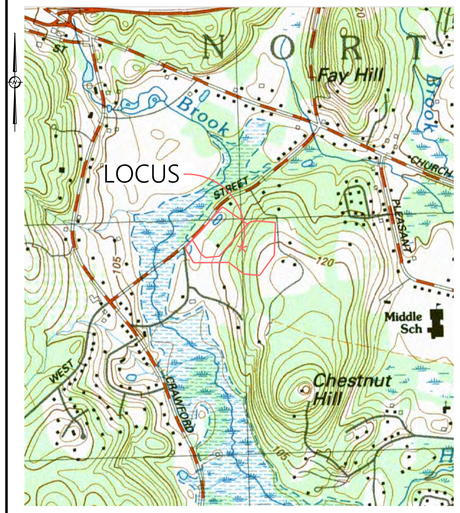

LOCUS MAP

SCALE: 1"=1000'

PREPARED BY:

WDA DESIGN GROUP
31 EAST MAIN STREET WESTBOROUGH, MA | 508.366.6552
WDA-DG.COM

OWNER:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

PREPARED FOR:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

SITE PLANS FOR COMMON DRIVE SPECIAL PERMIT

Pursuant to the Town of Northborough Municipal Zoning Code Section 10-36-130

FOR

Brant L. Viner & Margaret Harling

85 & 95 West Street

IN

Northborough, Massachusetts
(Worcester County)

DATE: 11/20/20

Revision Date: 2/24/2021

Sheet List Table

Sheet Number	Sheet Title
EXISTING CONDITIONS AND DEMOLITION PLAN	
C0.01	EXISTING CONDITIONS
C1.01	DEMOLITION PLAN
C1.02	DEMOLITION PLAN
SITE PLANS	
C2.00	SITE PLAN
C2.01	SITE PLAN
C2.02	SITE PLAN
GRADING & DRAINAGE PLAN	
C3.00	GRADING, DRAINAGE, & UTILITY PLAN
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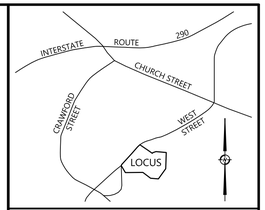
EROSION & SEDIMENT CONTROL PLANS	
C5.00	EROSION CONTROL PLAN - PHASE 1
C5.01	EROSION CONTROL PLAN - PHASE 2
C5.02	EROSION CONTROL PLAN - PHASE 3
CONSTRUCTION DETAILS	
C6.00	CONSTRCUTION DETAILS
C6.01	CONSTRCUTION DETAILS
C6.02	CONSTRCUTION DETAILS
C6.03	CONSTRCUTION DETAILS
C6.04	CONSTRUCTION DETAILS
C6.05	CONSTRUCTION DETAILS
C6.06	CONSTRUCTION DETAILS

LEGEND:

DESCRIPTION	EXISTING
BOUNDARY OF BORDERING VEGETATED WETLANDS	BBVW
BUILDING	
CHAIN LINK FENCE	CLF
CONTOUR LINE	350
CORRUGATED METAL PIPE	CMP
DOOR	
DRILL HOLE	DH
EDGE OF PAVEMENT	EOP
ELECTRIC METER	EM
FEET HIGH	FH
FOUND	(FND.)
GUY WIRE	GW
GROUNDWATER OVERLAY	GWO ZONE 3
INVERT	INV.
IRON ROD	IR
LIGHT POLE	LP
NOT TO SCALE	N.T.S.
NOW OR FORMERLY	N/F
OVERHEAD WIRE	OHW
PLUS OR MINUS	±
POST AND RAIL FENCE	PRF
SIGN	S
SPOT ELEVATION	X 350.25
STONE RETAINING WALL	SRW
STONE WALL	
TEST PIT	TP
TREELINE	
TYPICAL	(TYP.)
UTILITY POLE	UP
WELL	
WETLAND FLAG	X WF 15
WETLANDS	
WETLANDS 100' BUFFER ZONE	100' BVW BZ

NOTES:

1. EXISTING CONDITIONS INFORMATION IS BASED ON AN ON THE GROUND FIELD SURVEY BY WDA DESIGN GROUP, INC., IN MAY, 2018 AND OCTOBER, 2020. ELEVATIONS ARE BASED ON NAVD 1988. COORDINATE SYSTEM IS BASED ON THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, MAINLAND ZONE.
2. LOCATIONS OF UNDERGROUND UTILITIES SHOWN HEREON WERE COMPILED FROM AVAILABLE RECORD PLANS OF UTILITY COMPANIES AND ARE APPROXIMATE AND ASSUMED. THERE MAY BE ADDITIONAL UNDERGROUND UTILITIES PRESENT AT THE SITE THAT ARE NOT DEPICTED HEREON. BEFORE COMMENCING SITE WORK, CONTRACTOR SHALL CALL "DIG SAFE" AT 1-888-344-7233 TO ACCURATELY LOCATE UNDERGROUND UTILITIES. THE CONTRACTOR SHALL NOTIFY APPROPRIATE UTILITY DEPARTMENTS / COMPANIES OF ANY UTILITIES DAMAGED DURING CONSTRUCTION. ANY COSTS RELATED TO THE REPAIR OF UTILITIES DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITY SHALL BE THE CONTRACTOR'S RESPONSIBILITY. NO EXCAVATION SHALL BE PERFORMED UNTIL ALL UTILITY COMPANIES HAVE BEEN NOTIFIED.
3. APPROXIMATE LIMITS OF ZONE A (AREAS OF 100-YEAR FLOOD) AND ZONE C (AREAS OF MINIMAL FLOODING) EXIST WITHIN THE LOCUS PARCEL AS COMPILED FROM NATIONAL FLOOD INSURANCE PROGRAM FLOOD INSURANCE RATE MAP NUMBER 25027C0633F, WORCESTER COUNTY, EFFECTIVE JULY 16, 2014.
4. ON-SITE WETLAND BOUNDARIES DELINEATED BY WDA-DG ON APRIL 27, 2018, AND BOUNDARIES CONFIRMED VIA ORAD ISSUED BY THE NCC DATED AUGUST 21, 2018, DEP FILE #247-1150.
5. WETLAND BOUNDARIES ALONG WEST STREET DELINEATED BY WDA-DG OCTOBER 2020. LOCATIONS TO BE CONFIRMED VIA NOTICE OF INTENT WITH NORTHBOROUGH CONSERVATION COMMISSION.



LOCUS MAP
(NOT TO SCALE)

REV.	DATE	DESCRIPTION	INIT.
B	11/20/20	UPDATED WEST STREET AND PROPERTY BOUNDARIES	
A		INITIAL ISSUE	

COMMONWEALTH OF MASSACHUSETTS
KENNETH T. STROM #36393 PROFESSIONAL LAND SURVEYOR
11-20-20

PREPARED BY:

WDA DESIGN GROUP
31 EAST MAIN STREET WESTBOROUGH, MA | 508.366.6552
7 CENTRAL STREET PROVIDENCE, RI | 401.274.1360
WDA-DG.COM

OWNER:

BRANT L. VINER &
MARGARET HARLING

P.O. Box 295
Ellsworth, ME 04605

PREPARED FOR:

BRANT L. VINER &
MARGARET HARLING

P.O. Box 295
Ellsworth, ME 04605

TITLE:

EXISTING CONDITIONS PLAN

85 & 95 WEST STREET

Northborough, MA
(Worcester County)

NOTICE OF INTENT

SCALE: 1" = 50'
0 50 100 150

JOB NO.:	1207	DATE:	07/10/18
DWN. BY:	JRZ/KTS	SHEET:	C0.01
CHK'D. BY:	SPC/KTS		

OWNERS OF RECORD:
BRANT L. VINER & MARGARET HARLING
PO BOX 295
ELLSWORTH, ME 04605

ASSESSORS MAP REFERENCE:
PARCEL ID: 057.0-0034 and 35-0000.0

DEED REFERENCE:
DEED BOOK 15417 PAGE 232

PLAN REFERENCES:
PLAN BOOK 953 PLAN 49
PLAN BOOK 438 PLAN 122
PLAN BOOK 663 PLAN 16

FIRM CLASSIFICATION:
FLOOD INSURANCE RATE MAP
NUMBER 25027C0633F
EFFECTIVE JULY 16, 2014

ZONING CLASSIFICATION:
RB / RESIDENCE B

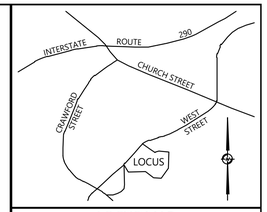
MINIMUM LOT AREA:	40,000 S.F.
MINIMUM LOT FRONTAGE:	150 FEET
MINIMUM LOT WIDTH:	150 FEET
MINIMUM FRONT YARD:	30 FEET
MINIMUM SIDE YARD:	15 FEET
MINIMUM REAR YARD:	25 FEET

H:\PROJECTS\1207\CAD\DWG\1207001.dwg

BASIS OF BEARINGS:
MASSACHUSETTS STATE PLANE
COORDINATE SYSTEM, MAINLAND ZONE

DRAWING KEY

C1.01
C1.02



LOCUS MAP
N.T.S.

REV.	DATE	DESCRIPTION	INIT.
A		INITIAL ISSUE	GBS

COMMONWEALTH OF MASSACHUSETTS
GREGORY BRIAN SCOTCHIE
CIVIL
No. 52510
REGISTERED PROFESSIONAL ENGINEER
11/20/2020

PREPARED BY:

WDA DESIGN GROUP
31 EAST MAIN STREET WESTBOROUGH, MA
508.366.6552
WDA-DG.COM

OWNER:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

PREPARED FOR:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

TITLE:

DEMOLITION PLAN

85 & 98 COMMON DRIVEWAY

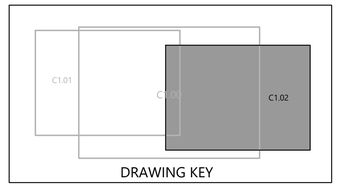
85 & 95 West Street
Northborough, MA 01532
(Worcester County)

NOTICE OF INTENT

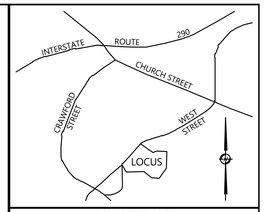
0 40 80 Feet

JOB NO.:	1207.03	DATE:	11/20/2020
DWN. BY:	JRZ	SHEET:	C1.01
CHK'D. BY:	SPC		

C1.01.dwg



BASIS OF BEARINGS:
MASSACHUSETTS STATE PLANE
COORDINATE SYSTEM, MAINLAND ZONE



LOCUS MAP
N.T.S.

REV.	DATE	DESCRIPTION	INIT.
A		INITIAL ISSUE	GBS

COMMONWEALTH OF MASSACHUSETTS
GREGORY BRIAN SCOTCHIE
CIVIL
No. 52510
REGISTERED PROFESSIONAL ENGINEER

11/20/2020

PREPARED BY:

WDA DESIGN GROUP
31 EAST MAIN STREET WESTBOROUGH, MA
508.366.6552
WDA-DG.COM

OWNER:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

PREPARED FOR:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

TITLE:

DEMOLITION PLAN

85 & 98 COMMON DRIVEWAY

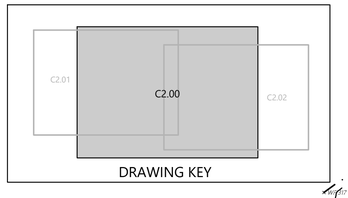
85 & 95 West Street
Northborough, MA 01532
(Worcester County)

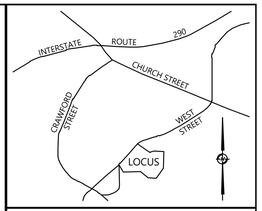
NOTICE OF INTENT

0 40 80 Feet

JOB NO.:	1207.03	DATE:	11/20/2020
DWN. BY:	JRZ	SHEET:	C1.02
CHK'D. BY:	SPC		

C1.02.dwg





LOCUS MAP
N.T.S.

BASIS OF BEARINGS: MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, MAINLAND ZONE

REV.	DATE	DESCRIPTION	INIT.
C	2/24/2021	PLANNING BOARD COMMENTS	GBS
A	X	INITIAL ISSUE	GBS

COMMONWEALTH OF MASSACHUSETTS
GREGORY BRIAN SCOTCHIE
CIVIL
No. 52510
REGISTERED PROFESSIONAL ENGINEER
2/24/2021

PREPARED BY:

WDA DESIGN GROUP
31 EAST MAIN STREET WESTBOROUGH, MA
508.366.6552
WDA-DG.COM

OWNER:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

PREPARED FOR:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

TITLE:

SITE PLAN

85 & 98 COMMON DRIVEWAY

85 & 95 West Street
Northborough, MA 01532
(Worcester County)

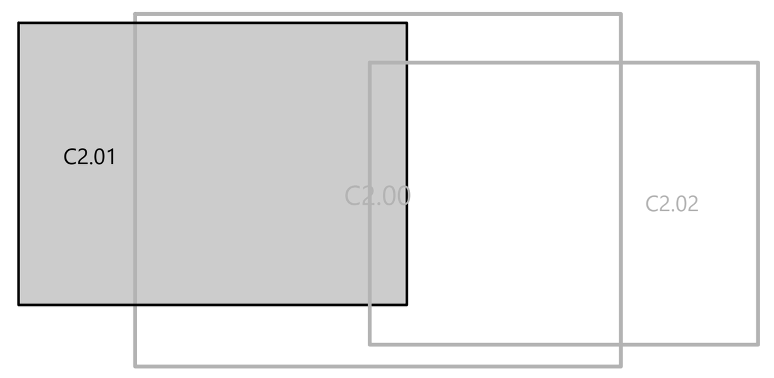
NOTICE OF INTENT

0 50 100 Feet

JOB NO.:	1207.03	DATE:	11/20/20
DWN. BY:	GBS	SHEET:	C2.00
CHK'D. BY:	BPW/JRW		

C2.00.dwg

BASIS OF BEARINGS:
MASSACHUSETTS STATE PLANE
COORDINATE SYSTEM, MAINLAND ZONE



DRAWING KEY

SITE LAYOUT LEGEND

MEDIUM DUTY ASPHALT PAVEMENT

GENERAL NOTES

1. Description: 85 & 95 West Street have 6.6 and 10.7 acres respectively for a total of 17.3 acres. The proposed development, disturbing ± 242,552 SF (5.5682 AC.), is bordered on the north by West Street. The project deed and plan book references are Deed Book 15417 Page 232 Plan Book 438 Plan 122; Plan Book 663 Plan 16, Town of Northborough, Worcester County, Massachusetts. Proposed construction will include demolition of existing pavement and construction of 3 single residential units with associated drives, utilities, and stormwater management system.

2. Name, address, and phone number of the property owner:
   Brant L. Viner & Margaret Harling
   P.O Box 295
   Ellsworth, ME 04605
   Contact: Brant L. Viner & Margaret Harling

   Phone: T.B.D.

3. Name and phone number of the 24-hour local contact person responsible for erosion control emergencies
   Name: T.B.D.
   Phone: T.B.D.

4. Engineer/Designer:
   WDA DESIGN GROUP
   CIVIL ENGINEERS LANDSCAPE ARCHITECTS SURVEYORS PLANNERS
   31 EAST MAIN STREET, WESTBOROUGH, MA 01581
   508.366.6552
   WDA-DG.COM

   Phone: (508) 366-6552
   Contact: Brian Waterman

5. Site location:
   85 & 95 West Street
   Northborough, MA 01532
   Project is located in Plan Book 438 Plan 122; Plan Book 663 Plan 16, Town of Northborough, Worcester County, Massachusetts.
   Zoning information: RB/RESIDENCE B
   Site area: ±753,588 SF
   Disturbed area:± 242,552 SF (5.5682 AC.)

6. This site is within the limits of a 1 or 0.2% annual chance flood hazard area as per F.I.R.M. for Worcester County, Massachusetts. Community panel NO. 25027C0633F EFFECTIVE JULY 16, 2014.

