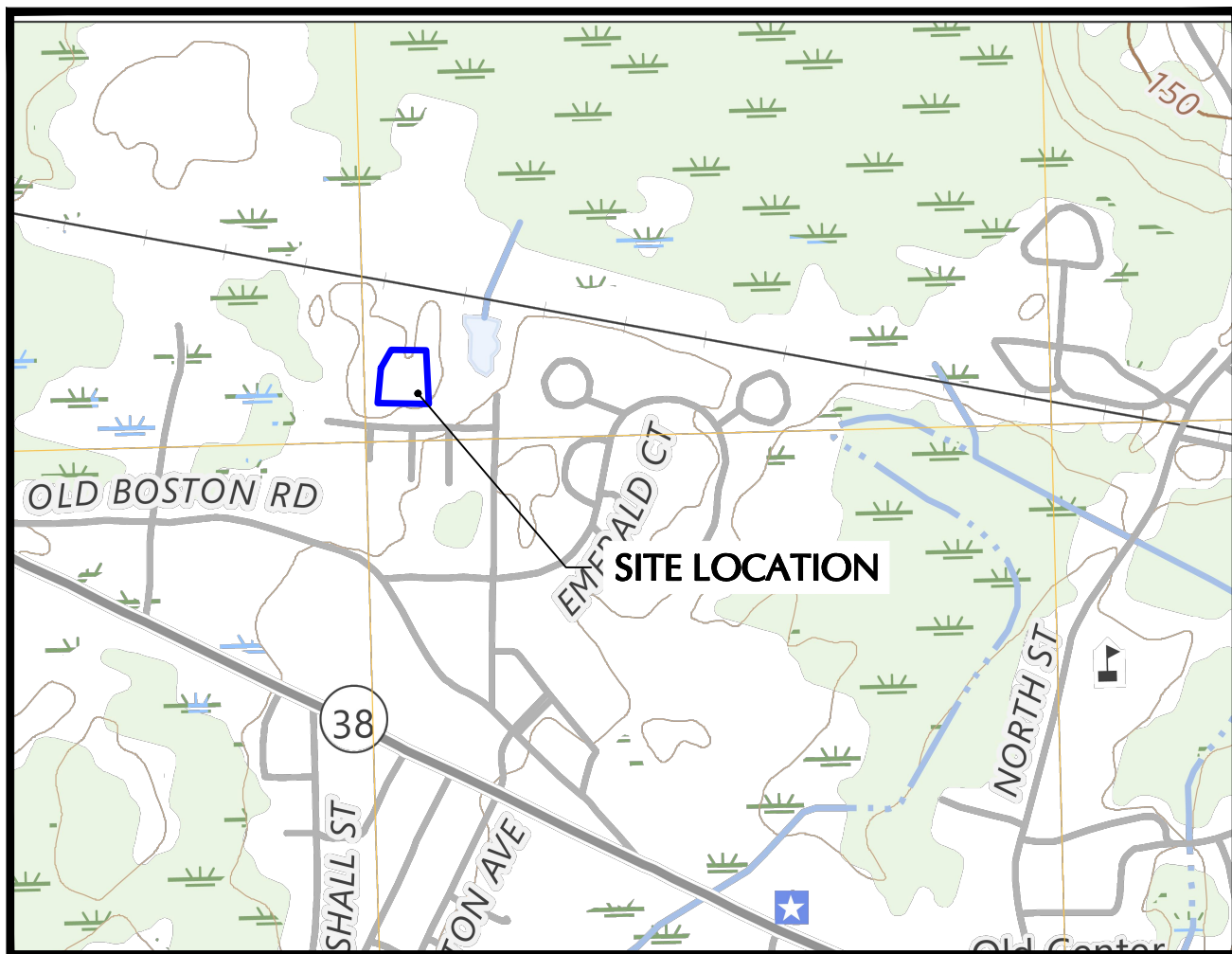


HILLMAN ENERGY CENTER
BATTERY ENERGY STORAGE SYSTEM
30% DESIGN DRAWINGS
73 & 75 HILLMAN STREET
TOWN OF TEWKSBURY, MIDDLESEX COUNTY, MASSACHUSETTS

CIVIL DRAWING INDEX			
SHEET NUMBER	DRAWING TITLE	DATE	LAST REVISED
CS001	SITE COVER SHEET	03-26-2025	
CS002	MASTER LEGEND AND NOTES	03-26-2025	
VL101	TOPOGRAPHIC AND BOUNDARY SURVEY	03-26-2025	
CS100	SITE PLAN	03-26-2025	
CG100	GRADING, DRAINAGE, & UTILITY PLAN	03-26-2025	
CS501	SITE DETAILS I	03-26-2025	
CS502	SITE DETAILS II	03-26-2025	
CS503	SITE DETAILS III	03-26-2025	
CS504	SITE DETAILS IV	03-26-2025	
CE100	SITE PREPARATION AND DEMOLITION PLAN	03-26-2025	
LP100	PLANTING PLAN	03-26-2025	
LP501	PLANTING NOTES & DETAILS	03-26-2025	
LL100	LIGHTING PLAN	03-26-2025	
LL501	LIGHTING NOTES & DETAILS	03-26-2025	



MAP REFERENCE: USGS 2024 WILMINGTON QUADRANGLE
MASSACHUSETTS (7.5 MINUTE SERIES)

LOCATION MAP

SCALE: 1"=1000'

RELEASE DATES	
DATE	ISSUED FOR
03/26/2025	30% DESIGN DRAWINGS

EAST POINT ENERGY, LLC
C/O: TYLER RYNNE
310 4TH STREET NE, 3RD FLOOR
CHARLOTTESVILLE, VIRGINIA 22902
PHONE: 434-217-5575
EMAIL:
TRYNNE@EASTPOINTENERGY.COM

WETLANDS & NATURAL RESOURCES
EPSILON ASSOCIATES, INC.
C/O: MARC BERGERON
3 MILL & MAIN PLACE, SUITE 250
MAYNARD, MA 01754
PHONE: 978-461-6253
EMAIL:
MBERGERON@EPSILONASSOCIATES.COM

CIVIL ENGINEER, LAND SURVEYOR, ENVIRONMENTAL
SERVICES & LANDSCAPE ARCHITECT
LANGAN ENGINEERING & ENVIRONMENTAL SERVICES,
INC
C/O: HILARY HOLMES
100 CAMBRIDGE STREET SUITE 1310
BOSTON, MA 02116
PHONE: 617-824-9126

NOT FOR CONSTRUCTION

LANGAN

GENERAL NOTES

- PLANIMETRIC AND TOPOGRAPHIC INFORMATION SHOWN HEREON HAS BEEN OBTAINED FROM GROUND SURVEYS BY LANGAN ENVIRONMENTAL AND ENGINEERING SERVICES. WETLAND DELINEATION FLAGGING COMPLETED BY EPSILON ASSOCIATES, INC. FIELD WORK COMPLETED DURING THE MONTH OF FEBRUARY 2025.
- THE MERIDIAN OF THIS SURVEY IS REFERENCED TO MASSACHUSETTS STATE PLANE COORDINATE SYSTEM NAD 83 (EPOCH 2001). POSITION WAS DETERMINED BY GLOBAL NAVIGATION SATELLITE SYSTEMS (GNSS) AS PROVIDED BY HXGN SMARTNET CONTINUOUSLY OPERATED REFERENCE STATIONS (CORS).
- ELEVATIONS SHOWN ARE REFERENCED TO NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) (GLOID 12B) AS DETERMINED BY GNSS.
- AS PER THE NATIONAL FLOOD INSURANCE PROGRAM FIRM MAP ENTITLED "MIDDLESEX COUNTY, MASSACHUSETTS PANEL 276 OF 654, MAP NUMBER 250218, EFFECTIVE DATE JULY 06, 2016" THE PROJECT AREA IS IN ZONE X (UNSHADED)
- UNLESS SPECIFICALLY NOTED HEREON, STORM AND SANITARY SEWER INFORMATION (INCLUDING PIPE INVERT, PIPE MATERIAL, AND PIPE SIZE) WAS OBSERVED AND MEASURED AT FIELD LOCATED STRUCTURES (MANHOLES/CATCH BASINS, ETC.). CONDITIONS CAN VARY FROM THOSE ENCOUNTERED AT THE TIMES WHEN AND LOCATIONS WHERE DATA IS OBTAINED. DESPITE MEETING THE REQUIRED STANDARD OF CARE, THE SURVEYOR CANNOT, AND DOES NOT WARRANT THAT PIPE MATERIAL AND/OR PIPE SIZE THROUGHOUT THE PIPE RUN ARE THE SAME AS THOSE OBSERVED AT EACH STRUCTURE, OR THAT THE PIPE RUN IS STRAIGHT BETWEEN THE LOCATED STRUCTURES.
- ADDITIONAL UTILITY (WATER, GAS, ELECTRIC ETC.) DATA IS SHOWN FROM FIELD LOCATED SURFACE MARKINGS (BY OTHERS), EXISTING STRUCTURES, AND/OR FROM EXISTING DRAWINGS.
- UNLESS SPECIFICALLY NOTED HEREON, THE SURVEYOR HAS NOT EXCAVATED TO PHYSICALLY LOCATE THE UNDERGROUND UTILITIES. THE SURVEYOR MAKES NO GUARANTEES THAT THE SHOWN UNDERGROUND UTILITIES ARE EITHER IN SERVICE, ABANDONED OR SUITABLE FOR USE, NOR ARE IN THE EXACT LOCATION OR CONFIGURATION INDICATED HEREON.
- ALL BUILDINGS AND STRUCTURES WERE LOCATED AND MEASURED AT GROUND LEVEL. THE SURVEYOR MAKES NO DETERMINATIONS OR GUARANTEES AS TO THE ABSENCE, EXISTENCE OR LOCATION OF UNDERGROUND STRUCTURES, FOUNDATIONS, FOOTINGS, PROJECTIONS, WALLS, TANKS, SEPTIC SYSTEMS, ETC. NO TEST PITS, EXCAVATIONS OR GROUND PENETRATING RADAR WERE PERFORMED AS PART OF THIS SURVEY.
- PRIOR TO ANY DESIGN OR CONSTRUCTION, THE PROPER UTILITY AGENCIES MUST BE CONTACTED FOR VERIFICATION OF UTILITY TYPE AND FOR FIELD LOCATIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING DIG SAFE (WWW.DIGSAFE.COM), EXCAVATION TEST HOLES, PERFORMING TEST BORINGS, AND PERFORMING WHATEVER ADDITIONAL INVESTIGATION NECESSARY TO PROTECT AND MAINTAIN ALL EXISTING UTILITIES TO REMAIN THROUGHOUT THE CONSTRUCTION PERIOD. ANY CONFLICTS BETWEEN EXISTING UTILITIES AND PROPOSED UTILITIES DISCOVERED DURING CONSTRUCTION SHALL BE PROMPTLY REPORTED TO THE PROJECT ENGINEER.
- ALL IMPROVEMENTS CONSTRUCTED IN THE TOWN PUBLIC RIGHT-OF-WAY SHALL CONFORM TO TOWN OF TEWKSBURY STANDARD DETAILS. IN THE ABSENCE OF LOCAL DETAILS & REQUIREMENTS AND WORK IN THE STATE RIGHT-OF-WAY SHALL COMPLY WITH THE STATE OF MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS AND BRIDGES, THE COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS (2021 EDITION) AND THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION SUPPLEMENTAL SPECIFICATIONS (DATED SEPTEMBER 30, 2021).
- FOR AREAS OUTSIDE THE PROPERTY LINES, REPAIR AND/OR REPLACE ALL DAMAGE DONE TO EXISTING ELEMENTS (SIDEWALKS, PAVING, LANDSCAPING, ETC.) AS REQUIRED BY OWNER AND/OR GOVERNING AUTHORITY.
- ALL SIGNS AND PAVEMENT MARKINGS SHALL CONFORM TO THE LATEST EDITION OF THE MUTCD AND MASSACHUSETTS DEPARTMENT OF TRANSPORTATION REGULATIONS.
- CONTRACTOR SHALL PREVENT DUST, SEDIMENT, AND DEBRIS FROM EXITING THE SITE AND SHALL BE RESPONSIBLE FOR CLEANUP, REPAIRS, AND CORRECTIVE ACTION IF SUCH OCCURS. ADJOINING STREETS AND PROPERTIES ARE TO BE KEPT FREE OF DEBRIS FROM DEMOLITION AND SHALL BE CLEANED ON A DAILY BASIS OR AS NEEDED.
- DUST CONTROL TREATMENTS SHALL BE APPLIED AS NECESSARY TO CONTROL AND REDUCE THE AMOUNT OF DUST WHICH MAY CAUSE OFF-SITE DAMAGE, BE A HEALTH HAZARD TO HUMANS, WILDLIFE AND PLANT LIFE, OR POSE A HAZARD TO TRAFFIC SAFETY.
- ABBREVIATIONS:
CB = CATCH BASIN
CO = CLEAN OUT
CONC. = CONCRETE
DIP = DUCTILE IRON PIPE
DMH = DRAIN MANHOLE
EX = EXISTING
GR = GRATE
HDPE = HIGH DENSITY POLYETHYLENE PIPE
INV. = INVERT
N.T.S. = NOT TO SCALE
R&D = REMOVE AND DISPOSE
TW = TOP OF WALL
TYP. = TYPICAL
LF = LINEAR FEET
- THE LOCATION OF EXISTING UNDERGROUND UTILITIES SHOWN HEREON IS TAKEN FROM DESIGN PLANS, AS-BUILT SKETCHES, EXISTING UTILITY COMPANY RECORDS, AND OTHER SOURCES OF INFORMATION AND IS NOT TO BE CONSTRUED AS AN ACCURATE "AS-BUILT" SURVEY AND IS SUBJECT TO SUCH CORRECTIONS THAT A MORE ACCURATE SURVEY MAY DISCLOSE.
- THE EXISTING UTILITIES INDICATED HEREON MAY NOT BE LOCATED AS SHOWN. IN ADDITION, OTHER UTILITIES NOT SHOWN HEREON MAY BE PRESENT. ANY DISCREPANCIES DISCOVERED DURING THE COURSE OF CONSTRUCTION SHALL BE PROMPTLY REPORTED TO THE PROJECT ENGINEER.
- THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AT LEAST 48 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS. ANY DISCREPANCIES DISCOVERED DURING THE COURSE OF CONSTRUCTION SHALL BE PROMPTLY REPORTED TO THE PROJECT ENGINEER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PAVEMENT REPAIRS REQUIRED AS A RESULT OF ANY UTILITY WORK.
- ALL ON-SITE PAVEMENT MARKINGS SHALL BE FAST DRYING WATER-BORNE TRAFFIC PAINT.
- BOTTOM AND TOP OF RETAINING WALL ELEVATION SPOT SHOTS REPRESENT THE BASE OF THE WALL AT FINISHED GROUND LEVEL AND THE TOP OF THE FACE OF THE WALL, RESPECTIVELY.

LEGEND

	EXISTING	PROPOSED
PROPERTY LINE	---	---
SETBACK LINE	---	---
WETLAND LIMITS	---	---
25-FT NO TOUCH ZONE	---	---
50-FT NO BUILD ZONE	---	---
100-FT NO BUFFER ZONE	---	---
CURB LINE (6" UNLESS OTHERWISE NOTED)	---	---
TRAFFIC SIGN		+
CONCRETE		
ROCK CONSTRUCTION ENTRANCE		
ASPHALT PAVEMENT		
CRUSHED STONE		
GRAVITY SANITARY LINE	---	---
SANITARY MANHOLE	⊙	⊙
WATER LINE	---	---
UNDERGROUND TELECOMMUNICATIONS	---	---
OVERHEAD ELECTRIC	---	---
UTILITY POLE	⌚	⌚
STORM PIPE	---	---
GAS LINE	---	---
CATCH BASIN	⊙	⊙
STORM DRAIN MANHOLE	⊙	⊙
CONTOUR	---322---	---322---
SPOT ELEVATION		⊙ 135.19
LIMIT OF DISTURBANCE	---	---
COMPOST FILTER TUBE	---	---
COMPOST FILTER TUBE & SILT FENCE	---	---
SAWCUT	---	---
STOCKPILE AREA		
INLET PROTECTION		
LIGHTING FIXTURES	⊙	⊙
CHAIN LINK FENCE	---	---
CONSTRUCTION FENCE	---	---
SOUND WALL	---	---
RETAINING WALL	---	---
INFILTRATION SYSTEMS	---	---

