PROPOSED RETAIL MOTOR FUEL OUTLET
SITE RE-DEVELOPMENT PLANS

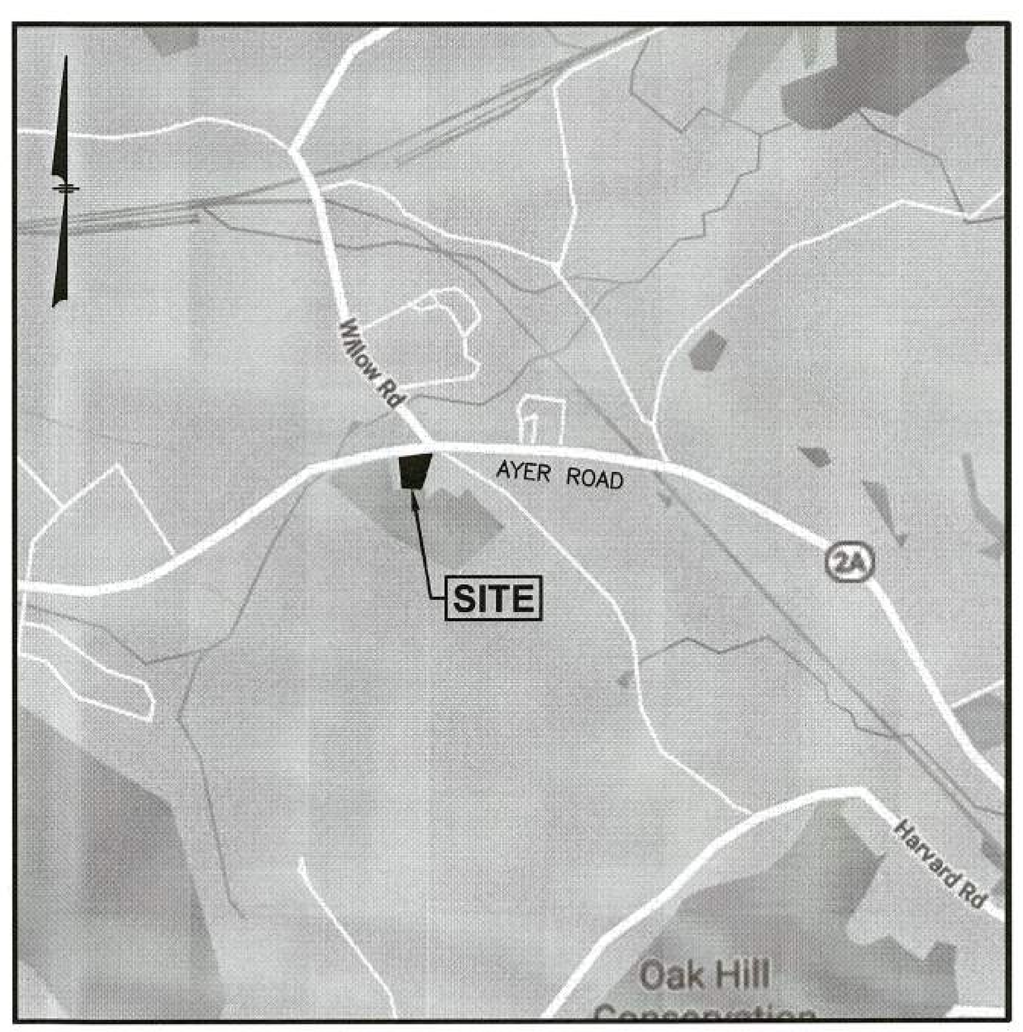
for

PARCEL ID: U45-7-0, U45-7-B, U45-8-A, & U45-11-0
254, 256 & 260 AYER ROAD
LITTLETON, MASSACHUSETTS
PARCEL ID: 30-16
0 LITTLETON ROAD
AYER, MASSACHUSETTS

Prepared for:

ENERGY NORTH GROUP

2 INTERNATIONAL WAY
LAWRENCE, MA 01843



LOCATION MAP
(NOT TO SCALE)

INDEX TO DRAWINGS

GPI Engineering Design Planning Construction Management
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Greenman-Pedersen, Inc.
44 Stiles Road, Suite One
Salem, NH 03079

PREPARED FOR
ENERGY NORTH GROUP
2 INTERNATIONAL WAY
LAWRENCE, MA 01843

PROPOSED RETAIL MOTOR FUEL OUTLET
SITE RE-DEVELOPMENT
PARCEL ID: U45-7-0, U45-7-B, U45-8-A, & U45-11-0
254, 256 & 260 AYER ROAD
LITTLETON, MASSACHUSETTS
PARCEL ID: 30-16
0 LITTLETON ROAD
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COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER M. TYMULA
CIVIL
No. 57140
4/21/23

REVISIONS

NO.	REVISION	DATE
2	REVISE SHEETS 1, 4-14, TT & ROADWAY PLANS	4/20/23
1	REVISE SHEETS 7&8	3/17/23

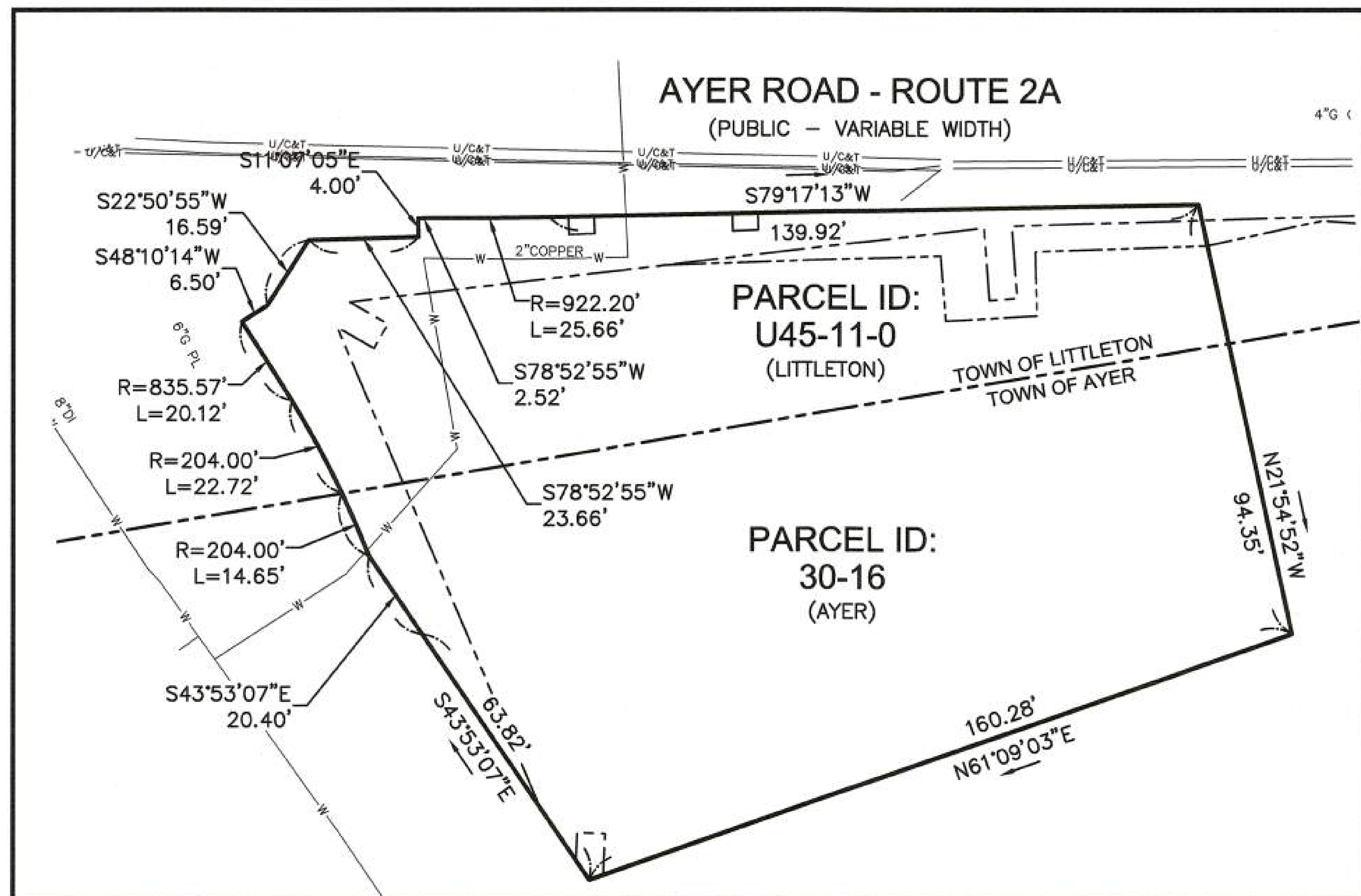
FEBRUARY 8, 2023

DRAWN/DESIGN BY	CHECKED BY
SJB/CNM	CMT

TITLE SHEET

SCALE: NOT TO SCALE

PROJECT NO. NEX-2021267

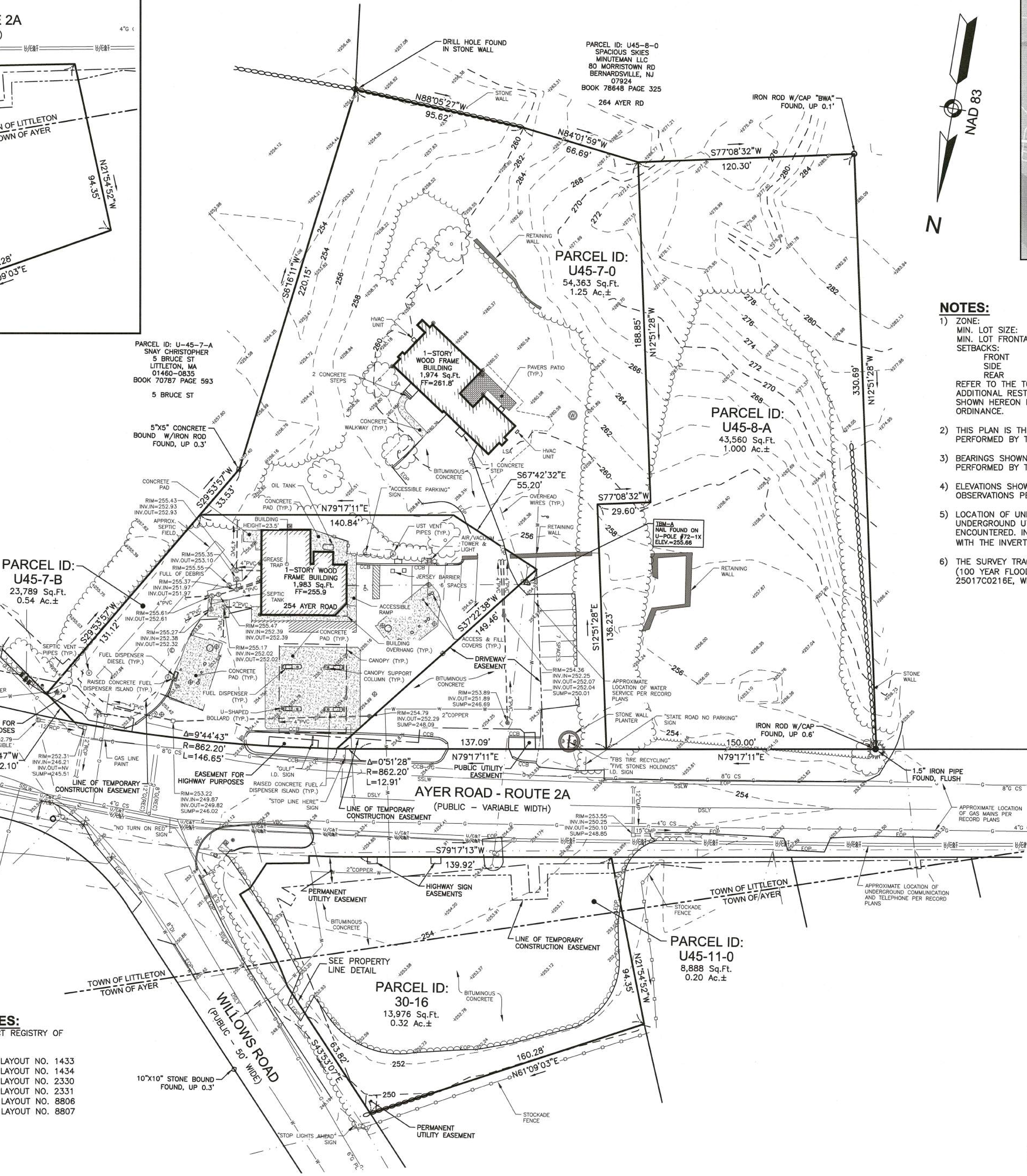


PROPERTY LINE DETAIL

(SCALE 1"=30')

LEGEND

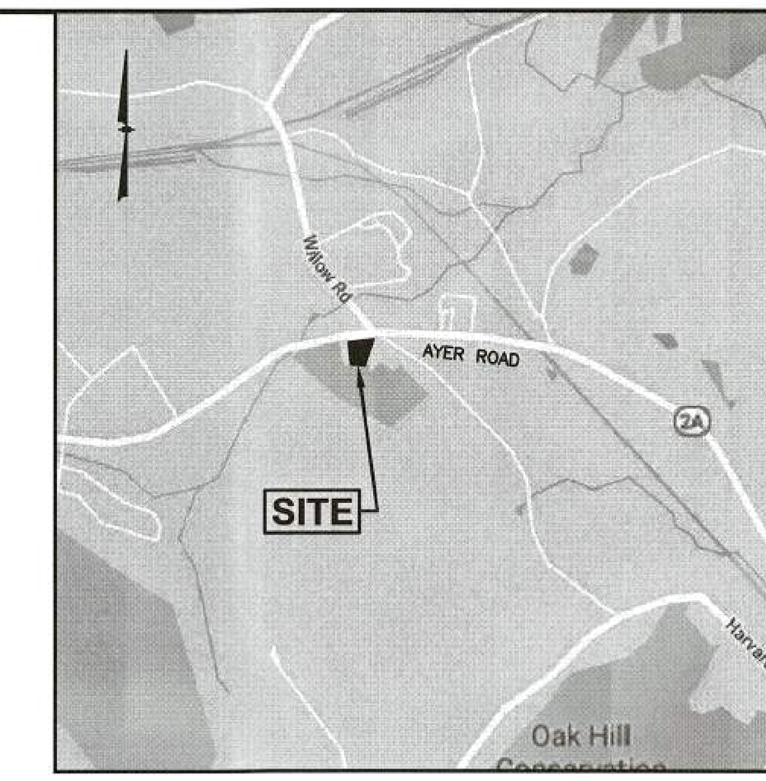
SGC	SLOPED GRANITE CURB
VGC	VERTICAL GRANITE CURB
SCC	SLOPED CONCRETE CURB
VCC	VERTICAL CONCRETE CURB
CCB	CAPE COD BERM
DSLY	DOUBLE SOLID LINE YELLOW
DDLY	DOUBLE DASHED LINE YELLOW
SDLY	SINGLE DASHED LINE YELLOW
SSLY	SINGLE SOLID LINE YELLOW
SSLW	SINGLE SOLID LINE WHITE
SDLW	SINGLE DASHED LINE WHITE
G	GAS LINE
T	UNDERGROUND TELEPHONE
W	WATER LINE
E	UNDERGROUND ELECTRIC
	WOOD GUARDRAIL
	METAL GUARDRAIL
	CHAIN LINK FENCE
	STOCKADE FENCE
	POST & RAIL FENCE
	WIRE FENCE
90	CONTOUR ELEVATION
	TREE
	UTILITY POLE
	GUY WIRE
	OVERHEAD WIRE
	TREELINE
PB	PULL BOX
	SIGN
	SPOT ELEVATION
	DRAIN MANHOLE
	CATCH BASIN
	ROOF DRAIN
	CLEANOUT
	VENT
	SEWER MANHOLE
	TELEPHONE MANHOLE
	ELECTRIC MANHOLE
	WATER MANHOLE
	MANHOLE
	GAS VALVE
	GAS SHUT OFF
	WATER VALVE
	WATER SHUT OFF
	FIRE HYDRANT
	BOLLARD
	GAS METER
	ELECTRIC METER
	MONITORING WELL
	LIGHT POLE
	BORING
	WETLAND LINE
	WATER FEATURE
U/CAT	UNDERGROUND COMM
	DITCH LINE
	EASEMENT LINE
	PROPERTY LINE
	ABUTTER PROPERTY LINE
	BUILDING SETBACK
	SOIL TYPE LINE
	ZONE LINE
	FLOOD ZONE LINE



PLAN REFERENCES:

MIDDLESEX SOUTH DISTRICT REGISTRY OF DEEDS & MASSDOT

1) 1912 STATE HIGHWAY LAYOUT NO. 1433
2) 1912 STATE HIGHWAY LAYOUT NO. 1434
3) 1926 STATE HIGHWAY LAYOUT NO. 2330
4) 1926 STATE HIGHWAY LAYOUT NO. 2331
5) 2022 STATE HIGHWAY LAYOUT NO. 8806
6) 2022 STATE HIGHWAY LAYOUT NO. 8807
7) PLAN 1150 OF 1967
8) PLAN 557 OF 1972
9) PLAN 558 OF 1972
10) PLAN 844 OF 1980
11) PLAN 558 OF 1983



LOCATION MAP

(NOT TO SCALE)

NOTES:

1) ZONE: BUSINESS DISTRICT (B)
   MIN. LOT SIZE: 15,000 Sq.Ft.
   MIN. LOT FRONTAGE: 100 Ft.
   SETBACKS:
   FRONT 25 Ft.
   SIDE 25 Ft.
   REAR 25 Ft.
   REFER TO THE TOWN OF LITTLETON ZONING ORDINANCE FOR VERIFICATION, ADDITIONAL RESTRICTIONS AND PERMITTED USES. THE ZONING INFORMATION SHOWN HEREON IS BASED ON A REVIEW OF THE LITTLETON ZONING ORDINANCE.
2) THIS PLAN IS THE RESULT OF AN ON-THE-GROUND FIELD SURVEY PERFORMED BY THIS OFFICE BETWEEN JULY 28 AND AUGUST 2, 2022.
3) BEARINGS SHOWN HEREON ARE BASED ON NAD83 PER GPS OBSERVATIONS PERFORMED BY THIS OFFICE ON JULY 28, 2022.
4) ELEVATIONS SHOWN HEREON ARE BASED ON NAVD88 PER GPS OBSERVATIONS PERFORMED BY THIS OFFICE ON JULY 28, 2022.
5) LOCATION OF UNDERGROUND UTILITIES IS APPROXIMATE ONLY. ADDITIONAL UNDERGROUND UTILITIES OTHER THAN THOSE SHOWN MAY BE ENCOUNTERED. INVERTS ARE LISTED IN A CLOCKWISE DIRECTION ENDING WITH THE INVERT OUT (UNLESS OTHERWISE NOTED).
6) THE SURVEY TRACT IS NOT LOCATED IN A SPECIAL FLOOD HAZARD AREA (100 YEAR FLOOD) PER FLOOD INSURANCE RATE MAP NUMBER 25017C0216E, WITH AN EFFECTIVE DATE OF JUNE 4, 2010.

OWNER OF RECORD:

PARCEL ID: U45-7-B
(LOCATION 254 AYER ROAD)
PAUL ROUTHIER TRUSTEE OF
256 AYER ROAD TRUST
254 AYER ROAD
LITTLETON, MA 01460
BOOK 14407 PAGE 382

PARCEL ID: U45-7-0
(LOCATION 256 AYER ROAD)
PAUL ROUTHIER TRUSTEE OF
AYER HOUSE TRUST
256 AYER ROAD
LITTLETON, MA 01460
BOOK 14463 PAGE 422

PARCEL ID: U45-8-A
(LOCATION 260 AYER ROAD)
JPR TRUST
PAUL ROUTHIER TRUSTEE
256 AYER ROAD
LITTLETON, MA 01460
BOOK 77124 PAGE 254

PARCEL ID: U45-11-0 (LITTLETON)
PARCEL ID: 30-16 (AYER)
PAUL ROUTHIER TRUSTEE OF
256 AYER ROAD TRUST
256 AYER ROAD
LITTLETON, MA 01460
BOOK 70655 PAGE 127

0 30 60 100

SCALE: 1" = 30'

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**PROPOSED RETAIL MOTOR FUEL OUTLET
SITE RE-DEVELOPMENT**

**PARCEL ID: U45-7-0, U45-7-B, U45-8-A, & U45-11-0
254, 256 & 260 AYER ROAD
LITTLETON, MASSACHUSETTS**

**PARCEL ID: 30-16
0 LITTLETON ROAD
AYER, MASSACHUSETTS**

COMMONWEALTH OF MASSACHUSETTS
SCOTT M. L'ITALIEN
NO. 50815
REGISTERED PROFESSIONAL LAND SURVEYOR

2/8/2023

REVISIONS

NO.	REVISION	DATE

FEBRUARY 8, 2023

DRAWN/DESIGN BY	CHECKED BY
CSS	SML

EXISTING CONDITIONS PLAN

SCALE: 1"=30'

PROJECT NO. NEX-2021267

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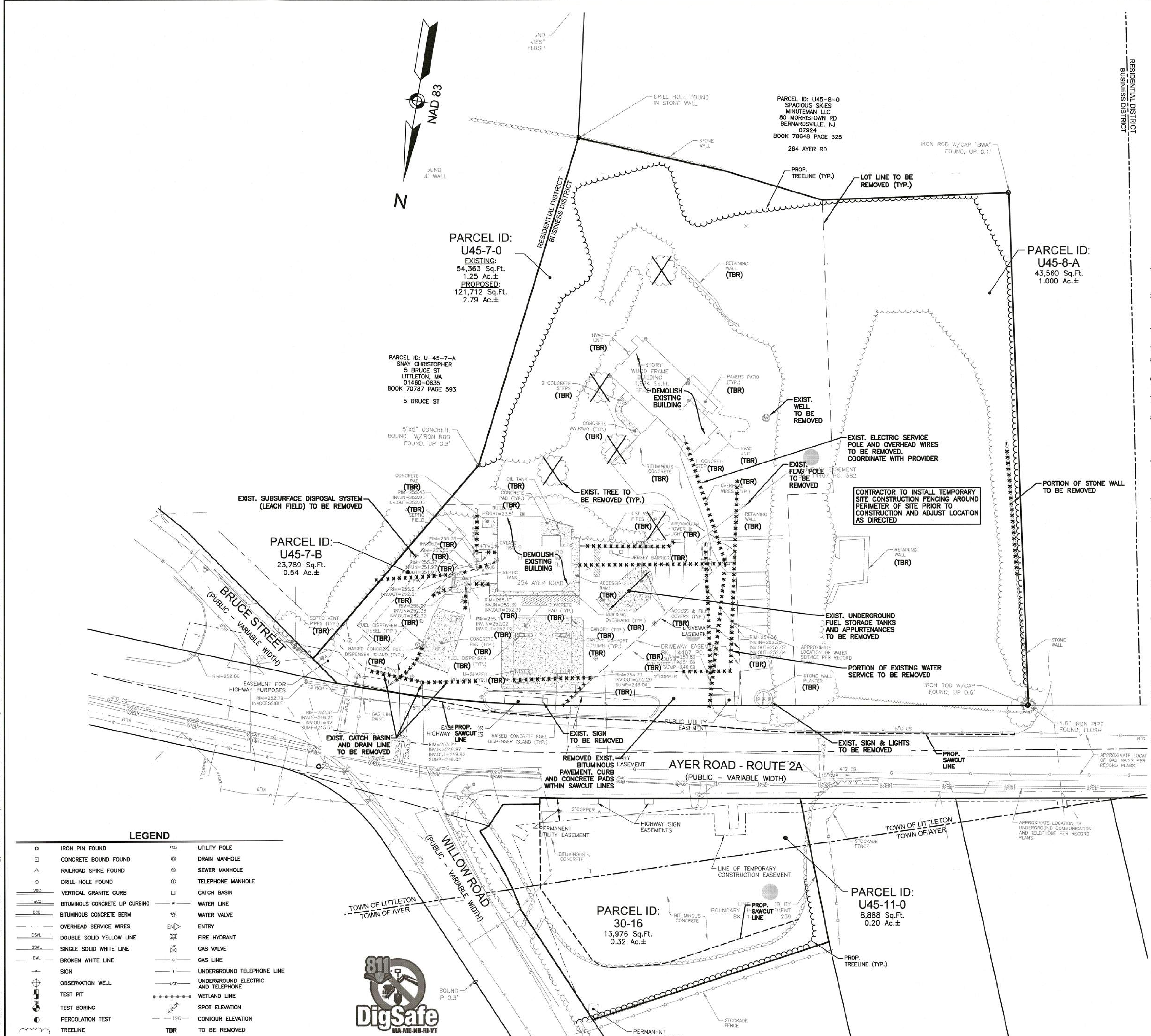
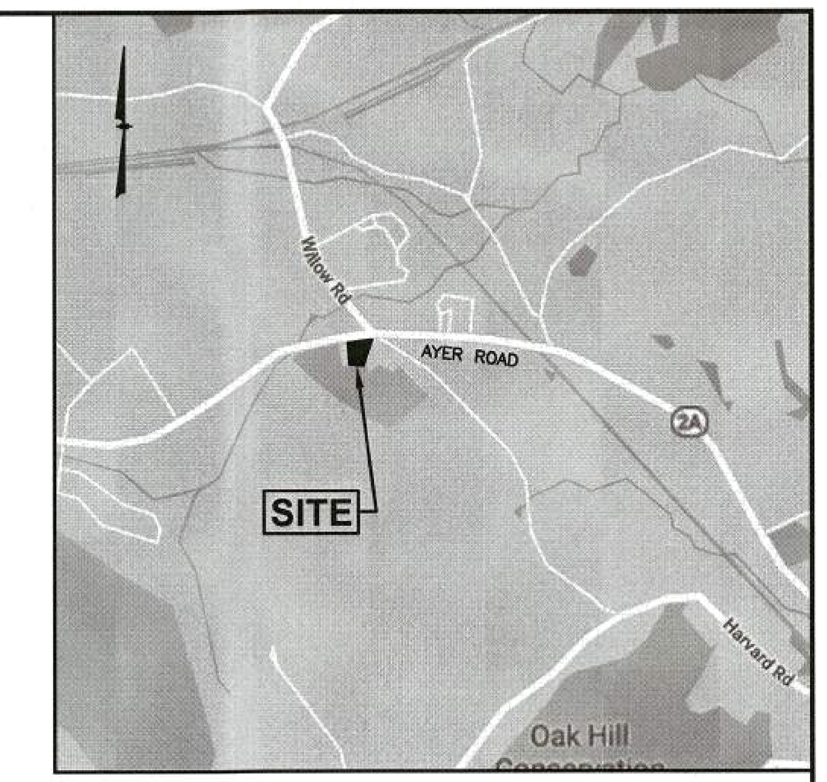


LEGEND

○	IRON PIN FOUND		UTILITY POLE
□	CONCRETE BOUND FOUND		DRAIN MANHOLE
△	RAILROAD SPIKE FOUND		SEWER MANHOLE
⊙	DRILL HOLE FOUND		TELEPHONE MANHOLE
VGC	VERTICAL GRANITE CURB	□	CATCH BASIN
BCC	BITUMINOUS CONCRETE LIP CURBING	— w —	WATER LINE
BCB	BITUMINOUS CONCRETE BERM		WATER VALVE
	OVERHEAD SERVICE WIRES	EN▷	ENTRY
DSYL	DOUBLE SOLID YELLOW LINE		FIRE HYDRANT
SSWL	SINGLE SOLID WHITE LINE		GAS VALVE
BWL	BROKEN WHITE LINE	— G —	GAS LINE
	SIGN	— T —	UNDERGROUND TELEPHONE LINE
	OBSERVATION WELL	— UGE —	UNDERGROUND ELECTRIC AND TELEPHONE
	TEST PIT		WETLAND LINE
	TEST BORING		SPOT ELEVATION
	PERCOLATION TEST	— 190 —	CONTOUR ELEVATION
	TREELINE	TBR	TO BE REMOVED
		- x x x x x x	TO BE REMOVED



LOCATION MAP

(NOT TO SCALE)

NOTES:

1) A DEMOLITION PERMIT MUST BE OBTAINED FROM THE TOWN OF LITTLETON PRIOR TO COMMENCEMENT OF WORK. ALL EXISTING UTILITY DISCONNECTIONS MUST BE COORDINATED WITH RESPECTIVE UTILITY COMPANIES.

2) ALL DEMOLITION ACTIVITIES ARE TO BE PERFORMED IN STRICT ADHERENCE TO ALL FEDERAL, STATE AND LOCAL REGULATIONS. CONTRACTOR TO INSTALL EROSION CONTROL DEVICES IN ACCORDANCE WITH EROSION AND SEDIMENT CONTROL PLAN PRIOR TO BEGINNING DEMOLITION ACTIVITIES.

3) PROCEED WITH DEMOLITION IN A SYSTEMATIC MANNER, FROM THE TOP OF THE STRUCTURE(S) TO THE GROUND.

4) DEMOLISH CONCRETE IN ALL SECTIONS.

5) BREAK UP CONCRETE SLABS-ON-GRADE, UNLESS OTHERWISE DIRECTED BY THE CONSTRUCTION MANAGER.

6) CONDUCT ALL DEMOLITION OPERATIONS IN A MANNER THAT WILL PREVENT INJURY, DAMAGE TO STRUCTURES, ADJACENT BUILDINGS AND ALL PERSONS.

7) REFRAIN FROM USING EXPLOSIVES WITHOUT PRIOR WRITTEN CONSENT OF THE DEVELOPER AND APPLICABLE GOVERNMENTAL AUTHORITIES.

8) CONDUCT DEMOLITION SERVICES IN SUCH A MANNER TO ENSURE MINIMUM INTERFERENCE WITH ROADS, STREETS, WALKS AND OTHER ADJACENT FACILITIES. DO NOT CLOSE OR OBSTRUCT STREETS, WALKS OR OTHER OCCUPIED FACILITIES WITHOUT PRIOR WRITTEN PERMISSION OF THE DEVELOPER AND APPLICABLE GOVERNMENTAL AUTHORITIES. PROVIDE ALTERNATIVE ROUTES AROUND CLOSED OR OBSTRUCTED TRAFFIC WAYS IF REQUIRED BY APPLICABLE GOVERNMENTAL REGULATIONS.

9) USE WATERING, TEMPORARY ENCLOSURES AND OTHER SUITABLE METHODS, AS NECESSARY TO LIMIT THE AMOUNT OF DUST AND DIRT RISING AND SCATTERING IN THE AIR. CLEAN ADJACENT STRUCTURE AND IMPROVEMENTS OF ALL DUST AND DEBRIS CAUSED BY THE DEMOLITION OPERATIONS. RETURN ALL ADJACENT AREAS TO THE CONDITIONS EXISTING PRIOR TO THE START OF WORK.

10) ACCOMPLISH AND PERFORM THE DEMOLITION IN SUCH A MANNER AS TO PREVENT THE UNAUTHORIZED ENTRY OF PERSONS AT ANY TIME.

11) COMPLETELY FILL BELOW GRADE AREAS AND VOIDS RESULTING FROM THE DEMOLITION OF STRUCTURES AND FOUNDATIONS WITH SOIL MATERIALS CONSISTING OF STONE, GRAVEL AND SAND, FREE FROM DEBRIS, TRASH, FROZEN MATERIALS, ROOTS AND OTHER ORGANIC MATTER. STONES USED WILL NOT BE LARGER THAT 6 INCHES IN DIMENSION. MATERIAL FROM DEMOLITION MAY NOT BE USED AS FILL. PRIOR TO PLACEMENT OF FILL MATERIALS, UNDERTAKE ALL NECESSARY ACTION IN ORDER TO INSURE THAT AREAS TO BE FILLED ARE FREE OF STANDING WATER, FROZEN MATERIAL, TRASH, DEBRIS. PLACE FILL MATERIALS LAYERS NOT EXCEEDING 6 INCHES IN LOOSE DEPTH AND COMPACT EACH LAYER AT PLACEMENT TO 95% OPTIMUM DENSITY, GRADE SURFACE TO MEET ADJACENT CONTOURS AND TO PROVIDE SURFACE DRAINAGE.

12) REMOVE FROM THE DESIGNATED SITE, AT THE EARLIEST POSSIBLE TIME, ALL DEBRIS RUBBISH, SALVAGEABLE ITEMS, HAZARDOUS AND COMBUSTIBLE SERVICES. REMOVED MATERIALS MAY NOT BE STORED, SOLD OR BURNED ON SITE. REMOVAL OF HAZARDOUS AND COMBUSTIBLE MATERIALS SHALL BE ACCOMPLISHED IN ACCORDANCE WITH THE PROCEDURES AS AUTHORIZED BY THE FIRE DEPARTMENT OR OTHER APPROPRIATE REGULATORY AGENCIES AND DEPARTMENTS.

13) DISCONNECT, SHUT OFF AND SEAL ALL UTILITIES SERVING THE STRUCTURE(S) TO BE DEMOLISHED BEFORE THE COMMENCEMENT OF THE DESIGNATED DEMOLITION. MARK FOR POSITION ALL UTILITY DRAINAGE AND SANITARY LINES AND PROTECT ALL ACTIVE LINES. CLEARLY IDENTIFY BEFORE THE COMMENCEMENT OF DEMOLITION SERVICES THE REQUIRED INTERRUPTION OF ACTIVE SYSTEMS THAT MAY AFFECT OTHER PARTIES, AND NOTIFY ALL APPLICABLE UTILITY COMPANIES TO INSURE THE CONTINUATION OF SERVICE.

14) PROTECT EXISTING DRAINAGE SYSTEM(S) AS NECESSARY TO PREVENT SEDIMENT FROM ENTERING DURING CONSTRUCTION. SEE DETAIL SHEETS FOR EROSION CONTROL DEVICES.

15) ALL WORK WITHIN ROADWAY RIGHT-OF-WAYS TO CONFORM TO TOWN & MASSDOT STANDARDS.

16) THE LIMITS OF WORK SHALL BE CLEARLY MARKED IN THE FIELD PRIOR TO THE START OF CONSTRUCTION OR SITE CLEARING.

17) IT SHALL BE THE CONTRACTORS RESPONSIBILITY TO NOTIFY DIG SAFE (DIAL 811) 72 HOURS PRIOR TO ANY EXCAVATION ON THIS SITE. CONTRACTOR SHALL ALSO NOTIFY LOCAL WATER DEPARTMENT TO MARK OUT THEIR UTILITIES.

18) NOTES ON THIS PLAN THAT READ "TBR" REPRESENT FEATURES TO BE REMOVED. ANY FEATURES NOT LABELED "TBR" OR "TO BE REMOVED" SHALL BE CONSIDERED EXISTING TO REMAIN.

19) EXISTING IRRIGATION SYSTEM TO BE PROTECTED DURING DEMOLITION AND CONSTRUCTION. EXISTING IRRIGATION SYSTEM TO BE RELOCATED, EXTENDED AND CONNECTED TO ALL PROPOSED LANDSCAPED AREAS AS NECESSARY.

20) SEE LANDSCAPE PLAN FOR LIMITS OF CLEARING AND GRUBBING. AFTER CLEARING, STRIP AND STOCKPILE TOP SOIL PER LANDSCAPE PLAN, IF APPLICABLE.

SEE EROSION & SEDIMENT CONTROL PLAN FOR CONSTRUCTION SEQUENCE AND LOCATION OF TEMPORARY EROSION CONTROL MEASURES AND LOCATION OF EROSION CONTROL DEVICES. SEE LANDSCAPE PLAN FOR LIMITS OF CLEARING.

0 30 60 100

SCALE: 1" = 30'

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254, 256 & 260 AYER ROAD
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0 LITTLETON ROAD
AYER, MASSACHUSETTS

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER M. TYMULA
CIVIL
No. 57140
REGISTERED PROFESSIONAL ENGINEER
4/24/23

REVISIONS

NO.	REVISION	DATE

FEBRUARY 8, 2023

DRAWN/DESIGN BY	CHECKED BY
SJB/CNM	CMT

DEMOLITION PLAN

SCALE: 1"=30'

PROJECT NO. NEX-2021267

TABLE OF ZONING REGULATIONS - (LITTLETON, MA)

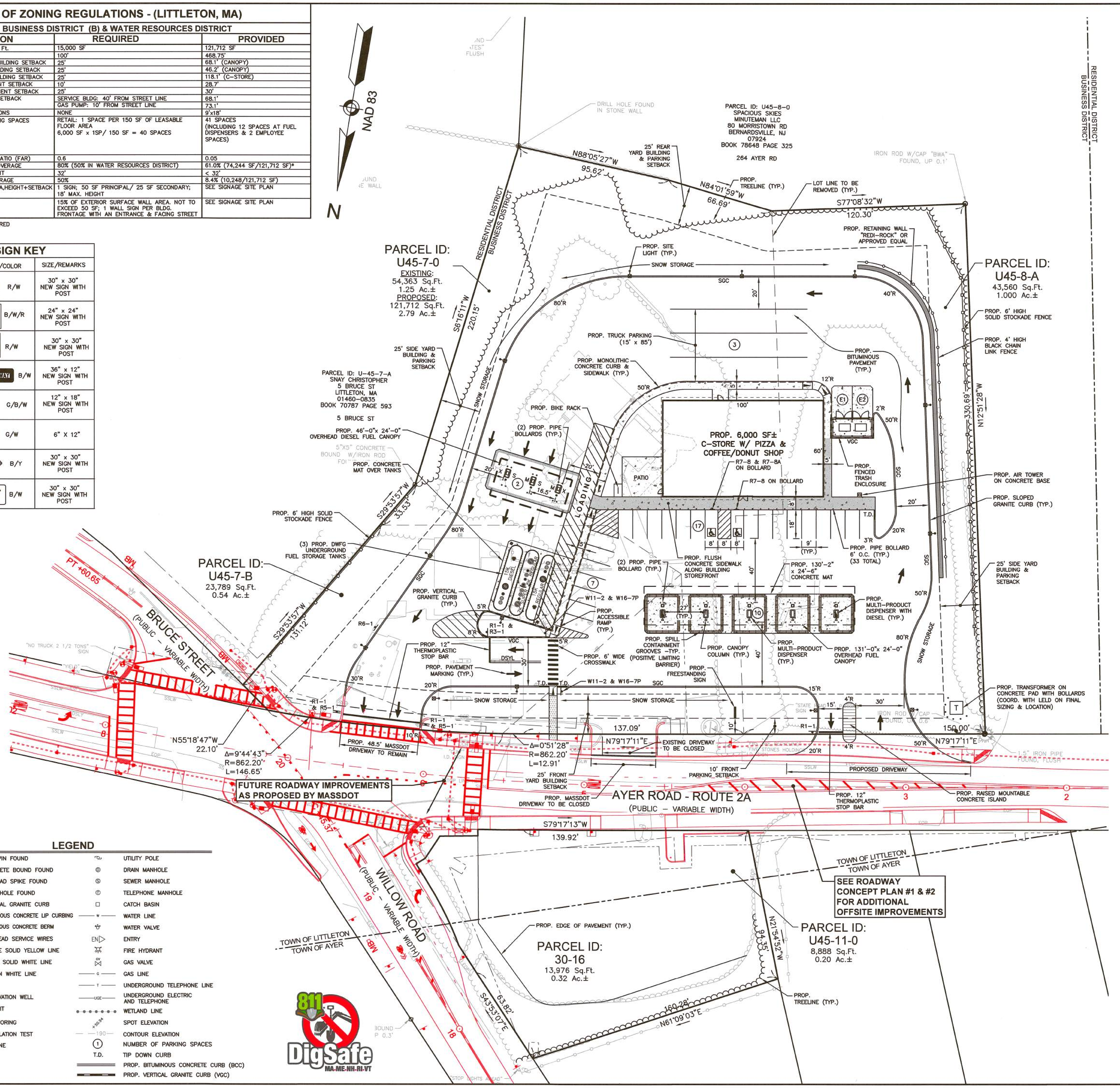
ZONE: BUSINESS DISTRICT (B) & WATER RESOURCES DISTRICT

DESCRIPTION	REQUIRED	PROVIDED
MINIMUM LOT AREA Sq. Ft.	15,000 SF	121,712 SF
MINIMUM LOT FRONTAGE	100'	468.75'
MINIMUM FRONT YARD BUILDING SETBACK	25'	68.1' (CANOPY)
MINIMUM SIDE YARD BUILDING SETBACK	25'	46.2' (CANOPY)
MINIMUM REAR YARD BUILDING SETBACK	25'	118.1' (C-STORE)
MINIMUM FRONT PAVEMENT SETBACK	10'	28.7'
MINIMUM PARKING PAVEMENT SETBACK	25'	30'
GASOLINE/OIL FACILITY SETBACK	SERVICE BLDG: 40' FROM STREET LINE	68.1'
	GAS PUMP: 10' FROM STREET LINE	73.1'
PARKING SPACE DIMENSIONS	NONE	9'x18'
MINIMUM NUMBER PARKING SPACES	RETAIL: 1 SPACE PER 150 SF OF LEASABLE FLOOR AREA 6,000 SF x 1SP/ 150 SF = 40 SPACES	41 SPACES (INCLUDING 12 SPACES AT FUEL DISPENSERS & 2 EMPLOYEE SPACES)
MAXIMUM FLOOR AREA RATIO (FAR)	0.6	0.05
MAXIMUM IMPERVIOUS COVERAGE	80% (50% IN WATER RESOURCES DISTRICT)	61.0% (74,244 SF/121,712 SF)*
MAXIMUM BUILDING HEIGHT	32'	< 32'
MAXIMUM BUILDING COVERAGE	50%	8.4% (10,248/121,712 SF)
FREESTANDING SIGN AREA,HEIGHT+SETBACK	1 SIGN; 50 SF PRINCIPAL/ 25 SF SECONDARY; 18' MAX. HEIGHT	SEE SIGNAGE SITE PLAN
WALL SIGN AREA	15% OF EXTERIOR SURFACE WALL AREA. NOT TO EXCEED 50 SF; 1 WALL SIGN PER BLDG. FRONTAGE WITH AN ENTRANCE & FACING STREET	SEE SIGNAGE SITE PLAN

* SPECIAL PERMIT REQUIRED

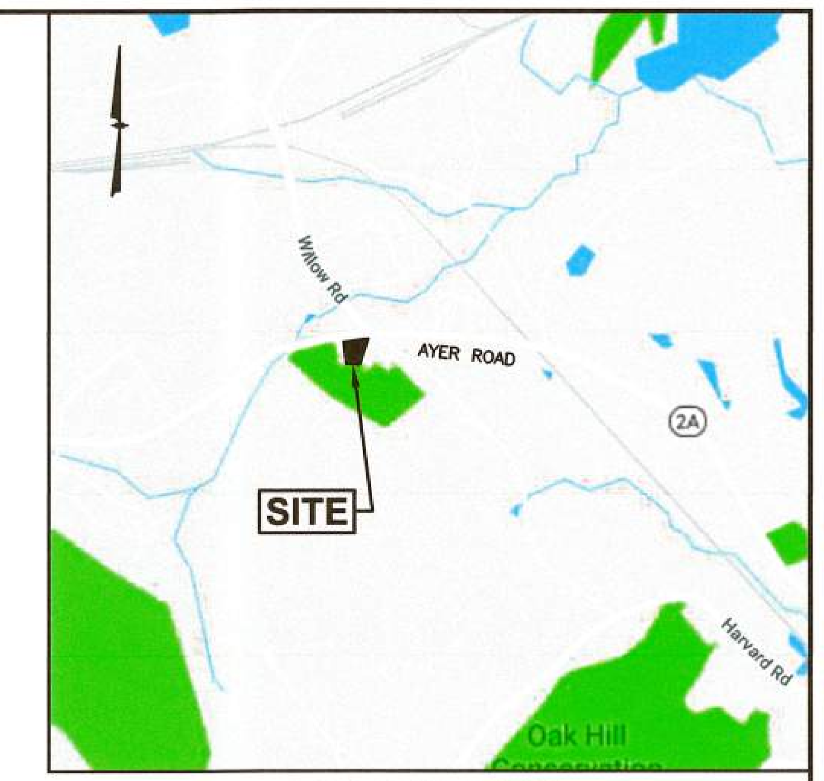
SIGN KEY

SIGN I.D. NUMBER	TEXT/COLOR	SIZE/REMARKS
R1-1	STOP R/W	30" x 30" NEW SIGN WITH POST
R3-1	B/W/R	24" x 24" NEW SIGN WITH POST
R5-1	DO NOT ENTER R/W	30" x 30" NEW SIGN WITH POST
R6-1	ONE WAY B/W	36" x 12" NEW SIGN WITH POST
R7-8	RESERVED PARKING G/B/W	12" x 18" NEW SIGN WITH POST
R7-8A	VAN ACCESSIBLE G/W	6" X 12"
W11-2	B/Y	30" x 30" NEW SIGN WITH POST
W16-7P	B/W	30" x 30" NEW SIGN WITH POST



LEGEND

○	IRON PIN FOUND		UTILITY POLE
⊡	CONCRETE BOUND FOUND	Ⓓ	DRAIN MANHOLE
△	RAILROAD SPIKE FOUND	Ⓢ	SEWER MANHOLE
⊙	DRILL HOLE FOUND	Ⓣ	TELEPHONE MANHOLE
VGC	VERTICAL GRANITE CURB	□	CATCH BASIN
BCC	BITUMINOUS CONCRETE LIP CURBING	W	WATER LINE
BCB	BITUMINOUS CONCRETE BERM		WATER VALVE
	OVERHEAD SERVICE WIRES	EN▷	ENTRY
DSYL	DOUBLE SOLID YELLOW LINE		FIRE HYDRANT
SSWL	SINGLE SOLID WHITE LINE	GV	GAS VALVE
BWL	BROKEN WHITE LINE	G	GAS LINE
	SIGN	T	UNDERGROUND TELEPHONE LINE
	OBSERVATION WELL	UGE	UNDERGROUND ELECTRIC AND TELEPHONE
	TEST PIT		WETLAND LINE
TB	TEST BORING	+50.94	SPOT ELEVATION
	PERCOLATION TEST	190	CONTOUR ELEVATION
	TREELINE	①	NUMBER OF PARKING SPACES
		T.D.	TIP DOWN CURB
			PROP. BITUMINOUS CONCRETE CURB (BCC)
			PROP. VERTICAL GRANITE CURB (VGC)



LOCATION MAP

(NOT TO SCALE)

NOTES:

1) THE PURPOSE OF THIS PLAN IS TO DEMOLISH THE EXISTING RETAIL MOTOR FUEL OUTLET AND COMMERCIAL BUILDING AND CONSTRUCT A NEW RETAIL MOTOR FUEL OUTLET.

2) EXISTING BOUNDARY AND PLANIMETRIC INFORMATION AS SHOWN IS THE RESULT OF AN ACTUAL FIELD SURVEY BY THIS OFFICE.

3) LITTLETON TAX MAP U45 LOTS 7, 7-B, 8-A, 11
AYER TAX MAP 30 LOT 16

4) ZONING DISTRICT: BUSINESS DISTRICT (B) / WATER RESOURCE DISTRICT

5) PROPOSED LOT 7-0 AREA (COMBINED) = 121,712 Sq.Ft. = 2.79 Ac.±

6) EXISTING USE: RETAIL MOTOR FUEL OUTLET WITH 1,983 SF C-STORE AND 5 DISPENSERS AND A TIRE RECYCLING BUSINESS.

PROPOSED USE: RETAIL MOTOR FUEL OUTLET WITH 6,000 SF C-STORE WITH PIZZA & COFFEE/ DONUT SHOP, RETAIL FUEL CANOPY WITH 5 DISPENSERS (10 FUELING POSITIONS AND A COMMERCIAL DIESEL CANOPY WITH 3 DISPENSERS (2 FUELING POSITIONS).

7) ALL BUILDINGS AND SITE CONSTRUCTION SHALL COMPLY WITH THE RULES AND REGULATIONS OF THE AMERICANS WITH DISABILITIES ACT (ADA) OF 1990, AS AMENDED.

8) THE LOCATIONS OF EXISTING SUBSURFACE UTILITIES SHOWN ON THIS PLAN WERE COMPILED FROM AVAILABLE RECORD DRAWINGS AND ARE NOT WARRANTED TO BE CORRECT. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING SUBSURFACE UTILITIES PRIOR TO PERFORMING ANY WORK.

9) WRITTEN DIMENSIONS ON THIS PLAN TAKE PRECEDENCE OVER SCALED DIMENSIONS. THE CONTRACTOR SHALL USE CAUTION WHEN SCALING REPRODUCED PLANS. IN THE EVENT OF A CONFLICT BETWEEN THIS PLAN SET AND ANY OTHER DRAWINGS AND/OR SPECIFICATIONS, THE ENGINEER SHALL BE NOTIFIED BY THE CONTRACTOR.

