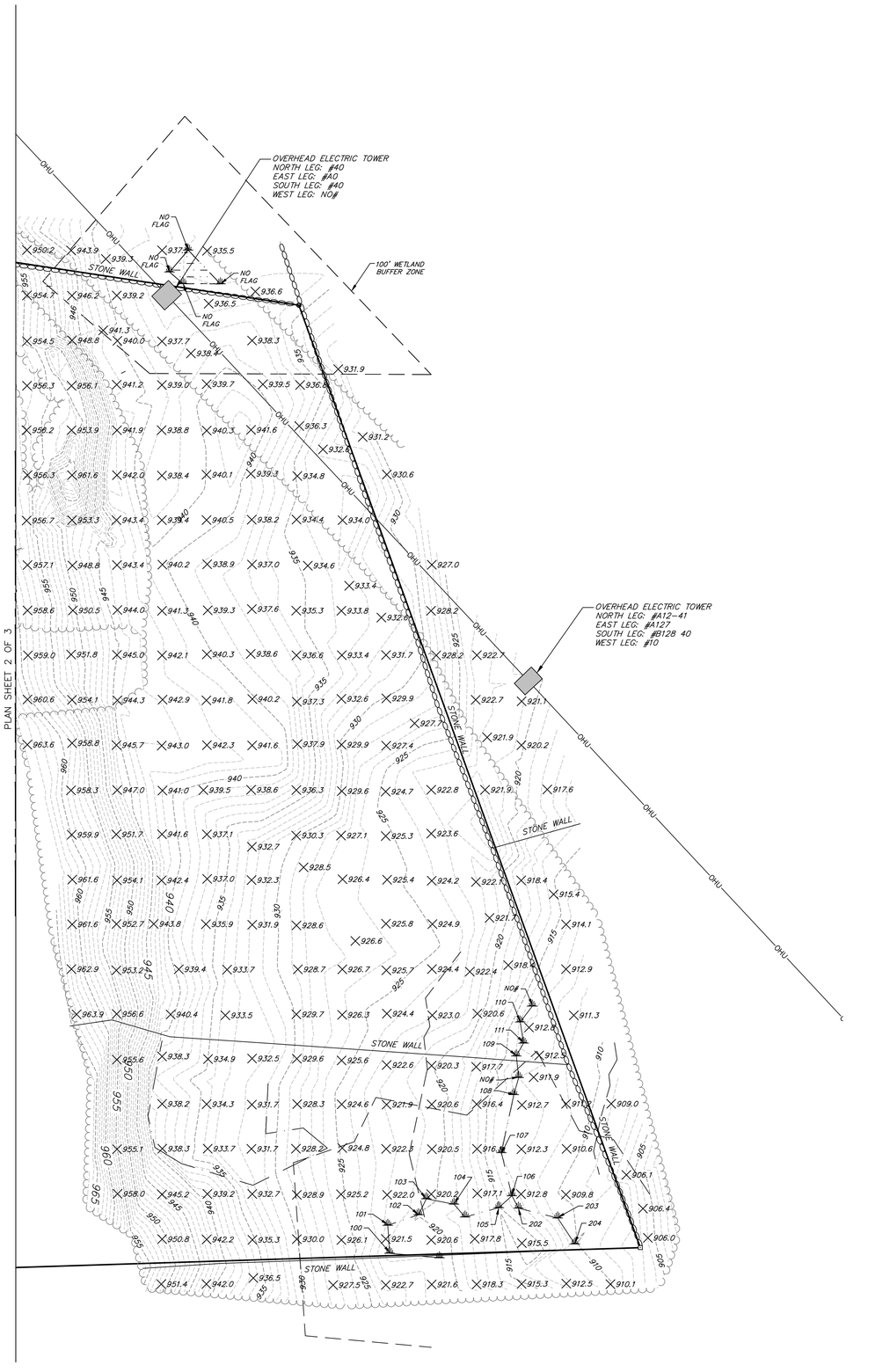
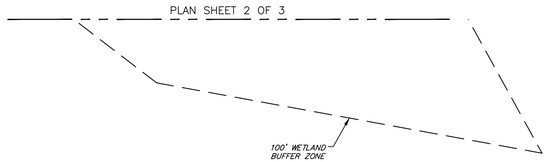
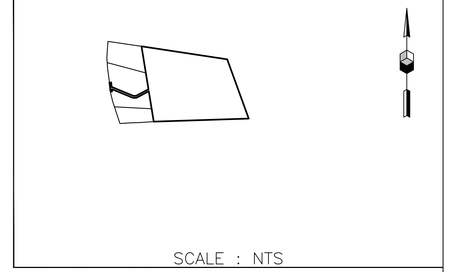






SCALE : NTS

LOCATION MAP

LEGEND

- PROPERTY LINE
- EXISTING CONDITIONS AREA
- ABUTTER LINE
- MONUMENT FOUND
- DRILL HOLE/IRON ROD FOUND
- STONE WALL
- WETLANDS
- WETLANDS 100' BUFFER ZONE
- TREELINE
- 120 CONTOURS 120
- X120.00 SPOT GRADE
- OHU OVERHEAD UTILITY
- WETLAND FLAG
- ELECTRIC TOWER
- WETLANDS

GENERAL NOTES:

1. THIS PLAN IS THE RESULT OF AN ON-THE-GROUND FIELD SURVEY COMPLETED BY CORNERSTONE ENERGY SERVICES, INC. IN MAY 2024.
2. BEARINGS SHOWN HEREON ARE REFERENCED TO GRID NORTH, MASSACHUSETTS STATE PLANE, NAD83. ELEVATIONS ARE IN REFERENCE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) BASED ON DUAL FREQUENCY GPS OBSERVATIONS.
3. PROPERTY MAY BE SUBJECT TO RIGHTS AND EASEMENTS NOT SHOWN THAT MIGHT HAVE BEEN REVEALED BY A COMPLETE AND THOROUGH TITLE SEARCH.
4. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD AT THE TIME OF THE SURVEY, AND IS A REPRESENTATION OF AVAILABLE SURFACE EVIDENCE ONLY, AND THEREFORE MAY NOT NECESSARILY DEPICT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC, (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO ANY EXCAVATION.
5. REFERENCE IS MADE TO THE FOLLOWING DEEDS AND PLANS:
   - 5.1. DEED BOOK 67682 PAGE 276
   - 5.2. PLAN BOOK 575, PLAN 122 & PLAN BOOK 739 PLAN 61
6. THE FIGURES SHOWN ON PLAN BOOK 575 PLAN 122 DID NOT MATCH THE PHYSICAL EVIDENCE FOUND IN THE FIELD.

70 35.5 0 70 140
SCALE: 1" = 70'

REV.:	BY:	DATE:	STATUS:
3	DML	09/26/24	VISUAL UPDATES FOR CLARITY
2	JEE	08/26/24	ADDITIONAL TOPOGRAPHIC FEATURES
1	AR	05/23/24	ADDITIONAL TOPOGRAPHIC FEATURES

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK.

Cornerstone Energy Services
111 CHINQUAPIN ROUND ROAD
SUITE 240
ANNAPOLIS, MD 21401
207-730-7340
FAX: 207-730-7343

EXISTING CONDITIONS SURVEY
OF:
ZOVL PARCEL
358 Coldbrook Road
Oakham, MA 01068
FOR:
Rhynland Energy

RECORD OWNER:
ZOVL Properties, LLC

DRAWN	CHECKED
MA	DL
PROJECT NO.	DATE
23230.1	08/29/2023
SHEET SIZE	SCALE
24" x 36"	1" = 60'

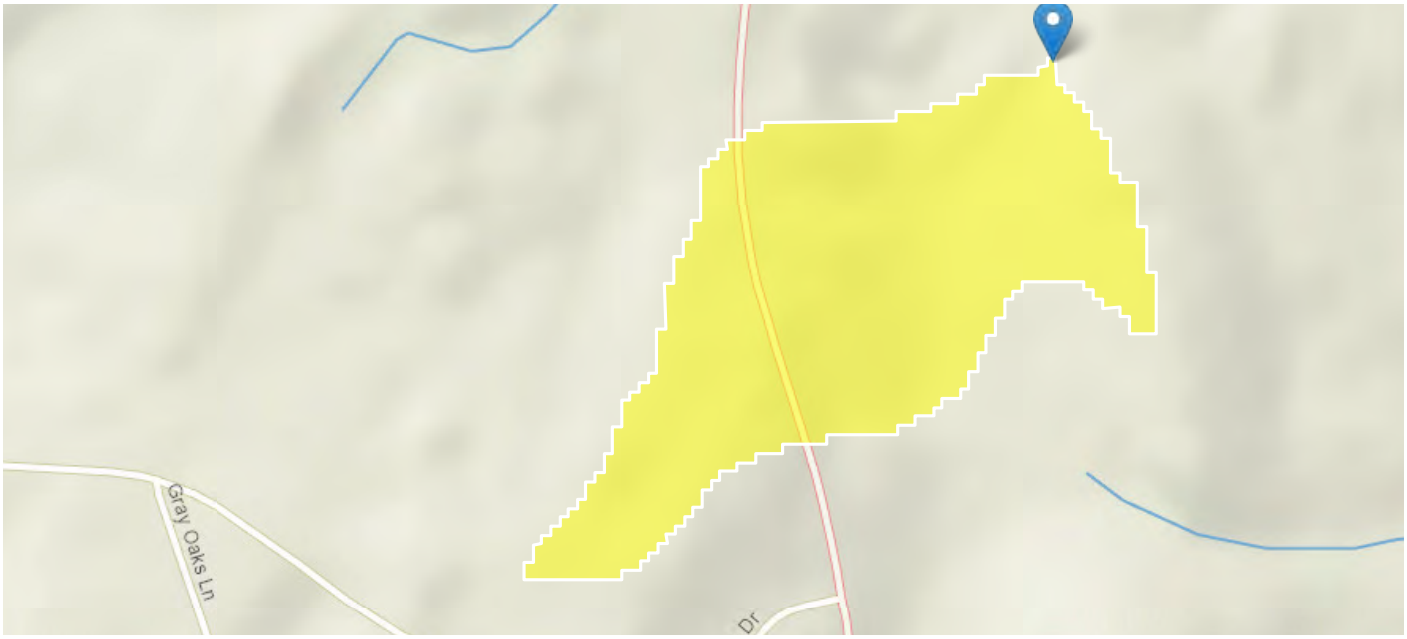
SHEET 3 OF 3

Attachment G

U.S.G.S. StreamStats Report

StreamStats Report: Coldbrook Road, Oakham, MA

Region ID: MA
Workspace ID: MA20240410173344565000
Clicked Point (Latitude, Longitude): 42.36402, -72.04245
Time: 2024-04-10 13:34:07 -0400



Collapse All

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
ACRSDFT	Area underlain by stratified drift	0	square miles
BSLDEM10M	Mean basin slope computed from 10 m DEM	6.363	percent
BSLDEM250	Mean basin slope computed from 1:250K DEM	4.098	percent
CAT1ROADS	Length of interstates lmtd access highways and ramps for lmtd access highways, includes cloverleaf interchanges (USGS Ntl Transp Dataset)	0	miles
CAT2ROADS	Length of sec hwy or maj connecting roads; main arteries & hwys not lmtd access, usually in the US Hwy or State Hwy systems (USGS Ntl Transp Dataset)	0	miles
CAT3ROADS	Length of local connecting roads; roads that collect traffic from local roads & connect towns, subdivisions & neighborhoods (USGS Nat Transp Dataset)	0	miles
CAT4ROADS	Length of local roads; generally paved street, road, or byway that usually have single lane of traffic in each direction (USGS Ntnl Transp Dataset)	0.41	miles
CENTROIDX	Basin centroid horizontal (x) location in state plane coordinates	155089.4	meters
CENTROIDY	Basin centroid vertical (y) location in state plane units	901388.2	meters

Parameter Code	Parameter Description	Value	Unit
CROSCOUNT1	Number of intersections between streams and roads, where the roads are interstate, limited access highway, or ramp (CAT1ROADS)	0	dimensionless
CROSCOUNT2	Number of intersections between streams and roads, where the roads are secondary highway or major connecting road (CAT2ROADS)	0	dimensionless
CROSCOUNT3	Number of intersections between streams and roads, where roads are local conecting roads (CAT3ROADS)	0	dimensionless
CROSCOUNT4	Number of intersections between streams and roads, where roads are local roads (CAT4ROADS)	0	dimensionless
CRSDFT	Percentage of area of coarse-grained stratified drift	0	percent
CSL10_85	Change in elevation divided by length between points 10 and 85 percent of distance along main channel to basin divide - main channel method not known	252	feet per mi
DRFTPERSTR	Area of stratified drift per unit of stream length	-100000	square mile per mile
DRNAREA	Area that drains to a point on a stream	0.0705	square miles
ELEV	Mean Basin Elevation	1020	feet
FOREST	Percentage of area covered by forest	65.66	percent
LAKEAREA	Percentage of Lakes and Ponds	0	percent
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	0	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	22.1	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	9.6	percent
LFPLENGTH	Length of longest flow path	0.62	miles
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	1	dimensionless
MAXTEMPC	Mean annual maximum air temperature over basin area, in degrees Centigrade	13.2	degrees C
OUTLETX	Basin outlet horizontal (x) location in state plane coordinates	155315	feet
OUTLETY	Basin outlet vertical (y) location in state plane coordinates	901645	feet
PCTSNDGRV	Percentage of land surface underlain by sand and gravel deposits	0	percent
PRECPRIS00	Basin average mean annual precipitation for 1971 to 2000 from PRISM	47.7	inches
STRMTOT	total length of all mapped streams (1:24,000-scale) in the basin	0	miles
WETLAND	Percentage of Wetlands	5.2	percent

Application Version: 4.19.4
StreamStats Services Version: 1.2.22
NSS Services Version: 2.2.1

Attachment H

Isolated Land Subject to Flooding Memorandum

ARUP

Memorandum

To	Marc Bergeron, Epsilon Associates, Inc.
Date	June 22, 2024
Copies	Anna Beheshti, Arup Justin Roy, Arup Jonathan O'Hara, Rhynland Energy, LLC Gus Hadidi, Rhynland Energy, LLC
From	Derek Anderson, Arup
Subject	Isolated Land Subject to Flooding Determination ZOVL Site (Oakham, MA)

In support of the Abbreviated Notice of Resource Area Delineation (ANRAD) filing for 358 Coldbrook Road in Oakham, MA, Arup USA, Inc. (Arup) performed calculations to determine if three (3) topographic depressions within the property bounds qualify as Isolated Land Subject to Flooding (ILSF). Arup's analysis was conducted in accordance with the Massachusetts Wetlands Protection Act Regulations at 310 CMR 10.57 (2)(b). This memorandum summarizes our findings.