SOIL EROSION-SEDIMENT CONTROL NOTES

PROPOSED DEVELOPMENT 1. CONSTRUCTION WILL INCLUDE EARTHWORK, CURBING, PAVING, UTILITY INSTALLATION, LANDSCAPING AND BUILDING CONSTRUCTION. ALL DEMOLITION DEBRIS AND SOIL REMOVAL RELATED TO CONSTRUCTION SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL LAWS GOVERNING SUCH ACTIVITIES.	 TO 70% OF ITS DESIGN VOLUMES, WHICHEVER OCCURS FIRST.	 CONTROL MEASURES SHALL BE IMPLEMENTED. ALL TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES SHALL BE IMPLEMENTED. ALL DISTURBED AREAS, STOCKPILES OF FILL OR EXCAVATED MATERIAL SHALL BE STABILIZED IN SUCH A MANNER AS NOT TO CAUSE UNREASONABLE HAZARD TO PERSONS OR PROPERTY.	 (i) TOPSOIL SHOULD BE A MINIMUM OF SIX INCHES DEEP (LIGHTLY COMPACTED) BEFORE SEEDING. (ii) TOPSOIL SHALL BE TESTED PRIOR TO SEEDING. (iii) WORK SOIL AMENDMENTS INTO SOIL AS NECESSARY AS NEARLY AS PRACTICAL TO A DEPTH OF FOUR INCHES WITH A DISC, SPRINGTOOTH HARROW OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OR DISCHING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE ALL CLAY OR SILTY SOIL AND COARSE SANDS SHOULD BE ROLLED TO FIRM THE SEED BED WHEREVER FEASIBLE. (iv) REMOVE FROM THE SURFACE ALL STONES ONE INCH OR LARGER IN ANY DIMENSION. REMOVE ALL OTHER DEBRIS, SUCH AS WRE, CABLE, TREE ROOTS, PIECES OF CONCRETE, CLOUDS, LUMPS, OR OTHER UNSUITABLE MATERIAL. (v) INSPECT SEED BED JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT SOIL COMPACT, THE AREA MUST BE RETILLED AND FIRMED AS ABOVE.
SOIL EROSION AND SEDIMENT CONTROL NOTES 1. THE SOIL AND SEDIMENT CONTROL PRACTICES MUST BE INSTALLED IN ACCORDANCE WITH THE LOCAL GOVERNING AUTHORITY, THE MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES AND THE MASSACHUSETTS STORMWATER STANDARDS. 2. EROSION AND SEDIMENT CONTROL DEVICES MUST BE INSTALLED PRIOR TO START OF DEMOLITION AND CONSTRUCTION AND DISTURBANCE OF SITE. CONTRIBUTORY DRAINAGE AREAS, THE OWNER OR ITS CONTRACTOR SHALL INSPECT, REPAIR AND REMOVE ALL SEDIMENT AND EROSION CONTROL DEVICES, AS INDICATED HEREIN. ALL EARTH CHANGES SHALL BE DESIGNED, CONSTRUCTED, AND COMPLETED IN SUCH A MANNER SO THAT THE EXPOSED AREA OF ANY DISTURBED LAND SHALL BE LIMITED TO THE SHORTEST POSSIBLE PERIOD OF TIME. 3. DISPOSAL OF COLLECTED SEDIMENT SHALL BE MADE TO AREA DESIGNATED BY THE OWNER'S SOIL ENGINEER. 4. FILTER FABRIC/SILT FENCE WILL BE INSTALLED ALONG THE TOE OF ALL CRITICAL CUT AND FILL SLOPES. 5. ALL TOPSOIL NOT TO BE USED FOR FINAL GRADING/LANDSCAPED AREAS SHALL BE REMOVED FROM THE SITE IMMEDIATELY. IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL LAW, ALL TOPSOIL TO BE USED IN LANDSCAPED AREAS SHALL BE STORED/STOCKPILED IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL LAW STANDARDS. 6. ALL AREAS WITHIN 500 FEET OF AN INHABITED DWELLING SHALL BE WETTED AS NECESSARY TO PROVIDE DUST CONTROL. 7. PAVEMENT BASE COURSE MUST BE PLACED IN ALL NEW ROADWAY AREAS UPON COMPLETION OF FINE GRADING. 8. THE CONTRACTOR IS RESPONSIBLE FOR ALL PAVED ROADWAYS, ON AND OFF-SITE, WHICH MUST BE KEPT FREE OF SITE GENERATED SEDIMENT AT ALL TIMES. DUST SHALL BE CONTROLLED BY SPRINKLING OR OTHER APPROVED METHOD. 9. ALL STORM DRAINAGE OUTLETS MUST BE STABILIZED, AS REQUIRED, BEFORE THE DISCHARGE POINTS BECOME OPERATIONAL. 10. SILT FENCES AND BARRIERS MUST BE CLEANED OR REPLACED PERIODICALLY TO REMOVE BUILT-UP SILT. 11. SEDIMENT TRAPS MUST BE CLEANED WHEN CAPACITY HAS BEEN REDUCED BY AN AVERAGE OF 2'-0" OVER ITS TOTAL AREA OR	 12. ALL EROSION AND SEDIMENT CONTROL DEVICES MUST BE INSPECTED ON A DAILY BASIS AND CLEANED IMMEDIATELY AFTER EACH STORM. 13. ANY TEMPORARY OR PERMANENT FACILITY DESIGNED FOR THE CONVEYANCE OF WATER AROUND, THROUGH, OR FROM THE EARTH CHANGE AREA SHALL BE DESIGNED TO LIMIT THE WATER FLOW TO A NON-EROSIVE VELOCITY. 14. THE CONTRACTOR SHALL CORRECT ANY OMISSIONS, ERRORS, OR FIELD OPERATIONS IMMEDIATELY AND IN ACCORDANCE WITH THE GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL. 15. ANY CONVEYANCE OF THIS PROJECT PRIOR TO ITS COMPLETION WILL TRANSFER FULL RESPONSIBILITY FOR COMPLIANCE WITH THE CERTIFIED PLAN TO ANY SUBSEQUENT OWNERS. 16. SOIL EROSION AND SEDIMENT CONTROLS MUST BE INSPECTED BY THE LOCAL GOVERNING AUTHORITY BEFORE WORK MAY COMMENCE. 17. THE PROPERTY OWNER AND/OR HIS/HER AGENTS MUST MAINTAIN (REPAIR/REPLACE), WHEN NECESSARY, THE SILTATION CONTROL UNTIL ALL DEVELOPMENT ACTIVITY IS COMPLETED AND ALL DISTURBED AREAS ARE PERMANENTLY STABILIZED. TEMPORARY STABILIZATION SEDIMENT DISPOSAL AREAS AND TOPSOIL STOCKPILES NOT SCHEDULED FOR CONSTRUCTION ACTIVITIES WITHIN THIRTY (30) DAYS OF DISTURBANCE SHALL BE STABILIZED AS FOLLOWS: A. SOIL AMENDMENTS AS NECESSARY. B. ANNUAL RYE GRASS SEEDING APPLIED AT A RATE OF NOT LESS THAN 1 LB. PER 1,000 SF. C. MULCH ALL NEWLY SEEDDED AREAS WITHIN 80 LBS. OF SALT HAY OR SMALL GRAIN STRAW PER 1,000 SF. D. WHEN DISTURBED AREAS ARE SCHEDULED FOR IMMEDIATE LANDSCAPING THEY MAY BE MULCHED AND SEEDDED PER ITEM C ABOVE. PERMANENT STABILIZATION REFER TO PLANS FOR PERMANENT STABILIZATION METHODS + PROPOSED SEED MIXES. A. PERMANENT VEGETATION IS TO BE SEEDDED OR SODDED ON ALL DISTURBED LAND AREAS WITHIN SEVEN (7) DAYS AFTER FINAL GRADING. MULCH AS NECESSARY FOR SEED PROTECTION AND ESTABLISHMENT. AMEND SOIL AS NEEDED PRIOR TO PERMANENT SEEDING. WHEN IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE A DISTURBED AREA AFTER COMPLETION OF AN EARTH CHANGE OR WHEN SIGNIFICANT EARTH CHANGE ACTIVITY CEASES, TEMPORARY SOIL EROSION	 B. MATERIALS SPECIFICATION: LAWN + MEADOW AREAS (i) ANY SOIL HAVING A PH OF FOUR OR LESS CONTAINING IRON SULFIDES SHALL BE COVERED WITH A MINIMUM OF TWELVE INCHES OF SOIL HAVING A PH OF FIVE OR MORE PRIOR TO SEED BED PREPARATION. C. MULCHING SHALL BE DONE AT THE RATE OF SEVENTY TO NINETY POUNDS (70-90 LBS) PER 1,000 SQUARE FEET WITH UNROTTED SALT HAY. D. LIQUID MULCH BINDERS MUST BE USED TO ANCHOR SALT HAY, HAY OR STRAY MULCHES. (i) APPLICATIONS SHOULD BE HEAVIER AT EDGES WHERE WIND CATCHES THE MULCH IN VALLEYS AND AT CREATED BANKS. REMAINDER OF AREA SHOULD BE UNIFORM IN APPEARANCE. (ii) USE ONE OF THE FOLLOWING: SYNTHETIC OR ORGANIC BINDERS SUCH AS OIRASOL DCA-70, PETRO SET, TERRA TACH, HYDRO MULCH AND AEROSPRAY MAY BE USED AT RATES RECOMMENDED BY THE MANUFACTURER OF ANCHOR MULCH MATERIALS. BINDERS CONTAINING PETROLEUM PRODUCTS SHALL NOT BE USED. NOTE: ALL NAMES GIVEN ABOVE ARE REGISTERED TRADE NAMES. THIS DOES NOT CONSTITUTE A RECOMMENDATION OF THESE TO THE EXCLUSION OF OTHER PRODUCTS. D. FILL MATERIAL SHALL BE FREE FROM DEBRIS, PERISHABLE OR COMBUSTIBLE MATERIAL AND FROZEN OR WET EARTH OR STONES LARGER THAN THREE INCHES IN MAXIMUM DIMENSION. E. CONSTRUCTION AREAS SHALL BE PERIODICALLY SPRAYED WITH WATER UNTIL THE SURFACE IS WET TO CONTROL THE GENERATION OF DUST. F. ALL REVISIONS AFTER APPROVAL HAS BEEN GRANTED SHALL BE FORWARDED TO THE APPROPRIATE DISTRICT FOR REVIEW. G. THE LOCAL GOVERNING AUTHORITY SHALL RECEIVE WRITTEN NOTIFICATION SEVENTY TWO HOURS BEFORE THE START OF ANY CONSTRUCTION. H. SEEDBED PREPARATION:	 CONTINGENCY SOIL EROSION AND SEDIMENT CONTROL NARRATIVE 1. THE GENERAL CONTRACTOR WILL DESIGNATE PERSONNEL FOR 24 HOUR EMERGENCY RESPONSE IN THE EVENT OF SEVERE WEATHER AND INCREASED POTENTIAL FOR SEVERE EROSION. 2. THE GENERAL CONTRACTOR IS REQUIRED TO MAINTAIN ON SITE OR HAVE THE ABILITY TO RETRIEVE WITHIN 12 HOURS THE FOLLOWING MATERIALS IN THE EVENT THAT THERE ARE DEFICIENCIES IN THE SESC MEASURES: A. 25% OF THE INSTALLED LENGTH OF SILT FENCE B. EQUIVALENT TONNAGE OF STONE FOR STABILIZATION OF 2 STABILIZATION ENTRANCES. STONE COULD BE USED FOR SLOPE REPAIRS, ENERGY DISSIPATER ENHANCEMENTS, ETC. C. HEAVY EQUIPMENT CAPABLE OF TRENCHING/EXCAVATING LARGE AREAS TO DIVERT AND CONTROL RUNOFF IN A CONTROLLED MANNER. D. HAVE DESIGNATED A HYDRO-SEED CONTRACTOR CAPABLE OF RESPONDING TO THE SITE WITHIN 12 HOURS 3. ANY STUMP GRINDINGS OR WOOD CHIPS GENERATED ON-SITE SHOULD BE RETAINED FOR USE TO BACK UP SILT FENCES.

Date	Description	No.
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Revisions

LANGAN

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Project **HILLMAN ENERGY
CENTER BATTERY
ENERGY STORAGE
SYSTEM**

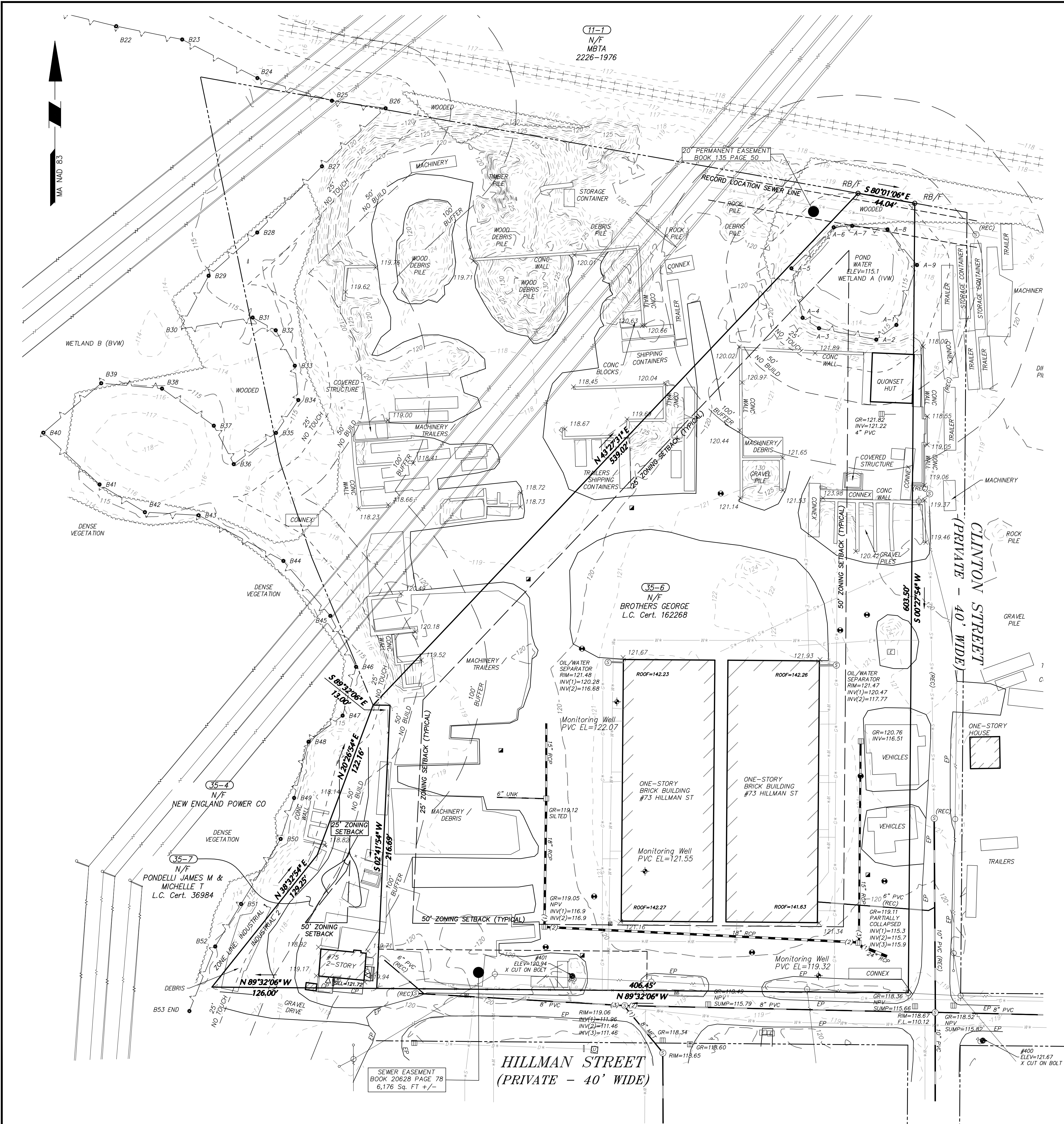
MIDDLESEX COUNTY MASSACHUSETTS

Drawing Title

**MASTER LEGEND
AND NOTES**

Project No. 151043401	Drawing No.
Date 03/26/2025	CS002
Drawn By JED/MPG	
Checked By HH	

NOT FOR CONSTRUCTION

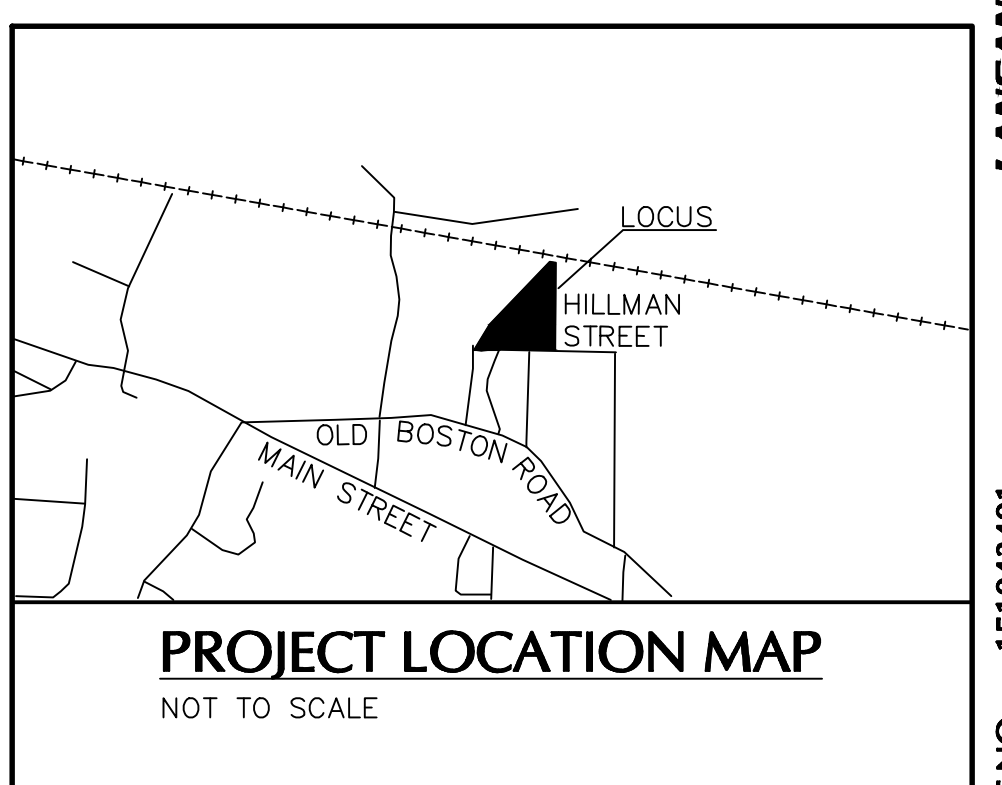


NOTES

- THIS SURVEY IS BASED UPON EXISTING PHYSICAL CONDITIONS FOUND AT THE SUBJECT SITE, DEED INFORMATION AND PLANS OF RECORD.
- THE MERIDIAN OF THIS SURVEY IS REFERENCED TO MASSACHUSETTS STATE PLANE COORDINATE SYSTEM NAD 83 (EPOCH 2001). POSITION WAS DETERMINED BY GLOBAL NAVIGATION SATELLITE SYSTEMS (GNSS) AS PROVIDED BY HXGN SMARTNET CONTINUOUSLY OPERATED REFERENCE STATIONS (CORS).
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- UNLESS SPECIFICALLY NOTED HEREON, STORM AND SANITARY SEWER INFORMATION (INCLUDING PIPE INVERT, PIPE MATERIAL, AND PIPE SIZE) WAS OBSERVED AND MEASURED AT FIELD LOCATED STRUCTURES (MANHOLES/CATCH BASINS, ETC). CONDITIONS CAN VARY FROM THOSE ENCOUNTERED AT THE TIMES WHEN AND LOCATIONS WHERE DATA IS OBTAINED. DESPITE MEETING THE REQUIRED STANDARD OF CARE, THE SURVEYOR CANNOT, AND DOES NOT WARRANT THAT PIPE MATERIAL AND/OR PIPE SIZE THROUGHOUT THE PIPE RUN ARE THE SAME AS THOSE OBSERVED AT EACH STRUCTURE, OR THAT THE PIPE RUN IS STRAIGHT BETWEEN THE LOCATED STRUCTURES.
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- PRIOR TO ANY DESIGN OR CONSTRUCTION, THE PROPER UTILITY AGENCIES MUST BE CONTACTED FOR VERIFICATION OF UTILITY TYPE AND FOR FIELD LOCATIONS.
- THIS SURVEY IS NOT VALID WITHOUT THE EMBOSSED OR INKED SEAL OF THE PROFESSIONAL.