10) THE CONTRACTOR SHALL CALL AND COORDINATE WITH DIGSAFE 811 PRIOR TO ANY EXCAVATION.

11) ALL CONSTRUCTION SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE TOWN OF LITTLETON AND THE STATE OF MASSACHUSETTS.

12) THE SURVEY TRACT IS NOT LOCATED IN A SPECIAL FLOOD HAZARD AREA (100 YEAR FLOOD) PER FLOOD INSURANCE RATE MAP NUMBER 25017C0216E, WITH AN EFFECTIVE DATE OF JUNE 4, 2010.

13) ALL CONSTRUCTION SHALL CONFORM TO THESE PLANS AND THE STANDARD CONSTRUCTION DRAWINGS AS SUPPLIED BY THE DEVELOPER.

14) A SIGN PERMIT SHALL BE OBTAINED PRIOR TO INSTALLATION.

15) PROPOSED SNOW STORAGE AREAS AS SHOWN. ANY EXCESS SNOW TO BE TRUCKED OFF-SITE.

16) THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE MEANS AND METHODS OF CONSTRUCTION AND FOR CONDITIONS AT THE SITE. THESE PLANS, PREPARED BY GREENMAN-PEDERSEN, INC., DO NOT EXTEND TO OR INCLUDE SYSTEMS PERTAINING TO THE SAFETY OF THE CONSTRUCTION CONTRACTOR OR THEIR EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE SEAL OF THE SURVEYOR AND/OR ENGINEER AS INCLUDED IN THE PLAN SET DOES NOT EXTEND TO ANY SUCH SAFETY SYSTEMS THAT MAY NOW OR HEREAFTER BE INCORPORATED INTO THESE PLANS. THE CONSTRUCTION CONTRACTOR SHALL PREPARE AND/OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS WHICH MAY BE REQUIRED BY THE U.S. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND/OR LOCAL REGULATIONS.

17) GENERAL CONTRACTOR TO IS RESPONSIBLE FOR OBTAINING A MASSACHUSETTS DEP-AIR QUALITY PERMIT BWP AQ 06 PRIOR TO BUILDING CONSTRUCTION.

18) ALL UNDERGROUND STORAGE TANKS, PRODUCT PIPING AND VENT LINES SHALL COMPLY WITH CURRENT STATE AND E.P.A. REGULATIONS.

19) SELF-SERVICE APPROVAL IS REQUIRED FROM THE OFFICE OF THE STATE FIRE MARSHAL. SEE APPROVED FIRE SUPPRESSION PLAN FOR LAYOUT OF SPILL CONTAINMENT GROOVES (POSITIVE LIMING BARRIER).

20) EXISTING IMPERVIOUS COVERAGE = 25,764 SF (21.2%)
PROPOSED IMPERVIOUS COVERAGE = 74,244 SF (61.0%)
PROPOSED UNDISTURBED LOT AREA = 7,027 SF (5.8%)
EXISTING OPEN SPACE = 95,948 SF (78.8%)
PROPOSED OPEN SPACE = 47,468 SF (39.0%)

PLAN REFERENCE:

1) LITTLETON-AYER-INTERSECTION IMPROVEMENTS ON ROUTE 2A AT WILLOW ROAD AND BRUCE STREET (PROJECT #608443); PREPARED FOR MASSDOT; PREPARED BY GREEN INTERNATIONAL AFFILIATES, INC.; DATE: 2/28/22; SHEET 12-13 OF 78.

0 30 60 100
SCALE: 1" = 30'

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2 INTERNATIONAL WAY
LAWRENCE, MA 01843

PROPOSED RETAIL MOTOR FUEL OUTLET
SITE RE-DEVELOPMENT
PARCEL ID: U45-7-0, U45-7-B, U45-8-A, & U45-11-0
254, 256 & 260 AYER ROAD
LITTLETON, MASSACHUSETTS
PARCEL ID: 30-16
0 LITTLETON ROAD
AYER, MASSACHUSETTS

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER M. TYMULA
CIVIL
No. 57140
4/21/23

REVISIONS

NO.	REVISION	DATE
1	MISC. REV'S PER TOWN/PEER REVIEW COMMENTS	4/20/23

FEBRUARY 8, 2023

DRAWN/DESIGN BY	CHECKED BY
SJB/CNM	CMT

SITE PLAN

SCALE: 1"=30'

PROJECT NO. NEX-2021267

DRAINAGE PIPE SCHEDULE

FROM: STRUCTURE NUMBER	PIPE SIZE (INCHES)	TYPE OF PIPE	APPROX. PIPE LENGTH (FEET)	SLOPE OF PIPE (FT./FT.)	TO: STRUCTURE NUMBER
CB–1	12	HDPE	109	0.007	DMH–1
CB–2	12	HDPE	11	0.018	DMH–1
CB–3	12	HDPE	11	0.019	DMH–2
CB–4	12	HDPE	12	0.008	DMH–4
CB–5	12	HDPE	25	0.010	DMH–6
CB–6	12	HDPE	78	0.008	DMH–9(FD)
CB–7	12	HDPE	16	0.012	DMH–8
CB–8(FD)	8	HDPE	7	0.014	OWS–1
CB–8(FD)	18	HDPE	20	0.041	FES–1
CB–9	12	HDPE	30	0.033	FES–2
DMH–1	12	HDPE	85	0.005	DMH–2
DMH–2	15	HDPE	41	0.007	DMH–3
DMH–3	15	HDPE	119	0.005	DMH–4
DMH–5	12	HDPE	65	0.005	DMH–6
DMH–6	12	HDPE	149	0.006	DMH–8
DMH–8	18	HDPE	8	0.052	DMH–9(FD)
HW–1	8	HDPE	31	0.128	DMH–DOT
INF–2	6	HDPE	18	0.018	DMH–6
OWS–1	8	HDPE	13	0.012	ES–1
SD–1	8	HDPE	5	0.020	CB–5

DRAINAGE STRUCTURES

CB–1
RIM=256.45
INV.OUT=253.45

CB–2
RIM=257.20
INV.OUT=254.20

CB–3
RIM=257.20
INV.OUT=253.20

CB–4
RIM=256.85
INV.OUT=252.85

* CB–5(W/DMH COVER)
RIM=256.25
INV.IN=253.75(SD–1)
INV.OUT=253.35

CB–6
RIM=256.40
INV.OUT=252.90

CB–7
RIM=255.80
INV.OUT=252.80

* CB–8(FD)
RIM=254.36
INV.OUT=250.80(6")
INV.OUT=251.80(12")

* CB–9
RIM=253.65
INV.OUT=251.00

DMH–1
RIM=257.40
INV.IN=254.00(CB–2)
INV.IN=252.70(CB–1)
INV.OUT=252.60

DMH–2
RIM=257.60
INV.IN=253.00(CB–3)
INV.IN=252.20(DMH–1)
INV.OUT=251.95

DMH–3
RIM=258.20
INV.IN=251.65(DMH–2)
INV.OUT=251.55

UNDERGROUND INFILTRATION SYSTEM #1
(UG–INF–1)
(44) STORMTECH MC–3500 CHAMBERS
INV.IN=250.92(24" ISOLATER ROW)
INV.IN=252.95(12" MANIFOLD)
INV.OUT=250.86
BOT.CHAMBER=250.75
BOT.STONE=250.00
(SEE DETAIL)

UNDERGROUND INFILTRATION SYSTEM #2
(UG–INF–2)
(10) STORMTECH MC–3500 CHAMBERS
INV.IN=250.36
INV.OUT=253.02
BOT.CHAMBER=250.25
BOT.STONE=249.50
(SEE DETAIL)

* DENOTES LOW PROFILE FRAME, GRATE, AND TOP SLAB

(FD) DENOTES FIRST DEFENSE FD–4HC HYDRODYNAMIC PARTICLE SEPARATOR OR APPROVED EQUAL

DMH–4 (W/2' SUMP)
RIM=256.70
INV.IN=250.92(DMH–3)
INV.IN=252.75(CB–4)
INV.OUT=250.92 (24" LOW)
INV.OUT=252.95 (12" MANIFOLD)

DMH–5
RIM=256.85
INV.IN=250.86(INF–1)
INV.OUT=253.05

DMH–6
RIM=256.25
INV.IN=252.70(DMH–5)
INV.IN=253.10(CB–5)
INV.IN=252.70(INF–2)
INV.OUT=252.60

DMH–7 (W/2' SUMP)
RIM=256.90
INV.IN=250.36(RD)
INV.OUT=250.36

DMH–8
RIM=255.95
INV.IN=252.60(CB–7)
INV.IN=251.70(DMH–6)
INV.OUT=252.60 (18" BYPASS)
INV.OUT=251.60 (6" LOW FLOW)

DMH–9(FD)
RIM=255.80
INV.IN=252.20(DMH–8)
INV.IN=251.15(DMH–69)
INV.IN=252.25(CB–6)
INV.OUT=251.05

2,000 GALLON OIL/WATER SEPARATOR
(OWS–1)
RIM=254.7±
INV.IN=250.70
INV.OUT=250.45
(SEE DETAIL)

2,000 GALLON OIL/WATER SEPARATOR
(OWS–2)
RIM=255.6±
INV.IN=251.50
INV.OUT=251.25
(SEE DETAIL)

SLOTTED DRAIN #1 (SD–1)
TOP GRATE=255.35–255.60
INV.OUT=253.85

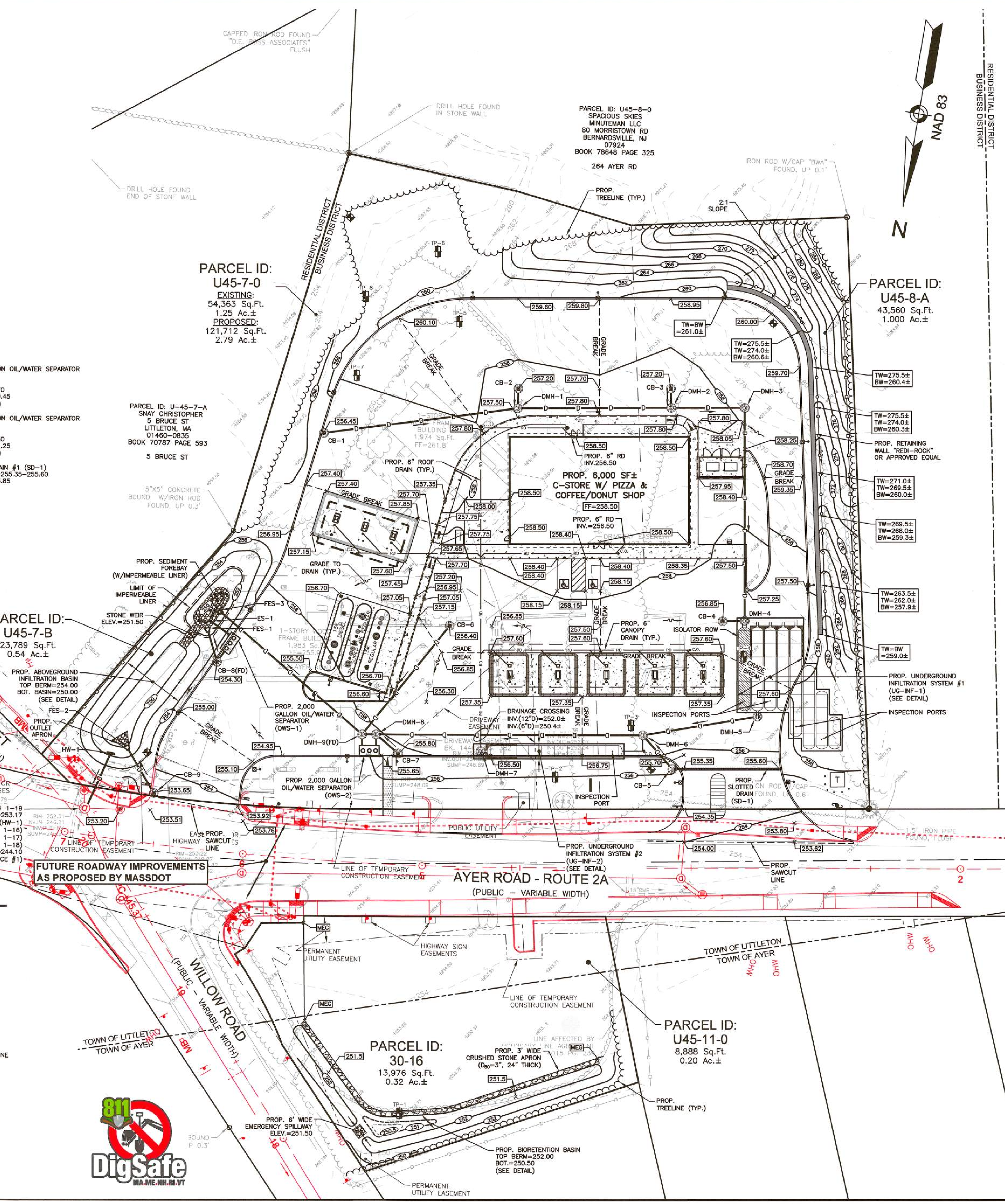
ES–1
INV.=250.30

FES–1
INV.=251.00

FES–2
INV.=250.00

FES–3
INV.=250.50

HW–1
INV.=252.00



LEGEND

○	IRON PIN FOUND		UTILITY POLE
□	CONCRETE BOUND FOUND		DRAIN MANHOLE
△	RAILROAD SPIKE FOUND		SEWER MANHOLE
○	DRILL HOLE FOUND		TELEPHONE MANHOLE
VGC	VERTICAL GRANITE CURB		CATCH BASIN
BCC	BITUMINOUS CONCRETE LIP CURBING		WATER LINE
BCB	BITUMINOUS CONCRETE BERM		WATER VALVE
	OVERHEAD SERVICE WIRES		ENTRY
DSYL	DOUBLE SOLID YELLOW LINE		FIRE HYDRANT
SSWL	SINGLE SOLID WHITE LINE		GAS VALVE
BWL	BROKEN WHITE LINE		GAS LINE
	SIGN		UNDERGROUND TELEPHONE LINE
	OBSERVATION WELL		UNDERGROUND ELECTRIC AND TELEPHONE
	TEST PIT		WETLAND LINE
	TEST BORING		SPOT ELEVATION
	PERCOLATION TEST	190	CONTOUR ELEVATION
	TREELINE	300	PROP. CONTOUR ELEVATION
C.O.	PROP. CLEANOUT	TW=	TOP OF WALL ELEV.
CB–1	PROP. CATCH BASIN	BW=	BOTTOM OF WALL ELEV.
DMH–1	PROP. DRAIN MANHOLE	G.B.	GRADE BREAK
MEG	MEET EXISTING GRADE		TEST PIT
331.25	PROP. SPOT ELEVATION		PROP. MONITORING WELL

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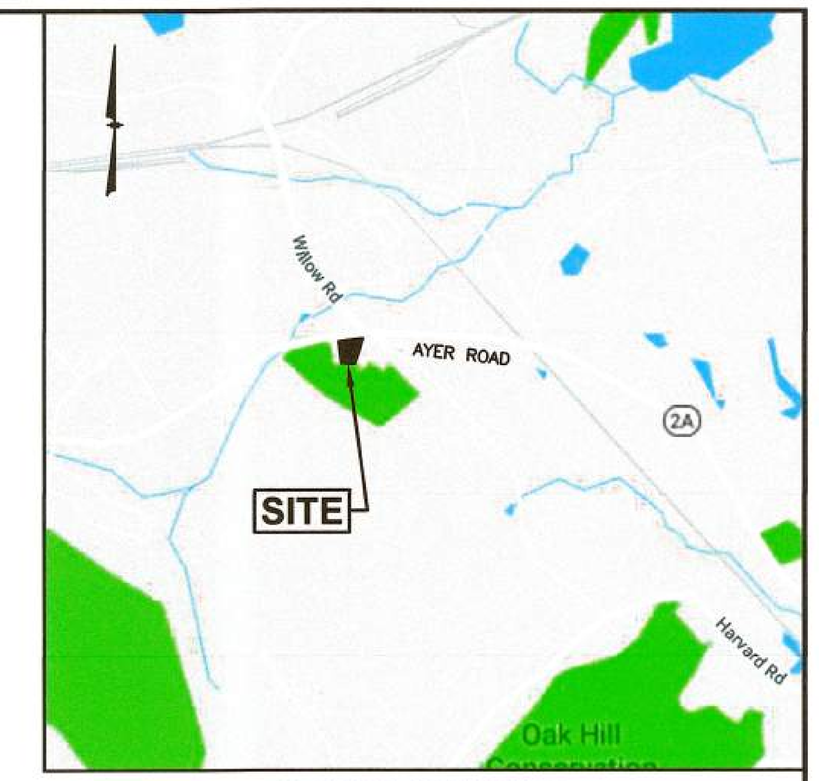

LOCATION MAP
(NOT TO SCALE)

NOTES:

1) ALL SITE DRAINAGE PIPE SHALL BE CORRUGATED HIGH–DENSITY POLYETHYLENE PIPE WITH STANDARD JOINTS, DUAL–WALL, SMOOTH INTERIOR, AS MANUFACTURED BY ADS, INC., OR APPROVED EQUAL, UNLESS OTHERWISE NOTED ON PLAN.
2) ALL ROOF AND CANOPY DRAIN PIPE SHALL BE 6" PVC (SDR–35), EXCEPT WITHIN 10' OF A BUILDING FOUNDATION WHERE CAST IRON PIPE SHALL BE USED. MIN. SLOPE=1%.
3) ELEVATIONS ARE BASED ON NAVD88 DATUM.
4) ALL PROPOSED ELEVATIONS AS SHOWN ARE BOTTOM OF CURB ELEVATIONS, UNLESS OTHERWISE NOTED.
5) ANY UTILITY FIELD ADJUSTMENTS SHALL BE APPROVED BY THE ENGINEER OF RECORD AND COORDINATED WITH THE APPROPRIATE LOCAL UTILITY COMPANY.
6) THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE ONLY. THE CONTRACTOR IS TO VERIFY EXACT LOCATION PRIOR TO CONSTRUCTION. THE CONTRACTOR IS TO NOTIFY THE DESIGN ENGINEER OF ANY DISCREPANCIES. CONSTRUCTION SHALL COMMENCE BEGINNING AT THE LOWEST INVERT (POINT OF CONNECTION) AND PROGRESS UP GRADIENT. PROPOSED INTERFACE POINTS (CROSSINGS) WITH EXISTING UNDERGROUND INSTALLATIONS SHALL BE FIELD VERIFIED BY TEST PIT PRIOR TO COMMENCEMENT OF CONSTRUCTION.
7) ALL CONSTRUCTION SHALL CONFORM TO MUNICIPAL DPW AND ALL APPLICABLE STATE AND FEDERAL STANDARDS.
8) THE CONTRACTOR SHALL CALL AND COORDINATE WITH DIG–SAFE (DIAL 811) PRIOR TO COMMENCING ANY EXCAVATION.
9) THIS SITE WILL REQUIRE A USEPA NPDES PERMIT FOR STORMWATER DISCHARGE FOR THE SITE CONSTRUCTION SINCE THE DISTURBANCE EXCEEDS ONE ACRE (ACTUAL DISTURBANCE = 122,000 SF±). THE CONSTRUCTION SITE OPERATOR SHALL DEVELOP AND IMPLEMENT A CONSTRUCTION STORM WATER POLLUTION PREVENTION PLAN (SWPPP), WHICH SHALL REMAIN ON SITE AND MADE ACCESSIBLE TO THE PUBLIC. A COMPLETED NOTICE OF TERMINATION (NOT) SHALL BE SUBMITTED TO NPDES PERMITTING AUTHORITY WITHIN 30 DAYS AFTER EITHER OF THE FOLLOWING CONDITIONS HAVE BEEN MET: FINAL STABILIZATION HAS BEEN ACHIEVED ON ALL PORTIONS OF THE SITE FOR WHICH THE PERMITTEE IS RESPONSIBLE; OR ANOTHER OPERATOR/PERMITTEE HAS ASSUMED CONTROL OVER ALL AREAS OF THE SITE THAT HAVE NOT BEEN FINALLY STABILIZED.
10) ANY UTILITIES TO BE TAKEN OUT OF SERVICE SHALL BE DISCONNECTED AS DIRECTED BY UTILITY COMPANY AND LOCAL DPW.
11) ALL TRAFFIC CONTROL AND TEMPORARY CONSTRUCTION SIGNAGE ARRANGEMENTS, ACCEPTABLE TO MASSDOT AND THE TOWN DEPARTMENT OF PUBLIC WORKS, SHALL BE EMPLOYED DURING OPERATIONS WITHIN THE PUBLIC RIGHT–OF–WAY.
12) ALL ADA ACCESSIBLE WALKWAYS CANNOT EXCEED 5% RUNNING SLOPE AND 2% CROSS SLOPE, RAMPS CANNOT EXCEED 8.33% RUNNING SLOPE AND 2% CROSS SLOPE, AND ACCESSIBLE PARKING STALLS AND ACCESS AISLES CANNOT EXCEED 2% SLOPE IN ANY DIRECTION. PRIOR TO CONSTRUCTION, CONTRACTOR SHALL NOTIFY ENGINEER OF ANY DISCREPANCIES.
13) SEE UTILITY PLAN FOR DETAILED UTILITY LAYOUT.
14) CONTRACTOR IS TO FIELD ADJUST GRADES FOR THE TANK PAD TO SHED WATER
15) ALL PROPOSED CATCH BASINS SHALL HAVE 4' SUMPS AND OUTLETS EQUIPPED WITH "ELIMINATOR" OIL HOODS OR APPROVED EQUAL.
16) ALL PIPE DATA IS CALCULATED TO CENTER OF STRUCTURE, TYP.
17) CONTRACTOR TO REFER TO THE OPERATION & MAINTENANCE (O&M) MANUAL FOR STORMWATER MANAGEMENT SYSTEMS & SITE MAINTENANCE DURING AND AFTER CONSTRUCTION.

PLAN REFERENCE:

1) LITTLETON–AYER–INTERSECTION IMPROVEMENTS ON ROUTE 2A AT WILLOW ROAD AND BRUCE STREET (PROJECT #608443); PREPARED FOR MASSDOT; PREPARED BY GREEN INTERNATIONAL AFFILIATES, INC.; DATE: 2/28/22; SHEET 12–13 OF 78.

0 30 60 100
SCALE: 1" = 30'

GPI Engineering Design Planning Construction Management
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Greenman-Pedersen, Inc.
44 Stiles Road, Suite One
Salem, NH 03079

PREPARED FOR
ENERGY NORTH GROUP
2 INTERNATIONAL WAY
LAWRENCE, MA 01843

PROPOSED RETAIL MOTOR FUEL OUTLET
SITE RE-DEVELOPMENT
PARCEL ID: U45-7-0, U45-7-B, U45-8-A, & U45-11-0
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0 LITTLETON ROAD
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COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER M. TYMULA
CIVIL
No. 57140
PROFESSIONAL ENGINEER
4/24/23

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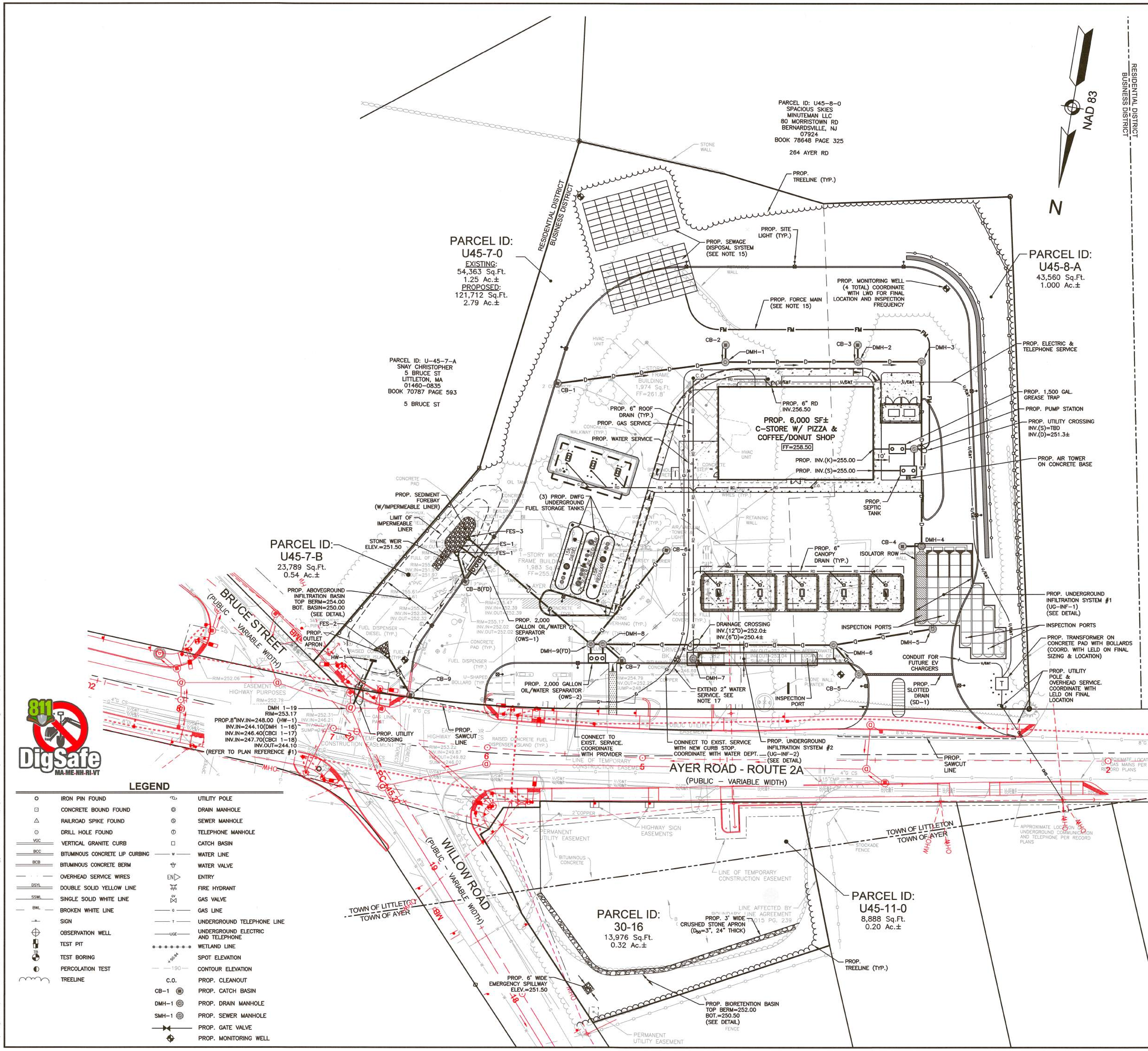
GRADING & DRAINAGE PLAN

SCALE: 1"=30'

PROJECT NO. NEX-2021267



LEGEND

○	IRON PIN FOUND		UTILITY POLE
	CONCRETE BOUND FOUND		DRAIN MANHOLE
△	RAILROAD SPIKE FOUND		SEWER MANHOLE
	DRILL HOLE FOUND		TELEPHONE MANHOLE
VGC	VERTICAL GRANITE CURB	□	CATCH BASIN
BCC	BITUMINOUS CONCRETE LIP CURBING	W	WATER LINE
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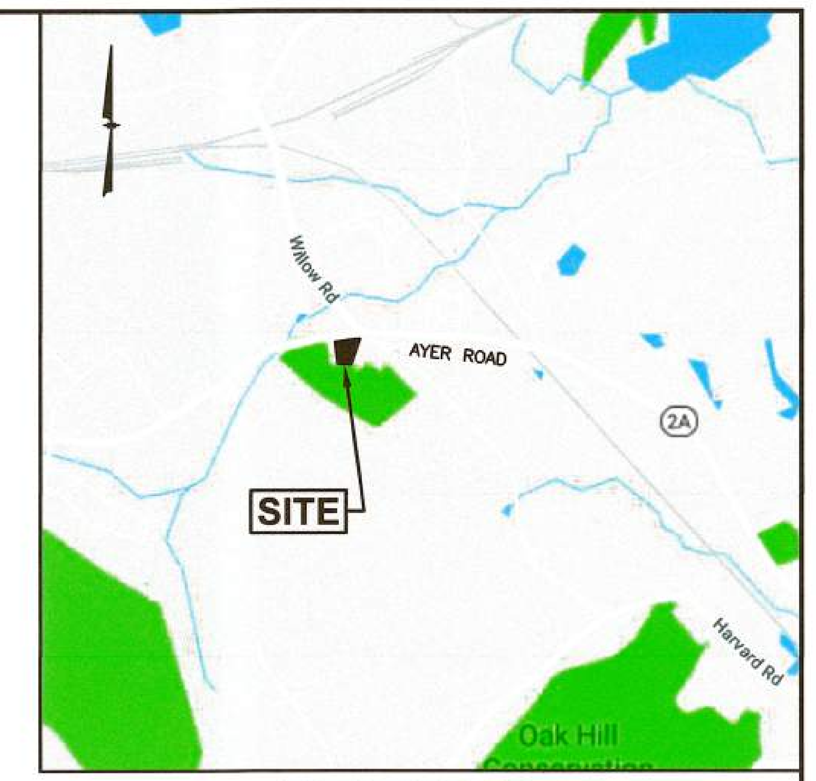
	OVERHEAD SERVICE WIRES	EN	ENTRY
DSYL	DOUBLE SOLID YELLOW LINE		FIRE HYDRANT
SSWL	SINGLE SOLID WHITE LINE	GV	GAS VALVE
BWL	BROKEN WHITE LINE	G	GAS LINE
	SIGN	T	UNDERGROUND TELEPHONE LINE
	OBSERVATION WELL	UGE	UNDERGROUND ELECTRIC AND TELEPHONE
	TEST PIT		WETLAND LINE
TB	TEST BORING	+50.94	SPOT ELEVATION
	PERCOLATION TEST	190	CONTOUR ELEVATION
	TREELINE	C.O.	PROP. CLEANOUT
		CB-1	PROP. CATCH BASIN
		DMH-1	PROP. DRAIN MANHOLE
		SMH-1	PROP. SEWER MANHOLE
			PROP. GATE VALVE
			PROP. MONITORING WELL



LOCATION MAP
(NOT TO SCALE)

NOTES:

1) ALL SANITARY SEWER PIPE SHALL BE PVC (SDR-35), UNLESS OTHERWISE NOTED.
2) ALL WATER PIPE SHALL BE COPPER (TYPE K), UNLESS OTHERWISE NOTED.
3) ANY UTILITY FIELD ADJUSTMENTS SHALL BE APPROVED BY THE ENGINEER OF RECORD AND COORDINATED WITH THE APPROPRIATE LOCAL UTILITY COMPANY.
4) THE LOCATIONS OF UNDERGROUND UTILITIES ARE APPROXIMATE ONLY. THE CONTRACTOR IS TO VERIFY EXACT LOCATION PRIOR TO CONSTRUCTION. THE CONTRACTOR IS TO NOTIFY THE DESIGN ENGINEER OF ANY DISCREPANCIES.
5) ALL CONSTRUCTION SHALL CONFORM TO MUNICIPAL DPW AND ALL APPLICABLE STATE AND FEDERAL STANDARDS.
6) THE CONTRACTOR SHALL CALL AND COORDINATE WITH DIGSAFE 811 PRIOR TO ANY EXCAVATION.
7) ALL WATER AND SEWER CONSTRUCTION SHALL CONFORM TO DEPARTMENT OF PUBLIC WORKS SPECIFICATIONS.
8) THIS SITE IS SERVED BY MUNICIPAL WATER AND ON-SITE SEPTIC SYSTEM..
9) ALL ELECTRIC, TELEPHONE AND CABLE TV LINES ARE TO BE UNDERGROUND UNLESS OTHERWISE NOTED AND INSTALLED IN CONFORMANCE WITH APPLICABLE UTILITY CO. SPECIFICATIONS AND LITTLETON ELECTRIC LIGHT DEPARTMENT (LELD).
10) ANY UTILITIES TO BE TAKEN OUT OF SERVICE SHALL BE DISCONNECTED AS DIRECTED BY UTILITY COMPANY AND LOCAL DPW.
11) ALL TRAFFIC CONTROL AND TEMPORARY CONSTRUCTION SIGNAGE ARRANGEMENTS, ACCEPTABLE TO MASSDOT AND TOWN DEPARTMENT OF PUBLIC WORKS, SHALL BE EMPLOYED DURING OPERATIONS WITHIN THE PUBLIC RIGHT-OF-WAY.
12) SEE GRADING & DRAINAGE PLAN FOR DETAILED DRAINAGE INFORMATION.
13) ELECTRICAL CONDUIT WITHIN 20' OF TANKS OR DISPENSERS MAY NEED TO BE RIGID METAL CONDUIT WITH CONCRETE ENCASEMENT. CONTRACTOR TO COORDINATE WITH UTILITY COMPANY AND/OR TOWN ELECTRICAL INSPECTOR AS REQUIRED.
14) REFER TO DETAIL SHEETS FOR ALL UTILITY AND DRAINAGE STRUCTURE DETAILS AND ADDITIONAL INFORMATION.
15) SEE SEWAGE DISPOSAL PLANS (UNDER SEPARATE COVER) FOR FINAL LOCATION AND INFORMATION ON SEWER COMPONENTS.
16) REFER TO FINAL FUEL STORAGE DESIGN PLANS FOR ALL UTILITY CROSSINGS/ CONFLICT POINTS & NOTIFY DESIGN ENGINEER OF ANY DISCREPANCIES.
17) REFER TO FINAL MEP PLANS FOR SIZING OF ROOF DRAINS, WATER, GAS AND ELECTRIC SERVICES.

PLAN REFERENCE:

1) LITTLETON-AYER-INTERSECTION IMPROVEMENTS ON ROUTE 2A AT WILLOW ROAD AND BRUCE STREET (PROJECT #608443); PREPARED FOR MASSDOT; PREPARED BY GREEN INTERNATIONAL AFFILIATES, INC.; DATE: 2/28/22; SHEET 12-13 OF 78.

0 30 60 100
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UTILITY PLAN

SCALE: 1"=30'

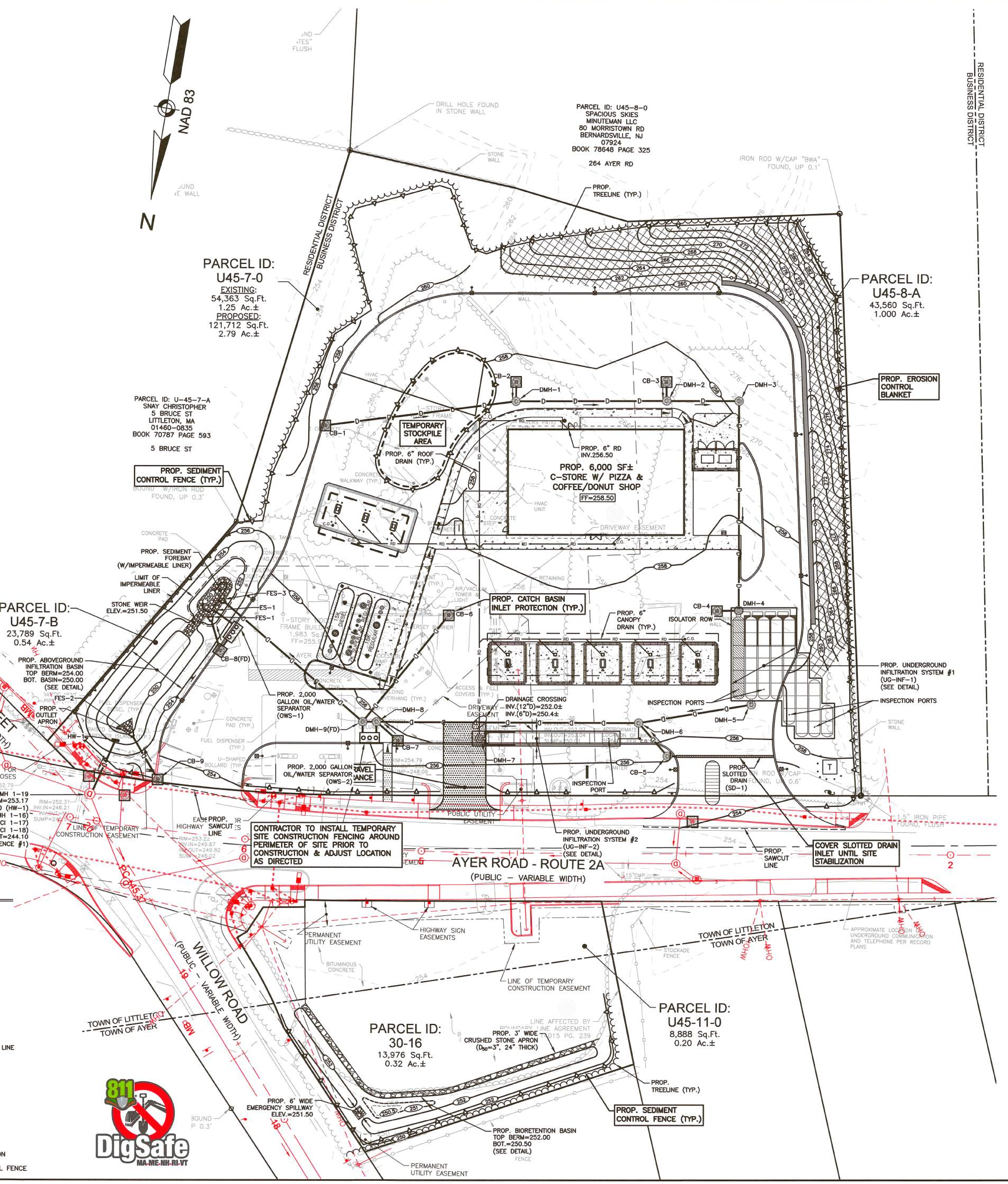
PROJECT NO. NEX-2021267

TEMPORARY EROSION CONTROL MEASURES:

1) SEDIMENT TRAPS SHALL BE INSTALLED AS REQUIRED. BARRIERS AND TRAPS ARE TO BE MAINTAINED AND CLEANED UNTIL ALL SLOPES HAVE A HEALTHY STAND OF GRASS.
2) MULCH SHALL BE MOWINGS OF ACCEPTABLE HERBACEOUS GROWTH, FREE FROM NOXIOUS WEEDS OR WOODY STEMS, AND SHALL BE DRY. NO SALT HAY SHALL BE USED.
3) FILL MATERIAL SHALL BE FREE FROM STUMPS, WOOD, ROOTS, ETC.
4) STOCKPILED MATERIALS SHALL BE PLACED ONLY IN AREAS SHOWN ON THE PLANS. STOCKPILES SHALL BE PROTECTED BY SILTATION FENCE AND SEEDED TO PREVENT EROSION. THESE MEASURES SHALL REMAIN UNTIL ALL MATERIAL HAS BEEN PLACED OR DISPOSED OFF SITE.
5) ALL DISTURBED AREAS SHALL BE LOAMED AND SEEDED. A MINIMUM OF 6 INCHES OF LOAM SHALL BE INSTALLED WITH NOT LESS THAN ONE POUND OF SEED PER 50 SQUARE YARDS OF AREA.
6) SEED MIX SHALL BE EQUAL PARTS OF RED FESCUE (CREEPING), KENTUCKY BLUEGRASS, REDTOP, PERENNIAL RYEGRASS.
7) AFTER ALL DISTURBED AREAS HAVE BEEN STABILIZED THE TEMPORARY EROSION CONTROL MEASURES ARE TO BE REMOVED.
8) PAVED ROADWAYS AND PARKING LOTS MUST BE KEPT CLEAN AT ALL TIMES. PROVIDE SWEEPING ON A DAILY BASIS OR AS DIRECTED BY THE TOWN.
9) ALL CATCH BASIN INLETS WILL BE PROTECTED WITH INLET PROTECTION – SEE DETAIL.
10) ALL DEWATERING OPERATIONS MUST DISCHARGE DIRECTLY INTO A SEDIMENT FILTER AREA.

CONSTRUCTION SEQUENCE:

1) INSTALL TEMPORARY SEDIMENT AND EROSION CONTROL MEASURES AS REQUIRED.
2) CUT AND STUMP AREAS OF PROPOSED CONSTRUCTION.
3) REMOVE AND STOCKPILE TOPSOIL. STOCKPILE SHALL BE SEEDED TO PREVENT EROSION.
4) CONSTRUCT CLOSED DRAINAGE SYSTEM. PROTECT CULVERT INLETS AND CATCH BASINS WITH SEDIMENTATION BARRIERS.
5) PERFORM SITE GRADING, PLACING SILTATION FENCES AS REQUIRED TO CONTROL SOIL EROSION.
6) INSTALL UNDERGROUND UTILITIES.
7) BEGIN TEMPORARY AND PERMANENT SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE SEEDED OR MULCHED IMMEDIATELY AFTER THEIR CONSTRUCTION.
8) DAILY, OR AS REQUIRED, CONSTRUCT, INSPECT, AND IF NECESSARY, RECONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SILT FENCES AND SEDIMENT TRAPS INCLUDING MULCHING AND SEEDING. REFER TO OPERATION AND MAINTENANCE PLAN FOR ADDITIONAL REQUIREMENTS AND INFORMATION. COPIES OF ALL INSPECTION REPORTS ARE TO BE PROVIDED TO THE CONSERVATION COMMISSION DURING CONSTRUCTION AND AVAILABLE UPON REQUEST AFTER CONSTRUCTION IS COMPLETED.
9) BEGIN EXCAVATION FOR AND CONSTRUCTION OF BUILDINGS.
10) FINISH PAVING ALL DRIVES AND PARKING AREAS.
11) COMPLETE PERMANENT SEEDING AND LANDSCAPING.
12) CLEAN OUT DRAINAGE SYSTEM AFTER FINAL PAVING AND SITE STABILIZATION. REFER TO STORMWATER OBM.
13) AFTER GRASS HAS BEEN FULLY GERMINATED IN ALL SEEDED AREAS, REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.



LEGEND

	IRON PIN FOUND		UTILITY POLE
	CONCRETE BOUND FOUND		DRAIN MANHOLE
	RAILROAD SPIKE FOUND		SEWER MANHOLE
	DRILL HOLE FOUND		TELEPHONE MANHOLE
VGC	VERTICAL GRANITE CURB		CATCH BASIN
BCC	BITUMINOUS CONCRETE LIP CURBING		WATER LINE
BCB	BITUMINOUS CONCRETE BERM		WATER VALVE
	OVERHEAD SERVICE WIRES	EN	ENTRY
DSYL	DOUBLE SOLID YELLOW LINE		FIRE HYDRANT
SSWL	SINGLE SOLID WHITE LINE		GAS VALVE
BWL	BROKEN WHITE LINE		GAS LINE
	SIGN		UNDERGROUND TELEPHONE LINE
	OBSERVATION WELL	UGE	UNDERGROUND ELECTRIC AND TELEPHONE
	TEST PIT		WETLAND LINE
	TEST BORING		SPOT ELEVATION
	PERCOLATION TEST	190	CONTOUR ELEVATION
	TREELINE	C.O.	PROP. CLEANOUT
		CB-1	PROP. CATCH BASIN
		DMH-1	PROP. DRAIN MANHOLE
		300	PROP. CONTOUR ELEVATION
			PROP. SEDIMENT CONTROL FENCE

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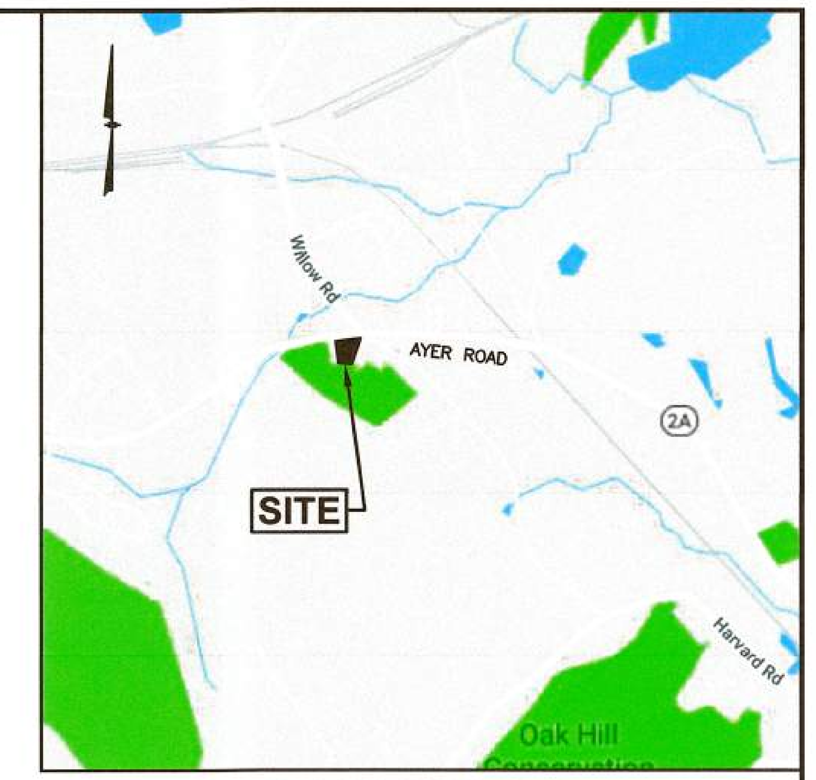

LOCATION MAP
(NOT TO SCALE)

OPERATIONS/MAINTENANCE PLAN FOR STORMWATER SYSTEM:

CONSTRUCTION PHASE:
THE BMP'S ASSOCIATED WITH THIS PROJECT WILL BE OWNED BY ENERGY NORTH GROUP WHO WILL BE RESPONSIBLE FOR INSPECTION, OPERATION AND MAINTENANCE.

1) THIS SITE WILL REQUIRE A USEPA NPDES PERMIT FOR STORMWATER DISCHARGE FOR THE SITE CONSTRUCTION SINCE THE DISTURBANCE EXCEEDS ONE ACRE (ACTUAL DISTURBANCE = 122,000 SF±). THE CONSTRUCTION SITE OPERATOR SHALL DEVELOP AND IMPLEMENT A CONSTRUCTION STORM WATER POLLUTION PREVENTION PLAN (SWPPP), WHICH SHALL REMAIN ON SITE AND MADE ACCESSIBLE TO THE PUBLIC. A COMPLETED NOTICE OF TERMINATION (NOT) SHALL BE SUBMITTED TO NPDES PERMITTING AUTHORITY WITHIN 30 DAYS AFTER EITHER OF THE FOLLOWING CONDITIONS HAVE BEEN MET: FINAL STABILIZATION HAS BEEN ACHIEVED ON ALL PORTIONS OF THE SITE FOR WHICH THE PERMITTEE IS RESPONSIBLE; OR ANOTHER OPERATOR/PERMITTEE HAS ASSUMED CONTROL OVER ALL AREAS OF THE SITE THAT HAVE NOT BEEN FINALLY STABILIZED.
2) THE CONTRACTOR IS TO INSTALL AND MAINTAIN DRAINAGE FACILITIES AS SHOWN ON THE SITE PLANS BY GREENMAN-PEDERSEN, INC.
3) PRIOR TO CONSTRUCTION, ALL EROSION/SILT CONTROL DEVICES SHOWN ON ABOVE PLAN ARE TO BE INSTALLED. TO PREVENT SILT INTRUSION INTO SURROUNDING AREAS DURING CONSTRUCTION, THE CONTRACTOR IS TO SET SILT FENCING AT ALL SLOPES WHICH MAY ERODE IN THE DIRECTION OF ANY OPEN DRAINAGE FACILITIES OR ABUTTING PROPERTY. SUCH PREVENTIVE MEASURES ARE TO BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROCESS.
4) ALL CONSTRUCTION OF DRAINAGE FACILITIES IS TO BE INSPECTED BY INSPECTORS FROM THE CITY OF METHUEN AND BY AN AUTHORIZED AGENT TO VERIFY CONFORMANCE TO THE DESIGN PLAN.
5) THE SEQUENCE OF DRAINAGE CONSTRUCTION SHALL BE AS FOLLOWS:
   A) CLEAR, GRUB, EXCAVATE AREAS FOR DETENTION/INFILTRATION SYSTEMS.
   B) INSTALL CATCH BASINS, PIPES AND MANHOLES.
6) EROSION CONTROLS ARE TO BE INSPECTED AND MAINTAINED ON A DAILY BASIS. UPON DISCOVERY OF SILTATION BUILD-UP IN ANY CATCH BASIN SUMP OR ANY OTHER STRUCTURE, CLEANING SHALL BE PERFORMED WITHIN 24 HOURS.
7) ALL EXPOSED SOILS SHALL BE IMMEDIATELY STABILIZED WITH A LAYER OF MULCH HAY.
8) UPON INSTALLATION OF CATCH BASINS, INLET PROTECTION – AS DESCRIBED ON AFOREMENTIONED PLAN – SHALL BE INSTALLED AND MAINTAINED UNTIL READY FOR PAVING.
9) PRIOR TO CONSTRUCTION OF IMPERVIOUS AREAS, ALL DRAINAGE STRUCTURES AND PIPES SHALL BE INSTALLED AND INSPECTED FOR PROPER FUNCTION. DURING CONSTRUCTION OF OTHER SITE FEATURES, ALL DRAINAGE FACILITIES SHALL BE INSPECTED ON A DAILY BASIS AND CLEANED/REPAIRED IMMEDIATELY UPON DISCOVERY OF SEDIMENT BUILD-UP OR DAMAGE.
10) AFTER PAVING IS INSTALLED, THE SITE SHALL BE SWEPT CLEAN ON A MONTHLY BASIS.
11) INSPECTIONS ARE TO BE PERFORMED AND INSPECTION LOGS FILLED OUT ON A WEEKLY BASIS FROM THE START OF CONSTRUCTION THROUGH FINAL STABILIZATION. THE START OF CONSTRUCTION MEANS THE INITIAL DISTURBANCE OF SOILS ASSOCIATED WITH CONSTRUCTION. FINAL STABILIZATION MEANS 70% VEGETATIVE GROWTH FOR UNPAVED AREAS.

