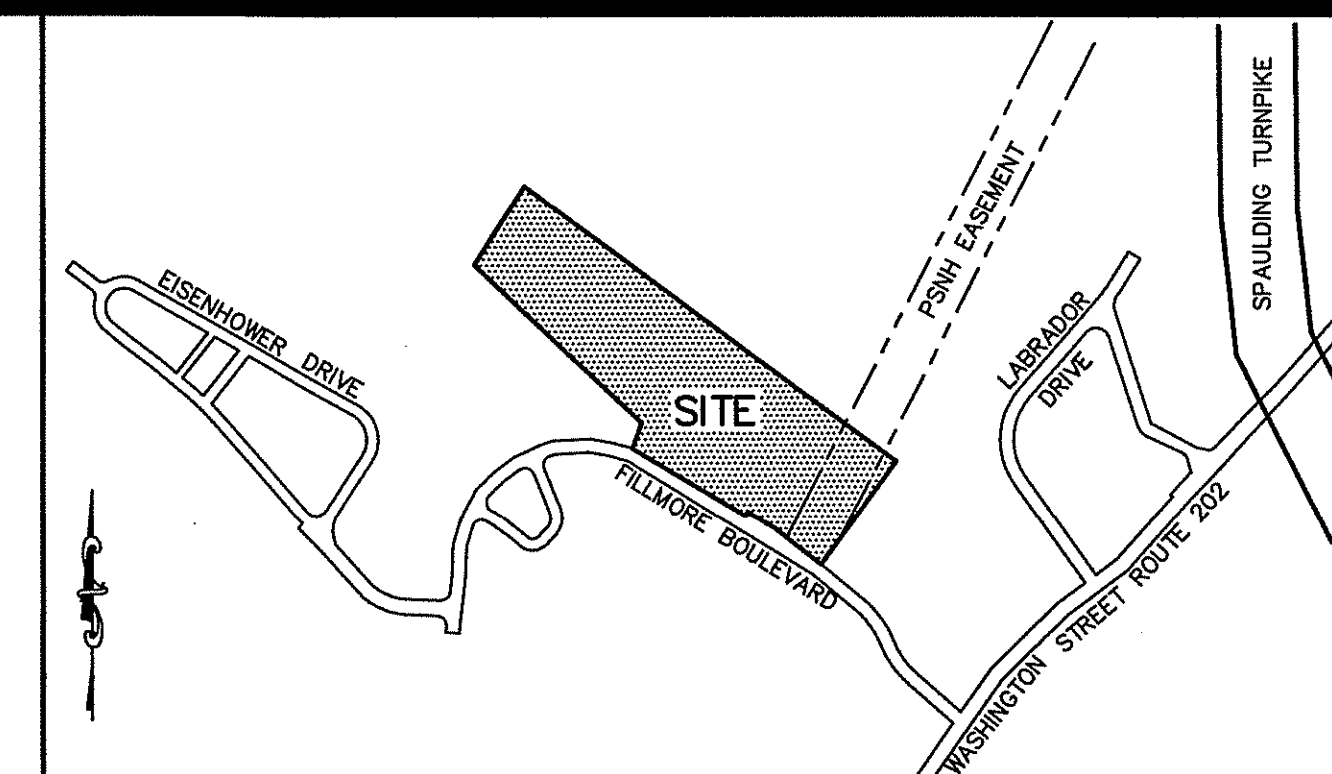


VICINITY PLAN  
NOT TO SCALE



VICINITY MAP  
SCALE: 1" = 800'±

# RESIDENTIAL SITE PLAN

## THE TOWNHOMES AT HIGHFIELD COMMONS – PHASE 2B

### MAP 237; LOT 8-1

### 59 FILLMORE BOULEVARD

### ROCHESTER, NEW HAMPSHIRE

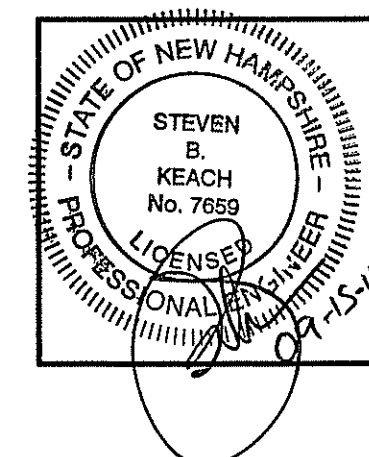
**OWNER/APPLICANT:**  
183 WASHINGTON STREET, LLC  
501 D.W. HIGHWAY, SUITE F  
MERRIMACK, NEW HAMPSHIRE 03054

**PROJECT MANAGER:**  
HILLSIDE DESIGN GROUP, LLC  
501 D.W. HIGHWAY, UNIT F  
MERRIMACK, NH 03054  
(603) 424-1132

**PREPARED BY: (CIVIL ENGINEER)**  
KEACH-NORDSTROM ASSOCIATES, INC.  
10 COMMERCE PARK NORTH, SUITE 3B  
BEDFORD, NEW HAMPSHIRE 03110  
(603) 627-2881

**PROJECT SURVEYOR:**  
JOSEPH M. WICHERT, LLS, INC.  
802 AMHERST STREET  
MANCHESTER, NH 03104-5427  
(603) 647-4282

**PROJECT ENVIRONMENTAL CONSULTANT:**  
STONE RIDGE ENVIRONMENTAL, LLC.  
229 PROSPECT MOUNTAIN ROAD  
ALTON, NH 03809  
(603) 776-5825



**KMA** KEACH-NORDSTROM ASSOCIATES, INC.  
Civil Engineering Land Surveying Landscape Architecture  
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

JUNE 9, 2014

LAST REVISED: SEPTEMBER 12, 2014

PROJECT NO. 12-1212-1

#### SHEET TITLE

#### SHEET No.

MASTER PLAN	1
EXISTING CONDITIONS PLAN	2
RESIDENTIAL SITE LAYOUT PLAN	3
GRADING AND DRAINAGE PLAN	4
EROSION CONTROL PLAN	5
UTILITY PLAN	6
LANDSCAPE PLAN	7
LIGHTING PLAN	8
ROADWAY & SEWER PROFILE (MONROE DRIVE)	9 – 10
DRAINAGE PROFILES	10
CONSTRUCTION DETAILS	11 – 17

APPROVED BY THE ROCHESTER PLANNING BOARD ON \_\_\_\_\_ DATE \_\_\_\_\_  
SIGNED BY \_\_\_\_\_ NAME \_\_\_\_\_ POSITION \_\_\_\_\_

MAP 237; LOT 7  
JONATHAN W. & HOLLY A. CLEMENT  
30 BICKFORD ROAD  
ROCHESTER, NH 03607-4288  
ZONED: R-1

VICINITY MAP  
SCALE: 1" = 800'±

MAP 130; LOT 43-1  
ROUTE 202, LLC.  
c/o JEAN M. KANE  
117 BOW STREET  
PORTSMOUTH, NH 03801  
ZONED: R-1

MAP 130; LOT 42  
PUBLIC SERVICE COMPANY OF  
NEW HAMPSHIRE  
c/o TAX ACCOUNTING  
PO BOX 3430  
MANCHESTER, NH 03105-3430  
ZONED: R-1

LEGEND

- STONE BOUND FOUND
- IRON ROD FOUND
- DRILL HOLE
- ABUTTER LINE
- PROPERTY LINE
- WETLAND
- TREELINE
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- STONEWALL
- EASEMENT
- PHASE LINE
- PROPOSED TREELINE
- PROPOSED EDGE OF PAVEMENT
- PROPOSED SLOPED GRANITE CURB
- PROPOSED GUARDRAIL
- PROPOSED EASEMENT LINE

MASTER PLAN  
THE TOWNHOMES AT  
HIGHFIELD COMMONS - PHASE 2B  
MAP 237; LOT 8-1  
59 FILLMORE BOULEVARD  
ROCHESTER, NEW HAMPSHIRE  
STRAFFORD COUNTY

OWNER OF RECORD:  
183 WASHINGTON STREET, LLC.  
501 D.W. HIGHWAY, SUITE F  
MERRIMACK, NH 03054

APPLICANT:  
183 WASHINGTON STREET, LLC.  
501 D.W. HIGHWAY, SUITE F  
MERRIMACK, NH 03054

**KNA** KEACH-NORDSTROM ASSOCIATES, INC.  
Civil Engineering Land Surveying Landscape Architecture

10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 827-2881

REVISIONS

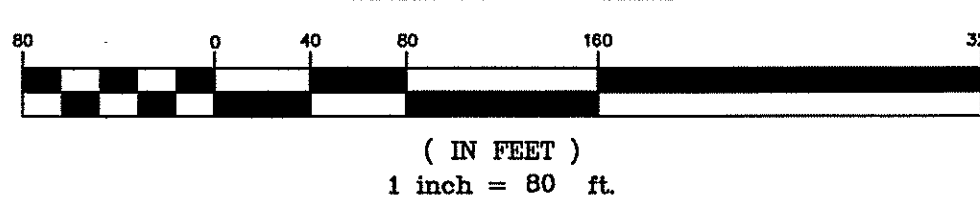
No.	DATE	DESCRIPTION	BY
1	6/25/14	DATE ONLY	BJC
2	8/22/14	DATE ONLY	BJC
3	9/12/14	PER TOWN COMMENTS	BJC

DATE: JUNE 9, 2014 SCALE: 1" = 80'  
PROJECT NO: 12-1212-1 SHEET 1 OF 17

NPDES NOTE

THIS PROJECT DISTURBS IN EXCESS OF 1-ACRE OF LAND, THEREFORE IT WILL BE REQUIRED TO OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGE AS ISSUED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THE OWNER/DEVELOPER AND "OPERATOR" (GENERAL CONTRACTOR) SHALL EACH BE REQUIRED TO PREPARE AND SUBMIT A NOTICE OF INTENT (NOI) TO THE EPA PRIOR TO THE START OF CONSTRUCTION AND SHALL BE RESPONSIBLE FOR THE PREPARATION AND IMPLEMENTATION OF A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) MEETING THE REQUIREMENTS OF THE CURRENT CONSTRUCTION GENERAL PERMIT.

GRAPHIC SCALE



NOTES (CONTINUED):

- PRIOR TO RELEASE OF SURETY AND INSPECTION FUNDS, AN AS-BUILT PLAN SHALL BE REVIEWED AND APPROVED BY THE CITY. AS-BUILT PLANS SHOULD INCLUDE THE FOLLOWING:
  - WATER AND SEWER MAIN LOCATIONS, SIZE, AND MATERIALS;
  - DRAINAGE PIPE LOCATION, SIZE, AND MATERIALS;
  - UTILITY CONNECTION POINTS AT BUILDINGS;
  - PROPERTY AND RIGHT-OF-WAY LINES;
  - EASEMENTS WITH BENEFICIARIES;
  - WETLANDS AND WETLAND BUFFERS;
  - SPOT ELEVATIONS;
  - PARKING SPACES WITH STRIPING, SIGN LOCATIONS, SIDEWALKS, AND BUILDINGS;
  - ROUGH OVERVIEW OF LANDSCAPING;
  - FOR ANY WORK WITHIN A CITY ROAD, RIGHT-OF-WAY, OR FUTURE RIGHT-OF-WAY, AS-BUILT PLANS SHALL INCLUDE ACCURATE SEWER AND DRAINAGE STRUCTURE RIMS AND INVERTS;
  - WATER CURB STOP LOCATIONS WITH SWING TIES FOR FUTURE REFERENCE; AND
  - SEWER CLEANOUTS WITH SWING TIES FOR FUTURE REFERENCE.
- THE FOLLOWING STATE PERMITS ARE REQUIRED FOR THIS PROJECT:

PHASE	TYPE	STATUS	PERMIT NO.	EXPIRATION
2A	NHDES AOT	APPROVED	AOT-0589	06/26/2018
2B	NHDES AOT	APPROVED	AOT-0799	09/09/2019
- IN ACCORDANCE WITH ENV-WQ 1503.21, THE OWNER SHALL COMPLETE AND FILE AN NHDES START OF CONSTRUCTION FORM. SIMILARLY, THE OWNER WILL ALSO FILE ADDITIONAL REQUIRED NHDES STANDARD PROJECT DOCUMENTATION.
- FOR MORE INFORMATION ABOUT THIS SUBDIVISION, OR TO SEE A COMPLETE PLAN SET, CONTACT THE CITY OF ROCHESTER PLANNING DEPARTMENT, 31 WAKEFIELD STREET, ROCHESTER, NH 03607, (603) 335-1338.

REFERENCE PLANS:

- "REVISED SUBDIVISION PLAN OF HIGHFIELD COMMONS - PHASE 1, OWNED BY 183 WASHINGTON STREET, LLC, TAX MAP 237 LOTS 8 & 3, WASHINGTON STREET (ROUTE 202), HUSSEY HILL ROAD AND BICKFORD ROAD, ROCHESTER, NEW HAMPSHIRE", DATED JUNE 30, 2010, LAST REVISED 9/30/10, PREPARED BY JOSEPH M. WICHERT, LLS, INC. SEE SCRD PLANS 100-58 THROUGH 100-64.
- "RESIDENTIAL SITE PLAN, HIGHFIELD PLACE, MAP 237; LOT 8-1; 59 FILLMORE BOULEVARD, ROCHESTER, NEW HAMPSHIRE, STRAFFORD COUNTY," DATED: FEBRUARY 18, 2013, WITH REVISIONS THROUGH 06/27/13, PREPARED BY KEACH-NORDSTROM ASSOCIATES, INC. (20 SHEETS)

NOTES:

- THE PURPOSE OF THIS PLAN IS TO ILLUSTRATE THE MASTER SITE PLAN LAYOUT OF THE TWO-STORY TOWNHOMES AT HIGHFIELD COMMONS. THIS PROJECT WILL BE CONSTRUCTED IN THREE (3) SEPARATE PHASES (PHASE 2A, 2B, AND 2C). THIS PLAN SET CONTAINS DESIGN INFORMATION FOR PHASE 2B ONLY.
- REFERENCE THE SUBJECT PARCEL AS CITY OF ROCHESTER, NEW HAMPSHIRE TAX ASSESSOR'S MAP 237; LOT 8-1.
- TOTAL SITE AREA: 954,141± SF, 21.904± ACRES
- PRESENT OWNER OF RECORD:  
183 WASHINGTON STREET, LLC.  
501 D.W. HIGHWAY, SUITE F  
MERRIMACK, NH 03054
- THE SUBJECT PARCEL IS LOCATED WITHIN THE RESIDENCE 1 ZONING DISTRICT (R-1) AND THE PLANNED UNIT DEVELOPMENT-2 (PUD-2) OVERLAY DISTRICT. THE PROPERTY IS SUBJECT TO THE FOLLOWING PUD STANDARDS OF DEVELOPMENT:

PERCENT MINIMUM OPEN SPACE	REQUIRED
PERCENT PUD SITE COVERAGE	20%
MAXIMUM DENSITY	50%
MAXIMUM BUILDING HEIGHT	6 UNITS/ACRE
	4 STORIES
- BOUNDARY INFORMATION SHOWN HEREON IS BASED UPON AN ACTUAL FIELD SURVEY PERFORMED BY JOSEPH M. WICHERT LLS, INC. BETWEEN 2003 AND FEBRUARY 2013. THE COORDINATE SYSTEM AND BEARINGS ARE BASED ON A TIE INTO THE CITY OF ROCHESTER GIS SYSTEM, USING GPS OBSERVATION PERFORMED BY JOSEPH M. WICHERT LLS, INC.
- TOPOGRAPHIC INFORMATION IS TAKEN FROM AN AERIAL SURVEY PREPARED BY SANBORN MAP CO., INC. ON MAY 5, 2002 AND FIELD SURVEY PERFORMED BY JOSEPH M. WICHERT LLS, INC. IN JANUARY AND FEBRUARY OF 2013.
- THE WETLANDS WERE ORIGINALLY DELINEATED IN JUNE 2002 AND AGAIN IN DECEMBER 2003 BY MICHAEL SERAIKAS, CWS #9. SOME OF THE WETLANDS WERE RE-FLAGGED BY CINDY BALCIUS, CWS #61 OF STONEY RIDGE ENVIRONMENTAL, LLC. IN 2013 AND FIELD LOCATED BY JOSEPH M. WICHERT LLS, INC.
- EXAMINATION OF THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) FOR THE CITY OF ROCHESTER, NEW HAMPSHIRE, STRAFFORD COUNTY, MAP NUMBER 33017C0195D, PANEL NUMBER 195 OF 405, EFFECTIVE DATE: MAY 17, 2005, INDICATES THAT THE SUBJECT PARCEL IS LOCATED WITHIN ZONE X.
- THE LOCATION OF ANY UNDERGROUND UTILITY INFORMATION SHOWN ON THIS PLAN IS APPROXIMATE. KEACH-NORDSTROM ASSOCIATES, INC. MAKES NO CLAIM TO THE ACCURACY OR COMPLETENESS OF UTILITIES SHOWN. PRIOR TO ANY EXCAVATION ON SITE THE CONTRACTOR SHALL CONTACT DIG SAFE AT 811.
- EXISTING UTILITY INFORMATION IS APPROXIMATE AND SHOULD BE VERIFIED BY THE SITE CONTRACTOR BEFORE ANY STRUCTURES OR PIPES ARE ORDERED.
- LOT IS SERVICED BY MUNICIPAL SEWER AND WATER UTILITIES.
- PARKING CALCULATIONS:

REQUIRED:	2 SPACES/UNIT = 32 UNITS x 2 = 64 SPACES REQUIRED
PROPOSED:	2 SPACES/UNIT (1 GARAGE SPACE + 1 STACKED SPACE) + 27 VISITOR SPACES
	= 91 SPACES PROVIDED (INCLUDES 2 HANDICAP SPACES)
- ALL WORK TO BE DONE IN CONFORMANCE WITH THE CITY OF ROCHESTER REGULATIONS. ALL ROAD, STRUCTURES, AND DRAINAGE TO MEET CITY OF ROCHESTER SPECIFICATIONS.
- FLOWED SNOW FROM THE FACILITIES, DRIVEWAY, PARKING LOTS, AND SIDEWALK SHALL BE STORED IN THE DESIGNATED AREAS SHOWN IN THIS PLAN SET. WHEN THE SNOW STORAGE AREAS ARE AT CAPACITY, SUBSEQUENT SNOW SHALL BE HAULED OFF-SITE AND DISPOSED OF IN AN ENVIRONMENTALLY SOUND FASHION IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS.
- SEE ARCHITECTURAL PLANS FOR WALKWAYS AND OTHER FEATURES AT THE BUILDINGS. CONTRACTOR TO PERFORM THIS WORK AS DIRECTED BY THE OWNER.
- IT IS THE RESPONSIBILITY OF THE CONDOMINIUM ASSOCIATION TO FLUSH AND MAINTAIN THE WATER SYSTEM SERVING THE DEVELOPMENT.
- MONUMENTATION SHALL BE PROVIDED IN ACCORDANCE WITH RSR 6.1.
- SURETIES AND INSPECTION FEES SHALL BE ESTABLISHED AS OUTLINED IN RSR 6.7.
- CONTRACTORS AND SUBCONTRACTORS SHALL MAINTAIN THE SITE IN ACCORDANCE WITH THE NPDES CONSTRUCTION GENERAL PERMIT AND ASSOCIATED SWPPP THROUGHOUT THE DURATION OF CONSTRUCTION (PREPARED BY OTHERS).
- MONROE DRIVE IS SPECIFICALLY DESIGNED AND INTENDED TO BE A PRIVATE ROAD.

MAP 237; LOT 8  
SDJ DEVELOPMENT OF ROCHESTER, LLC.  
c/o CHESAPEAKE DEVELOPMENT, LLC.  
501 DW HIGHWAY  
MERRIMACK, NH 03054  
ZONED: PUD-2

MAP 237-A; LOT 3-137  
SDJ DEVELOPMENT OF ROCHESTER, LLC.  
c/o CHESAPEAKE DEVELOPMENT, LLC.  
501 DW HIGHWAY  
MERRIMACK, NH 03054  
ZONED: PUD-2

MAP 237-A; LOT 3-142  
SDJ DEVELOPMENT OF ROCHESTER, LLC.  
c/o CHESAPEAKE DEVELOPMENT, LLC.  
501 DW HIGHWAY  
MERRIMACK, NH 03054  
ZONED: PUD-2

MAP 237-A; LOT 3-141  
SDJ DEVELOPMENT OF ROCHESTER, LLC.  
c/o CHESAPEAKE DEVELOPMENT, LLC.  
501 DW HIGHWAY  
MERRIMACK, NH 03054  
ZONED: PUD-2

MAP 237-A; LOT 3-140  
SDJ DEVELOPMENT OF ROCHESTER, LLC.  
c/o CHESAPEAKE DEVELOPMENT, LLC.  
501 DW HIGHWAY  
MERRIMACK, NH 03054  
ZONED: PUD-2

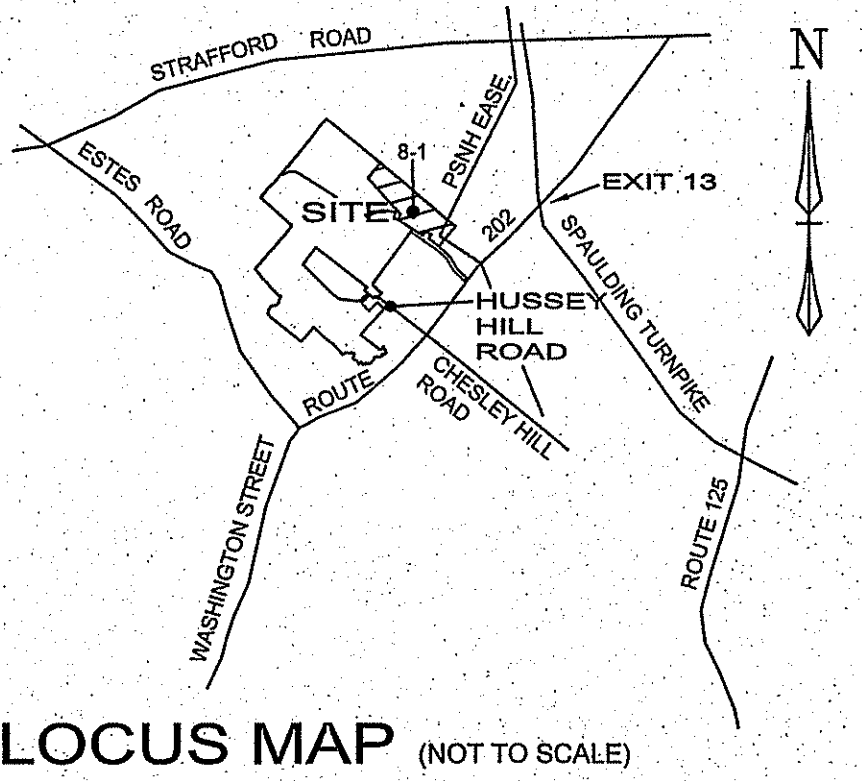
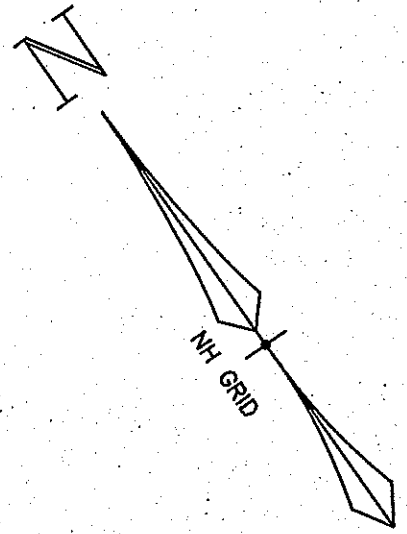
MAP 237; LOT 5  
JOSEPH J. MCGLORE, III &  
ANGELES GETTING DIAZ  
183 WASHINGTON STREET  
ROCHESTER, NH 03609-5508  
ZONED: R-1

MAP 237; LOT 6  
STATE OF NEW HAMPSHIRE  
JOHN MORTON BUILDING  
PO BOX 483  
CONCORD, NH 03302  
ZONED: R-1

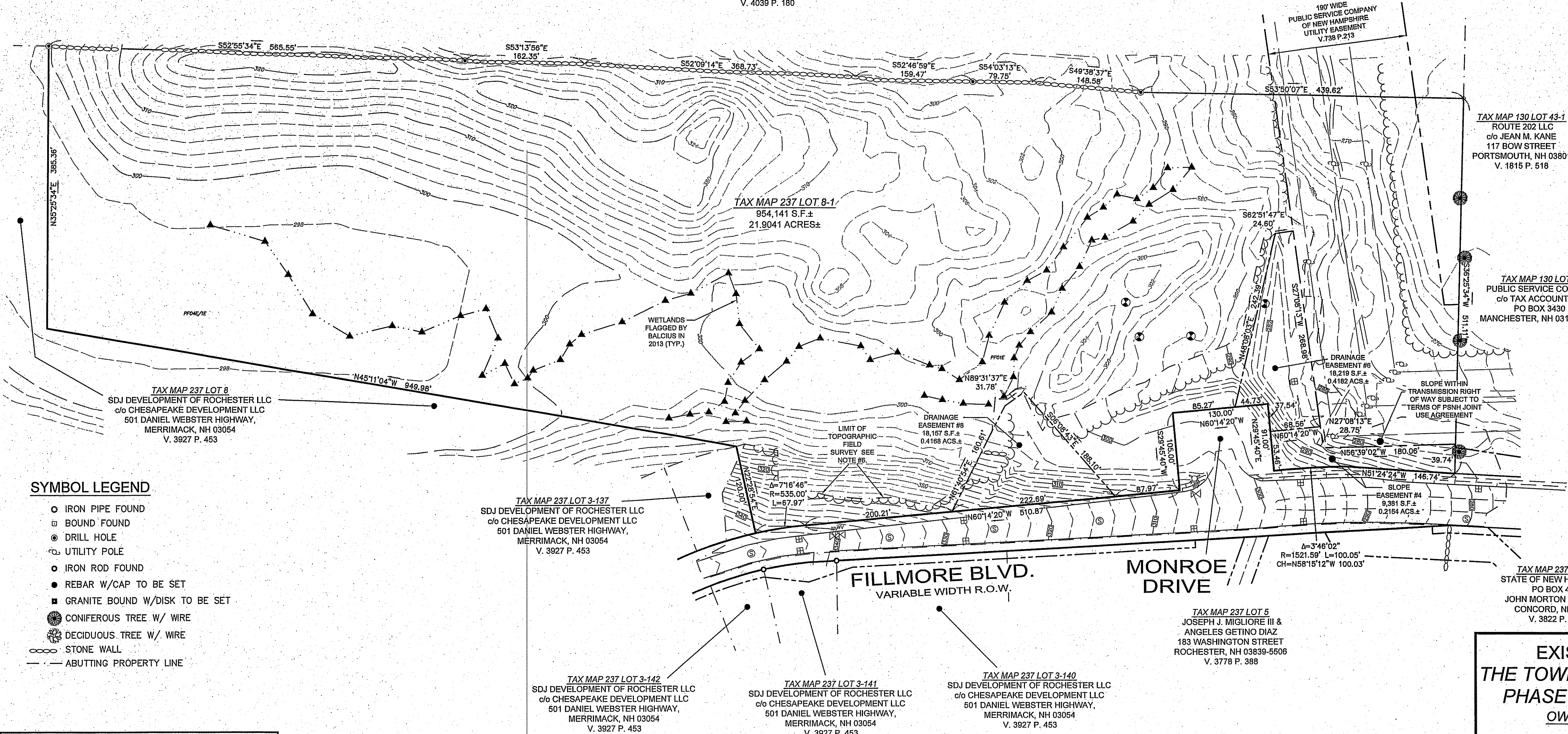


PLAN REFERENCES:

1.) "REVISED SUBDIVISION PLAN OF HIGHFIELD COMMONS - PHASE 1, OWNED BY 183 WASHINGTON STREET, LLC, TAX MAP 237 LOTS 8 & 3, WASHINGTON STREET (ROUTE 202), HUSSEY HILL ROAD AND BICKFORD ROAD, ROCHESTER, NEW HAMPSHIRE", DATED JUNE 30, 2010, LAST REVISE 9/30/10, PREPARED BY THIS OFFICE. SEE SCRD PLANS 100-58 THROUGH 100-64.



TAX MAP 237 LOT 7  
JONATHAN W. & HOLLY A. CLEMENT  
30 BICKFORD ROAD  
ROCHESTER, NH 03867-4288  
V. 4039 P. 180



SYMBOL LEGEND

- IRON PIPE FOUND
- BOUND FOUND
- DRILL HOLE
- UTILITY POLE
- IRON ROD FOUND
- REBAR W/CAP TO BE SET
- GRANITE BOUND W/DISK TO BE SET
- CONIFEROUS TREE W/ WIRE
- DECIDUOUS TREE W/ WIRE
- STONE WALL
- ABUTTING PROPERTY LINE

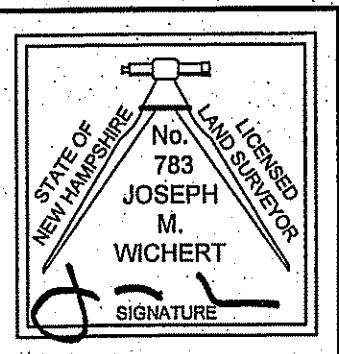
I CERTIFY THAT THIS PLAN IS THE RESULT OF AN ACTUAL FIELD SURVEY MADE WITH A TOPCON GPT 3103W. THE ERROR OF CLOSURE ON ALL LOT LINES WITHIN AND BORDERING THE SUBJECT PROPERTY IS BETTER THAN 1 IN 10,000.

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

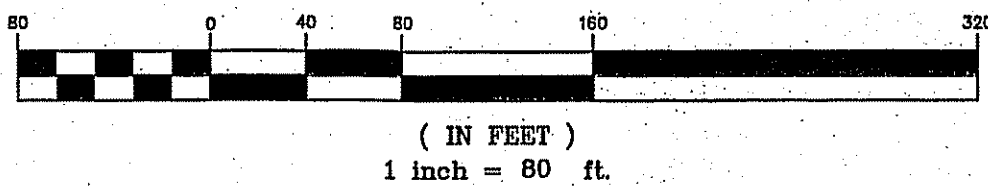
I HEREBY CERTIFY THAT A COPY OF THIS PLAN HAS BEEN FILED WITH THE ROCHESTER PLANNING BOARD IN ACCORDANCE WITH RSA 676:18(V).

12 SEPT. 2014

DATE



GRAPHIC SCALE



COPYRIGHT 2014 JOSEPH M. WICHERT, L.L.S., INC.

NO.	DATE	DESCRIPTION	BY
3	9/12/14	REVISE PROJECT NAME	JMW
2	6/27/13	REVISE PROJECT NAME	SNK
1	3/29/13	UPDATE DETAIL	SNK

EXISTING CONDITIONS PLAN FOR  
THE TOWNHOMES AT HIGHFIELD COMMONS  
PHASE 2 MULTI-FAMILY DEVELOPMENT

OWNED BY 183 WASHINGTON STREET, LLC

TAX MAP 237 LOTS 8-1

59 FILLMORE BOULEVARD  
ROCHESTER, NEW HAMPSHIRE

DATE: FEBRUARY 22, 2013

SCALE: 1" = 80'

SURVEY PLAN BY:

802 AMHERST STREET  
MANCHESTER, NH 03104  
TEL: (603) 647-4282 OR 736-8203  
FAX: (603) 623-1910  
WEB: WWW.JMWLLS.COM

Joseph M. Wichert  
L.L.S./INC.

