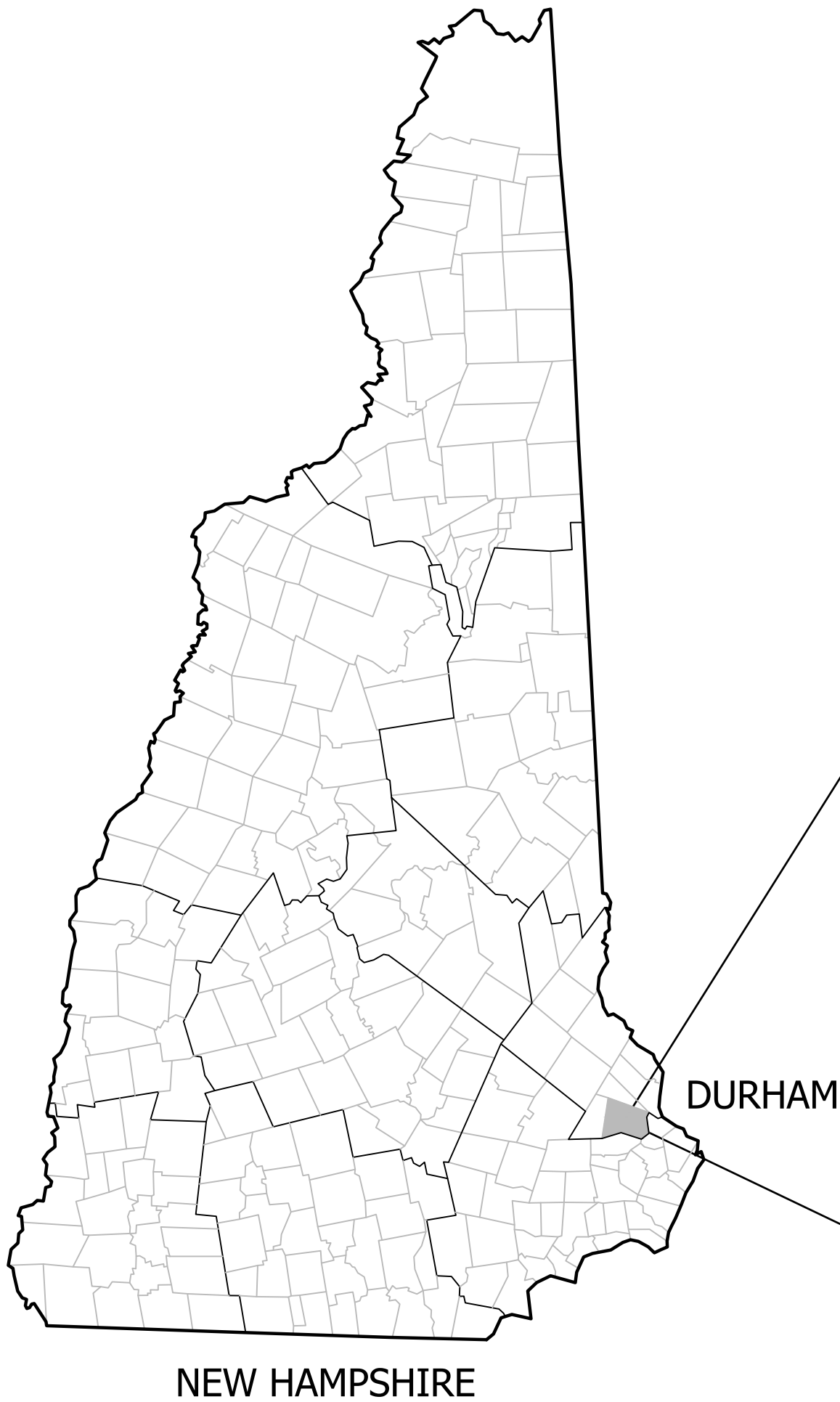


# MICHAEL & MARTI MULHERN

## THE CROSSINGS SUBDIVISION

### PERMITTED PLANS

DURHAM, NH & MADBURY, NH  
JUNE 2025

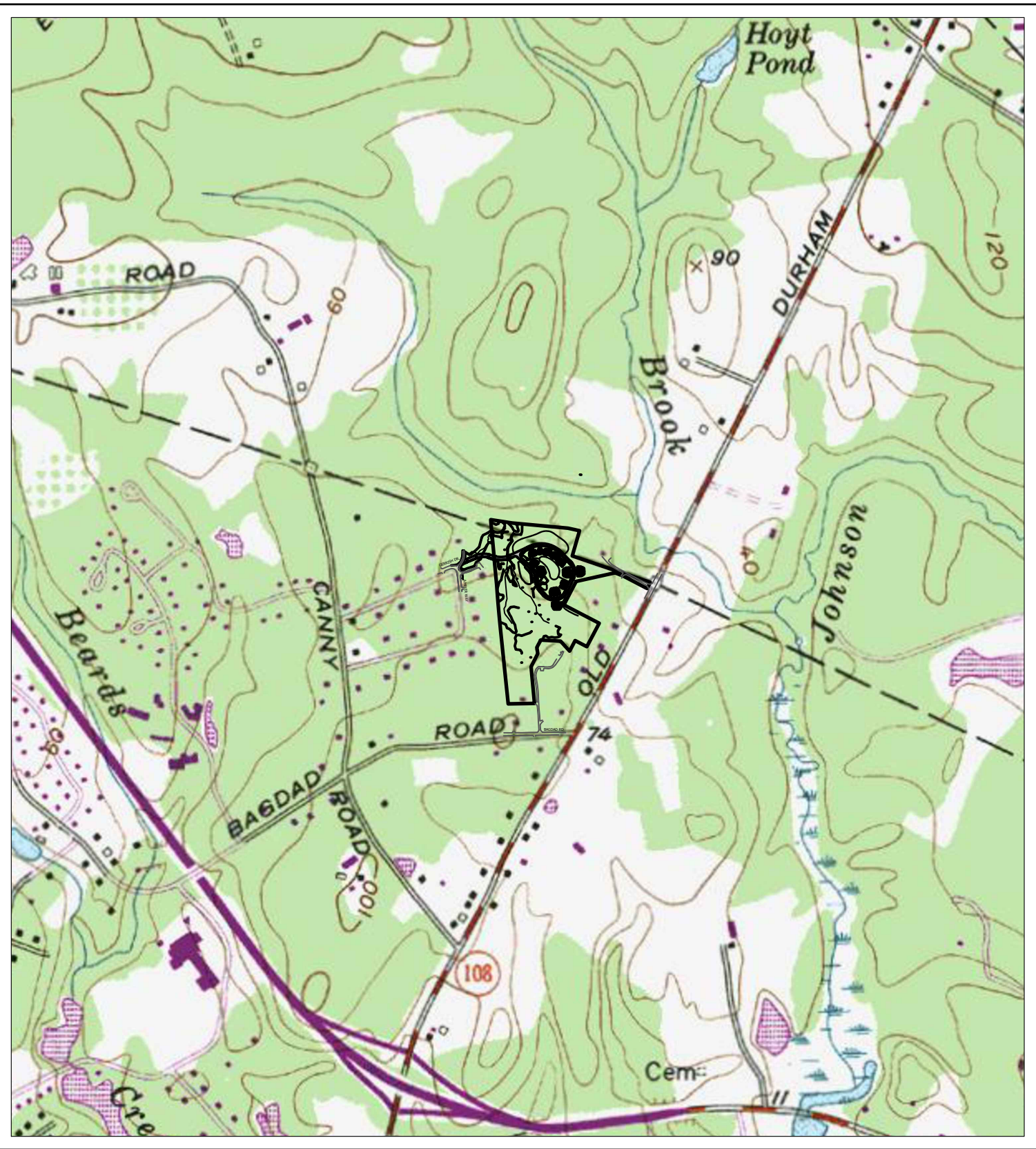


NEW HAMPSHIRE

ENGINEER:

**horizons**  
*Engineering*

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



LOCATION PLAN

SCALE: 1" = 1000'

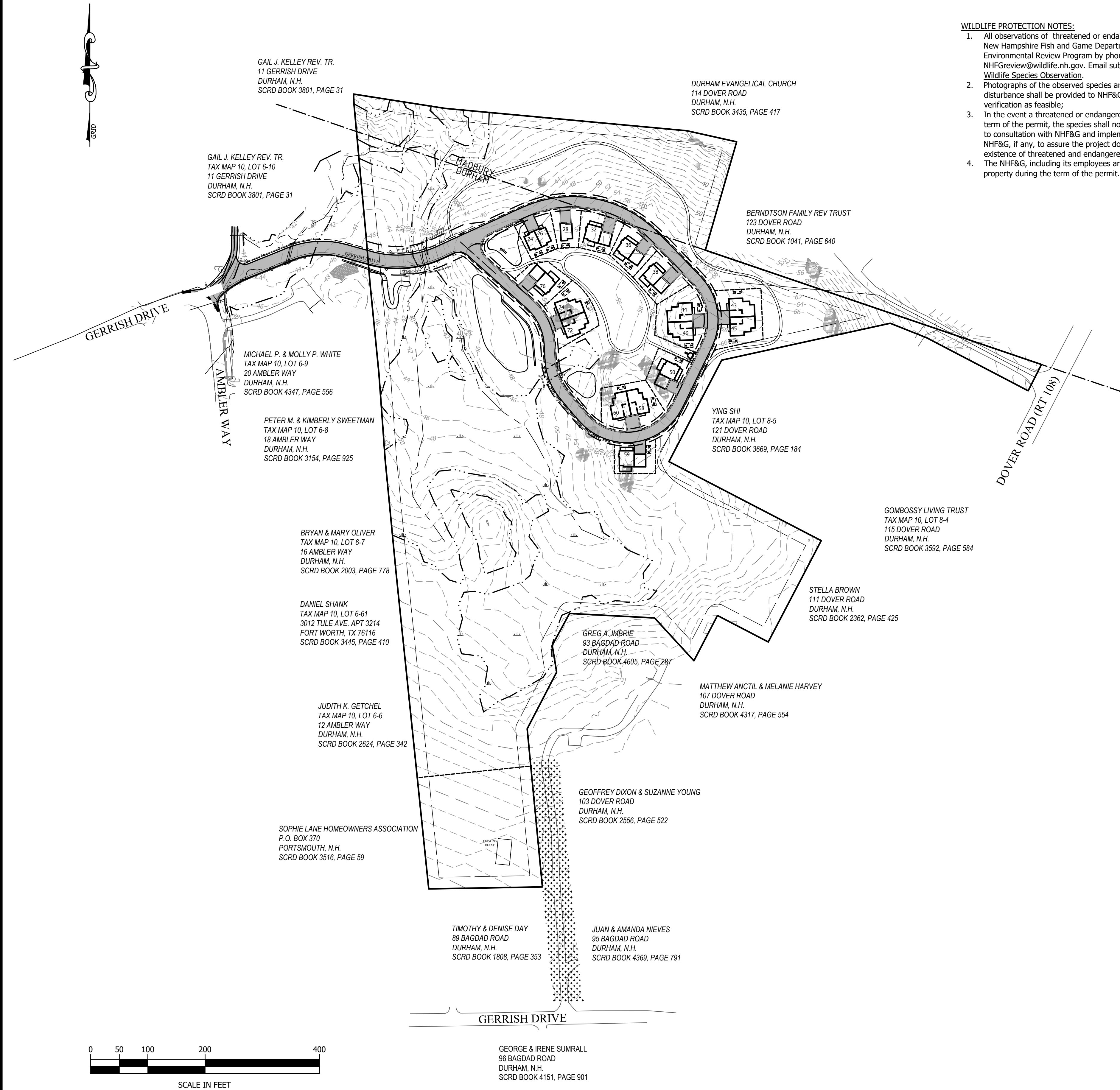
**NO LOTS OR DWELLING UNITS  
MAY BE SOLD OR CONVEYED  
FOR THIS SUBDIVISION UNTIL  
THE TOWN OF DURHAM  
RECORDS A RELEASE**

PERMITS:

NHDES WASTEWATER PERMIT: D2023-0409  
NHDES AOT PERMIT: AOT-2371  
NHDES WETLANDS PERMIT: 2021-03763

| SHEET INDEX |                                               |
|-------------|-----------------------------------------------|
| SHEET       | TITLE                                         |
| S-1         | LOT LINE ADJUSTMENT PLAN                      |
| S-2         | LOT LINE ADJUSTMENT PLAN                      |
| S-3         | LOT LINE ADJUSTMENT PLAN                      |
| C100        | OVERVIEW PLAN                                 |
| C101        | PROPOSED SITE PLAN                            |
| C102        | PROPOSED SITE PLAN                            |
| C103        | PROPOSED GRADING AND DRAINAGE PLAN            |
| C104        | PROPOSED OPEN SPACE AND CONDOMINIUM PLANS     |
| C105        | CONSTRUCTION MANAGEMENT PLAN                  |
| C202        | PROPOSED ROAD PLAN AND PROFILE 0+00 TO 10+50  |
| C203        | PROPOSED ROAD PLAN AND PROFILE 10+50 TO 17+84 |
| C300        | WETLAND CROSSING SECTIONS                     |
| C500        | CONSTRUCTION DETAILS                          |
| C501        | CONSTRUCTION DETAILS                          |
| C502        | CONSTRUCTION DETAILS                          |
| C503        | CONSTRUCTION DETAILS                          |
| C504        | CONSTRUCTION DETAILS                          |
| C505        | CONSTRUCTION DETAILS                          |
| C506        | CONSTRUCTION DETAILS                          |
| C507        | CONSTRUCTION DETAILS                          |
| L100        | LANDSCAPE PLAN                                |
| L101        | LANDSCAPE PLAN                                |

T:\proj\_2025\250403 Harmony Homes - Construction Admin - Gerrish Ave, Durham NH\Internal\Civil\Concepts\The Crossings - SVPPP Plan 1.dwg, C100, 11/13/2025 11:40:30 AM, dwheeler



WILDLIFE PROTECTION NOTES:

1. All observations of threatened or endangered species shall be reported immediately to the New Hampshire Fish and Game Department Nongame and Endangered Wildlife Environmental Review Program by phone at 603-271-2461 and by email at NHFGreview@wildlife.nh.gov. Email subject line: NHB22-1834, The Crossings Subdivision, Wildlife Species Observation.
2. Photographs of the observed species and nearby elements of habitat or areas of land disturbance shall be provided to NHF&G in digital format at the above email address for verification as feasible;
3. In the event a threatened or endangered species is observed on the project site during the term of the permit, the species shall not be disturbed, handled, or harmed in any way prior to consultation with NHF&G and implementation of corrective actions recommended by NHF&G, if any, to assure the project does not appreciably jeopardize the continued existence of threatened and endangered species as defined in Fis 1002.04
4. The NHF&G, including its employees and authorized agents, shall have access to the property during the term of the permit.

GENERAL NOTES:

- OWNER OF RECORD: MARTHA A. AND MICHAEL J. MULHERN  
91 BAGDAD ROAD  
DURHAM, NH 03824  
TAX MAP 10, LOT 8-6  
BOOK 4095, PAGE 129 SCR
1. ZONE: RESIDENTIAL (RB)  
OVERLAY DISTRICTS: WCOD  
DIMENSIONAL REQUIREMENTS OF THE RB DISTRICT DO NOT APPLY TO CONSERVATION SUBDIVISIONS.
  2. THE INTENT OF THIS PLAN IS TO SHOW THE GENERAL LAYOUT OF THE PROPOSED DEVELOPMENT.
  3. WETLANDS WERE DELINEATED BY MICHAEL MARIANO OF HIGHLAND SOIL SERVICES. SUPPLEMENTAL WETLANDS DELINEATION BY MARK WEST.
  4. SURVEY FIELD WORK WAS COMPLETED BY TRI-TECH AND NORWAY PLAINS ASSOCIATES.
  5. TOTAL WETLAND DISTURBANCE AREA = 7649 SF (0.18 Ac)
  6. TOTAL BUFFER DISTURBANCE AREA = 42 305 SF (0.97 Ac)
  7. TOTAL AREA OF DISTURBANCE = 186 607 SF (4.28 Ac)
  8. PROPOSED ADDRESSING MUST BE APPROVED BY FIRE AND POLICE DEPARTMENTS.
  9. THE ENTIRETY OF THE ROAD SERVING THIS SUBDIVISION STARTING FROM THE JUNCTURE ON GERRISH DRIVE AND AMBLER WAY IS A PRIVATE ROAD, TO BE OWNED AND MAINTAINED BY THE CONDOMINIUM ASSOCIATION. THE TOWN OF DURHAM DOES NOT MAINTAIN THIS ROAD, NOR PICK UP TRASH RECYCLING FOR THE RESIDENTS OF THE SUBDIVISION.
  10. THE TOWN WILL NOT PICK UP TRASK OF RECYCLING ON THIS NEW ROAD, WHICH IS A PRIVATE ROAD. RESIDENTS AND/OR THE ASSOCIATION WILL NEED TO MAKE THEIR OWN PLANS FOR

HANDLING OF TRASH AND RECYCLING.

11. THE LAYOUTS FOR THE HOUSES/DWELLING UNITS AND UTILITIES SERVING EACH HOUSE/DWELLING UNIT ARE CONCEPTUAL ONLY. THEY MAY BE MODIFIED PROVIDED THAT REQUIRED SETBACKS WITHIN THE LAND UNITS ARE MET, BUILDINGS MUST BE 5 FEET IN BETWEEN FROM LAND UNIT LINES
12. SEPTIC TANKS MUST BE LOCATED WITHIN THE LAND UNIT SERVING EACH DWELLING UNIT UNLESS THE BUILDING OFFICIAL DETERMINES THAT IT IS NOT PRACTICAL FOR ANY GIVEN UNIT AS PART OF THE BUILDING PERMIT PROCESS. NO SEPTIC TANK SHALL BE PLACED IN THE OPEN SPACE.
13. THE WATER AND SEWER SYSTEMS ON THE PROPERTY MUST BE OWNED AND OPERATED BY THE ASSOCIATION.
14. FOR MORE INFORMATION ABOUT THIS SUBDIVISION, OR TO SEE THE COMPLETE PLAN SET, CONTACT THE TOWN OF DURHAM PLANNING DEPARTMENT, 8 NEWMARKET ROAD, DURHAM, NH 03868, (603) 868-8064
15. ACCESS INTO THE SITE FOR FIRE APPARATUS MUST BE MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION PROCESS. PLEASE CONTACT THE FIRE DEPARTMENT AT (603) 330-7182 WITH ANY QUESTIONS ABOUT ACCESS REQUIREMENTS.

NO LOTS OR DWELLING UNITS  
MAY BE SOLD OR CONVEYED  
FOR THIS SUBDIVISION UNTIL  
THE TOWN OF DURHAM  
RECORDS A RELEASE

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

**horizons**  
Engineering

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

OVERVIEW PLAN FOR  
**THE CROSSINGS SUBDIVISION**  
**MICHAEL & MARTHA MULHERN**

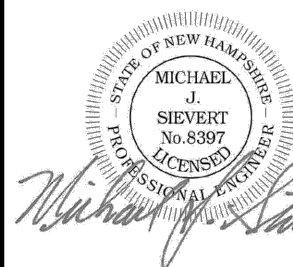
91 BAGDAD RD  
DURHAM NH 03824

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 8-6

| NO. | DATE       | REVISION DESCRIPTION             | ENG |
|-----|------------|----------------------------------|-----|
| 3   | 2021-11-02 | REVISED PER PRECEDENT CONDITIONS | MJS |
| 2   | 2021-10-05 | REVISED PER DPW COMMENTS         | MJS |
| 1   | 2021-09-15 | REVISED PER TOWN COMMENTS        | MJS |

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



DATE OF PRINT  
**NOVEMBER 13 2025**  
HORIZONS ENGINEERING

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C100



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

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

GREG A. IMBRIE  
93 BAGDAD ROAD  
DURHAM, N.H.  
SCRD BOOK 4685, PAGE 287

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

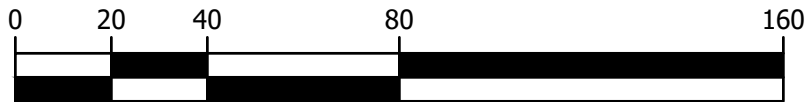
GEOFFREY DIXON & SUZANNE YOUNG  
103 DOVER ROAD  
DURHAM, N.H.  
SCRD BOOK 2556, PAGE 522

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

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

FOR REVIEW  
NOT FOR CONSTRUCTION

DATE OF PRINT  
NOVEMBER 13 2025  
HORIZONS ENGINEERING



SCALE IN FEET

NO LOTS OR DWELLING UNITS  
MAY BE SOLD OR CONVEYED  
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RECORDS A RELEASE

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

DATE \_\_\_\_\_

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PROPOSED SITE PLAN FOR  
**THE CROSSINGS SUBDIVISION**  
**MICHAEL & MARTHA MULHERN**

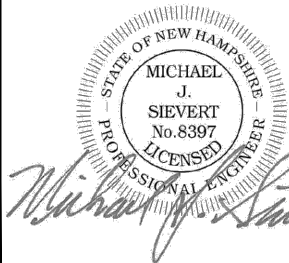
91 BAGDAD RD  
DURHAM NH 03824

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 8-6

| NO. | DATE       | REVISION DESCRIPTION | ENG | DWG |
|-----|------------|----------------------|-----|-----|
|     |            |                      |     |     |
|     |            |                      |     |     |
|     |            |                      |     |     |
| 00  | 2023-07-25 | INITIAL SUBMISSION   | MCS | MCS |

|                     |                       |
|---------------------|-----------------------|
| DATE:<br>2023-07-25 | PROJECT #:<br>NM19063 |
| ENG'D BY:<br>MJS    | DRAWN BY:<br>MCS      |
| CHECK'D BY:<br>MJS  | ARCHIVE #:<br>H-__    |



*Michael J. Seibert*

C101

WILDLIFE PROTECTION NOTES:

- All observations of threatened or endangered species shall be reported immediately to the New Hampshire Fish and Game Department Nongame and Endangered Wildlife Environmental Review Program by phone at 603-271-2461 and by email at NHFGreview@wildlife.nh.gov. Email subject line: NHB22-1834, The Crossings Subdivision, Wildlife Species Observation.
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- The NHF&G, including its employees and authorized agents, shall have access to the property during the term of the permit.

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

EX. 25' SEWER AND DRAINAGE EASEMENT

PROPOSED LIMITS OF DISTURBANCE

METAL ARCH CULVERT  
H = 6', W = 9', L = 54'

METAL ARCH  
INV. OUT = 34.35

WETLAND DISTURBANCE  
AREA = 1417 SF

PROPOSED WETLAND CROSSING #2

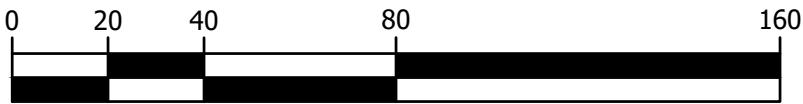
PROP. MAIL KIOSK

PROP. 4' WALKING PATH  
(TYP.)

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

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

DATE



SCALE IN FEET

DATE OF PRINT  
NOVEMBER 14 2025  
HORIZONS ENGINEERING

PROPOSED DRIVEWAY MODIFICATION  
ACCESS EASEMENT TO BE COORDINATED  
WITH THE TOWN AT EXISTING R-O-W

BOX CULVERT  
INV. OUT = 39.70

PROPOSED WETLAND CROSSING #1

Ø12" CMP INVERT 42.8'

Ø12" CMP INVERT 43.1'

EDGE OF GRAVEL (TYP.)

