SITE PLAN FOR TURBOCAM INTERNATIONAL

BARRINGTON TAX MAP 233 LOT 77 AND TAX MAP 234 LOTS 1.2 & 1.4
ROUTE 9 / REDEMPTION ROAD
BARRINGTON, NH 03825

CLIENT
TURBOCAM INTERNATIONAL
607 CALEF HIGHWAY
BARRINGTON, NH 03825

OWNER
TOWN OF BARRINGTON
P.O. BOX 660
BARRINGTON, NH 03825

CIVIL ENGINEER
EMANUEL ENGINEERING, INC.
118 PORTSMOUTH AVENUE, SUITE A202
STRATHAM, NH 03885

LAND SURVEYOR & WETLANDS SCIENTIST
JONES & BEACH ENGINEERS, INC.
85 PORSMOUTH AVENUE
STRATHAM, NH 03885

SOIL SCIENTIST
GOVE ENVIRONMENTAL SERVICES, INC.
8 CONTINENTAL DRIVE, BUILDING 2, UNIT H
EXETER, NH 03833

SHEETS TO BE RECORDED:

- COVER SHEET
- C3 - SITE PLAN

REQUIRED PERMITS/APPROVALS:

- NHDES ALTERATION OF TERRAIN PERMIT (PENDING)
- NHDES SUBSURFACE CONSTRUCTION PERMIT
- NHDES PUBLIC WATER SYSTEMS
- NHDOT DRIVEWAY PERMIT # 06-027-501 DATED JANUARY 8, 2013
- EPA NPDES GENERAL CONSTRUCTION PERMIT
- BARRINGTON CONDITIONAL USE PERMIT (PENDING)
- BARRINGTON SPECIAL PERMIT FOR CONSTRUCTION IN WETLAND BUFFER (PENDING)

Received 11/5/19

LAND USE OFFICE
NOV 05 2019
RECEIVED

PROJECT LOCUS PLAN
1" = 1,000 '

PROJECT DRAWING SET:

	COVER SHEET
C1.1 & C1.2	EXISTING CONDITIONS PLAN (BY JONES & BEACH ENGINEERS, INC.)
C2	SITE SPECIFIC SOILS & TOPOGRAPHY PLAN
C3	SITE PLAN
C4	GRADING & DRAINAGE PLAN
C5	UTILITIES PLAN
C6	PAVING PLAN
C7	TURNING TEMPLATE (WB-65 ENTERING SITE)
C8	TURNING TEMPLATE (WB-65 EXITING SITE)
SD1	SUBSURFACE DISPOSAL SYSTEM
D1 & D2	NOTES
D3 - D5	DETAILS

ISS.	DATE:	DESCRIPTION OF ISSUE:	CHK.
2	NOV 5, 2019	FOR APPROVAL	
1	SEP 13, 2019	FOR APPROVAL	

DRAWN: JJM | DESIGN: JJM
CHECKED: BDS | CHECKED: BDS

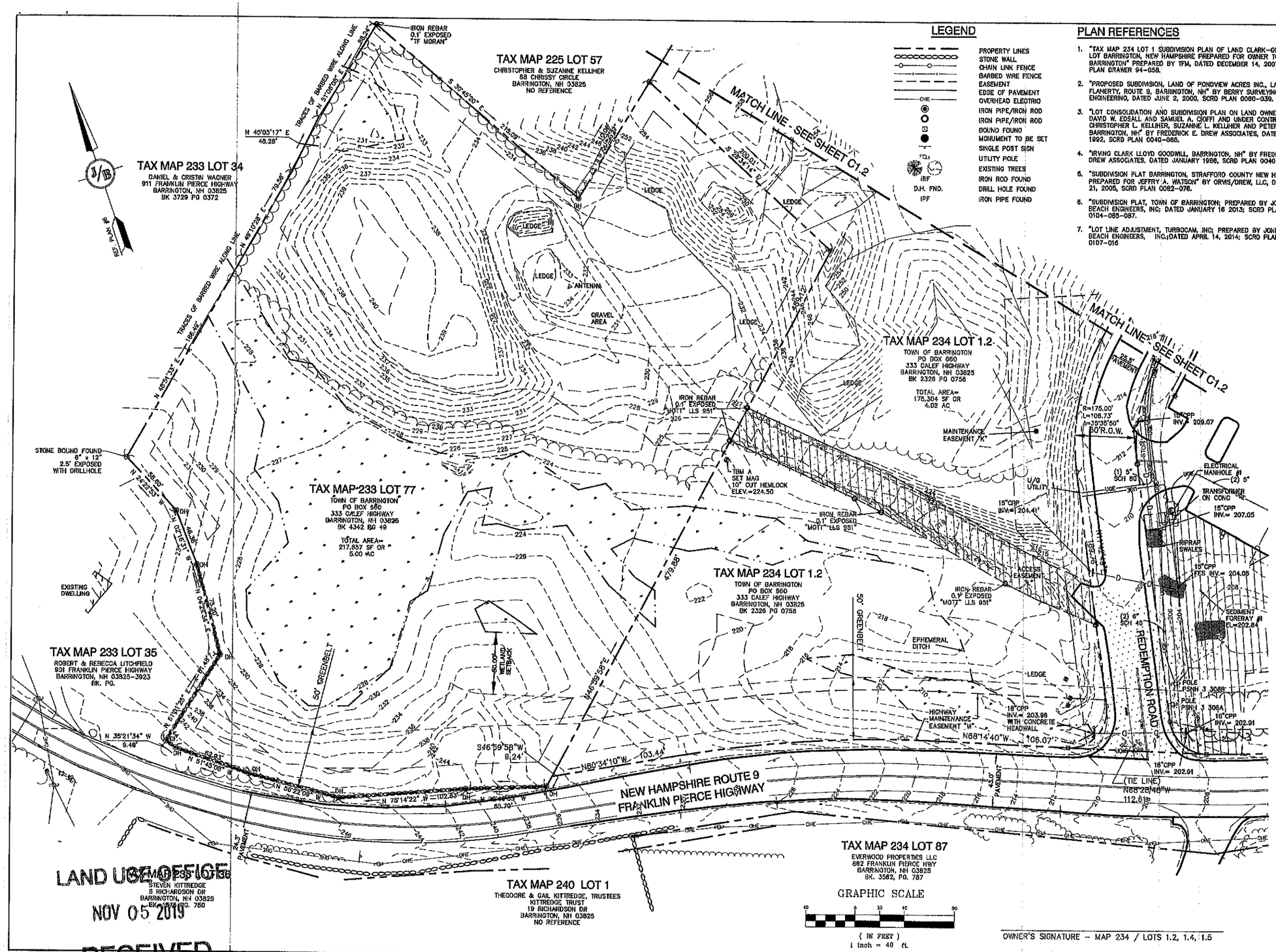
EMANUEL ENGINEERING
civil & structural consultants, land planners
118 Portsmouth Avenue, A202
Stratham, NH 03885
P: 603-772-4400 F: 603-772-4487
www.emanuelengineering.com

CLIENT:
TURBOCAM INTERNATIONAL
607 CALEF HIGHWAY
BARRINGTON, NH 03825

SEAL:

TITLE: COVER SHEET
FOR
TAX MAP 233 LOT 77
AND TAX MAP 234 LOTS 1.2 & 1.4
TURBOCAM INTERNATIONAL
ROUTE 9 / REDEMPTION ROAD (SITE)
BARRINGTON, NH 03825
& TOWN OF BARRINGTON
P.O. BOX 660
BARRINGTON, NH 03825

PROJECT:	SCALE:	SHEET:
19-020	AS SHOWN	COVER

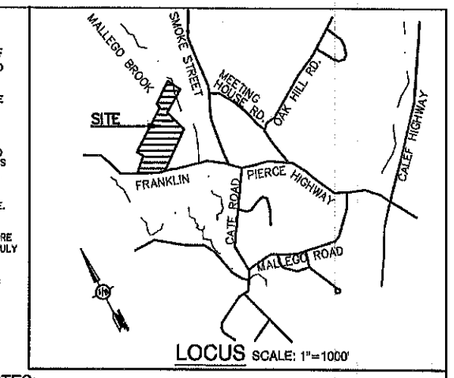


LEGEND

- PROPERTY LINES
- STONE WALL
- CHAIN LINK FENCE
- BARBED WIRE FENCE
- EASEMENT
- EDGE OF PAVEMENT
- OVERHEAD ELECTRIC
- IRON PIPE/IRON ROD
- IRON PIPE/IRON ROD
- BOUND FOUND
- MONUMENT TO BE SET
- SINGLE POST SIGN
- UTILITY POLE
- EXISTING TREES
- IRON ROD FOUND (IRF)
- DRILL HOLE FOUND (D.H. FND.)
- IRON PIPE FOUND (IPF)

PLAN REFERENCES

1. "TAX MAP 234 LOT 1 SUBDIVISION PLAN OF LAND CLARK-GOODWILL LOT BARRINGTON, NEW HAMPSHIRE PREPARED FOR OWNER TOWN OF BARRINGTON" PREPARED BY TFM, DATED DECEMBER 14, 2007, SCRD PLAN DRAWER 94-058.
2. "PROPOSED SUBDIVISION, LAND OF PONDVIEW ACRES INC., LAURETTE FLAHERTY, ROUTE 9, BARRINGTON, NH" BY BERRY SURVEYING & ENGINEERING, DATED JUNE 2, 2000, SCRD PLAN 0080-039.
3. "LOT CONSOLIDATION AND SUBDIVISION PLAN ON LAND OWNED BY DAVID W. EDSALL AND SAMUEL A. CIOFFI AND UNDER CONTRACT TO CHRISTOPHER L. KELLIHER, SUZANNE L. KELLIHER AND PETER DEMAS BARRINGTON, NH" BY FREDERICK E. DREW ASSOCIATES, DATED FEB. 1992, SCRD PLAN 0040-085.
4. "IRVING CLARK LLOYD GOODWILL, BARRINGTON, NH" BY FREDERICK E. DREW ASSOCIATES, DATED JANUARY 1986, SCRD PLAN 0040-084.
5. "SUBDIVISION PLAT BARRINGTON, STRAFFORD COUNTY NEW HAMPSHIRE PREPARED FOR JEFFRY A. WATSON" BY ORMS/DREW, LLC, DATED JULY 21, 2005, SCRD PLAN 0082-076.
6. "SUBDIVISION PLAT, TOWN OF BARRINGTON; PREPARED BY JONES & BEACH ENGINEERS, INC; DATED JANUARY 16 2013; SCRD PLAN 0104-085-087.
7. "LOT LINE ADJUSTMENT, TURBOCAM, INC; PREPARED BY JONES & BEACH ENGINEERS, INC.,DATED APRIL 14, 2014; SCRD PLAN 0107-016



LOCUS SCALE: 1"=1000'

NOTES:

1. THE INTENT OF THIS PLAN IS TO SHOW THE EXISTING CONDITIONS OF LOT 77 AS SHOWN ON TAX MAP 233 AND LOTS 1.2, 1.4 AND 1.5 AS SHOWN ON TAX MAP 234.
2. ZONING DISTRICT: VILLAGE DISTRICT W/ STRATIFIED DRIFT AQUIFER OVERLAY
   LOT AREA MINIMUM = 30,000 SF
   LOT FRONTAGE MINIMUM = 75'
   BUILDING SETBACKS (MINIMUM):
   FRONT SETBACK = 20'
   SIDE SETBACK = 15'
   REAR SETBACK = 15'
   WETLAND BUFFER = 50'
3. HORIZONTAL DATUM IS MAGNETIC. VERTICAL DATUM IS NAVD 88.
4. RESEARCH WAS PERFORMED AT THE TOWN OF BARRINGTON ASSESSORS OFFICE, THE STRAFFORD COUNTY REGISTRY OF DEEDS AND NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION.
5. THE TAX MAP AND LOT NUMBERS ARE BASED ON THE TOWN OF BARRINGTON TAX RECORDS AND ARE SUBJECT TO CHANGE.
6. ALL BOOK AND PAGE NUMBERS REFER TO THE STRAFFORD COUNTY REGISTRY OF DEEDS.
7. CERTAIN DATA HEREON MAY VARY FROM RECORDED DATA DUE TO DIFFERENCES IN DECLINATION, ORIENTATION, AND METHODS OF MEASUREMENT.
8. THIS SURVEY IS NOT A CERTIFICATION TO OWNERSHIP OR TITLE OF LANDS SHOWN. OWNERSHIP AND ENCUMBRANCES ARE MATTERS OF TITLE EXAMINATION NOT OF A BOUNDARY SURVEY. THE INTENT OF THIS PLAT IS TO RETRACE THE BOUNDARY LINES OF DEEDS REFERENCED HEREON.
9. OWNERSHIP OF ADJOINING PROPERTIES IS ACCORDING TO ASSESSOR'S RECORDS. THIS PLAT MAY OR MAY NOT INDICATE ALL ENCUMBRANCES EXPRESSED, IMPLIED OR PRESCRIPTIVE. ANY USE OF THIS PLAT AND OR ACCOMPANYING DESCRIPTIONS SHOULD BE DONE WITH LEGAL COUNSEL, TO BE CERTAIN THAT TITLES ARE CLEAR, THAT INFORMATION IS CURRENT, AND THAT ANY NECESSARY CERTIFICATES ARE IN PLACE FOR A PARTICULAR CONVEYANCE, OR OTHER USES.
10. THE SURVEY TIE LINES SHOWN ON THIS PLAT ARE NOT BOUNDARY LINES, THEY ONLY SHOULD BE USED TO LOCATE THE PARCEL SURVEYED FROM THE FOUND MONUMENTS SHOWN AND LOCATED BY SURVEY.
11. LOCATION, DEPTH, SIZE, TYPE, EXISTENCE OR NONEXISTENCE OF UNDERGROUND UTILITIES AND/OR UNDERGROUND STORAGE TANKS WAS NOT VERIFIED BY THIS SURVEY.
12. ALL SURFACE EVIDENCE OF UNDERGROUND UTILITIES SHOWN ON THIS PLAN (CB, SMH, ELEC. BAN, ETC.) WERE LOCATED BY THIS SURVEY. UNDERGROUND PORTIONS OF FACILITIES & UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS, AND THEREFORE THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. THERE MAY BE OTHERS, THE EXISTENCE OF WHICH IS PRESENTLY NOT KNOWN.
13. ORIGINAL FIELD SURVEY PERFORMED WITH A TOPCON GPT-250 AND HAS A CONTROL TRAVERSE ERROR OF 1:48,123.
14. THE LIMITS OF JURISDICTIONAL WETLANDS WERE DELINEATED BY CHRISTOPHER S. ALBERT OF JONES AND BEACH ENGINEERS, INC, DURING SPRING 2019 IN ACCORDANCE WITH THE FOLLOWING GUIDANCE DOCUMENTS:
    A. THE CORPS OF ENGINEERS FEDERAL MANUAL FOR IDENTIFYING AND DELINEATING JURISDICTIONAL WETLANDS.
    B. THE NORTH CENTRAL & NORTHEAST REGIONAL SUPPLEMENT TO THE FEDERAL MANUAL.
    C. THE CURRENT VERSION OF THE FIELD INDIOATORS FOR IDENTIFYING HYDRIC SOILS IN NEW ENGLAND, AS PUBLISHED BY THE NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION AND/OR THE CURRENT VERSION OF THE FIELD INDICATORS OF HYDRIC SOILS IN THE UNITED STATES, AS PUBLISHED BY THE USDA, NRCS, AS APPROPRIATE.
    D. THE CURRENT NATIONAL LIST OF PLANT SPECIES THAT OCCUR IN WETLANDS, AS PUBLISHED BY THE US FISH AND WILDLIFE SERVICE.

CERTIFICATION:

I CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN UNADJUSTED LINEAR ERROR OF CLOSURE THAT EXCEED BOTH THE MINIMUM OF 1:10,000 AS DEFINED IN SECTION 603.04 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES AND THE MINIMUM OF 1:15,000 AS DEFINED IN SECTION 4.2 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

THIS SURVEY CONFORMS TO A CATEGORY 1 CONDITION 1 SURVEY AS DEFINED IN SECTION 4.1 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

STATE OF NEW HAMPSHIRE No. 892 DAVID M. COLLIER LICENSED LAND SURVEYOR
SIGNATURE

DAVID M. COLLIER, LLS 892 DATE:
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

OWNER'S SIGNATURE – MAP 234 / LOTS 1.2, 1.4, 1.5

LAND USE OFFICE
NOV 05 2019
RECEIVED

Design: BWG	Draft: DWW	Date: 04/04/19
Checked: DMC	Scale: AS NOTED	Project No.: 19038
Drawing Name: 19038-EXISTING-CONDITIONS.dwg		

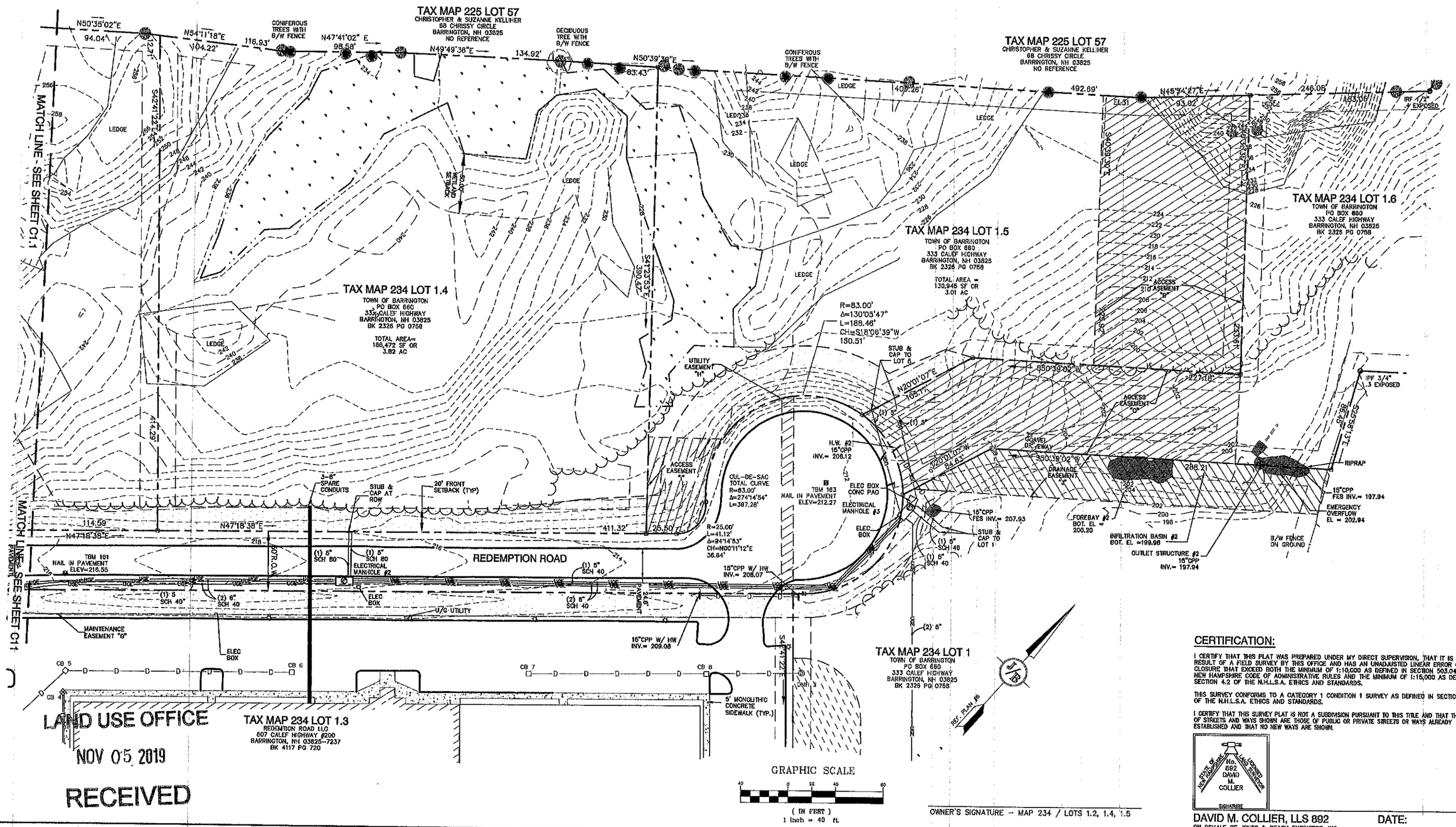
THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.

REV.	DATE	REVISION	BY
1	11/5/19	REVISED PER REVIEW COMMENTS	MJS
0	9/10/19	ISSUED FOR REVIEW	DMC

Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave. PO Box 219 Stratham, NH 03885
603-772-4746 FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: EXISTING CONDITIONS PLAN
Project: TAX MAP 233, LOT 77 & TAX MAP 234, LOTS 1.2, 1.4 & 1.5
ROUTE 9 & REDEMTION ROAD, BARRINGTON, NH
Owner of Record: TOWN OF BARRINGTON
PO BOX 660 333 CALEF HIGHWAY BARRINGTON, NH 03825
BK 2326 PG 0758 & BK 4342 PG 49

DRAWING No.
C1.1
SHEET 1 OF 2
JBE PROJECT NO. 19038



LAND USE OFFICE
NOV 05 2019
RECEIVED

CERTIFICATION:

I CERTIFY THAT THIS PLAT WAS PREPARED UNDER MY DIRECT SUPERVISION, THAT IT IS THE RESULT OF A FIELD SURVEY BY THIS OFFICE AND HAS AN UNADJUSTED LINEAR ERROR OF CLOSURE THAT EXCEED BOTH THE MINIMUM OF 1:10,000 AS DEFINED IN SECTION 503.04 OF THE NEW HAMPSHIRE CODE OF ADMINISTRATIVE RULES AND THE MINIMUM OF 1:15,000 AS DEFINED IN SECTION 4.2 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

THIS SURVEY CONFORMS TO A CATEGORY 1 CONDITION 1 SURVEY AS DEFINED IN SECTION 4.1 OF THE N.H.L.S.A. ETHICS AND STANDARDS.

I CERTIFY THAT THIS SURVEY PLAT IS NOT A SUBDIVISION PURSUANT TO THIS TITLE AND THAT THE LINES OF STREETS AND WAYS SHOWN ARE THOSE OF PUBLIC OR PRIVATE STREETS OR WAYS ALREADY ESTABLISHED AND THAT NO NEW WAYS ARE SHOWN.

NEW HAMPSHIRE LICENSED LAND SURVEYOR No. 892 DAVID M. COLLIER

SIGNATURE

DAVID M. COLLIER, LLS 892
ON BEHALF OF JONES & BEACH ENGINEERS, INC.

DATE:

OWNER'S SIGNATURE – MAP 234 / LOTS 1.2, 1.4, 1.5

Design: BWG	Draft: CWW	Date: 04/04/19
Checked: DMC	Scale: AS NOTED	Project No.: 18036
Drawing Name: 18036-EXISTING-CONDITIONS.dwg		

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM JONES & BEACH ENGINEERS, INC. (JBE). ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO JBE.

REV.	DATE	REVISION	BY
1	11/5/19	REVISED PER REVIEW COMMENTS	MJS
0	9/10/19	ISSUED FOR REVIEW	DMC

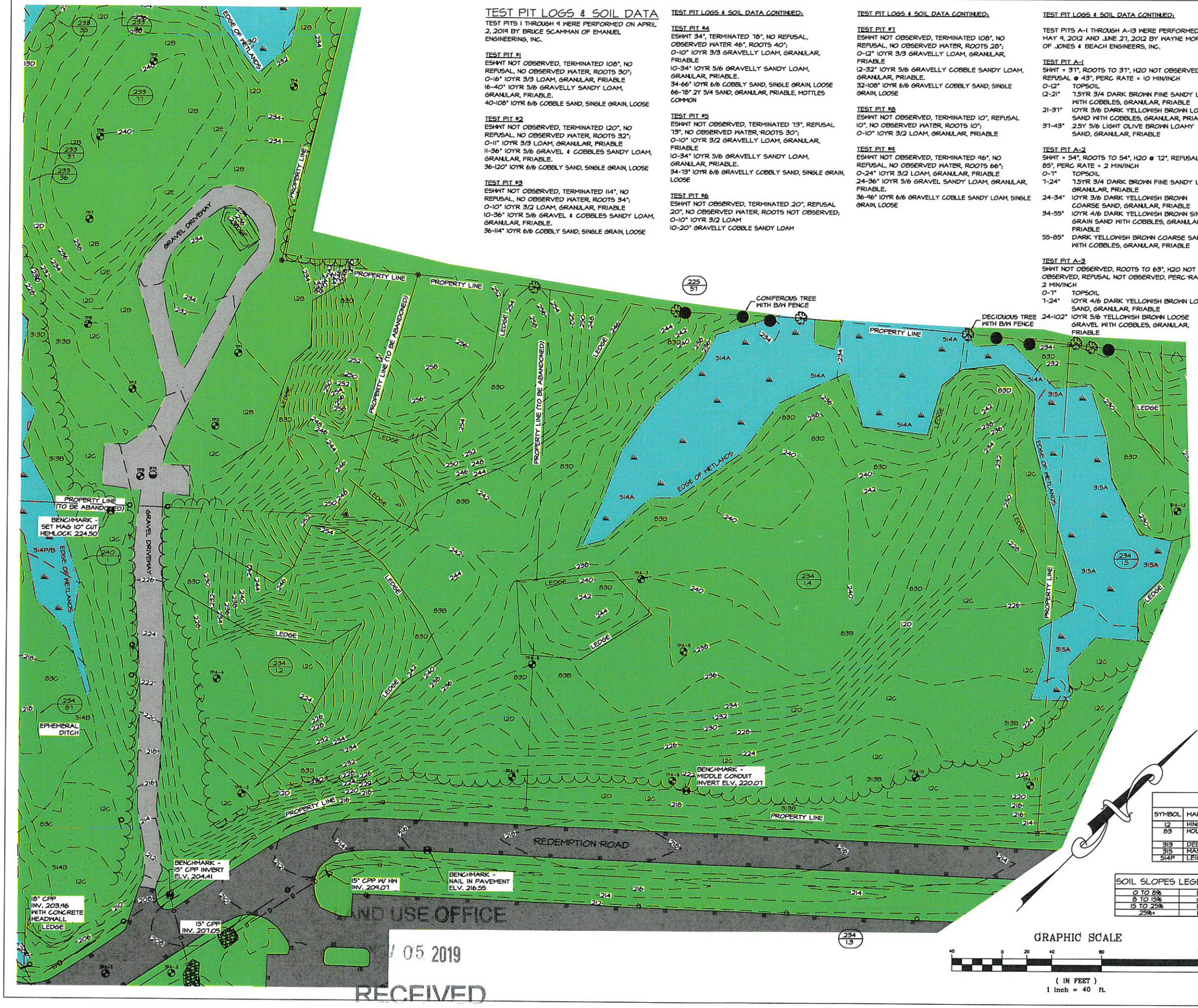
Designed and Produced in NH
Jones & Beach Engineers, Inc.
Civil Engineering Services
85 Portsmouth Ave.
PO Box 219
Stratham, NH 03885
603-772-4746
FAX: 603-772-0227
E-MAIL: JBE@JONESANDBEACH.COM

Plan Name: EXISTING CONDITIONS PLAN

Project: TAX MAP 233, LOT 77 & TAX MAP 234, LOTS 1.2, 1.4 & 1.5
ROUTE 9 & REDEMTION ROAD, BARRINGTON, NH

Owner of Record: TOWN OF BARRINGTON
PO BOX 660 333 CALEF HIGHWAY BARRINGTON, NH 03825
BK 2326 PG 0758 & BK 4342 PG 49

DRAWING No.
C1.2
SHEET 2 OF 2
JBE PROJECT NO. 18036



TEST PIT LOGS & SOIL DATA

TEST PITS 1 THROUGH 9 WERE PERFORMED ON APRIL 2, 2019 BY BRUCE SCAMMAN OF EMANUEL ENGINEERING, INC.

TEST PIT #1
ESHWT NOT OBSERVED, TERMINATED 108", NO REFUSAL, NO OBSERVED WATER, ROOTS 30";
0-16" 10YR 3/3 LOAM, GRANULAR, FRIABLE
16-40" 10YR 5/6 GRAVELLY SANDY LOAM, GRANULAR, FRIABLE.
40-108" 10YR 6/6 COBBLE SAND, SINGLE GRAIN, LOOSE

TEST PIT #2
ESHWT NOT OBSERVED, TERMINATED 120", NO REFUSAL, NO OBSERVED WATER, ROOTS 32";
0-11" 10YR 3/3 LOAM, GRANULAR, FRIABLE
11-36" 10YR 5/6 GRAVEL & COBBLES SANDY LOAM, GRANULAR, FRIABLE.
36-120" 10YR 6/6 COBBLY SAND, SINGLE GRAIN, LOOSE

TEST PIT #3
ESHWT NOT OBSERVED, TERMINATED 114", NO REFUSAL, NO OBSERVED WATER, ROOTS 34";
0-10" 10YR 3/2 LOAM, GRANULAR, FRIABLE
10-36" 10YR 5/6 GRAVEL & COBBLES SANDY LOAM, GRANULAR, FRIABLE.
36-114" 10TR 6/6 COBBLY SAND, SINGLE GRAIN, LOOSE

TEST PIT LOGS & SOIL DATA CONTINUED:

TEST PIT #4
ESHWT 34", TERMINATED 78", NO REFUSAL, OBSERVED WATER 46", ROOTS 40";
0-10" 10YR 3/3 GRAVELLY LOAM, GRANULAR, FRIABLE
10-34" 10YR 5/6 GRAVELLY SANDY LOAM, GRANULAR, FRIABLE.
34-66" 10YR 6/6 COBBLY SAND, SINGLE GRAIN, LOOSE
66-78" 2Y 5/4 SAND, GRANULAR, FRIABLE, MOTTLES COMMON

TEST PIT #5
ESHWT NOT OBSERVED, TERMINATED 73", REFUSAL 73", NO OBSERVED WATER, ROOTS 30";
0-10" 10YR 3/2 GRAVELLY LOAM, GRANULAR, FRIABLE
10-34" 10YR 5/6 GRAVELLY SANDY LOAM, GRANULAR, FRIABLE.
34-73" 10YR 6/6 GRAVELLY COBBLY SAND, SINGLE GRAIN, LOOSE

TEST PIT #6
ESHWT NOT OBSERVED, TERMINATED 20", REFUSAL 20", NO OBSERVED WATER, ROOTS NOT OBSERVED;
0-10" 10YR 3/2 LOAM
10-20" GRAVELLY COBBLE SANDY LOAM

TEST PIT LOGS & SOIL DATA CONTINUED:

TEST PIT #7
ESHWT NOT OBSERVED, TERMINATED 108", NO REFUSAL, NO OBSERVED WATER, ROOTS 28";
0-12" 10YR 3/3 GRAVELLY LOAM, GRANULAR, FRIABLE
12-32" 10YR 5/6 GRAVELLY COBBLE SANDY LOAM, GRANULAR, FRIABLE.
32-108" 10YR 6/6 GRAVELLY COBBLY SAND, SINGLE GRAIN, LOOSE

TEST PIT #8
ESHWT NOT OBSERVED, TERMINATED 10", REFUSAL 10", NO OBSERVED WATER, ROOTS 10";
0-10" 10YR 3/2 LOAM, GRANULAR, FRIABLE

TEST PIT #9
ESHWT NOT OBSERVED, TERMINATED 46", NO REFUSAL, NO OBSERVED WATER, ROOTS 66";
0-24" 10YR 3/2 LOAM, GRANULAR, FRIABLE
24-36" 10YR 5/6 GRAVEL SANDY LOAM, GRANULAR, FRIABLE.
36-46" 10YR 6/6 GRAVELLY COBLLE SANDY LOAM, SINGLE GRAIN, LOOSE

TEST PIT LOGS & SOIL DATA CONTINUED:

TEST PITS A-1 THROUGH A-13 WERE PERFORMED ON MAY 9, 2012 AND JUNE 21, 2012 BY WAYNE MORRILL OF JONES & BEACH ENGINEERS, INC.

