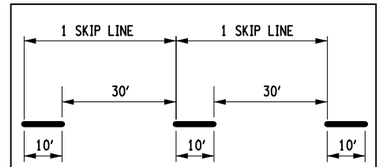
Appendix R– Maintenance and Protection of Traffic (MPT)

TABLE 011-01: PROTECTIVE VEHICLE REQUIREMENTS

CLOSURE TYPE	DURATION	MOBILE (WORK THAT MOVES INTERMITTENTLY OR CONTINUOUSLY, WHERE THE WORK AT ANY SPECIFIC LOCATION COMPLETES WITHIN 15 MINUTES) INCLUDES "STOP AND GO OPERATIONS OF 5 MINUTES OR LESS				SHORT DURATION (WORK THAT OCCUPIES A LOCATION FOR UP TO 1 HOUR)				SHORT TERM (DAYTIME WORK THAT OCCUPIES A LOCATION FOR MORE THAN 1 HOUR WITHIN A SINGLE DAYLIGHT PERIOD)				INTERMEDIATE TERM (WORK THAT OCCUPIES A LOCATION MORE THAN ONE DAYLIGHT PERIOD UP TO 3 CONSECUTIVE DAYS OR NIGHT TIME WORK LASTING MORE THAN 1 HOUR)				LONG TERM (WORK THAT OCCUPIES A LOCATION FOR MORE THAN 3 CONSECUTIVE DAYS)			
	ROAD TYPE & SPEED	FREEWAY	NON-FREEWAY			FREEWAY	NON-FREEWAY			FREEWAY	NON-FREEWAY			FREEWAY	NON-FREEWAY			FREEWAY	NON-FREEWAY		
			≥ 45 MPH	35 - 40 MPH	≤ 30 MPH		≥ 45 MPH	35 - 40 MPH	≤ 30 MPH		≥ 45 MPH	35 - 40 MPH	≤ 30 MPH		≥ 45 MPH	35 - 40 MPH	≤ 30 MPH		≥ 45 MPH	35 - 40 MPH	≤ 30 MPH
	EXPOSURE CONDITIONS[1]																				
LANE CLOSURE OR ENCROACHMENT	WORKERS ON FOOT OR VEHICLE EXPOSED TO TRAFFIC	P, TMIA	P, TMIA	P, TMIA	P	P, TMIA	P, TMIA	P, TMIA	P	P, TMIA	P, TMIA	P, TMIA	P	P, TMIA	P, TMIA	P, TMIA	SEE NOTE 2	P, TMIA	P, TMIA	P, TMIA	SEE NOTE 2
	OTHER HAZARDS NO WORKERS EXPOSED	NA	NA	NA	NA	P, TMIA	P, TMIA	P	P	P, TMIA	P, TMIA	P	SEE NOTE 2	P, TMIA	P, TMIA	SEE NOTE 2	SEE NOTE 2	P, TMIA	P, TMIA	SEE NOTE 2	SEE NOTE 2
SHOULDER CLOSURE OR ENCROACHMENT	WORKERS ON FOOT OR VEHICLE EXPOSED TO TRAFFIC	P, TMIA	P, TMIA	P	P	P, TMIA	P, TMIA	P	P	P, TMIA	P, TMIA	P	P	P, TMIA	P, TMIA	SEE NOTE 2	SEE NOTE 2	P, TMIA	P, TMIA	SEE NOTE 2	SEE NOTE 2
	OTHER HAZARDS NO WORKERS EXPOSED	NA	NA	NA	NA	P, TMIA	P, TMIA	P	P	P, TMIA	P, TMIA	P	SEE NOTE 2	P, TMIA	SEE NOTE 2	SEE NOTE 2	SEE NOTE 2	P, TMIA	SEE NOTE 2	SEE NOTE 2	SEE NOTE 2

LEGEND
P: PROTECTIVE VEHICLE REQUIRED FOR EACH CLOSED LANE & EACH CLOSED PAVED SHOULDER 8' OR WIDER, IF THE WORK SPACE MOVES WITHIN THE STATIONARY CLOSURE, THE PROTECTIVE VEHICLE SHALL BE REPOSITIONED ACCORDINGLY
TMIA: TRUCK/TRAILER MOUNTED IMPACT ATTENUATOR (TMIA) REQUIRED
NA: NOT APPLICABLE

NOTES
1. THE EXPOSURE CONDITIONS ASSUMES THERE IS NO POSITIVE PROTECTION PRESENT
2. EITHER A PROTECTIVE VEHICLE OR THE STANDARD BUFFER SPACE SHALL BE PROVIDED



DETAIL 011A - SKIP LINES

TABLE 011-02: TAPER LENGTHS & NUMBER OF CONES CHART

PRECONSTRUCTION POSTED SPEED LIMIT (MPH)	TAPER LENGTH: L (FT.)/ * OF SKIP LINES/ * OF CHANNELIZING DEVICES									SHOULDER TAPER LENGTH: L/3 (FT.)/ * OF SKIP LINES/ * OF CHANNELIZING DEVICES		
	LATERAL SHIFT OF TRAFFIC FLOW PATH (FT.)									FOR SHOULDER WIDTH		
	4	5	6	7	8	9	10	11	12	≤ 4 FT.	5 - 7 FT.	≥8 FT.
25	40/1/2	80/2/3	80/2/3	80/2/3	80/2/3	120/3/4	120/3/4	120/3/4	120/3/4	40/1/2	40/1/2	40/1/2
30	80/2/3	80/2/3	80/2/3	120/3/4	120/3/4	160/4/5	160/4/5	160/4/5	200/5/6	40/1/2	40/1/2	40/1/2
35	80/2/3	120/3/4	120/3/4	160/4/5	160/4/5	200/5/6	200/5/6	240/6/7	240/6/7	40/1/2	40/1/2	80/2/3
40	120/3/4	160/4/5	160/4/5	200/5/6	240/6/7	240/6/7	280/7/8	320/8/9	320/8/9	40/1/2	80/2/3	80/2/3
45	200/5/6	240/6/7	280/7/8	320/8/9	360/9/10	400/10/11	440/11/12	520/13/14	560/14/15	80/2/3	80/2/3	120/3/4
50	200/5/6	240/6/7	320/8/9	360/9/10	400/10/11	440/11/12	520/13/14	560/14/15	600/15/16	80/2/3	120/3/4	160/4/5
55	240/6/7	280/7/8	320/8/9	400/10/11	440/11/12	520/13/14	560/14/15	600/15/16	680/17/18	80/2/3	120/3/4	160/4/5
60	240/6/7	320/8/9	360/9/10	440/11/12	480/12/13	560/14/15	600/15/16	680/17/18	720/18/19	80/2/3	120/3/4	160/4/5
65	280/7/8	320/8/9	400/10/11	480/12/13	520/13/14	600/15/16	640/16/17	720/18/19	800/19/20	80/2/3	160/4/5	200/5/6

• THIS TABLE WAS CREATED WITH REFERENCE TO MUTCD TABLE 6H-4.
•• THE NUMBER OF CHANNELIZING DEVICES SHOWN IS CALCULATED BASED ON A 40FT DEVICE SPACING. THE NUMBER OF CHANNELIZING DEVICES CAN BE ADJUSTED AS NECESSARY.

TABLE 011-03 LONGITUDINAL BUFFER SPACE

PRECONSTRUCTION POSTED SPEED LIMIT (MPH)	DISTANCE (FT.)/ * OF SKIP LINES
25	155 / 4
30	200 / 5
35	250 / 6
40	305 / 8
45	360 / 9
50	425 / 11
55	495 / 13
65	645 / 16

• THIS TABLE IS THE SAME AS MUTCD TABLE 6C-2.

TABLE 011-04: ROLL AHEAD DISTANCE FOR PROTECTIVE VEHICLES

PRECONSTRUCTION POSTED SPEED LIMIT (MPH)	ROLL AHEAD DISTANCE (FT.)/* OF SKIP LINES FOR VEHICLES			
	MOVING OPERATION (BASED ON PROTECTIVE VEHICLE SPEED OF 15 MPH)		STATIONARY OPERATION	
	MIN	MAX	MIN	MAX
≥ 55	200/5	280/7	120/3	200/5
45 - 50	160/4	240/6	80/2	160/4
≤ 40	120/3	200/5	40/1	120/3

• THIS TABLE WAS CREATED WITH REFERENCE TO MUTCD TABLES NY-2 AND NY2-B.

TABLE 011-05 FLARE RATES FOR POSITIVE BARRIER

TYPE OF POSITIVE BARRIER	POSTED SPEED LIMIT				
	30 MPH	40 MPH	50 MPH	55 MPH	65 MPH
TEMPORARY POSITIVE BARRIER	8:1	11:1	14:1	16:1	20:1
BOX BEAM OR HEAVY POST CORRUGATED BEAM	7:1	9:1	11:1	12:1	15:1

TABLE 011-06 ADVANCE WARNING SIGN SPACING

ROAD TYPE	DISTANCE BETWEEN SIGNS			SIGN LEGEND	
	A (FT.)	B (FT.)	C (FT.)	XX	YY
URBAN (≤ 30 MPH•)	100	100	100	AHEAD	AHEAD
URBAN (35-40 MPH•)	200	200	200	AHEAD	AHEAD
URBAN (≥ 45 MPH•)	350	350	350	1000 FT.	AHEAD
RURAL	500	500	500	1500 FT.	1000 FT.
FREEWAY	1000	1500	2640	1 MILE	½ MILE

• PRECONSTRUCTION POSTED SPEED LIMIT.
•• THIS TABLE IS THE SAME AS MUTCD TABLE NY6H-3.

TABLE 011-07 TAPER LENGTH FOR TEMPORARY TRAFFIC CONTROL ZONES

TYPE OF TAPER	TAPER LENGTH (L)
MERGING TAPER	L
SHIFTING TAPER	L/2
SHOULDER TAPER	L/3
ONE-LANE, TWO-WAY TRAFFIC TAPER	50 FT. MIN -100 FT. MAX
DOWNSTREAM TAPER	50 FT. MIN -100 FT. MAX

• THIS TABLE IS THE SAME AS MUTCD TABLE 6C-3.

WORK ZONE TRAFFIC CONTROL LEGEND

SYMBOL	DESCRIPTION
	ARROW PANEL
	ARROW PANEL, CAUTION MODE
	ARROW PANEL TRAILER OR SUPPORT
	CHANGEABLE MESSAGE SIGN (PVMS)
	CHANNELIZING DEVICE
	CONE
	CRASH CUSHION/TEMPORARY IMPACT ATTENUATOR
	DIRECTION OF TEMPORARY TRAFFIC DETOUR
	DIRECTION OF TRAFFIC
	AUTOMATED FLAGGER ASSISTAMCE DEVICE WITH OPERATOR
	FLAGGER
	FLAG TREE
	LUMINAIRE
	MOWER
	PARKWAY GRASS SHOULDER
	PAVEMENT MARKINGS THAT SHALL BE REMOVED FOR A LONG TERM PROJECT
PVMS	PORTABLE VARIABLE MESSAGE SIGN
	ADVANCE WARNING SIGN WITH ORANGE FLAGS
	TRAILER FOR ARROW PANEL OR PORTABLE VARIABLE MESSAGE SIGN (PVMS)

WORK ZONE TRAFFIC CONTROL LEGEND

SYMBOL	DESCRIPTION
	SIGN, TEMPORARY
	SPOTTER
	TEMPORARY POSITIVE BARRIER
	TEMPORARY POSITIVE BARRIER WITH WARNING LIGHTS
	TEMPORARY TRAFFIC SIGNAL HEAD
	TYPE III BARRICADE
	WARNING LIGHTS
	WORK AREA
	WORK VEHICLE
	WORK VEHICLE (MULCHING/HERBICIDE OPERATION)
	WORK VEHICLE (PAVEMENT MARKING)
	WORK VEHICLE (SIGNAL WORK)
	24,000LB PROTECTIVE VEHICLE WITH TRUCK/TRAILER MOUNTED ATTENUATOR (TMIA)
	24,000LB PROTECTIVE VEHICLE WITHOUT TRUCK/ TRAILER MOUNTED ATTENUATOR

NEW YORK STATE OF OPPORTUNITY. Department of Transportation

U.S. CUSTOMARY STANDARD SHEET

WORK ZONE TRAFFIC CONTROL GENERAL TABLES AND LEGEND

APPROVED DECEMBER 2, 2021
Robert Limoges
ROBERT LIMOGES, P.E.
DIRECTOR, OTSM

ISSUED UNDER EI 21-028
619-011

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GENERAL NOTES

1. THE TYPICAL DETAILS DEPICTED ON THE STANDARD SHEETS AND IN THE MUTCD, REFLECT THE MINIMUM REQUIREMENTS.

2. PROPOSED REVISIONS TO THE TRAFFIC CONTROL PLAN SHALL BE PROVIDED, IN WRITING, TO THE DOT ENGINEER FOR REVIEW AND APPROVAL BY THE REGIONAL DIRECTOR OR HIS/HER DESIGNEE FIVE (5) WORK DAYS PRIOR TO THE PLANNED IMPLEMENTATION OF SUCH PROPOSED REVISIONS, EXCEPT FOR CHANGES THAT ALTER THE SCOPE OF THE TRAFFIC CONTROL PLAN. SUCH CHANGES IN SCOPE MUST BE SUBMITTED TO THE ENGINEER FOR APPROVAL BY THE REGIONAL DIRECTOR OR HIS/HER DESIGNEE THIRTY (30) WORKING DAYS PRIOR TO IMPLEMENTATION OF SUCH REVISIONS.

3. THE NAMES, ADDRESSES, AND TELEPHONE NUMBERS OF STAFF WHO ARE AUTHORIZED TO SECURE LABOR, MATERIALS, AND EQUIPMENT FOR EMERGENCY REPAIRS OUTSIDE NORMAL WORKING HOURS SHALL BE PROVIDED, IN WRITING, TO THE DOT ENGINEER. THE ENGINEER WILL PROVIDE THE SUBMITTED INFORMATION TO REGIONAL MANAGEMENT, THE NEW YORK STATE POLICE, THE RESIDENT ENGINEER, AND THE LOCAL POLICE.

4. STANDARD SHEET 619-503 MAY BE USED FOR AN OFFSITE DETOUR SETUP FOR BOTH LONG TERM AND SHORT TERM WORK DURATIONS.

5. FOLLOW REGIONAL HIGH-VOLUME RESTRICTIONS. CONSULT WITH DOT ENGINEER IF EXCEPTION NEEDED.

6. PLAN AHEAD TO AVOID CONFLICTING WORK ZONES. CHECK FOR CONSTRUCTION PROJECTS, CLOSURES, & RESTRICTIONS AT WWW.511NY.ORG, WWW.DOT.NY.GOV/PROJECTS, AND WITH DOT ENGINEER.

7. DOCUMENT AND REPORT WORK ZONE INCIDENTS USING EITHER THE DEPARTMENT'S WORK ZONE INCIDENT FORM, OR THE CONSTRUCTION INCIDENT REPORTING SYSTEM, AS APPROPRIATE.

8. CONSIDER CLOSURE WIDTH & CLEAR WIDTH FOR WIDE VEHICLES ON WIDE LOAD ROUTES.

ACTIVITY AREA

1. A 500' MINIMUM LONGITUDINAL DISTANCE SHALL BE MAINTAINED BETWEEN CONSTRUCTION OPERATIONS ON ALTERNATE SIDES OF THE ROADWAY, UNLESS OTHERWISE APPROVED BY THE ENGINEER.

2. WHEN TWO OR MORE AREAS ARE ADJACENT, OVERLAP, OR ARE IN CLOSE PROXIMITY, THE CONTRACTOR SHALL ENSURE THERE ARE NO CONFLICTING SIGNS AND THAT LANE CONTINUITY IS MAINTAINED THROUGHOUT ALL WORK AREAS.

SIGNS

1. THE LOCATIONS OF THE SIGNS SHOWN ON THE WORK ZONE TRAFFIC CONTROL PLANS AND DETAILS MAY BE ADJUSTED BASED ON SIGHT DISTANCE AND OTHER CONSIDERATIONS. THE FINAL LOCATIONS OF SIGNS ARE SUBJECT TO APPROVAL OF THE ENGINEER.

2. FOR LONG TERM WORK DURATIONS, ANY EXISTING SIGNS, INCLUDING OVERHEAD SIGNS, WHICH CONFLICT WITH THE TEMPORARY TRAFFIC CONTROL SIGN LAYOUT SHALL BE COVERED, REMOVED, STORED OR RESET, AS APPROVED BY THE ENGINEER. ALL APPROPRIATE EXISTING SIGNS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AND/OR LOCATION UNLESS OTHERWISE REPLACED IN THIS CONTRACT.

3. SIGNS AT OR NEAR INTERSECTIONS SHALL BE PLACED SO THAT THEY DO NOT OBSTRUCT A MOTORIST'S LINE OF SIGHT.

4. SIGNS MOUNTED ON THE MEDIAN OF DIVIDED HIGHWAYS WHERE MEDIAN BARRIER IS IN PLACE MAY BE MOUNTED ON THE BARRIER WITH A SADDLE TYPE BRACKET OR OMMITED WITH THE APPROVAL OF THE DOT ENGINEER. LAYING THE SIGN DOWN IN A HORIZONTAL POSITION IS NOT PERMITTED.

5. THE DIMENSIONS OF WORK ZONE TRAFFIC CONTROL SIGNS ARE DESCRIBED IN THE MUTCD. ANY CHANGES TO THE DIMENSIONS SHALL BE APPROVED BY THE REGIONAL DIRECTOR OR BY HIS/HER DESIGNEE.

6. NYR9-12 SHALL BE USED IN PLACE OF NYR9-11 WHEN A REDUCED REGULATORY SPEED LIMIT SIGN IS AUTHORIZED.

7. RIGID AND FLEXIBLE "ROLL-UP" SIGNS MAY BE USED FOR MOBILE, SHORT DURATION AND SHORT-TERM STATIONARY WORK. RIGID SIGNS MUST BE MOUNTED AT LEAST 5 FEET ABOVE GRADE (7 FEET WHERE THERE ARE PEDESTRIANS OR PARKED CARS). FLEXIBLE SIGNS SHALL BE MOUNTED AT LEAST ONE FOOT ABOVE GRADE. MESH SIGNS SHALL NOT BE USED. USE RETRO REFLECTORIZED RIGID SIGNS FOR NIGHTTIME WORK.

CHANNELIZING DEVICES

1. WHERE POSSIBLE ALL CHANNELIZING AND GUIDING DEVICES ARE TO BE PLACED SO AS TO PROVIDE A MINIMUM 2' LATERAL CLEARANCE TO THE TRAVELED WAY.

PUBLIC ACCESS

1. PROPERTY OWNERS WHOSE DRIVEWAYS WILL BE MADE INACCESSIBLE SHALL BE NOTIFIED AT LEAST 24 HOURS PRIOR TO RESTRICTING USE OF THE DRIVEWAY. FOR MULTIPLE ACCESS PROPERTIES, AT LEAST ONE DRIVEWAY SHALL BE OPEN AT ALL TIMES. ACCESS SHALL BE RESTORED TO ALL DRIVEWAYS AS SOON AS POSSIBLE.

2. SUITABLE RAMPS SHALL BE INSTALLED TO MAINTAIN SMOOTH TRANSITIONS FROM RESIDENTIAL AND COMMERCIAL DRIVEWAYS TO AND FROM THE WORK AREA.

LANE CLOSURES

1. LANE CLOSURES SHALL BE LOCATED TO PROVIDE OPTIMUM VISIBILITY, I.E. BEFORE CURVES AND CRESTS, TO THE EXTENT CONDITIONS PERMIT.

2. THE ENGINEER MAY REQUIRE THAT ALL LANES BE RE-OPENED AT ANY TIME IF THE ROUTE IS NEEDED FOR EMERGENCY PURPOSES. THIS COULD INCLUDE INCIDENTS AT LOCATIONS OUTSIDE THE CONTRACT LIMITS.

3. ARROW PANELS SHALL BE LEGIBLE CONTINUOUSLY FROM ANY POINT WITHIN THE ROADWAY (INCLUSIVE OF SHOULDERS) FROM 1,500 FEET IN ADVANCE OF THE LANE CLOSURE TAPER TO THE BEGINNING OF THE LANE CLOSURE TAPER.

LANE WIDTHS

1. UNLESS AUTHORIZED BY THE ENGINEER, THE MINIMUM LANE WIDTHS FOR WORK ZONE TRAVEL LANES SHALL BE AS FOLLOWS: FREEWAYS AND/OR EXPRESSWAYS IS 11'. THE MINIMUM LANE WIDTH FOR ALL OTHER TYPES OF ROADWAYS IS 10'.

2. A WRITTEN NOTE SHALL BE PROVIDED TO THE ENGINEER, A MINIMUM OF 21 CALENDAR DAYS IN ADVANCE OF PERFORMING ANY WORK THAT RESULTS IN THE REDUCED WIDTH OF AN EXISTING ROADWAY, SO THAT THE ENGINEER MAY NOTIFY THE REGIONAL PERMIT ENGINEER IN A TIMELY MANNER.

PROTECTIVE VEHICLES

1. A PROTECTIVE VEHICLE IS A LARGE DUMP TRUCK, A LARGE RACK TRUCK OR OTHER VEHICLE HAVING A GROSS WEIGHT OF AT LEAST 24,000 POUNDS. IF THE PROTECTIVE VEHICLE ENCROACHES INTO THE TRAVEL LANE, OR IF IT REMAINS ENTIRELY ON THE SHOULDER OF ANY HIGH SPEED ROAD (45 MPH OR HIGHER), IT SHALL BE EQUIPPED WITH A DEPLOYED TRUCK/TRAILER MOUNTED IMPACT ATTENUATOR (TMIA, SEE TABLE 011-01 ON SHEET 619-11). PROTECTIVE VEHICLES MAY BE LOADED WITH SAND, GRAVEL, OR FINE AGGREGATE AS BALLAST TO ENHANCE THE VEHICLE'S GROSS WEIGHT. ANY BALLAST ADDED TO ENHANCE THE VEHICLE'S GROSS WEIGHT SHALL BE SECURED AS NOT TO BECOME DISLODGED IF IMPACTED.

2. A PROTECTIVE VEHICLE USED IN A MOVING OPERATION IS REFERRED TO AS A SHADOW VEHICLE.

3. A PROTECTIVE VEHICLE USED IN A STATIONARY OPERATION IS REFERRED TO AS A BARRIER VEHICLE.

4. IN A MOVING OPERATION OR A STATIONARY OPERATION THAT OCCUPIES A LOCATION FOR UP TO 1 HOUR, THE OPERATOR SHALL REMAIN IN THE PROTECTIVE VEHICLE WITH THE SAFETY BELT AND HEADREST PROPERLY ADJUSTED, MAINTAIN VEHICLE SPACING, AND KEEP THE WHEELS ALIGNED WITH THE LANE STRIPING. TWO-WAY RADIOS SHOULD BE USED TO COMMUNICATE BETWEEN THE OPERATOR AND THE WORK CREW.

5. IN A STATIONARY OPERATION THAT OCCUPIES A LOCATION FOR MORE THAN 1 HOUR, ONCE THE PROTECTIVE VEHICLE HAS BEEN APPROPRIATELY PLACED, IT SHOULD BE UNOCCUPIED. UNOCCUPIED VEHICLE SHALL BE POSITIONED PARALLEL TO TRAFFIC, PARKING BRAKE SET, PLACED IN 2ND GEAR (MANUAL TRANSMISSIONS /ENGINE OFF) OR PARK / NEUTRAL (AUTOMATIC TRANSMISSIONS) AND HAVE THE FRONT WHEELS ALIGNED WITH THE LANE STRIPING AND LANE TO MAINTAIN LANE DISCIPLINE AND TO STAY IN LANE IF STRUCK.

6. WHEN A PROTECTIVE VEHICLE IS USED IN ADVANCE OF EITHER MOVING OR STATIONARY OPERATIONS TO DISPLAY SIGN MESSAGES, IT IS REFERRED TO AS AN ADVANCE WARNING VEHICLE. ADVANCED WARNING VEHICLES MAY BE OCCUPIED OR UNOCCUPIED. WHEN SIGNS ARE MOUNTED ON AN ADVANCED WARNING VEHICLE, THEY SHALL NOT OBSTRUCT VISIBILITY OF ANY LIGHTS (TAILLIGHTS OR WARNING LIGHTS) OR SIDE-VIEW MIRRORS ON THE VEHICLE.

7. NO WORK ACTIVITY, EQUIPMENT, VEHICLES AND/OR MATERIALS SHALL BE LOCATED BETWEEN THE PROTECTIVE VEHICLE AND THE ACTIVE WORK AREA (ROLL AHEAD DISTANCE).

8. PROTECTIVE VEHICLES MAY BE REQUIRED IN CONJUNCTION WITH POLICE PRESENCE IN THE WORK ZONE, TO BE INCLUDED IN THE UNIT BID PRICE FOR BASIC WORK ZONE TRAFFIC CONTROL, FOR CAPITOL CONSTRUCTION PROJECTS.

9. DIRECT VERBAL COMMUNICATION BETWEEN THE PROTECTIVE VEHICLES AND THE WORK VEHICLE(S) / EQUIPMENT SHALL BE UTILIZED WHERE AVAILABLE.

WORK DURATION DEFINITIONS

1. THERE ARE MAINLY FIVE WORK DURATIONS:

   A. LONG-TERM IS STATIONARY WORK THAT OCCUPIES A LOCATION MORE THAN 3 CONSECUTIVE DAYS.

   B. INTERMEDIATE-TERM IS STATIONARY WORK THAT OCCUPIES A LOCATION MORE THAN ONE DAYLIGHT PERIOD UP TO 3 CONSECUTIVE DAYS, OR NIGHTTIME WORK LASTING MORE THAN 1 HOUR.

   C. SHORT-TERM IS STATIONARY DAYTIME WORK THAT OCCUPIES A LOCATION FOR MORE THAN 1 HOUR WITHIN A SINGLE DAYLIGHT PERIOD.

   D. SHORT DURATION IS WORK THAT OCCUPIES A LOCATION UP TO 1 HOUR. IT CAN BE PERFORMED DURING THE DAYTIME OR AT NIGHT IN ACCORDANCE WITH NOTES N1 TO N10 NOTES ON NIGHTTIME WORK.

   E. MOBILE IS WORK THAT MOVES INTERMITTENTLY OR CONTINUOUSLY WHERE THE WORK AT ANY SPECIFIC LOCATION COMPLETES WITHIN 15 MINUTES. IT IS USED FOR VEHICLE BASED OPERATIONS AND DOES NOT INVOLVE WORKERS ON FOOT. IT CAN BE PERFORMED DURING THE DAYTIME OR AT NIGHT IN ACCORDANCE WITH NOTES N1 TO N10 NOTES ON NIGHTTIME WORK.

2. SPECIAL OPERATIONS ARE WORK OPERATIONS THAT DO NOT FIT INTO ONE OF THE ABOVE FIVE CATEGORIES. SPECIAL OPERATIONS INCLUDE:

   A. STOP AND GO OPERATIONS - WORK THAT COMPLETES WITHIN 5 MINUTES AND ALLOWS WORKERS ON FOOT.

   B. OTHER OPERATIONS INCLUDING MOWING, MULCHING/HERBICIDE OPERATIONS, TEMPORARY ROAD/INTERSECTION CLOSURES, ETC.

ROADWAY TYPE DEFINITIONS

1. FREEWAY:

   A. INTERSTATE: INTERREGIONAL HIGH-SPEED, HIGH-VOLUME, DIVIDED FACILITIES WITH COMPLETE CONTROL OF ACCESS.

   B. PARKWAY: DIVIDED HIGHWAYS FOR NON-COMMERCIAL TRAFFIC WITH FULL CONTROL OF ACCESS, GRADE PARKWAY SEPARATIONS, INTERCHANGES, AND OCCASIONAL AT-GRADE INTERSECTIONS. PARKWAYS ARE DESIGNATED BY LAW.

ROADWAY TYPE DEFINITIONS (CONTINUED)

2. EXPRESSWAY: DIVIDED HIGHWAYS FOR THROUGH TRAFFIC WITH FULL OR PARTIAL CONTROL OF ACCESS AND GENERALLY WITH GRADE SEPARATIONS AT MAJOR CROSSROADS. ALL FREEWAY STANDARD SHEETS ARE APPLICABLE TO EXPRESSWAY.

3. NON-FREEWAY:

   A. MULTILANE DIVIDED HIGHWAY

   B. MULTILANE UNDIVIDED HIGHWAY

   C. TWO-LANE TWO-WAY ROADWAY

ALL NON-FREEWAYS CAN BE EITHER URBAN OR RURAL:

URBAN: (MEETS MORE THAN 1 OF THE FOLLOWING CRITERIA)
- •HIGH DENSITY DEVELOPMENT
- •ON-STREET PARKING
- •VARIED BUILDING SETBACKS
- •MULTI-STORY AND LOW-TO MEDIUM-RISE STRUCTURES FOR RESIDENTIAL
- •COMMERCIAL, AND EDUCATIONAL USES, STRUCTURES THAT ACCOMMODATE MIXED USES: COMMERCIAL, RESIDENTIAL, AND PARKING
- •LIGHT INDUSTRIAL, AND SOMETIMES HEAVY INDUSTRIAL, LAND USE
- •PROMINENT DESTINATIONS WITH SPECIALIZED STRUCTURES, E.G., LARGE THEATERS, SPORTS FACILITIES OR CONFERENCE CENTERS
- •HIGH LEVELS OF PEDESTRIAN AND BICYCLIST ACTIVITY, WITH NEARLY CONTINUOUS SIDEWALKS AND MARKED CROSSWALKS
- •HIGHER DENSITY OF TRANSIT STOPS AND ROUTES
- •DRIVEWAY DENSITIES GREATER THAN 25 DRIVEWAYS/MILE ON EACH SIDE OF THE ROAD
- •MINOR COMMERCIAL DRIVEWAY DENSITIES OF 10 DRIVEWAYS/MILE OR GREATER
- •MAJOR COMMERCIAL DRIVEWAYS
- •HIGH DENSITY OF CROSS STREETS

RURAL: DOES NOT MEET MORE THAN ONE OF THE ABOVE CRITERIA.

NOTES FOR NIGHTTIME OPERATIONS:

N1. WORK OCCURRING AFTER SUNSET AND BEFORE SUNRISE WILL BE CONSIDERED NIGHTTIME OPERATIONS.

N2. ALL SIGNS, STOP/SLOW PADDLES AND RED FLAGS USED TO WARN/ALERT/CONTROL TRAFFIC SHALL BE RETROREFLECTIVE.

N3. ALL WORKERS INVOLVED SHALL WEAR PROTECTIVE HELMETS AND NIGHTTIME APPAREL IN ACCORDANCE WITH §107-05A. HIGH VISIBILITY APPAREL AT ALL TIMES.

N4. VEHICLES OPERATING ON THE PAVEMENT OF A CLOSED ROADWAY OR TRAVEL LANE SHALL DISPLAY ROTATING AMBER BEACONS OR FLASHING LED BEACONS AT ALL TIMES.

N5. LEVEL I ILLUMINATION SHALL BE PROVIDED NEAR THE BEGINNING OF LANE CLOSURE TAPERS AND AT ROAD CLOSURES, INCLUDING THE SETUP AND REMOVAL OF THE CLOSURE TAPERS.

N6. LEVEL II ILLUMINATION SHALL BE PROVIDED FOR FLAGGING STATIONS, ASPHALT PAVING, MILLING, AND CONCRETE PLACEMENT AND/OR REMOVAL OPERATIONS, INCLUDING BRIDGE DECKS, 50 FEET AHEAD OF AND 100 FEET BEHIND A PAVING OR MILLING MACHINE.

N7. LEVEL III ILLUMINATION SHALL BE PROVIDED FOR PAVEMENT OR STRUCTURAL CRACK FILLING, JOINT REPAIR, PAVEMENT PATCHING AND REPAIRS, INSTALLATION OF SIGNAL EQUIPMENT OR OTHER ELECTRICAL/MECHANICAL EQUIPMENT, AND OTHER TASKS INVOLVING FINE DETAILS OR INTRICATE PARTS AND EQUIPMENT.

N8. ALL LIGHTING SHALL BE DESIGNED, INSTALLED, AND OPERATED TO AVOID GLARE THAT AFFECTS TRAFFIC ON THE ROADWAY OR THAT CAUSES ANNOYANCE OR DISCOMFORT FOR RESIDENCES ADJOINING THE ROADWAY.

N9. PRIOR TO THE START OF NIGHTTIME OPERATIONS, A WRITTEN NIGHTTIME OPERATIONS AND LIGHTING PLAN IS REQUIRED FOR APPROVAL FROM THE DOT ENGINEER.

N10. SEE STANDARD SPECIFICATIONS §619 FOR ADDITIONAL REQUIREMENTS AND CONSIDERATIONS.

N11. FLAGGERS SHALL USE A FLASHLIGHT WITH RED GLOW CONE/RED LED BATON FOR FLAGGING IN NON-ILLUMINATED FLAGGER STATIONS DURING NIGHTTIME OPERATIONS.

NEW YORK STATE OF OPPORTUNITY. Department of Transportation

U.S. CUSTOMARY STANDARD SHEET

WORK ZONE TRAFFIC CONTROL GENERAL NOTES

APPROVED APRIL 8, 2022	ISSUED UNDER EI 22-008
Robert Limoges ROBERT LIMOGES, P.E. DIRECTOR, OTSM	619-010

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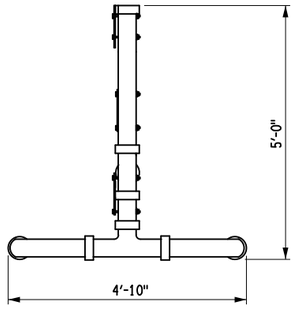

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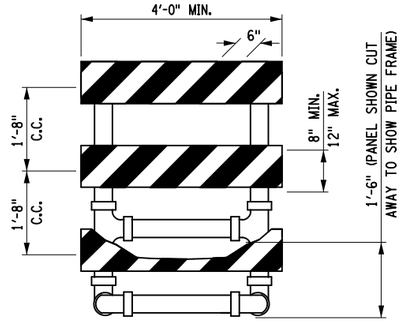

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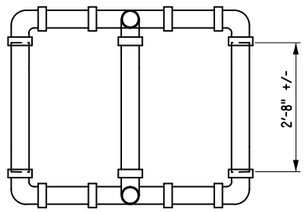
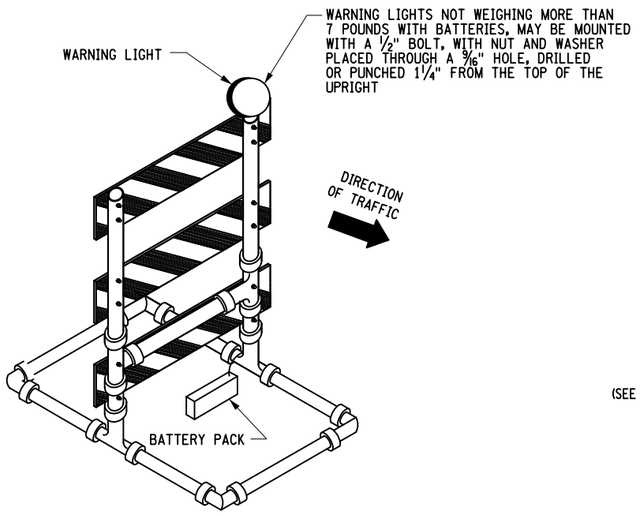


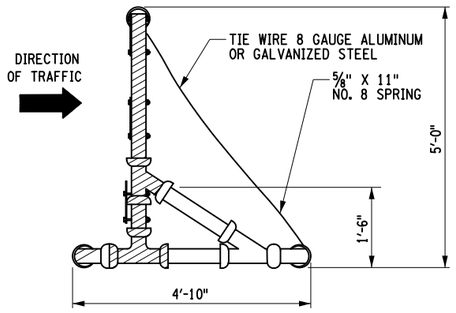
TYPE III CONSTRUCTION BARRICADE
ALTERNATE "A"

NOTES:

1. THE DETAILS AND MATERIALS FOR TYPE III CONSTRUCTION BARRICADES ARE NCHRP 350 APPROVED. IF THE CONTRACTOR ELECTS TO USE AN ALTERNATE DESIGN OR MATERIALS, THE ALTERNATIVE SHALL BE NCHRP 350 APPROVED.
2. THE ALTERNATES SHOWN ON THIS SHEET ARE EQUALLY ACCEPTABLE AND THE CONTRACTOR MAY USE ANY ONE OR A MIXTURE OF TYPES.
3. PANELS SHALL HAVE 6" WIDE REFLECTORIZED ORANGE AND WHITE DIAGONAL STRIPES OF TYPE I OR TYPE III SHEETING SLOPING AT AN ANGLE OF 45° IN ACCORDANCE WITH §729-08, TYPE III CONSTRUCTION BARRICADES. THE STRIPES SHALL SLOPE DOWNWARD TOWARD THE SIDE ON WHICH TRAFFIC IS TO PASS.
4. BALLAST MAY BE PLACED ON THE BASE MEMBERS OF THE BARRICADE. BALLAST SHALL NOT EXTEND INTO THE ACCESSIBLE PASSAGE WIDTH OF 5' WHERE BARRICADES ARE USED TO CHANNELIZE PEDESTRIANS.
5. PANELS FOR BARRICADES MAY BE WOOD, PLASTIC, OR ALUMINUM. PIPE FOR BARRICADES SHALL USE SDR SIZES 21 TO 32.5.
6. WHEN THE BATTERY AND LIGHT WEIGH MORE THAN 7 LBS, THE BATTERY SHALL BE MOUNTED ON THE BOTTOM OF THE BARRICADE.
7. ALL PIPES SHALL BE WHITE. WHITE FITTINGS ARE PREFERRED, BLACK MAY BE USED. ALL JOINTS IN ALTERNATE "A" SHALL BE GLUED WITH A SOLVENT CEMENT COMPATIBLE WITH THE P.V.C. PIPE.
8. ALL JOINTS IN ALTERNATE "B" SHALL BE FREE TO SEPARATE UPON VEHICLE IMPACT. SHADED PIPES AND FITTINGS SHALL BE TIED TOGETHER WITH A MINIMUM $\frac{3}{16}$" DIA. NYLON, OR EQUIVALENT ROPE THREADED INTO THE PIPE AND FITTING INTERIOR.
9. IF BARRICADES ARE USED TO TEMPORARILY CHANNELIZE PEDESTRIANS, THERE SHALL BE A CONTINUOUS DETECTABLE BOTTOM AND TOP RAILS WITH NO GAP BETWEEN INDIVIDUAL BARRICADES TO BE DETECTABLE TO BLIND OR VISUALLY IMPAIRED USERS OF LONG CANES. THE BOTTOM OF THE BOTTOM RAIL SHALL BE NO HIGHER THAN 2" ABOVE THE GROUND AND THE TOP OF THE TOP RAIL SHALL BE NO LOWER THAN 3' ABOVE THE GROUND.



DETAILS FOR FASTENING LIGHTS ON TOP OF BARRICADE



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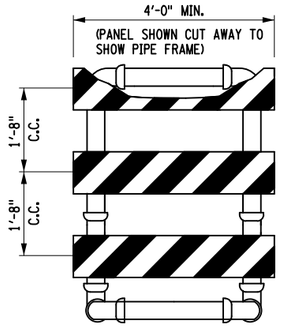

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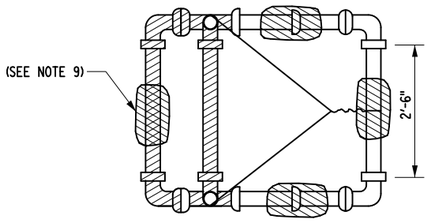

TYPE III CONSTRUCTION BARRICADE
ALTERNATE "B"

NEW YORK STATE OF OPPORTUNITY. **Department of Transportation**

U.S. CUSTOMARY STANDARD SHEET

WORK ZONE TRAFFIC CONTROL
TYPE III CONSTRUCTION BARRICADES
(SHEET 1 OF 2)

APPROVED DECEMBER 2, 2021

Robert Limoges

ROBERT LIMOGES, P.E.
DIRECTOR, OTSM

ISSUED UNDER EI 21-028

619-002

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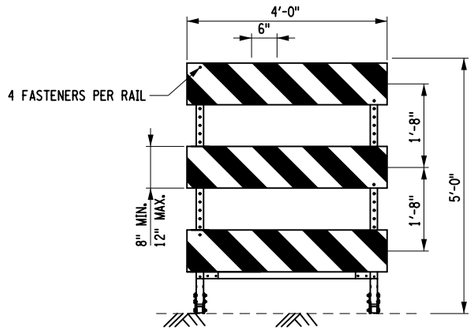

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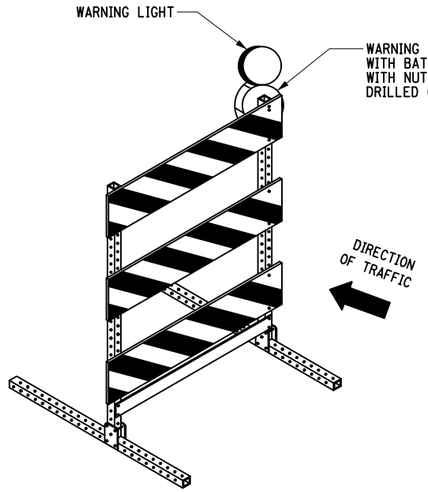


WARNING LIGHTS WEIGHING NOT MORE THAN 7 POUNDS WITH BATTERIES, MAY BE MOUNTED WITH A ½" BOLT, WITH NUT & WASHER, PLACED THROUGH A 9/16" HOLE DRILLED OR PUNCHED 1¼" FROM THE TOP OF THE UPRIGHT.

DETAIL FOR FASTENING LIGHT ON TOP OF BARRICADE

NOTES:

1. THE DETAILS AND MATERIALS FOR TYPE III CONSTRUCTION BARRICADES ARE NCHRP 350 APPROVED. IF THE CONTRACTOR ELECTS TO USE AN ALTERNATE DESIGN OR MATERIALS, THE ALTERNATIVE SHALL BE NCHRP 350 APPROVED.

2. THE ALTERNATES SHOWN ON THIS SHEET ARE EQUALLY ACCEPTABLE AND THE CONTRACTOR MAY USE ANY ONE OR A MIXTURE OF TYPES.

3. PANELS SHALL HAVE 6" WIDE REFLECTORIZED ORANGE AND WHITE DIAGONAL STRIPES OF TYPE I OR TYPE III SHEETING SLOPING AT AN ANGLE OF 45°, IN ACCORDANCE WITH §729-08. THE STRIPES SHALL SLOPE DOWNWARD TOWARD THE SIDE ON WHICH TRAFFIC IS TO PASS.

4. BALLAST MAY BE PLACED ON THE BASE MEMBERS OF THE BARRICADE. BALLAST SHALL NOT EXTEND INTO THE ACCESSIBLE PASSAGE WIDTH OF 5' WHERE BARRICADES ARE USED TO CHANNELIZE PEDESTRIANS.

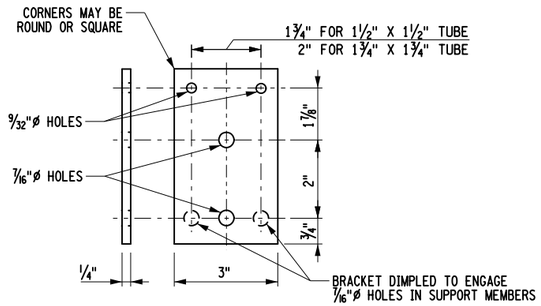
5. PANELS FOR BARRICADES MAY BE WOOD, PLASTIC, OR ALUMINUM.

6. WHEN THE BATTERY AND LIGHT WEIGH MORE THAN 7 LBS, THE BATTERY SHALL BE MOUNTED AT THE BOTTOM OF THE BARRICADE.

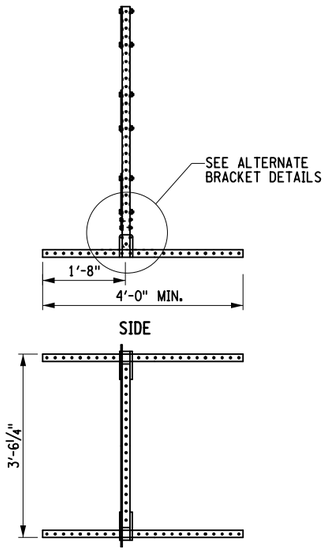
7. ALTERNATE "M" BARRICADES SHALL BE EXTENDED WITH INTERNAL SPLICE MEMBERS. THE INTERNAL SPLICE MEMBERS SHALL BE ONE 1 FOOT LENGTHS OF SQUARE STEEL TUBING INSERTED 6" INTO EACH UPRIGHT. THE EXTENSION SHALL THEN BE PLACED OVER THE TOP OF THE INTERNAL SPLICE MEMBER. THE EXTENSION AND INTERNAL SPLICE MEMBER SHALL BE HELD IN PLACE WITH ⅜" BOLTS WITH NUTS AND WASHERS PLACED 4"(±1") ABOVE AND BELOW THE JOINT FORMED BY THE EXTENSION. THE INTERNAL SPLICE MEMBERS SHALL BE ONE OF THE FOLLOWING SIZES DEPENDING UPON THE TUBING USED TO FABRICATE THE BARRICADE. GAUGES FOR SQUARE TUBES SHALL BE UNITED STATES STANDARD GAUGE.

BARRICADE MEMBERS	INTERNAL SPLICE MEMBERS
12 GAUGE 1¾" X 1¾"	12 GAUGE 1½" X 1½"
14 GAUGE 1¾" X 1¾"	14 GAUGE 1½" X 1½"
12 GAUGE 1½" X 1½"	12 GAUGE 1¼" X 1¼"

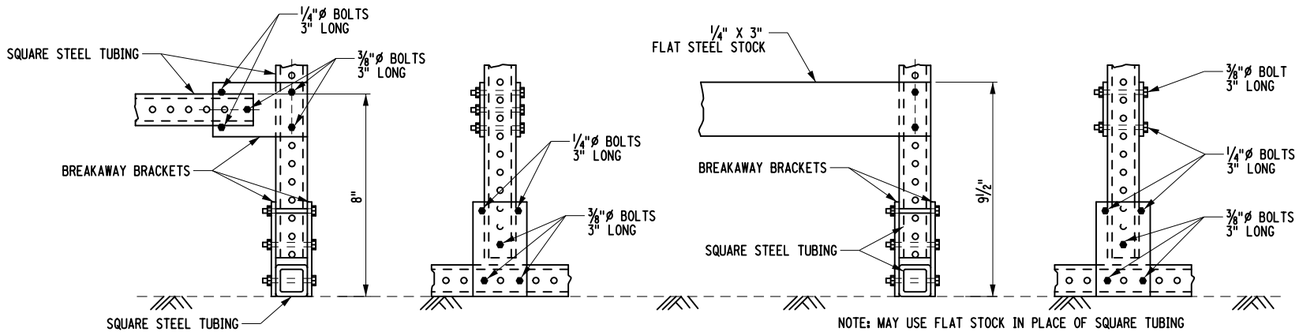
8. IF BARRICADES ARE USE TO TEMPORALLY CHANNELIZE PEDESTRIANS, THERE SHALL BE CONTINUOUS DETECTABLE BOTTOM AND TOP RAILS WITH NO GAP BETWEEN INDIVIDUAL BARRICADES, TO BE DETECTABLE TO BLIND OR VISUALLY IMPAIRED USERS OF LONG CANES. THE BOTTOM OF THE BOTTOM RAIL SHALL BE NO LOWER THAN 2" ABOVE THE GROUND SURFACE. THE TOP OF THE TOP RAIL SHALL BE NO LOWER THAN 3' ABOVE THE GROUND SURFACE.



