

FOR REGISTRY USE ONLY



ZONING DISTRICT: S-20

MIN. LOT AREA = 20,000 S.F.
MIN. LOT FRONTAGE = 120 FT.
MIN. LOT WIDTH CIRCLE DIA. = 80 FT.
MIN. FRONT YARD = 20'
MIN. SIDE YARD = 15'
MIN. REAR YARD = 20'

ASSESSORS REFERENCES

92 SANBORN LANE: MAP 56, LOT 16

DEED REFERENCES

92 SANBORN LANE: M.S.R.D. BOOK 25777, PAGE 374

PLAN REFERENCES

M.S.R.D. PLAN 1524 OF 1984
M.S.R.D. PLAN 1525 OF 1984
M.S.R.D. PLAN 1526 OF 1984
M.S.R.D. PLAN 920 OF 2003
M.S.R.D. PLAN 921 OF 2003
M.S.R.D. PLAN 1364 OF 1985
M.S.R.D. PLAN 1698 OF 1986

I CERTIFY THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTER OF DEEDS.

DATE _____

BENCHMARK

RIM OF SEWER MAN HOLE IN FRONT OF 98 SANBORN LANE READING SEWER DATUM TAKEN FROM SEWER AS BUILT OF SANBORN LANE ON FILE AT TOWN ENGINEER'S AS 000-L-625. ELEVATION = 111.10'.

WAIVERS

FROM THE RULES & REGULATIONS GOVERNING THE SUBDIVISION OF LAND IN READING:

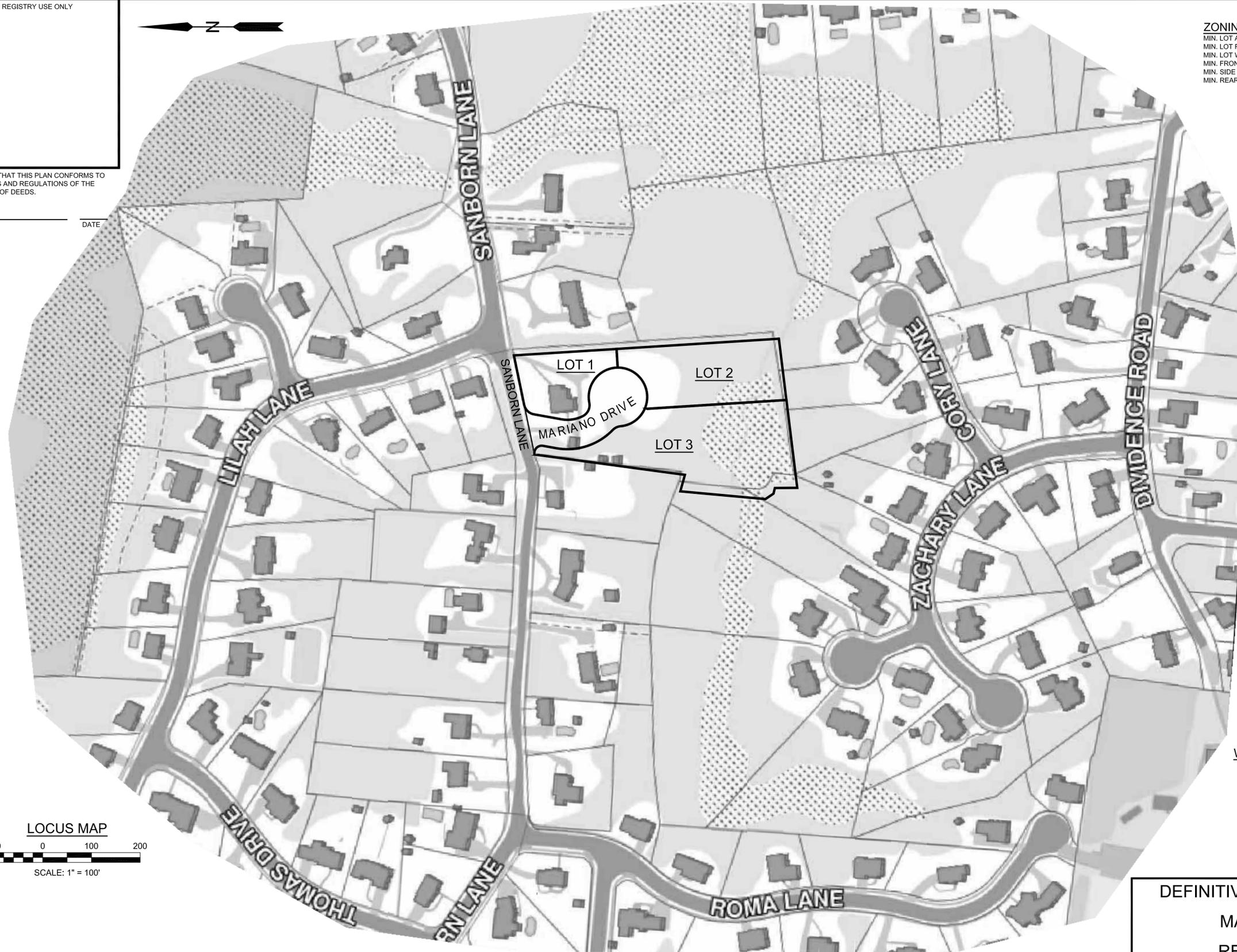
- SECTION 7.1.2.C REQUIRES VERTICAL CURVES BE PROVIDED FOR A DESIGN SPEED OF 30 MILES PER HOUR. TO AVOID EXCESSIVE FILL, THE PROPOSED ROAD PROFILE HAS BEEN DESIGNED WITH A VERTICAL CURVE FOR A DESIGN SPEED OF 20 MILES PER HOUR.

NOTES

- MARIANO DRIVE IS PROPOSED TO BE OFFERED TO THE TOWN OF READING FOR ACCEPTANCE AS A PUBLIC WAY.

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SHEET 10 OF 10	TREE REMOVAL/PRESERVATION PLAN



WIDTHS & STATUS OF STREETS WITHIN 1000' OF PROJECT

STREET	STATUS	R.O.W. WIDTH	PAVEMENT WIDTH	SIDEWALKS
LILAH LANE	PUBLIC	50'	30'	TWO: 4' WIDE
VERDE CIRCLE	PUBLIC	50'	30'	TWO: 4' WIDE
SANBORN LANE	PUBLIC	50'	30'	TWO: 4' WIDE
SANBORN LANE	PRIVATE	VARIABLE 40'-50'	20'	NONE
THOMAS DRIVE	PUBLIC	50'	30'	TWO: 4' WIDE
ROMA LANE	PUBLIC	50'	30'	TWO: 4' WIDE
ZACHARY LANE	PUBLIC	50'	30'	TWO: 4' WIDE
CORY LANE	PUBLIC	50'	30'	TWO: 4' WIDE
DIVIDENCE ROAD	PUBLIC	50'	30'	TWO: 4' WIDE

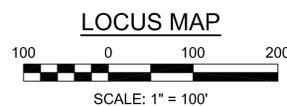
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DEFINITIVE SUBDIVISION PLAN
FOR
MARIANO DRIVE
IN
READING, MASS.

COVER SHEET

RECORD OWNER: MARY J. NAPPI 92 SANBORN LANE READING, MA 01867 (781) 944-7220	APPLICANT: ALBERT COUILLARD 5 MARION AVE. GROVELAND, MA 01834 (603) 560-4754
SURVEYOR: GA CONSULTANTS, INC. PROFESSIONAL ENGINEERS & LAND SURVEYORS 17 GRAF ROAD, NEWBURYPORT, MA 01950 TEL. 978-502-5197	
ENGINEER: CHRISTIANSEN & SERGI, INC. PROFESSIONAL ENGINEERS & LAND SURVEYORS 160 SUMMER STREET, HAVERHILL, MASSACHUSETTS 01830 WWW.CSI-ENGR.COM TEL. 978-373-0310 FAX. 978-372-3960	

DATE: MARCH 21, 2014
REVISIONS: MAY 15, 2014
SHEET 1 OF 10
DWG. NO. 12.091.003



TOWN OF READING OFFICE OF THE TOWN CLERK

THIS IS TO CERTIFY THAT ON _____ I RECEIVED FROM THE READING COMMUNITY PLANNING & DEVELOPMENT COMMISSION CERTIFICATION OF ITS APPROVAL OF THIS PLAN AND THAT DURING THE (20) TWENTY DAYS NEXT FOLLOWING I HAVE RECEIVED NO NOTICE OF ANY APPEAL FROM SAID DECISION.

CLERK _____ DATE _____

THIS PLAN IS SUBJECT TO ALL THE CONDITIONS AND REQUIREMENTS AS SET FORTH IN A COVENANTED AGREEMENT DATED _____ AND A GRANT OF EASEMENT AND UTILITIES DATED _____ BETWEEN CAROLYN/FLORENCE, LLC AND THE TOWN OF READING UNDER THE PROVISIONS OF SECTION 81U OF CHAPTER 41 OF THE GENERAL LAWS AND SAID AGREEMENT IS BEING FILED HERewith AND THEREBY BECOMING A PART OF THESE CONDITIONS.

DIRECTOR OF PUBLIC WORKS _____ DATE _____

AUTHORIZED AGENT FOR THE COMMUNITY PLANNING & DEVELOPMENT COMMISSION FOR THE TOWN OF READING

APPLICATION FILED _____
FINAL PLAN FILED _____
HEARING DATE _____
PLAN APPROVED _____
PLAN ENDORSED _____

APPROVED UNDER THE SUBDIVISION CONTROL LAW UPON CONDITIONS

DATE: _____
APPROVED BY: _____

READING COMMUNITY PLANNING & DEVELOPMENT COMMISSION

PROFESSIONAL ENGINEER

PHILIP G. CHRISTIANSEN

PROFESSIONAL LAND SURVEYOR

ROBERT M. GRASSO

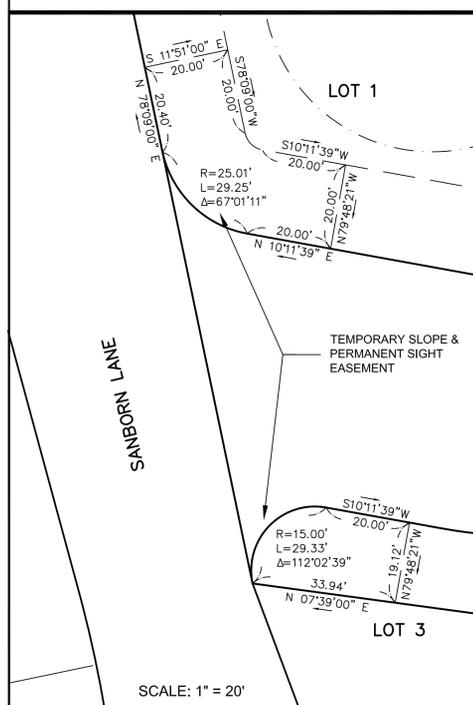
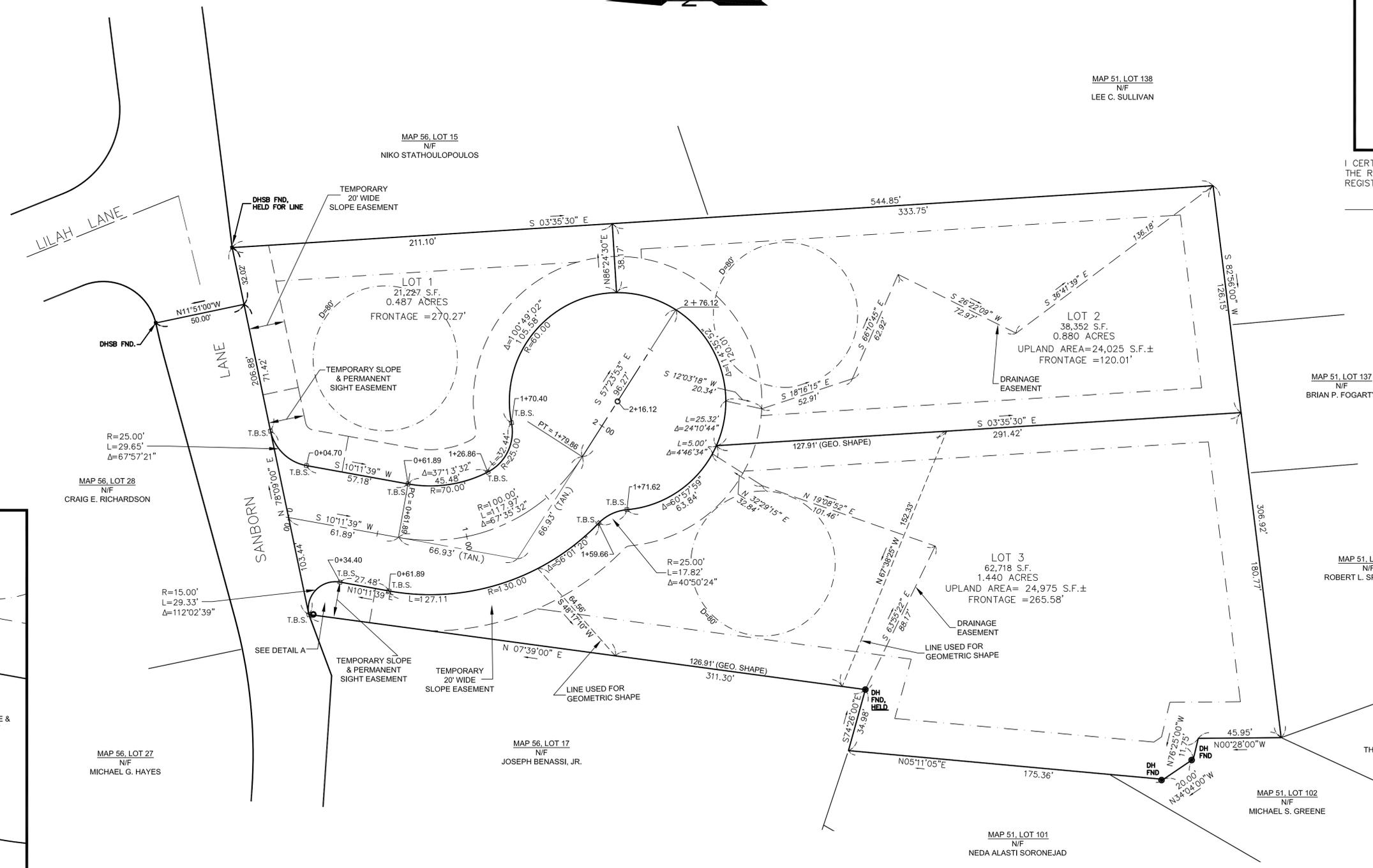
LEGEND

- D.H. IN STONE BOUND FOUND
- T.B.S. TO BE SET
- IRON PIPE FOUND
- DRILL HOLE FOUND
- ZONING BUILDING SETBACK LINE
- △^{9A} FLAGGED WETLAND
- LIMIT OF 25' NATURAL VEG. ZONE
- LIMIT OF 100' WETLAND BUFFER

FOR REGISTRY USE ONLY

I CERTIFY THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTER OF DEEDS

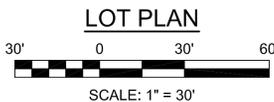
DATE



GEOMETRIC SHAPE TABLE PER ZONING 5.2.1

LOT	LOT / SHAPE AREA (SF)	PERIMETER (FT.)	AREA X 22	PERIMETER SQUARED
1*	21,227	622.64	466,994	387,681
2*	38,352	909.51	843,744	827,208
3*	20,000	595.49	440,000	354,608

* COMPLIANCE WITH 5.2.1 FOR LOTS 1 & 2 WERE CALCULATED USING THE ENTIRE LOT AS THE GEOMETRIC SHAPE. THE GEOMETRIC SHAPE OF LOT 3 LIES BETWEEN THE STREET LINE AND THE LINES NOTED ON THE LOT PLAN (SEE ALSO LOT CLOSURE CALCULATIONS). USING THESE LINES TO DEFINE THE LIMIT OF THE REQUIRED SHAPE MEETS ALL REQUIREMENTS OF PARAGRAPHS 5.2.1.A., 5.2.1.B., AND 5.2.1.C.