POST CONSTRUCTION PHASE:
THE OWNER SHALL BE RESPONSIBLE FOR CONTINUED MAINTENANCE OF ALL ON-SITE DRAINAGE STRUCTURES & SYSTEMS AND SHOULD FOLLOW PROCEDURES CONTAINED IN THE OPERATION AND MAINTENANCE PLAN (OBM).

REGULAR MAINTENANCE IS TO INCLUDE THE FOLLOWING:
1) INSPECTION OF ALL DRAINAGE FACILITIES (CATCH BASINS, MANHOLES & DETENTION SYSTEMS) EVERY THREE MONTHS. DURING THE FIRST YEAR OF OPERATION, ALL DRAINAGE FACILITIES SHOULD BE INSPECTED AFTER EVERY STORM, AND 2-3 DAYS AFTERWARD. DURING THESE INSPECTIONS, THE INSPECTOR AS DESIGNATED BY ENERGY NORTH GROUP, SHALL LOOK FOR EVIDENCE OF THE FOLLOWING: STRUCTURAL DAMAGE, SILT ACCUMULATION (NEAR INLET INVERTS ON CATCH BASINS), AND IMPROPER FUNCTION. REPORTS SHALL BE FILED FOR EVERY INSPECTION AND SUBMITTED TO THE TOWN ENGINEER FOR COMPLIANCE FOR ONE (1) YEAR AFTER THE ISSUANCE OF THE OCCUPANCY PERMIT OR UNTIL DEEMED NECESSARY BY THE TOWN ENGINEER.
2) AFTER INSPECTION, IF ANY OF THE ABOVE CONDITIONS EXIST, THE INSPECTOR SHALL NOTIFY THE DEVELOPER, WHO SHALL IMMEDIATELY ARRANGE FOR ALL NECESSARY REPAIRS AND SEDIMENT REMOVAL.
3) PARKING AREAS ARE TO BE SWEPT CLEAN EVERY MONTH SPRING THROUGH FALL AND OTHERWISE AS NEEDED (I.E. VISUALLY NOTICEABLE DEBRIS BUILD-UP).
4) THE CATCH BASINS AND DRAINAGE SYSTEM ARE TO BE INSPECTED EVERY THREE MONTHS. REMOVE OIL, DEBRIS AND SEDIMENT AFTER INSPECTIONS.
5) ALL GRADED SLOPES SHALL BE INSPECTED EVERY SPRING FOR EROSION. UPON DISCOVERY OF ANY FAILURE (I.E. EROSION) LOAM AND SEED SHALL BE PUT IN PLACE AND NURTURED.
6) DURING THE WINTER MONTHS, ALL SNOW IS TO BE STORED SUCH THAT SNOWMELT IS CONTROLLED. IN THE EVENT THE AMOUNT OF SNOW EXCEEDS SUCH CAPACITY, IT IS TO BE REMOVED OFF-SITE. THE MINIMUM AMOUNT OF DEICING CHEMICALS NEEDED IS TO BE USED.
7) DURING THE SUMMER MONTHS, ALL LANDSCAPE FEATURES ARE TO BE MAINTAINED WITH THE MINIMUM POSSIBLE AMOUNT OF FERTILIZERS, PESTICIDES OR HERBICIDES. IF IN QUESTION, MAINTENANCE PERSONNEL SHOULD CHECK WITH THE CONSERVATION COMMISSION. ALL PERSONNEL INVOLVED WITH THE MAINTENANCE OF LANDSCAPING WILL BE INFORMED OF THIS CONDITION.

PLAN REFERENCE:
1) LITTLETON-AYER-INTERSECTION IMPROVEMENTS ON ROUTE 2A AT WILLOW ROAD AND BRUCE STREET (PROJECT #608443); PREPARED FOR MASSDOT; PREPARED BY GREEN INTERNATIONAL AFFILIATES, INC.; DATE: 2/28/22; SHEET 12-13 OF 78.

0 30 60 100
SCALE: 1" = 30'

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2 INTERNATIONAL WAY
LAWRENCE, MA 01843

PROPOSED RETAIL MOTOR FUEL OUTLET SITE RE-DEVELOPMENT
PARCEL ID: U45-7-0, U45-7-B, U45-8-A, & U45-11-0
254, 256 & 260 AYER ROAD
LITTLETON, MASSACHUSETTS
PARCEL ID: 30-16
0 LITTLETON ROAD
AYER, MASSACHUSETTS

COMMONWEALTH OF MASSACHUSETTS CHRISTOPHER M. TYMULA CIVIL No. 57140 PROFESSIONAL ENGINEER
4/24/23

REVISIONS		
NO.	REVISION	DATE
2	MISC. REV'S PER TOWN/PEER REVIEW COMMENTS	4/20/23
1	ADD EROSION CONTROL	3/17/23

FEBRUARY 8, 2023

DRAWN/DESIGN BY	CHECKED BY
SJB/CNM	CMT

EROSION & SEDIMENT CONTROL PLAN

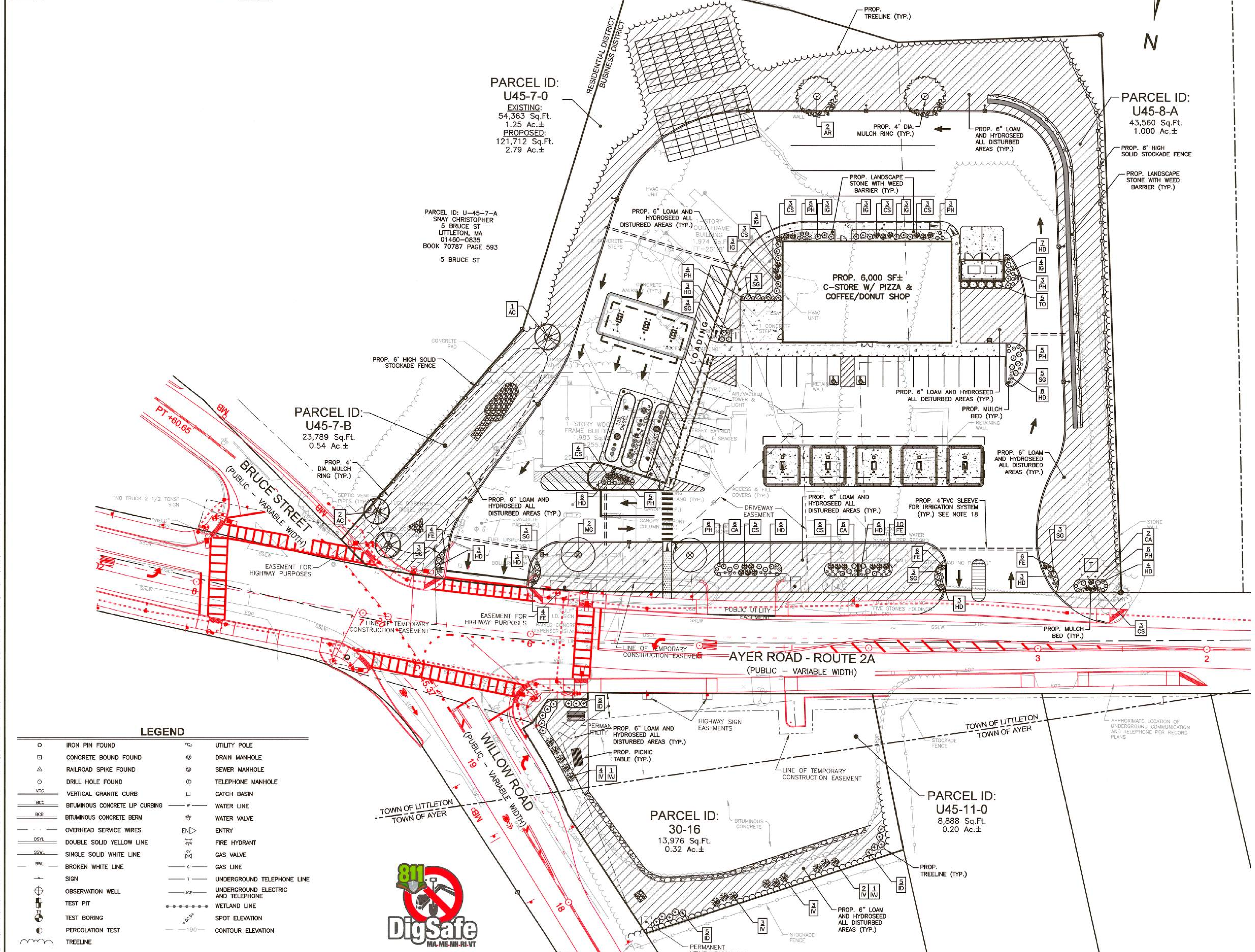
SCALE: 1"=30'
PROJECT NO. NEX-2021267

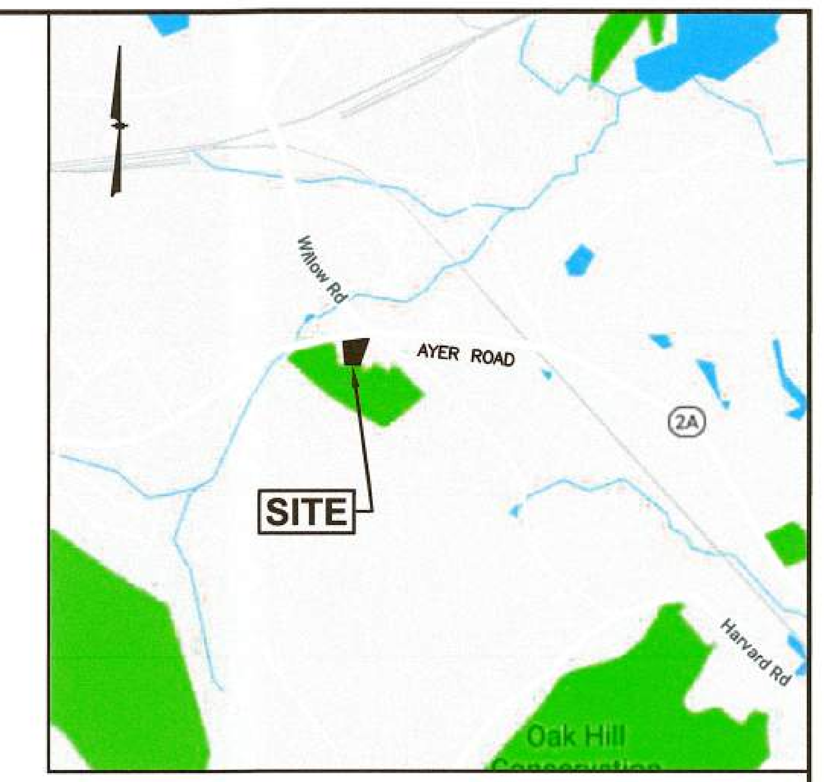
PLANTING SCHEDULE

PLANT	QNTY	BOTANICAL NAME	COMMON NAME	MIN. INSTALL SIZE	REMARKS
TREES					
AR	2	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	2 1/2"–3" CAL., B&B	
AC	3	AMELANCHIER CANADENSIS	SHADBLOW SERVICEBERRY	6'–7' HT., B&B	
MG	2	MALUS 'SPRING SNOW'	SPRING SNOW CRABAPPLE	2"–2 1/2" CAL., B&B	
SHRUBS					
CA	14	CLETHRA ALNIFOLIA 'HUMMINGBIRD'	HUMMINGBIRD SUMMERSWEET	2'–3' HT., 3 GAL.	
CS	30	CORNUS SERICEA 'ALLEMAN'S COMPACTA'	COMPACT REDTWIG DOGWOOD	2'–3' HT., 3 GAL.	
ID	18	ILEX GLABRA 'DENSA'	DENSA INKBERRY	3'–4' HT., 10 GAL.	
IG	19	ILEX GLABRA 'SHAMROCK'	SHAMROCK INKBERRY	2'–3' HT., 3 GAL.	
IVJ	2	ILEX VERTICILLATA 'JIM DANDY'	JIM DANDY WINTERBERRY	2'–3' HT., 3 GAL.	
IV	12	ILEX VERTICILLATA 'MARYLAND BEAUTY'	MARYLAND BEAUTY WINTERBERRY	2'–3' HT., 3 GAL.	
SG	23	SPIREA JAPONICA 'GOLDMOUND'	GOLDMOUND SPIREA	18"–24" HT. 3 GAL.	
TO	5	THUJA OCCIDENTALIS 'SMARAGD'	EMERALD GREEN ARBORVITAE	6'–7' HT., B&B	
PERENNIALS & GRASSES					
HD	52	HEMEROCALLIS 'STELLA DE ORO'	DWARF YELLOW DAYLILY	1 GAL.	
FE	30	FESTUCA GLAUCA 'ELIJAH BLUE'	ELIJAH BLUE FESCUE GRASS	1 GAL.	
PH	37	PENNISETUM ALOPECUROIDES 'HAMELN'	DWARF FOUNTAIN GRASS	1 GAL.	

PROP. LANDSCAPE STONE WITH WEED BARRIER (SEE NOTES)

PROP. LOAM AND HYDROSEED (SEE NOTES)





LOCATION MAP

(NOT TO SCALE)

NOTES:

1) ALL PLANT STOCK SHALL CONFORM TO ANSI Z260.1 – NURSERY STOCK, LATEST EDITION (AMERICAN ASSOCIATION OF NURSERYMEN, INC.).

2) A 4' DIA. TREE RING WITH 3" AGED PINE BARK MULCH TO BE INSTALLED AT BASE OF ALL TREES IN LAWN AREAS.

3) 3" AGED PINE BARK MULCH SHALL BE APPLIED TO ALL SHRUB AND GROUNDCOVER BEDS.

4) LANDSCAPE STONE SHALL BE TAN RIVERBED STONE. STONE SHALL BE (1½) INCHES IN DIAMETER AND APPLIED AT A THICKNESS OF (4) INCHES DEEP. ALL FINES SHALL BE SCREENED FROM THE AGGREGATE. THE MATERIAL SHALL BE FREE OF ORGANIC AND INORGANIC DEBRIS AND TRASH. SUBMIT SAMPLE IN A 5–GALLON BUCKET TO THE DEVELOPER FOR APPROVAL.

5) A WEED BARRIER (TY–PAR FABRIC OR APPROVED EQUAL) SHALL BE APPLIED TO ALL SHRUB AND GROUNDCOVER BEDS. INSTALL WEED BARRIER AS PER MANUFACTURERS RECOMMENDATIONS.

6) THE CONTRACTOR SHALL PROVIDE TESTING OF SOILS IN PLANTING LOCATIONS. THE CONTRACTOR SHALL PROVIDE TEST RESULTS AND RECOMMENDATIONS AS NECESSARY FOR SOIL AMENDMENT TO THE ENGINEER FOR THEIR APPROVAL. BACKFILL SHALL BE A BLEND OF ONE–PART LOAM BORROW, ONE PART ORGANIC MATERIAL AND TWO–PARTS EXISTING SUBSOIL.

7) ALL LANDSCAPED AREAS NOT PLANTED WITH TREES, SHRUBS OR GROUNDCOVER SHALL BE RESTORED WITH SEED AS INDICATED ON PLANS.

8) ALL SHRUB AND TREE AREAS SHALL RECEIVE 6" PH CORRECTED TOPSOIL. AFTER TOPSOIL IS SPREAD EVENLY OVER ENTIRE AREA, ALL CLODS, LUMPS, STONES AND OTHER DELETERIOUS MATERIAL SHALL BE RAKED UP AND REMOVED.

9) APPLICATION OF GRASS SEED, FERTILIZERS AND STRAW MULCH SHALL BE ACCOMPLISHED BY BROADCAST SEEDING OR HYDROSEEDING AT THE RATES OUTLINED BELOW:

<u>LIMESTONE:</u> 100 LBS./1,000 SQUARE FEET.
<u>FERTILIZER:</u> 500 LBS/ACRE OF 10–20–20 OR 1000 LBS/ACRE OF 5–10–10.
<u>STRAW MULCH:</u> APPROXIMATELY 3 TONS/ACRE

SEED MIX (SLOPES LESS THAN 4:1)	LBS/ACRE
CREEPING RED FESCUE	20
TALL FESCUE	15
PERENNIAL RYEGRASS	5
REDTOP	2
	42

SLOPE MIX (SLOPES GREATER THAN 4:1)	LBS/ACRE
CREEPING RED FESCUE	20
TALL FESCUE	20
BIRDSFOOT TREEFOIL	8
	48

10) FOR TEMPORARY EROSION CONTROL NOTES, SEE EROSION & SEDIMENT CONTROL PLAN.

11) NEWLY GRADED AREAS REQUIRING SLOPE PROTECTION OUTSIDE OF NORMAL SEEDING SEASON SHALL RECEIVE STRAW MULCH AT THE APPROXIMATE RATE OF NO MORE THAN 3 TONS PER ACRE.

12) ANY CHANGES IN PLANT LOCATIONS OR TYPES SHALL BE APPROVED BY THE DEVELOPER, LANDOWNER AND TOWN PRIOR TO INSTALLATION.

13) CLEAR AND GRUB (TO LIMITS REQUIRED ON GRADING PLAN) TO REMOVE VEGETATION, TREES, ROCKS, DEBRIS, ROOTS, ETC. STUMPS SHALL BE REMOVED AND DISPOSED OF OFF SITE IN ACCORDANCE WITH STATE REGULATIONS. AFTER CLEARING, STRIP AND STOCKPILE ALL ON–SITE TOPSOIL FOR REUSE TO THE MAXIMUM EXTENT POSSIBLE.

14) FOR SEED AREAS USE EXISTING TOPSOIL, IF AVAILABLE, FOR A 4" DEPTH AND TOP DRESS WITH 2" OF SCREENED TOPSOIL, UNLESS OTHERWISE NOTED ON PLAN. ALL LOAM OR TOPSOIL IMPORTED OR RE–UTILIZED FROM ON SITE SHALL BE TESTED AND AMENDED AS DIRECTED BY DEVELOPER TO MEET MINIMUM REQUIREMENTS.

15) PLANTINGS SHALL BE GUARANTEED BY THE CONTRACTOR FOR ONE YEAR AFTER WRITTEN ACCEPTANCE BY THE DEVELOPER.

16) EXPOSED SOILS SHALL BE SEEDED OR STRAW MULCHED WITHIN 72 HOURS OF FINAL GRADING.

17) ALL WORK SHALL BE COORDINATED WITH APPLICABLE EPA NPDES/SWPPP PERMIT WORK AS REQUIRED.

18) THE CONTRACTOR SHALL INSTALL AN IRRIGATION SYSTEM TO PROVIDE COMPLETE COVERAGE OF ALL SEED AREAS AND SHRUB BEDS WITHIN THE LEASE AREA. THE SYSTEM SHALL INCLUDE A TIMER AND SHALL BE INSTALLED IN ACCORDANCE WITH LOCAL CODES.

PLAN REFERENCE:

1) LITTLETON–AYER–INTERSECTION IMPROVEMENTS ON ROUTE 2A AT WILLOW ROAD AND BRUCE STREET (PROJECT #608443); PREPARED FOR MASSDOT; PREPARED BY GREEN INTERNATIONAL AFFILIATES, INC.; DATE: 2/28/22; SHEET 12–13 OF 78.

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SCALE: 1" = 30'

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254, 256 & 260 AYER ROAD
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AYER, MASSACHUSETTS

COMMONWEALTH OF MASSACHUSETTS CHRISTOPHER M. TYMULA CIVIL No. 57140 PROFESSIONAL ENGINEER

4/24/23

REVISIONS		
2	MISC. REV'S PER TOWN/PEER REVIEW COMMENTS	4/20/23
1	ADD BUFFER PLANTINGS	3/17/23
NO.	REVISION	DATE

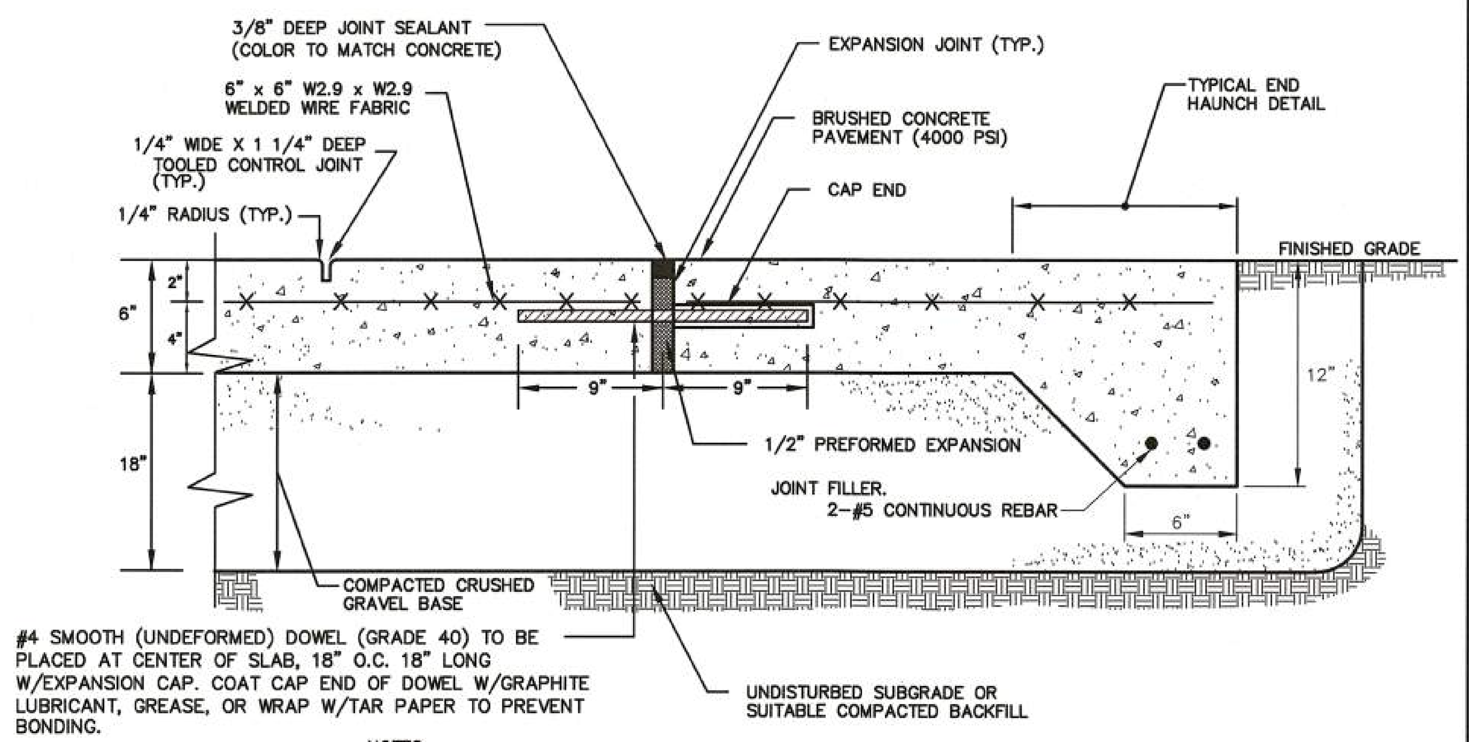
FEBRUARY 8, 2023

DRAWN/DESIGN BY	CHECKED BY
SJB/CNM	CMT

LANDSCAPE PLAN

SCALE: 1"=30'

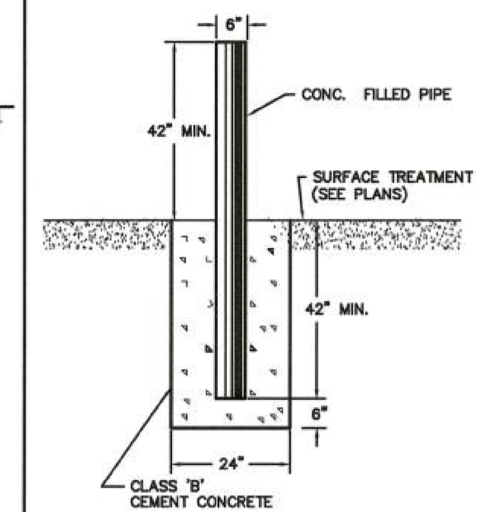
PROJECT NO. NEX-2021267



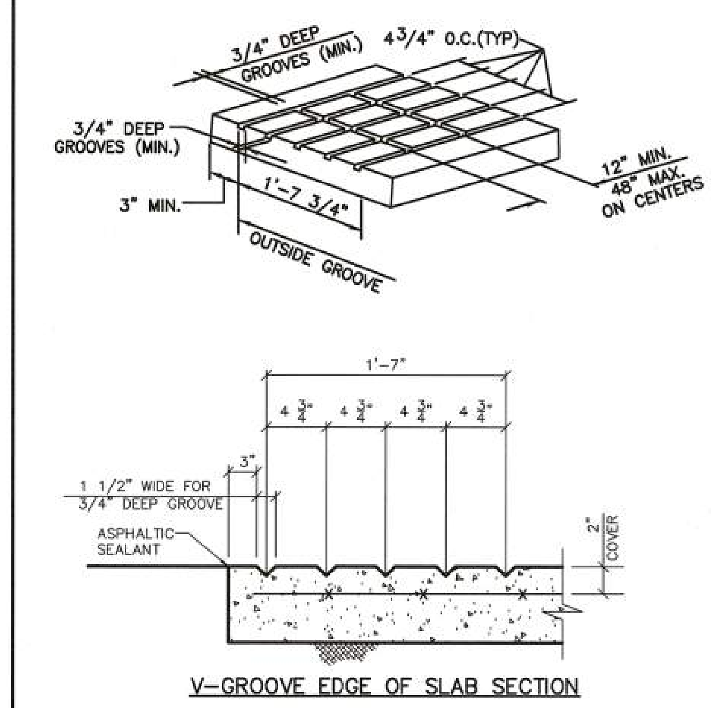
NOTES:

1. MAINTAIN 2" CLEARANCE (TYP) BETWEEN ALL CONCRETE EDGES AND WIRE FABRIC, DOWEL, OR REBAR.
2. CONTROL JOINTS TO BE LOCATED 5 FT. ON CENTER OR AS SHOWN ON ARCHITECTURAL PLANS.
3. EXPANSION JOINTS TO BE LOCATED 25 FT. ON CENTER.
4. WELDED WIRE FABRIC SHALL BE LAPSED A MINIMUM OF 2 WIRE SPACES.

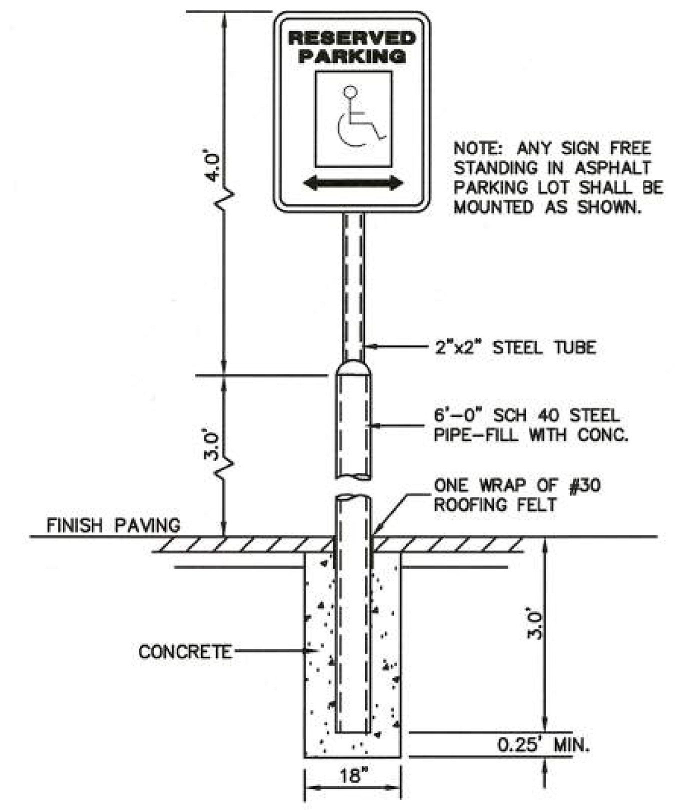
6" HEAVY DUTY CONCRETE PAD
NOT TO SCALE



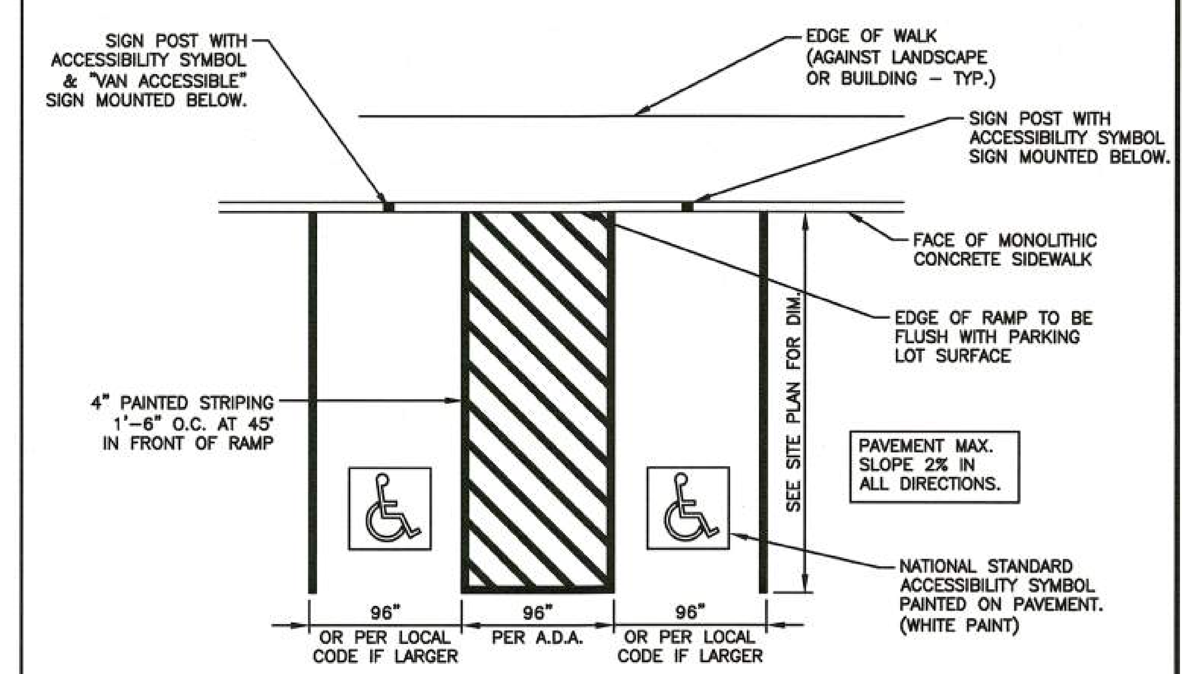
PIPE BOLLARD
NOT TO SCALE



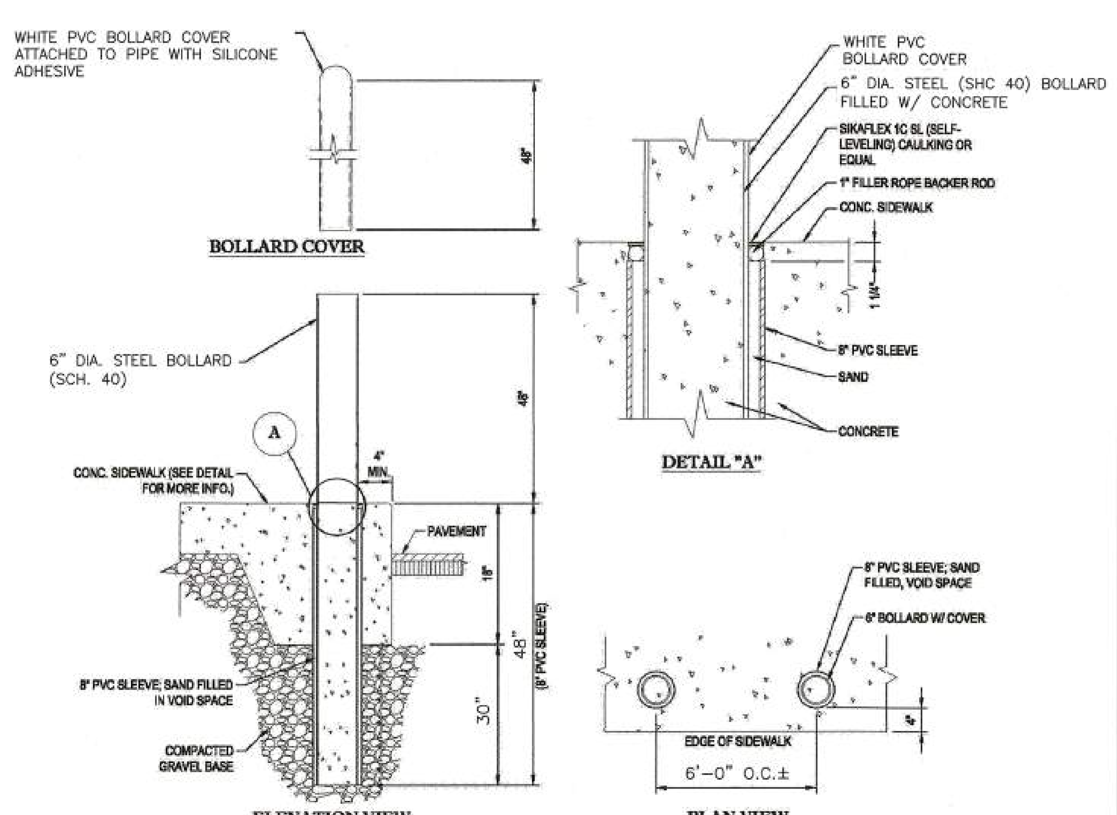
SPILL CONTAINMENT GROOVES
NOT TO SCALE



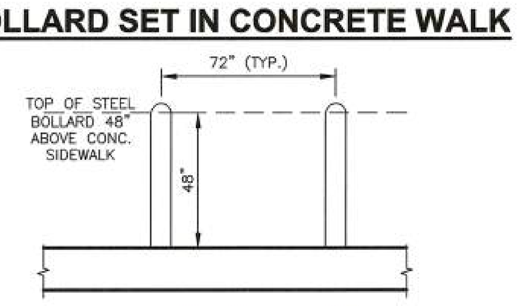
ACCESSIBLE SIGN ON BOLLARD
NOT TO SCALE



ACCESSIBLE PARKING STALLS
NOT TO SCALE

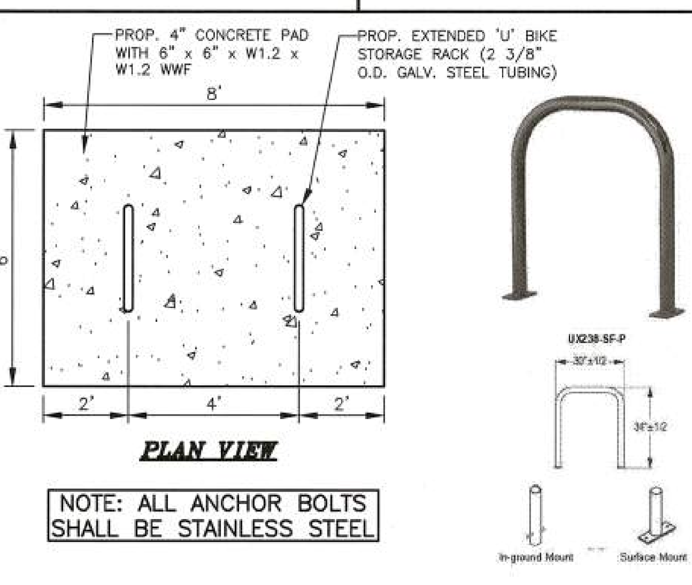


BOLLARD SET IN CONCRETE WALK

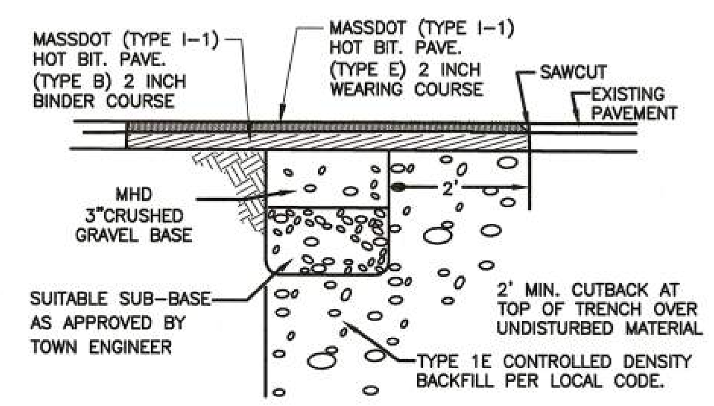


BOLLARD ELEVATION

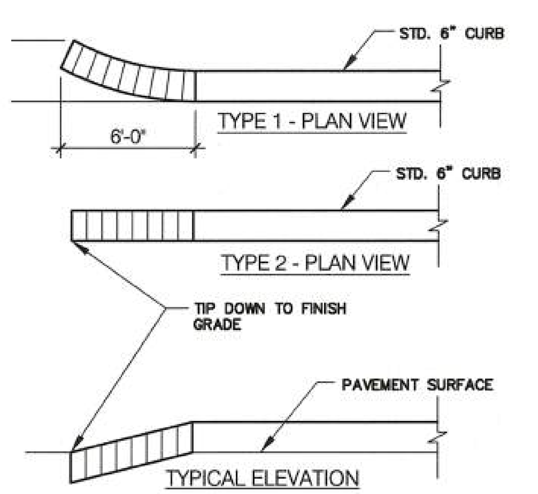
BOLLARD AT STOREFRONT
NOT TO SCALE



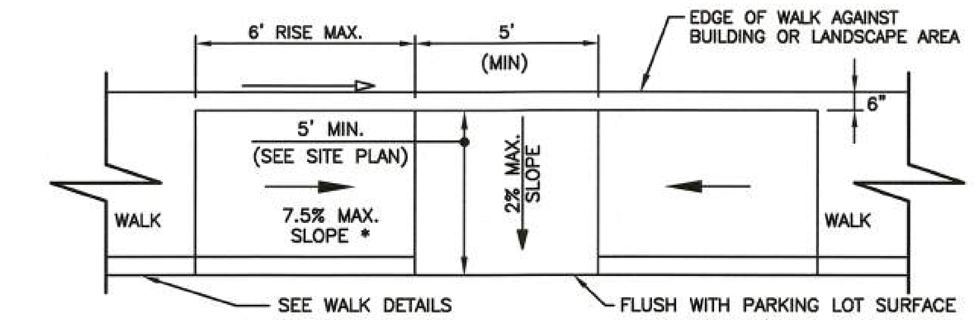
BIKE RACK
NOT TO SCALE



PAVEMENT REPAIR IN STREET R.O.W.
NOT TO SCALE

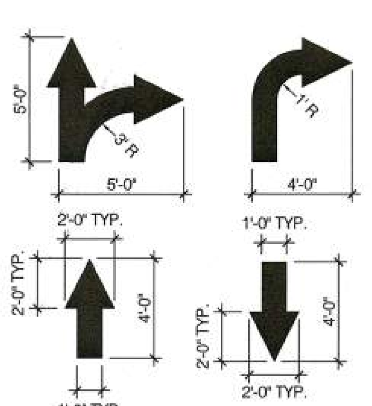


TYPICAL TIP DOWN CURB
NOT TO SCALE



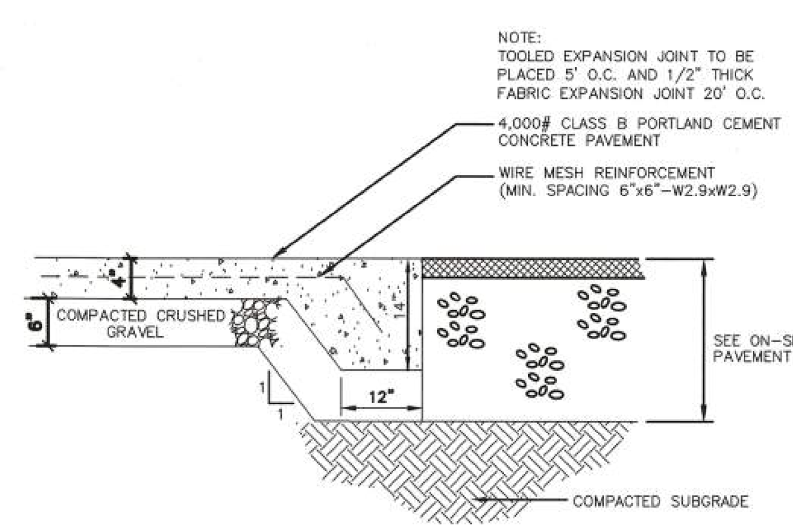
ACCESSIBLE RAMP ON-SITE
NOT TO SCALE

* TOLERANCE FOR CONSTRUCTION ±0.5%

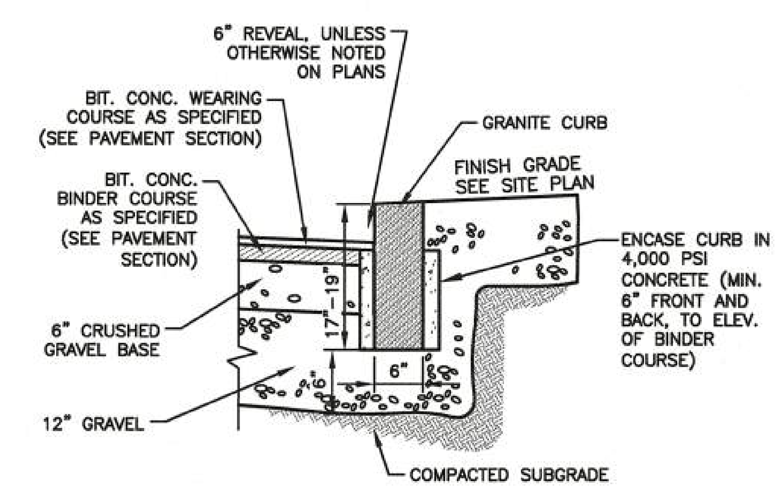


ALL PAVEMENT MARKINGS TO BE WHITE PAVEMENT PAINT, UNLESS STATED OTHERWISE.

ON-SITE PAVEMENT MARKING
NOT TO SCALE

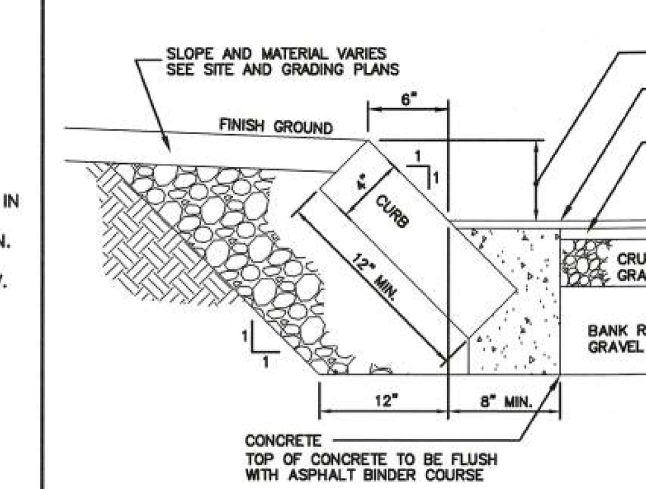


MONOLITHIC CURB/SIDEWALK
NOT TO SCALE



VERTICAL GRANITE CURB
NOT TO SCALE

NOTE: SAWCUT 1' OFF FACE OF CURB WHERE INSTALLED IN EXISTING PAVEMENT. PATCH PAVEMENT TO MATCH EXISTING THICKNESS.



RADIUS FOR STONES WITH SQUARE JOINTS	RADIUS FOR STONES WITH RADIAL JOINTS	MAXIMUM LENGTH
16'-28' 29'-41' 42'-55' 56'-68' 69'-82' 83'-96' 97'-110' OVER 110'	SEE CURB SECTIONS ON RADI DETAIL	1'-6" 2' 3' 4' 5' 6' 7' 8'

MAXIMUM LENGTH OF STRAIGHT CURB STONES - 18"

MINIMUM LENGTH OF STRAIGHT CURB STONES - 8"

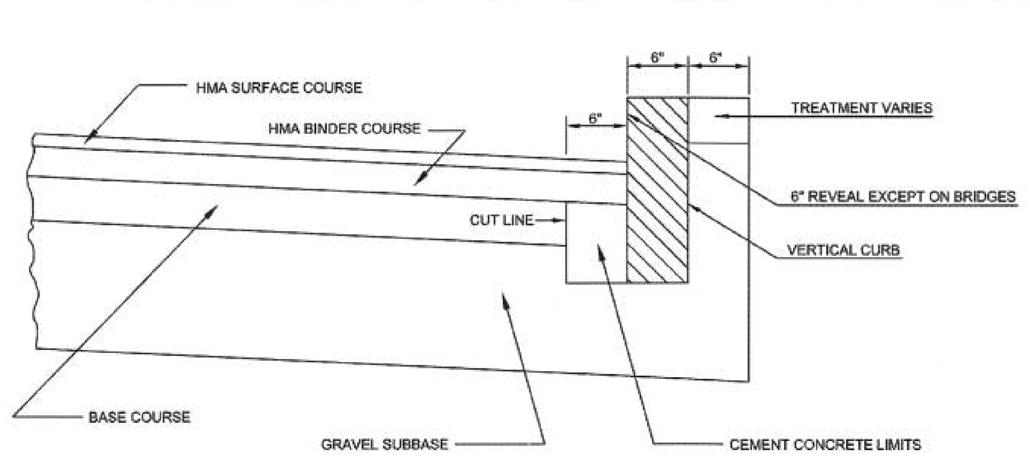
MAXIMUM LENGTH OF STRAIGHT CURB STONES LAID ON CURVES SEE CHART

ADJOINING STONES OF STRAIGHT CURB LAID ON CURVES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.

ALL JOINTS ARE TO BE GROUTED.

SLOPED GRANITE CURB
NOT TO SCALE

massDOT
CONSTRUCTION STANDARDS



NOTES:

1. THIS PROCEDURE IS APPLICABLE ONLY IF CURB IS TO BE SET AFTER BASE COURSE IS IN PLACE PRIOR TO BINDER AND TOP PLACEMENT.
2. CUT NEAT LINE 6" FROM CURB LINE AND REMOVE BASE AND GRAVEL. REPLACE WITH CEMENT CONCRETE.
3. ANY DESIGNATED CEMENT CONCRETE THAT IS ACCEPTABLE UNDER SECTION M4 OF THE STANDARD SPECIFICATIONS MAY BE USED; ALL TEST REQUIREMENTS ARE WAIVED. HOT MIX ASPHALT SHALL NOT TO BE USED AS A SUBSTITUTE.

