

Site Plans

The Dascomb Road Project

Andover, Massachusetts

(Assessors Map 203, Lot 2A-1)

Site Plans Index		
No.	Drawing Title	Latest Issue
C-1	Title & Index Sheet	October 31, 2018
C-2	Legend & General Notes	October 31, 2018
C-3	Proposed Site Plan	October 31, 2018
C-4	Demolition Plan	October 31, 2018
C-5	Layout & Materials Plan	October 31, 2018
C-6	Grading & Drainage Plan	October 31, 2018
C-7	Utility Plan	October 31, 2018
C-8	Erosion & Sediment Control Plan	October 31, 2018
C-9 - C-13	Drainage Plan & Profile	October 31, 2018
C-14 - C-16	Sewer Plan & Profile	October 31, 2018
C-17 - C-23	Construction Details	October 31, 2018
C-24	WB-67 & WB-50 Truck Turning Movements	October 31, 2018
C-25	Andover Fire Truck Turning Movements	October 31, 2018
C-26	Stream Restoration Plan	October 31, 2018
C-27	Stream Restoration Plan & Profile	October 31, 2018

Reference Plans Index		
No.	Drawing Title	Latest Issue
1	Existing Conditions/Survey (by Feldman Land Surveyors)	November 30, 2015
SL-1,EL-1, EL-2	Light Plan, Photometrics, and Schedules (by SK Associates)	December 4, 2017
L-1	Planting Plan (by Hammer + Walsh Design, Inc.)	December 4, 2017
---	Architectural Plan (by Form + Place)	December 14, 2017

APPROVALS REQUESTED FROM PLANNING BOARD:

- SPECIAL PERMIT – INDUSTRIAL DISTRICT 2
 - RETAIL SALES ESTABLISHMENT
 - RESTAURANT
 - INDOOR COMMERCIAL RECREATION ESTABLISHMENT
 - GROCERY STORE
 - HOTEL
- SPECIAL PERMIT – MAJOR NON-RESIDENTIAL PROJECT
- SPECIAL PERMIT – SITE PLAN REVIEW

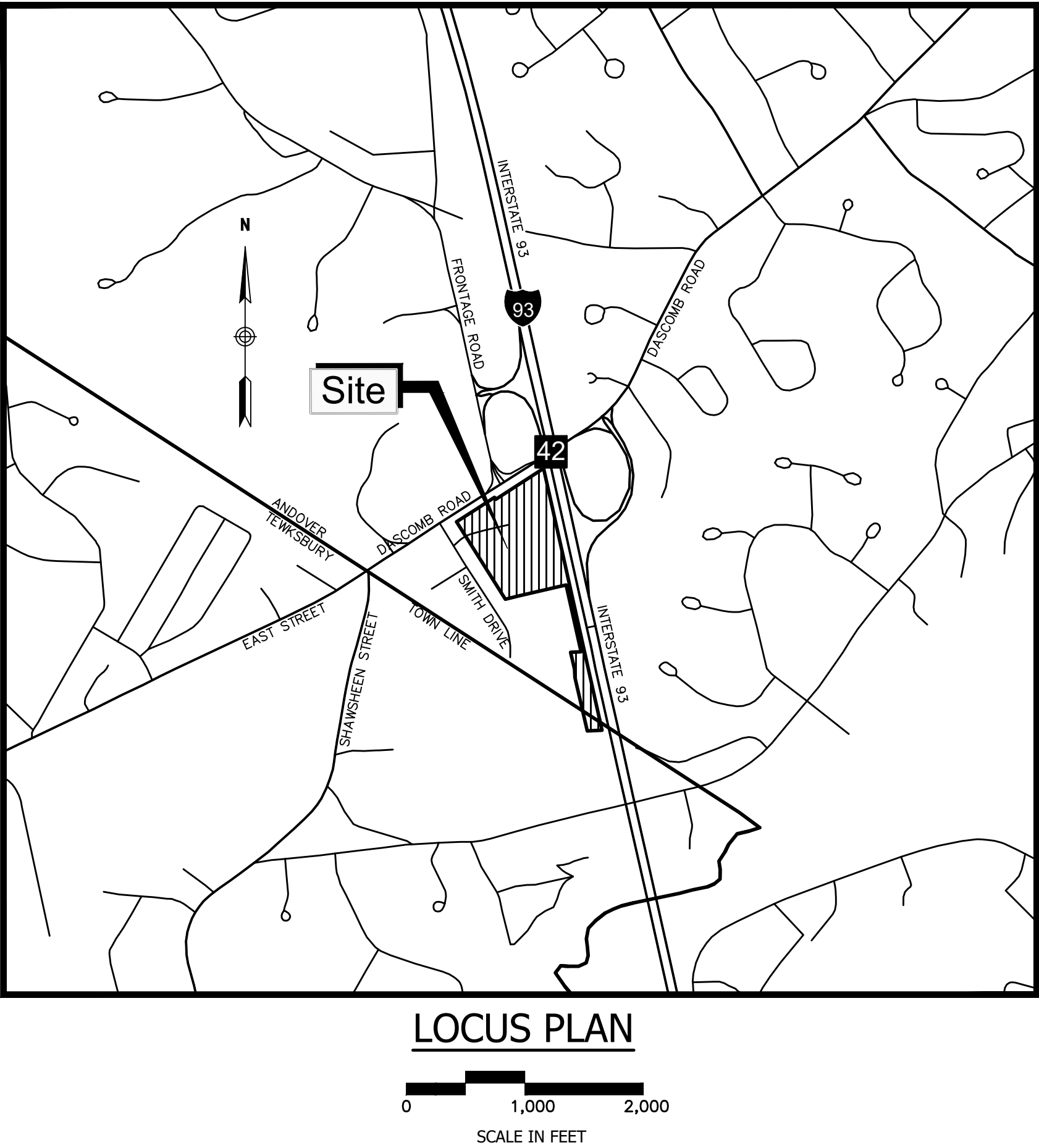
PRIOR LOCAL APPROVALS FOR THE DASCOMB ROAD PROJECT

APPROVALS FROM CONSERVATION COMMISSION
(DECISION 1/21/2016):

- ORDER OF CONDITIONS

APPROVALS FROM ZONING BOARD OF APPEALS
(DECISION 9/02/2014):

- VARIANCE FOR 0' SIDEYARD SETBACK



SEWER DESIGN FLOW CALCULATIONS

TYPE	FLOW RATE (GPD) ¹	UNIT	TOTAL AREA (SF)	TOTAL FLOW (GPD)
OFFICE	75	PER 1,000 SF	293,000	21,975
RETAIL	50	PER 1,000 SF	80,000	4,000
RESTAURANT	35	PER SEAT	200 SEATS	7,000
GROCERY	97	PER 1,000 SF	35,000	3,395
HOTEL	110	PER BEDROOM	100	11,000
FITNESS	25	PER PARTICIPANT	150 PARTICIPANTS	3,750
TOTAL				51,120

1. FLOW RATES PER 310 CMR 15 THE STATE ENVIRONMENTAL CODE TITLE 5, DEPARTMENT OF ENVIRONMENTAL PROTECTION

GPD=GALLONS PER DAY
SF=SQUARE FEET

GREASE TRAP DESIGN FLOW CALCULATIONS

TYPE	FLOW RATE (GPD) ¹	UNIT	TOTAL AREA (SF)	TOTAL FLOW (GPD)
RESTAURANT	15	PER SEAT	200	3,000



TEC, Inc.

146 Dascomb Road
Andover, MA 01810
(978) 794-1792
www.TheEngineeringCorp.com

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

DESIGNED BY	CPR
DRAWN BY	DGR
CHECKED BY	RJF
DATE	10/31/2018
SCALE	AS NOTED

PREPARED FOR

Dascomb Road
Development, LLC
354 Merrimack Street
Suite 1
Lawrence, MA 01843

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

The Dascomb Road
Project

PROJECT LOCATION

146 Dascomb Road
Andover, MA

DRAWING TITLE

Title &
Index Sheet



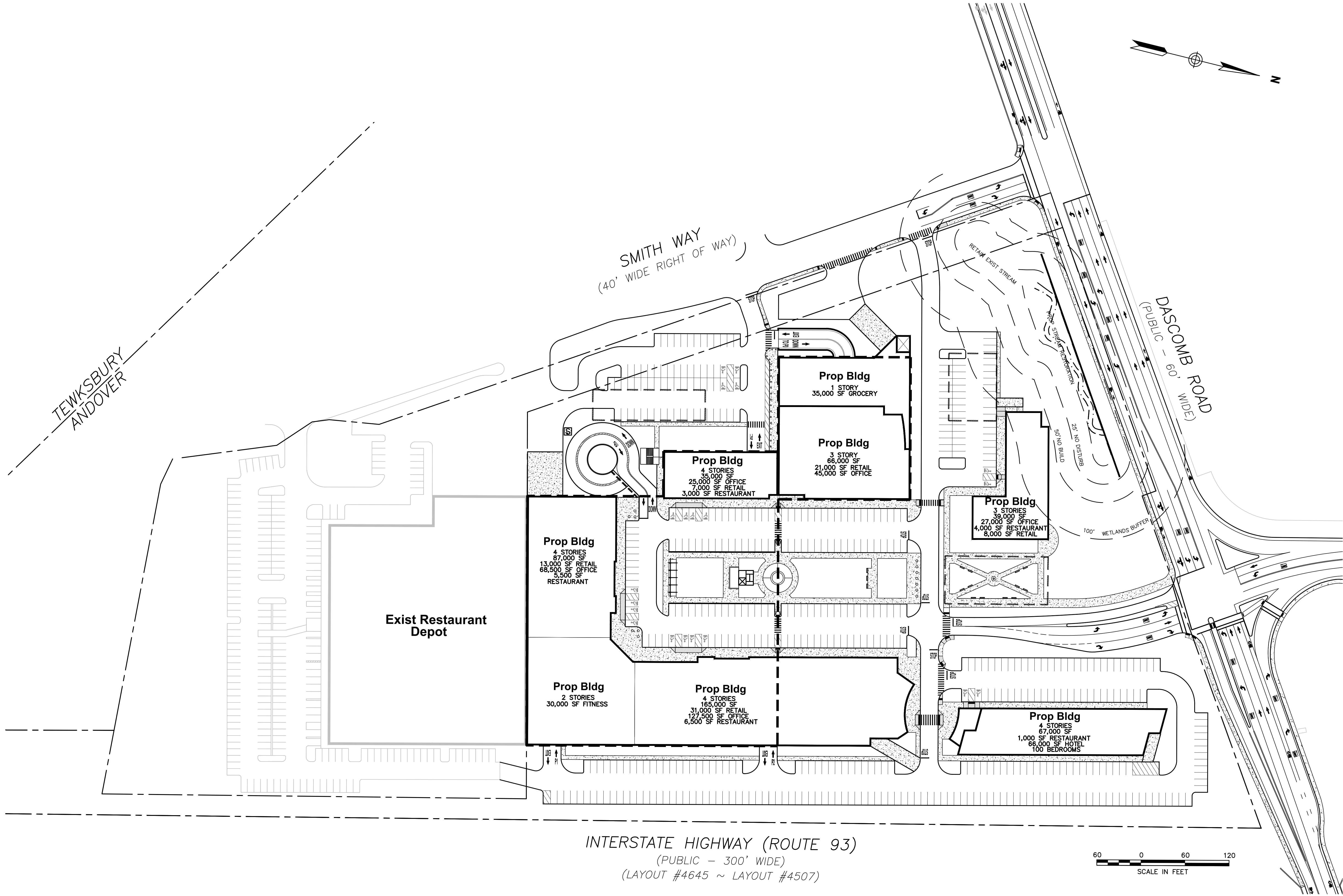
PROJECT NO.
T0681

TEC CAD FILE
T0681_COV.dwg

DRAWING NO.

C-1

SHEET 1 OF 27



TEC, Inc.

146 Dascomb Road
Andover, MA 01810
(978) 794-1792
www.TheEngineeringCorp.com

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

DESIGNED BY	CPR
DRAWN BY	DGR
CHECKED BY	RJF
DATE	10/31/2018
SCALE	1" = 60'

PREPARED FOR

Dascomb Road
Development, LLC
354 Merrimack Street
Suite 1
Lawrence, MA 01843

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

The Dascomb Road
Project

PROJECT LOCATION

146 Dascomb Road
Andover, MA

DRAWING TITLE

Proposed Site Plan



PROJECT NO.

T0681

TEC CAD FILE

T0681_PROP.dwg

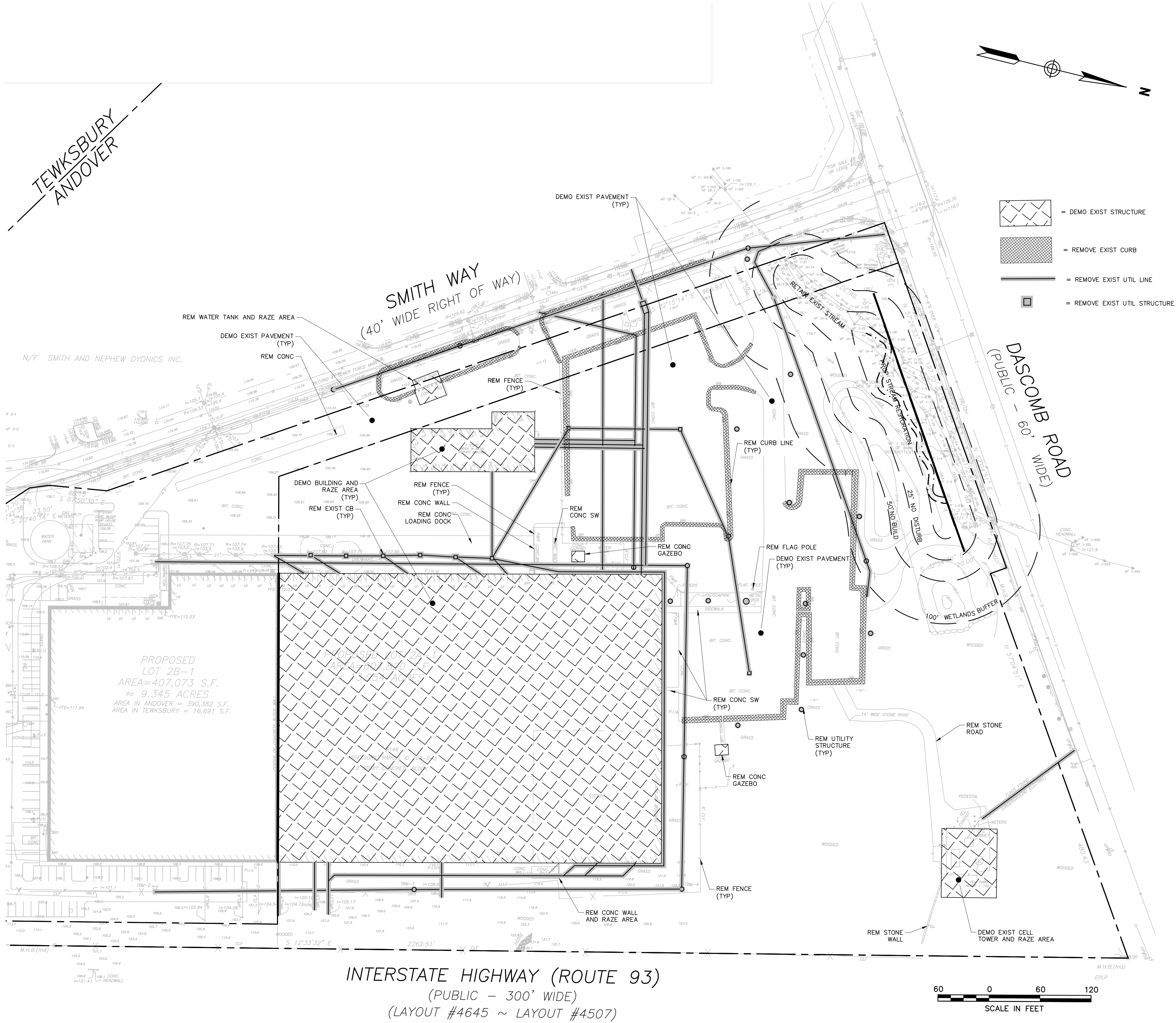
DRAWING NO.

C-3

SHEET 3 OF 27

NOTES:

1. ALL UTILITIES SHOWN ON THIS PLAN ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND ELEVATIONS OF EACH UTILITY PRIOR TO REMOVING OR RELOCATING. CONTRACTOR SHALL NOTIFY DIG-SAFE (1-888-344-7233) AND THE LOCAL MUNICIPAL WATER & SEWER DEPT. AT LEAST 72 HOURS BEFORE EXCAVATING.
2. THE CONTRACTOR SHALL DISCONNECT ALL UTILITIES FROM THE BUILDINGS PRIOR TO DEMOLITION.
3. THE CONTRACTOR IS TO REMOVE AND TO DISPOSE OF EXISTING MANMADE SURFACE FEATURES WITHIN THE LIMITS OF WORK INCLUDING BUILDINGS, STRUCTURES, PAVEMENTS, SLABS, CURBING, FENCES, UTILITY POLES, SIGNS, ETC. UNLESS INDICATED OTHERWISE ON THE DRAWINGS. REMOVE AND DISPOSE OF EXISTING UTILITIES, FOUNDATIONS, AND UNSUITABLE MATERIAL WITHIN THE PROPOSED BUILDING FOOTPRINT, TEN FEET BEYOND AND BENEATH PROPOSED EXTERIOR COLUMNS, AND CONFLICTING WITH ANY PROPOSED SITE WORK, PER DRAWINGS AND SPECIFICATIONS.
4. EXISTING UTILITIES SHALL BE TERMINATED, UNLESS OTHERWISE NOTED, IN CONFORMANCE WITH LOCAL, STATE, AND INDIVIDUAL UTILITY COMPANIES' STANDARD SPECIFICATIONS AND DETAILS. THE CONTRACTOR SHALL COORDINATE UTILITY SERVICE DISCONNECTS WITH THE UTILITY REPRESENTATIVES.
5. THE CONTRACTOR SHALL DISPOSE OF DEMOLITION DEBRIS IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS, ORDINANCES, AND STATUTES.
6. ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED AND APPROVED PRIOR TO DEMOLITION.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SECURITY AND JOB SAFETY. CONSTRUCTION ACTIVITIES SHALL BE IN ACCORDANCE WITH OSHA STANDARDS AND LOCAL REQUIREMENTS. A 6-FOOT TEMPORARY CHAIN LINK FENCE SHALL BE PROVIDED AROUND ALL CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL LEAVE NO UNSECURED OPEN EXCAVATIONS.
8. ALL EXISTING DRAINAGE STRUCTURES SHALL REMAIN IN PLACE AND FUNCTIONAL UNTIL THE PROPOSED DRAINAGE SYSTEM IS OPERATIONAL, UNLESS OTHERWISE NOTED BY THE ENGINEER.
9. THE CONTRACTOR SHALL NOTIFY THE OWNER AT LEAST 72 HOURS PRIOR TO BEGINNING ANY DEMOLITION.
10. THE LOCATION OF THE EXISTING SEWER SERVICE IS APPROXIMATE. THE EXISTING SERVICE SHALL BE REMOVED IN CONFORMANCE WITH STATE AND LOCAL REGULATIONS.
11. IN THE EVENT THAT SUSPECTED CONTAMINATED SOIL, GROUNDWATER, AND OTHER MEDIA ARE ENCOUNTERED DURING EXCAVATION AND CONSTRUCTION ACTIVITIES BASED ON VISUAL, OLFACTORY, OR OTHER EVIDENCE, THE CONTRACTOR SHALL STOP WORK IN THE VICINITY OF THE SUSPECT MATERIAL TO AVOID FURTHER SPREADING OF THE MATERIAL, AND SHALL NOTIFY THE OWNER IMMEDIATELY SO THAT THE APPROPRIATE TESTING AND SUBSEQUENT ACTION CAN BE TAKEN.
12. THE APPLICANT SHALL COORDINATE WITH THE CITY OF ANDOVER FIRE DEPARTMENT TO ACCESS THE PRACTICALITY OF OFFERING THE DEPARTMENT THE EXISTING BUILDINGS FOR FIRE & RESCUE TRAINING BEFORE DEMOLITION.



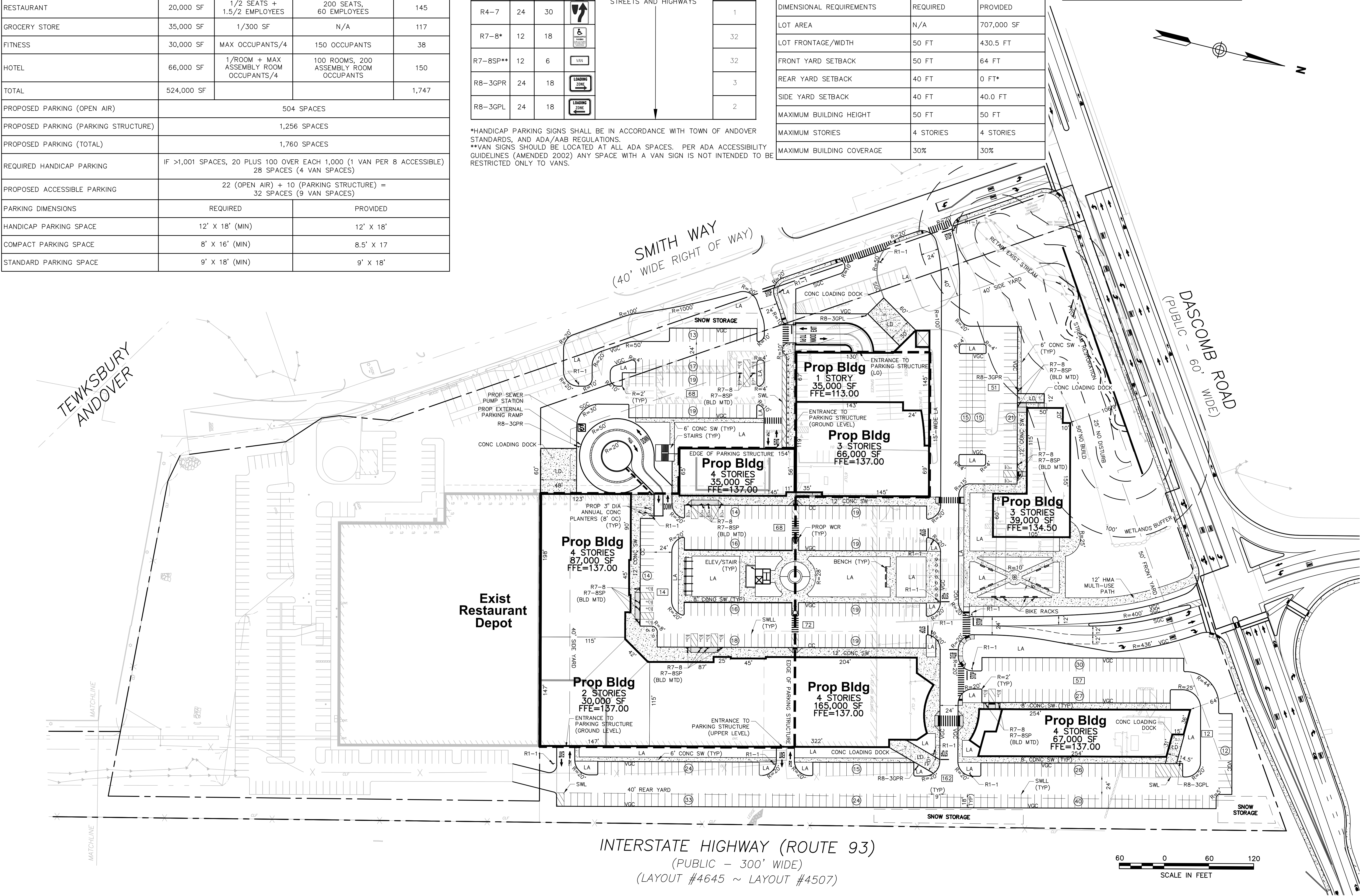
PARKING TABLE				
PROPOSED DEVELOPMENT USE	AREA	PARKING REQUIRED	OCCUPANTS/SEATS	SPACES
OFFICE	293,000 SF	1/300 SF	N/A	977
RETAIL	80,000 SF	1/250 SF	N/A	320
RESTAURANT	20,000 SF	1/2 SEATS + 1.5/2 EMPLOYEES	200 SEATS, 60 EMPLOYEES	145
GROCERY STORE	35,000 SF	1/300 SF	N/A	117
FITNESS	30,000 SF	MAX OCCUPANTS/4	150 OCCUPANTS	38
HOTEL	66,000 SF	1/ROOM + MAX ASSEMBLY ROOM OCCUPANTS/4	100 ROOMS, 200 ASSEMBLY ROOM OCCUPANTS	150
TOTAL	524,000 SF			1,747
PROPOSED PARKING (OPEN AIR)	504 SPACES			
PROPOSED PARKING (PARKING STRUCTURE)	1,256 SPACES			
PROPOSED PARKING (TOTAL)	1,760 SPACES			
REQUIRED HANDICAP PARKING	IF >1,001 SPACES, 20 PLUS 100 OVER EACH 1,000 (1 VAN PER 8 ACCESSIBLE) 28 SPACES (4 VAN SPACES)			
PROPOSED ACCESSIBLE PARKING	22 (OPEN AIR) + 10 (PARKING STRUCTURE) = 32 SPACES (9 VAN SPACES)			
PARKING DIMENSIONS	REQUIRED	PROVIDED		
HANDICAP PARKING SPACE	12' X 18' (MIN)	12' X 18'		
COMPACT PARKING SPACE	8' X 16' (MIN)	8.5' X 17		
STANDARD PARKING SPACE	9' X 18' (MIN)	9' X 18'		

SIGN SUMMARY					
IDENTIFICATION NUMBER	SIZE OF SIGN (in)		TEXT	TEXT DIMENSIONS (in)	NUMBER OF SIGNS REQUIRED
	WIDTH	HEIGHT		LETTER HEIGHT	
R1-1	30	30	STOP	SEE 2009 MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS	12
R4-7	24	30	UPWARD ARROW		1
R7-8*	12	18	HANDICAP		32
R7-8SP**	12	6	VAN		32
R8-3GPR	24	18	LOADING ZONE		3
R8-3GPL	24	18	LOADING ZONE		2

*HANDICAP PARKING SIGNS SHALL BE IN ACCORDANCE WITH TOWN OF ANDOVER STANDARDS, AND ADA/AAB REGULATIONS.
**VAN SIGNS SHOULD BE LOCATED AT ALL ADA SPACES. PER ADA ACCESSIBILITY GUIDELINES (AMENDED 2002) ANY SPACE WITH A VAN SIGN IS NOT INTENDED TO BE RESTRICTED ONLY TO VANS.

ZONING TABLE		
ZONING DISTRICT	INDUSTRIAL D2 (ID2)	
PROPOSED USE	SEE PARKING TABLE	
PROPOSED USE ALLOWABLE BY	BY RIGHT	
DIMENSIONAL REQUIREMENTS	REQUIRED	PROVIDED
LOT AREA	N/A	707,000 SF
LOT FRONTAGE/WIDTH	50 FT	430.5 FT
FRONT YARD SETBACK	50 FT	64 FT
REAR YARD SETBACK	40 FT	0 FT*
SIDE YARD SETBACK	40 FT	40.0 FT
MAXIMUM BUILDING HEIGHT	50 FT	50 FT
MAXIMUM STORIES	4 STORIES	4 STORIES
MAXIMUM BUILDING COVERAGE	30%	30%

WETLAND SETBACK TABLE		
	REQUIRED	PROVIDED
BUILDINGS	50 FT	50 FT
PARKING LOT (>4 VEHICLES)	50 FT	50 FT



TEC, Inc.

146 Dascomb Road
Andover, MA 01810
(978) 794-1792
www.TheEngineeringCorp.com

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

DESIGNED BY CPR
DRAWN BY DGR
CHECKED BY RJF
DATE 10/31/2018
SCALE 1" = 60'

PREPARED FOR

Dascomb Road
Development, LLC
354 Merrimack Street
Suite 1
Lawrence, MA 01843

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

The Dascomb Road
Project

PROJECT LOCATION

146 Dascomb Road
Andover, MA

DRAWING TITLE

Layout &
Materials Plan



PROJECT NO. T0681
TEC CAD FILE T0681_LM.dwg
DRAWING NO. C-5
SHEET 5 OF 27

PERMITTING SET - NOT FOR CONSTRUCTION



TEC, Inc.

146 Dascomb Road
Andover, MA 01810
(978) 794-1792
www.TheEngineeringCorp.com

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

DESIGNED BY	CPR
DRAWN BY	DGR
CHECKED BY	RJF
DATE	10/31/2018
SCALE	AS NOTED

PREPARED FOR

Dascomb Road
Development, LLC
354 Merrimack Street
Suite 1
Lawrence, MA 01843

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

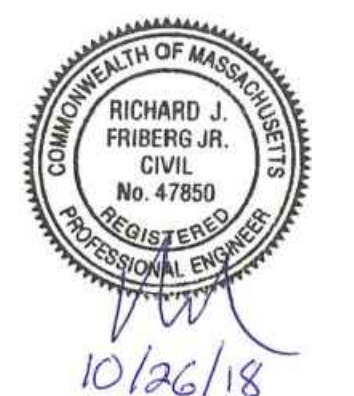
The Dascomb Road
Project

PROJECT LOCATION

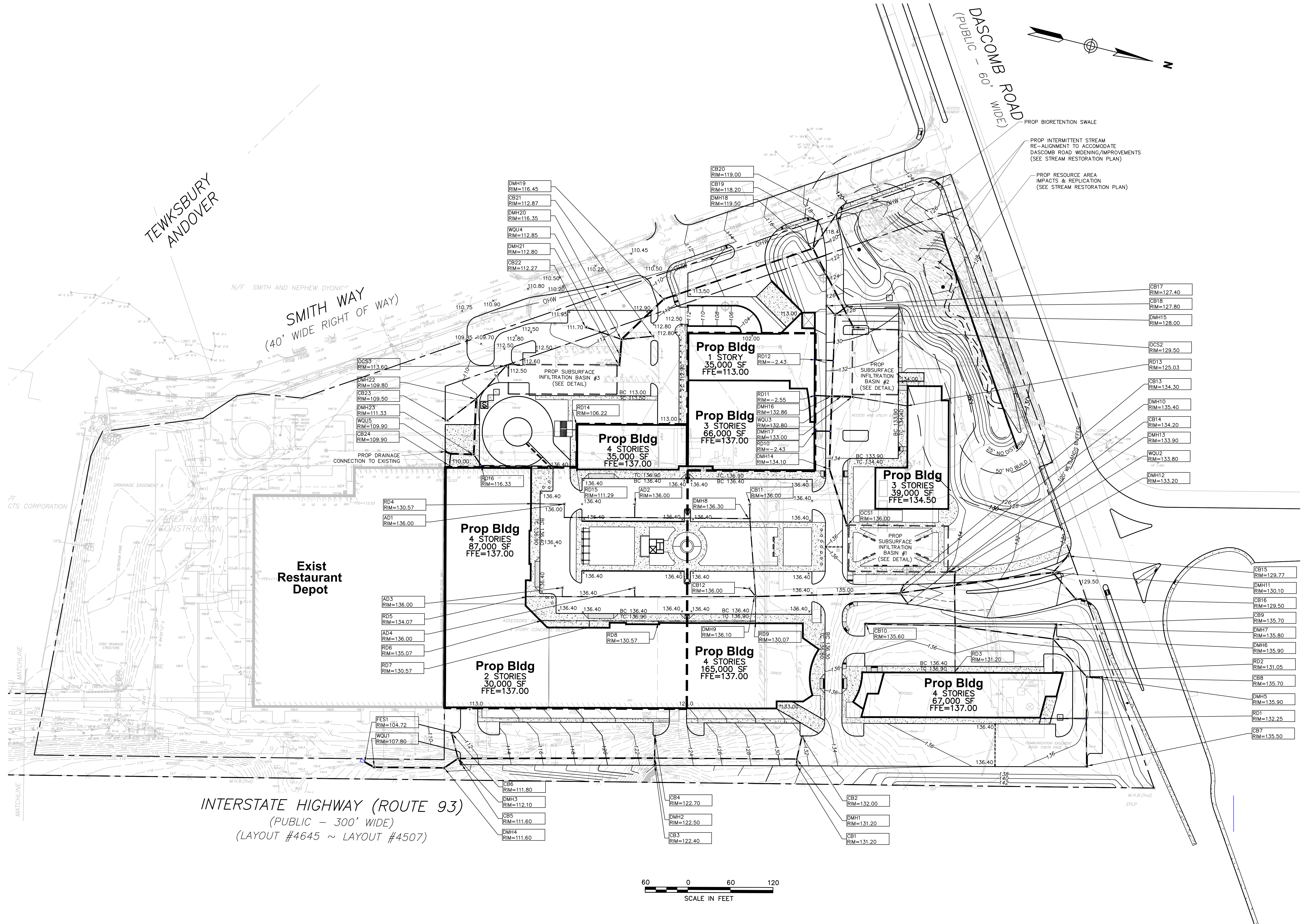
146 Dascomb Road
Andover, MA

DRAWING TITLE

Grading &
Drainage Plan



PROJECT NO.
T0681
TEC CAD FILE
T0681_GD
DRAWING NO.
C-6
SHEET 6 OF 27



PERMITTING SET - NOT FOR CONSTRUCTION

DRAINAGE STRUCTURE DATA		
NUMBER	INVERT	RIM ELEVATION
AD1	RD4 INV IN = 133.80 NULL2 INV OUT = 133.80	136.00
AD2	NULL3 INV OUT = 133.80	136.00
AD3	NULL4 INV OUT = 133.80	136.00
AD4	NULL5 INV OUT = 133.80	136.00
CB1	DMH1 INV OUT = 127.20	131.20
CB2	DMH1 INV OUT = 127.80	132.00
CB3	DMH2 INV OUT = 118.40	122.40
CB4	DMH2 INV OUT = 118.70	122.70
CB5	DMH3 INV OUT = 107.60	111.60
CB6	DMH3 INV OUT = 107.80	111.80
CB7	NULL1 INV OUT = 131.50	135.50
CB8	DMH5 INV OUT = 131.70	135.70
CB9	DMH6 INV OUT = 131.70	135.70
CB10	DMH7 INV OUT = 131.60	135.60
CB11	DMH8 INV OUT = 132.00	136.00
CB12	DMH9 INV OUT = 132.00	136.00
CB13	DMH10 INV OUT = 130.30	134.30
CB14	DMH10 INV OUT = 130.20	134.20
CB15	DMH11 INV OUT = 126.50	129.77
CB16	DMH11 INV OUT = 126.50	129.50
CB17	DMH15 INV OUT = 124.40	127.40
CB18	DMH15 INV OUT = 124.80	127.80
CB19	DMH18 INV OUT = 115.20	118.20
CB20	DMH18 INV OUT = 116.00	119.00
CB21	DMH20 INV OUT = 110.30	112.87
CB22	DMH20 INV OUT = 110.10	112.27
CB23	DMH22 INV OUT = 106.25	109.50
CB24	WQU5 INV OUT = 104.30	109.90
DMH1	CB1 INV IN = 127.10 CB2 INV IN = 127.50 DMH2 INV OUT = 127.00	131.20
DMH2	DMH1 INV IN = 120.00 CB3 INV IN = 118.30 CB4 INV IN = 118.30 DMH3 INV OUT = 118.20	122.50
DMH3	DMH2 INV IN = 107.50 CB5 INV IN = 107.50 CB6 INV IN = 107.50 DMH4 INV OUT = 107.40	112.10
DMH4	DMH3 INV IN = 107.00 WQ1 INV OUT = 106.90	111.60
DMH5	CB8 INV IN = 131.40 NULL1 INV IN = 130.10 DMH6 INV OUT = 130.00	135.90
DMH6	CB9 INV IN = 131.40 DMH5 INV IN = 129.30 RD2 INV IN = 131.40 DMH7 INV OUT = 129.20	135.90
DMH7	DMH6 INV IN = 128.60 CB10 INV IN = 130.00 RD3 INV IN = 129.50 DMH12 INV OUT = 128.50	135.80
DMH8	NULL3 INV IN = 132.10 CB11 INV IN = 131.80 DMH9 INV OUT = 132.00	136.30
DMH9	CB12 INV IN = 131.50 DMH8 INV IN = 131.00 NULL8 INV IN = 129.10 NULL5 INV IN = 129.00 DMH10 INV OUT = 129.00	136.10
DMH10	CB13 INV IN = 130.00 DMH9 INV IN = 127.10 CB14 INV IN = 130.00 DMH12 INV OUT = 127.00	135.40
DMH11	CB16 INV IN = 126.30 CB15 INV IN = 126.40 DMH12 INV OUT = 126.20	130.10
DMH12	DMH7 INV IN = 127.00 DMH11 INV IN = 125.90 DMH10 INV IN = 126.50 WQ2 INV OUT = 125.80	133.20

DMH13	WQU2 INV IN = 125.50	133.90
DMH14	OCS1 INV IN = 124.80 NULL9 INV OUT = 124.70	134.10
DMH15	CB17 INV IN = 124.30 CB18 INV IN = 124.70 NULL10 INV OUT = 124.20	128.00
DMH16	NULL10 INV IN = 123.60 NULL9 INV IN = 123.80 WQU3 INV OUT = 123.50 RD11 INV OUT = 124.20	132.86
DMH17	WQU3 INV IN = 123.20 RD13 INV IN = 123.00	133.00
DMH18	OCS2 INV IN = 114.40 CB20 INV IN = 115.20 CB19 INV IN = 115.00 DMH19 INV OUT = 114.30	119.50
DMH19	DMH18 INV IN = 113.40 DMH20 INV OUT = 113.30	116.45
DMH20	CB22 INV IN = 109.90 DMH19 INV IN = 113.20 CB21 INV IN = 110.00 WQU4 INV OUT = 109.90	116.35
DMH21	WQU4 INV IN = 109.60	112.80
DMH22	CB23 INV IN = 106.00 OCS3 INV IN = 104.45 DMH23 INV OUT = 105.10	109.80
DMH23	DMH22 INV IN = 104.50 RD16 INV IN = 109.00 WQU5 INV OUT = 104.30	111.33
FES1	WQU1 INV IN = 103.00	104.72
OCS1	DMH14 INV OUT = 125.25	136.00
OCS2	DMH18 INV OUT = 115.00	129.50
OCS3	DMH22 INV OUT = 105.40	113.60
WQU1	DMH4 INV IN = 103.20 FES1 INV OUT = 103.10	107.80
WQU2	DMH12 INV IN = 125.70 DMH13 INV OUT = 125.60	133.80
WQU3	DMH16 INV IN = 123.40 DMH17 INV OUT = 123.30	132.80
WQU4	DMH20 INV IN = 109.80 DMH21 INV OUT = 109.70	112.85

NOTES:

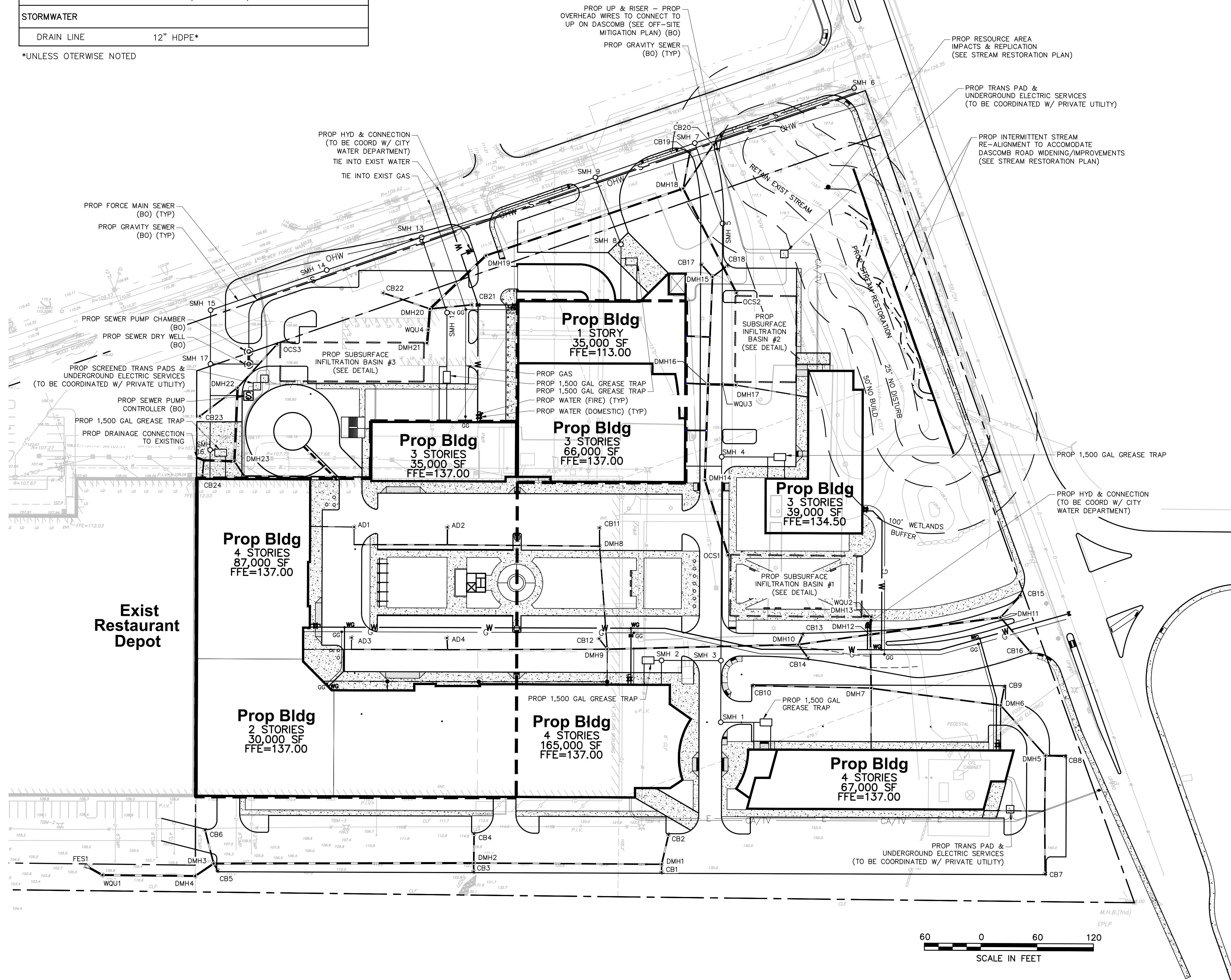
1. GREASE TRAP TO BE VENTED BACK TO BUILDING ROOF.
2. GREASE TRAP COVERS TO BE WATER/AIR TIGHT.
3. OWNER SHALL BE RESPONSIBLE FOR GREASE TRAP INCLUDING ITS CONTINUOUSLY EFFICIENT OPERATION, REGULAR MAINTENANCE, AND EXPENSES.
4. DROP INLET SHALL BE CONSTRUCTED TO MEET ALL CITY STANDARDS.
5. CONTRACTOR SHALL COORDINATE WITH CITY ENGINEER FOR SEWER MANHOLE CONSTRUCTION/CONNECTION TO EXIST CITY-OWNED SEWER MAIN WITHIN SEWER EASEMENT.
6. ALL ROOF DRAINS WILL BE INSTALLED AT 2% SLOPE.

