

MICHAEL & MARTI MULHERN

THE CROSSINGS SUBDIVISION

DURHAM, NH & MADBURY, NH

15 SEPTEMBER 2021

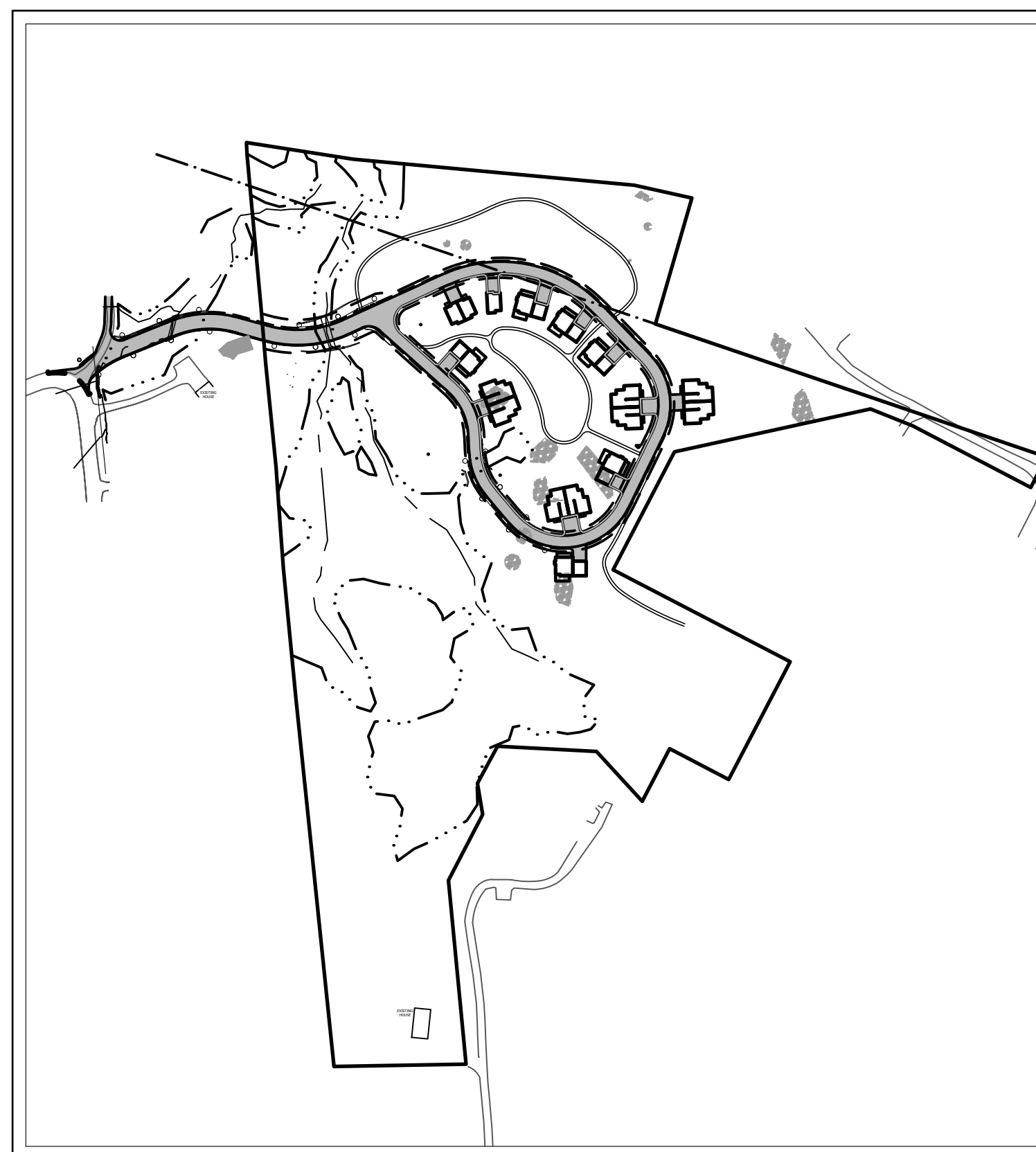
OWNER:

MICHAEL & MARTI MULHERN
91 BAGDAD ROAD
DURHAM, NH

ENGINEER:

horizons
Engineering

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



LEGEND

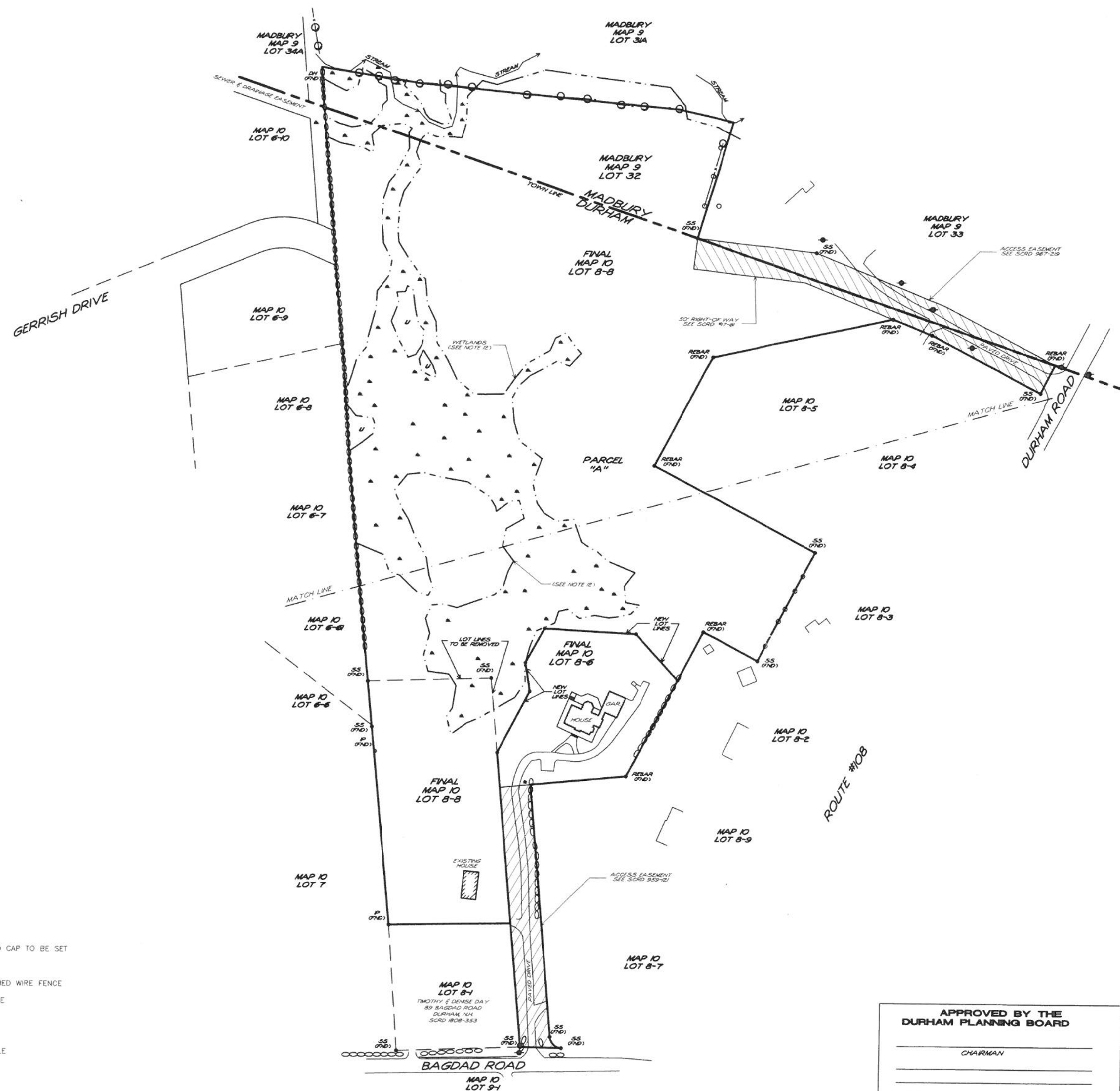
EXISTING	PROPOSED	DESCRIPTION
---	---	INDEX CONTOUR (10 FOOT)
---	---	INTERMEDIATE CONTOUR (2 FOOT)
---	---	SUPPLEMENTARY CONTOUR
---	---	WETLAND BOUNDARY
---	---	STORM DRAINLINE OR CULVERT
---	---	GUARDRAIL
⊙	⊙	SANITARY SEWER MANHOLE
⊙	⊙	FIRE HYDRANT
⊙	⊙	RIP RAP
⊙	⊙	EXPOSED LEDGE
⊙	⊙	POWER POLE

ABBREVIATIONS

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

N

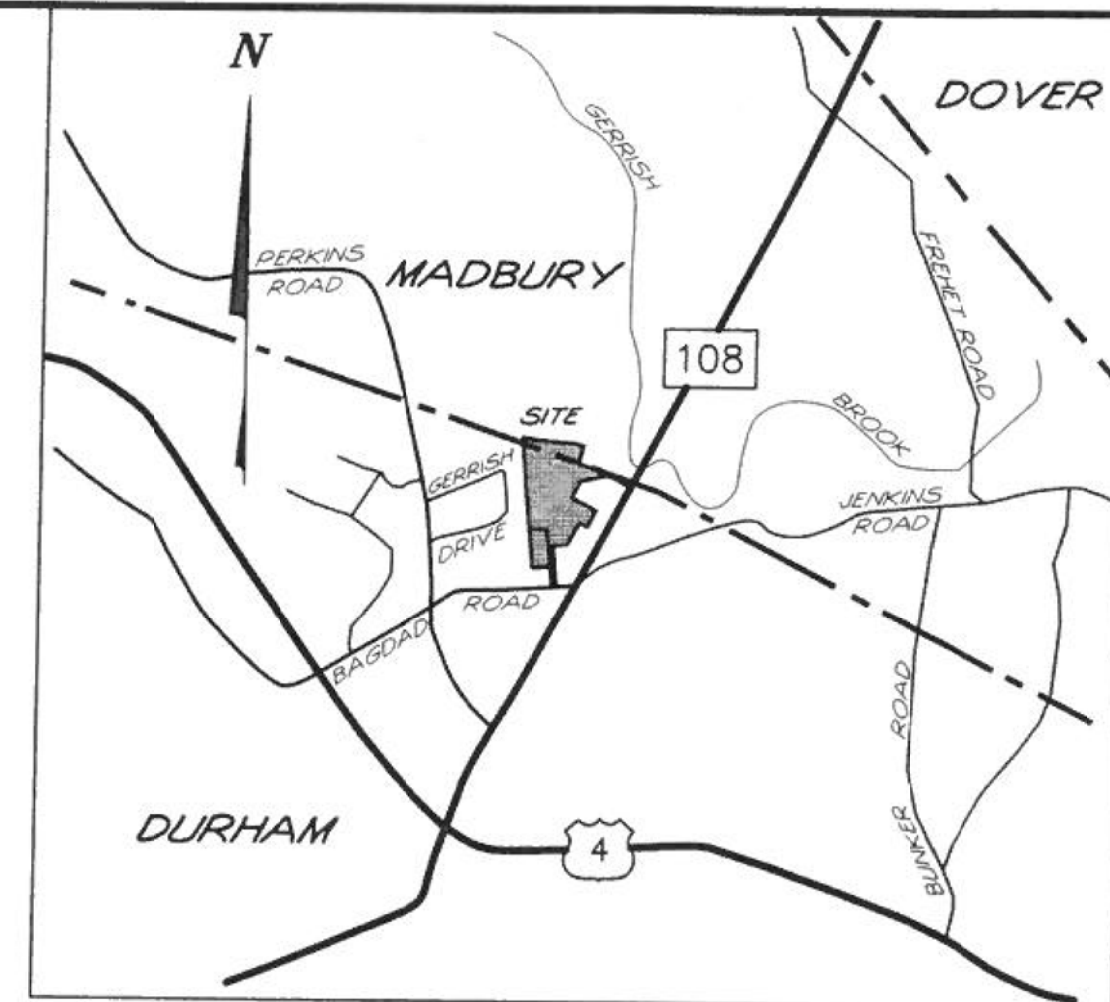
TRITECH
ENGINEERING CORPORATION



- 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

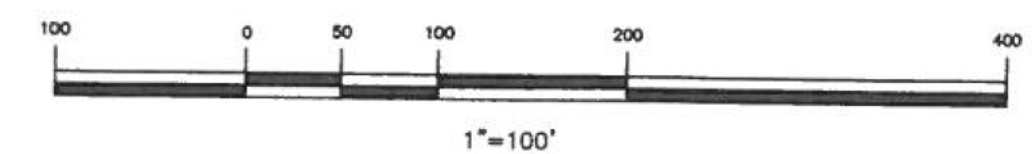
**APPROVED BY THE
DURHAM PLANNING BOARD**

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 831,144 SQ.FT. - 15.866 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 WALTER W. CHENEY, INC. IN MADBURY, N.H. BRUCE L. POHOPEK JULY 1, 1993 SCRD 64-13
DURHAM, NEW HAMPSHIRE G.L. DAVIS & ASSOCIATES NOV 1971 SCRD PO 4 FO 4 PLAN #42
LAND OF FRANCIS D. & DOROTHY L. MANOCK DURHAM, NEW HAMPSHIRE G.L. DAVIS & ASSOCIATES APRIL 1974 SCRD PO 8 FO 3 PLAN #21
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
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
PLAN OF LAND FOR RICHARD & SALLY TAPPAN BAGDAD ROAD & DOVER ROAD DURHAM, NEW HAMPSHIRE MOORE & STAPLES JAN. 1986 SCRD 28-90
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 3630

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

MATCH LINE

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

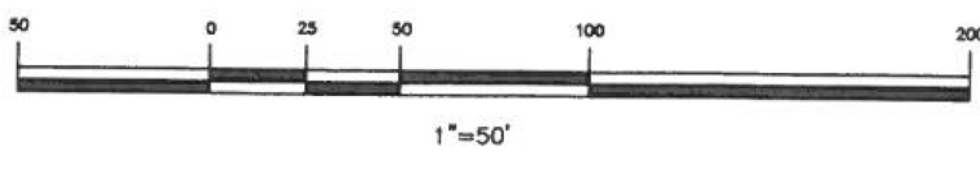
FINAL
MAP 10
LOT 8-6
74,771 sq. ft.
1.717 acres

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

SHEET No.

6-2

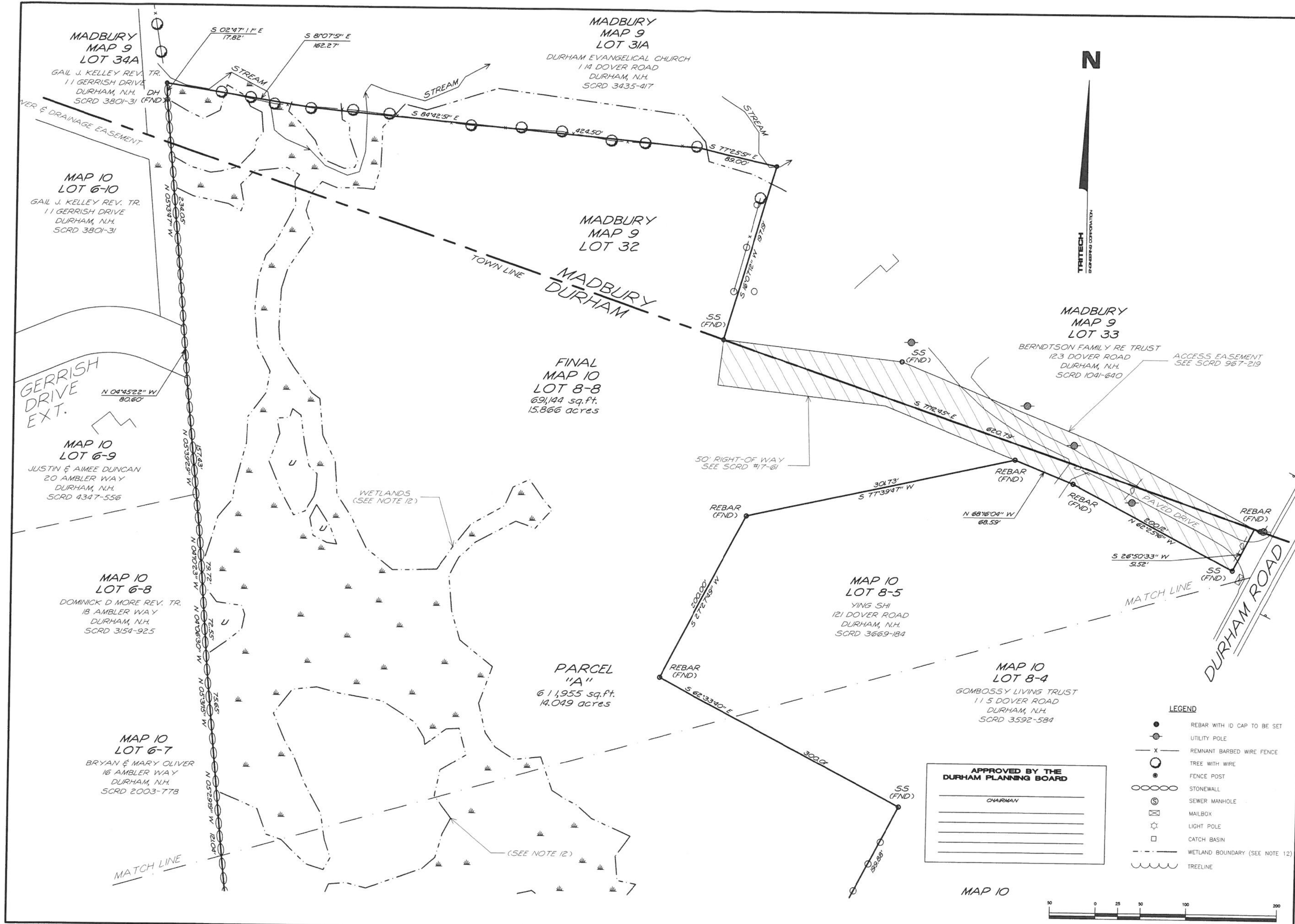
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MICHAEL & MARTHA MULHERN
91 & 93 BAGDAD ROAD
AND DURHAM ROAD - ROUTE 108
DURHAM, NEW HAMPSHIRE

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

REVISIONS DATE:	DESCRIPTION:

TRITECH
ENGINEERING CORPORATION

785 CENTRAL AVENUE
DOVER, NEW HAMPSHIRE 03820
TELEPHONE 603 742 8107
FAX 603 742 3630



TRITECH
ENGINEERING CORPORATION

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765 CENTRAL AVENUE
DOVER, NEW HAMPSHIRE 03820
TELEPHONE 603 742 8107
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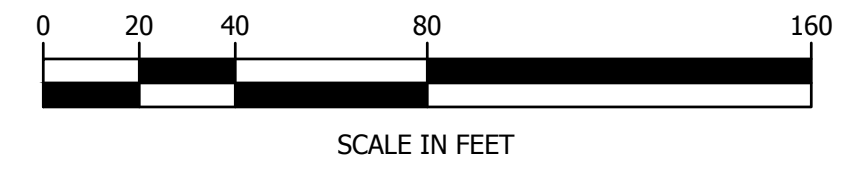
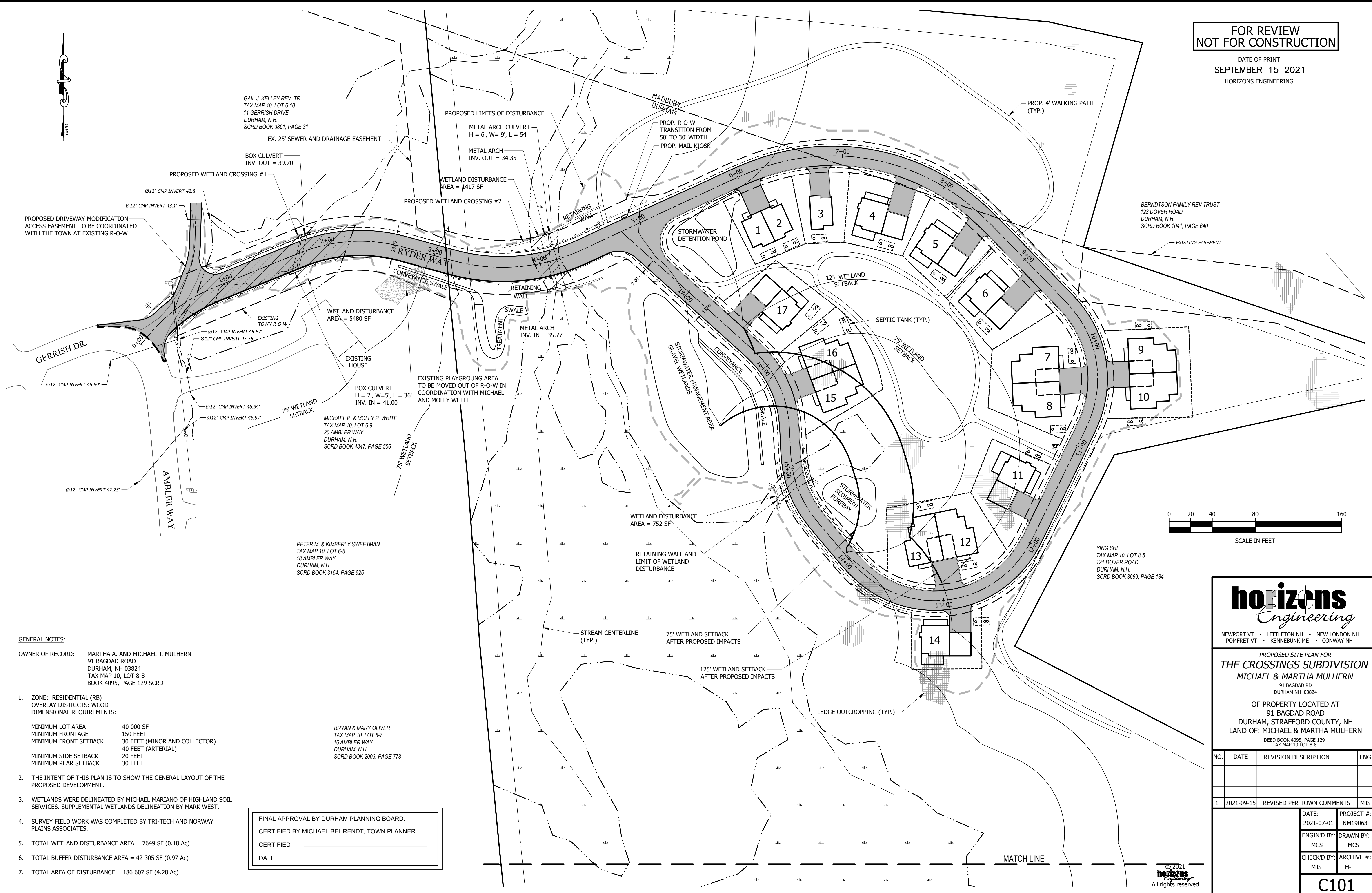
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AND DURHAM ROAD - ROUTE 108
DURHAM, NEW HAMPSHIRE

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SHEET NO.
5-3

FOR REVIEW
NOT FOR CONSTRUCTION

DATE OF PRINT
SEPTEMBER 15 2021
HORIZONS ENGINEERING

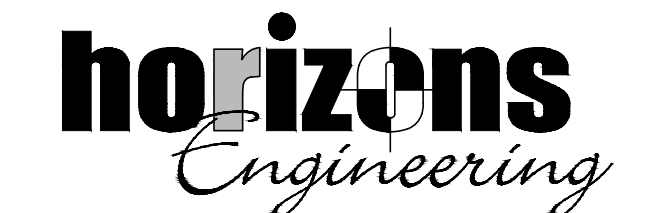


GENERAL NOTES:

- OWNER OF RECORD: MARTHA A. AND MICHAEL J. MULHERN
91 BAGDAD ROAD
DURHAM, NH 03824
TAX MAP 10, LOT 8-8
BOOK 4095, PAGE 129 SCR D
- ZONE: 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
 - 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.
 - 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)

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

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



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

PROPOSED SITE PLAN FOR
THE CROSSINGS SUBDIVISION
MICHAEL & MARTHA MULHERN
91 BAGDAD RD
DURHAM NH 03824

OF PROPERTY LOCATED AT
91 BAGDAD ROAD
DURHAM, STRAFFORD COUNTY, NH
LAND OF: MICHAEL & MARTHA MULHERN
DEED BOOK 4095, PAGE 129
TAX MAP 10 LOT 8-8

NO.	DATE	REVISION DESCRIPTION	ENG
1	2021-09-15	REVISED PER TOWN COMMENTS	MJS

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

C101



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

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

SOPHIE LANE HOMEOWNERS ASSOCIATION
P.O. BOX 370
PORTSMOUTH, N.H.
SCRD BOOK 3516, PAGE 59

GREG A. IMBRIE
93 BAGDAD ROAD
DURHAM, N.H.
SCRD BOOK 4605, PAGE 287

MATTHEW ANCTIL & MELANIE HARVEY
107 DOVER ROAD
DURHAM, N.H.
SCRD BOOK 4317, PAGE 554

GEOFFREY DIXON & SUZANNE YOUNG
103 DOVER ROAD
DURHAM, N.H.
SCRD BOOK 2556, PAGE 522

JUAN & AMANDA NIEVES
95 BAGDAD ROAD
DURHAM, N.H.
SCRD BOOK 4369, PAGE 791

TIMOTHY & DENISE DAY
89 BAGDAD ROAD
DURHAM, N.H.
SCRD BOOK 1808, PAGE 353
TIMOTHY & DENISE DAY
89 BAGDAD ROAD
DURHAM, N.H.
SCRD BOOK 1808, PAGE 353

STELLA BROWN
111 DOVER ROAD
DURHAM, N.H.
SCRD BOOK 2362, PAGE 425

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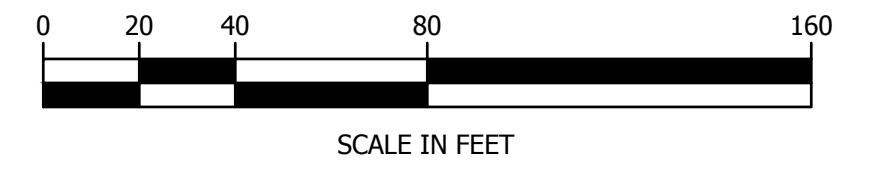
DATE OF PRINT
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HORIZONS ENGINEERING

MATCH LINE

75' WETLAND
SETBACK

125' WETLAND
SETBACK

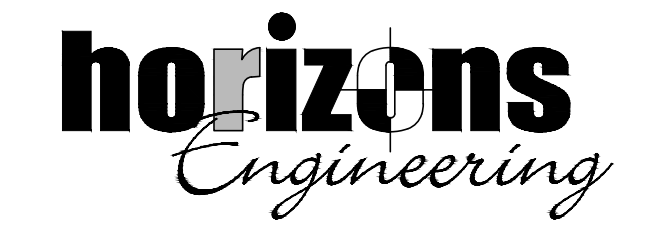
EXISTING
HOUSE
18



GENERAL NOTES:

- OWNER OF RECORD: MARTHA A. AND MICHAEL J. MULHERN
91 BAGDAD ROAD
DURHAM, NH 03824
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CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
CERTIFIED _____
DATE _____



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

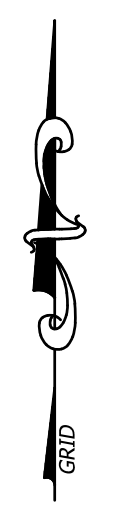
PROPOSED SITE PLAN FOR
THE CROSSINGS SUBDIVISION
MICHAEL & MARTHA MULHERN

91 BAGDAD RD
DURHAM NH 03824
OF PROPERTY LOCATED AT
91 BAGDAD ROAD
DURHAM, STRAFFORD COUNTY, NH
LAND OF: MICHAEL & MARTHA MULHERN
DEED BOOK 4095, PAGE 129
TAX MAP 10 LOT 8-8

NO.	DATE	REVISION DESCRIPTION	ENG
1	2021-09-15	REVISED PER TOWN COMMENTS	MJS

DATE: 2021-07-01	PROJECT #: NM19063
ENGIN'D BY: MCS	DRAWN BY: MCS
CHECK'D BY: MJS	ARCHIVE #: H-___
C102	

BAGDAD ROAD



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

RETAINING WALL
W/ INTEGRATED GUARDRAIL
BOX CULVERT
INV. OUT = 39.70

EX. 25' SEWER AND
DRAINAGE EASEMENT

WETLAND CROSSING #2
METAL ARCH CULVERT
H = 6', W = 9', L = 54'

METAL ARCH
INV. OUT = 34.35

OUTLET CONTROL
Ø18" BEEHIVE INV. = 46.5

PROP. R-O-W
TRANSITION FROM
50' TO 30' WIDTH

ROADSIDE SWALE (TYP.)
ARMOR WITH RIPRAP
WHERE GRADE > 6%

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

DRIVEWAY TO BE SHIFTED
AND RAISED TO JOIN WITH
PROPOSED ROAD

PIG LAUNCHING STATION
(SEE DETAIL)

GERRISH DR.

