

SITE DEVELOPMENT PLAN SOLAR ENERGY STORAGE SYSTEM (ESS)

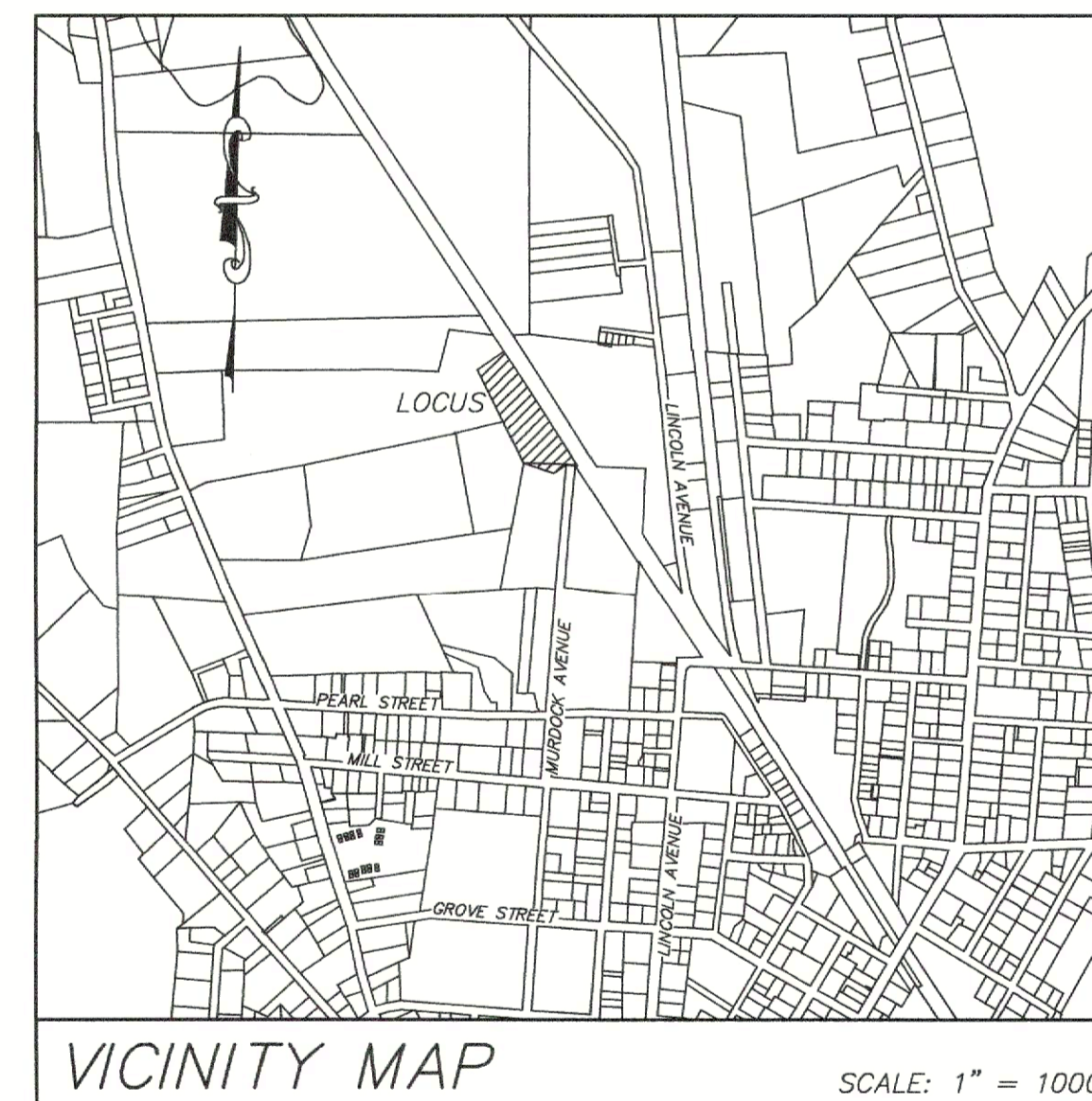
256 MURDOCK AVENUE

IN

WINCHENDON, MASSACHUSETTS

MARCH 27, 2023

REVISIONS THROUGH JULY 10, 2023



APPLICANT:

ZP BATTERY DEVCO, LLC
PETE FORTE
1 MERCANTILE STREET, SUITE 630
WORCESTER, MASSACHUSETTS 01608

OWNER:

BOSTWICK REALTY TRUST
256 MURDOCK AVENUE
WINCHENDON, MASSACHUSETTS 01475

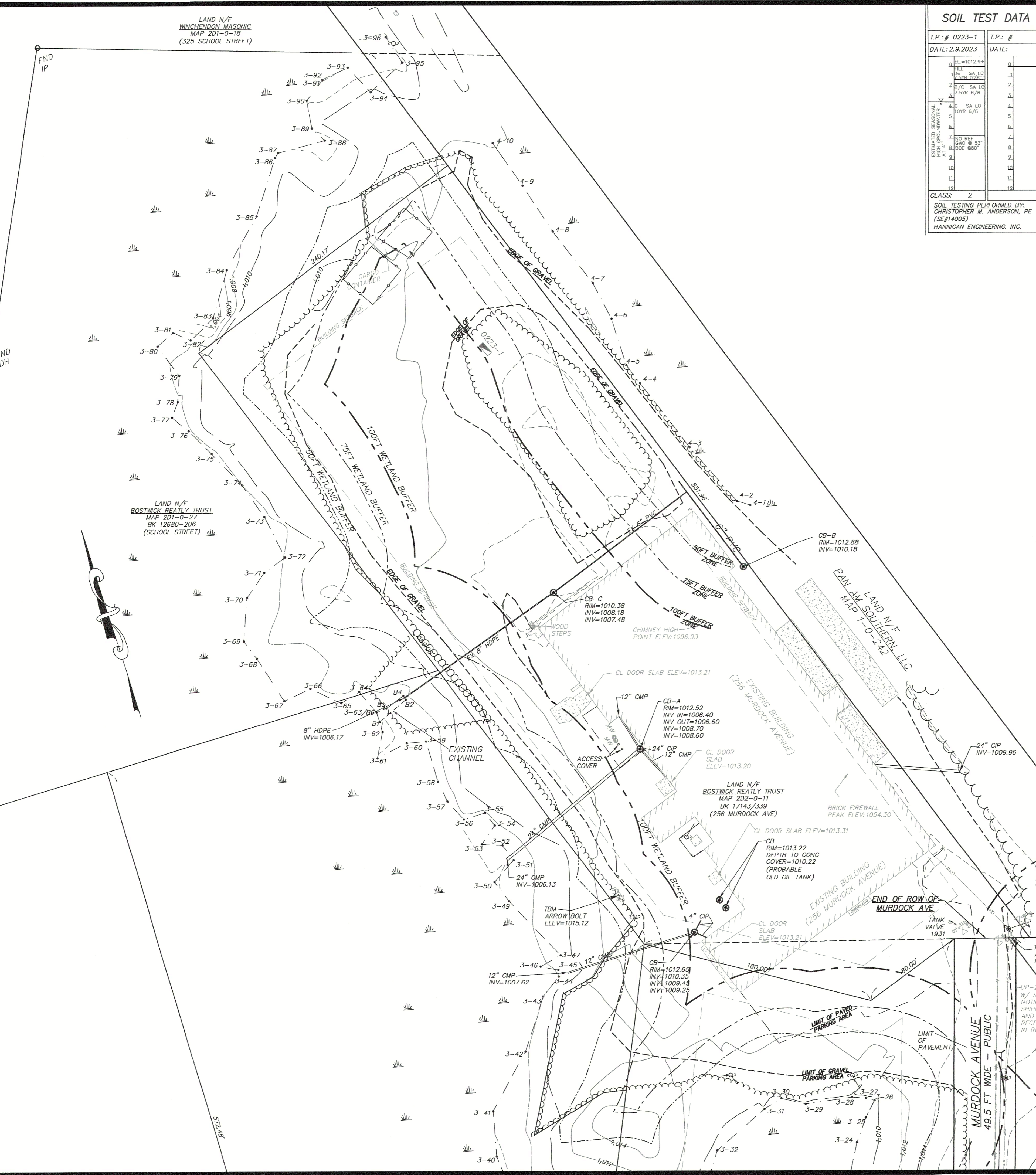
CIVIL ENGINEER & LAND SURVEYOR:

HANNIGAN ENGINEERING, INC.
8 MONUMENT SQUARE
LEOMINSTER, MASSACHUSETTS 01453
TEL: (978) 534-1234

PLAN INDEX

SHEET 1	EXISTING CONDITIONS PLAN
SHEET 2	SITE DEVELOPMENT PLAN
SHEET 3	EROSION CONTROL PLAN
SHEET 4	LANDSCAPE AND LAYOUT PLAN
SHEET 5 - 6	CONSTRUCTION DETAILS

PERMITTING SET - NOT FOR CONSTRUCTION



SOIL TEST DATA	
T.P.: # 0223-1	T.P.: #
DATE: 2.9.2023	DATE:
0 TL=1012.94	0
1 TL= SA LO	1
2 B/C SA LO	2
3 7.5'R 6/6	3
4 C SA LO	4
5 10'R 6/6	5
6 D SA LO	6
7 NO REF	7
8 DWO @ 5.1'	8
9 SOL 860'	9
10 LL	10
11 LL	11
12 LL	12
CLASS: 2	
SOIL TESTING PERFORMED BY: CHRISTOPHER M. ANDERSON, PE (SE#14005) HANNIGAN ENGINEERING, INC.	



LOCUS MAP SCALE: 1" = 1000'

OWNER
BOSTWICK REALTY TRUST
256 MURDOCK AVENUE
WINCHENDON, MASSACHUSETTS

APPLICANT
ZP BATTERY DEVCO, LLC
1 MERCANTILE STREET, SUITE 630
WORCESTER, MASSACHUSETTS 01608

- PROJECT NOTES:**
- EARTHEN MATERIALS UTILIZED AS FILL WITHIN THE PROJECT AREA SHALL BE CLEAN AND FREE OF DELETERIOUS MATERIALS AND SHALL NOT CONTAIN ANY HAZARDOUS MATERIALS.
 - PRIOR TO THE START OF CONSTRUCTION AND CLEARING ACTIVITIES, THE APPROVED LIMITS OF CONSTRUCTIONS SHALL BE FIELD STAKED AND REVIEWED BY THIS OFFICE UPON THE COMPLETION OF CONSTRUCTION CATCHBASINS, SUMPS AND STORMWATER BASINS OR BEST MANAGEMENT PRODUCTS (BMPs) SHALL BE CLEANED AND ANNUALLY THEREAFTER.
 - HAULING OF EARTHEN MATERIALS TO OR FROM THE CONSTRUCTION SITE SHALL BE LIMITED TO THE HOURS OF 9AM TO 4PM MONDAY THROUGH FRIDAY.
 - IMPERVIOUS COVERAGE FROM THE PROPOSED PROJECT SHALL BE COMPRISED OF CONCRETE AND CRUSHED STONE/GRAVEL FOR ACCESS WAYS.

