

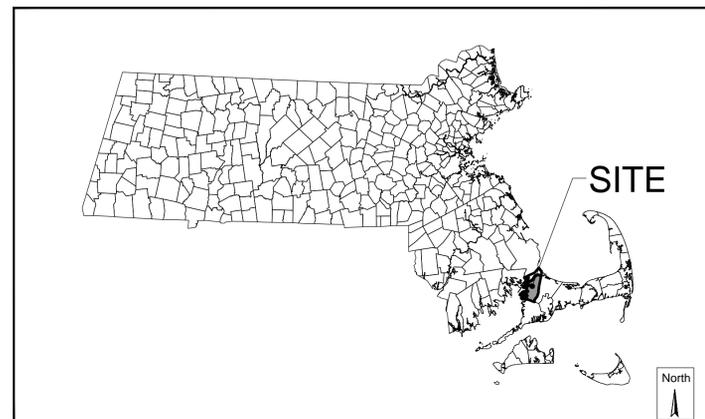
ATLANTIC SUBARU IMPROVEMENTS BOURNE, MASSACHUSETTS PERMITTING PLANS

JUNE 2016

REVISED AUGUST 2015

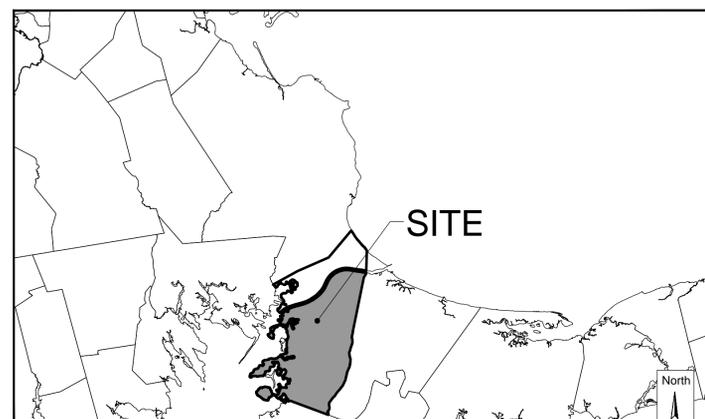
REVISED MARCH 2016

REVISED JUNE 2016



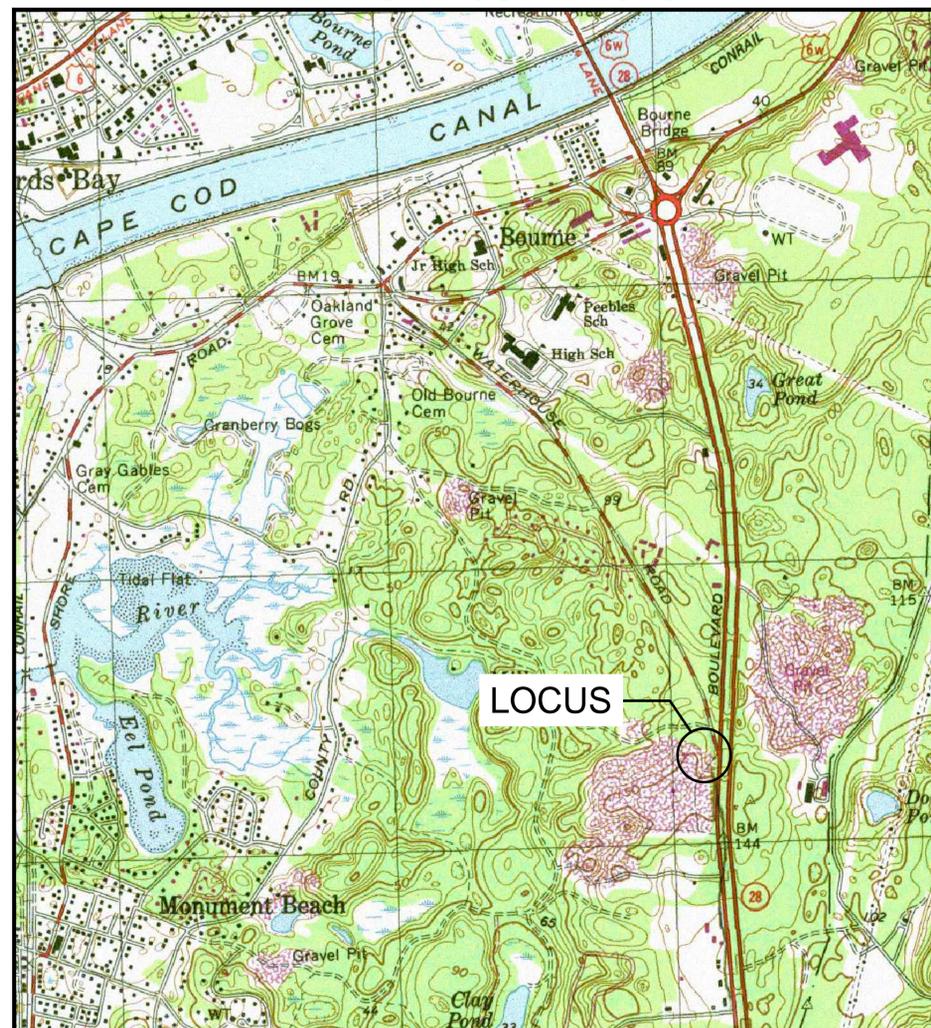
MASSACHUSETTS

Graphic Scale
0 150000
SCALE IN FEET
1:150000



TOWN

Graphic Scale
0 12000
SCALE IN FEET
1:12000



VICINITY MAP

Graphic Scale
1-inch = 1000-feet

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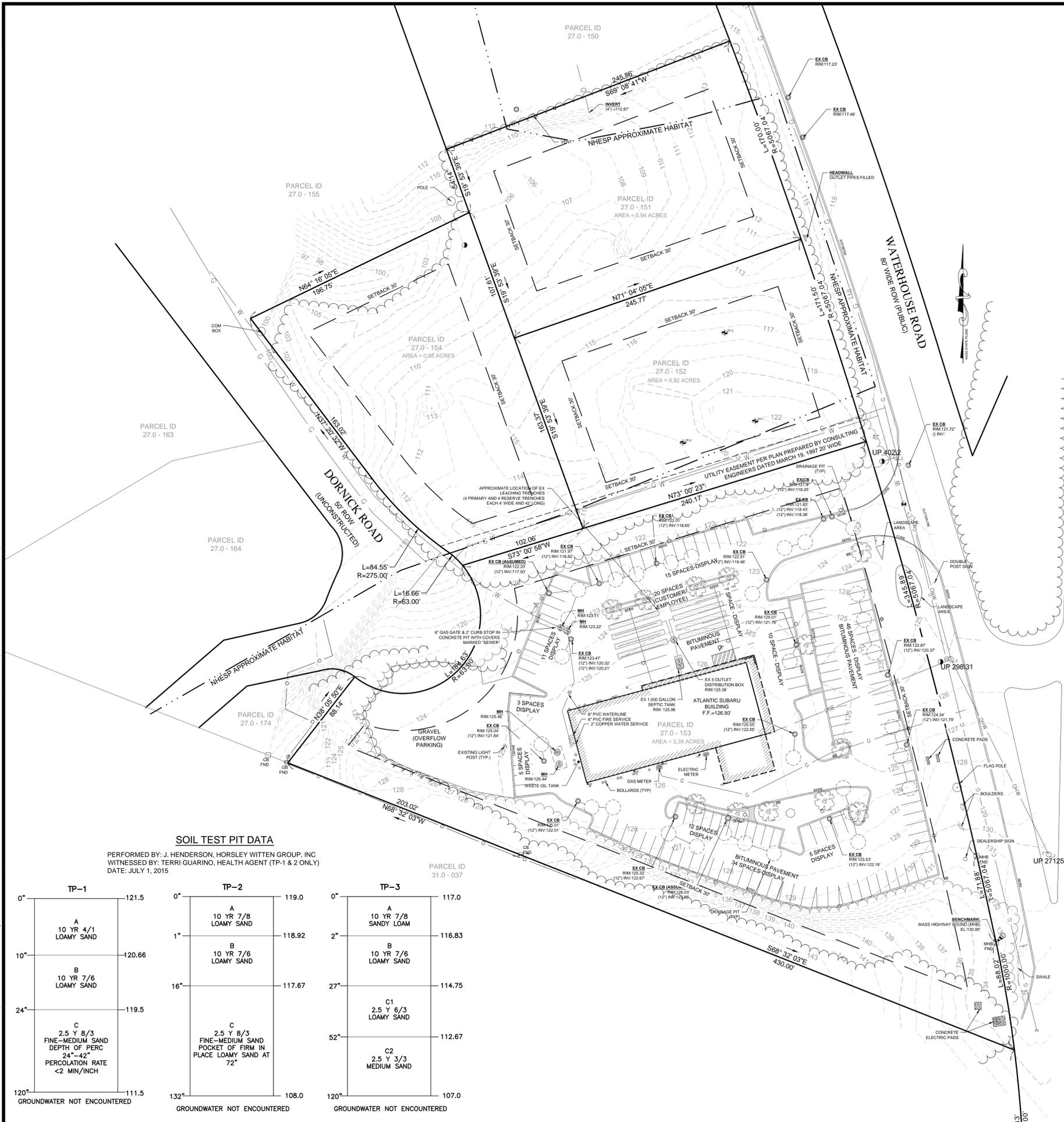
GENERAL NOTES:

SITE INFORMATION:

PLAT: 27
 LOT: 152 & 153
 AREA: LOT 152 0.92 ACRES
 AREA: LOT 153 3.39 ACRES
 ADDRESS: 124 WATERHOUSE ROAD
 ZONING DISTRICT: BUSINESS 4
 ACEC: BOURNE BACK RIVER

Plan Set:	ATLANTIC SUBARU IMPROVEMENTS BOURNE, MASSACHUSETTS PERMITTING PLANS																																				
Prepared For:	Atlantic Subaru 124 Waterhouse Road Bourne, MA (508) 759-5000																																				
Prepared By:	Horsley Witten Group, Inc. Sustainable Environmental Solutions www.horsleywitten.com 																																				
Registration:	Headquarters 90 Route 6A Sandwich, MA 02563 (508) 833-6600 voice (508) 833-3150 fax	294 Washington Street, Suite 801 Boston, MA 02110 (857) 263-8193 voice (617) 574-4799 fax																																			
	55 Dorrance Street, Suite 403 Providence, RI 02906 (401) 272-1717 voice (401) 439-8368 fax	Project Number: 14028A Sheet Number: 1 of 12 Drawing Number: C - 1																																			
	Revisions <table border="1"> <tr> <th>Rev.</th> <th>Date</th> <th>By</th> <th>Appr.</th> <th>Description</th> </tr> <tr> <td>△</td> <td>8/7/15</td> <td>BRK</td> <td>FPL</td> <td>Revisions per Town</td> </tr> <tr> <td>△</td> <td>3/31/16</td> <td>BAL</td> <td>BRK</td> <td>Revisions to Parking Layout</td> </tr> <tr> <td>△</td> <td>6/17/16</td> <td>BAL</td> <td>BRK</td> <td>Revisions to Parking Lot Layout</td> </tr> <tr> <td>△</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>△</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>△</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	Rev.	Date	By	Appr.	Description	△	8/7/15	BRK	FPL	Revisions per Town	△	3/31/16	BAL	BRK	Revisions to Parking Layout	△	6/17/16	BAL	BRK	Revisions to Parking Lot Layout	△					△					△					
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last modified: 06/21/16 printed: 06/21/16 by bl H:\Projects\201414028 Atlantic Subaru SurveyDrawings - 1402814028 EX.dwg



LEGEND:

GENERAL		SYMBOLS	
	BERM		BENCHMARK
	BERM CUT		BOUNDARY
	BUILDING		EXISTING TREE
	CENTERLINE		SPOT GRADE
	CONTOUR - MINOR		SEWER MANHOLE
	CONTOUR - MAJOR		ELECTRIC MANHOLE
	CURB		TELEPHONE MANHOLE
	CURB CUT		MANHOLE
	EDGE OF PAVEMENT		DRAIN MANHOLE
	FENCE - CHAIN LINK		CATCHBASIN
	GUARD RAIL		RECHARGE BASIN W/ MANHOLE
	RIP RAP		FLARED END OUTLET
	SIDEWALK		RIP RAP APRON
	TREE LINE		INLET PROTECTION
	WALL - RETAINING		WATER VALVE
	ABUTTING LOT		SEWER VALVE
	PROPERTY, LOT, OR ROW		CLEAN OUT
	DRAIN PIPE		ROOF DOWN SPOUT
	GAS LINE		UTILITY BOX
	OVERHEAD WIRE		HYDRANT
	SANITARY SEWER		UTILITY POLE W/GUY
	SEWER FORCE MAIN		UTILITY POLE
	UNDERGROUND E/T/C		GUY
	UNDERGROUND ELEC.		LIGHT POST
	CABLE LINE		TEST PIT
	TELEPHONE LINE		SIGN
	WATER LINE		HANDICAP SYMBOL