<u>UTILITY SCHEDULE</u>	
WATER	
MAIN LINE	12" CLDI (CLASS 52)*
WATER (DOMESTIC)	4" CLDI (CLASS 52)*
WATER (FIRE)	8" CLDI (CLASS 52)*
SEWER	
GRAVITY MAIN LINE	8" PVC (SCHEDULE 40)*
FORCE MAIN	6" HDPE*
DOMESTIC	6" PVC (SCHEDULE 40)*
GREASE TRAP	6" PVC (SCHEDULE 40)*
STORMWATER	
DRAIN LINE	12" HDPE*

*UNLESS OTHERWISE NOTED

SEWER STRUCTURE TABLES

SMH 1 RIM=135.80 INV=130.30(N) INV=130.00(OUT)	SMH 5 RIM=124.00 INV=116.10(N) INV=112.20(OUT)	SMH 9 RIM=114.60 INV=105.00(N) INV=106.00(BLDC) INV=105.70(OUT)	SMH 14 RIM=110.00 INV=100.50(N) INV=100.40(OUT)
SMH 2 RIM=136.31 INV=130.78(N) INV=131.45(N) INV=130.00(OUT)	SMH 6 RIM=126.00 INV=113.90(OUT)	SMH 12 RIM=112.60 INV=102.00(N) INV=104.30(OUT)	SMH 15 RIM=109.70 INV=97.90(N) INV=97.60(OUT)
SMH 3 RIM=135.30 INV=125.50(N) INV=129.65(N) INV=129.00(OUT)	SMH 7 RIM=118.50 INV=113.00(N) INV=110.00(N) INV=109.90(OUT)	SMH 13 RIM=110.50 INV=102.00(N) INV=101.80(N) INV=101.50(OUT)	SMH 16 RIM=109.90 INV=105.00(N) INV=100.50(OUT)
SMH 4 RIM=133.90 INV=125.00(N) INV=126.40(N) INV=120.35(OUT)	SMH 8 RIM=113.00 INV=105.40(N) INV=107.30(OUT)	SMH 17 RIM=109.80 INV=96.50(N) INV=98.70(N) INV=96.40(OUT)	



TEC, Inc.

146 Dascomb Road
Andover, MA 01810
(978) 794-1792
www.TheEngineeringCorp.com

DESIGNED BY	CPR
DRAWN BY	DGR
CHECKED BY	RJF
DATE	10/31/2018
SCALE	1" = 60'

PREPARED FOR

Dascomb Road
Development, LLC
354 Merrimack Street
Suite 1
Lawrence, MA 01843

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

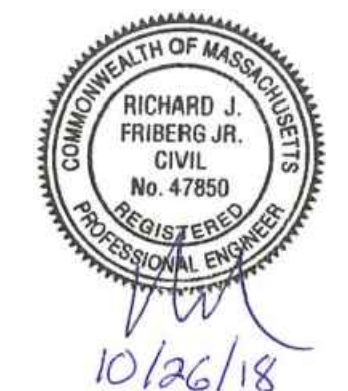
The Dascomb Road Project

PROJECT LOCATION

146 Dascomb Road
Andover, MA

DRAWING TITLE

Utility Plan



PROJECT NO.
T0681

TEC CAD FILE
T0681_UT.dwg

DRAWING NO.
C-7

SHEET 7 OF 27

PERMITTING SET - NOT FOR CONSTRUCTION

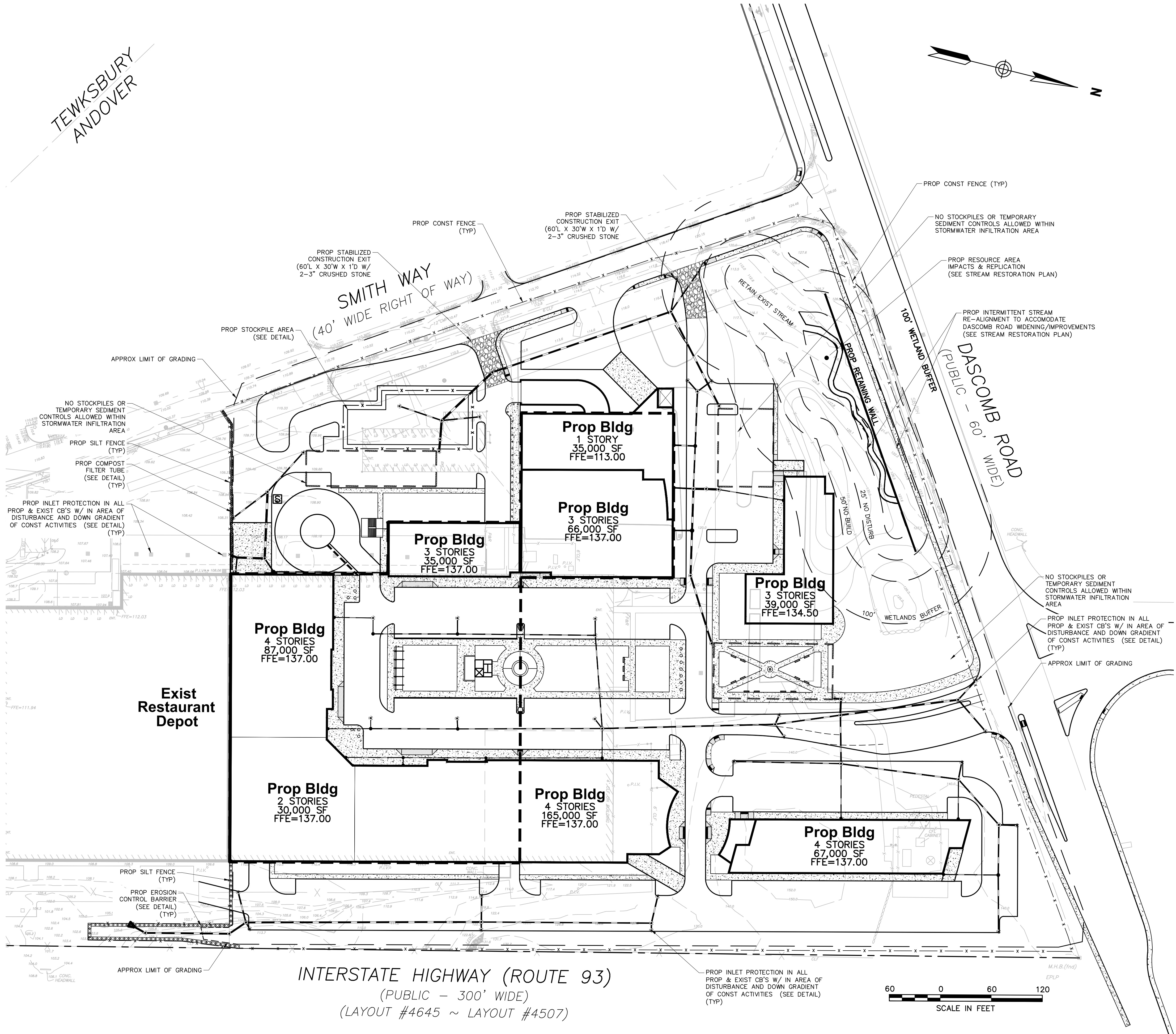
NOTES:

1. DEVELOPMENT SHALL BE ORIENTED TO THE SITE SO THAT CUTTING AND STRIPPING OF VEGETATION AND GRADING ARE MINIMIZED;
2. PRIOR TO ANY LAND DISTURBANCE ACTIVITIES COMMENCING ON THE SITE, THE DEVELOPER SHALL PHYSICALLY MARK LIMITS OF NO LAND DISTURBANCE ON THE SITE WITH TAPE, SIGNS, OR ORANGE CONSTRUCTION FENCE, SO THAT WORKERS CAN SEE THE AREA TO BE PROTECTED.
3. APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED PRIOR TO SOIL DISTURBANCE. MEASURES SHALL BE TAKEN TO CONTROL EROSION WITHIN THE PROJECT AREA. WETLAND AREAS AND SURFACE WATERS SHALL BE PROTECTED FROM SEDIMENT.
4. RUNOFF SHALL BE CONTROLLED AND CONVEYED INTO STORM DRAINS AND OTHER OUTLETS SO IT WILL NOT ERODE THE LAND OR CAUSE OFF-SITE DAMAGE; SEDIMENT IN RUNOFF SHALL BE TRAPPED BY USING STAKED HAY BALES, SILT FENCING, COMPOST FILTER TUBES, SEDIMENTATION TRAPS, OR OTHER APPROVED EROSION CONTROL DEVICES; SEDIMENT BASINS SHALL BE CONSTRUCTED WHERE NECESSARY TO DETAIN RUNOFF AND TO TRAP SEDIMENT DURING CONSTRUCTION;
5. SEDIMENT SHALL BE REMOVED ONCE THE VOLUME REACHES ¼ TO ½ THE HEIGHT OF THE SILT FENCE OR HAY BALE.
6. OFFSITE RUNOFF SHALL BE DIVERTED FROM HIGHLY ERODIBLE SOILS AND STEEP SLOPES TO STABLE AREAS.
7. EROSION AND SEDIMENT CONTROLS SHALL BE COORDINATED WITH THE SEQUENCE OF GRADING, DEVELOPMENT AND CONSTRUCTION OPERATIONS; CONTROL MEASURES SHALL BE IN EFFECT PRIOR TO COMMENCEMENT OF EACH INCREMENT/PHASE OF THE PROCESS; LAND DISTURBANCE ACTIVITIES EXCEEDING TWO ACRES IN SIZE SHALL NOT BE DISTURBED WITHOUT A SEQUENCING PLAN THAT REQUIRES STORMWATER CONTROLS TO BE INSTALLED AND SOIL STABILIZED, AS DISTURBANCE BEYOND THE TWO ACRES CONTINUES. MASS CLEARINGS AND GRADING OF THE ENTIRE SITE SHOULD BE AVOIDED. PRIOR TO ANY CONSTRUCTION AND DURING CONSTRUCTION, THE APPLICANT SHALL SUBMIT A CONSTRUCTION PHASING PLAN TO THE PLANNING DEPARTMENT FOR REVIEW AND APPROVAL.
8. SOIL AND OTHER MATERIALS SHALL NOT BE STOCKPILED OR REDISTRIBUTED, EITHER TEMPORARILY OR PERMANENTLY, IN LOCATIONS OR IN SUCH A MANNER AS WOULD CAUSE SUFFOCATION OF TREE ROOT SYSTEMS;
9. TOPSOIL SHALL BE STRIPPED FROM DISTURBED AREAS, STOCKPILED IN APPROVED AREAS AND STABILIZED WITH TEMPORARY VEGETATIVE COVER IF IT IS TO BE LEFT FOR MORE THAN THIRTY (30) CALENDAR DAYS; PERIMETER SEDIMENT CONTROLS SHALL BE INSTALLED AROUND EACH AREA OF STOCKPILED TOPSOIL. DISTURBED AREAS REMAINING IDLE FOR MORE THAN 14 DAYS SHALL BE STABILIZED.
10. GRADING SHALL BE KEPT TO A MINIMUM; TREE REMOVAL SHALL BE MINIMIZED;
11. FOR ACTIVE CONSTRUCTION AREAS SUCH AS BORROW OR STOCKPILE AREAS, ROADWAY IMPROVEMENTS, AND AREAS WITHIN 50 FEET OF A BUILDING UNDER CONSTRUCTION, A PERIMETER SEDIMENT CONTROL SYSTEM SHALL BE INSTALLED AND MAINTAINED TO CONTAIN SOIL.
12. A TRACKING PAD SHALL BE CONSTRUCTED AT ALL ENTRANCE/EXIT POINTS OF THE SITE TO REDUCE THE AMOUNT OF SOIL CARRIED ONTO ROADWAYS AND OFF THE SITE.
13. DUST SHALL BE CONTROLLED AT THE SITE. DUST CONTROL MEASURES SHALL BE USED DURING GRADING OPERATIONS. DUST CONTROL METHODS MAY CONSIST OF GRADING FINE SOILS ON CALM DAYS ONLY, OR DAMPENING THE GROUND WITH WATER.
14. ON THE CUT SIDE OF THE ROADS, DITCHES SHALL BE STABILIZED IMMEDIATELY WITH ROCK, RIP-RAP OR OTHER NON-ERODIBLE LINERS, OR WHERE APPROPRIATE, VEGETATIVE MEASURES SUCH AS SOD.
15. ALL GRADED AREAS BEYOND THE STREET RIGHT-OF-WAY SHALL BE COVERED WITH FOUR (4) INCHES OF TOPSOIL AND PLANTED WITH A NATIVE SPECIE OF VEGETATIVE COVER, SUFFICIENT TO PREVENT EROSION;
16. TEMPORARY SEEDING, MULCHING, OR OTHER SUITABLE STABILIZATION METHODS SHALL BE USED TO PROTECT EXPOSED SOIL AREAS DURING CONSTRUCTIONS; AS FEASIBLE, NATURAL VEGETATION SHALL BE RETAINED AND PROTECTED. DURING THE MONTHS OF OCTOBER THROUGH MARCH, WHEN SEEDING MAY BE IMPRACTICAL, AN ANCHORED MULCH OR SOD SHALL BE APPLIED AS APPROVED BY THE PLANNING BOARD OR BY ITS DESIGNEE; DIVERSIONS AND/OR PREPARED OUTLETS MAY BE REQUIRED IN CRITICAL AREAS DURING CONSTRUCTION.
17. PERMANENT SEEDING SHOULD BE UNDERTAKEN IN THE SPRING FROM MARCH THROUGH MAY, AND IN LATE SUMMER AND EARLY FALL FROM AUGUST TO OCTOBER 15. DURING PEAK SUMMER MONTHS AND IN THE FALL AFTER OCTOBER 15, WHEN SEEDING IS FOUND TO BE IMPRACTICAL, AN APPROPRIATE TEMPORARY MULCH SHALL BE APPLIED. PERMANENT SEEDING MAY BE UNDERTAKEN DURING THE SUMMER IF PLANS PROVIDE FOR ADEQUATE MULCHING AND WATERING.
18. PERMANENT VEGETATION AND EROSION CONTROL STRUCTURES, AS NECESSARY, SHALL BE INSTALLED PREFERABLY IMMEDIATELY AFTER CONSTRUCTION IS COMPLETED BUT OTHER WISE NO LATER THAN THE FIRST FULL SPRING SEASON IMMEDIATELY THEREAFTER; THEY SHALL COMPLY WITH THE EROSION AND SEDIMENTATION VEGETATIVE PRACTICES RECOMMENDED BY THE U.S. SOIL CONSERVATION SERVICE.
19. TEMPORARY GROUND CONVEYANCE/SEDIMENTATION CONTROLS SHALL BE ESTABLISHED ON ANY UNBUILT LOTS AS REQUIRED BY THE PLANNING BOARD;
20. NATIVE SPECIES SHALL BE USED FOR RE-VEGETATION;
21. ALL SLOPES STEEPER THAN 3:1 (H:V, 33.3%), AS WELL AS PERIMETER DIKES, SEDIMENT BASINS OR TRAPS, AND EMBANKMENTS SHALL, UPON COMPLETION, BE IMMEDIATELY STABILIZED WITH SOD, SEED AND ANCHORED STRAW MULCH, OR OTHER APPROVED STABILIZATION MEASURES. AREAS OUTSIDE OF THE PERIMETER SEDIMENT CONTROL SYSTEM SHALL NOT BE DISTURBED.
22. MONITORING AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES THROUGHOUT THE COURSE OF CONSTRUCTION SHALL BE REQUIRED. THE APPLICANT SHALL SUBMIT TO THE PLANNING BOARD, A COMPLETE OPERATION AND MAINTENANCE PLAN FOR TEMPORARY AND PERMANENT EROSION CONTROL MEASURES, AS PART OF THE APPLICATION PACKAGE.
23. TEMPORARY SEDIMENT TRAPPING DEVICES SHALL NOT BE REMOVED UNTIL PERMANENT STABILIZATION IS ESTABLISHED IN ALL CONTRIBUTORY DRAINAGE AREAS. SIMILARLY, STABILIZATION SHALL BE ESTABLISHED PRIOR TO CONVERTING SEDIMENT TRAPS/BASINS INTO PERMANENT (POST-CONSTRUCTION) STORMWATER MANAGEMENT FACILITIES. ALL FACILITIES USED AS TEMPORARY MEASURES SHALL BE CLEANED PRIOR TO BEING PUT INTO FINAL OPERATIONS.
24. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED AFTER FINAL SITE STABILIZATION. DISTURBED SOIL AREAS RESULTING FROM THE REMOVAL OF TEMPORARY MEASURES SHALL BE PERMANENTLY STABILIZED WITHIN 30 DAYS. THE APPLICANT'S ENGINEER SHALL SUBMIT WRITTEN CERTIFICATION THAT THIS CONDITION HAS BEEN MET.

PROPOSED CONSTRUCTION SEQUENCING

1. SELECTIVELY REMOVE VEGETATION FOR EROSION CONTROL BARRIER INSTALLATION;
2. INSTALL EROSION CONTROL BARRIERS;
3. INSTALL CONSTRUCTION FENCING AT LIMITS OF WORK, AND NO-DISTURB/TREE SAVE AREAS, IF ANY;
4. STABILIZE CONSTRUCTION ENTRANCE;
5. PREPARE CONSTRUCTION TRAILER/STAGING LOCATION;
6. CONSTRUCT NEW SEDIMENT BASINS AS NECESSARY;
7. BEGIN DEMOLITION OF EXISTING BUILDING SIDES;
8. SELECTIVELY CLEAR AND GRUB WOODS;
9. STRIP AND STOCKPILE TOPSOIL AND PAVEMENT;
10. TEMPORARILY STABILIZE TOPSOIL STOCKPILES (SEED AND SILT FENCE (GRASSED AREA) OR COMPOST FILTER TUBE OR STRAW BALES (PAVEMENT AREA) AROUND TOE OF SLOPE; CONDUCT EARTHWORK CUTS AND FILLS TO BRING SITE TO GRADE;
11. INITIATE RETAINING WALL AND BUILDING CONSTRUCTION;
12. CONSTRUCT UTILITIES (WATER, SEWER, STORM DRAIN, ETC.);
13. CONSTRUCT DRIVEWAY/PARKING/SIDEWALK PAVEMENT AREAS THROUGH BINDER COURSE;
14. COMPLETE BUILDING CONSTRUCTION;
15. FINISH GRADE LANDSCAPING AREAS;
16. PERMANENTLY STABILIZE LANDSCAPING AREAS WITH SEED/LANDSCAPING;
17. CONSTRUCT DRIVEWAY/PARKING AREAS THROUGH TOP COURSE; AND
18. REMOVE ALL TEMPORARY SOIL EROSION AND SEDIMENT CONTROL MEASURES UPON PERMANENT SITE STABILIZATION AND APPROVAL BY THE ENGINEER AND CITY OF ANDOVER.

NOTE: CONTRACTOR SHALL CONDUCT ALL WORK IN ACCORDANCE WITH THE 2017 NPDES CONSTRUCTION GENERAL PERMIT. A COPY OF THE SWPPP WILL BE PROVIDED TO THE ANDOVER CONSTRUCTION COMMISSION.



TEC, Inc.

146 Dascomb Road
Andover, MA 01810
(978) 794-1792
www.TheEngineeringCorp.com

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

DESIGNED BY	CPR
DRAWN BY	DGR
CHECKED BY	RJF
DATE	10/31/2018
SCALE	1" = 60'

PREPARED FOR

Dascomb Road
Development, LLC
354 Merrimack Street
Suite 1
Lawrence, MA 01843

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

The Dascomb Road
Project

PROJECT LOCATION

146 Dascomb Road
Andover, MA

DRAWING TITLE

Erosion &
Sedimentation
Control Plan

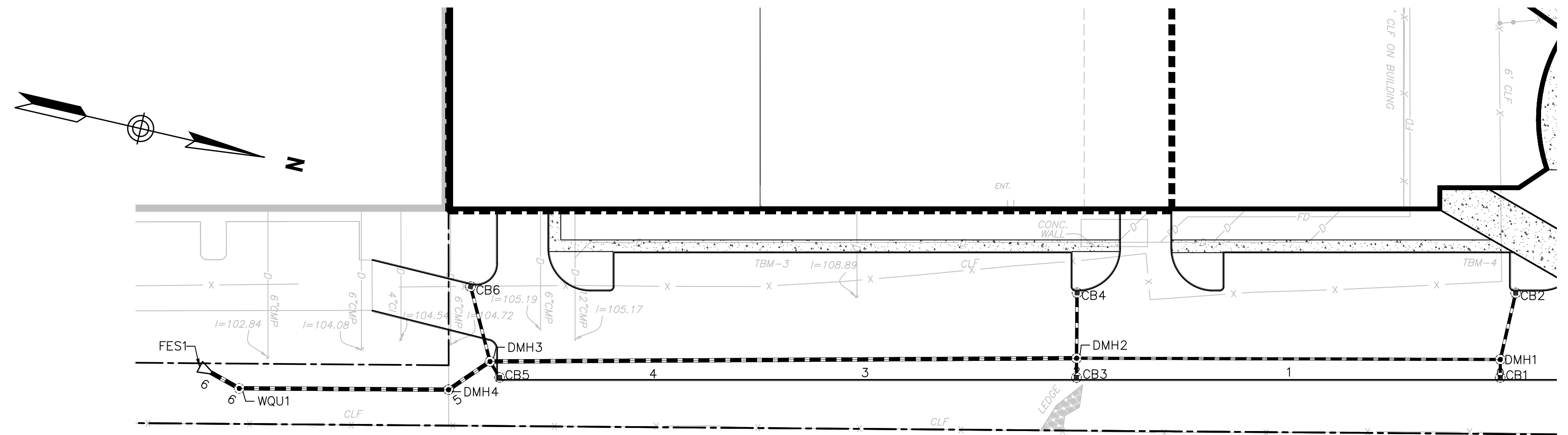


PROJECT NO.
T0681

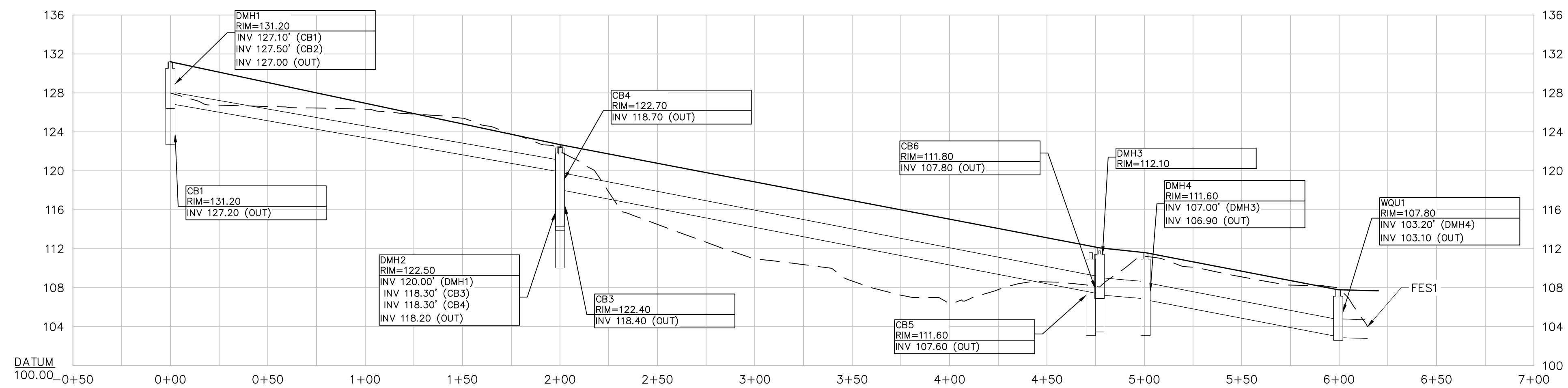
TEC CAD FILE
T0681_ER.dwg

DRAWING NO.
C-8

SHEET 8 OF 27



PLAN
1"=40'



PROFILE
STA 0+00 TO STA 7+50
H: 1"=40'
V: 1"=8'



TEC, Inc.

146 Dascomb Road
Andover, MA 01810
(978) 794-1792
www.TheEngineeringCorp.com

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

DESIGNED BY	CPR
DRAWN BY	DGR
CHECKED BY	RJF
DATE	10/31/2018
SCALE	AS NOTED

PREPARED FOR

Dascomb Road
Development, LLC
354 Merrimack Street
Suite 1
Lawrence, MA 01843

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

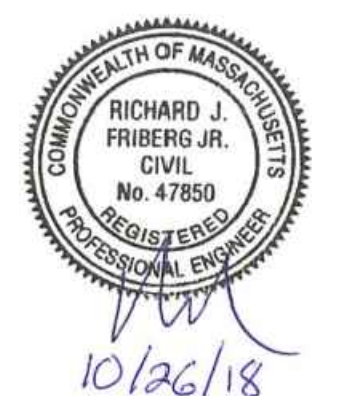
The Dascomb Road
Project

PROJECT LOCATION

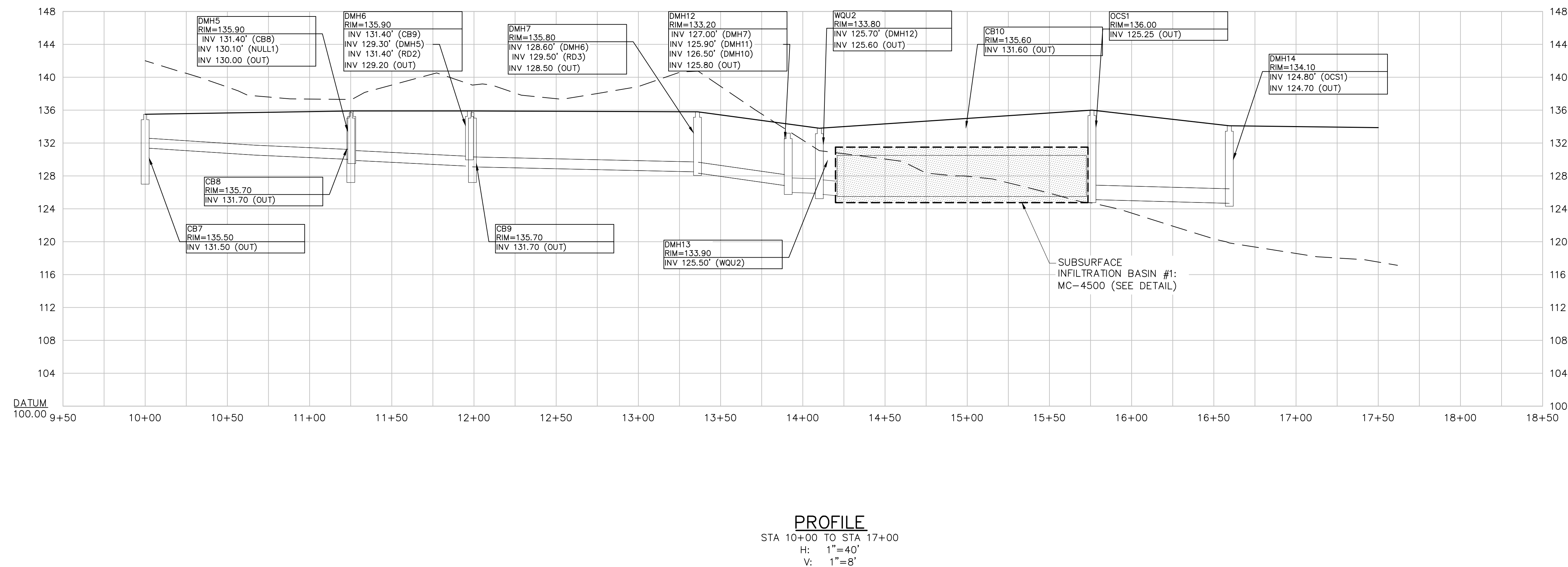
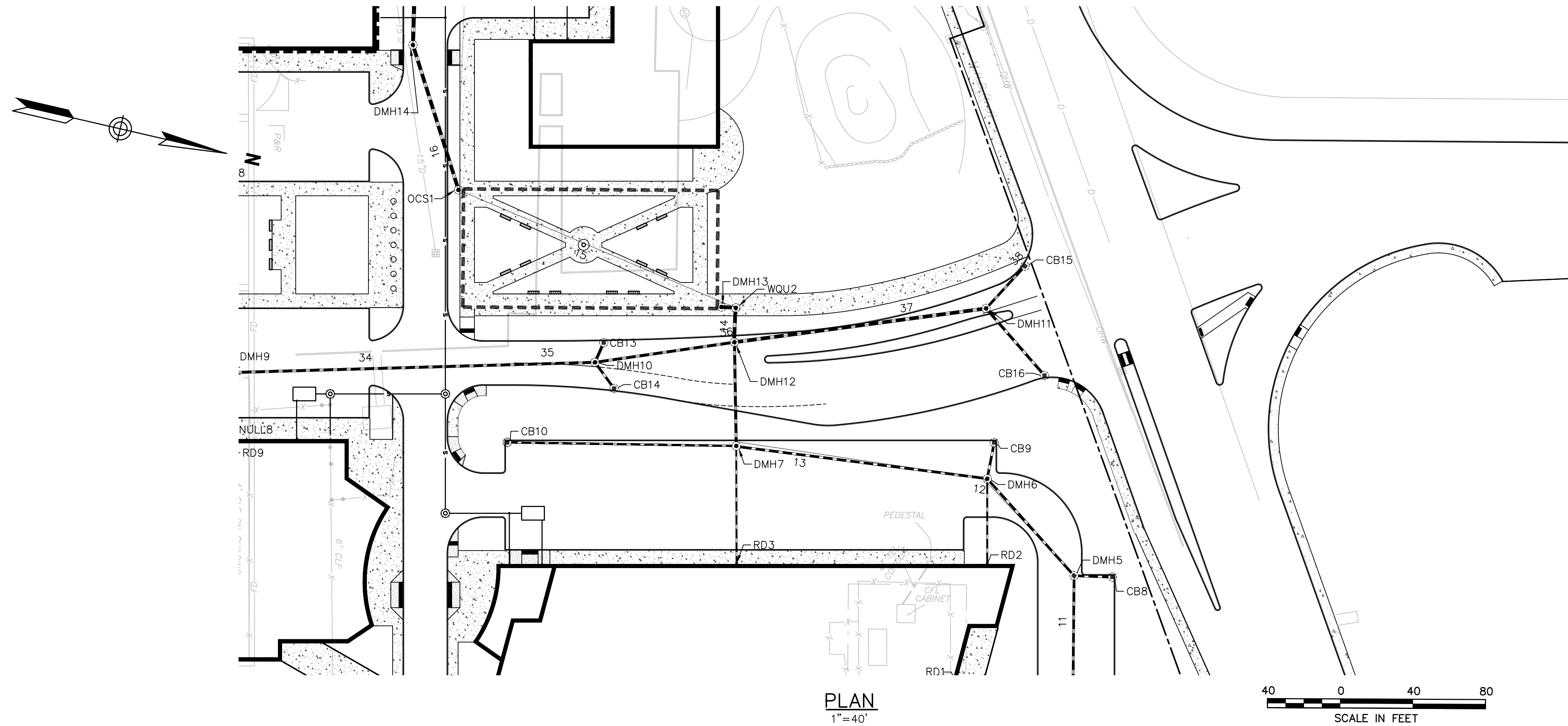
146 Dascomb Road
Andover, MA

DRAWING TITLE

Drainage
Profiles



PROJECT NO.
T0681
TEC CAD FILE
T0681_DRN_PROF
DRAWING NO.
C-9
SHEET 9 OF 27



TEC, Inc.

