near miss and accident reports shall be submitted to the Engineer of Record within one day of the incident for review and submittal to the Client within one day of the incident.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 04 60 – CONTROL OF WORK

PART 1 GENERAL

1.01 CONSTRUCTION MATERIAL AND EQUIPMENT

A. Furnish construction material and equipment which will be efficient, appropriate and large enough to secure a satisfactory quality of work and a rate of progress which will ensure the completion of the work within the time stipulated within the Contract Time. If at any time such equipment appears to the Client to be inefficient, inappropriate or insufficient for securing the quality of work required or for producing the rate of progress aforesaid, the Client may order the Contractor to increase the efficiency, change the character or increase the plant equipment, and the Contractor shall conform to such order. Failure of the Client to give such order shall in no way relieve the Contractor of his obligations to secure the quality of the work and rate of progress required.

1.02 GREEN REMEDIATION

A. Existing piping and fittings will be reused to the extent possible.

B. Prioritize contracting with local suppliers, laboratories, and disposal and recycling facilities.

1.03 CARE AND PROTECTION OF PROPERTY

A. The Contractor shall coordinate the Work with ConMed management and staff to minimize disruptions to the facility operations.

B. The Contractor shall be responsible for the preservation of all ConMed property and use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to ConMed property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, restore such property to a condition similar or equal to that existing before the damage was done, or make good the damage in other manner acceptable to the Client and ConMed.

C. The Contractor shall protect existing Site features including, but not limited to, building walls, existing piping and cables, and other features to remain whether or not they are shown on the Design Drawings.

1.04 WATER FOR CONSTRUCTION PURPOSES

A. Potable water is available at the Site.

1.05 COOPERATION WITHIN THIS CONTRACT

A. All firms or persons authorized to perform any work under this Contract shall cooperate with Contractor and Subcontractors or trades and assist in incorporating the work of other trades where necessary or required.

B. Cutting and patching, drilling and fitting shall be carried out where required by the trade or subcontractor having jurisdiction, unless otherwise indicated herein or directed by the Client.

C. Contractor shall provide timely notification to ConMed for any impacts to their facility and operations as a result of the Contractor's activities.

1.06 CLEANUP AND DISPOSAL OF DEMOLITION DEBRIS

A. During the course of the work, the Contractor shall keep the Site as clean and neat as possible. The Contractor shall dispose of debris resulting from the work and, at the conclusion of the work, remove and haul away any other refuse remaining from the construction operations and leave the Site of the work in a neat and orderly condition.

B. In order to prevent environmental pollution arising from the construction activities related to the performance of this Contract, the Contractor shall comply with all applicable Federal, State and local laws and regulations concerning waste material handling and disposal, as well as the specific requirements stated in this Section and in other related Sections.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 20 00 – PROJECT MEETINGS

PART 1 GENERAL

1.01 PRECONSTRUCTION CONFERENCE

A. Contractor shall assist the Engineer of Record with the coordination of the pre-construction conference which will also serve as the Operational Readiness Review (ORR)) among the Contractor, subcontractor(s) as necessary, the Client and the RTO to review the Contractor's proposed methods of complying with the requirements of the Contract Documents. As appropriate, representatives of the Property Owner/Occupant shall be included. An ORR Compliance Checklist (found in the Lockheed Martin Corporation Remediation Contractor's ESH Handbook) will be completed. The meeting and any required action items identified during the meeting must be approved by the Client prior to start of work.

B. During the pre-construction conference, the Contractor shall be prepared to discuss their means and methods, proposed site controls, construction schedule, communication plan, health and safety, emergency response, project organization and responsibilities.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 33 00 – SUBMITTALS

PART 1 GENERAL

1.01 DESCRIPTION

A. This Section specifies the general methods and requirements of submittals applicable to the Work including but not limited to Health and Safety Plan, Shop Drawings, Construction or Submittal Schedules, Construction Quality Control Plan, Contractor Work Plans, Logs and Field Reports, Certifications, Qualifications, and Field Test Results. Detailed submittal requirements are specified in the technical Sections.

B. All submittals shall be clearly identified by reference to Section Number, Paragraph, Figure Number or Detail as applicable. Submittals shall be clear and legible and of sufficient size for presentation of data.