STOP SIGN  
MUTCD R1-1

STOP BAR

GERRISH DRIVE

Ø12" CMP  
INVERT 46.69'

ROAD SIGN  
"Gerrish Drive  
Private Road"

50' TOWN ROW  
APPROXIMATE

Ø12" CMP INVERT 47.25'

Ø12" CMP INVERT 45.82'

Ø12" CMP INVERT 45.55'

Ø12" CMP INVERT 46.94'

Ø12" CMP INVERT 46.97'

EDGE OF  
TRAVELED WAY

WETLAND DISTURBANCE  
AREA = 5480 SF

APPROXIMATE  
EXISTING HOUSE

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

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

EXISTING PLAYGROUNING AREA  
TO BE MOVED OUT OF R-O-W IN  
COORDINATION WITH MICHAEL  
AND MOLLY WHITE

75' WETLAND  
SETBACK

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

EDGE OF  
TRAVELED WAY

WETLAND DISTURBANCE  
AREA = 752 SF

RETAINING WALL AND  
LIMIT OF WETLAND  
DISTURBANCE

STREAM CENTERLINE  
(TYP.)

PROP. 75' WETLAND SETBACK  
UPON WETLAND PERMIT APPROVAL  
(DURHAM)

PROP. 125' WETLAND SETBACK  
UPON WETLAND PERMIT APPROVAL  
(DURHAM SEPTIC)

LEDGE OUTCROPPING (TYP.)

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

125' WETLAND SETBACK  
(DURHAM SEPTIC)

75' WETLAND  
SETBACK

MATCH LINE

GENERAL NOTES:

OWNER OF RECORD: MARTHA A. AND MICHAEL J. MULHERN  
91 BAGDAD ROAD  
DURHAM, NH 03824  
TAX MAP 10, LOT 8-6  
BOOK 4095, PAGE 129 SCRD

- ZONE: RESIDENTIAL (RB)  
OVERLAY DISTRICTS: WOOD  
DIMENSIONAL REQUIREMENTS OF THE RB DISTRICT DO NOT  
APPLY TO CONSERVATION SUBDIVISIONS.
- THE INTENT OF THIS PLAN IS TO SHOW THE GENERAL LAYOUT OF  
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STARTING FROM THE JUNCTURE ON GERRISH DRIVE AND AMBLER  
WAY IS A PRIVATE ROAD, TO BE OWNED AND MAINTAINED BY  
THE CONDOMINIUM ASSOCIATION. THE TOWN OF DURHAM DOES  
NOT MAINTAIN THIS ROAD, NOR PICK UP TRASH RECYCLING FOR  
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- THE TOWN WILL NOT PICK UP TRASK OF RECYCLING ON THIS  
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IN BETWEEN FROM LAND UNIT LINES
- SEPTIC TANKS MUST BE LOCATED WITHIN THE LAND UNIT  
SERVING EACH DWELLING UNIT UNLESS THE BUILDING OFFICIAL  
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- FOR MORE INFORMATION ABOUT THIS SUBDIVISION, OR TO SEE  
THE COMPLETE PLAN SET, CONTACT THE TOWN OF DURHAM  
PLANNING DEPARTMENT, 8 NEWMARKET ROAD, DURHAM, NH  
03868, (603) 868-8064
- ACCESS INTO THE SITE FOR FIRE APPARATUS MUST BE  
MAINTAINED AT ALL TIMES DURING THE CONSTRUCTION  
PROCESS. PLEASE CONTACT THE FIRE DEPARTMENT AT (603)  
330-7182 WITH ANY QUESTIONS ABOUT ACCESS REQUIREMENTS.

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

**NO LOTS OR DWELLING UNITS  
MAY BE SOLD OR CONVEYED  
FOR THIS SUBDIVISION UNTIL  
THE TOWN OF DURHAM  
RECORDS A RELEASE**

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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

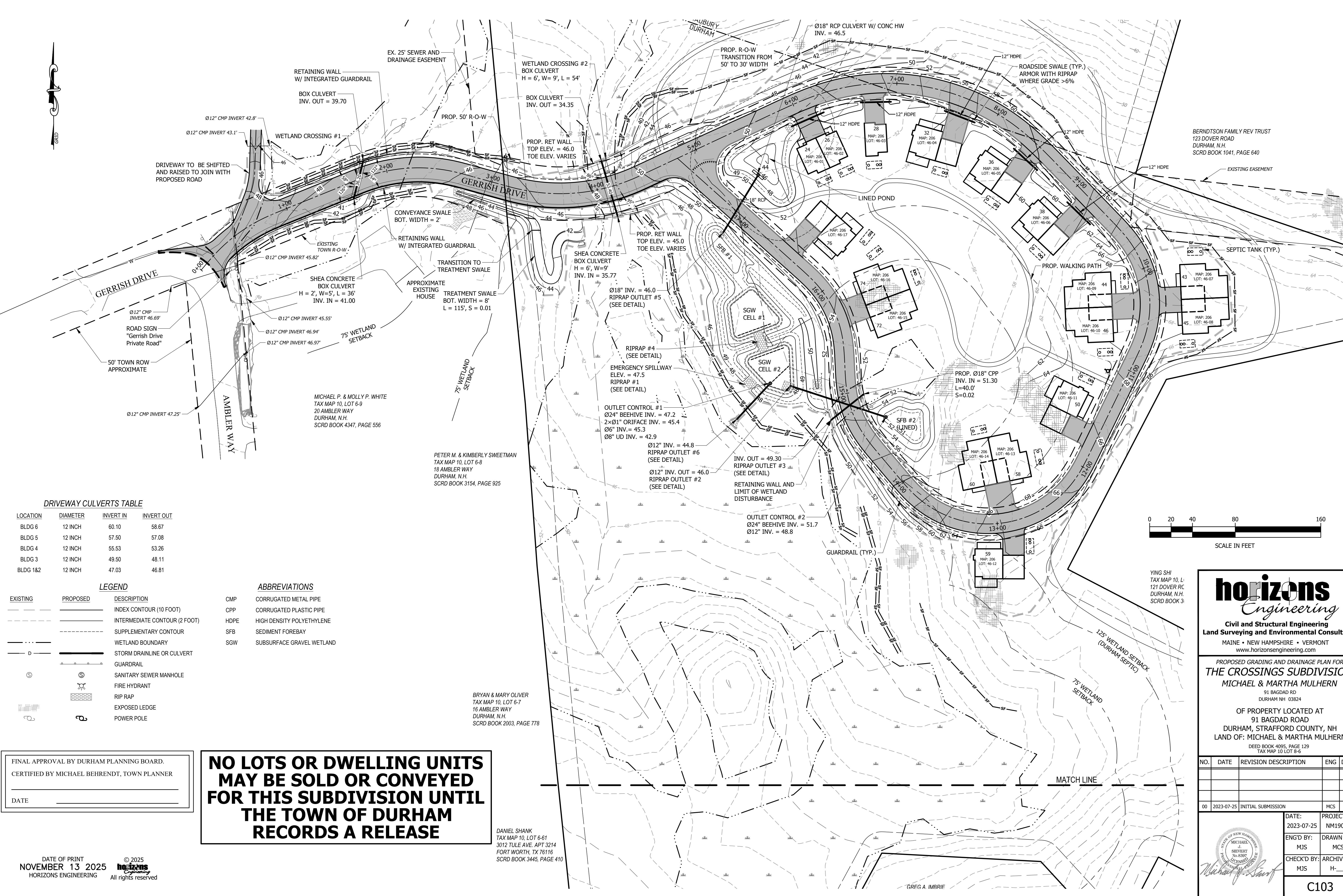
DEED BOOK 4095, PAGE 129  
TAX MAP 10 LOT 8-6

| NO. | DATE       | REVISION DESCRIPTION | ENG | DWG |
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|     |            |                      |     |     |
|     |            |                      |     |     |
| 00  | 2023-07-25 | INITIAL SUBMISSION   | MCS | MCS |

|                     |                       |
|---------------------|-----------------------|
| DATE:<br>2023-07-25 | PROJECT #:<br>NM19063 |
| ENG'D BY:<br>MJS    | DRAWN BY:<br>MCS      |
| CHECK'D BY:<br>MJS  | ARCHIVE #:<br>H---    |

Michael J. Seibert  
Professional Engineer  
No. 8397  
State of New Hampshire

C102



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PROPOSED GRADING AND DRAINAGE 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 8-6

| NO. | DATE       | REVISION DESCRIPTION | ENG | DWG |
|-----|------------|----------------------|-----|-----|
| 00  | 2023-07-25 | INITIAL SUBMISSION   | MCS | MCS |

DATE:  
2023-07-25

ENG'D BY:  
MJS

CHECK'D BY:  
MJS

PROJECT #:  
NM19063

DRAWN BY:  
MCS

ARCHIVE #:  
H---

STATE OF NEW HAMPSHIRE  
MICHAEL J. SEEVERY  
No. 8397  
LICENSED PROFESSIONAL ENGINEER

*Michael J. Seevery*

C103

T:\proj\_2023\250403 Harmony Homes - Construction Admin - Gerrish Ave, Durham NH\Internal\Civil\Concepts\The Crossings - SWPPP Plan 1.dwg, dwgheader



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

GAIL J. KELLEY REV. TR.  
TAX MAP 10, LOT 6-10  
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

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

OPEN SPACE NOTES:

|                                |                         |
|--------------------------------|-------------------------|
| TOTAL LOT AREA                 | 691 144 ft <sup>2</sup> |
| AREA OF LEDGE                  | 8 575 ft <sup>2</sup>   |
| S/W POORLY AND POORLY DRAINING | 232 262 ft <sup>2</sup> |
| SLOPES >25%                    | 23 383 ft <sup>2</sup>  |
| SLOPES >15-25%                 | 99 541 ft <sup>2</sup>  |
| USABLE AREA                    | 377 152 ft <sup>2</sup> |
| UNUSABLE AREA                  | 313 992 ft <sup>2</sup> |
| REQUIRED OPEN SPACE AREA       | 464 853 ft <sup>2</sup> |
| PROPOSED OPEN SPACE AREA       | 495 741 ft <sup>2</sup> |

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  
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SCRD BOOK 3154, PAGE 925

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SCRD BOOK 2003, PAGE 778

DANIEL SHANK  
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3012 TULE AVE, APT 3214  
FORT WORTH, TX 76116  
SCRD BOOK 3445, PAGE 410

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TAX MAP 10, LOT 6-6  
12 AMBLER WAY  
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SCRD BOOK 2624, PAGE 342

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

OPEN SPACE AREA #1  
495 741 ft<sup>2</sup>

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

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

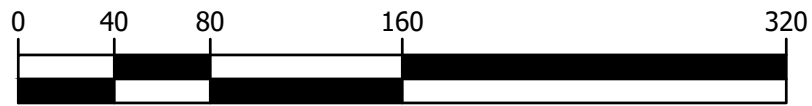
GEOFFREY DIXON & SUZANNE YOUNG  
103 DOVER ROAD  
DURHAM, N.H.  
SCRD BOOK 2556, PAGE 522

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

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

GOMBOSSY LIVING TRUST  
TAX MAP 10, LOT 8-4  
115 DOVER ROAD  
DURHAM, N.H.  
SCRD BOOK 3592, PAGE 584

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



SCALE IN FEET

GENERAL NOTES:

OWNER OF RECORD: MARTHA A. AND MICHAEL J. MULHERN  
91 BAGDAD ROAD  
DURHAM, NH 03824  
TAX MAP 10, LOT 8-6  
BOOK 4095, PAGE 129 SCRD

- ZONE: RESIDENTIAL (RB)  
OVERLAY DISTRICTS: WOOD  
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

DATE \_\_\_\_\_

**NO LOTS OR DWELLING UNITS  
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DATE OF PRINT  
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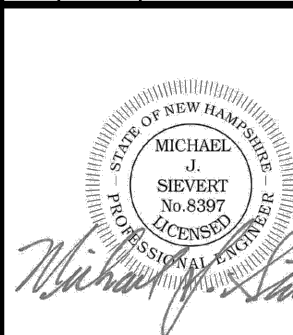
PROPOSED OPEN SPACE AND CONDOMINIUM PLAN  
**THE CROSSINGS SUBDIVISION**  
**MICHAEL & MARTHA MULHERN**

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 8-6

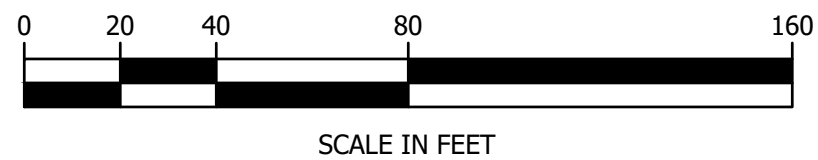
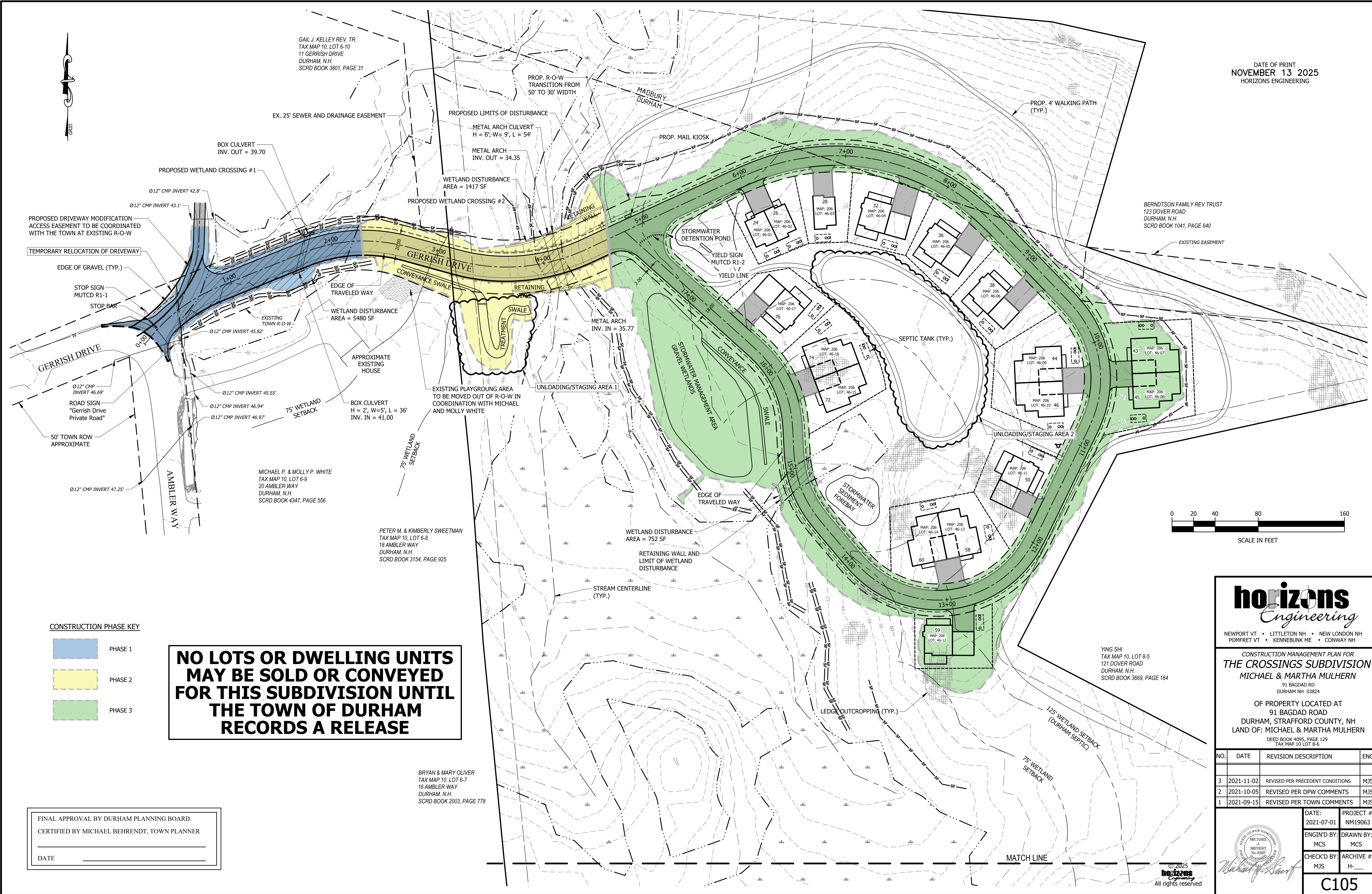
| NO. | DATE | REVISION DESCRIPTION | ENG | DWG |
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|                     |                       |
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| CHECK'D BY:<br>MJS  | ARCHIVE #:<br>H-_____ |

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**C104**



CONSTRUCTION PHASE KEY

- PHASE 1
- PHASE 2
- PHASE 3

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THE TOWN OF DURHAM  
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DATE

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CONSTRUCTION MANAGEMENT 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 8-6

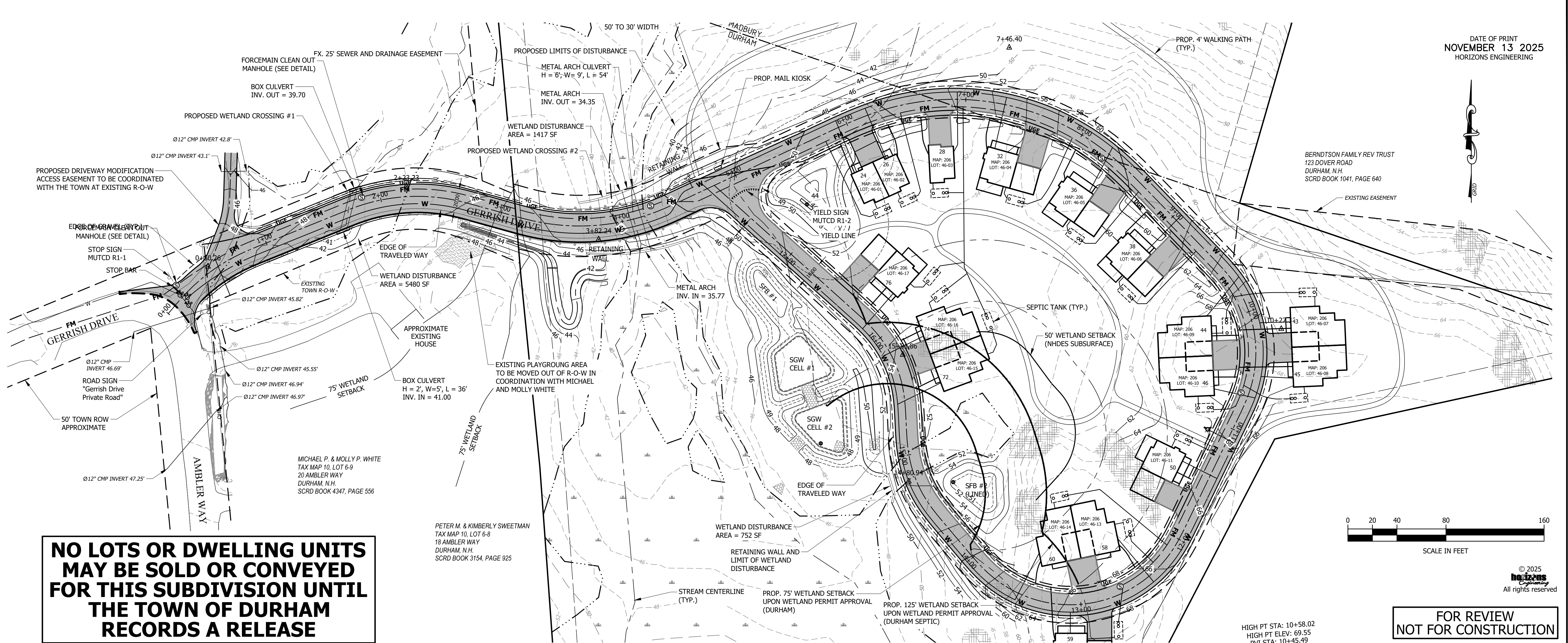
| NO. | DATE       | REVISION DESCRIPTION             | ENG |
|-----|------------|----------------------------------|-----|
| 3   | 2021-11-02 | REVISED PER PRECEDENT CONDITIONS | MJS |
| 2   | 2021-10-05 | REVISED PER DPW COMMENTS         | MJS |
| 1   | 2021-09-15 | REVISED PER TOWN COMMENTS        | MJS |

|                     |                       |
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| CHECK'D BY:<br>MJS  | ARCHIVE #:<br>H-      |

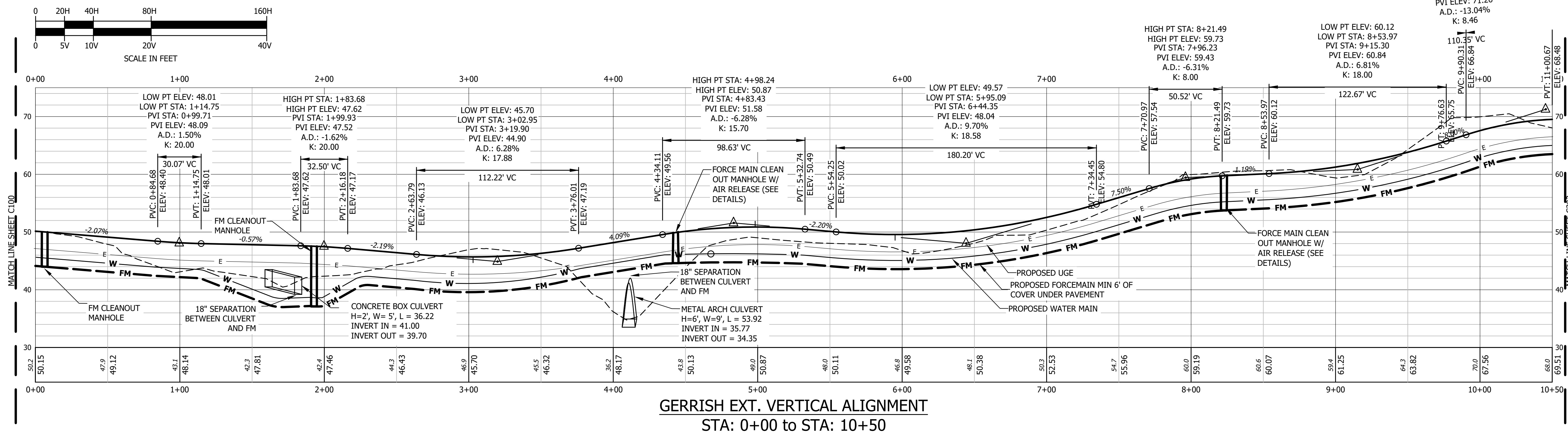
**C105**

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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