146 Dascomb Road
Andover, MA 01810
(978) 794-1792
www.TheEngineeringCorp.com

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

DESIGNED BY	CPR
DRAWN BY	DGR
CHECKED BY	RJF
DATE	10/31/2018
SCALE	AS NOTED

PREPARED FOR

Dascomb Road
Development, LLC
354 Merrimack Street
Suite 1
Lawrence, MA 01843

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

The Dascomb Road
Project

PROJECT LOCATION

146 Dascomb Road
Andover, MA

DRAWING TITLE

Drainage
Profiles

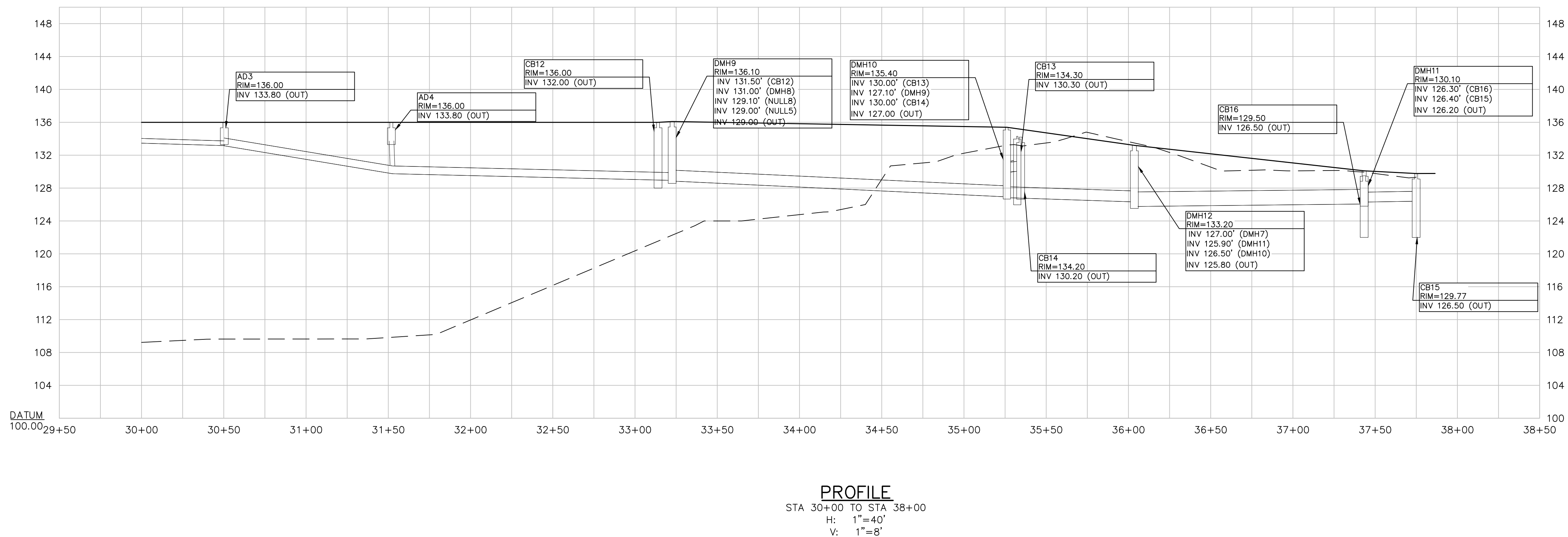
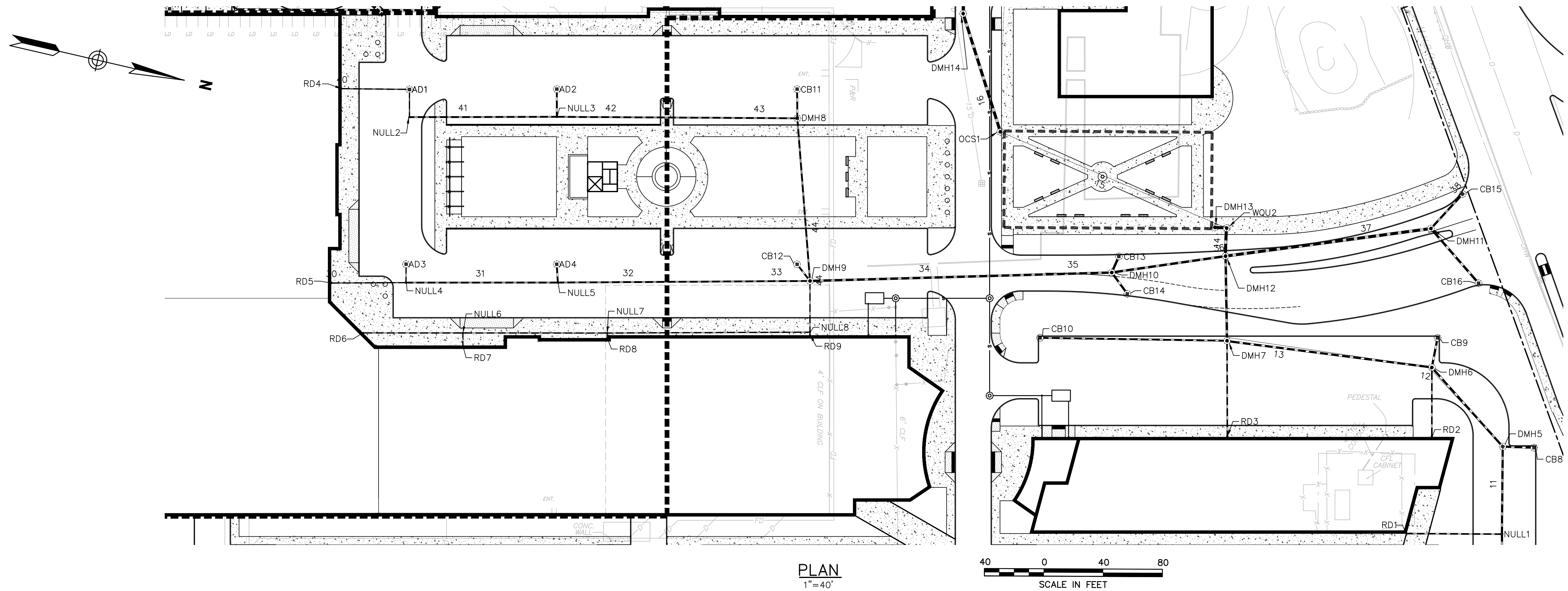


PROJECT NO.
T0681

TEC CAD FILE
T0681_DRN_PROF

DRAWING NO.
C-10

SHEET 10 OF 27



TEC, Inc.

146 Dascomb Road
Andover, MA 01810
(978) 794-1792
www.TheEngineeringCorp.com

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

DESIGNED BY	CPR
DRAWN BY	DGR
CHECKED BY	RJF
DATE	10/31/2018
SCALE	AS NOTED

PREPARED FOR

Dascomb Road
Development, LLC
354 Merrimack Street
Suite 1
Lawrence, MA 01843

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

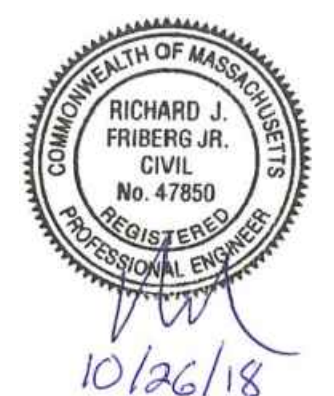
The Dascomb Road
Project

PROJECT LOCATION

146 Dascomb Road
Andover, MA

DRAWING TITLE

Drainage
Profiles



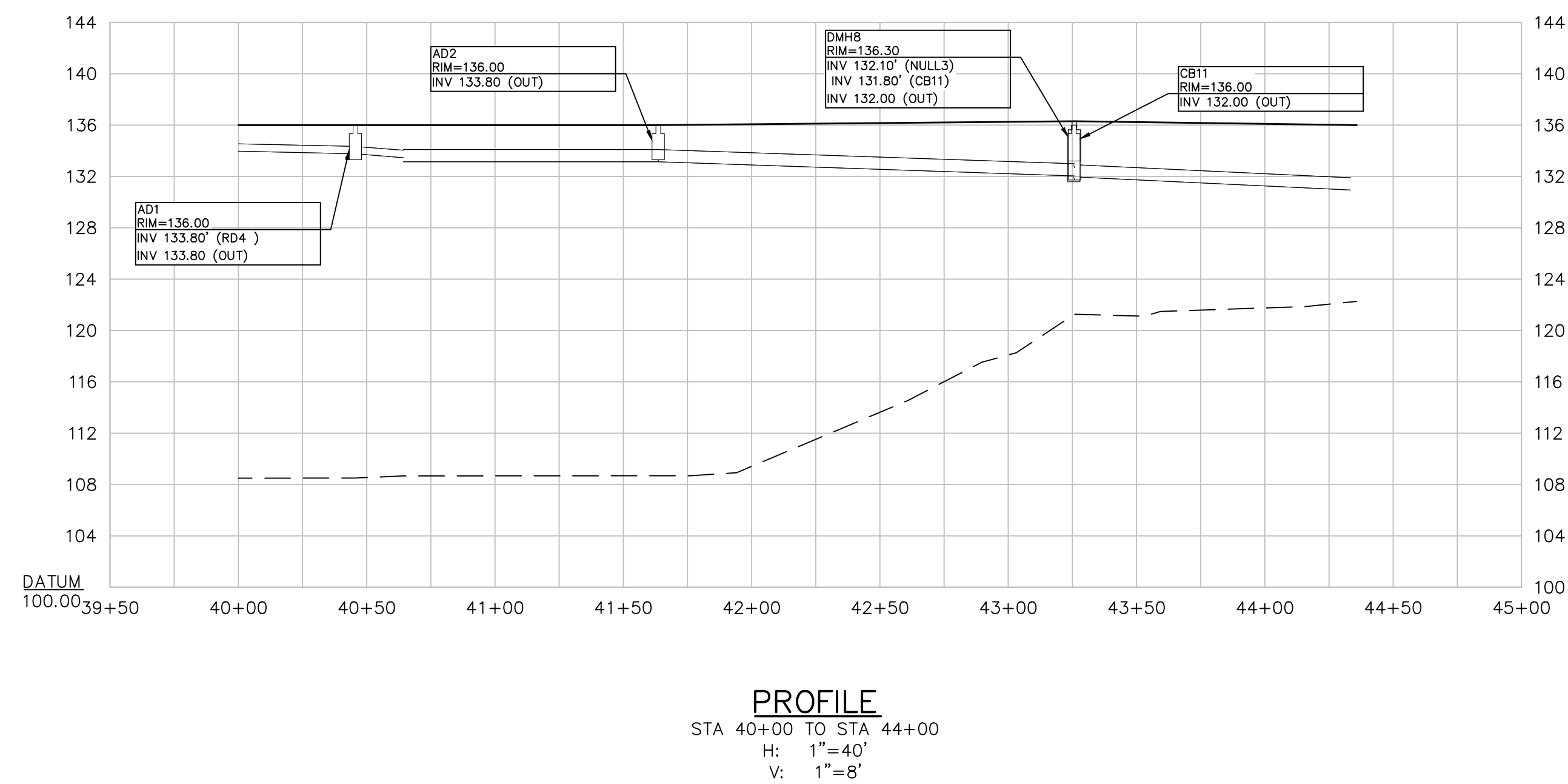
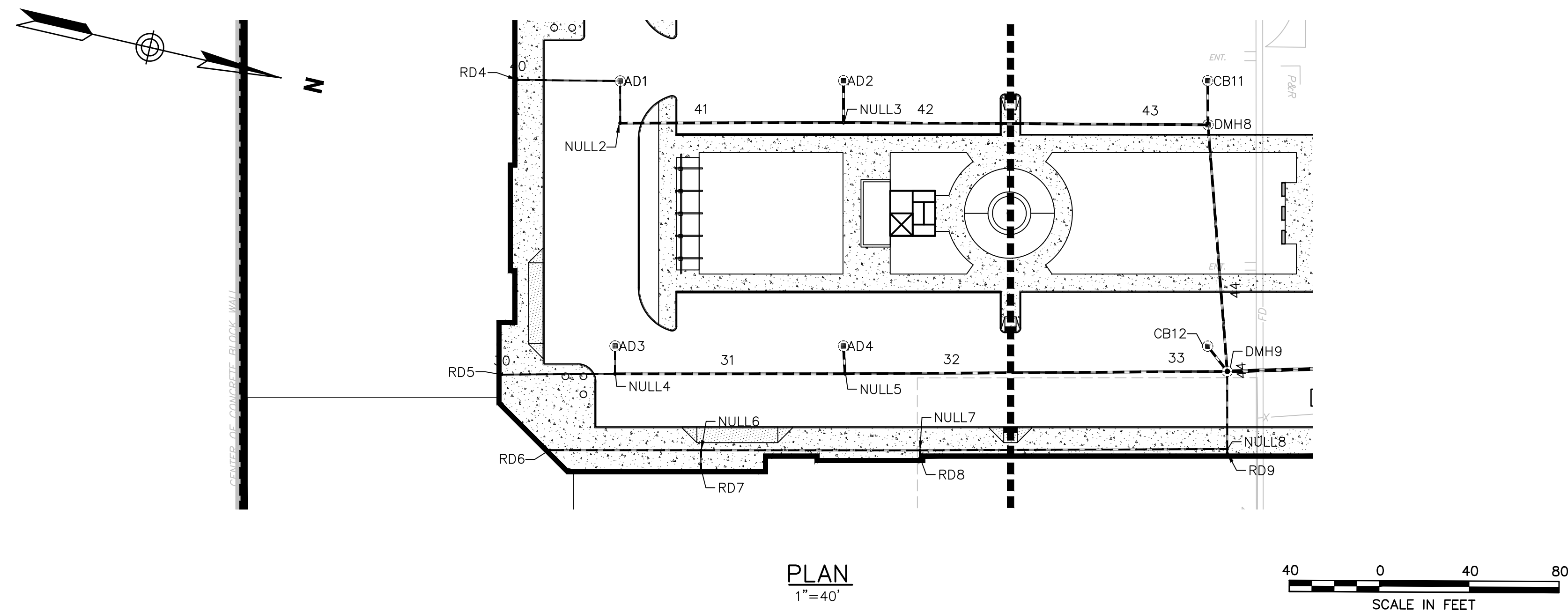
PROJECT NO.
T0681

TEC CAD FILE
T0681_DRN_PROF

DRAWING NO.

C-11

SHEET 11 OF 27



TEC, Inc.

146 Dascomb Road
Andover, MA 01810
(978) 794-1792
www.TheEngineeringCorp.com

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

DESIGNED BY	CPR
DRAWN BY	DGR
CHECKED BY	RJF
DATE	10/31/2018
SCALE	AS NOTED

PREPARED FOR

Dascomb Road
Development, LLC
354 Merrimack Street
Suite 1
Lawrence, MA 01843

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

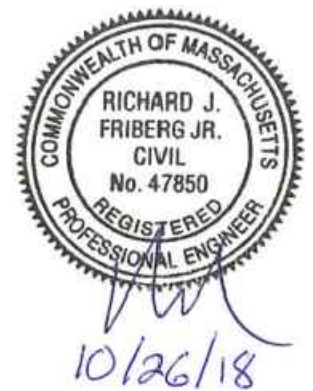
The Dascomb Road
Project

PROJECT LOCATION

146 Dascomb Road
Andover, MA

DRAWING TITLE

Drainage
Profiles

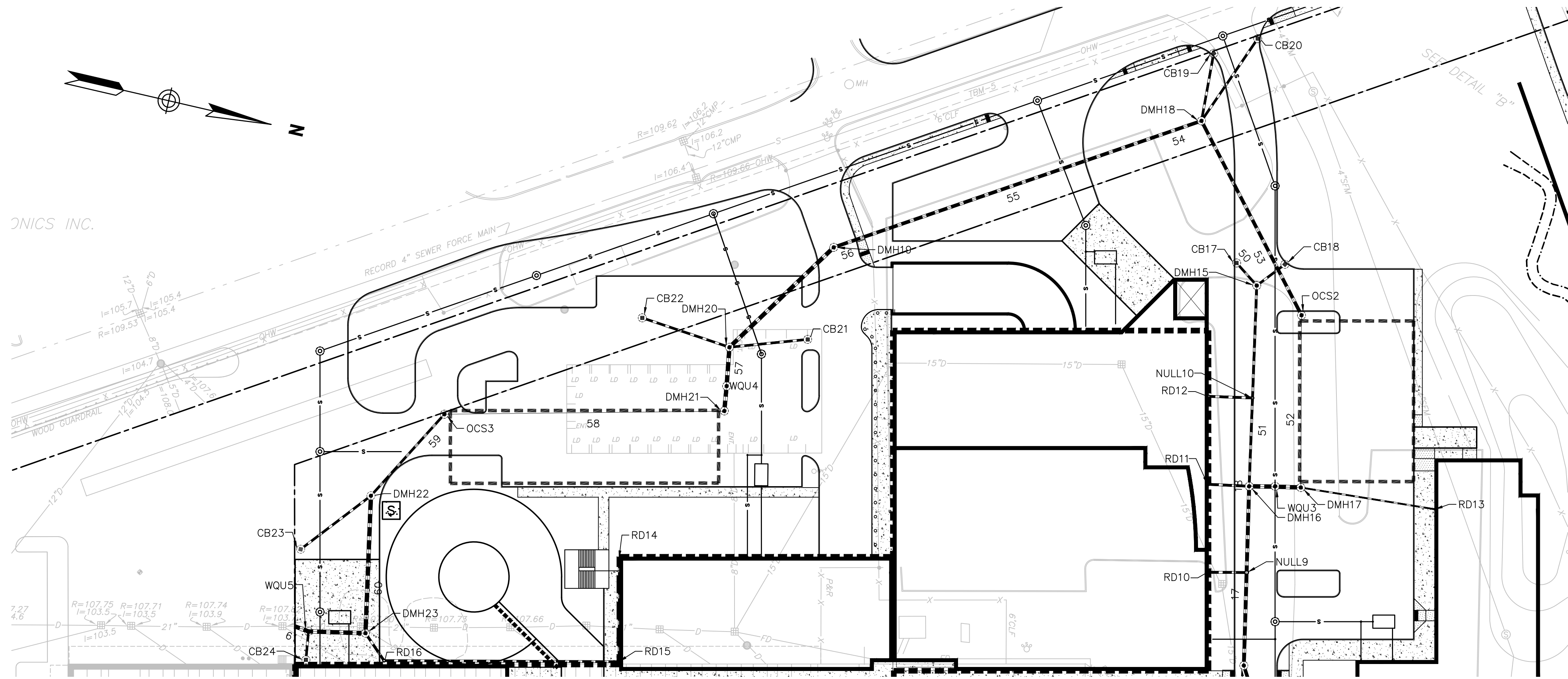


PROJECT NO.
T0681

TEC CAD FILE
T0681_DRN_PROF

DRAWING NO.
C-12

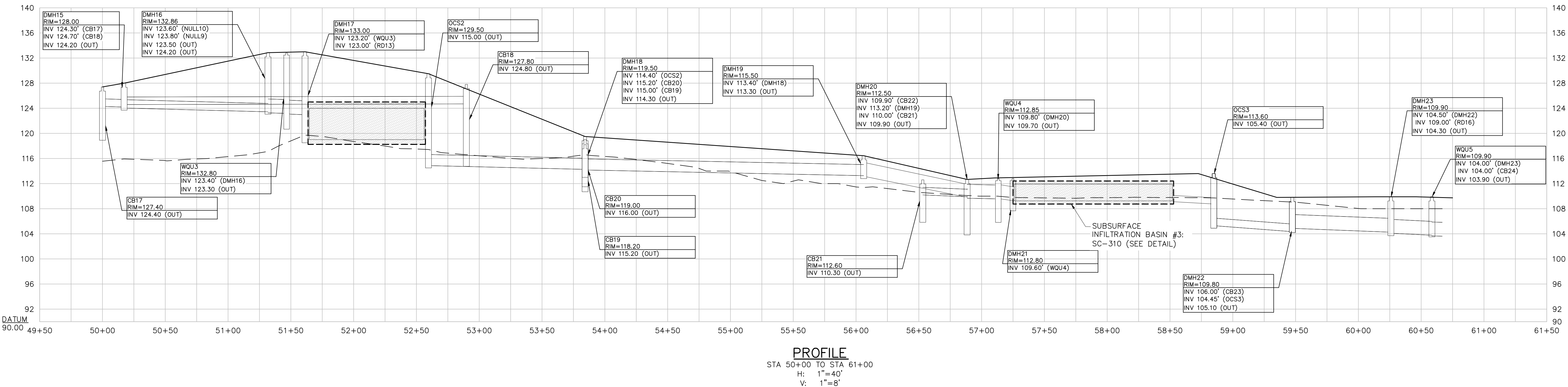
SHEET 12 OF 27



PLAN
1"=40'



SUBSURFACE
INFILTRATION BASIN #3:
SC-310 (SEE DETAIL)



PROFILE

STA 50+00 TO STA 61+00
H: 1"=40'
V: 1"=8'



TEC, Inc.

146 Dascomb Road
Andover, MA 01810
(978) 794-1792
www.TheEngineeringCorp.com

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

DESIGNED BY	CPR
DRAWN BY	DGR
CHECKED BY	RJF
DATE	10/31/2018
SCALE	AS NOTED

PREPARED FOR

Dascomb Road
Development, LLC
354 Merrimack Street
Suite 1
Lawrence, MA 01843

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

The Dascomb Road
Project

PROJECT LOCATION

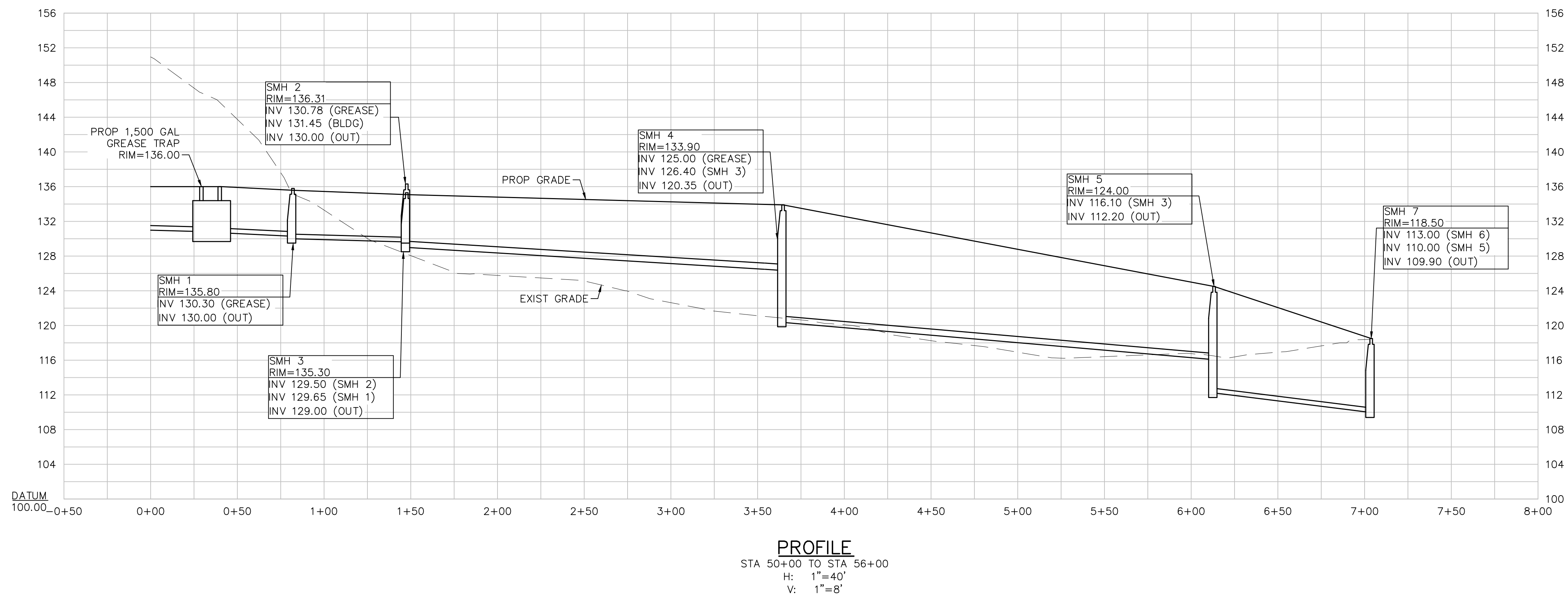
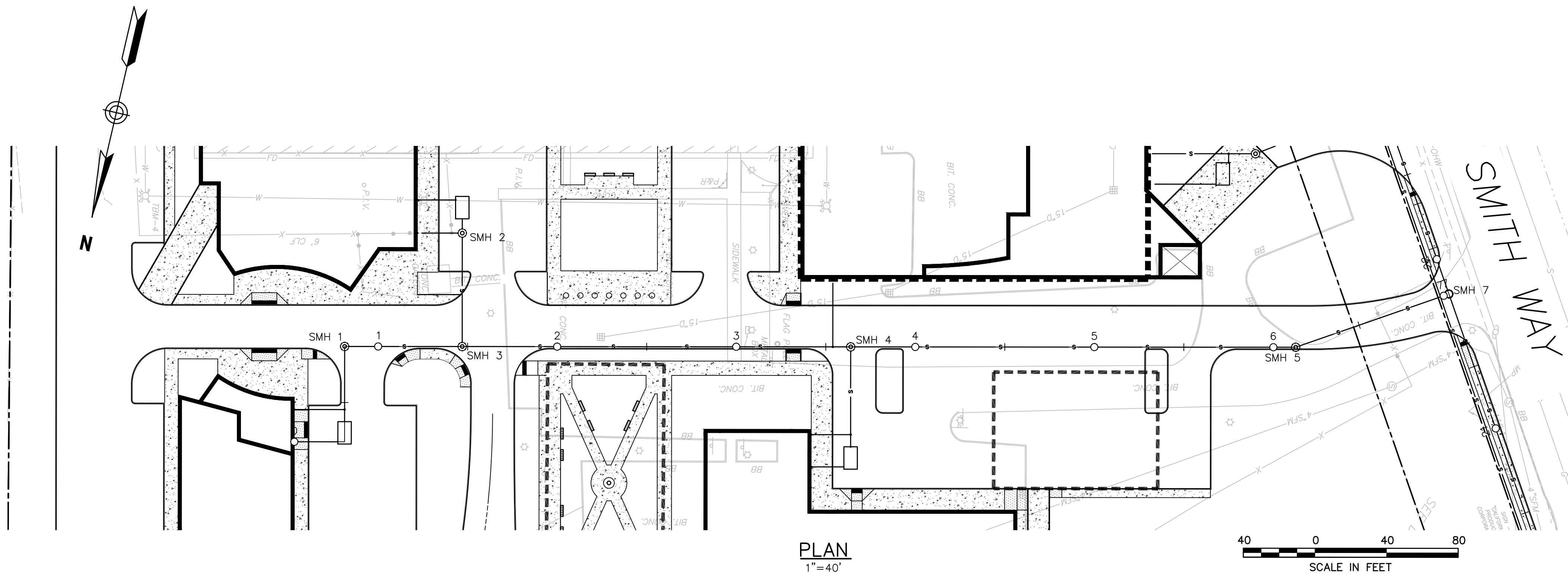
146 Dascomb Road
Andover, MA

DRAWING TITLE

Drainage
Profiles



PROJECT NO.
T0681
TEC CAD FILE
T0681_DRN_PROF
DRAWING NO.
C-13
SHEET 13 OF 27



TEC, Inc.
146 Dascomb Road
Andover, MA 01810
(978) 794-1792
www.TheEngineeringCorp.com
169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

DESIGNED BY	CPR
DRAWN BY	DGR
CHECKED BY	RJF
DATE	10/31/2018
SCALE	AS NOTED

PREPARED FOR
**Dascomb Road
Development, LLC
354 Merrimack Street
Suite 1
Lawrence, MA 01843**

REVISIONS

ISSUED FOR
Permitting

PROJECT TITLE
**The Dascomb Road
Project**

PROJECT LOCATION
**146 Dascomb Road
Andover, MA**

DRAWING TITLE
**Sewer
Plan & Profile**



PROJECT NO.
T0681
TEC CAD FILE
T0681_SWR_PROF
DRAWING NO.
C-14
SHEET 14 OF 27



TEC, Inc.

146 Dascomb Road
Andover, MA 01810
(978) 794-1792
www.TheEngineeringCorp.com

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

DESIGNED BY	CPR
DRAWN BY	DGR
CHECKED BY	RJF
DATE	10/31/2018
SCALE	AS NOTED

PREPARED FOR

Dascomb Road
Development, LLC
354 Merrimack Street
Suite 1
Lawrence, MA 01843

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

The Dascomb Road
Project

PROJECT LOCATION

146 Dascomb Road
Andover, MA

DRAWING TITLE

Sewer
Plan & Profile

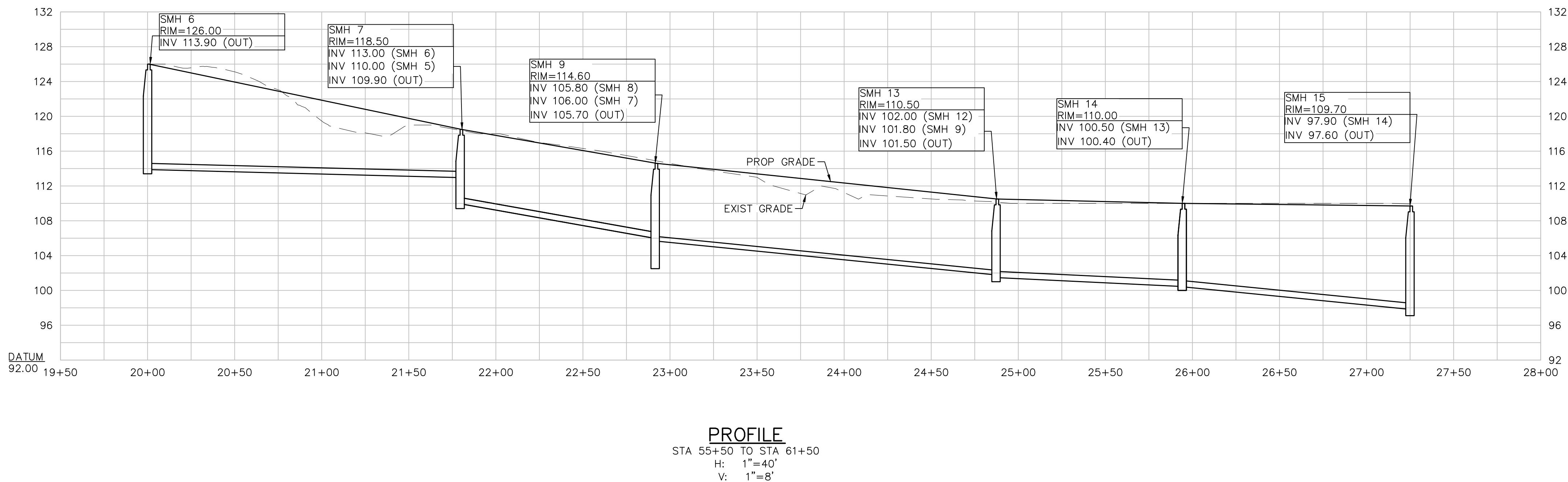
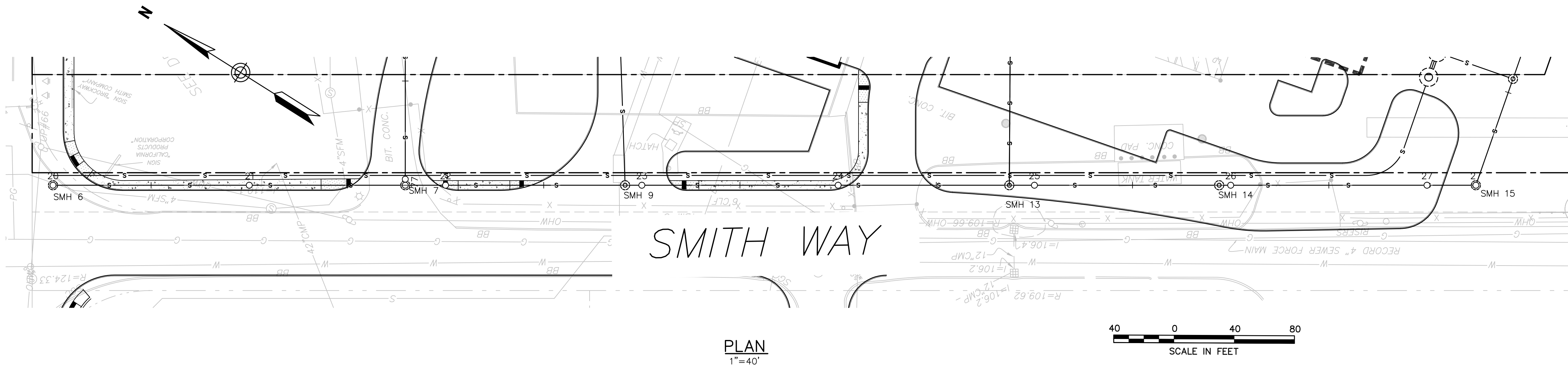


PROJECT NO.
T0681

TEC CAD FILE
T0681_SWR_PROF

DRAWING NO.
C-15

SHEET 15 OF 27





TEC, Inc.

146 Dascomb Road
Andover, MA 01810
(978) 794-1792
www.TheEngineeringCorp.com

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

DESIGNED BY	CPR
DRAWN BY	DGR
CHECKED BY	RJF
DATE	10/31/2018
SCALE	AS NOTED

PREPARED FOR

Dascomb Road
Development, LLC
354 Merrimack Street
Suite 1
Lawrence, MA 01843

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

The Dascomb Road
Project

PROJECT LOCATION

146 Dascomb Road
Andover, MA

DRAWING TITLE

Sewer
Plan & Profile

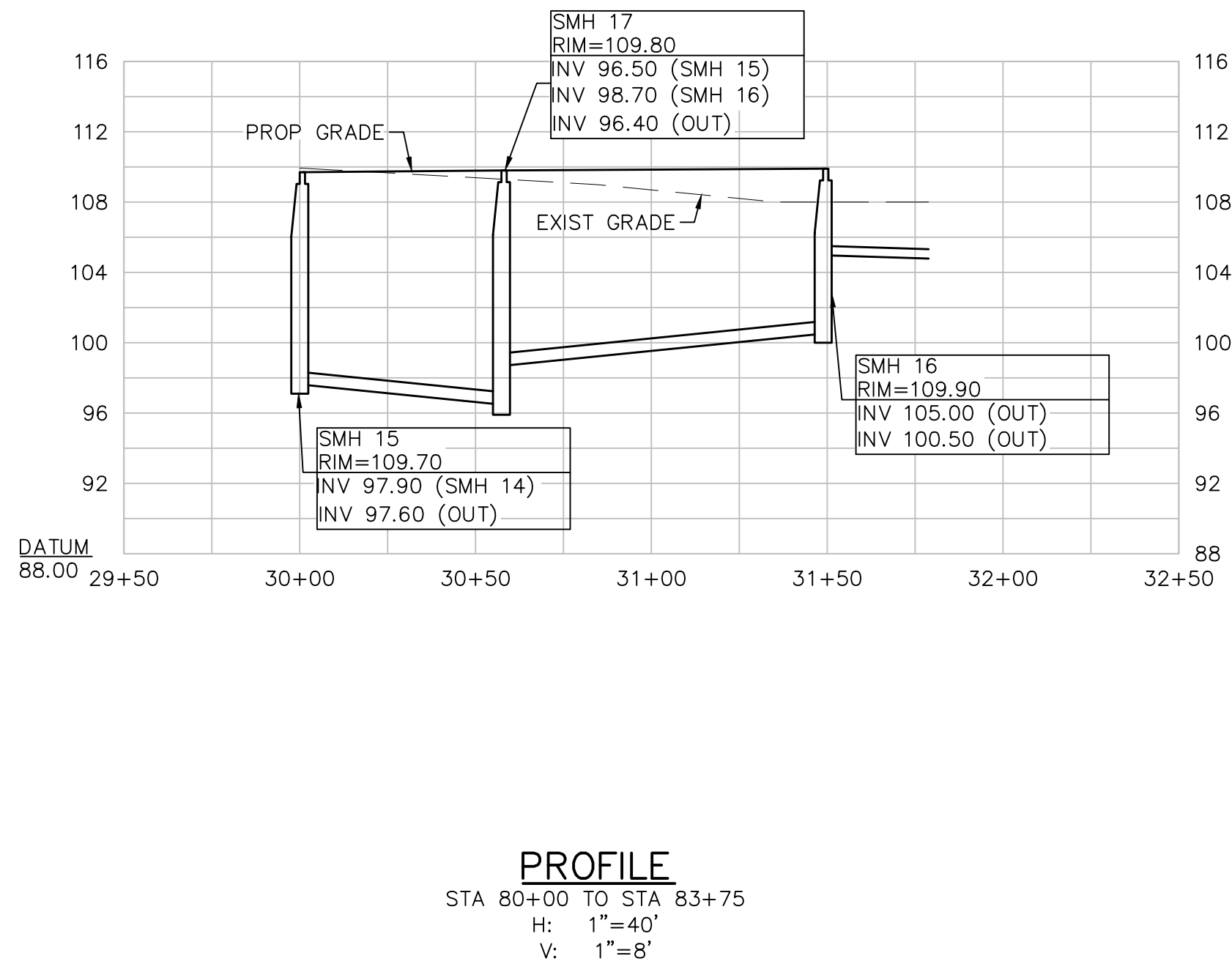
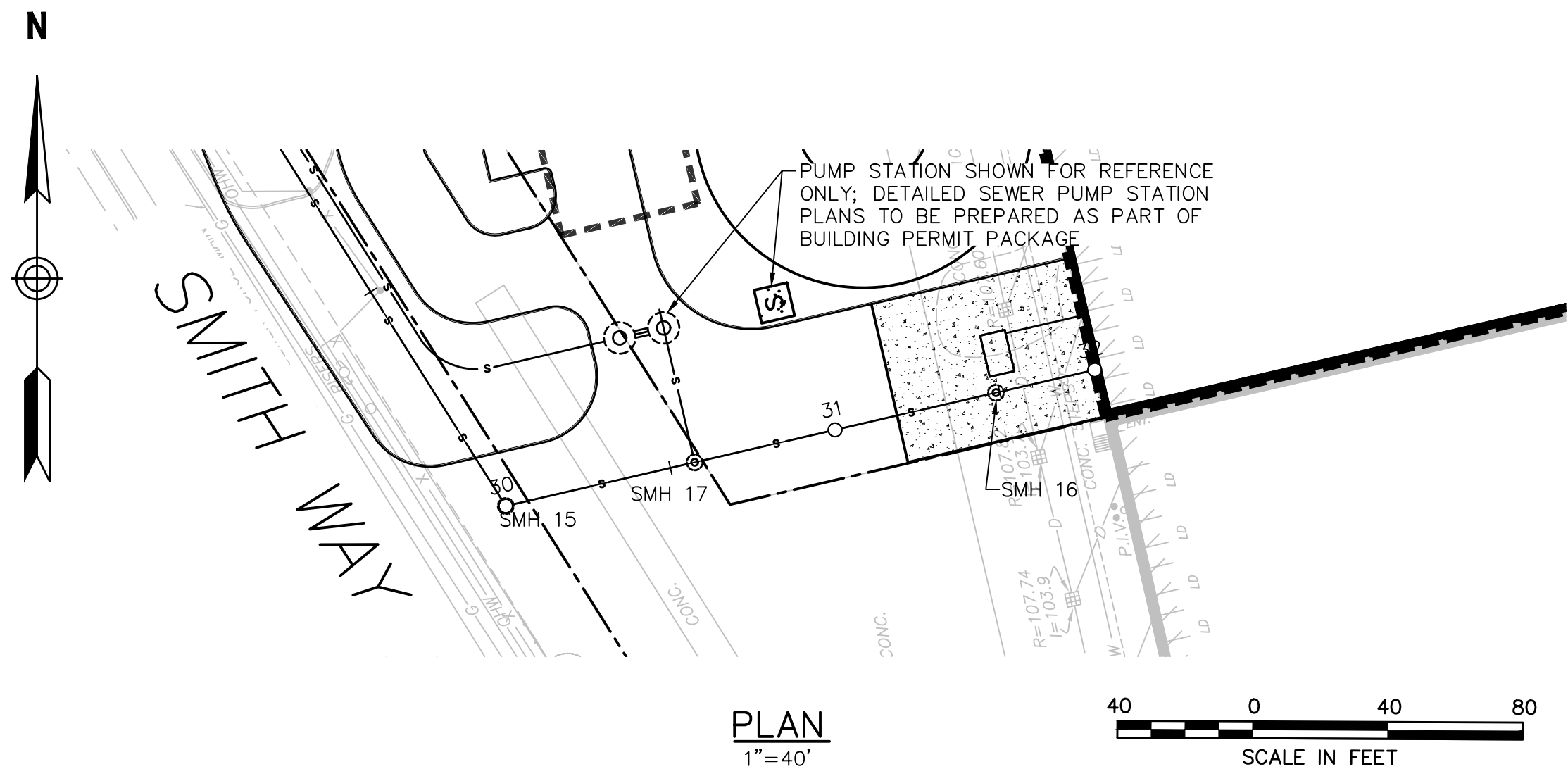