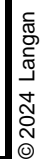
LEGEND

	AIR CONDITIONING UNIT		BORING HOLE
	BOLLARD		TEST PIT
	COLUMN		EDGE OF GRAVEL
	DOOR		EDGE OF WALK
	DOUBLE DOOR		DETECTABLE WARNING
	FLAG POLE		BITUMINOUS CURB
	MONITORING WELL		CONCRETE CURB
	SIGN		GRANITE CURB
	TREE		SLOPED GRANITE CURB
	WETLAND FLAG		METAL GUARD RAIL
	CATCH BASIN		WOOD GUARD RAIL
	CLEANOUT		STOCKADE FENCE
	ELECTRIC BOX		CHAINLINK FENCE
	ELECTRIC METER		IRON FENCE
	FIRE HYDRANT		TREE LINE
	FLARED END SECTION		OVERHEAD WIRE
	COMMUNICATION BOX		WETLAND LINE
	GAS METER		EASEMENT LINE
	GAS VALVE		PROPERTY LINE
	GUY POLE		RIGHT-OF-WAY LINE
	HAND HOLE		CONTOUR LINE
	MANHOLE (TYPE AS LABELED)		SANITARY FORCE MAIN
	POWER POLE		DRAINAGE MARK OUT LINE
	ROOF DRAIN		ELECTRIC MARK OUT LINE
	STANDPIPE		COMMUNICATION MARK OUT LINE
	WATER VALVE		GAS MARK OUT LINE
	SPOT ELEVATION		SANITARY SEWER MARK OUT LINE
	BITUMINOUS		WATER MARK OUT LINE
	CONCRETE		STEAM MARK OUT LINE
	CONCRETE PAD		UNKNOWN MARK OUT LINE
	LANDSCAPED AREA		REFERENCE UTILITY LINE (TYPE AS NOTED) - PLOTTED FROM EXISTING MAPPING
	BUILDING OVERHANG		
	BOTTOM OF WALL		
	EDGE OF PAVEMENT		

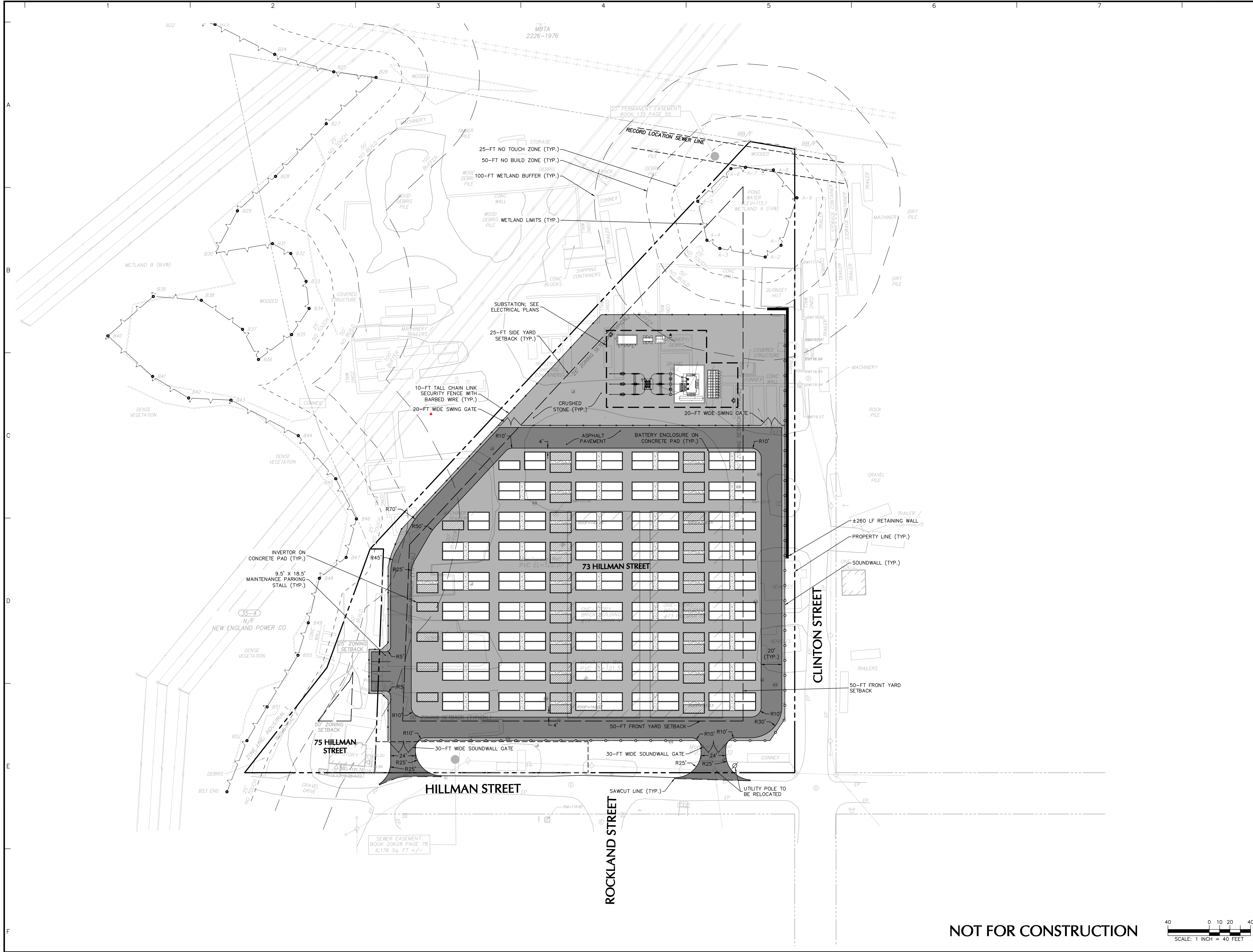


Date	Description	No.
REVISIONS		
IAN C. WISURI, PLS No. 47403 DATE SIGNED		
LANGAN Langan Engineering and Environmental Services, Inc. 100 Cambridge Street, Suite 1310 Boston, MA 02114 T: 617.824.9100 F: 617.824.9101 www.langan.com		
Project		
BESS ENERGY-EPSILON TEWKSBURY 73 & 75 HILLMAN STREET TEWKSBURY, 01876 MIDDLESEX COUNTY MASSACHUSETTS		
Prepared for		
EPSILON ASSOCIATES, INC. 3 MILL & MAIN PLACE, SUITE 250 MAYNARD, MASSACHUSETTS, 01754		
Record Owner		
ASSESSORS MAP 35 LOT 6 N/F BROTHERS GEORGE L.C. Cert. 162268 ASSESSORS MAP 35 LOT 6 N/F PONDELLI JAMES M & MICHELLE T L.C. Cert. 162268		
Drawing Title		
TOPOGRAPHIC AND BOUNDARY SURVEY		
Project No.	Drawing No.	
151043401	VL101	
Date	FEBRUARY 28, 2025	
Drawn By	JIC	
Checked By	ICW	
Sheet 1 of 2		





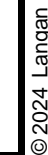
Date: 3/13/2025 Time: 22:53 User: bholmes Style Table: Lagan stb Layout: CE101 Document Code: 151043401-0501-CE101-0101



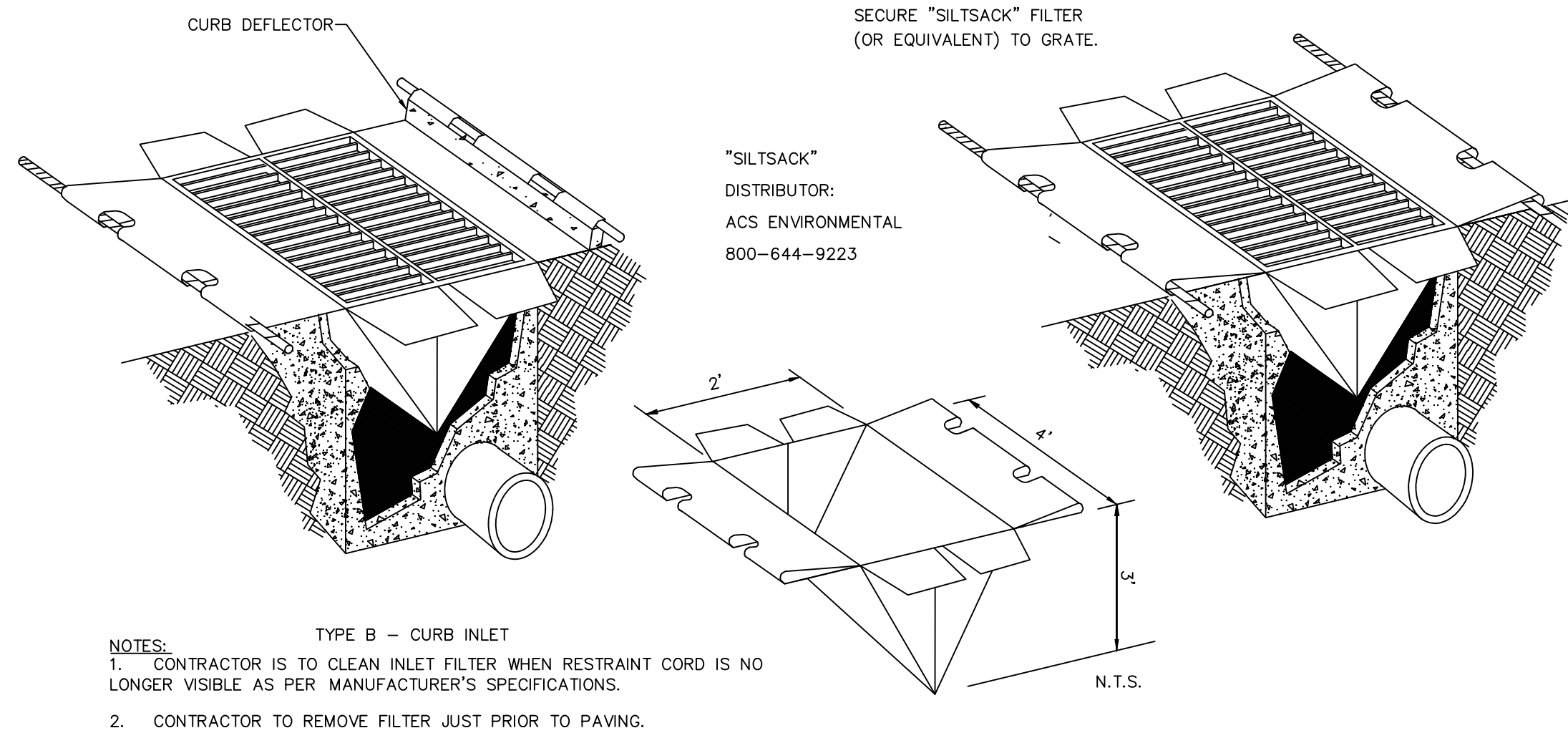
Date	Description	No.
Revisions		
LANGAN Langan Engineering and Environmental Services, LLC. 100 Cambridge Street, Suite 1310 Boston, MA 02114 T: 617.824.9100 F: 617.824.9101 www.langan.com		
Project HILLMAN ENERGY CENTER BATTERY ENERGY STORAGE SYSTEM TEWKSBURY MIDDLESEX COUNTY MASSACHUSETTS		
Drawing Title SITE PLAN		
Project No. 151043401	Drawing No. CS101	
Date 03/26/2025		
Drawn By JED/MPG		
Checked By HH		



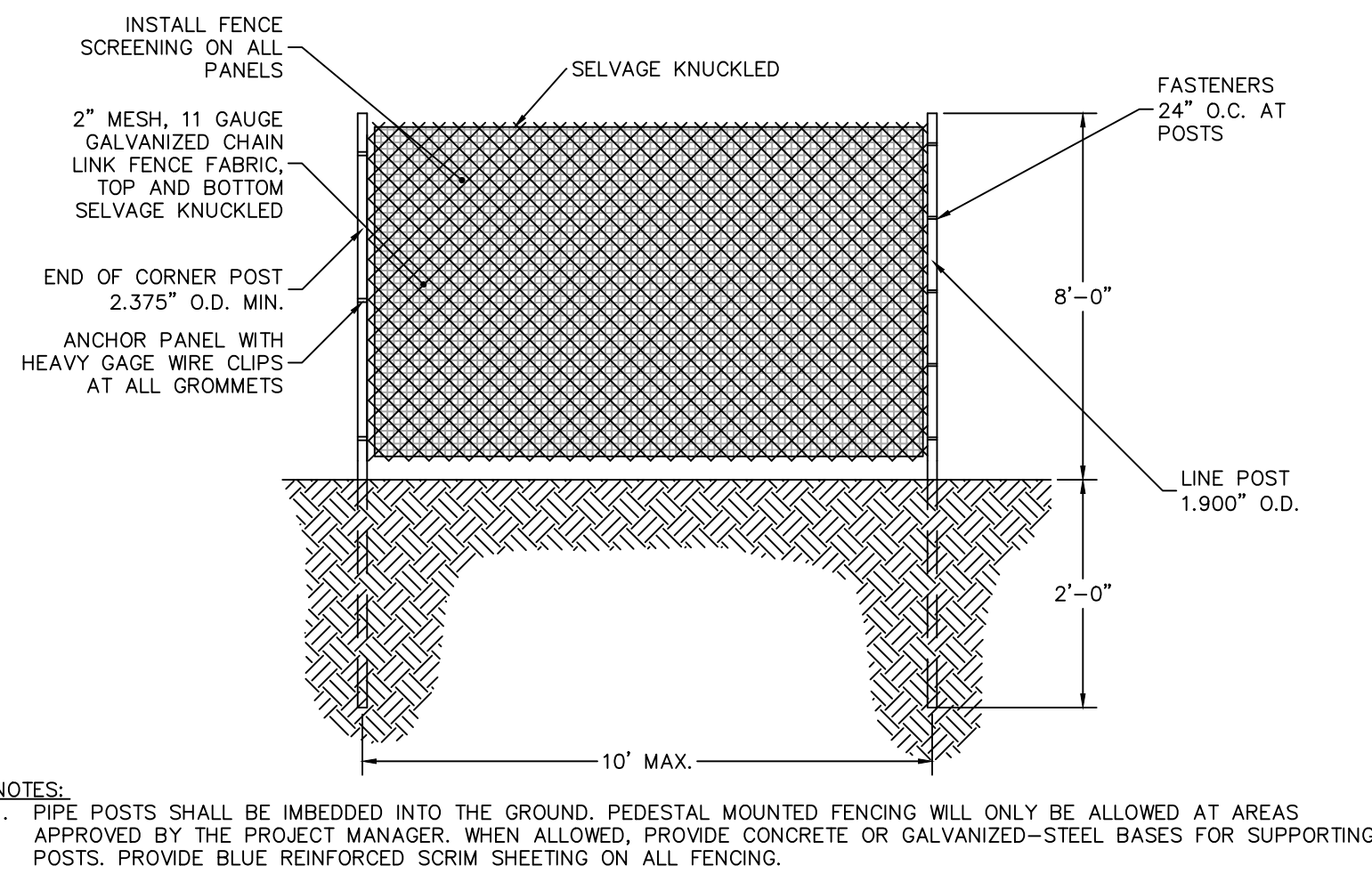
NOT FOR CONSTRUCTION



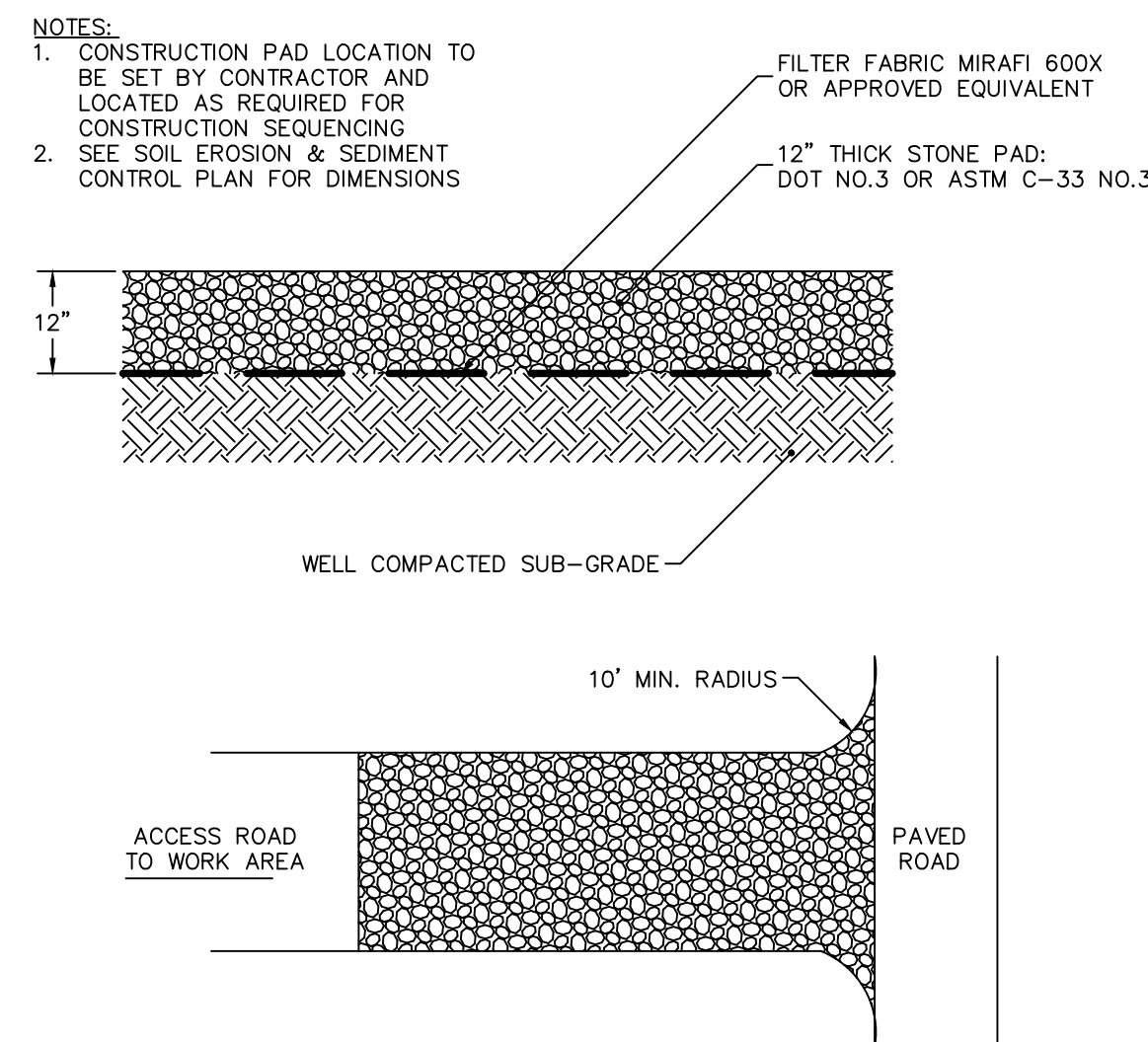
© 2024 Langan



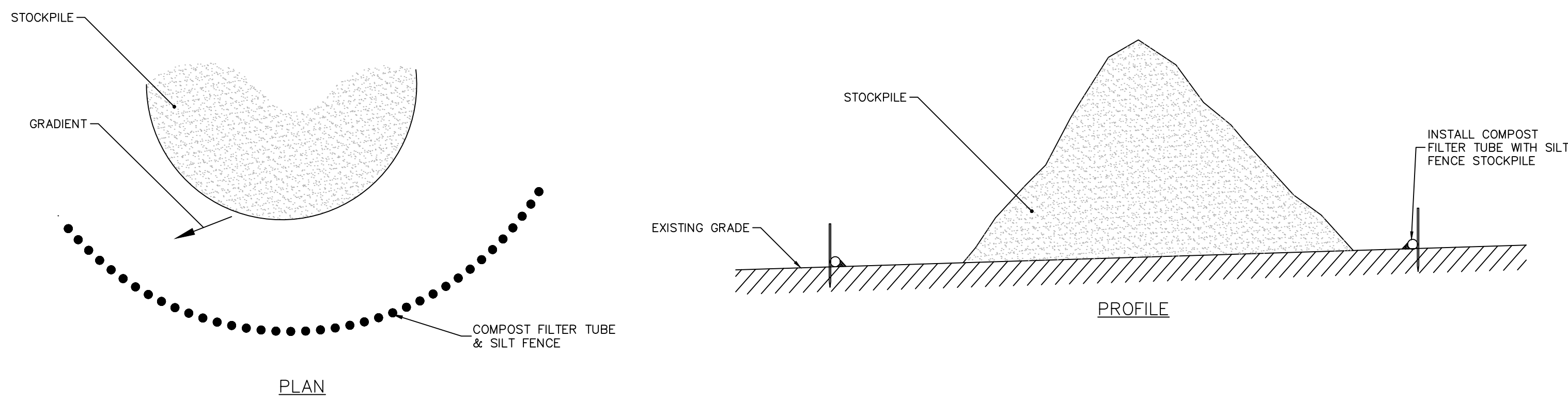
1 INLET PROTECTION
N.T.S.



