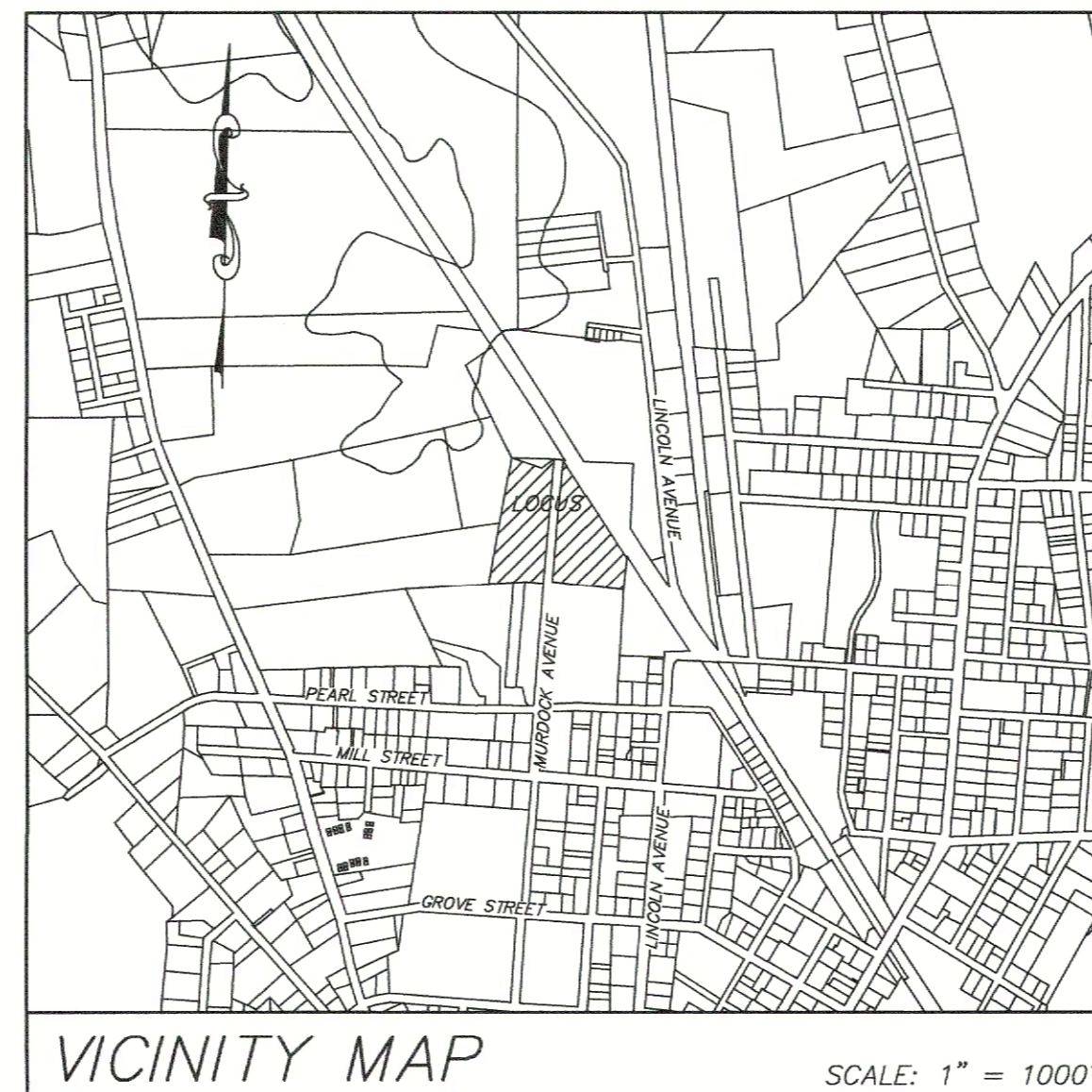


***SITE DEVELOPMENT PLAN
SOLAR ENERGY STORAGE SYSTEM (ESS)
0 MURDOCK AVENUE
IN
WINCHENDON, MASSACHUSETTS
MARCH 27, 2023***



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

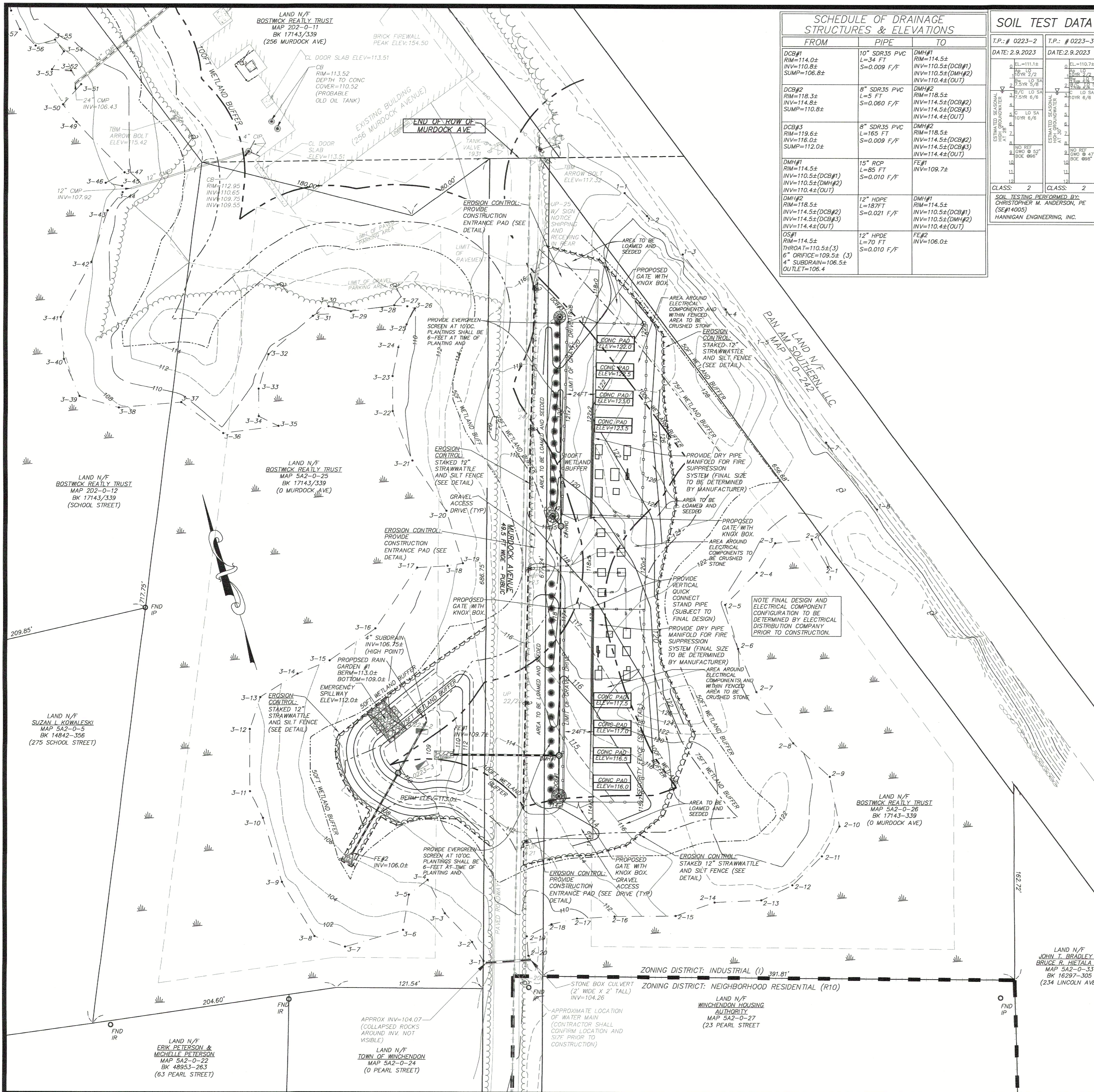
CIVIL ENGINEER & LAND SURVEYOR:

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 - 5	CONSTRUCTION DETAILS

PERMITTING SET - NOT FOR CONSTRUCTION



SCHEDULE OF DRAINAGE STRUCTURES & ELEVATIONS		
FROM	PIPE	TO
DCB#1 RM=114.0± INV=110.8± SUMP=106.8±	10" SDR35 PVC L=34 FT S=0.009 F/F	DMH#1 RM=114.5± INV=110.5±(DCB#1) INV=110.5±(DMH#2) INV=110.4±(OUT)
DCB#2 RM=118.3± INV=114.8± SUMP=110.8±	8" SDR35 PVC L=5 FT S=0.060 F/F	DMH#2 RM=118.5± INV=114.5±(DCB#2) INV=114.5±(DCB#3) INV=114.4±(OUT)
DCB#3 RM=119.6± INV=116.0± SUMP=112.0±	8" SDR35 PVC L=165 FT S=0.009 F/F	DMH#2 RM=118.5± INV=114.5±(DCB#2) INV=114.5±(DMH#2) INV=114.4±(OUT)
DMH#1 RM=114.5± INV=110.5±(DCB#1) INV=110.5±(DMH#2) INV=110.4±(OUT)	15" RCP L=85 FT S=0.010 F/F	FE#1 INV=109.7±
DMH#2 RM=118.5± INV=114.5±(DCB#2) INV=114.5±(DCB#3) INV=114.4±(OUT)	12" HDPE L=187 FT S=0.021 F/F	DMH#1 RM=114.5± INV=110.5±(DCB#1) INV=110.5±(DMH#2) INV=110.4±(OUT)
OS#1 RM=114.5± THROAT=110.5±(3) 6" ORIFICE=109.5±(3) 4" SUBDRAIN=106.5± OUTLET=106.4±	12" HDPE L=70 FT S=0.010 F/F	FE#2 INV=106.0±

SOIL TEST DATA	
T.P. # 0223-2	T.P. # 0223-3
DATE: 2.9.2023	DATE: 2.9.2023
ESTIMATED SEASONAL AVAILABILITY (%)	ESTIMATED SEASONAL AVAILABILITY (%)
CLASS: 2	CLASS: 2
SOIL TESTING PERFORMED BY: CHRISTOPHER M. ANDERSON, PE (SE#14005) HANNIGAN ENGINEERING, INC.	



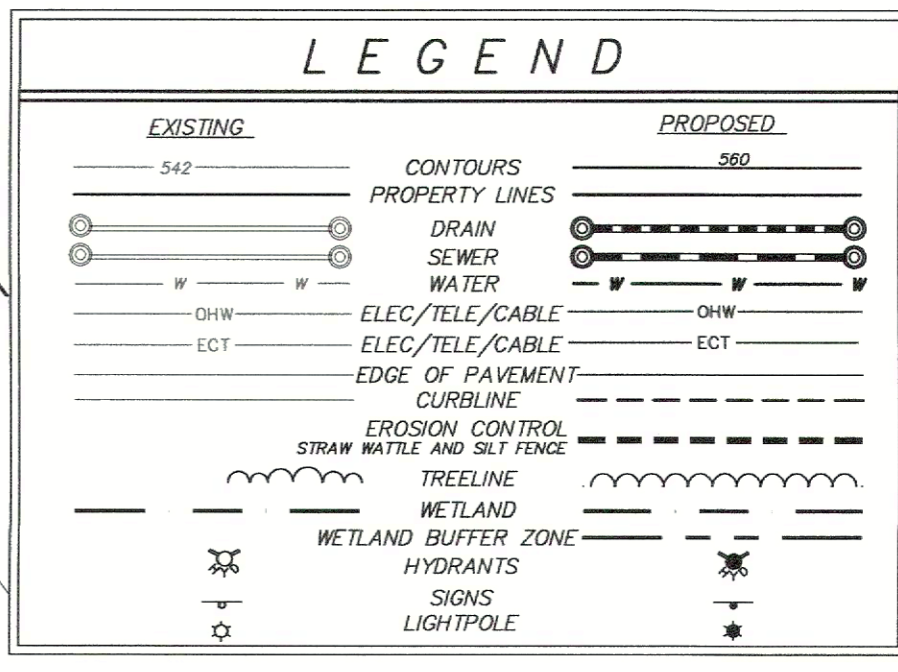
PROJECT INFORMATION	
LAND INFORMATION	
MAP/PARCEL: 17143/339	5A2/25, 5A2/26
DEED BOOK/PAGE: 686.75 FT (5A2/25), 677.24 FT (5A2/26)	
EXISTING FRONTAGE: 4.33 ACRES± (5A2/25), 3.67 ACRES± (5A2/26)	
ZONING INFORMATION	
ZONING DISTRICT: INDUSTRIAL	
DIMENSIONAL REQUIREMENTS:	
MINIMUM AREA: 43,560 SF	
MINIMUM FRONTAGE: 150 FEET	
MAXIMUM HEIGHT: SOFT	
MAXIMUM COVERAGE: NA	
MINIMUM SETBACKS:	
FRONT YARD: 40 FT	
SIDE YARD: 25 FT	
REAR YARD: 50 FT	
GENERAL NOTES:	
1. 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.	
2. 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.	
3. LOCATION OF ALL UTILITIES ARE APPROXIMATE AS SHOWN AND BASED UPON VISIBLE STRUCTURES AT THE TIME OF THE FIELD SURVEY. LOCATION OF ALL 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 UTILITIES COMPANIES AND AGENCY AS WELL AS DIG-SAFE PRIOR TO EXCAVATION. (SEE NOTE)	
4. 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.	
5. RELOCATION OF AND/OR CONNECTION TO EXISTING UTILITIES SHALL BE PERFORMED IN ACCORDANCE WITH PROVISIONS OF THE APPROPRIATE UTILITY COMPANY AND/OR REGULATORY AGENCIES.	
6. 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.	
7. ALL SLOPES UNLESS OTHERWISE SPECIFIED, SHALL BE LOAMED AND SEEDING FOR STABILIZATION.	
8. ANY DEVIATIONS IN DESIGN AS SHOWN SHALL REQUIRE A REVIEW AND APPROVAL OF THE DESIGN ENGINEER OR FIRM. 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 PERFORMANCE SHALL BE BORNE BY THE COMPANY OR CONTRACTOR MAKING THE UNAUTHORIZED CHANGE.	
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.	
10. PLANS TO BE REVIEWED BY APPLICABLE UTILITY AGENCIES FOR COMPLIANCE WITH REGULATIONS. FINAL LOCATION IS SUBJECT TO CHANGE.	
11. APPLICANT SHOULD BE AWARE OF OBLIGATIONS TO COMPLY WITH CHAPTER 131, SECTION 40 OF THE MASSACHUSETTS GENERAL LAWS, OTHERWISE KNOWN AS THE WETLANDS PROTECTION ACT, AND THE ASSOCIATED REGULATIONS (310 CMR 10.00)	
12. 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.	
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 #250348-0016B, 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.	
18. ALL UTILITIES ARE TO BE INSTALLED BY A LICENSED UTILITY CONTRACTOR LICENSED BY THE TOWN OF WINCHENDON.	

