Drawing Name: C:\Users\Mox\Documents\mjs\projects\2019\19070\dwg\19-070 CVR.dwg

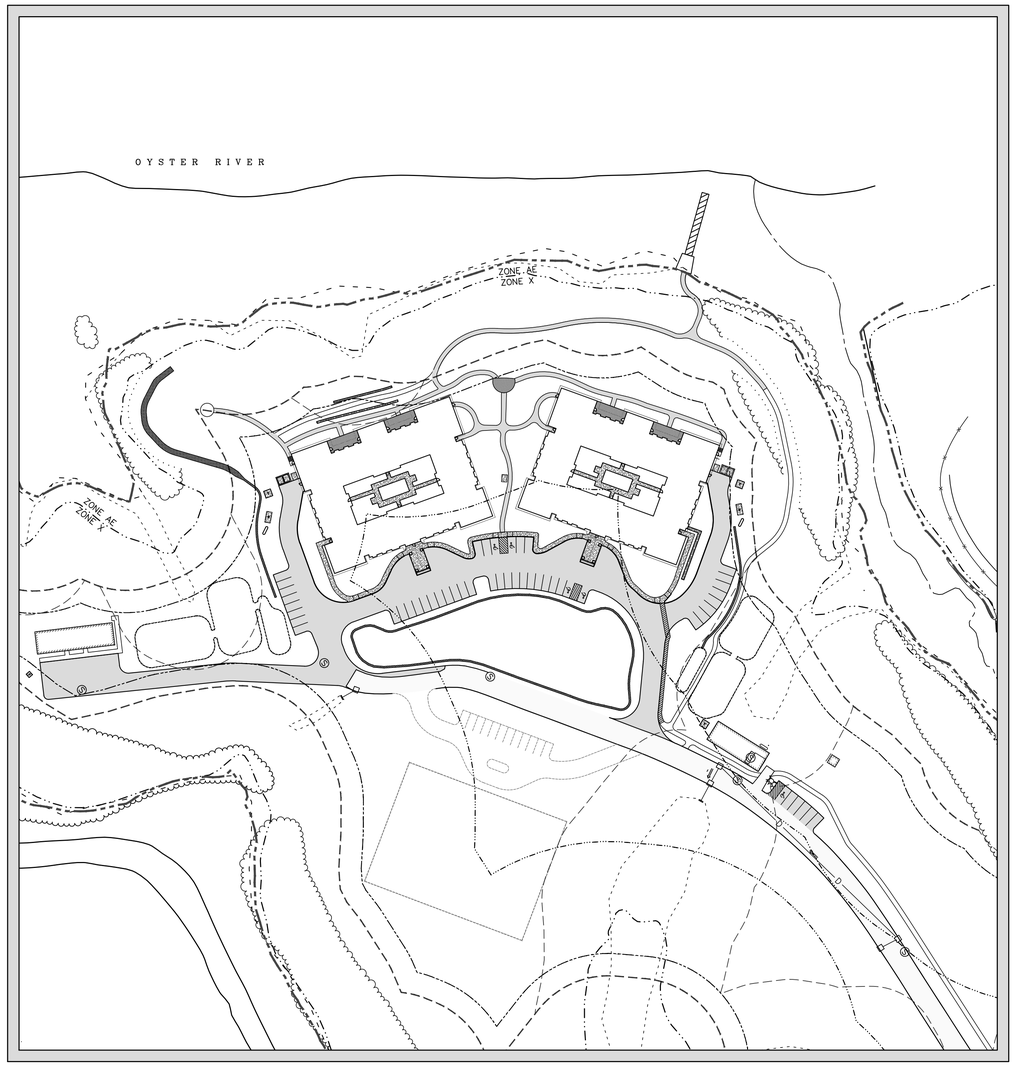
LEGEND

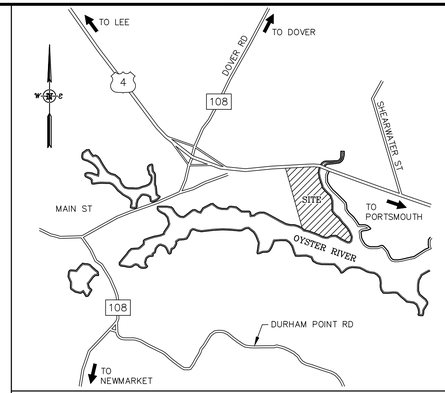
- WIRE FENCE
- OVERHEAD WIRES
- SEWER LINE
- DRAIN LINE
- APPROX. ABUTTERS LOT LINE
- TREE LINE
- STONE WALL
- EDGE OF FRESHWATER WETLAND
- EDGE OF TIDAL WETLAND
- APPROX. MEAN HIGH WATER LINE
- APPROXIMATE FLOOD ZONE LINE
- 100' TIDAL BUFFER
- 125' SHORELAND PROTECTION OVERLAY
- FLOOD ZONE AE
- PROPOSED FENCE
- PROPOSED EVEN CONTOUR
- PROPOSED ODD CONTOUR
- PROPOSED WATER LINE
- PROPOSED UNDERGROUND ELECTRIC
- PROPOSED SEWER LINE
- PROPOSED TRANSFORMER
- PROPOSED BACKUP GENERATOR
- GRANITE BOUND FOUND
- DRILL HOLE FOUND
- IRON PIPE/ROD FOUND
- 5/8" RE-BAR W/ ID CAP TO BE SET
- FIRE HYDRANT
- WATER GATE VALVE
- CATCH BASIN
- DRAIN MANHOLE
- DECIDUOUS TREE
- TYP. TYPICAL
- EP EDGE OF PAVEMENT
- DYL DOUBLE YELLOW LINE
- PROPOSED GRAVEL WETLAND SYSTEM BOUNDARY
- PROPOSED PATH
- PROPOSED FUTURE BUILDING 3 LOCATION
- PROPOSED SINGLE FAMILY/DUPLEX
- PROPOSED UNDERGROUND PROPANE TANK
- PROPOSED ACCESSIBLE PARKING
- PROPOSED CONSERVATION AREA
- EXISTING PAVEMENT
- PROPOSED DRAIN LINE
- PROPOSED RIP RAP APRON
- PROPOSED HYDRANT
- PROPOSED DRAIN MANHOLE
- (12) PARKING SPACE COUNT
- PROPOSED PAVEMENT
- EDGE OF WATER
- PROPOSED EDGE OF PAVEMENT
- EXISTING EDGE OF PAVEMENT
- TEMPORARY FENCING
- S/S SILTSOCK
- MATERIAL STOCKPILE AREAS PROPOSED STOCKPILE AREA

REVISION TO HARMONY HOMES BY THE BAY HARMONY PLACE

TAX MAP 11, LOTS 27-0
40 BRIGGS WAY
DURHAM, NH 03824

JUNE 4, 2020





Location Map (N.T.S.)

TABLE OF CONTENTS

TITLE	SHEET
APPROVED OVERALL SITE PLAN	C100
AS BUILT	C108
REVISED SITE PLAN	C101A
CONSTRUCTION DETAILS	D101-D104

PERMITS:

TITLE	PERMIT NUMBER
NHDOT DRIVEWAY	06-133-235
NHDES SHORELAND	2016-00384
NHDES AOT	AOT-1077
NHDES SEWER CONNECTION	D2016-0309

FINAL APPROVAL BY DURHAM PLANNING BOARD.
CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
CERTIFIED _____
DATE _____

APPLICANT

HARMONY HOMES BY THE BAY, LLC
JOHN RANDOLPH
1 STAGECOACH ROAD
DURHAM, NH 03824

OWNER

FHP AT GRANT CIRCLE LLC
1 STAGECOACH ROAD
DURHAM, NH 03824

CIVIL ENGINEER

MJS ENGINEERING, P.C.
CIVIL • STRUCTURAL • ENVIRONMENTAL
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SURVEYOR

DOUCET SURVEY INC
Serving Your Professional Surveying & Mapping Needs
102 Kent Place, Newmarket, NH 03857
Voice (603) 659-6560, Data (603) 659-4118

ARCHITECT

MARGARET RANDOLPH
22 JADY HILL
EXETER, NH 03885

SOIL SCIENTIST

JOSEPH W. NOEL
P.O. BOX 174
S. BERWICK, ME
(207) 384-5587

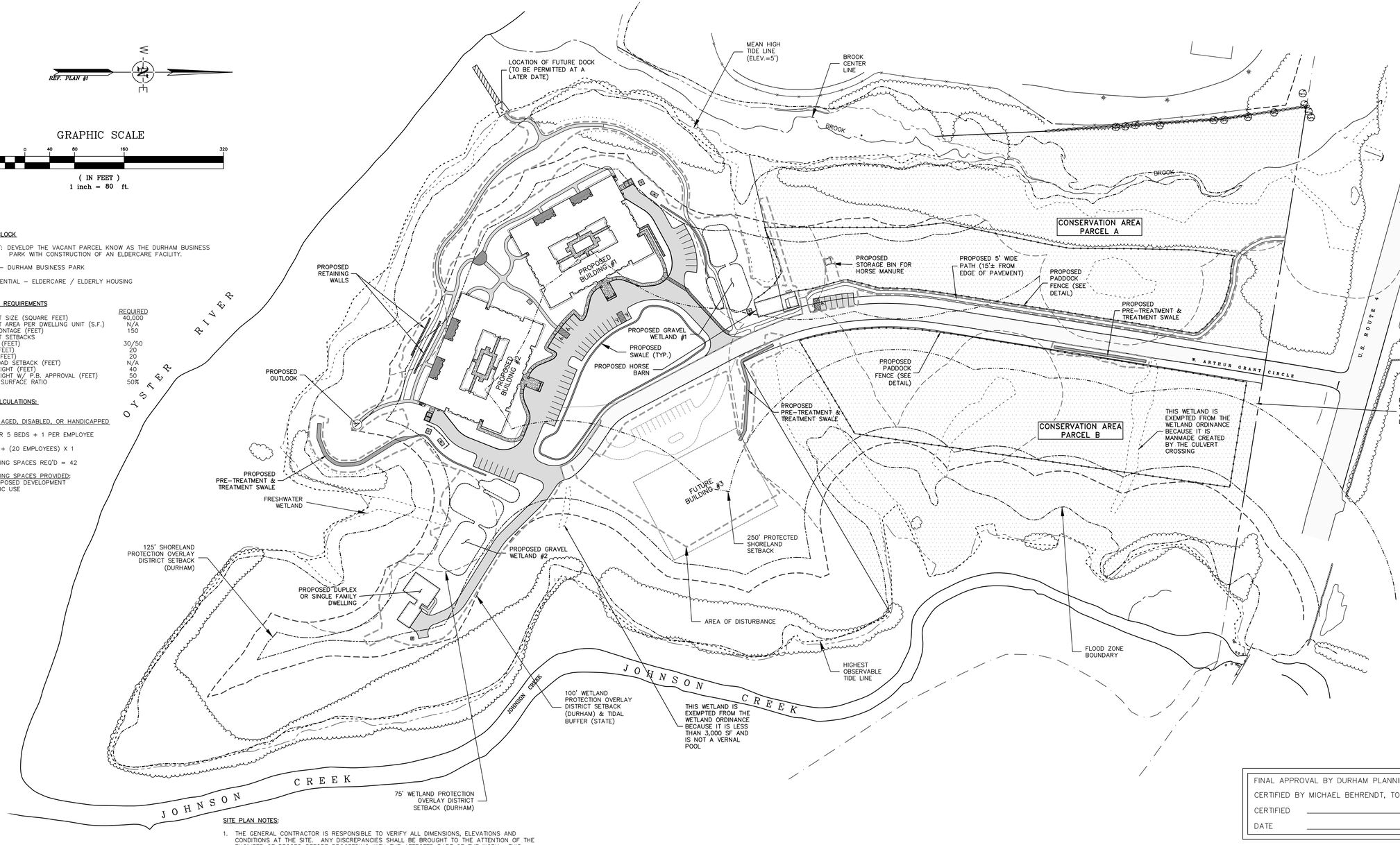
WETLAND SCIENTIST

GOVE ENVIRONMENTAL SERVICES
8 CONTINENTAL DRIVE, BLDG. 2
EXETER, NH 03833

OWNER SIGNATURE BLOCK

PLANNING BOARD APPROVAL BLOCK

NO.	REVISIONS	DATE	INT.
0.	SUBMITTED TO DURHAM PLANNING BOARD	6/4/20	MCS



SITE DATA BLOCK

PLAN INTENT: DEVELOP THE VACANT PARCEL KNOW AS THE DURHAM BUSINESS PARK WITH CONSTRUCTION OF AN ELDERCARE FACILITY.