7. Soil information:

   Chatfield-hollis-rock outcrop complex, 0 to 15 percent slopes (102c)
   Windsor loamy sand, 3 to 8 percent slopes (255b)
   Paxton fine sandy loam, 3 to 8 percent slopes (305b)
   Paxton fine sandy loam, 8 to 15 percent slopes (305c)
   Paxton fine sandy loam, 0 to 8 percent slopes, very stony (306c)
   Paxton fine sandy loam, 15 to 25 percent slopes, extremely stony (307d)
   Woodbridge fine sandy loam, 0 to 8 percent slopes, extremely stony (312b)

SITE NOTES

1. INSTALL JOINTS WHERE SHOWN. ALIGN ON WALLS, BUILDINGS, RADII, ETC. EVENLY SPACE BETWEEN ELEMENTS AS SHOWN. PROVIDE EXPANSION JOINTS BETWEEN CONCRETE PAVEMENT AND VERTICAL ELEMENTS (WALLS, CURBS, ETC.).
2. LAYOUT ALL CURVES SMOOTHLY WITH NO ABRUPT CHANGES AT TANGENT POINTS.
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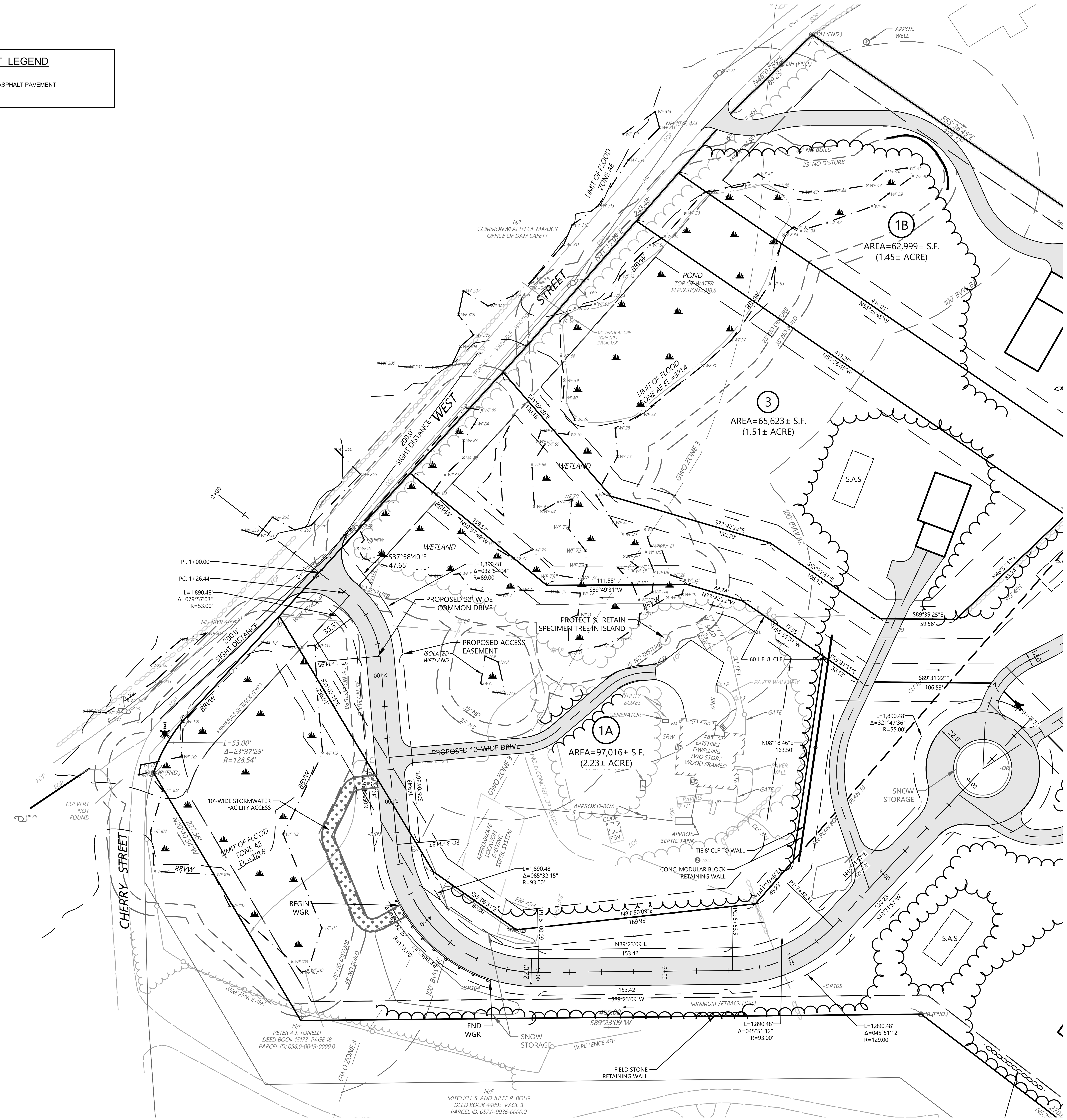
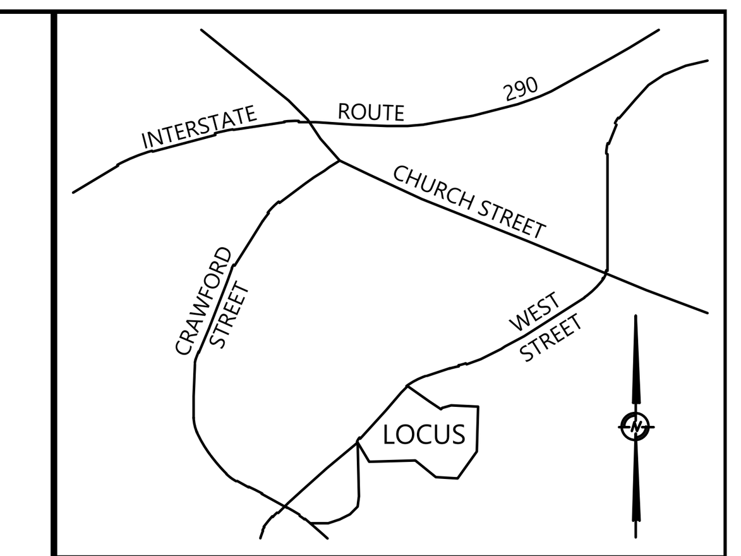
8. CONTRACTOR SHALL NOTIFY WDA DESIGN GROUP WITHIN 24 HOURS OF ANY LAYOUT DISCREPANCY PRIOR TO PROCEEDING WITH WORK. ALL ADDITIONAL COSTS, INCLUDING BUT NOT LIMITED TO REMEDIAL CONSTRUCTION, ADDITIONAL SITE VISITS, OR ENGINEERING SERVICES AND FEES, ETC. INCURRED DUE TO FAILURE TO FOLLOW THIS PROCEDURE WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.





LOCUS MAP
N.T.S.

REV.	DATE	DESCRIPTION	INIT.
C	2/24/2021	PLANNING BOARD COMMENTS	GBS
A		INITIAL ISSUE	GBS

COMMONWEALTH OF MASSACHUSETTS
GREGORY BRIAN SCOTCHIE
CIVIL
No. 52510
REGISTERED PROFESSIONAL ENGINEER
2/24/2021

PREPARED BY:

WDA DESIGN GROUP
31 EAST MAIN STREET WESTBOROUGH, MA
508.366.6552
WDA-DG.COM

OWNER:
Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

PREPARED FOR:
Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

TITLE:
SITE PLAN

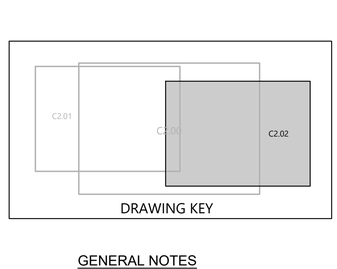
85 & 98 COMMON DRIVEWAY
85 & 95 West Street
Northborough, MA 01532
(Worcester County)

NOTICE OF INTENT

0 40 80 Feet

JOB NO.: 1207.03		DATE: 11/20/20	
DWN. BY: GBS		SHEET:	C2.01
CHK'D. BY: BPW/JRW			

C2.01.dwg



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SITE NOTES

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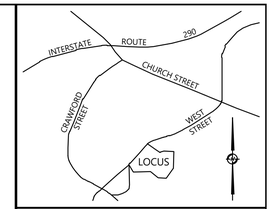
SITE LAYOUT LEGEND

MEDIUM DUTY ASPHALT PAVEMENT



LOCUS MAP
N.T.S.

REV.	DATE	DESCRIPTION	INIT.
C	2/24/2021	PLANNING BOARD COMMENTS	GBS
A	X	INITIAL ISSUE	GBS

COMMONWEALTH OF MASSACHUSETTS
GREGORY BRIAN SCOTCHIE
CIVIL
No. 52510
REGISTERED PROFESSIONAL ENGINEER
2/24/2021

PREPARED BY:

WDA DESIGN GROUP
31 EAST MAIN STREET WESTBOROUGH, MA
508.366.6552
WDA-DG.COM

OWNER:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

PREPARED FOR:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

TITLE:

SITE PLAN

85 & 98 COMMON DRIVEWAY

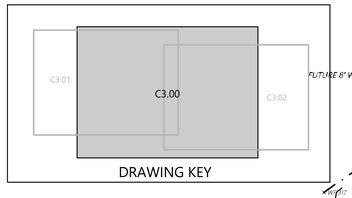
85 & 95 West Street
Northborough, MA 01532
(Worcester County)

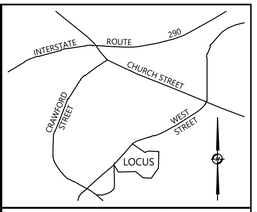
NOTICE OF INTENT

0 40 80 Feet

JOB NO.:	1207.03	DATE:	11/20/20
DWN. BY:	GBS	SHEET:	C2.02
CHK'D. BY:	BPW/JRW		

C2.02.dwg





LOCUS MAP
N.T.S.

BASIS OF BEARINGS: MASSACHUSETTS STATE PLANE COORDINATE SYSTEM, MAINLAND ZONE

REV.	DATE	DESCRIPTION	INIT.
C	2/24/2021	PLANNING BOARD COMMENTS	GBS
A	X	INITIAL ISSUE	GBS

COMMONWEALTH OF MASSACHUSETTS
GREGORY BRIAN SCOTCHI
CIVIL
No. 52510
REGISTERED PROFESSIONAL ENGINEER
2/24/2021

PREPARED BY:

WDA DESIGN GROUP

31 EAST MAIN STREET WESTBOROUGH, MA
508.366.6552
WDA-DG.COM

OWNER:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

PREPARED FOR:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

TITLE:

GRADING, DRAINAGE, & UTILITY PLAN

85 & 98 COMMON DRIVEWAY

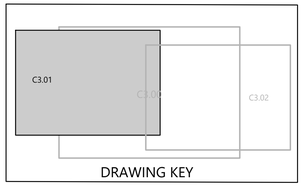
85 & 95 West Street
Northborough, MA 01532
(Worcester County)

NOTICE OF INTENT

0 50 100 Feet

JOB NO.:	1207.03	DATE:	11/20/20
DWN. BY:	GBS	SHEET:	C3.00
CHK'D. BY:	BPW/JRW		

C3.00.dwg



DRAWING KEY

GRADING LEGEND

950 — PROPOSED CONTOUR LINE

950 — EXISTING CONTOUR LINE

982.82 × — PROPOSED SPOT ELEVATION

5.0% — DRAINAGE FLOW ARROW (1% MINIMIM)

ECB — EROSION CONTROL BARRIER

GENERAL NOTES

1. Description: 85 & 95 West Street have 6.6 and 10.7 acres respectively for a total of 17.3 acres. The proposed development, disturbing ± 242,552 SF (5.5682 AC.), is bordered on the north by West Street. The project deed and plan book references are Deed Book 15417 Page 232 Plan Book 438 Plan 122; Plan Book 663 Plan 16, Town of Northborough, Worcester County, Massachusetts. Proposed construction will include demolition of existing pavement and construction of 3 single residential units with associated drives, utilities, and stormwater management system.

2. Name, address, and phone number of the property owner:
   Brant L. Viner & Margaret Harling
   P.O Box 295
   Ellsworth, ME 04605
   Contact: Brant L. Viner & Margaret Harling

   Phone: T.B.D.

3. Name and phone number of the 24-hour local contact person responsible for erosion control emergencies
   Name: T.B.D.
   Phone: T.B.D.

4. Engineer/Designer:
   WDA DESIGN GROUP
   CIVIL ENGINEERS LANDSCAPE ARCHITECTS SURVEYORS PLANNERS
   31 EAST MAIN STREET, WESTBOROUGH, MA 01581
   508.366.6552
   WDA-DG.COM

   Phone: (508) 366-6552
   Contact: Brian Waterman

5. Site location:
   85 & 95 West Street
   Northborough, MA 01532
   Project is located in Plan Book 438 Plan 122; Plan Book 663 Plan 16, Town of Northborough, Worcester County, Massachusetts.
   Zoning information: RB/RESIDENCE B
   Site area: ±753,588 SF
   Disturbed area:± 242,552 SF (5.5682 AC.)

6. This site is within the limits of a 1 or 0.2% annual chance flood hazard area as per F.I.R.M. for Worcester County, Massachusetts. Community panel NO. 25027C0633F EFFECTIVE JULY 16, 2014.

7. Soil information:

   Chatfield-hollis-rock outcrop complex, 0 to 15 percent slopes (102c)
   Windsor loamy sand, 3 to 8 percent slopes (255b)
   Paxton fine sandy loam, 3 to 8 percent slopes (305b)
   Paxton fine sandy loam, 8 to 15 percent slopes (305c)
   Paxton fine sandy loam, 0 to 8 percent slopes, very stony (306c)
   Paxton fine sandy loam, 15 to 25 percent slopes, extremely stony (307d)
   Woodbridge fine sandy loam, 0 to 8 percent slopes, extremely stony (312b)

GRADING & DRAINAGE NOTES

1. NO EARTHWORK SHALL BE PERMITTED UNTIL ISSUANCE OF A GRADING/LAND DISTURBANCE PERMIT FROM THE TOWN OF NORTHBOROUGH. ALL EXCESS MATERIAL TO BE REMOVED FROM SITE OR STOCKPILED IN APPROVED LOCATION.
2. ALL FILL AND CUT SLOPES SHALL BE 3:1 OR FLATTER UNLESS OTHERWISE NOTED ON THE PLANS.
3. NO GRADED SLOPE SHALL EXCEED 3H : 1V
4. EROSION CONTROL MATTING SHALL BE INSTALLED ON ALL SLOPES GREATER THAN 3:1.
5. CONTRACTOR TO COORDINATE WITH ALL UTILITY COMPANIES PRIOR TO BEGINNING GRADING ACTIVITIES.
7. EARTHWORK QUANTITIES
8. DETAIL FOR INFILTRATION UNITS FOUND ON C6.04 THROUGH C6.06 (C)

CUT FACTOR	FILL FACTOR	CUT (CU. YD.)	FILL (CU. YD.)	NET (CU.YD.)
1.00	1.20	-----	-----	-----

*VALUE ADJUSTED BY CUT OR FILL FACTOR OTHER THAN 1.0.

WATER NOTES

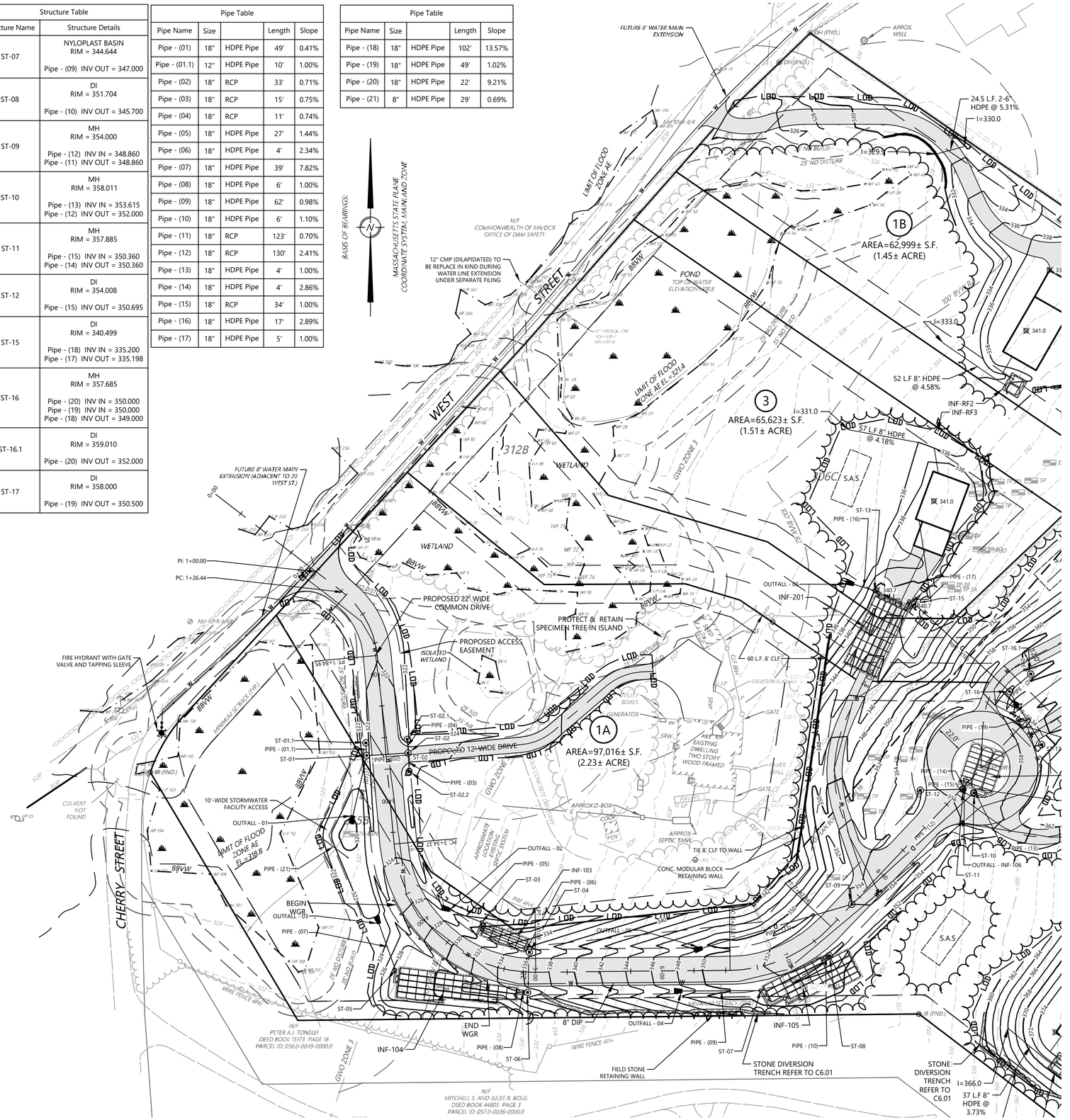
1. ALL WATER MAINS MUST BE CEMENT LINE DUCTILE IRON.
2. ALL RESIDENCES SHALL BE CONSTRUCTED WITH PRIVATE BOOSTER PUMPS ON THEIR WATER SERVICES TO PROVIDE ADEQUATE WATER PRESSURE.