SCALE: 1" = 20'
DETAIL A EASEMENTS

DEFINITIVE SUBDIVISION PLAN
FOR
MARIANO DRIVE
IN
READING, MASS.

PLAN OF LOTS

APPROVED UNDER THE SUBDIVISION CONTROL LAW UPON CONDITIONS

DATE: _____

APPROVED BY: _____

READING COMMUNITY PLANNING & DEVELOPMENT COMMISSION

PROFESSIONAL ENGINEER

PHILIP G. CHRISTIANSEN

PROFESSIONAL LAND SURVEYOR

ROBERT M. GRASSO

RECORD OWNER: MARY J. NAPPI
92 SANBORN LANE
READING, MA 01867
(781) 944-7220

APPLICANT: ALBERT COUILLARD
5 MARION AVE.
GROVELAND, MA 01834
(603) 560-4754

SURVEYOR: GA CONSULTANTS, INC.
PROFESSIONAL ENGINEERS & LAND SURVEYORS
17 GRAF ROAD, NEWBURYPORT, MA 01950
TEL. 978-502-5197

ENGINEER: CSI
PROFESSIONAL ENGINEERS & LAND SURVEYORS
CHRISTIANSEN & SERGI, INC.
180 SUMMER STREET, HAVERHILL, MASSACHUSETTS 01830
WWW.CSI-ENR.COM TEL. 978-373-0310 FAX. 978-372-3960

DATE: MARCH 21, 2014

REVISIONS: MAY 15, 2014

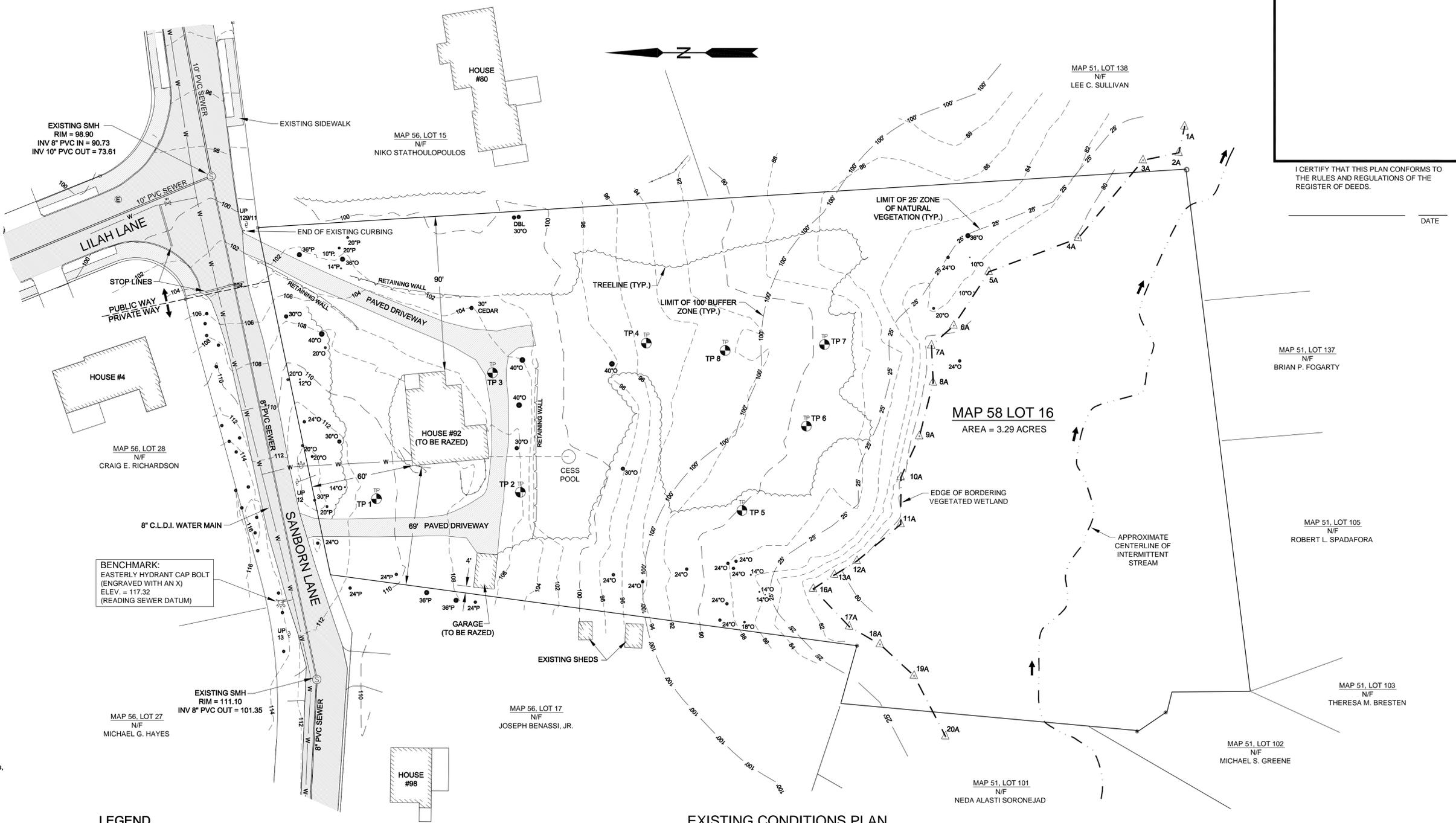
SHEET 2 OF 10

DWG. NO. 12.091.003

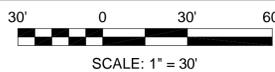
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TEST PIT RESULTS
Date of tests: November 26, 2013
Soil Evaluator: Daniel O'Connell, SE #1771, Christiansen & Sergi, Inc.
Witness: Christopher Cole, Town of Reading Engineering Division

Table with 4 columns: Test Pit #, Depth, Soil Type, and Observations. Includes test results for pits #1 through #8, detailing soil layers and root/leakage findings.



EXISTING CONDITIONS PLAN



LEGEND

- Legend symbols and descriptions: N/F (Now or Formerly of), Assessors Map & Lot Reference, Fire Hydrant, Water Main & Gate Valve, Water Service & Shut-off Valve, Existing Elevation Contour, Sewer Manhole & Sewer Main, Existing Curb & Edge of Pavement, Existing Bit. Conc. Sidewalk, Existing Tree/Brush Line, Wetland Flag A&E & Edge of Wetland, Centerline of Intermittent Stream, Limit of 100' Buffer Zone, Limit of 25' Zone of Natural Vegetation, Test Pit Location.

NOTES:

- Notes 1-5: 1. Location of all underground utilities shown hereon are approximate and are based on a combination of field locations and compiled information from plans supplied by various utility companies and government agencies. 2. According to the FEMA National Flood Insurance Program Map 25017C0311E, there are no special flood hazard areas on the project site. 3. The contour elevations shown are based on the Reading Town Sewer Datum. 4. The wetlands delineation was performed in September of 2013 by Basbanes Associates (39 Hardy Street, Dunstable, MA 01827). 5. The existing septic system/cess pool is to be pumped out by a licensed septic system waste hauler and removed or filled according to applicable local and state regulations.

I CERTIFY THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTER OF DEEDS.

DATE

DEFINITIVE SUBDIVISION PLAN FOR MARIANO DRIVE IN READING, MASS.

PLAN OF EXISTING CONDITIONS

APPROVED UNDER THE SUBDIVISION CONTROL LAW UPON CONDITIONS
DATE: _____
APPROVED BY: _____
READING COMMUNITY PLANNING & DEVELOPMENT COMMISSION

PROFESSIONAL ENGINEER
PHILIP G. CHRISTIANSEN

RECORD OWNER: MARY J. NAPPI, 92 SANBORN LANE, READING, MA 01867 (781) 944-7220
APPLICANT: ALBERT COUILLARD, 5 MARION AVE., GROVELAND, MA 01834 (603) 560-4754
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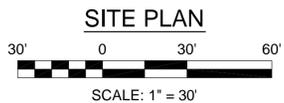
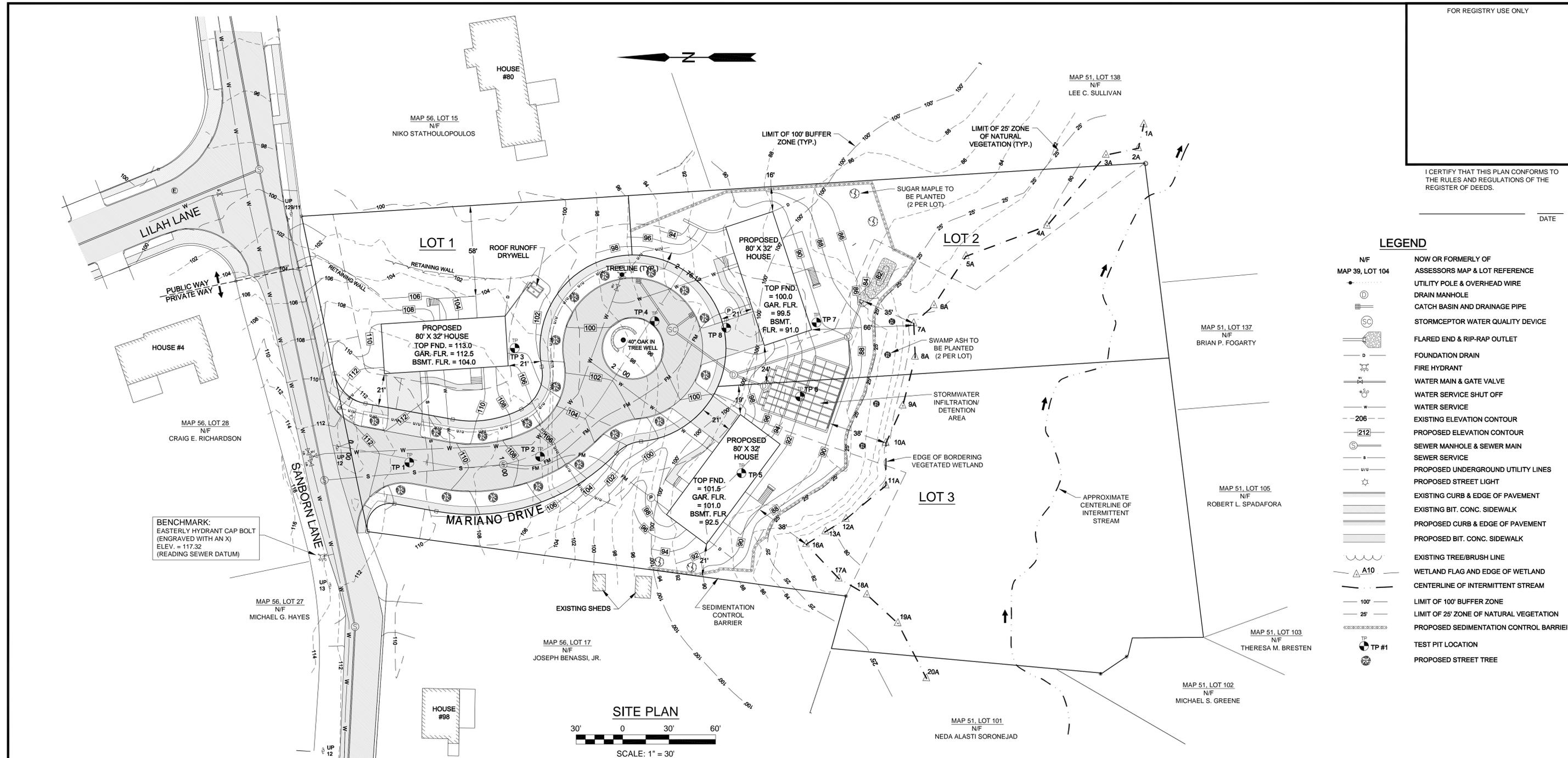
DATE: MARCH 21, 2014
REVISIONS: MAY 15, 2014
SHEET 3 OF 10
DWG. NO. 12.091.003

I CERTIFY THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTER OF DEEDS.

DATE

LEGEND

- N/F NOW OR FORMERLY OF
- MAP 39, LOT 104 ASSESSORS MAP & LOT REFERENCE
- UTILITY POLE & OVERHEAD WIRE
- DRAIN MANHOLE
- CATCH BASIN AND DRAINAGE PIPE
- SC STORMCEPTOR WATER QUALITY DEVICE
- FLARED END & RIP-RAP OUTLET
- D FOUNDATION DRAIN
- FIRE HYDRANT
- WATER MAIN & GATE VALVE
- WATER SERVICE SHUT OFF
- w WATER SERVICE
- 206 EXISTING ELEVATION CONTOUR
- 212 PROPOSED ELEVATION CONTOUR
- S SEWER MANHOLE & SEWER MAIN
- s SEWER SERVICE
- u/u PROPOSED UNDERGROUND UTILITY LINES
- PROPOSED STREET LIGHT
- EXISTING CURB & EDGE OF PAVEMENT
- EXISTING BIT. CONC. SIDEWALK
- PROPOSED CURB & EDGE OF PAVEMENT
- PROPOSED BIT. CONC. SIDEWALK
- EXISTING TREE/BRUSH LINE
- A10 WETLAND FLAG AND EDGE OF WETLAND
- CENTERLINE OF INTERMITTENT STREAM
- 100' LIMIT OF 100' BUFFER ZONE
- 25' LIMIT OF 25' ZONE OF NATURAL VEGETATION
- PROPOSED SEDIMENTATION CONTROL BARRIER
- TP #1 TEST PIT LOCATION
- PROPOSED STREET TREE



NOTES:

1. THE MINIMUM CELLAR FLOOR ELEVATIONS FOR EACH LOT, BASED ON THE ESTIMATED SEASONAL HIGH GROUNDWATER ELEVATIONS RECORDED IN THE TEST PITS, ARE AS FOLLOWS:

LOT 1	103.7
LOT 2	83.7
LOT 3	86.5
2. THE ESTIMATED WATER USE AND SEWAGE GENERATION, BASED ON THE MASS DEP TITLE 5 DESIGN FLOW OF 110 GALLONS PER BEDROOM, IS 1,320 GALLONS PER DAY (ASSUMING THREE 4-BEDROOM HOUSES). THE WATER USE OF THE EXISTING HOUSE SHALL BE DETERMINED FROM HISTORIC METERED USAGE. THE APPROXIMATE NET INCREASE IN WATER DEMAND (ASSUMING MASS DEP TITLE 5 DESIGN FLOW FOR THE EXISTING 3-BEDROOM HOUSE) IS 990 GALLONS PER DAY. THE APPROXIMATE NET INCREASE IN SEWAGE GENERATION IS 1,320 GALLONS PER DAY (THE EXISTING HOUSE IS NOT CONNECTED TO THE MUNICIPAL SEWER SYSTEM).
3. THE MAINTENANCE OF THE PLANTINGS AND LANDSCAPING WITHIN THE CUL-DE-SAC ISLAND IS TO BE DEEDED TO LOT 2 OR LOT 3.
4. WHEN SITE CONDITIONS REQUIRE A CHANGE IN THE SITE LAYOUT OR UTILITY DESIGN A PLAN SHALL BE SUBMITTED TO THE ENGINEERING DIVISION FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION OF THE CHANGE IN DESIGN.
5. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF ANY CONSTRUCTION.
6. VERTICAL GRANITE CURBING SHALL BE INSTALLED ALONG THE PROJECT SIDE OF SANBORN LANE FOR THE FULL LENGTH OF THE PROJECT FRONTAGE AND AROUND THE ENTIRE EDGE OF PAVEMENT IN MARIANO DRIVE EXCEPT AT THE LOCATIONS OF THE DRIVEWAYS AND THE HANDICAP RAMPS.
7. A 5-FOOT WIDE SIDEWALK SHALL BE INSTALLED ALONG THE PROJECT SIDE OF SANBORN LANE FROM THE END OF THE EXISTING SIDEWALK ALONG THE FULL LENGTH OF THE PROJECT FRONTAGE AND AROUND MARIANO DRIVE EXCEPT AT THE LOCATIONS OF THE DRIVEWAYS.
8. ROOF RUNOFF RECHARGE IS REQUIRED FOR THE ROOF OF THE HOUSE ON LOT 1. RUNOFF FROM THE FRONT HALF OF THE ROOF WILL DRAIN ONTO THE ROADWAY AND INTO THE INFILTRATION/DETENTION SYSTEM ON LOTS 2 AND 3. GUTTERS AND DOWNSPOUTS WILL BE INSTALLED TO COLLECT ALL RUNOFF FROM THE BACK HALF OF THE ROOF AND DIRECT IT INTO THE ROOF RUNOFF DRYWELL ON THE LOT.
9. TREE & SHRUB PLANTINGS ON LOTS 2 & 3 SHALL INCLUDE (PER LOT) 2 SWAMP ASH TREES TO BE PLANTED IN THE 25' ZNV, 2 SUGAR MAPLES TO BE PLANTED IN THE 100' BUFFER ZONE, AND 2 EVERGREEN SHRUBS, 2 RHODODENDRONS, AND VARIOUS GROUND COVER SHRUBS AS FOUNDATION PLANTINGS. NO TREES SHALL BE PERMITTED UPON OR WITHIN 10 FEET OF THE INFILTRATORS OR WITHIN 10 FEET OF THE CENTERLINE OF ANY DRAINAGE PIPES. (SMALL SHRUBS AND PLANTINGS ARE PERMITTED IN THESE AREAS.)

