

NO.	DATE	DESCRIPTION	BY	CK'D

CENTRAL VERMONT
STORMWATER
MASTER PLAN

STORMWATER
MASTER PLAN
BERLIN

SHEET TITLE

TITLE SHEET

DRAWN BY AS	DATE JAN. 2018
CHECKED BY ATH	D&K PROJECT # 123722
PROJ. ENG. ATH	D&K ARCHIVE #

SHEET NUMBER

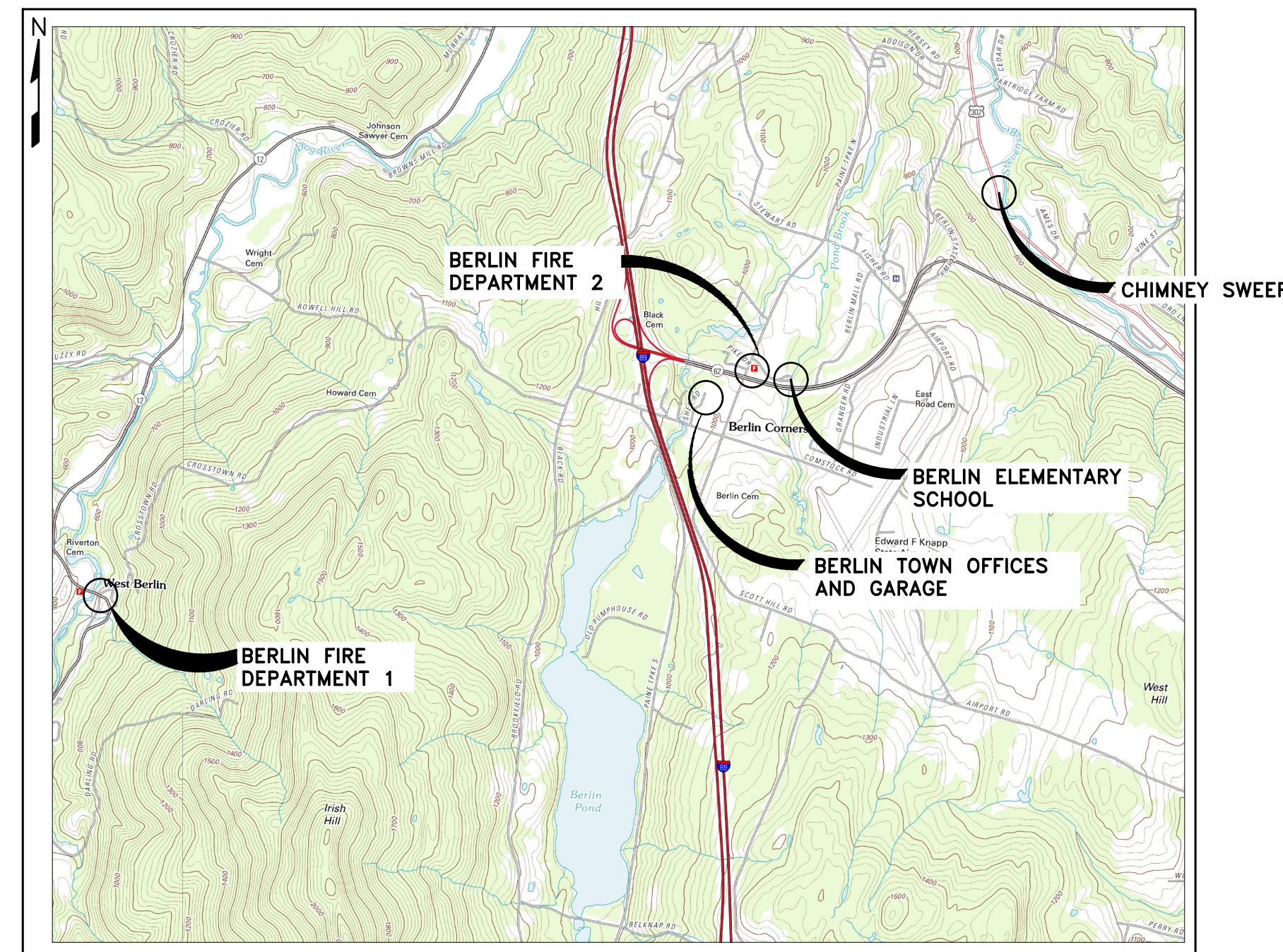
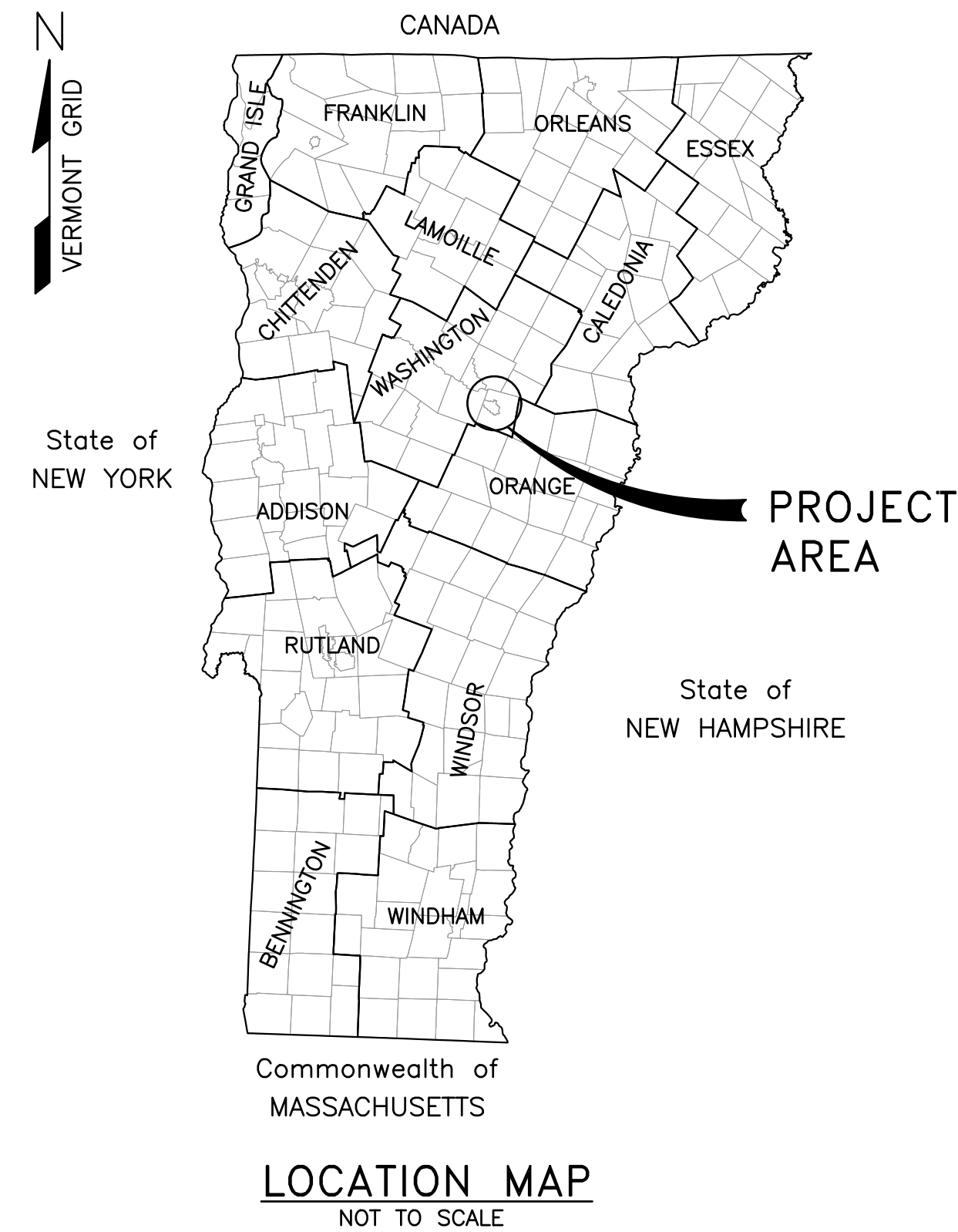
1