1.02 CONTRACTOR SUBMITTALS

A. Submittals shall be submitted to Engineer for review and acceptance. Submittals may also be submitted to the Client and/or the RTO for review and concurrence.

B. Submittals shall be submitted to the Engineer as soon as possible and with due regard to the sequence in which such information will be required. This includes, but is not limited to materials and products, details of any deviation which Contractor (or subcontractor) proposes from the details as indicated on the Drawings and Construction Sequence, and any details not specifically indicated on the Design Drawings. It is the Contractor's responsibility to provide submittals for approval, based on field measurements of actual conditions, indicating how it proposes to install the Work and the equipment, materials, and products being furnished under the Contract.

C. Subcontractor submittals shall be sent by Contractor to the Engineer of Record for review and approval. The Contractor shall be responsible for their submission at the proper time so as to prevent delays in delivery of materials.

D. The Contractor shall check all subcontractor's submittals regarding content, measurements, materials and details to make sure that they conform to the intent of the Design Drawings and related Sections. Return shop drawings found to be inaccurate or otherwise in error to the subcontractors for correction before submission thereof.

1.03 ENGINEER OF RECORD RESPONSIBILITIES

A. Review submittals, including those by subcontractors, prior to submission to determine and verify the following:

1. Conformance with related Technical Specifications Sections
2. Conformance with Figures in the Work Plan
3. Field measurements
4. Field construction criteria
5. Catalog numbers and similar data

B. Each submittal submitted by the Contractor shall have affixed to it the following Certification Statement including the Contractor's Company name and signed by the Engineer of Record : "Certification Statement: by this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements." Submittals, shop drawings and product data sheets 11-in x 17-in and smaller shall be bound together in an orderly fashion and bear the above Certification Statement on the cover sheet. The cover sheet shall fully describe the packaged data and include a listing of all items within the package. Provide a copy of each transmittal sheet for shop drawings, product data and samples at the time of submittal to the Engineer of Record.

C. Notify the Engineer of Record, Client, and the RTO in writing at the time of submittal of any deviations in the submittals from the requirements of the Contract Documents.

D. The review and approval of submittals, shop drawings, samples or product data by the Engineer of Record shall not relieve the Contractor from the responsibility for the fulfillment of the terms of the Contract. All risks of error and omission are assumed by the Contractor and the Client or the RTO will have no responsibility therefor.

E. No portion of the work requiring a shop drawing, sample, or product data shall be started nor shall any materials be fabricated or installed prior to the approval or qualified approval of such item. Fabrication performed, materials purchased or on-site construction accomplished which does not conform to approved shop drawings and data shall be at the Contractor's risk. The Client will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity.

F. Project work, materials, fabrication, and installation shall conform with approved shop drawings, applicable samples, and product data.

1.04 SUBMISSION REQUIREMENTS

A. Make submittals promptly in accordance with approved schedule and in such sequence as to cause no delay in the Work or in the work of any other contractor.

B. Each submittal, appropriately coded, will be returned within 15 calendar days following receipt of submittal by the Engineer.

C. Submittals shall contain:

1. The date of submission and the dates of any previous submissions.

2. The Project title and number.

3. Contractor identification.

4. The names of: a. Contractor; b. Supplier; c. Manufacturer.

5. Identification of the product, with the section number, page and paragraph(s).

6. Field dimensions, clearly identified as such.

7. Relation to adjacent or critical features of the work or materials.

8. Applicable standards, such as ASTM or Federal Standards numbers.

9. Identification of deviations from Contract Documents.

10. Identification of revisions on resubmittals.

11. A blank space suitably sized for Engineer's stamp

12. Where calculations are required to be submitted by the Contractor, the calculations shall have been checked by a qualified individual other than the preparer. The submitted calculations shall clearly show the names of the preparer and of the checker.

1.05 REVIEW OF SHOP DRAWINGS

A. The review of shop drawings will be for general conformance with the design concept and Contract Documents. They shall not be construed:

1. As permitting any departure from the Contract requirements;

2. As relieving the Contractor of responsibility for any errors, including details, dimensions, and materials;

3. As approving departures from details furnished by the Engineer of Record, except as otherwise provided herein.

B. The Contractor remains responsible for details and accuracy, for coordinating the work with all other associated work and trades, for selecting fabrication processes, for techniques of assembly, and for performing work in a safe manner.

