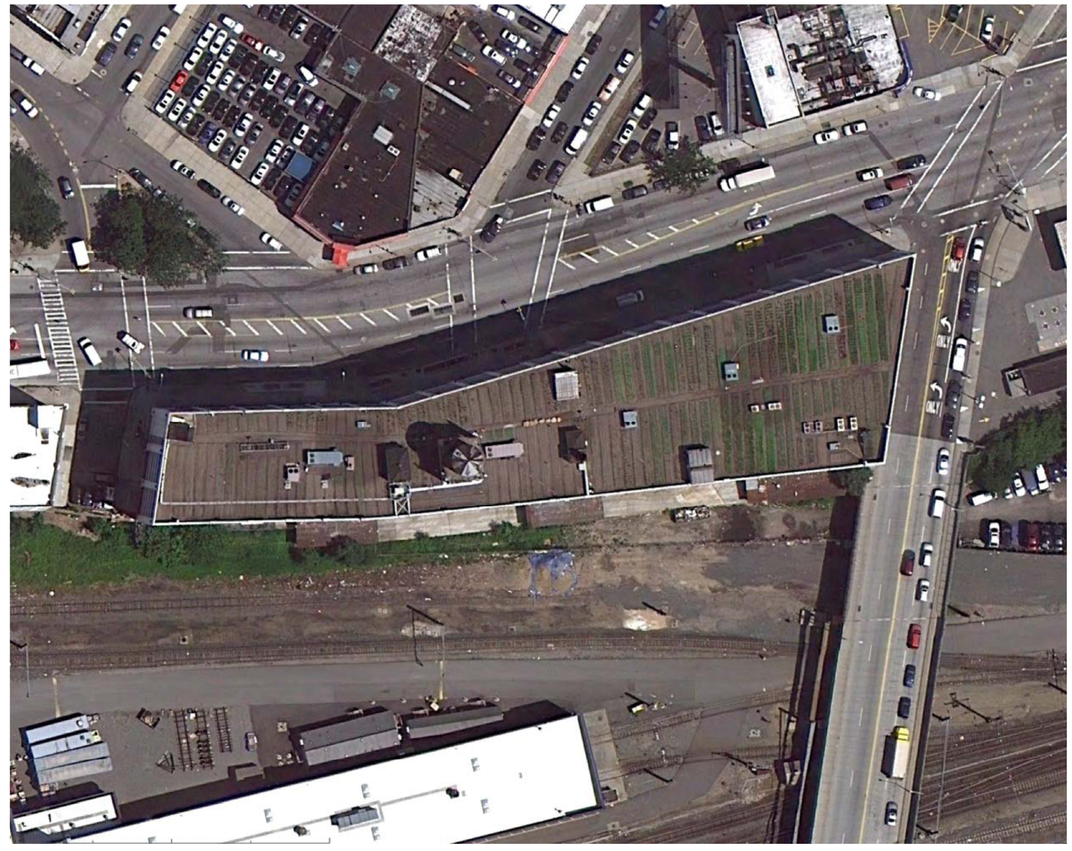
STANDARD MOTOR PRODUCTS, INC. SITE (SITE No. 2-41-016)

LONG ISLAND CITY, QUEENS, NEW YORK

AIR SPARGE/SOIL VAPOR EXTRACTION SYSTEM

FINAL (100%) DESIGN SUBMITTAL

OCTOBER 2011



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GENERAL	
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C–2	EXISTING SITE CONDITIONS
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CDM Camp Dresser & McKee
WOODBURY, NEW YORK

Consulting *Engineering* *Construction* *Operations*

01000 – PERFORMANCE–BASED DESIGN
1. ELEMENTS OF THE DESIGN ARE PERFORMANCE–BASED. WHERE COMPLETE DETAIL IS NOT SHOWN, CONTRACTOR IS RESPONSIBLE FOR PROVIDING AND INSTALLING ALL EQUIPMENT AND MATERIALS TO SATISFY THE INTENT OF THE DESIGN AS PRESCRIBED BY THE CONTRACT DRAWINGS AND SPECIFICATIONS. INDUSTRY STANDARDS MUST BE MET OR EXCEEDED.

01050 – GREEN REMEDIATION REQUIREMENTS
1. THE CONTRACTOR AND SUBCONTRACTORS SHALL USE ONLY ULTRA–LOW SULFUR DIESEL (ON–ROAD DIESEL) IN ALL DIESEL–POWERED PERSONNEL VEHICLES, TRUCKS, AND ONSITE EQUIPMENT. THE CONTRACTOR AND SUBCONTRACTORS WILL BE REQUIRED TO SIGN A CERTIFICATION STATING THAT ONLY ULTRA–LOW SULFUR DIESEL WILL BE USED DURING CONSTRUCTION.
2. EQUIPMENT SHALL NOT BE ALLOWED TO IDLE IF IT IS NOT IN USE FOR MORE THAN 5 MINUTES.
3. TO OPTIMIZE ENERGY EFFICIENCY, THE AIR COMPRESSOR WILL BE SIZED TO MEET THE REQUIREMENTS DETERMINED DURING AIR SPARGE WELL PERFORMANCE TESTING (§01840) WITHOUT BEING OVERSIZED.

01100 – PERMITTING
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ACQUISITION OF ANY PERMITS REQUIRED FOR CONSTRUCTION, INCLUDING BUT NOT LIMITED TO APPLICABLE LOCAL BUILDING/CONSTRUCTION PERMITS AND WELL INSTALLATION PERMITS.
2. CDM WILL BE RESPONSIBLE FOR PERMITS REQUIRED FOR OPERATION OF THE AIR SPARGE AND SVE SYSTEMS.

01300 – SUBMITTALS
1. WHERE SUBMITTALS ARE REQUIRED, THE CONTRACTOR SHALL PROVIDE ONE ELECTRONIC COPY OR THREE HARD COPIES TO THE ENGINEER FOR REVIEW AND APPROVAL.
2. THE FOLLOWING SUBMITTALS MUST BE APPROVED BY THE ENGINEER PRIOR TO CONTRACTOR MOBILIZATION TO THE SITE:
   - 2.1 CONSTRUCTION SCHEDULE.
   - 2.2 CONTRACTOR AND SUBCONTRACTORS HEALTH AND SAFETY PLANS.
   - 2.3 PERMITS AS REQUIRED BY §01100.
   - 2.4 RESUMES AND CURRENT OSHA 40–HOUR TRAINING/8–HOUR REFRESHER CERTIFICATIONS FOR ALL FIELD STAFF.
   - 2.5 CERTIFICATION SIGNED BY CONTRACTOR AND SUBCONTRACTORS STATING THAT ONLY ULTRA–LOW SULFUR DIESEL WILL BE USED ON THE PROJECT.
3. THE FOLLOWING SUBMITTALS MUST BE APPROVED PRIOR TO PERFORMANCE OF THE ASSOCIATED CONSTRUCTION:
   - 3.1 FILL MATERIALS – SOURCE INFORMATION, CLEAN SOURCE CERTIFICATION, AND SIEVE ANALYSES IN ACCORDANCE WITH §02300.
   - 3.2 PRE–CONSTRUCTION FIELD LAYOUT SURVEY – PROVIDE THREE HARD COPIES AND ONE ELECTRONIC AUTOCAD COPY.
   - 3.3 COMPACTION PLAN IN ACCORDANCE WITH §02300.
   - 3.4 DENSITY TESTING RESULTS IN ACCORDANCE WITH §02300.
   - 3.5 BITUMINOUS CONCRETE PAVEMENT MATERIALS – VENDOR CUT SHEETS AND MATERIALS INFORMATION DOCUMENTING COMPLIANCE WITH THE CONTRACT DRAWINGS.
   - 3.6 COMPRESSED AIR PIPING AND AIR SPARGE MANIFOLD SHOP DRAWINGS AND MANUFACTURER'S SPECIFICATIONS.
   - 3.7 WELL CONSTRUCTION MATERIALS – MANUFACTURER'S CUT SHEETS FOR HORIZONTAL AND VERTICAL WELL SCREEN, VAULTS, AND SAND INCLUDING PARTICLE SIZE DISTRIBUTION.
   - 3.8 AIR COMPRESSOR – SHOP DRAWINGS, OPERATING CURVES, AND MANUFACTURER'S DATA AND CUT SHEETS FOR THE COMPRESSOR AND APPURTENCES INCLUDING FILTERS, REGULATING VALVES, ETC.
   - 3.9 CONDUCTIVITY PROBE AND CONTROL BOX – MANUFACTURER'S DATA AND CUT SHEETS.
   - 3.10 INSTRUMENTATION AND CONTROL PLAN – DESCRIPTION OF DETAILED PLAN FOR ACCOMPLISHING THE PERFORMANCE–BASED OBJECTIVES OUTLINED IN §13300. INCLUDE PLC AND OTHER INSTRUMENTATION MANUFACTURER'S CUT SHEETS, SHOP DRAWINGS OF OPERATOR INTERFACE, AND WIRING DIAGRAMS.
   - 3.11 VALVES – SHOP DRAWINGS AND MANUFACTURER'S DATA AND CUT SHEETS FOR ALL PROCESS VALVES, INCLUDING SOLENOID VALVES, BUTTERFLY VALVES, BALL VALVES, PRESSURE REGULATING VALVES, AND CHECK VALVES.
   - 3.12 COMPRESSED AIR HOSE – MANUFACTURER'S DATA AND CUT SHEETS.
   - 3.13 POLYETHYLENE CELLULAR CONFINEMENT LOAD SUPPORT SYSTEM AND WOVEN FILTER FABRIC – PRODUCT DATA AND CUT SHEETS IN ACCORDANCE WITH §02580, ON SHEET C–4.
4. THE FOLLOWING SUBMITTALS SHALL BE SUBMITTED WITHIN 28 CALENDAR DAYS AFTER COMPLETION OF CONSTRUCTION:
   - 4.1 FIELD LOG BOOK NOTES.
   - 4.2 WELL INSTALLATION AND DEVELOPMENT RECORDS.
   - 4.3 O&M MANUAL IN ACCORDANCE WITH §01800.
   - 4.4 AS–BUILT SURVEY AND CONSTRUCTION DRAWINGS IN ACCORDANCE WITH §01550 AND §01800.

01320 – PROJECT SCHEDULE
1. THE CONTRACTOR SHALL SUBMIT A DETAILED SEQUENCE OF CONSTRUCTION AND CONSTRUCTION COMPLETION SCHEDULE WITH THE PROPOSAL. THE CONTRACTOR SHALL SUBMIT AN UPDATED SCHEDULE EVERY TWO WEEKS AFTER AWARD OF THE CONTRACT AND THROUGHOUT THE DURATION OF CONSTRUCTION.
2. CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY IF ANY ISSUES THAT IMPACT THE SCHEDULE ARISE.

01500 – FACILITIES
1. ACCESS TO POTABLE WATER WILL BE PROVIDED BY THE OWNER. A ¾" GARDEN HOSE SPIGOT IS LOCATED IN THE RESTROOM AT THE EAST END OF THE BASEMENT.
2. THE CONTRACTOR MAY USE THE RESTROOM AT THE EAST END OF THE BASEMENT.
3. NUMEROUS 110V OUTLETS ARE AVAILABLE AT THE EAST END OF THE BASEMENT.
4. THE INTERIOR BASEMENT HAS LIGHTING. CONTRACTOR SHALL PROVIDE ALL OTHER LIGHTING NECESSARY TO COMPLETE CONSTRUCTION.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING PARKING FOR CONTRACTOR VEHICLES. PARKING IS AVAILABLE FOR A FEE IN NEARBY LOTS OR IN METERED STREET–SIDE SPOTS. LIMITED SPOTS WEST OF THE BUILDING ON 37TH STREET ARE AVAILABLE ON A FIRST–COME BASIS.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ACCESS FOR EQUIPMENT AND DELIVERIES WITH THE BUILDING OWNER AND THE LEXUS DEALERSHIP LOCATED EAST OF THE SITE.

01525 – HEALTH AND SAFETY
1. OSHA STANDARDS 29 CFR 1910, SECTION 120 (B) AND 29 CFR 1926, SECTION 65 (B) REQUIRE EMPLOYERS TO DEVELOP AND IMPLEMENT A WRITTEN SAFETY AND HEALTH PROGRAM FOR EMPLOYEES INVOLVED IN HAZARDOUS WASTE OPERATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR THE PREPARATION, IMPLEMENTATION, AND ENFORCEMENT OF THE CONTRACTOR'S OWN HEALTH AND SAFETY PLAN FOR THE REMEDIAL ACTION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FOLLOWING ALL APPLICABLE OSHA REGULATIONS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IDENTIFYING ALL BURIED UTILITY LINES AT THE SITE AND SHALL TAKE ACTION TO DE–ENERGIZE OR PROTECT THEM BEFORE DIGGING NEAR THEM.
4. THE CONTRACTOR SHALL SHORE OR SLOPE THE WALLS OF EXCAVATIONS AS REQUIRED BY OSHA 29 CFR 1910. WHERE EMPLOYEES MAY BE EXPECTED TO ENTER EXCAVATIONS OVER FOUR FEET IN DEPTH, STAIRS, LADDERS, OR RAMPS SHALL BE PROVIDED. THE CONTRACTOR SHALL PROVIDE A COMPETENT PERSON AS DEFINED BY OSHA.
5. EXCAVATIONS OVER 4 FEET IN DEPTH SHALL BE CONSIDERED A CONFINED SPACE AS DEFINED BY OSHA 29 CFR 1926 AND THEREFORE, THE CONTRACTOR WILL BE REQUIRED TO PROVIDE CONFINED SPACE ENTRY PROCEDURES IN COMPLIANCE WITH 29 CFR 1910.146, "PERMIT REQUIRED CONFINED SPACES."
6. THE CONTRACTOR SHALL ERECT ORANGE SAFETY FENCE AT THE EDGE OF ANY OPEN EXCAVATION GREATER THAN ONE FOOT IN DEPTH. NEITHER HEAVY EQUIPMENT NOR EXCAVATED MATERIAL MAY BE PLACED WITHIN FIVE FEET OF AN OPEN EXCAVATION.
7. ALL MOBILE EQUIPMENT SHALL BE PROVIDED WITH WORKING BACK–UP ALARMS, BRAKES, AND SHUT–OFF SWITCHES. OPERATORS SHALL NOT LEAVE THEIR EQUIPMENT WHILE IT IS RUNNING.
8. REAL–TIME AIR MONITORING VIA PID IS REQUIRED DURING EXCAVATION, STAGING AND LOADING OF POTENTIALLY CONTAMINATED SOILS AND/OR HANDLING OF CONTAMINATED LIQUIDS. THE CONTRACTOR SHALL ABIDE BY THE PID ACTION LEVELS IN THE APPROVED HEALTH AND SAFETY PLAN.