AMBLER WAY

CONVEYANCE SWALE
BOT. WIDTH = 2'

RETAINING WALL
W/ INTEGRATED GUARDRAIL

TRANSITION TO
TREATMENT SWALE

TREATMENT SWALE
BOT. WIDTH = 8'
L = 115', S = 0.01

EXISTING HOUSE

BOX CULVERT
H = 2', W = 5', L = 36'
INV. IN = 41.00

PETER M. & KIMBERLY SWEETMAN
TAX MAP 10, LOT 6-9
20 AMBLER WAY
DURHAM, N.H.
SCRD BOOK 4347, PAGE 556

PROP. RET WALL
TOP ELEV. = 45.0
TOE ELEV. VARIES

METAL ARCH
H = 6', W = 9'
INV. IN = 35.77

Ø18" INV. = 46.0
RIPRAP OUTLET #5
(SEE DETAIL)

RIPRAP #4
(SEE DETAIL)

EMERGENCY SPILLWAY
ELEV. = 47.5
RIPRAP #1
(SEE DETAIL)

OUTLET CONTROL #1
Ø24" BEEHIVE INV. = 47.2
CONTROL WEIR INV. = 47.2
Ø6" INV. = 45.3

Ø12" INV. = 44.8
RIPRAP OUTLET #6
(SEE DETAIL)

Ø12" INV. OUT = 46.8
RIPRAP OUTLET #2
(SEE DETAIL)

RETAINING WALL AND
LIMIT OF WETLAND
DISTURBANCE

OUTLET CONTROL #2
Ø24" BEEHIVE INV. = 51.7
Ø12" INV. = 48.8

75' WETLAND SETBACK
AFTER PROPOSED IMPACTS

125' WETLAND SETBACK
AFTER PROPOSED IMPACTS

SGW CELL #1

SGW CELL #2

SFB #1

SFB #2

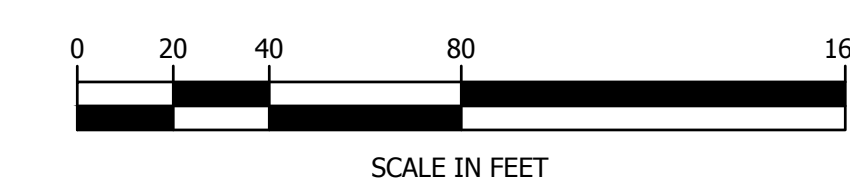
INV. OUT = 50.40
RIPRAP OUTLET #3
(SEE DETAIL)

PROP. Ø18" CPP
INV. IN = 51.30
L = 45.5'
S = 0.02

PROP. WALKING PATH

SEPTIC TANK (TYP.)

YING SHI
TAX MAP 10, LOT 8-5
121 DOVER ROAD
DURHAM, N.H.
SCRD BOOK 3669, PAGE 184



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
⊕	⊕	POWER POLE

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

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

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CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
CERTIFIED _____
DATE _____

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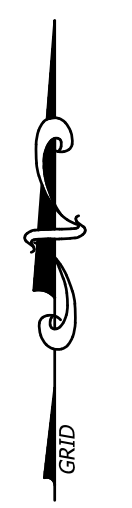
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MICHAEL & MARTHA MULHERN
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DURHAM NH 03824

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DURHAM, STRAFFORD COUNTY, NH
LAND OF: MICHAEL & MARTHA MULHERN
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C103



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TAX MAP 10, LOT 6-10
11 GERRISH DRIVE
DURHAM, N.H.
SCRD BOOK 3801, PAGE 31

SEE WATER/SEWER
CROSSING DETAIL

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

EXISTING EASEMENT

Ø12" CMP INVERT 42.8'
Ø12" CMP INVERT 43.1'
Ø12" CMP INVERT 45.82'
Ø12" CMP INVERT 45.55'
Ø12" CMP INVERT 46.69'
Ø12" CMP INVERT 46.94'
Ø12" CMP INVERT 46.97'
Ø12" CMP INVERT 47.25'

6" HDPE SDR11 (DIPS)
TO EXISTING WATER MAIN ON
GERRISH DR.
4" SEWER FORCEMAIN
TO EXISTING DURHAM
SEWER ON SUMAC LN
PIG LAUNCHING STATION
FOR FORCE MAIN CLEANING
(SEE DETAIL)

EXISTING
TOWN R-O-W

EXISTING
HOUSE

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

PETER M. & KIMBERLY SWEETMAN
TAX MAP 10, LOT 6-8
18 AMBLER WAY
DURHAM, N.H.
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 EQUIPPED WITH PUMP FOR LOW PRESSURE SEWER.

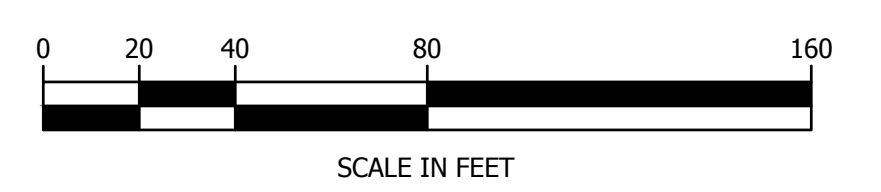
ELECTRICAL NOTES

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

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

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DATE OF PRINT
SEPTEMBER 15 2021
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PROPOSED UTILITIES PLAN FOR
THE CROSSINGS SUBDIVISION
MICHAEL & MARTHA MULHERN
91 BAGDAD RD
DURHAM NH 03824

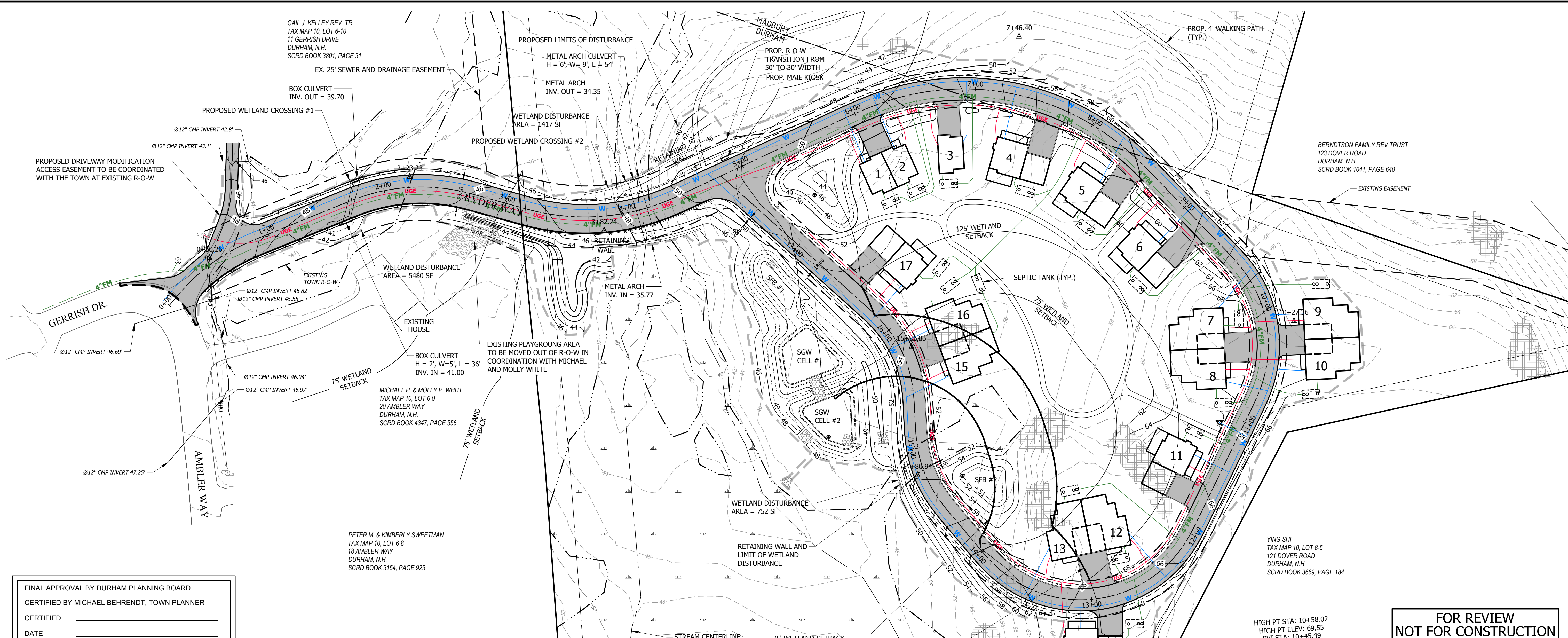
OF PROPERTY LOCATED AT
91 BAGDAD ROAD
DURHAM, STRAFFORD COUNTY, NH
LAND OF: MICHAEL & MARTHA MULHERN
DEED BOOK 4095, PAGE 129
TAX MAP 10 LOT 8-8

NO.	DATE	REVISION DESCRIPTION	ENG
1	2021-09-15	REVISED PER TOWN COMMENTS	MJS

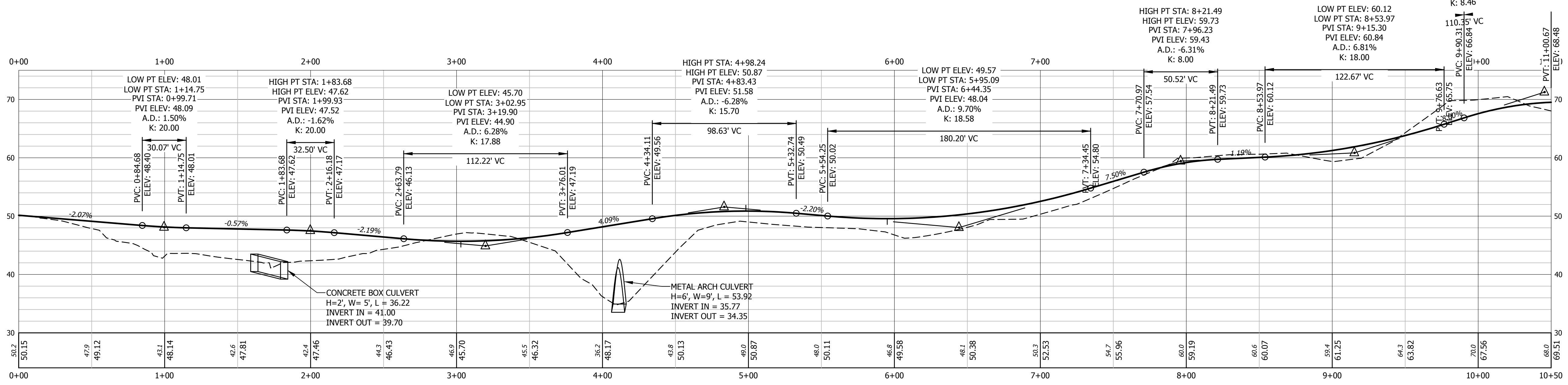
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C104

MATCH LINE



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GERRISH EXT. VERTICAL ALIGNMENT
 STA: 0+00 TO STA: 10+50

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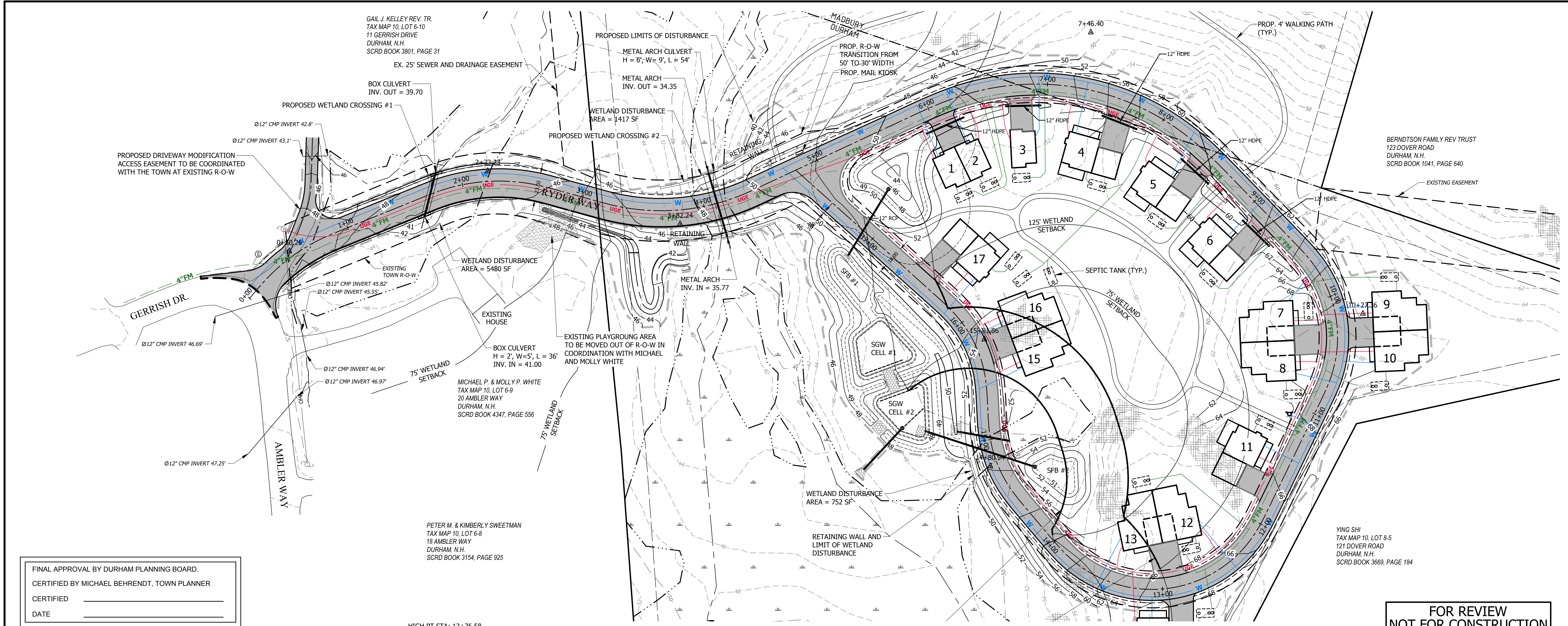


PROPOSED ROAD PROFILE 0+00 TO 10+50
THE CROSSINGS SUBDIVISION
MICHAEL & MARTHA MULHERN
 91 BAGDAD RD
 DURHAM NH 03824
 OF PROPERTY LOCATED AT
 91 BAGDAD ROAD
 DURHAM, STRAFFORD COUNTY, NH
 LAND OF: MICHAEL & MARTHA MULHERN
 DEED BOOK 4095, PAGE 129
 TAX MAP 10 LOT 8-8

NO.	DATE	REVISION DESCRIPTION	ENG
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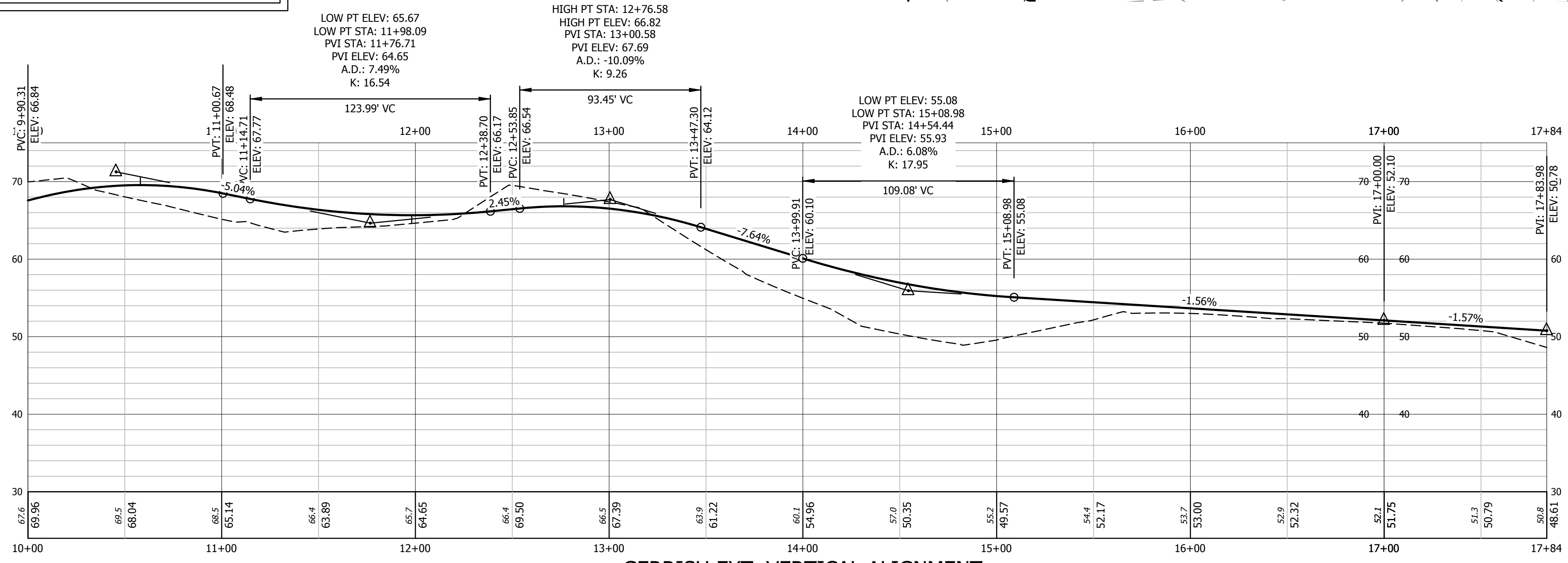
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MJS	H-___

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 DATE _____

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GERRISH EXT. VERTICAL ALIGNMENT
 STA: 17+00 TO STA: 17+84

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PROPOSED ROAD PROFILE 0+00 TO 17+84
THE CROSSINGS SUBDIVISION
 MICHAEL & MARTHA MULHERN
 91 BAGDAD RD
 DURHAM NH 03824

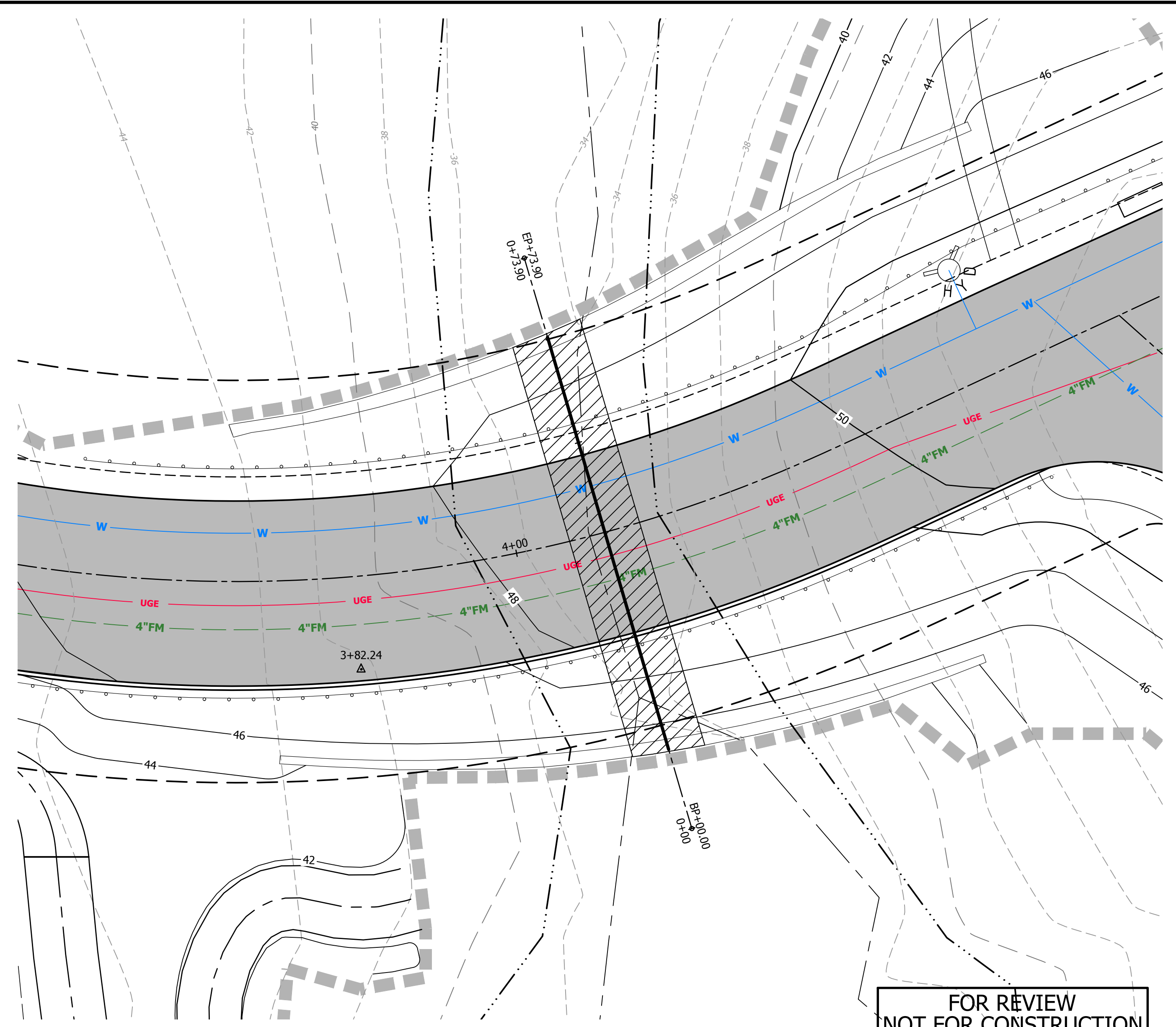
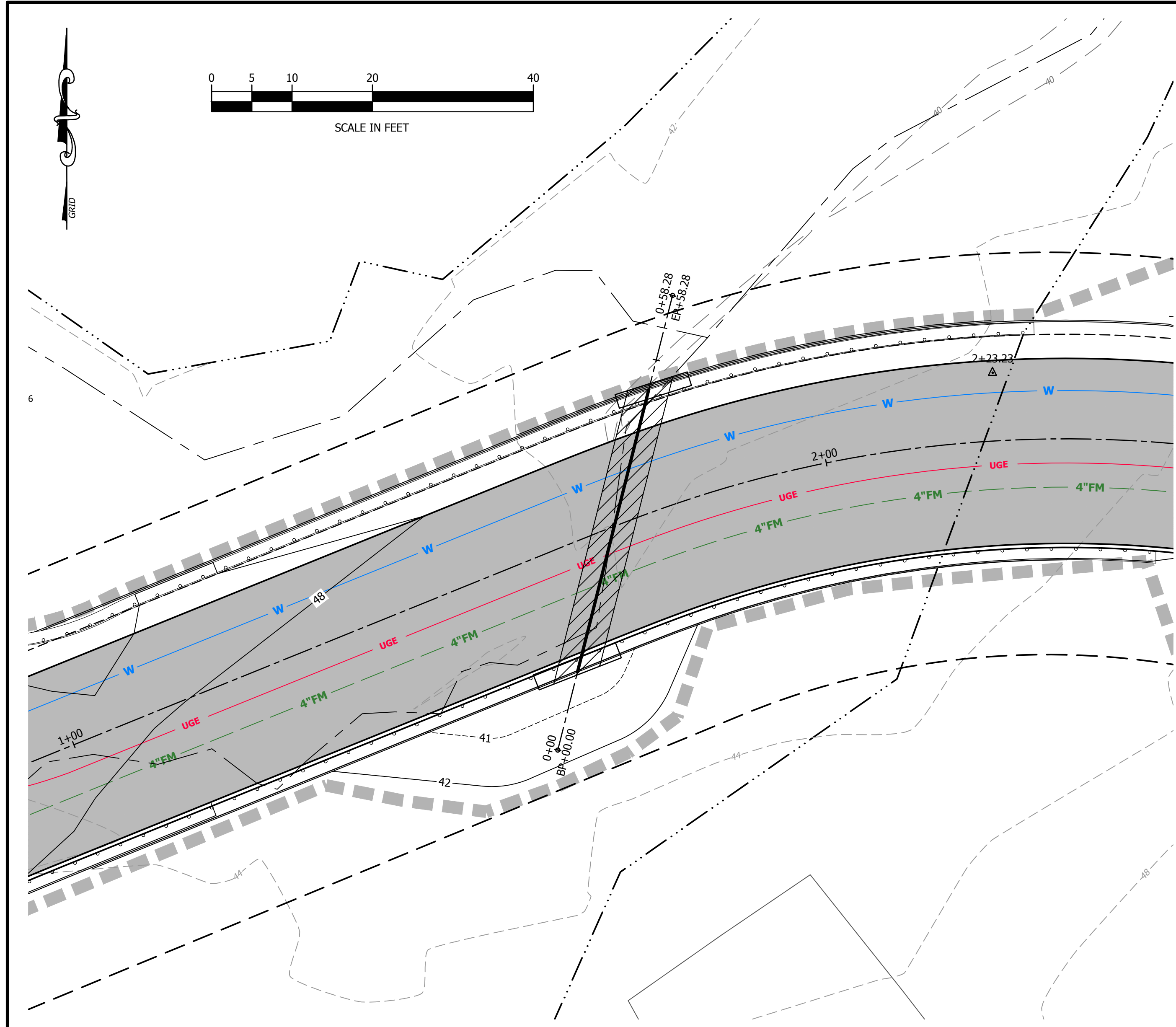
OF PROPERTY LOCATED AT
 91 BAGDAD ROAD
 DURHAM, STRAFFORD COUNTY, NH
 LAND OF: MICHAEL & MARTHA MULHERN
 DEED BOOK 4095, PAGE 129
 TAX MAP 10 LOT 8-8