BERLIN, VERMONT

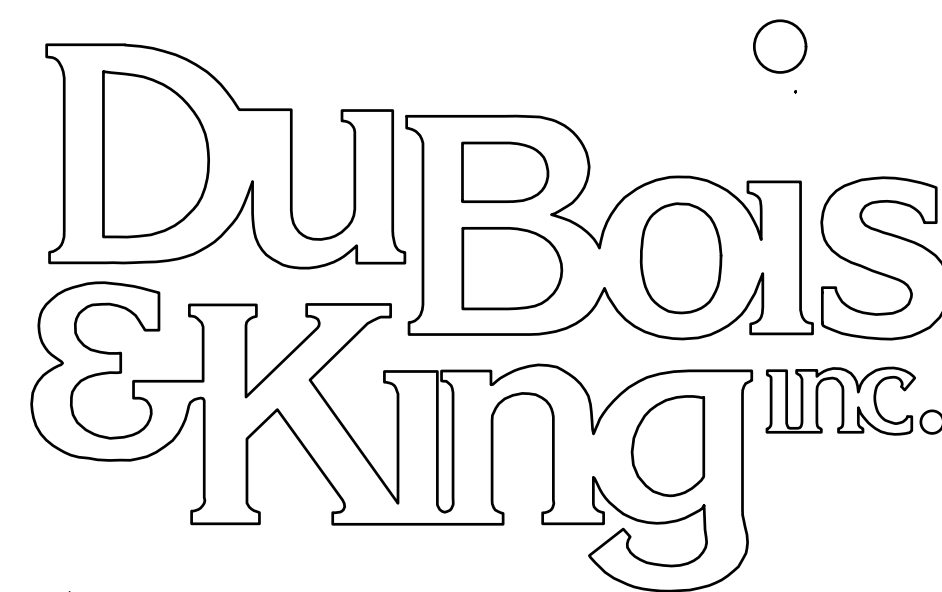
CENTRAL VERMONT STORMWATER

JANUARY 15, 2018

PRELIMINARY DRAWINGS



PROJECT LOCATION PLAN
SCALE: 1" = 2000 FEET ±



engineering
planning
management
development

LIST OF DRAWINGS

TITLE	SHEET NO.
TITLE SHEET	1
ELEMENTARY SCHOOL SITE PLAN	2
TOWN OFFICES SITE PLAN	3
CHIMNEY SWEEP SITE PLAN	4
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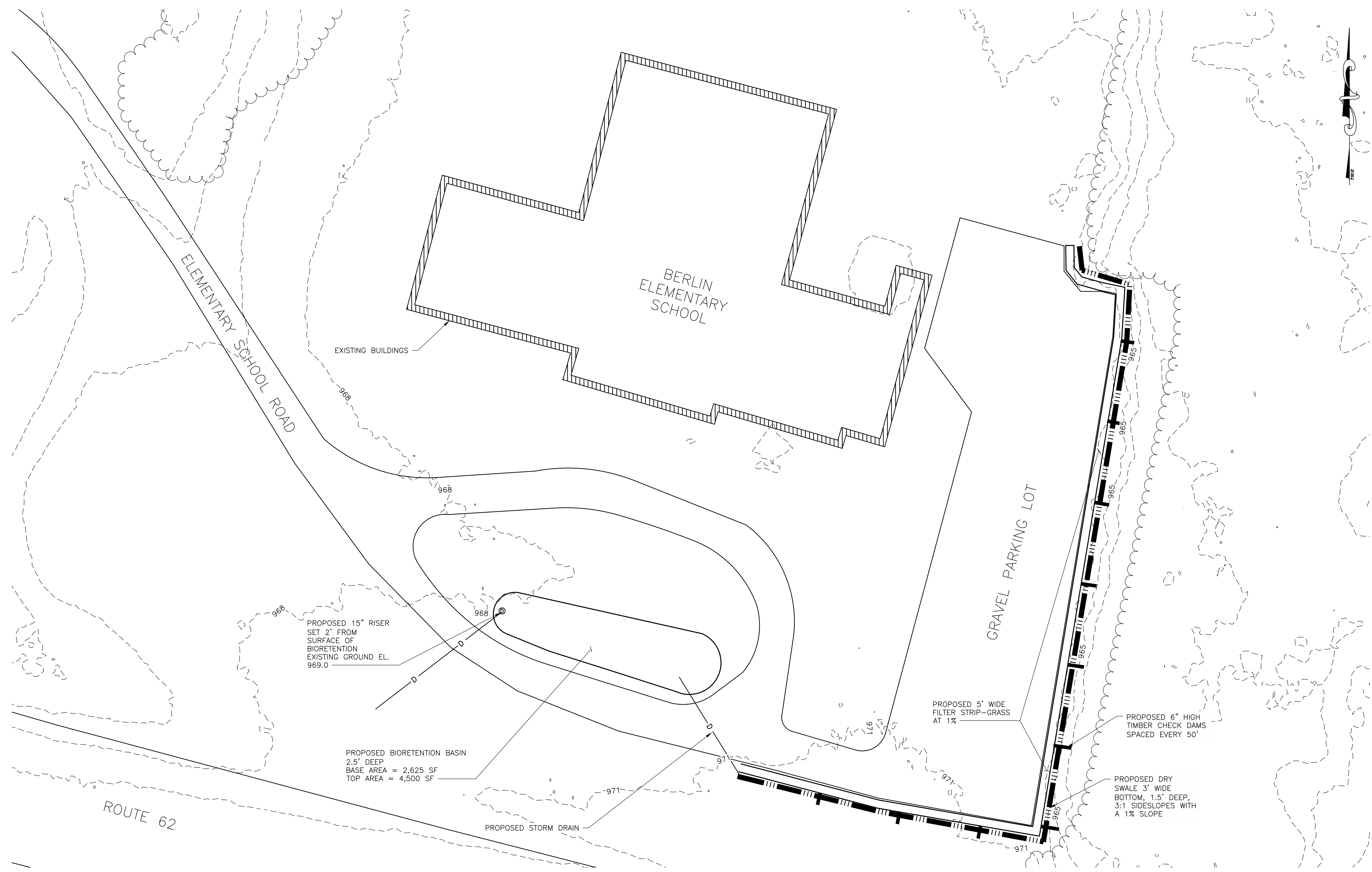
ELEMENTARY
SCHOOL
SITE PLAN

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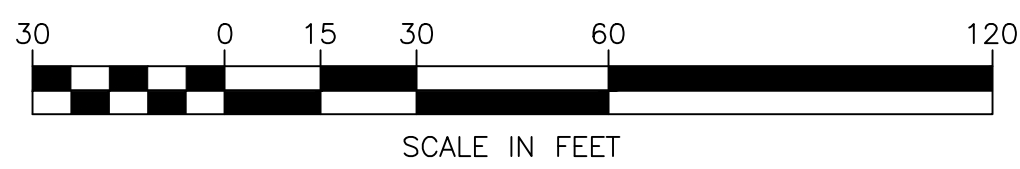
SHEET NUMBER

2

SHEET 2 OF 7



**ELEMENTARY SCHOOL
SITE PLAN**



ADDRESS:
372 PAINE TURNPIKE NORTH, BERLIN, VT

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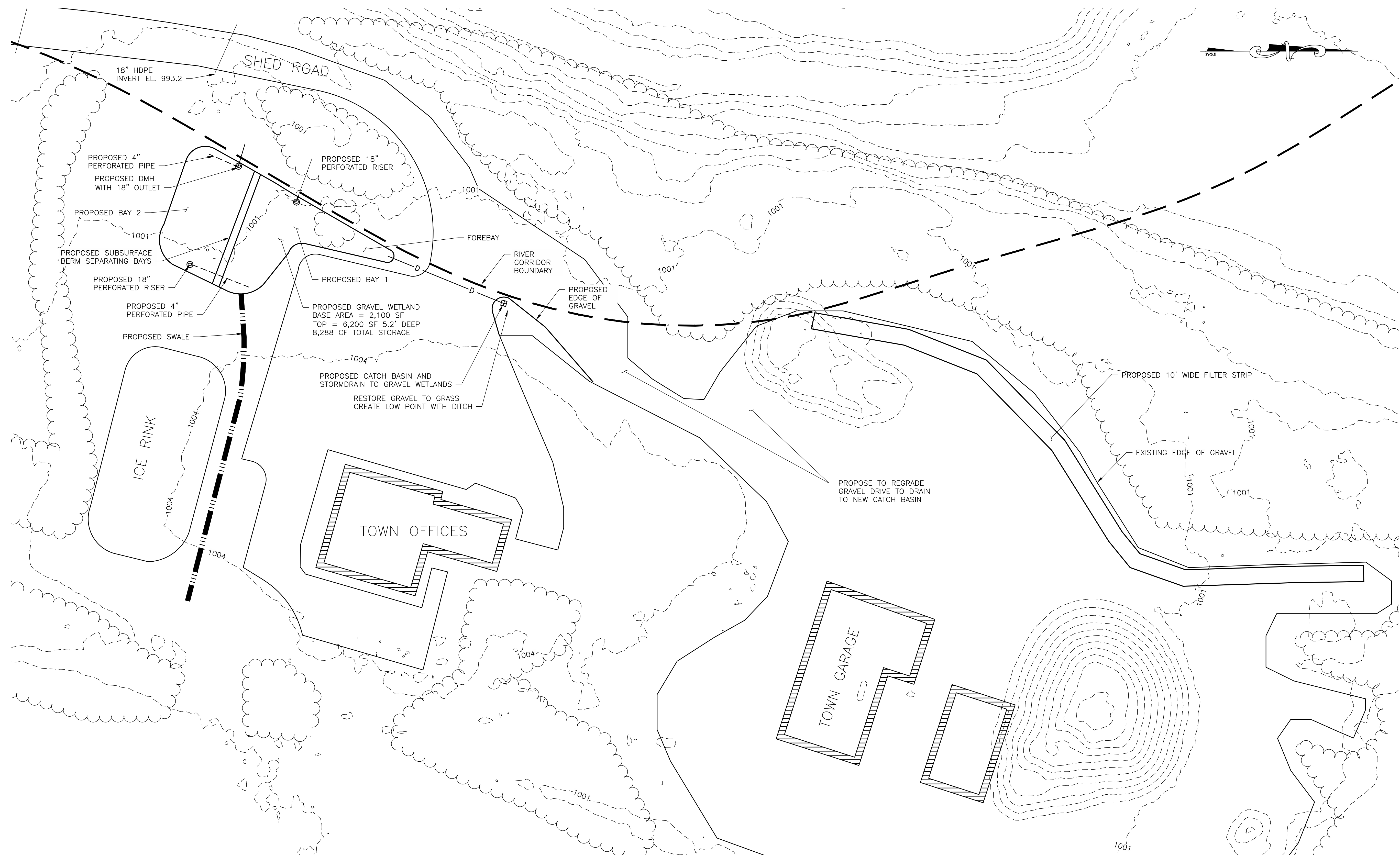
TOWN
OFFICES
STIE PLAN