01540 – SECURITY
1. THE CONTRACTOR SHALL HAVE RESPONSIBILITY FOR THE SECURITY OF ALL SUPPLIES AND PROPERTY BROUGHT AND STORED ON SITE BY THE CONTRACTOR, AND SHALL HOLD SOLE LIABILITY FOR ANY LOSSES OR DAMAGES.
2. THE CONTRACTOR SHALL HAVE RESPONSIBILITY FOR THE SECURITY OF ALL INSTALLED EQUIPMENT UNTIL THE COMPLETION AND ACCEPTANCE OF CONSTRUCTION, AND SHALL HOLD SOLE LIABILITY FOR ANY LOSSES OR DAMAGES.

01550 – SURVEYING
1. CDM WILL PROVIDE THE EXISTING AUTOCAD MAPPING TO THE CONTRACTOR.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EMPLOYING A NEW YORK–LICENSED SURVEYOR FOR PRE–CONSTRUCTION FIELD LAYOUT OF THE PROPOSED CONSTRUCTION.
3. THE CONTRACTOR SHALL PERFORM FIELD SURVEYING DURING CONSTRUCTION TO ENSURE THAT ALL CONSTRUCTION MEETS THE REQUIREMENTS OF THE CONTRACT DRAWINGS AND SPECIFICATIONS. ONGOING FIELD SURVEYING MAY BE PERFORMED BY THE CONTRACTOR, AND A LICENSED SURVEYOR IS NOT REQUIRED.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EMPLOYING A NEW YORK–LICENSED SURVEYOR FOR POST–CONSTRUCTION SURVEY OF AS–BUILT CONDITIONS. THE AS–BUILT SURVEY SHALL DOCUMENT ALL NEW CIVIL AND MECHANICAL FEATURES, INCLUDING THE LOCATIONS OF ALL TRENCHES, UNDERGROUND PIPING, WELLS, AND MONITORING POINTS. FINISHED GRADE ELEVATIONS SHALL BE SHOWN AT 0.5–FT CONTOURS.
5. THE CONTRACTOR SHALL PROVIDE ONSITE OVERSIGHT OF THE SURVEYOR.

01666 – PNEUMATIC LEAK TESTING
1. THE CONTRACTOR SHALL PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT REQUIRED FOR PNEUMATIC LEAK TESTING OF THE AIR SPARGE AND SVE PIPING SYSTEMS.
2. LEAK TESTING SHALL BE PERFORMED IN ACCORDANCE WITH ASTM A1047 EXCEPT WHERE OTHERWISE NOTED IN THIS SPECIFICATION.
3. LEAK TESTING SHALL BE CONDUCTED IN THE PRESENCE OF THE ENGINEER AND WHILE THE COMPLETE LINE TO BE TESTED IS EXPOSED TO VIEW.
4. THE SVE PIPING SYSTEM TEST PRESSURE SHALL BE 10 PSIG.
5. THE AIR SPARGE SYSTEM TEST PRESSURE SHALL BE 60 PSIG.
6. THE SYSTEM SHALL BE PRESSURIZED AND ALLOWED TO STABILIZE AT AN INITIAL PRESSURE WITHIN 10% OF THE TEST PRESSURE. THE SECTION TO BE TESTED SHALL BE ISOLATED, AND THE PRESSURE SHALL BE MONITORED DURING THE TEST PERIOD. THE TEST PERIOD SHALL BE 60 MINUTES OR THE TIME REQUIRED TO VISUALLY INSPECT THE ENTIRE SECTION, WHICHEVER IS LONGER.
7. ALL FITTINGS AND CONNECTIONS ON THE TEST SECTION SHALL BE VISUALLY TESTED FOR LEAKS WITH A SOAP–WATER SOLUTION DURING THE TEST PERIOD.
8. THE TEST SHALL BE CONSIDERED SUCCESSFUL WHEN NO LEAKS ARE VISUALLY OBSERVED AND THE LOSS IN PRESSURE DURING THE TEST PERIOD DOES NOT EXCEED 10% OF THE INITIAL PRESSURE.
9. FOR SMALL SECTIONS WHERE IT IS NOT PRACTICAL TO ISOLATE THE SECTION FOR TESTING, THE ENGINEER MAY ELECT TO WAIVE THE PRESSURE LOSS COMPONENT OF THE TEST IN FAVOR OF VISUAL TESTING WITH SOAP–WATER SOLUTION ONLY.
10. ANY LEAKS DISCOVERED DURING LEAK TESTING SHALL BE REPAIRED BY THE CONTRACTOR, AND THE SECTION SHALL BE RE–TESTED.

01780 – CONSTRUCTION ACCEPTANCE
1. CONSTRUCTION SHALL NOT BE CONSIDERED COMPLETE UNTIL INSPECTION AND FINAL ACCEPTANCE BY THE ENGINEER.
2. FOLLOWING THE INITIAL INSPECTION, THE ENGINEER WILL PROVIDE A PUNCHLIST OF DEFICIENT ITEMS. THE CONTRACTOR SHALL RECTIFY ALL PUNCHLIST ITEMS PRIOR TO FINAL INSPECTION AND ACCEPTANCE BY THE ENGINEER.
3. FOR THE PURPOSES OF PROGRESS PAYMENTS, THE CONTRACTOR MAY REQUEST INSPECTION AND INTERIM ACCEPTANCE OF DISCRETE PORTIONS OF THE WORK. SUCH INSPECTIONS WILL BE GRANTED AT THE DISCRETION OF THE ENGINEER. WHEN PORTIONS OF THE CONSTRUCTION ARE GIVEN INTERIM ACCEPTANCE, THE CONTRACTOR SHALL REMAIN RESPONSIBLE FOR THE CONDITION, SECURITY, AND MAINTENANCE OF THOSE PORTIONS OF WORK UNTIL FINAL ACCEPTANCE WHEN ALL CONSTRUCTION IS COMPLETED.

01800 – OPERATIONS AND MAINTENANCE (O&M) MANUAL
1. THE CONTRACTOR SHALL PROVIDE AN O&M MANUAL ADDENDUM FOR THE AIR SPARGE AND SVE SYSTEMS.
2. THE MANUAL SHALL INCLUDE, AT A MINIMUM: DESCRIPTION OF SYSTEM OPERATION, AS–BUILT DRAWINGS, UPDATED P&ID AND WIRING DIAGRAMS, MANUFACTURERS' INFORMATION/CUT–SHEETS FOR MAJOR SYSTEM COMPONENTS, INSTRUCTIONS FOR OPERATION, MAINTENANCE REQUIREMENTS AND PROCEDURES, AND TROUBLESHOOTING PROCEDURES.

01840 – AIR SPARGE WELL PERFORMANCE TESTING
1. TO OPTIMIZE THE SIZE OF THE AIR COMPRESSOR, AIR SPARGE WELL PERFORMANCE TESTING WILL BE CONDUCTED DURING CONSTRUCTION. BASED ON THE RESULTS OF TESTING, AN AIR COMPRESSOR WILL BE SELECTED.
2. TESTING SHALL BE CONDUCTED ON AS–4, AS–5, AS–6, OR THE DEEPEST WELL AS DIRECTED BY THE ENGINEER. THE DURATION OF TESTING WILL BE TWO DAYS. FOR SCHEDULING PURPOSES, CONTRACTOR MAY ASSUME ONE WEEK FOLLOWING TESTING FOR THE AIR COMPRESSOR TO BE SELECTED AND FIVE ADDITIONAL WEEKS TO PROCURE THE COMPRESSOR.
3. THE CONTRACTOR SHALL CONDUCT THE TESTING IN THE PRESENCE OF AND AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL PROVIDE AND INSTALL A TEMPORARY AIR COMPRESSOR, PRESSURE GAUGE, ROTAMETER, HOSES, AND FITTINGS FOR THE TEST. THE COMPRESSOR SHALL BE CAPABLE OF PROVIDING CLEAN AIR AT A MINIMUM RATE OF 50 SCFM AND 60 PSIG.
4. COMPRESSED AIR WILL INITIALLY BE APPLIED TO THE TEST WELL AT THE MINIMUM PRESSURE REQUIRED TO INITIATE FLOW. THE PRESSURE WILL BE INCREASED INCREMENTALLY (STEP TESTING) TO DELINEATE THE APPLIED PRESSURE–SPARGE FLOWRATE RELATIONSHIP.
5. DURING STEP TESTING, THE ENGINEER WILL MONITOR APPLIED PRESSURE AND AIR FLOWRATE AT THE TEST WELL. IN ADDITION, DEPTH TO GROUNDWATER, AND AIR PRESSURE WILL BE MONITORED AT THE SURROUNDING MONITORING WELLS AND AIR SPARGE WELLS DURING EACH STEP TO EVALUATE THE ZONE OF SPARGING INFLUENCE. READINGS WILL BE COLLECTED AT 15–MINUTE INCREMENTS, AT THE DISCRETION OF THE ENGINEER, UNTIL THEY HAVE STABILIZED.
6. THE DATA COLLECTED DURING STEP TESTING WILL BE EVALUATED BY THE ENGINEER TO DETERMINE THE SPARGE PRESSURE/FLOWRATE WHICH PROVIDES ADEQUATE ZONE OF INFLUENCE ACROSS THE ENTIRE TREATMENT AREA WITHOUT RESULTING IN ADVERSE EFFECTS (E.G., EXCESSIVE GROUNDWATER MOUNDING). THIS PRESSURE/FLOWRATE WILL BE USED TO OPTIMALLY SIZE THE AIR COMPRESSOR.

01850 – STARTUP TESTING
1. FOLLOWING COMPLETION OF ALL CONSTRUCTION, THE CONTRACTOR WILL CONDUCT STARTUP TESTING AND OPTIMIZATION OF THE SYSTEM WITH DIRECTION FROM THE ENGINEER.
2. ANY DEFICIENT WORK IDENTIFIED DURING STARTUP TESTING SHALL BE REPAIRED, REPLACED, OR COMPLETED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE.
3. THE DURATION OF STARTUP TESTING IS EXPECTED TO BE THREE CONTINUOUS DAYS. ANY DOWNTIME TO REPAIR DEFICIENT WORK MAY EXTEND OR RESTART STARTUP TESTING AT THE DISCRETION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
4. DURING STARTUP TESTING, THE SVE AND AIR SPARGE FLOW RATES WILL BE ADJUSTED TO OPTIMIZE AIR SPARGE RADIUS OF INFLUENCE AND THE SVE CAPTURE ZONE. THE ENGINEER WILL COLLECT PRESSURE AND FLOW MEASUREMENTS AND MONITOR AIR PRESSURE, AND WATER LEVELS IN THE MONITORING WELLS. THESE DATA WILL BE USED TO DETERMINE OPERATIONAL SET POINTS FOR THE SYSTEM.
5. DURING STARTUP TESTING, THE ENGINEER WILL COLLECT ONE ROUND OF SUMMA CANISTER VAPOR SAMPLES FOR TO–15 VOC ANALYSIS. THE FOLLOWING LOCATIONS WILL BE SAMPLED: SVE HEADERS 1, 2, AND 3; SSDS HEADER; GAC INFLUENT; GAC EFFLUENT/DISCHARGE STACK.
6. THE STARTUP TESTING PROCEDURES WILL BE CONDUCTED THE SAME AS THE AIR SPARGE WELL PERFORMANCE TESTING PROCEDURES IN SPECIFICATION SECTION 01840.

