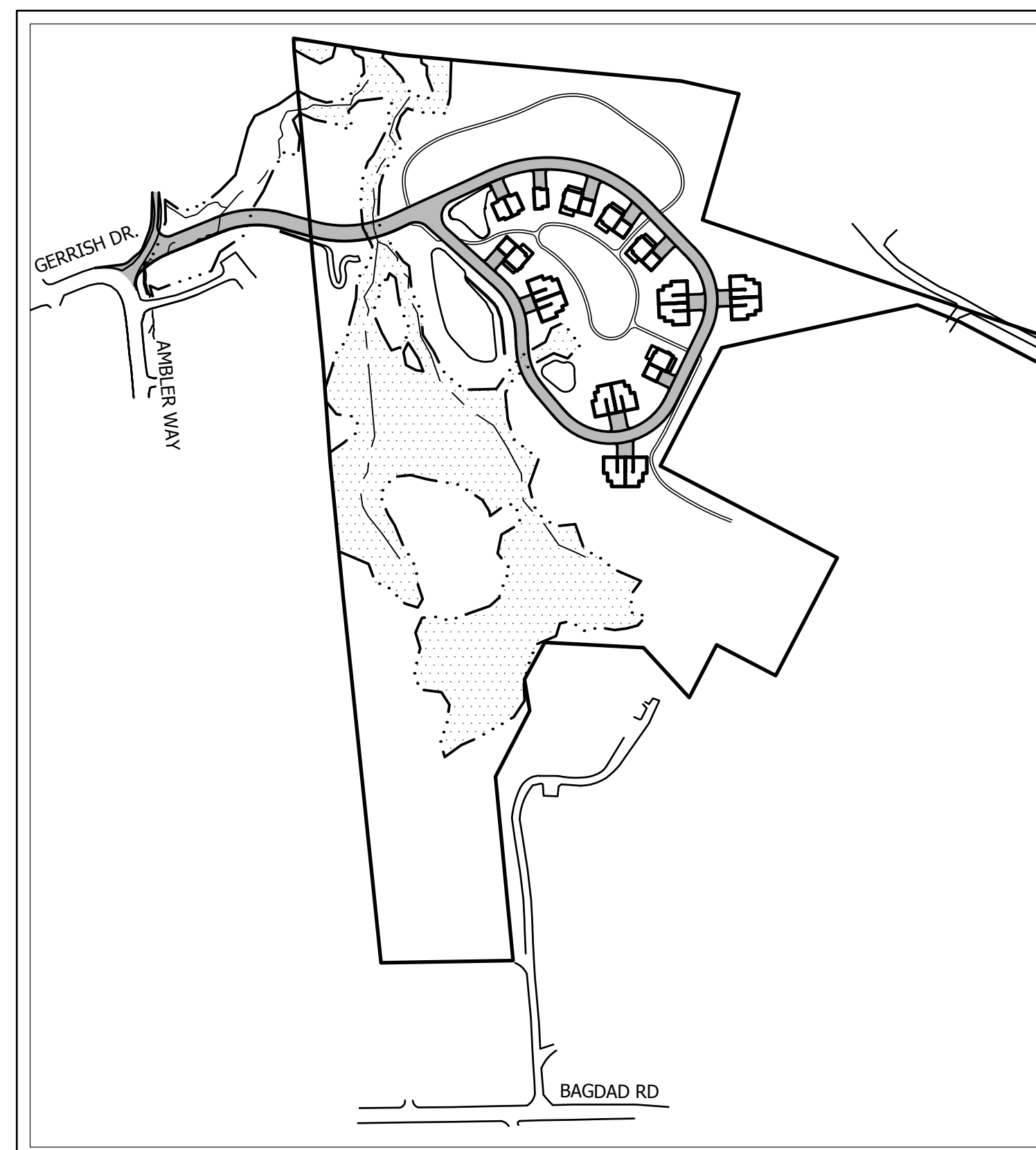


MICHAEL & MARTI MULHERN

THE CROSSINGS SUBDIVISION

DURHAM, NH & MADBURY, NH

12 AUGUST 2021



OWNER:

MICHAEL & MARTI MULHERN
91 BAGDAD ROAD
DURHAM

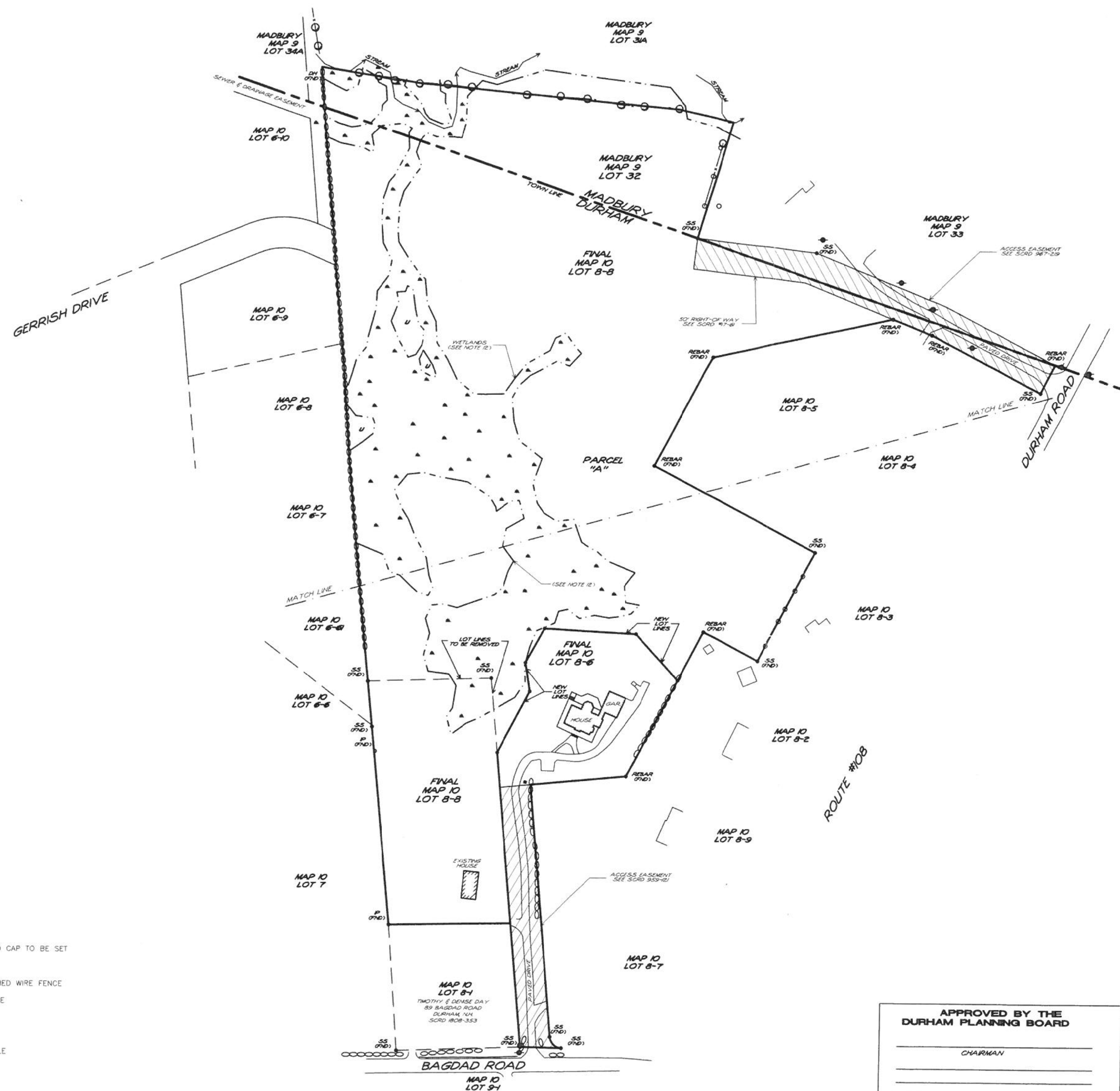
ENGINEER:

horizons
Engineering

5 RAILROAD ST
NEWMARKET, NH 03857
(603) 444-4111

N

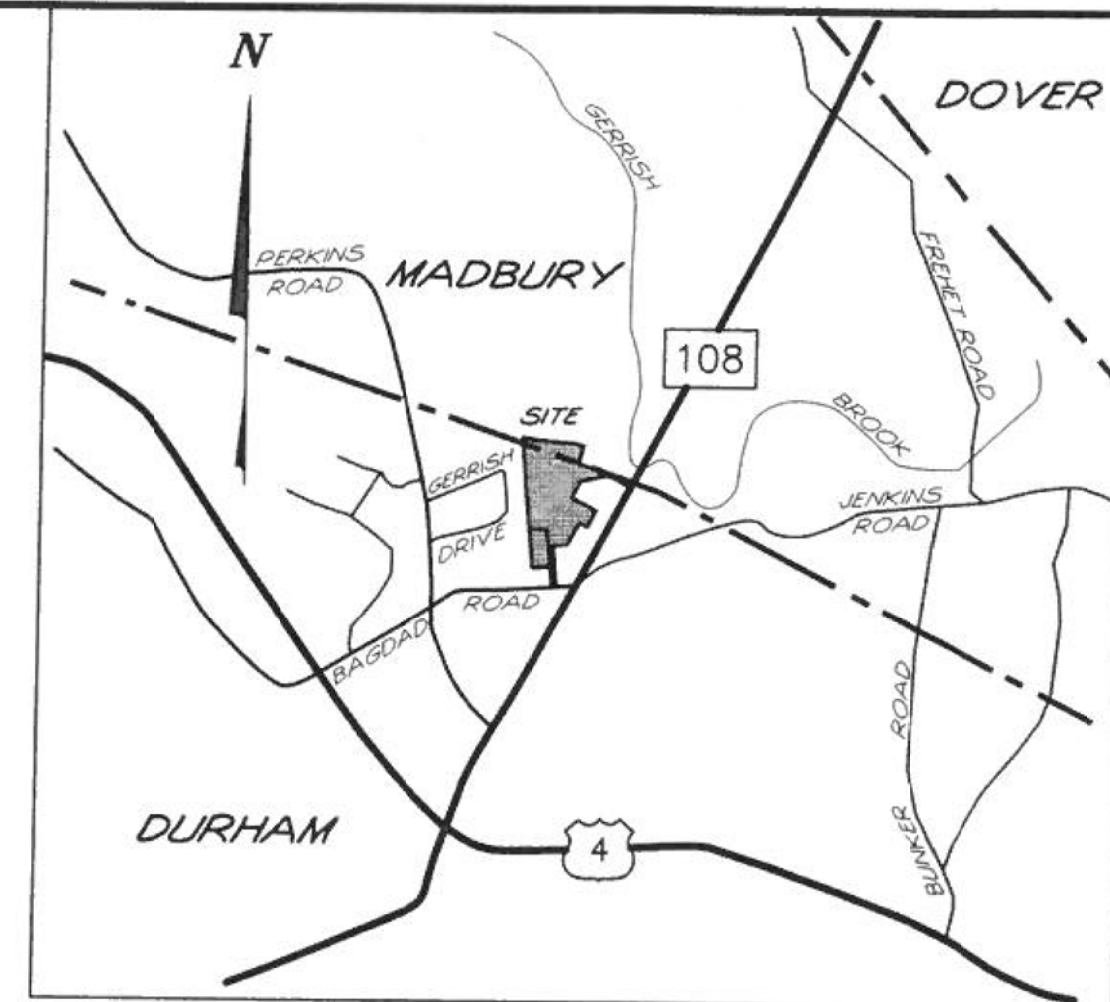
TRITECH
ENGINEERING CORPORATION



- LEGEND**
- REBAR WITH ID CAP TO BE SET
 - UTILITY POLE
 - X — REMNANT BARBED WIRE FENCE
 - TREE WITH WIRE
 - FENCE POST
 - STONEWALL
 - ⊙ SEWER MANHOLE
 - ⊠ MAILBOX
 - ☆ LIGHT POLE
 - CATCH BASIN
 - - - WETLAND BOUNDARY (SEE NOTE 12)
 - ~~~~ TREELINE

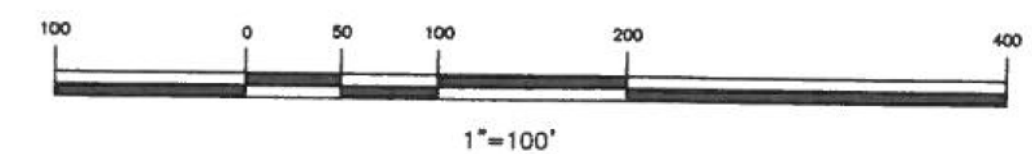
APPROVED BY THE
DURHAM PLANNING BOARD

CHAIRMAN



NOTES

- 1.) INTENT: TO ADJUST THE LOT LINES BETWEEN DURHAM TAX MAP 10 LOT 8-6 AND MAP 10 LOT 8-8, BY TRANSFERRING PARCEL "A" (611,955 SQ.FT.) FROM MAP 10 LOT 8-6 TO MAP 10 LOT 8-8.
- 2.) CURRENT OWNER OF RECORD: MAP 10 LOT 8-6 MICHAEL & MARTHA MULHERN 93 BAGDAD ROAD DURHAM, NH
MAP 10 LOT 8-8 MICHAEL & MARTHA MULHERN 93 BAGDAD ROAD DURHAM, NH
- 3.) SUBJECT PARCELS ARE LOCATED IN THE TOWN OF DURHAM COUNTY OF STRAFFORD AND THE STATE OF NEW HAMPSHIRE.
- 4.) TOTAL LOT AREA: MAP 10 LOT 8-6 ORIGINAL 686,726 SQ.FT. - 15.765 ACRES
PARCEL "A" - 611,955 SQ.FT. - 14.049 ACRES
FINAL 74,771 SQ.FT. - 1.717 ACRES
MAP 10 LOT 8-8 ORIGINAL 79,188 SQ.FT. - 1.818 ACRES
PARCEL "A" - 611,955 SQ.FT. - 14.049 ACRES
FINAL 891,144 SQ.FT. - 20.366 ACRES
- 5.) TAX MAP 10 LOTS 8-6 & 8-8.
- 6.) PROJECT DEED REFERENCE: MAP 10 LOT 8-6 BOOK 3178 PAGE 99
MAP 10 LOT 8-8 BOOK 4095 PAGE 129
- 7.) DURHAM RB - RESIDENCE B MIN. LOT SIZE: 40,000 SQ.FT. MIN. FRONTAGE: 150 FT. MIN. SETBACKS: FRONT: 30 FT. SIDE: 20 FT. REAR: 30 FT. MAX. BUILDING HEIGHT 30' OVERLAY DISTRICTS: WETLAND CONSERVATION
- 8.) PROPERTY LINE INFORMATION HAS BEEN OBTAINED FROM A SURVEY PERFORMED BY TRITECH ENGINEERING CORPORATION IN JUNE, 2017 WITH AN ERROR NOT GREATER THAN 1 IN 10,000.
- 9.) BASIS OF BEARING IS: NAD 83.
- 10.) SUBJECT PARCEL IS NOT LOCATED WITHIN A FEDERALLY DESIGNATED FLOOD HAZARD AREA. (COMMUNITY PANEL NUMBER 33017C0318E, EFFECTIVE DATE: 9-30-2015).
- 11.) IN JUNE, 2017, MICHAEL MARIANO, STATE OF NEW HAMPSHIRE WETLAND SCIENTIST #183, CONDUCTED AN ON SITE DELINEATION OF THE SUBJECT PARCEL WETLANDS UNDER STATE AND FEDERAL JURISDICTION WERE IDENTIFIED BASED ON THE "CORPS OF ENGINEERS WETLANDS DELINEATION MANUAL (DEPT. OF THE ARMY 1987). EXCEPT IN SPECIAL CIRCUMSTANCES THESE CRITERIA REQUIRE THAT INDICATORS OF WETLANDS SOILS, VEGETATION, AND HYDROLOGY ALL BE PRESENT FOR AN AREA TO BE CONSIDERED A WETLAND.
- 12.) PROJECT PLAN REFERENCE:
MAP OF LOTS PINE RIDGE FOR NELSON BOLSTRIDGE IN MADBURY, N.H. BRUCE L. POHOPEK JULY 1, 1993 SCRD 64-13
SUBDIVISION OF LAND FOR FRANCIS D. & DOROTHY L. MANOCK 121 DOVER ROAD DURHAM, NEW HAMPSHIRE KEM LAND SURVEY, INC APRIL 1997 SCRD 49-99
PLAN OF LOT LINE ADJUSTMENTS FOR FRANCIS D. & DOROTHY L. MANOCK 121 DOVER ROAD DURHAM, NEW HAMPSHIRE KEM LAND SURVEY, INC APRIL 1997 SCRD 49-99
PLAN OF LAND FOR RICHARD & SALLY TAPPAN BAGDAD ROAD & DOVER ROAD DURHAM, NEW HAMPSHIRE MOORE & STAPLES JAN. 1986 SCRD 28-90
SUBDIVISION PLAN OF LAND PREPARED FOR SOPHIE LANE, LLC. LOCATED AT BAGDAD ROAD & CANNEY ROAD DURHAM, N.H. ATLANTIC SURVEY JULY 2008 SCRD 96-94
LOT LINE ADJUSTMENT PLAN MANOCK / BONIN DURHAM, NEW HAMPSHIRE WALTER ZWEARCAN MAY 1990 SCRD 32-148
- 13.) NO ENCROACHMENT WILL RESULT FROM THIS LOT LINE ADJUSTMENT.
- 14.) FOR MORE INFORMATION ABOUT THIS LOT LINE ADJUSTMENT, CONTACT THE TOWN OF DURHAM PLANNING DEPARTMENT.
- 15.) LOTS ARE SERVICED BY PRIVATE INDIVIDUAL SEWAGE DISPOSAL SYSTEMS AND WELLS.



TRITECH
ENGINEERING CORPORATION

755 CENTRAL AVENUE
DOVER, NEW HAMPSHIRE 03820
TELEPHONE 603 742 8007
FAX 603 742 8630

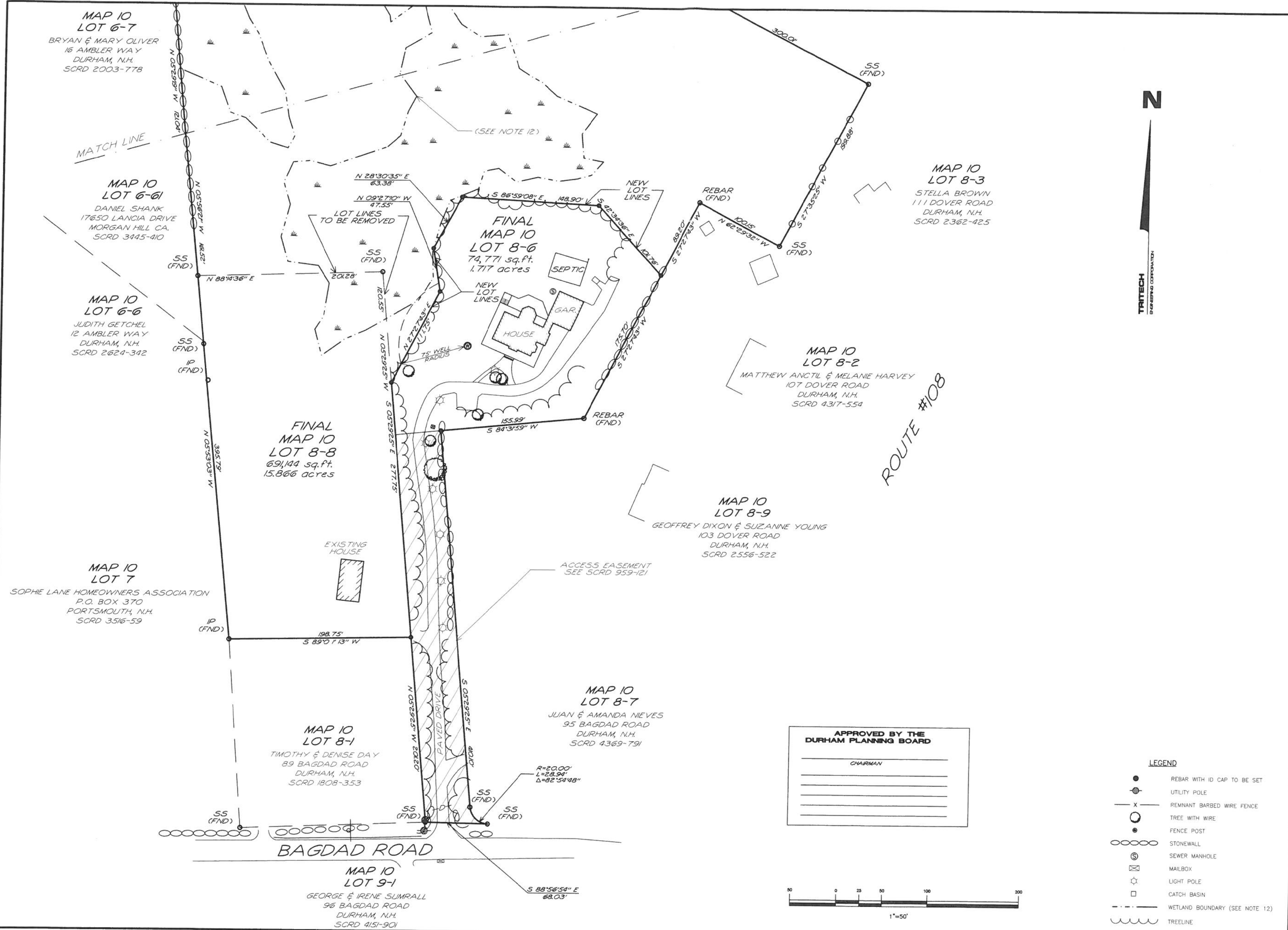
REVISIONS
DATE: DESCRIPTION:

LOT LINE ADJUSTMENT PLAN
MICHAEL & MARTHA MULHERN
91 & 93 BAGDAD ROAD
AND DURHAM ROAD - ROUTE 108
DURHAM, NEW HAMPSHIRE

JUNE 6, 2018
JOB No. 17105
SCALE: 1" = 100'

SHEET No.

8-1



MAP 10
LOT 6-7
BRYAN & MARY OLIVER
16 AMBLER WAY
DURHAM, N.H.
SCRD 2003-778

MAP 10
LOT 6-6I
DANIEL SHANK
17650 LANCIA DRIVE
MORGAN HILL CA.
SCRD 3445-410

MAP 10
LOT 6-6
JUDITH GETCHEL
12 AMBLER WAY
DURHAM, N.H.
SCRD 2624-342

MAP 10
LOT 7
SOPHIE LANE HOMEOWNERS ASSOCIATION
P.O. BOX 370
PORTSMOUTH, N.H.
SCRD 3516-59

FINAL
MAP 10
LOT 8-8
69,144 sq.ft.
15.866 acres

MAP 10
LOT 8-1
TIMOTHY & DENISE DAY
89 BAGDAD ROAD
DURHAM, N.H.
SCRD 1808-353

MAP 10
LOT 9-1
GEORGE & IRENE SUMRALL
96 BAGDAD ROAD
DURHAM, N.H.
SCRD 4151-901

FINAL
MAP 10
LOT 8-6
74,771 sq.ft.
1.717 acres

MAP 10
LOT 8-7
JULIAN & AMANDA NIEVES
95 BAGDAD ROAD
DURHAM, N.H.
SCRD 4369-791

MAP 10
LOT 8-9
GEOFFREY DIXON & SUZANNE YOUNG
103 DOVER ROAD
DURHAM, N.H.
SCRD 2556-522

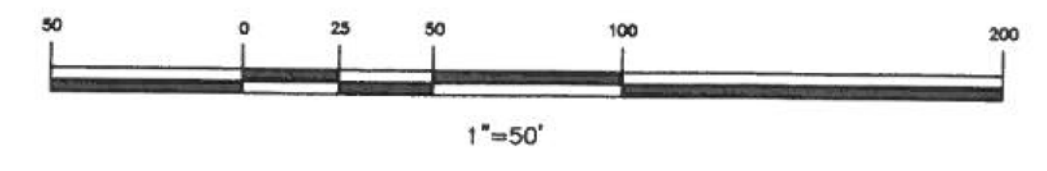
APPROVED BY THE
DURHAM PLANNING BOARD

CHAIRMAN

MAP 10
LOT 8-3
STELLA BROWN
111 DOVER ROAD
DURHAM, N.H.
SCRD 2362-425

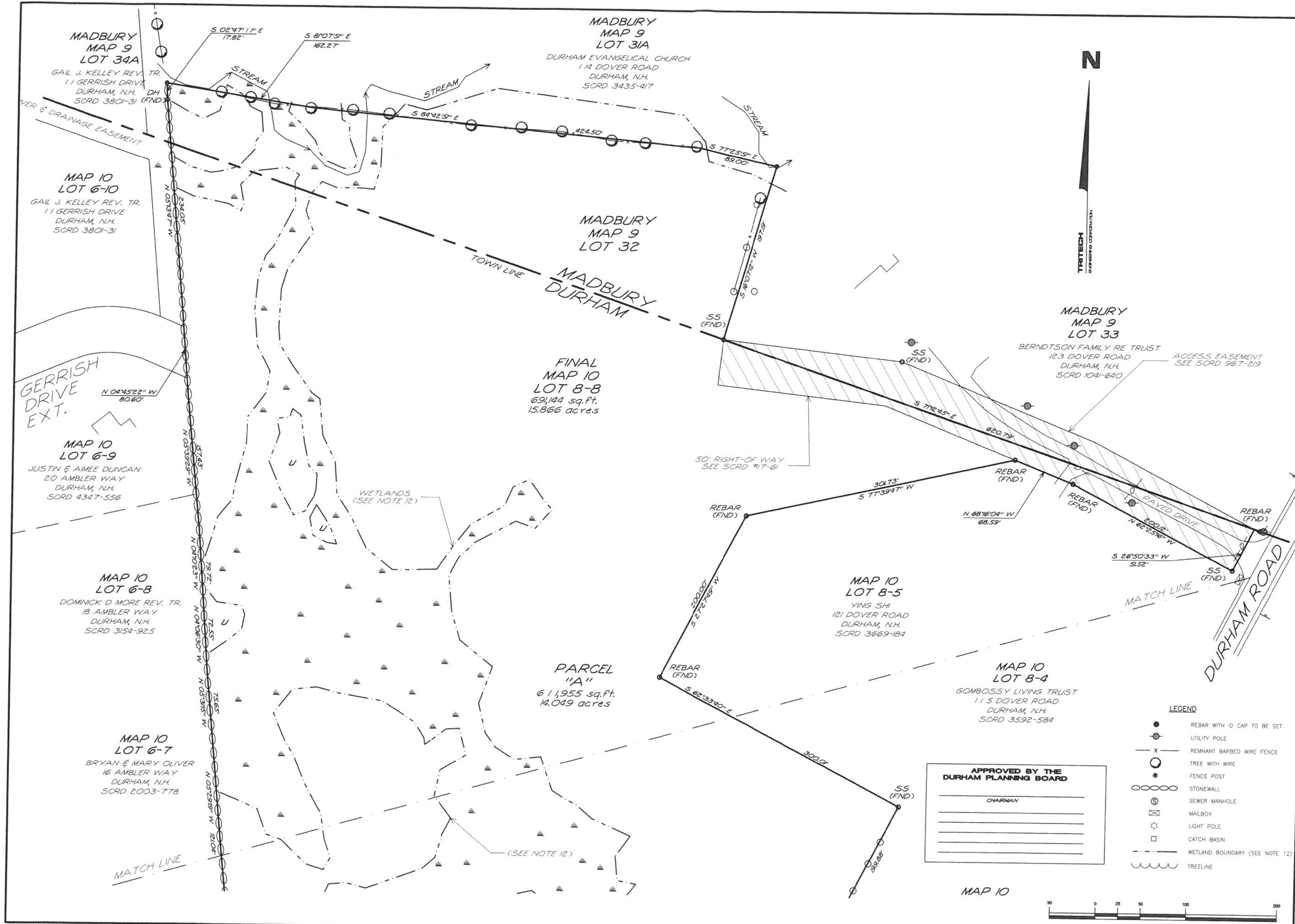
MAP 10
LOT 8-2
MATTHEW ANCTIL & MELANIE HARVEY
107 DOVER ROAD
DURHAM, N.H.
SCRD 4317-554

ROUTE #108



- LEGEND**
- REBAR WITH ID CAP TO BE SET
 - UTILITY POLE
 - x REMNANT BARBED WIRE FENCE
 - TREE WITH WIRE
 - FENCE POST
 - STONEWALL
 - ⊙ SEWER MANHOLE
 - ⊠ MAILBOX
 - ☆ LIGHT POLE
 - CATCH BASIN
 - - - WETLAND BOUNDARY (SEE NOTE 12)
 - ~~~~ TREELINE