To determine whether an isolated depression qualifies ILSF, one must follow a three-step process. First, it must be determined that the depression is isolated from waterbodies without any discernible inlets or outlets. Next, verify that the depression experiences flooding up to a volume of 0.25 acre-foot with a minimum depth of 6-inches. Finally, if the depression meets those requirements – one must determine the ILSF elevation based on the extent of lateral flooding resulting from a 7-inch, 24-hour storm event.

The three (3) topographic depressions in question were delineated by Epsilon Associates, Inc. on 7/21/2023 and are noted with wetland flag series W7-100 through W7-123, W4-100 through W4-127, and W5-100 through W5-131. The topographic depression delineated by wetland flags W4-100 through W4-127 has a total storage volume of 0.097 acre-feet. The topographic depression delineated by wetland flags W5-100 through W5-131 has a total storage volume of 0.041 acre-feet. The topographic depression delineated by wetland flags W7-100 through W7-123 does not have a maximum depth of at least 6-inches.

Based on the outcomes noted above, Arup has determined that none of the three (3) topographic depressions qualify as ILSF. Supporting calculations and sketches are provided as attachments to this memorandum.

ZOVL
Coldbrook Road
Oakham, MA
Arup Job Number: 296229
June 22, 2024

ILSF Determination

Wetland Flag Sequence	Is this area isolated?				Can this area confine a volume of water equal to or greater than 0.25 acre-feet and to an average depth of 6 inches?		
	Inlets	Outlets	Connection to 100-yr Floodplain	Outcome	Volume >= 0.25 acre-ft	Depth >= 6 inches	Outcome
W4-100 - W4-128	No	No	No	Yes	No	-	No
W5-100 - W5-131	No	No	No	Yes	No	-	No
W7-100 - W7-125	No	No	No	Yes	-	No	No

ILSF Sizing Calculations

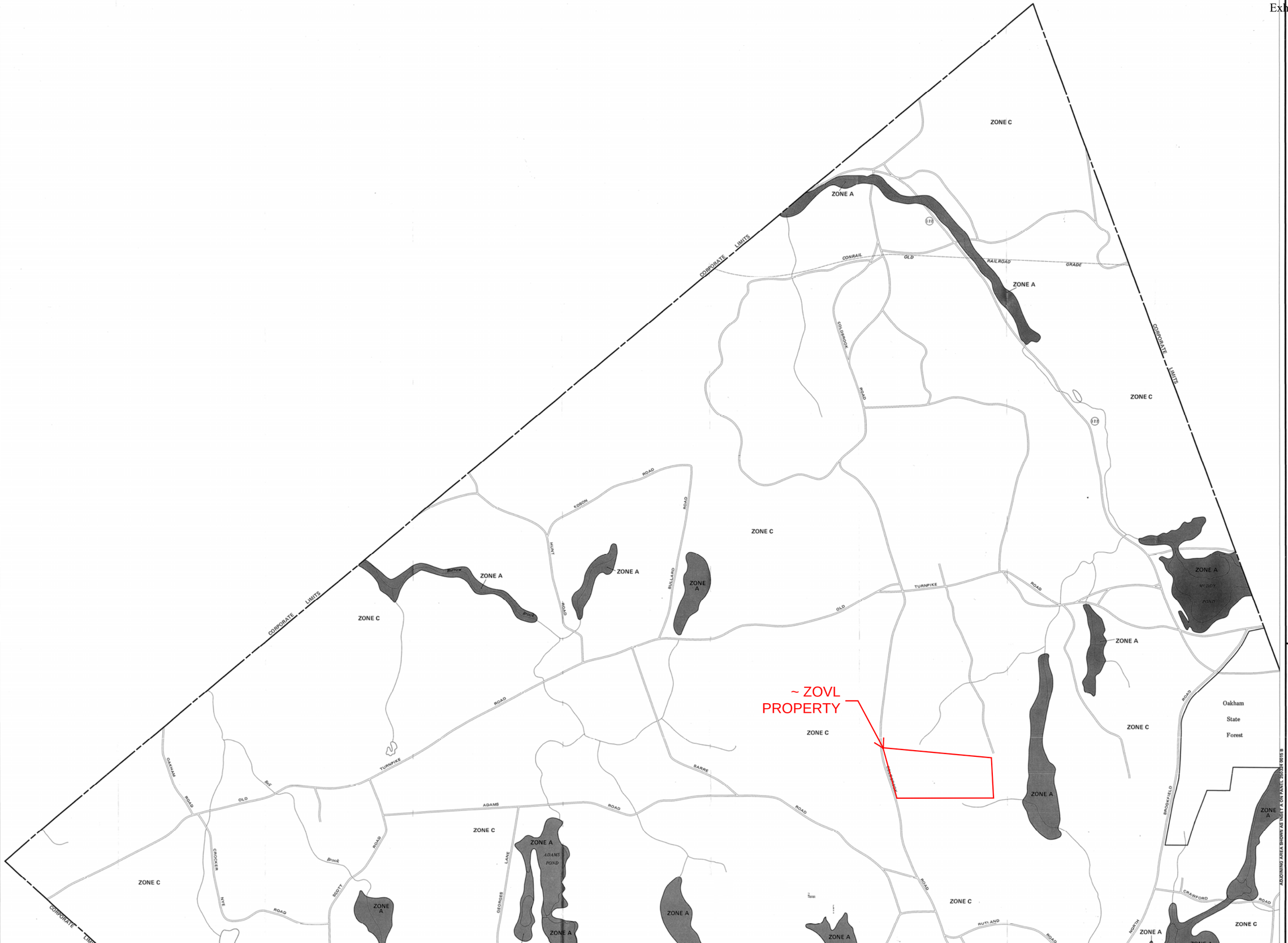
Wetland Flags W4-100 - W4-128

Elevation	Area at Elevation (sf)	Increment (ft)	Cumulative Volume (cf)	Cumulative Volume (ac-ft)
984.1	0			
		0.9		
985	821		369.45	0.0085
		0.5		
985.5	14533		4207.95	0.0966

Wetland Flags W5-100 - W5-131

Elevation	Area at Elevation (sf)	Increment (ft)	Cumulative Volume (cf)	Cumulative Volume (ac-ft)
983.1	0			
		0.9		
984	3985		1793.25	0.0412

Prepared By:
Arup
60 State Street, 10th Floor
Boston, MA 02109
(617) 864-2987



Zone Designations*

100-Year Flood Boundary

500-Year Flood Boundary

Base Flood Elevation Line With Elevation In Feet**

Base Flood Elevation in Feet Where Uniform Within Zone**

Elevation Reference Mark

Zone D Boundary

River Mile

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
AO	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Index To Map Panels.

INITIAL IDENTIFICATION:
AUGUST 2, 1974

FLOOD HAZARD BOUNDARY MAP REVISIONS:
AUGUST 20, 1976

FLOOD INSURANCE RATE MAP EFFECTIVE:
APRIL 3, 1984

FLOOD INSURANCE RATE MAP REVISIONS:

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.

APPROXIMATE SCALE
800 0 800 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

TOWN OF
OAKHAM,
MASSACHUSETTS
WORCESTER COUNTY

PANEL 5 OF 15
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COMMUNITY-PANEL NUMBER
250324 0005 B

EFFECTIVE DATE:
APRIL 3, 1984

PLOT BY: Anna Beheshti PLOT TIME: 6/20/2024 1:00 PM

NOTES

1. THE FOLLOWING DOCUMENTS ARE INCORPORATED BY REFERENCE AS PART OF THIS EXHIBIT:
   - 1.1. SITE SURVEY:"EXISTING CONDITIONS SURVEY" BY CORNERSTONE ENERGY SERVICES, DATED AUGUST 29, 2023.
   - 1.2. WETLAND MAPPING: "RHYNLAND BESS NEW ENGLAND - ZOVL SITE" EXHIBIT PREPARED BY EPSILON ASSOCIATES, INC.. DATED SEPTEMBER 21, 2023.
   - 1.3. FLOOD MAPPING: FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM), MAP NUMBER 250324 0005 B, EFFECTIVE APRIL 3, 1984.

Issue	Date	Revisions

ARUP

60 State St, Boston, MA
02109, United States

www.arup.com

Client

MORAGA STORAGE LLC

Job Title

MORAGA STORAGE
ZOVL - Oakham, MA

Seal

NOT FOR CONSTRUCTION

Drawing Title

ISOLATED LAND SUBJECT TO FLOODING EXHIBIT

Scale: 1" = 50'

File Name: ZOVL - ILSF.DWG

Drawing Status: NOT FOR CONSTRUCTION

Job No	Drawing No	Issue
289761-00	EX-1	0

Appendix M: Site Development Drawings

PLOT TIME: 3/14/2025 10:18 AM
PLOT BY: Reese Smith

GENERAL NOTES

1. THE FOLLOWING DOCUMENTS ARE INCORPORATED BY REFERENCE AS PART OF THIS SITE PLAN:
   - 1.1. TOPOGRAPHIC SURVEY: "EXISTING CONDITIONS SURVEY" BY CORNERSTONE ENERGY SERVICES, DATED NOVEMBER 6, 2024.
   - 1.2. FLOOD MAPPING: FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM), MAP NUMBERS 25032400058, EFFECTIVE APRIL 3, 1984.
   - 1.3. WETLAND DELINEATION: PER FIELD FLAGGING BY EPSILON ON JULY 21, 2023 AND MARCH 26, 2024 AND APPROVED BY THE OAKHAM CONSERVATION COMMISSION THROUGH AN ORDER OF RESOURCE AREA DELINEATION (ORAD) IN DECEMBER 2024.
   - 1.4. GEOTECHNICAL: GEOTECHNICAL INVESTIGATION COMPLETED DEC 23, 2024. ADDITIONAL GEOTECHNICAL INFORMATION MAY BE REQUIRED.
   - 1.5. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR MUST VERIFY THAT THEY HAVE THE LATEST EDITION OF THE DOCUMENTS REFERENCED ABOVE. THIS IS CONTRACTOR'S RESPONSIBILITY.
2. VERTICAL ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1998 (NAVD 88) AND HORIZONTAL LOCATIONS REFER TO THE NORTH AMERICAN DATUM OF 1983 (NAVD 83).
3. ARUP HAS NOT VERIFIED EXISTING CONDITIONS INFORMATION INDICATED HEREON. LOCATIONS OF EXISTING UNDERGROUND UTILITIES/OBSTRUCTIONS/STRUCTURES/SYSTEMS SHOWN HEREON ARE APPROXIMATE ONLY. ADDITIONAL UTILITIES/OBSTRUCTIONS/STRUCTURES/SYSTEMS NOT INDICATED HERON MAY EXIST. EXISTING UTILITY, PROPERTY LINE, AND ENVIRONMENTAL RESOURCE AREA INFORMATION INDICATED ON THIS PLAN SHOULD BE CONSIDERED APPROXIMATE.
4. NO GUARANTEE IS IMPLIED OR INTENDED AS TO THE ACCURACY, LOCATION, OR THAT ALL UTILITIES AND/OR SUBSURFACE STRUCTURES ARE SHOWN. CONTRACTOR SHALL VERIFY SIZE, LOCATION, AND ELEVATIONS OF UTILITIES AND STRUCTURES AS REQUIRED PRIOR TO THE START OF ANY CONSTRUCTION.
5. EXISTING UTILITIES TO REMAIN AND BE PROTECTED DURING CONSTRUCTION UNLESS OTHERWISE NOTED. CONTRACTOR TO NOTIFY ENGINEER IN WRITING ABOUT ANY CONFLICTS.
6. ALL DIMENSIONS SHOWN ON THE PLANS MUST BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. CONTRACTOR MUST NOTIFY ENGINEER, IN WRITING, IF ANY CONFLICTS, DISCREPANCIES, OR AMBIGUITIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION. NO EXTRA COMPENSATION WILL BE PAID TO THE CONTRACTOR FOR WORK WHICH HAS TO BE REDONE OR REPAIRED DUE TO DIMENSIONS OR GRADES SHOWN INCORRECTLY ON THESE PLANS PRIOR TO CONTRACTOR GIVING ENGINEER WRITTEN NOTIFICATION OF SAME AND ENGINEER, THEREAFTER, PROVIDING CONTRACTOR WITH WRITTEN AUTHORIZATION TO PROCEED WITH SUCH ADDITIONAL WORK.
7. THE CONTRACTOR IS RESPONSIBLE FOR IDENTIFYING WHEN SHORING IS REQUIRED AND FOR INSTALLING ALL SHORING REQUIRED DURING EXCAVATION (TO BE PERFORMED IN ACCORDANCE WITH CURRENT OSHA STANDARDS) AND ANY ADDITIONAL PRECAUTIONS TO BE TAKEN TO ASSURE THE STABILITY OF ADJACENT, NEARBY AND CONTIGUOUS STRUCTURES AND PROPERTIES.
8. THE ENGINEER IS NOT RESPONSIBLE FOR CONSTRUCTION METHODS, MEANS, TECHNIQUES OR PROCEDURES, GENERALLY OR FOR THE CONSTRUCTION MEANS, METHODS, TECHNIQUES OR PROCEDURES FOR COMPLETION OF THE WORK DEPICTED BOTH ON THESE PLANS, AND FOR ANY CONFLICTS/SCOPE REVISIONS WHICH RESULT FROM SAME. CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE METHODS/MEANS FOR COMPLETION OF THE WORK PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.
9. SAFETY MEASURES, CONSTRUCTION METHODS AND CONTROL OF WORK SHALL BE RESPONSIBILITY OF CONTRACTOR. THE ENGINEER OF RECORD IS NOT RESPONSIBLE FOR JOB SITE SAFETY. THE ENGINEER OF RECORD HAS NOT BEEN RETAINED TO PERFORM OR BE RESPONSIBLE FOR JOB SITE SAFETY, SAME BEING WHOLLY OUTSIDE OF ENGINEER'S SERVICES AS RELATED TO THE PROJECT. THE ENGINEER OF RECORD IS NOT RESPONSIBLE TO IDENTIFY OR REPORT ANY JOB SITE SAFETY ISSUES, AT ANY TIME.
10. CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR AND/OR REPLACEMENT OF ANY EXISTING IMPROVEMENTS DAMAGED DURING DEMOLITION THAT ARE NOT DESIGNATED FOR DEMOLITION AND/OR REMOVAL ON THE CONTRACT DOCUMENTS. DAMAGED IMPROVEMENTS SHALL BE REPAIRED TO THE SATISFACTION OF THEIR RESPECTIVE OWNERS.
11. ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR PRE-CONSTRUCTION CONDITIONS UPON COMPLETION OF DEMOLITION WORK, UNLESS OTHERWISE NOTED ON THE CONTRACT DOCUMENTS.
12. ANY DEMOLITION NECESSITATED BY FIELD CONDITIONS NOT COVERED ON THE CONTRACT DOCUMENTS SHALL BE REVIEWED AND APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO IMPLEMENTATION.
13. REFER TO ELECTRICAL DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
14. GENERAL CONTRACTOR SHALL COORDINATE ALL WORK WITH ALL TRADES.
15. AS CONTAINED IN THESE DRAWINGS AND ASSOCIATED APPLICATION DOCUMENTS PREPARED BY THE SIGNATORY PROFESSIONAL ENGINEER, THE USE OF THE WORDS CERTIFY OR CERTIFICATION CONSTITUTES AN EXPRESSION OF "PROFESSIONAL OPINION" REGARDING THE INFORMATION WHICH IS THE SUBJECT OF THE UNDERSIGNED PROFESSIONAL'S KNOWLEDGE OR BELIEF AND IN ACCORDANCE WITH COMMON ACCEPTED PROCEDURE CONSISTENT WITH THE APPLICABLE STANDARDS OF PRACTICE, AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE, EITHER EXPRESSED OR IMPLIED.