02300 – EARTHWORK
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING COMPACTION OF MATERIALS AS REQUIRED BY THE CONTRACT DRAWINGS AND SPECIFICATIONS.
2. UNLESS OTHERWISE SPECIFIED, COMPACTION LIFTS SHALL NOT EXCEED SIX INCHES.
3. THE CONTRACTOR SHALL SUBMIT A COMPACTION PLAN DESCRIBING IN DETAIL THE PROPOSED MEANS OF COMPACTION FOR EACH MATERIAL AND METHOD TO BE USED.
4. THE CONTRACTOR SHALL PROVIDE TEST RESULTS FOR MAXIMUM DRY DENSITY PER ASTM D1557 OF A REPRESENTATIVE SAMPLE OF NATIVE SUBSURFACE SOIL.
5. WHERE EXCAVATED/DISTURBED NATIVE SOIL MUST BE COMPACTED, THE COMPACTION REQUIREMENT SHALL BE 95% MODIFIED PROCTOR DENSITY UNLESS OTHERWISE NOTED.
6. THE CONTRACTOR SHALL PROVIDE NUCLEAR DENSITY TEST RESULTS PER ASTM D6938 DOCUMENTING ACHIEVEMENT OF THE COMPACTION REQUIRED BY THE CONTRACT DRAWINGS AND SPECIFICATIONS. TEST FREQUENCY SHALL BE ONE PER EACH COMPACTION METHOD–MATERIAL COMBINATION.
7. EMPLACED CRUSHED STONE DOES NOT REQUIRE DENSITY TESTING. COMPACTION OF CRUSHED STONE SHALL BE PERFORMED UNTIL THERE IS NO MOVEMENT OF THE STONE OR UNTIL PROPERLY ORIENTED AS DETERMINED BY THE ENGINEER.
8. THE CONTRACTOR SHALL IDENTIFY THE SOURCE AND PROVIDE CLEAN SOURCE CERTIFICATIONS FOR ALL FILL MATERIALS PROPOSED FOR ONSITE USE. NO MATERIALS WILL BE ALLOWED ONSITE WITHOUT CERTIFICATION.
9. THE CONTRACTOR SHALL PROVIDE SIEVE ANALYSES FOR EACH MATERIAL TO DOCUMENT COMPLIANCE WITH THE APPLICABLE SPECIFICATION.

02370 – EROSION CONTROL AND STORMWATER MANAGEMENT
1. CONTRACTOR SHALL BE RESPONSIBLE FOR SOIL EROSION, SEDIMENT CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION IN ACCORDANCE WITH THE NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL.
2. CONTRACTOR SHALL CONTINUOUSLY EVALUATE SITE CONDITIONS DURING CONSTRUCTION AND IMPLEMENT ADDITIONAL EROSION CONTROL MEASURES AS NECESSARY.
3. CONTRACTOR SHALL PROVIDE, INSTALL, AND MAINTAIN EROSION CONTROL MEASURES AT THE DIRECTION OF THE ENGINEER. MEASURES MAY INCLUDE, BUT ARE NOT LIMITED TO, HAY BALES AT INLETS AND SILT FENCE AT DOWNHILL PERIMETER OF DISTURBED AREAS.
4. ALL MATERIAL STOCKPILES SHALL BE KEPT DRY AND COVERED WITH TARPS AND SANDBAGS AT THE END OF EACH WORK DAY.
5. CONTRACTOR SHALL MAKE EVERY EFFORT TO KEEP STORMWATER FROM ENTERING EXCAVATIONS. MEASURES MAY INCLUDE PROPER SEQUENCING OF WORK, BERMS, COVERS, ETC. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND DISPOSAL OF STORMWATER FROM EXCAVATIONS IN ACCORDANCE WITH ALL APPLICABLE STATE AND FEDERAL REGULATIONS.

02525 – WELL INSTALLATION AND DRILLING
1. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY LABOR, ASSOCIATED MATERIALS AND EQUIPMENT, AND OTHER FACILITIES AND INCIDENTALS REQUIRED TO LOCATE, DRILL, INSTALL, COMPLETE, AND DEVELOP THE 4 MONITORING WELLS, 10 AIR SPARGING WELLS, AND 2 HORIZONTAL SVE WELLS.
2. VERTICAL WELLS SHALL BE INSTALLED USING THE HOLLOW–STEM AUGER METHOD.
3. THE WELLS SHALL BE CONSTRUCTED IN ACCORDANCE WITH ALL APPLICABLE STATE OF NEW YORK REGULATIONS, AND IN ACCORDANCE WITH THE SPECIFICATIONS HEREIN AND ON THE CONTRACT DRAWINGS.
4. THE WELL SCHEDULES, INCLUDING APPROXIMATE LOCATION, DEPTH, DIAMETER, SCREEN INTERVALS, AND CASING LENGTH ARE SHOWN ON THE CONTRACT DRAWINGS. EXACT WELL LOCATIONS SHALL BE FIELD VERIFIED IN THE PRESENCE OF THE ENGINEER.
5. PRIOR TO DRILLING, VERTICAL WELL LOCATIONS SHALL BE CLEARED TO A DEPTH OF FIVE FEET OR GROUNDWATER, WHICHEVER IS SHALLOWER, USING HAND TOOLS AND/OR AIR KNIFE METHODS.
6. CONTRACTOR SHALL FURNISH ALL LABOR REQUIRED TO OBTAIN ALL WELL PERMITS AND CERTIFICATES REQUIRED BY FEDERAL AND STATE AUTHORITIES.
7. ALL WORK ASSOCIATED WITH THE INSTALLATION OF THE WELLS SHALL BE PERFORMED BY A LICENSED WELL DRILLER IN THE STATE OF NEW YORK AND IN ACCORDANCE WITH THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC) RULES AND REGULATIONS.
8. CONTRACTOR SHALL BE RESPONSIBLE FOR COLLECTION, CONTAINERIZATION, AND DISPOSAL OF DEVELOPMENT WATER IN ACCORDANCE WITH ALL APPLICABLE STATE AND FEDERAL REGULATIONS.
9. WITHIN 7 DAYS OF COMPLETION OF EACH WELL, BUT NO SOONER THAN 24 HOURS AFTER CEMENT GROUTING IS COMPLETED, THE WELLS SHALL BE DEVELOPED BY PUMPING AND SURGING.
10. CONTRACTOR SHALL MONITOR AND RECORD THE FOLLOWING INFORMATION DURING WELL DEVELOPMENT: WATER LEVEL, PH, TEMPERATURE, CONDUCTIVITY, TURBIDITY, DO, ORP, AND ANY OTHER OBSERVATIONS RELATED TO WELL DEVELOPMENT.
11. AIR SPARGE WELL DEVELOPMENT SHALL CONTINUE UNTIL THREE CONSECUTIVE READINGS OF <50 NTU OR THE WATER IS VISUALLY FREE FROM SEDIMENT AS DETERMINED BY THE ENGINEER.
12. MONITORING WELL DEVELOPMENT SHALL CONTINUE UNTIL PH, TEMPERATURE, ORP, CONDUCTIVITY, AND TURBIDITY READINGS ARE STABLE (THREE CONSECUTIVE READINGS WITHIN +/– 10%) AND TURBIDITY IS <50 NTU.

13300 – INSTRUMENTATION AND CONTROLS
1. CONTRACTOR SHALL INSTALL A CONTROL PANEL EQUIPPED WITH A PLC FOR THE OPERATION OF THE AIR SPARGE SYSTEM. THE CONTROL PANEL SHALL HAVE TEN HAND/OFF/AUTO (H/O/A) SWITCHES CORRESPONDING TO THE SOLENOID VALVE INSTALLED ON EACH OF THE TEN AIR SPARGE MANIFOLD BRANCHES. THE CONTROL PANEL SHALL ALSO HAVE AN H/O/A SWITCH FOR THE COMPRESSOR, AN ALARM LIGHT FOR THE COMPRESSOR, AND AN ALARM RESET BUTTON.
2. THE ALARM CONDITIONS SHALL BE: HIGH WATER TABLE; AIR COMPRESSOR FAILURE, BLOWER FAILURE. THE BLOWER FAILURE ALARM CONDITIONS SHALL BE RECEIVED FROM THE EXISTING SSDS PLC.
3. THE PLC IN THE AIR SPARGE CONTROL PANEL SHALL BE PROGRAMMABLE TO SEQUENTIALLY SPARGE WELLS IN GROUPS OF 2 TO 10 WELLS FOR INTERVALS OF 1 MINUTE TO 6 HOURS BY OPENING SOLENOID VALVES. THE DEFAULT GROUPINGS SHALL BE THE FOLLOWING, IN ORDER: AS–1 AND AS–6; AS–2 AND AS–7; AS–5 AND AS–10; AS–3 AND AS–8; AS–4 AND AS–9. WELL GROUPINGS AND SPARGE DURATION SHALL BE FIELD–ADJUSTABLE BY THE OPERATOR WITHOUT THE USE OF SPECIALIZED TRAINING/KNOWLEDGE, TOOLS, EQUIPMENT, OR USE OF A COMPUTER.
4. THE PLC SHALL BE PROGRAMMED TO AUTOMATICALLY SHUT DOWN THE AIR COMPRESSOR WHEN THE CONDUCTIVITY PROBE INSTALLED IN MONITORING WELL MW–20 DETECTS HIGH WATER TABLE CONDITIONS. WHEN THE CONDUCTIVITY PROBE NO LONGER DETECTS WATER, THE PLC SHALL AUTOMATICALLY RESTART THE COMPRESSOR WITH A 15–MINUTE DELAY TO ELIMINATE FALSE STARTS/RESTARTS.
5. THE PLC SHALL HAVE AN INTERLOCK WITH THE EXISTING SSDS PANEL TO PREVENT AIR SPARGING WHEN THE SSDS/SVE BLOWERS ARE NOT OPERATING.
6. AIR SPARGE SOLENOID VALVES SHALL BE NORMALLY CLOSED AND RATED FOR CONTINUOUS DUTY.
7. THE CONDUCTIVITY PROBE SHALL BE GEMS MODEL DWP–25 OR EQUAL.
8. THE CONTROL BOX FOR THE CONDUCTIVITY PROBE SHALL BE GEMS SERIES 16VM OR EQUAL.

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	10/11	EJL	WN	VARIOUS SPECIFICATION REVISIONS PER NYSDEC REVIEW

DESIGNED BY: JVB
DRAWN BY: EJL
SHEET CHK'D BY: JVB
CROSS CHK'D BY: MW
APPROVED BY: MM
DATE: JULY 2011

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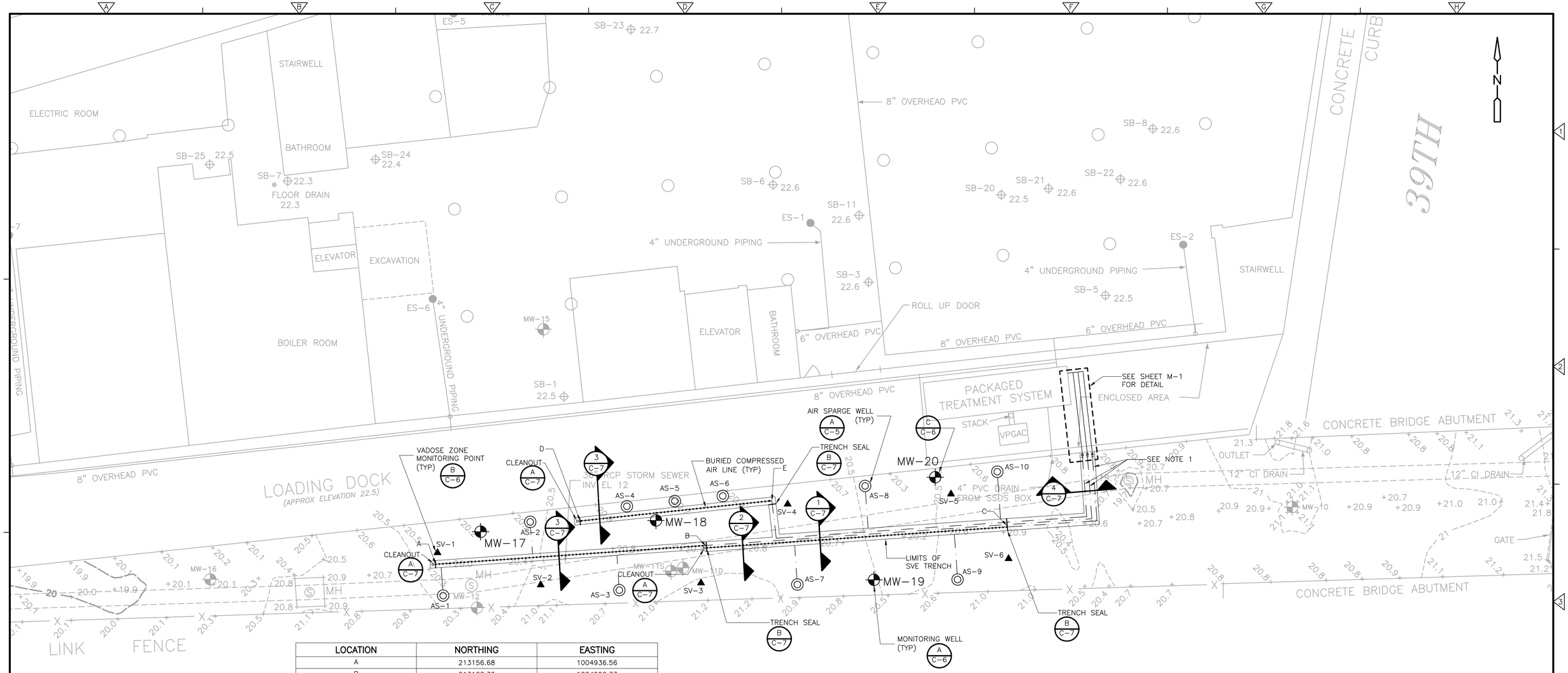
STANDARD MOTOR PRODUCTS, INC.