ZONE: DBP – DURHAM BUSINESS PARK

USE: RESIDENTIAL – ELDERCARE / ELDERLY HOUSING

DIMENSIONAL REQUIREMENTS

	REQUIRED
MINIMUM LOT SIZE (SQUARE FEET)	40,000
MINIMUM LOT AREA PER DWELLING UNIT (S.F.)	N/A
MINIMUM FRONTAGE (FEET)	150
MINIMUM LOT SETBACKS	
FRONT (FEET)	30/50
SIDE (FEET)	20
REAR (FEET)	20
MAXIMUM ROAD SETBACK (FEET)	N/A
MAXIMUM HEIGHT (FEET)	40
MAXIMUM HEIGHT W/ P.B. APPROVAL (FEET)	50
IMPERVIOUS SURFACE RATIO	50%

PARKING CALCULATIONS:
175-113:

HOMES FOR AGED, DISABLED, OR HANDICAPPED

1 SPACE PER 5 BEDS + 1 PER EMPLOYEE

= (110)/5 + (20 EMPLOYEES) X 1

TOTAL PARKING SPACES REQ'D = 42

TOTAL PARKING SPACES PROVIDED:
45 FOR PROPOSED DEVELOPMENT
6 FOR PUBLIC USE

DENSITY CALCULATIONS:
TABLE 175-54 TABLE OF DIMENSIONAL REQUIREMENTS:

MINIMUM LOT AREA PER DWELLING UNIT = 35,000 SF

EXISTING LOT AREA = 1,235,700 SF

MAXIMUM NUMBER OR DWELLING UNITS = 35.3

ZONING ORDINANCE SECTION 176-56:
SITUATIONS AFFECTING DIMENSIONS

DENSITY FOR ELDERLY CARE OR ELDERLY HOUSING

DWELLING UNIT FOR ELDERLY OCCUPANCY CONTAINING TWO OR MORE BEDROOMS = 0.5 DWELLING UNIT

EXAMPLE:
DUPLEX = 2 UNITS X 0.5 DWELLING UNIT/UNIT = 1 UNIT

ELDERCARE = 4 BEDS / DWELLING UNIT

34 DWELLING UNITS X 4 BEDS/DWELLING UNIT = 136 BEDS

SITE PLAN NOTES:

1. THE GENERAL CONTRACTOR IS RESPONSIBLE TO VERIFY ALL DIMENSIONS, ELEVATIONS AND CONDITIONS AT THE SITE. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER OF RECORD BEFORE PROCEEDING WITH THE AFFECTED PART OF THE WORK. THIS INCLUDES DISCREPANCIES BETWEEN THESE PLANS AND ANY OTHER PLANS OR CONTRACT DOCUMENTS.
2. ALL UTILITY PIPING AND WIRING SHALL BE LOCATED UNDERGROUND.
3. NO CUT TREES, STUMPS, DEBRIS, JUNK, RUBBISH, OR OTHER WASTE MATERIALS SHALL BE BURIED IN THE LAND, OR LEFT OR DEPOSITED ON SITE AT THE TIME THE CERTIFICATE OF OCCUPANCY IS ISSUED, OR AT ANY TIME AFTER THAT.
4. THIS PROJECT WILL DISTURB OVER ONE ACRE OF GROUND COVER AND/OR MEETS OTHER THRESHOLDS RELATED TO PERMIT CRITERIA FOR EPA NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) COMPLIANCE. THE SITE CONTRACTOR IS RESPONSIBLE FOR DEVELOPMENT AND IMPLEMENTATION OF A STORM WATER POLLUTION PREVENTION PLAN (SWPPP), SUBMISSION OF A NOTICE OF INTENT (NOI) TO EPA, INSPECTION AND MAINTENANCE OF SEDIMENT CONTROL MEASURES, DOCUMENTATION OF MAINTENANCE ACTIVITIES, AND SUBMISSION A NOTICE OF TERMINATION (NOT) TO EPA. THE SITE CONTRACTOR IS ALSO RESPONSIBLE TO COMPLY WITH ALL OTHER FEDERAL, STATE AND LOCAL STORMWATER OR NPDES REQUIREMENTS.
5. ACCESS INTO THE SITE FOR FIRE APPARATUS SHALL BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PROCESS. PLEASE CONTACT THE FIRE DEPARTMENT AT 868-5531 WITH ANY QUESTIONS ABOUT ACCESS REQUIREMENTS.
6. SNOW SHALL NOT BE PUSHED AGAINST TREES OR SHRUBS IN ANY MANNER THAT COULD DAMAGE THEM.
7. FOR MORE INFORMATION ABOUT THIS SITE PLAN, OR TO SEE THE COMPLETE PLAN SET, CONTACT THE TOWN OF DURHAM PLANNING DEPARTMENT, 8 NEWMARKET ROAD, DURHAM, NH 03824. (603) 868-8064.
8. IT IS THE APPLICANT'S, SITE CONTRACTOR'S, AND BUILDING CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL REQUIREMENTS RELATED TO THIS SITE PLAN APPROVAL. PLEASE REVIEW THESE PLANS AND THE PLANNING BOARD NOTICE OF DECISION CAREFULLY. CONTACT THE DURHAM PLANNING DEPARTMENT AT (603) 868-8064 WITH ANY QUESTIONS OR CONCERNS.
9. THE USE OF SODIUM-CHLORIDE BASED MATERIALS FOR WINTER ROAD MAINTENANCE SHALL BE THE MINIMUM NECESSARY FOR ROADWAY SAFETY.

GENERAL NOTES:

1. REFERENCE: TAX MAP 11, LOT (27-1) – (27-7)
2. TOTAL PARCEL AREA= 1,235,700± Sq. Ft. OR 28.4± Ac. (SEE NOTES #10 & #11)
3. OWNER OF RECORD: GRANT DEVELOPMENT, LLC
   8 NEWMARKET ROAD
   DURHAM, NH 03824
   S.C.R.D. BOOK 3384 PAGE 510
4. ZONE: DURHAM BUSINESS PARK (DBP)
   DIMENSIONAL REQUIREMENTS:
   MIN. LOT SIZE-40,000 Sq. Ft.
   MIN. FRONTAGE-150'
   MIN. FRONT SETBACK-30' (MINOR/COLLECTOR STREET)
   50' (ARTERIAL STREET)
   MIN. SIDE/REAR SETBACK-20'
   DURHAM WETLAND CONSERVATION OVERLAY DISTRICT:
   FRESHWATER WETLANDS-75'
   TIDAL WETLANDS-100'
   DURHAM SHORELAND PROTECTION OVERLAY DISTRICT:
   TIDAL WETLANDS-125'
   -PORTIONS OF THE PROPERTY LIE WITHIN THE TOWN OF DURHAM SHORELAND PROTECTION, WETLAND CONSERVATION, AND FLOOD PROTECTION OVERLAY DISTRICTS. SEE THE ZONING ORDINANCE FOR SPECIFIC REGULATIONS.
   -LAND WITHIN 250' OF THE HIGHEST OBSERVABLE TIDE LINE IS SUBJECT TO THE STATE OF NH COMPREHENSIVE SHORELAND PROTECTION ACT.
5. FIELD WORK PERFORMED BY DOUCET SURVEY INC. ON 5/96 & 11/00 USING A SOKKIA SET 4BII & POWERSET 3000 AND ON 12/07 USING A LEICA TCR TOTAL STATION WITH A RANGER TDS DATA COLLECTOR AND A SOKKIA B20 AUTO LEVEL. TRAVERSE ADJUSTMENT BASED ON LEAST SQUARE ANALYSIS.
6. WETLAND DELINEATION OF NON TIDAL WETLANDS PERFORMED BY JIM GOVE OF GOVE ENVIRONMENTAL IN 2012. TIDAL WETLANDS DELINEATED BY MARK WEST OF WEST ENVIRONMENTAL IN 2011.
7. AERIAL TOPOGRAPHY BY EASTERN TOPOGRAPHICS, WOLFBORO, NH.
8. VERTICAL DATUM BASED ON NGVD29 PER NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION DISK 133-0340 HAVING A REPORTED ELEVATION OF 32.87.
9. THE PARCEL IS SUBJECT TO THE FOLLOWING;
   A) UTILITY EASEMENT TO NETT & PSNH, SEE S.C.R.D. BOOK 1349 PAGE 118.
   B) SEWER AND DRAINAGE EASEMENTS AS SHOWN ON S.C.R.D. PLAN #28A-89.
   C) TERMS OF AGREEMENT BETWEEN W&D REALTY PARTNERSHIP AND THE TOWN OF DURHAM, SEE S.C.R.D. BOOK 1523 PAGE 443.
   D) COMMISSIONERS RETURN OF HIGHWAY LAYOUT, SEE S.C.R.D. BOOK 796 PAGE 2.
   E) WARRANTY DEED FROM STANLEY F. LANGLEY TO THE STATE OF NEW HAMPSHIRE, SEE S.C.R.D. BOOK 746 PAGE 437.
10. THE AREAS SHOWN HEREON ARE CALCULATED TO APPROXIMATE MEAN HIGH WATER (ELEVATION 5').
11. THE NON-CONTIGUOUS UPLAND PORTION OF LAND (±235 Sq. Ft.) AT THE WESTERLY SIDE OF THE PARCEL IS NOT INCLUDED IN THE OVERALL AREA CALCULATIONS OF LOT 27-0 AS SHOWN ON THIS PLAN. THIS AREA IS PART OF LOT #6.
12. WATER BOUNDARIES ARE DYNAMIC IN NATURE AND ARE SUBJECT TO CHANGE DUE TO NATURAL CAUSES SUCH AS EROSION OR ACCRETION.
13. FLOOD ZONE AE (ELEV. 6' PER NAVD88) AND ZONE X PER F.E.M.A. F.I.R.M. #33017C0320E DATED 9/30/15.
14. THE TOTAL DISTURBED AREA SHOWN ON THE PLANS IS 322,000 SF. THE TOTAL IMPERVIOUS AREA ON THE LOT IS 149,984 SF INCLUDING THE EXISTING ROADWAY. THIS IS EQUAL TO 12.1% IMPERVIOUS SURFACE RATIO.
15. "COAST" BUS STOP LOCATED APPROXIMATELY 1,000 FT TO EAST OF SITE ENTRANCE.
16. ALL AREAS WHICH ARE NOT LAWN OR LANDSCAPED SHALL REMAIN UNDISTURBED AND SHALL BE MOWED ANNUALLY.

REFERENCE PLANS

1. "STATE OF NEW HAMPSHIRE DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS PLANS OF PROPOSED FEDERAL AID PRIMARY PROJECT NO. F 012-2(4), NH PROJECT NO. P-3877-B, DURHAM BY-PASS" DATED 5/19/65, S.C.R.D. POCKET 15 FOLDER 3 PLAN 79.
2. "FINAL SUBDIVISION PLAN, JOHNSON CREEK DRIVE, DURHAM, NH" DATED JANUARY 1985, BY G.L. DAVIS & ASSOCIATES, S.C.R.D. PLAN #28A-89.
3. "SEWAGE DISPOSAL PLANT AREA, UNIVERSITY OF NEW HAMPSHIRE, DURHAM, NH" DATED 10/6/64 AND REVISED 12/22/64. NOT RECORDED.
4. "DURHAM BUSINESS PARK WATERLINE EXTENSION, PREPARED FOR PUBLIC WORKS DEPT. TOWN OF DURHAM" BY MAGUIRE GROUP, INC. AND DATED 7/8/97

FINAL APPROVAL BY DURHAM PLANNING BOARD.
CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
CERTIFIED _____
DATE _____

NO.	REVISIONS	DATE	INT.
5.	REVISIONS PER CONDITIONS OF APPROVAL	4/26/16	JLG
4.	REVISIONS PER AOT REVIEW LETTER DATED 3/31/16	4/21/16	MS
3.	SUBMISSION FOR ALTERATION OF TERRAIN PERMIT	2/10/16	JLG
2.	REVISED PER TOWN PLANNER COMMENTS DATED 10/16/15	10/28/15	JLG
1.	REVISIONS FOR ADDITIONAL SITE DESIGN	9/17/15	KD
0.	INITIAL SUBMISSION TO DURHAM PLANNING BOARD	9/2/15	JLG

SEAL: MICHAEL SURVEY No. 8397 LICENSED PROFESSIONAL LAND SURVEYOR NEW HAMPSHIRE - U.S.A.

DATE: 9/2/15
SCALE: 1"=80'
DESIGNED BY: MS/JLG
DRAWN BY: JLG
APPROVED BY: MJS
DWG FILE: 15-027 C1CC.dwg

OVERALL SITE PLAN
prepared for
HARMONY HOMES BY THE BAY
TAX MAP 11, LOTS (27-1)-(27-7)
W. ARTHUR GRANT CIRCLE DURHAM, NH

MJS ENGINEERING, P.C.
CIVIL • STRUCTURAL • ENVIRONMENTAL
5 RAILROAD ST., P.O. Box 359
NEWMARKET, NH 03857
PHONE: (603) 659-4627
E-MAIL: MJS@MJS-ENGINEERING.COM

JOB: 15-027

C100

UTILITIES NOTES:

1. ALL ELECTRIC, GAS, TELEPHONE, WATER, SEWER AND DRAIN SERVICES ARE SHOWN IN SCHEMATIC FASHION. THEIR LOCATIONS ARE NOT PRECISE OR NECESSARILY ACCURATE. NO WORK WHATSOEVER SHALL BE UNDERTAKEN ON THIS SITE USING THIS PLAN TO LOCATE THE ABOVE SERVICES. CONSULT WITH THE PROPER AUTHORITIES CONCERNED WITH THE SUBJECT SERVICE LOCATION FOR INFORMATION REGARDING SUCH. CALL DIG-SAFE: 1-888-DIG-SAFE (1-888-344-7233)