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

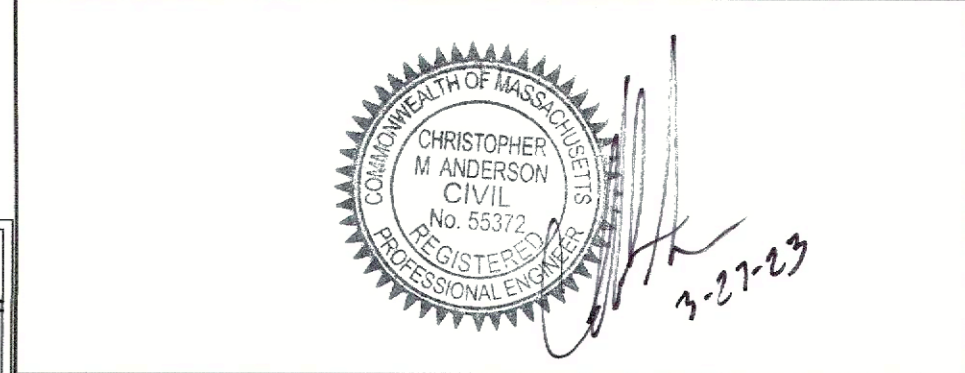
- PROJECT NOTES:**
- EARTHEN MATERIALS UTILIZED AS FILL WITHIN THE PROJECT AREA SHALL BE CLEAN AND FREE OF DELETERIOUS MATERIALS
 - PRIOR TO THE START OF CONSTRUCTION AND CLEARING ACTIVITIES, THE APPROVED LIMITS OF CONSTRUCTIONS SHALL BE FIELD STAKED AND REVIEWED BY THIS OFFICE UPON THE COMPLETION OF 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 ACCESSWAYS.



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

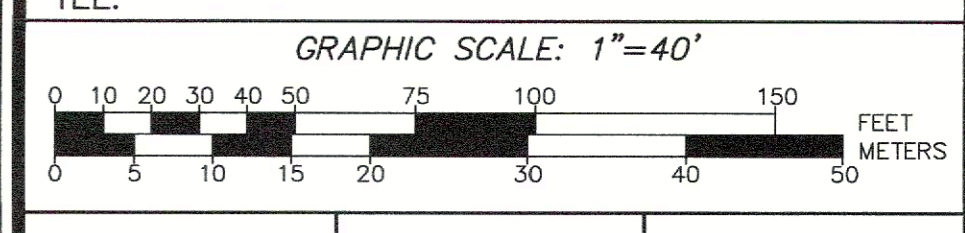
DATE: _____



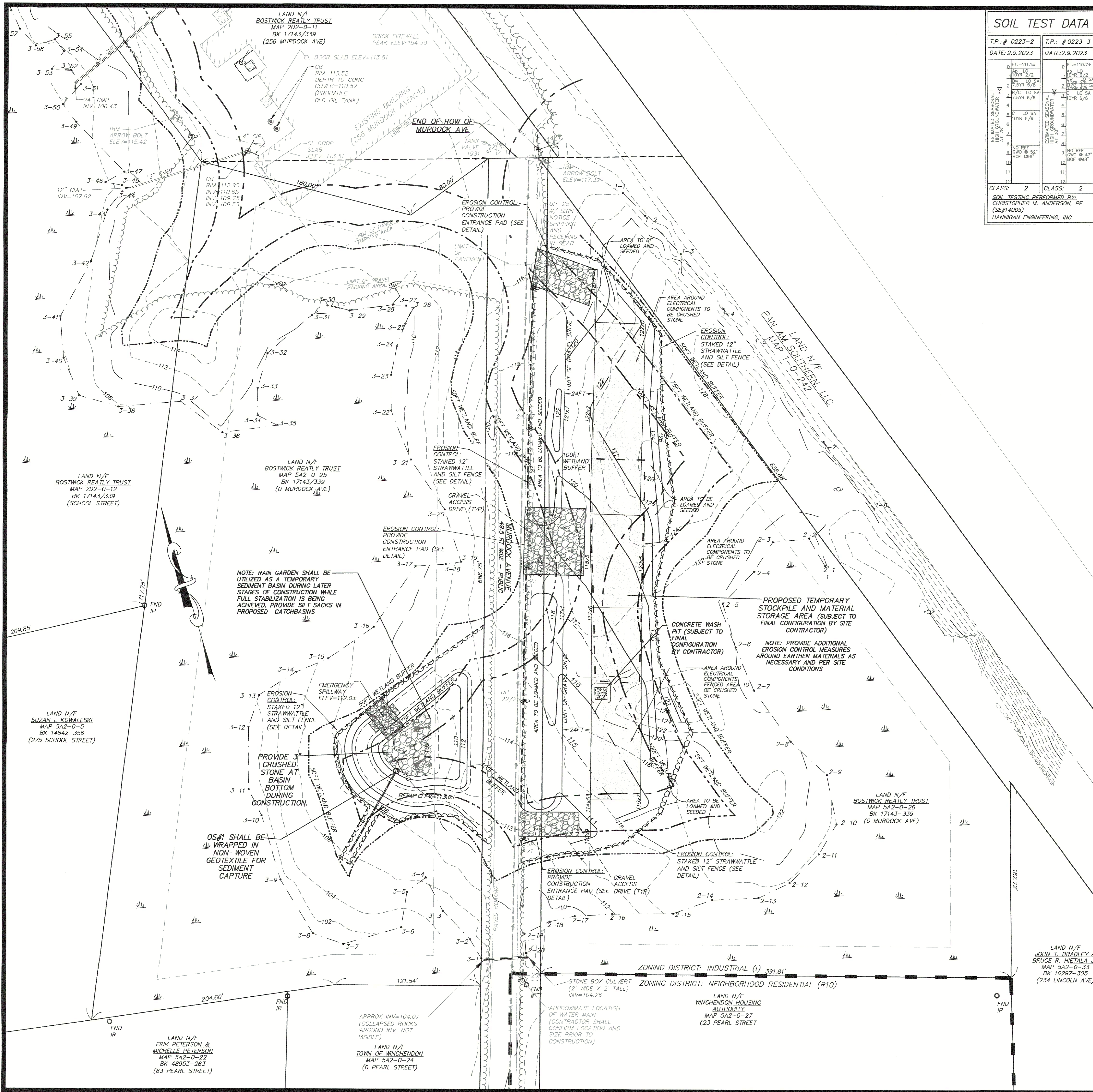
HANNIGAN ENGINEERING, INC.
CIVIL ENGINEERS & LAND SURVEYORS
8 MONUMENT SQUARE (978) 534-1234 (T)
LEOMINSTER, MASSACHUSETTS 01453 (978) 534-6060 (F)
WWW.HANNIGANENGINEERING.COM

SITE DEVELOPMENT PLAN
IN
WINCHENDON, MASSACHUSETTS

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



CALC: CMA	DRWN: CMA	SCALE: 1"=40'
CHKD: WH	APPD: CMA	DATE: MAR 27, 2023
SRV: JEF	FB: 75-130	JOB NO: 3101
TAB: (2) SDO	SHEET 2 OF 5	PLAN NO: C-18-41



SOIL TEST DATA	
T.P.: # 0223-2	T.P.: # 0223-3
DATE: 2.9.2023	DATE: 2.9.2023
1. EL=111.12 2. EL=111.12 3. EL=111.12 4. EL=111.12 5. EL=111.12 6. EL=111.12 7. EL=111.12 8. EL=111.12 9. EL=111.12 10. EL=111.12 11. EL=111.12 12. EL=111.12	1. EL=110.74 2. EL=110.74 3. EL=110.74 4. EL=110.74 5. EL=110.74 6. EL=110.74 7. EL=110.74 8. EL=110.74 9. EL=110.74 10. EL=110.74 11. EL=110.74 12. EL=110.74
CLASS: 2	CLASS: 2
SOIL TESTING PERFORMED BY: CHRISTOPHER M. ANDERSON, PE (SE#14005) HANNIGAN ENGINEERING, INC.	



PROJECT INFORMATION	
LAND INFORMATION	
MAP/PARCEL:	5A2/25; 5A2/26
DEED BOOK/PAGE:	17143/339
EXISTING FRONTAGE:	686.75 FT (5A2/25); 677.24 FT (5A2/26)
EXISTING AREA:	4.33 ACRES± (5A2/25); 3.67 ACRES± (5A2/26)
ZONING INFORMATION	
ZONING DISTRICT:	INDUSTRIAL
DIMENSIONAL REQUIREMENTS:	
MINIMUM AREA:	43,560 SF
MINIMUM FRONTAGE:	150 FEET
MAXIMUM HEIGHT:	SOFT
MAXIMUM COVERAGE:	NA
MINIMUM SETBACKS:	
FRONT YARD:	40 FT
SIDE YARD:	25 FT
REAR YARD:	50 FT
GENERAL NOTES:	
1. 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-TO-GROUND TOPOGRAPHIC SURVEY BY HANNIGAN ENGINEERING, INC. IN MAY OF 2022.	
2. 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 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)	
4. 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.	
5. RELOCATION OF AND/OR CONNECTION TO EXISTING UTILITIES SHALL BE PERFORMED IN ACCORDANCE WITH PROVISIONS OF THE APPROPRIATE UTILITY COMPANY AND/OR REGULATORY AGENCY. 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.	
6. 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.	
7. ALL SLOPES UNLESS OTHERWISE SPECIFIED, SHALL BE LOAMED AND SEEDED FOR STABILIZATION.	
8. ANY DEVIATIONS IN DESIGN AS SHOWN SHALL REQUIRE A REVIEW AND APPROVAL OF THE DESIGN ENGINEER OR FIRM. 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.	
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.	
10. PLANS TO BE REVIEWED BY APPLICABLE UTILITY AGENCIES FOR COMPLIANCE WITH REGULATIONS. FINAL LOCATION IS SUBJECT TO CHANGE.	
11. APPLICANT SHOULD BE AWARE OF OBLIGATIONS TO COMPLY WITH CHAPTER 131, SECTION 40 OF THE MASSACHUSETTS GENERAL LAWS, OTHERWISE KNOWN AS THE WETLANDS PROTECTION ACT, AND THE ASSOCIATED REGULATIONS (310 CMR 10.00).	
12. 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.	
13. AREAS OF FILL TO BE COMPACTED TO A MINIMUM 90% DRY DENSITY IN THE AMERICAN WITH DISABILITIES ACT (ADA), AS REQUIRED. SEE ARCHITECTURAL PLANS FOR CONFORMANCE REQUIREMENTS FOR PROPOSED BUILDINGS.	
14. ALL SIDEWALKS AND RAMPS TO CONFORM TO REQUIREMENTS OF THE AMERICAN 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 #250348-0016B, 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.	
18. ALL UTILITIES ARE TO BE INSTALLED BY A LICENSED UTILITY CONTRACTOR LICENSED BY THE TOWN OF WINCHENDON.	

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.

LEGEND	
EXISTING	PROPOSED
5A2	5B2
CONTOURS	CONTOURS
PROPERTY LINES	PROPERTY LINES
DRAIN	DRAIN
SEWER	SEWER
WATER	WATER
DHW	DHW
ELEC/TELE/CABLE	ELEC/TELE/CABLE
EDGE OF PAVEMENT	EDGE OF PAVEMENT
CURBLINE	CURBLINE
EROSION CONTROL STRAW MATTE AND SILT FENCE	EROSION CONTROL STRAW MATTE 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.
CIVIL ENGINEERS & LAND SURVEYORS

8 MONUMENT SQUARE (978) 534-1234 (F)
LEOMINSTER, MASSACHUSETTS 01453 (978) 534-6060 (F)

WWW.HANNIGANENGINEERING.COM

EROSION CONTROL PLAN		
IN WINCHENDON, MASSACHUSETTS		
PREPARED FOR: ZP BATTERY DEVCO, LLC PETE FORTE 1 MERCANTILE STREET, SUITE 630 WORCESTER, MASSACHUSETTS 01608 TEL:		
GRAPHIC SCALE: 1"=40'		
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)EROSION	SHEET 3 OF 5	PLAN NO: C-18-41

EROSION & SEDIMENTATION CONTROL PLAN

GENERAL:

1. THE PURPOSE OF THIS PLAN IS TO PRESENT A PREVENTIVE METHOD OF CONSTRUCTION TO MINIMIZE THE IMPACT OF THE CONSTRUCTION ACTIVITIES UPON WETLANDS AND SENSITIVE AREAS. THE DATA CONTAINED ON THIS PLAN IS INTENDED TO SUPPLEMENT THE DEVELOPER OR CONTRACTORS' EXPERIENCE AND IS NOT MEANT TO CIRCUMVENT LOGICAL DECISIONS REQUIRED BY A VARIETY OF FIELD CONDITIONS INCLUDING WEATHER AND THE TYPE OF EQUIPMENT AVAILABLE TO THE CONTRACTOR.

2. THE CONTRACTOR IS TO BE AWARE OF THE REQUIREMENTS AND OBLIGATIONS TO COMPLY WITH CHAPTER 131, SECTION 40 OF THE MASSACHUSETTS GENERAL LAWS, OTHERWISE KNOWN AS THE WETLANDS PROTECTION ACT, AND ITS ASSOCIATED REGULATIONS (310 CMR 10.00). CERTAIN PERMITS IN THE FORM OF AN ORDER OF CONDITIONS, OR OTHER FORMAT, MAY BE REQUIRED FOR THE CONSTRUCTION AS DEPICTED ON THIS PLAN. THESE PERMITS SHALL BE REVIEWED AND ADHERED TO BY THE CONTRACTOR THROUGHOUT THE CONSTRUCTION PROCESS. THE CONTRACTOR SHALL ALSO MAINTAIN COPIES OF ALL PERMITS ON SITE AT ALL TIMES.