NO.	DATE	REVISION DESCRIPTION	ENG
1	2021-09-15	REVISED PER TOWN COMMENTS	MJS

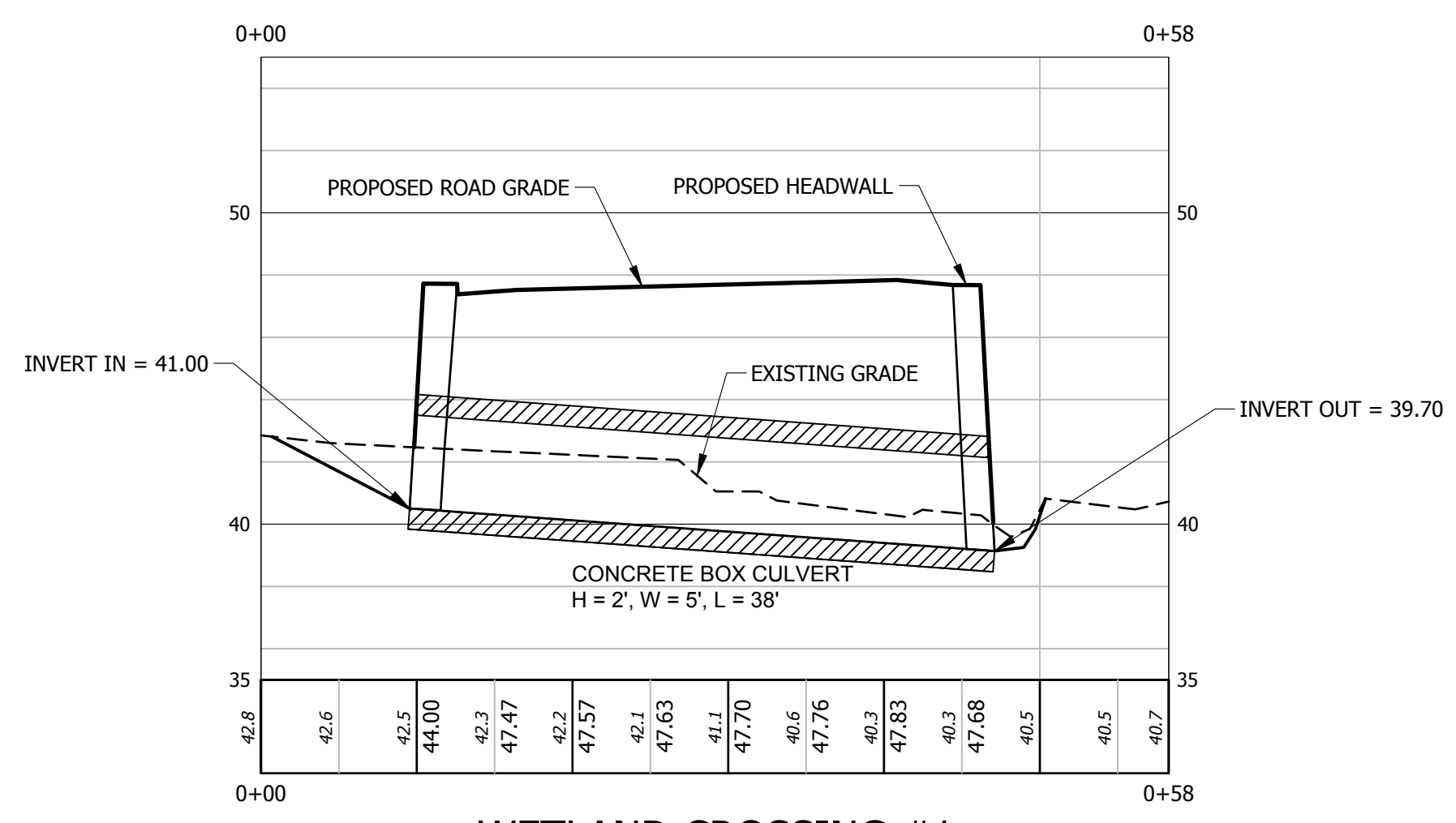
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MCS	MCS
CHECK'D BY:	ARCHIVE #:
MJS	H-___

C202

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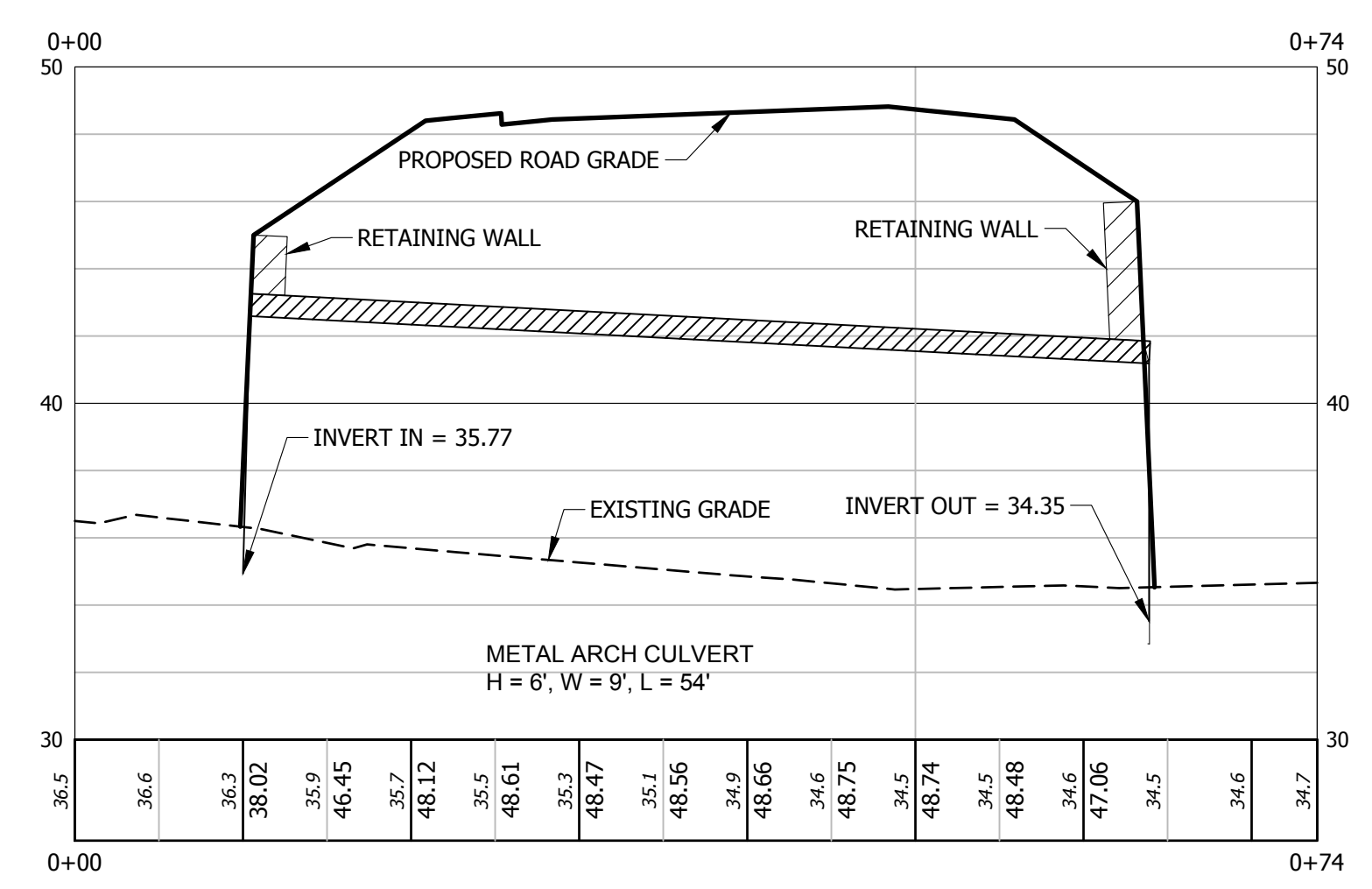


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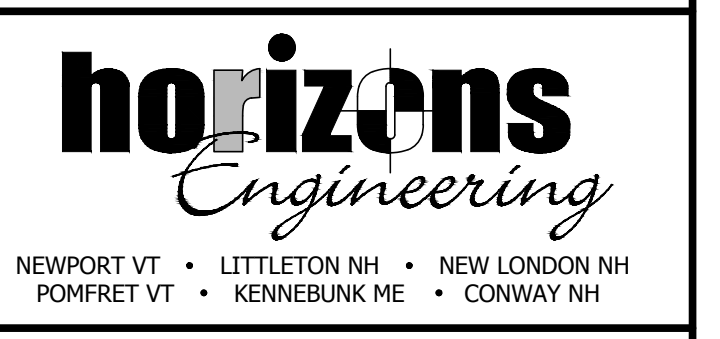


WETLAND CROSSING #1
STA: 0+00 to STA: 0+58

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



WETLAND CROSSING #2
STA: 0+00 to STA: 0+74



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WETLAND CROSSING SECTIONS
THE CROSSINGS SUBDIVISION
MICHAEL & MARTHA MULHERN
91 BAGDAD RD
DURHAM NH 03824

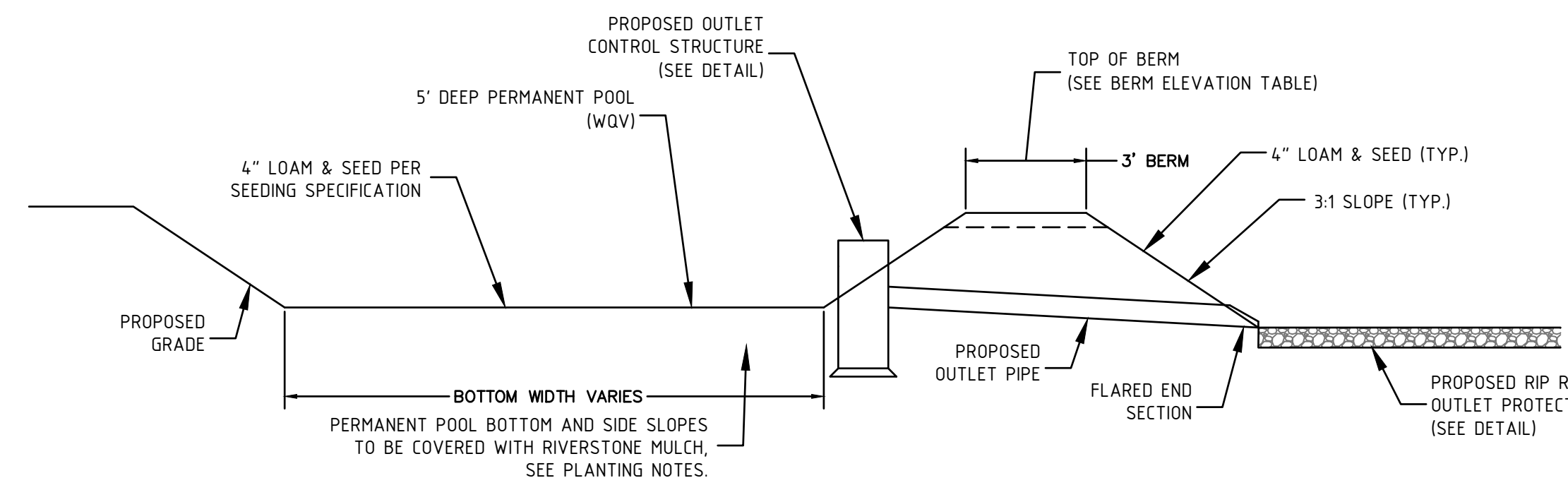
OF PROPERTY LOCATED AT
91 BAGDAD ROAD
DURHAM, STRAFFORD COUNTY, NH
LAND OF: MICHAEL & MARTHA MULHERN
DEED BOOK 4095, PAGE 129
TAX MAP 10 LOT 8-8

NO.	DATE	REVISION DESCRIPTION	ENG

1	2021-09-15	REVISED PER TOWN COMMENTS	MJS
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C301



CONSTRUCTION NOTES:

- DO NOT PLACE STORMWATER POND INTO SERVICE UNTIL THE BMP HAS BEEN SEEDDED 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:

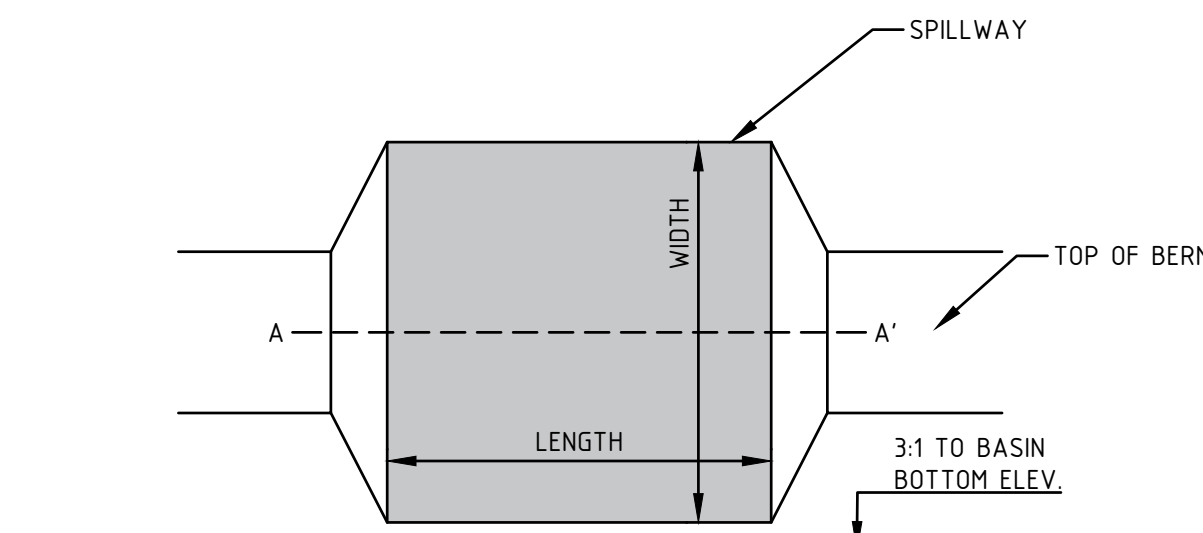
SIEVE SIZE:	% PASSING:
#4	80-90
#40	50-80
#100	30-45
#200	15-30

- 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 SEEDDED 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 SEEDDED WITH NEW ENGLAND CONSERVATION/WILDLIFE MIX (30 LBS PER ACRE).

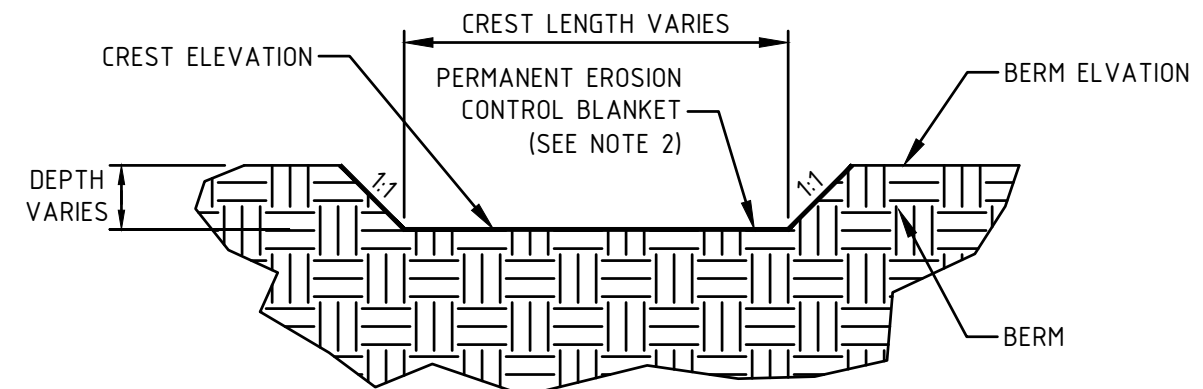
AVAILABLE FROM:
NEW ENGLAND WETLAND PLANTS, INC.
820 WEST STREET
AMHERST, MA 01002
(413)-548-8000

TYPICAL STORMWATER POND DETAIL
NTS

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



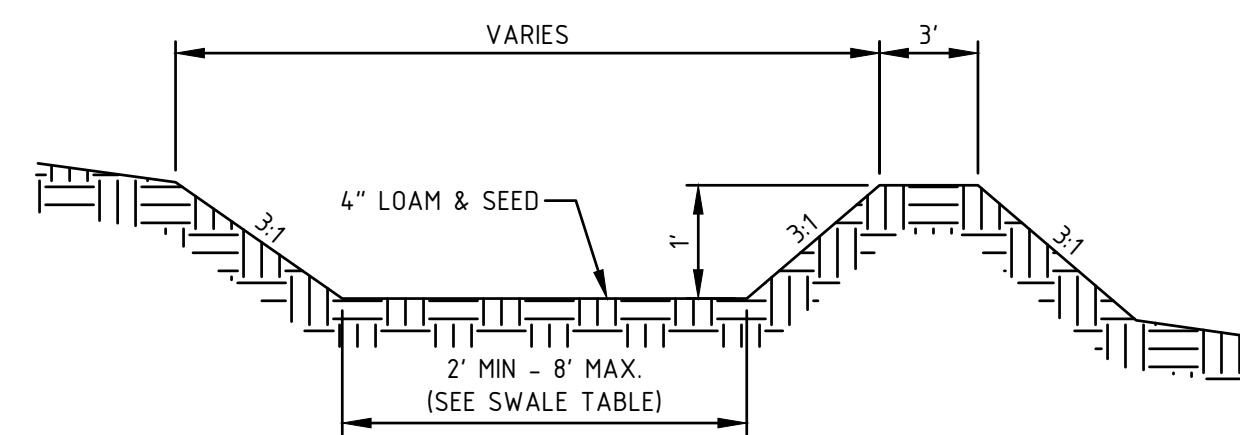
PLAN VIEW



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.

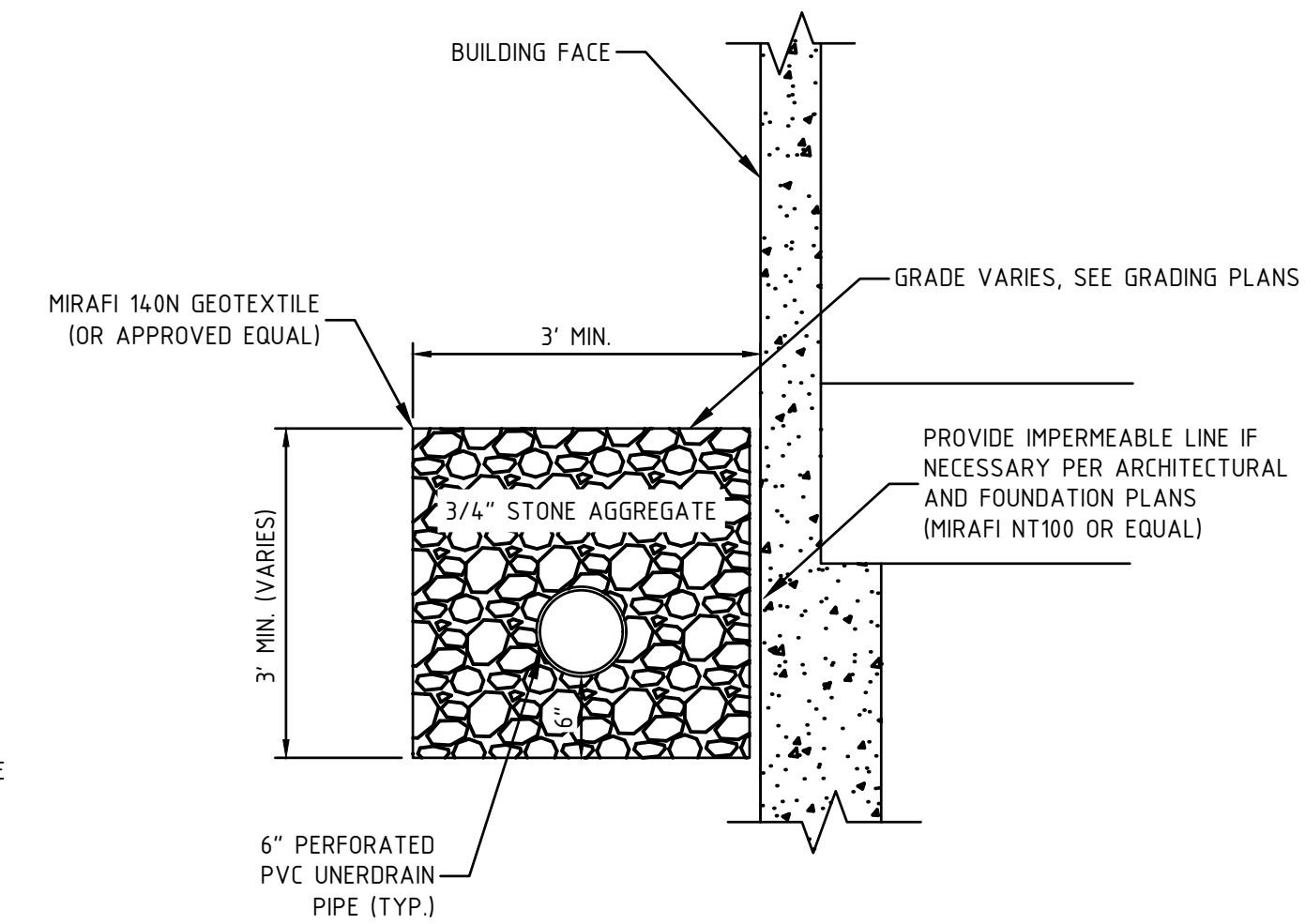
TYPICAL SPILLWAY DETAIL
NTS



- 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.