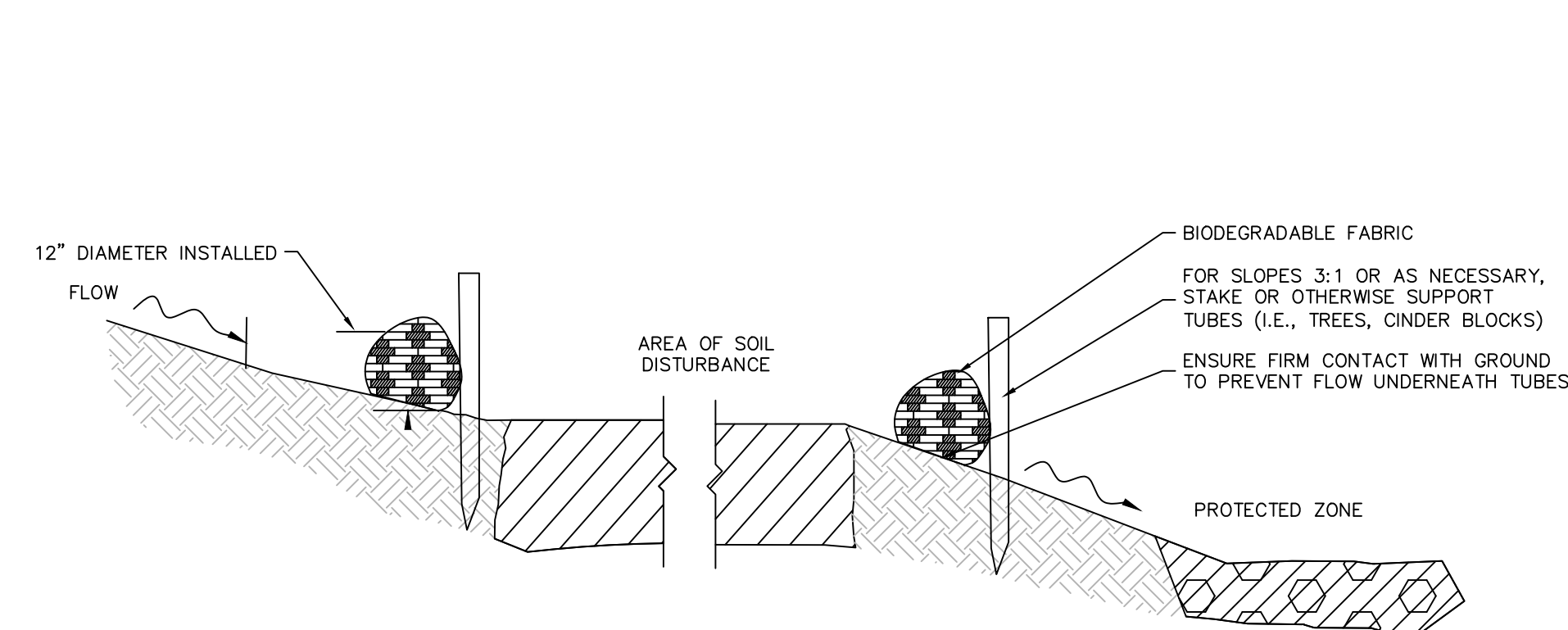
2 CONSTRUCTION FENCE
N.T.S.



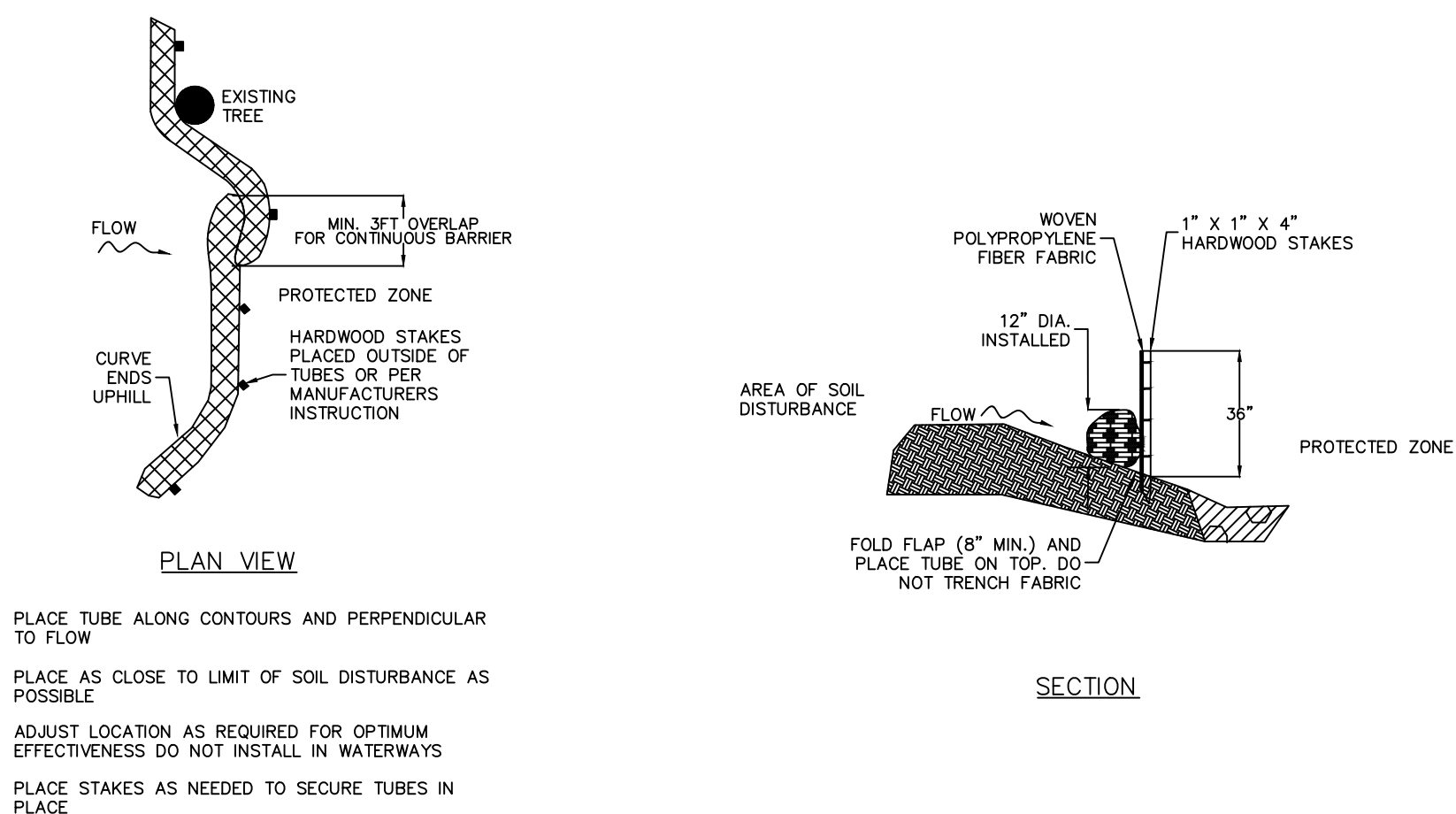
3 CONSTRUCTION ENTRANCE
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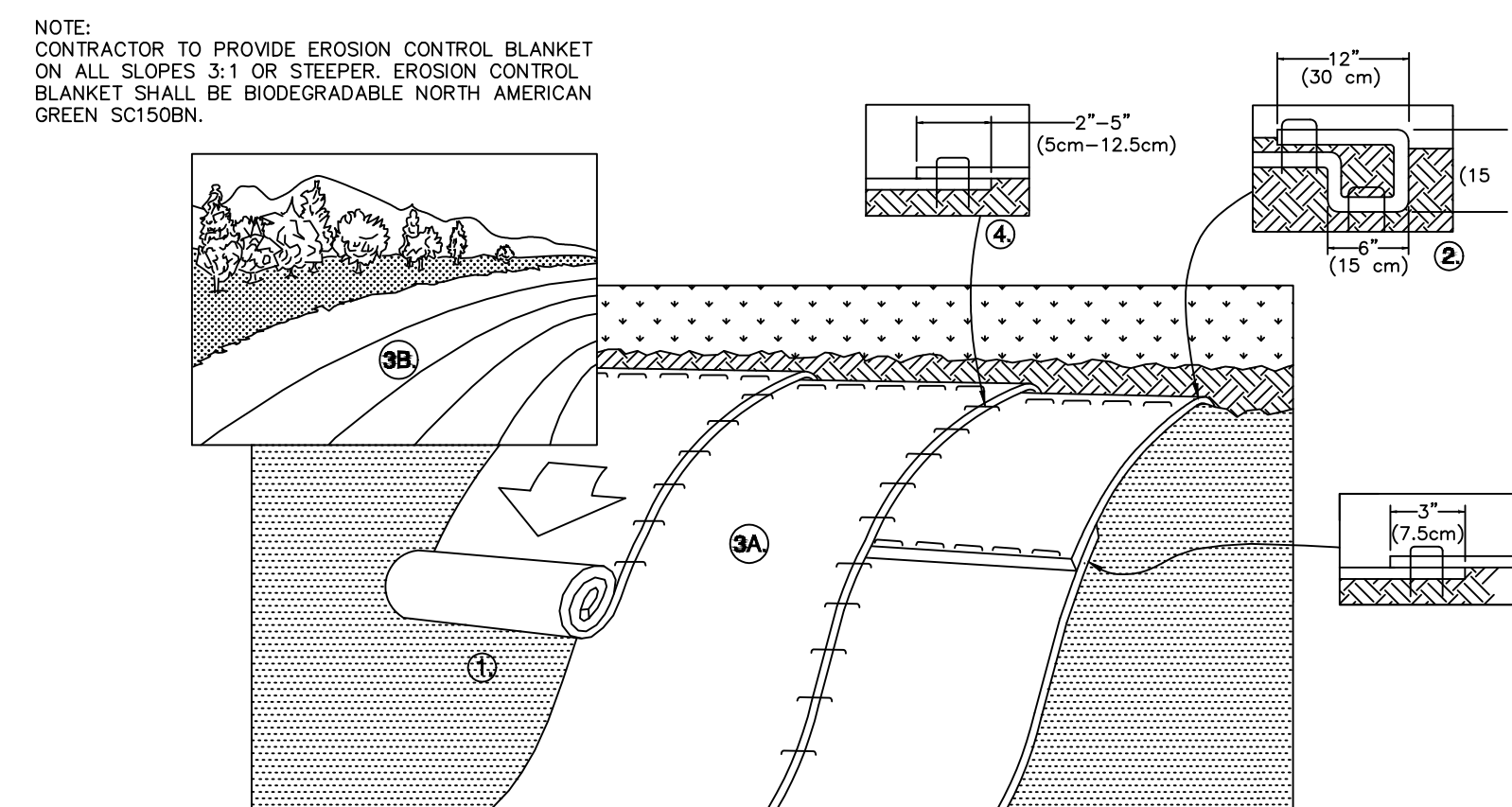
4 TEMPORARY STOCKPILE
N.T.S.



5 COMPOST FILTER TUBE
N.T.S.



6 COMPOST FILTER TUBE & SILT FENCE
N.T.S.



7 EROSION CONTROL BLANKETS (SLOPE STABILIZATION SLOPES 3H:1V AND STEEPER)
N.T.S.

NOT FOR CONSTRUCTION

Date	Description	No.
Revisions		
LANGAN Langan Engineering and Environmental Services, LLC. 100 Cambridge Street, Suite 1310 Boston, MA 02114 T: 617.824.9100 F: 617.824.9101 www.langan.com		
Project HILLMAN ENERGY CENTER BATTERY ENERGY STORAGE SYSTEM MIDDLESEX COUNTY TEWKSBURY MASSACHUSETTS		
Drawing Title SITE DETAILS I		
Project No. 151043401	Drawing No. CS501	
Date 03/26/2025		
Drawn By JED/MPG		
Checked By HH		



-
- A cross-sectional diagram of a pavement repair. On the left, a vertical line represents a 'SAWCUT EXISTING BITUMINOUS CONCRETE PAVEMENT, FINISH WITH HOT JOINT SEALER'. To the right of this cut is the 'EXISTING PAVEMENT SECTION', which is 12 inches wide. Below the pavement is the 'EXISTING PAVEMENT BASE'. The base is shown being cut at a 1:1 slope, with a label 'EXISTING PAVEMENT BASE TO BE CUT AT A 1:1 SLOPE' pointing to the sloped surface. Below the base is the 'COMPACTED SUBGRADE'. The diagram uses different hatching patterns to distinguish between the concrete pavement, the gravel base, and the compacted subgrade.

- NOTES:

N.T.S.

NTS

N.T.S.



- NOTES:

- N.T.S.

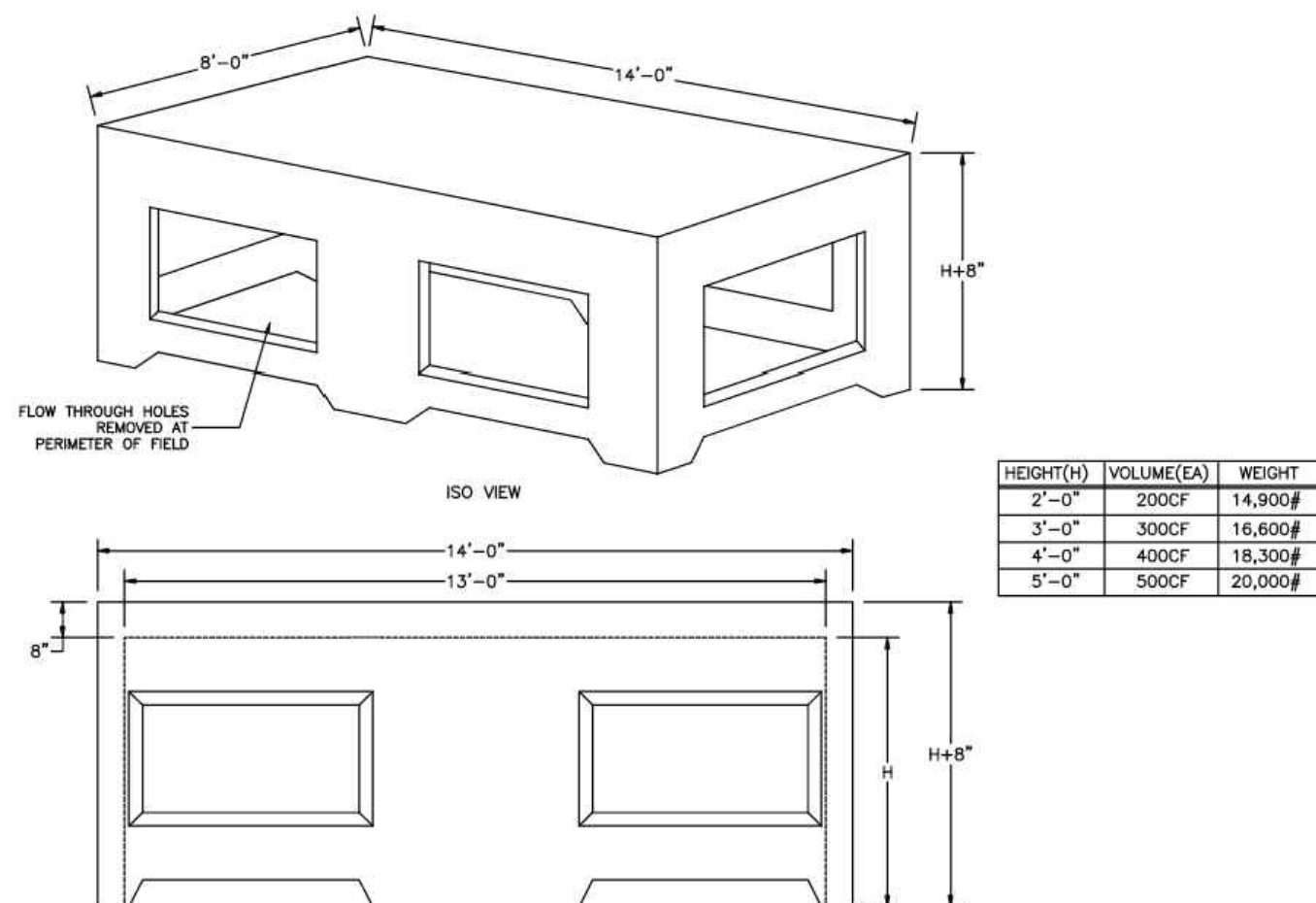
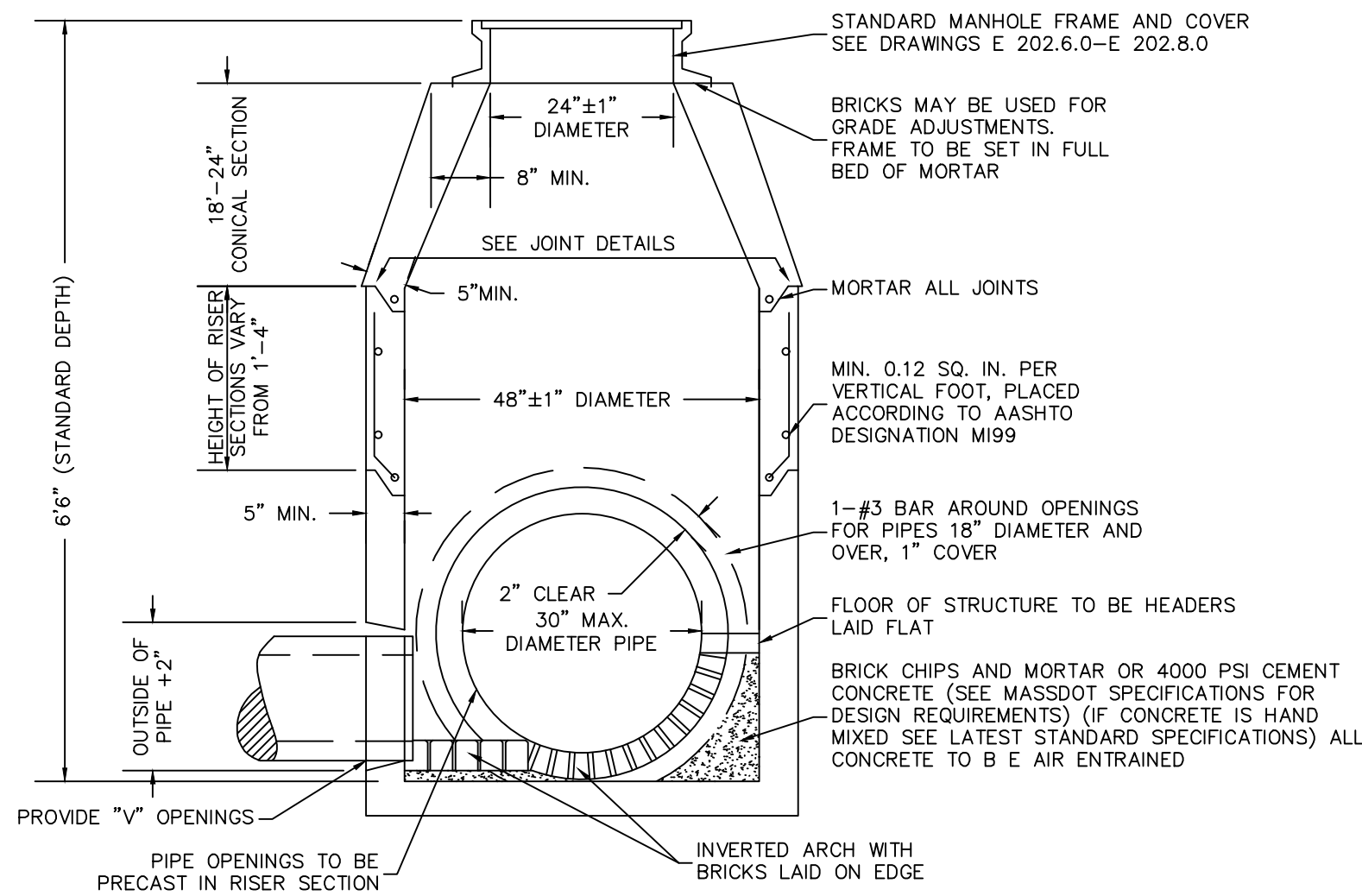
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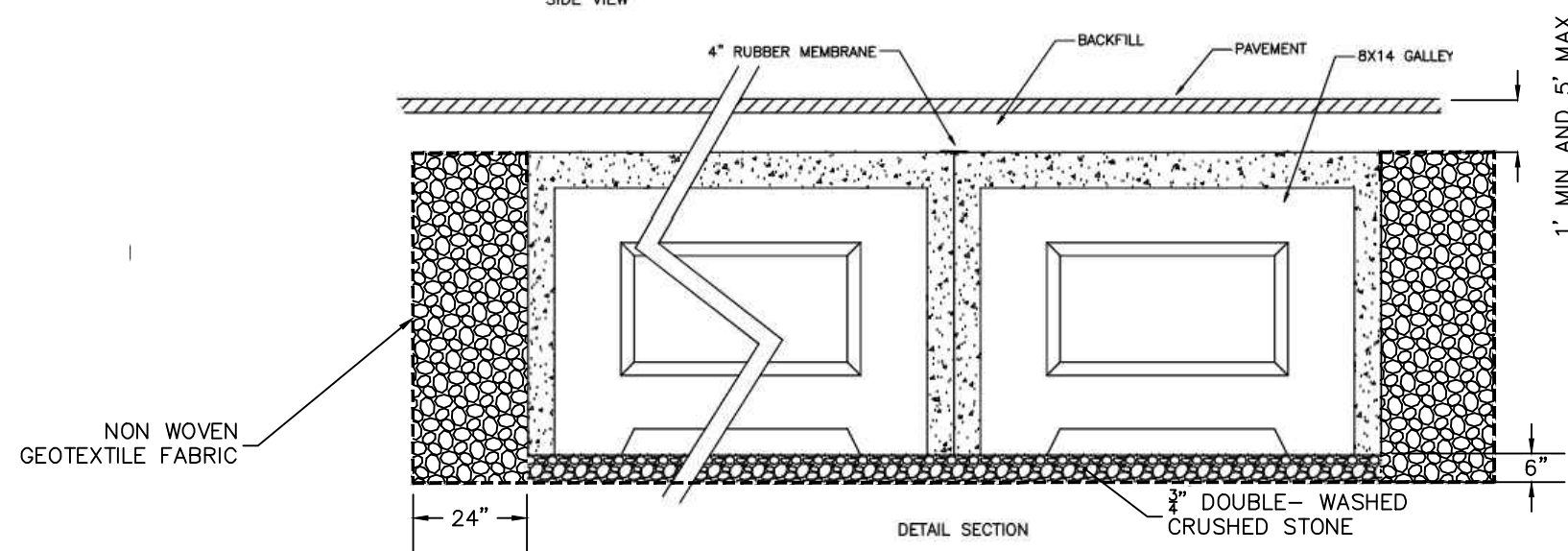