REGULATORY NOTES

1. CONTRACTOR SHALL CONTACT DIG-SAFE FOR UNDERGROUND UTILITY MARKING AT 1-800-344-7233 AT LEAST 72 HOURS PRIOR TO COMMENCEMENT OF ANY WORK.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY LOCATING AND COORDINATING ANY ON-SITE ACTIVITY WITH DIG-SAFE AND THE APPROPRIATE UTILITY COMPANY AND MAINTAINING EXISTING UTILITY SYSTEM SERVICE.
   - 2.1. CONTRACTOR SHALL MAKE THEMSELVES AWARE OF AND SHALL COMPLY WITH ALL CONSTRUCTION REQUIREMENTS, CONDITIONS, AND LIMITATIONS IMPOSED REGULATORY REQUIREMENTS, PERMITS, AND APPROVALS OF REGULATORY AUTHORITIES AND UTILITY COMPANIES PRIOR TO COMMENCEMENT OF ANY WORK. CONTRACTOR SHALL COORDINATE AND OBTAIN ALL CONSTRUCTION PERMITS, APPROVALS, INSPECTIONS, AND/OR CERTIFICATIONS REQUIRED BY REGULATORY AUTHORITIES.
3. DISPOSE OF ALL CONSTRUCTION WASTE IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS.
4. ANY DISCHARGE FROM DEWATERING OPERATIONS, SHOULD SUCH OPERATIONS PROVE NECESSARY, SHALL TAKE PLACE OUTSIDE THE 100-FOOT BUFFER ZONE TO WETLAND RESOURCE AREAS AND WITHIN THE LIMIT OF WORK. DISCHARGE FROM SEDIMENTATION BASINS SHALL BE FILTERED THROUGH SILT SACKS.
5. NO MATERIALS, INCLUDING BUT NOT LIMITED TO GRAVEL, TOPSOIL, BOULDERS, BRUSH, LOGS, STUMPS, SLASH, ASPHALT, AND CONSTRUCTION SUPPLIES OR DEBRIS, SHALL BE STORED OR BURIED WITHIN THE 100-FT BORDERING VEGETATED WETLAND BUFFER ZONE, OR THE FEMA 100-YEAR FLOOD AREA. ALL SUCH MATERIALS SHALL BE REMOVED FROM THE SITE PRIOR TO COMPLETION OF THE PROJECT, EXCEPT AS APPROVED BY THE OWNER'S REPRESENTATIVE.
6. ALL CONSTRUCTION ACTIVITIES SHALL BE PERFORMED IN ACCORDANCE WITH THE MASSACHUSETTS GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL.
7. THESE DRAWINGS ARE ISSUED FOR PERMIT-LEVEL REVIEW ONLY. THEY ARE NOT INTENDED FOR CONSTRUCTION PURPOSES. ANY USE OF THESE DRAWINGS FOR CONSTRUCTION IS AT THE USER'S OWN RISK. THE DESIGN IS SUBJECT TO FURTHER DEVELOPMENT, REVIEW, AND APPROVAL BEFORE BEING CONSIDERED FINAL FOR CONSTRUCTION.

SHEET INDEX

EXISTING WORKS LEGEND

- PROPERTY LINE
- EXISTING CONDITIONS AREA
- ABUTTER LINE
- MONUMENT FOUND
- DRILL HOLE/IRON ROD FOUND
- STONE WALL
- WETLANDS
- WETLANDS 100' BUFFER ZONE
- TREELINE
- CONTOURS
- SPOT GRADE
- OVERHEAD UTILITY
- WETLAND FLAG
- ELECTRIC TOWER
- EXISTING ACCESS ROAD

PROPOSED WORKS LEGEND

- PROPERTY LINE
- LIMIT OF DISTURBANCE
- FENCE LINE
- MAJOR CONTOUR
- MINOR CONTOUR
- NOISE WALL/RETAINING WALL
- STORM PIPE
- CATCH BASIN
- DOUBLE CATCH BASIN
- DRAIN MANHOLE/WATER QUALITY UNIT
- PROPOSED ASPHALT ROAD
- GRAVEL
- SILT FENCE
- CONSTRUCTION ENTRANCE
- SLOPE STABILIZATION
- INLET PROTECTION

ABBREVIATIONS

APPROX	APPROXIMATE/APPROXIMATELY
LF	LINEAR FEET
CB	CATCH BASIN
MH	MANHOLE
INV	INVERT
HDS	HYDRODYNAMIC SEPARATOR
HDPE	HIGH DENSITY POLYETHYLENE
JFV	JELLYFISH FILTRATION VAULT
B/BASIN	BOTTOM OF BASIN
T/BASIN	TOP OF BASIN
BVW	BORDERING VEGETATED WETLAND

Issue	Date	Revisions
A	9/22/23	DRAFT ISSUED FOR REVIEW
B	9/28/23	CONSTRAINT MAPPING
C	8/21/24	10% DESIGN SUBMISSION
D	9/13/24	30% DESIGN DRAFT
E	11/01/24	ISSUED FOR ISO-NE SIS APPLICATION
F	02/28/2025	30% DESIGN
G	03/18/2025	30% DESIGN REVISION

ARUP

60 State Street , Boston, MA
02109, United States

www.arup.com

Client

MORAGA STORAGE LLC

Job Title

MORAGA STORAGE
ZOVL - Oakham, MA

Seal

NOT FOR CONSTRUCTION

Drawing Title

GENERAL NOTES

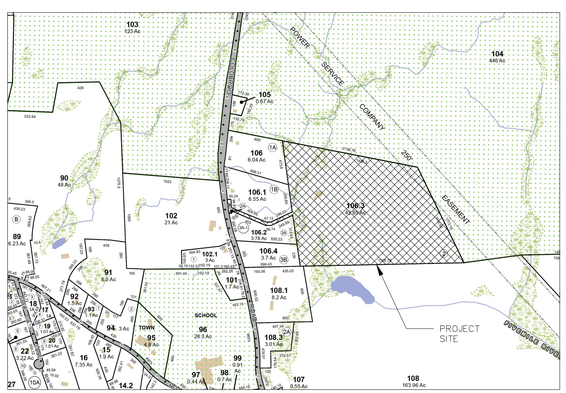
Scale: NTS

File Name: C0-01.DWG

Drawing Status: 30% DESIGN DRAWINGS

Job No	Drawing No	Issue
296229-00	C0-00	G

PLOT BY: Reese Smith PLOT TIME: 3/19/2025 1:24 PM



LOCUS MAP

SCALE: 1"=400'

NOTES

1. THE FOLLOWING DOCUMENTS ARE INCORPORATED BY REFERENCE AS PART OF THIS SITE PLAN:
   - 1.1. TOPOGRAPHIC SURVEY:"EXISTING CONDITIONS SURVEY OF ZOVL PARCEL" BY CORNERSTONE ENERGY SERVICES, DATED NOVEMBER 6, 2024.
   - 1.2. FLOOD MAPPING: FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM), MAP NUMBER 2503240005B, EFFECTIVE APRIL 3, 1984.
   - 1.3. WETLAND DELINEATION: PER FIELD FLAGGING BY EPSILON ON JULY 21, 2023 AND MARCH 26, 2024 AND APPROVED BY THE OAKHAM CONSERVATION COMMISSION THROUGH AN ORDER OF RESOURCE AREA DELINEATION (ORAD) IN DECEMBER 2024.
   - 1.4. GEOTECHNICAL: GEOTECHNICAL INVESTIGATION COMPLETED DEC 23, 2024. ADDITIONAL GEOTECHNICAL INFORMATION MAY BE REQUIRED.
   - 1.5. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR MUST VERIFY THAT THEY HAVE THE LATEST EDITION OF THE DOCUMENTS REFERENCED ABOVE. THIS IS CONTRACTOR'S RESPONSIBILITY.
2. VERTICAL ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1998 (NAVD 88) AND HORIZONTAL LOCATIONS REFER TO THE NORTH AMERICAN DATUM OF 1983 (NAVD 83).
3. ARUP HAS NOT VERIFIED EXISTING CONDITIONS INFORMATION INDICATED HEREON. LOCATIONS OF EXISTING UNDERGROUND UTILITIES/OBSTRUCTIONS/STRUCTURES/SYSTEMS SHOWN HEREON ARE APPROXIMATE ONLY. ADDITIONAL UTILITIES/OBSTRUCTIONS/STRUCTURES/SYSTEMS NOT INDICATED HERON MAY EXIST. EXISTING UTILITY, PROPERTY LINE, AND ENVIRONMENTAL RESOURCE AREA INFORMATION INDICATED ON THIS PLAN SHOULD BE CONSIDERED APPROXIMATE.
4. NO GUARANTEE IS IMPLIED OR INTENDED AS TO THE ACCURACY, LOCATION, OR THAT ALL UTILITIES AND/OR SUBSURFACE STRUCTURES ARE SHOWN. CONTRACTOR SHALL VERIFY SIZE, LOCATION, AND ELEVATIONS OF UTILITIES AND STRUCTURES AS REQUIRED PRIOR TO THE START OF ANY CONSTRUCTION.
5. EXISTING UTILITIES TO REMAIN AND BE PROTECTED DURING CONSTRUCTION UNLESS OTHERWISE NOTED. CONTRACTOR TO NOTIFY ENGINEER IN WRITING ABOUT ANY CONFLICTS.

ADDRESS:	358 COLDBROOK RD, OAKHAM, MA, 01068
EXISTING ZONE:	AGRICULTURAL AND RURAL RESIDENTIAL DISTRICT
PROPOSED ZONE:	AGRICULTURAL AND RURAL RESIDENTIAL DISTRICT
USES:	BATTERY ENERGY STORAGE SITE (BESS)

RELEVANT STANDARDS	PERMITTED/REQUIRED	PROPOSED	NOTES
MINIMUM LOT AREA (SF)	44,000 SF	1,866,546 SF	
MINIMUM LOT FRONTAGE (FT)	150 FT	150 FT	
MAXIMUM UPLAND AREA (%)	65%	25%	UNCLEAR WHETHER THIS MINIMUM APPLIES TO A LOT TO BE USED FOR BUSINESS PURPOSES, BUT FOR THE PURPOSES OF THIS ANALYSIS, THE MINIMUM UPLAND AREA IS 65% OF THE MINIMUM LOT AREA.
MINIMUM FRONT SETBACK (FT)	50 FT	244 FT	REMOVAL OF SOIL BELOW EXISTING GRADE IS PROHIBITED WITHIN 200 FEET OF ANY PUBLIC ROADWAY OR ABUTTING PROPERTY LINE, EXCEPT BY (A) PERMISSION OF AN ABUTTER AND A SUPER-MAJORITY VOTE OF THE PLANNING BOARD, PER SECTION 6.3.3., OR (B) CONSTRUCTING A CONTINUOUS VISUAL BARRIER, AS APPROVED BY THE PLANNING BOARD, IN WHICH CASE REMOVAL OF SOIL MAY OCCUR WITHIN 100 FEET OF THE ABUTTING PROPERTY LINE PER SECTION 6.3.3.1.*
MINIMUM SIDE SETBACK (FT)	50 FT	44 FT	
MINIMUM REAR SETBACK (FT)	50 FT	34 FT	
MINIMUM DIMENSION BETWEEN SIDE SETBACKS (FT)	100 FT	950 FT	
MAXIMUM BUILDING HEIGHT (FT)	35 FT	< 35 FT	HEIGHT OF NOISE BARRIER IS NOT SPECIFIED ON PLANS
PROPORTION FACTOR	PF = (16A/P^2) < 40	N/A	SECTION 5.6.5.4 EXEMPTS ALL LOTS OF RECORD AS OF JUNE 17, 2002. THE SUBJECT LOT WAS CREATED BY A PLAN RECORDED IN 1987 (PB 575/122) AS AMENDED BY A PLAN RECORDED ON MARCH 26, 1999 (PB 739/61). THEREFORE, THE LOT IN QUESTION IS EXEMPTED FROM THE REQUIREMENTS OF SECTION 5.6.
LOT DEPTH ALONG FRONTAGE (FT)	50 FT	30 FT	
FENCING	PERMITTED - 8 FT	8 FT	
DRIVEWAYS	MINIMUM 15 FT WIDTH	16 FT	

100 0 100 200

Issue	Date	Revisions
A	9/22/23	DRAFT ISSUED FOR REVIEW
B	9/28/23	CONSTRAINT MAPPING
C	8/21/24	10% DESIGN SUBMISSION
D	9/13/24	30% DESIGN DRAFT
E	11/01/24	ISSUED FOR ISO-NE SIS APPLICATION
F	02/28/2025	30% DESIGN
G	03/18/2025	30% DESIGN REVISION

ARUP

60 State Street , Boston, MA
02109, United States

www.arup.com

Client

MORAGA STORAGE LLC

Job Title

MORAGA STORAGE
ZOVL - Oakham, MA

Seal

NOT FOR CONSTRUCTION

Drawing Title

CIVIL EXISTING CONDITIONS SHEET

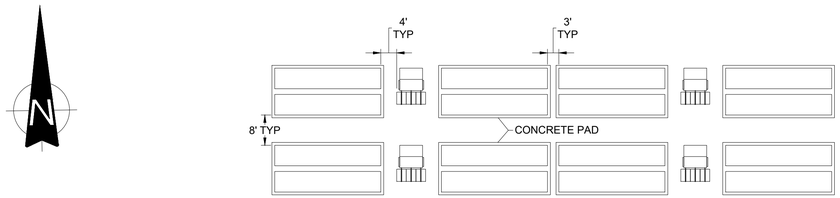
Scale 1" = 100'