3. IF CHANGES IN THE PROJECT ARE REQUIRED DUE TO FIELD CONDITIONS THE DEVELOPER/CONTRACTOR SHALL PROMPTLY NOTIFY THE ENGINEER FOR REVIEW OF THESE CONDITIONS. UPON REVIEW, AND PRIOR TO THE IMPLEMENTATION OF ANY CHANGES, THE CONTRACTOR AND THE ENGINEER SHALL MEET WITH THE APPROPRIATE LOCAL AND/OR STATE OFFICIAL, OR ITS AGENT, TO DETERMINE IF THE CHANGE REQUIRES MODIFICATION TO EXISTING APPROVED PERMITS.

4. ALTERATION AND/OR DESTRUCTION OF WETLAND AREAS WITHOUT PRIOR CONSENT OF THE CONSERVATION COMMISSION IS PROHIBITED. SILTATION PLUMES, ILLICIT DISCHARGES, OR INADVERTANT ALTERATION SHALL BE CONSIDERED AS ACTIVITIES NOT PERMITTED BY THE ORDER AND SHALL BE REPORTED TO THE CONSERVATION COMMISSION ALONG WITH THE PROPOSED CHANGES.

5. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE EROSION AND SEDIMENT CONTROL BARRIER SHALL BE INSTALLED AS SHOWN ON THE PLANS. THE CONTRACTOR SHALL MAINTAIN THE EROSION CONTROL BARRIER UNTIL ALL WORK IS COMPLETE AND ALL AREAS HAVE BEEN STABILIZED. THE REMOVAL OF SEDIMENT CONTROL DEVICES SHALL BE ONLY UPON THE APPROVAL OF THE CONSERVATION COMMISSION.

6. EROSION AND SEDIMENTATION CONTROL DEVICES, SUCH AS CHECK DAMS, SEDIMENT BASINS, ETC. ARE TO BE INSTALLED AS SHOWN ON THE SITE DEVELOPMENT PLANS WITH ASSOCIATED DETAILS, AS APPROPRIATE.

7. CONSTRUCTION OPERATIONS SHALL NOT CAUSE NOTICEABLE SEDIMENTATION PLUMES TO OCCUR ON OR SURROUNDING THE PROJECT. SHOULD SEDIMENT EXCEED CONSTRUCTION CONTROL BARRIERS, THE CONTRACTOR SHALL STOP WORK AND INSTALL ADDITIONAL MITIGATION MEASURES TO PREVENT FURTHER SEDIMENTATION.

8. NO MATERIAL SUBJECT TO EROSION SHALL BE STOCKPILED OVERNIGHT WITHIN 100 FEET OF ANY WETLAND AREAS WITHOUT PROPER EROSION AND SEDIMENTATION DEVICES IN PLACE.

9. EQUIPMENT SHALL NOT BE PARKED WITHIN WETLAND OR BUFFER AREAS EXCEPT DURING ACTUAL OPERATIONS REQUIRING SAID EQUIPMENT.

10. ACCUMULATED SEDIMENT ALONG EROSION CONTROL BARRIERS SHALL BE PERIODICALLY REMOVED AND DISPOSED OF BY THE CONTRACTOR AS REQUIRED BY THE CONSERVATION COMMISSION OR AS DIRECTED BY THE ENGINEER.

EROSION CONTROL METHODS:

1. IT IS OF GREAT IMPORTANCE THAT CONCENTRATION OF RUNOFF BE AVOIDED IN ORDER TO PREVENT THE TRANSPORT OF SEDIMENT.

2. THE PRIMARY EROSION CONTROL METHOD TO BE UTILIZED IS TO LIMIT THE AREA OF DISTURBANCE DURING CONSTRUCTION ACTIVITIES. THIS IS ACCOMPLISHED BY PROMPT STABILIZATION OF DISTURBED AREAS UPON COMPLETION OF SEQUENCES OF CONSTRUCTION.

3. EROSION AND SEDIMENT CONTROL DEVICES SUCH AS HAY BALES, SILT FENCES, DIVERSION BERMS, ETC. SHALL BE UTILIZED FOR THE PROTECTION OF THE AREAS BEYOND THE LIMIT OF CONSTRUCTION.

DEMARICATION OF SENSITIVE AREAS:

1. IT IS RECOMMEND THAT BARRIERS BE PLACED ON THE SITE TO CONTROL THE LIMITS OF THE DISTURBANCE. AS AN EXAMPLE, HAY BALE BARRIERS PROVIDE SUCH DEMARICATION AND OTHER METHODS SUCH AS LOG BARRIERS, ROPE WITH FLAGGING, ETC. MAY BE UTILIZED.

2. CARE SHOULD BE TAKEN IN THE OPERATION OF EQUIPMENT, SUCH THAT ONLY THE MINIMUM AREA NEEDED TO BE ALTERED IS DISTURBED.

ACCESS:

1. ACCESS TO THE SITE SHALL BE MADE IN THE AREA OF A PERMANENT DRIVEWAY OR ROADWAY UNLESS DOING SO WOULD RESULT IN A TRAFFIC HAZARD.

2. AN AREA OF CRUSHED STONE SHALL BE PLACED AT THE DRIVEWAY ENTRANCE TO INSURE THAT MUD IS NOT TRACKED ONTO THE EXISTING ROAD (SEE CONSTRUCTION ENTRANCE DETAIL). IF MUD IS INADVERTENTLY TRACKED ONTO THE ROAD, IT SHOULD BE PROMPTLY REMOVED.

3. LABORERS VEHICLES SHALL BE PARKED IN A DESIGNATED AREA AS TO MINIMIZE DISTURBED SURFACES AND TO INSURE THAT RUTS ARE NOT CREATED AND WHICH COULD CARRY WATER TO A WETLAND OR OTHER SENSITIVE AREA.

4. SUITABLE MEASURES SHALL BE TAKEN TO INSURE THAT LARGE DELIVERY TRUCKS SERVICING THE SITE DO NOT DAMAGE TO AREAS OF EXISTING VEGETATION OR CAUSE DISTURBANCE TO STABILIZED AREAS.

ORDERLY CONSTRUCTION PROCEDURES:

1. THE CONTRACTOR SHALL PERFORM SITE CONSTRUCTION IN A MANNER WHICH WILL INSURE THE STABILIZATION OF AREAS IN PROXIMITY OF OR TRIBUTARY TO WETLAND AREAS AS SOON AS POSSIBLE.

2. EROSION CONTROL DEVICES SUCH AS HAY BALE BARRIERS, SILT FENCES, AND MULCH SHALL BE BROUGHT TO THE SITE AND STOCKPILED PRIOR TO INITIATING CONSTRUCTION.

3. THE CONTRACTOR SHALL PROVIDE AREAS FOR THE TEMPORARY STORAGE OF CONSTRUCTION DEBRIS. CONSTRUCTION DEBRIS SHALL NOT BE ALLOWED TO ACCUMULATE FOR AN EXTENDED PERIOD OF TIME.

CLEARING:

1. LAND CLEARING SHALL BE PERFORMED IN PHASES CONSISTENT WITH ACTUAL CONSTRUCTION REQUIREMENTS. FINAL LAND CLEARING SHALL BE LIMITED TO GRADE SLOPES.

2. TREES SHALL BE CUT AND STUMPS GROUND IN PLACE TO EXISTING GRADE TO MAINTAIN SOIL STABILIZATION.

3. BRUSH AND BRANCHES SHOULD BE CHIPPED AND UTILIZED FOR WOOD MULCH IF PRACTICAL.

4. VEHICLES UTILIZED IN THE CLEARING OPERATION SHOULD NOT TRAVERSE WETLANDS OR FLOWING BROOKS OR STREAMS WITHOUT PRIOR APPROVAL FROM THE LOCAL CONSERVATION COMMISSION OR AGENT.

GRUBBING AND STRIPPING:

1. TOP SOIL SHALL BE RETAINED FOR LANDSCAPING PURPOSES.

2. GRUBBING AND STRIPPING OF SLOPES LEADING TO WETLAND AREAS SHOULD NOT BE UNDERTAKEN DURING PERIODS OF INTENSE RAINFALL.

3. TOP SOIL STOCKPILE LOCATIONS ARE DEPICTED ON THE SITE DEVELOPMENT PLAN, THE EROSION CONTROL PLAN, AND/OR THE CONSTRUCTION PHASING PLAN AND SHALL BE ADHERED TO.

4. WHEN WORKING IN THE VICINITY OF WETLANDS, TOP SOIL SATURATED WITH WATER SHALL BE REMOVED, AND CONTAINED PRIOR TO BEING USED.

5. AREAS LEADING TO WETLANDS SHALL HAVE HAY BALE BARRIERS INSTALLED ACROSS THEM IN ARCS POINTING DOWN THE HILL AT INTERVALS SUFFICIENT TO MITIGATE RUNOFF CARRYING SEDIMENT.

6. DURING PERIODS OF INTENSE RAINFALL, OR IF THE PROJECT IS TO BE LEFT FOR A PERIOD OF TIME, CONSIDERATION SHOULD BE GIVEN TO SUPPLEMENT HAY BALE BARRIERS WITH EITHER CRUSHED STONE OR ARMORED BARRIERS. CONSIDERATION MAY ALSO BE GIVEN TO DIVERTING RUNOFF INTO TEMPORARY SEDIMENTATION CONTROL AREAS.

7. WHENEVER PRACTICAL, NATURAL VEGETATION SHALL BE RETAINED, PROTECTED AND SUPPLEMENTED.

ROUGH GRADING:

1. THE ROUGH GRADING OF THE ROADWAY SHALL FOLLOW THE FILL AND EXCAVATION SEQUENCES, RESULTING IN SLOPES BEING MAINTAINED AWAY FROM WETLANDS AND SENSITIVE AREAS AS MUCH AS PRACTICAL.

2. DURING THIS PROCESS THE EROSION POTENTIAL IS HIGH. SUFFICIENT EROSION CONTROL BARRIERS SHOULD BE KEPT IN PROXIMITY TO THE WORK AREA TO ALLOW QUICK ACTION SHOULD EROSION BECOME AN ISSUE AND TO INSURE THAT NO SEDIMENT REACHES WETLANDS OR OTHER SENSITIVE AREAS.

3. IN AREAS OF CUT AND/OR FILL WHERE SLOPES COULD DIVERT WATER TOWARD WETLAND AREAS, DIVERSION TRENCHES AND/OR SWALES SHOULD BE CONSIDERED AND IMPLEMENTED TO DIVERT WATER AWAY FROM THESE AREAS.

4. STEEP SLOPES IN EXCAVATION OR FILL SHOULD BE AVOIDED.

5. DISTURBED AREAS SHALL BE STABILIZED BY LOAMING AND SEEDING OR RIPRAPPED IMMEDIATELY AFTER THE FINISH GRADE HAS BEEN MET. IF FINAL GRADING DOES NOT OCCUR DURING THE GROWING SEASON, THESE AREAS SHALL BE MULCHED BY HAY SECURED BY WEIGHTED SHOW FENCE, CHICKEN WIRE MESH OR JUTE NETTING WITH APPROPRIATE SECURING DEVICES.

6. A GROUND COVER SUFFICIENT TO RETAIN SOILS IN A STABILIZED CONDITION MUST BE PROVIDED WITHIN 14 WORKING DAYS, SEASON PERMITTING, ON ANY PORTION OF THE TRACT UPON WHICH FURTHER ACTIVE CONSTRUCTION IS NOT BEING UNDERTAKEN.

DRAINAGE:

1. IF DRAINAGE PIPES OR SWALES ARE TO BE INSTALLED, THEY SHALL BE CONSTRUCTED FROM DOWNSTREAM UP AND CONSTRUCTION SHALL INCLUDE THE PLACEMENT OF OUTFALL RIPRAP AND OTHER MITIGATIVE MEASURES SHOWN ON THE PLAN.

2. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, HAY BALES OR OTHER SUITABLE METHODS TO ENTRAP SEDIMENT SHALL BE PLACED DOWNSTREAM.

3. THE TOE OF EMBANKMENTS SHALL BE STABILIZED IMMEDIATELY, MULCHED AND TACKED DOWN BY SUITABLE MEANS.

4. IF THE PROPOSED ROADWAY IS NOT PAVED IMMEDIATELY AFTER THE INSTALLATION OF DRAINAGE STRUCTURES, HAY BALES SHALL BE PLACED TO PROTECT THE INTEGRITY OF THE STRUCTURES.

LANDSCAPING:

1. LANDSCAPING OF AREAS SHOULD OCCUR AS SOON AS POSSIBLE.

2. IF THE SEASON OR ADVERSE WEATHER CONDITIONS DO NOT PERMIT THE ESTABLISHMENT OF VEGETATION, TEMPORARY HAY MULCH, OR OTHER MEANS OF STABILIZATION SHALL BE PERFORMED.

3. USE OF HERBICIDES MAY BE SUBJECT TO OTHER REGULATIONS.

4. CARE SHOULD BE TAKEN WITH FERTILIZERS SUCH THAT THEY ARE NOT CARRIED TO A WETLAND OR SENSITIVE AREA.

5. TRUNKS OF TREES SHOULD NOT BE COVERED WITH MORE THAN TWO (2) INCHES OF SOIL.

6. STUMPS SHALL BE GROUND DOWN INTO A WOOD MULCH AND UTILIZED OR REMOVED FROM THE SITE.

CREATION OF DETENTION BASIN:

1. THE DETENTION BASIN HAS BEEN PLACED AS A SEPARATE ITEM TO EMPHASIZE THE IMPORTANCE OF EROSION CONTROL DURING ITS CONSTRUCTION.

2. THE PRIMARY EROSION CONTROL METHOD FOR BASIN CONSTRUCTION, AS WELL AS FOR THE SITE IS THE RAPID STABILIZATION OF ALL SURFACES. SECONDARY IN IMPORTANCE IS THE CONCENTRATION OF RUNOFF BE AVOIDED IN ORDER TO PREVENT THE TRANSPORT OF SEDIMENT.

3. DURING CONSTRUCTION, THE FILL AND EXCAVATION SEQUENCES SHOWN ON THIS PLAN SHOULD BE UTILIZED. THESE SEQUENCES REQUIRE THAT SLOPED AREAS LEFT FOR ANY PERIOD OF TIME NOT SLOPED TOWARDS THE WETLAND OR SENSITIVE AREA, BUT RATHER BACK INTO THE FILL MATERIAL.