PROJECT INFORMATION

LAND INFORMATION	
MAP PARCEL:	202/11
DEED BOOK/PAGE:	17143/339
EXISTING FRONTAGE:	49.5 FT
EXISTING AREA:	3.75 ACRES±
ZONING INFORMATION	
ZONING DISTRICT:	INDUSTRIAL
DIMENSIONAL REQUIREMENTS:	
MINIMUM AREA:	43,560 SF
MINIMUM FRONTAGE:	150 FEET
MAXIMUM HEIGHT:	50 FT
MAXIMUM COVERAGE:	NA
MINIMUM SETBACKS:	
FRONT YARD:	40 FT
SIDE YARD:	25 FT
REAR YARD:	50 FT

- GENERAL NOTES:**
- PROPERTY LINE INFORMATION BASED DEEDS AND PLANS OF RECORD. NO CERTIFICATION OF PROPERTY LINES SHOWN ON THIS PLAN IS INTENDED OR IMPLIED BY HANNIGAN ENGINEERING, INC. TOPOGRAPHIC INFORMATION IS THE RESULT OF AN ON-THE-GROUND TOPOGRAPHIC SURVEY BY HANNIGAN ENGINEERING, INC. IN MAY OF 2022.
 - AREAS SUBJECT TO PROTECTION UNDER THE WETLANDS PROTECTION ACT HAVE BEEN DELINEATED BY LEC ENVIRONMENTAL CONSULTANTS IN FEBRUARY OF 2022. THESE AREAS ARE DEPICTED ON THE PLANS BASED ON FIELD SURVEY LOCATION DURING THE TOPOGRAPHIC SURVEY.
 - LOCATION OF ALL UTILITIES ARE APPROXIMATE AS SHOWN AND BASED UPON VISIBLE STRUCTURES AT THE TIME OF THE FIELD SURVEY. LOCATION OF EXISTING UTILITIES AND SUBSURFACE STRUCTURES, WHETHER OR NOT SHOWN ON THESE PLANS, SHALL BE DETERMINED BY THE CONTRACTOR, MARKING IN THE FIELD, AND REVIEWED BY THE ENGINEER PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR SHALL BE AWARE OF THE OBLIGATION TO ALL UTILITY COMPANIES AND AGENCY AS WELL AS DIG-SAFE PRIOR TO EXCAVATION. (SEE NOTE)
 - NOTIFICATION REQUIREMENTS SHOWN ON THIS PLAN SHALL NOT RELIEVE THE CONTRACTOR OF ANY OTHER REQUIREMENTS WHICH MAY EXIST UNDER LOCAL, STATE, OR FEDERAL JURISDICTION TO WHICH THE CONTRACTOR IS OBLIGATED.
 - RELOCATION OF AND/OR CONNECTION TO EXISTING UTILITIES SHALL BE PERFORMED IN ACCORDANCE WITH PROVISIONS OF THE APPROPRIATE UTILITY COMPANY AND/OR REGULATORY AGENCY.
 - UNLESS OTHERWISE SPECIFIED, ALL MATERIALS AND WORKMANSHIP SHALL CONFORM WITH THE REQUIREMENTS OF THE TOWN OF WINCHENDON AND THE MASS DOT SPECIFICATIONS OF HIGHWAYS AND BRIDGES.
 - ALL SLOPES UNLESS OTHERWISE SPECIFIED, SHALL BE LOAMED AND SEEDED FOR STABILIZATION.
 - ANY DEVIATIONS IN DESIGN AS SHOWN SHALL REQUIRE A REVIEW AND APPROVAL OF THE DESIGN ENGINEER OR FINANCIAL CHANGES MADE IN THE FIELD MADE WITHOUT AUTHORIZATION SHALL BE SUBJECT TO REVIEW BY THE ENGINEER AND APPROPRIATE APPROVING AUTHORITY. EXPENSES INCURRED TO BRING THE UNAUTHORIZED CHANGES TO ACCEPTABLE CONFORMANCE SHALL BE BORNE BY THE COMPANY OR CONTRACTOR MAKING THE UNAUTHORIZED CHANGE.
 - ANY MATERIALS DISCOVERED ON-SITE WHICH ARE NOT SUITABLE FOR USE IN THE PROJECT AS SHOWN ON THIS PLAN SHALL BE REMOVED AND HAULED OFF-SITE TO AN APPROPRIATELY LICENSED FACILITY.
 - PLANS TO BE REVIEWED BY APPLICABLE UTILITY AGENCIES FOR COMPLIANCE WITH REGULATIONS. FINAL LOCATION IS SUBJECT TO CHANGE.
 - APPLICANT SHOULD BE AWARE OF OBLIGATIONS TO COMPLY WITH CHAPTER 131, SECTION 4D OF THE MASSACHUSETTS GENERAL LAWS, OTHERWISE KNOWN AS THE WETLANDS PROTECTION ACT, AND THE ASSOCIATED REGULATIONS (310 CMR 10.00)
 - STOCKPILING OF MATERIAL SHALL NOT BE PERMITTED WITHIN ANY AREAS SUBJECT TO PROTECTION UNDER THE WETLANDS PROTECTION ACT WITHOUT PRIOR APPROVAL BY THE LOCAL CONSERVATION COMMISSION. STOCKPILES SHALL BE PLACED IN A SUITABLE LOCATION AND SURROUNDED BY A ROW OF STAKED HAY BALES FOR EROSION CONTROL.
 - AREAS OF FILL TO BE COMPACTED TO A MINIMUM 95% DRY DENSITY IN AREAS WITHIN ROADWAYS AND UTILITY EASEMENTS. OTHER AREAS OF FILL TO BE COMPACTED TO A MINIMUM 90% DRY DENSITY. ALL FILL MATERIALS ARE TO BE CLEAN FILL, FREE OF DELETERIOUS MATERIALS AND DEBRIS.
 - ALL SIDEWALKS AND RAMPS TO CONFORM TO REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT (ADA), AS REQUIRED. SEE ARCHITECTURAL PLANS FOR CONFORMANCE REQUIREMENTS FOR PROPOSED BUILDINGS.
 - THE AREA PROPOSED FOR DEVELOPMENT IS NOT WITHIN A 100 YEAR FLOOD PLAIN PER F.E.M.A. FIRM PANEL 1982-01489-01489, DATED: JUNE 15, 1982. COMPLIANCE WITH APPLICABLE REGULATIONS IS REQUIRED.
 - ALL REINFORCED CONCRETE PIPE TO BE CLASS III UNLESS OTHERWISE NOTED.
 - PRE-CONSTRUCTION CONFERENCE SHALL BE HELD PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
 - ALL UTILITIES ARE TO BE INSTALLED BY A LICENSED UTILITY CONTRACTOR LICENSED BY THE TOWN OF WINCHENDON.

NO.	DATE	REVISIONS	BY
1	7/1/2023	PEER REVIEW AND BOARD COMMENT	CMA

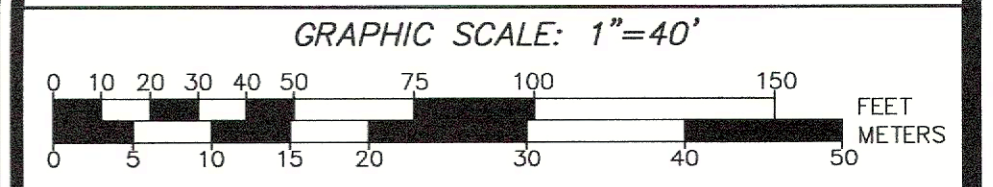


HANNIGAN ENGINEERING, INC.
CIVIL ENGINEERS & LAND SURVEYORS

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(978) 534-6060 (F)
WWW.HANNIGANENGINEERING.COM

EXISTING CONDITIONS PLAN
IN
WINCHENDON, MASSACHUSETTS

PREPARED FOR:
ZP BATTERY DEVCO, LLC
PETE FORTÉ
1 MERCANTILE STREET, SUITE 630
WORCESTER, MASSACHUSETTS 01608
TEL:



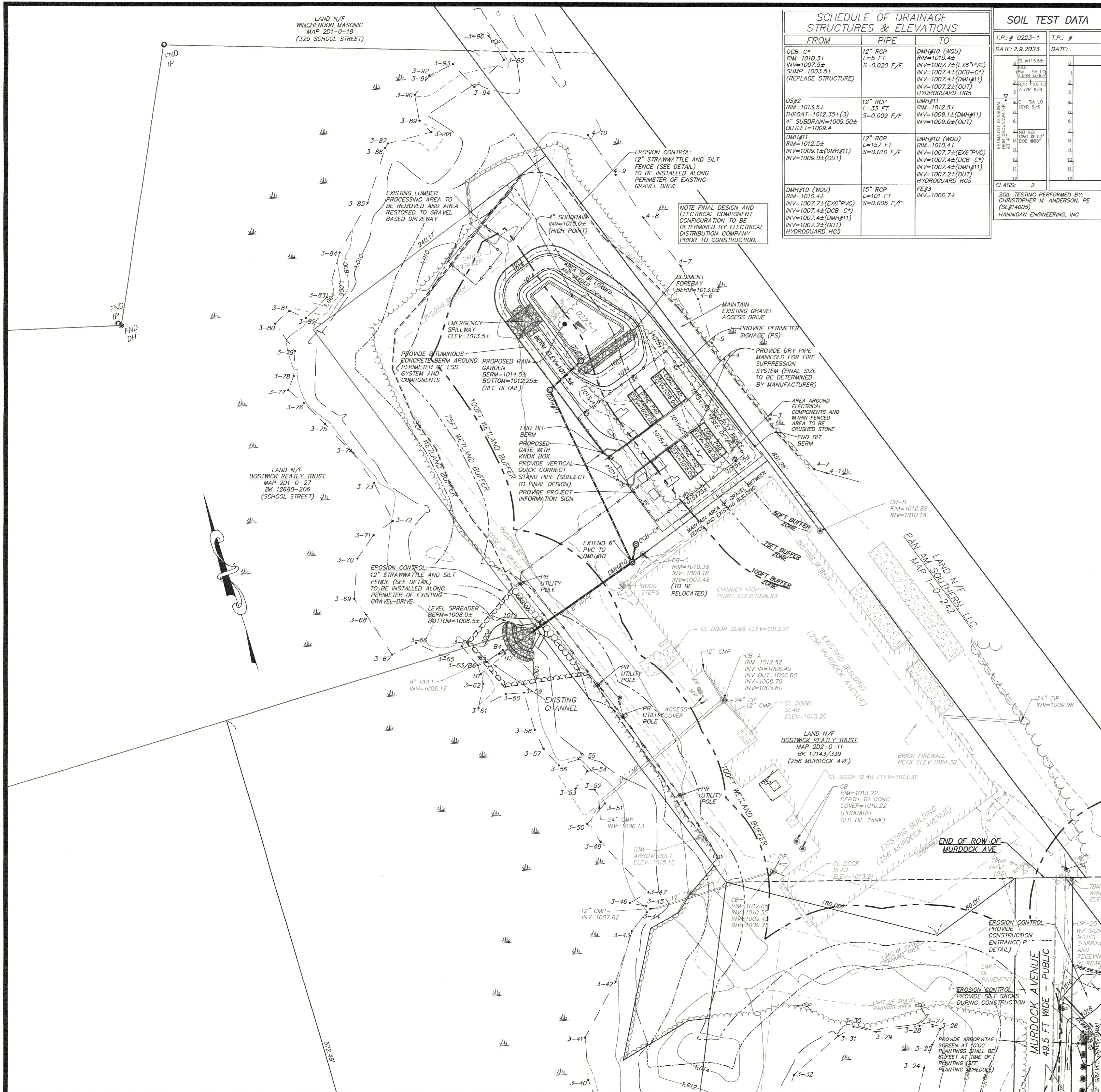
CALC: CMA	DRWN: CMA	SCALE: 1"=40'
CHKD: WDH	APPD: CMA	DATE: MAR 27, 2023
SRV: JEF	FB: 75-130	JOB NO: 3101
TAB: (1)EXCON A	SHEET 1 OF 6	PLAN NO: C-18-41