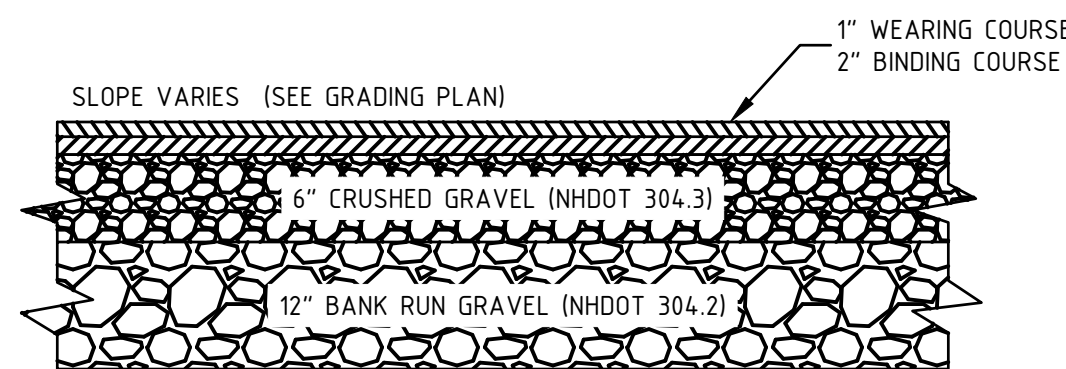
- MAINTENANCE NOTES:**
- INSPECT ANNUALLY FOR EROSION, SEDIMENT ACCUMULATION, VEGETATION LOSS, AND PRESENCE OF INVASIVE SPECIES.
 - PERFORM PERIODIC MOWING. DO NOT MOW GRASS SHORTER THAN 4 INCHES.
 - REMOVE DEBRIS AND ACCUMULATED SEDIMENT BASED ON INSPECTION.
 - REPAIR ERODED AREAS, REMOVE INVASIVE SPECIES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

CONVEYANCE SWALE DETAIL
NTS



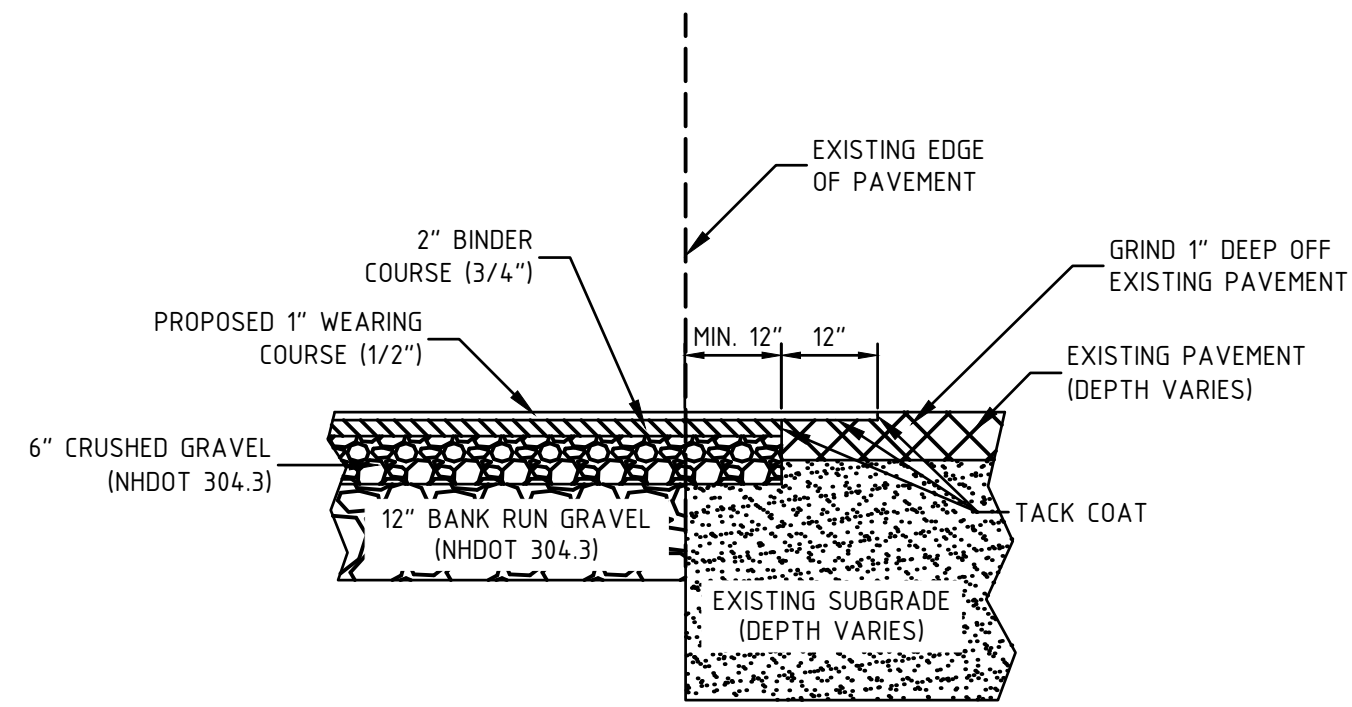
- NOTES:**
- SEE PLANS FOR LOCATION.

DRIP STRIP DETAIL
NTS



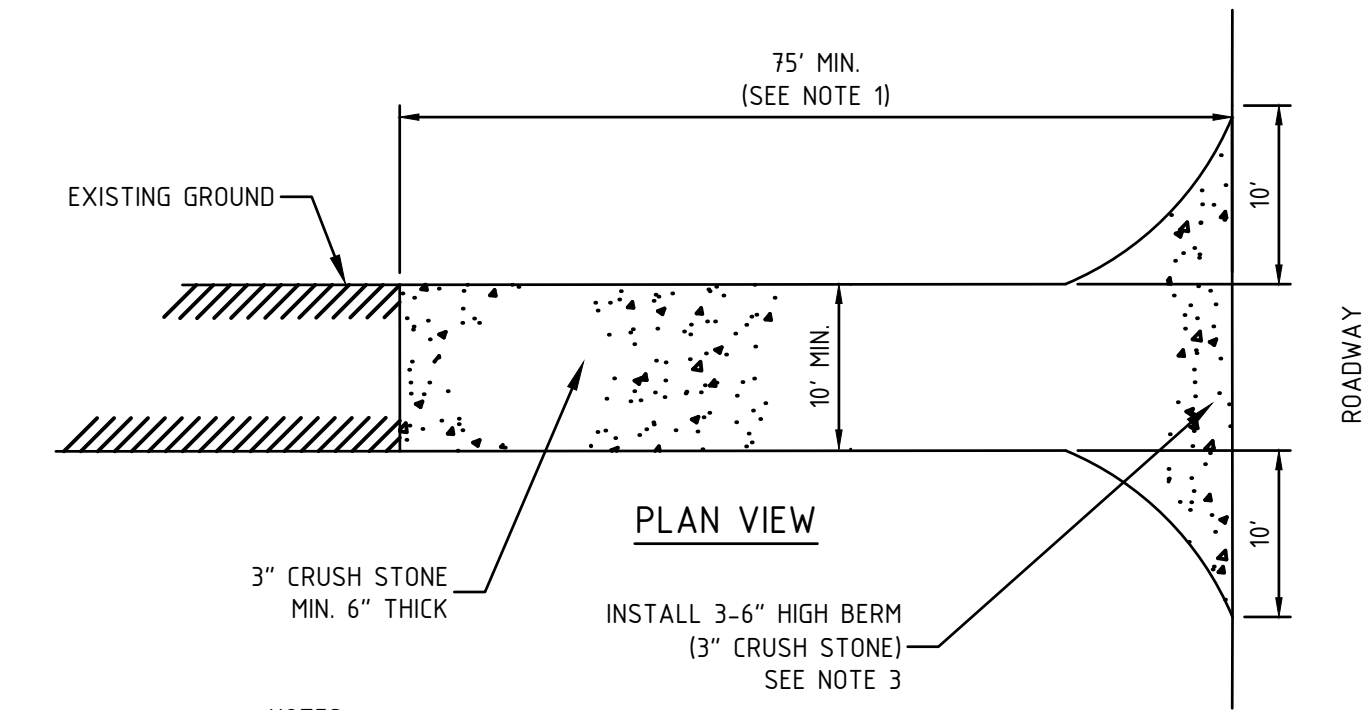
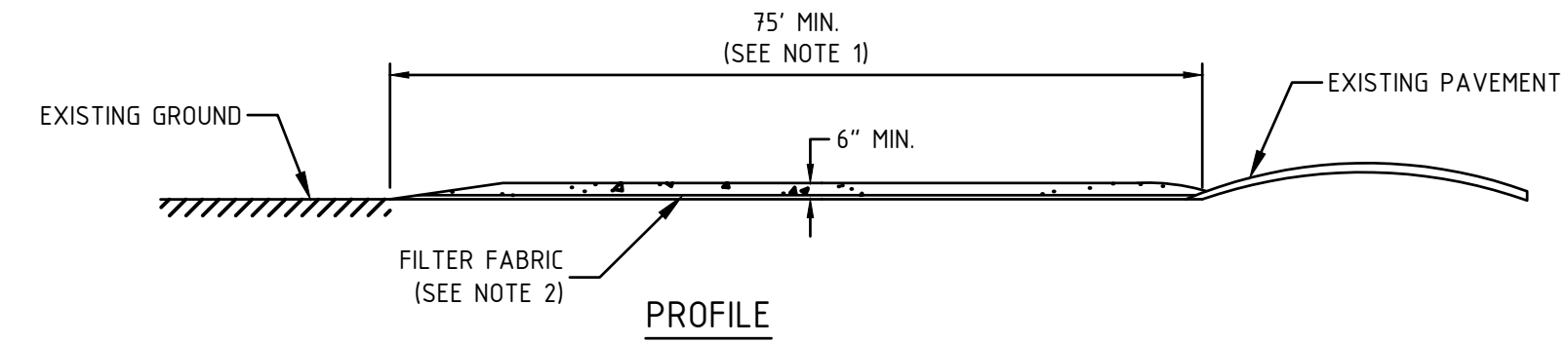
- NOTES:**
- DETERIORIOUS MATERIALS ENCOUNTERED BELOW PARKING AREA SHALL BE COMPLETELY REMOVED.
 - COMPACT SUBGRADE TO 95% OF STANDARD PROCTOR.

TYPICAL PAVEMENT CROSS-SECTION
NTS



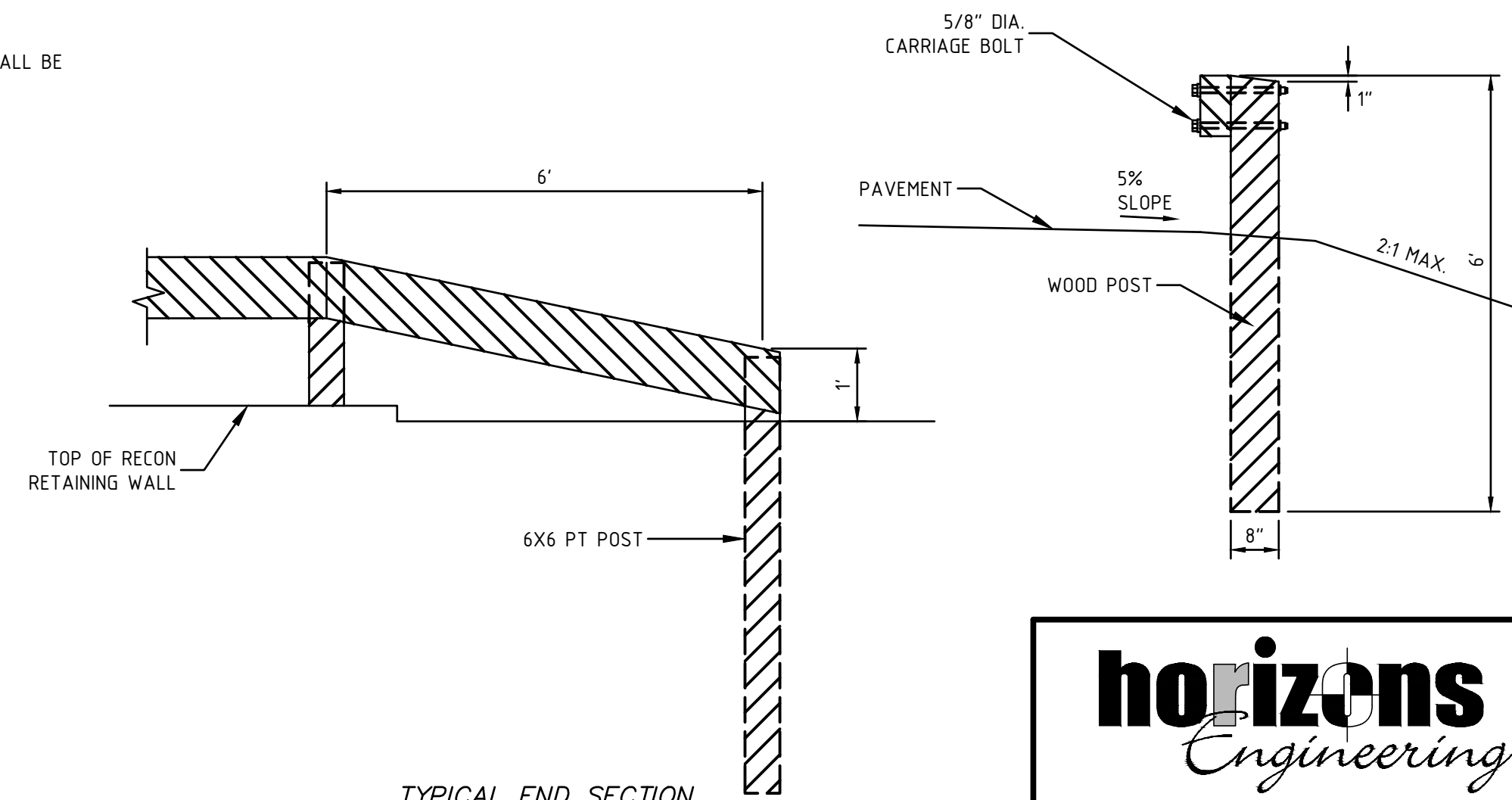
- NOTES:**
- SAWCUT THROUGH DEPTH OF PAVEMENT AT LEAST 1 FT. FROM EDGE OR GREATER IF REQUIRED BY NHDOT.
 - INSTALL AND COMPACT CRUSHED GRAVEL TO GRADE.
 - PLACE BINDER COURSE.
 - GRIND EXISTING PAVEMENT 1 FT. WIDE TO A DEPTH NECESSARY TO PROPERLY MATCH NEW WEARING COURSE PAVEMENT.
 - TACK COAT ALL EXISTING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

TYPICAL PAVEMENT SAWCUT DETAIL
NTS

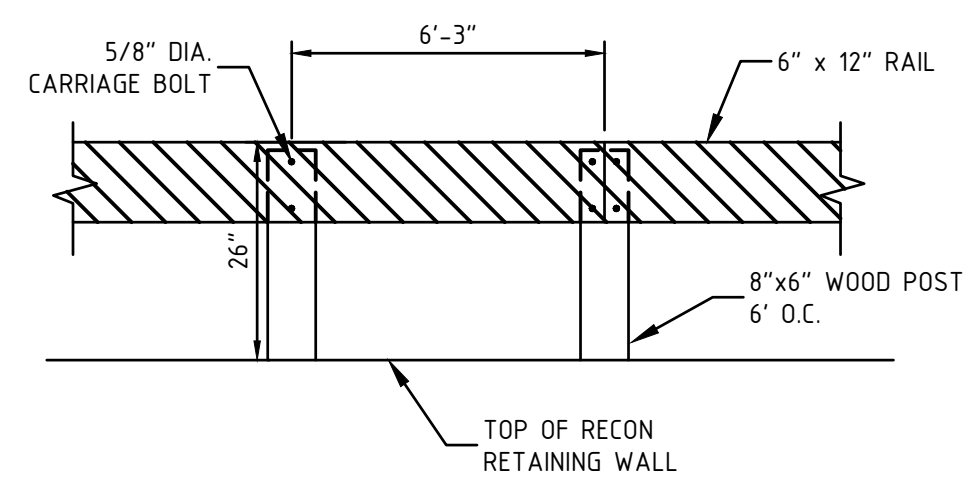


- NOTES:**
- LENGTH OF ENTRANCE MAY BE 50' WHERE DIVERSION RIDGE IS PROVIDED.
 - GRADE AND COMPACT ACCESS ROAD ENTRANCE AS NECESSARY. PLACE FILTER FABRIC AND 6" OF 3" CRUSHED STONE TO MATCH SLOPE OF EXISTING ROAD.
 - PROVIDE NECESSARY SWALES OR DIVERSIONS TO MINIMIZE DIRECT FLOW OF WATER ONTO STONE AREA.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



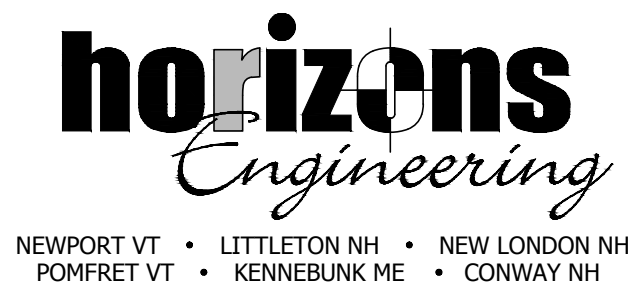
TYPICAL END SECTION



- NOTE:**
- ALL MATERIAL AND INSTALLATION METHODS SHALL CONFORM W/NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, SECTION 606-GUARDRAIL.
 - REFER TO SHEET C102 FOR LOCATION AND GRADING AROUND GUARD RAIL.
 - REFER TO SHEET C505 FOR SPECIFIC CONSTRUCTION DETAIL ON BLOCK RETAINING WALL.

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

GUARD RAIL DETAIL
NTS



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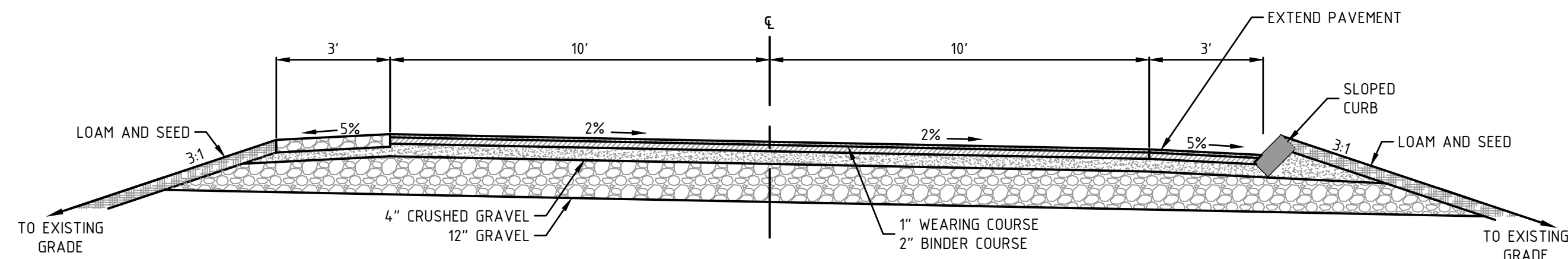
CONSTRUCTION DETAILS FOR
THE CROSSINGS SUBDIVISION
MICHAEL & MARTHA MULHERN

91 BAGDAD RD
DURHAM NH 03824
OF PROPERTY LOCATED AT
91 BAGDAD ROAD
DURHAM, STRAFFORD COUNTY, NH
LAND OF: MICHAEL & MARTHA MULHERN
DEED BOOK 4095, PAGE 129
TAX MAP 10 LOT 8-8

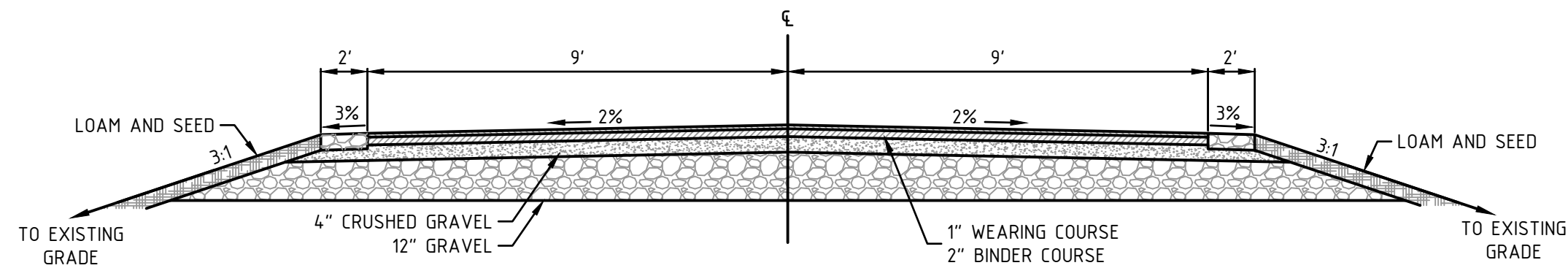
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C502

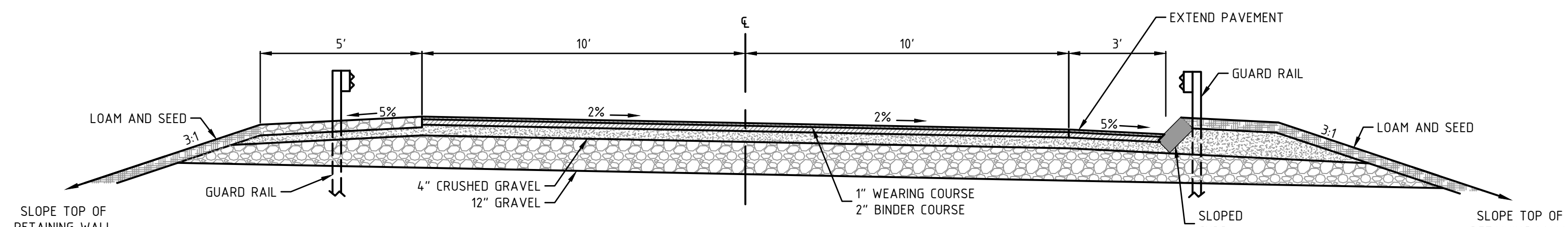


TYPICAL MAIN ACCESS ROAD CROSS-SECTION
NTS

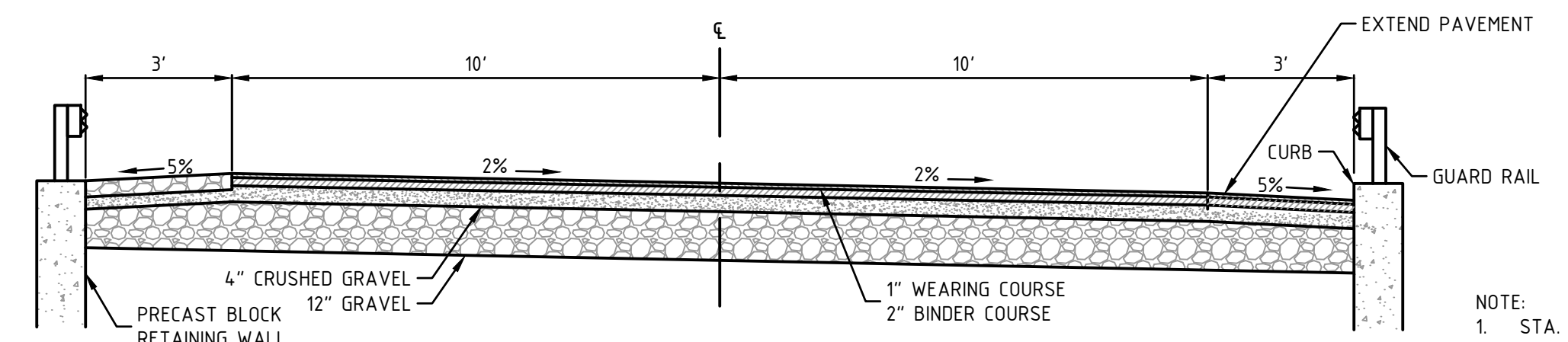


TYPICAL LOOP ROAD CROSS-SECTION
NTS

NOTE:
1. SOME SECTION OF LOOP ROAD ARE SUPERELEVATED. (SEE GRADING PLAN)



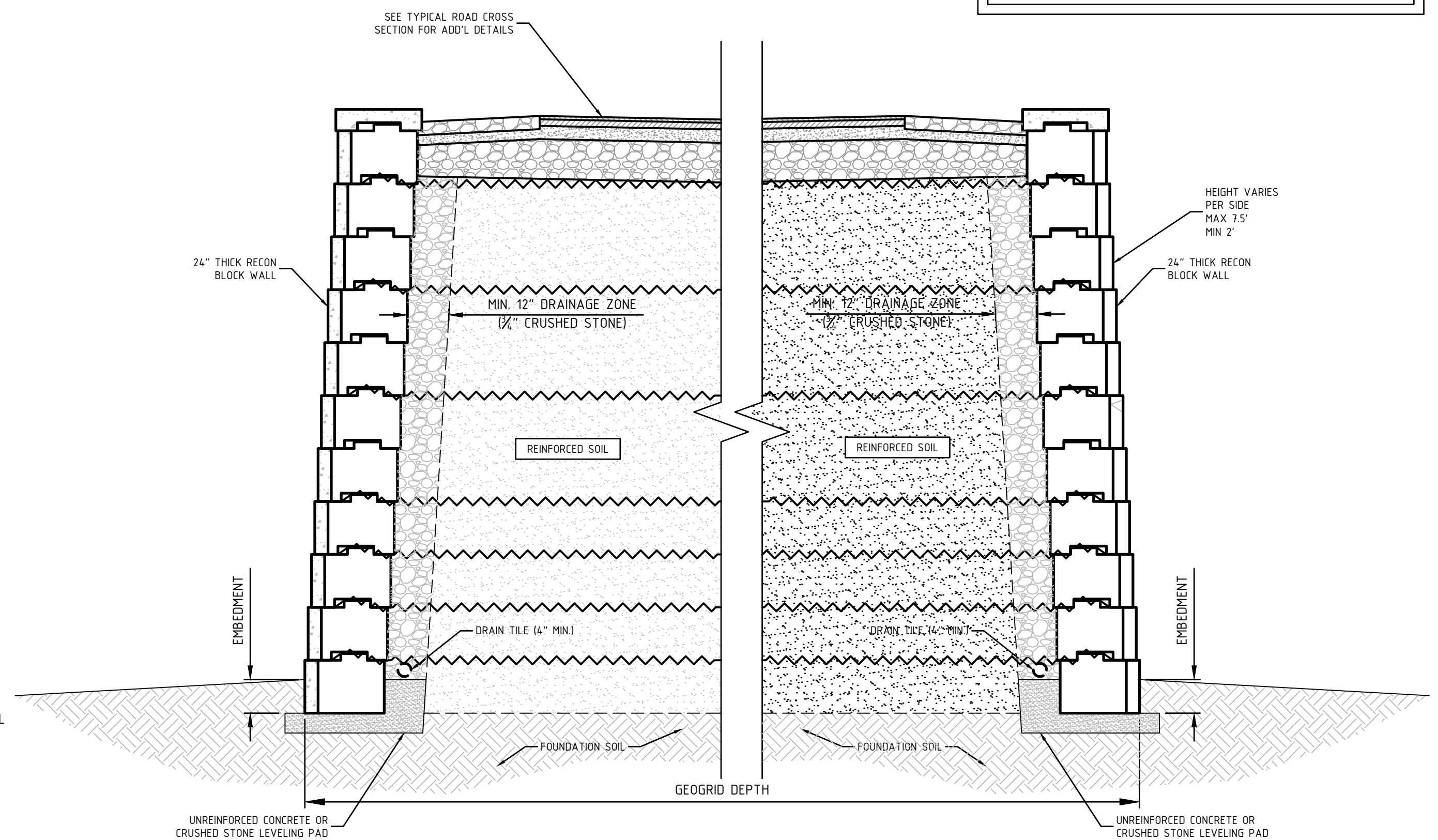
WETLAND CROSSING #2 ROAD CROSS-SECTION
NTS