- ## Revisions

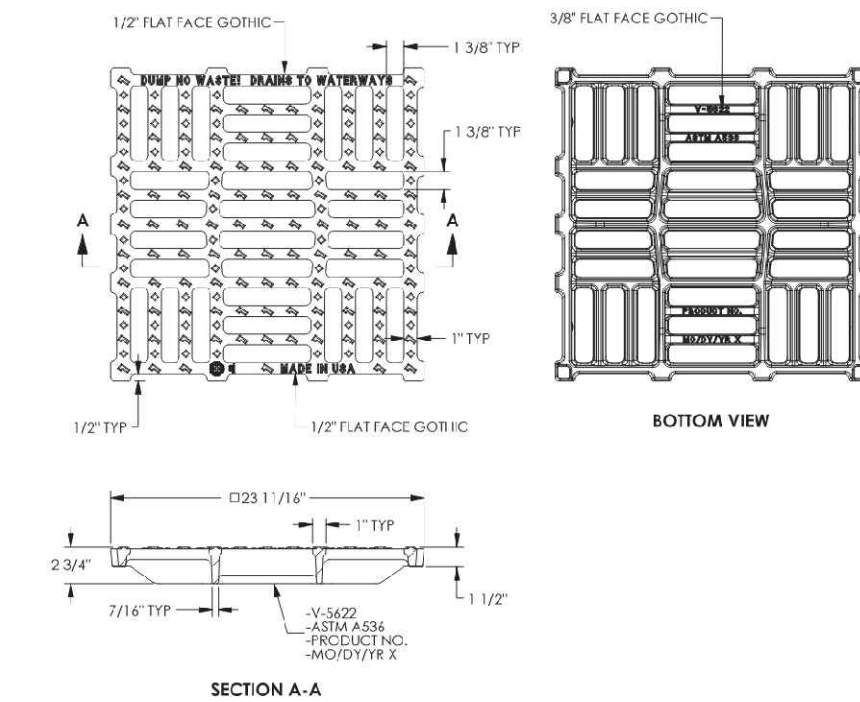
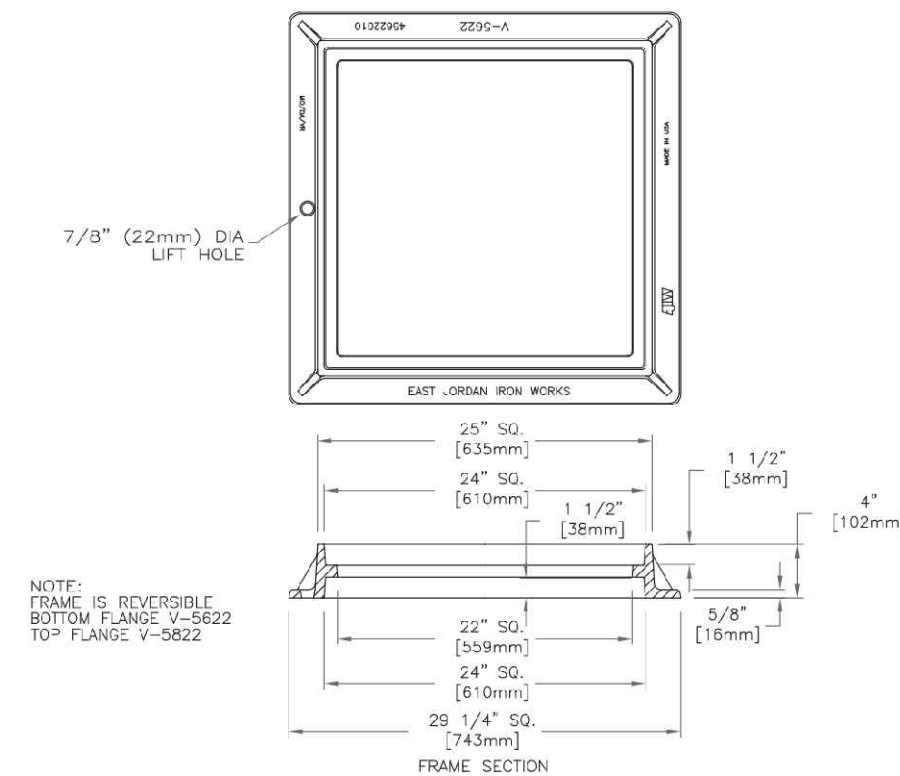
Date: 3/12/2025 Time: 10:42 User: jdahan Style Table: Langan.stb Layout: CS502 Document Code: 151043401-0501-CS501-0102



HEIGHT(H)	VOLUME(VA)	WEIGHT
2'-0"	200CF	14,300#
3'-0"	300CF	16,600#
4'-0"	400CF	18,300#
5'-0"	500CF	20,000#



- NOTES:
1. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS.
 2. LEACHING GALLEY SHALL BE AASHTO HS-20 LOADING RATED.
 3. LEACHING GALLEY SHALL BE INSTALLED SIDE BY SIDE.
 4. LEACHING GALLEY SHALL BE INSTALLED WITH 24" OF STONE ON 4 SIDES. STONE SHALL BE 3/4" DOUBLE WASHED CRUSHED STONE AND BE WRAPPED IN 60Z NONWOVEN FILTER FABRIC.
 5. 20" DIAMETER CAST IRON FRAME AND COVER TO BE INSTALLED FOR INSPECTION ACCESS.



1

PRECAST CONCRETE MANHOLE (E 202.4.0)

N.T.S.

SOURCE: MASSDOT

2

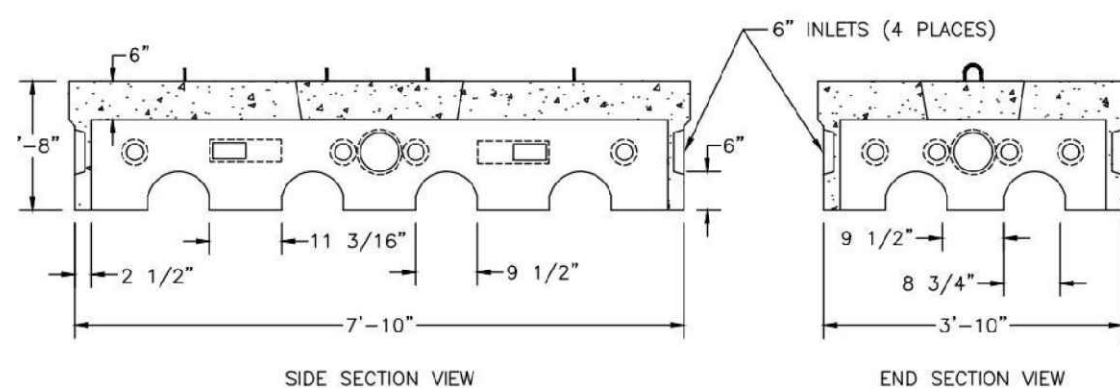
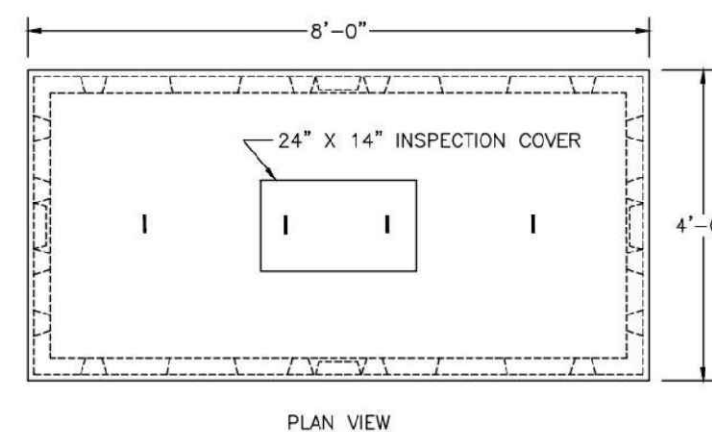
UNDERGROUND INFILTRATION SYSTEM - 8 X14 LEACHING CHAMBER

N.T.S. - PROVIDED BY SHEA CONCRETE PRODUCTS

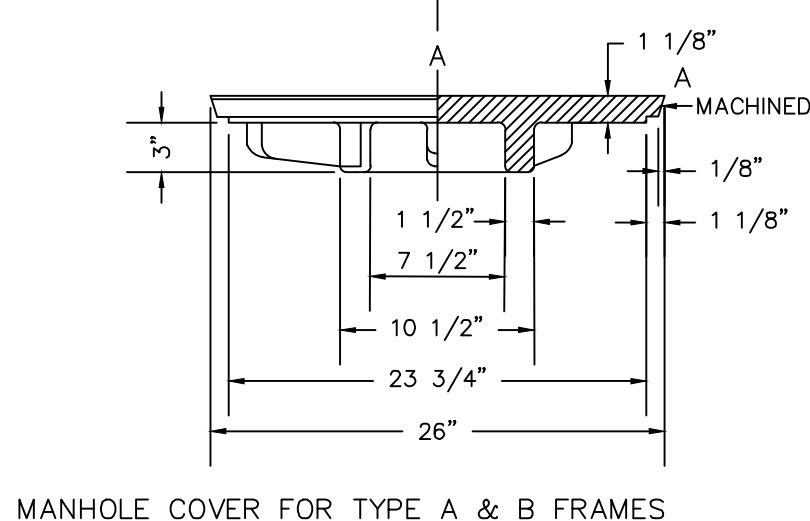
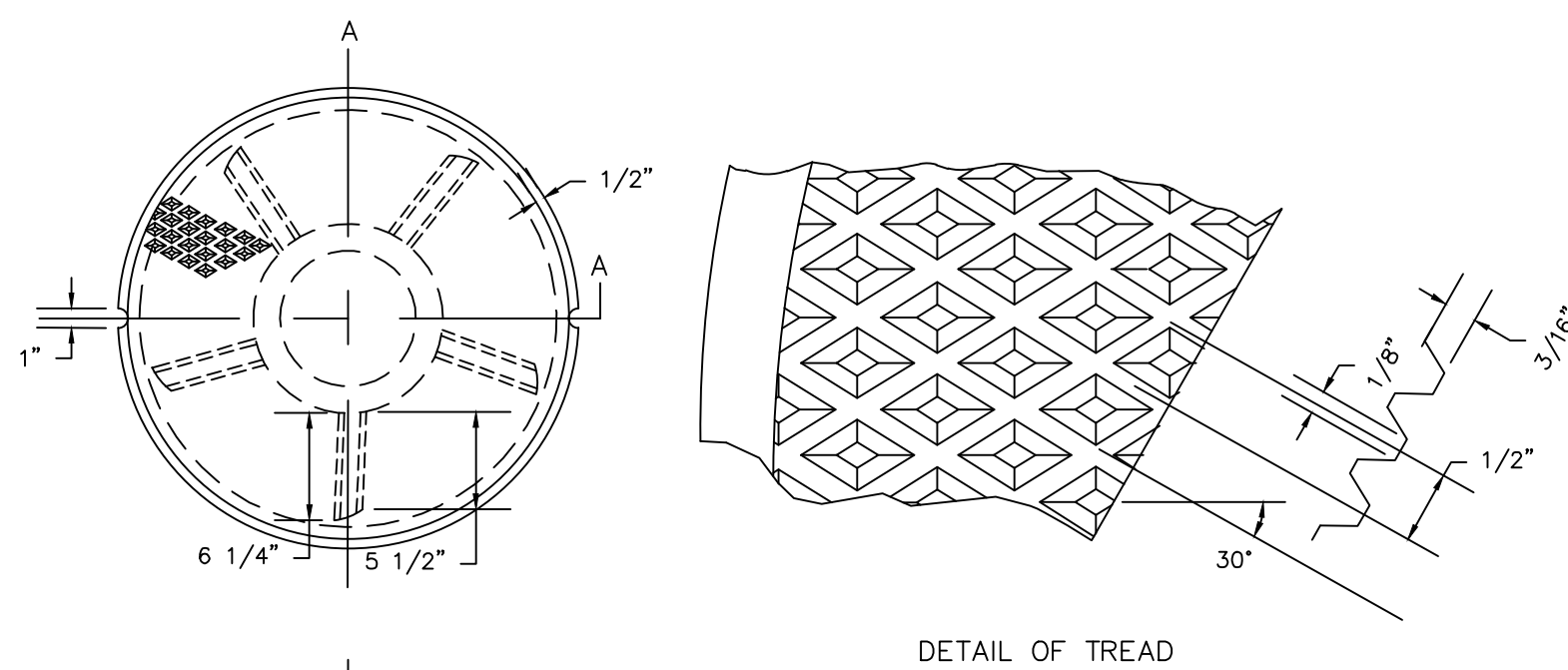
3

4-INCH FRAME & GRATE FOR WQU

N.T.S. - PROVIDED BY EAST JORDAN IRON WORKS, INC.



- NOTES:
1. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS.
 2. LEACHING GALLEY SHALL BE AASHTO HS-20 LOADING RATED.
 3. LEACHING GALLEY SHALL BE INSTALLED SIDE BY SIDE.
 4. LEACHING GALLEY SHALL BE INSTALLED WITH 24" OF STONE ON 4 SIDES AND A 6" STONE BASE. STONE SHALL BE 3/4" DOUBLE WASHED CRUSHED STONE AND BE WRAPPED IN 60Z NONWOVEN FILTER FABRIC.
 5. 24" DIAMETER CAST IRON FRAME AND COVER TO BE INSTALLED FOR INSPECTION ACCESS.