File Name C1-01.DWG

Drawing Status 30% DESIGN DRAWINGS

Job No	Drawing No	Issue
296229-00	C1-01	G

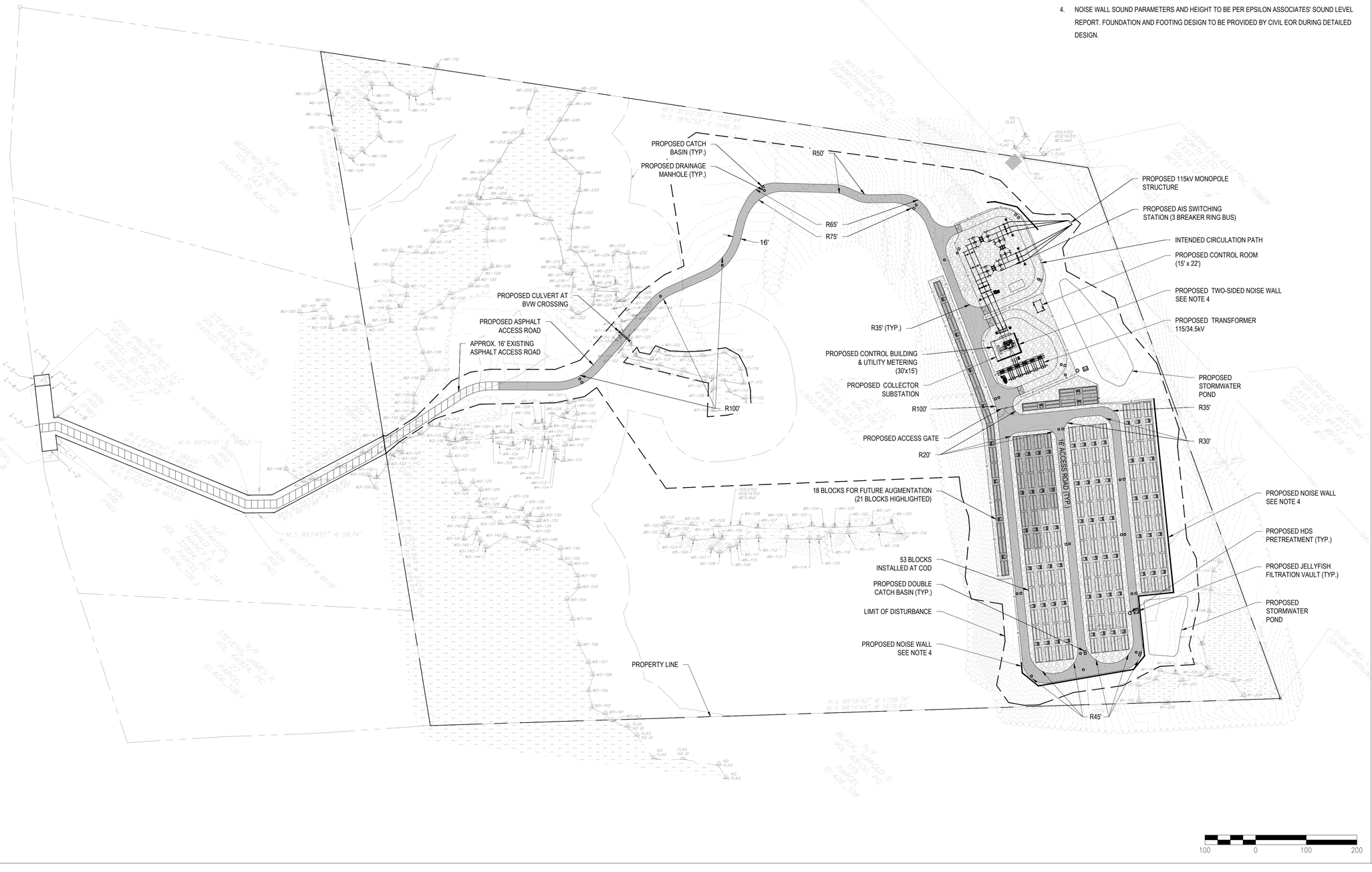
PLOT BY: Reese Smith PLOT TIME: 3/19/2025 1:29 PM



BESS CLEARANCE TYPICAL
SCALE: 1" = 20'

NOTES

1. TOPOGRAPHIC/SITE SURVEY, WETLAND LOCATIONS AND INFORMATION, AND LOCATIONS OF UNDERGROUND UTILITIES SOURCED FROM "EXISTING CONDITIONS SURVEY OF: ZOVL PARCEL" BY CORNERSTONE SURVEY, DATED NOV. 6, 2024.
2. BEARINGS SHOWN HEREON ARE REFERENCED TO GRID NORTH, MASSACHUSETTS STATE PLANE, NAD83. ELEVATIONS ARE IN REFERENCE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88) BASED ON DUAL FREQUENCY GPS OBSERVATIONS REFER TO THE NORTH AMERICAN DATUM OF 1983 (NAD 83).
3. UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD AT THE TIME OF THE SURVEY, AND IS A REPRESENTATION OF AVAILABLE SURFACE EVIDENCE ONLY, AND THEREFORE MAY NOT NECESSARILY DEPICT ALL EXISTING UTILITIES. CONTRACTORS AND/OR DESIGNERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC, (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO ANY AND/OR EXCAVATION.
4. NOISE WALL SOUND PARAMETERS AND HEIGHT TO BE PER EPSILON ASSOCIATES' SOUND LEVEL REPORT. FOUNDATION AND FOOTING DESIGN TO BE PROVIDED BY CIVIL EOR DURING DETAILED DESIGN.



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F	02/28/2025	30% DESIGN
G	03/18/2025	30% DESIGN REVISION

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02109, United States

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Client
MORAGA STORAGE LLC

Job Title
MORAGA STORAGE
ZOVL - Oakham, MA

Seal

NOT FOR CONSTRUCTION

Drawing Title
CIVIL SITE PLAN

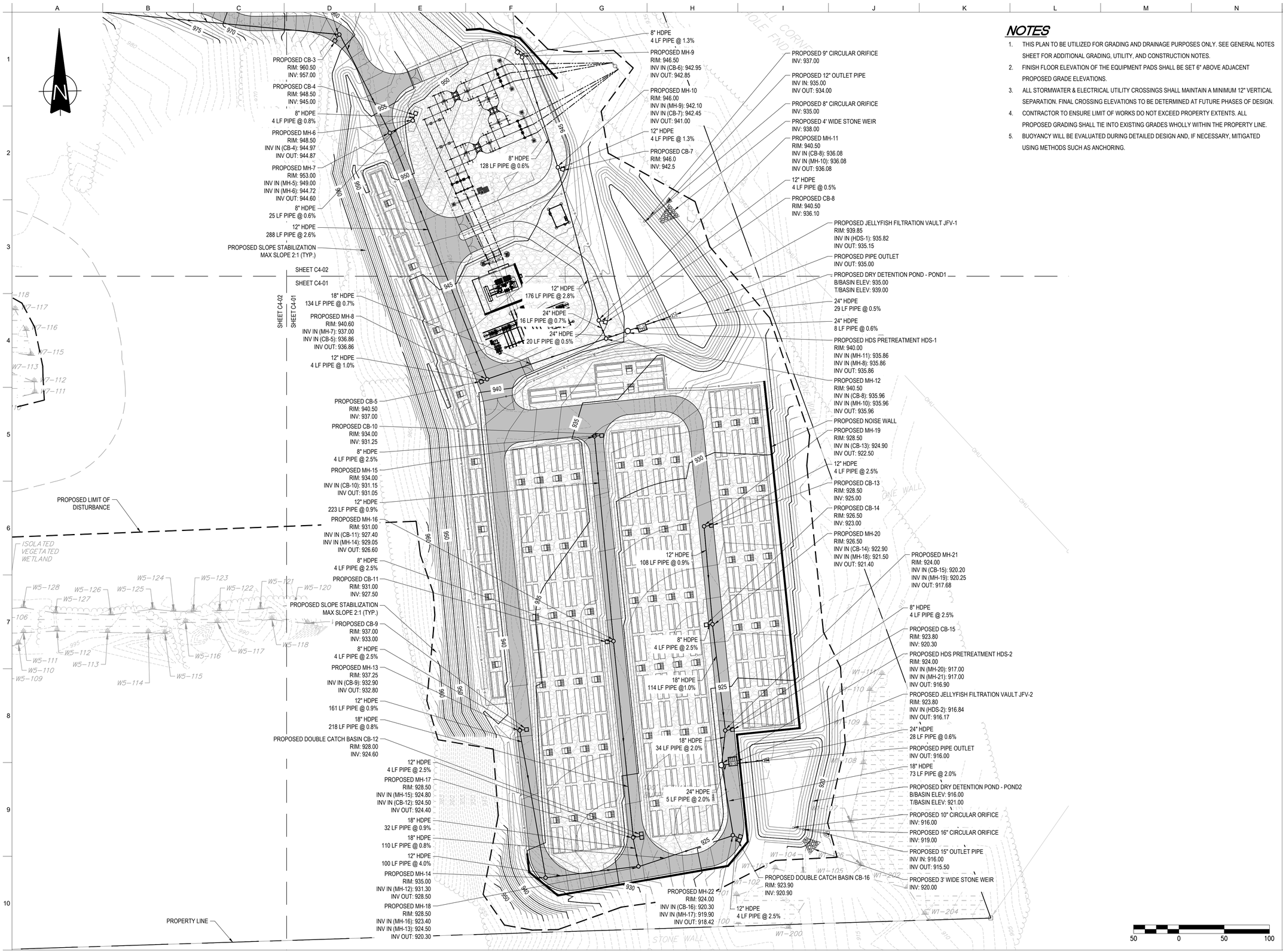
Scale 1" = 100'

File Name C2-01.DWG

Drawing Status
30% DESIGN DRAWINGS

Job No	Drawing No	Issue
296229-00	C2-01	G

PLOT BY: Reese Smith PLOT TIME: 3/19/2025 2:38 PM



NOTES

1. THIS PLAN TO BE UTILIZED FOR GRADING AND DRAINAGE PURPOSES ONLY. SEE GENERAL NOTES SHEET FOR ADDITIONAL GRADING, UTILITY, AND CONSTRUCTION NOTES.
2. FINISH FLOOR ELEVATION OF THE EQUIPMENT PADS SHALL BE SET 6" ABOVE ADJACENT PROPOSED GRADE ELEVATIONS.
3. ALL STORMWATER & ELECTRICAL UTILITY CROSSINGS SHALL MAINTAIN A MINIMUM 12" VERTICAL SEPARATION. FINAL CROSSING ELEVATIONS TO BE DETERMINED AT FUTURE PHASES OF DESIGN.
4. CONTRACTOR TO ENSURE LIMIT OF WORKS DO NOT EXCEED PROPERTY EXTENTS. ALL PROPOSED GRADING SHALL TIE INTO EXISTING GRADES WHOLLY WITHIN THE PROPERTY LINE.
5. BUOYANCY WILL BE EVALUATED DURING DETAILED DESIGN AND, IF NECESSARY, MITIGATED USING METHODS SUCH AS ANCHORING.

Issue	Date	Revisions
A	9/22/23	DRAFT ISSUED FOR REVIEW
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Client

MORAGA STORAGE LLC

Job Title

MORAGA STORAGE
ZOVL - Oakham, MA

Seal

NOT FOR CONSTRUCTION

Drawing Title

CIVIL GRADING AND DRAINAGE SHEET

Scale: 1" = 50'

File Name: C4-01.DWG

Drawing Status: 30% DESIGN DRAWINGS

Job No	Drawing No	Issue
296229-00	C4-01	G

50 0 50 100

PLOT BY: Reese Smith PLOT TIME: 3/19/2025 2:38 PM

NOTES

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3. ALL STORMWATER & ELECTRICAL UTILITY CROSSINGS SHALL MAINTAIN A MINIMUM 12" VERTICAL SEPARATION. FINAL CROSSING ELEVATIONS TO BE DETERMINED AT FUTURE PHASES OF DESIGN.
4. CONTRACTOR TO ENSURE LIMIT OF WORKS DO NOT EXCEED PROPERTY EXTENTS. ALL PROPOSED GRADING SHALL TIE INTO EXISTING GRADES WHOLLY WITHIN THE PROPERTY LINE.
5. FINAL CULVERT DESIGN, SIZING, AND MODELING WILL BE COMPLETED DURING THE DETAILED DESIGN PHASE IN ACCORDANCE WITH THE MASSACHUSETTS STREAM CROSSING STANDARDS (310 CMR 10.00) AND THE MASSACHUSETTS WETLANDS PROTECTION ACT (M.G.L. CH. 131, § 40) TO ENSURE REGULATORY COMPLIANCE AND MINIMIZE BVW IMPACTS.
6. APPROXIMATELY 385 SF OF PERMANENT WETLAND FILL AND 800 SF OF TEMPORARY WETLAND DISTURBANCE WILL OCCUR AT THE BVW CROSSING. ANY PERMANENT WETLAND FILL WILL BE REPLACED AT A 1:1 RATIO IN ACCORDANCE WITH THE MASSACHUSETTS WETLANDS PROTECTION REGULATIONS. THE LOCATION FOR THE REPLICATION AREA WILL BE DETERMINED DURING A LATER DESIGN PHASE.
7. BUOYANCY WILL BE EVALUATED DURING DETAILED DESIGN AND, IF NECESSARY, MITIGATED USING METHODS SUCH AS ANCHORING.