METHOD OF SETTING VERTICAL CURB

DATE OF ISSUE: OCTOBER 2017

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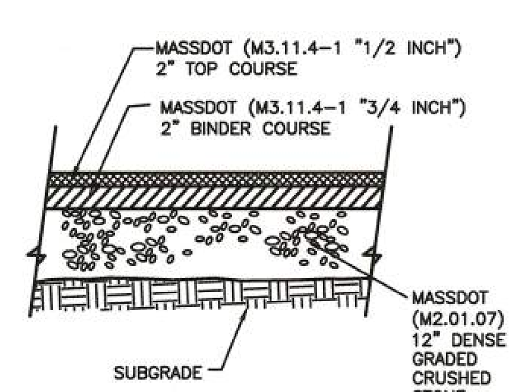
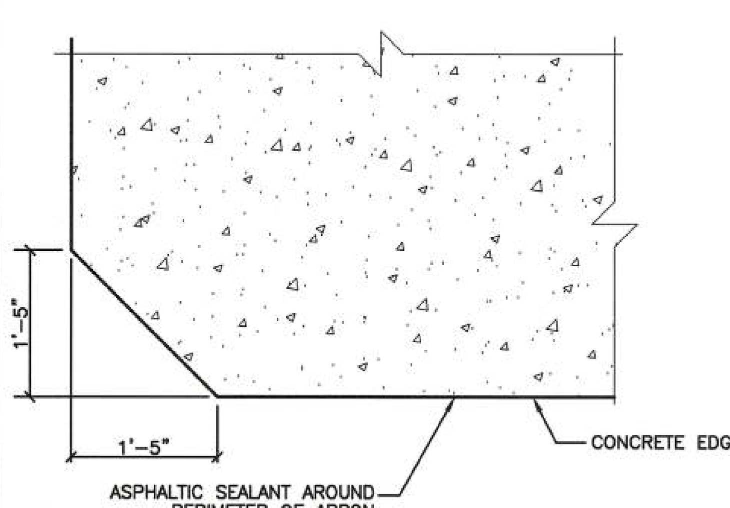
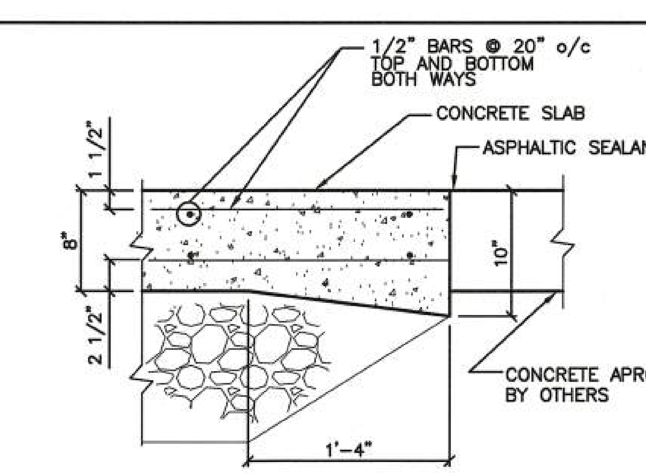


ON-SITE PAVEMENT
NOT TO SCALE

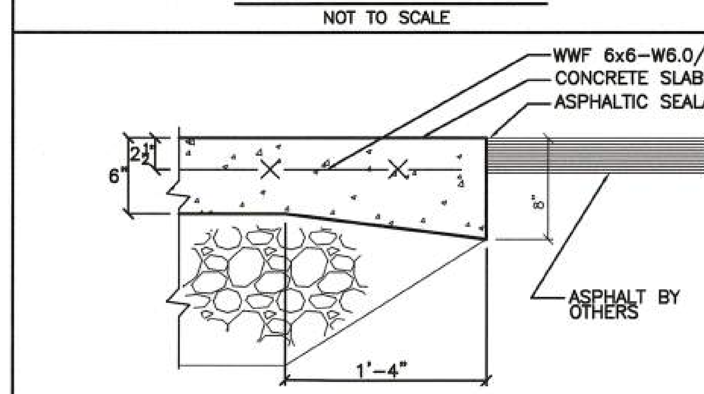
NOTE: WHERE BITUMINOUS PAVEMENT SECTIONS ARE TRANSITIONED TO CONCRETE SECTIONS, THE BITUMINOUS PAVEMENT SHOULD BE THICKENED BY 2 IN. (BINDER COURSE) TO MITIGATE THE CHANCES OF DIFFERENTIAL SETTLEMENT AND CRACKING BETWEEN THE TWO SECTIONS. THE LATERAL EXTENT OF THE THICKENED SECTION SHOULD BE 6 IN. AND SHOULD TRANSITION BACK TO THE RECOMMENDED FLEXIBLE PAVEMENT SECTION ON A 2H:1V SLOPE.



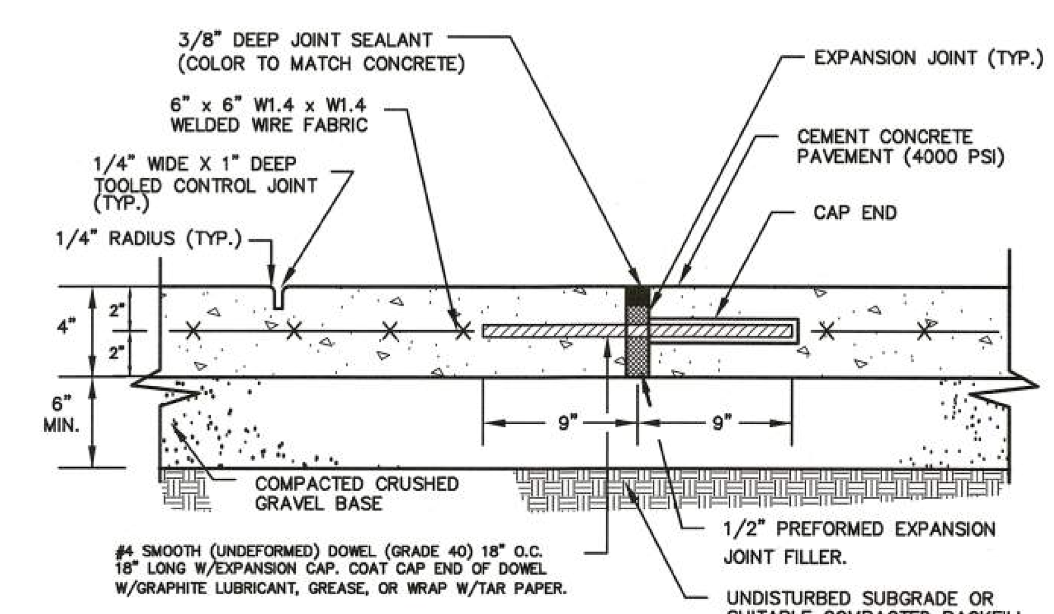
DISPENSER APRON CHAMFER
NOT TO SCALE



TANK APRON EDGE
NOT TO SCALE



DISPENSER APRON EDGE
NOT TO SCALE



NOTES:

1. MAINTAIN 2" CLEARANCE (TYP) BETWEEN ALL CONCRETE EDGES AND WIRE FABRIC OR DOWEL.
2. CONTROL JOINTS TO BE LOCATED 5 FT. ON CENTER.
3. EXPANSION JOINTS TO BE LOCATED 25 FT. ON CENTER.

CEMENT CONCRETE SIDEWALK SECTION AND JOINT
NOT TO SCALE

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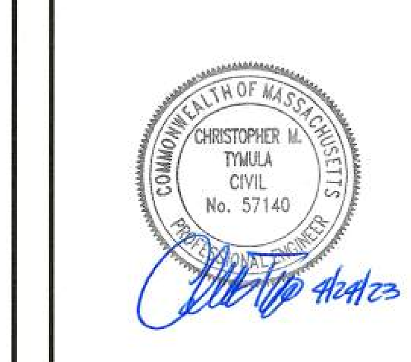
0 LITTLETON ROAD
AYER, MASSACHUSETTS



REVISIONS

NO.	REVISION	DATE
1	MISC. REV'S PER TOWN/PEER REVIEW COMMENTS	4/20/23

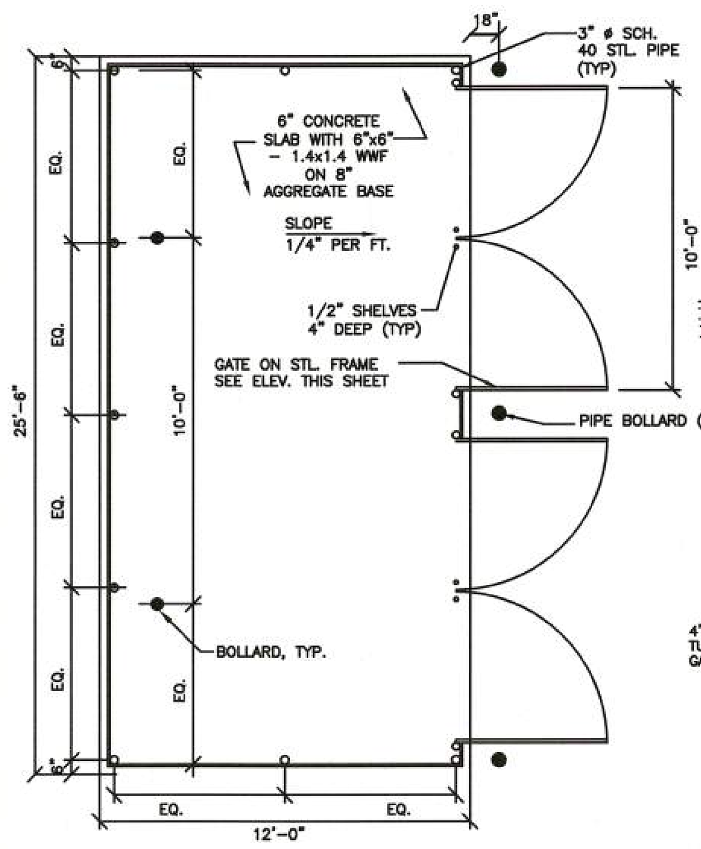
FEBRUARY 8, 2023

DRAWN/DESIGN BY	CHECKED BY
SJB/CNM	CMT

DETAIL SHEET

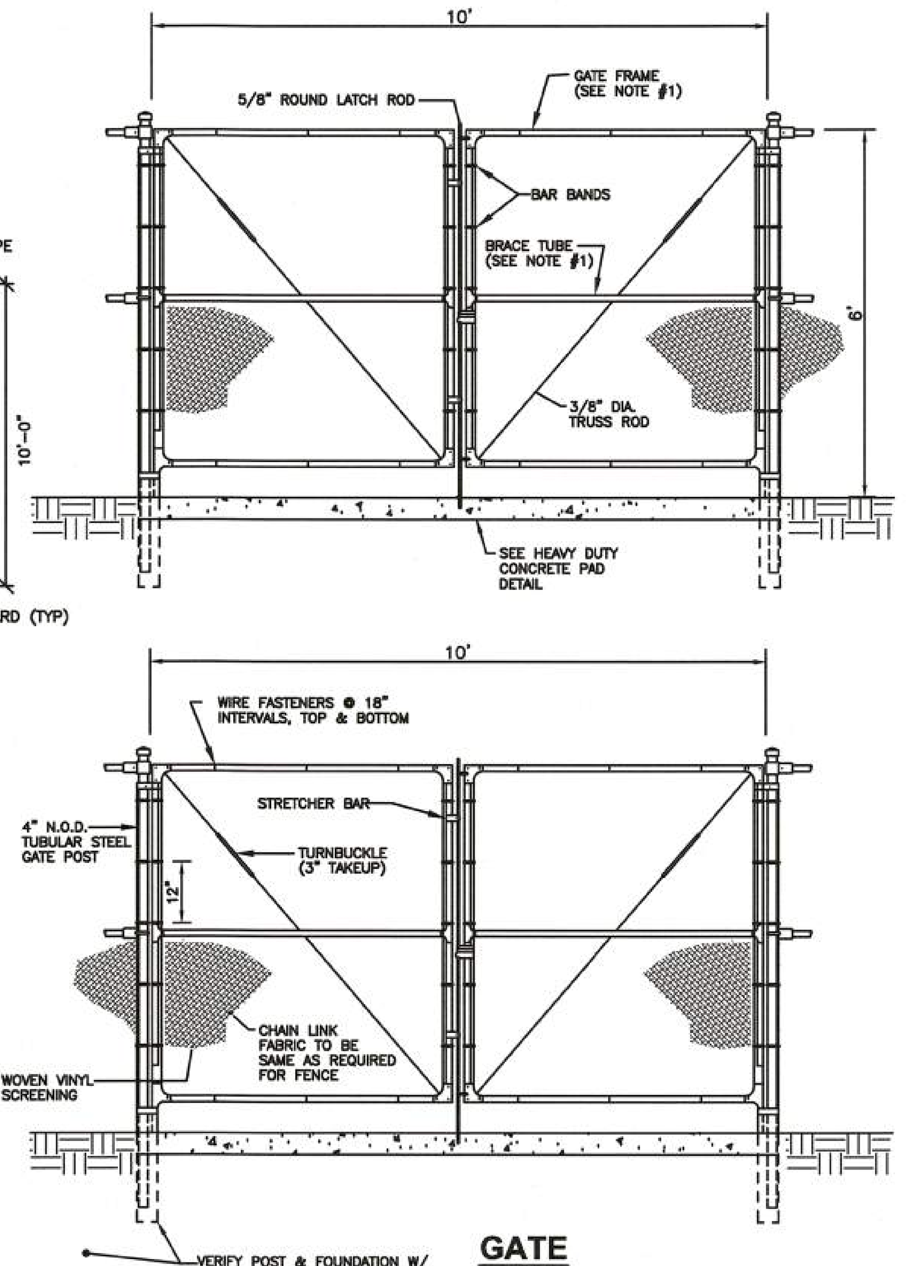
SCALE: AS SHOWN

PROJECT NO. NEX-2021267



PLAN VIEW

NOTE: SEE SITE PLAN FOR ACTUAL TRASH ENCLOSURE CONFIGURATION.



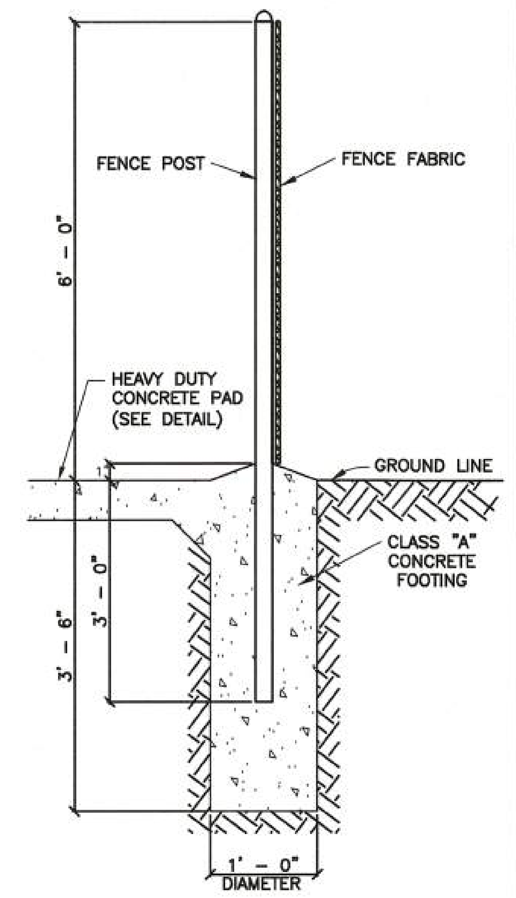
GATE

NOT TO SCALE

NOTE:
1) NOMINAL OUTSIDE DIAMETER (N.O.D.) OF GATE FRAME AND BRACE TUBE TO BE 1.66" UP TO 6" IN WIDTH, AND 1.90" IF OVER 6" IN WIDTH.

CHAIN LINK TRASH ENCLOSURE

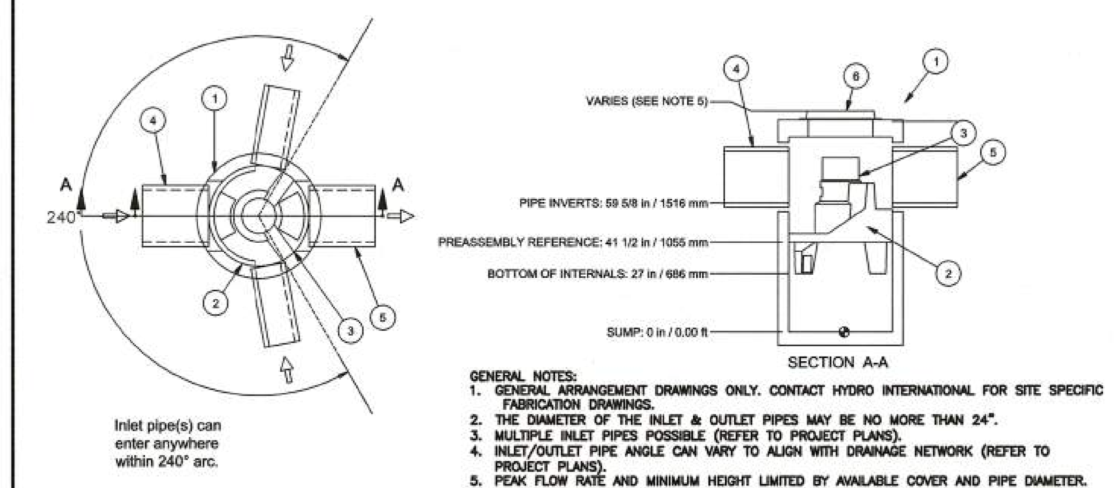
NOT TO SCALE



TRASH ENCLOSURE FENCE

NOT TO SCALE

FENCE NOTES:
1) FENCE FABRIC SHALL BE STANDARD 2" CHAIN LINK GALVANIZED MESH WITH PRIVACY SLATS (FOREST GREEN).
2) ALL POSTS SHALL BE GALVANIZED SCHEDULE 40 STEEL PIPE
3) ALL LINE POSTS TO BE 2.375" O.D. PIPE. MAXIMUM SPACING TO BE 10' ON CENTER.
4) ALL END AND CORNER POSTS TO BE 2.875" O.D. PIPE.
5) ALL TOP AND MIDDLE RAILS TO BE 1.66" O.D. PIPE.
6) ALL FITTINGS AND ACCESSORIES SHALL BE GALVANIZED.



Parts List		
ITEM	SIZE (in)	DESCRIPTION
1	48	I.D. PRECAST MANHOLE
2		LEDGER SUPPORT
3		SEPARATION MODULE
4	12	INLET PIPE (BY OTHERS)
5	15	OUTLET PIPE (BY OTHERS)
6	30	FRAME AND COVER (OR GRATE) (ROUND)

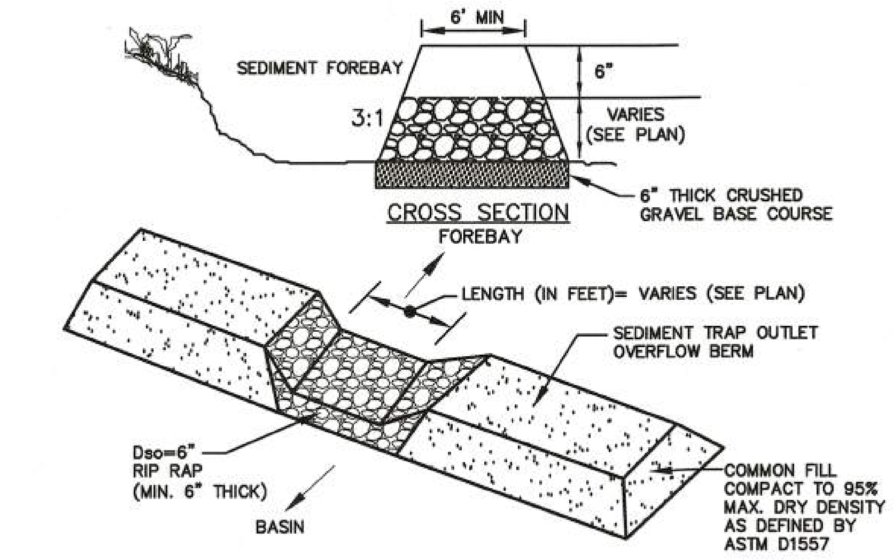
GENERAL NOTES:
1. GENERAL ARRANGEMENT DRAWINGS ONLY. CONTACT HYDRO INTERNATIONAL FOR SITE SPECIFIC FABRICATION DRAWINGS.
2. THE DIAMETER OF THE INLET & OUTLET PIPES MAY BE NO MORE THAN 24".
3. MULTIPLE INLET PIPES POSSIBLE (REFER TO PROJECT PLANS).
4. INLET/OUTLET PIPE ANGLE CAN VARY TO ALIGN WITH DRAINAGE NETWORK (REFER TO PROJECT PLANS).
5. PEAK FLOW RATE AND MINIMUM HEIGHT LIMITED BY AVAILABLE COVER AND PIPE DIAMETER.
6. LARGER SEDIMENT STORAGE CAPACITY MAY BE PROVIDED WITH A DEEPER SUMP DEPTH.

PRODUCT SPECIFICATIONS:
A. THE TREATMENT SYSTEM SHALL USE AN INDUCED VORTEX TO SEPARATE POLLUTANTS FROM STORM WATER RUNOFF.
B. THE TREATMENT SYSTEM SHALL FIT WITHIN THE LIMITS OF EXCAVATION (AREA AND DEPTH) AS SHOWN IN THE PROJECT PLANS AND WILL NOT EXCEED THE DIMENSIONS FOR THE DESIGN FLOW RATES SPECIFIED HEREIN.
C. THE TREATMENT SYSTEM SHALL REMOVE GREATER THAN OR EQUAL TO 90% OF TSS BASED ON THE TARGET PARTICLE SIZE (TPS) OF 106 MICRONS AND/OR 80% OF TSS BASED ON THE TPS OF 230 MICRONS AT 0.7 CFS AND 1.2 CFS, RESPECTIVELY.
D. THE TREATMENT SYSTEM SHALL CONVEY THE PEAK ON-LINE FLOW RATES OF UP TO 18 CFS WITHOUT CAUSING UPSTREAM SURCHARGE CONDITIONS. FULL-SCALE INDEPENDENT LABORATORY SCOUR TESTING SHALL DEMONSTRATE EFFLUENT CONTROL OF LESS THAN OR EQUAL TO 5 MG/L FOR ALL FLOWS UP TO 200% OF MTFR-106.
E. THE TREATMENT SYSTEM SHALL BE CAPABLE OF CAPTURING AND RETAINING FINE SILT AND SAND SIZE PARTICLES. ANALYSIS OF CAPTURED SEDIMENT FROM FULL-SCALE FIELD INSTALLATIONS SHALL DEMONSTRATE PARTICLE SIZES PREDOMINATELY IN THE 20-MICRON RANGE

"FIRST DEFENSE" UNIT DETAIL - FD-4HC

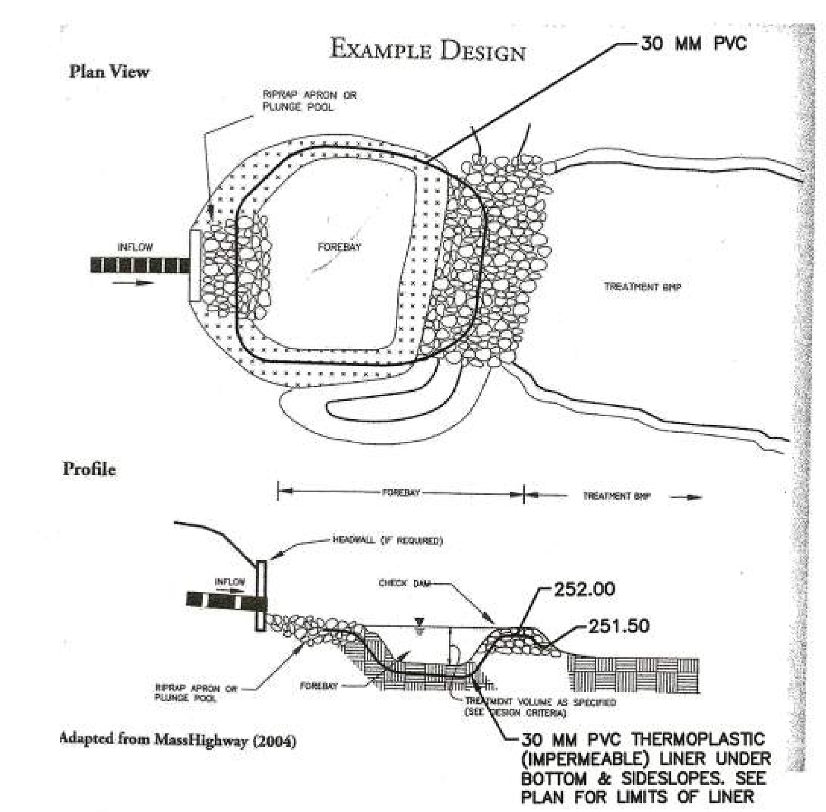
(OR APPROVED EQUAL)
NOT TO SCALE

NOTE: CONTRACTOR SHOULD CONFIRM SYSTEM PARTS AND OBTAIN SHOP DRAWINGS FROM MANUFACTURER PRIOR TO CONSTRUCTION.



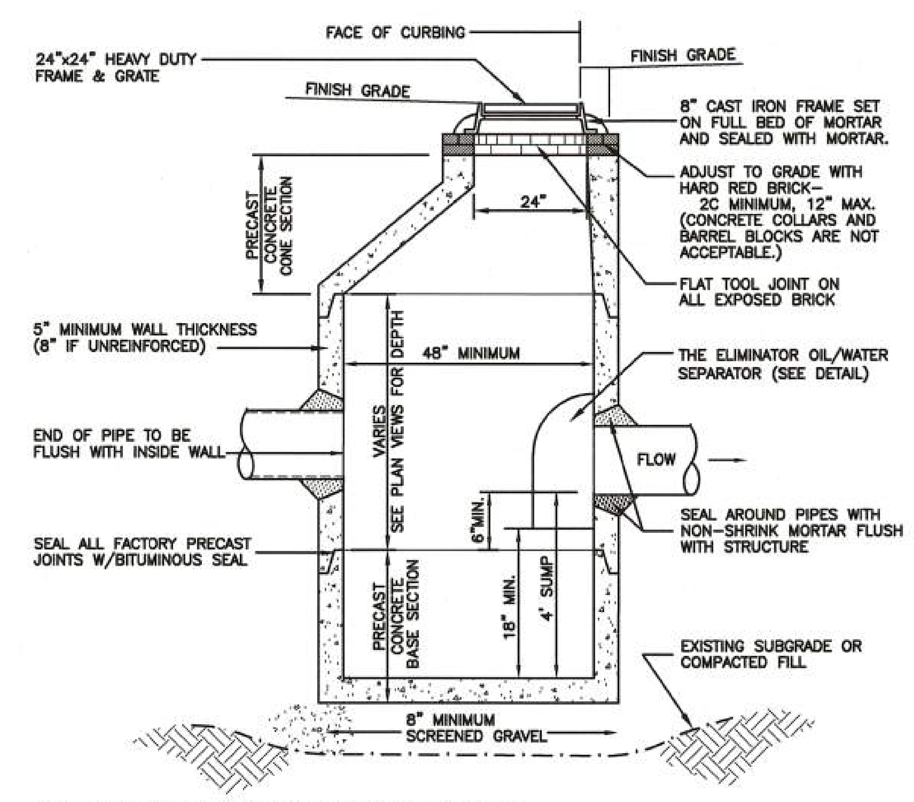
SEDIMENT FOREBAY STONE WEIR DETAIL

NOT TO SCALE



SEDIMENT FOREBAY DETAIL

NOT TO SCALE

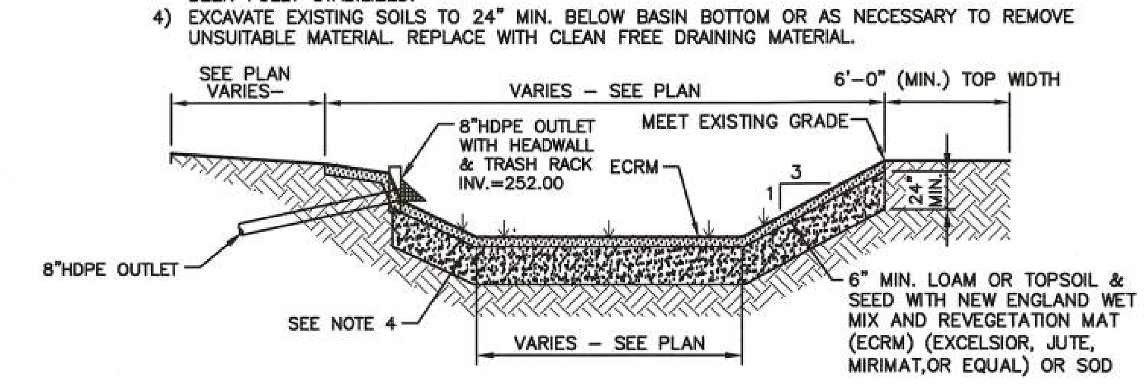


NOTE: ALL PRECAST SECTIONS SHALL CONFORM TO ASTM C-478

DEEP SUMP CATCH BASIN ECCENTRIC CONE

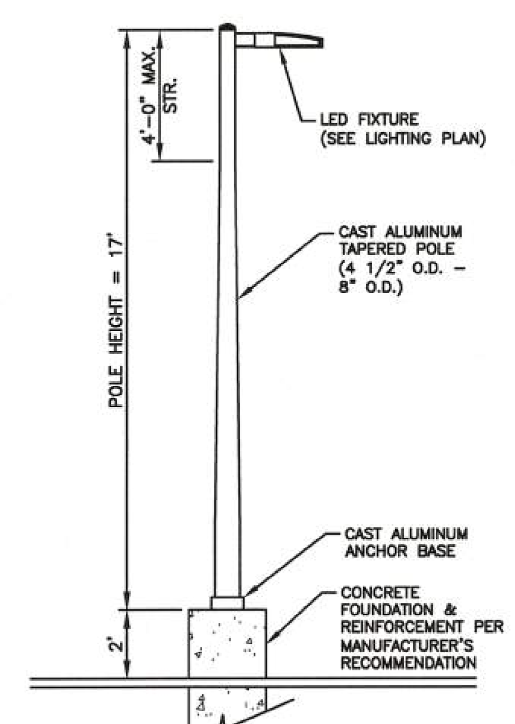
(FOR USE IN CURBED AREAS)
NOT TO SCALE

NOTE:
1) DO NOT TRAFFIC EXPOSED SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION SYSTEM.
2) AFTER THE INFILTRATION SYSTEM AREA IS EXCAVATED TO THE FINAL DESIGN ELEVATION, THE FLOOR SHOULD BE DEEPLY TILLED WITH A ROTARY TILLER OR DISC HARROW TO RESTORE INFILTRATION RATES, FOLLOWED BY A PASS WITH A LEVELING DRAG.
3) DO NOT PLACE INFILTRATION SYSTEMS INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
4) EXCAVATE EXISTING SOILS TO 24" MIN. BELOW BASIN BOTTOM OR AS NECESSARY TO REMOVE UNSUITABLE MATERIAL. REPLACE WITH CLEAN FREE DRAINING MATERIAL.



INFILTRATION BASIN - TYP. CROSS SECTION WITH OUTLET

NOT TO SCALE

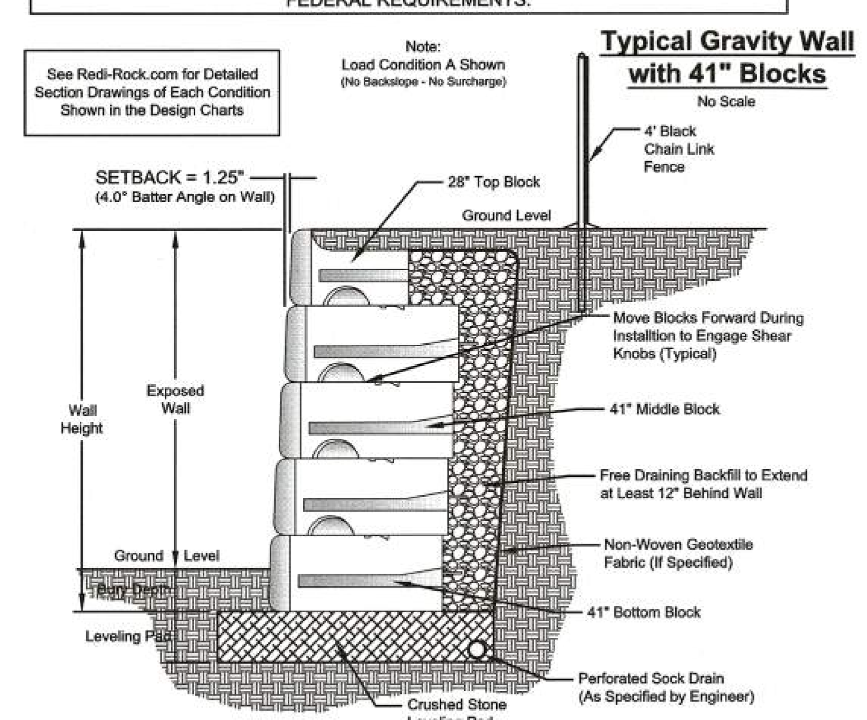


LIGHT FIXTURE

NOT TO SCALE

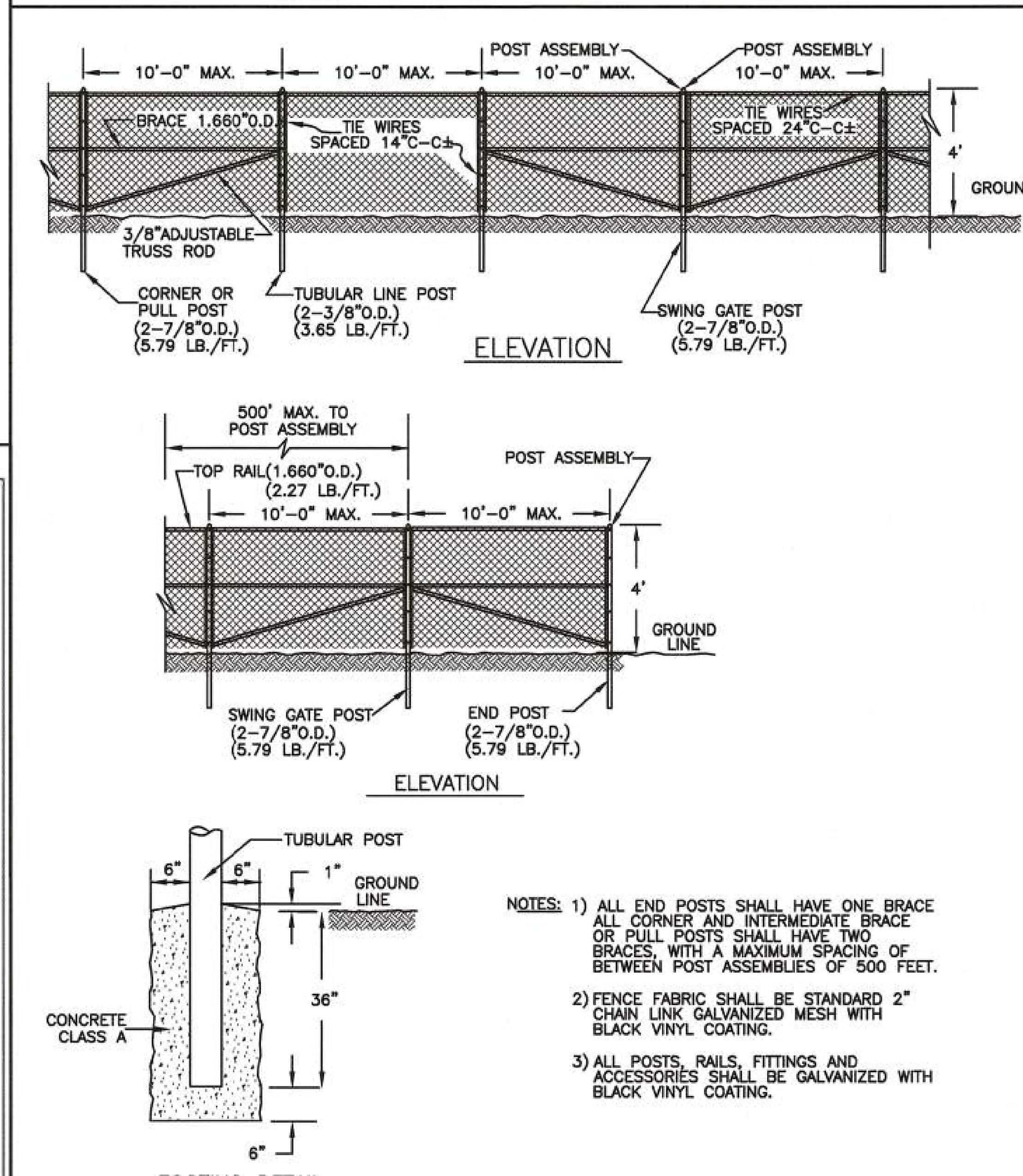
*NOTE
(ADDITIONAL SETBACKS FROM FACE OF WALL MAY BE REQUIRED UPON FINAL ENGINEERED STRUCTURAL WALL DRAWINGS.)

THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL, PRIOR TO START OF CONSTRUCTION, A RETAINING WALL DESIGN UTILIZING THE "REDI-ROCK" WALL (OR APPROVED EQUAL), PREPARED BY AND CERTIFIED BY A LICENSED PROFESSIONAL ENGINEER CONFORMING TO LOCAL, STATE AND FEDERAL REQUIREMENTS.



TYPICAL "REDI-ROCK" RETAINING WALL SECTION

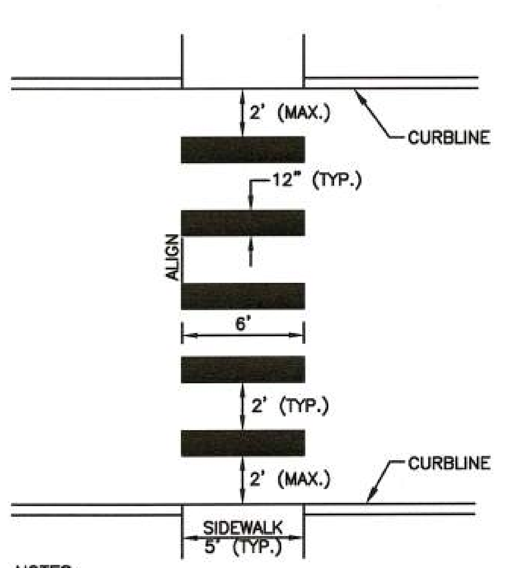
NOT TO SCALE



NOTES:
1) ALL END POSTS SHALL HAVE ONE BRACE ALL CORNER AND INTERMEDIATE BRACE OR PULL POSTS SHALL HAVE TWO BRACES, WITH A MAXIMUM SPACING OF BETWEEN POST ASSEMBLIES OF 500 FEET.
2) FENCE FABRIC SHALL BE STANDARD 2" CHAIN LINK GALVANIZED MESH WITH BLACK VINYL COATING.
3) ALL POSTS, RAILS, FITTINGS AND ACCESSORIES SHALL BE GALVANIZED WITH BLACK VINYL COATING.

CHAIN LINK FENCE DETAIL

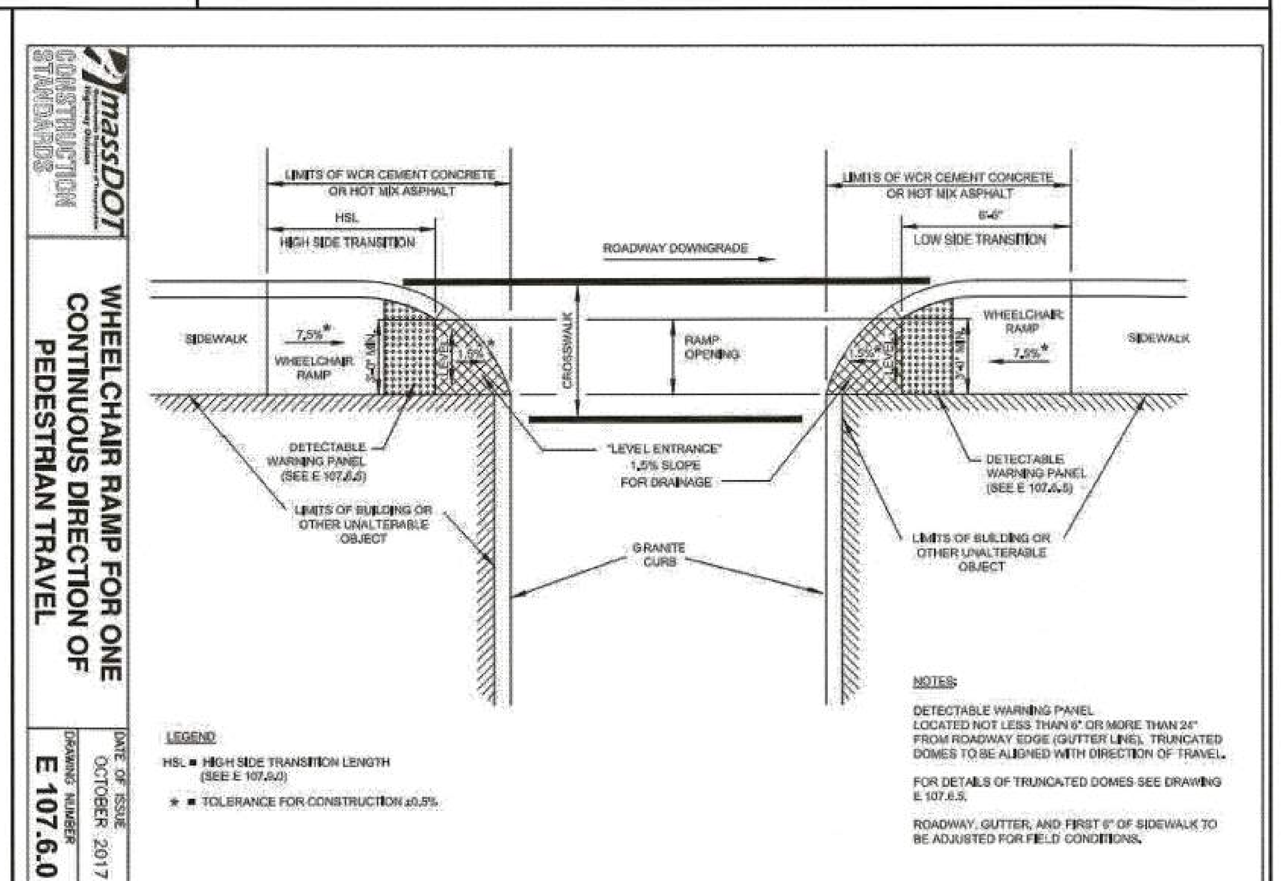
NOT TO SCALE

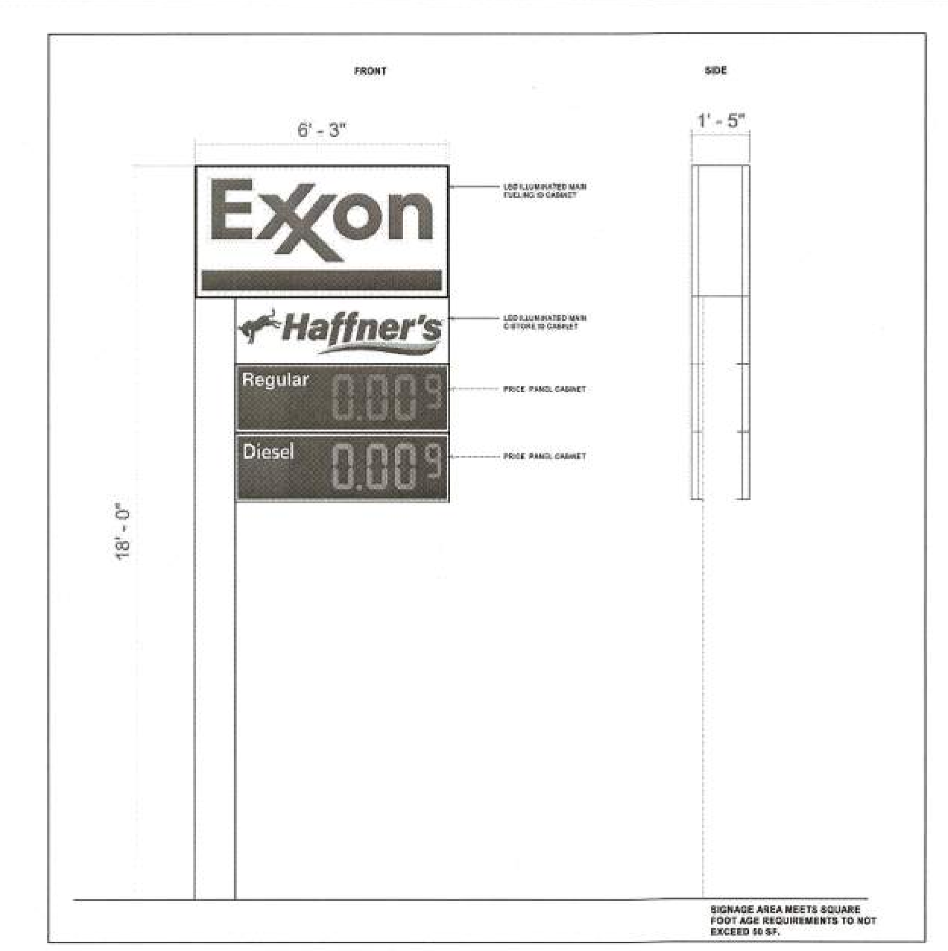


NOTES:
1. TWELVE INCH (12") LINES SHALL BE APPLIED IN ONE APPLICATION. NO COMBINATION OF LINES (TWO – 6 INCH LINES) WILL BE ACCEPTED.
2. LONGITUDINAL CROSSWALK LINES TO BE PARALLEL TO CURBLINE.
3. ALL LONGITUDINAL CROSSWALK LINES TO BE THE SAME LENGTH AND PROPERLY ALIGNED.