REMEDIAL DESIGN
AIR SPARGE/SOIL VAPOR EXTRACTION SYSTEM

SPECIFICATIONS

PROJECT NO. 34433–46200
FILE NAME: CSPEC001
SHEET NO.
C–1



LOCATION	NORTHING	EASTING
A	213156.68	1004936.56
B	213160.32	1004992.73
C	213164.65	1005055.06
D	213165.64	1004966.50
E	213169.85	1005006.29
MW-17	213163.43	1004945.91
MW-18	213164.73	1004986.20
MW-19	213153.45	1005027.45
MW-20	213174.72	1005040.15
AS-1	213150.17	1004938.13
AS-2	213165.46	1004956.19
AS-3	213151.32	1004974.65
AS-4	213168.69	1004976.22
AS-5	213169.76	1004986.16
AS-6	213170.83	1004996.10
AS-7	213152.48	1005011.56
AS-8	213172.91	1005025.61
AS-9	213153.52	1005044.78
AS-10	213175.85	1005053.01
SV-1	213159.07	1004936.96
SV-2	213152.41	1004958.35
SV-3	213152.79	1004991.58
SV-4	213169.14	1005009.55
SV-5	213158.62	1005049.50
SV-6	213171.22	1005043.41

SUMMARY OF WORK:

1. CONTRACTOR SHALL INSTALL 10 AIR SPARGE (AS) WELLS AND ASSOCIATED BURIED COMPRESSED AIR HOSES.
2. CONTRACTOR SHALL INSTALL 4 NEW MONITORING WELLS. ONE OF THE NEW MONITORING WELLS SHALL CONTAIN A CONDUCTIVITY PROBE THAT ACTS AS A HIGH GROUNDWATER LEVEL SWITCH WHICH SHUTS DOWN THE AS SYSTEM.
3. CONTRACTOR SHALL INSTALL 6 VADOSE ZONE PRESSURE/VACUUM MONITORING POINTS. AT THE DIRECTION OF THE ENGINEER, ADDITIONAL MONITORING POINTS SHALL BE INSTALLED DURING STARTUP TESTING.
4. CONTRACTOR SHALL CONSTRUCT A TRENCH CONTAINING TWO HORIZONTAL SVE WELLS. THE TWO SVE WELLS SHALL BE CONNECTED TO THE EXISTING VACUUM MANIFOLD IN THE PACKAGED TREATMENT SYSTEM.
5. CONTRACTOR SHALL INSTALL A CLEANOUT AT THE END OF EACH HORIZONTAL SVE WELL.
6. CONTRACTOR SHALL INSTALL AN AIR SPARGE SYSTEM INSIDE THE EXISTING PACKAGED TREATMENT SYSTEM. THE SYSTEM SHALL INCLUDE AN AIR COMPRESSOR, RECEIVING TANK (IF APPLICABLE), PARTICULATE FILTER, AND MANIFOLD. THE SYSTEM SHALL BE PROVIDED WITH INSTRUMENTATION AND CONTROLS TO ALLOW AUTOMATED, PULSED OPERATION OF THE AIR SPARGE WELLS.
7. FINISHED GRADE SHALL BE AS SHOWN ON THE DRAWINGS.
8. CONTRACTOR SHALL INSTALL A PERMEABLE CRUSHED STONE ACCESS ON THE EAST END OF THE PROPERTY AS SHOWN ON SHEET C-4.
9. CONTRACTOR SHALL INSTALL ASPHALT PAVING OVER THE AS/SVE TREATMENT AREA AS SHOWN ON THE DRAWINGS
10. CONTRACTOR SHALL INSTALL A CONCRETE CURB/RETAINING WALL ALONG THE FENCE AS SHOWN ON THE DRAWINGS.
11. CONTRACTOR SHALL INSTALL A SOLIDS RETENTION GRASS STRIP AND CRUSHED STONE INFILTRATION AREA ON THE WEST END OF THE PROPERTY AS SHOWN ON THE DRAWINGS.

LEGEND

- VADOSE ZONE PRESSURE/VACUUM MONITORING POINT
- AIR SPARGE WELL
- MONITORING WELL
- CLEANOUT
- HORIZONTAL SVE SCREEN
- UNDERGROUND PIPE/HOSE
- STORM SEWER

NOTES:

1. PROVIDE MINIMUM 1% SLOPE TOWARD SLOTTED PIPE SECTIONS.

1" = 10'

5 0 10

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	10/11	EJL	WN	REVISE AIR LINE LEADER LOCATION & NOTE 10 TYPO

DESIGNED BY: DP
DRAWN BY: EJL
SHEET CHK'D BY: JVB
CROSS CHK'D BY: MW
APPROVED BY: MM
DATE: JULY 2011

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Camp Dresser & McKee
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Suite 415, Woodbury, NY 11797
Tel: (516) 496-8400
consulting • engineering • construction • operations

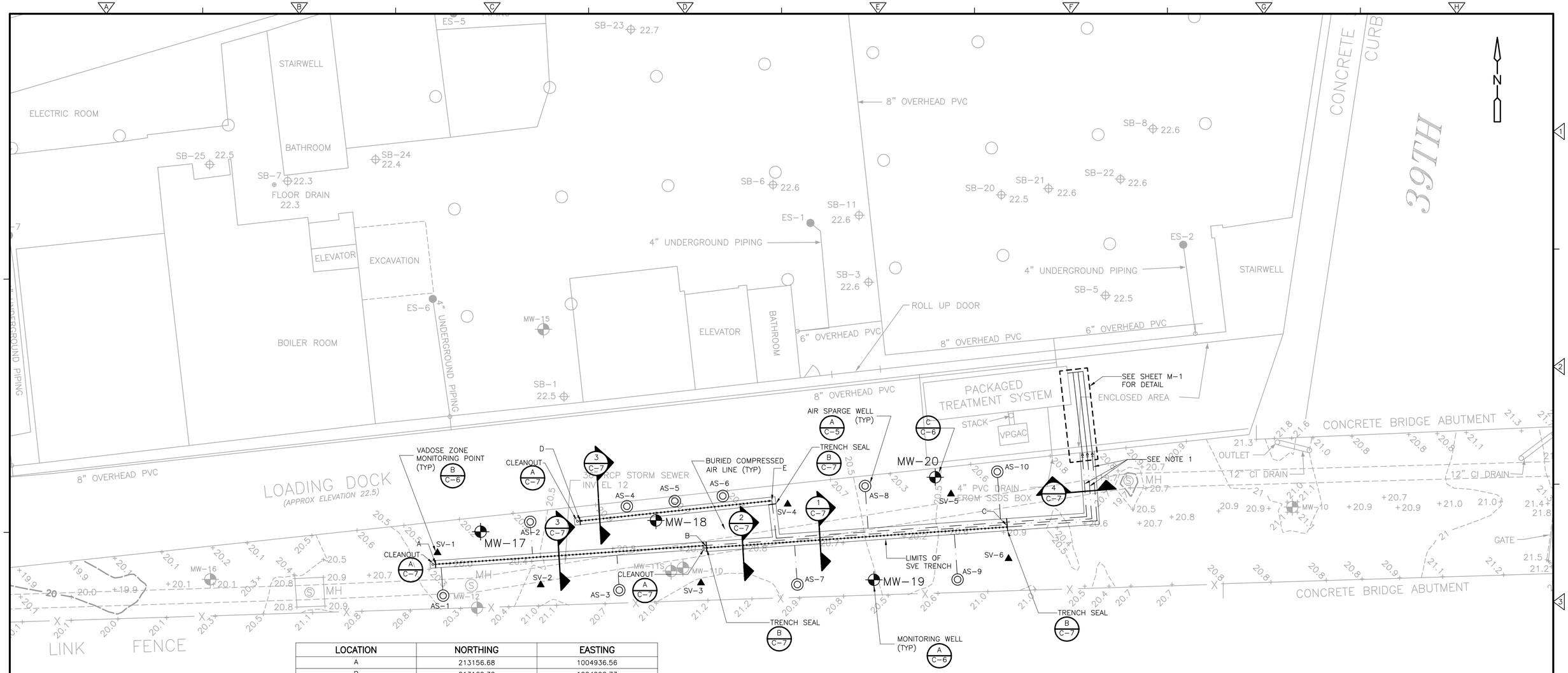
STANDARD MOTOR PRODUCTS, INC.

REMEDIAL DESIGN
AIR SPARGE/SOIL VAPOR EXTRACTION SYSTEM

SITE PLAN

PROJECT NO. 34433-46200
FILE NAME: CSTPL002

SHEET NO.
C-3



LOCATION	NORTHING	EASTING
A	213156.68	1004936.56
B	213160.32	1004992.73
C	213164.65	1005055.06
D	213165.64	1004966.50
E	213169.85	1005006.29
MW-17	213163.43	1004945.91
MW-18	213164.73	1004986.20
MW-19	213153.45	1005027.45
MW-20	213174.72	1005040.15
AS-1	213150.17	1004938.13
AS-2	213165.46	1004956.19
AS-3	213151.32	1004974.65
AS-4	213168.69	1004976.22
AS-5	213169.76	1004986.16
AS-6	213170.83	1004996.10
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SV-1	213159.07	1004936.96
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SV-3	213152.79	1004991.58
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SUMMARY OF WORK:

1. CONTRACTOR SHALL INSTALL 10 AIR SPARGE (AS) WELLS AND ASSOCIATED BURIED COMPRESSED AIR HOSES.
2. CONTRACTOR SHALL INSTALL 4 NEW MONITORING WELLS. ONE OF THE NEW MONITORING WELLS SHALL CONTAIN A CONDUCTIVITY PROBE THAT ACTS AS A HIGH GROUNDWATER LEVEL SWITCH WHICH SHUTS DOWN THE AS SYSTEM.
3. CONTRACTOR SHALL INSTALL 6 VADOSE ZONE PRESSURE/VACUUM MONITORING POINTS. AT THE DIRECTION OF THE ENGINEER, ADDITIONAL MONITORING POINTS SHALL BE INSTALLED DURING STARTUP TESTING.
4. CONTRACTOR SHALL CONSTRUCT A TRENCH CONTAINING TWO HORIZONTAL SVE WELLS. THE TWO SVE WELLS SHALL BE CONNECTED TO THE EXISTING VACUUM MANIFOLD IN THE PACKAGED TREATMENT SYSTEM.
5. CONTRACTOR SHALL INSTALL A CLEANOUT AT THE END OF EACH HORIZONTAL SVE WELL.
6. CONTRACTOR SHALL INSTALL AN AIR SPARGE SYSTEM INSIDE THE EXISTING PACKAGED TREATMENT SYSTEM. THE SYSTEM SHALL INCLUDE AN AIR COMPRESSOR, RECEIVING TANK (IF APPLICABLE), PARTICULATE FILTER, AND MANIFOLD. THE SYSTEM SHALL BE PROVIDED WITH INSTRUMENTATION AND CONTROLS TO ALLOW AUTOMATED, PULSED OPERATION OF THE AIR SPARGE WELLS.
7. FINISHED GRADE SHALL BE AS SHOWN ON THE DRAWINGS.
8. CONTRACTOR SHALL INSTALL A PERMEABLE CRUSHED STONE ACCESS ON THE EAST END OF THE PROPERTY AS SHOWN ON SHEET C-4.
9. CONTRACTOR SHALL INSTALL ASPHALT PAVING OVER THE AS/SVE TREATMENT AREA AS SHOWN ON THE DRAWINGS
10. CONTRACTOR SHALL AND INSTALL A CONCRETE CURB/RETAINING WALL ALONG THE FENCE AS SHOWN ON THE DRAWINGS.
11. CONTRACTOR SHALL INSTALL A SOLIDS RETENTION GRASS STRIP AND CRUSHED STONE INFILTRATION AREA ON THE WEST END OF THE PROPERTY AS SHOWN ON THE DRAWINGS.

LEGEND

- VADOSE ZONE PRESSURE/VACUUM MONITORING POINT
- AIR SPARGE WELL
- MONITORING WELL
- CLEANOUT
- HORIZONTAL SVE SCREEN
- UNDERGROUND PIPE/HOSE
- STORM SEWER

NOTES:

1. PROVIDE MINIMUM 1% SLOPE TOWARD SLOTTED PIPE SECTIONS.

1" = 10'
5 0 10

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: DP
DRAWN BY: EJL
SHEET CHK'D BY: JVB
CROSS CHK'D BY: MW
APPROVED BY: MM
DATE: JULY 2011

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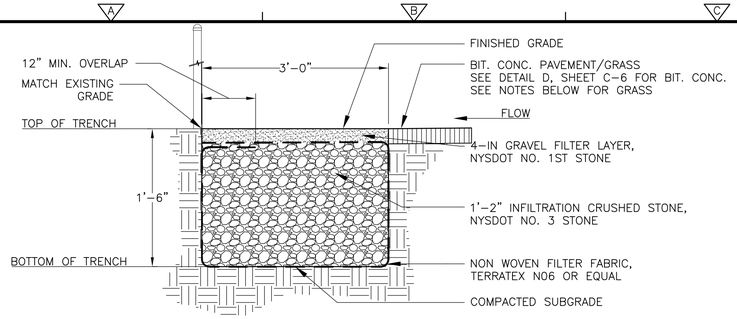
STANDARD MOTOR PRODUCTS, INC.