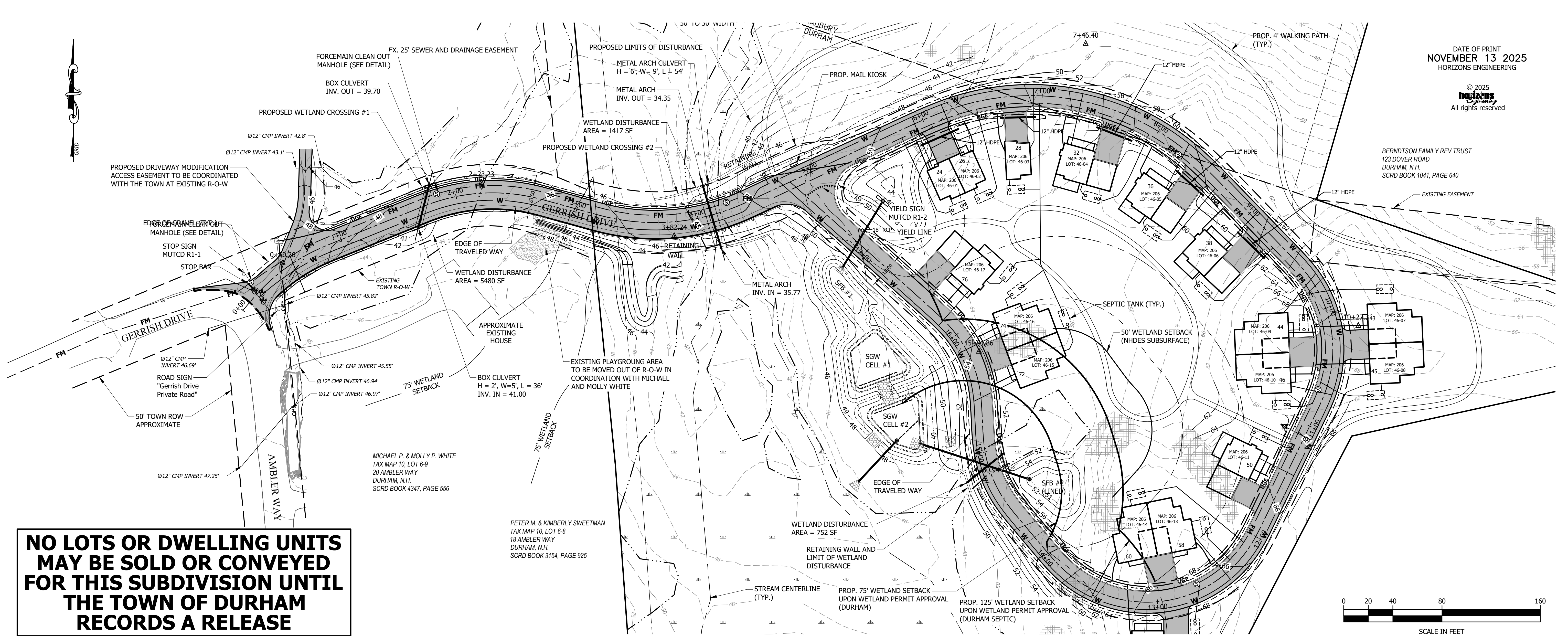
OF PROPERTY LOCATED AT  
91 BAGDAD ROAD  
DURHAM, STRAFFORD COUNTY, NH  
LAND OF: MICHAEL & MARTHA MULHERN  
DEED BOOK 4095, PAGE 129  
TAX MAP 10 LOT 8-6

| NO. | DATE       | REVISION DESCRIPTION      | ENG | DWG |
|-----|------------|---------------------------|-----|-----|
| 01  | 2025-01-06 | REVISED PER NHDES COMMENT | MJS | JFH |
| 00  | 2023-07-25 | INITIAL SUBMISSION        | MCS | MCS |

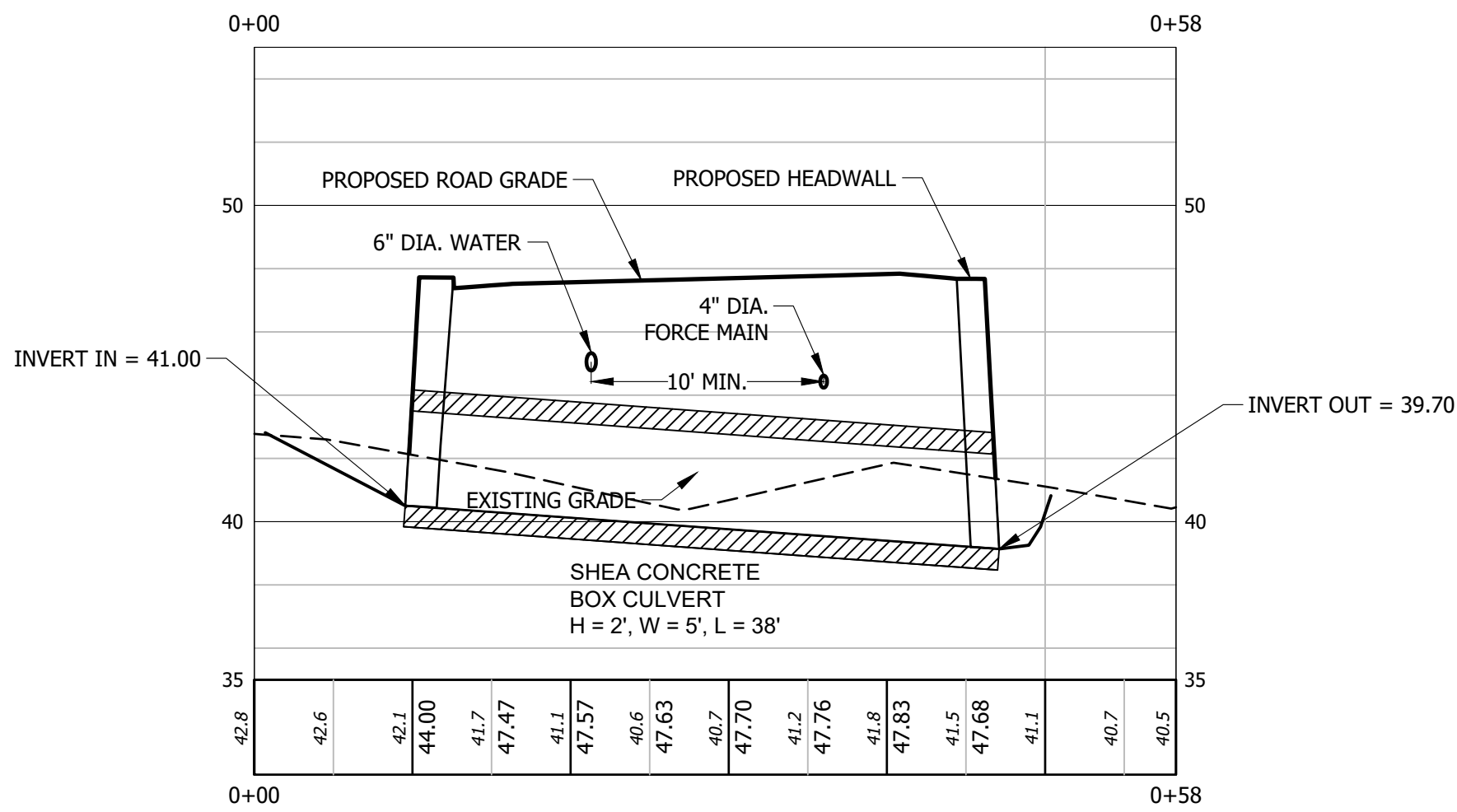
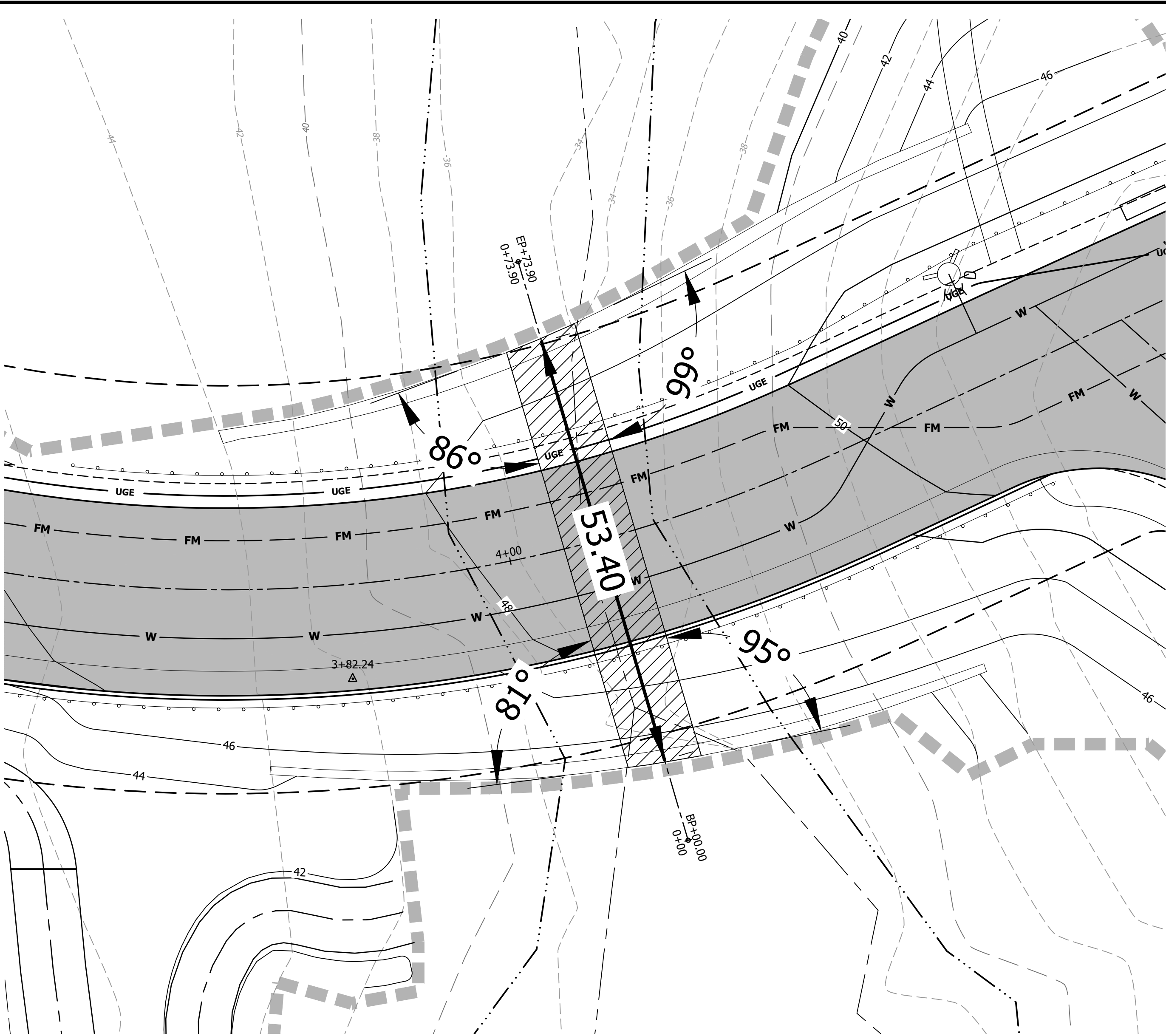
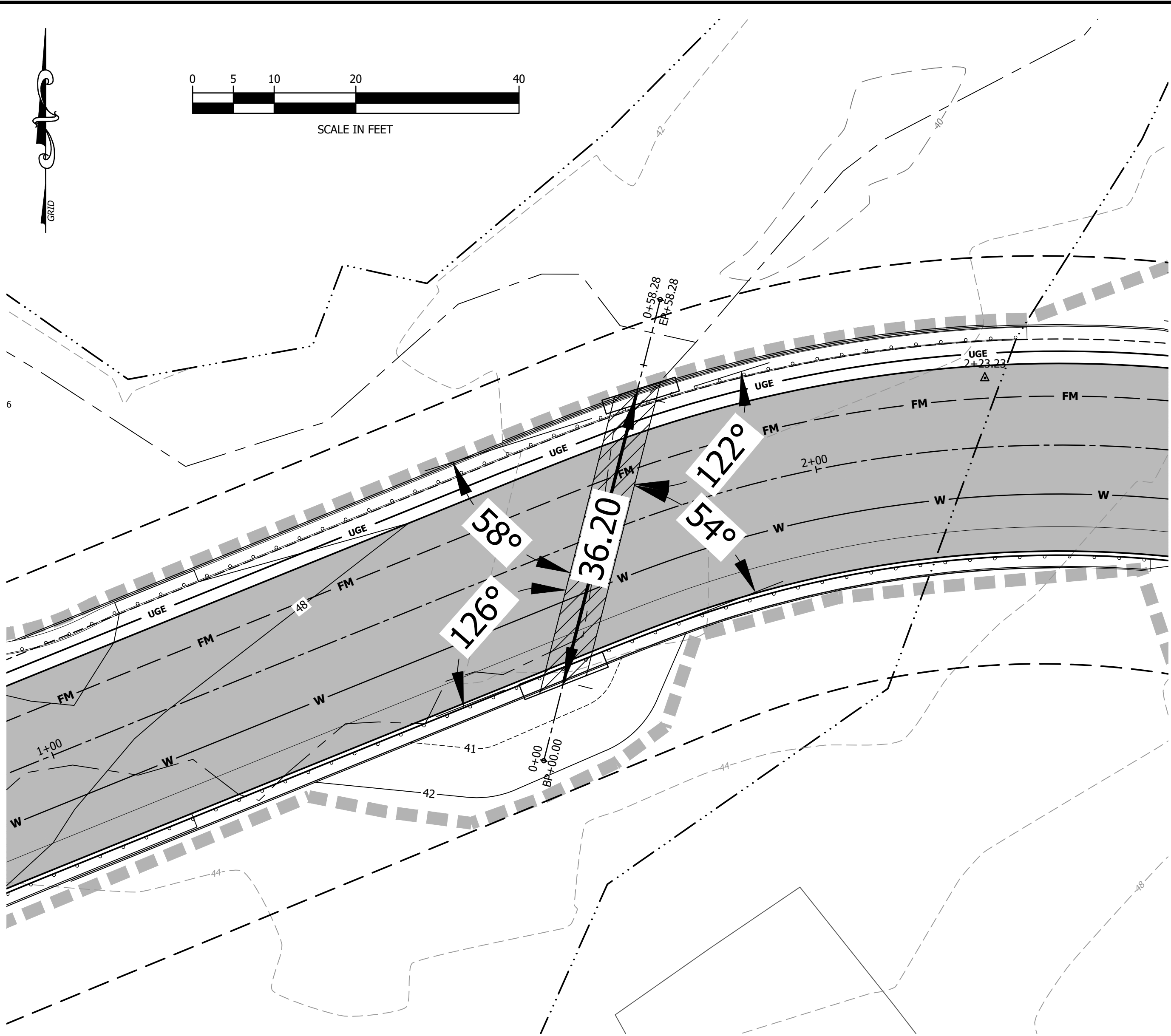
DATE: 2023-07-25 PROJECT #: NM19063  
ENG'D BY: MJS DRAWN BY: MCS  
CHECK'D BY: MJS ARCHIVE #: H-  
**C202**

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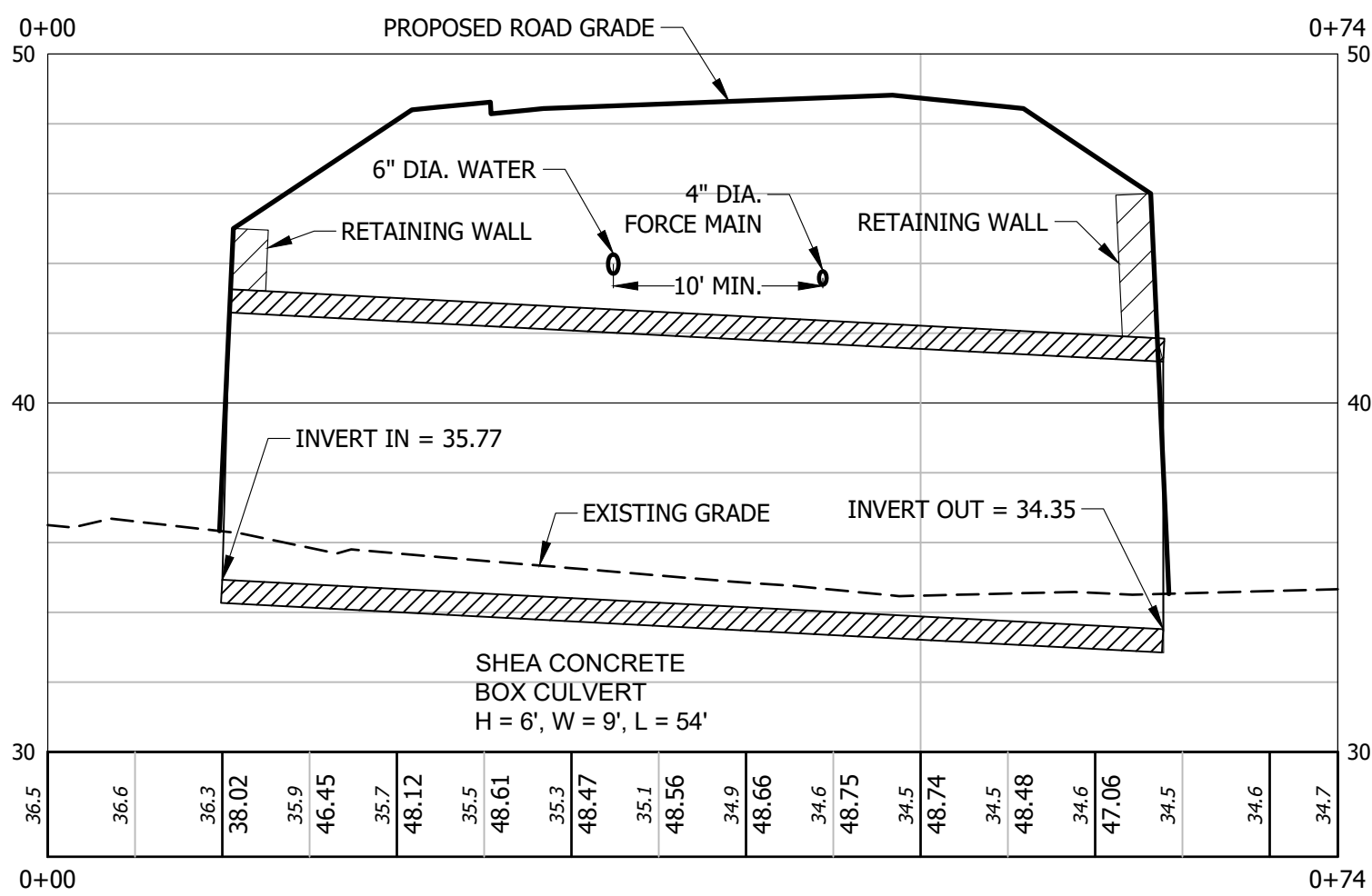
WETLAND CROSSING #1  
STA: 0+00 to STA: 0+58

NOTE:  
SEWER FORCE MAIN AND WATER  
MAIN TO BE INSULATED ACROSS  
CULVERT (SEE DETAIL)

NO LOTS OR DWELLING UNITS  
MAY BE SOLD OR CONVEYED  
FOR THIS SUBDIVISION UNTIL  
THE TOWN OF DURHAM  
RECORDS A RELEASE

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

DATE \_\_\_\_\_



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

NOTE:  
SEWER FORCE MAIN AND WATER  
MAIN TO BE INSULATED ACROSS  
CULVERT (SEE DETAIL)

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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 8-6

| NO. | DATE       | REVISION DESCRIPTION             | ENG |
|-----|------------|----------------------------------|-----|
| 3   | 2021-11-02 | REVISED PER PRECEDENT CONDITIONS | MJS |
| 2   | 2021-10-05 | REVISED PER DPW COMMENTS         | MJS |
| 1   | 2021-09-15 | REVISED PER TOWN COMMENTS        | MJS |

DATE:  
2021-07-01  
PROJECT #:  
NM19063

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CHECK'D BY:  
MJS  
ARCHIVE #:  
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C300

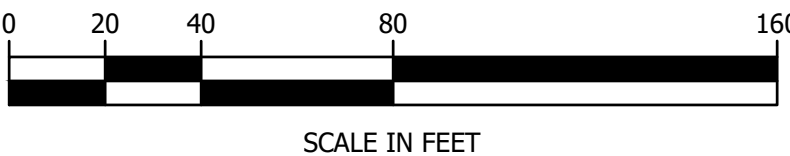
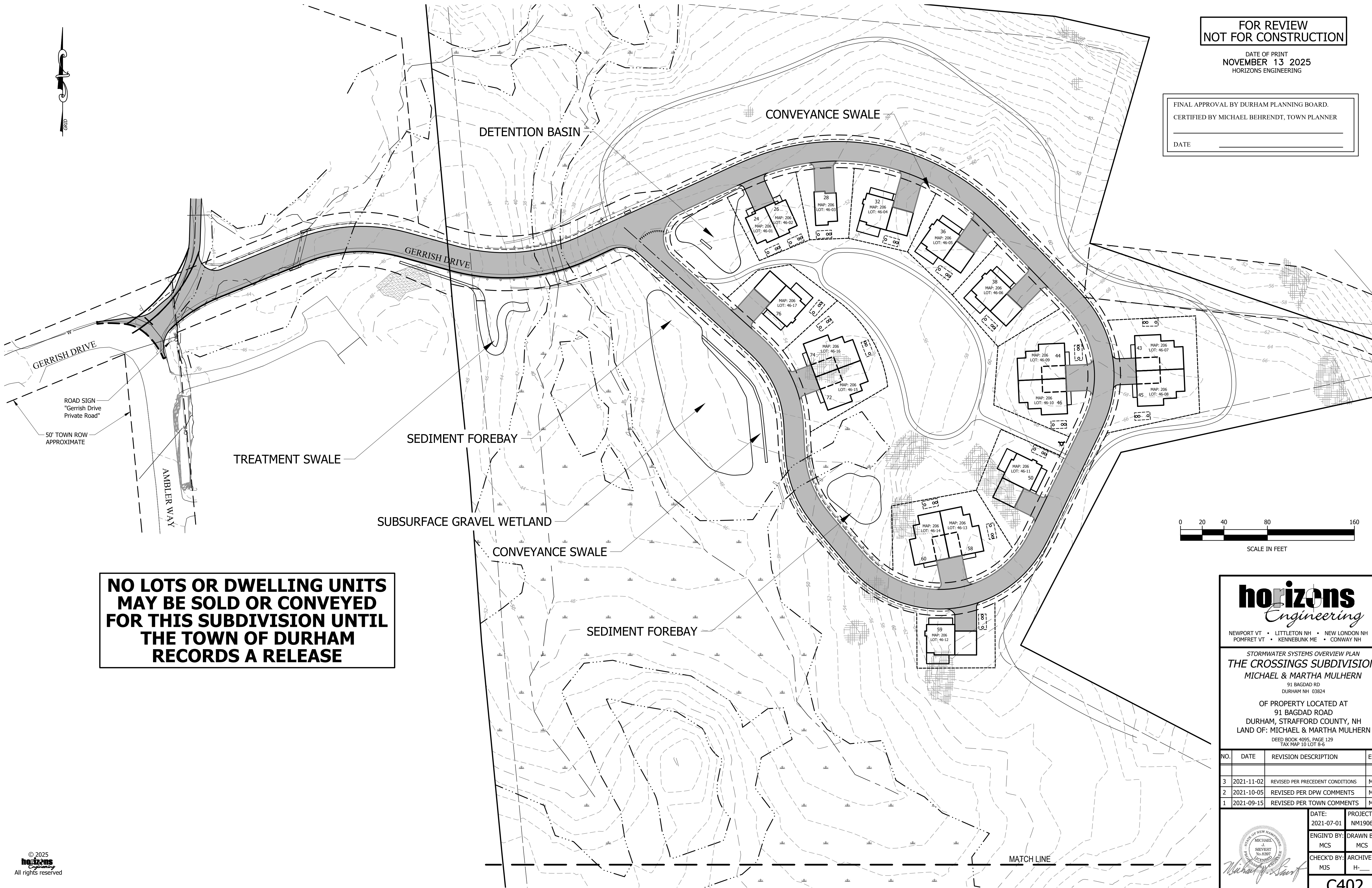


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FINAL APPROVAL BY DURHAM PLANNING BOARD.  
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DATE \_\_\_\_\_



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STORMWATER SYSTEMS OVERVIEW PLAN  
**THE CROSSINGS SUBDIVISION**  
**MICHAEL & MARTHA MULHERN**

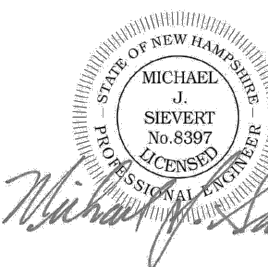
91 BAGDAD RD  
DURHAM NH 03824

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DEED BOOK 4095, PAGE 129  
TAX MAP 10 LOT 8-6

| NO. | DATE       | REVISION DESCRIPTION             | ENG |
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|                     |                       |
|---------------------|-----------------------|
| DATE:<br>2021-07-01 | PROJECT #:<br>NM19063 |
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**C402**