LAND SURVEYOR & SEPTIC SYSTEM DESIGNER

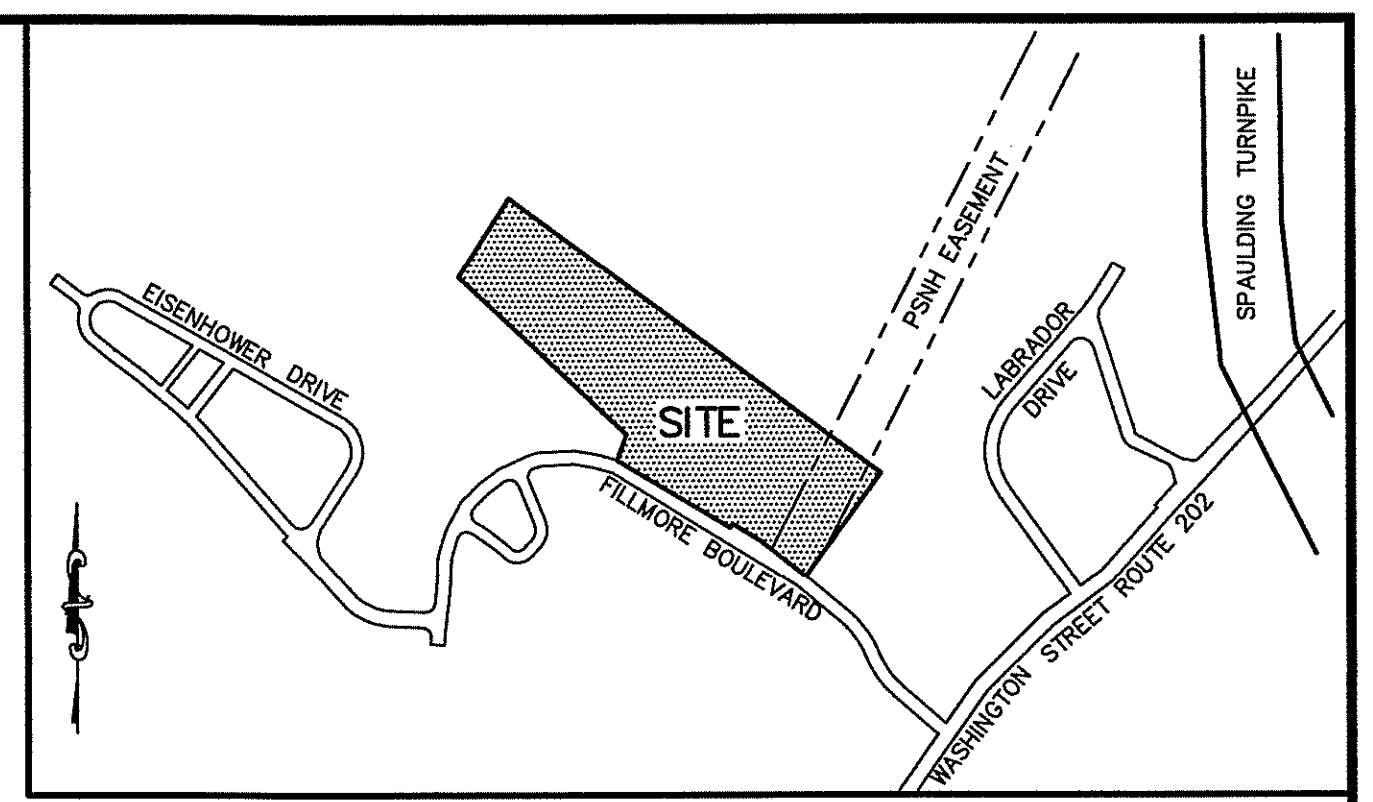
SHEET S1 SHEET 1 OF 1

F.B. P. JOB #2003150



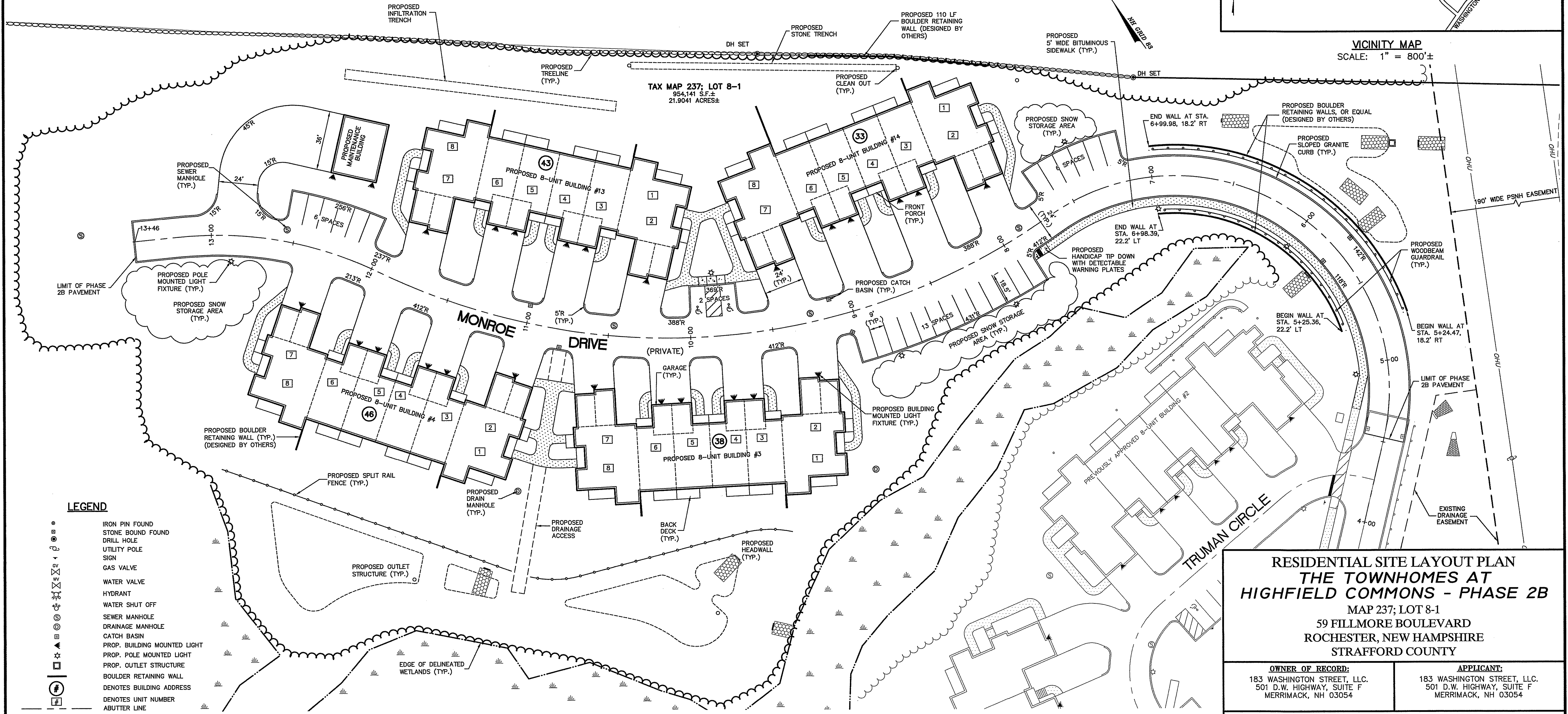
SEE SHEET 1 FOR NOTES

MAP 237; LOT 7  
JONATHAN W. & HOLLY A. CLEMENT  
30 BICKFORD ROAD  
ROCHESTER, NH 03607-4288  
ZONED: R-1



VICINITY MAP  
SCALE: 1" = 800'±

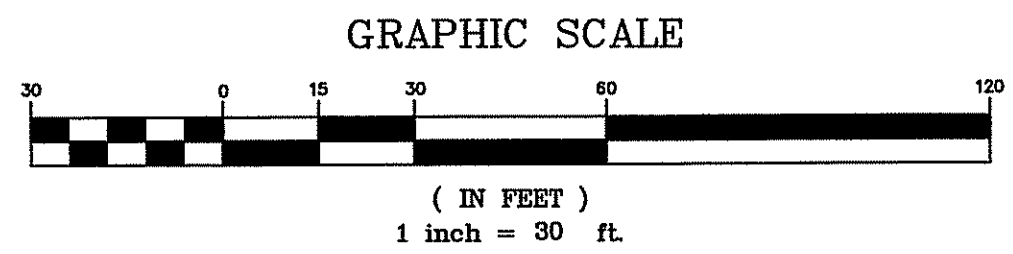
TAX MAP 237; LOT 8-1  
954,141 S.F.±  
21.9041 ACRES±



LEGEND

- IRON PIN FOUND
- STONE BOUND FOUND
- DRILL HOLE
- UTILITY POLE
- SIGN
- GAS VALVE
- WATER VALVE
- HYDRANT
- WATER SHUT OFF
- SEWER MANHOLE
- DRAINAGE MANHOLE
- CATCH BASIN
- PROP. BUILDING MOUNTED LIGHT
- PROP. POLE MOUNTED LIGHT
- PROP. OUTLET STRUCTURE
- BOULDER RETAINING WALL
- DENOTES BUILDING ADDRESS
- DENOTES UNIT NUMBER
- ABUTTER LINE
- PROPERTY LINE
- WETLAND
- OVERHEAD UTILITIES
- TREELINE
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- STONEWALL
- EASEMENT
- PROPOSED GUARDRAIL
- PROPOSED SPLIT RAIL FENCE
- PROPOSED EDGE OF PAVEMENT
- PROPOSED SLOPED GRANITE CURB
- PROPOSED TREELINE
- PROPOSED EASEMENT LINE

APPROVED BY THE ROCHESTER PLANNING BOARD ON \_\_\_\_\_ DATE \_\_\_\_\_  
SIGNED BY \_\_\_\_\_ NAME \_\_\_\_\_ POSITION \_\_\_\_\_



RESIDENTIAL SITE LAYOUT PLAN  
THE TOWNHOMES AT  
HIGHFIELD COMMONS - PHASE 2B  
MAP 237; LOT 8-1  
59 FILLMORE BOULEVARD  
ROCHESTER, NEW HAMPSHIRE  
STRAFFORD COUNTY

OWNER OF RECORD:  
183 WASHINGTON STREET, LLC.  
501 D.W. HIGHWAY, SUITE F  
MERRIMACK, NH 03054

APPLICANT:  
183 WASHINGTON STREET, LLC.  
501 D.W. HIGHWAY, SUITE F  
MERRIMACK, NH 03054

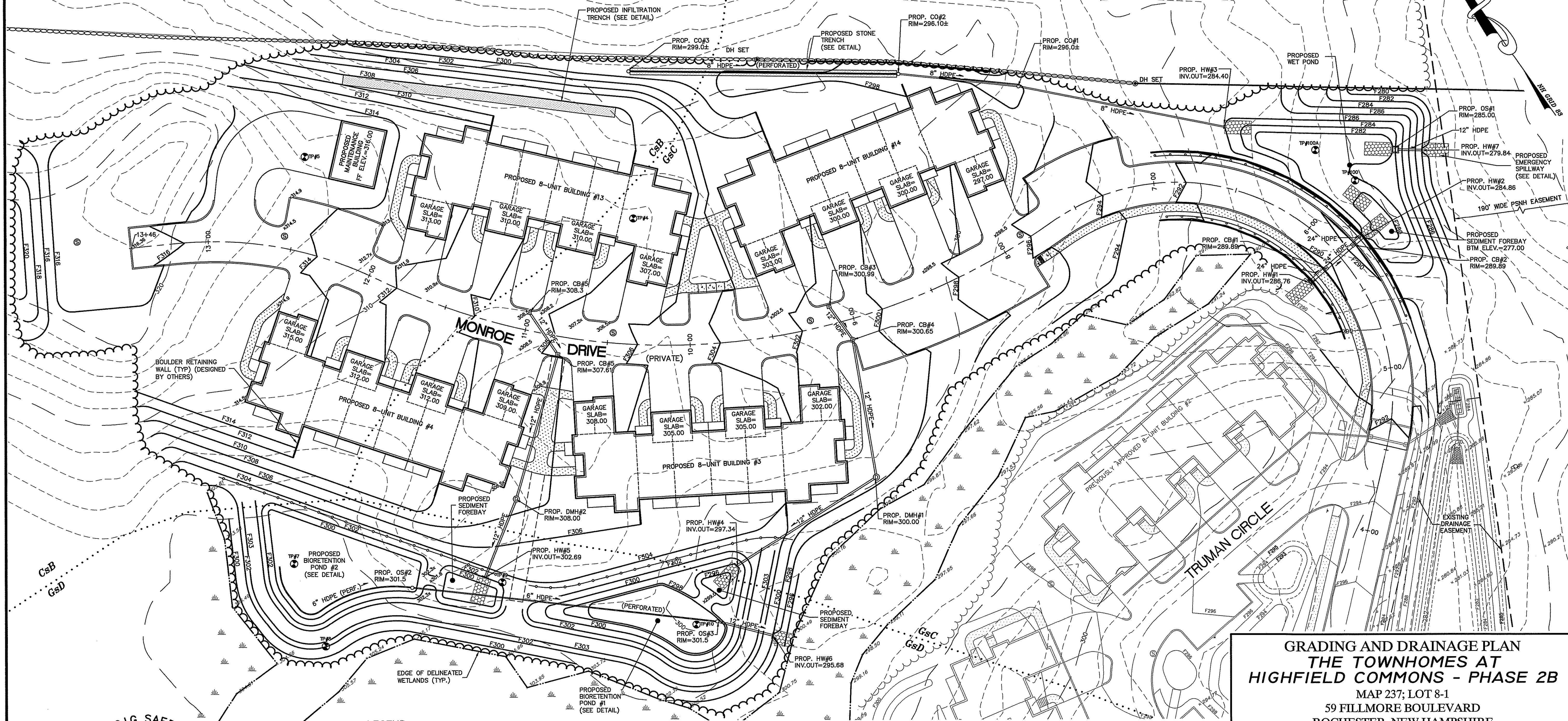
**KMA** KEACH-NORDSTROM ASSOCIATES, INC.  
Civil Engineering Land Surveying Landscape Architecture  
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

REVISIONS			
No.	DATE	DESCRIPTION	BY
1	6/25/14	FOR NHDES SUBMITTAL	BUC
2	8/22/14	PER NHDES COMMENTS	BUC
3	9/12/14	PER TOWN COMMENTS	BUC
DATE: JUNE 9, 2014			
PROJECT NO: 12-1212-1			
SCALE: 1" = 30'			
SHEET 3 OF 17			



MAP 237; LOT 7

LOAM & SEED ALL  
DISTURBED AREAS (TYP.)



#### NPDES NOTE

THIS PROJECT DISTURBS IN EXCESS OF 1-ACRE OF LAND, THEREFORE IT WILL BE REQUIRED TO OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGE AS ISSUED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THE OWNER/DEVELOPER AND "OPERATOR" (GENERAL CONTRACTOR) SHALL EACH BE REQUIRED TO PREPARE AND SUBMIT A NOTICE OF INTENT (NOI) TO THE EPA PRIOR TO THE START OF CONSTRUCTION AND SHALL BE RESPONSIBLE FOR THE PREPARATION AND IMPLEMENTATION OF A STORM WATER POLLUTION PREVENTION PLAN (SWPPP) MEETING THE REQUIREMENTS OF THE CURRENT CONSTRUCTION GENERAL PERMIT.

#### LEGEND

STONE BOUND FOUND	ABUTTER LINE
IRON PIN FOUND	PROPERTY LINE
DRILL HOLE	WETLAND
UTILITY POLE	DRAINAGE LINE
SIGN	TREELINE
GAS VALVE	EDGE OF PAVEMENT
WATER VALVE	EDGE OF GRAVEL
HYDRANT	10' CONTOUR
WATER SHUT OFF	2' CONTOUR
SEWER MANHOLE	STONEWALL
DRAINAGE MANHOLE	SCS SOIL LINE
CATCH BASIN	EASEMENT
TEST PIT	PROPOSED GUARDRAIL
PROPOSED OUTLET STRUCTURE	PROPOSED SPLIT RAIL FENCE
BOULDER RETAINING WALL	PROPOSED EDGE OF PAVEMENT
	PROPOSED SLOPED GRANITE CURB
	PROPOSED TREELINE
	PROPOSED DRAINAGE LINE
	PROPOSED DRAINAGE LINE
	PROPOSED 2' CONTOUR

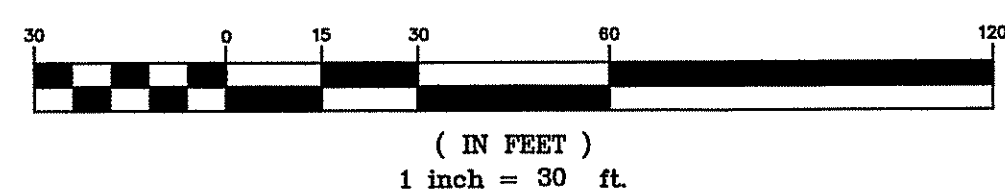
#### CONSTRUCTION NOTES:

- ALL WORK SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE CITY OF ROCHESTER, AND SHALL BE BUILT IN A WORKMANLIKE MANNER IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION, APPROVED AND ADOPTED 2010 ARE HEREBY INCORPORATED BY REFERENCE.
- ROAD AND DRAINAGE CONSTRUCTION SHALL CONFORM TO THE TYPICAL SECTIONS AND DETAILS SHOWN ON THE PLANS, AND SHALL MEET THE REQUIREMENTS AND SPECIFICATIONS FOR ROAD CONSTRUCTION, PUBLIC WORKS DEPARTMENT, ROCHESTER, NEW HAMPSHIRE.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION, AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG SAFE" AT 811 AT LEAST 72 HOURS BEFORE DIGGING.
- ALL DRAINAGE PIPE SHALL BE INSTALLED FOLLOWING MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- TOP SOIL SHALL BE STRIPPED FROM ALL CUT AND FILL AREAS, STOCKPILED, AND REDISTRIBUTED OVER GRADED AREAS. PROVIDE EROSION AND SEDIMENTATION CONTROLS AROUND STOCKPILES DURING CONSTRUCTION.
- TILL SOIL TO A DEPTH OF 4" MINIMUM AND REMOVE ALL ROCKS LARGER THAN 1" MEASURED IN LARGEST DIRECTION.
- GRADE ALL AREAS TO MAINTAIN POSITIVE SLOPE AWAY FROM BUILDING.
- ALL GRADED AREAS TO RECEIVE SEED OR SOD, TOP SOIL, STRAW, AND WATER UNTIL A HEALTHY STAND OF GRASS IS OBTAINED.
- SEE ARCHITECTURAL DRAWINGS FOR SPECIFIC GRADING AND DRAINAGE REQUIREMENTS AT THE BUILDING, WALKWAYS, AND ENTRANCES. INSTALL STEPS, LANDINGS, RAILINGS, AND OTHER FEATURES PER APPLICABLE CODES.
- ALL CATCH BASINS SHALL HAVE A 4'-0" SUMP.

#### SCS SOIL MAP LEGEND

CsB	CHARLTON VERY STONY FINE SANDY LOAM, 3 TO 8% SLOPES
CsC	CHARLTON VERY STONY FINE SANDY LOAM, 8 TO 15% SLOPES
GsC	GLOUCESTER VERY STONY FINE SANDY LOAM, 8 TO 15% SLOPES
GsD	GLOUCESTER VERY STONY FINE SANDY LOAM, 15 TO 25% SLOPES

#### GRAPHIC SCALE



### GRADING AND DRAINAGE PLAN THE TOWNHOMES AT HIGHFIELD COMMONS - PHASE 2B

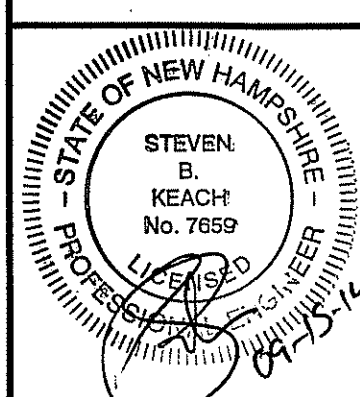
MAP 237; LOT 8-1  
59 FILLMORE BOULEVARD  
ROCHESTER, NEW HAMPSHIRE  
STRAFFORD COUNTY

**OWNER OF RECORD:**  
183 WASHINGTON STREET, LLC.  
501 D.W. HIGHWAY, SUITE F  
MERRIMACK, NH 03054

**APPLICANT:**  
183 WASHINGTON STREET, LLC.  
501 D.W. HIGHWAY, SUITE F  
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**K&A** KEACH-NORDSTROM ASSOCIATES, INC.  
Civil Engineering Land Surveying Landscape Architecture

10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 827-2881



#### REVISIONS

No.	DATE	DESCRIPTION	BY
1	6/25/14	FOR NHDES SUBMITTAL	BUC
2	8/22/14	PER NHDES COMMENTS	BUC
3	9/12/14	PER TOWN COMMENTS	BUC

DATE: JUNE 9, 2014

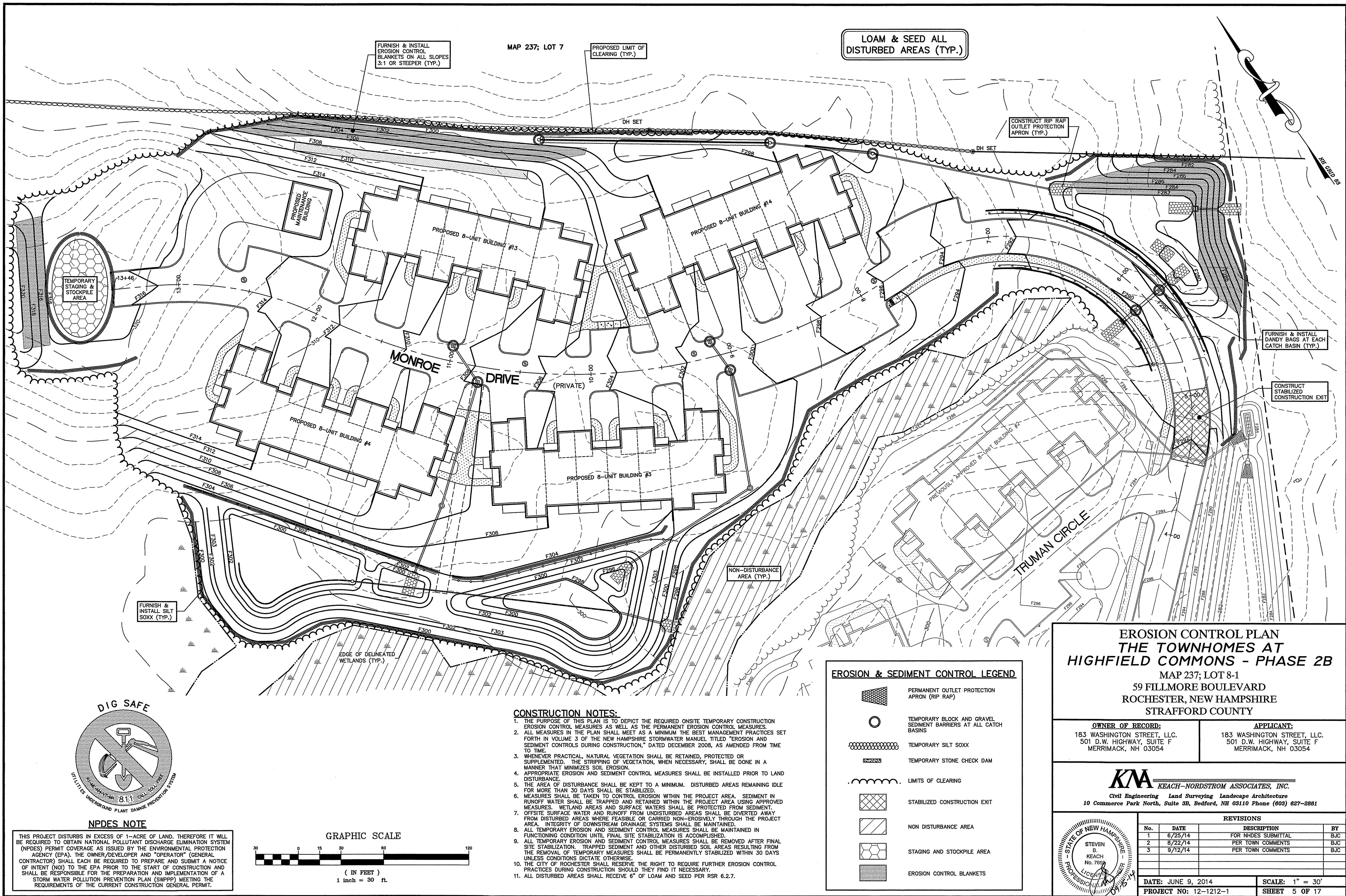
SCALE: 1" = 30'

PROJECT NO: 12-1212-1

SHEET 4 OF 17



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SEE SEWER PROFILE SHEET  
12 FOR SEWER INVERTS

MAP 237; LOT 7  
JONATHAN W. & HOLLY A. CLEMENT  
30 BICKFORD ROAD  
ROCHESTER, NH 03867-4288  
ZONED: R-1

PROPOSED 2" DOMESTIC WATER SERVICE WITH BACKFLOW PREVENTOR (SEE DETAILS)

PROPOSED HYDRANT AND VALVE (TYP.)

PROPOSED 8" D.I. WATER MAIN (TYP.)

PROPOSED GAS MAIN (TYP.)

CONNECT INTO 2A WATER LINE

FUTURE GAS CONNECTION

EXISTING DRAINAGE EASEMENT

TRUMAN CIRCLE

MONROE DRIVE (PRIVATE)

PROPOSED 8-UNIT BUILDING #3

PROPOSED 8-UNIT BUILDING #4

PROPOSED SEWER SERVICE (TYP.)

PROPOSED 8-UNIT BUILDING #13

PROPOSED 8-UNIT BUILDING #4

PROPOSED 8" SDR35 PVC SEWER MAIN (TYP.)

PROP. SMH#5 RIM=314.4

PROP. SMH#4 RIM=314.60

PROP. SMH#3 RIM=306.5

PROP. SMH#1 RIM=296.1

PROPOSED 4" FIRE PROTECTION SERVICE WITH BACKFLOW PREVENTOR (SEE DETAILS)

PROP. SMH#2 RIM=298.50

EXIST. SMH#34 RIM=298.50

LEGEND

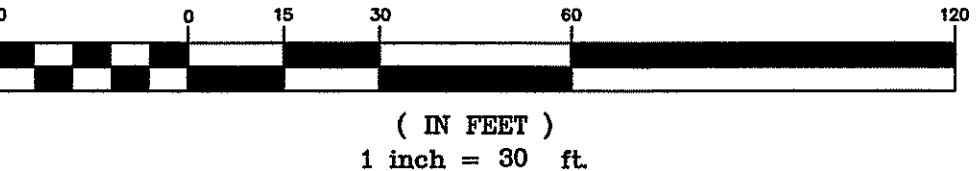
IRON PIN FOUND	ABUTTER LINE
STONE BOUND FOUND	PROPERTY LINE
DRILL HOLE	WETLAND
UTILITY POLE	OVERHEAD UTILITIES
SIGN	WATER LINE
GAS VALVE	SEWER LINE
WATER VALVE	DRAINAGE LINE
HYDRANT	TREELINE
WATER SHUT OFF	EDGE OF PAVEMENT
SEWER MANHOLE	EDGE OF GRAVEL
DRAINAGE MANHOLE	STONEWALL
CATCH BASIN	EASEMENT
PROP. BUILDING MOUNTED LIGHT	PROPOSED GUARDRAIL
PROP. POLE MOUNTED LIGHT	PROPOSED SPLIT RAIL FENCE
PROP. OUTLET STRUCTURE	PROPOSED EDGE OF PAVEMENT
BOULDER RETAINING WALL	PROPOSED SLOPED GRANITE CURB
	PROPOSED TREELINE
	PROPOSED DRAINAGE LINE
	PROPOSED OVERHEAD UTILITIES
	PROPOSED UNDERGROUND UTILITIES
	PROPOSED GAS LINE
	PROPOSED WATER LINE
	PROPOSED SEWER LINE
	PROPOSED EASEMENT LINE

CONSTRUCTION NOTES:

1. ALL WORK SHALL CONFORM TO THE APPLICABLE REGULATIONS AND STANDARDS OF THE CITY OF ROCHESTER, AND SHALL BE BUILT IN A WORKMANLIKE MANNER IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, STATE OF NEW HAMPSHIRE, DEPARTMENT OF TRANSPORTATION, APPROVED AND ADOPTED 2010 ARE HEREBY INCORPORATED BY REFERENCE.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING AND DETERMINING THE LOCATION, SIZE AND ELEVATION OF ALL EXISTING UTILITIES, SHOWN OR NOT SHOWN ON THESE PLANS, PRIOR TO THE START OF ANY CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY UTILITIES INTERFERING WITH THE PROPOSED CONSTRUCTION, AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING "DIG SAFE" AT 811 AT LEAST 72 HOURS BEFORE DIGGING.
3. UNDERGROUND ELECTRICAL SHALL BE PROVIDED TO ALL SITE LIGHT POLES. SEE ELECTRICAL PLANS FOR DETAILS AND FINAL CONDUIT LAYOUT.
4. ALL WORKMANSHIP AND MATERIALS INCORPORATED INTO THE CONSTRUCTION OF THE WATER LINES SHALL CONFORM TO ALL THE LOCAL PRECINCT'S STANDARDS, SPECIFICATIONS, RULES, AND REGULATIONS.
5. ALL WORKMANSHIP AND MATERIALS INCORPORATED INTO THE CONSTRUCTION OF THE ELECTRIC AND TELEPHONE LINES SHALL CONFORM WITH THE STANDARDS OF THE LOCAL PROVIDER.
6. ALL UTILITY CONSTRUCTION SHALL BE IN CONFORMANCE WITH THE CITY OF ROCHESTER STANDARDS OF INFRASTRUCTURE DESIGN SECTION I - POTABLE WATER DESIGN STANDARDS AND SECTION II - SANITARY SEWER DESIGN STANDARDS.
7. ONLY CONTRACTORS THAT HAVE BEEN GRANTED A WATER/SEWER LICENSE SHALL BE PERMITTED TO INSTALL ANY APPURTENANCE OR WATER/SEWER CONNECTION IN THE FILLMORE BOULEVARD RIGHT-OF-WAY.
8. PER RSR 6.4.3, FOLLOWING CONSTRUCTION, A PLAN SHALL BE SUBMITTED TO THE BOARD AND CITY ENGINEER BY THE ENGINEER OR LAND SURVEYOR INDICATING THEREON THE INVERT GRADES OF ALL STORM DRAINAGE AT ALL CATCH BASINS AND MANHOLES. THE ENGINEER SHALL CERTIFY THAT THE GRADES SHOWN ON THIS PLAN REPRESENT THE GRADES AS CONSTRUCTED.
9. PER RSR 6.6.3, ALL UTILITIES WITHIN THE LIMITS OF FILLMORE BOULEVARD SHALL BE INSPECTED BY A REPRESENTATIVE OF THE CITY PRIOR TO BACKFILLING OF TRENCHES OR OTHER COVERING OF THE SERVICES.
10. AN ACCURATE RECORD OF THE LOCATION AND DEPTH OF ALL UTILITIES SHALL BE KEPT BY THE DEVELOPER OR HIS/HER REPRESENTATIVE AND A COPY SHALL BE PROVIDED TO THE CITY.



GRAPHIC SCALE



UTILITY PLAN  
THE TOWNHOMES AT  
HIGHFIELD COMMONS - PHASE 2B

MAP 237; LOT 8-1

59 FILLMORE BOULEVARD  
ROCHESTER, NEW HAMPSHIRE  
STRAFFORD COUNTY

OWNER OF RECORD:

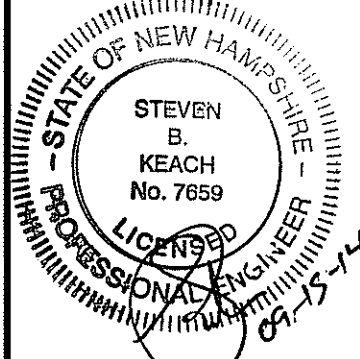
183 WASHINGTON STREET, LLC.  
501 D.W. HIGHWAY, SUITE F  
MERRIMACK, NH 03054

APPLICANT:

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2	8/22/14	PER NHDES COMMENTS	BJC
3	9/12/14	PER TOWN COMMENTS	BJC

DATE: JUNE 9, 2014 SCALE: 1" = 30'  
PROJECT NO: 12-1212-1 SHEET 6 OF 17



NOTES FOR PLANTING BIO RETENTION PONDS:

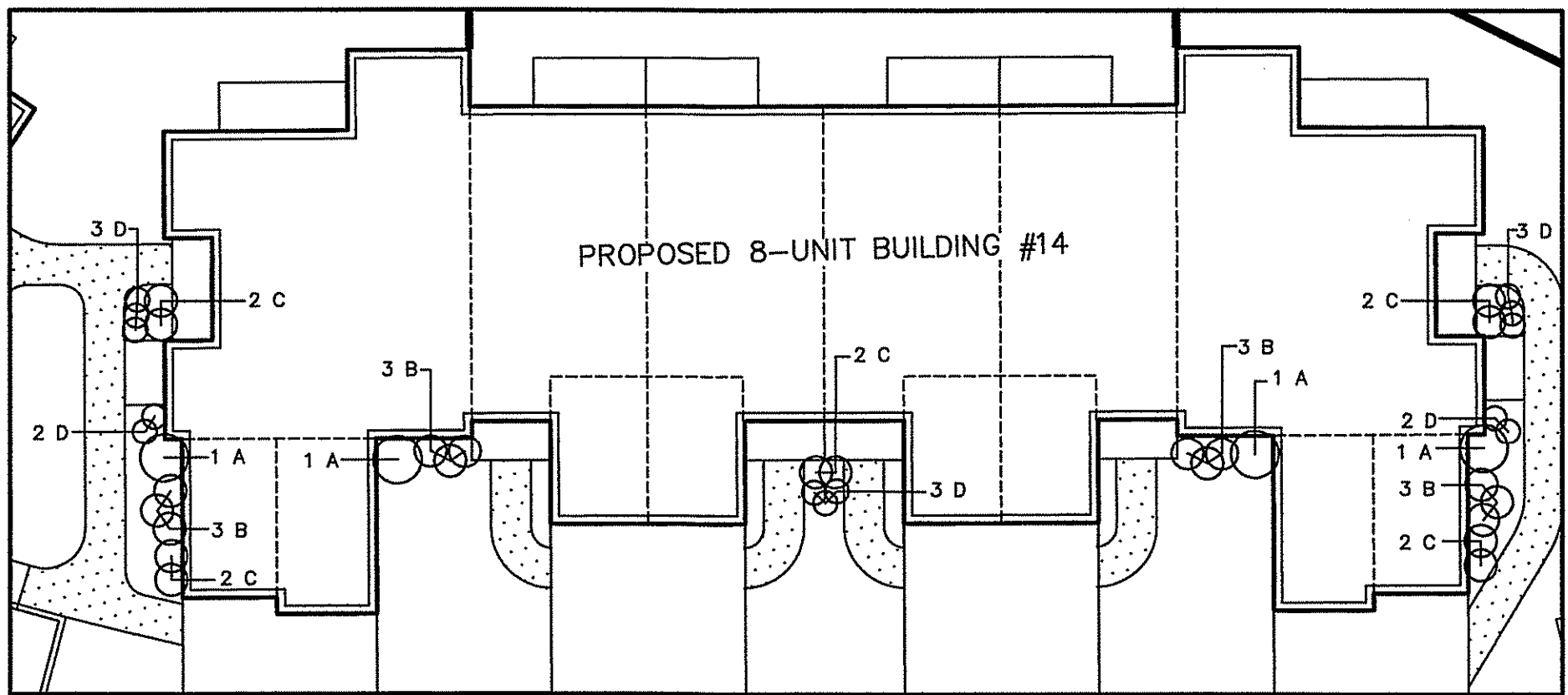
- FOR THE PLANTING OF THE BIO RETENTION PONDS, THE CONTRACTOR SHALL CHOOSE A MINIMUM OF 8 DIFFERENT SPECIES FROM THE FOLLOWING LIST:  
SEDOE (CAREX MORROWII)  
ALLMAN'S COMPACT DOGWOOD (CORNUS SERICEA 'ALLMAN'S COMPACTA')  
GATEWAY JOE-PYE WEED (EUPATORIUM MACULATUM 'GATEWAY')  
DWARF INKBERRY (ILEX GLABRA 'COMPACTA')  
RED SPRITE WINTERBERRY (ILEX VERTICILLATA 'RED SPRITE')  
CORAL REEF BEE BALM (MONARDA DIDYMA 'CORAL REEF')  
SHENANDOAH SWITCH GRASS (PANICUM VIRGATUM 'SHENANDOAH')  
HIGHBUSH BLUEBERRY (VACCINIUM CORYMBOSUM)  
WITHERED VIBURNUM (VIBURNUM CASSINOIDES)  
CLETHRA ALNIFOLIA 'COMPACTA' (COMPACT SUMMERSWEET)  
BUTTONBUSH (CEPHALANTHUS OCCIDENTALIS)  
SHEEP LAUREL (KALMIA ANGUSTIFOLIA)  
CARDINAL FLOWER (LOBELIA CARDINALIS)  
2. TO ACHIEVE A DESIRABLE DENSITY OF COVER, THE WOODY SHRUBS SHOULD BE PLANTED SIX-FOOT ON CENTER.  
3. NO LESS THAN 90 PLANTS FROM THE VARIETIES LISTED ABOVE, OF WHICH AT LEAST 30 MUST BE WOODY SHRUBS, SHALL BE PLANTED IN BIORETENTION POND #1.  
4. NO LESS THAN 150 PLANTS FROM THE VARIETIES LISTED ABOVE, OF WHICH AT LEAST 50 MUST BE WOODY SHRUBS, SHALL BE PLANTED IN BIORETENTION POND #2.