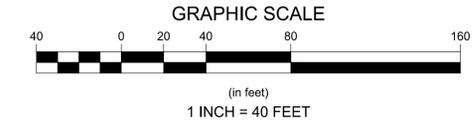
SURVEY NOTES

- THE PROPERTY LINES, TOPOGRAPHY, STRUCTURES AND EXISTING CONDITIONS DEPICTED ON THIS PLAN WERE TAKEN FROM THE SURVEY PLAN ENTITLED "EXISTING CONDITIONS" STAMPED BY DANIEL W. MACKENZIE, PLS OF THE HORSLEY WITTEN GROUP, INC. DATED APRIL 23, 2015.
- HORIZONTAL DATUM IS MASS STATE PLANE COORDINATE SYSTEM. DATUM ESTABLISHED BY SCALING ORTHOMETRIC PHOTOS PROVIDED BY MASSACHUSETTS GEOGRAPHICAL INFORMATION SYSTEM (MA GIS).
- THE SITE IS LOCATED IN A BUSINESS 4 ZONE.
- THE ACCURACY OF MEASURED PIPE INVERTS AND PIPE SIZES IS SUBJECT TO FIELD CONDITIONS. THE ABILITY TO MAKE VISUAL OBSERVATIONS, DIRECT ACCESS TO THE VARIOUS ELEMENTS AND OTHER CONDITIONS.
- THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS SHOWN ON THESE PLANS ARE BASED ON RECORDS OF VARIOUS UTILITY COMPANIES, AND WHEREVER POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES SHALL BE VERIFIED IN THE FIELD PRIOR TO THE START OF ANY CONSTRUCTION. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANY, ANY GOVERNING PERMITTING AUTHORITY IN THE TOWN OF BOURNE, AND "DIGSAFE" (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK IN PREVIOUSLY UNALTERED AREAS TO REQUEST EXACT FIELD LOCATION OF UTILITIES.
- SEPTIC SYSTEM LOCATION AND UNDERGROUND DRAINAGE STRUCTURES TAKEN FROM PLAN ENTITLED "GRADING, UTILITIES & EROSION CONTROL PLAN" AND PLAN ENTITLED "ONSITE WASTEWATER DISPOSAL SYSTEM" PREPARED BY CONSULTING ENGINEERS & SCIENTISTS, INC. DATED MARCH 19, 1997. SEE REFERENCE PLANS BELOW.
- UNDERGROUND ELECTRIC LINES TAKEN FROM PLANS PROVIDED BY NSTAR.
- GAS LINES TAKEN FROM PLANS PROVIDED BY NATIONAL GRID
- WATER LINES AND WATER PIT TAKEN FROM AS-BUILT SKETCH A-475 FOR HYDRANT #595 PROVIDED BY THE BOURNE WATER DISTRICT
- THE PROPERTY IS LOCATED WITHIN F.I.R.M ZONE X AS SHOWN ON COMMUNITY PANEL NUMBER 25001C0502J DATED JULY 16, 2014.
- PARCEL 20.0 - 153, PARCEL 27.0 151, 152 & 153 FALLS WITHIN AN ESTIMATED RARE WILDLIFE HABITAT NATURAL HERITAGE ENDANGERED SPECIES PROGRAM (NHESP) BOUNDARY SHOWN IS APPROXIMATE ONLY AND TAKEN FROM MASSGIS.
- THE PROPERTY IS NOT LOCATED IN A WATER RESOURCES PROTECTION DISTRICT AS SHOWN ON THE TOWN OF BOURNE ZONING MAP.
- SITE SOIL EVALUATION TEST PITS WERE PERFORMED BY HORSLEY WITTEN GROUP, INC. ON 7/11/15.
- REFERENCE PLANS:
 - PLAN ENTITLED "SITE PLAN FOR ATLANTIC SUBARU" PREPARED BY HUTCHINS-TOWBRIDGE ASSOCIATES ON JUNE 2, 1999.
 - PLAN ENTITLED "GRADING, UTILITIES, & EROSION CONTROL PLAN" PREPARED BY CONSULTING ENGINEERS & SCIENTISTS INC. ON MARCH 19, 1997.
 - PLAN ENTITLED "ONSITE WASTEWATER DISPOSAL SYSTEM" PREPARED BY CONSULTING ENGINEERS & SCIENTISTS, INC. DATED MARCH 19, 1997.
 - PLAN BOOK 404 PAGE 48 BARNSTABLE COUNTY REGISTRY OF DEEDS
 - PLAN BOOK 407 PAGE 83 BARNSTABLE COUNTY REGISTRY OF DEEDS
 - PLAN BOOK 549 PAGE 81 BARNSTABLE COUNTY REGISTRY OF DEEDS
 - MASS HIGHWAY LAYOUT 3369
 - MASS HIGHWAY LAYOUT 2916

SOIL TEST PIT DATA

PERFORMED BY: J. HENDERSON, HORSLEY WITTEN GROUP, INC
 WITNESSED BY: TERRI GUARINO, HEALTH AGENT (TP-1 & 2 ONLY)
 DATE: JULY 1, 2015

TP-1	TP-2	TP-3
0" - 121.5	0" - 119.0	0" - 117.0
A 10 YR 4/1 LOAMY SAND	A 10 YR 7/8 LOAMY SAND	A 10 YR 7/8 SANDY LOAM
10" - 120.66	B 10 YR 7/6 LOAMY SAND	B 10 YR 7/6 LOAMY SAND
B 10 YR 7/6 LOAMY SAND	16" - 117.67	C1 2.5 Y 6/3 LOAMY SAND
24" - 119.5	C 2.5 Y 8/3 FINE-MEDIUM SAND DEPTH OF PERC 24"-42" PERCOLATION RATE <2 MIN/INCH	C2 2.5 Y 3/3 MEDIUM SAND
120" - 111.5	132" - 108.0	52" - 112.67
GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED	GROUNDWATER NOT ENCOUNTERED



Revisions

Rev	Date	By	Appr	Description
1	8/7/15	DWM	ADD	Submittals
2	8/17/15	BAL	DWM	Address Test Pit Locations

Horsley Witten Group, Inc.
 Sustainable Environmental Solutions
 www.horsleywitten.com
 90 Route 6A
 Sandwich, MA 02563
 Phone: (508) 833-6600
 Fax: (508) 833-3150
 508-833-6600 voice
 508-833-3150 fax

ATLANTIC SUBARU IMPROVEMENTS
PLAT 27 - LOT 152 & 153
BOURNE, MASSACHUSETTS

EXISTING CONDITIONS

Prepared For: **Atlantic Subaru**
 124 Waterhouse Road
 Bourne, MA
 Phone: (508) 759-5000
 Fax: (508) 759-4595

Survey Provided By: **Horsley Witten Group, Inc.**
 90 Route 6A
 Sandwich, MA 02563
 Phone: (508) 833-6600
 Fax: (508) 833-3150
 Dated: APRIL 9, 2015

Project Number: **14028A** Sheet: **2 of 12**

Sheet Number: **C - 2**

GENERAL CONSTRUCTION NOTES

- ALL SITE WORK TO COMPLETE THIS PROJECT AS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- UTILIZE ALL PRECAUTIONS AND MEASURES TO ENSURE THE SAFETY OF THE PUBLIC, ALL PERSONNEL AND PROPERTY DURING CONSTRUCTION IN ACCORDANCE WITH OSHA STANDARDS, INCLUDING THE INSTALLATION OF TEMPORARY FENCING BARRICADES, SAFETY LIGHTING, CONES, POLICE DETAIL AND/OR FLAGMEN AS DETERMINED NECESSARY BY THE TOWN OF BOURNE. THE CONTRACTOR IS RESPONSIBLE FOR THE COST OF POLICE DETAIL AND FOR COORDINATING WITH THE LOCAL OR STATE POLICE DEPARTMENT FOR ALL REQUIRED POLICE DETAIL.
- MAKE ALL NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN ALL NECESSARY CONSTRUCTION PERMITS, PAY ALL FEES INCLUDING POLICE DETAILS AND POST ALL BONDS, IF NECESSARY, ASSOCIATED WITH THE SAME, AND COORDINATE WITH THE OWNER AND THE ENGINEER.
- ALL EXISTING CONDITIONS SHOWN ARE APPROXIMATE AND ARE BASED ON THE BEST INFORMATION AVAILABLE. PRIOR TO THE START OF CONSTRUCTION VERIFY THAT THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS DO NOT CONFLICT WITH ANY KNOWN EXISTING OR OTHER PROPOSED IMPROVEMENTS. IF ANY CONFLICTS ARE DISCOVERED, NOTIFY THE OWNER AND THE ENGINEER PRIOR TO INSTALLING ANY PORTION OF THE SITE WORK WHICH WOULD BE AFFECTED.
- THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS INDICATED ON THE DRAWINGS ARE BASED ON RECORDS OF VARIOUS UTILITY COMPANIES, AND WHEREVER POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES IN THE FIELD PRIOR TO THE START OF CONSTRUCTION. CONTACT THE APPROPRIATE UTILITY COMPANY, ANY GOVERNING PERMITTING AUTHORITY IN THE TOWN, AND "DIGSAFE" (1-888-344-7233) AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK IN PREVIOUSLY UNALTERED AREAS TO REQUEST EXACT FIELD LOCATION OF UTILITIES. THE CONTRACTOR MUST RESOLVE ALL DISCREPANCIES BETWEEN THE PROPOSED UTILITIES AND FIELD-LOCATED UTILITIES AND REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED, INCOMPLETELY OR INACCURATELY SHOWN. THE CONTRACTOR MUST MAINTAIN ACCURATE RECORDS OF THE LOCATION AND ELEVATION OF ALL WORK INSTALLED AND EXISTING UTILITIES FOUND DURING CONSTRUCTION FOR THE PREPARATION OF THE AS-BUILT PLAN.
- COORDINATE AND MAKE ALL CONNECTION ARRANGEMENTS WITH UTILITY COMPANIES, AS REQUIRED.
- THE CONTRACTOR MUST MAINTAIN ALL EXISTING UTILITIES IN WORKING ORDER AND FREE FROM DAMAGE DURING THE ENTIRE DURATION OF THE PROJECT. REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO COST TO THE OWNER. THE CONTRACTOR IS RESPONSIBLE FOR ALL COST RELATED TO THE REPAIR OF UTILITIES. EXCAVATION REQUIRED WITHIN THE PROXIMITY OF EXISTING UTILITY LINES MUST BE DONE BY HAND.
- COORDINATE ALL TRENCHING WORK WITHIN ROADWAYS WITH THE PROPER LOCAL & STATE AGENCY. THE CONTRACTOR IS RESPONSIBLE FOR ALL TRENCH SAFETY INCLUDING ANY LOCAL AND/OR STATE PERMITS REQUIRED FOR THE TRENCH WORK. IF THIS WORK IS REQUIRED TO OCCUR OUTSIDE THE AGREED UPON HOURS OF OPERATION FOR THE FACILITY, THE CONTRACTOR MUST PLAN ACCORDINGLY.
- SAWCUT ALL TRENCH WORK WITHIN EXISTING PAVEMENT AS INDICATED ON THE DRAWINGS. BACKFILL AND COMPACT TRENCH WORK AS INDICATED ON THE DRAWING AND IN THE SPECIFICATIONS. IF SETTLEMENT OCCURS DUE TO INADEQUATE COMPACTION, AS DETERMINED BY THE ENGINEER, WITHIN THE WARRANTY PERIOD, CONTRACTOR IS REQUIRED TO REMOVE, PATCH AND REPAVE AFTER ONE COMPLETE 12-MONTH CYCLE.
- IMPORT ONLY CLEAN MATERIAL. MATERIAL FROM AN EXISTING OR FORMER 21E SITE AS DEFINED BY THE MASSACHUSETTS CONTINGENCY PLAN 310 CMR 40.0000 WILL NOT BE ACCEPTED.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH AND MAINTAIN ALL CONTROL POINTS AND BENCHMARKS DURING CONSTRUCTION INCLUDING BENCHMARK LOCATIONS AND ELEVATIONS AT CRITICAL AREAS. COORDINATE WITH THE ENGINEER THE LOCATION OF ALL CONTROL POINTS AND BENCHMARKS.
- SITE LAYOUT SURVEY REQUIRED FOR CONSTRUCTION MUST BE PROVIDED BY THE CONTRACTOR AND PERFORMED BY A MASSACHUSETTS REGISTERED PROFESSIONAL LAND SURVEYOR. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE SURVEYOR FOR ALL SITE SURVEY WORK.
- MAINTAIN ALL GRADE STAKES SET BY THE SURVEYOR. GRADE STAKES ARE TO REMAIN UNTIL A FINAL INSPECTION OF THE ITEM HAS BEEN COMPLETED BY THE ENGINEER. RE-STAKING OF PREVIOUSLY SURVEYED SITE FEATURES IS THE RESPONSIBILITY (INCLUDING COST) OF THE CONTRACTOR.
- UNLESS OTHERWISE INDICATED ON THE DRAWINGS AND/OR IN THE SPECIFICATIONS, ALL SITE CONSTRUCTION MATERIALS AND METHODOLOGIES ARE TO CONFORM TO THE MOST RECENT VERSION OF THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS (THE MASSACHUSETTS HIGHWAY DEPARTMENT 1999 STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, THE 2002 SUPPLEMENTAL SPECIFICATIONS, AND THE 2005 STANDARD SPECIAL PROVISIONS).
- PROVIDE ALL CONSTRUCTION SERVICE IN ACCORDANCE WITH APPLICABLE LAWS AND REGULATIONS REGARDING NOISE, VIBRATION, DUST, SEDIMENTATION CONTAINMENT, AND TRENCH WORK.
- COLLECT SOLID WASTES AND STORE IN A SECURED DUMPSTER. THE DUMPSTER MUST MEET ALL LOCAL AND STATE SOLID WASTE MANAGEMENT REGULATIONS.
- RESTORE ALL SURFACES EQUAL TO THEIR ORIGINAL CONDITION AFTER CONSTRUCTION IS COMPLETE PER SPECIFICATIONS. LEAVE ALL AREAS NOT DISTURBED BY CONSTRUCTION IN THEIR NATURAL STATE. TAKE CARE TO PREVENT DAMAGE TO SHRUBS, TREES, OTHER LANDSCAPING AND/OR NATURAL FEATURES. WHEREAS THE PLANS DO NOT SHOW ALL LANDSCAPE FEATURES, EXISTING CONDITIONS MUST BE VERIFIED BY THE CONTRACTOR IN ADVANCE OF THE WORK.
- CONSTRUCT ALL WHEELCHAIR RAMPS IN ACCORDANCE WITH MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS AND CONSTRUCTION AND TRAFFIC STANDARD DETAILS (1996) DRAWING NUMBER 107.1.0 AND 107.2.0. CONSTRUCT RAMPS WITH AN 8% MAX. SLOPE AND 2% CROSS SLOPE.
- LEDGE OR BOULDER EXCAVATION IS NOT ANTICIPATED FOR THIS SITE. HOWEVER, PROVIDE A UNIT PRICE COST IN CUBIC YARD MEASURE FOR LEDGE AND/OR BOULDER REMOVAL. LEDGE AND/OR BOULDERS LESS THAN 1 CUBIC YARD IN SIZE BASED ON THE AVERAGE DIMENSIONS WILL NOT BE CONSIDERED PAYABLE ROCK. PROVIDE UNIT PRICES FOR BOTH ON AND OFF SITE DISPOSAL. IF ADDITIONAL FILL MATERIAL IS REQUIRED INCLUDE THE COST OF ALL FILL MATERIAL.
- REGULARLY INSPECT THE PERIMETER OF THE PROPERTY TO CLEAN UP AND REMOVE LOOSE CONSTRUCTION DEBRIS BEFORE IT LEAVES THE SITE. PROMPTLY REMOVE ALL DEMOLITION DEBRIS FROM THE SITE TO AN APPROVED DUMP SITE.
- ALL TRUCKS LEAVING THE SITE MUST BE COVERED.
- DO NOT WASH ANY CONCRETE TRUCKS ON-SITE. REMOVE BY HAND ANY CEMENT OR CONCRETE DEBRIS LEFT IN THE DISTURBED AREA.
- BURIAL OF ANY STUMPS, SOLID DEBRIS, AND/OR STONES/BOULDERS ON-SITE IS PROHIBITED. DO NOT USE ROAD SALT OR OTHER DE-ICING CHEMICALS ON THE ACCESS ROADWAY.
- IMMEDIATELY CONTACT AND COORDINATE WITH THE ENGINEER AND OWNER IF ANY DEVIATION OR ALTERATION OF THE WORK PROPOSED ON THESE DRAWINGS IS REQUIRED.
- AT THE END OF CONSTRUCTION, REMOVE ALL CONSTRUCTION DEBRIS AND SURPLUS MATERIALS FROM THE SITE (AS INDICATED IN THE SPECIFICATIONS OR PLANS), PERFORM A THOROUGH INSPECTION OF THE WORK PERMETER. COLLECT AND REMOVE ALL MATERIALS AND BLOWN OR WATER CARRIED DEBRIS FROM THE SITE.