TEST PIT A-1
SHWT = 37", ROOTS TO 37", H20 NOT OBSERVED, REFUSAL @ 43", PERC RATE = 10 MIN/INCH
0-12" TOPSOIL
12-21" 7.5YR 3/4 DARK BROWN FINE SANDY LOAM WITH COBBLES, GRANULAR, FRIABLE
21-37" 10YR 3/6 DARK YELLOWISH BROWN LOAMY SAND WITH COBBLES, GRANULAR, FRIABLE
37-43" 2.5Y 5/6 LIGHT OLIVE BROWN LOAMY SAND, GRANULAR, FRIABLE

TEST PIT A-2
SHWT = 54", ROOTS TO 54", H20 @ 72", REFUSAL @ 85", PERC RATE = 2 MIN/INCH
0-7" TOPSOIL
7-24" 7.5YR 3/4 DARK BROWN FINE SANDY LOAM, GRANULAR, FRIABLE
24-34" 10YR 3/6 DARK YELLOWISH BROWN COARSE SAND, GRANULAR, FRIABLE
34-55" 10YR 4/6 DARK YELLOWISH BROWN SINGLE GRAIN SAND WITH COBBLES, GRANULAR, FRIABLE
55-85" DARK YELLOWISH BROWN COARSE SAND WITH COBBLES, GRANULAR, FRIABLE

TEST PIT A-3
SHWT NOT OBSERVED, ROOTS TO 63", H20 NOT OBSERVED, REFUSAL NOT OBSERVED, PERC RATE = 2 MIN/INCH
0-7" TOPSOIL
7-24" 10YR 4/6 DARK YELLOWISH BROWN LOAMY SAND, GRANULAR, FRIABLE
24-102" 10YR 5/6 YELLOWISH BROWN LOOSE GRAVEL WITH COBBLES, GRANULAR, FRIABLE

TEST PIT LOGS & SOIL DATA CONTINUED:

TEST PIT A-4
DATA NOT AVAILABLE

TEST PIT A-5
SHWT @ 48", ROOTS TO 48", H20 @ 58", REFUSAL @ 67", PERC RATE = 2 MIN/INCH
0-4" TOPSOIL
4-12" 10YR 3/6 DARK YELLOWISH BROWN FINE SANDY LOAM, GRANULAR, FRIABLE
12-19" 10YR 4/6 DARK YELLOWISH BROWN LOAMY SAND, GRANULAR, FRIABLE
19-38" 10YR 4/4 DARK YELLOWISH BROWN SINGLE GRAIN SAND, GRANULAR, FRIABLE
28-46" 7.5YR 3/4 DARK BROWN COARSE SAND, GRANULAR, FRIABLE
46-67" 2.5Y 5/3 LIGHT OLIVE BROWN FINE SAND, GRANULAR, FRIABLE

TEST PIT A-6
REFUSAL @ 24"

TEST PIT A-7
REFUSAL @ 30"

TEST PIT A-8
SHWT @ 24", ROOTS TO 24", H20 NOT OBSERVED, REFUSAL @ 36", PERC RATE = 12 MIN/INCH
0-7" TOPSOIL
7-24" 10YR 5/6 YELLOWISH BROWN FINE SANDY LOAM, GRANULAR, FRIABLE
24-36" 2.5Y 5/3 LIGHT OLIVE BROWN LOAMY SAND, GRANULAR, FRIABLE

TEST PIT A-9
SHWT @ 46", ROOTS TO 46", H20 @ 52", REFUSAL NOT OBSERVED, PERC RATE = 2 MIN/INCH
0-7" TOPSOIL
7-17" 2.5Y 5/4 LIGHT OLIVE BROWN FINE SANDY LOAM, GRANULAR, FRIABLE
17-28" 10YR 4/6 DARK YELLOWISH BROWN FINE SAND, GRANULAR, FRIABLE
28-46" 10YR 5/6 YELLOWISH BROWN COARSE SAND, GRANULAR FRIABLE
46-95" 2.5Y 5/6 LIGHT OLIVE BROWN COARSE SAND, GRANULAR, FRIABLE

TEST PIT A-10
SHWT NOT OBSERVED, ROOTS TO 102", H20 NOT OBSERVED, REFUSAL NOT OBSERVED, PERC RATE = 2 MIN/INCH
0-8" TOPSOIL
8-20" 10YR 5/6 YELLOWISH BROWN LOAMY SAND, GRANULAR, FRIABLE
20-65" 10YR 4/6 DARK YELLOWISH BROWN GRAVELLY SAND, GRANULAR, FRIABLE
65-122" 10YR 5/6 YELLOWISH BROWN LOOSE GRAVEL WITH COBBLES, GRANULAR FRIABLE

TEST PIT A-11
SHWT NOT OBSERVED, ROOTS TO 40", H20 @ 81", REFUSAL NOT OBSERVED, PERC RATE = 2 MIN/INCH
0-4" TOPSOIL
4-14" 10YR 4/6 DARK YELLOWISH BROWN LOAMY SAND, GRANULAR, FRIABLE
14-68" 10YR 5/6 YELLOWISH BROWN COARSE GRAVEL, GRANULAR, FRIABLE
68-97" 10YR 4/4 DARK YELLOWISH BROWN SINGLE GRAIN SAND, GRANULAR, FRIABLE
97-136" 10YR 5/6 YELLOWISH BROWN COARSE GRAVEL, GRANULAR FRIABLE
136-140" 10YR 4/4 DARK YELLOWISH BROWN SINGLE GRAIN SAND, GRANULAR FRIABLE

TEST PIT A-12
SHWT @ 24", ROOTS TO 38", H20 @ 28",-REFUSAL NOT OBSERVED, PERC RATE = 8 MIN/INCH
0-6" TOPSOIL
6-18" 10YR 4/4 DARK YELLOWISH BROWN LOAMY SAND, GRANULAR, FRIABLE
18-24" 10YR 5/8 YELLOWISH BROWN LOAMY SAND, GRANULAR, FRIABLE
24-60" 2.5Y 6/1 GRAY LOAMY SAND, GRANULAR FIRM

TEST PIT A-13
SHWT NOT OBSERVED, ROOTS TO 67", H20 NOT OBSERVED, REFUSAL NOT OBSERVED, PERC RATE = 2 MIN/INCH
0-7" TOPSOIL
7-19" 10YR 4/6 DARK YELLOWISH BROWN LOAMY SAND, GRANULAR, FRIABLE
19-117" 2.5Y 5/6 LIGHT OLIVE BROWN LOOSE GRAVEL WITH COBBLES, GRANULAR, FRIABLE

NOTES:

1. OWNER OF RECORD:
TAX MAP 233 LOT 77 & TAX MAP 234 LOTS 1.2 & 1.4
TOWN OF BARRINGTON
P.O. BOX 660
BARRINGTON, NH 03825
SCRD BK4342 P60049 (MAP 233 LOT 77)
SCRD BK2326 P60158 (MAP 234 LOT 1.2)
2. THE INTENT OF THIS PLAN IS TO DELINEATE SOIL TYPES AND SHOW TOPOGRAPHY OF THE SITE FOR NHDES AOT PERMIT APPLICATION.
3. PARCEL IS ZONED VILLAGE DISTRICT (VD) PER THE TOWN OF BARRINGTON, NH ZONING MAP AMENDED JUNE 6, 2014.
4. PARCEL IS NOT IN A FLOOD HAZARD ZONE; REFERENCE FLOOD INSURANCE RATE MAP 33017C0285D, DATED MAY 17, 2005.
5. FIELDWORK CONDUCTED BY JONES & BEACH ENGINEERS, INC. IN SPRING 2014.
6. WETLANDS WERE DELINEATED BY JONES & BEACH ENGINEERS INC. IN SPRING 2014
7. SOILS WERE DELINEATED BY GOVE ENVIRONMENTAL SERVICES, INC. IN SPRING 2014.

LEGEND:

	GRANITE BOUND FOUND
	IRON PIPE FOUND
	DRILL HOLE FOUND
(TYP)	TYPICAL
(TBR)	TO BE REMOVED
VGC	VERTICAL GRANITE CURB
SGC	SLOPED GRANITE CURB
PPP	PROPOSED POROUS PAVEMENT
PTP	PROPOSED TRADITIONAL PAVEMENT
	PROPERTY LINE
	EDGE OF PAVEMENT (EOP)
	SOIL DELINEATION
OHE	OVERHEAD UTILITIES
UG	UNDERGROUND UTILITIES
	UTILITY POLE
	GUY WIRE
	WELL
W	WATER LINE
D	DRAIN LINE
S	SEPTIC LINE
GAS	GAS LINE
	STONEWALL
	GUARD RAIL
	WETLANDS
	TREELINE
	TREE

SOIL MAPPING STANDARDS:

SITE-SPECIFIC SOIL MAPPING STANDARDS FOR NEW HAMPSHIRE AND VERMONT. SSSNNE SPECIAL PUBLICATION NO. 3, VERSION 5.0, DECEMBER 2017. THIS MAP PRODUCT IS WITHIN THE TECHNICAL STANDARDS OF THE NATIONAL COOPERATIVE SOIL SURVEY. IT IS A SPECIAL PRODUCT, INTENDED FOR THE SUBMISSION TO THE NH DES ALTERATION OF TERRAIN. IT WAS PRODUCED BY A PROFESSIONAL SOIL SCIENTIST AND IS NOT A PRODUCT OF THE USDA NATURAL RESOURCE CONSERVATION SERVICE.

SOIL IDENTIFICATION LEGEND

SYMBOL	MAP UNIT	HYDROLOGIC SOIL GROUP
12	HINCKLEY, FINE SANDY LOAM	A
83	HOLLIS-CANTON-ROCK OUTCROP	HOLLIS - C/D CANTON - B
313	DEERFIELD, LOAMY SAND	B
315	MASHPEE	B
514P	LEICESTER, FINE SANDY LOAM	C

SOIL SLOPES LEGEND

0 TO 8%	B
8 TO 15%	C
15 TO 25%	D
25%+	E

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

ISS.	DATE:	DESCRIPTION OF ISSUE:	CHK.
2	NOV 5, 2019	FOR PRESENTATION	
1	OCT 17, 2019	FOR PRESENTATION	

DRAWN: JJM DESIGN: JJM
CHECKED: BDS CHECKED: BDS

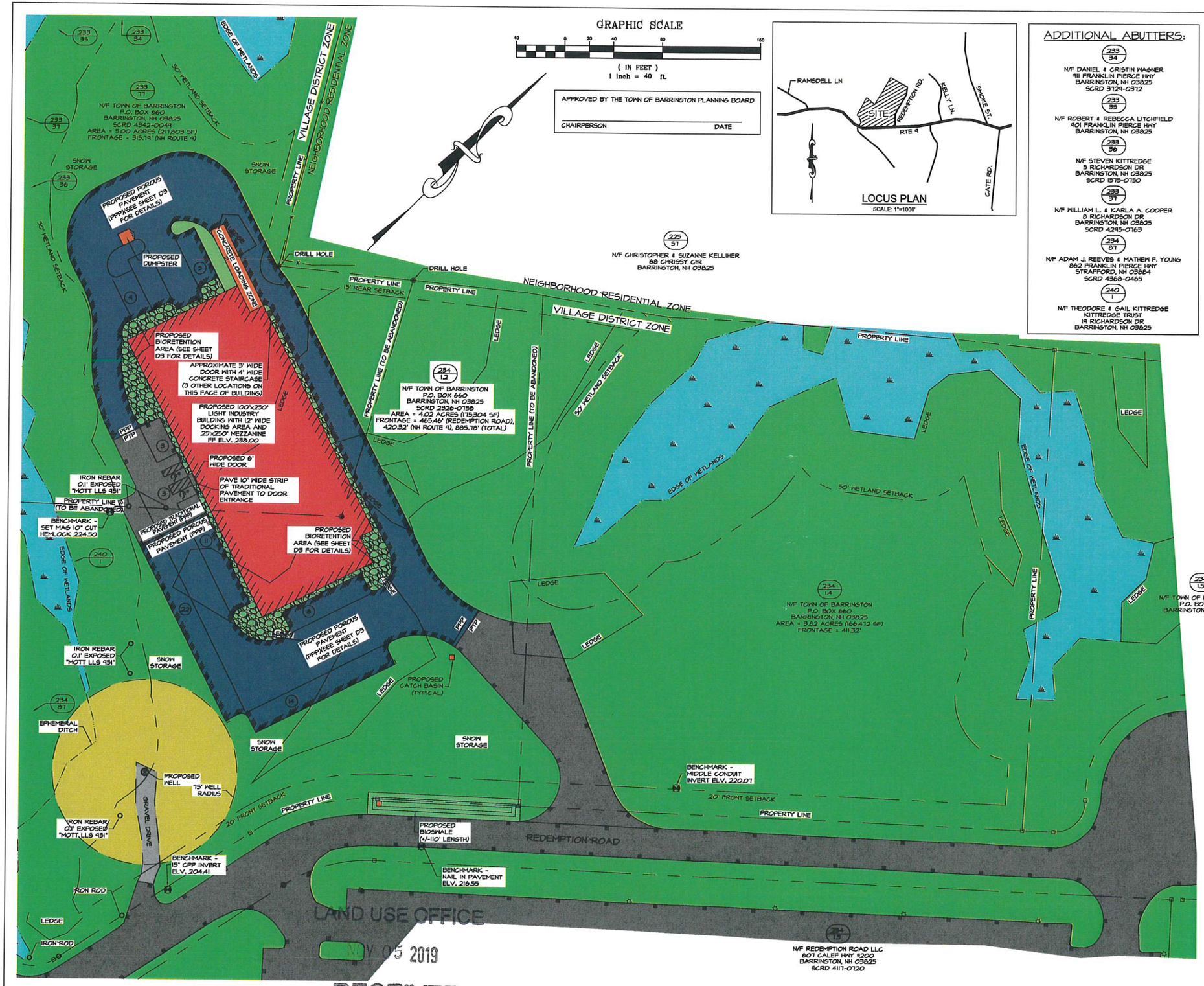
EMANUEL ENGINEERING
civil & structural consultants, land planners
118 Portsmouth Avenue, A202
Stratham, NH 03885
P: 603-772-4400 F: 603-772-4487
www.emanuelengineering.com

CLIENT:
TURBOCAM INTERNATIONAL
607 CALEF HIGHWAY
BARRINGTON, NH 03825

SEAL:

TITLE:
SITE-SPECIFIC SOILS PLAN
FOR
TAX MAP 233 LOT 77
AND TAX MAP 234 LOTS 1.2 & 1.4
TURBOCAM INTERNATIONAL
ROUTE 9 / REDEMPTION ROAD (SITE)
BARRINGTON, NH 03825
& TOWN OF BARRINGTON
PO BOX 660
BARRINGTON, NH 03825

PROJECT:	SCALE:	SHEET:
19-020	1"=40'	C2



ADDITIONAL ABUTTERS:

233/34
N/F DANIEL & CRISTIN WAGNER
411 FRANKLIN PIERCE HWY
BARRINGTON, NH 03825
SCRD 3129-0372

233/35
N/F ROBERT & REBECCA LITCHFIELD
401 FRANKLIN PIERCE HWY
BARRINGTON, NH 03825

233/36
N/F STEVEN KITTREDGE
5 RICHARDSON DR
BARRINGTON, NH 03825
SCRD 1515-0150

233/37
N/F WILLIAM L. & KARLA A. COOPER
8 RICHARDSON DR
BARRINGTON, NH 03825
SCRD 4245-0169

234/87
N/F ADAM J. REEVES & MATHEW F. YOUNG
862 FRANKLIN PIERCE HWY
STRAFFORD, NH 03884
SCRD 4368-0465

240/1
N/F THEODORE & GAIL KITTREDGE
KITTREDGE TRUST
19 RICHARDSON DR
BARRINGTON, NH 03825

NOTES:

1. OWNER OF RECORD:
TAX MAP 233 LOT 77 & TAX MAP 234 LOTS 1.2 & 1.4
TOWN OF BARRINGTON
P.O. BOX 660
BARRINGTON, NH 03825
SCRD BK4342 P60044 (MAP 233 LOT 77)
SCRD BK2326 P60156 (MAP 234 LOT 1.2)

2. THE INTENT OF THIS PLAN IS TO SHOW THE CONSTRUCTION OF A 100FT x 250FT BUILDING WITH A 12FT WIDE DOCKING AREA (27,340 SF TOTAL FOOTPRINT) AND 6,250 SF MEZZANINE, AND ASSOCIATED IMPROVEMENTS.

3. PARCEL IS ZONED VILLAGE DISTRICT (VD) PER THE TOWN OF BARRINGTON, NH ZONING MAP AMENDED JUNE 6, 2014.

4. PARCEL IS NOT IN A FLOOD HAZARD ZONE; REFERENCE FLOOD INSURANCE RATE MAP 33017C0285D, DATED MAY 17, 2005.

5. FIELDWORK CONDUCTED BY JONES & BEACH ENGINEERS, INC. IN SPRING 2019.

6. WETLANDS WERE DELINEATED BY JONES & BEACH ENGINEERS INC. IN SPRING 2019.

7. PROPERTY TO BE SERVICED BY ON-SITE WELL AND SEPTIC.

8. ALL CONSTRUCTION SHOULD COMPLY WITH FEDERAL, STATE, AND LOCAL STANDARDS AND REGULATIONS.

9. THIS PLAN WAS PREPARED WITH ON-SITE FIELD SURVEY AND EXISTING PLANS. THE CONTRACTOR SHOULD NOTIFY EMANUEL ENGINEERING, INC. DURING CONSTRUCTION IF ANY DISCREPANCY TO THE PLAN IS FOUND ON SITE.

10. BEFORE ANY EXCAVATION, DIG SAFE AND ALL UTILITY COMPANIES SHOULD BE CONTACTED 72 HOURS BEFORE COMMENCING BY THE CONTRACTOR. CALL DIG SAFE @ 811 OR 1-888-DIG-SAFE.

11. ALL UTILITIES SHALL BE LOCATED UNDERGROUND EXCEPT AS NOTED ON PLAN APPROVED BY THE PLANNING BOARD.

12. TOWN OF BARRINGTON, NEW HAMPSHIRE ZONING ORDINANCE AS AMENDED MARCH 13, 2018 DIMENSIONAL REQUIREMENTS FOR THE VILLAGE DISTRICT (NON-RESIDENTIAL):
   - MINIMUM LOT SIZE = 30,000 SF
   - MINIMUM LOT FRONTAGE = 75 FT
   - MINIMUM FRONT SETBACK = 20 FT
   - MINIMUM SIDE SETBACK = 15 FT
   - MINIMUM REAR SETBACK = 15 FT
   - MAXIMUM BUILDING HEIGHT = 35 FT
   - MAXIMUM BUILDING STORIES = 3
   - MAXIMUM LOT COVERAGE = 60%
   - MAXIMUM BUILDING SIZE = 50,000 SF
   - BUFFER FOR EXISTING RESIDENTIAL USES = 50 FT
   - GREENBELT BUFFER = 50 FT
   - WETLAND BUFFER = 50 FT

13. 2013 SITE PLAN OFF-STREET PARKING AND LOADING STANDARDS:
   - PARKING SPACE DIMENSIONS:
     MINIMUM 9 FT WIDE 18 FT LONG
   - MINIMUM AISLE WIDTHS SHALL BE 22 FT FOR ONE-WAY AND 24 FT FOR TWO-WAY AISLES.
   - SEE NOTE 14 FOR REQUIRED PARKING SPACES.

14. PARKING REQUIRED/PROPOSED:
   - PROPOSED BUILDING (LIGHT INDUSTRY)
     GROSS FLOOR AREA = 33,590 SF
   - REQUIREMENT = 1.5 SPACES / 1,000 SF
   - 27,340 SF x 1.5 SPACES/1,000 SF = 50.4 SPACES
   - TOTAL SPACES REQUIRED = 51 SPACES
   - TOTAL SPACES PROVIDED = 75 SPACES

15. ALL KNOX BOX, FIRE ALARM SYSTEM AND FIRE SPRINKLER INSTALLATION & INSPECTIONS TO BE COORDINATED WITH THE BARRINGTON FIRE DEPARTMENT.

16. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT DEFICIENCIES EXIST IN THE APPROVED DESIGN DRAWINGS, THE CONTRACTOR SHALL BE REQUIRED TO CORRECT THE DEFICIENCIES TO MEET THE REQUIREMENTS OF THE REGULATIONS AT NO EXPENSE TO THE TOWN.

17. REQUIRED EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY DISTURBANCE OF THE SITE'S SURFACE AREA AND SHALL BE MAINTAINED THROUGH THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION CONTROL MEASURES ARE REQUIRED TO STOP ANY EROSION ON THE CONSTRUCTION SITE DUE TO ACTUAL SITE CONDITIONS, THE OWNER SHALL BE REQUIRED TO INSTALL THE NECESSARY EROSION PROTECTION AT NO EXPENSE TO THE TOWN.

18. IN ACCORDANCE WITH TOWN REGULATIONS AND RSA 676:13, ALL IMPROVEMENTS SPECIFIED ON THESE SITE PLANS SHALL BE CONSTRUCTED, COMPLETED, INSPECTED AND APPROVED BY THE TOWN OF BARRINGTON PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY.

LEGEND:

⊡	GRANITE BOUND FOUND
O	IRON PIPE FOUND
◉	DRILL HOLE FOUND
(TYP)	TYPICAL
(TBR)	TO BE REMOVED
VGC	VERTICAL GRANITE CURB
SGC	SLOPED GRANITE CURB
PPP	PROPOSED POROUS PAVEMENT
PTP	PROPOSED TRADITIONAL PAVEMENT
— - - —	PROPERTY LINE
—|||—	EDGE OF PAVEMENT (EOP)
. . . . .	SOIL DELINEATION
—OHE—	OVERHEAD UTILITIES
—UG—	UNDERGROUND UTILITIES
°O,	UTILITY POLE
	GUY WIRE
W	WELL
—W—	WATER LINE
—D—	DRAIN LINE
—S—	SEPTIC LINE
—GAS—	GAS LINE
·○○○○○·	STONEWALL
	GUARD RAIL
	WETLANDS
	TREELINE
	TREE

I CERTIFY THAT THIS SURVEY PLAT WAS PREPARED BY ME OR THOSE UNDER MY DIRECT SUPERVISION. THIS PLAN IS A RESULT OF FIELD SURVEY WORK PERFORMED BY JONES & BEACH ENGINEERS INC. IN 2012 THROUGH 2019. THE ERROR OF CLOSURE IS BETTER THAN 1/10,000. SURVEY PER NHLSA STANDARDS; CATEGORY 1 CONDITION 1. AREA CALCULATIONS PER LAND DEVELOPMENT DESKTOP SOFTWARE.

LICENSED LAND SURVEYOR, DATE

SEAL:

ISS.	DATE:	DESCRIPTION OF ISSUE:	CHK.
2	NOV 5, 2019	FOR PRESENTATION	
1	OCT 17, 2019	FOR PRESENTATION	

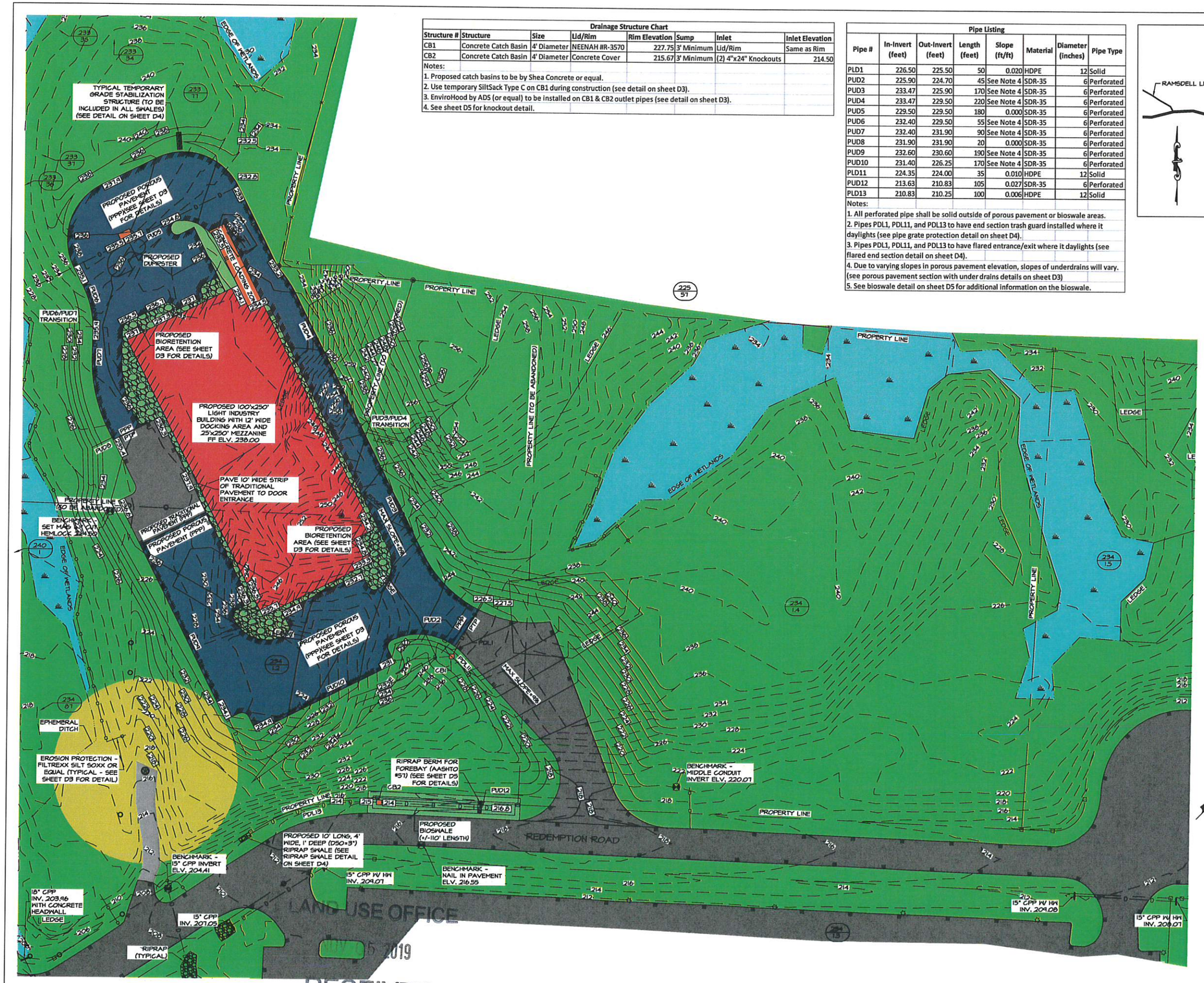
DRAWN: JJM | DESIGN: JJM
CHECKED: BDS | CHECKED: BDS

EMANUEL ENGINEERING
civil & structural consultants, land planners
118 Portsmouth Avenue, A202
Stratham, NH 03885
P: 603-772-4400 F: 603-772-4487
www.emanuelengineering.com

CLIENT:
TURBOCAM INTERNATIONAL
607 CALEF HIGHWAY
BARRINGTON, NH 03825

TITLE:
SITE PLAN
FOR
TAX MAP 233 LOT 77
AND TAX MAP 234 LOTS 1.2 & 1.4
TURBOCAM INTERNATIONAL
ROUTE 9 / REDEMPTION ROAD (SITE)
BARRINGTON, NH 03825
& TOWN OF BARRINGTON
PO BOX 660
BARRINGTON, NH 03825

PROJECT:	SCALE:	SHEET:
19-020	1"=40'	C3



Drainage Structure Chart

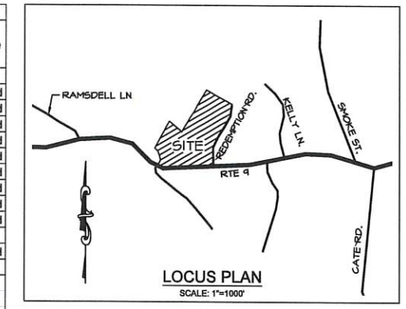
Structure #	Structure	Size	Lid/Rim	Rim Elevation	Sump	Inlet	Inlet Elevation
CB1	Concrete Catch Basin	4' Diameter	NEENAH #R-3570	227.75	3' Minimum	Lid/Rim	Same as Rim
CB2	Concrete Catch Basin	4' Diameter	Concrete Cover	215.67	3' Minimum	(2) 4"x24" Knockouts	214.50

Notes:
1. Proposed catch basins to be by Shea Concrete or equal.
2. Use temporary SiltSack Type C on CB1 during construction (see detail on sheet D3).
3. EnviroHood by ADS (or equal) to be installed on CB1 & CB2 outlet pipes (see detail on sheet D3).
4. See sheet D5 for knockout detail.

Pipe Listing

Pipe #	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	Material	Diameter (inches)	Pipe Type
PLD1	226.50	225.50	50	0.020	HDPE	12	Solid
PUD2	225.90	224.70	45	See Note 4	SDR-35	6	Perforated
PUD3	233.47	225.90	170	See Note 4	SDR-35	6	Perforated
PUD4	233.47	229.50	220	See Note 4	SDR-35	6	Perforated
PUD5	229.50	229.50	180	0.000	SDR-35	6	Perforated
PUD6	232.40	229.50	55	See Note 4	SDR-35	6	Perforated
PUD7	232.40	231.90	90	See Note 4	SDR-35	6	Perforated
PUD8	231.90	231.90	20	0.000	SDR-35	6	Perforated
PUD9	232.60	230.60	190	See Note 4	SDR-35	6	Perforated
PUD10	231.40	226.25	170	See Note 4	SDR-35	6	Perforated
PLD11	224.35	224.00	35	0.010	HDPE	12	Solid
PUD12	213.63	210.83	105	0.027	SDR-35	6	Perforated
PLD13	210.83	210.25	100	0.006	HDPE	12	Solid

Notes:
1. All perforated pipe shall be solid outside of porous pavement or bioswale areas.
2. Pipes PDL1, PDL11, and PDL13 to have end section trash guard installed where it daylights (see pipe grate protection detail on sheet D4).
3. Pipes PDL1, PDL11, and PDL13 to have flared entrance/exit where it daylights (see flared end section detail on sheet D4).
4. Due to varying slopes in porous pavement elevation, slopes of underdrains will vary. (see porous pavement section with under drains details on sheet D3)
5. See bioswale detail on sheet D5 for additional information on the bioswale.



LOCUS PLAN
SCALE: 1"=1000'

LEGEND:

- GRANITE BOUND FOUND
- IRON PIPE FOUND
- DRILL HOLE FOUND
- (TYP) TYPICAL
- (TBR) TO BE REMOVED
- VGC VERTICAL GRANITE CURB
- SGC SLOPED GRANITE CURB
- PPP PROPOSED POROUS PAVEMENT
- PTP PROPOSED TRADITIONAL PAVEMENT
- PROPERTY LINE
- EDGE OF PAVEMENT (EOP)
- SOIL DELINEATION
- OHE OVERHEAD UTILITIES
- UG UNDERGROUND UTILITIES
- UTILITY POLE
- GUY WIRE
- WELL
- W WATER LINE
- D DRAIN LINE
- S SEPTIC LINE
- GAS GAS LINE
- STONEWALL
- GUARD RAIL
- WETLANDS
- TREELINE
- TREE

NOTES:

1. OWNER OF RECORD:
   TAX MAP 233 LOT 77 & TAX MAP 234 LOTS 1.2 & 1.4
   TOWN OF BARRINGTON
   P.O. BOX 660
   BARRINGTON, NH 03825
   SCRD BK4342 PG0049 (MAP 233 LOT 77)
   SCRD BK2326 PG0156 (MAP 234 LOT 1.2)
2. THE INTENT OF THIS PLAN IS TO SHOW THE DRAINAGE STRUCTURES AND PROPOSED GRADING ASSOCIATED WITH THE SITE IMPROVEMENTS.
3. PARCEL IS ZONED VILLAGE DISTRICT (VD) PER THE TOWN OF BARRINGTON, NH ZONING MAP AMENDED JUNE 6, 2014.
4. PARCEL IS NOT IN A FLOOD HAZARD ZONE; REFERENCE FLOOD INSURANCE RATE MAP 33017C0285D, DATED MAY 17, 2005.
5. FIELDWORK CONDUCTED BY JONES & BEACH ENGINEERS, INC. IN SPRING 2019.
6. WETLANDS WERE DELINEATED BY JONES & BEACH ENGINEERS INC. IN SPRING 2019.
7. PROPERTY TO BE SERVICED BY ON-SITE WELL AND SEPTIC.
8. ALL CONSTRUCTION SHOULD COMPLY WITH FEDERAL, STATE, AND LOCAL STANDARDS AND REGULATIONS.
9. THIS PLAN WAS PREPARED WITH ON-SITE FIELD SURVEY AND EXISTING PLANS. THE CONTRACTOR SHOULD NOTIFY EMANUEL ENGINEERING, INC. DURING CONSTRUCTION IF ANY DISCREPANCY TO THE PLAN IS FOUND ON SITE.
10. BEFORE ANY EXCAVATION, DIG SAFE AND ALL UTILITY COMPANIES SHOULD BE CONTACTED 72 HOURS BEFORE COMMENCING BY THE CONTRACTOR. CALL DIG SAFE @ 811 OR 1-888-DIG-SAFE.
11. ALL UTILITIES SHALL BE LOCATED UNDERGROUND EXCEPT AS NOTED ON PLAN APPROVED BY THE PLANNING BOARD.
12. IN THE EVENT OF A CUT INTO LEDGE, A SLOPE OF 1:1 MAY BE USED. IF THIS IS DONE, A 4FT TALL CHAINLINK FENCE MUST BE INSTALLED AT THE TOP OF THE SLOPE.
13. REQUIRED EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO ANY DISTURBANCE OF THE SITE'S SURFACE AREA AND SHALL BE MAINTAINED THROUGH THE COMPLETION OF ALL CONSTRUCTION ACTIVITIES. IF, DURING CONSTRUCTION, IT BECOMES APPARENT THAT ADDITIONAL EROSION CONTROL MEASURES ARE REQUIRED TO STOP ANY EROSION ON THE CONSTRUCTION SITE DUE TO ACTUAL SITE CONDITIONS, THE OWNER SHALL BE REQUIRED TO INSTALL THE NECESSARY EROSION PROTECTION AT NO EXPENSE TO THE TOWN.