BRACKET DETAIL



TYPE III CONSTRUCTION BARRICADE ALTERNATE "M"



ALTERNATE BRACKET DETAIL

NOTE: MAY USE FLAT STOCK IN PLACE OF SQUARE TUBING

NOTE: SQUARE STEEL TUBING SHALL MEET ONE OF THE FOLLOWING MATERIAL REQUIREMENTS:

12 GAUGE 1¾" X 1¾", ASTM A653
12 GAUGE 1½" X 1½", ASTM A653
14 GAUGE 1¾" X 1¾", ASTM A1011
ALL BOLTS ARE A325 OR EQUIVALENT BOLTS

NEW YORK STATE OF OPPORTUNITY. **Department of Transportation**

U.S. CUSTOMARY STANDARD SHEET

WORK ZONE TRAFFIC CONTROL TYPE III CONSTRUCTION BARRICADES (SHEET 2 OF 2)

APPROVED DECEMBER 2, 2021

Robert Limoges
ROBERT LIMOGES, P.E.
DIRECTOR, OTSM

ISSUED UNDER EI 21-028

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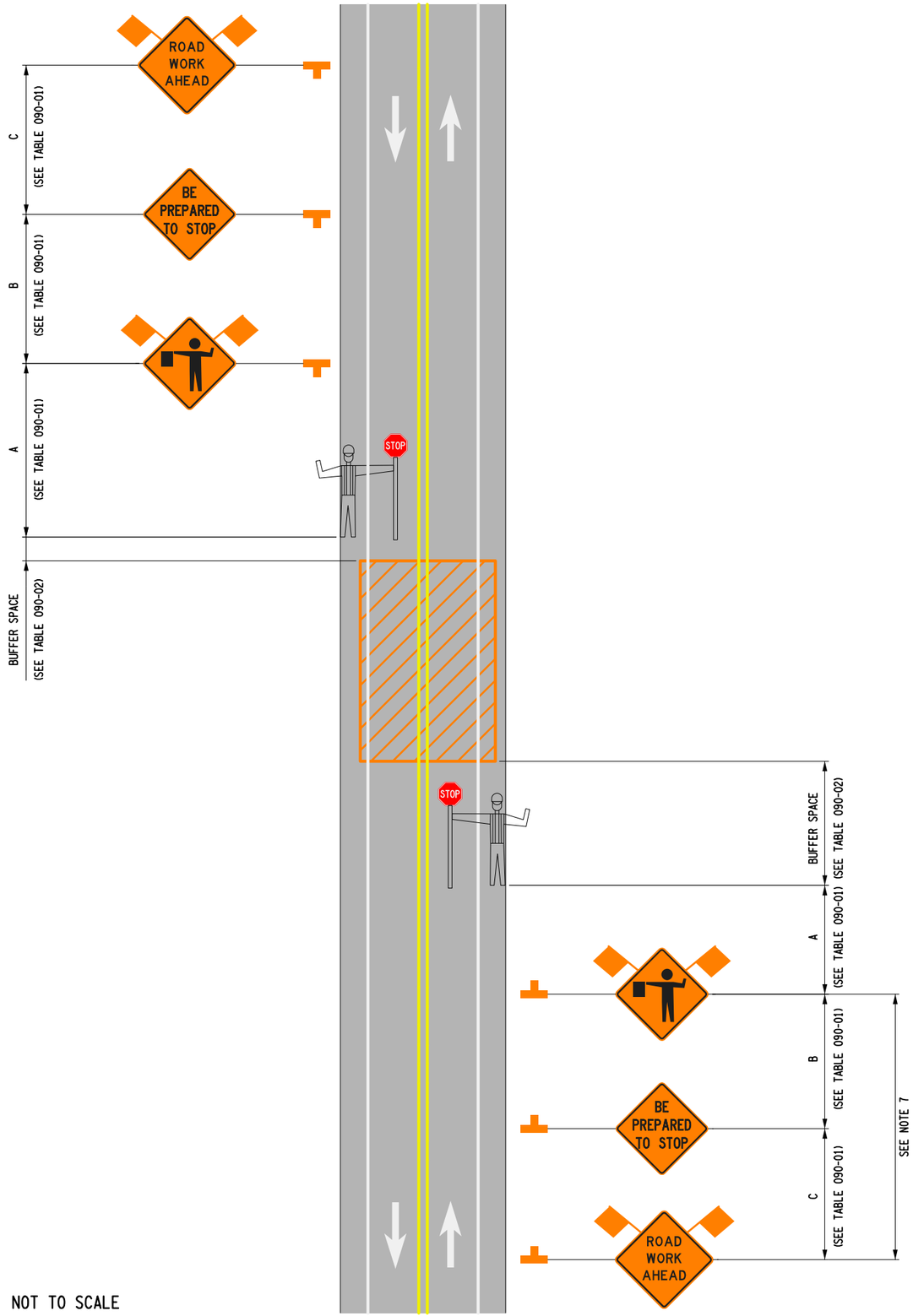

NOT TO SCALE

TABLE 090-01: ADVANCE WARNING SIGN SPACING					
ROAD TYPE	DISTANCE BETWEEN SIGNS			SIGN LEGEND	
	A (FT.)	B (FT.)	C (FT.)	XX	YY
URBAN (≤ 30 MPH•)	100	100	100	AHEAD	AHEAD
URBAN (35-40 MPH•)	200	200	200	AHEAD	AHEAD
URBAN (≥ 45 MPH•)	350	350	350	1000 FT.	AHEAD
RURAL	500	500	500	1500 FT.	1000 FT.

• PRECONSTRUCTION POSTED SPEED LIMIT

TABLE 090-02: LONGITUDINAL BUFFER SPACE	
PRECONSTRUCTION POSTED SPEED LIMIT (MPH)	DISTANCE (FT.)/ * OF SKIP LINES
25	155/4
30	200/5
35	250/6
40	305/8
45	360/9
50	425/11
55	495/13

TABLE 090-03: REQUIRED SIGN SIZE•		
SIGN	NON-FREEWAY	FREEWAY
W3-4	36x36	48x48
W20-1	36x36	48x48
W20-7	36x36	48x48
WARNING FLAG	18x18	18x18
•FREEWAY SIZES MAY BE USED ON NON-FREEWAY, IF SPACE CONSTRAINTS DO NOT EXIST.		

NOTES:

1. DURATION OF THE CLOSURE SHALL NOT EXCEED 5 MINUTES.
2. IN URBAN CONDITIONS, ADVANCE WARNING SIGN SPACINGS MAY BE ADJUSTED IN ORDER TO ACCOMMODATE SIDE STREETS AND DRIVEWAYS. IF THERE IS A CONFLICT, MOVE THE SIGN UPSTREAM.
3. FLAGGER SYMBOL SIGN (W20-7) AND "BE PREPARED TO STOP" (W3-4) SHALL BE REMOVED, COVERED OR TURNED AWAY FROM ROAD USERS WHEN FLAGGING OPERATIONS ARE NOT OCCURING.
4. FOR MULTI LANE ROADWAYS, A SITE SPECIFIC PLAN IS REQUIRED ILLUSTRATING PROPOSED STRATEGIES / SIGNAGE TO REDUCE THE ROAD TO A SINGLE LANE ON EACH APPROACH TO THE WORK AREA.
5. TRAFFIC IN BOTH DIRECTIONS WILL BE STOPPED FOR THE ENTIRE DURATION OF THE WORK. THE WORK SHALL BE SUSPENDED DURING PERIODS OF POOR VISIBILITY AND DURING PEAK HOURS.
6. WORK SHOULD BE SCHEDULED DURING NON-PEAK HOURS.
7. PRIOR TO PLACING THE ADVANCE WARNING SIGNS, CONSIDERATION NEEDS TO BE GIVEN TO THE EXPECTED VOLUME OF TRAFFIC THAT NEEDS TO BE HELD AND DISTANCES B AND C INCREASED IF NEEDED.

W3-4

WORK AREA

W20-7

W20-1

FLAGGER

NEW YORK STATE OF OPPORTUNITY. Department of Transportation

U.S. CUSTOMARY STANDARD SHEET

WORK ZONE TRAFFIC CONTROL TWO-LANE TWO-WAY ROADWAY TEMPORARY ROAD CLOSURE

APPROVED DECEMBER 2, 2021

Robert Limoges

ROBERT LIMOGES, P.E.
DIRECTOR, OTSM

ISSUED UNDER EI 21-028

619-090

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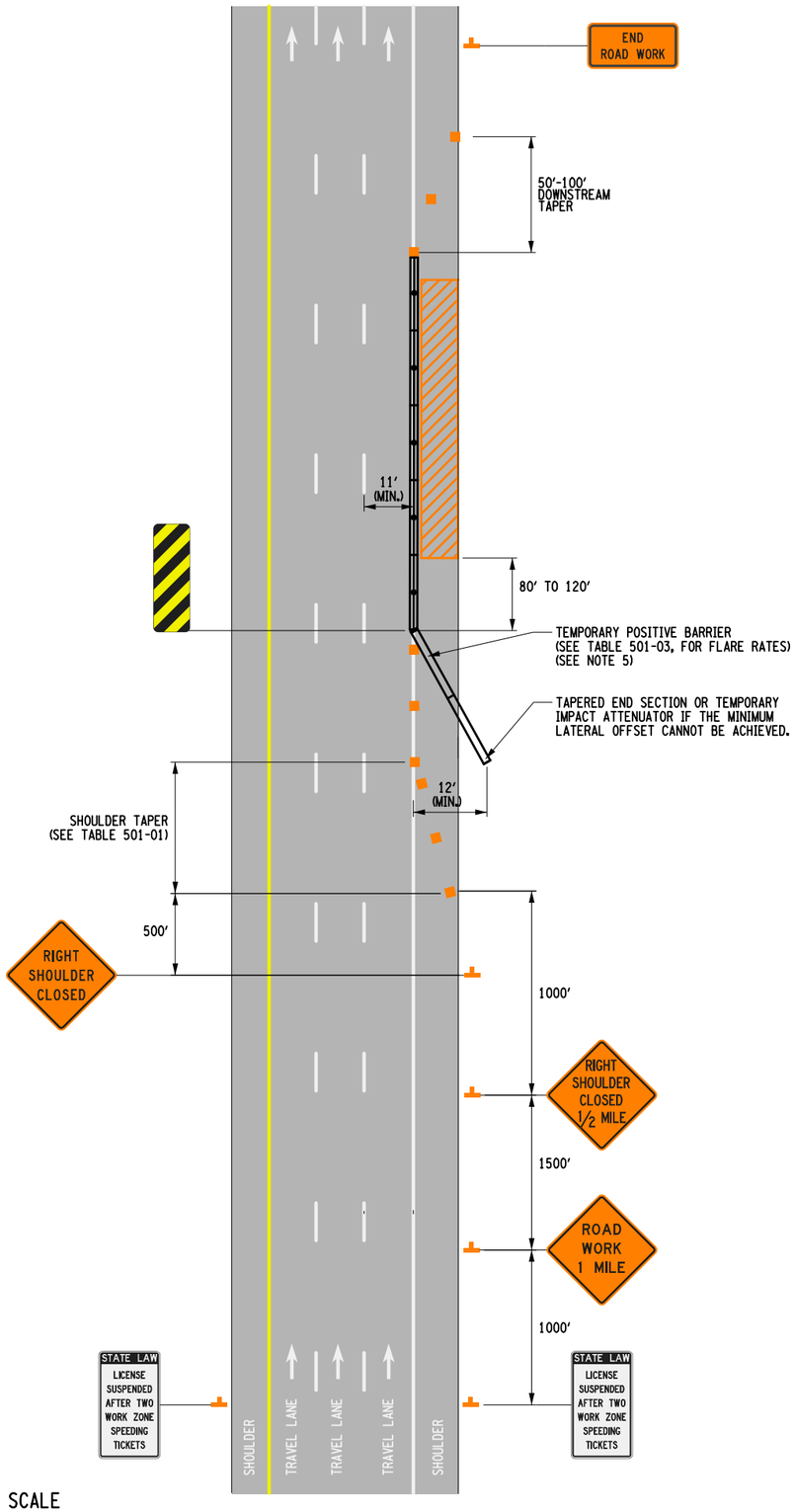

NOT TO SCALE

NOTES:

1. LONG-TERM IS STATIONARY WORK THAT OCCUPIES A LOCATION MORE THAN 3 CONSECUTIVE DAYS.

2. LEFT SHOULDER CLOSURES ARE SYMMETRICAL. SUBSTITUTE LEFT SHOULDER CLOSED SIGNS (W21-5bL AND W21-5aL), AND OBJECT MARKER (OM3-L) FOR RIGHT SHOULDER CLOSED SIGNS (W21-5bR AND W21-5aR), AND OBJECT MARKER (OM3-R).

3. XX IS THE EXPECTED OVERALL LENGTH OF THE OPERATION TO BE COMPLETED WITHIN THE WORK DAY. A SUPPLEMENTAL DISTANCE PLAQUE W7-3a SHALL BE USED WITH SIGN W20-1 WHEN THE DISTANCE BETWEEN THE ADVANCE WARNING SIGNS AND WORK MAY BECOME GREATER THAN 2 MILES AS A RESULT OF THE FOLLOWING SITUATIONS:
   - •MULTIPLE WORK LOCATIONS ARE ANTICIPATED WITHIN XX MILES FROM W20-1 SIGN
   - •WORK AREA WILL BE RELOCATED DURING THE DURATION OF THE WORK WITHIN XX MILES FROM THE W20-1 SIGN

THE SUPPLEMENT SIGN W7-3a SHALL INDICATE THE MAXIMUM ANTICIPATED DISTANCE BETWEEN THE W20-1 SIGN AND THE FARTHEST WORK LOCATION.

4. WHEN MULTIPLE WORK LOCATIONS EXIST WITHIN XX MILES FROM THE W20-1 SIGN. A G20-1 SIGN SHALL BE PLACED EVERY TWO MILES INDICATING THE DISTANCE FROM THE SIGN TO THE FARTHEST WORK LOCATION.

5. THE TEMPORARY POSITIVE BARRIER SHALL NOT BE PLACED ALONG THE MERGING TAPER. THE SHOULDER SHALL BE CLOSED USING CHANNELIZING DEVICES.

NOTES ON NIGHTTIME WORK:

N1. WORK OCCURRING AFTER SUNSET AND BEFORE SUNRISE WILL BE CONSIDERED NIGHTTIME OPERATIONS.

N2. ALL SIGNS, STOP/SLOW PADDLES AND RED FLAGS USED TO WARN/ALERT/CONTROL TRAFFIC SHALL BE RETROREFLECTIVE.

N3. ALL WORKERS INVOLVED SHALL WEAR PROTECTIVE HELMETS AND NIGHTTIME APPAREL IN ACCORDANCE WITH §107-05A. HIGH VISIBILITY APPAREL AT ALL TIMES.

N4. VEHICLES OPERATING ON THE PAVEMENT OF A CLOSED ROADWAY OR TRAVEL LANE SHALL DISPLAY ROTATING AMBER BEACONS OR FLASHING LED BEACONS AT ALL TIMES.

N5. LEVEL I ILLUMINATION SHALL BE PROVIDED NEAR THE BEGINNING OF LANE CLOSURE TAPERS AND AT ROAD CLOSURES, INCLUDING THE SETUP AND REMOVAL OF THE CLOSURE TAPERS.

N6. LEVEL II ILLUMINATION SHALL BE PROVIDED FOR FLAGGING STATIONS, ASPHALT PAVING, MILLING, AND CONCRETE PLACEMENT AND/OR REMOVAL OPERATIONS, INCLUDING BRIDGE DECKS, 50 FEET AHEAD OF AND 100 FEET BEHIND A PAVING OR MILLING MACHINE.

N7. LEVEL III ILLUMINATION SHALL BE PROVIDED FOR PAVEMENT OR STRUCTURAL CRACK FILLING, JOINT REPAIR, PAVEMENT PATCHING AND REPAIRS, INSTALLATION OF SIGNAL EQUIPMENT OR OTHER ELECTRICAL/MECHANICAL EQUIPMENT, AND OTHER TASKS INVOLVING FINE DETAILS OR INTRICATE PARTS AND EQUIPMENT.

N8. ALL LIGHTING SHALL BE DESIGNED, INSTALLED, AND OPERATED TO AVOID GLARE THAT AFFECTS TRAFFIC ON THE ROADWAY OR THAT CAUSES ANNOYANCE OR DISCOMFORT FOR RESIDENCES ADJOINING THE ROADWAY.

N9. PRIOR TO THE START OF NIGHTTIME OPERATIONS, A WRITTEN NIGHTTIME OPERATIONS AND LIGHTING PLAN IS REQUIRED FOR APPROVAL.

N10. SEE NIGHTTIME SAFETY BULLETIN, HDM §16.5.7, & STANDARD SPECIFICATIONS §619 FOR ADDITIONAL REQUIREMENTS AND CONSIDERATIONS.

OM3-R
(TYPE 3 OBJECT MARKER
RECOMMENDED)

RIGHT SHOULDER CLOSED — W21-5aR

RIGHT SHOULDER CLOSED 1/2 MILE — W21-5bR

STATE LAW: LICENSE SUSPENDED AFTER TWO WORK ZONE SPEEDING TICKETS — NYR9-11

ROAD WORK NEXT XX MILES — G20-1 (SEE NOTE 4)

TEMPORARY POSITIVE BARRIER WITH WARNING LIGHTS

END ROAD WORK — G20-2
THIS SIGN SHALL BE LOCATED A MINIMUM DISTANCE OF 80 FT. AND MAXIMUM OF 400 FT. PAST THE END OF THE DOWNSTREAM TAPER

ROAD WORK 1 MILE — W20-1

NEXT XX MILES — W7-3a (SEE NOTE 3)

WORK AREA

CHANNELIZING DEVICE (SEE TABLE 501-02)

REFER TO SHEET 2 OF 2 FOR ALL TABLES

NEW YORK STATE OF OPPORTUNITY. Department of Transportation

U.S. CUSTOMARY STANDARD SHEET

WORK ZONE TRAFFIC CONTROL FREEWAY - SHOULDER ≥ 8 FOOT RIGHT SHOULDER CLOSURE LONG TERM OPERATION (SHEET 1 OF 2)

APPROVED DECEMBER 2, 2021

Robert Limoges

ROBERT LIMOGES, P.E.
DIRECTOR, OTSM

ISSUED UNDER EI 21-028

619-501

FILE NAME = 619-501-1.dgn
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TABLE 501-01: LONGITUDINAL BUFFER SPACE AND TAPER LENGTHS

PRECONSTRUCTION POSTED SPEED LIMIT (MPH)	LONGITUDINAL BUFFER SPACE DISTANCE (FT.)/ * OF SKIP LINES	TAPER LENGTH: L (FT.)/ * OF SKIP LINES/ * OF CHANNELIZING DEVICES			SHOULDER TAPER LENGTH: L/3 (FT.)/ * OF SKIP LINES/ * OF CHANNELIZING DEVICES		
		FOR LANE WIDTH IN FT. (LATERAL SHIFT OF TRAFFIC FLOW PATH)			FOR SHOULDER WIDTH		
		10	11	12	≤ 4 FT.	5 - 7 FT.	≥ 8 FT.
45	360/9	440/11/12	520/13/14	560/14/15	80/2/3	80/2/3	120/3/4
50	425/11	520/13/14	560/14/15	600/15/16	80/2/3	120/3/4	160/4/5
55	495/13	560/14/15	600/15/16	680/17/18	80/2/3	120/3/4	160/4/5
65	645/16	640/16/17	720/18/19	800/20/21	80/2/3	160/4/5	200/5/6

TABLE 501-02: CHANNELIZING DEVICE APPLICATION FOR LONG-TERM STATIONARY WORK ZONES

WORK ZONE PROVISIONS	MAXIMUM DEVICE SPACING (CENTER TO CENTER)	MUTCD COMPLIANT CHANNELIZING DEVICE								
LONG-TERM STATIONARY WORK ZONES INVOLVE WORK THAT OCCUPIES A LOCATION FOR MORE THAN 3 CONSECUTIVE DAYS		DRUMS	STANDARD CONES	TALL CONES	EXTRA TALL CONES	TEMPORARY TUBULAR MARKERS	INTERIM TUBULAR MARKERS	VERTICAL PANELS	OVERSIZED VERTICAL PANELS	TYPE III BARRICADES
SHOULDER/MERGING/ SHIFTING TAPERS	20 FT.	X							X	
	40 FT.	X							X	
REMOVAL OF EXISTING GUIDE RAIL	80 FT.	X		X	X	X		X	X	O
	40 FT.									

NOTES: X= ALLOWED, BLANK = NOT ALLOWED, O = OPTIONAL
1. - A TYPE 1 OBJECT MARKER MAY BE USED IN LIEU OF CHANNELIZING DEVICE.
2. - CHANNELIZING DEVICES SHALL BE EQUIPPED WITH A FLASHING WARNING LIGHT.

TABLE 501-03: FLARE RATES FOR POSITIVE BARRIER

TYPE OF POSITIVE BARRIER	POSTED SPEED LIMIT		
	50 MPH	55 MPH	65 MPH
TEMPORARY POSITIVE BARRIER	14:1	16:1	20:1
BOX BEAM OR HEAVY POST CORRUGATED BEAM	11:1	12:1	15:1

TABLE 501-04: REQUIRED SIGN SIZES•

SIGN	NON-FREEWAY	FREEWAY
G20-1	36x18	48x24
G20-2	36x18	48x24
NYR9-11	24x42	48x48
W7-3a	24x18	36x30
W20-1	36x36	48x48
W21-5aR	36x36	48x48
W21-5bR	36x36	48x48
WARNING FLAG	18x18	18x18

•FREEWAY SIZES MAY BE USED ON NON-FREEWAY, IF SPACE CONSTRAINTS DO NOT EXIST.

NEW YORK STATE OF OPPORTUNITY. Department of Transportation

U.S. CUSTOMARY STANDARD SHEET

WORK ZONE TRAFFIC CONTROL FREEWAY - SHOULDER ≥ 8 FOOT RIGHT SHOULDER CLOSURE LONG TERM OPERATION (SHEET 2 OF 2)

APPROVED APRIL 8, 2022

Robert Limoges

ROBERT LIMOGES, P.E.
DIRECTOR, OTSM

ISSUED UNDER EI 22-008

619-501

FILE NAME = 619-501-2.dgn
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Appendix S – Site Specific Health and Safety Plan

CaldwellMarine INTERNATIONAL
A JAG COMPANY

SEGMENT 1 EM&CP
HORIZONTAL DIRECTIONAL DRILLS
AT SHORELINE CROSSINGS

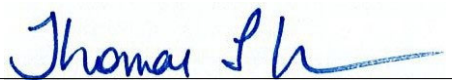
ON THE
CHAMPLAIN HUDSON POWER EXPRESS
SUBMARINE CABLE SYSTEM

Site Specific Health and Safety Plan

REVISION TABLE			
REV. #	**DESCRIPTION**	**DATE**	**APPROVED**
00	Creation	02/17/22	LA
01	Revised after NKT review	05/26/22	LA
02	Revised to Reflect all four (4) HDD EAPs	07/14/22	LA

February 17, 2022

SITE HEALTH & SAFETY PLAN APPROVAL



3/14/2022

Thomas F. Ulisse, Project Executive *Date*
Caldwell Marine

5/14/22

Br t Bailey, Pro1ect Manager *Date*
Caldwell Marine

03/14/22

Lucky Abernathy, EHS Director *Date*
Caldwell Marine

3-11-2022

Kevin J. McMahon, CIH, Prepared By *Date*

Attachments

1. SSHASP Sign-Off Form
2. Job Safety Analyses
3. Safety Data Sheets
4. Directions to Hospital
5. Incident Report
6. CALDWELL MARINE. Corp. Health & Safety Policies and Procedures Manual
7. Confined Space Entry Permit
8. Hot Work Permit
9. Safety Inspection Form
10. Emergency Action Plans
11. Monthly EHS Report
12. Site Specific Safety Orientation Form
13. Lightning Safety Procedures
14. Pandemic Response Plan

PROJECT IDENTIFICATION

Client: NKT

Project Name: CHAMPLAIN HUDSON POWER EXPRESS
Site Location: Stoney Point, NY Congers,
NY Contractor: CALDWELL MARINE.
CALDWELL MARINE. Project Manager:
CALDWELL MARINE. Project Engineer:
CALDWELL MARINE. Site Superintendent:
CALDWELL MARINE. Site Safety Officer:

1.1 GENERAL SCOPE OF WORK

The work to be undertaken is associated with State of New York Public Service Commission Case 10-T-0139 for the Champlain Hudson Power Express project for the construction of a 1250 MW high voltage direct current circuit from the Canadian Border to New York City. The cable route extends approximately 330 miles over land and marine pathways.

For informational purposes the EM&CP process for this project will be divided into multiple segments to allow for approvals of work supporting the overall project schedule for completion.

Caldwell Marine International, LLC (CMI) will utilize a variety of heavy equipment including excavators/loaders, barges, crew boats, HDD rig, mud mixing equipment, separation plant, etc. and other equipment and hand tools during this project.

The drilling aspect of the operation will be performed by Huxted Trenchless, LLC (HUX). Caldwell Marine International, LLC (CMI) will provide marine support, permanent materials, supervision, and management of the operation.

2 INTRODUCTION

2.1. SCOPE & APPLICATION OF SSHASP

The purpose of this Site-Specific Health and Safety Plan (SSHASP) is to define the requirements and designate protocols to be followed by CALDWELL MARINE during construction activities on the **Horizontal Directional Drilling at Shoreline Crossings - Segment One EM&CP.**

Applicability extends to CALDWELL MARINE personnel, subcontractors, governmental authorities/officials, and visitors that enter the site while construction activities are occurring. For the purposes of this SSHASP, the term "site" will be used to identify construction areas associated with and around the CALDWELL MARINE work areas.

All site personnel, on-site contractors and subcontractors included (hereafter referred to as "project personnel"), will be provided with a site orientation including the site emergency response procedures and any potential fire, explosion, health, or safety and environmental hazards associated with the operations. The Site Specific Orientation form in *Attachment 12* will be completed for each orientation given. This SSHASP summarizes those hazards, and defines protective measures planned for the site. In the event that other potential hazards arise or are recognized after the project begins, the SSHASP will be updated accordingly as discussed in Section 2.3.

This plan must be reviewed by all project personnel, and an agreement to comply with the requirements contained herein must be signed by all project personnel and visitors who may enter the work areas prior to commencement of work. See *Attachment 1*.

During development of this plan, consideration was given to current safety standards as defined by OSHA; primarily in the Construction Industry Standards, 29 CFR 1926 and General Industry Standards, 29 CFR 1910, as applicable.

In addition to this SSHASP, CALDWELL MARINE. has established a comprehensive Corporate Health & Safety Manual based on past experience, sound engineering practices, employee training and enforcement of Safety and Health regulations, to prevent incidents and injuries. A copy of the Health & Safety Manual will be available on site.

2.2 Key EHS Performance Indicators

Measuring Key Performance Indicators (KPIs) is an important part of ensuring the effectiveness and efficiency of an EHS Management System. These KPIs allow EHS professionals and company leaders to collect data and communicate trends, which can then be used to identify where further improvements are needed.

A key performance indicator is a metric that is tied to a predetermined target and represents how far it exceeds or falls below that target. KPIs provide the company with objective data about their EHS performance, ensuring adequate feedback on the effectiveness of safety initiatives and policies.

KPIs should include leading and lagging indicators of performance to be most effective. KPIs will be developed for this project which include measures of safety performance, e.g., total recordable incident rate, lost time incident rate, number of restricted and days away from work; safety inspections and action items completed; safety training and meetings completed.

The Monthly EHS Report in *Attachment 11* will be completed for each month the project is in the field.

2.3 APPLICABILITY TO VISITORS & AUTHORITIES

In addition to this Site-Specific Health & Safety Plan, visitors to the site will be expected to comply with all Federal and State requirements. All project personnel, visitors, and authorities will provide and care for their own protective equipment or arrange to acquire PPE from their employer.

In the event that any project personnel, visitor, or authority does not adhere to the provisions of the SSHASP, he/she will be requested to leave the work site or area. All non-conformance incidents will be recorded in the log by Site Supervision, or his and will be reported to CALDWELL MARINE management immediately.

2.2. IMPLEMENTATION OF CHANGES TO SSHASP

If the project team determines changes to the SSHASP are required, the SSHASP Revision Form, provided as *Attachment 1*, will be completed. The proposed revision will be reviewed by the CALDWELL MARINE Project Manager and Site Safety Officer (SSO). If the revision is acceptable, it will be signed by the key project personnel and included in the control copy of the SSHASP as maintained by the SSO. In addition, approved SSHASP revisions will be discussed during the next daily safety tailgate meeting by the SSO.

2.4 SAFETY TRAINING & EDUCATION

Training is essential to assure employees or subcontractors recognize the hazards inherent in their work and understand the means and methods used to eliminate or control hazards, including engineering methods, administrative and work practices, warning systems, and personal protective equipment. Training will also be provided

to assure that employees or subcontractors understand the proper use of work equipment and tools and how to maintain the equipment to assure continued safety.

Training will be provided before employees or subcontractors are assigned to new or different work activities and periodically to re-enforce their awareness. Where required, annual refresher training will be provided. Management is responsible for assuring safety training is made available to all employees or subcontractors as required by their specific work activities. It is the responsibility of Site Superintendent (SS) to assure that employees or subcontractors have the required training to perform their work safely.

All employees and supervision will be required to attend New Hire/ Supervisor Training. This will include HSE induction and specific HSE training appropriate to the work being performed.

Employees or subcontractors will be required to have attended an initial OSHA 10-Hour class. Proof of training must be available in the form of an OSHA 10-hour "wallet" card, or a certificate of attendance submitted by the company providing the training (they must be an OSHA accepted trainer). Note: At the discretion of SSO, company employees who do not possess an OSHA 10hr card with be provided a reasonable amount of time to meet this requirement.

Initial and periodic refresher training will include at a minimum the following topics:

- Employee conduct
- Inspection of safety devices and protective equipment
- Exposure to hazardous substances
- Clothing
- Personal protective equipment
- Injuries and incident reporting
- Emergency information
- Housekeeping
- Smoking Policy
- Grounding
- Fall protection
- Excavation Safety
- Ladder Safety
- Welding, burning, cutting (i.e., Hot Work)

Weekly "toolbox" talks will be held to discuss safety requirements for current work and to "refresh" awareness of general safety topics. The Site Superintendent in conjunction with safety personnel will select the most appropriate topics to review during the "toolbox" talks. Attendance at these meetings mandatory. Attendance will be taken and records maintained.

3 IDENTIFICATION OF KEY PERSONNEL AND MANAGEMENT

3.1 KEY SITE PERSONNEL CONTACTS

Title	Person	Contact Phone Numbers
CALDWELL MARINE Project Executive (PE)	*Thomas F. Ulisse*	(732) 620-3470
CALDWELL MARINE Project Manager (PM)	*Brett Bailey*	(732) 620-8197
(CALDWELL MARINE.) Site Superintendent(s) (SS)	*Paul Larrabee - Water Side* *Brett Bryant - Land Side*	(732) 620-3938 (732) 620-4214
(CALDWELL MARINE.) Site Safety Officer(s) (SSO)	*Lucky Abernathy* (TBD)	(908) 433-3755 (TBD)

3.2 ROLES AND RESPONSIBILITIES

The Site Superintendent (SS) has overall responsibility for ensuring that the project is implemented according to specifications. As the representative of the general contractor, the Project Superintendent has the responsibility to follow this SSHASP and implement the steps necessary to protect the health and safety of workers on site, including review of subcontractors' safety performance. The SS will establish and ensure compliance with site control areas and procedures and coordinate these responsibilities with the Site Safety Officer. The SS has responsibility for all field activities and reviews safe work practices. The SS also assures the safety of visitors who enter the site. The SS maintains communication with the project manager, site owner representatives and other client representative(s) as required.

The SSO and SS constitute the Safety Team and are responsible for day-to-day implementation of the SSHASP and have full authority regarding health and safety issues. The SSO will make recommendations to protect the health and safety of site personnel.

It is the responsibility of all employees for the recognition, evaluation and control of potential hazards that may exist at the site during the scope of the project covered by this SSHASP. As part of these responsibilities, the Health and Safety team is responsible for day-to-day implementation of health and safety activities. The daily activities include, but are not limited to, the following:

- Implementing this SSHASP
- Completing daily safety observations

- Record keeping related to worker/visitor qualifications, medical surveillance, training and exposure/air monitoring
- Selection, use and modifications to personal protective equipment
- Communication of new hazards and appropriate controls

No activities are to take place on site without the knowledge of the SSO. In the event that the SSO is unavailable, the Site Superintendent will temporarily perform the duties of the SSO.

3.3 Subcontractor Responsibilities

OSHA Rules of Construction (29 CFR 1926.16)

Subcontractors will be pre-qualified to assure they meet the safety performance criteria, have policies and procedures for the tasks undertaken, and meet the training requirements for this project. All of the subcontractor's documentation will be reviewed and approved prior to being allowed to start their work.

Subcontractors are expected to follow all requirements of this SSHASP, their own SSHASP, as appropriate, and all Federal, State, and local health and safety requirements. If non-compliance or unsafe conditions or practices are observed, the work will be stopped. The subcontractor representative will be notified and corrective action will be required. Work will not be allowed to continue until satisfactory mitigations have been implemented. The subcontractor will determine and implement necessary controls and corrective actions and provide documentation that corrective actions were taken within necessary timeframes. If repeat non-compliance/unsafe conditions are observed, the subcontractor will be required to stop affected work until adequate corrective measures are implemented.

4 HAZARD ANALYSIS/RISK ASSEMENT

OSHA Recommended Practices for Safety and Health Programs

Work activities on this project have the potential to present hazards which can result in serious risks for injuries and/or illnesses to workers. This section reviews the potential hazardous materials and physical hazards that may be encountered when performing activities on this project and the measures to be taken to reduce the risks. Individual Job Hazard Analyses for each of the major tasks are provided in *Attachment 3*.

4.1.1 Hazardous Substances

As with any construction site, potentially hazardous materials can be generated by typical worksite activities. Some common types may include:

- Carbon monoxide from vehicle and generator exhaust
- Fuel and lubricants (e.g., gasoline, diesel fuel, hydraulic oil)
- Miscellaneous hazardous materials, e.g., solvents, cleaning agents, pesticides, etc.)
- Silica from concrete cutting, breaking and demolition operations.

Exposures will be evaluated, and controls implemented to assure that site personnel are not exposed above allowable exposure limits to any hazardous materials used or generated on site. Engineering, administrative and personal protective equipment will be used to assure site personnel are protected. Respiratory protection will be provided, if deemed necessary, in accordance with 29 CFR 1926.134 and Section 73 of the CALDWELL MARINE.'S Corporate Health & Safety Manual, (See *Attachment 6*).

Harmful silica dust may be generated from concrete cutting, breaking, demolition or other activities with materials containing crystalline silica and can cause lung damage and long-term illness. Exposure to silica containing materials, if applicable, will be assessed and controlled to avoid exposure. Wet techniques, and isolation barriers, if feasible, will be used to reduce generation of dust. Site personnel involved in these activities will be provided with adequate respiratory protection, e.g., N-95 or filtering face piece respirators with P-100 cartridges.

As this site may utilize various contractors/subcontractors, CALDWELL MARINE will coordinate among its contractors/subcontractors to assure that all contractors receive information about the hazardous materials that may be used on this project. All contractors/subcontractors will be required to submit Safety Data Sheets (SDSs) to CALDWELL MARINE for the chemicals they use on the site so the information may be communicated to all who may be affected. A complete inventory list of chemicals, including quantities of such chemicals that will be on site at all times.

4.1.2 Hazard Communication Program

OSHA Hazard Communication (29 CFR 1926.59)

A Safety Data Sheet (SDS) is required for all hazardous materials brought on site pursuant to 29 CFR 1926.59. The SSO will maintain a central file on site, accessible to all workers, which will contain an inventory of materials and SDSs for hazardous materials on site. See *Attachment 3*.

All site personnel working with hazardous materials will be trained, before first assignment, in accordance with 29 CFR 1926.59.

Each contractor and subcontractor will ensure that initial (at the time of assignment), and periodic, Hazard Communication Training will be provided to all employees or subcontractors regarding the hazardous chemicals in their work area. Whenever a chemical that poses a new or different type of hazard enters the work area it is the responsibility of each supervisor to ensure employees or subcontractors are trained. This training will include (but is not limited to) requirements of this program and a review of the SDS for that product for the following information:

a) Methods of detection and monitoring of the compound (including monitoring devices, appearance and odor).
b) Each physical and health hazard that the material presents.

c) Personal protective equipment, work practices, and emergency procedures (i.e., fire, first aid, chemical spill, etc.) to be followed while handling.
d) The labeling system for hazardous materials will be legible and in English, but for non-English speaking employees or subcontractors the information will be presented in their language, as it relates to the material.
e) Location of the hazard communication program, listing of hazardous materials present, SDS's and host employees or subcontractors can obtain from the Site Safety Officer (SSO) and be uses to review the appropriate hazard information.

A. Task specific procedures for informing employees or subcontractors of the hazards of non-routine tasks, such as equipment maintenance or trailer pesticide application, etc., will be implemented whenever that task involves a hazardous chemical. Each Superintendent is responsible for either training each employee or scheduling such training with a responsible person prior to performing any non-routine task.

B. Training for non-routine tasks will include:

a) Items (a) through (d) above.
b) Special precautions for the non-routine task; and
c) Other company safety procedures which are relevant to the operation, such as Lockout/Tagout and Hot Work Permits, etc.

C. It is the responsibility of the Superintendent to ensure that all employees or subcontractors working on site are informed of any hazardous chemicals that they may be exposed to while working on the project. This information will include:

a) Existing hazardous chemicals
b) Hazardous chemical emissions for processes involved in the work
c) Precautions and personal protective equipment which must be worn in the area
d) Where and how to safely store

D. The Project Manager will be responsible for all actions of the prime contractor employees or subcontractors and will ensure that the subcontractor employees or subcontractors follow all safety precautions that would be used by CALDWELL MARINE employees or subcontractors.

Documentation of Training

Training must include labeling and SDS format including:

- Type of information the employee would expect to see on the new labels, including the Product identifier: how the hazardous chemical is identified. This can be (but is not limited to) the chemical name, code number or batch number. The manufacturer, importer or distributor can decide the appropriate product identifier. The same product identifier must be both on the label and in Section 1 of the SDS (Identification).

- Signal word: used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label. There are only two signal words, "Danger" and "Warning." Within a specific hazard class, "Danger" is used for the more severe hazards and "Warning" is used for the less severe hazards. There will only be one signal word on the label no matter how many hazards a chemical may have. If one of the hazards warrants a "Danger" signal word and another warrants the signal word "Warning," then only "Danger" should appear on the label.

- Pictogram: OSHA's required pictograms must be in the shape of a square set at a point and include a black hazard symbol on a white background with a red frame sufficiently wide enough to be clearly visible. A square red frame set at a point without a hazard symbol is not a pictogram and is not permitted on the label. OSHA has designated eight pictograms under this standard for application to a hazard category.

- Hazard statement(s): describe the nature of the hazard(s) of a chemical, including, where appropriate, the degree of hazard. For example: "Causes damage to kidneys through prolonged or repeated exposure when absorbed through the skin." All of the applicable hazard statements must appear on the label. Hazard statements may be combined where appropriate to reduce redundancies and improve readability. The hazard statements are specific to the hazard classification categories, and chemical users should always see the same statement for the same hazards, no matter what the chemical is or who produces it.

- Precautionary statement(s): means a phrase that describes recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to a hazardous chemical or improper storage or handling.

- Name, address and phone number of the chemical manufacturer, distributor, or importer. How an employee might use the labels in the workplace.

- Explain how information on the label can be used to ensure proper storage of hazardous chemicals.

- Explain how the information on the label might be used to quickly locate information on first aid when needed by employees or subcontractors or emergency personnel.

- General understanding of how the elements work together on a label.

- Explain that where a chemical has multiple hazards, different pictograms are used to identify the various hazards. The employee should expect to see the appropriate pictogram for the corresponding hazard class.

- Explain that when there are similar precautionary statements, the one providing the most protective information will be included on the label.

- Training on the format of the SDS must include information on: standardized 16-section format, including the type of information found in the various sections

- For example, the employee should be instructed that with the new format, Section 8 (Exposure Controls/Personal Protection) will always contain information about exposure limits, engineering controls and ways to protect yourself, including personal protective equipment.

- How the information on the label is related to the SDS

- For example, explain that the precautionary statements would be the same on the label and on the SDS.

  Whenever training is provided to employees or subcontractors or contractors in accordance with this policy, the individual(s) responsible for providing this training will collect the names (printed), signatures and Social Security numbers of all attending individuals, and the dates and times of the training. Utilize the training roster located at the end of this program. Note that OSHA requires the employee's SSN.

  Equipment operators, general laborers, Superintendents and management, etc., must be trained prior to being allowed to participate in or supervise field activities. The training should cover the use of personal protective equipment. The training should also cover work practices which minimize hazardous risks and safe use of engineering controls & equipment.

  Upon completion of training, forward a copy of the training roster and copies of any additional training material used to the Safety Director. Certificates of training and/or wallet cards will be produced and sent back to the location where the training was performed. These should be presented to the employees or

subcontractors for their personal records. Documentation of all training performed will be submitted to human resources for inclusion into the individual's personnel records. Maintain a copy of all training records and certificates at the facility or job site, as a record that training was performed as required by OSHA.

Labeling

It is the responsibility of each employee to ensure that, prior to use, all containers of potentially hazardous chemicals used are labeled, tagged, or marked with:

a) The identity of the hazardous material, i.e., common and/or chemical name, and Chemical Abstract Service (CAS) Registry Number, including the name that appears on the SDS, and;
b) An appropriate hazard warning, which gives an immediate warning and summary of the more important information from the SDS. In those cases where non-English speaking employees or subcontractors are working at jobsites information will be presented in their language also.
c) **Note:** Chemical materials supplied to outside contractors by CALDWELL MARINE must be labeled, tagged, or marked as identified above.

The outside shipping container label may contain the same information as the immediate chemical container unless that label conflicts with the label(s) required by the Department of Transportation (DOT) for the transportation of hazardous materials.

An employee may transfer or place a hazardous chemical into another "secondary use". That "secondary use" container must be labeled immediately to reflect the by the employee who transfers the product.

The contents of a chemical container that is not labeled appropriately may not be used or put into service, unless it is relabeled appropriately, or the user is given specific approval from a responsible person. Labels already on any chemical container at any location, and used for any purpose, may not be removed, or defaced unless the contents of the container changes.

Signs, placards, standard operating procedures (SOP's), or similar written material may be used instead of placing a label on stationary containers, as long as the written document conveys the same information as is required on a label and is readily accessible to each applicable employee during their normal working shift. This alternate labeling procedure will only be used after review by the Safety Director

for each individual situation. Labels will be legible, in English. However, for non-English-speaking employees or subcontractors, information may be presented in their language as well.

4.2 Physical Safety Hazards

OSHA General Duty Clause, OSH Act of 1970, Section 5 (a)(1)

Construction sites may also present numerous potential physical safety hazards. As such, workers must be aware of these hazards and exercise caution at all times. All unsafe conditions must be reported immediately to the SSO. While it is important to identify and be aware of potential physical hazards and the means by which to reduce their risks, not all hazards can be predicted. Although a task-by-task analysis of potential hazards is included in the sections below, the recognition, evaluation, and control of site activities associated with the potential hazards is best accomplished by the development, use, and implementation of standard operating procedures and guidelines, as well as ongoing review of applicable standards and regulations. This Site-Specific Health & Safety Plan, as well as CALDWELL MARINE's Corporate Health and Safety Manual (*Attachment 6*), provide safe operating procedures for activities covered by the scope of work for this project.

This section assesses the physical safety hazards that may be encountered on this project. These include, but are not limited to:

- O Excavations, holes, ditches, trenches and other subsurface work
- O Sharp objects, such as nails, metal piping and shards, and broken glass
- O Slips/Trips/Falls
- O Working near heavy equipment (backhoes, cranes, dump trucks and other material handling equipment), vehicular traffic
- O Lightning
- O Electrical
- O Material handling
- O Hand and power tools
- O Noise
- O Heat and cold stress
- O Fire
- O Confined Space
- O Hot Work

Safety/physical hazards associated with work on this project are presented in detail below.

4.2.1. Electrical

OSHA Electrical (29 CFR 1926, Subpart K)

OSHA Electrical, Wiring design and protection (29 CFR 1926.404)

Overhead power lines, downed electrical wires, and buried cables all pose a danger of shock or electrocution if contacted or severed during site operations. A minimum distance of 10 feet will be present between overhead wires and equipment. This distance will vary according to voltage; the greater the voltage, the greater the clearance between any part of the equipment and the power line Refer to ***Table 4 - Minimum Clearance From Energized Overhead Electrical Lines***. When required, a spotter will be utilized to maintain a safe distance between equipment and overhead wires. The basic rule is "Don't locate equipment in a position where it can come in contact with overhead power lines." Maintain the required distance from the lines. Overhead electrical power lines will be considered energized unless the person owning such line or operating officials of the electric utility supplying the line assures that it is not energized, and it has been visibly grounded.

Table 1 - Minimum Clearance from Energized Overhead Electrical Lines	
Nominal System Voltage	Minimum Rated Clearance
0 to 50 kV	10 Feet (3 m)
50 to 200 kV	15 Feet (4.5 m)
200 to 350 kV	20 Feet (6 m)
350 to 500 kV	25 Feet
500 to 750 kV	35 Feet
751 to 1000 kV	45 Feet
>1000 kV	(as established by the utility owner/operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution).

There are various means of insulating the wires, as well as barriers and alarms that may be available to reduce the risk of injury to workers, but the use of such devices does not change the requirements of any other applicable standards or laws. In addition, these and other measures (such as grounding the equipment itself) may not be fully effective but may create a false sense of security. Only the utility company is authorized to de- energize, insulate, or handle the lines. No one else may attempt these operations.

Electrically powered equipment and tools may also pose a hazard. Whenever possible, workers will use low-voltage equipment with ground-fault circuit interrupters (GFCIs) and watertight, corrosion-resistant connecting cables to help minimize this hazard.

No employee will be permitted to work in the proximity of any part of an electrical power circuit unless the person is protected against electric shock by de-energizing the circuit and grounding it, or it has been locked and tagged out.

4.2.2. Heavy Equipment/Vehicle Traffic

OSHA Equipment (29 CFR 1926.600)
OSHA Operator Training, Certification, and Evaluation (29 CFR 1926.1427)

Considerations for controlling the movement of personnel and equipment in a construction area are vitally important to any project, as injuries may occur while working with or adjacent to such equipment. This category includes all operations that utilize moving heavy equipment: excavators, loaders, graders, dozers, and delivery/supply trucks. Site workers will take every precaution necessary to ensure the

safety of the public and the on-site personnel during traffic movement operations.

Site workers will adhere to all applicable standards and regulations while operating heavy equipment at the site. Operators will be trained and experienced in the use and maintenance of the equipment they are operating. Equipment will be inspected on a daily basis to identify any worn parts, and/or unsafe conditions. Any unsafe equipment will be removed from service until safety defects can be corrected. Equipment operators will not leave their machine unattended while it is running. Keys will be removed when equipment is not in use. All equipment will have electronic backup alarms. Each piece of equipment will be equipped with a minimum 5 lb. ABC fire extinguisher. No vehicles or equipment will be operated in a careless or unsafe manner. Personnel will wear high visibility reflective vests when working around equipment/vehicles. All personnel will stay a minimum of 4 ft clear of the operational area of the equipment.

During construction activities, it is often necessary to have a worker direct the operator. In these cases, close communication between the operator and the laborer is of critical importance. One designated person will give signals to the operator of both equipment and vehicles in the work area. Workers should not take any action unless they have made eye contact with the operator and clearly communicated their intentions. In addition, all machines will be equipped with back-up alarms, which are checked daily and repaired immediately. Truck traffic will be controlled by a competent flagger/spotter, as required.

4.2.3. Material Handling

OSHA Reference 29 CFR 1926.251
OSHA Electrical, Wiring design and protection (29 CFR 1926.404)

Various materials and equipment may be handled manually during project operations. Care should be taken when lifting and handling heavy or bulky items to avoid back and other joint injuries. At induction the following fundamentals will addressed in regard to the proper lifting techniques that are essential in preventing back injuries:

- The size, shape, and weight of the object to be lifted must first be considered. Multiple employees or subcontractors or the use of mechanical lifting devices are required for heavy objects.
- The anticipated path to be taken by the lifter should be considered for the presence of slip, trip, and fall hazards.
- The feet will be placed far enough apart for good balance and stability (typically

shoulder width).

- The worker will get as close to the load as possible. The legs will be bent at the knees.
- The back will be kept as straight as possible and abdominal muscles should be tightened.
- Twisting motions should be avoided when performing manual lifts.
- To lift the object, the legs are straightened from their bending position.
- A worker will never carry a load that cannot be seen over or around.

When placing an object down, the stance and position are identical to that for lifting. The legs are bent at the knees and the object lowered. When two or more workers are required to handle the same object, workers will coordinate the effort so that the load is lifted uniformly and that the weight is equally divided between the individuals carrying the load. When carrying the object, each worker, if possible, will face the direction in which the object is being carried. In handling bulky or heavy items, the following guidelines will be followed to avoid injury to the hands and fingers:

- A firm grip on the object is essential; leather work gloves will be used unless it is a sharp object. If sharp, cut resistant gloves will be used.
- The hands and object will be free of oil, grease, and water which might prevent a firm grip, and the fingers will be kept away from any points that could cause them to be pinched or crushed, especially when setting the object down.
- The item will be inspected for metal slivers, jagged edges, burrs, and rough or slippery surfaces prior to being lifted.

4.2.4 Hand and Power Tools

Hand and power tools will be used for various site activities. Procedures for using hand and power tools are as follows:

- Persons using power tools will be trained in their use.
- Ground Faults must be present on all electrical tools.
- Only tools in good condition will be used.
- Tools will be kept clean.
- Guards and shields will be kept on all tools.
- Air couplings will be secured with pins or tie-wire.
- Non-sparking tools will be used in hazardous areas, i.e., where flammables may be present.
- Task specific eye protection is critical when using power tools. At a minimum, safety glasses will be required during site operations. If projectiles are possible, full-face shields will be utilized in addition to the glasses.

4.2.5 Noise Exposure

OSHA Electrical, Wiring design and protection (29 CFR 1926.404)

Noise is generated during construction activities in such operations as transportation of materials, operation of heavy construction equipment and other construction equipment, e.g., compressors. Noise has been defined as unwanted sounds. The human ear can tolerate a certain amount of sound without any harmful effects. The OSHA standard allows 90 dB (A) for a full 8 hours and for a lesser time when the levels exceed 90 dB (A). It is usually safe to assume that if you need to shout to be heard at arms-length, the noise level is at 90 dB (A) or above. Hearing protection will be utilized by personnel operating or working around construction equipment or power tools or in marked and designated areas.

4.2.6 Excavation Safety/Protection of Underground Facilities

OSHA Specific Excavation Requirements (29 CFR 1926.651)
OSHA Requirements for Protective Systems (29 CFR 1926.652)
Pipeline Awareness Color Code Chart

This section outlines the basic hazards associated with excavation. Section 13 of CALDWELL MARINE's Corporate Health & Safety Manual, incorporated by reference in *Attachment 6* of this SSHASP, provides detailed procedures for excavation and trenching safety.

A competent person will be assigned for each excavation. The competent person will be trained and capable of identifying existing and predictable hazards in the surroundings or working conditions, which are unsanitary, hazardous, or dangerous to employees or subcontractors. The competent person will have the ability and authority to take prompt corrective measures to eliminate these conditions. The competent person will perform the following:

1. Have a complete understanding of the applicable safety standards and any other data provided.
2. Assure the proper locations of underground installations or utilities, and that the proper utility companies have been contacted.
3. Conduct soil classification tests and reclassify soil after any condition changes.
4. Determine adequate protective systems (sloping, shoring, or shielding systems) for employee protection.
5. Conduct all air monitoring for potential hazardous atmospheres if anticipated. Conduct daily and periodic inspections of excavations and trenches. Approve design of structural ramps, if used.