PROPERTY LINE
100' WETLAND BUFFER ZONE
PROPOSED CB-2
RIM: 980.50
INV: 977.00
8" HDPE
300 LF PIPE @ 4.8%
8" HDPE
4 LF PIPE @ 1.3%
8" HDPE
170 LF PIPE @ 1.7%
PROPOSED MH-4
RIM: 980.50
INV IN (CB-2): 976.95
INV IN (MH-3): 977.00
INV OUT: 972.00
PROPOSED MH-3
RIM: 984.50
INV IN (MH-2): 979.98
INV OUT: 979.88
8" HDPE
136 LF PIPE @ 0.7%
PROPOSED MH-2
RIM: 984.00
INV IN (MH-1): 980.90
INV OUT: 980.80
8" HDPE
230 LF PIPE @ 0.6%
PROPOSED CULVERT AT BVW CROSSING
SEE NOTES 5 AND 6
ELEV 986.4
8" HDPE
4 LF PIPE @ 3.0%
PROPOSED MH-1
RIM: 985.00
INV IN (CB-1): 982.38
INV OUT: 982.28
PROPOSED CB-1
RIM: 985.00
INV: 982.50
PROPOSED LIMIT OF DISTURBANCE
PROPERTY LINE
ISOLATED VEGETATED WETLAND
PROPOSED MH-5
RIM: 960.75
INV IN (MH-4): 957.50
INV IN (CB-3): 956.96
INV OUT: 955.00
8" HDPE
4 LF PIPE @ 1.0%
8" HDPE
120 LF PIPE @ 5.0%
PROPOSED CB-6
RIM: 946.50
INV: 943.00
PROPOSED CB-3
RIM: 960.50
INV: 957.00
PROPOSED CB-4
RIM: 948.50
INV: 945.00
8" HDPE
4 LF PIPE @ 0.8%
PROPOSED MH-6
RIM: 948.50
INV IN (CB-4): 944.97
INV OUT: 944.87
8" HDPE
128 LF PIPE @ 0.6%
PROPOSED MH-7
RIM: 953.00
INV IN (MH-5): 949.00
INV IN (MH-6): 944.72
INV OUT: 944.60
8" HDPE
25 LF PIPE @ 0.6%
12" HDPE
288 LF PIPE @ 2.6%
PROPOSED SLOPE STABILIZATION
MAX SLOPE 2:1 (TYP.)
SHEET C4-02
SHEET C4-01
18" HDPE
134 LF PIPE @ 0.7%
PROPOSED MH-8
RIM: 940.60
INV IN (MH-7): 937.00
INV IN (CB-5): 936.86
INV OUT: 936.86
12" HDPE
4 LF PIPE @ 1.0%
12" HDPE
176 LF PIPE @ 2.8%
24" HDPE
16 LF PIPE @ 0.7%
24" HDPE
20 LF PIPE @ 0.5%
PROPOSED CB-5
RIM: 940.50
INV: 937.00
PROPOSED CB-10
RIM: 934.00
INV: 931.25
8" HDPE
4 LF PIPE @ 2.5%
PROPOSED MH-15
RIM: 934.00
INV IN (CB-10): 931.15
INV OUT: 931.05
12" HDPE
223 LF PIPE @ 0.9%
PROPOSED MH-16
RIM: 931.00
INV IN (CB-11): 927.40
INV IN (MH-14): 929.05
INV OUT: 926.60
8" HDPE
4 LF PIPE @ 2.5%
PROPOSED CB-11
RIM: 931.00
INV: 927.50
PROPOSED CB-9
RIM: 937.00
INV: 933.00
STONE WALL
FLAG
50 0 50 100

Issue	Date	Revisions
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ARUP

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02109, United States

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Client
MORAGA STORAGE LLC

Job Title
MORAGA STORAGE
ZOVL - Oakham, MA

Seal

NOT FOR CONSTRUCTION

Drawing Title
CIVIL GRADING AND DRAINAGE SHEET

Scale
1" = 50'

File Name
C4-01.DWG

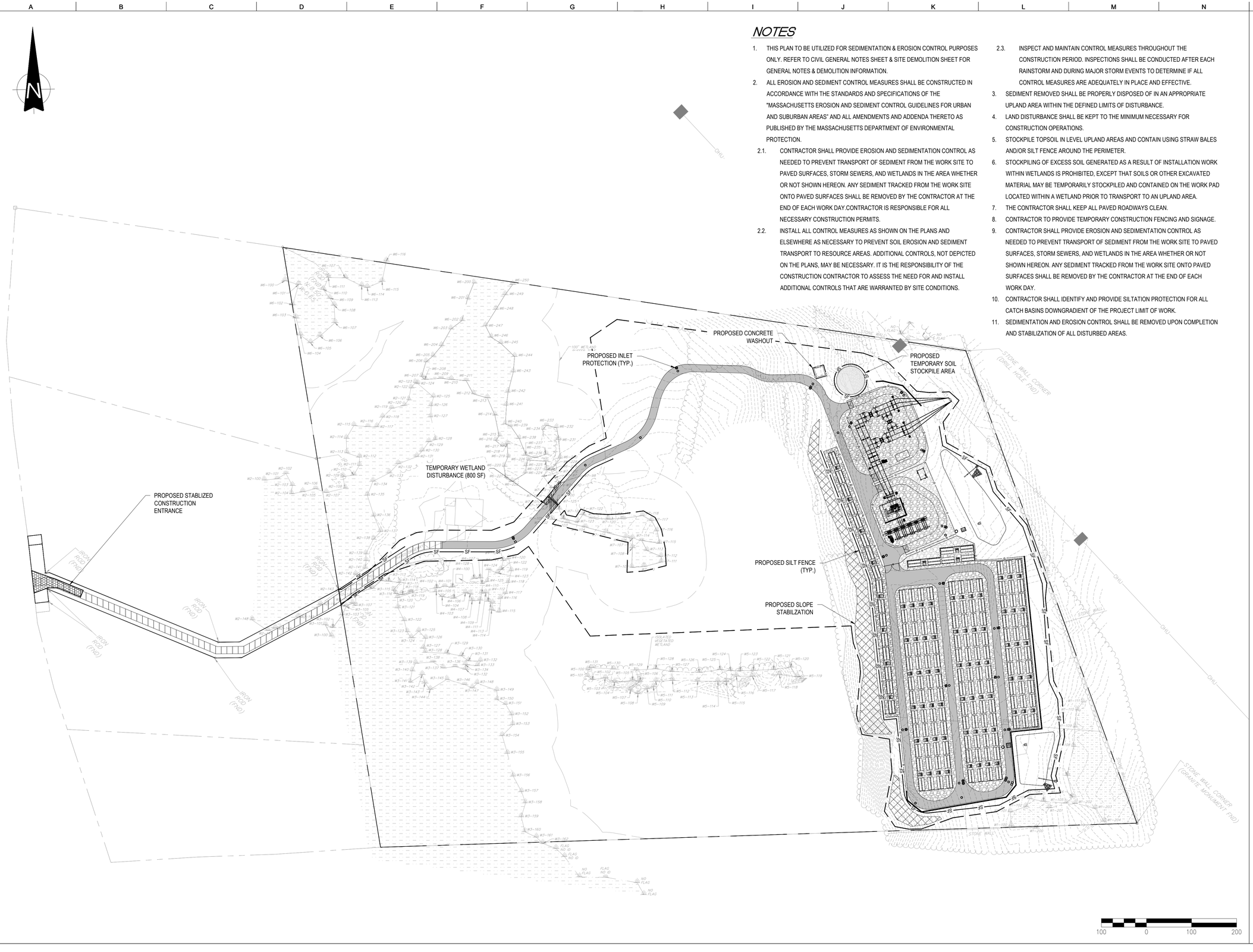
Drawing Status
30% DESIGN DRAWINGS

Job No	Drawing No	Issue
296229-00	C4-02	G

PLOT BY: Reese Smith PLOT TIME: 3/19/2025 1:37 PM

NOTES

1. THIS PLAN TO BE UTILIZED FOR SEDIMENTATION & EROSION CONTROL PURPOSES ONLY. REFER TO CIVIL GENERAL NOTES SHEET & SITE DEMOLITION SHEET FOR GENERAL NOTES & DEMOLITION INFORMATION.
2. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE "MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS" AND ALL AMENDMENTS AND ADDENDA THERETO AS PUBLISHED BY THE MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION.
   - 2.1. CONTRACTOR SHALL PROVIDE EROSION AND SEDIMENTATION CONTROL AS NEEDED TO PREVENT TRANSPORT OF SEDIMENT FROM THE WORK SITE TO PAVED SURFACES, STORM SEWERS, AND WETLANDS IN THE AREA WHETHER OR NOT SHOWN HEREON. ANY SEDIMENT TRACKED FROM THE WORK SITE ONTO PAVED SURFACES SHALL BE REMOVED BY THE CONTRACTOR AT THE END OF EACH WORK DAY.CONTRACTOR IS RESPONSIBLE FOR ALL NECESSARY CONSTRUCTION PERMITS.
   - 2.2. INSTALL ALL CONTROL MEASURES AS SHOWN ON THE PLANS AND ELSEWHERE AS NECESSARY TO PREVENT SOIL EROSION AND SEDIMENT TRANSPORT TO RESOURCE AREAS. ADDITIONAL CONTROLS, NOT DEPICTED ON THE PLANS, MAY BE NECESSARY. IT IS THE RESPONSIBILITY OF THE CONSTRUCTION CONTRACTOR TO ASSESS THE NEED FOR AND INSTALL ADDITIONAL CONTROLS THAT ARE WARRANTED BY SITE CONDITIONS.
   - 2.3. INSPECT AND MAINTAIN CONTROL MEASURES THROUGHOUT THE CONSTRUCTION PERIOD. INSPECTIONS SHALL BE CONDUCTED AFTER EACH RAINSTORM AND DURING MAJOR STORM EVENTS TO DETERMINE IF ALL CONTROL MEASURES ARE ADEQUATELY IN PLACE AND EFFECTIVE.
3. SEDIMENT REMOVED SHALL BE PROPERLY DISPOSED OF IN AN APPROPRIATE UPLAND AREA WITHIN THE DEFINED LIMITS OF DISTURBANCE.
4. LAND DISTURBANCE SHALL BE KEPT TO THE MINIMUM NECESSARY FOR CONSTRUCTION OPERATIONS.
5. STOCKPILE TOPSOIL IN LEVEL UPLAND AREAS AND CONTAIN USING STRAW BALES AND/OR SILT FENCE AROUND THE PERIMETER.
6. STOCKPILING OF EXCESS SOIL GENERATED AS A RESULT OF INSTALLATION WORK WITHIN WETLANDS IS PROHIBITED, EXCEPT THAT SOILS OR OTHER EXCAVATED MATERIAL MAY BE TEMPORARILY STOCKPILED AND CONTAINED ON THE WORK PAD LOCATED WITHIN A WETLAND PRIOR TO TRANSPORT TO AN UPLAND AREA.
7. THE CONTRACTOR SHALL KEEP ALL PAVED ROADWAYS CLEAN.
8. CONTRACTOR TO PROVIDE TEMPORARY CONSTRUCTION FENCING AND SIGNAGE.
9. CONTRACTOR SHALL PROVIDE EROSION AND SEDIMENTATION CONTROL AS NEEDED TO PREVENT TRANSPORT OF SEDIMENT FROM THE WORK SITE TO PAVED SURFACES, STORM SEWERS, AND WETLANDS IN THE AREA WHETHER OR NOT SHOWN HEREON. ANY SEDIMENT TRACKED FROM THE WORK SITE ONTO PAVED SURFACES SHALL BE REMOVED BY THE CONTRACTOR AT THE END OF EACH WORK DAY.
10. CONTRACTOR SHALL IDENTIFY AND PROVIDE SILTATION PROTECTION FOR ALL CATCH BASINS DOWNGRADIENT OF THE PROJECT LIMIT OF WORK.
11. SEDIMENTATION AND EROSION CONTROL SHALL BE REMOVED UPON COMPLETION AND STABILIZATION OF ALL DISTURBED AREAS.



Issue	Date	Revisions
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Client
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Job Title
MORAGA STORAGE
ZOVL - Oakham, MA

Seal

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Drawing Title
SOIL EROSION AND SEDIMENTATION CONTROL SHEET

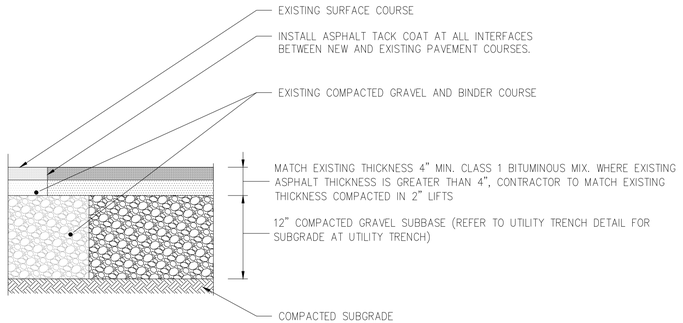
Scale 1" = 100'

File Name C6-01.DWG

Drawing Status
30% DESIGN DRAWINGS

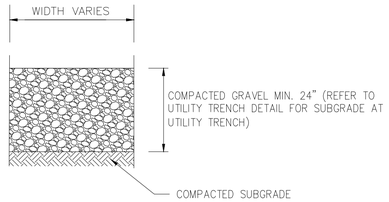
Job No	Drawing No	Issue
296229-00	C6-01	G

PLOT TIME: 3/25/2025 12:35 PM
PLOT BY: Reese Smith



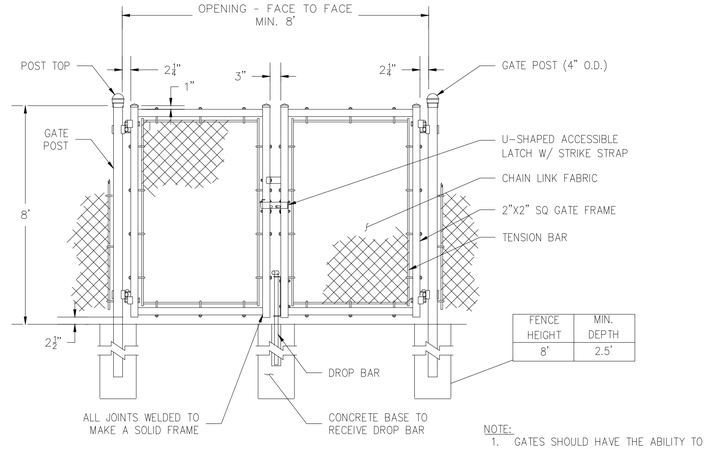
1 ASPHALT PAVING

N.T.S.



2 PERSONNEL PROTECTION GRAVEL

N.T.S.



3 SUBSTATION ACCESS GATE

N.T.S.

Issue	Date	Revisions
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Client

MORAGA STORAGE LLC

Job Title

MORAGA STORAGE
ZOVL - Oakham, MA

Seal

NOT FOR CONSTRUCTION

Drawing Title

CIVIL DETAIL SHEET 1

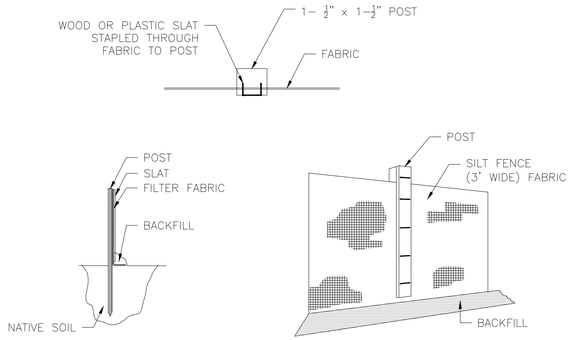
Scale: NTS

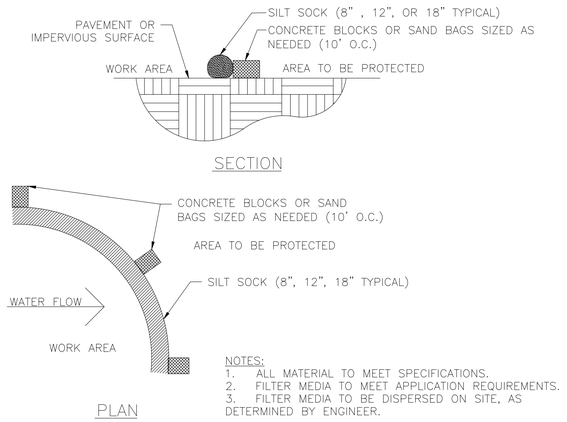
File Name: C8-01.DWG

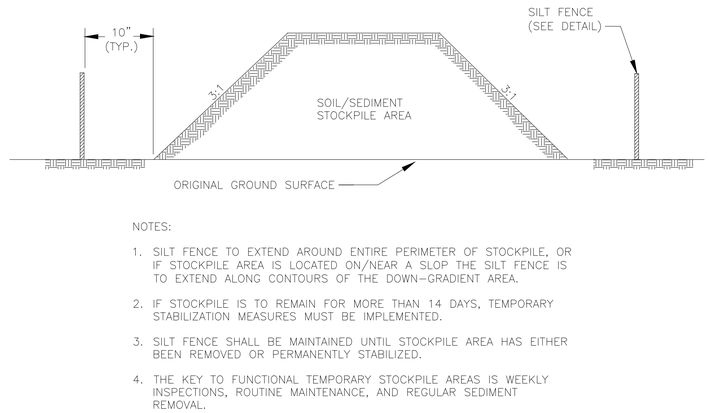
Drawing Status: 30% DESIGN DRAWINGS

Job No	Drawing No	Issue
296229-00	C8-01	G

PLOT BY: Reese Smith PLOT TIME: 3/13/2025 4:10 PM

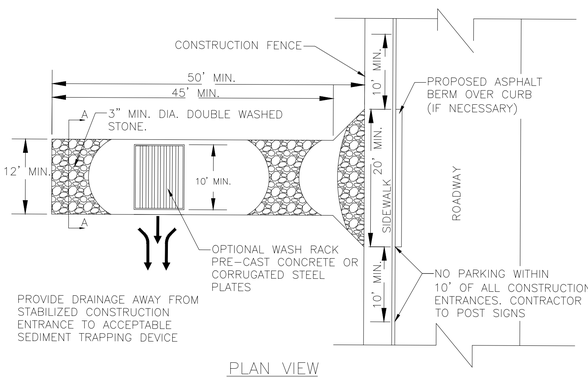






1 SILTATION FENCE DETAIL

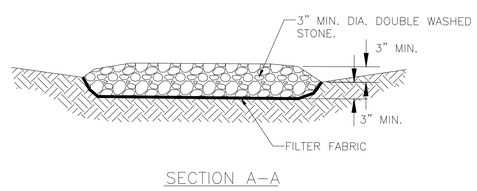
N.T.S.