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

ISS.	DATE:	DESCRIPTION OF ISSUE:	CHK.
2	NOV 5, 2019	FOR PRESENTATION	
1	OCT 17, 2019	FOR PRESENTATION	

DRAWN: JJM | DESIGN: JJM
CHECKED: BDS | CHECKED: BDS

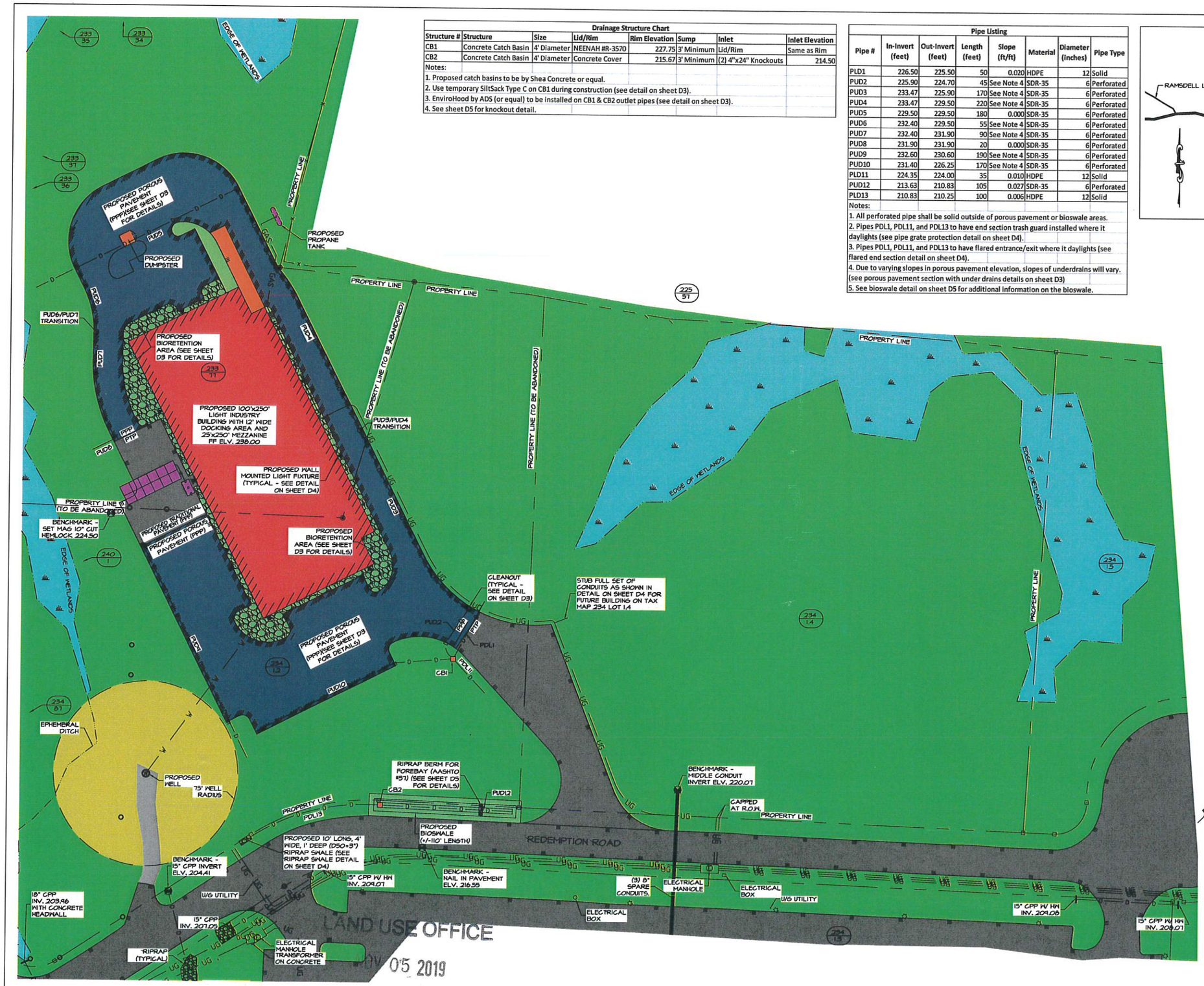
EMANUEL ENGINEERING
civil & structural consultants, land planners
118 Portsmouth Avenue, A202
Stratham, NH 03885
P: 603-772-4400 F: 603-772-4487
www.emanuelengineering.com

CLIENT:
TURBOCAM INTERNATIONAL
607 CALEF HIGHWAY
BARRINGTON, NH 03825

SEAL:

TITLE:
GRADING & DRAINAGE PLAN
FOR
TAX MAP 233 LOT 77
AND TAX MAP 234 LOTS 1.2 & 1.4
TURBOCAM INTERNATIONAL
ROUTE 9 / REDEMPTION ROAD (SITE)
BARRINGTON, NH 03825
& TOWN OF BARRINGTON
PO BOX 660
BARRINGTON, NH 03825

PROJECT:	SCALE:	SHEET:
19-020	1"=40'	C4

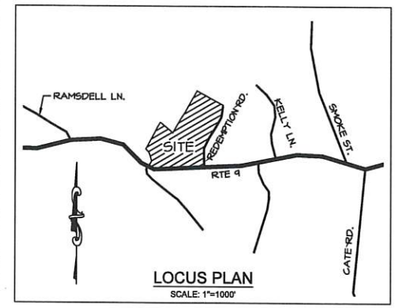


Drainage Structure Chart							
Structure #	Structure	Size	Lid/Rim	Rim Elevation	Sump	Inlet	Inlet Elevation
CB1	Concrete Catch Basin	4' Diameter	NEENAH #R-3570	227.75	3' Minimum	Lid/Rim	Same as Rim
CB2	Concrete Catch Basin	4' Diameter	Concrete Cover	215.67	3' Minimum	(2) 4"x24" Knockouts	214.50

Notes:
1. Proposed catch basins to be by Shea Concrete or equal.
2. Use temporary SiltSack Type C on CB1 during construction (see detail on sheet D3).
3. EnviroHood by ADS (or equal) to be installed on CB1 & CB2 outlet pipes (see detail on sheet D3).
4. See sheet D5 for knockout detail.

Pipe Listing							
Pipe #	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	Material	Diameter (inches)	Pipe Type
PLD1	226.50	225.50	50	0.020	HDPE	12	Solid
PUD2	225.90	224.70	45	See Note 4	SDR-35	6	Perforated
PUD3	233.47	225.90	170	See Note 4	SDR-35	6	Perforated
PUD4	233.47	229.50	220	See Note 4	SDR-35	6	Perforated
PUD5	229.50	229.50	180	0.000	SDR-35	6	Perforated
PUD6	232.40	229.50	55	See Note 4	SDR-35	6	Perforated
PUD7	232.40	231.90	90	See Note 4	SDR-35	6	Perforated
PUD8	231.90	231.90	20	0.000	SDR-35	6	Perforated
PUD9	232.60	230.60	190	See Note 4	SDR-35	6	Perforated
PUD10	231.40	226.25	170	See Note 4	SDR-35	6	Perforated
PLD11	224.35	224.00	35	0.010	HDPE	12	Solid
PUD12	213.63	210.83	105	0.027	SDR-35	6	Perforated
PLD13	210.83	210.25	100	0.006	HDPE	12	Solid

Notes:
1. All perforated pipe shall be solid outside of porous pavement or bioswale areas.
2. Pipes PDL1, PDL11, and PDL13 to have end section trash guard installed where it daylights (see pipe grate protection detail on sheet D4).
3. Pipes PDL1, PDL11, and PDL13 to have flared entrance/exit where it daylights (see flared end section detail on sheet D4).
4. Due to varying slopes in porous pavement elevation, slopes of underdrains will vary. (see porous pavement section with under drains details on sheet D3)
5. See bioswale detail on sheet D5 for additional information on the bioswale.



LOCUS PLAN
SCALE: 1"=1000'

LEGEND:

- GRANITE BOUND FOUND
- IRON PIPE FOUND
- DRILL HOLE FOUND
- (TYP) TYPICAL
- (TBR) TO BE REMOVED
- VGC VERTICAL GRANITE CURB
- SGC SLOPED GRANITE CURB
- PPP PROPOSED POROUS PAVEMENT
- PTP PROPOSED TRADITIONAL PAVEMENT
- PROPERTY LINE
- EDGE OF PAVEMENT (EOP)
- SOIL DELINEATION
- OHE OVERHEAD UTILITIES
- UG UNDERGROUND UTILITIES
- UTILITY POLE
- GUY WIRE
- WELL
- W WATER LINE
- D DRAIN LINE
- S SEPTIC LINE
- GAS GAS LINE
- STONEWALL
- GUARD RAIL
- WETLANDS
- TREELINE
- TREE

NOTES:

1. OWNER OF RECORD:
   TAX MAP 233 LOT 77 & TAX MAP 234 LOTS 1.2 & 1.4
   TOWN OF BARRINGTON
   P.O. BOX 660
   BARRINGTON, NH 03825
   SCRD BK4342 PG0049 (MAP 233 LOT 77)
   SCRD BK2326 PG0758 (MAP 234 LOT 1.2)
2. THE INTENT OF THIS PLAN IS TO SHOW THE ASSOCIATED UTILITIES REQUIRED FOR THE PROPOSED LIGHT INDUSTRIAL BUILDING.
3. PARCEL IS ZONED VILLAGE DISTRICT (VD) PER THE TOWN OF BARRINGTON, NH ZONING MAP AMENDED JUNE 6, 2014.
4. PARCEL IS NOT IN A FLOOD HAZARD ZONE; REFERENCE FLOOD INSURANCE RATE MAP 33017C0285D, DATED MAY 17, 2005.
5. FIELDWORK CONDUCTED BY JONES & BEACH ENGINEERS, INC. IN SPRING 2019.
6. WETLANDS WERE DELINEATED BY JONES & BEACH ENGINEERS INC. IN SPRING 2019.
7. PROPERTY TO BE SERVICED BY ON-SITE WELL AND SEPTIC.
8. ALL CONSTRUCTION SHOULD COMPLY WITH FEDERAL, STATE, AND LOCAL STANDARDS AND REGULATIONS.
9. THIS PLAN WAS PREPARED WITH ON-SITE FIELD SURVEY AND EXISTING PLANS. THE CONTRACTOR SHOULD NOTIFY EMANUEL ENGINEERING, INC. DURING CONSTRUCTION IF ANY DISCREPANCY TO THE PLAN IS FOUND ON SITE.
10. BEFORE ANY EXCAVATION, DIG SAFE AND ALL UTILITY COMPANIES SHOULD BE CONTACTED 72 HOURS BEFORE COMMENCING BY THE CONTRACTOR. CALL DIG SAFE @ 811 OR 1-888-DIG-SAFE.
11. ALL UTILITIES SHALL BE LOCATED UNDERGROUND EXCEPT AS NOTED ON PLAN APPROVED BY THE PLANNING BOARD.

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft.

ISS.	DATE:	DESCRIPTION OF ISSUE:	CHK.
2	NOV 5, 2019	FOR PRESENTATION	
1	OCT 16, 2019	FOR PRESENTATION	

DRAWN: JJM DESIGN: JJM
CHECKED: BDS CHECKED: BDS

EMANUEL ENGINEERING
civil & structural consultants, land planners
118 Portsmouth Avenue, A202
Stratham, NH 03885
P: 603-772-4400 F: 603-772-4487
www.emanuelengineering.com

CLIENT:
TURBOCAM INTERNATIONAL
607 CALEF HIGHWAY
BARRINGTON, NH 03825

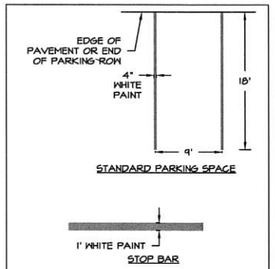
SEAL:

TITLE:
UTILITIES PLAN
FOR
TAX MAP 233 LOT 77
AND TAX MAP 234 LOTS 1.2 & 1.4
TURBOCAM INTERNATIONAL
ROUTE 9 / REDEMPTION ROAD (SITE)
BARRINGTON, NH 03825
& TOWN OF BARRINGTON
PO BOX 660
BARRINGTON, NH 03825

PROJECT:	SCALE:	SHEET:
19-020	1"=40'	C5

LAND USE OFFICE
NOV 05 2019
RECEIVED

LOCUS PLAN
SCALE: 1"=1000'



PAINTING NOTES:
1. ALL PAINTING TO BE REFLECTIVE.
2. SEE SHEET D3 FOR DETAILS ON PARKING STALLS FOR THE PHYSICALLY CHALLENGED

PAINT STRIPING DETAILS
NOT TO SCALE

NOTES:

1. OWNER OF RECORD:
   TAX MAP 233 LOT 77 & TAX MAP 234 LOTS 1.2 & 1.4
   TOWN OF BARRINGTON
   P.O. BOX 660
   BARRINGTON, NH 03825
   SCRD BK4342 PG0044 (MAP 233 LOT 77)
   SCRD BK2326 PG0758 (MAP 234 LOT 1.2)
2. THE INTENT OF THIS PLAN IS TO SHOW THE LOCATION, SIZE, PAVING, AND RADII OF DRIVEWAY AND PARKING LOT WITHIN THE SITE.
3. PARCEL IS ZONED VILLAGE DISTRICT (VD) PER THE TOWN OF BARRINGTON, NH ZONING MAP AMENDED JUNE 6, 2014.
4. PARCEL IS NOT IN A FLOOD HAZARD ZONE; REFERENCE FLOOD INSURANCE RATE MAP 33017C0285D, DATED MAY 17, 2005.
5. FIELDWORK CONDUCTED BY JONES & BEACH ENGINEERS, INC. IN SPRING 2014.
6. WETLANDS WERE DELINEATED BY JONES & BEACH ENGINEERS INC. IN SPRING 2014.
7. PROPERTY TO BE SERVICED BY ON-SITE WELL AND SEPTIC.
8. ALL CONSTRUCTION SHOULD COMPLY WITH FEDERAL, STATE, AND LOCAL STANDARDS AND REGULATIONS.
9. THIS PLAN WAS PREPARED WITH ON-SITE FIELD SURVEY AND EXISTING PLANS. THE CONTRACTOR SHOULD NOTIFY EMANUEL ENGINEERING, INC. DURING CONSTRUCTION IF ANY DISCREPANCY TO THE PLAN IS FOUND ON SITE.
10. BEFORE ANY EXCAVATION, DIG SAFE AND ALL UTILITY COMPANIES SHOULD BE CONTACTED 72 HOURS BEFORE COMMENCING BY THE CONTRACTOR. CALL DIG SAFE @ 811 OR 1-888-DIG-SAFE.
11. ALL UTILITIES SHALL BE LOCATED UNDERGROUND EXCEPT AS NOTED ON PLAN APPROVED BY THE PLANNING BOARD.

LEGEND:

⊡	GRANITE BOUND FOUND
O	IRON PIPE FOUND
⊕	DRILL HOLE FOUND
(TYP)	TYPICAL
(TBR)	TO BE REMOVED
VGC	VERTICAL GRANITE CURB
SGC	SLOPED GRANITE CURB
PPP	PROPOSED POROUS PAVEMENT
PTP	PROPOSED TRADITIONAL PAVEMENT
— - - —	PROPERTY LINE
—|||—	EDGE OF PAVEMENT (EOP)
. . . . .	SOIL DELINEATION
—OHE—	OVERHEAD UTILITIES
—UG—	UNDERGROUND UTILITIES
	UTILITY POLE
	GUY WIRE
W	WELL
—W—	WATER LINE
—D—	DRAIN LINE
—S—	SEPTIC LINE
—GAS—	GAS LINE
○○○○○○	STONEWALL
	GUARD RAIL
	WETLANDS
	TREELINE
	TREE

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

ISS.	DATE:	DESCRIPTION OF ISSUE:	CHK.
2	NOV 5, 2019	FOR PRESENTATION	
1	OCT 16, 2019	FOR PRESENTATION	

DRAWN: JJM | DESIGN: JJM
CHECKED: BDS | CHECKED: BDS

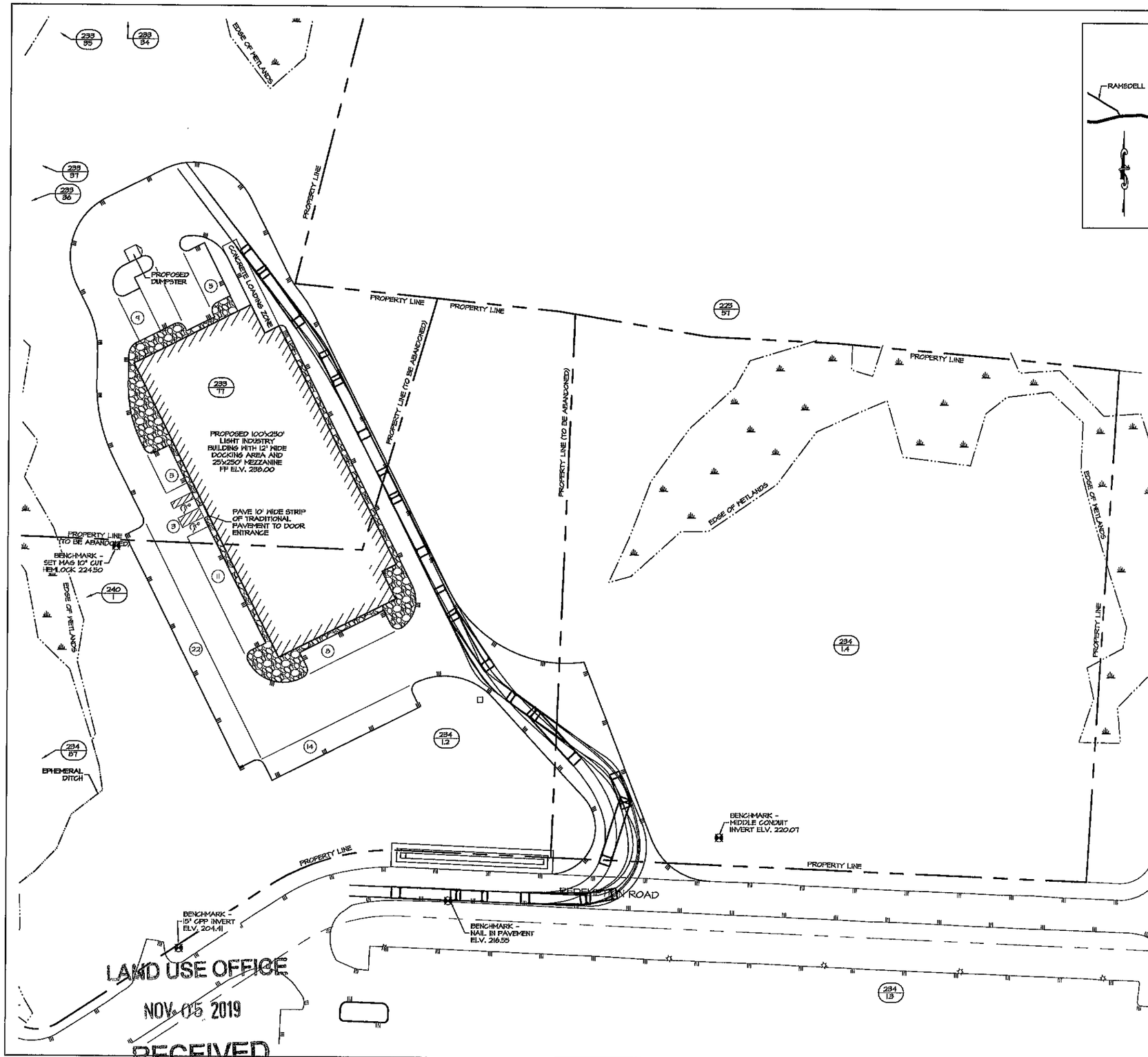
EMANUEL ENGINEERING
civil & structural consultants, land planners
118 Portsmouth Avenue, A202
Stratham, NH 03885
P: 603-772-4400 F: 603-772-4487
www.emanuelengineering.com

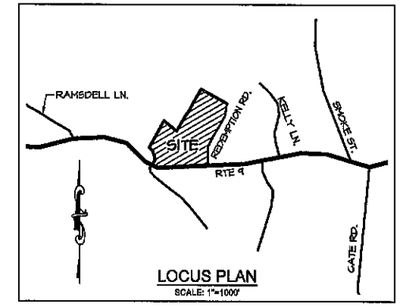
CLIENT:
TURBOCAM INTERNATIONAL
607 CALEF HIGHWAY
BARRINGTON, NH 03825

SEAL:

TITLE:
PAVING PLAN
FOR
TAX MAP 233 LOT 77
AND TAX MAP 234 LOTS 1.2 & 1.4
TURBOCAM INTERNATIONAL
ROUTE 9 / REDEMPTION ROAD (SITE)
BARRINGTON, NH 03825
& TOWN OF BARRINGTON
PO BOX 660
BARRINGTON, NH 03825

PROJECT:	SCALE:	SHEET:
19-020	1"=40'	C6





LOCUS PLAN
SCALE: 1"=1000'

NOTES:

1. OWNER OF RECORD:
   TAX MAP 233 LOT 77 & TAX MAP 234 LOTS 1.2 & 1.4
   TOWN OF BARRINGTON
   P.O. BOX 660
   BARRINGTON, NH 03825
   SCRD BK4842 PG0041 (MAP 233 LOT 77)
   SCRD BK2926 PG0156 (MAP 234 LOT 1.2)
2. THE INTENT OF THIS PLAN IS TO SHOW VERIFY THAT A WB-65 INTERSTATE SEMITRAILER CAN ENTER THE PROPOSED SITE AND ALIGN WITH THE LOADING DOCK.
3. THE VEHICLE PATH TRACKING FEATURE FROM CARLSON CIVIL 2019 WAS USED TO DEMONSTRATE THE APPROXIMATE VEHICLE PATH.
4. FIELDWORK CONDUCTED BY JONES & BEACH ENGINEERS, INC. IN SPRING 2014.

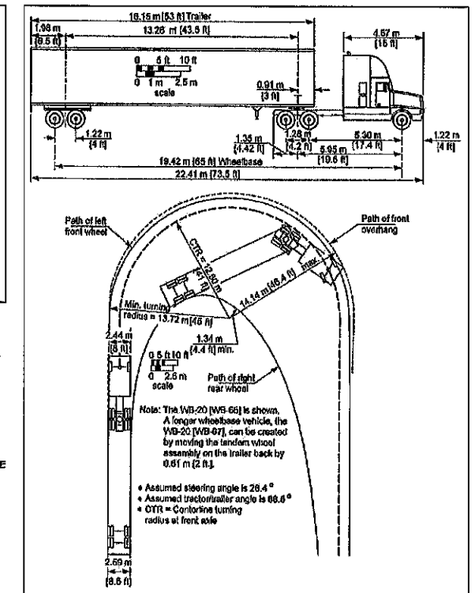


Exhibit 2-16. Minimum Turning Path for Interstate Semitrailer (WB-20 [WB-65 and WB-67]) Design Vehicle

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

LEGEND:

- GRANITE BOUND FOUND
- IRON PIPE FOUND
- DRILL HOLE FOUND
- (TYP) TYPICAL
- (TBR) TO BE REMOVED
- VGC VERTICAL GRANITE CURB
- SGC SLOPED GRANITE CURB
- PPP PROPOSED POROUS PAVEMENT
- PTP PROPOSED TRADITIONAL PAVEMENT
- PROPERTY LINE
- EDGE OF PAVEMENT (EOP)
- SOIL DELINEATION
- OHE OVERHEAD UTILITIES
- UG UNDERGROUND UTILITIES
- UTILITY POLE
- GUY WIRE
- WELL
- W WATER LINE
- D DRAIN LINE
- S SEPTIC LINE
- GAS GAS LINE
- STONEWALL
- GUARD RAIL
- WETLANDS
- TREELINE
- TREE

ISS.	DATE:	DESCRIPTION OF ISSUE:	CHK.
2	NOV 5, 2019	FOR APPROVAL	
1	SEPT 13, 2019	FOR APPROVAL	

DRAWN: JJM | DESIGN: JJM
CHECKED: BDS | CHECKED: BDS

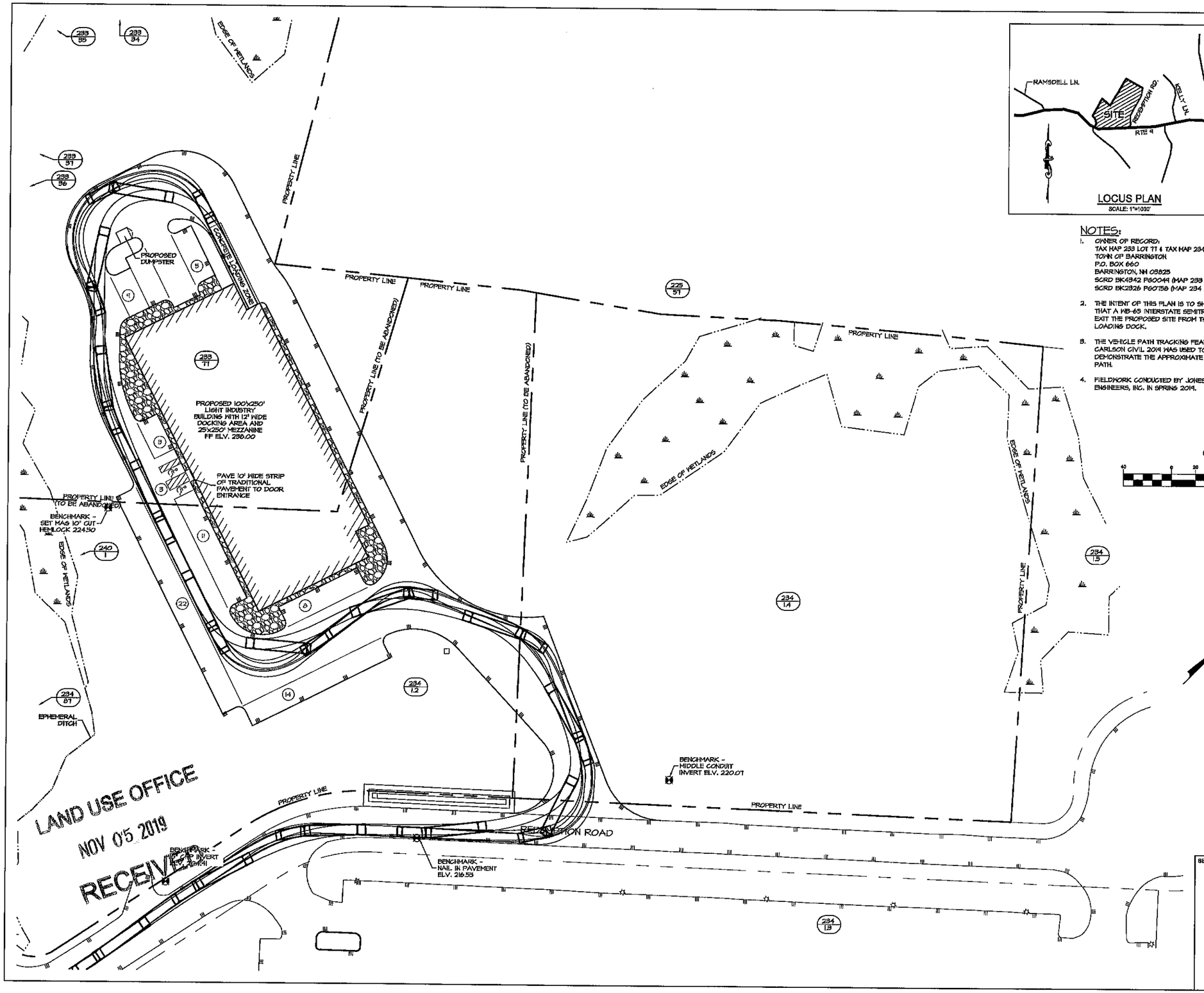
EMANUEL ENGINEERING
civil & structural consultants, land planners
118 Portsmouth Avenue, A202
Stratham, NH 03885
T: 603-772-4468 F: 603-772-4487
www.emanuelengineering.com

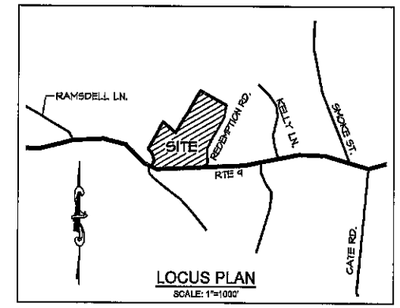
CLIENT:
TURBOCAM INTERNATIONAL
607 CALEF HIGHWAY
BARRINGTON, NH 03825

SEAL:

TITLE: TURNING TEMPLATE (WB-65 ENTERING SITE)
FOR
TAX MAP 233 LOT 77
AND TAX MAP 234 LOTS 1.2 & 1.4
TURBOCAM INTERNATIONAL
ROUTE 9 / REDEMPTION ROAD (SITE)
BARRINGTON, NH 03825
& TOWN OF BARRINGTON
PO BOX 660
BARRINGTON, NH 03825

PROJECT:	SCALE:	SHEET:
19-020	1"=40'	C7





NOTES:

1. OWNER OF RECORD:
   TAX MAP 233 LOT 77 & TAX MAP 234 LOTS 1.2 & 1.4
   TOWN OF BARRINGTON
   P.O. BOX 660
   BARRINGTON, NH 03825
   SCRD BK4342 P90044 (MAP 233 LOT 77)
   SCRD BK2326 P60758 (MAP 234 LOT 1.2)
2. THE INTENT OF THIS PLAN IS TO SHOW VERIFY THAT A WB-65 INTERSTATE SEMITRAILER CAN EXIT THE PROPOSED SITE FROM THE PROPOSED LOADING DOCK.
3. THE VEHICLE PATH TRACKING FEATURE FROM CARLSON CIVIL 2014 WAS USED TO DEMONSTRATE THE APPROXIMATE VEHICLE PATH.
4. FIELDWORK CONDUCTED BY JONES & BEACH ENGINEERS, INC. IN SPRING 2014.