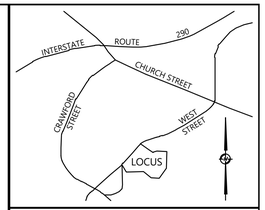
Structure Table	
Structure Name	Structure Details
Outfall - 01	CONC. FLARED END SECTION RIM = 321.346 Pipe - (01) INV IN = 319.700
Outfall - 02	CONC. FLARED END SECTION RIM = 328.646 Pipe - (05) INV IN = 326.000
Outfall - 03	CONC. FLARED END SECTION RIM = 323.646 Pipe - (07) INV IN = 322.000
Outfall - 04	CONC. FLARED END SECTION RIM = 348.036 Pipe - (09) INV IN = 346.390
Outfall - 05	CONC. FLARED END SECTION RIM = 351.792 Pipe - (11) INV IN = 348.000
Outfall - 06	CONC. FLARED END SECTION RIM = 335.646 Pipe - (16) INV IN = 334.000
Outfall - INF-103	STORMTECH INLET RIM = 328.034 Pipe - (06) INV IN = 326.390
Outfall - INF-104	STORMTECH INLET RIM = 325.774 Pipe - (08) INV IN = 324.130
Outfall - INF-105	STORMTECH INLET RIM = 347.274 Pipe - (10) INV IN = 345.630
Outfall - INF-106	STORMTECH INLET RIM = 352.264 Pipe - (14) INV IN = 350.260
Outfall - INF-201	STORMTECH INLET RIM = 335.504 Pipe - (17) INV IN = 335.150
ST-01	MH RIM = 324.442 Pipe - (01.1) INV IN = 319.900 Pipe - (02) INV IN = 319.900 Pipe - (01) INV OUT = 319.900
ST-01.1	DI RIM = 321.976 Pipe - (01.1) INV OUT = 320.000
ST-02	MH RIM = 324.672 Pipe - (04) INV IN = 320.130 Pipe - (03) INV IN = 320.130 Pipe - (02) INV OUT = 320.130
ST-02.1	DI RIM = 322.752 Pipe - (04) INV OUT = 320.210
ST-02.2	DI RIM = 322.782 Pipe - (03) INV OUT = 320.240
ST-03	NYLOPLAST BASIN RIM = 328.034 Pipe - (05) INV OUT = 326.390
ST-04	DI RIM = 335.017 Pipe - (06) INV OUT = 326.490
ST-05	NYLOPLAST BASIN RIM = 326.684 Pipe - (07) INV OUT = 325.040
ST-06	DI RIM = 335.017 Pipe - (08) INV OUT = 324.195

Structure Table	
Structure Name	Structure Details
ST-07	NYLOPLAST BASIN RIM = 344.644 Pipe - (09) INV OUT = 347.000
ST-08	DI RIM = 351.704 Pipe - (10) INV OUT = 345.700
ST-09	MH RIM = 354.000 Pipe - (12) INV IN = 348.860 Pipe - (11) INV OUT = 348.860
ST-10	MH RIM = 358.011 Pipe - (13) INV IN = 353.615 Pipe - (12) INV OUT = 352.000
ST-11	MH RIM = 357.885 Pipe - (15) INV IN = 350.360 Pipe - (14) INV OUT = 350.360
ST-12	DI RIM = 354.008 Pipe - (15) INV OUT = 350.695
ST-15	DI RIM = 340.499 Pipe - (18) INV IN = 335.200 Pipe - (17) INV OUT = 335.198
ST-16	MH RIM = 357.685 Pipe - (20) INV IN = 350.000 Pipe - (19) INV IN = 350.000 Pipe - (18) INV OUT = 349.000
ST-16.1	DI RIM = 359.010 Pipe - (20) INV OUT = 352.000
ST-17	DI RIM = 358.000 Pipe - (19) INV OUT = 350.500

Pipe Table				
Pipe Name	Size		Length	Slope
Pipe - (01)	18"	HDPE Pipe	49'	0.41%
Pipe - (01.1)	12"	HDPE Pipe	10'	1.00%
Pipe - (02)	18"	RCP	33'	0.71%
Pipe - (03)	18"	RCP	15'	0.75%
Pipe - (04)	18"	RCP	11'	0.74%
Pipe - (05)	18"	HDPE Pipe	27'	1.44%
Pipe - (06)	18"	HDPE Pipe	4'	2.34%
Pipe - (07)	18"	HDPE Pipe	39'	7.82%
Pipe - (08)	18"	HDPE Pipe	6'	1.00%
Pipe - (09)	18"	HDPE Pipe	62'	0.98%
Pipe - (10)	18"	HDPE Pipe	6'	1.10%
Pipe - (11)	18"	RCP	123'	0.70%
Pipe - (12)	18"	RCP	130'	2.41%
Pipe - (13)	18"	HDPE Pipe	4'	1.00%
Pipe - (14)	18"	HDPE Pipe	4'	2.86%
Pipe - (15)	18"	RCP	34'	1.00%
Pipe - (16)	18"	HDPE Pipe	17'	2.89%
Pipe - (17)	18"	HDPE Pipe	5'	1.00%

Pipe Table				
Pipe Name	Size		Length	Slope
Pipe - (18)	18"	HDPE Pipe	102'	13.57%
Pipe - (19)	18"	HDPE Pipe	49'	1.02%
Pipe - (20)	18"	HDPE Pipe	22'	9.21%
Pipe - (21)	8"	HDPE Pipe	29'	0.69%





LOCUS MAP
N.T.S.

REV.	DATE	DESCRIPTION	INIT.
C	2/24/2021	PLANNING BOARD COMMENTS	GBS
A		INITIAL ISSUE	GBS

COMMONWEALTH OF MASSACHUSETTS
GREGORY BRIAN SCOTCHIE
CIVIL
No. 52510
REGISTERED PROFESSIONAL ENGINEER
2/24/2021

PREPARED BY:

WDA DESIGN GROUP
31 EAST MAIN STREET WESTBOROUGH, MA
508.366.6552
WDA-DG.COM

OWNER:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

PREPARED FOR:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

TITLE:

GRADING, DRAINAGE, & UTILITY PLAN

85 & 98 COMMON DRIVEWAY

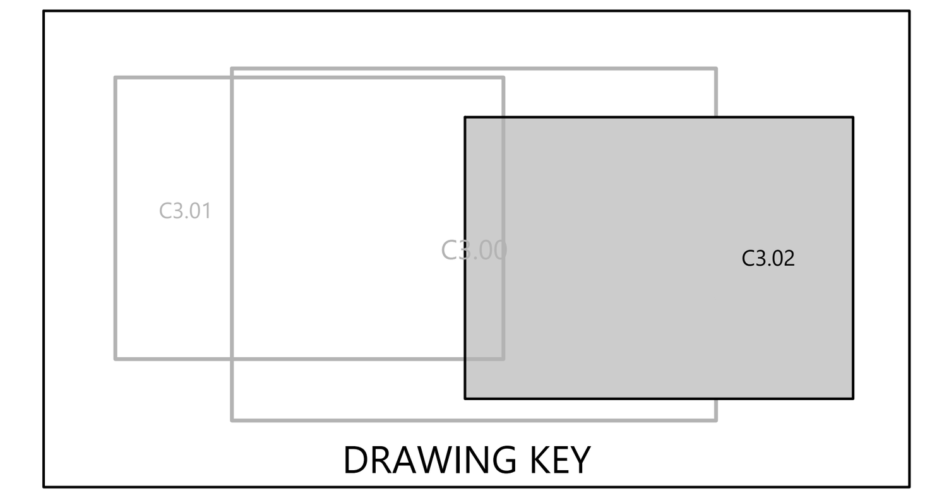
85 & 95 West Street
Northborough, MA 01532
(Worcester County)

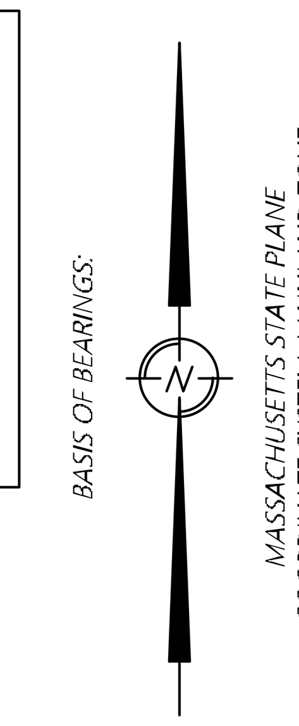
NOTICE OF INTENT

0 40 80 Feet

JOB NO.:	1207.03	DATE:	11/20/20
DWN. BY:	GBS	SHEET:	C3.01
CHK'D. BY:	BPW/JRW		

C3.01.dwg





GRADING LEGEND

950	PROPOSED CONTOUR LINE
950	EXISTING CONTOUR LINE
982.82 ×	PROPOSED SPOT ELEVATION
5.0%	DRAINAGE FLOW ARROW (1% MINIMIM)
ECB	EROSION CONTROL BARRIER

GENERAL NOTES

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   31 EAST MAIN STREET, WESTBOROUGH, MA 01581
   508.366.6552
   WDA-DG.COM

   Phone: (508) 366-6552
   Contact: Brian Waterman

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   Windsor loamy sand, 3 to 8 percent slopes (255b)
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   Paxton fine sandy loam, 8 to 15 percent slopes (305c)
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GRADING & DRAINAGE NOTES

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7. EARTHWORK QUANTITIES
8. DETAIL FOR INFILTRATION UNITS FOUND ON C6.00 AND C6.01 (C)

CUT FACTOR	FILL FACTOR	CUT (CU. YD.)	FILL (CU. YD.)	NET (CU.YD.)
1.00	1.20	-----	-----	-----

*VALUE ADJUSTED BY CUT OR FILL FACTOR OTHER THAN 1.0.

WATER NOTES

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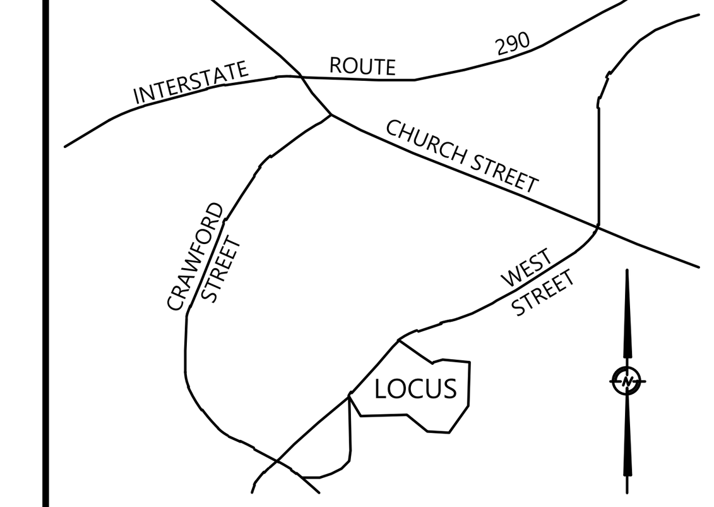


LOCUS MAP
N.T.S.

REV.	DATE	DESCRIPTION	INIT.
C	2/24/2021	PLANNING BOARD COMMENTS	GBS
A		INITIAL ISSUE	GBS

COMMONWEALTH OF MASSACHUSETTS
GREGORY BRIAN SCOTCHIE
CIVIL
No. 52510
REGISTERED PROFESSIONAL ENGINEER
2/24/2021

PREPARED BY:
WDA DESIGN GROUP
31 EAST MAIN STREET WESTBOROUGH, MA
508.366.6552
WDA-DG.COM

OWNER:
Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

PREPARED FOR:
Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

TITLE:
GRADING, DRAINAGE, & UTILITY PLAN

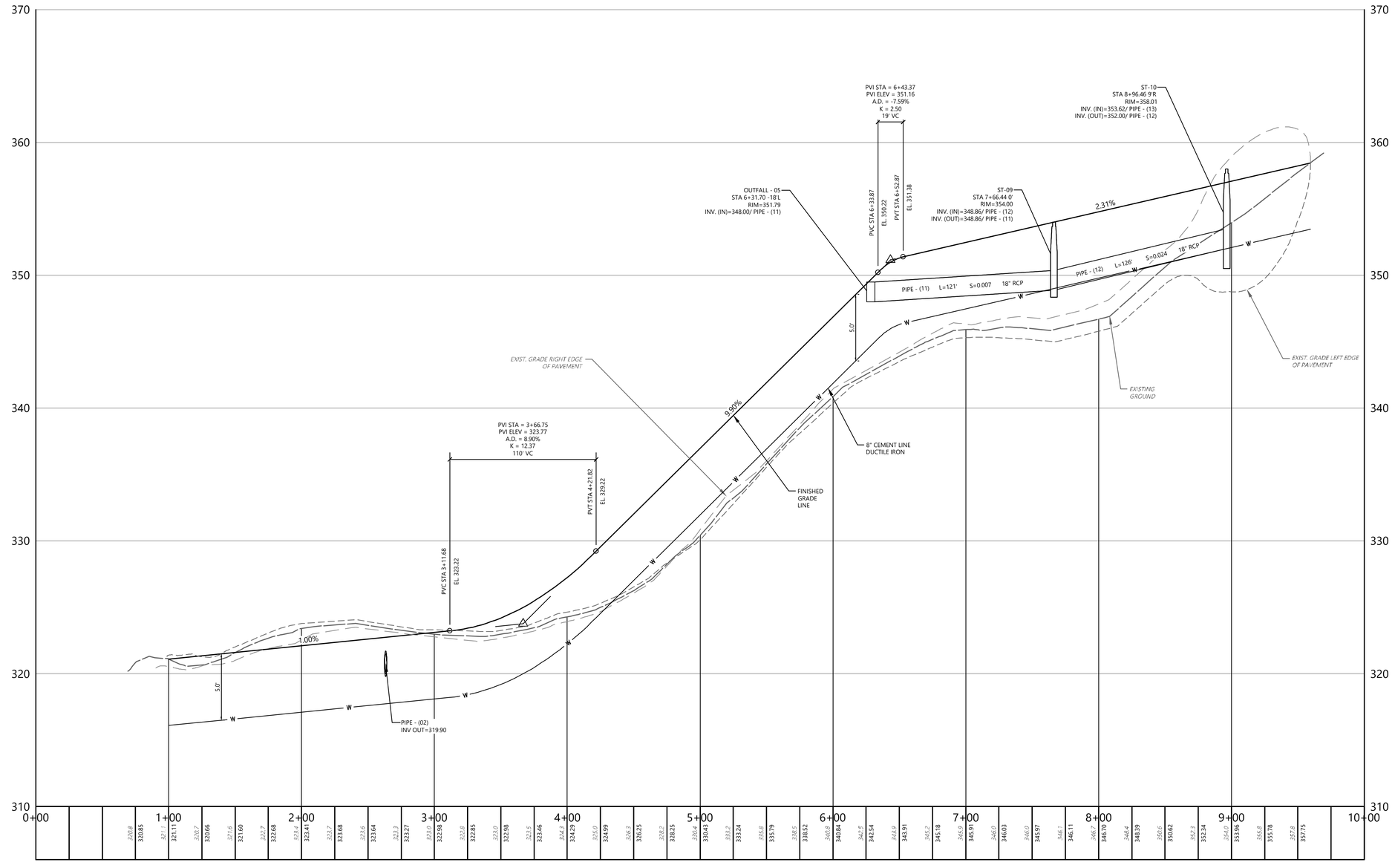
85 & 98 COMMON DRIVEWAY
85 & 95 West Street
Northborough, MA 01532
(Worcester County)

NOTICE OF INTENT

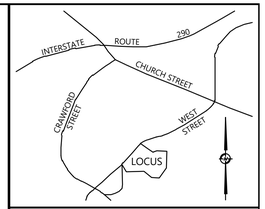
0 40 80 Feet

JOB NO.:	1207.03	DATE:	11/20/20
DWN. BY:	GBS	SHEET:	C3.02
CHK'D. BY:	BPW/JRW		

PROFILE: COMMON DRIVEWAY



STATION
HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'



LOCUS MAP
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C	2/24/2021	PLANNING BOARD COMMENTS	GBS
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COMMONWEALTH OF MASSACHUSETTS
GREGORY BRIAN SCOTCHIE
CIVIL
No. 52810
REGISTERED PROFESSIONAL ENGINEER
2/24/2021

PREPARED BY:

WDA DESIGN GROUP
31 EAST MAIN STREET WESTBOROUGH, MA
508.366.6552
WDA-DG.COM

OWNER:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

PREPARED FOR:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

TITLE:

COMMON DRIVEWAY PROFILE

85 & 98 COMMON DRIVEWAY
85 & 95 West Street
Northborough, MA 01532
(Worcester County)

NOTICE OF INTENT

JOB NO.:	1207.03	DATE:	11/20/20
DWN. BY:	GBS	SHEET:	C4.00
CHK'D. BY:	BPW/JRW		

GENERAL NOTES

1. DESCRIPTION: 85 & 95 WEST STREET HAVE 6.6 AND 10.7 ACRES RESPECTIVELY FOR A TOTAL OF 17.3 ACRES. THE PROPOSED DEVELOPMENT, DISTURBING ± 242,552 SF (5.5682 AC.), IS BORDERED ON THE NORTH BY WEST STREET. THE PROJECT DEED AND PLAN BOOK REFERENCES ARE Deed Book 15417 Page 232 Plan Book 438 Plan 122; Plan Book 663 Plan 16, TOWN OF NORTHBOROUGH, Worcester County, MASSACHUSETTS. PROPOSED CONSTRUCTION WILL INCLUDE DEMOLITION OF EXISTING PAVEMENT AND CONSTRUCTION OF 3 SINGLE RESIDENTIAL UNITS WITH ASSOCIATED DRIVES, UTILITIES, AND STORMWATER MANAGEMENT SYSTEM.

2. NAME, ADDRESS, AND PHONE NUMBER OF THE PROPERTY OWNER:
   Brant L. Viner & Margaret Harling
   P.O Box 295
   Ellsworth, ME 04605
   CONTACT: Brant L. Viner & Margaret Harling

   PHONE: T.B.D.

3. NAME AND PHONE NUMBER OF THE 24-HOUR LOCAL CONTACT PERSON RESPONSIBLE FOR EROSION CONTROL EMERGENCIES
   NAME: T.B.D.
   PHONE: T.B.D.

4. ENGINEER/DESIGNER:
   WDA DESIGN GROUP
   CIVIL ENGINEERS LANDSCAPE ARCHITECTS SURVEYORS PLANNERS
   31 EAST MAIN STREET, WESTBOROUGH, MA 01581
   508.366.6552
   WDA-DG.COM

   PHONE: (508) 366-6552
   CONTACT: BRIAN WATERMAN

5. SITE LOCATION:
   85 & 95 West Street
   Northborough, MA 01532
   PROJECT IS LOCATED IN Plan Book 438 Plan 122; Plan Book 663 Plan 16, TOWN OF NORTHBOROUGH, Worcester County, MASSACHUSETTS.
   ZONING INFORMATION: RB/RESIDENCE B
   SITE AREA: ±753,588 SF
   DISTURBED AREA:± 242,552 SF (5.5682 AC.)

6. THIS SITE IS WITHIN THE LIMITS OF A 1 OR 0.2% ANNUAL CHANCE FLOOD HAZARD AREA AS PER F.I.R.M. FOR Worcester County, MASSACHUSETTS, COMMUNITY PANEL NO. 25027C0633F EFFECTIVE JULY 16, 2014.

7. SOIL INFORMATION:

   CHATFIELD-HOLLIS-ROCK OUTCROP COMPLEX, 0 TO 15 PERCENT SLOPES (102C)
   WINDSOR LOAMY SAND, 3 TO 8 PERCENT SLOPES (255B)
   PAXTON FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES (305B)
   PAXTON FINE SANDY LOAM, 8 TO 15 PERCENT SLOPES (305C)
   PAXTON FINE SANDY LOAM, 0 TO 8 PERCENT SLOPES, VERY STONY (306C)
   PAXTON FINE SANDY LOAM, 15 TO 25 PERCENT SLOPES, EXTREMELY STONY (307D)
   WOODBRIDGE FINE SANDY LOAM, 0 TO 8 PERCENT SLOPES, EXTREMELY STONY (312B)

CONSTRUCTION PHASING PLAN

PRE-CONSTRUCTION

1. PREPARE AND SUBMIT NOTICE OF INTENT WITH US EPA FOR COVERAGE UNDER NPDES CONSTRUCTION GENERAL PERMIT FOR CONSTRUCTION PROJECTS DISTURBING OVER 1 ACRE OF LAND AT LEAST 14 DAYS PRIOR TO LAND DISTURBANCE.
2. PREPARE AND PLACE ON-SITE STORMWATER POLLUTION PREVENTION PLAN IN ACCORDANCE WITH NPDES CONSTRUCTION GENERAL PERMIT.
3. INSTALL DEP FILE NO. SIGN AND NPDES PERMIT ID SIGN AT PROJECT SITE.