Prior to beginning any excavation work with mechanical equipment, the site must be marked out by the facility owner in compliance with NYS Industrial Code 753. The Site Superintendent will call in for marks At least **2 to 10 working days prior** to any mechanized work (does not include the date of the call) notice must be provided to the One-Call Notification System, which will transmit the project information to involved members so that they can mark the location of any facilities at the excavation site. Call for remarks every 10 days thereafter. The One Call Number inside New York State is

811 or 800-962-7962. Notification of cancellations must be made no later than the day of the scheduled work and no earlier than 24 hours before the scheduled work date. Confirmation numbers will be kept by the Project Manager in the main office on a running log. Dig Safely New York currently allows excavators to submit Survey and Design Requests via Exactix or by calling the operations center at 1-800-962-7962.

Callers must still contact the affected companies directly; however, Dig Safely New York will identify those affected companies and inform them of the design request, and provide the caller with a contact number for those affected companies. These contacts are often engineering departments that may be able to supply "as-built" maps and charts, which are more accurate.

Utility installations, such as sewer, telephone, fuel, electric or water line, etc. that may be encountered during excavation work must be delineated prior to opening an excavation and protected, supported, removed, or relocated as per standards, as directed by the on- site Representative, and as necessary to safeguard workers while the excavation is open.

The primary hazard encountered during soil excavation is the cave in of excavation sides with possible burial or crushing of workers. Causes of cave-ins may include: (a) absence of shoring, (b) misjudgment of stability, (c) defective shoring, and (d) undercut sides. Other potential hazards include: falling during access/egress, while monitoring or dismounting equipment, or stumbling into excavation. An overhead hazard can result from material, tools, rock, and/or soil falling into the excavation. When applicable, adequate shoring or sloping of sides of the excavation will be provided. Excavation/trenches will be inspected daily for changing conditions.

Excavation spoils will be kept at least 2 feet from the sides of trenches. Excavation/trenches will be protected to avoid the possibility of someone falling into them. The use of raised berms, caution signs and caution tape will be instituted to protect both the public and other personnel on the site. The excavation area will be delineated with caution tape during operations and barricaded/secured with safety fence at the end of each workday. Adequate means of exit, such as ladders, steps, ramps, or other safe means of egress, will be provided and be within 25 feet of lateral travel.

Where personnel are required to enter excavations over 4 ft in depth, sufficient stairs, ramps, or ladders will be provided to require no more than 25 ft. of lateral travel. At least two means of exit will be provided for personnel working in excavations. Where the width of the excavation exceeds 100 ft. two or more means of exit will be provided on each side of the excavation.

Adequate precautions will be taken to avoid creating hazards due to accumulating water. Surface water will be diverted to prevent it from entering the excavation. Site personnel will not be allowed to work in excavations with accumulating water unless specific measure is taken to correct conditions. The competent person will monitor conditions and assure adequate measures are taken.

Support systems such as shoring, bracing, or underpinning will be used to assure the

stability of adjacent structures, sidewalks, and pavements to protect site personnel.

Barricades, guardrail systems, fences or similar equipment will be used to guard open excavations that are over 6 feet in depth to protect site personnel from falls.

Not expected for this project, however, for trenches over 20 feet in depth a shop drawing and design calculations, certified by a Professional Engineer, will be provided.

4.2.7 Slips/Trips/Falls

OSHA Walking-Working Surfaces (29 CFR 1910.28)
OSHA Fall Protection (29 CFR 1926, Subpart M)

Slip/trip/hit/fall injuries are among the most frequent of all injuries to workers. They occur for a wide variety of reasons, but all injuries can be prevented by the following prudent practices:

- Spot-check the work area to identify hazards.
- Establish and utilize a pathway, which is most free of slip and trip hazards.
- Beware of trip hazards such as wet floors, slippery floors, and uneven surfaces or terrain.
- Carry only loads, that you can see over.
- Keep work areas clean and free of clutter, especially in storage rooms and walkways.
- Communicate hazards to on-site personnel
- Secure all loose clothing, ties, and remove jewelry while around machinery.
- Report and/or remove hazards.
- Keep a safe buffer zone between workers using equipment and tools

Fall protection is required at elevations of **6 ft. or greater**. Examples of areas where employees or subcontractors may have to be protected include but are not limited to the following:

- Leading edges
- Hoist areas
- Holes in walk surface
- Framework and reinforcing steel
- Ramps, runways, and other walkways
- Excavations
- Working over dangerous equipment/water
- Roofing work on low or steep sloped roofs
- Precast concrete construction
- Wall openings
- Scaffolds
- Aerial lifts

4.2.8 Confined Spaces

OSHA Confined Spaces in Construction (29 CFR 1926, Subpart AA)

A Confined Space is a space that is large enough and so configured that an employee can

bodily enter and perform assigned work and has limited or restricted means for entry or exit (i.e., tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry/egress) and is not designed for continuous employee occupancy. Entry means the action by which a person passes through an opening into a confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon **as any part of the entrant's body breaks the plane of an opening into the space.**

Concrete vaults, RPZ drains, and basins are potential confined spaces. In the event that site personnel are required to enter a confined space, the confined space procedures in Section 12 of CALDWELL MARINE.'S Corporate Health & Safety Manual will be followed. Procedures include hazard assessment and control, permitting, training for personnel working on confined space entries, pre-job briefing, atmospheric testing and ventilation, personal protective equipment, rescue equipment and plans. A Confined Space Entry Permit form is provided in *Attachment 7*.

Copies of personnel training records, rescue equipment/procedures and proof of rescue arrangements will be submitted to CALDWELL MARINE's SSO prior to all confined space entries.

The following personnel and roles will be assigned to each confined space entry.

1) **Entry Superintendent:** CALDWELL MARINE employees or subcontractors or contractors assigned to entry Superintendent duties must be trained and qualified in CALDWELL MARINE confined space procedures. Certification of training in hazardous atmosphere testing equipment must be obtained.
2) **Attendant (Safety Observer):** The attendant (safety observer) must be trained, qualified, and designated by to perform the duties of an entry attendant. Note: One attendant is typically required for each specific confined space; attendants are not authorized to attend multiple confined space entries unless specific provisions are made prior to entry.
3) **Authorized Entrants:** Entrants into confined space must be trained, qualified, and authorized.

Duties of Entry Superintendent:

1) The Entry Superintendent must know the hazards faced during entry, including information on the mode, signs, and symptoms and consequences of exposure. An SDS or similar written material must be kept at the work site for any material to which the authorized entrant may be exposed.
2) The Entry Superintendent must verify that the appropriate entries have

been made on the confined space entry permit and that all specified tests have been conducted.

3) Verifies, by checking, that all procedures and equipment specified by the permit are in place, before signing the permit and allowing entry.
4) Terminates the entry and cancels the permit if the confined space hazard or conditions outside the confined space pose a hazard to the entrants.
5) Verifies that rescue services are available and that the communication with rescue services is readily available.
6) Removes unauthorized individuals who enter or who attempt to enter the confined space.
7) Reviews the confined space operation at intervals dictated by the hazard and the operation to insure compliance with this policy.
8) Determines when responsibility for a permit space entry operation is transferred.
9) Reviews the Permit-Required Confined Space work, prior to commencement with the attendant, and entrants.
10) Designates qualified individuals to act as entrants and attendants.
11) Monitor the space and inform the entrants of the potential hazards and results; they must participate in the permit review and signing. Ventilation must be used & testing must be conducted before entry & during work.

Duties of Attendant:

1) The attendant must know the hazards that may be faced during entry, including information on the mode, signs, symptoms, and consequences of exposure.
2) An attendant must be on duty outside the confined space for the duration of entry operations.
4) The attendant must be aware of possible behavioral effects of hazard exposure in authorized entrants.

5) The attendant must maintain an accurate count of authorized entrants in the permit space and ensure that the entrants are properly identified and authorized on the permit.
6) The attendant must insure, by head count, that all authorized entrants have departed the confined space prior to closing out the permit or departing the confined space.
7) The attendant will contact emergency responders utilizing 9-1-1 if the attendant feels the entrants may need assistance to escape from hazards or may have displayed the effects of the hazards of the confined space.
8) The attendant will prevent unauthorized entry to the confined space.
9) The attendant will not attempt to rescue by entry into the confined space. Non-entry rescue attempt only is allowed.
10) The attendant will not vacate the area, for any reason, or perform any duty, which would prevent or inhibit the ability to communicate with the entrants.
11) The attendant will evacuate the confined space if:

a) The attendants detects a condition outside (i.e. an alarm, leak, etc.) which may endanger the entrants or any alarm condition on continuous monitoring equipment
b) The attendant detects a behavioral or symptomatic change in the entrant(s).
c) The attendant must leave the site or cannot comply with all the duties listed in this section.
d) The attendant cannot effectively communicate with the entrants.
e) The attendant is advised to vacate the confined space by a client representative or CALDWELL MARINE Superintendent.
f) The attendant determines that the entrant (s) is (are) not complying with personal protective equipment practices or safe work practices.

Duties of the Authorized Entrant:

1) The authorized entrant must know the hazards that may be faced during entry, including information on the mode, signs and symptoms and consequences of the exposure.
2) Properly use protective equipment and monitoring devices as specified.
3) Establish and maintain open communications with the attendant.
4) Alert the attendant if the entrant detects a prohibited or hazardous condition.
5) Alert the attendant and other entrants if the entrant notices any warning sign or change in behavior or symptom of exposure in any other entrant. The entrant will notify the entry Superintendent of the condition changes. The Superintendent will then cancel the existing permit and re-evaluate the space.
6) The entrant will immediately take action to evacuate the confined space if the entrant:
   a) Is directed to do so by the attendant, entry Superintendent or designated client representative.
   b) Detects a failure to comply with personal protective equipment requirements.
   c) Is unable to maintain effective communication with the attendant.
   d) Detects any alarm on continuous monitoring equipment.

A Confined Space Entry Permit (*Attachment 7*) will be completed as needed.

4.2.8.1 PERMIT REQUIRED CONFINED SPACE PREPARATION FOR ENTRY:

A. **Isolation:** The confined space must be removed from service and completely protected against the release of energy and material into the space.

B. All energy sources must be locked out.

C. All lines, pipes, hoses, intake vents, ducts, etc., leading to or from the confined space must be broken away in a manner which would prevent intake or through put of hazardous materials or energy: blanked, blinded, or sections removed.

D. Rotating equipment must be de-energized and locked out.

E. The confined space must be purged, flushed, ventilated, cleaned or inert to eliminate or control the hazardous atmosphere (**Note**: Inert Atmospheres create a hazard by displacing oxygen with an inert. Special care and ventilation prior to testing and entry must be exercised prior to entry. A SDS must also be provided and kept at the site for chemical-cleaning agents used in confined spaces. Confined spaces purged with steam or cleaned with hot water must be allowed time to cool to acceptable levels prior to the onset of entry).

F. Barriers to prevent pedestrian or vehicle entry, which could pose a hazard to entrants, must be erected.

G. Determine if the cover (if any) can be safely removed by the following:

1) Conduct exterior visual examination for existence of hazards, i.e. liquid, etc.
2) Test the atmosphere around the cover to determine the presence of hydrocarbons or toxic vapors.
3) Slowly open the cover to insure no existence of pressure, fluids, etc. If possible, atmospheric testing should be conducted.
4) Remove cover and visually inspect from the outside for the presence of hazards.
5) Conduct atmospheric testing in this exact manner
   (Note: Ventilation systems must be off for a minimum of 30 minutes prior to testing**):**
   a) Test atmosphere outside of confined space for oxygen content.
   b) Test atmosphere inside of confined space for oxygen content.
   c) Compare reading, a difference of –1% oxygen content inside of the confined space may represent 10,000 PPM or a toxic material.
   d) Oxygen content must be above 19.5% and below 23.5% for entry.
   e) Test for combustible gases must be below 2% LFL for entry.
   f) Test for toxic gases or vapors must read 0 Parts Per Million (PPM).

g) If testing falls outside of the parameters established above, a permit cannot be issued without elimination of hazard and retest.

h) Entrants or their representatives are to be given an opportunity to review and participate in the review and calibration of air monitoring data before entering.

i) Entrants must also be given the opportunity to participate in the permit review and signing.

H. Designate attendant and entrants as described in this procedure.

I. Provide all personal protective equipment.

J. Provide ventilation, (Refer to Section on Welding and Burning).

K. All lighting and electrical tools used in confined spaces must be connected to GFCI or reduced to 12 volts

L. All air-operated tools must be connected to breathing air quality air sources.

M. Discuss job requirements, emergency procedures and hazards with entrants, attendants and client-designated representatives. Secure / issue proper confined space entry permit and appropriate work permit for confined space work (if required by client). Note: In spaces where multi employers are working in the same space, all of the above information will be discussed with those individuals entering the space and information gathered/discussed as to their purpose of entering the space. If for any reason it would increase the hazards to employees or subcontractors entering the space an effort to schedule different entry periods will be made.

N. Post copies of the permits; permit required confined space entry procedure, SDS and emergency procedures plan at the work site.

O. A permit required confined space may be declared and certified as a non-permit required confined space by following the procedures outlined in the Non-Permit Required Confined Space Procedure.

P. Periodic hazardous atmosphere monitoring will be conducted and logged on the confined space entry permit form.

Q. If the confined space is vacated, unattended, or recovered, visual inspection and re-testing of the space for hazardous atmosphere must be conducted.

R. Caution:

1) Hazards, such as welding fumes, electrical shock, flammable and toxic vapors, may be introduced to the confined space by work in the confined space.
2) Welding and cutting torches may not be left on and unattended. The source must be isolated prior to departing the confined space.
3) Adequate ventilation must be provided for welding, cutting, and burning work inside of confined spaces.

Employees or subcontractors or their representatives are entitled to request additional monitoring at any time.

Rescue Equipment/Procedures:

CALDWELL MARINE uses a tripod retrieval device in which the employee entering the space is "tied in" with a harness and lanyard system. The individual can be retrieved from the space by cranking the retrieval arm, therefore, hoisting the individual from the space. Under no circumstances is an individual to go inside the space to retrieve an individual. Typically, the space can be illuminated with flashlights carried by the occupying party. If not possible, other lighting arrangements will be made.

It should be noted that every time the individual leaves the confined space, testing procedures for the reentry must take place before the individual re-enters the space. These occurrences are to be documented as part of the entry permit and times including atmospheric readings are to be recorded.

The following equipment is to be provided to the crew:

- Testing and monitoring equipment including multi-gas detector (minimum: LEL/O2/CO/H2S) needed to determine if hazardous condition exist.
- Ventilation equipment to maintain gas and particulates below occupational exposure limits.
- Communication between personnel involved in the entry operation.
- Personal protective equipment insofar as feasible engineering and work practice controls does not adequately protect employees or subcontractors.
- Lighting equipment needed to enable employees or subcontractors to see well enough to work safely and to exit the space quickly in an emergency. Barriers and shields as required protecting the workers from

pedestrian and vehicular traffic.

- Ladders, needed for safe ingress and egress by authorized entrants.
- Rescue, Retrieval and Emergency equipment needed to extract or treat injured personnel, except to the extent that the equipment and or service are provided by rescue services that are immediately amiable.
- Any other equipment necessary for safe entry into and rescue from permitted spaces at our facility.
- Other equipment: Air Compressor (as required); Air Purifying Respirators (as required); Body Harness; Emergency escape breathing apparatus (as needed); Escape ladders for depths of 4 ft. or below; Extraction cable and lanyards; eye protection equipment; first aid kits; hand tools; head protection equipment; hearing protection equipment; Intrinsically safe lighting equipment (if in potential flammable/combustible atmosphere); lock out/tag out equipment (as required); Personal Protective clothing.

Arrangements will be made with public or private rescue services prior to beginning any permit required confined space work.

4.2.8.2 NON-PERMIT REQUIRED CONFINED SPACE ENTRY PROCEDURE

Determination of Permit-Required or Non-Permit Required Confined Space:
For permit-required confined spaces, CALDWELL MARINE must ensure that all exposed employees or subcontractors are made aware by posting signs or by any other effective means, of the existence and location of the danger posed by the permit-required space.

CALDWELL MARINE employees or subcontractors must consider all confined spaces meeting the definition of a confined space as a permit-required confined space, until a determination has been made by a trained, competent entry Superintendent or CALDWELL MARINE SSO.

CALDWELL MARINE employees or subcontractors will not enter the confined space until a determination has been made. Certification of non-permit required confined space determination will be provided to the CALDWELL MARINE, employees or subcontractors assigned to enter and must be kept at the job site.

Under no circumstances will CALDWELL MARINE, employees or subcontractors enter a Permit-Required Confined Space without a properly issued permit for entry. Work will not begin in the permit-required confined space until additional permits, e.g., hot work, have been issued.

B. The following steps must be taken, and the attached form be completed in determining the status of the confined space by the CALDWELL MARINE Entry Superintendent.

1) Entry covers must be safely removed.

2) A visual inspection, if possible, without entry must be performed to establish the absence of recognized hazards.

3) Install proper railing or temporary barrier that will prevent accidental fall through the opening.

4) Test internal atmosphere with a calibrated direct reading instrument for the following conditions.

5) ***NOTE: AIR MOVERS MUST BE TURNED OFF DURING ATMOSPHERIC TESTING AND THE TESTING MUST BE ACCOMPLISHED IN THE EXACT ORDER PRESENTED BELOW.***

a) Oxygen content – must be above 19.5% and below 23.5%.
b) Test for flammable gases and vapors – must be below 10% flammable limit (LFL).
c) Visually ascertain that no airborne combustible dust is present.
d) Test for the presence of H2S or other toxic contaminants.
e) **IF YOU ARE IN DOUBT OF RESULTS, CONTACT CALDWELL MARINE SSO FOR FURTHER INSTRUCTIONS**

C. The CALDWELL MARINE Entry Superintendent must complete the attached form and leave the form at the work site. In the event that multiple sites are involved, each site must be tested, and the results posted on the attached forms.

D. Ladders must be provided for egress and entry.

E. Coordinating entry operations for multi employers so that employees or subcontractors of one employer do not endanger the employees or subcontractors of any other employer.

F. A safety observer (attendant) must be assigned with clear communications capability with the non-permit confined space entrants. **THE ATTENDANT WILL NOT ATTEMPT TO RESCUE ENTRANTS WITHIN THE CONFINED SPACE BY ENTERING INTO THE CONFINED SPACE**.

G. The attendant must be knowledgeable of how to summon emergency response personnel.

H. Non-Permit Required Confined Spaces that are vacated for a period of 1 hour, suspended for any purpose, or suspected to have any change in atmosphere or condition, must be re-tested and the results annotated on the attached form.

I. Non-Permit Required Confined Spaces must be periodically monitored for changes in conditions by the Entry Superintendent.

J. Reviews of the permit space program, using the canceled permits retained for at least one year after each entry and revise the program as necessary, to ensure that employees or subcontractors are protected.

K. Failure of any re-test or changes in condition requires reclassification of the confined space as a Permit-Required Confined Space and must be noted on the attached form.

4.2.9 Welding and Cutting

OSHA 1926 Subpart J - 1926.350 Gas Welding and Cutting
OSHA 1926 Subpart J - 1926.351 ARC Welding and Cutting
OSHA 1926 Subpart J - 1926.352 Fire Prevention
OSHA 1926 Subpart J - 1926.353 Ventilation & Protection in Welding, Cutting and Heating
OSHA 1926 Subpart J - 1926.354 Welding, Cutting and Heating in Way of Preservative Coatings

Welding and cutting may be performed during the course of the project. When performed, the following requirements will be followed:

A. **Fire Prevention:**

1. Objects to be welded, cut, burned or heated should be moved to a designated safe location when practical.
2. First aid equipment will be available at all times.
3. If the object to be welded or cut cannot be moved and if all the fire hazards cannot be removed, then guards shields, fire blankets, etc. will be used to confine the heat, sparks and slag and to protect the immovable fire hazards. Welding, cutting, burning or heating operations must not be performed where the application of

4. flammable paints, compounds or heavy dust accumulation will present a hazard.
5. The proper fire extinguishing equipment and fire watch must be in place prior to the onset of work.
6. Gas supplies to torches must be shut off at a point, (preferably the source) outside of confined spaces.
7. Torches and hoses must not be left in confined spaces and excavations overnight.
8. Welding and cutting on used drums is prohibited unless the drums have been properly cleaned and purged of hazardous materials.
9. Hollow spaces, cavities and containers must be vented and purged with an inert gas before preheating, welding or cutting.
10. In areas where either a flammable atmosphere or combustible materials may be present fire watch will be designated and will remain at the operation, plus a ½ hour after completion The fire watch is required during the following:
    a) Locations where other than a minor fire might develop.
    b) Combustible materials closer than 35ft. (10.7M) to the point of operation.
    c) Combustibles that are 35ft. (10.7M) or more away but are easily ignited.
    d) Wall or floor openings within 35ft. (10.7M) radius expose combustible materials.
    e) Combustible materials are adjacent to the opposite side of metal partitions, ceilings or roofs.

    Note: 1. All persons performing fire watch duties will be trained in the proper use of fire extinguishing equipment and general fire watch duties.

    Note: 2. If the area has the potential for a flammable or explosive atmosphere LEL readings will be continuously monitored with a pre-calibrated instrument for that purpose.

    Note: 3 If fire hazards cannot be moved or guarded, welding and cutting operations will NOT be performed.

11. Hot work permits (*Attachment 8*) will be required for all burning, cutting, and welding operations by the Superintendent or designated SSO. A copy of the permit is attached to the end of this section.

B. Gas Welding, Cutting And Burning.

1. When transporting gas cylinders, they must be secured on a cradle,

sling board or pallet. Choker sling or electric magnets must not be used.

2. The cylinders must be secured and transported in a vertical position with the valve protective caps in place.
3. Unless cylinders are firmly secured on a special carrier intended for the purpose, regulators must be removed and protective caps must be in place prior to movement.
4. An approved cylinder truck or chain must be sued to steady the cylinders while in use or storage.
5. The cylinder valve may be opened only when work is being performed.
6. All gas cylinders must be kept away from the actual welding or cutting operation and protected from sparks, hot slag or flames.
7. Cylinders may not be placed where they may become a part of an electrical circuit.
8. Oxygen cylinders must be stored in an upright position, with regulators removed and safety caps installed.
9. Oxygen cylinders must be separated from fuel cylinders by a minimum of 20 feet.
10. All cylinders must be properly labeled with content and hazard warnings.
11. Cylinders must have fixed had wheels, keys, handles or a non-adjustable wrench on the valve stem.
12. Acetylene cylinders must never be opened more than 1 and 1/2 turns of the spindle
13. Before connecting a regulator to a cylinder valve, crack the valve open slightly and close to insure tight stop and no leakage. Do not stand in front of the valve when opening.
14. Fuel gas hose and oxygen hose must be easily distinguishable from each other. (Red hose for fuel gases, green hoses for oxygen and non-combustible gases black hose for inert gas and air).
15. All regulators, hoses, and valves must be kept free and clear of oil and other materials.
16. Parallel sections of oxygen and fuel hose that have been taped together must be taped with not more than 4 inches of tape each 12 inches.
17. Hoses in with noticeable or suspected defect must not be used.
18. All hoses, cables and other equipment must be kept clear of walkways and roadways.
19. Torches must be inspected each day for leaking shut off valves, hose couplings and tip connections.
20. Torches may be lit by friction lighters only.
21. All gauges, valves and pressure regulators must be in proper working order.

22. Cutting, welding and burning may not be performed on surfaces with protective coatings applied without proper breathing zone ventilation or appropriate respiratory protection.
23. Proper protective equipment must be worn when performing welding, cutting or burning.
24. Hoses must not be wrapped around an individual's body.
25. Workers in charge of oxygen or fuel-gas supply equipment (including distribution piping systems and generators) must be instructed and judged competent for such work.

C. **Arc Welding and Cutting.**

1. Employees or subcontractors assigned to operate arc welding equipment must be properly instructed and qualified to operate such equipment.
2. SDS for welding rods must be available in the CALDWELL MARINE. HAZCOM program.
2. Positive ventilation must be provided when welding and cutting are performed in a confined space, or respiratory protection must be provided. Proper ventilation or respiratory protection procedures must be used when evolution of hazardous fumes, gases, or dust is possible.
3. All ground connections will be inspected to insure that they are mechanically sound and properly rated for the required current.
4. A ground return cable must have a safe current carrying capacity equal to or exceeding the specified maximum output of the arc-welding unit.
5. The frames of all arc welding machines must be grounded either through a third wire in the cable containing the circuit conductor or through a separate wire that is grounded at the source of the current.
6. Gasoline or propane fueled portable welding machines and auxiliary generators must have a positive ground before placing them in service.
7. Arc welding and cutting operations with must be screened with non-combustible or flameproof screens wherever possible.
8. Use only manual electrode holders specifically designed for arc welding and cutting.
9. All current carrying parts must be fully insulated against the maximum voltage encountered to ground.
10. All arc welding cables must be capable of handling the maximum current requirements of the work being accomplished.
11. Cables must be equipped with standard insulated connectors of a capacity at least equivalent to that of the cable.
12. Proper eye and face protection must be used when performing arc welding or cutting.

Note: 1. All employees or subcontractors assigned arc welding and cutting duties must be familiar with 29 CFR 1910.254, 29 CFR 252 (a), (b) and (c), and with fire prevention and protection, health protection and ventilation, and protection of personnel.

Note: 2. Operators of equipment should report any equipment defect or safety hazards and discontinue use of equipment until its safety has been assured. Repairs will be made only by qualified personnel.

Note: 3. Burners, welders and fire watch personnel should be licensed in accordance with jurisdiction of authority.

4.2.8 Weather & Lightning

OSHA Emergency Action Plans 1926 Subpart C 1926.35
OSHA Emergency Preparedness
OSHA Lightning Safety
OSHA Tornado Preparedness and Response

The procedures provided below will be used to protect site personnel from weather and lightning related injuries.

CALDWELL MARINE will consult the publicly available weather forecasts on a daily basis for the operation. Estimated operational limits for specific phases are shown in Table 7-1 of the Installation Manual. Lightening Safety Procedures are provided in *Attachment 13*.

Training

A tailgate safety meeting will be conducted to increase awareness to the hazards and prevention of weather and lightning related incidents.

Detection of Lightning

The Site Superintendent will be proactive in monitoring conditions that may produce thunderstorms and lightning. The weather forecast will be tracked and communicated to site personnel as often as necessary. When signs of impending storms, i.e., increasing wind, darkening skies, or lightening appear, local weather monitoring will be increased. The National Weather Service (www.nws.noaa.gov/) should be consulted frequently. Personnel will be notified when thunderstorms may impact the site.

The "flash/bang" (f/b) technique of measuring the distance to lightning will be reviewed with all personnel. The f/b technique is defined as: for each five seconds from the time of observing the lightning flash to hearing the associated thunder, the lightning is approximately one mile away.

Suspension/Resumption of Activities

All outside activities will be suspended when a lightning flash is immediately in the area or a f/b of 20 seconds (4 miles away) is noted. Personnel may continue indoor work activities. Outdoor activities will resume when 30 minutes have passed since the last observable f/b is 20 seconds or greater.

Lightning Protection

When notification is given, all outside work activities will stop and personnel will gather in the support area for a head count and further instructions. Indoor work will continue, except for the use of electrical equipment, telephones and computers. When a safe location is not present and personnel are caught by a sudden lightning event, employees or subcontractors should seek the lowest possible area, away from large objects which might attract lightning or fall over, e.g., trees, utility poles. The employee should assume a crouching position with their head lowered and hands over their ears. AVOID: WATER, HIGH GROUNDS, HEAVY EQUIPMENT AND TALL, ISOLATED OBJECTS.

First Aid

An employee that is struck by lightning needs immediate medical assistance (call 911). The body will not carry an electrical charge, but receives a severe electrical shock and may be burned. Personnel certified in first aid/CPR should inspect for shock and burns around fingers, toes, buckles and jewelry. Stay with the injured employee until medical help arrives.

4.2.9 Fires

If required, the SSO will establish areas approved for welding, cutting, and other hot work. Hot work must comply with the following Hot Work Procedures. A Hot Work Permit will be obtained from the SSO, if required. All personnel will be protected from welding radiation, flashes, sparks, molten metal, and slag. All welding, burning, and cutting equipment will be inspected daily by the operator. Defective equipment will be tagged and removed from service, replaced, or repaired, and re-inspected before being placed back in service. All welders will be properly trained in the safe operation of their equipment, safe welding/cutting practices, and welding/cutting respiratory and fire protection.

Where practical, all combustible material will be relocated at least 35 feet away from the hot work site. Where relocation is impractical, combustibles will be protected with flame proofed covers or otherwise shielded. At a minimum, two fully charged and operable fire extinguishers, appropriate for the type of possible fire (e.g., 10 lb. ABC), will be available at the work area. A fire watch will be required whenever hot work is performed and a minimum of 30 minutes after hot work is complete.

A hot work permit will be completed by the SSO, reviewed with personnel who will perform the hot work, and posted near the work area. The hot work permit is good only for the date issued and is valid only for the eight-hour shift for which it is issued. If at

any time during the hot work operation a change in conditions at the work site is suspected, such as a release of flammable gases or vapors in the work area, work will be stopped immediately and the SSO will be notified. Such work stoppage invalidates the hot work permit, and a new permit will be completed after inspections and tests have been performed by the SSO. .

4.2.10 Dust Control

Control measures will be implemented for all operations where dust is likely to be generated. Careful planning and implementation of controls will reduce potential dust emissions. There are a number of possible construction practices which will reduce levels of airborne particulates. These include:

- Providing for a misting spray during excavation activities.
- Applying water on and sweeping haul roads.
- Spraying mist on buckets during material handling and dumping.
- Hauling materials in properly tarped or watertight containers.
- Reducing the active work area surface and limiting the number of concurrent operations.
- Avoiding dry sweeping.

4.2.11 Noise Control

Noise levels will be controlled to meet applicable OSHA standards for workers. Applicable noise ordinances will be observed nearby residents and off-site community.

5 SAFETY TRAINING AND EDUCATION

5.1. OSHA TRAINING

All site personnel will have the required OSHA training pertaining to the work they are conducting. Copies of training certificates will be available upon request. The CALDWELL MARINE. Site Superintendent will have a minimum of the OSHA 30 Hour Construction training. All laborers will have a minimum of the OSHA 10 Hour Construction training.

Content for new hire and periodic training is outlined in Section 2.4 of this Plan.
All contractors and visitors at this site are expected to comply with all applicable government safety, health, and environmental regulations, as well as company policies. Worker protection standards include, but are not limited to:

OSHA Construction Standards (29 CFR 1926), such as -

- Subpart C - General Health & Safety Provisions
- Subpart D - Occupational Noise Exposure (1926.52)
- Subpart E - Personal Protective and Life Saving Equipment
- Subpart F - Fire Protection

-
- Subpart G - Signs, Signals and Barricades
- Subpart J - Welding & Cutting
- Subpart M - Fall Protection

Should there be a conflict between this plan and any of the above mentioned standards, the more stringent provisions will be followed until a proper evaluation can be made to determine the appropriate course of action.

5.2. Site Safety Orientation

All site personnel and visitors will be provided with a Site Safety Orientation when they arrive on site and before they enter a work zone. The Site Safety Orientation will be conducted by the SSO or designee and will be documented on the form in *Attachment 8.* The Site Safety Orientation will generally include an overview of the project, current activities, emergency procedures/evacuation routes, assembly areas and notification, PPE requirements, and general site rules.

5.2. TOOLBOX SAFETY MEETINGS

Site Safety Meetings, also called Toolbox Safety Meetings, will be presented to all site personnel just prior to the onset of each initial work activity and performed at least weekly. It will be the responsibility of the SSO or designated representative to conduct these meetings. Toolbox Safety Meetings are mandatory for all project personnel. At the conclusion of the meeting, each individual will be required to sign the Field Safety Meeting attendance log.

The SSO and SS will determine the topics based on activities to be conducted and any incidents or items identified during previous days. These topics will include, but are not limited to, PPE requirements, chemical hazards, physical hazards, emergency procedures, weather concerns (if applicable), injury/incidents and trends, and any other special considerations.

6. PERSONAL PROTECTIVE EQUIPMENT

OSHA Personal Protective Equipment

The SSO will assure personal protective equipment is regularly inspected by the user (e.g., before each use) and in accordance with manufacturers' recommendations. Equipment that fails inspection will be removed from service immediately and replaced with equivalent equipment.

Site personnel wearing protective equipment will be trained in the proper use, inspection, and maintenance of the equipment.

Activities on this project have been assessed for PPE requirements. Minimum personal PPE on this site includes eye protection, work boots, hard hat, and reflective vest at all times. Specific requirements include:

- Hard hat
- Safety glasses with side shields
- Face shield (when exposed to projectiles)
- Safety work boots (e.g., composite toe)
- High visibility reflective warning vest
- Hearing protection (working around heavy/noisy equipment)
- Work gloves

The need for respirators will be assessed prior to exposure to dust producing materials, e.g., concrete/silica. Workers requiring use of respirators will be evaluated to assure they are medically cleared to wear respirators and fit tested to assure an effective seal. N-95 filtering facepiece respirators, where appropriate, will be used to minimize exposure. Respirators will be maintained, and filters will be changed as necessary to assure they remain effective in protecting site personnel.

Fall protection is required at elevations of **6 ft. or greater**. Requirements for fall protection are listed in Section 4.2.7.

The SSO will ensure that each worker who is exposed to the hazards of flames (hot work) or electric arcs does not wear clothing that could increase the extent of injury. Flame retardant/resistant clothing will be designed and maintained in accordance with ASTM 1506 or NFPA 1975 requirements. Clothing made from the following types of fabrics, either alone or in blends, are prohibited: acetate, nylon, polyester, rayon. Proper inspection of PPE requires several steps depending upon specific type of PPE and its frequency of use. The different steps of inspection are as follows:

- Inspection and operational testing of equipment received from the factory or distributor.
- Inspection of equipment as it is issued to workers.
- Inspection before each use
- Inspection after use or training and prior to maintenance.
- Periodic inspection of stored equipment.
- Periodic inspection when a question arises concerning the appropriateness of the selected equipment, or when problems with similar equipment arise.
- Inspection for tears and punctures.

7 EMERGENCY ACTION PLAN & PROCEDURES

OSHA Emergency Action Plans (29 CFR 1910.38)

This section describes contingencies and emergency planning procedures to be implemented at the site. *Attachment 10* of this plan includes Emergency Action Plans for the project.

Directions to the hospital will be posted on site when this SSHASP is in effect.
Emergency procedures will be posted and covered in daily site briefings.

7.1 PRE-EMERGENCY PLANNING

The Site Superintendent will ensure that the appropriate lines of communications have been established with local hospitals, government agencies and other emergency response organizations prior to site activities. Site workers and visitors will be notified of the emergency response plan, communication systems, and evacuation routes during orientation.

7.2 PERSONNEL ROLES AND LINES OF AUTHORITY

The Site Superintendent and SSO have primary responsibility for responding to and correcting emergency situations. This includes taking appropriate measure to ensure the safety of site personnel and the public. Possible actions may involve evacuation of adjacent personnel. Additionally, they are responsible for ensuring that corrective measures have been implemented, appropriate authorities notified, and follow up investigation reports completed. All incidents involving injury to site personnel (beyond first aid) or the public and significant property damage will be reported to CALDWELL MARINE management and Engineer in Charge within 8 hours of occurrence. Major incidents involving hospitalization or fatality will be reported immediately.

7.3 EMERGENCY CONTACTS & NOTIFICATION SYSTEMS

The following table provides names and telephone numbers for emergency contact personnel. It will be posted where the nearest phones are located. In the event of any emergency situation Emergency Services will be notified so the appropriate response personnel can be activated.

All incidents involving injury to site personnel (beyond first aid) or the public and significant property damage will be reported to CALDWELL MARINE management and Engineer in Charge within 8 hours of occurrence. Major incidents involving hospitalization or fatality will be reported immediately. Initial Incident Investigation reports will be completed within 24 hours.

Organization/ Responsibility	Contact	Telephone
Police		911
Fire		911
Hospital (see Attachment 4)	Attachment 4	Attachment 4
US Coast Guard	VHF-FM Channel 16 (15 .8 MHz), dial 911 Northern New England -Lake C mplain Emergency: (207) 767-0303 Sector New Y rk - Hudson River Emergency: (71	
(CALDWELL MARINE) Project Manager	See Page 9	See Page 9
(CALDWELL MARINE) Site Superintendent	See Page 9	See Page 9
(CALDWELL MARINE.) Site Safety Officer	See Page 9	See Page 9
Engineer in Charge	See Page 9	See Page 9

7.4 EMERGENCY EQUIPMENT & FACILITIES

The following emergency equipment will be available:

- First aid kit
- Fire extinguishers near areas of welding and torch burning; outside flammable liquid storage areas
- Portable eye wash near any areas of chemical use or splashing
- Mobile phone and/or two-way radio
- Oil absorbing spill pads and booms

Successful communications between personnel on site is essential. The following communications systems may be used to communicate in the event of an emergency.

. Two way radios H Channel (. H
(ther radio channels could be designated in the e ent o excess communication tra ic rom other users
. Air horns (see below)
. Cellular phone or hardwired phone

Air Horn Alerts

Signal	Definition
One long blast	Attention
Two long Blasts	Leave when possible
Three long Blasts	Leave area IMMEDIATELY (EMERGENCY Situation)
Repeated Short Blasts	Send Backup Support

Fire and Emergency Events

When a fire or emergency event is discovered:

Activate the nearest fire alarm (if installed) or sound the emergency signal on the project by **three long blasts** of the air horn.
Notify the local Fire Department by calling 9-1-1
Notify your Superintendent immediately.

Fight the fire ONLY if:

The Fire Department has been notified.
The fire is small and is not spreading to other areas.
Escaping the area is possible by backing up to the nearest exit.
The fire extinguisher is in working condition and personnel have been trained to use it.

Upon being notified about the emergency, site personnel must:

Leave the affected area using the designated evacuation routes. Assemble in the designated area established in advance. Remain outside the affected area until the Superintendent and or designated authority announces that it is safe to reenter. The Superintendent or foreman will account for all employees or subcontractors using the project's employee roster or attendance record to ensure all employees or subcontractors evacuated the area. In the event an employee is unaccounted for, the emergency response agency will be notified of the missing employee.

7.5 Directions to Hospital

A map with directions to the nearest hospital is displayed in *Attachment 4.* Copies of the

map will be posted in the site trailer. The SSO or designated alternative will drive the hospital route before field activities begin to verify that the route is acceptable and unobstructed by other construction activities.

7.6 First Aid and Medical Attention

Medical personnel will be made available for advice and consultation on matters of occupational health and provisions will be made prior to beginning the project for prompt medical attention in case of serious injury.

First aid supplies will be available at the project trailer and made available as needed. The contents of the first aid kit will be in a weatherproof container with individual sealed packages for each type of item, and will be checked before being sent out to the job site and at least weekly to ensure that the expended items are replaced.

A telephone for contacting necessary ambulance service will be provided.

A portable eye wash will be maintained in any area where employees or subcontractors may be exposed to corrosive materials or materials which could injure the eyes.

8 FIRE PROTECTION & PREVENTION

OSHA 1926 Subpart J - 1926.352 Fire Prevention

8.1 General Requirements

A fire protection program will be maintained throughout all phases of the project. Access to all available firefighting equipment will be maintained at all times and will be conspicuously located. All firefighting equipment will be periodically inspected and maintained in operating condition. Defective equipment will be immediately replaced.

A "No Smoking On-Site" policy is in effect on this site for all personnel. Failure to comply with this policy will result in action to assure that future non-conformances will not occur.

8.1.2 Fire Extinguishers

A fire extinguisher, rated not less than 10B, will be provided within 50 feet of wherever more than 5 gallons of flammable or combustible liquids or 5 pounds of flammable gas are being used on the jobsite. This requirement does not apply to the integral fuel tanks of motor vehicles. Travel distance from any point of the protected area to the nearest fire extinguisher will not exceed 100 feet and will be protected from freezing.

Portable fire extinguishers will be inspected periodically and maintained in accordance with *Maintenance and Use of Portable Fire Extinguishers*, NFPA No.

10 and OSHA 1926.150. Fire extinguishers which have been listed or approved by a nationally recognized testing laboratory (e.g., UL, FM Global), will be used.

The Site Superintendent or designee will conduct a visual inspection of fire extinguishers on at least a monthly basis.

8.1.3 Fire Alarm Devices

An alarm system, e.g., cell phone, will be established on the site so the local fire department can be alerted for an emergency. Site personnel will be alerted via 3 long blasts on an air horn. The alarm code and reporting instructions will be conspicuously posted at phones and at employee entrances.

8.1.4 Ignition Hazards

Electrical wiring and equipment for light, heat, or power purposes will be installed in compliance with the requirements of OSHA 1910.26, Subpart K, *Electrical*.

Internal combustion engine powered equipment will be located so that the exhausts are well away from combustible materials.

Smoking will be prohibited at or in the vicinity of operations which constitute a fire hazard, and will be conspicuously posted: "No Smoking or Open Flame."

Portable battery powered lighting equipment, used in connection with the storage, handling, or use of flammable gases or liquids, will be of the type approved for the hazardous location.

8.1.5 Open Yard Storage

Combustible materials will be kept stable and no higher than 20 feet. Method of piling will be solid wherever possible and in orderly and regular piles. No combustible material will be stored outdoors within 10 feet of a building or structure.

Driveways between and around combustible storage piles will be at least 15 feet wide and maintained free from accumulation of rubbish, equipment, or other articles or materials. Driveways will be so spaced that a maximum grid system unit of 50 feet by 150 feet is produced.

The entire storage site will be kept free from accumulation of unnecessary combustible materials. Weeds and grass will be kept down, and a regular procedure provided for the periodic cleanup of the entire area. When there is a

danger of an underground fire, that land will not be used for combustible or flammable storage.

Portable fire extinguishing equipment, suitable for the fire hazard involved, will be provided at convenient, conspicuously accessible locations in the yard area. Portable fire extinguishers, rated not less than 2A, will be placed so that maximum travel distance to the nearest unit will not exceed 100 feet.

8.2 Flammable and Combustible Liquids

8.2.1 General Requirements

Only approved containers and portable tanks will be used for storage and handling of flammable and combustible liquids. Approved metal safety (e.g., UL, FM Global) cans will be used for the handling and use of flammable liquids in quantities greater than one gallon, except that this will not apply to those flammable liquid materials which are highly viscid (extremely hard to pour), which may be used and handled in original shipping containers. For quantities of one gallon or less, only the original container or approved metal safety cans will

be used for storage, use, and handling of flammable liquids.

Flammable or combustible liquids will not be stored in areas used for exits, stairways, or normally used for the safe passage of people.

8.2.2 Storage Outside Buildings

Storage of containers (not more than 60 gallons each) will not exceed 1,100 gallons in any one pile or area. Piles or groups of containers will be separated by a 5-foot clearance. Piles or groups of containers will not be nearer than 20 feet to a building.

Within 200 feet of each pile of containers, there will be a 12-foot-wide access way to permit approach of fire control apparatus.

The storage area will be graded in a manner to divert possible spills away from buildings or other exposures, or will be surrounded by a curb or earth dike at least 12 inches high. When curbs or dikes are used, provisions will be made for draining off accumulations of ground or rainwater, or spills of flammable or combustible liquids. Drains will terminate at a safe location and will be accessible to operation under fire conditions.

Outdoor portable tank storage:

i. Portable tanks will not be nearer than 20 feet from any building. Two or more portable tanks, grouped together, having a combined capacity in excess of 2,200 gallons, will be separated by a 5-foot-clear area. Individual portable tanks exceeding 1,100 gallons will be separated by a 5-foot-clear area.
ii. Within 200 feet of each portable tank, there will be a 12-foot-wide access way to permit approach of fire control apparatus.

Storage areas will be kept free of weeds, debris, and other combustible material not necessary to the storage.

Portable tanks, not exceeding 660 gallons, will be provided with emergency venting and other devices, as required by chapters III and IV of NFPA 30-2018, *The Flammable and Combustible Liquids Code*.

Portable tanks, in excess of 660 gallons, will have emergency venting and other devices, as required by chapters II and III of *The Flammable and Combustible Liquids Code*, NFPA 30-2018.

At least one portable fire extinguisher having a rating of not less than 20-B units will be located not less than 25 feet, nor more than 75 feet, from any flammable liquid storage area located outside.

At least one portable fire extinguisher having a rating of not less than 20-B:C units will be provided on all tank trucks or other vehicles used for transporting and/or dispensing flammable or combustible liquids.

8.2.3 Dispensing Liquids

Areas in which flammable or combustible liquids are transferred at one time, in quantities greater than 5 gallons from one tank or container to another tank or container, will be separated from other operations by 25-feet distance or by construction having a fire resistance of at least 1 hour. Drainage or other means will be provided to control spills. Adequate natural or mechanical ventilation will be provided to maintain the concentration of flammable vapor at or below 10 percent of the lower flammable limit.

Transfer of flammable liquids from one container to another will be done only when containers are electrically interconnected (bonded).

Flammable or combustible liquids will be drawn from or transferred into vessels, containers, or tanks within a building or outside only through a closed piping system, from safety cans, by means of a device drawing through the top, or from a container, or portable tanks, by gravity or pump, through an approved self-

closing valve. Transferring by means of air pressure on the container or portable tanks is prohibited.

The dispensing units will be protected against collision damage. Dispensing devices and nozzles for flammable liquids will be of an approved type.

8.2.4 Handling Liquids at Point of Final Use

Flammable liquids will be kept in closed containers when not actually in use.

Leakage or spillage of flammable or combustible liquids will be disposed of promptly and safely.

Flammable liquids may be used only where there are no open flames or other sources of ignition within 50 feet of the operation, unless conditions warrant greater clearance.

8.2.5 Service and Refueling Areas

Flammable or combustible liquids will be stored in approved closed containers, in tanks located underground, or in aboveground portable tanks.

The tank trucks will comply with the requirements covered in the *Standard for Tank Vehicles for Flammable and Combustible Liquids*, NFPA No. 385-2022.

The dispensing hose will be an approved type, and the dispensing nozzle will be an approved automatic-closing type without a latch-open device.

Clearly identified and easily accessible switch(es) will be provided at a location remote from dispensing devices to shut off the power to all dispensing devices in the event of an emergency.

Heating equipment of an approved type may be installed in the lubrication or service area where there is no dispensing or transferring of flammable liquids, provided the bottom of the heating unit is at least 18 inches above the floor and is protected from physical damage.

Heating equipment installed in lubrication or service areas, where flammable liquids are dispensed, will be of an approved type for garages, and will be installed at least 8 feet above the floor.

There will be no smoking or open flames in the areas used for fueling, servicing fuel systems for internal combustion engines, receiving or dispensing of flammable or combustible liquids. Conspicuous and legible signs prohibiting

smoking will be posted.

The motors of all equipment being fueled will be shut off during the fueling operation.

Each service or fueling area will be provided with at least one fire extinguisher having a rating of not less than 20-B:C located so that an extinguisher will be within 75 feet of each pump, dispenser, underground fill pipe opening, and lubrication or service area

9 SECURITY, ILLUMINATION and HOUSEKEEPING

OSHA General Duty Clause

9.1 ILLUMINATION

Site operations will cease in time to permit personnel to exit the work area and secure the site prior to dusk. Conversely, operations will not begin until lighting is adequate at dawn. If work schedules require work outside of these parameters then portable light plants sufficient to provide adequate lighting will be provided. (Headlights from vehicles and equipment generally do not provide sufficient illumination to conduct work safely.)

Construction areas, ramps, runways, corridors, offices, shops, and storage areas will be lighted to not less than the minimum illumination intensities listed in the Table below.

MINIMUM ILLUMINATION INTENSITIES IN FOOT-CANDLES

Foot-Candles	Area of Operation
5	General construction area lighting.
3	General construction areas, concrete placement, excavation and waste areas, access ways, active storage areas, loading platforms, refueling, and field maintenance areas.
5	Indoors: warehouses, corridors, hallways, and exit ways.
5	Tunnels, shafts, and general underground work areas: (Exception: minimum of 10 foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Bureau of Mines approved cap lights will be acceptable for use in the tunnel heading)

10	General construction plant and shops (e.g., batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lofts and active store rooms, mess halls, and indoor toilets and workrooms.)
30	First aid stations, infirmaries, and offices.

For areas or operations not covered above, refer to the American National Standard A11.1-1965, R1970, or latest edition, *Practice for Industrial Lighting*, for recommended values of illumination.

9.2 HOUSEKEEPING & SANITATION

To minimize potential accidents the site will be maintained in a generally clean condition. Waste materials will be disposed of in approved waste containers or roll-offs.

The site will be set up so as to be reasonably free from significant safety hazards. Wires and hoses will be positioned so they do not obstruct or present a safety hazard in walkways and evacuation routes.

An adequate supply of potable water will be provided. Portable containers used to dispense drinking water will be capable of being tightly closed, and equipped with a tap. Any container used to distribute drinking water will be clearly marked as to the nature of its contents and not used for any other purpose. Where single service cups (to be used but once) are supplied, both a sanitary container for the unused cups and a receptacle for disposing of the used cups will be provided.

Toilets will be provided for employees or subcontractors according to the following table:

Number of employees or subcontractors	**Number of Toilets**
20 or less	1
20 or more	1 toilet seat and 1 urinal per 40 workers.
200 or more	1 toilet seat and 1 urinal per 50 workers.

Under temporary field conditions, provisions will be made to assure not less than one toilet facility is available. The requirements for sanitation facilities will not apply to mobile crews having transportation readily available to nearby toilet facilities. Washing facilities will be maintained in a sanitary condition with adequate soap or hand sanitizer.

10 INSPECTION PROGRAM

Work areas will be inspected on a periodic basis. The SSO or alternate will utilize a checklist when performing these inspections. Inspections will be performed at least weekly and kept available for inspection with the SSO records. A Construction Safety Inspection Checklist form is included in *Attachment 9.*

11 TRAFFIC CONTROL

Manual on Uniform Traffic Control Devices (MUTCD)

Protection of the public and site personnel working on roadways during this project are of the highest concern. Minimizing impacts to traffic is also a primary concern. Objectives for maintaining safety and reducing traffic concerns include:

1. Providing a high level of safety for workers, motorists, pedestrians, bicyclists and persons with disabilities in the highway work zone
2. Minimizing congestion and community impacts by maintaining acceptable levels of service as close as possible to preconstruction levels.
3. Providing a feasible design of highway traffic control during highway operations.
4. Providing contractors with access to the roadway that is adequate to complete the work efficiently while meeting the quality requirements of the contract.
5. Keeping the cost as low as possible, consistent with safety and an appropriate degree of convenience for the public.