LEGEND	
EXISTING	PROPOSED
542	560
CONTOURS	CONTOURS
PROPERTY LINES	PROPERTY LINES
DRAIN	DRAIN
SEWER	SEWER
WATER	WATER
ELEC/TELE/CABLE	DHW
ELEC/TELE/CABLE	ECT
EDGE OF PAVEMENT	
CURBLINE	
EROSION CONTROL	
STRAW MATTE AND SILT FENCE	
TREELINE	
WETLAND	
WETLAND BUFFER ZONE	
HYDRANTS	
SIGNS	
LIGHTPOLE	

APPROVAL OF THIS PLAN IS GRANTED ON THE CONDITIONS LISTED IN A SEPARATE STATEMENT OF CONDITIONS WHICH PART OF THE APPROVAL OF THIS SITE PLAN.

WINCHENDON PLANNING BOARD

DATE: _____



SCHEDULE OF DRAINAGE STRUCTURES & ELEVATIONS		
FROM	PIPE	TO
DCB-C RIM=1010.5± INV=1007.5± SUMP=1003.5± (REPLACE STRUCTURE)	12" RCP L=15 FT S=0.020 F/F	DMH#10 (WOU) RIM=1010.4± INV=1007.7±(EX6" PVC) INV=1007.4±(DMH#11) INV=1007.2±(OUT) HYDROGUARD HGS
OS#2 RIM=1013.5± THROA=1012.35±(3) 4" SUBRAIN=1009.50± OUTLE=1009.4	12" RCP L=33 FT S=0.009 F/F	DMH#11 RIM=1012.5± INV=1009.1±(DMH#11) INV=1007.4±(DCB-C) INV=1007.2±(OUT) HYDROGUARD HGS
DMH#11 RIM=1012.5± INV=1009.1±(DMH#11) INV=1009.0±(OUT)	12" RCP L=157 FT S=0.010 F/F	DMH#10 (WOU) RIM=1010.4± INV=1007.7±(EX6" PVC) INV=1007.4±(DMH#11) INV=1007.2±(OUT) HYDROGUARD HGS
DMH#10 (WOU) RIM=1010.4± INV=1007.7±(EX6" PVC) INV=1007.4±(DCB-C) INV=1007.2±(OUT) HYDROGUARD HGS	15" RCP L=101 FT S=0.005 F/F	FE#3 INV=1006.7±

SOIL TEST DATA	
T.P.: # 0223-1	T.P.: #
DATE: 2.9.2023	DATE:
EL=113.50 SL=1.0 CL=13.5 LL=22.0 PL=16.0 SH=2.0 L=10.0 C=10.0 U=1.0 OC=1.0 O=1.0 OM=1.0 OH=1.0 O _h =1.0	
CLASS: 2	
SOIL TESTING PERFORMED BY: CHRISTOPHER M. ANDERSON, PE (SEE #14005) HANNIGAN ENGINEERING, INC.	



LOCUS MAP SCALE: 1" = 1000'

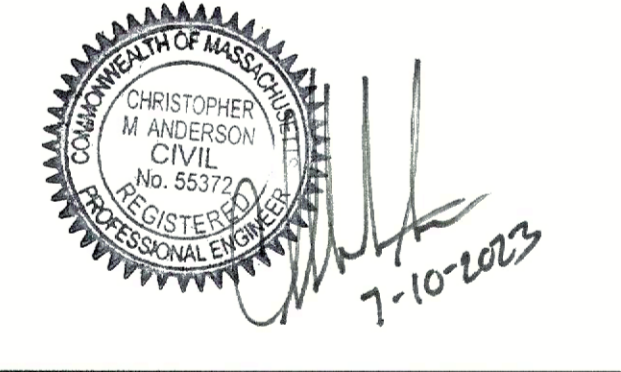
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APPLICANT
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PROJECT INFORMATION	
LAND INFORMATION	
MAP/PARCEL: 202/11	DEED BOOK/PAGE: 17143/339
EXISTING FRONTAGE: 49.5 FT	EXISTING AREA: 3.75 ACRES±
ZONING INFORMATION	
ZONING DISTRICT: INDUSTRIAL	
DIMENSIONAL REQUIREMENTS:	
MINIMUM AREA:	43,560 SF
MINIMUM FRONTAGE:	150 FEET
MAXIMUM HEIGHT:	SOFT
MINIMUM COVERAGE:	NA
MINIMUM SETBACKS:	
FRONT YARD:	40 FT
SIDE YARD:	25 FT
REAR YARD:	50 FT
GENERAL NOTES:	
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2. AREAS SUBJECT TO PROTECTION UNDER THE WETLANDS PROTECTION ACT HAVE BEEN DELINEATED BY LEG ENVIRONMENTAL CONSULTANTS IN THE COURSE OF THESE AREAS ARE DETECTED ON THE PLANS BASED ON FIELD SURVEY LOCATION DURING THE TOPOGRAPHIC SURVEY.	
3. LOCATION OF ALL UTILITIES ARE APPROXIMATE AS SHOWN AND BASED UPON VISIBLE STRUCTURES AT THE TIME OF THE FIELD SURVEY. LOCATION OF EXISTING UTILITIES AND SUBSURFACE STRUCTURES WHETHER OR NOT SHOWN ON THESE PLANS, SHALL BE DETERMINED BY THE CONTRACTOR, MARKED IN THE FIELD, AND REVIEWED BY THE ENGINEER PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. THE CONTRACTOR SHALL BE AWARE OF THE OBLIGATION TO ALL UTILITY COMPANIES AND AGENCY AS WELL AS DIG-SAFE PRIOR TO EXCAVATION. (SEE NOTE)	
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9. ANY MATERIALS DISCOVERED ON-SITE WHICH ARE NOT SUITABLE FOR USE IN THE PROJECT AS SHOWN ON THIS PLAN SHALL BE REMOVED AND HAULED OFF-SITE TO AN APPROPRIATELY LICENSED FACILITY.	
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11. APPLICANT SHOULD BE AWARE OF OBLIGATIONS TO COMPLY WITH CHAPTER 151, SECTION 40 OF THE MASSACHUSETTS GENERAL LAWS, OTHERWISE KNOWN AS THE WETLANDS PROTECTION ACT, AND THE ASSOCIATED REGULATIONS (310 CMR 10.00)	
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13. AREAS OF FILL TO BE COMPACTED TO A MINIMUM 95% DRY DENSITY IN AREAS WITHIN ROADWAYS AND UTILITY EASEMENTS. OTHER AREAS OF FILL TO BE COMPACTED TO A MINIMUM 90% DRY DENSITY. ALL FILL MATERIALS ARE TO BE CLEAN FILL, FREE OF DELETERIOUS MATERIALS AND DEBRIS.	
14. ALL SIDEWALKS AND RAMPS TO CONFORM TO REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT (ADA), AS REQUIRED. SEE ARCHITECTURAL PLANS FOR CONFORMANCE REQUIREMENTS FOR PROPOSED BUILDINGS.	
15. THE AREA PROPOSED FOR DEVELOPMENT IS NOT WITHIN A 100 YEAR FLOOD PLAIN PER F.E.M.A. FIRM PANEL #25048-0016B, DATED: JUNE 15, 1982. COMPLIANCE WITH APPLICABLE REGULATIONS IS REQUIRED.	
16. ALL REINFORCED CONCRETE PIPE TO BE CLASS III UNLESS OTHERWISE NOTED.	
17. PRE-CONSTRUCTION CONFERENCE SHALL BE HELD PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.	
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NO.	DATE	REVISIONS	BY
1	7/1/2023	PEER REVIEW AND BOARD COMMENT	CMA



LEGEND	
EXISTING	PROPOSED
542	562
CONTOURS	CONTOURS
PROPERTY LINES	PROPERTY LINES
DRAIN	DRAIN
SEWER	SEWER
WATER	WATER
OWH	OWH
ELEC/TELE/CABLE	ELEC/TELE/CABLE
ECT	ECT
EDGE OF PAVEMENT	EDGE OF PAVEMENT
CURBLINE	CURBLINE
EROSION CONTROL STRAW WATTLE AND SILT FENCE	EROSION CONTROL STRAW WATTLE AND SILT FENCE
TREELINE	TREELINE
WETLAND	WETLAND
WETLAND BUFFER ZONE	WETLAND BUFFER ZONE
HYDRANTS	HYDRANTS
SIGNS	SIGNS
LIGHTPOLE	LIGHTPOLE

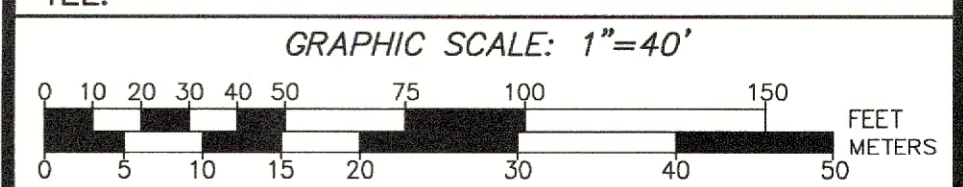
APPROVAL OF THIS PLAN IS GRANTED ON THE CONDITIONS LISTED IN A SEPARATE STATEMENT OF CONDITIONS WHICH PART OF THE APPROVAL OF THIS SITE PLAN.