PHASE 1

1. INSTALL PROPOSED SILTATION CONTROL MEASURES AS SHOWN ON THESE PLANS. (REFER TO EROSION AND SEDIMENTATION CONTROL DETAILS FOR ADDITIONAL INFORMATION ON SILTATION CONTROL PRACTICES TO BE USED THROUGHOUT THE SITE).
2. CONSTRUCT CRUSHED STONE TRACKING PADS PRIOR TO ANY EARTHWORK OR TREE CLEARING BEING PERFORMED.
3. NOTIFY CONSERVATION COMMISSION AGENT FOLLOWING INSTALLATION OF SILTATION CONTROL PRIOR TO ANY MAJOR EXCAVATION OR LAND DISTURBANCE TAKING PLACE.
4. CLEAR AND GRUB SITE. CONTRACTOR SHALL MAINTAIN FOREST MAT AND/OR SLASH MATERIALS FROM TREE CLEARING FOR TEMPORARY EROSION CONTROLS IN AREAS NOT IMMEDIATELY SCHEDULED FOR CUT/FILL ACTIVITIES TO MINIMIZE POTENTIAL FOR WASHOUT OF DISTURBED SOIL SURFACES.
5. CONSTRUCT FILL SLOPES AND STABLIZE DISTURBED SLOPES AS NECESSARY WITH PERMANENT SEEDING.
6. CONSTRUCT TEMPORARY SEDIMENT BASIN.

PHASE 2

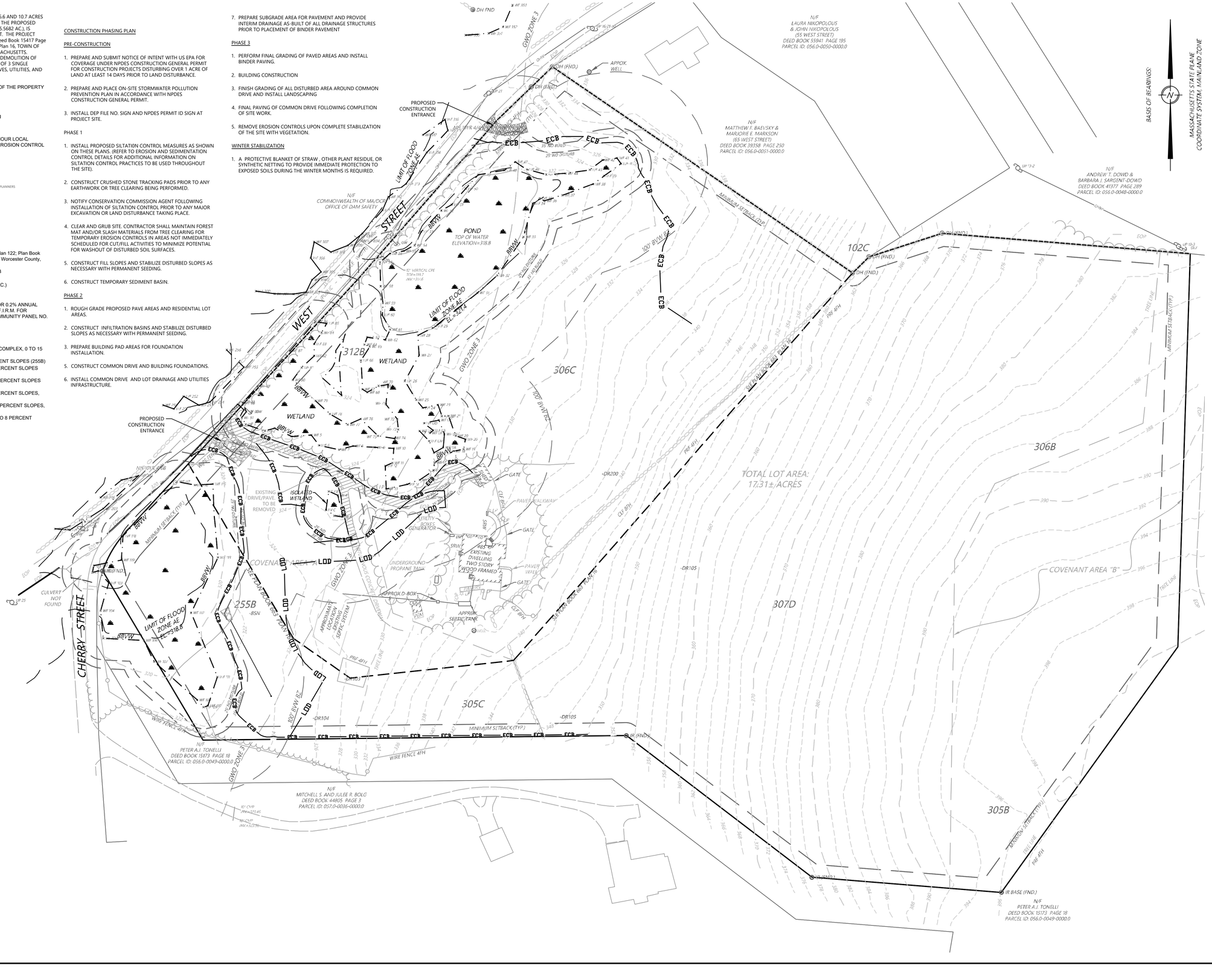
1. ROUGH GRADE PROPOSED PAVE AREAS AND RESIDENTIAL LOT AREAS.
2. CONSTRUCT INFILTRATION BASINS AND STABILIZE DISTURBED SLOPES AS NECESSARY WITH PERMANENT SEEDING.
3. PREPARE BUILDING PAD AREAS FOR FOUNDATION INSTALLATION.
5. CONSTRUCT COMMON DRIVE AND BUILDING FOUNDATIONS.
6. INSTALL COMMON DRIVE AND LOT DRAINAGE AND UTILITIES INFRASTRUCTURE.
7. PREPARE SUBGRADE AREA FOR PAVEMENT AND PROVIDE INTERIM DRAINAGE AS-BUILT OF ALL DRAINAGE STRUCTURES PRIOR TO PLACEMENT OF BINDER PAVEMENT

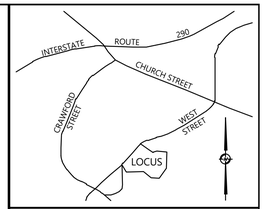
PHASE 3

1. PERFORM FINAL GRADING OF PAVED AREAS AND INSTALL BINDER PAVING.
2. BUILDING CONSTRUCTION
3. FINISH GRADING OF ALL DISTURBED AREA AROUND COMMON DRIVE AND INSTALL LANDSCAPING
4. FINAL PAVING OF COMMON DRIVE FOLLOWING COMPLETION OF SITE WORK.
5. REMOVE EROSION CONTROLS UPON COMPLETE STABILIZATION OF THE SITE WITH VEGETATION.

WINTER STABILIZATION

1. A PROTECTIVE BLANKET OF STRAW , OTHER PLANT RESIDUE, OR SYNTHETIC NETTING TO PROVIDE IMMEDIATE PROTECTION TO EXPOSED SOILS DURING THE WINTER MONTHS IS REQUIRED.





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COMMONWEALTH OF MASSACHUSETTS
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REGISTERED PROFESSIONAL ENGINEER
2/24/2021

PREPARED BY:

WDA DESIGN GROUP
31 EAST MAIN STREET WESTBOROUGH, MA
508.366.6552
WDA-DG.COM

OWNER:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

PREPARED FOR:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

TITLE:

EROSION CONTROL PLAN - PHASE 1

85 & 98 COMMON DRIVEWAY

85 & 95 West Street
Northborough, MA 01532
(Worcester County)

NOTICE OF INTENT

0 50 100 Feet

JOB NO.:	1207.03	DATE:	11/20/20
DWN. BY:	GBS	SHEET:	C5.00
CHK'D. BY:	BPW/JRW		

C5.00.dwg

GENERAL NOTES

1. DESCRIPTION: 85 & 95 WEST STREET HAVE 6.6 AND 10.7 ACRES RESPECTIVELY FOR A TOTAL OF 17.3 ACRES. THE PROPOSED DEVELOPMENT, DISTURBING ± 242,552 SF (5.5682 AC.), IS BORDERED ON THE NORTH BY WEST STREET. THE PROJECT DEED AND PLAN BOOK REFERENCES ARE Deed Book 15417 Page 232 Plan Book 438 Plan 122; Plan Book 663 Plan 16, TOWN OF NORTHBOROUGH, Worcester County, MASSACHUSETTS. PROPOSED CONSTRUCTION WILL INCLUDE DEMOLITION OF EXISTING PAVEMENT AND CONSTRUCTION OF 3 SINGLE RESIDENTIAL UNITS WITH ASSOCIATED DRIVES, UTILITIES, AND STORMWATER MANAGEMENT SYSTEM.

2. NAME, ADDRESS, AND PHONE NUMBER OF THE PROPERTY OWNER:
   Brant L. Viner & Margaret Harling
   P.O Box 295
   Ellsworth, ME 04605
   CONTACT: Brant L. Viner & Margaret Harling

   PHONE: T.B.D.

3. NAME AND PHONE NUMBER OF THE 24-HOUR LOCAL CONTACT PERSON RESPONSIBLE FOR EROSION CONTROL EMERGENCIES
   NAME: T.B.D.
   PHONE: T.B.D.

4. ENGINEER/DESIGNER:
   WDA DESIGN GROUP
   CIVIL ENGINEERS LANDSCAPE ARCHITECTS SURVEYORS PLANNERS
   31 EAST MAIN STREET, WESTBOROUGH, MA 01581
   508.366.6552
   WDA-DG.COM

   PHONE: (508) 366-6552
   CONTACT: BRIAN WATERMAN

5. SITE LOCATION:
   85 & 95 West Street
   Northborough, MA 01532
   PROJECT IS LOCATED IN Plan Book 438 Plan 122; Plan Book 663 Plan 16, TOWN OF NORTHBOROUGH, Worcester County, MASSACHUSETTS.
   ZONING INFORMATION: RB/RESIDENCE B
   SITE AREA: ±753,588 SF
   DISTURBED AREA:± 242,552 SF (5.5682 AC.)

6. THIS SITE IS WITHIN THE LIMITS OF A 1 OR 0.2% ANNUAL CHANCE FLOOD HAZARD AREA AS PER F.I.R.M. FOR Worcester County, MASSACHUSETTS. COMMUNITY PANEL NO. 25027C0633F EFFECTIVE JULY 16, 2014.

7. SOIL INFORMATION:

   CHATFIELD-HOLLIS-ROCK OUTCROP COMPLEX, 0 TO 15 PERCENT SLOPES (102C)
   WINDSOR LOAMY SAND, 3 TO 8 PERCENT SLOPES (255B)
   PAXTON FINE SANDY LOAM, 3 TO 8 PERCENT SLOPES (305B)
   PAXTON FINE SANDY LOAM, 8 TO 15 PERCENT SLOPES (305C)
   PAXTON FINE SANDY LOAM, 0 TO 8 PERCENT SLOPES, VERY STONY (306C)
   PAXTON FINE SANDY LOAM, 15 TO 25 PERCENT SLOPES, EXTREMELY STONY (307D)
   WOODBRIDGE FINE SANDY LOAM, 0 TO 8 PERCENT SLOPES, EXTREMELY STONY (312B)

CONSTRUCTION PHASING PLAN

PRE-CONSTRUCTION

1. PREPARE AND SUBMIT NOTICE OF INTENT WITH US EPA FOR COVERAGE UNDER NPDES CONSTRUCTION GENERAL PERMIT FOR CONSTRUCTION PROJECTS DISTURBING OVER 1 ACRE OF LAND AT LEAST 14 DAYS PRIOR TO LAND DISTURBANCE.
2. PREPARE AND PLACE ON-SITE STORMWATER POLLUTION PREVENTION PLAN IN ACCORDANCE WITH NPDES CONSTRUCTION GENERAL PERMIT.
3. INSTALL DEP FILE NO. SIGN AND NPDES PERMIT ID SIGN AT PROJECT SITE.

PHASE 1

1. INSTALL PROPOSED SILTATION CONTROL MEASURES AS SHOWN ON THESE PLANS. (REFER TO EROSION AND SEDIMENTATION CONTROL DETAILS FOR ADDITIONAL INFORMATION ON SILTATION CONTROL PRACTICES TO BE USED THROUGHOUT THE SITE).
2. CONSTRUCT CRUSHED STONE TRACKING PADS PRIOR TO ANY EARTHWORK OR TREE CLEARING BEING PERFORMED.
3. NOTIFY CONSERVATION COMMISSION AGENT FOLLOWING INSTALLATION OF SILTATION CONTROL PRIOR TO ANY MAJOR EXCAVATION OR LAND DISTURBANCE TAKING PLACE.
4. CLEAR AND GRUB SITE. CONTRACTOR SHALL MAINTAIN FOREST MAT AND/OR SLASH MATERIALS FROM TREE CLEARING FOR TEMPORARY EROSION CONTROLS IN AREAS NOT IMMEDIATELY SCHEDULED FOR CUT/FILL ACTIVITIES TO MINIMIZE POTENTIAL FOR WASHOUT OF DISTURBED SOIL SURFACES.
5. CONSTRUCT FILL SLOPES AND STABLIZE DISTURBED SLOPES AS NECESSARY WITH PERMANENT SEEDING.

PHASE 2

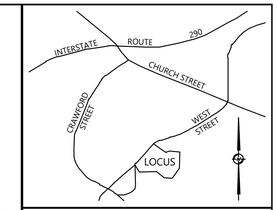
1. ROUGH GRADE PROPOSED PAVE AREAS AND RESIDENTIAL LOT AREAS.
2. CONSTRUCT INFILTRATION BASINS AND STABILIZE DISTURBED SLOPES AS NECESSARY WITH PERMANENT SEEDING.
3. INSTALL EXCAVATED DROP INLET TRAP AS INDICATED.
4. PREPARE BUILDING PAD AREAS FOR FOUNDATION INSTALLATION.
5. CONSTRUCT COMMON DRIVE AND BUILDING FOUNDATIONS.
6. INSTALL COMMON DRIVE AND LOT DRAINAGE AND UTILITIES INFRASTRUCTURE.
7. PREPARE SUBGRADE AREA FOR PAVEMENT AND PROVIDE INTERIM DRAINAGE AS-BUILT OF ALL DRAINAGE STRUCTURES PRIOR TO PLACEMENT OF BINDER PAVEMENT

PHASE 3

1. PERFORM FINAL GRADING OF PAVED AREAS AND INSTALL BINDER PAVING.
2. BUILDING CONSTRUCTION
3. FINISH GRADING OF ALL DISTURBED AREA AROUND COMMON DRIVE AND INSTALL LANDSCAPING
4. FINAL PAVING OF COMMON DRIVE FOLLOWING COMPLETION OF SITE WORK.
5. REMOVE EROSION CONTROLS UPON COMPLETE STABILIZATION OF THE SITE WITH VEGETATION.

WINTER STABILIZATION

1. A PROTECTIVE BLANKET OF STRAW , OTHER PLANT RESIDUE, OR SYNTHETIC NETTING TO PROVIDE IMMEDIATE PROTECTION TO EXPOSED SOILS DURING THE WINTER MONTHS IS REQUIRED.



LOCUS MAP
N.T.S.

REV.	DATE	DESCRIPTION	INIT.
C	2/24/2021	PLANNING BOARD COMMENTS	GBS
A	X	INITIAL ISSUE	GBS

COMMONWEALTH OF MASSACHUSETTS
GREGORY BRIAN SCOTCHIE
CIVIL
No. 52510
REGISTERED PROFESSIONAL ENGINEER
2/24/2021

PREPARED BY:

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EROSION CONTROL PLAN - PHASE 2

85 & 98 COMMON DRIVEWAY

85 & 95 West Street
Northborough, MA 01532
(Worcester County)

NOTICE OF INTENT

0 50 100 Feet

JOB NO.:	1207.03	DATE:	11/20/20
DWN. BY:	GBS	SHEET:	C5.01
CHK'D. BY:	BPW/JRW		

C5.01.dwg

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EROSION LEGEND

PERMANENT SEEDING

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5. CONSTRUCT FILL SLOPES AND STABILIZE DISTURBED SLOPES AS NECESSARY WITH PERMANENT SEEDING.
6. CONSTRUCT TEMPORARY DIVERSION SWALES WITH STRAW BALE CHECK DAMS AS NECESSARY TO DIVERT SEDIMENT LADEN STORM WATER TO SEDIMENT TRAP.

PHASE 2

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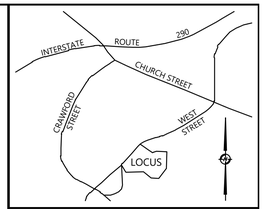
LOCUS MAP



N.T.S.

REV.	DATE	DESCRIPTION	INIT.
C	2/24/2021	PLANNING BOARD COMMENTS	GBS
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COMMONWEALTH OF MASSACHUSETTS
GREGORY BRIAN SCOTCHIE
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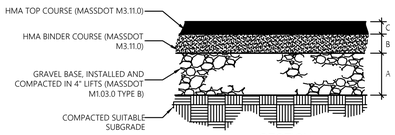
85 & 95 West Street
Northborough, MA 01532
(Worcester County)

NOTICE OF INTENT

0 50 100 Feet

JOB NO.:	1207.03	DATE:	11/20/20
DWN. BY:	GBS	SHEET:	C5.02
CHK'D. BY:	BPW/JRW		

	DEPTH		
SURFACE	A	B	C
BIT. CONCRETE WALK	8"	1 1/2"	1 1/2"
BIT. CONCRETE ROAD (PASS. CAR/ PARKING AREAS)	12"	1 1/2"	1 1/2"
BIT. CONCRETE ROAD (TRUCK/ HEAVY TRAFFIC)	12"	2 1/2"	1 1/2"

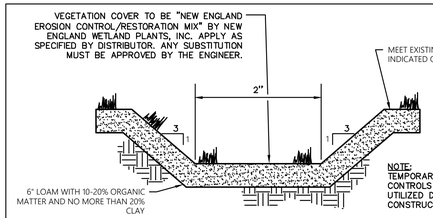


SECTION

BITUMINOUS CONCRETE PAVEMENT

N.T.S. 02700-08

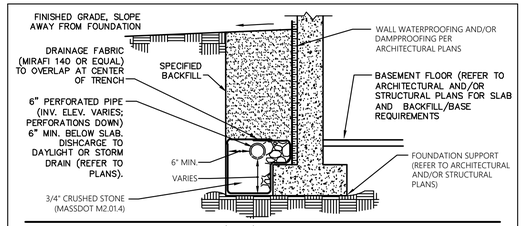
WDA, INC.