TRITECH ENGINEERING CORPORATION		785 CENTRAL AVENUE DOVER, NEW HAMPSHIRE 03820 TELEPHONE 603 742 8107 FAX 603 742 3830	
REVISIONS	DATE:		
		<p>LOT LINE ADJUSTMENT PLAN</p> <p>MICHAEL & MARTHA MULHERN</p> <p>91 & 93 BAGDAD ROAD AND DURHAM ROAD - ROUTE 108 DURHAM, NEW HAMPSHIRE</p> <p>JUNE 6, 2018 JOB No. 17105 SCALE: 1" = 50'</p>	
SHEET No.	6-2		



TRITECH
ENGINEERING CORPORATION

765 CENTRAL AVENUE
DOVER, NEW HAMPSHIRE 03820
TELEPHONE 603 742 8107
FAX 603 742 3830

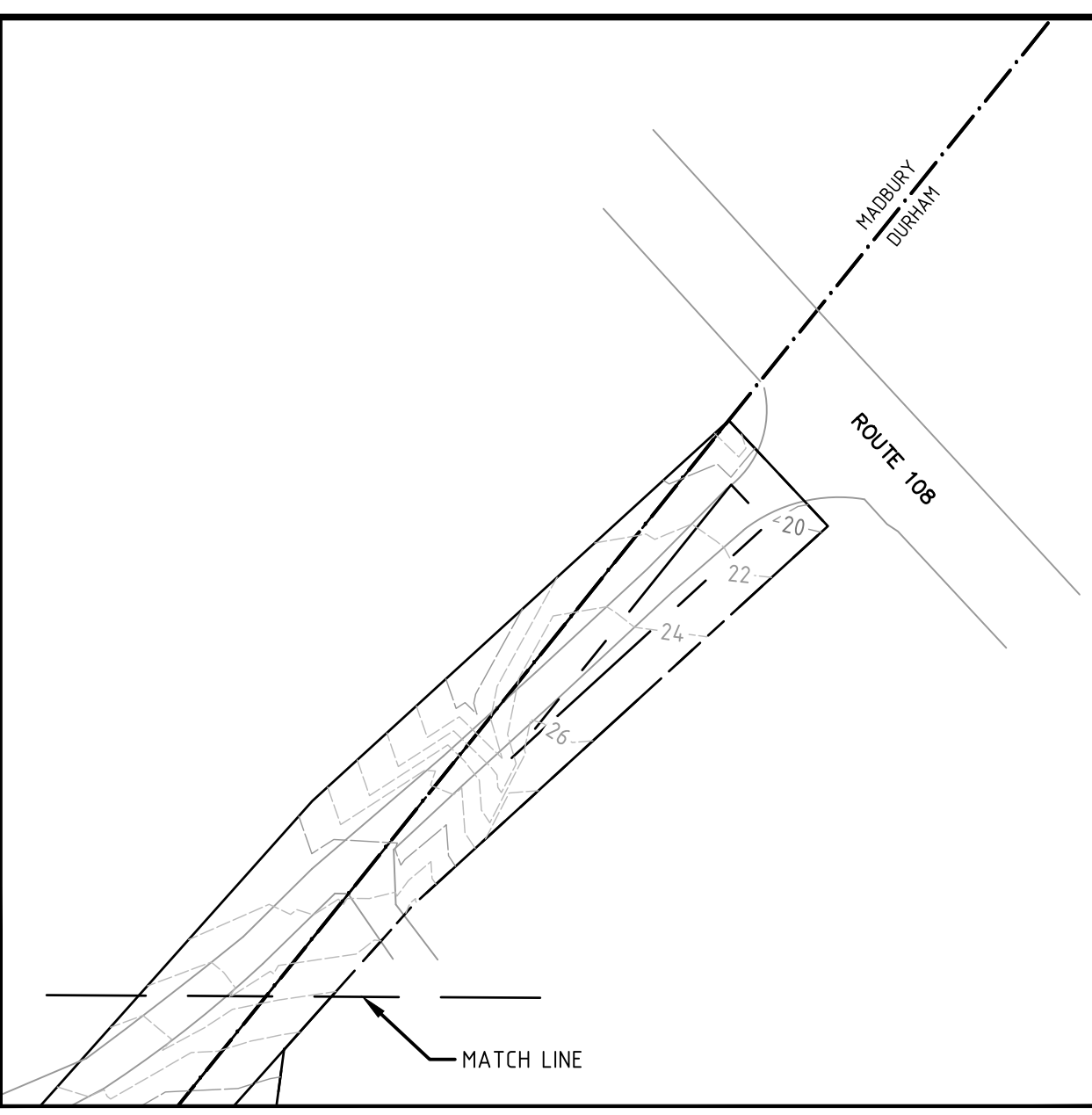
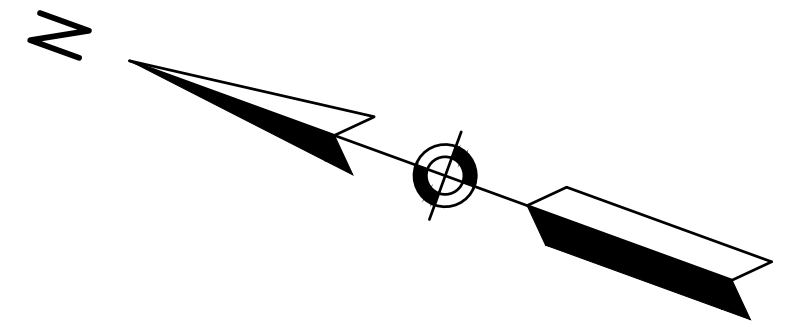
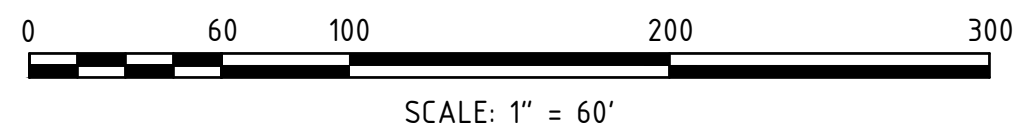
REVISIONS	DATE	DESCRIPTION

LOT LINE ADJUSTMENT PLAN

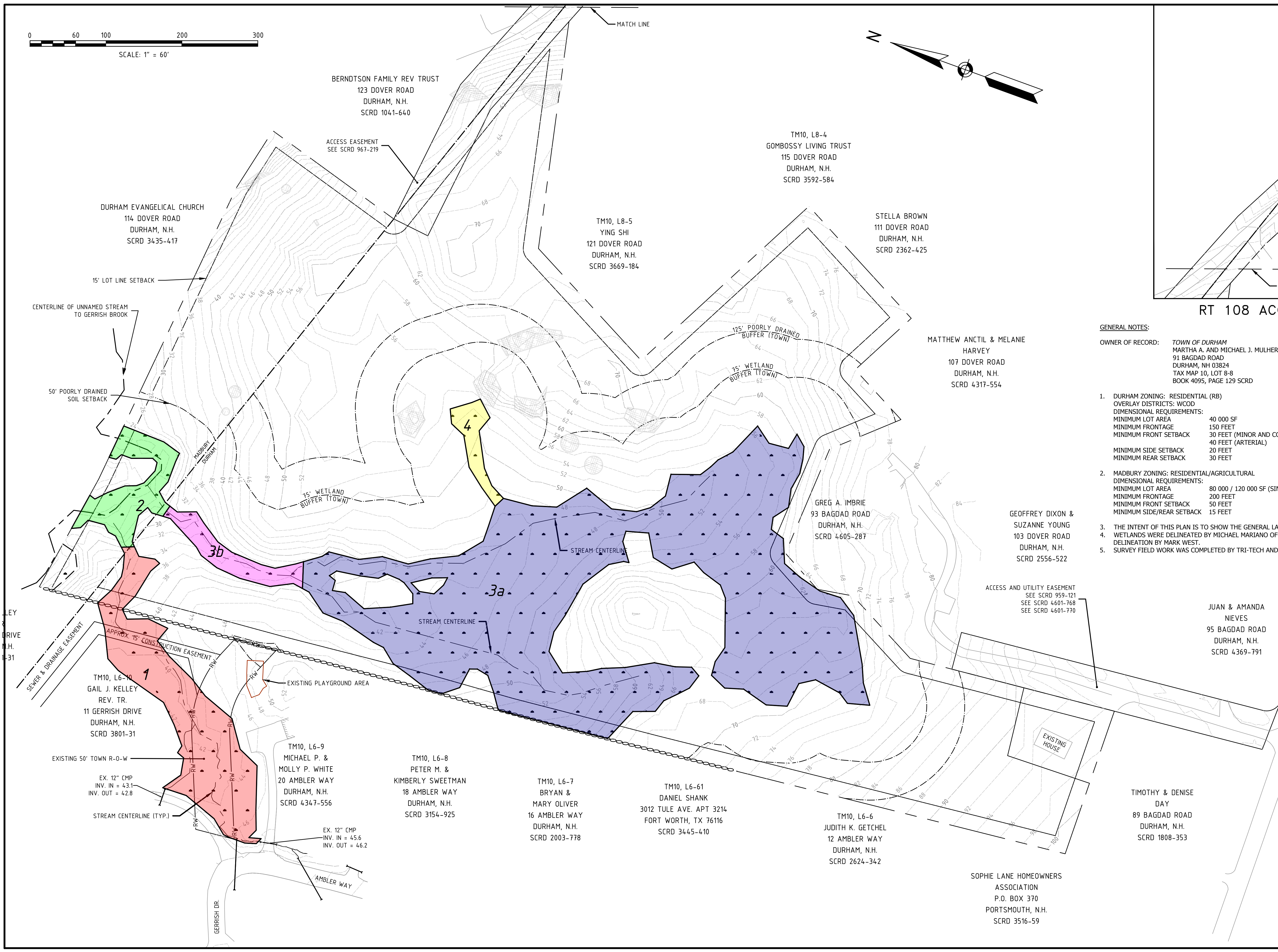
MICHAEL & MARTHA MULHERN
91 & 93 BAGDAD ROAD
AND DURHAM ROAD - ROUTE 108
DURHAM, NEW HAMPSHIRE

JUNE 6, 2018
JOB No. 17105
SCALE: 1" = 50'

SHEET NO. **5-3**

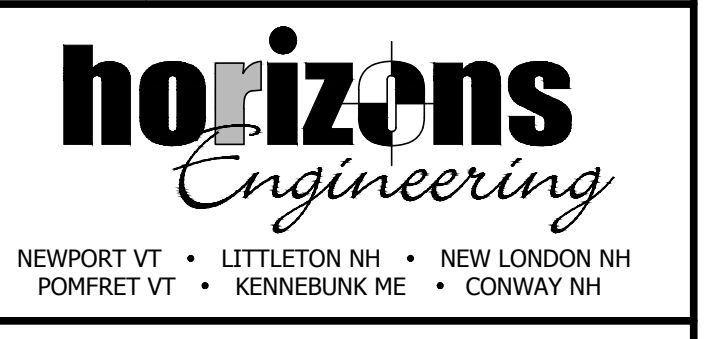


RT 108 ACCESS



GENERAL NOTES:

- | | | |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| OWNER OF RECORD: | TOWN OF DURHAM
MARTHA A. AND MICHAEL J. MULHERN
91 BAGDAD ROAD
DURHAM, NH 03824
TAX MAP 9, LOT 8-8
BOOK 4095, PAGE 129 SCR.D | TOWN OF MADBURY
MARTHA A. AND MICHAEL J. MULHERN
91 BAGDAD ROAD
DURHAM, NH 03824
TAX MAP 9, LOT 33
BOOK 4095, PAGE 129 SCR.D |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
- DURHAM ZONING: RESIDENTIAL (RB)
OVERLAY DISTRICTS: WCOD
DIMENSIONAL REQUIREMENTS:
MINIMUM LOT AREA: 40 000 SF
MINIMUM FRONTAGE: 150 FEET
MINIMUM FRONT SETBACK: 30 FEET (MINOR AND COLLECTOR)
40 FEET (ARTERIAL)
MINIMUM SIDE SETBACK: 20 FEET
MINIMUM REAR SETBACK: 30 FEET
 - MADBURY ZONING: RESIDENTIAL/AGRICULTURAL
DIMENSIONAL REQUIREMENTS:
MINIMUM LOT AREA: 80 000 / 120 000 SF (SINGLE-FAMILY/TWO-FAMILY)
MINIMUM FRONTAGE: 200 FEET
MINIMUM FRONT SETBACK: 50 FEET
MINIMUM SIDE/REAR SETBACK: 15 FEET
 - THE INTENT OF THIS PLAN IS TO SHOW THE GENERAL LAYOUT OF THE PROPOSED DEVELOPMENT.
 - WETLANDS WERE DELINEATED BY MICHAEL MARIANO OF HIGHLAND SOIL SERVICES. SUPPLEMENTAL WETLANDS DELINEATION BY MARK WEST.
 - SURVEY FIELD WORK WAS COMPLETED BY TRI-TECH AND NORWAY PLAINS ASSOCIATES.



MICHAEL & MARTI MULHERN
THE CROSSINGS SUBDIVISION
DURHAM, NEW HAMPSHIRE

EXISTING CONDITIONS

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

	DATE:	2021-08-12	PROJECT #:	NM19063
	ENG'N'D BY:	MCS	DRAWN BY:	MCS
	CHECK'D BY:	MJS	ARCHIVE #:	H-
	C100			

SOPHIE LANE HOMEOWNERS ASSOCIATION
P.O. BOX 370
PORTSMOUTH, N.H.
SCR.D 3516-59

TIMOTHY & DENISE DAY
89 BAGDAD ROAD
DURHAM, N.H.
SCR.D 1808-353

TM10, L6-6
JUDITH K. GETCHEL
12 AMBLER WAY
DURHAM, N.H.
SCR.D 2624-342

TM10, L6-61
DANIEL SHANK
3012 TULE AVE. APT 3214
FORT WORTH, TX 76116
SCR.D 3445-410

TM10, L6-7
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16 AMBLER WAY
DURHAM, N.H.
SCR.D 2003-778

TM10, L6-8
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18 AMBLER WAY
DURHAM, N.H.
SCR.D 3154-925

TM10, L6-9
MICHAEL P. & MOLLY P. WHITE
20 AMBLER WAY
DURHAM, N.H.
SCR.D 4347-556

TM10, L6-10
GAIL J. KELLEY REV. TR.
11 GERRISH DRIVE
DURHAM, N.H.
SCR.D 3801-31

STELLA BROWN
111 DOVER ROAD
DURHAM, N.H.
SCR.D 2362-425

MATTHEW ANCTIL & MELANIE HARVEY
107 DOVER ROAD
DURHAM, N.H.
SCR.D 4317-554

TM10, L8-4
GOMBOSSY LIVING TRUST
115 DOVER ROAD
DURHAM, N.H.
SCR.D 3592-584

TM10, L8-5
YING SHI
121 DOVER ROAD
DURHAM, N.H.
SCR.D 3669-184

BERNDTSON FAMILY REV TRUST
123 DOVER ROAD
DURHAM, N.H.
SCR.D 1041-640

DURHAM EVANGELICAL CHURCH
114 DOVER ROAD
DURHAM, N.H.
SCR.D 3435-417

JUAN & AMANDA NIEVES
95 BAGDAD ROAD
DURHAM, N.H.
SCR.D 4369-791

ACCESS AND UTILITY EASEMENT
SEE SCR.D 959-121
SEE SCR.D 4601-768
SEE SCR.D 4601-770

GEOFFREY DIXON & SUZANNE YOUNG
103 DOVER ROAD
DURHAM, N.H.
SCR.D 2556-522

GREG A. IMBRIE
93 BAGDAD ROAD
DURHAM, N.H.
SCR.D 4605-287

EX. 12" CMP
INV. IN = 45.6
INV. OUT = 46.2

EX. 12" CMP
INV. IN = 43.1
INV. OUT = 42.8

75' WETLAND BUFFER (TOWN)

75' WETLAND BUFFER (TOWN)

125' POORLY DRAINED BUFFER (TOWN)

15' LOT LINE SETBACK

50' POORLY DRAINED SOIL SETBACK

CENTERLINE OF UNNAMED STREAM TO GERRISH BROOK

GERRISH DRIVE

GERRISH DR.

AMBLER WAY

APPROX. 15' CONSTRUCTION EASEMENT

SEWER & DRAINAGE EASEMENT

EXISTING PLAYGROUND AREA

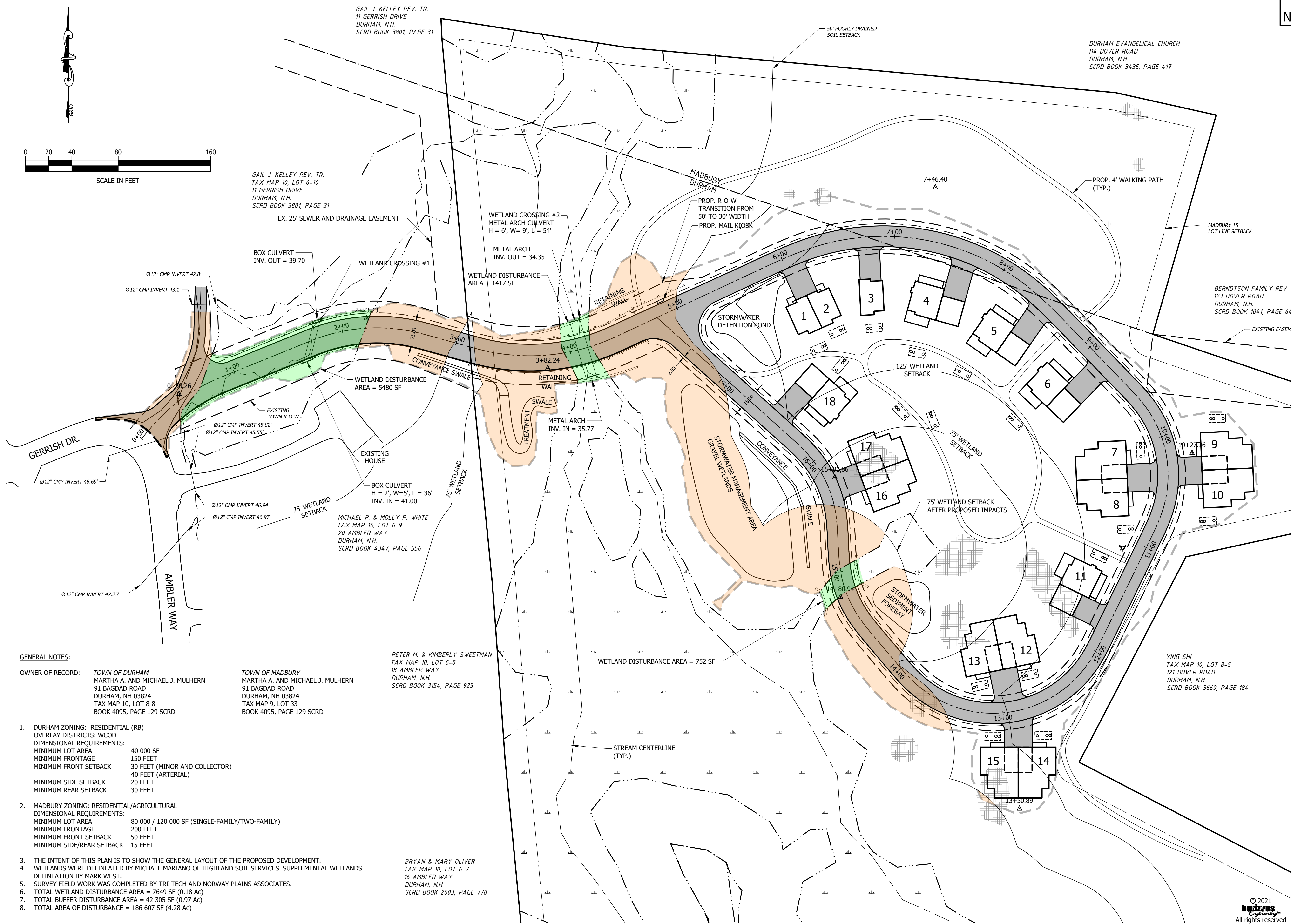
EXISTING HOUSE

MATCH LINE

MATCH LINE

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DATE OF PRINT
AUGUST 12 2021
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GENERAL NOTES:

- OWNER OF RECORD: TOWN OF DURHAM
MARTHA A. AND MICHAEL J. MULHERN
91 BAGDAD ROAD
DURHAM, NH 03824
TAX MAP 10, LOT 8-8
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 - SURVEY FIELD WORK WAS COMPLETED BY TRI-TECH AND NORWAY PLAINS ASSOCIATES.
 - TOTAL WETLAND DISTURBANCE AREA = 7649 SF (0.18 Ac)
 - TOTAL BUFFER DISTURBANCE AREA = 42 305 SF (0.97 Ac)
 - TOTAL AREA OF DISTURBANCE = 186 607 SF (4.28 Ac)

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POMFRET VT • KENNEBUNK ME • CONWAY NH

MICHAEL & MARTI MULHERN
THE CROSSINGS SUBDIVISION
DURHAM, NEW HAMPSHIRE

SITE PLAN

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: 2021-08-12	PROJECT #: NM19063
ENGINE'D BY: MCS	DRAWN BY: MCS
CHECK'D BY: MJS	ARCHIVE #: H-___