NOTE:

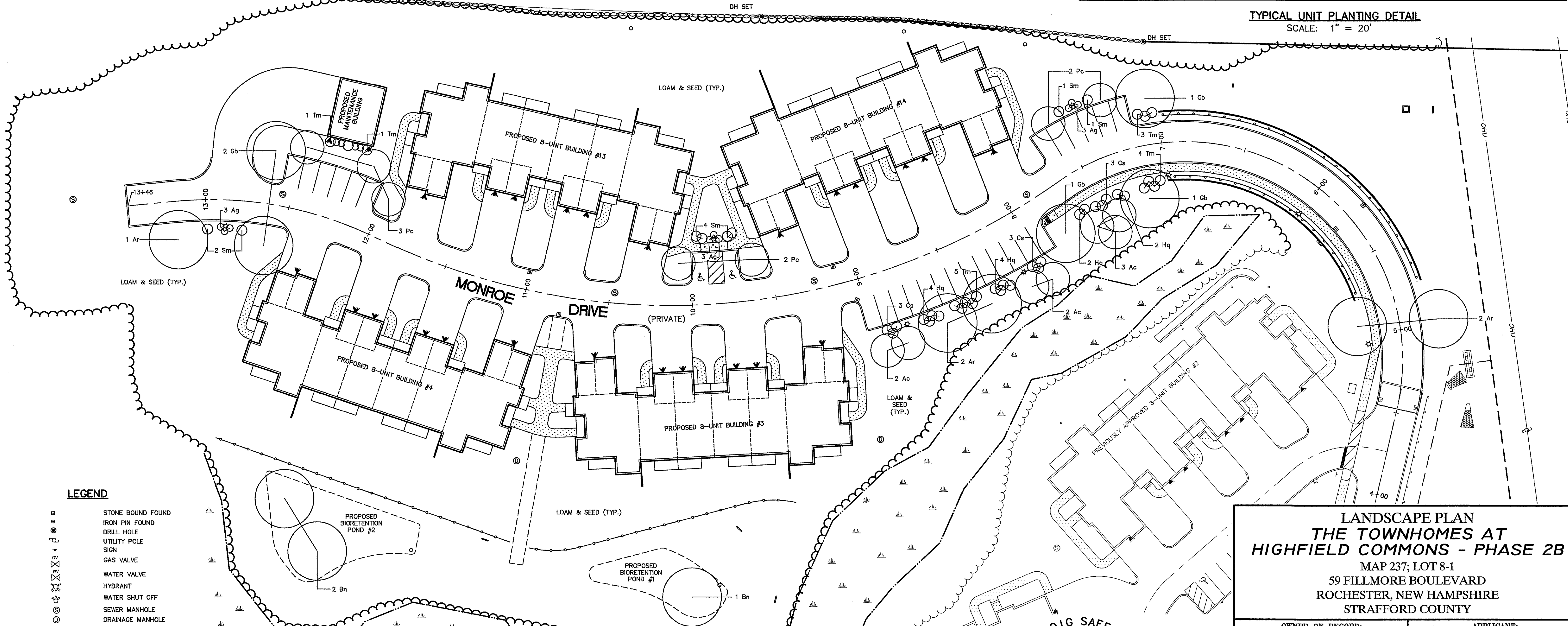
THE PURPOSE OF THIS DETAIL IS TO DEPICT A SUGGESTED PLANTING LAYOUT FOR THE PROPOSED DWELLING UNITS. THE INTENT IS TO CREATE A VARIETY OF PLANT MATERIALS AMONG ADJACENT DWELLING UNITS. THE LANDSCAPE CONTRACTOR MAY MAKE SUBSTITUTIONS ACCORDING TO SEASONAL AVAILABILITY AT HIS/HER DISCRETION.

PLANT SCHEDULE

CATEGORY	BOTANICAL NAME	COMMON NAME	SIZE
A	ILEX GLABRA 'SHAMROCK'	SHAMROCK INKBERRY	2-2.5'
	AZALEA 'BLAAUW'S PINK'	BLAAUW'S PINK AZALEA	2-2.5' B&B
	THUJA MEDIA 'TAUNTONII'	TAUNTONI YEW	2-2.5' B&B
B	CLETHRA ALNIFOLIA 'COMPACTA'	COMPACT SUMMERSWEET	#2
	HYDRANGEA ARBORESCENS 'BELLA ANNA'	BELLA ANNA SMOOTH HYDRANGEA	#5
	SPIRAEA BUMALDA 'ANTHONY WATERER'	ANTHONY WATERER SPIREA	#5
C	AZALEA 'DELAWARE VALLEY WHITE'	DELAWARE VALLEY AZALEA	#5
	PHYSOCARPUS OPULIFOLIOLUS 'LITTLE DEVIL'	LITTLE DEVIL NINEBARK	#5
	PIERIS JAPONICA 'CAVATINE'	CAVATINE ANDROMEDA	2-2.5' B&B
D	ASTILBE 'BRIDAL VEIL'	BRIDAL VEIL ASTILBE	#2
	HEMEROCALLIS FULVA	ORANGE DAYLILLY	#2
	HOSTA 'SAGAE'	SAGAE PLANTAIN LILLY	#2



TYPICAL UNIT PLANTING DETAIL  
SCALE: 1" = 20'



LEGEND

- STONE BOUND FOUND
- IRON PIN FOUND
- DRILL HOLE
- UTILITY POLE
- SIGN
- GAS VALVE
- WATER VALVE
- HYDRANT
- WATER SHUT OFF
- SEWER MANHOLE
- DRAINAGE MANHOLE
- CATCH BASIN
- PROP. BUILDING MOUNTED LIGHT
- PROP. POLE MOUNTED LIGHT
- BOULDER RETAINING WALL
- ABUTTER LINE
- PROPERTY LINE
- WETLAND
- OVERHEAD UTILITIES
- TREELINE
- EDGE OF PAVEMENT
- EDGE OF GRAVEL
- STONEWALL
- EASEMENT
- PROPOSED GUARDRAIL
- PROPOSED SPLIT RAIL FENCE
- PROPOSED EDGE OF PAVEMENT
- PROPOSED SLOPED GRANITE CURB
- PROPOSED TREELINE
- PROPOSED EASEMENT LINE

LANDSCAPE NOTES:

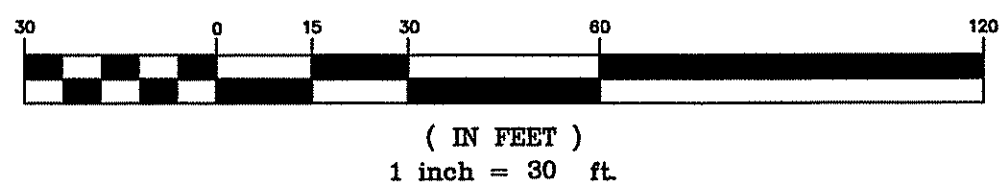
- THE PURPOSE OF THIS PLAN IS TO SHOW THE PROPOSED SITE LANDSCAPE WHICH PROVIDES CLIMATIC RELIEF AND AESTHETIC APPEAL.
- ALL PLANT MATERIALS USED SHALL BE NURSERY STOCK AND SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM DATE OF INSTALLATION. ANY MATERIAL WHICH DIES OR DOES NOT SHOWN HEALTHY APPEARANCE WITHIN THIS TIME SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE, WITH SAME WARRANTY REQUIREMENTS AS THE ORIGINAL. WARRANTIES TYPICALLY DO NOT COVER LOSS DUE TO INSECT INFESTATION OR MECHANICAL DAMAGE (I.E. SNOW STORAGE).
- IF THE SOIL CONDITIONS ARE EXTREMELY SANDY, ALL TREES SHALL HAVE A 6" LAYER OF COMPACTED TOPSOIL PLACED IN THE BASE OF THE PLANT PIT AS A MOISTURE RETENTION LAYER. THE PLANT PIT SIDEWALLS SHALL BE OVER EXCAVATED BY AN ADDITIONAL 12" BEYOND THE NORMAL OUTSIDE RADIUS OF THE HOLE. A TOPSOIL MIXTURE SHALL BE USED TO BACKFILL THE HOLE AS FOLLOWS: ORGANIC TOPSOIL, AMENDED WITH 10% WOOD ASH, 10% MANURE, 30% PEATMOSS AND A GRANULAR HYDROGEL TO ABSORB AND RETAIN WATER.
- PLANTING BEDS AND SAUCERS SHALL RECEIVE A 4" MINIMUM THICKNESS OF FINE/HEMLOCK BARK MULCH OVER A 6oz. POLYPROPYLENE WEED CONTROL FABRIC.
- PAVEMENT AND ROAD BASE MATERIAL ENCOUNTERED IN ANY LAWN OR PLANTING BED SHALL BE REMOVED AND DISPOSED OF BY THE CONTRACTOR AND SUITABLE AMENDED SOIL INSTALLED AS SPECIFIED IN THE TURF ESTABLISHMENT SCHEDULE.

PLANT LIST

SYMBOL	QUANTITY	BOTANICAL NAME	COMMON NAME	SIZE
<b>TREES</b>				
Ac	7	ABIES CONCOLOR	WHITE FIR	6-7' B&B
Ar	5	ACER RUBRUM 'REDPOINTE'	REDPOINTE RED MAPLE	3"-3.5" CAL
Bn	3	BETULA NIGRA 'HERITAGE'	HERITAGE RIVER BIRCH	3"-3.5" CAL
Gb	5	GINKGO BILOBA	MAIDENHAIR TREE	3-3.5" CAL
Pc	7	PYRUS CALLERYANNA 'CHANTICLEER'	CHANTICLEER FLOWERING PEAR	2-2.5" CAL
<b>SHRUBS</b>				
Ag	9	AZALEA 'GIRARD'S HOT SHOT'	GIRARD'S HOT SHOT AZALEA	24"
Cs	9	CORNUS SERICEA 'ALLEMAN'S COMPACTA'	ALLEMAN'S COMPACT RED-OSIER DOGWOOD	24"
Hq	12	HYDRANGEA Q. 'RUBY SLIPPERS'	RUBY SLIPPERS OAKLEAF HYDRANGEA	24"
Sm	8	SYRINGA MEYERI 'PALIBIN'	DWARF KOREAN LILAC	2-3" B&B
Tm	14	TAXUS MEDIA 'GREENWAVE'	GREENWAVE SPREADING YEW	2-3" B&B



GRAPHIC SCALE



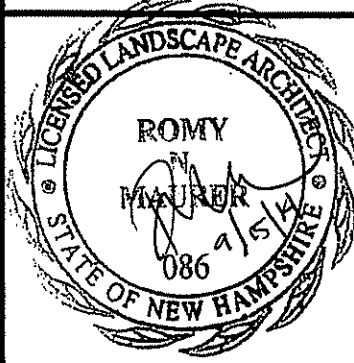
LANDSCAPE PLAN  
THE TOWNHOMES AT  
HIGHFIELD COMMONS - PHASE 2B  
MAP 237; LOT 8-1  
59 FILLMORE BOULEVARD  
ROCHESTER, NEW HAMPSHIRE  
STRAFFORD COUNTY

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3	9/12/14	PER TOWN COMMENTS	BJC

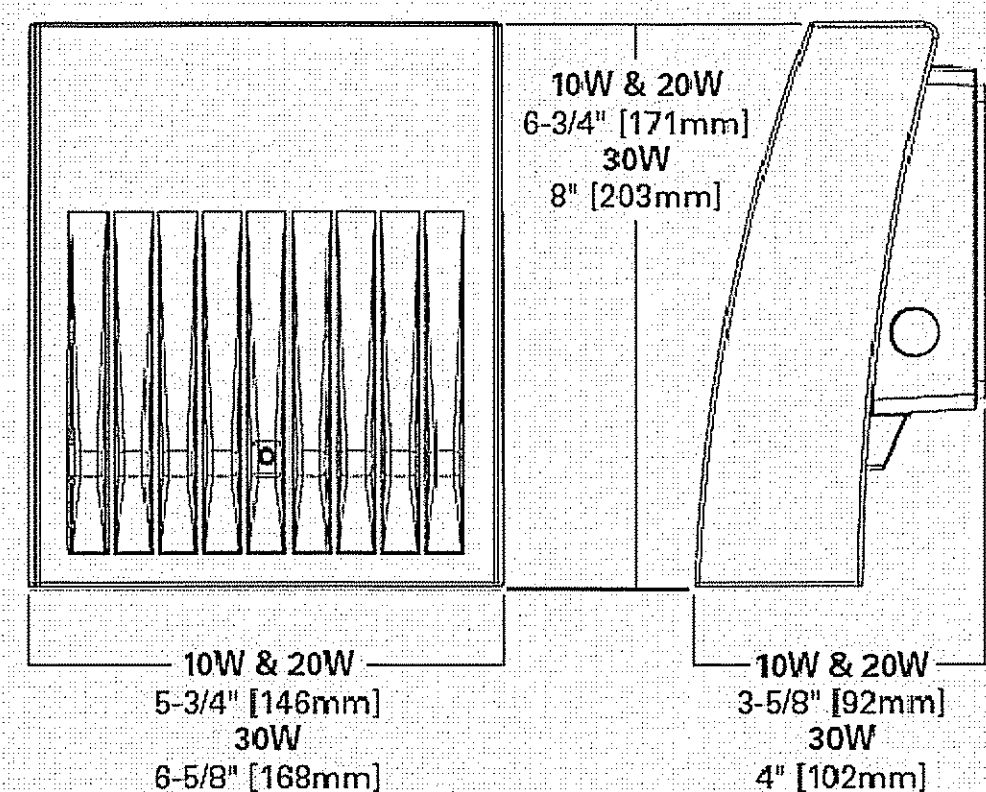
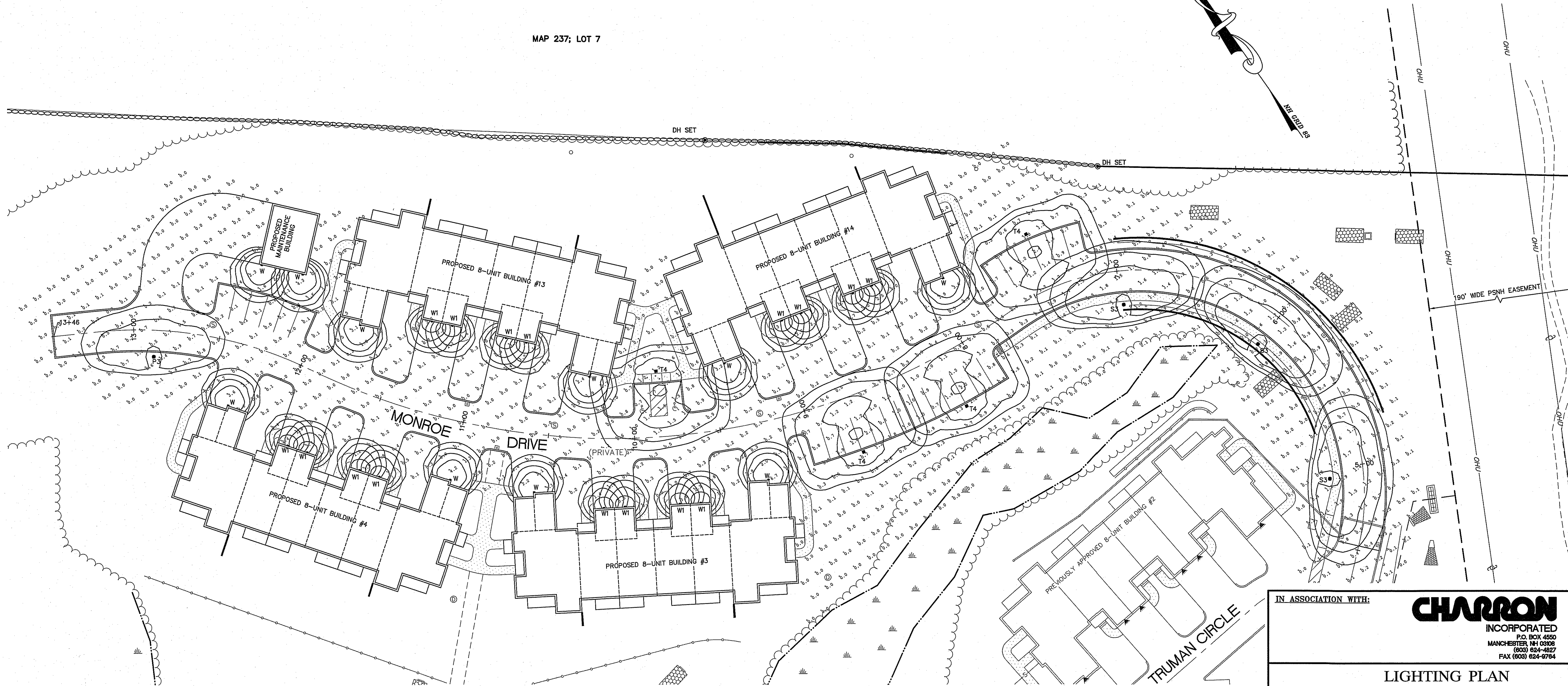
DATE: JUNE 9, 2014  
PROJECT NO: 12-1212-1  
SCALE: 1" = 30'  
SHEET 7 OF 17



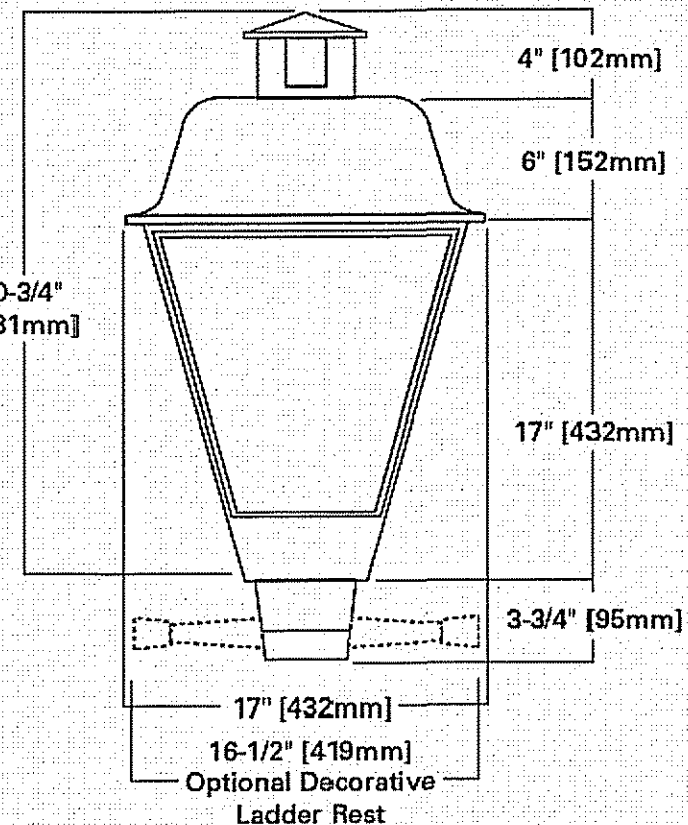
SEE SHEET 11 FOR DETAILS

CONSTRUCTION NOTES:  
1. SEE ELECTRICAL PLANS FOR ADDITIONAL INFORMATION REGARDING LIGHT INSTALLATION AND WIRING REQUIREMENTS.

MAP 237; LOT 7



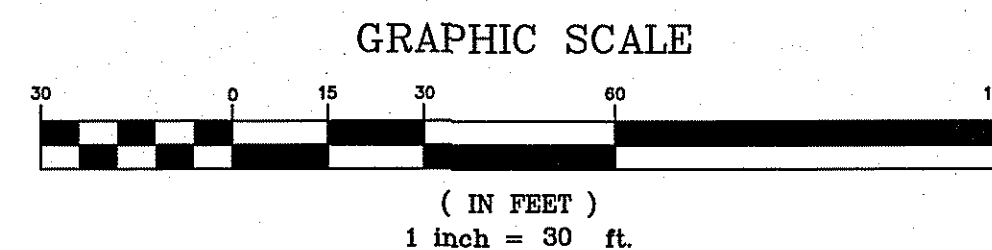
XTOR CROSSTOUR LED  
SCALE: NOT TO SCALE



UTLD TRADITIONAIRE LED DOWNLIGHT  
SCALE: NOT TO SCALE

StatArea  
MAIN DRIVE AND GENERAL PARKING AREAS  
Illuminance (Fc)  
Average = 0.67  
Maximum = 2.4  
Minimum = 0.0  
Avg/Min Ratio = 0.00  
Max/Min Ratio = 0.00

Luminaire Schedule				
Symbol	Qty	Label	Arrangement	Description
16	16	W1	SINGLE	XTOR1A/ WALL MTD 10' AFG
10	10	W	SINGLE	XTOR2A/ WALL MTD 10' AFG
1	1	P3	SINGLE	UTLDB01LEDEUSL3/ 15' POLE
3	3	S3	SINGLE	UTLDB02LEDEUSL3/ 15' POLE
4	4	T4	SINGLE	UTLDB02LEDEUSL4/ 15' POLE



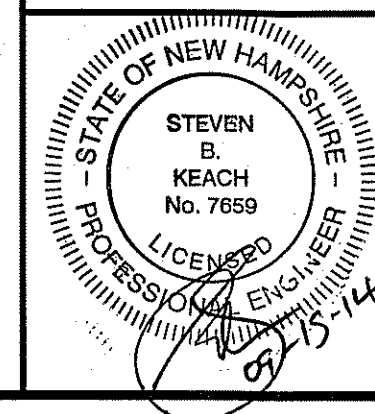
IN ASSOCIATION WITH:  
**CHARRON**  
INCORPORATED  
P.O. BOX 4550  
MANCHESTER, NH 03050  
(603) 624-4827  
FAX (603) 624-9784

**LIGHTING PLAN**  
**THE TOWNHOMES AT**  
**HIGHFIELD COMMONS - PHASE 2B**  
MAP 237; LOT 8-1  
59 FILLMORE BOULEVARD  
ROCHESTER, NEW HAMPSHIRE  
STRAFFORD COUNTY

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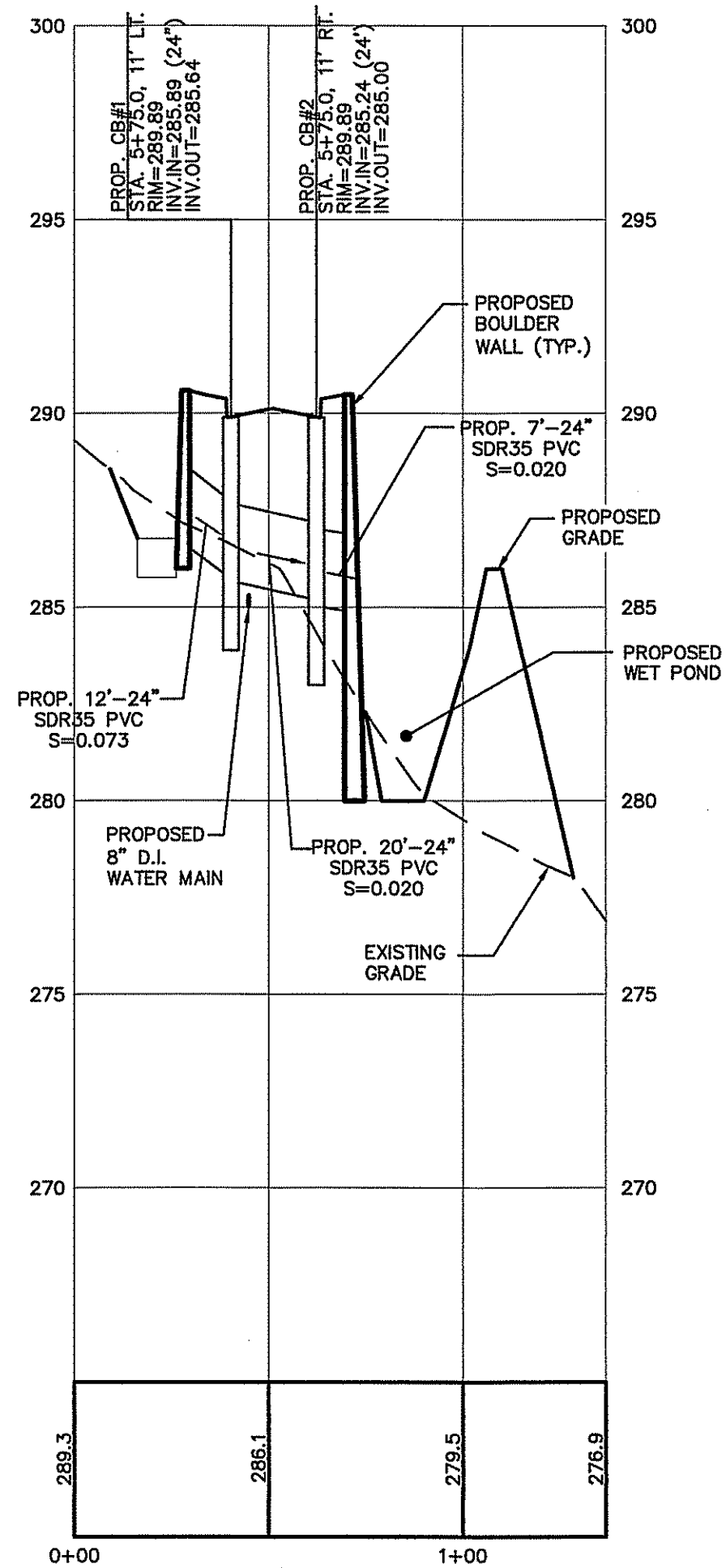
REVISIONS			
No.	DATE	DESCRIPTION	BY
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3	9/12/14	PER TOWN COMMENTS	BJC
DATE: JUNE 9, 2014			
SCALE: 1" = 30'			
PROJECT NO: 12-1212-1			
SHEET 8 OF 17			





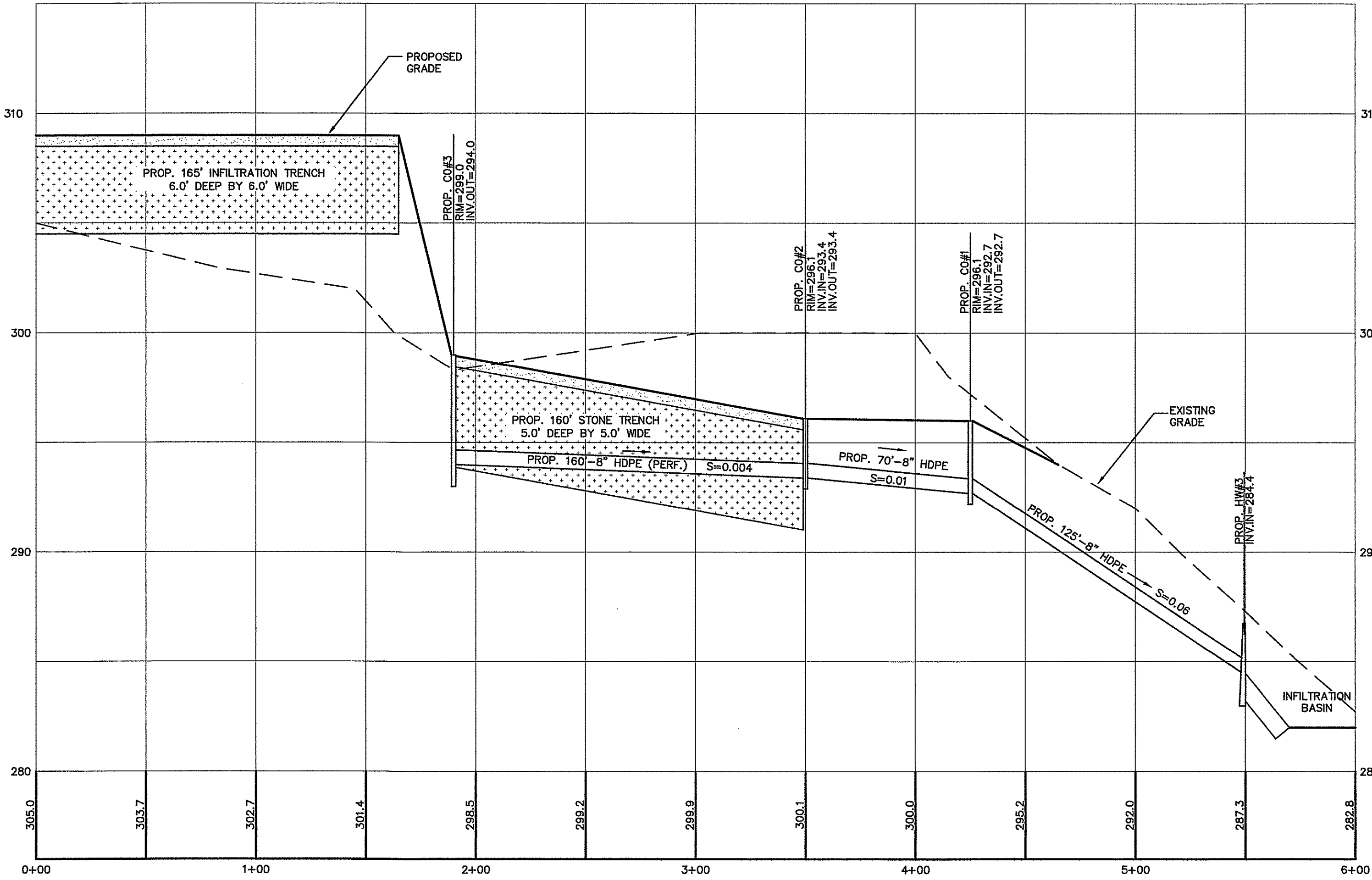


PHASE 2B - WETLAND



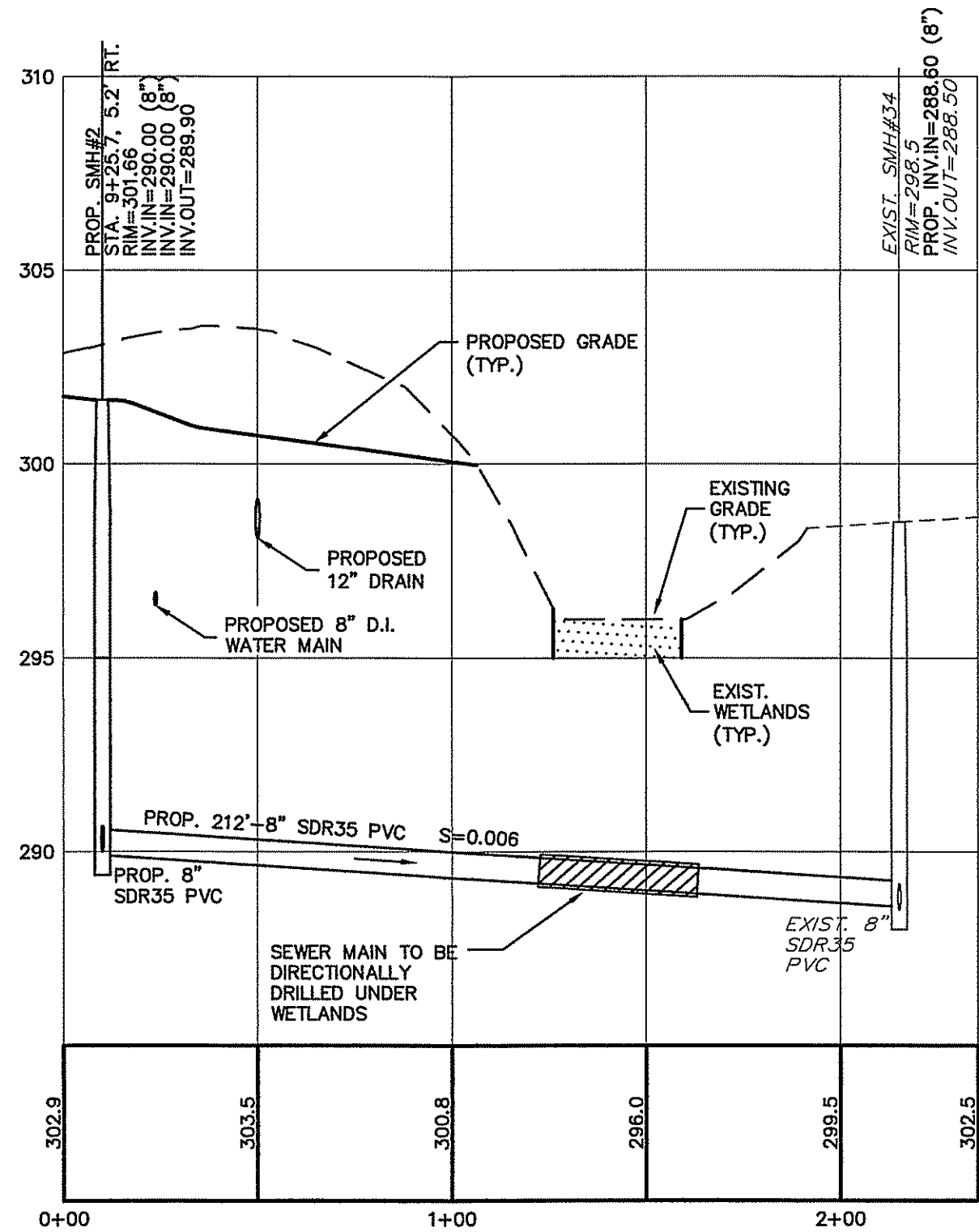
DRAIN PROFILE: (HW#1 TO HW#2)  
SCALE: 1" = 40'(HORIZ.)  
1" = 4'(VERT.)