2. UNDERGROUND ELECTRICAL UTILITIES ARE ALSO SHOWN ON SHEETS C110 & C111.

FLOW ← OYSTER RIVER → EBB

HIGHEST OBSERVABLE TIDE LINE (TYP.)
MEAN HIGH TIED LINE (ELEV.=5')
FRESHWATER WETLAND (TYP.)
BROOK CENTER LINE (TYP.)
TREE LINE (TYP.)
BLOCK PAVER PATIO (TYP)
PAVED WALKING PATH
8" HDPE
12" HDPE
12" HDPE
TRASH & RECYCLING DUMPSTERS (TYP.)
RETAINING WALL
2-1/2" COPPER WATER SERVICE
TRANSFORMER
BASEMENT INTERIOR DRAINAGE TO DAYLIGHT
RETAINING WALL
GREASE TRAP
BACKUP GENERATOR
LIGHT
GUTTER DRAINAGE TO DAYLIGHT
3 UNDERGROUND 1000 GAL. PROPANE TANK
FIRE DEPT. CONNECTION (TYP.)
HYDRANT
CONCRETE SIDEWALK (TYP)
SIGN (TYP.)
8" HDPE
LIGHT POLE (TYP.)
VERTICAL GRANITE CURB (TYP)
GRAVEL WALKING PATH
OUTLET CONTROL STRUCTURE #1
APPROX. LOCATION OF EXISTING 6" PVC SEWER SERVICE. EXACT LENGTH UNKNOWN.
STONE SPILLWAY (TYP)
OUTLET CONTROL STRUCTURE #2
12" DRAIN PIPE
APPROX. LOCATION OF EXISTING 6" PVC SEWER SERVICE EXACT LENGTH UNKNOWN.
SERVICE TO HYDRANT 6" D.I.
MAINTENANCE ACCESS
SEWER SERVICE TO BUILDING 6" SDR 35 PVC INV. OUT OF BLDG = 11.0 LENGTH = 295' S = 0.008
6" D.I. WATER SERVICE
15" HDPE INV. OUT=8.63
GRAVEL WETLAND #1 BOTTOM ELEVATION=9.50 BERM ELELVATION=12.50 (SEE DETAIL)
EXISTING 8" PVC SEWER LINE (TYP.)
APPROX. LOCATION OF EXISTING 6" PVC SEWER SERVICE. EXACT LENGTH UNKNOWN (TYP.).
12" DRAIN PIPE
8" D.I. WATER MAIN
UTILITY EASEMENT LINE (TYP.)
RISERS & UNDERDRAINS (SEE GRAVEL WETLAND CROSS SECTION)
ELEC. & COMM. CONDUIT STUB PHASE 3
4" SEWER FORCEMAIN
CB 1509 RIM=16.8 15"RCP INV. OUT=13.4
SMH 4 RIM=17.30 INV. IN=8.56 INV. OUT=8.46 L=300' S=0.005
STONE & MORTOR HEADWALL 15" RCP INV. OUT =13.5 TOP OF HEADWALL = 15.4
APPROXIMATE LOCATION OF 6" SDR 35 PVC SEWER SERVICE
WATER LINE STUB
SMH 5 RIM=17.05 INV. OUT=9.52 L=186' S=0.005
TRANSFORMER
EXISTING 8" D.I. WATER MAIN
SMH 1419 RIM=16.27 CL INV. = 3.16 (DROP)
EXISTING 8" D.I. WATERLINE
MATCH LINE CITY
EXIST. END CAP 8" D.I. WATER LINE STUB
SEWER LINE STUB FOR THIRD BUILDING (CAP END)
ELECTRIC MANHOLE (6' X 4') ALL SWEEPS TO BE STEEL
APPROX. LOCATION OF EXISTING 6" PVC SEWER SERVICE. EXACT LENGTH UNKNOWN (TYP.).
GATE VALVE
EXISTING SEWER PUMP STATION
CB 1519 RIM=15.1 15" RCP INV IN=10.4 15" RCP INV. OUT=10.4 L=19' S=0.005
CB 1518 RIM=15.0 15" RCP INV. IN =10.3 15" RCP INV OUT =10.2 L=21' S=0.002
SMH 3 RIM=15.26 INV. IN = 6.99 (1) INV. IN = 7.01 (2) INV. OUT = 6.97 (3)
STONE HEADWALL 15" RCP INV OUT =10.2 TOP OF HEADWALL=12.4
GRAVEL WETLAND #2

30 0 30 60
SCALE: 1 INCH = 30 FT.

NO.	REVISIONS	DATE	INT.
	FORMAL SUBMISSION	12/1/17	EHK

SEAL: NEW HAMPSHIRE MICHAEL J. SEVERT No. 9397 LICENSED PROFESSIONAL ENGINEER

DATE: 9/2/15
SCALE: 1"=30'
DESIGNED BY: MS/JLG
DRAWN BY: JLG
APPROVED BY: MJS
DWG FILE: 15-027 C1DD AS BUILT.dwg

AS-BUILT SITE PLAN

prepared for

HARMONY HOMES BY THE BAY

TAX MAP 11, LOTS (27-1)-(27-7)
W. ARTHUR GRANT CIRCLE DURHAM, NH

MJS ENGINEERING, P.C.
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5 RAILROAD ST., P.O. BOX 359
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PHONE: (603) 659-4627 FAX: (603) 659-4627
E-MAIL: MJS@MJS-ENGINEERING.COM

JOB: 15-027

C108

REF. PLAN #1

N

LEGEND

- HIGHEST OBSERVABLE TIDE LINE (HOTL)
- EDGE OF FRESHWATER WETLAND
- 100-YR FLOOD HAZARD AREA
- 125' SHORELAND BUFFER
- 100' TIDAL WETLAND BUFFER
- 75' FRESHWATER WETLAND BUFFER
- EXIST. TREELINE

EXIST. ROADWAY

PROPOSED DRIVE

STUB
SEE AS BUILT

SED. FOREBAY

GW#1

GW#2

SMH 5
RIM=17.05
PROP. INV. IN=9.82
INV. OUT=9.52

PROP. 6" SDR35
L=285'
S=0.012
INV. IN=13.23
INV. OUT=9.82

PSMH
RIM=17.31
INV. IN=13.55
INV. OUT=13.23

PROP. 6" SDR35
L=46'
S=0.02
INV. IN=14.47
INV. OUT=13.55

2 STORY DECK ABOVE
2ND STORY12'
3RD SORY 8'

PROPOSED MIX USE BUILDING
FFE = 18.88

GRAVEL SHOULDER
FOR TURN AROUND
AND FIRE ACCESS

PROP. BIKE RACKS

75' FW WETLAND BUFFER

100' TIDAL BUFFER

125' SHORELAND BUFFER

EDGE OF WETLAND

HOTL

100-YR FLOOD HAZARD AREA

0 20 50 100
SCALE: 1" = 20'

NO.	DESCRIPTION	DATE	INT.
	INITIAL SUBMISSION TO DURHAM PLANNING BOARD	6/4/20	MCS

REVISIONS

MICHAEL J. SEVERT No. 6397 Licensed PROFESSIONAL ENGINEER STATE OF NEW HAMPSHIRE

DATE: 2/26/20
SCALE: 1"=20'
DESIGNED BY: MJS
DRAWN BY: MCS
APPROVED BY: MJS
FILE: 19-070 civilg.dwg

REVISED SITE PLAN
ENLARGMENT
prepared for
HARMONY PLACE
TAX MAP 11, LOT 27-0
40 BRIGGS WAY, DURHAM NH

MJS ENGINEERING, P.C.
CIVIL • STRUCTURAL • ENVIRONMENTAL
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E-MAIL: MJS@MJS-ENGINEERING.COM

JOB: 19-070

C101A

CONSTRUCTION SEQUENCING AND EROSION CONTROL NOTES:

AREA OF DISTURBANCE/STABILIZATION
A. THE SMALLEST PRACTICAL AREA SHALL BE DISTURBED DURING CONSTRUCTION, BUT IN NO CASE SHALL THE AREA OF UNSTABILIZED SOIL EXCEED 5 ACRES AT ANY ONE TIME BEFORE THE AREA IS STABILIZED.
B. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
   1. IN AREAS TO BE PAVED, BASE COURSE GRAVELS MEETING THE GRADATION REQUIREMENTS OF NHDOT STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION, 2006, ITEM NO. 304.1 OR 304.2 HAVE BEEN INSTALLED;
   2. IN AREAS NOT TO BE PAVED
      2.A. A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
      2.B. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED;
      2.C. EROSION CONTROL BLANKETS HAVE BEEN INSTALLED IN ACCORDANCE WITH ENV-WQ 1506.03.
C. DISTURBED AREAS SHALL BE TEMPORARILY STABILIZED WITHIN 45 DAYS AND PERMANENTLY STABILIZED NO LATER THAN 3 DAYS AFTER FINAL GRADING.

EROSION CONTROL PRACTICES:
A. INSTALLATION:
   1. INSTALL ALL EROSION CONTROLS AS SHOWN ON THE GRADING PLAN, TYPICAL DETAILS, AND IN CONFORMANCE WITH THE EROSION AND SEDIMENT CONTROL NOTES ON THIS PAGE. MANUFACTURER'S SPECIFICATIONS SHALL BE FOLLOWED.
B. INSPECTION:
   1. INSPECT ALL EROSION CONTROLS WEEKLY AND AFTER EVERY RAIN EVENT OF 0.5 INCHES OR GREATER UNLESS OTHERWISE NOTED.
   2. TEMPORARY STABILIZATION PRACTICES SHALL BE INSPECTED ONCE PER WEEK DURING CONSTRUCTION UNTIL EXPOSED SURFACES ARE STABILIZED.
   3. ANY SIGNS OF RILL OR GULLY EROSION SHALL BE IMMEDIATELY REPAIRED.
C. MAINTENANCE:
   1. MAINTAIN EROSION CONTROLS PER THE TYPICAL DETAILS AND IN CONFORMANCE WITH THE EROSION AND SEDIMENT CONTROL NOTES ON THIS PAGE.
D. REMOVAL
   1. ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED ONCE 85% VEGETATIVE COVER HAS BEEN ESTABLISHED.
   2. AFTER REMOVAL, ALL DISTURBED AREAS SHALL BE REGRADED, FERTILIZED, AND RESEEDED. MONITOR TO ENSURE VEGETATIVE GROWTH IS ESTABLISHED AND REPAIR AS NEEDED UNTIL MINIMUM OF 85% VEGETATIVE COVER IS ESTABLISHED.

PROTECTED SHORELAND REQUIREMENTS

A. ALL WORK SHALL CONFORM TO THE COMPREHENSIVE SHORELAND PROTECTION ACT AND TOWN OF DURHAM SHORELAND PROTECTION OVERLAY DISTRICT.
B. WITHIN 3 DAYS OF FINAL GRADING OR TEMPORARY SUSPENSION OF WORK IN AN AREA THAT IS IN THE PROTECTED SHORELAND, ALL EXPOSED SOIL AREAS SHALL BE STABILIZED BY:
   1. SEEDING AND MULCHING, IF DURING THE GROWING SEASON
   2. MULCHING WITH TACK OR NETTING IF NOT WITHIN THE GROWING SEASON
   3. A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED;
   4. EROSION CONTROL BLANKETS HAVE BEEN INSTALLED IN ACCORDANCE WITH ENV-WQ 1506.03.
C. FERTILIZER & LIMESTONE
   1. NO LIMESTONE SHALL BE APPLIED WITHIN THE 250' PROTECTED SHORELAND. NO FERTILIZER SHALL BE APPLIED TO VEGETATION OR SOILS LOCATED WITHIN 150 FEET OF THE HIGHEST OBSERVABLE LOW PHOSPHATE, SLOW RELEASE NITROGEN FERTILIZER (NOT MORE THAN 2% PHOSPHORUS AND A NITROGEN COMPONENT WHICH IS AT LEAST 50% SLOW RELEASE NITROGEN COMPONENTS) SHALL BE USED BEYOND 150 FEET FROM THE HIGHEST OBSERVABLE TIDE LINE.
   2. APPLY 10-0-10 LOW PHOSPHATE FERTILIZER AT A RATE OF 600 lb./A.
   3. APPLY LIMESTONE (EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF 3 TONS/ACRE ONLY OUTSIDE THE LIMIT OF THE 250' PROTECTED SHORELAND.

COLD WEATHER SITE STABILIZATION
A. SHALL BE UTILIZED BETWEEN NOVEMBER 30TH AND MAY 1ST. THE AREA OF EXPOSED, UNSTABILIZED SOIL SHALL BE LIMITED TO 1 ACRE AND SHALL BE PROTECTED AGAINST EROSION BY THE FOLLOWING METHODS PRIOR TO ANY THAW OR SPRING MELT EVENT.
B. ALL PROPOSED VEGETATED AREAS HAVING A SLOPE OF LESS THAN 15% WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY NOVEMBER 30TH, OR WHICH ARE DISTURBED AFTER NOVEMBER 30TH, SHALL BE SEEDED AND COVERED WITH 3-4 TONS OF HAY OR STRAW MULCH PER ACRE SECURED WITH ANCHORED NETTING OR TACKIFIER, OR 2 INCHES OF EROSION CONTROL MIX MEETING THE FOLLOWING CRITERIA;
   1. THE MIX SHALL HAVE AN ORGANIC PORTION BETWEEN 25% AND 65%, DRY WEIGHT BASIS, AND BE FIBROUS AND ELONGATED SUCH AS FROM SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR EQUIVALENT MANUFACTURED PRODUCTS;
   2. WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS, OR REPROCESSED WOOD PRODUCTS SHALL NOT BE USED AS THE ORGANIC MATERIAL;
   3. THE MIX SHALL NOT CONTAIN SILTS, CLAYS, OR FINE SANDS;
   4. THE MIX SHALL HAVE A PARTICLE SIZE BY WEIGHT OF 100% PASSING A 3-INCH SCREEN, 90% TO 100% PASSING A 1-INCH SCREEN, 70% TO 100% PASSING A 0.75-INCH SCREEN, AND 30% TO 75% PASSING A 0.25 INCH SCREEN;
   5. THE MIX pH SHALL BE BETWEEN 5.0 AND 8.0;
C. ALL PROPOSED VEGETATED AREAS HAVING A SLOPE GREATER THAN 15% WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY NOVEMBER 30TH, OR WHICH ARE DISTURBED AFTER NOVEMBER 30TH, SHALL BE SEEDED AND COVERED WITH A PROPERLY INSTALLED AND ANCHORED EROSION CONTROL BLANKET OR WITH A MINIMUM 4 INCH THICK NESS OF EROSION CONTROL MIX MEETING THE CRITERIA SPECIFIED ABOVE IN (B)(1-5);
D. INSTALLATION OF ANCHORED HAY MULCH OR EROSION CONTROL MIX, MEETING THE CRITERIA SPECIFIED IN (B)(1-5) SHALL NOT OCCUR OVER SNOW OF GREATER THAN 1-INCH IN DEPTH.
E. INSTALLATION OF EROSION CONTROL BLANKETS SHALL NOT OCCUR OVER SNOW OF GREATER THAN 1 INCH IN DEPTH OR ON FROZEN GROUND.
F. ALL PROPOSED STABILIZATION IN ACCORDANCE WITH (A) OR (B) SHALL BE COMPLETED WITHIN A DAY OF ESTABLISHING THE GRADE THAT IS FINAL OR THAT OTHERWISE WILL EXIST FOR MORE THAN 5 DAYS.
G. ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY NOVEMBER 30TH, OR WHICH ARE DISTURBED AFTER NOVEMBER 30TH, SHALL BE STABILIZED WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS.
H. AFTER NOVEMBER 15TH, INCOMPLETE ROAD OR PARKING SURFACES WHERE ACTIVE CONSTRUCTION OF THE ROAD OR PARKING AREA HAS STOPPED FOR THE WINTER SEASON SHALL BE PROTECTED WITH A MINIMUM 3-INCH LAYER OF BASE COURSE GRAVELS MEETING THE GRADATION REQUIREMENTS OF NHDOT STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION, 2006, ITEM NO. 304.1 OR 304.2.