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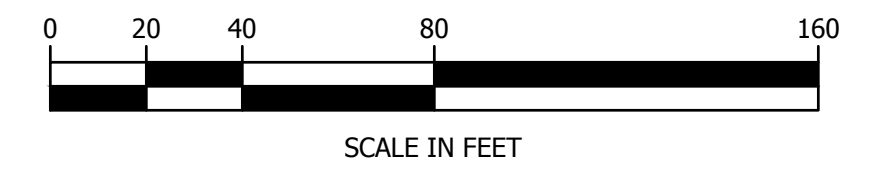
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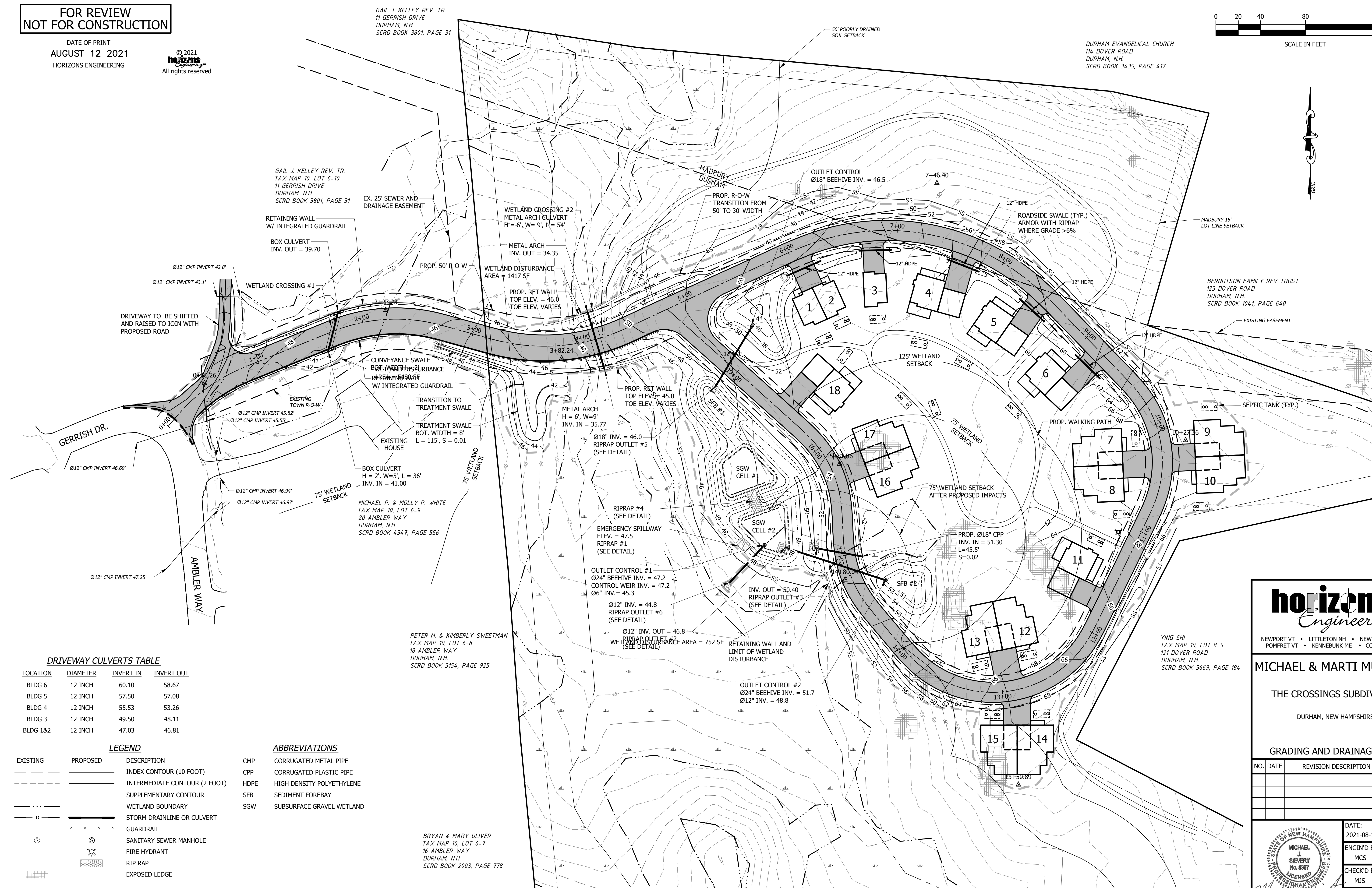
DATE OF PRINT
AUGUST 12 2021
HORIZONS ENGINEERING

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GAIL J. KELLEY REV. TR.
11 GERRISH DRIVE
DURHAM, N.H.
SCRD BOOK 3801, PAGE 31



DURHAM EVANGELICAL CHURCH
114 DOVER ROAD
DURHAM, N.H.
SCRD BOOK 3435, PAGE 417



DRIVEWAY CULVERTS TABLE

LOCATION	DIAMETER	INVERT IN	INVERT OUT
BLDG 6	12 INCH	60.10	58.67
BLDG 5	12 INCH	57.50	57.08
BLDG 4	12 INCH	55.53	53.26
BLDG 3	12 INCH	49.50	48.11
BLDG 1&2	12 INCH	47.03	46.81

LEGEND

EXISTING	PROPOSED	DESCRIPTION
---	---	INDEX CONTOUR (10 FOOT)
---	---	INTERMEDIATE CONTOUR (2 FOOT)
---	---	SUPPLEMENTARY CONTOUR
---	---	WETLAND BOUNDARY
---	---	STORM DRAINLINE OR CULVERT
---	---	GUARDRAIL
⊙	⊙	SANITARY SEWER MANHOLE
⊙	⊙	FIRE HYDRANT
▨	▨	RIP RAP
---	---	EXPOSED LEDGE

ABBREVIATIONS

CMP	CORRUGATED METAL PIPE
CPP	CORRUGATED PLASTIC PIPE
HDPE	HIGH DENSITY POLYETHYLENE
SFB	SEDIMENT FOREBAY
SGW	SUBSURFACE GRAVEL WETLAND

BRYAN & MARY OLIVER
TAX MAP 10, LOT 6-7
16 AMBLER WAY
DURHAM, N.H.
SCRD BOOK 2003, PAGE 778

PETER M. & KIMBERLY SWEETMAN
TAX MAP 10, LOT 6-8
18 AMBLER WAY
DURHAM, N.H.
SCRD BOOK 3154, PAGE 925

MICHAEL P. & MOLLY P. WHITE
TAX MAP 10, LOT 6-9
20 AMBLER WAY
DURHAM, N.H.
SCRD BOOK 4347, PAGE 556

CONVEYANCE SWALE
W/ INTEGRATED GUARDRAIL

RETAINING WALL
W/ INTEGRATED GUARDRAIL

GAIL J. KELLEY REV. TR.
TAX MAP 10, LOT 6-10
11 GERRISH DRIVE
DURHAM, N.H.
SCRD BOOK 3801, PAGE 31

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POMFRET VT • KENNEBUNK ME • CONWAY NH

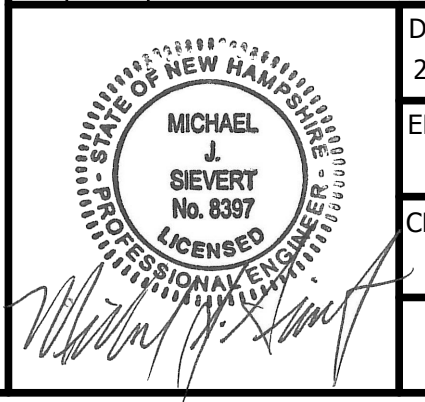
MICHAEL & MARTI MULHERN

THE CROSSINGS SUBDIVISION

DURHAM, NEW HAMPSHIRE

GRADING AND DRAINAGE PLAN

NO.	DATE	REVISION DESCRIPTION	ENG	DWG



DATE: 2021-08-12
PROJECT #: NM19063
ENGIN'D BY: MCS
DRAWN BY: MCS
CHECK'D BY: MJS
ARCHIVE #: H-___

C102

GAIL J. KELLEY REV. TR.
TAX MAP 10, LOT 6-10
11 GERRISH DRIVE
DURHAM, N.H.
SCRD BOOK 3801, PAGE 31

BERNDTSON FAMILY REV TRUST
123 DOVER ROAD
DURHAM, N.H.
SCRD BOOK 1041, PAGE 640

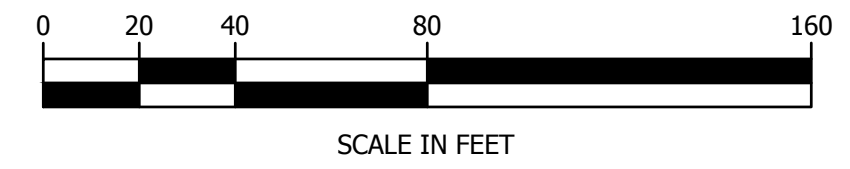
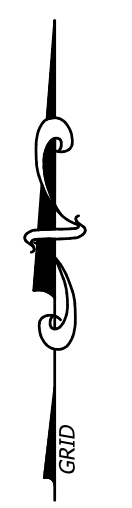
MICHAEL P. & MOLLY P. WHITE
TAX MAP 10, LOT 6-9
20 AMBLER WAY
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SCRD BOOK 4347, PAGE 556

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SCRD BOOK 3154, PAGE 925

BRYAN & MARY OLIVER
TAX MAP 10, LOT 6-7
16 AMBLER WAY
DURHAM, N.H.
SCRD BOOK 2003, PAGE 778

DANIEL SHANK
TAX MAP 10, LOT 6-61
3012 TULE AVE. APT 3214
FORT WORTH, TX 76116
SCRD BOOK 3445, PAGE 410

GREG A. IMBRIE



POTABLE WATER NOTES

1. EACH UNIT WILL RECEIVE WATER FROM THE DURHAM MUNICIPAL WATER SYSTEM.

SEWER NOTES

2. EACH BUILDING WILL BE CONNECTED A SEPTIC TANK EFFLUENT PUMPING (STEP) SYSTEM.

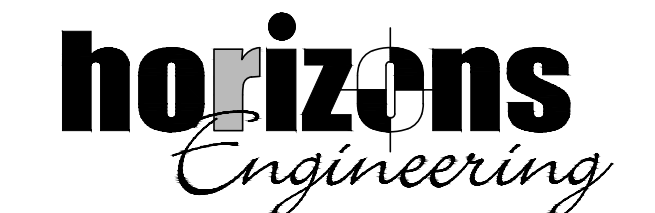
ELECTRICAL NOTES

3. THE PROPOSED UNITS WILL BE SERVICED BY EVERSOURCE ENERGY.

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

**FOR REVIEW
NOT FOR CONSTRUCTION**

DATE OF PRINT
AUGUST 12 2021
HORIZONS ENGINEERING



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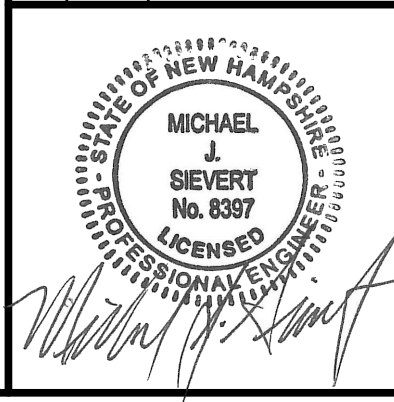
MICHAEL & MARTI MULHERN

THE CROSSINGS SUBDIVISION

DURHAM, NEW HAMPSHIRE

UTILITIES PLAN

NO.	DATE	REVISION DESCRIPTION	ENG	DWG



DATE: 2021-08-12
PROJECT #: NM19063
ENGIN'D BY: MCS
DRAWN BY: MCS
CHECK'D BY: MJS
ARCHIVE #: H-___

C103

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, 2016, 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.
- 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.

COLD WEATHER SITE STABILIZATION

- A. TO ADEQUATELY PROTECT WATER QUALITY DURING COLD WEATHER AND DURING SPRING RUNOFF, THE ADDITIONAL STABILIZATION TECHNIQUES SPECIFIED IN THIS SECTION SHALL BE EMPLOYED DURING THE PERIOD FROM OCTOBER 15 THROUGH MAY 1.
- B. SUBJECT TO (C), BELOW, THE AREA OF EXPOSED, UNSTABILIZED SOIL SHALL BE:
 - 1. LIMITED TO ONE ACRE; AND
 - 2. PROTECTED AGAINST EROSION BY THE METHODS DESCRIBED IN THIS SECTION PRIOR TO ANY THAW OR SPRING MELT EVENT.
- C. THE ALLOWABLE AREA OF EXPOSED SOIL MAY BE INCREASED IF A WINTER CONSTRUCTION PLAN IS DEVELOPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST AND SUBMITTED TO THE DEPARTMENT FOR APPROVAL AS A REQUEST TO WAIVE THE ONE-ACRE LIMIT.
- D. SUBJECT TO (F) AND (G), BELOW, ALL PROPOSED VEGETATED AREAS HAVING A SLOPE OF LESS THAN 15% THAT DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15, OR THAT ARE DISTURBED AFTER OCTOBER 15, SHALL BE SEEDED AND COVERED WITH 3 TO 4 TONS OF HAY OR STRAW MULCH PER ACRE SECURED WITH ANCHORED NETTING OR TACKIFIER OR WITH AT LEAST 2 INCHES OF EROSION CONTROL MIX MEETING THE CRITERIA OF ENV-WQ 1506.05(B).
- E. SUBJECT TO (F) AND (G), BELOW, ALL PROPOSED VEGETATED AREAS HAVING A SLOPE OF 15% OR GREATER THAT DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15, OR THAT ARE DISTURBED AFTER OCTOBER 15, SHALL BE SEEDED AND COVERED WITH A PROPERLY INSTALLED AND ANCHORED EROSION CONTROL BLANKET OR WITH AT LEAST 4 INCHES OF EROSION CONTROL MIX MEETING THE CRITERIA OF ENV-WQ 1506.05(B).
- F. ANCHORED HAY MULCH OR EROSION CONTROL MIX THAT MEETS THE CRITERIA OF ENV-WQ 1506.05(B) SHALL NOT BE INSTALLED OVER SNOW GREATER THAN ONE INCH IN DEPTH. EROSION CONTROL BLANKETS SHALL NOT BE INSTALLED OVER SNOW GREATER THAN ONE INCH IN DEPTH OR ON FROZEN GROUND.
- H. ALL PROPOSED STABILIZATION IN ACCORDANCE WITH (D) OR (E), ABOVE, SHALL BE COMPLETED WITHIN A DAY OF ESTABLISHING THE GRADE THAT IS FINAL OR THAT OTHERWISE WILL EXIST FOR MORE THAN 5 DAYS.
- I. ALL DITCHES OR SWALES THAT DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15, OR THAT ARE DISTURBED AFTER OCTOBER 15, SHALL BE STABILIZED TEMPORARILY WITH STONE OR EROSION CONTROL BLANKETS APPROPRIATE FOR THE DESIGN FLOW CONDITIONS, AS DETERMINED BY THE OWNER'S ENGINEERING CONSULTANT.
- J. AFTER OCTOBER 15, INCOMPLETE ROAD OR PARKING AREAS WHERE ACTIVE CONSTRUCTION OF THE ROAD OR PARKING AREA HAS STOPPED FOR THE WINTER SEASON SHALL BE PROTECTED WITH A MINIMUM 4-INCH LAYER OF BASE COURSE GRAVELS MEETING THE GRADATION REQUIREMENTS OF NHDOT STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION, 2016, TABLE 304-1, ITEM NO. 304.1, 304.2, OR 304.3, AVAILABLE AS NOTED IN APPENDIX B.

TEMPORARY VEGETATION

- 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 SEED.
 - 2. COMPACTED SOIL SHALL BE LOOSENEED 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, CULTPACKER TYPE SEEDER OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER). NORMAL SEEDING DEPTH IS FROM 1/4 TO 1/2 INCH. HYDROSEEDING THAT INCLUDES MULCH MAY BE LEFT ON SOIL SURFACE. SEEDING RATES MUST BE INCREASED 10% WHEN HYDROSEEDING.
 - 3. TEMPORARY SEEDING SHALL OCCUR PRIOR TO SEPTEMBER 15TH IN THE YEAR IN WHICH THE AREA BEING SEEDING WAS DISTURBED.
 - 4. AREAS SEEDING BETWEEN MAY 15TH AND AUGUST 15TH SHALL BE COVERED WITH HAY OR STRAW MULCH MEETING THE FOLLOWING CRITERIA:
 - 4.A. HAY AND STRAW MULCHES SHALL BE ANCHORED WITH MULCH NETTING OR TACKIFIER SO THAT THEY ARE NOT BLOWN AWAY BY WIND OR WASHED AWAY BY FLOWING WATER;
 - 4.B. MULCH MATERIALS SHALL BE SELECTED BASED UPON SOILS, SLOPE, FLOW CONDITIONS, AND TIME OF YEAR;
 - 4.C. HAY OR STRAW MULCH SHALL BE APPLIED AT A RATE OF 1.5 TO 2 TONS PER ACRE, EQUIVALENT TO 70 TO 90 POUNDS PER 1,000 SQUARE FEET;
 - 4.D. IF VEGETATED GROWTH COVERING AT LEAST 85% OF THE DISTURBED AREA IS NOT ACHIEVED PRIOR TO OCTOBER 15TH, ONE OR MORE ADDITIONAL EROSION CONTROL METHODS SHALL BE IMPLEMENTED.
- D. MAINTENANCE
 - 1. TEMPORARY SEEDING SHOULD BE INSPECTED WEEKLY AND AFTER ANY RAINFALL EXCEEDING 1/2 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 RESEEDING 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 RESEEDING, WITH OTHER TEMPORARY MEASURES (E.G., MULCH) USED TO PROVIDE EROSION PROTECTION DURING THE PERIOD OF VEGETATION ESTABLISHMENT.

PERMANENT VEGETATION

- A. SITE PREPARATION
 - 1. REFER TO SITE PREPARATION FOR TEMPORARY SEEDING.
- B. SEED BED PREPARATION
 - 1. REFER TO SEED BED PREPARATION FOR TEMPORARY SEEDING IN CONJUNCTION WITH THESE NOTES.
 - 2. 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.
 - 3. 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.
 - 4. INSPECT SEEDBED JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED; THE AREA MUST BE TILLED AND FIRMED AS ABOVE.
 - 5. WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF 2 INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED.
 - 6. 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, CULTPACKER TYPE SEEDER OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER). NORMAL SEEDING DEPTH IS FROM 1/4 TO 1/2 INCH. HYDROSEEDING THAT INCLUDES MULCH MAY BE LEFT ON SOIL SURFACE.
 - 3. WHERE FEASIBLE, EXCEPT WHERE EITHER A CULTPACKER 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. WHEN HYDROSEEDING 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.
 - 8. TEMPORARY SEEDING SHALL OCCUR PRIOR TO SEPTEMBER 15TH IN THE YEAR IN WHICH THE AREA BEING SEEDING WAS DISTURBED.
 - 9. AREAS SEEDING BETWEEN MAY 15TH AND AUGUST 15TH SHALL BE COVERED WITH HAY OR STRAW MULCH MEETING THE FOLLOWING CRITERIA:
 - 9.A. HAY AND STRAW MULCHES SHALL BE ANCHORED WITH MULCH NETTING OR TACKIFIER SO THAT THEY ARE NOT BLOWN AWAY BY WIND OR WASHED AWAY BY FLOWING WATER;
 - 9.A. MULCH MATERIALS SHALL BE SELECTED BASED UPON SOILS, SLOPE, FLOW CONDITIONS, AND TIME OF YEAR;
 - 9.B. HAY OR STRAW MULCH SHALL BE APPLIED AT A RATE OF 1.5 TO 2 TONS PER ACRE, EQUIVALENT TO 70 TO 90 POUNDS PER 1,000 SQUARE FEET;
 - 9.C. HAY OR STRAW MULCH SHALL BE APPLIED AT A RATE OF 1.5 TO 2 TONS PER ACRE, EQUIVALENT TO 70 TO 90 POUNDS PER 1,000 SQUARE FEET;
 - 10. IF VEGETATED GROWTH COVERING AT LEAST 85% OF THE DISTURBED AREA IS NOT ACHIEVED PRIOR TO OCTOBER 15TH, ONE OR MORE ADDITIONAL EROSION CONTROL METHODS SHALL BE IMPLEMENTED.
- D. MAINTENANCE
 - 1. PERMANENTLY SEEDING AREAS SHOULD BE INSPECTED MONTHLY.
 - 2. MOW SEEDING AREAS AS NECESSARY.
 - 3. BASED ON INSPECTION, AREAS SHOULD BE REPAIRED AND/OR RESEEDING 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
 - 2.A. WITHIN 100 FEET OF WETLANDS THE TIME PERIOD SHOULD BE NO GREATER THAN 7 DAYS.
 - 2.B. IN OTHER AREAS IT SHALL BE NO GREATER THAN 14 DAYS.
 - 3. MULCH MATERIALS SHALL BE SELECTED BASED UPON SOILS, FLOW CONDITIONS, AND TIME OF YEAR.
 - B. TEMPORARY MULCHING
 - 1. HAY OR STRAW MULCHES
 - 1.A. ORGANIC MULCHES INCLUDING HAY AND STRAW SHALL BE AIR-DRIED, FREE OF UNDESIRABLE SEEDS AND COARSE MATERIALS.
 - 1.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.
 - 1.C. ANCHORING SHALL BE ONE OF THE FOLLOWING:
 - 1.C.1. NETTING SHALL BE JUTE, WOOD FIBER, OR BIODEGRADABLE PLASTIC NETTING INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
 - 1.C.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.
 - 1.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 SEEDING AND MULCHED IN THE SPRING.
 - 1.E. MAINTENANCE
 - 1.E.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
 - 2.A. REFER TO PLANS FOR TYPICAL EROSION CONTROL MATTING DETAIL. INSTALL PER MANUFACTURER'S SPECIFICATIONS.
 - 2.B. APPLICATION AND TIMING
 - 2.B.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.B.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%).
 - 3. MAINTENANCE
 - 3.A. 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
 - 1.A. APPLY TO A THICKNESS OF 2 TO 6 INCHES. APPLICATION RATES ARE 10-20 TONS/ACRE OR 460-920 POUNDS/1,000 SF.
 - 1.B. MAINTENANCE: 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
 - 2.A. SHALL BE PLACED AT A THICKNESS OF 2 INCHES OR MORE FOR MULCHING.
 - 2.B. COMPOSITION OF THE MIX SHALL BE AS FOLLOWS:
 - 2.B.1. ORGANIC MATTER CONTENT SHALL BE BETWEEN 25-65% DRY WEIGHT BASIS.
 - 2.B.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.
 - 2.B.3. THE ORGANIC PORTION SHALL BE ELONGATED AND FIBROUS SUCH AS FROM SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR EQUIVALENT MANUFACTURED PRODUCTS. IT SHALL NOT CONTAIN WOOD AND BARK GROUND CONSTRUCTION DEBRIS OR REPROCESSED WOOD PRODUCTS.
 - 2.B.4. THE MIX SHALL NOT CONTAIN SILTS, CLAYS, OR FINE SANDS.
 - 2.B.5. SOLUBLE SALTS CONTENT SHALL BE < 4.0MMHOS/CM AND A pH OF 5.0-8.0.
 - 2.C. PLACEMENT OF BERM
 - 2.C.1. PLACE BERM ALONG A LEVEL CONTOUR. BERM MUST BE A MINIMUM OF 12" HIGH ON THE UPHILL SIDE AND 2 FEET WIDE. UPSLOPE AREA MUST HAVE A SLOPE OF LESS THAN 5%.
 - 2.C.2. MAINTENANCE: INSPECT PERIODICALLY AND AUGMENT AS NEEDED TO MAINTAIN INITIAL THICKNESS. REPLACE IF NO LONGER FUNCTIONING AS INTENDED.

SOIL STOCKPILES

- A. GENERAL
 - 1. 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

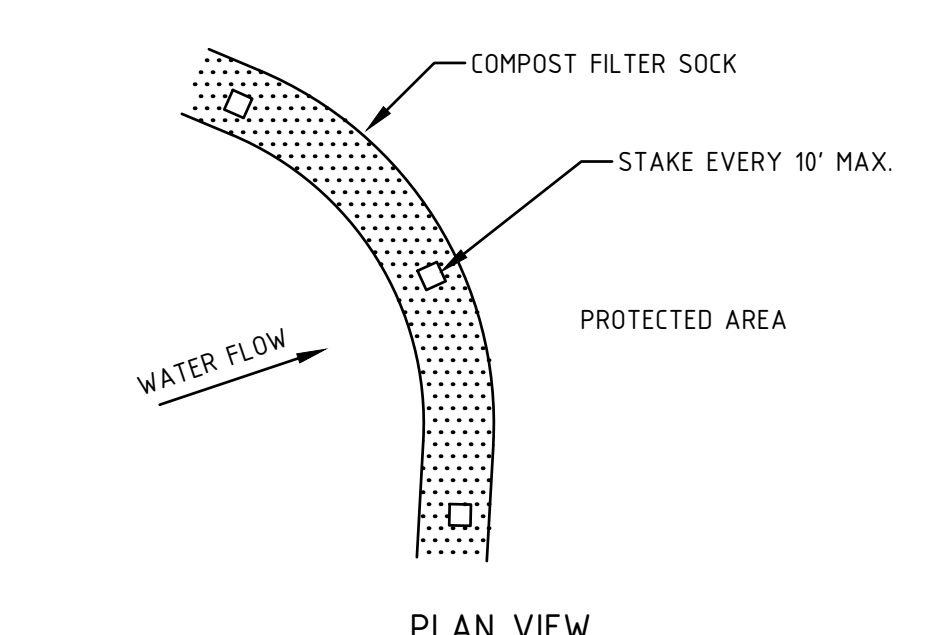
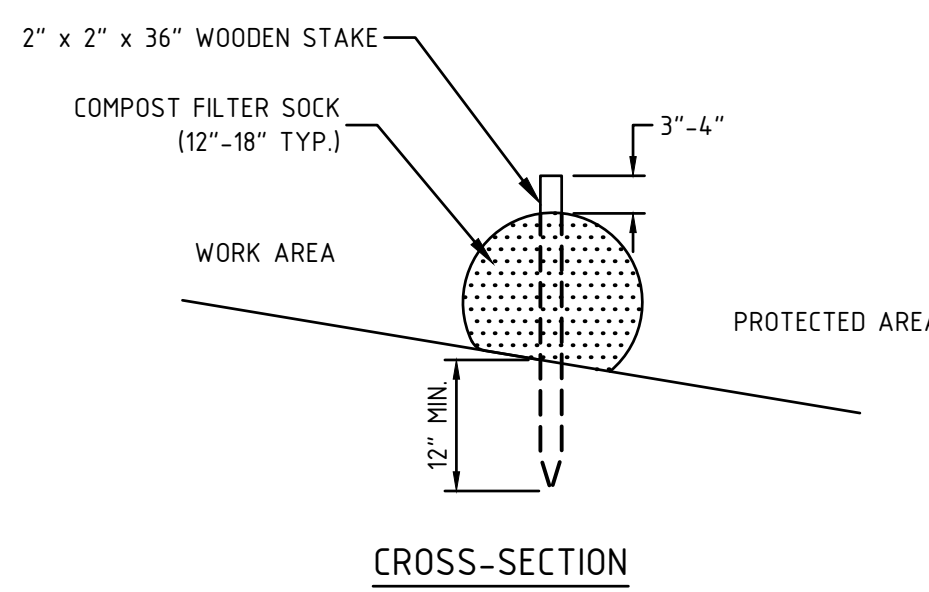
- A. DUST SHALL BE CONTROLLED ON SITE DURING CONSTRUCTION BY IMPLEMENTING THE FOLLOWING DUST CONTROL MEASURES:
 - 1. MULCHING AND VEGETATIVE COVER TO REDUCE DUST.
 - 2. MECHANICAL SWEEPERS AND FINE WATER SPRAYS.
 - 3. COVER SURFACES WITH CRUSHED STONE OR COARSE GRAVEL.