11.1 Flagger Training

New York State Department of Transportation requires that all flaggers be adequately trained in flagging operations by recognized training programs, including the American Traffic Safety Services Association, the National Safety Council, unions, or construction industry associations, or by an individual who holds a current certification as a flagger training instructor from such a program. Prior to the start of flagging operations, CALDWELL MARINE or its subcontractors will provide to a list of certified flaggers to be used in the operation, identifying the source of flagger training for each individual. When requested, flaggers will demonstrate their competency in flagging procedures. Flaggers not competent in flagging procedures will be retrained or replaced at once.

12 MATERIAL HANDLING, STORAGE, USE AND WASTE DISPOSAL

EPA Land, Waste and Cleanup Topics

The following procedures provide a process for waste management planning and promote the development of more coherent and appropriate waste management. It is the responsibility of each individual on site to follow CALDWELL MARINE. policies and procedures for managing waste.

1. CALDWELL MARINE will estimate the waste that will be generated prior to work being performed so that the need for containers and waste removal can be determined. Trash and scrap materials will be considered waste.

2. Waste materials will be properly stored and handled to minimize the potential for a spill or impact to the environment. During outdoor activities, receptacles will be covered with a tarp to prevent dispersion of waste materials and to control the potential for run-off.

3. CALDWELL MARINE will properly segregate waste materials to ensure opportunities for reuse or recycling.

4. All site personnel will be instructed on the proper disposal method for wastes. This will include general instruction on disposal of non-hazardous wastes, trash, scrap materials, and waste oils. If wastes generated are classified as hazardous, employees or subcontractors will be trained to ensure proper disposal. This training will be conducted during the site orientation and conducted by the Site Superintendent or his designee.

5. Waste management planning will be continuously reviewed and revised to assure site safety and to meet regulatory requirements.

Section 8 of this SSHASP outlines storage and handling requirements for potentially flammable and combustible materials to prevent the possibility of fires.

General materials storage and disposal requirements for this project include the following:

1. All materials stored in tiers must be stacked, racked, blocked, interlocked or otherwise secured to prevent sliding, falling or collapse.
2. When a difference in road or working levels exist, means such as ramps, blocking or grading will be used to ensure safe movement of vehicles between two levels.
3. Non-compatible materials will be segregated in storage.
4. All bagged materials will be stacked by stepping back the layers and cross keying the bags at least every 10 bags high.
5. All used lumber will have all nails withdrawn before stacking.
6. All structural steel, poles, pipe, bar stock and other cylindrical materials, unless racked, will be stacked and blocked to prevent spreading or tilting.
7. All scrap lumber, waste materials and rubbish will be removed from the immediate work area, as the work progresses.

8. Disposal of waste material and debris by burning is forbidden.
9. Storage areas will be kept free from accumulation of materials that constitute hazards from tripping, fire, explosion, or pest harborage. Vegetation control will be exercised when necessary.

The work area will be surrounded by a silt fence.

Specific procedures for handling of spoil piles, HDD cuttings, and Drilling Fluids are provided in the CALDWELL MARINE project Installation Manual.

Section 74 of CALDWELL MARINE's Corporate Health & Safety Manual (*Attachment 6)* provides detailed procedures for rigging and hoisting of materials. All such procedures will be closely adhered.

13 SIGNS, SIGNALS AND BARRICADES

OSHA Specifications for accident prevention signs and tags (29 CFR 1910.145)

Signs, signals, and barricades are important, if not critical, to the safety of the construction workers. Several important definitions are applicable to this subpart:

Barricade means an obstruction to deter the passage of persons or vehicles.

Signs are the warnings of hazard, temporarily or permanently affixed or placed, at locations where hazards exist.

Signals are moving signs, provided by workers, such as flagmen, or by devices, such as flashing lights, to warn of possible or existing hazards.

Tags are temporary signs, usually attached to a piece of equipment or part of a structure, to warn of existing or immediate hazards.

13.1 Accident Prevention Signs and Tags

13.1.1 General

Signs and symbols will be visible at times when work is being performed, and will be removed or covered promptly when the hazards no longer exist.

13.1.2 Danger Signs

Danger signs will be used only where an immediate hazard exists.

Danger signs will have red as the predominating color for the upper panel; black outline on the borders; and a white lower panel for additional sign wording (see accompanying figure).

13.1.3 Caution Signs

Caution signs will be used only to warn against potential hazards or to caution against unsafe practices.

Caution signs will have yellow as the predominating color; black upper panel and borders; yellow lettering of "caution" on the black panel; and the lower yellow panel for additional sign wording. Black lettering will be used for additional wording.

Standard color of the background will be yellow; and the panel, black with yellow letters. Any letters used against the yellow background will be black. The colors will be those of opaque glossy samples as specified in Table 1 of American National Standard ANSI Z53.1-1967 (see accompanying figure).

13.1.4 Exit Signs

Exit signs, when required, will be lettered in legible red letters, not less than 6 inches high, on a white field and the principal stroke of the letters will be at least three-fourths inch in width.

13.1.5 Safety Instruction Signs

Safety instruction signs, when used, will be white with green upper panel with white letters to convey the principal message. Any additional wording on the sign will be black letters on the white background (see accompanying figure).

13.1.6 Directional Signs

Directional signs, other than automotive traffic signs specified in the paragraph below, will be white with a black panel and a white directional symbol. Any additional wording on the sign will be black letters on the white background.

13.1.7 Traffic Signs

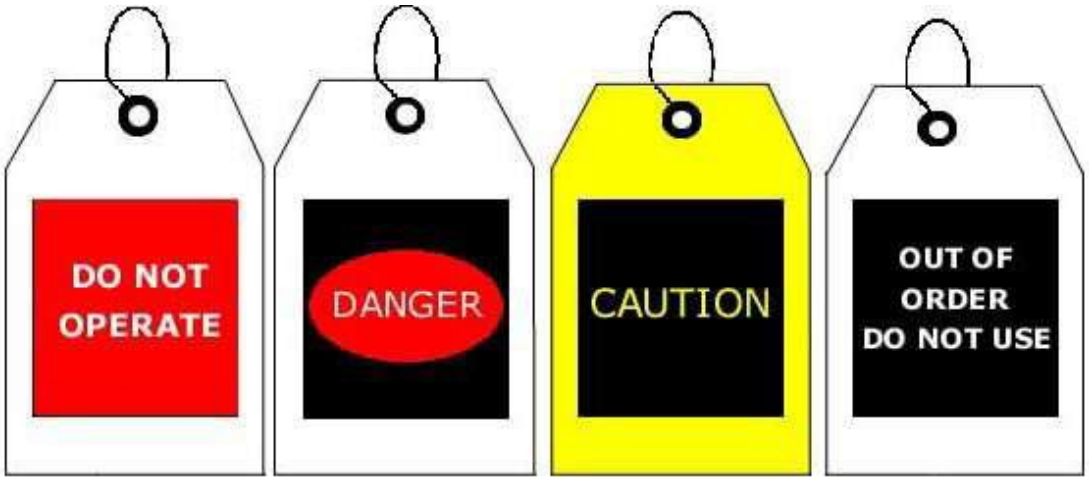
Construction areas will be posted with legible traffic signs at points of hazard.

All traffic control signs or devices used for protection of construction workers will conform to AASHTO MUTCD 2010 Edition, *Manual on Uniform Traffic Control Devices.*

13.1.8 Accident Prevention Tags

Accident prevention tags will be used as a temporary means of warning employees or subcontractors of an existing hazard, such as defective tools, equipment, etc. They will not be used in place of, or as a substitute for, accident prevention signs.

Specifications for accident prevention tags similar to those shown below will apply.



Basic Stock (Background)	Safety Colors (Ink)	Copy Specification (Letters)
White	Red	Do Not Operate
White	Black and Red	Danger
Yellow	Black	Caution
White	Black	Out of Order Do Not Use

13.1.9 Additional Rules

American National Standards Institute ANSI Z35.1-1968, *Specifications for Accident Prevention Signs*, and ANSI Z35.2-1968, *Specifications for Accident Prevention Tags*, contain rules which are additional to the rules prescribed in this section. The employer will comply with these ANSI standards with respect to rules not specifically prescribed in this subpart.

13.2 SIGNALING

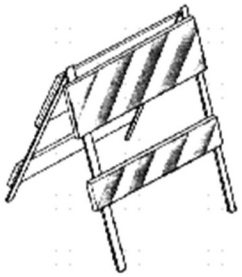
13.2.1 Flagmen

When operations are such that signs, signals, and barricades do not provide the necessary protection on or adjacent to a highway or street, flagmen or other appropriate traffic controls will be provided.

Signaling directions by flagmen will conform to AASHTO MUTCD 2010 Edition, *Manual on Uniform Traffic Control Devices.*

Hand signaling by flagmen will be by use of red flags at least 18 inches square or sign paddles, and in periods of darkness, red lights.

Flagmen will be provided with and will wear a red or orange warning garment while flagging. Warning garments worn at night will be of reflectorized material.



13.2.2 Crane and Hoist Signals

Regulations for crane and hoist signaling will be found in applicable American National Standards Institute standards and CALDWELL MARINE Safety Manual.

13.3 BARRICADES

Barricades for protection of employees or subcontractors will conform to AASHTO MUTCD 2010 Edition, *Manual on Uniform Traffic Control Devices,* portions relating to barricades. Pedestrian barricades will be of the type pictured below or equivalent.

Pedestrian Barricade

ATTACHMENT 1

Plan Acknowledgement & Revision Forms

ATTACHMENT 1

The following individuals acknowledge that they have read and understand this Site-Specific Health and Safety Plan:

Print Name	Signature	Company	Date

Site Specific Health & Safety Plan
Revision Form

Project Name: _____ **Project No.** _____

Amendment No. _____ **Date:** _____

Amendment Revises: Page:_____ **Section:** _____

Task(s) Amendment Affects*:

_____

_____

*(*Attach new/revised Job Safety Analyses*)

Reason For Amendment:

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Amendment:
(Attach separate sheet(s) as necessary)

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Completed by: _____ **Approved by:** _____

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ATTACHMENT 2

JOB SAFET ANALYSES

JOB SAFETY ANALYSIS FOR HANDING DRILL STEM – LOAD/UNLOAD				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Loading/Unloading HDD Drill Stem	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects	Hard hats, safety glasses, hearing protection, cut resistant/work gloves, safety shoes/boots; high visible vest for all tasks in this JSA	
	Strains/Sprains Handling Heavy Objects	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment to move large, awkward loads	Cut Resistant or Leather gloves	
	High Noise Levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) • Assess noise level with sound level meter if possibility exists that level may exceed 85dBA 8 HR TWA	Hearing Protection	
	Slips, Trips, Falls	• Clear walkways, work areas of equipment, vegetation, excavated material, tools, and debris • Mark, identify, or barricade other obstructions		
	Caught In/ Between Moving Parts	• Identify and understand parts of equipment which may cause crushing, pinching, rotating or similar injuries • Assure guards are in place to protect from these parts of equipment during operation • Provide and wear proper work gloves when the possibility of crush, pinch, or other injury may be caused by moving/stationary edges or objects • Maintain all equipment in a safe condition • Keep all guards in place during use • De-energize and lock-out machinery before maintenance or service		
Powered Industrial	Struck	• Personnel will know transport route and how		

JOB SAFETY ANALYSIS FOR HANDING DRILL STEM – LOAD/UNLOAD				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Trucks (for lifting materials)	By/Struck Against Overhead Hazards	equipment will be transported prior to the move; the pathway will be made clear of any obstacles. • Trained/certified personnel will operate the forklift. Training verfication will be on site and a copy or certification will be available. • Forklifts will be inspected by the operator prior to use and transport of equipment. • Slings and shackles will be adequately rated for lifting and transporting materials and equipment • Rigging equipment (i.e. slings,schackles, etc..) will be inspected prior to and during use by the compentent person. • Loads will be slightly lifted off the ground to test rigging & detect any shift before lifting load. • Spotters/Flaggers will be utilized when equipment is transported. Spotter will observe for any overhead hazards when transporting equipment. • Areas where forklifts will be in operation will be free from excess materials and a clear path will be in place. • Personnel will stay clear of forklift during transport. 		

JOB SAFETY ANALYSIS FOR CONFINED SPACE ENTRY – FRAK TANK/BARGE				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Confined Space Entry	Slips, Trips, Falls	• Clear walkways, work areas of equipment, vegetation, excavated material, tools, and debris around space • Mark, identify, or barricade other obstructions • Evaluate fall hazards above 4 ft.; use fall protection equipment (harness/lanyard), standard guardrails or other fall protection systems when working on elevated platforms above 6 ft. • Use 'heavy duty industrial' (type IA) fiber glass ladders • Secure straight/extension ladders	Hard hats, safety glasses, hearing protection, work gloves, safety shoe/boots; high visible vest (applies to all tasks for this JSA unless otherwise noted)	
	Fire/ Explosion	• Eliminate sources of ignition from the work area • Prohibit smoking • Provide ABC (or equivalent) fire extinguishers in all work, flammable storage areas and with fuel powered generators and compressors • Store flammable liquids in well ventilated areas • Prohibit storage, transfer of flammable liquids in plastic containers • Post "NO SMOKING" signs • Store combustible materials away from flammables • Store all compressed gas cylinders upright, caps in place when not in use • Separate Flammables and Oxidizers by 20 feet minimum	Portable fire extinguisher	LEL/O_2 Meter
	Flammable, Toxic, Oxygen deficient Atmospheres	• Test confined space atmosphere for flammable/toxic vapors, and oxygen deficiency • Obtain Confined Space Entry Permit signed by Supervisor/Safety Officer • De-energize, lock-out and tag all energized equipment • Establish rescue plan and resources • Review emergency procedures before work commences • Review hazardous properties of possible contaminants with entrants and attendant	Portable ABC fire extinguisher	LEL/O_2/CO/ H2S meter

JOB SAFETY ANALYSIS FOR CONFINED SPACE ENTRY – FRAK TANK/BARGE				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
		• Provide attendant outside space • Wear proper level of PPE for the type of atmospheric contaminants • Use body harness, safety belt with tripod winch for possible rescue		
	Inhalation and Contact with Hazardous Substances	• Provide workers proper skin, eye and respiratory protection based on the exposure hazards present • Review hazardous properties of possible contaminants with workers before operations begin • Monitor breathing zone air to determine levels of contaminants	Tyvek coveralls, nitrile gloves, latex or neoprene boots (see Section 5.0 HASP)	LEL/O_2/CO/ H2S meter
	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Maintain all hand and power tools in a safe condition • Keep guards in place during use	Leather or cut resistant gloves	
	High/Low Ambient Temperature	• Monitor for Heat/Cold stress • Provide fluids to prevent worker dehydration • Follow work/rest schedule in the safety plan	Insulated Clothing (subject to ambient temperature)	Meteorological Equipment

JOB SAFETY ANALYSIS FOR CRANES / HOISTING / RIGGING ACTIVITIES				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Rigging Activities	Overhead Utilities	• Identify all utilities around the site before work commences • Utility clearance shall conform with 29 CFR 1926.955 Guard or de-energize electrical sources before crane operations begin	Hard hats, safety glasses, hearing protection, work gloves, safety shoe/boots; high visible vest for all tasks in this JSA	
	Rigging Equipment	• Identify the proper rigging equipment for the type of lift • Inspect rigging devices to verify slings, chains, straps are free from defects and rated for the lift weight • Prohibit use of equipment with missing documentation tags, or defective equipment • Ensure tag-lines are free of knots and defects • Review rigging techniques, positioning of load, tag lines with workers involved in rigging activities • Use qualified riggers. Training verification will be kept onsite. • Loads will be slightly lifted off the ground to test rigging & detect any shift before lifting load.	Cut Resistant or Leather gloves	
	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects	Cut Resistant or Leather gloves	
	Handling Heavy Objects	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads	Cut Resistant or Leather gloves	
Hoisting and Lifting Crane Operation Inspections		• Verify the crane annual inspection and maintenance log • Perform required daily crane inspections, of wire ropes sheaves, drums, rigging hardware and attachments	Cut Resistant or Leather gloves	

JOB SAFETY ANALYSIS FOR CRANES / HOISTING / RIGGING ACTIVITIES				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
		• Perform daily inspection of mechanical, hydraulic operations crane • Use manufacture's inspection checklist		
Hoisting and Lifting Pre-lift Meeting		• Hold mandatory pre-lift meeting and complete lift worksheet • Determine if the lift is a critical lift • Assign lift or critical lift supervisor and a signaler for the lift • Calculate lift / load capacities using crane operations manuals and load capacity charts • Review lift hand signals with operator, signaler, supervisor, and work crew		
Crane Operation	Struck By/ Against Heavy Equipment	• Wear reflective warning vests when exposed to vehicular traffic • Isolate crane swing areas • Make eye contact with operators before approaching equipment • Prohibit all personnel from work activities in the blind swing areas of the crane • Test lift objects if center of gravity or similar critical factors are uncertain • Never lift any object if weights are unknown • Never stand under a suspended load	Warning vests, hard hat, safety glasses; safety shoes/boots	
Tag Lines	Cut/Lacerations	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by tag lines • Prohibit looping / winding tag lines around hands or body • Prohibit positioning, moving load using tag lines	Cut Resistant or Leather gloves	
	High Noise Levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) • Assess noise level with sound level meter if possibility exists that level may exceed 85dBA 8 HR	Hearing Protection	

JOB SAFETY ANALYSIS FOR CRANES / HOISTING / RIGGING ACTIVITIES				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
		TWA		
	Slips, Trips, Falls	• Clear walkways, work areas of equipment, vegetation, excavated material, tools, and debris • Mark, identify, or barricade other obstructions		
	Handling Heavy Objects	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads	Cut Resistant or Leather gloves	
	Struck By/Struck Against Overhead Hazards	• Provide detailed lift plans along with this JHA; lift plan will contain a cut sheet of the crane being used, copy of annual inspections, copy of current crane operator license, weights of loads, and percentage of crane capcity being used during the lift) prior to crane coming on site. • The weight of lifts will not exceed 75% of the crane's capacity. • Spill kit will accompany crane while on site. • Barricade swing radius using caution tape and safety cones. • Complete Safe Work Permits (e.g., Crane Lift) • Use certified crane operators. • Use qualified and competent persons to conduct all assembly/disassembly of crane components. • Place poly boards under crane outriggers. • Outriggers fully extended. • Inspect each crane prior to use by the operator. • Use a qualified signal person for all lifts. Training verification will be onsite. • Restrict location of boom so that it is not within 20 ft of overhead lines.		

JOB SAFETY ANALYSIS FOR CRANES / HOISTING / RIGGING ACTIVITIES				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
		• Use two-way radios for communication during each lift. • Stay clear of load. Nobody shall place any part of their body under a suspended load. • Use tag lines to control loads. • Suspend the lift if wind exceeds 25 MPH or at first sign of lightening		

JOB SAFETY ANALYSIS FOR DIVING OPERATIONS		
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**
Diving Operations	Drowning Respiratory and circulatory problems; lack of air Decompression sickness (DCS, the "bends") Nitrogen narcosis Hypothermia	• Follow all requirements in OSHA's Commercial Diving standards (29 CFR Part 1910, Subpart T) • Perform a site-specific risk assessment with the involvement of the diving crew before each dive. • Each dive team member will have the experience or training necessary to perform assigned tasks in a safe and healthful manner. Divers will be medically qualified. • All dive team members will be trained in cardiopulmonary resuscitation and first aid (American Red Cross standard course or equivalent). A properly stocked First Aid kit and AED will be immediately available. Emergency and rescue plans will be available before each dive. • Have appropriate breathing air gas mixtures. Routine periodical inspection nand testing of cylinders. Analysis of oxygen fraction of gas before use, particularly if cylinder has been stored for a long time. Periodic air quality testing of compressors. • Divers must follow strict decompression procedures. • A DPIC will be at the dive location in charge of all aspects of the diving operation. • Diving with two (2) divers in the water requires a minimum of four (4) dive team members as follows: designated person-in-charge (DPIC), a standby diver, and two (2) divers • Two (2) divers must be in continuous visual contact of each other or connected by a buddy line. The two (2) divers do not require a tending line to the surface unless they are required to work against a current exceeding one (1) knot. • When required or deemed necessary, one (1) tending line to the surface is sufficient when the two (2) divers are connected by a buddy line.. • The standby diver can be the DPIC provided that he/she is a qualified diver, and that the fourth dive team member is trained and capable of performing all necessary functions of the DPIC while the DPIC is in the water as the standby diver. • The standby diver can also be the tender provided that he/she is a qualified diver; in this case the DPIC would assume tending duties when the standby diver is in the water. • De-energize, lockout, tagout all equipment being serviced or repaired. Equipment Specific LOTO procedure and A Safe Work Permit will be used.

JOB SAFETY ANALYSIS FOR EXCAVATION LOADER/MUD PIT/SAETY FENCE				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Excavation/Mud Pit/Safety Fence/Backfilling	Underground/ Overhead Utilities	• Identify all utilities around the site before work begins • Cease work immediately if unknown utility markers are uncovered • Use manual excavation within 2 feet of known utilities • Utility clearance shall conform with 29 CFR 1926.955 (high voltage >700 kv) 15 feet phase to ground clearance; 31 feet phase to phase clearance	Hard hats, safety glasses, hearing protection, work gloves, safety shoe/boots; high visible vest (applies to all tasks for this JSA unless otherwise noted)	
	Excavation Wall Collapse	• Construct diversion ditches or dikes to prevent surface water from entering excavation • Provide good drainage of area adjacent to excavation • Collect ground water/rainwater from excavation and dispose of properly • Store excavated material at least 2 feet from the edge of the excavation; prevent excessive loading of the excavation face • Provide sufficient stairs, ladders, or ramps when workers enter excavations over 4 feet in depth • Place ladders no more than 25 feet apart laterally • Treat excavations over 4 feet deep as potential confined spaces if located in area of potential contaminants • Monitor atmosphere for flammable/toxic vapors, and oxygen deficiency if contamination possible • Slope, bench, shore, or sheet excavations over 5 feet deep if worker entry is required • Assign a competent person to inspect, decide soil classification, proper sloping, correct shoring, or sheeting • Inspect excavations (when personnel entry is required) daily, whenever conditions change		LEL/O2 meter (if potential contaminants)

JOB SAFETY ANALYSIS FOR EXCAVATION LOADER/MUD PIT/SAETY FENCE				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
	Struck By/ Against Heavy Equipment	• Wear reflective warning vests when exposed to vehicular traffic • Isolate equipment swing areas		
		• Make eye contact with operators before approaching equipment • Understand and review hand signals		
	Handling Heavy Objects	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads		
	Slips, Trips, Falls	• Clear walkways, work areas of equipment, vegetation, excavated material, tools, and debris • Mark, identify, or barricade other obstructions • Use heavy duty industrial (type IA) ladders • Secure straignt/extension ladders		
	Caught In/ Between Moving Parts	• Identify and understand parts of equipment which may cause crushing, pinching, rotating or similar injuries • Assure guards are in place to protect from these parts of equipment during operation • Provide and use proper work gloves when the possibility of crush, pinch, or other injury may be caused by moving/stationary edges or objects • Maintain all equipment in a safe condition • Keep all guards in place during use • De-energize and lock-out machinery before maintenance or service		
	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Maintain all hand and power tools in a safe condition • Keep guards in place during use	Cut resistant gloves	

JOB SAFETY ANALYSIS FOR EXCAVATION LOADER/MUD PIT/SAETY FENCE				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
	High Noise Levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) • Assess noise level with sound level meter if possibility exists that level may exceed 85dBA 8 HrTWA	Ear plugs	Sound Level Meter
	High/Low Ambient Temperature	• Monitor for Heat/Cold stress in accordance with Safety Plan • Provide fluids to prevent worker dehydration • Follow work/rest schedule in Safety Plan	Insulated Clothing (subject to ambient temperature)	Meteorological Equipment or Weather App

JOB SAFETY ANALYSIS FOR RECEIVING EQUIPMENT/MATERIALS				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Rigging Activities	Overhead Utilities	• Identify all utilities around the site before work commences • Utility clearance shall conform with 29 CFR 1926.955 Guard or de-energize electrical sources before crane operations begin	Hard hats, safety glasses, hearing protection, work gloves, safety shoe/boots; high visible vest (for all tasks in this JSA; additional PPE noted as need)	
	Rigging Equipment	• Identify the proper rigging equipment for the type of lift • Inspect rigging devices to verify slings, chains, straps are free from defects and rated for the lift weight • Prohibit use of equipment with missing documentation tags, or defective equipment • Ensure tag-lines are free of knots and defects • Review rigging techniques, positioning of load, tag lines with workers involved in rigging activities • Use qualified riggers. Training verification will be kept onsite. • Loads will be slightly lifted off the ground to test rigging & detect any shift before lifting load.	Cut Resistant or Leather gloves	
	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects	Cut Resistant or Leather gloves	
	Handling Heavy Objects	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads	Cut Resistant or Leather gloves	
Crane Operation	Struck By/ Against Heavy Equipment	• Wear reflective warning vests when exposed to vehicular traffic • Isolate crane swing areas • Make eye contact with operators before approaching equipment		

JOB SAFETY ANALYSIS FOR RECEIVING EQUIPMENT/MATERIALS				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
		• Prohibit all personnel from work activities in the blind swing areas of the crane • Test lift objects if center of gravity or similar critical factors are uncertain • Never lift any object if weights are unknown • Never stand under a suspended load		
	Cut/Lacerations	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by tag lines • Prohibit looping / winding tag lines around hands or body • Prohibit positioning, moving load using tag lines	Cut Resistant or Leather gloves	
	High Noise Levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) • Assess noise level with sound level meter if possibility exists that level may exceed 85dBA 8 HR TWA	Hearing Protection	
	Slips, Trips, Falls	• Clear walkways, work areas of equipment, vegetation, excavated material, tools, and debris • Mark, identify, or barricade other obstructions		
	Handling Heavy Objects	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads	Cut Resistant or Leather gloves	
	Struck By/Struck Against Overhead Hazards	• Provide detailed lift plans along with this JHA; lift plan will contain a cut sheet of the crane being used, copy of annual inspections, copy of current crane operator license, weights of loads, and percentage of crane capcity being used during the lift) prior to crane coming on site.		

JOB SAFETY ANALYSIS FOR RECEIVING EQUIPMENT/MATERIALS				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
		• The weight of lifts will not exceed 75% of the crane's capacity. • Spill kit will accompany crane while on site. • Barricade swing radius using caution tape and safety cones. • Complete Safe Work Permits (e.g., Crane Lift) • Use certified crane operators. • Use qualified and competent persons to conduct all assembly/disassembly of crane components. • Place poly boards under crane outriggers. • Outriggers fully extended. • Inspect each crane prior to use by the operator. • Use a qualified signal person for all lifts. Training verification will be onsite. • Restrict location of boom so that it is not within 20 ft of overhead lines. • Use two-way radios for communication during each lift. • Stay clear of load. Nobody shall place any part of their body under a suspended load. • Use tag lines to control loads. • Suspend the lift if wind exceeds 25 MPH or at first sign of lightening		
Forklift Operation	Struck By/Struck Against Overhead Hazards	• Personnel will know transport route and how equipment will be transported prior to the move; the pathway will be made clear of any obstacles. • Trained/certified personnel will operate the forklift. Training verfication will be on site and a copy or certification will be available. • Forklifts will be inspected by the operator prior to use and transport of equipment. • Slings and shackles will be adequately rated for lifting and transporting materials and equipment		

JOB SAFETY ANALYSIS FOR RECEIVING EQUIPMENT/MATERIALS				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
		• Rigging equipment (i.e. slings,schackles, etc..) will be inspected prior to and during use by the compentent person. • Loads will be slightly lifted off the ground to test rigging & detect any shift before lifting load. • Spotters/Flaggers will be utilized when equipment is transported. Spotter will observe for any overhead hazards when transporting equipment. • Areas where forklifts will be in operation will be free from excess materials and a clear path will be in place. • Personnel will stay clear of forklift during transport.		

JOB SAFETY ANALYSIS FOR SITE PREP/MARK OUTS/GRADING/SILT FENCE		
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**
Site preparation, mark outs, grading, silt fence	Struck by/ Against Heavy Equipment & Materials, Vehicular Traffic	• Wear hard hat, safety glasses, safety shoes, work gloves, high visibility vest, hearing protection • Isolate equipment swing areas • Make eye contact with operators before approaching equipment • Understand and review hand signals for signaling operators
	Slips, Trips, Falls	• Clear walkways and work areas of equipment, tools, debris, vegetation and other materials • Mark, identify, or barricade other obstructions
	Handling Heavy Objects	• Plan movement of materials to take shortest route • Use mechanical lifting equipment (e.g., backhoe/loader; trucks) to move large, awkward loads • Observe proper lifting techniques • Obey sensible lifting limits (e.g., 60 lb. per person for manual lifting)
	Underground/ Overhead Utilities	• Identify all utilities around the site before work commences • Cease work immediately if unknown utility markers are uncovered • Use manual excavation within 2 feet of known utilities • Utility clearance shall conform with 29 CFR 1926.955
	Excavation Hazards	• Follow all excavation/trenching safety practices if excavation is over 4 feet deep. • Store excavated material at least 2 feet from the edge of the excavation; prevent excessive loading of the excavation face • Assign a competent person to inspect, decide soil classification, proper sloping, the correct shoring, or sheeting • Inspect excavations (when personnel entry is required) daily, any time conditions change
	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects • Maintain all hand and power tools in a safe condition • Keep guards in place during use of power tools

JOB SAFETY ANALYSIS FOR CHAIN SAW/CHOP SAW		
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**
Survey work area/objects to be cut	• Slip, Trip & Fall • Struck by vehicles and other mobile equipment	• Wear hard hat, safety glasses, safety shoes, work gloves, high visibility vest • Walk cautiously and observe pathway. Walk around, step over or clear pathway of obstacles, defects, and obstructions. • Identify objects to be cut and proper saw for the task
Check and fill fluid levels in saw; inspect saw for damages and leaks	• Splash or spilling of gas/oil mixture • Saw could stall-out while cutting causing a kick-back when re-started in cut • Fire could occur if fuel mixture leaked	• Wear hard hat, safety glasses, safety shoes, work gloves, high visibility vest • Replace and close fluid tank caps on both saw and supply containers after use • Maintain fluid level and right mixture (in accordance with manufacturer specification) to avoid stalling-out during the cut • Do not use saw if leak is detected. Take saw out of service and have repaired before re-using
Check cutting blade/chain for proper type, wear/tear & wear pattern, installed properly for direction of rotation and secured	• Cuts/Lacerations	• Wear hard hat, safety glasses, safety shoes, high visibility vest • Wear gloves if handling blade/chain to inspect it • Make sure blade is straight and tight and correct for type of material being cut. Check manufacturer's requirements for type of blade to use • Check blade/chain for defects; know what to look for to determine if defective; check manufacturer's manual; replace blade/wheel/chain when defects are detected
Ensure blade guard is properly in place	• Struck by particles of metal and other debris • Cuts/Lacerations	• Adjust guard so that rear section is flush with the work piece and spatter and sparks from object being cut will be led away from the user • Never remove or pin back guards during operation
Start-up saw	• Cuts/Laceration - Lose control of saw	• Wear hard hat, safety glasses, safety shoes, high visibility vest; hearing protection • Wear chain saw chaps when operating chain saw • Place saw on firm ground, ensure blade/wheel/chain is clear

JOB SAFETY ANALYSIS FOR CHAIN SAW/CHOP SAW		
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**
		of obstructions. Secure saw with hand using firm grip on front handle and placing foot on base handle (if saw equipped with base handle).
Cutting operation	• Strain, sprain • Struck by debris • Cuts/lacerations and other injuries from saw kickback/flying debris • Hearing loss • Carbon Monoxide exposure	• Avoid bending at the waist by squatting, using a wide stance, and/or using support by resting arm on knee. Face forward to avoid twisting. Keep the work close to avoid reaching. • Wear safety hard hat, safety shoes, safety glasses or goggles, and a face shield. Keep body away from path of sparks • Let the saw do the work • Support object being cut to prevent it from moving and pinching the blade • Review the saw manual for proper cutting technique • Never start to cut with the upper quadrant (12 o'clock to 3 o'clock position) of the blade (kickback zone) • Hold the machine with firm grip using 2 hands and stand off to side of saw while cutting • Keep good balance and firm foothold • Always cut at maximum speed • Stand at comfortable distance from the work piece • Never cut above shoulder height • Be alert to movement of the object which could cause the cut to close and pinch the blade • To prevent kickback avoid removing blade and re-entering to make cut • Do not wear any loose clothing, jewelry or other articles which could become entangled in the saw • Wear hearing protection (plugs or muffs) • Only use gas powered saw in a well ventilated area to avoid overexposure to carbon monoxide. Use mechanical ventilation (blowers), in poorly ventilated areas.

JOB SAFETY ANALYSIS FOR WELDING/BURNING/CUTTING				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Welding, cutting, burning	Fire or Explosion Struck by/Against	• Complete Hot work permit. • Conduct air monitoring if in any area with flammable/combustible materils. • Do not weld near flammable material. Move flammables at least 35 feet away or protect them withflame-proof covers. • Do not weld on drums, tanks, or any closed containers unless a qualified person has tested it and declared it or prepared it to be safe. • Store acetylene and oxygen cylinders at least 20 feet apart when stored; or five foot high fire barrier when on cart together • Keep valve caps in place when not in use/stored. Do not lift cylinders by valve caps.	Hard hats, safety glasses, hearing protection, work gloves, safety shoes/boots; high visible vest (applies to all tasks for this JSA; additional PPE as noted)	LEL/O2 meter
	Inhalation of fumes	• Use enough forced ventilation or local exhaust at the arc to remove fumes from breathing area. • Use welding helmet that has fresh air supply. • Keep your head out of the fumes and do not breathe fumes.	Welding helmet; respirator if fumes are not controlled	
	Sparks could burn eyes, hands, clothes	• Wear welder's cap, eye protection, face shield, gloves, apron • If welding outside with breeze, use wind break and line of sight barrier to protect passers-by.	Leather/flame resistant gloves	
	Eye burns	• Use welding helmet with correct shade of filter.	Welding helmet	

JOB SAFETY ANALYSIS FOR WELDING/BURNING/CUTTING				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
		• Use welding curtain to shield other employees and visitors from arc rays.		

JOB SAFETY ANALYSIS FOR RIGGING UP DRILL/EQUIPMENT HANDLING/HOSE MANAGEMENT				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
Rigging Activities	Overhead Utilities	• Identify all utilities around the site before work commences • Utility clearance shall conform with 29 CFR 1926.955 Guard or de-energize electrical sources before crane operations begin	Hard hats, safety glasses, hearing protection, work gloves, safety shoe/boots; high visible vest for all tasks in this JSA; additional PPE as noted	
	Rigging Equipment	• Identify the proper rigging equipment for the type of lift • Inspect rigging devices to verify slings, chains, straps are free from defects and rated for the lift weight • Prohibit use of equipment with missing documentation tags, or defective equipment • Ensure tag-lines are free of knots and defects • Review rigging techniques, positioning of load, tag lines with workers involved in rigging activities • Use qualified riggers. Training verification will be kept onsite. • Loads will be slightly lifted off the ground to test rigging & detect any shift before lifting load.	Cut Resistant or Leather gloves	
	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects	Cut Resistant or Leather gloves	
	Handling Heavy Objects	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads	Cut Resistant or Leather gloves	
Hoisting and Lifting, Crane Operation Inspections		• Verify the crane annual inspection and maintenance log • Perform required daily crane inspections, of wire ropes sheaves, drums, rigging hardware and attachments	Cut Resistant or Leather gloves	

JOB SAFETY ANALYSIS FOR RIGGING UP DRILL/EQUIPMENT HANDLING/HOSE MANAGEMENT				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
		• Perform daily inspection of mechanical, hydraulic operations crane • Use manufacture's inspection checklist		
Hoisting and Lifting Pre-lift Meeting		• Hold mandatory pre-lift meeting and complete lift worksheet • Determine if the lift is a critical lift • Assign lift or critical lift supervisor and a signaler for the lift • Calculate lift / load capacities using crane operations manuals and load capacity charts • Review lift hand signals with operator, signaler, supervisor, and work crew		
Crane Operation	Struck By/ Against Heavy Equipment	• Wear reflective warning vests when exposed to vehicular traffic • Isolate crane swing areas • Make eye contact with operators before approaching equipment • Prohibit all personnel from work activities in the blind swing areas of the crane • Test lift objects if center of gravity or similar critical factors are uncertain • Never lift any object if weights are unknown • Never stand under a suspended load		
Tag Lines	Cut/Lacerations	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by tag lines • Prohibit looping / winding tag lines around hands or body • Prohibit positioning, moving load using tag lines	Cut Resistant or Leather gloves	
	High Noise Levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) • Assess noise level with sound level meter if possibility exists that level may exceed 85dBA 8 HR	Hearing Protection	

JOB SAFETY ANALYSIS FOR RIGGING UP DRILL/EQUIPMENT HANDLING/HOSE MANAGEMENT				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
		TWA		
	Slips, Trips, Falls	• Clear walkways, work areas of equipment, vegetation, excavated material, tools, and debris • Mark, identify, or barricade other obstructions		
	Handling Heavy Objects	• Observe proper lifting techniques • Obey sensible lifting limits (60 lb. maximum per person manual lifting) • Use mechanical lifting equipment (hand carts, trucks) to move large, awkward loads	Cut Resistant or Leather gloves	
	Struck By/Struck Against Overhead Hazards	• Provide detailed lift plans along with this JHA; lift plan will contain a cut sheet of the crane being used, copy of annual inspections, copy of current crane operator license, weights of loads, and percentage of crane capcity being used during the lift) prior to crane coming on site. • The weight of lifts will not exceed 75% of the crane's capacity. • Spill kit will accompany crane while on site. • Barricade swing radius using caution tape and safety cones. • Complete Safe Work Permits (e.g., Crane Lift) • Use certified crane operators. • Use qualified and competent persons to conduct all assembly/disassembly of crane components. • Place poly boards under crane outriggers. • Outriggers fully extended. • Inspect each crane prior to use by the operator. • Use a qualified signal person for all lifts. Training verification will be onsite. • Restrict location of boom so that it is not within 20 ft of overhead lines.		

JOB SAFETY ANALYSIS FOR RIGGING UP DRILL/EQUIPMENT HANDLING/HOSE MANAGEMENT				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
		• Use two-way radios for communication during each lift. • Stay clear of load. Nobody shall place any part of their body under a suspended load. • Use tag lines to control loads. • Suspend the lift if wind exceeds 25 MPH or at first sign of lightening		
Equipment Handling, Hose Management	Struck by/ Against Heavy Equipment & Materials Vehicular Traffic	• Isolate equipment swing areas • Make eye contact with operators before approaching equipment • Understand and review hand signals for signaling operators		
	Slips, Trips, Falls	• Clear walkways and work areas of equipment, tools, debris, vegetation and other materials • Mark, identify, or barricade other obstructions		
	Falls from Elevated Heights	• Use standard guardrails when working on elevated platforms or PFAS (harness/lanyard); anchorage points for fall arrest systems must support each worker. • Use heavy duty industrial (type IA) ladders; tie-off all straight/extension ladders. • Install/inspect scaffolds according to manufacturer's requirements. • Train operators using aerial lifts		
	Handling Heavy Objects	• Plan movement of materials to take shortest route • Use mechanical lifting equipment (e.g., backhoe/loader; trucks) to move large, awkward loads • Observe proper lifting techniques • Obey sensible lifting limits (e.g., 60 lb. per person for manual lifting)		
	Sharp Objects	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects	Cut Resistant or Leather Work Gloves	

JOB SAFETY ANALYSIS FOR RIGGING UP DRILL/EQUIPMENT HANDLING/HOSE MANAGEMENT				
Task Breakdown	**Potential Hazards**	**Critical Safety Practices**	**Personal Protective Clothing and Equipment**	**Monitoring Devices**
		• Maintain all hand and power tools in a safe condition • Keep guards in place during use of power tools		
	High Noise Levels	• Use hearing protection when exposed to excessive noise levels (greater than 85 dBA over an 8-hour work period) • Assess noise level with sound level meter if possibility exists that level may exceed 85dBA 8 HR TWA		

ATTACHMENT 3

Safety Data Sheets

(Added as Brought to the Project)

ATTACHMENT 4

Directions to Hospital

(See Emergency Action Plans – Attachment 10)

ATTACHMENT 5

Incident Investigation Report

INJURY REPORT – FORM # 1

(Completed by Investigating Supervisor)

Report Only ☐

Complete Within 8 Hours or Before End of Shift
email to: safety@jaginc.co

Investigation #	
Work Comp#	

Location: _____

Date of Incident:	**Time of Incident:** ☐ AM ☐ PM
Date Reported:	**Shift:** ☐ 1 ☐ 2 ☐ 3 ☐ OTHER
Location of Incident:	**Length of Shift:** ☐ 8 ☐ 10 ☐ 12 ☐ OTHER

Type of Incident: ☐ Injury ☐ Illness ☐ Near Miss ☐ Other: _____

Incident Description:

PERSON INVOLVED

1. **Name of Person involved:**
2. **Employment Status:** ☐ Employee ☐ Sub-Contractor ☐ General Public
3. **Date of Hire/Assignment:**
4. **Job Title/Craft/Position:**
5. **Department:**
6. **Manager/Supervisor:**
7. **Gender:** ☐ Male ☐ Female
8. **How long in Current Position:** Yrs. Months
9. **List the possible witnesses of the incident – Attach witness statement (Form #2):** ☐ ☐
10. **Photographs taken** ☐ Yes ☐ No **(PICTURE MUST BE TAKEN WHENEVER POSSIBLE)**
11. **Is the employee involved employed anywhere other than Prestige Industries?** ☐ Yes ☐ No
    If yes, where and what does s/he do?
12. **What day of the week did the incident occur?** ☐ M ☐ Tu ☐ W ☐ Th ☐ F ☐ Sa ☐ Su
13. **What consecutive day of the employee's work week was it?** ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7
14. **Was the employee working overtime at the time of the incident?** ☐ Yes ☐ No
15. **Was the employee doing their regularly assigned/scheduled job duties?** ☐ Yes ☐ No
    If "NO", then please explain

NOTE: Multiple Injuries – If more than one person is injured in an incident, a separate incident form will need to be completed for each person. Keep all the information for these incidents together and submit as one package.

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INJURY / ILLNESS		
1.	What type of injury / illness occurred? ☐ Abrasion ☐ Amputation ☐ Bruise ☐ Concussion ☐ Dislocation ☐ Fracture ☐ Foreign Body ☐ Laceration ☐ Sprain/Strain ☐ Loss of Consciousness ☐ Other:	
2.	To what part (s) of the body?	☐ Right ☐ Left ☐ Both ☐ Right ☐ Left ☐ Both
3.	What was the initial type of treatment was provided?	☐ First Aid ☐ Medical Clinic ☐ Hospital ☐ None - Not Needed or Requested at Time of Incident
	Name and Location of treating facility: _____	
4.	Was the injury/illness reported in a timely manner?	☐ Yes ☐ No
	If not, why?	
5.	Onset of condition	☐ Gradual ☐ Sudden
6.	Has the employee experienced a similar injury, pain, or discomfort previously?	☐ Yes ☐ No ☐ Unknown
	If "Yes" explain	
7.	Did the incident result in a lost time accident?	☐ Yes ☐ No ☐ Unknown
	If Yes, what was the date of the last day worked?	
8.	Has the person to been assigned light duty or job transfer?	☐ Yes ☐ No ☐ Unknown
9.	When the employee was sent for post incident drug & alcohol test?	☐ Yes ☐ No

Supervisor (print):	Signature:	Date:
Time of this Report: ☐ AM ☐ PM		

INCIDENT INVESTIGATION FORM REPORTING PROCEDURES		
FORM(s) TO COMPLETE	**BY WHOM**	**BY WHEN**
Incident Report– Form # 1	Investigating Supervisor	Within 8 hour or End of shift
Incident Statement –Form # 2	Person Involved in Incident	Within 24 hours
Incident Investigation-Form #3	Witness / Description - Extension for Form 1 or 2	Within 24 hours

SCAN and SEND FORMS VIA EMAIL TO: Safety@jaginc.co

Call EH&S Director ASAP with Details of the Incident - Lucky Abernathy at (908) 433-3755

NOTE: Initial report within 8hrs and a complete report with Incident Statement(s) within 24hrs

INCIDENT STATEMENT – FORM# 2

Complete within 24 email to: Safety@jaginc.co

STATEMENT FORM

Company: _____ **email to: Safetey@jaginc.co**

Statement By:	☐ Person/Employee Involved	☐ Employee Witness	☐ Manager/Supervisor	
	☐ Witness	☐ Contractor	☐ Temporary	☐ Visitor
Name:	**Date of Incident:**		***Time of Incident:***	

STATEMENT

Print Name:	**Signature:**	**Date:**
Supervisors Review:	**Date:**	

INCIDENT INVESTIGATION FORM # 3

(Completed by Investigating Supervisor)

Complete within 24 Hours or before end of shift
email to: Safety@jaginc.co

Investigation #

Company: _____ **Work Comp#**

Date of Incident: **Time of Incident:** ☐ AM ☐ PM

Type of Incident: ☐ Injury ☐ Illness ☐ Property Damage ☐ Other:
☐ Fire ☐ Near Miss ☐ Equipment Damage

Incident Description: _____

PERSON INVOLVED

1. **Name of Person(s) involved**
2. **Employment Status** ☐ Employee ☐ Temporary ☐ Sub-Contractor ☐ Visitor
4. **Job Title/Position**
5. **Department**
6. **Manager/Supervisor**

ROOT CAUSE ANALYSIS

1. **What unsafe acts and or conditions contributed to the incident?**

☐ Failure to Lockout/tagout ☐ Not wearing PPE ☐ Defective tool / equipment
☐ Lack of training or knowledge ☐ Wearing unsafe clothing ☐ Willful disregard of safety policy
☐ Improper guarding ☐ Inattentiveness / distraction ☐ Failed to recognize hazard
☐ Poor housekeeping ☐ Over exertion / pushing / pulling ☐ Other:

Other – please explain:

2. **What is the root causes(s) of the incident?**
(Please list or describe) _____

3. **Did the person(s) involved violate a Company safety rule/regulation?** ☐ **Yes** ☐ **No**

If so, which one and describe? _____

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Name: **DOI:**

EQUIPMENT / MATERIAL ANALYSIS N/A ☐

1. **Was the equipment/machine/tool involved suited for the purpose?** ☐ **Yes** ☐ **No**

If No, please explain

2. **Was the equipment/machine/tool involved in good condition?** ☐ **Yes** ☐ **No**

If No, please explain

3. **Were the safeguards in place?** ☐ **Yes** ☐ **No**

If No, please explain

ENVIRONMENT ☐ N/A

1. **Was the area where the incident occurred well lit?** ☐ **Yes** ☐ **No**

If No, please explain

2. **Walking/Working Surface:** Slippery ☐ Wet ☐ Dry ☐ Level ☐ Not level ☐ Cracked ☐ N/A ☐

Other:

CORRECTIVE ACTIONS N/A

1.

2.

3.

Supervisor (print)		**Signature**		**Date**	

INCIDENT INVESTIGATION FORM REPORTING PROCEDURES		
FORM(s) TO COMPLETE	**BY WHOM**	**BY WHEN**
1. Incident Report	Investigating Supervisor	Within 8 hour or end of shift
2. Incident Statement	Person involved in incident	Within 24 hours
3. Incident Statement	Witness or description extension for Form 1 or 2	Within 24 hours

SCAN and SEND FORMS VIA EMAIL TO: Safety@jaginc.co

NOTE: Initial report within – 8hrs and a complete report with Incident Statement(s) within 24hr.