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ATH	123722
PROJ. ENG.	D&K ARCHIVE #
ATH	

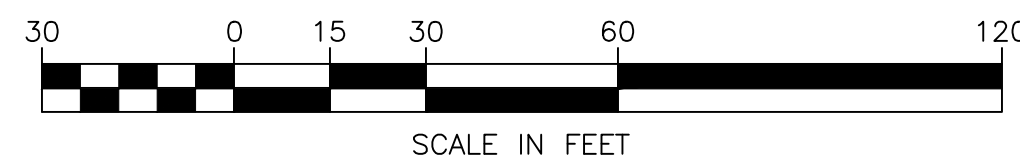
SHEET NUMBER

3

SHEET 3 OF 7



TOWN OFFICES STIE PLAN



ADDRESS:
END OF SHED ROAD, BERLIN , VT

NO.	DATE	DESCRIPTION	BY	CK'D

**CENTRAL VERMONT
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**STORMWATER
 MASTER PLAN
 BERLIN**

**SHEET TITLE
 CHIMNEY
 SWEEP
 SITE PLAN**

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SHEET NUMBER
4
 SHEET 4 OF 7

ACCEPTABLE FILL MATERIALS: STORMTECH MC-4500 CHAMBER SYSTEMS

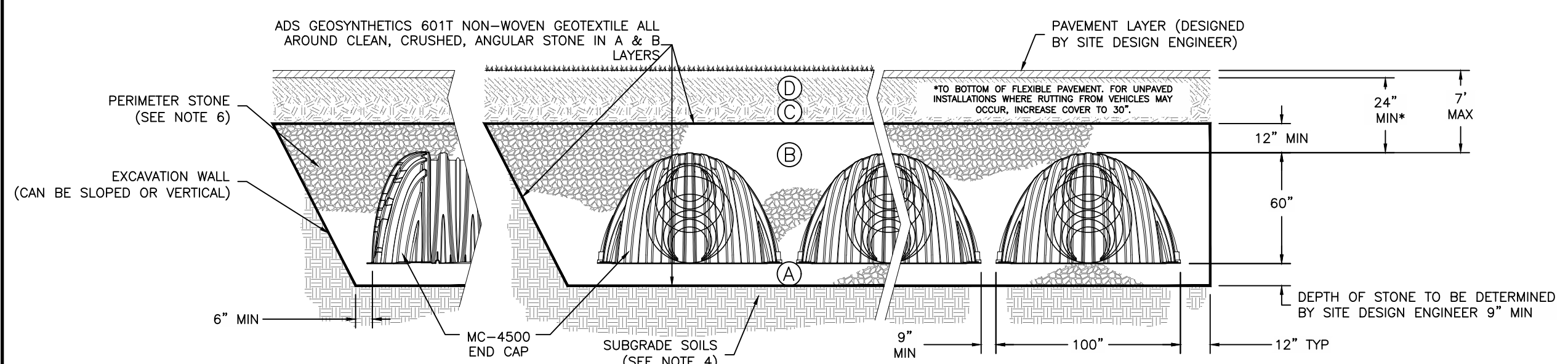
MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	N/A	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.	AASHTO M145' A-1, A-2-4, A-3 OR AASHTO M43' 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" 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.	AASHTO M43' 3, 4	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	AASHTO M43' 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.

PROPOSED ELEVATIONS

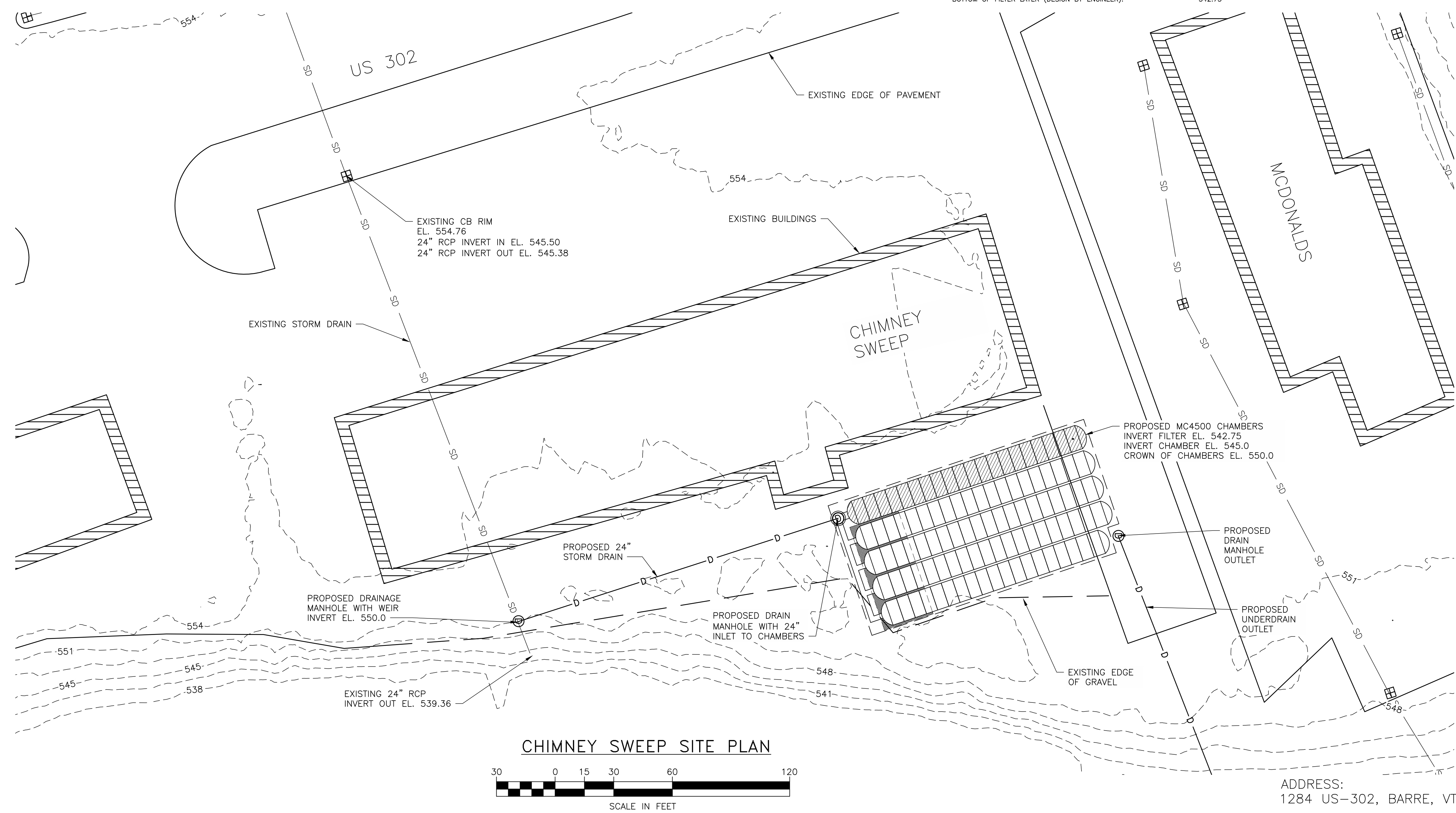
MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	557.00
MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	552.50
MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):	552.00
MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	552.00
MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT):	552.00
TOP OF STONE:	551.00
TOP OF CHAMBER:	550.00
18" CONNECTION INVERT:	547.45
24" CONNECTION INVERT:	545.19
BOTTOM OF CHAMBER:	545.00
BOTTOM OF STONE:	544.25
BOTTOM OF FILTER LAYER (DESIGN BY ENGINEER):	542.75