SEED MIXTURE SELECTION BASED ON SOIL TYPE				
USE	SEEDING MIXTURE	SOIL DRAINAGE		
		DROUGHTY	WELL DRAINED	MODERATELY WELL DRAINED
STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS	A	FAIR	GOOD	GOOD
	B	POOR	GOOD	FAIR
	C	POOR	GOOD	EXCELLENT
	D	FAIR	EXCELLENT	EXCELLENT
WATERWAYS, EMERGENCY SPILLWAYS, AND OTHER CHANNELS WITH FLOWING WATER.	A	GOOD	GOOD	GOOD
	C	GOOD	EXCELLENT	EXCELLENT
	F	FAIR	EXCELLENT	EXCELLENT
LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY USE RECREATION SITES.	A	GOOD	GOOD	GOOD
	B	GOOD	GOOD	FAIR
	C	GOOD	EXCELLENT	EXCELLENT
PLAY AREAS AND ATHLETIC FIELDS. (TOPSOIL IS ESSENTIAL FOR GOOD TURF.)	E	FAIR	EXCELLENT	EXCELLENT
	F	FAIR	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	20	0.45
	CREeping RED FESCUE	20	0.45
	REDTOP	2	0.05
	TOTAL	42	0.95
B	TALL FESCUE	15	0.35
	CREeping RED FESCUE	15	0.35
	CROWN VETCH	15	0.35
	TOTAL	45	1.05
C	TALL FESCUE	20	0.45
	CREeping RED FESCUE	20	0.45
	BIRDFOOT TREFOIL	8	0.20
	TOTAL	48	1.10
D	TALL FESCUE	20	0.45
	FLATPEA	30	0.75
	TOTAL	50	1.20
E	CREeping RED FESCUE	50	1.15
	KENTUCKY BLUEGRASS	50	1.15
	TOTAL	100	2.30
F	TALL FESCUE	150	3.60

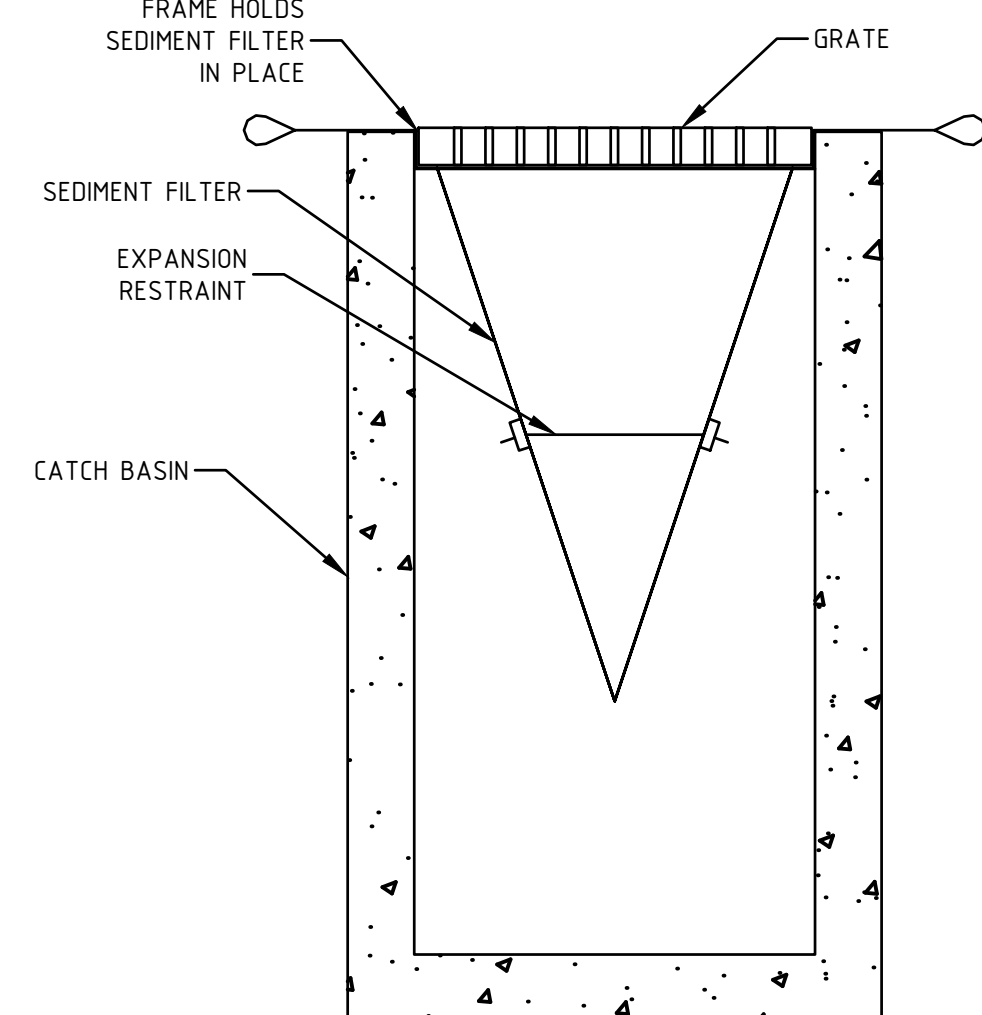
FINAL APPROVAL BY DURHAM PLANNING BOARD.
 CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
 CERTIFIED _____
 DATE _____



- NOTES:
 - 1. ALL COMPOST MATERIAL TO MEET MANUFACTURER'S SPECIFICATIONS.
 - 2. FILTER SOCKS SHOULD BE INSTALLED FOLLOWING EXISTING CONTOURS.

COMPOST FILTER SOCK DETAIL

NTS



- NOTES:
 - 1. SEDIMENT FILTER TRAP SHALL BE ACF REGULAR FLOW SILTSACK OR APPROVED EQUAL.
 - 2. FILTERS 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 SEDIMENT FILTER DETAIL

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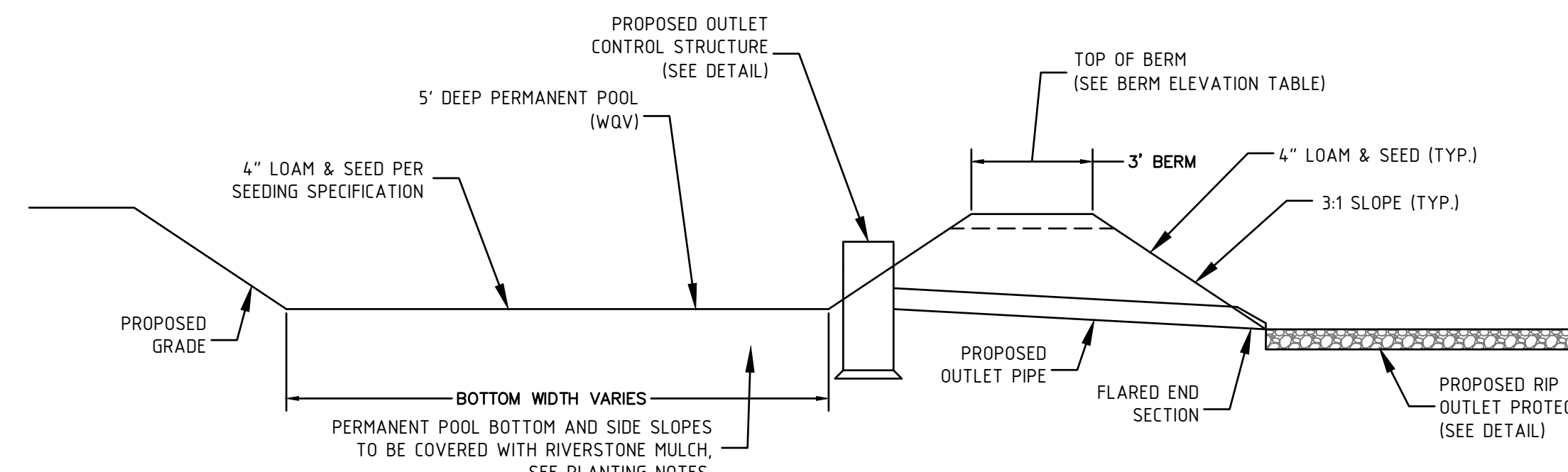
DURHAM, NEW HAMPSHIRE

CONSTRUCTION DETAILS

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: 2021-07-01	PROJECT #: NM19063
ENGINE'D BY: MCS	DRAWN BY: MCS
CHECK'D BY: MJS	ARCHIVE #: H-

C501



CONSTRUCTION NOTES:

- DO NOT PLACE STORMWATER POND INTO SERVICE UNTIL THE BMP HAS BEEN SEEDED AND STABILIZED. ALL CONTRIBUTING AREAS SHALL BE FULLY STABILIZED.
- CLEAR AND GRUB THE AREA WHERE THE STORMWATER POND IS TO BE LOCATED. STOCKPILE LOAM FOR REUSE LATER.
- THE FOUNDATION AREA SHALL BE SCARIFIED PRIOR TO PLACING FILL. ALL UNSUITABLE MATERIAL UNDER THE BERM SHALL BE REMOVED AND REPLACED WITH SUITABLE FOUNDATION MATERIAL.
- THE BERM SHALL BE CONSTRUCTED BEGINNING FROM THE LOWEST POINT UNIFORMLY ALONG ITS ENTIRE LENGTH. PLACE MATERIALS IN MAXIMUM 12" LOOSE LIFTS COMPACTED TO 95% MAXIMUM DRY DENSITY. EMBANKMENT SOIL SHALL HAVE NO ORGANIC MATTER OR FROZEN MATERIAL AND NO STONES LARGER THAN 2/3 OF THE MAXIMUM LOOSE LIFT THICKNESS. STONES AROUND ANY STRUCTURES AND/OR CONDUITS SHALL NOT EXCEED 3 INCHES. EMBANKMENT FILL MATERIAL SHALL HAVE THE FOLLOWING GRADATION:

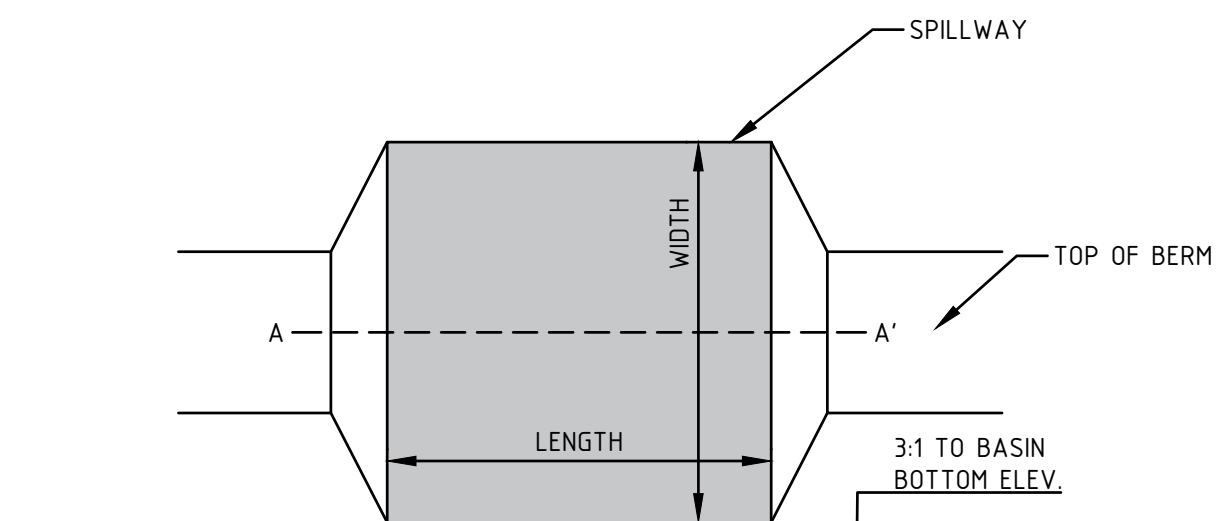
SIEVE SIZE:	% PASSING:
#4	80-90
#40	50-80
#100	30-45
#200	15-30

- ALL PIPE TO PIPE CONNECTIONS SHALL BE WATER-TIGHT.
 - ALL DISTURBED AREAS SHALL RECEIVE FOUR INCHES OF LOAM AND SEED PER THE CONSTRUCTION SEQUENCING AND EROSION CONTROL NOTES.
- PLANTING NOTES:**
- PERMANENT POOL BOTTOM AND SIDE SLOPES TO BE COVERED WITH 2" DEEP RIVERSTONE (1-1/2" TO 2" STONES).
 - POND BOTTOM**
POND BOTTOM EXCLUDING PERMANENT POOL TO BE SEEDED WITH NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS AND MOIST SITES (50 LBS./ACRE).
 - POND BERM AND SIDE SLOPES**
BERM AND SIDE SLOPES EXCLUDING PERMANENT POOL SHALL BE SEEDED WITH NEW ENGLAND CONSERVATION/WILDLIFE MIX (30 LBS PER ACRE).

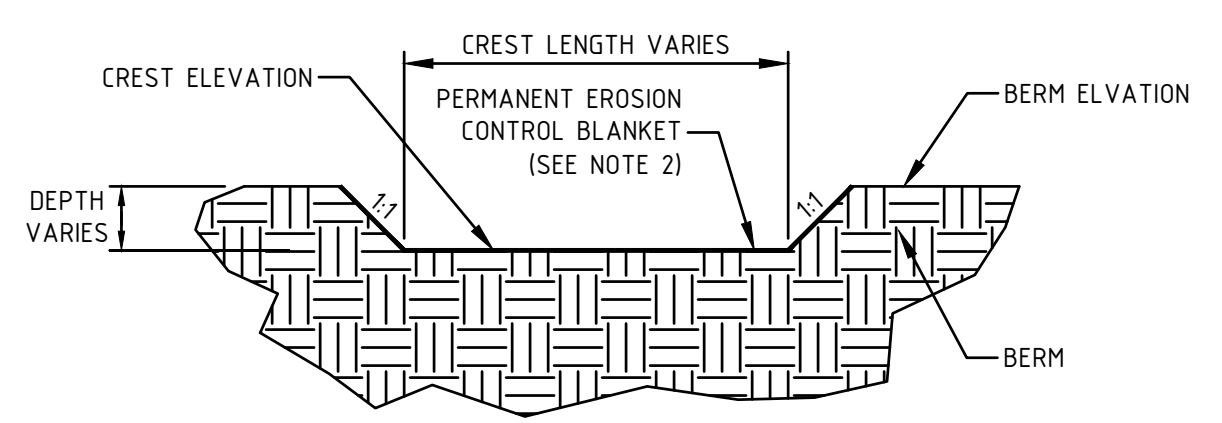
AVAILABLE FROM:
NEW ENGLAND WETLAND PLANTS, INC.
820 WEST STREET
AMHERST, MA 01002
(413)-548-8000

TYPICAL STORMWATER POND DETAIL
NTS

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



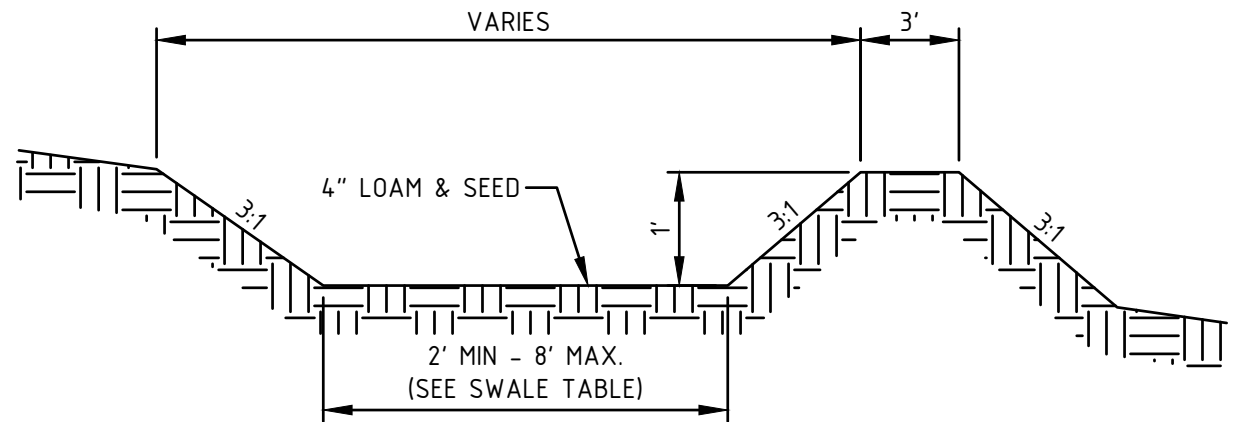
PLAN VIEW



CROSS-SECTION A-A'

- NOTES:**
- SPILLWAYS ARE LOCATED AT SEDIMENT FOREBAY OUTLETS, STORMWATER POND AND INFILTRATION BASIN.
 - PERMANENT EROSION CONTROL BLANKET SHOULD BE TENSAR P300 OR APPROVED EQUAL
 - INSTALL TURF REINFORCEMENT PER MANUFACTURER'S SPECIFICATIONS.

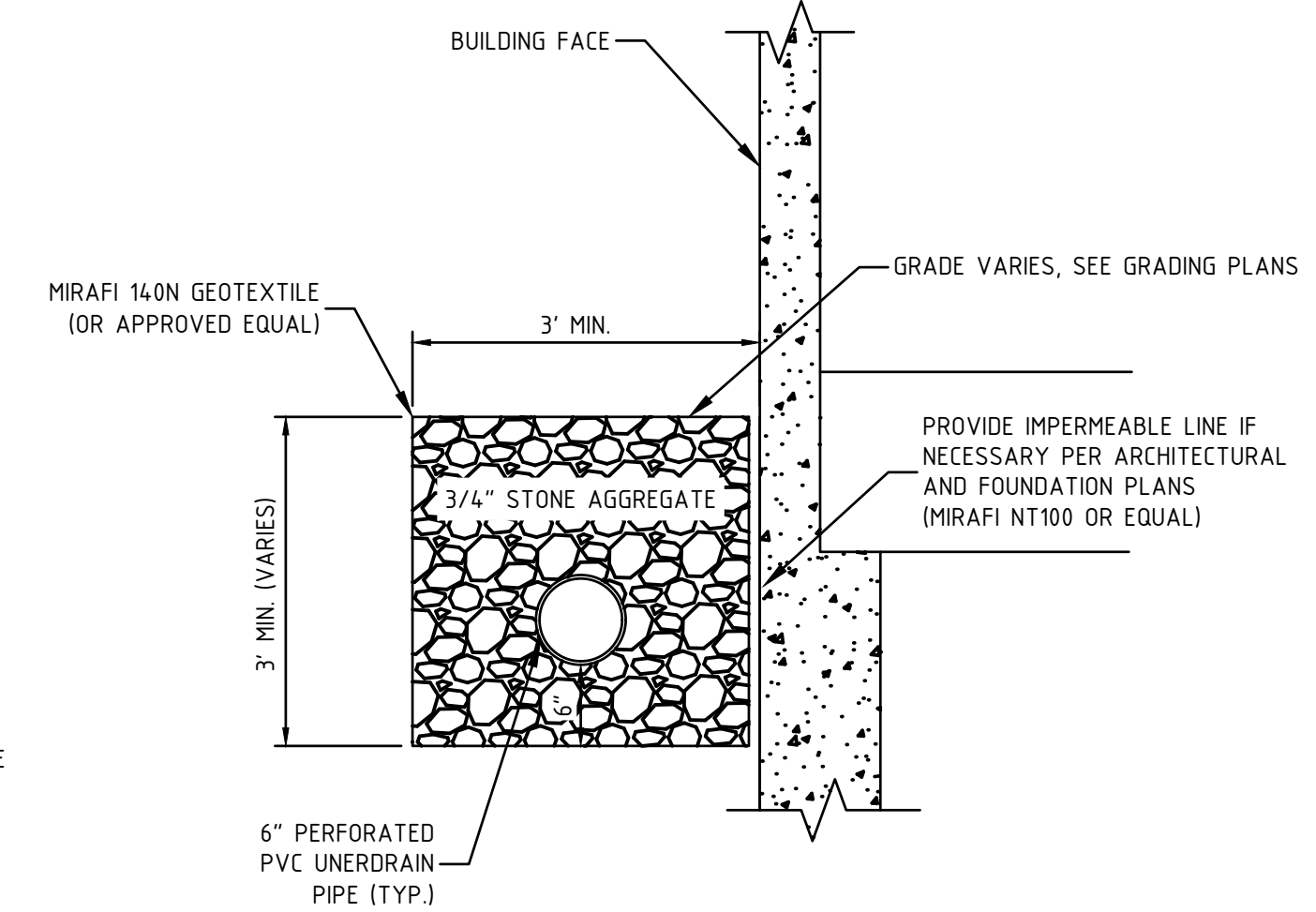
TYPICAL SPILLWAY DETAIL
NTS



- CONSTRUCTION NOTES:**
- REFER TO BERM CONSTRUCTION NOTES IN STORMWATER POND DETAIL FOR BERM CONSTRUCTION REQUIREMENTS.
 - SWALE SHALL HAVE GREATER THAN 85% VEGETATIVE GROWTH PRIOR TO RECEIVING RUNOFF.
 - BOTTOM OF THE SWALE MUST BE ABOVE SEASON HIGH WATER TABLE.

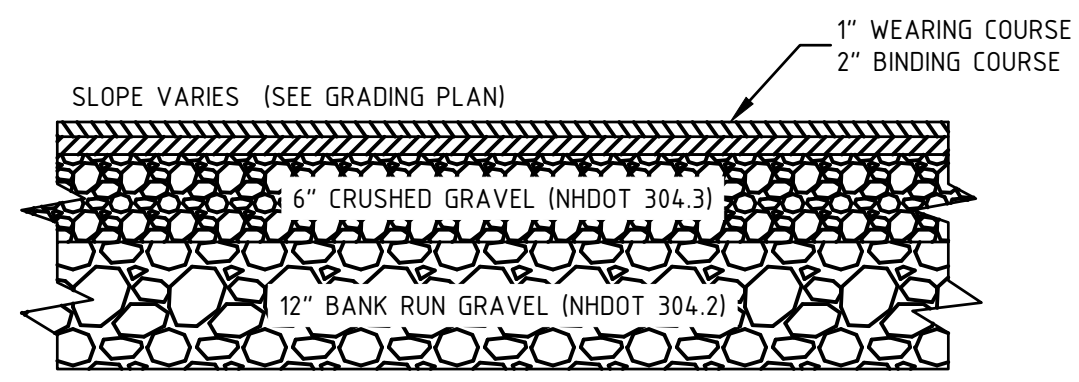
- MAINTENANCE NOTES:**
- INSPECT ANNUALLY FOR EROSION, SEDIMENT ACCUMULATION, VEGETATION LOSS, AND PRESENCE OF INVASIVE SPECIES.
 - PERFORM PERIODIC MOWING. DO NOT MOW GRASS SHORTER THAN 4 INCHES.
 - REMOVE DEBRIS AND ACCUMULATED SEDIMENT BASED ON INSPECTION.
 - REPAIR ERODED AREAS, REMOVE INVASIVE SPECIES AND DEAD VEGETATION, AND RESEED WITH APPLICABLE GRASS MIX AS WARRANTED BY INSPECTION.

CONVEYANCE SWALE DETAIL
NTS



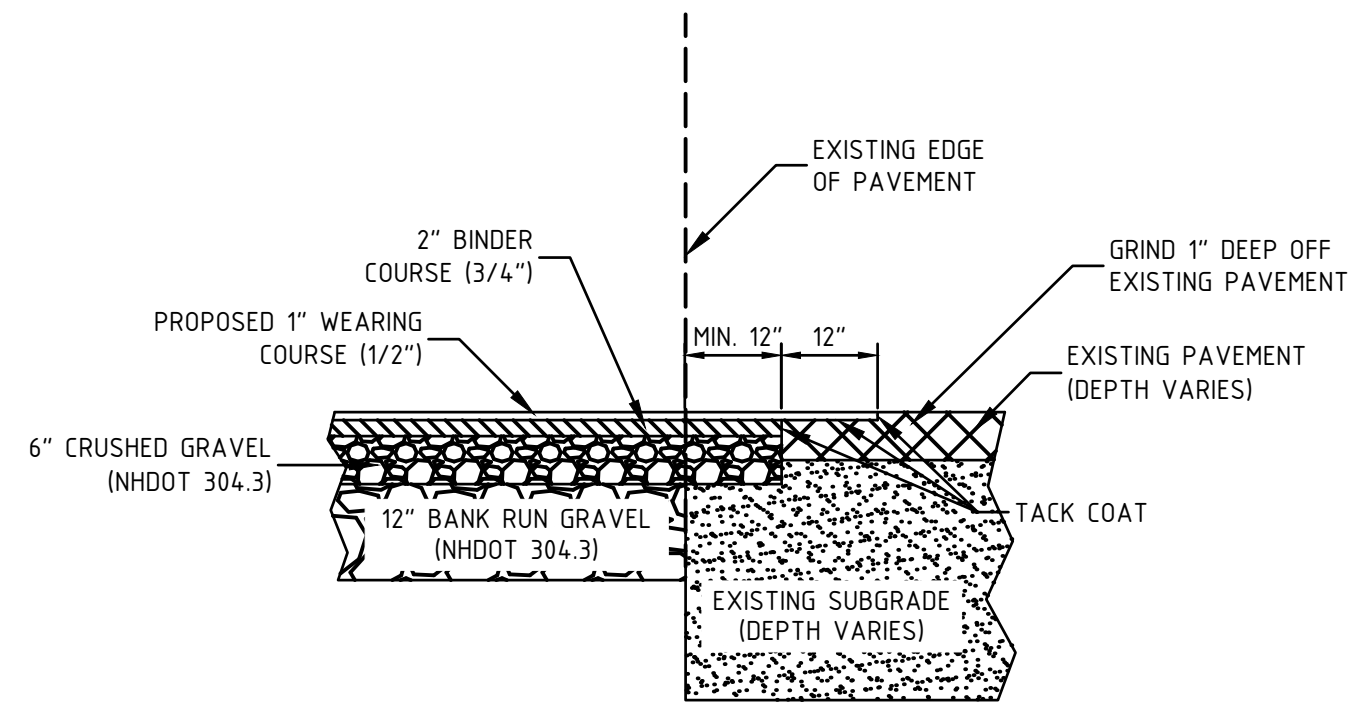
- NOTES:**
- SEE PLANS FOR LOCATION.