COMMON DRIVE SWALE

N.T.S.

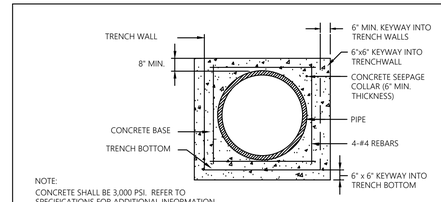
WDA, INC.



FOUNDATION DRAIN (FD)

N.T.S. 02600-06

WDA, INC.

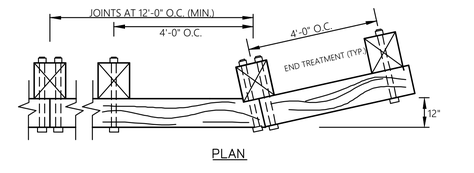


NOTE:
CONCRETE SHALL BE 3,000 PSI. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION.

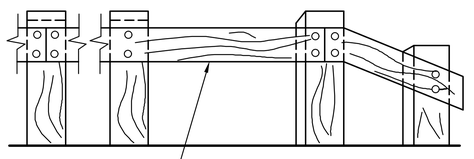
SEEPAGE COLLAR

N.T.S. 02600-32

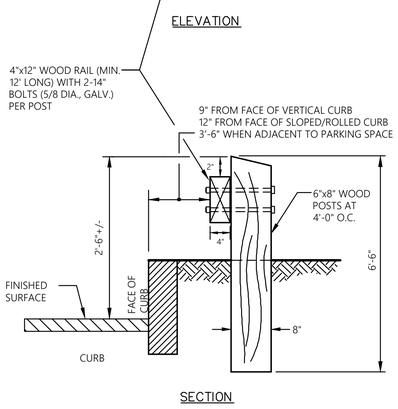
WDA, INC.



PLAN



ELEVATION



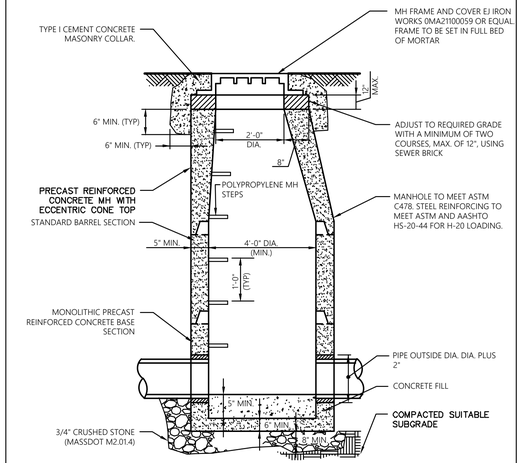
SECTION

C

WOOD GUIDE RAIL (WGR)

N.T.S. 02800-03

WDA, INC.

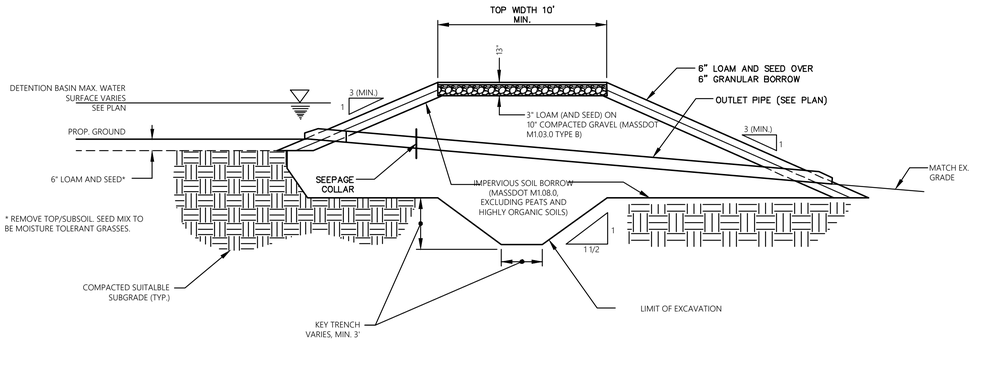


NOTES:
4' DIA. – PIPE PENETRATIONS TO 24"
5' DIA. – PIPE PENETRATIONS TO 30"
6' DIA. – PIPE PENETRATIONS TO 42"
8' DIA. – PIPE PENETRATIONS TO 60"

DRAIN MANHOLE (DMH)

N.T.S. 02600-04

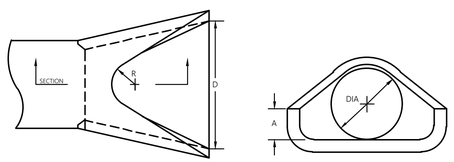
WDA, INC.



DETENTION BASIN BERM SECTION

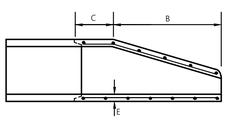
N.T.S. 02600-28

WDA, INC.



PLAN VIEW END VIEW

DIA.	A	B	C	D	E	R		
12"	4"		2'-0"	4'-0 7/8"	2'-0"	2"	9"	
15"	6"		2'-3"	3'-10"	2'-6"	2-1/4"	11"	
18"	9"		2'-3"	3'-10"	3'-0"	2-1/2"	1/2"	
24"	9 1/2"		3'-7 1/2"	2'-6"	4'-0"	3"	14"	
30"	12"		4'-6"	1'-7 3/4"	5'-0"	3-1/2"	15"	
36"	15"		5'-3"	2'-10 3/4"	6'-0"	4"	20"	

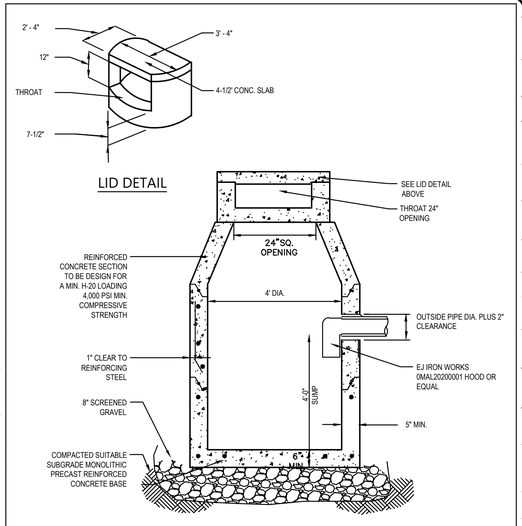


SECTION VIEW

CONCRETE FLARED END (FE)

N.T.S. 02600-30

WDA, INC.

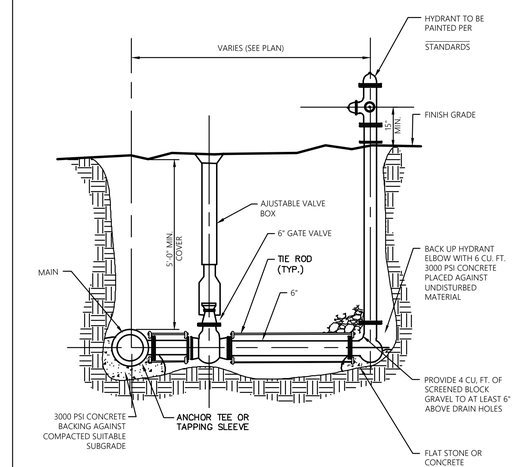


LID DETAIL

DROP INLET WITH 4' DEEP SUMP

N.T.S.

WDA, INC.

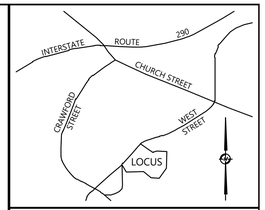


NOTE:
HYDRANT AND GATE VALVE TO BE RODDED TO ANCHOR TEE. FLANGES TO HAVE CAST ON LUGS (DOG EARS) AT 2 AND 7 O'CLOCK FOR TIE RODS (3/4" THREADED STEEL, 36K PSI MIN. YIELD)

HYDRANT AND VALVE (HYD)

N.T.S. 02510-02

WDA, INC.



LOCUS MAP
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CONSTRCUTION DETAILS

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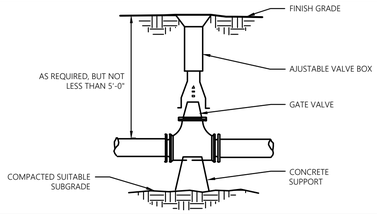
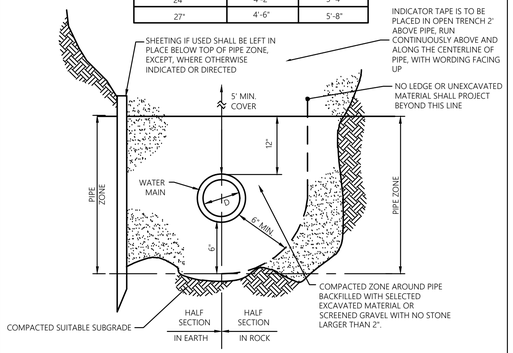


WATER GATE VALVE (WG)

N.T.S. 02510-01

WDA, INC.

DIAMETER OF PIPE D.	TRENCH WIDTH	
	UNSHEETED	SHEETED
12" AND SMALLER	3'-0"	4'-2"
15"	3'-2"	4'-4"
18"	3'-6"	4'-8"
21"	3'-10"	5'-0"
24"	4'-2"	5'-4"
27"	4'-6"	5'-8"



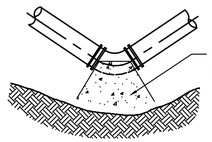
NOTE:
1. ALL INSTALLATIONS SHALL CONFORM TO TOWN OF NORTHBOROUGH STANDARD WATER REGULATIONS & SPECIFICATIONS.
2. FOR LOCATIONS WHERE LEDGE IS ENCOUNTERED, SAND BEDDING SHALL BE MINIMUM OF 12" THICK UNDER PIPE.
3. FILL MATERIAL SHALL BE COMPACTED TO 95% PROCTOR DENSITY.

WATER MAIN TRENCH SECTION

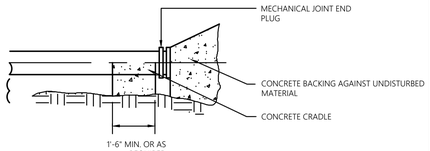
N.T.S. 02510-03

WDA, INC.

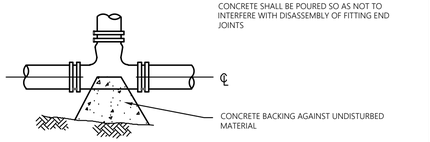
MINIMUM VERTICAL-PLANE BEARING AREAS FOR WATER MAIN FITTINGS (SF)			
SIZE OF MAIN (IN.)	22 1/2 ° BEND	45 ° BEND	TEES & PLUGS
8" OR LESS	8	8	10
10" & 12"	13	22	16



HORIZONTAL BEND



TYPICAL PLUG OR END CAP (ELEVATION VIEW)

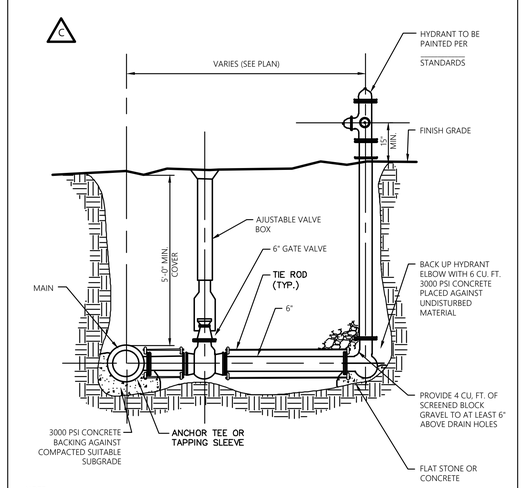


TYPICAL TEE

THRUST BLOCKS

N.T.S. 02510-06

WDA, INC.

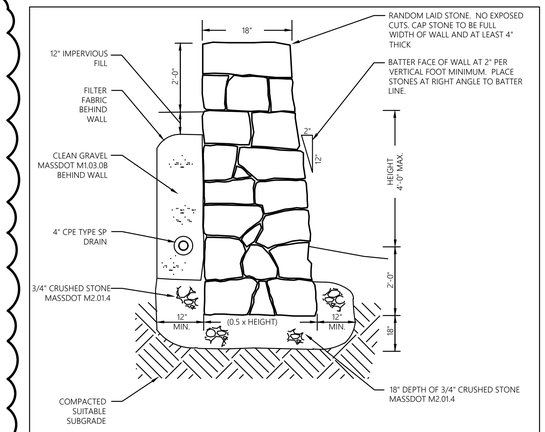


NOTE:
HYDRANT AND GATE VALVE TO BE RODDED TO ANCHOR TEE. FLANGES TO HAVE CAST ON LUGS (DOG EARS) AT 2 AND 7 O'CLOCK FOR TIE RODS (3/4" THREADED STEEL, 36K PSI MIN. YIELD)

HYDRANT AND VALVE (HYD)

N.T.S. 02510-02

WDA, INC.

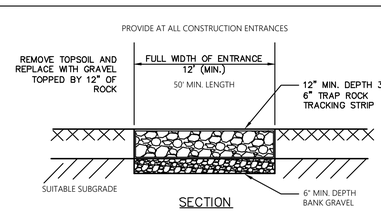


NOTES:
1. IMPERVIOUS FILL SHALL CONFORM TO MASSDOT M1.08.0 (EXCLUDING PEATS OR OTHER HIGHLY ORGANIC SOILS).
2. 4" CPE TYPE SP DRAIN TO DAY LIGHT THROUGH WALL EVERY 50' AND AT ENDS OF WALL. DRAIN SHALL BE WRAPPED IN FILTER FABRIC SOCK.
3. CRUSHED STONE BASE SHALL BE WELL CONSILIDATED.

FIELDSTONE RETAINING WALL (SHORT)

N.T.S. 02800-25

WDA, INC.

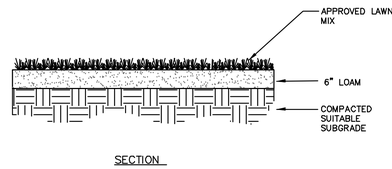


SECTION

CONSTRUCTION ENTRANCE

N.T.S. 02700-13

WDA, INC.



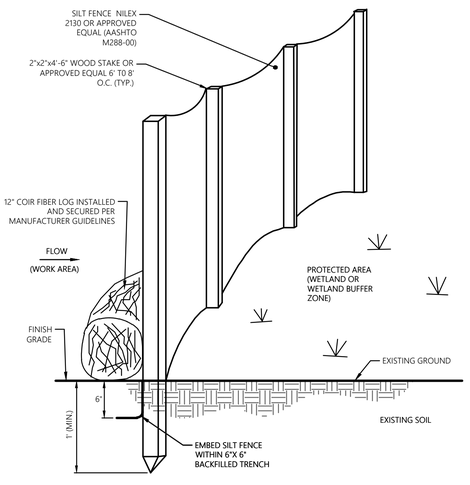
SECTION

LOAM AND SEED

N.T.S.

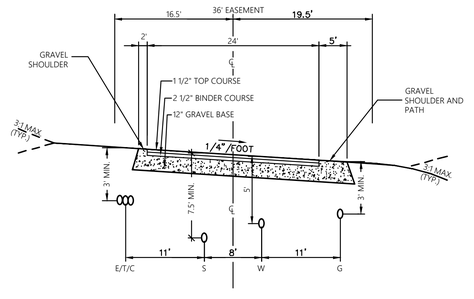
WDA, INC.

NOTE:
1. SHALL BE IN ACCORDANCE WITH THE COMMONWEALTH OF MASSACHUSETTS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, LATEST EDITION.



EROSION CONTROL BARRIER (ECB)

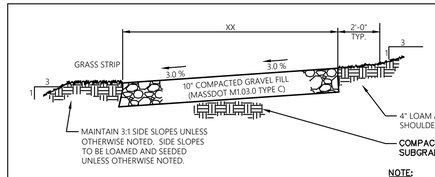
31 25 24-11 - EROSION CONTROL BARRIER - STRAW WATTLE AND SILT FENCE N.T.S.



COMMON DRIVEWAY TYPICAL SECTION

N.T.S. 02700-16

WDA, INC.



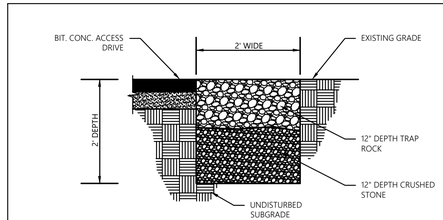
TYPICAL CROSS SECTION

NOTE:
CROSS SLOPE AS INDICATED ON GRADING PLAN.

DETENTION BASIN ACCESS DRIVE

N.T.S. 02700-23

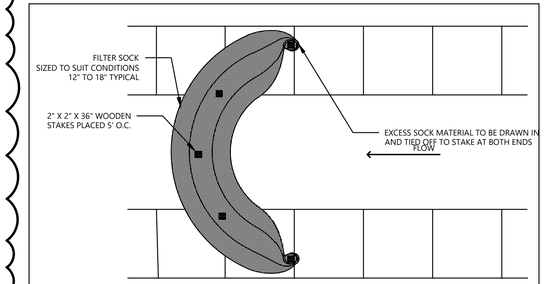
WDA, INC.



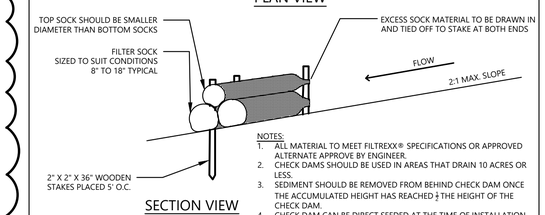
STONE DIVERSION TRENCH

N.T.S.

WDA, INC.



PLAN VIEW



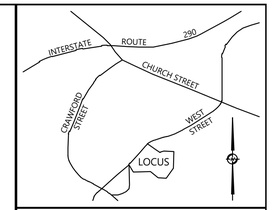
SECTION VIEW

NOTES:
1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS OR APPROVED ALTERNATE APPROVE BY ENGINEER.
2. CHECK DAMS SHOULD BE USED IN AREAS THAT DRAIN 10 ACRES OR LESS.
3. SEDIMENT SHOULD BE REMOVED FROM BEHIND CHECK DAM ONCE THE ACCUMULATED HEIGHT HAS REACHED ½ THE HEIGHT OF THE CHECK DAM.
4. CHECK DAM CAN BE DIRECT SEEDED AT THE TIME OF INSTALLATION.
5. CONTRACTOR IS REQUIRED TO BE A FILTREXX CERTIFIED INSTALLER.