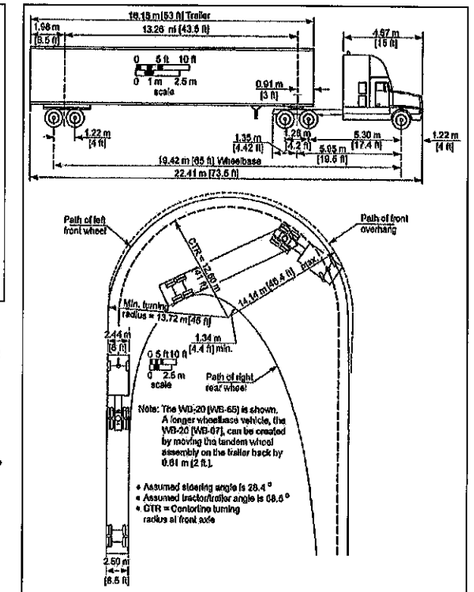


Exhibit 2-16. Minimum Turning Path for Interstate Semitrailer (WB-20 [WB-65 and WB-67]) Design Vehicle

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

LEGEND:

- GRANITE BOUND FOUND
- IRON PIPE FOUND
- DRILL HOLE FOUND
- (TYP) TYPICAL
- (TBR) TO BE REMOVED
- VGC VERTICAL GRANITE CURB
- SGC SLOPED GRANITE CURB
- PPP PROPOSED POROUS PAVEMENT
- PTP PROPOSED TRADITIONAL PAVEMENT
- PROPERTY LINE
- EDGE OF PAVEMENT (EOP)
- SOIL DELINEATION
- OHE OVERHEAD UTILITIES
- UG UNDERGROUND UTILITIES
- UTILITY POLE
- GUY WIRE
- WELL
- W WATER LINE
- D DRAIN LINE
- S SEPTIC LINE
- GAS GAS LINE
- STONEWALL
- GUARD RAIL
- WETLANDS
- TREELINE
- TREE

ISS.	DATE:	DESCRIPTION OF ISSUE:	CHK.
2	NOV 5, 2019	FOR APPROVAL	
1	SEPT 13, 2019	FOR APPROVAL	

DRAWN: JJM | DESIGN: JJM
CHECKED: BDS | CHECKED: BDS

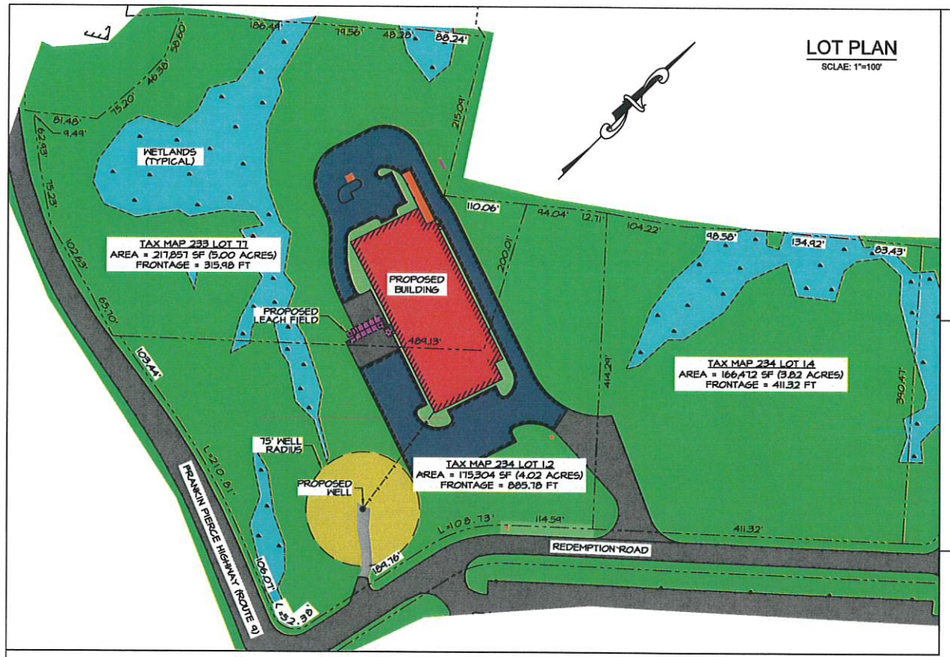
EMANUEL ENGINEERING
civil & structural consultants, land planners
118 PORTSMOUTH AVENUE, A202
STRATHAM, NH 03885
P: 603-772-4400 F: 603-772-4487
WWW.EMANUELENGINEERING.COM

CLIENT:
TURBOCAM INTERNATIONAL
607 CALEF HIGHWAY
BARRINGTON, NH 03825

SEAL:

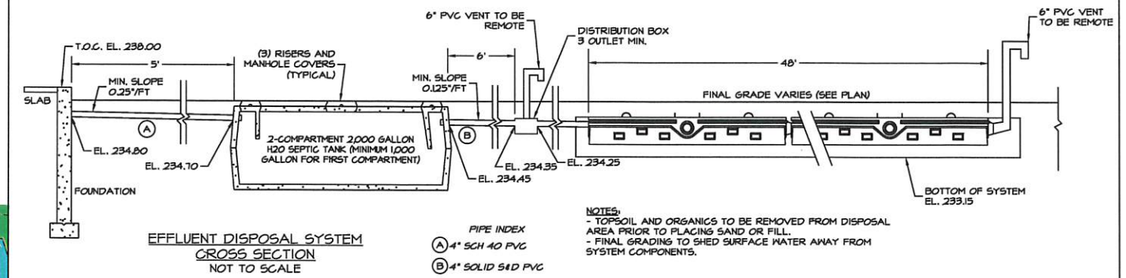
TITLE: TURNING TEMPLATE (WB-65 EXITING SITE)
FOR
TAX MAP 233 LOT 77
AND TAX MAP 234 LOTS 1.2 & 1.4
TURBOCAM INTERNATIONAL
ROUTE 9 / REDEMPTION ROAD (SITE)
BARRINGTON, NH 03825
& TOWN OF BARRINGTON
PO BOX 660
BARRINGTON, NH 03825

PROJECT:	SCALE:	SHEET:
19-020	1"=40'	C8



LOT PLAN

SCLAE: 1"=100'



EFFLUENT DISPOSAL SYSTEM CROSS SECTION

NOT TO SCALE

PIPE INDEX
(A) 4" SCH 40 PVC
(B) 4" SOLID 5.4D PVC

NOTES:
- TOPSOIL AND ORGANICS TO BE REMOVED FROM DISPOSAL AREA PRIOR TO PLACING SAND OR FILL.
- FINAL GRADING TO SHED SURFACE WATER AWAY FROM SYSTEM COMPONENTS.

LOCATION:

COUNTY: STRAFFORD TOWN: BARRINGTON
SUBDIVISION TITLE: "SUBDIVISION PLAN OF LAND CLARK-GOODWILL LOT, BARRINGTON, NH"; DATED 12/14/07
NH SUBDIVISION APPROVAL NO. : N/A
TAX MAP/LOT: MAP 233 LOT 11 & MAP 234 LOT 1.2
DEED: (MAP 233, LOT 11) BK 4342 PG 0041
(MAP 234, LOT 1.2) BK 2326 PG 0158
OWNER:
TOWN OF BARRINGTON
P.O. BOX
BARRINGTON, NH 03825
(603) 664-9007

SYSTEM DESIGN DATA:

BUILDING TYPE: 25,000 SF LIGHT INDUSTRIAL
SEWAGE LOAD: 42 EMPLOYEES x 10 GPD/PERSON = 420 GPD
GARBAGE DISPOSAL: NONE
TYPE OF CELLAR: NONE FOUNDATION DRAINS: NO
SEPTIC TANK SIZE: 2000 GAL. DISTRIBUTION BOX: 3 OUTLET MIN.
LEACH BED REQUIREMENTS:
AREA REQUIRED: 420 GPD x 1.25 SF/100 GPD = 525 SF
AREA PROVIDED: (12) 8' x 8' CONCRETE CHAMBERS = 768 SF
CHAMBER LAYOUT: 2 WIDE BY 6 LONG
SEWAGE PUMP: NONE
DRINKING WATER: PROPOSED WELL
WELL INSTALLED PRIOR TO 1984: NO
NEAREST ABUTTING WELL: >> 75 FT AWAY
WETLAND SOILS: >> 50 FT AWAY TO POORLY DRAINED SOIL
WETLAND SOILS: >> 75 FT AWAY TO VERY POORLY DRAINED SOIL
NEAREST SURFACE WATER: >> 75 FT AWAY
NEAREST LEDGE OUTCROP: 56 FEET AWAY (SEE TEST PIT DATA)

DESIGN INTENT:

LEACH BED BOTTOM TO BE INSTALLED NO LESS THAN 61 INCHES ABOVE ORIGINAL GRADE, ON THE UPSLOPE SIDE, TO MAINTAIN 4 FEET ABOVE THE SEASONAL HIGH WATER TABLE AND 4 FEET ABOVE LEDGE, HARDPAN OR IMPERMEABLE MATERIAL.

SOIL DATA:

PERFORMED BY: BRUCE SCAMMAN
WITNESSED BY: N/A
SOIL CLASSIFICATION: HINCKLEY

TEST PIT #2:

DATE: APRIL 2, 2019
*OBSERVED GROUND WATER @ NOT OBSERVED
*SEASONAL HIGH GROUND WATER (MOTTLING) @ NOT OBSERVED
*LEDGE, HARDPAN, CLAY/IMPERMEABLE SUBSTRATUM @ NOT OBSERVED
0-11" 10YR 3/3 LOAM, GRANULAR, FRIABLE
11-36" 10YR 5/6 GRAVEL & COBBLES SANDY LOAM, GRANULAR, FRIABLE.
36-120" 10YR 6/6 COBBLY SAND, SINGLE GRAIN, LOOSE

TEST PIT #3:

DATE: APRIL 2, 2019
*OBSERVED GROUND WATER @ NOT OBSERVED
*SEASONAL HIGH GROUND WATER (MOTTLING) @ NOT OBSERVED
*LEDGE, HARDPAN, CLAY/IMPERMEABLE SUBSTRATUM @ NOT OBSERVED
0-10" 10YR 3/2 LOAM, GRANULAR, FRIABLE
10-36" 10YR 5/6 GRAVEL & COBBLES SANDY LOAM, GRANULAR, FRIABLE.
36-114" 10YR 6/6 COBBLY SAND, SINGLE GRAIN, LOOSE

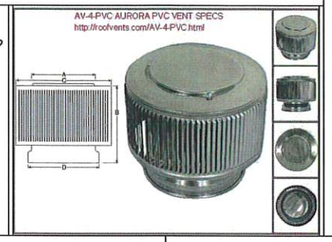
TEST PIT #4:

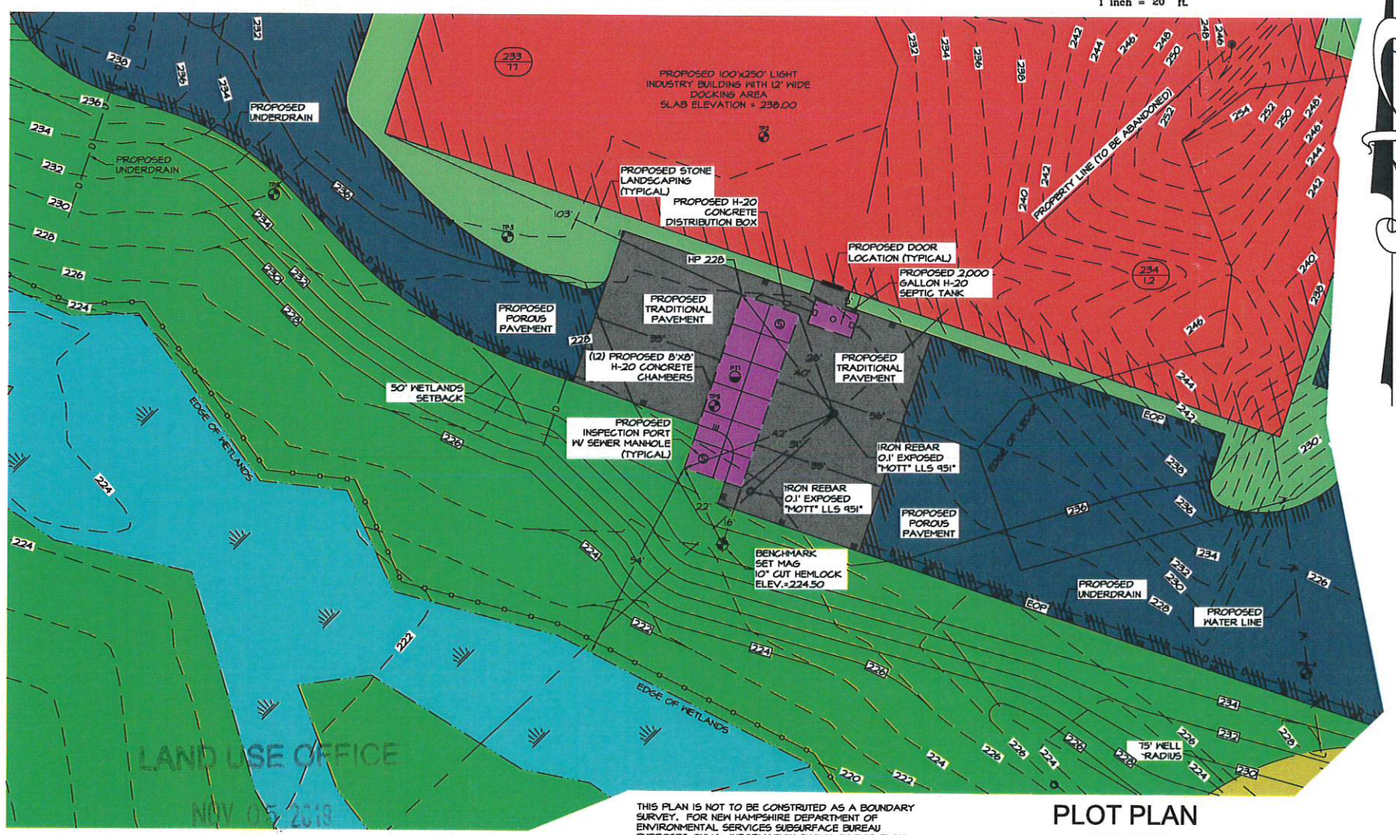
DATE: APRIL 2, 2019
*OBSERVED GROUND WATER @ NOT OBSERVED
*SEASONAL HIGH GROUND WATER (MOTTLING) @ NOT OBSERVED
*LEDGE, HARDPAN, CLAY/IMPERMEABLE SUBSTRATUM @ NOT OBSERVED
0-24" 10YR 3/2 LOAM, GRANULAR, FRIABLE
24-36" 10YR 5/6 GRAVEL SANDY LOAM, GRANULAR, FRIABLE.
36-96" 10YR 6/6 GRAVELLY COBLLE SANDY LOAM, SINGLE GRAIN, LOOSE

PERC TEST # 1:

DATE: APRIL 2, 2019
PERFORMED BY: BRUCE SCAMMAN
DEPTH: 24 INCHES RATE: 2 MIN/INCH

AV-4-PVC AURORA PVC VENT SPECS
http://roofvents.com/AV-4-PVC.html





THIS PLAN IS NOT TO BE CONSTRUED AS A BOUNDARY SURVEY. FOR NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES SUBSURFACE BUREAU PURPOSES ONLY. INFORMATION SHOWN ON THIS PLAN IS FROM THE TOWN ASSESSORS TAX MAP, BOUNDARY PLANS, AND DEEDS.

PLOT PLAN

SCALE: 1" = 20'

ELEVATION OF BENCHMARK IS ASSUMED

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

GENERAL NOTES:

1. SEE PLAN FOR ARRANGEMENT AND QUANTITY OF CHAMBERS.
2. CHAMBERS SHALL BE DESIGNED FOR H-20 LIVE LOADING.
3. ALL 4 INCH PVC PIPE SHALL BE SCHEDULE 80. PIPE OUTSIDE LEACHING AREA SHALL BE WATERTIGHT. PIPE BETWEEN DISTRIBUTION BOX AND CHAMBERS SHALL BE LAID LEVEL. ALL JOINTS, INLETS, OUTLETS, ETC. TO BE SEALED WITH A NON-SHRINK GROUT, "WATER-PLUG" OR EQUAL.
4. IN EVENT OF FUTURE SYSTEM FAILURE, REPLACEMENT SYSTEM SHALL BE BUILT IN THE SAME LOCATION AS THE ORIGINAL SYSTEM AFTER CONTAMINATED MATERIALS HAVE BEEN REMOVED.
5. ALL PRE CAST UNITS, (TANKS, D-BOXES) SHALL BE MANUFACTURED BY SHEA CONCRETE OR EQUAL.
6. THIS PLAN DOES NOT REPRESENT A BOUNDARY SURVEY.
7. BOUNDARY INFORMATION TAKEN FROM PLAN ENTITLED: EXISTING CONDITIONS PLAN ROUTE 9 BARRINGTON, NH BY JONES & BEACH ENGINEERS.
8. RECORD DEED: BK 4342 PG 0041
9. THE DESIGN AND INSTALLATION GUIDELINES FOR THE CONCRETE FLOW DIFFUSOR LEACHING CHAMBER FOR USE IN THE STATE OF NEW HAMPSHIRE SHALL BECOME A PART OF THIS DESIGN.
10. EQUALIZER FLOW INSERTS SHALL BE INSTALLED IN DISTRIBUTION BOX OUTLETS.
11. INSTALLER MUST CONTACT DIG SAFE PRIOR TO CONSTRUCTION.
12. DO NOT INSTALL SYSTEM ON FROZEN GROUND OR LEAVE SYSTEM UNCOVERED FOR EXTENDED PERIODS OF TIME.
13. THIS DOCUMENT IS FOR THE CONSTRUCTION OF THE EFFLUENT DISPOSAL SYSTEM SHOWN. ANYONE USING INFORMATION FROM THIS DOCUMENT FOR ANY OTHER PURPOSE DOES SO AT THEIR OWN RISK.
14. SYSTEM MUST BE CONSTRUCTED IN ACCORDANCE WITH ENV-WS 1000. "APPROVAL FOR CONSTRUCTION" IS VALID FOR 4 YEARS FROM DATE OF ISSUE.

SITE PREPARATION:

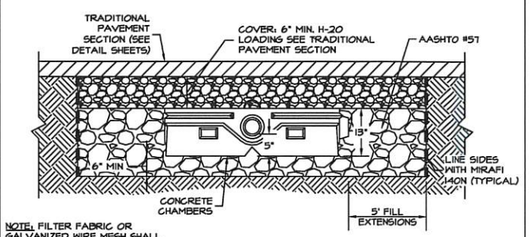
1. CHECK DESIGN INTENT AND VERIFY THE ELEVATION OF EXISTING GROUND-UPSLOPE SIDE BEFORE DISTURBING SITE. CONTACT THE DESIGNER SHOULD ANY DISCREPANCY OCCUR.
2. REMOVE ALL TREES, BRUSH, BOULDERS, AND DEBRIS FROM THE LEACH FIELD SITE.
3. REMOVE TOPSOIL. LEAVE SUBSOIL IN PLACE. DO NOT COMPACT SUBSOIL WITH MACHINERY; SCARIFY AS NEEDED BEFORE FILLING.
4. FILL FOR UNDER LEACHING AREA TO BE MATERIALS MEETING ASTM C-33 (AASHTO #57), AND FILL FOR FILL EXTENSION TO BE MEDIUM TO COARSE TEXTURED SAND (0.5-1.0 MM).
5. SAND FILL TO BE PUSHED ONTO PREPARED SURFACE FROM THE SIDE.
6. FILL FOR BACKFILING SHALL BE CLEAN, PERMEABLE FILL, FREE OF STONES LARGER THAN 6 INCHES.
7. SIDE SLOPE OF FILL 3:1, (3' HORIZONTAL FOR EVERY 1' VERTICAL).
8. PLACE 6 INCHES OF LOAM AS A BLANKET ON SIDE SLOPES WHERE REQUIRED.
9. ENTIRE DISTURBED AREA SHALL BE LOAMED AND SEEDED OR PAVED AS SOON AS POSSIBLE AFTER BACKFILLING TO PREVENT EROSION.
10. BACKFILL DEPTH OVER SYSTEM TO BE 6 INCHES.
11. FINAL GRADING SHALL PROVIDE FOR DRAINAGE OF SURFACE RUNOFF AWAY FROM LEACHING AREA.

OPERATION AND MAINTENANCE:

1. SYSTEM IS NOT DESIGNED TO HANDLE A GARBAGE DISPOSAL UNIT OR DISCHARGE FROM A HOT TUB OR SIMILAR LARGE VOLUME WATER USES.
2. EVERY SYSTEM'S DESIGN CAPACITY IS LIMITED. CAREFUL AND REASONABLE WATER USE IS REQUIRED TO MAXIMIZE THE SYSTEM'S LIFE.
3. DO NOT DISPOSE OF GREASE, CHEMICALS, SOLVENTS, ETC. VIA THIS SYSTEM.
4. SEPTIC TANK MUST BE PUMPED BY A LICENSED HAULER AT LEAST EVERY TWO YEARS. KEEP PUMPING RECEIPTS AS PROOF OF MAINTENANCE. CHECK TANK YEARLY. IF SLUDGE AND SURFACE SCUM EXCEED 1/3 OF LIQUID DEPTH, HAVE THE TANK PUMPED.
5. DO NOT ALLOW VEHICULAR TRAFFIC OVER ANY COMPONENT OF THE SYSTEM UNLESS THAT STRUCTURE IS DESIGNED TO WITHSTAND AN H-20 WHEEL LOAD.

REVISION 3	REVISION 2	REVISION 1
		REVISED SLOPE & REMOVED RETAINING WALL 11/05/19 JJM

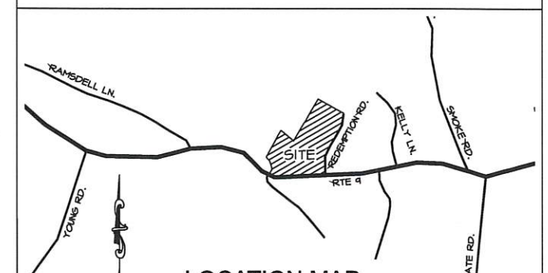
MAINTENANCE REQUIRED: RECOMMEND CLEANING SEPTIC TANK AT LEAST ONCE EVERY 2 YEARS



NOTE: FILTER FABRIC OR GALVANIZED WIRE MESH SHALL BE PLACED AROUND THE CHAMBERS PRIOR TO PLACING THE SEPTIC STONE.

SYSTEM SECTION

N.T.S.



LOCATION MAP

NOT TO SCALE

EMANUEL ENGINEERING
civil & structural consultants, land planners
118 Portsmouth Avenue, A202
Stratham, NH 03885
P: 603-772-4400 F: 603-772-4487
WWW.EMANUELENGINEERING.COM

DESIGNED:	JJM - 09-13-19
DRAWN:	JJM - 09-13-19
CHECKED:	BDS - 09-13-19
SCALE:	1" = 20'
DWG:	SD1
JOB:	19-020

SUBSURFACE DISPOSAL SYSTEM

TURBOCAM INTERNATIONAL

ROUTE 9 / REDEMPTION ROAD (SITE)
BARRINGTON, NH 03825

EROSION AND SEDIMENTATION CONTROL CONSTRUCTION PHASING AND SEQUENCING:

1. SEE "EROSION AND SEDIMENTATION CONTROL GENERAL NOTES" WHICH ARE TO BE AN INTEGRAL PART OF THIS PROCESS.
2. INSTALL SILT FENCING AND/OR HAY BALE BARRIERS AS PER DETAILS AND AT SEDIMENT MIGRATION.
3. CONSTRUCT TREATMENT SWALES , LEVEL SPREADERS AND DETENTION STRUCTURES AS DEPICTED ON DRAWINGS.
4. INSTALL TEMPORARY GRAVEL CONSTRUCTION ENTRANCE(S) AS PER DETAIL AND AT LOCATIONS SHOWN ON THE DRAWINGS. MAINTAIN (TOP DRESS) REGULARLY TO PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC STREETS.
5. STRIP AND STOCKPILE TOPSOIL. STABILIZE PILES OF SOIL CONSTRUCTION MATERIAL.
6. ROUGH GRADE SITE. INSTALL CULVERTS AND ROAD DITCHES.
7. FINISH GRADE AND COMPACT SITE.
8. RE-SPREAD AND ADD TOPSOIL TO ALL ROADSIDE SLOPES. TOTAL TOPSOIL THICKNESS TO BE A MINIMUM OF FOUR TO SIX INCHES.
9. STABILIZE ALL AREAS OF BARE SOIL WITH MULCH AND SEEDING.
10. RE-SEED PER EROSION AND SEDIMENTATION CONTROL GENERAL NOTES.
11. SILT FENCING AND HAY BALES TO REMAIN AND BE MAINTAINED FOR TWENTY FOUR MONTHS AFTER CONSTRUCTION TO INSURE ESTABLISHMENT OF ADEQUATE SOIL STABILIZATION AND VEGETATIVE COVER. ALL SILT FENCING, HAY BALES AND TRAPPED SILT ARE THEN TO BE REMOVED FROM THE SITE AND PROPERLY DISPOSED OF.
12. PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO EARTH MOVING OPERATIONS.
13. PONDS AND SWALES SHALL BE INSTALLED EARLY ON IN THE CONSTRUCTION SEQUENCE - BEFORE ROUGH GRADING THE SITE.
14. ALL DITCHES AND SWALES SHALL BE STABILIZED PRIOR TO DIRECTING RUNOFF TO THEM.
15. ALL ROADWAYS AND PARKING LOTS SHALL BE STABILIZED WITHIN 72 HOURS OF ACHIEVING FINISHED GRADE.
16. ALL CUT AND FILL SLOPES SHALL BE SEEDED/LOAMED WITHIN 72 HOURS OF ACHIEVING FINISH GRADE.
17. ALL EROSION CONTROLS SHALL BE INSPECTED WEEKLY AND AFTER EVERY HALF-INCH OF RAINFALL.

WINTER CONSTRUCTION NOTES (OCTOBER 15 TO MAY 1):

1. ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED BY SEEDING AND INSTALLING EROSION CONTROL BLANKETS ON SLOPES GREATER THAN 3:1, AND SEEDING AND PLACING 3 TO 4 TONS OF MULCH PER ACRE, SECURED WITH ANCHORED NETTING, ELSEWHERE. THE INSTALLATION OF EROSION CONTROL BLANKETS OR MULCH AND NETTING SHALL NOT OCCUR OVER ACCUMULATED SNOW OR ON FROZEN GROUND AND SHALL BE COMPETED IN ADVANCE OF THAW OR SPRING MELT EVENT.
2. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15TH, OR WHICH ARE DISTURBED AFTER OCTOBER 15TH, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
3. AFTER OCTOBER 15TH, INCOMPLETE ROAD OR PARKING SURFACES, WHERE WORK HAS STOPPED FOR THE WINTER SEASON, SHALL BE PROTECTED WITH A MINIMUM OF 3 INCHES OF CRUSHED GRAVEL PER NHDOT ITEM 304.3.

GRASS SWALE MAINTENANCE:

1. TIMELY MAINTENANCE IS IMPORTANT TO KEEP THE VEGETATION IN THE SWALE IN GOOD CONDITION. MOWING SHOULD BE DONE FREQUENTLY ENOUGH TO KEEP THE VEGETATION IN VIGOROUS CONDITION AND TO CONTROL ENCROACHMENT OF WEEDS AND WOODY VEGETATION, HOWEVER, IT SHOULD NOT BE MOWED TOO CLOSELY SO AS TO REDUCE THE FILTERING EFFECT. FERTILIZE ON AN "AS NEEDED" BASIS TO KEEP THE GRASS HEALTHY. OVER FERTILIZATION CAN RESULT IN THE SWALE BECOMING A SOURCE OF POLLUTION.
2. THE SWALE SHOULD BE INSPECTED PERIODICALLY AND AFTER EVERY MAJOR STORM TO DETERMINE THE CONDITION OF THE SWALE. RILLS AND DAMAGED AREAS SHOULD BE PROMPTLY REPAIRED AND RE-VEGETATED AS NECESSARY TO PREVENT FURTHER DETERIORATION.

LAND USE OFFICE
NOV 05 2019
RECEIVED

EROSION AND SEDIMENTATION CONTROL GENERAL NOTES:

1. CONDUCT ALL CONSTRUCTION IN A MANNER AND SEQUENCE THAT CAUSES THE LEAST PRACTICAL DISTURBANCE OF THE PHYSICAL ENVIRONMENT, BUT IN NO CASE SHALL EXCEED 5 ACRES AT ANY ONE TIME BEFORE DISTURBED AREAS ARE STABILIZED.
2. ALL EROSION AND SEDIMENTATION CONTROL MEASURES IN THE PLAN SHALL MEET THE DESIGN BASED ON NEW HAMPSHIRE STORMWATER MANUAL, VOLUMES 1-3; DATED DECEMBER 2008, PREPARED BY NHDES.
3. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
   - BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED.
   - A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED.
   - A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP RAP HAS BEEN INSTALLED.
   - EROSION CONTROL BLANKETS HAVE BEEN PROPERLY INSTALLED.
4. ALL AREAS SHALL BE STABILIZED WITHIN 45 DAYS OF INITIAL DISTURBANCE.
5. SEE WINTER CONSTRUCTION NOTES IF SCHEDULE AND DATES ARE APPLICABLE.
6. ALL DITCHES, SWALES AND PONDS MUST BE STABILIZED PRIOR TO DIRECTING FLOW TO THEM.
7. ALL GROUND AREAS OPENED UP FOR CONSTRUCTION WILL BE STABILIZED IN THE SHORTEST PRACTICAL TIME. ALL SOILS FINISH GRADED MUST BE STABILIZED WITHIN SEVENTY TWO HOURS OF DISTURBANCE.
8. EMPLOY TEMPORARY EROSION AND SEDIMENTATION CONTROL DEVICES AS DETAILED ON THIS PLAN AS NECESSARY UNTIL ADEQUATE STABILIZATION HAS BEEN ASSURED.
9. TEMPORARY & LONG TERM SEEDING: USE SEED MIXTURES, FERTILIZER, LIME AND MULCHING AS RECOMMENDED (SEE SEEDING AND STABILIZATION NOTES).
10. STRAW OR HAY BALE BARRIERS AND SILTATION FENCING TO BE SECURELY EMBEDDED AND STAKED AS DETAILED. WHEREVER POSSIBLE A VEGETATED STRIP OF AT LEAST TWENTY FIVE FEET IS TO BE KEPT BETWEEN SILT FENCE AND ANY EDGE OF WET AREA.
11. SEEDED AREAS WILL BE FERTILIZED AND RE-SEEDED AS NECESSARY TO ENSURE VEGETATIVE ESTABLISHMENT.
12. SEDIMENT BASIN(S), IF REQUIRED, TO BE CHECKED AFTER EACH SIGNIFICANT RAINFALL AND CLEANED AS NEEDED TO RETAIN DESIGN CAPACITY.
13. STRAW BALE AND/OR SILT FENCE BARRIERS WILL BE CHECKED REGULARLY AND AFTER EACH SIGNIFICANT RAINFALL. NECESSARY REPAIRS WILL BE MADE TO CORRECT UNDERMINING OR DETERIORATION OF THE BARRIER AS WELL AS CLEANING, REMOVAL AND PROPER DISPOSAL OF TRAPPED SEDIMENT.
14. TREATMENT SWALES WILL BE CHECKED WEEKLY AND REPAIRED WHEN NECESSARY UNTIL ADEQUATE VEGETATIVE COVER HAS BEEN ESTABLISHED.
15. THE PROJECT IS TO BE MANAGED IN A MANNER THAT MEETS THE REQUIREMENTS AND INTENT OF RSA 430:53 AND CHAPTER AGR 3800 RELATIVE TO INVASIVE SPECIES.
16. TEMPORARY WATER DIVERSION (SWALES, BASINS, ETC.) MUST BE USED AS NECESSARY UNTIL AREAS ARE STABILIZED.