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:
- 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;
  - IN AREAS NOT TO BE PAVED:
    - A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
    - A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIPRAP HAS BEEN INSTALLED;
  - 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:
- INSTALL ALL EROSION CONTROLS AS SHOWN ON THE GRADING PLAN, TYPICAL DETAILS, AND IN CONFORMANCE WITH THE EROSION AND SEDIMENT CONTROL NOTES ON THIS PAGE. MANUFACTURER'S SPECIFICATIONS SHALL BE FOLLOWED.
- B. INSPECTION:
- INSPECT ALL EROSION CONTROLS WEEKLY AND AFTER EVERY RAIN EVENT OF 0.5 INCHES OR GREATER UNLESS OTHERWISE NOTED.
  - TEMPORARY STABILIZATION PRACTICES SHALL BE INSPECTED ONCE PER WEEK DURING CONSTRUCTION UNTIL EXPOSED SURFACES ARE STABILIZED.
  - ANY SIGNS OF RILL OR GULLY EROSION SHALL BE IMMEDIATELY REPAIRED.
- C. MAINTENANCE:
- MAINTAIN EROSION CONTROLS PER THE TYPICAL DETAILS AND IN CONFORMANCE WITH THE EROSION AND SEDIMENT CONTROL NOTES ON THIS PAGE.
- D. REMOVAL:
- ALL TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED ONCE 85% VEGETATIVE COVER HAS BEEN ESTABLISHED.
  - 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:
- LIMITED TO ONE ACRE; AND
  - 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.
- G. 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 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 3-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
- INSTALL EROSION AND SEDIMENT CONTROL MEASURES AS SPECIFIED ABOVE.
  - ENSURE RUNOFF IS DIVERTED FROM SEEDED AREA.
  - 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
- REMOVE STONES AND TRASH FROM AREA TO BE SEEDED.
  - COMPACTED SOIL SHALL BE LOOSENED TO A DEPTH OF 2 INCHES BEFORE APPLYING FERTILIZER, LIME, AND SEED.
  - 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
- 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                |

- APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL, CULTPACKER TYPE SEEDER OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER). NORMAL SEEDING DEPTH IS FROM ¼ TO ½ INCH. HYDROSEEDING THAT INCLUDES MULCH MAY BE LEFT ON SOIL SURFACE. SEEDING RATES MUST BE INCREASED 10% WHEN HYDROSEEDING.
  - TEMPORARY SEEDING SHALL OCCUR PRIOR TO SEPTEMBER 15TH IN THE YEAR IN WHICH THE AREA BEING SEEDED WAS DISTURBED.
  - AREAS SEEDED BETWEEN MAY 15TH AND AUGUST 15TH SHALL BE COVERED WITH HAY OR STRAW MULCH MEETING THE FOLLOWING CRITERIA:
    - 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;
    - MULCH MATERIALS SHALL BE SELECTED BASED UPON SOILS, SLOPE, FLOW CONDITIONS, AND TIME OF YEAR.
  - 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.
  - 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
- TEMPORARY SEEDING SHOULD BE INSPECTED WEEKLY AND AFTER ANY RAINFALL EXCEEDING ½ INCH IN 24 HOURS ON ACTIVE CONSTRUCTION SITES. TEMPORARY SEEDING SHOULD ALSO BE INSPECTED JUST PRIOR TO SEPTEMBER 15, TO ASCERTAIN WHETHER ADDITIONAL SEEDING IS REQUIRED TO PROVIDE STABILIZATION OVER THE WINTER PERIOD.
  - BASED ON INSPECTION, AREAS SHOULD BE RESEEDED TO ACHIEVE FULL STABILIZATION OF EXPOSED SOILS. IF IT IS TOO LATE IN THE PLANTING SEASON TO APPLY ADDITIONAL SEED, THEN OTHER TEMPORARY STABILIZATION MEASURES SHOULD BE IMPLEMENTED.
  - AT A MINIMUM, 85% OF THE SOIL SURFACE SHOULD BE COVERED BY VEGETATION.
  - IF ANY EVIDENCE OF EROSION OR SEDIMENTATION IS APPARENT, REPAIRS SHOULD BE MADE AND AREAS SHOULD BE RESEEDED, WITH OTHER TEMPORARY MEASURES (E.G., MULCH) USED TO PROVIDE EROSION PROTECTION DURING THE PERIOD OF VEGETATION ESTABLISHMENT.

PERMANENT VEGETATION

- A. SITE PREPARATION
- REFER TO SITE PREPARATION FOR TEMPORARY SEEDING.
- B. SEED BED PREPARATION
- REFER TO SEED BED PREPARATION FOR TEMPORARY SEEDING IN CONJUNCTION WITH THESE NOTES.
  - 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. 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.
  - INSPECT SEEDBED JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT THE SOIL COMPACTED, THE AREA MUST BE TILLED AND REGRADED AS ABOVE.
  - WHERE THE SOIL HAS BEEN COMPACTED BY CONSTRUCTION OPERATIONS, LOOSEN SOIL TO A DEPTH OF 2 INCHES BEFORE APPLYING FERTILIZER, LIME AND SEED.
  - 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
- UNLESS OTHERWISE NOTED, GRASS SEED MIXTURE "C" SHALL BE APPLIED AT THE SPECIFIED RATE AS NOTED IN THE "SEED MIXTURES FOR PERMANENT VEGETATION" TABLE.
  - APPLY SEED UNIFORMLY BY HAND, CYCLONE SEEDER, DRILL, CULTPACKER TYPE SEEDER OR HYDROSEEDER (SLURRY INCLUDING SEED AND FERTILIZER). NORMAL SEEDING DEPTH IS FROM ¼ TO ½ INCH. HYDROSEEDING THAT INCLUDES MULCH MAY BE LEFT ON SOIL SURFACE. SEEDING OPERATIONS SHOULD BE ON THE CONTOUR, 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.
  - 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.
  - SLOPES MUST BE NO STEEPER THAN 2 TO 1.
  - LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. THE USE OF FIBER MULCH ON CRITICAL AREAS IS NOT RECOMMENDED (UNLESS IT IS USED TO HOLD STRAW OR HAY). BETTER PROTECTION IS GAINED BY USING STRAW MULCH AND HOLDING IT WITH ADHESIVE MATERIALS OR 500 POUNDS PER ACRE OF WOOD FIBER MULCH.
  - SEEDING RATES MUST BE INCREASED 10% WHEN HYDROSEEDING.
  - TEMPORARY SEEDING SHALL OCCUR PRIOR TO SEPTEMBER 15TH IN THE YEAR IN WHICH THE AREA BEING SEEDED WAS DISTURBED.
  - AREAS SEEDED BETWEEN MAY 15TH AND AUGUST 15TH SHALL BE COVERED WITH HAY OR STRAW MULCH MEETING THE FOLLOWING CRITERIA:
    - 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;
    - MULCH MATERIALS SHALL BE SELECTED BASED UPON SOILS, SLOPE, FLOW CONDITIONS, AND TIME OF YEAR.
  - 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.
  - 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
- PERMANENTLY SEEDED AREAS SHOULD BE INSPECTED MONTHLY.
  - MOW SEEDED AREAS AS NECESSARY.
  - BASED ON INSPECTION, AREAS SHOULD BE REPAIRED AND/OR RESEEDED TO ENSURE 85% OF THE SOIL SURFACE IS COVERED BY VEGETATION.

MULCHING & EROSION CONTROL MATTING

- A. GENERAL
- APPLY PRIOR TO A STORM EVENT. CLOSELY MONITOR THE WEATHER TO HAVE ADEQUATE WARNING OF SIGNIFICANT STORMS.
  - MULCHING WITHIN A SPECIFIED TIME PERIOD FROM ORIGINAL SOIL EXPOSURE
    - WITHIN 100 FEET OF WETLANDS THE TIME PERIOD SHOULD BE NO GREATER THAN 7 DAYS.
    - IN OTHER AREAS IT SHALL BE NO GREATER THAN 14 DAYS.
  - MULCH MATERIALS SHALL BE SELECTED BASED UPON SOILS, SLOPE, FLOW CONDITIONS, AND TIME OF YEAR.
- B. TEMPORARY MULCHING
- HAY OR STRAW MULCHES
    - ORGANIC MULCHES INCLUDING HAY AND STRAW SHALL BE AIR-DRIED, FREE OF UNDESIRABLE SEEDS AND COARSE MATERIALS.
    - 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.
    - ANCHORING SHALL BE ONE OF THE FOLLOWING
      - NETTING SHALL BE JUTE, WOOD FIBER, OR BIODEGRADABLE PLASTIC NETTING INSTALLED PER MANUFACTURER'S SPECIFICATIONS.
      - 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.
    - WINTER APPLICATION: APPLY TO A DEPTH OF 4 INCHES OR DOUBLE THE ABOVE LISTED APPLICATION RATE. NOTE THAT IF SEEDING IS NECESSARY, MULCH WILL NEED TO BE REMOVED AND THE AREA SEEDED AND MULCHED IN THE SPRING.
  - MAINTENANCE
    - INSPECT PERIODICALLY AND AFTER RAIN STORMS FOR RILLS OR DISPLACEMENT OF MULCH. REPAIR AS NECESSARY. CONTINUE INSPECTIONS UNTIL 85% VEGETATIVE COVER IS ESTABLISHED.
- EROSION CONTROL BLANKET OR MATTING
  - REFER TO PLANS FOR TYPICAL EROSION CONTROL MATTING DETAIL. INSTALL PER MANUFACTURERS SPECIFICATIONS.
  - APPLICATION AND TIMING
    - 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.
    - DURING THE LATE FALL AND WINTER (SEPTEMBER 15 - APRIL 15) IN ADDITION TO THOSE LISTED ABOVE USE ON SIDE SLOPES OF GRASSED WATERWAYS AND MODERATE SLOPES (GREATER THAN 8%).
- C. PERMANENT MULCHING
- WOOD CHIPS OR GROUND BARK
    - APPLY TO A THICKNESS OF 2 TO 6 INCHES. APPLICATION RATES ARE 10-20 TONS/ACRE OR 460-920 POUNDS/1,000 SF.
    - MAINTENANCE: INSPECT ANNUALLY AND AFTER RAIN EVENTS OF 2.5 INCHES OR MORE IN A 24 HOUR PERIOD. REPAIR/REPLACE AS NECESSARY.
  - EROSION CONTROL MIX
    - SHALL BE PLACED AT A THICKNESS OF 2 INCHES OR MORE FOR MULCHING.
    - COMPOSITION OF THE MIX SHALL BE AS FOLLOWS:
      - ORGANIC MATTER CONTENT SHALL BE BETWEEN 25-65% DRY WEIGHT BASIS.
      - 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.
    - THE ORGANIC PORTION SHALL BE BLUEGATED AND FIBROUS SUCH AS FROM SHREDDED BARK, STUMP GRINDINGS, COMPOSTED BARK, OR EQUIVALENT MANUFACTURED PRODUCTS. IT SHALL NOT CONTAIN WOOD AND BARK CHIPS, GROUND CONSTRUCTION DEBRIS, OR REPROCESSED WOOD PRODUCTS.
    - THE MIX SHALL NOT CONTAIN SILTS, CLAYS, OR FINE SANDS.
    - SOLUBLE SALTS CONTENT SHALL BE < 4.0MMHOS/CM AND A PH OF 5.0-8.0.
  - PLACEMENT OF BERM
    - 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%.
  - MAINTENANCE: INSPECT PERIODICALLY AND AUGMENT AS NEEDED TO MAINTAIN INITIAL THICKNESS. REPLACE IF NO LONGER FUNCTIONING AS INTENDED.

SOIL STOCKPILES

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

DUST CONTROL

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

| SEED MIXTURE SELECTION BASED ON SOIL TYPE                                                   |                 |          |              |                         |
|---------------------------------------------------------------------------------------------|-----------------|----------|--------------|-------------------------|
| USE                                                                                         | SOIL DRAINAGE   |          |              |                         |
|                                                                                             | SEEDING MIXTURE | DROUGHTY | WELL DRAINED | MODERATELY WELL DRAINED |
| STEEP CUTS AND FILLS, BORROW AND DISPOSAL AREAS                                             | A               | 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               |
| LIGHTLY USED PARKING LOTS, ODD AREAS, UNUSED LANDS, AND LOW INTENSITY USE RECREATION SITES. | A               | GOOD     | GOOD         | GOOD                    |
|                                                                                             | B               | GOOD     | GOOD         | EXCELLENT               |
|                                                                                             | 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.

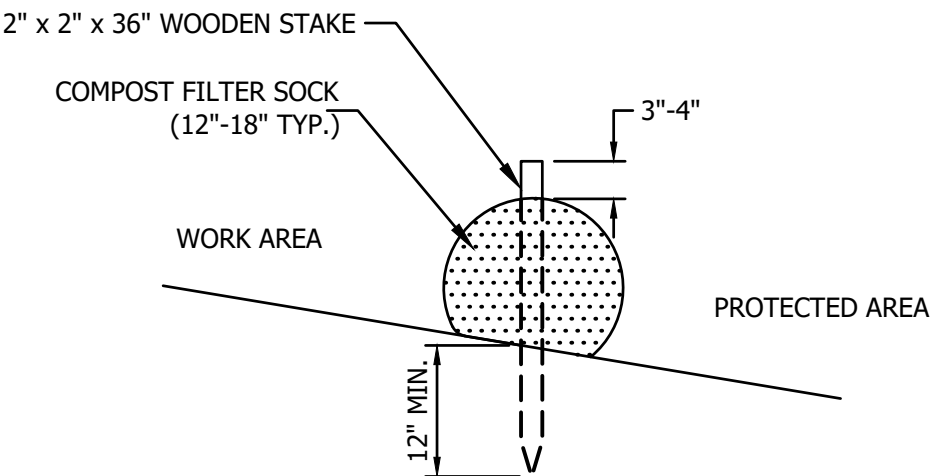
| SEED MIXTURES FOR PERMANENT VEGETATION |                     |                 |                     |
|----------------------------------------|---------------------|-----------------|---------------------|
| MIXTURE                                | SPECIES             | POUNDS PER ACRE | POUNDS PER 1,000 SF |
| A                                      | TALL FESCUE         | 20              | 0.45                |
|                                        | CREeping RED FESCUE | 20              | 0.45                |
|                                        | REEDTOP             | 2               | 0.05                |
|                                        | TOTAL               | 42              | 0.95                |
| B                                      | TALL FESCUE         | 15              | 0.35                |
|                                        | CREeping RED FESCUE | 10              | 0.25                |
|                                        | CROWN VETCH         | 15              | 0.35                |
|                                        | OR FLATPEA          | 20              | 0.75                |
|                                        | TOTAL               | 40 OR 55        | 0.95 OR 1.35        |
| C                                      | TALL FESCUE         | 20              | 0.45                |
|                                        | CREeping RED FESCUE | 20              | 0.45                |
|                                        | BIRDSFOOT 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 \_\_\_\_\_

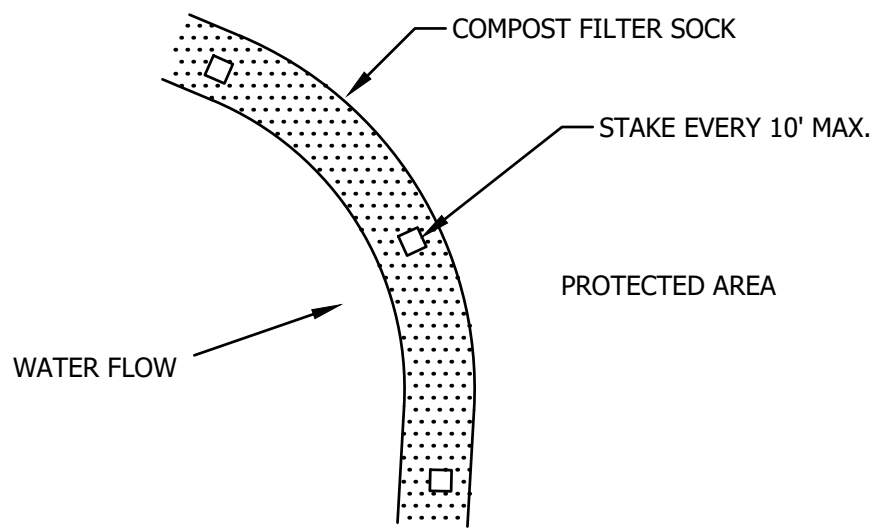
NO LOTS OR DWELLING UNITS  
MAY BE SOLD OR CONVEYED  
FOR THIS SUBDIVISION UNTIL  
THE TOWN OF DURHAM  
RECORDS A RELEASE

DATE OF PRINT  
NOVEMBER 13 2025  
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CROSS-SECTION

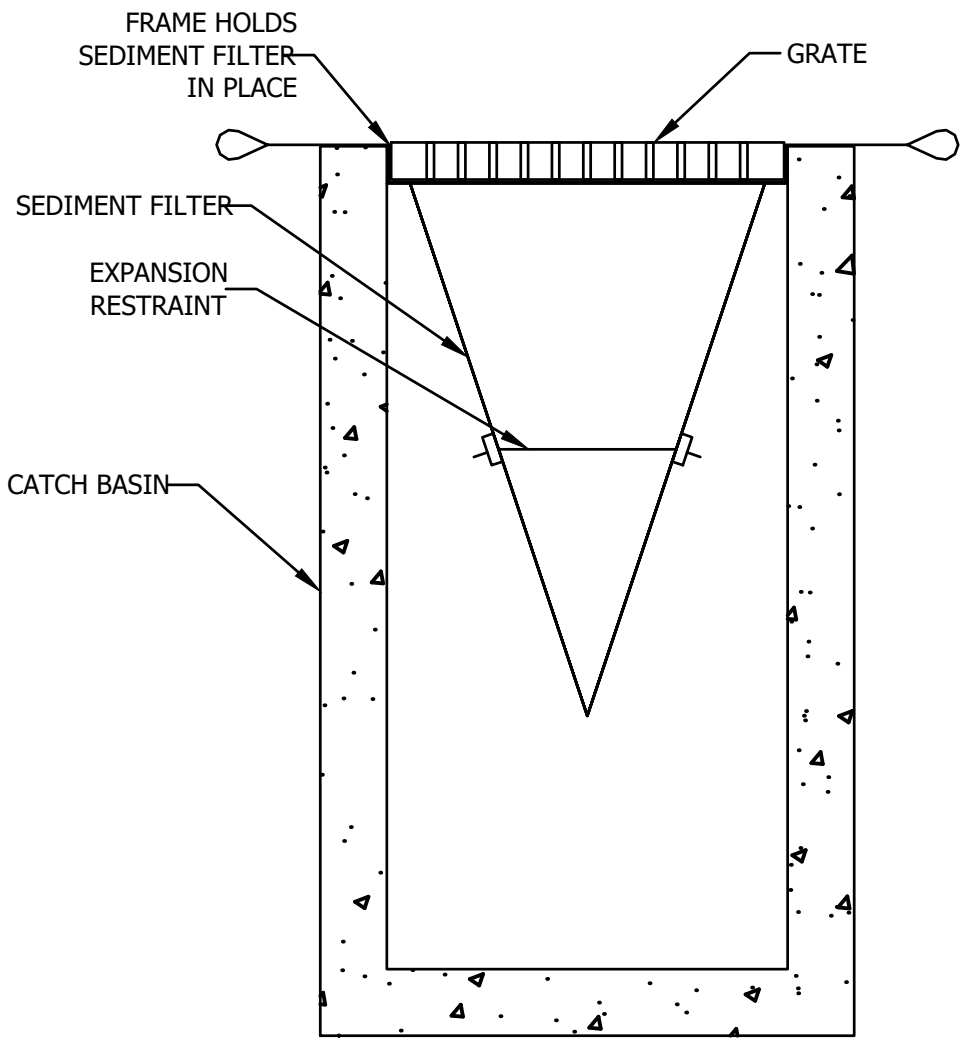


PLAN VIEW

- NOTES:
- ALL COMPOST MATERIAL TO MEET MANUFACTURES SPECIFICATIONS.
  - FILTER SOCKS SHOULD BE INSTALLED FOLLOWING EXISTING CONTOURS.

COMPOST FILTER SOCK DETAIL

NTS



NOTES:

- SEDIMENT FILTER TRAP SHALL BE ACF REGULAR FLOW SILTSACK OR APPROVED EQUAL.
- 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

NTS

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CONSTRUCTION DETAIL 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 8-6

| NO. | DATE       | REVISION DESCRIPTION                            | ENG |
|-----|------------|-------------------------------------------------|-----|
| 4   | 2021-04-20 | REVISED PER ENGINEERING REVIEW                  | MCS |
| 3   | 2021-02-04 | REVISED SUBMISSION TO THE DURHAM PLANNING BOARD | MCS |
| 2   | 2020-11-04 | REVISED SUBMISSION TO DURHAM                    | MCS |
| 1   | 2020-10-28 | INITIAL SUBMISSION TO DURHAM                    | MCS |

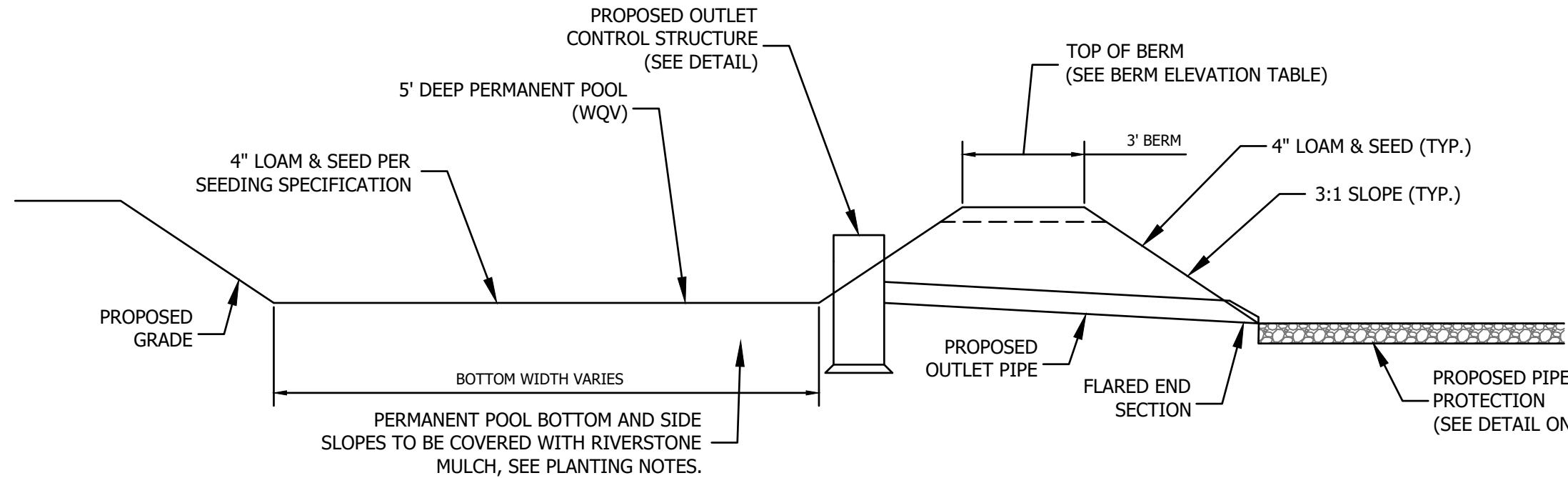
STATE OF NEW HAMPSHIRE  
MICHAEL J. SIEVERT  
Notary Public  
LICENSED

DATE:  
2020-11-04  
PROJECT #:  
NM19063

ENGINE'D BY:  
MCS  
DRAWN BY:  
MCS

CHECK'D BY:  
MJS  
ARCHIVE #:  
H-\_\_\_

C500



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\"/>

| 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 SEEDED PER THE CONSTRUCTION SEQUENCING AND EROSION CONTROL NOTES.