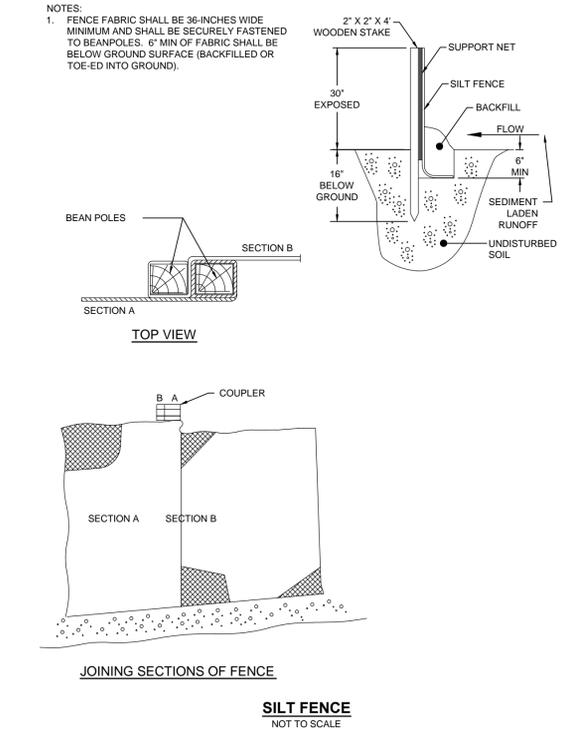
GENERAL DEMOLITION NOTES

THIS PLAN SET DOES NOT INCLUDE DETAILS & SPECIFICATIONS FOR ALL DEMOLITION WORK REQUIRED WITHIN THE PROPOSED CONSTRUCTION LIMITS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE OWNER, PROJECT ARCHITECT, MECHANICAL ENGINEERS AND OTHERS INVOLVED WITH THE PROPOSED NEW CONSTRUCTION TO DEVELOP A SUITABLE DEMOLITION PLAN, WHICH WILL ALLOW THE FACILITIES TO REMAIN IN OPERATION DURING THE ENTIRETY OF CONSTRUCTION.

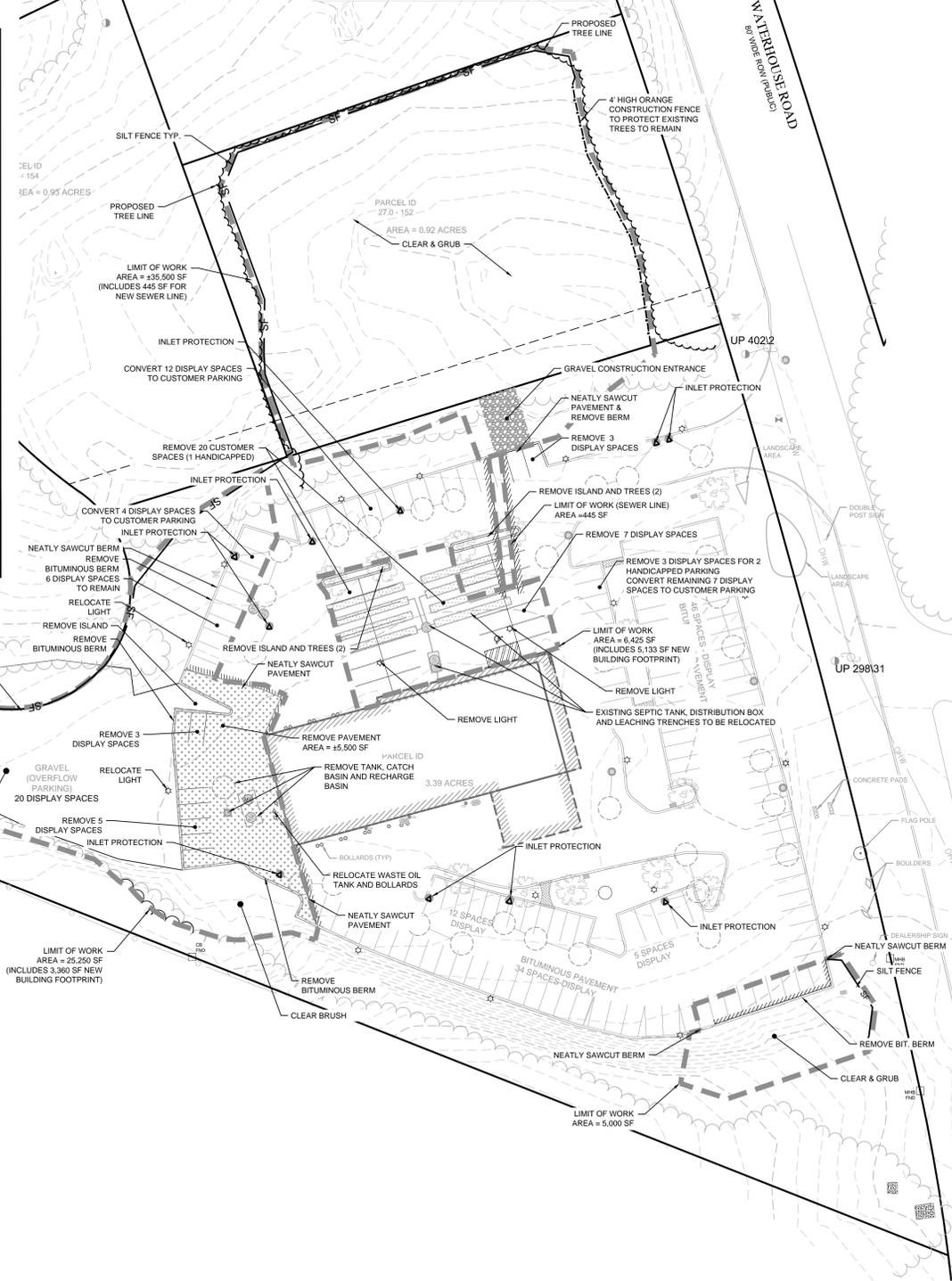
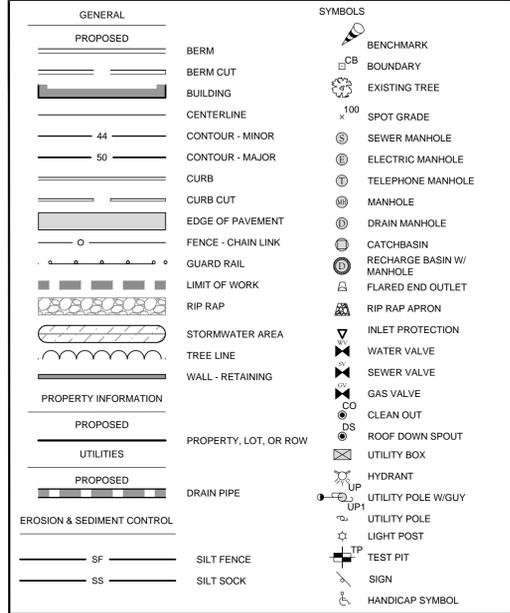
- UNLESS OTHERWISE NOTED, THE CONTRACTOR IS RESPONSIBLE FOR THE RELOCATION, DEMOLITION, REMOVAL AND DISPOSAL, IN A LOCATION APPROVED BY ALL GOVERNING AUTHORITIES, OF ALL EXISTING SITE ELEMENTS AND STRUCTURES INCLUDING, BUT NOT LIMITED TO, BUILDINGS, ROADWAYS, PARKING AREAS, PARKING ISLANDS, BITUMINOUS CONCRETE, CEMENT CONCRETE, GRAVEL CURBS, WALKWAYS, SIDEWALKS, BERMS, FENCES, BOLLARDS, POSTS, PLANTING BEDS, TREES, SHRUBS, UTILITIES, DRAINAGE STRUCTURES AND ALL OTHER STRUCTURES SHOWN AND NOT SHOWN WITHIN CONSTRUCTION LIMITS, AND WHERE NEEDED, TO ALLOW FOR NEW CONSTRUCTION. ALL FACILITIES TO BE REMOVED ARE TO BE UNDERCUT TO SUITABLE MATERIAL AND BROUGHT TO GRADE WITH SUITABLE COMPACTED FILL MATERIAL PER SPECIFICATIONS.
- REMOVE ALL DEBRIS FROM THE SITE AND DISPOSE OF THE DEBRIS IN A PROPER AND LEGAL MANNER.
- OBTAIN ALL PERMITS REQUIRED FOR DEMOLITION AND DISPOSAL.
- COORDINATE WITH RESPECTIVE UTILITY COMPANIES PRIOR TO THE REMOVAL AND/OR RELOCATION OF UTILITIES. COORDINATE WITH THE UTILITY COMPANIES CONCERNING PORTIONS OF THE WORK WHICH MAY BE PERFORMED BY THE UTILITY COMPANY AND ANY FEES WHICH ARE TO BE PAID TO THE UTILITY COMPANY FOR THEIR SERVICES. THE CONTRACTOR IS RESPONSIBLE FOR PAYING ALL FEES AND CHARGES.
- REFER TO MECHANICAL AND UTILITY PLANS AND SPECIFICATIONS FOR ALL WORK WHICH REQUIRES UTILITIES TO BE REMOVED, RELOCATE OR ABANDONED AND LEFT IN PLACE.
- PROVIDE NOTICE TO ALL UTILITY COMPANIES REGARDING DESTRUCTION AND REMOVAL OF ALL SERVICE LINES AND CAP ALL UTILITY LINES, AS REQUIRED, BEFORE PROCEEDING WITH THE WORK.
- MAINTAIN CONTINUOUS ACCESS AND OPERATION FOR SURROUNDING FACILITIES, AS DEEMED BY THE OWNER, AT ALL TIMES DURING DEMOLITION OF THE EXISTING FACILITIES.
- PRIOR TO DEMOLITION OCCURRING, ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED.