SEEDING AND STABILIZATION FOR LOAMED SITE:

1. FOR TEMPORARY & LONG TERM SEEDINGS (BY SEPTEMBER 15 OF THE SAME YEAR OF DISTURBANCE) USE AGWAY'S SOIL CONSERVATION GRASS SEED OR EQUAL.
2. COMPONENTS: ANNUAL RYE GRASS, PERENNIAL RYE GRASS, WHITE CLOVER, 2 FESCUES, SEED AT A RATE OF 100 POUNDS PER ACRE.
3. FERTILIZER & LIME:
   NITROGEN (N) 50 LBS/ACRE, PHOSPHATE (P205) 100 LBS/ACRE, POTASH (K20) 100 LBS/ACRE, LIME 2000 LBS/ACRE.
4. MULCH: HAY OR STRAW 1.5-2 TONS/ACRE.
5. GRADING AND SHAPING:
   SLOPES SHALL NOT BE STEEPER THAN 2:1; 3:1 SLOPES OR FLATTER ARE PREFERRED. WHERE MOWING WILL BE DONE, 3:1 SLOPES OR FLATTER ARE RECOMMENDED.
6. SEED BED PREPARATION
   - SURFACE AND SEEPAGE WATER SHOULD BE DRAINED OR DIVERTED FROM THE SITE TO PREVENT DROWNING OR WINTER KILLING OF THE PLANTS.
   - STONES LARGER THAN 4 INCHES AND TRASH SHOULD BE REMOVED BECAUSE THEY INTERFERE WITH SEEDING AND FUTURE MAINTENANCE OF THE AREA. WHERE FEASIBLE, THE SOIL SHOULD BE TILLED TO A DEPTH OF ABOUT 4 INCHES TO PREPARE A SEEDBED AND MIX FERTILIZER AND LIME INTO THE SOIL. THE SEEDBED SHOULD BE LEFT IN A REASONABLY FIRM AND SMOOTH CONDITION. THE LAST TILLAGE OPERATION SHOULD BE PERFORMED ACROSS THE SLOPE WHEREVER PRACTICAL.

STABILIZATION CONSTRUCTION ENTRANCE SPECIFICATIONS:

1. STONE FOR A STABILIZED CONSTRUCTION ENTRANCE SHALL BE 3 INCH STONE (MINIMUM), RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
2. THE LENGTH OF THE STABILIZED ENTRANCE SHALL NOT BE LESS THAN 75 FEET (OR 50 FEET WITH A 3 TO 6 INCH MOUNTABLE BERM).
3. THE THICKNESS OF THE STONE FOR THE STABILIZATION ENTRANCE SHALL NOT BE LESS THAN 6 INCHES.
4. THE WIDTH OF THE ENTRANCE SHALL NOT BE LESS THAN THE FULL WIDTH OF THE ENTRANCE WHERE INGRESS OR EGRESS OCCURS OR 10 FEET, WHICH EVER IS GREATER.
5. GEOTEXTILE FILTER CLOTH SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING THE STONE.
6. ALL SURFACE WATER THAT IS FLOWING TO OR DIVERTED TOWARDS THE CONSTRUCTION ENTRANCE SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A BERM WITH 5:1 SLOPES THAT CAN BE CROSSED BY VEHICLES MAY BE SUBSTITUTED FOR THE PIPE.
7. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING OF ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED PROMPTLY.
8. WHEELS SHALL BE CLEANED TO REMOVE MUD PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.

FILTREXX LAND IMPROVEMENT SYSTEMS INSPECTION & MAINTENANCE:

1. CONSULT FILTREXX SWPP CUT SHEETS FOR ALL FILTREXX PRODUCTS PRIOR TO INSTALLATION AND FOR MAINTENANCE GUIDELINES. HTTP://WWW.FILTREXX.COM/DESIGN_CUT_SHEETS.HTM
2. ROUTINE INSPECTION SHOULD BE CONDUCTED WITHIN 24 HRS OF A RUNOFF EVENT OR AS DESIGNATED BY THE REGULATING AUTHORITY. UNITS SHOULD BE REGULARLY INSPECTED TO MAKE SURE THEY MAINTAIN THEIR SHAPE AND ARE PRODUCING ADEQUATE HYDRAULIC FLOW-THROUGH, DITCH/CHANNEL EROSION CONTROL, AND SEDIMENT REMOVAL.
3. IF PONDING BECOMES EXCESSIVE, ADDITIONAL CHECK DAMS, LEVEL SPREADERS, OR SEDIMENT CONTROL UNITS FOR SEDIMENT REMOVAL MAY BE REQUIRED.
4. SEDIMENT ACCUMULATION SHOULD BE REMOVED ONCE IT REACHES THE HEIGHT OF THE CHECK DAM OR UNIT. ALTERNATIVELY, ANOTHER UNIT MAY BE INSTALLED SLIGHTLY UPSLOPE, ON TOP OF THE EXISTING ONE. THIS PROCESS IS NOT CONSIDERED A SOIL DISTURBING ACTIVITY.
5. STORM DEBRIS ACCUMULATION BEHIND CHECK DAMS, LEVEL SPREADER, SEDIMENT CONTROL UNIT, ETC. SHOULD NEVER BE HIGHER THAN THE SIDES OF THE CHECK DAM/UNIT. STORM RUNOFF OVERFLOW SHALL MAINTAIN THE UNITS IN A FUNCTIONAL CONDITION AT ALL TIMES AND IT SHALL BE ROUTINELY INSPECTED.
6. IF A UNIT HAS BEEN DAMAGED, IT SHALL BE REPAIRED, OR REPLACED IF BEYOND REPAIR.
7. THE CONTRACTOR SHALL REMOVE SEDIMENT AT THE BASE OF THE UPSLOPE SIDE OF UNITS WHEN ACCUMULATION HAS REACHED 1/2 OF THE EFFECTIVE HEIGHT OF THE SOXX, OR AS DIRECTED BY THE ENGINEER.
8. AS AN ALTERNATIVE, ANOTHER SOXX UNIT MAY BE INSTALLED ADJACENT AND PARALLEL TO THE UPSLOPE SIDE OF THE ORIGINAL TO INCREASE SEDIMENT STORAGE CAPACITY. SOXX SEDIMENT BACKUP IN CENTER OF THE DITCH/CHANNEL SHALL REMAIN LOWER THAN THE SIDES.
9. IF SOXX UNIT BECOMES CLOGGED WITH DEBRIS AND SEDIMENT, IMMEDIATE REMOVAL OF DEBRIS AND SEDIMENT SHOULD BE CONDUCTED TO ASSURE PROPER DRAINAGE AND WATER FLOW THROUGH THE DITCH OR CHANNEL. STORM RUNOFF OVERFLOW OF THE SOXX UNIT IS ACCEPTABLE.
10. SOXX UNITS SHALL BE MAINTAINED UNTIL DISTURBED AREA AROUND THE DEVICE HAS BEEN PERMANENTLY STABILIZED AND CONSTRUCTION ACTIVITY HAS CEASED.
11. THE FILTERMEDIATM MAY BE DISPERSED ON SITE ONCE DISTURBED AREA HAS PERMANENTLY STABILIZED, CONSTRUCTION ACTIVITY CEASED, OR DETERMINED BY THE ENGINEER.
12. PERMANENT VEGETATED FILTER STRIPS WILL BE LEFT INTACT.

SECTION I- GENERAL (POROUS ASPHALT PAVEMENTS)

1.01 SUBMITTALS
- A. THE CONTRACTOR SHALL SUBMIT TO THE SUPERVISORY ENGINEER THE PROPOSED SOURCE AND QUALIFICATIONS OF THE PROPOSED SOURCE(S) OF THE HOT MIX ASPHALT AT LEAST 14 DAYS IN ADVANCE OF ANTICIPATED PAVING DATE.
- B. THE CONTRACTOR SHALL SUBMIT TO THE SUPERVISORY ENGINEER THE PROPOSED INSTALLER QUALIFICATIONS AT LEAST 14 DAYS IN ADVANCE OF ANTICIPATED PAVING DATE.
- C. THE CONTRACTOR SHALL SUBMIT TO THE SUPERVISORY ENGINEER THE CONTRACTOR'S PROPOSED CONSTRUCTION PHASING PLAN AT LEAST 14 DAYS IN ADVANCE OF MOBILIZING TO THE SITE FOR CONSTRUCTION. UPDATES TO THE CONSTRUCTION PHASING PLAN SHALL BE PROVIDED TO THE SUPERVISORY ENGINEER AT LEAST 48 HOURS IN ADVANCE OF THE PROPOSED. THE CONSTRUCTION PHASING PLAN SHALL CONTAIN THE ELEMENTS AS DETAILED WITHIN THIS SECTION AND DRAWINGS.
- D. THE CONTRACTOR SHALL SUBMIT TO THE SUPERVISORY ENGINEER THE PROPOSED THIRD PARTY QUALITY CONTROL FIRM TO CONDUCT THIRD PARTY QUALITY CONTROL OF THE ASPHALT HOT MIX PLANT PRODUCTION AT LEAST 14 DAYS IN ADVANCE OF ANTICIPATED PAVING DATE.
- E. THE CONTRACTOR SHALL SUBMIT TO THE SUPERVISORY ENGINEER THE QUALITY CONTROL RESULTS AND JOB MIX FORMULA FOR THE POROUS ASPHALT MATERIAL AT LEAST 14 DAYS IN ADVANCE OF THE ANTICIPATED PAVING DATE.

1.02 QUALIFICATIONS
- A. THE POROUS ASPHALT SHALL BE SUPPLIED FROM A HOT MIX MATERIAL PROVIDER THAT HAS THE FOLLOWING MINIMUM QUALIFICATIONS:
  1. SHALL HAVE SUCCESSFULLY PRODUCED A MINIMUM OF THREE (3) POROUS ASPHALT PAVING JOBS IN THE PAST FIVE (5) YEARS.
  2. CAPABLE OF PRODUCING POROUS ASPHALT WITH A PG76-28 BINDER; UNDER NO CIRCUMSTANCES IS A PGAB 64-28 ACCEPTABLE IN REPLACE OF PG 76-28.
  3. CAPABLE OF CONDUCTING THE MATERIALS TESTING FOR QUALITY CONTROL AS DOCUMENTED IN SECTION IV PART 4, TABLE 3, TABLE 4, TABLE 5;
  4. CAPABLE OF PROVIDING MATERIAL CERTIFICATES SIGNED BY THE PLANTS' AUTHORIZED REPRESENTATIVE; AND
  5. CAPABLE OF PROVIDING THE MOST RECENT ANNUAL PLANT SCALE TESTING DOCUMENTATION.
- B. THE POROUS ASPHALT INSTALLER SHALL HAVE THE FOLLOWING MINIMUM QUALIFICATIONS:
  1. SHALL HAVE SUCCESSFULLY COMPLETED A MINIMUM OF THREE (3) POROUS ASPHALT PAVING JOBS IN THE PAST FIVE (5) YEARS.
  2. PROVIDE A SITE SUPERINTENDENT THAT WILL BE ON-SITE DURING THE PROJECT THAT HAS SUCCESSFULLY COMPLETED A MINIMUM OF THREE (3) POROUS ASPHALT PAVING JOBS IN THE PAST FIVE (5) YEARS.

1.03 TRANSPORTATION AND SHIPPING
- A. POROUS ASPHALT MATERIALS SHALL BE TRANSPORTED TO THE SITE SUCH THAT THE TEMPERATURE OF THE ASPHALT AT THE TIME OF DISCHARGE FROM THE HAUL VEHICLE SHALL BE AS PER SECTION IV - 3.05 E TEMPERATURE REQUIREMENTS, UNLESS OTHERWISE SPECIFIED BY THE HOT MIX PLANT AND APPROVED BY THE SUPERVISORY ENGINEER.

1.04 ENVIRONMENTAL CONDITIONS
- A. THE ASPHALT PAVING CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACING ANY EROSION AND SEDIMENT CONTROLS THAT ARE DAMAGED FROM PAVING ACTIVITIES.
- B. WASTE GENERATED DURING ASPHALT PAVING SHALL BE PROPERLY DISPOSED OF ACCORDING TO THE PROJECT SPECIFICATIONS AND LOCAL, STATE, AND FEDERAL REGULATIONS.
- C. ASPHALT HAUL TRUCKS SHALL EXIT THE SITE THROUGH THE DESIGNATED STABILIZED CONSTRUCTION ENTRANCE TO PREVENT TRACK OUT.

1.05 SCHEDULE FOR CONSTRUCTION DATES
- A. AFTER MAY 15 OR THE DATE OF ASPHALT PLANT OPENING UNTIL DECEMBER 1 OR THE DATE OF ASPHALT PLANT CLOSURE OR PER APPROVAL OF SUPERVISING ENGINEER.

1.06 REQUIREMENTS FOR CONSTRUCTION PHASING
- A. CONSTRUCTION PHASING, SEQUENCING AND ENGINEERING OVERSIGHT IS REQUIRED TO ENSURE THE SUCCESSFUL PRODUCTION, INSTALLATION, AND LONG-TERM PERFORMANCE OF POROUS PAVEMENT SYSTEMS. PROPER COORDINATION OF THESE PROCEDURES WITH THE CONTRACTOR AND INSPECTION OF THE PAVEMENT SUBGRADE DURING CONSTRUCTION IS CRITICAL TO PROVIDE ACCESS AND PREVENT DAMAGE TO POROUS PAVEMENT SYSTEM COMPONENTS. TEMPORARY CONSTRUCTION METHODS AND PHASING CONSIDERATIONS ACCOUNT FOR THE NECESSARY USE OF LARGE CONSTRUCTION EQUIPMENT OVER THE POROUS PAVEMENT LAYERS WHILE MAINTAINING ITS STRUCTURAL INTEGRITY AND INFILTRATIVE CAPACITY. THE CONTRACTOR'S CONSTRUCTION PHASING SEQUENCE PLAN SHALL INCLUDE PROTECTIVE AND CORRECTIVE ACTIONS DETAILED BELOW FOR EXPECTED IMPACTS FROM CONSTRUCTION ACTIVITIES.
- B. THE FOLLOWING CONSTRUCTION PHASING IS INTENDED AS A GUIDE. PHASING MUST BE PLANNED SUCH THAT NO CONSTRUCTION TRAFFIC IS PERMITTED ON A COMPLETED POROUS ASPHALT WEARING COURSE SURFACE AREA. CONSTRUCTION TRAFFIC IS PERMITTED ON THE TEMPORARY CONSTRUCTION ROAD, SUBGRADE AND ON THE SUBBASE DURING PREPARATION. THE USE OF A TEMPORARY POROUS ASPHALT CONSTRUCTION ROAD SHOULD ENABLE CONSTRUCTION TRAFFIC TO PROCEED WITH PHASED COMPLETION AND CLOSURE OF AREAS. INFILTRATION BEDS WILL NEED TO BE PROTECTED FROM EROSION AND SEDIMENTATION RUN-ON. IT IS RECOMMENDED THAT AREAS ARE COMPLETED INCREMENTALLY UNTIL PAVING IS COMPLETED. THE PHASING PLAN WILL BE ADAPTED BASED ON FEEDBACK WITH THE CLIENT, THE SUPERVISORY ENGINEER, AND THE CONTRACTOR.
- C. THE CONTRACTOR SHALL INCLUDE THE ELEMENTS OF THIS PHASING IN THE CONTRACTOR'S CONSTRUCTION PHASING PLAN.
  1. CONTRACTOR SUBMITTALS AND APPROVALS
  2. HOST A PRE-CONSTRUCTION MEETING AT THE SITE
  3. EROSION AND SEDIMENTATION CONTROL BMPS ESTABLISHED INCLUDING SEDIMENTATION POND AT DOWNHILL END OF SITE. POROUS PAVEMENT RESERVOIRS MAY BE USED FOR TEMPORARY SEDIMENTATION PONDS, ACCUMULATED FINES SHALL BE REMOVED PRIOR TO PLACEMENT OF AGGREGATE AND APPROVED BY THE SUPERVISING ENGINEER.
  4. ROUGH GRADE SITE (CUT/FILL)
  5. FINE GRADE SUBGRADE
  6. PERFORM TOPOGRAPHICAL SURVEY OF SUBGRADE
  7. SUPERVISORY ENGINEER TO INSPECT SUBGRADE AND PERFORM INFILTRATION TESTS TO VERIFY SUITABILITY OF SUBGRADE FROM COMPACTION DURING CONSTRUCTION OR WHERE EROSION HAS CAUSED ACCUMULATION OF FINE MATERIALS. REWORK MATERIALS THAT DO NOT MEET INFILTRATION REQUIREMENTS PER THE DRAWINGS AND SPECIFICATIONS. THESE MATERIALS SHALL BE REMOVED AND/OR SCARIFIED TO A MINIMUM DEPTH OF 6 INCHES, AND RETESTED FOR COMPACTION AND INFILTRATION AS PER SPECIFICATIONS.
  8. INSTALL GEOTEXTILE VERTICAL BARRIERS PLACED ALONG PERIMETER OF POROUS PAVEMENT PARKING AREA PER THE DRAWINGS.
  9. INSTALL CAPILLARY BARRIER AND GEOTEXTILE INTERNAL GRADE CONTROLS
  10. PLACE UTILITIES LINES OVER THE GRADED CAPILLARY BARRIER LAYER
  11. PLACE AND COMPACT FILTER COURSE PER THIS SECTION
  12. SUPERVISORY ENGINEER TO INSPECT FILTER COURSE AND PERFORM INFILTRATION TESTS TO VERIFY SUITABILITY OF COMPACTION AND INFILTRATION PER THIS SECTION.
  13. PLACE AND GRADE CHOKER COARSE
  14. PLACE AND COMPACT POROUS ASPHALT BINDER COURSE.

1.07 PLACEMENT OF TEMPORARY ROAD OF POROUS ASPHALT BINDER COURSE (OPTIONAL)
- A. INSTALL AT THICKNESS INDICATED ON DRAWINGS (IN PLACE) LAYER OF BINDER COURSE PER THIS SECTION.
- B. INSTALL FRAME, GRATES, AND LANDSCAPING. SPECIAL CARE IS TO BE TAKEN TO PROTECT FRESH BINDER COURSE.
- C. ALL TRUCKS (INCLUDING CONCRETE TRUCKS) WILL BE STOPPED PRIOR TO ENTERING THE SITE AND INSTRUCTED AS TO SPECIAL CONCERNS FOR PAVEMENT DURABILITY.
- D. A WASHOUT AREA FOR ALL CONCRETE TRUCKS SHALL BE DESIGNATED OUTSIDE OF POROUS PAVEMENT AREA ON THE CONTRACTOR'S EROSION AND SEDIMENT CONTROL PLAN.
- E. POROUS PAVEMENT SURFACE SHALL BE PROTECTED ON HOT DAYS DURING THE PAVEMENT CURE PERIOD (2-3 DAYS). SURFACE TEMPERATURES CAN QUICKLY REACH OVER 145°F IN DIRECT SUN.
- F. A TEMPERATURE GUN SHALL BE AVAILABLE ONSITE TO ASSESS PAVEMENT SURFACE TEMPERATURES. PAVEMENT TEMPERATURES GREATER THAN 100°F SHOULD BE OBSERVED CAREFULLY FOR PAVEMENT DURABILITY. AS NEEDED, COOLING OF PAVEMENT SURFACE BY APPLICATION OF WATER FROM A WATER TRUCK SHOULD OCCUR WHEN HEAVY VEHICULAR TRAFFIC IS EXPECTED SUCH AS CONCRETE TRUCKS FOR DRY WELL FRAME AND GRATE INSTALLATION. IN THE EVENT THIS IS INEFFECTIVE FOR COOLING AND PAVEMENT DEFORMATION IS STILL OBSERVED, THE USE OF 3/4" PLYWOOD UNDER LARGE VEHICLE WHEELS MAY BE REQUIRED.
- G. TRUCKS AND OTHER CONSTRUCTION TRAFFIC WILL NOT BE ALLOWED TO ACCESS THE SITE WHILE THE PAVEMENT IS EXCESSIVELY HOT >130°F OR IF UNACCEPTABLE DAMAGE IS OBSERVED. COSMETIC DAMAGE TO BINDER COURSE IS ACCEPTABLE NOT INCLUDING LOSS OF INFILTRATION CAPACITY.
- H. NO STOCKPILING OF MATERIALS (E.G. SOIL, STONE, LANDSCAPING MATERIALS) WILL BE ALLOWED ON POROUS PAVEMENTS.
- I. MATERIALS EXCAVATED FOR FINISH WORKS SHALL BE PLACED OUTSIDE OF POROUS PAVEMENT AREAS.
- J. VACUUMING THROUGHOUT CONSTRUCTION MAY BE NECESSARY FOR SURROUNDING PAVED AREAS TO PREVENT RUN-ON OR TRACKING ONTO POROUS PAVEMENTS. FREQUENCY SHALL BE ADJUSTED AS NEEDED.
- K. REPEAT PHASE 1 AND 2 INCREMENTALLY UNTIL FULL PAVING IS COMPLETED.

SECTION II-PAVEMENT SUBGRADE (POROUS ASPHALT PAVEMENTS)

PART 1 EXECUTION

1.01 EXAMINATION
- A. EXAMINE SPACES TO BE FILLED BEFOREHAND AND REMOVE ALL UNSUITABLE MATERIALS AND DEBRIS INCLUDING SHEETING, FORMS, TRASH, STUMPS, PLANT LIFE, ETC.
- B. INSPECT BACKFILL AND FILL MATERIALS BEFOREHAND AND REMOVE ALL ROOTS, VEGETATION, ORGANIC MATTER, OR OTHER FOREIGN DEBRIS. STONES LARGER THAN 12 INCHES IN ANY DIMENSION SHALL ALSO BE REMOVED OR BROKEN INTO SMALLER PIECES.
- C. NO BACKFILL OR FILL MATERIAL SHALL BE PLACED ON FROZEN GROUND NOR SHALL THE MATERIAL ITSELF BE FROZEN OR CONTAIN FROZEN SOIL FRAGMENTS.
- D. SPACES TO BE FILLED SHALL BE FREE FROM STANDING WATER SO THAT PLACEMENT AND COMPACTION OF THE FILL MATERIALS CAN BE ACCOMPLISHED IN "DRY" CONDITIONS.
- E. ALL UNDERGROUND UTILITY INSTALLATIONS, INCLUDING CULVERTS, SHALL BE COMPLETED, BACKFILLED AND COMPACTED PRIOR TO COMPLETION OF SUBGRADE.
- F. VERIFY THAT TRAFFIC CONTROLS AND EROSION AND SEDIMENT CONTROLS ARE IN PLACE.

1.02 PREPARATION
- A. TEMPORARY EROSION AND SEDIMENT CONTROLS SHALL BE INSTALLED PRIOR TO CONSTRUCTION OF SUBGRADE.
- B. TAKE ANY OTHER NECESSARY STEPS TO PREVENT SEDIMENT FROM WASHING INTO INFILTRATION BEDS DURING CONSTRUCTION. WHEN THE SITE IS FULLY STABILIZED, TEMPORARY SEDIMENT CONTROL DEVICES SHALL BE REMOVED.
- C. TEMPORARY DRAINS AND DITCHES SHALL BE CONSTRUCTED AS NECESSARY TO REMOVE WATER FROM THE SUBGRADE AREA.
  1. TEMPORARY DRAINAGE OPENINGS IN EXISTING CATCH BASINS MAY BE MADE IN A MANNER ACCEPTABLE TO THE ENGINEER, SUCH OPENINGS TO BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.
  2. CONTRACTOR TO PREVENT THE ENTRANCE OF DEBRIS, STONES AND SILT FROM ENTERING DRAINAGE SYSTEMS, INCLUDING THE USE OF BALES OF HAY, SCREENS AND OTHER DESILTING METHODS.
- D. BACKFILLED AREAS SHALL BE RETESTED AT THE DISCRETION OF THE ENGINEER.
- E. MINIMIZE TRAFFIC AND COMPACTION UPON SUBGRADE.
- F. IN MOST INSTANCES TRAVEL UPON SUBGRADE IS UNAVOIDABLE, AND A CAREFUL ASSESSMENT OF DEGREE OF SUBGRADE COMPACTION IS NEEDED. TILLING AND OR REMOVAL OF COMPACTED SUBGRADE MAY BE NEEDED.
- G. SUBGRADE COMPACTED DURING EXCAVATION OR WHERE EROSION HAS CAUSED ACCUMULATION OF FINE MATERIALS, THIS MATERIAL SHALL BE REMOVED AND/OR SCARIFIED TO A MINIMUM DEPTH OF 6 INCHES.
- H. PRIOR TO PLACEMENT OF THE AGGREGATE RESERVOIR (AGGREGATE BASE COURSE), THE INFILTRATION RATE OF THE SUBGRADE SHALL BE DETERMINED BY ASTM D3385 OR APPROVED ALTERNATE AT THE DISCRETION OF THE ENGINEER. THE INFILTRATION RATE SHALL BE NO LESS 5-30 FT/DAY OR 50% OF THE HYDRAULIC CONDUCTIVITY (D2434) AT 95% STANDARD PROCTOR COMPACTION.
- I. SEE TABLE 2 FOR COMPACTION AND INFILTRATION REQUIREMENTS.
- J. THE DENSITY OF SUBGRADE COURSES SHALL BE DETERMINED BY AASHTO T 191 (SAND-CONE METHOD), AASHTO T 204 (DRIVE CYLINDER METHOD), OR AASHTO T 238 (NUCLEAR METHODS), OR OTHER APPROVED METHODS AT THE DISCRETION OF THE ENGINEER.
- K. UNSUITABLE MATERIALS SHALL BE REMOVED AND REWORKED TO THE SATISFACTION OF THE ONSITE ENGINEER.
- L. UPON COMPLETION OF SUBGRADE WORK, THE ENGINEER SHALL BE NOTIFIED AND SHALL INSPECT AT HIS/HER DISCRETION BEFORE PROCEEDING WITH THE POROUS MEDIA BED INSTALLATION.

1.03 FIELD QUALITY CONTROL
- A. FOR COMPACTION REQUIREMENTS SEE TABLE 2.
- B. TOLERANCES - THE FINAL SUBGRADE SURFACE SHALL NOT VARY MORE THAN ±1/2 INCH FROM THE DESIGN GRADE ELEVATION AT ANY LOCATION, PARALLEL TO THE FINAL ROAD SURFACE AS DEFINED BY THE TOTAL ROADWAY THICKNESS.
- C. PROOF ROLLED - PRIOR TO THE PLACEMENT OF THE NEXT PAVEMENT COURSE, THE SUBGRADE SURFACE SHALL BE PROOF ROLLED TO LOCATE AREAS OF INADEQUATE COMPACTION OR DEFECTIONS OR SOFT OR RUTTING AREAS REQUIRING UNDERCUTTING, WITH 8- TO 10-TON PNEUMATIC TIRE COMPACTORS.
  1. AREAS OF INADEQUATE COMPACTION TO BE RECOMPACTED.
  2. IF ADDITIONAL ROLLING DOES NOT CORRECT AN AREA OF UNSTABLE CONDITION, THEN THIS AREA AND SOFT OR RUTTED AREAS SHALL BE REMOVED AND REPLACED WITH SELECT ON-SITE MATERIAL AND COMPACTED.
  3. WHERE NO SUITABLE ON-SITE MATERIAL IS AVAILABLE, GRANULAR MATERIALS SHALL BE INSTALLED AND COMPACTED; AREAS INACCESSIBLE TO ROLLERS TO BE COMPACTED BY MECHANICAL METHODS.

SECTION III: AGGREGATE BASE COURSE (POROUS ASPHALT PAVEMENTS)

PART 1 EXECUTION

1.01 EXAMINATION
- A. VERIFY PAVEMENT SUBGRADE HAS BEEN ACCEPTED FOR PLACEMENT OF AGGREGATE BASE COURSE.
  1. GRADIENTS, CROWNS AND ELEVATIONS ARE CORRECT.
  2. SUBGRADE IS DRY.
  3. PRIOR TO PLACEMENT OF THE AGGREGATE, THE INFILTRATION RATE OF THE SUBGRADE SHALL BE DETERMINED BY ASTM D3385 OR APPROVED ALTERNATE AT THE DISCRETION OF THE ENGINEER. THE INFILTRATION RATE SHALL BE NO LESS 5-30 FT/DAY OR 50% OF THE HYDRAULIC CONDUCTIVITY (D2434) AT 95% STANDARD PROCTOR COMPACTION.
- B. VERIFY THAT TRAFFIC CONTROLS ARE IN PLACE.

1.02 EDGE LINER INSTALLATION
- A. EDGE GEOTEXTILE OR PVC LINER SHALL BE PLACED IMMEDIATELY AFTER APPROVAL OF SUBGRADE PREPARATION.
- B. THE EDGE LINER IS TO BE PLACED ALONG THE ENTIRE PERIMETER OF THE VERTICAL WALLS OF BOTH SIDES OF THE EXCAVATION AND LOCATED BEHIND THE CURB, SIDEWALK, OR TRANSITION ELEMENT TO THE DIMENSIONS AND LOCATIONS AS SHOWN WITHIN THE CONTRACT DRAWINGS.
- C. THE LINER IS TO BE PLACED BEHIND THE CURB OR TRANSITION WITHIN CONCRETE FOOTING.
- D. THE EDGE LINER SHOULD TEMPORARILY BE STAKED VERTICALLY AT 12-18" ABOVE THE SUBGRADE, PRIOR TO PLACEMENT BEHIND CURB, TO FUNCTION AS EROSION CONTROL MEASURE TO PREVENT FINES FROM WASHING INTO RESERVOIR BASE.
- E. PENETRATIONS TO THE PVC LINER SHALL BE WRAPPED WITH A STAINLESS STEEL PIPE CLAMP, SEALED BY HEAT-SHRINK, OR SIMILAR METHOD TO ACHIEVE LOW PRESSURE WATER TIGHT SEAL OR APPROVED EQUAL TO PREVENT THE MIGRATION OF SEDIMENT ACROSS THE PENETRATION.
- F. INTERNAL GRADE PVC LINER GRADE CONTROL TO BE PLACED EVERY 12" OF GRADE LOSS AT EQUAL ELEVATION ALONG THE CONTOUR. THE INTERNAL GRADE CONTROL ARE TO CONTAIN THE FLOW ON SLOPE WITHIN THE PAVEMENT RESERVOIR AND MUST BE KEYED INTO EDGE PVC LINER AND CONTAIN THE RESERVOIR BED AND SUBGRADE.
- B. THE INTERNAL GRADE CONTROL PVC LINER IS TO BE PLACED ALONG AN EQUAL ELEVATION CONTOUR AS PER THE DIMENSIONS AND LOCATIONS AS SHOWN WITHIN THE CONTRACT DRAWINGS.
- C. PENETRATIONS FROM UTILITIES TO THE PVC LINER ARE TO BE MINIMIZED AND LOCATED BENEATH THE PVC LINER IF POSSIBLE.
- D. UTILITY PIPING WITHIN THE ROADBED SHALL BE WATERTIGHT AND SEALED WITH FOAM, CAULKING, OR OTHER SUITABLE METHOD.
- E. ALL UTILITY TRENCHES THAT INTERSECT OR TRAVEL BELOW THE PAVEMENT SUBBASE SHALL HAVE CONSIDERATIONS TO PREVENT SOIL PIPING AND INFILTRATION AND INFLOW. THIS MAY INCLUDE SEEPAGE COLLAR, COVER WITH LINER, OR OTHER METHOD APPROVED BY ENGINEER.
- F. IN AREAS WHERE THE LINER IS NOT CONTINUOUS, A 12-INCH OVERLAP IS REQUIRED.