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FIRST AID LOG – FORM # 4 Week of / /

Submit to Safety@jaginc.co Monthly

THIS FIRST AID LOG IS TO BE COMPLETED FOR ANY INJURY REPORTED TO A SUPERVISOR OR ANY FIRST-AID TREATEMENT PROVODED BY THE SUPERVISOR

Employee Name: *Jose Nunes* **Date:** *11/11/11* **Time:** *10:30* **X AM** ☐ **PM**

Type of Injury: *Cut right hand* **Description of Injury:** *Jose was opening a can with a screwdriver and cut his hand. The palm of his had was cut about ½" across*

Treatment Given: *Cleaned the cut and put on a band-aid. Told Jose to check in with me in the morning.*

Person Treating: *John Smith*

1) Employee Name: _____ **Date:** _____ **Time:** _____ ☐ **AM** ☐ **PM**

Type of Injury: _____ **Description of Injury:** _____

Treatment Given: _____

Person Treating:

2) Employee Name: _____ **Date:** _____ **Time:** _____ ☐ **AM** ☐ **PM**

Type of Injury: _____ **Description of Injury:** _____

Treatment Given: _____

Person Treating:

3) Employee Name: _____ **Date:** _____ **Time:** _____ ☐ **AM** ☐ **PM**

Type of Injury: _____ **Description of Injury:** _____

Treatment Given:

Person Treating:

4) Employee Name: _____ **Date:** _____ **Time:** _____ ☐ **AM** ☐ **PM**

Type of Injury: _____ **Description of Injury:** _____

Treatment Given:

Person Treating:

5) Employee Name: **Date:** **Time:** ☐ **AM** ☐ **PM**

Type of Injury: _____ **Description of Injury:** _____

Treatment Given:

Person Treating:

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EQUIP/GL INCIDENT REPORT # 5

Complete Within 8 hours or before the End of Shift
email to: Safety@jaginc.co

Report Only	☐
Investigation #	

Company:		**Vehicle # :**
Date of Incident:	**Time of Incident:**	☐ AM ☐ PM
Date Reported:		**Shift:** ☐ 1 ☐ 2 ☐ 3 ☐ OTHER
Incident Location:		**Length of Shift:** ☐ 8 ☐ 10 ☐ 12 ☐ OTHER
City:	**State:**	

What day of the week did the incident occur : ☐ Mon ☐ Tue ☐ Wed ☐ Thur ☐ Fri ☐ Sat ☐ Sun

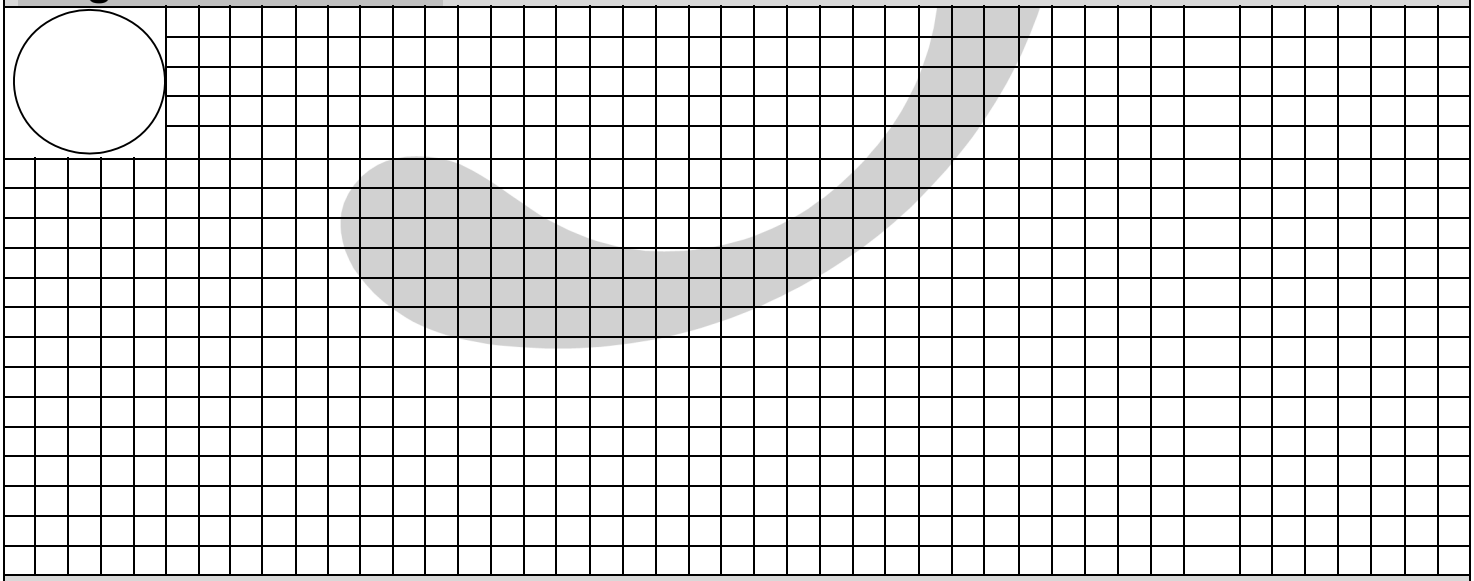
Type of Incident: ☐ Motor Vehicle Accident ☐ Equipment Damage ☐ Property Damage ☐ Theft ☐ Fire ☐ Near Miss ☐ Unsafe Condition ☐ Other:

Incident Description:

Accident / Incident Description

Driver/Operator Name:	**How long in Current Position:** Yrs. months
Employment Status: ☐ Employee ☐ Temporary ☐ Contractor ☐ Owner Operator	
Any Injuries: ☐ Yes ☐ No * ☐ Fatality If so, Who:	**Was anyone removed from the scene by ambulance?** * ☐ Yes ☐ No If so, Who:
Was any vehicle towed: * ☐ Yes ☐ No	**Which vehicle:** ☐ Yours ☐ Other driver ☐ Both
Was a police report made: ☐ Yes ☐ No	**Report # :** **Was Driver ticketed:** * ☐ Yes ☐ No
Other Driver's Insurance Information	**: Name:** **Insurance:** **Unavailable:** ☐
Other Vehicle Make:	**Model:** **Ins. Carrier :** **Policy #**
List the possible witnesses of the incident:	**1)** **2)** **3)**
Photographs taken: ☐ Yes ☐ No **(PICTURES MUST BE TAKEN!!!!)** **If not, why:**	

Diagram of Incident :



Provide a drawing of the roadway configuration and all vehicles or objects that were invoilved in the incident.

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Accident / Incident Description - Continued

Incident Occurred during:	☐ Loading ☐ Unloading ☐ In route (driving) ☐ Backing up ☐ Moving Forward ☐ Excessive Speed ☐ Unexpected Movement ☐ Unsafe Operation ☐ Turning ☐ Other :
Vehicle Type:	☐ Forklift ____Ton ☐ Tractor ☐ Trailer ☐ Straight Truck (26,000 or below) ☐ Auto ☐ Other
Weather Conditions:	☐ Clear ☐ Rain ☐ Snow ☐ Wind ☐ N/A (In-side) ☐ Sun Glare ☐ Other
Road Conditions:	☐ Dry ☐ Wet ☐ Snow covered ☐ Icy ☐ Dark ☐ Other
Damage to:	☐ Tire/wheels ☐ Cab ☐ Body _____(Location) ☐ R ☐ L ☐ Windshield ☐ N/A ☐ Drive Train ☐ Frame/Suspension ☐ Bumper - ☐ Front ☐ Rear ☐ Other

Note: If the DOT driver received a ticket or answered yes to two (2) or more of the questions above with an asterisk (*) by it, then the driver must report for a Post-Accident Drug/ Alcohol Testing directly!!!

When was the Post Incident Drug & Alcohol Test done:

DOT D & A Test: ☐	**NON- DOT D & A Test:** ☐	**If a test was not performed, Why?**
Date:	**Time:** ☐ AM ☐ PM	**Location:** **State:**

Reminders for the Drivers:

☐ Completer drivers report of accident ☐ Protect the vehicle and cargo

☐ Set warning devices and move to A Safe location ☐ Discuss the incident with ONLY proper authorities

☐ ☐

Obtain information i.e. Other vehicle info/witness names and numbers etc. Pictures, Pictures, Pictures

Driver/Operator (print):	**Signature:**	**Date:**
Supervisor (print):	**Signature:**	**Date:**

INCIDENT INVESTIGATION FORM REPORTING PROCEDURES		
FORM(s) TO COMPLETE	**BY WHOM**	**BY WHEN**
Equipment Incident Report– Form # 5	Investigating Supervisor	Within 8 hour or End of shift
Incident Report – Form # 1	Supervisor (If Employee Injury Involved)	Within 8 hour or End of shift
Incident Statement –Form # 2	Person involved in incident	Within 24 hours
Incident Investigation-Form #3	Witness / Description extension for Parts 1 or 2	Within 24 hours

SCAN and SEND FORMS VIA EMAIL TO: Safety@jaginc.co

NOTE: Initial report within 8hrs/end of shift and a complete report with Incident Statement(s) etc. within 24hrs.

Attachment 6

CALDWELL MARINE
Corporate Health & Safety Policies and Procedures Manual

(Incorporated by Reference)

Attachment 7

Confined Space Entry Forms

Caldwell
Marine International

CONFINED SPACE ENTRY PERMIT

LOCATION and DESCRIPTION of Confined Space:

PURPOSE of Entry:

DEPARTMENT:

SUPERVISOR:

Permit Type: □ **Specific Entry** □ **Duration of Job** □ **Annual** □ **Special/Hot Work**

Hazards: □ **O_2** □ **Flammability** □ **Toxic Chemical (specify)-**
□ **Other (specify)-**

KEY PERSONEL (Initialed by Individual)

Authorized Entrants	Attendant(s)	Rescue Personnel
	1st -	
	2nd -	

ENTRY CHECKLIST

Item	YES	N/A	Item	YES	N/A
Lockout - De-energize/electrical			**Lifelines**		
Lockout - Mechanical/valves			**Fire Extinguisher(s)**		
Purge - Flush and Vent			**Rescue Personnel Available**		
Positive Ventilation			**Lighting**		
Secure Area, Barriers in Place			**Protective Clothing**		
Emergency SCBA at Site			**Oxygen Meter**		
Escape Harness			**Combustible Gas Meter**		
Tripod Emergency Escape Unit			**Chemical Detector**		

Special Precautions & Equipment:

Air Monitoring

Test Parameter	Permitted Condition	Perform Test		Initial Results	2	3	4	5
		YES	NO		Time	Time	Time	Time
% Oxygen	19.5 - 23%							
% of LEL	< 10 %							
% of CO	< 25 %							
Hydrogen Sulfide	< 10 %							

[QUALIFIED PERSON] has verified that all of the above conditions have been satisfied and authorizes work to proceed as specified:

Name: _____ **Title:** _____ **Date:** _____

Attachment 8

Hot Work Permit

HOT WORK PERMIT

Date: _____ Time: _____

Location: _____

Issued To: _____

Site Safety Officer (if applicable): _____

Supervisor: _____

Do not cut or use open-flame or spark producing equipment until the following precautions have been taken.

Protective Equipment to be used: _____

Fire Watch Assigned: _____

(Initial Each Of The Following)

_____ The location where the work is to be done has been personally examined.

_____ Any available fire protection systems are in service.

_____ There are no flammable dusts, vapors, liquids or unpurged tanks (empty) in the area.

_____ Explosive meter reading <10%. 1st Reading: _____ 2nd Reading: _____ Additional readings: _____

_____ All combustibles have been moved away from the operation, or otherwise protected with fire curtains or equivalent.

_____ Ample portable fire extinguishing equipment has been provided.

_____ Arrangements have been made to patrol the area for at least 30 minutes after the work has been completed.

_____ The phone number for the local Fire Department is: _____

NOTE: This form is to be filled out in its entirety by the responsible person performing the "HOT WORK". It must be approved by the Health and Safety Officer and the client prior to beginning the project.
This permit expires 24 hours after the designated "start time." If work is to continue another permit must be issued.

Company:	Date:
Responsible Person:	Start Time:
Work to be performed:	End Time:
Location (area, room, etc.):	Equipment:
Is it possible to perform this work in the shop? Yes No	Other:

Place a checkmark if the following items have been completed.

Flame or spark-producing equipment to be used has been inspected and found in good repair.	
Sprinklers, where provided, are in commission and will not be taken out of service while this work is being done.	
There are no combustible fibers, dusts, vapors, gases, or liquids in the area. Tanks and equipment previously containing such materials have been purged. The absence of gases or vapors has been verified by a combustible gas detection instrument. If there is a possibility of a leak developing in nearby piping, equipment, or tanks, this area is to be continuously monitored. Call Site Safety if assistance is needed to test area at (specify phone #):_____	
Fire alarms will not be taken out of service while work is being performed. If alarm system must be inactivated during work, then client will be contacted prior to taking alarm out of service so that a suitable "Fire Watch" can be coordinated. *Under no circumstances will fire alarms be taken out of service without contacting client.*	
The work will be confined to the area or equipment specified on this permit.	
Surrounding floors have been swept clean and, if combustible, wet down.	
Contractor has ample portable fire extinguishers available and trained personnel to use them.	
All combustibles have been relocated 35 feet from the operation and the remainder protected with metal guards or flame-proofed curtains or covers (not ordinary tarpaulins).	
All floor and wall openings within 35 feet of the operations have been tightly covered.	
Responsible personnel have been assigned to provide a "Fire Watch" for dangerous sparks in the work area, as well as on floors above and below while work is being performed.	
Arrangements have been made to provide a "Fire Watch" to patrol the area, including floors above and below, during any lunch or rest period and for at least one-half hour after the work has been completed.	

I attest that the above precautions have been taken:	
Name of Person Responsible for performing Hot Work:	
Site HSO Approval (name):	
Date:	

Attachment 9

Safety Inspection Form

Inspected By: _____ Date: _____

Worksite Information	Yes	No	N/A
Posting of OSHA and other work-site warning posters?			
First aid equipment properly stocked?			
Work site injury records being kept?			
Emergency telephone numbers conspicuously posted?			
Emergency Information (evacuation, muster points, etc.) posted?			
Safety Meetings conducted periodically? When was last meeting?			

Describe violation, location, and corrective actions taken:

_____

_____

_____

Housekeeping and Sanitation	Yes	No	N/A
Are emergency lights fully operational?			
Regular disposal of waste and trash?			
Passageways and walkways clear?			
Waste containers provided and used?			
Sanitary facilities adequate and clean?			
Adequate supply of water?			
Adequate lighting?			
Trash receptacle for drinking cups?			
Are handrails and stair treads in good repair?			
Is smoking restricted to certain locations?			
Are electrical cords and plugs in good condition?			
Is a clearance of 3’ maintained around hot water heaters, electric breaker panels, heating units, and fire sprinkler riser?			
Are electric circuit breakers free of obstructions?			
General neatness of working areas:			

Describe violation, location, and corrective actions taken:

_____

_____

_____

Fire Prevention	Yes	No	N/A
Fire instruction to personnel?			
Fire extinguishers identified, accessible, and fully charged?			
"No Smoking" signs posted and enforced where needed?			
Good housekeeping?			
Storage use and handling of flammable liquids properly done?			
Fire hazards checked?			
Is gasoline contained only in UL listed containers?			

Describe violation, location, and corrective actions taken:

_____

_____

_____

Handling and Storage of Materials	Yes	No	N/A
Are materials properly stored and stacked?			
Are passageways clear?			
Shelves in stockrooms in good repair and properly anchored.			
Stacks on firm footing, not too high?			
Are employees lifting loads correctly?			
Are materials protected from weather conditions?			
Flammable liquids not stored in areas used for exits or stairways?			

Describe violation, location, and corrective actions taken:

_____

_____

_____

Hand Tools	Yes	No	N/A
Proper tool being used for each job?			
Neat storage, safe carrying?			
Inspection and maintenance?			
Electric tools are grounded?			

Describe violation, location, and corrective actions taken:

_____

_____

_____

Personal Protective Equipment	Yes	No	N/A
Eye protection?			
Respirators and mask?			
Helmets, hoods, head protection?			
Gloves, aprons, sleeves?			
Hearing protection?			
Safety harnesses and lifelines?			
Shirts are to be worn?			
Back support belts?			

Describe violation, location, and corrective actions taken:

_____

_____

_____

Hazardous Materials	Yes	No	N/A
Is a binder containing SDS for supplies containing hazardous chemicals available to employees before using?			
Are "Safety Data Sheets" are available on request signs posted in conspicuous locations?			
Is the hazardous waste inventory log maintained?			
Are hazardous waste storage areas inspected weekly?			
Is the hazardous material dispositioning log maintained?			
All containers clearly identified?			
Proper storage practices observed?			
Proper storage temperatures and protection?			
Proper type and number of extinguishers nearby?			
Are there any visible dust or fumes that could be of a concern?			

Describe violation, location, and corrective actions taken:

_____

_____

_____

Unsafe acts and/or practices observed:

_____

_____

_____

Site Supervisor_____Date: _____

Safety Inspector _____Date: _____

Attachment 10
Emergency Action Plans

JOB EMERGENCY ACTION PLAN

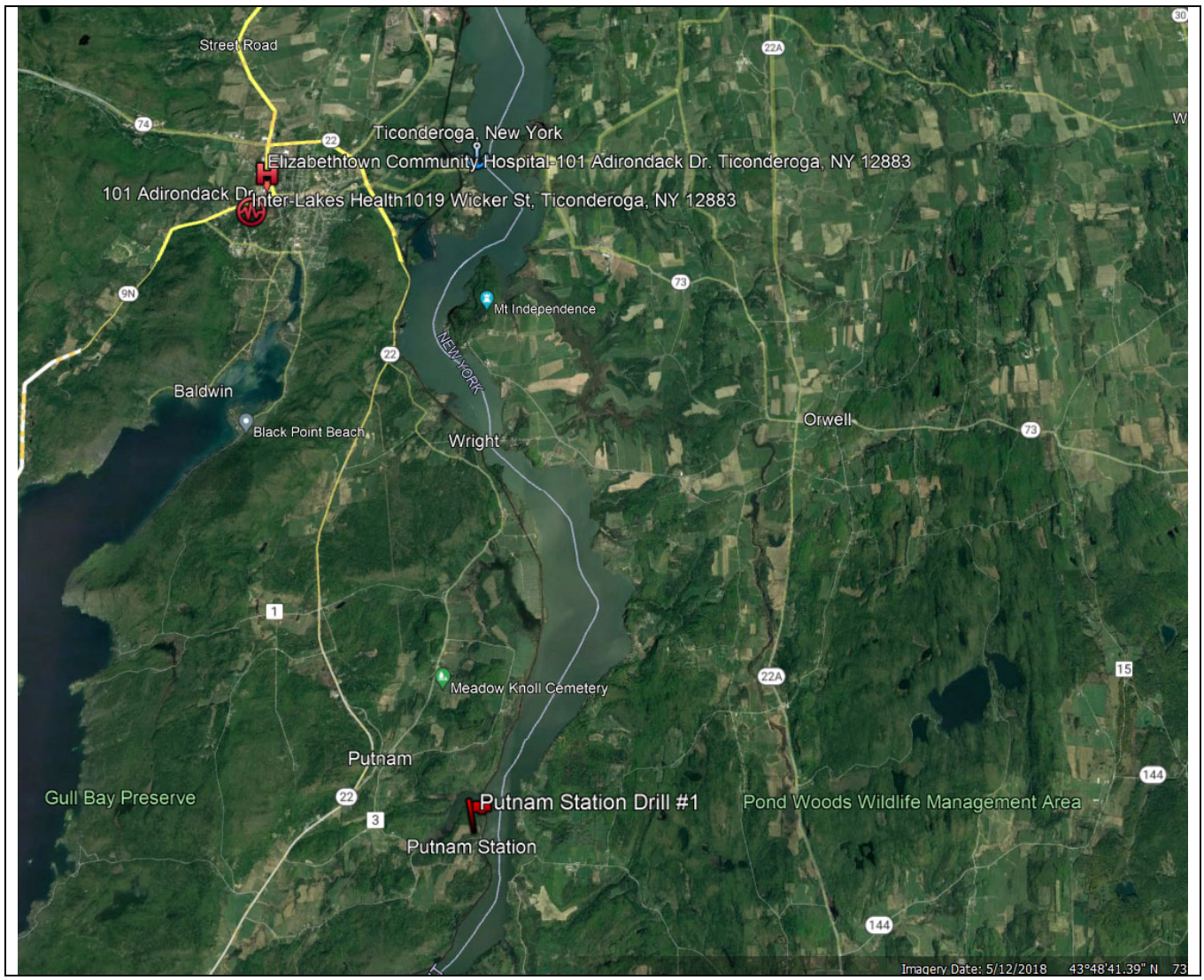
JOBSITE DETAILS			
Date: 07/12/22	**Project Owner:** CHPE, LLC	**Contractor:** CMI/ECI	
Project Name: CHPE HDD			**Job No:** 1229
Project Address: Putnam Station Drill #1 - 523 Co Rd 3 100 Alpha Blvd Catskill, NY 12414			
PM: Thomas Ulisse	**Cell:** 732 620 3470	**Supt:** Brett Bryant	**Cell:** 732 620 4214

EMERGENCY CALLING INFORMATION – 911 (*Local numbers are required, even if 911 is used.*)		
Department	***Name***	***Telephone Number***
POLICE	**Putnam Valley Sheriff's Department**	**845 225 4300/911**
FIRE DEPARTMENT	**Putnam Volunteer Fire Dept.**	**518 547 9982/911**
FIRST AID / NON-EMERGENCY	**Rockland Urgent Care**	**845 429 4000**
HOSPITAL / EMERGENCY	**Montefiore Nyack Hospital**	**845 348 2000**
POISON CONTROL	**NY Poison Control**	**800 222 1222**
SPILL RESONSE	**Clean Harbors**	**800 645 8265**
OSHA	**** Corporate Safety Director will Initiate Any/All Contact with OSHA****	
DIVE HOSPITAL	**Jacobi Medical Center 234 East 149th St. Bronx, NY**	**718 579 5000**
Other:		

OWNER / CONTRACTOR CALLING INFORMATION		
Role	***Name- Address***	***Telephone***
OWNER: CHPE, LLC		
OWNER'S ENGINEER:		
GENERAL CONTRACTOR: NKT INC.	**Fredrik Hallsten**	**919-836-3522**
SUBCONTRACTOR: ECI DRILLING, LLC	**John Langford**	**(936) 5224-0852**
SITE SAFETY REPRESENTATIVE:	**Lucky Abernathy**	**(908) 433-3755**

JOB EMERGENCY ACTION PLAN

EVACUATION POINT(s)



JOB EMERGENCY ACTION PLAN

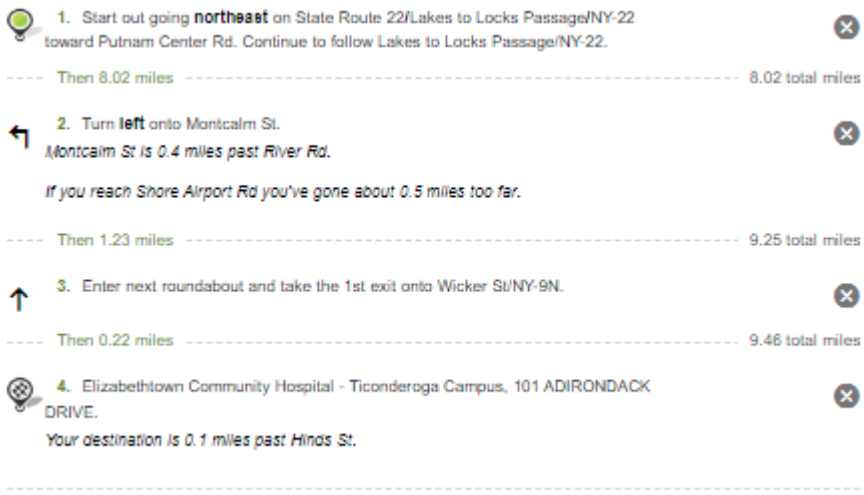
HOSPITAL - Emergency

Work Related Incidents/Accidents:

Any injured employee requiring assistance beyond first aid should obtain immediate attention at the address provided herein:

Transport to the nearest Emergency Room

Elizabethtown Community Hospital
101 Adirondack Dr.
Ticonderoga, NY 12883
845-348-2000



After emergency care has been given to an injured employee, notify the Safety Director ASAP @ (908) 433-3755.

A written incident report must be submitted within 24 hours of the occurrence to Safety@Jaginc.co

JOB EMERGENCY ACTION PLAN

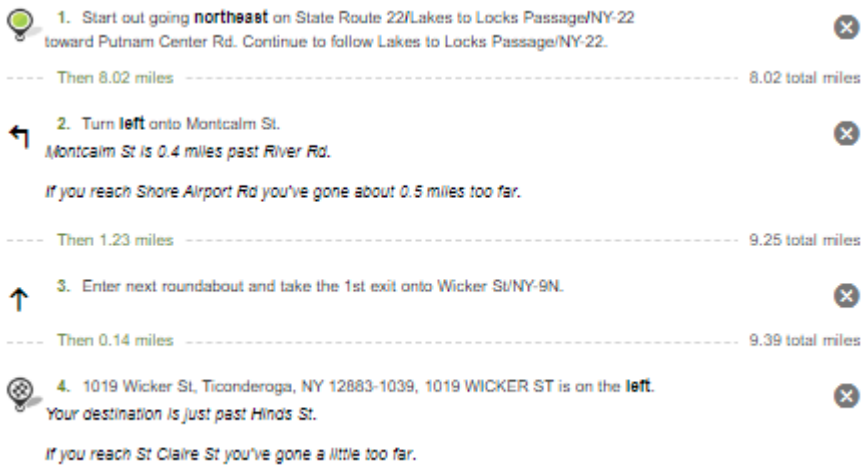
OC DOCTOR – Non Emergency

Work Related Incidents/Accidents:

Any injured employee requiring assistance above and beyond first aid should obtain immediate attention at the address provided herein:

Transport to the Occupational Medical Provider

Inter-Lakes Health
1019 Wicker St,
Ticonderoga, NY 12883
845-429-4000



After medical care has been given to an injured employee, notify the Safety Director ASAP @ (908) 433-3755.

A written incident report must be submitted within 24 hours of the occurrence to Safety@Jaginc.co

Caldwell Marine International, LLC HUXTED TUNNELING EC DRILLING INTERNATIONAL

JOB EMERGENCY ACTION PLAN

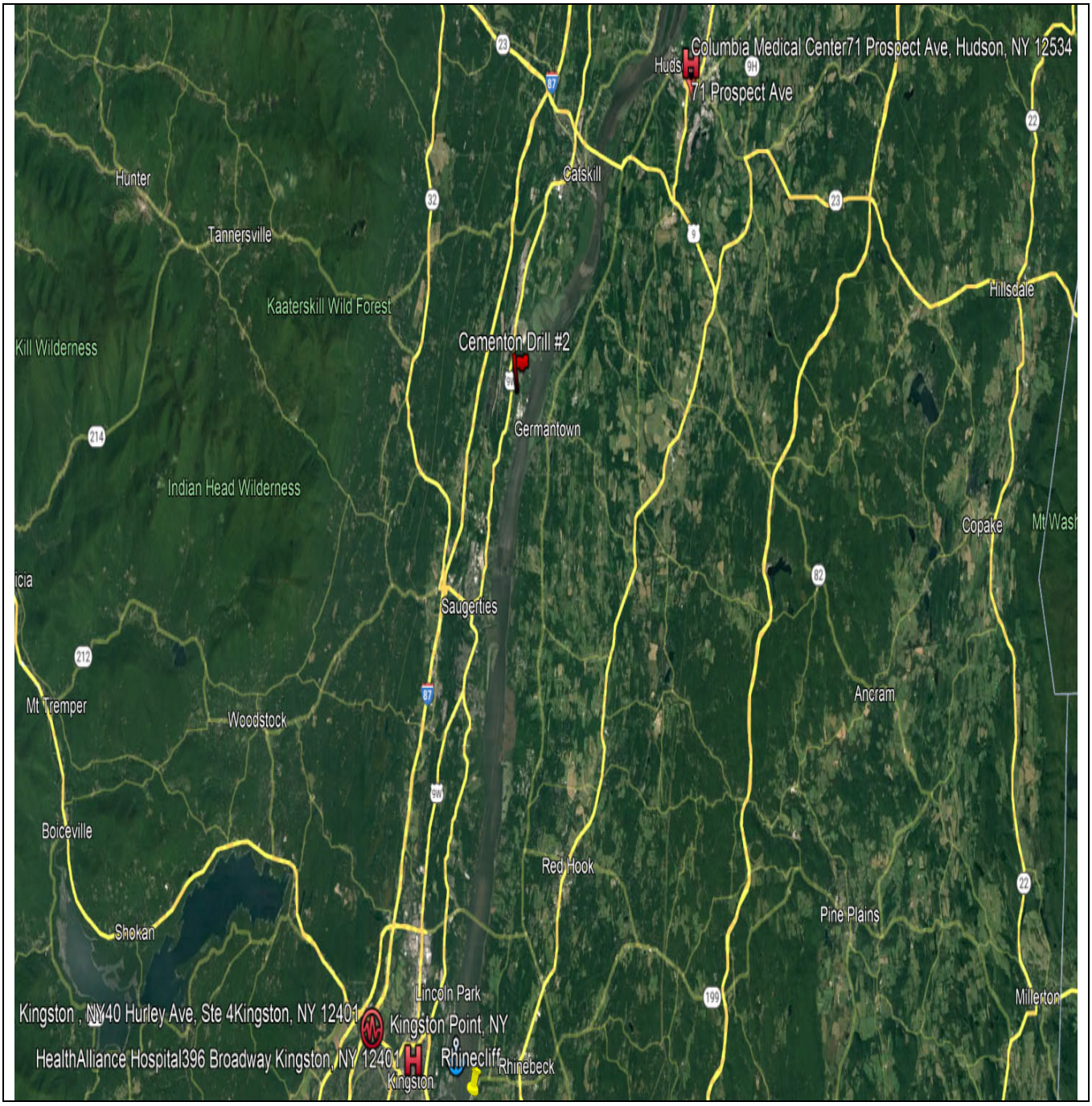
JOBSITE DETAILS			
Date: 07/12/22	**Project Owner:** CHPE, LLC	**Contractor:** CMI/ECI	
Project Name: CHPE HDD			**Job No:** 1229
Project Address: Cementon Drill #2- 523 Co Rd 3 Putnam Station, NY 12861			
PM: Thomas Ulisse	**Cell:** 732 620 3470	**Supt:** Brett Bryant	**Cell:** 732 620 4214

EMERGENCY CALLING INFORMATION – 911		(*Lcal numbers are required, even if 911 is used.*)
Department	***Name***	***Telephone Number***
POLICE	**Catskill Village Police**	**518 943 2244/911**
FIRE DEPARTMENT	**Malden West Camp Station**	**845 246 3287/911**
FIRST AID/ NON-EMERGENCY	**Emergency One-Kingston, NY**	**845 331 3131**
HOSPITAL / EMERGENCY	**COLUMBIA MEMORIAL HEALTH**	**518 828 760171**
POISON CONTROL	**NY Poison Control**	**800 222 1222**
SPILL RESONSE	**Clean Harbors**	**800 645 8265**
OSHA	**** Corporate Safety Director will Initiate Any/All Contact with OSHA****	
DIVE HOSPITAL	**Jacobi Medical Center 234 East 149th St. Bronx, NY**	**1-718-579-5000**
Other:		

OWNER / CONTRACTOR CALLING INFORMATION		
Role	***Name- Address***	***Telephone***
OWNER: CHPE,LLC		
OWNER'S ENGINEER:		
GENERAL CONTRACTOR: NKT INC.	**Fredrik Hallsten**	**919-836-3522**
SUBCONTRACTOR: ECI DRILLING, LLC	**John Langford**	**(936) 5224-0852**
SITE SAFETY REPRESENTATIVE:	**Lucky Abernathy**	**(908) 433-3755**

JOB EMERGENCY ACTION PLAN

EVACUATION POINT(s)



JOB EMERGENCY ACTION PLAN

HOSPITAL - Emergency

Work Related Incidents/Accidents:

Any injured employee requiring assistance beyond first aid should obtain immediate attention at the address provided herein:

Transport to the nearest Emergency Room

Prospect Ave
Hudson, NY 12534
818 828 7601

1. Start out going **north** toward Lehigh Rd.
   Then 0.42 miles — 0.42 total miles
2. Take the 1st **left** onto Lehigh Rd.
   Then 0.18 miles — 0.60 total miles
3. Turn **left**.
   Then 0.16 miles — 0.76 total miles
4. Take the 1st **right** onto US Highway 9W/US-9W N.
   If you are on US Highway 9W and reach Alpha Rd you've gone about 0.3 miles too far.
   Then 4.78 miles — 5.54 total miles
5. Turn **right** onto W Bridge St/US-9W N.
   Then 0.56 miles — 6.09 total miles
6. Turn **slight right** onto W Bridge St/NY-385.
   W Bridge St is just past Grandview Plz.
   Then 0.88 miles — 6.97 total miles
7. Turn **left** onto Spring St/NY-385.
   Spring St is just past Liberty St.
   If you reach Prospect Ave you've gone a little too far.
   Then 0.56 miles — 7.53 total miles
8. Turn **right** onto Rip Van Winkle Bridge/NY-23 (Portions toll).
   Rip Van Winkle Bridge is just past Gardiner St.
   Then 1.57 miles — 9.10 total miles
9. Enter next roundabout and take the 2nd exit onto Rhinebeck-Hudson Rd/NY-23/NY-9G.
   Then 0.47 miles — 9.56 total miles
10. Turn **left** onto NY-9G/NY-23B.
    If you are on State Route 23 and reach Conway Rd you've gone about 0.3 miles too far.
    Then 2.79 miles — 12.35 total miles
11. Turn **right** onto Warren St.
    Warren St is just past Cherry Aly.
    If you are on N 3rd St and reach Prison Aly you've gone a little too far.
    Then 0.78 miles — 13.13 total miles
12. Turn **left** onto Prospect Ave.
    Prospect Ave is just past 8th St.
    If you reach Worth Aly you've gone about 0.2 miles too far.
    Then 0.24 miles — 13.37 total miles
13. 71 Prospect Ave, Hudson, NY 12534-2907, 71 PROSPECT AVE is on the **left**.
    Your destination is 0.1 miles past Rossman Ave.

After emergency care has been given to an injured employee, notify the Safety Director ASAP @ (908) 433-3755.

A written incident report must be submitted within 24 hours of the occurrence to Safety@Jaginc.co

Caldwell Marine International, LLC

HUXTED TUNNELING

EQ DRILLING INTERNATIONAL

JOB EMERGENCY ACTION PLAN

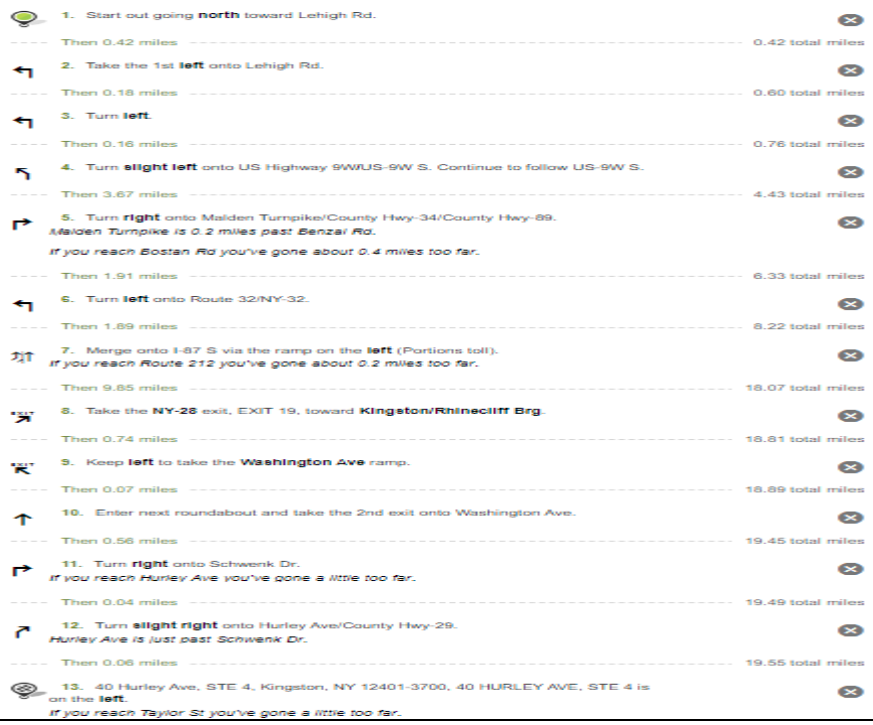
OC DOCTOR – Non Emergency

Work Related Incidents/Accidents:

Any injured employee requiring assistance above and beyond first aid should obtain immediate attention at the address provided herein:

Transport to the Occupational Medical Provider

Emergency One, Kingston, NY
40 Hurley Ave, Ste 4
Kingston, NY 12401
(845) 338-5600



After medical care has been given to an injured employee, notify the Safety Director ASAP @ (908) 433-3755.

A written incident report must be submitted within 24 hours of the occurrence to Safety@Jaginc.co

Caldwell Marine International, LLC HUXTED TUNNELING EC DRILLING INTERNATIONAL

JOB EMERGENCY ACTION PLAN

JOBSITE DETAILS			
Date: 03/04/22	**Project Owner:** CHPE,LLC	**Contractor:** CMI/ECI	
Project Name: CHPE HDD			**Job No:** 1229
Project Address: Drill #3 - Stony Point – 1 Elm Ave, Tompkins Cove, NY			
PM: Thomas Ulisse	**Cell:** 732 620 3470	**Supt:** Brett Bryant	**Cell:** 732 620 4214

EMERGENCY CALLING INFORMATION – 911		*(Local numbers are required, even if 911 is used.)*
Department	***Name***	***Telephone Number***
POLICE	**Stony Point Police Dept.**	**845-786-2422/911**
FIRE DEPARTMENT	**West Haverstraw Fire Dept.**	**845-947-2800/911**
FIRST AID / NON-EMERGENCY	**Rockland Urgent Care**	**845-429-4000**
HOSPITAL / EMERGENCY	**Montefiore Nyack Hospital**	**845-348-2000**
POISON CONTROL	**NY Poison Control**	**1-800-222-1222**
SPILL RESONSE	**Clean Harbors**	**1-800-645-8265**
OSHA	**** Corporate Safety Director will Initiate Any/All Contact with OSHA****	
DIVE HOSPITAL	**Jacobi Medical Center 234 East 149th St. Bronx, NY**	**1-718-579-5000**
Other:		

OWNER / CONTRACTOR CALLING INFORMATION		
Role	***Name- Address***	***Telephone***
OWNER: CHPE,LLC		
OWNER'S ENGINEER:		
GENERAL CONTRACTOR: NKT INC.	**Fredrik Hallsten**	**919-836-3522**
SUBCONTRACTOR: ECI DRILLING, LLC	**John Langford**	**(936) 5224-0852**
SITE SAFETY REPRESENTATIVE:	**Lucky Abernathy**	**(908) 433-3755**

JOB EMERGENCY ACTION PLAN

EVACUATION POINT(s)

JOB EMERGENCY ACTION PLAN

HOSPITAL - Emergency

Work Related Incidents/Accidents:

Any injured employee requiring assistance beyond first aid should obtain immediate attention at the address provided herein:

Transport to the nearest Emergency Room

Montefiore Nyack Hospital
160 N Midland Avenue
Nyack, NY 10960
845-348-2000

Head south on Elm Ave	
Turn left onto N Liberty Dr	167 ft
Turn right onto Wayne Ave	0.3 mi
Turn slightly right onto W Main St	1.4 mi
Turn right onto Route 210	0.2 mi
Turn left onto Palisades Interstate Pkwy	1.5 mi
Keep right and leave the freeway at exit 9E towards I-87 South/I-287 East/New York City	9.9 mi
Enter the freeway I-287 E/I-87 S from the right	0.5 mi
Keep right and leave the freeway at exit 11 towards South Nyack/US-9W/Nyack	2.8 mi
Turn left onto Route 59	0.2 mi
Turn left onto N Highland Ave	0.4 mi
Turn right onto 5th Ave	0.4 mi
Turn right onto N Midland Ave	0.1 mi
Turn right	344 ft
Turn left	82 ft
Your destination is in front of you	157 ft

After emergency care has been given to an injured employee, notify the Safety Director ASAP @ (908) 433-3755.

A written incident report must be submitted within 24 hours of the occurrence to Safety@Jaginc.co

Caldwell Marine International, LLC HUXTED TUNNELING EQ DRILLING INTERNATIONAL

JOB EMERGENCY ACTION PLAN

OC DOCTOR – Non Emergency

Work Related Incidents/Accidents:

Any injured employee requiring assistance above and beyond first aid should obtain immediate attention at the address provided herein:

Transport to the Occupational Medical Provider

Rockland Urgent Care
89 South Route 9W
West Haverstraw, NY 10993
845-429-4000

After medical care has been given to an injured employee, notify the Safety Director ASAP @ (908) 433-3755.

A written incident report must be submitted within 24 hours of the occurrence to Safety@Jaginc.co

Caldwell Marine International, LLC HUXTED TUNNELING EC DRILLING INTERNATIONAL

JOB EMERGENCY ACTION PLAN

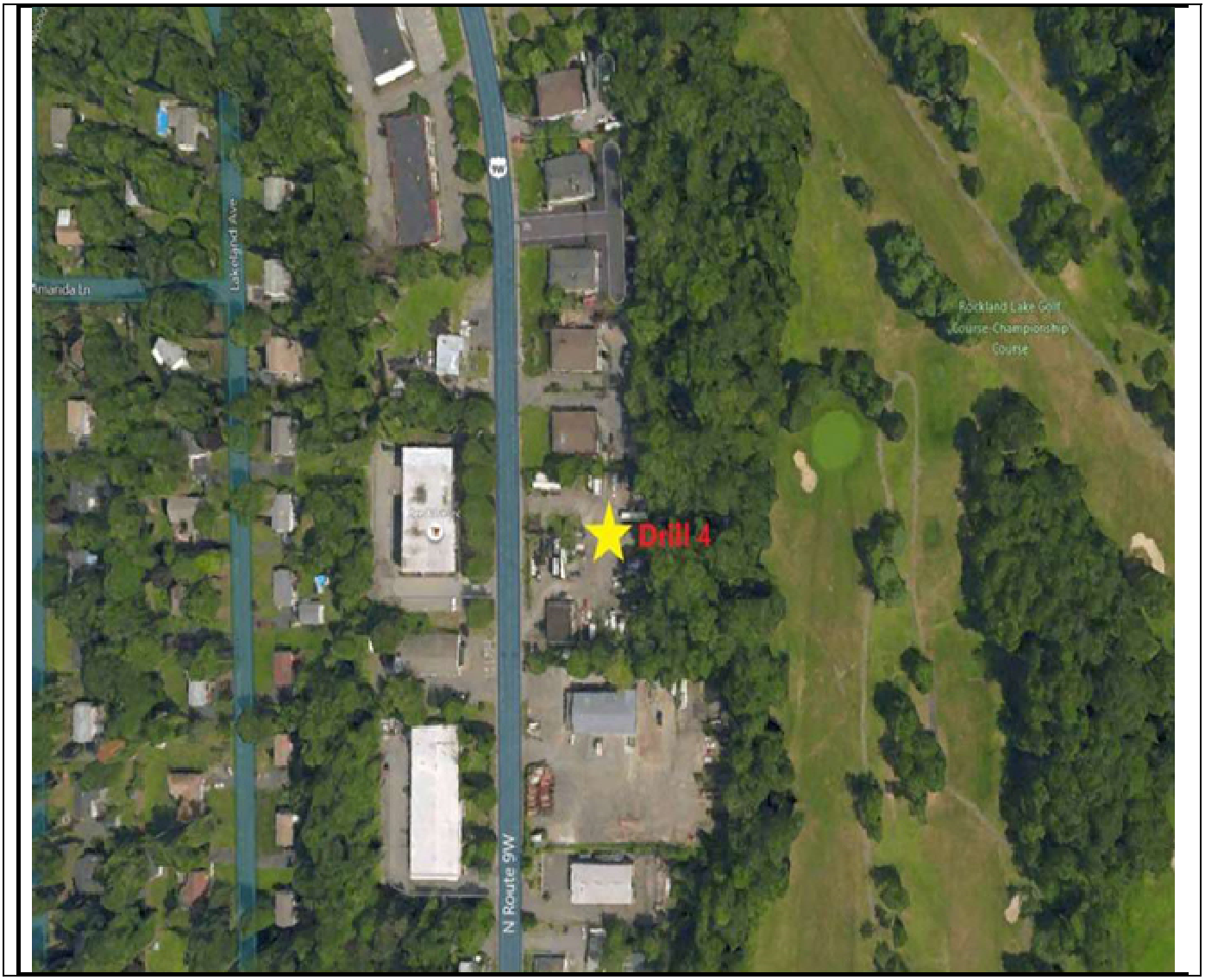
JOBSITE DETAILS			
Date: 03/04/22	**Project Owner:** CHPE, LLC	**Contractor:** CMI/ECI	
Project Name: CHPE HDD			**Job No:** 1229
Project Address: Drill #4 Congers – 152 Rte. 9W Congers, NY			
PM: Thomas Ulisse	**Cell:** 732 620 3470	**Supt:** Brett Bryant	**Cell:** 732 620 4214

EMERGENCY CALLING INFORMATION – 911		*(Local numbers are required, even if 911 is used.)*
Department	***Name***	***Telephone Number***
POLICE	**Rockland Lake Police**	**845-268-6200/911**
FIRE DEPARTMENT	**Congers Fire Dept.**	**845-268-6562/911**
FIRST AID / NON-EMERGENCY	**Walk-in Medical Urgent Care**	**845-678-3434**
HOSPITAL / EMERGENCY	**Montefiore Nyack Hospital**	**845-348-2000**
POISON CONTROL	**NY Poison Control**	**1-800-222-1222**
SPILL RESONSE	**Clean Harbors**	**1-800-645-8265**
OSHA	**** Corporate Safety Director will Initiate Any/All Contact with OSHA****	
DIVE HOSPITAL	**Jacobi Medical Center 234 East 149th St. Bronx, NY**	**1-718-579-5000**
Other:		

OWNER / CONTRACTOR CALLING INFORMATION		
Role	***Name- Address***	***Telephone***
OWNER: CHPE,LLC		
OWNER'S ENGINEER:		
GENERAL CONTRACTOR: NKT INC.	**Fredrik Hallsten**	**919-836-3522**
SUBCONTRACTOR: ECI DRILLING, LLC	**John Langford**	**(936) 5224-0852**
SITE SAFETY REPRESENTATIVE:	**Lucky Abernathy**	**(908) 433-3755**

JOB EMERGENCY ACTION PLAN

EVACUATION POINT(s)



Caldwell Marine International, LLC

HUXTED TUNNELING

EC DRILLING INTERNATIONAL

JOB EMERGENCY ACTION PLAN

HOSPITAL - Emergency

Work Related Incidents/Accidents:

Any injured employee requiring assistance beyond first aid should obtain immediate attention at the address provided herein:

Transport to the nearest Emergency Room

Montefiore Nyack Hospital
160 N Midland Avenue
Nyack, NY 10960
845-348-2000

Head south on Elm Ave	
Turn left onto N Liberty Dr	167 ft
Turn right onto Wayne Ave	0.3 mi
Turn slightly right onto W Main St	1.4 mi
Turn right onto Route 210	0.2 mi
Turn left onto Palisades Interstate Pkwy	1.5 mi
Keep right and leave the freeway at exit 9E towards I-87 South/I-287 East/New York City	9.9 mi
Enter the freeway I-287 E/I-87 S from the right	0.5 mi
Keep right and leave the freeway at exit 11 towards South Nyack/US-9W/Nyack	2.8 mi
Turn left onto Route 59	0.2 mi
Turn left onto N Highland Ave	0.4 mi
Turn right onto 5th Ave	0.4 mi
Turn right onto N Midland Ave	0.1 mi
Turn right	344 ft
Turn left	82 ft
Your destination is in front of you	157 ft

After emergency care has been given to an injured employee, notify the Safety Director ASAP @ (908) 433-3755.

A written incident report must be submitted within 24 hours of the occurrence to Safety@Jaginc.co

Caldwell Marine International, LLC HUXTED TUNNELING EQ DRILLING INTERNATIONAL

JOB EMERGENCY ACTION PLAN

OC DOCTOR – Non-Emergency

Work Related Incidents/Accidents:

Any injured employee requiring assistance above and beyond first aid should obtain immediate attention at the address provided herein:

Transport to the Occupational Medical Provider

Walk-In Medical Urgent Care

236 South Main Street
New City, NY 10906
845-678-3434

Head north on N Route 9W	
Turn left onto Route 304	1.6 mi
Turn right onto 3rd St	3.4 mi
Turn left onto S Main St	0.2 mi
Turn left	0.2 mi
Your destination is on the right	135 ft

After medical care has been given to an injured employee, notify the Safety Director ASAP @ (908) 433-3755.

A written incident report must be submitted within 24 hours of the occurrence to Safety@Jaginc.co

Caldwell Marine International, LLC HUXTED TUNNELING EC DRILLING INTERNATIONAL

Attachment 11
HSE Monthly Report

HEALTH, SAFETY & ENVIRONMENT – MONTHLY REPORT

Project:			
Project Number:			**Month:**
Man-hours	Total Carried:	Current Month:	Project Total:
Employee/Visitor On-Boarding	Total Carried:	Current Month:	Project Total:
Daily JAGs (Job Action Guide)	Total Carried:	Current Month:	Project Total:
Weekly Toolbox Topics	Total Carried:	Current Month:	Project Total:
Safety Inspection Performed	Total Carried:	Current Month:	Project Total:
Safety Stand-Down/Time-Outs	Total Carried:	Current Month:	Project Total:
Near Miss	Total Carried:	Current Month:	Project Total:
First Aid	Total Carried:	Current Month:	Project Total:
Medical Treatment (Off-Site)	Total Carried:	Current Month:	Project Total:
Restricted Duty	Total Carried:	Current Month:	Project Total:
Lost Time	Total Carried:	Current Month:	Project Total:
Environmental Incidents	Total Carried:	Current Month:	Project Total:
Asset/Equipment Damage	Total Carried:	Current Month:	Project Total:
Management Of Change	Total Carried:	Current Month:	Project Total:

Incident Status Up-Date

Date:	Location:	Incident #:	Title:	Category:	Status: Open/ Close

Prepared By:	**Signature:**	**Date:**

Attachment 12

Site Specific Safety Orientation Form

JAG COMPANIES

SITE SPECIFIC SAFETY ORIENTATION

Contractor / Subcontractor:	Project Number:
I have attended the site orientation and understand and furthermore I accept the site rules and regulations presented.	
Printed Name:	Trade:
Address:	Telephone Number:
Emergency Contact Person & Telephone Number:	Driver's License Number:

MEDICAL QUESTIONS – This information is medical and is considered confidential.
All questions are voluntarily requested to assist in the event of an emergency.