2 SILT SOCK ON PAVEMENT DETAIL

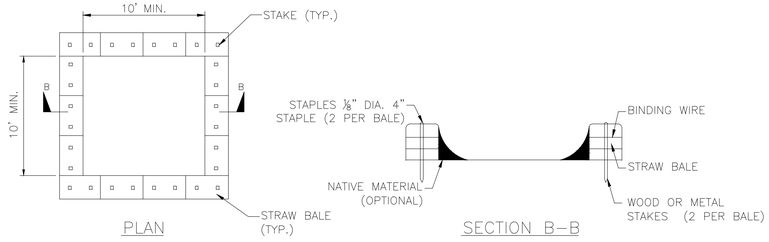
N.T.S.

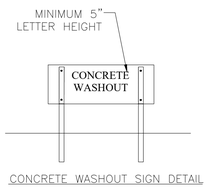
NOTES:
1.CONTRACTOR TO COORDINATE LOCATION OF CONSTRUCTION ENTRANCE/EXIT WITH OWNER
2. CONTRACTOR TO PROVIDE A WATER SOURCE FOR A WASH STATION FOR ALL VEHICLES LEAVING THE SITE.



3 SOIL STOCKPILE

N.T.S.

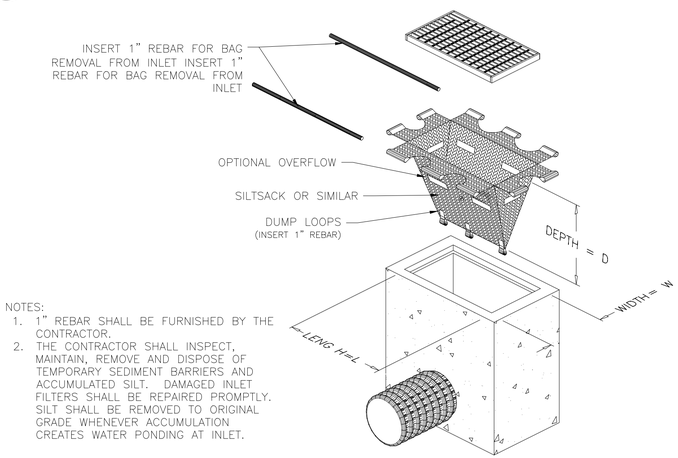




NOTES:
1. ACTUAL LAYOUT DETERMINED IN FIELD.
2. INSTALL CONCRETE WASHOUT SIGN (24"X24", MINIMUM) WITHIN 30' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
3. TEMPORARY WASHOUT AREA MUST BE AT LEAST 50' FROM A STORM DRAIN, CREEK BANK OR PERIMETER CONTROL.
4. CLEAN OUT CONCRETE WASHOUT AREA WHEN 50% FULL.
5. THE KEY TO FUNCTIONAL CONCRETE WASHOUTS IS WEEKLY INSPECTIONS, ROUTINE MAINTENANCE, AND REGULAR CLEAN OUT.
6. SILT FENCE SHALL BE INSTALLED AROUND PERIMETER OF CONCRETE WASHOUT AREA EXCEPT FOR THE SIDE UTILIZED FOR ACCESSING THE WASHOUT.
7. A ROCK CONSTRUCTION ENTRANCE MAY BE NECESSARY ALONG ONE SIDE OF THE WASHOUT TO PROVIDE VEHICLE ACCESS.

4 CONSTRUCTION ENTRANCE

N.T.S.



6 INLET PROTECTION FOR CATCH BASIN

N.T.S.

5 CONCRETE WASHOUT

N.T.S.

Issue	Date	Revisions
A	9/22/23	DRAFT ISSUED FOR REVIEW
B	9/28/23	CONSTRAINT MAPPING
C	8/21/24	10% DESIGN SUBMISSION
D	9/13/24	30% DESIGN DRAFT
E	11/01/24	ISSUED FOR ISO-NE SIS APPLICATION
F	02/28/2025	30% DESIGN
G	03/18/2025	30% DESIGN REVISION

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Drawing Title

CIVIL DETAIL SHEET 2

Scale NTS

File Name C8-01.DWG

Drawing Status

30% DESIGN DRAWINGS

Job No	Drawing No	Issue
296229-00	C8-02	G

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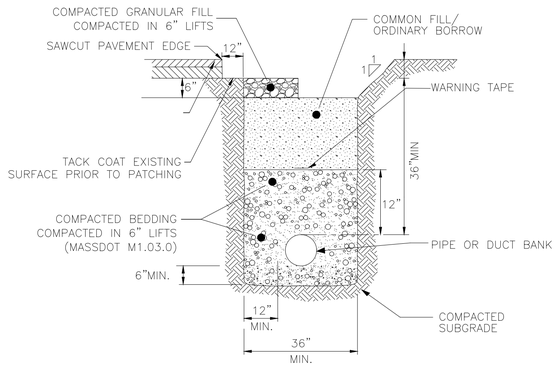
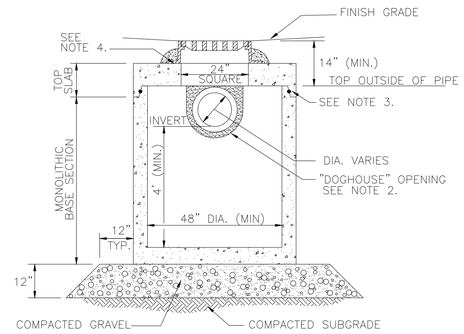


NOTES:

1. USE METALLIC TRACING/WARNING TAPE OVER ALL DUCTBANKS.
2. INSTALL PIPE IN CENTER OF TRENCH.

1 UTILITY TRENCH

N.T.S.

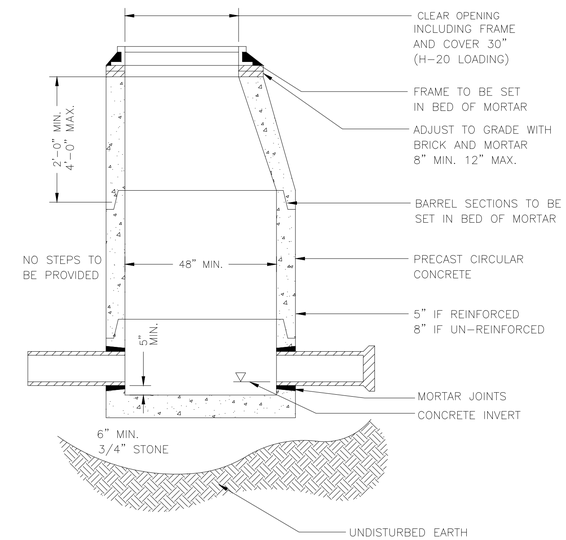


NOTES:

1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
2. PROVIDE DOGHOUSE OPENING FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. TOP SLAB SHALL NOT REST DIRECTLY ON PIPE. GROUT ALL PIPE CONNECTIONS (NON-SHRINK GROUT).
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
4. CATCH BASIN FRAME AND GRATE (4"DEPTH) SHALL BE SET IN FULL MORTAR BED.
5. ADJUST TO FINISH GRADE WITH CLAY BRICK AND MORTAR AS REQUIRED.

2 TYPICAL CATCH BASIN

N.T.S.



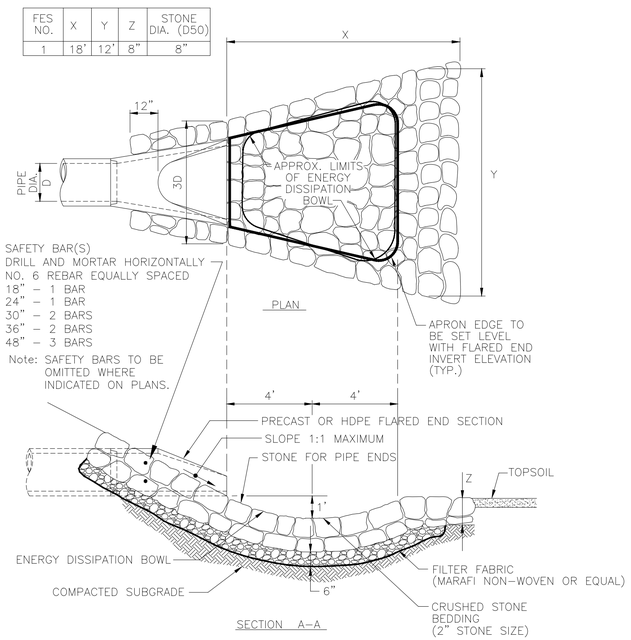
STRUCTURE TO BE DESIGNED FOR H-20 LOADING

3 DRAIN MANHOLE DETAIL (H-20 LOADING)

N.T.S.

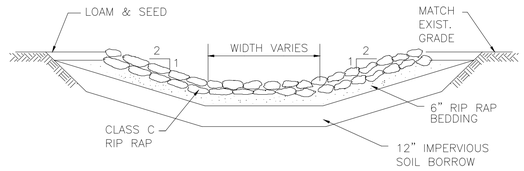
Issue	Date	Revisions
A	9/22/23	DRAFT ISSUED FOR REVIEW
B	9/28/23	CONSTRAINT MAPPING
C	8/21/24	10% DESIGN SUBMISSION
D	9/13/24	30% DESIGN DRAFT
E	11/01/24	ISSUED FOR ISO-NE SIS APPLICATION
F	02/28/2025	30% DESIGN
G	03/18/2025	30% DESIGN REVISION

FES NO.	X	Y	Z	STONE DIA. (D50)
1	18'	12'	8"	8"



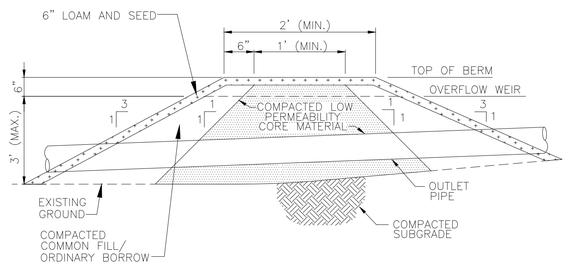
4 FLARED END SCOUR PROTECTION

N.T.S.



5 DETENTION BASIN EMERGENCY SPILLWAY

N.T.S.

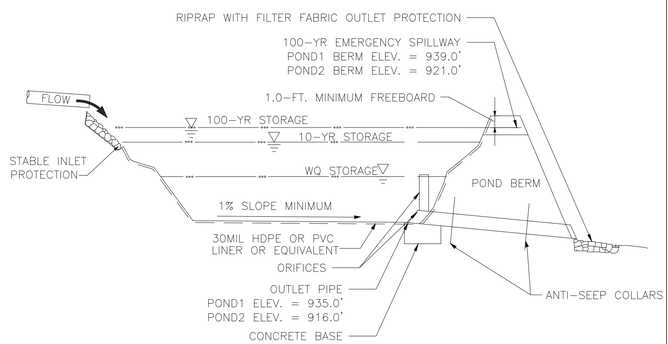


NOTES:

1. PIPES PENETRATING THE LOW PERMEABILITY CORE SHALL BE BEDDED IN THE LOW PERMEABILITY CORE MATERIAL
2. THE BERM SECTION IS SUBJECT TO CHANGE AND WILL BE BASED ON THE RESULTS OF FURTHER GEOTECHNICAL INVESTIGATIONS.

6 DRY POND BERM SECTION

N.T.S.