WINCHENDON PLANNING BOARD		
DATE:		

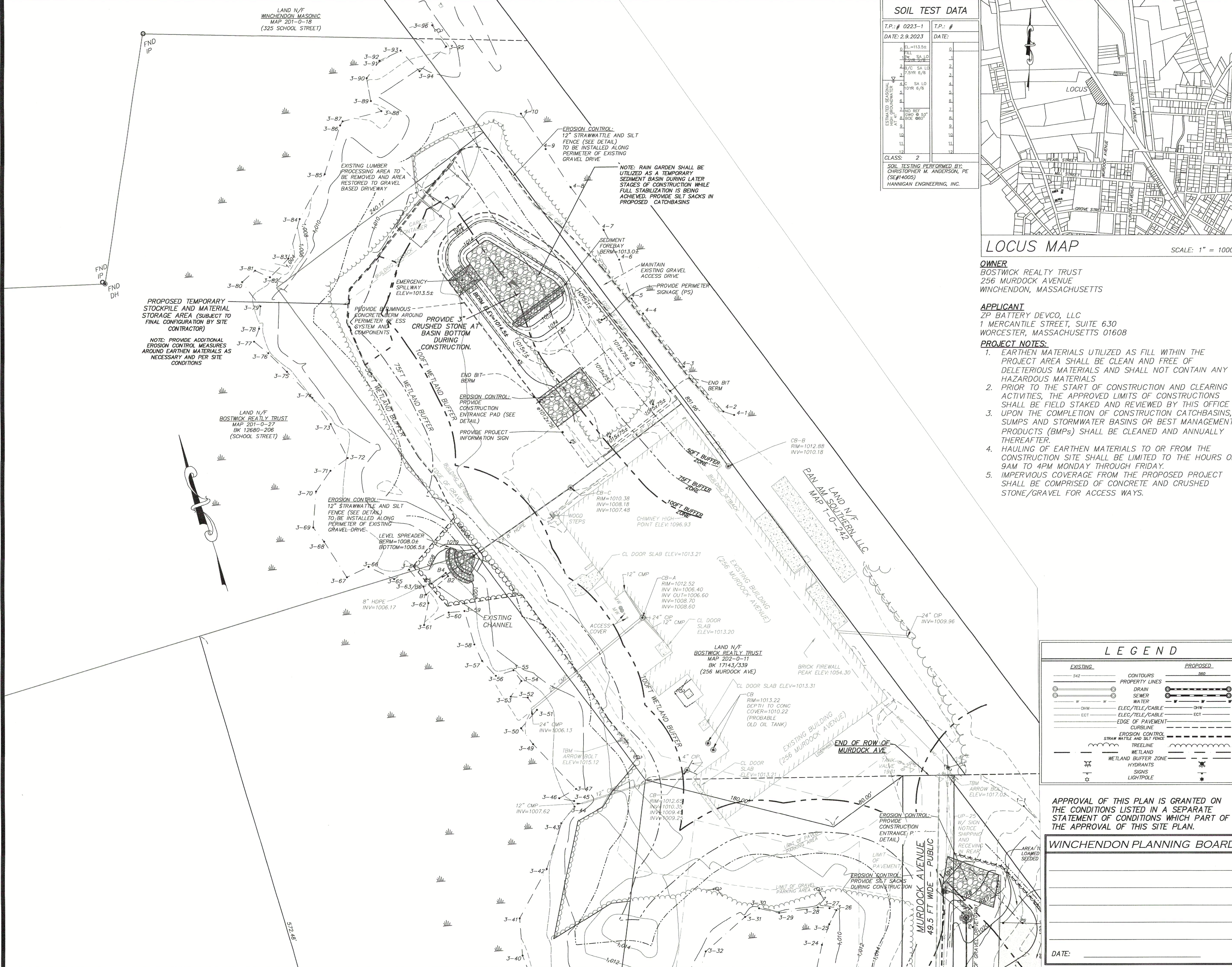
HANNIGAN ENGINEERING, INC.
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8 MONUMENT SQUARE
LEOMINSTER, MASSACHUSETTS 01453
(978) 534-1234 (T)
(978) 534-6060 (F)
WWW.HANNIGANENGINEERING.COM

SITE DEVELOPMENT PLAN
IN
WINCHENDON, MASSACHUSETTS

PREPARED FOR:
ZP BATTERY DEVCO, LLC
PETE FORTÉ
1 MERCANTILE STREET, SUITE 630
WORCESTER, MASSACHUSETTS 01608
TEL: _____



CALC: CMA	DRWN: CMA	SCALE: 1" = 40'
CHKD: WDH	APPD: CMA	DATE: MAR 27, 2023
SRV: JEF	FB: 75-130	JOB NO: 3101
TAB: (2) SDP-A	SHEET 2 OF 6	PLAN NO: C-18-41



SOIL TEST DATA

T.P.: #	T.P.: #
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DATE: 2.9.2023	DATE:
1.11.13.5E 2.11.13.5E 3.11.13.5E 4.11.13.5E 5.11.13.5E 6.11.13.5E 7.11.13.5E 8.11.13.5E 9.11.13.5E 10.11.13.5E 11.11.13.5E 12.11.13.5E 13.11.13.5E 14.11.13.5E 15.11.13.5E 16.11.13.5E 17.11.13.5E 18.11.13.5E 19.11.13.5E 20.11.13.5E	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
CLASS: 2	
SOIL TESTING PERFORMED BY: CHRISTOPHER M. ANDERSON, PE (SE#14005) HANNIGAN ENGINEERING, INC.	

PROJECT INFORMATION

LAND INFORMATION	
MAP PARCEL:	202/11
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- THE AREA PROPOSED FOR DEVELOPMENT IS NOT WITHIN A 100 YEAR FLOOD PLAIN PER F.E.M.A. FIRM PANEL #250348-00168, DATED: JUNE 15, 1982. COMPLIANCE WITH APPLICABLE REGULATIONS IS REQUIRED.
- ALL REINFORCED CONCRETE PIPE TO BE CLASS III UNLESS OTHERWISE NOTED.
- PRE-CONSTRUCTION CONFERENCE SHALL BE HELD PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
- ALL UTILITIES ARE TO BE INSTALLED BY A LICENSED UTILITY CONTRACTOR LICENSED BY THE TOWN OF WINCHENDON.

LOCUS MAP

OWNER
BOSTWICK REALTY TRUST
256 MURDOCK AVENUE
WINCHENDON, MASSACHUSETTS

APPLICANT
ZP BATTERY DEVCO, LLC
1 MERCANTILE STREET, SUITE 630
WORCESTER, MASSACHUSETTS 01608

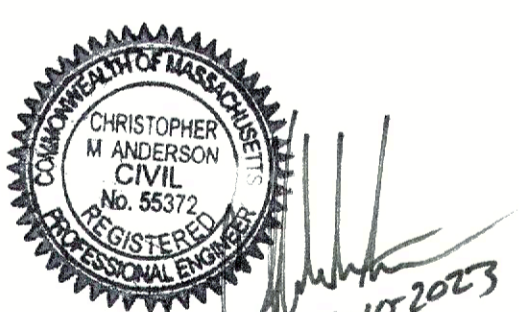
PROJECT NOTES:

- EARTHEN MATERIALS UTILIZED AS FILL WITHIN THE PROJECT AREA SHALL BE CLEAN AND FREE OF DELETERIOUS MATERIALS AND SHALL NOT CONTAIN ANY HAZARDOUS MATERIALS
- PRIOR TO THE START OF CONSTRUCTION AND CLEARING ACTIVITIES, THE APPROVED LIMITS OF CONSTRUCTIONS SHALL BE FIELD STAKED AND REVIEWED BY THIS OFFICE UPON THE COMPLETION OF CONSTRUCTION CATCHBASINS, SUMPS AND STORMWATER BASINS OR BEST MANAGEMENT PRODUCTS (BMPs) SHALL BE CLEANED AND ANNUALLY THEREAFTER.
- HAULING OF EARTHEN MATERIALS TO OR FROM THE CONSTRUCTION SITE SHALL BE LIMITED TO THE HOURS OF 9AM TO 4PM MONDAY THROUGH FRIDAY.
- IMPERVIOUS COVERAGE FROM THE PROPOSED PROJECT SHALL BE COMPRISED OF CONCRETE AND CRUSHED STONE/GRAVEL FOR ACCESS WAYS.

LEGEND

EXISTING	PROPOSED
542	560
CONTOURS	CONTOURS
PROPERTY LINES	PROPERTY LINES
DRAIN	DRAIN
SEWER	SEWER
WATER	WATER
OHW	OHW
ELEC/TELE/CABLE	ELEC/TELE/CABLE
ECT	ECT
EDGE OF PAVEMENT	EDGE OF PAVEMENT
CURBLINE	CURBLINE
EROSION CONTROL STRAW MATS AND SILT FENCE	EROSION CONTROL STRAW MATS AND SILT FENCE
TREELINE	TREELINE
WETLAND	WETLAND
HYDRANTS	HYDRANTS
SIGNS	SIGNS
LIGHTPOLE	LIGHTPOLE

NO.	DATE	REVISIONS	BY
1	7/1/2023	PEER REVIEW AND BOARD COMMENT	CMA

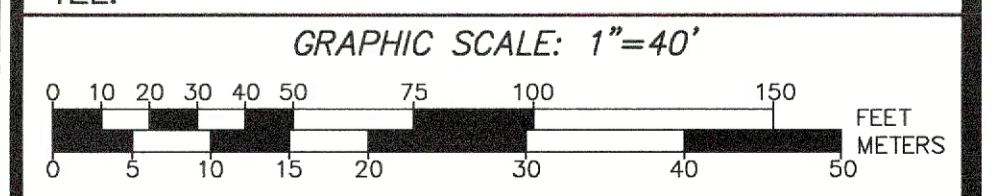


HANNIGAN ENGINEERING, INC.
CIVIL ENGINEERS & LAND SURVEYORS

8 MONUMENT SQUARE
LEOMINSTER, MASSACHUSETTS 01453
(978) 534-1234 (M)
(978) 534-6060 (F)
WWW.HANNIGANENGINEERING.COM

EROSION CONTROL PLAN
IN
WINCHENDON, MASSACHUSETTS

PREPARED FOR:
ZP BATTERY DEVCO, LLC
PETE FORTI
1 MERCANTILE STREET, SUITE 630
WORCESTER, MASSACHUSETTS 01608
TEL:

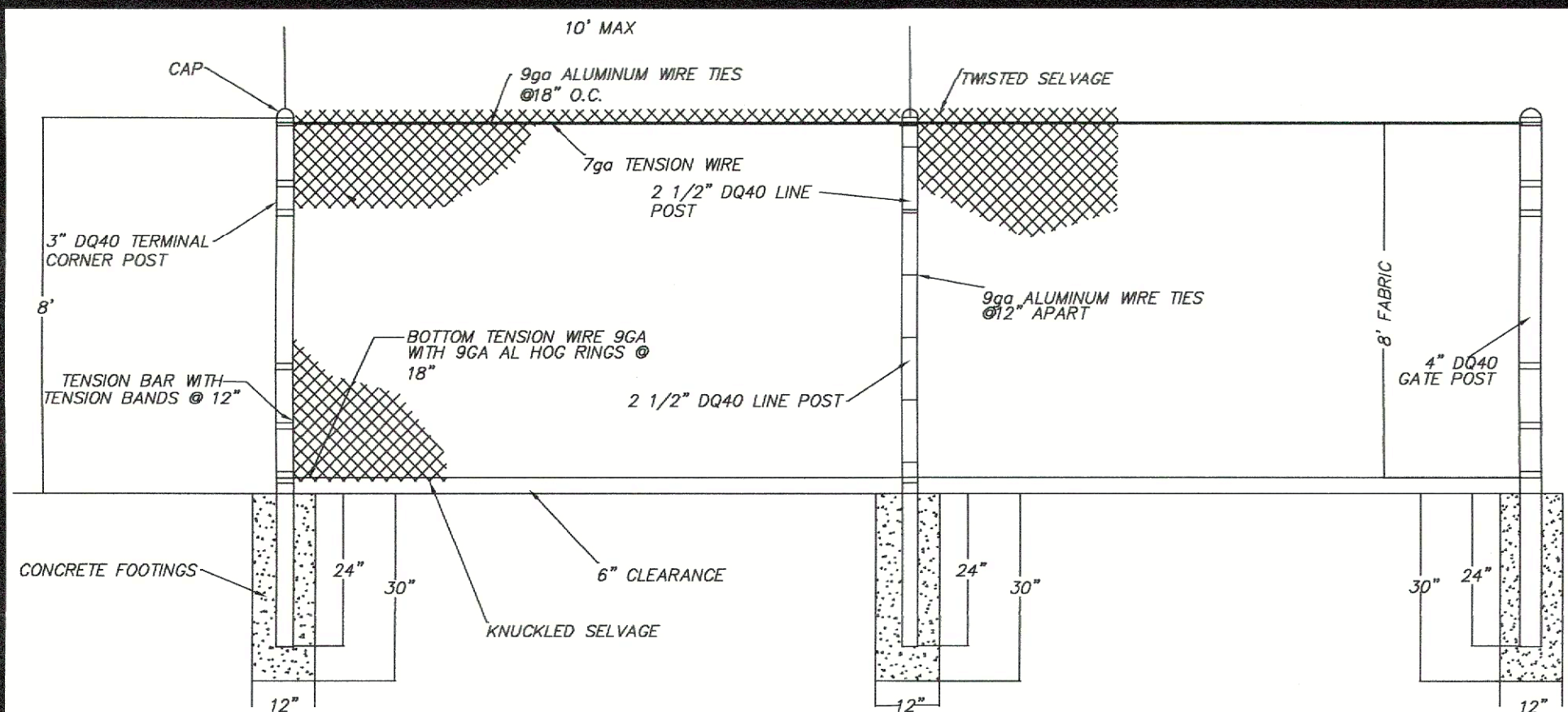


CALC: CMA	DRWN: CMA	SCALE: 1"=40'
CHKD: WDH	APPD: CMA	DATE: MAR 27, 2023
SRV: JEF	FB: 75-130	JOB NO: 3101
TAB: (3) EROS-A	SHEET 3 OF 6	PLAN NO: C-18-41

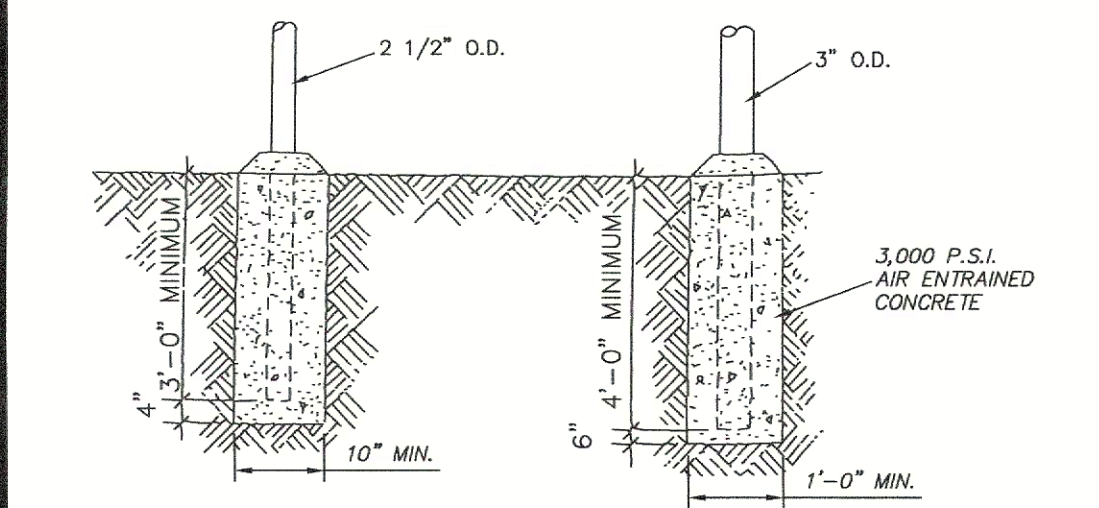
APPROVAL OF THIS PLAN IS GRANTED ON THE CONDITIONS LISTED IN A SEPARATE STATEMENT OF CONDITIONS WHICH PART OF THE APPROVAL OF THIS SITE PLAN.

WINCHENDON PLANNING BOARD

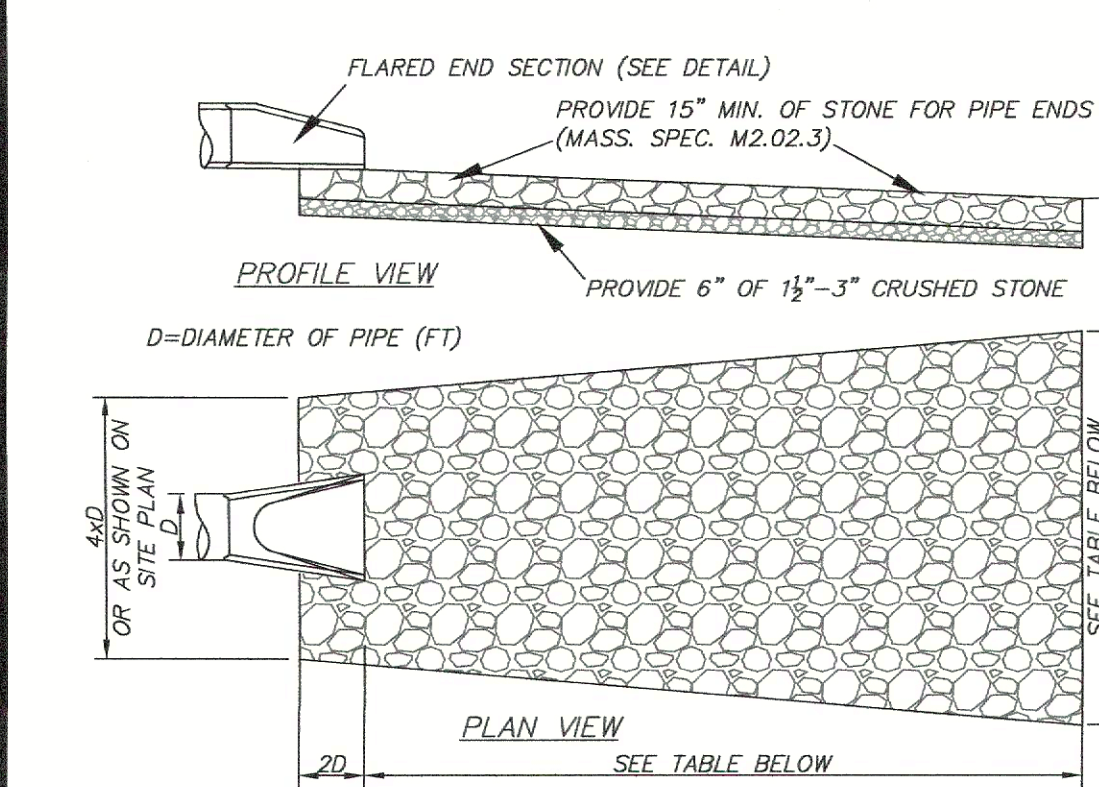
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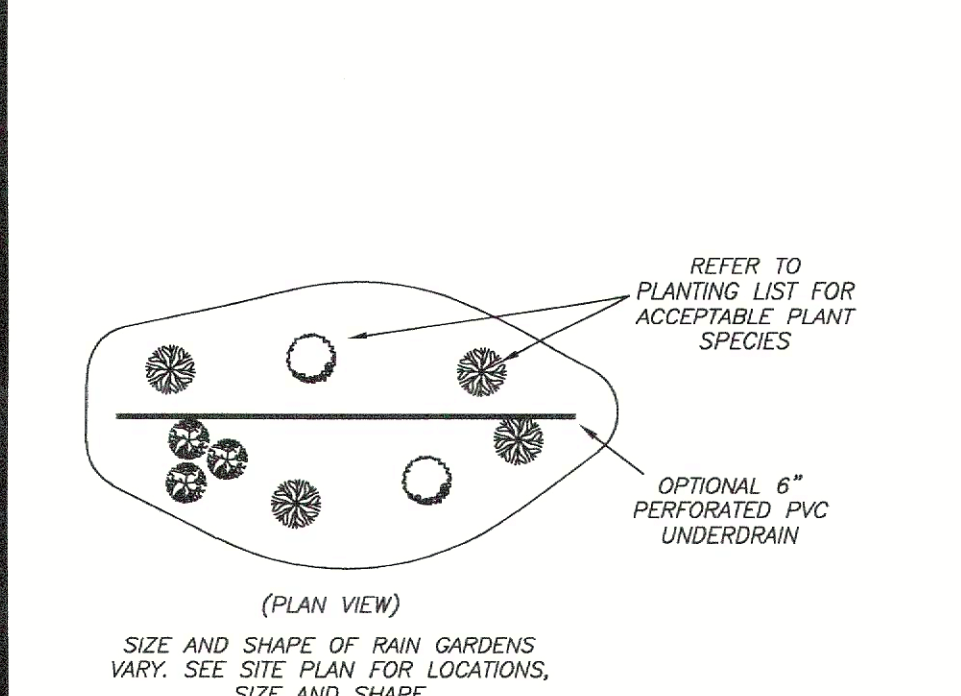
CHAIN LINK FENCE DETAIL