REMEDIAL DESIGN
AIR SPARGE/SOIL VAPOR EXTRACTION SYSTEM

SITE PLAN

PROJECT NO. 34433-46200
FILE NAME: CSTPL002

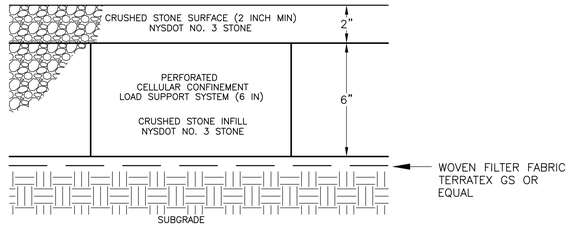
SHEET NO.
C-3



INFILTRATION TRENCH

DETAIL 1 / –

SCALE: NTS



GRANULAR PAVEMENT

DETAIL 2 / –

SCALE: NTS

GRASS NOTES:

1. MATERIALS FOR TURF ESTABLISHMENT SHALL BE IN ACCORDANCE WITH SECTION 610-2.02 OF THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS (NYS DOT SS), LATEST EDITION.
2. APPLICATION RATES FOR TURF ESTABLISHMENT SHALL BE AS FOLLOWS:

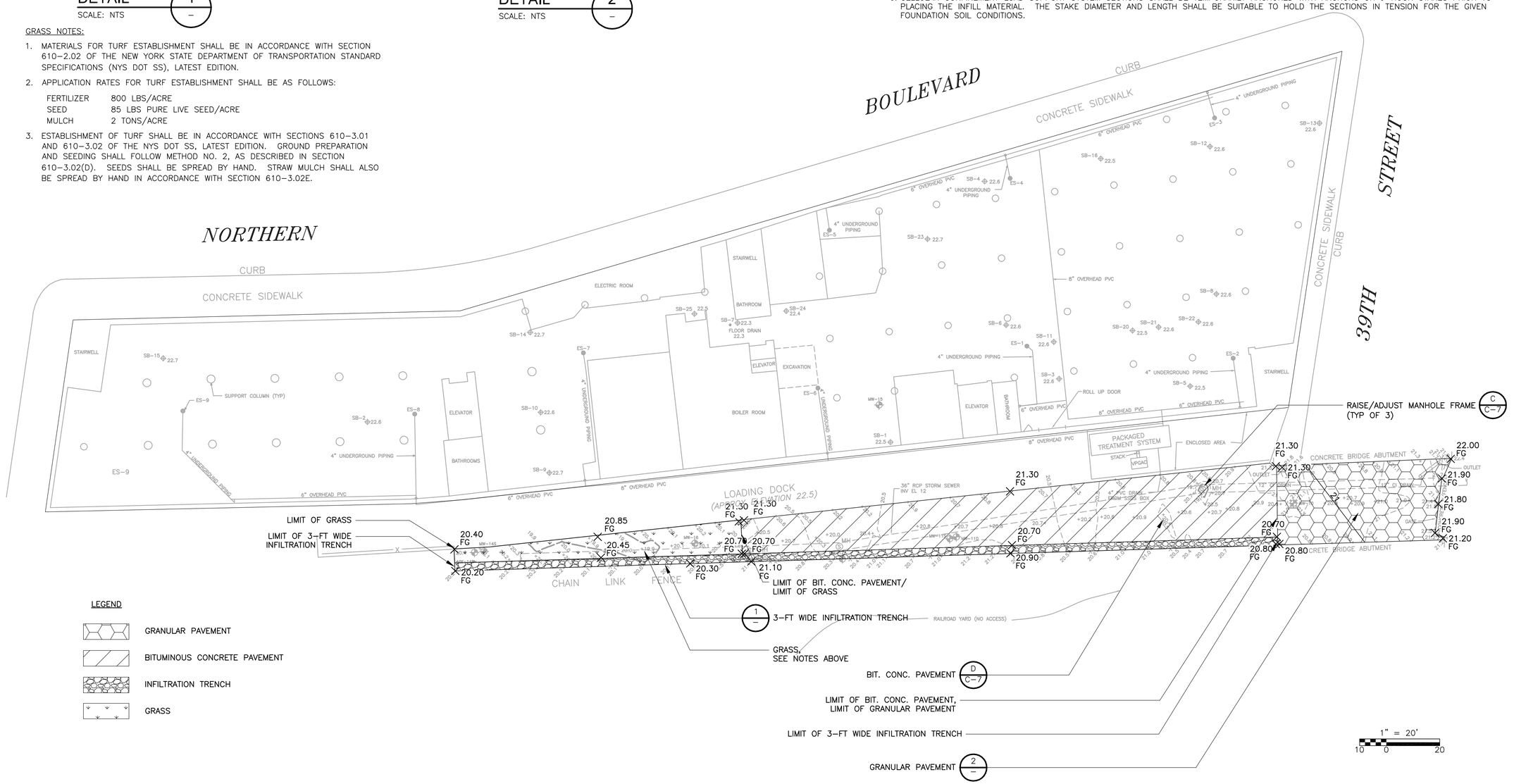
FERTILIZER	800 LBS/ACRE
SEED	85 LBS PURE LIVE SEED/ACRE
MULCH	2 TONS/ACRE

3. ESTABLISHMENT OF TURF SHALL BE IN ACCORDANCE WITH SECTIONS 610-3.01 AND 610-3.02 OF THE NYS DOT SS, LATEST EDITION. GROUND PREPARATION AND SEEDING SHALL FOLLOW METHOD NO. 2, AS DESCRIBED IN SECTION 610-3.02(D). SEEDS SHALL BE SPREAD BY HAND. STRAW MULCH SHALL ALSO BE SPREAD BY HAND IN ACCORDANCE WITH SECTION 610-3.02E.

02580 – GRANULAR PAVEMENT

1. PRIOR TO INSTALLATION, THE LIMITS OF THE CELLULAR CONFINEMENT LOAD SUPPORT SYSTEM SHALL BE STAKED BY THE CONTRACTOR AS SHOWN ON THE CONSTRUCTION DRAWINGS FOR APPROVAL BY THE ENGINEER.
2. SUBGRADE SOILS SHALL BE EXCAVATED OR GRADED TO THE LINES AND GRADES SHOWN ON THE CONSTRUCTION DRAWINGS. WHERE SUBGRADE SOILS ARE ENCOUNTERED THAT ARE DEEMED UNSUITABLE BY THE ENGINEER, THE CONTRACTOR SHALL EXCAVATE THE AFFECTED AREAS AND REPLACE THE EXCAVATED MATERIAL WITH SUITABLE FILL UNDER THE DIRECTION OF THE ENGINEER. SUBGRADE SHALL BE COMPACTED TO 95 PERCENT OF MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D1557.
3. THE WOVEN FILTER FABRIC PROVIDED UNDER THE CELLULAR CONFINEMENT LOAD SUPPORT SYSTEM SHALL BE TERRATEX GS AS MANUFACTURED BY HANES GEO COMPONENTS, OR EQUAL. FILTER FABRIC SHALL BE INSTALLED ON TOP OF THE COMPACTED SUBGRADE, BEFORE THE CELLULAR CONFINEMENT LOAD SUPPORT SYSTEM IS PLACED.
4. THE CELLULAR CONFINEMENT LOAD SUPPORT SYSTEM SHALL BE INSTALLED AS SHOWN ON THE CONSTRUCTION DRAWINGS OR AS DIRECTED BY THE ENGINEER IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
5. THE CELLULAR CONFINEMENT LOAD SUPPORT SYSTEM SHALL BE TERRACELL AS MANUFACTURED BY HANES GEO COMPONENTS, OR EQUAL MANUFACTURER WITH AT LEAST 5 YEARS EXPERIENCE IN MANUFACTURING CELLULAR CONFINEMENT LOAD SUPPORT SYSTEMS. IT SHALL BE FABRICATED USING STRIPS OF SHEET POLYETHYLENE, CONNECTED USING FULL-DEPTH, ULTRASONIC SPOT-WELDS ALIGNED PERPENDICULAR TO THE LONGITUDINAL AXIS OF THE STRIP. IT SHALL HAVE THE FOLLOWING PROPERTIES:
   - A. POLYETHYLENE SHALL HAVE A DENSITY OF 58.4-60.2 LB/CU. FT (0.935-0.965 G/CM3) TESTED PER ASTM D1505 AND SHALL HAVE AN ENVIRONMENTAL STRESS CRACK RESISTANCE (ESCR) OF AT LEAST 4000 HOURS TESTED PER ASTM D1693.
   - B. STRIPS TO MAKE CELLULAR CONFINEMENT LOAD SUPPORT SYSTEMS SHALL HAVE A SHEET THICKNESS OF 50 MILS $-\pm$5% TESTED PER ASTM D5199.
   - C. CARBON BLACK SHALL BE USED FOR ULTRA-VIOLET LIGHT STABILIZATION. CARBON BLACK CONTENT SHALL BE 1.5%-2% BY WEIGHT THROUGH THE ADDITION OF A CARRIER WITH A CERTIFIED CARBON BLACK CONTENT.
   - D. CELL SEAM STRENGTH SHALL BE UNIFORM OVER THE FULL DEPTH OF THE CELL. MINIMUM SEAM PEEL STRENGTHS SHALL BE 480 LB AND SHALL HAVE A NOMINAL CELL AREA OF 44.8 IN2 (289 CM2).
6. CELLULAR CONFINEMENT LOAD SUPPORT SYSTEM SECTIONS SHALL BE TEMPORARILY ANCHORED WITH ANCHORS OR J-HOOK STAKES PRIOR TO PLACING THE INFILL MATERIAL. THE STAKE DIAMETER AND LENGTH SHALL BE SUITABLE TO HOLD THE SECTIONS IN TENSION FOR THE GIVEN FOUNDATION SOIL CONDITIONS.

N



LEGEND

- GRANULAR PAVEMENT
- BITUMINOUS CONCRETE PAVEMENT
- INFILTRATION TRENCH
- GRASS

C:\cdmxm\larsonej\d0257306\ CSTPL003 11/19/10 18:34 larsonej XREFS: XSTPL001, SMPIBRDR, CBSPL001

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: DV
DRAWN BY: JJC
SHEET CHK'D BY: JVB
CROSS CHK'D BY: MW
APPROVED BY: MM
DATE: JULY 2011

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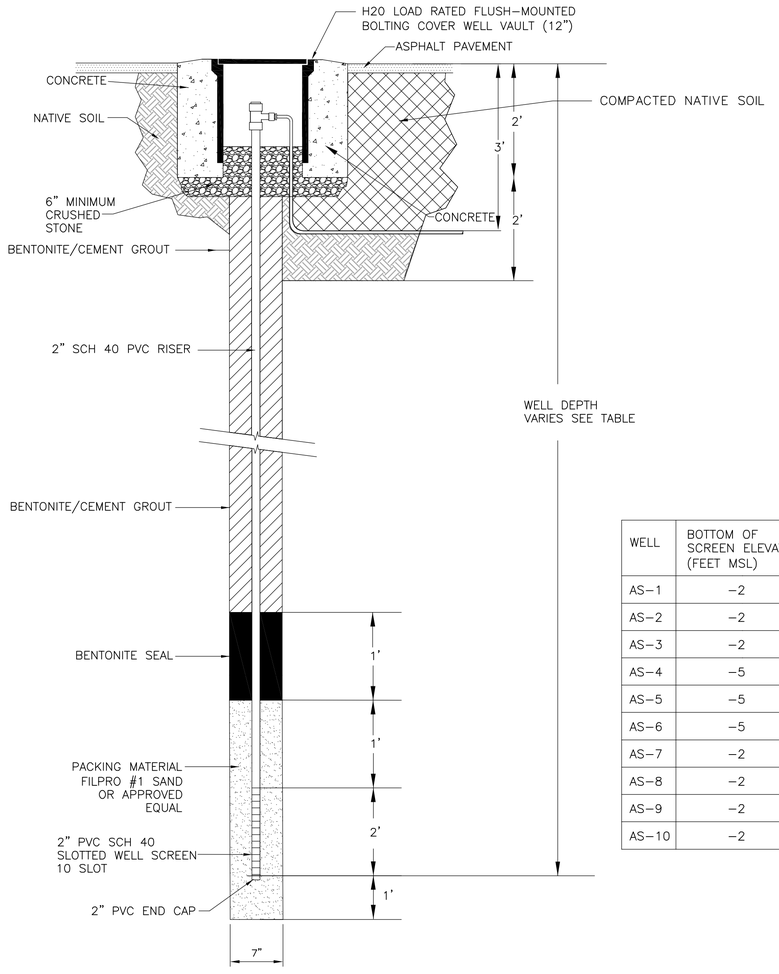
STANDARD MOTOR PRODUCTS, INC.