PHASE 2B - PSNH EASEMENT



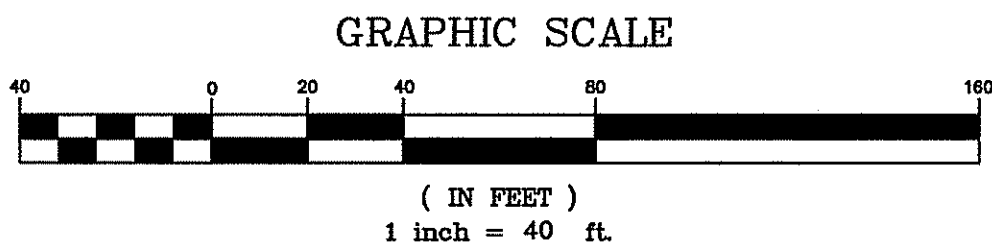
DRAIN PROFILE: STONE AND INFILTRATION TRENCH (CO#3 TO HW#3)  
SCALE: 1" = 40'(HORIZ.)  
1" = 4'(VERT.)

PHASE 2B

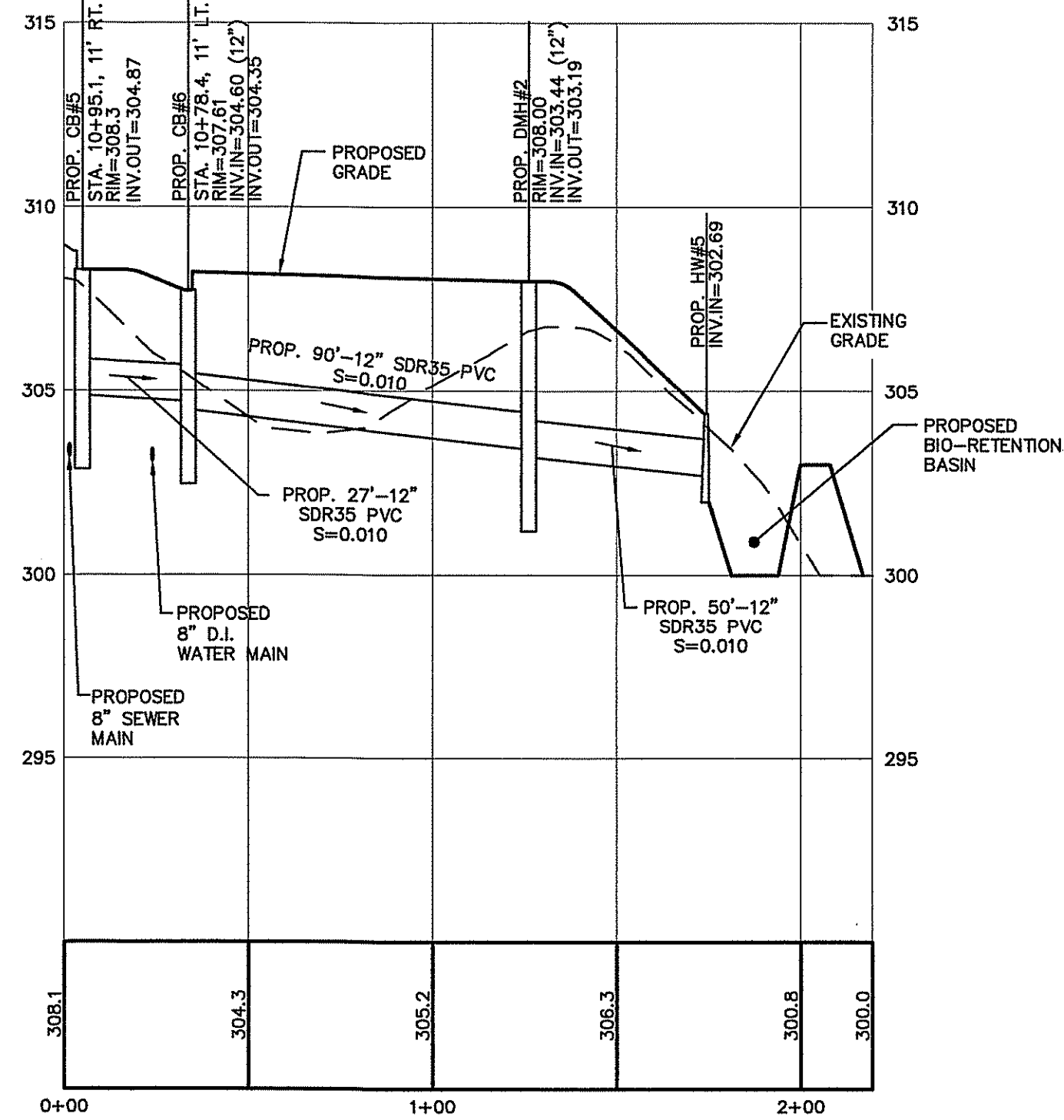


SEWER PROFILE: (SMH#2 TO EXISTING SMH#34)  
SCALE: 1" = 40'(HORIZ.)  
1" = 4'(VERT.)

PHASE 2A

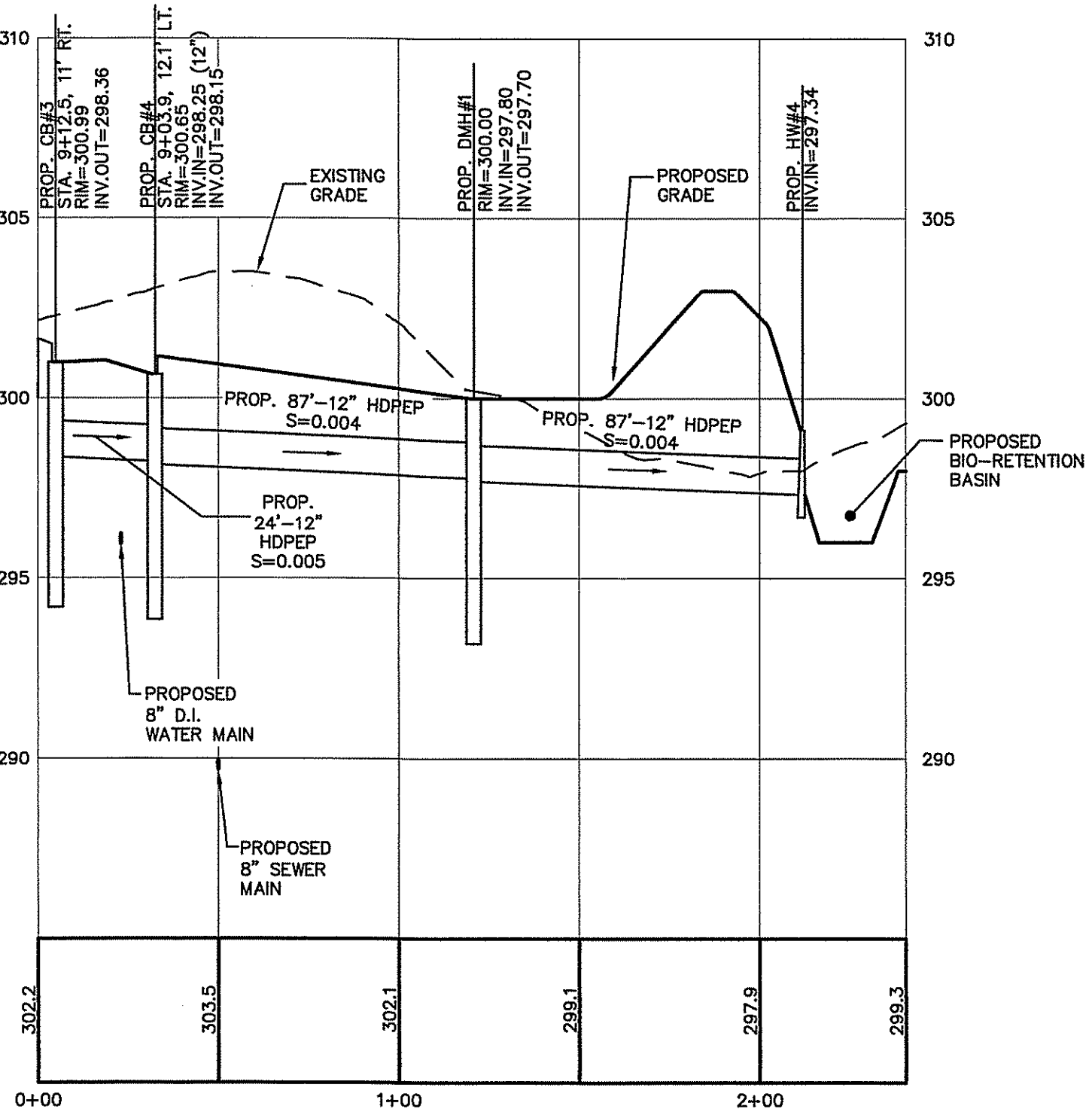


PHASE 2B - UNIT #12



DRAIN PROFILE: (CB#5 TO HW#5)  
SCALE: 1" = 40'(HORIZ.)  
1" = 4'(VERT.)

PHASE 2B - UNIT #11



DRAIN PROFILE: (CB#3 TO HW#4)  
SCALE: 1" = 40'(HORIZ.)  
1" = 4'(VERT.)

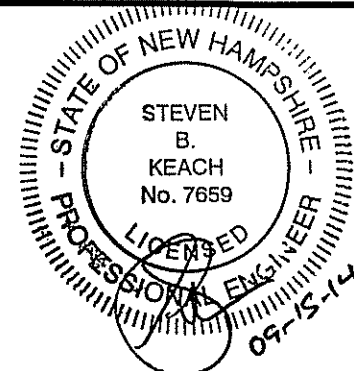
PHASE 2B - BIORETENSION BASIN #1

DRAINAGE - PROFILES  
THE TOWNHOUSES AT HIGHFIELD  
COMMONS - PHASE 2B  
MAP 237; LOT 8-1  
59 FILLMORE BOULEVARD  
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STRAFFORD COUNTY

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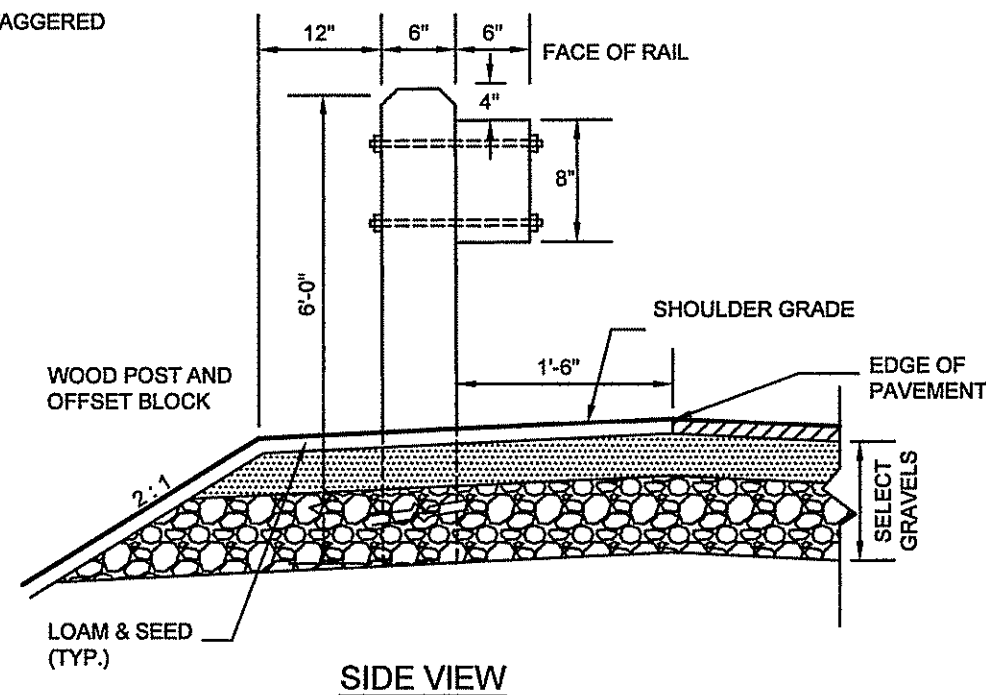
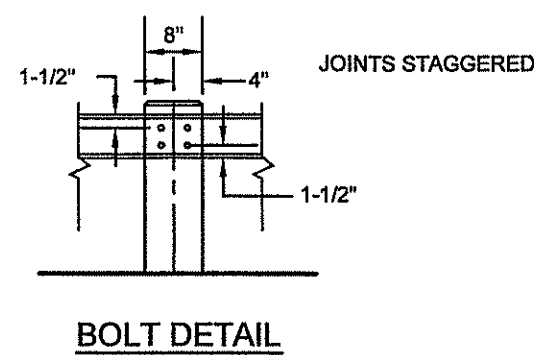
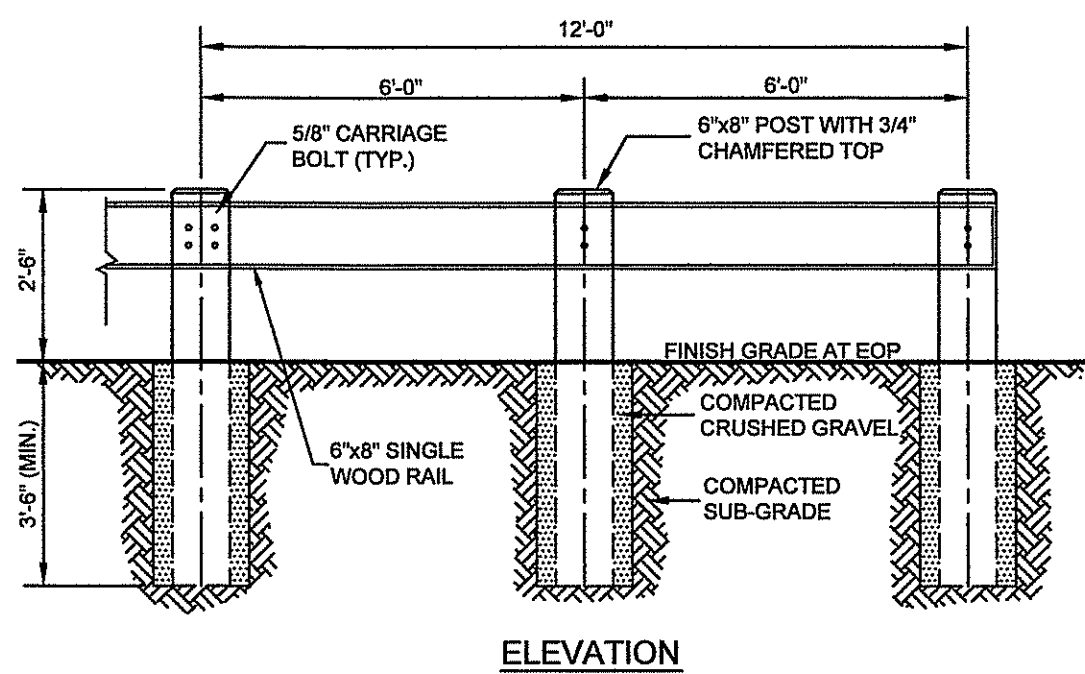
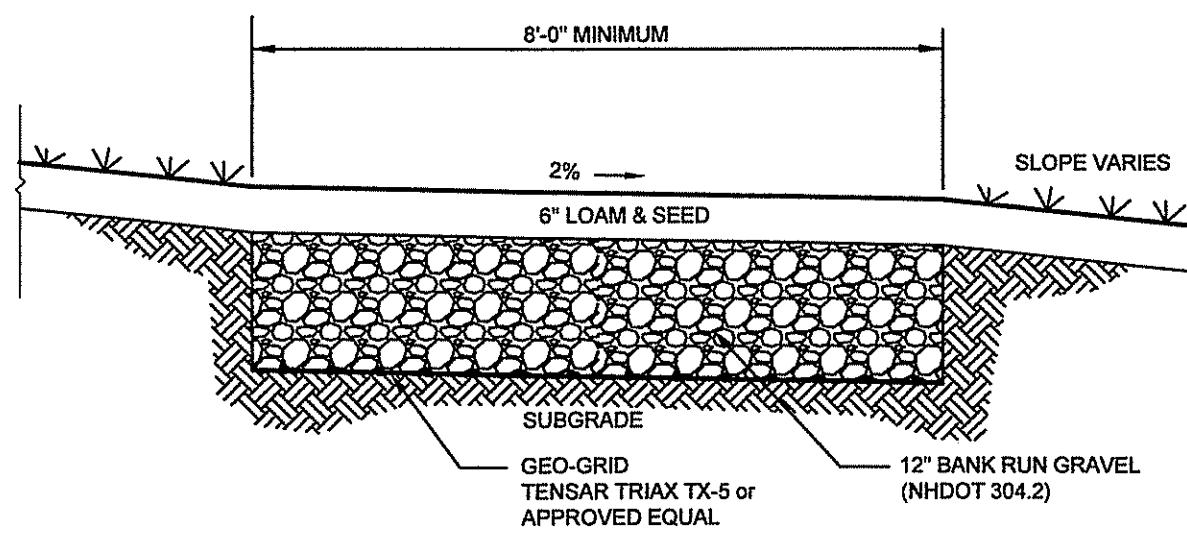
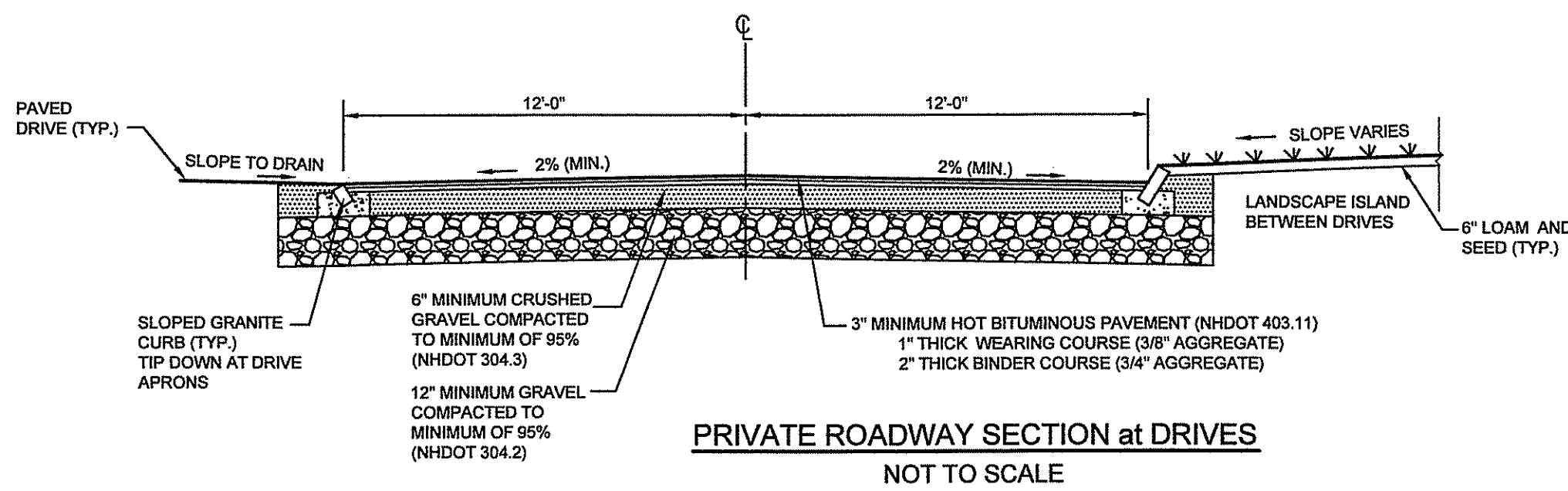
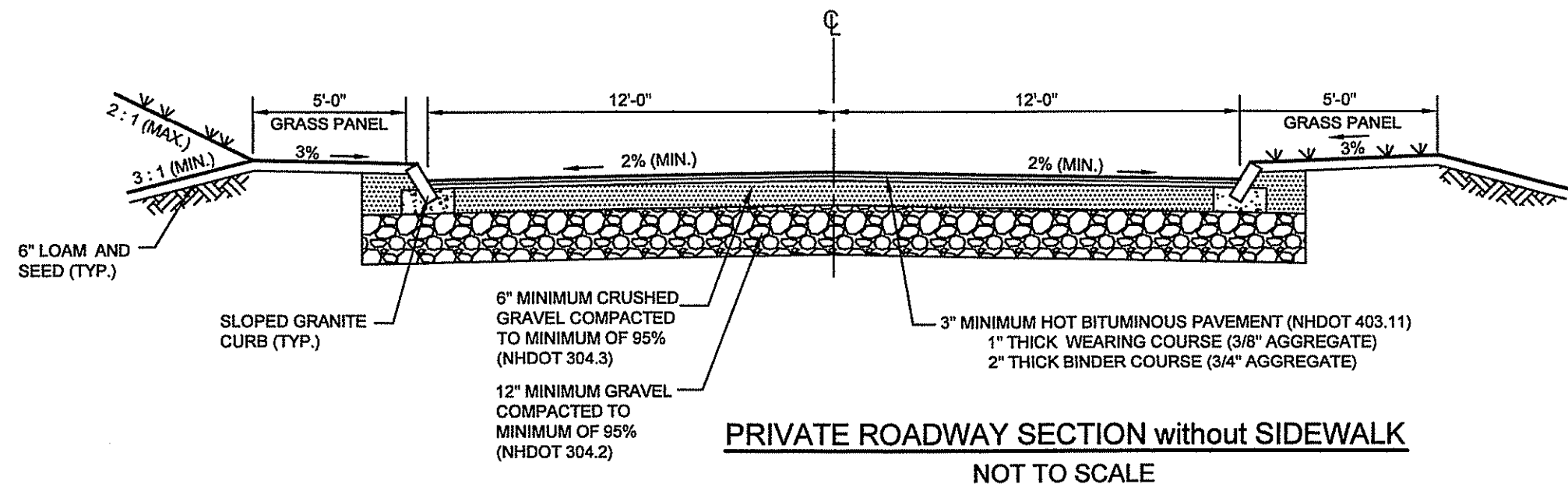
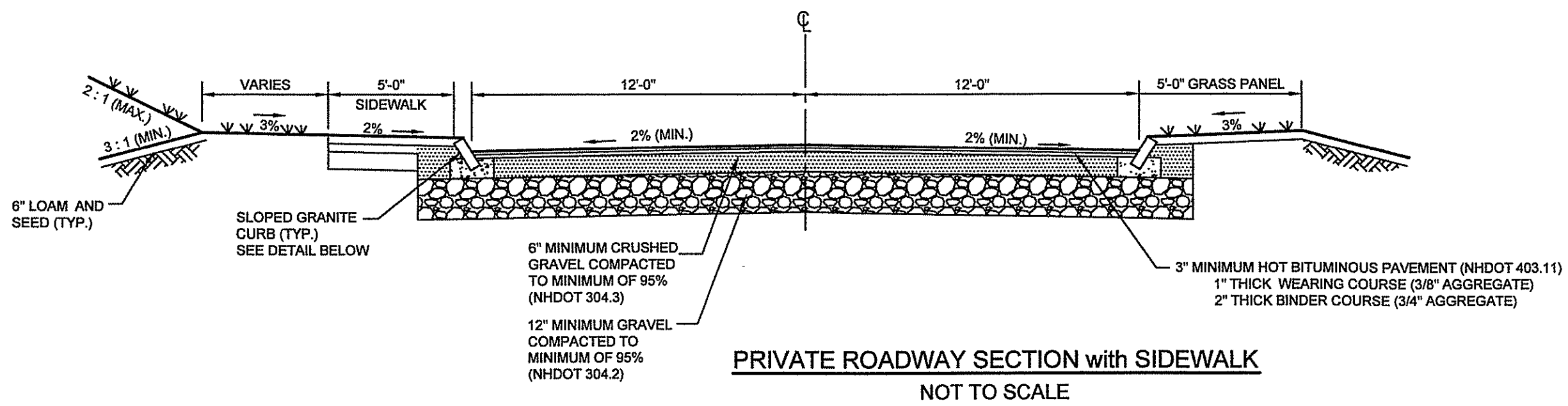
APPLICANT:  
183 WASHINGTON STREET, LLC.  
501 D.W. HIGHWAY, SUITE F  
MERRIMACK, NH 03054

**KMA** KEACH-NORDSTROM ASSOCIATES, INC.  
Civil Engineering Land Surveying Landscape Architecture  
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881



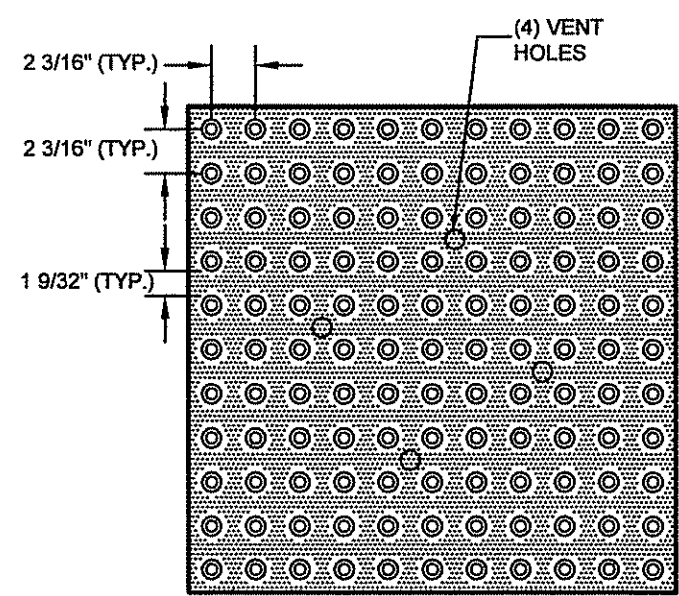
REVISIONS			
No.	DATE	DESCRIPTION	BY
1	8/22/14	PER NHDES COMMENTS	BJC
2	8/22/14	DATE ONLY	BJC
3	9/12/14	PER TOWN COMMENTS	BJC
DATE: JUNE 9, 2014			
SCALE: AS SHOWN			
PROJECT NO: 12-1212-1			
SHEET 10 OF 17			