FENCE POST DETAIL
NO SCALE



RIP RAP APRON DETAIL
NO SCALE



PLANTING LIST AND NOTES

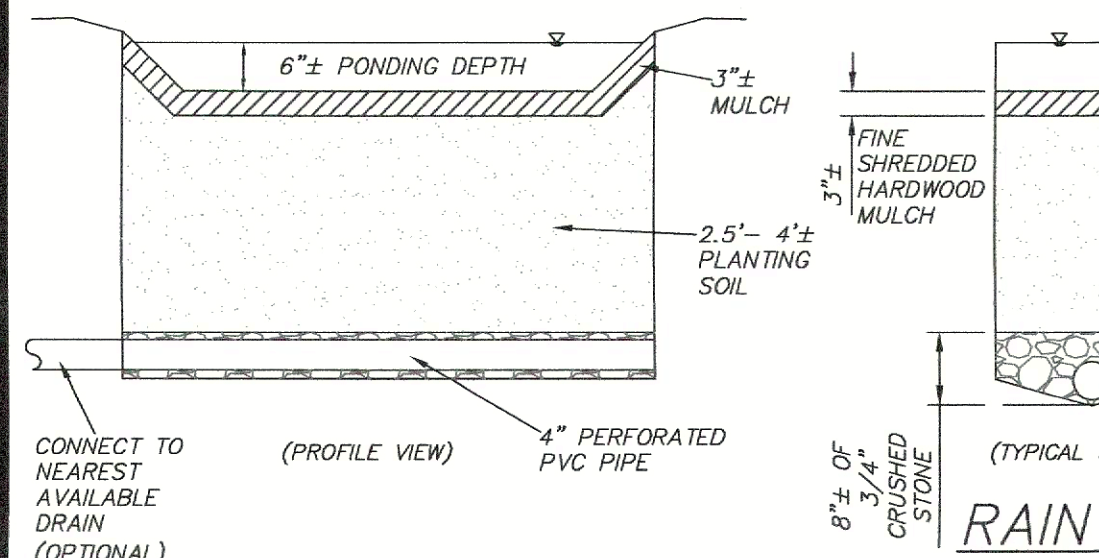
APPROXIMATE SPECIES MIX

RED CHOKEBERRY - *Aronia arbutifolia*
 SWEET PEPPERBUSH - *Diervilla lonicera*
 RED OSLER DOGWOOD - *Cornus sericea*
 WITCH HAZEL - *Hamamelis virginiana*
 COMMON ST. JOHN'S WORT - *Hypericum perforatum*
 INKBERRY - *Ilex glabra*
 WINTERBERRY - *Illex verticillata*
 COMMON JUNIPER - *Juniperus communis*
 CREEPING JUNIPER - *Juniperus horizontalis*
 SPIRIBUSH - *Lindera benzoin*
 BAYBERRY - *Myrica pensylvanica*
 ARROW-WOOD - *Viburnum dentatum*

RED MAPLE - *Acer rubrum*
 SWITCH GRASS - *Panicum virgatum*
 SHADBLUSH - *Amelanchier*
 RIVER BIRCH - *Betula nigra*
 GRAY BIRCH - *Betula populifolia*
 WHITE ASH - *Fraxinus americana*
 GREEN ASH - *Fraxinus pennsylvanica*
 EASTERN RED CEDAR - *Juniperus virginiana*
 SWEET GUM - *Liquidambar styraciflua*
 BLACK GUM - *Nyssa sylvatica*
 SYCAMORE - *Platanus occidentalis*
 EASTERN COTONWOOD - *Populus deltoides*
 SWAMP WHITE OAK - *Quercus bicolor*
 BUR OAK - *Quercus macrocarpa*

NOTES:

1. THE PLANTING PLAN SHALL INCLUDE A MIX OF RED MAPLE, PEPPERBUSH, SHRUBS AND (IF CONDITIONS PERMIT) UNDERSTORY TREES THAT CAN TOLERATE INTERMITTENT PONDING, OCCASIONAL SALINE CONDITIONS DUE TO ROAD SALT, AND EXTENDED DRY PERIODS.
2. INVASIVE OR EXOTIC SPECIES ARE PROHIBITED
3. REFER TO MASSACHUSETTS STORMWATER HANDBOOK (VOLUME 2, CHAPTER 2) FOR ADDITIONAL INFORMATION REGARDING PLANT SPECIES SUITABLE FOR USE IN BIORETENTION.

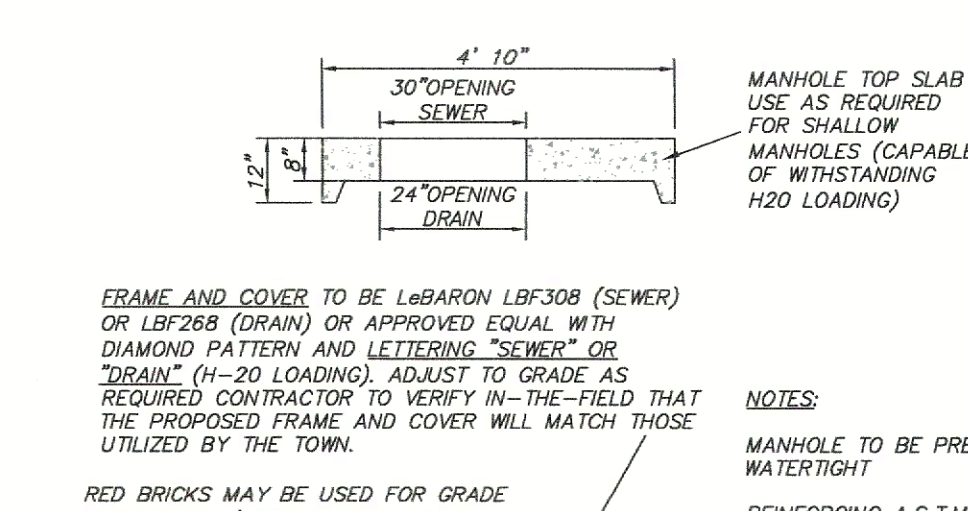


PLANTING SOIL NOTES

1. THE SOIL MIX SHALL BE A MIXTURE OF SAND COMPOST AND SOIL AS FOLLOWS: 40% SAND, 20-30% TOPSOIL AND 30-40% COMPOST.
2. THE SOIL MIX MUST BE UNIFORM, FREE OF STONES, STUMPS, ROOTS OR SIMILAR OBJECTS LARGER THAN 2". CLAY CONTENT SHALL NOT EXCEED 5%.
3. SOIL PH SHOULD BE BETWEEN 5.5-6.5
4. USE SOILS WITH 1.5% TO 3% ORGANIC CONTENT AND MAXIMUM 500-PPM SOLUBLE SALTS.
5. THE SAND COMPONENT SHALL BE GRAVELLY SAND THAT MEETS ASTM D422.
6. THE TOPSOIL COMPONENT SHALL BE A SANDY LOAM, LOAMY SAND OR LOAM TEXTURE.
7. THE COMPOST COMPONENT MUST BE PROCESSED FROM YARD WASTE IN ACCORDANCE WITH MASS DEP GUIDELINES. THE COMPOST SHALL NOT CONTAIN BIOSOLIDS.

RAIN GARDEN DETAIL
(NO SCALE)

NOTES:
 COLOR OF ALL MATERIALS ARE GALVANIZED
 INCLUDES 10'x20' WIDE DOUBLE GATE
 GATE POSTS 4"
 TERMINAL POSTS 3"
 LINE POSTS 2.5"
 TOP TENSION WIRE 7ga HOG RINGS WITH STEEL CORE
 TENSION BANDS @ 12" WIRE 9ga TENSION WIRE TO MATCH FABRIC.
 BOTTOM TENSION WIRE WITH 9ga AL HOG RINGS
 DOME CAPS RAIL ENDS 9ga TIE WIRE WITH STEEL CORE
 3" BRACE BANDS
 STEEL CORE GALVANIZED WITH 9ga PVC EXTRUDED POLY VINYL CHLORIDE (PVC)
 COATED STEEL CHAIN LINK FABRIC AS PER ASTM F668 CLASS 1