C. If the shop drawings, data or samples as submitted describe variations and show a departure from the Contract requirements which Engineer of Record finds to be in the interest of the Client and to be so minor as not to involve a change in Contract Price or Contract Time, the Engineer of Record may return the reviewed drawings without noting an exception.

D. Resubmittals will be handled in the same manner as first submittals. On resubmittals the Contractor shall identify all revisions made to the submittals, either in writing on the letter of transmittal or on the shop drawings by use of revision triangles or other similar methods. The re-submittal shall clearly respond to each comment made by the Engineer of Record on the previous submission. Additionally, the Contractor shall direct specific attention to any revisions made other than the corrections requested by the Engineer of Record on previous submissions.

E. If the Contractor considers any correction indicated on the shop drawings to constitute a change to the Contract Documents, the Contractor shall give written notice thereof to the Engineer of Record at least 7 working days prior to release for manufacture.

F. When the shop drawings have been completed to the satisfaction of the Engineer of Record, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Engineer of Record.

1.06 RECORD DRAWINGS

A. The Contractor shall maintain at the job site a complete set of red-line drawings as issued with the Contract Documents.

B. The Contractor's set of Drawings showing changes made during construction shall be available to the Client and RTO during construction and shall be delivered to the Engineer of Record according to the requirements of paragraph A, above.

1.07 GENERAL PROCEDURES FOR SUBMITTALS

A. Prepare and transmit each submittal sufficiently in advance of performing the related work or other applicable activities, so that the implementation will not be delayed by processing times including disapproval and resubmittal (if required), coordination with other submittals, sampling and analyses, drum staging and storing space limitations, waste disposal documentation, off-site shipment and similar sequenced activities. No extension of time will be authorized because of the Contractor's failure to transmit submittals sufficiently in advance of the Work.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

SECTION 01 60 00 – MATERIALS AND EQUIPMENT

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Approval of materials and equipment.
2. Transportation and delivery.
3. Handling and storage.

B. Related Sections and Documents:

1. Section 01 01 00 Summary of Work
2. Section 01 04 60 Control of Work
3. Section 01 33 00 Submittals

1.02 SUBMITTALS

A. APPROVAL OF MATERIALS AND EQUIPMENT

1. All materials and equipment furnished shall be subject to the inspection and approval of the Engineer of Record. No material shall be delivered to the work without prior approval of the Engineer of Record.

2. Submit to the Engineer of Record, in accordance with Section 01 33 00, data relating to materials and equipment proposed to be furnished for the work. Such data shall be in sufficient detail to enable the Engineer of Record to identify the particular product and to form an opinion as to its conformity to the specifications. Facilities and labor for handling and inspection of all materials and equipment shall be furnished by the Contractor. If the Engineer of Record requires, either prior to beginning or during the progress of the work, submit additional samples or materials for such special tests as may be necessary to demonstrate that they conform to the requirements specified herein. Such samples shall be furnished, stored, packed and shipped as directed at the Contractor's expense.

3. The materials and equipment used on the work shall correspond to the approved samples or other data.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 TRANSPORATION AND DELIVERY

A. Transport and handle items in accordance with the supplier and/or manufacturer's instructions.

B. Schedule delivery to reduce long term on-site storage prior to use. Under no circumstances shall equipment be delivered to the site more than one month prior to use without written authorization from the Engineer of Record.

C. Deliver products to the site in manufacturer's original sealed containers or other packing systems, complete with instructions for handling, storing, unpacking, protecting, and installing.

D. All items delivered to the site shall be unloaded and placed in a manner that will not hamper the Contractor's normal construction operation or those of subcontractors and other Contractors and will not interfere with the flow of Property Owner/Occupant traffic.

E. Provide necessary equipment and personnel to unload all items delivered to the site.

F. Promptly inspect shipment to assure that products comply with requirements, quantities are correct and items are undamaged. For items furnished by others (i.e., Client, other Contractors), perform inspection in the presence of the Engineer of Record. Notify Engineer of Record, verbally and in writing, of any problems.