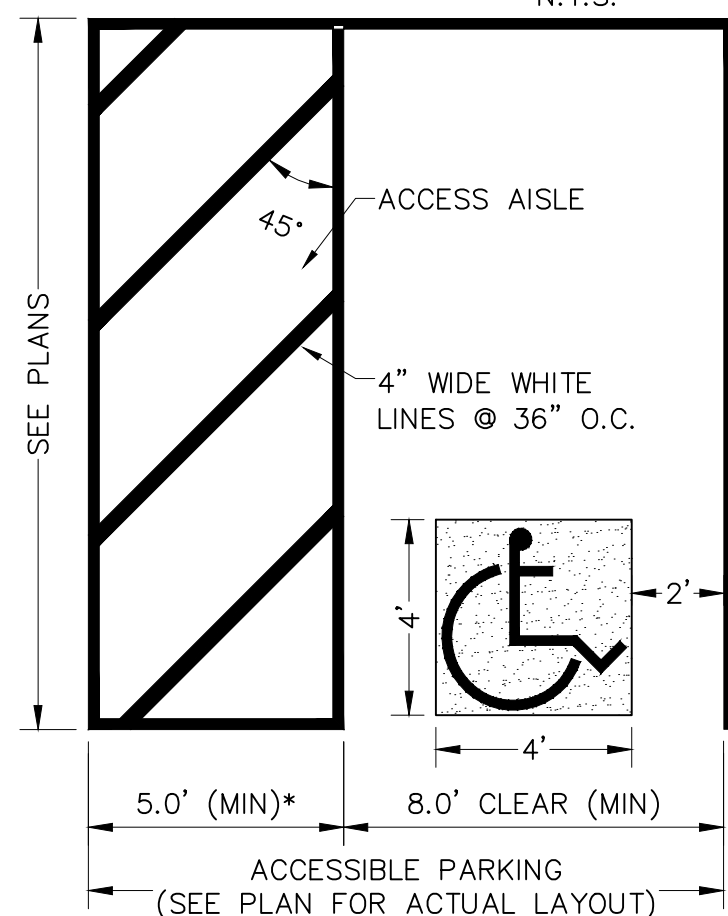
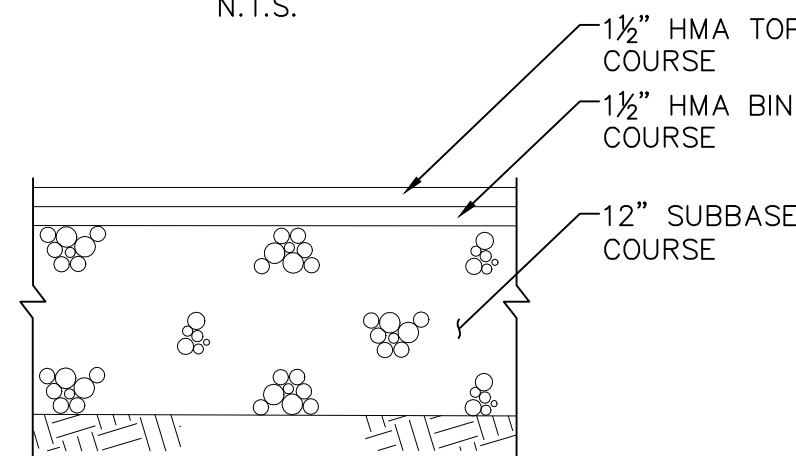
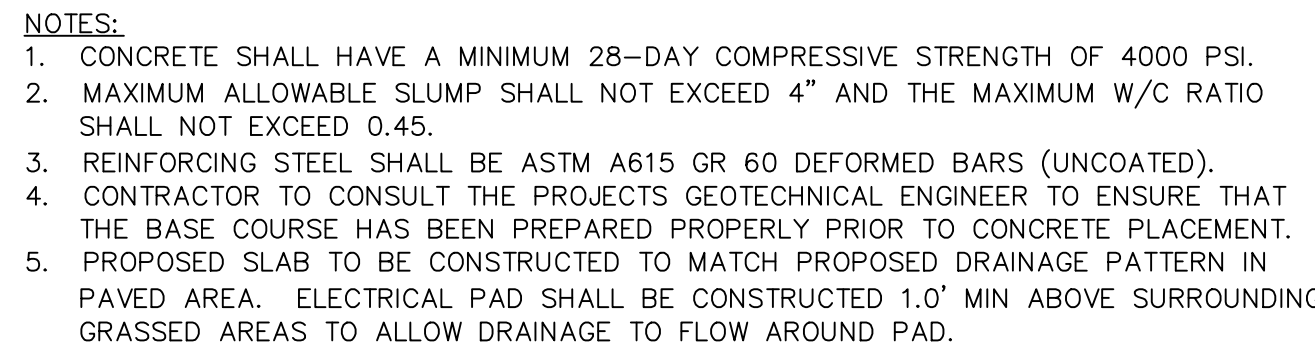
PROJECT NO.
T0681

TEC CAD FILE
T0681_SWR_PROF

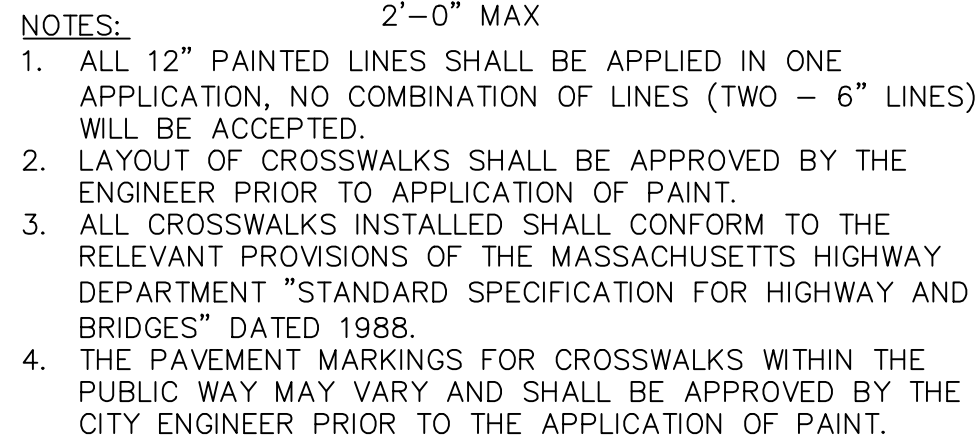
DRAWING NO.
C-16

SHEET 16 OF 27

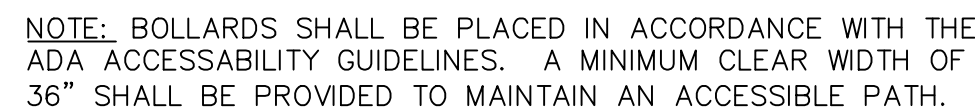




ACCESSIBLE PARKING SPACE
N.T.S.



CROSSWALK PAVEMENT MARKING
N.T.S.

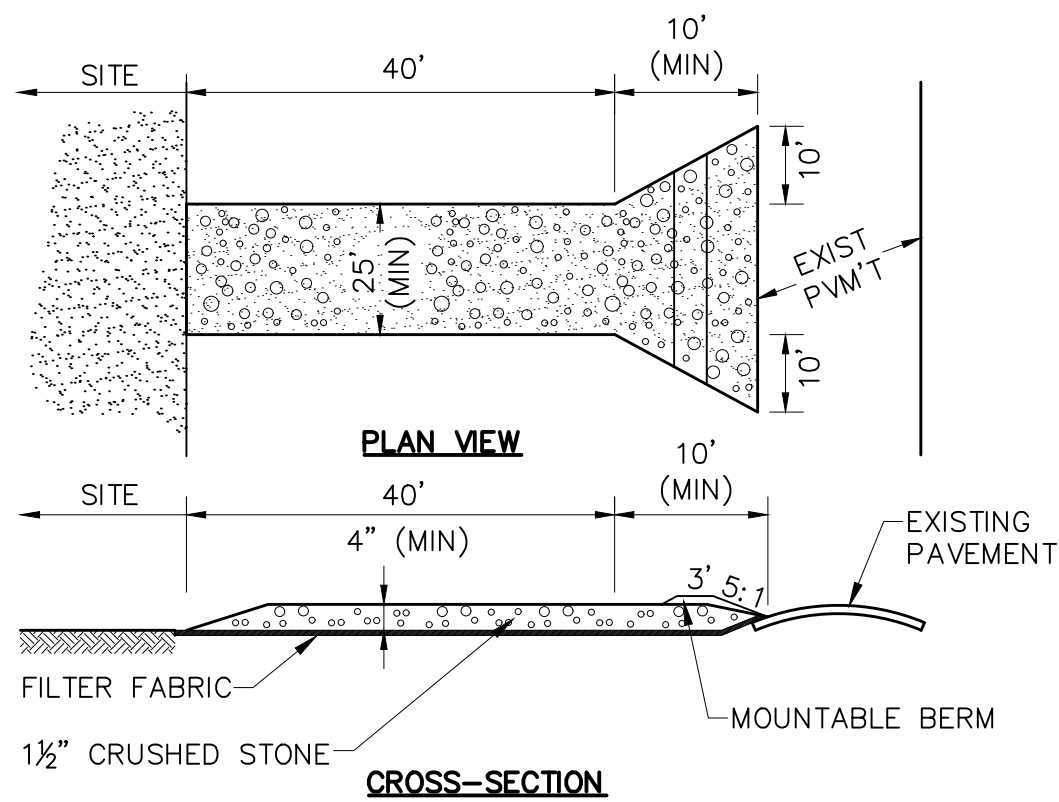


BOLLARD
N.T.S.



1. MAXIMUM ALLOWABLE SLOPE OF ACCESSIBLE ROUTE EXCLUDING CURB RAMPS SHALL BE DESIGNED TO 4.5% $\pm$ 0.5% (7.5% $\pm$ 0.5% FOR CURB RAMPS)
2. A MINIMUM OF 3'-3" CLEAR SHALL BE MAINTAINED AT ANY PERMANENT OBSTACLE IN ACCESSIBLE ROUTE (I.E., HYDRANTS, UTILITY POLES, TREE WELLS, SIGNS, ETC.).
3. CURB TREATMENT VARIES, SEE PLANS FOR CURB TYPE.
4. RAMP, CURB, AND ADJACENT PAVEMENTS SHALL BE GRADED TO PREVENT PONDING.
5. WHERE ACCESSIBLE ROUTES ARE LESS THAN 5' IN WIDTH (EXCLUDING CURBING) A 5'x5' PASSING AREA SHALL BE PROVIDED AT INTERSECTIONS AND 20' FT. LONG.
6. WHEELCHAIR RAMP SLOPES AND CROSS SLOPES SHALL HAVE A CONSTRUCTION TOLERANCE OF $\pm$ 0.5%.
7. ALL RAMPS SHALL HAVE AN EXPOSED AGGREGATE FINISH.

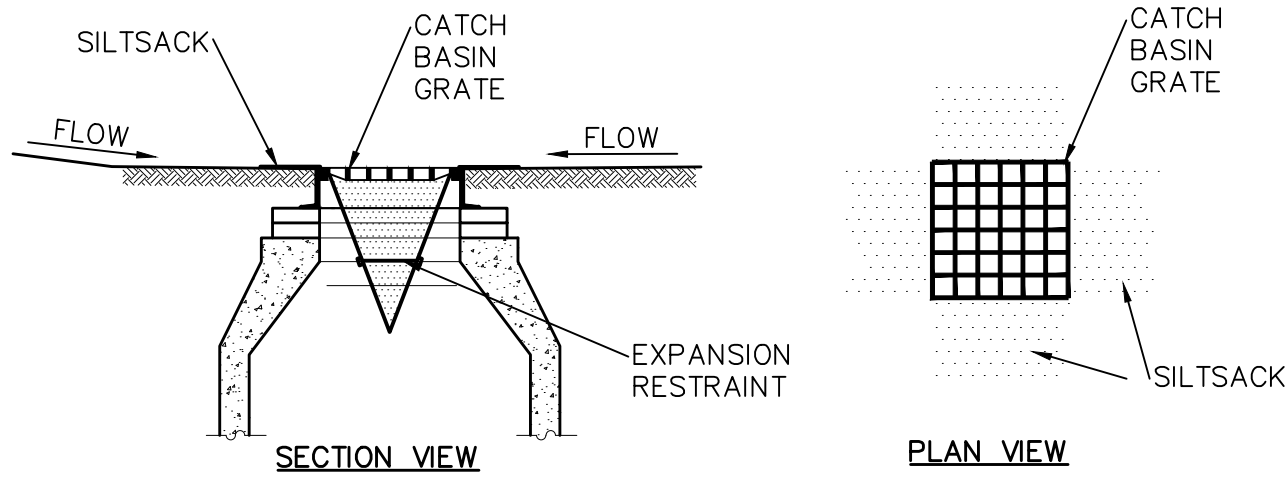
WHEELCHAIR RAMP NOTES
N.T.S.



- ENTRANCE WIDTH SHALL BE A TWENTY-FIVE (25) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY. BERM SHALL BE PERMITTED. PERIODIC INSPECTION AND MAINTENANCE SHALL BE PROVIDED AS NEEDED.
- STABILIZED CONSTRUCTION EXIT SHALL BE REMOVED PRIOR TO FINAL FINISH MATERIALS BEING INSTALLED.

STABILIZED CONSTRUCTION EXIT

N.T.S.

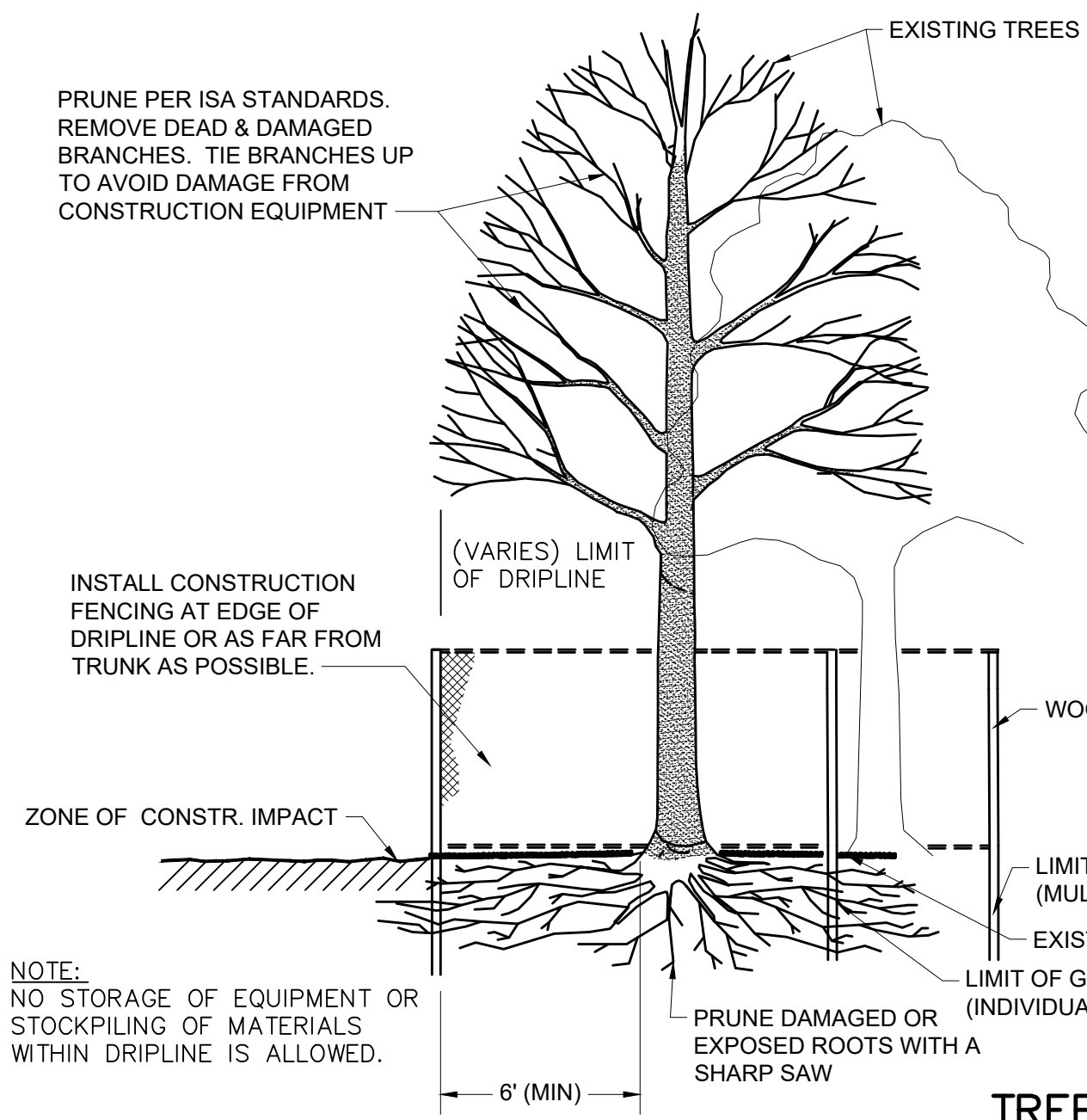


NOTES:

- INSTALL SILTSACK IN EXISTING CATCH BASINS BEFORE COMMENCING WORK, AND IN NEW CATCH BASINS IMMEDIATELY AFTER INSTALLATION OF STRUCTURE. MAINTAIN UNTIL BINDER COURSE PAVING IS COMPLETE OR A PERMANENT STAND OF GRASS HAS BEEN ESTABLISHED.
- GRATE TO BE PLACED OVER SILTSACK.
- SILTSACK SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND CLEANING OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED.

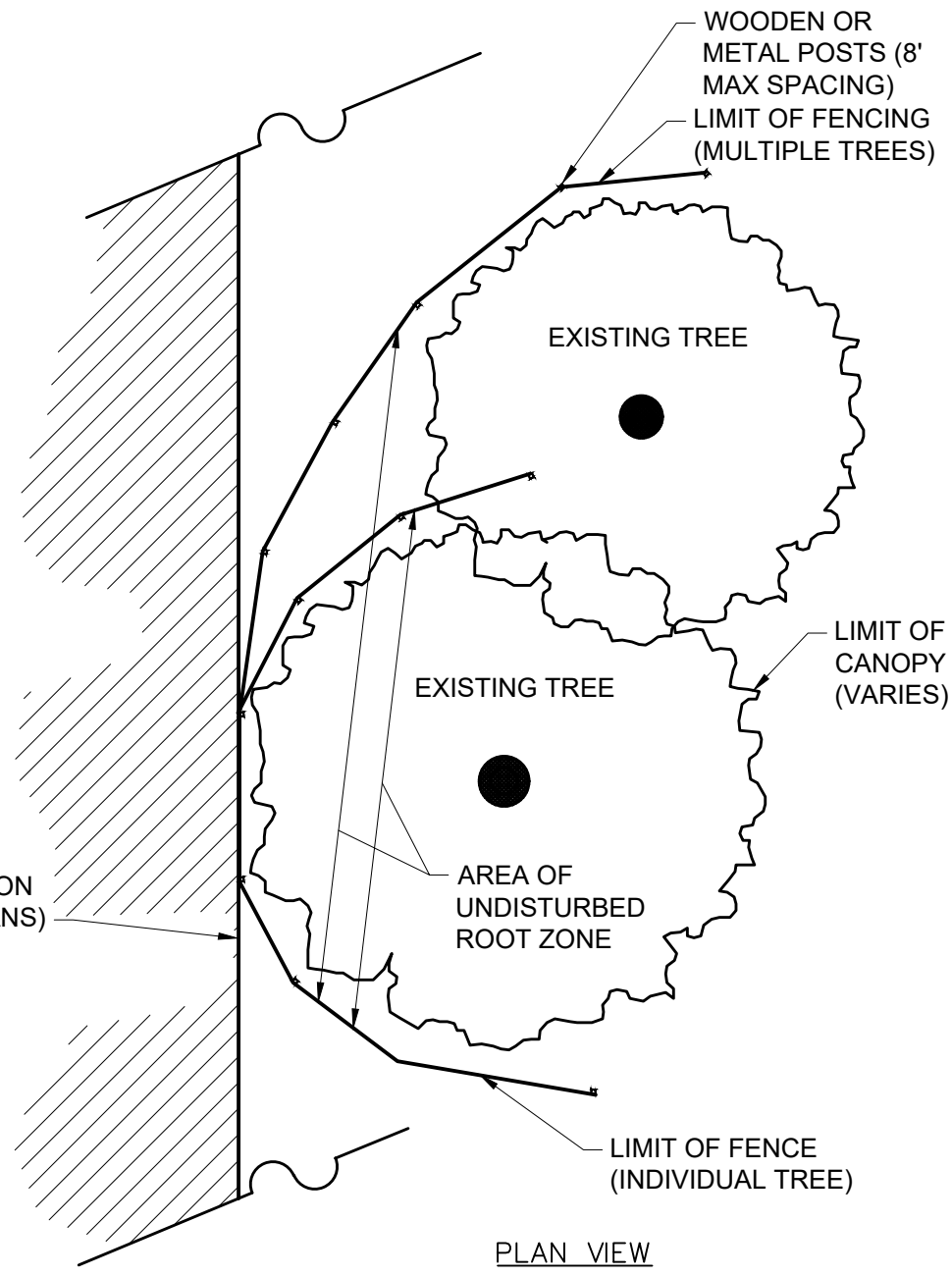
INLET PROTECTION – SILT SACK IN CATCH BASIN

N.T.S.

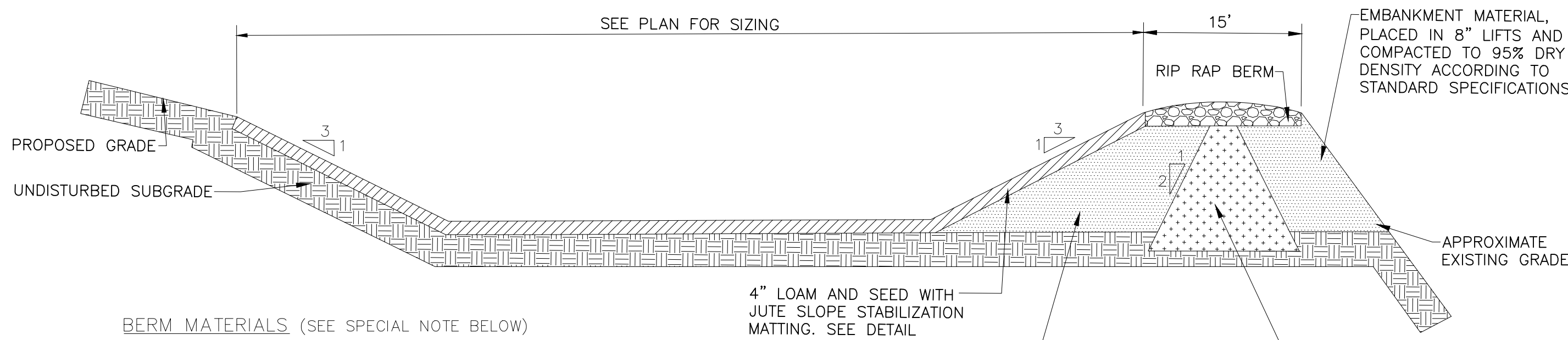


TREE PROTECTION

N.T.S.



PLAN VIEW



BERM MATERIALS (SEE SPECIAL NOTE BELOW)

- IMPERVIOUS CORE (CLAY SILT & SAND SHALL CONFORM TO AASHTO T27 HAVING A COEFFICIENT OF PERMEABILITY OF 1 X 10 CM/SEC AND MEET THE GRADATION AS FOLLOWS:
ROLLED TO 6 LAYERS (95% COMPACTION)

PERCENT FINER	SIEVE SIZE
100	#4
30 TO 85	#40
20 TO 50	#200

- FILTER LAYER F2
EMBANKMENT MATERIAL SHALL CONFORM TO AASHTO M57 AND MEET THE FOLLOWING GRADATION:

PERCENT FINER	SIEVE SIZE
100	3 IN.
95-100	2 IN.
55-85	1 IN.
27-52	#4
50 MAX	#40
25 MAX	#200

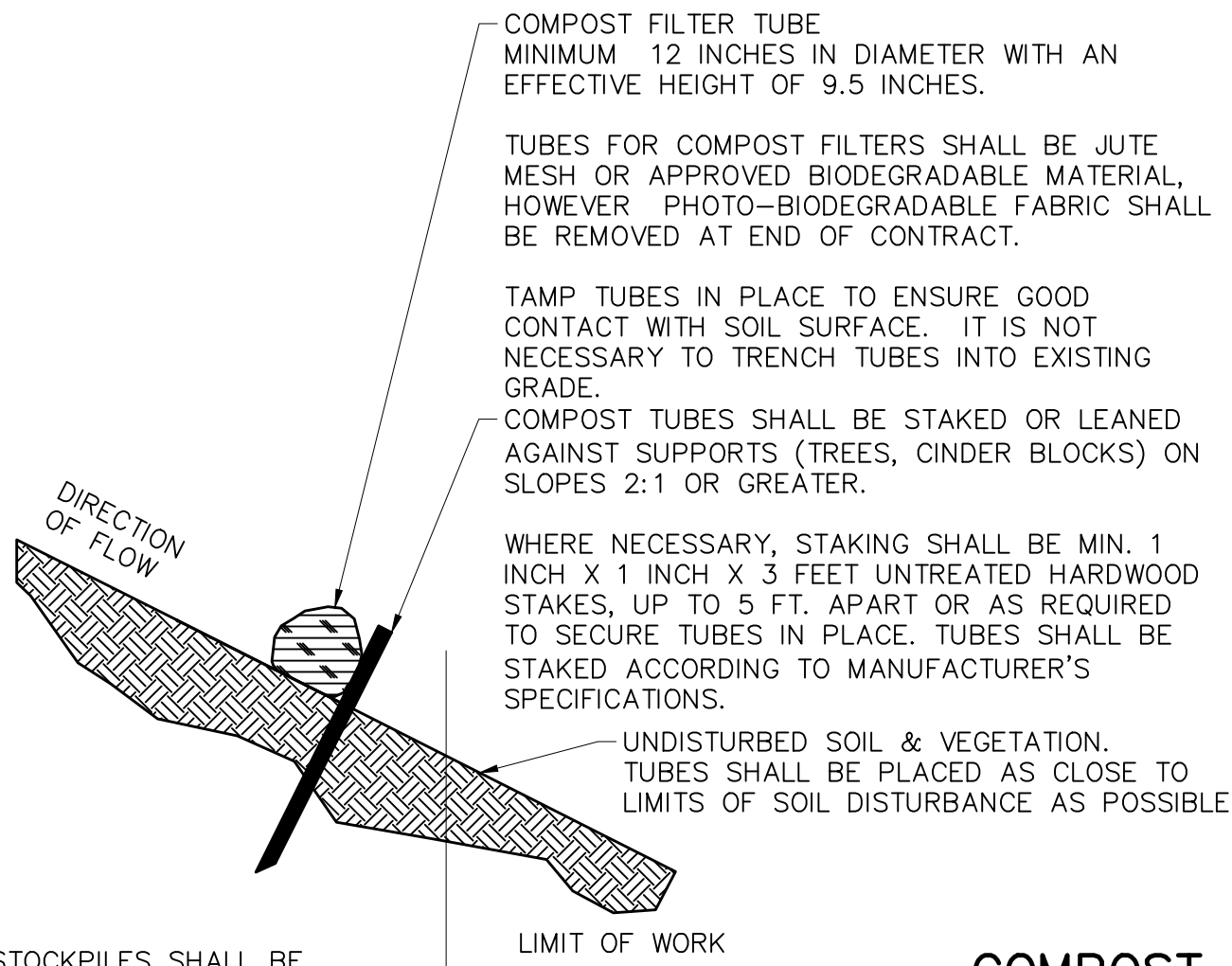
INFILTRATION BASIN

N.T.S.

*** SPECIAL NOTE ***
SPECIAL MATERIALS 1, 2 AND ANTI-SEEP COLLARS CAN BE ELIMINATED AND REPLACED WITH GENERAL MATERIALS IN AREAS OF OVERALL EMBANKMENT CUT AND IN AREAS WHERE THE GEOTECHNICAL & CITY ENGINEERS DETERMINE THAT FIELD CONDITIONS DO NOT WARRANT THESE ITEMS.

NOTES:

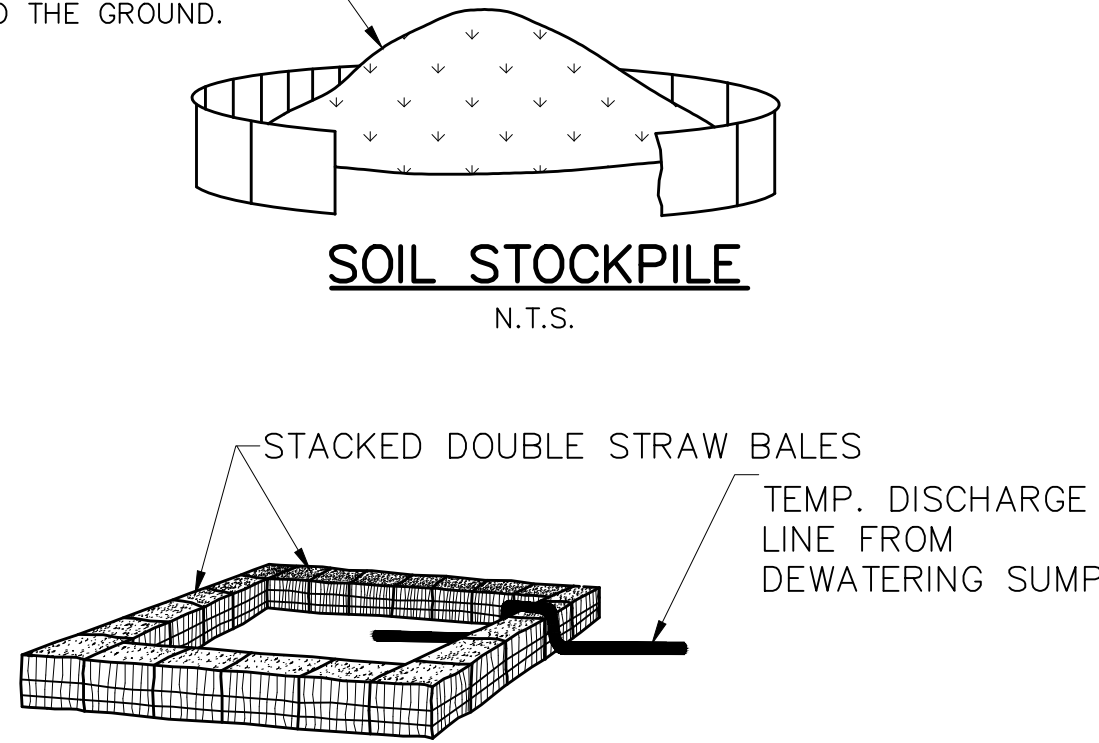
- PROVIDE A MINIMUM TUBE DIAMETER OF 12 INCHES FOR SLOPES UP TO 50 FEET IN LENGTH WITH A SLOPE RATIO OF 3H:1V OR STEEPER. LONGER SLOPES OF 3H:1V MAY REQUIRE LARGER TUBE DIAMETER OR ADDITIONAL COURSING OF FILTER TUBES TO CREATE A FILTER BERM. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR SITUATIONS WITH LONGER OR STEEPER SLOPES.
- INSTALL TUBES ALONG CONTOURS AND PERPENDICULAR TO SHEET OR CONCENTRATED FLOW.
- TUBE LOCATION MAY BE SHIFTED TO ADJUST TO LANDSCAPE FEATURES, BUT SHALL PROTECT UNDISTURBED AREA AND VEGETATION TO MAXIMUM EXTENT POSSIBLE.
- DO NOT INSTALL IN PERENNIAL, EPHEMERAL OR INTERMITTENT STREAMS.
- ADDITIONAL TUBES SHALL BE USED AT THE DIRECTION OF THE ENGINEER.
- ADDITIONAL STAKING SHALL BE USED AT THE DIRECTION OF THE ENGINEER.



COMPOST FILTER TUBE

N.T.S.

STOCKPILES SHALL BE SURROUNDED BY DOUBLE-STAKED STRAW BALES, OR SILT FENCE ENTRENCHED 6" INTO THE GROUND.



SOIL STOCKPILE

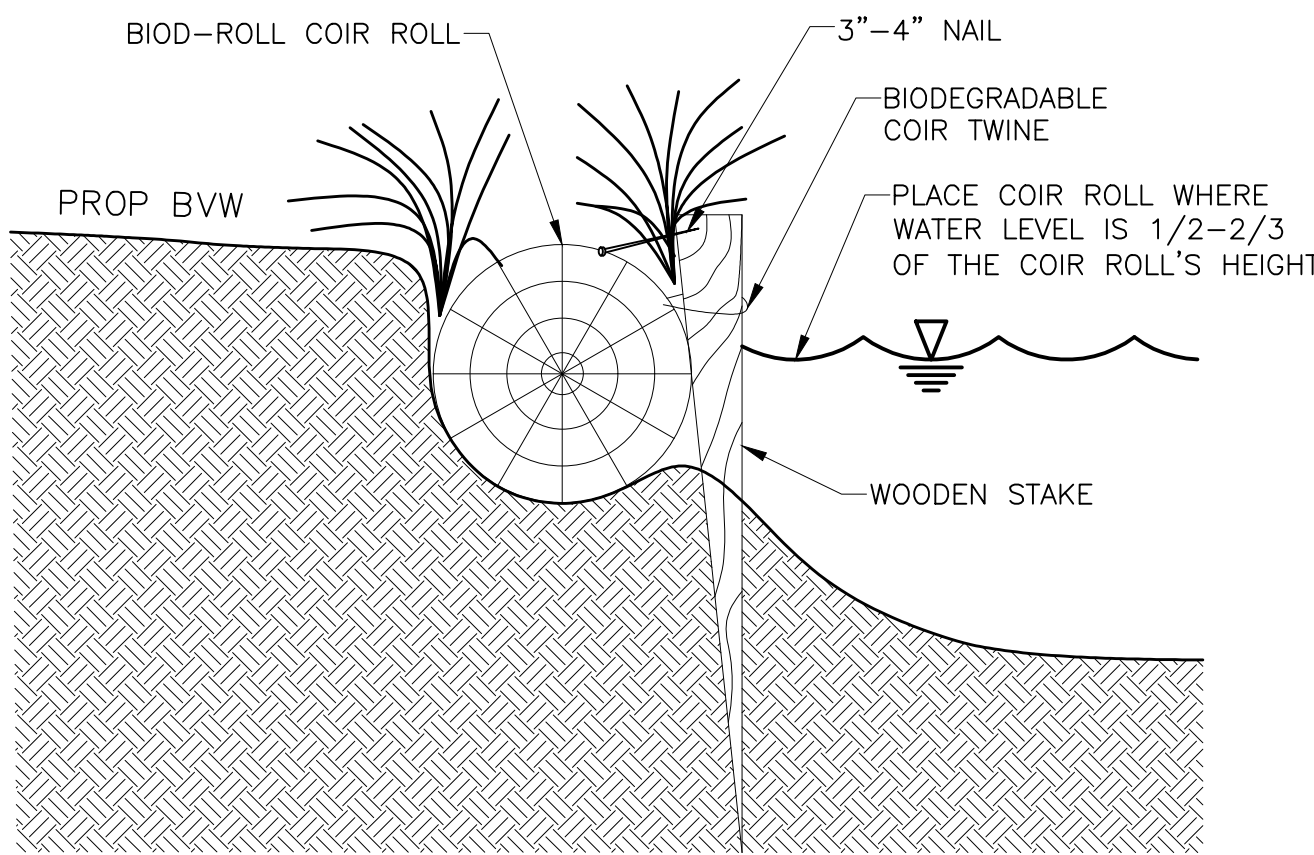
N.T.S.

NOTES:

- DISCHARGE TO SEDIMENTATION BASIN (AS SHOWN) OR TO SILTATION/DEWATERING BAG SUCH AS FLOGARD DEWATERING BAG MODEL SC-DW1215Z, OR EQUAL APPROVED BY CONSERVATION COMMISSION. ALL DISCHARGE LOCATIONS SHALL BE A MINIMUM OF 50' FROM EXISTING BVW.

TEMPORARY STILLING AREA

N.T.S.