DRIP STRIP DETAIL
NTS



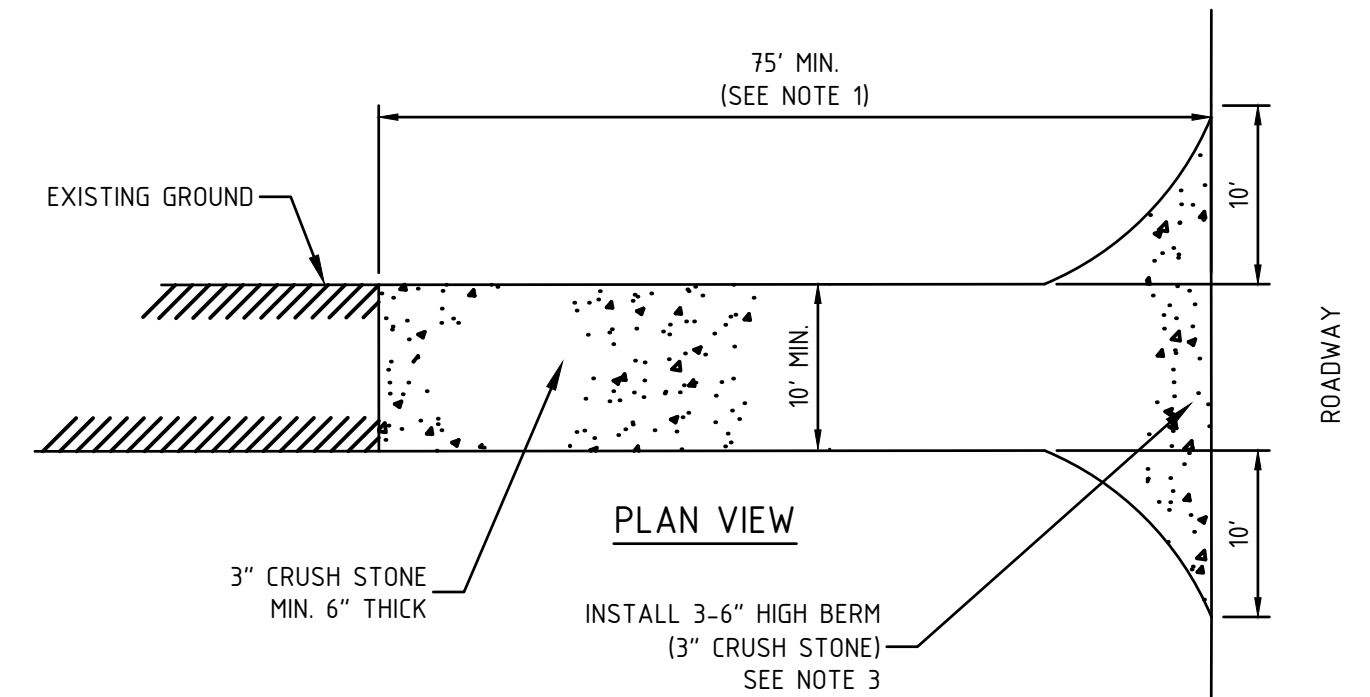
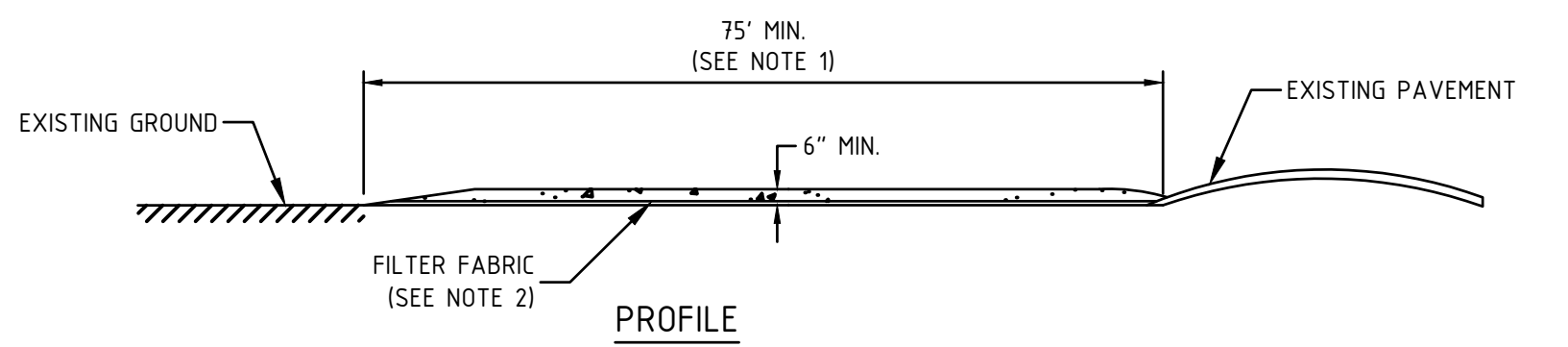
- NOTES:**
- DETERIORIOUS MATERIALS ENCOUNTERED BELOW PARKING AREA SHALL BE COMPLETELY REMOVED.
 - COMPACT SUBGRADE TO 95% OF STANDARD PROCTOR.

DRIVEWAY PAVEMENT CROSS-SECTION
NTS



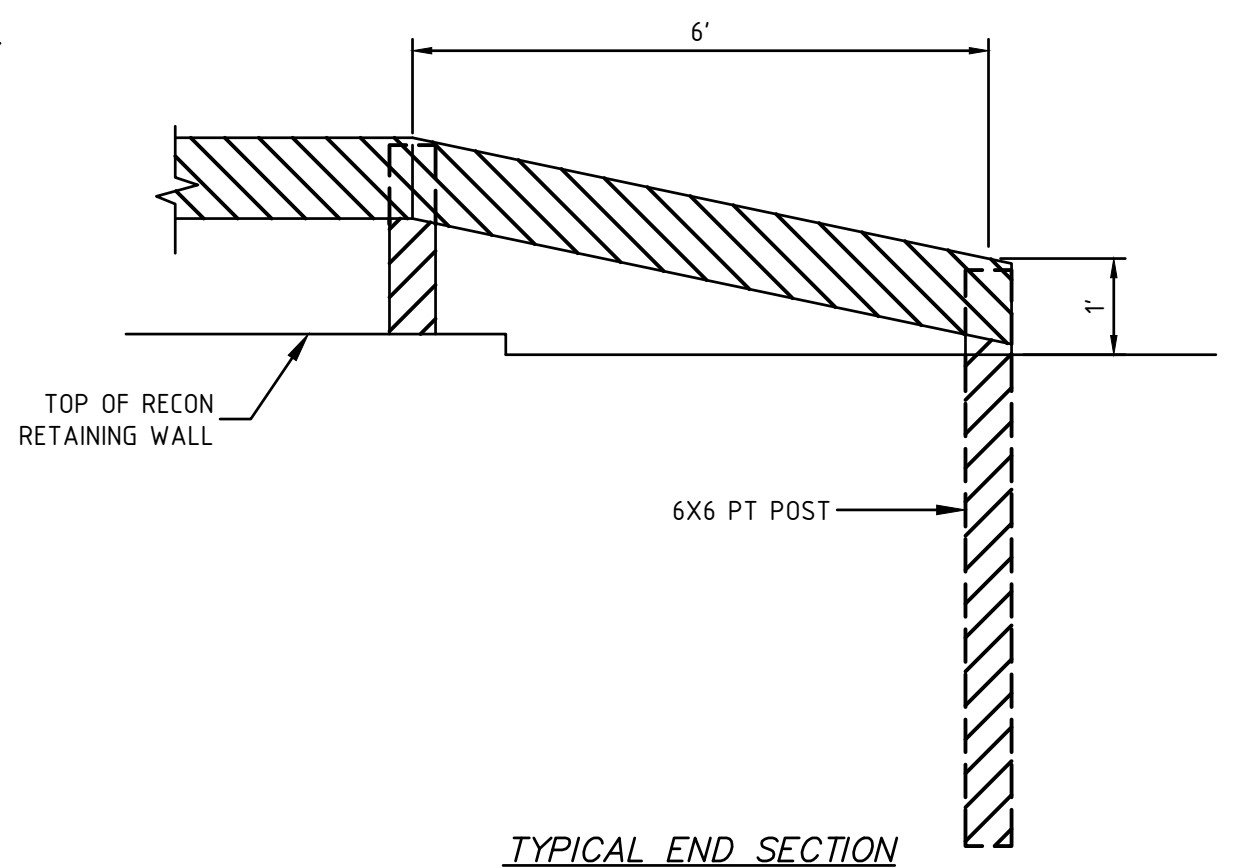
- NOTES:**
- SAWCUT THROUGH DEPTH OF PAVEMENT AT LEAST 1 FT. FROM EDGE OR GREATER IF REQUIRED BY NHDOT.
 - INSTALL AND COMPACT CRUSHED GRAVEL TO GRADE.
 - PLACE BINDER COURSE.
 - GRIND EXISTING PAVEMENT 1 FT. WIDE TO A DEPTH NECESSARY TO PROPERLY MATCH NEW WEARING COURSE PAVEMENT.
 - TACK COAT ALL EXISTING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

TYPICAL PAVEMENT SAWCUT DETAIL
NTS

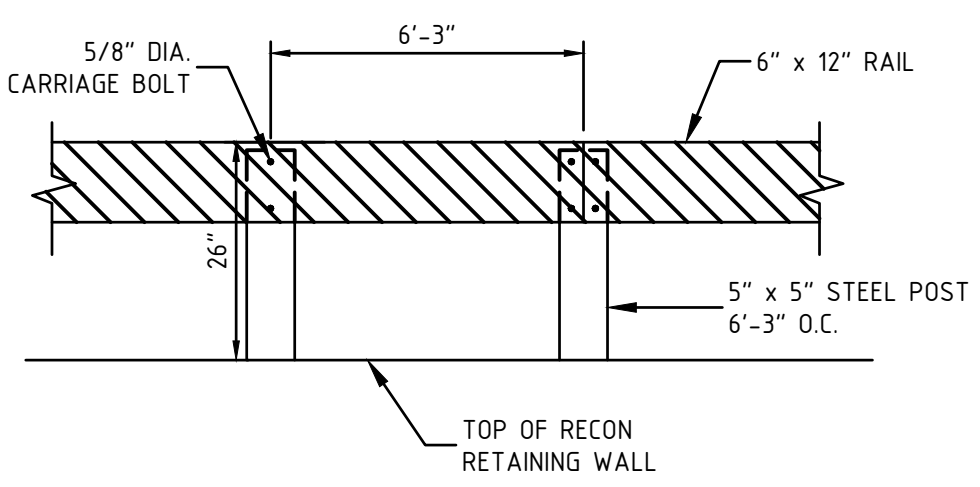


- NOTES:**
- LENGTH OF ENTRANCE MAY BE 50' WHERE DIVERSION RIDGE IS PROVIDED.
 - GRADE AND COMPACT ACCESS ROAD ENTRANCE AS NECESSARY. PLACE FILTER FABRIC AND 6" OF 3" CRUSHED STONE TO MATCH SLOPE OF EXISTING ROAD.
 - PROVIDE NECESSARY SWALES OR DIVERSIONS TO MINIMIZE DIRECT FLOW OF WATER ONTO STONE AREA.
 - 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 ENTRANCE.

STABILIZED CONSTRUCTION ENTRANCE DETAIL
NTS



TYPICAL END SECTION



- NOTE:**
- REFER TO SHEET C103 FOR LOCATION AND GRADING AROUND GUARD RAIL.

REFERENCE:
TIMBER BRIDGE DESIGN, CONSTRUCTION, INSPECTION, AND MAINTENANCE PUBLISHED BY THE UNITED STATES DEPARTMENT OF AGRICULTURE FOREST SERVICE.

GUARD RAIL DETAIL
NTS

horizons Engineering
NEWPORT VT • LITTLETON NH • NEW LONDON NH
POMFRET VT • KENNEBUNK ME • CONWAY NH

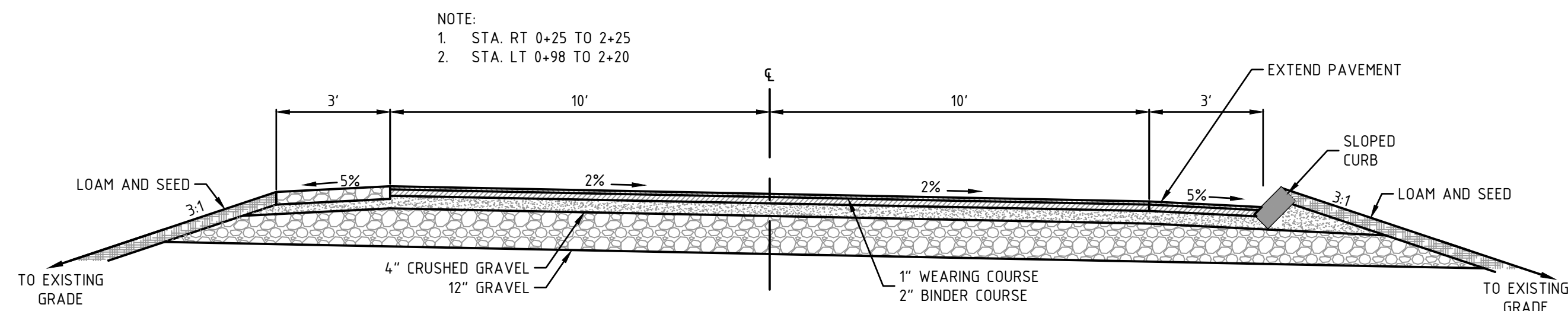
MICHAEL & MARTI MULHERN
THE CROSSINGS SUBDIVISION
DURHAM, NEW HAMPSHIRE

CONSTRUCTION DETAILS

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

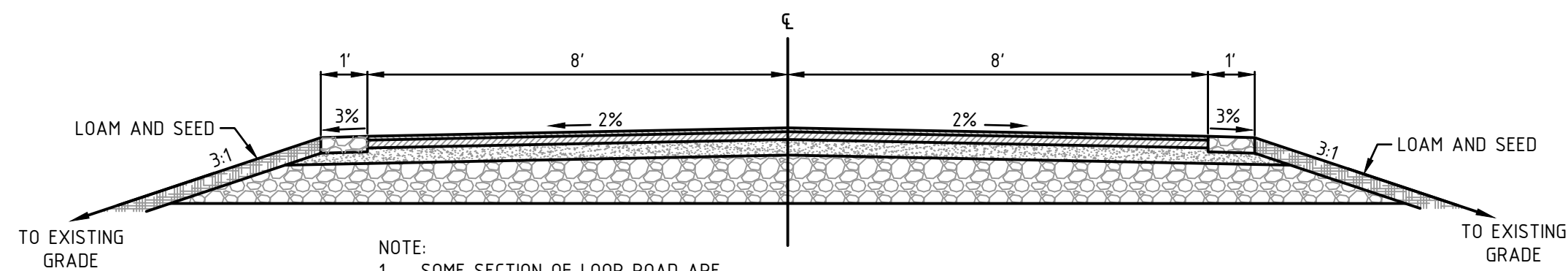
DATE: 2021-07-01	PROJECT #: NM19063
ENGIN'D BY: MCS	DRAWN BY: MCS
CHECK'D BY: MJS	ARCHIVE #: H-___

C502



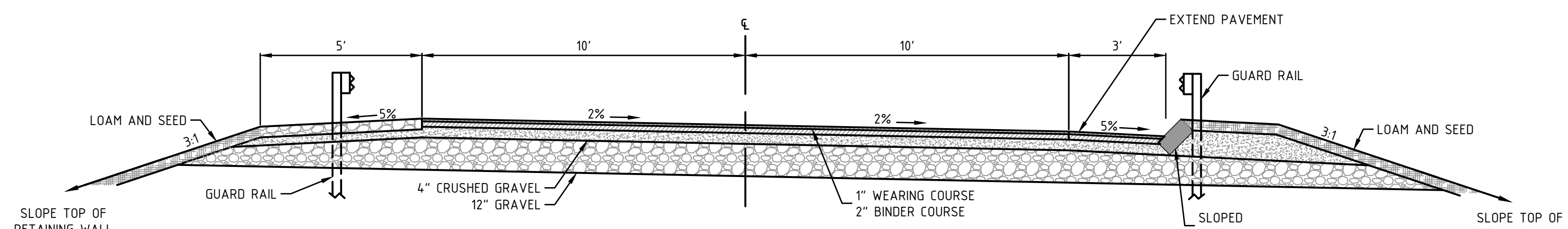
TYPICAL ACCESS ROAD CROSS-SECTION

NTS



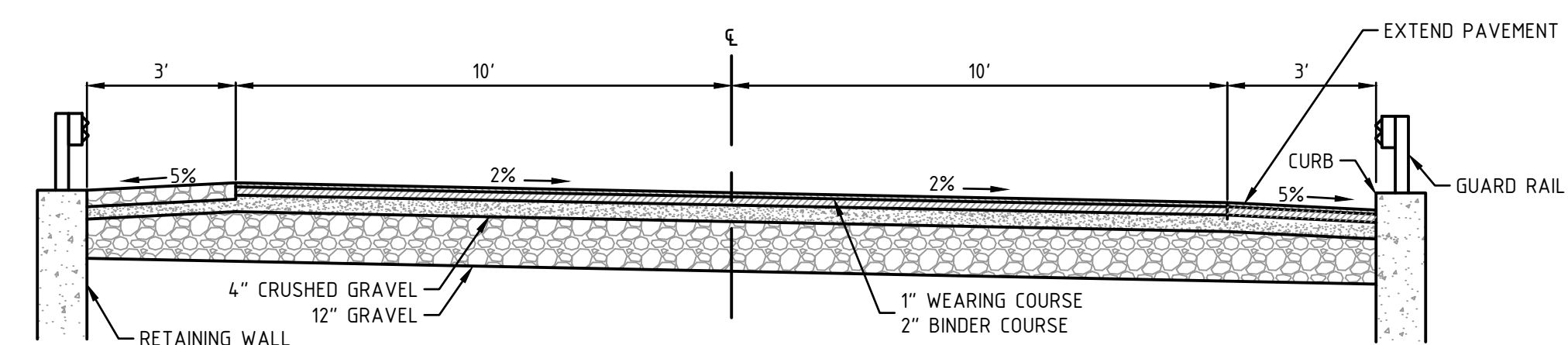
TYPICAL LOOP ROAD CROSS-SECTION

NTS



WETLAND CROSSING #2 ROAD CROSS-SECTION

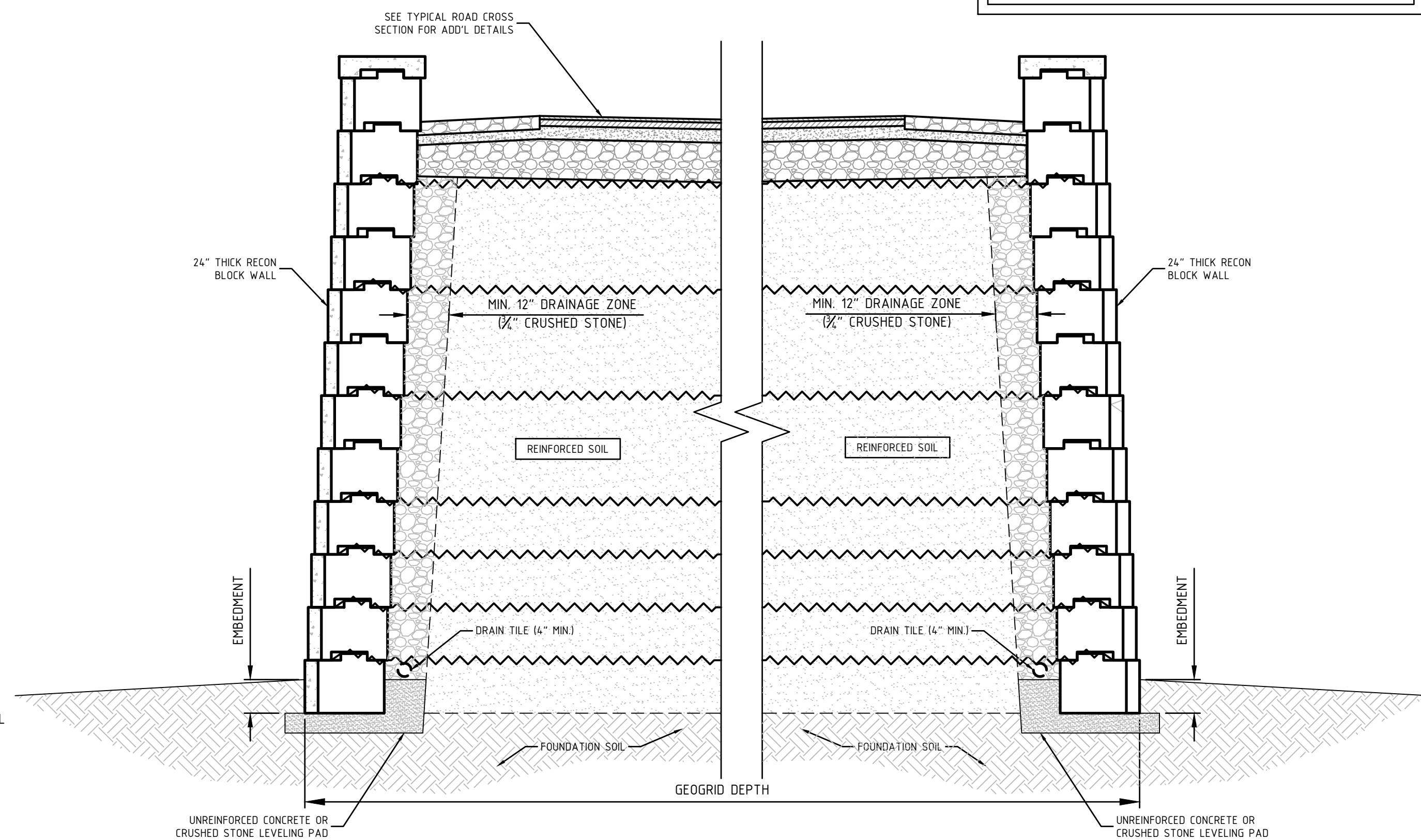
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TYPICAL ACCESS ROAD WITH RETAINING WALLS CROSS-SECTION

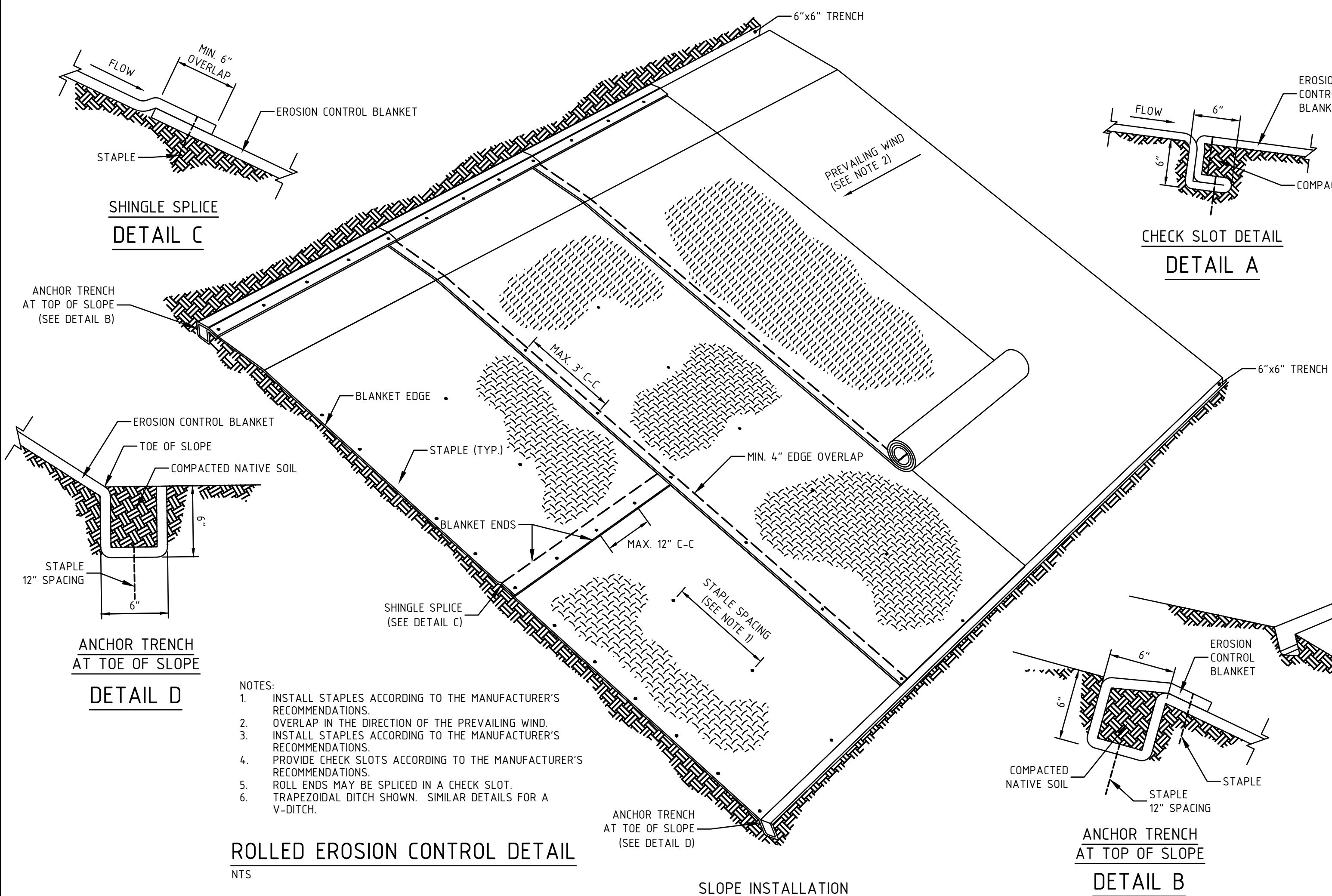
NTS

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



MSE WALL FOR WETLAND CROSSING #1

NTS



- NOTES:
1. INSTALL STAPLES ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
 2. OVERLAP IN THE DIRECTION OF THE PREVAILING WIND.
 3. INSTALL STAPLES ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
 4. PROVIDE CHECK SLOTS ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS.
 5. ROLL ENDS MAY BE SPICED IN A CHECK SLOT.
 6. TRAPEZOIDAL DITCH SHOWN. SIMILAR DETAILS FOR A V-DITCH.