CONCEPTUAL LAYOUT
 (99) STORMTECH MC-4500 CHAMBERS
 (10) STORMTECH MC-4500 END CAPS
 INSTALLED WITH 12" COVER STONE, 9" BASE STONE, 18" FILTER LAYER (DESIGN BY ENGINEER)
 30% STONE VOID ASSUMED FOR VOLUME CALCULATIONS
 INSTALLED SYSTEM VOLUME: 18167 CF
 AREA OF SYSTEM: 4257 FT²
 PERIMETER OF SYSTEM: 277 FT



- NOTES:**
- MC-4500 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
 - MC-4500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
 - "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
 - 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. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
 - 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.

STORMTECH MC-4500 CHAMBER SYSTEMS DETAIL
 NTS



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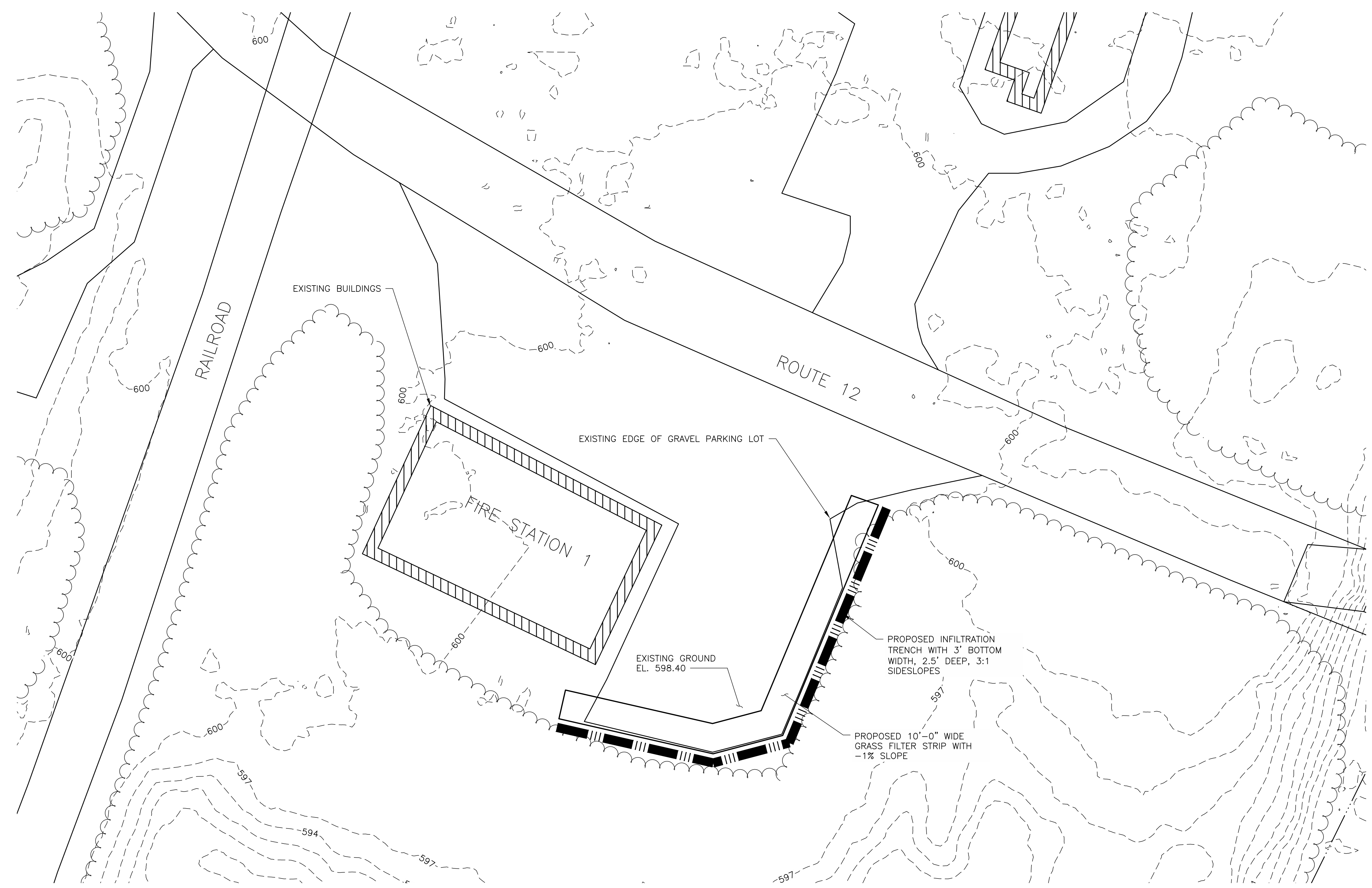
**FIRE STATION 1
SITE PLAN**

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PROJ. ENG. ATH	D&K ARCHIVE #

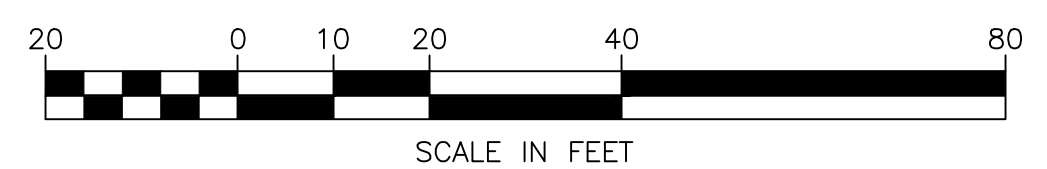
SHEET NUMBER

5

SHEET 5 OF 7



**FIRE STATION 1
SITE PLAN**



ADDRESS:
ROUTE 12, WEST OF CROSTOWN ROAD, BERLIN, VT

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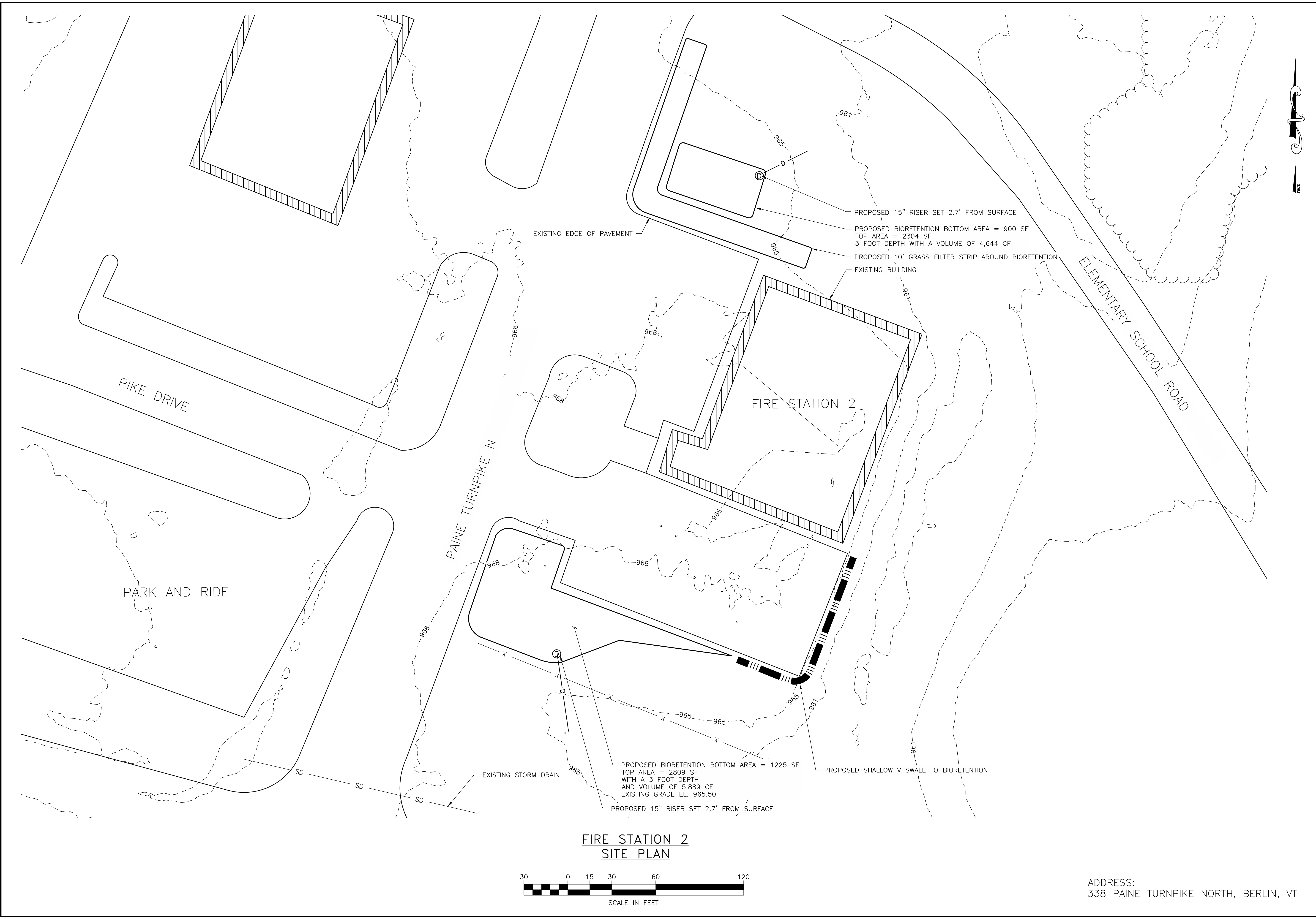
**FIRE STATION 2
SITE PLAN**