REMEDIAL DESIGN
AIR SPARGE/SOIL VAPOR EXTRACTION SYSTEM

GRADING AND DRAINAGE PLAN

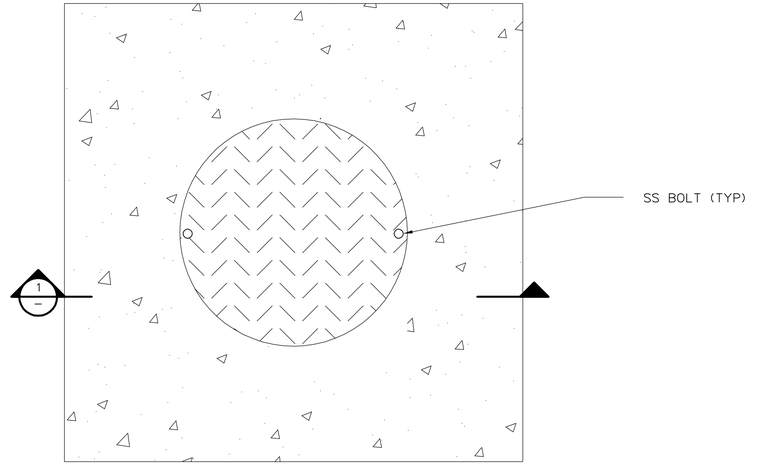
PROJECT NO. 34433-46200
FILE NAME: CSTPL003

SHEET NO.
C-4

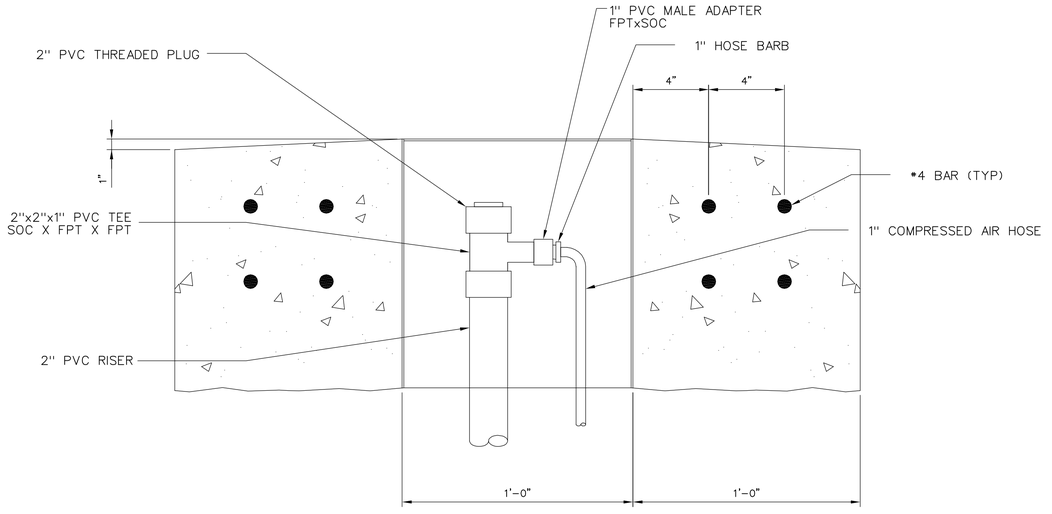


WELL	BOTTOM OF SCREEN ELEVATION (FEET MSL)
AS-1	-2
AS-2	-2
AS-3	-2
AS-4	-5
AS-5	-5
AS-6	-5
AS-7	-2
AS-8	-2
AS-9	-2
AS-10	-2

TYPICAL AIR SPARGE WELL
DETAIL A
NTS C-3



WELL HEAD
PLAN
3" = 1'-0"



WELL HEAD
SECTION 1
3" = 1'-0" –

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	10/11	EJL	WN	CORRECT PAGE REFERENCE FOR DETAIL A

DESIGNED BY: DP
DRAWN BY: EJL
SHEET CHK'D BY: JVB
CROSS CHK'D BY: MW
APPROVED BY: MM
DATE: JULY 2011

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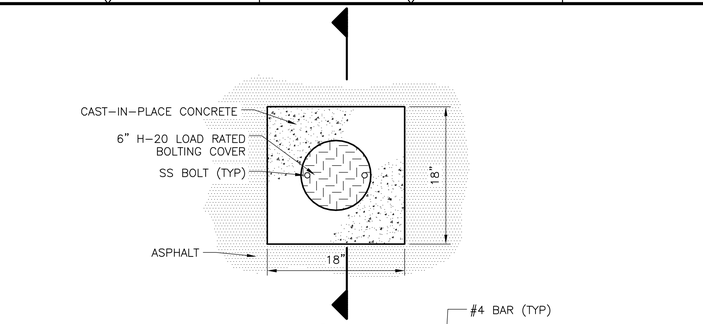
STANDARD MOTOR PRODUCTS, INC.

REMEDIAL DESIGN
AIR SPARGE/SOIL VAPOR EXTRACTION SYSTEM

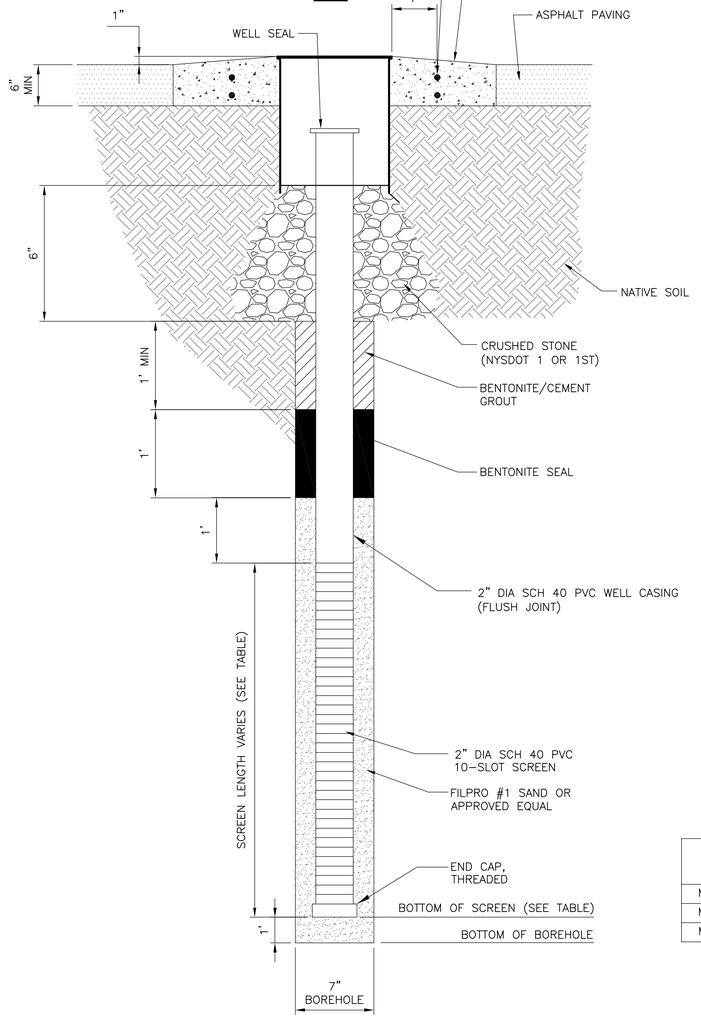
AIR SPARGE WELL DETAIL

PROJECT NO. 34433-46200
FILE NAME: CASDT001

SHEET NO.
C-5



PLAN



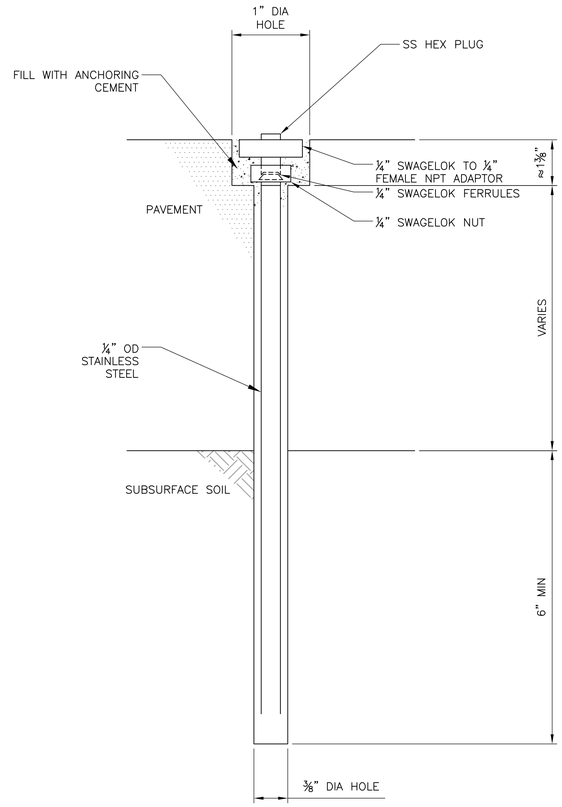
SECTION

MONITORING WELL (MW-17, 18, 19)

DETAIL A / C-3

NTS

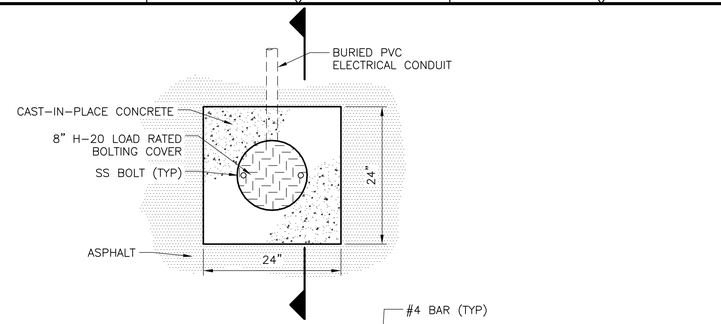
WELL	SCREEN LENGTH	BOTTOM OF SCREEN ELEVATION (FEET MSL)
MW-17	7'	8
MW-18	10'	5
MW-19	7'	8



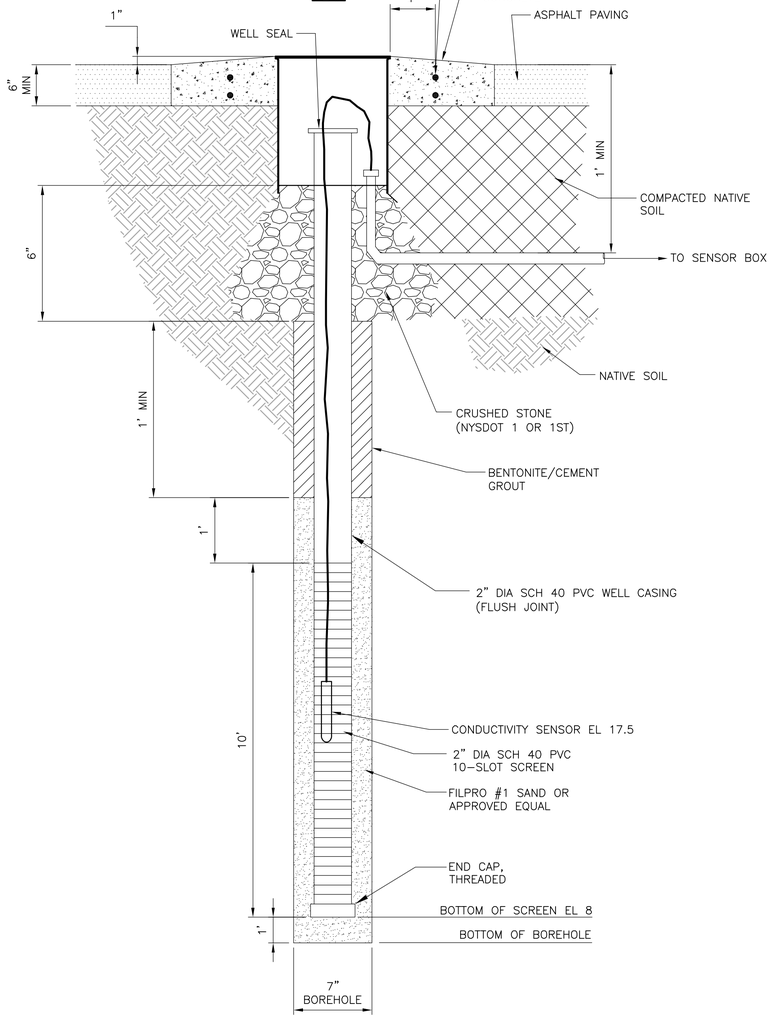
VADOSE ZONE PRESSURE/VACUUM MONITORING POINT

DETAIL B / C-3

NTS



PLAN



SECTION

MONITORING WELL (MW-20)

DETAIL C / C-3

NTS

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: DP
DRAWN BY: EJL
SHEET CHK'D BY: JVB
CROSS CHK'D BY: MW
APPROVED BY: MM
DATE: JULY 2011

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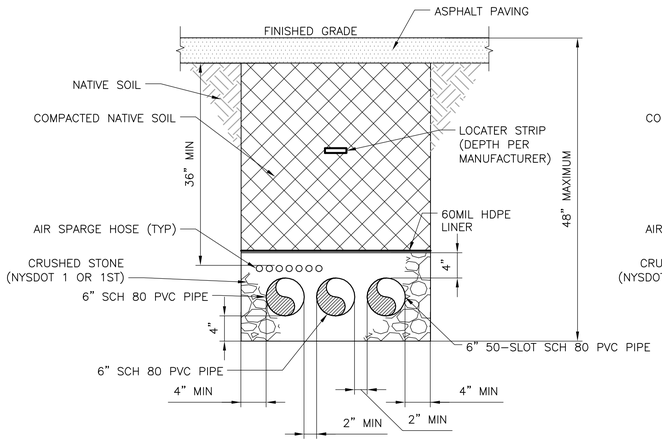
STANDARD MOTOR PRODUCTS, INC.