ROLLED EROSION CONTROL DETAIL

NTS

horizons
Engineering

NEWPORT VT • LITTLETON NH • NEW LONDON NH
 POMFRET VT • KENNEBUNK ME • CONWAY NH

MICHAEL & MARTI MULHERN

THE CROSSINGS SUBDIVISION

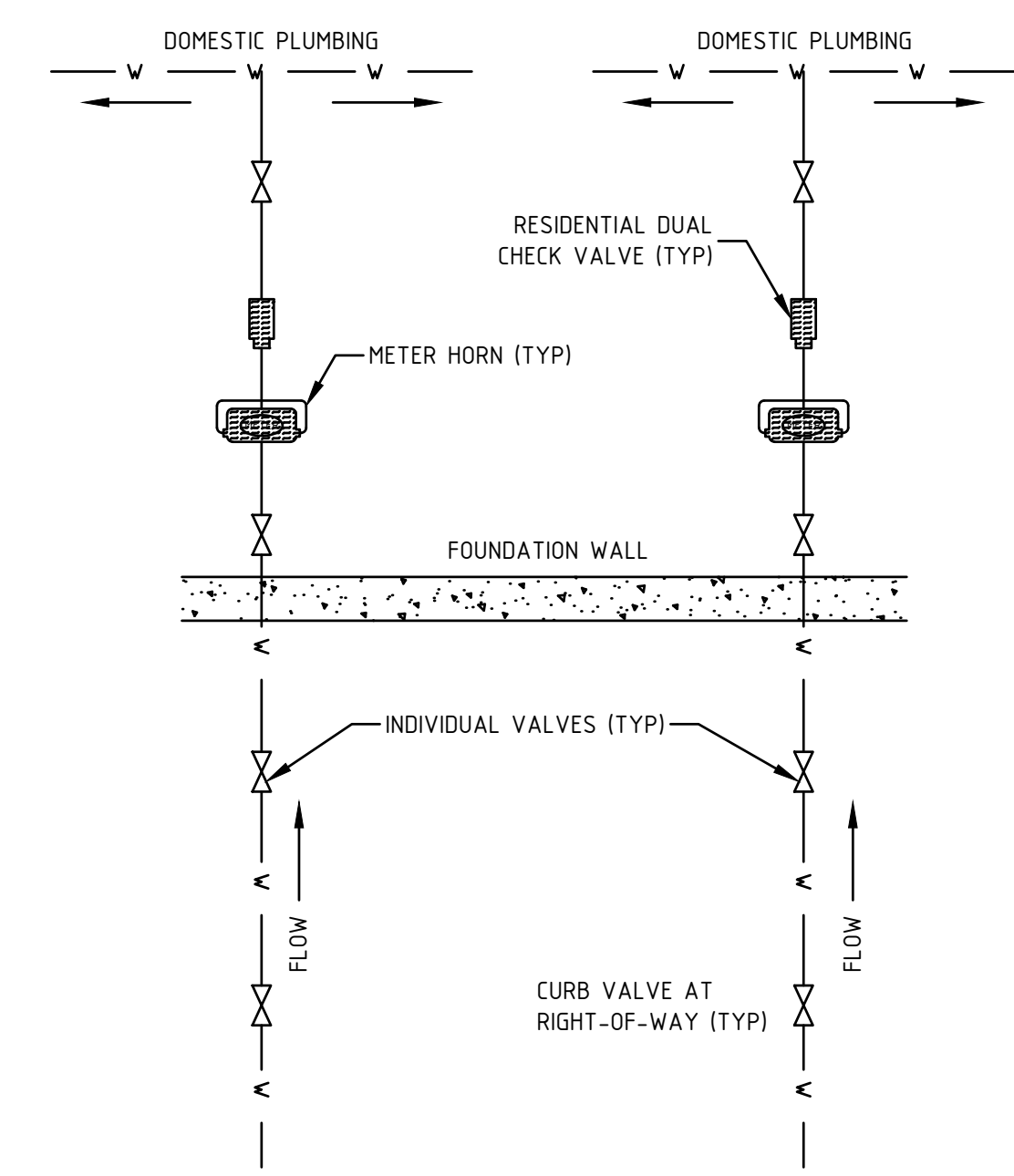
DURHAM, NEW HAMPSHIRE

CONSTRUCTION DETAILS

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

DATE: 2021-07-01 PROJECT #: NM19063
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 CHECK'D BY: MJS ARCHIVE #: H-
 MICHAEL J. SIEVERT No. 6897 LICENSED PROFESSIONAL ENGINEER

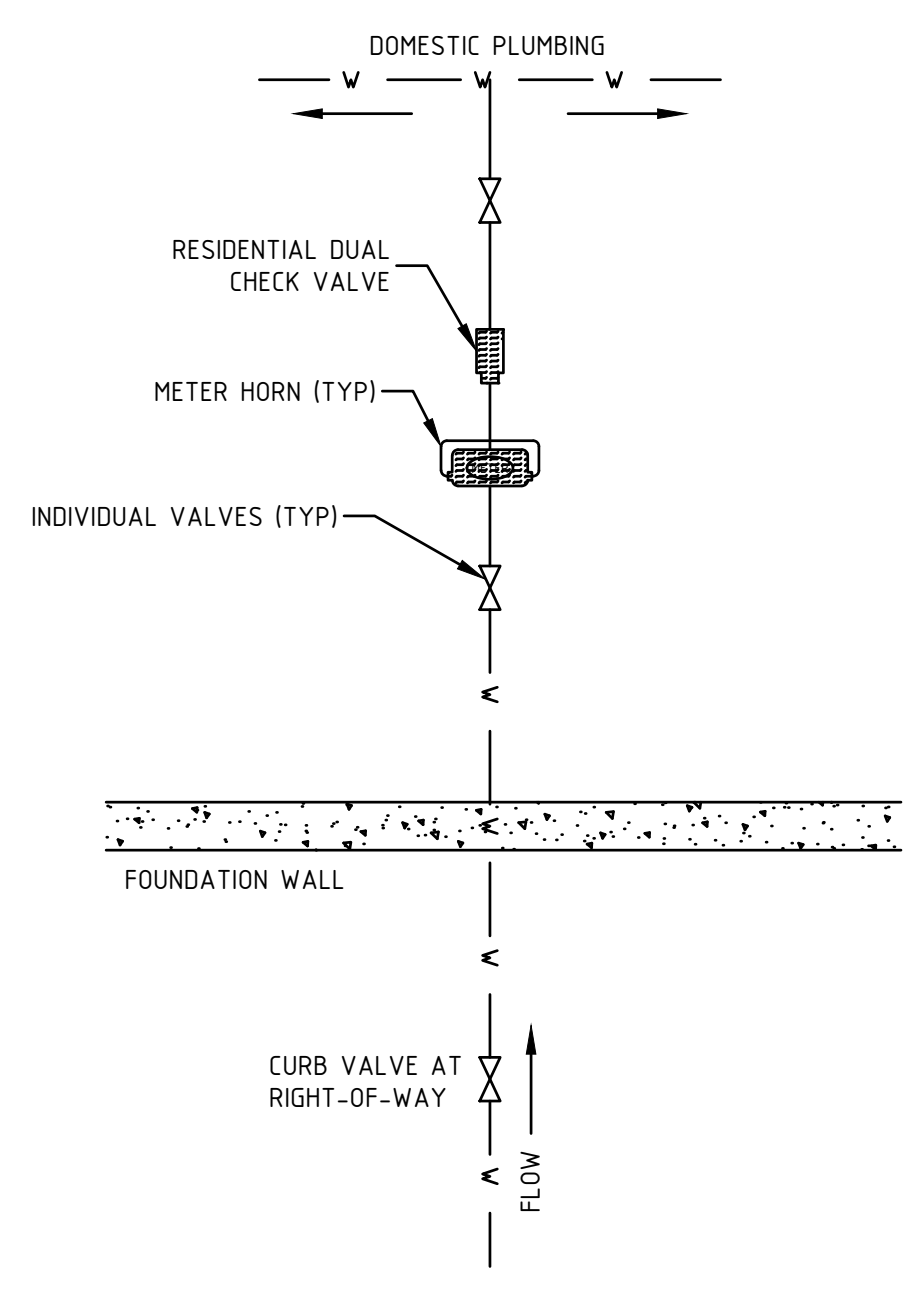
C503



NOTE: ALL METERS SUPPLIED BY TOWN OF DURHAM GENERAL SERVICES DEPARTMENT

DUAL RESIDENTIAL WATER METER INSTALLATION

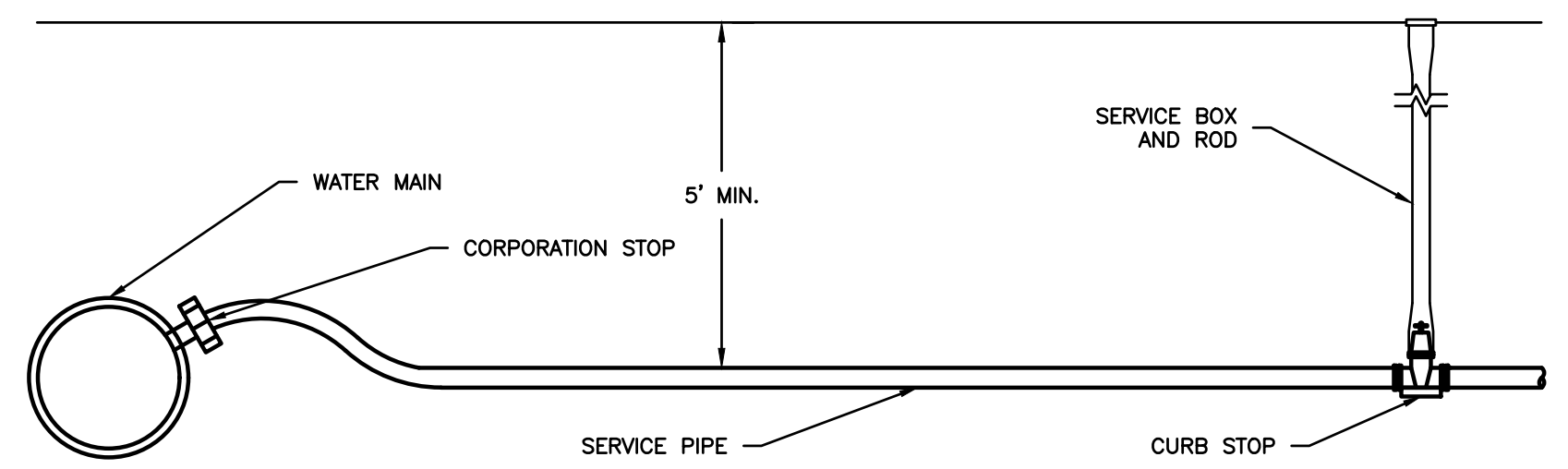
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NOTE: ALL METERS SUPPLIED BY TOWN OF DURHAM GENERAL SERVICES DEPARTMENT

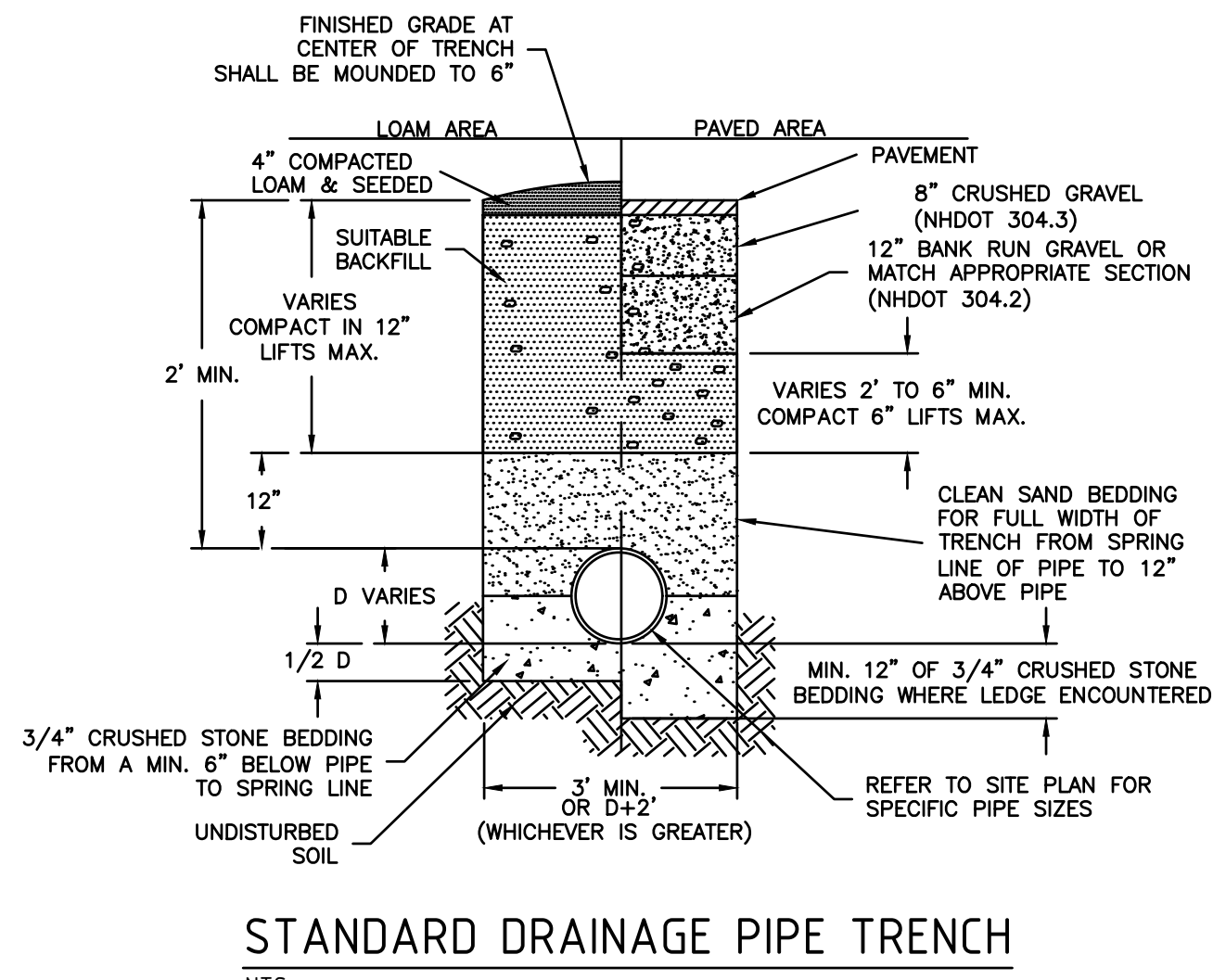
SINGLE FAMILY WATER METER INSTALLATION

NTS



TYPICAL WATER SERVICE CONNECTION

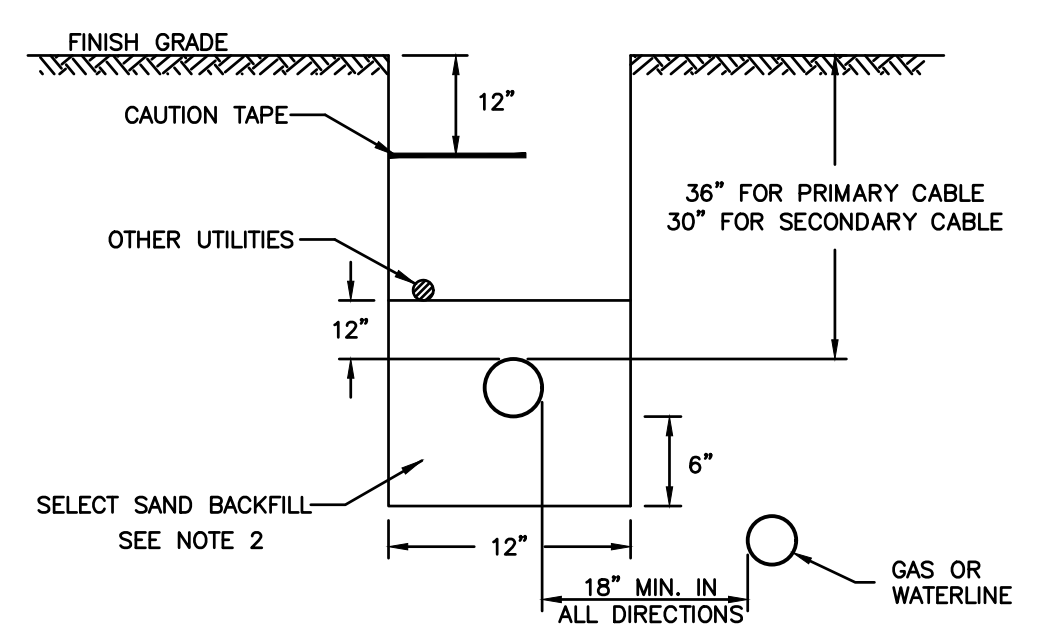
NTS



STANDARD DRAINAGE PIPE TRENCH

NTS

- DRAINAGE STRUCTURE NOTES:**
- DRAINAGE STRUCTURE MATERIALS SHALL COMPLY WITH NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION, DIVISION 600, SECTION 604.
 - SITE CONTRACTOR SHALL BACKFILL AROUND DRAINAGE STRUCTURES IN 6 TO 8 INCH LIFTS, ATTAINING 95% MAXIMUM PROCTOR DENSITY FOR EACH LIFT.
 - PIPE OPENINGS SHALL BE FULLY MORTARED ON OUTSIDE PRIOR TO BACK FILLING. INSIDE OF PIPE OPENINGS SHALL BE MORTARED AND ALLOWED TO CURE PER MANUFACTURER'S REQUIREMENTS PRIOR TO RECEIVING RUNOFF.
 - JOINTS BETWEEN ADJACENT RISERS SHALL BE FULLY SEALED WITH ELASTOMERIC SEALANT PER MANUFACTURER'S REQUIREMENTS.
 - WHEN FRAME/GRATE ARE LOCATED IN A PAVED AREA, THEY SHALL BE BROUGHT TO FINISH GRADE AFTER BINDER COURSE PAVEMENT IS PLACED. THE EXCAVATION REQUIRED AROUND THE GRATE AND FRAME SHALL BE BACKFILLED FLUSH WITH THE TOP OF BINDER COURSE WITH NHDOT CLASS B CONCRETE.
 - FRAME AND GRATE: CATCH BASINS: NEENAH LIFTMATE OR PAMREX

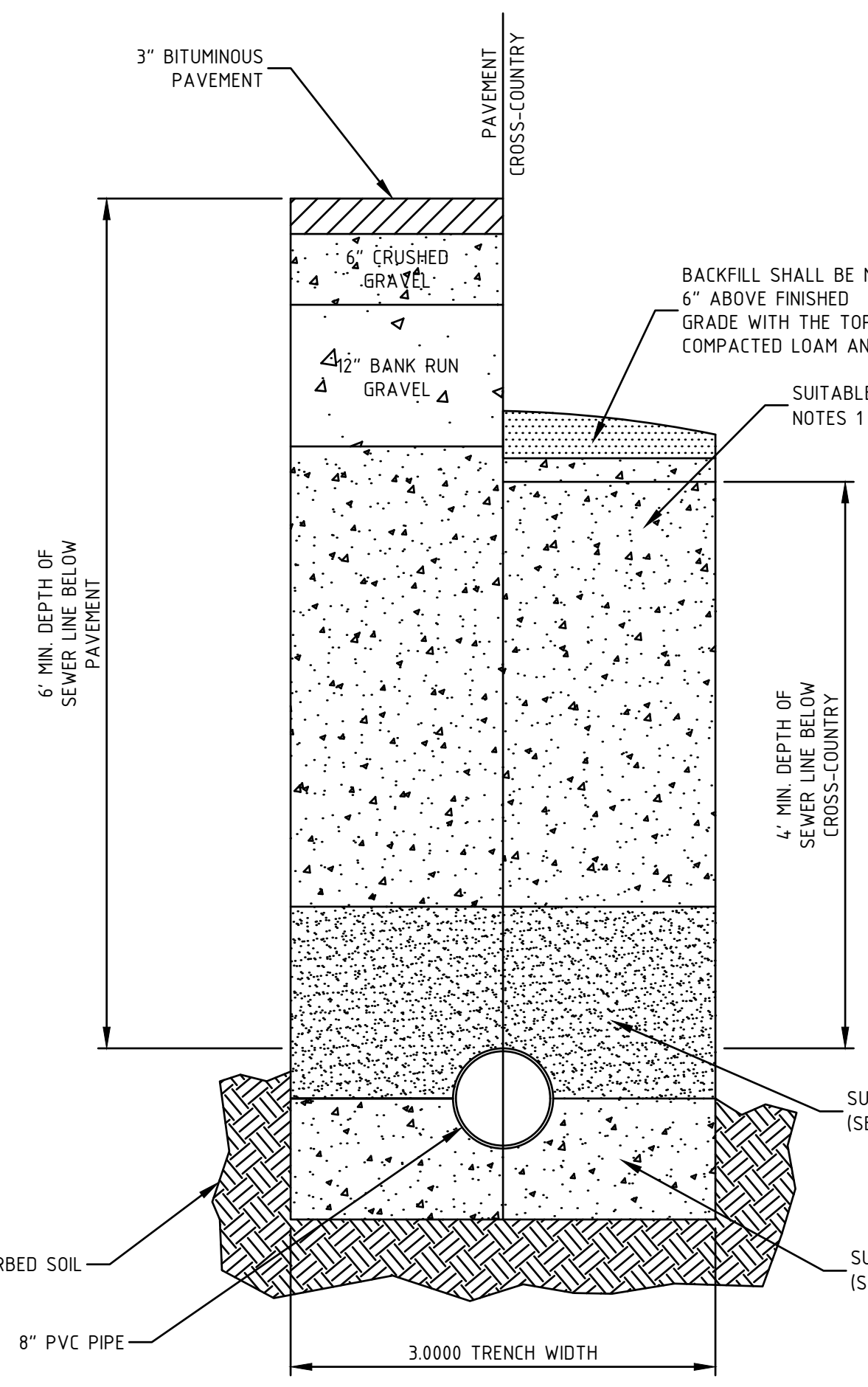


TELEPHONE & ELECTRICAL TRENCH

NTS

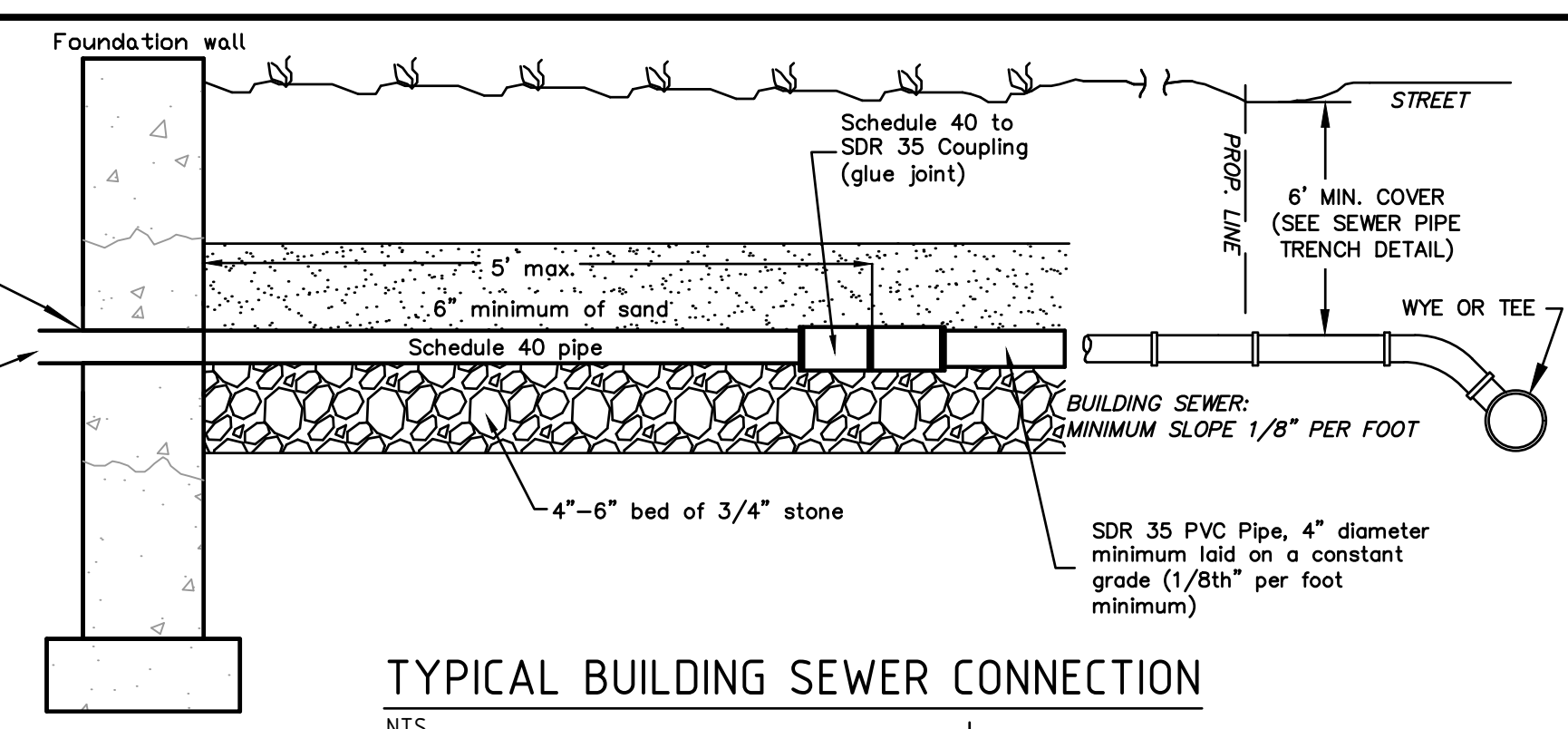
- NOTES:**
- CONSTRUCTION TO BE IN ACCORDANCE WITH PSNH CONSTRUCTION STANDARDS FOR NEW ELECTRICAL SERVICE WORK BY CONTRACTORS, MOST RECENT EDITION.
 - SELECT SAND BACKFILL SHALL CONSIST OF A FINE GRANULAR MATERIAL OF WHICH 100% SHALL PASS THROUGH A 1/4" SIEVE. EXCEPT NATURALLY OCCURRING SMOOTH ROUND 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.
 - CONDUIT SIZES TO BE 5" 3-PHASE PRIMARY AND 4" 3-PHASE SECONDARY. ALL CONDUIT SIZES TO BE VERIFIED BY PSNH.
 - 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.