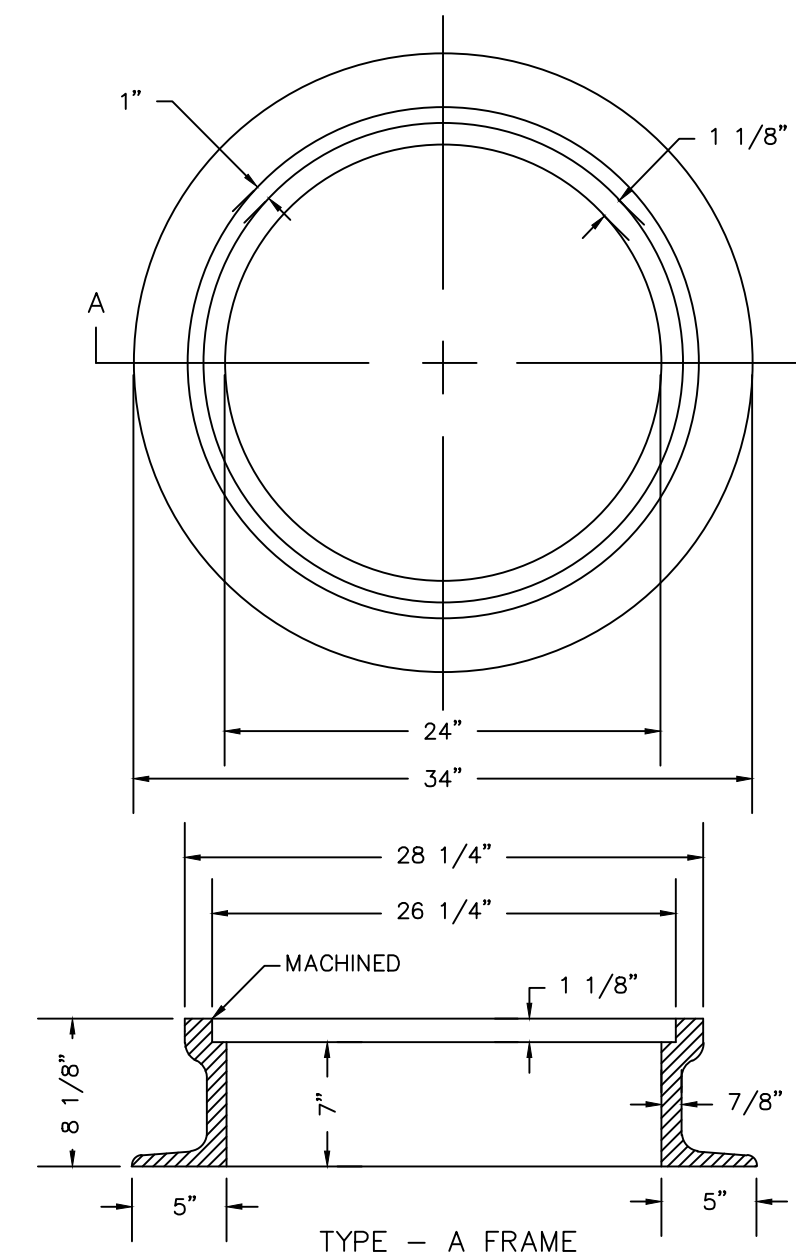
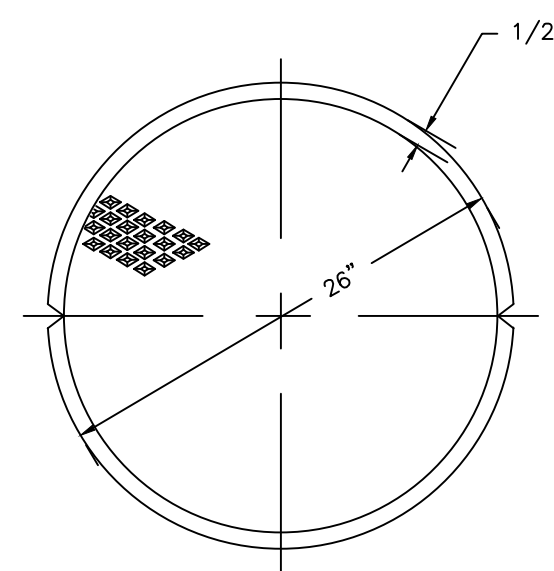


- NOTES:
1. MINIMUM COVER MASS - 200 LBS
 2. MATERIAL - CAST IRON - SEE STANDARD SPECIFICATIONS WITH NO BLACK ASPHALT COATING ALLOWED

MANHOLE COVER DETAILS (E 202.8.0)

N.T.S.

SOURCE: MASSDOT



- NOTES:
1. MINIMUM MASS - 265 LBS
 2. MATERIAL - CAST IRON - SEE STANDARD SPECIFICATIONS WITH NO BLACK ASPHALT COATING ALLOWED

MANHOLE FRAME (E 202.6.0)

N.T.S.

SOURCE: MASSDOT

4

UNDERGROUND INFILTRATION SYSTEM - 8 X14 X 1.7 LEACHING CHAMBER

N.T.S. - PROVIDED BY SHEA CONCRETE PRODUCTS

5

MANHOLE COVER DETAILS (E 202.8.0)

N.T.S.

SOURCE: MASSDOT

6

NOT FOR CONSTRUCTION

Date	Description	No.
------	-------------	-----

Revisions

LANGAN

Langan Engineering and
Environmental Services, LLC.

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Boston, MA 02114

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Project **HILLMAN ENERGY
CENTER BATTERY
ENERGY STORAGE
SYSTEM**

MIDDLESEX COUNTY MASSACHUSETTS

Drawing Title

SITE DETAILS III

Project No.	Drawing No.
151043401	CS503
Date	03/26/2025
Drawn By	JED/MPG
Checked By	HH



N.T.S.



N.T.S.



N.T.S



N.T.S. - PROVIDED BY HYDRO INTERNATIONAL

Date: 3/13/2025 Time: 22:21 User: hholmes Style Table: Langan.stb Layout: CS504 Document Code: 151043401-0501-CS501-010

SITE LIGHTING SCHEDULE

SYMBOL	KEY	QTY.	FIXTURE MANUFACTURER	FIXTURE MODEL	FIXTURE DESCRIPTION	FIXTURE MOUNTING HEIGHT	LAMP	COLOR TEMPERATURE	OPTICS	LUMENS	LLF	FIXTURE CATALOGUE NO.	POLE MANUFACTURER	POLE DESCRIPTION	POLE LENGTH	POLE CATALOGUE NO.	NOTES
	A	9	LITHONIA	DSK1	SINGLE POLE-MOUNTED FIXTURE, COLOR: BLACK	25'-0"	51W LED	3000K	TYPE II	7,203	0.90	DSK1-LED-P1-30K-80 CRI-T2M-HS	LITHONIA	ROUND TAPERED STEEL POLE, COLOR: BLACK	22'-0"	RTS-25-6-68-DM19AS-V0-DB LXD	POLE TO BE FACTORY CUT TO LENGTH OF 22', MOUNTED ON 3' HT. EXPOSED CONCRETE BASE

NOTE:
1. REFER TO ELECTRICAL DRAWINGS FOR SITE LIGHTING VOLTAGES.
2. ALL POLES WITH 25' MOUNTING HEIGHT OR GREATER TO RECEIVE FACTORY-INSTALLED VIBRATION DAMPENERS.

STATISTICS

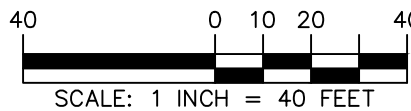
DESCRIPTION	AVG.	MAX.	MIN.	MAX./MIN.	AVG./MIN.
DRIVEWAY	0.5fc	0.9fc	0.2fc	4.5:1	2.6:1

NOTE: LIGHT PHOTOMETRY AND CALCULATIONS FOR EXISTING AND ADJACENT LIGHTING TO REMAIN ARE NOT INCLUDED IN THE ABOVE STATISTICS.



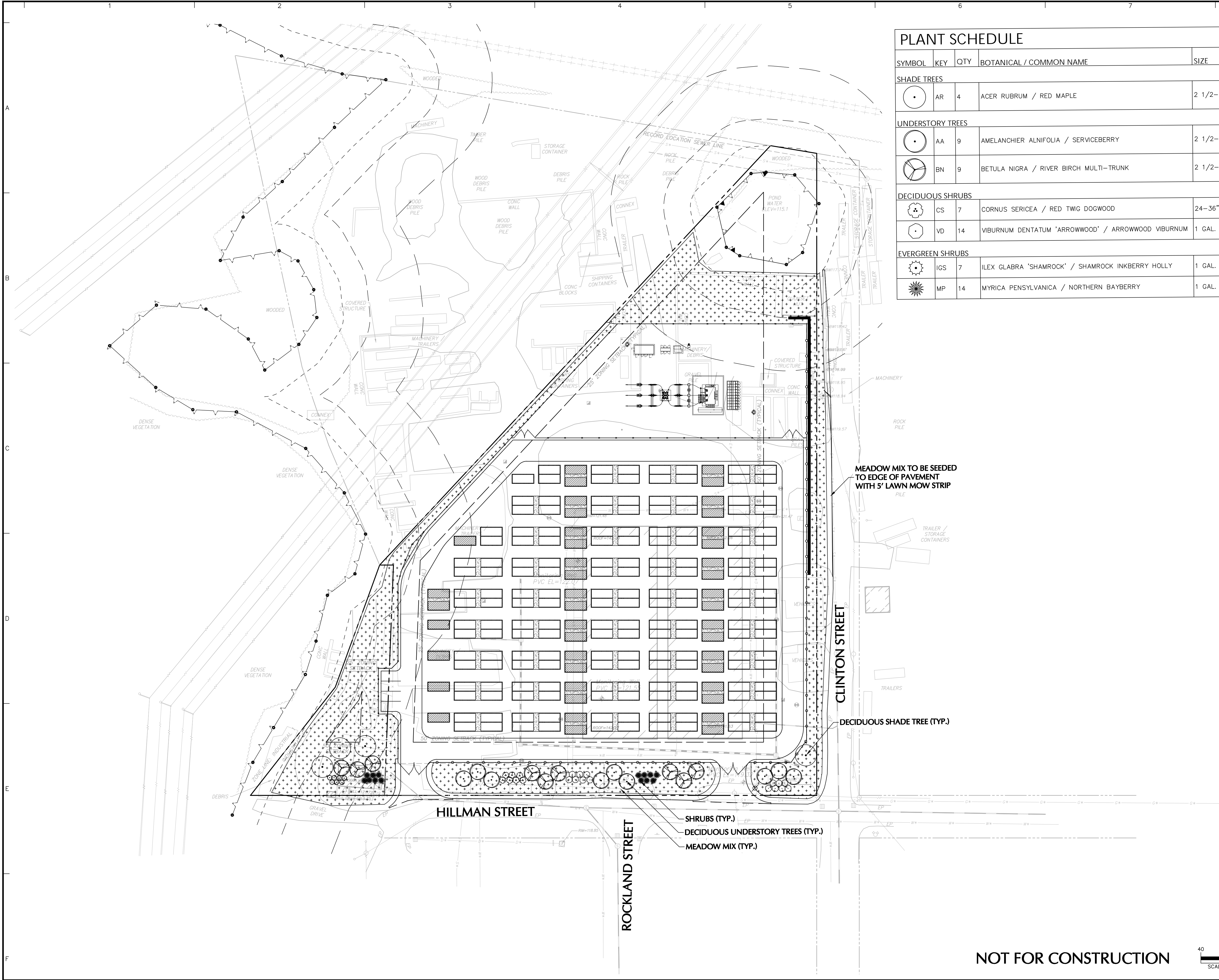
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Revisions		
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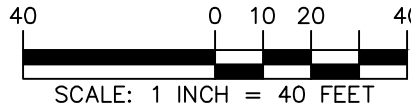


PLANT SCHEDULE

SYMBOL	KEY	QTY	BOTANICAL / COMMON NAME	SIZE	ROOT
SHADE TREES					
	AR	4	ACER RUBRUM / RED MAPLE	2 1/2-3" CAL.	B&B
UNDERSTORY TREES					
	AA	9	AMELANCHIER ALNIFOLIA / SERVICEBERRY	2 1/2-3" CAL.	B&B
	BN	9	BETULA NIGRA / RIVER BIRCH MULTI-TRUNK	2 1/2-3" CAL.	B&B
DECIDUOUS SHRUBS					
	CS	7	CORNUS SERICEA / RED TWIG DOGWOOD	24-36" HT.	CONTAINER
	VD	14	VIBURNUM DENTATUM 'ARROWWOOD' / ARROWWOOD VIBURNUM	1 GAL.	CONTAINER
EVERGREEN SHRUBS					
	IGS	7	ILEX GLABRA 'SHAMROCK' / SHAMROCK INKBERRY HOLLY	1 GAL.	CONTAINER
	MP	14	MYRICA PENSYLVANICA / NORTHERN BAYBERRY	1 GAL.	CONTAINER



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Date	Description	No.
Revisions		
LANGAN Langan Engineering and Environmental Services, LLC. 100 Cambridge Street, Suite 1310 Boston, MA 02114 T: 617.824.9100 F: 617.824.9101 www.langan.com		
Project HILLMAN ENERGY CENTER BATTERY ENERGY STORAGE SYSTEM TEWKSBURY MIDDLESEX COUNTY MASSACHUSETTS		
Drawing Title LANDSCAPING PLANTING PLAN		
Project No. 151043401	LP101	
Date 03/26/2025		
Drawn By SH		
Checked By AS		

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GENERAL LANDSCAPE PLANTING NOTES

- INVOICES FOR ALL PLANTING WITHIN WETLAND AND WETLAND BUFFER SHALL BE PROVIDED AND APPROVED BY CONSERVATION COMMISSION PRIOR TO INSTALLATION.
- NAMES OF PLANTS AS DESCRIBED ON THIS PLAN CONFORM TO THOSE GIVEN IN "STANDARDIZED PLANT NAMES", 1942 EDITION, PREPARED BY THE AMERICAN JOINT COMMITTEE ON HORTICULTURAL NOMENCLATURE. NAMES OF PLANT VARIETIES NOT INCLUDED THEREIN CONFORM TO NAMES GENERALLY ACCEPTED IN NURSERY TRADE.
- ALL EXPOSED GROUND SURFACES THAT ARE NOT PAVED WITHIN THE CONTRACT LIMIT LINE, AND THAT ARE NOT COVERED BY LANDSCAPE PLANTING OR SEEDING AS SPECIFIED, SHALL BE COVERED BY A NATURAL MULCH THAT WILL PREVENT SOIL EROSION AND THE EMANATION OF DUST.
- NO PLANT SHALL BE PUT INTO THE GROUND BEFORE ROUGH GRADING HAS BEEN COMPLETED AND APPROVED BY THE PROJECT LANDSCAPE ARCHITECT OR PROJECT ENGINEER.
- STANDARDS FOR TYPE, SPREAD, HEIGHT, ROOT BALL AND QUALITY OF NEW PLANT MATERIAL SHALL BE IN ACCORDANCE WITH GUIDELINES AS SET FORTH IN THE "AMERICAN STANDARD FOR NURSERY STOCK", PUBLISHED BY THE AMERICAN ASSOCIATION OF NURSEMYMEN. PLANT MATERIAL SHALL HAVE NORMAL HABIT OF GROWTH AND BE HEALTHY, VIGOROUS, AND FREE FROM DISEASES AND INSECT INFESTATION.
- NEW PLANT MATERIAL SHALL BE NURSERY GROWN UNLESS SPECIFIED OTHERWISE. ALL PLANTS SHALL BE SET PLUMB AND SHALL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE AS THE PLANT'S ORIGINAL GRADE BEFORE DIGGING. PLANT MATERIAL OF THE SAME SPECIES AND SPECIFIED AS THE SAME SIZE SHOULD BE SIMILAR IN SHAPE, COLOR, AND HABIT. THE LANDSCAPE ARCHITECT HAS THE RIGHT TO REJECT PLANT MATERIAL THAT DOES NOT CONFORM TO THE TYPICAL OR SPECIFIED HABIT OF THAT SPECIES.
- THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UNDERGROUND UTILITY AND SEWER LINES PRIOR TO THE START OF EXCAVATION ACTIVITIES. NOTIFY THE PROJECT ENGINEER AND OWNER IMMEDIATELY OF ANY CONFLICTS WITH PROPOSED PLANTING LOCATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE.
- THE CONTRACTOR SHALL MAKE SUBSTITUTIONS, IF THE SPECIFIED LANDSCAPE MATERIAL IS NOT OBTAINABLE. THE CONTRACTOR SHALL SUBMIT PROOF OF NON-AVAILABILITY TO THE LANDSCAPE ARCHITECT AND OWNER, TOGETHER WITH A WRITTEN PROPOSAL FOR USE OF AN EQUIVALENT MATERIAL.
- LANDSCAPE CONTRACTOR TO STAKE OUT PLANTING LOCATIONS, FOR REVIEW AND APPROVAL BY THE LANDSCAPE ARCHITECT AND/OR OWNER BEFORE PLANTING WORK BEGINS. THE LANDSCAPE ARCHITECT AND/OR OWNER SHALL DIRECT THE CONTRACTOR IN THE FINAL PLACEMENT OF ALL PLANT MATERIAL AND LOCATION OF PLANTING BEDS TO ENSURE COMPLIANCE WITH DESIGN INTENT UNLESS OTHERWISE INSTRUCTED.
- THE LANDSCAPE ARCHITECT MAY REVIEW PLANT MATERIALS AT THE SITE, BEFORE PLANTING, FOR COMPLIANCE WITH REQUIREMENTS FOR GENUS, SPECIES, VARIETY, SIZE, AND QUALITY. THE LANDSCAPE ARCHITECT RETAINS THE RIGHT TO FURTHER REVIEW PLANT MATERIALS FOR SIZE AND CONDITION OF BALLS AND ROOT SYSTEM, INSECTS, INJURIES, AND LATENT DEFECTS, AND TO REJECT UNSATISFACTORY OR DEFECTIVE MATERIAL AT ANY TIME DURING PROGRESS OF WORK. THE CONTRACTOR SHALL REMOVE REJECTED PLANT MATERIALS IMMEDIATELY FROM PROJECT SITE AS DIRECTED BY THE LANDSCAPE ARCHITECT OR OWNER.
- DELIVERY, STORAGE, AND HANDLING
 - PACKAGED MATERIALS SHALL BE DELIVERED IN CONTAINERS SHOWING WEIGHT, ANALYSIS, AND NAME OF MANUFACTURER. MATERIALS SHALL BE PROTECTED FROM DETERIORATION DURING DELIVERY, AND WHILE STORED AT SITE.
 - TREES AND SHRUBS: THE CONTRACTOR SHALL PROVIDE TREES AND SHRUBS DUG FOR THE GROWING SEASON FOR WHICH THEY WILL BE PLANTED. DO NOT PRUNE PRIOR TO DELIVERY UNLESS OTHERWISE DIRECTED BY THE LANDSCAPE ARCHITECT. DO NOT BEND OR BIND TREES OR SHRUBS IN SUCH A MANNER AS TO DAMAGE BARK, BREAK BRANCHES, OR DESTROY NATURAL SHAPE. PROVIDE PROTECTIVE COVERING DURING TRANSIT. DO NOT DROP BALLED AND BURLAPPED STOCK DURING DELIVERY OR HANDLING.
 - ALL PLANTS SHALL BE BALLED AND BURLAPPED OR CONTAINER GROWN AS SPECIFIED. NO CONTAINER GROWN STOCK WILL BE ACCEPTED IF IT IS ROOT BOUND. ALL ROOTBALL WRAPPING AND BRINDING MATERIAL MADE OF SYNTHETICS OR PLASTICS SHALL BE REMOVED FROM THE TOP OF THE BALL AT THE TIME OF PLANTING. IF THE PLANT IS SHIPPED WITH A WIRE BASKET AROUND THE ROOT BALL, THE WIRE BASKET SHALL BE CUT AND FOLDED DOWN 8 INCHES INTO THE PLANTING HOLE. WITH CONTAINER GROWN STOCK, THE CONTAINER SHALL BE REMOVED AND THE ROOT BALL SHALL BE CUT THROUGH THE SURFACE IN TWO LOCATIONS.
 - THE CONTRACTOR SHALL HAVE TREES AND SHRUBS DELIVERED TO SITE AFTER PREPARATIONS FOR PLANTING HAVE BEEN COMPLETED AND PLANT IMMEDIATELY. IF PLANTING IS DELAYED MORE THAN 6 HOURS AFTER DELIVERY, THE CONTRACTOR SHALL SET TREES AND SHRUBS IN SHADE, PROTECT FROM WEATHER AND MECHANICAL DAMAGE, AND KEEP ROOTS MOIST WITH COVERING WITH MULCH, BURLAP OR OTHER ACCEPTABLE MEANS OF RETAINING MOISTURE.
- ALL LANDSCAPED AREAS TO BE CLEARED OF ROCKS, STUMPS, TRASH AND OTHER UNSIGHTLY DEBRIS. ALL FINE GRADED AREAS SHOULD BE HAND RAKED SMOOTH ELIMINATING ANY CLUMPS AND AND UNEVEN SURFACES PRIOR TO PLANTING OR MULCHING.
- ALL PLANT MATERIAL SHALL BE INSTALLED AS PER DETAILS, NOTES AND CONTRACT SPECIFICATIONS. THE LANDSCAPE ARCHITECT MAY REVIEW INSTALLATION AND MAINTENANCE PROCEDURES.
- NEW PLANT MATERIAL SHALL BE GUARANTEED TO BE ALIVE AND IN VIGOROUS GROWING CONDITION FOR A PERIOD OF TWO YEARS FOLLOWING ACCEPTANCE BY THE OWNER. PLANT MATERIAL FOUND TO BE UNHEALTHY, DYING OR DEAD DURING THIS PERIOD, SHALL BE REMOVED AND REPLACED IN KIND BY THE CONTRACTOR AT NO EXPENSE TO THE OWNER.
- THE CONTRACTOR SHALL KEEP AREA CLEAN DURING DELIVERY AND INSTALLATION OF PLANT MATERIALS. REMOVE AND DISPOSE OF OR REUSE ANY ACCUMULATED DEBRIS OR UNWANTED MATERIALS. REPAIR DAMAGE TO ADJACENT AREAS CAUSED BY LANDSCAPE INSTALLATION OPERATIONS.
- ALL PLANTS SHALL BE WATERED THOROUGHLY TWICE DURING THE FIRST 24-HOUR PERIOD AFTER PLANTING. ALL PLANTS SHALL THEN BE WATERED WEEKLY OR AS REQUIRED BY SITE AND WEATHER CONDITIONS TO MAINTAIN MOISTURE AND HEALTHY PLANT GROWTH.
- THE BACKFILL MIXTURE AND SOIL MIXES TO BE INSTALLED PER THE SPECIFICATIONS.
- IF PLANTING IS PLACED IN TREE PIT LOCATION, ALL TWINE HOLDING ROOT BALL TOGETHER SHOULD BE COMPLETELY REMOVED AND THE BURLAP SHOULD BE PULLED DOWN SO 1/2 OF THE ROOT BALL IS EXPOSED. SYNTHETIC BURLAP SHOULD BE COMPLETELY REMOVED AFTER INSTALLATION.
- MULCH SHOULD NOT BE PILED UP AROUND THE TRUNK OF ANY PLANT MATERIAL. NO MULCH OR TOPSOIL SHOULD BE TOUCHING THE BASE OF THE TRUNK ABOVE THE ROOT COLLAR.
- ALL FENCE INSTALLATION SHALL BE COMPLETED PRIOR TO COMMENCEMENT OF ANY LANDSCAPE PLANTING, LAWN AND GRASSES, OR IRRIGATION WORK.
- FOR ANY DISCREPANCIES BETWEEN THE PLANT SCHEDULE AND PLANTING PLAN THE GRAPHIC QUANTITY SHOWN SHALL GOVERN.
- PLANT MATERIALS SHALL NOT BE PLANTED UNTIL THE FINISHED GRADING HAS BEEN COMPLETED.
- ALL PLANT INSTALLATIONS SHALL BE COMPLETED EITHER BETWEEN APRIL 1 – JUNE 15 OR AUGUST 15 – NOVEMBER 1, UNLESS OTHERWISE DIRECTED BY THE PROJECT LANDSCAPE ARCHITECT. SEE LAWN SEEDING DATES IN SEEDING NOTES.