TEMPORARY VEGETATION
(REFER TO PROTECTED SHORELAND REQUIRMENTS FOR WORK WITHIN THE PROTECTED SHORELAND)

A. SITE PREPARATION
   1. INSTALL EROSION AND SEDIMENT CONTROL MEASURES AS SPECIFIED ABOVE.
   2. ENSURE RUNOFF IS DIVERTED FROM SEEDED AREA.
   3. ON SLOPES OF 4:1 OR STEEPER, CREATE HORIZONTAL GROOVES PERPENDICULAR TO THE DIRECTION OF THE SLOPE TO CATCH SEED AND REDUCE RUNOFF.
B. SEED BED PREPARATION
   1. REMOVE STONES AND TRASH FROM AREA TO BE SEEDED.
   2. COMPACTED SOIL SHALL BE LOOSENED TO A DEPTH OF 2 INCHES BEFORE APPLYING FERTILIZER, LIME, AND SEED.
   3. APPLY FERTILIZER AT A RATE OF 600 LBS PER ACRE OF 10-10-10. APPLY LIMESTONE (EQUIVALENT TO 50 PERCENT CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF 3 TONS PER ACRE.
C. SEEDING
   1. SEED PER THE FOLLOWING RECOMMENDATIONS

SEASON	APPLICATION DATE	MIXTURE TYPE	QUANTITY (lb./Ac.)
EARLY SPRING	NO LATER THAN 5/15	OATS	80
LATE SPRING/ FALL	4/1 TO 6/1 & 8/15 TO 9/15	PERENNIAL RYE	30
EARLY SPRING/ FALL	4/1 TO 5/15 & 8/15 TO 9/15	ANNUAL RYE	40
FALL	8/15 TO 9/15	WINTER RYE	112

   2. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL, CULTIPACKER TYPE SEEDER OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER). NORMAL SEEDING DEPTH IS FROM ¼ TO ½ INCH. HYDROSEEDING THAT INCLUDES MULCH MAY BE LEFT ON SOIL SURFACE. SEEDING RATES MUST BE INCREASED 10% WHEN HYDROSEEDING.
   3. TEMPORARY SEEDING SHOULD TYPICALLY OCCUR PRIOR TO SEPTEMBER 15TH.
   4. AREAS SEEDED BETWEEN MAY 15TH AND AUGUST 15TH SHOULD BE COVERED WITH HAY OR STRAW MULCH.
   5. VEGETATED GROWTH COVERING AT LEAST 85% OF THE DISTURBED AREA SHOULD BE ACHIEVED PRIOR TO OCTOBER 15TH. IF THIS CONDITION IS NOT ACHIEVED, IMPLEMENT OTHER TEMPORARY STABILIZATION MEASURES FOR OVERWINTER PROTECTION.
D. MAINTENANCE
   1. TEMPORARY SEEDING SHOULD BE INSPECTED WEEKLY AND AFTER ANY RAINFALL EXCEEDING ½ INCH IN 24 HOURS ON ACTIVE CONSTRUCTION SITES. TEMPORARY SEEDING SHOULD ALSO BE INSPECTED JUST PRIOR TO SEPTEMBER 15, TO ASCERTAIN WHETHER ADDITIONAL SEEDING IS REQUIRED TO PROVIDE STABILIZATION OVER THE WINTER PERIOD.
   2. BASED ON INSPECTION, AREAS SHOULD BE RESEEDED TO ACHIEVE FULL STABILIZATION OF EXPOSED SOILS. IF IT IS TOO LATE IN THE PLANTING SEASON TO APPLY ADDITIONAL SEED, THEN OTHER TEMPORARY STABILIZATION MEASURES SHOULD BE IMPLEMENTED.
   3. AT A MINIMUM, 85% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION.
   4. IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHOULD BE MADE AND AREAS SHOULD BE RESEEDED, WITH OTHER TEMPORARY MEASURES (E.G., MULCH) USED TO PROVIDE EROSION PROTECTION DURING THE PERIOD OF VEGETATION ESTABLISHMENT.

PERMANENT VEGETATION
(REFER TO PROTECTED SHORELAND REQUIRMENTS FOR WORK WITHIN THE PROTECTED SHORELAND)
A. SITE PREPARATION
   1. REFER TO SITE PREPARATION FOR TEMPORARY SEEDING.
B. SEED BED PREPARATION
   1. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH A DISC, SPRING TOOTH HARROW OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE TILLAGE UNTIL A REASONABLY UNIFORM, FINE SEEDBED IS PREPARED. ALL BUT CLAY OR SILTY SOILS AND COARSE SANDS SHOULD BE ROLLED TO FIRM THE SEEDBED WHEREVER FEASIBLE.
   2. REMOVE FROM THE SURFACE ALL STONES 2 INCHES OR LARGER IN ANY DIMENSION. REMOVE ALL OTHER DEBRIS, SUCH AS WIRE, CABLE, TREE ROOTS, CONCRETE, CLODS, LUMPS, TRASH OR OTHER UNSUITABLE MATERIAL.
   3. INSPECT SEEDBED JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED; THE AREA MUST BE TILLED AND FIRMED AS ABOVE.
   4. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF 2 INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED.
   5. APPLY FERTILIZER AT A RATE OF 600 LBS PER ACRE OF 10-10-10. APPLY LIMESTONE (EQUIVALENT TO 50 PERCENT CALCIUM PLUS MAGNESIUM OXIDE) AT A RATE OF 3 TONS PER ACRE.
C. SEEDING
   1. UNLESS OTHERWISE NOTED, GRASS SEED MIXTURE 'C' SHALL BE APPLIED AT THE SPECIFIED RATE AS NOTED IN THE 'SEED MIXTURES FOR PERMANENT VEGETATION' TABLE.
   2. APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL, CULTIPACKER TYPE SEEDER OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER). NORMAL SEEDING DEPTH IS FROM ¼ TO ½ INCH. HYDROSEEDING THAT INCLUDES MULCH MAY BE LEFT ON SOIL SURFACE. SEEDING OPERATIONS SHOULD BE ON THE CONTOUR.
   3. WHERE FEASIBLE, EXCEPT WHERE EITHER A CULTIPACKER TYPE SEEDER OR HYDROSEEDER IS USED, THE SEEDBED SHOULD BE FIRMED FOLLOWING SEEDING OPERATIONS WITH A ROLLER, OR LIGHT DRAG.
   4. WHEN HYDROSEEDING (HYDRAULIC APPLICATION), PREPARE THE SEEDBED AS SPECIFIED ABOVE OR BY HAND RAKING TO LOOSEN AND SMOOTH THE SOIL AND TO REMOVE SURFACE STONES LARGER THAN 2 INCHES IN DIAMETER.
   5. SLOPES MUST BE NO STEEPER THAN 2 TO 1.
   6. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. THE USE OF FIBER MULCH ON CRITICAL AREAS IS NOT RECOMMENDED (UNLESS IT IS USED TO HOLD STRAW OR HAY). BETTER PROTECTION IS GAINED BY USING STRAW MULCH AND HOLDING IT WITH ADHESIVE MATERIALS OR 500 POUNDS PER ACRE OF WOOD FIBER MULCH.
   7. SEEDING RATES MUST BE INCREASED 10% WHEN HYDROSEEDING.
D. MAINTENANCE
   1. PERMANENTLY SEEDED AREAS SHOULD BE INSPECTED MONTHLY.
   2. MOW SEEDED AREAS AS NECESSARY.
   3. BASED ON INSPECTION, AREAS SHOULD BE REPAIRED AND/OR RESEEDED TO ENSURE 85% OF THE SOIL SURFACE IS COVERED BY VEGETATION.

MULCHING & EROSION CONTROL MATTING
A. GENERAL
   1. APPLY PRIOR TO A STORM EVENT. CLOSELY MONITOR THE WEATHER TO HAVE ADEQUATE WARNING OF SIGNIFICANT STORMS.
   2. MULCHING WITHIN A SPECIFIED TIME PERIOD FROM ORIGINAL SOIL EXPOSURE
      A. WITHIN 100 FEET OF WETLANDS THE TIME PERIOD SHOULD BE NO GREATER THAN 7 DAYS.
      B. IN OTHER AREAS IT SHALL BE NO GREATER THAN 14 DAYS.
B. TEMPORARY MULCHING
   1. HAY OR STRAW MULCHES
      A. ORGAINIC MULCHES INLCUDING HAY AND STRAW SHALL BE AIR-DRIED, FREE OF UNDESIRABLE SEEDS AND COARSE MATERIALS.
      B. APPLICATION RATE SHALL BE 2 BALES/1,000 SF (70-90 POUNDS) OR 1.5-2.0 TONS/ACRE TO COVER 75-90% OF THE GROUND.
      C. ANCHORING
         1. NETTING: NETTING SHALL BE JUTE, WOOD FIBER, OR BIODEGRADABLE PLASTIC NETTING INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
         2. TACKIFIER: APPLY POLYMER OR ORGANIC TACKIFIER TO ANCHOR HAY OR STRAW MULCH. APPLY PER MANUFACTURER'S SPECIFICATIONS. TYPICAL APPLICATION RATES ARE 40-60 LBS/ACRE FOR POLYMER MATERIAL AND 80-120 LBS/ACRE FOR ORGANIC LIQUID.
      D. WINTER APPLICATION: APPLY TO A DEPTH OF 4 INCHES OR DOUBLE THE ABOVE LISTED APPLICATION RATE. NOTE THAT IF SEEDING IS NECESSARY, MULCH WILL NEED TO BE REMOVED AND THE AREA SEEDED AND MULCHED IN THE SPRING.
   E. MAINTENANCE
      1. INSPECT PERIODICALLY AND AFTER RAIN STORMS FOR RILLS OR DISPLACEMENT OF MULCH. REPAIR AS NECESSARY. CONTINUE INSPECTIONS UNTIL 85% VEGETATIVE COVER IS ESTABLISHED.
      2. EROSION CONTROL BLANKET OR MATTING
         A. REFER TO PLANS FOR TYPICAL EROSION CONTROL MATTING DETAIL. INSTALL PER MANUFACTURERS SPECIFICATIONS.
         B. APPLICATION AND TIMING
            1. DURING THE GROWING SEASON (APRIL 15 – SEPTEMBER 15) USE ON THE BASE OF GRASSED WATERWAYS, STEEP SLOPES (15% OR GREATER), ANY DISTURBED SOIL WITHIN 100 FEET OF LAKES, STREAMS, AND WETLANDS.
            2. DURING THE LATE FALL AND WINTER (SEPTEMBER 15 – APRIL 15) IN ADDITION TO THOSE LISTED ABOVE USE ON SIDE SLOPES OF GRASSED WATERWAYS AND MODERATE SLOPES (GREATER THAN 8%).
         C. MAINTENANCE
            1. INSPECT PERIODICALLY AND BEFORE AND AFTER STORM EVENTS TO ENSURE CONTACT WITH THE SOIL UNTIL 85% VEGETATIVE COVER IS ESTABLISHED. REPAIR AND RESTAPLE AS NECESSARY.
C. PERMANENT MULCHING
   1. WOOD CHIPS OR GROUND BARK
      A. APPLY TO A THICKNESS OF 2 TO 6 INCHES. TYPICAL APPLICATION RATES ARE 10-20 TONS/ACRE OR 460-920 POUNDS/1,000 SF.
      B. MAINTENANCE:
         1. INSPECT ANNUALLY AND AFTER RAIN EVENTS OF 2.5 INCHES OR MORE IN A 24 HOUR PERIOD. REPAIR/REPLACE AS NECESSARY.
         2. EROSION CONTROL MIX
            A. COMPOSITION OF THE MIX SHALL BE AS FOLLOWS:
               1. ORGANIC MATTER CONTENT SHALL BE BETWEEN 25-65% DRY WEIGHT BASIS.
               2. PARTICLE SIZE BY WEIGHT SHOULD BE 100% PASSING THE 3" SCREEN, 90-100% PASSING THE 1" SCREEN, 70-100% PASSING THE 0.75 INCH SCREEN, AND 30-75% PASSING THE 0.25 INCH SCREEN.
               3. THE ORGANIC PORTION SHALL BE ELONGATED AND FIBROUS. IT SHALL NOT CONTAIN WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS, OR REPROCESSED WOOD PRODUCTS.
               4. THE MIX SHALL NOT CONTAIN SILTS, CLAYS, OR FINE SANDS.
               5. SOLUBLE SALTS CONTENT SHALL BE < 4.0MMHOS/CM AND A pH OF 5.0-8.0.
            B. PLACEMENT OF BERM
               1. PLACE BERM ALONG A LEVEL CONTOUR. BERM MUST BE A MINIMUM OF 12" HIGH ON THE UPHILL SIDE AND 2 FEET WIDE.
            C. MAINTENANCE
               1. INSPECT PERIODICALLY AND AUGMENT AS NEEDED TO MAINTAIN INITIAL THICKNESS. REPLACE IF NO LONGER FUNCTIONING AS INTENDED.