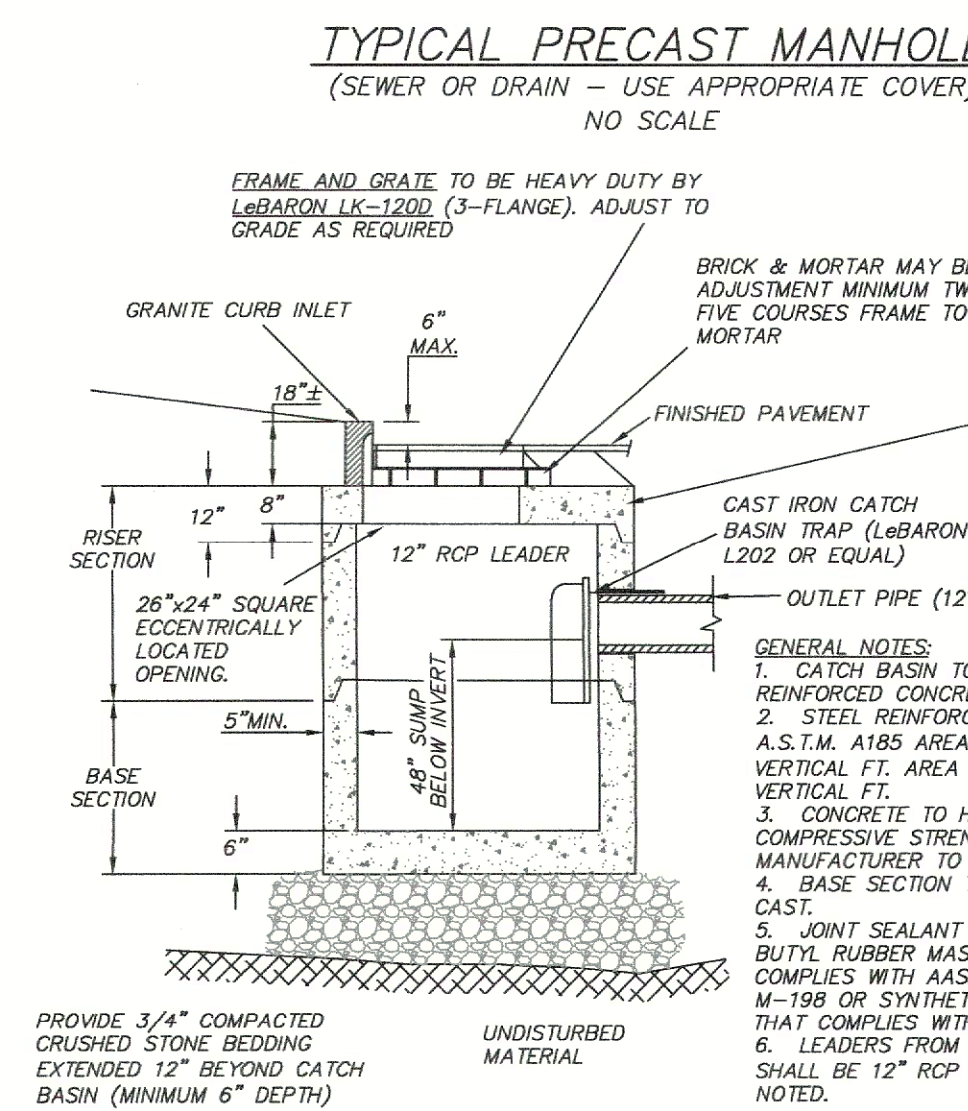
TYPICAL PRECAST MANHOLE (SEWER OR DRAIN - USE APPROPRIATE COVER)
NO SCALE

FRAME AND GATE TO BE LABARON LBF308 (SEWER) OR LBF268 (DRAIN) OR APPROVED EQUAL WITH DIAMOND PATTERN AND LETTERING "SEWER" OR "DRAIN" (H=20 LOADING). ADJUST TO GRADE AS REQUIRED CONTRACTOR TO VERIFY IN-THE-FIELD THAT THE PROPOSED FRAME AND COVER WILL MATCH THOSE UTILIZED BY THE TOWN.

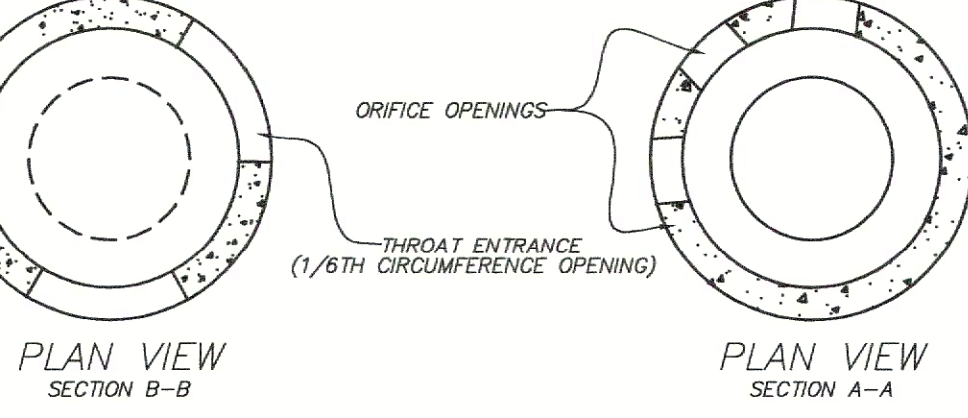
RED BRICKS MAY BE USED FOR GRADE ADJUSTMENT (MINIMUM TWO COURSES, MAXIMUM FIVE COURSES) FRAME TO BE SET IN FULL BED OF MORTAR

MANHOLE TOP SLAB USE AS REQUIRED FOR SHALLOW MANHOLES (CAPABLE OF WITHSTANDING H2O LOADING)

NOTES:
 MANHOLE TO BE PRECAST CONCRETE AND WATER TIGHT
 REINFORCING A.S.T.M. A185 AREA 48" DIA. 0.12 SQ.IN. VERTICAL FT. AREA 60" DIA. 0.15 SQ.IN. VERTICAL FT.
 CONCRETE COMPRESSIVE STRENGTH 4,000 P.S.I.
 MANHOLE STEPS SHALL BE STEEL REINFORCED COPOLYMER POLYPROPYLENE PLASTIC.
 BASE SECTION WILL BE CAST MONOLITHIC TWO (2) COATS BITUMINASTIC COATING AROUND ENTIRE EXTERIOR SURFACES OF MANHOLE
 MANHOLE DESIGN SHALL CONFORM TO "PRECAST REINFORCED CONCRETE MANHOLE SECTIONS- A.S.T.M. DESIGNATION C478, LATEST REVISION."
 JOINT SEALANT SHALL BE PRE-FORMED BUTYL RUBBER MASTIC TYPE SEAL THAT COMPLES WITH AASHTO SPECIFICATION M-198 OR SYNTHETIC RUBBER GASKET THAT COMPLES WITH ASTM C443 OR C361.
 HEIGHT OF BRICK MASONRY INVERT CHANNEL TO BE BROUGHT UP TO A LEVEL EQUAL TO 2/3 DIAMETER OF SEWER
 BRICK MASONRY INVERT (TO CROWN OF PIPE)
 SEE MANHOLE CONNECTION DETAIL
 FLOOR OF STRUCTURE TO BE HEADERS LAID FLAT, PITCH TOWARDS OUTLET FOR POSITIVE DRAINAGE
 INVERTED ARCH WITH BRICKS LAID ON EDGE
 PROVIDE 3/4" COMPACTED CRUSHED STONE BEDDING EXTENDED 12" BEYOND STRUCTURE (MIN. 6" DEPTH)
 UNDISTURBED MATERIAL



TYPICAL PRECAST CATCH BASIN WITH GRANITE CURB INLET
NO SCALE



RAIN GARDEN OUTLET STRUCTURE WITH 1/6TH CIRCUMFERENCE THROAT OPENINGS
NO SCALE

PROVIDE 3/4" COMPACTED CRUSHED STONE BEDDING EXTENDED 12" BEYOND CATCH BASIN (MINIMUM 6" DEPTH)

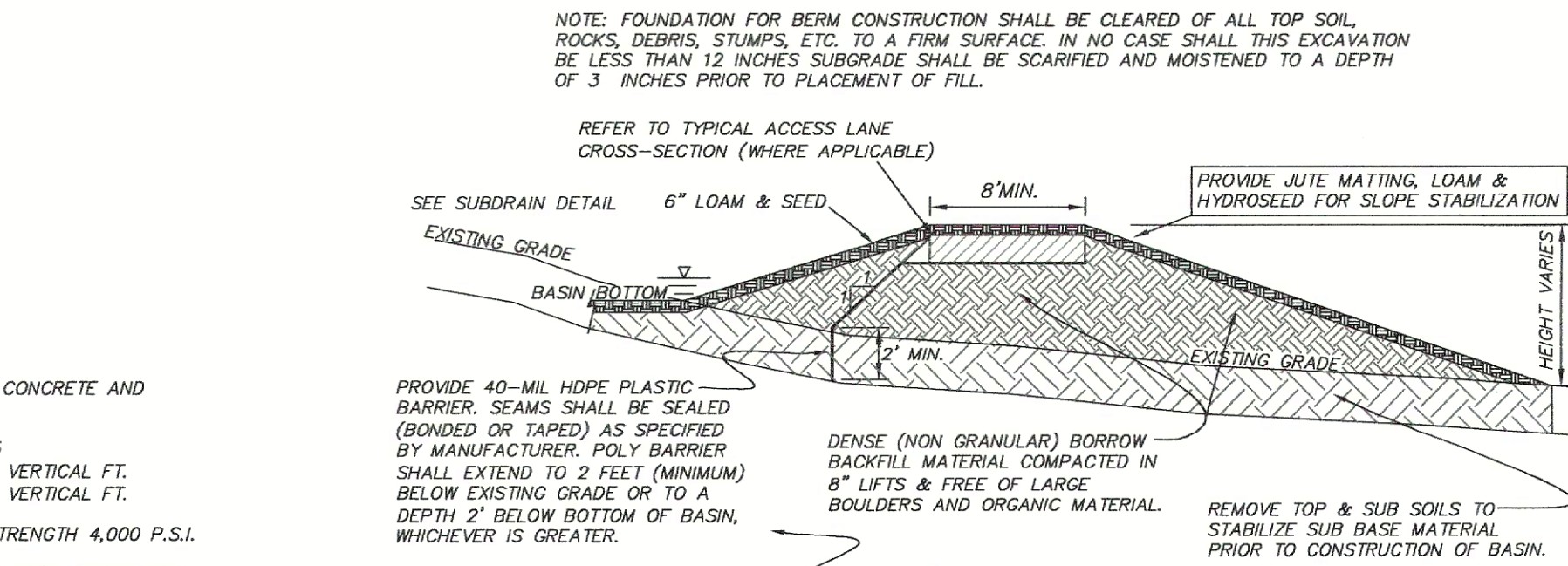
UNDISTURBED MATERIAL

FINISHED PAVEMENT

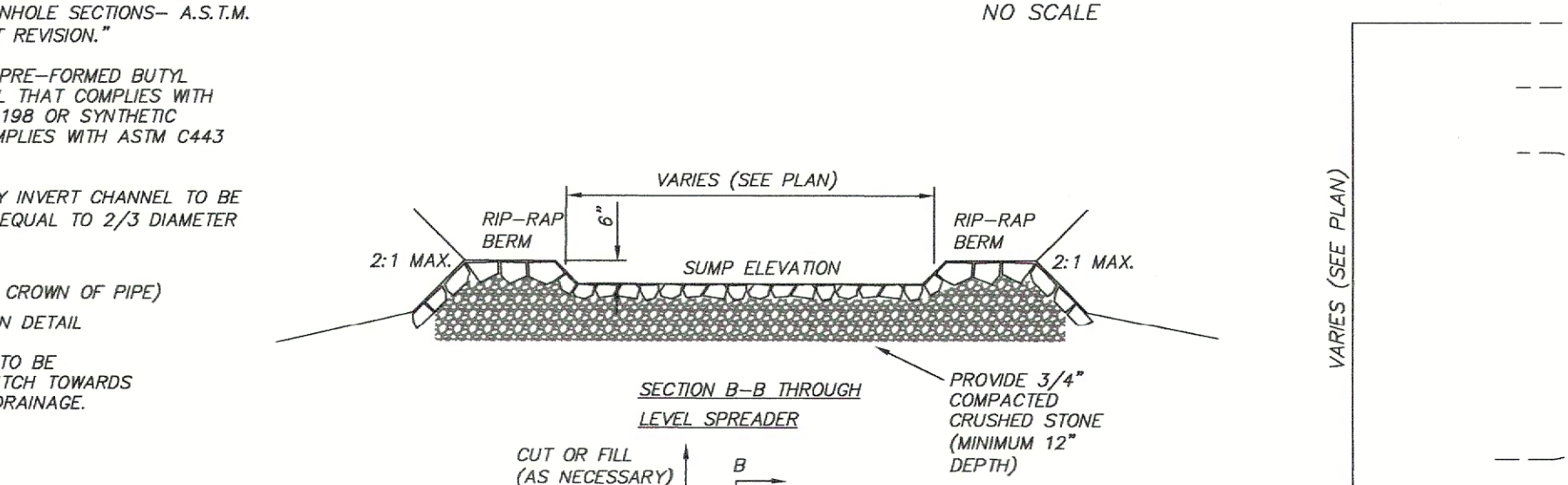
CAST IRON CATCH BASIN TRAP (LABARON L202 OR EQUAL)

OUTLET PIPE (12" MIN.)