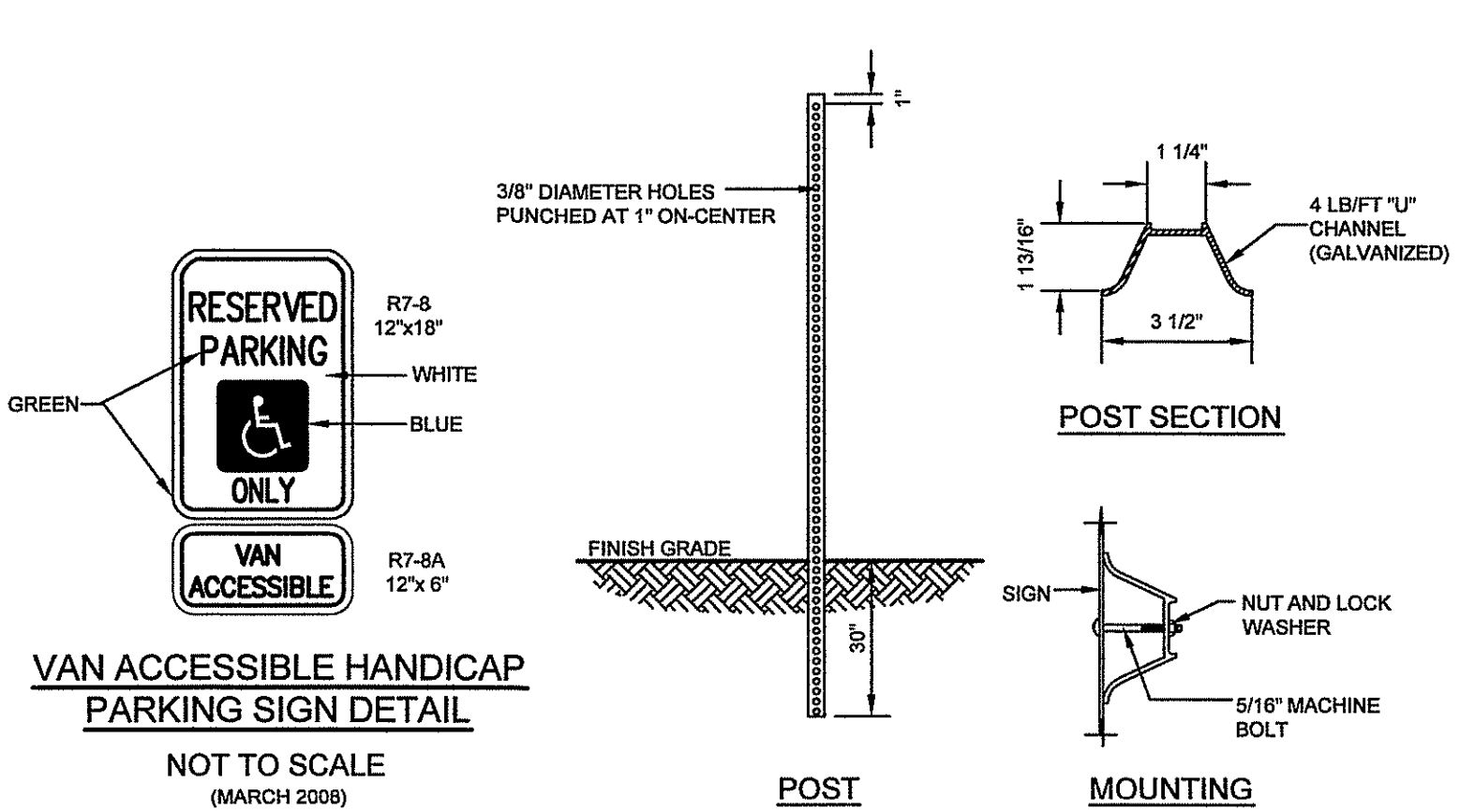
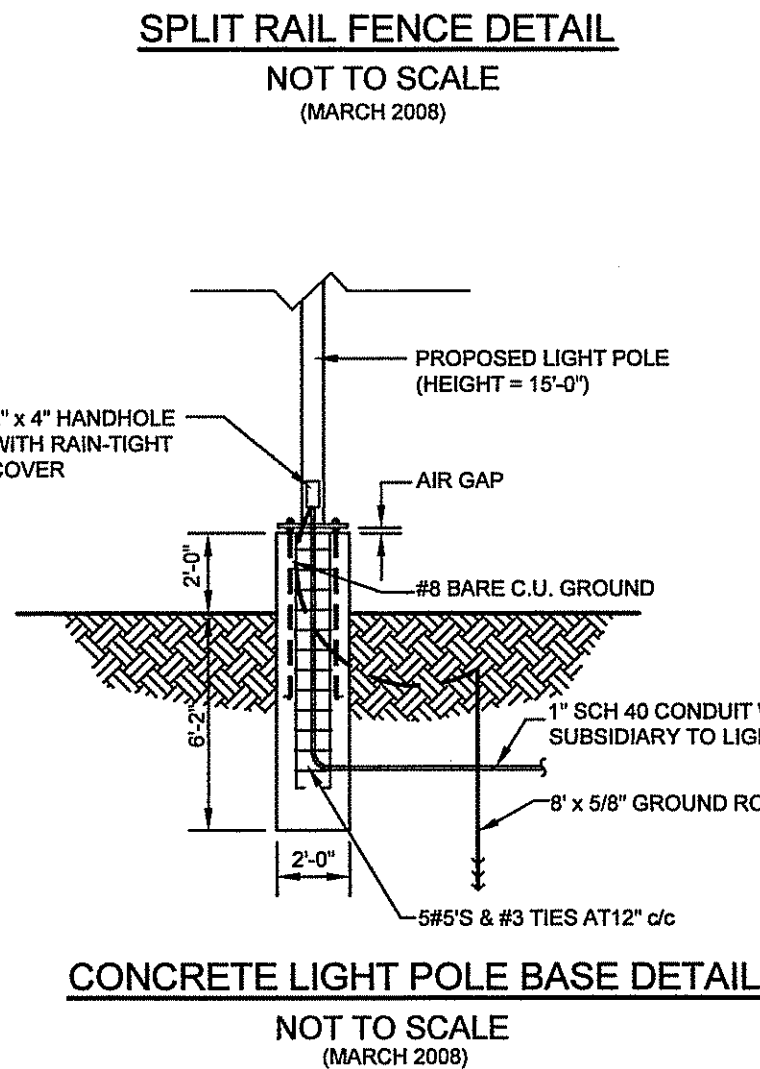
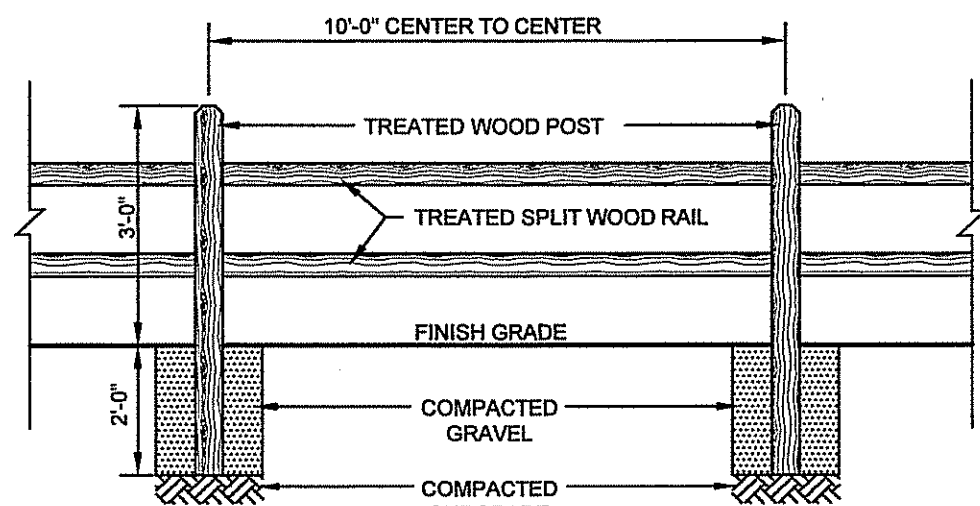
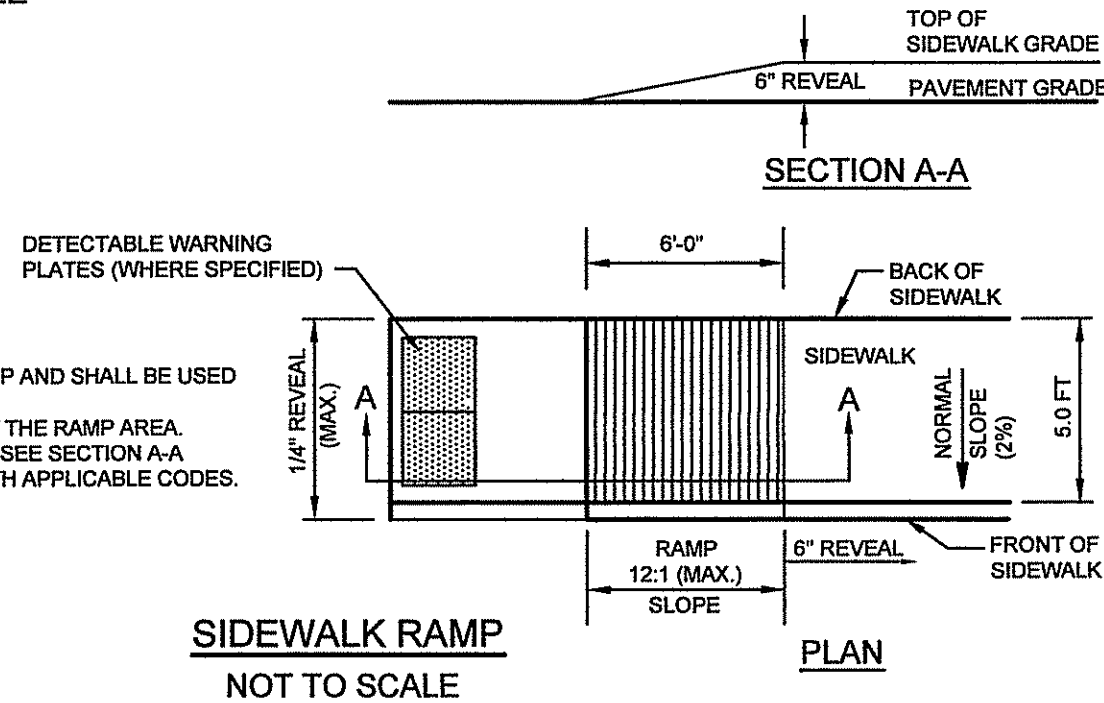
- NOTES:**
1. ALL TIMBERS SHALL BE PRESSURE TREATED.
  2. PAY LIMIT = PER LINEAR FOOT INCLUDING END SECTION.
  3. ALL HARDWARE SHALL BE HOT DIPPED GALVANIZED.

**WOOD BEAM GUARDRAIL**  
NOT TO SCALE



- NOTES:**
1. DETECTABLE WARNING PLATE SHALL BE NEENAH FOUNDRY OR APPROVED EQUAL.
  2. THE PLATE MUST COMPLY WITH ADAAG (AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES) AND ARCHITECTURAL BARRIER ACT GUIDELINES.
  3. MATERIAL SHALL BE CAST GRAY IRON
  4. FINISH: NO PAINT

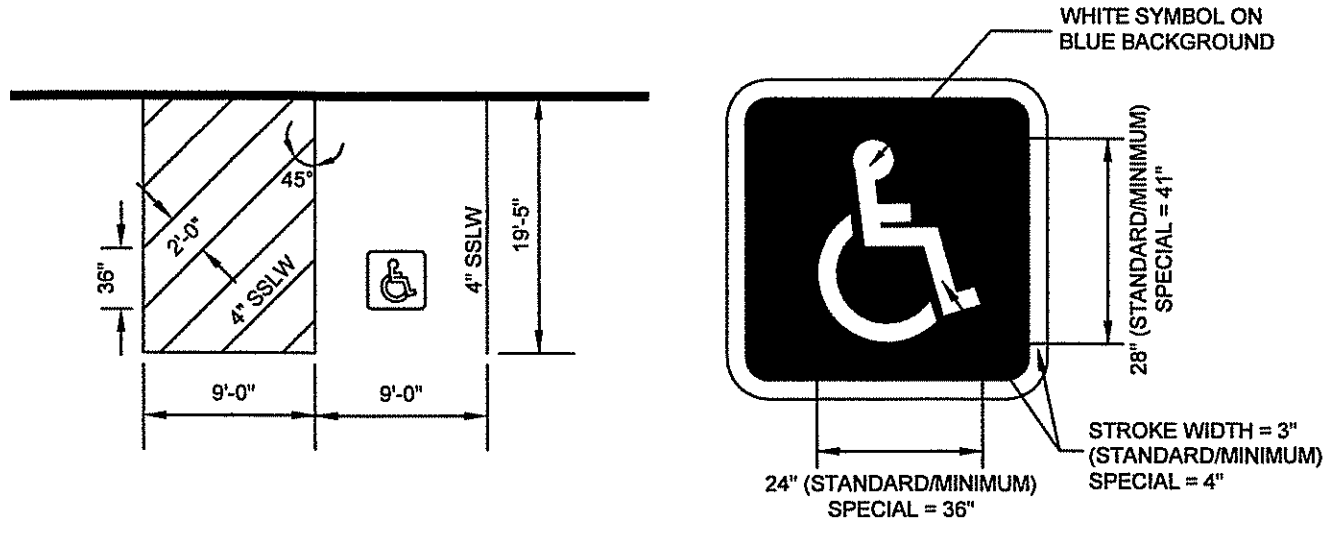
**24" x 24" DETECTABLE WARNING PLATE DETAIL**  
NOT TO SCALE



**NOTE:**  
POST SHALL CONFORM TO NHDOT 615.2.5.3

**STEEL SIGN POST DETAIL**  
NOT TO SCALE  
(MARCH 2008)

- TRAFFIC SIGN NOTES:**
1. ALL TRAFFIC SIGN FACES AND SHAPES SHALL CONFORM WITH THE MUTCD, LATEST EDITION.
  2. ALL SIGN POST MOUNTS SHALL CONFORM WITH THE AASHTO AND NHDOT SPECIFICATIONS, LATEST EDITIONS.



- STRIPING NOTES:**
1. ALL PAVEMENT MARKINGS SHALL BE IN CONFORMANCE WITH THESE STANDARDS AND THE CURRENT EDITION OF MUTCD.
  2. WIDTH OF LINES SHALL VARY NO MORE THAN 1/4 INCH FROM THAT SPECIFIED.
  3. THE WET FILM THICKNESS OF A PAINTED LINE SHALL BE A MINIMUM OF 15 MILS THROUGHOUT THE ENTIRE WIDTH AND LENGTH OF LINE SPECIFIED.
  4. OVERSPRAY SHALL BE KEPT TO AN ABSOLUTE MINIMUM.

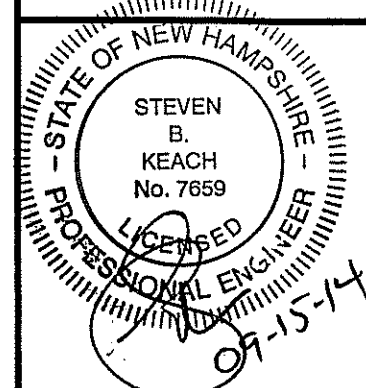
## CONSTRUCTION DETAILS THE TOWNHOMES AT HIGHFIELD COMMONS - PHASE 2B MAP 237; LOT 8-1 59 FILLMORE BOULEVARD ROCHESTER, NEW HAMPSHIRE STRAFFORD COUNTY

**OWNER OF RECORD:**  
183 WASHINGTON STREET, LLC  
501 D.W. HIGHWAY, SUITE F  
MERRIMACK, NH 03054

**APPLICANT:**  
183 WASHINGTON STREET, LLC  
501 D.W. HIGHWAY, SUITE F  
MERRIMACK, NH 03054

**KMA**  
KEACH-NORDSTROM ASSOCIATES, INC.

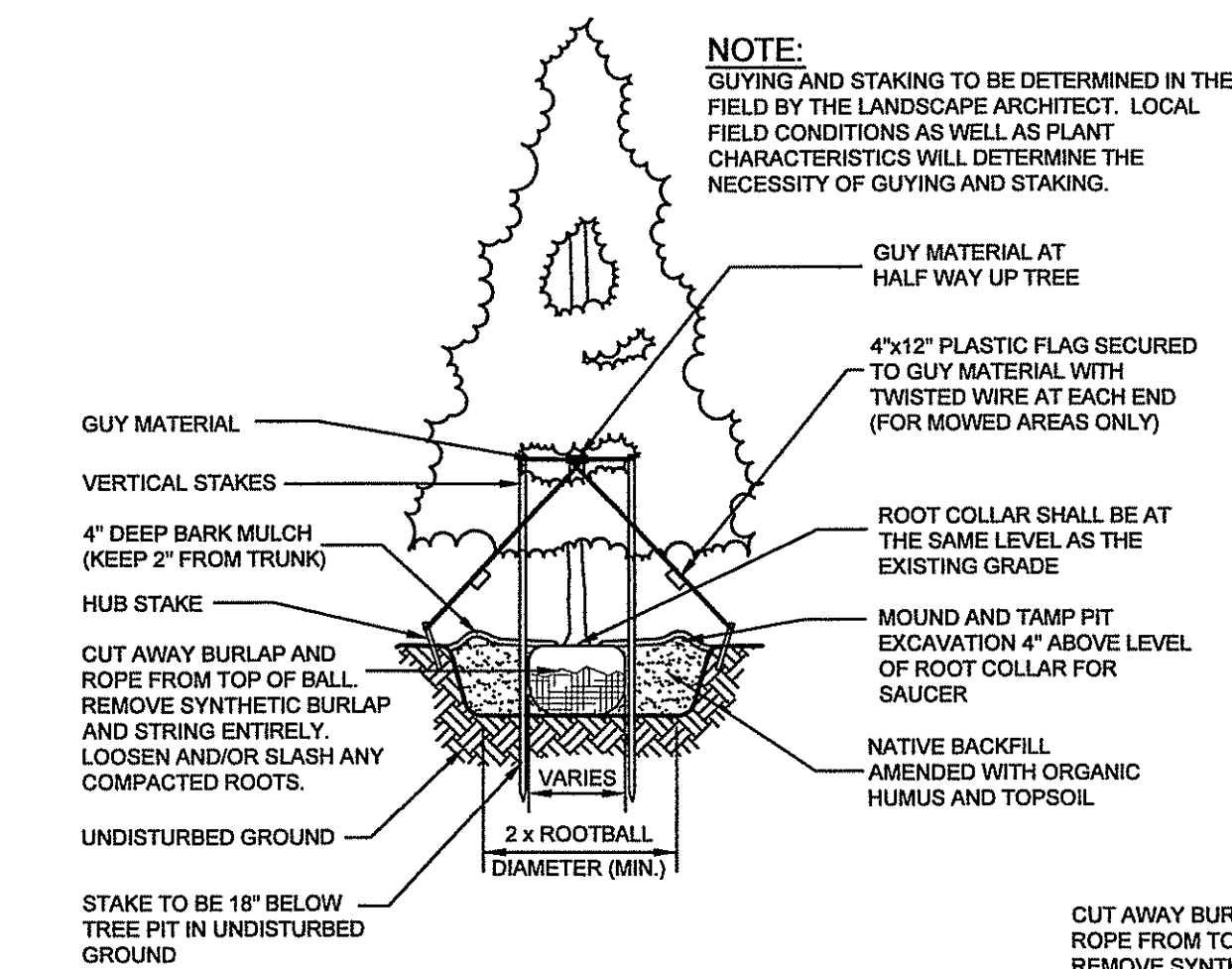
Civil Engineering Land Surveying Landscape Architecture  
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 827-2881



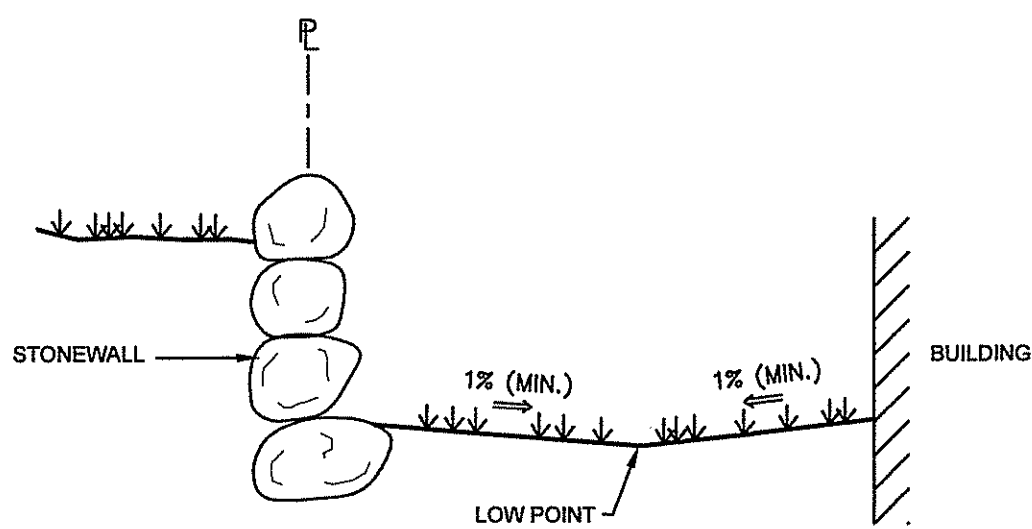
REVISIONS			
No.	DATE	DESCRIPTION	BY
1	6/25/14	DATE ONLY	BJC
2	8/22/14	DATE ONLY	BJC
3	9/12/14	DATE ONLY	BJC

DATE: JUNE 9, 2014  
PROJECT NO: 12-1212-1  
SCALE: AS SHOWN  
SHEET 11 OF 17

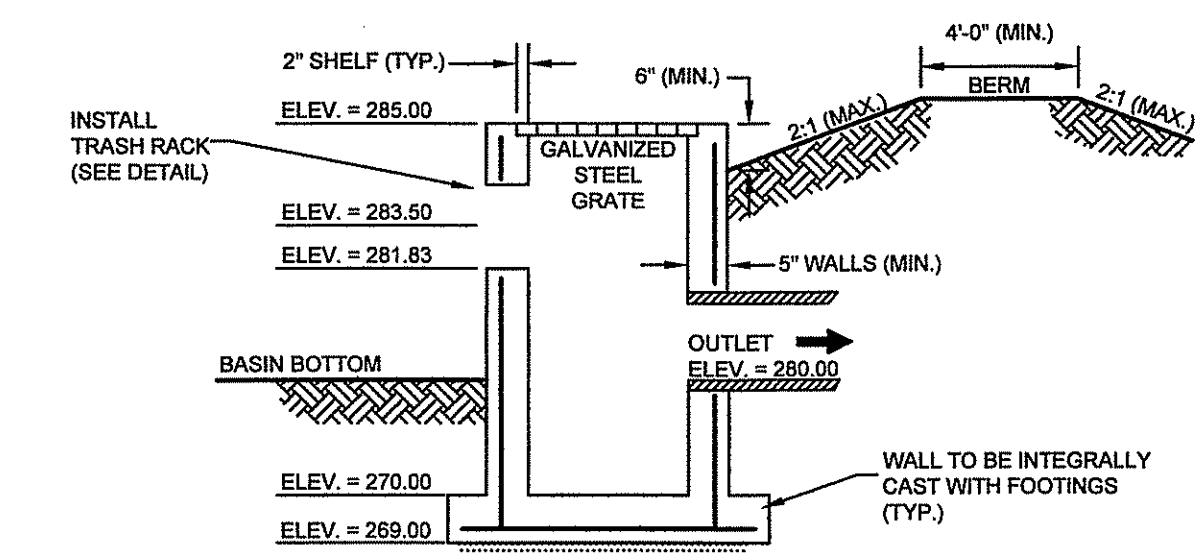




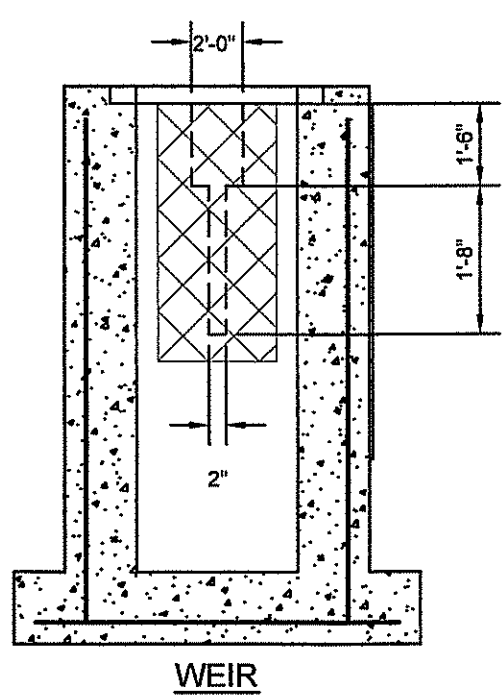
**EVERGREEN TREE PLANTING DETAIL**  
NOT TO SCALE  
(JANUARY 2012)



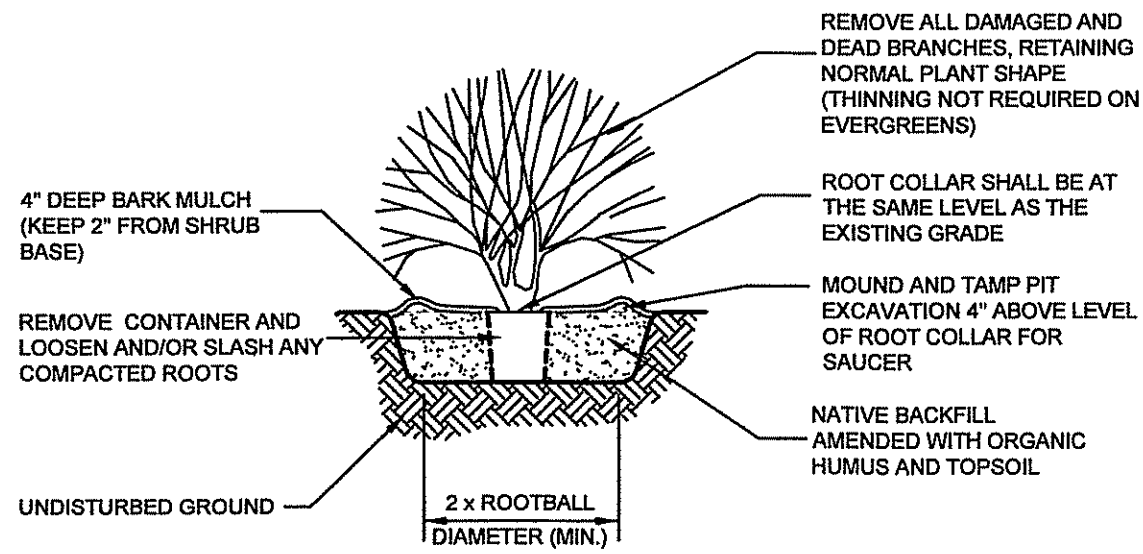
**STONEWALL DETAIL**  
NOT TO SCALE



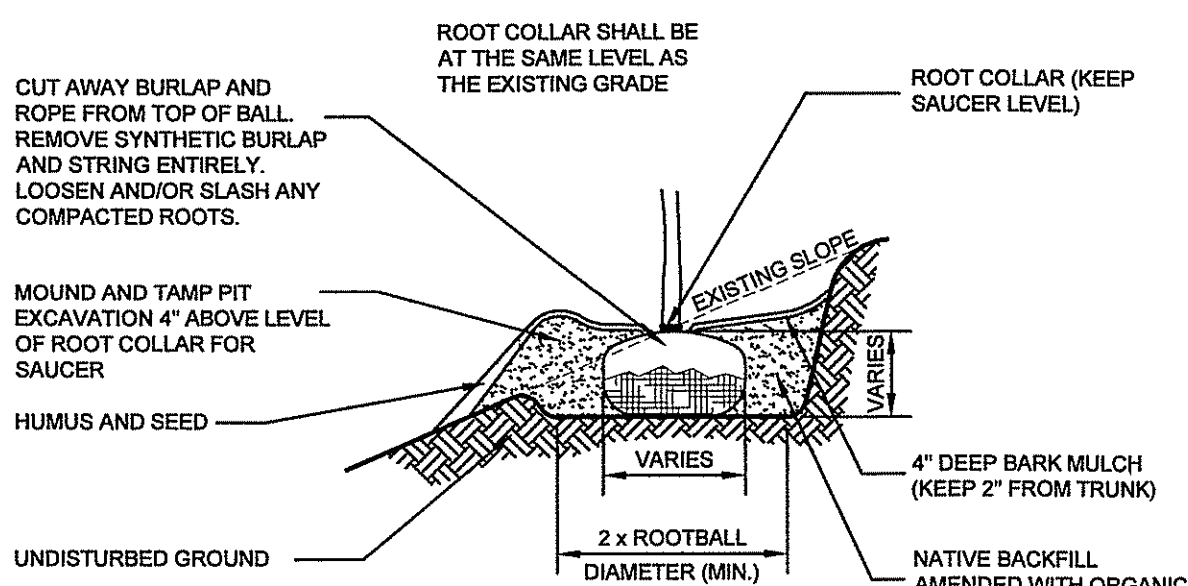
- NOTES:**
1. ALL CEMENT CONCRETE TO BE 4,000 PSI MINIMUM.
  2. GALVANIZED STEEL GRATE SHALL BE BOLTED TO TOP OF STRUCTURE.
  3. ALL OPENINGS CAST IN AS REQUIRED.
  4. PRECAST REINFORCED CONCRETE STRUCTURE TO MEET ASTM C-478 DESIGNATION AND H-20 LOADING.



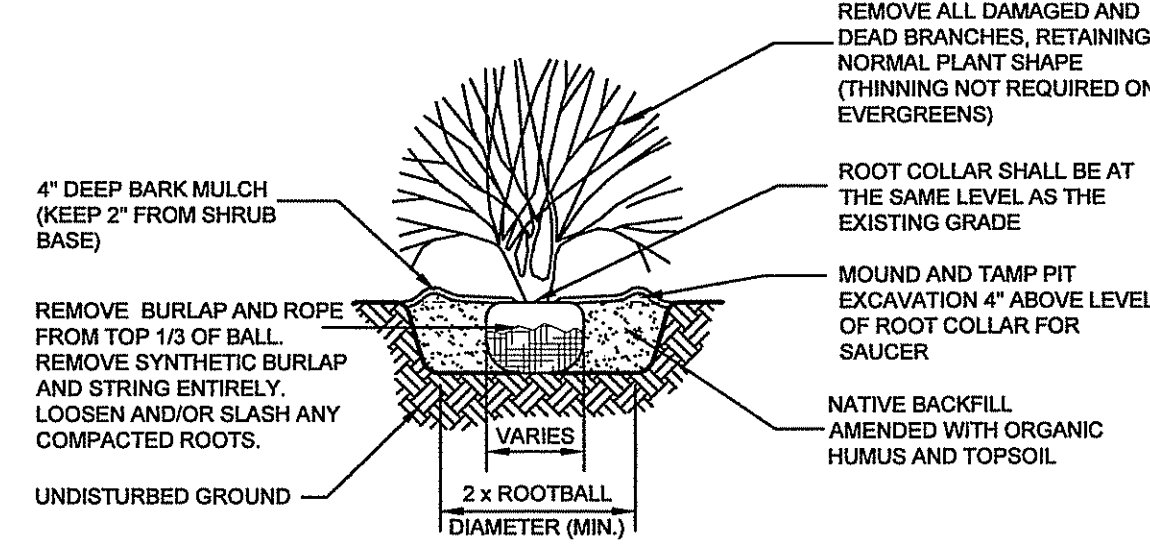
**WEIR**



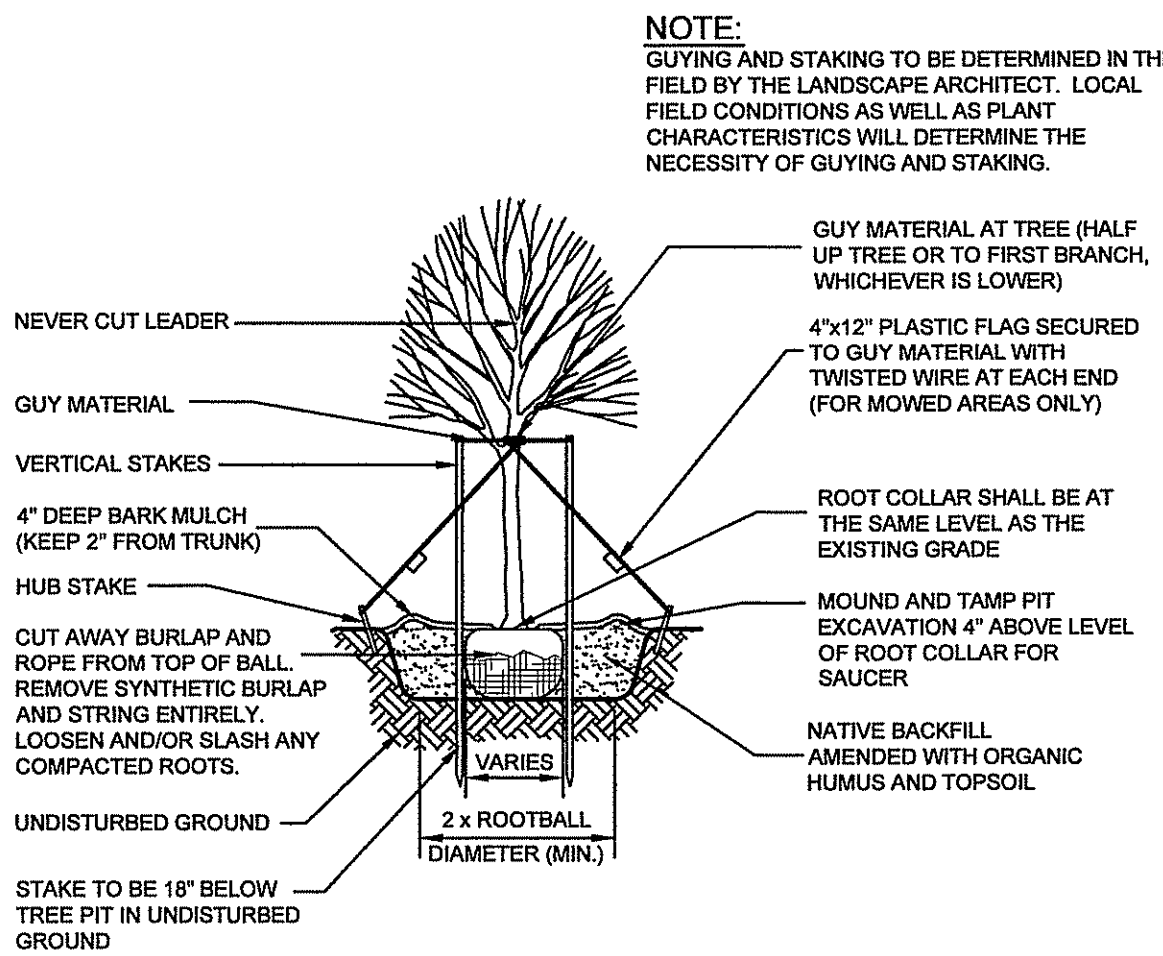
**CONTAINER SHRUB PLANTING DETAIL**  
NOT TO SCALE  
(JANUARY 2012)



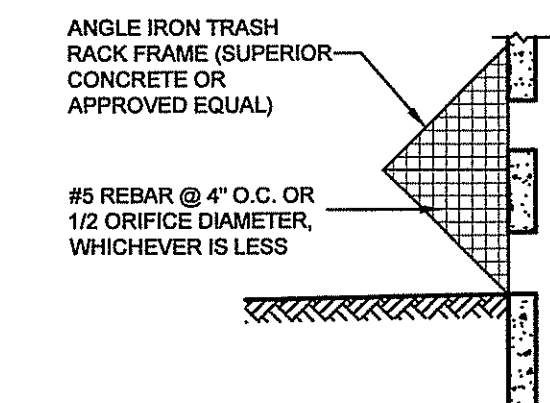
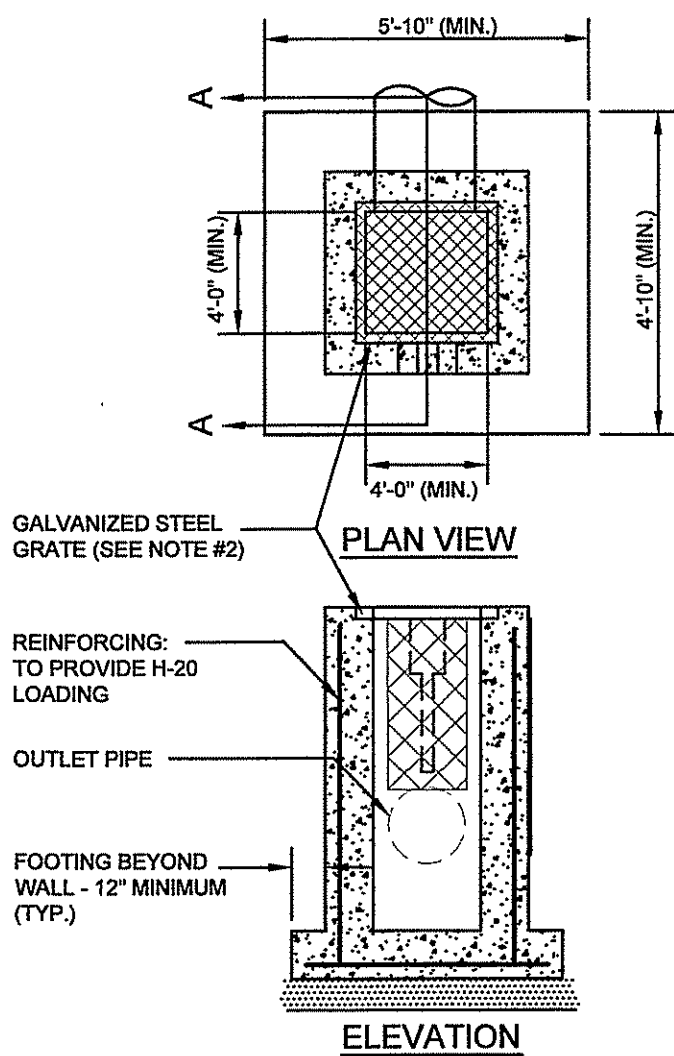
**TYPICAL PLANTING PIT ON SLOPE 4:1 OR GREATER**  
NOT TO SCALE  
(JANUARY 2012)