7 STORMWATER SYSTEM SECTION

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Drawing Title

CIVIL DETAIL SHEET 3

Scale NTS

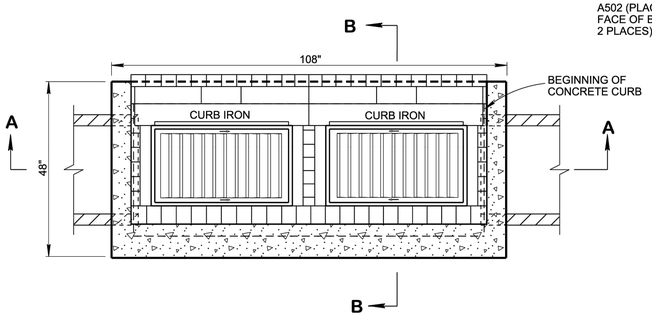
File Name C8-01.DWG

Drawing Status

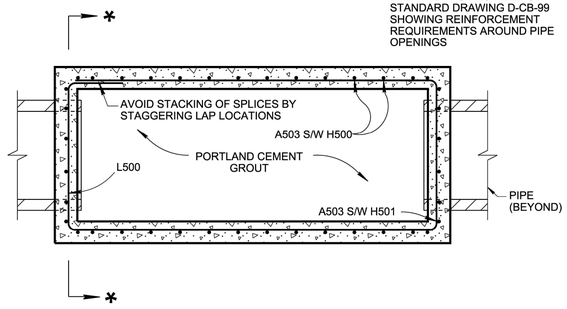
30% DESIGN DRAWINGS

Job No	Drawing No	Issue
296229-00	C8-03	G

PLOT BY: Reese Smith PLOT TIME: 3/13/2025 4:10 PM



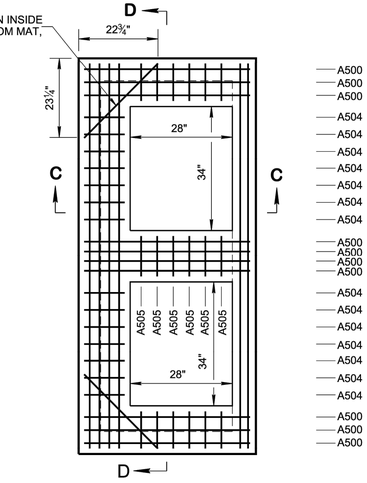
PLAN VIEW



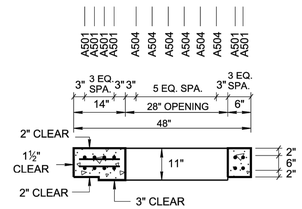
SECTION *-*

ELEV. VIEW IS PROVIDED ON STANDARD DRAWING D-CB-99 SHOWING REINFORCEMENT REQUIREMENTS AROUND PIPE OPENINGS

SECTION E-E

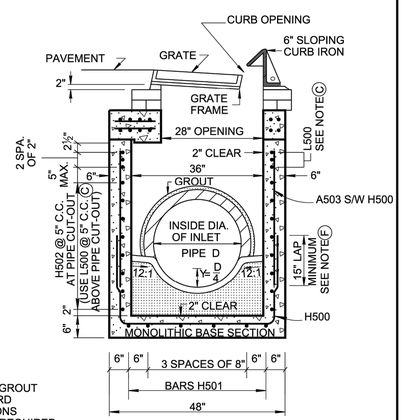


LID REINFORCING

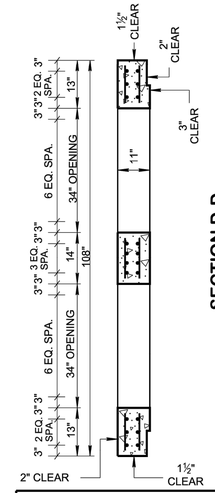


SECTION C-C

SECTION A-A



SECTION B-B



SECTION D-D

CATCH BASIN MAXIMUM DEPTH NOTE
MAXIMUM DEPTH FOR THIS STRUCTURE IS 10.00'.

CATCH BASIN DIMENSIONS

INSIDE DIAMETER (D) OF PIPE (INCHES)	PIPE WALL THICKNESS (INCHES)	DIAMETER OF CUT-OUT HOLES (INCHES)	BOX SECTION MINIMUM HEIGHTS (INCHES)	FOR DESIGN USE ONLY CATCH BASIN MINIMUM DESIGN DEPTH (FEET)
18	2½	25	53	4.06
24	3	32	60	4.61
(4) 30	3½	39	67	5.15
(4) 36	4	46	74	5.69
(4) 42	4½	53	81	6.23
(4) 48	5	60	88	6.77
(4) 54	5½	67	95	7.31
(4) 60	6	74	102	7.86

(1) CUT-OUT HOLES BASED ON REINFORCED CONCRETE PIPE WITH WALL TYPE "B".

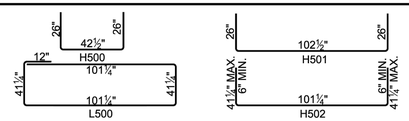
(2) ALL FLEXIBLE PIPE MATERIALS REQUIRE GASKET. SEE STANDARD DRAWING D-PB-2.

(3) CUT-OUT HOLES FOR PRECAST STRUCTURES TO BE FORMED IN ORDER TO OBTAIN A SMOOTH EDGED HOLE. SCORED OR ETCHED HOLES WITH REINFORCING STEEL LEFT UNCUT WILL NOT BE PERMITTED.

(4) TO BE USED IN 96 INCH INTERIOR WALLS ONLY.

REINFORCING STEEL LEGEND

A500	45"
A501	105"
A502	30"
A503	VARIABLE
A504	10"
A505	11"



DIMENSIONS SHOWN IN THIS LEGEND ARE OUTSIDE TO OUTSIDE OF BAR.
STANDARD C.R.S.I. HOOK AND TIE DETAILS SHALL APPLY, EXCEPT AS NOTED.

GENERAL NOTES

(A) DRAWING TO BE USED FOR ALL PRECAST NO. 26 CONCRETE CATCH BASINS THAT ARE BETWEEN MINIMUM DEPTH AND TEN FEET. SEE STANDARD DRAWING D-CB-26S FOR DETAILS OF CAST-IN-PLACE NO. 26 CONCRETE CATCH BASINS AND PRECAST NO. 26 CONCRETE CATCH BASINS THAT ARE GREATER TEN FEET IN DEPTH. SEE STANDARD DRAWING D-CB-99 FOR ADDITIONAL CONSTRUCTION NOTES & DETAILS.

(B) THIS DIMENSION MAY VARY FROM A MINIMUM OF 0 INCHES TO A MAXIMUM OF 24 INCHES AS LONG AS 23 INCHES IS SATISFIED. THE CONTRACTOR HAS THE OPTION OF USING BRICK OR STANDARD PRECAST CONCRETE RISER FRAMES. THE USE OF BRICK SHALL BE LIMITED TO 6 INCHES. IF THIS DIMENSION EXCEEDS 6 INCHES, PRECAST CONCRETE RISER FRAMES SHALL BE USED AS SHOWN ON STANDARD DRAWING D-RF-1.

(C) THIS DRAWING DEPICTS THE MINIMUM HORIZONTAL REINFORCING AT THE TOP OF CATCH BASIN WALLS. SEE ADDITIONAL DETAILS ON STANDARD DRAWING D-CB-99 FOR TALLER SECTIONS AND STEEL PLACEMENT ABOVE PIPE OPENINGS.

(D) ALL PRECAST ELEMENTS SHALL MEET ASTM C913 (CURRENT EDITION) UNLESS SUPERSEDED BY THIS DRAWING.

CONCRETE: f'_c = 4,000 POUNDS PER SQUARE INCH AT 28 DAYS
REINFORCING STEEL: ASTM A615, F_y = 60,000 POUNDS PER SQUARE INCH
ALL REINFORCING IS TO BE INSTALLED AS DETAILED ON THIS DRAWING.

(E) PRECAST CATCH BASIN UNITS WHICH ARE DAMAGED DURING SHIPMENT OR INSTALLATION WILL BE REJECTED. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO REPLACE DAMAGED CATCH BASIN UNITS AT THEIR OWN EXPENSE.

(F) THE FABRICATOR MAY ELIMINATE THE A503 BARS BY LENGTHENING THE VERTICAL LEG OF THE H500/H501 BARS SO THAT 1½ INCHES OF CLEAR COVER IS PROVIDED AT THE TOP OF THE STRUCTURE.

(G) APPROPRIATE SIZING AND LOCATION OF LIFTING DEVICES SHALL BE THE RESPONSIBILITY OF THE FABRICATOR.

(H) THE CONTRACTOR IS TO PATCH ALL LIFTING DEVICE HOLES WITH GROUT AND PLACE A MINIMUM OF ONE (1) INCH OF COVER OVER THE HARDWARE OF THESE DEVICES ON BOTH TOP AND BOTTOM SURFACES.

(I) ALTERNATIVE JOINT DETAILS MAY BE ACCEPTABLE. SEE STANDARD DRAWING D-CB-99 FOR ADDITIONAL DETAILS.

(J) SEE ROADWAY PLANS DRAINAGE TABULATION FOR PIPE INLET AND OUTLET ELEVATIONS. IF NEEDED, INVERT ELEVATIONS MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER IN ORDER TO ACCOMMODATE INLET AND OUTLET PIPES.

(K) FOR CASES WHERE THE OUTLET PIPE DIAMETER IS LARGER THAN THE INLET PIPE DIAMETER, A MINIMUM 23 INCH DEPTH SHALL BE MAINTAINED ABOVE THE OUTLET PIPE.

(L) SEE STANDARD DRAWING D-CBB-12B FOR DETAILS REGARDING CAST IRON GRATES, FRAMES AND CURB INLETS.

(M) PAY DEPTH MEASUREMENT MADE FROM TOP OF GRATE TO OUTLET FLOW ELEVATION. PAYMENT INCLUDES RISER SECTION AND GRATE. PAYMENT FOR CATCH BASIN WILL BE MADE UNDER ITEM NUMBERS:

611-26.02, CATCH BASINS, TYPE 26, > 4'-8' DEPTH, EACH,

1 DOUBLE CATCH BASIN

N.T.S.

Issue	Date	Revisions
A	9/22/23	DRAFT ISSUED FOR REVIEW
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C	8/21/24	10% DESIGN SUBMISSION
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File Name C8-01.DWG

Drawing Status

30% DESIGN DRAWINGS

Job No	Drawing No	Issue
296229-00	C8-04	G

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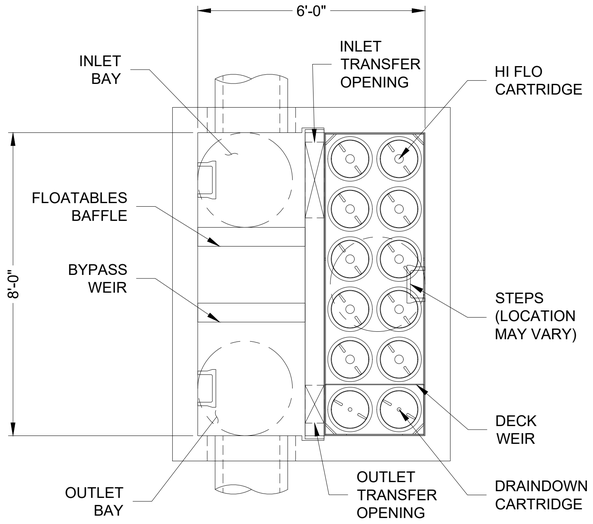
PLOT BY: Reese Smith



PLAN VIEW

(TOP SLAB NOT SHOWN FOR CLARITY)

JELLYFISH DESIGN NOTES

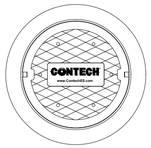
JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE LENGTH AND THE NUMBER OF CARTRIDGES. THE STANDARD PEAK DIVERSION STYLE WITH PRECAST TOP SLAB IS SHOWN. ALTERNATE OFFLINE VAULT AND/OR SHALLOW ORIENTATIONS ARE AVAILABLE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD

CARTRIDGE SELECTION

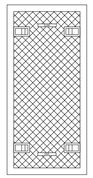
CARTRIDGE LENGTH	54"	40"	27"	15"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-6"	5'-4"	4'-3"	3'-3"
FLOW RATE HI-FLO / DRAINDOWN (CFS) (PER CART)	0.178 / 0.089	0.133 / 0.067	0.089 / 0.045	0.049 / 0.025
MAX. TREATMENT (CFS)	2.94	2.21	1.47	0.81
DECK TO INSIDE TOP (MIN) (B)	5.00	4.00	4.00	4.00

SITE SPECIFIC DATA REQUIREMENTS

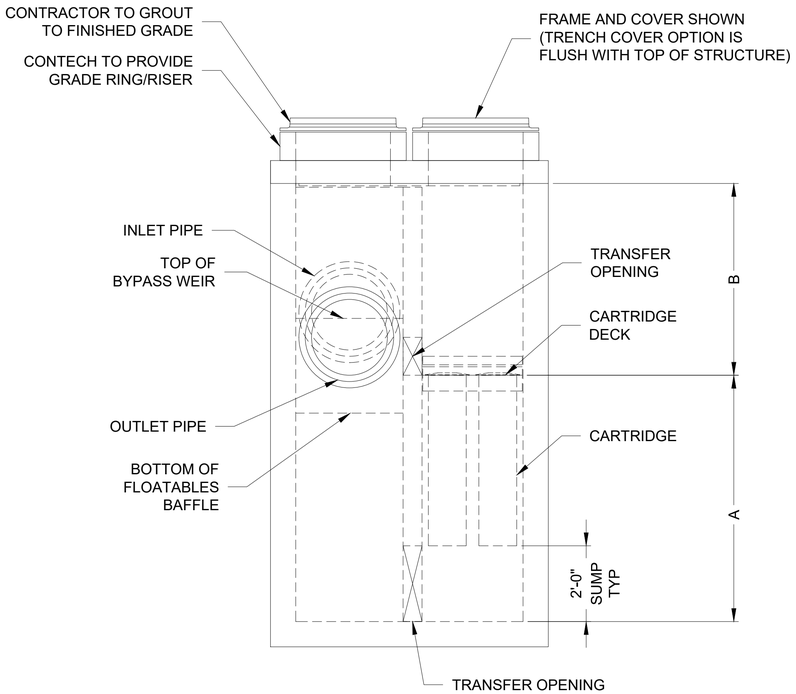
STRUCTURE ID	JFV-1
WATER QUALITY FLOW RATE (cfs)	1.13
PEAK FLOW RATE (cfs)	11.40
RETURN PERIOD OF PEAK FLOW (yrs)	100
# OF CARTRIDGES REQUIRED (HF / DD)	6/ 2
CARTRIDGE LENGTH	54"



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.



24" TRENCH COVER
(LENGTH VARIES)
N.T.S.



ELEVATION VIEW

GENERAL NOTES:

1. PRODUCT SHALL BE CONTECH JFPD0806-6-2 OR APPROVED SIMILAR
2. JELLYFISH WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
3. STRUCTURE SHALL MEET AASHTO HS-20 OR PER APPROVING JURISDICTION REQUIREMENTS, WHICHEVER IS MORE STRINGENT, ASSUMING EARTH COVER OF 0' - 10', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
4. STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-857, ASTM C-918, AND AASHTO LOAD FACTOR DESIGN METHOD.
6. OUTLET PIPE INVERT IS EQUAL TO THE CARTRIDGE DECK ELEVATION.
7. THE OUTLET PIPE DIAMETER FOR NEW INSTALLATIONS IS RECOMMENDED TO BE ONE PIPE SIZE LARGER THAN THE INLET PIPE AT EQUAL OR GREATER SLOPE.
8. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES:

1. SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD DURING SUBSEQUENT DETAILED DESIGN.
2. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE.
3. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT).
4. CARTRIDGE INSTALLATION, BY CONTECH, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLYFISH UNIT IS CLEAN AND FREE OF DEBRIS. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION.

1 JELLYFISH FILTRATION VAULT (JFV-1) - CONTECH JFPD0806-6-2 (OR APPROVED SIMILAR)

N.T.S.