4. THE BASIN BERM IS TO BE CONSTRUCTED BY EQUIPMENT WORKING ON STABLE MATERIAL ONLY. HAY BALES SHALL BE PLACED AT THE TOE OF SLOPE UNTIL SURFACES ARE STABILIZED.

5. NO EXCAVATION WITHIN THE BASIN SHALL COMMENCE UNTIL THE BERM IS IN PLACE.

6. CARE SHOULD BE TAKEN TO INSURE THAT ORGANIC MATERIAL REMOVED FROM THE BASIN AREA IS RESERVED FOR FINISH GRADING AND THE STABILIZATION OF DISTURBED AREAS.

7. IF DEWATERING IS NECESSARY, PUMPING TO A SETTLING BASIN SHALL BE PERMITTED IF SETTLING BASIN IS CONSTRUCTED, MAINTAINED AND OPERATED EFFECTIVELY.

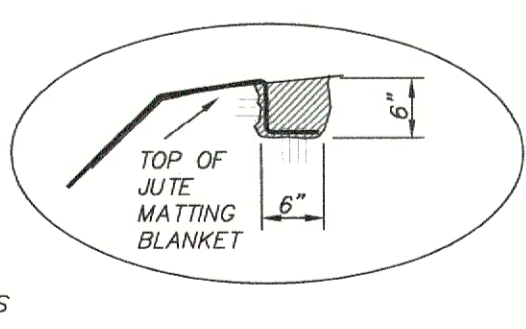
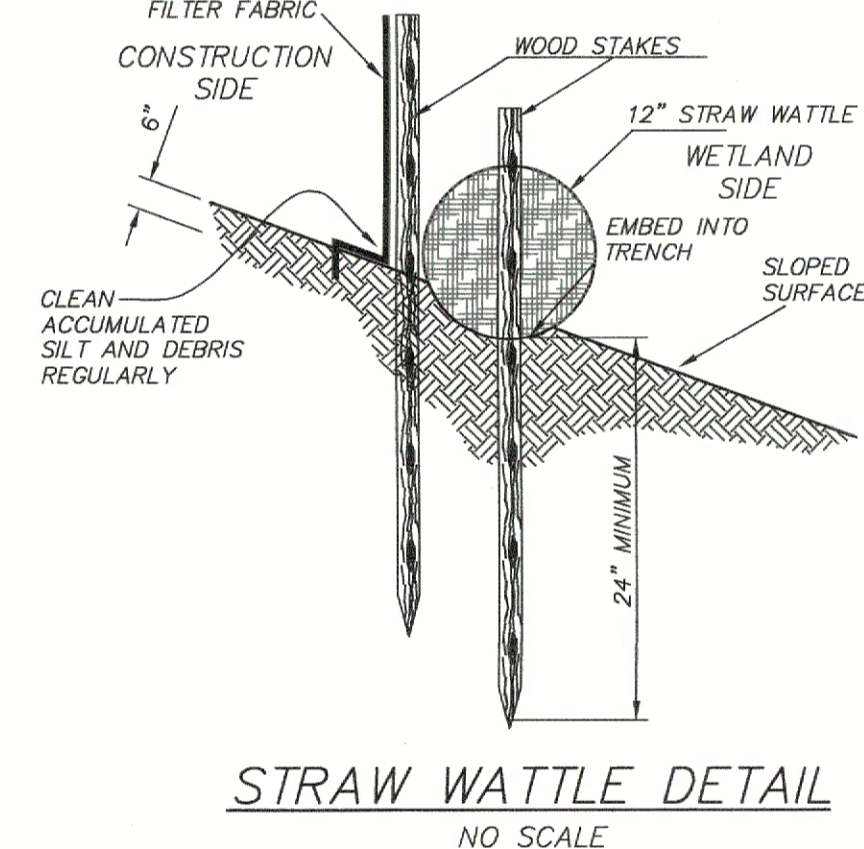
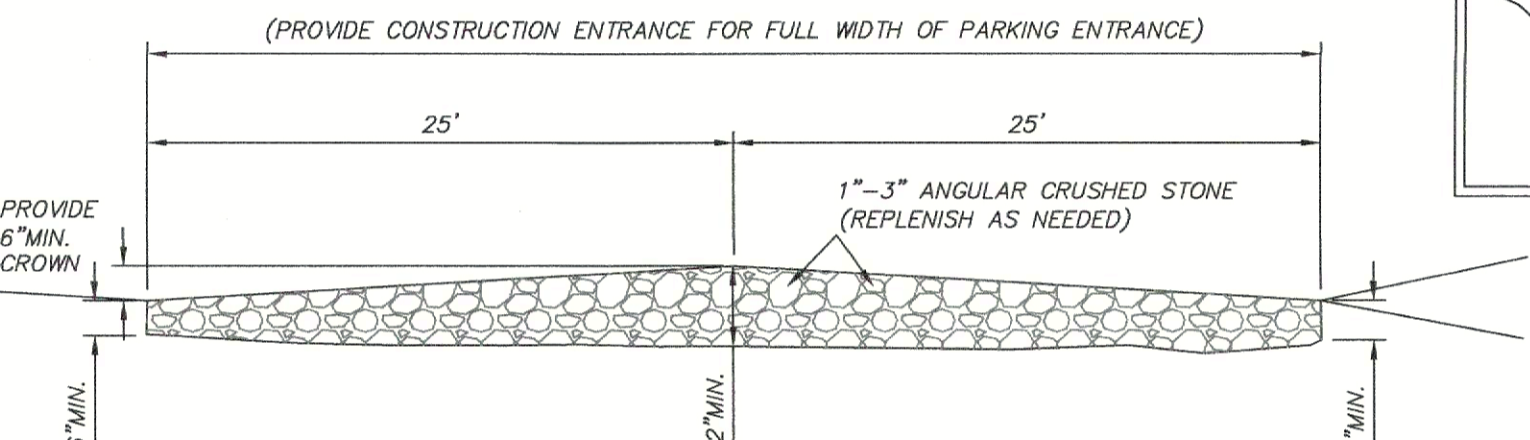
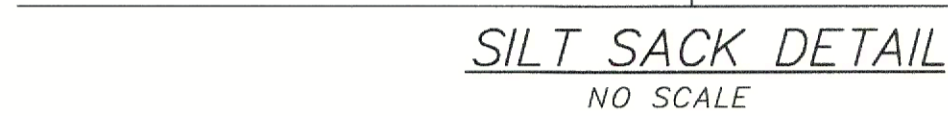
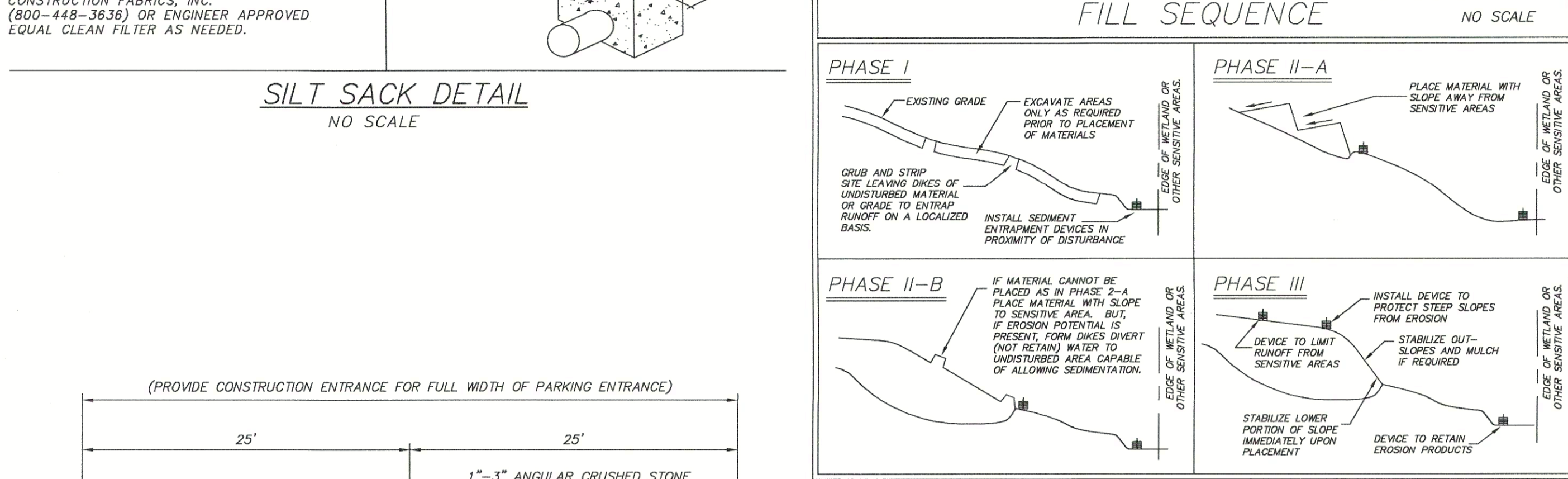
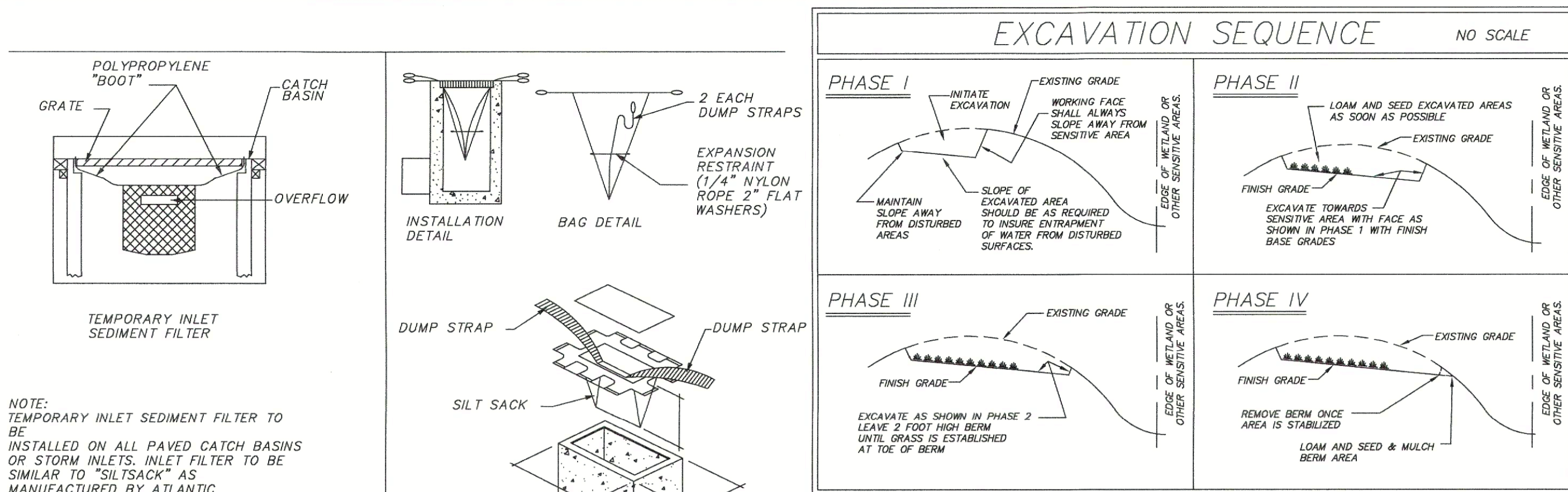
8. AT NO TIME SHALL RUNOFF CARRYING SEDIMENT BE ALLOWED TO FLOW TO THE WETLANDS OR SENSITIVE AREAS.

9. THE WORK AREA SHALL REMAIN FREE OF LITTER AND DEBRIS AT ALL TIMES AND MONITORED ON A DAILY BASIS TO ENSURE COMPLIANCE.

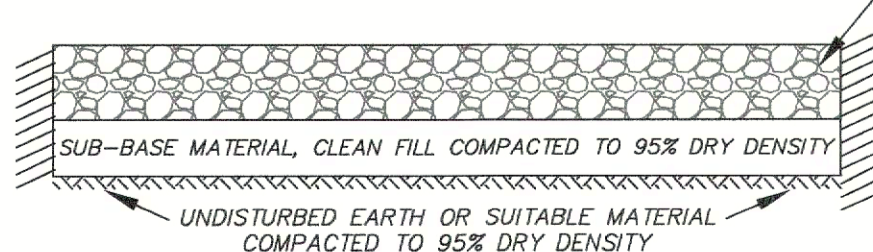
10. ALL MATERIALS STOCKPILED SHALL BE LOCATED, MULCHED OR OTHERWISE TREATED TO INSURE THAT MATERIALS CONTAINED, THEREIN, AREA NOT CARRIED INTO THE WETLANDS.

11. ANY MATERIALS BLOWN OR CARRIED BY WATER AWAY FROM THE CONSTRUCTION SITE OR INTO THE WETLAND AREAS SHALL BE PROMPTLY REMOVED AS REQUIRED BY THE LOCAL CONSERVATION COMMISSION.

12. A GEOTECHNICAL FILTER FABRIC SHALL BE PLACED OVER THE BASIN SUBDRAIN DURING CONSTRUCTION TO PREVENT SEDIMENT FROM ENTERING AND CLOGGING THE DRAIN. THE FABRIC SHALL BE REMOVED FOR BASIN PREPARATION FOR FINAL STABILIZATION.



- PROCEDURES FOR INSTALLATION OF JUTE MATTING:**
- 1) PREPARE SLOPES WITH FINAL GRADING AND LOAM PLACEMENT. RAKE AND SMOOTH FINAL SURFACE, APPLY HYDROSEED.
 - 2) START AT THE TOP OF SLOPE BY ANCHORING BLANKETS IN A 6" DEEP x 6" WIDE ANCHOR TRENCH. PLACE BLANKETS, STAPLE (8" STAPLES), BACKFILL AND COMPACT.
 - 3) ROLL BLANKETS DOWN THE SLOPE. STAPLE THE OPEN BLANKET EDGE USING ONE ROW OF STAPLES AT 2' INTERVALS. THE INTERIOR OF THE BLANKET SHOULD BE STAPLED USING A 2" WIDE x 3" HIGH STAPLE PATTERN. BE SURE TO LAY BLANKETS LOOSLY ON THE GROUND ALLOWING A GOOD CONTACT BETWEEN SOIL AND BLANKETS.
 - 4) USE AN 8" OVERLAP BETWEEN BLANKET SPICES. USE TWO ROWS OF STAPLES TO ANCHOR BLANKETS TOGETHER.
 - 5) PROVIDE 6" x 6" ANCHOR TRENCH AT TOE OF SLOPE.
 - 6) JUTE MATTING TYPE SHALL BE PROPERLY SELECTED FOR SOIL CONDITIONS AND MAXIMUM ALLOWABLE SLOPE.
 - 7) ANY/ALL METALLIC ANCHORS SHALL BE PROMPTLY REMOVED ONCE THE VEGETATIVE COVER HAS BEEN ESTABLISHED.
 - 8) GRASS SEED VARIETY SHALL BE PROPERLY CHOSEN FOR SPECIFIC SITE CONDITIONS (SHADE OR SUN, ETC.)