TYPICAL MAIN ACCESS ROAD WITH RETAINING WALLS CROSS-SECTION
NTS

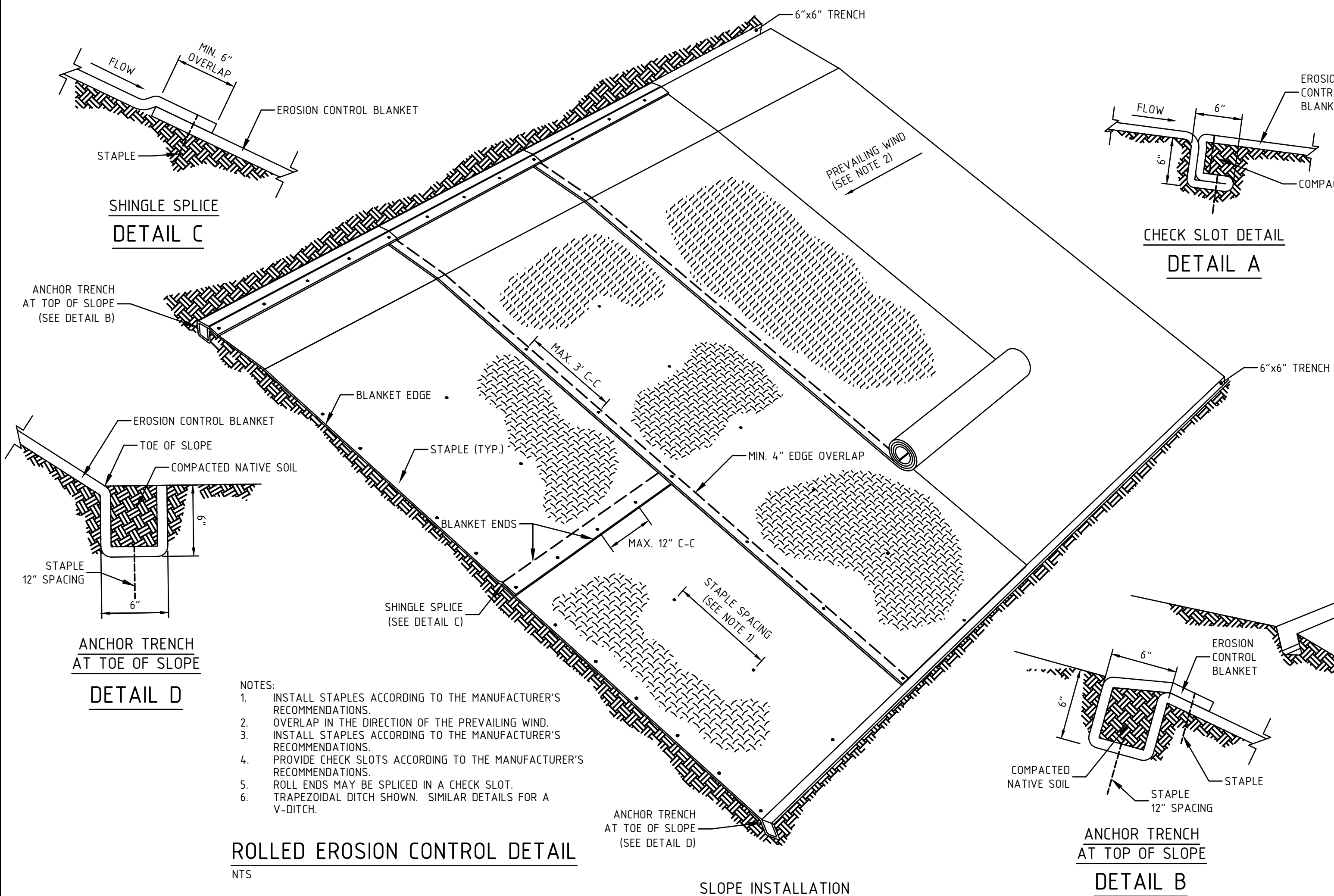
NOTE:
1. STA. RT 0+25 TO 2+25
2. STA. LT 0+98 TO 2+20

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



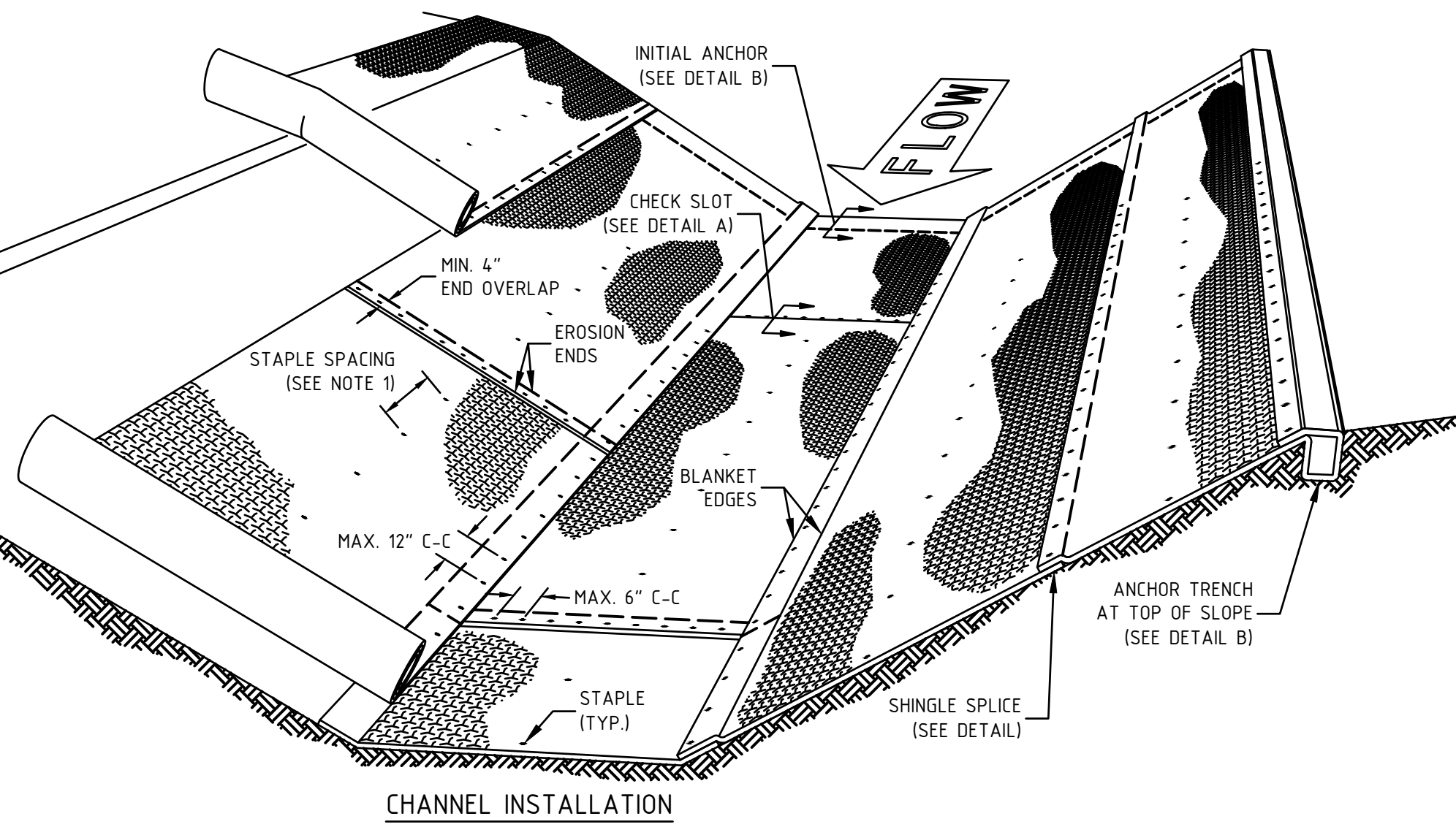
NOTES
1. SOIL BORINGS ARE RECOMMENDED PRIOR TO FINAL WALL DESIGN

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



CHANNEL INSTALLATION

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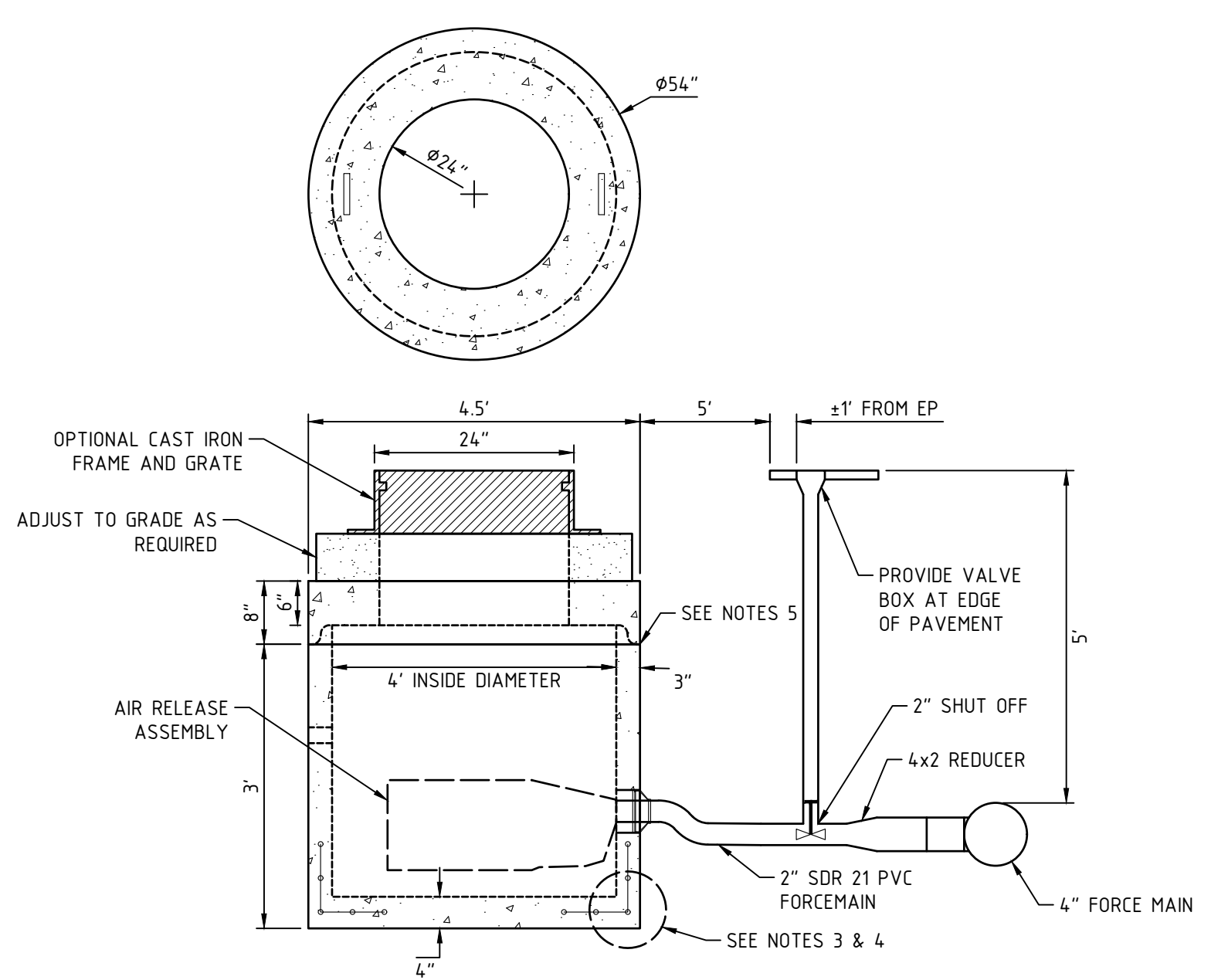
CONSTRUCTION DETAILS FOR
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MICHAEL & MARTHA MULHERN
91 BAGDAD RD
DURHAM NH 03824
OF PROPERTY LOCATED AT
91 BAGDAD ROAD
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DEED BOOK 4095, PAGE 129
TAX MAP 10 LOT 8-8

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C503

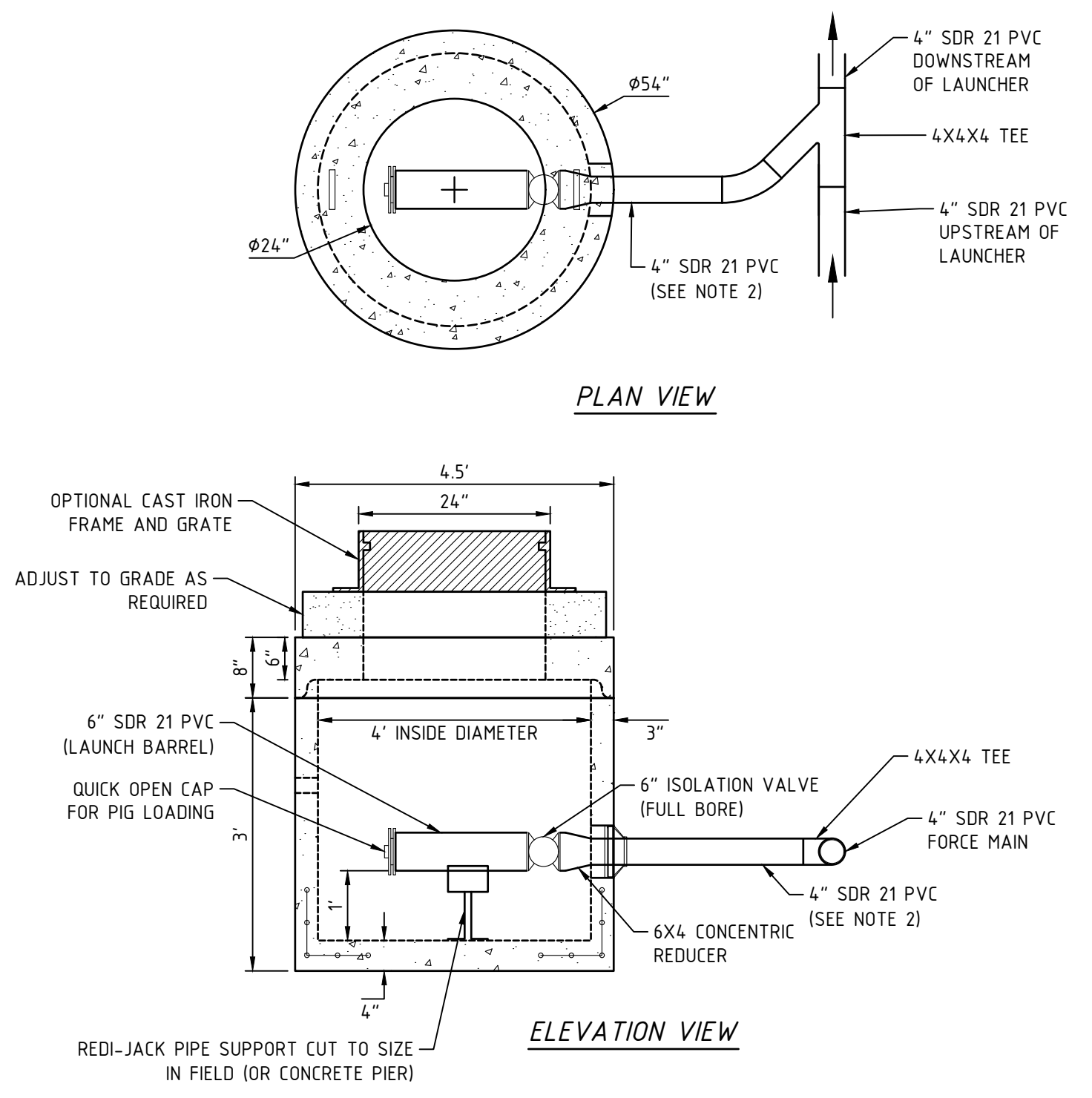
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- NOTES**
1. CONCRETE: FC = 4,000 PSI @ 28 DAYS MINIMUM, TYPE III CEMENT
 2. HS-20 DESIGN LOADING CONFORMS TO LATEST SPECIFICATIONS ASTM C478, AASHTO M199 PRECAST REINFORCED CONCRETE MANHOLE SECTIONS
 3. ONE POUR MONOLITHIC BASE SECTION
 4. STEEL REINFORCEMENT CONFORMS TO LATEST ASTM SPECIFICATION: ASTM A615, GRADE 60 BLACK DEFORMED BARS
ASTM A185 WELDED WIRE FABRIC
 5. 0.12 SQ. IN./LINEAL FT. AND 0.12 SQ. IN.(BOTH WAYS) BASE BOTTOM
 6. BUTYL RUBBER JOINT SEALANT PROVIDED CONFORMS TO ASTM C990 AND FEDERAL SPEC SS-5-210A
 7. HOLES & ELEVATIONS TBD
 8. BOOTED PIPE CONNECTIONS (IF USED) CONFORM TO ASTM C923.
 9. PLASTIC MANHOLE STEPS (IF REQUIRED) ARE STEEL REINFORCED CONFORMING TO ASTM C478
 10. ASPHALTIC EXTERIOR COATING AVAILABLE.
 11. ALL INTERIOR PIPING AND VALVES TO BE CONFIRMED WITH DESIGN ENGINEER PRIOR TO START OF PROJECT.
 12. MANHOLES TO BE SET ON MINIMUM 6" COMPACTED CRUSHED STONE (3/4") FOR SALES CONTACT.

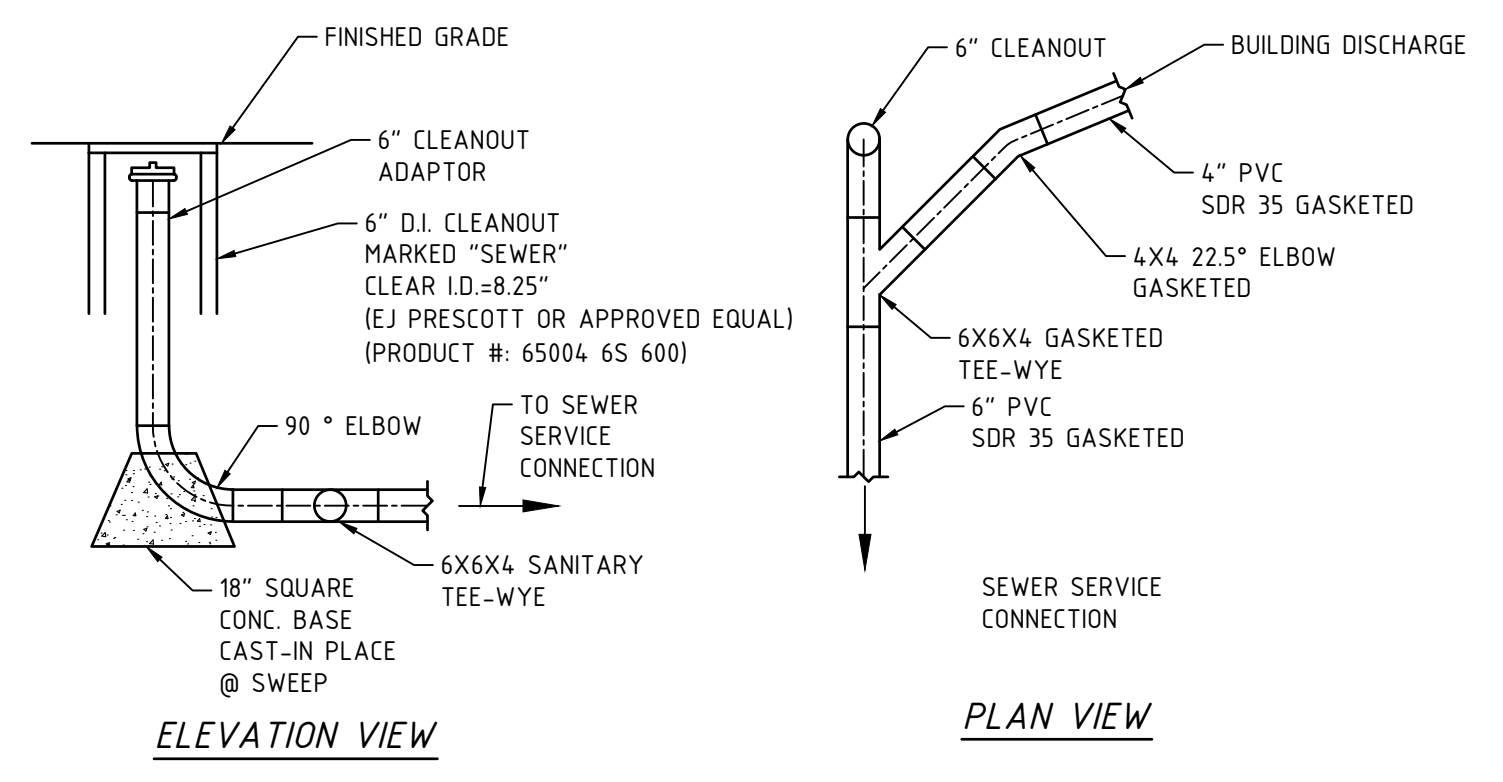
PHOENIX PRECAST PRODUCTS
77 REGIONAL DRIVE
CONCORD, NH 03301
1-800-639-2199

AIR RELEASE VALVE ASSEMBLY
N.T.S.

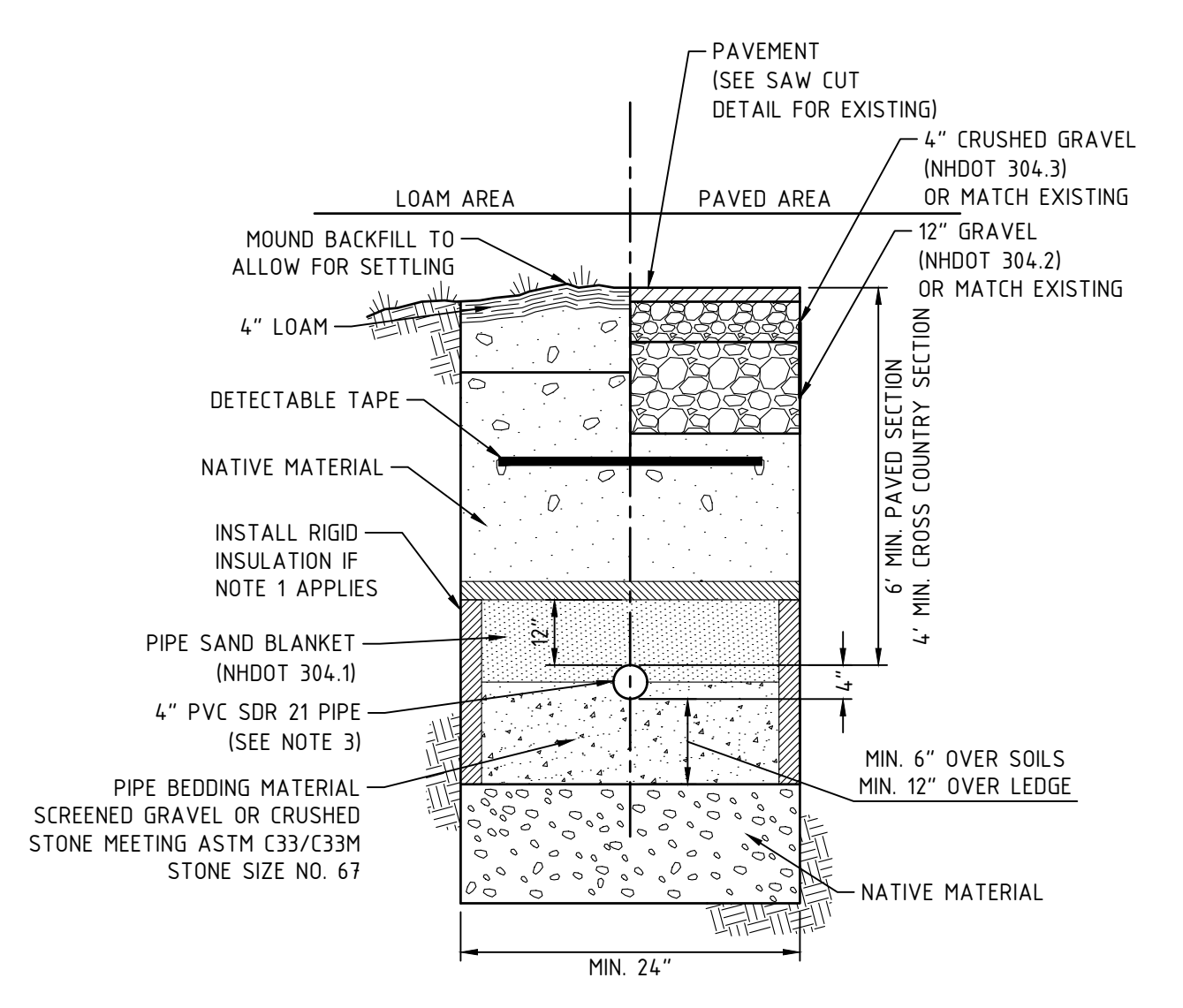


- NOTES**
1. ALL PIPING MUST HAVE A PRESSURE CLASS RATING OF 200 PSI OR GREATER AT 23 °C.
 2. INSIDE DIAMETERS OF THE FORCE MAIN AND THE PRESSURE PIPE AFTER THE 6X4 REDUCER MUST BE EQUAL.
 3. ALL VALVES MUST HAVE A FULL BORE TO ALLOW PIG TO PASS THROUGH. CONTRACTOR MUST CONFIRM WITH THE VALVE MANUFACTURER THAT VALVES USED ARE PIGGABLE.

PIG LAUNCHING STATION DETAIL
N.T.S.