EROSION & SEDIMENT CONTROL NOTES

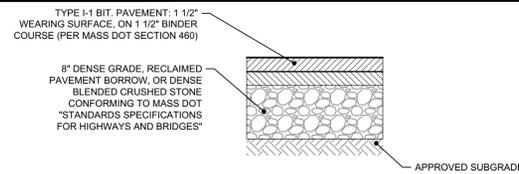
- DESIGNATE THE SITE CONSTRUCTION FOREMAN AS THE ON-SITE PERSONNEL RESPONSIBLE FOR THE DAILY INSPECTION AND MAINTENANCE OF ALL SEDIMENT AND EROSION CONTROLS AND IMPLEMENTATION OF ALL NECESSARY MEASURES TO CONTROL EROSION AND PREVENT SEDIMENT FROM LEAVING THE SITE.
- INSTALL ALL EROSION AND SEDIMENT CONTROL (ESC) MEASURES AS INDICATED ON DRAWINGS IN CONSULTATION WITH ENGINEER BEFORE ANY CONSTRUCTION ACTIVITIES BEGIN. INSPECT, MAINTAIN REPAIR AND REPLACE EROSION CONTROL MEASURES AS NECESSARY DURING THE ENTIRE CONSTRUCTION PERIOD OF THE PROJECT. THE SITE PERIMETER EROSION CONTROLS ARE THE DESIGNATED LIMIT OF WORK. INFORM ALL PERSONNEL WORKING ON THE PROJECT SITE THAT NO CONSTRUCTION ACTIVITY IS TO OCCUR BEYOND THE LIMIT OF WORK AT ANY TIME THROUGHOUT THE CONSTRUCTION PERIOD.
- MAINTAIN A MINIMUM SURPLUS OF 100 FEET OF EROSION CONTROL BARRIER (SILT FENCE, STRAWBALE, & OR SILT SOCK) ON-SITE AT ALL TIMES.
- PROVIDE CONSTRUCTION EXITS AS INDICATED ON DRAWINGS TO SHED DIRT FROM CONSTRUCTION VEHICLE TIRES. CLEAN AND/OR REPLACE THE CRUSHED STONE PAD, AS NECESSARY, TO MAINTAIN ITS EFFECTIVENESS.
- KEEP THE LIMIT OF CLEARING, GRADING AND DISTURBANCES TO A MINIMUM WITHIN THE PROPOSED AREA OF CONSTRUCTION. PHASE THE SITE WORK IN A MANNER TO MINIMIZE AREAS OF EXPOSED SOIL. IF TREES ARE TO BE CUT ON THE ENTIRE SITE, CLEAR AND GRUB ONLY THOSE AREAS WHICH ARE ACTIVELY UNDER CONSTRUCTION. PROPERLY INSTALL THE SEDIMENTATION CONTROLS PRIOR TO BEGINNING ANY LAND CLEARING ACTIVITY AND/OR OTHER CONSTRUCTION RELATED WORK.
- MONITOR LOCAL WEATHER REPORTS DURING CONSTRUCTION AND PRIOR TO SCHEDULING EARTHMOVING OR OTHER CONSTRUCTION ACTIVITIES WHICH LEAVE LARGE DISTURBED AREAS UNSTABILIZED. IF INCLEMENT WEATHER IS PREDICTED, USE BEST PROFESSIONAL JUDGEMENT AND GOOD CONSTRUCTION PRACTICES WHEN SCHEDULING CONSTRUCTION ACTIVITIES AND ENSURE THE NECESSARY EROSION CONTROL DEVICES ARE INSTALLED AND FUNCTIONING PROPERLY TO MINIMIZE EROSION FROM ANY IMPENDING WEATHER EVENTS.
- INSPECT EROSION AND SEDIMENT CONTROL DEVICES AND STABILIZED SLOPES ON A WEEKLY BASIS AND AFTER EACH RAINFALL EVENT OF .25 INCH OR GREATER. REPAIR IDENTIFIED PROBLEMS WITHIN 24 HOURS TO ENSURE EROSION AND SEDIMENT CONTROLS ARE IN GOOD WORKING ORDER. RESET OR REPLACE MATERIALS AS REQUIRED.
- SURROUND THE PERIMETER OF SOIL STOCKPILES WITH SILT SOCK, SILT FENCE, STRAWBALES, OR A COMBINATION OF SILT FENCE WITH STRAWBALE, AS DETERMINED NECESSARY.
- DISTURBED AREAS AND SLOPES MUST NOT BE LEFT UNATTENDED OR EXPOSED FOR EXCESSIVE PERIODS OF TIME SUCH AS THE INACTIVE WINTER SEASON. PROVIDE APPROPRIATE STABILIZATION PRACTICES ON ALL DISTURBED AREAS AS SOON AS POSSIBLE BUT NOT MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY OR PERMANENTLY CEASED. REINFORCE TEMPORARY AREAS HAVING A SLOPE GREATER THAN 3:1 WITH EROSION BLANKETS OR APPROVED EQUIVALENT UNTIL THE SITE IS PROPERLY STABILIZED. TEMPORARY SWALES MAY ALSO BE REQUIRED IF DETERMINED NECESSARY IN THE FIELD BY THE ENGINEER.
- INSTALL A SILT SACK OR APPROVED EQUIVALENT IN EACH EXISTING CATCHBASIN RECEIVING RUNOFF FROM THE SITE. UPON THE INSTALLATION OF EACH CATCH BASIN, INSTALL A SILT SACK OR APPROVED EQUIVALENT. INSPECT SILT SACKS, AFTER EACH SIGNIFICANT STORM EVENT AND REMOVE AND REPLACE AS NEEDED FOR THE DURATION OF THE CONSTRUCTION PERIOD.
- SMALL SEDIMENTATION BASINS MAY BE CONSTRUCTED ON AN AS-NEEDED BASIS DURING CONSTRUCTION TO AID IN THE CAPTURE OF SITE RUNOFF AND SEDIMENT. IT WILL BE THE RESPONSIBILITY OF THE SITE CONTRACTOR, IN CONSULTATION WITH THE ENGINEER, TO SIZE AND CREATE THESE BASINS IN APPROPRIATE LOCATIONS.
- CONTAIN ALL SEDIMENT ON-SITE. SWEEP ALL EXITS FROM THE SITE AS NECESSARY INCLUDING ANY SEDIMENT TRUCKS. SWEEP PAVED AREAS AS NEEDED TO REMOVE SEDIMENT AND POTENTIAL POLLUTANTS ACCUMULATED DURING SITE CONSTRUCTION.
- REMOVE ACCUMULATED SEDIMENT FROM ALL TEMPORARY PRACTICES AND DISPOSE OF IN A PRE-APPROVED LOCATION.
- PROVIDE ON-SITE OR MAKE READILY AVAILABLE THE NECESSARY EQUIPMENT AND SITE PERSONNEL DURING CONSTRUCTION HOURS FOR THE DURATION OF THE PROJECT TO ENSURE ALL EROSION AND SEDIMENTATION CONTROL DEVICES ARE PROPERLY MAINTAINED AND REPAIRED IN A TIMELY AND RESPONSIBLE MANNER. IF SITE WORK IS SUSPENDED DURING THE WINTER MONTHS THE CONTRACTOR MUST CONTINUE TO PROVIDE PERSONNEL AND EQUIPMENT EITHER ON-SITE OR READILY AVAILABLE TO PROPERLY MAINTAIN AND REPAIR ALL EROSION AND SEDIMENTATION CONTROL DEVICES IN A TIMELY AND RESPONSIBLE MANNER.
- PRIOR TO THE INSTALLATION OF FILTER FABRIC AND MEDIA WITHIN THE BIORETENTION AREAS, REMOVE AND PROPERLY DISPOSE OF SEDIMENT ACCUMULATED IN ANY PARTIALLY CONSTRUCTED OR TEMPORARY BIORETENTION/DRAINAGE AREA USED FOR SEDIMENT CONTROL DURING CONSTRUCTION. PROVIDE A SURFACE ELEVATION AT A MINIMUM 1 FOOT ABOVE THE BOTTOM OF MEDIA ELEVATION AS SHOWN IN THE BIORETENTION SCHEDULE FOR PARTIALLY CONSTRUCTED BIORETENTION AREAS. THIS ALLOWS FOR AN OVER-DIG OF THE COLLECTED SEDIMENT FROM WITHIN THE BIORETENTION AREA PRIOR TO MEDIA/FABRIC INSTALLATION.
- CONTROL DUST BY WATERING OR OTHER APPROVED METHODS AS NECESSARY, OR AS DIRECTED BY THE ENGINEER.
- THE CONTRACTOR IS RESPONSIBLE FOR THE INSPECTION AND MAINTENANCE DURING CONSTRUCTION OF ALL STORMWATER FACILITIES INSTALLED OR AFFECTED BY THE PROJECT. REMOVE SEDIMENT OR DEBRIS COLLECTED WITHIN THESE FACILITIES FROM THE PROJECT WORK PRIOR TO THE OWNER'S ACCEPTANCE.



LEGEND:

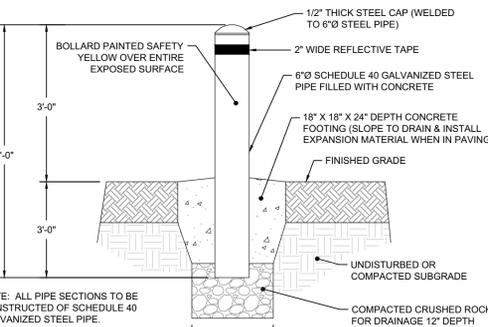


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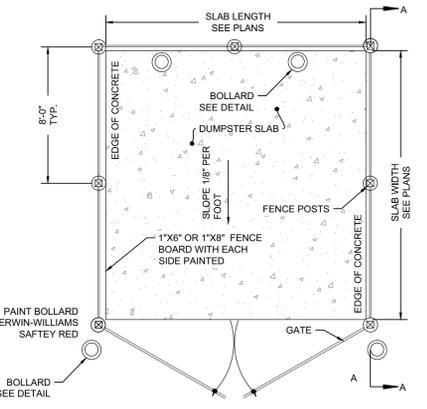


- GENERAL NOTES:**
- SUB-GRADE (EXISTING MATERIAL) SHALL CONSIST OF INERT MATERIAL THAT IS HARD, DURABLE STONE AND/OR COARSE SAND, FREE FROM LOAM AND CLAY TO A DEPTH NOT LESS THAN 4 FT BELOW THE FINISH PAVEMENT SURFACE. EXCAVATE SANDY LOAM AND/OR LOAMY SAND TOPSOIL MATERIAL FROM ALL PAVED AREAS PRIOR TO SUB-BASE INSTALLATION.
 - PLACE SUB-BASE IN MAXIMUM 8" LIFTS (COMPACTED TO 95%).
 - COMPACT SUB-GRADE FILL TO 95% COMPACTION.
 - SEE SITE LAYOUT PLAN FOR PAVEMENT WIDTH AND LOCATION.
 - SEE GRADING PLANS FOR PAVEMENT SLOPE AND CROSS SLOPE.
 - SWEEP CLEAN THE EXISTING BINDER COURSE SURFACE PRIOR TO INSTALLING THE WEARING COURSE BY A STREET SWEEPING MACHINE. APPLY A TACK COAT PER SPECIFICATIONS.