CHECK DAM - SILT SOCK

N.T.S.

WDA, INC.



LOCUS MAP
N.T.S.

REV.	DATE	DESCRIPTION	INIT.
C	2/24/2021	PLANNING BOARD COMMENTS	GBS
B	12/14/20	CON. COM. COMMENTS	GBS
A		INITIAL ISSUE	GBS

COMMONWEALTH OF MASSACHUSETTS
GREGORY BRIAN SCOTCHIE
No. 52510
REGISTERED PROFESSIONAL ENGINEER
2/24/2021

PREPARED BY:

WDA DESIGN GROUP
31 EAST MAIN STREET WESTBOROUGH, MA
508.366.6552
WDA-DG.COM

OWNER:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

PREPARED FOR:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

TITLE:

CONSTRCUTION DETAILS

85 & 98 COMMON DRIVEWAY
85 & 95 West Street
Northborough, MA 01532
(Worcester County)

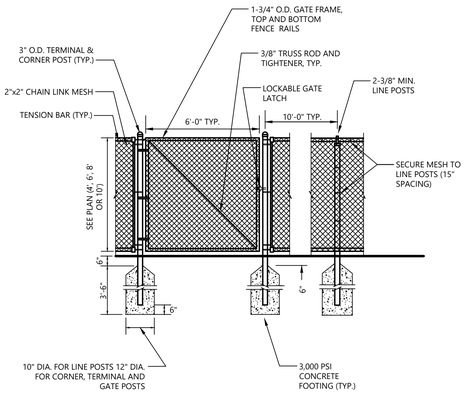
NOTICE OF INTENT

JOB NO.:	1207.03	DATE:	11/20/20
DWN. BY:	GBS	SHEET:	C6.01
CHK'D. BY:	BPW/JRW		

C6.01.dwg

NOTES:

1. LINE POSTS SHALL BE SPACED 10'-0" ON CENTER EXCEPT ON CURVES. SPACING ON CURVES SHALL BE AS FOLLOWS; R=200'-500' - 8'-0" R=100'-200' - 6'-0" R=100' - 5'-0".
2. MATERIALS AND INSTALLATION METHODS SHALL COMPLY WITH , SECTION 894.2 AND APPLICABLE SECTIONS, AS DESCRIBED IN GDOT SECTION 894.2.



CHAIN LINK FENCE AND GATE

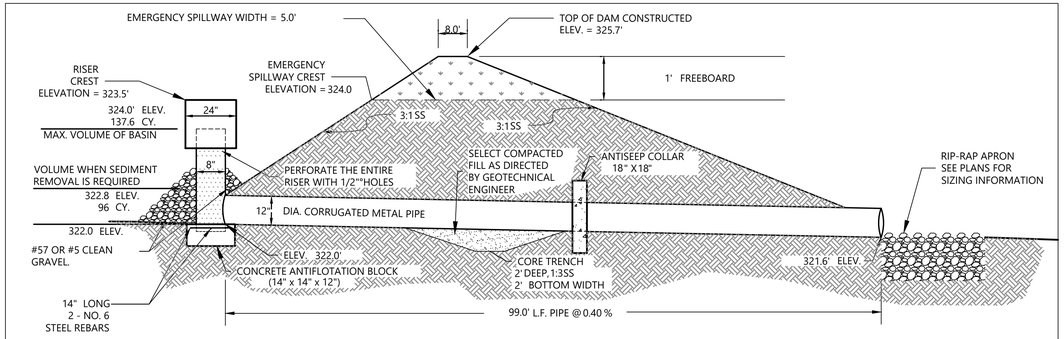
N.T.S. 02800-20

WDA, INC.

Permanent Seeding Mixtures

Seed, Pounds per:

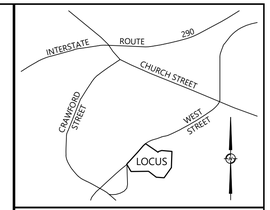
Mix	Site	Seed Mixture	Acre	1,000 sf	Remarks
1	Dry	Little Bluestem or Broomsedge	10	0.25	* Use Warm Season planting procedure. * Roadsides
		Tumble Lovegrass*	1	0.10	* Sand and Gravel Stabilization
		Switchgrass	10	0.25	* Clover requires inoculation with nitrogen-fixing bacteria
		Bush Clover*	2	0.10	
		Red Top	1	0.10	* Rates for this mix are for PLS.
2	Dry	Deertongue	15	0.35	* Use Warm Season planting procedures.
		Broomsedge	10	0.25	* Acid sites/Mine spoil
		Bush Clover*	2	0.10	* Clover requires inoculation with nitrogen-fixing bacteria.
		Red Top	1	0.10	*Rates for this mix are for PLS.
3	Dry	Big Bluestem	10	0.25	* Use Warm Season planting procedures.
		Indian Grass	10	0.25	* Eastern Prairie appearance
		Switchgrass	10	0.25	* Sand and Gravel pits.
		Little Bluestem	10	0.25	* Golf Course Wild Areas
		Red Top or	1	0.10	* Sanitary Landfill Cover seeding
		Perennial Ryegrass	10	0.25	* Wildlife Areas *OK to substitute Poverty Dropseed in place of Red Top/Ryegrass. *Rates for this mix are for PLS.
4	Dry	Flat Pea	25	0.60	* Use Cool Season planting procedures
		Red Top or	2	0.10	* Utility Rights-of-Ways (tends to suppress
		Perennial Ryegrass	15	0.35	woody growth)
5	Dry	Little Bluestem	5	0.10	* Use Warm Season planting procedures.
		Switchgrass	10	0.25	* Coastal sites
		Beach Pea*	20	0.45	* Rates for Bluestein and Switchgrass are for
		Perennial Ryegrass	10	0.25	PLS.
6	Dry - Moist	Red Fescue	10	0.25	* Use Cool Season planting procedure.
		Canada Bluegrass	10	0.25	* Provides quick cover but is non-aggressive;
		Perennial Ryegrass	10	0.25	will tend to allow indigenous plant colonization.
		Red Top	1	0.10	* General erosion control on variety of sites, including forest roads, skid trails and landings.
7	Moist-Wet	Switchgrass	10	0.25	* Use Warm Season planting procedure.
		Virginia Wild Rye	5	0.10	* Coastal plain/flood plain
		Big Bluestem	15	0.35	* Rates for Bluestem and Switchgrass are for
		Red Top	1	0.10	PLS.



TEMPORARY SEDIMENT BASIN

N.T.S.

WDA, INC.



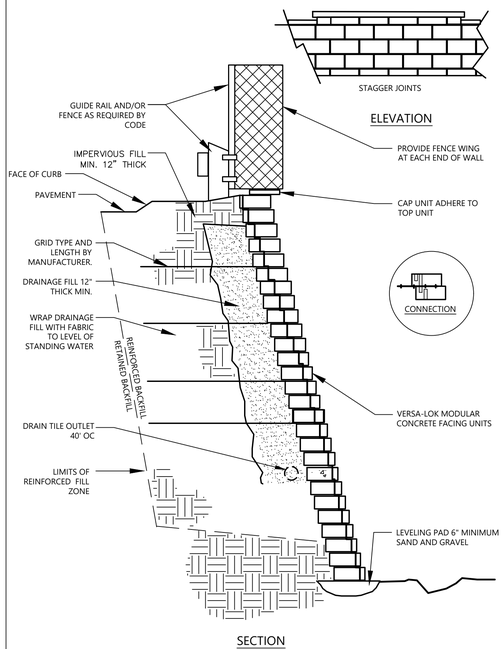
LOCUS MAP
N.T.S.

REV.	DATE	DESCRIPTION	INIT.
C	2/24/2021	PLANNING BOARD COMMENTS	GBS
B	12/14/20	CON. COM. COMMENTS	GBS
A		INITIAL ISSUE	GBS

COMMONWEALTH OF MASSACHUSETTS
GREGORY BRIAN SCOTCHIE
No. 52510
REGISTERED PROFESSIONAL ENGINEER
2/24/2021

NOTES:

1. LINTEL BEAMS SHALL BE PRECAST WITH MIN.7 DAYS CURE. HEIGHT OF BEAM SHALL CORRESPOND TO HEIGHT OF BLOCK USED.
2. GEOTEXTILE FABRIC SHALL BE INSTALLED AROUND PIPE OPENING. BACKFILL WITH 1/2" TO 3/4" CLEAN GRAVEL.
3. CHANGES ARE TO BE VERIFIED WITH ENGINEER.



* TO BE DESIGNED AND BUILT PER MANUFACTURERS DESIGN AND DETAILS

CONCRETE MODULAR UNIT (CMU) RETAINING WALL

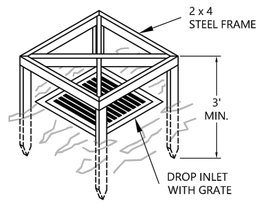
N.T.S. 02800-22

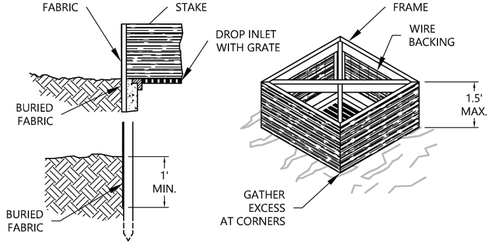
WDA, INC.

Permanent Seeding Mixtures

Seed, Pounds per:

Mix	Site	Seed Mixture	Acre	1,000 sf	Remarks
8	Moist Wet	Creeping Bentgrass	5	0.10	* Use Cool Season planting procedures.
		Fringed Bromegrass	5	0.10	* Pond Banks
		Fowl Meadowgrass	5	0.10	* Waterways/ditch banks
		Bluejoint Reedgrass or Rice Cutgrass	2	0.10	
		Perennial Ryegrass	10	0.25	
9	Moist Wet	Red Fescue	5	0.10	*Salt Tolerant
		Creeping Bentgrass	2	0.10	* Fescue and Bentgrass provide low growing appearance, while Switchgrass provides tall cover for wildlife.
		Switchgrass	8	0.20	
		Perennial Ryegrass	10	0.25	
10	Moist Wet	Red Fescue	5	0.10	* Use Cool Season planting procedure.
		Creeping Bentgrass	5	0.10	* Trefoil requires inoculation with nitrogen fixing bacteria.
		Virginia Wild Rye	8	0.20	
		Wood Reed Grass*	1	0.10	* Suitable for forest access roads, skid
		Showy Tick Trefoil*	1	0.10	trails and other partial shade situations.
11	Moist Wet	Creeping Bentgrass	5	0.10	* Use Cool Season planting procedure.
		Bluejoint Reed Grass	1	0.10	* Suitable for waterways, pond or ditch banks.
		Virginia Wild Rye	3	0.10	* Trefoil requires inoculation with nitrogen fixing bacteria.
		Fowl Meadow Grass	10	0.25	
		Showy Tick Trefoil*	1	0.10	
		Red Top	1	0.10	
12	Wet	Blue Joint Reed Grass	1	0.10	* Use Cool Season planting procedure.
		Canada Manna Grass	1	0.10	* OK to seed in saturated soil conditions, but not in standing water.
		Rice Cut Grass	1	0.10	
		Creeping Bent Grass	5	0.10	* Suitable as stabilization seeding for created wetland.
		Fowl Meadow Grass	5	0.10	* All species in this mix are native to Massachusetts.
13	Dry - Moist	American Beachgrass	18" centers	18' centers	*Vegetative planting with dormant culms, 3-5 culms per planting
14	Inter-Tidal	Smooth Cordgrass	12-18" centers	12-18" centers	* Vegetative planting with transplants.
		Saltmeadow Cordgrass			





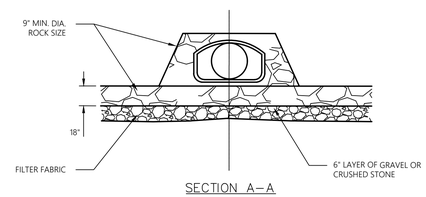
MAINTENANCE:

1. THE TRAP SHALL BE INSPECTED DAILY AND AFTER EACH RAIN. REPAIRS SHALL BE MADE AS NEEDED.
2. SEDIMENT SHALL BE REMOVED WHEN THE SEDIMENT HAS ACCUMULATED TO ONE-HALF THE HEIGHT OF THE TRAP. FOR EXCAVATED INLET SEDIMENT TRAPS, SEDIMENT SHALL BE REMOVED WHEN ONE-HALF OF THE SEDIMENT STORAGE CAPACITY HAS BEEN LOST TO SEDIMENT ACCUMULATION.
3. SEDIMENT SHALL NOT BE WASHED INTO THE INLET. IT SHALL BE REMOVED FROM THE SEDIMENT TRAP AND DISPOSED OF AND STABILIZED SO THAT IT WILL NOT ENTER THE INLET AGAIN. WHEN CONTRIBUTING DRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED, ALL MATERIALS AND ANY SEDIMENT SHALL BE REMOVED, AND EITHER SALVAGED OR DISPOSED OF PROPERLY. THE DISTURBED AREA SHALL BE BROUGHT TO PROPER GRADE, THEN SMOOTHED AND COMPACTED. APPROPRIATELY STABILIZE ALL DISTURBED AREAS AROUND THE INLET.

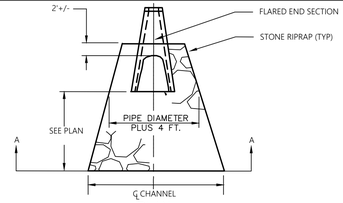
FABRIC DROP INLET PROTECTION

N.T.S.

WDA, INC.



SECTION A–A



PLAN

RIPRAP APRON

N.T.S. 02600-15

WDA, INC.

PREPARED BY:
WDA DESIGN GROUP
31 EAST MAIN STREET WESTBOROUGH, MA
508.366.6552
WDA–DG.COM

OWNER:
Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

PREPARED FOR:
Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

TITLE:
CONSTRCUTION DETAILS

85 & 98 COMMON DRIVEWAY
85 & 95 West Street
Northborough, MA 01532
(Worcester County)

NOTICE OF INTENT

JOB NO.:	1207.03	DATE:	11/20/20
DWN. BY:	GBS	SHEET:	C6.02
CHK'D. BY:	BPW/JRW		

C6.02.dwg

Inlet Sediment Trap Calculations- ST-01.1

1. Drainage Area	=	0.11	ac		
2. Required sediment storage	=	67	cy/ac * drainage area		
Required sediment storage	=	67	cy/ac *	0.11	
Required sediment storage	=	7.37	cy		
3. Assume excavation **depth** (minimum 1.5 feet)	=	2.00	ft		
4. Assume **slope of sides** (shall not be steeper than 2:1)	=	3.00	ft		
5. Determine required surface area.					
SA_{min} = Required sediment storage / excavation depth					
SA_{min} =	7.37	cy	/	2.00	ft
SA_{min} =	99.495	sf			
6. Assume shape of excavation and determine dimensions.					
(A rectangular shape with 2:1 length to width ratio is recommended)					
Shape	=				
Dimensions					
length =	15.00	ft			
width =	7.50	ft			
(if applicable) radius =		ft			
Required surface area =	112.50	sf			

Inlet Sediment Trap Calculations- ST-02.1

1. Drainage Area	=	1.12	ac		
2. Required sediment storage	=	67	cy/ac * drainage area		
Required sediment storage	=	67	cy/ac *	1.12	
Required sediment storage	=	75.04	cy		
3. Assume excavation **depth** (minimum 1.5 feet)	=	2.00	ft		
4. Assume **slope of sides** (shall not be steeper than 2:1)	=	3.00	ft		
5. Determine required surface area.					
SA_{min} = Required sediment storage / excavation depth					
SA_{min} =	75.04	cy	/	2.00	ft
SA_{min} =	1013.04	sf			
6. Assume shape of excavation and determine dimensions.					
(A rectangular shape with 2:1 length to width ratio is recommended)					
Shape	=				
Dimensions					
length =	45.01	ft			
width =	22.51	ft			
(if applicable) radius =		ft			
Required surface area =	1035.00	sf			

Inlet Sediment Trap Calculations- ST-02.2

1. Drainage Area	=	0.48	ac		
2. Required sediment storage	=	67	cy/ac * drainage area		
Required sediment storage	=	67	cy/ac *	0.48	
Required sediment storage	=	32.16	cy		
3. Assume excavation **depth** (minimum 1.5 feet)	=	2.00	ft		
4. Assume **slope of sides** (shall not be steeper than 2:1)	=	3.00	ft		
5. Determine required surface area.					
SA_{min} = Required sediment storage / excavation depth					
SA_{min} =	32.16	cy	/	2.00	ft
SA_{min} =	434.16	sf			
6. Assume shape of excavation and determine dimensions.					
(A rectangular shape with 2:1 length to width ratio is recommended)					
Shape	=				
Dimensions					
length =	30.00	ft			
width =	15.00	ft			
(if applicable) radius =		ft			
Required surface area =	450.00	sf			

Inlet Sediment Trap Calculations- ST-04

1. Drainage Area	=	0.18	ac		
2. Required sediment storage	=	67	cy/ac * drainage area		
Required sediment storage	=	67	cy/ac *	0.18	
Required sediment storage	=	12.06	cy		
3. Assume excavation **depth** (minimum 1.5 feet)	=	2.00	ft		
4. Assume **slope of sides** (shall not be steeper than 2:1)	=	3.00	ft		
5. Determine required surface area.					
SA_{min} = Required sediment storage / excavation depth					
SA_{min} =	12.06	cy	/	2.00	ft
SA_{min} =	162.81	sf			
6. Assume shape of excavation and determine dimensions.					
(A rectangular shape with 2:1 length to width ratio is recommended)					
Shape	=				
Dimensions					
length =	19.00	ft			
width =	9.50	ft			
(if applicable) radius =		ft			
Required surface area =	180.50	sf			

Inlet Sediment Trap Calculations- ST-06

1. Drainage Area	=	1.53	ac		
2. Required sediment storage	=	67	cy/ac * drainage area		
Required sediment storage	=	67	cy/ac *	1.53	
Required sediment storage	=	102.51	cy		
3. Assume excavation **depth** (minimum 1.5 feet)	=	2.00	ft		
4. Assume **slope of sides** (shall not be steeper than 2:1)	=	3.00	ft		
5. Determine required surface area.					
SA_{min} = Required sediment storage / excavation depth					
SA_{min} =	102.51	cy	/	2.00	ft
SA_{min} =	1383.885	sf			
6. Assume shape of excavation and determine dimensions.					
(A rectangular shape with 2:1 length to width ratio is recommended)					
Shape	=				
Dimensions					
length =	53.00	ft			
width =	26.50	ft			
(if applicable) radius =		ft			
Required surface area =	1404.50	sf			