PLANTING NOTES:

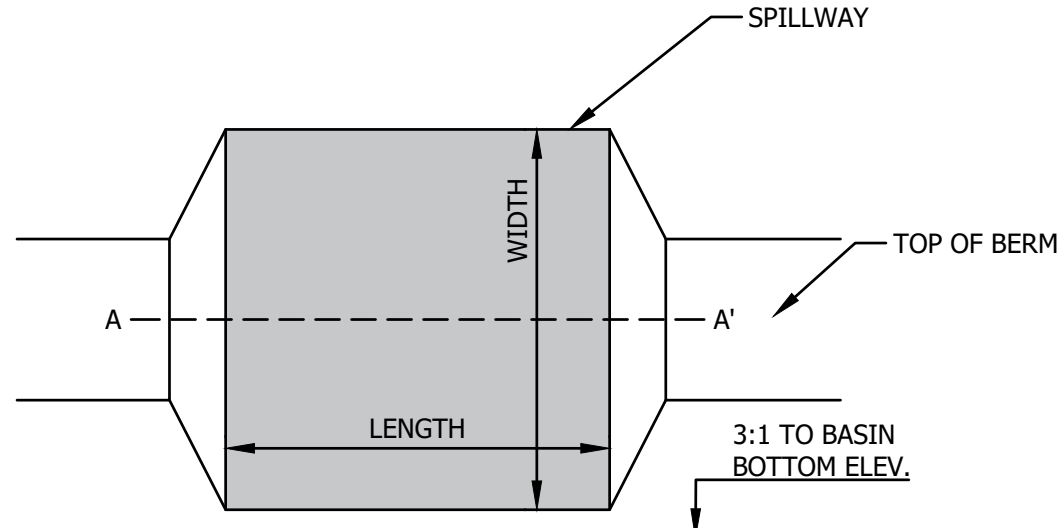
- PERMANENT POOL BOTTOM AND SIDE SLOPES TO BE COVERED WITH 2\"/>
- POND BOTTOM EXCLUDING PERMANENT POOL TO BE SEEDED WITH NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS AND MOIST SITES (50 LBS./ACRE).

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).

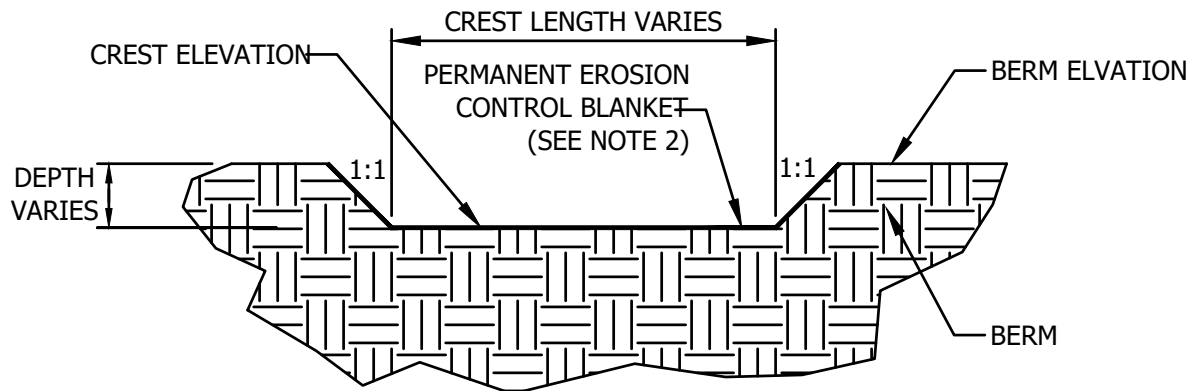
AVAILABLE FROM:  
NEW ENGLAND WETLAND PLANTS, INC.  
820 WEST STREET  
AMHERST, MA 01002  
(413)-548-8000

TYPICAL STORMWATER POND DETAIL

NTS



PLAN VIEW



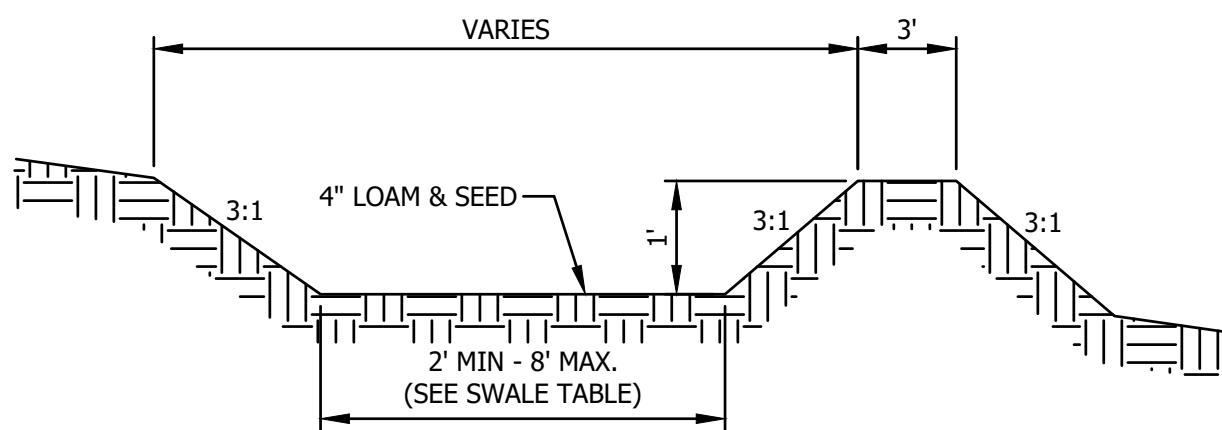
CROSS-SECTION A-A'

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.

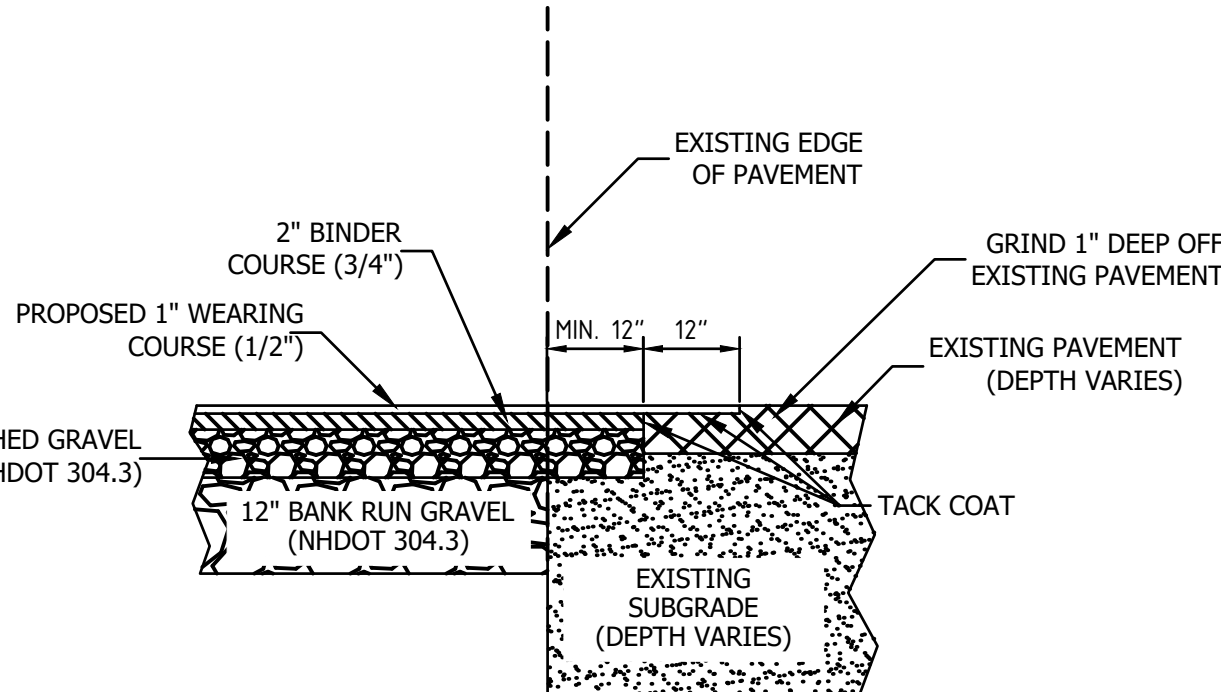
- MAINTENANCE NOTES:
- INSPECT ANNUALLY FOR EROSION, SEDIMENT ACCUMULATION, VEGETATION LOSS, AND PRESENCE OF INVASIVE SPECIES.
  - PERFORM PERIODIC MOWING. DO NOT MOW GRASS SHORTER THAN 4 INCHES.
  - REMOVE DEBRIS AND ACCUMULATED SEDIMENT BASED ON INSPECTION.
  - REPAIR ERODED AREAS, REMOVE INVASIVE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

CONVEYANCE SWALE DETAIL

NTS

STORMWATER POND MAINTENANCE:

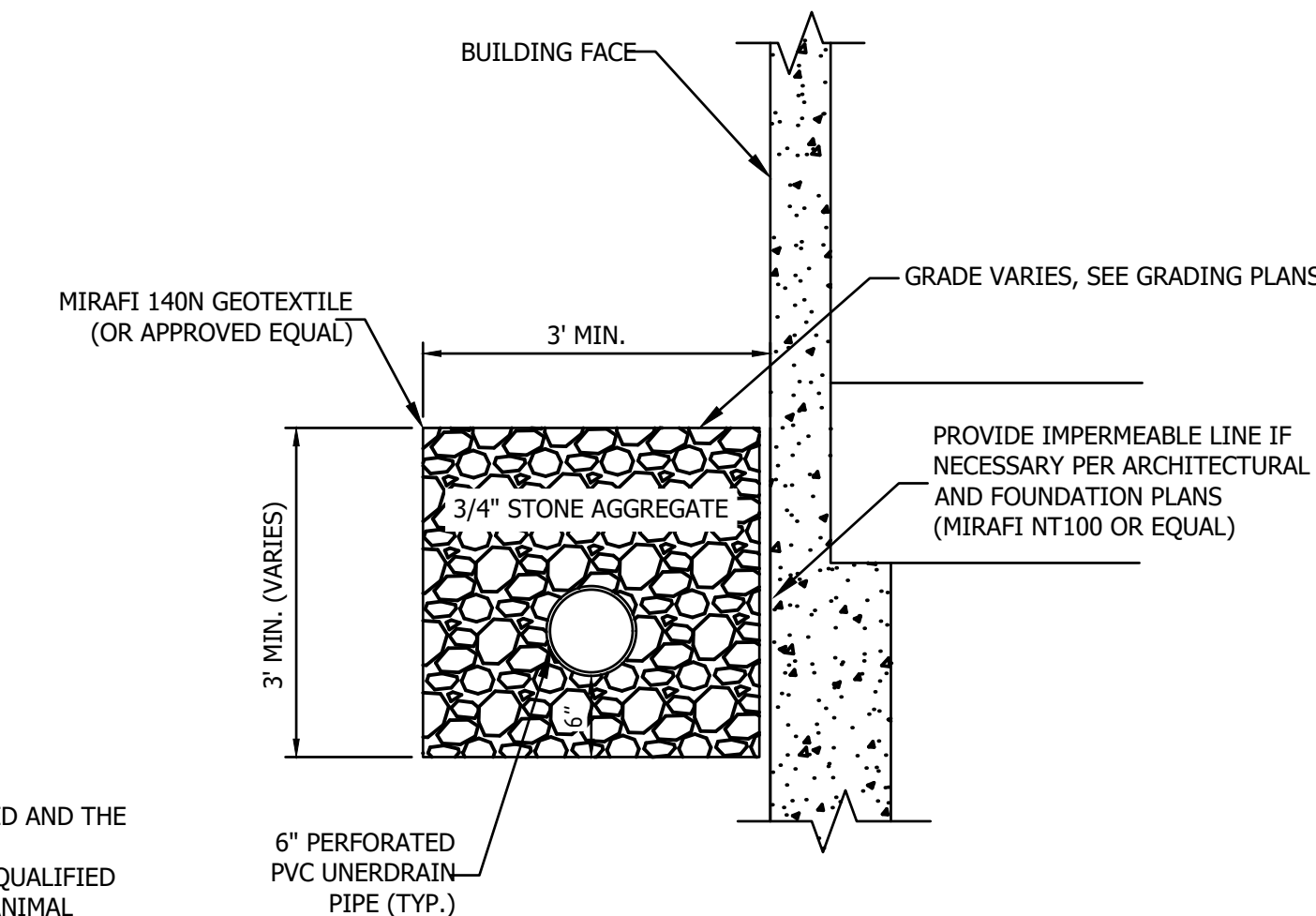
- THE BOTTOM, SIDE SLOPES AND CREST SHALL BE MOWED AND THE VEGETATION MAINTAINED IN A HEALTHY CONDITION.
- EMBANKMENTS SHOULD BE INSPECTED ANNUALLY BY A QUALIFIED PROFESSIONAL FOR SETTLEMENT, EROSION, SEEPAGE, ANIMAL BURROWS, AND WOODY VEGETATION. REPAIR AS NECESSARY.
- A QUALIFIED PROFESSIONAL SHALL INSPECT THE OUTLET PIPE, SPILLWAY, AND OUTLET PROTECTION ANNUALLY. REPAIR AS NECESSARY.
- TRASH AND DEBRIS SHALL BE REMOVED FROM THE BASIN AND PIPE INLETS AND OUTLETS WHENEVER PRESENT.
- ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN THE DEPTH EXCEEDS 4 INCHES.



- 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



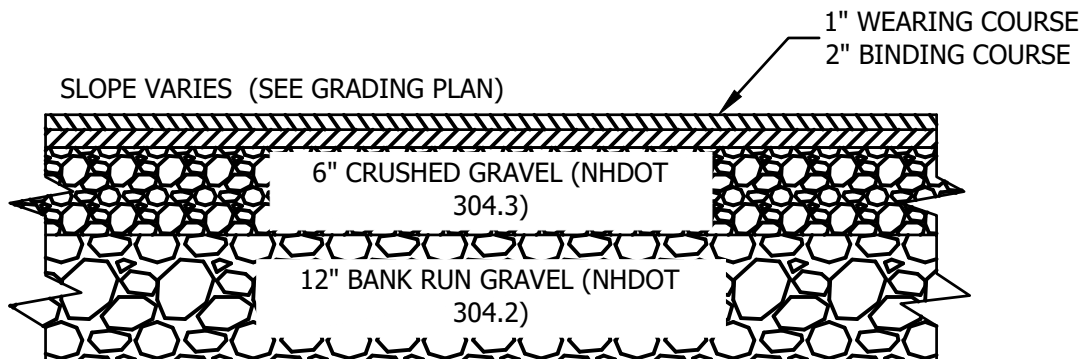
NOTES:

- SEE PLANS FOR LOCATION.

DRIP STRIP DETAIL

NTS

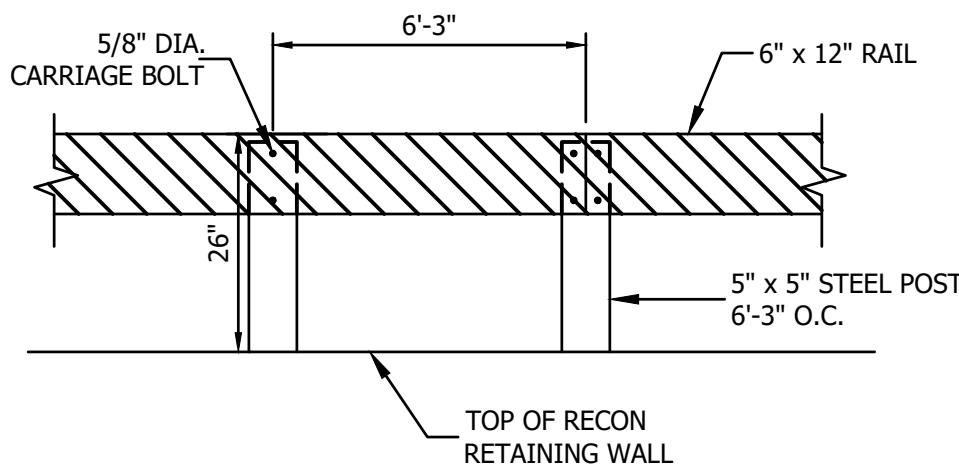
|                                             |       |
|---------------------------------------------|-------|
| FINAL APPROVAL BY DURHAM PLANNING BOARD.    |       |
| CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER |       |
| CERTIFIED                                   | _____ |
| DATE              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



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

TYPICAL PAVEMENT CROSS-SECTION

NTS



NOTE:

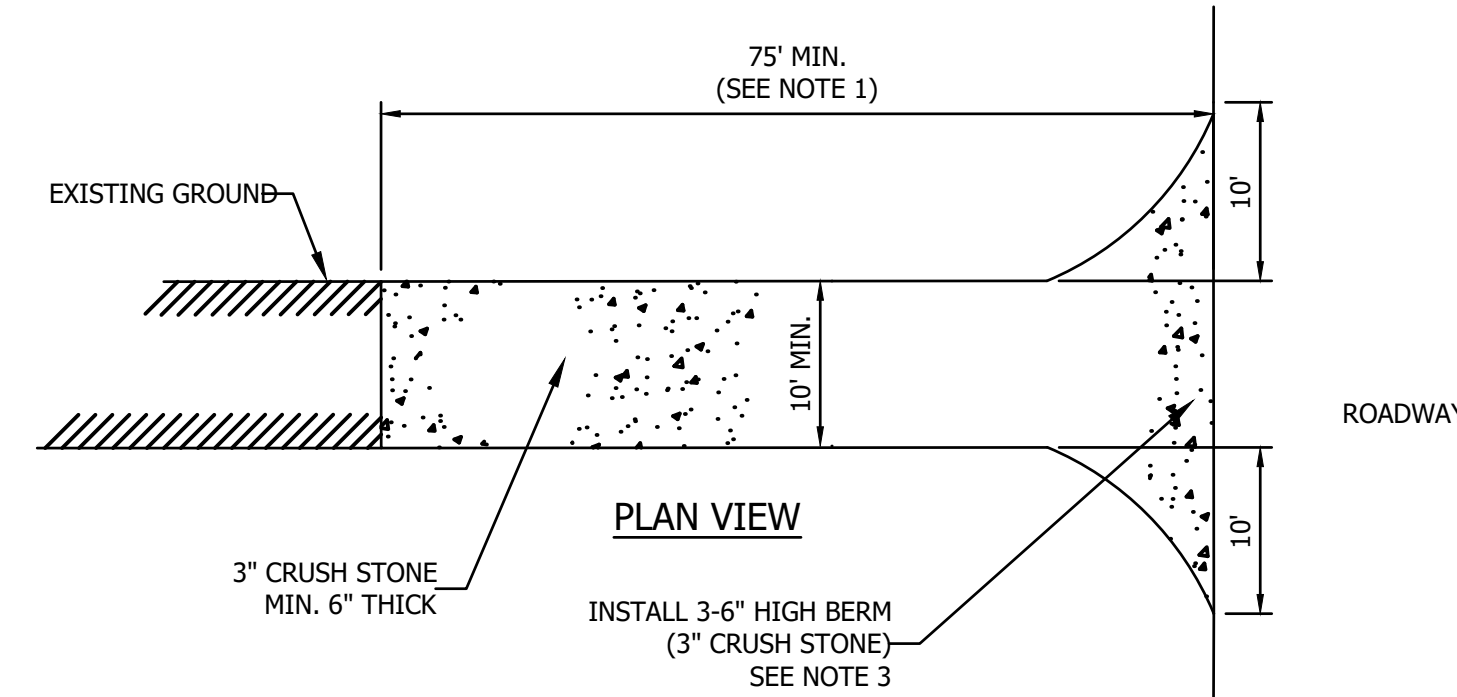
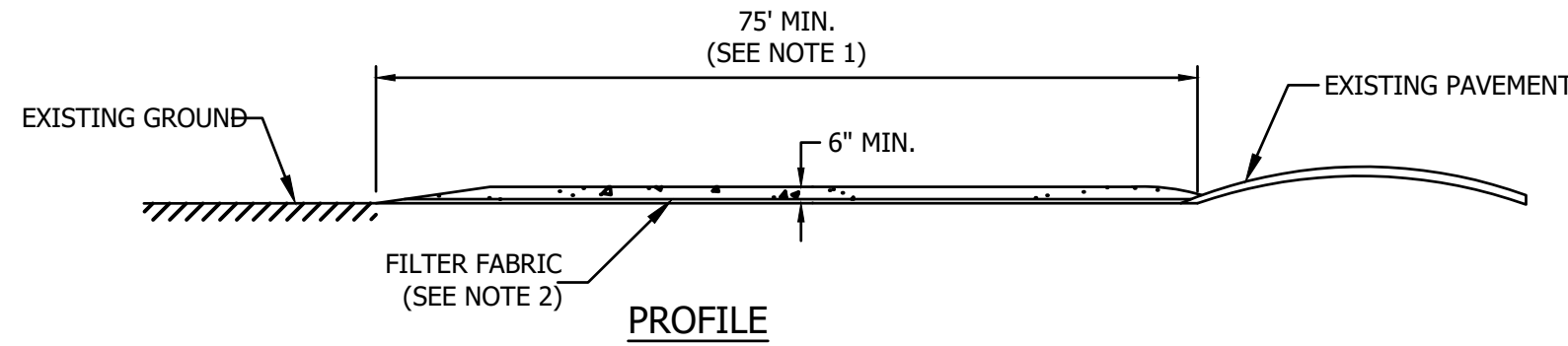
- REFER TO SHEET C103 FOR LOCATION AND GRADING AROUND GUARD RAIL.

REFERENCE:

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

GUARD RAIL DETAIL

NTS



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\"/>
- 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

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**NO LOTS OR DWELLING UNITS  
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FOR THIS SUBDIVISION UNTIL  
THE TOWN OF DURHAM  
RECORDS A RELEASE**

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NOVEMBER 13 2025  
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CONSTRUCTION DETAIL FOR  
**THE CROSSINGS SUBDIVISION**  
**MICHAEL & MARTHA MULHERN**

91 BAGDAD RD  
DURHAM NH 03824

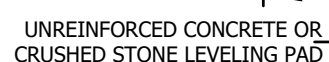
OF PROPERTY LOCATED AT  
91 BAGDAD ROAD  
DURHAM, STRAFFORD COUNTY, NH  
LAND OF: MICHAEL & MARTHA MULHERN

DEED BOOK 4095, PAGE 129  
TAX MAP 10 LOT 8-6

| NO. | DATE       | REVISION DESCRIPTION                            | ENG |
|-----|------------|-------------------------------------------------|-----|
| 4   | 2021-04-20 | REVISED PER ENGINEERING REVIEW                  | MCS |
| 3   | 2021-02-04 | REVISED SUBMISSION TO THE DURHAM PLANNING BOARD | MCS |
| 2   | 2020-11-04 | REVISED SUBMISSION TO DURHAM                    | MCS |
| 1   | 2020-10-28 | INITIAL SUBMISSION TO DURHAM                    | MCS |

|                     |                       |
|---------------------|-----------------------|
| DATE:<br>2020-11-04 | PROJECT #:<br>NM19063 |
| ENGINE'D BY:<br>MCS | DRAWN BY:<br>MCS      |
| CHECK'D BY:<br>MJS  | ARCHIVE #:<br>H-___   |

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FOR THIS SUBDIVISION UNTIL  
THE TOWN OF DURHAM  
RECORDS A RELEASE**

**horizons**  
*Engineering*

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

CONSTRUCTION DETAIL 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 8-6

| NO. | DATE       | REVISION DESCRIPTION                            | ENG |
|-----|------------|-------------------------------------------------|-----|
| 4   | 2021-04-20 | REVISED PER ENGINEERING REVIEW                  | MCS |
| 3   | 2021-02-04 | REVISED SUBMISSION TO THE DURHAM PLANNING BOARD | MCS |
| 2   | 2020-11-04 | REVISED SUBMISSION TO DURHAM                    | MCS |
| 1   | 2020-10-28 | INITIAL SUBMISSION TO DURHAM                    | MCS |

DATE OF PRINT  
NOVEMBER 13 2025  
HORIZONS ENGINEERING

|                     |                       |
|---------------------|-----------------------|
| DATE:<br>2020-11-04 | PROJECT #:<br>NM19063 |
| ENGINE'D BY:<br>MCS | DRAWN BY:<br>MCS      |
| CHECK'D BY:<br>MJS  | ARCHIVE #:<br>H-__    |

C502



1. CONSTRUCTION TO BE IN ACCORDANCE WITH PSNH CONSTRUCTION STANDARDS FOR NEW ELECTRICAL SERVICE WORK BY CONTRACTORS, MOST RECENT EDITION.
2. SELECT SAND BACKFILL SHALL CONSIST OF A FINE GRANULAR MATERIAL OF WHICH 100% SHALL PASS THROUGH A 1/4" SIEVE. EXCEPT NATURALLY 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%.
3. SAND SHALL BE FREE OF COALS, LUMBS, ROCKS, STONES, DEBRIS AND RUBBISH. BACKFILL SHALL BE THOROUGHLY COMPACTED IN 6" LIFTS.
3. CONDUIT SIZES TO BE 5" 3-PHASE PRIMARY AND 4" 3-PHASE SECONDARY. ALL CONDUIT SIZES TO BE VERIFIED BY PSNH.
4. ALL CONDUIT INSTALLATIONS MUST CONFORM TO THE CURRENT EDITION OF THE NATIONAL ELECTRIC SAFETY CODE, STATE AND LOCAL CODES AND ORDINANCES, AND WHERE APPLICABLE THE NATIONAL ELECTRIC CODE.