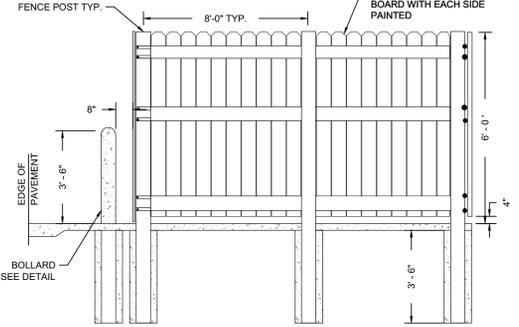
BITUMINOUS PAVEMENT
NOT TO SCALE



CONCRETE FIXED STEEL BOLLARD DETAIL
NOT TO SCALE



PLAN VIEW



DUMPSTER PAD & ENCLOSURE DETAIL
NOT TO SCALE

- NOTES:**
- SIZE OF DUMPSTER PAD TO BE AS INDICATED ON PLANS. CONSTRUCTION JOINTS TO BE SET AT INTERVALS OF 10' OF LENGTH.
 - DUMPSTER PAD TO BE SIZED TO SUIT.
 - ENCLOSURE SPECIFICATIONS:
 - THE FENCING TO BE AN OPAQUE TYPE MATERIAL OF EITHER CEDAR OR VINYL.
 - THE FENCE HEIGHT TO FULLY ENCLOSE THE DUMPSTER AND NOT EXCEED 8-FT.
 - THE ENCLOSURE TO BE CONSTRUCTED IN SUCH A MANNER THAT ALL STRUCTURAL MEMBERS, INCLUDING BRACES, POSTS, POLES AND OTHER PROJECTIONS, WILL BE ON THE INTERIOR SIDE OF THE FENCE.
 - THE GATES TO BE CONSTRUCTED WITH COMMERCIAL GRADE HARDWARE.
 - THE SUPPORTING POLES AT THE GATES TO BE METAL WITH THE APPROPRIATE DIAMETER TO SUPPORT THE GATE AT LEAST ONE AND FIVE-EIGHTHS (1-5/8") IN DIAMETER AND TO HAVE A CLOSING LATCH.
 - TWO BOLLARDS TO BE INSTALLED IN FRONT OF THE FENCE, BOTH SIDES OF GATE.

BASIC CONSTRUCTION SEQUENCE

THE FOLLOWING CONSTRUCTION SEQUENCE IS TO BE USED AS A GENERAL GUIDELINE. COORDINATE WITH THE OWNER, ENGINEERS, AND LANDSCAPE ARCHITECTS AND SUBMIT A PROPOSED CONSTRUCTION SEQUENCE FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.

- SURVEY AND STAKE THE PROPOSED LIMIT OF DISTURBANCE AND LIMIT OF SEDIMENTATION BARRIERS.
- PLACE SEDIMENTATION BARRIERS (STRAWBALES, SILT FENCE, ETC.) AS INDICATED ON DRAWINGS AND STAKED OUT IN THE FIELD. UNDER NO CIRCUMSTANCES IS THE LIMIT OF WORK TO EXTEND BEYOND THE SEDIMENTATION BARRIERS/LIMIT OF DISTURBANCE AS INDICATED ON DRAWINGS AS APPROVED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP).
- BEGIN CLEARING THE SITE AS REQUIRED.
- EXCAVATE AND ROUGH GRADE THE PROPOSED DRAINAGE BASINS AND ANY ADDITIONAL TEMPORARY BASINS NECESSARY TO CONTROL SITE RUNOFF AND SEDIMENTS. TEMPORARILY SEED PERMANENT DRAINAGE BASINS. COMPLETE PERMANENT DRAINAGE BASIN SEEDING AND PLANTING AFTER THE CONTRIBUTING AREA TO THE BASIN HAS REACHED A MINIMUM OF 80% STABILIZATION AND IS NO LONGER REQUIRED AS A CONSTRUCTION SEDIMENTATION BASIN.
- BEGIN CLEARING AND GRUBBING THE AREAS OF PARKING LOTS AND DRAINAGE BASINS. TOPSOIL IS TO BE STRIPPED FROM THE AREA OF THE PROPOSED PARKING LOTS AND DRAINAGE BASINS AND STOCKPILED IN APPROVED LOCATIONS. TOPSOIL STOCKPILES MUST BE PROTECTED BY A SEDIMENT BARRIER.
- INSTALL TEMPORARY CONVEYANCE DEVICES (SWALES, CHECK DAMS, PIPES, ETC.) AS NECESSARY TO CONVEY RUNOFF TO TREATMENT AREAS.
- INSTALL PROPOSED RELOCATED WASTEWATER SYSTEMS.
- ABANDON / REMOVE EXISTING WASTEWATER SYSTEM.
- BEGIN ROUGH GRADING AREAS FOR PARKING AND BUILDINGS. BRING ROUGH GRADING TO PROPER ELEVATIONS AS SOON AS PRACTICABLE. COORDINATE WORK TO MINIMIZE TIME SOILS ARE UN-STABILIZED.
- REMOVE UNDERGROUND UTILITIES, TANKS AND DRAINAGE STRUCTURES IN THE AREAS OF THE PROPOSED BUILDING ADDITIONS.
- BEGIN BUILDING CONSTRUCTION.
- BEGIN UTILITY CONSTRUCTION. THE CONTRACTOR IS FREE TO INSTALL THE UTILITIES IN THE SEQUENCE HE/SHE CHOOSES. IMMEDIATELY REPAIR, REPLACE AND STABILIZE ANY EROSION CONTROL DEVICES DISTURBED DURING THE UNDERGROUND UTILITY CONSTRUCTION. MODIFY TEMPORARY CONVEYANCE DEVICES, AS NECESSARY, TO CONVEY RUNOFF TO TREATMENT AREAS.
- INSTALL DRAINAGE PIPES, DRAINAGE MANHOLES, CATCH BASINS, AND UNDERGROUND DRAINAGE STRUCTURES. BEGIN WORK AT THE DRAINAGE BASINS AND PROGRESS UP-GRADE. PROTECT DISCHARGE OUTLETS WITH RIP-RAP APRONS. THE DRAINAGE BASIN(S) AND DRAINAGE NETWORK ARE TO BE PROTECTED FROM SEDIMENTATION WITH SILT FENCE AND STRAWBALES UNTIL ALL UN-STABILIZED AREAS ARE STABILIZED WITH STONE SUB-BASE OR VEGETATION. INSTALL SEDIMENT BARRIERS AT ALL POINTS OF ENTRY INTO THE DRAINAGE NETWORK. TAKE PARTICULAR CARE TO PROTECT THE UNDERGROUND DRAINAGE BASINS FROM SEDIMENT.
- INSTALL PROPOSED RELOCATED WASTEWATER SYSTEMS.
- PERMANENTLY SEED ALL DISTURBED AREAS OUTSIDE OF THE AREA TO BE PAVED.
- UPON COMPLETION OF UNDERGROUND UTILITIES INSTALLATION, PLACE COMPACTED GRAVEL FOUNDATION AND ROUGH GRADE THE ROADWAYS/PARKING AREAS IN ACCORDANCE WITH THE SITE PLANS AND IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL REGULATIONS AS SOON AS POSSIBLE.
- BEGIN PARKING CONSTRUCTION PER SITE PLANS AND IN ACCORDANCE WITH APPLICABLE STATE AND LOCAL REGULATIONS. ROADS AND PARKING AREAS ARE NOT TO BE PAVED UNTIL THE ENTIRE PERMANENT DRAINAGE SYSTEM HAS BEEN INSTALLED AND ALL PIPE CONNECTIONS COMPLETE.
- FINISH PERMANENT STABILIZATION: SWEEP THE ROADWAY TO REMOVE ALL SEDIMENTS. REPAIR DRAINAGE OUTLETS AND BASINS AS REQUIRED. CLEAN AND FLUSH THE DRAINAGE STRUCTURES AND PIPES AT THE END OF CONSTRUCTION AND REMOVE ALL ACCUMULATED SEDIMENTS IN THE DRAINAGE BASINS. CONTRACTOR MUST INSPECT THE DRAINAGE NETWORK AND REPAIR ANY DAMAGE IMMEDIATELY.
- COMPLETE ALL REMAINING PLANTING AND SEEDING.
- ENGINEER TO APPROVE THE REMOVAL OF ALL TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES FOLLOWING VEGETATIVE ESTABLISHMENT OF ALL DISTURBED AREAS AND DETERMINE WHEN THE CONTRIBUTING AREA HAS REACHED A MINIMUM OF 80% STABILIZATION.

PROPOSED SPACES - NEW PARKING (LOT 152)

DISPLAY SPACES ADDED	111
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EXISTING AND PROPOSED SPACES (LOT 153)

TOTAL EXISTING DISPLAY TO REMAIN	104
NEW DISPLAY SPACES TO BE ADDED	12
TOTAL DISPLAY SPACES LOT 153	116

TOTAL DISPLAY SPACES (BOTH LOTS)

TOTAL DISPLAY SPACES	227
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CUSTOMER SPACES (CONVERTED FROM DISPLAY INCLUDES HANDICAPPED)

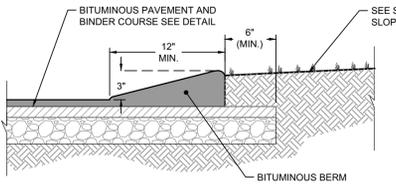
CUSTOMER SPACES (CONVERTED FROM DISPLAY INCLUDES HANDICAPPED)	25
FORMALIZED GRAVEL LOT	20

TOTAL PROPOSED SPACES (BOTH LOTS)

TOTAL PROPOSED SPACES (BOTH LOTS)	272
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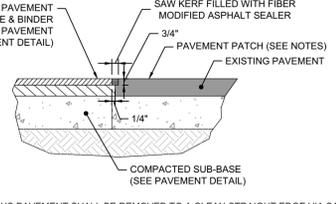
LOT AREAS

LOT 153 = 3.39 ACRES
LOT 152 = 0.94 ACRES



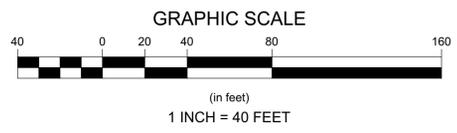
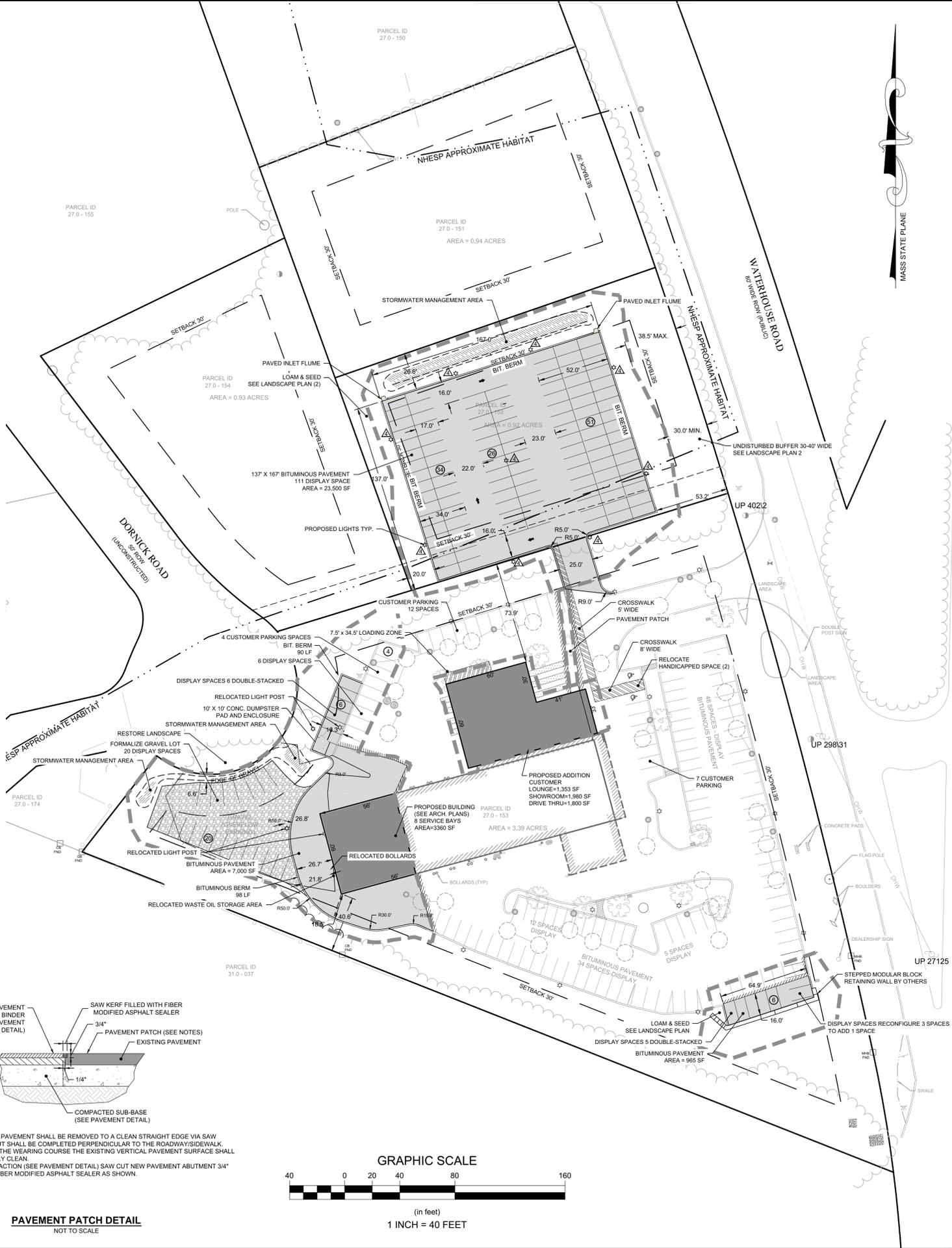
BITUMINOUS BERM DETAIL
NOT TO SCALE

- NOTES:**
- BERM TO BE CONSTRUCTED OF BITUMINOUS WEARING SURFACE COURSE AS SHOWN.
 - BERM TO BE CONSTRUCTED INTEGRAL WITH BITUMINOUS WEARING SURFACE.
 - WHEN BERM IS TO BE CONSTRUCTED ON A FRESH LAID BITUMINOUS SURFACE, THAT SURFACE MUST FIRST BE CLEANED.
 - BERM TO BE FOUNDED ENTIRELY ON THE BASE COURSE.
 - FINISH GRADE AT THE BACK OF THE BERM IS TO BE BROUGHT TO THE TOP OF THE BACK EDGE OF BERM.