CROSSWALK

NOT TO SCALE





PYLON SIGN

NOT TO SCALE

GPI Engineering Design Planning Construction Management
603.893.0720 GPINET.COM
Greenman-Pedersen, Inc.
44 Stiles Road, Suite One
Salem, NH 03079

PREPARED FOR
ENERGY NORTH GROUP
2 INTERNATIONAL WAY
LAWRENCE, MA 01843

PROPOSED RETAIL MOTOR FUEL OUTLET
SITE RE-DEVELOPMENT
PARCEL ID: U45-7-0, U45-7-B, U45-8-A, & U45-11-0
254, 256 & 260 AYER ROAD
LITTLETON, MASSACHUSETTS
PARCEL ID: 30-16
0 LITTLETON ROAD
AYER, MASSACHUSETTS

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER M. TYMULA
CIVIL
No. 57140
PROFESSIONAL ENGINEER
4/20/23

REVISIONS		
NO.	REVISION	DATE
1	MISC. REV'S PER TOWN/PEER REVIEW COMMENTS	4/20/23

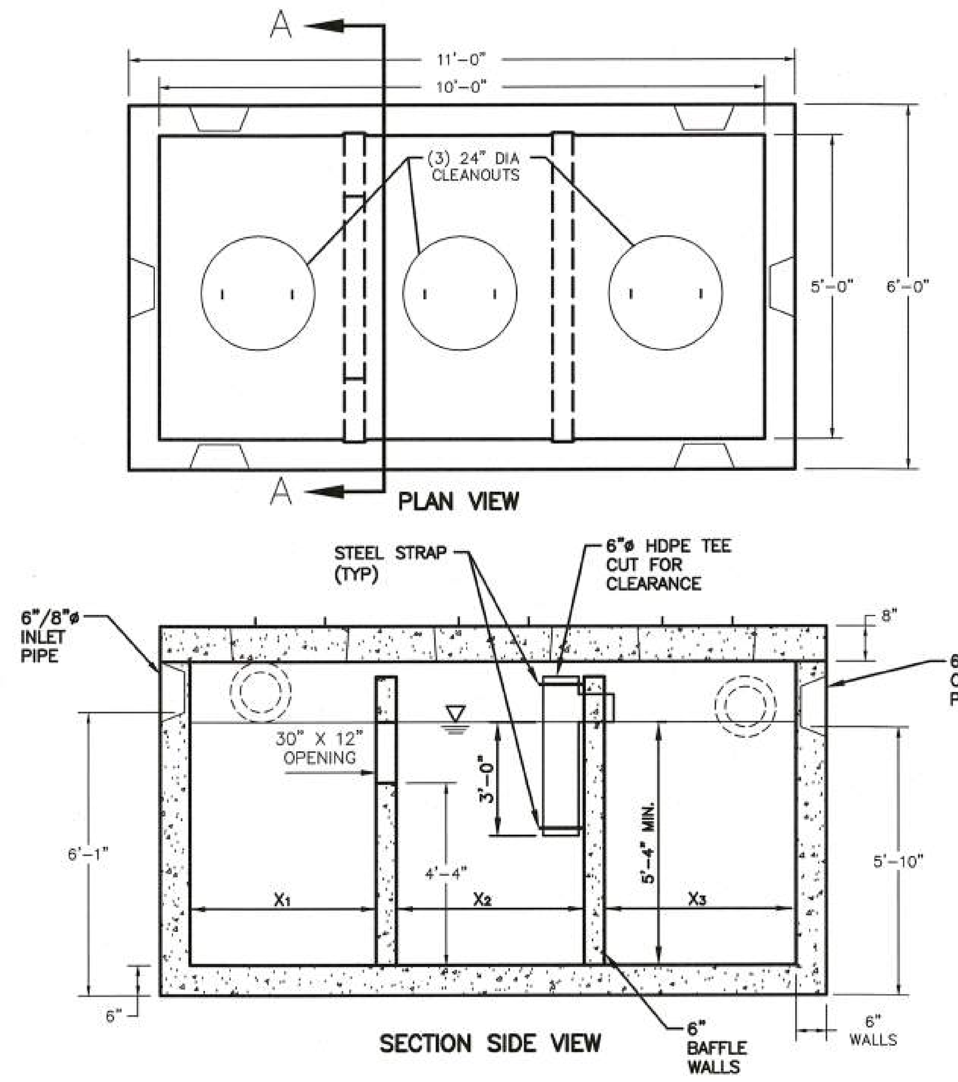
FEBRUARY 8, 2023

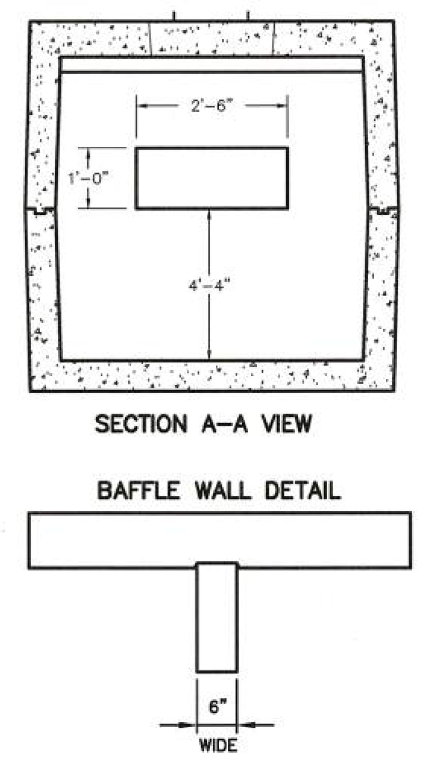
DRAWN/DESIGN BY	CHECKED BY
SJB/CNM	CMT

DETAIL SHEET

SCALE: AS SHOWN

PROJECT NO. NEX-2021267





NOTES:

1. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS.
2. DESIGNED FOR H-20 LOADING (REQUIRED FOR PAVED AREAS).
3. TONGUE & GROOVE JOINT SEALED WITH BUTYL RESIN.
4. FIRST CHAMBER SIZING BASED ON DEP CRITERIA OF 400 CF/ACRE OF IMPERVIOUS AREA:

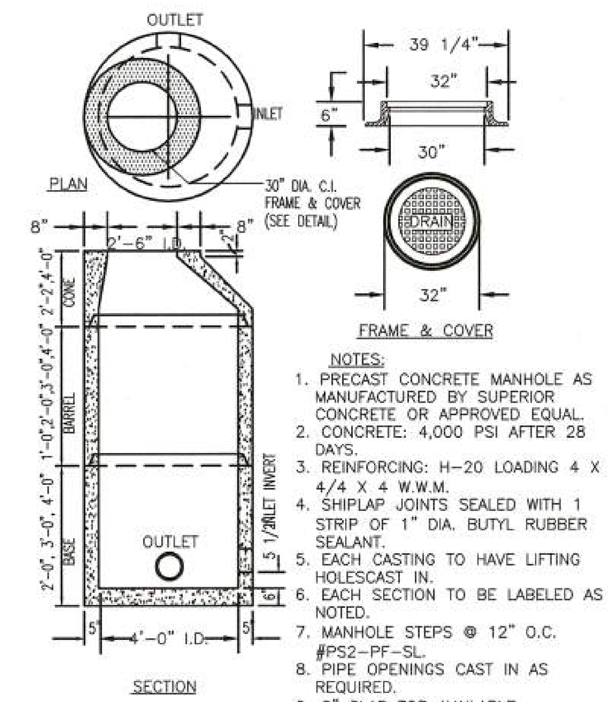
   O/W SEP #1: 12,234 SF IMP. AREA = 0.28 Ac.
   400 CF/Ac. x 0.28 Ac.= 112 CF
   X1 = 112 CF/(5'-4"x5') = 4'-3"
   X2 = 2'-11"
   X3 = 2'-10"

   O/W SEP #2: 10,540 SF IMP. AREA = 0.24 Ac.
   400 CF/Ac. x 0.24 Ac.= 96 CF
   X1 = 96 CF/(5'-4"x5') = 3'-8"
   X2 = 3'-2"
   X3 = 3'-2"

5. CONTRACTOR TO SUBMIT SHOP DRAWING FOR APPROVAL.
6. PROVIDE RISERS, FRAME & COVERS TO GRADE.

2,000 GAL. OIL/WATER SEPARATOR

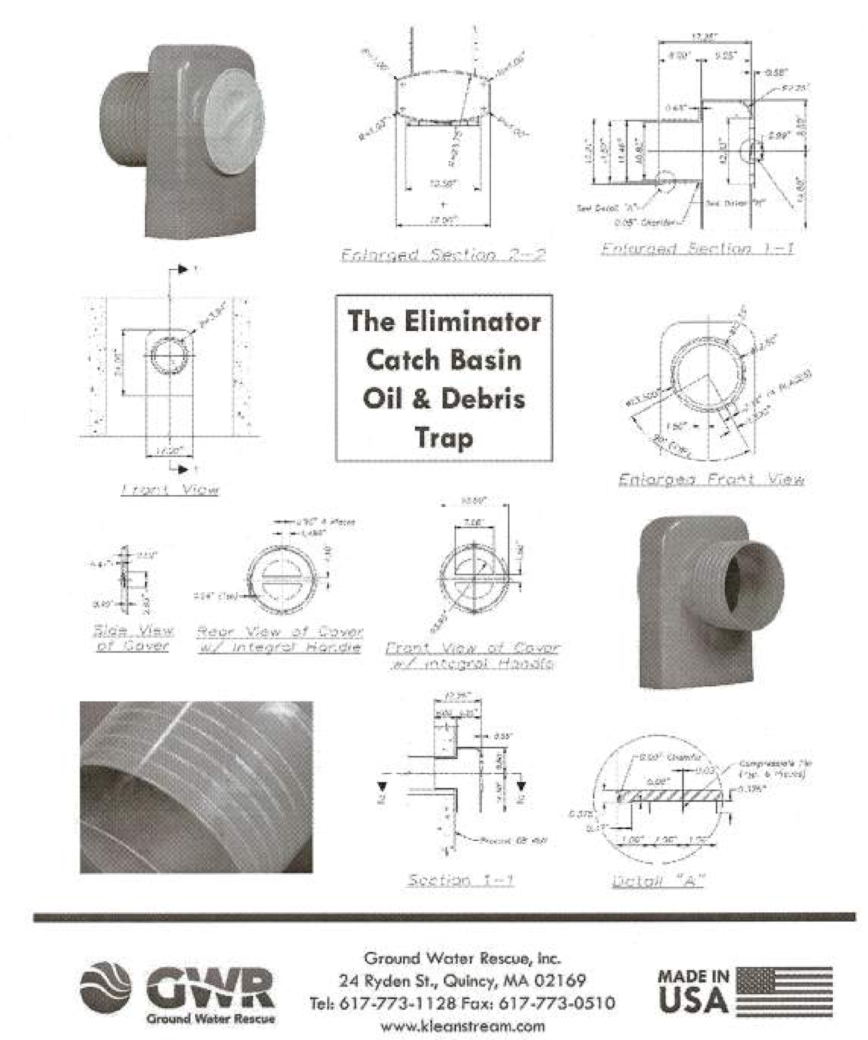
NOT TO SCALE

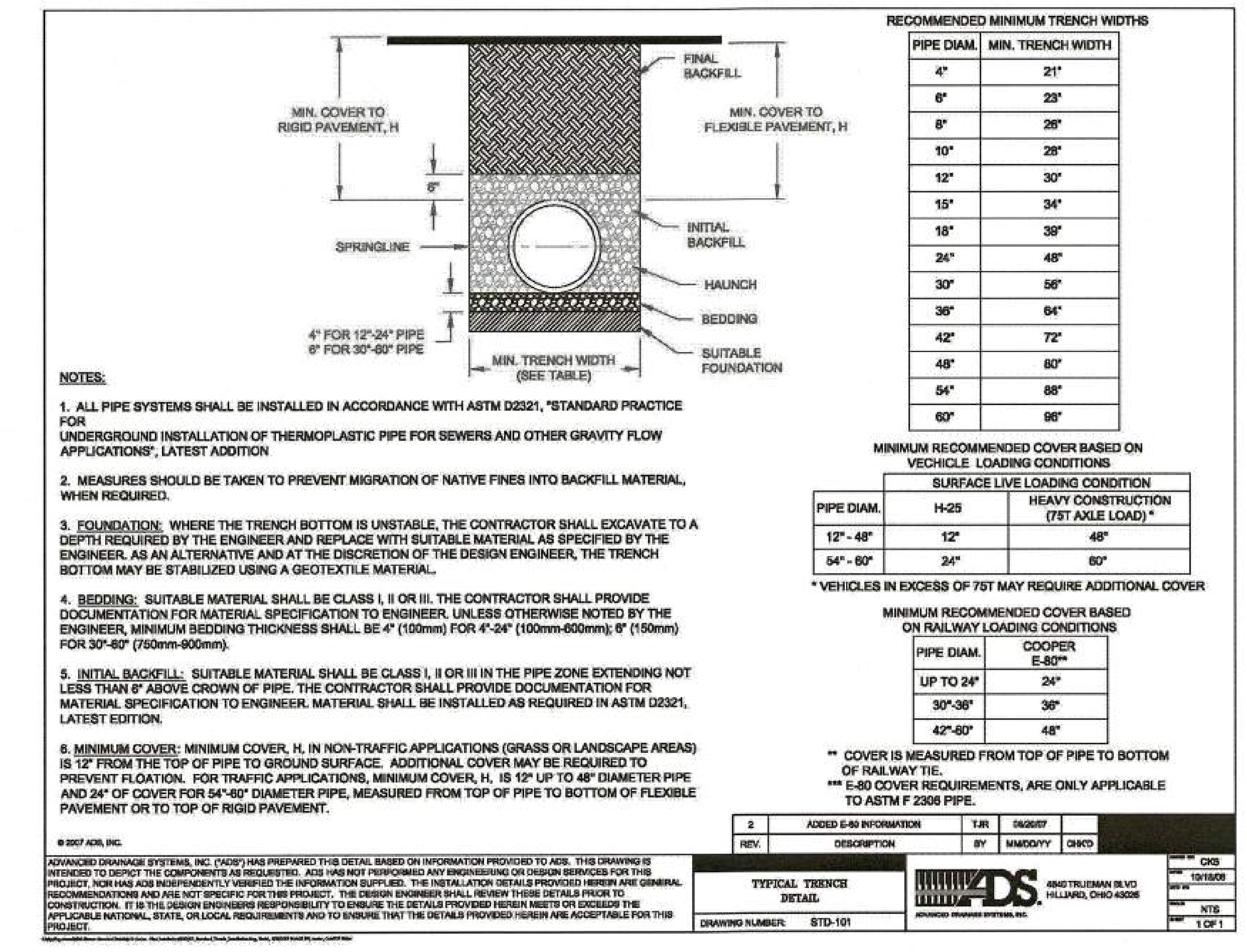


NOTES:
1. PRECAST CONCRETE MANHOLE AS MANUFACTURED BY SUPERIOR CONCRETE OR APPROVED EQUAL.
2. CONCRETE: 4,000 PSI AFTER 28 DAYS.
3. REINFORCING: H-20 LOADING 4 X 4/4 X 4 W.W.M.
4. SHIPLAP JOINTS SEALED WITH 1 STRIP OF 1" DIA. BUTYL RUBBER SEALANT.
5. EACH CASTING TO HAVE LIFTING HOLESCAST IN.
6. EACH SECTION TO BE LABELED AS NOTED.
7. MANHOLE STEPS @ 12" O.C. #PS2-PF-SL.
8. PIPE OPENINGS CAST IN AS REQUIRED.
9. 8" SLAB TOP AVAILABLE.

PRECAST CONCRETE DRAIN MANHOLE

MAXIMUM PIPE DIAMETER 30"
NOT TO SCALE





RECOMMENDED MINIMUM TRENCH WIDTHS

PIPE DIAM.	MIN. TRENCH WIDTH
4"	21"
6"	23"
8"	26"
10"	28"
12"	30"
15"	34"
18"	39"
24"	48"
30"	56"
36"	64"
42"	72"
48"	80"
54"	88"
60"	96"

MINIMUM RECOMMENDED COVER BASED ON VECHICLE LOADING CONDITIONS

PIPE DIAM.	SURFACE LIVE LOADING CONDITION: H-25	HEAVY CONSTRUCTION (75T AXLE LOAD) *
12" - 48"	12"	48"
54" - 60"	24"	60"

* VEHICLES IN EXCESS OF 75T MAY REQUIRE ADDITIONAL COVER

MINIMUM RECOMMENDED COVER BASED ON RAILWAY LOADING CONDITIONS

PIPE DIAM.	COOPER E-80**
UP TO 24"	24"
30"-36"	36"
42"-60"	48"

** COVER IS MEASURED FROM TOP OF PIPE TO BOTTOM OF RAILWAY TIE.
*** E-80 COVER REQUIREMENTS, ARE ONLY APPLICABLE TO ASTM F 2306 PIPE.

NOTES:

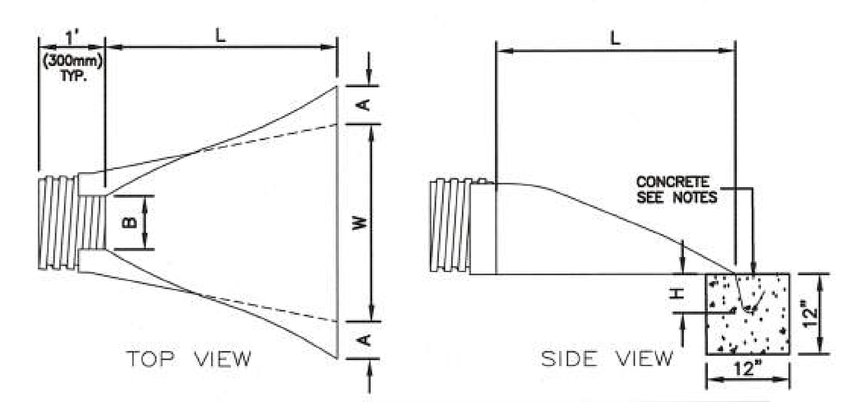
1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST ADDITION
2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm); 6" (150mm) FOR 30"-60" (750mm-900mm).
5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE EXTENDING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 54"-60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

REV.	DESCRIPTION	BY	MM/DD/YY	CHK'D
2	ADDED E-80 INFORMATION	TJR	04/20/07	

TYPICAL TRENCH DETAIL
DRAWING NUMBER: STD-101
ADS ADVANCED DRAINAGE SYSTEMS, INC. 4640 TRUEMAN BLVD HILLIARD, OHIO 43026
CKS 10/18/06 NTS 1 OF 1

HDPE PIPE TRENCH

NOT TO SCALE



DIMENSIONS, INCHES (mm)

PIPE DIAMETER	PART NO.	A, ±1 (25)	B MAX	H, ±1 (25)	L, ±1/2 (13)	W, ±2 (50)
12", 15" (300,375)	1210 NP	6.5 (165)	10 (254)	6.5 (165)	25 (635)	29 (735)
18" (450)	1810 NP	7.5 (190)	15 (380)	6.5 (165)	32 (812)	35 (890)
24" (600)	2410 NP	7.5 (190)	18 (450)	6.5 (165)	36 (900)	45 (1140)
30" (750)	3010 NP	10.5 (266)	NA	7.0 (178)	53 (1346)	68 (1725)
36" (900)	3610 NP	10.5 (266)	NA	7.0 (178)	53 (1346)	68 (1725)

CONSTRUCTION SPECIFICATIONS:

PREPARE BEDDING:
BACKFILL MATERIAL AROUND THE END SECTION MAY BE THE SAME AS THE MATERIAL AROUND THE PIPE. PLACE A FEW INCHES OF BACKFILL MATERIAL IN THE TRENCH OR DITCH WHERE THE END SECTION WILL BE PLACED. COMPACT AND CONTOUR THIS BEDDING MATERIAL TO GENERALLY MATCH THE END SECTION. EXCAVATE AN AREA IN THE BEDDING WHERE TOE TROUGH WILL BE PLACED SO THAT THE END SECTION WILL BE LEVEL WITH THE BOTTOM OF THE TRENCH OR DITCH IN THE FINISHED INSTALLATION.

PLACE END SECTION OF PIPE:
OPEN THE END SECTION COLLAR AND SEAT IT OVER THE TWO PIPE CONNECTIONS. ONCE THE END SECTION IS POSITIONED, CHECK TO MAKE SURE THAT THE INVERT OF THE END SECTION MATCHES THE INVERT OF THE PIPE AND THAT THE END SECTION IS LEVEL WITH THE BOTTOM OF THE TRENCH OR DITCH.

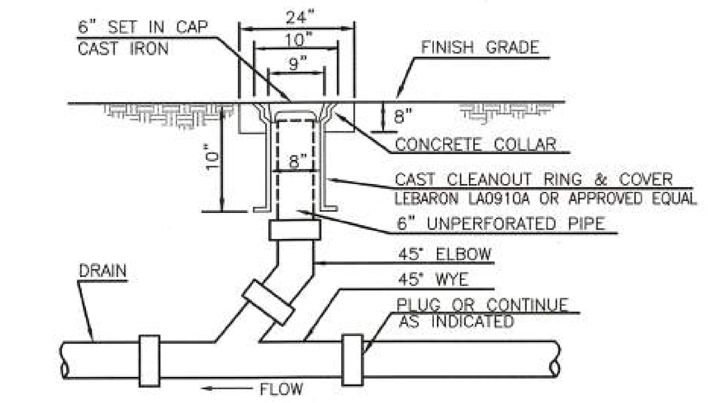
SECURE THE END SECTION:
SLIP THE STAINLESS STEEL ROD THROUGH THE PRE-DRILLED HOLES AT THE TOP OF THE COLLAR. THE ROD SHOULD BE BETWEEN THE CROWNS OF THE TWO PIPE CONNECTIONS. PLACE A WASHER ON EITHER END OF THE ROD. PLACE A NUT ON EITHER END OF THE ROD AND TIGHTEN WITH A WRENCH.

SECURE THE TOE TROUGH:
TO PREVENT WASHOUTS FROM HIGH VELOCITY FLOW, IT IS RECOMMENDED THAT THE TROUGH BE SECURED WITH CONCRETE. POUR CONCRETE IN THE TROUGH UP TO THE LEVEL OF THE TRENCH OR DITCH BOTTOM AND ALONG THE ENTIRE LENGTH OF THE TROUGH.

FINISH BACKFILL:
SHOVEL BACKFILL AROUND THE END SECTION IN 6 TO 9 INCH LAYERS EQUALLY ON BOTH SIDES, KNIFING IT TO ELIMINATE VOIDS. TAMP WITH A SMALL-FACED COMPACTOR OR OTHER EQUIPMENT SUITABLE FOR SMALL AREAS. CONTINUE PLACING, KNIFING, AND COMPACTING BACKFILL LAYERS TO THE TOP OF THE END SECTION TO SEAT IT WELL INTO THE BACKFILL.

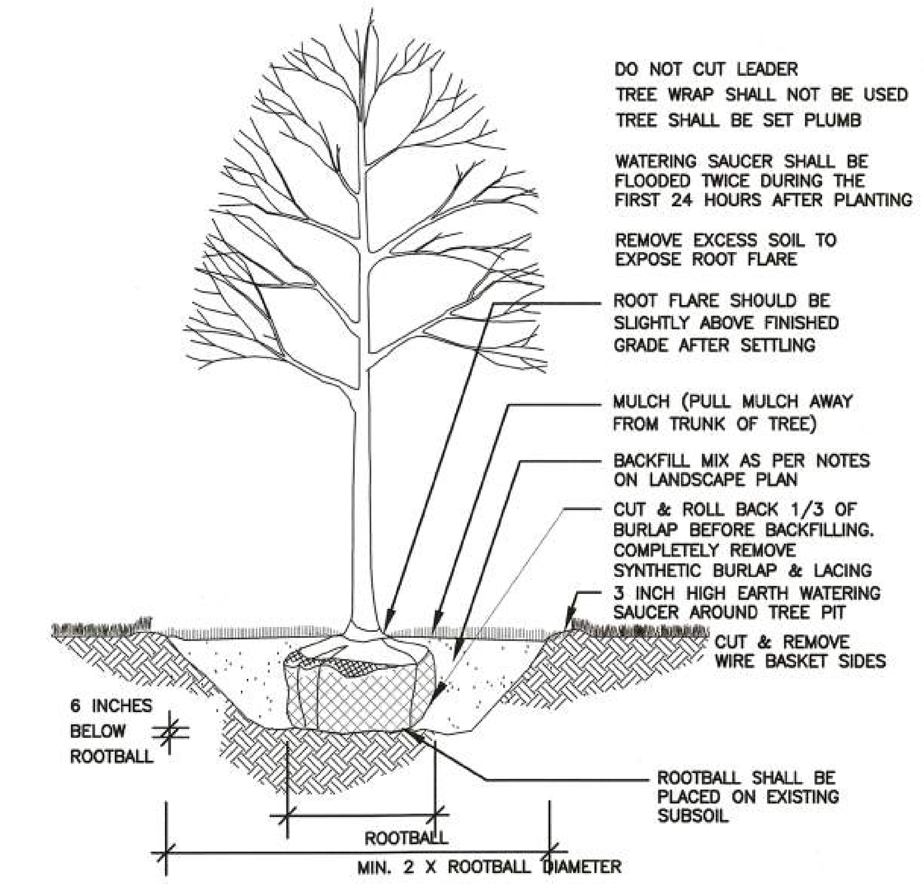
FLARED END SECTION
HIGH DENSITY POLYETHYLENE (HDPE)

NOT TO SCALE



TYPICAL DRAIN CLEANOUT

NOT TO SCALE



TYPICAL TREE PLANTING

NOT TO SCALE

TEST PIT DATA

Test Pit No.	1		SCS Soil:	Canton-Charlton-Urban Land Complex
ESHWT: Refusal:	>100" >100"		Standing Water: Roots:	None None
Depth	Horizon	Soil Texture	Color	Consistence	Mottles; Quantity/Contrast
0-36"	Fill	Mixed Soils	Variable		
36-100"	C	Coarse Sand	2.5y 4/3	Loose	

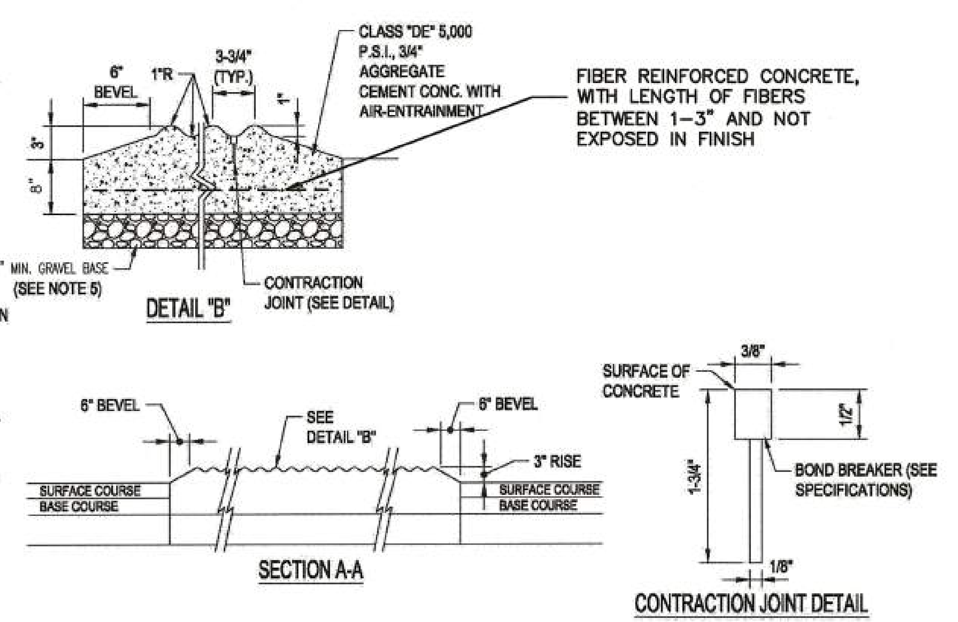
Test Pit No.	2		SCS Soil:	Canton-Charlton-Urban Land Complex
ESHWT: Refusal:	>116" >116"		Standing Water: Roots:	None None
Depth	Horizon	Soil Texture	Color	Consistence	Mottles; Quantity/Contrast
0-36"	Fill	Mixed Soils	Variable		
36-48"	B	Loamy Sand	10yr 5/6	Friable	
48-116"	C	Sand & Gravel	2.5y 4/3	Loose	

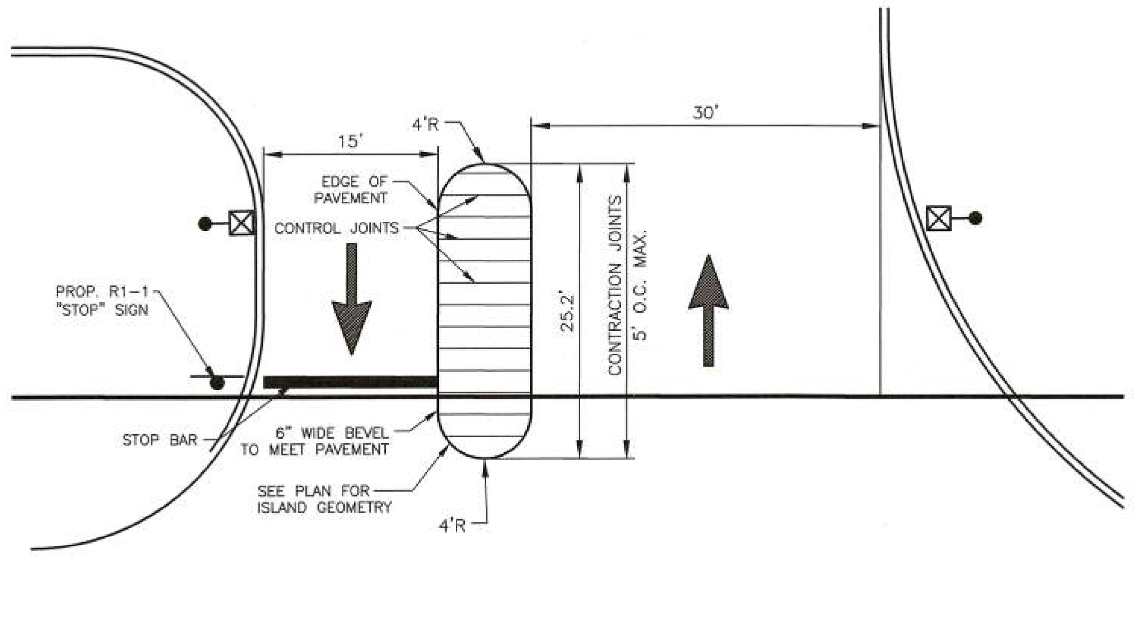
Test Pit No.	3		SCS Soil:	Canton-Charlton-Urban Land Complex
ESHWT: Refusal:	>116" >116"		Standing Water: Roots:	None None
Depth	Horizon	Soil Texture	Color	Consistence	Mottles; Quantity/Contrast
0-22"	A/Fill	Loamy Sand	10yr 3/2	Friable	
22-36"	B	Loamy Sand	10yr 5/6	Friable	
36-116"	C	Sand & Gravel	2.5y 4/3	Loose	

Test Pit No.	4		SCS Soil:	Canton-Charlton-Urban Land Complex
ESHWT: Refusal:	>120" >120"		Standing Water: Roots:	None None
Depth	Horizon	Soil Texture	Color	Consistence	Mottles; Quantity/Contrast
0-60"	Fill	Mixed Soils	Variable		
60-120"	C	Sand & Gravel	2.5y 4/3	Loose	

NOTES:

1. CONTRACTION JOINTS ARE TO BE SPACED AT A MAXIMUM OF 5 FEET APART.
2. THE JOINTS ARE TO BE SAWED AND LOCATED IN THE DEPRESSIONS OF THE CORRUGATIONS (SEE DETAIL OF CORRUGATIONS)
3. END OF CORRUGATED RIDGES TO BE BEVELED.
4. FOR DESCRIPTION OF MATERIAL AND CONSTRUCTION METHODS SEE CONNDOT STANDARD SPECIFICATIONS AND SPECIAL PROVISIONS.
5. THE DEPTH OF THE GRAVEL IS TO BE SUCH THAT ITS BOTTOM LINE MEETS THE BOTTOM OF THE GRAVEL LINE OF THE CONTIGUOUS PAVEMENT.





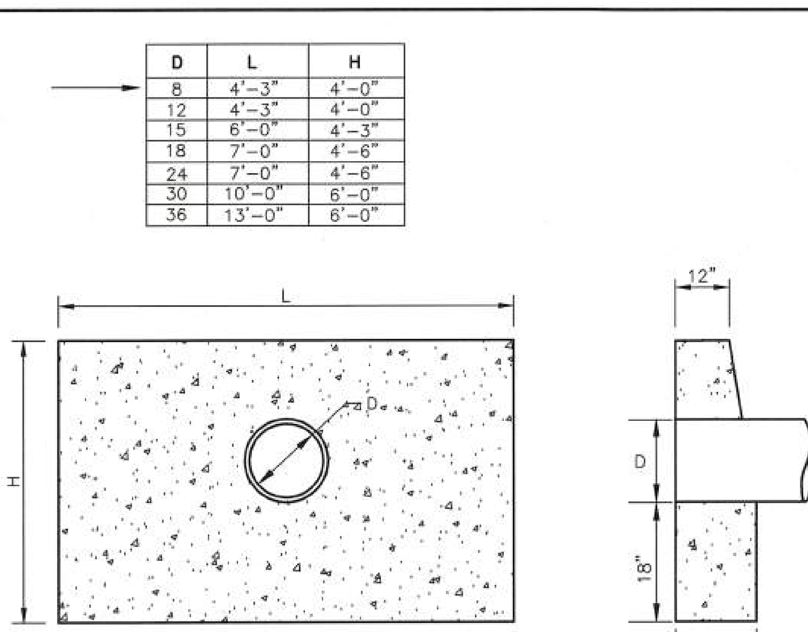
AYER ROAD

DETAIL "A"

RAISED/MOUNTABLE CONCRETE ISLAND

NOT TO SCALE

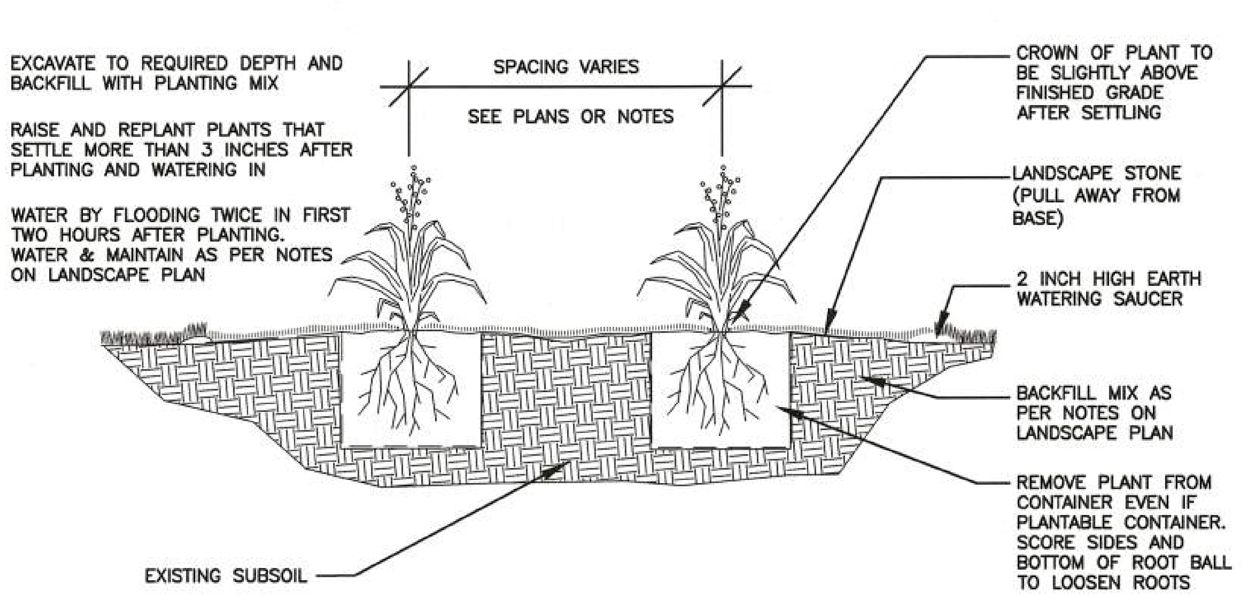
D	L	H
8	4'-3"	4'-0"
12	4'-3"	4'-0"
15	6'-0"	4'-3"
18	7'-0"	4'-6"
24	7'-0"	4'-6"
30	10'-0"	6'-0"
36	13'-0"	6'-0"



NOTE: CONCRETE: 4,000 PSI MINIMUM AFTER 28 DAYS.

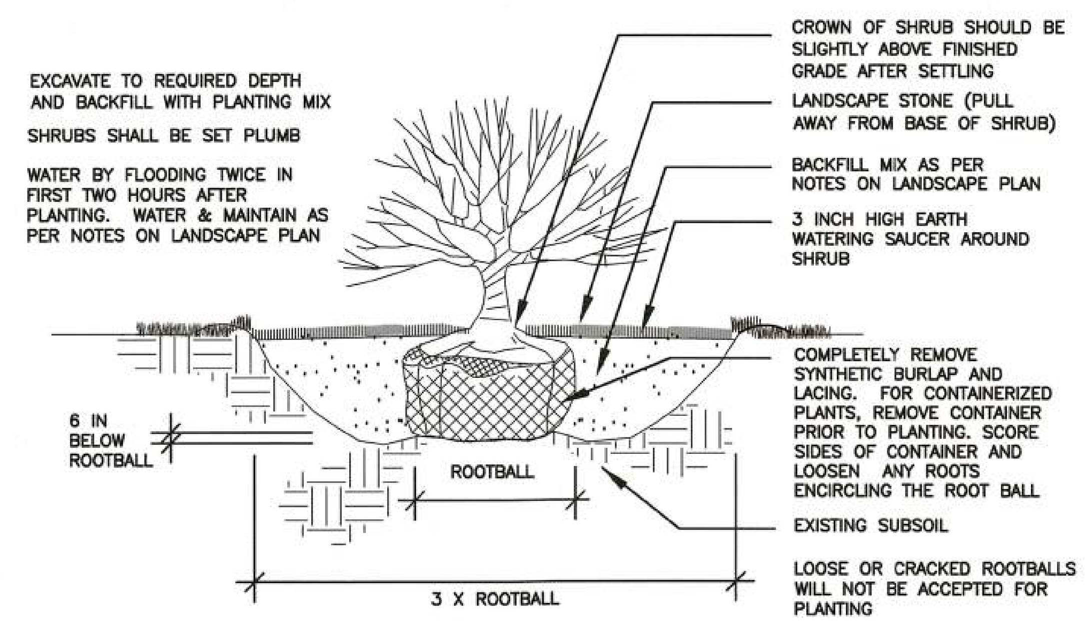
CONCRETE HEADWALL

NOT TO SCALE



TYPICAL PERENNIAL PLANTING

NOT TO SCALE



TYPICAL SHRUB PLANTING

NOT TO SCALE

GPI Engineering Design Planning Construction Management
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Salem, NH 03079

PREPARED FOR
ENERGY NORTH GROUP
2 INTERNATIONAL WAY
LAWRENCE, MA 01843

PROPOSED RETAIL MOTOR FUEL OUTLET
SITE RE-DEVELOPMENT
PARCEL ID: U45-7-0, U45-7-B, U45-8-A, & U45-11-0
254, 256 & 260 AYER ROAD
LITTLETON, MASSACHUSETTS
PARCEL ID: 30-16
0 LITTLETON ROAD
AYER, MASSACHUSETTS

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER M. TISOLA
CIVIL
No. 57140
4/20/23

REVISIONS

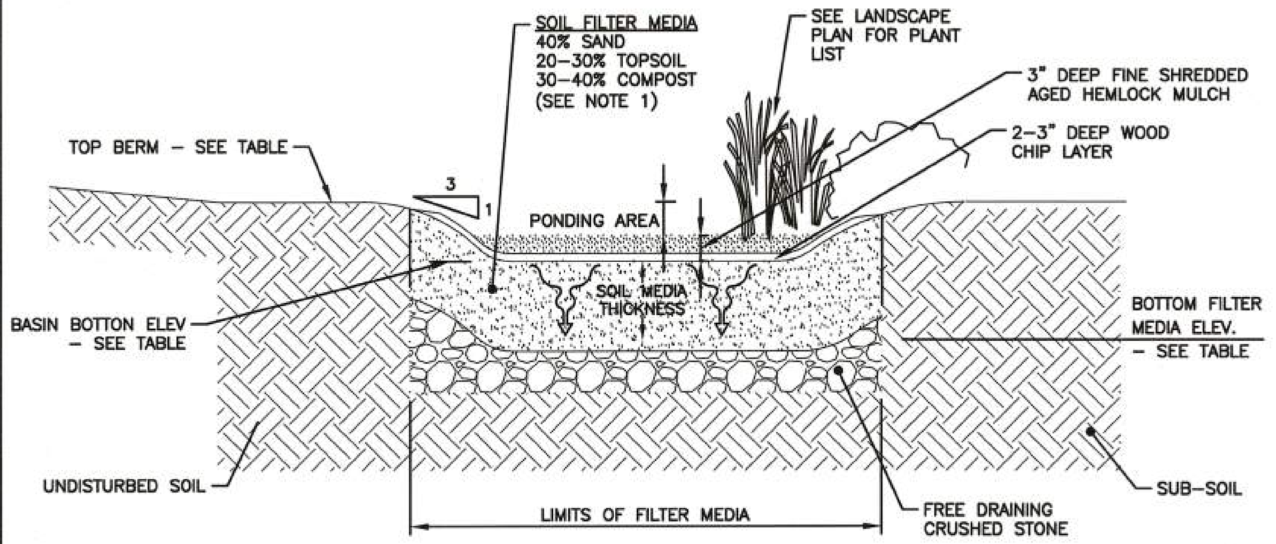
NO.	REVISION	DATE
2	MISC. REV'S PER TOWN/PEER REVIEW COMMENTS	4/20/23
1	REVISE OIL/WATER SEPARATOR	TBD

FEBRUARY 8, 2023

DRAWN/DESIGN BY	CHECKED BY
SJB/CNM	CMT

DETAIL SHEET

SCALE: AS SHOWN
PROJECT NO. NEX-2021267

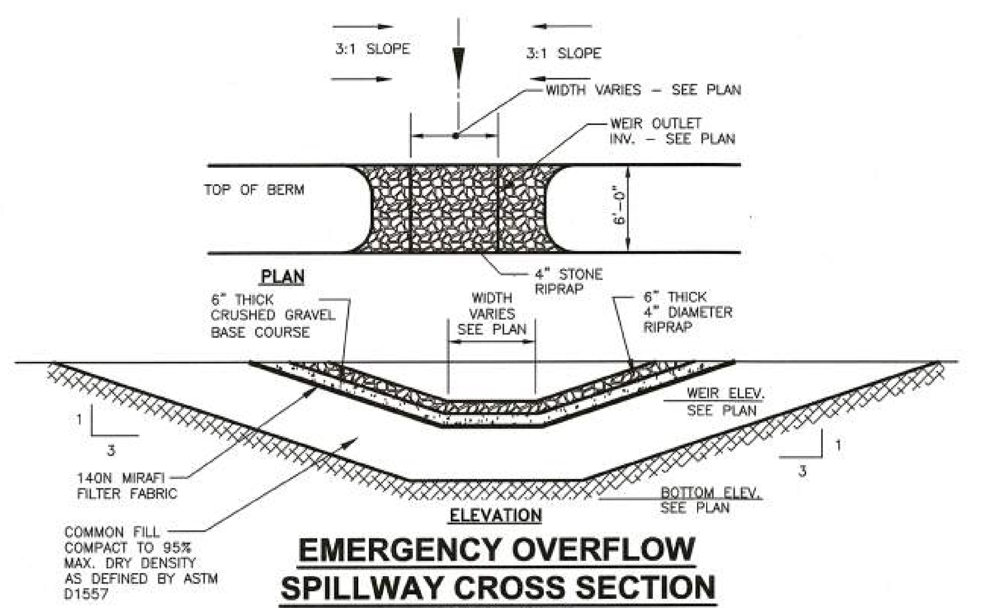


BIORETENTION AREA	TOP BERM ELEVATION	BASIN BOTTOM ELEVATION	SOIL MEDIA THICKNESS	BOTTOM FILTER MEDIA ELEV.	BOTTOM STONE ELEV.
#1	252.00	250.50	30"	248.00	247.50

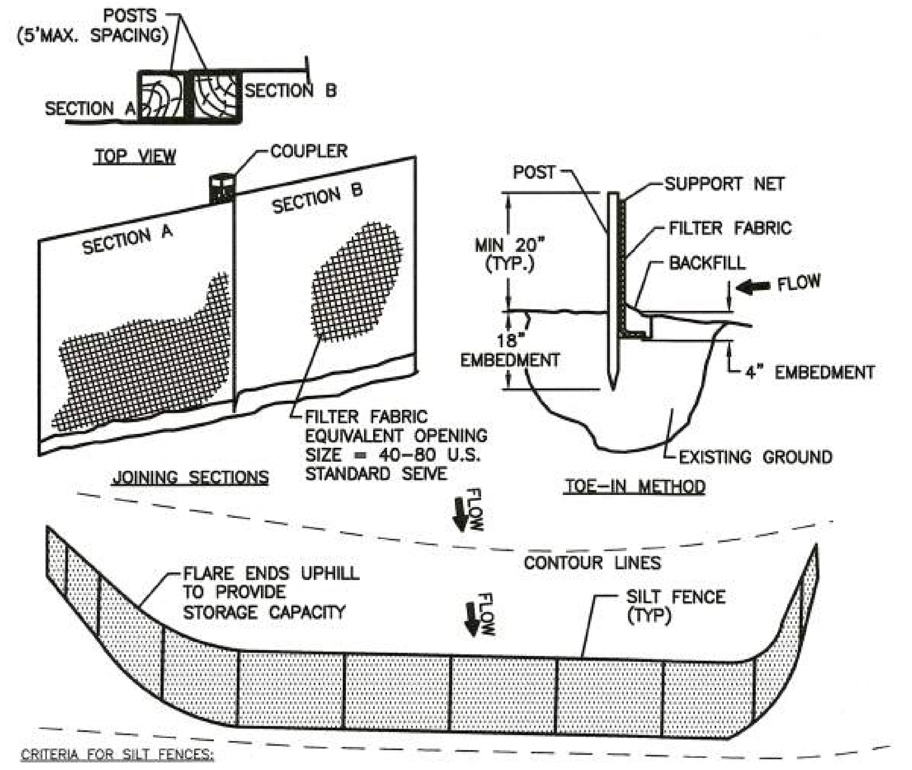
NOTES:
1. FOR ADDITIONAL INFORMATION REFER TO THE MASSACHUSETTS DEP STORMWATER HANDBOOK
2. DO NOT PLACE THE BIO-RETENTION SYSTEM INTO SERVICE UNTIL THE BMP HAS BEEN PLANTED AND IT'S CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED
3. DO NOT DISCHARGE SEDIMENT–LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO THE BIO–RETENTION AREA DURING ANY STAGE OF CONSTRUCTION.
4. DO NOT TRAFFIC EXPOSE SOIL SURFACE WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION COMPONENTS OF THE SYSTEM.

BIO–RETENTION CONSTRUCTION:
1) CLEAR AND GRUB THE AREA WHERE THE POND IS TO BE LOCATED. STOCKPILE LOAM FOR REUSE ON SLOPES.
2) THE FOUNDATION AREA SHALL BE SCARIFIED PRIOR TO PLACING FILL. ALL UNSUITABLE MATERIAL UNDER THE EMBANKMENT SHALL BE REMOVED AND REPLACED WITH SUITABLE FOUNDATION MATERIAL.
3) FILL MATERIAL SHALL BE FREE OF ORGANICS, FROZEN SOIL AND ROCKS GREATER THAN 6" IN DIAMETER.
4) SELECT MATERIALS SHALL BE PLACED AROUND STRUCTURES, PIPES, AND FILTER DIAPHRAMS. PLACE SELECT MATERIAL IN MAXIMUM 8" LIFTS COMPACTED TO 95% MAXIMUM PROCTOR DENSITY.
5) THE EMBANKMENT SHALL BE CONSTRUCTED BEGINNING FROM THE LOWEST POINT UNIFORMLY ALONG ITS ENTIRE LENGTH. PLACE MAXIMUM 8" LIFTS COMPACTED TO 95% MAXIMUM PROCTOR DENSITY.

BIORETENTION AREA
NOT TO SCALE



EMERGENCY OVERFLOW SPILLWAY CROSS SECTION
NOT TO SCALE



CRITERIA FOR SILT FENCES:
1) SILT FENCE FILTER CLOTH: THE FABRIC FOR THE SILT FENCE SHALL MEET THE FOLLOWING SPECIFICATIONS:

FABRIC PROPERTIES:	MINIMUM ACCEPTABLE VALUES	TEST METHOD
GRAB TENSILE STRENGTH (lbs)	90	ASTM D1682
ELONGATION AT FAILURE (%)	50	ASTM D1682
MULLEN BURST STRENGTH (PSI)	190	ASTM D3786
PUNCTURE STRENGTH (lbs)	40	ASTM D751
EQUIVALENT OPENING SIZE	40–80	US STD SIEVE

2) FENCE POSTS (FOR FABRICATED UNITS) – THE POSTS SHALL BE A MINIMUM OF 36 INCHES LONG. WOOD POSTS WILL BE OF SOUND QUALITY HARDWOOD WITH A MINIMUM CROSS SECTIONAL AREA OF 3.0 SQUARE INCHES. STEEL POSTS WILL BE STANDARD T OR U SECTIONS WEIGHING NOT LESS THAN 1 POUND PER LINEAR FOOT. MAXIMUM SPACING SHALL BE 6 LINEAR FEET.

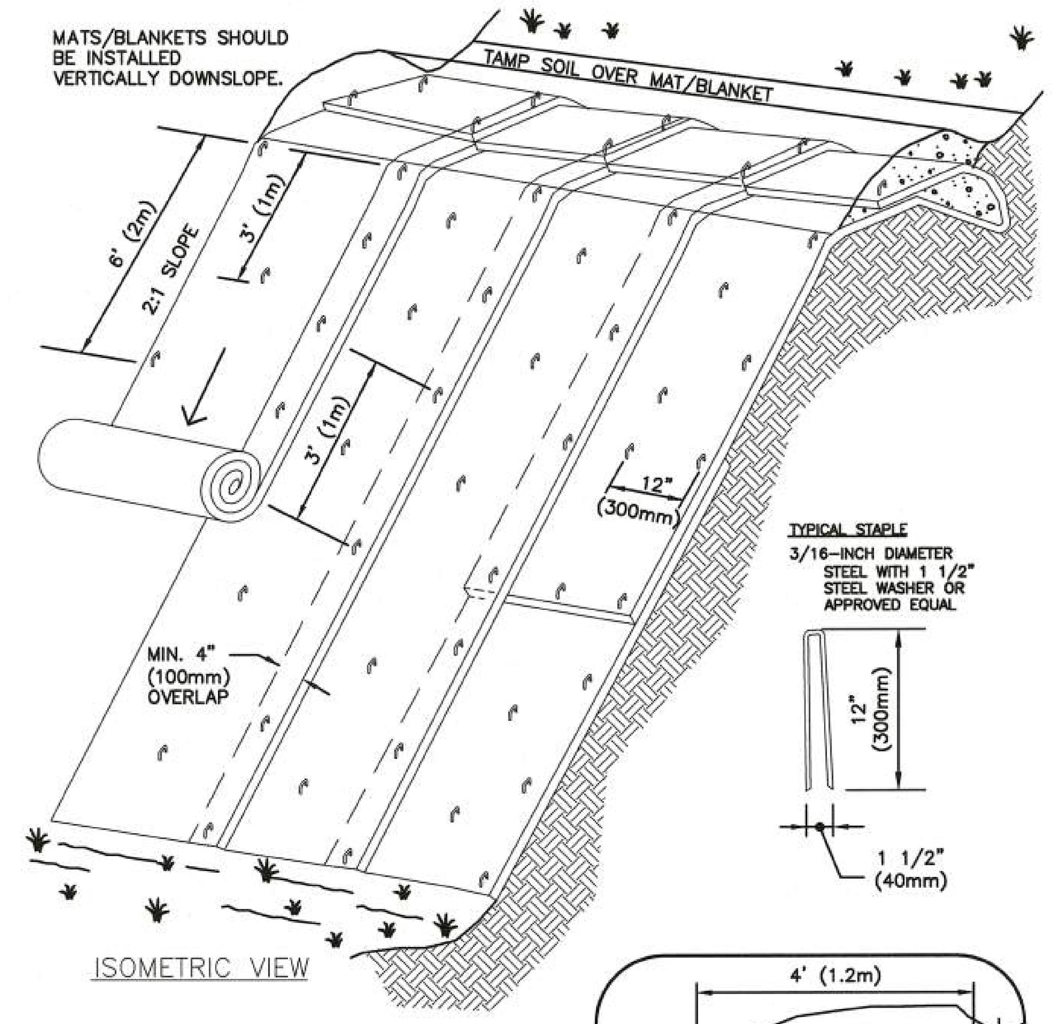
3) WIRE FENCE (FOR FABRICATED UNITS) – WIRE FENCING SHALL BE A MINIMUM 14.5 GUAGE WITH A MAXIMUM 6 INCH MESH OPENING.