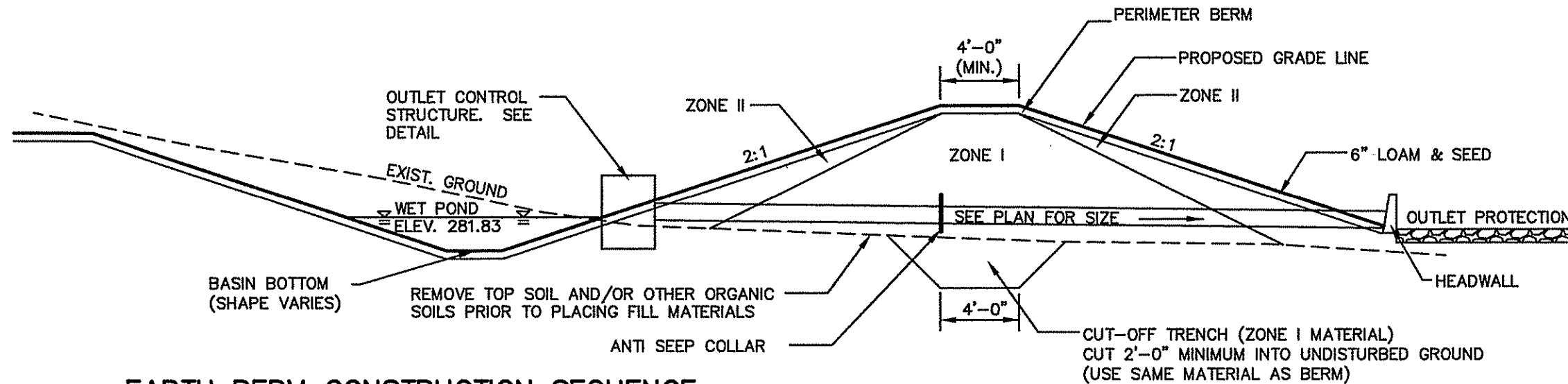
**BALLED & BURLAP SHRUB PLANTING DETAIL**  
NOT TO SCALE  
(JANUARY 2012)



**DECIDUOUS TREE PLANTING DETAIL**  
NOT TO SCALE  
(JANUARY 2012)



**TRASH RACK DETAIL**  
NOT TO SCALE



**EARTH BERM CONSTRUCTION SEQUENCE**

1. CONTRACTOR TO NOTIFY DIG-SAFE 72 HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
2. CUT AND CLEAR TREES AND BRUSH FROM CONSTRUCTION AREAS TO THE EXTENT NECESSARY. ALL BRANCHES, TOPS AND BRUSH TO BE PROPERLY DISPOSED OF BY CONTRACTOR.
3. PRIOR TO GRUBBING OF CLEARED AREAS, ALL SILTATION BARRIERS DESIGNED FOR USE AS TEMPORARY EROSION CONTROL MEASURES SHALL BE INSTALLED AS CALLED FOR ON PROJECT PLANS.
4. COMPLETE GRUBBING OPERATIONS. ALL STUMPS AND SIMILAR DEBRIS SHALL BE PROPERLY DISPOSED OF BY CONTRACTOR. ORGANIC MATERIAL SUITABLE FOR USE AS TOPSOIL SHALL BE STOCKPILED IN UPLAND AREAS. ALL STOCKPILES SHALL BE SEED WITH WINTER RYE AND IF NECESSARY SURROUNDED WITH HAY BALES IN ORDER TO PREVENT LOSS DUE TO EROSION.
5. CONSTRUCT TEMPORARY CULVERTS AS NECESSARY TO FACILITATE CONSTRUCTION ACTIVITIES. ALL SUCH CROSSINGS SHALL BE PROTECTED WITH HAY BALE BARRIERS TO LIMIT EROSION.
6. PERFORM EARTHWORK CUT/FILLS REQUIRED TO SHAPE SEDIMENT FOREBAY AND STORMWATER BASIN.
7. CONSTRUCT OUTLET & OVERFLOW STRUCTURE, WEIR, CULVERT, HEADWALL, AND RIP RAP OUTLET PROTECTION AS SHOWN ON PLANS.
8. CONSTRUCT ZONE I PORTION OF EARTH EMBANKMENT.
9. CONSTRUCT ZONE II PORTION OF EARTH EMBANKMENT.
10. APPLY TOPSOIL TO SLOPES AND OTHER AREAS DISTURBED BY CONSTRUCTION. TOPSOIL USED MAY BE NATIVE ORGANIC MATERIAL SCREENED SO AS TO BE FREE OF ROOTS, BRANCHES, STONES, AND OTHER DELETERIOUS MATERIALS. TOPSOIL SHALL BE APPLIED SO AS TO PROVIDE A MINIMUM OF A 4-INCH COMPACTED THICKNESS. UPON COMPLETION OF TOPSOILING, FINISHED SECTIONS ARE TO BE LIMED, SEEDDED AND MULCHED. CONSTRUCTION PERSONNEL SHALL INSPECT COMPLETED SECTIONS OF WORK ON A REGULAR BASIS AND REMEDY ANY PROBLEM AREAS UNTIL A HEALTHY STAND OF GRASS HAS BECOME ESTABLISHED.
11. MAINTAIN, REPAIR, AND REPLACE AS NECESSARY TEMPORARY EROSION CONTROL MEASURES UNTIL SUCH TIME AS THE ENTIRE CONSTRUCTION AREA HAS BEEN STABILIZED (A MINIMUM OF ONE WINTER SHALL HAVE PASSED).
12. AFTER STABILIZATION REMOVE AND SUITABLY DISPOSE OF TEMPORARY EROSION CONTROL MEASURES.
13. MONITOR CONSTRUCTION ACTIVITIES TO INSURE CONSTRUCTION ACTIVITIES ARE BEING PERFORMED IN SUCH A WAY AS NOT TO ENDANGER THE INTEGRITY OF EARTH EMBANKMENTS, STORMWATER CONTROL STRUCTURE, CULVERT AND RIP RAP OUTLET PROTECTION.

**TYPICAL STORMWATER BASIN CROSS SECTION**  
NOT TO SCALE

## TURF ESTABLISHMENT SCHEDULE

### PURPOSE:

TO ESTABLISH AND MAINTAIN PERMANENT AND TEMPORARY TURF AREAS, RESTORE GROWTH TO EXISTING TURF AREAS DISTURBED DURING CONSTRUCTION AND CONTROL SOIL EROSION.

### PREPARATION AND EXECUTION:

1. RAKE THE SUBGRADE OF ALL AREAS TO BE LOAMED AND SEED TO REMOVE RUBBISH, STICKS, ROOTS AND STONES LARGER THAN 1 INCH.
2. PLACE LOAM OVER AREAS TO BE SEEDDED AND SPREAD.
3. FINE GRADE SURFACE AND SUPPLEMENT WITH SUITABLE LOAM WHERE NEEDED TO CREATE A UNIFORM SURFACE ACCORDING TO THE FINISH GRADES INDICATED. TOP AND BOTTOM OF SLOPES SHALL BE ROUNDED. NO LOAM SHALL BE SPREAD IF THE SUBGRADE IS EXCESSIVELY WET OR FROZEN.
4. APPLY LIME EVENLY OVER LOAM SURFACE AND THOROUGHLY INCORPORATE LIME INTO THE LOAM BY HEAVY RAKING TO AT LEAST ONE-HALF THE DEPTH OF THE LOAM.
5. APPLY FERTILIZER AND MIX WITH THE UPPER 2 INCHES OF LOAM.
6. DETERMINE APPROPRIATE MIXTURE FOR AREA TO BE SEEDDED BASED ON EXAMINATION OF PROJECT PLANS. UNIFORMLY SPREAD THE SEED BY BROADCASTING OR HYDROSEEDING. IF BROADCASTING, LIGHTLY RAKE INTO THE PREPARED SURFACE AND ROLL. IF, HYDROSEEDING, USE 4 TIMES THE RECOMMENDED RATE OF INOCULANT. AFTER SEED IS SPREAD, WATER THOROUGHLY WITH A FINE SPRAY.
7. SEEDING FOR PERMANENT COVER SHALL OCCUR BETWEEN SEPTEMBER 15 AND OCTOBER 15 AND BETWEEN APRIL 15 AND JUNE 15. SEEDING SHALL NOT BE DONE DURING WINDY WEATHER, WHEN THE GROUND IS FROZEN OR EXCESSIVELY WET OR OTHERWISE UNTILLABLE.
8. WITHIN 24 HOURS AFTER SEEDING OPERATION, UNIFORMLY MULCH THE AREA WITH HAY. ANCHOR MULCH ON ALL SLOPES EXCEEDING 3:1 USING MULCH NETTING INSTALLED IN ACCORDANCE WITH THE MANUFACTURER.
9. PROTECT AND PREVENT AGAINST WASHOUTS, ANY WASHOUTS WHICH OCCUR SHALL BE PROMPTLY REGRADED AND RESEEDDED.
10. WHEN IT IS IMPRACTICAL TO ESTABLISH PERMANENT GROWTH ON DISTURBED EARTH BY OCTOBER 15, A TEMPORARY SEED MIXTURE SHALL BE USED. WHEN TEMPORARY SEEDING CANNOT ESTABLISH VISIBLE GROWTH, THE DISTURBED AREA SHALL BE COVERED WITH SIX INCHES OF MULCH FOR THE WINTER.

### MAINTENANCE:

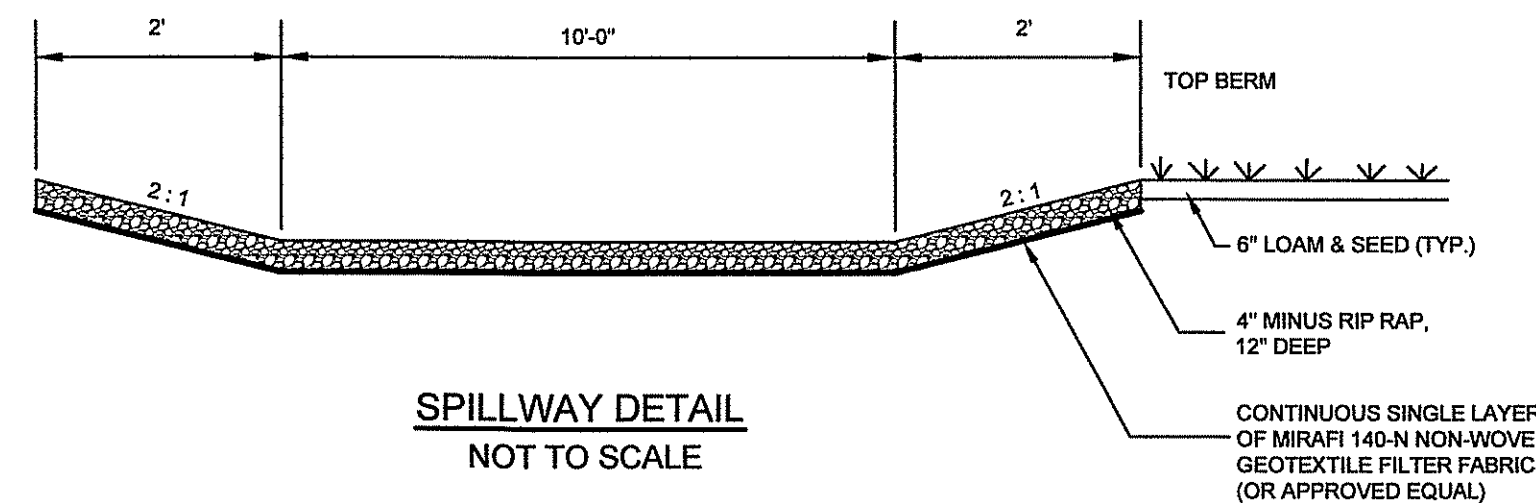
ALL SEEDDED AREAS SHALL BE KEPT WATERED AND IN GOOD CONDITION. RESEED AS NECESSARY TO ESTABLISH HEALTHY UNIFORM GROWTH OVER THE ENTIRE SEEDDED AREA. MAINTAIN SEEDDED AREAS IN AN APPROVED CONDITION UNTIL FINAL ACCEPTANCE. MAINTENANCE SHALL INCLUDE REPAIRS FOR DAMAGE CAUSED BY EROSION.

### APPLICATION RATES:

1. LOAM SHALL BE APPLIED AT A MINIMUM COMPACTED THICKNESS OF 6 INCHES.
2. LIME SHALL BE APPLIED AT A RATE OF 75 TO 100 POUNDS PER 1,000 S.F.
3. FERTILIZER SHALL BE APPLIED AT A RATE OF 30 POUNDS PER 1,000 S.F.
4. SEED MIXTURE FOR LAWN AREAS SHALL BE APPLIED AT A RATE OF AT LEAST 80 POUNDS PER ACRE OR 2 POUNDS PER 1,000 S.F.
5. TEMPORARY SEED MIXTURE SHALL BE APPLIED AT A RATE OF 2 POUNDS PER 1,000 S.F.
6. SEED MIXTURE FOR SLOPE AREAS SHALL BE APPLIED AT A RATE OF 80 POUNDS PER ACRE OR 2 POUNDS PER 1,000 S.F.
7. SEED MIXTURE FOR STORMWATER MANAGEMENT AREAS SHALL BE APPLIED AT A RATE OF 70 POUNDS PER ACRE OR 1.6 POUNDS PER 1,000 S.F.
8. MULCH SHALL BE APPLIED AT A RATE OF 90 POUNDS PER 1,000 S.F.

### MATERIALS:

1. LOAM USED FOR TOPSOIL SHALL BE FRIABLE, FERTILE, NATURAL FREE-DRAINING LOAM; FREE OF ROOTS, GRASS, STICKS, WEEDS, CLAY, SOD LUMPS, DEBRIS AND STONES LARGER THAN 1 INCH IN ANY DIMENSION. SOIL SHALL NOT BE EXCESSIVELY ACID OR ALKALINE AND CONTAIN NO TOXIC MATERIALS.
2. LIME SHALL BE GROUND LIMESTONE CONTAINING NO LESS THAN 95% CALCIUM AND MAGNESIUM CARBONATES.
3. FERTILIZER SHALL BE 10-20-20 COMMERCIAL GRADE.
4. SEED MIXTURE FOR LAWN AREAS SHALL BE 99% PURE LIVE SEED AND CONSIST OF THE FOLLOWING:  
25% CREEPING RED FESCUE  
25% KENTUCKY BLUEGRASS  
25% REDTOP  
25% MANHATTAN PERENNIAL RYEGRASS
5. TEMPORARY SEEDING MIXTURE SHALL BE AN APPROVED CONSERVATION MIX OR CONSIST OF THE FOLLOWING:  
15% BLACKWELL OR SHELTER SWITCHGRASS  
30% NIAGRA OR KAW BIG BLUESTEM  
30% CAMPER OR BLAZE LITTLESTEM  
15% NE-ZT OR BLAZE SAND LOVEGRASS  
10% VIKING BIRDSFOOT TREFOL  
INOCULUM SPECIFIC TO BIRDSFOOT TREFOL MUST BE USED WITH THIS MIXTURE. IF SEEDING BY HAND, A STICKING AGENT SHALL BE USED. IF SEEDING WITH A HYDROSEEDER, USE FOUR TIMES THE RECOMMENDED AMOUNT OF INOCULUM.
6. SEED MIXTURE FOR SLOPE AREAS SHALL BE 99% PURE LIVE SEED AND SHALL CONSIST OF THE FOLLOWING:  
30% CREEPING RED FESCUE  
40% PERENNIAL RYE GRASS  
15% REDTOP  
15% BIRDSFOOT TREFOL  
IN ADDITION TO THE MIX SPECIFIED ABOVE, CROWN VETCH SHALL BE USED ON ALL SLOPES STEEPER THAN 3:1. CROWN VETCH SHALL BE APPLIED AT A RATE OF 10 POUNDS PER ACRE AND INOCULUM SPECIFIC TO CROWN VETCH MUST BE USED.
7. SEED MIXTURE FOR STORMWATER MANAGEMENT AREAS, INCLUDING DETENTION BASINS AND VEGETATED TREATMENT SWALES SHALL CONSIST OF THE FOLLOWING:  
25% CREEPING RED FESCUE  
15% SWITCH GRASS  
15% FOX SEDGE  
15% CREEPING BENTGRASS  
10% FLATPEA  
20% WILDFLOWER VARIETY
8. HAY USED FOR MULCH SHALL CONSIST OF MOWED AND PROPERLY CURED GRASS OR LEGUME MOWINGS, FREE FROM WEEDS, TWIGS, DEBRIS OR OTHER DELETERIOUS MATERIAL AND ROT OR MOLD.



**SPILLWAY DETAIL**  
NOT TO SCALE

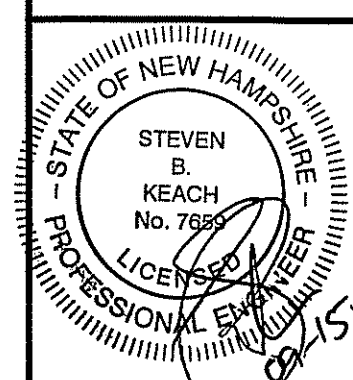
## CONSTRUCTION DETAILS THE TOWNHOMES AT HIGHFIELD COMMONS - PHASE 2B MAP 237; LOT 8-1 59 FILLMORE BOULEVARD ROCHESTER, NEW HAMPSHIRE STRAFFORD COUNTY

**OWNER OF RECORD:**  
183 WASHINGTON STREET, LLC  
501 D.W. HIGHWAY, SUITE F  
MERRIMACK, NH 03054

**APPLICANT:**  
183 WASHINGTON STREET, LLC  
501 D.W. HIGHWAY, SUITE F  
MERRIMACK, NH 03054

**KM KEACH-NORDSTROM ASSOCIATES, INC.**

Civil Engineering Land Surveying Landscape Architecture  
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881

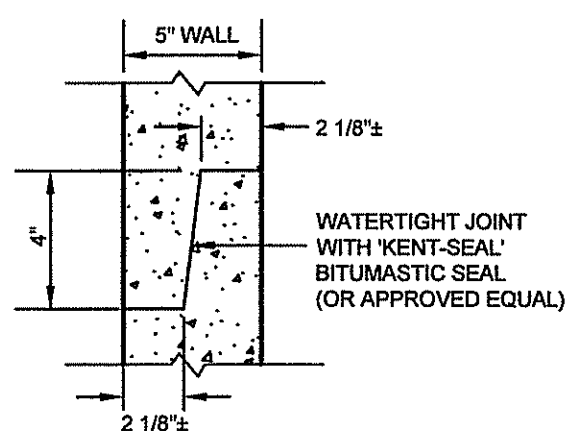


REVISIONS			
No.	DATE	DESCRIPTION	BY
1	6/25/14	FOR NHDES SUBMITTAL	BJC
2	8/22/14	PER NHDES COMMENTS	BJC
3	9/12/14	DATE ONLY	BJC
DATE: JUNE 9, 2014 SCALE: AS SHOWN			
PROJECT NO: 12-1212-1 SHEET 12 OF 17			

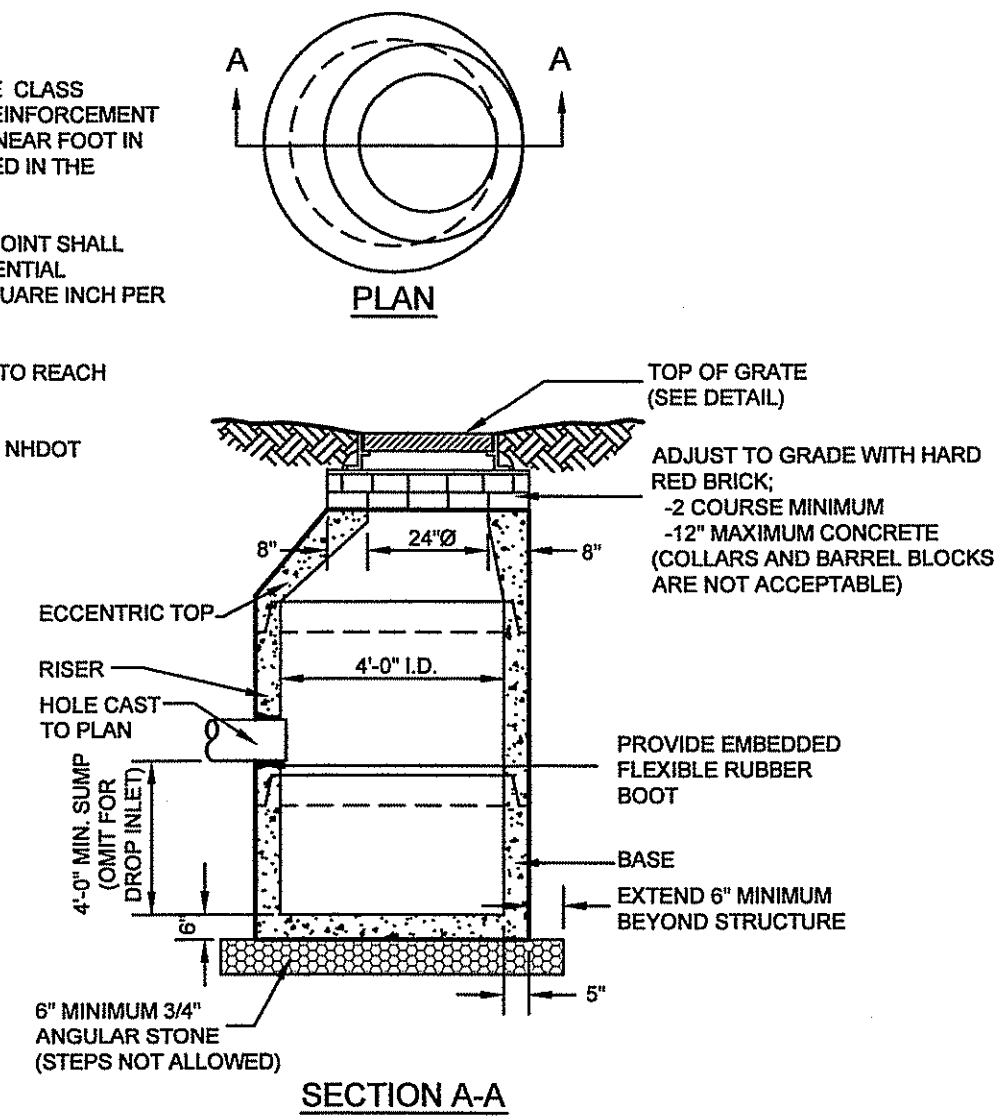


**NOTES:**

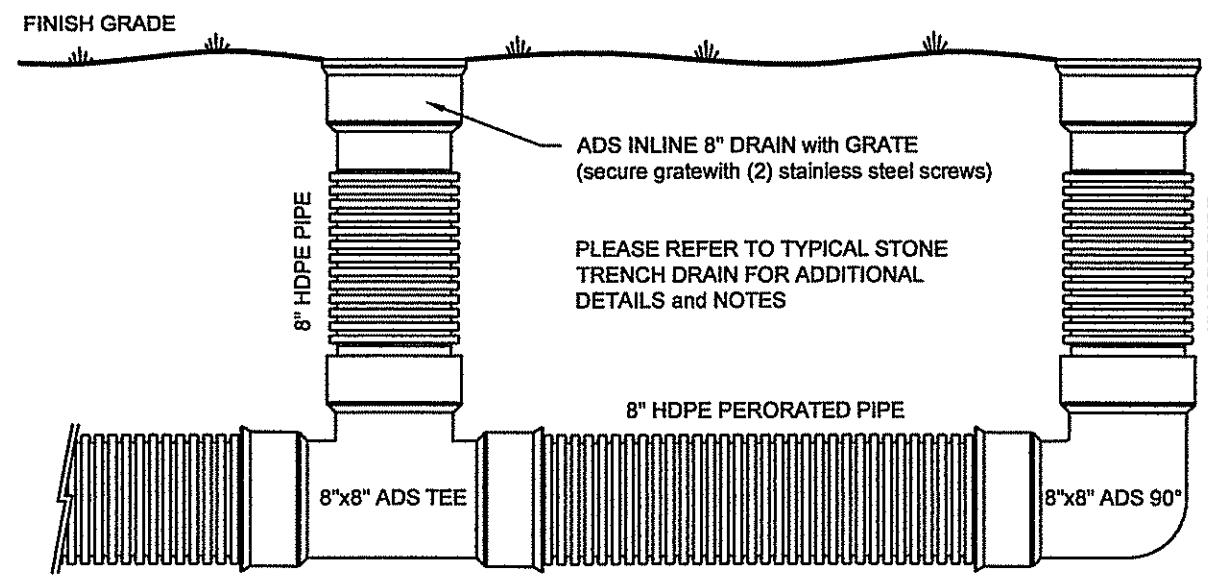
- ALL SECTIONS SHALL BE CONCRETE CLASS AA(4000 PSI). CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQUARE INCH PER LINEAR FOOT IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER THIRD OF THE WALL.
- THE TONGUE OR GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQUARE INCH PER LINEAR FOOT.
- RISER OF 1', 2', 3' & 4' CAN BE USED TO REACH DESIRED DEPTH.
- MATERIALS AND CONSTRUCTION TO NHDOT STANDARDS.



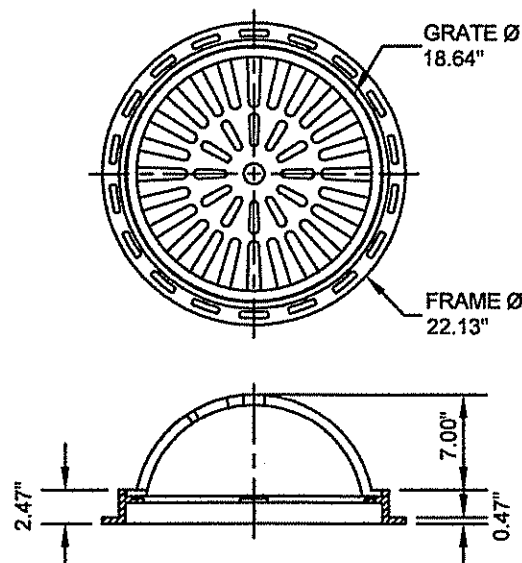
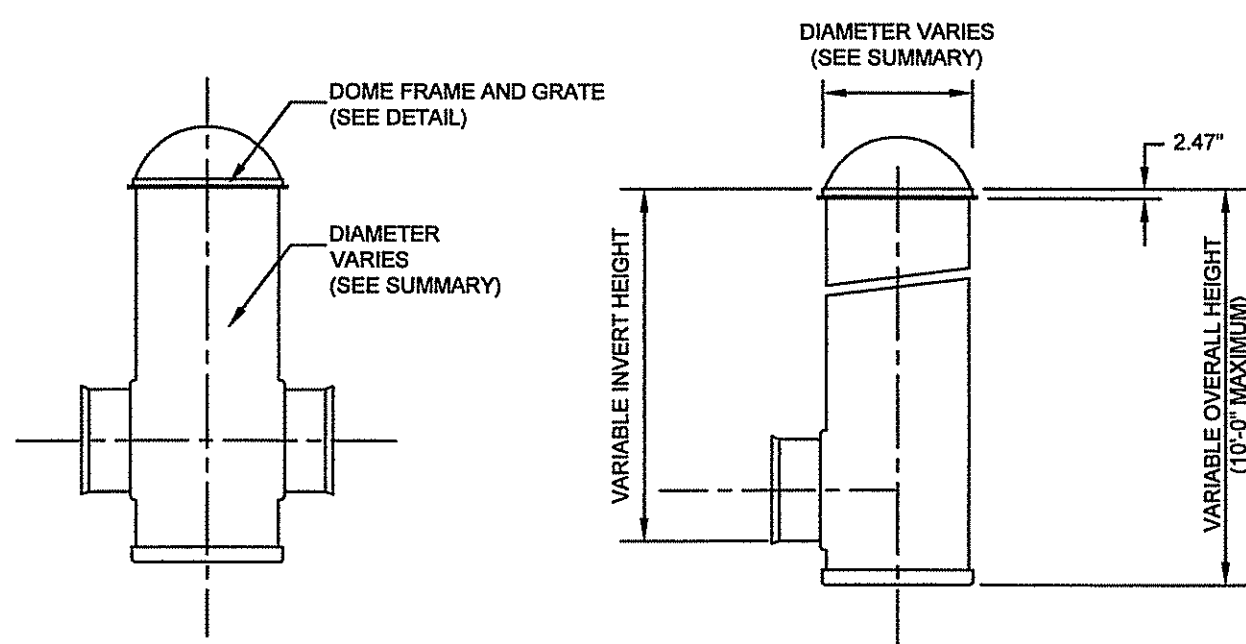
**DETAIL OF TONGUE AND GROOVE JOINT**



**PRECAST REINFORCED CATCH BASIN**  
NOT TO SCALE  
(MAY 2012)



**UNDERDRAIN TRENCH CLEANOUT DETAIL**  
NOT TO SCALE

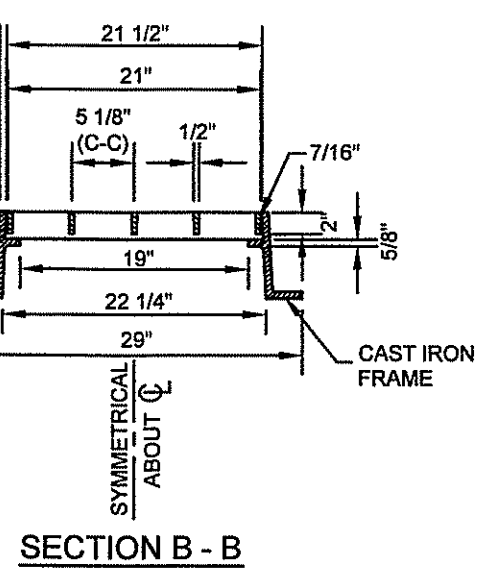
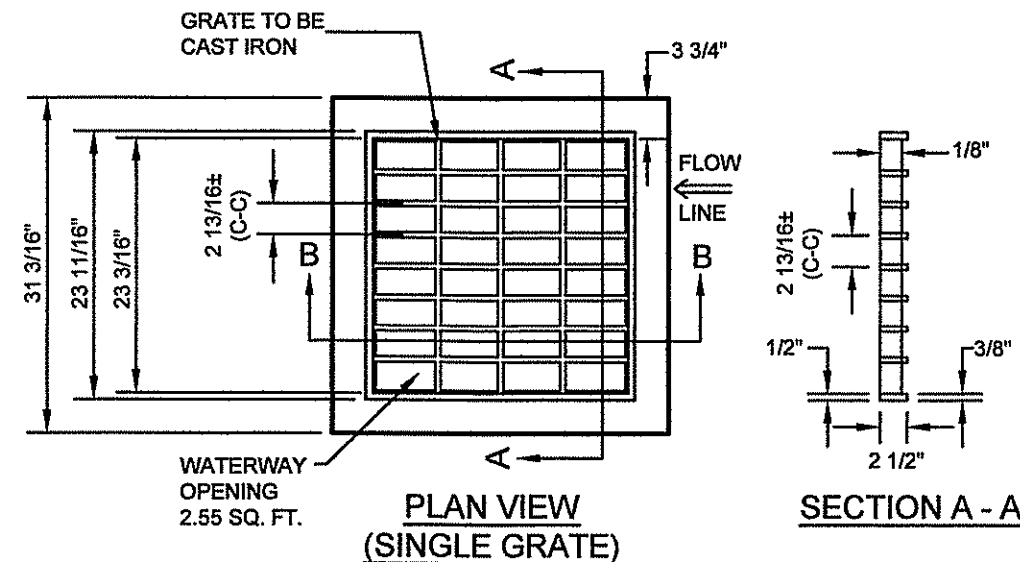


**DOMES GRATE**

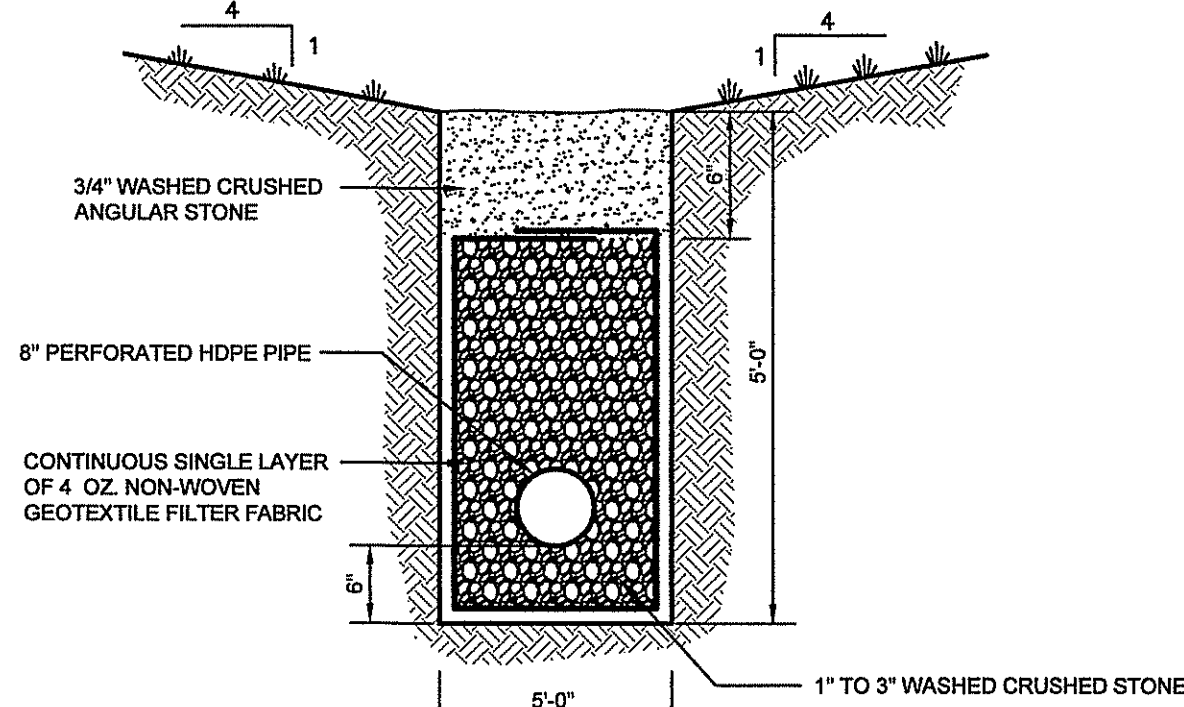
LOCATION	A (Rim)	B (Orif.)	C (In)	D (Out)	E (Sump)
OS-2 (BP-1)	301.50	n/a	6": 296.0	6": 296.0	295.5
OS-3 (BP-2)	301.50	n/a	6": 298.5	12": 298.5	298.0