SOIL STOCKPILES
A. GENERAL
   1. PLACE IN THE LOCATIONS SHOWN ON THE PLAN. ADDITIONAL STOCKPILES MUST BE LOCATED 50 FEET FROM DITCHES AND CULVERT INLETS.
B. PROTECTION OF STOCKPILES
   1. PROTECT SOIL AND AGGREGATE STOCKPILES WITH TEMPORARY PERIMETER SEDIMENT BARRIER SUCH AS SILT FENCE OR SILT SOCK.
   2. COVER ACTIVE STOCKPILES WITH ANCHORED PROTECTIVE COVERING PRIOR TO EXPECTED STORM EVENTS.
   3. INACTIVE STOCKPILES SHALL BE COVERED WITH ANCHORED TARPS OR TEMPORARILY SEEDED AND MULCHED PER THE TEMPORARY VEGETATION AND MULCHING NOTES ON THIS PAGE.
   4. STOCKPILES THAT ARE A SOURCE OF DUST SHALL BE COVERED.

DUST CONTROL
A. DUST SHALL BE CONTROLLED ON SITE DURING CONSTRUCTION BY IMPLEMENTING THE FOLLOWING DUST CONTROL MEASURES
   1. MULCHING AND VEGETATIVE COVER TO REDUCE DUST.
   2. MECHANICAL SWEEPERS AND FINE WATER SPRAYS.
   3. COVER SURFACES WITH CRUSHED STONE OR COARSE GRAVEL.

SEED MIXTURE SELECTION BASED ON SOIL TYPE

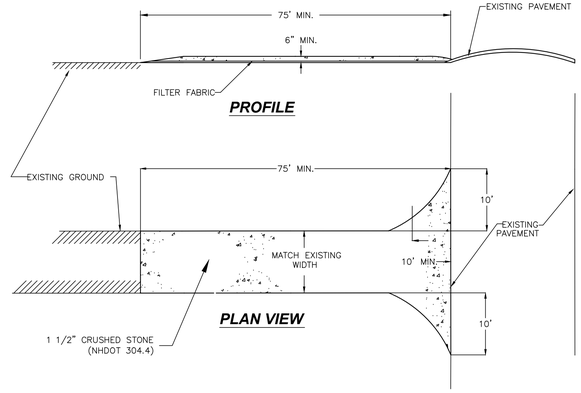
USE	SOIL DRAINAGE: SEEDING MIXTURE	DROUGHTY	WELL DRAINED	MODERATELY WELL DRAINED
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A B C D	FAIR POOR POOR FAIR	GOOD GOOD GOOD EXCELLENT	GOOD FAIR EXCELLENT EXCELLENT
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER.	A C	GOOD GOOD	GOOD EXCELLENT	GOOD EXCELLENT
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY USE RECREATION SITES.	A B C	GOOD GOOD GOOD	GOOD GOOD EXCELLENT	GOOD FAIR FAIR
PLAY AREAS AND ATHLETIC FIELDS. (TOPSOIL IS ESSENTIAL FOR GOOD TURF.)	E F	EXCELLENT FAIR	EXCELLENT EXCELLENT	EXCELLENT EXCELLENT
NOTE: POORLY DRAINED SOILS ARE NOT DESIRABLE FOR USE AS PLAYING AREAS AND ATHLETIC FIELDS.				

SEED MIXTURES FOR PERMANENT VEGETATION

MIXTURE	SPECIES	POUNDS PER ACRE	POUNDS PER 1,000 SF
A	TALL FESCUE CREEPING RED FESCUE REDTOP *TOTAL*	20 20 2 *42*	0.45 0.45 0.05 *0.95*
B	TALL FESCUE CREEPING RED FESCUE CROWN VETCH OR FLATPEA *TOTAL*	15 10 15 – 30 *40 OR 55*	0.35 0.25 0.35 – 0.75 *0.95 OR 1.35*
C	TALL FESCUE CREEPING RED FESCUE BIRDSFOOT TREFOIL *TOTAL*	20 20 8 *48*	0.45 0.45 0.20 *1.10*
D	TALL FESCUE FLATPEA *TOTAL*	20 30 *50*	0.45 0.75 *1.20*
E	CREPPING RED FESCUE KENTUCKY BLUEGRASS *TOTAL*	50 50 *100*	1.15 1.15 *2.30*
F	TALL FESCUE	*150*	*3.60*

ADDITIONAL NOTES:
1. NO FUEL SHALL BE STORED ON SITE DURING CONSTRUCTION.
2. DURING CONSTRUCTION DUST SHALL BE PREVENTED FROM BECOMING A SAFETY OR HEALTH HAZARD BY THE IMPLEMENTATION OF ACCEPTED CONTROL METHODS SUCH AS WATERING.
3. ALL CONSTRUCTION MATERIALS THAT ARE SPILLED OR DEPOSITED ON THE PUBLIC ROADWAYS SHALL BE REMOVED BY THE CONTRACTOR.
4. DO NOT BEGIN CONSTRUCTION UNTIL ALL LOCAL, STATE, AND FEDERAL PERMITS HAVE BEEN APPLIED FOR AND RECEIVED.

FINAL APPROVAL BY DURHAM PLANNING BOARD.
CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
CERTIFIED _____
DATE _____



STABILIZED CONSTRUCTION ENTRANCE DETAIL

N.T.S

STABILIZED CONSTRUCTION ENTRANCE NOTES:
1. GRADE AND COMPACT ACCESS ROAD ENTRANCE AS NECESSARY. PLACE FILTER FABRIC (MIRAFI OR EQUAL) AND PLACE 6" OF 1"-2" STONE TO MATCH SLOPE OF EXISTING ROAD.
2. PROVIDE NECESSARY SWALES OR DIVERSIONS TO MINIMIZE DIRECT FLOW OF WATER ONTO STONE AREA.
3. CONSTRUCTION ENTRANCE SHALL BE MAINTAINED AS NECESSARY TO REMOVE SILT FROM TIRES PRIOR TO ENTERING PUBLIC ROADS. A SMALL SWALE SHALL BE CONSTRUCTED ON THE DOWN GRADIENT SIDE TO TRAP ANY SILT WASHED FROM THE STONE ENTERANCE.

CONSTRUCTION SEQUENCING:

THE ESTIMATED START OF CONSTRUCTION IS JULY 2020 AND THE ESTIMATED END OF CONSTRUCTION IS MARCH 2021. THE CONSTRUCTION SEQUENCING IS DETAILED BELOW.

1. COMPLETE A PRE-CONSTRUCTION MEETING WITH ALL PARTIES PRIOR TO BEGINNING CONSTRUCTION.
2. CONTACT DIG-SAFE PRIOR TO BEGINNING ANY CONSTRUCTION.
3. INSTALL ALL EROSION CONTROL MEASURES AS SHOWN ON THE SITE GRADING PLAN.
4. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE IN THE LOCATION SHOWN ON THE SITE PLAN.
5. GRUB SITE FOR THE CONSTRUCTION. MINIMIZE THE AMOUNT OF EXPOSED AREA TO THE LOCATION THAT IS BEING ACTIVELY WORKED.
6. EXCAVATE FOR BUILDING FOUNDATIONS, PREPARE FOOTING SUBGRADE, AND BACKFILL IN ACCORDANCE WITH GEOTECHNICAL OR STRUCTURAL ENGINEERS REQUIREMENTS.
7. MATERIAL CONSTRUCTION STAGING WILL BE IN THE FUTURE BUILDING #3 AREA. EROSION CONTROL WILL BE INSTALLED PRIOR TO START OF CONSTRUCTION.
8. INSTALL UNDERGROUND UTILITIES INCLUDING SEWER, WATER, ELECTRIC AND TELECOM. INSTALL ALL UTILITIES IN ACCORDANCE WITH CONSTRUCTION DETAILS, LOCAL AND STATE REQUIREMENTS.
9. PROPERLY COMPLETE ALL INSPECTIONS AND TESTING AS REQUIRED PRIOR TO BACK FILLING ANY COMPLETED WORK.
10. CONSTRUCT ROADWAY AND PARKING LOT TO THE LINES AND GRADES SHOWN ON THE SITE PLANS.
    1. EXCAVATE ROADWAY AND PARKING LOT TO SUBGRADE.
    2. PLACE SELECT MATERIALS IN ACCORDANCE WITH THE DETAILS AND AS FOLLOWS:
       A. PLACE SELECT MATERIALS IN MAXIMUM 12" LIFTS AND COMPACT TO 95% MAX. DRY DENSITY BASED ON PROCTOR TEST.
       B. MATERIAL SHALL BE FREE OF DELETERIOUS MATERIALS SUCH AS LOAM, STUMPS, BRUSH, AND ROCKS LARGER THAN 3/4 THE DEPTH OF THE LIFT BEING PLACED.
    3. PLACE 2" BINDER COURSE OF PAVEMENT IN ACCORDANCE WITH SPECIFICATIONS AS SOON AS POSSIBLE AFTER SELECT MATERIALS HAVE BEEN INSTALLED AND ACCEPTED TO MINIMIZE SOIL EROSION.
    4. THE FINAL COURSE OF PAVEMENT SHOULD NOT BE INSTALLED AFTER NOVEMBER 15. IT IS RECOMMENDED THAT THE WINTER SEASON GO BY PRIOR TO FINISH PAVING BEING INSTALLED.
    5. CONSTRUCT SIDEWALKS AND BITUMINOUS PATHS IN ACCORDANCE WITH THE PHASING PLAN AND EACH SPECIFIC CROSS-SECTION.
11. LOAM SHALL BE STOCKPILED ON SITE IN LOCATIONS SHOWN OR APPROVED OTHERWISE FOR RE-USE ON THE SITE.
12. COMPLETE GRADING AND INSTALL PERMANENT SEEDING AND PLANTINGS IN ACCORDANCE WITH THE LANDSCAPE PLANS.
13. INSTALL REMAINING DRAINAGE AND UTILITY STRUCTURES AND STABILIZE PRIOR TO RECEIVING RUNOFF.
14. INSPECT, MAINTAIN, AND IF NECESSARY, REPAIR ALL EROSION AND SEDIMENT CONTROL MEASURES.
15. REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AFTER SITE IS STABILIZED AND RESEED ANY AREAS DISTURBED BY REMOVAL.

NO.	DATE	REVISIONS
1	6/4/20	INITIAL SUBMISSION TO THE DURHAM PLANNING BOARD

MCS INT.

SEAL: NEW HAMPSHIRE LICENSED PROFESSIONAL ENGINEER MICHAEL J. SEVERT No. 9397 Certified

DATE: 6/4/20
SCALE: AS SHOWN
DESIGNED BY: MJS
DRAWN BY: BOB
APPROVED BY: MJS
DWG FILE: 19-070 Detail.dwg

SITE CONSTRUCTION DETAILS
prepared for
HARMONY PLACE
TAX MAP 11, LOT 27-0
40 BRIGGS WAY, DURHAM NH

MJS ENGINEERING, P.C.
CIVIL • STRUCTURAL • ENVIRONMENTAL
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JOB: 19-070

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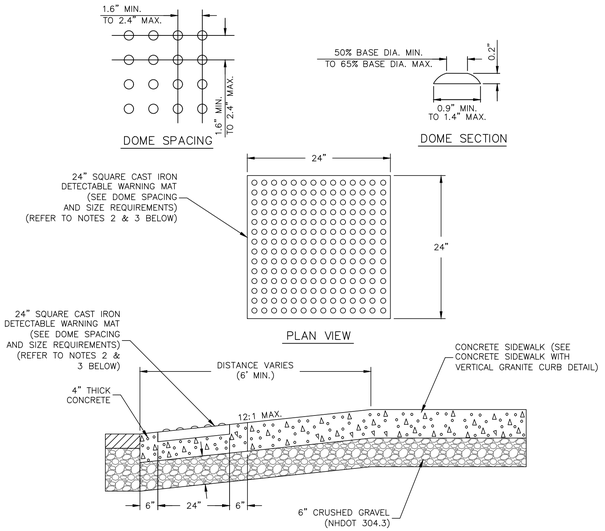
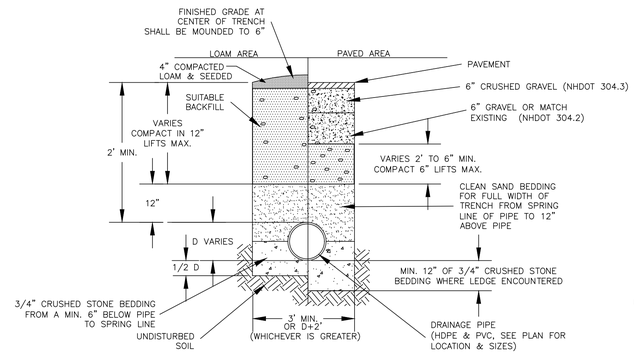


DETECTABLE WARNING MAT DETAIL

N.T.S

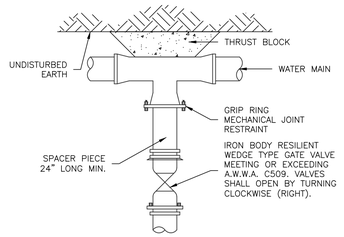
NOTES:

1. CONCRETE TO BE 4,000 PSF.
2. REFER TO MANUFACTURER'S SPECIFICATIONS FOR INSTALLATION OF DETECTABLE WARNING MATS.

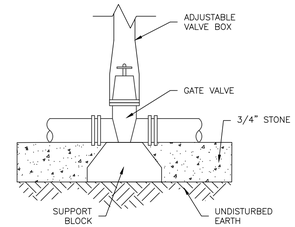


STANDARD DRAINAGE PIPE TRENCH

N.T.S



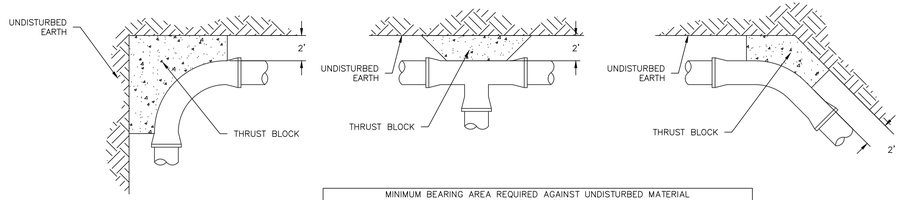
PLAN VIEW



ELEVATION VIEW

TYPICAL VALVE CONNECTION

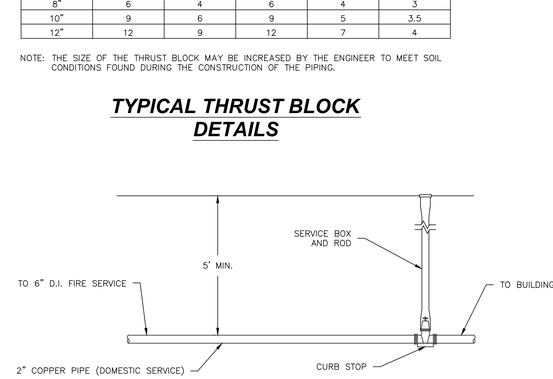
N.T.S



MINIMUM BEARING AREA REQUIRED AGAINST UNDISTURBED MATERIAL (SQ. FT.)					
PIPE DIAMETER	90° BEND	TEE	PLUG	45° BEND	22.5° BEND OR LESS
4–6"	3	3	3	3	3
8"	6	4	6	4	3
10"	9	6	9	5	3.5
12"	12	9	12	7	4

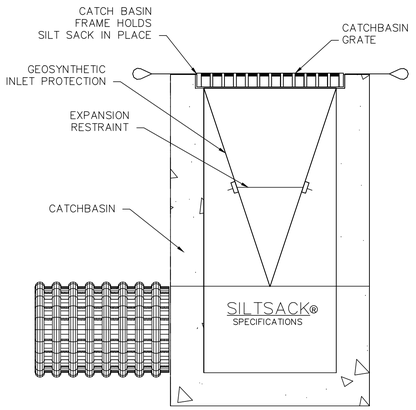
NOTE: THE SIZE OF THE THRUST BLOCK MAY BE INCREASED BY THE ENGINEER TO MEET SOIL CONDITIONS FOUND DURING THE CONSTRUCTION OF THE PIPING.

TYPICAL THRUST BLOCK DETAILS



TYPICAL WATER SHUTOFF CONNECTION

N.T.S



REGULAR FLOW SILTSACK®

(FOR AREAS OF LOW TO MODERATE PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	300 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20 %
PUNCTURE	ASTM D-4833	120 LBS
MULLEN BURST	ASTM D-3786	800 PSI
TRAPEZOID TEAR	ASTM D-4533	120 LBS
UV RESISTANCE	ASTM D-4355	80 %
APPARENT OPENING SIZE	ASTM D-4751	40 US SIEVE
FLOW RATE	ASTM D-4491	40 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	0.55 SEC -1

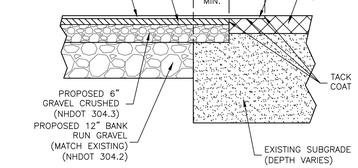
NOTES:

1. GEOSYNTHETIC SEDIMENT FILTER TRAP SHALL BE "REGULAR FLOW SILTSACK®" OR APPROVED EQUAL. SPECIFICATIONS FOR SILTSACK® ARE DETAILED.

2. FILTER TRAPS SHALL BE INSPECTED AFTER EVERY RAIN EVENT OF 0.25" OR GREATER AND SEDIMENTS SHALL BE REMOVED FROM TRAP WHEN SEDIMENT HAS REACHED TWO THIRDS OF THE DEPTH OF THE TRAP, OR IF PONDING OF WATER AT SURFACE BEGINS TO OCCUR. DO NOT PUNCTURE FILTER TRAP TO MITIGATE PONDING.

CATCH BASIN GEOSYNTHETIC SEDIMENT TRAP

N.T.S.

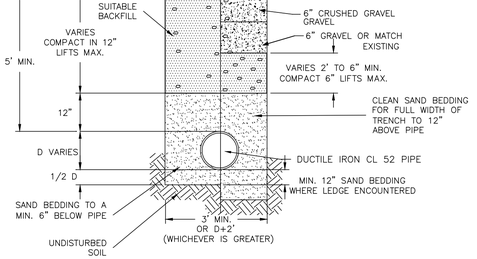


TYPICAL PAVEMENT SAWCUT DETAIL

SCALE: N.T.S.

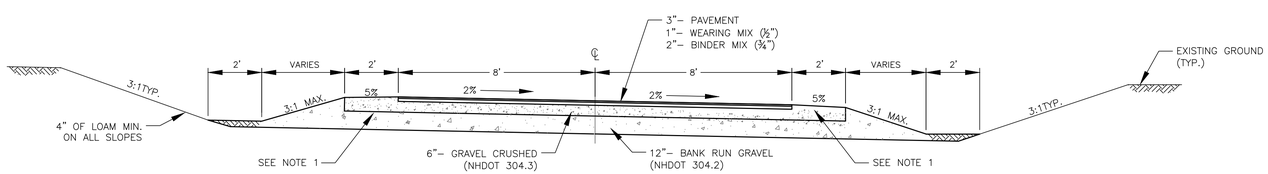
PAVEMENT SAWCUT NOTES:

1. SAWCUT THROUGH DEPTH OF PAVEMENT AT LEAST 1 FT. FROM EDGE OR GREATER IF REQUIRED BY NHDOT.
2. INSTALL AND COMPACT CRUSHED GRAVEL TO GRADE.
3. PLACE BINDER COURSE.
4. GRIND EXISTING PAVEMENT 1 FT. WIDE TO A DEPTH NECESSARY TO PROPERLY MATCH NEW WEARING COURSE PAVEMENT.
5. TACK COAT ALL EXISTING PAVEMENT SURFACES WITH EMULSIFIED ASPHALT (MS-1) PRIOR TO PLACING NEW PAVEMENT.



STANDARD WATER MAIN TRENCH

N.T.S



TYPICAL ROAD CROSS SECTION

SCALE: NO SCALE

NOTES:

1. AT ALL SHOULDER LOCATIONS, NHDOT ITEM 304.33 – MODIFIED CRUSHED GRAVEL IS REQUIRED. 2.
2. ACCESS DRIVE CROSS SLOPE DIRECTION VARIES. REFER TO GRADING PLAN.
3. ROAD CROSS-SECTION VARIES AT PARKING AND DROP-OFF AREAS. REFER TO SITE PLAN FOR WIDTHS AND GRADES.

FINAL APPROVAL BY DURHAM PLANNING BOARD.
CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
CERTIFIED _____
DATE _____

NO.	DATE	REVISIONS
1	6/4/20	INITIAL SUBMISSION TO THE DURHAM PLANNING BOARD

MCS | INT.

SEAL: NEW HAMPSHIRE – MICHAEL J. SEVERT No. 6397 – LICENSED PROFESSIONAL ENGINEER

DATE: 6/4/20
SCALE: AS SHOWN
DESIGNED BY: MJS
DRAWN BY: BOB
APPROVED BY: MJS
DWG FILE: 19-070 Det4.dwg

SITE CONSTRUCTION DETAILS
prepared for
HARMONY PLACE
TAX MAP 11, LOT 27-0
40 BRIGGS WAY, DURHAM NH

MJS ENGINEERING, P.C.
CIVIL • STRUCTURAL • ENVIRONMENTAL
5 RAILROAD ST., P.O. BOX 359
NEWMARKET, NH 03857
PHONE: (603) 659-5255 FAX: (603) 659-4627
E-MAIL: MJSBMJS@MJS-ENGINEERING.COM

JOB: 19-070

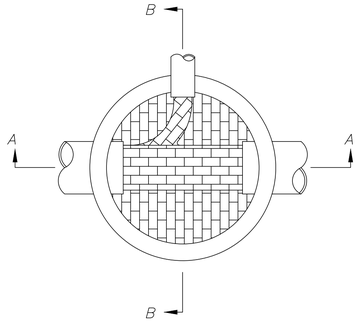
D102

MANHOLE CONSTRUCTION MATERIAL REQUIREMENTS (PER Env-Wq 704.10 NUMERATION)

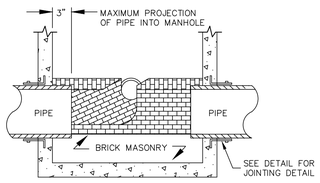
(A) ALL COMPONENT PARTS OF MANHOLE STRUCTURES SHALL HAVE THE STRENGTH, LEAK RESISTANCE, AND SPACE NECESSARY FOR THE INTENDED SERVICE.
(B) MANHOLE STRUCTURES SHALL HAVE A LIFE EXPECTANCY IN EXCESS OF 25 YEARS.
(C) MANHOLE STRUCTURES SHALL BE DESIGNED TO WITHSTAND H-20 LOADING AND SHALL NOT LEAK IN EXCESS OF 1 GPD PER VERTICAL FOOT OF MANHOLE FOR THE LIFE OF THE STRUCTURE.
(D) BARRELS AND CONE SECTIONS SHALL BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE.
(E) BASE SECTIONS SHALL BE MONOLITHIC CONSTRUCTION TO A POINT AT LEAST SIX INCHES ABOVE THE CROWN OF THE INCOMING PIPE.
(F) HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF AN OVERLAPPING TYPE, SEALED FOR WATER TIGHTNESS USING A DOUBLE ROW OF AN ELASTOMERIC OR MASTIC-LIKE SEALANT.
(G) PIPE TO MANHOLE JOINTS SHALL BE AS FOLLOWS:
  (1) ELASTOMERIC, RUBBER SLEEVE WITH WATER TIGHT JOINTS AT THE MANHOLE OPENING AND PIPE SURFACES;
  (2) CAST INTO THE WALL OR SECURED WITH STAINLESS STEEL CLAMPS;
  (3) ELASTOMERIC SEALING RING CAST IN THE MANHOLE OPENING WITH SEAL FORMED ON THE SURFACE OF THE PIPE BY COMPRESSION OF THE RING; AND
  (4) NON-SHRINK GROUTED JOINTS WHERE WATERTIGHT BONDING TO THE MANHOLE AND PIPE CAN BE OBTAINED.
(H) MANHOLE CONE SECTIONS SHALL BE ECCENTRIC IN SHAPE.
(I) ALL PRECAST SECTIONS AND BASES SHALL HAVE THE DATE OF MANUFACTURE AND THE NAME OF THE TRADEMARK OF THE MANUFACTURER IMPRESSED OR INDELIBLY MARKED ON THE INSIDE OF THE WALL.
(J) MANHOLES SHALL HAVE A BRICK PAVED SHELF AND INVERT, CONSTRUCTED TO CONFORM TO THE SIZE OF THE PIPE AND FLOW. AT CHANGES IN DIRECTIONS, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVES SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPE TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELF SHALL CONSIST OF BRICK MASONRY. INVERTS AND SHELVES SHALL BE PLACED AFTER TESTING.
(K) MATERIALS FOR CONSTRUCTION FOR MANHOLES SHALL BE AS FOLLOWS:
  (1) CONCRETE FOR CAST-IN-PLACE OR COMPLETE MANHOLES SHALL CONFORM TO THE REQUIREMENTS FOR CLASS AA CONCRETE IN THE NH DOT'S "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION."
  (2) REINFORCING FOR CAST-IN-PLACE CONCRETE SHALL BE STEEL OR STRUCTURAL FIBERS THAT CONFORM TO THE REQUIREMENTS OF THE NH DOT'S "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION."
  (3) PRECAST CONCRETE BARREL SECTIONS, CONES, AND BASES SHALL CONFORM TO ASTM C478-06;
  (4) THE MANHOLE FRAME AND COVER SHALL PROVIDE A 30-INCH DIAMETER CLEAR OPENING;
  (5) THE MANHOLE COVER SHALL HAVE THE WORD "SEWER" IN 3-INCH LETTERS CAST INTO THE TOP SURFACE;
  (6) THE CASTINGS SHALL BE OF EVEN-GRAINED CAST IRON, SMOOTH, AND FREE FROM SCALE, LUMPS, BLISTERS, SAND HOLES AND DEFECTS;
  (7) CONTACT SURFACES OF COVERS AND FRAMES SHALL BE MACHINED AT THE FOUNDRY TO PREVENT ROCKING OF COVERS IN ANY ORIENTATION;
  (8) CASTINGS SHALL BE EQUAL TO CLASS 30, CONFORMING TO ASTM A48/48M-03;
  (9) BRICK MASONRY FOR SHELF, INVERT AND GRADE ADJUSTMENT SHALL COMPLY WITH ASTM C32-05, CLAY OR SHALE, FOR GRADE SS HARD BRICK;
  (10) MORTAR SHALL BE COMPOSED OF PORTLAND CEMENT AND SAND WITH OR WITHOUT HYDRATED LIME ADDITION;
  (11) PROPORTIONS IN MORTAR OF PARTS BY VOLUME SHALL BE:
    (a) 4.5 PARTS SAND AND 1.5 PARTS CEMENT; OR
    (b) 4.5 PARTS SAND, 1.0 PART CEMENT AND 0.5 PART HYDRATED LIME;
  (12) CEMENT SHALL BE TYPE II PORTLAND CEMENT CONFORMING TO ASTM C150-05;
  (13) HYDRATED LIME SHALL BE TYPE S CONFORMING TO THE ASTM C207-06 "STANDARD SPECIFICATIONS FOR HYDRATED LIME FOR MASONRY PURPOSES";
  (14) SAND SHALL CONSIST OF INERT NATURAL SAND CONFORMING TO THE ASTM C33-03 "STANDARD SPECIFICATIONS FOR CONCRETE, FINE AGGREGATES";
(N) THE MINIMUM INTERNAL DIAMETER OF MANHOLE SHALL BE 48 INCHES.
(S) IN THE FLOW CHANNEL A DROP OF AT LEAST 0.1 FEET SHALL BE PROVIDED BETWEEN THE INGOING AND OUTGOING SEWERS ON ALL MANHOLES.