1. **Do you have any known allergies?** ☐ No ☐ Yes If yes, describe: _____
2. **Are you on any medications?** ☐ No ☐ Yes If yes, describe: _____
3. **Do you have first aid training?** ☐ No ☐ Yes If yes, exp. date: _____

SAFETY RULES AND REGULATIONS

☐ Review of Federal Regulations & Requirements	☐ Work Permit
☐ Emergency Response / Alarms	☐ Scaffolding / Tag System
☐ First Aid Station / Location / Training	☐ Ladders
☐ Reporting ACC / INC / Injuries / Hazards	☐ Riggers – Responsibilities
☐ Worker Responsibilities	☐ Preventive Maintenance Program
☐ Foreman Responsibilities	☐ Excavations
☐ Management Responsibilities	☐ Barricades
☐ Worker Right to Know	☐ Signage / Flagging
☐ Site Hazards	☐ Welders Responsibilities / Work Protection, etc.
☐ HNIS / MSDS – Training / Locations	☐ Fire Extinguishers / Locations / Inspections
☐ Communication Systems	☐ Torches / Cutting Equipment / Safeguards / Flash Arrestors
☐ Traffic Patterns / Parking / Security	☐ Proper Storage / Transporting Cylinders
☐ Safety Meetings	☐ Inspection of Hoses / Coupling etc.
☐ Smoking / Alcohol / Drugs	☐ Equipment Safeguards
☐ Zero Tolerance Rules	☐ Grinders / Disc Rated
☐ Equipment Inspection / Certification	☐ Electrical Cords / Connectors / Overhead Lines
☐ Equipment Hazards	☐ Hand Tools / Power Tools
☐ Lockout Program	☐ Rowdiness / Horseplay
☐ P.P.E. Eyes / Ears / Head / Hands / Feet	☐ Good Housekeeping / Sanitation
☐ Safety Harness / Lanyards	☐ Other:
☐ Confines Space / Training	☐ Other:

Attendee's Signature:	Date:
Instructor's Signature:	Date:

NORTHEAST REMSCO Construction · Caldwell Marine International, LLC · HUXTED TUNNELING · EC DRILLING INTERNATIONAL

Attachment 13
Lightning Safety Procedures

Lightning Safety Procedures

Overview

The purpose of this document is to provide a guide for personal safety during thunderstorms.
A brief review of common medical problems encountered with a lightning strike and appropriate first aid treatment is also included.

References

OSHA Emergency Action Plans 29CFR 1926.35

Hazards

Direct strike - statistics show that death resulted in over 70 % of cases.
Side flash - e.g. standing near a tree - this can be as serious as a direct strike.
Contact potential - physical contact with struck object has similar consequences to direct strike.
Step voltage - lightning impulse traveling through/on ground and may pass through one limb/part and out another. Injuries include burns and paralysis but these are usually temporary.
Surge propagation - person close to or in contact with an electrical appliance or power/communication line. Serious injury is not common but a number of deaths have resulted from telephone usage.

Key Responsibilities

Managers and Supervisors

- Review project Emergency Action Plan (EAP), as outlined in 29 CFR 1926.35
- Review written lightning safety protocol with all outdoor workers
- Regularly monitor weather conditions and local weather forecasts prior to scheduled activities
- Monitor SkyScan EWS-PRO 2 Portable Lightning Detector and Early Warning Device
- Notify all employees about lightning safety warnings and instruct workers seek safe shelter inside.
- Suspend outdoor work activities when lightning is detected within 3-8 miles
- Inform all workers to take action after hearing thunder, seeing lightning, or perceiving any other warning signs of approaching thunderstorms.
- Do not allow the resumption of outdoor work activities until 30min after the last lightning strike.

Employees

- Follow all directions and instruction of your supervisor
- When instructed, seek safe shelter ASAP
- Do not return to work until instructed to do so by supervisor.
- Employees should safely secure any work tasks being performed at the time of lightning notification and seek safe shelter inside ASAP.

Procedure/Practices

General

Lightning safety awareness should be a priority at every outdoor facility and operation, where education is the single most important means to achieving this goal.

The number one rule is that workers need to always consider their own situational safety, and those who may find themselves exposed to the risk should always recognize and anticipate their exposure to a changing or high-risk situation, and where appropriate move to a lower-risk location.

The following steps are suggested:

1. Regularly monitor weather conditions and local weather forecasts prior to scheduled activities.
2. Suspension and resumption of work activities should be planned in advance, in conjunction with this Lightning Risk Policy
3. Understanding of SAFE shelters is essential. SAFE evacuation sites include:
    - Grounder Barge offices/lunchroom/tool containers
    - Fully enclosed metal vehicles with windows up
    - Substantial buildings
    - Low ground
4. UNSAFE SHELTER AREAS include all outdoor metal objects, like power poles, fences and gates, high mast light poles, electrical equipment, mowing and road machinery.
    - AVOID solitary trees.
    - AVOID water.
    - AVOID open fields.
    - AVOID high ground and caves.
5. If you feel your hair standing on end, and/or hear "crackling noises," you are in lightning's electric field. If caught outside during close lightning activity, immediately remove metal objects (including baseball cap, jewelry, belts, car keys etc.), place your feet together, duck your head, and crouch down low with hands on knees.
6. Wait a minimum of 30 minutes from the last observed lightning or thunder before resuming activities. Be extra cautious during this phase as the storm may not be over.
7. People who have been struck by lightning do not carry an electrical charge and are safe to handle. Apply first aid immediately if you are qualified to do so. Get emergency help promptly.
9. Suspend activities, allowing sufficient time to get to shelter. Of course, different distances to safety will determine different times to suspend activities.
10. Be aware of your surroundings and the nearest safe area.

SkyScan EWS-PRO 2 Features:

Accurate digital microprocessor with patented dual antenna receiving system

- Built-in 12 volt rechargeable power source, operating for 7+ days on a single charge
- Loud 95dB alert horn, with adjustable range setting
- Rugged weather-resistant case
- Low battery indicator on the weather detector
- Severe thunderstorm alert that warns of large storm cell approaching
- False signal filtering feature to warn against any possible location interference
- Accurate identification software that eliminates alerts to harmless cloud-to-cloud lightning activity
- Battery management intelligent battery recharging system.
- Case designed with battery recharger storage compartment

Attachment 14
Pandemic Response Plan

JAG Companies

Pandemic Pathogen Response Plan

VERSION 1.5 | November 1, 2020

Authored by: Rolando E. Acosta

JAG Companies Pandemic Pathogen Response Plan

Note: The following plan provides a general framework that any Northeast Remsco Construction, Caldwell Marine International, Huxted Tunneling, and ECI Drilling International facility/project should follow during a pandemic event. The plan is based on Federal guidelines; however, State/Local Governments, Project Owners, or specific circumstances may require a different standard of response. The Plan, in coordination with the Emergency Response Team, may be altered to support additional requirements requested/required from State/Local Governments or Project Owners or to respond to particular conditions.

1. Purpose & Goal

a. The purpose of implementing the JAG Companies Pandemic Pathogen Response Plan (the "plan") is to:
    i. (1) protect the health of our employees and their families
    ii. (2) to ensure business continuity and maintain mission-critical operations and services during a pandemic event
b. Maintaining essential business functions during a pandemic event is a challenge and the response requires flexibility based on available credible information from government agencies (federal, state, & local) and medical professionals.
c. The plan allows JAG Co. to respond to any pandemic, outbreak, or health related event effectively and efficiently.
d. Leadership is key during a pandemic event. Employees will look to management to provide leadership for JAG Co. We are committed to lead as follows:
    i. *Anticipate*: We will attempt to predict what lies ahead without succumbing to panic.
    ii. *Navigate*: We will course correct as needed in real time.
    iii. *Communicate*: We will continually maintain clear, established lines of communication with our employees.
    iv. *Listen*: We will listen to the experts, our advisors, and our employees, including information we may not want to hear. We will attempt to avoid media hype and crowd hysteria.
    v. *Learn*: We will use what we learn from this experience as a lesson for future events.
    vi. *Lead*: We will improve ourselves and elevate those around us.
e. The plan will be reviewed annually or during the initial phases of a health event as needed. Reviewers will include certain JAG Co. management personnel.

2. Key Terms & Definitions

a. **Close Contact**: Being within 6 feet of an infected person for a cumulative total of 15 minutes or more over a 24-hour period regardless of whether cloth face covers or masks were in us.
    i. Anyone who has been exposed to COIVD-19 due to "close contact" is required to stay home for 14-days from the day of last exposure.
        1. During the 14 days, that person must maintain a distance of at least 6 fee from others at all times, self-monitor for symptoms, avoid contact with people at higher risk of illness, and follow CDC guidelines if they develop symptoms.
    ii. Brief interactions totaling 15 minutes over the course of 24-hours with:
        1. A person who is known to have COVID-19 (i.e., someone who has been

tested and confirmed to have COVID-19),
2. A person who developed symptoms consistent with COVID-19 two to three days after the interaction, or
3. A person currently experiencing symptoms of COVID-19.

iii. Factors to consider when evaluating close contact:
1. Proximity: closer distance increases exposure risk.
2. Duration: longer interactions increase exposure risk.
3. Symptoms: interactions with a person within two to three days of symptom onset increase your exposure risk.
4. Activity: interactions with persons coughing or shouting increase your exposure risk.
5. Location: interactions in an area that has less ventilation (indoors vs. outdoors) increase your exposure risk.

b. **Hand Hygiene**: Applies to the disinfecting of one's hands. This is usually done with soap and water, hand sanitizer, or hand wipes. It is recommended that you wash your hands for a minimum of 20 seconds with soap & water and 10 seconds with hand sanitizer/wipes.
c. **Human-to-Human Transmission:** Refers to the spread of a pathogen from one human to another by (including but not limited to): direct contact with the blood or body fluids (i.e., *saliva, urine, vomit, semen, and feces***)** of an infected person or contact with objects that have been contaminated with the blood or body fluids of an infected person.
i. The pathogen in the blood & body fluids can enter another person's body through broken skin or unprotected mucous membranes in the eyes, nose, or mouth.
ii. During outbreaks of pathogen, the disease can spread quickly and human-to-human contact must be avoided and/or eliminated.
iii. Proper disinfecting and disposal of objects is vital.
d. **Infection Control**: A broad term used to describe a number of measures designed to detect, prevent, and contain the spread of an infectious disease. Some measures include hand washing, respiratory etiquette, use of personal protective equipment (PPE), prophylaxis, isolation, and quarantine.
e. **Infectious Disease**: An infectious disease, or communicable disease, is caused by the entrance of organisms (e.g. viruses, bacteria, fungi) into the body that grow and multiply to cause illness. Infectious diseases can be transmitted by direct contact with an infected individual, their discharges (e.g. breath, cough, sneeze), or with an item touched by them.
f. **Isolation**: When sick people are asked to remain in one place (e.g. home, hospital), away from the public, until they are no longer infectious.
g. **Pandemic**: A disease epidemic that has spread across a large region, for instance multiple continents, or worldwide.
h. **Pathogen**: A bacterium, virus, or other microorganism that can cause disease.
i. **Personal Protective Equipment (PPE)**: PPE is specialized clothing or equipment worn to protect someone against a hazard including an infectious disease. It can range from a mask or a pair of gloves to a combination of gear that might cover some or all of the body.
j. **Prevention**: An action taken to reduce or eliminate the opportunities for transmission of the disease from one individual to another. We must all do our part to prevent the spread of the disease by following the procedures outlined in this process.
k. **Quarantine**: A quarantine is when people who have been in close proximity to an infected person, but appear healthy, are asked to remain in one place, away from the general public,

until it can be determined that they have not been infected.

l. **Respiratory Etiquette**: Respiratory etiquette, or good coughing and sneezing manners, is one way of minimizing the spread of pathogens which are passed from human-to-human in the tiny droplets of moisture that come out of the nose or mouth when coughing, sneezing, or talking. Healthy and sick people should cover their nose and mouth when sneezing, coughing, or blowing their nose and then put the used tissue in the trash to prevent the spread of germs.

m. **Social (Physical) Distancing**: An infection control strategy that includes methods of reducing the frequency and the closeness of contact between people to limit the spread of infectious diseases. Generally, social distancing refers to the avoidance of gatherings with many people.
    i. In the event **Social (Physical) Distancing** is not practical nor feasible during work activities, the employee will be supplied and required to wear the appropriate respiratory PPE.

n. **Work from Home (WFH)**: WFH is a consideration available for certain eligible employees as identified by the Emergency Response Team ("ERT") to work temporarily from home or a remote location. The WFH process will be followed by all identified employees:
    i. The ERT will identify employees that can or will work from home.
    ii. The ERT will notify the employee's manager and the manager will assign a virtual meeting group and meeting group leader.
    iii. Normal operating hours apply.
        1. A 30-minute lunch break will be accounted for during working hours.
    iv. OIT will coordinate and set-up the necessary technology for identified employees.
        1. OIT is available to provide all necessary support.

3. Responsibilities

a. Employer: All JAG Companies' operating companies.
    i. Create, distribute and implement a **"Self-Assessment Checklist."**
        1. The checklist does not supersede any daily assessment protocols that may already be in place as provided by the project owner.
        2. The checklist will be provided to employees as well as prominently displayed at all Company facilities (offices, jobsites, shops, etc.).
        3. If you reply **YES** to any of the checklist questions, **STAY HOME** and immediately contact your supervisor.
    ii. Educate workers about general precautions and regularly communicate plans to limit the spread of the pathogen.
    iii. Reinforce good hygiene practices and take steps to make it easy for workers to frequently wash their hands.
        1. Install hand-sanitizing stations throughout workplaces.
    iv. Implement policies that maintain physical distance between workers.
        1. Post social distancing signs as a reminder.
        2. Instruct employees to avoid direct physical contact.
    v. Identify, clean and sanitize high-risk transmission areas regularly.
    vi. Provide appropriate personal protective equipment (PPE)
    vii. Require sick workers to stay home and send sick workers home.

b. Employees: For the sake of clarity, we are ALL employees.
    i. Employees must complete a self-assessment as outlined in the **"Self-Assessment Checklist"** prior to the start of EVERY shift.
        1. The checklist does not supersede any daily assessment protocols that may already be in place as provided by the project owner.
        2. The checklist will be provided to employees as well as prominently displayed at all Company facilities (offices, jobsites, shops, etc.).
        3. If you reply **YES** to any of the checklist questions, **STAY HOME** and immediately contact your supervisor.
        4. Check your body temperature and know the symptoms that may indicate an infection, specifically COVID-19. Check for the following:
            - Fever or feeling feverish
            - General soreness
            - Fatigue
            - Headache
            - Sore Throat
            - Cough
            - Change or Loss of Appetite
            - Repeated shaking with chills
            - Shortness of breath
            - Muscle pain
            - Loss of taste
            - Loss of smell
            - Diarrhea.
    ii. Employees that are or feel ill must **NOT** report to work
        1. Employee should contact their manager to discuss next steps.
        2. Any employee that reports to work with any "sick symptoms" will be sent home immediately.
        3. The employee may not return to work without clearance or a return to work note from a medical professional or approval from ERT.
    iii. Maintain good workplace hygiene, including hand washing practices and cough/sneeze etiquette.
        1. **100%** use of a "**face cover**" on **ALL** company projects, regardless of geographic location.
        2. The Safety Team is available to discuss and suggest the appropriate face covering for your project activities: cloth covering/mask, surgical mask, KN95, N95, face shield, etc.
    iv. Maintain a distance of at least six feet from other workers and limit large group interactions. Follow these same practices on and off the job as well.
        1. In the event the minimum distance of six feet is not practical nor feasible during work activities, the employee will be supplied and required to wear the appropriate respiratory equipment.
    v. Cooperate with response measures instituted by employer and those recommended by health officials at the federal, state and local level.
    vi. Do not share other workers' phones, PPE or other work tools and equipment.
    vii. Receive recommended appropriate immunization or vaccination.
c. Office/Site Managers: Managers are responsible for implementing the protocol for

employees that are symptomatic and employees returning to work after being out sick.

i. If any employee exhibits symptoms that are indicative of the pandemic, office/site management must be notified immediately. The communication should be oral or telephone first, followed by an email.
    1. Isolate the employee to the best of your ability.
    2. Provide a mask to the employee and instruct them to put the mask on immediately. Masks and other PPE will be available onsite.
    3. The Corporate Safety Director ("CSD") will speak directly with the employee to avoid any misinformation or having pertinent information "lost in translation." The CSD will manage the communications with the employee and protect the identity of the employee to best of their ability.
    4. Instruct the employee to leave work. Ask the employee to avoid public transportation if possible.
    5. Advise the employee to seek medical attention.
    6. Have the employee's workstation, work area, vehicle, tools, etc. cleaned and disinfected immediately by a cleaning service.
    7. If the diagnosis from a medical professional is that the symptoms are unrelated to the pandemic, then the employee may to return to work following review by the ERT.
    8. If the diagnosis from a medical professional is that the employee has the illness causing the pandemic, then the employee must follow the Diagnosed Individual Protocol outlined in *Section 5d* below.
    9. Check on the employee during their absence from work and encourage a return to work once they feel better and are cleared by medical professional.

ii. **Temperature Screening**
    1. To protect your co-workers and families, the company will require temperature screening for all employees returning to their workplace after being sick or quarantined.
    2. Body temperatures will be taken in a manner that is consistent with infection control and social distancing policies (six-foot separation between individuals in line) and provides privacy for those individuals being screened.
    3. Screening information will be considered confidential and protected accordingly, even while acting on that information to protect the health and safety of others in the workplace.
    4. For the purpose of the Plan, a fever is defined as subjective fever (feeling feverish) or a measured temperature of 100.4 F (38 C) or higher.
    5. An employee with a body temperature of 100.4 F (38 C) or higher may be denied from returning to their workplace after being sick or quarantined.
        - Employees who screen positive for a fever will be rechecked a second time after 15 minutes.

iii. Any thermometer or other equipment used in the temperature screening process that touches an employee or is touched by an employee should be properly disinfected between uses.

d. Emergency Response Team ("ERT"): An ERT will be responsible for investigating all

pandemic events & emergency events and evaluating the impact such event will have on JAG Co. The ERT will be responsible for providing guidance in responding to the event. The ERT will consist of some or all of the following JAG Co. employees (*the ERT may also include other JAG Co. employees*):

i. Lucky Abernathy, Corporate Safety Director JAG Companies
ii. Roly Acosta, President/CEO JAG Companies
iii. Marcelo Afonso, CFO JAG Companies
iv. Dustin Brasher, VP/GM ECI Drilling International
v. Anna Camooso, HR Manager JAG Companies
vi. Greg Goett, Counsel JAG Companies
vii. John Gutierrez, VP/Equipment Manager JAG Companies
viii. Ray Post, VP/GM Huxted Tunneling
ix. Rob Ross, VP/GM Northeast Remsco Construction
x. Jim Yuille, VP/GM Caldwell Marine International

4. Communication

a. Good communication during a pandemic event is critical to the success of our response. The company will utilize various channels of communication to keep our employees informed including telephone calls, emails, text messages, emergency text message service, letters, handouts, website, social media accounts, etc.
b. The communicator may vary, but the message will have "one voice" for consistency, clear instructions & directions, and to avoid confusion.
c. Regular communication provides:
    i. Notification of any changes in our Tiered Response Plan (*detailed in this plan*).
    ii. Clarification to any Executive Orders from Federal, State, or Local governments.
    iii. Updates on the status of the pandemic from credible sources including the Center for Disease Control ("CDC"), the World Health Organization ("WHO"), & the Occupational Safety & Health Administration ("OSHA").
    iv. Changes to our Response Plan.
    v. Prompt notification of all employees of any known exposure to COVID-19 at the worksite.

5. Pandemic Pathogen Protocol

a. International Travelers: Any employees or project personnel, including subcontractors & vendors, returning from a CDC Level 2 or 3 country must disclose their travels to their manager or project management prior to returning to work. The traveler must remain out of work for the CDC (or equivalent government agency) designated quarantine period (beginning from the date returned to the United States) even if they are not directed to quarantine by government officials. https://wwwnc.cdc.gov/travel/notices/
    i. An employee might be permitted to follow WFH process if job duties allow.
b. Domestic Travelers: Any employees or project personnel, including subcontractors & vendors, returning from domestic travel must disclose their travels to their manager or project management prior to returning to work. Notification is required regardless of travel method (i.e., air, rail, ship, road, etc.) The ERT will provide guidance that may include a CDC (or equivalent government agency) designated quarantine period (beginning from the date returned to the United States) even if they are not directed to

quarantine by government officials.

i. An employee might be permitted to follow WFH process if job duties allow.

c. Individuals directed to Quarantine by Federal, State & Local Authorities: Employees, subcontractors or vendors who are directed to quarantine by federal, state or local authorities must remain out of work for the duration of the quarantine period.
    i. An employee might be permitted to follow WFH process if job duties allow.
d. Diagnosed Individuals: Employees, subcontractors or vendors who have been diagnosed with a pandemic pathogen must remain out of work for the CDC (or equivalent government agency) designated quarantine period starting from the date of the positive diagnosis. The individual cannot return to work unless they have been cleared by a medical professional and the ERT.
    i. An employee might be permitted to follow WFH process if job duties allow.
e. Others: Individuals who feel they are at risk for contracting a pandemic pathogen must provide a written statement to their manager explaining the reason for their concerns. Concerns might include shared residence with a diagnosed person, close contact with a diagnosed person, exposure to the pathogen in their personal life, etc. The ERT will review the statement and provide guidance that may include some period of quarantine.
    i. An employee might be permitted to follow WFH process if job duties allow.
f. These are intended as general guidelines; JAG Co. may modify or make exceptions following review and approval by the ERT.

6. COVID-19 Risk Assessment

a. The Company will conduct periodic assessments of risk levels following OSHA and CDC guidance to keep employees safe on a continuous basis.
b. OSHA classifies occupational risk to COVID-19 infections as:
    i. ***Lower Exposure Risk***: Activities that do not require contact between people know to be, or suspected of being, infective with COVID-19 nor frequent contact with (within 6 feet of) the general public.
    ii. ***Medium Exposure Risk***: Activities that require frequent and/or close contact with (within 6 feet of) people who may be infected with COVID-19, but who are not known or suspected to be infected with COVID-19.
    iii. ***High Exposure Risk***: Activities with high potential for exposure to known or suspected sources of COVID-19.
    iv. ***Very High Exposure Risk***: Activities with high potential for exposure to known or suspected sources of COVID-19 during specific medical, postmortem, or laboratory procedures.

7. JAG Companies Face Cover PPE Protocol

a. During a pandemic, company protocol is **100%** use of a "**face cover**" on **ALL** company property (office, project, shops, etc).
b. **General Information**
    i. A face covering is a personal protective device that is worn on the face or head and covers at least the nose and mouth. A face covering is used to reduce the wearer's risk of inhaling hazardous airborne particles (including infectious agents), gases or vapors.
    ii. Information indicates that covering your nose and mouth can slow the spread of

a pathogen, including COVID-19.

iii. Lowering the covering from your nose and mouth while talking defeats the purpose of wearing the face covering since you can spread virus while you talk.
iv. Employees may be unable to wear every available face covering due to certain medical conditions.
    1. Employees should consult with the Safety Department prior to utilizing a face covering that they are unfamiliar with or uncertain of wearing.
v. An employee experiencing difficulty breathing while wearing a face covering should social distance immediate and discontinue use. The employee must report the issue to their supervisor as soon as possible.

c. **Cloth Face Covers**
    i. A cloth face cover is a material that covers the nose and mouth.
    ii. It can be secured to the head with ties or straps or simply wrapped around the lower face. It can be made of a variety of materials, such as cotton, silk, or linen.
    iii. A cloth face covering may be factory-made or sewn by hand or can be improvised from household items such as scarfs, T-shirts, sweatshirts, or towels.
    iv. Employees may provide their own cloth face covering or request a company issued cloth face cover.
    v. It is recommended that you wash your cloth face covering frequently, ideally after each use, or at least daily.
    vi. Use a bag or bin to store cloth face coverings until they can be laundered with detergent and hot water and dried on a hot cycle.
    vii. If you must re-wear your cloth face covering before washing, wash your hands immediately after putting it back on and avoid touching your face.
    viii. Do NOT share cloth face coverings nor any other PPE.
    ix. Discard cloth face coverings that:
        1. No longer cover the nose and mouth
        2. Have stretched out or damaged ties or straps
        3. Cannot stay on the face
        4. Have holes or tears in the fabric

d. **Surgical Masks**
    i. A surgical mask is a loose-fitting, disposable device that creates a physical barrier between the mouth and nose of the wearer and potential contaminants in the immediate environment.
    ii. Surgical masks are made in different thicknesses and with different ability to protect you from contact with liquids. These properties may also affect how easily you can breathe through the facemask.
    iii. If worn properly, a surgical mask is meant to help block large-particle droplets, splashes, sprays, or splatter that may contain germs (viruses and bacteria), keeping it from reaching your mouth and nose. Surgical masks may also help reduce exposure of your saliva and respiratory secretions to others.
    iv. Employees should minimize the demand for surgical masks respirators by undertaking preventative actions on the job site. That is our first line of defense.
    v. Surgical masks will be provided to employees when required.
    vi. Do NOT share surgical masks nor any other PPE.
    vii. Surgical masks are not intended to be used more than once. If your mask is damaged or soiled, or if breathing through the mask becomes difficult, you

should remove the face mask, discard it safely, and replace it with a new one.

viii. To safely discard your mask, place it in a secure waste receptacle. Wash your hands after handling the used mask.

e. **N95 Respirator Masks** (KN95 Masks are a suitable alternative under certain emergency circumstances)
   i. A N95 is a type of respirator which removes particles from the air that are breathed through it. These respirators filter out at least 95% of very small (0.3 micron) particles. N95's are capable of filtering out all types of particles, including bacteria and viruses.
   ii. Achieving an adequate seal to the face is essential. When properly fitted and worn, minimal leakage occurs around edges of the respirator when the user inhales. This means almost all of the air is directed through the filter media.
   iii. The CDC does not recommend that the general public wear N95 respirators to protect themselves from respiratory diseases, including coronavirus. Everyday preventative action prevents the spread of respiratory viruses.
   iv. To ensure N95 respirators are available when needed, employees should minimize the demand for N95 respirators by undertaking preventative actions on the job site. That is our first line of defense.
   v. N95 respirators will be provided to employees when required. An employee will be issued one (1) N95 respirator per week (or as needed) when required.
   vi. Do NOT share N95 respirators nor any other PPE.
   vii. During times of supply shortages, the CDC allows for the re-use of N95 respirators assuming it is not clogged with particulates.
   viii. The respirator should be carefully stored between uses:
      1. In a receptacle that allows for some breathability: a paper bag, a plastic container with holes in the top, a closable plastic bag with holes in it.
      2. Label respirators with the user's name before use to prevent reuse by another individual
   ix. The wearer should wash his or her hands before & after handling the respirator.
   x. Respirator users should not attempt to disinfect N95 respirators. It may create a health hazard for the user and it may render the respirator ineffective in providing respiratory protection.
   xi. As the N95 mask gets clogged, it becomes more difficult to breathe. When this occurs, throw it out and request a new one.
   xii. Discard the mask if it is wet, dirty, deformed, or if the filter is torn.
   xiii. To safely discard your mask, place it in a secure waste receptacle.

8. Tiered Response Plan

a. The JAG CO. Tiered Response Plan outlines our temporary approach to a pandemic event to keep our employees & their families safe and maintain mission-critical operations and business continuity.

Office Response Plan

The following shall be applied to each JAG office location as may be required:

TIER ZERO ("0")

- Office open with minimal restrictions.
- Follow the CDC Five:
    - Hands: Wash Them Often
    - Elbow: Cough Into It
    - Face: Don't Touch It
    - Feet: Stay More Than 6ft Apart
    - Feel: Sick? Stay Home

TIER ONE ("1")

- Office open with some restrictions.
- Certain eligible employees might be offered the opportunity to work temporarily from home or remote location ("home").
    - Job description must allow for productive work from home.
    - Manager approval required
    - Follow "Work from Home" Process.
- Request that all meetings be conducted via teleconference or virtual platform.
- Limit personal interactions with co-workers.
- Limit visitors to the office (vendors, subcontractors, spouse, children, etc.)
- Practice social distancing, hand hygiene, and respiratory etiquette.
- Restrict occupancy in common areas such as break or lunch areas.
- Eliminate water coolers and other shared resources (high-touch areas).
- Increase cleaning / wipe down of personal work areas, common areas and facilities.
- Nonessential business related travel suspended.
- Use of a face covering outside of your personal workspace and where 6' of distance cannot be maintained with other employees.

TIER TWO ("2")

- Office open with further restrictions.
- Office restricted to essential personnel and activities as well as employees where telecommunicating poses a hardship.
    - The ERT will identify essential personnel & activities as required.
- All eligible non-essential employees might be offered the opportunity to work temporarily from home.
    - Job description must allow for productive work from home.
    - ERT approval required.
    - Follow "Work from Home" Process.
- All meetings must be conducted via teleconference or virtual platform.
- Limit interactions with co-workers.
- No visitors to the office.
- Practice social distancing, hand hygiene, and respiratory etiquette.
- Restrict occupancy in common areas such as break/lunch areas to accommodate 6' social distance.
- Increase cleaning / wipe down of personal work areas, common areas and facilities.
- All business travel is suspended.
- Use of a face covering outside of your personal workspace and where 6' of distance cannot be maintained with other employees.

TIER THREE ("3")

- Office Closed.
- All eligible essential & non-essential employees might be offered the opportunity to work temporarily from home.
    - Job description must allow for productive work from home.
    - Follow "Work from Home" Process.
- All meetings must be conducted via teleconference or virtual platform.

Field/Shop/Non-Office Locations Response Plan

The following shall be applied to each JAG Companies operating location as may be required:

TIER ZERO ("0")

- Location is operational with minimal restrictions.
- Follow the CDC Five:
    - Hands: Wash Them Often
    - Elbow: Cough Into It
    - Face: Don't Touch It
    - Feet: Stay More Than 6ft Apart
    - Feel: Sick? Stay Home

TIER ONE ("1")

- Location is operational with some restrictions.
- Certain eligible employees might be offered the opportunity to work temporarily from home or remote location ("home").
    - Job description must allow for productive work from home.
    - ERT approval required
    - Follow "Work from Home" Process.
- Request that all meetings be conducted via teleconference or virtual platform.
- Limit personal interactions with co-workers.
- Limit visitors to essential project personnel (owner, engineer, vendors, suppliers, subcontractors, etc.)
- Practice social distancing, hand hygiene, and respiratory etiquette.
- Eliminate water coolers and other shared resources (high-touch areas).
- Increase cleaning / wipe down of personal work areas, common areas and facilities.
- Hold separate "Tool Box Talks" or other job meetings with the various crews.
- Eat lunch separately to the extent possible.
- Reduce choke points (i.e., project entrances, portable toilet facilities, etc.).
- Use of a face covering outside of your personal workspace and where 6' of distance cannot be maintained with other employees.

TIER TWO ("2")

- Location is operational with further restrictions.
- Location restricted to essential personnel and activities.
    - The ERT will identify essential personnel & activities as required.

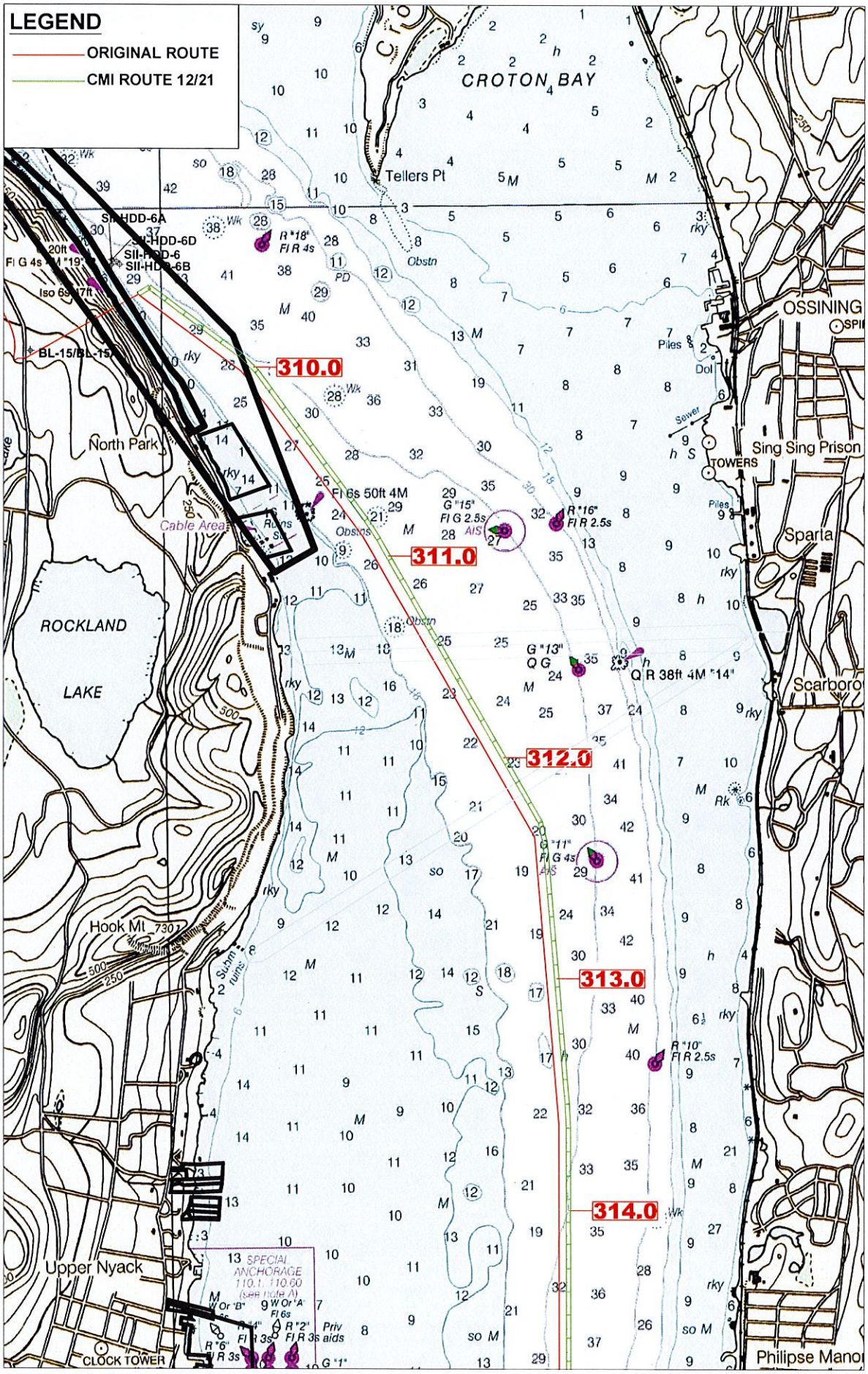
- All eligible non-essential employees might be offered the opportunity to work temporarily from home.
    - Job description must allow for productive work from home.
    - ERT approval required.
    - Follow "Work from Home" Process.
- All meetings must be conducted via teleconference or virtual platform.
- No visitors to the location except for essential personnel.
- Limit interactions with co-workers. Eat lunch separately.
- Practice social distancing, hand hygiene, and respiratory etiquette.
- Increase cleaning / wipe down of personal work areas, common areas and facilities.
- Hold separate "Tool Box Talks" or other job meetings with the various crews.
- Use of a face covering outside of your personal workspace and where 6' of distance cannot be maintained with other employees.

TIER THREE ("3")

- Location is Closed.
- All eligible essential & non-essential employees might be offered the opportunity to work temporarily from home.
    - Job description must allow for productive work from home.
    - Follow "Work from Home" Process.
- All meetings must be conducted via teleconference or virtual platform.

Appendix T – Geotechnical Borings Taken in 2022

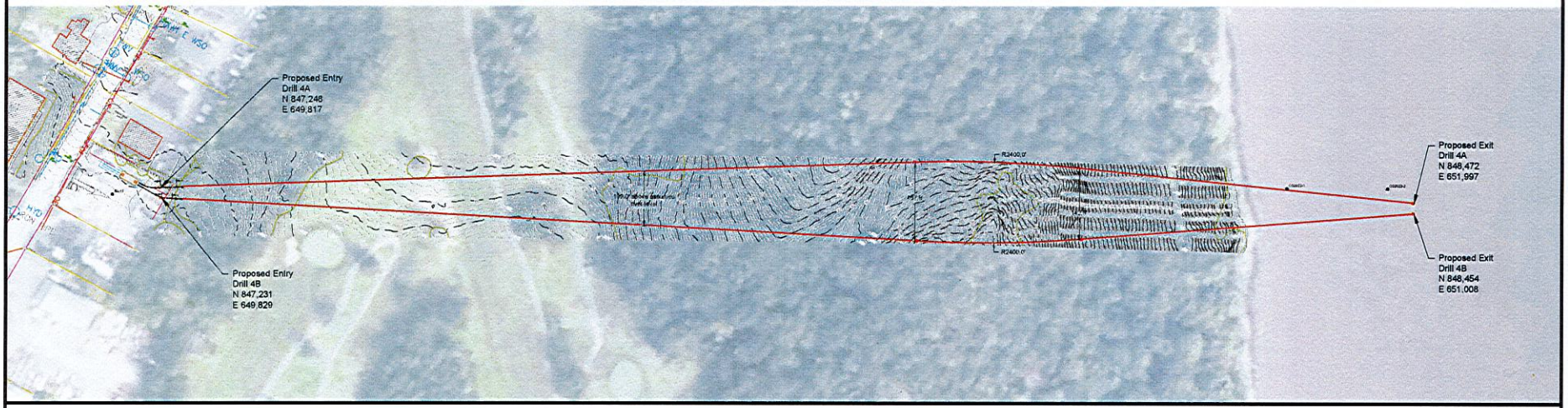
CHPE - HUDSON RIVER CABLE ROUTE ADJUSTMENT

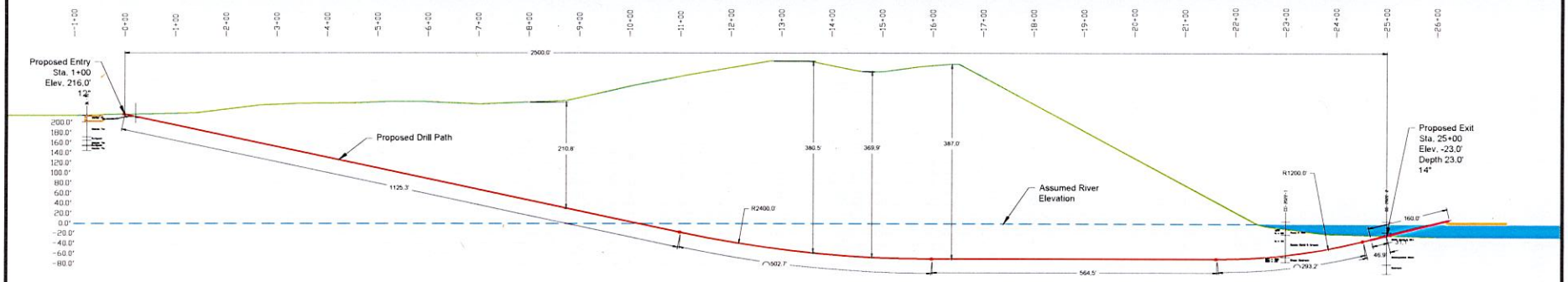


11/03/2021 R1 12/14/2021

SHEET 13 OF 16

Transmission Developers, Inc.
Champlain Hudson Power Express
Drill 4 - Congers





HD = 2,500'
MD = 2,530'
Scale: 1" = 250'

Notes:
1. All existing grade elevations are based on assumptions from Google Earth and NOAA Bathemetry.
2. Detailed IFC drawings will be provided after land survey is complete.
3. Depth of drill profile is greater than horizontal separartion.

EC DRILLING INTERNATIONAL
1306 N. FM 3083 Road
Conroe, Texas 77303
PH: (936) 441-9080
FAX: (936) 441-9082

DATE:	JOB No.:	DRAWN BY:
10-26-22	E20-034	GJH

CLIENT:	PROFILE DIRECTION:
Champlain Hudson Power Express	SW to NE

LOCATION:	DRAWING No.:
Hudson River Congers, New York	Drill 4

Project: **CHPE**
Congers, New York
Date: 03/09/2022 to 03/14/2022
Contractor: Warren George, Inc.

Boring No.: CO-2022-1
Sheet: 1 of 2
Ground El: Barge Deck
Groundwater Depth: NA

Depth Feet	SAMPLES Number	Blows / 6"	Strata	SOIL DESCRIPTION	Classification Depth Elevation
				Barge Deck Assumed 0.0 @ 8:30AM on 3/9/22 Assumed 0.0 is ±1.33ft above MLLW at Haverstraw Bay Position: 41°09' N 73°55' W	
5				Water Line	6'-0"
10					
15				Mud Line	15'-0"
	S-1	WOR-37-58-51		6" River Mud	
	S-2	12-12-14-14			
20	S-3	8-16-18-16	S	Dark gray coarse to fine Sand, and Silt	SM
	S-4	17-12-14-10			
	S-5	12-22-24-15			
25	S-6	17-22-27-25			27'-0"
30	S-7	47-100		Dark gray coarse to fine Gravel, little Silt, some coarse to fine Sand	GM
35	S-8	42-36-38-36			37'-0"
			G_T		
40					
45				Dense Sand & Gravel	GM
50					

Project: **CHPE**
Congers, New York
Date: 03/09/2022 to 03/14/2022
Contractor: Warren George, Inc.

Boring No.: CO-2022-1
Sheet: 2 of 2
Ground El: Barge Deck
Groundwater Depth: NA

Depth Feet	SAMPLES Number	Blows / 6"	Strata	SOIL DESCRIPTION	Classification Depth Elevation
55					
60			G_T	Dense Sand & Gravel	GM
65					
70		RUN =60" 66'-71' REC = 15% RQD = 0%		Gravel in Core Barrel	71'-0"
75		RUN =60" 71-76' REC = 60% RQD = 21%	R	Red brown Shale Bedrock (Stockton Formation):	
80		RUN =60" 76'-81' REC = 45% RQD = 11%			81'-0"
				End of Boring	
85					
90					
95					
100	S-13	100/1"			

Project: **CHPE**
Congers, New York
Date: 03/14/2022 to 03/15/2022
Contractor: Warren George, Inc.

Boring No.: CO-2022-2
Sheet: 1 of 3
Ground El: Barge Deck
Groundwater Depth: NA

Depth Feet	SAMPLES Number	SAMPLES Blows / 6"	Strata	SOIL DESCRIPTION	Classification Depth Elevation
				Barge Deck Assumed 0.0 @ 9:00AM on 3/14/22 Assumed 0.0 is ±3.34ft above MLLW at Haverstraw Bay Position: 41°09' N 73°55' W	
5				Water Line	6'-0"
10					
15					
20				Mud Line	22'-0"
25					
30					
35			S	Soft Sand & Silt	
40					
45					
50					

Project: **CHPE**
Congers, New York
Date: 03/14/2022 to 03/15/2022
Contractor: Warren George, Inc.

Boring No.: CO-2022-2
Sheet: 2 of 3
Ground El: Barge Deck
Groundwater Depth: NA

Depth Feet	SAMPLES Number	SAMPLES Blows / 6"	Strata	SOIL DESCRIPTION	Classification Depth Elevation
55			S	Soft Sand & Silt	53'-0"
60					
65					
70			G_T	Dense Sand & Gravel	
75					
80					
85					85'-0"
90			D_R	Dense Soil and Rock Possible Decomposed Rock	
95					
100			R	Possible Bedrock	100'-0"

Project: **CHPE**
Congers, New York
Date: 03/14/2022 to 03/15/2022
Contractor: Warren George, Inc.

Boring No.: CO-2022-2
Sheet: 3 of 3
Ground El: Barge Deck
Groundwater Depth: NA

Depth Feet	SAMPLES Number	SAMPLES Blows / 6"	Strata	SOIL DESCRIPTION	Classification Depth / Elevation
			R	Possible Bedrock	104'-0"
105				End of Boring	
110					
115					
120					
125					
130					
135					
140					
145					
150					

Particle Size Distribution Report

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	9.9	8.8	10.7	25.3	34.4	10.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1	100.0		
.75	90.1		
.375	85.8		
#4	81.3		
#10	70.6		
#20	60.1		
#40	45.3		
#60	27.6		
#140	13.7		
#200	10.9		

* (no specification provided)

Material Description

Dark gray-brown poorly graded sand with silt and gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 18.8751 D_{85}= 7.3284 D_{60}= 0.8462
D_{50}= 0.5021 D_{30}= 0.2706 D_{15}= 0.1223
D_{10}= C_u= C_c=

Classification

USCS= SP-SM AASHTO=

Remarks

Sample washed on #200 sieve
USCS based on dilatancy & plasticity per ASTM D2488

Source of Sample: CO-2022-1 **Depth:** 23-25 ft.
Sample Number: S-5 **Date:** 5-12-2022

SKYLANDS TESTING, LLC

Sparta, NJ

Client: Warren George/Pillori Assoc.
Project: Champlain Hudson Power Express
Hudson Valley, NY
Project No: 22-045 **Figure**

Tested By: RS **Checked By:** VRS

COMPRESSIVE STRENGTH OF INTACT ROCK CORE

Project: Warren George/Pillori Assoc. - Champlain Hudson Power Express
Job No.: 22-045
Location: Hudson Valley, NY

Tested by: ZM
Test Date: 5-5-2022
Boring: CO-2022-1 Core: R-2 Depth (ft.): 73.3

Test Condition: [ ] As-received [x] Laboratory air dry [ ] Oven dry [ ] Saturated/Soaked

Moist Unit Weight (pcf): 159.3
Dry Unit Weight (pcf): 157.6
Post-Test Moisture Content: 1.1%

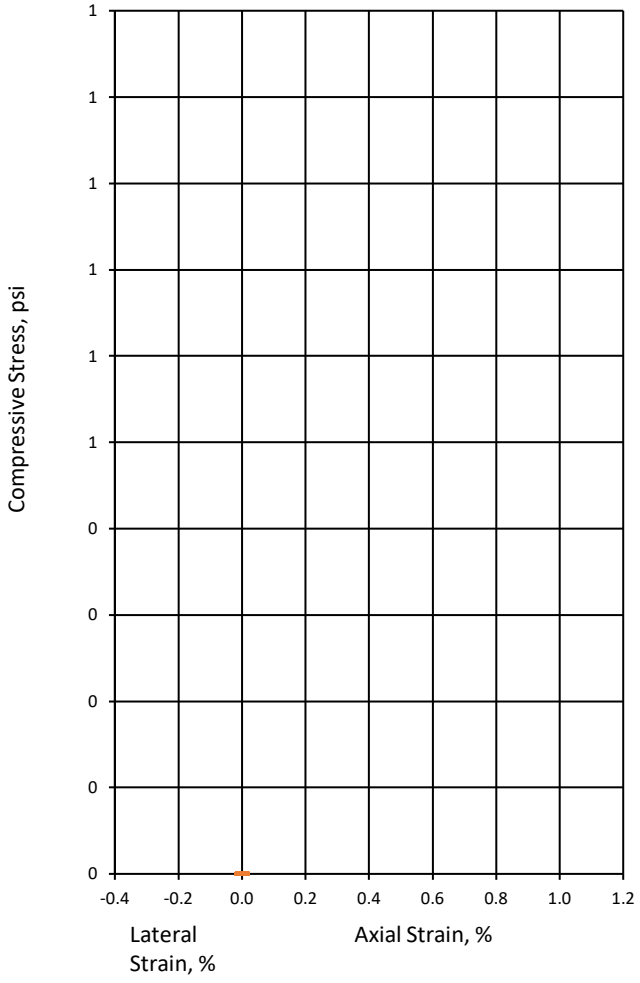
Test Method: ASTM D7012C
Stress rate, lbf/s: 80

Specimen Data

Ave. Diameter, in.: 1.979 Area (in.^{2}): 3.076
Ave. Length, in.: 4.049 L/D: 2.0

For any checked item(s) below, specimen not able to be prepared in accordance with ASTM D4543; results may differ from results obtained from a test specimen that met the requirement.