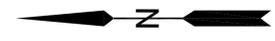
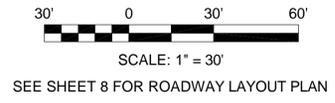
AQUIFER PROTECTION DISTRICT

1. THE SITE IS LOCATED WITHIN THE AQUIFER PROTECTION DISTRICT.
2. A BREAKDOWN OF THE PROPOSED IMPERVIOUS AREAS ON THE SITE IS AS FOLLOWS:

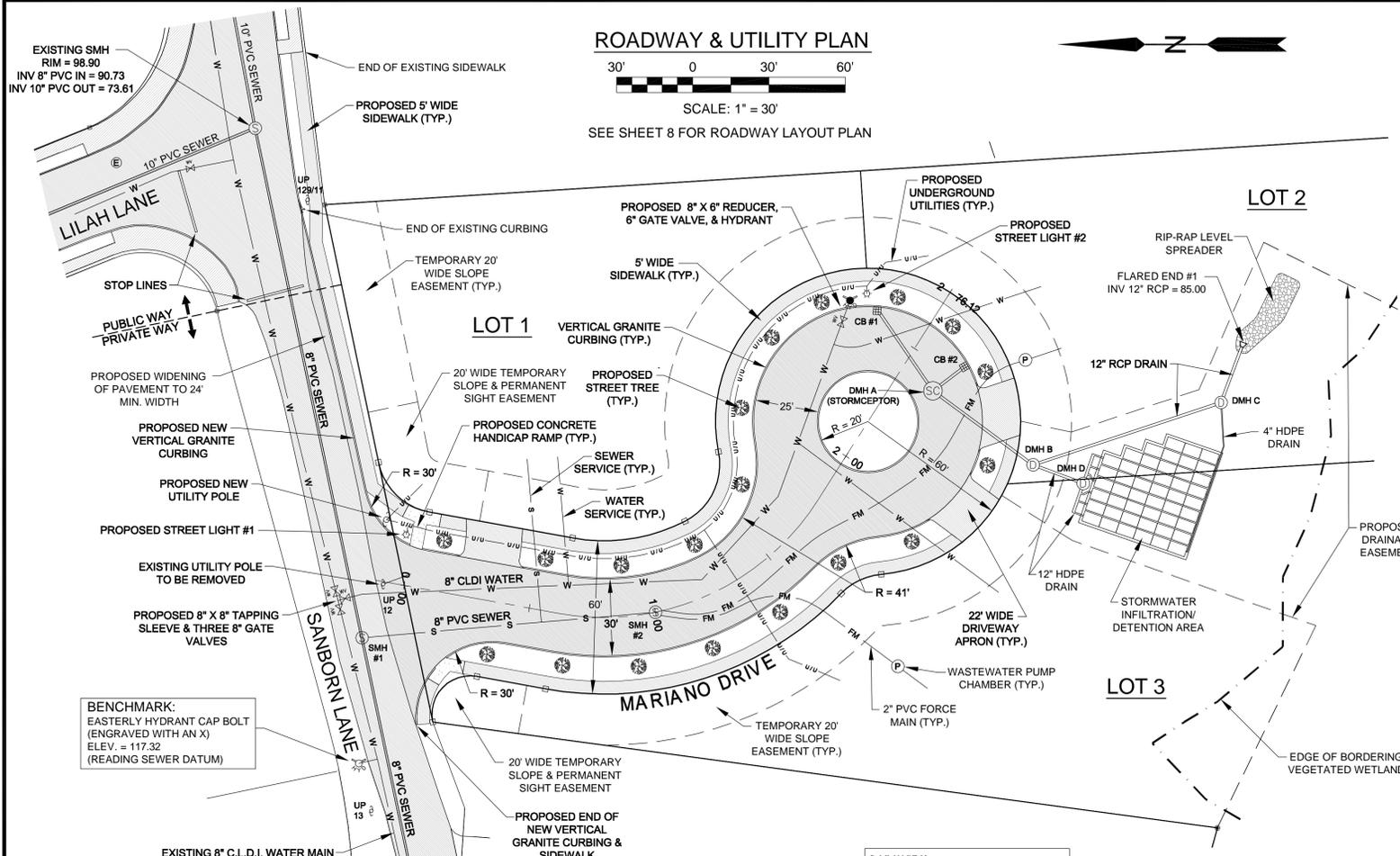
LOT	AREA (S.F.)	PROPOSED IMPERVIOUS AREA (S.F.)	PERCENT IMPERVIOUS
1	21,227	3,333	15.7%
2	38,352	3,295	8.6%
3	62,718	3,265	5.2%
ROAD	21,069	14,956	71.0%
TOTAL	143,366	24,849	17.3%
3. SINCE THE TOTAL PROPOSED IMPERVIOUS AREA EXCEEDS 15% OF THE TOTAL PROJECT AREA A SYSTEM OF ARTIFICIAL RECHARGE OF PRECIPITATION IS REQUIRED. A STORMWATER INFILTRATION/DETENTION AREA IS PROPOSED ON LOTS 2 & 3 TO RECHARGE STORMWATER RUNOFF INTO THE GROUNDWATER.
4. SINCE THE PROPOSED IMPERVIOUS AREA ON LOT 1 EXCEEDS 15% OF THE LOT AREA A SYSTEM OF ARTIFICIAL RECHARGE OF PRECIPITATION IS REQUIRED. A ROOF RUNOFF DRYWELL IS PROPOSED TO RECHARGE RUNOFF FROM THE BACK HALF OF THE ROOF INTO THE GROUNDWATER. RUNOFF FROM THE FRONT HALF OF THE ROOF DRAINS INTO THE ROADWAY DRAINAGE SYSTEM AND IS RECHARGED BY THE STORMWATER INFILTRATION/DETENTION AREA ON LOTS 2 & 3.

DEFINITIVE SUBDIVISION PLAN		SITE GRADING PLAN
FOR MARIANO DRIVE IN READING, MASS.		
RECORD OWNER: MARY J. NAPPI 92 SANBORN LANE READING, MA 01867 (781) 944-7220	APPLICANT: ALBERT COUILLARD 5 MARION AVE. GROVELAND, MA 01834 (603) 560-4754	DATE: MARCH 21, 2014 REVISIONS: MAY 15, 2014 SHEET 4 OF 10 DWG. NO. 12.091.003
SURVEYOR: GA CONSULTANTS, INC. PROFESSIONAL ENGINEERS 17 GRAF ROAD, NEWBURYPORT, MA 01950 TEL. 978-502-5197		
ENGINEER: CSI PROFESSIONAL ENGINEERS & LAND SURVEYORS CHRISTIANSEN & SERGI, INC. 160 SUMMER STREET, HAVERHILL, MASSACHUSETTS 01830 WWW.CSI-ENGR.COM TEL. 978-373-0310 FAX. 978-372-3960		
APPROVED UNDER THE SUBDIVISION CONTROL LAW UPON CONDITIONS DATE: _____ APPROVED BY: _____ READING COMMUNITY PLANNING & DEVELOPMENT COMMISSION	PROFESSIONAL ENGINEER PHILIP G. CHRISTIANSEN	

ROADWAY & UTILITY PLAN



SEE SHEET 8 FOR ROADWAY LAYOUT PLAN

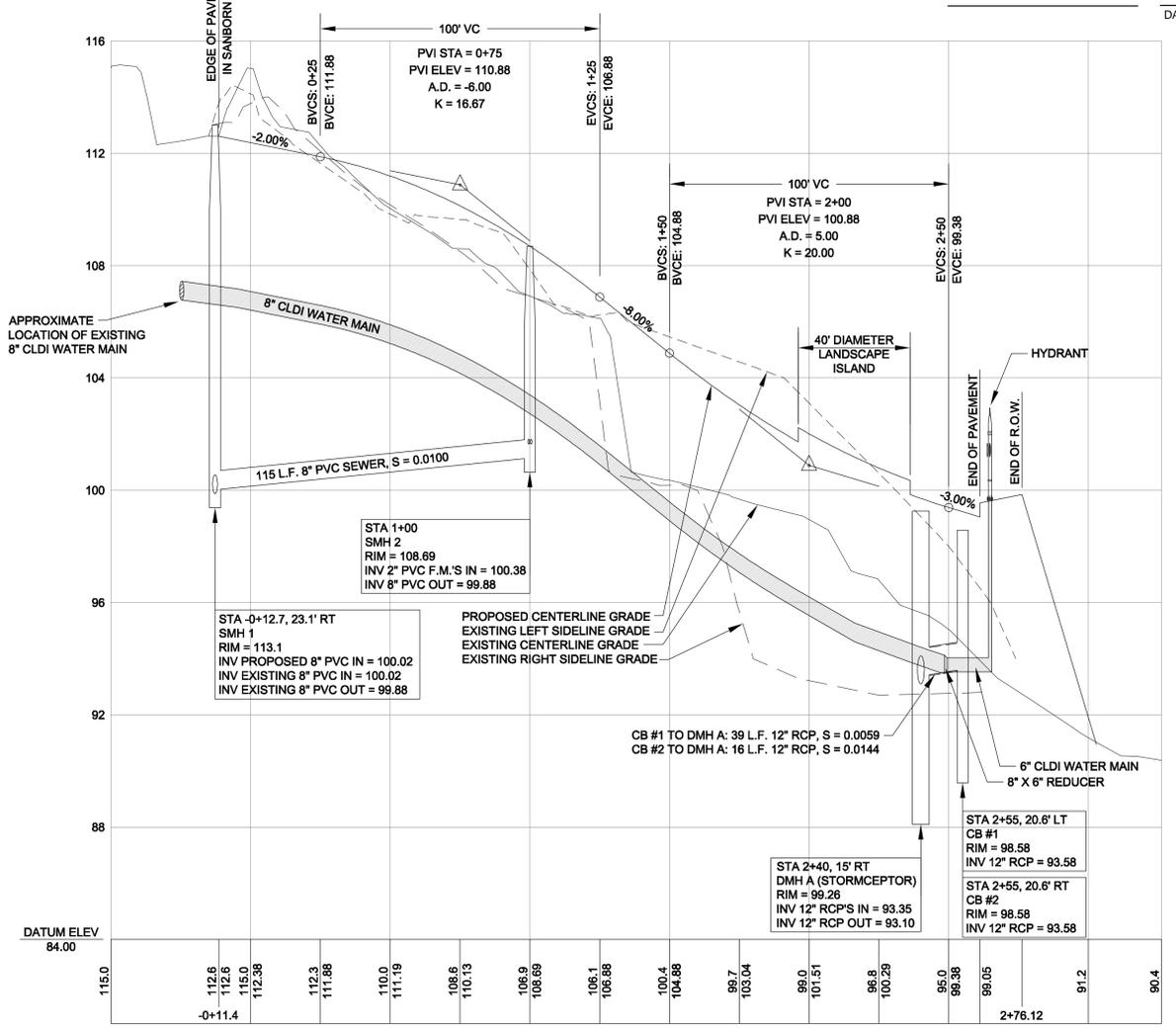


CUL-DE-SAC EDGE OF PAVEMENT GRADES

ROAD STATION	OUTSIDE OF CIRCLE				INSIDE OF CIRCLE		
	LEFT EDGE OF PAVEMENT	RIGHT EDGE OF PAVEMENT	ROAD C/L	ROAD C/L	EDGE OF PAVEMENT	EDGE OF PAVEMENT	EDGE OF PAVEMENT
OFFSET	OFFSET	OFFSET	OFFSET	OFFSET	OFFSET	OFFSET	
1+50	17.81	104.35	15.00	104.41	1+96.12	0.00	101.72
1+75	26.12	102.26	21.01	102.41	2+00	11.84	101.15
2+00	42.01	100.25	42.01	100.25	2+25	17.92	99.75
2+25	44.12	98.97	44.12	98.97	2+36.12	0.00	99.85
2+50	29.62	98.67	29.62	98.67			
2+55	20.61	98.58	20.61	98.58			
2+61.12	0.00	99.05	0.00	99.05			

I CERTIFY THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTER OF DEEDS.