LANDSCAPE MAINTENANCE NOTES

- MAINTENANCE OPERATIONS BEFORE APPROVAL
 - PLANT CARE SHALL BEGIN IMMEDIATELY AFTER EACH PLANT IS SATISFACTORILY INSTALLED AND SHALL CONTINUE THROUGHOUT THE LIFE OF THE CONTRACT UNTIL FINAL ACCEPTANCE OF THE PROJECT.
 - CARE SHALL INCLUDE, BUT NOT BE LIMITED TO, REPLACING MULCH THAT HAS BEEN DISPLACED BY EROSION OR OTHER MEANS, REPAIRING AND RESHAPING WATER RINGS OR SAUCERS, MAINTAINING STAKES AND GUYS AS ORIGINALLY INSTALLED, WATERING WHEN NEEDED OR DIRECTED, AND PERFORMING ANY OTHER WORK REQUIRED TO KEEP THE PLANTS IN A HEALTHY CONDITION.
 - CONTRACTOR SHALL REMOVE AND REPLACE ALL DEAD, DEFECTIVE AND/OR REJECTED PLANTS AS REQUIRED BEFORE FINAL ACCEPTANCE.
- MAINTENANCE DURING CONSTRUCTION
 - MAINTENANCE SHALL BEGIN IMMEDIATELY AFTER PLANTING. PLANTS SHALL BE WATERED, MULCHED, WEEDED, PRUNED, SPRAYED, FERTILIZED, CULTIVATED, AND OTHERWISE MAINTAINED AND PROTECTED UNTIL PROVISIONAL ACCEPTANCE. SETTLED PLANTS SHALL BE RESET TO PROPER GRADE AND POSITION, PLANTING SAUCER RESTORED AND DEAD MATERIAL REMOVED. STAKES AND WIRES SHALL BE TIGHTENED AND REPAIRED. DEFECTIVE WORK SHALL BE CORRECTED AS SOON AS POSSIBLE AFTER IT BECOMES APPARENT AND WEATHER AND SEASON PERMIT.
 - IF A SUBSTANTIAL NUMBER OF PLANTS ARE SICKLY OR DEAD AT THE TIME OF INSPECTION, ACCEPTANCE SHALL NOT BE GRANTED AND THE CONTRACTOR'S RESPONSIBILITY FOR MAINTENANCE OF ALL PLANTS SHALL BE EXTENDED FROM THE TIME REPLACEMENTS ARE MADE OR EXISTING PLANTS ARE DEEMED ACCEPTABLE BY THE LANDSCAPE ARCHITECT.
 - ALL REPLACEMENTS SHALL BE PLANTS OF THE SAME KIND AND SIZE SPECIFIED ON THE PLANT LIST OR THAT WHICH WAS TO REMAIN OR BE RELOCATED. THEY SHALL BE IDENTICAL AND PLANTED AS SPECIFIED. THE COST SHALL BE BORNE BY THE CONTRACTOR. REPLACEMENTS RESULTING FROM REMOVAL, LOSS, OR DAMAGE DUE TO OCCUPANCY OF THE PROJECT IN ANY PART, VANDALISM, PHYSICAL DAMAGE BY ANIMALS, VEHICLES, ETC., AND LOSSES DUE TO CURTAILMENT OF WATER BY LOCAL AUTHORITIES SHALL BE APPROVED AND PAID FOR BY THE OWNER.
 - PLANTS SHALL BE GUARANTEED FOR A PERIOD OF TWO YEARS AFTER INSPECTION AND PROVISIONAL ACCEPTANCE.
 - AT THE END OF THE ESTABLISHMENT PERIOD, INSPECTION SHALL BE MADE AGAIN. ANY PLANT REQUIRED UNDER THIS CONTRACT THAT IS DEAD OR UNSATISFACTORY TO THE LANDSCAPE ARCHITECT OR OWNER SHALL BE REMOVED FROM THE SITE AND REPLACED DURING THE NORMAL PLANTING SEASON.
- LAWN MAINTENANCE
 - BEGON MAINTENANCE IMMEDIATELY AFTER EACH PORTION OF LAWN IS PLANTED AND CONTINUE FOR 8 WEEKS AFTER ALL LAWN PLANTING IS COMPLETED.
 - WATER TO KEEP SURFACE SOIL MOIST, REPAIR WASHED OUT AREAS BY FILLING WITH TOPSOIL, LIMING, FERTILIZING AND RE-SEEDING; MOW TO 2 1/2 – 3 INCHES AFTER GRASS REACHES 3 1/2 INCHES IN HEIGHT, AND MOW FREQUENTLY ENOUGH TO KEEP GRASS FROM EXCEEDING 3 1/2 INCHES. WEED BY LOCAL SPOT APPLICATION OF SELECTIVE HERBICIDE ONLY AFTER GRASS IS WELL-ESTABLISHED.

PLANTING SOIL SPECIFICATIONS

- PLANTING SOIL, ALTERNATELY MAY BE REFERRED TO AS TOPSOIL, SHOULD BE FRIABLE, FERTILE, WELL DRAINED, FREE OF DEBRIS, TONS, TRASH AND STONES OVER 1/2" DIA. IT SHOULD HAVE A HIGH ORGANIC CONTENT SUITABLE TO SUSTAIN HEALTHY PLANT GROWTH AND SHOULD LOOK AESTHETICALLY PLEASING HAVING NO NOXIOUS ODOORS.
- PLANTING SOIL:
 - REUSE SURFACE SOILS STOCKPILED ON SITE, VERIFYING COMPLIANCE WITH PLANTING SOIL AND TOPSOIL CRITERIA IN THIS SPECIFICATION THROUGH TESTING. CLEAN SURFACE SOIL OF ALL ROOTS, PLANTS, SOD, AND GRAVEL OVER 1" IN DIAMETER AND DELETERIOUS MATERIAL. IF ON-SITE SOILS ARE TO BE USED FOR PROPOSED PLANTING, THE CONTRACTOR SHALL DEMONSTRATE, THROUGH SOIL TESTING, THAT ON-SITE SOILS MEET THE SAME CRITERIA AS INDICATED IN NOTES PLANS AND SPECIFICATIONS.
 - SUPPLEMENT WITH IMPORTED OR MANUFACTURED TOPSOIL FROM OFF SITE SOURCES WHEN TOPSOIL AND PLANTING SOIL QUANTITIES ARE INSUFFICIENT. OBTAIN SOIL DISPLACED FROM NATURALLY WELL-DRAINED SITES WHERE TOPSOIL OCCURS AT LEAST 4" DEEP. DO NOT OBTAIN FROM AGRICULTURAL LAND, BOGS, MARSHES OR CONTAMINATED SITES.
 - CONTRACTOR SHALL TEST SOILS AND FURNISH SAMPLES UPON REQUEST. PACKAGED MATERIALS SHALL BE UNOPENED BAGS OR CONTAINERS, EACH BEARING A NAME, GUARANTEE, AND TRADEMARK OF THE PRODUCER, MATERIAL COMPOSITION, MANUFACTURER'S CERTIFIED ANALYSIS, AND THE WEIGHT OF THE MATERIALS. SOIL OR AMENDMENT MATERIALS SHALL BE STORED ON SITE TEMPORARILY IN STOCKPILES PRIOR TO PLACEMENT AND SHALL BE PROTECTED FROM INTRUSION OF CONTAMINANTS AND EROSION. AFTER MIXING, SOIL MATERIALS SHALL BE COVERED WITH A TARPULIN UNTIL TIME OF ACTUAL USE.
 - ALL PLANTING SOILS SHALL BE SUBMITTED FOR TESTING TO THE STATE COOPERATIVE EXTENSION SERVICE, OR APPROVED EQUAL, PRIOR TO DELIVERY TO THE SITE. CONTRACTOR SHALL FURNISH SOIL SAMPLES AND SOIL TEST RESULTS TO LANDSCAPE ARCHITECT OR OWNER AT A RATE OF ONE SAMPLE PER 500 CUBIC YARDS TO ENSURE CONSISTENCY ACROSS THE TOTAL VOLUME OF PLANTING SOIL REQUIRED. TEST RESULTS SHALL EVALUATE FOR ALL CRITERIA LISTED IN THIS SPECIFICATION. IF TESTING AGENCY DETERMINES THAT THE SOILS ARE DEFICIENT IN ANY MANNER AND MAY BE CORRECTED BY ADDING AMENDMENTS, THE CONTRACTOR SHALL FOLLOW STATED RECOMMENDATIONS FOR SOIL IMPROVEMENT AND FURNISH SUBMITTALS FOR ALL AMENDMENTS PRIOR TO DELIVERY OF SOIL TO THE PROJECT SITE.
- THE FOLLOWING TESTING SHOULD BE PERFORMED AND RESULTS GIVEN TO THE LANDSCAPE ARCHITECT FOR APPROVAL BEFORE INSTALLATION:
 - PARTICLE SIZE ANALYSIS: LOAMY SAND: 60-75% SAND, 25-40% SILT, AND 5-15% CLAY.
 - FERTILITY ANALYSIS: pH (5.5-6.5), SOLUBLE SALTS (LESS THAN 2 MMH/CM), NITRATE, PHOSPHATE, POTASSIUM, CALCIUM AND MAGNESIUM.
 - ORGANIC MATTER CONTENT: 2.5-5% IN NATIVE SOILS; UP TO 10% IN AMENDED SOILS.
 - TOXIC SUBSTANCE ANALYSIS.
 - MATERIAL DRAINAGE RATE: 60% PASSING IN 2 MINUTES, 40% RETAINED.
 - NOT MORE THAN 1% OF MATERIAL SHALL BE RETAINED BY A #4 SIEVE.
- SOIL AMENDMENT FOR PLANT MATERIAL:
 - IF SOIL ORGANIC CONTENT IS INADEQUATE, SOIL SHALL BE AMENDED WITH COMPOST OR ACCEPTABLE, WEED FREE, ORGANIC MATTER. ORGANIC AMENDMENT SHALL BE WELL COMPOSTED, PH RANGE OF 6-8, HUMUS CONTENT 35-50% BY WEIGHT, 100% PASSING THROUGH 1" SIEVE, SOLUBLE SALT CONTENT LESS THAN 0.5 MM HOS/CM, MEETING ALL APPLICABLE ENVIRONMENTAL CRITERIA FOR CLEAN FILL.
 - ORGANIC MATTER AS A SOIL AMENDMENT: LEAF MOLD WITH 60-80% ORGANIC CONTENT BY WEIGHT, SHREDDED LEAF LITTER, COMPOSTED FOR A MINIMUM OF 1 YR. SHOULD BE FREE OF DEBRIS, STONES OVER 1/2", WOOD CHIPS OVER 1".
 - SOIL IN BEDS AND PLANTING ISLANDS OTHER THAN BACKFILL MATERIAL AND TOPSOIL, SHOULD BE FRIABLE, WELL DRAINED, AND FREE OF DEBRIS, INCLUDING STONES AND TRASH.
 - AMENDMENTS FOR BACK FILL IN TREE AND SHRUB PITS:
 - GROUND LIMESTONE (WITH A MIN. OF 88% OF CALCIUM AND MAGNESIUM CARBONATES) USED PENDING RESULTS OF SOIL ANALYSIS.
 - BRING pH LEVELS TO 5.5 MIN. TO 6.5 FOR NON-ERICACEOUS PLANTS.
 - BRING pH LEVELS TO 4.5 MIN. TO 5.5 FOR ERICACEOUS PLANTS.
 - TERRA-SORB BY "PLANT HEALTH CARE" 800-421-9051 (SEE MANUFACTURER RECOMMENDATIONS) USED IN PLANTING SOIL LAYER IN SHRUB AREAS, AND THIRTY-SIX INCHES (36") MINIMUM DEPTH PLANTING SOIL LAYER IN TREE PLANTING AREAS.
 - MYCOR-ROOT SAVER BY "PLANT HEALTH CARE" 800-421-9051 (SEE MANUFACTURER RECOMMENDATIONS) USED IN BACKFILL MIXTURE WITH TREES.
- WHERE PLANTING AREAS ARE PROPOSED FOR FORMER PAVED OR GRAVEL AREAS, BEDS SHALL BE EXCAVATED TO A MINIMUM 30" DEPTH AND, AT A MINIMUM, BE BACKFILLED WITH BOTTOM LAYER OF SANDY LOAM (ORGANIC CONTENT LESS THAN 2%) OVER WHICH TOPSOIL AND PLANTING SOILS WILL BE PLACED AT DEPTHS INDICATED IN PLANS, DETAILS AND NOTES.
- CLEAN SOIL FILL IN LANDSCAPE AREAS:
 - LANDSCAPE FILL MATERIAL, BELOW PLANTING SOILS, SHALL HAVE THE PHYSICAL PROPERTIES OF A SANDY LOAM WITH AN ORGANIC CONTENT OF LESS THAN 2% AND A PH BETWEEN 5 – 7.
- SOIL PLACEMENT
 - CONTRACTOR TO PROVIDE SIX INCHES (6") MINIMUM DEPTH PLANTING SOIL LAYER IN LAWN AREAS, TWELVE INCHES (12") MINIMUM DEPTH PLANTING SOIL LAYER IN GROUNDCOVER AND PERENNIAL AREAS, EIGHTEEN INCHES (18") MINIMUM DEPTH PLANTING SOIL LAYER IN SHRUB AREAS, AND THIRTY-SIX INCHES (36") MINIMUM DEPTH PLANTING SOIL LAYER IN TREE PLANTING AREAS.
 - SCARIFY AND/OR TILL COMPACTED SUBSOILS TO A MINIMUM DEPTH OF 6 INCHES, THOROUGHLY MIX A 6 INCH DEPTH LAYER OF PLANTING SOIL INTO THE SUBSOIL PRIOR TO PLACING PLANTING SOIL AT THE DEPTHS INDICATED ABOVE. PLANTING SOIL SHALL BE PLACED IN 12-18" LIFTS AND WATER THOROUGHLY BEFORE INSTALLING NEXT LIFT. REPEAT UNTIL DEPTHS AND FINISH GRADES HAVE BEEN ACHIEVED, NO SOILS SHALL BE PLACED IN A FROZEN OR MUDDY SUBSOIL.
 - PLANTING SOIL PRESENT AT THE SITE, IF ANY, MAY BE USED TO SUPPLEMENT TOTAL AMOUNT REQUIRED. CONTRACTOR TO FURNISH AN ANALYSIS OF ON-SITE PLANTING SOIL UTILIZED IN ALL PLANTING AREAS.
- SOIL CONDITIONS
 - ADJUST pH AND NUTRIENT LEVELS AS REQUIRED TO ENSURE AN ACCEPTABLE GROWING MEDIUM. LOWER pH USING ELEMENTAL SULFUR OF 8" PEAT MOSS OR CORRESPONDING AMENDMENTS. AMENDMENT MATERIAL WILL ONLY BE USED PENDING RESULTS OF SOIL ANALYSIS. PROVIDE WITH MINIMUM 88% CALCIUM AND MAGNESIUM CARBONATE MIXTURE WITH TOTAL 100% PASSING THE 10 MESH SIEVE, MINIMUM 90% PASSING 20 MESH SIEVE, AND MINIMUM 60% PASSING 100 MESH SIEVE.
 - ALL DEBRIS EXPOSED FROM EXCAVATION AND CULTIVATION SHALL BE DISPOSED OF AT THE CONTRACTOR'S EXPENSE.
 - SOIL MODIFICATIONS (PENDING RESULTS OF SOIL ANALYSIS):
 - THOROUGHLY TILL ORGANIC MATTER (LEAF COMPOST) INTO THE TOP 6 TO 12 IN. OF MOST PLANTING SOILS TO IMPROVE THE SOIL'S ABILITY TO RETAIN WATER AND NUTRIENTS. ALL PRODUCTS SHOULD BE COMPOSTED TO A DARK COLOR AND BE FREE OF PIECES WITH IDENTIFIABLE LEAF OR WOOD STRUCTURE. AVOID MATERIAL WITH A pH HIGHER THAN 7.0. PEAT MOSS MAY NOT BE USED AS ORGANIC MATTER AMENDMENT.
 - MODIFY HEAVY CLAY OR SILT (MORE THAN 40% CLAY OR SILT) BY ADDING COMPOSTED PINE BARK (UP TO 30% BY VOLUME) AND/OR GYPSUM. COARSE SAND MAY BE USED IF ENOUGH IS ADDED TO BRING THE SAND CONTENT TO MORE THAN 60% OF THE TOTAL MIX. IMPROVE DRAINAGE IN HEAVY SOILS BY PLANTING OR RAISED MOUNDS OR BEDS AND INCLUDING SUBSURFACE DRAINAGE LINES.
 - MODIFY EXTREMELY SANDY SOILS (MORE THAN 85% SAND) BY ADDING ORGANIC MATTER AND/OR DRY, SHREDDED CLAY LOAM UP TO 30% OF THE TOTAL MIX.