NOTES (IN ACCORDANCE WITH Env-Ws 706.05)

1. 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.
2. PIPEK SAND BLANKET MATERIAL SHALL BE GRADED SAND, FREE FROM ORGANIC MATERIAL, WHICH LOOSELY PACKED TO A MINIMUM OF 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.
3. 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.
4. TRENCH BACKFILL MATERIAL FOR PAVED AREAS SHALL CONSIST OF THE NATURAL MATERIAL EXCAVATED FOR THE TRENCH WITH THE EXCEPTION OF: DEBRIS, EXCESS PAVEMENT, ORGANIC MATTER, SOIL, WET OR SOFT MUCK, PEAT OF CLAY EXCAVATED FROM WATER LOGGED AREAS OVER 6 INCHES IN MARKET 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.
5. ADDITIONAL REQUIREMENTS MAY BE FOUND IN Env-W6706.05.

DRAINAGE STRUCTURE NOTES:

1. DRAINAGE STRUCTURE MATERIALS SHALL COMPLY WITH NHDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION, DIVISION 600, SECTION 604.
2. SITE CONTRACTOR SHALL BACKFILL AROUND DRAINAGE STRUCTURES IN 6 TO 8 INCH LIFTS, ATTAINING 95% MAXIMUM PROCTOR DENSITY FOR EACH LIFT.
3. 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.
4. JOINTS BETWEEN ADJACENT RISERS SHALL BE FULLY SEALED WITH ELASTOMERIC SEALANT PER MANUFACTURERS REQUIREMENTS.
5. 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.
6. FRAME AND GRATE:  
CATCH BASINS:  
NEENAH LIFTMATE OR PAMREX

**NO LOTS OR DWELLING UNITS  
MAY BE SOLD OR CONVEYED  
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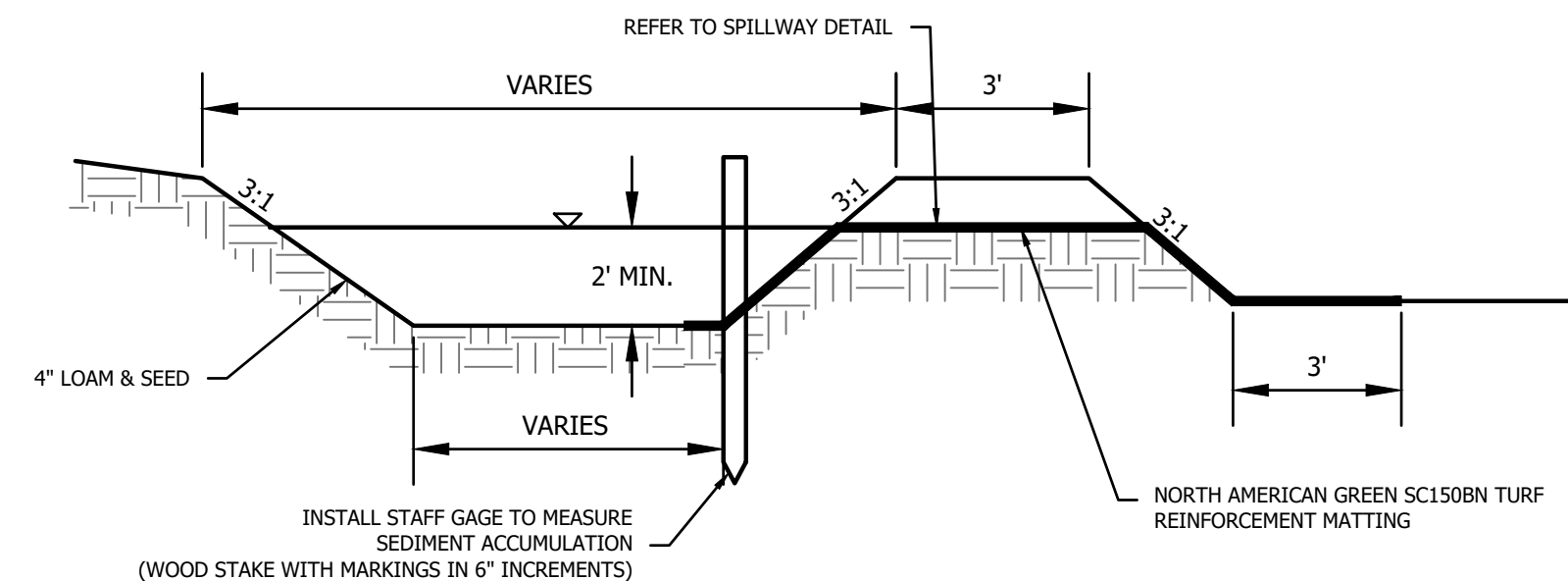
FINAL APPROVAL BY DURHAM PLANNING BOARD.  
 CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER  
 CERTIFIED \_\_\_\_\_  
 DATE \_\_\_\_\_

DATE OF PRINT  
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HORIZONS ENGINEERING

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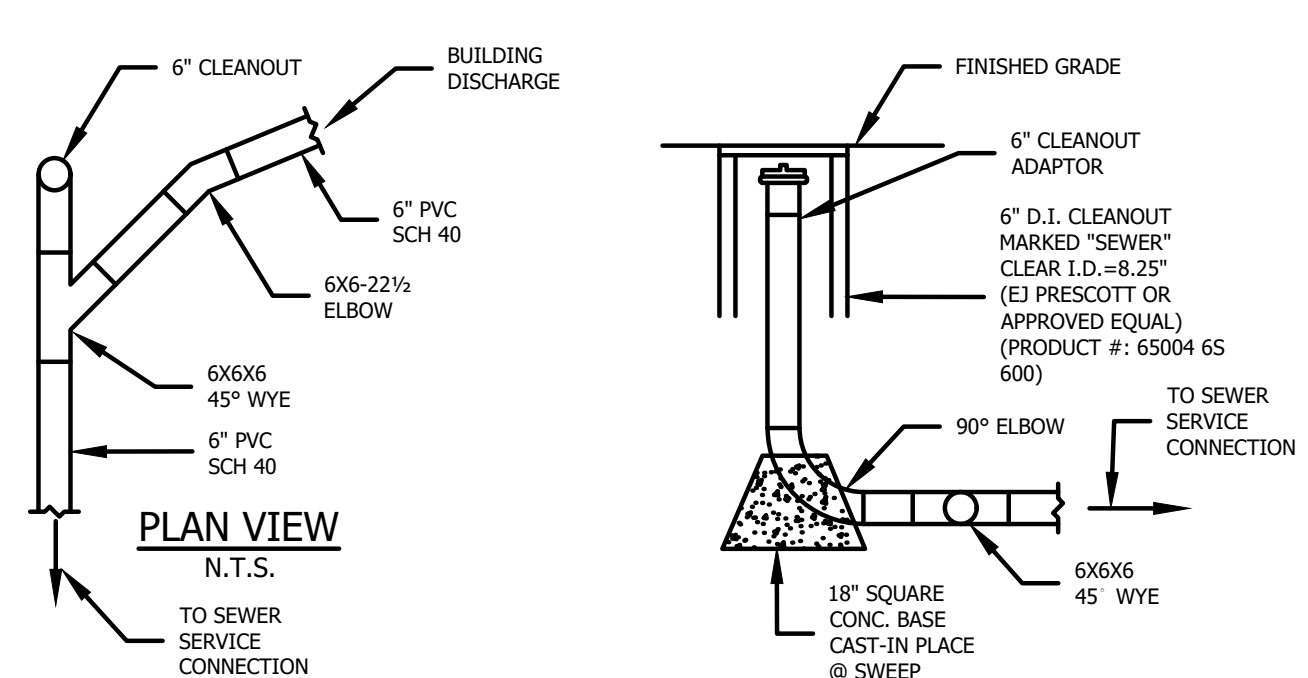
|                                                                                                                                                                                                                                         |              |            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|------------|
|  <p>STATE OF NEW HAMPSHIRE<br/>MICHAEL J. SIEVERT<br/>NO. 5397<br/>LICENSED<br/>REGISTERED PROFESSIONAL ENGINEER</p> <p><i>William J. Gunt</i></p> | DATE:        | PROJECT #: |
|                                                                                                                                                                                                                                         | 2020-11-04   | NM19063    |
|                                                                                                                                                                                                                                         | ENGINE'D BY: | DRAWN BY:  |
|                                                                                                                                                                                                                                         | MCS          | MCS        |
| CHECK'D BY:                                                                                                                                                                                                                             | ARCHIVE #:   |            |
| MJS                                                                                                                                                                                                                                     | H-__         |            |

# C503



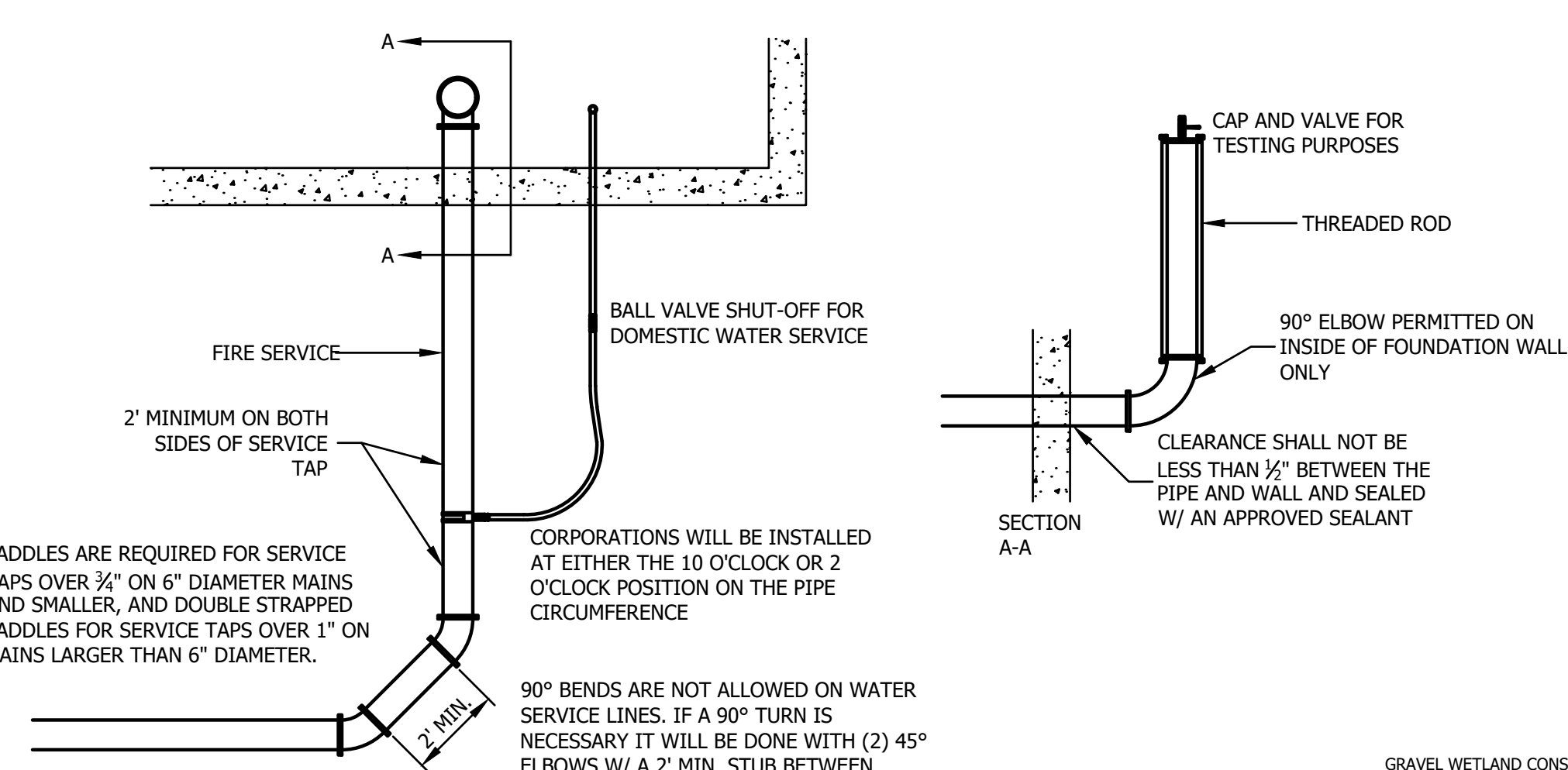
### SEDIMENT FOREBAY TYPICAL CROSS SECTION DETAIL

- 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.



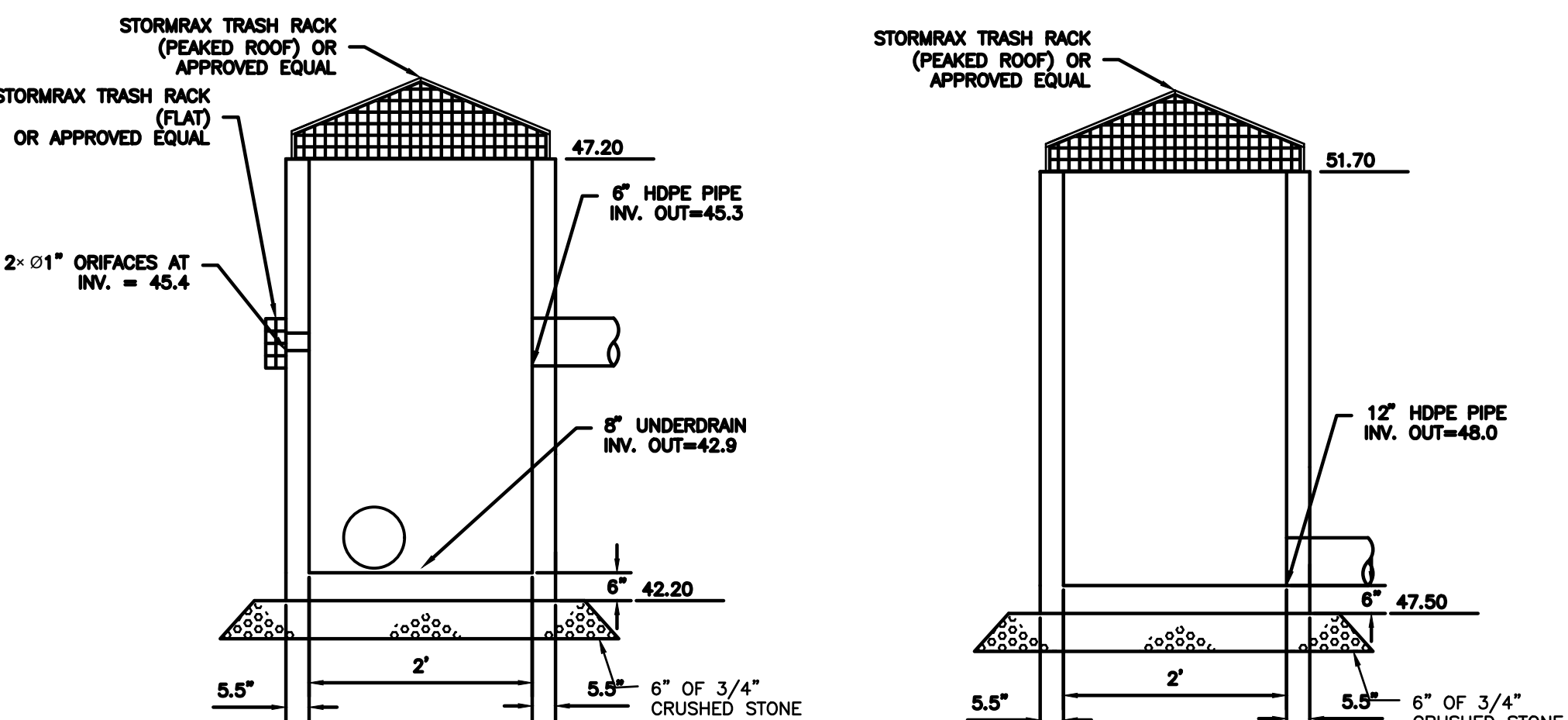
### CLEANOUT DETAIL

NTS



### WATER SERVICE THROUGH FOUNDATION

NTS

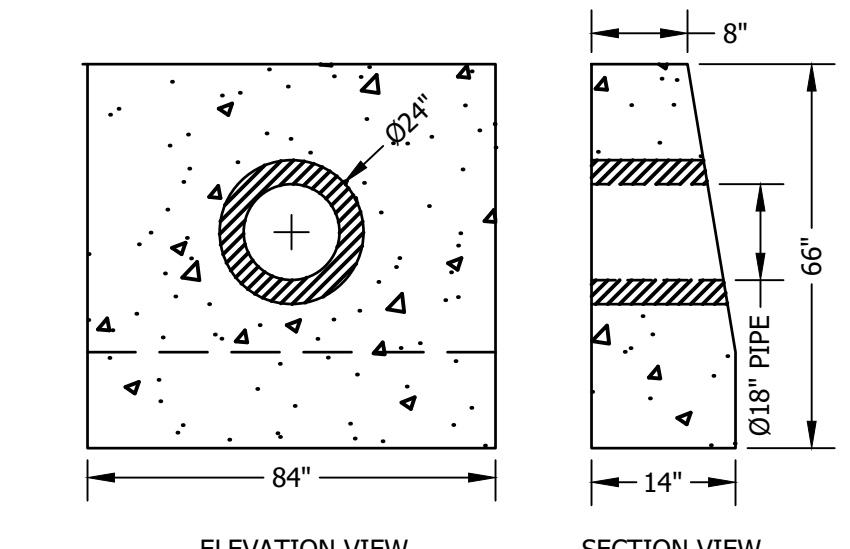


### OUTLET CONTROL STRUCTURE #1 FOR GRAVEL WETLAND

NTS

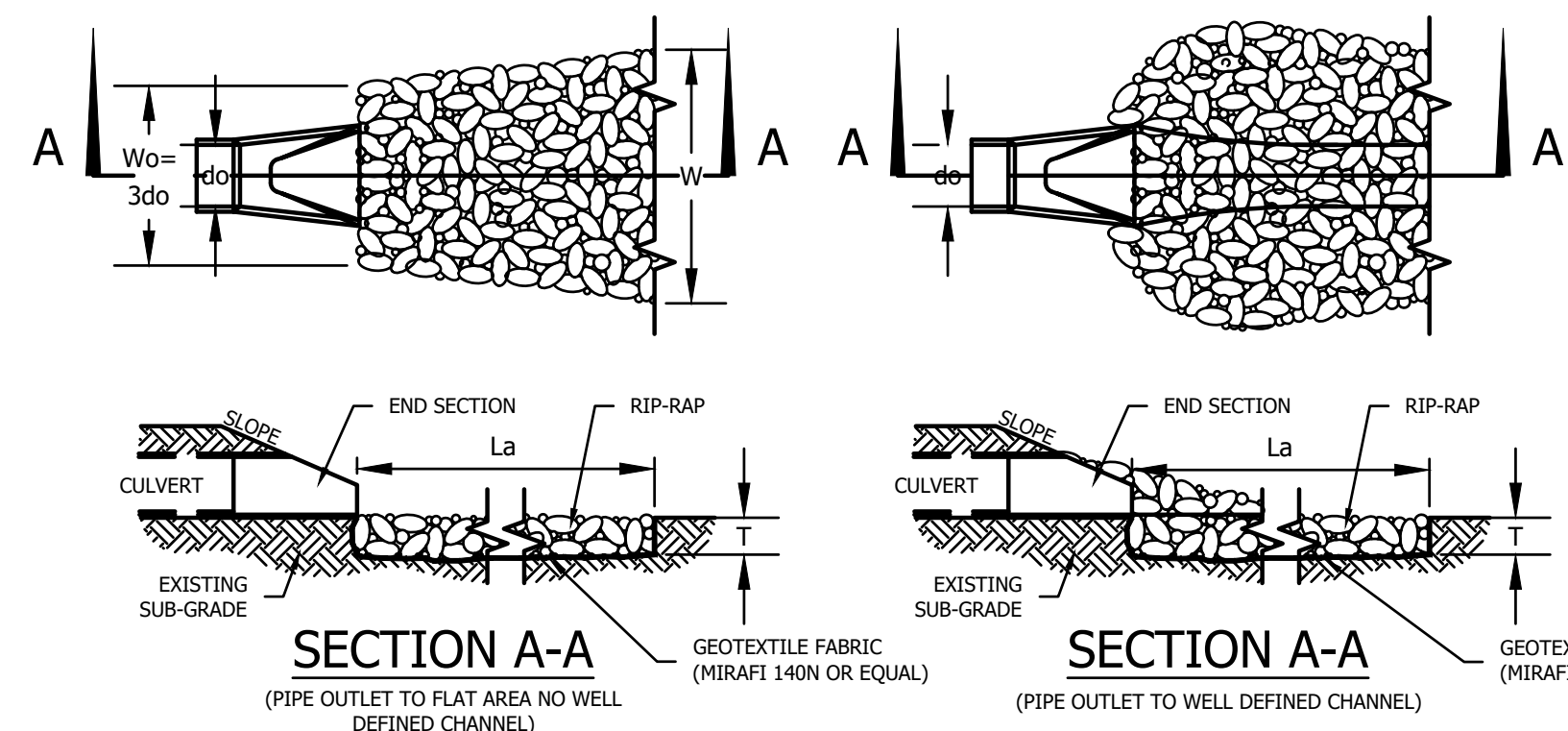
### OUTLET CONTROL STRUCTURE #2 FOR SEDIMENT FOREBAY

NTS



### PRECAST CONCRETE HEADWALL DETAIL

N.T.S.