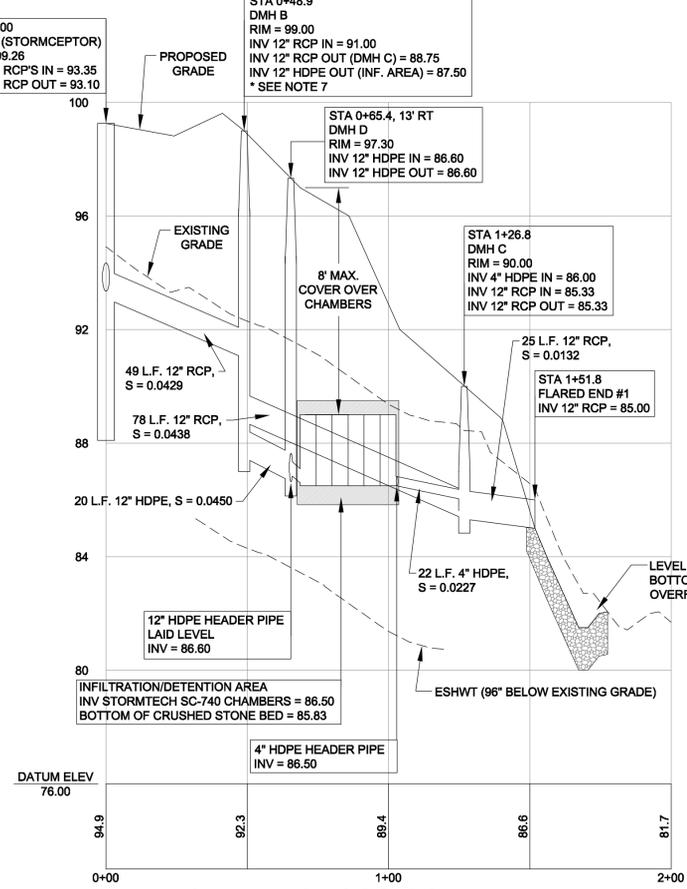
DATE



PROFILE ~ MARIANO DRIVE

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

- NOTES:**
- THE LOCATION OF ALL UNDERGROUND UTILITIES SHOWN HEREON ARE APPROXIMATE AND ARE BASED ON A COMBINATION OF FIELD LOCATIONS AND COMPILED INFORMATION FROM PLANS SUPPLIED BY VARIOUS UTILITY COMPANIES AND GOVERNMENT AGENCIES. IN ACCORDANCE WITH M.G.L. CHAPTER 82 SECTION 40, INCLUDING AMENDMENTS, ALL CONTRACTORS SHOULD NOTIFY IN WRITING ALL UTILITY COMPANIES AND GOVERNMENT AGENCIES PRIOR TO ANY EXCAVATION WORK AND CALL DIG-SAFE AT 1-888-DIG-SAFE.
 - PRIOR TO CONSTRUCTION, TEST PITS ARE TO BE DUG IN SANBORN LANE TO DETERMINE THE PRECISE LOCATIONS AND ELEVATIONS OF ALL UNDERGROUND UTILITIES AT THE CONNECTION POINTS AND IN THE PATH OF THE PROPOSED WATER AND SEWER MAIN EXTENSIONS. NO WORK IN THESE STREETS SHALL BEGIN UNTIL IT IS VERIFIED THAT THERE ARE NO CONFLICTS WITH EXISTING UTILITIES.
 - ALL DRAINAGE PIPES ARE TO BE 12" CLASS IV REINFORCED CONCRETE PIPE UNLESS OTHERWISE NOTED.
 - ALL SEWER MAINS ARE TO BE 8" SDR 35 PVC PIPE. ALL SEWER SERVICES ARE TO BE 6" SDR 35 PVC PIPE. FORCE MAINS ARE TO BE 2" SCH 40 (MIN.) PVC PIPE.
 - THE STATIONS SPECIFIED FOR THE SEWER AND DRAIN MANHOLES REFERENCE THE CENTERS OF THE STRUCTURES. THE STATIONS SPECIFIED FOR THE CATCH BASINS REFERENCE THE CENTERS OF THE GRATES AT 1.00 FT. OFF THE EDGE OF PAVEMENT.
 - THE FINAL LOCATIONS OF THE PROPOSED STREET LIGHTS ARE TO BE DETERMINED BY THE READING MUNICIPAL LIGHT DEPARTMENT AND SHALL BE SUBJECT TO THE APPROVAL BY THE DPW ENGINEERING DIVISION.
 - THE 12" HDPE OUTLET PIPE LEADING FROM DMH B TO THE INFILTRATION/DETENTION AREA IS TO BE CAPPED UPON INSTALLATION, & SHALL REMAIN CAPPED UNTIL ALL CONTRIBUTING UPGRADIENT AREAS ARE STABILIZED.
 - THE SEWER PUMP DESIGNS FOR LOTS 2 & 3 SHALL BE SUBMITTED TO THE ENGINEERING DIVISION FOR REVIEW AND APPROVAL UPON OR BEFORE THE SUBMISSION OF THE APPLICATION FOR THE SEWER PERMIT OF THE RESPECTIVE LOT.
 - THE CATCH BASINS, MANHOLES, STORMCEPTOR, AND ALL DRAINAGE LINES ARE TO BE CLEANED UPON STABILIZATION OF ALL SURFACES AND THE COMPLETION OF ALL PAVEMENT SURFACES.



PROFILE ~ CROSS COUNTRY DRAIN

HORIZONTAL SCALE: 1" = 30'
VERTICAL SCALE: 1" = 3'

APPROVED UNDER THE SUBDIVISION CONTROL LAW UPON CONDITIONS
DATE: _____
APPROVED BY: _____
READING COMMUNITY PLANNING & DEVELOPMENT COMMISSION

PROFESSIONAL ENGINEER
PHILIP G. CHRISTIANSEN

DEFINITIVE SUBDIVISION PLAN
FOR
MARIANO DRIVE
IN
READING, MASS.

RECORD OWNER: MARY J. NAPPI, 92 SANBORN LANE, READING, MA 01867 (781) 944-7220
APPLICANT: ALBERT COUILLARD, 5 MARION AVE., GROVELAND, MA 01834 (603) 560-4754

SURVEYOR: **GA CONSULTANTS, INC.**, PROFESSIONAL ENGINEERS, 17 GRAF ROAD, NEWBURYPORT, MA 01950, TEL: 978-502-5197
ENGINEER: **CS** PROFESSIONAL ENGINEERS & LAND SURVEYORS, **CHRISTIANSEN & SERGI, INC.**, 160 SUMMER STREET, HAVERHILL, MASSACHUSETTS 01830, WWW.CSI-ENGR.COM TEL: 978-373-0310 FAX: 978-372-3960

PLAN & PROFILE ~ MARIANO DRIVE

DATE: MARCH 21, 2014
REVISIONS: MAY 15, 2014
SHEET 5 OF 10
DWG. NO. 12.091.003

Erosion and Sedimentation Control Plan

The Erosion and Sedimentation Control Plan (ESCP) provides the developer and the contractor with erosion prevention information and Best Management Practices (BMP's) to be used during project construction to prevent the generation of erosion products and their transport to environmentally sensitive areas. Environmentally sensitive areas include all designated resource areas downstream of the Site, and those areas of the Site that do not need to be altered for development purposes.

The most important BMP is maintaining a rapid construction process, resulting in prompt stabilization of surfaces, thereby reducing erosion potential. Given the primacy of rapid construction, the ESCP has been designed to allow construction progress with essentially no hindrance by the erosion control methods prescribed. The ESCP has also been designed with sufficient flexibility to allow the contractor to modify the suggested methods as required to suit seasonal, atmospheric, and site specific physical constraints. Another important BMP is the prevention of concentrated water flow. Sheet flow does not have the erosive potential of a concentrated rivulet. The ESCP recommends construction methods that allow localized erosion control and a system of construction which inhibits the development of shallow concentrated flow. These BMP's should be maintained through the construction process.

RESPONSIBILITY OF THE CONTRACTOR

The contractor shall be solely responsible for erosion and sedimentation control at the Site. The contractor shall utilize a system of operations and all necessary erosion and sedimentation control measures, even if not specified herein or elsewhere, to minimize erosion damage at the Site. The BMP's presented in the ESCP should be used as a guide for erosion and sedimentation control and are not intended to be considered specifications for construction.

BMP's FOR CONSTRUCTION

Clearing:

- Vehicles used in the wood clearing process shall be maintained within the approved limits of work.
- Wheel ruts shall be filled in and graded to prevent concentration of storm water runoff.
- Vehicle tracks leading downhill shall be blocked during periods of intense precipitation by hay bales, dikes, or silt fences which shall be installed to entrap the sediment.
- Consideration shall be given to chipping of brush and branches that generate wood chip mulch for the use in stabilization of disturbed surfaces.
- No spoil (e.g., tree stumps) shall be disposed of by burying.

Grubbing, Stripping and Grading:

- Erosion Control devised shall be in place as shown on the design plans before grading commences.
- A Crushed Stone Construction Entrance shall be installed as soon as the start of construction. The stabilized construction entrance will be inspected daily for sediment tracked on the road, for clean gravel, and to make sure that the all traffic uses the stabilized entrance when leaving the site.
- As much topsoil as possible shall be stockpiled for on-site use.
- Stripping shall be done in a manner which will not concentrate runoff. If precipitation is expected, earthen berms shall be constructed around the area being stripped, with a silt fence or hay bale dikes located in an arc at the low point of the berm.
- If intense precipitation is anticipated, hay bales, dikes and/or silt fences shall be used as required to prevent erosion and sediment transport. The materials required shall be stored on site at all times.
- If water is required for soil compaction, it shall be added in a uniform manner that does not allow excess water to flow off the area being compacted.
- Dust should be held at a minimum by sprinkling exposed soil with at appropriate amount of water.

Maintenance of Disturbed Surfaces

- Runoff shall be diverted from disturbed side slopes in both cut and fill.
- Mulching may be used for temporary stabilization.
- Hay bale dikes or silt fences shall be set where required to trap sediment and shall be maintained on a continual basis throughout the construction process.

Loaming and Seeding

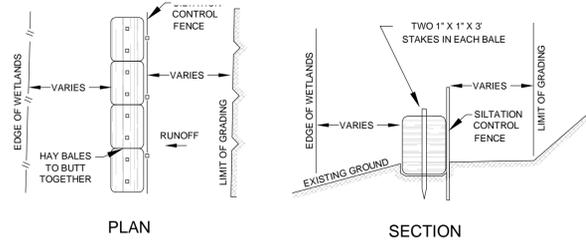
- Loaming and seeding of slopes shall be an ongoing construction process and is not limited to any one phase of construction.
- Loam shall not be placed unless it is to be seeded directly thereafter.
- All disturbed areas shall have a minimum of 4" of loam placed before being seeded and mulched.
- Consideration should be given to hay-mulching, especially on slopes in excess of 3 to 1.
- Loamed and seeded slopes shall be protected from washout by mulching or other acceptable slope protection until vegetation begins to grow.
- All exposed areas shall be stabilized within 30 days of being excavated even if further work is anticipated for that particular area.

Storm Water Collection System Installation

- The rip-rap level spreader shall be constructed prior to the installation of the roadway drainage system. Areas in the vicinity of outfalls shall be stabilized with vegetation.
- Inlet protection (staked hay bales) shall be installed around each catch basin upon installation and shall remain in place until all upgradient contributing areas are stabilized.
- The 12" HDPE outlet pipe leading from DMH B to the infiltration/detention area is to be capped upon installation, & shall remain capped until all contributing upgradient areas are stabilized.

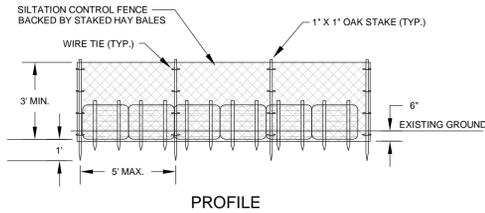
Stabilization of Surfaces

- Stabilization of surfaces shall be an ongoing process.
- Stabilization of surfaces included the placement of pavement, rip rap, bark mulch and the establishment of vegetated surfaces.
- Upon the completion of construction, all surfaces shall be stabilized even though it is apparent that the future construction efforts will cause their disturbance. In no case left open greater than 30 days.
- Vegetated cover shall be established during the proper growing season and should be enhanced by soil adjustment for proper pH, nutrients and moisture content.
- Surfaces that are disturbed by erosion processes, vandalism or by construction shall be stabilized as soon as possible, in no case greater than 30 days.
- Hay-mulching of grass surfaces is recommended, especially if seeding of the surfaces is required outside the normal growing season.
- Erosion control blankets are recommended for steep slopes (greater than 3:1).



PLAN

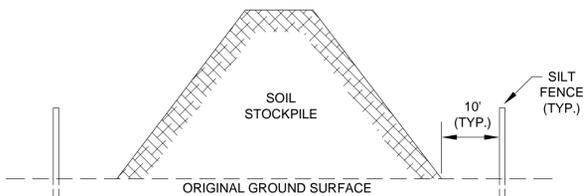
SECTION



PROFILE

1 SEDIMENTATION CONTROL DETAIL

NOT TO SCALE

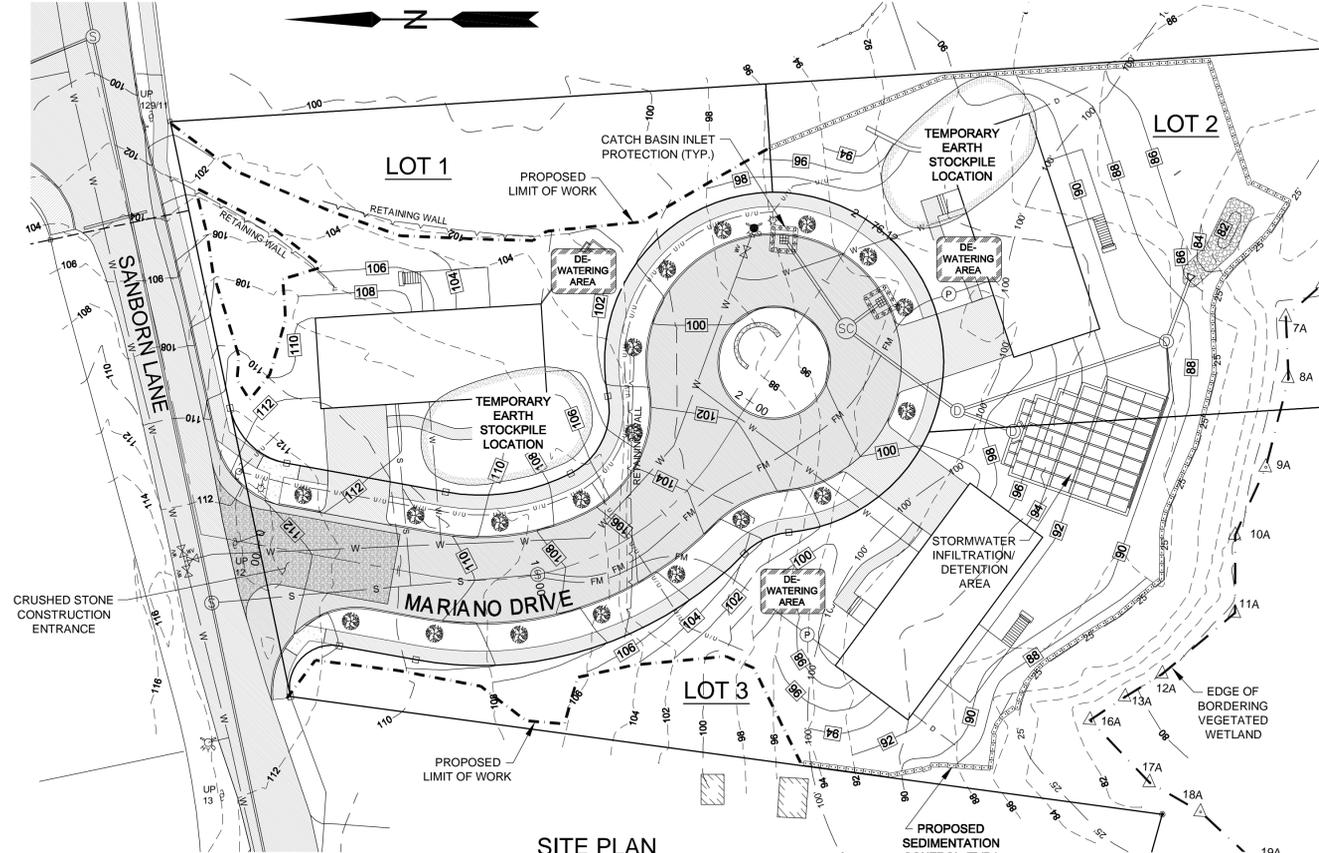


2 TEMPORARY SOIL STOCKPILE

NOT TO SCALE

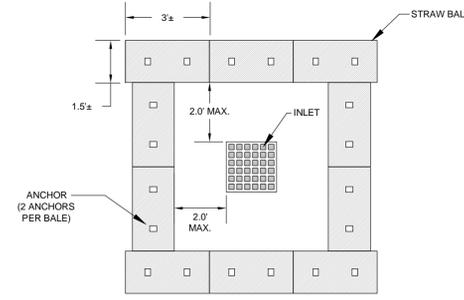
NOTES:

1. SILT FENCE TO EXTEND AROUND ENTIRE PERIMETER OF STOCKPILE IF ON LEVEL GROUND OR TO EXTEND AROUND DOWNGRADIENT PORTION IF STOCKPILE IS ON SLOPE.
2. IF THE STOCKPILE IS TO REMAIN FOR MORE THAN 14 DAYS IT SHALL BE STABILIZED WITH AN EROSION CONTROL BLANKET OR SEEDING (IF LOAM).
3. INSPECTION OF SILT FENCES SHALL BE AT LEAST ONCE PER WEEK AND AFTER RAIN EVENTS IN EXCESS OF 1/2". REPAIR OR REPLACEMENT OF SILT FENCE SHALL BE MADE PROMPTLY AS NEEDED.
4. SEDIMENT TRAPPED BY SILT FENCES SHALL BE REMOVED AND PROPERLY DISPOSED OF WHEN SEDIMENT DEPTH REACHES 12".
5. SILT FENCES SHALL BE MAINTAINED UNTIL STOCKPILE IS ELIMINATED.