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PROJ. ENG. ATH	D&K ARCHIVE #

SHEET NUMBER

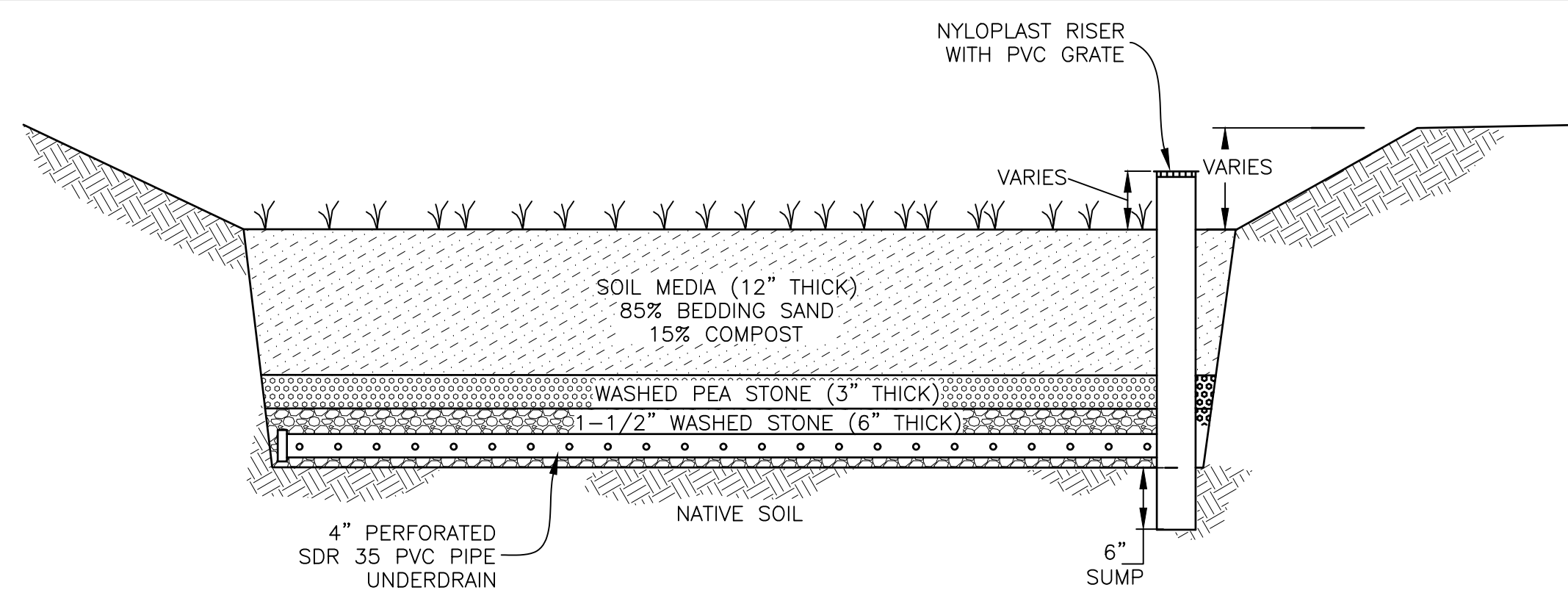
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SHEET 6 OF 7