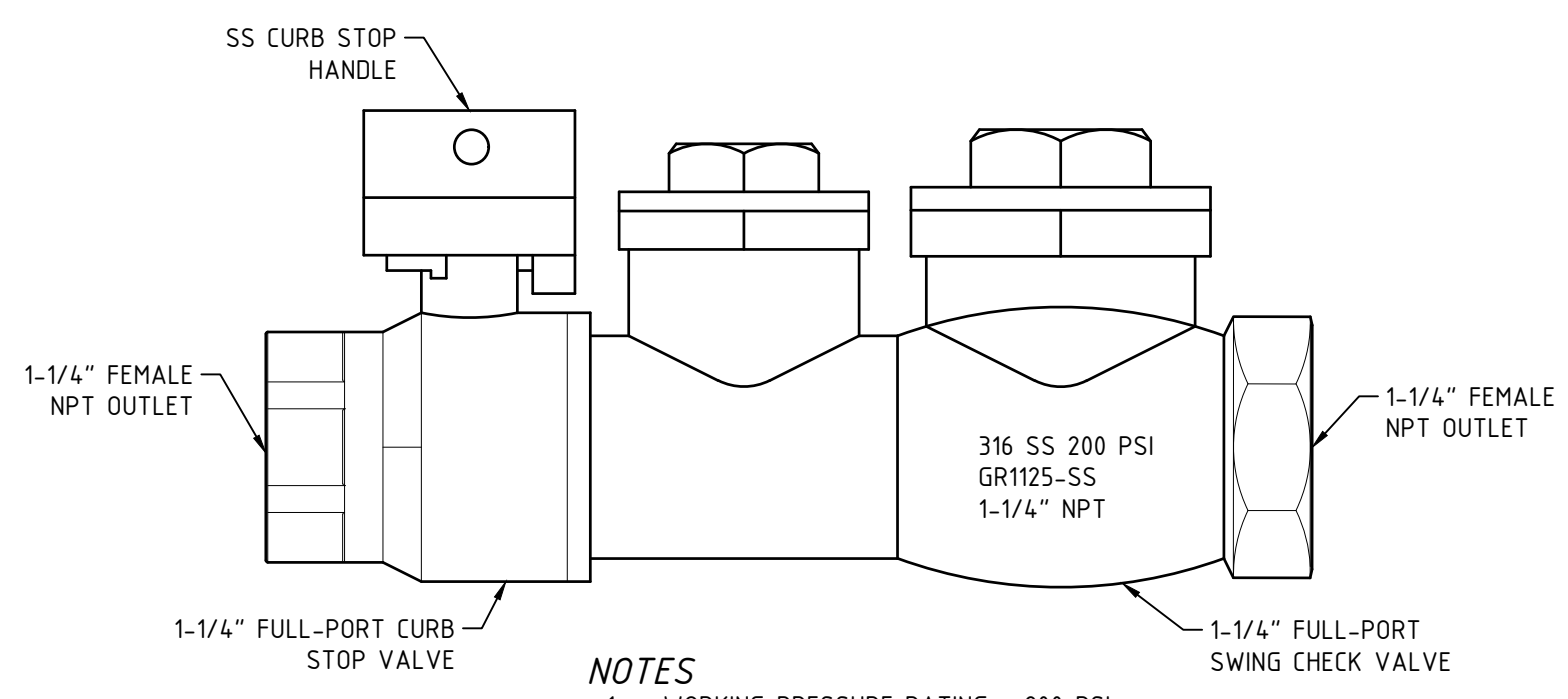


CLEANOUT DETAIL
N.T.S.



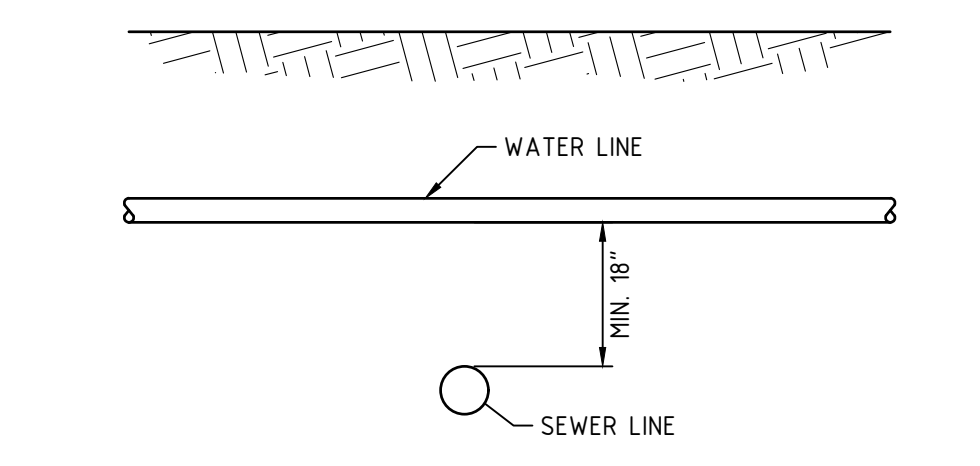
- NOTES**
1. USE RIGID INSULATION AS SHOWN IF PIPE COVER IS LESS THAN 6' UNDER PAVED SECTION OR 4' UNDER COUNTRY SECTION.
 2. THERE SHALL BE NO GLUE JOINTS ON THE FORCE MAIN.
 3. FORCE MAIN PIPES MUST HAVE A PRESSURE CLASS RATING OF 200 PSI OR GREATER AT 23 °C.

SEWER FORCEMAIN TRENCH
N.T.S.

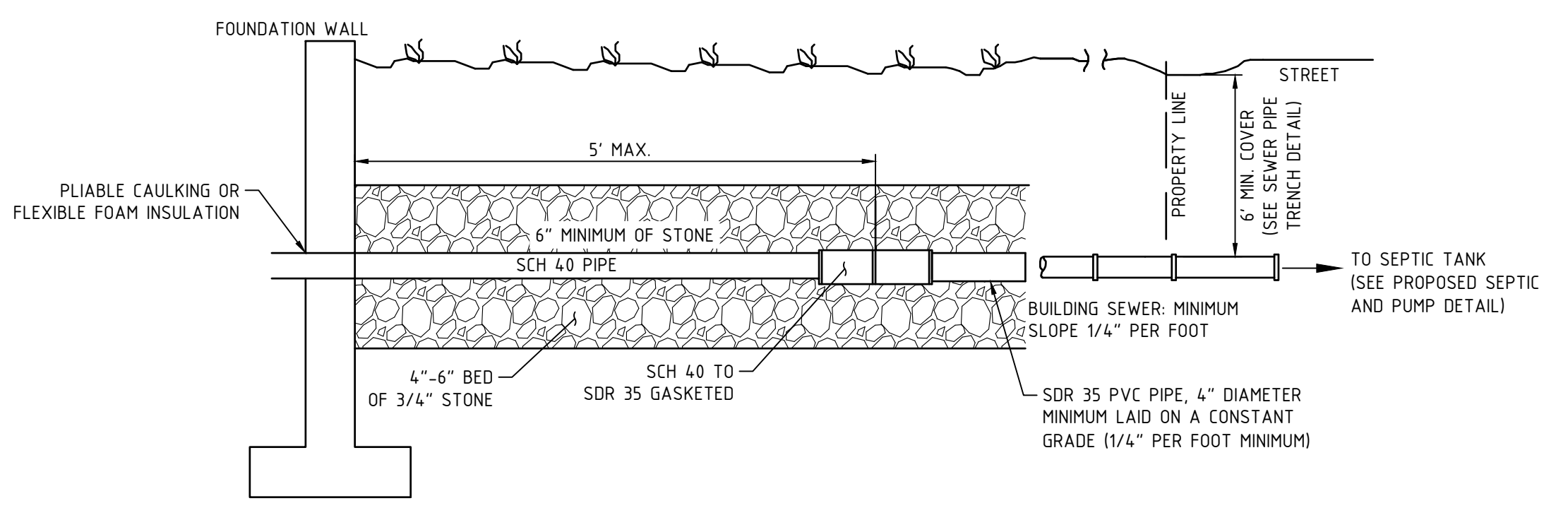


- NOTES**
1. WORKING PRESSURE RATING = 200 PSI
 2. 316 SS MATERIAL
 3. 1-1/4" NPT OUTLETS

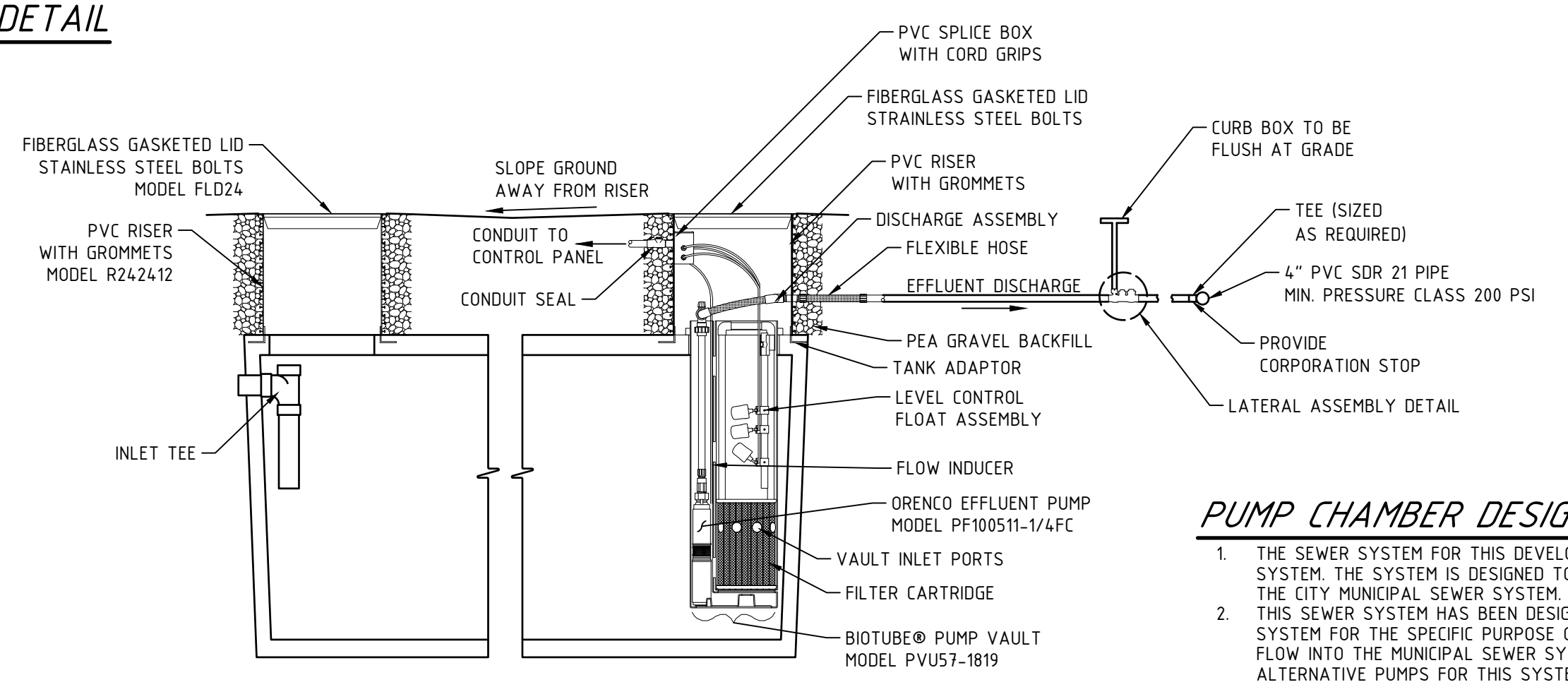
LATERAL ASSEMBLY DETAIL
N.T.S.



WATER AND SEWER CROSSING DETAIL
N.T.S.



TYPICAL BUILDING TO LOW PRESSURE SEWER CONNECTION
N.T.S.

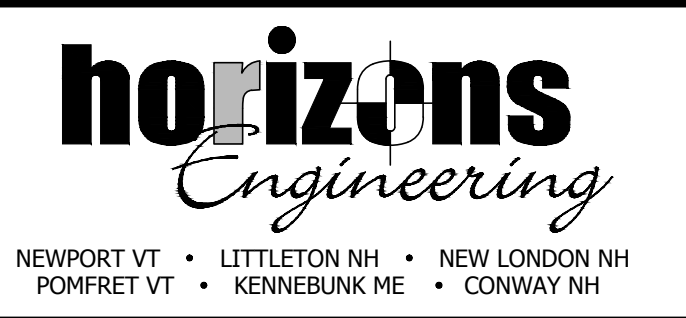


- NOTES**
1. SEPTIC TANK MUST BE 1250 GAL + 500 GAL

PROPOSED SEPTIC AND PUMP DETAIL
N.T.S.

PUMP CHAMBER DESIGN SPECIFICATIONS

1. THE SEWER SYSTEM FOR THIS DEVELOPMENT IS A LOW PRESSURE FORCE MAIN SEWER SYSTEM. THE SYSTEM IS DESIGNED TO PUMP WASTEWATER EFFLUENT FROM EACH LOT TO THE CITY MUNICIPAL SEWER SYSTEM.
2. THIS SEWER SYSTEM HAS BEEN DESIGNED USING THE ORENCO PROPACK EFFLUENT PUMP SYSTEM FOR THE SPECIFIC PURPOSE OF PUMPING A LOW VOLUME TO MINIMIZE THE PEAK FLOW INTO THE MUNICIPAL SEWER SYSTEM. THERE WILL BE NO SUBSTITUTIONS FOR ALTERNATIVE PUMPS FOR THIS SYSTEM WITHOUT ADDITIONAL APPROVAL.
3. EACH UNIT WILL BE CONSTRUCTED WITH A 2-COMPARTMENT SEPTIC/PUMP TANK AS SHOWN. EACH UNIT OWNER WILL BE RESPONSIBLE TO PUMP THEIR SEPTIC TANK TO INSURE THAT SLUDGE DOES NOT ACCUMULATE TO GRATER THAN 1/4 THE DEPTH OF THE TANK. THIS IS APPROXIMATELY ONCE EVERY 3 YEARS.
4. PUMP CHAMBER ELEVATIONS AND PUMP "ON", "OFF", AND "ALARM" ELEVATIONS TO BE SET BASED ON EXACT PUMP CHAMBER LOCATIONS (TO BE DETERMINED DURING UNIT BUILD OUT).
5. CONTACT JOSH SCOTTON AT RCM PUMPS FOR EQUIPMENT, SPECIFICATIONS AND INSTALLATION REQUIREMENTS.



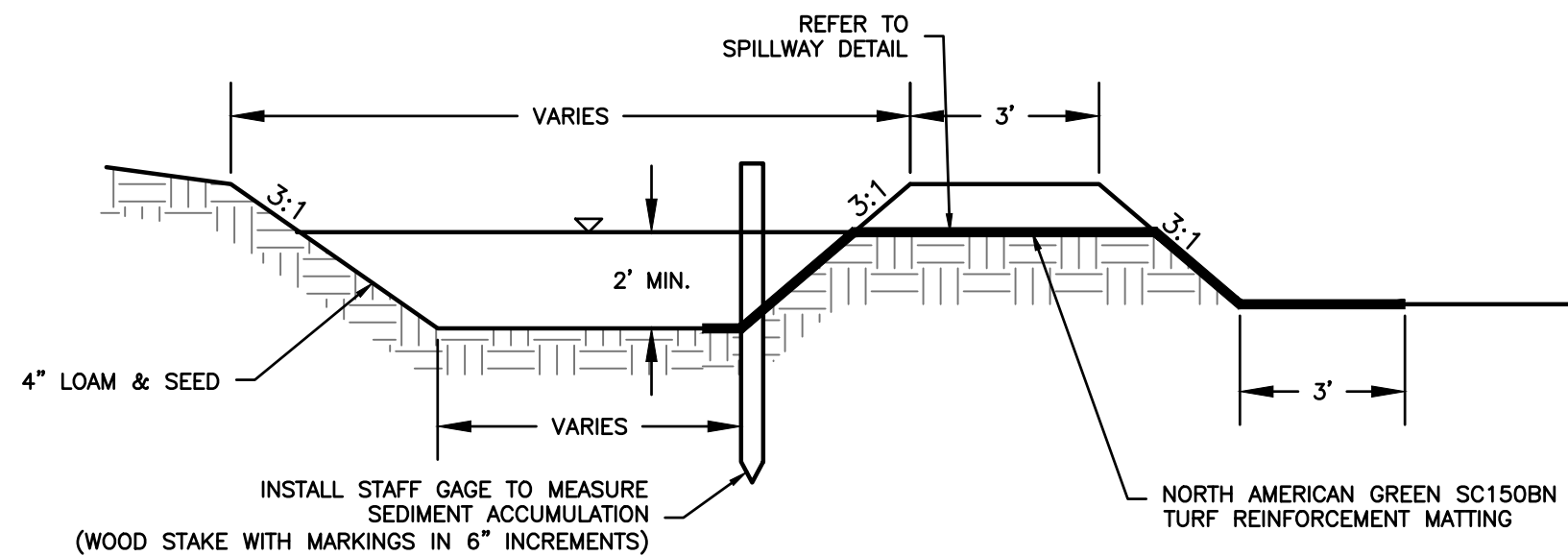
CONSTRUCTION DETAILS FOR
THE CROSSINGS SUBDIVISION
MICHAEL & MARTHA MULHERN
91 BAGDAD RD
DURHAM NH 03824

OF PROPERTY LOCATED AT
91 BAGDAD ROAD
DURHAM, STRAFFORD COUNTY, NH
LAND OF: MICHAEL & MARTHA MULHERN
DEED BOOK 4095, PAGE 129
TAX MAP 10 LOT 8-8

NO.	DATE	REVISION DESCRIPTION	ENG
1	2021-09-15	REVISED PER TOWN COMMENTS	MJS

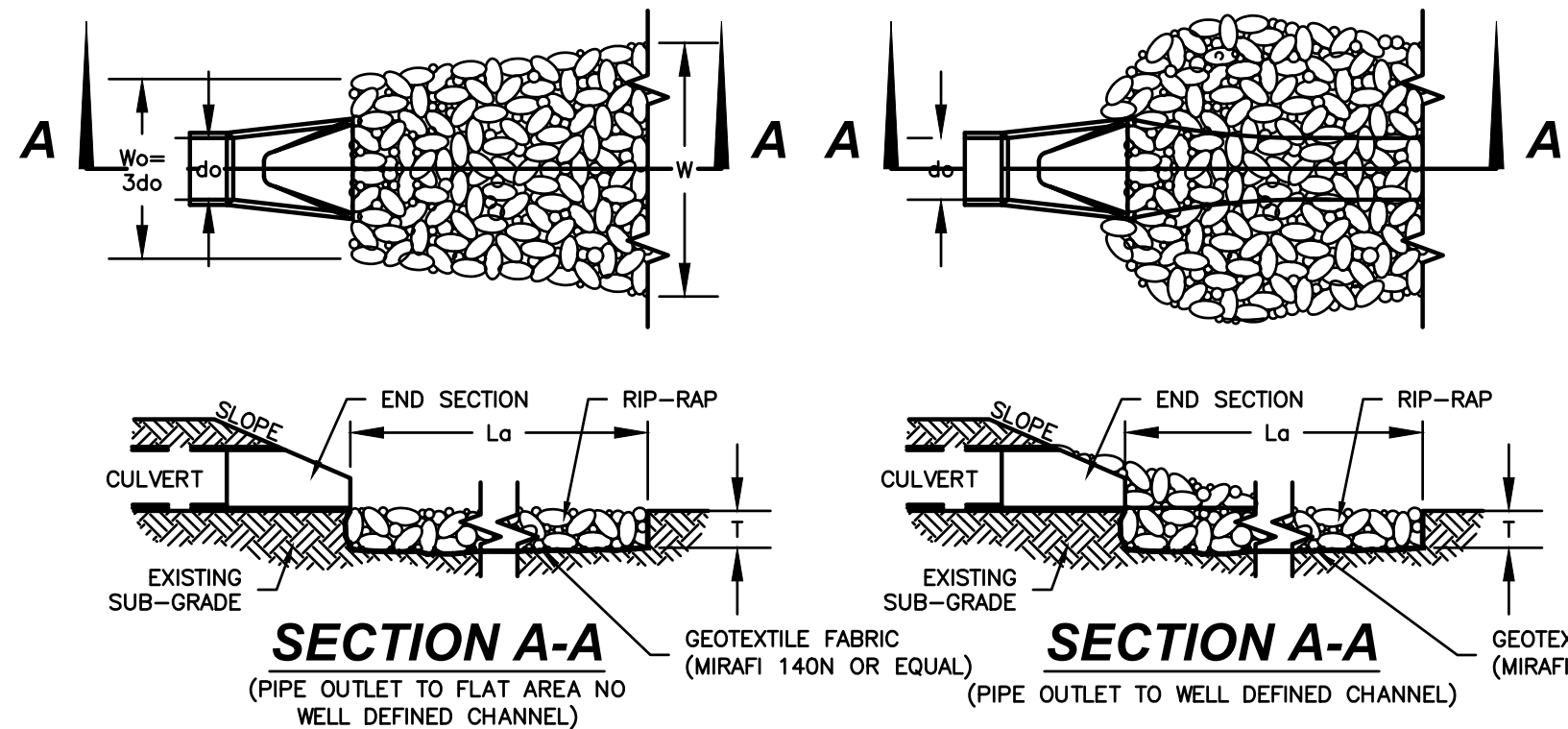
DATE: 2021-07-01	PROJECT #: NM19063
ENGINE'D BY: MJS	DRAWN BY: MCS
CHECK'D BY: MJS	ARCHIVE #: H-___

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.



RIP-RAP GRADATION

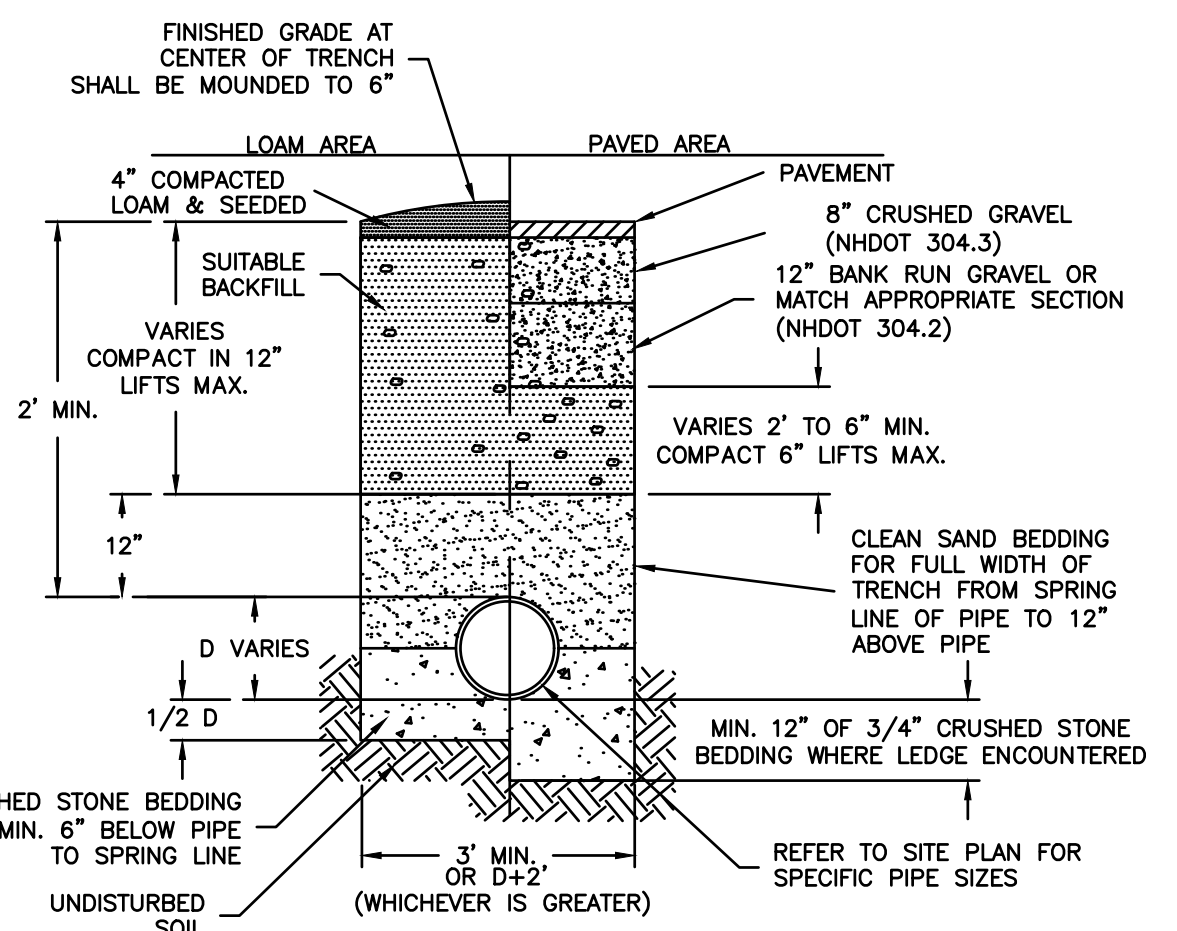
D50	% OF WEIGHT SMALLER THAN THE GIVEN SIZE		SIZE OF STONE (INCHES)	
	100	85	9	TO 12
			7.8	TO 10.8
			6	TO 9
			1.8	TO 3

D50	% OF WEIGHT SMALLER THAN THE GIVEN SIZE		SIZE OF STONE (INCHES)	
	100	85	12	TO 16
			10.4 <td>TO 14.4</td>	TO 14.4
			8 <td>TO 12</td>	TO 12
			2.4 <td>TO 4</td>	TO 4