SITE PLAN

SCALE: 1" = 30'



PLAN

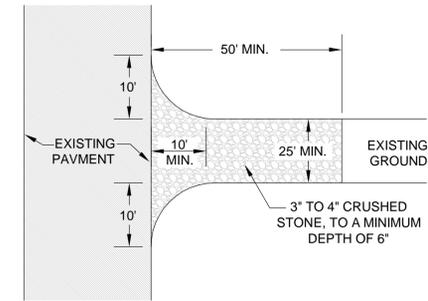
SECTION

5 CATCH BASIN INLET PROTECTION

NOT TO SCALE

NOTES:

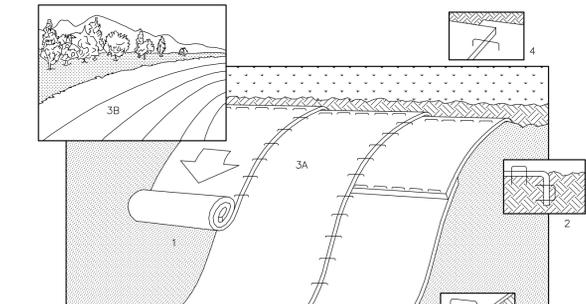
1. IMMEDIATELY AFTER THE INSTALLATION OF ANY CATCH BASIN OR STORM DRAIN, STAKED STRAW BALES SHALL BE SET AROUND THE INLET TO PREVENT SEDIMENT FROM ENTERING THE DRAINAGE SYSTEM PRIOR TO PAVING.
2. THE IMMEDIATE LAND AREA AROUND THE INLET SHOULD BE RELATIVELY FLAT (LESS THAN 2% SLOPE) AND BE LOCATED SUCH THAT THE ACCUMULATED SEDIMENT CAN BE EASILY REMOVED.
3. THE INSIDE EDGE OF THE BALES SHALL BE A MAXIMUM OF 2 FEET FROM THE EDGE OF THE INLET.
4. ANCHORS SHALL BE REBAR, STEEL PICKETS, OR 1" X 1" STAKES, AND SHALL BE LONG ENOUGH TO EXTEND AT LEAST 1.5 TO 2.0 FEET INTO THE GROUND WHEN THE TOP IS FLUSH WITH THE BALES.



6 CRUSHED STONE CONSTRUCTION ENTRANCE

NOT TO SCALE

THE CONSTRUCTION ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO SANBORN LANE.

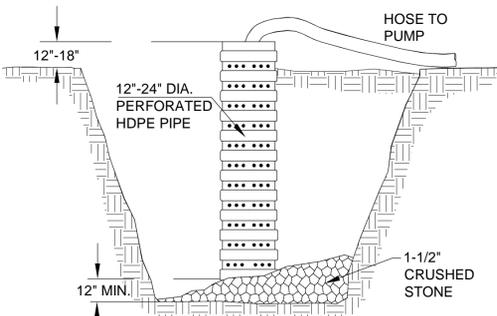


7 EROSION CONTROL BLANKET DETAIL

NOT TO SCALE

NOTE: REFER TO GENERAL STAPLE PATTERN GUIDE FOR CORRECT STAPLE PATTERN RECOMMENDATIONS FOR SLOPE INSTALLATIONS.

1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN 6" DEEP X 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
3. ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE.
4. THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2" OVERLAP.
5. WHEN BLANKETS MUST BE SPLICED DOWN THE SLOPE, PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH APPROXIMATELY 4" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART.

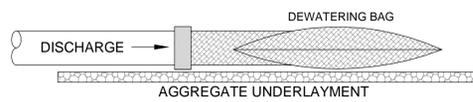


TOP VIEW

SIDE VIEW

3 DEWATERING SUMP DETAIL

NOT TO SCALE



4 DEWATERING BAG DETAIL

NOT TO SCALE

FOR REGISTRY USE ONLY

I CERTIFY THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTER OF DEEDS.

DATE

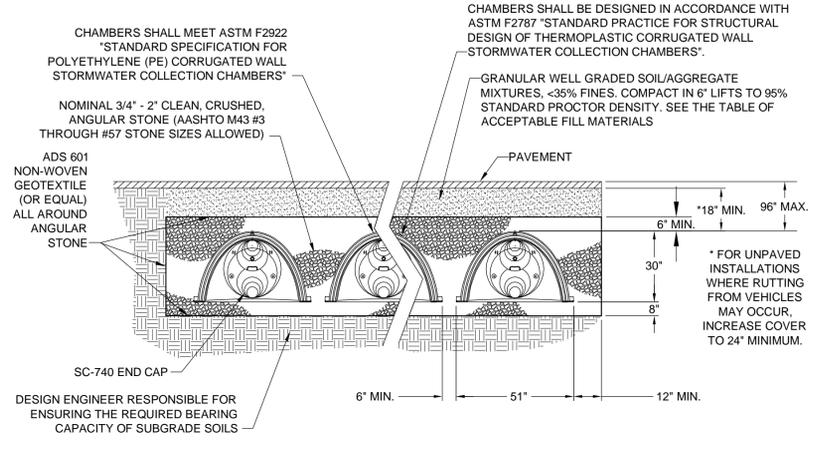
NOTES:

1. THE TEMPORARY EARTH STOCKPILE LOCATIONS SHOWN ARE INTENDED TO BE REPRESENTATIVE OF AVAILABLE AREAS WHERE STOCKPILES MAY BE LOCATED. STOCKPILES ARE TO BE LOCATED IN AREAS OF RELATIVELY FLAT SLOPES OUTSIDE OF IMMEDIATE WORK AREAS & AT A MINIMUM OF 100' FROM ALL JURISDICTIONAL WETLAND RESOURCE AREAS.
2. THE DEWATERING AREAS SHOWN ARE INTENDED TO BE REPRESENTATIVE OF AVAILABLE AREAS WHERE DEWATERING MAY BE LOCATED. DEWATERING AREAS ARE TO BE LOCATED IN AREAS OF RELATIVELY FLAT SLOPES OUTSIDE OF IMMEDIATE WORK AREAS & AT A MINIMUM OF 100' FROM ALL JURISDICTIONAL WETLAND RESOURCE AREAS.
3. NO MACHINERY WILL BE STORED WITHIN 100' OF ANY RESOURCE AREA, & ALL MACHINERY WILL BE INSPECTED DAILY FOR LEAKING FLUIDS, CHEMICALS, FERTILIZERS, PESTICIDES, HERBICIDES, ETC. SHALL NOT BE USED OR STORED WITHIN 100' OF A JURISDICTIONAL RESOURCE AREA.

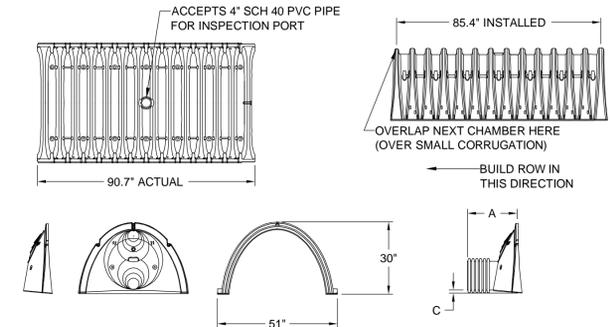
DEFINITIVE SUBDIVISION PLAN		EROSION & SEDIMENTATION CONTROL PLAN
FOR MARIANO DRIVE IN READING, MASS.		
RECORD OWNER: MARY J. NAPPI 92 SANBORN LANE READING, MA 01867 (781) 944-7220	APPLICANT: ALBERT COUILLARD 5 MARION AVE. GROVELAND, MA 01834 (603) 560-4754	DATE: MARCH 21, 2014 REVISIONS: MAY 15, 2014
SURVEYOR: GA CONSULTANTS, INC. PROFESSIONAL ENGINEERS 17 GRAF ROAD, NEWBURYPORT, MA 01950 TEL. 978-502-5197		
ENGINEER: CHRISTIANSEN & SERGI, INC. PROFESSIONAL ENGINEERS & LAND SURVEYORS 160 SUMMER STREET, HAVERHILL, MASSACHUSETTS 01830 WWW.CSI-ENGR.COM TEL. 978-373-0310 FAX. 978-372-3960		SHEET 6 OF 10 DWG. NO. 12.091.009

APPROVED UNDER THE SUBDIVISION CONTROL LAW UPON CONDITIONS	PROFESSIONAL ENGINEER
DATE: _____	
APPROVED BY: _____	
	PHILIP G. CHRISTIANSEN
READING COMMUNITY PLANNING & DEVELOPMENT COMMISSION	

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1 SC-740 TYPICAL CROSS-SECTION NOT TO SCALE



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W x H x INSTALLED LENGTH)	51.0" x 30.0" x 85.4" [1295 mm x 762 mm x 2169 mm]
CHAMBER STORAGE	45.9 CUBIC FEET [1.30 m ³]
MINIMUM INSTALLED STORAGE	74.9 CUBIC FEET [2.12 m ³]
WEIGHT	75 lbs. [33.6 kg]

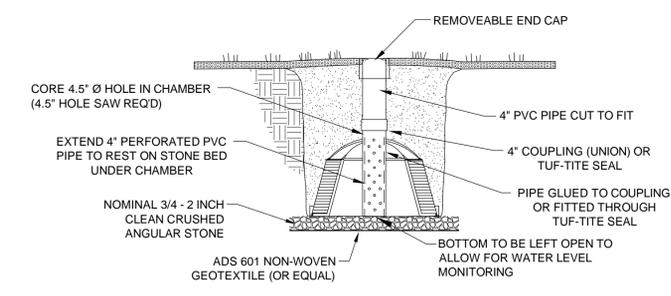
STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"

PART#	STUB	A	B	C
SC740EPE06B	6"	10.90"	N/A	0.50"

ALL STUBS ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

NOTE: ALL DIMENSIONS ARE NOMINAL

2 SC-740 TECHNICAL SPECIFICATIONS NOT TO SCALE



3 INSPECTION PORT DETAIL NOT TO SCALE

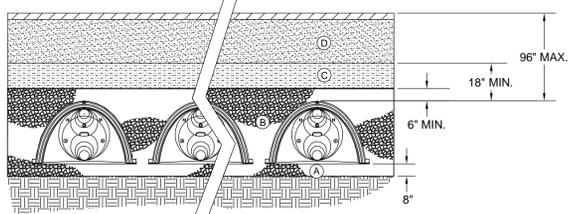
NOTES:

- INSPECTION PORT MUST BE CONNECTED THROUGH KNOCK-OUT LOCATED AT CENTER OF CHAMBER.
- ALL SCHEDULE 40 FITTINGS TO BE SOLVENT CEMENTED.

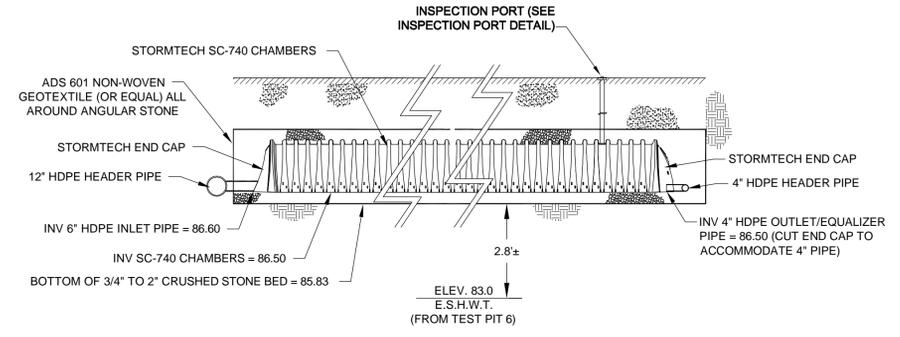
MATERIAL LOCATION	DESCRIPTION	AASHTO M43 DESIGNATION ⁽¹⁾	COMPACTION/DENSITY REQUIREMENT
(D) FILL MATERIAL FOR LAYER D STARTS FROM THE TOP OF THE C LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISH GRADE ABOVE. NOTE THAT PAVEMENT SUB-BASE MAY BE PART OF THIS LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
(C) FILL MATERIAL FOR LAYER C STARTS FROM THE TOP OF THE EMBEDMENT STONE (B LAYER) TO 18" (457 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUB-BASE MAY BE A PART OF THIS LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, < 35% FINES. MOST PAVEMENT SUB-BASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTION AFTER 12" (305 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (152 mm) LIFTS TO A MIN. 95% STANDARD PROCTOR DENSITY ⁽²⁾ . ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
(B) EMBEDMENT STONE SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE (A LAYER) TO THE C LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE. NOMINAL SIZE DISTRIBUTION BETWEEN 3/4" - 2" INCH [19 - 51 mm]	3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
(A) FOUNDATION STONE BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE. NOMINAL SIZE DISTRIBUTION BETWEEN 3/4" - 2" INCH [19 - 51 mm]	3, 35, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A 95% STANDARD PROCTOR DENSITY ⁽²⁾ .

PLEASE NOTE:

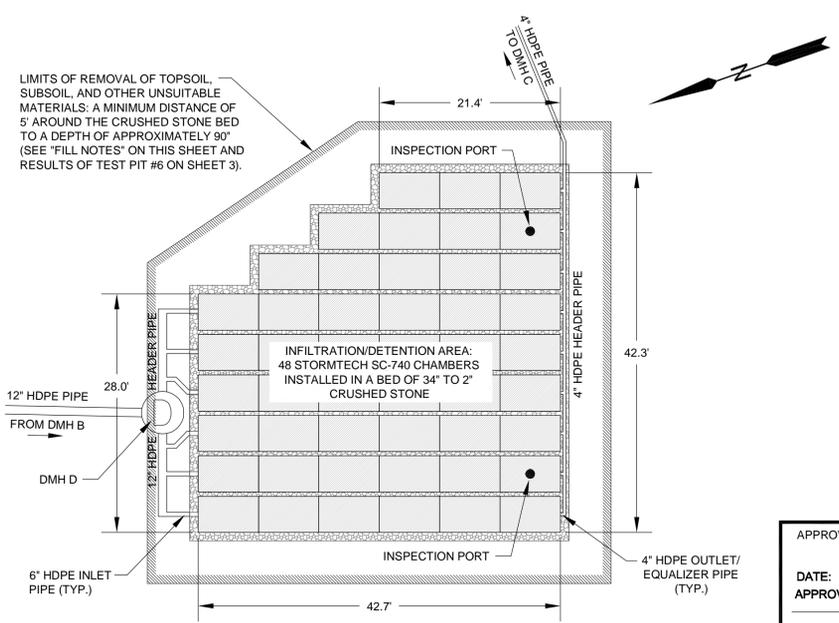
- THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
- AS AN ALTERNATE TO PROCTOR TESTING AND FIELD DENSITY MEASUREMENTS ON OPEN GRADED STONE, STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (229 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH AN APPROPRIATE COMPACTOR.