PAVEMENT PATCH DETAIL
NOT TO SCALE

- NOTES:**
- EXISTING BITUMINOUS PAVEMENT SHALL BE REMOVED TO A CLEAN STRAIGHT EDGE VIA SAW CUTTING. THE SAW CUT SHALL BE COMPLETED PERPENDICULAR TO THE ROADWAY/SIDEWALK.
 - PRIOR TO INSTALLING THE WEARING COURSE THE EXISTING VERTICAL PAVEMENT SURFACE SHALL BE SWEEPED COMPLETELY CLEAN.
 - AFTER PROPER COMPACTION (SEE PAVEMENT DETAIL) SAW CUT NEW PAVEMENT ABUTMENT 3/4\"/>



Revisions

Rev	Date	By	Appr	Description
1	8/7/16	BRK/FPL		Revisions per Town comments
2	9/3/16	BAL/BRK		Revisions to Parking Layout
3	6/17/16	BAL/BRK		Revised Parking Lot Layout
4	7/25/16	BAL/BRK		Revised light locations for lot 152

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Sandwich, MA 02563
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508-833-3150 fax

Checked By: RAC
Drawn By: BAL
Designed By: BRK
Date: JUNE 2016

ATLANTIC SUBARU IMPROVEMENTS
PERMITTING PLANS
BOURNE, MASSACHUSETTS

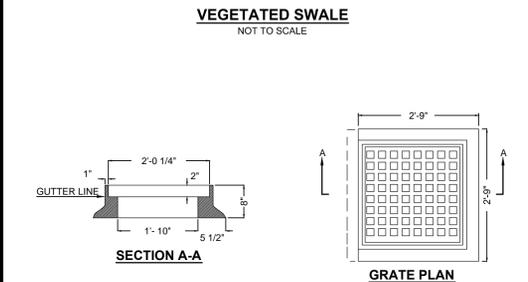
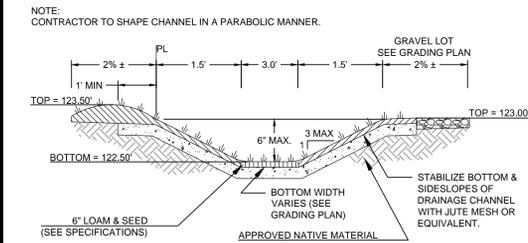
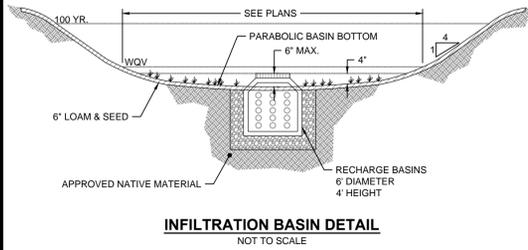
Plan Set:
Plan Title: **OVERALL SITE PLAN**

Prepared For:
Atlantic Subaru
124 Waterhouse Road
Bourne, MA
Phone: (508) 759-5000
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Survey Provided By:
Horsley Witten Group, Inc.
90 Route 6A
Sandwich, MA 02563
Phone: (508) 833-6600
Fax: (508) 833-3150
Date: APRIL 9, 2015

Registration:

Project Number: 14028A
Sheet: 4 of 12
Sheet Number: C-4

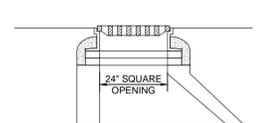
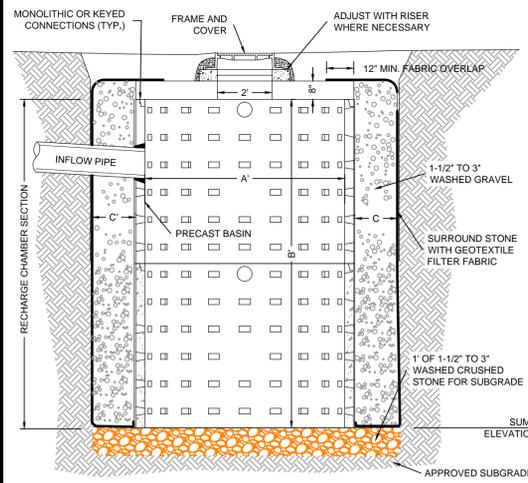


- NOTES:
1. BASED ON EAST JORDAN IRON WORKS 24" X 24" ECONOMY GRATE
 2. GRATE MATERIAL- DUCTILE IRON

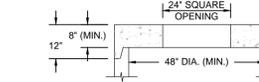
DRAINAGE STRUCTURE FRAME AND GRATE
NOT TO SCALE

- NOTES:
1. ALL SECTIONS SHALL BE DESIGNED FOR H20 LOADING.
 2. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
 3. RECHARGE BASIN FRAME AND GRATE SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH PRECAST CONCRETE RISER.
 4. FRAME AND COVER SHALL CONFORM TO MASSACHUSETTS STANDARDS (LEBARON FOUNDRY, MODEL LK 110A, OR APPR. EQUIV.)
 5. GEOTEXTILE FILTER FABRIC SHALL BE MIRAFI 140N OR EQUIVALENT

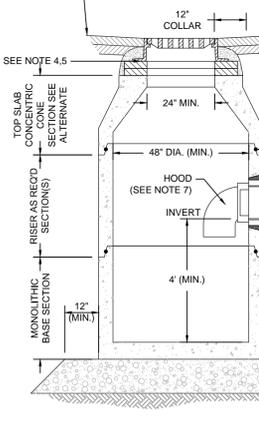
STRUCTURE	A	B	C
RB-1	6'	10'	2'
RB-2	6'	10'	2'



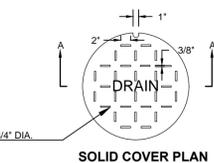
ALTERNATE ECCENTRIC CONE SECTION



ALTERNATE TOP SLAB

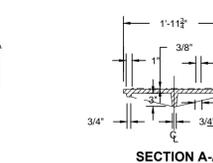


- NOTES:
1. ALL SECTIONS TO BE DESIGNED FOR H-20 LOADING.
 2. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
 3. JOINT SEALANT BETWEEN PRECAST SECTIONS TO BE PREFORMED BUTYL RUBBER.
 4. CATCH BASIN FRAME AND GRATE TO BE SET IN FULL 1/2" WIDE MORTAR BED. ADJUST TO GRADE WITH PRECAST CONCRETE RISER OR BRICK.
 5. DO NOT PLACE MORTAR BED AROUND STRUCTURE UNTIL IT IS AT THE REQUIRED FINISH ELEVATION AND ALIGNMENT.
 6. FRAME AND COVER TO CONFORM TO MASSACHUSETTS STANDARDS HEAVY DUTY (EAST JORDAN, NEENAH, OR APPROVED EQUIVALENT)
 7. HDPE PIPE HOOD TO BE 90° BEND FASTENED TO PIPE WITH SEALANT. BEND TO HAVE 1 INCH PURGE HOLE DRILLED INTO TOP OF ELBOW.



SOLID COVER PLAN

- NOTES:
1. FRAME AND COVER TO CONFORM TO MASSACHUSETTS STANDARDS HEAVY DUTY (EAST JORDAN, NEENAH, OR APPROVED EQUIVALENT)
 2. ALL H20 LOADING
 3. MIN. FRAME WEIGHT: 4" FLANGE 265 LBS 3" FLANGE 265 LBS
 4. MATERIAL-CAST IRON
 5. MIN. GRATE WEIGHT: 200LBS
 6. SEE CATCHBASIN AND MANHOLE DETAILS FOR INSTALLATION.

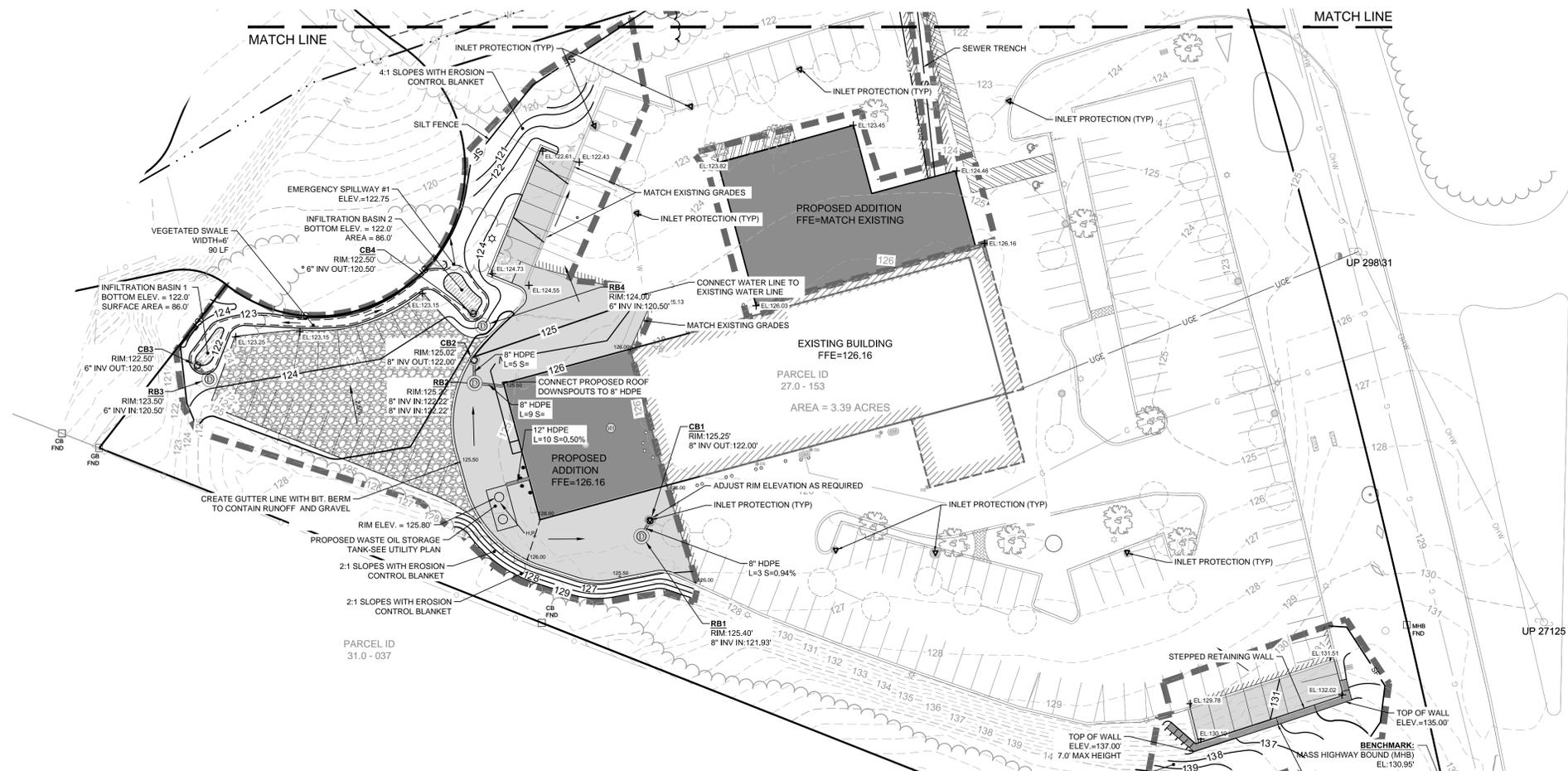
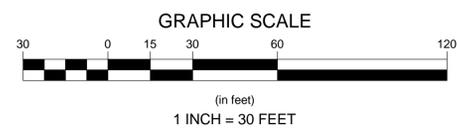


SECTION A-A

- NOTES:
1. FRAME AND COVER TO CONFORM TO MASSACHUSETTS STANDARDS HEAVY DUTY (EAST JORDAN, NEENAH, OR APPROVED EQUIVALENT)
 2. ALL H20 LOADING
 3. MIN. FRAME WEIGHT: 4" FLANGE 265 LBS 3" FLANGE 265 LBS
 4. MATERIAL-CAST IRON
 5. MIN. GRATE WEIGHT: 200LBS
 6. SEE CATCHBASIN AND MANHOLE DETAILS FOR INSTALLATION.