- THE FOLLOWING TESTING SHOULD BE PERFORMED AND RESULTS GIVEN TO THE LANDSCAPE ARCHITECT FOR APPROVAL BEFORE INSTALLATION:
 - PARTICLE SIZE ANALYSIS: LOAMY SAND: 60-75% SAND, 25-40% SILT, AND 5-15% CLAY.
 - FERTILITY ANALYSIS: pH (5.5-6.5), SOLUBLE SALTS (LESS THAN 2 MMH/CM), NITRATE, PHOSPHATE, POTASSIUM, CALCIUM AND MAGNESIUM.
 - ORGANIC MATTER CONTENT: 2.5-5% IN NATIVE SOILS; UP TO 10% IN AMENDED SOILS.
 - TOXIC SUBSTANCE ANALYSIS.
 - MATERIAL DRAINAGE RATE: 60% PASSING IN 2 MINUTES, 40% RETAINED.
 - NOT MORE THAN 1% OF MATERIAL SHALL BE RETAINED BY A #4 SIEVE.
- SOIL AMENDMENT FOR PLANT MATERIAL:
 - IF SOIL ORGANIC CONTENT IS INADEQUATE, SOIL SHALL BE AMENDED WITH COMPOST OR ACCEPTABLE, WEED FREE, ORGANIC MATTER. ORGANIC AMENDMENT SHALL BE WELL COMPOSTED, PH RANGE OF 6-8, HUMUS CONTENT 35-50% BY WEIGHT, 100% PASSING THROUGH 1" SIEVE, SOLUBLE SALT CONTENT LESS THAN 0.5 MM HOS/CM, MEETING ALL APPLICABLE ENVIRONMENTAL CRITERIA FOR CLEAN FILL.
 - ORGANIC MATTER AS A SOIL AMENDMENT: LEAF MOLD WITH 60-80% ORGANIC CONTENT BY WEIGHT, SHREDDED LEAF LITTER, COMPOSTED FOR A MINIMUM OF 1 YR. SHOULD BE FREE OF DEBRIS, STONES OVER 1/2", WOOD CHIPS OVER 1".
 - SOIL IN BEDS AND PLANTING ISLANDS OTHER THAN BACKFILL MATERIAL AND TOPSOIL, SHOULD BE FRIABLE, WELL DRAINED, AND FREE OF DEBRIS, INCLUDING STONES AND TRASH.
 - AMENDMENTS FOR BACK FILL IN TREE AND SHRUB PITS:
 - GROUND LIMESTONE (WITH A MIN. OF 88% OF CALCIUM AND MAGNESIUM CARBONATES) USED PENDING RESULTS OF SOIL ANALYSIS.
 - BRING pH LEVELS TO 5.5 MIN. TO 6.5 FOR NON-ERICACEOUS PLANTS.
 - BRING pH LEVELS TO 4.5 MIN. TO 5.5 FOR ERICACEOUS PLANTS.
 - TERRA-SORB BY "PLANT HEALTH CARE" 800-421-9051 (SEE MANUFACTURER RECOMMENDATIONS) USED IN PLANTING SOIL LAYER IN SHRUB AREAS, AND THIRTY-SIX INCHES (36") MINIMUM DEPTH PLANTING SOIL LAYER IN TREE PLANTING AREAS.
 - MYCOR-ROOT SAVER BY "PLANT HEALTH CARE" 800-421-9051 (SEE MANUFACTURER RECOMMENDATIONS) USED IN BACKFILL MIXTURE WITH TREES.
- WHERE PLANTING AREAS ARE PROPOSED FOR FORMER PAVED OR GRAVEL AREAS, BEDS SHALL BE EXCAVATED TO A MINIMUM 30" DEPTH AND, AT A MINIMUM, BE BACKFILLED WITH BOTTOM LAYER OF SANDY LOAM (ORGANIC CONTENT LESS THAN 2%) OVER WHICH TOPSOIL AND PLANTING SOILS WILL BE PLACED AT DEPTHS INDICATED IN PLANS, DETAILS AND NOTES.
- CLEAN SOIL FILL IN LANDSCAPE AREAS:
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- SOIL PLACEMENT
 - CONTRACTOR TO PROVIDE SIX INCHES (6") MINIMUM DEPTH PLANTING SOIL LAYER IN LAWN AREAS, TWELVE INCHES (12") MINIMUM DEPTH PLANTING SOIL LAYER IN GROUNDCOVER AND PERENNIAL AREAS, EIGHTEEN INCHES (18") MINIMUM DEPTH PLANTING SOIL LAYER IN SHRUB AREAS, AND THIRTY-SIX INCHES (36") MINIMUM DEPTH PLANTING SOIL LAYER IN TREE PLANTING AREAS.
 - SCARIFY AND/OR TILL COMPACTED SUBSOILS TO A MINIMUM DEPTH OF 6 INCHES, THOROUGHLY MIX A 6 INCH DEPTH LAYER OF PLANTING SOIL INTO THE SUBSOIL PRIOR TO PLACING PLANTING SOIL AT THE DEPTHS INDICATED ABOVE. PLANTING SOIL SHALL BE PLACED IN 12-18" LIFTS AND WATER THOROUGHLY BEFORE INSTALLING NEXT LIFT. REPEAT UNTIL DEPTHS AND FINISH GRADES HAVE BEEN ACHIEVED, NO SOILS SHALL BE PLACED IN A FROZEN OR MUDDY SUBSOIL.
 - PLANTING SOIL PRESENT AT THE SITE, IF ANY, MAY BE USED TO SUPPLEMENT TOTAL AMOUNT REQUIRED. CONTRACTOR TO FURNISH AN ANALYSIS OF ON-SITE PLANTING SOIL UTILIZED IN ALL PLANTING AREAS.
- SOIL CONDITIONS
 - ADJUST pH AND NUTRIENT LEVELS AS REQUIRED TO ENSURE AN ACCEPTABLE GROWING MEDIUM. LOWER pH USING ELEMENTAL SULFUR OF 8" PEAT MOSS OR CORRESPONDING AMENDMENTS. AMENDMENT MATERIAL WILL ONLY BE USED PENDING RESULTS OF SOIL ANALYSIS. PROVIDE WITH MINIMUM 88% CALCIUM AND MAGNESIUM CARBONATE MIXTURE WITH TOTAL 100% PASSING THE 10 MESH SIEVE, MINIMUM 90% PASSING 20 MESH SIEVE, AND MINIMUM 60% PASSING 100 MESH SIEVE.
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MEADOW SEED NOTES

MEADOW SEED MIX – ERNST NATIVE UPLAND WILDLIFE FORAGE & COVER MEADOW MIX)

34.9% ANDROPOGON GERARDII, 'NAGARA'	BIG BLUESTEM, 'NAGARA'
27.0% PANICUM VIRGATUM, 'CAVE-IN-ROCK'	SWITCHGRASS, 'CAVE-IN-ROCK'
21.0% ELYMUS VIRGINICUS, 'WADSWORTH'	VIRGINIA WILDFE, 'WADSWORTH'
9.0% SORGHASTRUM NUTANS, 'TOMAHAWK'	INDIANGRASS, 'TOMAHAWK'
3.0% RUDEBECKIA HIRTA, PA ECOTYPE	BLACKEYED SUSAN, PA ECOTYPE
2.0% CHAMAECRISTA FASCICULATA, PA ECOTYPE	PARTRIDGE PEA, PA ECOTYPE
1.5% HELIOPSIS HELIANTHOIDES, PA ECOTYPE	OXEYE SUNFLOWER, PA ECOTYPE
1.0% COREOPSIS TINCTORIA	PLAINS COREOPSIS
0.4% DESMODIUM CANADENSE, PA ECOTYPE	SHOWY TICKTREFAL, PA ECOTYPE
0.1% ASCLEPIAS SYRACA	COMMON MILKWEED
0.1% MONARDA FISTULOSA, PA ECOTYPE	WILD BERGAMOT, PA ECOTYPE

NOTES:
SEED AT A RATE OF 20 LB/ACRE OF 100% PURE LIVE SEED

MEADOW SEED MIX NOTES

GENERAL SEEDING NOTES:

- FINAL SEED MIXTURES, RATES & SPECIES TO BE DETERMINED BASED ON SCD REVIEW.
- SEEDING SHALL TAKE PLACE IN THE SPRING (APRIL 1 TO JUNE 15) OR THE FALL (SEPTEMBER 1 TO OCTOBER 15).
- ELIMINATE UNWANTED VEGETATION PRIOR TO SEEDING USING A NON-SELECTIVE HERBICIDE PER MANUFACTURER'S SPECIFICATIONS. CONTRACTOR TO ENSURE HERBICIDE IS INDICATED FOR USE AROUND WATER BODIES.
- IT IS RECOMMENDED THAT CONTRACTOR INSTALL SEED MIXTURE USING A NO-TILL TRUAX-TYPE DRILL WHERE APPLICABLE.
- THERE MUST BE CONTINUOUS SOIL MOISTURE FOR 4-6 WEEKS TO ALLOW PROPER GERMINATION.

WEED CONTROL / MAINTENANCE

- DURING THE ESTABLISHMENT YEAR, CONTRACTOR SHALL MOW SEEDING IF WEED HEIGHT EXCEEDS MEADOW MIX HEIGHT. MOW AT A HEIGHT OF 8"-10". DO NOT MOW CLOSER.
- AFTER THE FIRST GROWING SEASON, AND IF MEADOW MIX IS WELL ESTABLISHED, THE MEADOW MIX SHALL BE MOWED ONLY ONCE ANNUALLY. ANNUAL MAINTENANCE MOWING SHALL BE DURING THE WINTER DURING THE MONTH OF MARCH.
- MOW IN DETENTION BASIN AND WETLAND TRANSITION AREAS DURING DRY SITE CONDITIONS WHEN SOIL DISTURBANCE WILL NOT OCCUR. MAINTENANCE FOR DETENTION BASIN AND WETLAND TRANSITION AREAS SHALL OCCUR DURING LATE SUMMER (JULY 15 – AUGUST 15) WHEN THE WATER TABLE IS USUALLY AT ITS LOWEST POINT OF THE YEAR. DO NOT MOW IN DETENTION BASIN, WETLAND OR WETLAND TRANSITION AREAS AFTER ESTABLISHMENT OF MEADOW MIX.
- IN THE EVENT THAT INVASIVE SPECIES ARE PRESENT AFTER THE ESTABLISHMENT PERIOD, MEADOW AREAS ARE TO BE TRIMMED TO A HEIGHT OF 8". ANY TRIMMING SHOULD CEASE BY MID-SEPTEMBER.

LAWN SEED MIX:

- LAWN SEED MIX: LESCO GRASS SEED – ALL PRO TRANSITION MIX (3 TURF-TYPE TALL-FESCUE GRASSES)

NOTES:

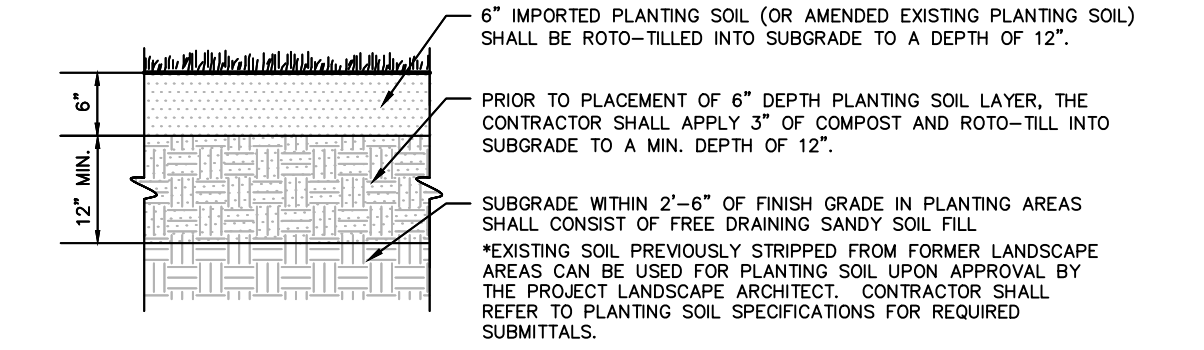
- SEED RATE:
 - NEW ESTABLISHMENT: SEED AT A RATE OF 6-8 LBS/1000 SQ FT
 - RENOVATION: 20-50% EXISTING COVER: 5-7 LBS/1000 SQ FT
 - 50-75% EXISTING COVER: 4-6 LBS/1000 SQ FT

GENERAL SEED NOTES:

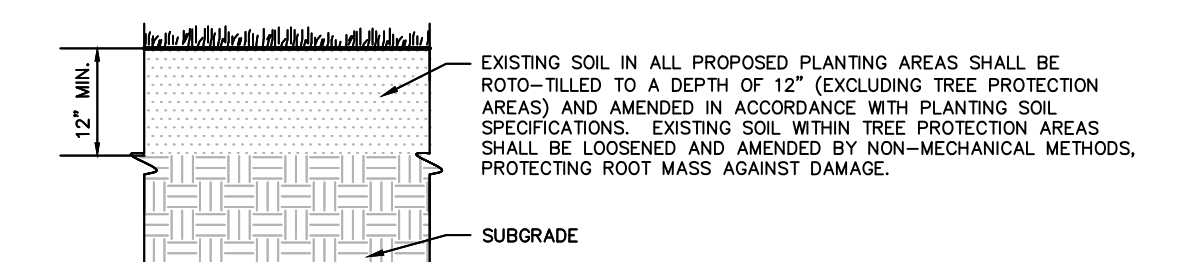
- FINAL SEED MIXTURES, RATES, AND SPECIES TO BE DETERMINED BASED ON PROJECT LANDSCAPE ARCHITECT REVIEW.
- SEEDING SHALL TAKE PLACE IN THE SPRING (APRIL 1 TO JUNE 15) OR THE FALL (SEPTEMBER 1 TO OCTOBER 15).
- ELIMINATE UNWANTED VEGETATION PRIOR TO SEEDING USING A NON-SELECTIVE HERBICIDE PER MANUFACTURER'S SPECIFICATIONS.
- IT IS RECOMMENDED THAT CONTRACTOR INSTALL SEED MIXTURE USING A NO-TILL TRUAX-TYPE DRILL SEEDER WHERE APPLICABLE.
- THERE MUST BE CONTINUOUS SOIL MOISTURE FOR 4-6 WEEKS TO ALLOW FOR PROPER GERMINATION.

GENERAL NOTE:

DUE TO GENERAL CONSTRUCTION ACTIVITIES AND ADJACENT SITE COMPACTION REQUIREMENTS, SUBGRADE SOILS WITHIN PROPOSED PLANTING AREAS TEND TO BECOME HIGHLY COMPACTED. IN ORDER TO CREATE A HEALTHY GROWTH MEDIUM TO ALLOW PROPOSED PLANTINGS TO ESTABLISH A VIGOROUS ROOT MASS, THIS SUBGRADE SOIL MUST UNDERGO A RESTORATION PROCESS. IN ADDITION, IMPORTED OR AMENDED EXISTING SOILS SHALL BE MIXED WITH SUBGRADE SOILS WHERE THEY MEET IN ORDER TO CREATE A TRANSITIONAL GRADE TO ALLOW FOR PROPER DRAINAGE.



IMPORTED OR AMENDED EXISTING PLANTING SOIL WITHIN AREAS OF RAISED GRADE



AMENDED EXISTING PLANTING SOIL WITHIN AREAS OF UNCHANGED OR CUT GRADE

NOTES:

- CONTRACTOR IS RESPONSIBLE TO SEND SAMPLES OF EXISTING SOILS INTENDED FOR USE IN PLANTING AREAS (1 PER 500 CY.) TO TESTING LABORATORY OR UNIVERSITY COOPERATIVE EXTENSION FOR TESTING. ALL TESTING COSTS ARE AT THE CONTRACTOR'S EXPENSE.
- RECYCLED CRUSHED CONCRETE AND ASPHALT MILLINGS SHALL NOT BE PLACED WITHIN 2'-6" OF FINISH GRADE IN PROPOSED LANDSCAPE AREAS.
- IMPORTED FILL SHALL CONTAIN NO CONTAMINATION IN EXCESS OF THE PROJECT STATE ENVIRONMENTAL REVIEW AGENCY STANDARDS AND MEET THE ENVIRONMENTAL REQUIREMENTS FOR THE PROJECT. IF APPLICABLE, THE CONTRACTOR SHALL PROVIDE DOCUMENTATION OF COMPLIANCE PRIOR TO DELIVERY OF ANY FILL TO THE SITE.
- CONTRACTOR TO LIGHTLY COMPACT ALL PLACED PLANTING SOILS AND RAISE GRADES ACCORDINGLY TO ALLOW FOR FUTURE SETTLEMENT OF PLANTING SOILS (TYP.).
- NO STONES, WOOD CHIPS, OR DEBRIS LARGER THAN 1/2" SHALL BE ACCEPTABLE WITHIN PL