4 ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEM NOT TO SCALE



5 TYPICAL SECTION - INFILTRATION/DETENTION AREA NOT TO SCALE



6 INFILTRATION/DETENTION AREA DETAIL SCALE: 1" = 10'

FILL NOTES

- FILL MATERIAL SHALL CONSIST OF IMPORTED SOIL MATERIAL. THE FILL MATERIAL SHALL BE COMPRISED OF CLEAN GRANULAR SAND, FREE FROM ORGANIC MATTER AND DELETERIOUS SUBSTANCES. MIXTURES AND LAYERS OF DIFFERENT CLASSES OF SOILS SHALL NOT BE USED. THE FILL SHALL NOT CONTAIN ANY MATERIAL LARGER THAN 2 INCHES. A SIEVE ANALYSIS, USING A #4 SIEVE, SHALL BE PERFORMED ON A REPRESENTATIVE SAMPLE OF THE FILL. UP TO 45% BY WEIGHT OF THE SAMPLE MAY BE RETAINED ON THE #4 SIEVE. SIEVE ANALYSES ALSO SHALL BE PERFORMED ON THE FRACTION OF THE FILL SAMPLE PASSING THE #4 SIEVE. SUCH ANALYSES MUST DEMONSTRATE THAT THE MATERIAL MEETS EACH OF THE FOLLOWING SPECIFICATIONS.
- | SIEVE SIZE | PARTIAL SIZE | % THAT MUST PASS SIEVE |
|------------|--------------|------------------------|
| # 4 | 4.75 mm | 100% |
| # 50 | 0.30 mm | 10% - 100% |
| #100 | 0.15 mm | 0% - 20% |
| #200 | 0.075 mm | 0% - 5% |
- WHERE FILL IS REQUIRED TO REPLACE UNSUITABLE OR IMPERMEABLE SOILS, THE EXCAVATION OF THE UNSUITABLE MATERIAL SHALL EXTEND A MINIMUM OF FIVE FEET LATERALLY IN ALL DIRECTIONS BEYOND THE OUTER PERIMETER OF THE CRUSHED STONE BED OF THE INFILTRATION/DETENTION SYSTEM TO THE DEPTH OF NATURALLY OCCURRING PERVIOUS MATERIAL AND REPLACED WITH FILL MATERIAL MEETING THE SPECIFICATIONS OF NOTE #1 ABOVE.
 - PRIOR TO PLACEMENT OF FILL, WHICH SHALL BE STOCKPILED AT THE EDGE OF THE EXCAVATION AND FILLED IN GRADUALLY, THE BOTTOM OF THE EXCAVATION SHALL BE SCARIFIED AND RELATIVELY DRY. FILL SHALL NOT BE PLACED DURING RAIN OR SNOW STORMS. IF THE WATER TABLE ELEVATION IS ABOVE THE ELEVATION OF THE BOTTOM OF THE EXCAVATION, THE EXCAVATION SHALL BE DEWATERED AS NECESSARY.
 - A SIEVE ANALYSIS SHALL BE PERFORMED ON THE FILL MATERIAL TO BE USED. A COPY OF THE RESULTS OF THE ANALYSIS SHALL BE SUBMITTED TO THE TOWN ENGINEER FOR APPROVAL PRIOR TO ANY PLACEMENT OF FILL.
 - THE FILL MATERIAL USED SHALL BE PLACED IN 12" MAXIMUM COMPACTED LIFTS.

I CERTIFY THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTER OF DEEDS.

DATE

STORMWATER CHAMBER SPECIFICATIONS

- CHAMBERS SHALL BE STORMTECH SC-740, SC-310 OR APPROVED EQUAL.
- CHAMBERS SHALL BE MANUFACTURED FROM VIRGIN POLYPROPYLENE OR POLYETHYLENE RESINS TESTED USING ASTM STANDARDS.
- CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORT PANELS.
- THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12 ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCE.
- ONLY CHAMBERS THAT ARE APPROVED BY THE ENGINEER WILL BE ALLOWED. THE CONTRACTOR SHALL SUBMIT (3 SETS) OF THE FOLLOWING TO THE ENGINEER FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE.
 - A STRUCTURAL EVALUATION BY A REGISTERED STRUCTURAL ENGINEER THAT DEMONSTRATES THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12 ARE MET. THE 50-YEAR CREEP MODULUS DATA SPECIFIED IN ASTM F2922 MUST BE USED AS A PART OF THE AASHTO STRUCTURAL EVALUATION TO VERIFY LONG-TERM PERFORMANCE.
- CHAMBERS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.
- ALL DESIGN SPECIFICATIONS FOR CHAMBERS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S LATEST DESIGN MANUAL.
- THE INSTALLATION OF CHAMBERS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S LATEST INSTALLATION INSTRUCTIONS.

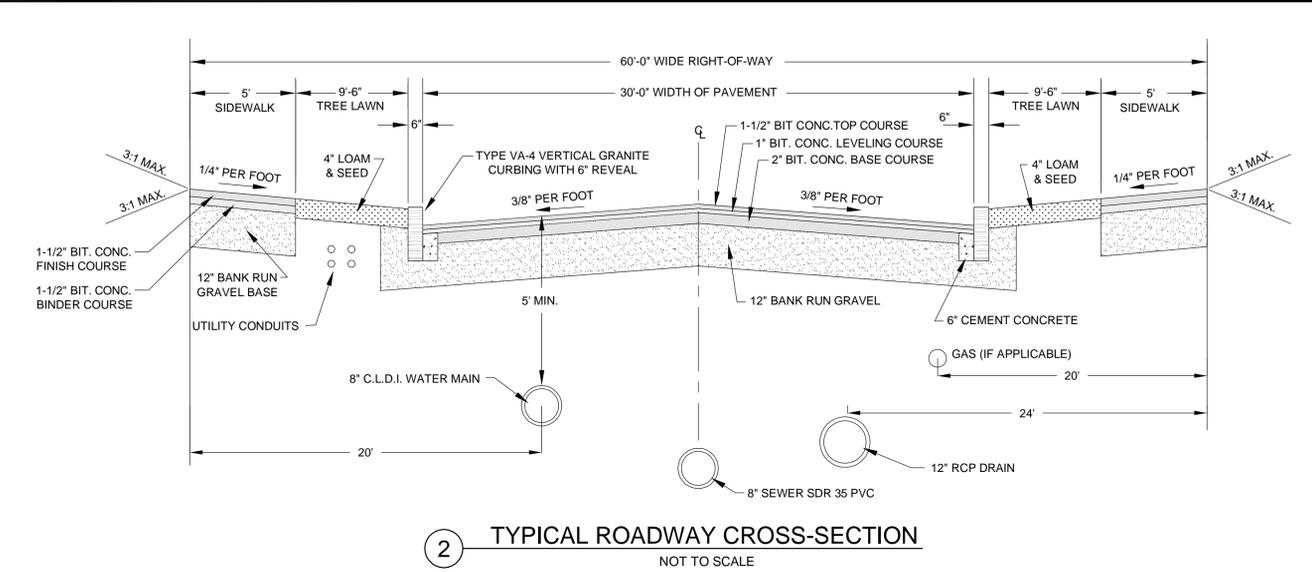
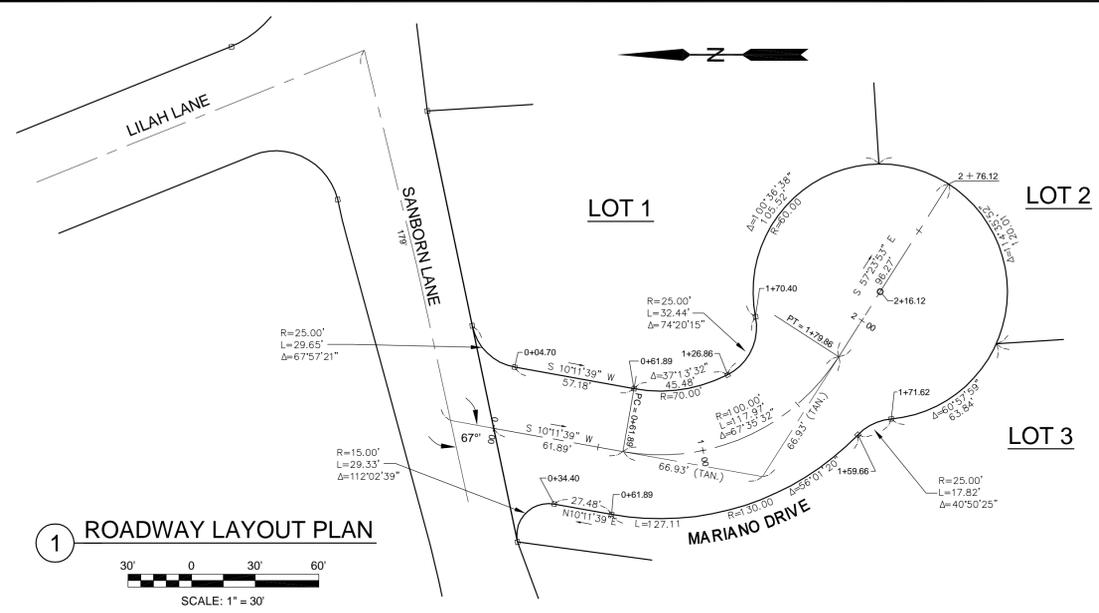
STORMTECH GENERAL NOTES

- STORMTECH REQUIRES INSTALLING CONTRACTORS TO USE AND UNDERSTAND STORMTECH'S LATEST INSTALLATION INSTRUCTIONS PRIOR TO BEGINNING SYSTEM INSTALLATION.
- OUR TECHNICAL SERVICES DEPARTMENT OFFERS INSTALLATION CONSULTATIONS TO INSTALLING CONTRACTORS. CONTACT OUR TECHNICAL SERVICES REPRESENTATIVE AT LEAST 30 DAYS PRIOR TO SYSTEM INSTALLATION TO ARRANGE A PRE-INSTALLATION CONSULTATION. OUR REPRESENTATIVES CAN THEN ANSWER QUESTIONS OR ADDRESS COMMENTS ON THE STORMTECH CHAMBER SYSTEM AND INFORM THE INSTALLING CONTRACTOR OF THE MINIMUM INSTALLATION REQUIREMENTS BEFORE BEGINNING THE SYSTEM'S CONSTRUCTION. CALL 1-888-892-2694 TO SPEAK TO A TECHNICAL SERVICES REPRESENTATIVE OR VISIT WWW.STORMTECH.COM TO RECEIVE A COPY OF OUR INSTALLATION INSTRUCTIONS.
- STORMTECH'S REQUIREMENTS FOR SYSTEMS WITH PAVEMENT DESIGN (ASPHALT, CONCRETE PAVERS, ETC.), MINIMUM COVER IS 18" [457 mm] NOT INCLUDING PAVEMENT; MAXIMUM COVER IS 96" [2438 mm] INCLUDING PAVEMENT. FOR INSTALLATIONS THAT DO NOT INCLUDE PAVEMENT, WHERE RUTTING FROM VEHICLES MAY OCCUR, MINIMUM REQUIRED COVER IS 24" [610 mm], MAXIMUM COVER IS 96" [2,438 m].
- THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE DESIGN ENGINEER.
- AASHTO M288 CLASS 2 NON-WOVEN GEOTEXTILE (FILTER FABRIC) MUST BE USED AS INDICATED IN THE PROJECT PLANS.
- STONE PLACEMENT BETWEEN CHAMBERS ROWS AND AROUND PERIMETER MUST FOLLOW INSTRUCTIONS AS INDICATED IN THE MOST CURRENT VERSION OF STORMTECH'S INSTALLATION INSTRUCTIONS.
- BACKFILLING OVER THE CHAMBERS MUST FOLLOW REQUIREMENTS AS INDICATED IN THE MOST CURRENT VERSION OF STORMTECH'S INSTALLATION INSTRUCTIONS.
- THE CONTRACTOR MUST REFER TO STORMTECH'S INSTALLATION INSTRUCTIONS FOR A TABLE OF ACCEPTABLE VEHICLE LOADS AT VARIOUS DEPTHS OF COVER. THIS INFORMATION IS ALSO AVAILABLE AT STORMTECH'S WEBSITE: WWW.STORMTECH.COM. THE CONTRACTOR IS RESPONSIBLE FOR PREVENTING VEHICLES THAT EXCEED STORMTECH'S REQUIREMENTS FROM TRAVELING ACROSS OR PARKING OVER THE STORMWATER SYSTEM. TEMPORARY FENCING, WARNING TAPE AND APPROPRIATELY LOCATED SIGNS ARE COMMONLY USED TO PREVENT UNAUTHORIZED VEHICLES FROM ENTERING SENSITIVE CONSTRUCTION AREAS.
- THE CONTRACTOR MUST APPLY EROSION AND SEDIMENT CONTROL MEASURES TO PROTECT THE STORMWATER SYSTEM DURING ALL PHASES OF SITE CONSTRUCTION PER LOCAL CODES AND DESIGN ENGINEER'S SPECIFICATIONS.
- STORMTECH PRODUCT WARRANTY IS LIMITED. SEE CURRENT PRODUCT WARRANTY FOR DETAILS. TO ACQUIRE A COPY CALL STORMTECH AT 1-888-892-2694 OR VISIT WWW.STORMTECH.COM

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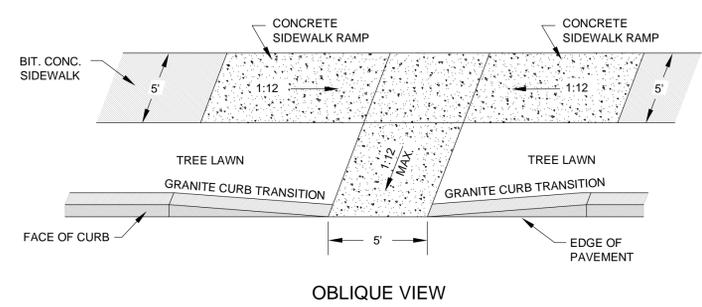
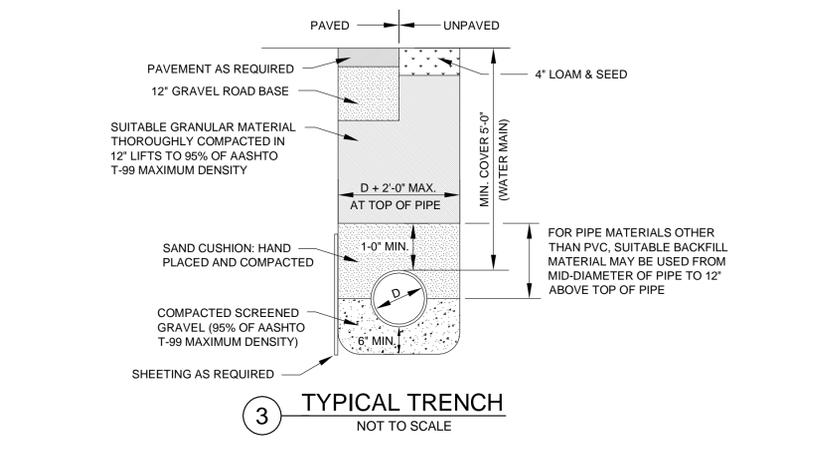
<p>DEFINITIVE SUBDIVISION PLAN</p> <p>FOR</p> <p>MARIANO DRIVE</p> <p>IN</p> <p>READING, MASS.</p>		<p>STORMWATER INFILTRATION/DETENTION AREA DETAILS</p>
<p>RECORD OWNER:</p> <p>MARY J. NAPPI 92 SANBORN LANE READING, MA 01867 (781) 944-7220</p>	<p>APPLICANT:</p> <p>ALBERT COUILLARD 5 MARION AVE. GROVELAND, MA 01834 (603) 560-4754</p>	
<p>SURVEYOR:</p> <p>GA CONSULTANTS, INC. PROFESSIONAL ENGINEERS 17 GRAF ROAD, NEWBURYPORT, MA 01950 TEL. 978-502-5197</p>		<p>DATE: MARCH 21, 2014</p> <p>REVISIONS: MAY 15, 2014</p>
<p>ENGINEER:</p> <p>PROFESSIONAL ENGINEERS & LAND SURVEYORS CHRISTIANSEN & SERGI, INC. 160 SUMMER STREET, HAVERHILL, MASSACHUSETTS 01830 WWW.CSI-ENGR.COM TEL. 978-373-0310 FAX. 978-372-3960</p>		<p>SHEET 7 OF 10</p> <p>DWG. NO. 12.091.008</p>