GENERAL GRADING AND DRAINAGE NOTES

1. ALL CUT AND FILL SLOPES SHALL BE 3:1 OR FLATTER UNLESS OTHERWISE NOTED.
2. EXISTING GRADE CONTOUR INTERVALS SHOWN AT 1 FOOT.
3. PROPOSED GRADE CONTOUR INTERVALS SHOWN AT 1 FOOT.
4. ADJUST AND/OR CUT EXISTING PAVEMENT AS NECESSARY TO ASSURE A SMOOTH FIT AND CONTINUOUS GRADE.
5. PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS FOR ALL NATURAL AND PAVED AREAS. IMMEDIATELY NOTIFY THE ENGINEER IF POSITIVE DRAINAGE CANNOT BE PROVIDED.
6. REFER TO ARCHITECTURAL PLAN AND SPECIFICATIONS FOR EARTHWORK AND COMPACTION REQUIREMENTS FOR ALL SLABS AND BUILDING FOUNDATIONS.
7. PROPOSED ELEVATIONS ARE SHOWN TO FINISH PAVEMENT OR GRADE UNLESS NOTED OTHERWISE.
8. ALL EARTHWORK AND SITE PREPARATION MUST BE DONE IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF ANY SUBSURFACE INVESTIGATION OR GEOTECHNICAL REPORTS PREPARED FOR THIS SITE.
9. ALL DRAINAGE STRUCTURES AND PIPES MUST BE CONNECTED TO THE DRAINAGE SYSTEM PRIOR TO THE INSTALLATION OF ANY PAVEMENT. PAVING WILL NOT BE ALLOWED IF THE DRAINAGE SYSTEM FOR THE PROPOSED PAVED AREA IS NOT COMPLETELY AND PROPERLY INSTALLED. THIS INCLUDES THE STABILIZATION OF ALL DISTURBED AREAS CONTRIBUTING TO THE DRAINAGE SYSTEMS AND ANY STORMWATER BASIN FLOORS AND SIDE SLOPES.



MAC ARTHUR BOULEVARD
ROUTE 28 400' WIDE ROW (PUBLIC)

Revisions

Rev.	Date	By	Appr.	Description
1	6/13/16	BAL	BRK	Revised Parking Lot Layout
2	6/7/16	BRK	FPL	Revision per Town comments

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Checked By: RAC
Drawn By: BAL
Designed By: BRK
Date: JUNE 2016

Prepared For:
Atlantic Subaru
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Phone: (508) 759-5000
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Plan Title:
ATLANTIC SUBARU IMPROVEMENTS PERMITTING PLANS BOURNE, MASSACHUSETTS

Plan No.:
GRADING AND DRAINAGE PLAN (1)

Survey Provided By:
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Phone: (508) 833-6600
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Date: APRIL 9, 2015

Project Number: 14028A
Sheet: 5 of 12

Registration:
Professional Seal of Robert A. Clayton, No. 45116, State of Massachusetts, License No. 02563.

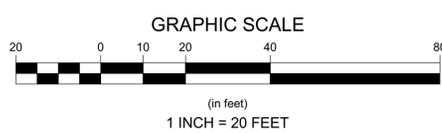
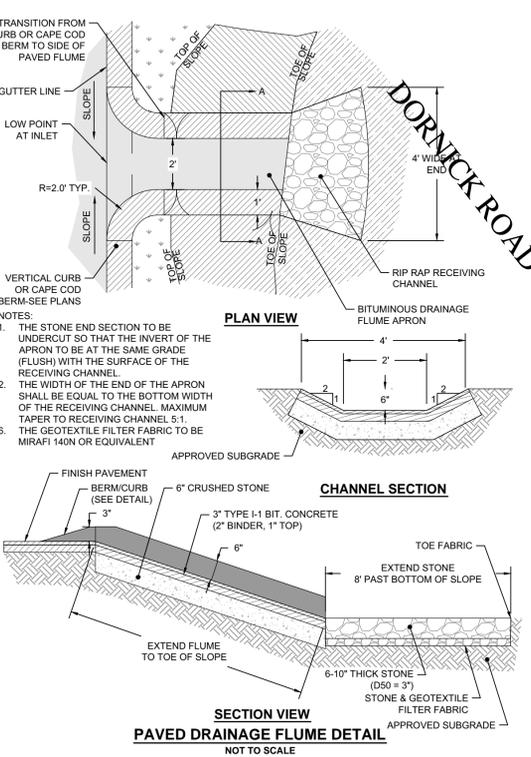
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STORMWATER FACILITY OPERATION & MAINTENANCE:
 THE CONTRACTOR IS RESPONSIBLE FOR THE PROPER INSPECTION AND MAINTENANCE OF ALL STORMWATER MANAGEMENT FACILITIES AS OUTLINED BELOW UNTIL SUCH TIME THAT THE ROADWAYS AND ASSOCIATED UTILITIES ARE ACCEPTED BY THE OWNER AND THE ENGINEER.

- INSPECT AND RESTORE/CLEAN ALL FACILITIES (INLETS, MANHOLES, INFILTRATION BASINS, ETC.) OF SEDIMENT AND DEBRIS PRIOR TO THE OWNER'S ACCEPTANCE.
- REMOVE AND DISPOSE ALL SEDIMENT AND DEBRIS OF A PRE-APPROVED LOCATION AS APPROVED BY THE TOWN.
- REFER TO THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR ADDITIONAL INFORMATION PERTAINING TO STORMWATER FACILITY OPERATION AND MAINTENANCE REQUIREMENTS. MAINTAIN A WORKING COPY OF THE SWPPP ON SITE AT ALL TIMES.
- INSPECT AFTER EVERY MAJOR RAINFALL EVENT FOR THE ENTIRE DURATION OF THE CONSTRUCTION PROJECT AND THE FIRST 3 MONTHS AFTER CONSTRUCTION TO ENSURE PROPER STABILIZATION AND CONSTRUCTION.
- SPECIFIC ANNUAL MAINTENANCE REQUIRED AS FOLLOWS:
 - DRAINAGE STRUCTURES (INLETS, MANHOLES & CATCHBASINS):** ALL DRAINAGE STRUCTURES WILL BE INSPECTED ANNUALLY TO MONITOR FOR PROPER OPERATION, COLLECTION OF LITTER OR TRASH, AND STRUCTURAL DETERIORATION. THE BASINS WILL BE CLEANED OF SEDIMENT (INCLUDING SUMPS) AS NECESSARY, AND REPAIRED WHEN REQUIRED.
 - SEDIMENT FOREBAY:** INSPECT ANNUALLY TO ENSURE PROPER FUNCTIONING. REMOVE SEDIMENT BUILD-UP ON THE FLOOR OF THE FOREBAY AND PROPERLY DISPOSE OF ONCE EVERY FIVE TO SEVEN YEARS, OR MORE OFTEN AS NECESSARY TO LIMIT SEDIMENT BUILDUP TO LESS THAN 50 PERCENT OF THE DESIGN VOLUME.
 - BIORETENTION SYSTEMS:** INSPECT TWICE ANNUALLY FOR THE FIRST YEAR OF OPERATION AND ANNUALLY AFTER THE FIRST YEAR, AND AFTER STORM EVENTS GREATER THAN OR EQUAL TO THE 1-YEAR, 24-HOUR PRECIPITATION EVENT. GENERAL MAINTENANCE OF BIORETENTION SYSTEMS FALLS UNDER LANDSCAPING PRACTICES. MONITOR THE PLANTING SOIL BED FOR PROPER PH, EROSION, AND AERATION. REPLACE MULCH BI-ANNUALLY, AND REMOVE AND REPLACE ILL-ESTABLISHED, DEAD OR SEVERELY DISEASED PLANTS ANNUALLY. REMOVE SEDIMENT BUILD-UP FROM THE PEA GRAVEL DIAPHRAGM AS NEEDED, AND REPLACE THE DIAPHRAGM WHEN NECESSARY.
 - INFILTRATION BASIN:** INSPECT ANNUALLY TO ENSURE THAT DESIGN INFILTRATION RATES ARE BEING MET. IF SEDIMENT OR ORGANIC DEBRIS BUILD-UP LIMITS THE INFILTRATION CAPABILITIES TO BELOW THE DESIGN RATE OF, REMOVE THE TOP 6" AND THE SURFACE ROTO-TILLED TO A DEPTH OF 12". RESTORE THE BASIN BOTTOM ACCORDING TO ORIGINAL DESIGN SPECIFICATIONS.
 - GRASS SWALES:** PERFORM A GENERAL INSPECTION OF THE SWALE ANNUALLY AND AFTER STORM EVENTS GREATER THAN OR EQUAL TO THE 1-YEAR, 24-HOUR PRECIPITATION EVENT, OR MORE FREQUENTLY AS NEEDED. MAINTENANCE CONSISTS OF REMOVAL OF ANY TRASH AND/OR DEBRIS FROM THE BOTTOM OF THE SWALE, REMOVAL OF SEDIMENT WITHIN THE SWALE WHEN BUILDUP IS GREATER THAN OR EQUAL 1/4 OF THE DESIGN DEPTH, MOWING THE GRASS AT LEAST FOUR TIMES A YEAR TO A HEIGHT OF 4-6 INCHES DURING THE GROWING SEASON, CORRECTING ANY EROSION GULLYING, AND RESEEDING, AS NECESSARY. DISPOSE SEDIMENT OFF-SITE IN A PRE-APPROVED LOCATION.
 - ROUTINE MAINTENANCE:** OTHER ROUTINE MAINTENANCE INCLUDES THE REMOVAL OF TRASH AND LITTER FROM PAVED AND PERIMETER AREAS, AND ANNUAL STREET AND PARKING LOT SWEEPING AFTER THE SPRING THAW TO AVOID EXCESSIVE ACCUMULATION OF SEDIMENT IN THE DRAINAGE SYSTEM. INSPECT THE PIPES DRAINING THE PROJECT ANNUALLY FOR PROPER FLOW.

NOTE: OPERATION AND MAINTENANCE CHECKLIST AVAILABLE UPON REQUEST



Revisions 8/7/15 BRK FPL Revision per Town comments 3/31/16 BAL BRK Revision to Parking Layout 6/13/16 BAL BRK Revised Parking Lot Layout 7/25/16 BAL BRK Revised light locations Lot 152	
Project Information Project Number: 14028A Sheet: 6 of 12 Sheet Number: C-6	Client Information Prepared For: Atlantic Subaru 124 Waterhouse Road Bourne, MA Phone: (508) 759-5000 Fax: (508) 759-4595
Professional Information Survey Provided By: Horsley Witten Group, Inc. 90 Route 6A Sandwich, MA 02563 Phone: (508) 833-3150 Fax: (508) 833-3150 Dated: APRIL 9, 2015	Professional Seal RICHARD A. CLAYTON CIVIL NO. 45115 REGISTERED PROFESSIONAL ENGINEER 7-26-14
Company Information Horsley Witten Group, Inc. Sustainable Environmental Solutions www.horsleywitten.com 90 Route 6A Sandwich, MA 02563 508-833-3150 voice 508-833-3150 fax	Project Title ATLANTIC SUBARU IMPROVEMENTS PERMITTING PLANS BOURNE, MASSACHUSETTS GRADING AND DRAINAGE PLAN (2)