### SECTION A-A

(PIPE OUTLET TO FLAT AREA NO WELL DEFINED CHANNEL)

### SECTION A-A

(PIPE OUTLET TO WELL DEFINED CHANNEL)

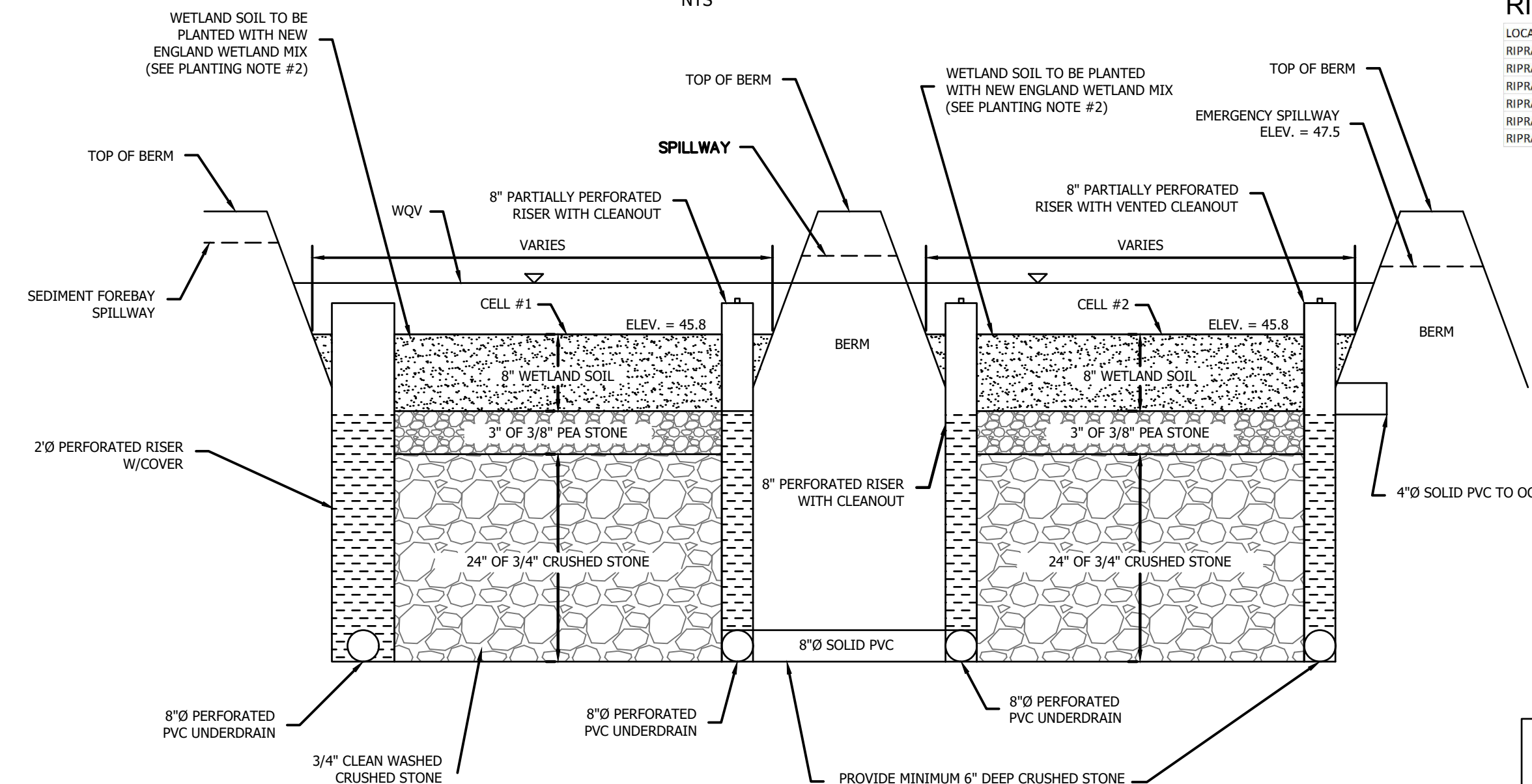
### RIP-RAP GRADATION

| % 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               |

### PIPE OUTLET PROTECTION DETAIL

NTS



### GRAVEL WETLAND SECTION

NTS

### RIP RAP APRON DIMENSION TABLE

| LOCATION                                      | W <sub>0</sub>  | W               | L <sub>a</sub> | T   | d <sub>50</sub> |
|-----------------------------------------------|-----------------|-----------------|----------------|-----|-----------------|
| RIPRAP #1 - GRAVEL WETLAND EMERGENCY SPILLWAY | VARIES SEE PLAN | VARIES SEE PLAN | 72"            | 24" |                 |
| RIPRAP #2 - 12" CPP OUTLET @ STA. 15457       | 2.5             | 16              | 13             | 18" | 6"              |
| RIPRAP #3 - 18" CPP OUTLET @ STA. 15466       | 3.75            | 4.7             | 16             | 18" | 6"              |
| RIPRAP #4 - GRAVEL WETLAND MID SPILLWAY       | VARIES SEE PLAN | VARIES SEE PLAN | 24"            | 8"  |                 |
| RIPRAP #5 - 18" CPP OUTLET @ STA. 17480       | 3.75            | 8.1             | 18             | 24" | 8"              |
| RIPRAP #6 - 6" CPP GRAVEL WETLAND OUTLET      | 1.25            | 9               | 8              | 18" | 6"              |

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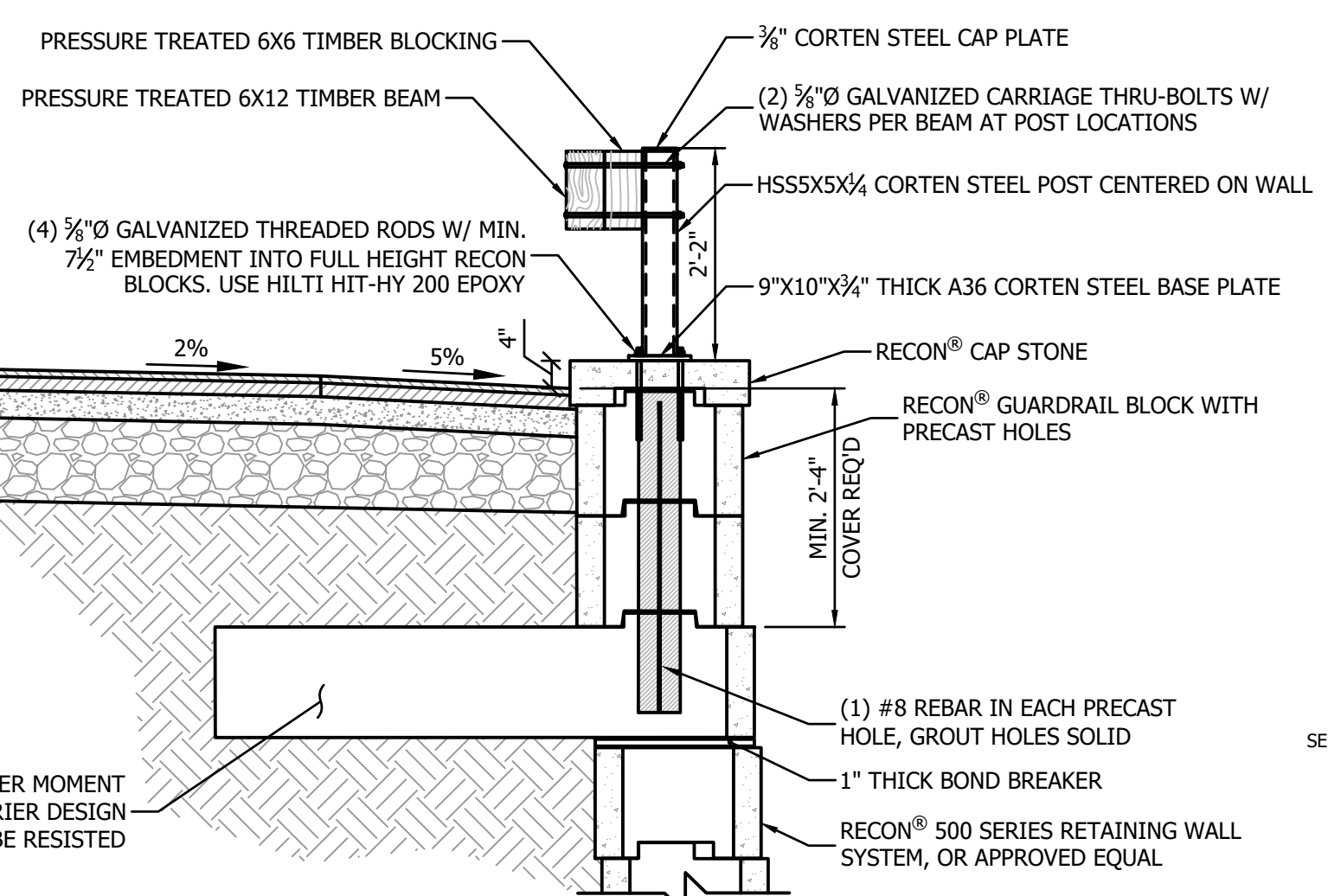
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Engineering  
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FINAL APPROVAL BY DURHAM PLANNING BOARD.  
CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER  
CERTIFIED \_\_\_\_\_  
DATE \_\_\_\_\_

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RECORDS A RELEASE**

### RETAINING WALL AND GUARDRAIL DETAIL

NTS



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

### 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         | 50-80      |
| #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 SEED 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 WEEDING, 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)-499-4992
- GRAVEL WETLAND SLOPES AND BERM TO BE PLANTED WITH SEED MIX 'C' LISTED ON SHEET D101.

**horizons**  
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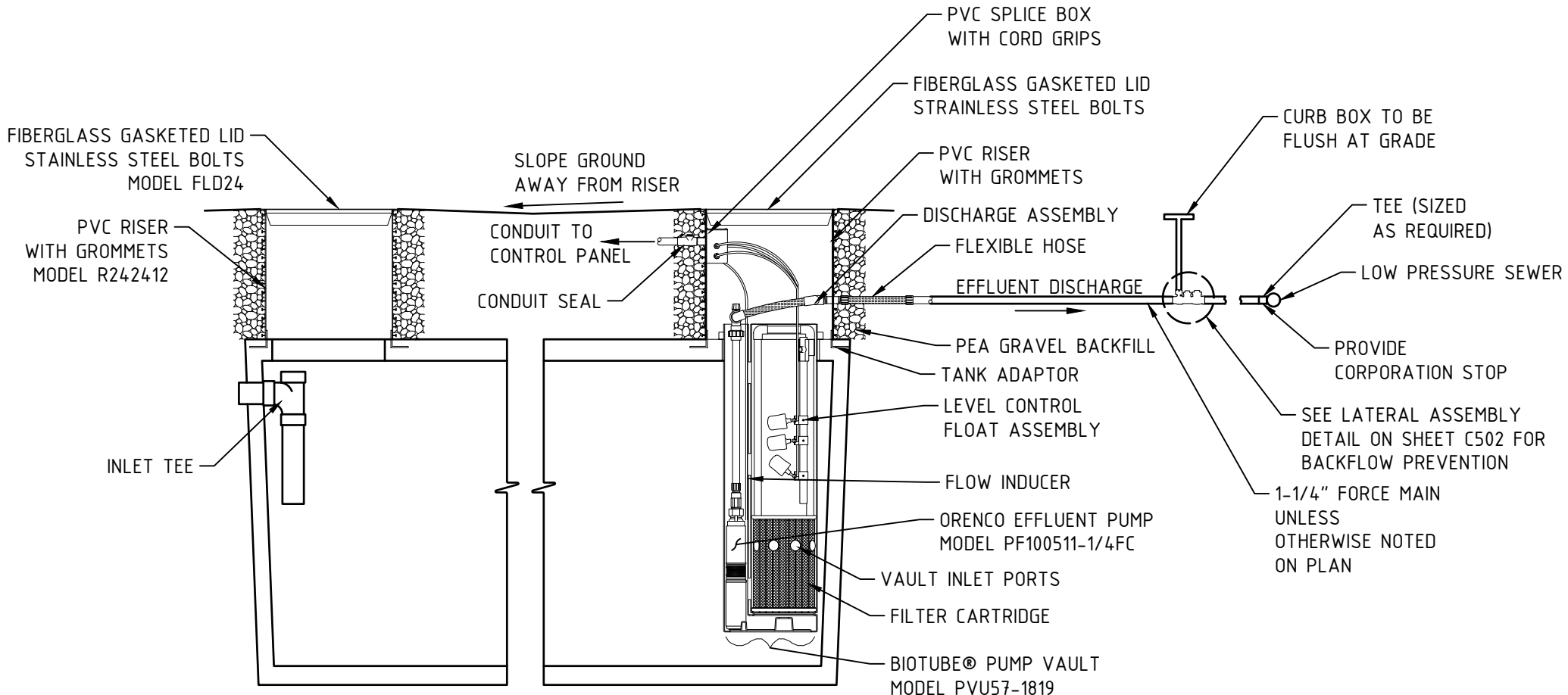
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ENGINE'D BY: MCS  
DRAWN BY: MCS  
CHECK'D BY: MJS  
ARCHIVE #: H-\_\_\_\_  
**C504**





NOTES

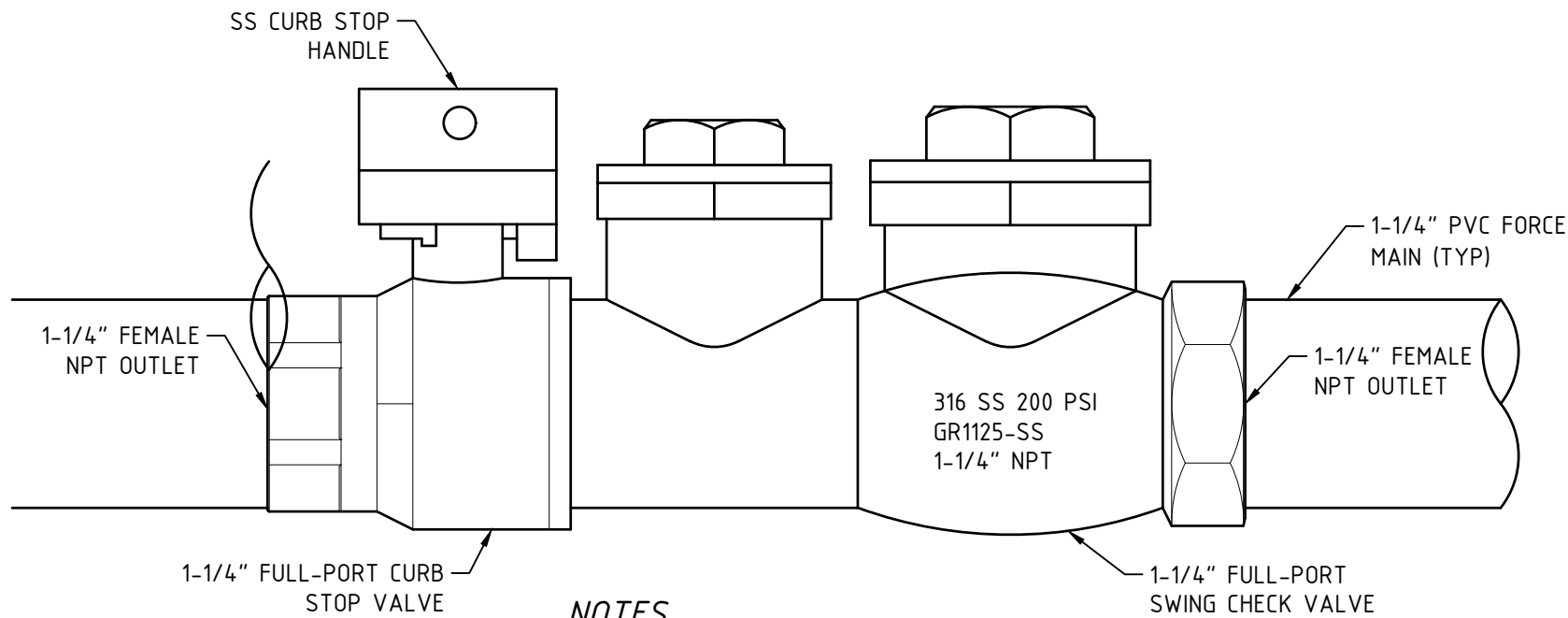
1. TWO (2) CHAMBER SEPTIC TANK. MUST BE AT LEAST 1250 GAL + 500 GAL

PROPOSED SEPTIC AND PUMP DETAIL

N.T.S.

MAINTENANCE CHECKLIST

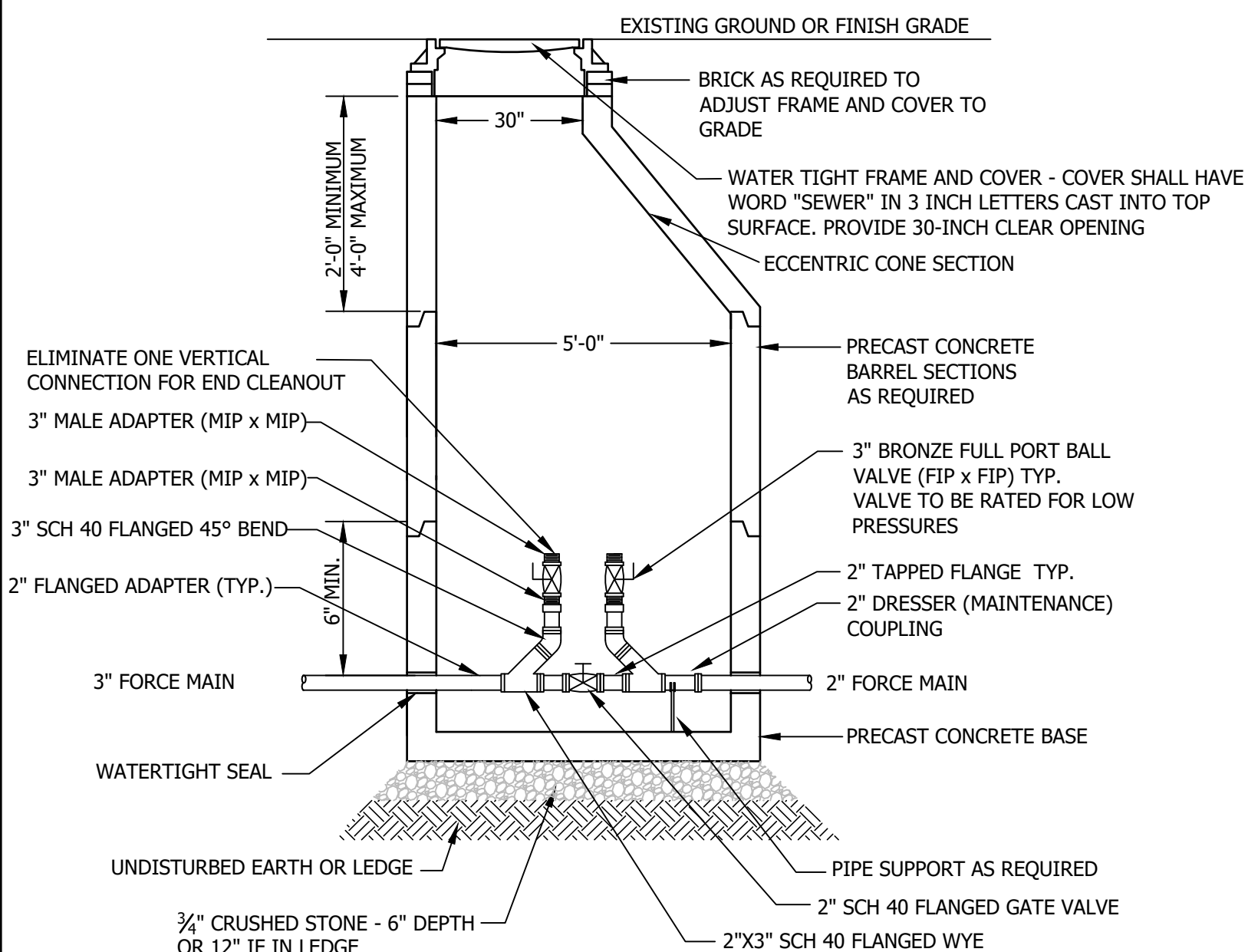
1. THE SEPTIC TANK AND PUMP CHAMBER SHALL BE PUMPED ONCE EVERY THREE YEARS. ALL INLET BAFFLES SHALL BE INSPECTED AND REPAIRED AS NEEDED.
2. CLEAN PUMP AND EFFLUENT FILTER AT THE SAME TIME THE TANKS ARE PUMPED.
3. INSPECT AND VERIFY THE OPERATION OF THE CONTROL PANEL AND FLOAT SWITCHES EVERY 3 YEARS AT THE TIME OF PUMPING.