"FACILITY NAME"

OWNER CONTACT INFORMATION
###-###-####

OPERATOR CONTACT INFORMATION
###-###-####

EMERGENCY CONTACT INFORMATION
###-###-####

PERIMETER SIGNAGE

NO SCALE
12" x 9"
SIGNS TO BE PLACED ALONG FENCELINE AT 50 FT INTERVALS

OWNER

BOSTWICK REALTY TRUST
256 MURDOCK AVENUE
WINCHENDON, MASSACHUSETTS

APPLICANT

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

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: _____

STORMWATER OPERATION AND MAINTENANCE PLAN

THE FOLLOWING SHALL BE CONSIDERED THE OPERATION & MAINTENANCE PLAN (OMP) FOR THE STORMWATER COLLECTION FACILITY FOR THIS DEVELOPMENT. THIS OMP HAS BEEN PREPARED IN ACCORDANCE WITH THE STORMWATER MANAGEMENT POLICY AS ISSUED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

I. SYSTEM OWNERSHIP

THE SYSTEM SHALL INCLUDE THE DRAINAGE INFRASTRUCTURE AND ALL OF ITS COMPONENTS AS SHOWN ON THE SITE DEVELOPMENT PLANS, INCLUDING THE DETENTION FACILITIES AND OUTFALL AREAS OF THE DRAINAGE SYSTEM. THE STRUCTURES OF THE SYSTEM SHALL INCLUDE THE DRAINAGE SWALES AND THE OUTFALL & CONTROL STRUCTURES. THE SYSTEM SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CONSTRUCTION DETAILS AND THE APPROVED PLANS.

UPON THE COMPLETION OF CONSTRUCTION THE DRAINAGE SYSTEM DESCRIBED ABOVE AND AS DEPICTED ON THE SITE PLANS SHALL BECOME PROPERTY OF THE LAND OWNER, WITH SPECIFIC EASEMENT RIGHTS TO THE OPERATOR OF THE SOLAR SYSTEM TO MAINTAIN THE DRAINAGE SYSTEM AS DEPICTED ON THE APPROVED PLANS. SAID EASEMENT RIGHTS SHALL BE SPECIFICALLY DESCRIBED IN LEASE DOCUMENTS FOR THE PROJECT.

II. RESPONSIBLE PARTIES

THE OPERATOR OF THE SOLAR SYSTEM SHALL BE CONSIDERED THE RESPONSIBLE PARTY FOR THE OPERATION AND MAINTENANCE OF THE STORMWATER MANAGEMENT SYSTEM. THE SYSTEM SHALL INCLUDE THE DRAINAGE INFRASTRUCTURE AND ALL OF ITS COMPONENTS AS SHOWN ON THE APPROVED PLANS. THE SYSTEM SHALL ALSO INCLUDE THE DETENTION FACILITIES AND THE OUTFALL AREAS OF THE DRAINAGE SYSTEM.

III. INSPECTION & MAINTENANCE SCHEDULE

STRUCTURE TYPE	INSPECTION	MAINTENANCE	TASK
RIP/RAP APRONS	TWICE A YEAR	EVERY 10 YEARS	REMOVE DEBRIS & ADD STONE
SPILLWAY	TWICE A YEAR	TWICE A YEAR	REMOVE DEBRIS AND SEDIMENT

SEEDING OPERATION AND MAINTENANCE PLAN

I. RESPONSIBLE PARTIES

THE OPERATOR OF THE SOLAR SYSTEM SHALL BE CONSIDERED THE RESPONSIBLE PARTY FOR THE OPERATION AND MAINTENANCE OF THE GRASS & VEGETATION. THE VEGETATION SHALL INCLUDE ALL OF ITS AREAS AS SHOWN ON THE APPROVED PLANS. THE SYSTEM SHALL ALSO INCLUDE THE GRASSED AREAS AROUND THE PANELS AND DRAINAGE STRUCTURES.

II. INSPECTION & MAINTENANCE SCHEDULE

ACTIVITY	MAINTENANCE	TASK
GRASS CUTTING	MONTHLY	GRASS HEIGHT TO BE ALLOWED TO GROW TO A HEIGHT OF NO MORE THAN 18 INCHES AND BE CUT TO A HEIGHT OF 4 TO 6 INCHES.

III. APPROPRIATE SEED MIX AND APPLICATION RATES

SEED TYPE (NATIVE SEED REQUIRED)	APPLICATION RATE	% OF MIX
WELDFLOWER SEED MIX	3 TO 10 POUNDS PER ACRE	30%
WHITE CLOVER SEED MIX	3 TO 5 POUNDS PER ACRE	10%
KENTUCKY BLUEGRASS	80 TO 100 POUNDS PER ACRE	40%

IV. HERBICIDES & PESTICIDES

THERE WILL NO HERBICIDES OR PESTICIDES USED ON THIS PROJECT.



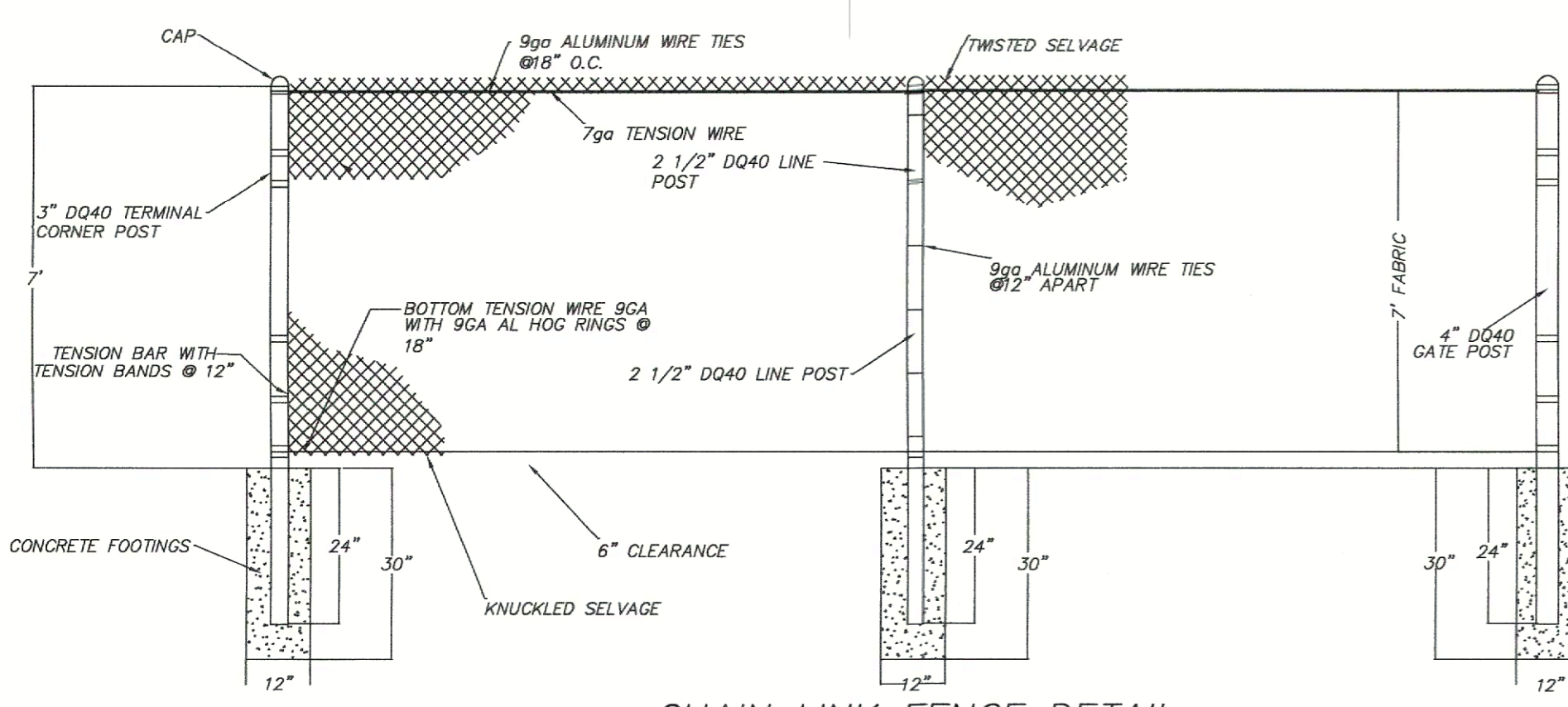
HANNIGAN ENGINEERING, INC.
CIVIL ENGINEERS & LAND SURVEYORS

8 MONUMENT SQUARE
LEOMINSTER, MASSACHUSETTS 01453
WWW.HANNIGANENGINEERING.COM

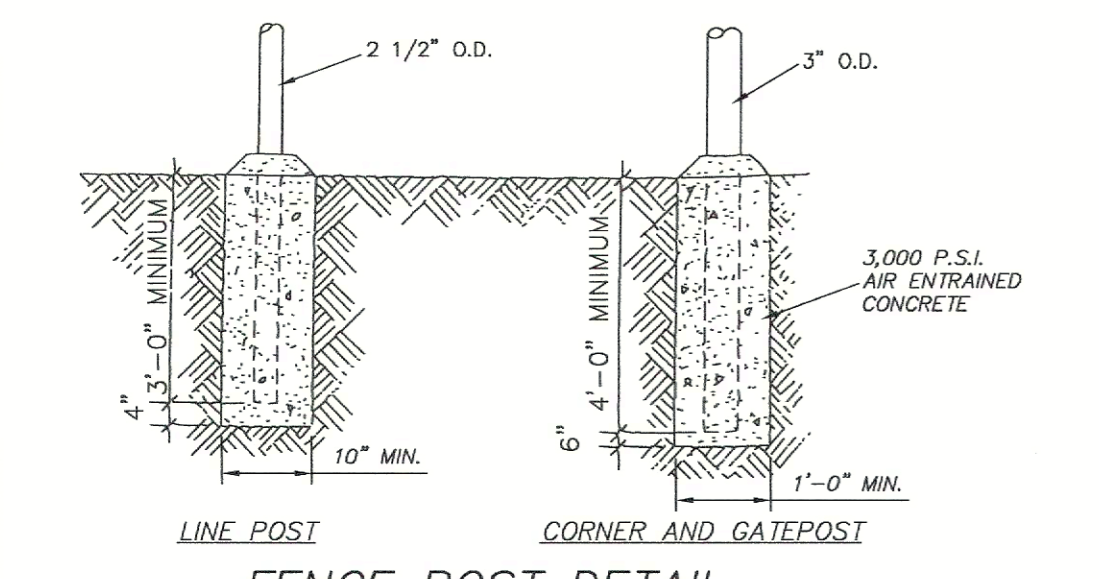
CONSTRUCTION DETAILS
IN
WINCHENDON, MASSACHUSETTS

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

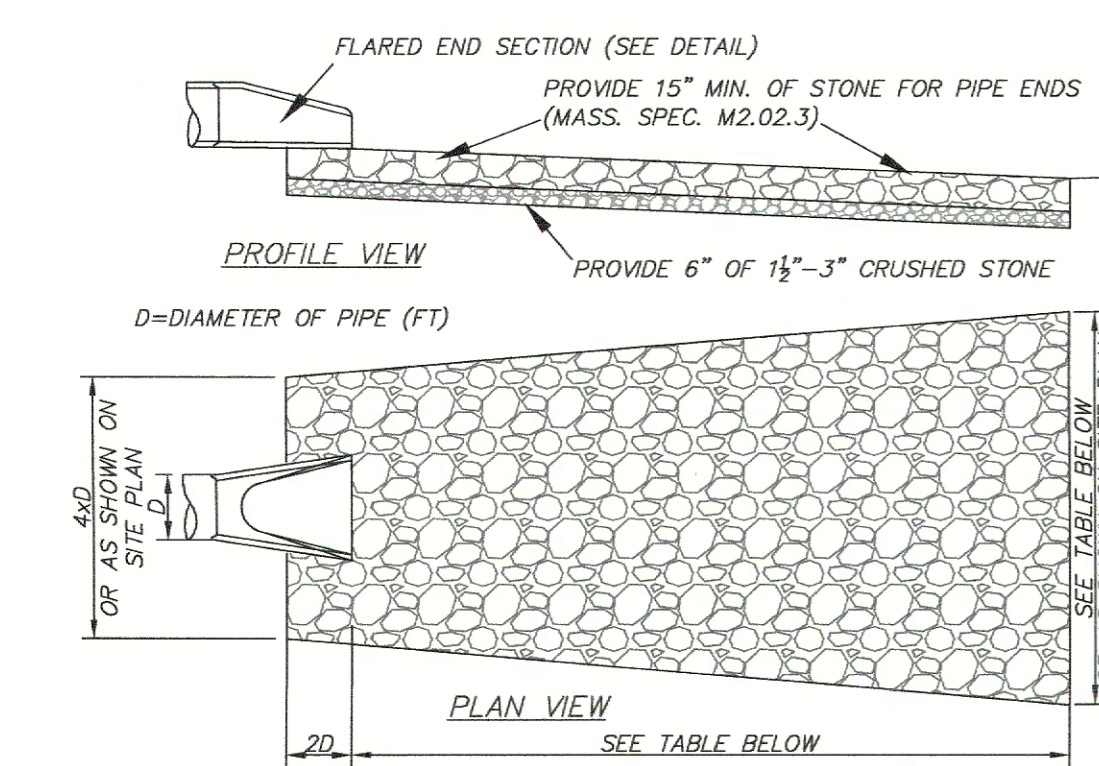
CALC: CMA	DRWN: CMA	SCALE: NA
CHKD: WDH	APPD: CMA	DATE: MAR 27, 2023
SRV: JEF	FB: 75-130	JOB NO: 3101
TAB: (4-5)DET	SHEET 4 OF 5	PLAN NO: C-18-41