1.03 FILTER COURSE PREPARATION
- A. RESERVOIR COURSE AND CAPILLARY BARRIER AGGREGATE SHALL BE PLACED IMMEDIATELY AFTER APPROVAL OF SUBGRADE PREPARATION AND INSTALLATION OF EDGE GEOTEXTILE. ANY ACCUMULATION OF DEBRIS OR SEDIMENT WHICH HAS TAKEN PLACE AFTER APPROVAL OF SUBGRADE SHALL BE REMOVED PRIOR TO INSTALLATION OF GEOTEXTILE AT NO EXTRA COST TO THE OWNER.
- B. SEE TABLE 1 FOR SPECIFICATIONS FOR FILTER COURSE AND RESERVOIR COURSE / CAPILLARY BARRIER.
- C. SEE TABLE 2 FOR COMPACTION AND INFILTRATION REQUIREMENTS OF SUBBASE.
- D. INSTALL FILTER COURSE AGGREGATE IN 12-INCH MAXIMUM LIFTS TO 95 TO 98% STANDARD PROCTOR COMPACTION (ASTM D698 / AASHTO T99). INSTALL AGGREGATE TO GRADES INDICATED ON THE DRAWINGS.
- E. THE INFILTRATION RATE OF THE FILTER COURSE SHALL BE DETERMINED BY ASTM D3385 OR APPROVED ALTERNATE AT THE DISCRETION OF THE SUPERVISING ENGINEER. THE INFILTRATION RATE SHALL BE NO LESS 5-30 FT/DAY OR 50% OF THE HYDRAULIC CONDUCTIVITY (D2434) AT 95% STANDARD PROCTOR COMPACTION.
- F. THE DENSITY OF FILTER COURSE SHALL BE DETERMINED BY AASHTO T 191 (SAND-CONE METHOD), AASHTO T 204 (DRIVE CYLINDER METHOD), OR AASHTO T 238 (NUCLEAR METHODS), OR OTHER APPROVED METHODS AT THE DISCRETION OF THE SUPERVISING ENGINEER.
- G. VIBRATORY COMPACTION SHALL BE PERFORMED USING TWO-AXLE TANDEM ROLLERS WITH A GROSS MASS (WEIGHT) OF NOT LESS THAN 5 METRIC TONS (5.5 TONS) AND NOT MORE THAN 10 METRIC TONS (12 TONS) AND SHALL BE CAPABLE OF PROVIDING A MINIMUM COMPACTIVE EFFORT OF 44 KN/M (250 POUNDS PER INCH) OF WIDTH OF THE DRIVE ROLL. ALL ROLLS SHALL BE AT LEAST 1 M (42 INCHES) IN DIAMETER.
- H. COMPACTION OF SUBGRADE COURSE MATERIAL SHALL BE DONE WITH A METHOD AND ADEQUATE WATER TO MEET THE REQUIREMENTS. ROLLING AND SHAPING SHALL CONTINUE UNTIL THE REQUIRED DENSITY IS ATTAINED. WATER SHALL BE UNIFORMLY APPLIED OVER THE SUBBASE COURSE MATERIALS DURING COMPACTION IN THE AMOUNT NECESSARY FOR PROPER CONSOLIDATION.

1.04 POROUS AGGREGATE SUBBASE INSTALLATION
- A. RESERVOIR BED AGGREGATE SHALL BE PLACED IMMEDIATELY AFTER APPROVAL OF SUBGRADE PREPARATION AND INSTALLATION OF EDGE PVC LINER. ANY ACCUMULATION OF DEBRIS OR SEDIMENT WHICH HAS TAKEN PLACE AFTER APPROVAL OF SUBGRADE SHALL BE REMOVED PRIOR TO INSTALLATION OF PVC LINER AT NO EXTRA COST TO THE OWNER.
- B. SEE TABLE 2 FOR COMPACTION AND INFILTRATION REQUIREMENTS.
- C. INSTALL RESERVOIR BED AGGREGATE IN 12-INCH MAXIMUM LIFTS TO 95 TO 98% STANDARD PROCTOR COMPACTION (ASTM D698 / AASHTO T99). INSTALL AGGREGATE TO GRADES INDICATED ON THE DRAWINGS.
- D. VIBRATORY COMPACTION SHALL BE PERFORMED USING TWO-AXLE TANDEM ROLLERS WITH A GROSS MASS (WEIGHT) OF NOT LESS THAN 5 METRIC TONS (5.5 TONS) AND NOT MORE THAN 10 METRIC TONS (12 TONS) AND SHALL BE CAPABLE OF PROVIDING A MINIMUM COMPACTIVE EFFORT OF 44 KN/M (250 POUNDS PER INCH) OF WIDTH OF THE DRIVE ROLL. ALL ROLLS SHALL BE AT LEAST 1 M (42 INCHES) IN DIAMETER.
- E. COMPACTION OF SUBGRADE COURSE MATERIAL SHALL BE DONE WITH A METHOD AND ADEQUATE WATER TO MEET THE REQUIREMENTS. ROLLING AND SHAPING SHALL CONTINUE UNTIL THE REQUIRED DENSITY IS ATTAINED. WATER SHALL BE UNIFORMLY APPLIED OVER THE SUBBASE COURSE MATERIALS DURING COMPACTION IN THE AMOUNT NECESSARY FOR PROPER CONSOLIDATION.
- F. ADD SMALL QUANTITIES OF FINE AGGREGATE TO COARSE AGGREGATE AS APPROPRIATE TO ASSIST COMPACTION.
- G. IF EXCESS WATER IS APPARENT, REMOVE AGGREGATE AND AERATE TO REDUCE MOISTURE CONTENT.
- H. USE MECHANICAL VIBRATING TAMPING IN AREAS INACCESSIBLE TO COMPACTION EQUIPMENT.
- I. THE ENGINEER SHALL BE NOTIFIED AND SHALL INSPECT THE LINER AND SUBBASE INFILTRATION CAPACITY AT HIS/HER DISCRETION BEFORE PROCEEDING WITH THE PLACEMENT OF SELECT ROAD BASE MATERIALS.
- J. INSPECTION OF INFILTRATION CAPACITY WILL VERIFY SUITABILITY OF SUBBASE FROM COMPACTION DURING CONSTRUCTION OR WHERE EROSION HAS CAUSED ACCUMULATION OF FINE MATERIALS. IF NEEDED, COMPACTED/ACCUMULATED MATERIALS SHALL BE REMOVED AND/OR SCARIFIED TO A MINIMUM DEPTH OF 6 INCHES AND RETESTED FOR COMPACTION AND INFILTRATION AS PER SPECIFICATIONS.
- K. INSTALL INFILTRATION TRENCH PER CONSTRUCTION DETAIL. INFILTRATION TRENCH MAY BE ELIMINATED IN THE EVENT OF SHALLOW UTILITIES THAT WILL INTERSECT THE EXCAVATION.

1.05 PROTECTION
- A. IN THE EVENT THE SUBBASE IS USED FOR MAINTENANCE OF TRAFFIC OR IS DISTURBED OR LOOSENED BY ANY CAUSE, THEN PRIOR TO PLACING OF THE NEXT PAVING COURSE, THE SUBBASE SHALL BE REGRADED AND RECOMPACTED TO ITS FINISHED GRADE AND SPECIFIED DENSITY.

SEAL

ISS.	DATE:	DESCRIPTION OF ISSUE:	CHK.
2	NOV 5, 2019	FOR APPROVAL	
1	SEP 13, 2019	FOR APPROVAL	

DRAWN:	JJM	DESIGN:	JJM
CHECKED:	BDS	CHECKED:	BDS

EMANUEL ENGINEERING
civil & structural consultants, land planners
118 PORTSMOUTH AVENUE, A202
STRATHAM, NH 03885
P: 603-772-4400 F: 603-772-4487
WWW.EMANUELENGINEERING.COM

CLIENT:
TURBOCAM INTERNATIONAL
607 CALEF HIGHWAY
BARRINGTON, NH 03825

TITLE:
NOTES
FOR
TAX MAP 233 LOT 77
AND TAX MAP 234 LOTS 1.2 & 1.4
TURBOCAM INTERNATIONAL
ROUTE 9 / REDEMPTION ROAD (SITE)
BARRINGTON, NH 03825
& TOWN OF BARRINGTON
PO BOX 660
BARRINGTON, NH 03825

PROJECT:	SCALE:	SHEET:
19-020	AS SHOWN	D1

SECTION IV- POROUS ASPHALT PAVING (POROUS ASPHALT PAVEMENTS)

DR. ROBERT ROSEEN OF WATERSTONE ENGINEERING, INC. (OR EQUAL) SHALL REVIEW ALL ASPECTS OF PREPARATION, INSTALLATION, AND TESTING FOR THE POROUS PAVEMENT SECTIONS. PHONE: (603) 686-2488

PART 1
1.01 SCHEDULING
A. SCHEDULE THE PAVING OPERATIONS SUCH THAT ALL PAVING NECESSARY TO PROVIDE SAFE AND ADEQUATE MAINTENANCE AND PROTECTION OF TRAFFIC OR FOR PROTECTION OF PREVIOUSLY LAID COURSES IS COMPLETED WITHIN THE WEATHER AND SEASONAL LIMITATIONS.
1. SUCH SCHEDULING SHALL INCLUDE EXPEDITING CONSTRUCTION OPERATIONS TO PERMIT PAVING BEFORE THE SEASONAL LIMITATIONS OR BY LIMITING THE LENGTH OF WORK TO THAT WHICH CAN BE COMPLETED BEFORE THE SEASONAL SHUTDOWN.
2. THE COST OF SCHEDULING AND SEQUENCING OF WORK TO CONFORM TO THE SEASONAL LIMITATIONS SHALL BE REFLECTED IN THE BID PRICES FOR THE RELATED CONTRACT ITEMS.

PART 2 PRODUCTS
2.01 ASPHALT CONCRETE
A. BINDER COURSE - THE PAVEMENT BINDER COURSE SHALL BE CONSTRUCTED OF THE FOLLOWING TYPE AND TO THE WIDTHS AND DEPTHS AS SHOWN ON THE DRAWINGS.
1. THIS BINDER COURSE SHALL BE IN ACCORDANCE WITH NHDOT SPECIFICATION FOR BITUMINOUS CONCRETE.
B. PAVEMENT WEARING COURSE (SURFACE COURSE) - PAVEMENT WEARING COURSE SHALL BE CONSTRUCTED OF THE FOLLOWING TYPE AND TO THE WIDTH AND DEPTH AS SHOWN ON THE DRAWINGS.
1. THIS WEARING COURSE SHALL BE IN ACCORDANCE WITH NHDOT SPECIFICATION FOR BITUMINOUS CONCRETE.
C. PAINTED TRAFFIC MARKINGS - CONTRACTOR SHALL REPLACE ALL MARKINGS IN ACCORDANCE WITH LOCAL, COUNTY, OR STATE SPECIFICATIONS (DEPENDING ON JURISDICTION).

2.02 POROUS ASPHALT
A. THIS IS A PERFORMANCE SPECIFICATION; ALTERNATIVES CAN BE SUBSTITUTED IF THE MIX DESIGN MEETS THE MINIMUM QC PERFORMANCE CRITERIA FOR GRADATION, ASPHALT CONCRETE (AC) CONTENT, PERCENT (%) VOID SPACE, % DRAIN DOWN, RETAINED TENSILE STRENGTH (TSR), AND CANTABRO WEAR TEST AND ACCEPTED IN WRITING BY THE ENGINEER.
B. POLYMER MODIFIED PERFORMANCE GRADED ASPHALT BINDER AND MIX DESIGNS
1. POROUS ASPHALT WEARING COURSE: GRADATION, AC CONTENT, % VOID SPACE, % DRAIN DOWN, TSR, CANTABRO AS INDICATED IN TABLE 3. THE ASPHALT BINDER SHALL BE A TERMINAL BLENDED PG76-28 MODIFIED WITH A STYRENE BUTADIENE STYRENE.
2. POROUS ASPHALT BINDER COURSE: GRADATION, AC CONTENT, % VOID SPACE, % DRAIN DOWN, TSR, CANTABRO AS INDICATED IN TABLE 3. THE ASPHALT BINDER SHALL BE A TERMINAL BLENDED PG76-28 MODIFIED WITH A STYRENE BUTADIENE STYRENE.
3. POROUS ASPHALT MIX DESIGNS: THE CONTRACTOR SHALL SIZE, UNIFORMLY GRADE, AND COMBINE THE AGGREGATE FRACTIONS IN PROPORTIONS THAT PROVIDE A MIXTURE MEETING THE REQUIREMENTS SPECIFIED.

PART 3 EXECUTION
3.01 PREPARATION - RESET MANHOLE FRAMES
A. PRIOR TO PLACING WEARING (TOP) COURSE, MAKE FINAL ADJUSTMENTS OF MANHOLE FRAMES, CATCH BASIN FRAMES, VALVE BOXES AND ANY OTHER UTILITY STRUCTURES LOCATED IN THE PAVEMENT IN RELATION TO FINISHED GRADE.
1. MANHOLE FRAMES, VALVE BOXES, ETC. TO SET 1/2 INCH BELOW FINISHED GRADE AND PARALLEL TO FINISHED CROWN.
2. CATCH BASIN FRAMES TO SET 1 INCH BELOW FINISHED GRADE AND PARALLEL TO FINISHED CROWN.
a. BEVEL SLOPE OF WEARING COURSE (FOR 6-INCH WIDTH) AROUND CATCH BASIN FRAME.

3.02 POROUS ASPHALT BINDER COURSE INSTALLATION
A. TEST STRIP (OPTIONAL)
1. AN OPTIONAL TEST STRIP SHALL BE CONDUCTED TO DETERMINE OPTIMAL COMPACTION PROCEDURES FOR THE BINDER COURSE AT A THICKNESS AS INDICATED IN THE DRAWINGS. THE TEST STRIP WILL BE CONSTRUCTED IN A PORTION OF THE SITE TO ESTABLISH AND ENSURE THE PROPER MIX DESIGN, PRODUCTION AND PLACEMENT.
2. THE TEST STRIP SHALL BE OVERSEEN BY THE ENGINEER.
3. TWO MIX SAMPLES SHALL BE COLLECTED AT THE ASPHALT PLANT BY A 3RD PARTY QC TECHNICIAN DURING BINDER COURSE PRODUCTION FROM EACH TEST STRIP FOR ASPHALT CONTENT, AND GRADATION.
4. FIELD TESTING OF INFILTRATION CAPACITY SHALL BE PERFORMED ON THE TEST STRIP FOR INFILTRATION BY THE ENGINEER.
5. TWO CORES SHALL BE COLLECTED FROM EACH TEST STRIP AND EVALUATED FOR COMPACTION, DENSITY, AND POROSITY.
6. THESE CRITERIA ONCE ESTABLISHED WILL BE APPLIED TO ALL POROUS ASPHALT INSTALLATIONS.
B. CONDITIONING OF EXISTING SURFACE
1. THE CONTRACTOR SHALL THOROUGHLY CLEAN THE SURFACE UPON WHICH THE BINDER COURSE IS TO BE PLACED OF ALL OBJECTIONABLE MATERIAL.
C. PREPARATION OF AGGREGATES
1. THE CONTRACTOR SHALL DRY AND HEAT THE AGGREGATES FOR THE BINDER COURSE TO THE REQUIRED TEMPERATURE.
D. MIXING
1. THE CONTRACTOR SHALL COMBINE THE DRIED AGGREGATE IN THE MIXER IN THE AMOUNT OF EACH FRACTION OF AGGREGATE REQUIRED TO MEET THE SPECIFICATIONS. ONCE MIXED THE BINDER COURSE SHALL BE PLACED AS SOON AS POSSIBLE.

E. SPREADING AND FINISHING
1. ON AREAS WHERE IRREGULARITIES OR UNAVOIDABLE OBSTACLES MAKE THE USE OF MECHANICAL SPREADING AND FINISHING IMPRACTICABLE, THE CONTRACTOR SHALL SPREAD AND RAKE THE BINDER COURSE WITH HAND TOOLS TO PROVIDE THE REQUIRED COMPACTED THICKNESS.
2. SOLVENT BASED AGENTS DEVELOPED TO STRIP ASPHALTS FROM AGGREGATES WILL NOT BE ALLOWED AS A RELEASE AGENT.
3. JOINTS SHALL BE FULLY COATED WITH PGAB 76-28 JUST PRIOR TO THE PLACEMENT OF THE ADJOINING COURSE. AREAS THAT BECOME CONTAMINATED OR STRIPPED OF ASPHALT COATING WILL BE RETREATED WITH ASPHALT PRIOR TO PLACING THE ADJOINING COARSE.
F. COMPACTION
1. THE ACTUAL METHODS AND EQUIPMENT USED TO COMPACT THE BINDER COURSE WILL BE DETERMINED DURING THE PLACEMENT AND COMPACTION OF THE TEST STRIP AND AS TABLE 2.
2. IMMEDIATELY AFTER THE ASPHALT TREATED PERMEABLE BASE HAS BEEN SPREAD, STRUCK OFF, AND ANY SURFACE IRREGULARITIES ADJUSTED, THE CONTRACTOR SHALL THOROUGHLY AND UNIFORMLY COMPACT THE BINDER COURSE BY ROLLING.
3. THE BINDER COURSE SHALL BE COMPACTED BY A MAXIMUM OF THREE COMPLETE PASSES OF A STEEL ROLLER HAVING A MINIMUM WEIGHT OF 12 TONS OPERATED IN STATIC MODE, OR 10 TONS IF EQUIPPED WITH OSCILLATORY COMPACTION AND OPERATED IN LOW FREQUENCY, LOW AMPLITUDE MODE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. PNEUMATIC ROLLERS WILL NOT BE USED TO COMPACT THE BINDER COURSE.
4. THE CONTRACTOR SHALL ROLL THE SURFACE WHEN THE MIXTURE IS IN THE PROPER CONDITION AND WHEN THE ROLLING DOES NOT CAUSE UNDUE DISPLACEMENT, CRACKING, OR SHOVING. THE CONTRACTOR SHALL PREVENT ADHESION OF THE BINDER COURSE TO THE ROLLERS OR VIBRATING COMPACTORS WITHOUT THE USE OF FUEL OIL OR OTHER PETROLEUM, OR SOLVENT BASED RELEASE AGENTS. SOLVENTS DESIGNED TO STRIP ASPHALT BINDERS FROM AGGREGATES WILL NOT BE PERMITTED AS RELEASE AGENTS ON EQUIPMENT, TOOLS OR BINDER COURSE SURFACES.
5. THE CONTRACTOR SHALL IMMEDIATELY CORRECT ANY DISPLACEMENT OCCURRING AS A RESULT OF THE REVERSING OF THE DIRECTION OF A ROLLER OR FROM OTHER CAUSES TO THE SATISFACTION OF THE ENGINEER.
6. ANY OPERATION THAT RESULTS IN BREAKDOWN OF THE AGGREGATE SHALL BE DISCONTINUED.
G. TRAFFIC
1. AFTER A 24 HOUR CURING PERIOD OF THE BINDER COURSE, LIMITED TRAFFIC MAY BE ROUTED OVER THE BINDER COURSE SURFACE. UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER, CONSTRUCTION EQUIPMENT, AND TRAFFIC SHALL BE PROHIBITED FROM TRAVELING OVER THE BINDER COURSE SURFACE UNTIL THE ENTIRE PAVEMENT STRUCTURE IS IN PLACE.
2. DAMAGE TO THE BINDER COURSE LAYER CAUSED BY CONSTRUCTION EQUIPMENT OR TRAFFIC SHALL BE REMEDIED BY COMPLETE REMOVAL. REPLACEMENT OF THE DAMAGED AREA TO THE LIMITS DETERMINED BY THE ENGINEER. THERE WILL BE NO ADDITIONAL PAYMENT FOR REPAIRS, OR ASSOCIATED WORK.

3.03 PLACEMENT OF POROUS ASPHALT BINDER COURSE
A. INSTALL THE BINDER COURSE COURSE AT A THICKNESS AS INDICATED IN DRAWINGS.
B. INSTALL FRAME, GRATES, AND LANDSCAPING. SPECIAL CARE IS TO BE TAKEN TO PROTECT FRESH BINDER COURSE.
C. ALL TRUCKS (INCLUDING CONCRETE TRUCKS) WILL BE STOPPED PRIOR TO ENTERING THE SITE AND INSTRUCTED AS TO SPECIAL CONCERNS FOR PAVEMENT DURABILITY.
D. A WASHOUT AREA FOR ALL CONCRETE TRUCKS SHALL BE DESIGNATED OUTSIDE OF POROUS PAVEMENT AREA ON THE CONTRACTOR'S EROSION AND SEDIMENT CONTROL PLAN OR ON DETAIL SHEET.
E. POROUS PAVEMENT SURFACE SHALL BE PROTECTED ON HOT DAYS DURING THE PAVEMENT CURE PERIOD (2-3 DAYS). SURFACE TEMPERATURES CAN QUICKLY REACH OVER 145°F IN DIRECT SUN.
F. A TEMPERATURE GUN SHALL BE AVAILABLE ONSITE TO ASSESS PAVEMENT SURFACE TEMPERATURES. PAVEMENT TEMPERATURES GREATER THAN 100°F SHOULD BE OBSERVED CAREFULLY FOR PAVEMENT DURABILITY. AS NEEDED, COOLING OF PAVEMENT SURFACE BY APPLICATION OF WATER FROM A WATER TRUCK SHOULD OCCUR WHEN HEAVY VEHICULAR TRAFFIC IS EXPECTED SUCH AS CONCRETE TRUCKS FOR DRY WELL FRAME AND GRATE INSTALLATION. IN THE EVENT THIS IS INEFFECTIVE FOR COOLING AND PAVEMENT DEFORMATION IS STILL OBSERVED, THE USE OF 3/4" PLYWOOD UNDER LARGE VEHICLE WHEELS MAY BE REQUIRED.
G. TRUCKS AND OTHER CONSTRUCTION TRAFFIC WILL NOT BE ALLOWED TO ACCESS THE SITE WHILE THE PAVEMENT IS EXCESSIVELY HOT >130°F.
H. NO STOCKPILING OF MATERIALS (E.G. SOIL, STONE, LANDSCAPING MATERIALS) WILL BE ALLOWED ON POROUS PAVEMENTS.
I. MATERIALS EXCAVATED FOR FINISH WORKS SHALL BE PLACED OUTSIDE OF POROUS PAVEMENT AREAS.
J. VACUMING THROUGHOUT CONSTRUCTION MAY BE NECESSARY FOR SURROUNDING PAVED AREAS TO PREVENT RUN-ON OR TRACKING ONTO POROUS PAVEMENTS. FREQUENCY SHALL BE ADJUSTED AS NEEDED.

3.04 INSPECTION, CORRECTIVE ACTION, REMOVAL AND REPLACEMENT OF BINDER COURSE
A. PRIOR TO INSTALLATION OF THE POROUS ASPHALT WEARING COURSE, THE BINDER COURSE WILL BE INSPECTED FOR DAMAGE AND REDUCED INFILTRATION CAPACITY.
B. BINDER COURSE CLOGGING WILL BE CORRECTED BY VACUUM AND PRESSURE WASHING TO THE SATISFACTION OF THE ENGINEER.
C. BINDER COURSE AREAS WILL BE REMOVED AND REPLACED IN AREAS WHERE STRUCTURAL DAMAGE OR INFILTRATION CAPACITY IS SUBSTANTIALLY COMPROMISED AT THE DISCRETION OF THE ENGINEER.
D. THE CHOKER COURSE SHALL BE INSPECTED FOR VOIDS AND FINES PRIOR TO REPLACEMENT OF THE BINDER COURSE, IF VOID SPACE IS COMPROMISED, STONE WILL BE ADDED AND/OR REPLACED FOR CORRECTIVE ACTION.
E. THERE WILL BE NO ADDITIONAL PAYMENT FOR BINDER COURSE REPAIRS, CLEANING, REPLACEMENT, OR ASSOCIATED WORK.

3.05 POROUS ASPHALT WEARING COURSE INSTALLATION
A. GENERAL
1. VERIFY BINDER COURSE CONDITION AND PREPARATION FOLLOWING CONSTRUCTION PRIOR TO PAVING THE POROUS ASPHALT WEARING COURSE AS DESCRIBED IN SECTION 3.07.
2. THE ENGINEER SHALL BE NOTIFIED AND INSPECT THE BINDER COURSE AT THEIR DISCRETION PRIOR TO PAVING THE POROUS ASPHALT WEARING COURSE.
3. TEMPORARY CONSTRUCTION FENCING WILL BE USED TO CLOSE POROUS PAVEMENT AREAS TO CONSTRUCTION TRAFFIC AFTER PAVING DURING PROJECT COMPLETION.
B. TEST STRIP
1. A TEST STRIP SHALL BE CONDUCTED TO DETERMINE OPTIMAL COMPACTION PROCEDURES OF THE POROUS ASPHALT AT A THICKNESS AS INDICATED IN THE DRAWINGS. THE TEST STRIP WILL BE CONSTRUCTED IN A PORTION OF THE SITE TO ESTABLISH AND ENSURE THE PROPER MIX DESIGN, PRODUCTION AND PLACEMENT.
2. THE TEST STRIP SHALL BE OVERSEEN BY THE ENGINEER.
3. TWO MIX SAMPLES SHALL BE COLLECTED AT THE ASPHALT PLANT BY A 3RD PARTY QC TECHNICIAN DURING PRODUCTION FROM EACH TEST STRIP FOR ASPHALT CONTENT, GRADATION, AND CANTABRO WEAR.
4. FIELD TESTING OF INFILTRATION CAPACITY SHALL BE PERFORMED ON THE TEST STRIP FOR INFILTRATION BY THE ENGINEER.
5. TWO CORES SHALL BE COLLECTED FROM EACH TEST STRIP AND EVALUATED FOR COMPACTION, DENSITY, AND POROSITY.
6. THESE CRITERIA ONCE ESTABLISHED WILL BE APPLIED TO ALL POROUS ASPHALT INSTALLATIONS.
C. ROLLERS
1. ROLLERS OR OSCILLATING VIBRATORY ROLLERS, RANGING FROM 8-12 TONS, SHALL BE USED FOR COMPACTION, AND 1-2 TONS ROLLER FOR FINISHING. THE NUMBER, MASS (WEIGHT), AND TYPE OF ROLLERS FURNISHED SHALL BE SUFFICIENT TO OBTAIN THE REQUIRED COMPACTION WHILE THE MIXTURE IS IN A WORKABLE CONDITION. GENERALLY, ONE BREAKDOWN ROLLER WILL BE NEEDED FOR EACH PAVER USED IN THE SPREADING OPERATION.
2. ADDITIONAL ROLLING MAY BE EXCESSIVE, CAUSING A BREAK IN THE BOND OF ASPHALT BETWEEN AGGREGATE PARTICLES, PARTICULARLY AFTER THE MIX HAS COOLED.
3. TO PREVENT ADHESION OF THE MIXTURE TO THE ROLLS, ROLLS SHALL BE KEPT MOIST WITH WATER OR WATER MIXED WITH VERY SMALL QUANTITIES OF DETERGENT OR OTHER APPROVED MATERIAL. EXCESS LIQUID WILL NOT BE PERMITTED.
4. OTHER COMBINATIONS OF ROLLERS AND/OR METHODS OF COMPACTING MAY BE USED IF APPROVED IN WRITING BY THE ENGINEER, PROVIDED THE COMPACTION REQUIREMENTS ARE MET. THE SPEED OF THE ROLLER SHALL BE SLOW AND UNIFORM TO AVOID DISPLACEMENT OF THE MIXTURE, AND THE ROLLER SHOULD BE KEPT IN AS CONTINUOUS OPERATION AS PRACTICAL. ROLLING SHALL CONTINUE UNTIL ALL ROLLER MARKS AND RIDGES HAVE BEEN ELIMINATED.
5. ROLLERS WILL NOT BE STOPPED OR PARKED ON THE FRESHLY PLACED MAT. THE SPEED OF THE ROLLER SHALL BE SLOW AND UNIFORM TO AVOID DISPLACEMENT OF THE MIXTURE, AND THE ROLLER SHOULD BE KEPT IN AS CONTINUOUS OPERATION AS PRACTICAL. ROLLING SHALL CONTINUE UNTIL ALL ROLLER MARKS AND RIDGES HAVE BEEN ELIMINATED.
6. ROLLERS WILL NOT BE STOPPED OR PARKED ON THE FRESHLY PLACED MAT.
D. CONDITIONING OF EXISTING SURFACE
1. CONTACT SURFACES SUCH AS CURBING, GUTTERS, AND MANHOLES SHALL BE PAINTED WITH A THIN, UNIFORM COAT OF TYPE RS-1 EMULSIFIED ASPHALT IMMEDIATELY BEFORE THE ASPHALT MIXTURE IS PLACED AGAINST THEM.
E. TEMPERATURE REQUIREMENTS
1. THE TEMPERATURE OF THE ASPHALT MIXTURE, AT THE TIME OF DISCHARGE FROM THE HAUL VEHICLE AND AT THE PAVER, SHALL BE BETWEEN 135-163°C (275 TO 325°F), WITHIN 6 °C (10 °F) OF THE COMPACTION TEMPERATURE FOR THE APPROVED MIX DESIGN.
2. THE TEMPERATURE OF THE ASPHALT MIXTURE, AT THE TIME OF DISCHARGE FROM THE HAUL VEHICLE AND AT THE PAVER, SHALL BE BETWEEN 135-163°C (275 TO 325°F), WITHIN 6 °C (10 °F) OF THE COMPACTION TEMPERATURE FOR THE APPROVED MIX DESIGN.
3. BREAKDOWN ROLLING SHALL OCCUR WHEN THE MIX TEMPERATURE IS BETWEEN 135-163°C (275 TO 325°F).
4. INTERMEDIATE ROLLING SHALL OCCUR WHEN THE MIX TEMPERATURE IS BETWEEN 93-135°C (200 TO 275°F).
5. FINISH ROLLING SHALL OCCUR WHEN THE MIX TEMPERATURE IS BETWEEN 66-93°C (150 TO 200°F)