REMEDIAL DESIGN
AIR SPARGE/SOIL VAPOR EXTRACTION SYSTEM

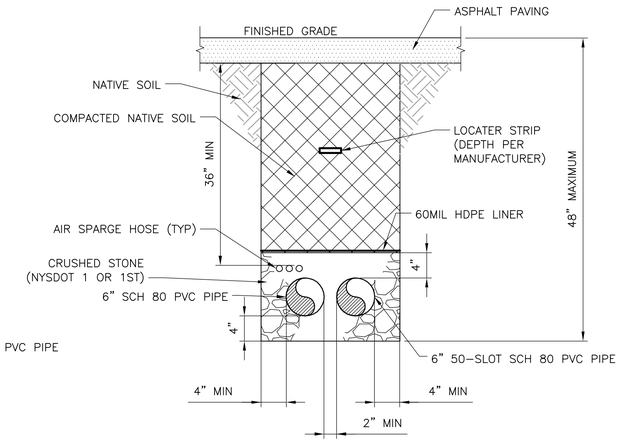
MONITORING POINT DETAILS

PROJECT NO. 34433-46200
FILE NAME: CWLDT001

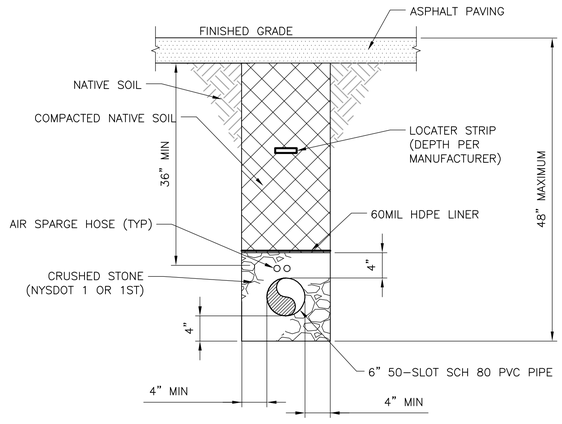
SHEET NO.
C-6



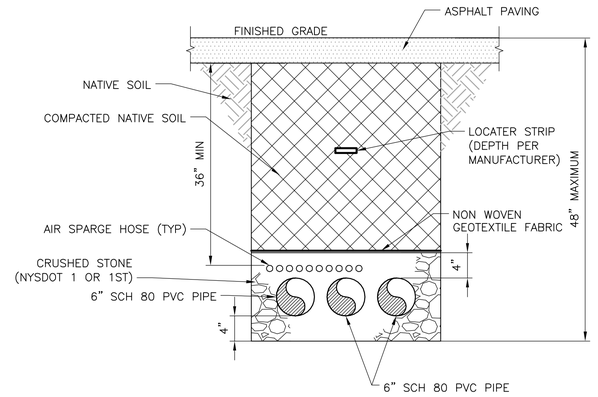
SECTION 1 (C-3) — 1" = 1'



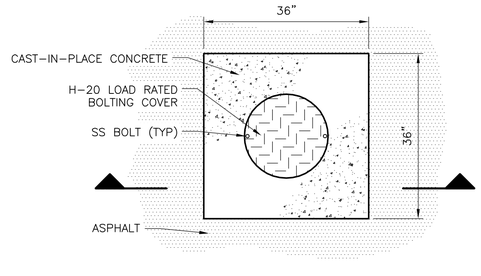
SECTION 2 (C-3) — 1" = 1'



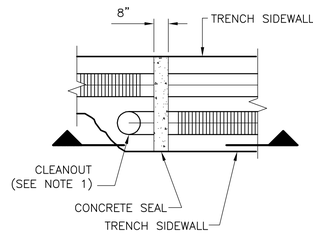
SECTION 3 (C-3) — 1" = 1'



SECTION 4 (C-3) — 1" = 1'



PLAN



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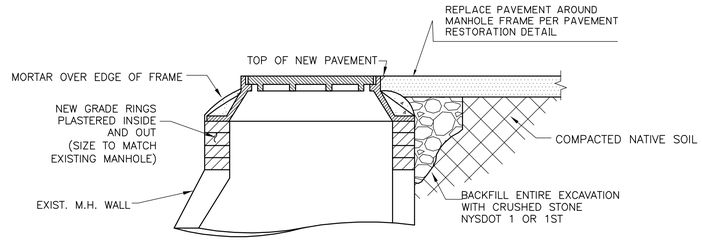
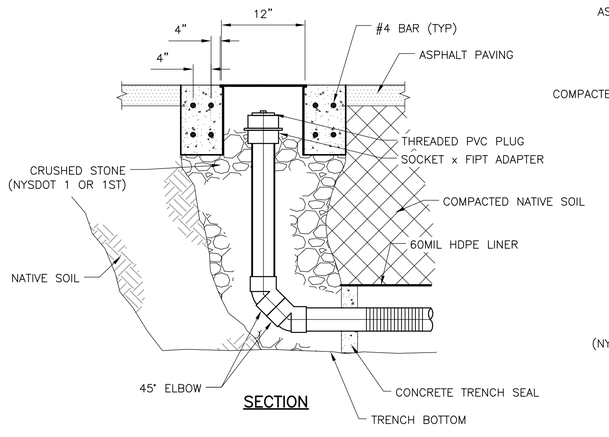


RAISING FRAME ON EXISTING MANHOLE

DETAIL C (C-4) — NTS

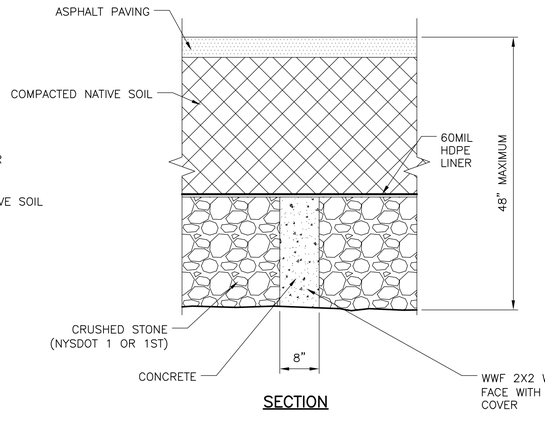
NOTE:
ALL MORTAR TO BE 1 PART PORTLAND CEMENT TO 2 PARTS CLEAN SAND.



SECTION

SVE LINE CLEANOUT

DETAIL A (C-3) — NTS

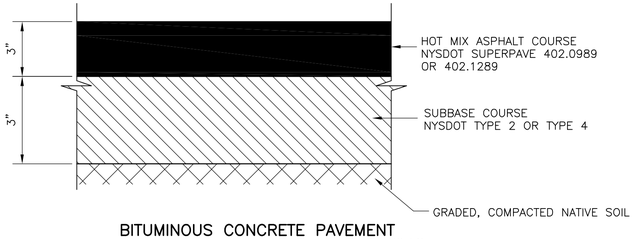


SECTION

TRENCH SEAL BETWEEN SVE SECTIONS

DETAIL B (C-3) — NTS

NOTES:
1. CONTRACTOR SHALL SEAL ALL PENETRATIONS THROUGH HDPE LINER.



BITUMINOUS CONCRETE PAVEMENT

DETAIL D (C-4) — NTS

NOTES:
1. UNLESS OTHER WISE NOTED, PAVEMENT PLACEMENT, COMPACTION, AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH NYSDOT SPECIFICATIONS.
2. PG BINDER SHALL BE NYSDOT GRADE 702-7622.
3. SUBBASE AND SUBGRADE MATERIALS SHALL BE GRADED TO A SMOOTH SURFACE AND SHALL BE COMPACTED TO 95 PERCENT RELATIVE COMPACTION AS DETERMINED BY ASTM D1557.
4. HOT MIX ASPHALT COURSE SHALL BE COMPACTED USING 80 SERIES COMPACTION ACCORDING TO NYSDOT SPECIFICATION 402-3.07D.

REV. NO.	DATE	DRWN	CHKD	REMARKS
1	10/11	EJL	WN	ADD CONCRETE TRENCH SEAL LABEL TO DETAIL A

DESIGNED BY: DP
DRAWN BY: EJL
SHEET CHK'D BY: JVB
CROSS CHK'D BY: MW
APPROVED BY: MM
DATE: JULY 2011

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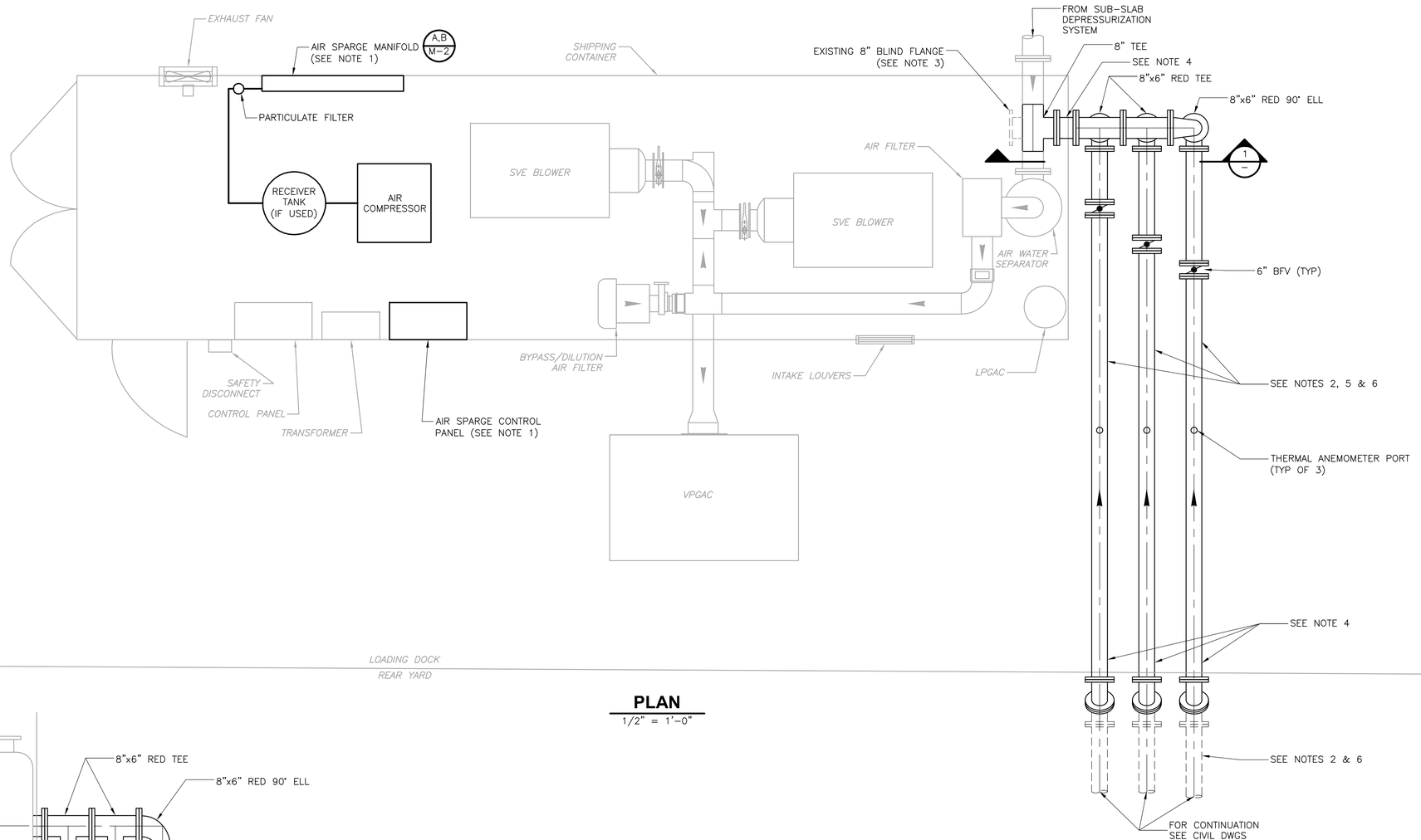
REMEDIAL DESIGN
AIR SPARGE/SOIL VAPOR EXTRACTION SYSTEM

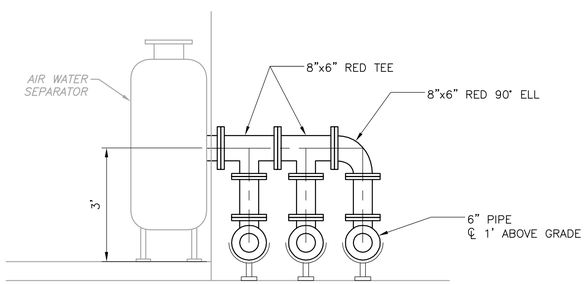
SECTIONS AND DETAILS

PROJECT NO. 34433-46200
FILE NAME: CSTDT001

SHEET NO.
C-7



PLAN
1/2" = 1'-0"



SECTION 1 / –
1/2" = 1'-0"

NOTES:
1. LOCATION OF AIR SPARGE CONTROL PANEL AND MANIFOLD MAY BE ADJUSTED BY THE CONTRACTOR DURING CONSTRUCTION WITH THE APPROVAL OF THE ENGINEER.
2. SVE PIPING SHALL BE SCHEDULE 80 PVC.
3. ROTATE EXISTING TEE WITH BLIND FLANGE 180-DEG. EXTERIOR INSULATION AND WALL PENETRATION SEAL SHALL BE REPAIRED IF DAMAGED.
4. CUT HOLE IN WALL AND SEAL PENETRATION.
5. PROVIDE PIPE SADDLE SUPPORTS EVERY 8 FEET AT A MINIMUM. SUPPORTS SHALL SECURE THE PIPE USING U-BOLT, YOKE, OR EQUIVALENT AND SHALL BE ANCHORED TO THE CONCRETE LOADING DOCK.
6. PROVIDE MINIMUM 1% SLOPE AWAY FROM TREATMENT SYSTEM.

1/2" = 1'- 0"
1 0 1 2

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: DP
DRAWN BY: EJL
SHEET CHK'D BY: JVB
CROSS CHK'D BY: MW
APPROVED BY: MM
DATE: JULY 2011

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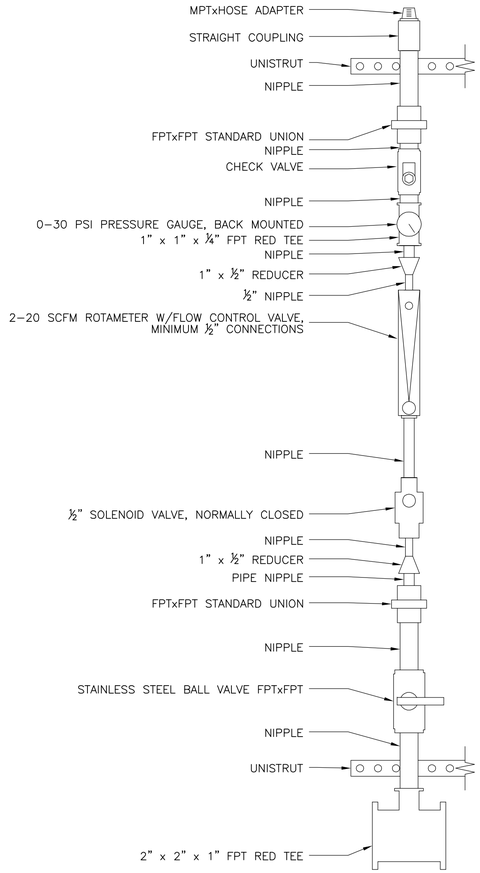
consulting • engineering • construction • operations

STANDARD MOTOR PRODUCTS, INC.