<p>APPROVED UNDER THE SUBDIVISION CONTROL LAW UPON CONDITIONS</p> <p>DATE: _____</p> <p>APPROVED BY: _____</p>	<p>PROFESSIONAL ENGINEER</p> <p>PHILIP G. CHRISTIANSEN</p>
<p>READING COMMUNITY PLANNING & DEVELOPMENT COMMISSION</p>	

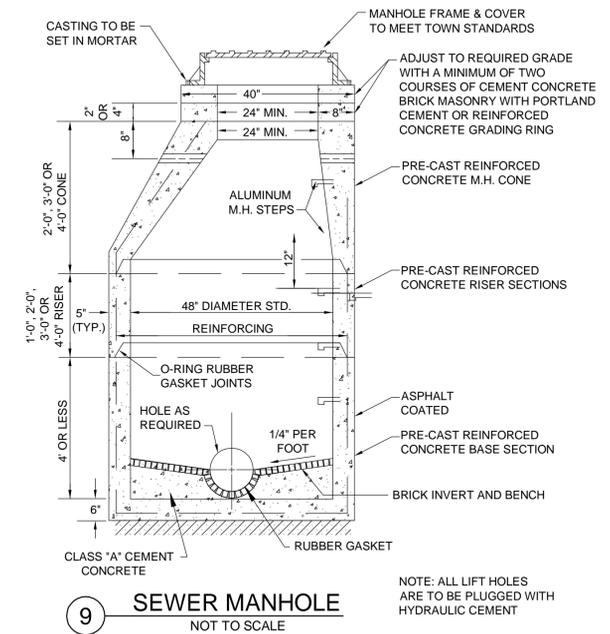
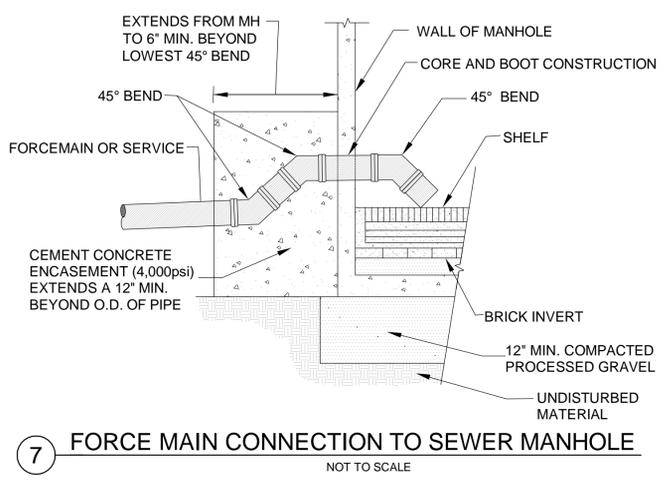


I CERTIFY THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTER OF DEEDS.

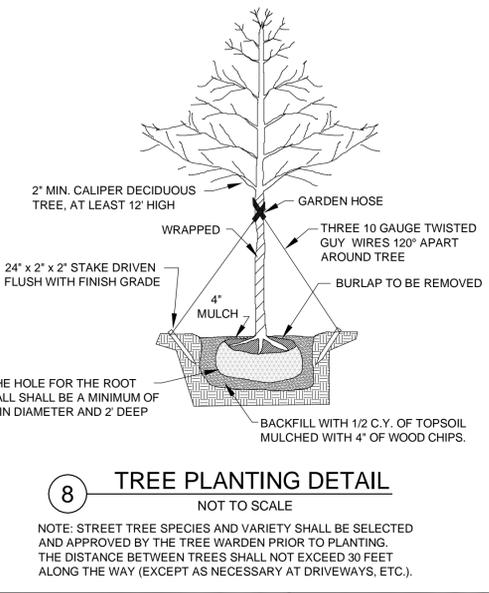
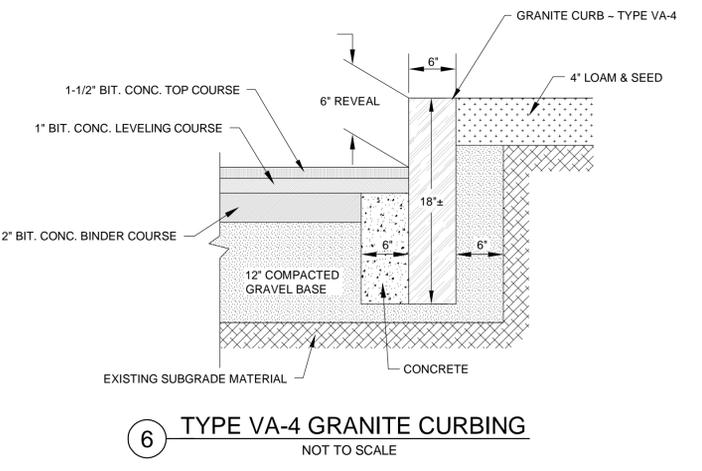
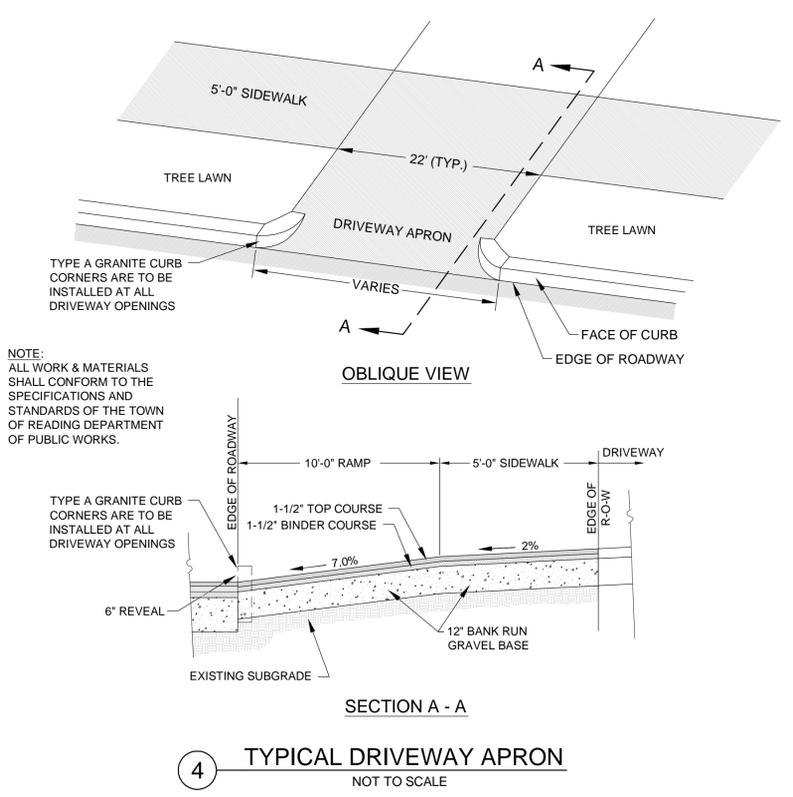
DATE



- NOTES:**
1. PORTLAND CEMENT CONCRETE RAMPS SHALL CONSIST OF 12" OF BANK RUN GRAVEL AND 4" OF CEMENT CONCRETE REINFORCED WITH NO. 10, 6" BY 6" MESH.
 2. PORTLAND CEMENT CONCRETE RAMPS ARE TO BE TEXTURED BY BROOMING IN A DIRECTION PARALLEL TO THE LENGTH OF THE RAMP.
 3. HANDICAP RAMPS ARE TO HAVE TACTILE WARNING STRIPS THAT COMPLY WITH AAB AND ADAAG SECTION 4.29.



NOTE: ALL LIFT HOLES ARE TO BE PLUGGED WITH HYDRAULIC CEMENT



APPROVED UNDER THE SUBDIVISION CONTROL LAW UPON CONDITIONS

DATE: _____

APPROVED BY: _____

READING COMMUNITY PLANNING & DEVELOPMENT COMMISSION

PROFESSIONAL ENGINEER

PHILIP G. CHRISTIANSEN

DEFINITIVE SUBDIVISION PLAN		CONSTRUCTION DETAILS 1
FOR MARIANO DRIVE IN READING, MASS.		
RECORD OWNER: MARY J. NAPPI 92 SANBORN LANE READING, MA 01867 (781) 944-7220	APPLICANT: ALBERT COUILLARD 5 MARION AVE. GROVELAND, MA 01834 (603) 560-4754	DATE: MARCH 21, 2014 REVISIONS: MAY 15, 2014
SURVEYOR: GA CONSULTANTS, INC. PROFESSIONAL ENGINEERS 17 GRAF ROAD, NEWBURYPORT, MA 01950 TEL. 978-502-5197		DATE: MARCH 21, 2014 REVISIONS: MAY 15, 2014
ENGINEER: CHRISTIANSEN & SERGI, INC. PROFESSIONAL ENGINEERS & LAND SURVEYORS 160 SUMMER STREET, HAVERHILL, MASSACHUSETTS 01830 WWW.CSI-ENGR.COM TEL. 978-373-0310 FAX. 978-372-3960		SHEET 8 OF 10 DWG. NO. 12.091.008

ROOF RECHARGE CALCULATIONS:

I. REQUIRED RECHARGE VOLUME
 ROOF AREA (BACK HALF) = 1280 SF
 REQUIRED RECHARGE VOLUME = (0.5")/(1/12") (1280 SF) = 53.3 CF

II. RECHARGE VOLUME PROVIDED
 FOR 2 CULTEC C-100 CHAMBERS IN 8.5' X 7.5' STONE BED:
 TOTAL CHAMBER VOLUME = 2 X 14.0 CF = 27.9 CF

FOR 6" STONE UNDER AND AROUND CHAMBERS:
 70.4 CF STONE X 40% VOIDS = 28.1 CF

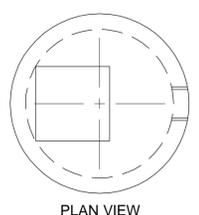
TOTAL AVAILABLE STORAGE VOLUME:
 27.9 CF + 28.1 CF = 56 CF
 56 CF > 53.3 CF (OK)

ELEVATIONS:

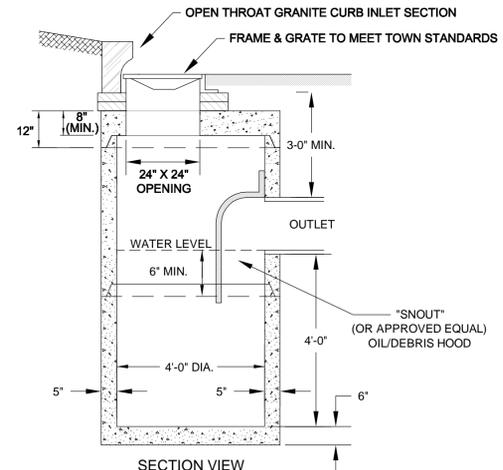
EXISTING GROUND ELEVATION AT HIGH CORNER = 102.25
 DEPTH TO E.S.H.W.T. = 39" (TEST PIT #3)
 E.S.H.W.T. ELEVATION = 99.00
 BOTTOM OF STONE BED = 101.00
 BOTTOM OF CHAMBERS = 101.50
 TOP OF CHAMBERS = 102.54
 FINISH GRADE OVER CHAMBERS = 103.3 (MIN.)

I CERTIFY THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTER OF DEEDS.

DATE

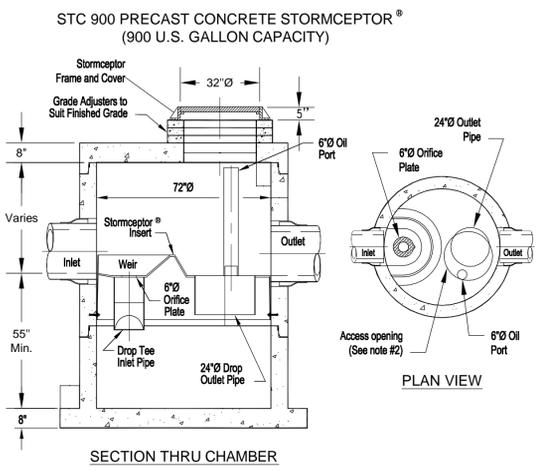


- NOTES:**
1. CONCRETE: 4,000 PSI AFTER 28 DAYS.
 2. REINFORCING: H-20 LOADING, 4 X 4/4 X 4 W.W.M.
 3. SHIPLAP JOINTS SEALED WITH 1 STRIP OF 1" BUTYL RUBBER SEALANT.
 4. EACH CASTING TO HAVE LIFTING HOLES CAST IN.
 5. ADJUST TO REQUIRED GRADE WITH CEMENT CONCRETE BRICK MASONRY WITH PORTLAND CEMENT



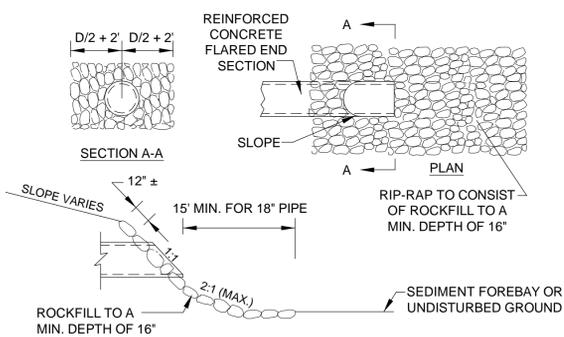
1 CATCH BASIN
NOT TO SCALE

Rinker Concrete Pipe Division



- NOTES:**
1. THE USE OF FLEXIBLE CONNECTION IS RECOMMENDED AT THE INLET AND OUTLET WHERE APPLICABLE.
 2. THE COVER SHOULD BE POSITIONED OVER THE OUTLET DROP PIPE AND THE OIL PORT.
 3. THE STORMCEPTOR SYSTEM IS PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: #4985148, #5498331, #5725760, #5753115, #5849181, #6068765, #6371690.
 4. CONTACT A CONCRETE PIPE DIVISION REPRESENTATIVE FOR FURTHER DETAILS NOT LISTED ON THIS DRAWING.
 5. THE CONTRACTOR MUST CONTACT THE SUPPLIER OF THE STORMCEPTOR FOR THE PROPER CONFIGURATION OF MULTIPLE INLETS FOR THE UNIT

3 STORMCEPTOR STC 900
NOT TO SCALE



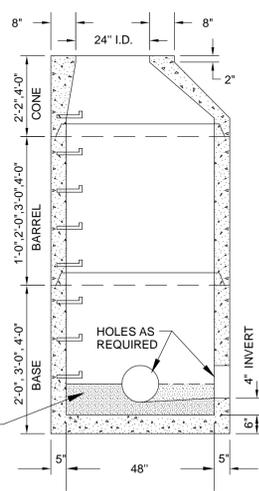
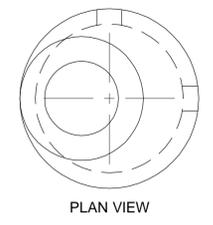
* SAME DETAIL APPLIES FOR AN OUTLET WITH A HEADWALL