MANHOLE TESTING REQUIREMENTS (Env-Wq 704.10)

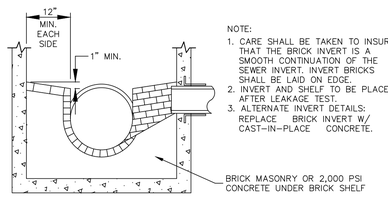
(X) MANHOLES SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST.*
(Y) THE MANHOLE VACUUM TEST SHALL CONFORM TO THE FOLLOWING:
  (1) THE INITIAL VACUUM GAUGE TEST PRESSURE SHALL BE 10 INCHES Hg: AND
  (2) THE MINIMUM ACCEPTABLE TEST HOLD TIME FOR A 1-INCH Hg PRESSURE DROP TO 9 INCHES Hg SHALL BE:
    (A) NOT LESS THAN 2 MINUTES FOR MANHOLES LESS THAN 10 FEET DEEP;
    (B) NOT LESS THAN 2.5 MINUTES FOR MANHOLES 10 TO 15 FEET DEEP
(Z) THE MANHOLE SHALL BE REPAIRED AND RETESTED IF THE TEST HOLD TIMES FAIL TO ACHIEVE THE ACCEPTANCE LIMITS SPECIFIED IN (Y) ABOVE.
*MANHOLE TESTING MUST BE CONDUCTED PRIOR TO INVERT AND SHELF PLACEMENT.



PLAN



SECTION A-A

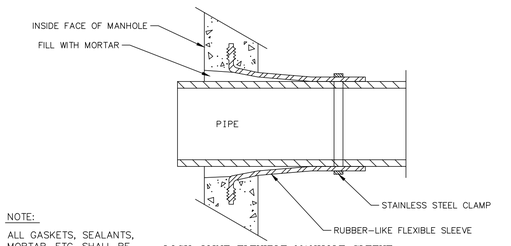


NOTE:
1. CARE SHALL BE TAKEN TO INSURE THAT THE BRICK INVERT IS A SMOOTH CONTINUATION OF THE SEWER INVERT. INVERT BRICKS SHALL BE LAID ON EDGE.
2. INVERT AND SHELF TO BE PLACED AFTER LEAKAGE TEST.
3. ALTERNATE INVERT DETAILS: REPLACE BRICK INVERT W/ CAST-IN-PLACE CONCRETE.

SECTION B-B

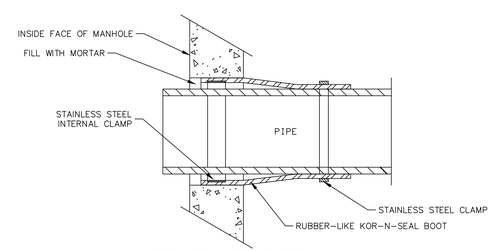
TYPICAL SEWER MANHOLE INVERT

N.T.S.



NOTE:
ALL GASKETS, SEALANTS, MORTAR, ETC. SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS

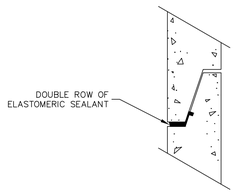
LOCK-JOINT FLEXIBLE MANHOLE SLEEVE
(OR ACCEPTABLE SUBSTITUTE)



KOR-N-SEAL JOINT SLEEVE
(OR ACCEPTABLE SUBSTITUTE)

DETAIL "A" - PIPE TO MANHOLE JOINTS
N.T.S

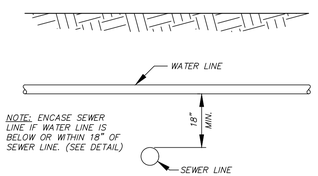
NOTES:
1. USE LOCK-JOINT FLEXIBLE MANHOLE SLEEVE FOR FACTORY INSTALLED APPLICATIONS AND KOR-N-SEAL SLEEVE FOR IN FIELD INSTALLATIONS.



ELASTOMERIC SEALANT

NOTE:
ALL GASKETS AND SEALANTS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS' WRITTEN INSTRUCTIONS

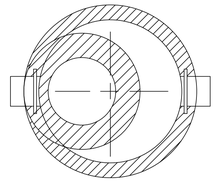
DETAIL "B" - HORIZONTAL JOINTS
N.T.S



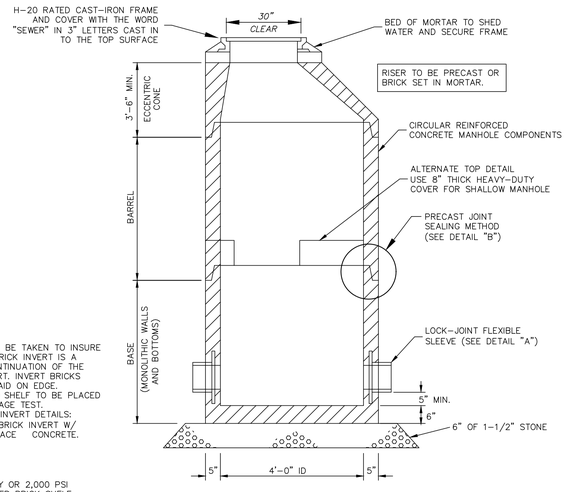
NOTE: ENCASE SEWER LINE IF WATER LINE IS BELOW OR WITHIN 18" OF SEWER LINE. (SEE DETAIL)

WATER/SEWER CROSSING

N.T.S.



PLAN VIEW



SECTION VIEW

STANDARD MANHOLE

N.T.S.

NOTES:
1. SMH #1 IS A STANDARD MANHOLE WITH ECCENTRIC CONE TOP.
2. THERE SHALL BE NO STEPS INSTALLED WITHIN THE MANHOLE.

SEWER NOTES:

PER THE REQUIREMENTS OF "STANDARDS OF DESIGN AND CONSTRUCTION FOR SEWERAGE AND WASTEWATER TREATMENT FACILITIES."

GRAVITY SEWER CONSTRUCTION MATERIALS (Env-Wq 704.05)

(A) PLASTIC GRAVITY SEWER PIPE AND FITTINGS SHALL BE 8 INCH PVC SDR 35 SEWER PIPE (EXCEPT SEWER SERVICE SHALL BE 6" SRD 35 PVC) AND SHALL COMPLY WITH ASTM D3034-04e.
(B) PLASTIC SEWER PIPE SHALL HAVE A PIPE STIFFNESS RATING OF AT LEAST 46 PSI AT 5 PERCENT PIPE DIAMETER DEFLECTION, AS MEASURED IN ACCORDANCE WITH ASTM D2412-02 DURING MANUFACTURE.
(C) JOINT SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL CONFORMING TO ASTM D3212-96(a)(2003)e1 AND SHALL BE PUSH-ON, BELL AND SPIGOT TYPE.

GRAVITY SEWER PIPE TESTING REQUIREMENTS (Env-Wq 704.07)

(A) ALL NEW SEWERS SHALL BE TESTED FOR WATER TIGHTNESS BY THE USE OF LOW-PRESSURE AIR TESTS.
(B) LOW-PRESSURE AIR TESTING SHALL BE IN CONFORMANCE WITH:
  (1) ASTM F1417-92(2005) "STANDARD TEST METHOD FOR INSTALLATION ACCEPTANCE OF PLASTIC GRAVITY SEWER LINES USING LOW-PRESSURE AIR"; OR
  (2) UNI-BELL PVC PIPE ASSOCIATION UNI-B-6, "LOW-PRESSURE AIR TESTING OF INSTALLED SEWER PIPE" (1998).
(C) ALL NEW GRAVITY SEWERS SHALL BE CLEANED AND VISUALLY INSPECTED AND SHALL BE TRUE TO LINE AND GRADE FOLLOWING INSTALLATION AND PRIOR TO USE.
(D) ALL PLASTIC SEWER PIPE SHALL BE DEFLECTION TESTED NOT LESS THAN 30 DAYS FOLLOWING INSTALLATION.
(E) THE MAXIMUM ALLOWABLE DEFLECTION OF FLEXIBLE SEWER PIPE SHALL BE 7½ PERCENT OF AVERAGE INSIDE DIAMETER.

PROTECTION OF WATER SUPPLIES (Env-Wq 704.12)

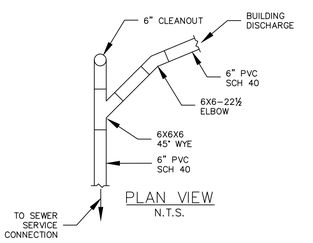
(A) SEWERS SHALL BE LOCATED AT LEAST 10 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATER MAIN.
(B) A DEVIATION FROM THE SEPARATION REQUIREMENTS OF (A) ABOVE SHALL BE ALLOWED WHERE NECESSARY TO AVOID CONFLICT WITH SUBSURFACE STRUCTURES, UTILITY CHAMBERS, AND BUILDING FOUNDATIONS, PROVIDED THAT THE SEWER IS CONSTRUCTED IN ACCORDANCE WITH THE FORCE MAIN CONSTRUCTION REQUIREMENTS SPECIFIED IN Env-Wq 704.06.
(C) WHENEVER SEWERS MUST CROSS WATER MAINS, THE SEWER SHALL BE CONSTRUCTED AS FOLLOWS:
  (1) VERTICAL SEPARATION OF THE SEWER AND WATER MAIN SHALL BE NOT LESS THAN 18 INCHES, WITH WATER ABOVE SEWER; AND
  (2) SEWER PIPE JOINTS SHALL BE LOCATED AT LEAST 6 FEET HORIZONTALLY FROM THE WATER MAIN.

FORCE MAIN AND LOW PRESSURE SEWER CONSTRUCTION MATERIALS (PER Env-Wq 704.06 NUMERATION)

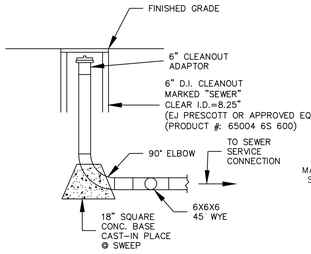
THIS SECTION REQUIRED TO MEET REQUIREMENTS OF Env-Wq 704.12 (d):
(A) FORCE MAINS SHALL BE CONSTRUCTED OF SDR 21 PVC MATERIAL.
(B) FORCE MAINS SHALL BE TREATED AS GRAVITY SEWERS FOR PURPOSES OF FOUNDATION BEDDING AND BACKFILL REQUIREMENTS.
(C) PVC PIPE USED FOR FORCE MAINS SHALL CONFORM TO ASTM D2241-05 OR ASTM D1785-05.

FORCE MAIN AND LOW PRESSURE SEWER TESTING (PER Env-Wq 704.08 NUMERATION)

FORCE MAINS SHALL BE TESTED IN ACCORDANCE WITH SECTION 4 OF AWWA C600-05 "INSTALLATION OF CAST IRON WATER MAINS AND THEIR APPURTENANCES", AT A PRESSURE EQUAL TO THE GREATER OF 150 PERCENT OF THE DESIGN OPERATING TOTAL DYNAMIC HEAD OR AT LEAST 100 PSI.

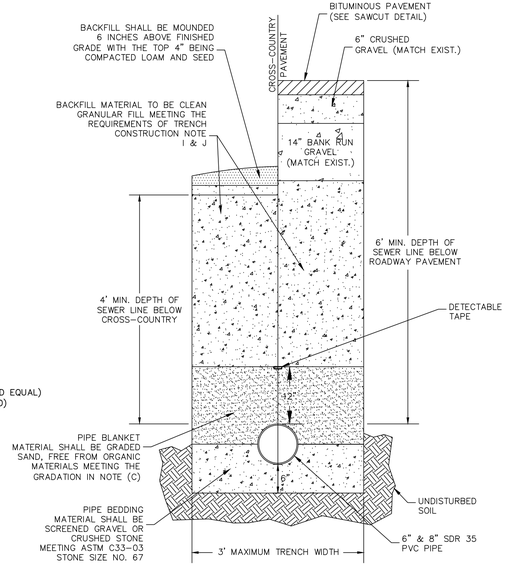


PLAN VIEW
N.T.S.

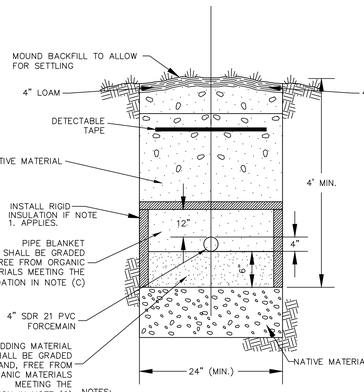


ELEVATION VIEW
N.T.S.

CLEANOUT DETAIL



STANDARD SEWER PIPE TRENCH



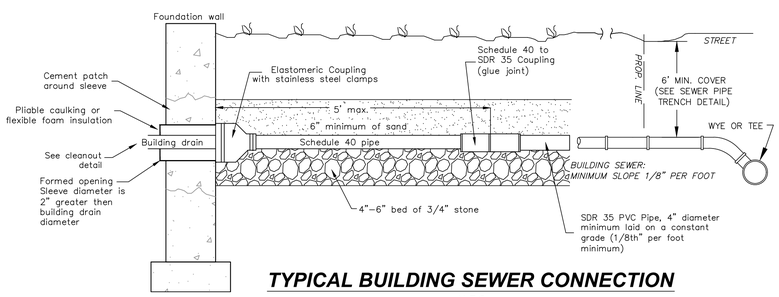
NOTES:
1. USE RIGID INSULATION AS SHOWN IF PIPE COVER IS LESS THAN 4'.