4) PREFABRICATED UNITS – PREFABRICATED UNITS MAY BE USED IN LIEU OF THE ABOVE METHOD PROVIDING: (1) THE FILTER CLOTH AND FENCE POSTS MEET THE ABOVE CRITERIA; AND (2) THE UNIT IS INSTALLED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.

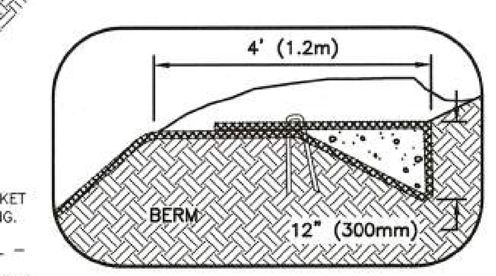
MAINTENANCE:
1) SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
2) IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
3) SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EVERY STORM EVENT. THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE–HALF THE HEIGHT OF THE BARRIER.
4) SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATED.

CONSTRUCTION SPECIFICATIONS:
1) THE GEOTEXTILE FABRIC SHALL MEET THE DESIGN CRITERIA FOR SILT FENCES.
2) THE FABRIC SHALL BE EMBEDDED A MINIMUM OF 8 INCHES INTO THE GROUND (4" DEEP & 4" WIDE) AND THE SOIL COMPACTED OVER THE EMBEDDED FABRIC.
3) WOVEN WIRE FENCE SHALL BE FASTENED SECURELY TO THE FENCE POSTS WITH WIRE TIES OR STAPLES.
4) FILTER CLOTH SHALL BE FASTENED SECURELY TO THE WOVEN WIRE FENCE WITH TIES SPACED EVERY 24 INCHES AT THE TOP, MID–SECTION AND BOTTOM.
5) WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EAC OTHER, THEY SHALL BE OVERLAPPED BY 6 INCHES (24" IS PREFERRED), FOLDED, AND STAPLED.
6) POSTS TO BE SPACED AT A MAXIMUM OF 6' ON CENTER.

SEDIMENT CONTROL FENCE
NOT TO SCALE



TYPICAL SLOPE SOIL STABILIZATION



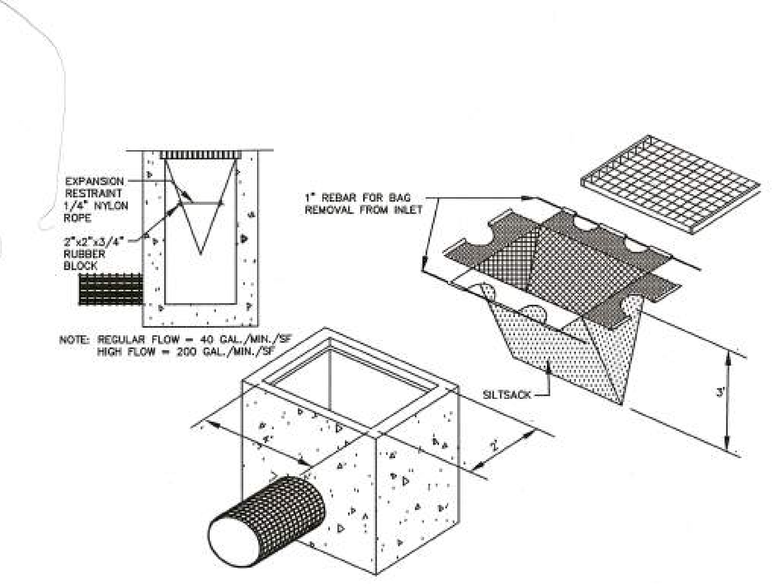
TYPICAL INSTALLATION OF EROSION CONTROL BLANKETS FOR SLOPES
NOT TO SCALE

NOTES:
1. BEGIN AT THE TOP OF BLANKET INSTALLATION AREA BY ANCHORING BLANKET IN A 6" DEEP TRENCH. BACKFILL AND COMPACT TRENCH AFTER STAPLING.
2. ROLL THE BLANKET DOWN THE SWALE IN THE DIRECTION OF THE WATER FLOW. LAY BLANKETS LOOSELY & MAINTAIN DIRECT CONTACT WITH SOIL – DO NOT STRETCH.
3. THE EDGES OF BLANKETS MUST BE STAPLED WITH APPROX. 4 INCH OVERLAP WHERE 2 OR MORE STRIP WIDTHS ARE REQUIRED.
4. WHEN BLANKETS MUST BE SPLICED DOWN THE SWALE, PLACE BLANKET END OVER END WITH 6 INCH (MIN.) OVERLAP AND ANCHOR DOWN SLOPE BLANKET IN A 6 INCH DEEP TRENCH.
5. BLANKETS SHALL BE STAPLED ENOUGH TO ANCHOR BLANKET WHILE MAINTAINING CONTACT WITH SOIL. STAPLES SHALL BE PLACED DOWN THE CENTER & STAGGERED WITH THE STAPLES PLACED ALONG EDGES. PATTERN & AMOUNT OF STAPLES VARIES BY MANUFACTURER, SO FOLLOW MANUFACTURERS RECOMMENDATIONS.
6. BLANKET SHALL BE NORTH AMERICAN GREEN SC–150 OR APPROVED EQUAL.

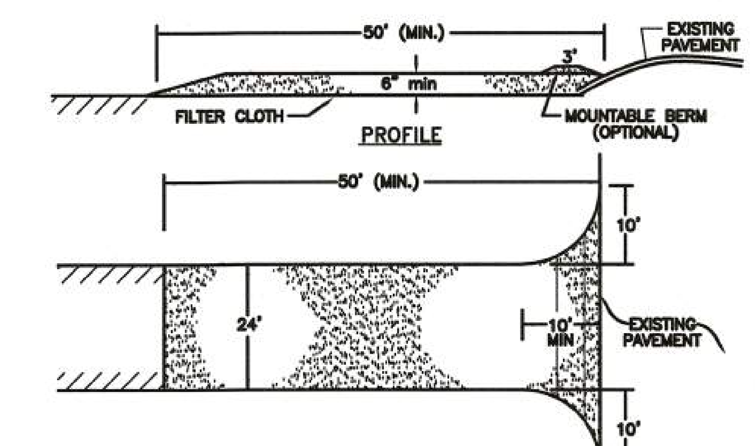
MAINTENANCE & MATS
1. BLANKETS SHALL BE INSPECTED WEEKLY DURING CONSTRUCTION & AFTER A RAINFALL IN EXCESS OF 1/2" IN A 24–HOUR PERIOD.
2. FAILURES SHALL BE REPAIRED IMMEDIATELY. IF ANY OF THE FOLLOWING OCCUR; SLOPE WASHOUT, MAT DISPLACEMENT, DAMAGE TO MAT, THE AFFECTED AREA SHALL BE REPAIRED & RESEEDED & MAT SHALL BE REPLACED OR RE–INSTALLED.

NOTE: DO NOT USE PRODUCTS THAT CONTAIN WELDED PLASTIC OR THAT ARE "PHOTODEGRADABLE". USE PRODUCTS WITH BIODEGRADABLE NETTING AND NATURAL FIBER MATERIAL (I.E. STRAW OR COCONUT FIBER).

BLANKET SLOPE PROTECTION FOR EROSION CONTROL
NOT TO SCALE



SILT SACK DETAIL-ON OR OFF SITE
NOT TO SCALE



1. STONE FOR A STABILIZED CONSTRUCTION ENTRANCE SHALL BE 1 TO 2 INCH STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.

2. THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 50 FEET, EXCEPT FOR A SINGLE RESIDENTIAL LOT WHERE A 30 FOOT MINIMUM WOULD APPLY.
3. THE THICKNESS OF THE STONE FOR THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.

4. THE WIDTH OF THE ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF THE ENTRANCE WHERE INGRESS OCCURS OR 10 FEET, WHICH EVER IS GREATER.

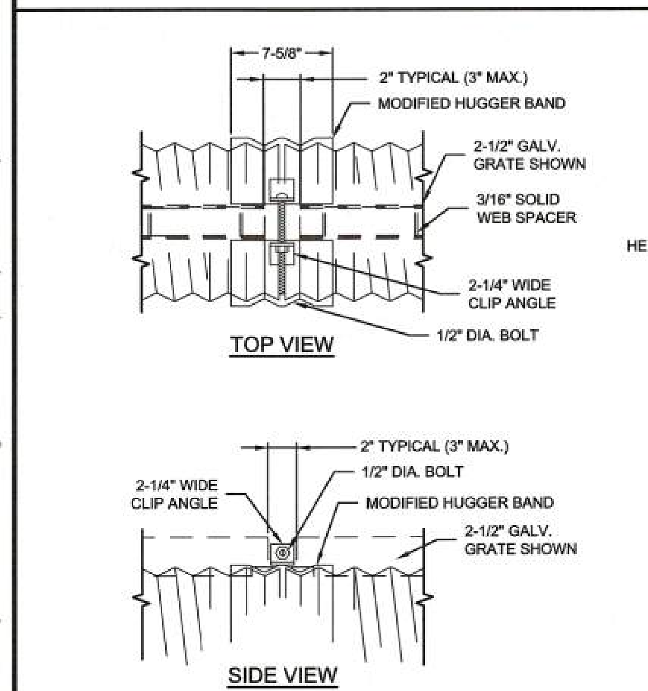
5. GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE. FILTER CLOTH IS NOT REQUIRED FOR A SINGLE FAMILY RESIDENCE LOT.

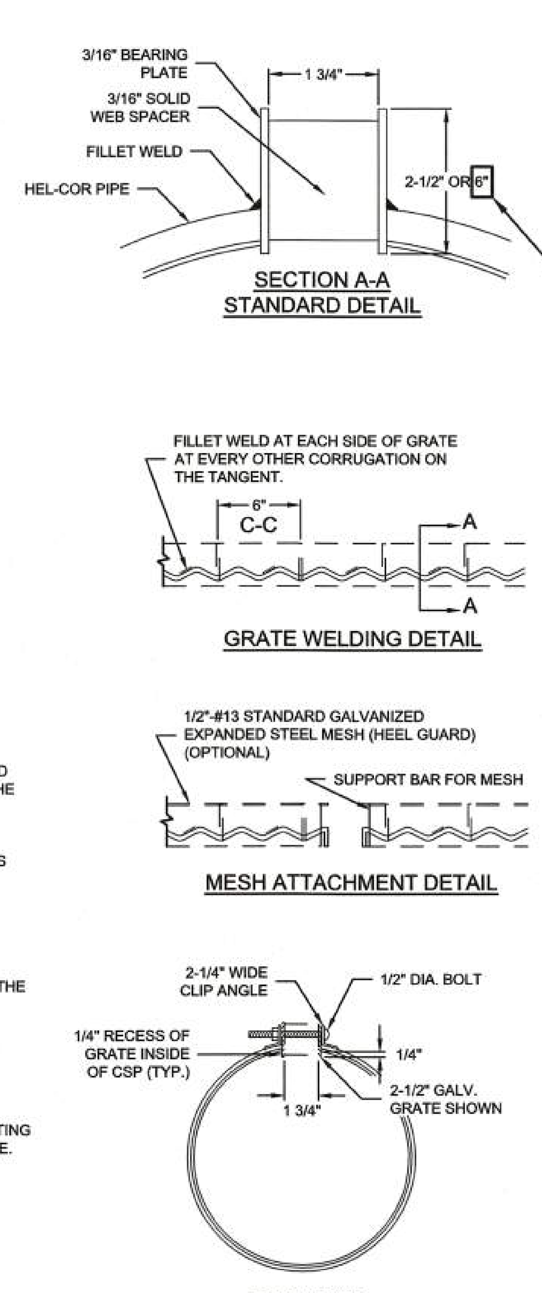
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARD THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.

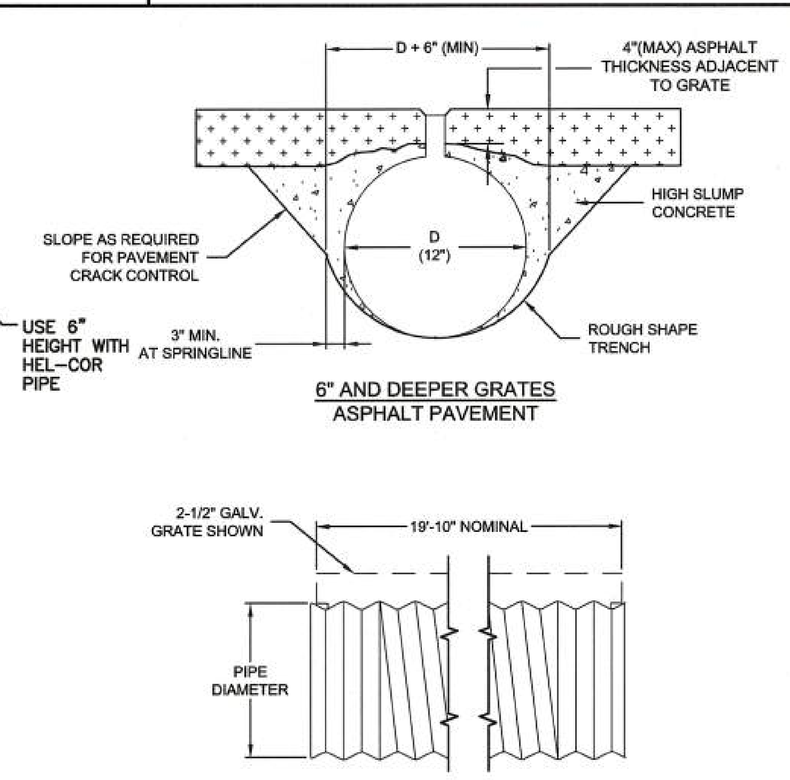
7. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS–OF–WAY. THIS MAY REQUIRE PERIODIC TOPDRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED OR TRACKED ONTO PUBLIC RIGHT–OF–WAY MUST BE REMOVED PROMPTLY.

8. WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS–OF–WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

STABILIZED CONSTRUCTION ENTRANCE DETAIL
NOT TO SCALE







REQUIREMENTS:

1. EITHER 2-1/2" OR 6" DEEP GRATING IS ACCEPTABLE FOR STANDARD HIGHWAY (H10, H20, H25 & HL93) LOADS USING THE GAGES IN THE TABLE TO THE RIGHT. HIGH SLUMP CONCRETE BACKFILL IS REQUIRED WITH THE ENVELOPE EXTENDING A MINIMUM OF 3 INCHES BEYOND THE SPRINGLINE, AS SHOWN ABOVE. THE HIGH SLUMP CONCRETE MUST PROVIDE A MINIMUM OF 750 PSI COMPRESSIVE STRENGTH.
2. FOR INSTALLATION SUBJECTED TO OCCASIONAL LIGHT VEHICLE (LESS THAN H10) LOADS, SELECTED GRANULAR BACKFILL MAY BE USED. HOWEVER, THE SLOTTED DRAIN MUST BE SET IN A TRENCH WIDE ENOUGH TO PROPERLY HAUNCH THE PIPE (TYPICALLY D + 36"). THE GRANULAR BACKFILL MUST BE CLEAN, NON-PLASTIC, WELL GRADED MATERIAL, COMPACTED TO 95% STANDARD PROCTOR DENSITY.
3. DURING INSTALLATION, RECESS THE TOP OF THE GRATE 1/4" BELOW THE FINISHED GRADE OF THE PAVEMENT.
4. PAVEMENT DESIGNS BY OTHERS. FOR REINFORCED CONCRETE PAVEMENTS, CONTINUE THE REINFORCEMENT OVER THE SLOTTED DRAIN. FOR UNREINFORCED CONCRETE PAVEMENTS, MINIMUM SHRINKAGE STEEL IS RECOMMENDED.
5. HEAVIER WHEEL LOADS REQUIRE THE USE OF MINIMUM 6" DEEP GRATING AND TYPICALLY A LARGER HIGH SLUMP CONCRETE EMBEDMENT ZONE. (SEE AIRCRAFT & HEAVY LOADING DETAIL).

SLOTTED DRAIN CORRUGATED STEEL PIPE MINIMUM GAGE REQUIREMENTS FOR HIGHWAY LOADS

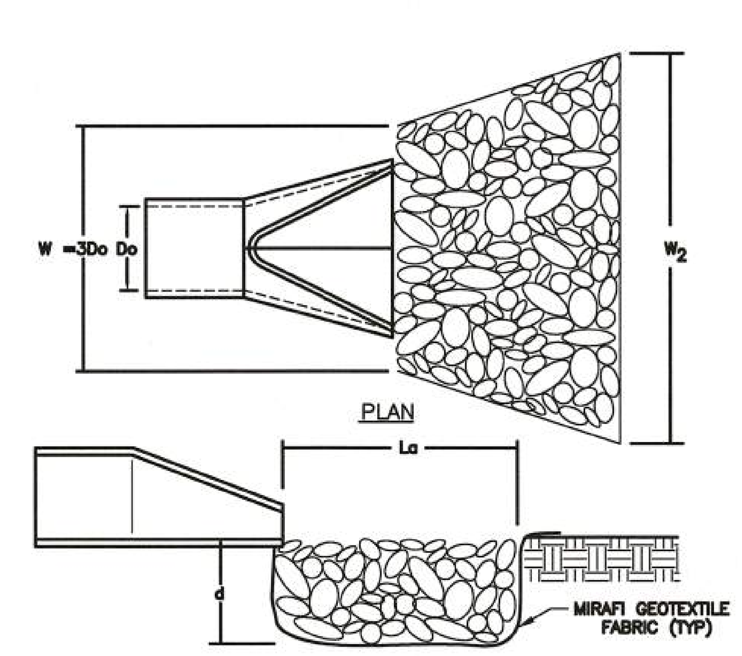
SLOTTED DRAIN CSP	2 1/2" GRATE		6" GRATE	
DIA, D (IN.)	ASPHALT PAVEMENT	CONCRETE PAVEMENT	ASPHALT PAVEMENT	CONCRETE PAVEMENT
12 - 36	16GA			

NOTES:
1. INSTALLATION MUST CONFORM TO STANDARD INSTALLATION DETAILS USING A 750 PSI MINIMUM HIGH SLUMP CONCRETE BACKFILL.
2. REQUIRES A REINFORCED CONCRETE PAVEMENT OR A DEEPER GRATE.

SLOTTED DRAIN NOTES:
1. GRATING IS AVAILABLE IN DEPTHS OF 2-1/2" AND 6"
2. TRAPEZOIDAL GRATING WITH SLANTED SPACERS IS ALSO AVAILABLE REF. TRAPEZOIDAL GRATE DETAIL.
3. FOR 6" VERTICAL REQUIREMENTS, THE SLOTTED DRAIN BAND MAY BE SUPPLIED WITH AN OPTIONAL ANGLE ATTACHMENT.
4. DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES

CONTECH PIPE SOLUTIONS

SLOTTED DRAIN DETAIL (STRAIGHT SIDED GRATES)
NOT TO SCALE



OUTLET	Do	La	W_1	W_2	d_{50}	d
ES–1*	8"	10'	2'	6'	3"	8"
FES–1*	12"	8'	3'	11'	3"	8"
FES–2	12"	7'	3'	10'	3"	8"
FES–3*	18"	12'	4.5'	17'	3"	8"

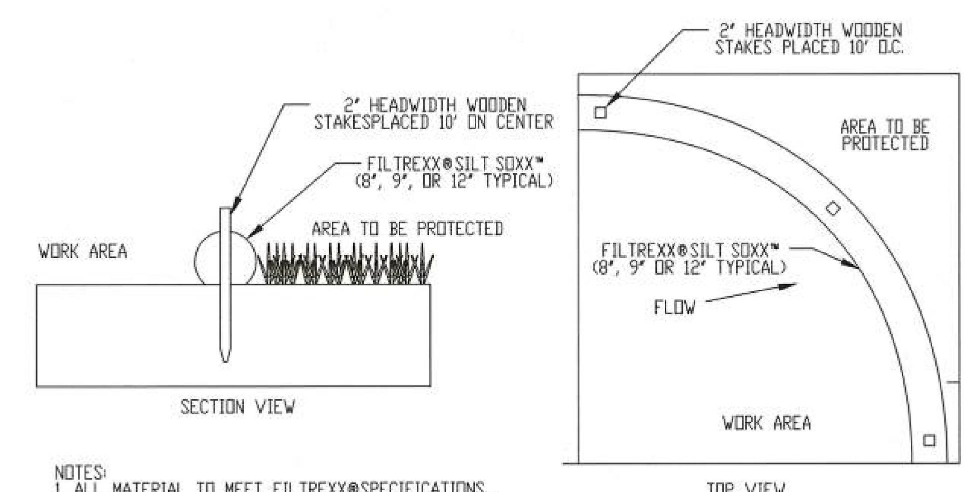
*PLACE CRUSHED STONE AROUND ENTIRE SEDIMENT FOREBAY BOTTOM.

ROCK RIP–RAP GRADATION

% OF WEIGHT SMALLER THAN THE GIVEN SIZE	SIZE OF STONE IN INCHES
100	4.5 TO 6.0
85	3.9 TO 5.4
50	3.0 TO 4.5
15	0.9 TO 1.5

CONSTRUCTION NOTES:
1. THE SUBGRADE FOR THE FILTER MATERIAL, GEOTEXTILE FABRIC, AND RIP–RAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. THE ROCK OR GRAVEL USED FOR FILTER OR RIP–RAP SHALL CONFORM TO THE SPECIFIED GRADATION.
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIP–RAP. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACE,\MENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
4. STONE FOR THE RIP–RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.
5. THE MEDIAN STONE DIAMEMETER FOR THE RIP–RAP APRON IS d50. FIFTY PERCENT BY WEIGHT OF THE RIP–RAP MIXTURE SHALL BE SMALLER THAN THE MEDIAN STONE SIZE. THE LARGEST STONE SIZE IN THE MIXTURE SHALL BE 1.5 d50.

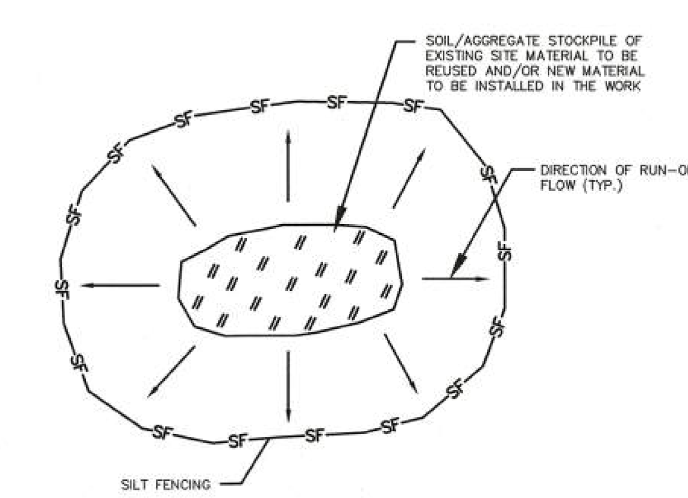
STONE OUTLET APRON
NOT TO SCALE



NOTES:
1. ALL MATERIAL TO MEET FILTREXX®SPECIFICATIONS.
2. SILT SOXX™FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.

INSPECTION AND MAINTENANCE
Routine inspection should be conducted within 24 hrs of a runoff event or as designated by the regulating authority. Sediment control should be regularly inspected to make sure they maintain their shape and are producing adequate hydraulic flow-through. If ponding becomes excessive, additional Sediment control may be required to reduce effective slope length or sediment removal may be necessary. Sediment control shall be inspected until area above has been permanently stabilized and construction activity has ceased
1. The Contractor shall maintain the Sediment control in a functional condition at all times and it shall be routinely inspected.
2. If the Sediment control has been damaged, it shall be repaired, or replaced if beyond repair.
3. The Contractor shall remove sediment at the base of the upslope side of the Sediment control when accumulation has reached 1/2 of the effective height of the Sediment control, or as directed by the Engineer. Alternatively, a new Sediment control can be placed on top of and slightly behind the original one creating more sediment storage capacity without soil disturbance.
4. Sediment control shall be maintained until disturbed area above the device has been permanently stabilized and construction activity has ceased.
5. The FilterMedia™ will be dispersed on site once disturbed area has been permanently stabilized, construction activity has ceased, or as determined by the Engineer.
6. For long-term sediment and pollution control applications, Sediment control can be seeded at the time of installation to create a vegetative filtering system for prolonged and increased filtration of sediment and soluble pollutants (contained vegetative filter strip). The appropriate seed mix shall be determined by the Engineer.

FILTREXX® SILT SOXX™



NOTES:
1. ALL EXISTING EXCAVATED MATERIAL THAT IS NOT TO BE REUSED IN THE WORK IS TO BE IMMEDIATELY REMOVED FROM THE SITE AND PROPERLY DISPOSED OF.

2. SOIL/AGGREGATE STOCKPILE SITES TO BE WHERE SHOWN ON THE DRAWINGS.

3. RESTORE STOCKPILE SITES TO PRE–EXISTING PROJECT CONDITION AND RESEED AS REQUIRED.

4. STOCKPILE HEIGHTS MUST NOT EXCEED 35'. STOCKPILE SLOPES MUST BE 2:1 OR FLATTER.

MATERIALS STOCKPILE
NOT TO SCALE

GPI Engineering Design Planning Construction Management
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Salem, NH 03079

PREPARED FOR
ENERGY NORTH GROUP
2 INTERNATIONAL WAY
LAWRENCE, MA 01843

PROPOSED RETAIL MOTOR FUEL OUTLET
SITE RE-DEVELOPMENT
PARCEL ID: U45-7-0, U45-7-B, U45-8-A, & U45-11-0
254, 256 & 260 AYER ROAD
LITTLETON, MASSACHUSETTS
PARCEL ID: 30-16
0 LITTLETON ROAD
AYER, MASSACHUSETTS

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER M. TYMULA
CIVIL
No. 57140
4/20/23

REVISIONS

NO.	REVISION	DATE
1	MISC. REV'S PER TOWN/PEER REVIEW COMMENTS	4/20/23

FEBRUARY 8, 2023

DRAWN/DESIGN BY	CHECKED BY
SJB/CNM	CMT

DETAIL SHEET

SCALE: AS SHOWN
PROJECT NO. NEX-2021267

UNDERGROUND INFILTRATION SYSTEM NOTES:

1) EXISTING TOPSOIL, BRUSH, TREES, BOULDERS, FILL, DEBRIS AND OTHER UNSUITABLES TO BE REMOVED FOR 5' ALL AROUND UNDERGROUND INFILTRATION SYSTEM DOWN TO NATIVE MATERIAL. BACKFILL WITH STONE BEDDING MATERIAL.

2) DO NOT TRAFFIC EXPOSED SOIL SURFACES WITH CONSTRUCTION EQUIPMENT. IF FEASIBLE, PERFORM EXCAVATIONS WITH EQUIPMENT POSITIONED OUTSIDE THE LIMITS OF THE INFILTRATION SYSTEM.

3) DO NOT PLACE INFILTRATION SYSTEMS INTO SERVICE UNTIL THE CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.

4) CONTRACTOR SHOULD CONFIRM SYSTEM PARTS AND OBTAIN SHOP DRAWINGS FROM MANUFACTURER. SUBSTITUTIONS AND SHOP DRAWINGS SHOULD BE APPROVED BY THE ENGINEER.

5) PARTS SPECIFICATIONS SHOWN ARE AS PROVIDED BY SHAWCOR, OR APPROVED EQUAL. ANY CHANGES TO THESE SPECIFICATIONS SHOULD BE APPROVED BY DESIGN ENGINEER FOR PERFORMANCE.

MC-3500 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH MC-3500.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 45x76 DESIGNATION SS.
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. 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.
7. 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.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-3500 CHAMBER SYSTEM

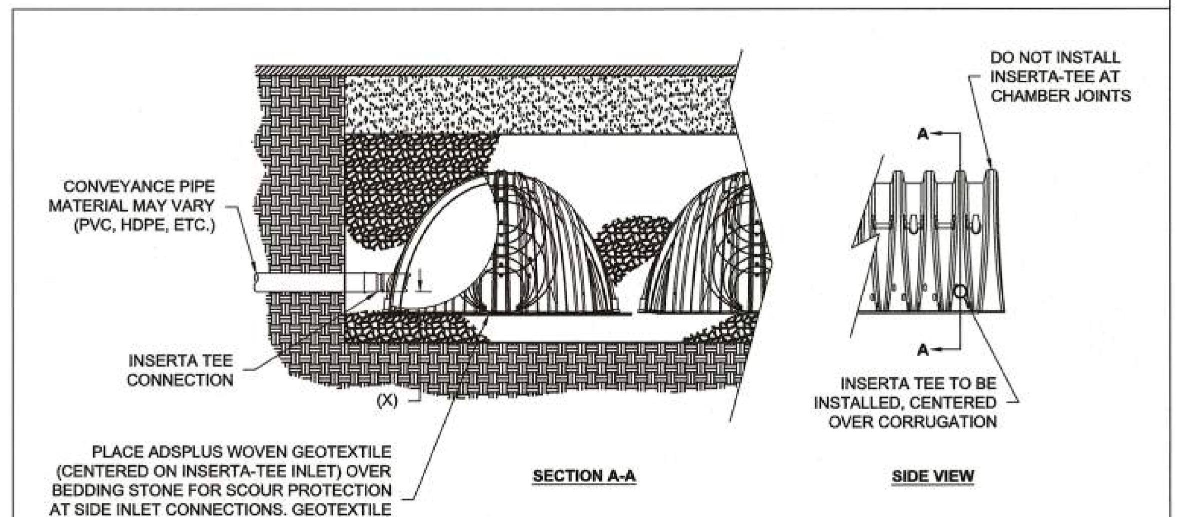
1. STORMTECH MC-3500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS.
   STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - SPACING BETWEEN THE CHAMBER ROWS.
7. INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
8. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
9. STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
10. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
11. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH MC-3500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
2. THE USE OF EQUIPMENT OVER MC-3500 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

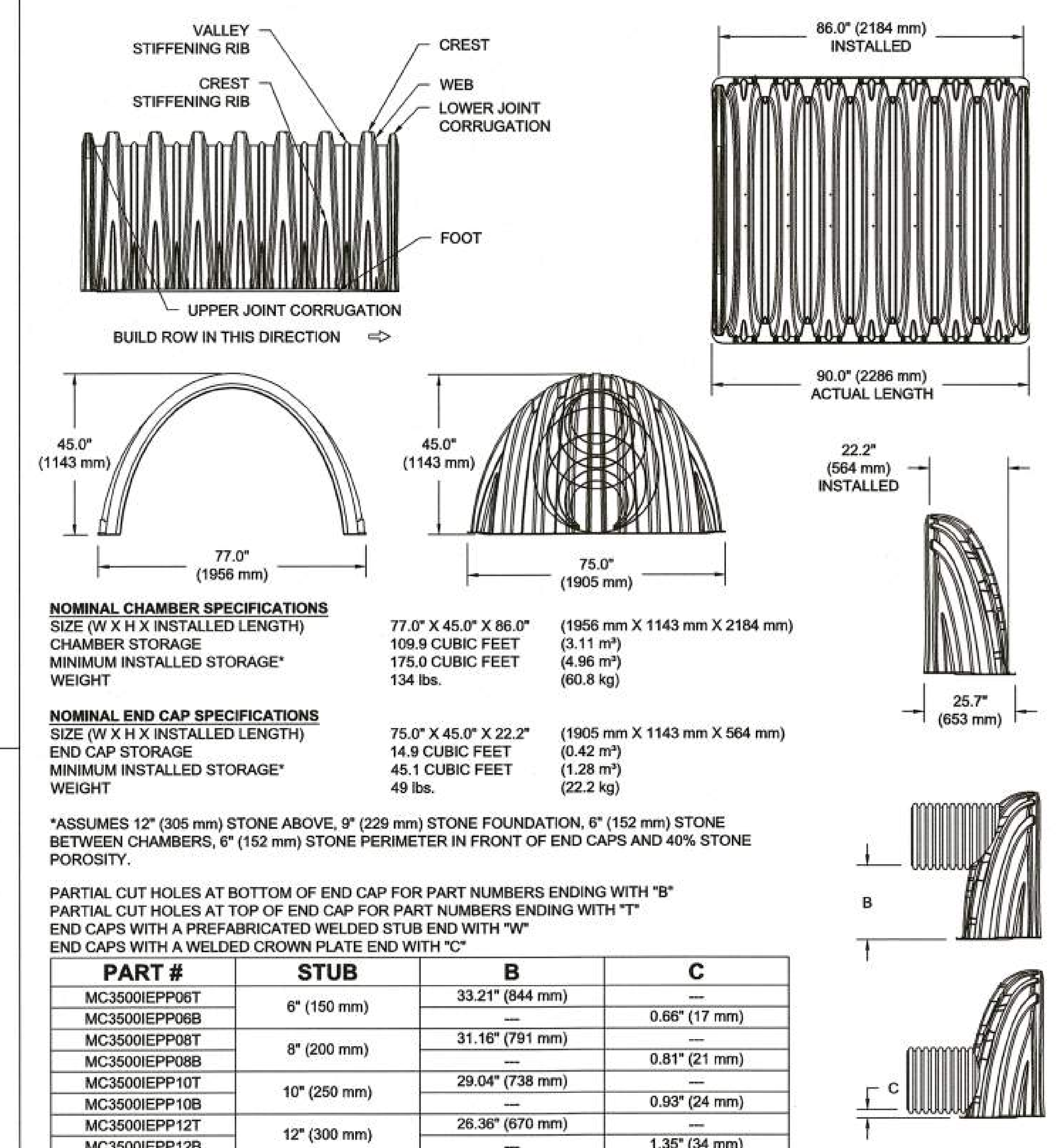
CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.



CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	12" (300 mm)	6" (150 mm)
MC-4500	12" (300 mm)	8" (200 mm)
INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON		

NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

3 INSERTA-TEE SIDE INLET DETAIL



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	77.0" X 45.0" X 86.0"	(1956 mm X 1143 mm X 2184 mm)
CHAMBER STORAGE	109.9 CUBIC FEET	(3.11 m³)
MINIMUM INSTALLED STORAGE*	175.0 CUBIC FEET	(4.96 m³)
WEIGHT	134 lbs.	(60.8 kg)

NOMINAL END CAP SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	75.0" X 45.0" X 22.2"	(1905 mm X 1143 mm X 564 mm)
END CAP STORAGE	14.9 CUBIC FEET	(0.42 m³)
MINIMUM INSTALLED STORAGE*	45.1 CUBIC FEET	(1.28 m³)
WEIGHT	49 lbs.	(22.2 kg)

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION, 6" (152 mm) STONE BETWEEN CHAMBERS, 6" (152 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

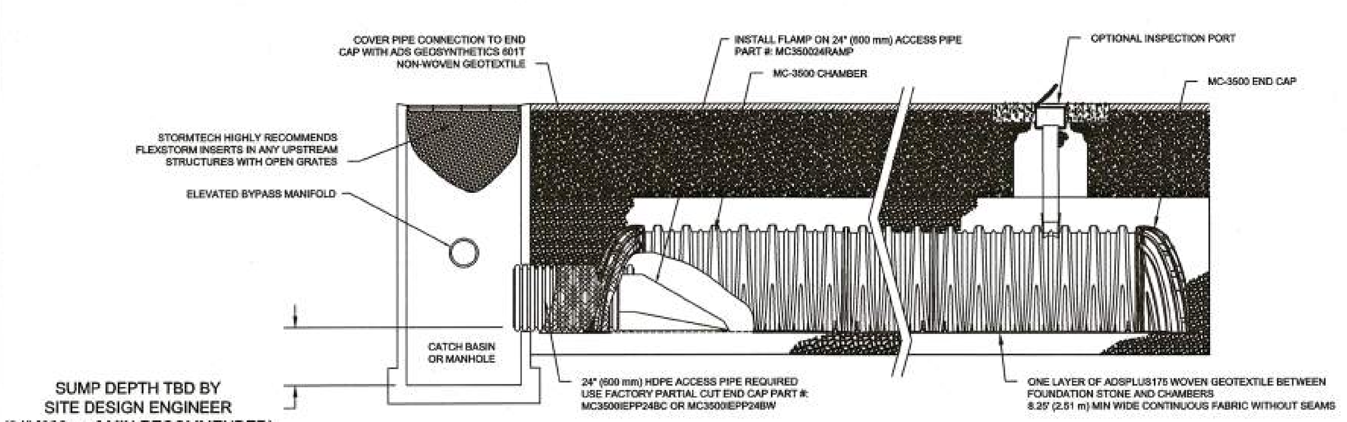
PARTIAL CUT HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PARTIAL CUT HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"
END CAPS WITH A WELDED CROWN PLATE END WITH "C"

PART #	STUB	B	C
MC3500IEPP06T	6" (150 mm)	33.21" (844 mm)	---
MC3500IEPP06B		---	0.66" (17 mm)
MC3500IEPP08T	8" (200 mm)	31.16" (791 mm)	---
MC3500IEPP08B		---	0.81" (21 mm)
MC3500IEPP10T	10" (250 mm)	29.04" (738 mm)	---
MC3500IEPP10B		---	0.93" (24 mm)
MC3500IEPP12T	12" (300 mm)	26.36" (670 mm)	---
MC3500IEPP12B		---	1.35" (34 mm)
MC3500IEPP15T	15" (375 mm)	23.39" (594 mm)	---
MC3500IEPP15B		---	1.50" (38 mm)
MC3500IEPP18TC	18" (450 mm)	20.03" (509 mm)	---
MC3500IEPP18TW			
MC3500IEPP18BC		---	1.77" (45 mm)
MC3500IEPP18BW			
MC3500IEPP24TC	24" (600 mm)	14.48" (368 mm)	---
MC3500IEPP24TW			
MC3500IEPP24BC		---	2.06" (52 mm)
MC3500IEPP24BW			
MC3500IEPP30BC	30" (750 mm)	---	2.75" (70 mm)

NOTE: ALL DIMENSIONS ARE NOMINAL

CUSTOM PARTIAL CUT 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-3500 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.

2 MC-3500 TECHNICAL SPECIFICATIONS



INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

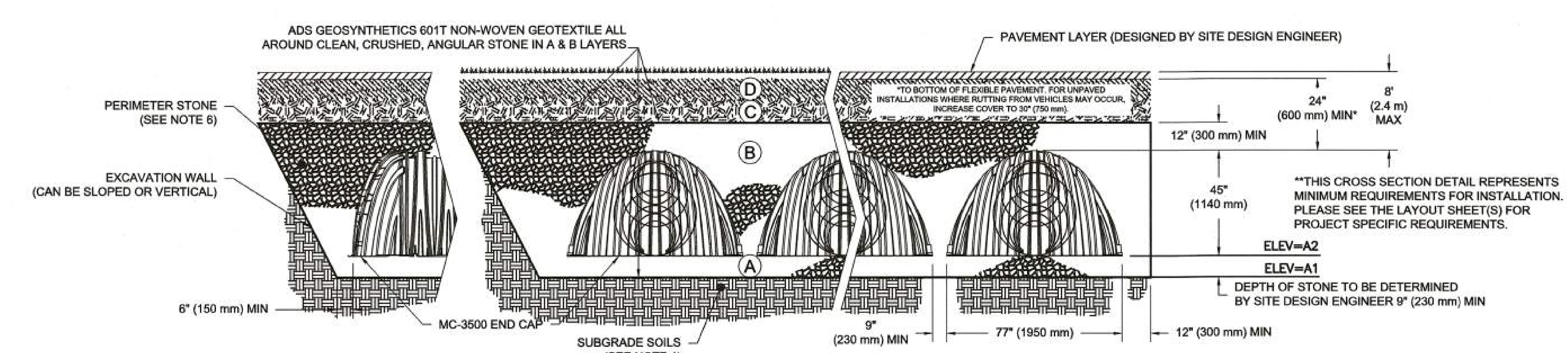
1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

6 MC-3500 ISOLATOR ROW PLUS DETAIL

ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 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.

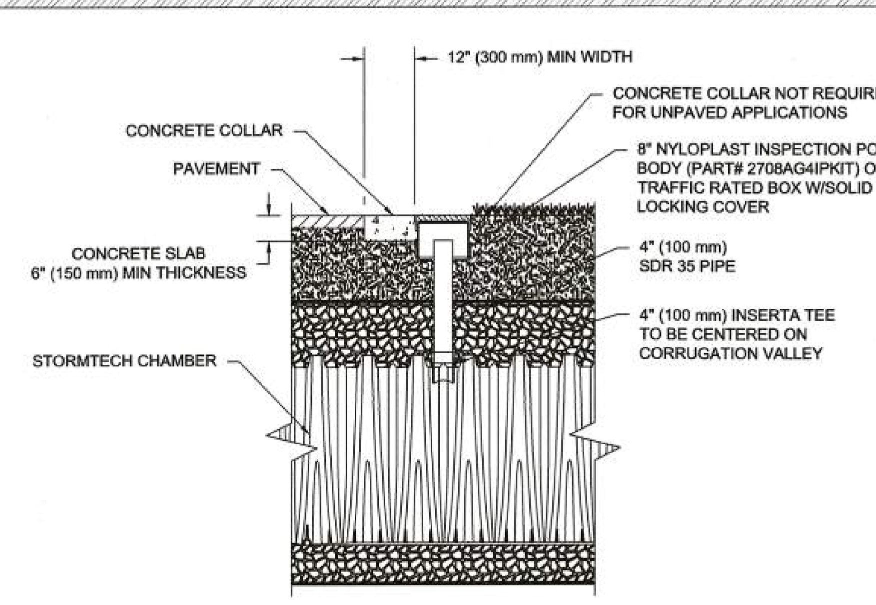


NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 45x76 DESIGNATION SS.
2. MC-3500 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.

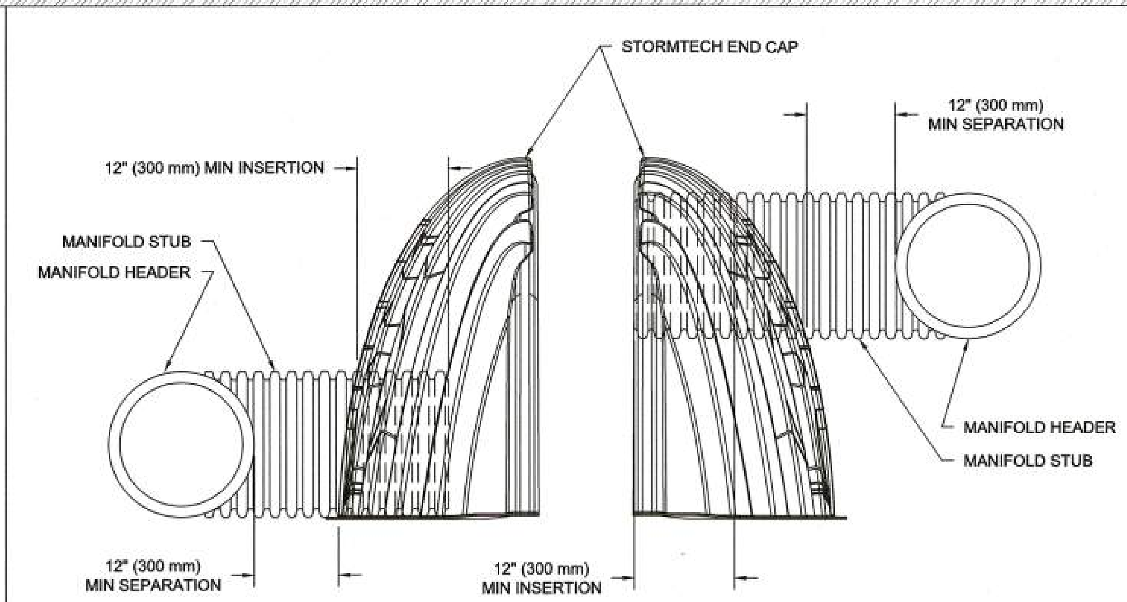
ELEVATIONS TABLE

SYSTEM #	ELEV. A1	ELEV. A2
UG INF-1	250.00	250.75
UG INF-2	249.50	250.25



NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION VALLEY.