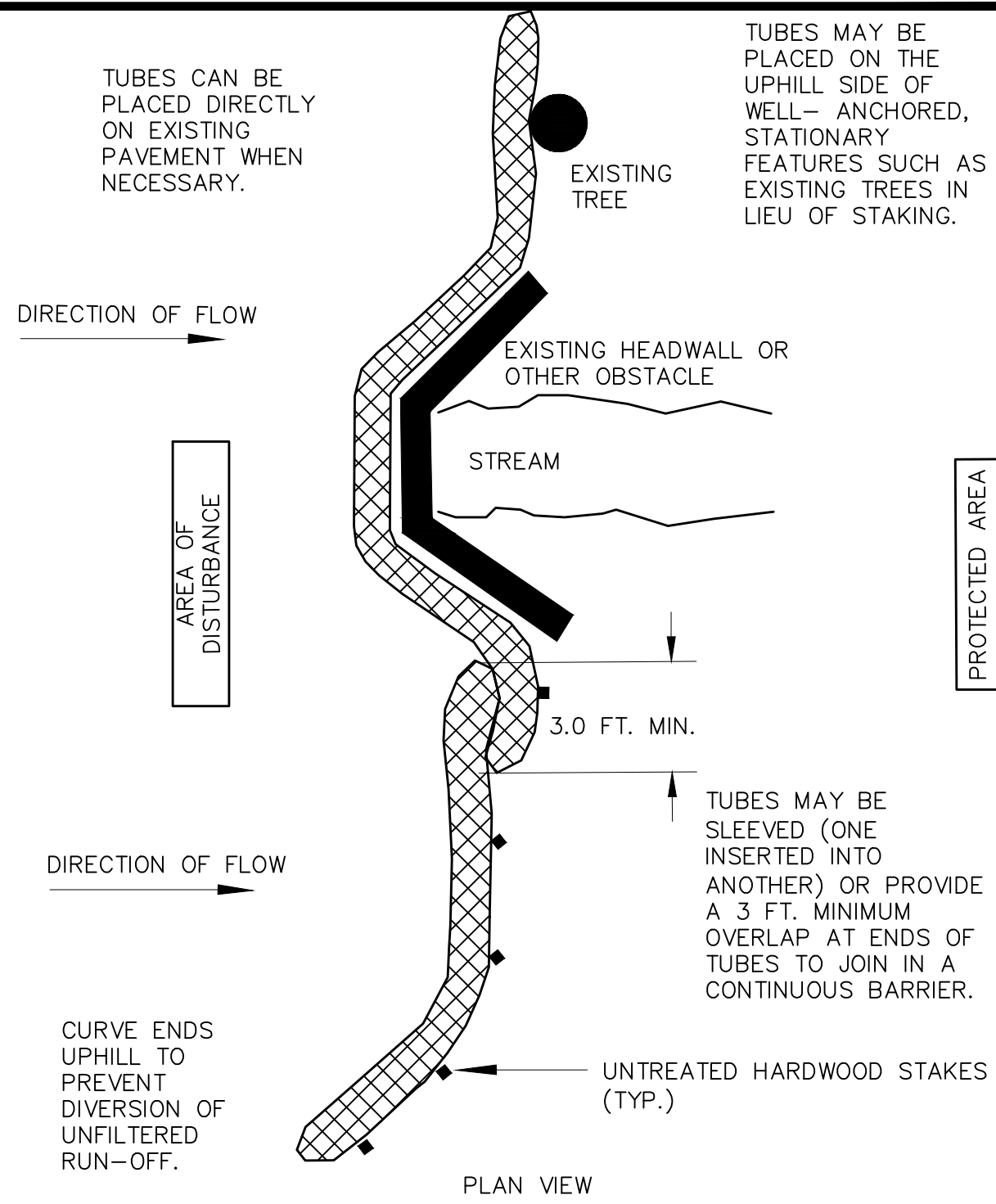


NOTES:

- CLEAR AREA OF ANY DEBRIS, TREES, ROCKS OR LARGE OBSTRUCTIONS PRIOR TO INSTALLATION.
- LOGS ARE PLACED IN A SMALL PRE-DUG TRENCH ALONG STREAM BANK.
- COIR LOGS ARE CONSTRUCTED FROM CYLINDER/ROUND SHAPE COIR NETTING PACKED WITH BIODEGRADABLE COIR FIBER.
- LOGS ARE SECURED INTO POSITION USING WOODEN STAKES, COIR TWINE AND A NAIL.
- ADJACENT LOGS ARE TIED TOGETHER END TO END USING COIR TWINE.

COIR GREEN LOGS

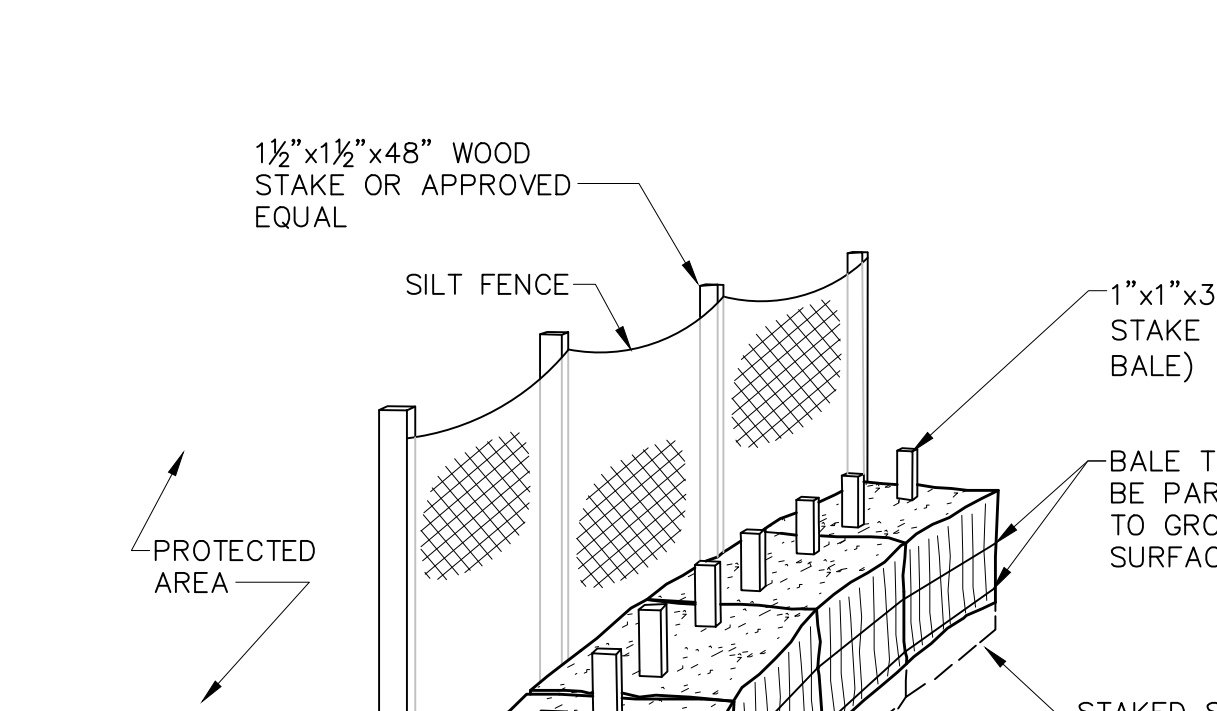
N.T.S.



COMPOST FILTER TUBE

N.T.S.

STOCKPILES SHALL BE SURROUNDED BY DOUBLE-STAKED STRAW BALES, OR SILT FENCE ENTRENCHED 6" INTO THE GROUND.



DISCHARGE TO SEDIMENTATION BASIN (AS SHOWN) OR TO SILTATION/DEWATERING BAG SUCH AS FLOGARD DEWATERING BAG MODEL SC-DW1215Z, OR EQUAL APPROVED BY CONSERVATION COMMISSION. ALL DISCHARGE LOCATIONS SHALL BE A MINIMUM OF 50' FROM EXISTING BVW.

DISCHARGE TO SEDIMENTATION BASIN (AS SHOWN) OR TO SILTATION/DEWATERING BAG SUCH AS FLOGARD DEWATERING BAG MODEL SC-DW1215Z, OR EQUAL APPROVED BY CONSERVATION COMMISSION. ALL DISCHARGE LOCATIONS SHALL BE A MINIMUM OF 50' FROM EXISTING BVW.

DISCHARGE TO SEDIMENTATION BASIN (AS SHOWN) OR TO SILTATION/DEWATERING BAG SUCH AS FLOGARD DEWATERING BAG MODEL SC-DW1215Z, OR EQUAL APPROVED BY CONSERVATION COMMISSION. ALL DISCHARGE LOCATIONS SHALL BE A MINIMUM OF 50' FROM EXISTING BVW.

DISCHARGE TO SEDIMENTATION BASIN (AS SHOWN) OR TO SILTATION/DEWATERING BAG SUCH AS FLOGARD DEWATERING BAG MODEL SC-DW1215Z, OR EQUAL APPROVED BY CONSERVATION COMMISSION. ALL DISCHARGE LOCATIONS SHALL BE A MINIMUM OF 50' FROM EXISTING BVW.

DISCHARGE TO SEDIMENTATION BASIN (AS SHOWN) OR TO SILTATION/DEWATERING BAG SUCH AS FLOGARD DEWATERING BAG MODEL SC-DW1215Z, OR EQUAL APPROVED BY CONSERVATION COMMISSION. ALL DISCHARGE LOCATIONS SHALL BE A MINIMUM OF 50' FROM EXISTING BVW.

DISCHARGE TO SEDIMENTATION BASIN (AS SHOWN) OR TO SILTATION/DEWATERING BAG SUCH AS FLOGARD DEWATERING BAG MODEL SC-DW1215Z, OR EQUAL APPROVED BY CONSERVATION COMMISSION. ALL DISCHARGE LOCATIONS SHALL BE A MINIMUM OF 50' FROM EXISTING BVW.

DISCHARGE TO SEDIMENTATION BASIN (AS SHOWN) OR TO SILTATION/DEWATERING BAG SUCH AS FLOGARD DEWATERING BAG MODEL SC-DW1215Z, OR EQUAL APPROVED BY CONSERVATION COMMISSION. ALL DISCHARGE LOCATIONS SHALL BE A MINIMUM OF 50' FROM EXISTING BVW.

DISCHARGE TO SEDIMENTATION BASIN (AS SHOWN) OR TO SILTATION/DEWATERING BAG SUCH AS FLOGARD DEWATERING BAG MODEL SC-DW1215Z, OR EQUAL APPROVED BY CONSERVATION COMMISSION. ALL DISCHARGE LOCATIONS SHALL BE A MINIMUM OF 50' FROM EXISTING BVW.

DISCHARGE TO SEDIMENTATION BASIN (AS SHOWN) OR TO SILTATION/DEWATERING BAG SUCH AS FLOGARD DEWATERING BAG MODEL SC-DW1215Z, OR EQUAL APPROVED BY CONSERVATION COMMISSION. ALL DISCHARGE LOCATIONS SHALL BE A MINIMUM OF 50' FROM EXISTING BVW.

DISCHARGE TO SEDIMENTATION BASIN (AS SHOWN) OR TO SILTATION/DEWATERING BAG SUCH AS FLOGARD DEWATERING BAG MODEL SC-DW1215Z, OR EQUAL APPROVED BY CONSERVATION COMMISSION. ALL DISCHARGE LOCATIONS SHALL BE A MINIMUM OF 50' FROM EXISTING BVW.

DISCHARGE TO SEDIMENTATION BASIN (AS SHOWN) OR TO SILTATION/DEWATERING BAG SUCH AS FLOGARD DEWATERING BAG MODEL SC-DW1215Z, OR EQUAL APPROVED BY CONSERVATION COMMISSION. ALL DISCHARGE LOCATIONS SHALL BE A MINIMUM OF 50' FROM EXISTING BVW.



TEC, Inc.

146 Dascomb Road
Andover, MA 01810
(978) 794-1792
www.TheEngineeringCorp.com

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

DESIGNED BY	CPR
DRAWN BY	DGR
CHECKED BY	RJF
DATE	10/31/2018
SCALE	AS NOTED

PREPARED FOR

Dascomb Road
Development, LLC
354 Merrimack Street
Suite 1
Lawrence, MA 01843

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

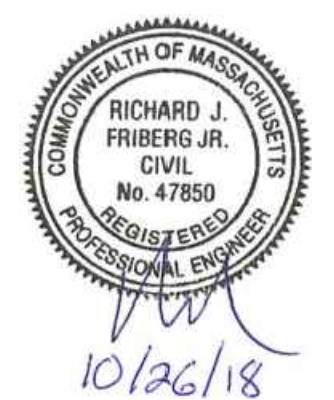
The Dascomb Road
Project

PROJECT LOCATION

146 Dascomb Road
Andover, MA

DRAWING TITLE

Construction Details



PROJECT NO.

T0681

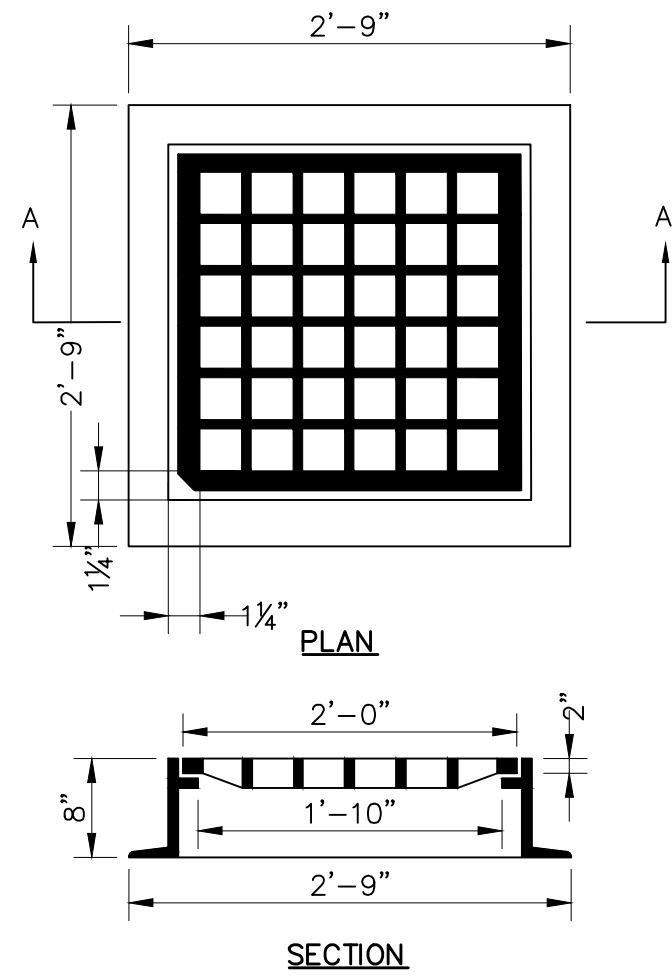
TEC CAD FILE

T0681_DET.dwg

DRAWING NO.

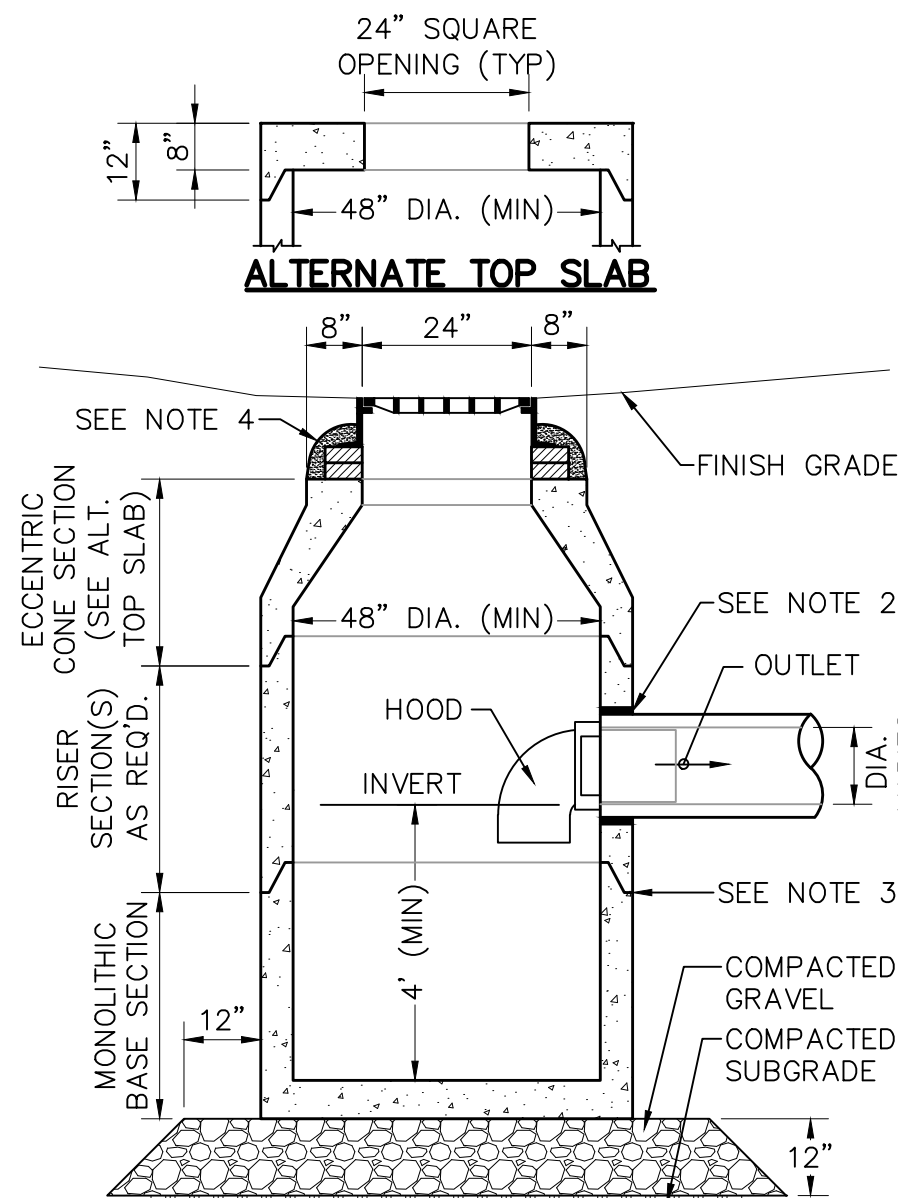
C-18

SHEET 18 OF 27



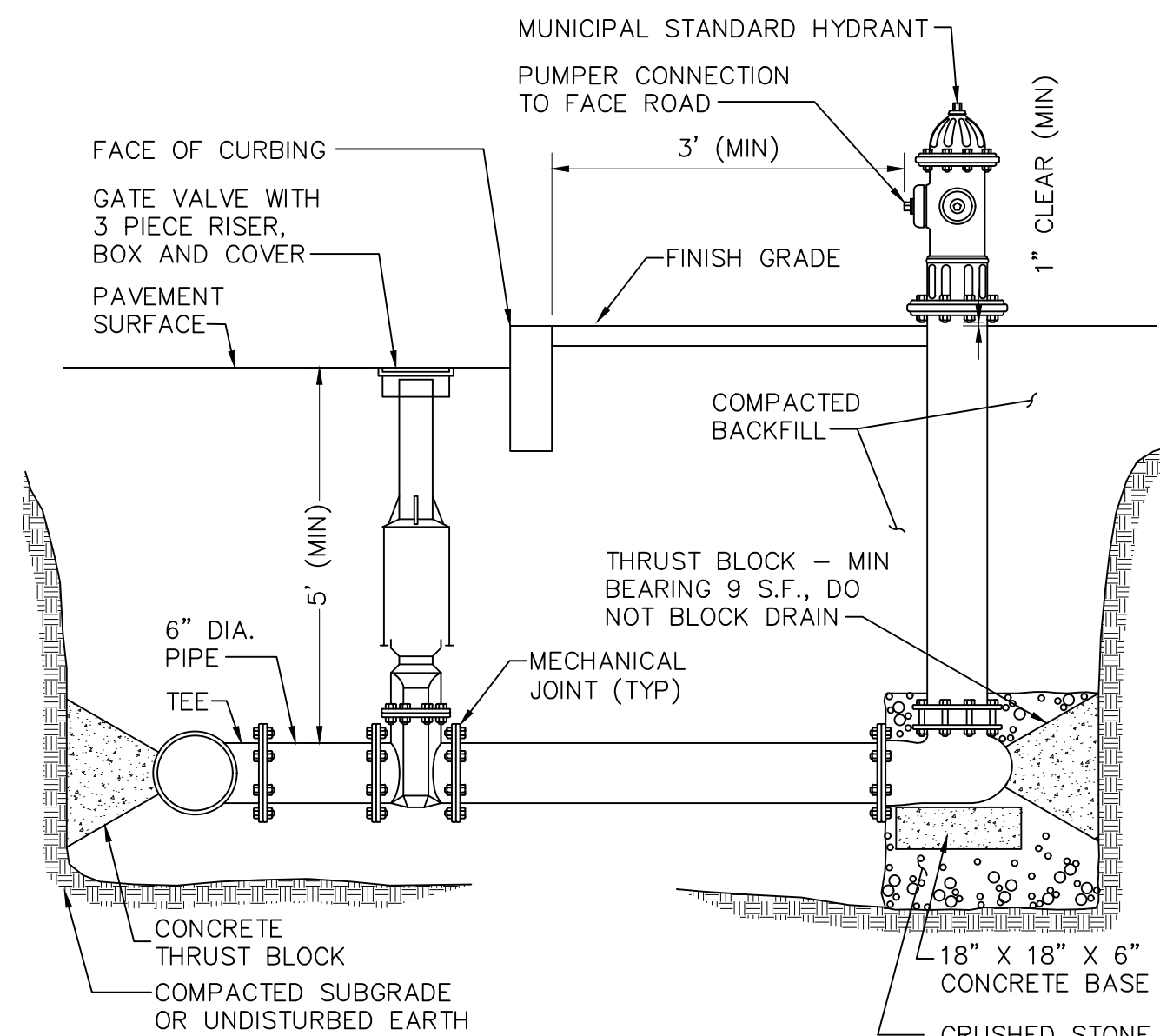
- NOTES:
1. FRAME AND GRATE SHALL BE RATED FOR HS-20 LOADING.
 2. USE 3 FLANGE FRAMES AT CURB INLET.
 3. MIN FRAME WEIGHT:
4 FLANGE - 295 LB
3 FLANGE - 264 LB

CATCH BASIN FRAME & GRATE
N.T.S.

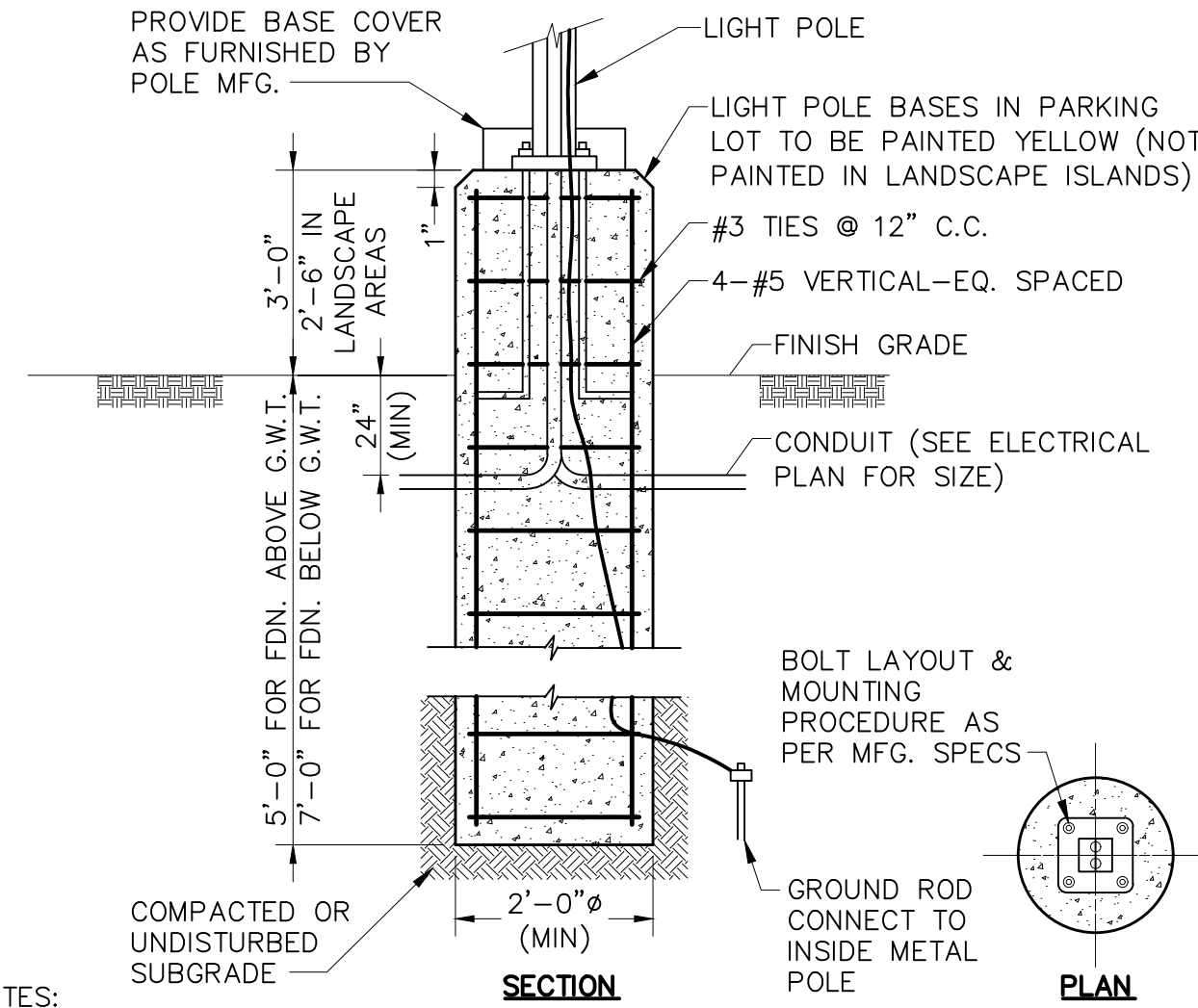


- NOTES:
1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
 2. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
 3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
 4. CATCH BASIN FRAME AND GRATE SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR. (2 COURSES TYP 5 COURSES MAX)

DEEP SUMP CATCH BASIN WITH HOOD
N.T.S.

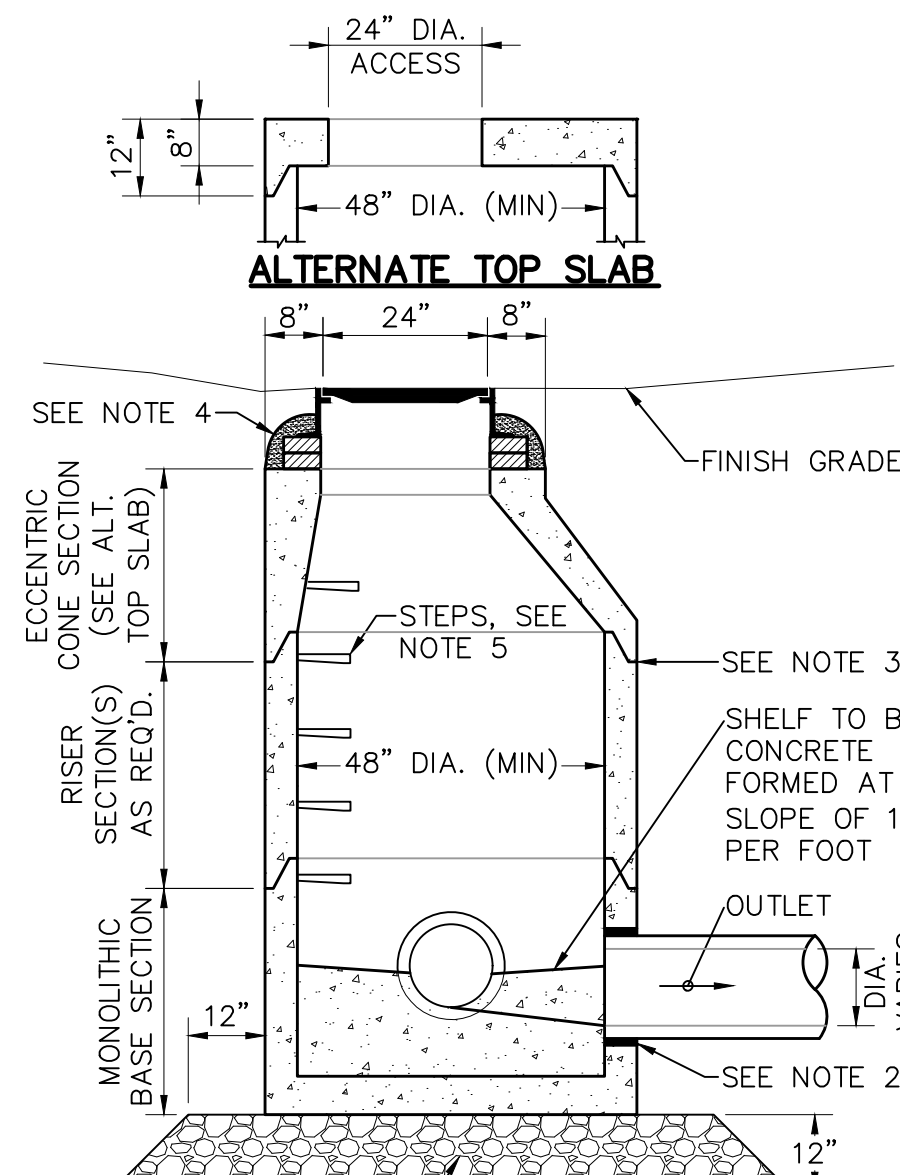


HYDRANT CONNECTION
N.T.S.



- NOTES:
1. LIGHT POLE FOUNDATION DESIGN IS SUBJECT TO CHANGE BASED ON FINAL POLE AND FIXTURE SELECTION AND GEOTECHNICAL SITE INVESTIGATION.

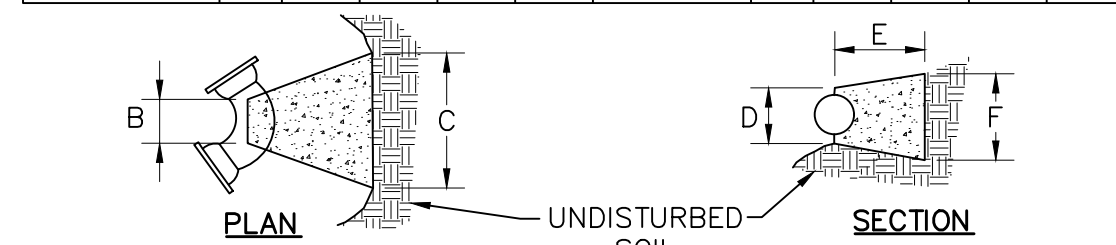
LIGHT POLE BASE
N.T.S.



DRAIN MANHOLE
N.T.S.

- NOTES:
1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
 2. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
 3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
 4. DRAIN MANHOLE FRAME AND COVER SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR. (2 COURSES TYP 5 COURSES MAX)
 5. COPOLYMER MANHOLE STEPS SHALL BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.

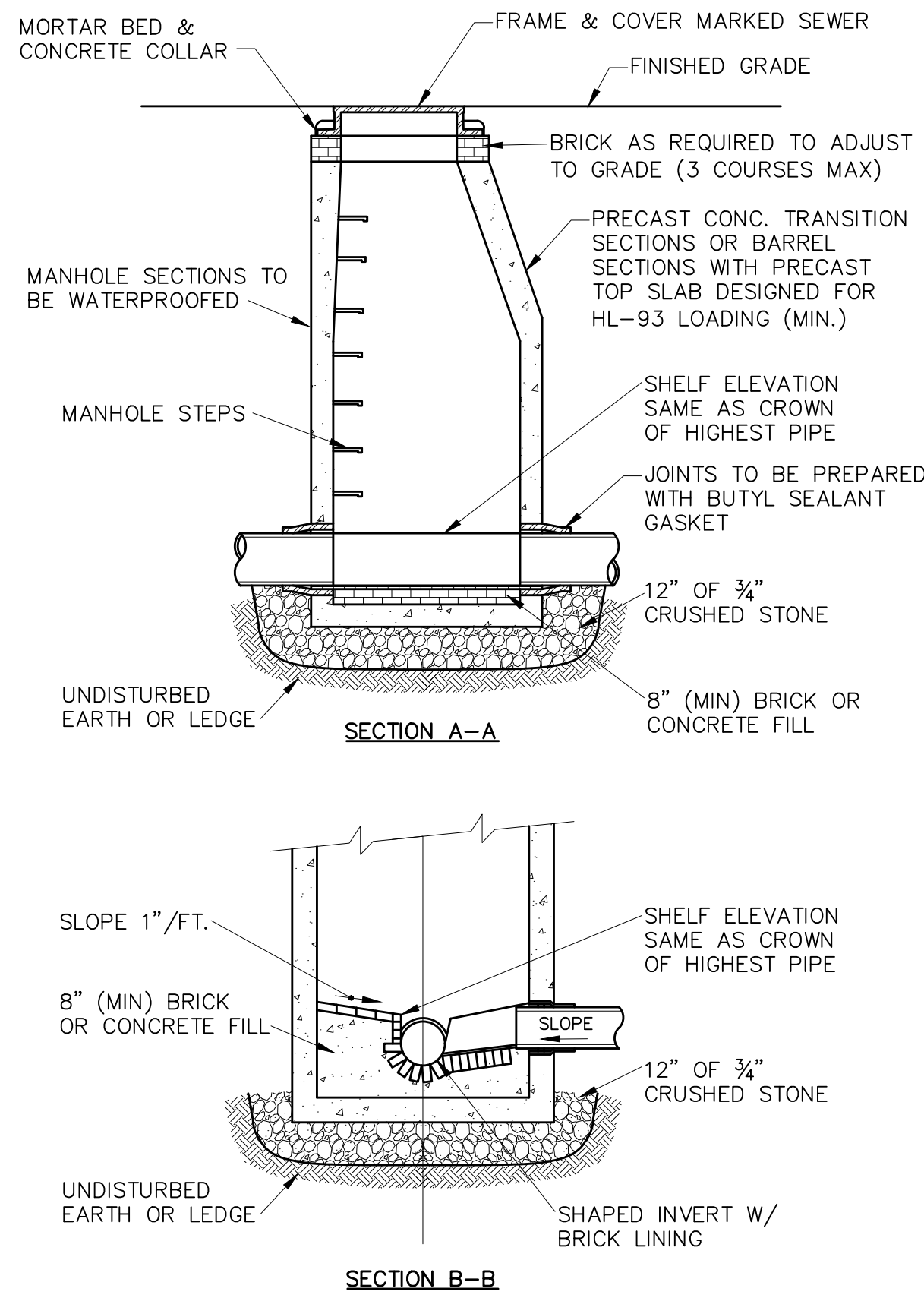
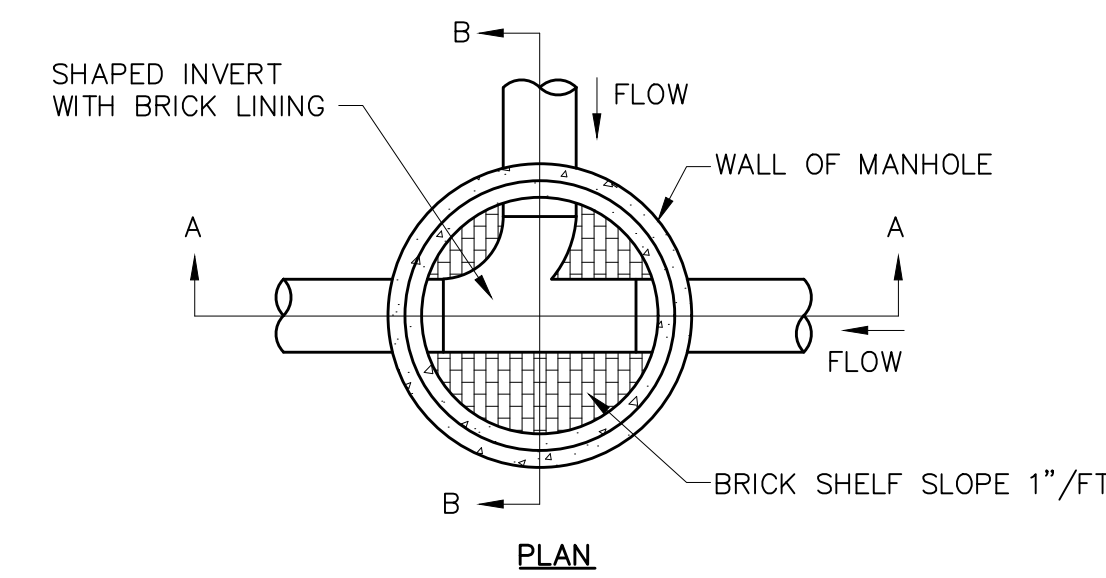
BENDS						BENDS					
	B	C	D	E	F		B	C	D	E	F
6"	11-1/4"	8"	15"	12"	24"	12"	6"	45"	8"	30"	12"
6"	22-1/2"	8"	19"	12"	24"	13"	6"	90"	8"	30"	12"
8"	11-1/4"	8"	20"	12"	24"	12"	8"	45"	8"	30"	12"
8"	22-1/2"	8"	22"	12"	24"	17"	8"	90"	8"	38"	12"
12"	11-1/4"	8"	30"	12"	24"	15"	12"	45"	8"	40"	12"
12"	22-1/2"	8"	35"	12"	24"	25"	12"	90"	8"	60"	12"



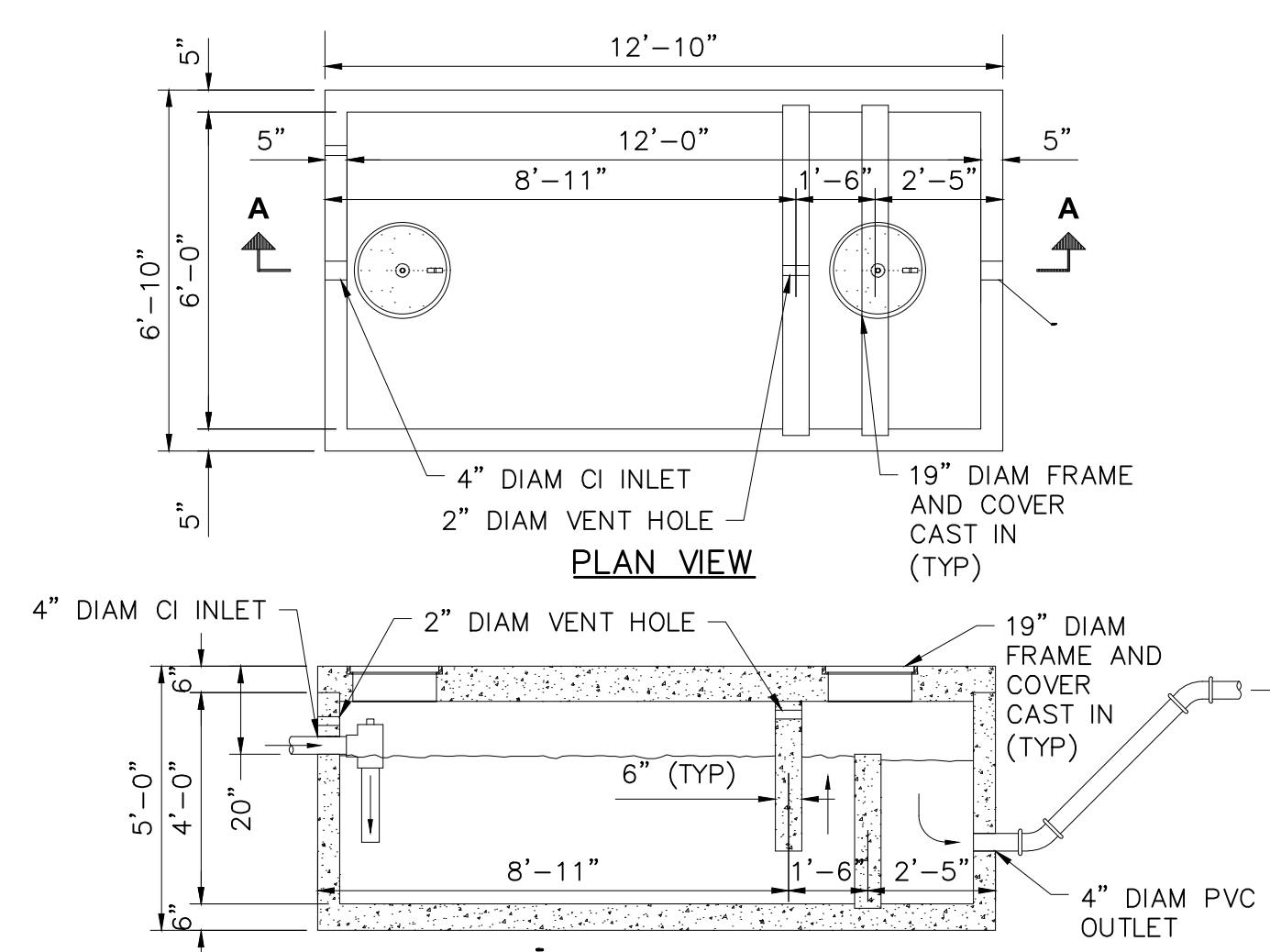
TEES					TEES				
	G	H	I	J		G	H	I	J
6" X 6" X 6"	12"	24"	24"	18"	12" X 12" X 6"	12"	24"	24"	18"
8" X 8" X 6"	12"	24"	24"	18"	12" X 12" X 8"	12"	24"	24"	24"
8" X 8" X 8"	12"	24"	24"	24"	12" X 12" X 12"	12"	36"	24"	36"

- NOTES:
1. PROVIDE BLOCKS FOR TAPPING SLEEVES, DEAD ENDS, GATE VALVES AND VERTICAL BENDS. SAME SIZE AS REQ. FOR TEES. PROVIDE ANCHOR RODS AT VERTICAL BENDS AND GATE VALVES.
 2. CONCRETE SHALL NOT BE PLACED AGAINST PIPE BEYOND FITTING.
 3. CONCRETE SHALL BE 3000 PSI - TYPE 1

CONCRETE THRUST BLOCK
N.T.S.