Inlet Sediment Trap Calculations- ST-08

1. Drainage Area	=	2.11	ac		
2. Required sediment storage	=	67	cy/ac * drainage area		
Required sediment storage	=	67	cy/ac *	2.11	
Required sediment storage	=	141.37	cy		
3. Assume excavation **depth** (minimum 1.5 feet)	=	2.00	ft		
4. Assume **slope of sides** (shall not be steeper than 2:1)	=	3.00	ft		
5. Determine required surface area.					
SA_{min} = Required sediment storage / excavation depth					
SA_{min} =	141.37	cy	/	2.00	ft
SA_{min} =	1908.495	sf			
6. Assume shape of excavation and determine dimensions.					
(A rectangular shape with 2:1 length to width ratio is recommended)					
Shape	=				
Dimensions					
length =	62.00	ft			
width =	31.00	ft			
(if applicable) radius =		ft			
Required surface area =	1922.00	sf			

Inlet Sediment Trap Calculations- ST-12

1. Drainage Area	=	0.53	ac		
2. Required sediment storage	=	67	cy/ac * drainage area		
Required sediment storage	=	67	cy/ac *	0.53	
Required sediment storage	=	35.51	cy		
3. Assume excavation **depth** (minimum 1.5 feet)	=	2.00	ft		
4. Assume **slope of sides** (shall not be steeper than 2:1)	=	3.00	ft		
5. Determine required surface area.					
SA_{min} = Required sediment storage / excavation depth					
SA_{min} =	35.51	cy	/	2.00	ft
SA_{min} =	479.385	sf			
6. Assume shape of excavation and determine dimensions.					
(A rectangular shape with 2:1 length to width ratio is recommended)					
Shape	=				
Dimensions					
length =	31.00	ft			
width =	15.50	ft			
(if applicable) radius =		ft			
Required surface area =	480.50	sf			

Inlet Sediment Trap Calculations- ST-15

1. Drainage Area	=	0.36	ac		
2. Required sediment storage	=	67	cy/ac * drainage area		
Required sediment storage	=	67	cy/ac *	0.36	
Required sediment storage	=	24.12	cy		
3. Assume excavation **depth** (minimum 1.5 feet)	=	2.00	ft		
4. Assume **slope of sides** (shall not be steeper than 2:1)	=	3.00	ft		
5. Determine required surface area.					
SA_{min} = Required sediment storage / excavation depth					
SA_{min} =	24.12	cy	/	2.00	ft
SA_{min} =	325.62	sf			
6. Assume shape of excavation and determine dimensions.					
(A rectangular shape with 2:1 length to width ratio is recommended)					
Shape	=				
Dimensions					
length =	26.00	ft			
width =	13.00	ft			
(if applicable) radius =		ft			
Required surface area =	338.00	sf			

Inlet Sediment Trap Calculations- ST-16.1

1. Drainage Area	=	1.63	ac		
2. Required sediment storage	=	67	cy/ac * drainage area		
Required sediment storage	=	67	cy/ac *	1.63	
Required sediment storage	=	109.21	cy		
3. Assume excavation **depth** (minimum 1.5 feet)	=	2.00	ft		
4. Assume **slope of sides** (shall not be steeper than 2:1)	=	3.00	ft		
5. Determine required surface area.					
SA_{min} = Required sediment storage / excavation depth					
SA_{min} =	109.21	cy	/	2.00	ft
SA_{min} =	1474.335	sf			
6. Assume shape of excavation and determine dimensions.					
(A rectangular shape with 2:1 length to width ratio is recommended)					
Shape	=				
Dimensions					
length =	55.00	ft			
width =	27.50	ft			
(if applicable) radius =		ft			
Required surface area =	1512.50	sf			

Inlet Sediment Trap Calculations- ST-17

1. Drainage Area	=	0.77	ac		
2. Required sediment storage	=	67	cy/ac * drainage area		
Required sediment storage	=	67	cy/ac *	0.77	
Required sediment storage	=	51.59	cy		
3. Assume excavation **depth** (minimum 1.5 feet)	=	2.00	ft		
4. Assume **slope of sides** (shall not be steeper than 2:1)	=	3.00	ft		
5. Determine required surface area.					
SA_{min} = Required sediment storage / excavation depth					
SA_{min} =	51.59	cy	/	2.00	ft
SA_{min} =	696.465	sf			
6. Assume shape of excavation and determine dimensions.					
(A rectangular shape with 2:1 length to width ratio is recommended)					
Shape	=				
Dimensions					
length =	38.00	ft			
width =	19.00	ft			
(if applicable) radius =		ft			
Required surface area =	722.00	sf			

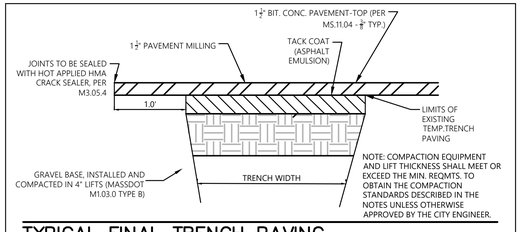
INSTALLATION:

THE TRAP SHOULD BE EXCAVATED AROUND THE INLET TO PROVIDE 67 CUBIC FEET OF STORAGE PER ACRE OF DRAINAGE AREA TO THE INLET. THE TRAP SHOULD BE NO LESS THAN 1 FOOT DEEP OR MORE THAN 2 FEET DEEP WHEN MEASURED FROM THE TOP OF THE INLET. SIDE SLOPES SHOULD BE 3:1 OR FLATTER. DIMENSIONS OF THE EXCAVATION SHOULD BE BASED ON THE SITE CONDITIONS. NORMALLY THE TRAPS ARE SQUARE. IF THERE IS CONCENTRATED FLOW BEING DIRECTED INTO THE TRAP, HOWEVER, THEN THE TRAP SHOULD BE RECTANGULAR WITH THE LONG DIMENSION ORIENTED IN THE DIRECTION OF THE FLOW. WHEN NECESSARY, SPOIL MAY BE PLACED TO FORM A DIKE ON THE DOWNSLOPE SIDE OF THE EXCAVATION TO PREVENT BYPASS FLOW.

EXCAVATED DROP INLET TRAP

N.T.S.

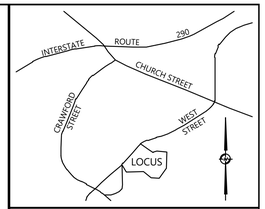
WDA, INC.



TYPICAL FINAL TRENCH PAVING

N.T.S.

WDA, INC.



LOCUS MAP
N.T.S.

REV.	DATE	DESCRIPTION	INIT.
C	2/24/2021	PLANNING BOARD COMMENTS	GBS
B	12/14/20	CON. COM. COMMENTS	GBS
A		INITIAL ISSUE	GBS

COMMONWEALTH OF MASSACHUSETTS
GREGORY BRIAN SCOTCHIE
CIVIL
No. 52510
REGISTERED PROFESSIONAL ENGINEER
2/24/2021

PREPARED BY:
WDA DESIGN GROUP
31 EAST MAIN STREET WESTBOROUGH, MA
508.366.6552
WDA-DG.COM

OWNER:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

PREPARED FOR:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

TITLE:

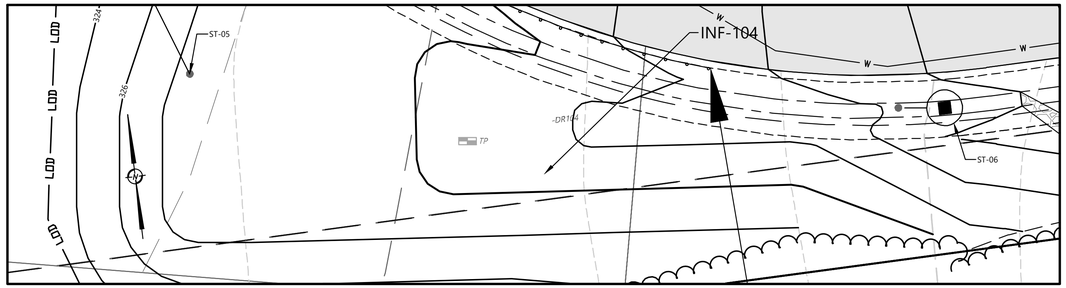
CONSTRCUTION DETAILS

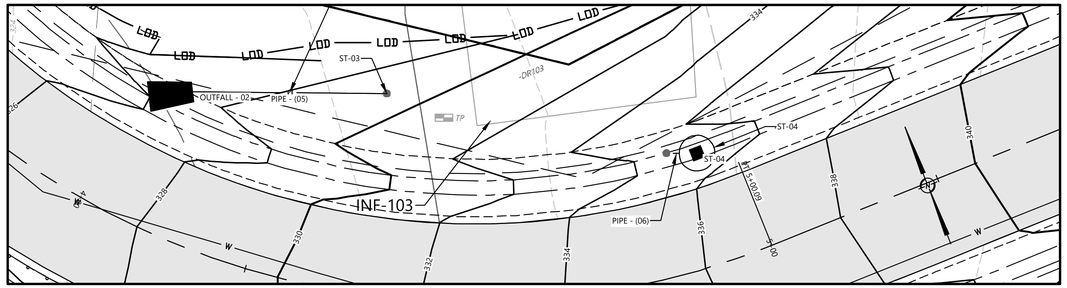
85 & 98 COMMON DRIVEWAY
85 & 95 West Street
Northborough, MA 01532
(Worcester County)

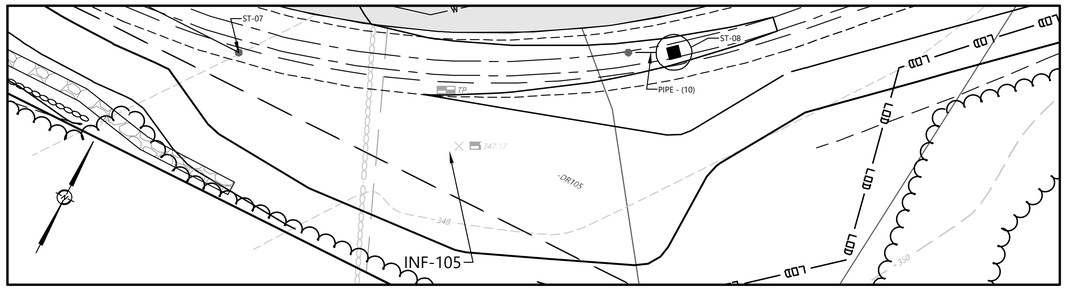
NOTICE OF INTENT

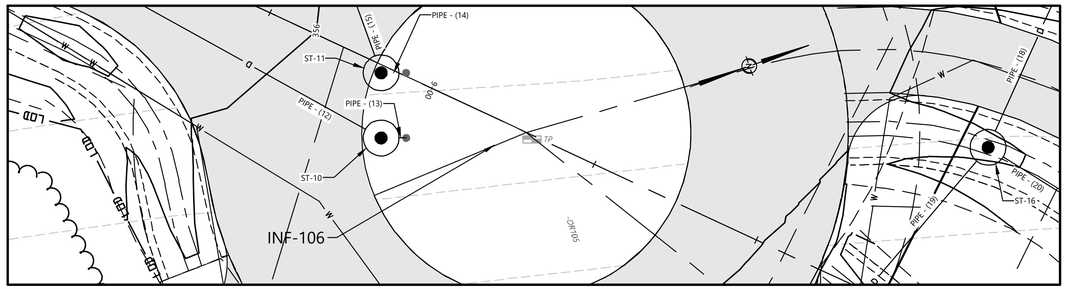
JOB NO.:	1207.03	DATE:	11/20/20
DWN. BY:	GBS	SHEET:	C6.03
CHK'D. BY:	BPW/JRW		

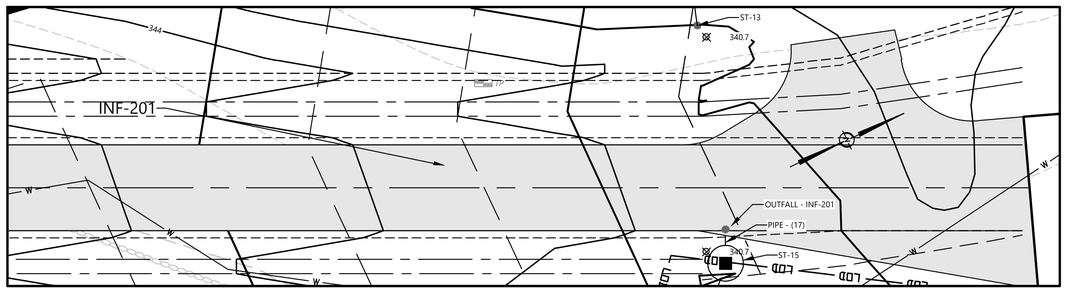
C6.03.dwg

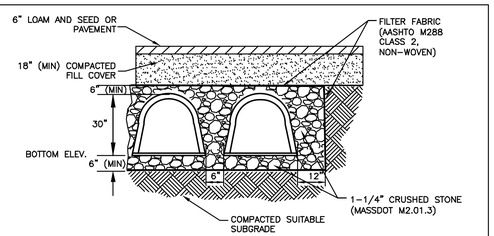


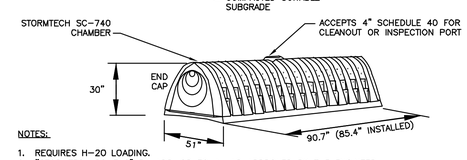












NOTES:
1. REQUIRES H-20 LOADING.
2. "STORMTECH SC-740" BY ADS, OR EQUAL AS APPROVED BY THE ENGINEER.
3. INSTALLATION IS TO BE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
4. PROVIDE CLEANOUTS/INSPECTION PORTS ON ALTERNATING ROWS AT 50' INTERVALS.

SYSTEM DESIGNATION	BOTTOM ELEV.	INVERT ELEV. (OUT)	# OF ROWS	WIDTH OF STONE	# OF UNITS/ROW	LENGTH OF STONE	TOTAL # OF UNITS
INF-RF2	332.00	334.04	1	11.00'	2	10.74'	2
INF-RF3	330.00	332.04	1	11.00'	2	10.74'	2
INF-RF4	368.00	370.04	1	11.00'	2	10.74'	2
INF-RF5	374.00	376.04	1	11.00'	2	10.74'	2
INF-RF6	374.00	376.04	1	11.00'	2	10.74'	2

STORMWATER INFILTRATION SYSTEM (INF)

N.T.S. 02600-12-STORMTECH

WDA, INC.

PROPOSED LAYOUT-INF-104	
50	STORMTECH SC-740 CHAMBERS
6	STORMTECH SC-740 END CAPS
6	STONE ABOVE (in)
9	STONE BELOW (in)
40	% STONE VOID
4,023	INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED)
1,920	SYSTEM AREA (ft²)
243	SYSTEM PERIMETER (ft)

PROPOSED ELEVATIONS-INF-104	
334.50	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)
328.00	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)
327.00	TOP OF STONE
326.50	TOP OF SC-740 CHAMBER
325.04	INVERT OUT (12" VERTICAL ORIFCE X 2)
324.13	INVERT IN
324.00	BOTTOM OF SC-740 CHAMBER
323.25	UNDERDRAIN INVERT
323.25	BOTTOM OF STONE
24.00	OBSERVED DEPTH TO GROUNDWATER (INCHES)

PROPOSED LAYOUT-INF-106	
21	STORMTECH MC-4500 CHAMBERS
6	STORMTECH MC-4500 END CAPS
12	STONE ABOVE (in)
9	STONE BELOW (in)
40	% STONE VOID
4,227	INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED)
1,016	SYSTEM AREA (ft²)
128	SYSTEM PERIMETER (ft)

PROPOSED ELEVATIONS-INF-106	
362.10	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)
357.10	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)
356.10	TOP OF STONE
355.10	TOP OF MC-4500 CHAMBER
353.65	INVERT OUT (6" Vert. Orifice X 2)
350.26	INVERT IN
350.10	BOTTOM OF MC-4500 CHAMBER
349.35	UNDERDRAIN INVERT
349.35	BOTTOM OF STONE
70.00	OBSERVED DEPTH TO GROUNDWATER (INCHES)

PROPOSED LAYOUT-INF-103	
25	STORMTECH SC-160LP CHAMBERS
10	STORMTECH SC-160LP END CAPS
6	STONE ABOVE (in)
6	STONE BELOW (in)
40	% STONE VOID
481	INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED)
473	SYSTEM AREA (ft²)
101	SYSTEM PERIMETER (ft)

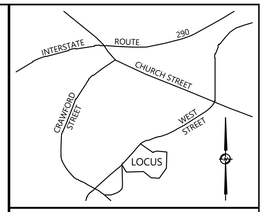
PROPOSED ELEVATIONS-INF-103	
337.33	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)
328.50	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)
327.83	TOP OF STONE
327.33	TOP OF SC-160LP CHAMBER
326.39	INVERT OUT (6" VERICAL ORIFACE X 4)
326.39	INVERT IN
326.33	BOTTOM OF SC-160LP CHAMBER
325.83	UNDERDRAIN INVERT
325.83	BOTTOM OF STONE
24.00	OBSERVED DEPTH TO GROUNDWATER (INCHES)

PROPOSED LAYOUT-INF-105	
45	STORMTECH SC-740 CHAMBERS
6	STORMTECH SC-740 END CAPS
6	STONE ABOVE (in)
9	STONE BELOW (in)
40	% STONE VOID
3,634	INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED)
	SYSTEM AREA (ft²)
	SYSTEM PERIMETER (ft)

PROPOSED ELEVATIONS-INF-105	
356.00	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)
349.50	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)
348.50	TOP OF STONE
348.00	TOP OF SC-740 CHAMBER
347.04	INVERT OUT (6" Vert. Orifice X 5)
345.63	INVERT IN
345.50	BOTTOM OF SC-740 CHAMBER
344.75	UNDERDRAIN INVERT
344.75	BOTTOM OF STONE
37.00	OBSERVED DEPTH TO GROUNDWATER (INCHES)

PROPOSED LAYOUT-INF-201	
48	STORMTECH SC-740 CHAMBERS
12	STORMTECH SC-740 END CAPS
6	STONE ABOVE (in)
6	STONE BELOW (in)
40	% STONE VOID
1,662	INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED)
1,817	SYSTEM AREA (ft²)
181	SYSTEM PERIMETER (ft)

PROPOSED ELEVATIONS-INF-201	
345.50	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)
339.00	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)
338.00	TOP OF STONE
337.50	TOP OF SC-740 CHAMBER
336.54	INVERT OUT (6") X 3
336.38	INVERT OUT (8") X 2
335.13	INVERT IN
335.00	BOTTOM OF SC-740 CHAMBER
334.50	UNDERDRAIN INVERT
334.50	BOTTOM OF STONE
36.00	OBSERVED DEPTH TO GROUNDWATER (INCHES)



LOCUS MAP
N.T.S.