5 4" PVC INSPECTION PORT DETAIL (MC SERIES CHAMBER)



NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

4 MC-SERIES END CAP INSERTION DETAIL

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PREPARED FOR
ENERGY NORTH GROUP
2 INTERNATIONAL WAY
LAWRENCE, MA 01843

PROPOSED RETAIL MOTOR FUEL OUTLET
SITE RE-DEVELOPMENT
PARCEL ID: U45-7-0, U45-7-B, U45-8-A, & U45-11-0
254, 256 & 260 AYER ROAD
LITTLETON, MASSACHUSETTS
PARCEL ID: 30-16
0 LITTLETON ROAD
AYER, MASSACHUSETTS

COMMONWEALTH OF MASSACHUSETTS
CHRISTOPHER M. TYMULA
CIVIL
No. 57140
REGISTERED PROFESSIONAL ENGINEER
4/20/23

REVISIONS

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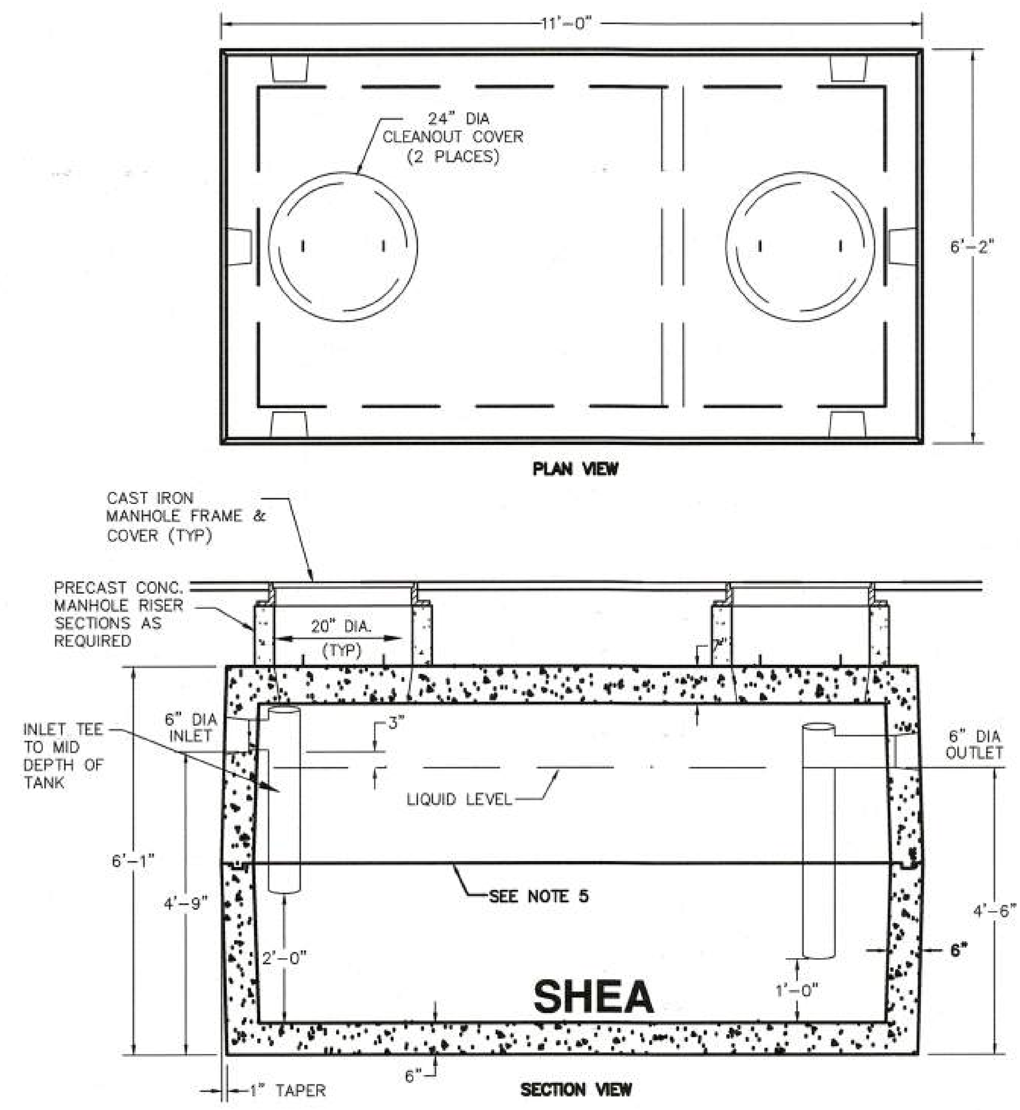
FEBRUARY 8, 2023

DRAWN/DESIGN BY	CHECKED BY
SJB/CNM	CMT

DETAIL SHEET

SCALE: AS SHOWN

PROJECT NO. NEX-2021267

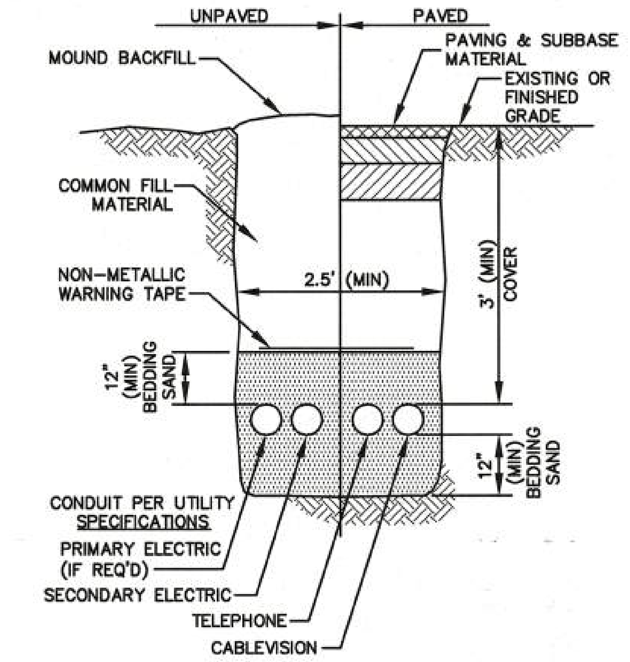


NOTES:

1. CONCRETE: 5,000 PSI MINIMUM AFTER 28 DAYS.
2. ALL REINFORCEMENT PER ASTM C1227-93.
3. DESIGNED FOR H-20 LOADING.
4. TONGUE & GROOVE JOINT SEALED WITH BUTYLE RESIN.
5. TEES AND BAFFLES SOLD SEPARATELY.

1,500 GALLON GREASE TRAP (H-20 LOADING)

NOT TO SCALE

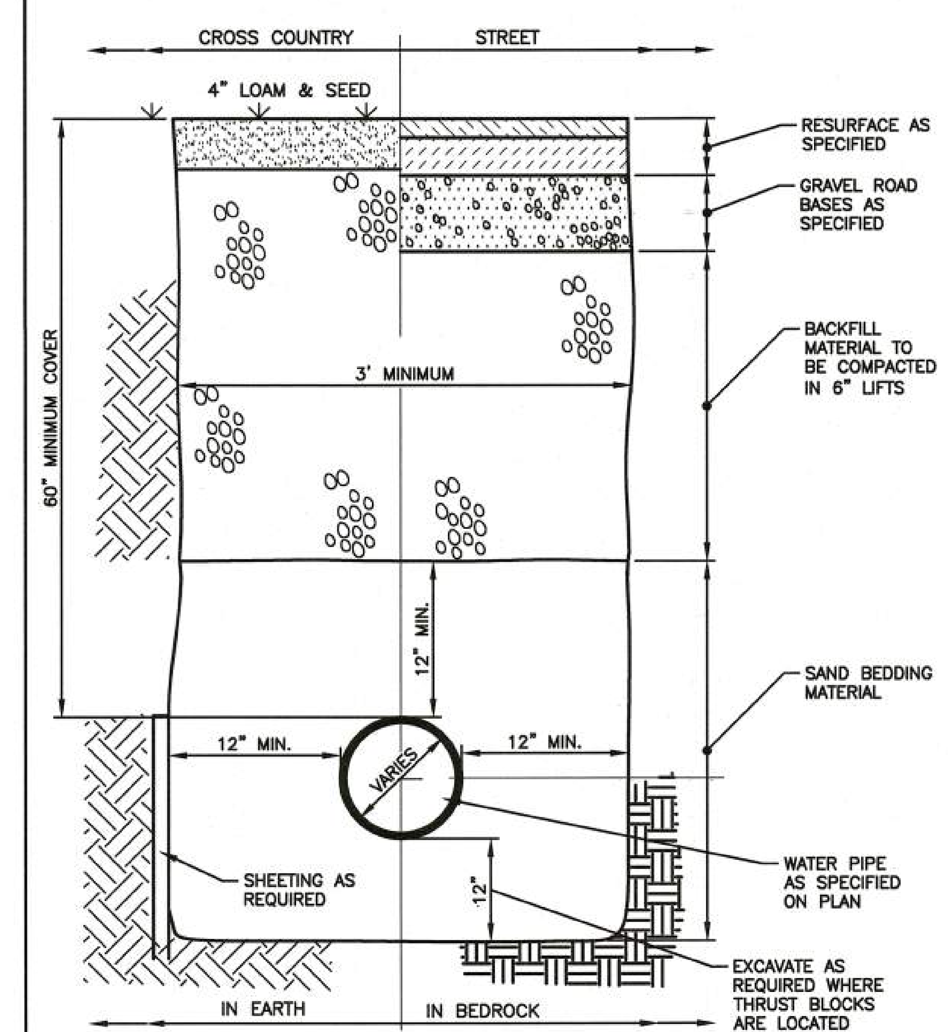


UTILITY TRENCH

NOT TO SCALE

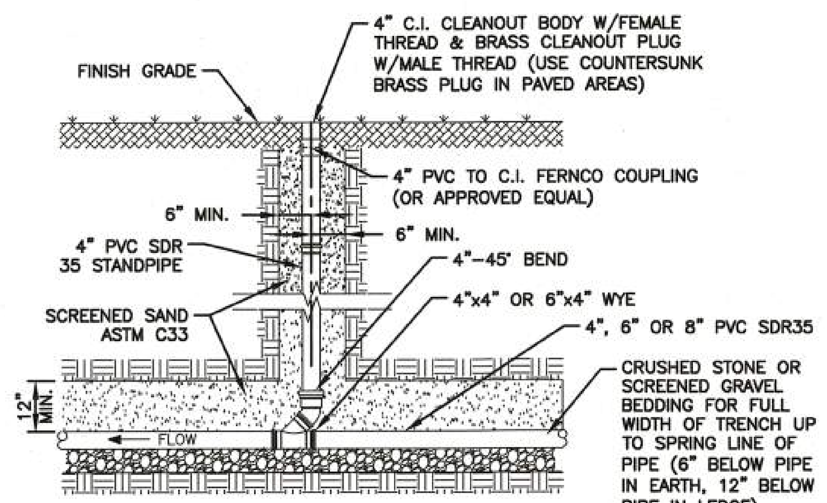
KOR-N-SEAL

NOT TO SCALE



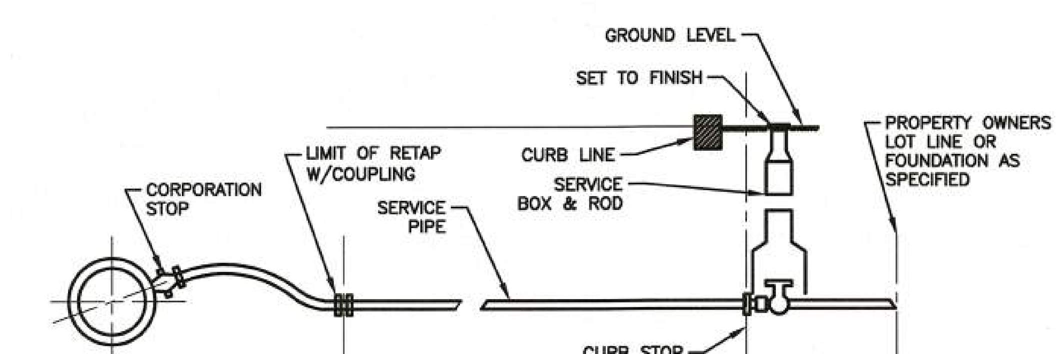
TYPICAL TRENCH SECTION FOR WATER SERVICE

NOT TO SCALE



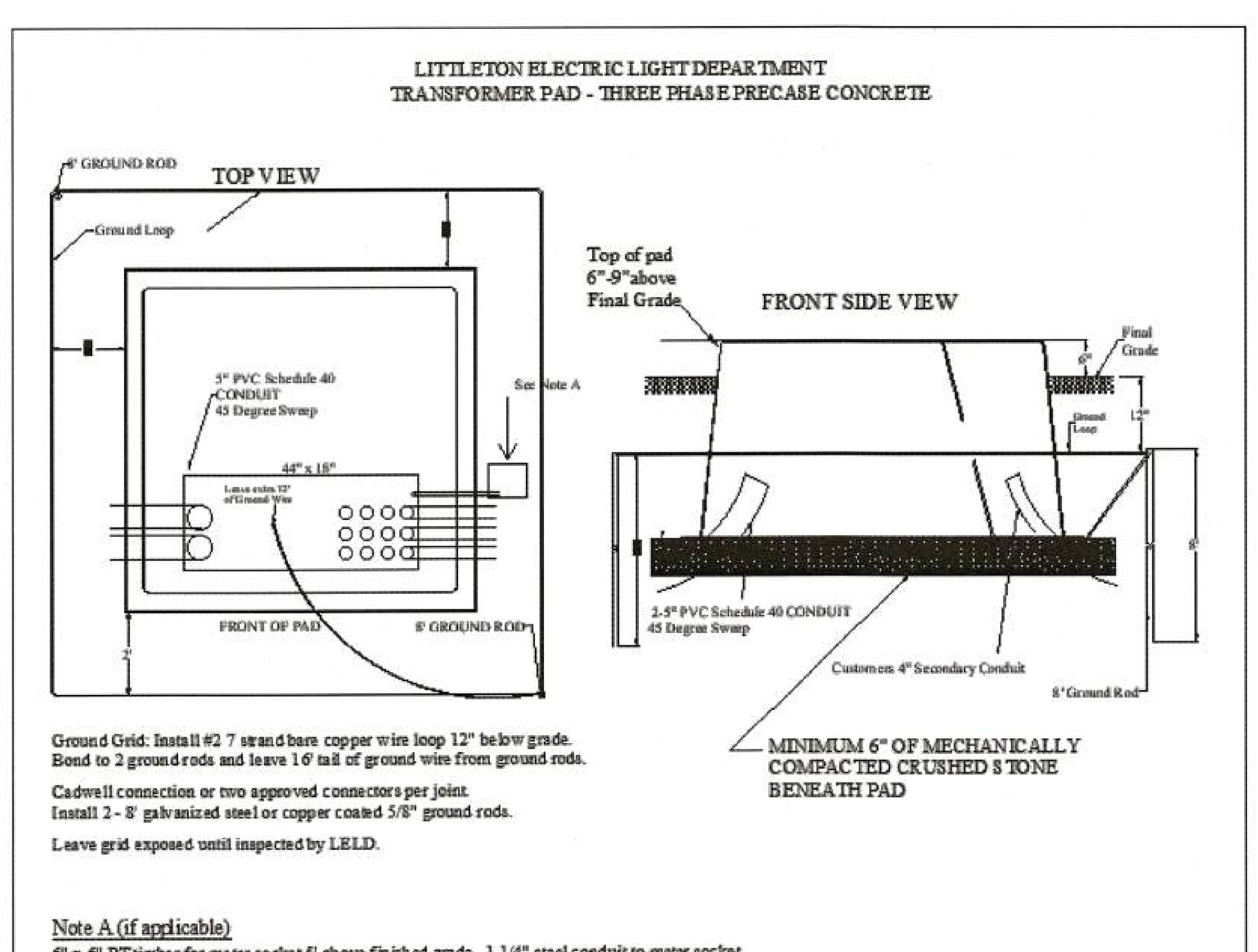
TYPICAL SEWER SERVICE CLEANOUT

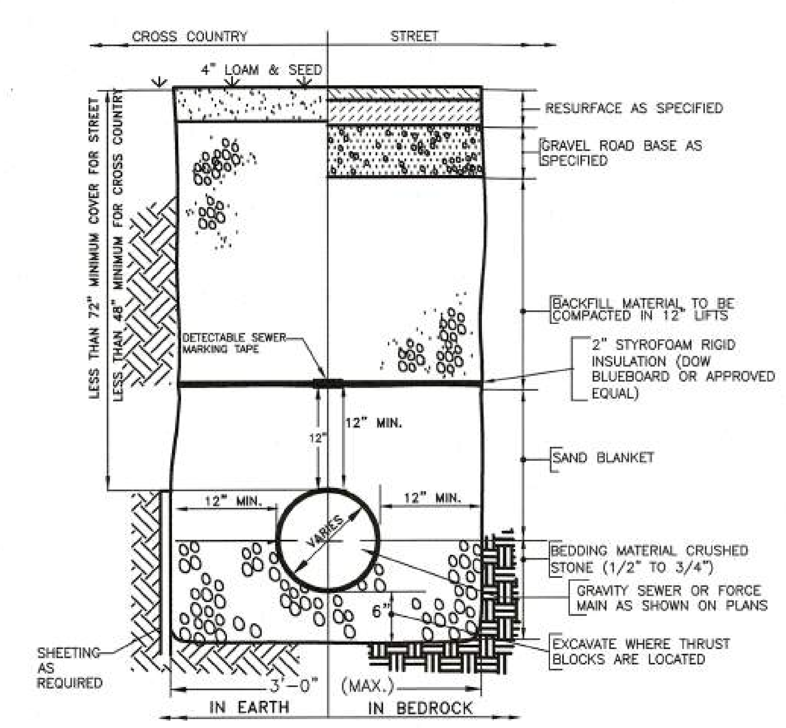
NOT TO SCALE



TYPICAL WATER SERVICE CONNECTION

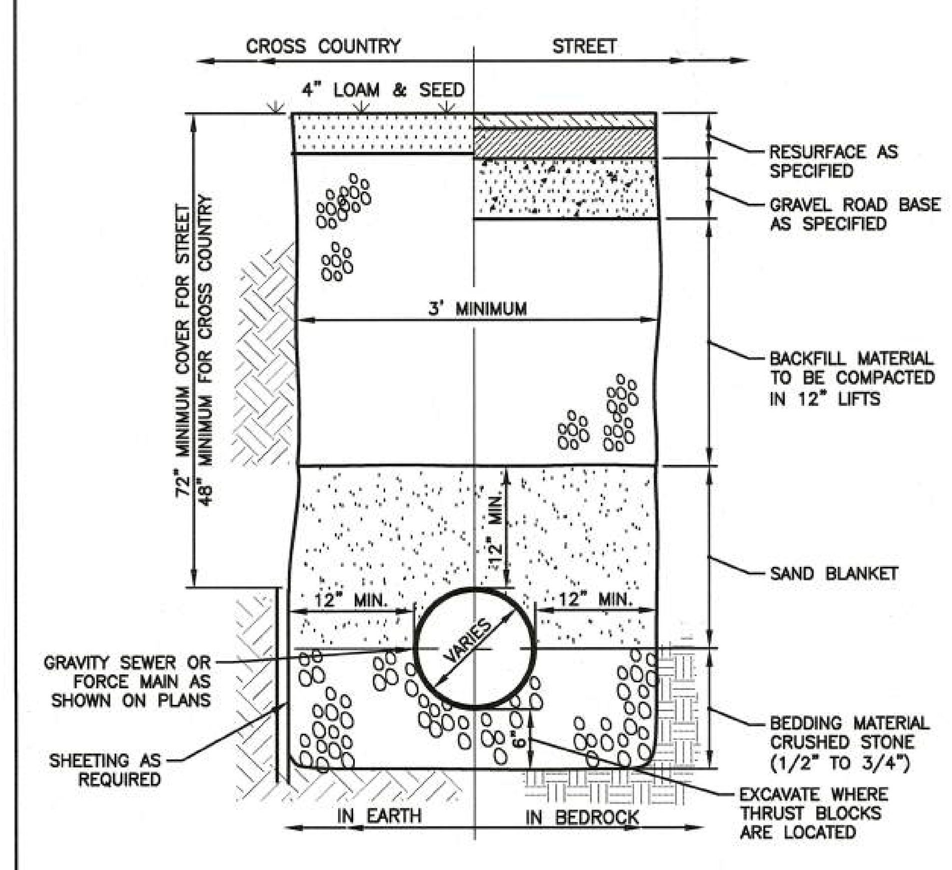
NOT TO SCALE





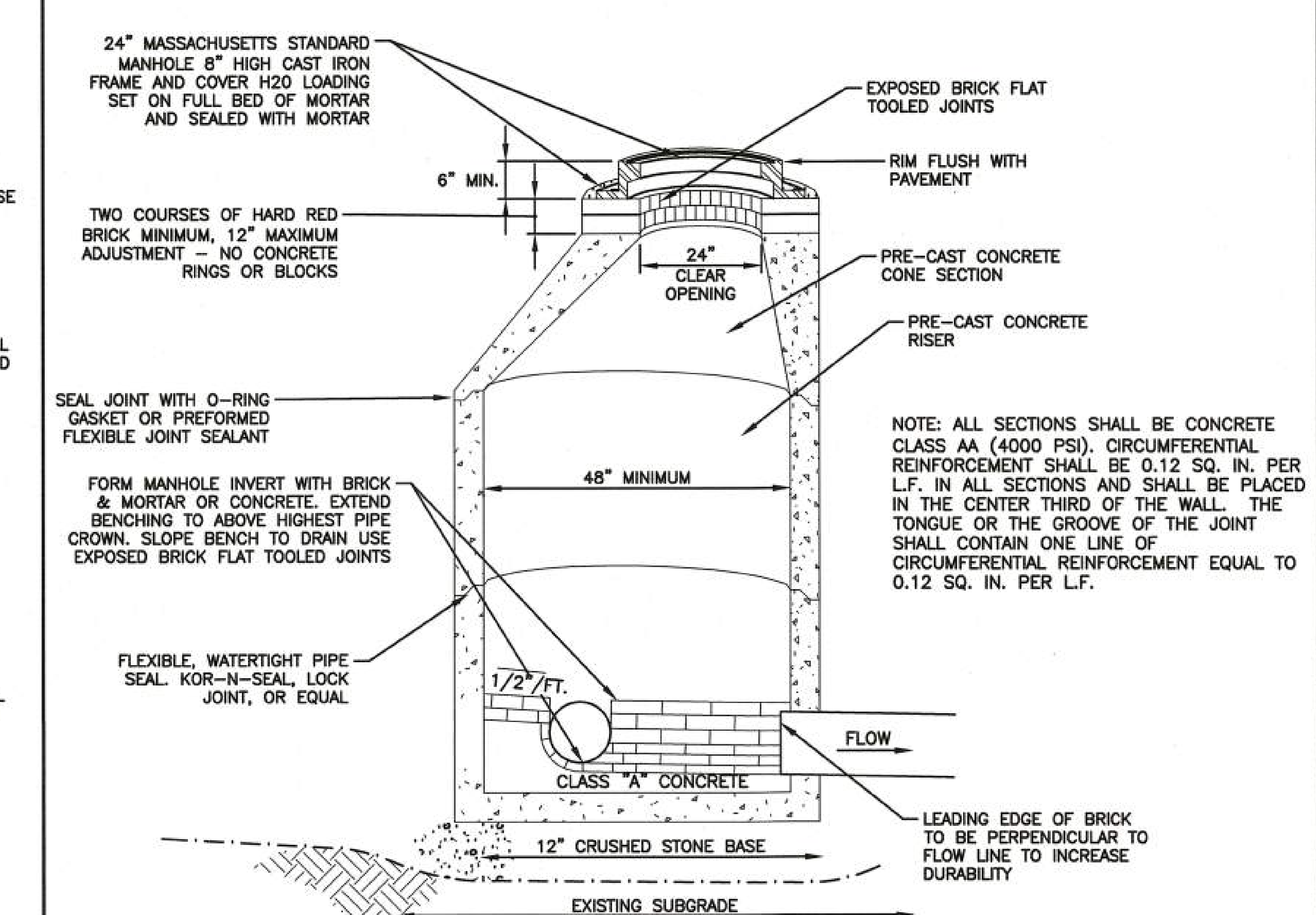
TYPICAL TRENCH SECTION FOR SANITARY SEWER SERVICE WITH LESS THAN 6' OF COVER

NOT TO SCALE



TYPICAL TRENCH SECTION FOR SANITARY SEWER SERVICE

NOT TO SCALE



MORTAR SHALL CONSIST OF: 1 PART BY VOLUME PORTLAND CEMENT, 2 PARTS BY VOLUME, DAMP WASHED COARSE SAND AND POTABLE WATER TO PRODUCE A CONSISTENCY OF STIFF PASTE. SEAL ALL PRECAST JOINTS WITH MORTAR.

SEWER MANHOLE

NOT TO SCALE

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LAWRENCE, MA 01843

PROPOSED RETAIL MOTOR FUEL OUTLET
SITE RE-DEVELOPMENT
PARCEL ID: U45-7-0, U45-7-B, U45-8-A, & U45-11-0
254, 256 & 260 AYER ROAD
LITTLETON, MASSACHUSETTS
PARCEL ID: 30-16
0 LITTLETON ROAD
AYER, MASSACHUSETTS

COMMONWEALTH OF MASSACHUSETTS
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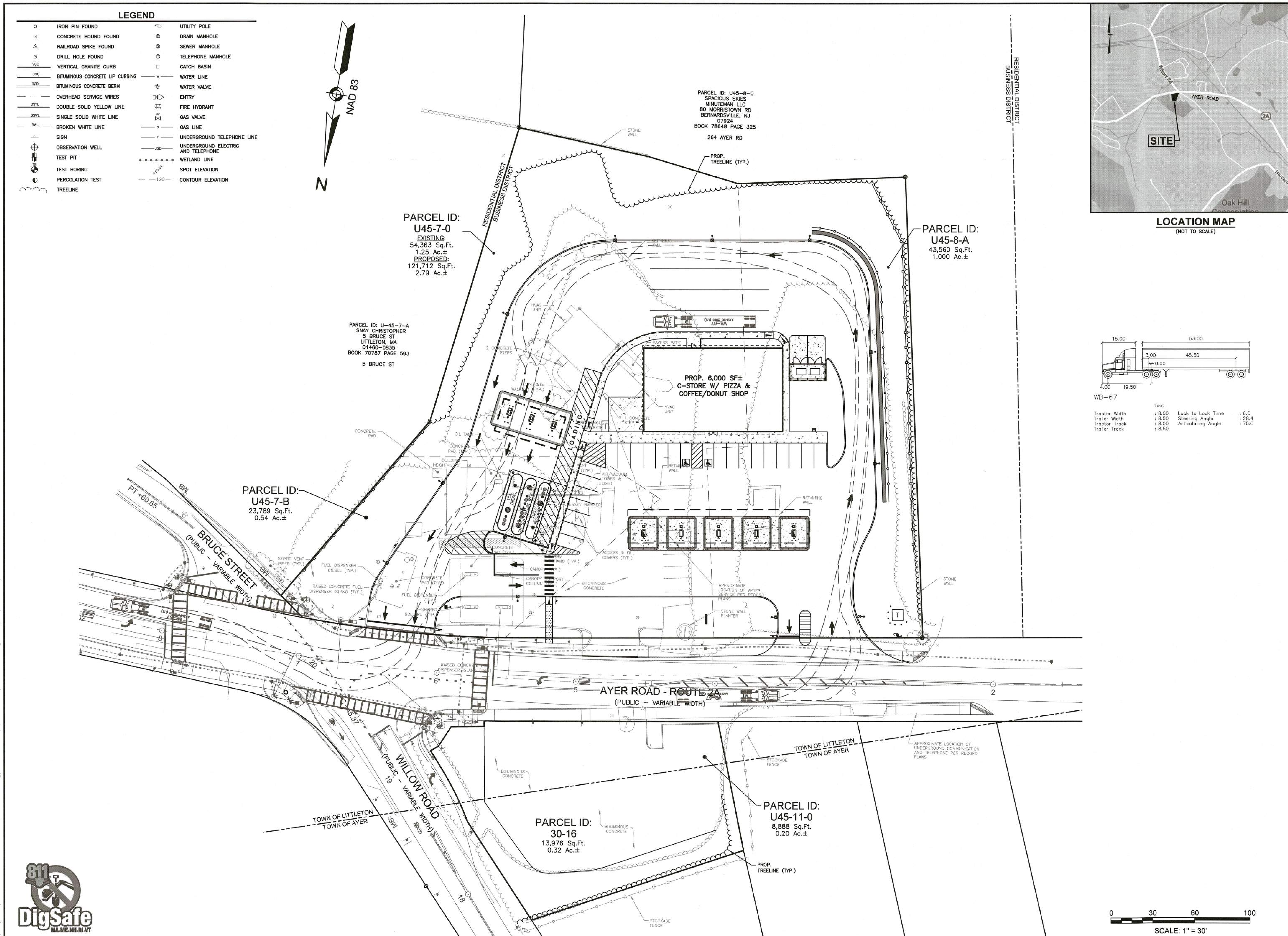

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PROPOSED RETAIL MOTOR FUEL OUTLET
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NO.	REVISION	DATE
1	MISC. REV'S PER TOWN/PEER REVIEW COMMENTS	4/20/23

FEBRUARY 8, 2023

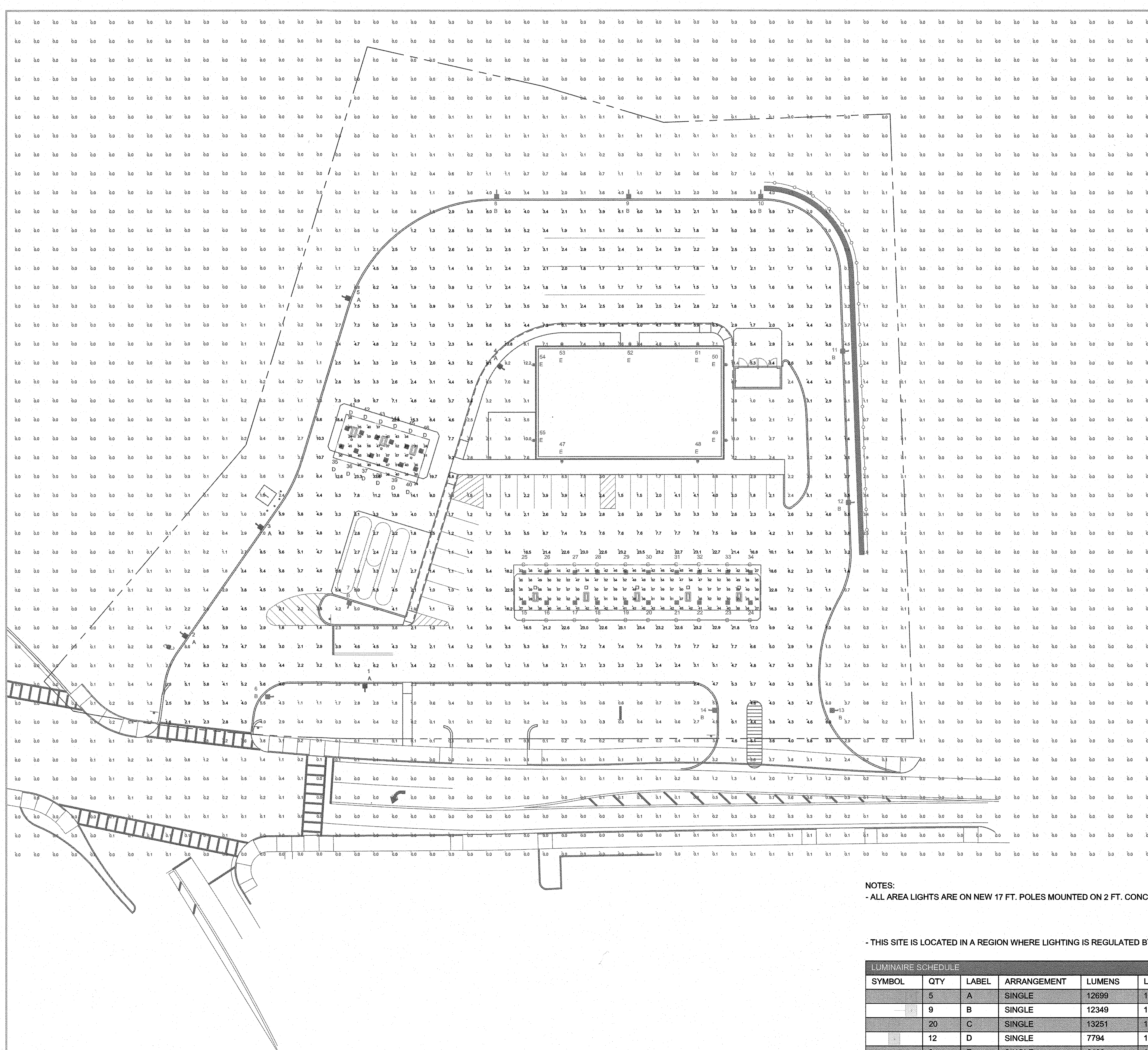
DRAWN/DESIGN BY	CHECKED BY
SJB/CNM	CMT

TRUCK TURN PLAN

SCALE: 1"=30'

PROJECT NO. NEX-2021267

1 OF 1



LUMINAIRE LOCATION SUMMARY		
LUM NO.	LABEL	MTG. HT.
1	A	19
2	A	19
3	A	19
4	A	19
5	A	19
6	B	19
7	B	19
8	B	19
9	B	19
10	B	19
11	B	19
12	B	19
13	B	19
14	B	19
15	C	16
16	C	16
17	C	16
18	C	16
19	C	16
20	C	16
21	C	16
22	C	16
23	C	16
24	C	16
25	C	16
26	C	16
27	C	16
28	C	16
29	C	16
30	C	16
31	C	16
32	C	16
33	C	16
34	C	16
35	D	16
36	D	16
37	D	16
38	D	16
39	D	16
40	D	16
41	D	16
42	D	16
43	D	16
44	D	16
45	D	16
46	D	16
47	E	10
48	E	10
49	E	10
50	E	10
51	E	10
52	E	10
53	E	10
54	E	10
55	E	10

NOTES:

- ALL AREA LIGHTS ARE ON NEW 17 FT. POLES MOUNTED ON 2 FT. CONCRETE BASES.

- THIS SITE IS LOCATED IN A REGION WHERE LIGHTING IS REGULATED BY LOCAL ORDINANCES.

FOOTCANDLE LEVELS CALCULATED AT GRADE USING INITIAL LUMEN VALUES					
LABEL	AVG	MAX	MIN	AVG/MIN	MAX/MIN
PAVED AREA	5.02	33.6	0.8	6.28	42.00
UNDEFINED AREA	0.44	12.2	0.0	N.A.	N.A.
UNDER CANOPY_DIESEL	40.33	57	20	2.02	2.85
UNDER CANOPY_GAS	45.02	59	25	1.80	2.36

LUMINAIRE SCHEDULE										
SYMBOL	QTY	LABEL	ARRANGEMENT	LUMENS	LLF	BUG RATING	WATTS/LUMINAIRE	TOTAL WATTS	MANUFACTURER	CATALOG LOGIC
	5	A	SINGLE	12699	1.030	B2-U0-G2	104	520	CREE, INC.	OSQ-ML-B-DA-XX + OSQM-B-16L-57K7-3M-UL-NM-XX-Q9 + OSQ-BLSMF
	9	B	SINGLE	12349	1.030	B2-U0-G2	104	936	CREE, INC.	OSQ-ML-B-DA-XX + OSQM-B-16L-57K7-4M-UL-NM-XX-Q9 + OSQ-BLSMF
	20	C	SINGLE	13251	1.030	B3-U0-G1	134	2680	CREE, INC.	CAN-304-SL-RS-06-E-UL-XX-700-57K
	12	D	SINGLE	7794	1.030	B3-U0-G1	69	828	CREE, INC.	CAN-304-SL-RS-06-E-UL-XX-350-57K
	9	E	SINGLE	6100	1.030	B2-U0-G2	47	423	CREE, INC.	XSPW-B-WM-4ME-6L-57K-UL -XX

REDLEONARD ASSOCIATES

1340 Kemper Meadow Dr, Forest Park, OH 45240

513-574-9500 | redleonard.com

SCALE: 1" = 30'

LAYOUT BY: RCF

DWG SIZE: D

DATE: 02/06/2023

PROJECT NAME:

ENERGY NORTH
LITTLETON, MA

DRAWING NUMBER:

RL-8621-S1

AREA	QTY	LABEL	DESCRIPTION
	5	A	OSQ-ML-B-DA-XX + OSQM-B-16L-57K7-3M-UL-NM-XX-Q9 + OSQ-BLSMF
	9	B	OSQ-ML-B-DA-XX + OSQM-B-16L-57K7-4M-UL-NM-XX-Q9 + OSQ-BLSMF

CANOPY	QTY	LABEL	DESCRIPTION
	20	C	CAN-304-SL-RS-06-E-UL-XX-700-57K
	12	D	CAN-304-SL-RS-06-E-UL-XX-350-57K

WALL MOUNTED	QTY	LABEL	DESCRIPTION
	9	E	SEC-EDG-4M-06-E-UL-XX-700-40K-DIM

ADDITIONAL FIXTURE INFO

OSQ Series

OSQ™ LED Area/Flood Luminaire featuring Cree TrueWhite® Technology – Medium & Large

CREE LIGHTING

ADDITIONAL FIXTURE INFO

304 Series™

LED Recessed Canopy Luminaire

CREE LIGHTING

ADDITIONAL FIXTURE INFO

XSP Series

XSPW™ LED Wall Mount Luminaire featuring Cree TrueWhite® Technology

CREE LIGHTING

REDLEONARD ASSOCIATES

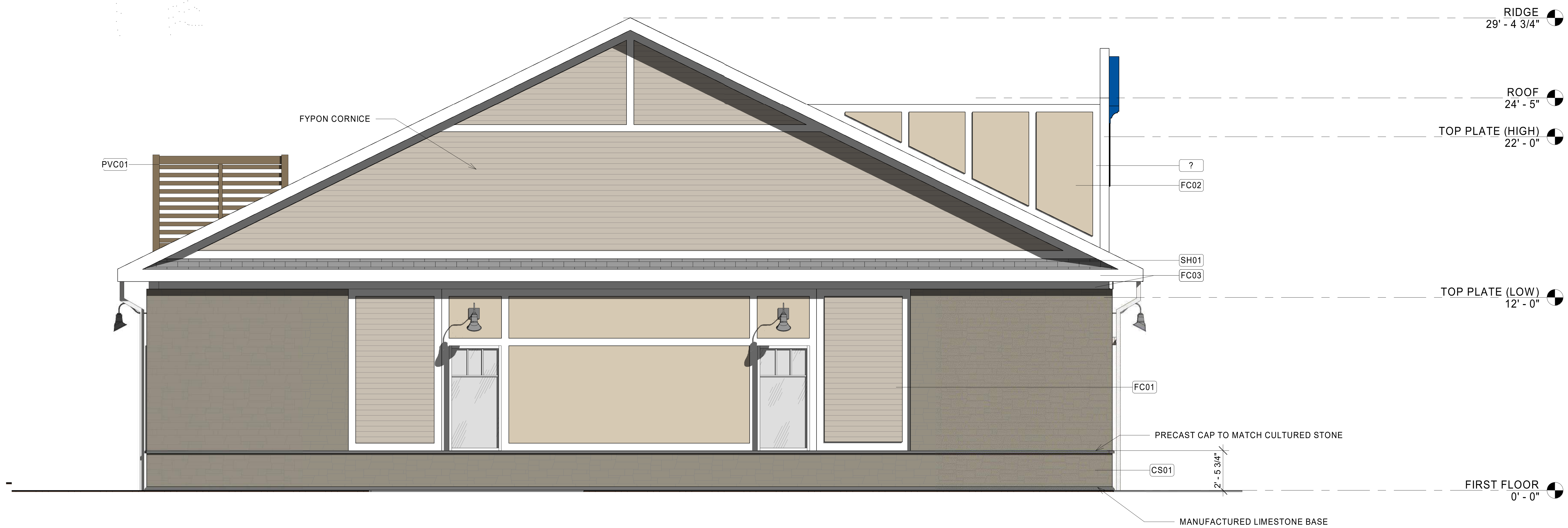
1340 Kemper Meadow Dr, Forest Park, OH 45240

513-574-9500 | redleonard.com

PROJECT NAME:
ENERGY NORTH
LITTLETON, MA

DRAWING NUMBER:
RL-8621-S1

_Material Takeoff_Exterior					
Material: Mark	Material: Description	Material: Manufacturer	Material: Model	Material: Mat_Color	Material: Comments
CS01	CULTURED STONE	WESTLAKE	COUNTRY LEDGESTONE		INSTALL DRY STACK ONLY
FC01	FIBER CEMENT CLAPBOARD SIDING		4" EXPOSURE	COBBLESTONE	FACTORY FINISH
FC02	5/16" FIBER CEMENT PANEL SIDING			NAVAJO BEIGE	FACTORY FINISH; WITH ALUM. VERTICAL JOINTS. PAINT JOINTS TO MATCH PANEL.
FC03	5/4X6 FIBER CEMENT TRIM			ARCTIC WHITE	FACTORY FINISH
FT01	30" x 30" FLOOR TILE	ADESSI	DISTRICT GRAY PORCELAIN TILE		GROUT: MAPEI #47 ULTRACOLOR PLUS FA - CHARCOAL. WHERE WALL TILE OCCURS G.C. TO PROVIDE AND INSTALL SHCLUTER COVE BASE.
PVC01	SCREEN FENCE	CERTAINTEED	BREEZEWOOD SELECT CEDAR	WEATHERED BLEND	
SH01	ASPHALT ROOFING SHINGLE			WEATHERWOOD	



2 WEST ELEVATION
1/4" = 1'-0"

1 SOUTH ELEVATION
1/4" = 1'-0"

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ENERGY NORTH - HAFFNERS
LITTLETON, MA
JOB NUMBER: 42-23-50001

ISSUE BLOCK		
1	SD SET	02/06/23

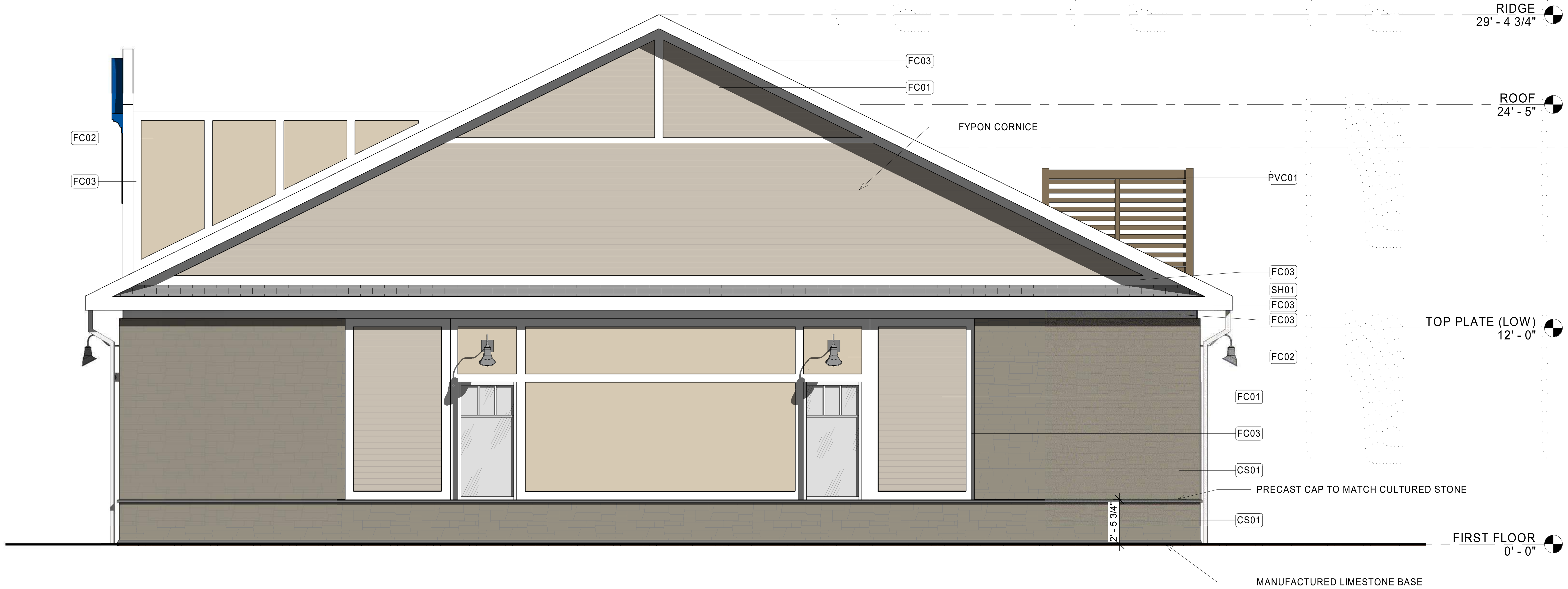
CHECKED BY:	JEO
DRAWN BY:	LT
DOCUMENT DATE:	02/06/23

NOT FOR CONSTRUCTION

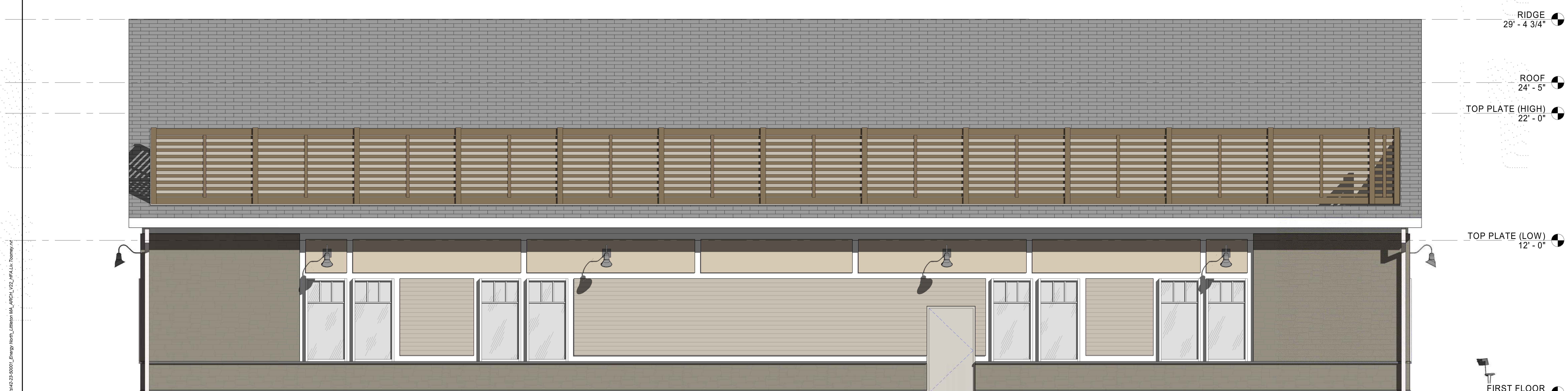
ELEVATIONS

SHEET:
A-200

_Material Takeoff_Exterior					
Material: Mark	Material: Description	Material: Manufacturer	Material: Model	Material: Mat_Color	Material: Comments
CS01	CULTURED STONE	WESTLAKE	COUNTRY LEDGESTONE		INSTALL DRY STACK ONLY
FC01	FIBER CEMENT CLAPBOARD SIDING		4" EXPOSURE	COBBLESTONE	FACTORY FINISH
FC02	5/16" FIBER CEMENT PANEL SIDING			NAVAJO BEIGE	FACTORY FINISH; WITH ALUM. VERTICAL JOINTS. PAINT JOINTS TO MATCH PANEL.
FC03	5/4X6 FIBER CEMENT TRIM			ARCTIC WHITE	FACTORY FINISH
FT01	30" x 30" FLOOR TILE	ADESSI	DISTRICT GRAY PORCELAIN TILE		GROUT: MAPEI #47 ULTRACOLOR PLUS FA - CHARCOAL. WHERE WALL TILE OCCURS G.C. TO PROVIDE AND INSTALL SHCLUTER COVE BASE.
PVC01	SCREEN FENCE	CERTAINTEED	BREEZEWOOD SELECT CEDAR	WEATHERED BLEND	
SH01	ASPHALT ROOFING SHINGLE			WEATHERWOOD	



2 EAST ELEVATION



1 NORTH ELEVATION

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ENERGY NORTH - HAFFNERS
LITTLETON, MA
JOB NUMBER: 42-23-50001

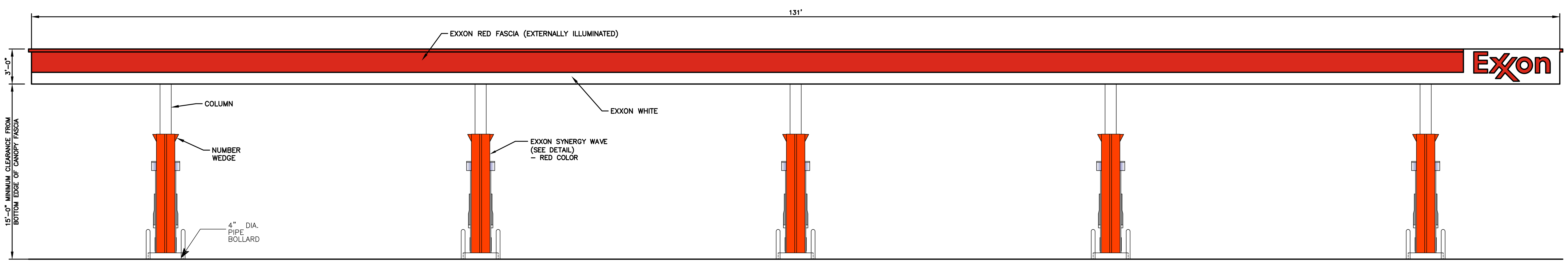
ISSUE BLOCK		
1	SD SET	02/06/23

CHECKED BY: JEO
DRAWN BY: LT
DOCUMENT DATE: 02/06/23

NOT FOR CONSTRUCTION

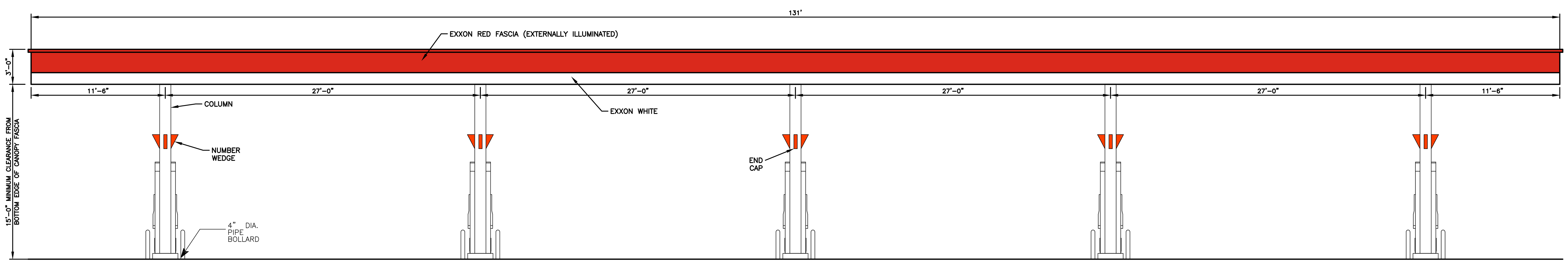
ELEVATIONS

SHEET: A-201



FRONT ELEVATION - FACING AYER ROAD (ROUTE 2A)

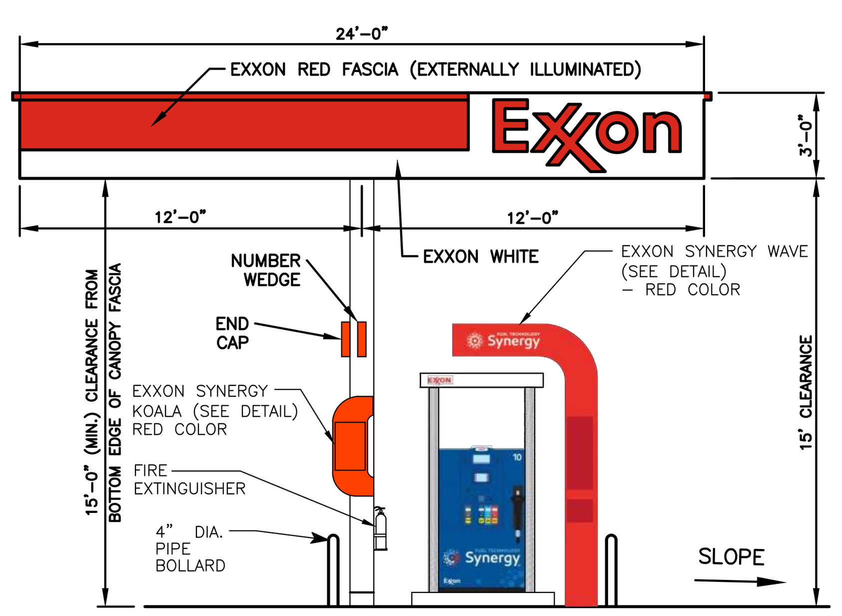
SCALE: 3/16" = 1'-0"



REAR ELEVATION - FACING STORE

SCALE: 3/16" = 1'-0"

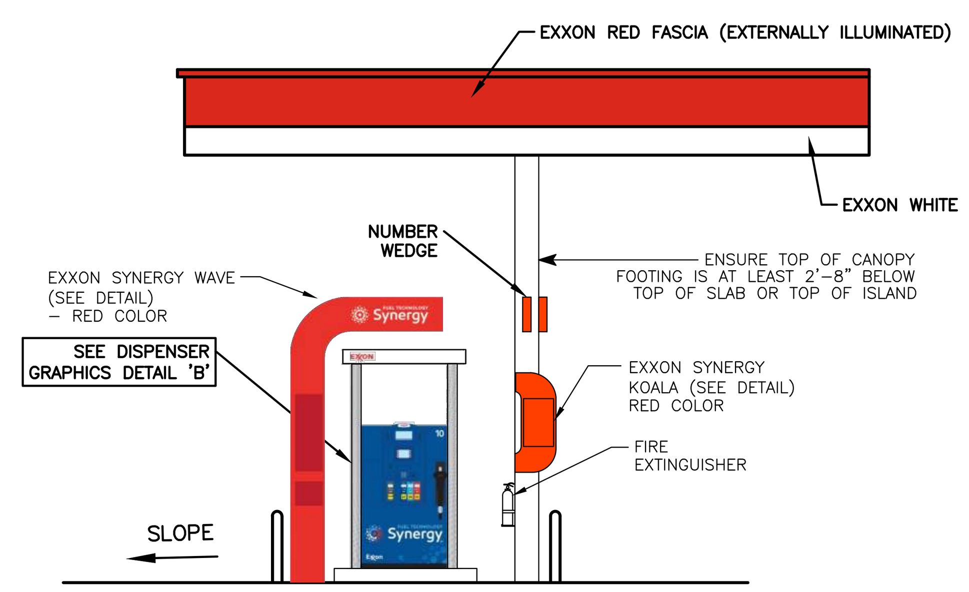
STORE SIDE



LEFT ELEVATION

SCALE: 3/16" = 1'-0"

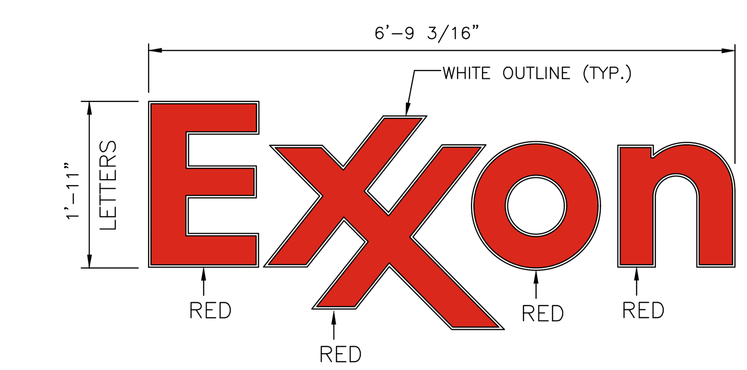
STREET SIDE



RIGHT ELEVATION

SCALE: 3/16" = 1'-0"

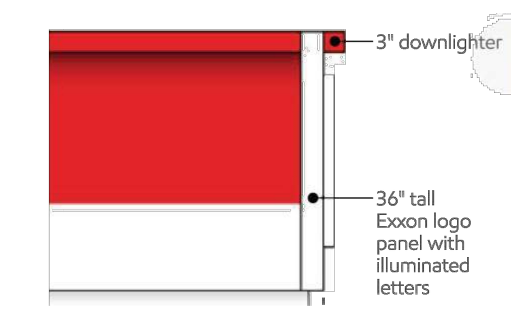
STORE SIDE



"EXXON" CANOPY LEGEND DETAIL

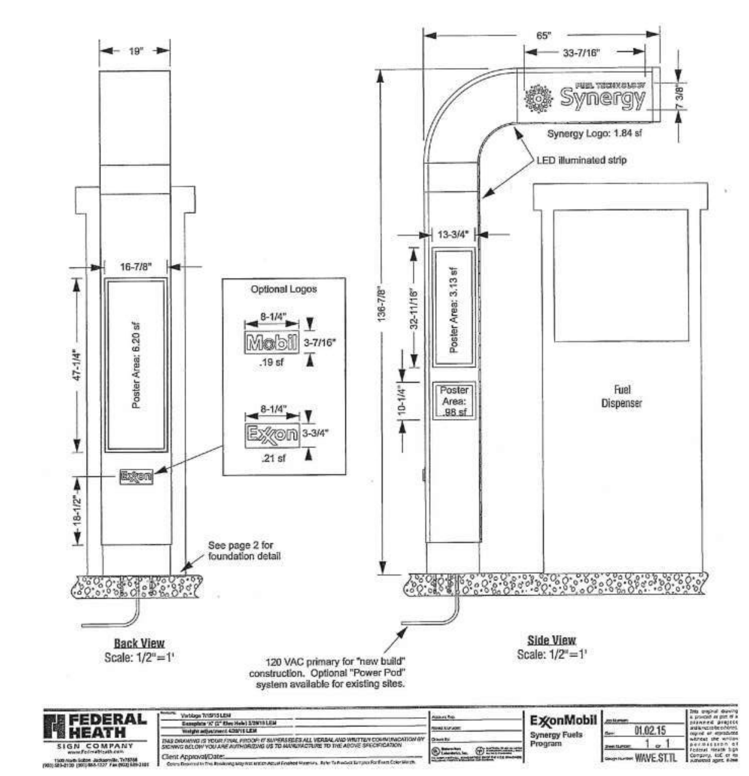
NOT TO SCALE - 13.0 Sq.Ft.