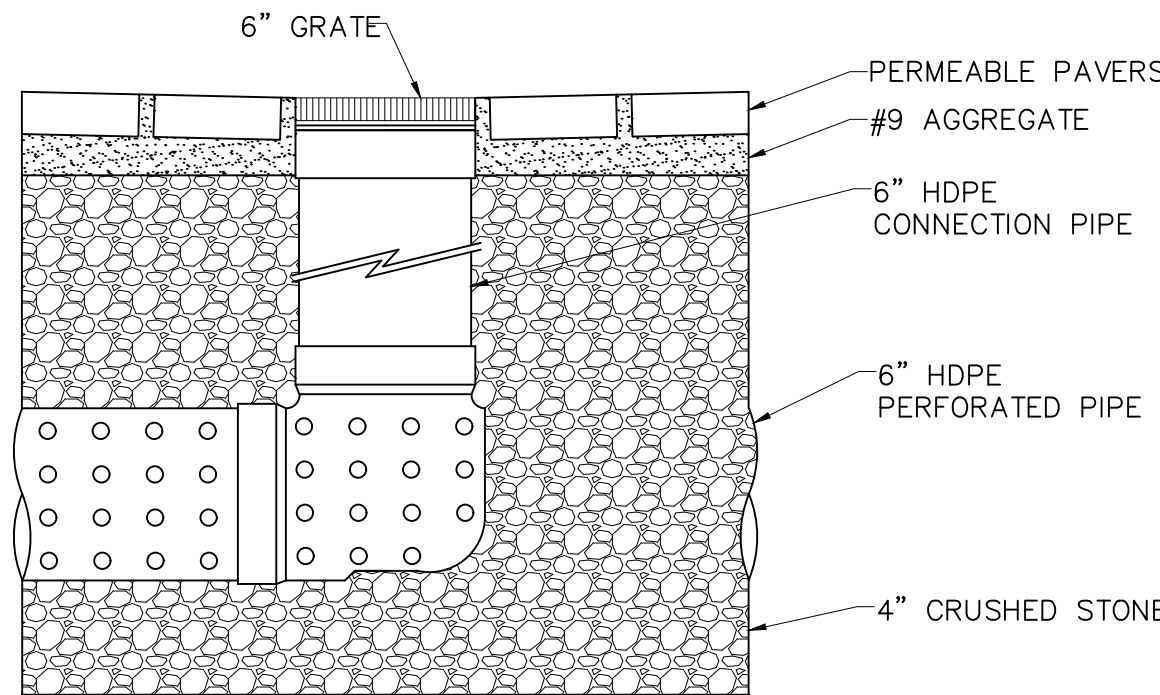


SEWER MANHOLE
N.T.S.

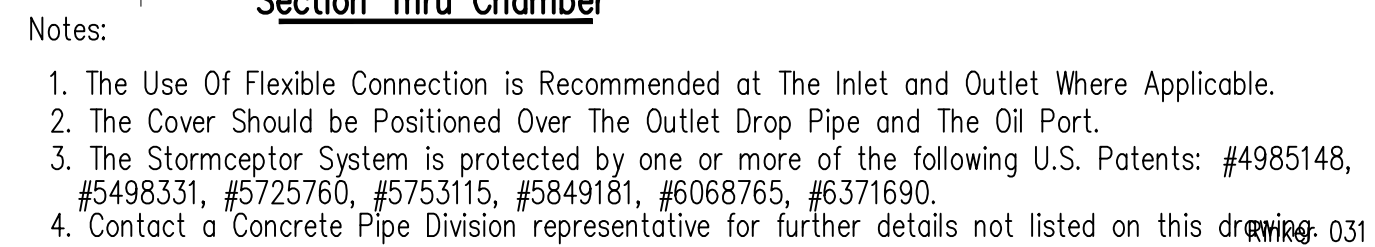
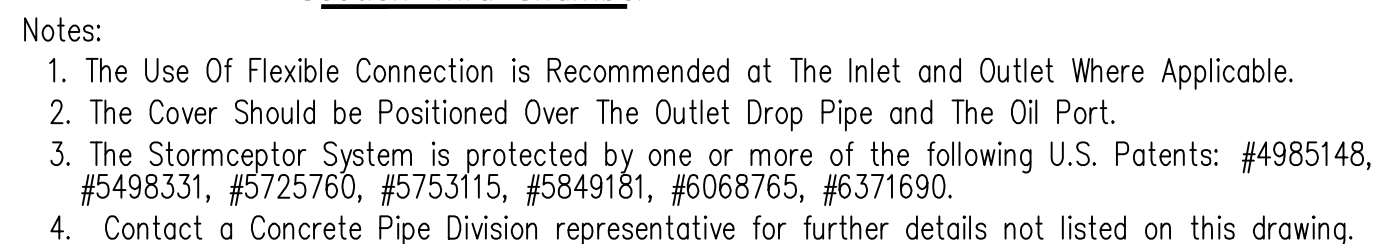


1500 GALLON GREASE TRAP (GT)
N.T.S.

- NOTES:
- SPECIFICATIONS:
1. CONCRETE: HAS A DESIGN STRENGTH OF 5,000 PSI AT 28 DAYS.
 2. STEEL REINFORCEMENT: ASTM A-615, GRADE 60.
 3. LOADING: DESIGNED FOR H20 LOADING.
 4. CI CASTINGS: ASTM A48, CLASS 30/35.
- GENERAL NOTES:
1. UNIT COMES WITH INTERIOR INFLOW PIPING INSTALLED.
 2. INFLOW SECTION OF UNIT MUST BE FILLED WITH AT LEAST 12" OF CLEAR WATER PRIOR TO USE.
- FEATURES:
1. 4" DIAM CI DOUBLE HUB INLET FURNISHED
 2. 4" DIAM PVC HALF HUB OUTLET FURNISHED



AREA DRAIN
N.T.S.



1. THE USE OF FLEXIBLE CONNECTION IS RECOMMENDED AT THE INLET AND OUTLET WHERE APPLICABLE.
2. THE COVER SHOULD BE POSITIONED OVER THE OUTLET DROP PIPE AND THE OIL PORT.
3. THE STORMCEPTOR SYSTEM IS PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: # 4995148, #5498331, #5725760, #5753115, #5849181, #6068765, #6371690.
4. CONTACT A CONCRETE PIPE DIVISION REPRESENTATIVE FOR FURTHER DETAILS NOT LISTED ON THIS DRAWING.
5. A COMPARABLE PRODUCT MAY BE PROPOSED BY THE CONTRACTOR, BUT ITS USE REQUIRES APPROVAL BY THE ENGINEER OF RECORD.

12" DIA HDPE INLET PIPE
ELEV 108.50

12" x 3" ORIFICE

WEIR

48" DIA (MIN)

36" ACCESS

24"x36" FRAME & ACCESS COVER
(H=20 LOAD RATING)
PRODUCED BY NEENAH FOUNDRY
OR APPROVED EQUAL

TOP OF WEIR
ELEV 110.25

SEE NOTE 2

OUTLET

12" DIA HDPE OUTLET PIPE
ELEV 105.40

12"

12"

12" x 3" ORIFICE
ELEV 110.00

TOP OF WEIR
ELEV 110.25

RIM
ELEV. 113.60

36" ACCESS

48" DIA (MIN)

WEIR

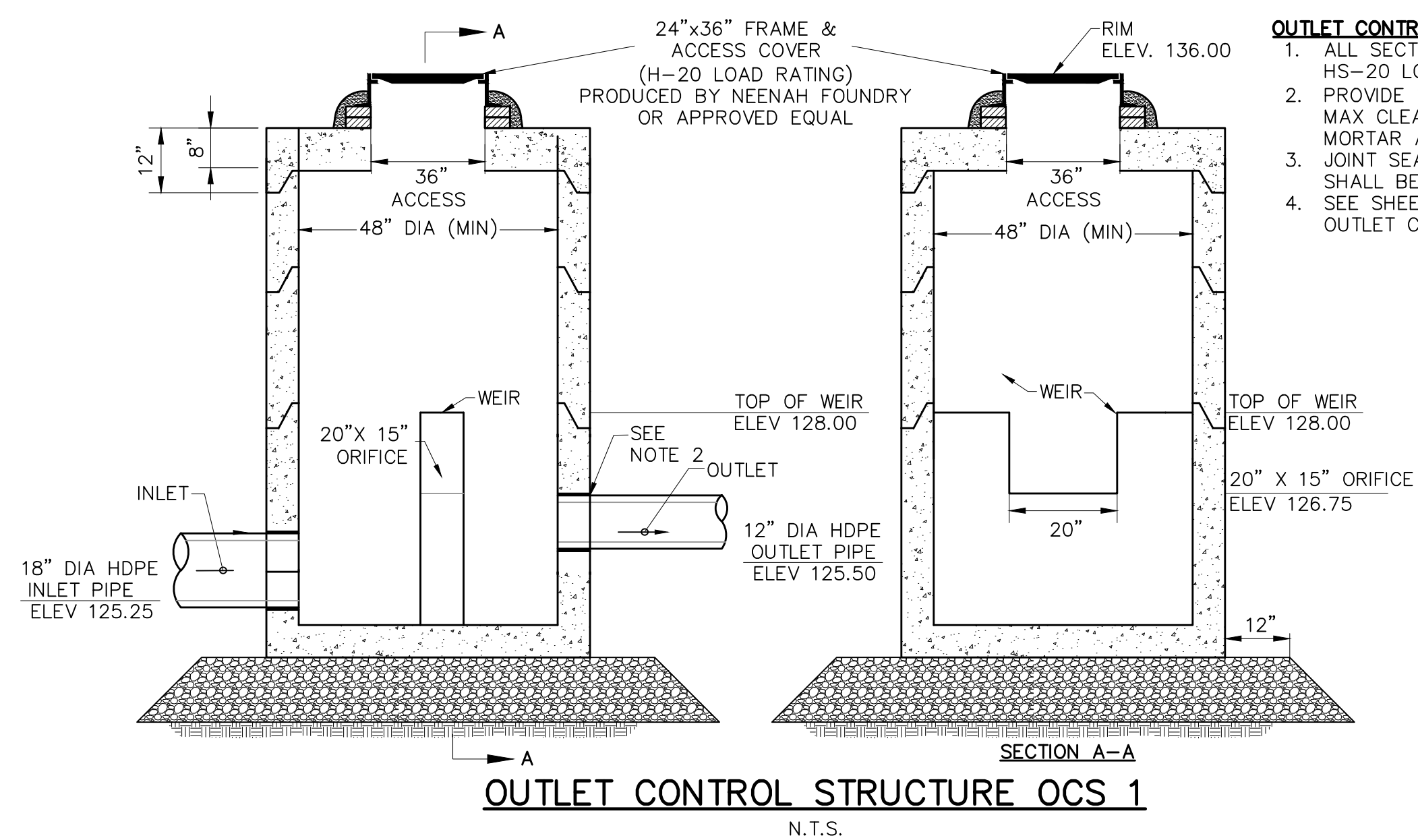
12"

SECTION A-A

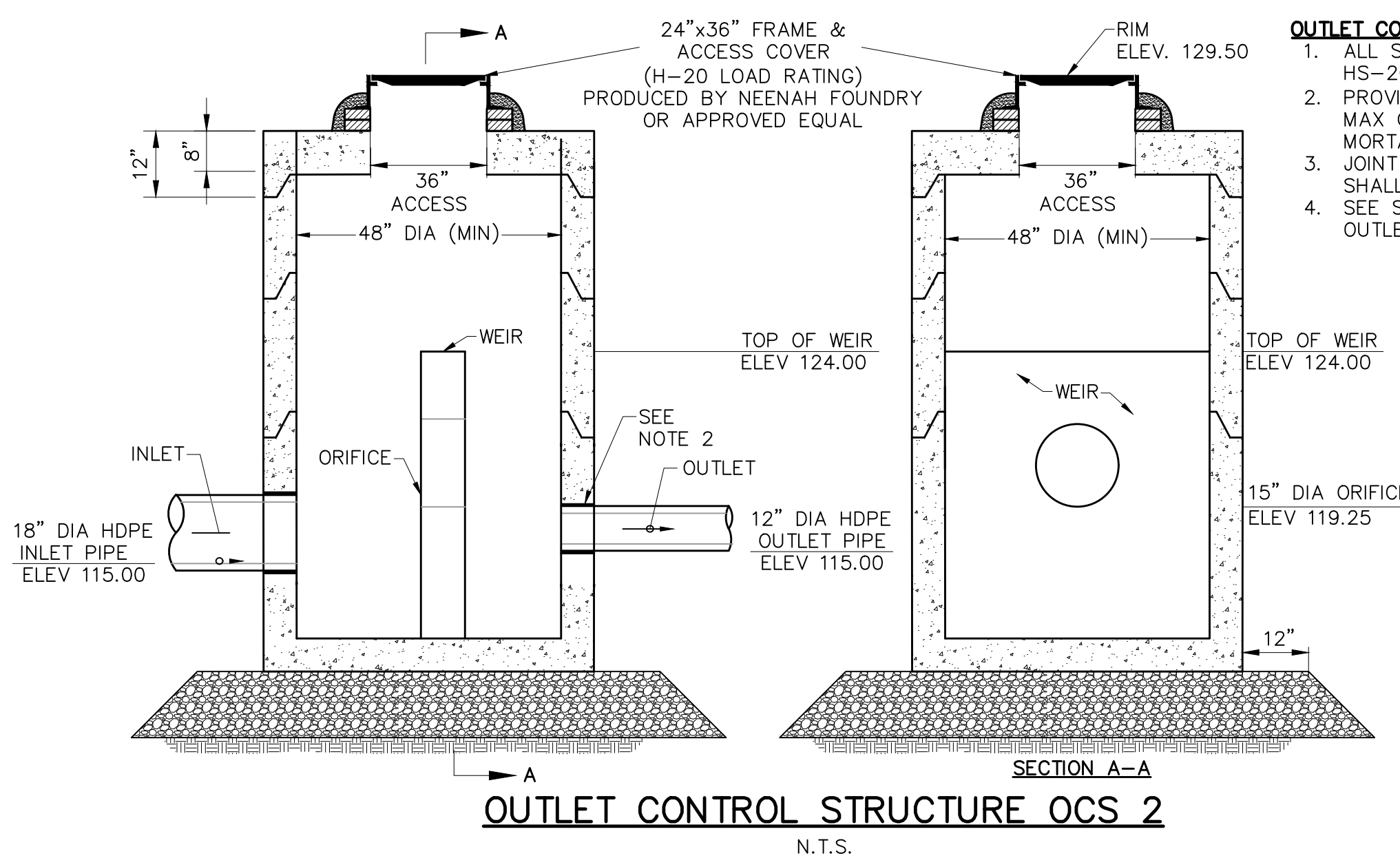
OUTLET CONTROL STRUCTURE OCS 3

N.T.S.

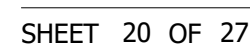
1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
2. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
4. SEE SHEET C-6 FOR PLAN VIEW AND OUTLET CONTROL STRUCTURE LOCATION.



1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
2. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
4. SEE SHEET C-6 FOR PLAN VIEW AND OUTLET CONTROL STRUCTURE LOCATION.



1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
2. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
4. SEE SHEET C-6 FOR PLAN VIEW AND OUTLET CONTROL STRUCTURE LOCATION.



PERMITTING SET - NOT FOR CONSTRUCTION

IMPORTANT - NOTES FOR THE BIDDING AND
INSTALLATION OF THE SC-740 SYSTEM

- STORMTECH SC-310 & SC-740 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
- STORMTECH SC-310 & SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/SC-780 CONSTRUCTION GUIDE".
- CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
 - STONE SHOOTER 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.
- THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
- JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
- MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4-2" (20-50 mm).
- THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
- 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

- STORMTECH SC-310 & SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/SC-780 CONSTRUCTION GUIDE".
- THE USE OF CONSTRUCTION EQUIPMENT OVER SC-310 & SC-740 CHAMBERS IS LIMITED:
 - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
 - NO RUBBER Tired LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/SC-780 CONSTRUCTION GUIDE".
 - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/SC-780 CONSTRUCTION GUIDE".
- 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 THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY 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.

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

PLEASE NOTE:

- 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".
- STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
- 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.

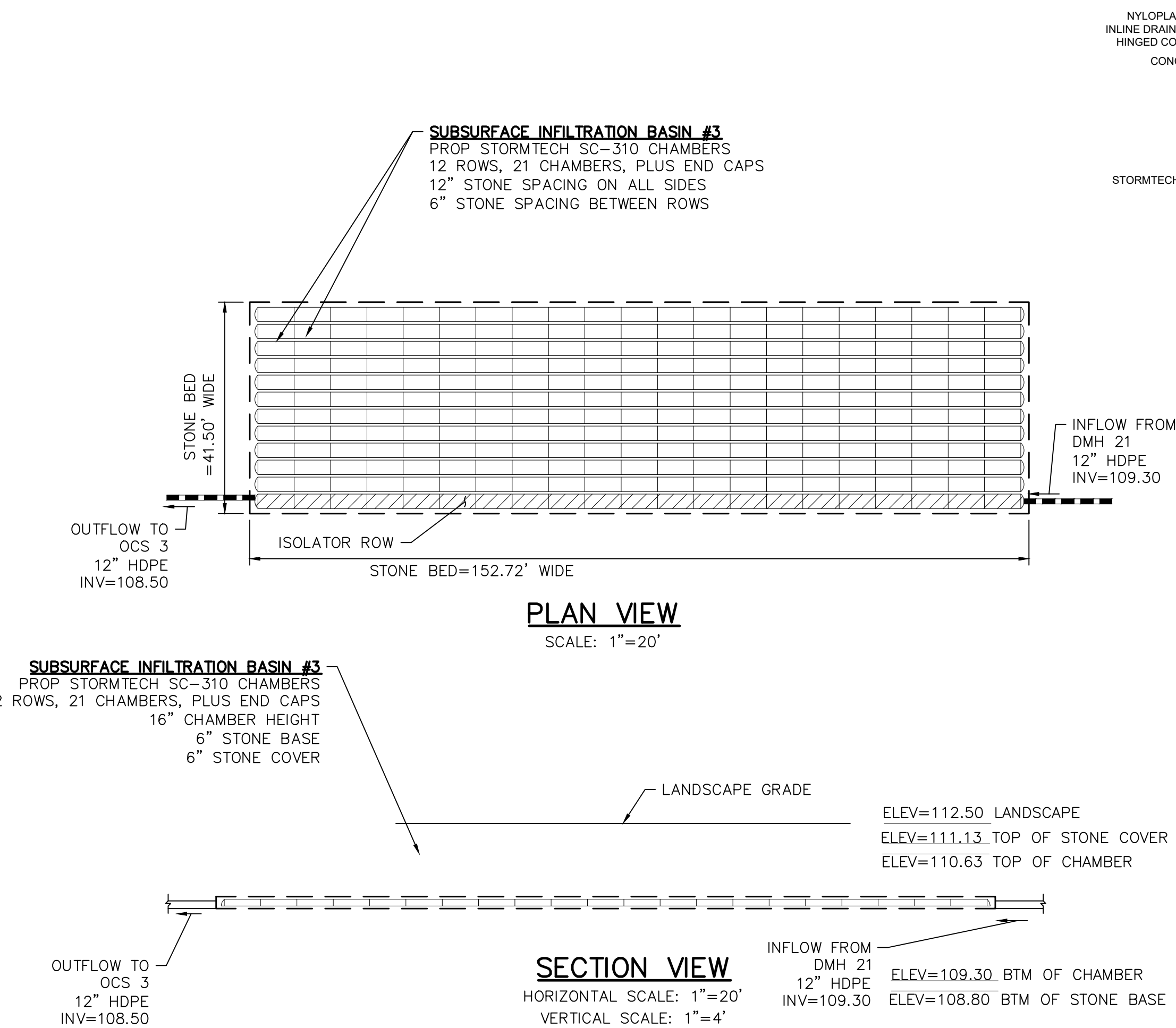
SC-740 ACCEPTABLE FILL MATERIALS

N.T.S.

- CHAMBERS SHALL BE STORMTECH SC-310.
- CHAMBERS SHALL BE MANUFACTURED FROM VIRGIN POLYPROPYLENE OR POLYETHYLENE RESINS.
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORT PANELS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
- 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.
- CHAMBERS SHALL MEET ASTM F2922 (POLYETHYLENE) OR ASTM F2418-16 (POLYPROPYLENE), "STANDARD SPECIFICATION FOR THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- CHAMBERS SHALL BE DESIGNED AND ALLOWABLE LOADS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. THE CHAMBER MANUFACTURER SHALL SUBMIT THE FOLLOWING UPON REQUEST TO THE SITE DESIGN ENGINEER FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE:
 - A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES 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 AASHTO FOR THERMOPLASTIC PIPE.
 - A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET. THE 50 YEAR CREEP MODULUS DATA SPECIFIED IN ASTM F2418 OR ASTM F2922 MUST BE USED AS PART OF THE AASHTO STRUCTURAL EVALUATION TO VERIFY LONG-TERM PERFORMANCE.
- CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

SC-740 CHAMBER SPECIFICATION

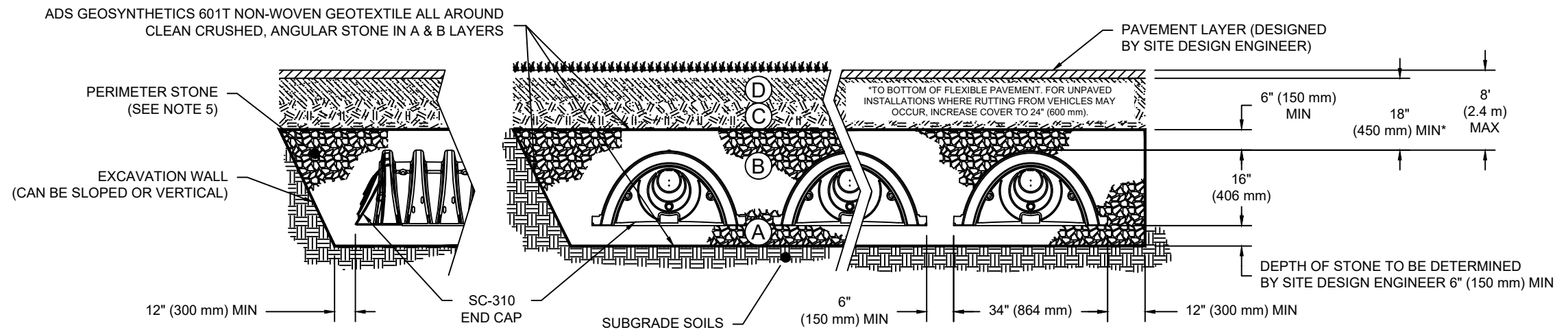
N.T.S.



****FINAL DESIGN OF SUBSURFACE INFILTRATION BASIN SHALL BE PROVIDED BY STORMTECH PRIOR TO ENDORSEMENT OF THE SITE PLANS****

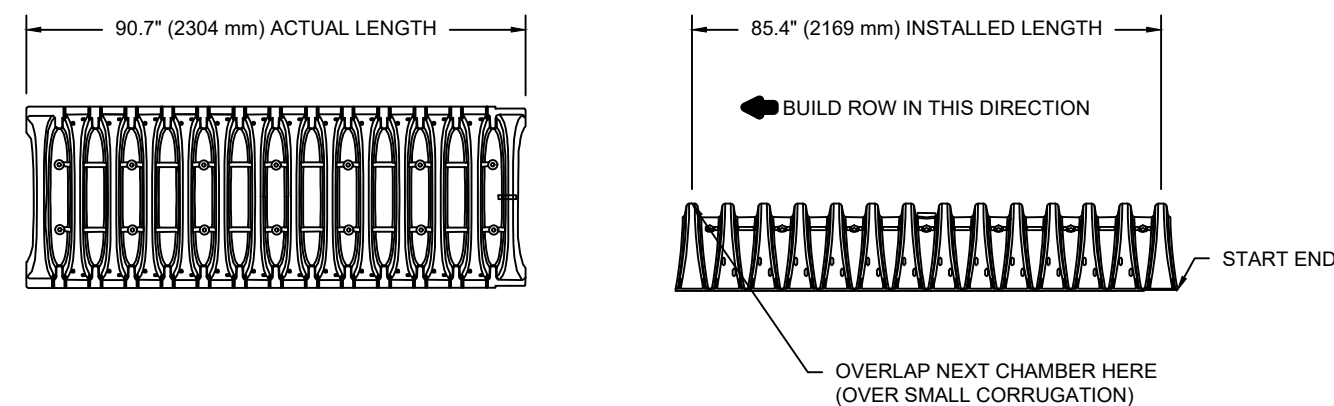
NOTES:

- SC-310 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- SC-310 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.



SC-740 STANDARD CROSS SECTION

N.T.S.



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)

CHAMBER STORAGE

MINIMUM INSTALLED STORAGE*

WEIGHT

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

PRE-FAB STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"

PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"

PRE-CORED END CAPS END WITH "PC"

PART #	STUB	A	B	C
SC310EPE06T / SC310EPE06TPC	6" (150 mm)	9.6" (244 mm)	5.8" (147 mm)	---
SC310EPE08B / SC310EPE08BPC	---	---	---	0.5" (13 mm)
SC310EPE08T / SC310EPE08TPC	8" (200 mm)	11.9" (302 mm)	3.5" (89 mm)	---
SC310EPE08B / SC310EPE08BPC	---	---	---	0.6" (15 mm)
SC310EPE10T / SC310EPE10TPC	10" (250 mm)	12.7" (323 mm)	1.4" (36 mm)	---
SC310EPE10B / SC310EPE10BPC	---	---	---	0.7" (18 mm)
SC310EPE12B	12" (300 mm)	13.5" (343 mm)	---	0.9" (23 mm)

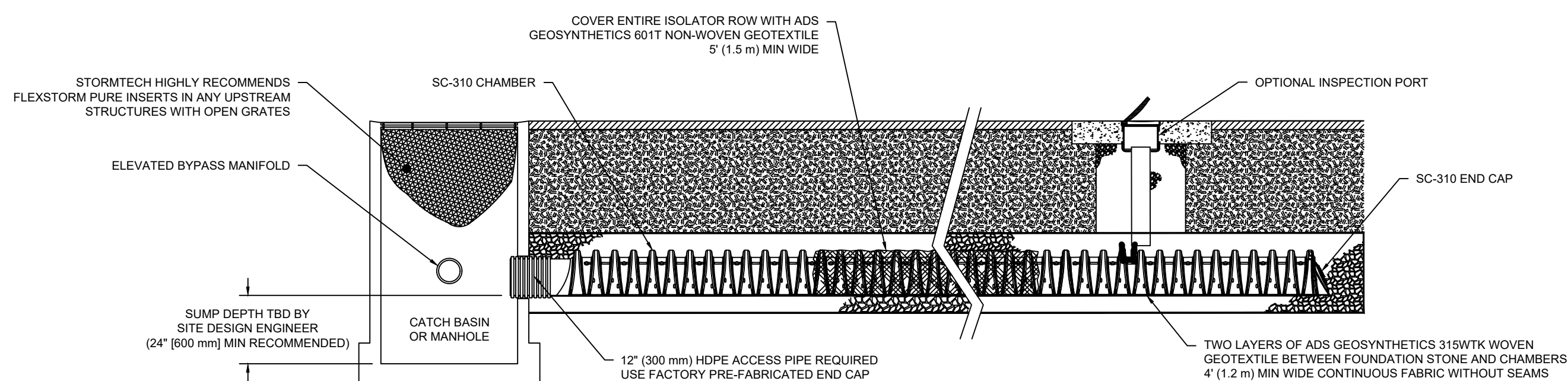
ALL STUBS, EXCEPT FOR THE SC310EPE12B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

* FOR THE SC310EPE12B THE 12" (300 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 0.25" (6 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL.

SC-740 TECHNICAL SPECIFICATION

N.T.S.



SC-740 ISOLATOR ROW

N.T.S.

PERMITTING SET - NOT FOR CONSTRUCTION



TEC, Inc.

146 Dascomb Road
Andover, MA 01810
(978) 794-1792
www.TheEngineeringCorp.com

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

DESIGNED BY	CPR
DRAWN BY	DGR
CHECKED BY	RJF
DATE	10/31/2018
SCALE	N.T.S.

PREPARED FOR

Dascomb Road
Development, LLC
354 Merrimack Street
Suite 1
Lawrence, MA 01843

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

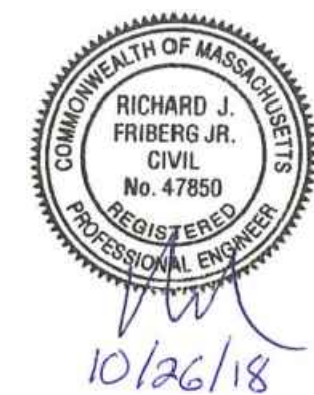
The Dascomb Road
Project

PROJECT LOCATION

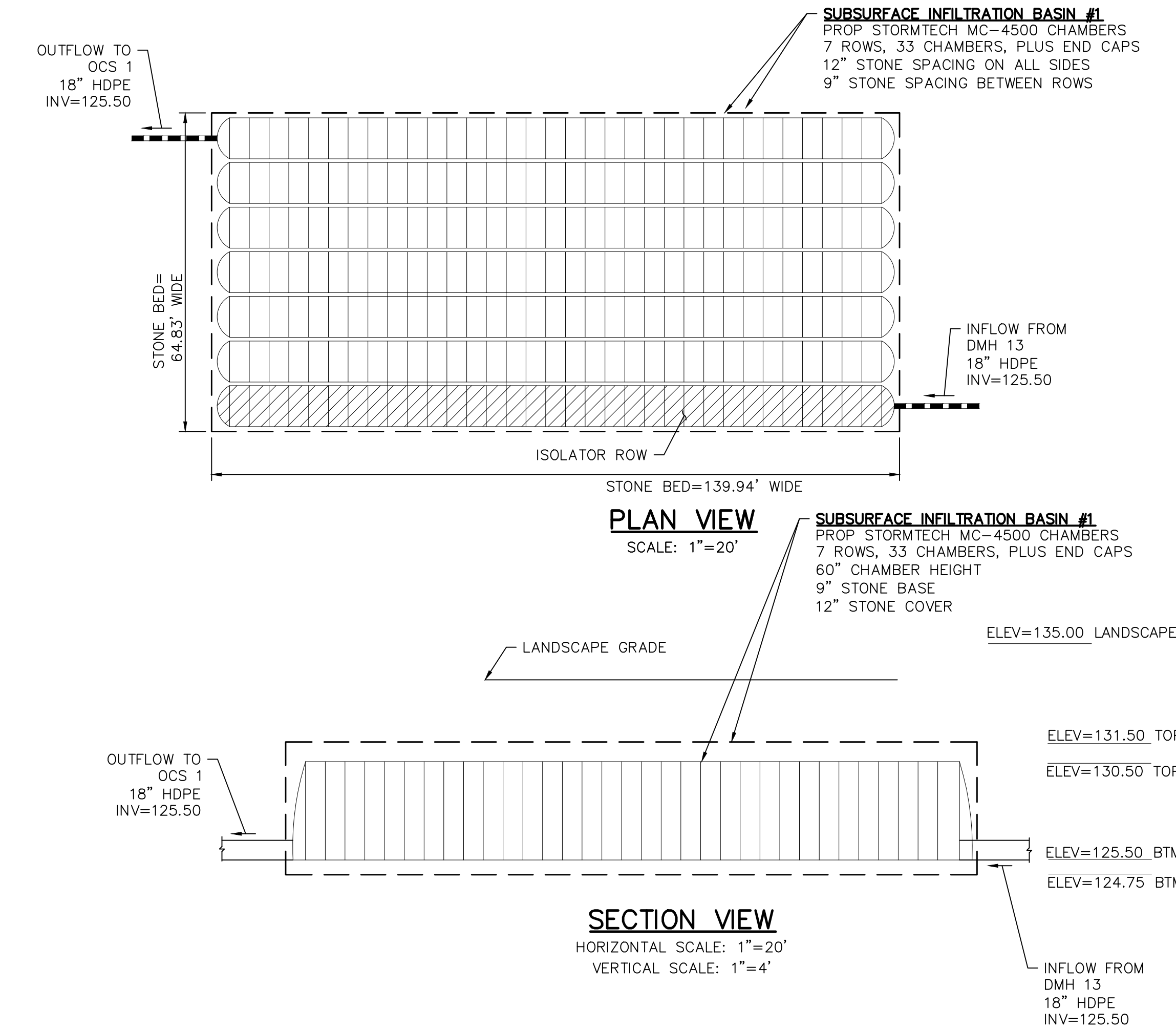
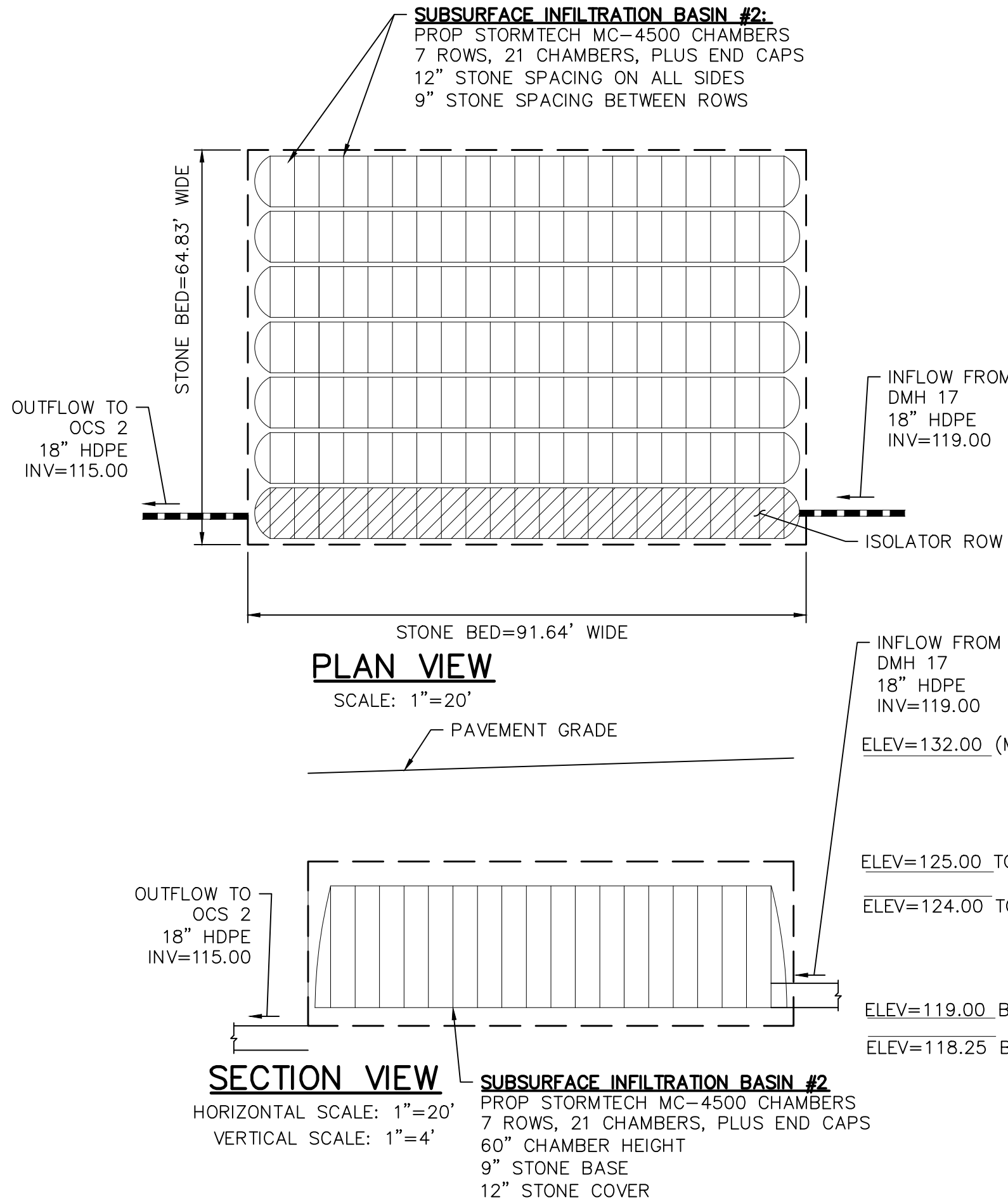
146 Dascomb Road
Andover, MA

DRAWING TITLE

Construction Details



PROJECT NO.
T0681
TEC CAD FILE
T0681_DET.dwg
DRAWING NO.
C-21
SHEET 21 OF 27



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' 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" (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' 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' 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. **

- PLEASE NOTE:
- 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".
 - 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.
 - 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 DESIGN, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.