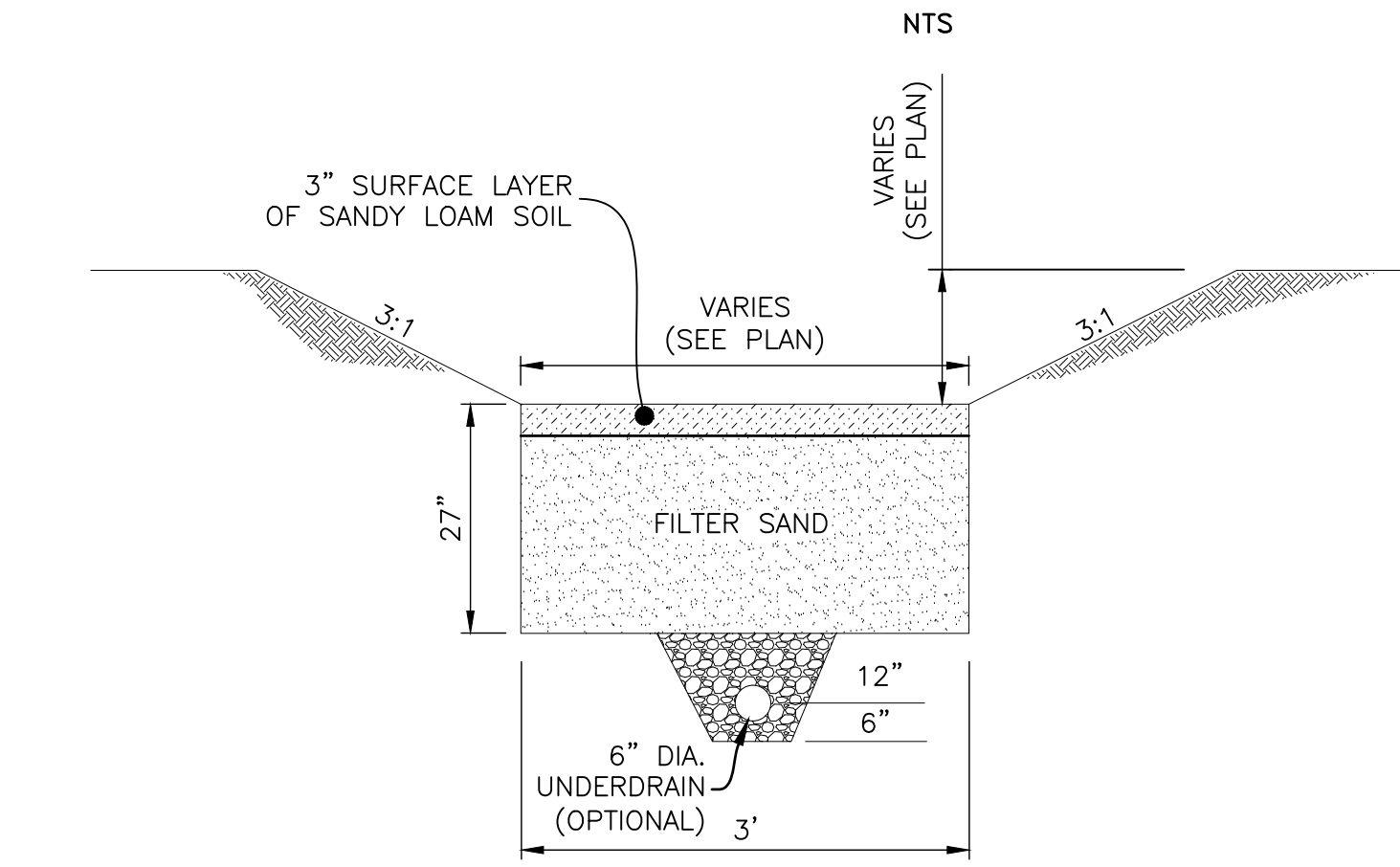


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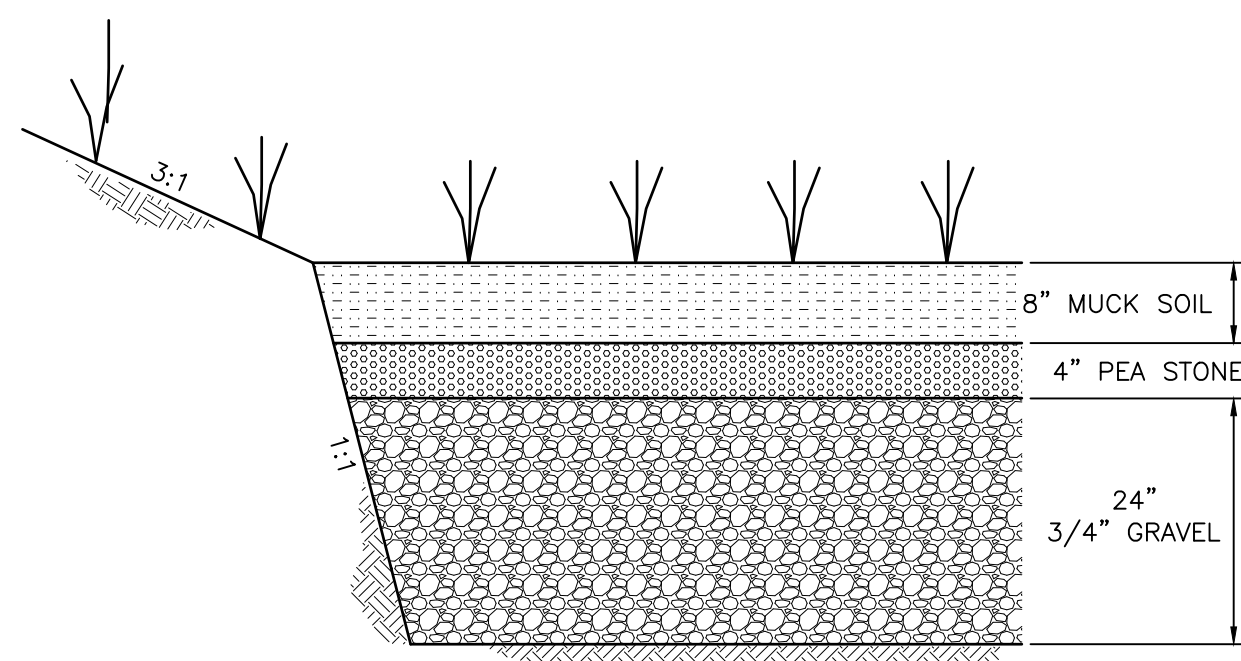
ADDRESS:
338 PAINE TURNPIKE NORTH, BERLIN, VT



BIORETENTION DETAIL
NTS



DRY SWALE DETAIL
NTS



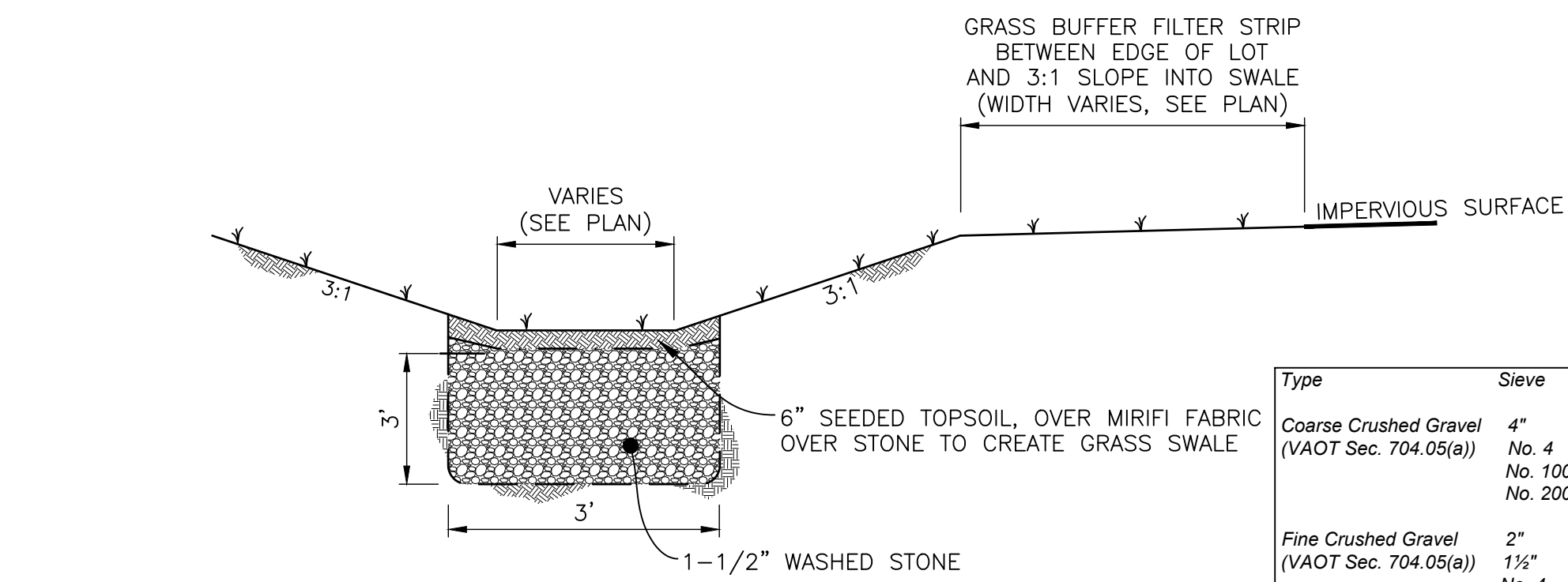
GRAVEL WETLAND DETAIL
NTS

AGGREGATE SPECIFICATIONS
TYPE I STONE FILL - (VAOT SEC. 706.04(A))
THE LONGEST DIMENSION OF THE STONE SHALL VARY FROM 1 INCH TO 12 INCHES, AND AT LEAST 50 PERCENT OF THE VOLUME OF THE STONE IN PLACE SHALL HAVE AT LEAST DIMENSION OF 4 INCHES.

3/4 INCH HARD WASHED STONE
CLEAN, DURABLE STONE NO SMALLER THAN 1/2 INCH OR LARGER THAN 1/2 INCH IN DIAMETER, ROUND OR ANGULAR

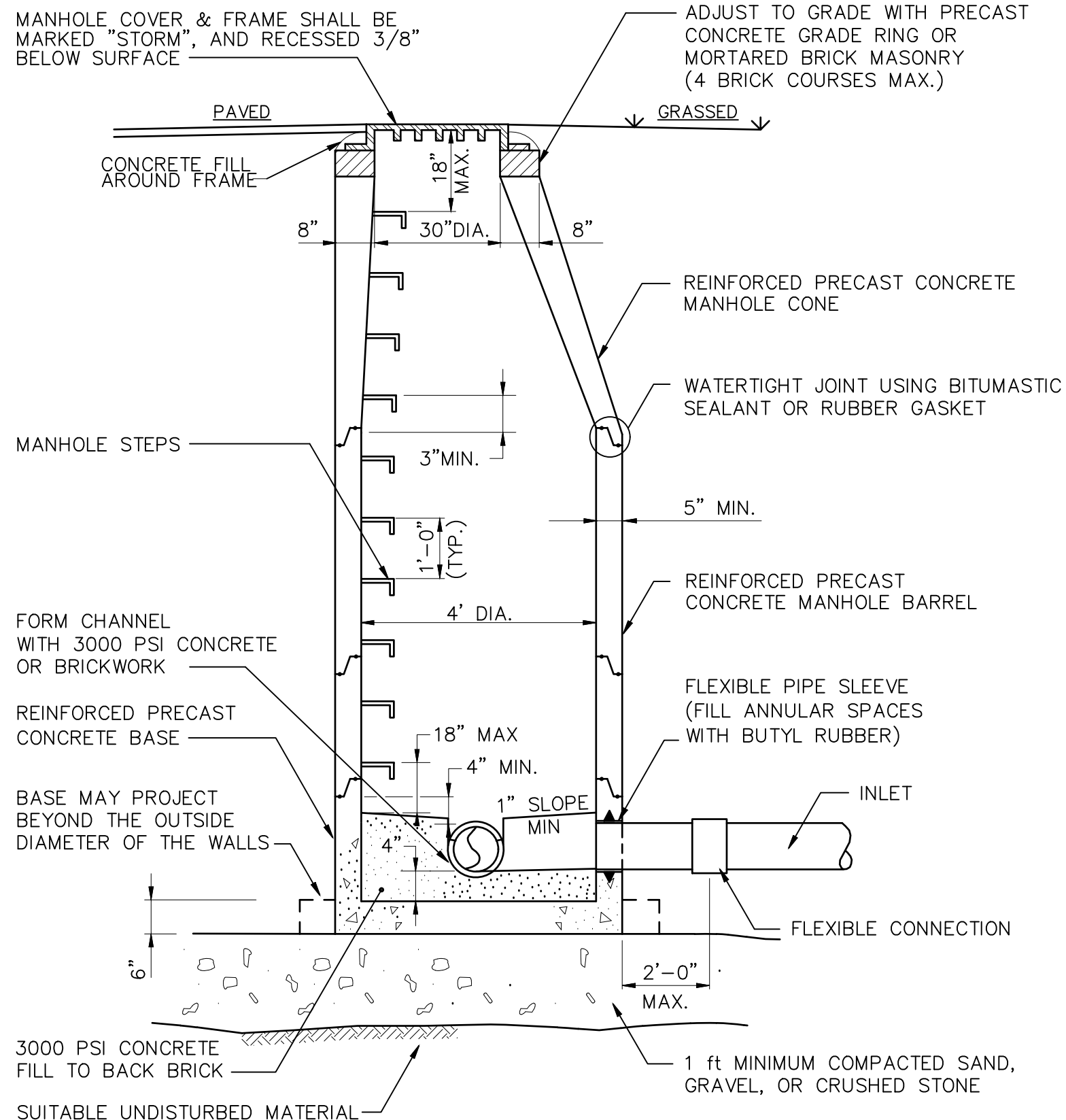
PEA STONE
CLEAN, DURABLE STONE NO SMALLER THAN 1/4 INCH OR LARGER THAN 1/2 INCH IN DIAMETER, ROUND OR ANGULAR.