NOTE: SIGN IS INTERNALLY ILLUMINATED CHANNEL LETTERS



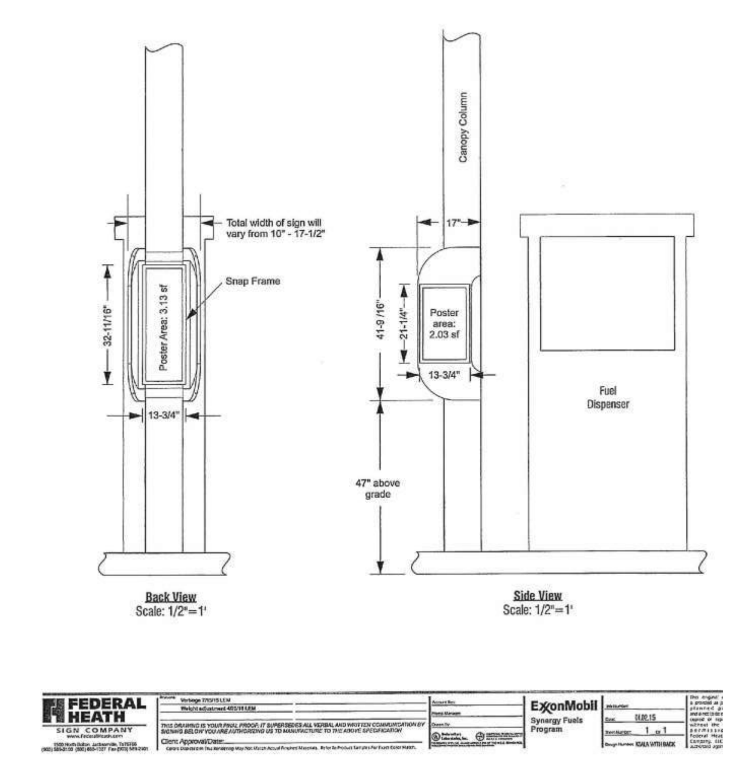
EXXON CANOPY EXTERIOR LIGHTING "EYEBROW"

NOT TO SCALE



WAVE DETAIL

NOT TO SCALE



KOALA DETAIL

NOT TO SCALE

F:\Projects\NEX-2021267 - Littleton, MA - Energy North Goup\CAD Files\21267_CANELEV.dwg CANOPY-Retail 2/09/23 8:36am sbonfanti

GPI Engineering Design Planning Construction Management
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44 Stiles Road, Suite One
Salem, NH 03079

PREPARED FOR
ENERGY NORTH GROUP
2 INTERNATIONAL WAY
LAWRENCE, MA 01843

PROPOSED RETAIL MOTOR FUEL OUTLET
SITE RE-DEVELOPMENT
PARCEL ID: U45-7-0, U45-7-B, U45-8-A, & U45-11-0
254, 256 & 260 AYER ROAD
LITTLETON, MASSACHUSETTS
PARCEL ID: 30-16
0 LITTLETON ROAD
AYER, MASSACHUSETTS

REVISIONS

NO.	REVISION	DATE

FEBRUARY 8, 2023

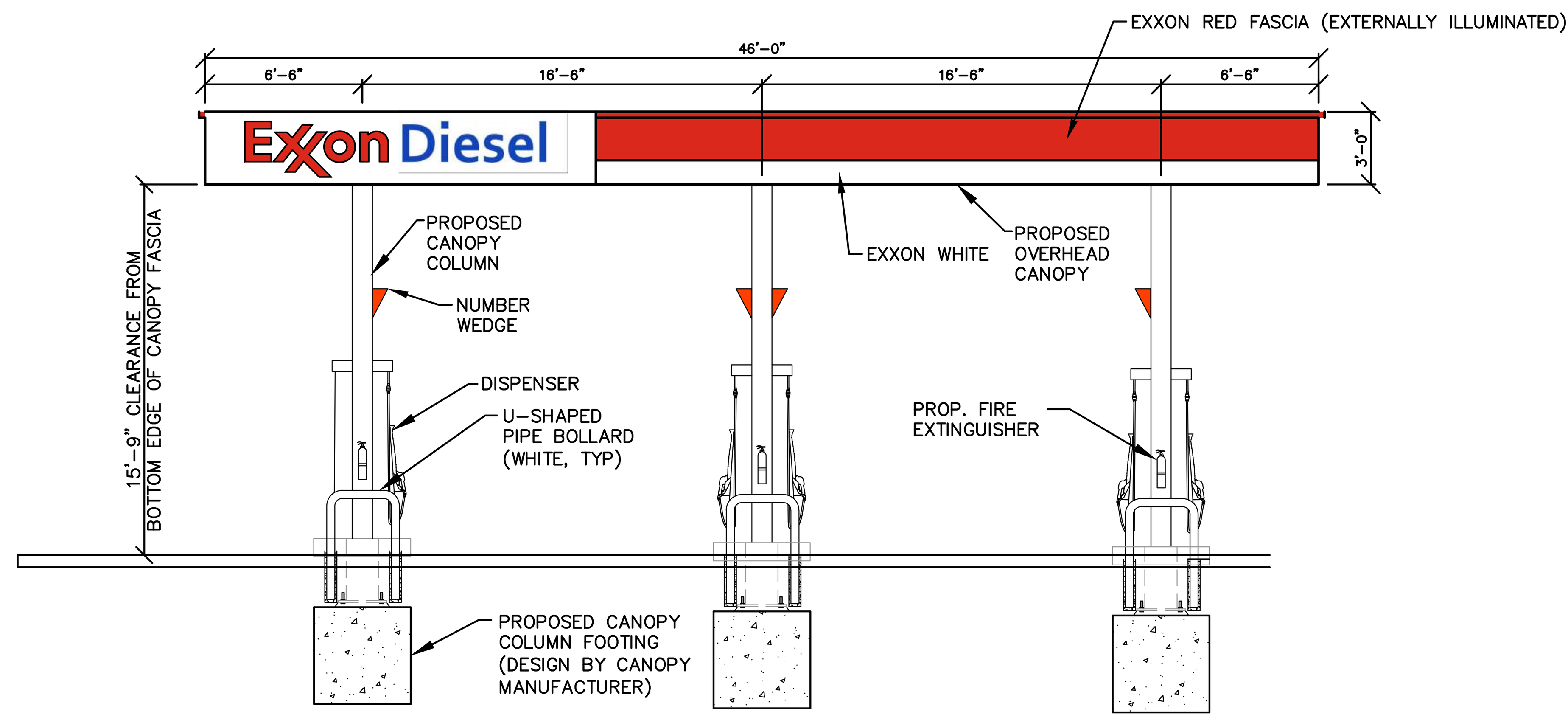
DRAWN/DESIGN BY	CHECKED BY
SJB/CNM	CMT

RETAIL FUEL CANOPY ELEVATIONS

SCALE: 3/16"=1'-0"

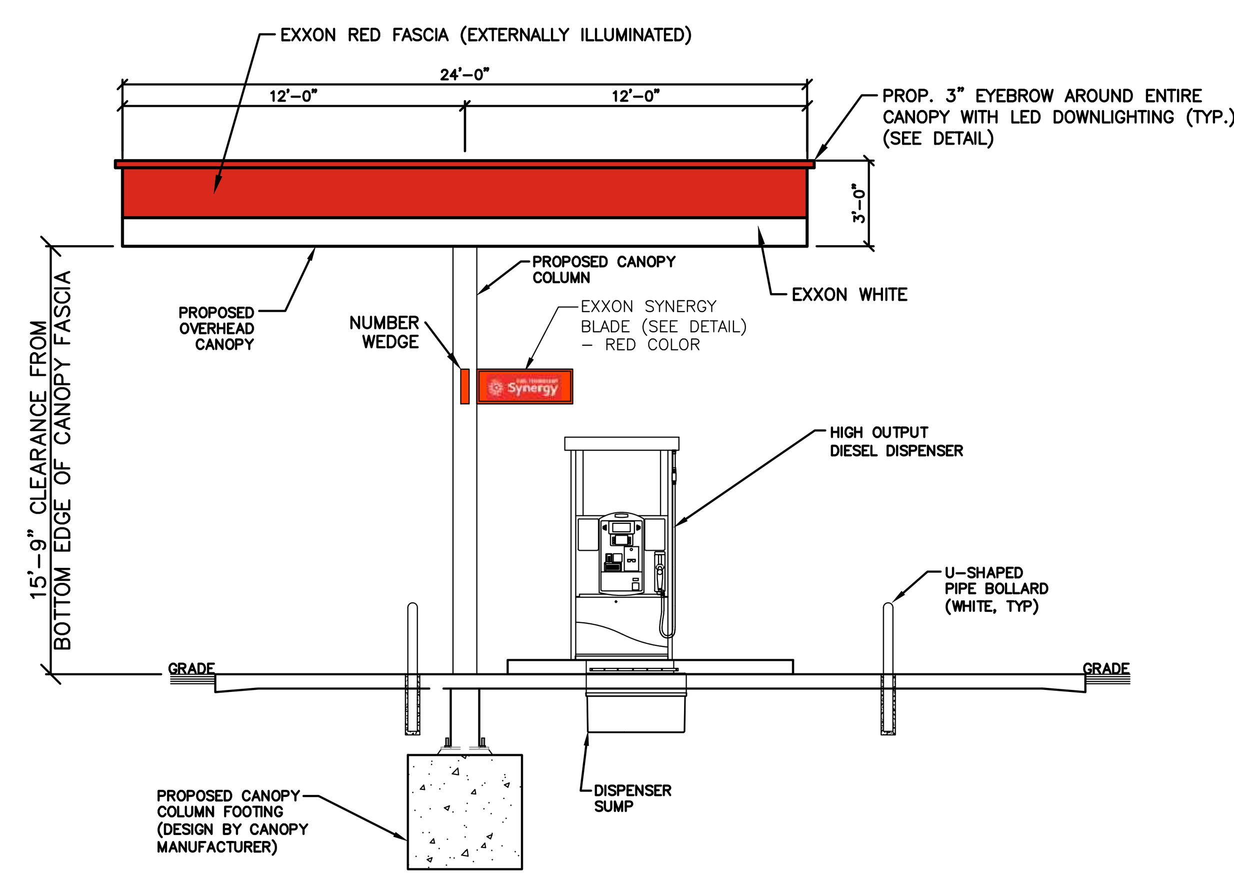
PROJECT NO. NEX-2021267

1 OF 2



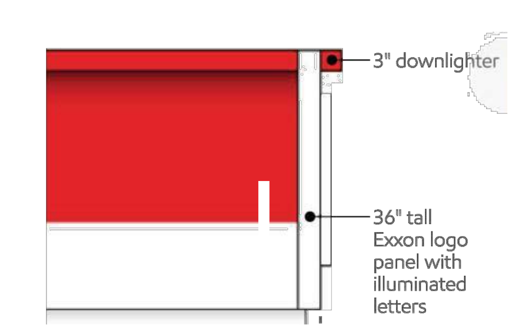
FRONT ELEVATION - ROUTE 2A

SCALE: 3/16" = 1'–0"



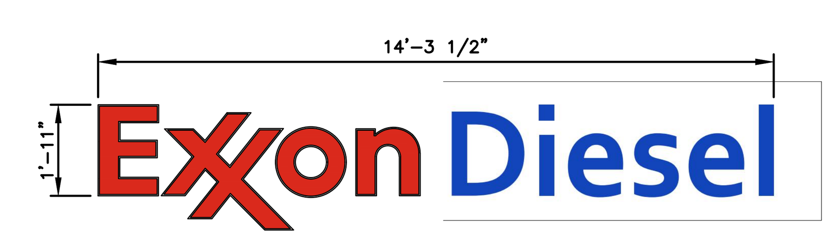
RIGHT ELEVATION - STORE SIDE

SCALE: 3/16" = 1'–0"



EXXON CANOPY EXTERIOR LIGHTING "EYEBROW"

NOT TO SCALE



"EXXON DIESEL" CANOPY LEGEND DETAIL

NOT TO SCALE – 26.2 Sq.Ft.

NOTE: SIGN IS INTERNALLY ILLUMINATED CHANNEL LETTERS

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Salem, NH 03079

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ENERGY NORTH GROUP
2 INTERNATIONAL WAY
LAWRENCE, MA 01843

PROPOSED RETAIL MOTOR FUEL OUTLET
SITE RE-DEVELOPMENT

PARCEL ID: U45-7-0, U45-7-B, U45-8-A, & U45-11-0
254, 256 & 260 AYER ROAD
LITTLETON, MASSACHUSETTS

PARCEL ID: 30-16
0 LITTLETON ROAD
AYER, MASSACHUSETTS

REVISIONS

NO.	REVISION	DATE

FEBRUARY 8, 2023

DRAWN/DESIGN BY	CHECKED BY
SJB/CNM	CMT

COMMERCIAL DIESEL CANOPY ELEVATIONS

SCALE: 3/16"=1'-0"

PROJECT NO. NEX-2021267

2 OF 2

SIGNAGE AREA = 11.57SF

D

5 SD- FUEL CANOPY SIGN

SIGNAGE AREA = REF CIVIL

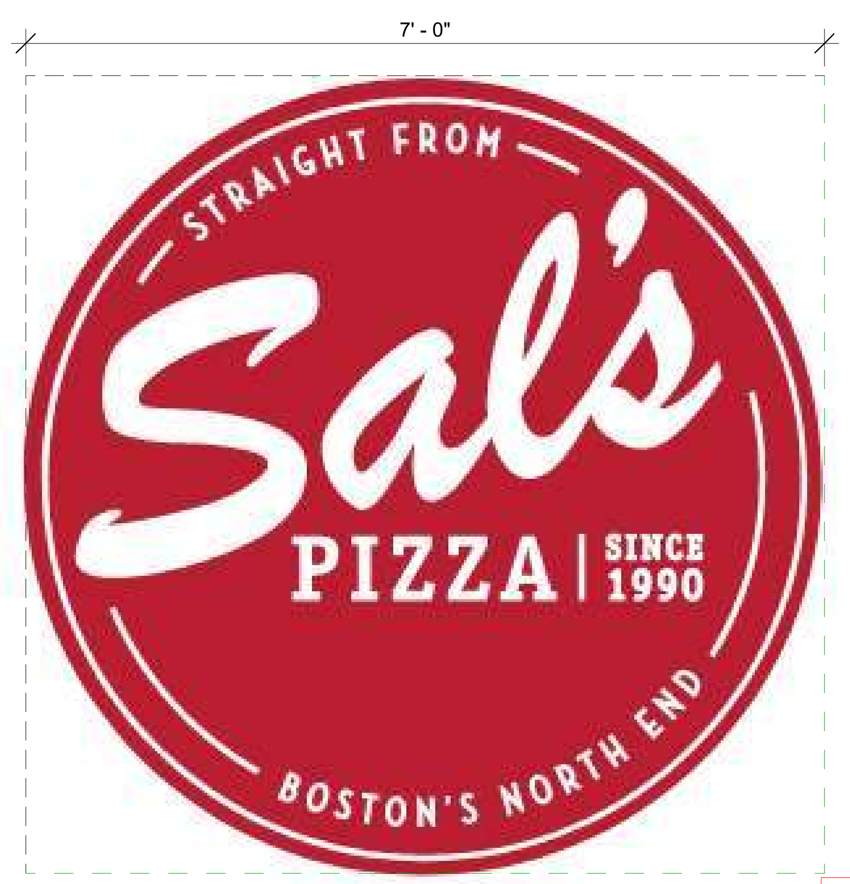
D1

6 SD- DIESEL FUEL CANOPY SIGN

SIGNAGE AREA = 35.48 SF C

4 CRACK'D SIGNAGE

3/4" = 1'-0"



SIGNAGE AREA = 49 SF B

3 SALS PIZZA SIGNAGE

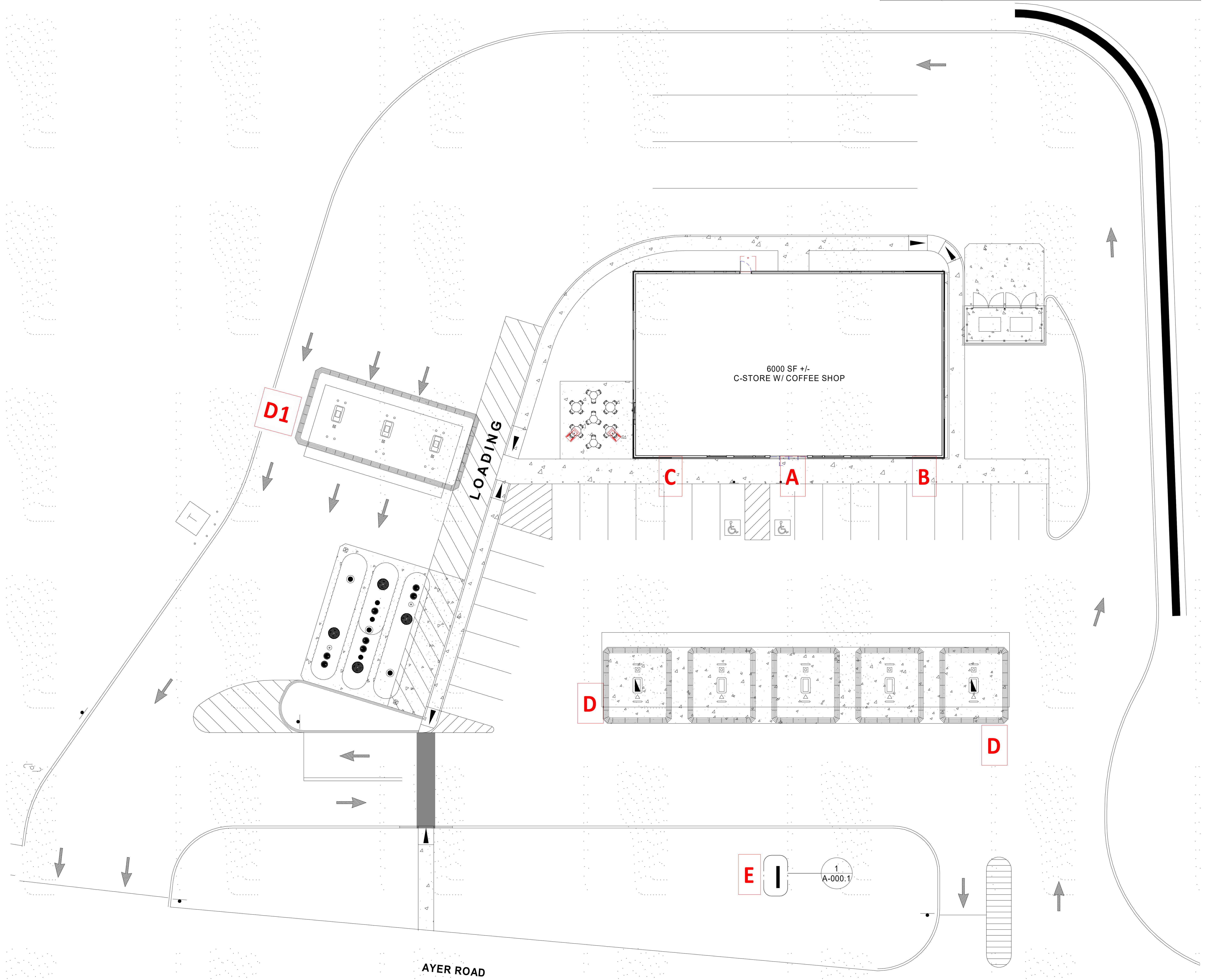
3/4" = 1'-0"

A

SIGNAGE AREA = 34.8 SF

2 HAFFNERS BUILDING SIGNAGE

3/4" = 1'-0"



1 SIGNAGE SITE PLAN

1" = 20'-0"

EXTERIOR SIGN SCHEDULE	
A	INT. ILLUM. HAFFNERS CHANNEL LETTER SET
B	INT. ILLUM. SALS PIZZA LOGO
C	INT. ILLUM. CRACK'D SIGNAGE
D	INT. ILLUM. FUEL CANOPY CHANNEL LETTERS
D1	INT. ILLUM. DIESEL FUEL CANOPY CHANNEL LETTERS
E	18' HIGH PYLON SIGN

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ENERGY NORTH - HAFFNERS
LITTLETON, MA

JOB NUMBER: 42-23-50001

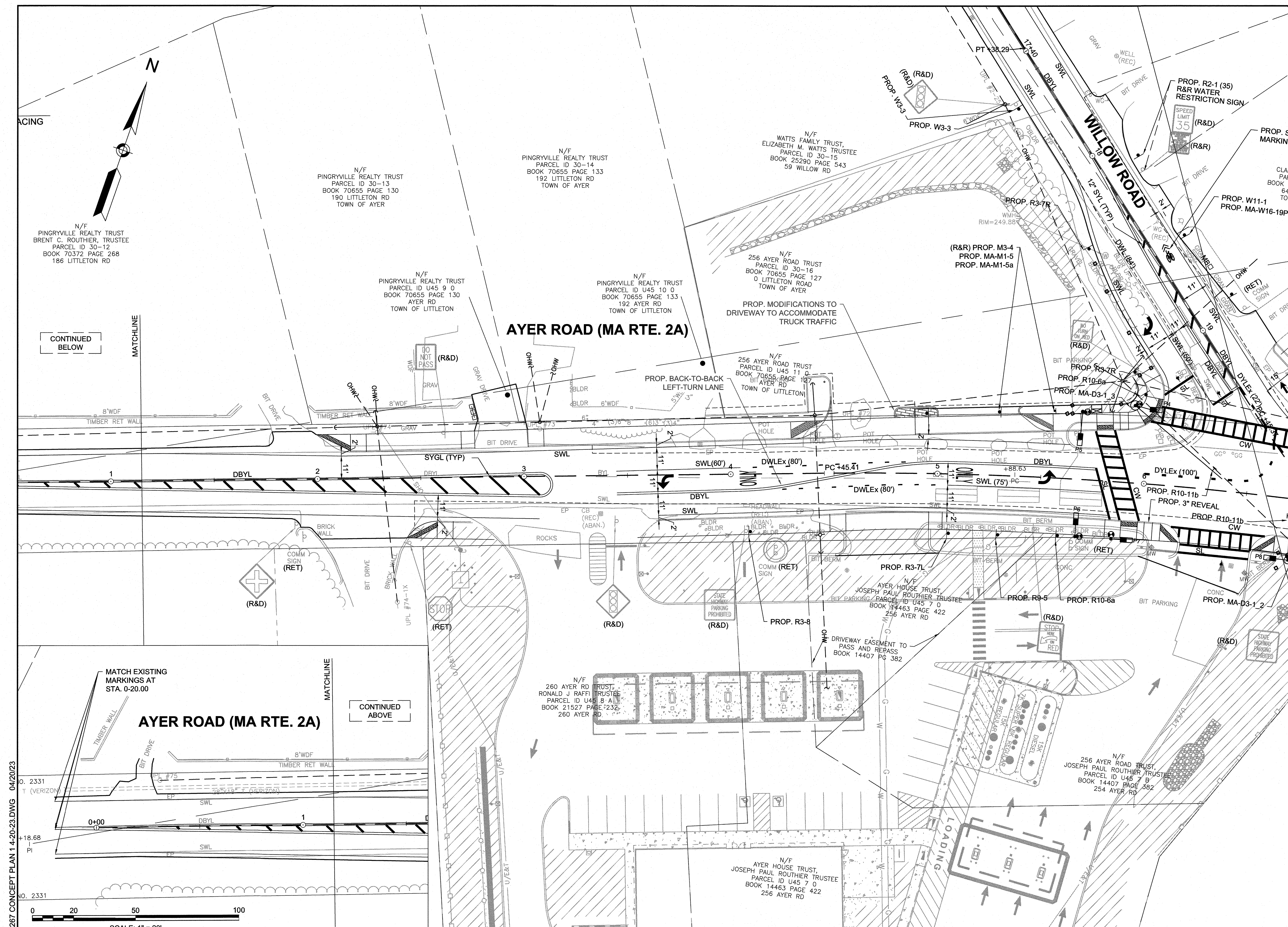
ISSUE BLOCK		
1	SD SET	02/06/23

CHECKED BY:	HEW
DRAWN BY:	LT
DOCUMENT DATE:	02/06/23

NOT FOR CONSTRUCTION

SIGNAGE SITE PLAN

SHEET:
A-000



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2 INTERNATIONAL WAY
LAWRENCE, MA

256 AYER ROAD (ROUTE 2A) LITTLETON, MASSACHUSETTS

REVISIONS

NO.	REVISION	DATE
1	MISC. ON-SITE REVS.	4/20/23

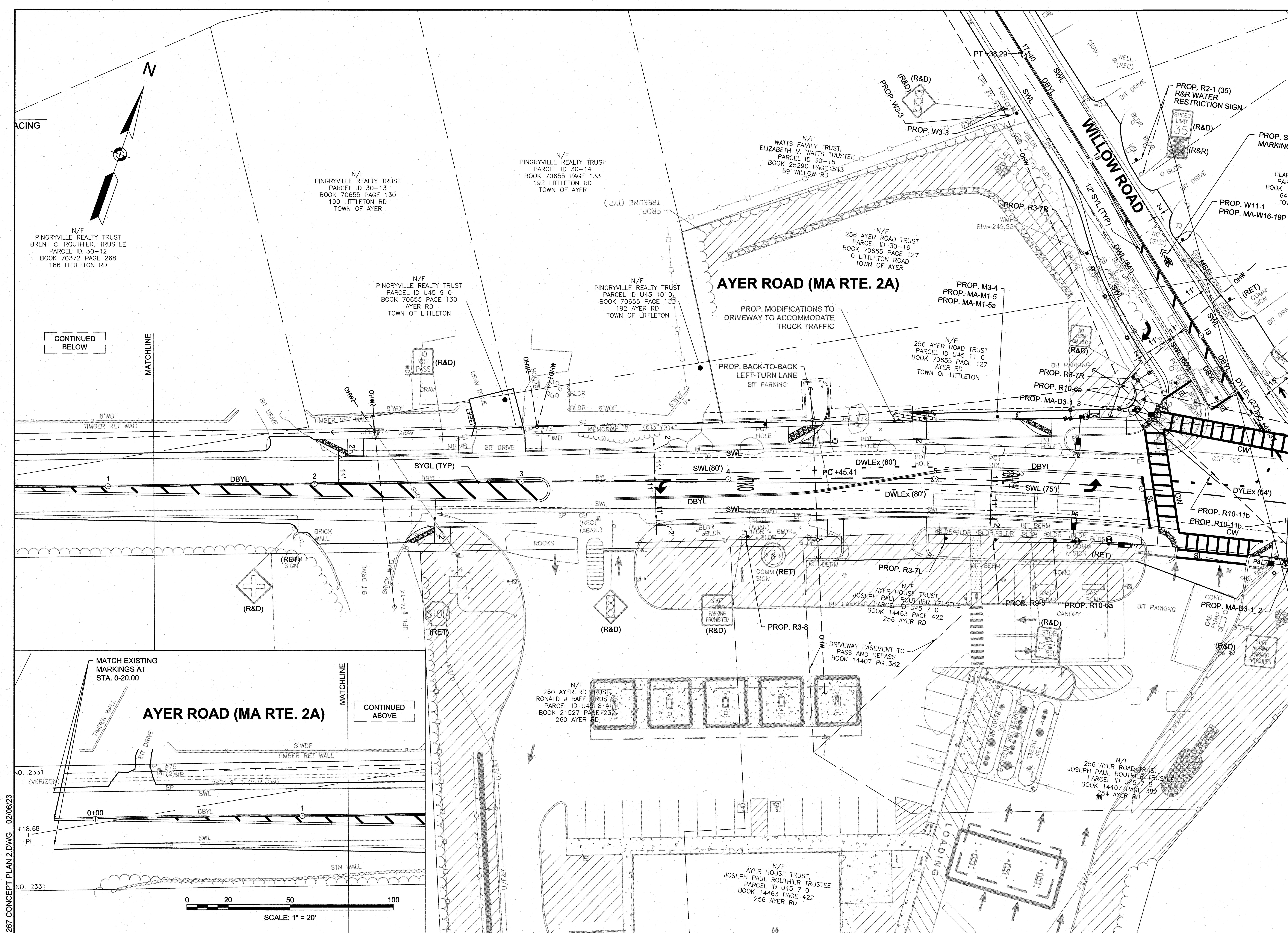
02-06-23

DRAWN/DESIGN BY	CHECKED BY
DIP	EMR

ROADWAY CONCEPT #1

SCALE: 1"=20'

NEX-2021267



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LAWRENCE, MA

256 AYER ROAD (ROUTE 2A) LITTLETON, MASSACHUSETTS

REVISIONS

NO.	REVISION	DATE
1	MISC. ON-SITE REVS.	4/20/23

02-06-23

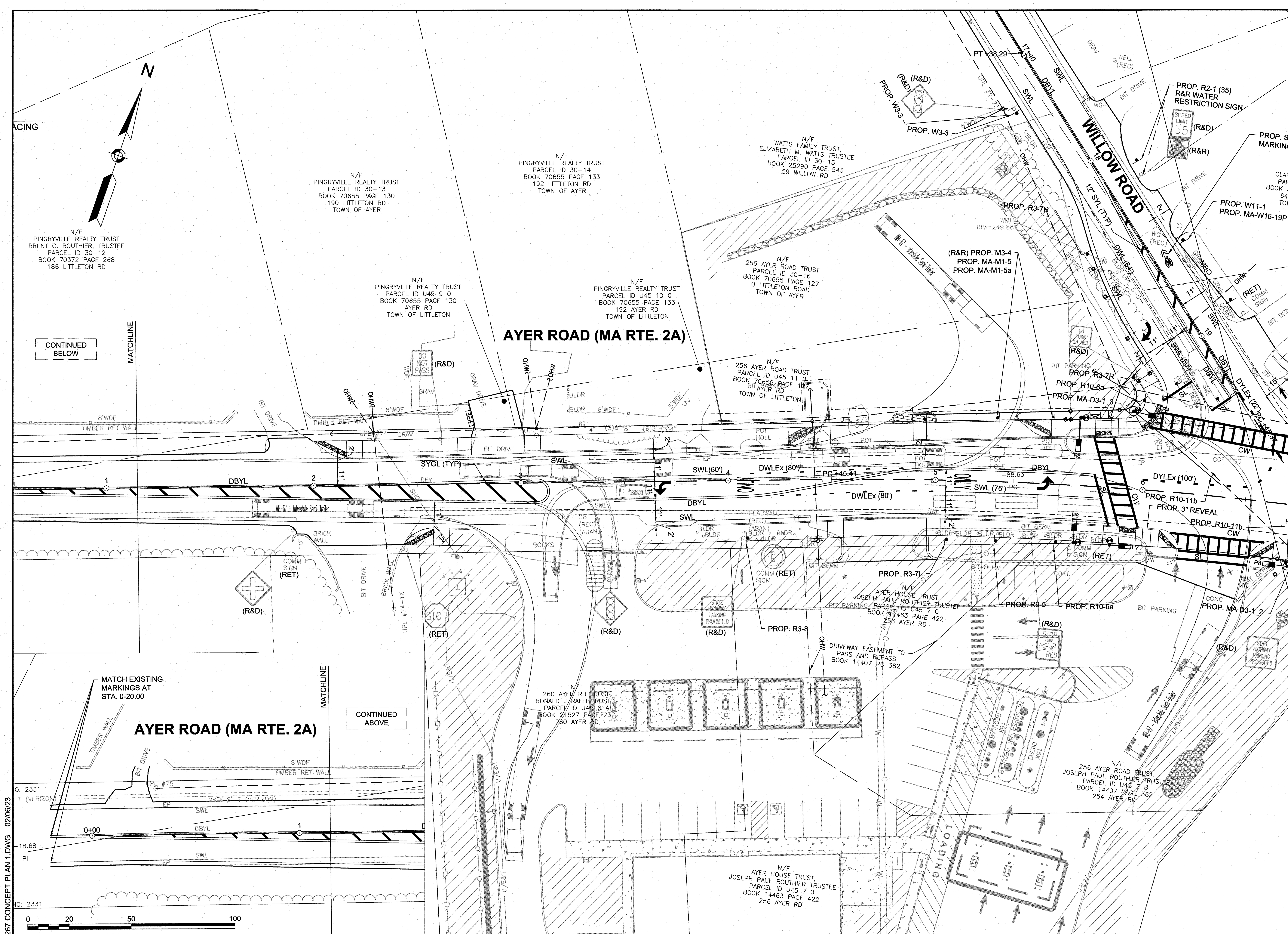
DRAWN/DESIGN BY	CHECKED BY
DIP	EMR

ROADWAY CONCEPT #2

SCALE: 1"=20'

NEX-2021267

21267 CONCEPT PLAN 2.DWG 02/06/23



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LAWRENCE, MA

256 AYER ROAD (ROUTE 2A) LITTLETON, MASSACHUSETTS

REVISIONS

NO.	REVISION	DATE
1	ADD TURNING PATH	4/20/23

02-06-23

DRAWN/DESIGN BY	CHECKED BY
DIP	EMR

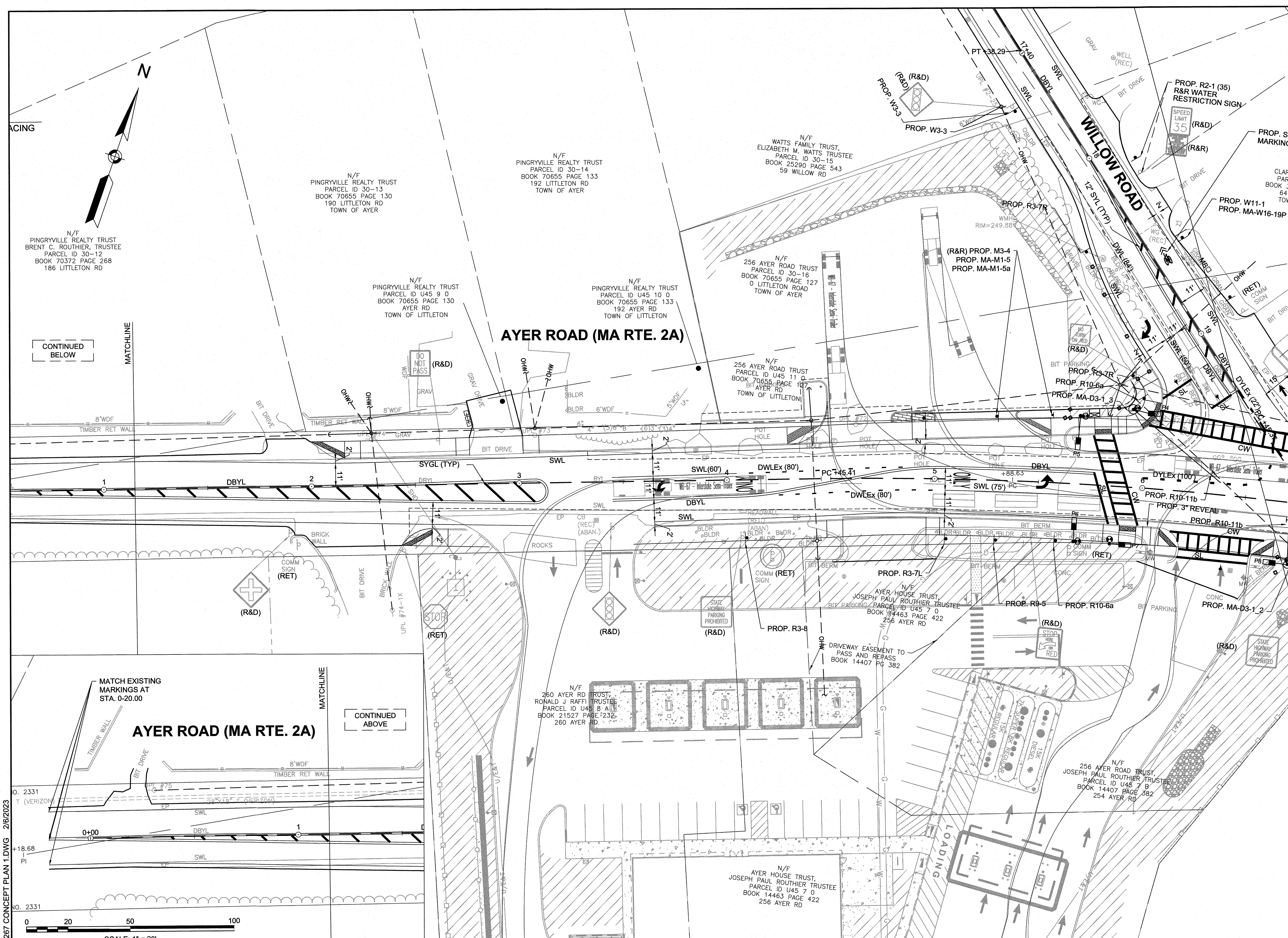
TRUCK TURN PLAN

SCALE: 1"=20'

NEX-2021267

3 OF 5

21267 CONCEPT PLAN 1.DWG 02/06/23



21267 CONCEPT PLAN 1.DWG 2/6/2023

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Wilmington, MA 01887

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256 AYER ROAD (ROUTE 2A) LITTLETON, MASSACHUSETTS

REVISIONS

NO.	REVISION	DATE
1	ADD TURNING PATH	4/20/23

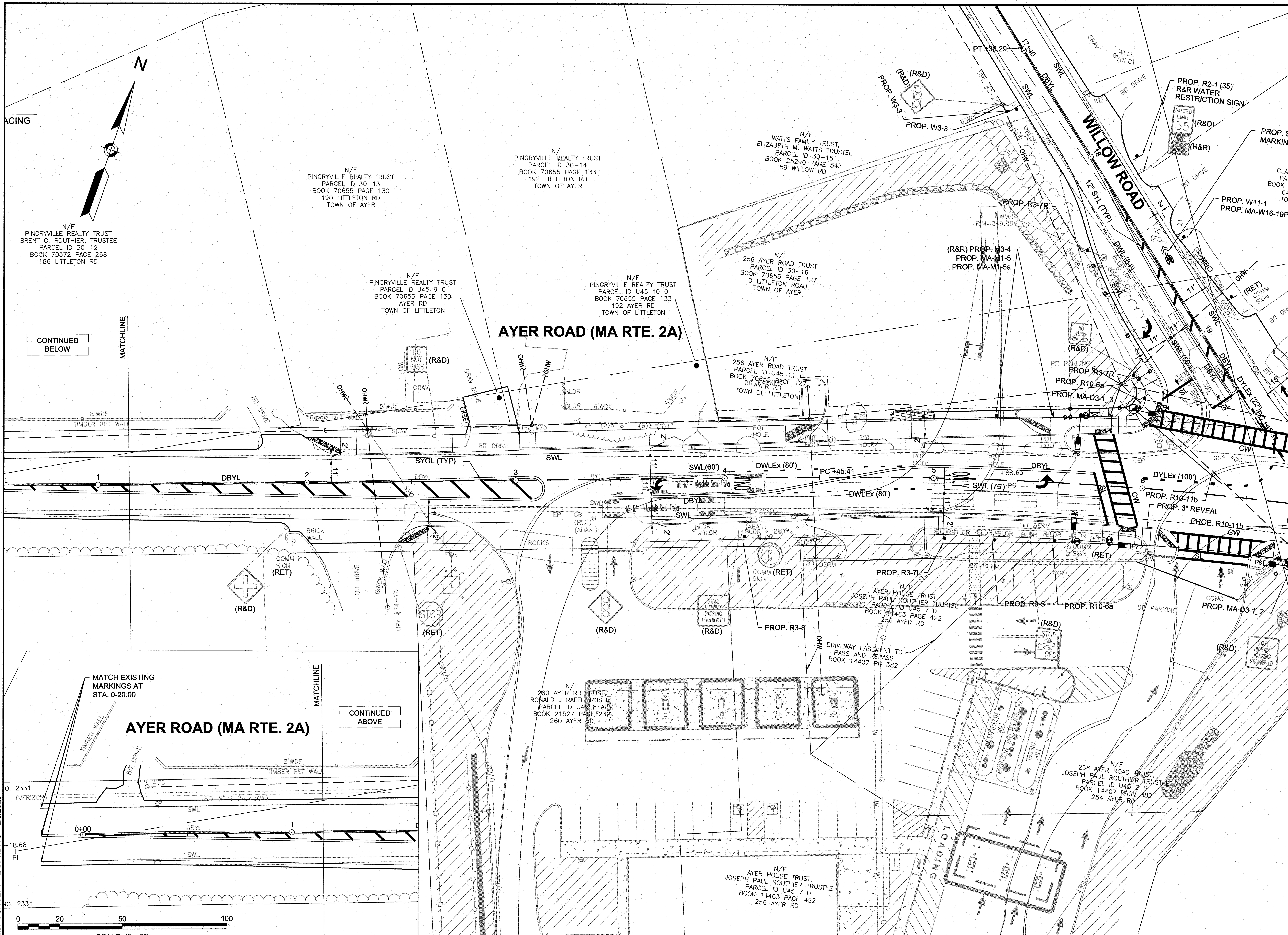
02-06-23

DRAWN/DESIGN BY	CHECKED BY
DIP	EMR

TRUCK TURN PLAN

SCALE: 1"=20'

NEX-2021267



21267 CONCEPT PLAN 1.DWG 2/6/2023

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Greenman-Pedersen, Inc.
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Wilmington, MA 01887

PREPARED FOR
ENERGY NORTH GROUP
2 INTERNATIONAL WAY
LAWRENCE, MA

256 AYER ROAD (ROUTE 2A) LITTLETON, MASSACHUSETTS

REVISIONS

NO.	REVISION	DATE
1	ADD TURNING PATH	4/20/23

02-06-23

DRAWN/DESIGN BY	CHECKED BY
DIP	EMR

TRUCK TURN PLAN

SCALE: 1"=20'

NEX-2021267