MC-4500 ACCEPTABLE FILL MATERIALS

N.T.S.

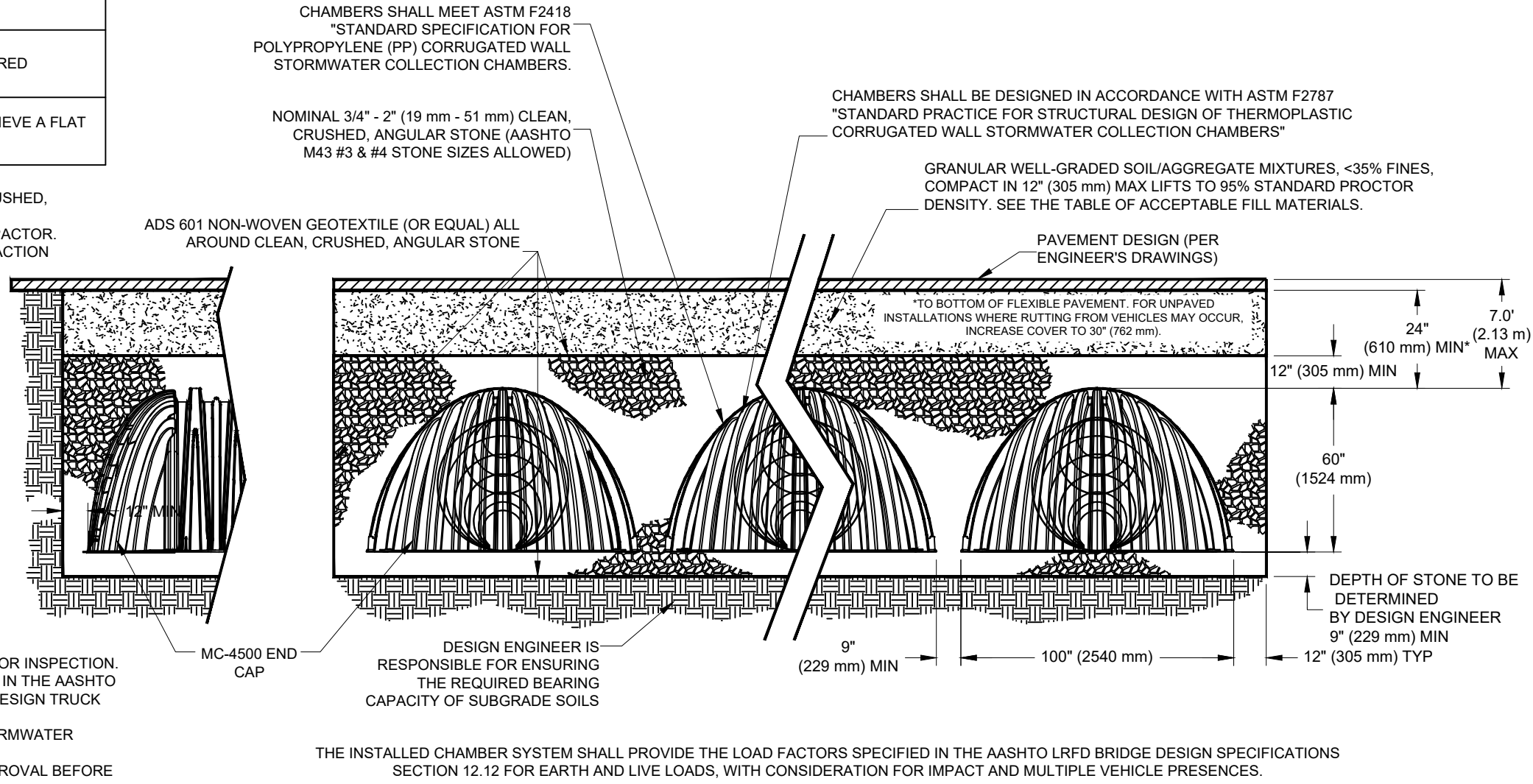
- CHAMBERS SHALL BE STORMTECH MC-4500 OR APPROVED EQUAL.
- CHAMBERS SHALL BE MADE FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORT PANELS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
- THE STRUCTURAL 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.
- CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F 2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- ONLY CHAMBERS THAT ARE APPROVED BY THE ENGINEER WILL BE ALLOWED. THE CONTRACTOR SHALL SUBMIT (3 SETS) OF THE FOLLOWING TO THE ENGINEER FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE:
 - A STRUCTURAL EVALUATION BY A REGISTERED STRUCTURAL ENGINEER THAT DEMONSTRATES THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12 ARE MET.
 - THE STRUCTURAL CROSS SECTION DETAIL ON WHICH THE STRUCTURAL CROSS SECTION IS BASED.
- THE INSTALLATION OF CHAMBERS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S LATEST INSTALLATION INSTRUCTIONS.

MC-4500 CHAMBER SPECIFICATION

N.T.S.

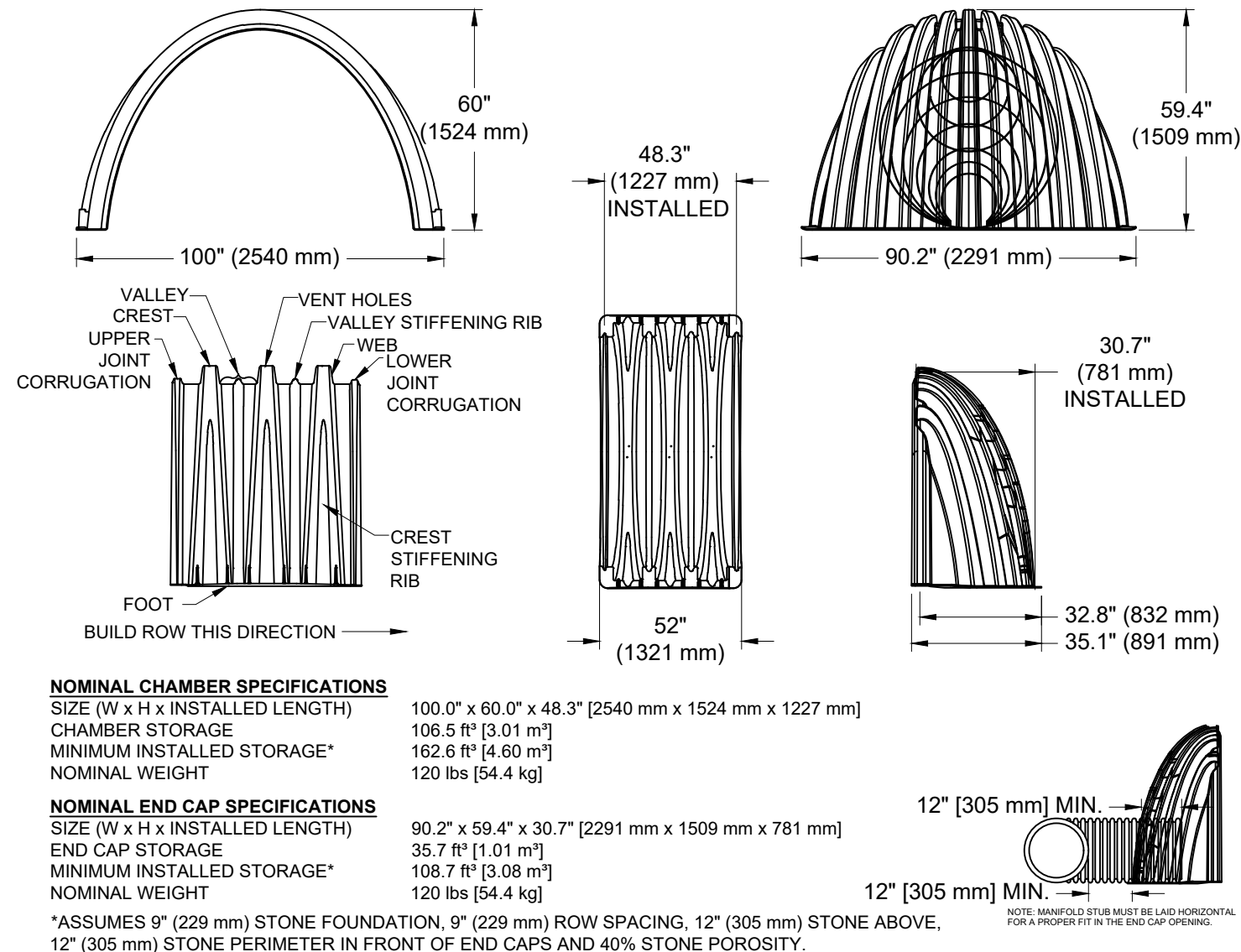
NOTES:

- 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.



MC-4500 STANDARD CROSS SECTION

N.T.S.



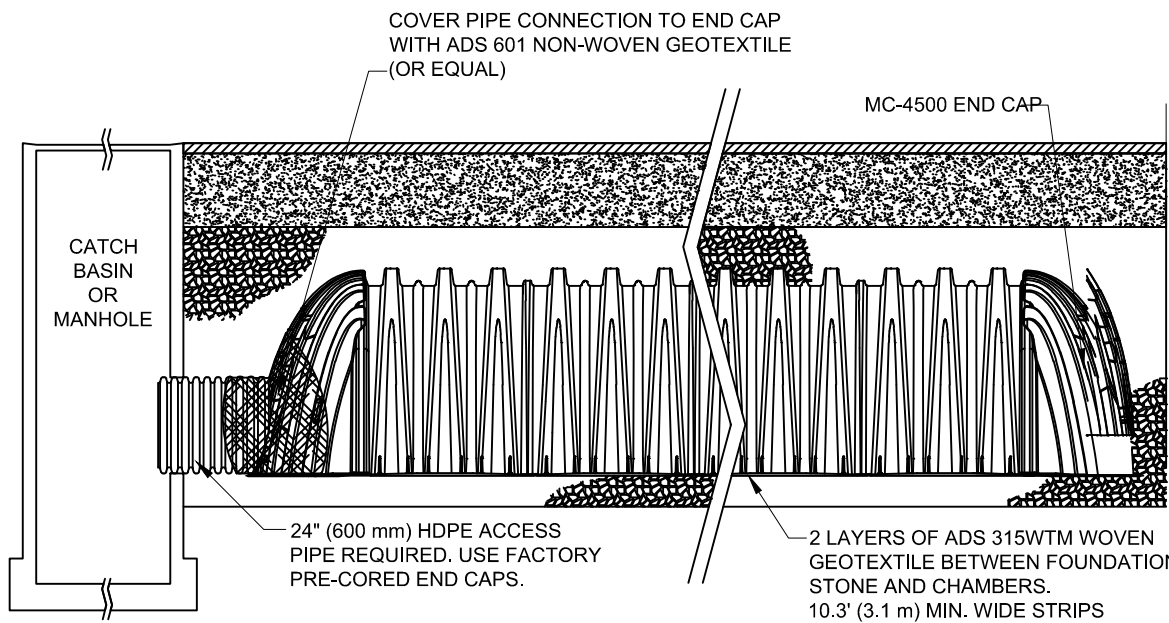
PART NUMBERS ENDING WITH "B" ARE FOR STUBS AT BOTTOM OF END CAP.
PART NUMBERS ENDING WITH "T" ARE FOR STUBS AT TOP OF END CAP.

PART #	STUB	B	C
MC4500REPE06T	6" (150 mm)	42.54" (1081 mm)	N/A
MC4500REPE08B	8" (200 mm)	N/A	0.86" (22 mm)
MC4500REPE08T	8" (200 mm)	40.50" (1029 mm)	N/A
MC4500REPE08B	8" (200 mm)	N/A	1.01" (26 mm)
MC4500REPE10T	10" (250 mm)	38.37" (975 mm)	N/A
MC4500REPE10B	10" (250 mm)	N/A	1.13" (29 mm)
MC4500REPE12T	12" (300 mm)	35.89" (907 mm)	N/A
MC4500REPE12B	12" (300 mm)	N/A	1.55" (39 mm)
MC4500REPE15T	15" (375 mm)	32.72" (831)	N/A
MC4500REPE15B	15" (375 mm)	N/A	1.70" (43 mm)
MC4500REPE18T	18" (450 mm)	29.36" (746 mm)	N/A
MC4500REPE18B	18" (450 mm)	N/A	1.97" (50 mm)
MC4500REPE24T	24" (600 mm)	23.05" (580 mm)	N/A
MC4500REPE24B	24" (600 mm)	N/A	2.26" (57 mm)
MC4500REPE30B	30" (750 mm)	N/A	2.59" (65 mm)
MC4500REPE36B	36" (900 mm)	N/A	3.25" (83 mm)
MC4500REPE42B	42" (1050 mm)	N/A	3.55" (90 mm)

NOTE: ALL DIMENSIONS ARE NOMINAL

MC-4500 TECHNICAL SPECIFICATION

N.T.S.



MC-4500 ISOLATOR ROW

N.T.S.

PERMITTING SET - NOT FOR CONSTRUCTION



TEC, Inc.

146 Dascomb Road
Andover, MA 01810
(978) 794-1792
www.TheEngineeringCorp.com

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

DESIGNED BY CPR
DRAWN BY DGR
CHECKED BY RJF
DATE 10/31/2018
SCALE N.T.S.

PREPARED FOR

Dascomb Road
Development, LLC
354 Merrimack Street
Suite 1
Lawrence, MA 01843

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

The Dascomb Road
Project

PROJECT LOCATION

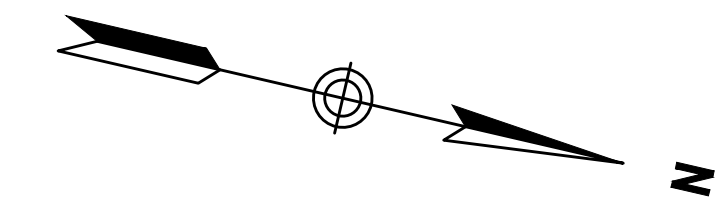
146 Dascomb Road
Andover, MA

DRAWING TITLE

Construction Details



PROJECT NO. T0681
TEC CAD FILE T0681_DET.dwg
DRAWING NO. C-22
SHEET 22 OF 27



TEC, Inc.

146 Dascomb Road
Andover, MA 01810
(978) 794-1792
www.TheEngineeringCorp.com

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

DESIGNED BY	CPR
DRAWN BY	DGR
CHECKED BY	RJF
DATE	10/31/2018
SCALE	1" = 60'

PREPARED FOR

Dascomb Road
Development, LLC
354 Merrimack Street
Suite 1
Lawrence, MA 01843

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

The Dascomb Road
Project

PROJECT LOCATION

146 Dascomb Road
Andover, MA

DRAWING TITLE

Construction Details

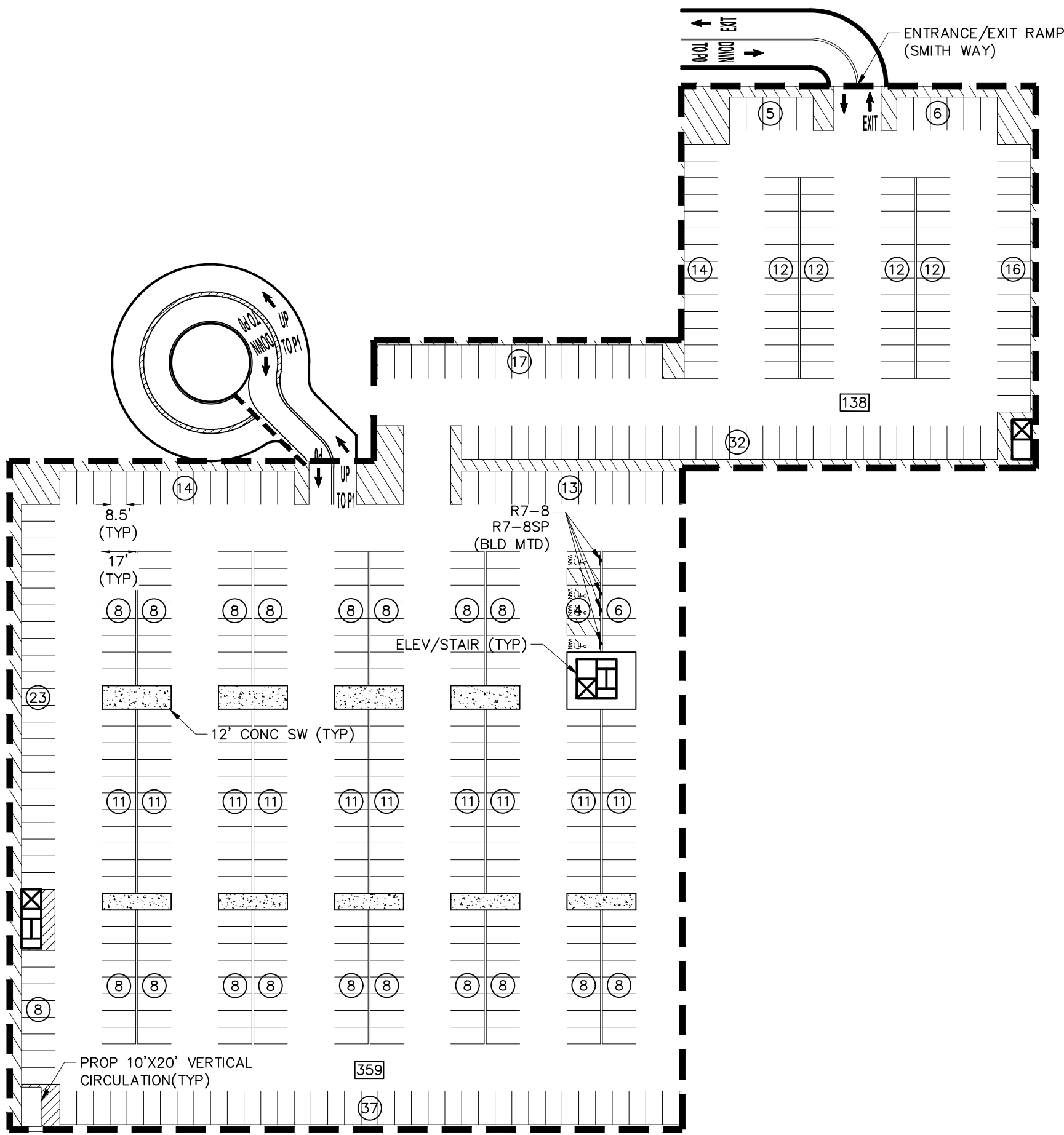


PROJECT NO.
T0681

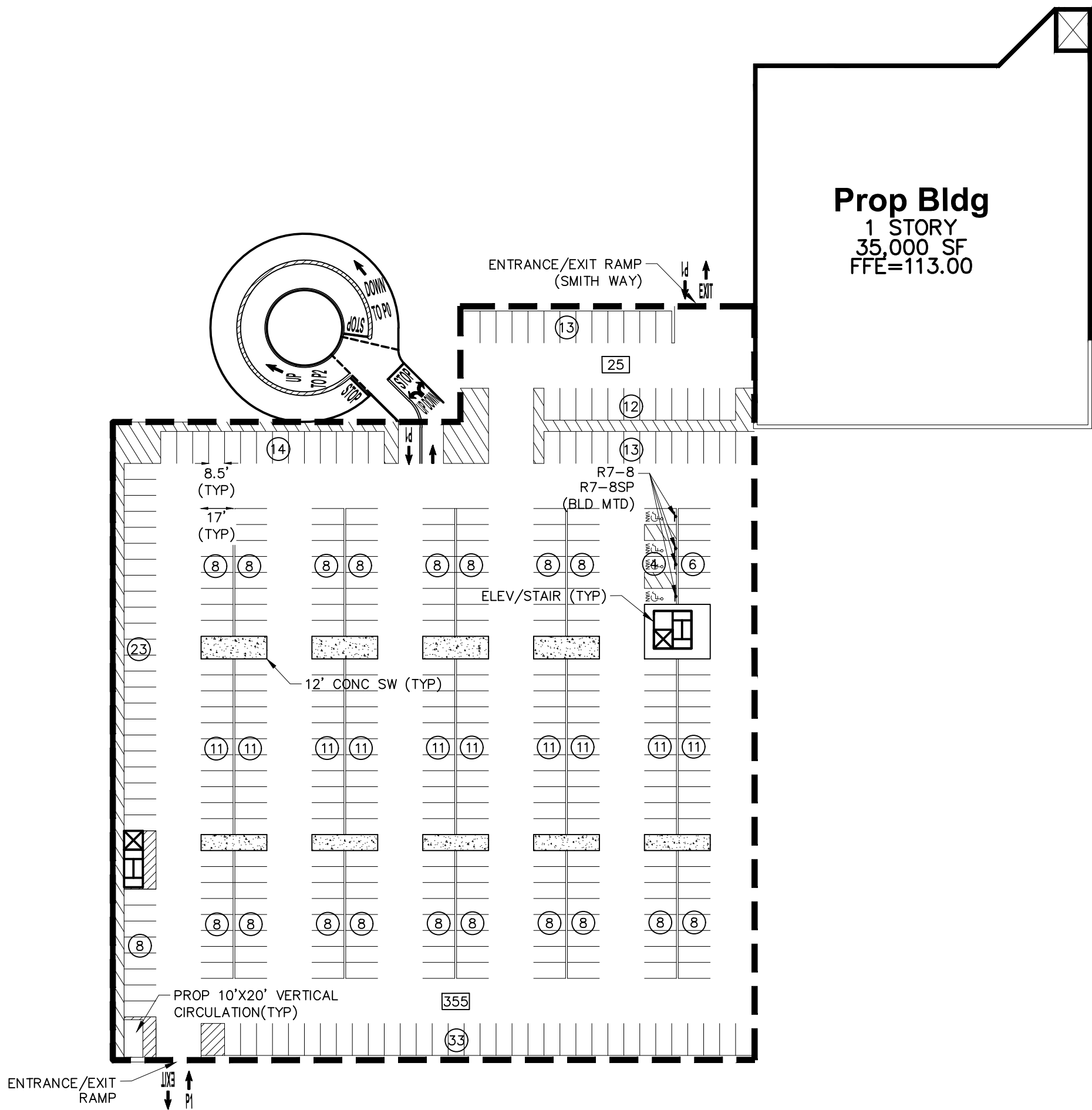
TEC CAD FILE
T0681_PS.dwg

DRAWING NO.
C-23

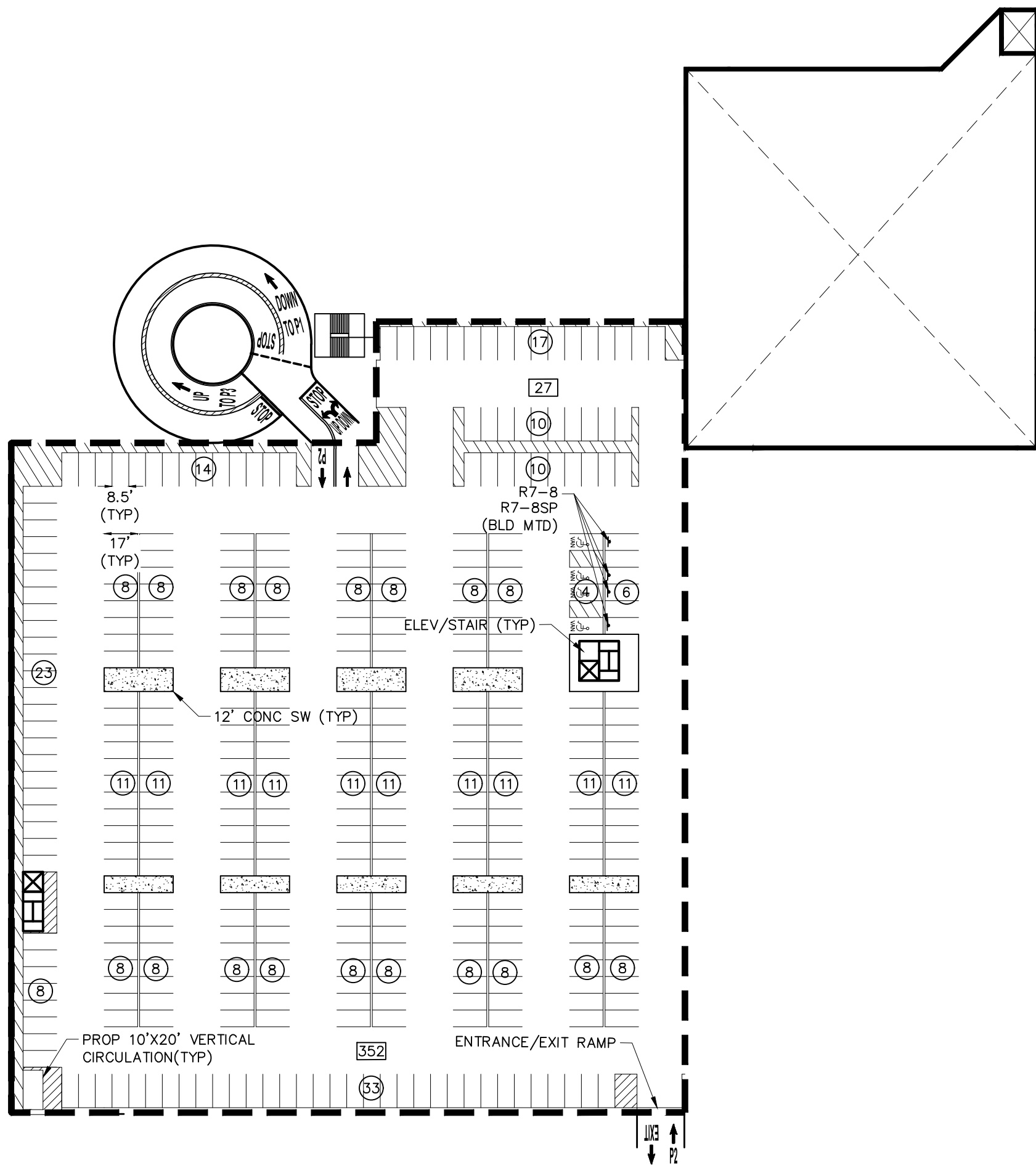
SHEET 23 OF 27



LEVEL 0 LAYOUT &
MATERIALS
FFE=102.00



LEVEL 1 LAYOUT &
MATERIALS
FFE=113.00



LEVEL 2 LAYOUT &
MATERIALS
FFE=124.00

NOTES:

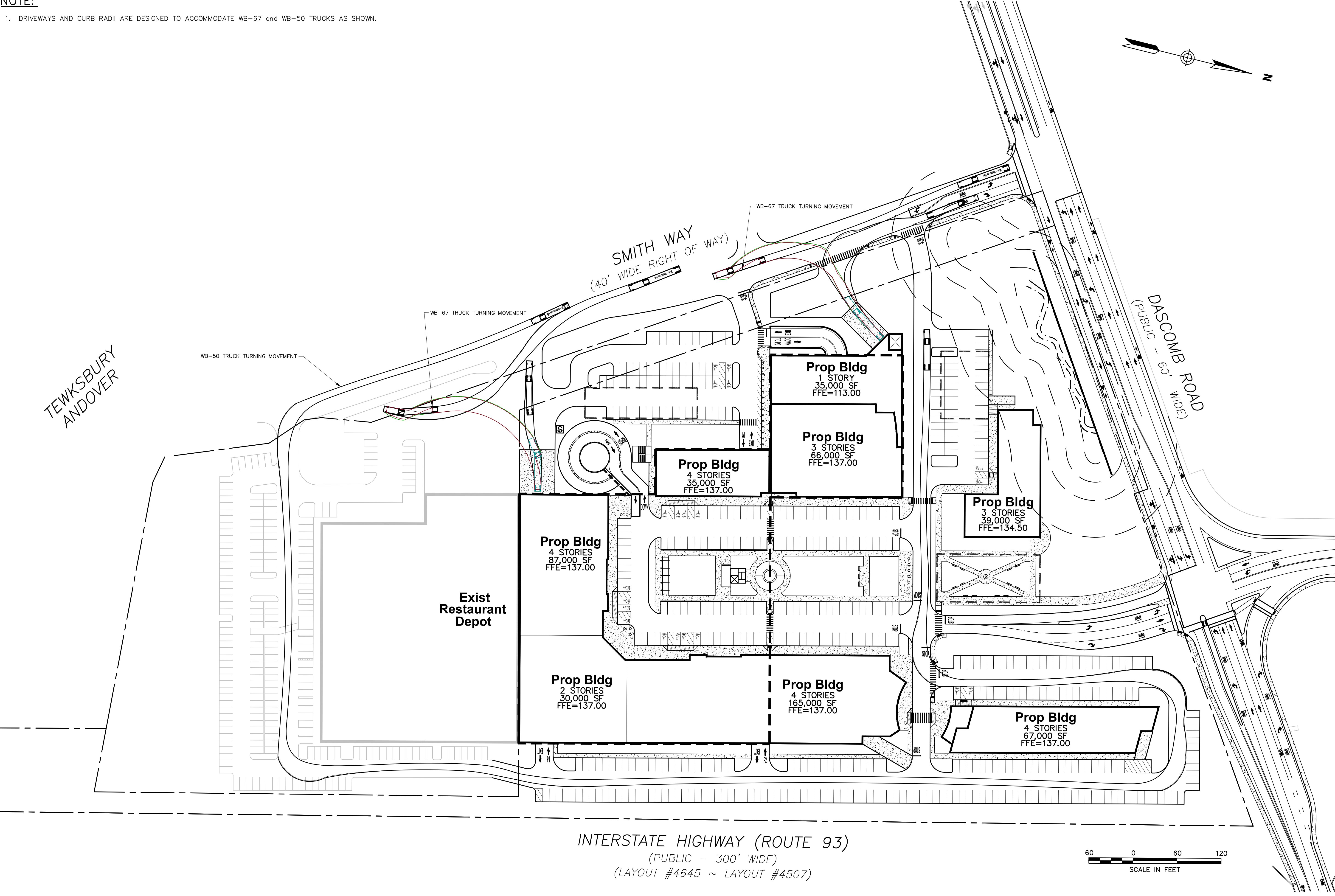
1. FINAL DESIGN OF GRADING WITHIN PARKING DECK SHALL BE PROVIDED AS PART OF STRUCTURAL DESIGN PLANS WITH BUILDING PERMIT PACKAGE.
2. FINAL DESIGN OF PLUMBING SHALL BE PROVIDED BY MEP ENGINEER AS PART OF BUILDING PERMIT PACKAGE.



PERMITTING SET - NOT FOR CONSTRUCTION

NOTE:

1. DRIVEWAYS AND CURB RADII ARE DESIGNED TO ACCOMMODATE WB-67 and WB-50 TRUCKS AS SHOWN.



TEC, Inc.

146 Dascomb Road
Andover, MA 01810
(978) 794-1792
www.TheEngineeringCorp.com

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

DESIGNED BY	CPR
DRAWN BY	DGR
CHECKED BY	RJF
DATE	10/31/2018
SCALE	1" = 60'

PREPARED FOR

Dascomb Road
Development, LLC
354 Merrimack Street
Suite 1
Lawrence, MA 01843

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

The Dascomb Road
Project

PROJECT LOCATION

146 Dascomb Road
Andover, MA

DRAWING TITLE

WB-67 & WB-50
Truck Turning
Movements



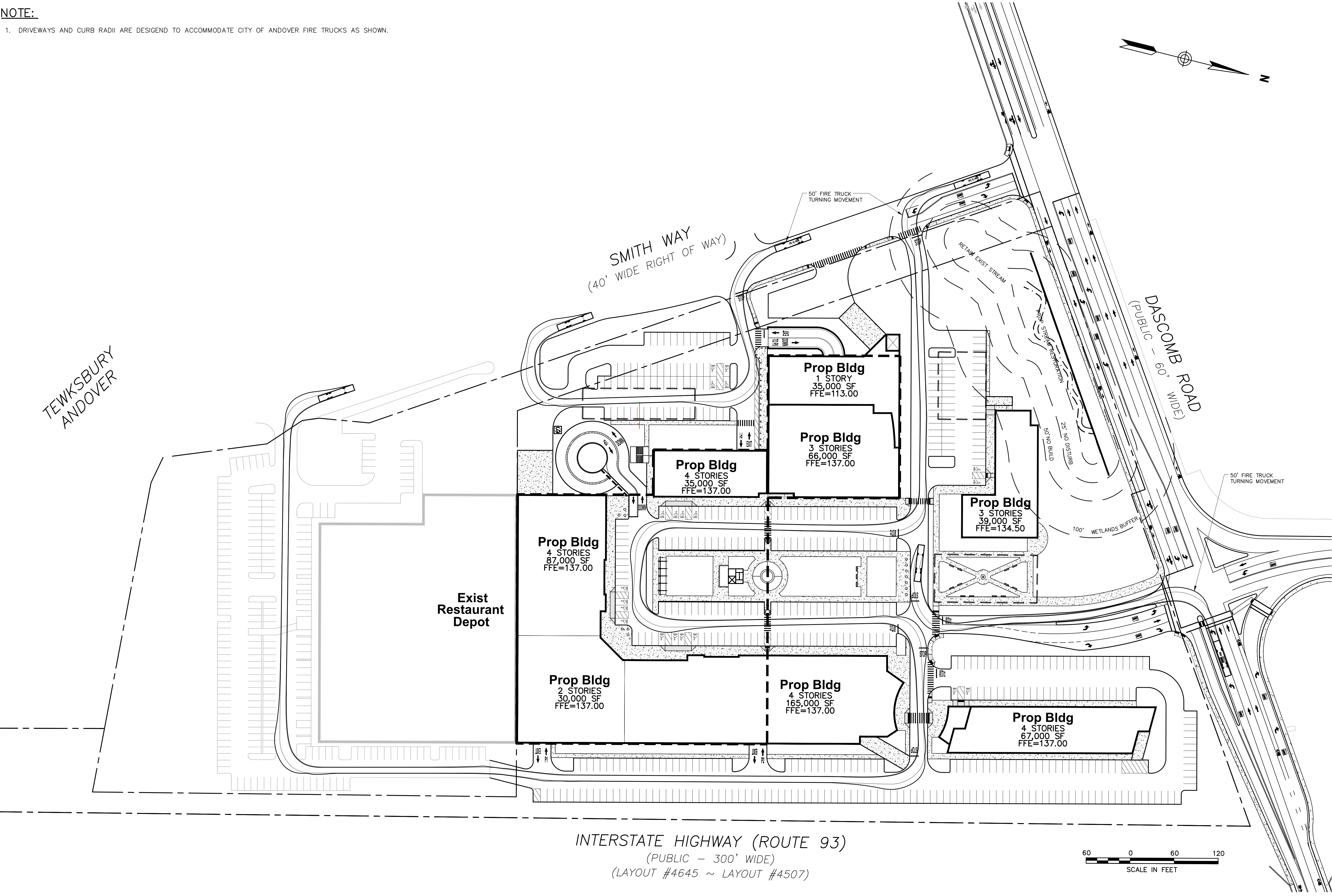
PROJECT NO.
T0681

TEC CAD FILE
T0681_WB67.dwg

DRAWING NO.
C-24

SHEET 24 OF 27

NOTE:
1. DRIVEWAYS AND CURB RADII ARE DESIGEND TO ACCOMMODATE CITY OF ANDOVER FIRE TRUCKS AS SHOWN.