[ ] Side Straightness [x] End Flatness [x] End ⊥ [x] End ∥



Pre-Test

Post-Test

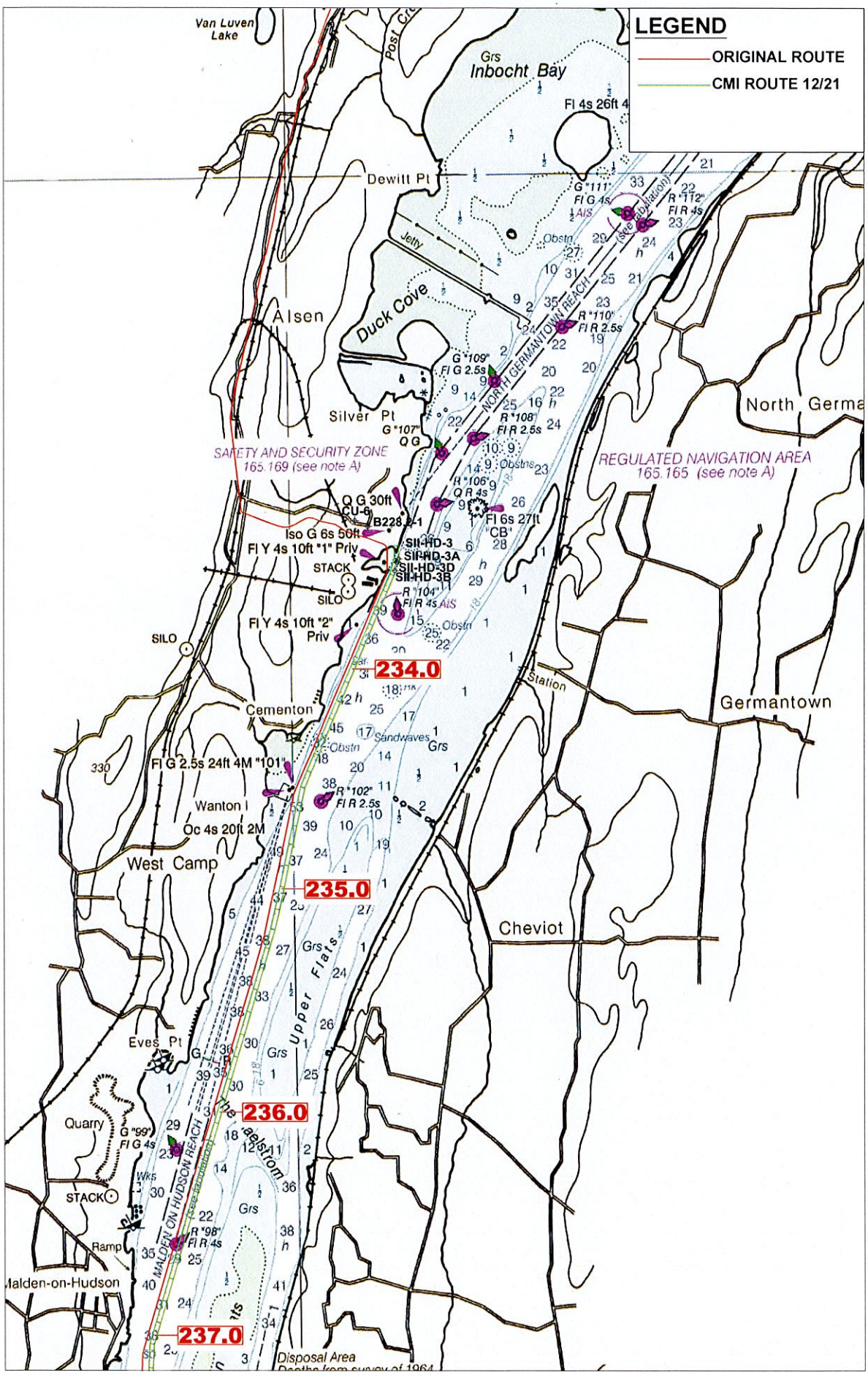
Unconfined Compressive Strength: 10,800 psi

E
Tan. Mod. at 50% UC Strength: NR
Ave. Mod. Along Linear Portion: NR

Remarks: Red f Sandstone

SKYLANDS TESTING, LLC

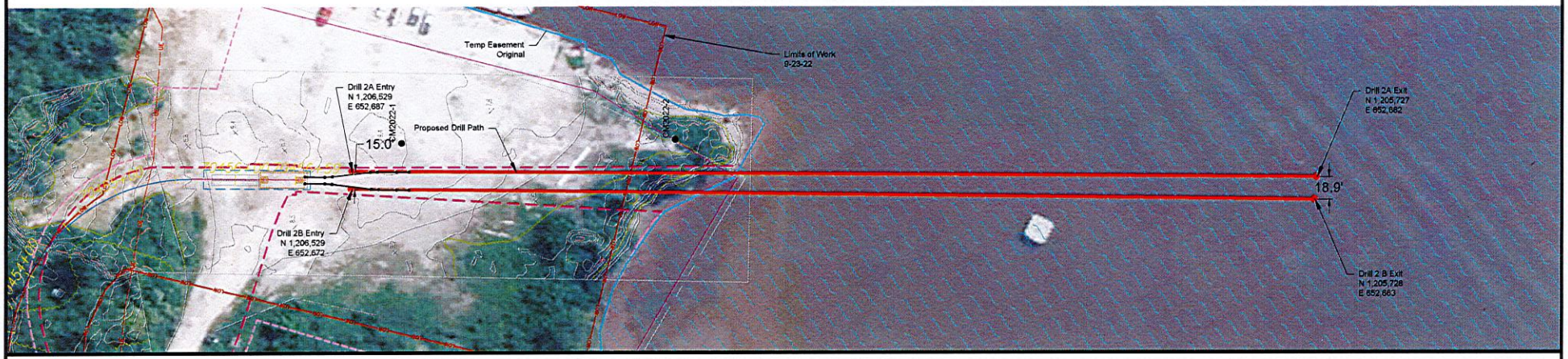
CHPE - HUDSON RIVER CABLE ROUTE ADJUSTMENT

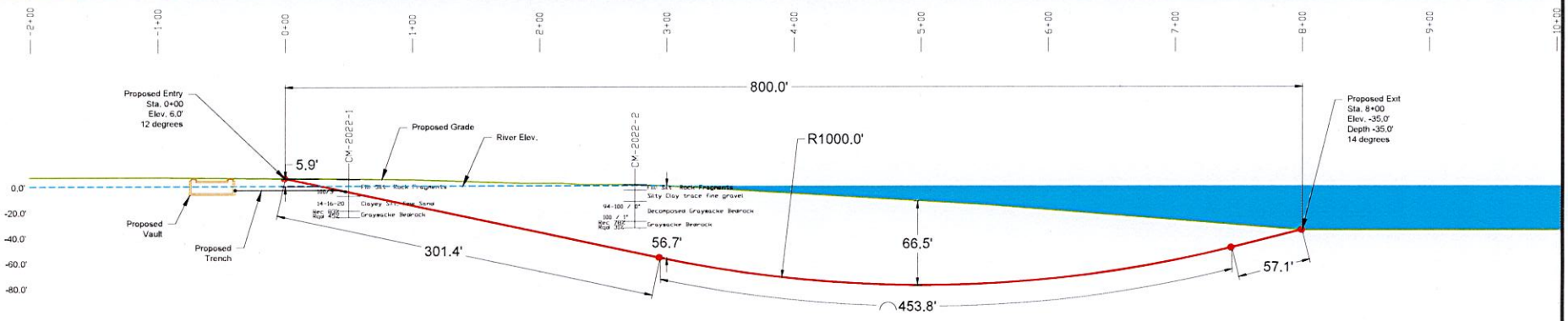


11/03/2021 R1 12/14/2021

SHEET 1 OF 16

Transmission Developers, Inc.
Champlain Hudson Power Express
Drill 2 - Cementon, New York





HD = 800'
MD = 812'
Scale: 1" = 80'

Notes:
1. All existing grade elevations are based on assumptions from Google Earth and NOAA Bathemetry.
2. Detailed IFC drawings will be provided after land survey is complete.

EC DRILLING INTERNATIONAL
1306 N. FM 3083 Road
Conroe, Texas 77303
PH: (936) 441-9080
FAX: (936) 441-9082

DATE:	JOB No.:	DRAWN BY:
10-19-22	E20-034	GJH

CLIENT:	PROFILE DIRECTION:
Champlain Hudson Power Express	N to S
LOCATION: Hudson River Cementon, New York	DRAWING No.: Drill 2

Project: **CHPE**
Cementon, New York
Date: 03/18/2022
Contractor: Warren George, Inc.

Boring No.: CM-2022-1
Sheet: 1 of 1
Ground El: NA
Groundwater Depth: NA

Depth Feet	SAMPLES Number	Blows / 6"	Strata	SOIL DESCRIPTION	Classification Depth Elevation
	S-1	10-21-20-21	F	Fill: Gray brown coarse to fine Sand, little Silt, some coarse to fine Gravel	4'-0"
5	S-2	5-11-6-14	F	Fill: Brown Silty Clay, litle coarse to fine Sand, trace fine Gravel	FILL 8'-0"
10	S-3	80-100/3"	F	Fill: Silt & rock fragments	13'-0"
15	S-4	7-8-10-10	S	Dark gray Clayey Silt, trace fine Sand	ML
20	S-5	4-3-4-4	S		25'-0"
25		RUN =60" 25'-30' REC = 83% RQD = 45%	R	Dark gray Graywacke Bedrock:	30'-0"
30				End of Boring	
35					
40					
45					
50					

PILLORI ASSOCIATES, P.A. ***Geotechnical Engineering***

Project No.: 220103

Project: **CHPE**
Cementon, New York
Date: 03/18/2022
Contractor: Warren George, Inc.

Boring No.: CM-2022-2
Sheet: 1 of 1
Ground El: NA
Groundwater Depth: NA

Depth Feet	SAMPLES Number	Blows / 6"	Strata	SOIL DESCRIPTION	Classification Depth Elevation
	S-1	12-11-12-12	F	Fill: Gray brown coarse to fine Sand, little Silt, some coarse to fine Gravel w/brick fragments	FILL 4'-0"
5	S-2	10-9-11-10	C	Brown Silty Clay, litle fine Sand, trace fine Gravel	CL 13'-0"
10	S-3	94-100/0"	D_R	Silt & rock fragments (decomposed bedrock)	
15	S-4	50/0"			
20	S-5	100/2"		Decomposed Graywacke Bedrock	
25	S-6	100/1"			29'-0"
30		RUN =60" 29'-34' REC = 78% RQD = 31%	R	Dark gray Graywack Bedrock:	34'-0"
35				End of Boring	
40					
45					
50					

PILLORI ASSOCIATES, P.A. ***Geotechnical Engineering***

Project No.: 220103

COMPRESSIVE STRENGTH OF INTACT ROCK CORE

Project: Warren George/Pillori Assoc. - Champlain Hudson Power Express
Job No.: 22-045
Location: Hudson Valley, NY

Tested by: ZM
Test Date: 5-5-2022
Boring: CM-2022-1 Core: R-1 Depth (ft.): 28.6

Test Condition: [ ] As-received [x] Laboratory air dry [ ] Oven dry [ ] Saturated/Soaked

Moist Unit Weight (pcf): 169.2
Dry Unit Weight (pcf): 168.0
Post-Test Moisture Content: 0.8%

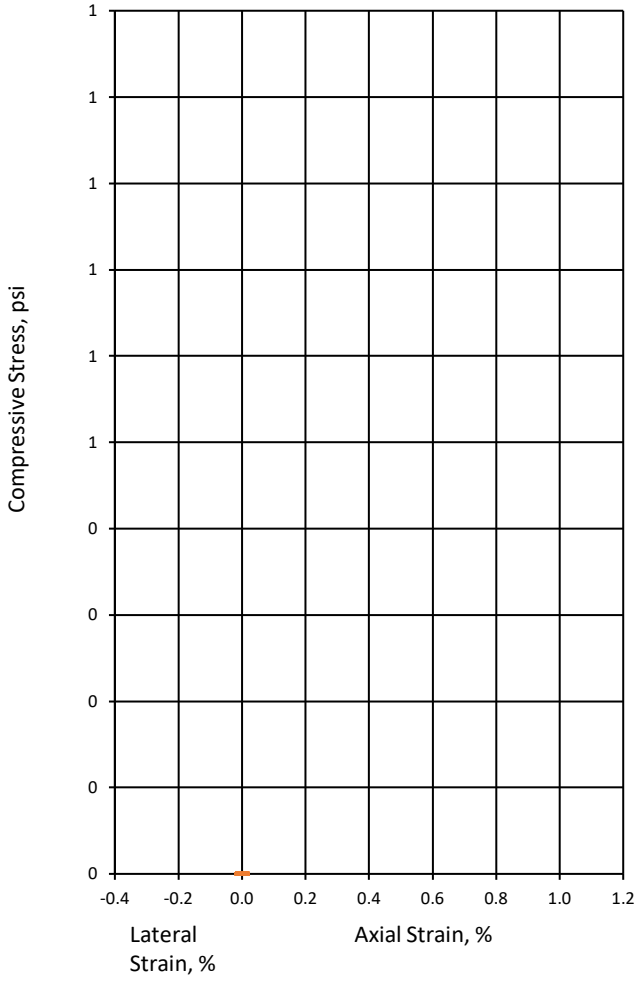
Test Method: ASTM D7012C
Stress rate, lbf/s: 100

Specimen Data			
Ave. Diameter, in.	1.987	Area (in.^{2})	3.100
Ave. Length, in.	3.741	L/D	1.9*

For any checked item(s) below, specimen not able to be prepared in accordance with ASTM D4543; results may differ from results obtained from a test specimen that met the requirement.

[ ] Side Straightness [x] End Flatness [x] End ⊥ [x] End ∥

* Specimen did not meet the minimum length requirement; results may differ from results obtained from a test specimen that met the requirement.



Pre-Test

Post-Test

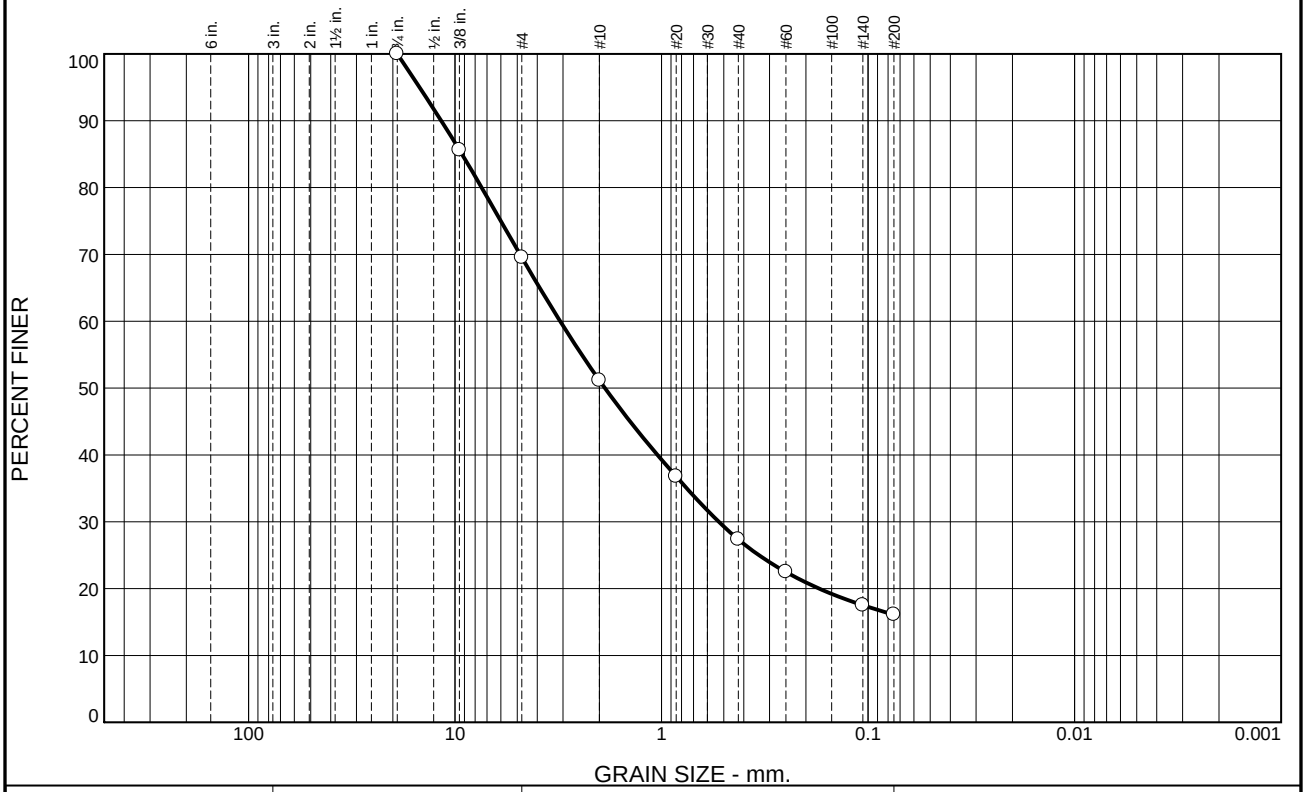
Unconfined Compressive Strength: 2,500 psi

E
Tan. Mod. at 50% UC Strength: NR
Ave. Mod. Along Linear Portion: NR

Remarks: Gray Shale/Graywacke
Longest piece available

SKYLANDS TESTING, LLC

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	30.5	18.3	23.8	11.3	16.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.375	85.6		
#4	69.5		
#10	51.2		
#20	36.8		
#40	27.4		
#60	22.5		
#140	17.5		
#200	16.1		

* (no specification provided)

Material Description

Gray silty sand with gravel

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 11.6655 D_{85}= 9.2586 D_{60}= 3.0956
D_{50}= 1.8802 D_{30}= 0.5283 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Sample washed on #200 sieve
USCS based on dilatancy & plasticity per ASTM D2488

Source of Sample: CM-2022-2 **Depth:** 20-22 & 25-27 ft.
Sample Number: S-5 & S-6 combined **Date:** 5-12-2022

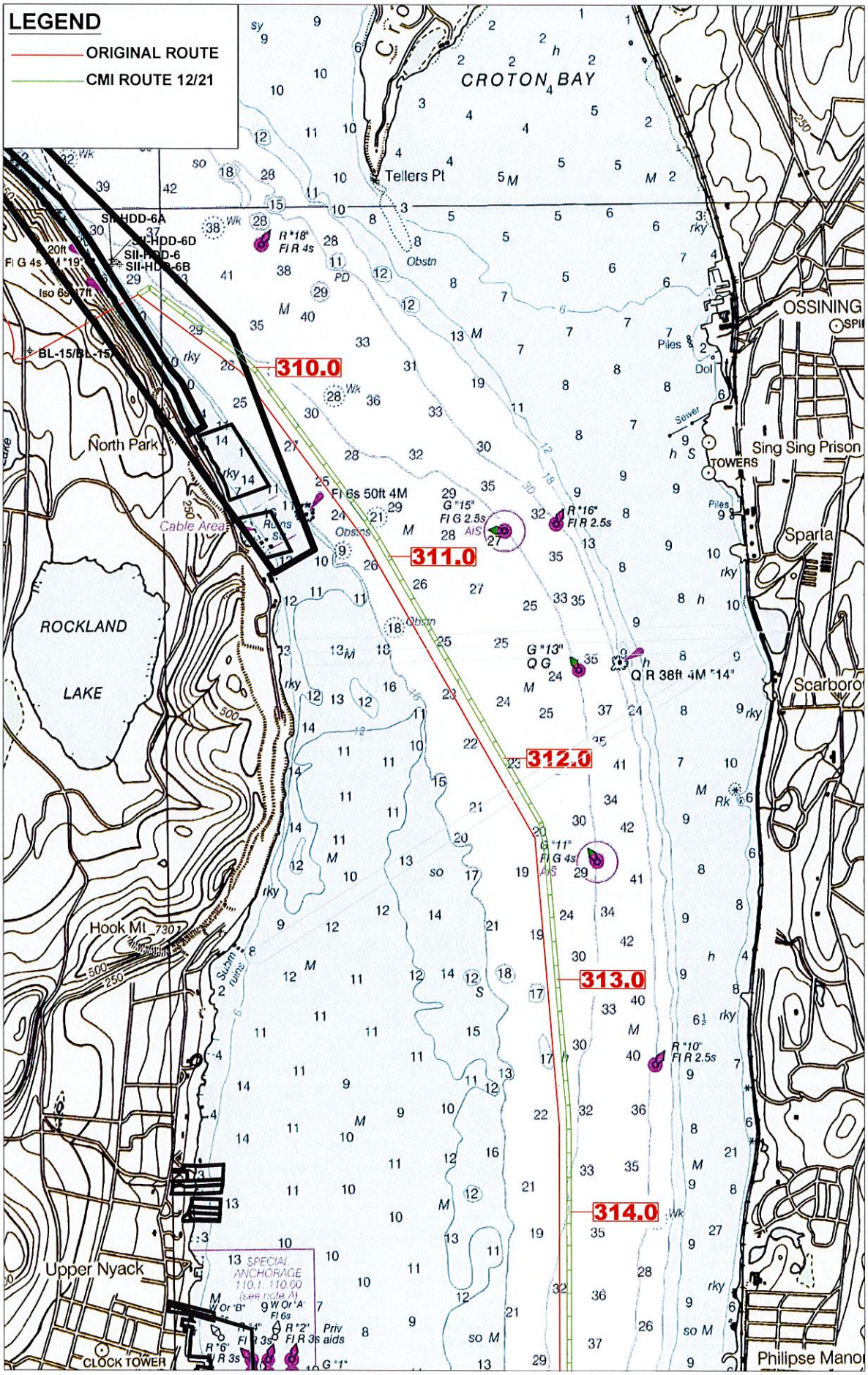
SKYLANDS TESTING, LLC

Sparta, NJ

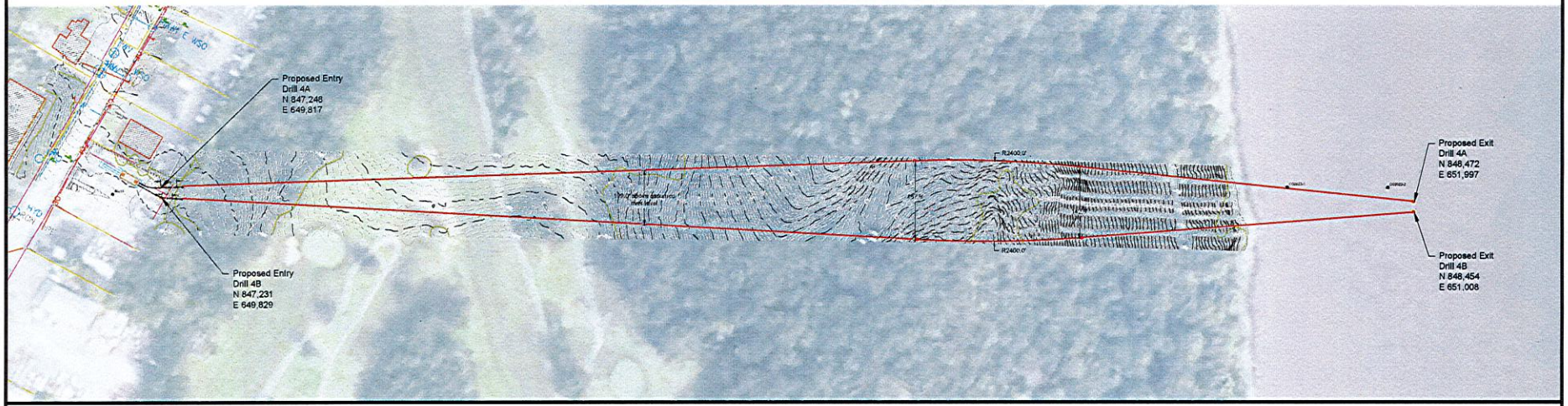
Client: Warren George/Pillori Assoc.
Project: Champlain Hudson Power Express
Hudson Valley, NY
Project No: 22-045 **Figure**

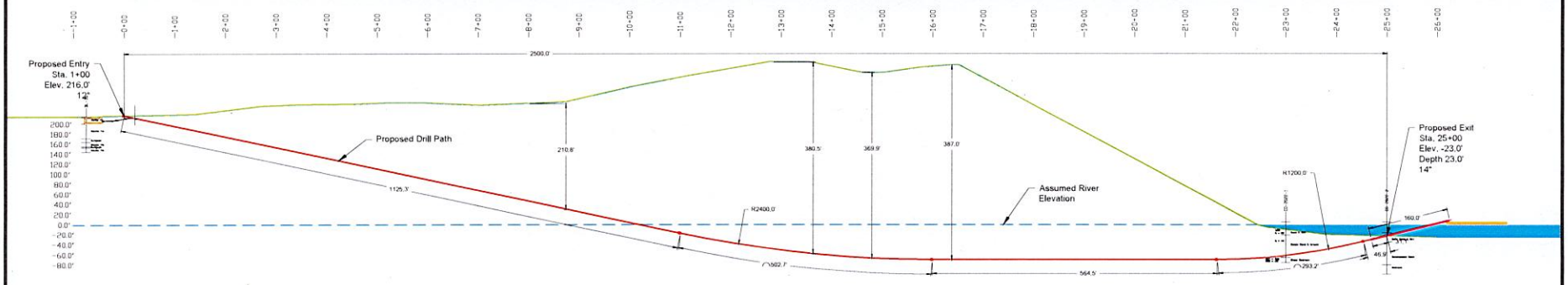
Tested By: RS **Checked By:** VRS

CHPE - HUDSON RIVER CABLE ROUTE ADJUSTMENT



Transmission Developers, Inc.
Champlain Hudson Power Express
Drill 4 - Congers





HD = 2,500'
MD = 2,530'
Scale: 1" = 250'

Notes:
1. All existing grade elevations are based on assumptions from Google Earth and NOAA Bathemetry.
2. Detailed IFC drawings will be provided after land survey is complete.
3. Depth of drill profile is greater than horizontal separartion.

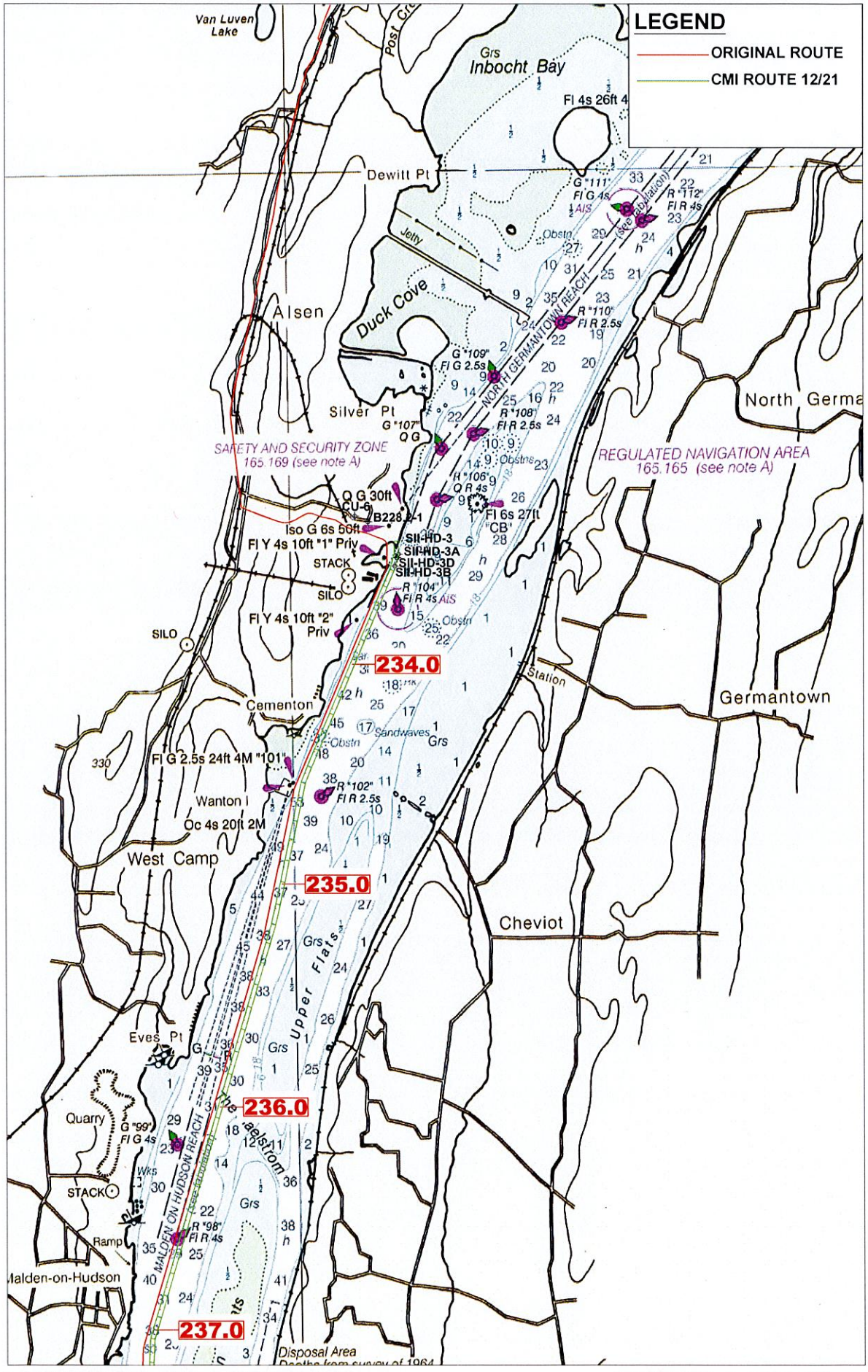
ECI DRILLING INTERNATIONAL
1306 N. FM 3083 Road
Conroe, Texas 77303
PH: (936) 441-9080
FAX: (936) 441-9082

DATE:	JOB No.:	DRAWN BY:
10-26-22	E20-034	GJH

CLIENT:	PROFILE DIRECTION:
Champlain Hudson Power Express	SW to NE

LOCATION:	DRAWING No.:
Hudson River Congers, New York	Drill 4

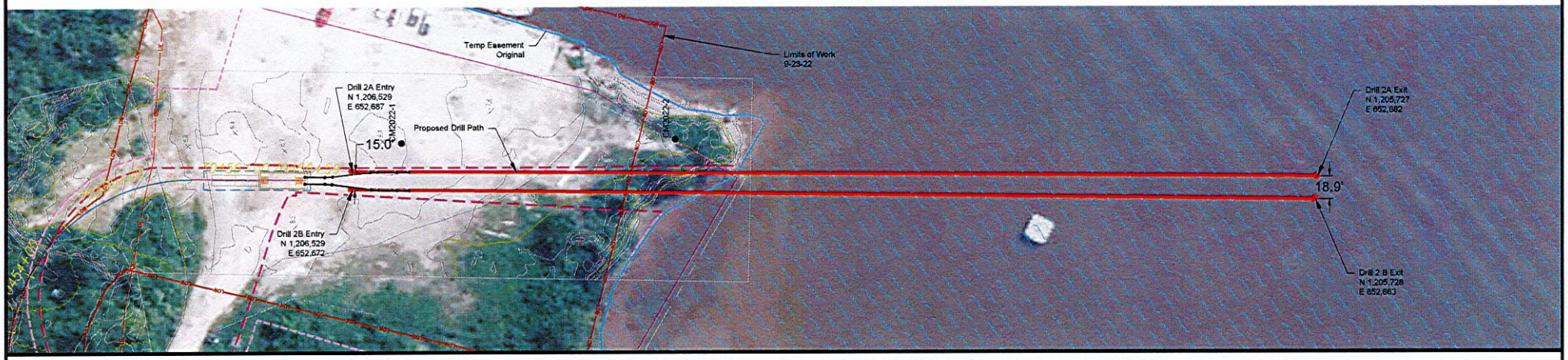
CHPE - HUDSON RIVER CABLE ROUTE ADJUSTMENT

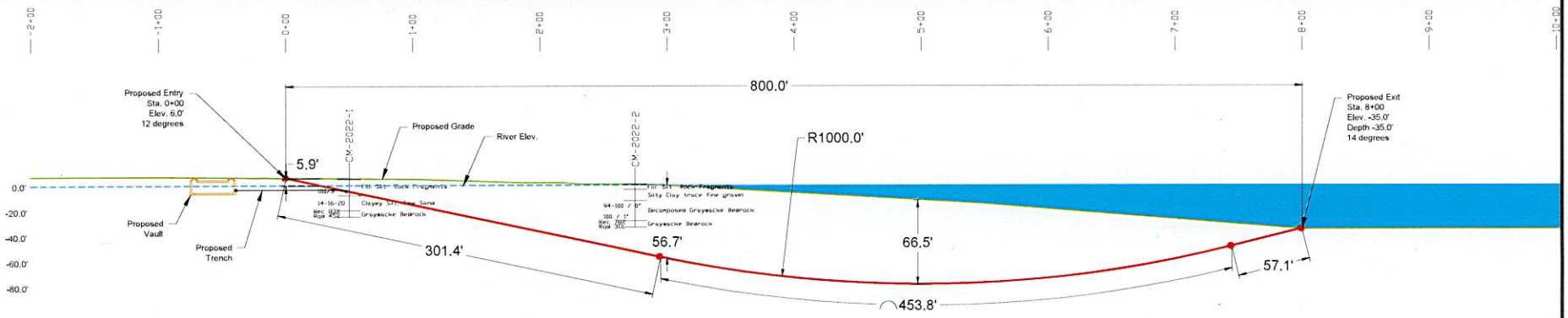


11/03/2021 R1 12/14/2021

SHEET 1 OF 16

Transmission Developers, Inc.
Champlain Hudson Power Express
Drill 2 - Cementon, New York





HD = 800'
MD = 812'
Scale: 1" = 80'

Notes:
1. All existing grade elevations are based on assumptions from Google Earth and NOAA Bathemetry.
2. Detailed IFC drawings will be provided after land survey is complete.

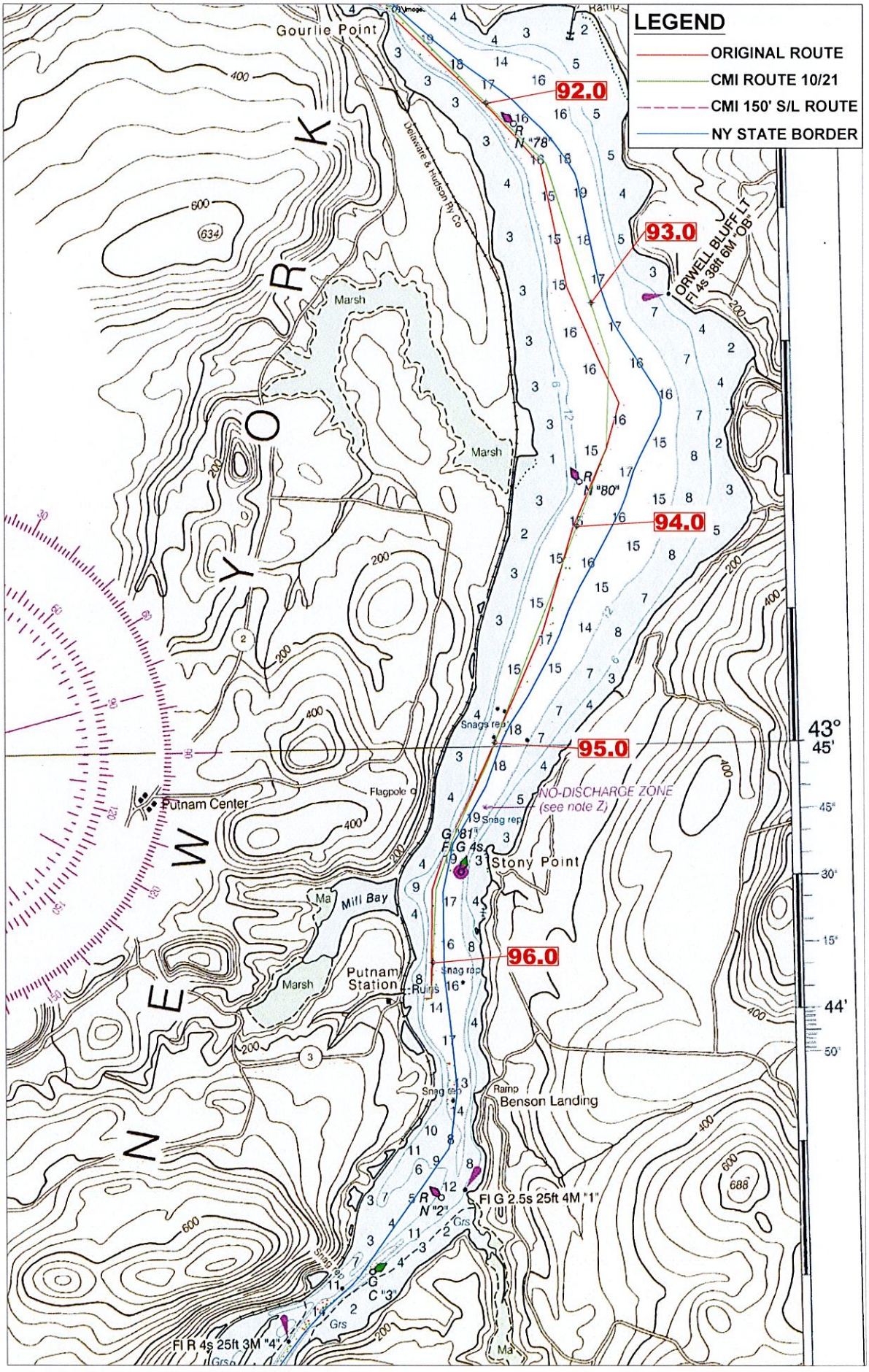
EC DRILLING INTERNATIONAL
1306 N. FM 3083 Road
Conroe, Texas 77303
PH: (936) 441-9080
FAX: (936) 441-9082

DATE:	JOB No.:	DRAWN BY:
10-19-22	E20-034	GJH

CLIENT:	PROFILE DIRECTION:
Champlain Hudson Power Express	N to S

LOCATION:	DRAWING No.:
Hudson River Cementon, New York	Drill 2

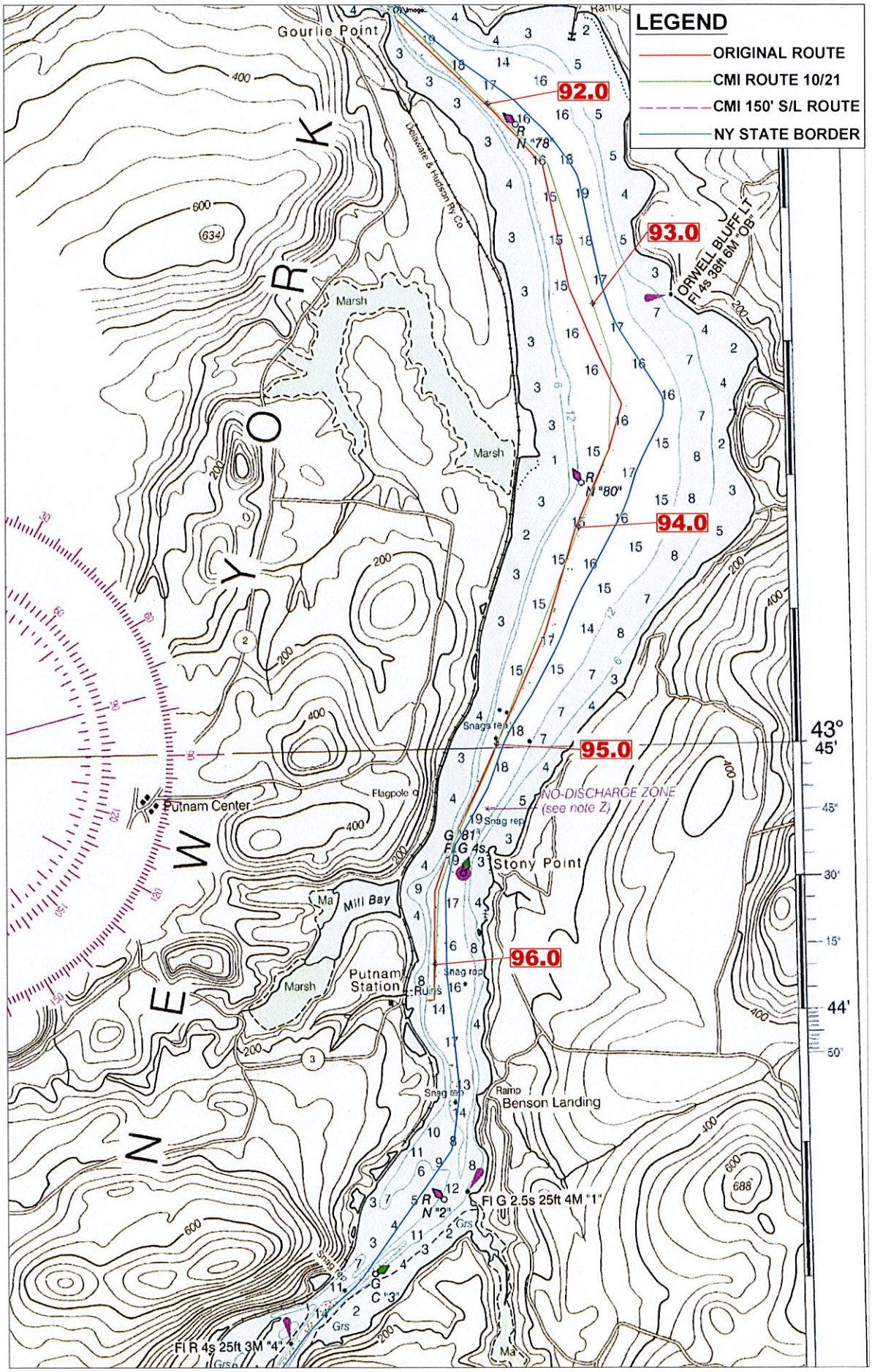
CHPE - LAKE CHAMPLAIN CABLE ROUTE ADJUSTMENT



10/19/2021 R10/26/2021

SHEET 17 OF 17

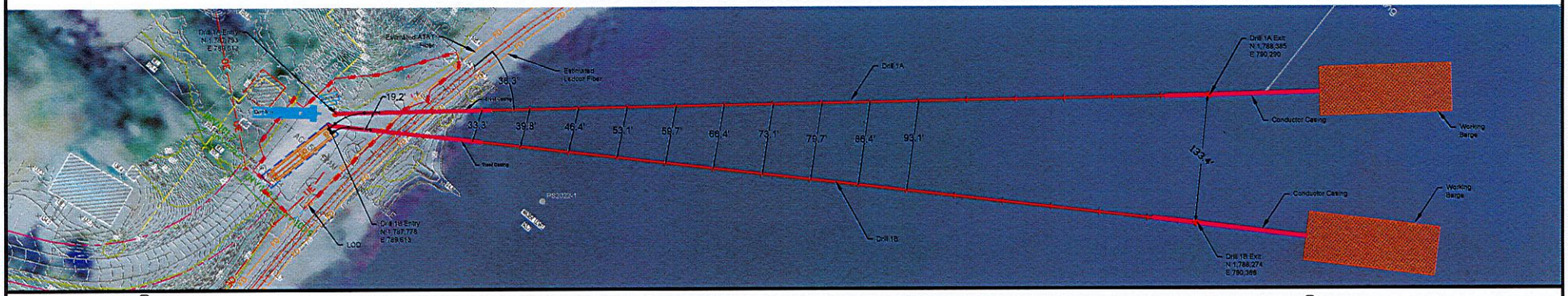
CHPE - LAKE CHAMPLAIN CABLE ROUTE ADJUSTMENT

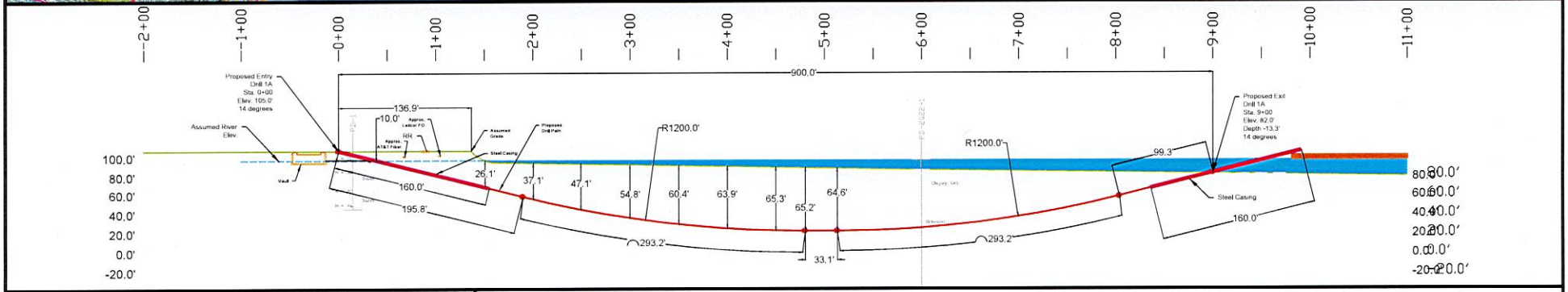


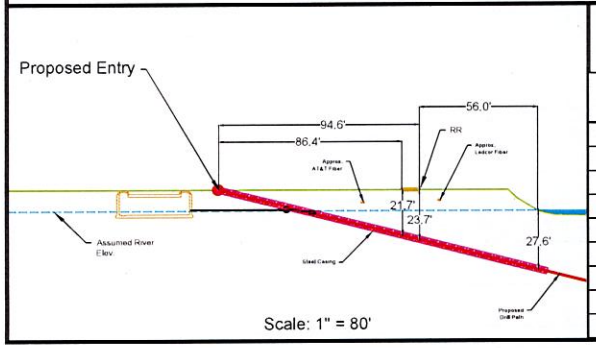
10/19/2021 R10/26/2021

SHEET 17 OF 17

Transmission Developers, Inc.
Champlain Hudson Power Express
Putnam Station, New York
Drill 1A - Putnam Station Profile - Option 2







Location	Horizontal Separation	Depth Below Mud Line	Difference
River Elev.	19.2	10.0	9.2
1+50	33.3	27.5	5.8
2+00	39.8	37.1	2.7
2+50	46.4	47.1	-0.7
3+00	53.1	54.8	-1.7
3+50	59.7	60.4	-0.7
4+00	66.4	63.9	2.5
4+50	73.1	65.3	7.8
5+00	79.7	64.8	14.9

Notes:
1. All existing grade elevations are based on assumptions from Google Earth and NOAA Bathemetry.
2. Detailed IFC drawings will be provided after land survey is complete.

HD = 900'
MD = 912'
Scale: 1" = 100'

DRILLING INTERNATIONAL
1306 N. FM 3083 Road
Conroe, Texas 77303
PH: (936) 441-9080
FAX: (936) 441-9082

DATE:	JOB No.:	DRAWN BY:
11-02-22	E20-034	GJH

CLIENT:	PROFILE DIRECTION:
Champlain Hudson Power Express	SW to NE

LOCATION:	DRAWING No.:
Hudson River Putnam Station, New York	Drill 1A

Project: **CHPE**
Putnam, New York
Date: 05/24/2022- 05/25/2022
Contractor: Warren George, Inc.

Boring No.:PS-2022-1
Sheet: 1 of 2
Ground El: Barge Deck
Groundwater Depth: NA

Depth Feet	SAMPLES Number	Blows / 6"	Strata	SOIL DESCRIPTION	Classification Depth Elevation
				Barge Deck/Water Line Assumed 0.0 @ 11:00 AM on 5/24/2022 Position: 43°44' N 73°22' W	8'-0"
10	S-1	WOH	S	Mud Line	
15	S-2	WOH		Gray Silt	ML
20	S-3	WOH			21'-0"
25	S-4	10-11-11-13	G_A	Gray fine Sand, trace Silt with wood fragments	SP
30	S-5	7-7-6-7			
35	S-6	10-11-14-15		Gray medium to fine Sand, trace Silt	
40	S-7	13-14-14-15			
45	S-8	15-20-25-26			
50	S-9	15-16-20-20		Gray fine Sand, trace Silt	

Project: **CHPE**
Putnam, New York
Date: 05/24/2022-05/25/2022
Contractor: Warren George, Inc.

Boring No.:PS-2022-1
Sheet: 2 of 2
Ground El: Barge Deck
Groundwater Depth: NA

Depth Feet	SAMPLES Number	Blows / 6"	Strata	SOIL DESCRIPTION	Classification Depth Elevation
55	S-10	20-28-30-36		Gray fine Sand, trace Silt	
60	S-11	18-21-28-47			
			G_A		SP
65	S-12	30-30-31-32			
				Gray coarse to fine Sand, trace Silt	
70	S-13	30-36-35-33			
	S-14	40-54-55-61			
75					76'-0"
80					
85				Advanced Boring through Sand from 75 to 100ft. No Bedrock was encountered	
90					
95					
100					100'-0"
				End of Boring	

Project: **CHPE**
Putnam, New York
Date: 05/25/2022
Contractor: Warren George, Inc.

Boring No.:PS-2022-2
Sheet: 1 of 2
Ground El: Barge Deck
Groundwater Depth: NA

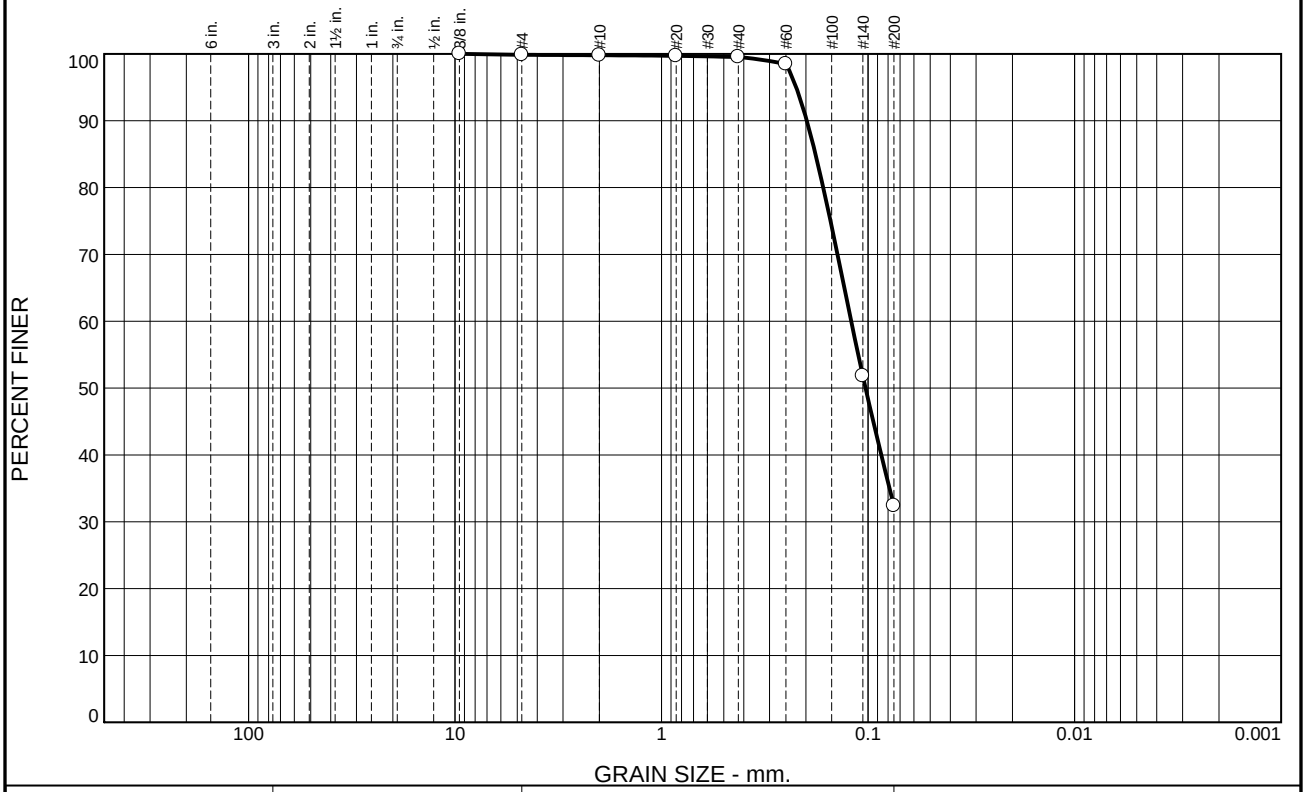
Depth Feet	SAMPLES Number	SAMPLES Blows / 6"	Strata	SOIL DESCRIPTION	Classification Depth Elevation
				Barge Deck/Water Line	
5				Assumed 0.0 @ 10:00 AM on 5/25/2022 Position: 43°44' N 73°22' W	
10					
15					15'-0"
	S-1	WOR		Mud Line	
20					
25	S-2	WOR			
30					
			S	Gray Silt	ML
35	S-3	WOR			
40					
45	S-4	WOR			
50					

Project: **CHPE**
Putnam, New York
Date: 05/25/2022
Contractor: Warren George, Inc.