CHAIN LINK FENCE DETAIL
NO SCALE

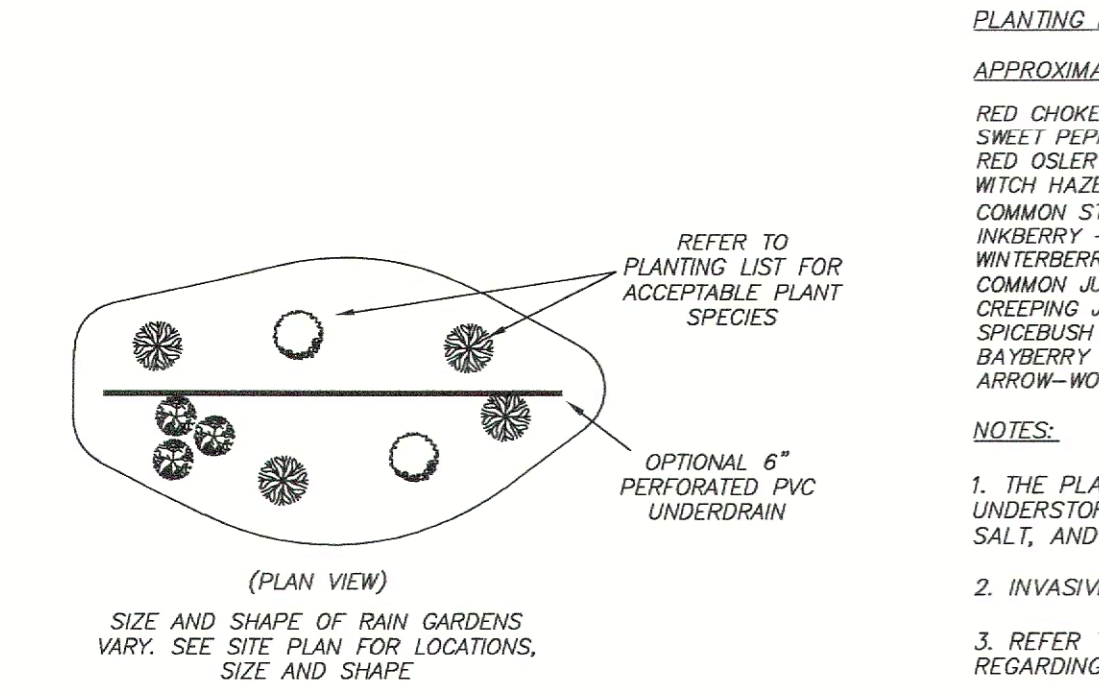


FENCE POST DETAIL
NO SCALE



RIP-RAP APRON DETAIL
NO SCALE

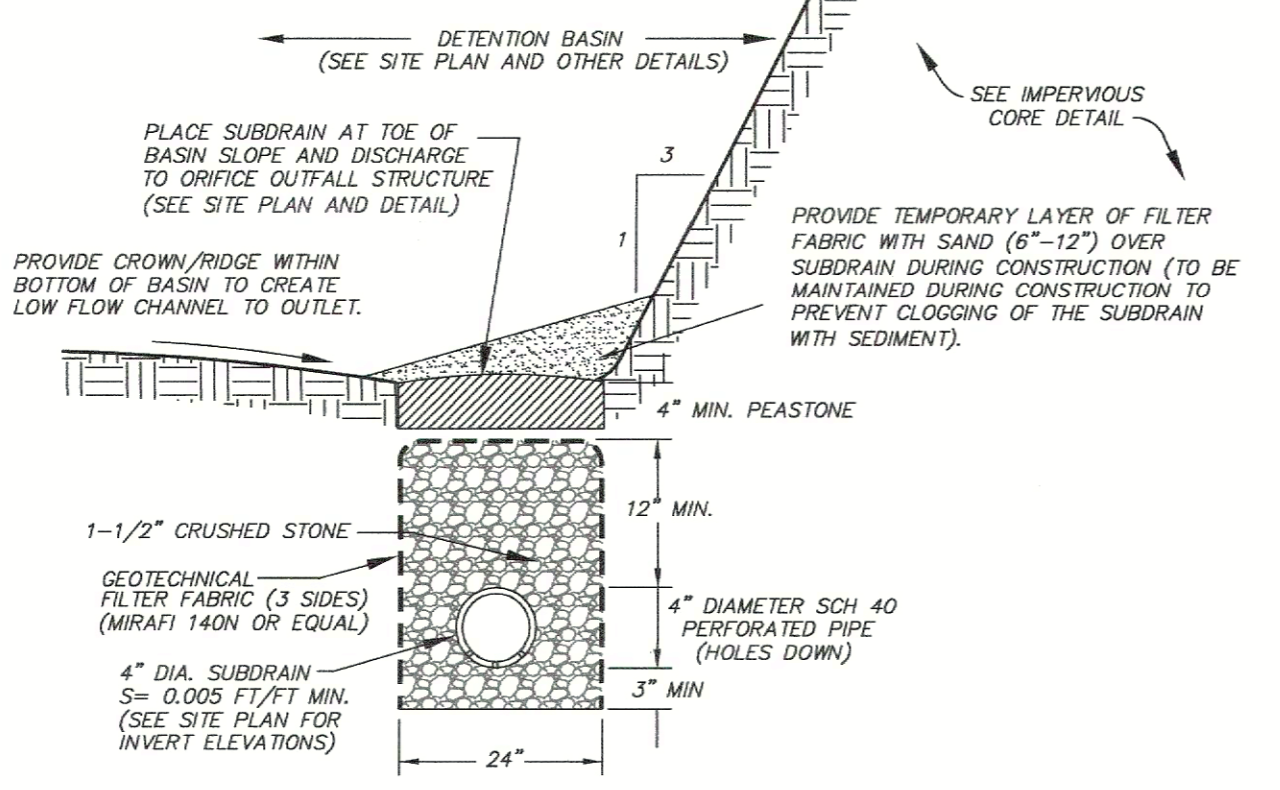
PIPE DIAMETER	LENGTH	TERMINUS WIDTH
15-INCH (FE#1)	10.0 FEET	10.0 FEET



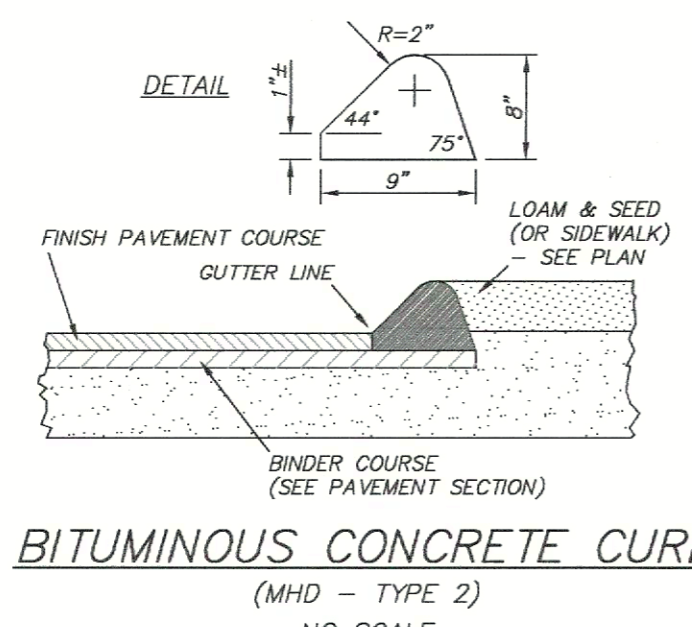
RAIN GARDEN DETAIL
NO SCALE

NOTES:
COLOR OF ALL MATERIALS ARE GALVANIZED INCLUDES 10\"/>

NOTE: INFILTRATION FROM SUBDRAINS HAS NOT BEEN CONSIDERED IN OVERALL DRAINAGE DESIGN CALCULATIONS.



DETENTION BASIN 4\"/>



BITUMINOUS CONCRETE CURB
(MHD - TYPE 2)
NO SCALE

PLANTING LIST AND NOTES

APPROXIMATE SPECIES MIX

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

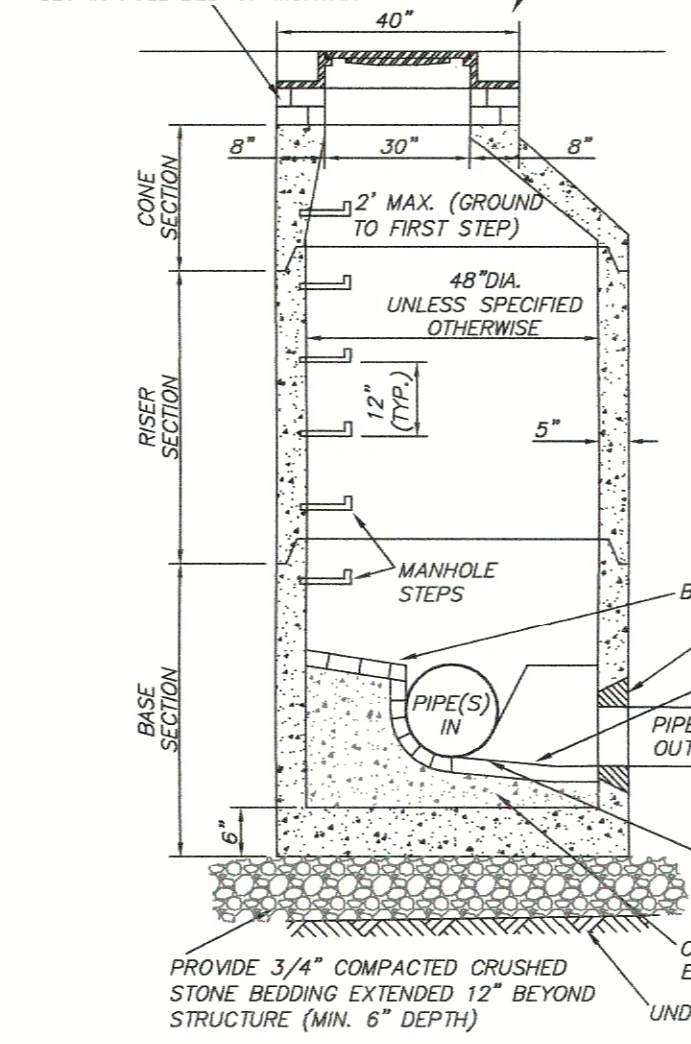
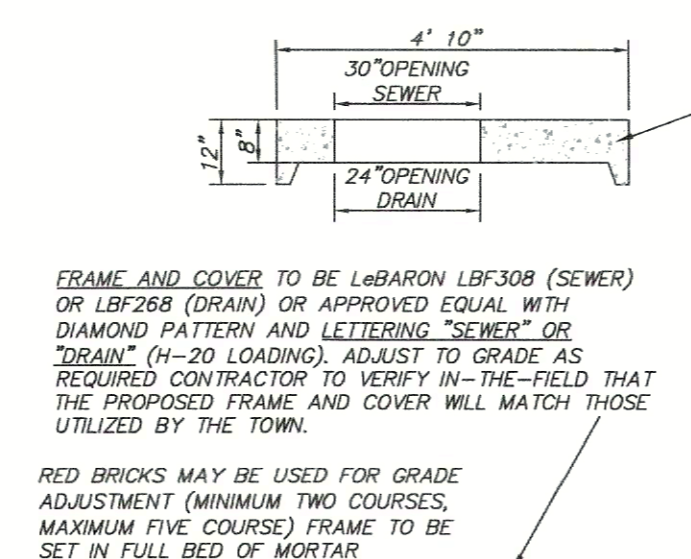
RED MAPLE - *Acer rubrum*
SWITCH GRASS - *Panicum virgatum*
SHADBLOW - *Amelanchier*
RIVER BIRCH - *Betula nigra*
GRAY BIRCH - *Betula populifolia*
WHITE ASH - *Fraxinus americana*
GREEN ASH - *Fraxinus pennsylvanica*
EASTERN RED CEDAR - *Juniperus virginiana*
SWEET GUM - *Liquidambar styraciflua*
BLACK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

NOTES:

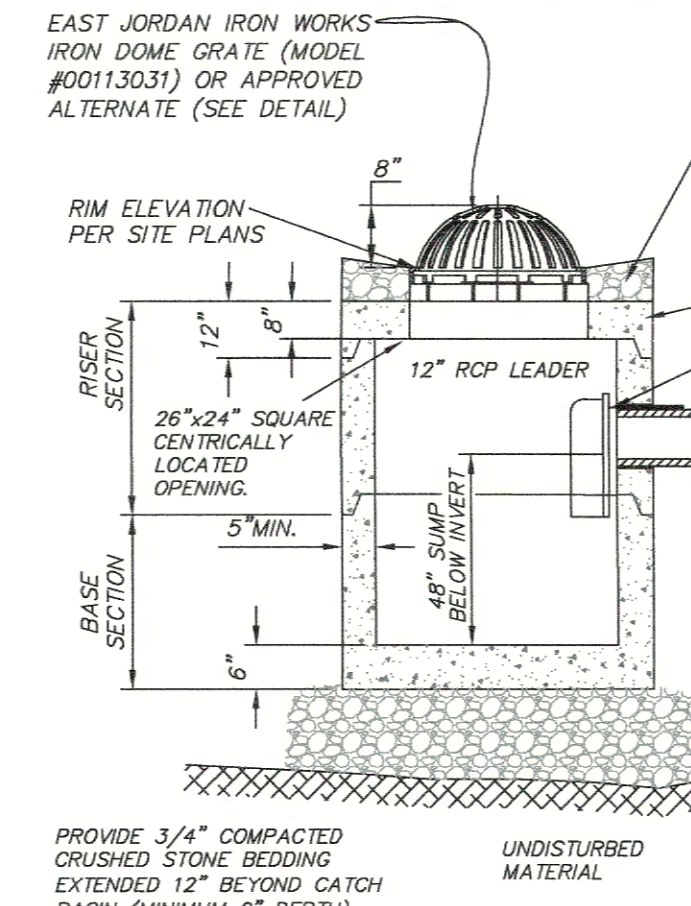
1. THE PLANTING PLAN SHALL INCLUDE A MIX OF PERENNIALS, SHRUBS AND (IF CONDITIONS PERMIT) UNDERSTORY TREES THAT CAN TOLERATE INTERMITTENT PONDING, OCCASIONAL SALINE CONDITIONS DUE TO ROAD SALT, AND EXTENDED DRY PERIODS.
2. INVASIVE OR EXOTIC SPECIES ARE PROHIBITED
3. REFER TO MASSACHUSETTS STORMWATER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