SEWER FORCEMAIN TRENCH

N.T.S

TRENCH CONSTRUCTION (PER Env-Wq 704.09 NUMERATION)

(A) TRENCH DIMENSIONS SHALL BE AS FOLLOWS:
  (1) FOR SEWER PIPE LESS THAN 15" IN DIAMETER, THE ALLOWABLE TRENCH WIDTH AT A PLANE 12 INCHES ABOVE THE PIPE SHALL BE NO MORE THAN 36".
(B) PIPE TRENCH BEDDING MATERIAL AND FILL MATERIAL FOR EXCAVATION BELOW GRADE SHALL BE SCREENED GRAVEL OR CRUSHED STONE TO ASTM C33-03 STONE SIZE NO. 67.
(C) THE PIPE SAND BLANKET MATERIAL SHALL BE GRADED SAND, FREE FROM ORGANIC MATERIALS, GRADED SUCH THAT 100% PASSES THROUGH A 1/2 INCH SIEVE AND A MAXIMUM OF 15% PASSES THROUGH A #200 SIEVE.
(E) PIPE BEDDING MATERIAL SHALL EXTEND FROM A HORIZONTAL PLANE THROUGH THE PIPE AXIS TO 6 INCHES BELOW THE BOTTOM OF THE OUTSIDE SURFACE OF THE PIPE.
(F) PIPE SAND MATERIAL SHALL COVER THE PIPE A MINIMUM OF 12 INCHES ABOVE THE CROWN OF THE OUTSIDE SURFACE.
(G) COMPACTION SHALL BE IN 12 INCH LAYERS FOR BEDDING AND BLANKET MATERIALS.
(H) BACKFILL MATERIALS SHALL BE COMPACTED IN 3-FOOT LAYERS TO THE GROUND SURFACE EXCEPT FOR ROAD CONSTRUCTION (OR OTHER PAVED AREAS) WHERE THE FINAL 3 FEET SHALL BE COMPACTED IN 12-INCH LAYERS TO THE ROAD BASE SURFACE.
(I) TRENCH BACKFILL MATERIAL IN ROADWAY LOCATIONS SHALL BE NATURAL MATERIALS EXCAVATED FROM THE TRENCH DURING CONSTRUCTION, EXCLUDING: DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, ALL WET OR SOFT MUCK, PEAT OR CLAY, ALL EXCAVATED LEDGE MATERIAL, AND ALL ROCKS OVER SIX INCHES IN LARGEST DIMENSION, OR ANY MATERIAL WHICH AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION.
(J) TRENCH BACKFILL AT CROSS-COUNTRY LOCATIONS SHALL BE AS DESCRIBED IN (I) ABOVE, EXCEPT THAT TOP SOIL, LOAM, MUCK OR PEAT, MAY BE USED PROVIDED THE COMPLETED CONSTRUCTION WILL BE STABLE, AND PROVIDED THAT ACCESS TO THE SEWER FOR MAINTENANCE AND RECONSTRUCTION IS PRESERVED.
(K) BACKFILL SHALL BE MOUNDED 6 INCHES ABOVE ORIGINAL GROUND AT CROSS-COUNTRY LOCATIONS.
(L) BASE COURSE FOR TRENCH REPAIR SHALL MEET THE REQUIREMENTS OF DIVISION 300 OF THE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" OF THE NH DOT.
(O) PRECAUTIONS SHALL BE TAKEN TO AVOID GROUNDWATER POOLING AT THE SURFACE BY PROVIDING DRAINAGE TO A SUITABLE OUTLET AT CATCH BASINS OR RUNOFF SWALES.



TYPICAL BUILDING SEWER CONNECTION

N.T.S

FINAL APPROVAL BY DURHAM PLANNING BOARD.
CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
CERTIFIED _____
DATE _____

NO.	REVISIONS	DATE	INT.
	INITIAL SUBMISSION TO THE DURHAM PLANNING BOARD	6/4/20	MCS

SEAL: MICHAEL J. SEVERT No. 8387 CERTIFIED NEW HAMPSHIRE PROFESSIONAL ENGINEER

DATE: 6/4/20
SCALE: AS SHOWN
DESIGNED BY: MJS
DRAWN BY: BOB
APPROVED BY: MJS
DWG FILE: 19-070 DetA.dwg

SITE CONSTRUCTION DETAILS
prepared for
HARMONY PLACE
TAX MAP 11, LOT 27-0
40 BRIGGS WAY, DURHAM NH

MJS ENGINEERING, P.C.
CIVIL • STRUCTURAL • ENVIRONMENTAL
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D103

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14649 HIGHWAY 41 NORTH
EVANSVILLE, IN 47725
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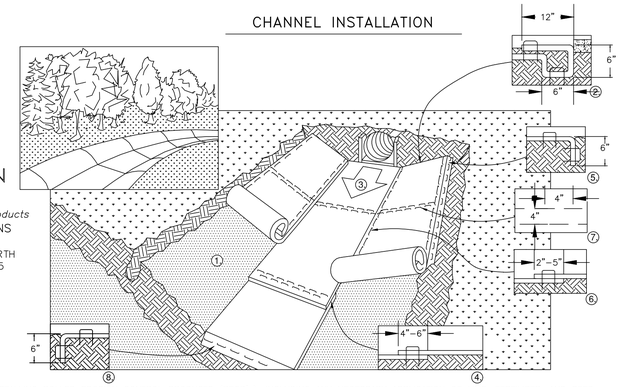
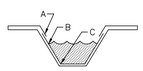
CHANNEL INSTALLATION



1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP's), 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 CHANNEL BY ANCHORING THE RECP'S IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH WITH APPROXIMATELY 12" (30 CM) OF RECP's EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP's WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30 CM) PORTION OF RECP's BACK OVER SEED AND COMPACTED SOIL. SECURE RECP's OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30 CM) ACROSS THE WIDTH OF THE RECP's.
3. ROLL CENTER RECP's IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. RECP's WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP's MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM™, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
4. PLACE CONSECUTIVE RECP's END OVER END (SHINGLE STYLE) WITH A 4" - 6" (10 CM -15 CM) OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10 CM) APART AND 4" (10 CM) ON CENTER TO SECURE RECP's.
5. FULL LENGTH EDGE OF RECP's AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
6. ADJACENT RECP's MUST BE OVERLAPPED APPROXIMATELY 2" - 5" (5 CM -12.5 CM) (DEPENDING ON RECP's TYPE) AND STAPLED.
7. IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT (9 M - 12 M) INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10 CM) APART AND 4" (10 CM) ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
8. THE TERMINAL END OF THE RECP's MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30 CM) APART IN A 6" (15 CM) DEEP X 6" (15 CM) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.

* IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 CM) MAY BE NECESSARY TO PROPERLY ANCHOR THE RECP's.



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

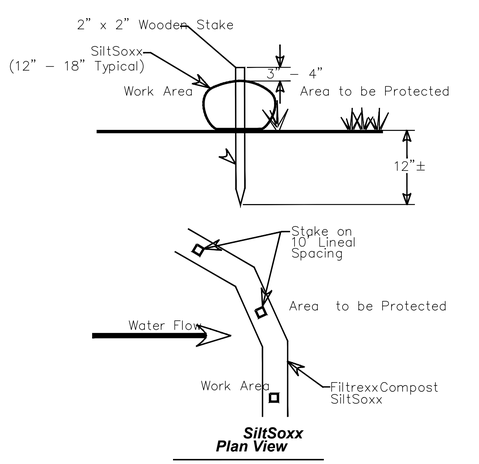
NOTE:
* HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.

** IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 cm) MAY BE REQUIRED.

TYPICAL TURF REINFORCEMENT MATTING DETAIL

N.T.S

NOTES:
1. FOR SALES CONTACT:
EJ PRESCOTT, INC.
210 SHEEP DAVIS RD.
CONCORD, NH
603-224-9545

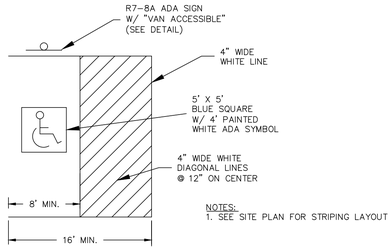


SiltSoxx Plan View

SILTSOXX DETAIL

N.T.S.

Notes:
1. All material to meet Filtrexx specifications.
2. Compost material to be dispersed on site up slope from protected area.



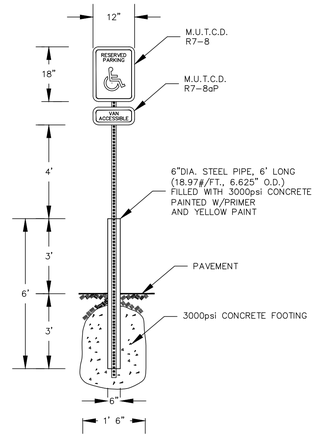
NOTES:
1. SEE SITE PLAN FOR STRIPING LAYOUT

ADA STRIPING AND SIGN DETAIL

N.T.S

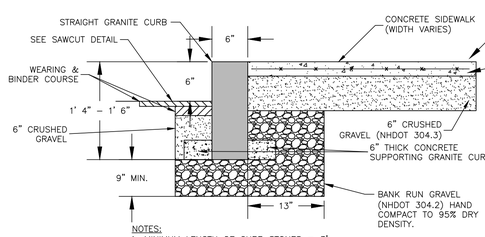
PAVEMENT MARKINGS:

1. STRIPE PARKING AREAS AND DRIVES AS SHOWN, INCLUDING PARKING SPACES, HANDICAP SYMBOLS, AND PAINTED ISLANDS. ALL TRAFFIC PAINT SHALL MEET THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION (NHDOT) AND AASHTO M248 TYPE "F". MEDIAN ISLANDS AND CENTERLINES TO BE CONSTRUCTED USING YELLOW TRAFFIC PAINT.
2. ALL PAVEMENT MARKINGS AND SIGNS SHALL CONFORM TO THE LATEST EDITIONS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", THE "STANDARD ALPHABETS FOR HIGHWAY SIGN AND PAVEMENT MARKINGS", AND THE AMERICANS WITH DISABILITIES ACT REQUIREMENTS.
3. PAINTED ISLANDS SHALL BE 4 INCH WIDE DIAGONAL LINES SPACED AT 3 FT. O.C. BORDERED BY 4 INCH WIDE LINES.



TYPICAL SIGN DETAIL

N.T.S.



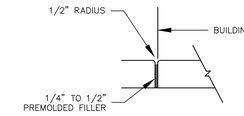
NOTES:
1. MINIMUM LENGTH OF CURB STONES = 3'
2. MAXIMUM LENGTH OF CURB STONES = 10'
3. ADJOINING STONES SHALL HAVE THE SAME OR APPROXIMATELY THE SAME LENGTH.

TYPICAL SECTION

N.T.S

CONCRETE SIDEWALK WITH VERTICAL GRANITE CURB

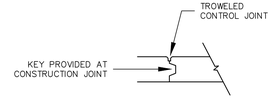
N.T.S



SECTION A: EXPANSION JOINT

N.T.S

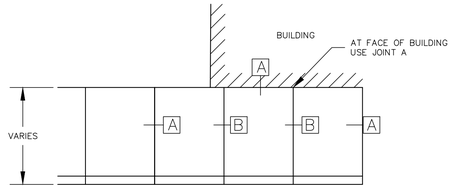
1. EXPANSION JOINTS SHALL BE LOCATED AT 25' INTERVALS.



SECTION B: CONSTRUCTION CONTROL JOINT

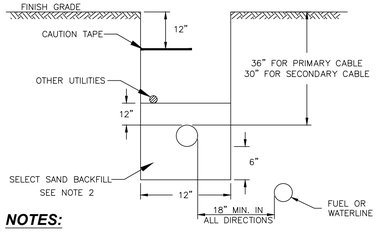
N.T.S

1. CONTROL JOINTS SHALL BE SPACED AT 5' INTERVALS.



PLAN VIEW

N.T.S

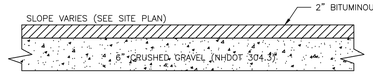


NOTES:

1. CONSTRUCTION TO BE IN ACCORDANCE WITH PSNH CONSTRUCTION STANDARDS FOR NEW ELECTRICAL SERVICE WORK BY CONTRACTORS, MOST RECENT EDITION.
2. SELECT SAND BACKFILL SHALL CONSIST OF A FINE GRANULAR MATERIAL OF WHICH 100% SHALL PASS THROUGH A 1/4" SIEVE. EXCEPT NATURALLY OCCURING SMOOTH ROUND PEBBLES NO GREATER THAN 3/8" IN DIAMETER ARE PERMITTED AS LONG AS THEIR TOTAL VOLUME PER CUBIC FOOT OF SAND DOES NOT EXCEED 1%. THE SAND SHALL BE COMPLETELY FREE OF FROZEN LUMPS, ROCKS, STONES, DEBRIS AND RUBBISH. BACKFILL SHALL BE THOROUGHLY COMPACTED IN 6" LIFTS.
3. CONDUIT SIZES TO BE 5" 3-PHASE PRIMARY AND 4" 3-PHASE SECONDARY. ALL CONDUIT SIZES TO BE VERIFIED BY PSNH.
4. ALL CONDUIT INSTALLATIONS MUST CONFORM TO THE CURRENT EDITION OF THE NATIONAL ELECTRIC SAFETY CODE, STATE AND LOCAL CODES AND ORDINANCES, AND WHERE APPLICABLE THE NATIONAL ELECTRIC CODE.

TELEPHONE & ELECTRIC TRENCH

N.T.S



TYPICAL BITUMINOUS PATH SECTION

NOTES:
1. LOAM SHALL BE REMOVED TO A MINIMUM DEPTH OF 8" PRIOR TO PLACING SELECT MATERIALS
2. THE WIDTHS OF ALL BITUMINOUS PATHS SHALL BE 5'

SLOPE VARIES (SEE SITE PLAN)

FINAL APPROVAL BY DURHAM PLANNING BOARD.
CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
CERTIFIED _____
DATE _____

NO.	DATE	REVISIONS
1	6/4/20	INITIAL SUBMISSION TO THE DURHAM PLANNING BOARD

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