ROCKFILL SHALL CONSIST OF HARD, DURABLE ANGULAR SHAPED STONES WHICH ARE THE PRIMARY PRODUCT OF A STONE CRUSHER. ROUNDED STONE, BOULDERS, SANDSTONE AND SIMILAR SOFT STONE OR RELATIVELY THIN SLABS ARE NOT ACCEPTABLE. THE STONE SHALL BE FREE FROM OVERBURDEN, SPOIL, SHALE, AND ORGANIC MATTER AND SHALL CLOSELY CONFORM TO THE FOLLOWING TARGET GRADATION REQUIREMENTS:

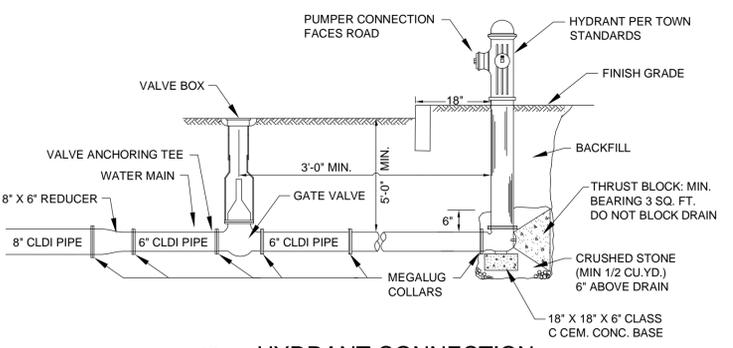
SIZE OF STONE	PERCENT PASSING
10 IN.	100
8 IN.	85
6 IN.	50
2.5 IN.	15

4 STONE FOR PIPE ENDS
NOT TO SCALE

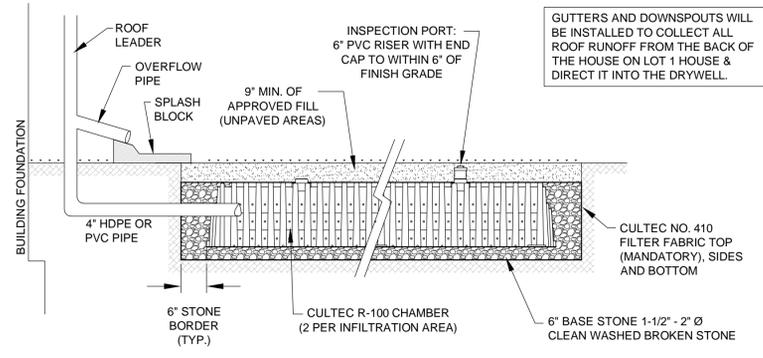
- NOTES:**
1. CONCRETE: 4,000 PSI AFTER 28 DAYS.
 2. REINFORCING: H-20 LOADING 4 X 4/4 X 4 W.W.M.
 3. SHIPLAP JOINTS SEALED WITH 1 STRIP OF 1" DIA. BUTYL RUBBER SEALANT.
 4. EACH CASTING TO HAVE LIFTING HOLES CAST IN.
 5. EACH SECTION TO BE LABELED AS NOTED.
 6. MANHOLE STEPS @ 12" O.C. #PS2-PF-SL.
 7. PIPE OPENINGS CAST IN AS REQUIRED.
 8. 8" SLAB TOP AVAILABLE.
 9. CAST IRON FRAME AND COVER ARE TO MEET TOWN STANDARDS.



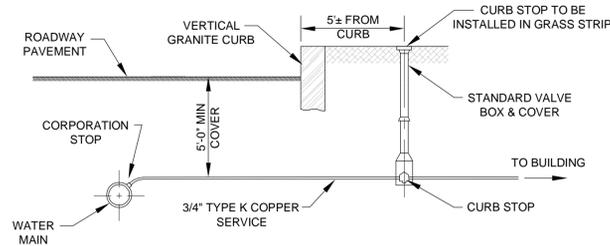
2 DRAIN MANHOLE
NOT TO SCALE



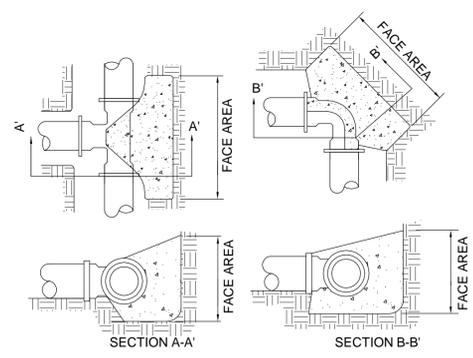
5 HYDRANT CONNECTION
NOT TO SCALE



6 LOT 1 DOWNSPOUT & ROOF RUNOFF DRYWELL DETAIL
NOT TO SCALE



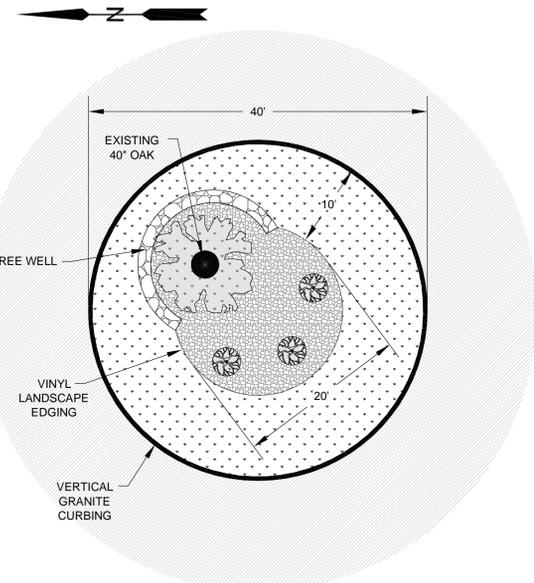
7 WATER SERVICE CONNECTION
(TO BE PERFORMED BY TOWN OF READING WATER DEPARTMENT)
NOT TO SCALE



8 STANDARD THRUST BLOCKING
NOT TO SCALE

PIPE DIA.	MIN. FACE AREA OF BLOCK IN SQ. FT.				
	TEES & PLUGS	90° BENDS	45° BENDS	22 1/2° BENDS	11 1/4° BENDS
6"	4'-0"	6'-0"	3'-0"	3'-0"	3'-0"
8"	4'-0"	6'-0"	3'-0"	3'-0"	3'-0"
12"	9'-0"	12'-0"	7'-0"	7'-0"	7'-0"

NOTE: ALL TEES, PLUGS AND BENDS SHALL BE BLOCKED AGAINST FIRM EARTH WITH CLASS C CONCRETE



9 CUL-DE-SAC LANDSCAPING DETAIL
SCALE: 1" = 10'

KEY

TREES	SHRUBS	GROUND COVER
EXISTING 40" OAK	INKBERRY (ILEX GLABRA)	GRASS
		1-1/2" BROWN, ROUNDED, LANDSCAPE STONE

DEFINITIVE SUBDIVISION PLAN
FOR
MARIANO DRIVE
IN
READING, MASS.

CONSTRUCTION DETAILS 2

RECORD OWNER:	MARY J. NAPPI 92 SANBORN LANE READING, MA 01867 (781) 944-7220	APPLICANT:	ALBERT COUILLARD 5 MARION AVE. GROVELAND, MA 01834 (603) 560-4754
SURVEYOR:	GA CONSULTANTS, INC. PROFESSIONAL ENGINEERS 17 GRAF ROAD, NEWBURYPORT, MA 01950 TEL: 978-502-5197		
ENGINEER:	PROFESSIONAL ENGINEERS & LAND SURVEYORS CHRISTIANSEN & SERGI, INC. 160 SUMMER STREET, HAVERHILL, MASSACHUSETTS 01830 WWW.CSI-ENGR.COM TEL: 978-373-0310 FAX: 978-372-3960		

DATE: MARCH 21, 2014
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 SHEET 9 OF 10
 DWG. NO. 12.091.008

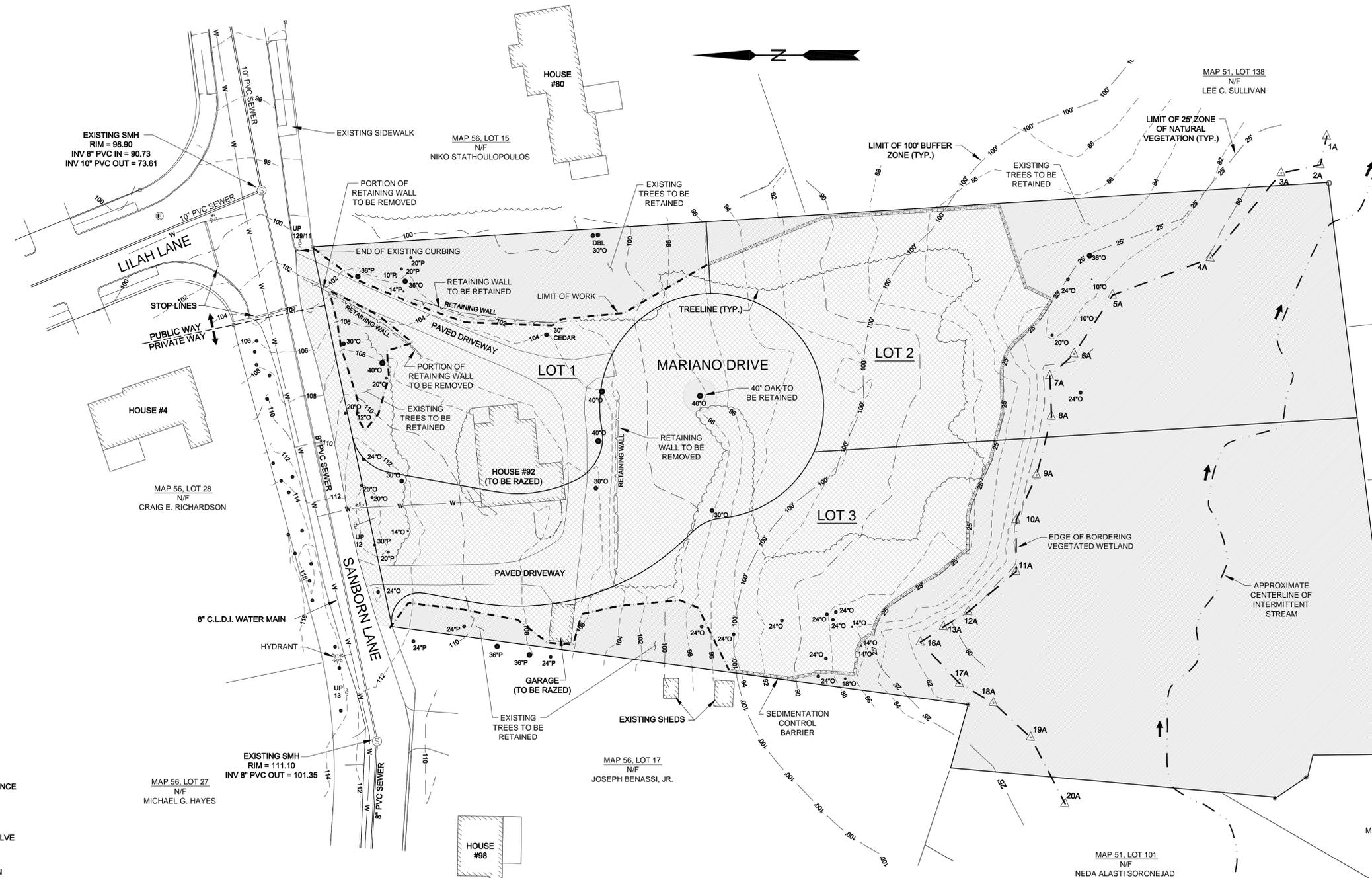
APPROVED UNDER THE SUBDIVISION CONTROL LAW UPON CONDITIONS

DATE: _____
 APPROVED BY: _____

READING COMMUNITY PLANNING & DEVELOPMENT COMMISSION

PROFESSIONAL ENGINEER

PHILIP G. CHRISTIANSEN



I CERTIFY THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTER OF DEEDS.

DATE _____

MAP 51, LOT 137
N/F
BRIAN P. FOGARTY

MAP 51, LOT 105
N/F
ROBERT L. SPADAFORA

MAP 51, LOT 103
N/F
THERESA M. BRESTEN

MAP 51, LOT 102
N/F
MICHAEL S. GREENE

MAP 51, LOT 101
N/F
NEDA ALASTI SORONEJAD

MAP 56, LOT 27
N/F
MICHAEL G. HAYES

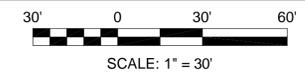
MAP 56, LOT 28
N/F
CRAIG E. RICHARDSON

MAP 56, LOT 15
N/F
NIKO STATHOULOPOULOS

MAP 51, LOT 138
N/F
LEE C. SULLIVAN

MAP 56, LOT 17
N/F
JOSEPH BENASSI, JR.

TREE REMOVAL/PRESERVATION PLAN



LEGEND

- N/F NOW OR FORMERLY OF
- MAP 39, LOT 104 ASSESSORS MAP & LOT REFERENCE
- FIRE HYDRANT
- WATER MAIN & GATE VALVE
- WATER SERVICE & SHUT-OFF VALVE
- EXISTING ELEVATION CONTOUR
- SEWER MANHOLE & SEWER MAIN
- EXISTING TREE/BRUSH LINE
- WETLAND FLAG A& EDGE OF WETLAND
- CENTERLINE OF INTERMITTENT STREAM
- LIMIT OF 100' BUFFER ZONE
- LIMIT OF 25' ZONE OF NATURAL VEGETATION
- TEST PIT LOCATION
- PROPOSED LIMIT OF WORK
- PROPOSED SEDIMENTATION CONTROL BARRIER & LIMIT OF WORK
- AREA OF EXISTING TREES TO BE RETAINED
- AREA OF EXISTING TREES TO BE REMOVED

SUMMARY OF TREES TO BE REMOVED

	SANBORN LANE R.O.W.	MARIANO DRIVE	LOT 1	LOT 2	LOT 3	
	2 - 20" OAKS	1 - 14" OAK	1 - 30" CEDAR	NONE	1 - 14" OAKS	
	1 - 24" OAK	1 - 20" OAK			6 - 24" OAKS	
	1 - 30" PINE	1 - 24" OAK				
		3 - 30" OAKS				
		2 - 40" OAKS				
		1 - 20" PINE				
TOTALS	4 TREES	9 TREES	1 TREE	NONE	8 TREES	22 TREES TOTAL

DEFINITIVE SUBDIVISION PLAN
FOR
MARIANO DRIVE
IN
READING, MASS.

**TREE
REMOVAL/
PRESERVATION
PLAN**

APPROVED UNDER THE SUBDIVISION CONTROL LAW UPON CONDITIONS
DATE: _____
APPROVED BY: _____

READING COMMUNITY PLANNING & DEVELOPMENT COMMISSION

PROFESSIONAL ENGINEER

PHILIP G. CHRISTIANSEN

RECORD OWNER: MARY J. NAPPI
92 SANBORN LANE
READING, MA 01867
(781) 944-7220

APPLICANT: ALBERT COUILLARD
5 MARION AVE.
GROVELAND, MA 01834
(603) 560-4754

SURVEYOR: GA CONSULTANTS, INC.
PROFESSIONAL ENGINEERS
17 GRAF ROAD, NEWBURYPORT, MA 01950
TEL. 978-502-5197

ENGINEER: CSI PROFESSIONAL ENGINEERS & LAND SURVEYORS
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