F. SPREADING AND FINISHING
1. THE POROUS ASPHALT WEARING COURSE SHALL BE PLACED IN ONE APPLICATION TO A THICKNESS AS INDICATED ON THE DRAWINGS.
2. THE CONTRACTOR SHALL PROTECT ALL EXPOSED SURFACES THAT ARE NOT TO BE TREATED FROM DAMAGE DURING ALL PHASES OF THE PAVEMENT OPERATION.
3. NO TRAFFIC WILL BE PERMITTED ON MATERIAL PLACED UNTIL THE MATERIAL HAS BEEN THOROUGHLY COMPACTED AND HAS BEEN PERMITTED TO COOL TO BELOW 38 °C (100 °F). THE ENGINEER RESERVES THE RIGHT TO REQUIRE THAT ALL WORK ADJACENT TO THE PAVEMENT, SUCH AS GUARDRAIL, CLEANUP, AND TURF ESTABLISHMENT, IS COMPLETED PRIOR TO PLACING THE WEARING COURSE WHEN THIS WORK COULD CAUSE DAMAGE TO THE PAVEMENT.
G. COMPACTION
1. PLACING MIX IN AN APPROPRIATE AMBIENT TEMPERATURE AND ON A SURFACE SUFFICIENTLY WARM TO MINIMIZE THE RISK OF EXCESSIVE COOLING BEFORE COMPLETION OF ROLLING IS OF PARAMOUNT IMPORTANCE. HOLDING THE AGGREGATE PARTICLES IN PLACE IS SOLELY THE FUNCTION OF THE FILM OF ASPHALT. THE ASPHALT CANNOT PERFORM THIS FUNCTION PROPERLY IF THE MIX IS TOO COOL WHEN ROLLED.
2. IT IS IMPORTANT TO KEEP THE TIME BETWEEN THE POROUS ASPHALT AND WEARING COURSE AND BINDER COURSE PLACEMENTS SHALL BE MINIMAL AND KEEP THE FIRST LAYER CLEAR FROM DUST AND MOISTURE, AND MINIMIZE TRAFFIC ON THE FIRST LAYER.
3. A THIN COURSE COMPRESSES VERY LITTLE UNDER THE ROLLER AND, AS IT COOLS QUICKLY, IT MUST BE ROLLED AS SOON AS POSSIBLE.
4. A HIGH DEGREE OF DENSIFICATION IS NOT THE GOAL WITH THIS TYPE OF MIX; THE AIM IS FIRM SEATING AND CONTACT OF THE AGGREGATE PARTICLES.
5. WHEN OVERTAKEN BY SUDDEN STORMS, THE ENGINEER MAY PERMIT WORK TO CONTINUE UP TO THE AMOUNT WHICH MAY BE IN TRANSIT FROM THE PLANT AT THE TIME, PROVIDED THE MIXTURE IS WITHIN TEMPERATURE LIMITS SPECIFIED.
6. IMMEDIATELY AFTER THE ASPHALT MIXTURE HAS BEEN SPREAD, STRUCK OFF, AND SURFACE IRREGULARITIES ADJUSTED, IT SHALL BE THOROUGHLY AND UNIFORMLY COMPACTED BY ROLLING. THE COMPACTION OBJECTIVE IS 18% - 22% IN PLACE VOID CONTENT (CORELOCK). GREAT CARE SHALL BE TAKEN TO AVOID OVER-COMPACTION.
7. IF THE ENGINEER DETERMINES THAT UNSATISFACTORY COMPACTION OR SURFACE DISTORTION IS BEING OBTAINED OR DAMAGE TO HIGHWAY COMPONENTS AND/OR ADJACENT PROPERTY IS OCCURRING USING VIBRATORY COMPACTION EQUIPMENT, THE CONTRACTOR SHALL IMMEDIATELY CEASE USING THIS EQUIPMENT AND PROCEED WITH THE WORK IN ACCORDANCE WITH THE FIFTH PARAGRAPH OF THIS SUBSECTION.
8. ALONG FORMS, CURBS, HEADERS, WALLS, AND OTHER PLACES NOT ACCESSIBLE TO THE ROLLERS, THE MIXTURE SHALL BE THOROUGHLY COMPACTED WITH HOT OR LIGHTLY OILED HAND TAMPERS, SMOOTHING IRONS OR WITH MECHANICAL TAMPERS. ON DEPRESSED AREAS, EITHER A TRENCH ROLLER OR CLEATED COMPRESSION STRIPS MAY BE USED UNDER THE ROLLER TO TRANSMIT COMPRESSION TO THE DEPRESSED AREA.
H. JOINTS
1. UNLESS OTHERWISE SPECIFIED, THE LONGITUDINAL JOINTS SHALL BE ROLLED FIRST. NEXT, THE CONTRACTOR SHALL BEGIN ROLLING AT THE LOW SIDE OF THE PAVEMENT AND SHALL PROCEED TOWARDS THE CENTER OR HIGH SIDE WITH LAPPED ROLLINGS PARALLEL TO THE CENTERLINE.
2. PLACEMENT OF THE SURFACE COURSE SHALL BE CAREFULLY PLANNED TO ASSURE THAT THE LONGITUDINAL JOINTS IN THE SURFACE COURSE WILL CORRESPOND WITH THE EDGES OF THE PROPOSED TRAFFIC LANES. THEY SHALL NOT BE LOCATED WITHIN THE NORMAL WHEELPATH OF VEHICULAR TRAFFIC.
3. WHEN PAVING ADJOINING LANES, THE ASPHALT CONCRETE SHALL BE LAID SUCH THAT IT UNIFORMLY OVERLAPS THE ADJACENT LANE 2 INCHES TO 3 INCHES. THE THICKNESS OF THE OVERLAP MATERIAL SHALL BE APPROXIMATELY 1/4 THE COMPACTED THICKNESS OF THE COURSE, SO AS TO RESULT IN A SMOOTH AND WELL COMPACTED JOINT AFTER ROLLING. THE OVERLAPPED MATERIAL SHALL BE BROOMED OR RAKED BACK ONTO THE ADJACENT HOT LANE SO THAT THE ROLLER OPERATOR CAN CROWD THE SMALL EXCESS INTO THE HOT SIDE OF THE JOINT. IF THE OVERLAP IS EXCESSIVE, THE EXCESS MATERIAL SHALL BE TRIMMED OFF SO THAT THE MATERIAL ALONG THE JOINT IS UNIFORM.
4. THE COARSE PARTICLES OF AGGREGATE IN THE OVERLAP MATERIAL SHALL BE REMOVED AND WASTED IF DEEMED NECESSARY BY THE ENGINEER.
5. TRANSVERSE JOINTS SHALL BE STAGGERED A MINIMUM OF 10 FEET FROM ADJACENT LANES.
I. TRAFFIC
1. ALL TRUCKS (INCLUDING CONCRETE TRUCKS) WILL BE STOPPED PRIOR TO ENTERING THE SITE AND INSTRUCTED AS TO SPECIAL CONCERNS FOR PAVEMENT DURABILITY.
2. TRUCKS AND OTHER CONSTRUCTION TRAFFIC WILL NOT BE ALLOWED TO ACCESS THE SITE WHILE THE PAVEMENT IS EXCESSIVELY HOT.
3. POROUS PAVEMENT SURFACE SHALL BE PROTECTED ON HOT DAYS DURING THE PAVEMENT CURE PERIOD (1-2 WEEKS).
4. A TEMPERATURE GUN SHALL BE AVAILABLE ONSITE TO ASSESS PAVEMENT SURFACE TEMPERATURES. PAVEMENT TEMPERATURES IN EXCESS OF 1000F SHOULD BE OBSERVED CAREFULLY FOR PAVEMENT DURABILITY.
5. COOLING OF PAVEMENT SURFACE BY APPLICATION OF WATER FROM A WATER TRUCK SHOULD OCCUR WHEN HEAVY VEHICULAR TRAFFIC IS EXPECTED, SUCH AS CONCRETE TRUCKS FOR CURB INSTALLATION. IN THE EVENT THIS IS INEFFECTIVE FOR COOLING AND PAVEMENT DEFORMATION IS STILL OBSERVED, 3/4" PLYWOOD SHALL BE PLACED ON TOP OF THE PAVEMENT.
6. AFTER A 24 HOUR CURING PERIOD OF THE POROUS ASPHALT WEARING COURSE, LIMITED TRAFFIC MAY BE ROUTED OVER THE FINISHED SURFACE.
7. TRAVEL OF CONSTRUCTION EQUIPMENT, AND TRAFFIC IS ALLOWED OVER THE BINDER COURSE ROAD.
8. TRACKING OF DEBRIS SHALL BE MINIMIZED TO A FEASIBLE EXTENT DURING CONSTRUCTION THROUGH THE USE OF STONE ENTRANCES, AND ROUTINE PAVEMENT VACUUMING.
9. UNLESS OTHERWISE AUTHORIZED BY THE ENGINEER, CONSTRUCTION EQUIPMENT, AND TRAFFIC SHALL BE PROHIBITED FROM TRAVELING OVER THE COMPLETED POROUS ASPHALT SURFACE UNTIL THE ENTIRE PAVEMENT STRUCTURE IS IN PLACE.
10. DAMAGE TO THE BINDER COURSE LAYER CAUSED BY CONSTRUCTION EQUIPMENT OR TRAFFIC SHALL BE REMEDIED BY COMPLETE REMOVAL AND REPLACEMENT OF THE DAMAGED AREA TO THE LIMITS DETERMINED BY THE ENGINEER.
J. OTHER
1. OTHER COMBINATIONS OF ROLLERS AND/OR METHODS OF COMPACTING MAY BE USED IF APPROVED IN WRITING BY THE ENGINEER, PROVIDED THE COMPACTION REQUIREMENTS ARE MET.
2. A WASHOUT AREA FOR ALL CONCRETE TRUCKS SHALL BE DESIGNATED OUTSIDE OF POROUS PAVEMENT AREA ON EROSION CONTROL PLAN.
3. NO STOCKPILING OF MATERIALS (SOIL, STONE, LANDSCAPING MATERIALS, ETC.) WILL BE ALLOWED ON POROUS PAVEMENTS.
4. MATERIALS EXCAVATED FOR CURB INSTALLATION AND LANDSCAPING STOCKPILES SHALL BE PLACED OUTSIDE OF POROUS PAVEMENT AREA.
5. WEEKLY VACUUMING OF THE POROUS PAVEMENT AND SURROUNDING AREAS (20-FEET BEYOND LIMITS OF POROUS PAVEMENT) SHALL BE PERFORMED BY THE CONTRACTOR AS NECESSARY. FREQUENCY SHALL BE INCREASED IF REQUIRED BY CONSTRUCTION ACTIVITIES.

3.06 DRIVEWAYS AND PARKING AREAS
A. PAVING MATERIALS, TYPE OF PAVING, DEPTH OF VARIOUS COURSES, ETC., SHALL BE AS SHOWN ON THE DRAWINGS.
1. THE DRIVEWAYS AND PARKING AREAS SHALL BE CUT BACK 12 INCHES FROM OUTSIDE DISTURBED OR DAMAGED AREAS AS DESCRIBED ABOVE.
2. THE MINIMUM DEPTH OF SUBBASE SHALL BE AS INDICATED ON THE DRAWINGS AND NHDOT AGGREGATE SPECIFICATIONS.
3. THE WORK SHALL INCLUDE PROPER COMPACTION OF ANY NECESSARY SUBBASE, BASE COURSE AND PAVING COURSES.
B. BITUMINOUS SURFACES SHALL BE RESTORED WITH ASPHALT CONCRETE MATCHING EXISTING, BUT IN NO CASE SHALL BE LESS THAN 2 INCHES OF BINDER AND 1 INCH OF TOP COURSE AS SPECIFIED IN THE APPLICABLE ARTICLES OF THIS SECTION.
C. NON-BITUMINOUS SURFACES - WHERE SHOWN ON THE DRAWINGS, CONSTRUCT NEW DRIVEWAYS AND PARKING AREAS OR RESTORE EXISTING DRIVEWAYS AND PARKING AREAS AS FOLLOWS:
1. GRAVEL SURFACES SHALL BE RESTORED USING SCREENED GRAVEL, MATCHING EXISTING, BUT IN NO CASE SHALL BE LESS THAN 6 INCHES THICK. THE GRAVEL SHALL BE GRADED, SHAPED AND COMPACTED. LOOSE STONES SHALL BE REMOVED.
2. CRUSHED STONE SURFACES SHALL BE RESTORED MATCHING EXISTING STONE, BUT IN NO CASE SHALL BE LESS THAN 1 INCH THICKNESS OF STONE. STONE SHALL BE COMPACTED WITH A ROLLER.

3.07 SEAL AND TACK COAT
A. APPLY SEAL COAT TO DENSE MIX ASPHALT AND ASPHALT CURBS ONLY AND IN ACCORDANCE WITH NHDOT STANDARD SPECIFICATIONS.
B. SEAL COAT APPLICATION TO POROUS PAVEMENTS IS PROHIBITED.
C. BITUMINOUS MATERIAL FOR THE TACK COAT SHALL BE EMULSIFIED ASPHALT, GRADE RS-1 CONFORMING TO NHDOT SPECIFICATION.

3.08 TOLERANCES
A. SURFACE TOLERANCE - THE PAVEMENT SURFACE SHALL BE CONSTRUCTED TO A 1/4-INCH TOLERANCE. IF, IN THE OPINION OF THE ENGINEER, THE PAVEMENT SURFACE IS NOT BEING CONSTRUCTED OR HAS NOT BEEN CONSTRUCTED TO THIS TOLERANCE BASED UPON VISUAL OBSERVATION OR UPON RIDING QUALITY, HE MAY TEST THE SURFACE WITH A 16-FOOT STRAIGHT EDGE (FURNISHED BY THE CONTRACTOR) OR STRING LINE PLACED PARALLEL TO THE CENTERLINE OF THE PAVEMENT AND WITH A 10-FOOT STRAIGHT EDGE OR STRING LINE PLACED TRANSVERSELY TO THE CENTERLINE OF THE PAVEMENT ON ANY PORTION OF THE PAVEMENT.
1. VARIATIONS EXCEEDING 1/4-INCH SHALL BE SATISFACTORILY CORRECTED OR THE PAVEMENT RELAYED AT NO ADDITIONAL COST AS ORDERED BY THE ENGINEER.
B. THICKNESS TOLERANCE - THE THICKNESS INDICATED FOR EACH OF THE VARIOUS COURSES OF BITUMINOUS PAVEMENT IS THE NOMINAL THICKNESS. THE PAVEMENT SHALL BE SO CONSTRUCTED THAT THE FINAL COMPACTED THICKNESS IS AS NEAR TO THE NOMINAL THICKNESS AS IS PRACTICAL, AND WITHIN THE TOLERANCES SPECIFIED BELOW.
1. MATERIAL WHICH IS PART OF A TRUING OR LEVELING COURSE OR SHIM COURSE WILL NOT BE CONSIDERED IN PAVEMENT THICKNESS DETERMINATIONS.
2. A TOLERANCE NOT TO EXCEED 1/4-INCH FROM THE NOMINAL THICKNESS REQUIRED FOR THE COURSE SPECIFIED UNDER ONE PAY ITEM WILL BE ACCEPTABLE WHERE THE REQUIRED NOMINAL THICKNESS IS 4 INCHES OR LESS. A TOLERANCE NOT TO EXCEED 1/2-INCH FROM THE NOMINAL THICKNESS REQUIRED FOR THE COURSE OR COURSES SPECIFIED UNDER ONE PAY ITEM WILL BE ACCEPTABLE WHERE THE REQUIRED NOMINAL THICKNESS IS OVER 4 INCHES. IN ADDITION, THE SUM TOTAL THICKNESS OF ALL BITUMINOUS MIXTURE COURSES SHALL NOT VARY FROM THE TOTAL OF THE NOMINAL THICKNESS INDICATED ON THE PLANS BY MORE THAN 1/4-INCH WHERE THE TOTAL NOMINAL THICKNESS IS 4 INCHES OR LESS; OR MORE THAN 1/2-INCH WHERE THE TOTAL NOMINAL THICKNESS IS OVER 4 INCHES BUT NOT MORE THAN 8 INCHES; AND BY NOT MORE THAN 5/8-INCH WHERE THE TOTAL NOMINAL THICKNESS IS MORE THAN 8 INCHES.

3.09 PROTECTION
A. ANY PAVEMENT, CONSTRUCTED OR RECONSTRUCTED, WHICH IS SUBSEQUENTLY DAMAGED DUE TO ACTIVITY OF WORK UNDER THIS CONTRACT, SHALL BE REMOVED AND REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
B. PROTECT PAVEMENT FROM VEHICULAR TRAFFIC UNTIL COMPACTION IS COMPLETED.

3.10 PAVEMENT MARKING
A. PAVEMENT MARKING SHALL BE IN ACCORDANCE WITH NHDOT STANDARD SPECIFICATION.
B. STRIPING PAINT FOR POROUS ASPHALT SHALL BE LATEX, WATER-BASE EMULSION, READY-MIXED, AND COMPLYING WITH PAVEMENT MARKING SPECIFICATIONS PS TT-P-1952 AND IN ACCORDANCE WITH UNHSC DESIGN SPECIFICATIONS FOR POROUS ASPHALT PAVEMENT AND INFILTRATION BEDS, REV. OCTOBER 2009 OR MOST RECENT UPDATE LOCATED AT HTTP://WWW.UNH.EDU/UNHSC/SPECS-AND-FACT-SHEETS-0

PART 4: QUALITY ASSURANCE AND QUALITY CONTROL
4.01 GENERAL
A. PERFORM WORK IN ACCORDANCE WITH THE NHDOT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, AS AMENDED TO DATE AND AS THEY APPLY TO THE FOLLOWING AND UNHSC DESIGN SPECIFICATIONS FOR POROUS ASPHALT PAVEMENT AND INFILTRATION BEDS OR MOST RECENT UPDATE LOCATED AT HTTP://WWW.UNH.EDU/UNHSC/SPECS-AND-FACT-SHEETS-0.:
3. MATERIALS AND BATCH PLANT REQUIREMENTS.
4. CONSTRUCTION PROCEDURES EXCEPT AS MODIFIED HEREIN.
5. WEATHER AND SEASONAL LIMITATIONS EXCEPT AS MODIFIED HEREIN.
A. PAVING WORK SHALL BE PERFORMED BY A QUALIFIED PAVING CONTRACTOR OR SUBCONTRACTOR ACCEPTABLE TO THE OWNER AND ENGINEER.
B. OBTAIN ASPHALT CONCRETE MATERIALS FROM SAME SOURCE THROUGHOUT PROJECT.

4.02 QUALITY ASSURANCE/CONTROL DURING SUBBASE AND SUBGRADE PREPARATION

4.03 THIRD PARTY QUALITY CONTROL OF HOT MIX PLANT PRODUCTION
A. THE CONTRACTOR SHALL PROVIDE AT CONTRACTOR'S EXPENSE AND THE ENGINEER'S APPROVAL A THIRD PARTY QUALITY CONTROL INSPECTOR TO OVERSEE AND DOCUMENT BOTH 1) MIX PRODUCTION OF THE POROUS ASPHALT WEARING COURSE AND BINDER COURSE MATERIALS USED FOR THE PROJECT, AND 2) FIELD TESTING FOR IN PLACE MATERIALS, AS PER TABLE 5.
B. ALL MIX TESTING RESULTS DURING PRODUCTION SHOULD BE SUBMITTED TO THE ENGINEER ON A DAILY BASIS.
C. QUALITY ASSURANCE FIELD TESTING SHALL BE CONDUCTED FOR IN-PLACE MATERIALS FOR THE POROUS ASPHALT SYSTEM BY A THIRD PARTY AT THE CONTRACTOR'S EXPENSE IN COORDINATION WITH THE ENGINEER.
D. THE CONTRACTOR SHALL COORDINATE WITH THE THIRD PARTY QUALITY CONTROL FIRM TO SUBMIT RESULTS TO THE ENGINEER DAILY AND ON AN ON-GOING BASIS.

4.04 REVIEW SUBMITTALS OF QUALITY ASSURANCE/CONTROL OF PRODUCTION
A. PROVIDE CERTIFICATION OF APPROVED JOB MIX FORMULAS FOR TYPES TO BE USED ON THIS PROJECT.
B. THE MIXING PLANT SHALL EMPLOY A QUALITY CONTROL INSPECTOR. THE INSPECTOR WILL PERFORM QA/QC TESTING AND WILL BE CERTIFIED IN THE DISCIPLINE OF HMA PLANT TECHNICIAN BY THE RELEVANT CERTIFYING AGENCY (E.G. NETTCP IN NEW ENGLAND). THE CONTRACTOR SHALL SAMPLE, TEST AND EVALUATE THE MIX IN ACCORDANCE WITH THE METHODS AND MINIMUM FREQUENCIES SUMMARIZED IN TABLE 5.
C. IF AN ANALYZED SAMPLE IS OUTSIDE THE TESTING TOLERANCES IMMEDIATE CORRECTIVE ACTION WILL BE TAKEN. AFTER THE CORRECTIVE ACTION HAD BEEN TAKEN THE RESULTING MIX WILL BE SAMPLED AND TESTED. IF THE RE-SAMPLED MIX TEST VALUES ARE OUTSIDE THE TOLERANCES THE ENGINEER WILL BE IMMEDIATELY INFORMED. THE ENGINEER MAY DETERMINE THAT IT IS IN THE BEST INTEREST OF THE PROJECT THAT PRODUCTION IS CEASED. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL MIX PRODUCED FOR THE PROJECT.
D. TESTING TOLERANCES DURING CONSTRUCTION. THE PAVING MIXTURE PRODUCED SHOULD NOT VARY FROM THE DESIGN CRITERIA FOR AGGREGATE GRADATION AND BINDER CONTENT BY MORE THAN +/- 5 PERCENT (%) OR APPROVAL BY ENGINEER.
E. SHOULD THE PAVING MIXTURE PRODUCED VARY FROM THE DESIGNATED GRADING AND ASPHALT CONTENT SPECIFIED BY MORE THAN THE ABOVE TOLERANCES, THE APPROPRIATE PRODUCTION MODIFICATIONS ARE TO BE MADE UNTIL THE POROUS ASPHALT MIX IS WITHIN THESE TOLERANCES.

4.05 QUALITY ASSURANCE/CONTROL DURING PAVING
A. QA/QC REQUIREMENTS DURING PAVING ARE SUMMARIZED IN TABLE 4 AND TABLE 5
B. MONITOR QUALITY CONTROL OVER SUPPLIERS, MANUFACTURERS, PRODUCTS, SERVICES, SITE CONDITIONS, AND WORKMANSHIP, TO PRODUCE WORK OF SPECIFIED QUALITY.

PART 5: SIGNAGE FOR OPERATIONS AND MAINTENANCE

RECOMMENDED SIGNAGE SHOULD READ AS FOLLOWS:
POROUS PAVEMENT PARKING FACILITY FOR STORMWATER MANAGEMENT
POROUS ASPHALT ROADWAY-ENVIRONMENTALLY FRIENDLY STREET
- REDUCES POLLUTION AND FLOODING FROM STORMWATER
- PROTECTS AND CONSERVES WATER RESOURCES
- REDUCES EXCESS URBAN HEAT
- REDUCES WINTER SALT FOR DEICING

ROUTINE MAINTENANCE
- SANDING, SEALCOATING, AND CRACKSEALING PROHIBITED.
- DO NOT STORE STOCKPILES ON POROUS SURFACE SUCH AS SAND, SALT, MULCH, LOAM, OR GRASS CLIPPINGS.
- VACUUM 3X PER YEAR (SPRING, SUMMER, FALL) OR AS NEEDED.
- POWER-WASH AT A 45° ANGLE FOR CHRONICALLY CLOGGED AREAS.
- ALL SWEEPINGS MUST BE DISPOSED OF IN A LEGAL MANNER.
- PREVENT RUN-ON OF SEDIMENT AND DEBRIS THROUGH EROSION CONTROL OF NEARBY AREAS.

WINTER MAINTENANCE
- MECHANICAL REMOVAL OF SNOW AND ICE BY SNOW PLOW.
- APPLY DEICING TREATMENTS DURING, AND AFTER STORMS AS NECESSARY TO CONTROL COMPACT SNOW AND ICE NOT REMOVED BY PLOWING.
- LITTLE OR NO ROAD SALT MAY BE NECESSARY BETWEEN STORMS. UP TO 75% REDUCED USE OF ROAD SALT MAY BE FEASIBLE AND MINIMIZE POTENTIAL IMPACT TO GROUNDWATER AND WETLAND RESOURCES.
- NO DEICING MATERIALS SHALL BE STORED ON SITE.

TABLE 1: SUB-BASE MATERIAL GRADATION REQUIREMENTS

MATERIAL TYPE	CHOKER COURSE	RESERVOIR COURSE PEA GRAVEL (ASTM NO. 57)	FILTER COURSE (NHDOT ... MODIFIED)
SIEVE DESIGNATION (INCH/MM)	PERCENT PASSING (%) CRITERIA	PERCENT PASSING (%) CRITERIA	PERCENT PASSING (%) CRITERIA
6/150			100
2/50			
1½/37.5	100		
1/25	75 - 100	100	
¾/19	45 - 65	90-100	
½/12.5	20 - 35		
⅜/9.5	0 - 25	20-55	
#4/4.75		0-10	70-100
#8/2.36		0-5	
#200/0.075			0-6**
VOIDS (ASTM C29)	>40%	>40%	

*ALL RANGE +/-5% OR APPROVAL BY REVIEW ENGINEER
**PREFERABLY LESS THAN 4% FINES

TABLE 2: TESTING REQUIREMENTS FOR COMPACTION AND INFILTRATION FOR SUBGRADE AND SUBBASE

CONSTRUCTION ELEMENT	MAX LAYER THICKNESS (IN)	FIELD TESTING AREA	COMPACTION LEVEL % STANDARD PROCTOR	INFILTRATION RATE (FT/DAY)*	FREQUENCY
1. EMBANKMENTS AND FILLS					
A. NON-POROUS AREAS FILL AND SUBGRADE UNDER STREETS, PARKING AREAS, AND OTHER PAVED AREAS	12	T138	95%	N/A	
B. POROUS AREAS FILL AND SUBGRADE	12	T138 D3385	95-99%	>5-30'	10,000
C. POROUS AREAS SUBBASE (FILTER COURSE)	12	T138 D3385	95-99%	>5-30'	40,000
D. ROUGH SITE GRADING	24	T138	85%	N/A	
II. TRENCHES					
A. PIPE SIDEFILLS AND TOP 4 FEET OF PIPE BACKFILL UNDER PAVEMENTS*	12	T138	93%	N/A	
B. BACKFILL BELOW 4 FEET UNDER PAVEMENT	18	T138	90%	N/A	

*THE INFILTRATION RATE SHALL BE NO LESS 5-30 FT/DAY OR 50% OF THE HYDRAULIC CONDUCTIVITY (D2434) AT 95% STANDARD PROCTOR COMPACTION; SUBGRADE REFERS TO EVERYTHING 2' BELOW FINISHED GRADE OF PAVEMENT; SUBBASE REFERS TO CONSTRUCTED PAVEMENT MATERIALS ABOVE SUBGRADE AND BELOW PAVEMENT SURFACE.

TABLE 3: POROUS ASPHALT MIX DESIGN CRITERIA.

SIEVE DESIGNATION (INCH/MM)	PERCENT PASSING (%) CRITERIA
0.75/19	100
0.50/12.5	85-100
0.375/9.5	55-75
NO.4/4.75	10-25
NO.8/2.36	5-10
NO.200/0.075 (#200)	2-4
PGAB CONTENT (AASHTO T164)	5.7-6.2%
MIXING TEMPERATURE RANGE	290°F-350°F OR AS PER PGAB SUPPLIER
PGAB GRADE	PG 76-28
STYRENE BUTADIENE STYRENE (SBS)	3% OR TBD
AIR VOID CONTENT (ASTM D6752/AASHTO T275)	18.0-22.0%
DRAINDOWN (ASTM D6390)	<0.3%
RETAINED TENSILE STRENGTH (TSR) (AASHTO 283)	>80%
CANTABRO ABRASION TEST ON UNAGED SAMPLES (ASTM D7064-04)	≤12%

*TESTING TOLERANCES SHOULD BE WITHIN THE SPECIFIED RANGE, OR FOR SINGLE CRITERIA SHOULD NOT VARY BY MORE THAN +/- 5 PERCENT (%) OR BY APPROVAL OF ENGINEER.
**CELLULOSE OR MINERAL FIBERS MAY BE USED TO REDUCE DRAINDOWN.
***IF THE TSR (RETAINED TENSILE STRENGTH) VALUES FALL BELOW 80% WHEN TESTED PER NAPA IS 131 (WITH A SINGLE FREEZE THAW CYCLE RATHER THAN 5), THEN IN STEP 4, THE CONTRACTOR SHALL EMPLOY AN ANTISTRIP ADDITIVE, SUCH AS HYDRATED LIME (ASTM C977) OR A FATTY AMINE, TO RAISE THE TSR VALUE ABOVE 80%.
****UNDER NO CIRCUMSTANCES IS A PGAB 64-28 ACCEPTABLE IN REPLACE OF PG 76-28.

TABLE 4: QA/QC REQUIREMENTS DURING PAVING

ACTIVITY	SCHEDULE/FREQUENCY	TOLERANCE
INSPECT TRUCK BEDS FOR POOLING (DRAIN DOWN)	EVERY TRUCK	N/A
TAKE SURFACE TEMP. BEHIND JOINT HEATER	EACH PULL	6°C (10°F) OF COMPACTION TEMP.
CONSULT WITH ENGINEER TO DETERMINE LOCATIONS OF BUTT JOINTS	AS NEEDED	N/A
TEST SURFACE SMOOTHNESS & POSITIVE DRAINAGE WITH 10 FT STRAIGHTEDGE	AFTER COMPACTION	4.5 MM (3/16")
CONSULT WITH ENGINEER TO MARK CORE LOCATIONS FOR QA TESTING	AFTER COMPACTION	N/A

TABLE 5: QA/QC TESTING REQUIREMENTS BY SAMPLES AT ASPHALT PLANT AND FIELD SAMPLES BY CORE

TEST	POROUS ASPHALT WEARING COURSE RANGE/SAMPLE LOCATION	ASPHALT TREATED PERMEABLE BASE RANGE/SAMPLE LOCATION	FREQUENCY (MINIMUM X PER DAY/CRITERIA)
BINDER CONTENT (AASHTO T164)	5.7 - 6.25%, ASPHALT PLANT	2.7%, ASPHALT PLANT	2X, PER 500 TONS
AIR VOID CONTENT (ASTM D6752/AASHTO T275)	18 - 22%, FIELD CORE	>27%, FIELD CORES	2X, PER 500 TONS
DRAINDOWN (ASTM D6390)	≤0.3%, ASPHALT PLANT	N/A	2X, PER 500 TONS
CANTABRO ABRASION TEST ON UNAGED SAMPLES (ASTM D7064-04)	≤12%, ASPHALT PLANT	N/A	2X, PER 500 TONS
INFILTRATION RATE (HOSE TEST)*	>1000 IN/HR	>3000 IN/HR	2X, PER 500 TONS

*INFILTRATION WILL BE REDUCED FOR TESTS PERFORMED ON SLOPE; HOSE TESTS WILL BE PERFORMED BY USE OF A WATER TRUCK WITH HOSE AND MEASURED FLOW, AND DETERMINED BY DIAMETER OF PUDDLE.
**INFILTRATION TESTS WILL BE COLLOCATED WITH CORE SAMPLES.
***TESTING TOLERANCES SHOULD NOT VARY FROM THE DESIGN CRITERIA BY MORE THAN +/- 5 PERCENT (%) OR APPROVAL BY ENGINEER

ISS.	DATE:	DESCRIPTION OF ISSUE:	CHK.
2	NOV 5, 2019	FOR APPROVAL	
1	SEP 13, 2019	FOR APPROVAL	

DRAWN: JJM DESIGN: JJM
CHECKED: BDS CHECKED: BDS

EMANUEL ENGINEERING
civil & structural consultants, land planners
118 PORTSMOUTH AVENUE, A202
STRATHAM, NH 03885
P: 603-772-4400 F: 603-772-4487
WWW.EMANUELENGINEERING.COM

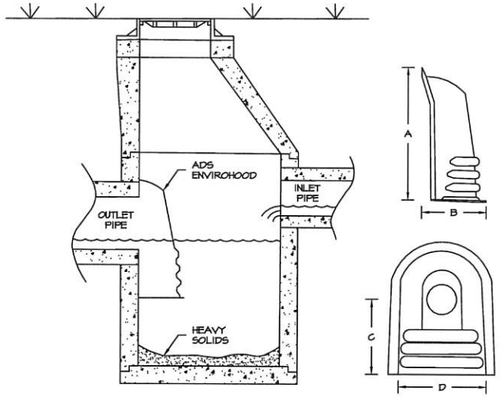
CLIENT:
TURBOCAM INTERNATIONAL
607 CALEF HIGHWAY
BARRINGTON, NH 03825

SEAL

TITLE:
NOTES
FOR
TAX MAP 233 LOT 77
AND TAX MAP 234 LOTS 1.2 & 1.4
TURBOCAM INTERNATIONAL
ROUTE 9 / REDEMPTION ROAD (SITE)
BARRINGTON, NH 03825
& TOWN OF BARRINGTON
PO BOX 660
BARRINGTON, NH 03825

PROJECT: 19-020 SCALE: AS SHOWN SHEET: D2

LAND USE OFFICE
NOV 05 2019
RECEIVED

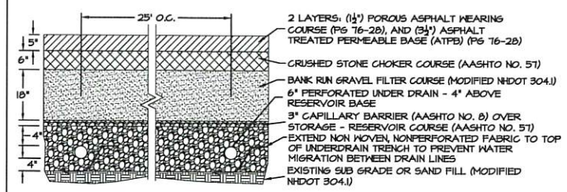


STRUCTURE TYPE	OUTLET COVERED	PART NUMBER*	GENERAL DIMENSIONS In. (cm) A	B	C	D
48" (120 cm) Round Concrete	up to 18" (45 cm)	5818AGR	30.2 (75)	14.9 (35)	17.2 (45)	20.5 (50)
48"-54" (120-135 cm) Round Concrete	up to 24" (60 cm)	5824AGR	41.7 (105)	18.0 (45)	26.9 (70)	26.9 (70)
54"-60" (135-150 cm)Round Concrete	up to 30" (75 cm)	5830AGR	48.7 (120)	20.5 (50)	30.5 (75)	33.1 (85)
Flat Concrete	up to 18" (45 cm)	5818AGF	30.2 (75)	11.8 (30)	17.2 (45)	20.4 (50)
Flat Concrete	up to 24" (60 cm)	5824AGF	41.8 (105)	15.3 (40)	26.9 (70)	27.0 (70)
Flat Concrete	up to 30" (75 cm)	5830AGF	48.8 (120)	18.3 (45)	30.5 (75)	34.0 (85)
18" (45 cm) Nyloplast	up to 12" (30 cm)	5818AG0412	19.4 (50)	9.8 (25)	12.3 (30)	13.8 (35)
24" (60 cm)Nyloplast	up to 15" (40 cm)	5824AG0415	26.5 (65)	12.8 (30)	14.5 (35)	20.0 (50)
30"(75 cm) Nyloplast	up to 18" (45 cm)	5830AG0418	32.8 (85)	15.4 (40)	18.7 (45)	26.0 (65)

*Includes installation hardware

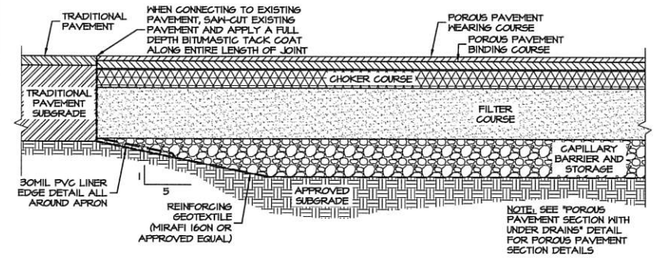
NOTES:
1. ALL HOODS SHALL BE CONSTRUCTED OF POLYETHYLENE.
2. THE SIZE AND POSITION OF THE HOD SHALL BE DETERMINED BY THE OUTLET.
3. INSTALLATION HARDWARE AND INSTRUCTIONS SHALL BE PROVIDED BY MANUFACTURER.
4. INSTALLATION SHALL BE IN ACCORDANCE WITH NYLOPLAST INSTALLATION PROCEDURES AND THOSE ISSUES BY LOCAL BUILDING/CONSTRUCTION REGULATIONS.