3.02 HANDLING AND STORAGE OF MATERIALS AND EQUIPMENT

A. Store and protect products and equipment in accordance with the supplier and/or manufacturer's instructions. Storage instruction shall be studied by the Contractor and reviewed with the Engineer of Record. All construction equipment, and materials and equipment to be incorporated into the Work shall be placed so as not to injure any part of the Work or existing facilities, and so that free access can be achieved at all times to all parts of the Work and to all public utility installations in the vicinity of the Work.

B. Equipment and materials shall be kept neatly and compactly stored in locations that will cause a minimum of inconvenience to other contractors, public travel, adjoining owners, tenants, occupants and the Engineer's personnel.

END OF SECTION

SECTION 15 00 00 – PROCESS PIPING AND ACCESSORIES

PART 1 GENERAL

1.01 SUMMARY

A. The Contractor is responsible for installation of all process piping and accessories including, but not limited to, the following items as shown on the Design Drawings: Schedule 40 PVC pipe and fittings, valves, pipe sleeves, pipe supports and pipe hangers, fasteners, mounting hardware, flow meters, vacuum indicators, and sample taps.

B. Leak testing of piping.

1.02 REFERENCES

A. ASTM International

1. ASTM D1784 - Standard Specification for Rigid Polyvinyl Chloride (PVC) and Chlorinated Polyvinyl Chloride (CPVC) Compounds.

2. ASTM D2466 - Standard Specification for Polyvinyl Chloride (PVC) Socket Type Fittings.

3. ASTM D3350 - Standard Specification for Polyethylene Plastic (PE) Pipe and Fittings Materials.

4. ASTM F714 - Standard Specification for Polyethylene Plastic (PE) Pipe (SDR-PR) Based on Outside Diameter.

5. ANSI B16.5 - Pipe Flanges and Flanged Fittings.

1.03 SUBMITTALS

A. Section 01 33 00 - Submittals.

B. Source: Identify sources for materials specified in this section.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Materials and equipment supplied for the Work shall conform to the requirements of these technical specifications and design drawings. Suggested suppliers are indicated in some cases, however the contractor may offer substitute material and equipment that is equivalent in all respects to that indicated. The contractor shall provide technical data that defines the offered substitute and supports the substitution as equivalent to the equipment or materials specified.

The Engineer will review the contractor’s technical-data submittals and accept or reject the substitution. If the offered substitution is rejected, the Contractor shall be responsible for compensating the Engineer’s costs to review the offered substitute. All submittals and substitutions shall be in accordance with Section 01 33 00 of these Technical Specifications.

2.02 VALVES

A. The valves shall be a diaphragm valve manufactured by George Fischer, Type 317, 3-inch diameter PVC, EPDM Diaphragm with flanged connections as specified or indicated in the Design Drawings.

2.03 VACUUM GAUGES

A. The vacuum gauges shall be manufactured by Dwyer Model No. SGX-D7622N (0 to 80 inches of water) as specified or indicated in the Design Drawings.

2.04 FLOW METERS

A. The flow meters shall be orifice plate flow meter manufactured by Dwyer Model No. PE-H-2 as specified or indicated in the Design Drawings.

2.05 PIPE SLEEVES

A. All pipes passing through walls, floors, and treatment building shall be made as specified or indicated in the Design Drawings.

2.06 HANGERS, SUPPORTS AND ANCHORS FOR PIPING

A. All piping shall be supported by means of an approved combination of hangers, supports, and attachments, assuring that no weight is imposed upon the connected equipment. All piping and supports shall use the building mounting/uni-strut system.

PART 3 EXECUTION

3.01 EXAMINATION

A. The contractor shall protect all piping from the entry of dirt, pipe cuttings, lubricants, debris, storm-water, and other foreign material. The contractor shall remove any foreign materials and clean piping to the Engineer’s satisfaction.

3.02 PREPARATION

A. The contractor shall:

1. Mark pipe sections with required identification before assembly.

2. Inspect for defective or damaged spool pieces before assembly.

3. Remove scale, dirt, pipe fittings, and lubricants from the inside and outside of pipe before assembly.

4. Complete piping connections to monitoring and control devices with flanges or unions.

3.03 PIPING INSTALLATION

A. The contractor shall cut the pipe to exact measurement and install it without forcing or springing.

B. The contractor shall install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.

C. The contractor shall provide adequate clearance, install unions, and orient fittings and appurtenances for ease of installation of equipment and access to valves, fittings, and appurtenances.