- NOTES (IN ACCORDANCE WITH Env-Ws 706.05)**
- PIPE TRENCH BEDDING MATERIAL AND FILL MATERIAL FOR ORDERED EXCAVATION BELOW GRADE SHALL BE SCREENED GRAVEL OR CRUSHED STONE TO ASTM C33 STONE SIZE NO. 67. THE PIPE BEDDING MATERIAL SHALL BE PLACED 6 INCHES BELOW THE BOTTOM OF THE PIPE. THE FILL MATERIAL SHALL BE PLACED ABOVE THE PIPE SAND BLANKET MATERIAL AND EXTEND TO THE FINISHED GRADE OR TO THE BOTTOM OF THE SELECT MATERIALS FOR A PAVED AREA.
 - PIPE SAND BLANKET MATERIAL SHALL BE GRADED SAND, FREE FROM ORGANIC MATERIALS, 100% OF WHICH SHALL PASS THROUGH A 1/2 INCH SIEVE AND A MAXIMUM OF 15% OF WHICH SHALL PASS THROUGH A #200 SIEVE. THE SAND BLANKET SHALL COVER THE PIPE TO A DEPTH OF 12 INCHES.
 - BEDDING AND BLANKET MATERIALS SHALL BE COMPACTED IN 12 INCH LAYERS. BACKFILL MATERIAL SHALL BE COMPACTED IN 3 FOOT LAYERS TO THE FINISHED SURFACE EXCEPT FOR PAVED AREAS WHERE THE DEPTH BELOW PAVEMENT CONSISTING OF THE SELECT MATERIALS SHALL BE COMPACTED PER THE APPLICABLE PAVEMENT CONSTRUCTION GUIDELINES.
 - TRENCH BACKFILL MATERIAL FOR PAVED AREAS SHALL CONSIST OF THE NATURAL MATERIAL EXCAVATED FOR THE TRENCH WITH THE EXCEPTION OF: DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, WET OR SOFT MUCK, PIECES OF CLAY, EXCAVATED LEDGE MATERIAL, ROCKS OVER 6 INCHES IN THE LARGEST DIMENSION, AND ANY MATERIAL NOT APPROVED BY THE ENGINEER. TRENCH BACKFILL FOR CROSS-COUNTRY SHALL BE AS DESCRIBED ABOVE WITH THE EXCEPTION THAT TOP SOIL, LOAM, AND MUCK OR PEAT MAY BE USED AS LONG AS SUCH MATERIAL PROVIDES STABLE CONSTRUCTION.
 - ADDITIONAL REQUIREMENTS MAY BE FOUND IN Env-Ws 706.05.



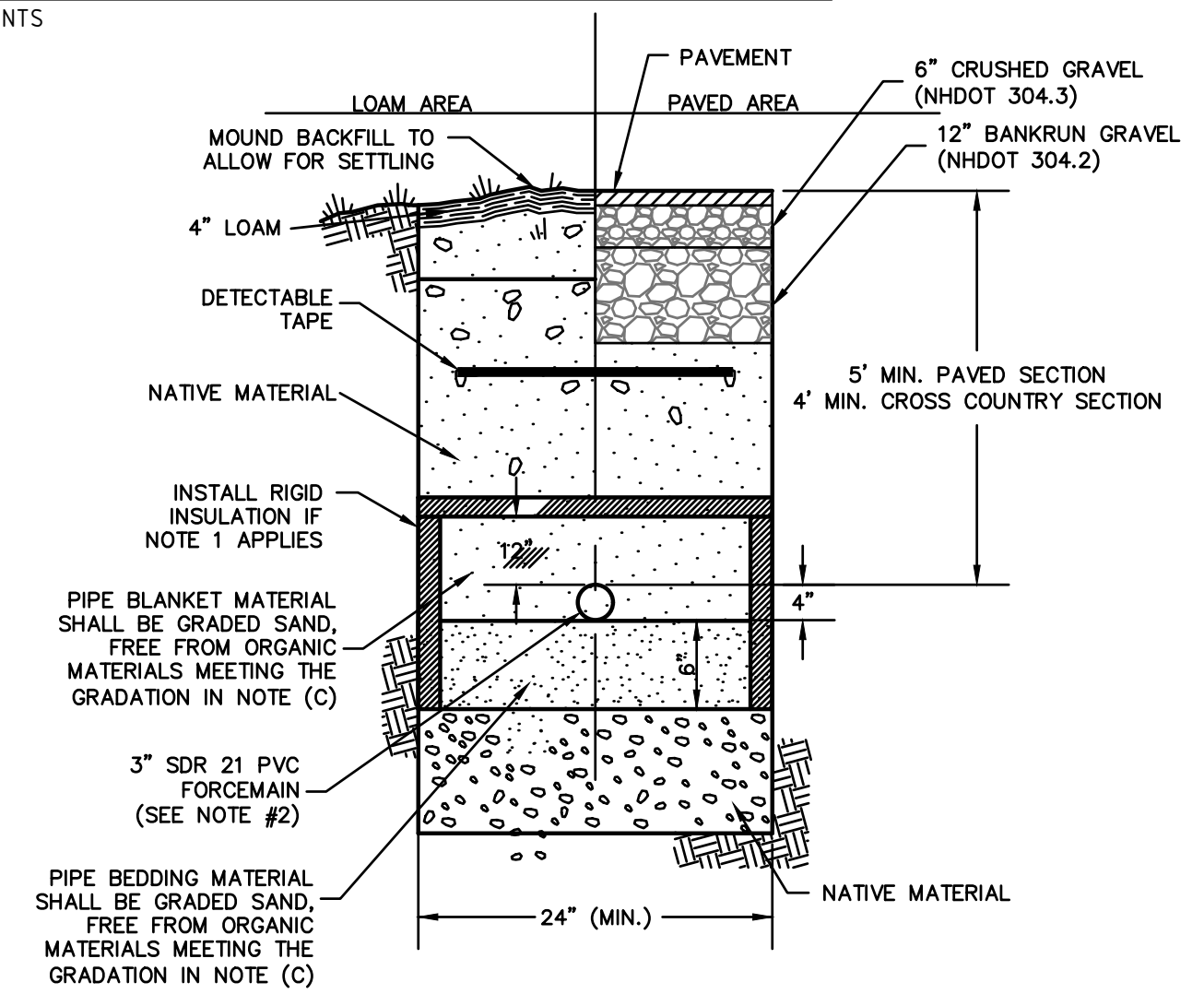
STANDARD SEWER PIPE TRENCH

NTS



TYPICAL BUILDING SEWER CONNECTION

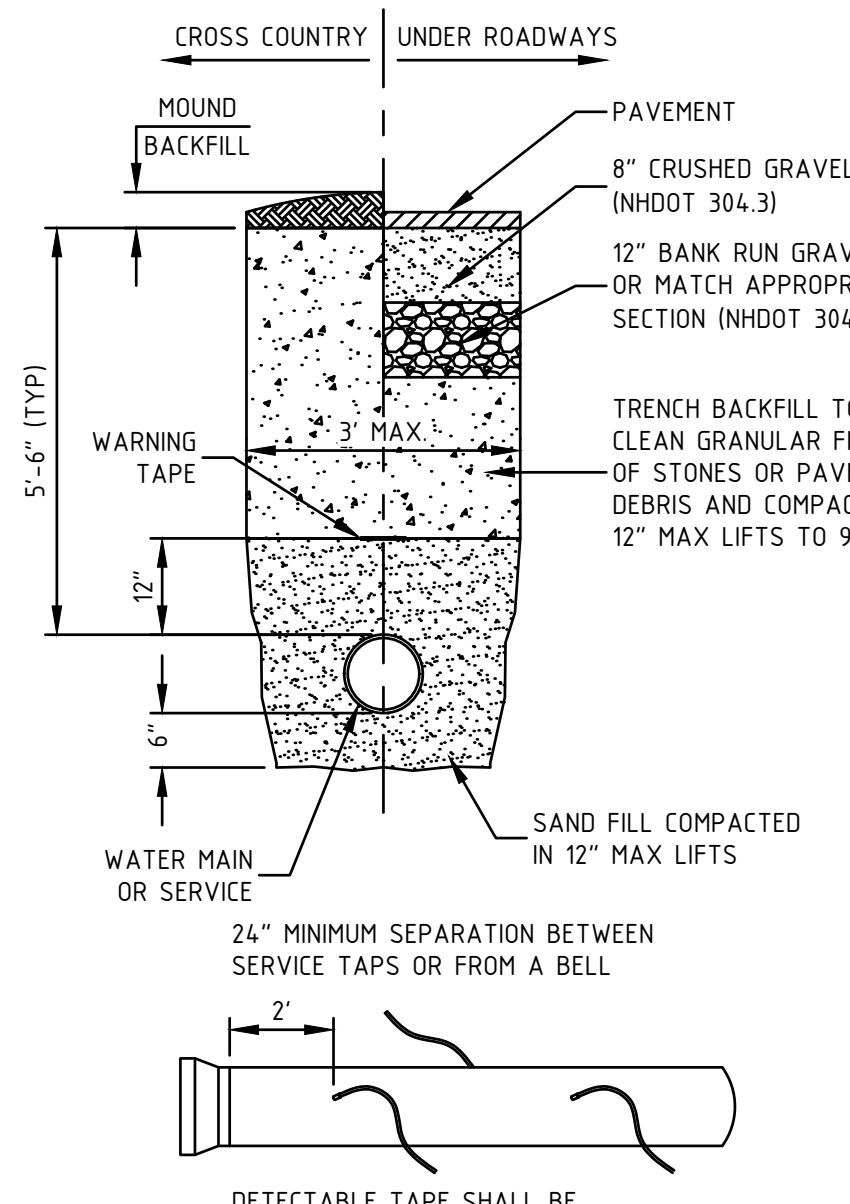
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SEWER FORCE MAIN TRENCH

NTS

- NOTES:**
- USE RIGID INSULATION AS SHOWN IF PIPE COVER IS LESS THAN 4' UNDER PAVED SECTION OR 5' UNDER CROSS COUNTRY SECTION.
 - THERE SHALL BE NO GLUE JOINTS ON THE FORCEMAIN.



WATER MAIN TRENCH

NTS

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)

- 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 D3034-04g.
- PLASTIC GRAVITY 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.
- JOINT SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL CONFORMING TO ASTM D3212-96(c)(2003)1 AND SHALL BE PUSH-ON, BELL AND SPIGOT TYPE.

GRAVITY SEWER PIPE TESTING REQUIREMENTS (Env-Wq 704.07)

- ALL NEW SEWERS SHALL BE TESTED FOR WATER TIGHTNESS BY THE USE OF LOW-PRESSURE AIR TESTS.
- LOW-PRESSURE AIR TESTING SHALL BE IN CONFORMANCE WITH:
 - ASTM F1417-92(2005) "STANDARD TEST METHOD FOR INSTALLATION ACCEPTANCE OF PLASTIC GRAVITY SEWER LINES USING LOW-PRESSURE AIR"; OR
 - UNI-BELL PVC PIPE ASSOCIATION UNI-B-6, "LOW-PRESSURE AIR TESTING OF INSTALLED SEWER PIPE" (1998).
- ALL NEW GRAVITY SEWERS SHALL BE CLEANED AND VISUALLY INSPECTED AND SHALL BE TRUE TO LINE AND GRADE FOLLOWING INSTALLATION AND PRIOR TO USE.
- ALL PLASTIC SEWER PIPE SHALL BE DEFLECTION TESTED NOT LESS THAN 30 DAYS FOLLOWING INSTALLATION.
- THE MAXIMUM ALLOWABLE DEFLECTION OF FLEXIBLE SEWER PIPE SHALL BE 7 1/2 PERCENT OF AVERAGE INSIDE DIAMETER.

TRENCH CONSTRUCTION (PER Env-Wq 704.09 NUMERATION)

- TRENCH DIMENSIONS SHALL BE AS FOLLOWS:
 - 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".
- 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.
- 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.
- 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.
- PIPE SAND MATERIAL SHALL COVER THE PIPE A MINIMUM OF 12 INCHES ABOVE THE CROWN OF THE OUTSIDE SURFACE.
- COMPACTION SHALL BE IN 12 INCH LAYERS FOR BEDDING AND BLANKET MATERIALS.
- 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.
- 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 SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION.
- 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.
- BACKFILL SHALL BE MOUNDING 6 INCHES ABOVE ORIGINAL GROUND AT CROSS-COUNTRY LOCATIONS.
- 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.
- PRECAUTIONS SHALL BE TAKEN TO AVOID GROUNDWATER POOLING AT THE SURFACE BY PROVIDING DRAINAGE TO A SUITABLE OUTLET AT CATCH BASINS OR RUNOFF SWALES.

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):
- FORCE MAINS SHALL BE CONSTRUCTED OF SDR 21 PVC MATERIAL.
 - FORCE MAINS SHALL BE TREATED AS GRAVITY SEWERS FOR PURPOSES OF FOUNDATION BEDDING AND BACKFILL REQUIREMENTS.
 - 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 C800-05 "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.

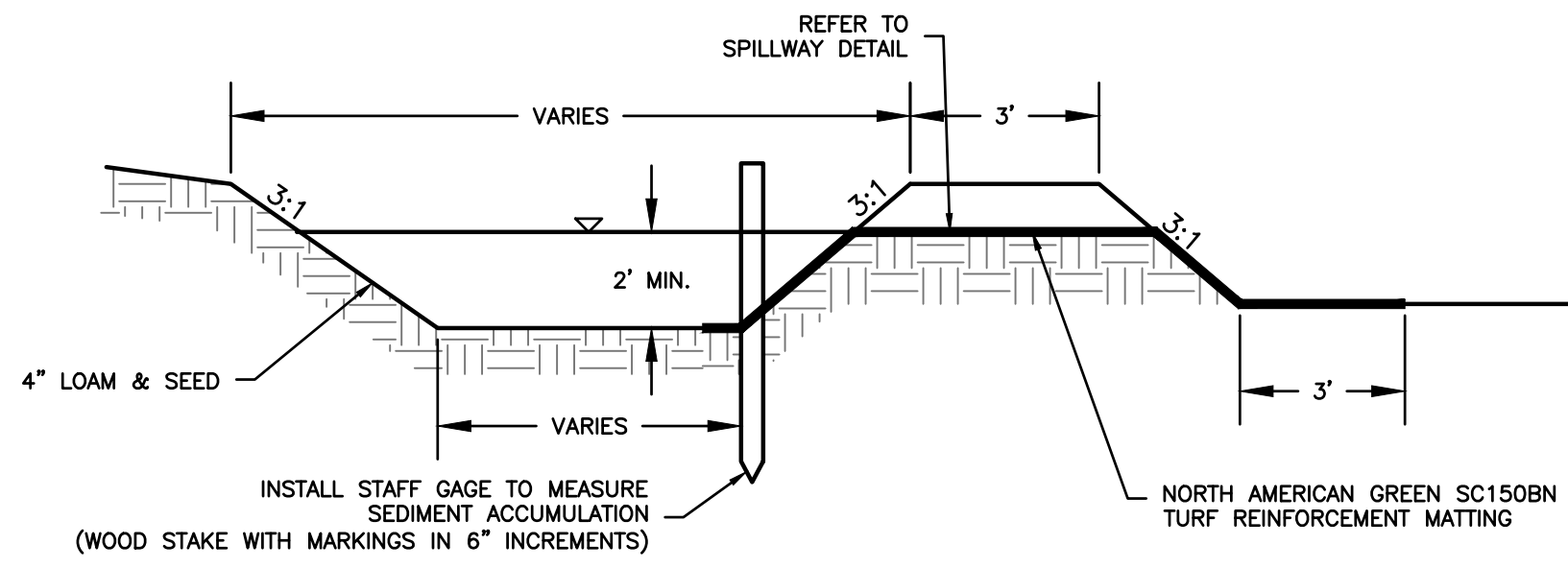
horizons Engineering
NEWPORT VT • LITTLETON NH • NEW LONDON NH
POMFRET VT • KENNEBUNK ME • CONWAY NH

MICHAEL & MARTI MULHERN
THE CROSSINGS SUBDIVISION
DURHAM, NEW HAMPSHIRE

CONSTRUCTION DETAILS

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

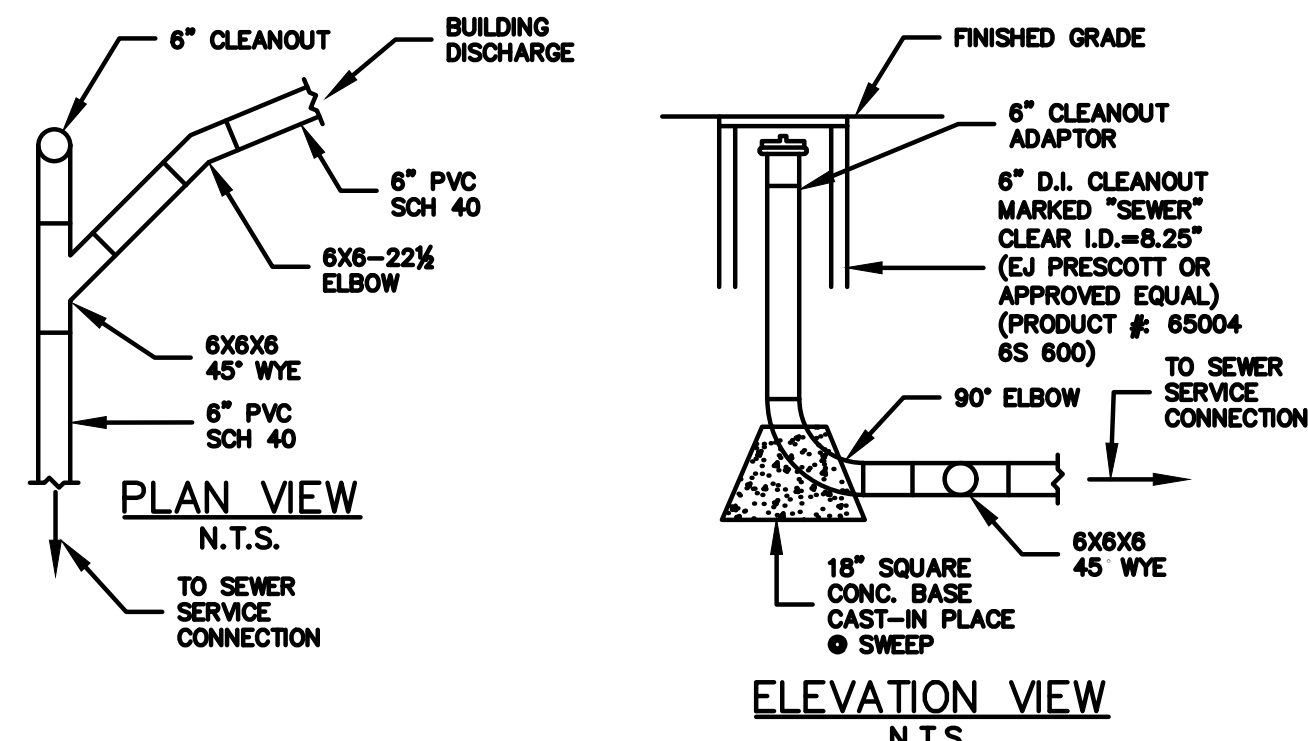
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 ENG'D BY: MCS DRAWN BY: MCS
 CHECK'D BY: MJS ARCHIVE #: H-
C504



SEDIMENT FOREBAY TYPICAL CROSS SECTION DETAIL

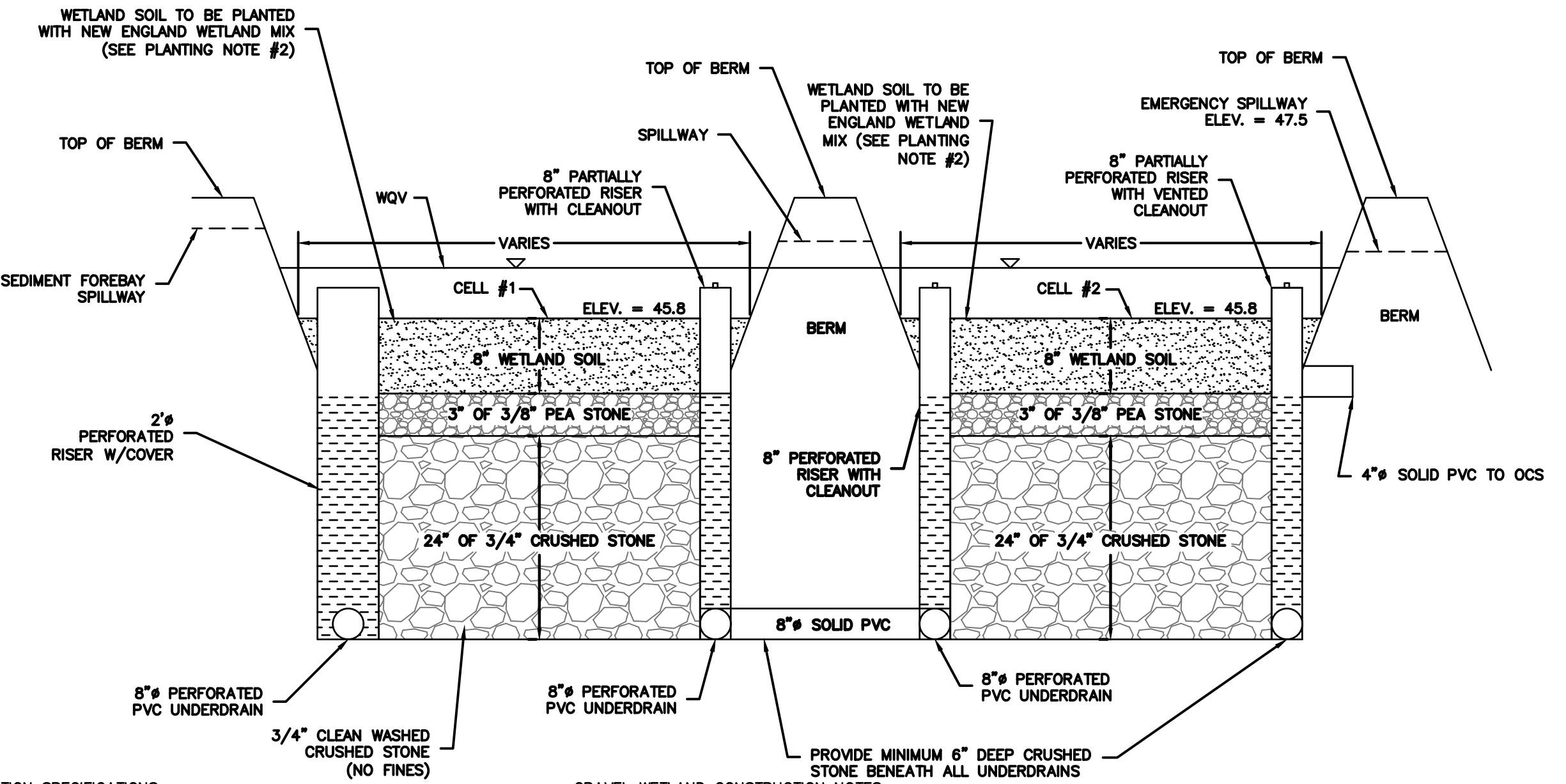
NTS

- NOTES:
- REFER TO BERM CONSTRUCTION NOTES IN BIORETENTION SYSTEM DETAIL FOR BERM CONSTRUCTION REQUIREMENTS.
 - REFER TO SPILLWAY CROSS SECTION DETAIL FOR SPILLWAY CONSTRUCTION REQUIREMENTS.
 - THE SEDIMENT FOREBAY SHALL BE MOWED WITH THE REST OF THE SITES LAWN AREAS TO PROMOTE HEALTHY GROWTH AND PREVENT THE ENCROACHMENT OF WEEDS AND WOODY VEGETATION.
 - INSTALL STAFF GAGE TO MEASURE SEDIMENT ACCUMULATION. SEDIMENT SHALL BE REMOVED AFTER SEDIMENT ACCUMULATES TO A DEPTH OF 1 FOOT.