RIP RAP APRON DIMENSION TABLE

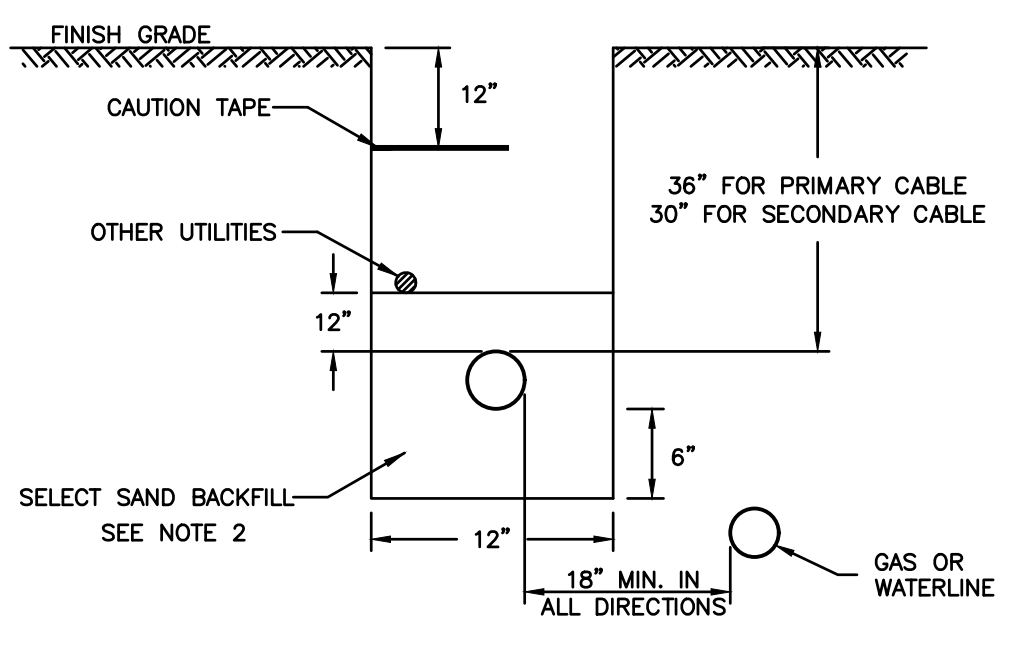
LOCATION	W ₀	W	L _a	T	Ø50
RIPRAP #1 - GRAVEL WETLAND EMERGENCY SPILLWAY	2.5	16	13	18"	24"
RIPRAP #2 - 12" CPP OUTLET @ STA. 15+57	3.75	4.7	16	18"	6"
RIPRAP #3 - 18" CPP OUTLET @ STA. 15+66	VARIES SEE PLAN			24"	8"
RIPRAP #4 - GRAVEL WETLAND MID SPILLWAY	3.75	8.1	18	24"	8"
RIPRAP #5 - 18" CPP OUTLET @ STA. 17+80	1.25	9	8	18"	6"
RIPRAP #6 - 6" CPP GRAVEL WETLAND OUTLET					

PIPE OUTLET PROTECTION DETAIL
NTS



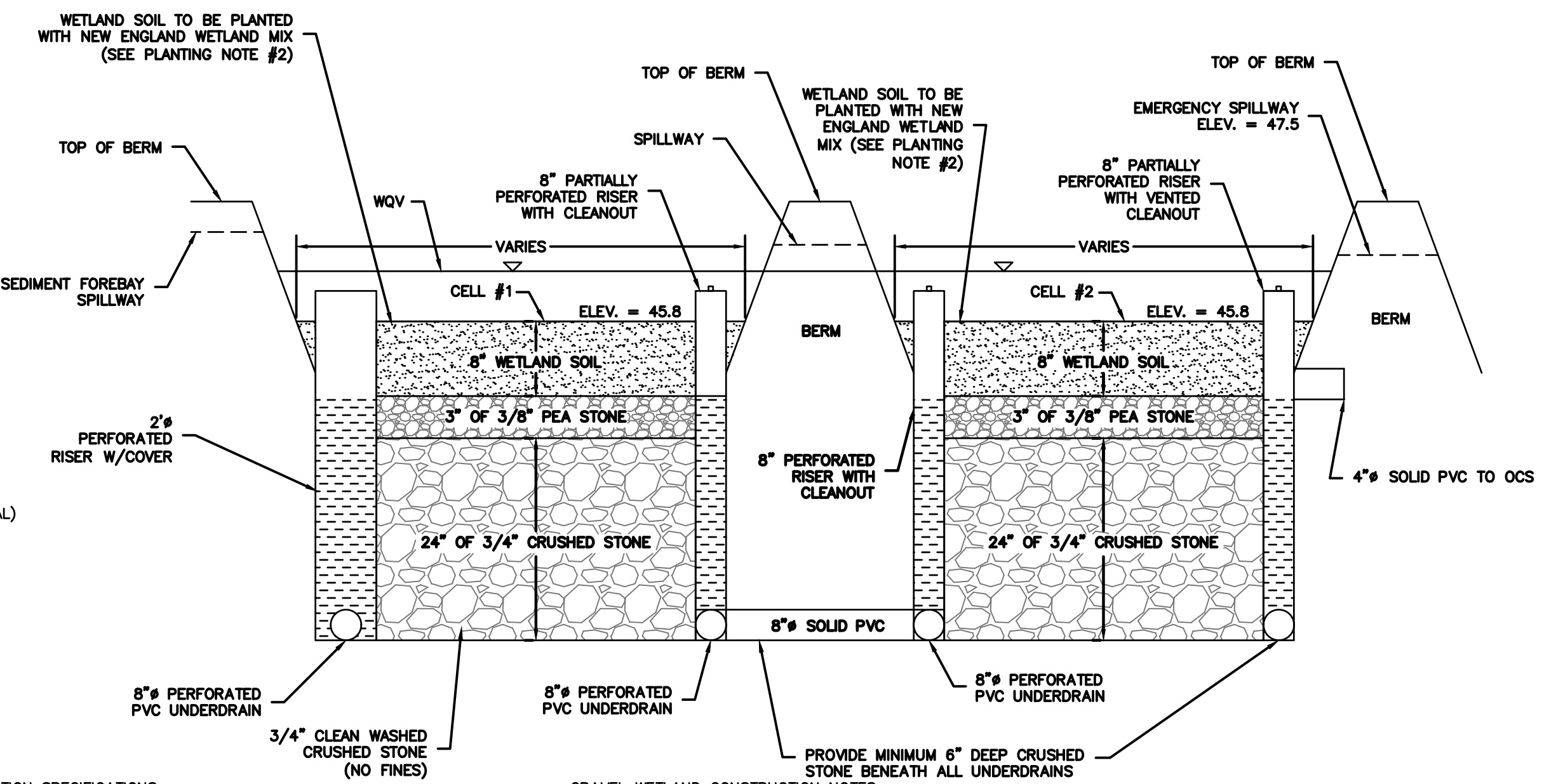
STANDARD DRAINAGE PIPE TRENCH
NTS

- 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 MANUFACTURERS REQUIREMENTS PRIOR TO RECEIVING RUNOFF.
 - JOINTS BETWEEN ADJACENT RISERS SHALL BE FULLY SEALED WITH ELASTOMERIC SEALANT PER MANUFACTURERS 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 BASIN: NEEHAH UFMATE 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.



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
#10	50-60
#30	30-45
#60	15-30

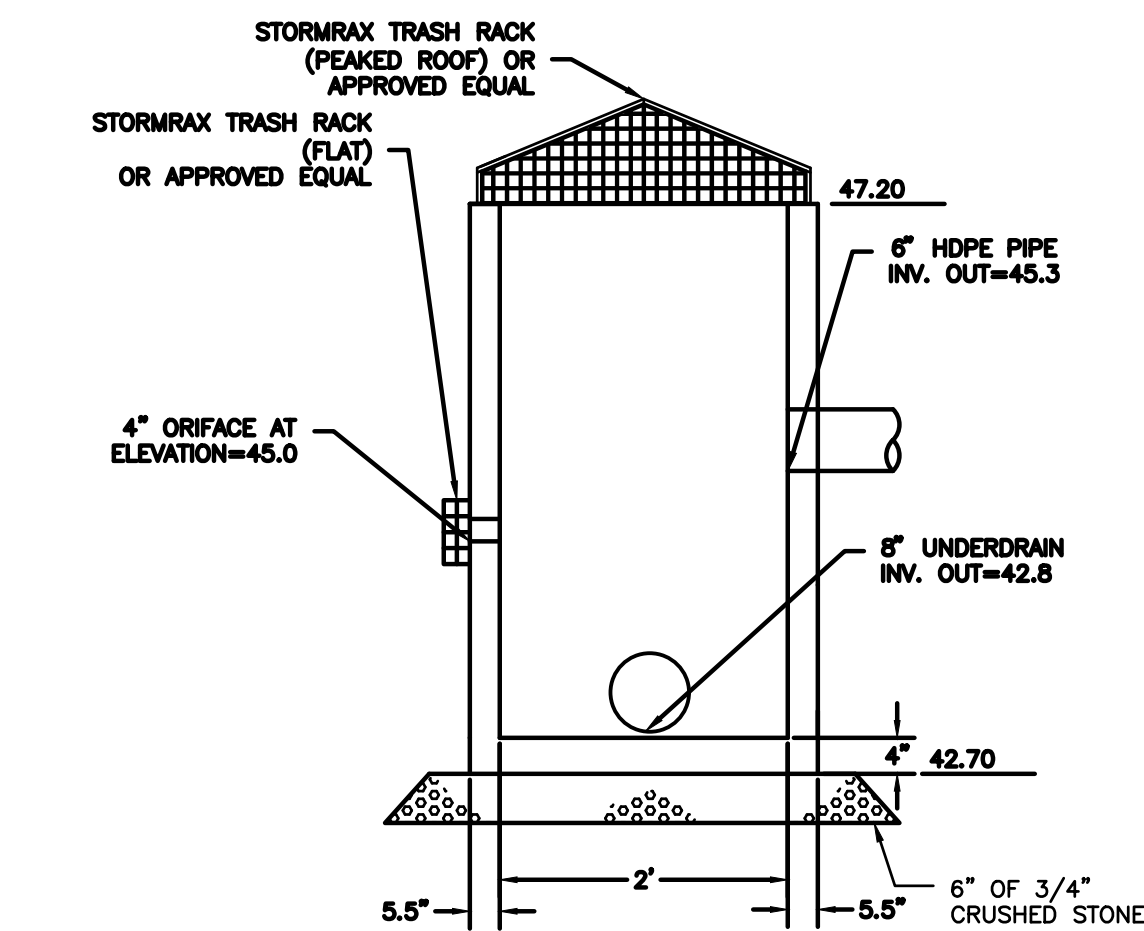
- ALL PIPE TO PIPE CONNECTIONS SHALL BE WATER-TIGHT.
- ALL DISTURBED AREAS NOT OTHERWISE PLANTED SHALL RECEIVE FOUR INCHES OF LOAM AND SEEDED PER THE CONSTRUCTION SEQUENCING AND EROSION CONTROL NOTES ON SHEET D101.

GRAVEL WETLAND MAINTENANCE:

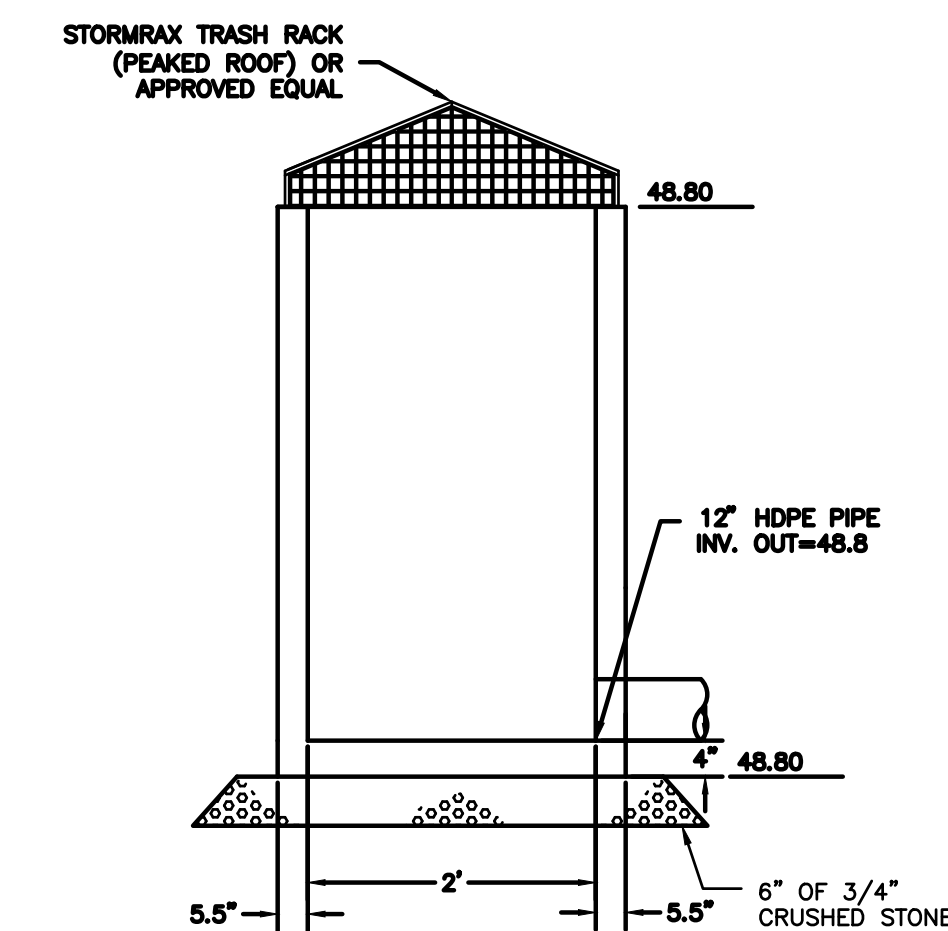
- SYSTEMS SHOULD BE INSPECTED AT LEAST TWICE ANNUALLY, AND FOLLOWING ANY RAINFALL EVENT EXCEEDING 2.5 INCHES IN A 24 HOUR PERIOD, WITH MAINTENANCE OR REHABILITATION CONDUCTED AS WARRANTED BY SUCH INSPECTION.
- TRASH AND DEBRIS SHOULD BE REMOVED AT EACH INSPECTION.
- AT LEAST ONCE ANNUALLY SYSTEM SHOULD BE INSPECTED FOR DRAINAGE 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 MULD, 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.

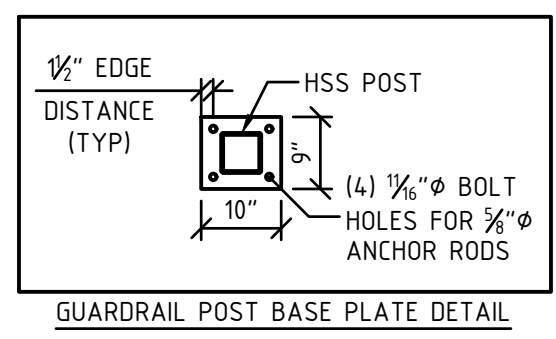


MODIFIED OUTLET CONTROL STRUCTURE FOR GRAVEL WETLAND
NTS

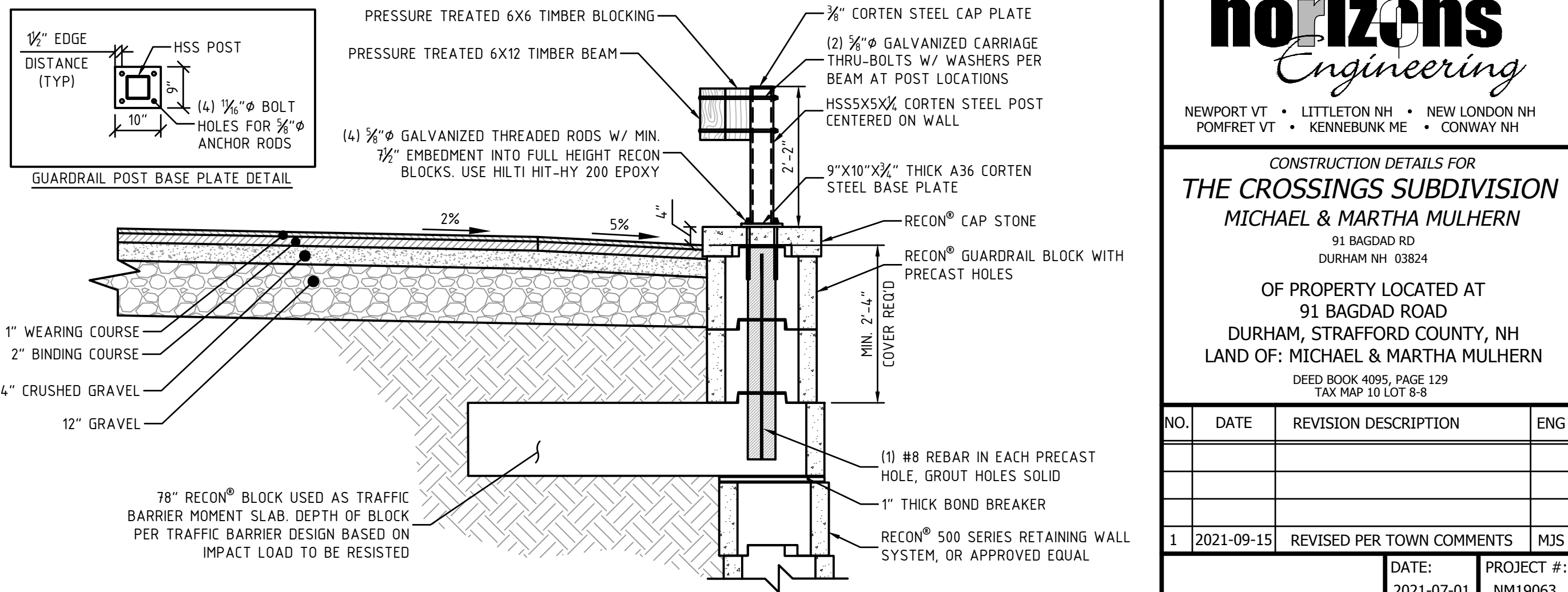


MODIFIED OUTLET CONTROL STRUCTURE FOR SEDIMENT FOREBAY
NTS

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



GUARDRAIL POST BASE PLATE DETAIL



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

RETAINING WALL AND GUARDRAIL DETAIL
NTS

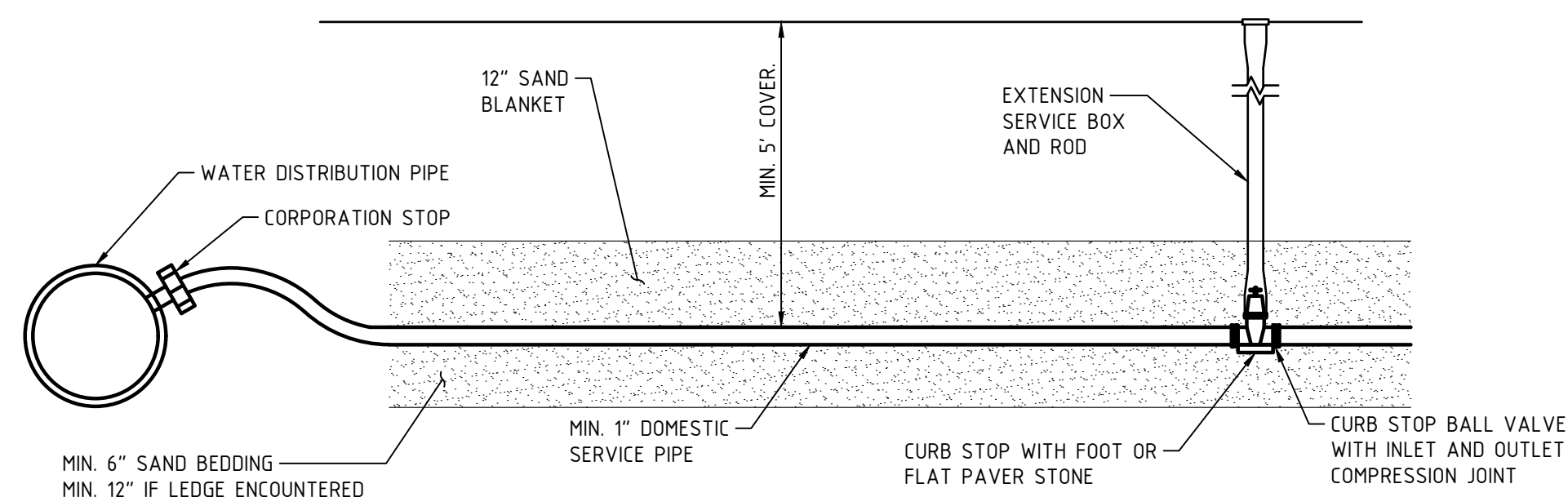


CONSTRUCTION DETAILS FOR
THE CROSSINGS SUBDIVISION
MICHAEL & MARTHA MULHERN
91 BAGDAD RD
DURHAM NH 03824
OF PROPERTY LOCATED AT
91 BAGDAD ROAD
DURHAM, STRAFFORD COUNTY, NH
LAND OF: MICHAEL & MARTHA MULHERN
DEED BOOK 4095, PAGE 129
TAX MAP 10 LOT 8-8

NO.	DATE	REVISION DESCRIPTION	ENG
1	2021-09-15	REVISED PER TOWN COMMENTS	MJS

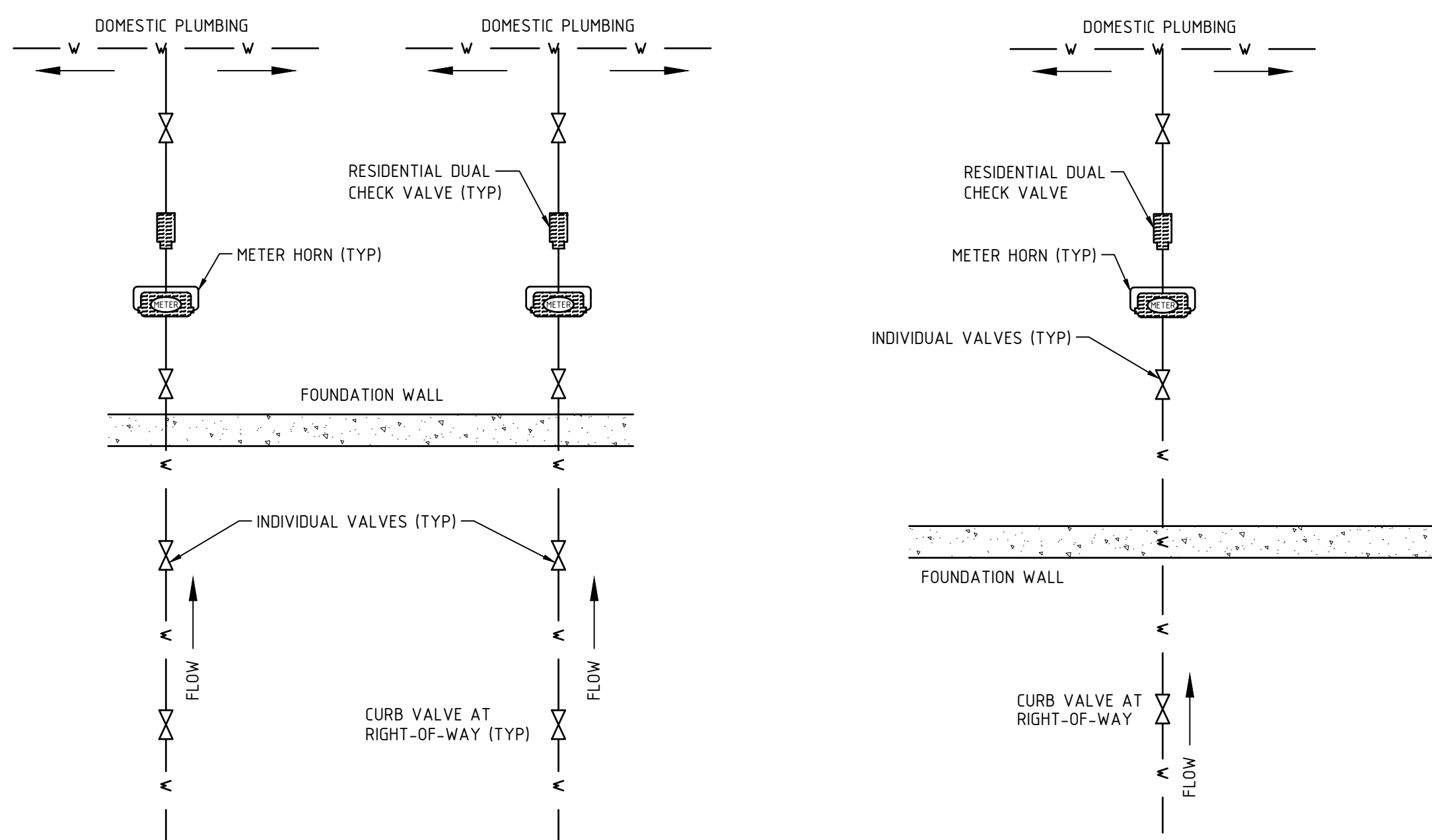
DATE:	PROJECT #:
2021-07-01	NM19063
ENGINE'D BY:	DRAWN BY:
MJS	MJS
CHECK'D BY:	ARCHIVE #:
MJS	H-

C505



- NOTES**
- COORDINATE ALL WORK WITH TOWN OF NEWMARKET.
 - ALL WORK TO BE IN ACCORDANCE WITH TOWN OF NEWMARKET SPECIFICATIONS.
 - ALL TAPS SHALL BE MADE AT 2 AND 10 O'CLOCK (APPROX.).
 - NO COUPLINGS SHALL BE ALLOWED IN ROADWAY WITHOUT PRIOR APPROVAL BY ENGINEER.

TYPICAL WATER SERVICE CONNECTION
N.T.S.