NOTE: ALL NYLOPLAST BASIN OUTLET STRUCTURES WILL BE 24.0 INCH DIAMETER UNITS

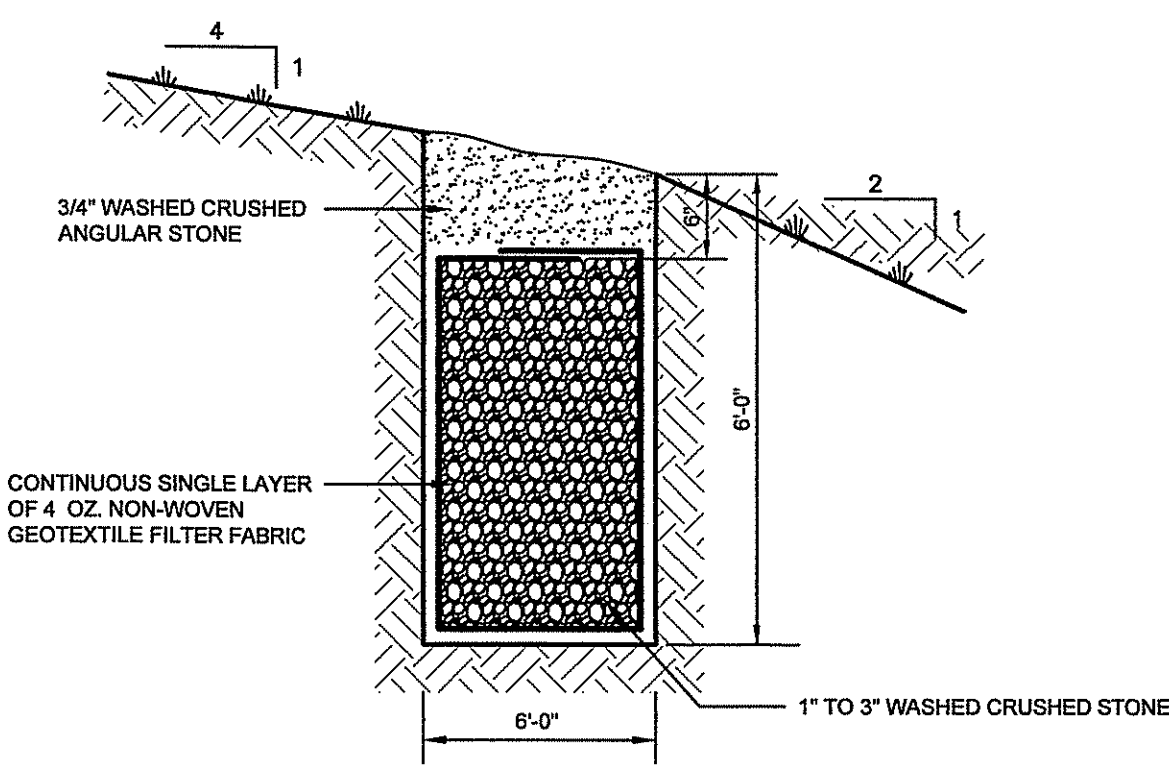
**OUTLET STRUCTURE NYLOPLAST DRAIN BASIN**  
NOT TO SCALE



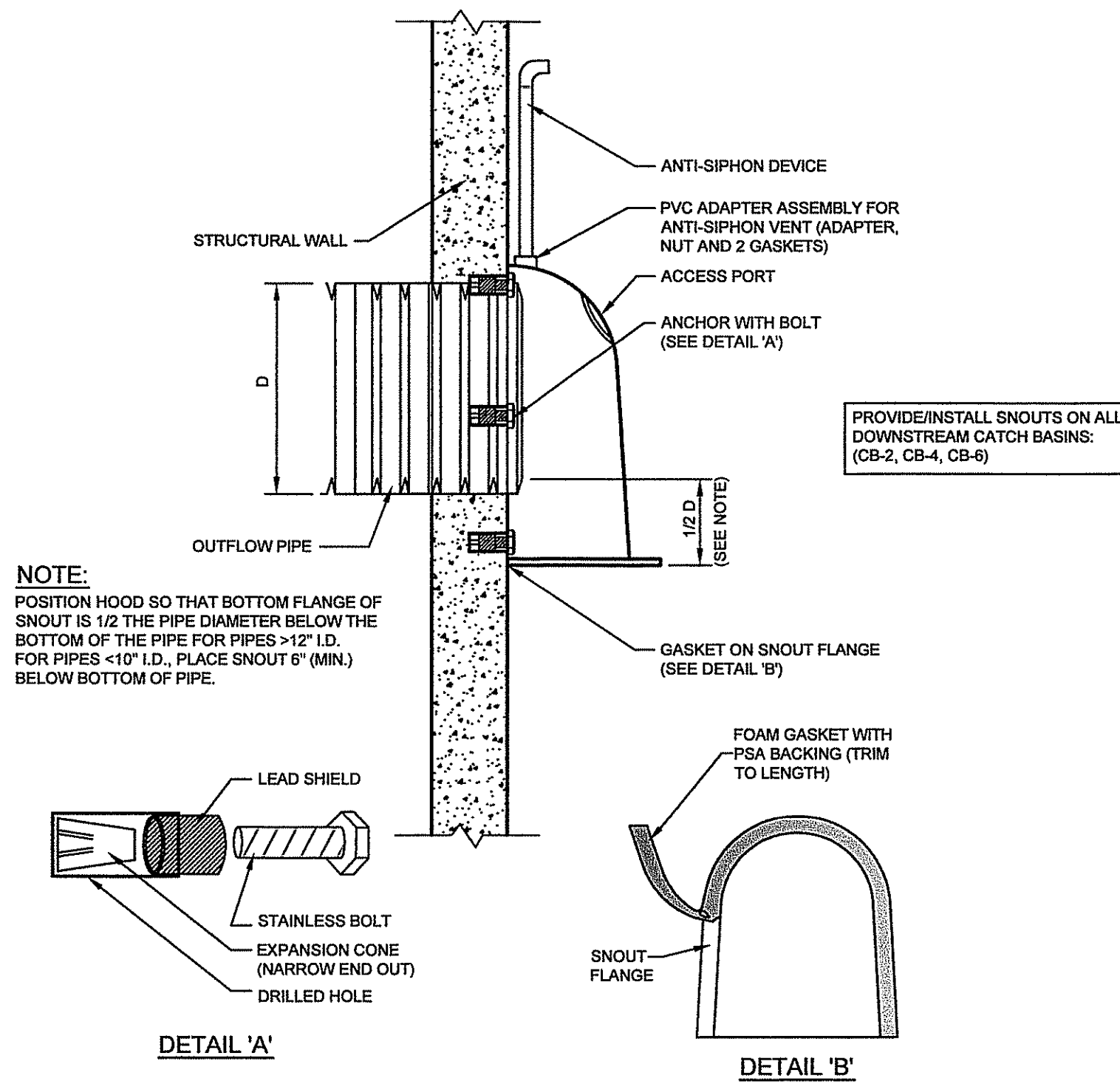
**TYPE B FRAME & GRATE DETAIL**  
NOT TO SCALE  
(MARCH 2008)



**STONE TRENCH WITH UNDERDRAIN**  
NOT TO SCALE



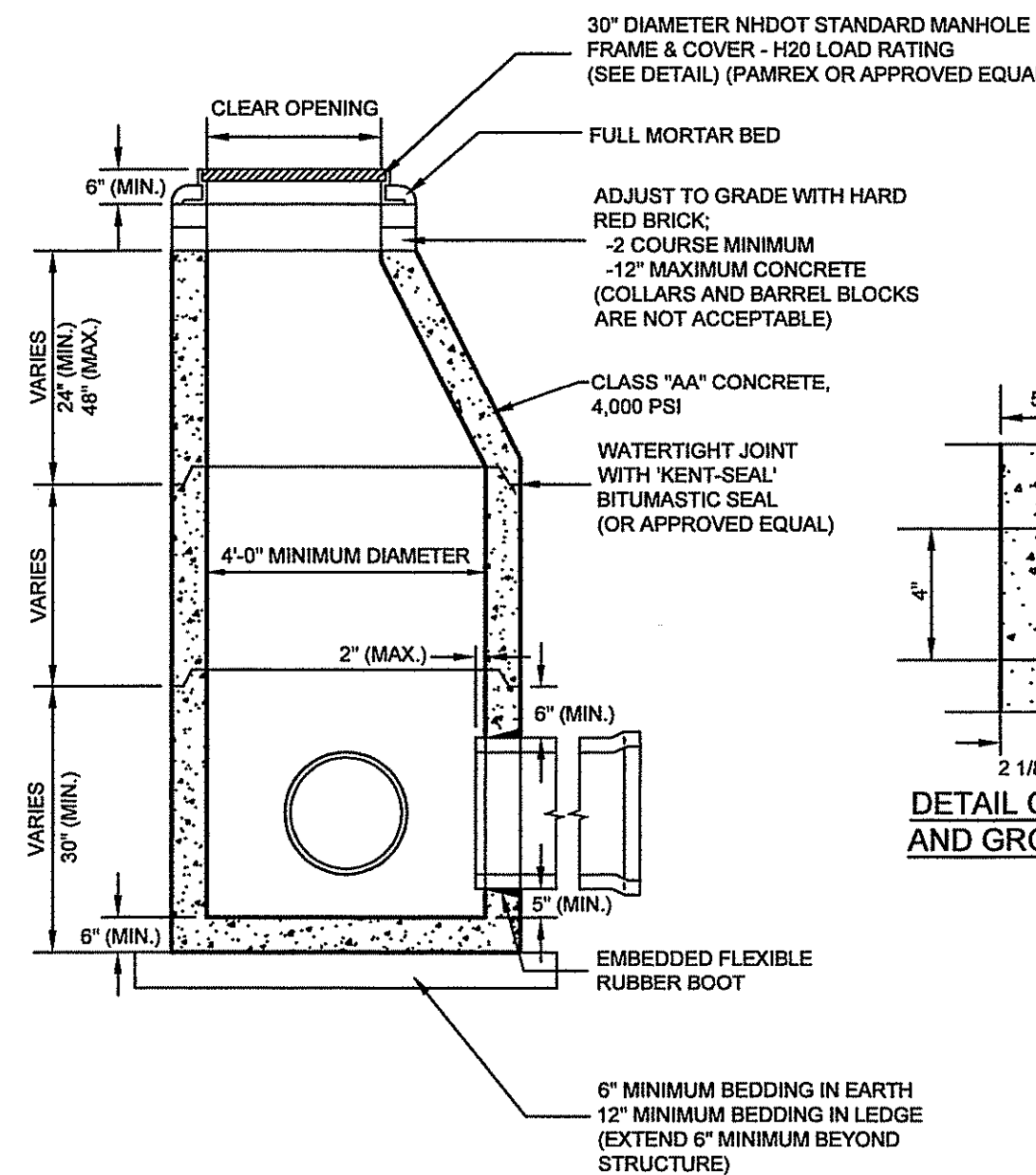
**INFILTRATION TRENCH**  
NOT TO SCALE



**DETAIL 'A'**

**DETAIL 'B'**

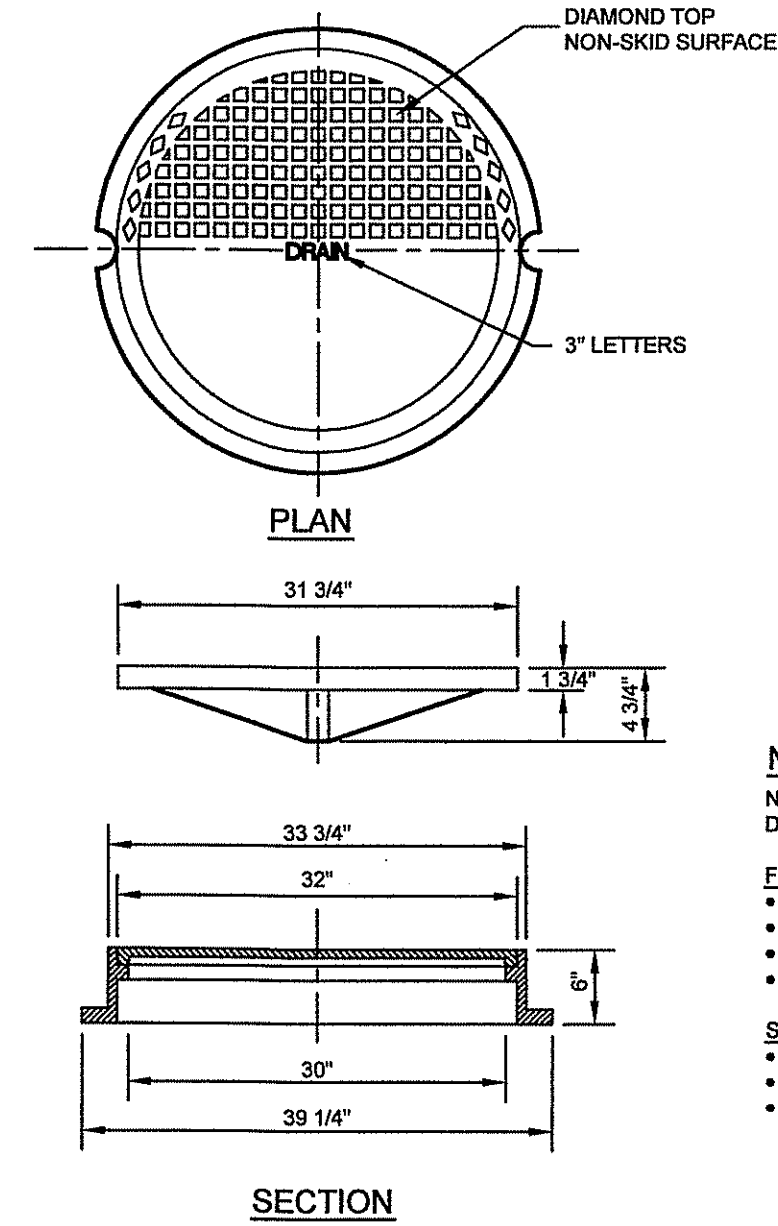
**SNOUT OIL AND DEBRIS STOP DETAIL (OR EQUAL)**  
NOT TO SCALE  
(MARCH 2008)



**NOTES:**

- STEPS ARE NOT ALLOWED.
- ALL SECTIONS SHALL BE CONCRETE CLASS AA (4,000 PSI). CIRCUMFERENTIAL REINFORCEMENT SHALL BE 0.12 SQ. IN. PER L.F. IN ALL SECTIONS AND SHALL BE PLACED IN THE CENTER OF THE WALL.
- THE TONGUE OR THE GROOVE OF THE JOINT SHALL CONTAIN ONE LINE OF CIRCUMFERENTIAL REINFORCEMENT EQUAL TO 0.12 SQ. IN. PER L.F.
- MATERIALS AND CONSTRUCTION TO NHDOT STANDARDS.

**PRECAST REINFORCED DRAIN MANHOLE DETAIL**  
NOT TO SCALE  
(MARCH 2008)



**DRAIN MANHOLE FRAME AND COVER DETAIL**  
NOT TO SCALE  
(JANUARY 2012)

**NOTES:**

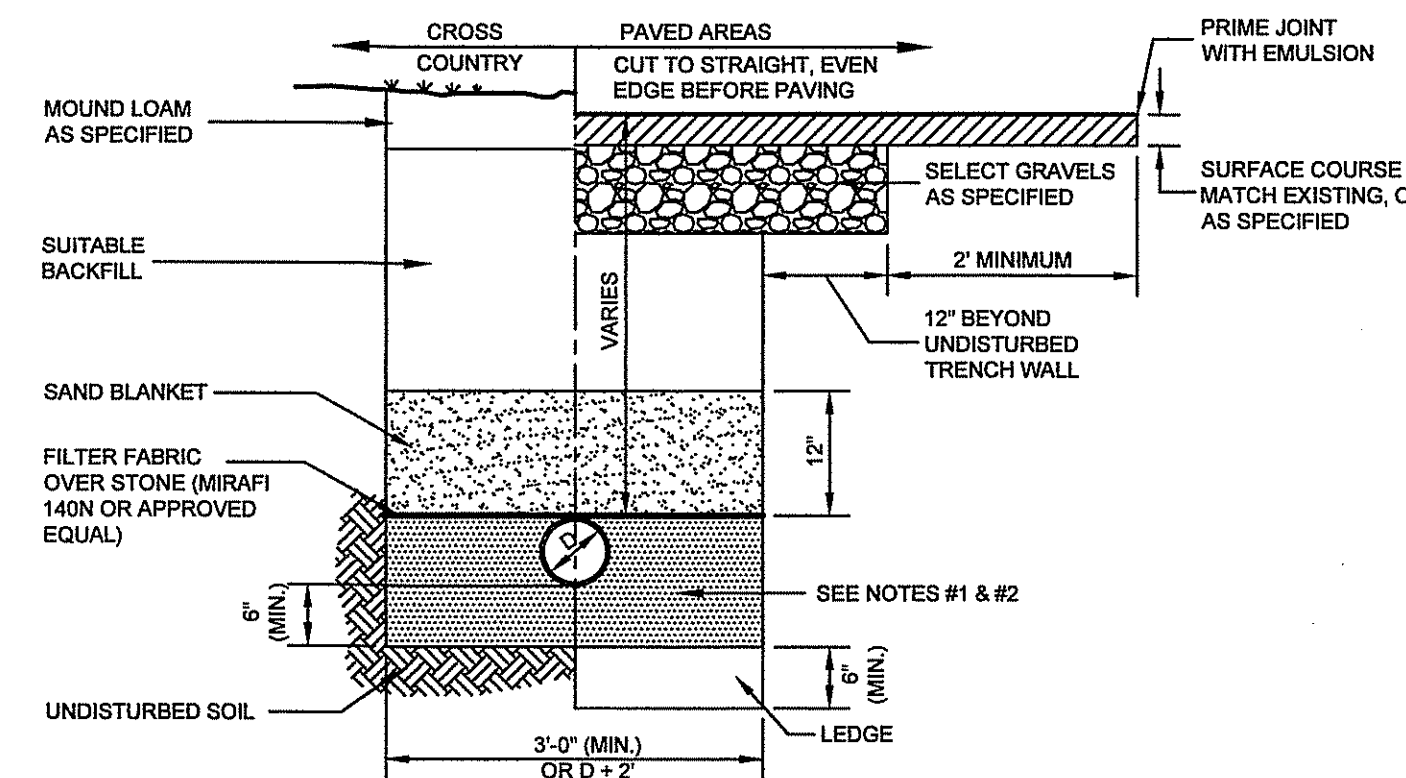
NEW HAMPSHIRE MAINTAINS A CLEAR OPENING DESIGNATION OF 30" FOR ITS MANHOLE CASTINGS.

**FEATURES:**

- 3" LETTERING
- COVERS MARKED DRAIN
- NONROCKING COVER
- DIAMOND SURFACE DESIGN

**SPECIFICATIONS:**

- FULLY MACHINED FRAME AND COVER
- H-20 LOAD RATED
- PAMREX OR APPROVED EQUAL



**NOTES**

- THOROUGHLY COMPACTED SCREENED GRAVEL FOR RCP PIPE. SCREENED GRAVEL TO EXTEND TO SELECT FILL LINE.
- FOR HDPE OR PVC PIPE, BEDDING SHALL BE 3/4" STONE TO THE TOP OF THE PIPE.

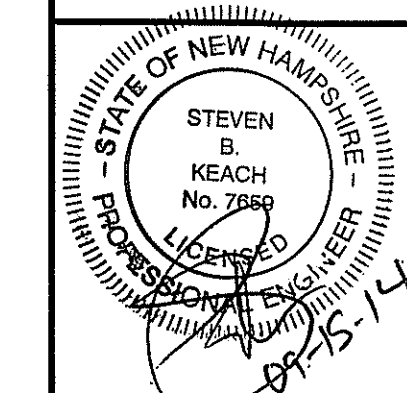
**STORM DRAINAGE TRENCH DETAIL**  
NOT TO SCALE  
(MARCH 2008)

**CONSTRUCTION DETAILS**  
**THE TOWNHOMES AT HIGHFIELD COMMONS - PHASE 2B**  
MAP 237; LOT 8-1  
59 FILLMORE BOULEVARD  
ROCHESTER, NEW HAMPSHIRE  
STRAFFORD COUNTY

**OWNER OF RECORD:**  
183 WASHINGTON STREET, LLC  
501 D.W. HIGHWAY, SUITE F  
MERRIMACK, NH 03054

**APPLICANT:**  
183 WASHINGTON STREET, LLC  
501 D.W. HIGHWAY, SUITE F  
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**KM KEACH-NORDSTROM ASSOCIATES, INC.**  
Civil Engineering Land Surveying Landscape Architecture  
10 Commerce Park North, Suite 3B, Bedford, NH 03110 Phone (603) 627-2881



REVISIONS			
No.	DATE	DESCRIPTION	BY
1	6/25/14	FOR NHDES SUBMITTAL	BJC
2	8/22/14	PER NHDES COMMENTS	BJC
3	9/12/14	DATE ONLY	BJC
DATE: JUNE 9, 2014			
PROJECT NO: 12-1212-1			
SCALE: AS SHOWN			
SHEET 13 OF 17			

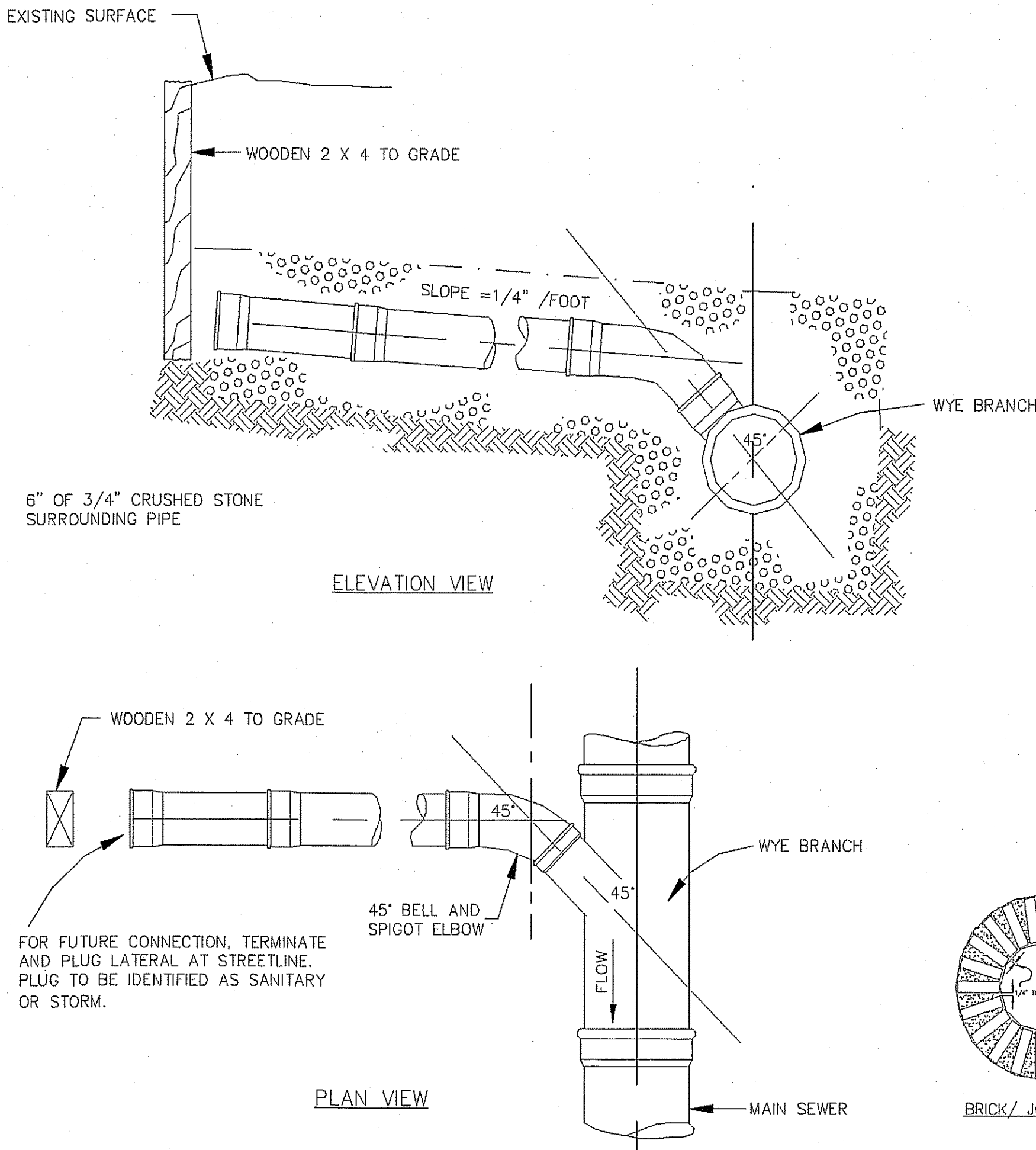




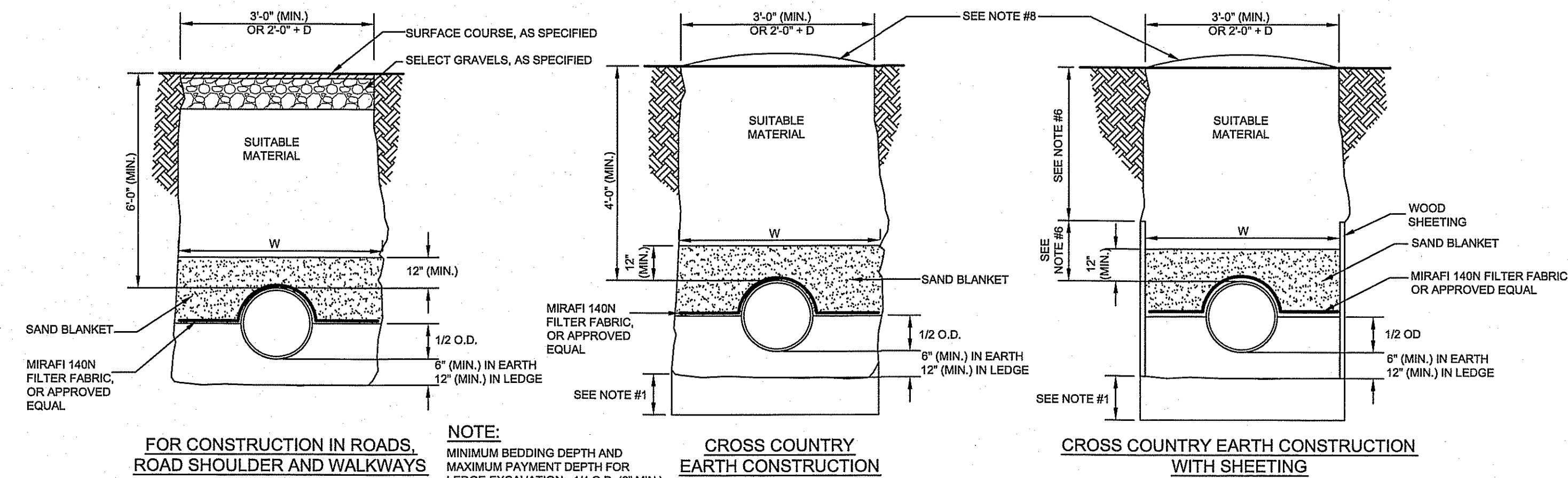


SANITARY SEWER PIPE NOTES:

- MINIMUM SIZE PIPE FOR UNIT SERVICE SHALL BE 4 INCHES UNLESS OTHERWISE NOTED. MINIMUM SIZE FOR STREET SEWER LINES SHALL BE 8 INCHES.
- PIPE AND JOINT MATERIALS:
  - DUCTILE IRON PIPE AND FITTINGS SHALL CONFORM TO THE FOLLOWING STANDARDS OF THE AMERICAN WATER WORKS ASSOCIATION (AWWA):
    - AWWA C151/A21.51-02 - FOR DUCTILE IRON PIPE, CENTRIFUGALLY CAST IN METAL OR SAND-LINED MOLDS, FOR WATER OR OTHER LIQUIDS;
    - AWWA C150/A21.50-02 - FOR THICKNESS DESIGN OF DUCTILE IRON PIPE AND WITH ASTM A536-84 (2004) DUCTILE IRON CASTINGS;
    - JOINTS SHALL BE MECHANICAL, PUSH-ON OR BALL-AND-SOCKET TYPE.
  - PLASTIC GRAVITY SEWER PIPE AND FITTINGS SHALL COMPLY WITH THE FOLLOWING STANDARDS:
    - ASTM D3034-04A - PVC, SOLID WALL;
    - AT LEAST 48 PSI AT 5% PIPE DIAMETER DEFLECTION, AS MEASURED IN ACCORDANCE WITH ASTM D2414-02 DURING MANUFACTURING; AND
    - JOINT SEALS FOR PVC PIPE SHALL BE OIL RESISTANT COMPRESSION RINGS OF ELASTOMERIC MATERIAL CONFORMING TO ASTM D3212-96A(2003)E1 AND SHALL BE PUSH-ON OR BELL-AND-SPIGOT TYPE.
- DAMAGED PIPE SHALL BE REJECTED AND REMOVED FROM THE JOB SITE.
- JOINTS SHALL BE DEPENDENT UPON PROPER MATERIALS (SEE NOTE #2) FOR WATER TIGHTNESS, AND ALL JOINTS SHALL BE PROPERLY MATCHED WITH THE PIPE MATERIALS USED. WHERE DIFFERING MATERIALS ARE TO BE CONNECTED, AS AT THE STREET SEWER WYE OR AT THE FOUNDATION WALL, APPROPRIATE MANUFACTURED ADAPTERS SHALL BE USED.
- ALL NEW CONSTRUCTION SERVICE CONNECTIONS SHALL USE TEE OR WYE FITTINGS. IN EXISTING CONSTRUCTION WHERE A TEE OR WYE IS NOT AVAILABLE, THE APPROPRIATE CONNECTION SHALL BE MADE, FOLLOWING THE MANUFACTURER'S INSTRUCTIONS USING A BOLTED, CLAMPED OR EPOXY-CEMENTED SADDLE TAPPED INTO A SMOOTHLY DRILLED OR SAWN OPENING IN THE SEWER. THE PRACTICE OF BREAKING AN OPENING WITH A SLEDGE HAMMER, APPLYING MORTAR TO HOLD THE CONNECTION OR ANY OTHER SIMILAR CRUDE PRACTICES WILL NOT BE PERMITTED. SADDLE CONNECTIONS SHALL BE CONCRETE ENCASED IF DIRECTED BY THE AUTHORITY HAVING JURISDICTION (AHJ).
- PIPE INSTALLATION:
  - THE PIPE SHALL BE HANDLED, PLACED AND JOINTED IN ACCORDANCE WITH INSTALLATION GUIDES OF THE APPROPRIATE MANUFACTURER.
  - PIPES SHALL BE CAREFULLY BEDDED ON A 4 INCH LAYER OF CRUSHED STONE AND/OR GRAVEL.
  - BEDDING AND RE-FILL, FOR A DEPTH OF 12 INCHES ABOVE THE TOP OF THE PIPE, SHALL BE CAREFULLY AND THOROUGHLY TAMPED BY HAND OR WITH THE APPROPRIATE MECHANICAL DEVICES.
  - THE PIPE SHALL BE LAID AT A CONTINUOUS AND CONSTANT GRADE FROM THE STREET SEWER CONNECTION TO THE HOUSE FOUNDATION AT A GRADE OF NOT LESS THAN 1/8 INCH PER FOOT.
  - PIPE JOINTS MUST BE MADE UNDER DRY CONDITIONS. IF WATER IS PRESENT, ALL NECESSARY STEPS SHALL BE TAKEN TO DEWATER THE TRENCH.
- TESTING: THE COMPLETED HOUSE SEWER SHALL BE SUBJECTED TO A LEAKAGE TEST IN ANY OF THE FOLLOWING MANNERS: (PRIOR TO BACKFILLING)
  - AN OBSERVATION TEE SHALL BE INSTALLED AS SHOWN AND WHEN READY FOR TESTING, AN INFLATABLE BLADDER OR PLUG SHALL BE INSERTED JUST UPSTREAM FROM THE OPENING IN THE TEE. AFTER INFLATION, WATER SHALL BE INTRODUCED INTO THE SYSTEM ABOVE THE PLUG TO A HEIGHT OF 5 FEET ABOVE THE LEVEL OF THE PLUG.
  - THE PIPE SHALL BE LEFT EXPOSED AND LIBERALLY HOSED WITH WATER TO SIMULATE, AS NEARLY AS POSSIBLE, WET TRENCH CONDITIONS OR, IF THE TRENCH IS WET, THE GROUND WATER SHALL BE PERMITTED TO RISE IN THE TRENCH OVER THE PIPE. INSPECTIONS FOR LEAKS SHALL BE MADE THROUGH THE CLEAN OUT WITH A FLASHLIGHT.
  - DRY FLUORESCENCE DYE SHALL BE SPRINKLED OVER THE PIPE. IF THE TRENCH IS DRY, THE PIPE SHALL BE LIBERALLY HOSED WITH WATER, OR IF THE TRENCH IS WET, GROUND WATER SHALL BE PERMITTED TO RISE IN THE TRENCH OVER THE PIPE. OBSERVATION FOR LEAKS SHALL BE MADE IN THE FIRST DOWNSTREAM MANHOLE.
  - LEAKAGE OBSERVED IN ANY OF THE ABOVE TESTS SHALL BE CAUSE FOR NON-ACCEPTANCE AND THE PIPE SHALL BE DUG-UP, IF NECESSARY, AND RE-LAID SO AS TO ASSURE WATER-TIGHTNESS.
- ILLEGAL CONNECTIONS: NOTHING BUT SANITARY WASTE FLOW FROM TOILETS, SINKS, LAUNDRY, ETC. SHALL BE PERMITTED. ROOF LEADERS, FOOTING DRAINS, SUMP PUMPS OR ANY OTHER SIMILAR CONNECTION CARRYING RAIN WATER, DRAINAGE OR GROUND WATER, SHALL NOT BE PERMITTED.
- WATER SERVICE SHALL NOT BE LAID IN THE SAME TRENCH AS THE SEWER SERVICE, UNLESS NECESSARY AND APPROVED BY THE AHJ. WHEN NECESSARY, THE WATER SERVICE SHALL BE PLACED ABOVE AND TO ONE SIDE OF THE SEWER SERVICE, AS SHOWN.
- LOCATION: THE LOCATION OF THE WYE SHALL BE RECORDED AND FILED IN THE MUNICIPAL RECORDS. IN ADDITION, A FERROUS MATERIAL, ROD OR PIPE SHALL BE PLACED OVER THE WYE TO AID IN LOCATING THE BURIED PIPE WITH A DIP NEEDLE OR PIPE FINDER.
- CHIMNEY CONNECTIONS ARE ONLY PERMITTED IF ALLOWED BY THE AHJ. ANY VERTICAL RISE GREATER THAN 4 FEET SHALL BE PROVIDED WITH ADDED SUPPORT BY ENCASED THE FITTING AND RISER IN A PRECAST CONCRETE CHIMNEY. UP TO 12 FEET OF VERTICAL RISE CAN ALSO BE SECURED BY PROPER MEANS AS LONG AS IT CONSISTS OF A BELL-ON-BELL CONNECTION PROPERLY PROTECTED AGAINST PIPE PENETRATION AND IF IT IS ALLOWED BY THE AHJ.
- UNLESS OTHERWISE NOTED, ALL GRANULAR MATERIAL SHALL BE PLACED IN 12" MAXIMUM LIFTS AND COMPACTED TO 95% OF THE MODIFIED PROCTOR TEST DENSITY.