REV.	DATE	DESCRIPTION	INIT.
C	2/24/2021	PLANNING BOARD COMMENTS	GBS
B	12/14/20	CON. COM. COMMENTS	GBS
A		INITIAL ISSUE	GBS

COMMONWEALTH OF MASSACHUSETTS
GREGORY BRIAN SCOTCHIE
CIVIL
No. 52510
REGISTERED PROFESSIONAL ENGINEER
2/24/2021

PREPARED BY:

WDA DESIGN GROUP
31 EAST MAIN STREET WESTBOROUGH, MA
508.366.6552
WDA-DG.COM

OWNER:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

PREPARED FOR:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

TITLE:

CONSTRUCTION DETAILS

85 & 98 COMMON DRIVEWAY
85 & 95 West Street
Northborough, MA 01532
(Worcester County)

NOTICE OF INTENT

0 10 20 Feet

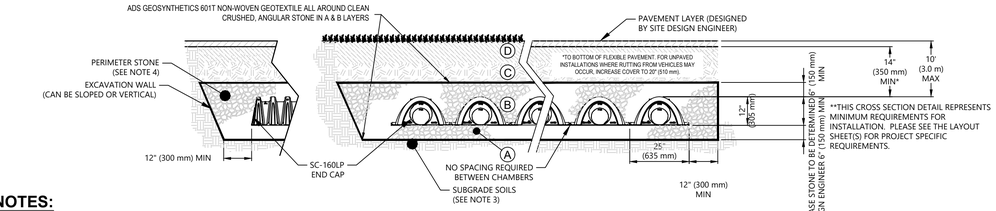
JOB NO.:	1207.03	DATE:	11/20/20
DWN. BY:	GBS	SHEET:	C6.04
CHK'D. BY:	BPW/JRW		

C6.04.dwg

ACCEPTABLE FILL MATERIALS: STORMTECH SC-160LP CHAMBER SYSTEMS

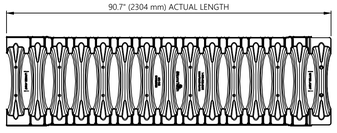
	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 14" (355 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

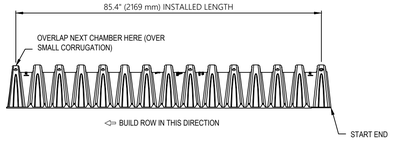
PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 1.5"
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 400 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.





NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	25.0" X 12.0" X 85.4"	(635 mm X 305 mm X 2169 mm)
CHAMBER STORAGE	6.85 CUBIC FEET	(0.19 m³)
MINIMUM INSTALLED STORAGE*	16.0 CUBIC FEET	(0.45 m³)
WEIGHT	24.0 lbs.	(10.9 kg)

*ASSUMES 6" (152 mm) ABOVE, 6" (152 mm) BELOW, AND STONE BETWEEN CHAMBERS WITH 40% STONE POROSITY.

PART #	STUB	A
SC160EPP	6" (150 mm)	0.66" (16 mm)
	8" (200 mm)	0.80" (20 mm)
SC160EPP08	8" (200 mm)	0.96" (24 mm)

ALL STUBS ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

NOTE: ALL DIMENSIONS ARE NOMINAL

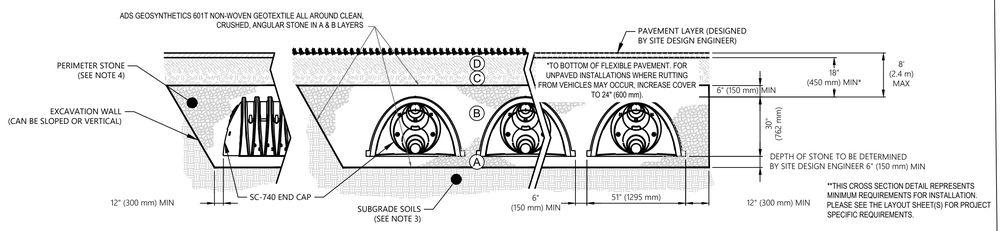
STORMTECH CHAMBER SC-160LP

N.T.S.

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

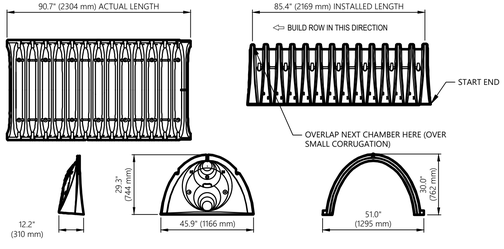
PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

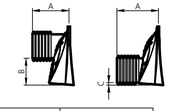
SC-740 CROSS SECTION DETAIL



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51.0" X 30.0" X 85.4"	(1295 mm X 762 mm X 2169 mm)
CHAMBER STORAGE	45.9 CUBIC FEET	(1.30 m³)
MINIMUM INSTALLED STORAGE*	74.9 CUBIC FEET	(2.12 m³)
WEIGHT	75.0 lbs.	(33.6 kg)

*ASSUMES 6" (152 mm) STONE ABOVE, BELOW, AND BETWEEN CHAMBERS



PRE-FAB STUB AT BOTTOM OF END CAP WITH FLAMP END WITH "BR"
PRE-FAB STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
PRE-CORED END CAPS END WITH "PC"

PART #	STUB	A	B	C
SC740EPE06T / SC740EPE06TPC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	---
SC740EPE06B / SC740EPE06BPC			---	0.5" (13 mm)
SC740EPE08T /SC740EPE08TPC	8" (200 mm)	12.2" (310 mm)	16.5" (419 mm)	---
SC740EPE08B / SC740EPE08BPC			---	0.6" (15 mm)
SC740EPE10T / SC740EPE10TPC	10" (250 mm)	13.4" (340 mm)	14.5" (368 mm)	---
SC740EPE10B / SC740EPE10BPC			---	0.7" (18 mm)
SC740EPE12T / SC740EPE12TPC	12" (300 mm)	14.7" (373 mm)	12.5" (318 mm)	---
SC740EPE12B / SC740EPE12BPC			---	1.2" (30 mm)
SC740EPE15T / SC740EPE15TPC	15" (375 mm)	18.4" (467 mm)	9.0" (229 mm)	---
SC740EPE15B / SC740EPE15BPC			---	1.3" (33 mm)
SC740EPE18T / SC740EPE18TPC	18" (450 mm)	19.7" (500 mm)	5.0" (127 mm)	---
SC740EPE18B / SC740EPE18BPC			---	1.6" (41 mm)
SC740EPE24B*	24" (600 mm)	18.5" (470 mm)	---	0.1" (3 mm)
SC740EPE24BR*	24" (600 mm)	18.5" (470 mm)	---	0.1" (3 mm)

ALL STUBS, EXCEPT FOR THE SC740EPE24B/SC740EPE24BR ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

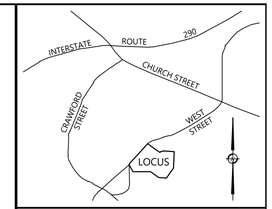
* FOR THE SC740EPE24B/SC740EPE24BR THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

SC-740 TECHNICAL SPECIFICATIONS

STORMTECH CHAMBER SC-740

N.T.S.



LOCUS MAP
N.T.S.

REV.	DATE	DESCRIPTION	INIT.
C	2/24/2021	PLANNING BOARD COMMENTS	GBS
A		INITIAL ISSUE	GBS

COMMONWEALTH OF MASSACHUSETTS
GREGORY BRIAN SCOTCHIE
CIVIL
No. 52510
REGISTERED PROFESSIONAL ENGINEER
2/24/2021

PREPARED BY:

WDA DESIGN GROUP
31 EAST MAIN STREET WESTBOROUGH, MA
508.366.6552
WDA-DG.COM

OWNER:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

PREPARED FOR:

Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

TITLE:

CONSTRUCTION DETAILS

85 & 98 COMMON DRIVEWAY
85 & 95 West Street
Northborough, MA 01532
(Worcester County)

NOTICE OF INTENT

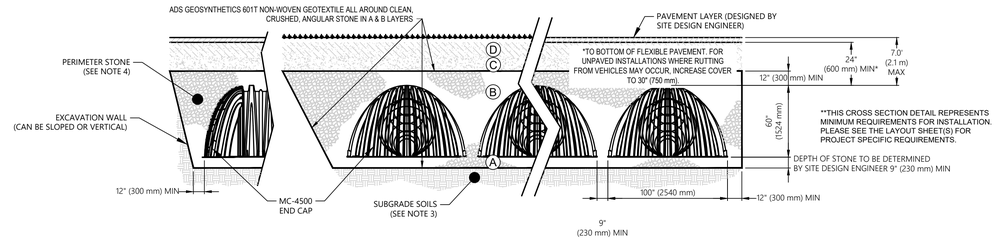
JOB NO.:	1207.03	DATE:	11/20/20
DWN. BY:	GBS	SHEET:	C6.05
CHK'D. BY:	BPW/JRW		

C6.05.dwg

ACCEPTABLE FILL MATERIALS: STORMTECH MC-4500 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



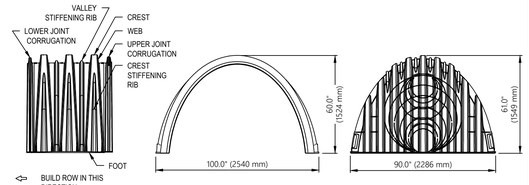
NOTES:

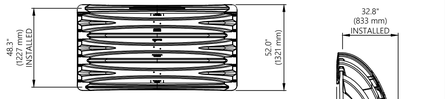
1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101
2. MC-4500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

MC-4500 CROSS SECTION DETAIL

STORMTECH CHABER SC-4500

N.T.S.





NOMINAL CHAMBER SPECIFICATIONS

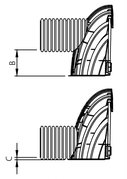
SIZE (W X H X INSTALLED LENGTH)	100.0" X 60.0" X 48.3"	(2540 mm X 1524 mm X 1227 mm)
CHAMBER STORAGE	106.5 CUBIC FEET	(3.01 m³)
MINIMUM INSTALLED STORAGE*	162.6 CUBIC FEET	(4.60 m³)
WEIGHT (NOMINAL)	125.0 lbs.	(56.7 kg)

NOMINAL END CAP SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	90.0" X 61.0" X 32.8"	(2286 mm X 1549 mm X 833 mm)
END CAP STORAGE	39.5 CUBIC FEET	(1.12 m³)
MINIMUM INSTALLED STORAGE*	115.3 CUBIC FEET	(3.26 m³)
WEIGHT (NOMINAL)	90 lbs.	(40.8 kg)

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.
PARTIAL CUT HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PARTIAL CUT HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC4500IEPP06T	6" (150 mm)	42.54" (1081 mm)	---
MC4500IEPP06B		---	0.86" (22 mm)
MC4500IEPP08T	8" (200 mm)	40.50" (1029 mm)	---
MC4500IEPP08B		---	1.01" (26 mm)
MC4500IEPP10T	10" (250 mm)	38.37" (975 mm)	---
MC4500IEPP10B		---	1.33" (34 mm)
MC4500IEPP12T	12" (300 mm)	35.69" (907 mm)	---
MC4500IEPP12B		---	1.55" (39 mm)
MC4500IEPP15T	15" (375 mm)	32.72" (831 mm)	---
MC4500IEPP15B		---	1.70" (43 mm)
MC4500IEPP18T	18" (450 mm)	29.36" (746 mm)	---
MC4500IEPP18TW			
MC4500IEPP18B		---	1.97" (50 mm)
MC4500IEPP18BW			
NOTE: ALL DIMENSIONS ARE NOMINAL			
MC4500IEPP24T	24" (600 mm)	23.05" (585 mm)	---
MC4500IEPP24TW			
MC4500IEPP24B		---	2.26" (57 mm)
MC4500IEPP24BW			
MC4500IEPP30BW	30" (750 mm)	---	2.95" (75 mm)
MC4500IEPP36BW	36" (900 mm)	---	3.25" (83 mm)
MC4500IEPP42BW	42" (1050 mm)	---	3.55" (90 mm)



CUSTOM PREFABRICATED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-4500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

MC-4500 TECHNICAL SPECIFICATIONS

Storm Sewer Tabulation

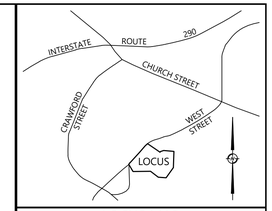
Page 1

Station Line	To Line	Len (ft)	Drng Area Incr (ac)	Drng Area Total (ac)	Rnoff coeff (C)	Area x C Incr	Area x C Total	Tc Inlet (min)	Tc Syst (min)	Rain (I) (in/hr)	Total flow (cfs)	Cap full (cfs)	Vel (ft/s)	Pipe Size (in)	Pipe Slope (%)	Invert Elev Dn (ft)	Invert Elev Up (ft)	HGL Elev Dn (ft)	HGL Elev Up (ft)	Grnd / Rim Elev Dn (ft)	Grnd / Rim Elev Up (ft)	Line ID
1	End	122.850	0.00	0.00	0.00	0.00	0.00	0.0	1.6	0.0	2.40	8.79	1.36	18	0.70	348.00	348.86	350.49	350.55	354.19	355.62	Pipe - (11)
2	1	130.360	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	2.40	16.30	2.56	18	2.41	348.86	352.00	350.56	352.59	355.62	358.01	Pipe - (12)
3	2	3.502	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	2.40	9.72	4.15	18	0.86	353.62	353.65	354.13	354.24	358.01	355.29	Pipe - (13)
4	End	3.502	0.00	0.53	0.00	0.00	0.36	0.0	34.3	5.0	1.80	17.74	4.94	18	2.85	350.26	350.36	350.58	350.86	352.26	357.88	Pipe - (14)
5	4	33.580	0.53	0.53	0.68	0.36	0.36	33.8	33.8	5.0	1.82	10.57	3.47	18	1.01	350.36	350.70	350.86	351.21	357.88	354.01	Pipe - (15)
6	End	4.750	0.36	2.76	0.40	0.14	0.86	5.0	27.7	5.6	4.83	11.67	5.50	18	1.05	335.15	335.20	335.82	336.04	335.50	340.50	Pipe - (17)
7	6	101.718	0.00	2.40	0.00	0.00	0.72	0.0	26.9	5.7	4.08	38.68	4.21	18	13.57	335.20	349.00	336.04	349.77	340.50	357.68	Pipe - (18)
8	7	48.921	0.77	0.77	0.30	0.23	0.23	19.3	19.3	6.6	1.52	10.62	3.78	18	1.02	350.00	350.50	350.38	350.96	357.68	358.00	Pipe - (19)
9	7	21.705	1.63	1.63	0.30	0.49	0.49	26.7	26.7	5.7	2.78	31.88	7.50	18	9.21	350.00	352.00	350.30	352.63	357.68	359.01	Pipe - (20)
10	End	62.005	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	5.90	10.42	5.57	18	0.98	346.39	347.00	347.20	347.94	348.04	344.64	Pipe - (09)
11	End	6.368	2.11	2.11	0.36	0.76	0.76	24.8	24.8	5.9	4.48	11.01	5.23	18	1.10	345.63	345.70	346.30	346.51	347.27	351.70	Pipe - (10)
12	End	17.329	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	7.50	19.32	7.92	18	2.89	334.00	334.50	334.65	335.56	335.65	337.18	Pipe - (16)
13	End	4.278	0.18	0.18	0.61	0.11	0.11	8.3	8.3	8.8	3.97	16.05	5.95	18	2.34	326.39	326.49	326.90	327.25	328.03	335.02	Pipe - (06)
14	End	27.140	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	3.20	12.59	4.99	18	1.44	326.00	326.39	326.52	327.07	328.65	328.03	Pipe - (05)
15	End	6.469	1.53	1.53	0.33	0.50	0.50	21.2	21.2	6.3	9.20	10.92	6.57	18	1.08	324.13	324.20	325.18	325.37	325.77	335.02	Pipe - (08)
16	End	38.856	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	9.50	29.37	5.85	18	7.82	322.00	325.04	324.18	326.23	323.65	326.68	Pipe - (07)
17	End	48.757	0.00	1.71	0.00	0.00	0.72	0.0	38.7	4.7	3.39	6.73	3.91	18	0.41	319.70	319.90	320.40	320.68	321.35	324.44	Pipe - (01)
18	17	32.616	0.00	1.60	0.00	0.00	0.65	0.0	38.3	4.7	3.07	8.82	3.28	18	0.71	319.90	320.13	320.88	320.80	324.44	324.67	Pipe - (02)
19	18	10.751	1.12	1.12	0.42	0.47	0.47	38.2	38.2	4.7	2.22	9.06	3.30	18	0.74	320.13	320.21	320.80	320.77	324.67	322.75	Pipe - (04)
20	18	14.678	0.48	0.48	0.38	0.18	0.18	12.2	12.2	7.9	1.43	9.09	2.56	18	0.75	320.13	320.24	320.80	320.69	324.67	322.78	Pipe - (03)
21	17	10.048	0.11	0.11	0.65	0.07	0.07	5.0	5.0	9.8	0.70	3.85	1.89	12	1.00	319.90	320.00	320.88	320.35	324.44	321.98	Pipe - (01.1)
22	End	24.170	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	0.10	1.19	1.81	8	0.83	320.30	320.50	320.44	320.64	0.00	0.00	Pipe - (21)

Common Driveway 85 West Street | Number of lines: 22 | Run Date: 2/23/2021

NOTES:Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period =Yrs. 100 ; c = cir e = ellip b = box

Storm Sewers v2021.00



LOCUS MAP
N.T.S.

REV.	DATE	DESCRIPTION	INIT.
A		INITIAL ISSUE	GBS

COMMONWEALTH OF MASSACHUSETTS
GREGORY BRIAN SCOTCHIE
CIVIL
No. 52510
REGISTERED PROFESSIONAL ENGINEER
2/24/2021

PREPARED BY:
WDA DESIGN GROUP
31 EAST MAIN STREET WESTBOROUGH, MA
508.366.6552
WDA-DG.COM

OWNER:
Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

PREPARED FOR:
Brant L. Viner & Margaret Harling
P.O Box 295
Ellsworth, ME 04605

TITLE:
CONSTRUCTION DETAILS

85 & 98 COMMON DRIVEWAY
85 & 95 West Street
Northborough, MA 01532
(Worcester County)

NOTICE OF INTENT

JOB NO.:	1207.03	DATE:	11/20/20
DWN. BY:	GBS	SHEET:	C6.06
CHK'D. BY:	BPW/JRW		

C6.06.dwg