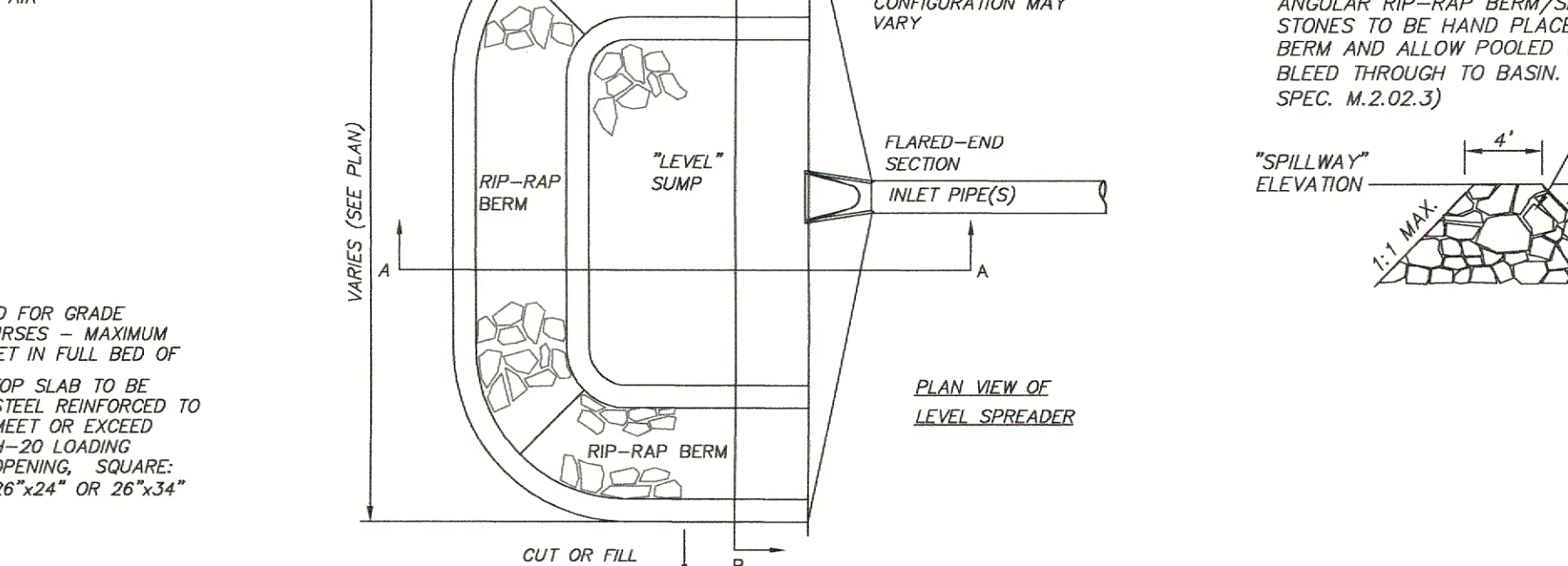
GENERAL NOTES:
 1. CATCH BASIN TO BE PRECAST REINFORCED CONCRETE
 2. STEEL REINFORCEMENT TO CONFORM TO A.S.T.M. A185 AREA 48" DIA., 0.12 SQ.IN. VERTICAL FT. AREA 60" DIA., 0.15 SQ.IN. VERTICAL FT.
 3. CONCRETE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 P.S.I., MANUFACTURER TO CERTIFY.
 4. BASE SECTION TO BE MONOLITHIC CAST
 5. JOINT SEALANT SHALL BE PRE-FORMED BUTYL RUBBER MASTIC TYPE SEAL THAT COMPLES WITH AASHTO SPECIFICATION M-198 OR SYNTHETIC RUBBER GASKET THAT COMPLES WITH ASTM C443 OR C361.
 6. LEADERS FROM ALL CATCHBASINS SHALL BE 12" RCP UNLESS OTHERWISE NOTED.



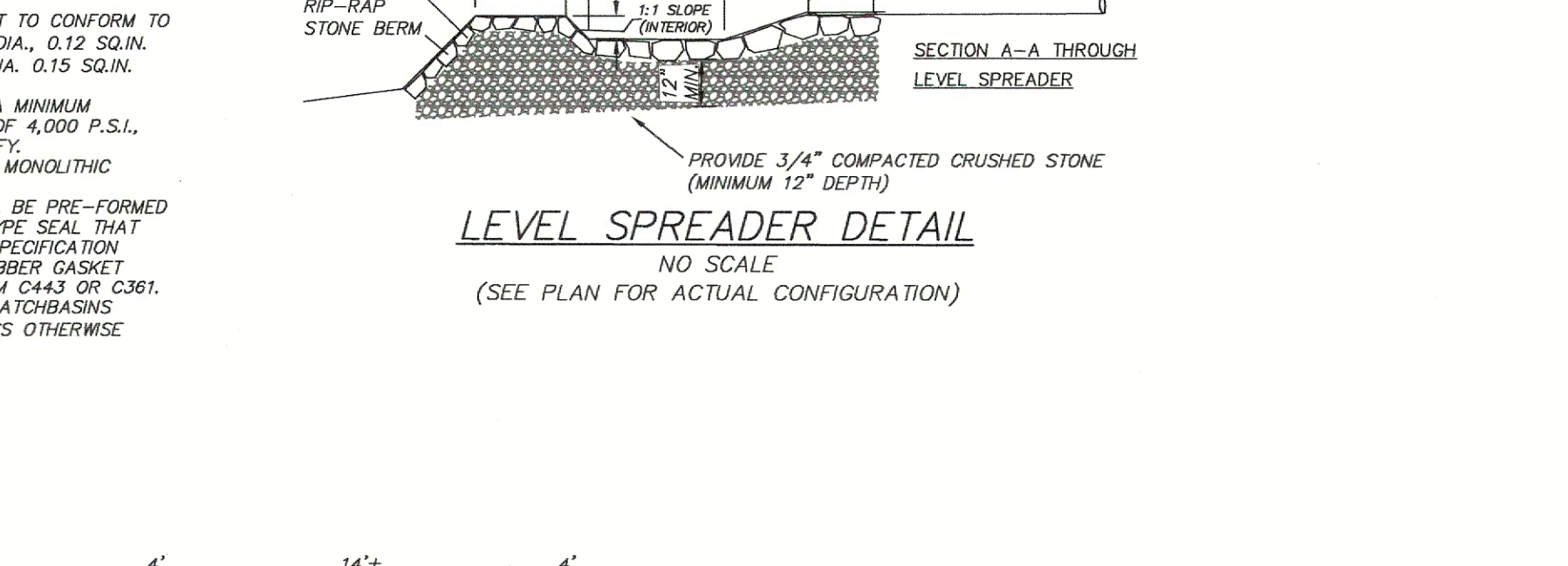
RAIN GARDEN BERM (REQUIRED FOR DETENTION BASIN CONSTRUCTION)
NO SCALE



LEVEL SPREADER DETAIL
NO SCALE (SEE PLAN FOR ACTUAL CONFIGURATION)

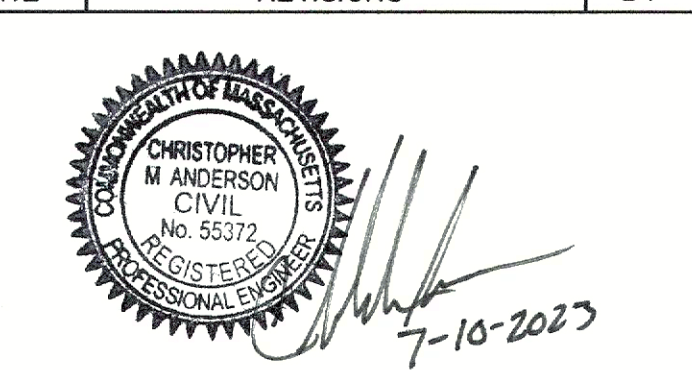


FOREBAY DETAIL (NO SCALE) (SEE PLAN FOR ACTUAL CONFIGURATION)



EMERGENCY SPILLWAY DETAIL
NO SCALE

NO.	DATE	REVISIONS	BY
1	7/1/2023	PEER REVIEW AND BOARD COMMENT	CMA



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 1 LEOMINSTER, MASSACHUSETTS 01453 (978) 534-6060 (F)
 WWW.HANNIGANENGINEERING.COM

CONSTRUCTION DETAILS
 IN
WINCHENDON, MASSACHUSETTS

PREPARED FOR:
 ZP BATTERY DEVCO, LLC
 PETE FORTLE
 1 MERCANTILE STREET, SUITE 630
 WORCESTER, MASSACHUSETTS 01608
 TEL:

WINCHENDON PLANNING BOARD

CALC:	CMA	DRWN:	CMA	SCALE:	NA
CHKD:	WDH	APPD:	CMA	DATE:	MAR 27, 2023
SRV:	JEF	FB:	75-130	JOB NO:	3101
TAB:	(5-6)DET	SHEET:	6 OF 6	PLAN NO:	C-18-41

DATE: _____

CALC:	CMA	DRWN:	CMA	SCALE:	NA
CHKD:	WDH	APPD:	CMA	DATE:	MAR 27, 2023
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TAB:	(5-6)DET	SHEET:	6 OF 6	PLAN NO:	C-18-41