NOTES

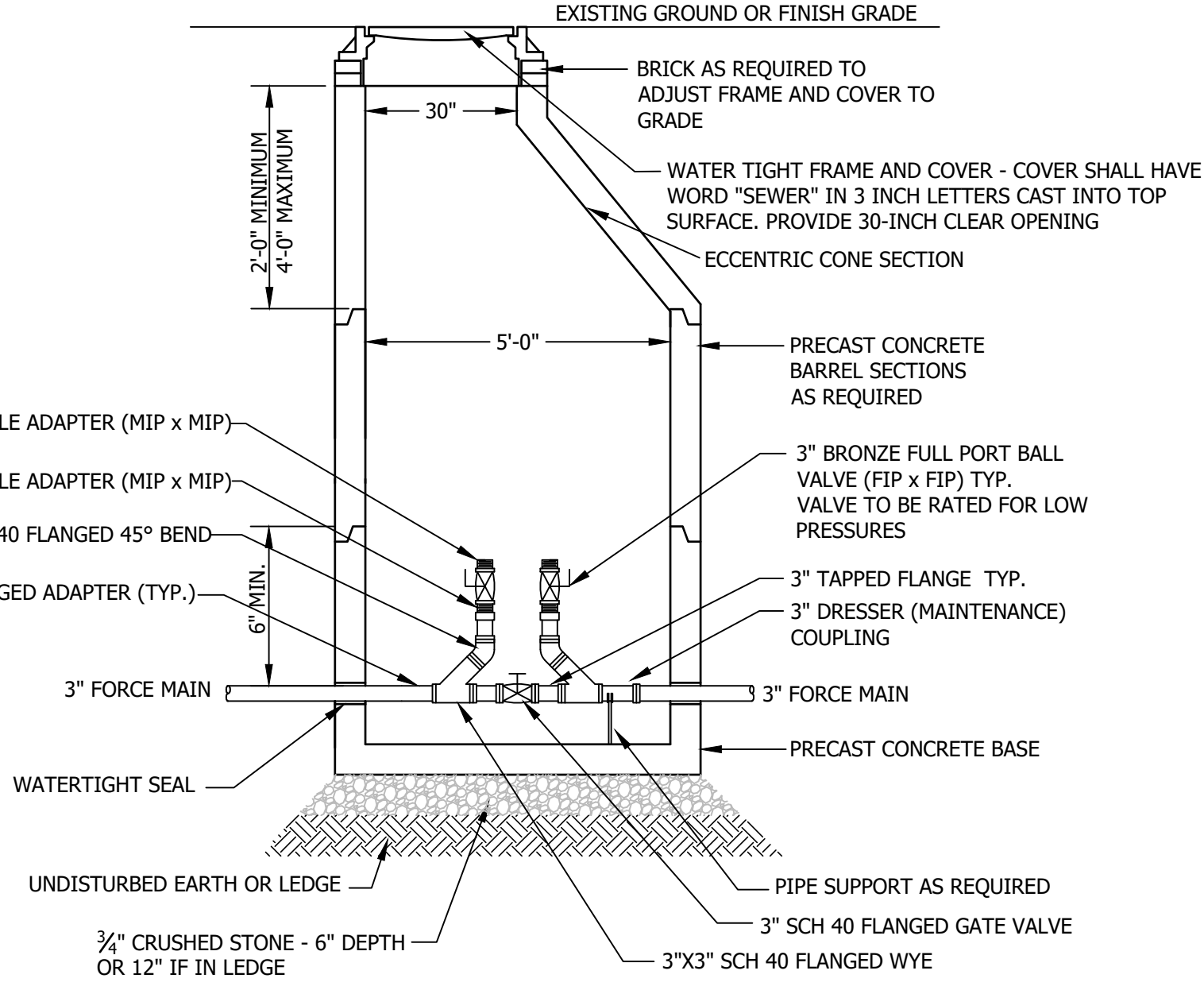
1. WORKING PRESSURE RATING = 200 PSI
2. 316 SS MATERIAL
3. 1-1/4\"/>

LATERAL ASSEMBLY DETAIL



2\"/>

NOT TO SCALE

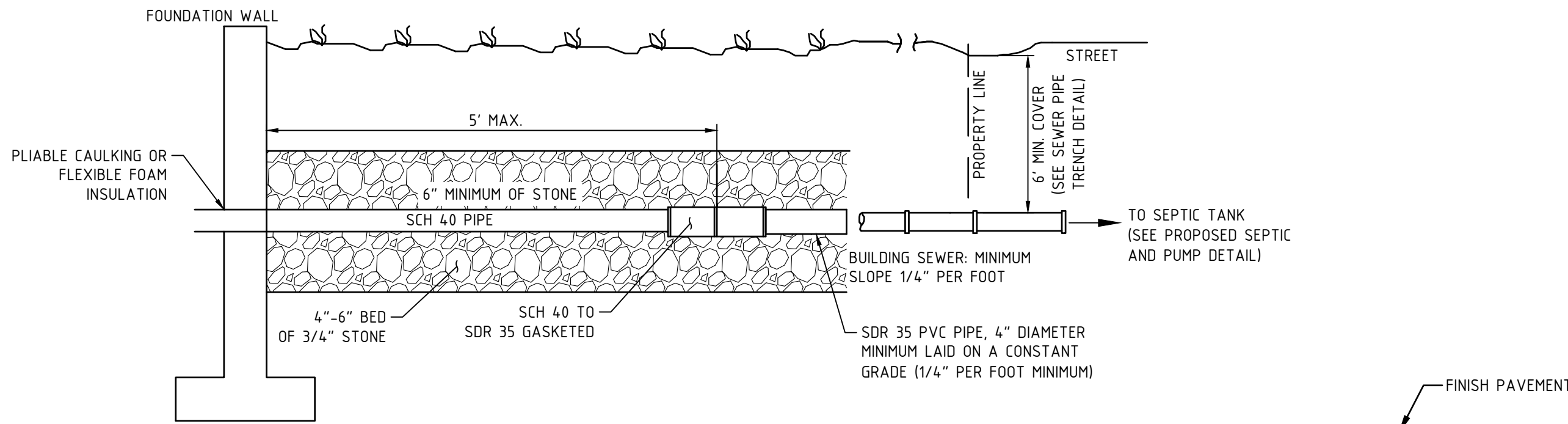


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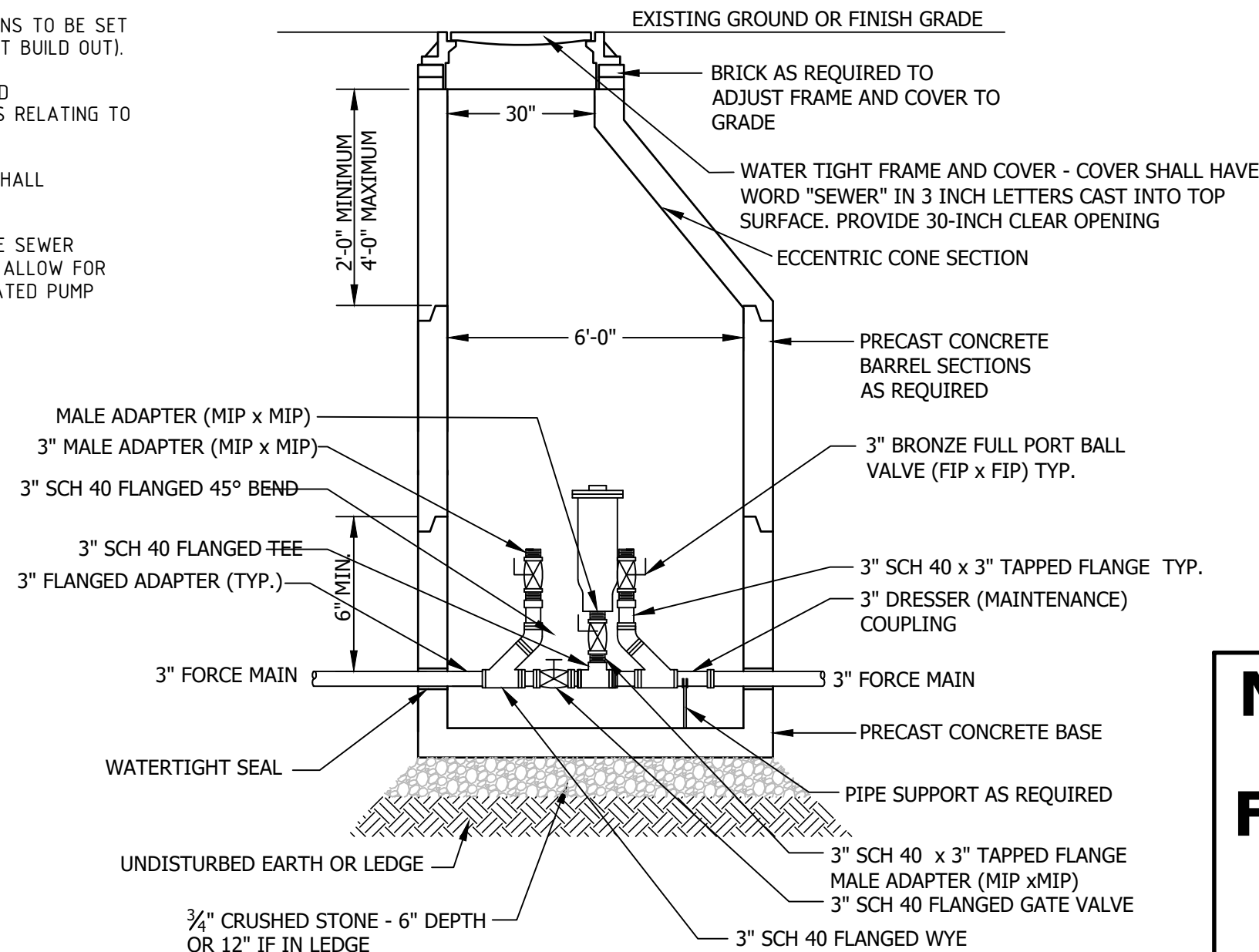
PUMP CHAMBER DESIGN SPECIFICATIONS

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. IN SUPPORT OF PURSUING WAIVER UNDER EVN-WQ 719 FOR USE OF STEP SYSTEM (EFFLUENT ONLY) ON THIS PROJECT, SEPTIC TANKS INSTALLED AND CONNECTED TO THE PRESSURE SEWER SHALL BE AS DEFINED, SIZED, AND MEET CRITERIA PROVIDED UNDER ALL SECTIONS OF ENV-WQ 1000 (UNLESS MORE STRINGENT REQUIREMENTS OR CRITERIA ARE INDICATED ELSEWHERE ON THE PLANS OR AS A CONDITION OF WAIVER). THIS INCLUDES BUT IS NOT LIMITED TO ENV-WQ 1002.63 (DEFINITION), ENV-WQ 1008.04 (MINIMUM DISTANCES), ENV-WQ 1008.06 (PROTECTIVE WELL RADI), ENV-WQ 1008.13 (EASEMENTS AND FLOWAGE EASEMENTS), ENV-WQ 1010.01 (LIQUID CAPACITY OF SEPTIC TANKS), ENV-WQ 1010.03 (WATER-TIGHTNESS OF SEPTIC TANKS), ENV-WQ 1010.05 (ACCESS TO INTERIOR OF SEPTIC TANK), ENV-WQ 1010.06 (SEPTIC TANK DESIGN REQUIREMENTS), ENV-WQ 1010.07 (INLET AND OUTLET BAFFLES), ENV-WQ 1010.08 (PIPE TO TANK CONNECTIONS), ENV-WQ 1010.09 (STORAGE ABOVE LIQUID LEVEL; SEPTIC TANK DIMENSIONS), ENV-WQ 1010.10 (LIQUID DEPTH), ENV-WQ 1010.11 (COMPARTMENTS), ENV-WQ 1023.01 (SEPTIC TANK INSPECTION AND PUMPING REQUIREMENTS), AND ENV-WQ 1023.06 (INDICATIONS OF POSSIBLE SEPTIC SYSTEM FAILURE REQUIRING INSPECTION).
2. THIS SEWER SYSTEM HAS BEEN DESIGNED USING THE ORENCO PROPACK EFFLUENT ONLY 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. CONTACT THE DESIGN ENGINEER FOR QUESTIONS RELATING TO THE DESIGN, OR PROPOSED CHANGES/DEVIATIONS FROM THESE PLANS.
6. ANY FUTURE CONNECTIONS TO THIS PROPOSED MAIN FROM EXISTING HOMES SHALL CONFORM TO THE DESIGN INTENT AND SPECIFICATIONS OF THIS PLAN SET.
7. ALL PROPOSED AND FUTURE PRIVATE SEWER CONNECTIONS TO THE PRESSURE SEWER SHALL HAVE BACK-UP POWER (OR AT LEAST HAVE A TRANSFER SWITCH TO ALLOW FOR CONNECTION TO AN EMERGENCY GENERATOR) FOR OPERATION OF THE ASSOCIATED PUMP SYSTEM IN THE EVENT OF EXTENDED POWER OUTAGE.



TYPICAL BUILDING TO LOW PRESSURE SEWER CONNECTION

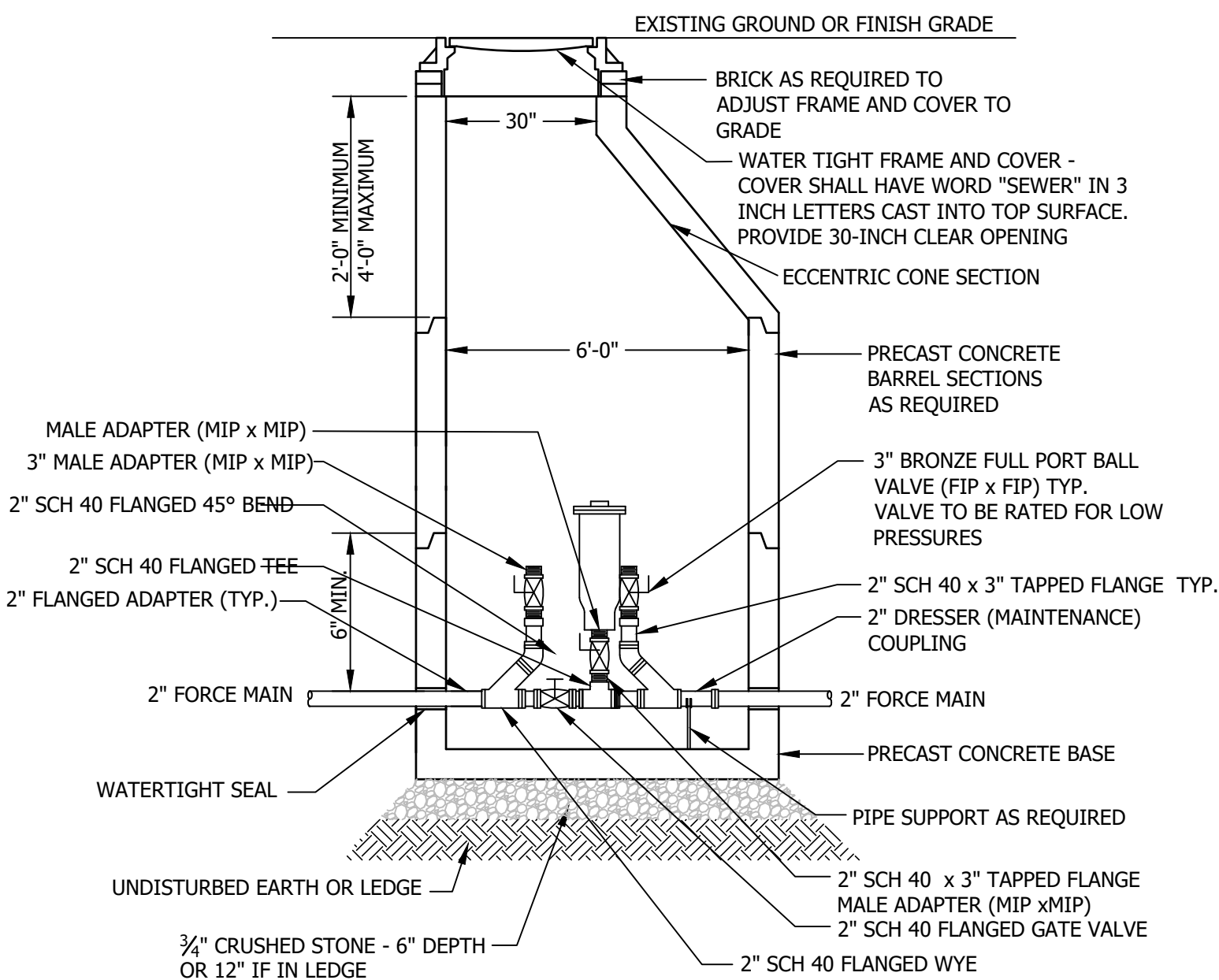
N.T.S.



DUAL CLEAN OUT

3\"/>

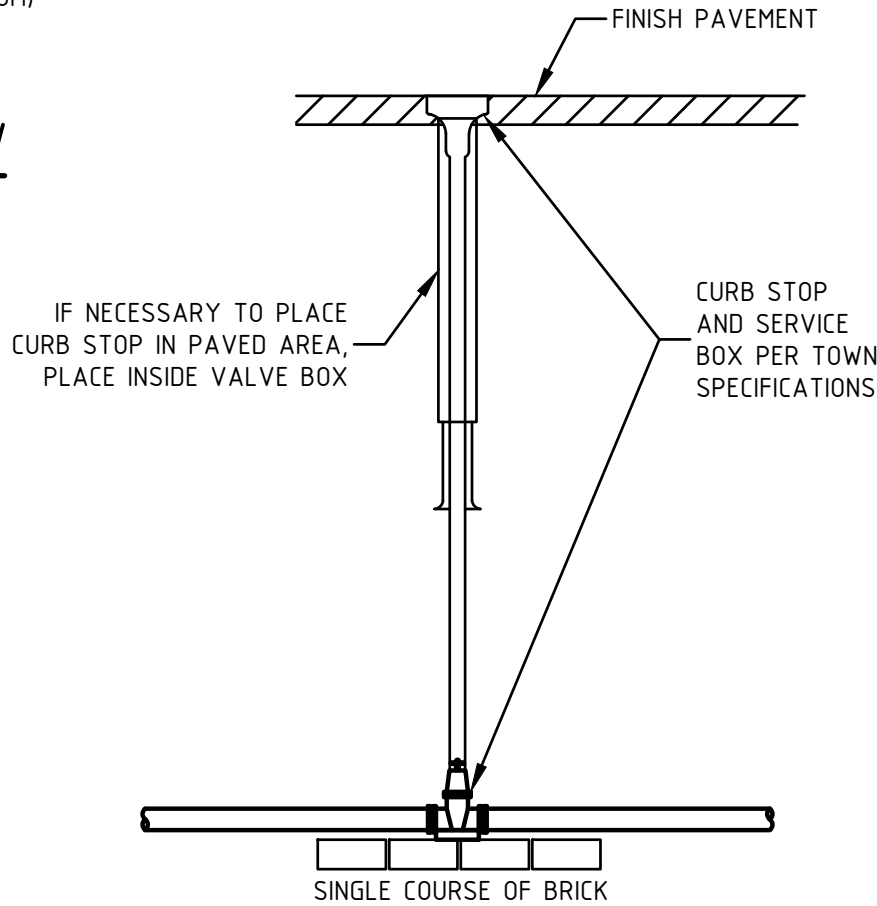
NOT TO SCALE



DUAL CLEAN OUT

2\"/>

NOT TO SCALE



CURB STOP IN PAVEMENT DETAIL

NOT TO SCALE

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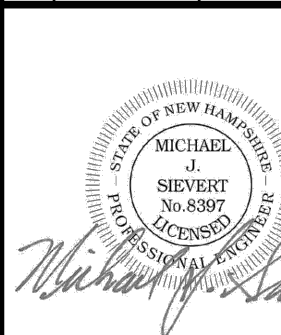
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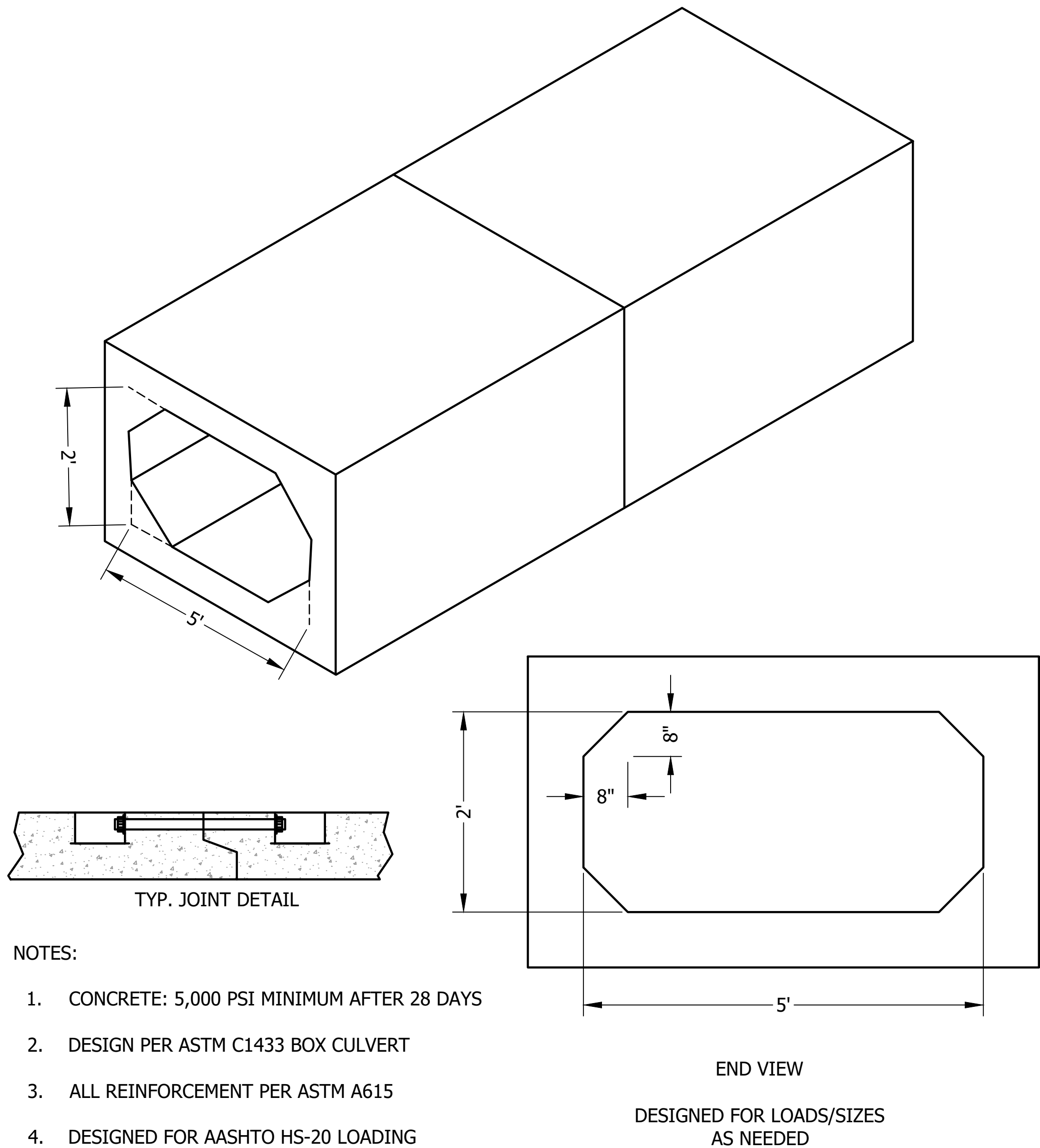


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| ENGINE'D BY:<br>MCS | DRAWN BY:<br>MCS      |
| CHECK'D BY:<br>MJS  | ARCHIVE #:<br>H-___   |

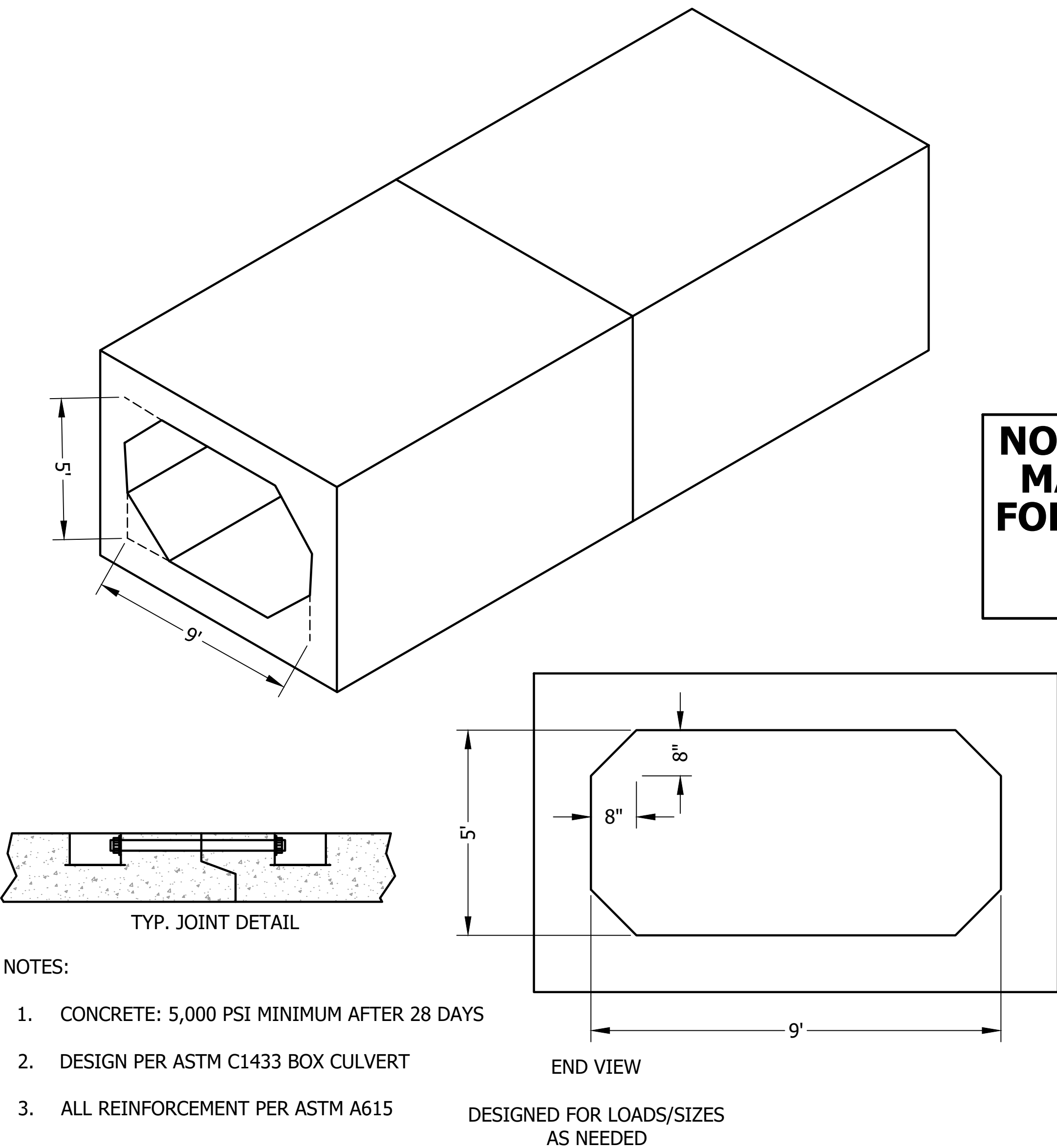
C506

NOVEMBER 13 2025  
HORIZONS ENGINEERING

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**SHEA CONCRETE BOX CULVERT FOR WETLAND**  
**CROSSING #1**  
NOT TO SCALE



**SHEA CONCRETE BOX CULVERT FOR WETLAND**  
**CROSSING #2**  
NOT TO SCALE

**NO LOTS OR DWELLING UNITS  
MAY BE SOLD OR CONVEYED  
FOR THIS SUBDIVISION UNTIL  
THE TOWN OF DURHAM  
RECORDS A RELEASE**

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



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 8-6

| NO. | DATE | REVISION DESCRIPTION | ENG |
|-----|------|----------------------|-----|
|     |      |                      |     |
|     |      |                      |     |
|     |      |                      |     |

|  |                     |                       |
|--|---------------------|-----------------------|
|  | DATE:<br>2020-11-04 | PROJECT #:<br>NM19063 |
|  | ENGINE'D BY:<br>MCS | DRAWN BY:<br>MCS      |
|  | CHECK'D BY:<br>MJS  | ARCHIVE #:<br>H-___   |
|  | C507                |                       |