PLANTING SOIL NOTES

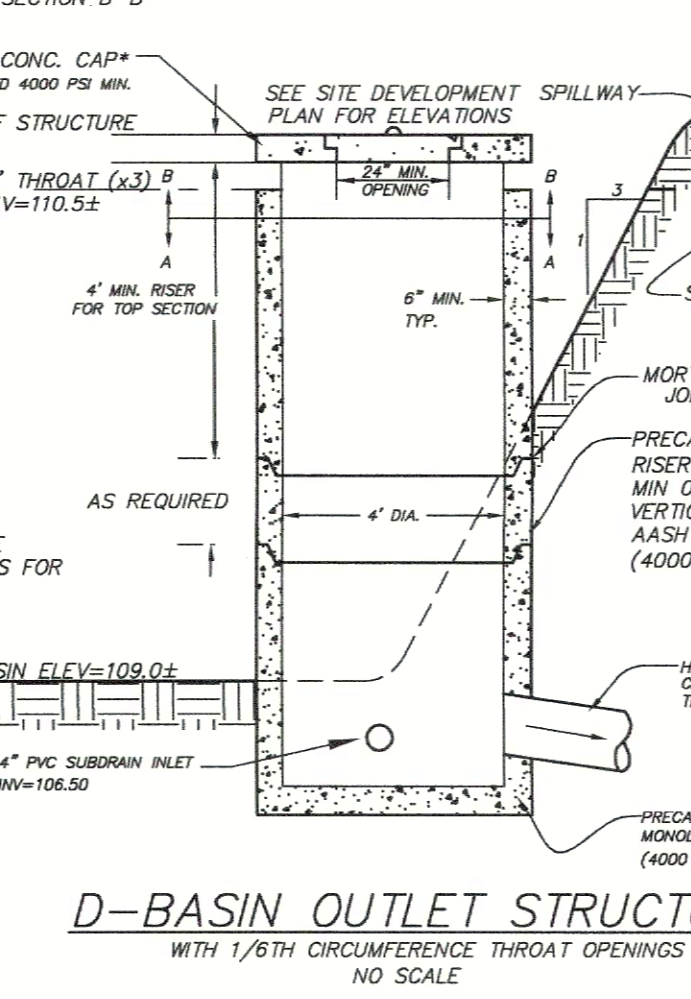
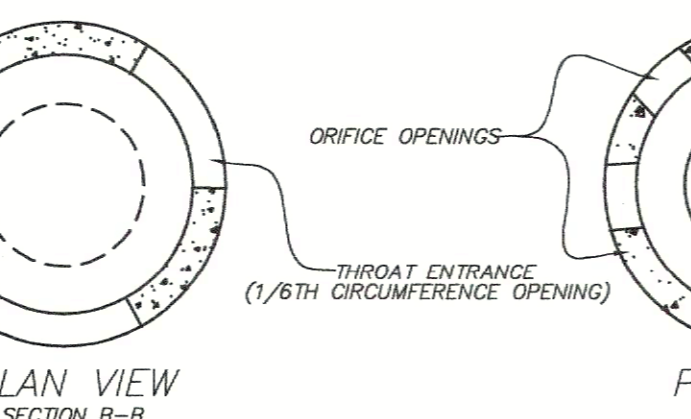
1. THE SOIL MIX SHALL BE A MIXTURE OF SAND COMPOST AND SOIL AS FOLLOWS: 40% SAND, 20-30% TOPSOIL AND 30-40% COMPOST.
2. THE SOIL MIX MUST BE UNIFORM, FREE OF STONES, STUMPS, ROOTS OR SIMILAR OBJECTS LARGER THAN 2\"/>



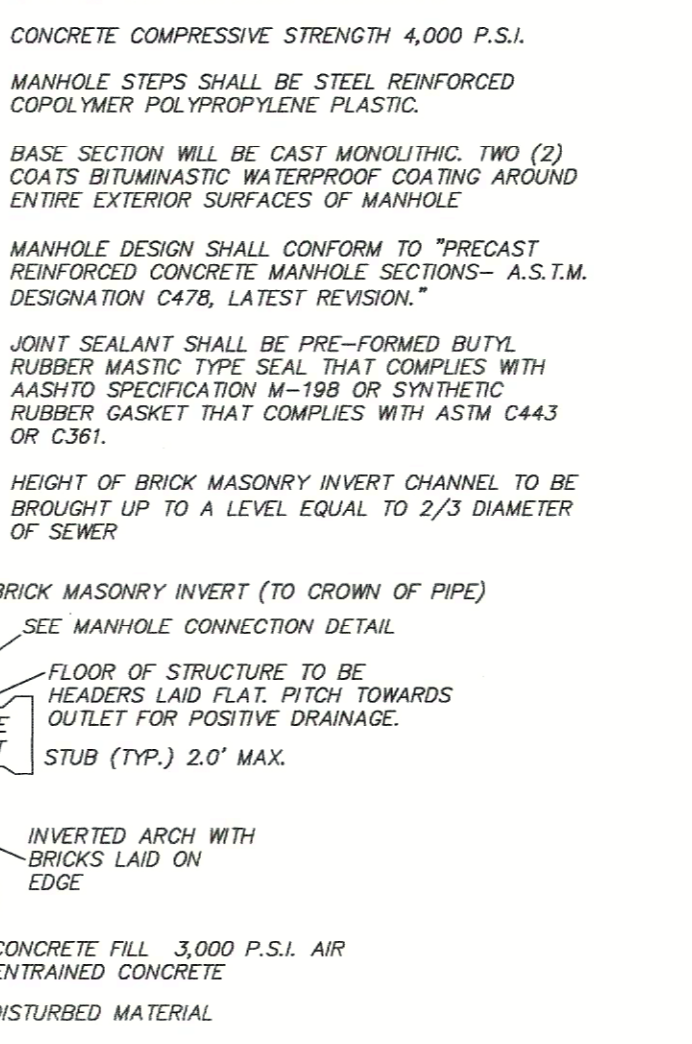
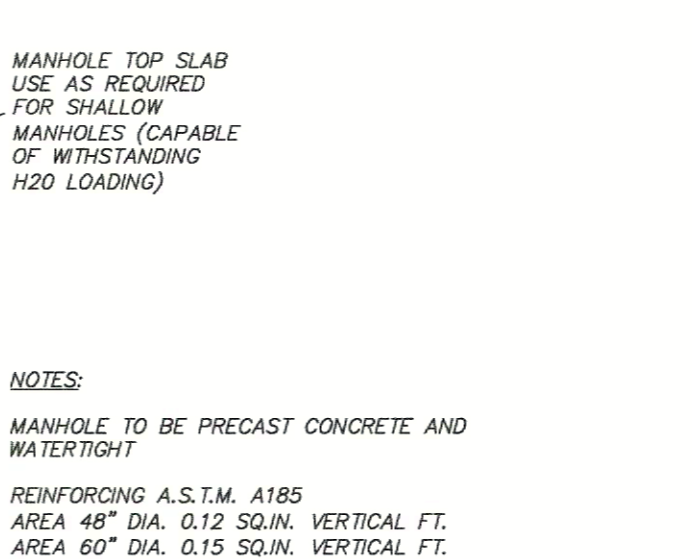
TYPICAL PRECAST MANHOLE
(SEWER OR DRAIN - USE APPROPRIATE COVER)
NO SCALE



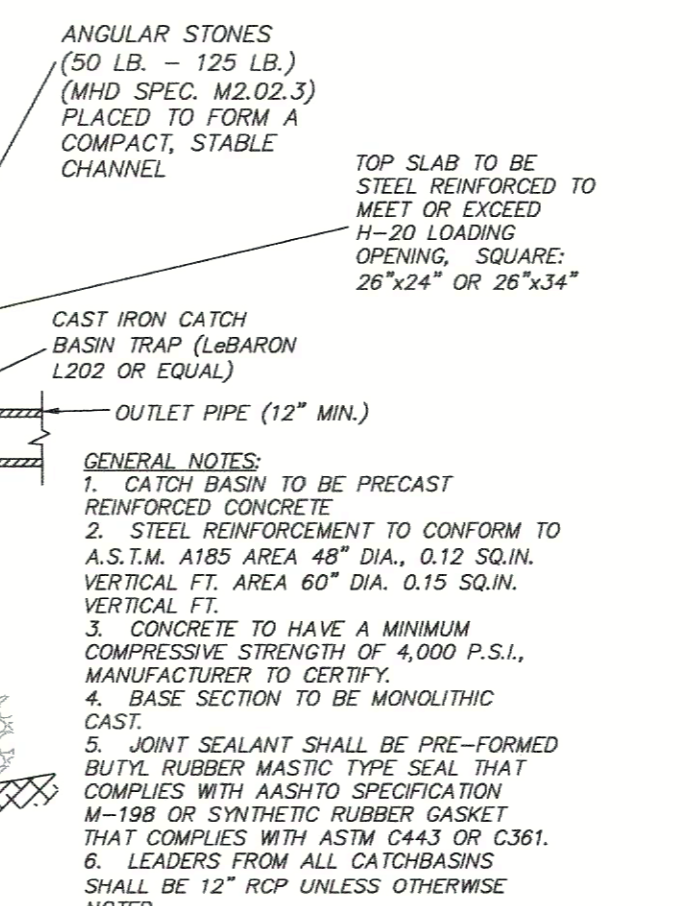
TYPICAL PRECAST CATCH BASIN
WITH GRANITE CURB INLET
NO SCALE



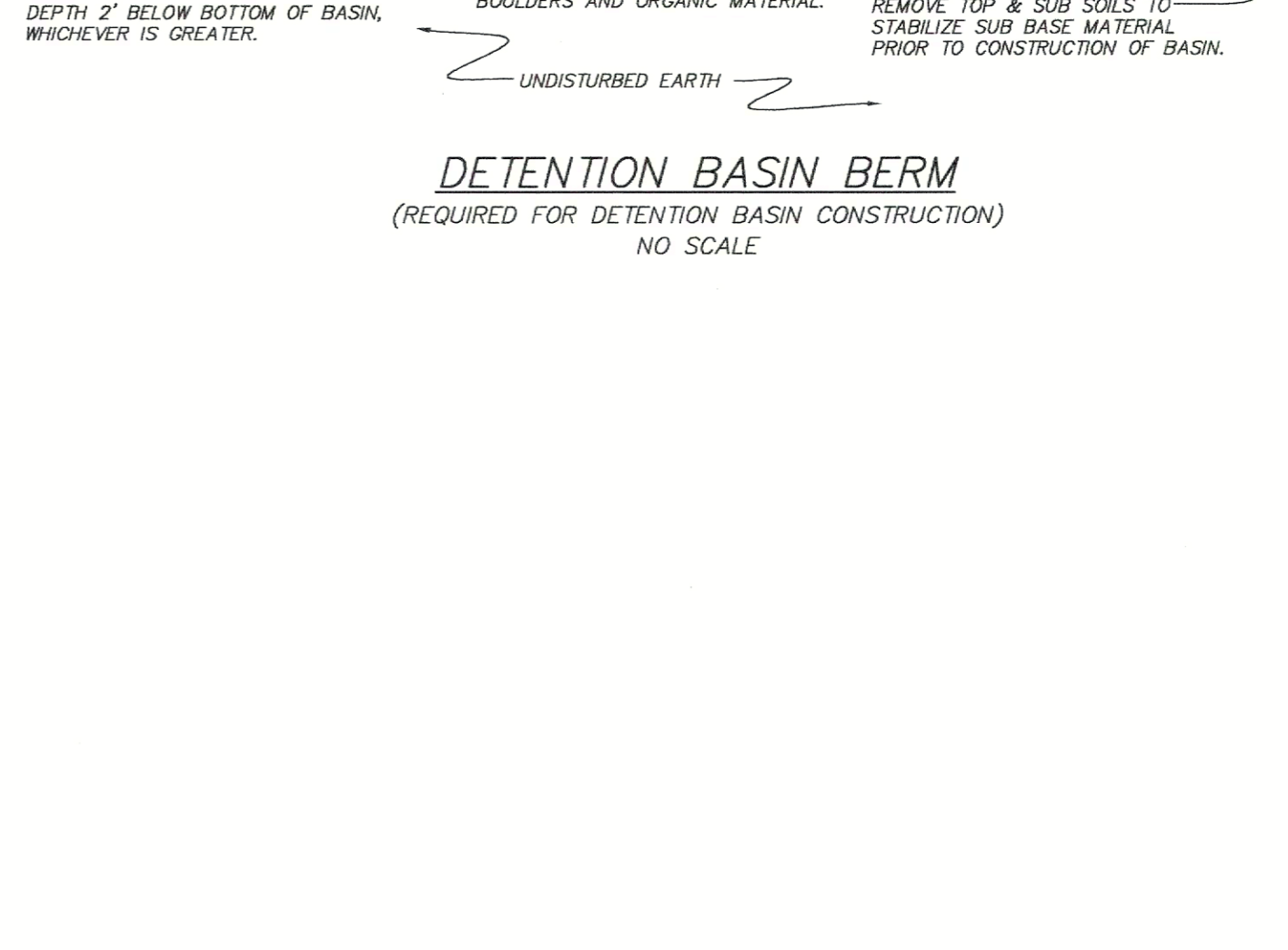
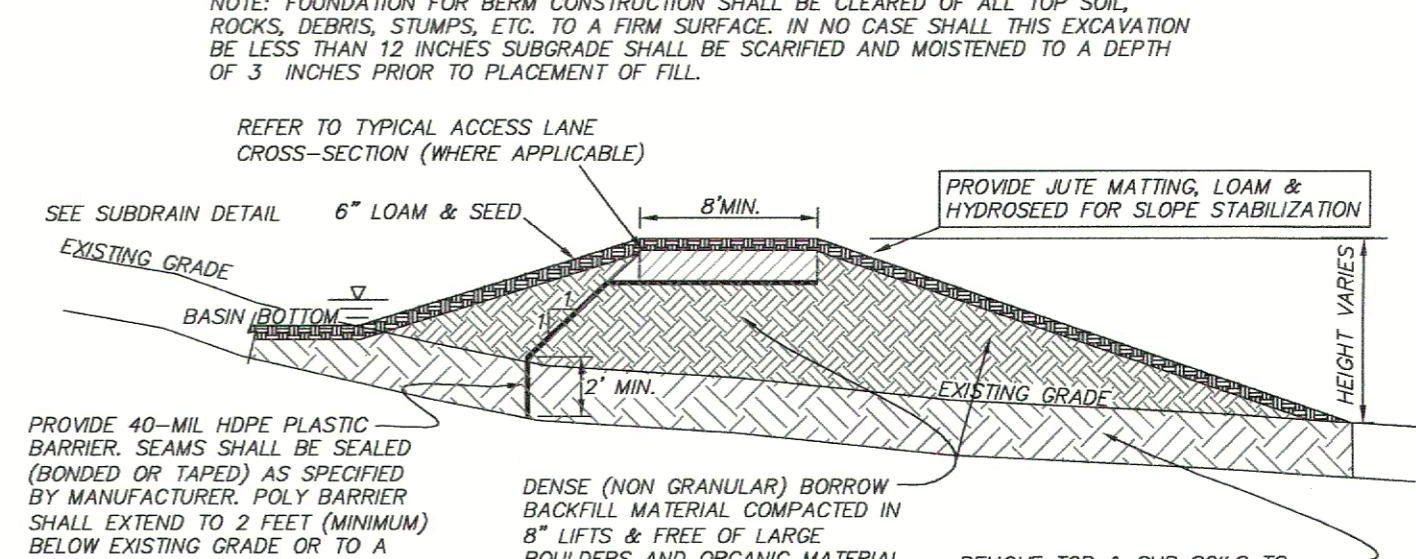
D-BASIN OUTLET STRUCTURE
WITH 1/8\"/>