REMEDIAL DESIGN
AIR SPARGE/SOIL VAPOR EXTRACTION SYSTEM

MECHANICAL PLAN

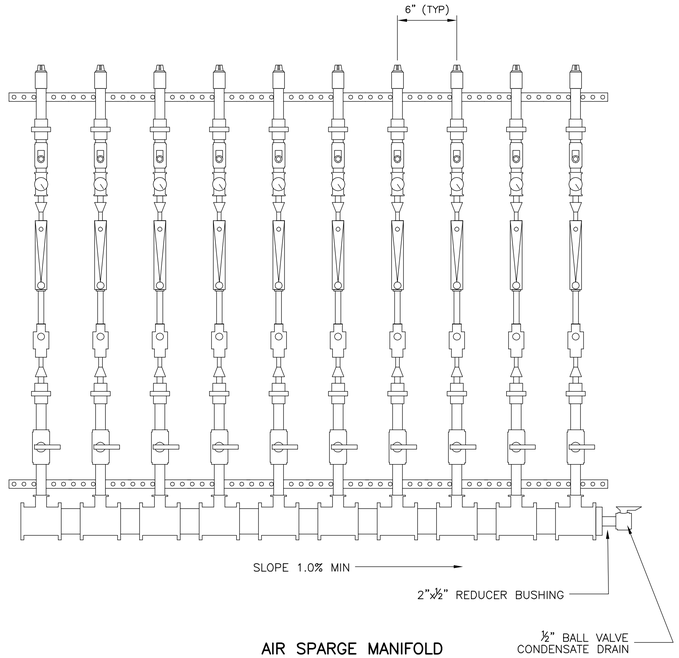
PROJECT NO. 34433-46200
FILE NAME: MBRPL001
SHEET NO.
M-1



TYPICAL AIR SPARGE MANIFOLD BRANCH

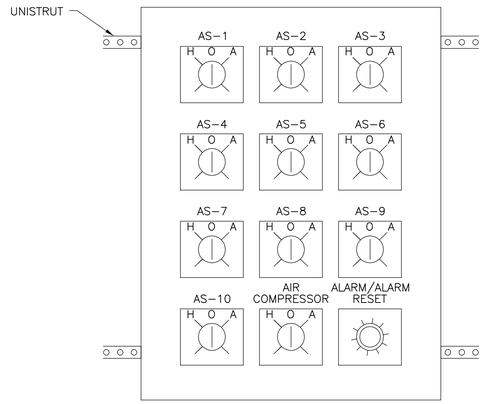
DETAIL A — 3" = 1'–0" — M–1

NOTES:
1. AIR SPARGE MANIFOLD COMPONENTS SHALL BE BRASS, GALVANIZED STEEL, OR STAINLESS STEEL.
2. UNLESS OTHERWISE NOTED, ALL AIR SPARGE MANIFOLD COMPONENTS SHALL BE 1–IN DIAMETER.



AIR SPARGE MANIFOLD

DETAIL B — NTS — M–1



AIR SPARGE CONTROL PANEL

DETAIL C — NTS — M–1

NOTES:
1. PROVIDE NEMA 4 CONTROL PANEL ENCLOSURE FOR AIR SPARGE CONTROLS.
2. CONTRACTOR SHALL DETERMINE SIZE OF ENCLOSURE BASED ON AVAILABLE SPACE INSIDE THE EXISTING PACKAGED TREATMENT SYSTEM. CONTRACTOR IS RESPONSIBLE FOR ENSURING THE ENCLOSURE PROVIDES ADEQUATE SPACE FOR THE PROPOSED EQUIPMENT.
3. PROVIDE HAND–OFF–AUTO SWITCH FOR EACH AIR SPARGE WELL SOLENOID VALVE.
4. EACH SWITCH SHALL ILLUMINATE WHEN THE CORRESPONDING WELL IS ACTIVELY SPARGING (I.E., SOLENOID VALVE IS OPEN).

REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: DP
DRAWN BY: EJL
SHEET CHK'D BY: JVB
CROSS CHK'D BY: MW
APPROVED BY: MM
DATE: JULY 2011

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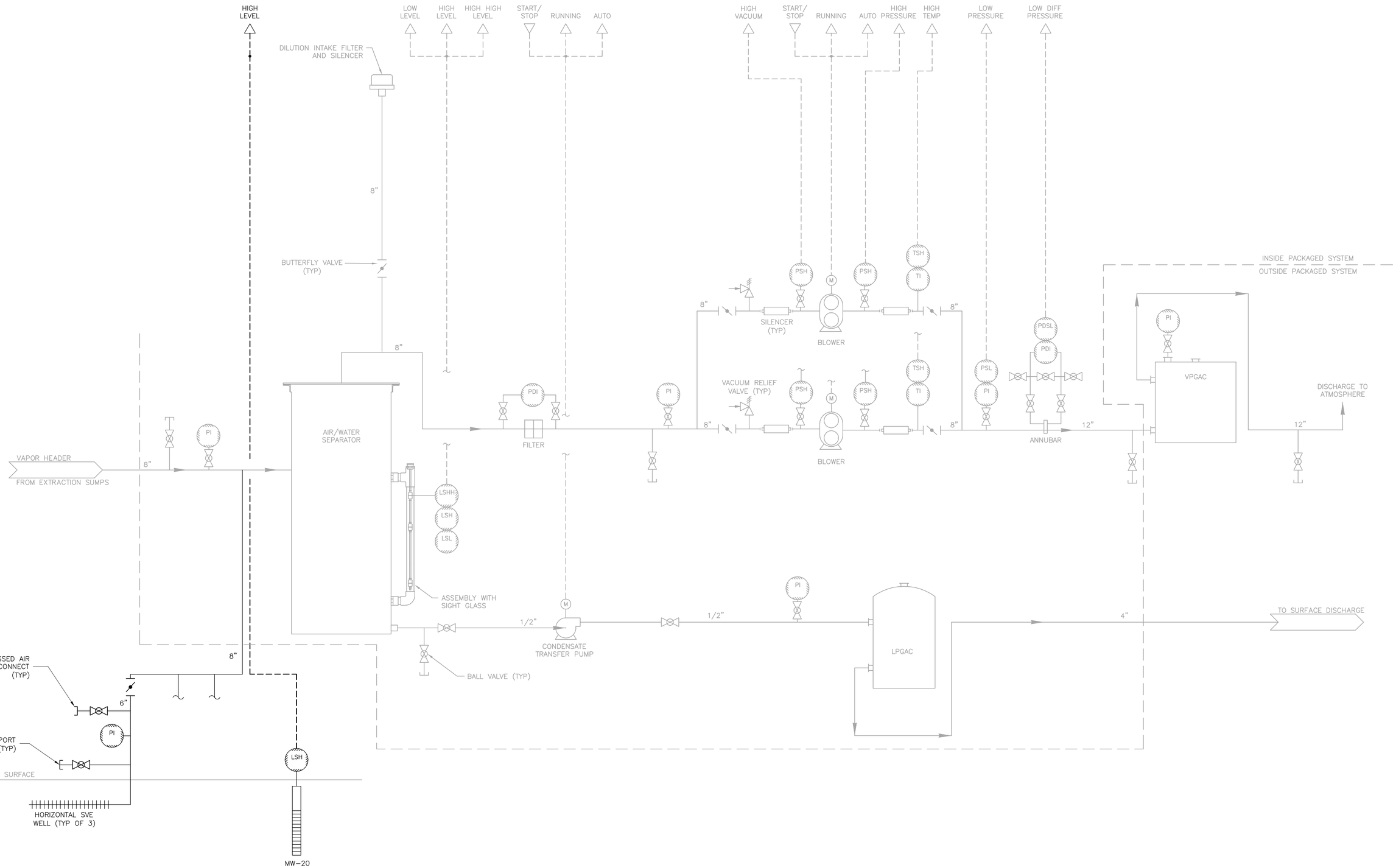
REMEDIAL DESIGN
AIR SPARGE/SOIL VAPOR EXTRACTION SYSTEM

AIR SPARGE DETAILS

PROJECT NO. 34433–46200
FILE NAME: MASDM001
SHEET NO. M-2



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: DP
DRAWN BY: EJL
SHEET CHK'D BY: JVB
CROSS CHK'D BY: MW
APPROVED BY: MM
DATE: JULY 2011

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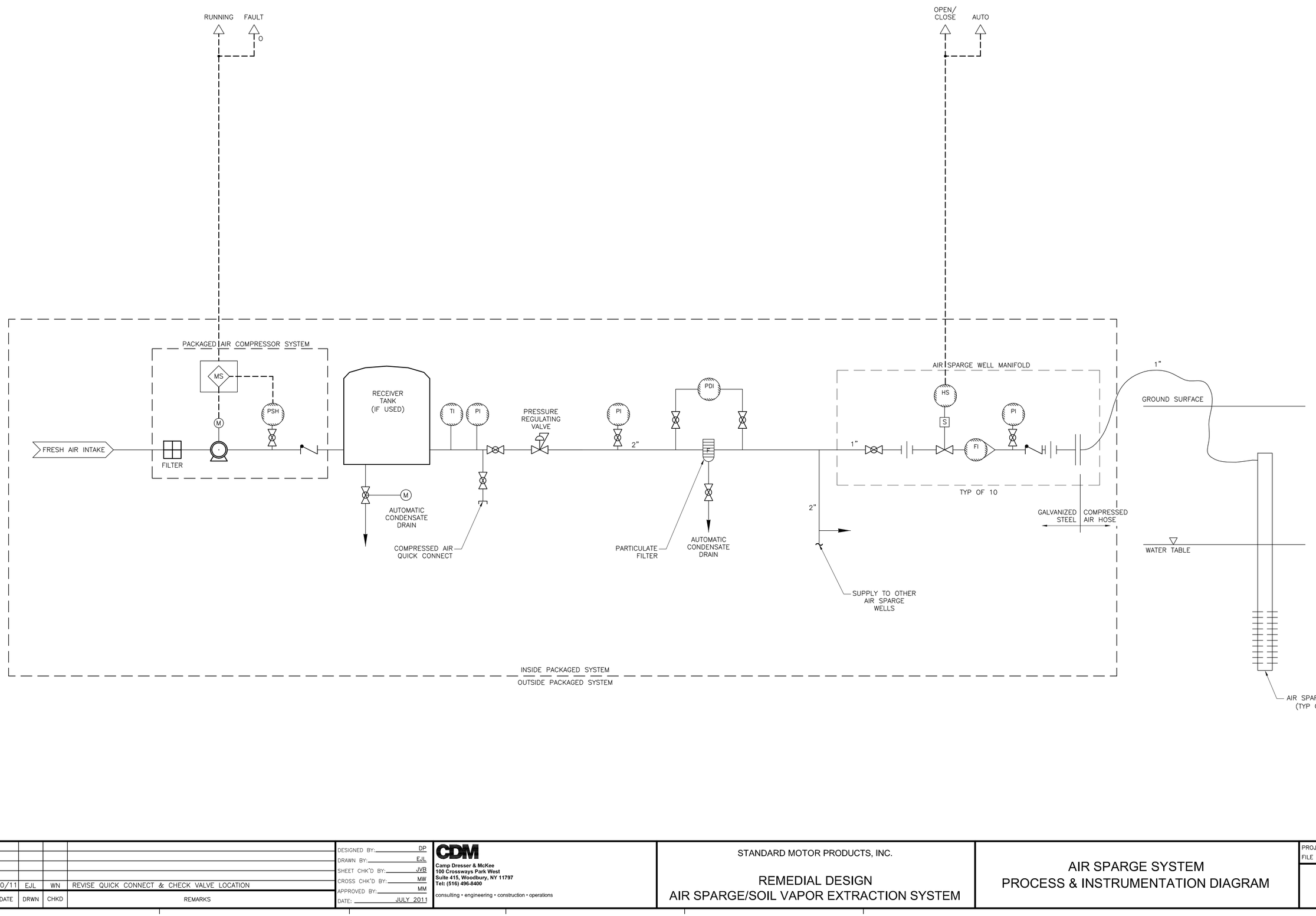
REMEDIAL DESIGN
AIR SPARGE/SOIL VAPOR EXTRACTION SYSTEM

SOIL VAPOR EXTRACTION SYSTEM PROCESS AND INSTRUMENTATION DIAGRAM

PROJECT NO. 34433-46200
FILE NAME: IP&ID001

SHEET NO.
I-1



REV. NO.	DATE	DRWN	CHKD	REMARKS
1	10/11	EJL	WN	REVISE QUICK CONNECT & CHECK VALVE LOCATION

DESIGNED BY: DP
DRAWN BY: EJL
SHEET CHK'D BY: JVB
CROSS CHK'D BY: MW
APPROVED BY: MM
DATE: JULY 2011

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REMEDIAL DESIGN
AIR SPARGE/SOIL VAPOR EXTRACTION SYSTEM

AIR SPARGE SYSTEM
PROCESS & INSTRUMENTATION DIAGRAM

PROJECT NO. 34433-46200
FILE NAME: IP&ID002

SHEET NO.
I-2