D. The contractor shall install all piping and equipment as indicated on the Design Drawings. In the event of an unclear installation-requirement, the contractor shall consult with the Engineer before proceeding.

E. The contractor shall install all couplings, elbows, tees, and valves as shown in the design drawings. However, the contractor may install additional fittings as necessary to complete the work. The contractor shall consult with the consultant/engineer before installing additional fittings.

3.04 PIPE SLEEVE INSTALLATION

A. The contractor shall:

1. Install pipe sleeves around pipes protruding through walls installing the pipe, as shown in the Design Drawings.

2. Seal all pipe-sleeve openings with caulking.

3. Rigidly anchor pipe to stable structures where necessary. Provide pipe guides so that movement takes place only along the axis of the pipe.

3.05 HANGER, SUPPORT AND ANCHOR INSTALLATION

A. Hangers must be absolutely vertical and secured to supplementary steel, using clamps as attachments wherever possible. Where necessary to obtain the required vertical alignment, furnish and install angle- or channel-irons of ample strength and length to bridge between walls and ceilings to receive hanger attachments or supports for piping, ductwork, and equipment. Structural equipment-storage-container members shall not be drilled, otherwise weakened, or overloaded. Hangers shall not be attached to piping and shall not pierce or be sustained from ductwork. Supplementary steel must be kept as high as possible.

B. Wire, rope, wood, perforated band-iron, tape, or other makeshift materials shall not be used for hangers or attachments. Threaded hangers shall have lock nuts.

1. Interior piping shall be supported, guided, and anchored to maintain the required alignment and pitch, without sagging or swaying, and to provide controlled expansion using adjustable split-clevis- or trapeze-type hangers. Spacing of hangers and sizes shall be in accordance with ANSI B31.1 and manufacturers' recommendations. All interior piping and hangars shall use the building mounting/uni-strut system.

2. A set of piping drawings shall be marked with approximate hanger locations, and a standard hanger-sheet showing typical random support arrangements shall be furnished for field guidance.

3. The consultant/engineer shall have the option to direct the contractor to either support piping from above or below, at any time, at no additional cost to the consultant/engineer or owner.

4. Fittings with support bases cast with the fitting shall be used to support pipe from floors or walls whenever possible, or as directed by the consultant/engineer. Piping shall be supported from the floor by means of pipe-stanchion saddles and U-bolts. Maximum spacing of hangers shall comply with ASA B31.3 and manufacturers' recommendations. Arrangement and location of all anchors shall be submitted to the Engineer for approval before installation.

3.06 IDENTIFICATION-MARKER INSTALLATION

A. The contractor shall identify:

1. Flow Meters and Valves: Identify all valves and flow meters on the system with stainless-steel tags with the valve or flow-meter designation permanently stamped on the tag (dog-tag style). The contractor shall prepare a valve schedule including alphanumeric designations for each valve as it is designated in the design drawings, and submit the schedule to the consultant/engineer for approval before purchasing and installing the tags. The valve schedule shall include the valve and flow-meter designation, type, and location, and shall be submitted in accordance with section 01 33 00.

2. Piping: Identify concealed or exposed piping with plastic pipe-markers. Identify service, flow direction, contents, and pressure. Install the marker in clear view and align it with the axis of piping. Locate identification so as not to exceed 10 feet on straight runs (including risers and drops), adjacent to each valve and branch tee, at each point of penetration of enclosures, and at other obstructions to the pipe run.

3. Insulated sections of piping and valves, if any, shall be identified on the pipe and the exterior of the insulation jacketing.

3.07 LEAK TESTING

A. Leak tests shall be performed on all piping using an ultrasound detector. The ultrasound detector shall be an Ultraprobe® 9000 manufactured by UE Systems, Inc. or approved equal.

B. If tests indicate work does not meet specified requirements, remove work, replace, and re-test at the contractor's expense.

C. Piping tests shall be observed by the Engineer and written acceptance shall be given to the contractor after successful completion of the test.

D. Any damaged or defective pipe, fittings, valves, or joints discovered following the tests shall be repaired or replaced at no cost to the owner or consultant/engineer. The test shall be observed by the Engineer and written acceptance shall be given to the contractor after successful test completion.

END OF SECTION