MUCK SOIL
SILTY SOIL WITH A MINIMUM OF 15% ORGANIC MATTER BY WEIGHT, FREE OF MAN-MADE DEBRIS AND CONTAMINANTS, FREE OF STONE LARGER THAN 1 INCH IN DIAMETER. MAY BE FORM NATURAL SOURCE OR MANUFACTURED WITH COMPOSTED ORGANIC MATERIAL. IF NATURAL, THE SOIL SHALL NOT HAVE BEEN REMOVED FROM AN EXISTING WETLAND EXCEPT UNDER STATE OR FEDERAL APPROVALS.



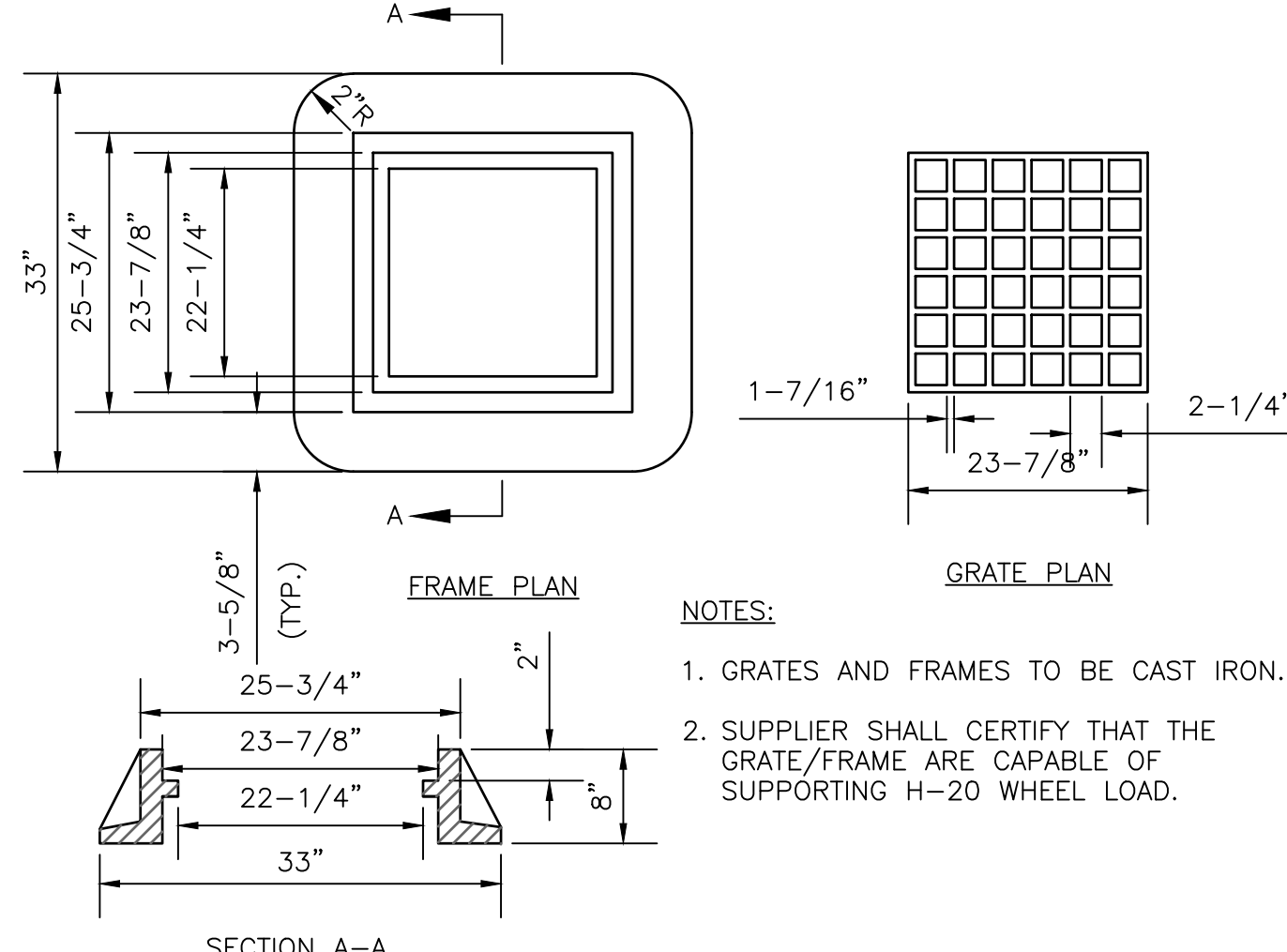
INFILTRATION SWALE DETAIL
NTS

Type	Sieve	% Passing
Coarse Crushed Gravel (VAOT Sec. 704.05(a))	4"	95-100
	No. 4	25-50
	No. 100	0-12
Fine Crushed Gravel (VAOT Sec. 704.05(a))	2"	100
	1 1/2"	90-100
	No. 4	30-60
	No. 100	0-12
	No. 200	0-6