TEC, Inc.
146 Dascomb Road Andover, MA 01810
(978) 794-1792
www.TheEngineeringCorp.com
169 Ocean Boulevard Unit 101, PO Box 249 Hampton, NH 03842
(603) 601-8154

DESIGNED BY	CPR
DRAWN BY	DGR
CHECKED BY	RJF
DATE	10/31/2018
SCALE	1" = 60'

PREPARED FOR
Dascomb Road Development, LLC
354 Merrimack Street Suite 1
Lawrence, MA 01843

REVISIONS

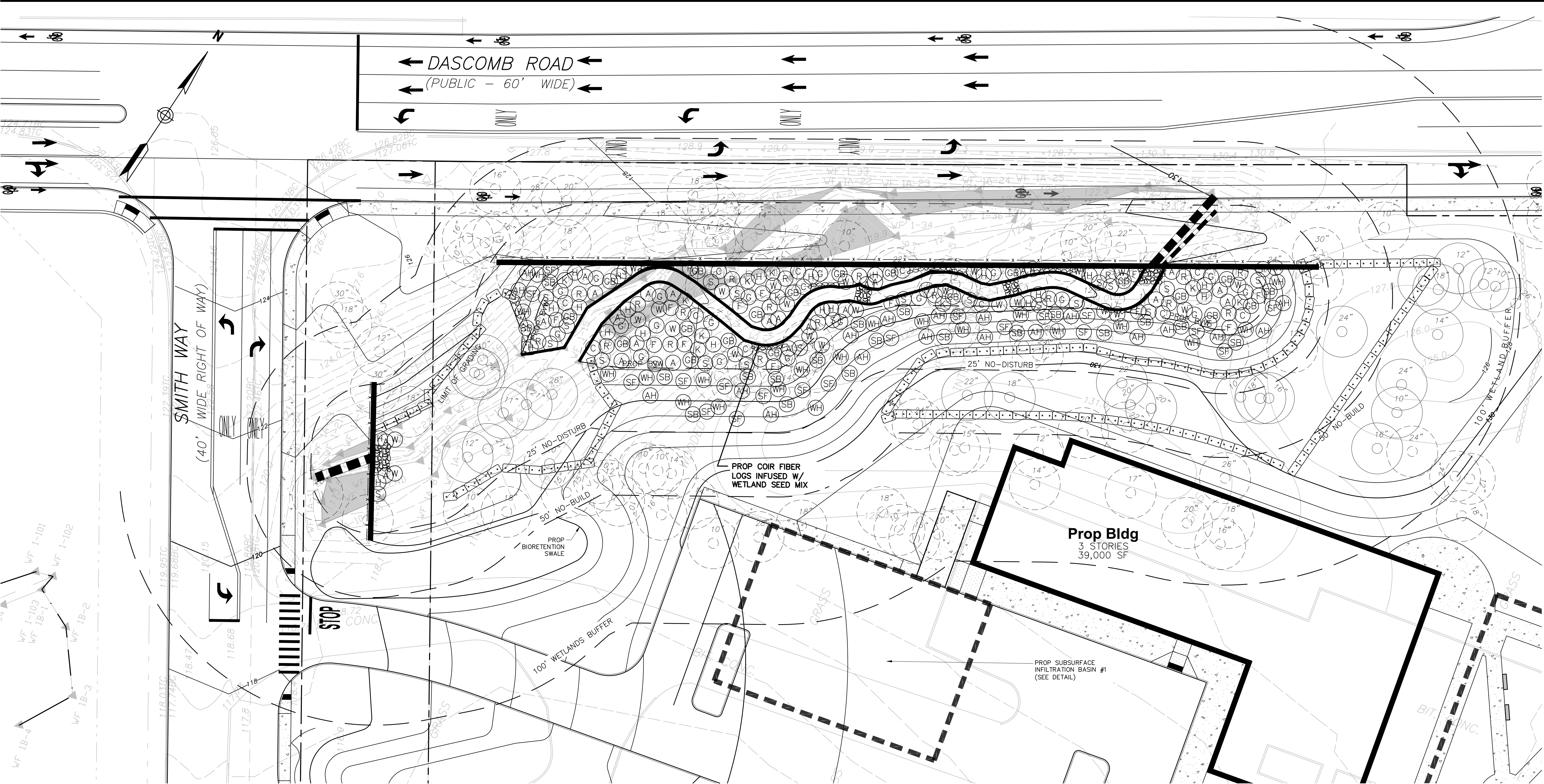
ISSUED FOR
Permitting

PROJECT TITLE
The Dascomb Road Project

PROJECT LOCATION
146 Dascomb Road Andover, MA

DRAWING TITLE
Andover Fire Truck Turning

	PROJECT NO.	T0681
	TEC CAD FILE	T0681_FIRE.dwg
	DRAWING NO.	C-25
	SHEET	25 OF 27



BANK RESTORATION AREA PLANTING TABLE

STRATUM	BANK PLANT SPECIES	SIZE	SPACING
TREE	Red maple (R) (Acer rubrum) Green ash (G) Fraxinus pennsylvanica)	4'-6' specimens	18 trees (9 of each species) planted on 10-foot centers throughout the restoration area. A total of 10 trees to be planted per 1,000 ft ² of buffer zone.
SHRUB	Silky dogwood (S) (Cornus amomum) Highbush blueberry (H) (Vaccinium corymbosum) Winterberry (W) (Ilex verticillata)	18"-24" stock	30 shrubs (10 of each species) planted on 8-foot centers throughout the restoration area. A total of 15 shrubs to be planted per 1,000 ft ² of buffer zone.
HERBACEOUS	New England Erosion Control/Restoration mix for Moist Sites*	N/A	1.0 lb. per 1,250 ft ² sown on all exposed soils.

* Mix contains the following species: Virginia Wild Rye (Elymus virginicus), Creeping Red Fescue (Festuca rubra), Little Bluestem (Schizachyrium scoparium), Big Bluestem (Andropogon gerardii), Fox Sedge (Carex vulpinoidea), Switch Grass (Panicum virgatum), Rough Bentgrass (Agrostis scabra), New England Aster (Aster novae-angliae), Boneset (Eupatorium perfoliatum), Grass Leaved Goldenrod (Euthamia graminifolia), Green Bulrush (Scirpus atrovirens), Blue Vervain (Verbena hastata), Soft Rush (Juncus effusus), Wool Grass (Scirpus cyperinus).

Note: 100% straw fiber erosion control blankets stitch-bonded to a photodegradable net on both top and bottom, suitable for moderate-flow runoff conditions will be installed on graded side slopes of the stream channel.

WETLAND REPLICATION AREA PLANTING TABLE

STRATUM	WETLAND PLANT SPECIES	SIZE	SPACING
TREE	Red maple (R) (Acer rubrum) American Elm (E) (Ulmus americana) Green Ash (G) (Fraxinus pennsylvanica)	4'-6' specimens	66 trees (22 of each species) planted on 10-foot centers throughout the restoration area. A total of 10 trees to be planted per 1,000 ft ² of buffer zone.
SHRUB	Arrowwood (A) (Viburnum dentatum) Highbush blueberry (H) (Vaccinium corymbosum) Winterberry (W) (Ilex verticillata)	18"-24" stock	102 shrubs (34 of each species) planted on 8-foot centers throughout the restoration area. A total of 15 shrubs to be planted per 1,000 ft ² of buffer zone.
HERBACEOUS	Cinnamon Fern (C) (Osmunda cinnamomea) Sensitive Fern (F) (Onoclea sensibilis) Skunk Cabbage (K) (Symplocarpus foetidus)	1 gallon pots 1 gallon pots Bare rooted	210 shrubs (70 of each species) planted on 5-foot centers throughout the restoration area or as directed by Agent/Environmental Monitor.
	Wetland Seed Mix*	N/A	2.5 lbs. (1.0 lb. per 2,500 sqft) sown on all exposed soils.

*New England WETMIX or approved equal, available at New England Wetland Plants, Inc. Mix contains the following species: Fox Sedge (Carex vulpinoidea), Virginia Wild Rye (Elymus virginicus), Blue Vervain (Verbena Hastata), Fringed Sedge (Carex crinita), Shallow Sedge (Carex lurida), American Manna Grass (Glyceria grandis), Fowl Manna Grass (Glyceria striata), Soft Rush (Juncus effusus), Wool Grass (Scirpus cyperinus), Eastern Lesser Bur Reed (Sparganium americanum), Giant Bur Reed (Sparganium eurycarpum), Green Bulrush (Scirpus atrovirens), Bristly Sedge (Carex comosa), Nodding Sedge (Carex gynandra), Hop Sedge (Carex lupulina), Rattlesnake Grass (Glyceria canadensis), Red Top (Agrostis alba), Switchgrass (Panicum virgatum).

25-FOOT NO DISTURB ZONE RESTORATION AREA PLANTING TABLE

STRATUM	NO DISTURB ZONE PLANT SPECIES	SIZE	SPACING
TREE	Black Cherry (B) (Prunus serotina) White Oak (WO) (Quercus alba) Red Oak (RO) (Quercus rubra) Sugar maple (M) (Acer saccharum)	4'-6' specimens	128 trees (32 of each species) planted on 10-foot centers throughout the restoration area. A total of 10 trees to be planted per 1,000 ft ² of buffer zone.
SHRUB	American hazelnut (AH) (Corylus americana) Witch Hazel (WH) (Hamamelis virginiana) Alternate-leaf Dogwood (W) (Cornus alternifolia)	18"-24" stock	195 shrubs (65 of each species) planted on 8-foot centers throughout the restoration area. A total of 15 shrubs to be planted per 1,000 ft ² of buffer zone.
HERBACEOUS	Wetland Seed Mix*	N/A	1.0 lb. per 1,250 ft ² sown on all exposed soils.

* Mix contains the following species: Creeping Red Fescue (Festuca rubra), Canada Wild Rye (Elymus canadensis), Annual Ryegrass (Lolium multiflorum), Perennial Ryegrass (Lolium perenne), Blue Grama (Bouteloua gracilis), Little Bluestem (Schizachyrium scoparium), Indian Grass (Sorghastrum nutans), Rough Bentgrass (Agrostis scabra), Upland Bentgrass (Agrostis perennans).

BWV REPLICATION AREA
SHRUB

- (S) Silky dogwood (Cornus amomum)
- (H) Highbush blueberry (Vaccinium corymbosum)
- (W) Winterberry (Ilex verticillata)
- (A) Northern Arrowwood (Viburnum dentatum)
- (C) Cinnamon Fern (Osmunda cinnamomea)
- (F) Sensitive Fern (Onoclea sensibilis)
- (K) Skunk Cabbage (Symplocarpus foetidus)

TREE

- (R) Red maple (Acer rubrum)
- (G) Green ash (Fraxinus pennsylvanica)
- (GB) Gray Birch (Betula populifolia)

NOTES:

1. WETLAND SEED MIX (1.0 LBS/2500 SF) SOWN ON ALL EXPOSED SOILS.

25 FOOT NO DISTURB RESTORATION AREA
SHRUB

- (SF) Sweet fern (Comptonia peregrina)
- (AH) American hazelnut (Corylus americana)
- (WH) Witch hazel (Hamamelis virginiana)
- (SB) Serviceberry (Amelanchier canadensis)

NOTES:

1. SEED WITH NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DRY SITES (1.0 LBS/1250 SF). SOW ALL EXPOSED SOILS.

LEGEND



TEC, Inc.

146 Dascomb Road
Andover, MA 01810
(978) 794-1792
www.TheEngineeringCorp.com

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

DESIGNED BY	CPR
DRAWN BY	DGR
CHECKED BY	RJF
DATE	10/31/2018
SCALE	1" = 20'

PREPARED FOR

Dascomb Road
Development, LLC
354 Merrimack Street
Suite 1
Lawrence, MA 01843

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

The Dascomb Road
Project

PROJECT LOCATION

146 Dascomb Road
Andover, MA

DRAWING TITLE

Stream
Restoration Plan



PROJECT NO.
T0681
TEC CAD FILE
T0681_SR.dwg
DRAWING NO.
C-26
SHEET 26 OF 27

NOTES

EROSION CONTROLS:
CUSTOMARY EROSION AND SEDIMENTATION CONTROL MEASURES CONSISTING OF SILT FENCE BACKED BY DOUBLE-STAKED HAY BALES, WILL BE ESTABLISHED AT THE PROPOSED LIMIT OF WORK PRIOR TO COMMENCING CONSTRUCTION AND WILL BE MAINTAINED IN A FUNCTIONAL MANNER THROUGHOUT CONSTRUCTION UNTIL THE SITE IS DEEMED STABLE. SILT THAT HAS ACCUMULATED IN THE FRONT OF THE EROSION CONTROL BARRIERS DURING CONSTRUCTION WILL BE REMOVED. EROSION CONTROL BARRIERS WILL BE INSTALLED ALONG THE LIMIT OF WORK BETWEEN WETLAND RESOURCE AREAS AND UPGRADE CONSTRUCTION. INSTALLATION OF THE EROSION CONTROLS WILL BE INSPECTED AND APPROVED BY A QUALIFIED WETLAND SCIENTIST OR EROSION CONTROL SPECIALIST AND THE CONSERVATION AGENT OR COMMISSION'S DESIGNATED ENVIRONMENTAL MONITOR PRIOR TO COMMENCING CONSTRUCTION, AND WILL BE INSTALLED/ADJUSTED IN LOCATION AND DESIGNED TO SUIT THE CONSTRUCTION ACTIVITIES. ADDITIONALLY, EMERGENCY EROSION CONTROL MATERIALS WILL BE STOCKPILED ONSITE TO BE USED FOR REPAIRS IF NECESSARY.

STREAM CHANNEL BANK STABILIZATION:
IMMEDIATELY FOLLOWING CONSTRUCTION OF THE PROPOSED STREAM CHANNEL, THE BANKS WILL BE STABILIZED WITH "COIR GREEN COIRLOGS". THESE COIR LOGS ARE CONSTRUCTED FROM CYLINDER/ROUND SHAPE NETTING PACKED WITH BIODEGRADABLE COIR FIBER. EACH LOG CONSIST OF COIR NETTING, PACKED WITH COIR FIBER RANGING FROM 7-9KG PER LINEAR METER, AND SHALL BE INFUSED WITH WETLAND SEED MIX TO ASSIST IN STABILIZING AND VEGETATING THE BANK. THE DIAMETER OF THE LOG VARIES AS PER REQUIREMENT, RANGING FROM 20 TO 50 CM DIAMETER WITH 2 OR 4 METER LENGTH SEGMENTS. INSTALLATION OF THE COIR LOGS WILL BE INSPECTED AND APPROVED BY A QUALIFIED WETLAND SCIENTIST OR EROSION CONTROL SPECIALIST AND THE CONSERVATION AGENT OR COMMISSION'S DESIGNATED ENVIRONMENTAL MONITOR PRIOR TO COMMENCING CONSTRUCTION.

WETLAND REPLICATION AREA SOILS:
DUE TO UNSUITABLE SOILS ON THE SITE AND DIFFICULTY IN HARVESTING SUFFICIENT QUANTITIES OF ORITE MATERIALS, SOILS USED FOR THE WETLAND REPLICATION AREA WILL BE IMPORTED FROM OFFSITE. THE MANMADE SOILS WILL HAVE ORGANIC CARBON CONTENT ON A DRY WEIGHT BASIS OF 10%-12%, AND BE FROM AN INVASIVE PLANT FREE SOURCE, IN LIEU OF NATURAL SOILS. MANMADE SOILS CONSISTING OF LOAM WITH EQUAL VOLUMES OF ORGANIC AND MINERAL MATERIALS WILL BE USED, IN THE REGARD, CLEAN LEAF COMPOST OR OTHER SOIL AMENDMENT(S) MAY BE USED TO MEET THE REQUISITE ORGANIC CARBON/ORGANIC MATTER CONTENT NOTED ABOVE. THE PH OF THE EXISTING BVW AREA WILL BE TESTED TO DETERMINE THE PH LEVEL. THE PH OF THE TRANSLOCATED SOILS WILL BE TESTED FOR PH AND AMENDED AS NECESSARY TO MATCH EXISTING BVW PH LEVELS. TRANSLOCATED SOILS WILL BE INVASIVE SPECIES FREE. TRANSLOCATED SOILS BROUGHT TO SITE FOR WETLAND REPLICATION AREA USE WILL BE TESTED FOR PH, ORGANIC MATTER AND TEXTURE PRIOR TO BEING USED.

COARSE WOODY DEBRIS:
FOLLOWING THE COMPLETION OF THE WETLAND REPLICATION AREA LOGS SET ASIDE FROM THE ORIGINAL CLEARING WILL BE PLACED THROUGHOUT THE REPLICATION AREA. THE WOODY DEBRIS WILL COVER AT LEAST TWO TO FOUR PERCENT OF THE WETLAND AREAS. THE WOODY MATERIALS SHOULD NOT INCLUDE ANY LIVE INVASIVE SPECIES.

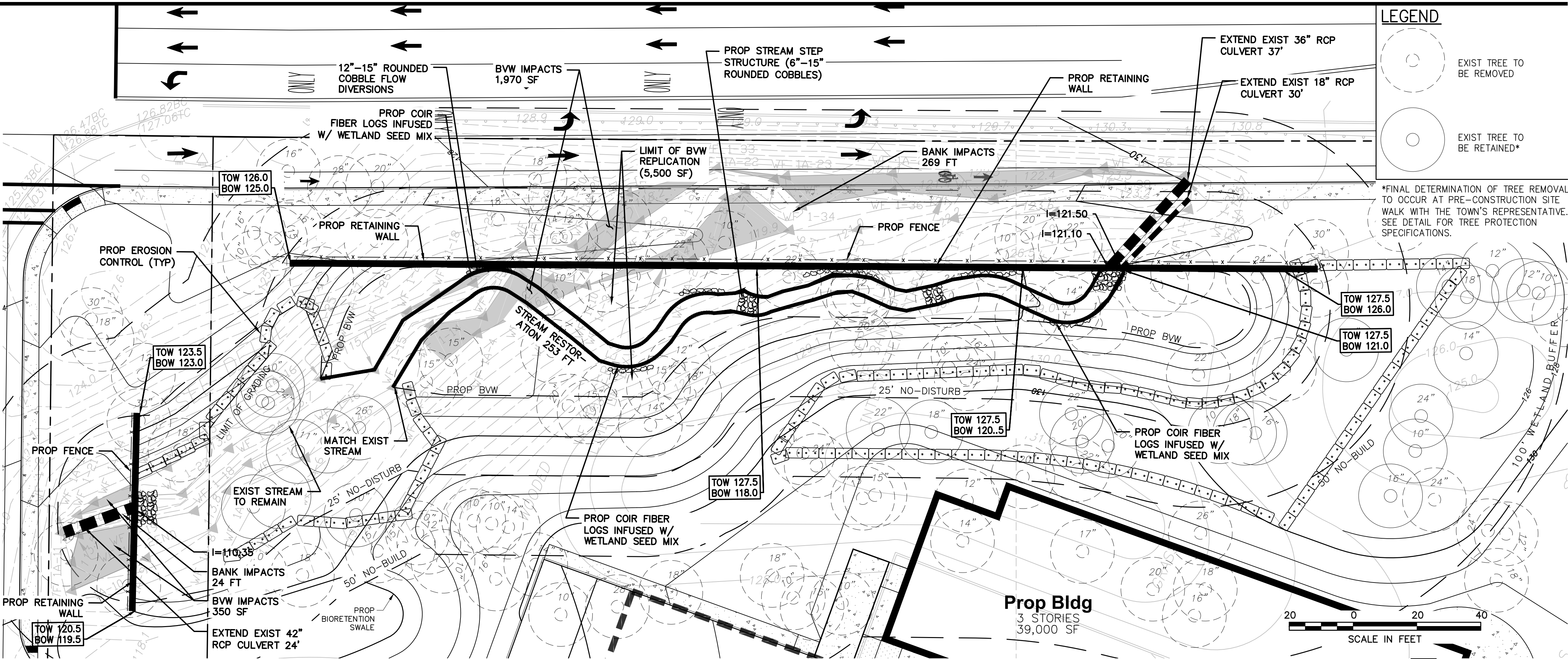
MICROTOPOGRAPHY:
MANMADE HUMMOCKS WILL BE CONSTRUCTED WITHIN THE WETLAND REPLICATION AREA WITH VARYING HEIGHTS 10" TO 14" TO BETTER MIMIC A NATURAL WETLAND SYSTEM. NO HUMMOCKS WILL BE PLACED WITHIN THE PROPOSED STREAM CHANNEL. HUMMOCKS WILL BE CONSTRUCTED USING THE ON-SITE SUBSOIL AND TOP DRESSED WITH A MINIMUM OF 12 INCHES OF THE SAME WETLAND REPLICATION AREA SOILS DESCRIBED ABOVE AND PLANTED WITH TREE AND SHRUB SPECIES SHOWN IN THE PLANTING TABLES.

PLANTINGS:
THE WETLAND REPLICATION AREA AND ITS ASSOCIATED SIDE SLOPES WILL BE SEEDED AS SPECIFIED IMMEDIATELY FOLLOWING FINAL GRADING TO PROMOTE SOIL STABILIZATION. THE WETLAND REPLICATION AREA SHOULD BE DRESSED WITH A MINIMUM OF 12" OF HIGH ORGANIC LOAM. THE PLANTINGS OF TREES AND SHRUBS WILL ALSO OCCUR FOLLOWING FINAL GRADING BETWEEN APRIL 15TH AND OCTOBER 15TH, DEPENDING ON WEATHER CONDITIONS AND SOIL HYDROLOGY.

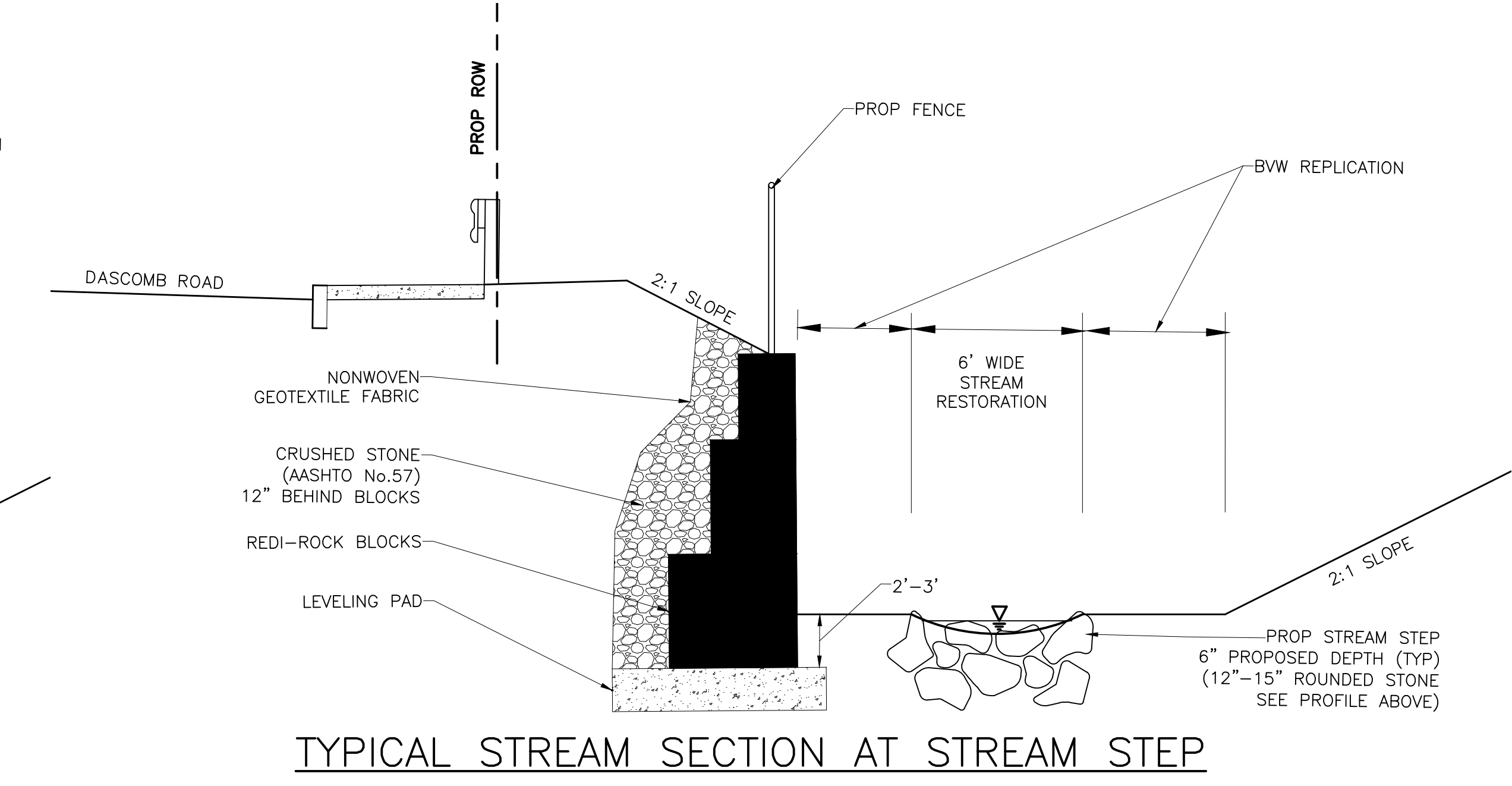
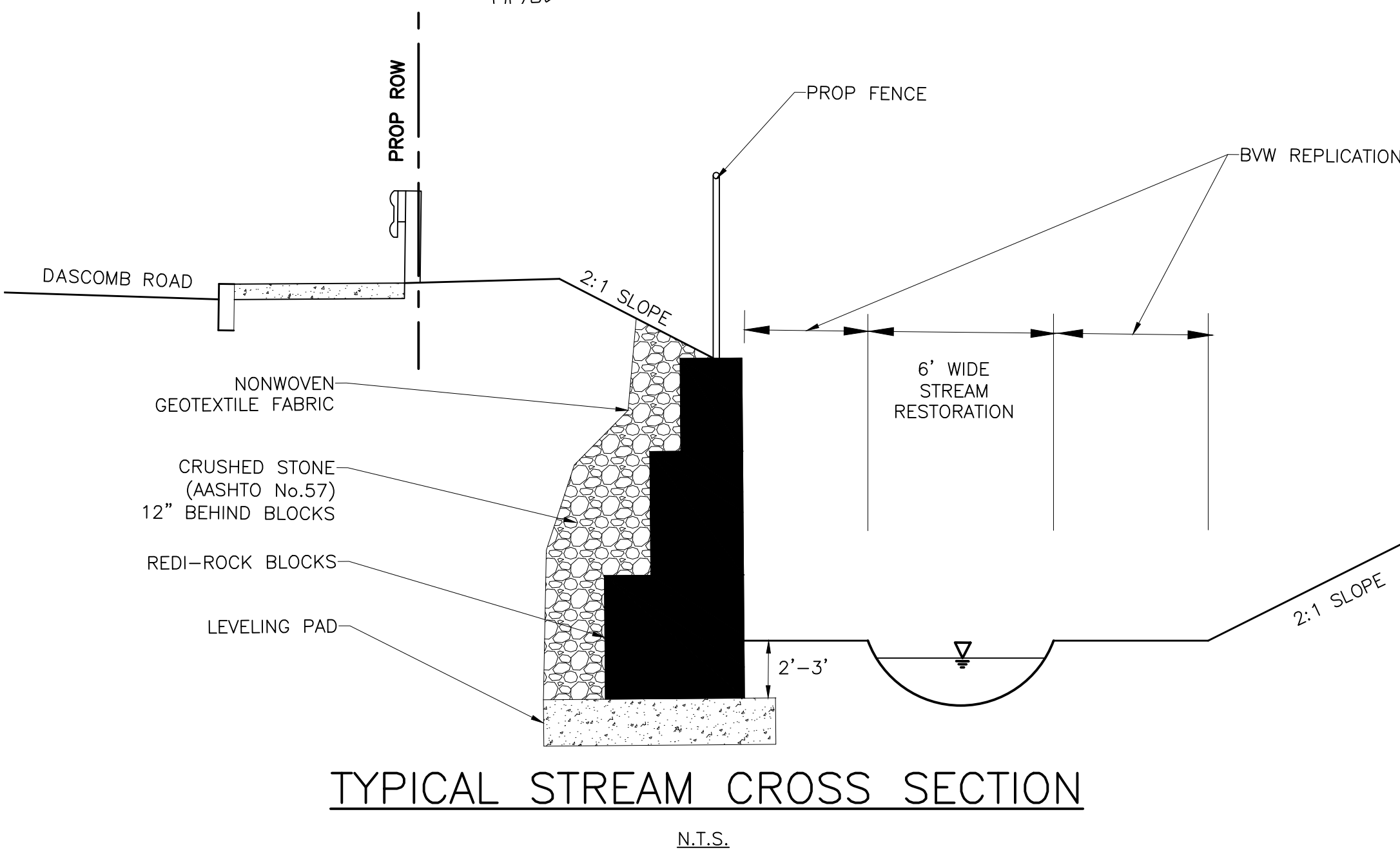
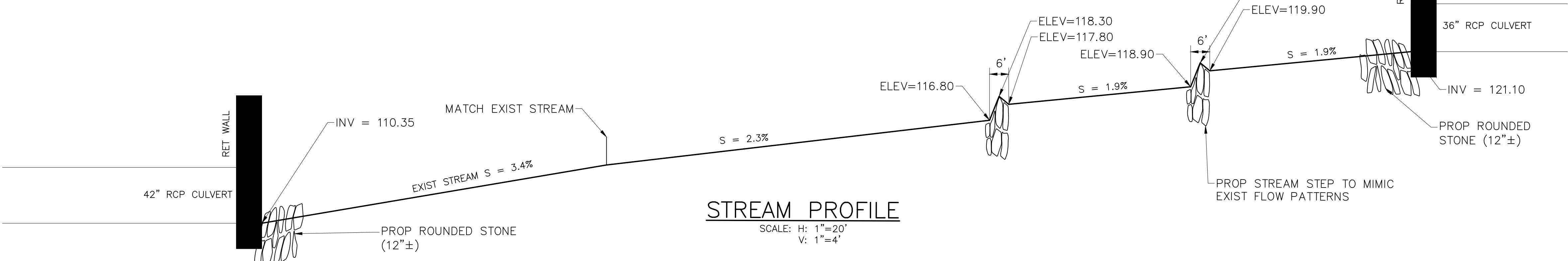
STREAM RELOCATION AND WETLAND REPLICATION AREA CONSTRUCTION SEQUENCE:
AS INDICATED AT THE SITE INSPECTION JUNE 10, 2015, THE CONSTRUCTION OF THE EXPANDED HIGHWAY AND RELOCATION OF THE STREAM CHANNEL. HUMMOCKS WILL BE GENERALLY BE ACCOMPLISHED BY THE EXCAVATION OF THE NEW STREAM/REPLICATION AREA PRIOR TO ANY DISTURBANCE OF THE EXISTING STREAM OR FLOW PATTERNS. ONCE THE RELOCATED STREAM/REPLICATION AREA IS GRADED TO THE ROUGH FINISH GRADE FLOW WOULD BE BYPASSED AROUND THE EXISTING STREAM AND THROUGH THE NEW STREAM/REPLICATION AREA INTO THE DOWN GRADIENT SMITH DRIVE CULVERT. THE RETAINING WALL WOULD THEN BE CONSTRUCTED, CULVERTS WOULD BE EXTENDED, THE STREAM AND REPLICATION AREA WOULD BE FINAL GRADED, AND THE FLOW REESTABLISHED.

GENERALLY, THE SEQUENCE IN WHICH THE STREAM RELOCATION/REPLICATION ACTIVITIES WOULD TAKE PLACE IS ITEMIZED BELOW. PLEASE NOTE THAT THIS SET OF PROCEDURES WOULD BE REFINED ONCE A SITE CONTRACTOR IS SELECTED. AT THAT TIME A FINAL SEQUENCE OF CONSTRUCTION WILL BE PROVIDED TO THE CONSERVATION COMMISSION OR ITS AGENT/ENVIRONMENTAL MONITOR, WHICH WOULD INCORPORATE INPUT FROM THE FULL PROJECT TEAM AND TAKE INTO ACCOUNT STREAM FLOW CONDITIONS, WEATHER PATTERNS, SEASON OF THE YEAR, ETC. FOR REVIEW AND APPROVAL.

- RE-ESTABLISH WETLAND RESOURCE AREA BOUNDARIES IN VICINITY OF STREAM RELOCATION/WETLAND REPLICATION AREA.
- INSTALL EROSION CONTROLS, INCLUDING HAY BALES AND SILT FENCE AT THE LIMIT OF PROPOSED WORK LINE ON THE SOUTH SIDE OF THE BVW BANK BOUNDARY. IDENTIFY AND PROTECT TREES TO BE SAVED DURING CONSTRUCTION ALONG THE PERIMETER OF THE TOP SLOPE OF THE REPLICATION AREA.
- SCHEDULE A SITE INSPECTION WITH THE AGENT, ENVIRONMENTAL MONITOR, AND THE SUPERVISING WETLAND SCIENTIST A MINIMUM OF 2 BUSINESS DAYS PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES TO REVIEW THE STREAM RELOCATION/ WETLAND REPLICATION PROGRAM AND THE ORDER OF CONDITIONS. AT THIS TIME, A REVIEW WILL BE MADE OF THE TREES TO BE SAVED ALONG THE PERIMETER OF THE WETLAND REPLICATION AREA.
- REMOVE AND STOCKPILE COARSE, WOODY DEBRIS FOR WETLAND REPLICATION AREA.
- MAINTAIN STREAM FLOWS IN EXISTING CHANNEL DURING CONSTRUCTION OF NEW STREAM/REPLICATION AREA FROM DASCOMB ROAD CULVERT TO APPROXIMATELY WETLAND FLAG 1A-20.
- CONSTRUCT CHECK DAM/SEDIMENT TRAP AND BYPASS CULVERT FLOWS AT APPROXIMATELY WETLAND FLAG1A-20 AROUND PROPOSED RETAINING WALL INTO SMITH DRIVE CULVERT.
- INSTALL RETAINING WALL FOOTING AND INITIAL WALL SOURCES WHILE REPLICATION AREA IS AT ROUGH GRADE; INSTALL INITIAL CULVERT EXTENSION SECTIONS FROM WALL UP GRADIENT TOWARD CULVERT OUTLET.
- ESTABLISH DEWATERING FILTER AND PUMPS AS NEEDED.
- CONSTRUCT CHECK DAM/SEDIMENT TRAP AT DOWNSTREAM END OF REPLICATION AREA.
- COMPLETE REPLICATION AREA GRADING, INSTALLATION OF STEPS TO ATTENUATE STREAM FLOW EROSION, AND INSTALL COIR BUNDLES TO FORM STREAM BANKS, DRESS STREAM BOTTOM WITH SMOOTH STONE AT STREAM STEPS; BACKFILL BVW REPLICATION AREA WITH ORGANIC SOILS.
- BACKFILL THE REPLICATION AREA TO GRADE WITH 12" OF ORGANIC TOPSOIL/COMPOST. ADD COARSE WOODY DEBRIS AT 1 TO 2% ALONG BUFFER ZONE.
- INSTALL EROSION ALONG THE NEWLY CREATED WETLAND BOUNDARY.
- CREATE A STREAM DIVERSION TO DIVERT WATER INTO PIPES THROUGH THE CULVERT EXTENSION AREA AND ROUTE THE FLOW THROUGH THE NEW REPLICATION AREA INTO THE SMITH DRIVE DRAIN CULVERT.
- CONSTRUCT CULVERT EXTENSION IN THE DRY, WORKING FROM THE BOTTOM OF THE CULVERT EXTENSION, UPGRADE. COMPLETE WALL SECTION AROUND CULVERT EXTENSION CONSTRUCTION, AND BALANCE OF WALL; REMOVE CHECK DAM/SEDIMENT TRAP.
- SOURCE OF SOILS SHALL BE REVIEWED, TESTED, AND MONITORED. SOILS FOR TOP DRESSING OF THE BVW SHALL BE AGRISOURCE, OR AN APPROVED EQUIVALENT SUPPLIER OF WETLAND SOIL MIXES.
- SOILS BROUGHT ONSITE FOR THE REPLICATION SHALL BE FROM AGRISOURCE OR AN APPROVED EQUIVALENT SUPPLIER AND SHALL BE TESTED FOR PH, ORGANIC MATTER AND TEXTURE AND SHALL BE FROM AN INVASIVE FREE SOURCE.
- THE PH OF THE EXISTING BVW AREA SHALL BE TESTED AND THE SOILS USED IN THE REPLICATION AREA SHALL BE TESTED AND AMENDED AS NECESSARY TO APPROXIMATE THE PH IN THE EXISTING BVW.
- CONDUCT INSPECTIONS BY AGENT AND ENVIRONMENTAL MONITOR AS REQUIRED.
- SEED ALL DISTURBED WETLAND AND BUFFER ZONE SOILS WITH THE APPROPRIATE SEED MIXES AS DESCRIBED IN THE WETLAND IMPACT MITIGATION PLAN (SHEET C-7).
- PLANT THE WETLAND REPLICATION AREA AND DISTURBED BUFFER ZONE WITH THE SPECIFIED TREES AND SHRUBS DURING MARCH-JUNE OR SEPTEMBER-NOVEMBER.
- MAINTAIN ALL EROSION CONTROL MEASURES UNTIL VEGETATION HAS ESTABLISHED IN DISTURBED AREAS.
- MONITOR THE REPLICATION AREA FOR FIVE FULL GROWING SEASONS, AND PROVIDE MONITORING REPORTS PER THE ORDER OF CONDITIONS.
- IMPLEMENT REMEDIAL ACTIONS TO ASSURE THE REPLICATION AREA ACHIEVES SATISFACTORY REVEGETATION AND HYDROLOGIC CONDITIONS PRIOR TO REQUESTING A CERTIFICATE OF COMPLIANCE. IF REMEDIAL PLANTINGS ARE NECESSARY, THEY SHALL BE IDENTIFIED IN THE MONITORING REPORTS AND SUPPLEMENTAL REMEDIAL PLANTINGS SHALL BE ADDED IN THE REPLICATION AREA AT THE NEXT APPROPRIATE PLANTING SEASON.



NOTE: COBBLE TO BE PUT INTO STREAM RELOCATION MUST BE RIVER ROCK AND NOT ANGULAR ROCK OR CRUSHED STONE.



TEC, Inc.

146 Dascomb Road
Andover, MA 01810
(978) 794-1792
www.TheEngineeringCorp.com

169 Ocean Boulevard
Unit 101, PO Box 249
Hampton, NH 03842
(603) 601-8154

DESIGNED BY CPR
DRAWN BY DGR
CHECKED BY RJF
DATE 10/31/2018
SCALE AS NOTED

PREPARED FOR

Dascomb Road
Development, LLC
354 Merrimack Street
Suite 1
Lawrence, MA 01843

REVISIONS

ISSUED FOR

Permitting

PROJECT TITLE

The Dascomb Road
Project

PROJECT LOCATION

146 Dascomb Road
Andover, MA

DRAWING TITLE

Stream Restoration
Plan & Profile



PROJECT NO. T0681
TEC CAD FILE T0681_SR.dwg
DRAWING NO. C-27
SHEET 27 OF 27

PERMITTING SET - NOT FOR CONSTRUCTION