Issue	Date	Revisions
A	9/22/23	DRAFT ISSUED FOR REVIEW
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C	8/21/24	10% DESIGN SUBMISSION
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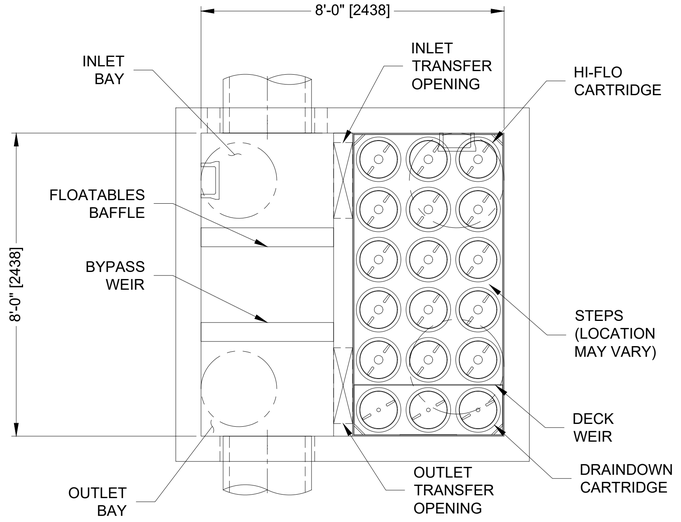
Drawing Title
CIVIL DETAIL SHEET 5

Scale NTS
File Name C8-01.DWG
Drawing Status 30% DESIGN DRAWINGS

Job No	Drawing No	Issue
296229-00	C8-05	G

PLOT BY: Reese Smith PLOT TIME: 3/13/2025 4:10 PM



PLAN VIEW
TOP SLAB NOT SHOWN

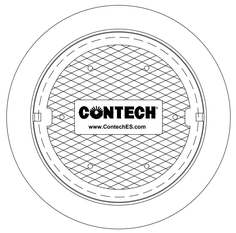
JELLYFISH DESIGN NOTES

JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SIZE, TYPE AND QUANTITY. THE STANDARD PEAK DIVERSION VAULT STYLE WITH PRECAST TOP SLAB IS SHOWN. THE 8' X 8' [2438 X 2438] JELLYFISH PEAK TREATMENT CAPACITY IS 2.94 CFS [83.25 L/s]. MAXIMUM BYPASS CAPACITY IS DETERMINED BY CONTECH ENGINEERED SOLUTIONS. IF THE SITE CONDITIONS EXCEED THE TOTAL BYPASS CAPACITY OF THE SYSTEM, AN UPSTREAM DIVERSION STRUCTURE IS REQUIRED.

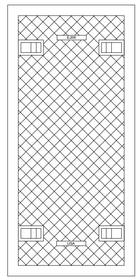
CARTRIDGE SIZE	54	40	27	15
FLOW RATE HIGH-FLO / DRAINDOWN (cfs [L/s])	0.178/0.089 [5.10/2.55]	0.133/0.065 [3.68/1.84]	0.089/0.045 [2.55/1.28]	0.049/0.025 [1.42/0.71]
MAXIMUM CARTRIDGE QUANTITY, HI-FLO / DRAINDOWN	15/3			
MAXIMUM TREATMENT	2.94 [83.25]	2.21 [62.58]	1.47 [41.63]	0.81 [22.94]
OUTLET INVERT TO STRUCTURE INVERT (A) (ft. [mm])	6.50 [1981]	5.33 [1625]	4.25 [1295]	3.25 [991]
FINISHED GRADE TO OUTLET INVERT (SHALLOW) (B)	DETERMINED BY CONTECH			
FINISHED GRADE TO OUTLET INVERT (STANDARD) (B) (ft. [mm])	5.67 [1727]	4.58 [1396]		

SITE SPECIFIC DATA REQUIREMENTS

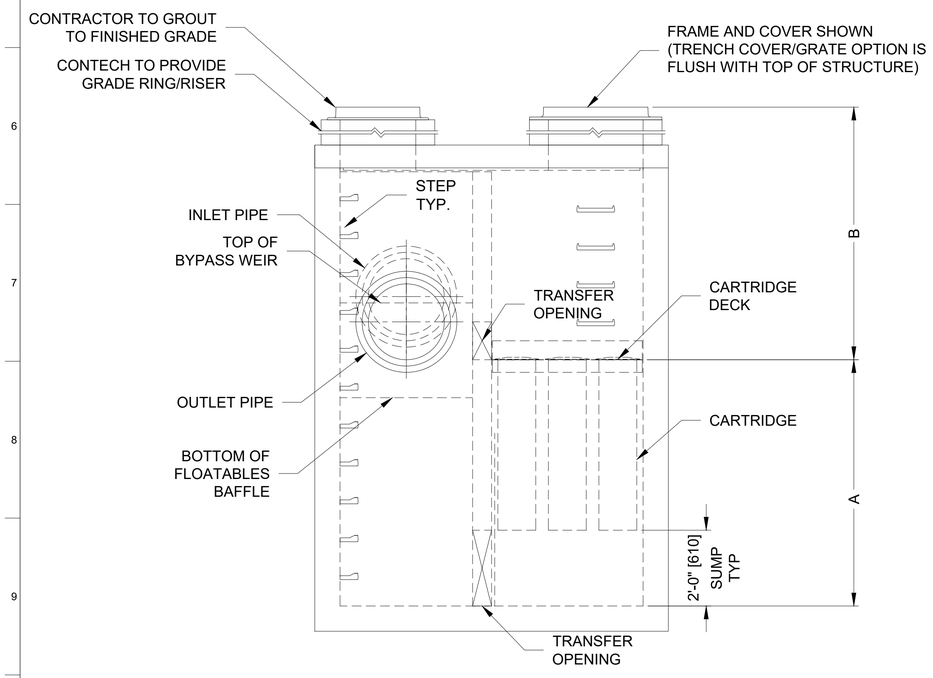
STRUCTURE ID	JFV-2
WATER QUALITY FLOW RATE (cfs)	2.32
PEAK FLOW RATE (cfs)	23.03
RETURN PERIOD OF PEAK FLOW (yrs)	100
# OF CARTRIDGES REQUIRED (HF / DD)	12/3
CARTRIDGE LENGTH	54"



FRAME AND COVER
STANDARD TOP
SLAB CONFIGURATION
(DIAMETER VARIES)
NOT TO SCALE



24"
TRENCH COVER
SHALLOW TOP
SLAB CONFIGURATION
(LENGTH VARIES)
NOT TO SCALE



ELEVATION VIEW

GENERAL NOTES:

1. PRODUCT SHALL BE CONTECH JFPD0808-12-3 OR APPROVED SIMILAR
2. JELLYFISH WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
3. STRUCTURE SHALL MEET AASHTO HS-20 OR PER APPROVING JURISDICTION REQUIREMENTS, WHICHEVER IS MORE STRINGENT, ASSUMING EARTH COVER OF 0' – 10', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
4. STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-857, ASTM C-918, AND AASHTO LOAD FACTOR DESIGN METHOD.
6. OUTLET PIPE INVERT IS EQUAL TO THE CARTRIDGE DECK ELEVATION.
7. THE OUTLET PIPE DIAMETER FOR NEW INSTALLATIONS IS RECOMMENDED TO BE ONE PIPE SIZE LARGER THAN THE INLET PIPE AT EQUAL OR GREATER SLOPE.
8. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES:

1. SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD DURING SUBSEQUENT DETAILED DESIGN.
2. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE.
3. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT).
4. CARTRIDGE INSTALLATION, BY CONTECH, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLYFISH UNIT IS CLEAN AND FREE OF DEBRIS. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION.

1 JELLYFISH FILTRATION VAULT (JFV-2) - CONTECH JFPD0808-12-3 (OR APPROVED SIMILAR)
N.T.S.

Issue	Date	Revisions
A	9/22/23	DRAFT ISSUED FOR REVIEW
B	9/28/23	CONSTRAINT MAPPING
C	8/21/24	10% DESIGN SUBMISSION
D	9/13/24	30% DESIGN DRAFT
E	11/01/24	ISSUED FOR ISO-NE SIS APPLICATION
F	02/28/2025	30% DESIGN
G	03/18/2025	30% DESIGN REVISION

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02109, United States

www.arup.com

Client
MORAGA STORAGE LLC

Job Title
MORAGA STORAGE
ZOVL - Oakham, MA

Seal

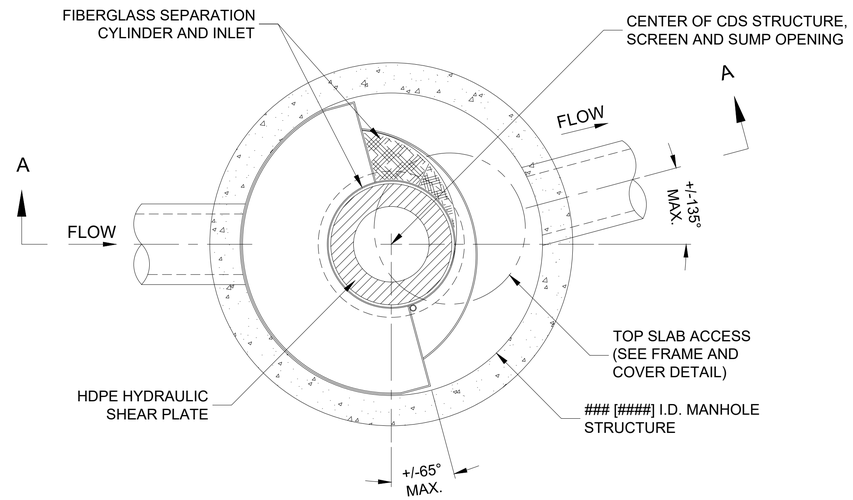
NOT FOR CONSTRUCTION

Drawing Title
CIVIL DETAIL SHEET 6

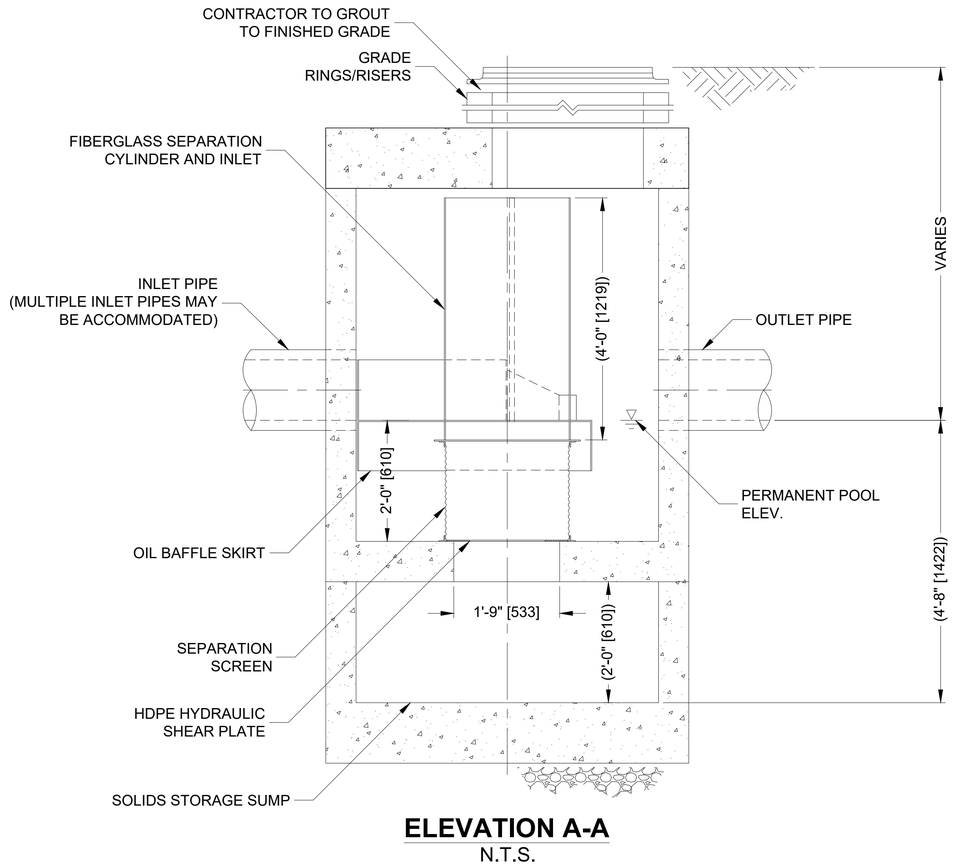
Scale NTS
File Name C8-01.DWG
Drawing Status
30% DESIGN DRAWINGS

Job No	Drawing No	Issue
296229-00	C8-06	G

PLOT BY: Reese Smith PLOT TIME: 3/13/2025 4:10 PM



PLAN VIEW B-B
N.T.S.



ELEVATION A-A
N.T.S.

1 HYDRODYNAMIC SEPARATOR (HDS-1) - CONTECH CDS2015-5 (OR APPROVED SIMILAR)
N.T.S.

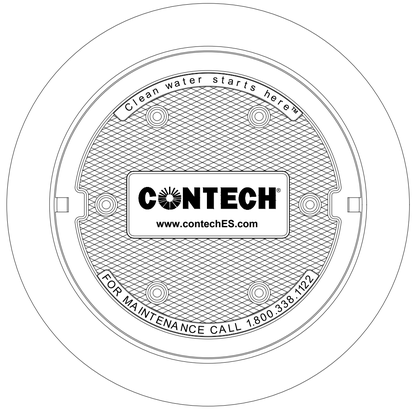
CDS2015-5-C DESIGN NOTES

CDS2015-5-C RATED TREATMENT CAPACITY IS 1.4 CFS, OR PER LOCAL REGULATIONS.

THE STANDARD CDS2015-5-C CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION
GRATED INLET ONLY (NO INLET PIPE)
GRATED INLET WITH INLET PIPE OR PIPES
CURB INLET ONLY (NO INLET PIPE)
CURB INLET WITH INLET PIPE OR PIPES

SITE SPECIFIC DATA REQUIREMENTS	
STRUCTURE ID	HDS-1
WATER QUALITY FLOW RATE (cfs)	1.13
PEAK FLOW RATE (cfs)	11.40
RETURN PERIOD OF PEAK FLOW (yrs)	100



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

GENERAL NOTES:

1. PRODUCT SHALL BE CONTECH CDS2015-5-C OR APPROVED SIMILAR
2. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
3. STRUCTURE SHALL MEET AASHTO HS-20 OR PER APPROVING JURISDICTION REQUIREMENTS, WHICHEVER IS MORE STRINGENT, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
4. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
5. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND ASSHTO LOAD FACTOR DESIGN MENTION.

INSTALLATION NOTES:

1. SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD DURING SUBSEQUENT DETAILED DESIGN.
2. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS STRUCTURE.
3. CONTRACTOR TO INSTALL JOIN SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
4. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPES. MATCH INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.

Issue	Date	Revisions
A	9/22/23	DRAFT ISSUED FOR REVIEW
B	9/28/23	CONSTRAINT MAPPING
C	8/21/24	10% DESIGN SUBMISSION
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E	11/01/24	ISSUED FOR ISO-NE SIS APPLICATION
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Client
MORAGA STORAGE LLC

Job Title
MORAGA STORAGE
ZOVL - Oakham, MA

Seal

NOT FOR CONSTRUCTION

Drawing Title
CIVIL DETAIL
SHEET 7

Scale NTS
File Name C8-01.DWG
Drawing Status
30% DESIGN DRAWINGS

Job No	Drawing No	Issue
296229-00	C8-07	G