ENVIROHOOD BY ADS DETAIL
NOT TO SCALE



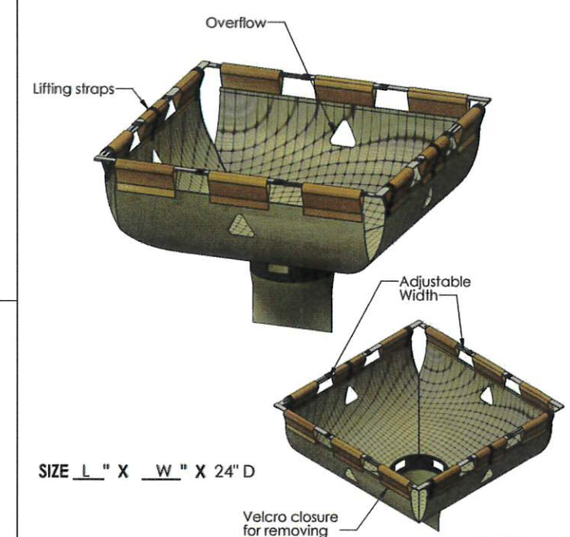
NOTE:
1. SEE SHEETS D1 & D2 FOR ADDITIONAL NOTES ON POROUS PAVEMENT, AND TABLE 1 SEPCIFICALLY FOR MODIFIED NHDOT 304.1 GRADATION.

POROUS PAVEMENT SECTION WITH UNDER DRAINS
N.T.S.

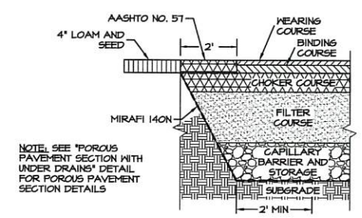


POROUS PAVEMENT TRANSITION TO TRADITIONAL PAVEMENT OR CONCRETE DETAIL
N.T.S.

Silt Sack - Type C

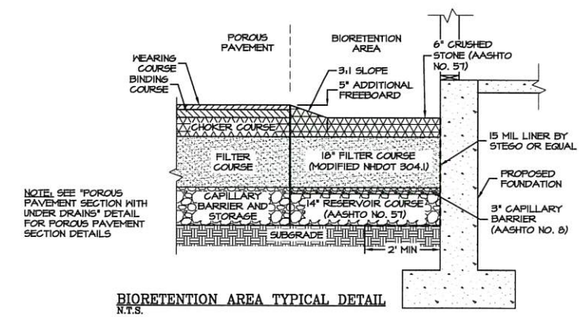


SIZE L" X W" X 24" D



NOTE: SEE "POROUS PAVEMENT SECTION WITH UNDER DRAINS" DETAIL FOR POROUS PAVEMENT SECTION DETAILS

POROUS PAVEMENT EDGE DETAIL
N.T.S.

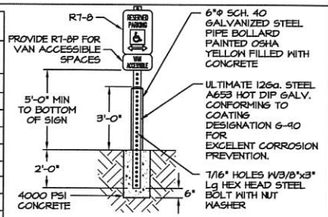


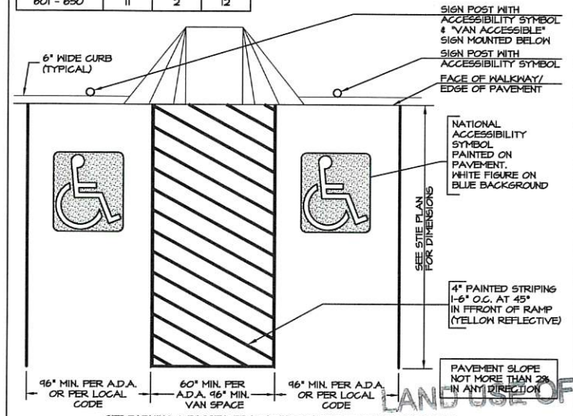
NOTE: SEE "POROUS PAVEMENT SECTION WITH UNDER DRAINS" DETAIL FOR POROUS PAVEMENT SECTION DETAILS

BIORETENTION AREA TYPICAL DETAIL
N.T.S.

ACF ENVIRONMENTAL
2831 Cardwell Road
Richmond, VA 23234
WWW.ACFENVIRONMENTAL.COM

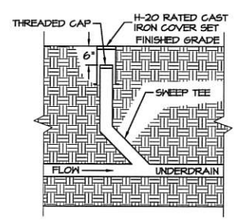
PARKING & PASSENGER LOADING ZONES			
TOTAL # PARKING SPACES	MINIMUM ACCESSIBLE SPACES		
	STAND.	VAN	TOTAL
1 - 25	0	1	1
26 - 50	1	1	2
51 -75	2	1	3
76 - 100	3	1	4
101 - 150	4	1	5
151 - 200	5	1	6
201 - 300	6	1	7
301 - 400	7	1	8
401 - 500	8	2	9
501 - 550	9	2	10
551 - 600	10	2	11
601 - 650	11	2	12





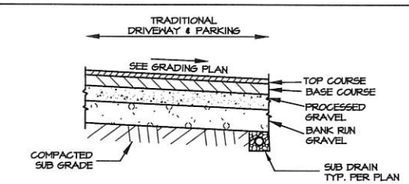
SEE PARKING & PASSENGER LOADING ZONES FOR SPACES REQUIRED.

PARKING STALL FOR THE PHYSICALLY CHALLENGED
N.T.S.



NOTE:
SEE SHEET C5 FOR CLEANOUT LOCATIONS

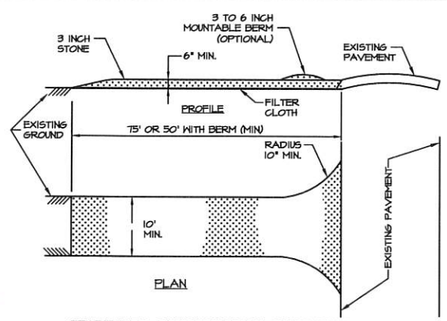
UNDERDRAIN CLEANOUT DETAIL
NOT TO SCALE



PAVEMENT COMPONENTS:
MATERIALS AND PLACEMENT METHODS SHOULD MEET CURRENT NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION (NHDOT) REQUIREMENTS.

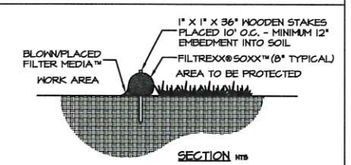
DRIVEWAY:
2" ASPHALT WEARING SURFACE, NHDOT ½" NOMINAL MAXIMUM AGGREGATE SIZE
3" ASPHALT BASE, NHDOT ¾" NOMINAL MAXIMUM AGGREGATE SIZE
6" CRUSHED GRAVEL BASE, NHDOT TYPE 304.3
12" GRAVEL SUB BASE, NHDOT TYPE 304.2

TRADITIONAL DRIVEWAY & PARKING LOT SECTION
N.T.S.

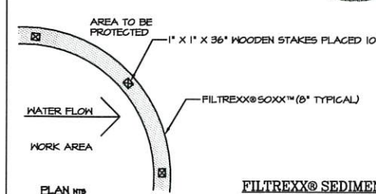


STABILIZED CONSTRUCTION ENTRANCE
N.T.S

NOTES:
1. ALL MATERIAL TO MEET FILTREXX® SPECIFICATIONS.
2. FILTER MEDIA FILL TO MEET APPLICATION REQUIREMENTS.
3. COMPOST MATERIAL TO BE DISPERSED ON SITE, AS DETERMINED BY ENGINEER.
4. ADDITIONAL INFO AVAILABLE AT HTTP://WWW.FILTREXX.COM



SECTION NTS



PLAN NTS

FILTREXX® SEDIMENT CONTROL
N.T.S.

ISS.	DATE:	DESCRIPTION OF ISSUE:	CHK.
1	SEPT 13, 2019	FOR APPROVAL	

DRAWN: JJM | DESIGN: JJM
CHECKED: BDS | CHECKED: BDS

EMANUEL ENGINEERING
civil & structural consultants, land planners
118 Portsmouth Avenue, A202
Stratham, NH 03885
P: 603-772-4400 F: 603-772-4487
www.emanuelengineering.com

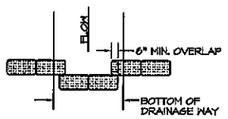
CLIENT:
TURBOCAM INTERNATIONAL
607 CALEF HIGHWAY
BARRINGTON, NH 03825

SEAL

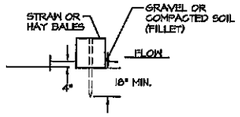
TITLE:
DETAILS
FOR
TAX MAP 233 LOT 77
AND TAX MAP 234 LOTS 1.2 & 1.4
TURBOCAM INTERNATIONAL
ROUTE 9 / REDEMPTION ROAD (SITE)
BARRINGTON, NH 03825
& TOWN OF BARRINGTON
PO BOX 660
BARRINGTON, NH 03825

PROJECT:	SCALE:	SHEET:
19-020	AS SHOWN	D3

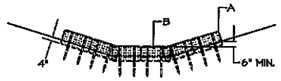
LAND USE OFFICE
NOV 05 2019
RECEIVED



PLAN VIEW



BALE INSTALLATION TECHNIQUE

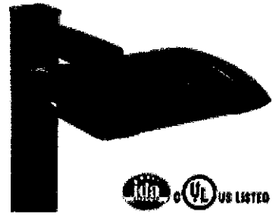


DRAINAGE WAY X-SECTION

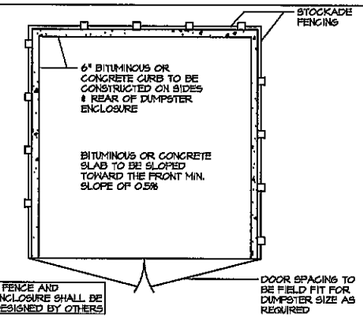
THE ELEVATION OF POINT "A" MUST BE A MINIMUM OF 6" ABOVE POINT "B".

STRAW OR HAY BALE GRADE STABILIZATION STRUCTURE

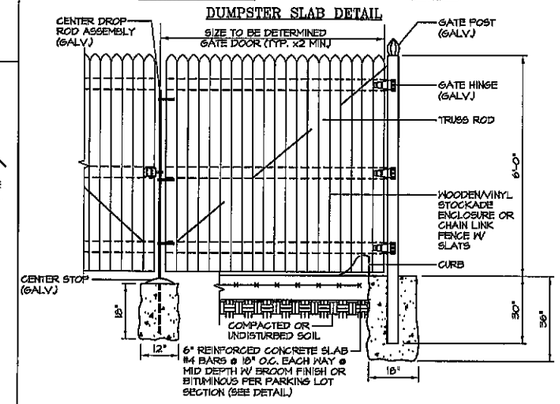
N.T.S.



WALL MOUNT FIXTURE (OR EQUAL)
DESCRIPTION: SPAULDING 15867 LUM 110 A
CL15-4DL-4K-B BLACK
VOLTAGE: 277V
LUMENS: 15267
LAMP WATTS / TYPE: LED
MOUNTING: EXT WALL MOUNT AT 16 FEET
COORDINATE COLOR WITH STEEL MANUFACTURER OR ARCHITECT
COORDINATE WITH AVAILABLE VOLTAGE

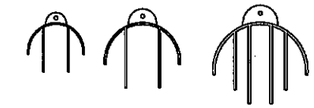


DUMPSTER SLAB DETAIL



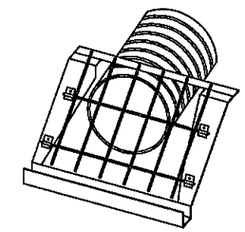
STOCKADE DUMPSTER ENCLOSURE DETAIL

N.T.S.



ANIMAL GUARD GRATE
(FINGER STYLE)

STANDARD SIZES:
4", 6", 8", 10", 12", 15", 18", 24", 30", 36" & 42"



END SECTION TRASH GUARD/GRATE

STANDARD SIZES:
12", 15", 18", 24", 30", & 36"

NOTES:

1) PRODUCTS SHOWN MANUFACTURED BY ADVANCE DRAINAGE SYSTEM INC. WWW.ADS-PIPE.COM

2) USE ADVANCE DRAINAGE SYSTEM INC. OR EQUAL

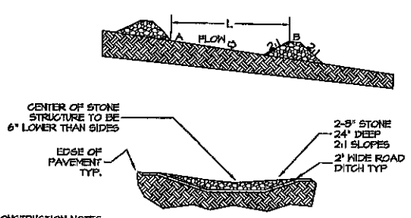
3) FOLLOW MANUFACTURER INSTALLATION INSTRUCTIONS

PIPE GRATE PROTECTION DETAIL

N.T.S.

SPACING BETWEEN STRUCTURES

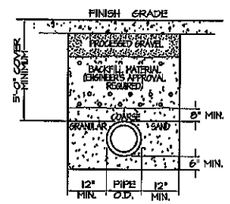
L = THE DISTANCE SUCH THAT POINTS A AND B ARE OF EQUAL ELEVATION.



CONSTRUCTION NOTES:
STONE STRUCTURES SHOULD BE CONSTRUCTED OF 2-3" STONE. THE STONE SHOULD BE PLACED ACCORDING TO ABOVE DETAIL. CAREFUL PLACEMENT WILL BE NECESSARY TO ACHIEVE COMPLETE COVERAGE OF THE DITCH OR SWALE AND TO INSURE THAT THE CENTER OF THE STRUCTURE IS LOWER THAN THE EDGES.

TEMPORARY GRADE STABILIZATION STRUCTURE

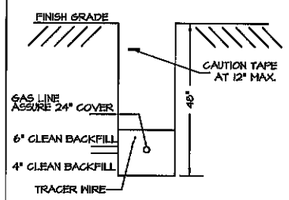
N.T.S.



NOTE:
SEE SITE PLAN FOR PIPE SIZES AND SERVICES.

WATERLINE INSTALLATION

N.T.S.

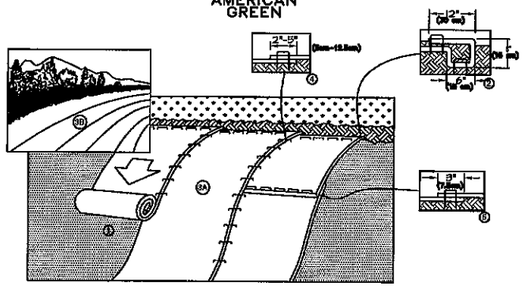


GAS LINE INSTALLATION

N.T.S.

SLOPE INSTALLATION

NORTH AMERICAN GREEN



1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30cm) PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30cm) APART ACROSS THE WIDTH OF THE BLANKET.
3. ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"-5" (5cm-12.5cm) OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
5. CONSECUTIVE BLANKETS SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5cm) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30cm) APART ACROSS ENTIRE BLANKET WIDTH.

NOTE:
*IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15cm) MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

CRITICAL POINTS
A. OVERLAPS AND SEAMS
B. PROJECTED WATER LINE
C. CHANNEL BOTTOM/SIDE SLOPE VERTICES

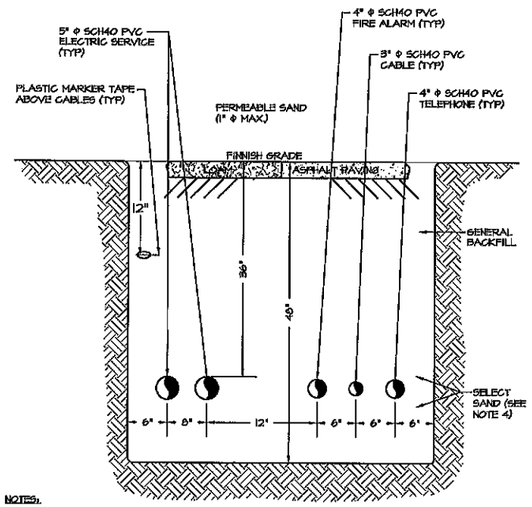
LAND USE OFFICE

* HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.
** IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENTHS IN EXCESS OF 6" (15cm) MAY BE NECESSARY TO PROPERLY ANCHOR THE BLANKETS.

1464 HIGHWAY 41 NORTH, EVANSVILLE, INDIANA 47725
USA 1-800-772-2040 CANADA 1-800-448-2040
www.naglreen.com

NOV 05 2019

RECEIVED



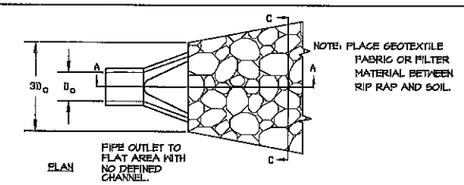
NOTES:

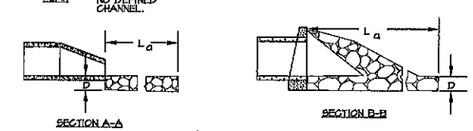
VERIFY NUMBER OF CONDUIT RUNS AND TYPES OF CONDUITS REQUIRED WITH ELECTRICAL AND MECHANICAL DESIGNERS BEFORE INSTALLATION

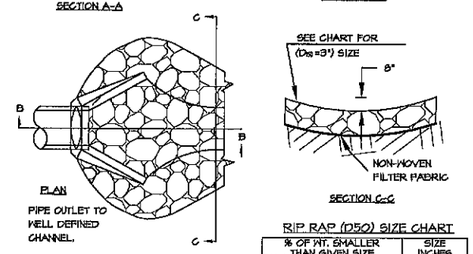
1. ALL UTILITIES SHALL BE REVIEWED AND APPROVED BY APPROPRIATE UTILITY COMPANY.
2. SERVICE BOX CONNECTIONS SHALL BE "FLUSH MOUNT" TO GREATEST EXTENT POSSIBLE AND LOCATED AT PROPERTY LINE CORNERS.
3. PIPE SIZES ARE MINIMUM SIZES TO BE INSTALLED.
4. BACKFILL SHALL BE SELECTED SAND, 100% SHALL PASS THROUGH 1/4" SCREEN, UP TO 1% MAY BE ROUNDED PEBBLES UP TO 3/8" IN SIZE.
5. TRENCH WIDTH IS TO BE 12" MINIMUM, DEPENDING ON NUMBER OF UTILITIES IN TRENCH, UNLESS CABLE IS PLOWED IN.
6. UTILITIES ARE TO BE LOCATED IN ROAD SHOULDERS AND ROWS AS DETERMINED BY PLANS. ALL WORK TO BE COORDINATED WITH UTILITY COMPANIES.
7. THERE MAY BE MORE OR LESS SERVICES TO BE INSTALLED IN TRENCH VERIFY WITH UTILITIES PLAN.
8. VERIFY & REFER TO PROJECT ELECTRICAL DRAWINGS AND DETAILS FOR SPECIFICS.
9. RUN AN ADDITIONAL SET OF CONDUIT FOR FUTURE BUILDING ON MAP 234 LOT 1.4 AS SHOWN ON SHEET C5.

TYPICAL UTILITY TRENCH DETAIL

N.T.S.







RIP RAP (D50) SIZE CHART

% OF WT. SMALLER THAN GIVEN SIZE	SIZE INCHES
100	9.5-6.6
85	8.5-5.1
50	6.0-4.5
15	0.4-1.5

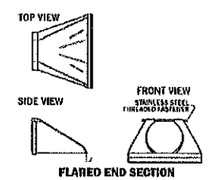
CONSTRUCTION SPECIFICATIONS:
1. THE SUBGRADE FOR THE FILTER MATERIAL, GEOTEXTILE FABRIC, AND RIPRAP SHALL BE PREPARED TO THE LINES AND GRADES SHOWN ON THE PLANS.
2. THE ROCK OF GRAVEL USED FOR FILTER OR RIPRAP SHALL CONFORM TO THE SPECIFIED GRADATION.
3. GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF THE ROCK RIPRAP. DAMAGED AREAS IN THE FABRIC SHALL BE REPAIRED BY PLACING A PIECE OF FABRIC OVER THE DAMAGED AREA OR BY COMPLETE REPLACEMENT OF THE FABRIC. ALL OVERLAPS REQUIRED FOR REPAIRS OR JOINING TWO PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES.
4. STONE FOR THE RIPRAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.

PIPE OUTLET PROTECTION

N.T.S.

FLARED END SECTIONS

SIZE	PRODUCT CODE
10" (250mm)	1015NP
12" (300mm) / 15" (375mm)	1215NP
18" (450mm)	1810NP
24" (600mm)	2410NP
30" (750mm)	3015NP
36" (900mm)	3615NP



FLARED END SECTION

ISS.	DATE:	DESCRIPTION OF ISSUE:	CHK.
1	SEP 13, 2019	FOR APPROVAL.	

DRAWN: JJM | DESIGN: JJM
CHECKED: BDS | CHECKED: BDS

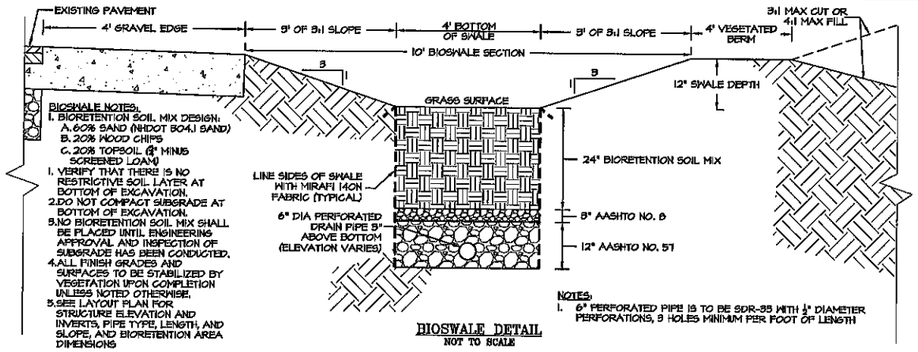
EMANUEL ENGINEERING
civil & structural consultants, land planners
118 PORTSMOUTH AVENUE, A203
STRATHAM, NH 03885
P: 603-772-4400 F: 603-772-4487
WWW.EMANUELENGINEERING.COM

CLIENT:
TURBOCAM INTERNATIONAL
607 CALEF HIGHWAY
BARRINGTON, NH 03825

SEAL

TITLE:
DETAILS
FOR
TAX MAP 233 LOT 77
AND TAX MAP 234 LOTS 1.2 & 1.4
TURBOCAM INTERNATIONAL
ROUTE 9 / REDEMPTION ROAD (SITE)
BARRINGTON, NH 03825
& TOWN OF BARRINGTON
PO BOX 660
BARRINGTON, NH 03825

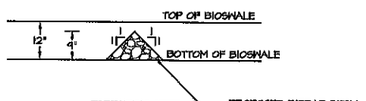
PROJECT:	SCALE:	SHEET:
19-020	AS SHOWN	D4



BIOSWALE NOTES:
1. BIORETENTION SOIL MIX DESIGN:
   A. 60% SAND (NHDOT 304.1 SAND)
   B. 20% WOOD CHIPS
   C. 20% TOPSOIL (3" MINUS SCREENED LOAM)
1. VERIFY THAT THERE IS NO RESTRICTIVE SOIL LAYER AT BOTTOM OF EXCAVATION.
2. DO NOT COMPACT SUBGRADE AT BOTTOM OF EXCAVATION.
3. NO BIORETENTION SOIL MIX SHALL BE PLACED UNTIL ENGINEERING APPROVAL AND INSPECTION OF SUBGRADE HAS BEEN CONDUCTED.
4. ALL FINISH GRADES AND SURFACES TO BE STABILIZED BY VEGETATION UPON COMPLETION UNLESS NOTED OTHERWISE.
5. SEE LAYOUT PLAN FOR STRUCTURE ELEVATION AND INVERTS, PIPE TYPE, LENGTH, AND SLOPE, AND BIORETENTION AREA DIMENSIONS

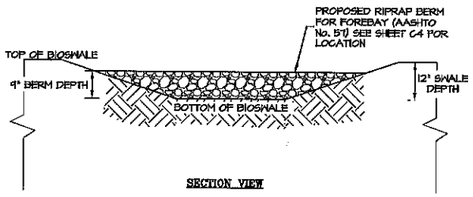
NOTES:
1. 6" PERFORATED PIPE IS TO BE SDR-35 WITH ½" DIAMETER PERFORATIONS, 3 HOLES MINIMUM PER FOOT OF LENGTH

BIOSWALE DETAIL
NOT TO SCALE



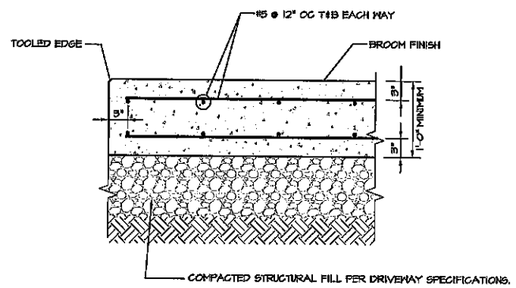
ELEVATION VIEW

PROPOSED RIPRAP BERM FOR FOREBAY (AASHTO No. 57) SEE SHEET C4 FOR LOCATION



SECTION VIEW

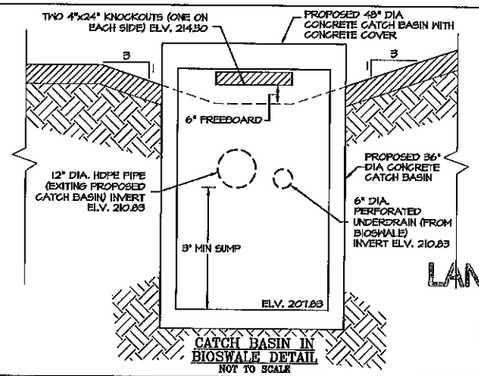
RIPRAP BERM DETAIL
NOT TO SCALE



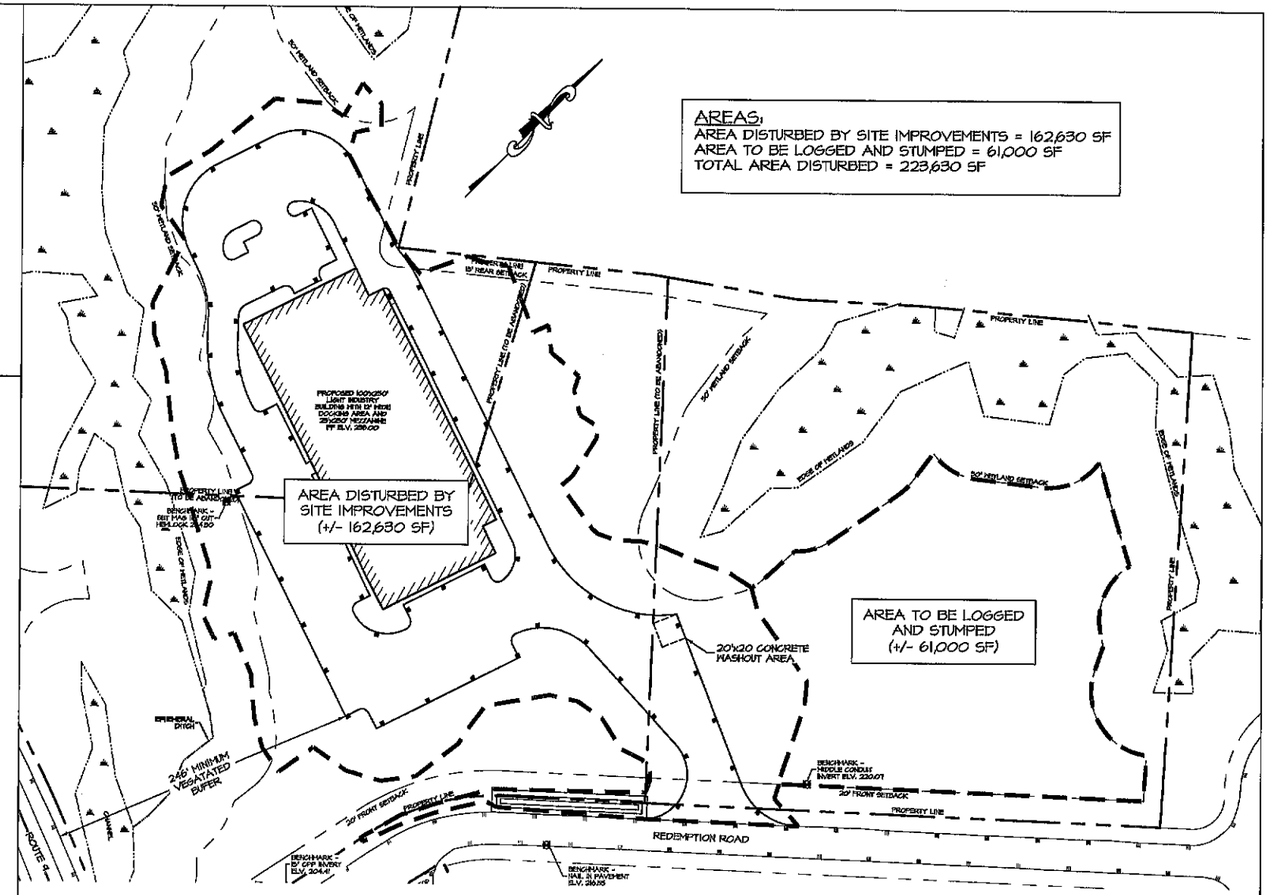
CONCRETE:

1. CONCRETE WORK SHALL CONFORM TO THE FOLLOWING NOTES AND SPECIFICATIONS.
   - "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS" - ACI 301-05.
   - "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" - ACI 318-05.
2. COMPRESSIVE STRENGTH OF CONCRETE SHALL BE 4000 PSI AFTER 28 DAYS WITH 5 TO 7% AIR ENTRAINMENT FOR EXTERIOR SLABS, W.R. GRACE "ECLIPSE PLUS" SHRINKAGE ADMIXTURE, AND W.R. GRACE "DCI-S" CORROSION INHIBITOR, AND A MIDRANGE WATER REDUCER.
3. FINISH SLAB W/ BROOM FINISH AND TOOLED JOINT ALONG ALL EDGES OF SLAB.
4. SLAB SHALL BE WATER CURED FOR A MINIMUM OF 5 DAYS USING WET BURLAP.
5. W.W.F. SHALL BE SHEETS ONLY, LAP TWO SQUARES AT ALL JOINTS AND TIE @ 3'-0" ON CENTER.

CONCRETE LOADING ZONE DETAIL
N.T.S.



CATCH BASIN IN BIOSWALE DETAIL
NOT TO SCALE



TOTAL SITE DISTURBANCE DETAIL
SCALE: 1"=60'

ISS.	DATE:	DESCRIPTION OF ISSUE:	CHK.
2	NOV 5, 2019	FOR APPROVAL	
1	SEP 13, 2019	FOR APPROVAL	

DRAWN: JJM | DESIGN: JJM
CHECKED: BDS | CHECKED: BDS

EMANUEL ENGINEERING
civil & structural consultants, land planners
118 Portsmouth Avenue, A202
Stratham, NH 03885
P: 603-772-4400 F: 603-772-4487
www.emanuelengineering.com

CLIENT:
TURBOCAM INTERNATIONAL
607 CALEF HIGHWAY
BARRINGTON, NH 03825

SEAL

TITLE:
DETAILS
FOR
TAX MAP 233 LOT 77
AND TAX MAP 234 LOTS 1.2 & 1.4
TURBOCAM INTERNATIONAL
ROUTE 9 / REDEMPTION ROAD (SITE)
BARRINGTON, NH 03825
& TOWN OF BARRINGTON
PO BOX 660
BARRINGTON, NH 03825

PROJECT:	SCALE:	SHEET:
19-020	AS SHOWN	D5

LAND USE OFFICE
NOV 05 2019
RECEIVED