Boring No.:PS-2022-2
Sheet: 2 of 2
Ground El: Barge Deck
Groundwater Depth: NA

Depth Feet	SAMPLES Number	Blows / 6"	Strata	SOIL DESCRIPTION	Classification Depth Elevation
55	S-5	WOR			
60					
65	S-6	WOR			
70					
75	S-7	WOR	S	Gray Silt	ML
80					
85	S-8	WOR			
90					
95					
100	S-2	WOR			100'-0"
				End of Boring	

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.1	0.1	0.3	67.1	32.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.375	100.0		
#4	99.9		
#10	99.8		
#20	99.7		
#40	99.5		
#60	98.5		
#140	51.8		
#200	32.4		

* (no specification provided)

Material Description

Dark gray silty sand; w/wood

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.1980 D_{85}= 0.1798 D_{60}= 0.1207
D_{50}= 0.1029 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Sample washed on #200 sieve
USCS based on dilatancy & plasticity per ASTM D2488

Source of Sample: PS-2022-1 **Depth:** 23-25 ft.
Sample Number: S-4

Date: 7-21-2022

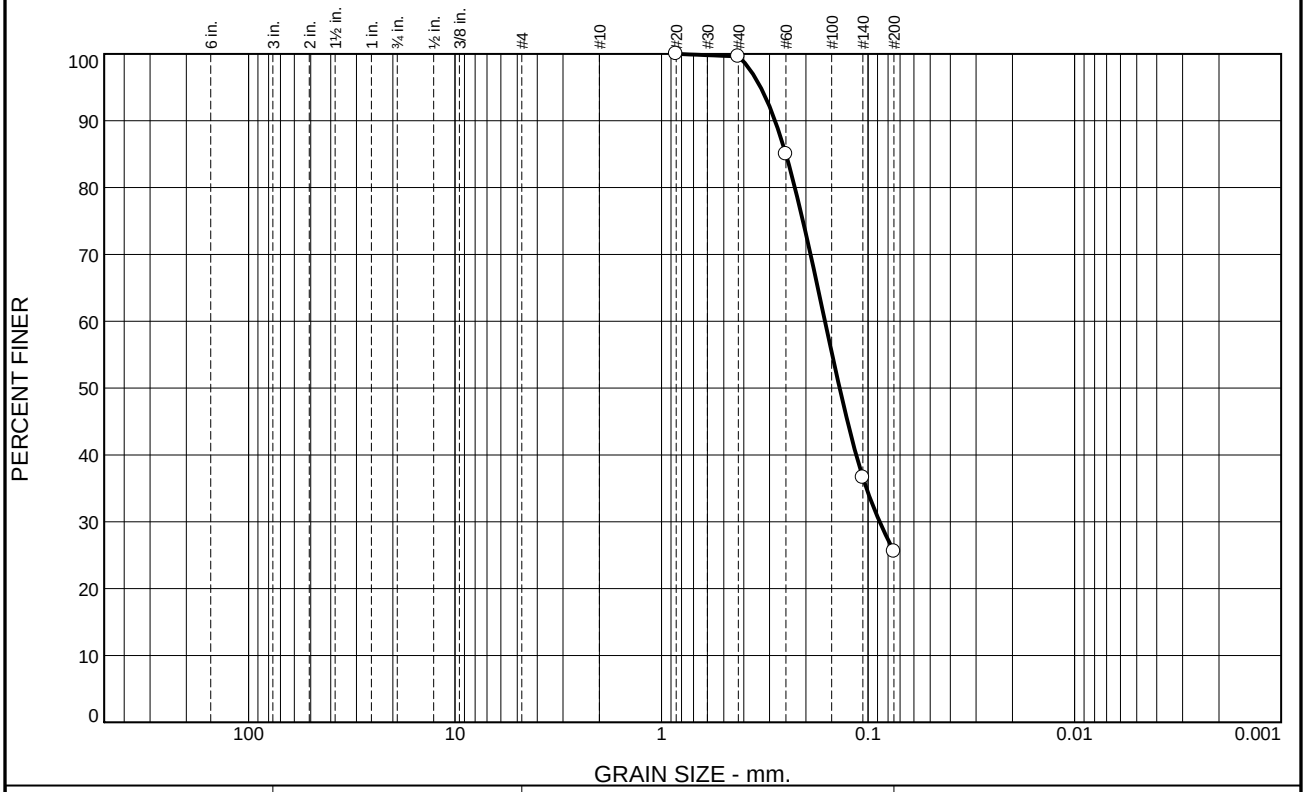
SKYLANDS TESTING, LLC

Sparta, NJ

Client: Warren George/Pillori Assoc.
Project: Champlain Hudson Power Express
Hudson Valley, NY
Project No: 22-045 **Figure**

Tested By: RS **Checked By:** VRS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.4	74.0	25.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#20	100.0		
#40	99.6		
#60	85.0		
#140	36.6		
#200	25.6		

* (no specification provided)

Material Description

Dark gray silty sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.2821 D_{85}= 0.2500 D_{60}= 0.1617
D_{50}= 0.1373 D_{30}= 0.0879 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Sample washed on #200 sieve
USCS based on dilatancy & plasticity per ASTM D2488

Source of Sample: PS-2022-1 **Depth:** 28-30 ft.
Sample Number: S-5

Date: 7-21-2022

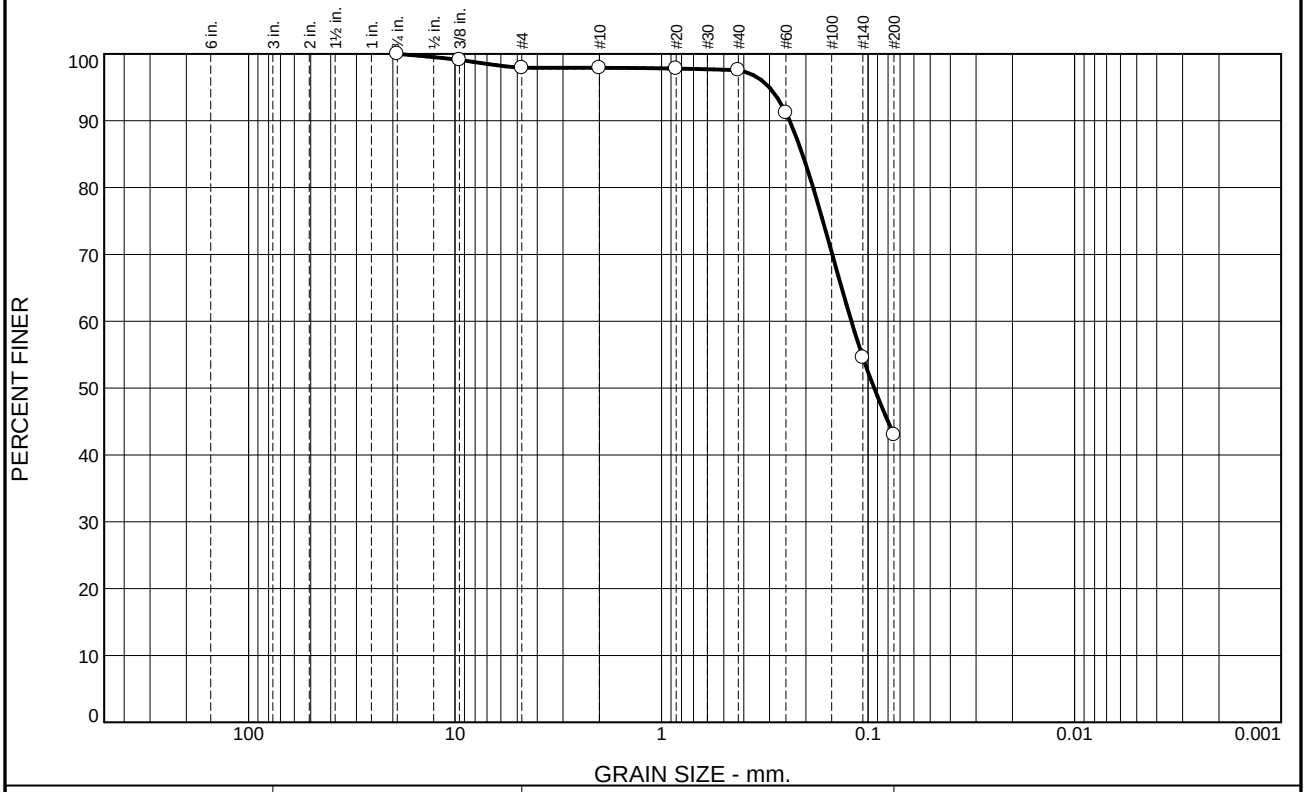
SKYLANDS TESTING, LLC

Sparta, NJ

Client: Warren George/Pillori Assoc.
Project: Champlain Hudson Power Express
Hudson Valley, NY
Project No: 22-045 **Figure**

Tested By: RS **Checked By:** VRS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.1	0.0	0.3	54.6	43.0	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
.75	100.0		
.375	99.1		
#4	97.9		
#10	97.9		
#20	97.8		
#40	97.6		
#60	91.2		
#140	54.6		
#200	43.0		

* (no specification provided)

Material Description

Dark gray silty sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.2397 D_{85}= 0.2079 D_{60}= 0.1205
D_{50}= 0.0935 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Sample washed on #200 sieve
USCS based on dilatancy & plasticity per ASTM D2488

Source of Sample: PS-2022-1 **Depth:** 33-35 ft.
Sample Number: S-6

Date: 7-21-2022

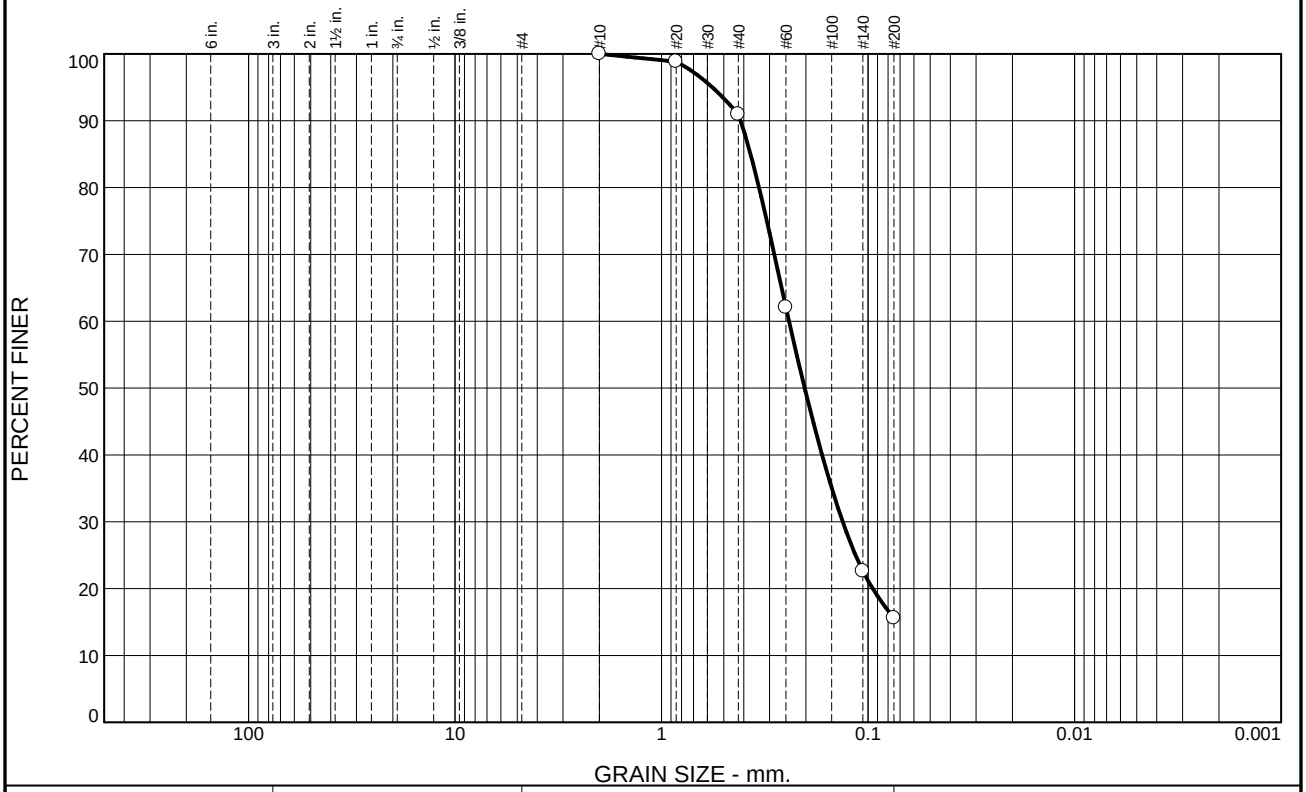
SKYLANDS TESTING, LLC

Sparta, NJ

Client: Warren George/Pillori Assoc.
Project: Champlain Hudson Power Express
Hudson Valley, NY
Project No: 22-045 **Figure**

Tested By: RS **Checked By:** VRS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	9.0	75.4	15.6	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	98.8		
#40	91.0		
#60	62.1		
#140	22.6		
#200	15.6		

* (no specification provided)

Material Description

Dark gray silty sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.4145 D_{85}= 0.3706 D_{60}= 0.2414
D_{50}= 0.2028 D_{30}= 0.1327 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Sample washed on #200 sieve
USCS based on dilatancy & plasticity per ASTM D2488

Source of Sample: PS-2022-1 **Depth:** 38-40 ft.
Sample Number: S-7

Date: 7-21-2022

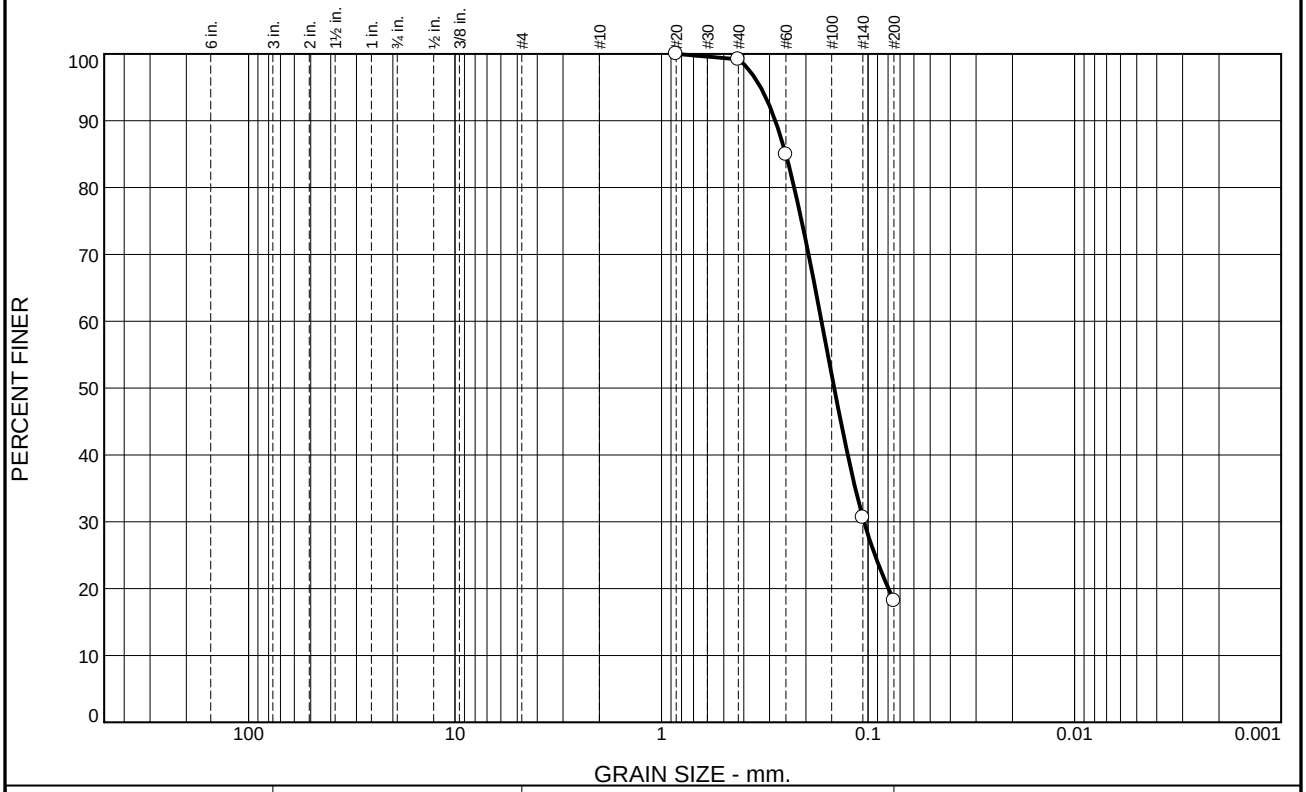
SKYLANDS TESTING, LLC

Sparta, NJ

Client: Warren George/Pillori Assoc.
Project: Champlain Hudson Power Express
Hudson Valley, NY
Project No: 22-045 **Figure**

Tested By: RS **Checked By:** VRS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.8	81.0	18.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#20	100.0		
#40	99.2		
#60	85.0		
#140	30.6		
#200	18.2		

* (no specification provided)

Material Description

Gray silty sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.2812 D_{85}= 0.2502 D_{60}= 0.1681
D_{50}= 0.1459 D_{30}= 0.1046 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Sample washed on #200 sieve
USCS based on dilatancy & plasticity per ASTM D2488

Source of Sample: PS-2022-1 **Depth:** 43-45 ft.
Sample Number: S-8

Date: 7-21-2022

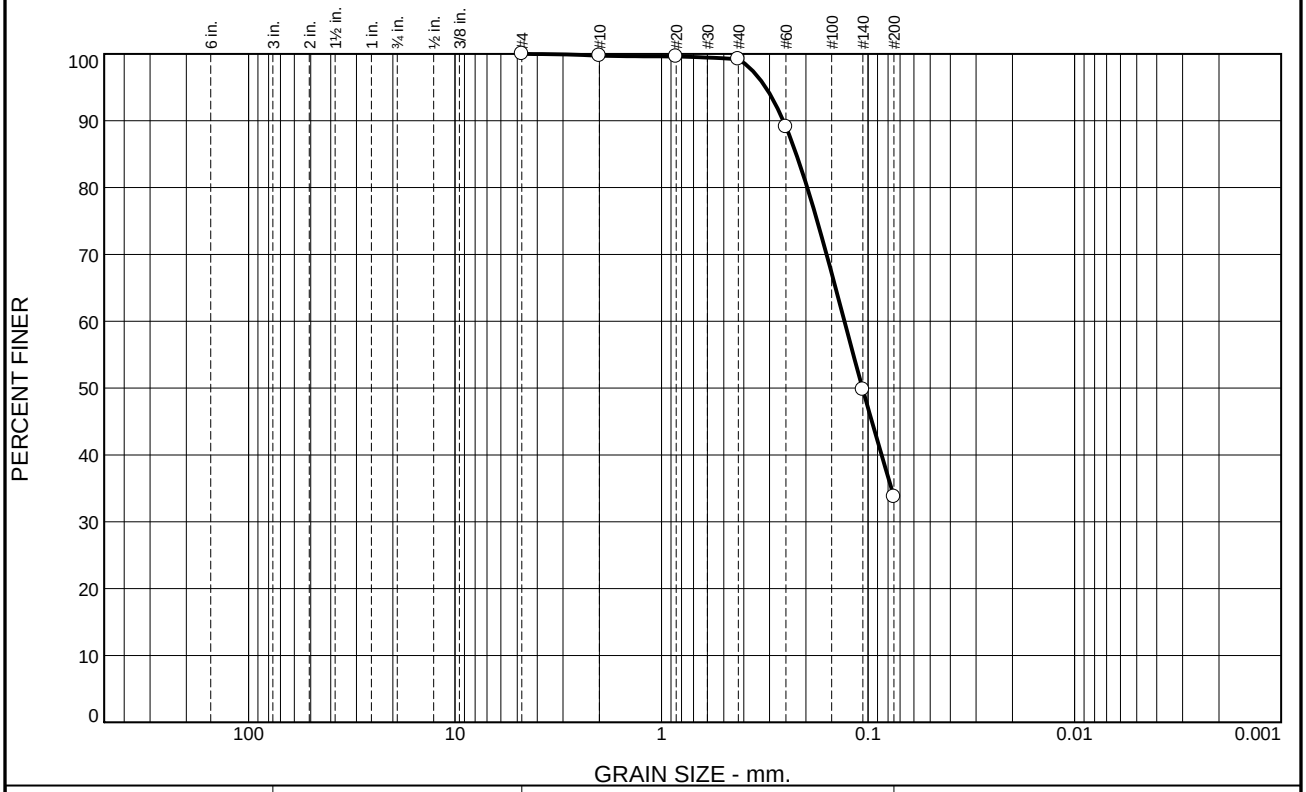
SKYLANDS TESTING, LLC

Sparta, NJ

Client: Warren George/Pillori Assoc.
Project: Champlain Hudson Power Express
Hudson Valley, NY
Project No: 22-045 **Figure**

Tested By: RS **Checked By:** VRS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.3	0.5	65.4	33.8	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.7		
#20	99.6		
#40	99.2		
#60	89.1		
#140	49.8		
#200	33.8		

* (no specification provided)

Material Description

Light gray-brown silty sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.2573 D_{85}= 0.2226 D_{60}= 0.1301
D_{50}= 0.1065 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Sample washed on #200 sieve
USCS based on dilatancy & plasticity per ASTM D2488

Source of Sample: PS-2022-1 **Depth:** 48-50 ft.
Sample Number: S-9

Date: 7-21-2022

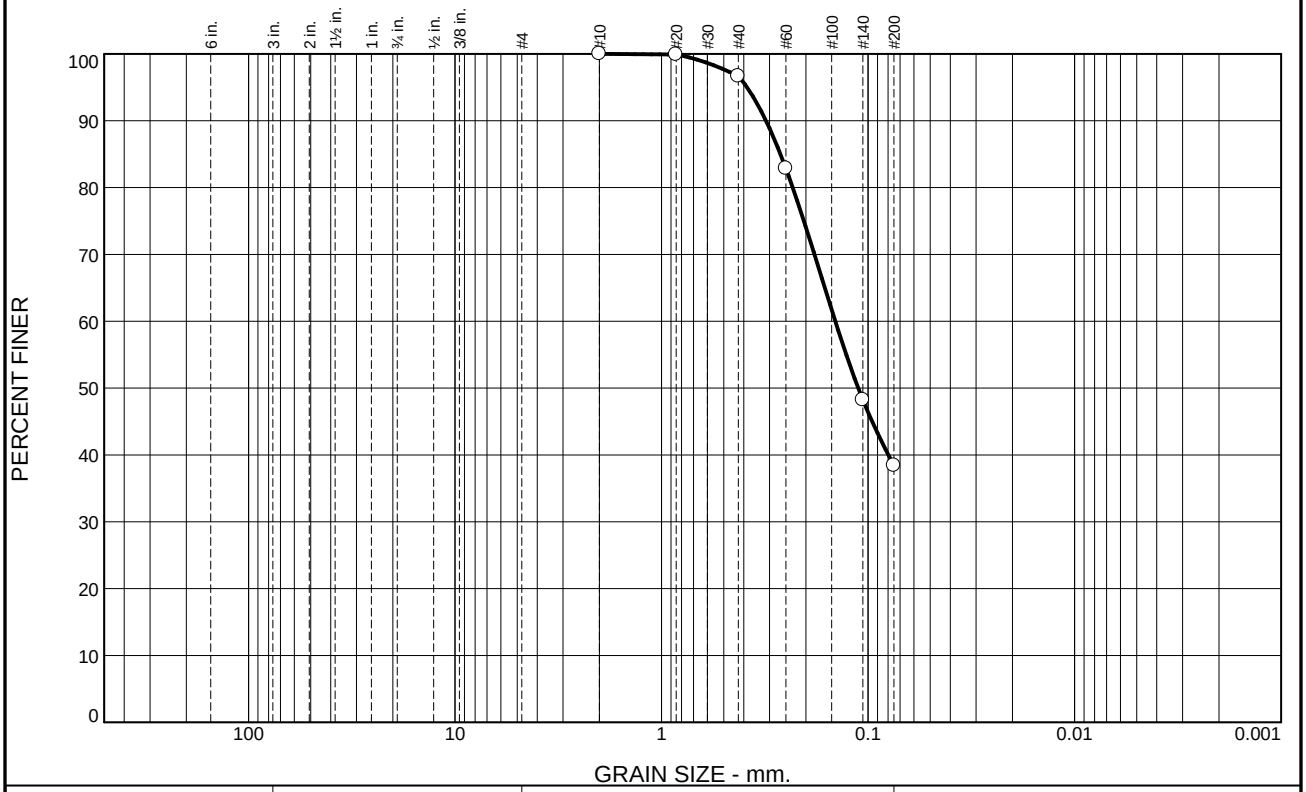
SKYLANDS TESTING, LLC

Sparta, NJ

Client: Warren George/Pillori Assoc.
Project: Champlain Hudson Power Express
Hudson Valley, NY
Project No: 22-045 **Figure**

Tested By: RS **Checked By:** VRS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	3.3	58.3	38.4	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	99.9		
#40	96.7		
#60	82.9		
#140	48.2		
#200	38.4		

* (no specification provided)

Material Description

Light gray-brown silty sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3120 D_{85}= 0.2657 D_{60}= 0.1441
D_{50}= 0.1116 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Sample washed on #200 sieve
USCS based on dilatancy & plasticity per ASTM D2488

Source of Sample: PS-2022-1 **Depth:** 53-55 ft.
Sample Number: S-10

Date: 7-21-2022

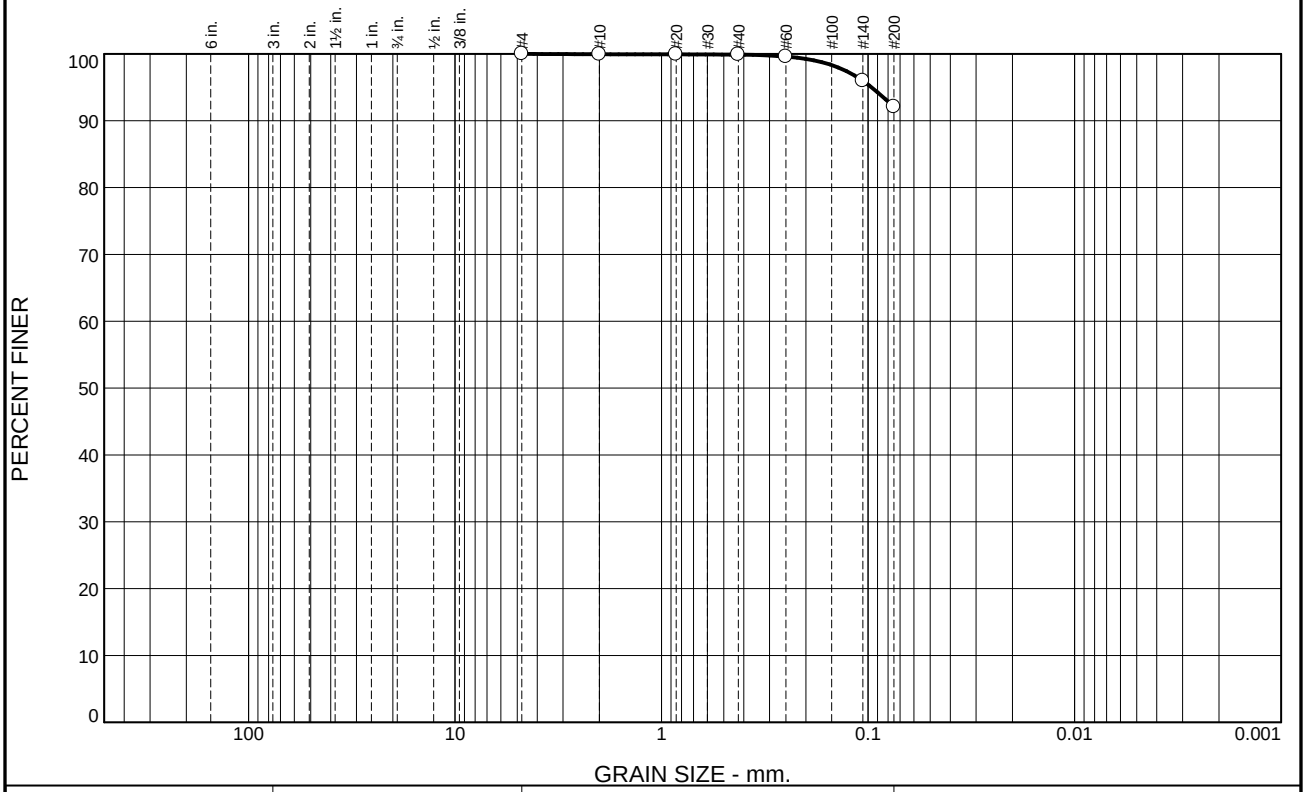
SKYLANDS TESTING, LLC

Sparta, NJ

Client: Warren George/Pillori Assoc.
Project: Champlain Hudson Power Express
Hudson Valley, NY
Project No: 22-045 **Figure**

Tested By: RS **Checked By:** VRS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.1	0.0	7.8	92.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	99.9		
#20	99.9		
#40	99.9		
#60	99.6		
#140	96.0		
#200	92.1		

* (no specification provided)

Material Description

Light gray-brown silt

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= D_{85}= D_{60}=
D_{50}= D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= ML AASHTO=

Remarks

Sample washed on #200 sieve
USCS based on dilatancy & plasticity per ASTM D2488

Source of Sample: PS-2022-1 **Depth:** 58-60 ft.
Sample Number: S-11 **Date:** 7-21-2022

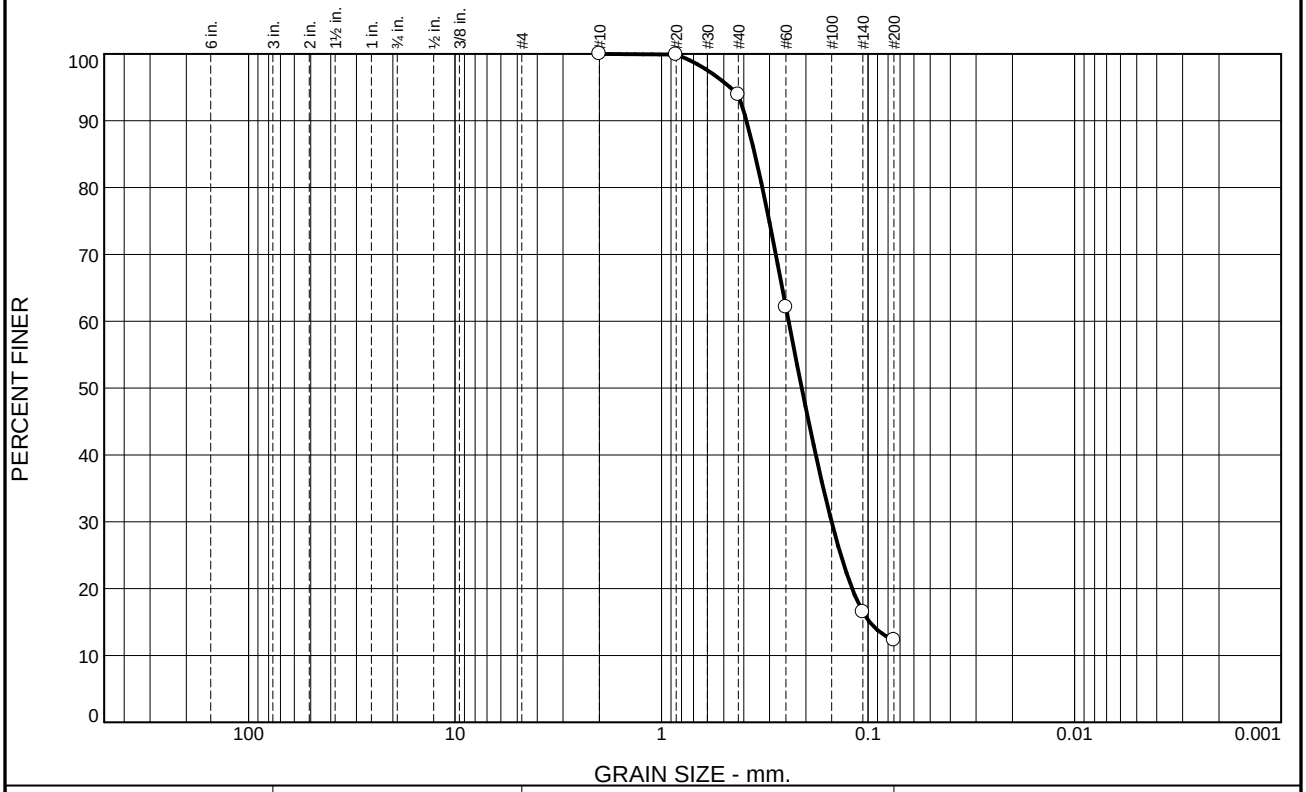
SKYLANDS TESTING, LLC

Sparta, NJ

Client: Warren George/Pillori Assoc.
Project: Champlain Hudson Power Express
Hudson Valley, NY
Project No: 22-045 **Figure**

Tested By: RS **Checked By:** VRS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	6.1	81.6	12.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	99.9		
#40	93.9		
#60	62.1		
#140	16.5		
#200	12.3		

* (no specification provided)

Material Description

Dark gray silty sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3881 D_{85}= 0.3531 D_{60}= 0.2425
D_{50}= 0.2095 D_{30}= 0.1502 D_{15}= 0.0983
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Sample washed on #200 sieve
USCS based on dilatancy & plasticity per ASTM D2488

Source of Sample: PS-2022-1 **Depth:** 63-65 ft.
Sample Number: S-12

Date: 7-21-2022

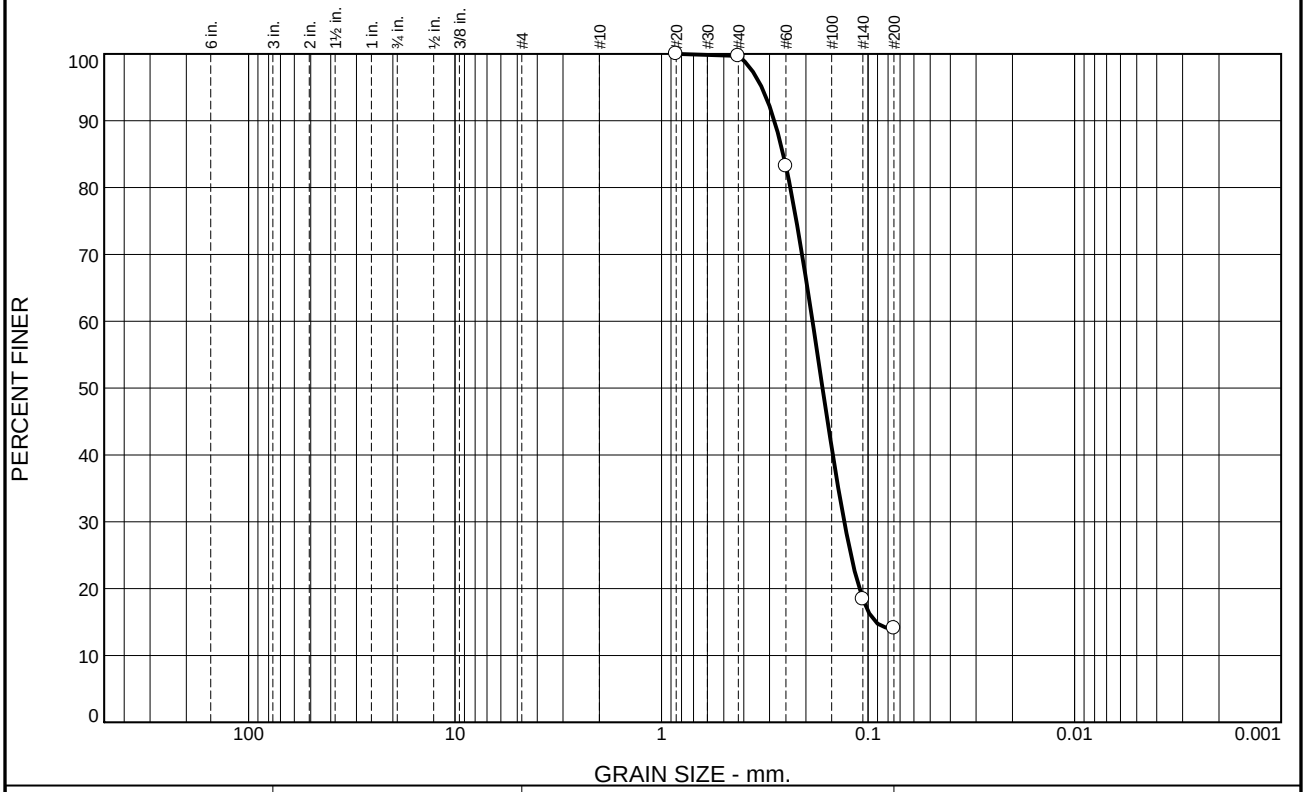
SKYLANDS TESTING, LLC

Sparta, NJ

Client: Warren George/Pillori Assoc.
Project: Champlain Hudson Power Express
Hudson Valley, NY
Project No: 22-045 **Figure**

Tested By: RS **Checked By:** VRS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	0.3	85.6	14.1	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#20	100.0		
#40	99.7		
#60	83.2		
#140	18.4		
#200	14.1		

* (no specification provided)

Material Description

Dark gray silty sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.2843 D_{85}= 0.2575 D_{60}= 0.1859
D_{50}= 0.1662 D_{30}= 0.1304 D_{15}= 0.0919
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Sample washed on #200 sieve
USCS based on dilatancy & plasticity per ASTM D2488

Source of Sample: PS-2022-1 **Depth:** 68-70 ft.
Sample Number: S-13

Date: 7-21-2022

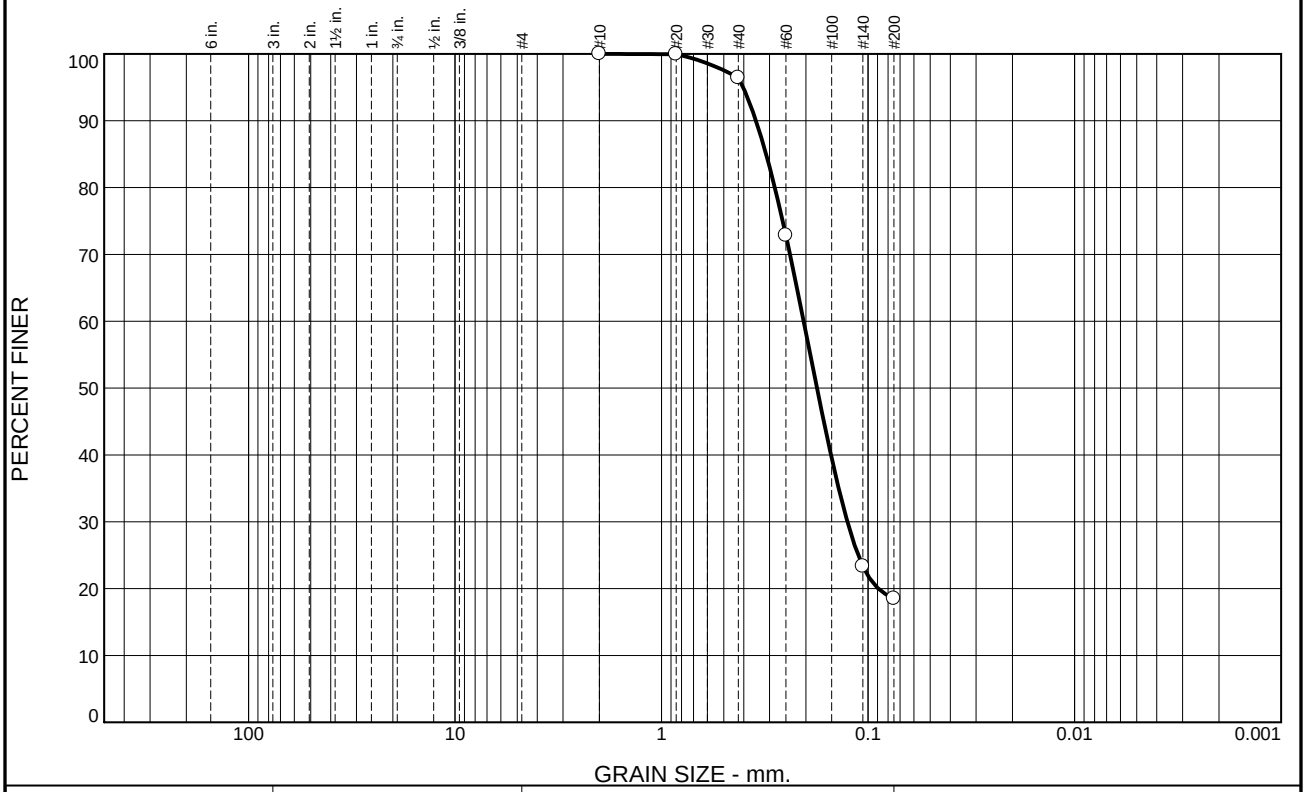
SKYLANDS TESTING, LLC

Sparta, NJ

Client: Warren George/Pillori Assoc.
Project: Champlain Hudson Power Express
Hudson Valley, NY
Project No: 22-045 **Figure**

Tested By: RS **Checked By:** VRS

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	0.0	3.6	77.9	18.5	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#10	100.0		
#20	100.0		
#40	96.4		
#60	72.8		
#140	23.4		
#200	18.5		

* (no specification provided)

Material Description

Dark gray silty sand

Atterberg Limits

PL= LL= PI=

Coefficients

D_{90}= 0.3488 D_{85}= 0.3117 D_{60}= 0.2051
D_{50}= 0.1768 D_{30}= 0.1259 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO=

Remarks

Sample washed on #200 sieve
USCS based on dilatancy & plasticity per ASTM D2488

Source of Sample: PS-2022-1 **Depth:** 73-75 ft.
Sample Number: S-14

Date: 7-21-2022

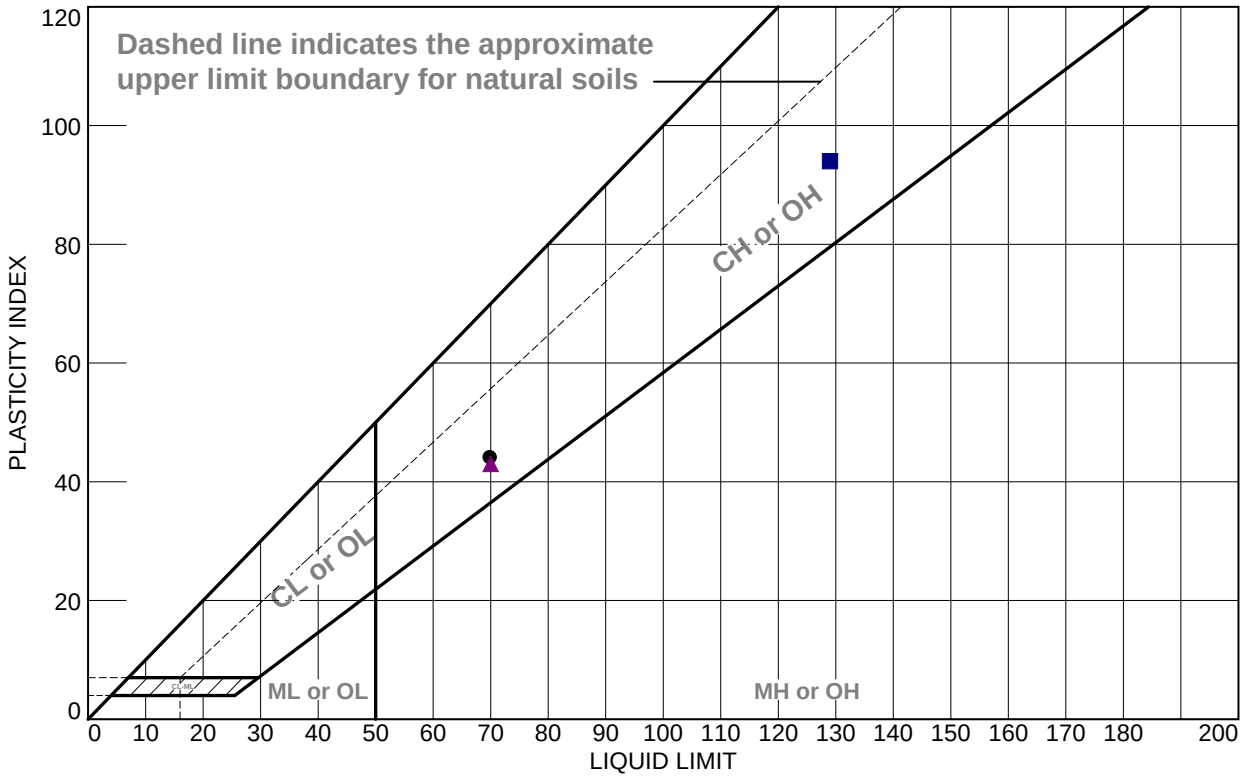
SKYLANDS TESTING, LLC

Sparta, NJ

Client: Warren George/Pillori Assoc.
Project: Champlain Hudson Power Express
Hudson Valley, NY
Project No: 22-045 **Figure**

Tested By: RS **Checked By:** VRS

ATTERBERG LIMITS REPORT



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LIQUIDITY INDEX	USCS
●	PS-2022-1	S-1	8-10 ft.	106.5	26	70	44	1.8	
■	PS-2022-1	S-2	13-15 ft.	124.6	35	129	94	1.0	
▲	PS-2022-1	S-3	18-20 ft.	76.5	27	70	43	1.2	

SKYLANDS TESTING, LLC

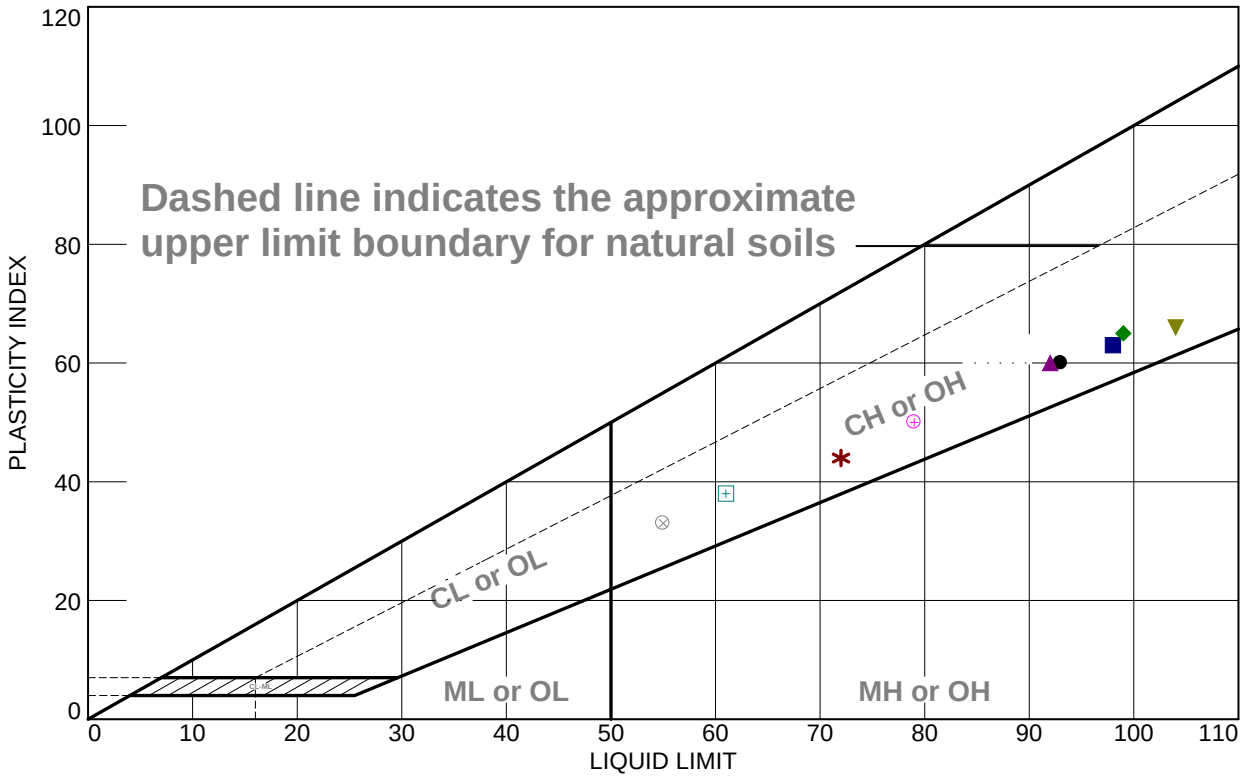
Sparta, NJ

Client: Warren George/Pillori Assoc.

Project: Champlain Hudson Power Express
Hudson Valley, NY

Project No.: 22-045 **Figure**

ATTERBERG LIMITS REPORT



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LIQUIDITY INDEX	USCS
●	PS-2022-2	S-1	15-17 ft.	116.2	33	93	60	1.4	
■	PS-2022-2	S-2	25-27 ft.	88.6	35	98	63	0.9	
▲	PS-2022-2	S-3	35-37 ft.	80.5	32	92	60	0.8	
◆	PS-2022-2	S-4	45-47 ft,	85.2	34	99	65	0.8	
▼	PS-2022-2	S-5	55-57 ft.	97.0	38	104	66	0.9	
✱	PS-2022-2	S-6	65-67 ft.	71.8	28	72	44	1.0	
⊕	PS-2022-2	S-7	75-77 ft.	72.2	29	79	50	0.9	
⊞	PS-2022-2	S-8	85-87 ft.	51.6	23	61	38	0.8	
⊗	PS-2022-2	S-9	98-100 ft.	38.5	22	55	33	0.5	

SKYLANDS TESTING, LLC

Sparta, NJ

Client: Warren George/Pillori Assoc.

Project: Champlain Hudson Power Express
Hudson Valley, NY

Project No.: 22-045

Figure