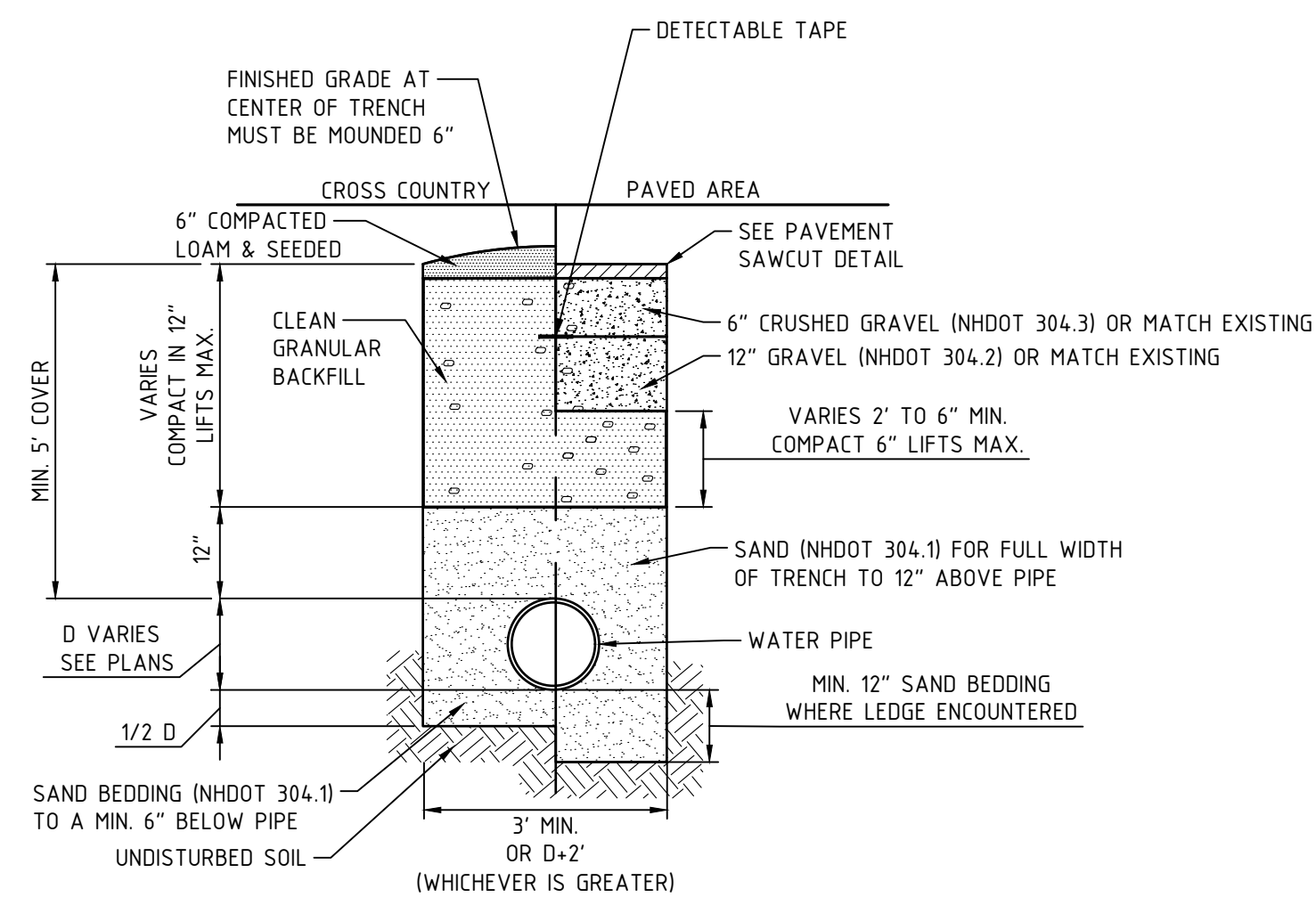


NOTE: ALL METERS SUPPLIED BY TOWN OF DURHAM GENERAL SERVICES DEPARTMENT

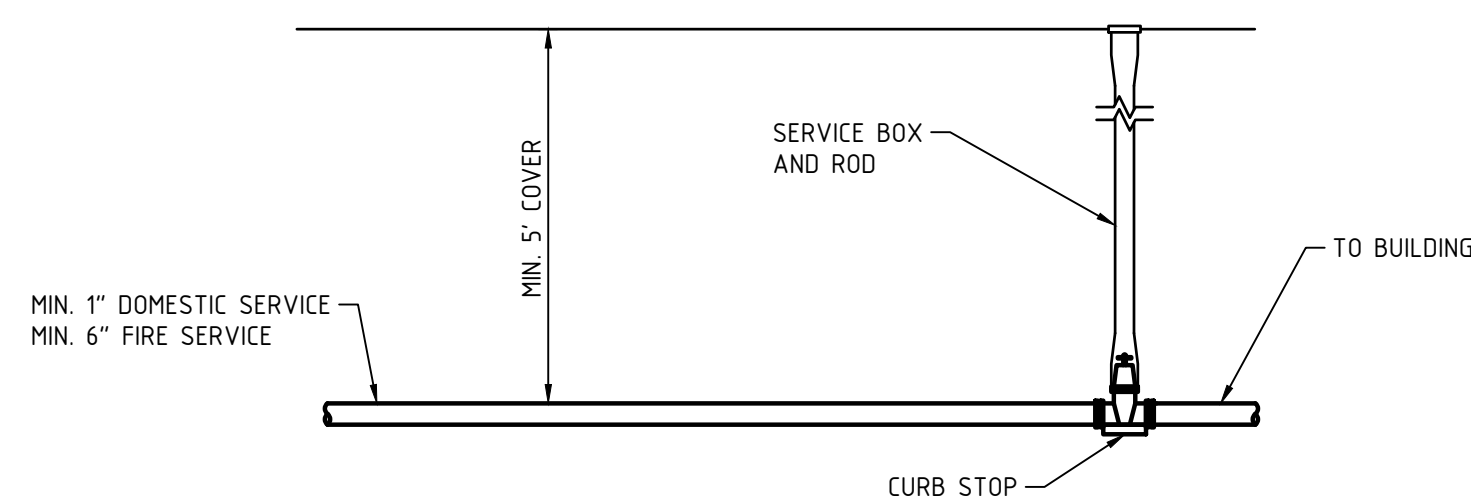
DUAL RESIDENTIAL WATER METER INSTALLATION
N.T.S.

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

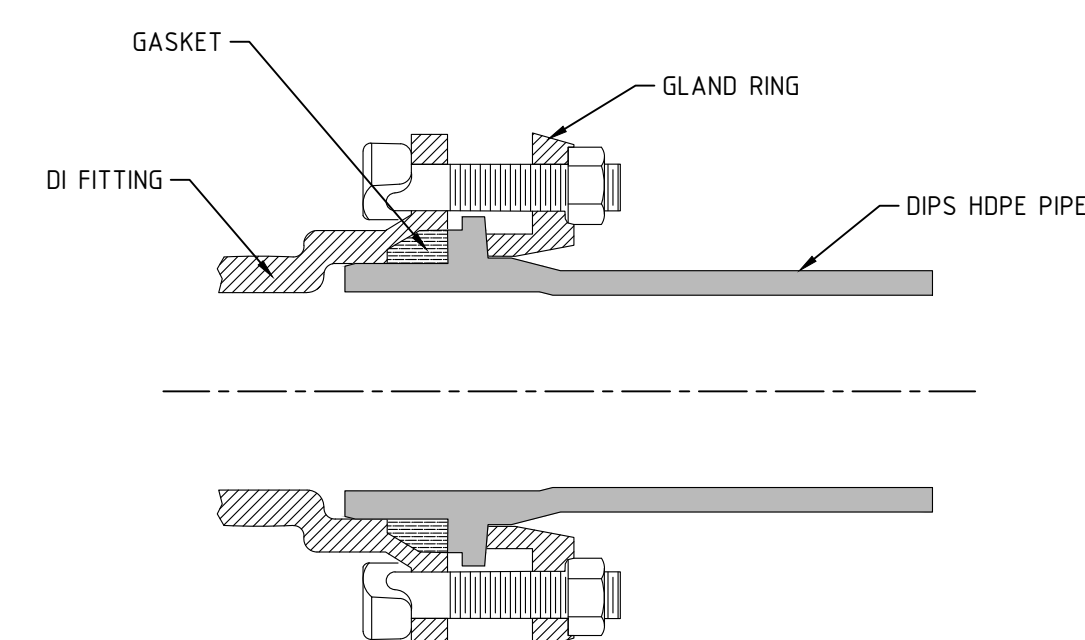
SINGLE FAMILY WATER METER INSTALLATION
N.T.S.



STANDARD WATER SUPPLY TRENCH
N.T.S.



TYPICAL WATER SHUTOFF CONNECTION
N.T.S.



- NOTES**
- FITTINGS MUST COMPLY WITH AWWA C153/A2153.
 - HDPE DISTRIBUTION PIPES MUST BE DIPS.
 - INSTALL FITTING FOLLOWING MANUFACTURERS INSTRUCTIONS.
 - HDPE PIPE STIFFENERS MUST BE MADE OF 316 STAINLESS STEEL.

PE PIPE TO MECHANICAL JOINT CONNECTION
N.T.S.

horizons
Engineering

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

CONSTRUCTION DETAILS FOR
THE CROSSINGS SUBDIVISION
MICHAEL & MARTHA MULHERN

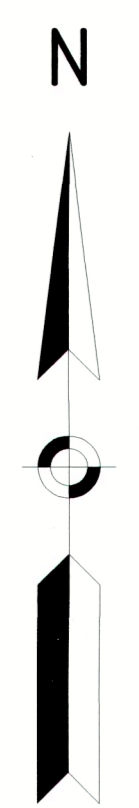
91 BAGDAD RD
DURHAM NH 03824

OF PROPERTY LOCATED AT
91 BAGDAD ROAD
DURHAM, STRAFFORD COUNTY, NH
LAND OF: MICHAEL & MARTHA MULHERN
DEED BOOK 4095, PAGE 129
TAX MAP 10 LOT 8-8

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1	2021-09-15	REVISED PER TOWN COMMENTS	MJS

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

C506



Plant List

TREES

Symbol	Botanical Name	Common Name	Quantity	Size	Comments
Ab	<i>Abies balsamea</i>	Balsam Fir	5	7-8' ht	BB
Am	<i>Amelanchier canadensis</i>	Shadblow Serviceberry	5	7-8' ht.	BB Multi-stem
Ar	<i>Acer rubrum</i> 'Red Sunset'	Red Sunset Red Maple	5	3" cal.	BB
Bn	<i>Betula nigra</i> 'Heritage'	Heritage River Birch	7	8-10' ht.	BB
Cc	<i>Carpinus caroliniana</i>	American Hornbeam	6	7-8' ht.	BB Multi-stem
Ct	<i>Chamaecyparis thuyoides</i>	Atlantic White Cedar	8	7-8' ht.	BB
Hm	<i>Hamamelis intarmedia</i> x 'Arnold Promise'	Arnold Promise Witch Hazel	6	7-8' ht.	BB Multi-stem
Ms	<i>Malus</i> 'Sugar Tyme'	Sugar Tyme Crabapple	3	2.5' cal.	BB
Ns	<i>Nyssa sylvatica</i>	Black Tupelo	4	3" cal.	BB
Th	<i>Thuja plicata</i> 'Green Giant'	Green Giant Western Red Cedar	8	9-10' ht.	BB
Ua	<i>Ulmus americana</i> 'Princeton'	Priceton Elm	1	3" cal.	BB

SHRUBS

Symbol	Botanical Name	Common Name	Quantity	Size	Comments
Iv	<i>Ilex verticillata</i> 'Red Sprite'	Red Sprite Winterberry	50	3 gal.	
	<i>Ilex verticillata</i> 'Southern Gentleman'	Southern Gentleman Winterberry	8	3 gal.	
Cs	<i>Cornus sericea</i>	Red Osier Dogwood	62	5 gal.	
Cr	<i>Cornus racemosa</i>	Grey Twig Dogwood	19	3 gal.	
Ci	<i>Clethra alnifolia</i>	Summersweet Clethra	19	3 gal.	
Jc	<i>Juniperus communis</i>	Common Juniper	19	3 gal.	
Mp	<i>Myrica pennsylvanica</i>	Bayberry	41	2-2.5' ht.	BB
Vd	<i>Viburnum dentatum</i>	Arrowwood Viburnum	20	2-3' ht.	BB
Vn	<i>Viburnum nudum</i>	Smooth Witherod	10	2-3' ht.	BB

SEEDING

Meadow & Road Shoulders	50% New England Roadside Matrix Upland Seed Mix/ 50% New England Showy Wildflower Mix, by New England Wetland Plants	SF
Lawn Areas	Pennington Smart Seed Tall Fescue Blend	SF

DATE ISSUED:	12/09/20	SCALE:	1"=30'
DESIGNED BY:	RW	DRAWN BY:	VM
APPROVED BY:	RW	DWG FILE:	

LANDSCAPE PLAN
 prepared for
 MULHERN
 TAX MAP 10, LOT 8-6
 91 BAGDAD ROAD, DURHAM, NH 03824

woodburn & company
 LANDSCAPE ARCHITECTURE
 103 Kent Place Newmarket, New Hampshire Phone: 603.659.5949

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

0 30 60 100
 SCALE: 1" = 30'

NO.	REVISIONS	DATE	INT.
3.	PER REVISED SITE PLAN	07/07/21	VM
2.	REVISED SUBMISSION TO THE DURHAM CONSERVATION COMMISSION	07/20/21	VM
1.	REVISED SUBMISSION TO THE DURHAM PLANNING BOARD	12/09/20	VM
0.	INITIAL SUBMISSION TO THE DURHAM PLANNING BOARD	10/28/20	MCS

JOB: 19-063
L100

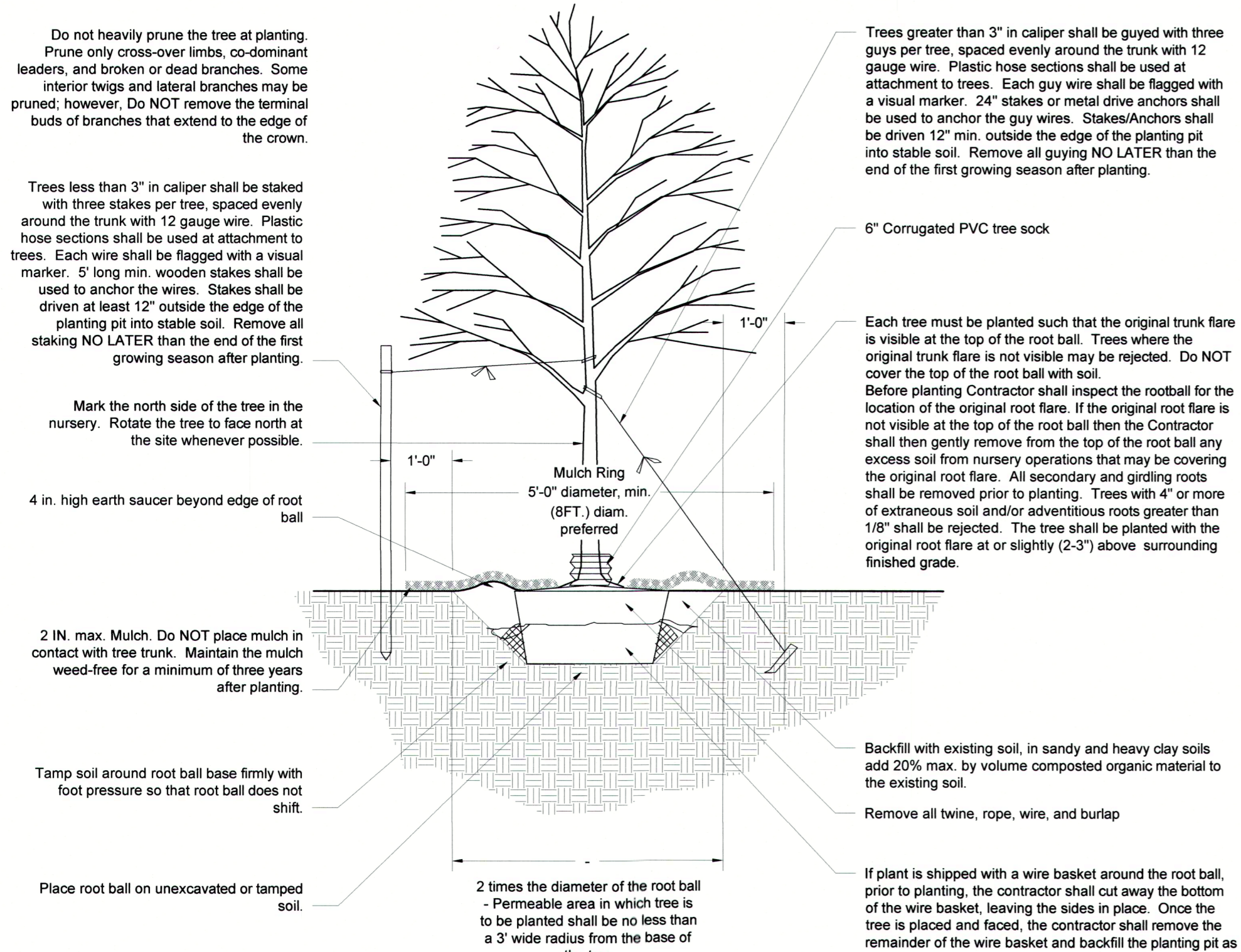
Landscape Notes

- Design is based on drawings by MJS Engineering dated 07/01/2021 and may require adjustment due to actual field conditions.
- The contractor shall follow best management practices during construction and shall take all means necessary to stabilize and protect the site from erosion.
- Erosion Control shall be in place prior to construction.
- Erosion Control to consist of Hay Bales and Erosion Control Fabric shall be staked in place between the work and Water bodies, Wetlands and/or drainage ways prior to any construction.
- The Contractor shall verify layout and grades and inform the Landscape Architect or Client's Representative of any discrepancies or changes in layout and/or grade relationships prior to construction.
- It is the contractor's responsibility to verify drawings provided are to the correct scale prior to any bid, estimate or installation. A graphic scale bar has been provided on each sheet for this purpose. If it is determined that the scale of the drawing is incorrect, the landscape architect will provide a set of drawings at the correct scale, at the request of the contractor.
- Trees to Remain within the construction zone shall be protected for the duration of the project by snow fence or other suitable means of protection to be approved by Landscape Architect or Client's Representative. Snow fence shall be located at the drip line at a minimum and shall include any and all surface roots. Do not fill or mulch on the trunk flare. Do not disturb roots. In order to protect the integrity of the roots, branches, trunk and bark of the tree(s) no vehicles or construction equipment shall drive or park in or on the area within the drip line(s) of the tree(s). Do not store any refuse or construction materials or portalets within the tree protection area.
- Location, support, protection, and restoration of all existing utilities and appurtenances shall be the responsibility of the Contractor.
- The Contractor shall verify exact location and elevation of all utilities with the respective utility owners prior to construction. Call DIGSAFE at 1-888-344-7233.
- The Contractor shall procure any required permits prior to construction.
- Prior to any landscape construction activities Contractor shall test all existing loam and loam from off-site intended to be used for lawns and plant beds using a thorough sampling throughout the supply. Soil testing shall indicate levels of pH, nitrates, macro and micro nutrients, texture, soluble salts, and organic matter. Contractor shall provide Landscape Architect with test results and recommendations from the testing facility along with soil amendment plans as necessary for the proposed plantings to thrive. All loam to be used on site shall be amended as approved by the Landscape Architect prior to placement.
- Contractor shall notify landscape architect or owner's representative immediately if at any point during demolition or construction a site condition is discovered which may negatively impact the completed project. This includes, but is not limited to, unforeseen drainage problems, unknown subsurface conditions, and discrepancies between the plan and the site. If a contractor is aware of a potential issue, and does not bring it to the attention of the landscape architect or owner's representative immediately, they may be responsible for the labor and materials associated with correcting the problem.
- The Contractor shall furnish and plant all plants shown on the drawings and listed thereon. All plants shall be nursery-grown under climatic conditions similar to those in the locality of the project. Plants shall conform to the botanical names and standards of size, culture, and quality for the highest grades and standards as adopted by the American Association of Nurserymen, Inc. in the *American Standard of Nursery Stock*, American Standards Institute, Inc. 230 Southern Building, Washington, D.C. 20004.
- A complete list of plants, including a schedule of sizes, quantities, and other requirements is shown on the drawings. In the event that quantity discrepancies or material omissions occur in the plant materials list, the planting plans shall govern.
- All plants shall be legibly tagged with proper botanical name.
- The Contractor shall guarantee all plants for not less than one year from time of acceptance.
- Owner or Owner's Representative will inspect plants upon delivery for conformity to Specification requirements. Such approval shall not affect the right of inspection and rejection during or after the progress of the work. The Owner reserves the right to inspect and/or select all trees at the place of growth and reserves the right to approve a representative sample of each type of shrub, herbaceous perennial, annual, and ground cover at the place of growth. Such sample will serve as a minimum standard for all plants of the same species used in this work.
- No substitutions of plants may be made without prior approval of the Owner or the Owner's Representative for any reason.
- All landscaping shall be provided with the following:
 - Outside hose attachments spaced a maximum of 150 feet apart, and
 - An underground irrigation system, or
 - A temporary irrigation system designed for a two-year period of plant establishment.
- If an automatic irrigation system is installed, all irrigation valve boxes shall be located within planting bed areas.
- The contractor is responsible for all plant material from the time their work commences until final acceptance. This includes but is not limited to maintaining all plants in good condition, the security of the plant material once delivered to the site, and watering of plants. Plants shall be appropriately watered prior to, during and after planting. It is the contractor's responsibility to provide clean water suitable for plant health from off site, should it not be available on site.
- All disturbed areas will be dressed with 6" of topsoil and planted as noted on the plans or seeded except plant beds. Plant beds shall be prepared to a depth of 12" with 75% loam and 25% compost.
- Trees, ground cover, and shrub beds shall be mulched to a depth of 2" with one-year-old, well-composted, shredded native bark not longer than 4" in length and 1/2" in width, free of woodchips and sawdust. Mulch for ferns and herbaceous perennials shall be no longer than 1" in length. Trees in lawn areas shall be mulched in a 5' diameter min. saucer. Color of mulch shall be black.
- Drip strip shall extend to 6" beyond roof overhang and shall be edged with 3/16" thick metal edger.
- In no case shall mulch touch the stem of a plant nor shall mulch ever be more than 3" thick total (including previously applied mulch) over the root ball of any plant.
- Secondary lateral branches of deciduous trees overhanging vehicular and pedestrian travel ways shall be pruned up to a height of 6' to allow clear and safe passage of vehicles and pedestrians under tree canopy. Within the sight distance triangles at vehicle intersections the canopies shall be raised to 6' min.
- Snow shall be stored a minimum of 5' from shrubs and trunks of trees.
- Landscape Architect is not responsible for the means and methods of the contractor.

GERRISH DR.

AMBLER WAY

MATCH LINE SHEET L100
MATCH LINE SHEET L101

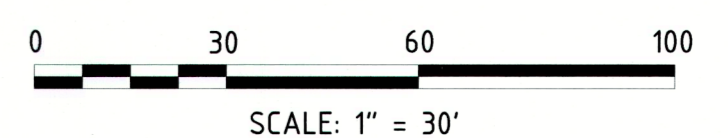


Plant List

Symbol	Botanical Name	Common Name	Quantity	Size	Comments
Ab	<i>Abies balsamea</i>	Balsam Fir	5	7-8' ht.	BB
Am	<i>Amelanchier canadensis</i>	Shadblow Serviceberry	5	7-8' ht.	BB Multi-stem
Ar	<i>Acer rubrum 'Red Sunset'</i>	Red Sunset Red Maple	5	3' cal.	BB
Bn	<i>Betula nigra 'Heritage'</i>	Heritage River Birch	7	8-10' ht.	BB
Cc	<i>Carpinus caroliniana</i>	American Hornbeam	6	7-8' ht.	BB Multi-stem
Ct	<i>Chamaecyparis thyoides</i>	Atlantic White Cedar	8	7-8' ht.	BB
Hm	<i>Hamamelis intermedia x 'Arnold Promise'</i>	Arnold Promise Witch Hazel	6	7-8' ht.	BB Multi-stem
Ms	<i>Malus 'Sugar Tyme'</i>	Sugar Tyme Crabapple	3	2-5' cal.	BB
Ns	<i>Nyssa sylvatica</i>	Black Tupelo	4	3' cal.	BB
Th	<i>Thuja plicata 'Green Giant'</i>	Green Giant Western Red Cedar	8	9-10' ht.	BB
Ua	<i>Ulmus americana 'Princeton'</i>	Princeton Elm	1	3' cal.	BB
SHRUBS					
Iv	<i>Ilex verticillata 'Red Sprite'</i>	Red Sprite Winterberry	50	3 gal.	
	<i>Ilex verticillata 'Southern Gentleman'</i>	Southern Gentleman Winterberry	8	3 gal.	
Cs	<i>Cornus sericea</i>	Red Osier Dogwood	62	5 gal.	
Cr	<i>Cornus racemosa</i>	Grey Twig Dogwood	19	3 gal.	
Cl	<i>Clethra alnifolia</i>	Summersweet Clethra	91	3 gal.	
Jc	<i>Juniperus communis</i>	Common Juniper	19	3 gal.	
Mp	<i>Myrica pennsylvanica</i>	Bayberry	41	2-2.5' ht.	BB
Vd	<i>Viburnum dentatum</i>	Arrowwood Viburnum	20	2-3' ht.	BB
Vn	<i>Viburnum nudum</i>	Smooth Witherod	10	2-3' ht.	BB
SEEDING					
Meadow & Road Shoulders	50% New England Roadside Matrix Upland Seed Mix/ 50% New England Showy Wildflower Mix, by New England Wetland Plants			SF	
Lawn Areas	Pennington Smart Seed Tall Fescue Blend			SF	

woodburn & company
LANDSCAPE ARCHITECTURE
103 Kent Place Newmarket, New Hampshire Phone: 603.659.5949

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



NO.	REVISIONS	DATE	INT.
3	PER REVISED SITE PLAN	07/07/21	VM
2	REVISED SUBMISSION TO THE DURHAM CONSERVATION COMMISSION	07/20/21	VM
1	REVISED SUBMISSION TO THE DURHAM PLANNING BOARD	12/09/20	MCS
0	INITIAL SUBMISSION TO THE DURHAM PLANNING BOARD	10/28/20	MCS

DATE ISSUED:	SCALE:	DESIGNED BY:	DRAWN BY:	APPROVED BY:	DWG FILE:
12/09/20	1"=30'	RW	VM	RW	

LANDSCAPE PLAN
prepared for
MULHERN
TAX MAP 10, LOT 8-6
91 BAGDAD ROAD, DURHAM, NH 03824

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E-mail: mjs@mjs-engineering.com

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L101

Tree Planting Detail