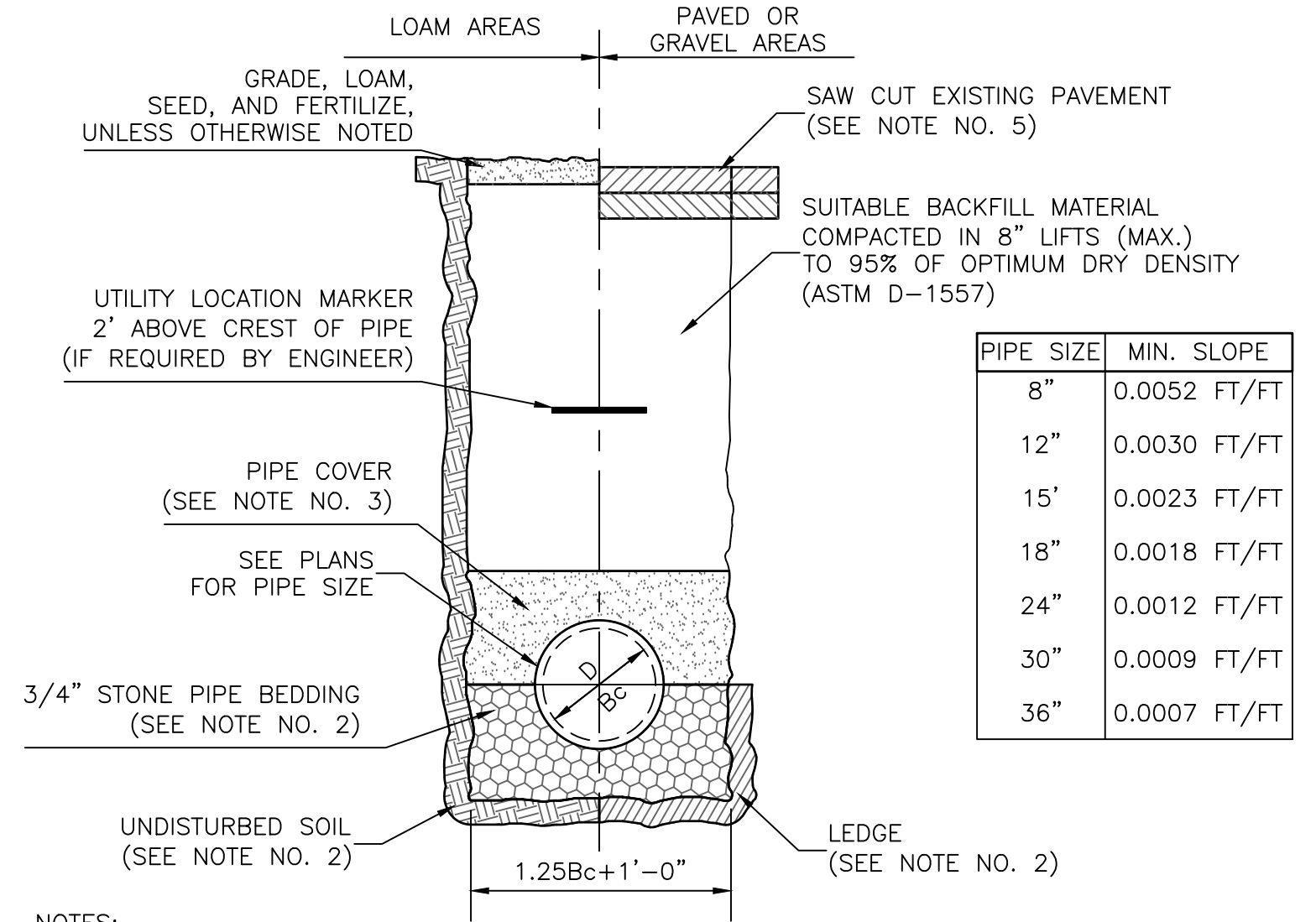
CONCRETE MANHOLE DETAIL
NOT TO SCALE

- NOTES:**
- 1.) WHEN MANHOLE DEPTH IS LESS THAN 6 FEET, A FLAT REINFORCED CONCRETE COVER WITH AN ECCENTRIC OPENING AND CAPABLE OF H-20 WHEEL LOADS MAY BE USED.
 - 2.) MANHOLES SHALL BE CAPABLE OF WITHSTANDING H-20 WHEEL LOADS. ADDITIONAL REINFORCING AND/OR WALL THICKNESS MAY BE REQUIRED TO MEET THE H-20 WHEEL LOAD.



GRATE AND FRAME DETAIL
NOT TO SCALE

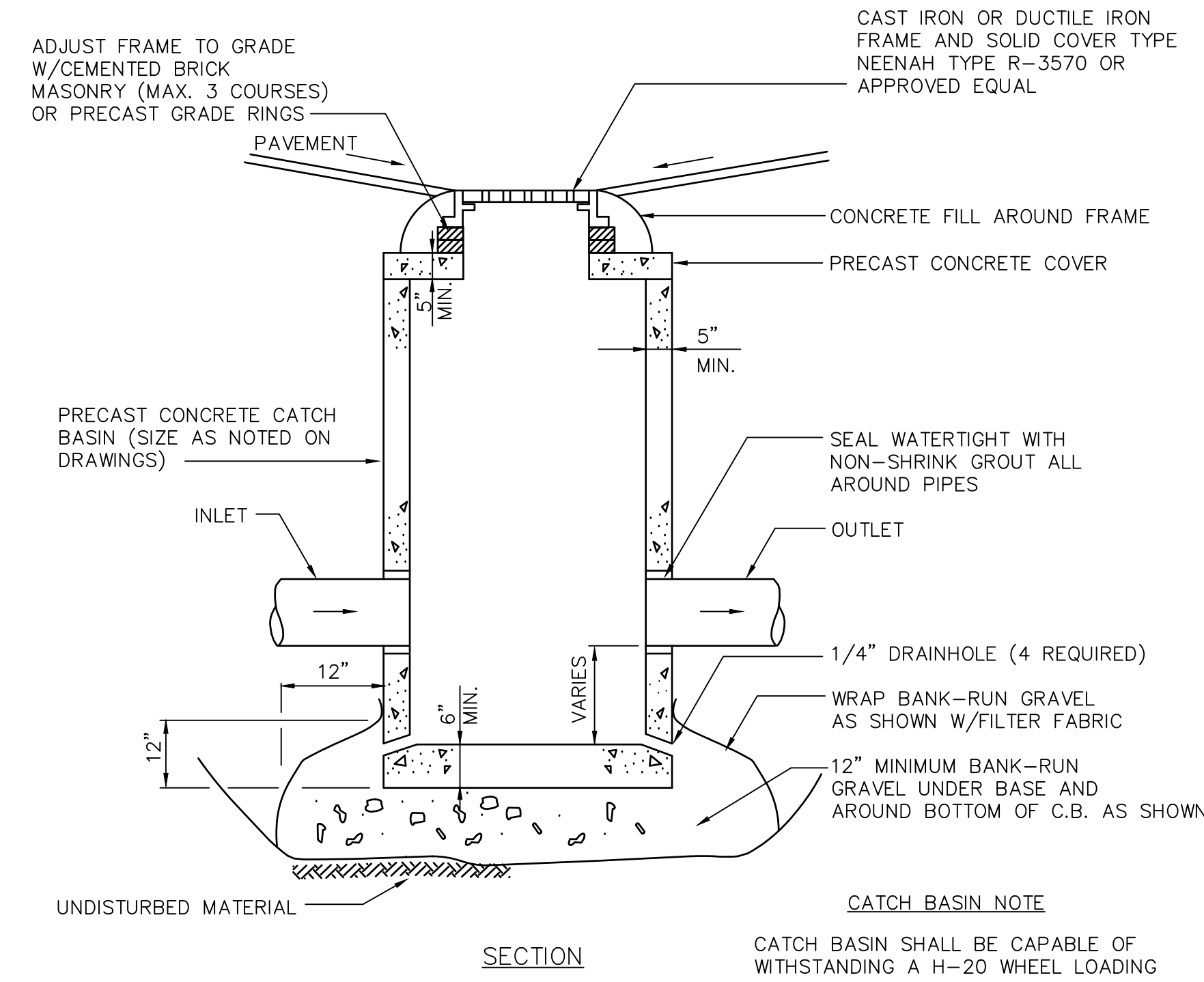
- NOTES:**
1. GRATES AND FRAMES TO BE CAST IRON.
 2. SUPPLIER SHALL CERTIFY THAT THE GRATE/FRAME ARE CAPABLE OF SUPPORTING H-20 WHEEL LOAD.



CULVERT AND STORM DRAIN PIPE TRENCH DETAIL
NOT TO SCALE

- NOTES:**
1. ALL EXCAVATION MUST MEET OSHA STANDARDS.
 2. BEDDING MATERIAL SHALL BE FULL WIDTH OF TRENCH. BEDDING MATERIAL SHALL BE 6" BELOW PIPE (IN EARTH) OR 12" BELOW PIPE (IN LEDGE) UP TO SPRING LINE OF PIPE.
 3. PIPE COVER MATERIAL SHALL BE FULL WIDTH OF TRENCH FROM SPRING LINE UP TO 12" (MINIMUM) ABOVE CREST OF PIPE. [PIPE COVER MATERIAL SHALL BE SCREENED SAND] IF REINFORCED CONCRETE PIPE (RCP) IS USED, SAND COVER MATERIAL MAY BE EXCHANGED FOR NON-ORGANIC MATERIAL THAT CONTAINS NO STONES LARGER THAN 3" IN DIAMETER.
 4. STORM DRAIN LAYOUT PLAN PIPE SLOPES SHALL GOVERN OVER MINIMUM PIPE SLOPE SCHEDULE.
 5. PAVEMENT REPAIR SHALL CONFORM TO STREET OPENING REGULATIONS (WITHIN RIGHT-OF-WAY LIMITS), PAVEMENT SECTION DETAIL (OUTSIDE OF RIGHT-OF-WAY LIMITS) AND PAVEMENT REPAIR DETAIL.

PIPE SIZE	MIN. SLOPE
8"	0.0052 FT/FT
12"	0.0030 FT/FT
15"	0.0023 FT/FT
18"	0.0018 FT/FT
24"	0.0012 FT/FT
30"	0.0009 FT/FT
36"	0.0007 FT/FT



CATCH BASIN DETAIL
NOT TO SCALE

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CENTRAL VERMONT STORMWATER MASTER PLAN

STORMWATER MASTER PLAN BERLIN

SHEET TITLE

DETAILS

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