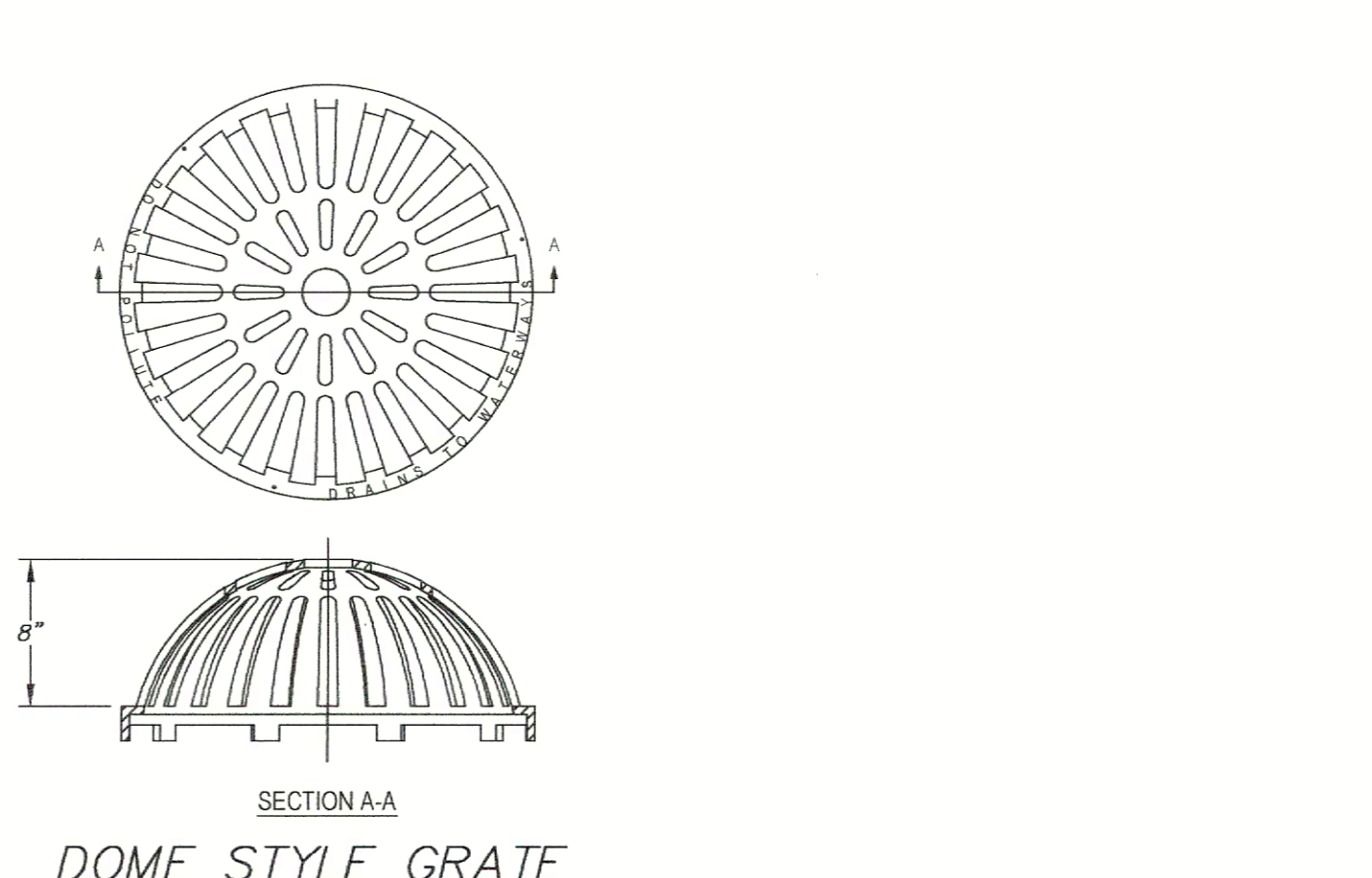
EMERGENCY SPILLWAY DETAIL
NO SCALE



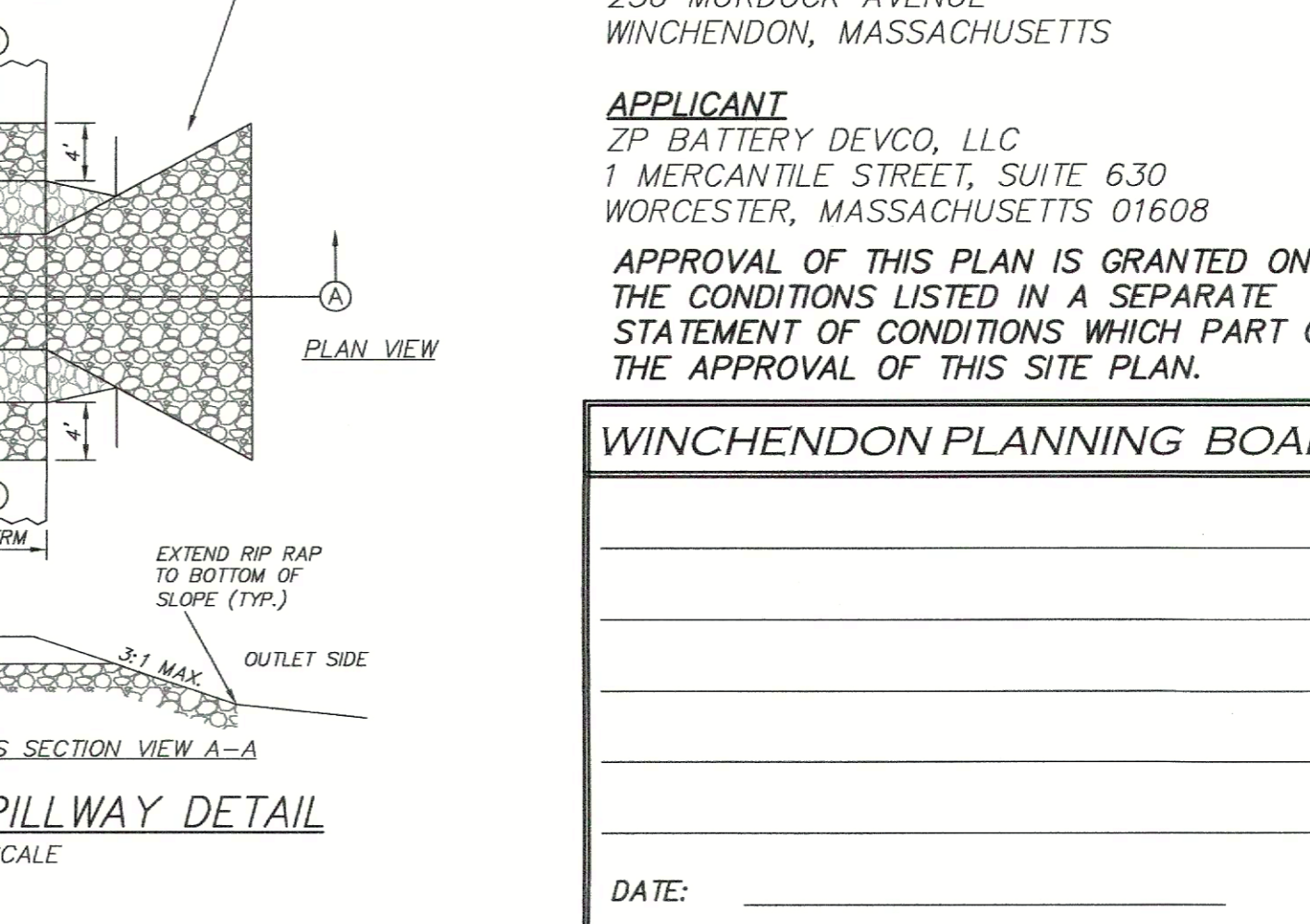
EMERGENCY SPILLWAY DETAIL
NO SCALE



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



DOME STYLE GRATE
NO SCALE



EMERGENCY SPILLWAY DETAIL
NO SCALE

NOTE: FOUNDATION FOR BERM CONSTRUCTION SHALL BE CLEARED OF ALL TOP SOIL, ROCKS, DEBRIS, STUMPS, ETC. TO A FIRM SURFACE. IN NO CASE SHALL THIS EXCAVATION BE LESS THAN 12 INCHES SUBGRADE SHALL BE SCARIFIED AND MOISTENED TO A DEPTH OF 3 INCHES PRIOR TO PLACEMENT OF FILL.

REFER TO TYPICAL ACCESS LANE CROSS-SECTION (WHERE APPLICABLE)

PROVIDE 40-MIL HDPE PLASTIC BARRIER. SEAMS SHALL BE SEALED (BONDED OR TAPED) AS SPECIFIED BY MANUFACTURER. POLY BARRIER SHALL EXTEND TO 2 FEET (MINIMUM) BELOW EXISTING GRADE OR TO A DEPTH 2\"/>

REMOVE TOP & SUB SOILS TO STABILIZE SUB BASE MATERIAL PRIOR TO CONSTRUCTION OF BASIN.

UNDISTURBED EARTH

PROVIDE 3/4\"/>

CONCRETE FILL, 3,000 P.S.I. AIR ENTRAINED CONCRETE

UNDISTURBED MATERIAL

CONCRETE COMPRESSIVE STRENGTH 4,000 P.S.I.

MANHOLE TO BE PRECAST CONCRETE AND WATER TIGHT

REINFORCING A.S.T.M. A195 AREA 48\"/>

CONCRETE COMPRESSIVE STRENGTH 4,000 P.S.I.

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 COMPLIES WITH AASHTO SPECIFICATION M-198 OR SYNTHETIC RUBBER GASKET THAT COMPLIES 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.

PIPE STUB (TYP.) 2.0\"/>

INVERTED IRON WITH BRICKS LAID ON EDGE

CONCRETE FILL, 3,000 P.S.I. AIR ENTRAINED CONCRETE

UNDISTURBED MATERIAL

PROVIDE 3/4\"/>

UNDISTURBED MATERIAL

EAST JORDAN IRON WORKS IRON DOME GRATE (MODEL #00113031) OR APPROVED ALTERNATE (SEE DETAIL)

ANGULAR STONES (50 LB. - 125 LB.) (MHD SPEC. M2.02.3) PLACED TO FORM A COMPACT, STABLE CHANNEL

TOP SLAB TO BE STEEL REINFORCED TO MEET OR EXCEED H-20 LOADING. OPENING SQUARE: 26\"/>

CAST IRON CATCH BASIN TRAP (LEBARON L202 OR EQUAL)

OUTLET PIPE (12\"/>

GENERAL NOTES:
1. CATCH BASIN TO BE PRECAST REINFORCED CONCRETE
2. STEEL REINFORCEMENT TO CONFORM TO A.S.T.M. A195 AREA 48\"/>

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 COMPLIES WITH AASHTO SPECIFICATION M-198 OR SYNTHETIC RUBBER GASKET THAT COMPLIES WITH ASTM C443 OR C361.

6. LEADERS FROM ALL CATCHBASINS SHALL BE 12\"/>

PROVIDE 3/4\"/>

UNDISTURBED MATERIAL

UNDISTURBED MATERIAL

ANGULAR STONES FOR CHANNEL PAVING (MHD SPEC. M2.06.2) (NON-GRouted) PLACED TO FORM A COMPACT, STABLE SPILLWAY CHANNEL

END VIEW

CROSS SECTION VIEW B-B

PLAN VIEW

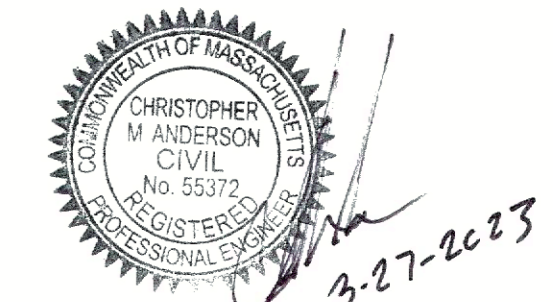
CROSS SECTION VIEW A-A

EXTEND RIP RAP TO BOTTOM OF SLOPE (TYP.)

OUTLET SIDE

EXTEND RIP RAP TO BOTTOM OF SLOPE (TYP.)

NO SCALE



HANNIGAN ENGINEERING, INC.
CIVIL ENGINEERS & LAND SURVEYORS

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

CONSTRUCTION DETAILS
IN
WINCHENDON, MASSACHUSETTS

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

OWNER
BOSTWICK REALTY TRUST
256 MURDOCK AVENUE
WINCHENDON, MASSACHUSETTS

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

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

CALC: CMA	DRWN: CMA	SCALE: NA
CHKD: WDH	APPD: CMA	DATE: MAR 27, 2023
SRV: JEF	FB: 75-130	JOB NO: 3101
TAB: (4-5)DET	SHEET 5 OF 5	PLAN NO: C-18-41

DATE: _____