CLEANOUT DETAIL

NTS



CONSTRUCTION SPECIFICATIONS:

- PREPARE THE SUB-GRADE FOR THE FILTER MATERIAL, GEOTEXTILE FABRIC, AND RIP-RAP TO THE GRADES SHOWN ON THE PLANS.
- MINIMUM 6" SAND/GRAVEL BEDDING OR GEOTEXTILE FABRIC (MIRAFI 140N OR EQUAL) REQUIRED UNDER ALL ROCK RIP-RAP.
- THE ROCK OR GRAVEL USED FOR FILTER OR RIP-RAP SHALL CONFORM TO THE SPECIFIED GRADATION.
- GEOTEXTILE FABRICS SHALL BE PROTECTED FROM PUNCTURE OR TEARING DURING THE PLACEMENT OF ROCK RIP-RAP. 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 (2) PIECES OF FABRIC SHALL BE A MINIMUM OF 12 INCHES. STONE FOR THE RIP-RAP MAY BE PLACED BY EQUIPMENT AND SHALL BE CONSTRUCTED TO THE FULL LAYER THICKNESS IN ONE OPERATION AND IN SUCH A MANNER AS TO PREVENT SEGREGATION OF THE STONE SIZES.

MAINTENANCE NOTES:

- OUTLETS SHALL BE INSPECTED AND CLEANED ANNUALLY AND AFTER ANY MAJOR STORM EVENT. ANY EROSION OR DAMAGE TO THE RIP-RAP SHALL BE REPAIRED IMMEDIATELY.
- THE CHANNEL IMMEDIATELY DOWNSTREAM FROM THE OUTLET SHOULD BE CHECKED TO SEE THAT NO EROSION IS OCCURRING.
- THE DOWNSTREAM CHANNEL SHOULD BE KEPT CLEAR OF OBSTRUCTIONS SUCH AS FALLEN TREES, DEBRIS, AND SEDIMENT THAT COULD CHANGE FLOW PATTERNS AND/OR TAILWATER DEPTHS ON THE PIPES. REPAIRS MUST BE CARRIED OUT IMMEDIATELY TO AVOID ADDITIONAL DAMAGE TO THE OUTLET PROTECTION APRON.

GRAVEL WETLAND CONSTRUCTION NOTES:

- DO NOT PLACE GRAVEL WETLANDS INTO SERVICE UNTIL EACH BMP HAS BEEN PLANTED AND ITS CONTRIBUTING AREAS HAVE BEEN FULLY STABILIZED.
- DO NOT DISCHARGE SEDIMENT-LADEN WATERS FROM CONSTRUCTION ACTIVITIES (RUNOFF, WATER FROM EXCAVATIONS) TO THE GRAVEL WETLAND OR DURING ANY STAGE OF CONSTRUCTION.
- CLEAR AND GRUB THE AREA WHERE THE GRAVEL WETLAND IS TO BE LOCATED. STOCKPILE LOAM FOR REUSE LATER.
- THE FOUNDATION AREA SHALL BE SCARIFIED PRIOR TO PLACING FILL. ALL UNSUITABLE MATERIAL UNDER THE BERM SHALL BE REMOVED AND REPLACED WITH SUITABLE FOUNDATION MATERIAL.
- THE BERM SHALL BE CONSTRUCTED BEGINNING FROM THE LOWEST POINT UNIFORMLY ALONG ITS ENTIRE LENGTH. PLACE MATERIALS IN MAXIMUM 12" LOOSE LIFTS COMPACTED TO 95% MAXIMUM MODIFIED PROCTOR DENSITY. EMBANKMENT SOIL SHALL HAVE NO ORGANIC MATTER OR FROZEN MATERIAL AND NO STONES LARGER THAN 2/3 OF THE MAXIMUM LOOSE LIFT THICKNESS. STONES AROUND ANY STRUCTURES AND/OR CONDUITS SHALL NOT EXCEED 3 INCHES. EMBANKMENT FILL MATERIAL SHALL HAVE THE FOLLOWING GRADATION:

SIEVE SIZE:	% PASSING:
#4	80-90
#40	50-60
#100	30-45
#200	15-30

- ALL PIPE TO PIPE CONNECTIONS SHALL BE WATER-TIGHT.
- ALL DISTURBED AREAS NOT OTHERWISE PLANTED SHALL RECEIVE FOUR INCHES OF LOAM AND SEEDED PER THE CONSTRUCTION SEQUENCING AND EROSION CONTROL NOTES ON SHEET D101.

GRAVEL WETLAND MAINTENANCE:

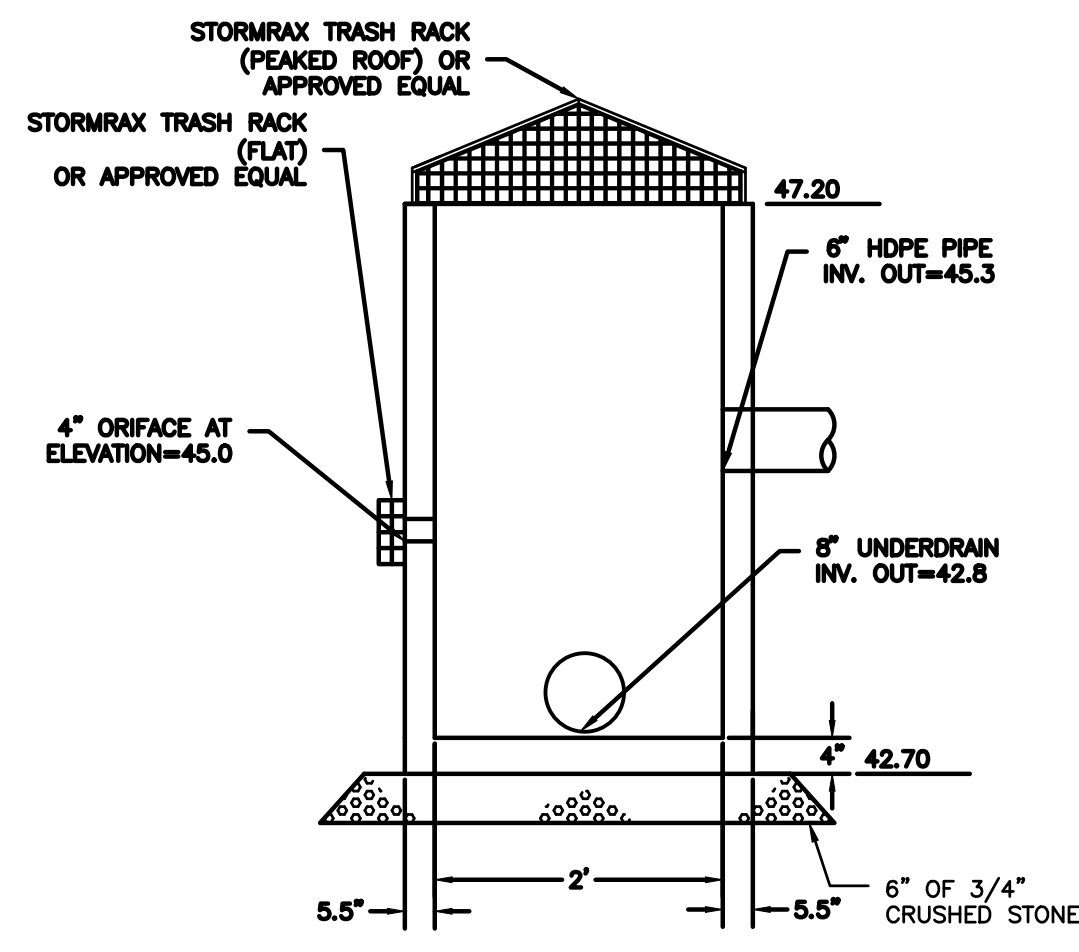
- SYSTEMS SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND FOLLOWING ANY RAINFALL EVENT EXCEEDING 2.5 INCHES IN A 24 HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS WARRANTED BY SUCH INSPECTION.
- TRASH AND DEBRIS SHOULD BE REMOVED AT EACH INSPECTION.
- AT LEAST ONCE ANNUALLY, SYSTEM SHOULD BE INSPECTED FOR DRAWDOWN TIME. IF GRAVEL WETLAND DOES NOT DRAIN WITHIN 72-HOURS FOLLOWING A RAINFALL EVENT, THEN A QUALIFIED PROFESSIONAL SHOULD ASSESS THE CONDITION OF THE FACILITY TO DETERMINE MEASURES REQUIRED TO RESTORE FILTRATION FUNCTION INCLUDING BUT NOT LIMITED TO REMOVAL AND REPLACEMENT OF WETLAND SOIL AND REPLANTING.
- VEGETATION SHOULD BE INSPECTED AT LEAST ANNUALLY, AND MAINTAINED IN HEALTHY CONDITION, INCLUDING PRUNING, REMOVAL AND REPLACEMENT OF DEAD OR DISEASED VEGETATION, AND REMOVAL OF INVASIVE SPECIES.

PLANTING NOTES:

- WETLAND SOIL MIX FOR GRAVEL WETLAND SHALL BE A SILT LOAM WITH A MINIMUM OF 15-20% ORGANIC CONTENT BY MASS. THE CLAY CONTENT SHALL NOT EXCEED 15% BY VOLUME. THE ORGANIC MATTER SHALL CONSIST OF DECIDUOUS LEAF COMPOST PROPERLY MATURED AND AT LEAST ONE YEAR OLD. THERE SHALL BE NO LEAF MULCH, COMPOSTED MIXED YARD DEBRIS, OR WOOD CHIPS.
- GRAVEL WETLAND BOTTOM TO BE PLANTED WITH NEW ENGLAND WETLAND MIX AVAILABLE FROM: PIERSON NURSERIES INC. 24 BUZZELL ROAD BIDDEFORD, ME 04005 (207)-498-4992
- GRAVEL WETLAND SLOPES AND BERM TO BE PLANTED WITH SEED MIX 'C' LISTED ON SHEET D101.

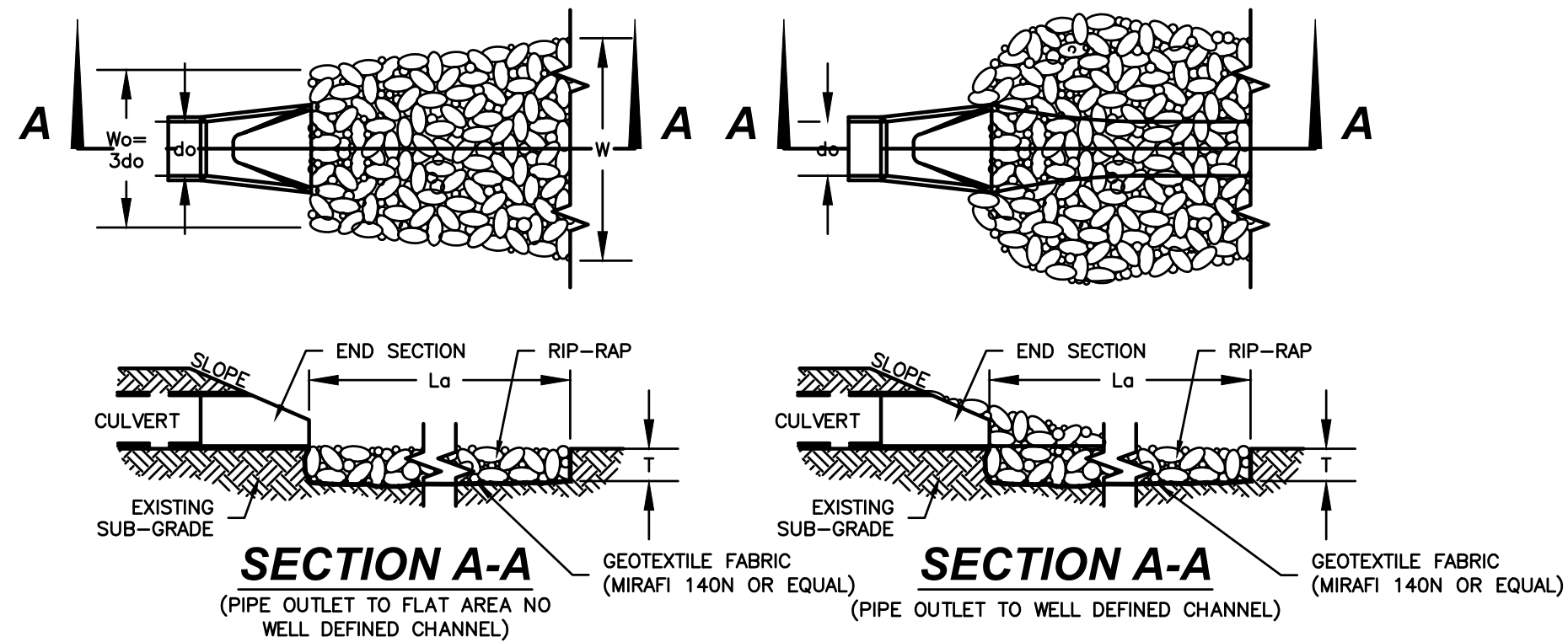
GRAVEL WETLAND SECTION

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MODIFIED OUTLET CONTROL STRUCTURE FOR GRAVEL WETLAND

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RIP-RAP GRADATION

% OF WEIGHT SMALLER THAN THE GIVEN SIZE	SIZE OF STONE (INCHES)
100	9 TO 12
85	7.8 TO 10.8
50	6 TO 9
15	1.8 TO 3

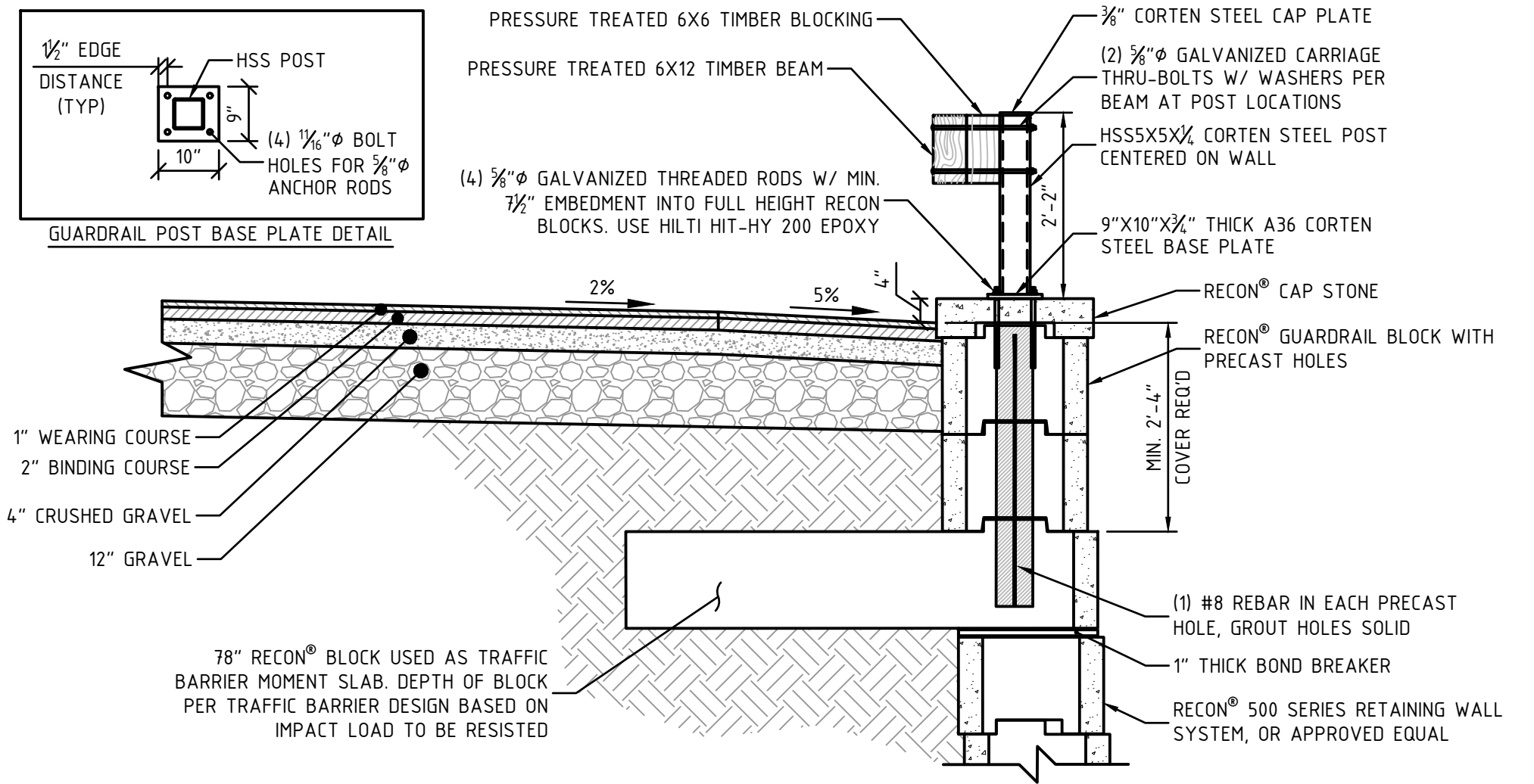
% OF WEIGHT SMALLER THAN THE GIVEN SIZE	SIZE OF STONE (INCHES)
100	12 TO 16
85	10.4 TO 14.4
50	8 TO 12
15	2.4 TO 4

RIP RAP APRON DIMENSION TABLE

LOCATION	W _o	W	L _a	T	d ₅₀
RIPRAP #1 - GRAVEL WETLAND EMERGENCY SPILLWAY	VARIES SEE PLAN				
RIPRAP #2 - 12" CPP OUTLET @ STA. 15+57	2.5	15	13	18"	6"
RIPRAP #3 - 18" CPP OUTLET @ STA. 15+66	3.75	4.7	16	18"	6"
RIPRAP #4 - GRAVEL WETLAND MID SPILLWAY	VARIES SEE PLAN				
RIPRAP #5 - 18" CPP OUTLET @ STA. 17+80	3.75	8.1	18	24"	8"
RIPRAP #6 - 6" CPP GRAVEL WETLAND OUTLET	1.25	9	8	18"	6"

PIPE OUTLET PROTECTION DETAIL

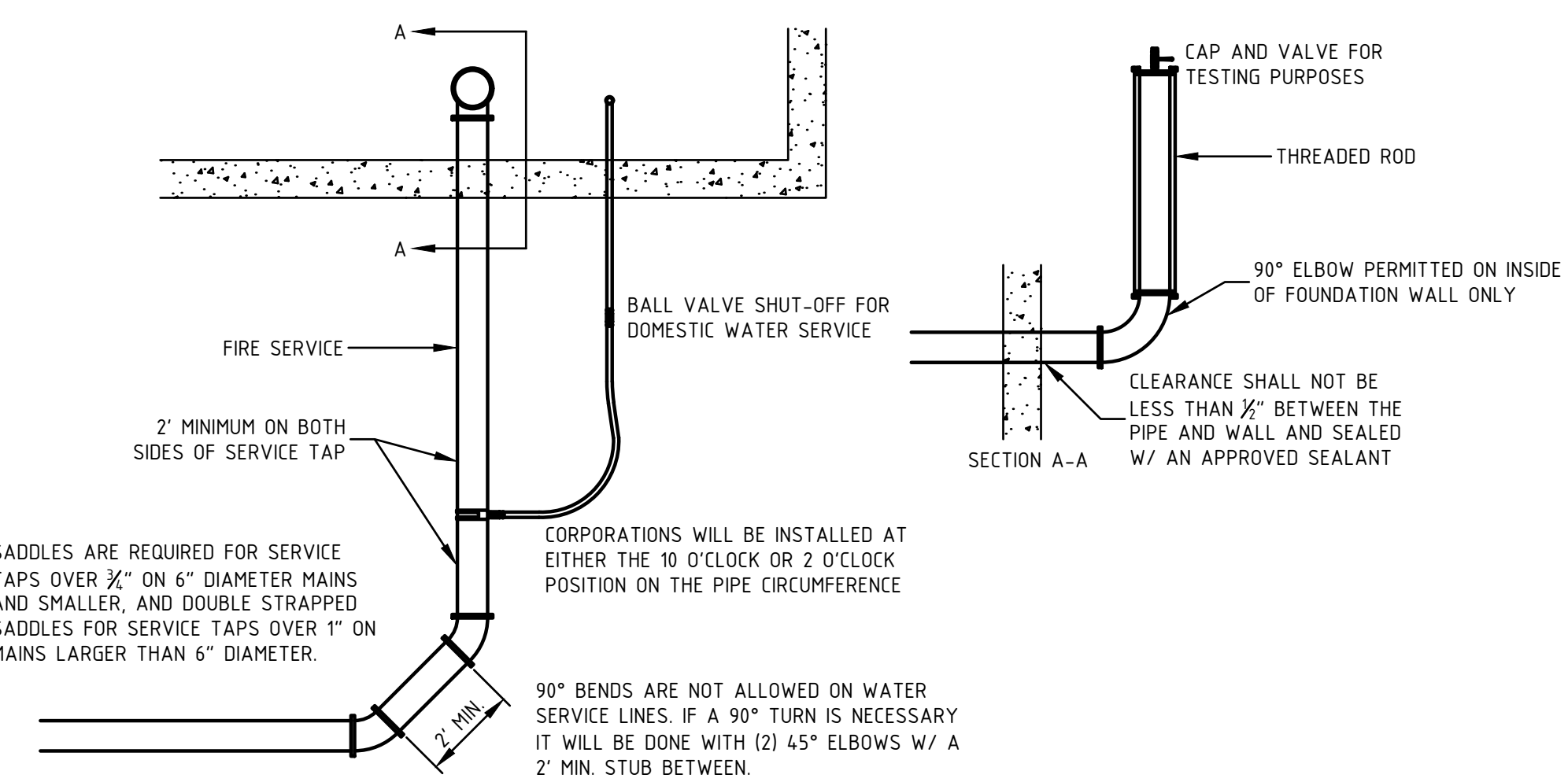
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- NOTES:
- DELETERIOUS MATERIALS ENCOUNTERED BELOW ROAD SHALL BE COMPLETELY REMOVED.
 - COMPACT SUBGRADE TO 95% OF STANDARD PROCTOR.

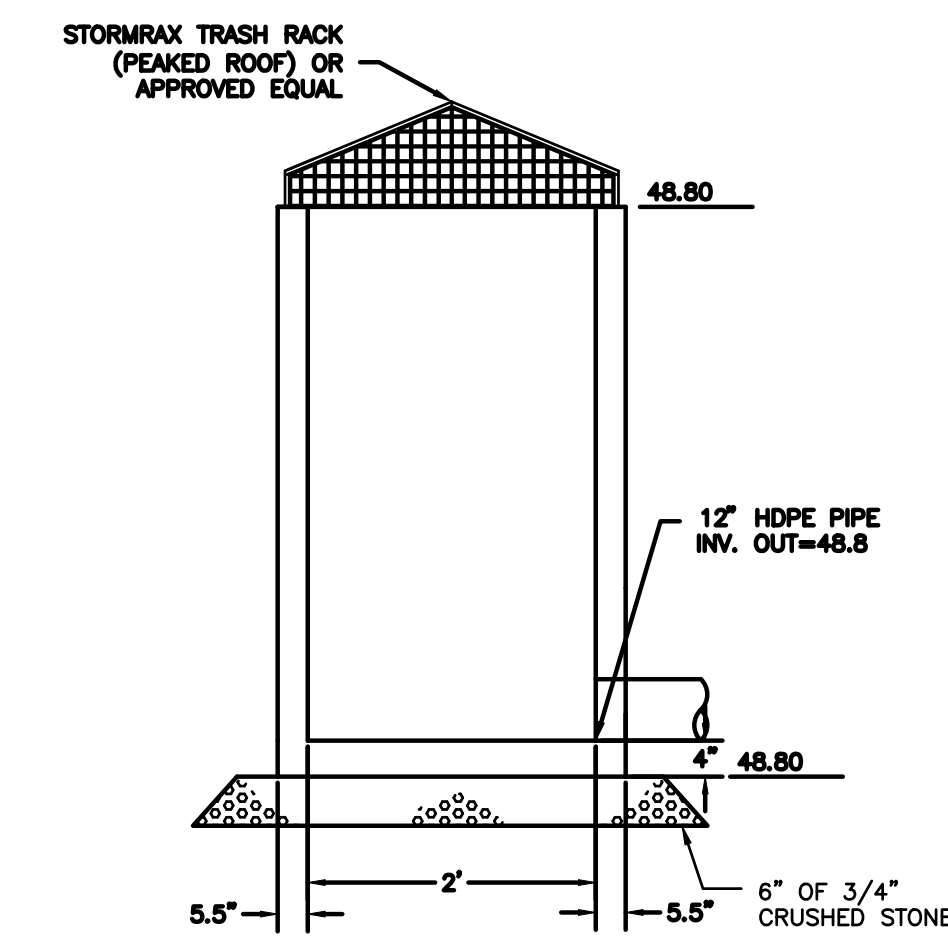
RETAINING WALL AND GUARDRAIL DETAIL

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WATER SERVICE THROUGH FOUNDATION

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MODIFIED OUTLET CONTROL STRUCTURE FOR SEDIMENT FOREBAY

NTS

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



MICHAEL & MARTI MULHERN

THE CROSSINGS SUBDIVISION

DURHAM, NEW HAMPSHIRE

CONSTRUCTION DETAILS

NO.	DATE	REVISION DESCRIPTION	ENG	DWG

STATE OF NEW HAMPSHIRE
 MICHAEL J. SIEVERT
 No. 6397
 LICENSED PROFESSIONAL ENGINEER

DATE: 2021-07-01
 PROJECT #: NM19063
 ENGIN'D BY: MCS
 DRAWN BY: MCS
 CHECK'D BY: MJS
 ARCHIVE #: H-____

C505