SANITARY SEWER SERVICE DETAIL  
NOT TO SCALE

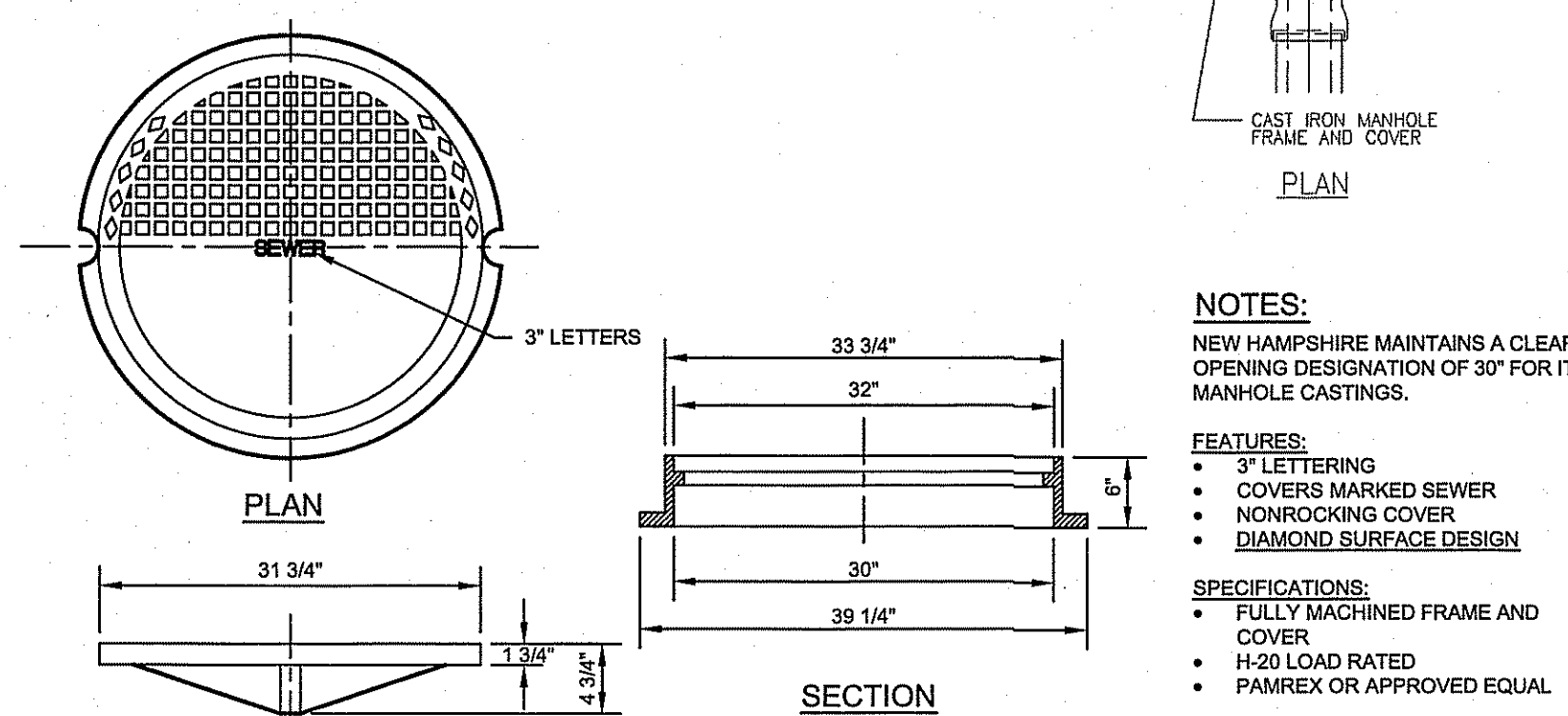


SANITARY SEWER TRENCH DETAIL  
NOT TO SCALE  
(MARCH 2011)

SANITARY SEWER CONSTRUCTION NOTES:

- ORDERED EXCAVATION OF UNSUITABLE MATERIAL BELOW GRADE. REFILL WITH BEDDING MATERIAL, ALSO SEE NOTE #7.  
BEDDING: CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33-03 STONE SIZE NO. 67.  
100% PASSING 1 INCH SCREEN  
90 - 100% PASSING 3/4 INCH SCREEN  
20 - 55% PASSING 3/8 INCH SCREEN  
0 - 10% PASSING # 4 SIEVE  
0 - 5% PASSING # 8 SIEVE  
WHERE ORDERED BY THE ENGINEER TO STABILIZE THE TRENCH BASE, GRADED CRUSHED STONE 1/2 INCH TO 1-1/2 INCHES SHALL BE USED.
- SAND BLANKET: GRADED CLEAN SAND FREE FROM ORGANIC MATTER, SO THAT 100% PASSES A 1/2 INCH SIEVE AND NOT MORE THAN 15% WILL PASS A # 200 SIEVE. BLANKET MAY BE OMITTED FOR CAST IRON, DUCTILE IRON AND REINFORCED CONCRETE PIPE PROVIDED, HOWEVER, THAT NO STONE LARGER THAN 2 INCHES IS IN CONTACT WITH THE PIPE.
- MIRAFI 140 N FILTER FABRIC, OR APPROVED EQUAL, SHALL BE INSTALLED ABOVE PIPE.
- SUITABLE MATERIAL: IN ROADS, ROAD SHOULDERS, WALKWAYS AND TRAVELED WAYS SUITABLE MATERIAL FOR TRENCH BACKFILL SHALL BE THE NATURAL MATERIAL EXCAVATED DURING THE COURSE OF CONSTRUCTION, BUT SHALL EXCLUDE DEBRIS, PIECES OF PAVEMENT, ORGANIC MATTER, TOP SOIL, ALL WET OR SOFT MUCK, PEAT OR CLAY, ALL EXCAVATED LEDGE MATERIAL AND ALL ROCKS OVER 6 INCHES IN LARGEST DIMENSION, OR ANY MATERIAL WHICH, AS DETERMINED BY THE ENGINEER, WILL NOT PROVIDE SUFFICIENT SUPPORT OR MAINTAIN THE COMPLETED CONSTRUCTION IN A STABLE CONDITION.  
IN CROSS COUNTRY CONSTRUCTION, SUITABLE MATERIAL SHALL BE AS DESCRIBED ABOVE, EXCEPT THAT THE ENGINEER MAY PERMIT THE USE OF TOP SOIL, LOAM, MUCK OR PEAT IF HE/SHE IS SATISFIED THAT THE COMPLETED CONSTRUCTION WILL BE ENTIRELY STABLE AND PROVIDED THAT EASY ACCESS TO THE SEWER WILL BE PRESERVED FOR MAINTENANCE AND POSSIBLY RECONSTRUCTION, WHEN NECESSARY.
- BASE COURSE, IF ORDERED BY THE ENGINEER, SHALL MEET THE REQUIREMENTS OF DIVISION 300 OF THE LATEST EDITION OF THE "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION OF THE STATE OF NEW HAMPSHIRE, DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS."
- WOOD SHEETING, IF REQUIRED, WHERE PLACED ALONGSIDE THE PIPE AND EXTENDING BELOW MID-DIAMETER, SHALL BE CUT OFF AND LEFT IN PLACE TO AN ELEVATION NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE. WHERE SHEETING IS ORDERED BY THE ENGINEER TO BE LEFT IN PLACE, IT SHALL BE CUT OFF AT LEAST 3 FEET BELOW FINISHED GRADE, BUT NOT LESS THAN 1 FOOT ABOVE THE TOP OF THE PIPE.
- W = MAXIMUM ALLOWABLE TRENCH WIDTH TO A PLANE 12 INCHES ABOVE THE PIPE. FOR PIPES 15 INCHES NOMINAL DIAMETER OR LESS, W SHALL BE NO MORE THAN 36 INCHES. FOR PIPES GREATER THAN 15 INCHES NOMINAL DIAMETER, W SHALL BE 24 INCHES PLUS PIPE O.D. W SHALL ALSO BE THE PAYMENT WIDTH FOR LEDGE EXCAVATION AND FOR ORDERED EXCAVATION BELOW GRADE.
- FOR CROSS COUNTRY CONSTRUCTION, BACKFILL OR FILL SHALL BE MOUND TO A HEIGHT OF 6 INCHES ABOVE THE ORIGINAL GROUND SURFACE.
- NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES DESIGN STANDARDS REQUIRE 10 FEET OF SEPARATION BETWEEN WATER AND SEWER. HOWEVER, SHOULD CONSTRUCTION REVEAL OR EXPOSE A WATERLINE (MAIN OR SERVICE) RUNNING APPROXIMATELY PARALLEL AND LESS THAN 10 FEET HORIZONTALLY FROM THE PROPOSED SEWER INSTALLATION AND WHERE IT IS NOT PRACTICAL TO RELOCATE THE SEWER, A DEVIATION MAY BE GRANTED PROVIDED THAT THE SEWER IS CONSTRUCTED IN ACCORDANCE WITH THE FORCE MAIN CONSTRUCTION REQUIREMENT SPECIFIED BELOW:
  - FORCEMAINS SHALL BE CONSTRUCTED FROM DUCTILE IRON, HIGH DENSITY POLYETHYLENE, OR PVC PER ENV-WQ 704.06(a).  
PVC SHALL CONFORM TO ASTM D2241-05 OR ASTM D1785-05  
HDPE SHALL CONFORM TO ASTM D3035-03a  
DI SHALL BE CORROSION PROTECTED IN CORROSIVE ENVIRONMENTS
- WHERE WATER LINES AND SEWER LINES CROSS, THEY SHOULD CROSS AS PERPENDICULAR AS POSSIBLE AND THE WATER MAIN SHALL CROSS AT LEAST 18" INCHES ABOVE THE SEWER. FURTHER, THE SEWER JOINTS SHALL BE LOCATED AT LEAST 8 FEET HORIZONTALLY FROM THE WATER MAIN.
- ALL SEWERS AT 8 PERCENT SLOPE, OR GREATER, SHALL HAVE IMPERVIOUS TRENCH DAMS CONSTRUCTED EVERY 300 FEET.
- UNLESS OTHERWISE NOTED, ALL GRANULAR MATERIAL SHALL BE PLACED IN 12" LIFTS AND COMPACTED TO 95% OF THE MODIFIED PROCTOR TEST.
- WHERE WATER MAINS CROSS UNDER SEWER MAINS, BOTH THE SEWER AND WATER MAINS SHALL BE PRESSURE RATED PIPE PER ENV-WQ 704.06 AND TESTED PER AWWA C600-05 AT 1.5 TIMES DESIGN PRESSURE OR 100 PSI, WHICHEVER IS GREATER, WITH NO JOINTS WITHIN 9 FEET OF THE CROSSING POINT AND 18" MINIMUM VERTICAL SEPARATION.
- GRAVITY PIPE SEWER TESTING:
  - ALL NEW GRAVITY SEWERS SHALL BE TESTED FOR WATER TIGHTNESS BY THE USE OF LOW-PRESSURE AIR TESTS.
  - LOW-PRESSURE AIR TESTING SHALL BE IN CONFORMANCE WITH:
    - ASTM F1417-92(2005) "STANDARD TEST METHOD FOR INSTALLATION ACCEPTANCE OF PLASTIC GRAVITY SEWER LINES USING LOW-PRESSURE AIR," OR
    - UNI-BELL PVC PIPE ASSOCIATION UNI-B-9, "LOW-PRESSURE AIR TESTING OF INSTALLED SEWER PIPE" (1998)
  - ALL NEW GRAVITY SEWERS SHALL BE CLEANED AND VISUALLY INSPECTED AND SHALL BE TRUE TO LINE AND GRADE FOLLOWING INSTALLATION AND PRIOR TO USE.
  - ALL PLASTIC SEWER PIPE SHALL BE DEFLECTION TESTED NOT LESS THAN 30 DAYS FOLLOWING INSTALLATION.
  - THE MAXIMUM ALLOWABLE DEFLECTION OF FLEXIBLE SEWER PIPE SHALL BE 7-1/2 PERCENT OF AVERAGE INSIDE DIAMETER.

SANITARY SEWER MANHOLE  
NOT TO SCALE



SEWER MANHOLE FRAME AND COVER DETAIL  
NOT TO SCALE  
(MARCH 2008)

SANITARY SEWER STRUCTURES NOTES:

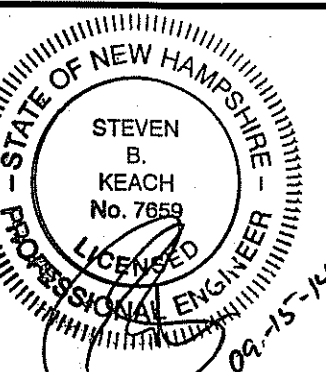
- ALL COMPONENT PARTS OF MANHOLE STRUCTURES SHALL HAVE THE STRENGTH, LEAK RESISTANCE AND SPACE NECESSARY FOR THE INTENDED SERVICE.
- MANHOLE STRUCTURES SHALL HAVE A LIFE EXPECTANCY IN EXCESS OF 25 YEARS.
- MANHOLE STRUCTURES SHALL BE DESIGNED TO WITHSTAND H-20 LOADING AND SHALL NOT LEAK IN EXCESS OF ONE GPD PER VERTICAL FOOT OF MANHOLE FOR THE LIFE OF THE STRUCTURE.
- BARRELS AND CONE SECTIONS SHALL BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE AND SHALL CONFORM TO ASTM C478.
- BEDDING: CRUSHED STONE FREE FROM CLAY, LOAM, ORGANIC MATTER AND MEETING ASTM C33 100% PASSING 1 INCH SCREEN 90% PASSING 3/4 INCH SCREEN 20-55% PASSING 3/8 INCH SCREEN 0-10% PASSING #4 SIEVE 0-5% PASSING #8 SIEVE  
WHERE ORDERED BY THE ENGINEER TO STABILIZE THE BASE, CRUSHED STONE 1/2 INCH TO 1-1/2 INCH SHALL BE USED.
- BASE SECTIONS SHALL BE OF MONOLITHIC CONSTRUCTION TO A POINT AT LEAST 6 INCHES ABOVE THE CROWN OF THE INCOMING PIPE.
- HORIZONTAL JOINTS BETWEEN SECTIONS OF PRECAST CONCRETE BARRELS SHALL BE OF AN OVERLAPPING TYPE, SEALED FOR WATER-TIGHTNESS USING A DOUBLE ROW OF AN ELASTOMERIC OR MASTIC-LIKE SEALANT.
- PIPE TO MANHOLE JOINTS SHALL BE AS FOLLOWS:
  - ELASTOMERIC, RUBBER SLEEVE WITH WATERTIGHT JOINTS AT THE MANHOLE OPENING AND PIPE SURFACES;
  - CAST INTO THE WALL OR SECURED WITH STAINLESS STEEL CLAMPS;
  - ELASTOMERIC SEALING RING CAST IN THE MANHOLE OPENING WITH SEAL FORMED ON THE SURFACE OF THE PIPE BY COMPRESSION OF THE RING; AND
- MANHOLE CONE SECTIONS SHALL BE ECCENTRIC IN SHAPE.
- ALL PRECAST SECTIONS AND BASES SHALL HAVE THE DATE OF MANUFACTURE AND THE NAME OR TRADEMARK OF THE MANUFACTURER IMPRESSED OR INDELIBLY MARKED ON THE INSIDE WALL.
- MANHOLES SHALL HAVE A BRICK OR INVERT CONSTRUCTED TO CONFORM TO THE SIZE OF PIPE AND FLOW. AT CHANGES IN DIRECTION, THE INVERTS SHALL BE LAID OUT IN CURVES OF THE LONGEST RADIUS POSSIBLE TANGENT TO THE CENTER LINE OF THE SEWER PIPES. SHELVE SHALL BE CONSTRUCTED TO THE ELEVATION OF THE HIGHEST PIPE CROWN AND SLOPED TO DRAIN TOWARD THE FLOWING THROUGH CHANNEL. UNDERLAYMENT OF INVERT AND SHELVE SHALL CONSIST OF BRICK MASONRY. INVERTS AND SHELVE SHALL BE PLACED AFTER TESTING.
- MATERIALS OF CONSTRUCTION FOR MANHOLES SHALL BE AS FOLLOWS:
  - CONCRETE FOR CAST-IN-PLACE BASES OR COMPLETE MANHOLES SHALL CONFORM TO THE REQUIREMENTS FOR CLASS AA CONCRETE IN THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION";
  - REINFORCING FOR CAST-IN-PLACE CONCRETE SHALL BE STEEL OR STRUCTURAL FIBERS THAT CONFORM TO THE REQUIREMENTS OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION";
  - PRECAST CONCRETE BARREL SECTIONS, CONES AND BASES SHALL CONFORM TO ASTM C478-08;
  - THE MANHOLE FRAME AND COVER SHALL PROVIDE A 30-INCH DIAMETER CLEAR OPENING;
  - THE MANHOLE COVER SHALL HAVE THE WORD "SEWER" IN 3-INCH LETTERS CAST INTO THE TOP SURFACE;
  - THE COVER SHALL BE PAMREX OR APPROVED EQUAL;
  - CONTACT SURFACES OF COVERS AND FRAMES SHALL BE MACHINED AT THE FOUNDRY TO PREVENT ROCKING OF COVERS IN ANY ORIENTATION;
  - CASTINGS SHALL BE EQUAL TO CLASS 30, CONFORMING TO ASTM A484M-03;
  - BRICK MASONRY FOR SHELVE, INVERT AND GRADE ADJUSTMENT SHALL COMPLY WITH ASTM C32-05, CLAY OR SHALE, FOR GRADE SS HARD BRICK;
  - MORTAR SHALL BE COMPOSED OF PORTLAND CEMENT AND SAND WITH OR WITHOUT HYDRATED LIME ADDITION;
  - PROPORTIONS IN MORTAR OF PARTS BY VOLUMES SHALL BE:
    - 4.5 PARTS SAND AND 1.5 PARTS CEMENT; OR
    - 4.5 PARTS SAND, ONE PART CEMENT AND 0.5 PARTS HYDRATED LIME;
  - CEMENT SHALL BE TYPE II PORTLAND CEMENT CONFORMING TO ASTM C150-05;
  - HYDRATED LIME SHALL BE TYPE S CONFORMING TO THE ASTM C207-08 "STANDARD SPECIFICATIONS FOR HYDRATED LIME FOR MASONRY PURPOSES";
  - SAND SHALL CONSIST OF INERT NATURAL SAND CONFORMING TO THE ASTM C33-03 "STANDARD SPECIFICATIONS FOR CONCRETE, FINE AGGREGATES";
  - CONCRETE FOR DROP SUPPORTS SHALL CONFORM TO THE REQUIREMENT FOR CLASS AAA CONCRETE OF THE NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION";
  - SUBJECT TO (Q) BELOW, A FLEXIBLE PIPE JOINT SHALL BE PROVIDED WITHIN THE FOLLOWING DISTANCES FROM ANY MANHOLE CONNECTION:
    - WITHIN 48-INCHES FOR REINFORCED CONCRETE (RC) PIPE; AND
    - WITHIN 60-INCHES FOR PVC PIPE LARGER THAN 15-INCH DIAMETER;
  - NO FLEXIBLE JOINT SHALL BE REQUIRED FOR DI PIPE OR FOR PVC PIPE UP THROUGH 15-INCH DIAMETER; AND
  - WHEN MANHOLE DEPTH IS LESS THAN 8 FEET, A REINFORCED CONCRETE SLAB COVER MAY BE USED IN LIEU OF A CONE SECTION, PROVIDED THE SLAB HAS AN ECCENTRIC ENTRANCE OPENING AND IS CAPABLE OF SUPPORTING H-20 LOADS.
- MANHOLE STEPS SHALL:
  - BE PERMITTED ONLY AT THE REQUEST OF THE SYSTEM OWNER;
  - BE MANUFACTURED OF STAINLESS, PLASTIC-COVERED STEEL OR PLASTIC;
  - BE SHAPED SO THAT THEY CANNOT BE PULLED OUT OF THE CONCRETE WALL INTO WHICH THEY ARE SECURED;
  - MEET THE REQUIREMENTS OF ASTM C478-08 FOR LOAD CARRYING CAPACITY AND PULL-OUT RESISTANCE;
  - NOT BE SECURED WITH MORTAR;
  - BE APPROXIMATELY 14-INCHES BY 10-INCHES IN DIMENSION;
  - HAVE A DROP SECTION OR RAISED ABUTMENTS TO PREVENT SIDEWAYS SLIPPAGE OFF THE STEP; AND
  - HAVE NON-SKID SAFETY SERRATIONS ON THE FOOT CONTACT SURFACES.
- MANHOLE TESTING:
  - MANHOLES SHALL BE TESTED FOR LEAKAGE USING A VACUUM TEST.
  - THE MANHOLE VACUUM TEST SHALL CONFORM TO THE FOLLOWING:
    - THE INITIAL VACUUM GAUGE TEST PRESSURE SHALL BE 10 INCHES Hg. AND
    - THE MINIMUM ACCEPTABLE TEST HOLD TIME FOR A 1-INCH Hg PRESSURE DROP TO 9 INCH Hg SHALL BE:
      - NOT LESS THAN 2 MINUTES FOR MANHOLES LESS THAN 10 FEET DEEP IN DEPTH;
      - NOT LESS THAN 2.5 MINUTES FOR MANHOLES 10 TO 15 FEET DEEP; AND
      - NOT LESS THAN 3 MINUTES FOR MANHOLES MORE THAN 15 FEET DEEP.
  - THE MANHOLE SHALL BE REPAIRED AND RETESTED IF THE TEST HOLD TIMES FAIL TO ACHIEVE THE ACCEPTANCE LIMITS SPECIFIED IN (B) ABOVE.
  - FOLLOWING COMPLETION OF THE LEAKAGE TEST, THE FRAME AND COVER SHALL BE PLACED ON THE TOP OF THE MANHOLE OR SOME OTHER MEANS USED TO PREVENT ACCIDENTAL ENTRY BY UNAUTHORIZED PERSONS, CHILDREN OR ANIMALS UNTIL THE CONTRACTOR IS READY TO MAKE FINAL ADJUSTMENTS TO GRADE.

CONSTRUCTION DETAILS  
THE TOWNHOMES AT HIGHFIELD  
COMMONS - PHASE 2B  
MAP 237; LOT 8-1  
59 FILLMORE BOULEVARD  
ROCHESTER, NEW HAMPSHIRE  
STRAFFORD COUNTY

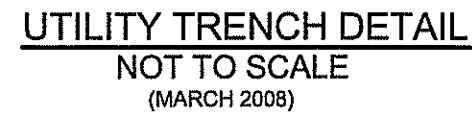
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**K&A** KEACH-NORDSTROM ASSOCIATES, INC.  
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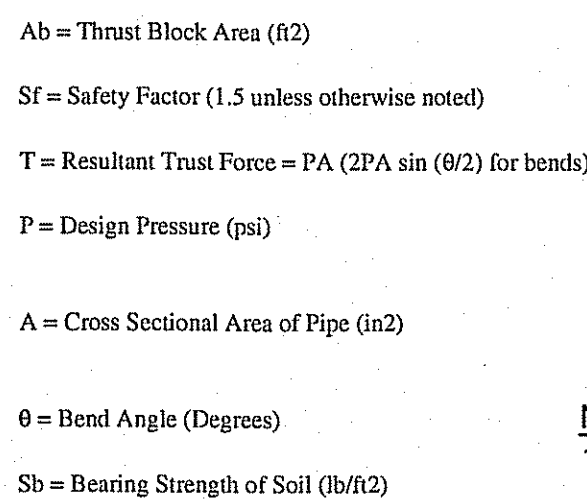
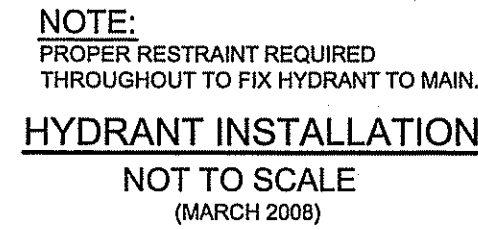
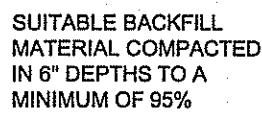
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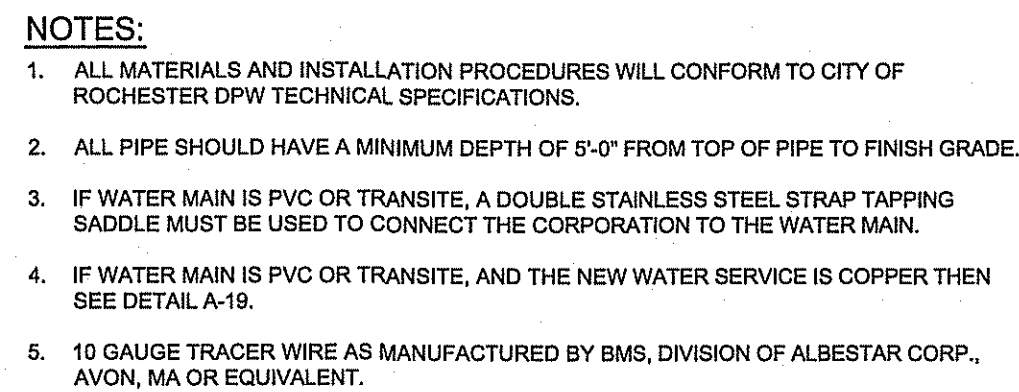
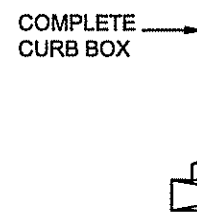
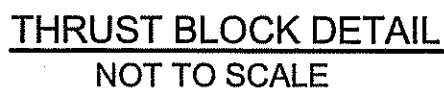


**WATER GATE VALVE**  
NOT TO SCALE  
(MARCH 2008)

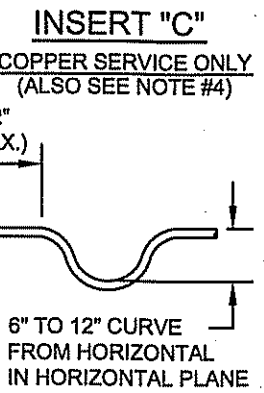


**NOTE:**

1. THRUST BLOCKS SHALL BE INSTALLED IN CONFORMANCE WITH THE CITY OF ROCHESTER DEPARTMENT OF PUBLIC WORKS STANDARDS OF INFRASTRUCTURE DESIGN.



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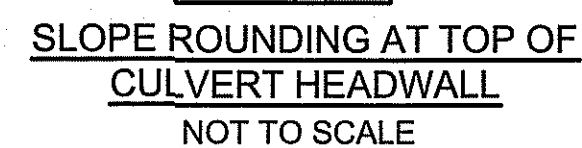


**COPPER SERVICE ONLY**  
(ALSO SEE NOTE #4)

**6" TO 12" CURVE  
FROM HORIZONTAL  
IN HORIZONTAL PLANE**

**NOTES:**

1. ALL MATERIALS AND INSTALLATION PROCEDURES WILL CONFORM TO CITY OF ROCHESTER DPW TECHNICAL SPECIFICATIONS.
2. ALL PIPE SHOULD HAVE A MINIMUM DEPTH OF 5'-0" FROM TOP OF PIPE TO FINISH GRADE.
3. IF WATER MAIN IS PVC OR TRANSITE, A DOUBLE STAINLESS STEEL STRAP TAPPING SADDLE MUST BE USED TO CONNECT THE CORPORATION TO THE WATER MAIN.
4. IF WATER MAIN IS PVC OR TRANSITE, AND THE NEW WATER SERVICE IS COPPER THEN SEE DETAIL A-19.
5. 10 GAUGE TRACER WIRE AS MANUFACTURED BY BMS, DIVISION OF ALBEMASTER CORP., AVON, MA OR EQUIVALENT.



DIAMETER D (INCH)	AREA OF PIPE (SQ. FT)	MASONRY PER FOOT OF WALL (SQ. YD.)	MASONRY PER HOLE (CU. FT.)	MASONRY PER STANDARD HEADER (CU. YD.)	STEEL PER STANDARD HEADER (LB)	LENGTH OF BARS	PIPE EXC. 1' DEPTH (CU. YD.)	HEADER EXC. 1' DEPTH (CU. YD.)	HEADER LENGTH L	HEADER HEIGHT H	FILL HEIGHT h	WIDTH AT BOTTOM OF HEADER	"L" HEADWALL		
													MASONRY IN CORNER FRUSTRUM (CU. YD.)	HEADER EXC. 1' DEPTH (CU. YD.)	
12"	0.79	0.204	2.00	0.80	11	3'-0"	0.111	0.911	4'-3"	3'-9"	1'-1"	1'-3"	1'-11 1/4"	0.31	1.195
15"	1.23	0.240	3.18	1.32	16	5'-8"	0.120	1.204	6'-0"	4'-3"	1'-7"	1'-6"	2'-3/4"	0.38	1.588
18"	1.77	0.280	4.51	1.66	26	5'-8"	0.130	1.375	7'-0"	4'-6"	1'-10"	1'-6"	2'-1 1/2"	0.42	1.700
24"	3.14	0.301	7.36	3.05	24	14'-8"	0.171	1.731	9'-0"	5'-9"	2'-2"	1'-6"	3'-2 1/2"	0.51	2.086
30"	4.96	0.326	10.94	4.38	34	15'-2"	0.288	3.029	13'-1"	15'-0"	3'-4"	1'-6"	3'-11 1/2"	0.68	2.848
36"	6.43	0.346	21.89	5.66	44	15'-2"	0.288	3.029	13'-1"	15'-0"	3'-4"	1'-6"	3'-11 1/2"	0.68	2.848

**APPLICANT:**  
183 WASHINGTON STREET, LLC.  
501 D.W. HIGHWAY, SUITE F  
MERRIMACK, NH 03054

## REVISIONS

No.	DATE	DESCRIPTION	BY
1	6/25/14	FOR NHDES SUBMITTAL	BJC
2	8/22/14	PER NHDES COMMENTS	BJC
3	9/12/14	DATE ONLY	BJC

DATE: JUNE 9, 2014	SCALE: AS SHOWN
PROJECT NO: 12-1212-1	SHEET 16 OF 17