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CONSTRUCTION NOTES

- 1. EXAMINATION
A. VERIFY LAYOUT AND ORIENTATION OF BIORETENTION AREA AND CONNECTIONS.
B. VERIFY EXCAVATION BASE IS READY TO RECEIVE WORK AND EXCAVATIONS, DIMENSIONS, AND ELEVATIONS ARE AS INDICATED ON DRAWINGS.
2. PREPARATION
A. CALL DIGSAFE AT 1-888-344-7233 NOT LESS THAN THREE WORKING DAYS BEFORE PERFORMING WORK.
B. REQUEST UNDERGROUND UTILITIES TO BE LOCATED AND MARKED WITHIN AND SURROUNDING CONSTRUCTION AREAS.
C. IDENTIFY REQUIRED LINES, LEVELS, CONTOURS, AND DATUM.
D. CLEAR AND GRUB THE PROPOSED BIORETENTION AREA.
3. EXCAVATION
A. EXCAVATE BIORETENTION AREA IN ACCORDANCE WITH GENERAL NOTES AND SPECIFICATIONS.
B. TO MINIMIZE COMPACTION, WORK EXCAVATORS OR BACKHOES FROM THE SIDES TO EXCAVATE THE BIORETENTION AREA TO ITS APPROPRIATE DESIGN DEPTH AND DIMENSIONS.
C. EXCAVATION EQUIPMENT WITH ADEQUATE REACH SO THEY DO NOT WORK IN THE FOOTPRINT OF THE BIORETENTION AREA.
D. IF APPLICABLE AND PER THE ENGINEERS DIRECTION USE A CELL CONSTRUCTION APPROACH IN LARGER BIORETENTION BASINS, WHEREBY THE BASIN IS SPLIT INTO 500 TO 1000 SQUARE FOOT TEMPORARY CELLS WITH A 10 TO 15 FOOT EARTH BRIDGE IN BETWEEN, SO THAT CELLS CAN BE EXCAVATED FROM THE SIDE.
E. EXCAVATE AND SEAL ANY PRE-TREATMENT CELLS AND/OR SEDIMENT FOREBAYS FIRST AND SEALED TO TRAP SEDIMENTS PER THE DRAWINGS.
F. ROUGH GRADE THE BIORETENTION AREA DURING GENERAL CONSTRUCTION.
G. IF THE BIORETENTION AREA IS TO BE USED AS A TEMPORARY DRAINAGE STORAGE BASIN DURING THE EARLY STAGES OF PROJECT CONSTRUCTION, THE SIDE SLOPES SHOULD BE TEMPORARILY STABILIZED AND SILT FENCE INSTALLED ALONG THE TOE OF THE ROUGH GRADED BIORETENTION SLOPES TO MINIMIZE EXCESSIVE SEDIMENTATION OF THE BIORETENTION FLOOR.
4. COMPACTION
A. MINIMIZE COMPACTION OF BOTH THE BASE OF THE BIORETENTION AREA AND THE REQUIRED BACKFILL.
B. USE EXCAVATOR OR BACKHOES TO EXCAVATE THE BIORETENTION AREA.
C. IF THE BIORETENTION AREA IS EXCAVATED USING A LOADER, USE ONLY WIDE TRACK OR MARSH TRACK EQUIPMENT, OR LIGHT EQUIPMENT WITH TURF TIRE TIRES.
D. COMPACTION CAN BE ALLEVIATED AT THE BASE OF THE BIORETENTION FACILITY BY USING A PRIMARY TILLING OPERATION SUCH AS A CHISEL PLOW, RIPPER, OR SUBSOILER.
E. UNDERDRAIN
A. INSTALL UNDERDRAIN, INCLUDING 4 INCH PERFORATED PIPE, GRAVEL AND FILTER FABRIC ON TOP OF THE UNDERDRAIN GRAVEL AS INDICATED ON DRAWINGS.
F. ESTABLISH ELEVATIONS AND PIPE INVERTS FOR INLETS AND OUTLETS AS INDICATED ON DRAWINGS.
G. ESTABLISH OVERFLOW OUTLET STRUCTURE AS INDICATED ON DRAWINGS.
H. INSTALL UNDERDRAIN, INCLUDING 4 INCH PERFORATED PIPE, GRAVEL AND FILTER FABRIC ON TOP OF THE UNDERDRAIN GRAVEL AS INDICATED ON DRAWINGS.
I. INSTALL PEA GRAVEL LAYER AS INDICATED ON DRAWINGS.
J. DELIVER APPROVED BIORETENTION SOIL AND STORE ON ADJACENT IMPERVIOUS AREA OR PLASTIC SHEETING.
7. BACKFILLING
A. BACKFILL WITH APPROVED BIORETENTION SOIL TO THE DESIGN GRADE AS SPECIFIED IN THE DRAWINGS.
B. PLACE SOIL IN 12 INCH LIFTS UNTIL DESIRED TOP ELEVATION OF BIORETENTION SOIL IS ACHIEVED.
C. DO NOT COMPACT BIORETENTION SOIL WITH MECHANICAL EQUIPMENT.
D. GRADE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER/LOADER WITH MARSH TRACKS.
E. STABILIZE ALL REMAINING DISTURBED AREAS AND SIDE SLOPES WITH SEEDING, HYDROSEEDING, AND/OR EROSION CONTROL BLANKETS AS INDICATED ON DRAWINGS.
8. PLANTING
A. PLANT BIORETENTION AREA IN ACCORDANCE WITH PLANTING PLANS AND SPECIFICATIONS.
B. THE PRIMARY FUNCTION OF THE BIORETENTION STRUCTURE IS TO IMPROVE WATER QUALITY.
C. INSTALL BIORETENTION PLANTINGS AS INDICATED ON DRAWINGS.
D. DO NOT PLANT BEFORE THE REMAINING DISTURBED AREAS SURROUNDING THE FACILITY ARE STABILIZED.
E. REMOVE SEDIMENT ACCUMULATED IN THE BIORETENTION AREA DURING THE PLANTING PHASE.
F. IF SUITABLE VEGETATIVE COVER HAS NOT BEEN ESTABLISHED ALONG THE BIORETENTION SIDE SLOPES PRIOR TO PLANTING, INSTALL A SILT FENCE PERIMETER AT THE TOE OF THE BIORETENTION SLOPES AND LEAVE IN PLACE UNTIL AN APPROVED VEGETATIVE COVER HAS BEEN ESTABLISHED.
G. INSTALL MULCH LAYER AS INDICATED ON DRAWINGS.
H. REMOVE REMAINING EROSION AND SEDIMENT CONTROLS ONLY AFTER SURROUNDING DISTURBED AREAS HAVE BEEN PROPERLY STABILIZED.
I. CONDUCT FINAL CONSTRUCTION INSPECTION WITH ENGINEER.
9. CLEAN UP
A. AFTER COMPLETION OF THE WORK, REMOVE AND PROPERLY DISPOSE ALL DEBRIS, CONSTRUCTION MATERIALS, RUBBISH, EXCESS SOIL, ETC. FROM THE PROJECT SITE.

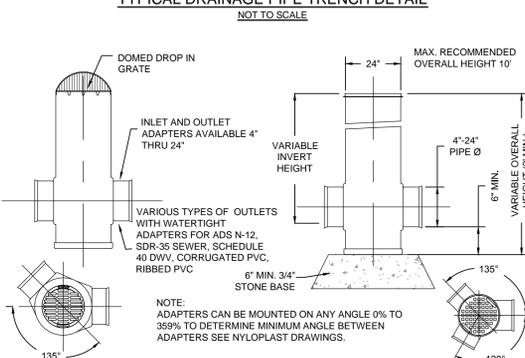
MATERIAL SPECIFICATIONS

- 1. BIORETENTION SOIL
A. USDA UNIFIED SOIL CLASSIFICATION: LOAMY SAND CONSISTING OF A UNIFORM MIX, FREE OF NOXIOUS WEEDS AND FREE OF STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN 1 INCH.
B. PROVIDE A SOIL TEST OF THE BIORETENTION SOIL FOR CONFORMANCE TO THE FOLLOWING CRITERIA:
PH RANGE: 5.2-7.0
MAGNESIUM: MINIMUM 32 PPM
PHOSPHOROUS (P2O5): NOT TO EXCEED 69 PPM
POTASSIUM (K2O): MINIMUM 78 PPM
SOLUBLE SALTS: NOT TO EXCEED 500 PPM
IF THE SOIL PH IS NOT WITHIN THE ACCEPTABLE RANGE, AMEND WITH LIME TO RAISE THE PH OR WITH IRON SULFATE TO LOWER THE PH, AS NECESSARY.
C. VOLUME OF FILTER MEDIA BASED ON 10% OF PLAN VOLUME TO ACCOUNT FOR SETTLING OR COMPACTION.
D. DO NOT MIX, DUMP OR STORE ANY OTHER MATERIALS OR SUBSTANCES THAT MAY BE HARMFUL TO PLANT GROWTH OR PROVIDE A HINDRANCE TO THE PLANTING MAINTENANCE OR OPERATIONS WITHIN THE BIORETENTION AREA.
2. MULCH
A. FINE SHREDDED WELL AGED (6 MONTH MINIMUM) HARDWOOD MULCH.
B. A MULCH SAMPLE MUST BE SUBMITTED AND APPROVED BY THE ENGINEER PRIOR TO DELIVERY TO THE PROJECT SITE.
3. FILTER FABRIC
A. NON-WOVEN GEOTEXTILE FABRIC WITH FLOW RATE OF > 110 GALLON/MINUTES/SQUARE FOOT.
B. CLASS 'C' APPARENT OPENING SIZE (ASTM D-4751).
C. GRAB TENSILE STRENGTH (ASTM-D-4632) BURST STRENGTH (ASTM-D-4833).
4. PEA GRAVEL
A. 3/8" WASHED STONE
5. UNDERDRAIN GRAVEL
A. 3/4" CRUSHED WASHED STONE, CLEAN AND FREE OF ALL FINES AND MEETING AASHTO M-43.
6. PIPE
A. UNDERDRAIN
4" RIGID SCHEDULE 40 PVC PIPE, WITH 3/8" PERFORATIONS @ 6" O.C. MEETING ASTM D 1785 OR AASHTO M-278.
B. CONNECTIONS TO STORM DRAIN SYSTEM.
C. UNDERDRAIN CLEANOUTS
NON PERFORATED SCHEDULE 40 PVC PIPE, PVC ELBOW, CAP, AND ALL ASSOCIATED FITTINGS.
7. EROSION CONTROL BLANKET (3:1 SIDE SLOPES ONLY)
A. WOVEN, 100% BIODEGRADABLE JUTE FIBER 7.70 LBS/1000 SQFT.
8. PLANTS
A. AS INDICATED ON DRAWINGS.
9. SEED (SIDE SLOPES ONLY)
A. NEW ENGLAND CONSERVATION/WILDLIFE MIX OR APPROVED EQUIVALENT.
B. APPLICATION RATE 25 LBS/ ACRES OR PER SEED MANUFACTURER'S REQUIREMENTS.
10. OUTLET STRUCTURE
A. SIZE AS INDICATED ON DRAWINGS.
B. FIBERGLASS REINFORCED PLASTIC MANHOLES OF SIZE INDICATED ON DRAWINGS.

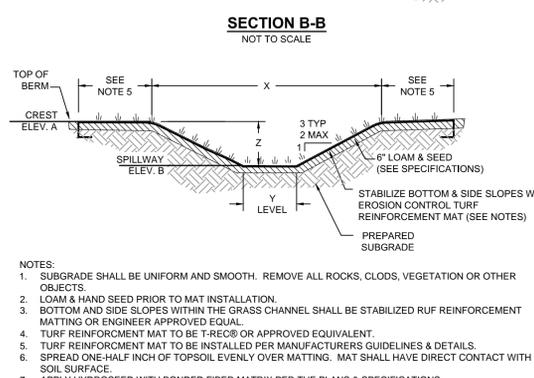
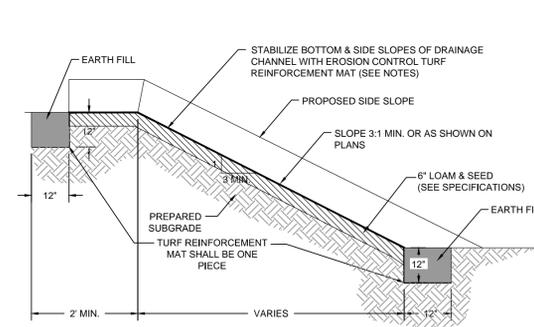
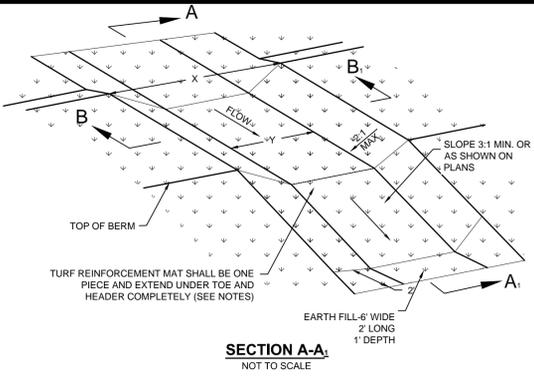
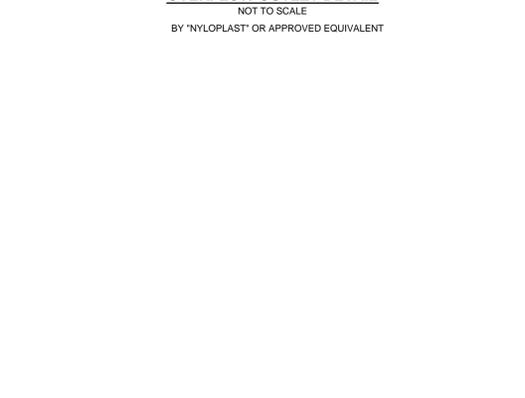
NOTES

- 1. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH A FOUNDATION OF CLASS I OR II MATERIAL AS DEFINED IN ASTM D2321.
2. BEDDING, HAUNCHING AND INITIAL BACKFILL: SUITABLE MATERIAL SHALL CONSIST OF CLEAN, HARD, PARTICLES OF GRAVEL MEETING THE FOLLOWING:
SIEVE SIZE PASSING 3/8" 85-95
NO. 4 5-15
NO. 8 0-2
MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
3. MINIMUM TRENCH WIDTHS SHALL BE AS FOLLOWS:
NOMINAL Ø IN (mm) MIN. RECOMMENDED TRENCH WIDTH, IN (mm)
8 (200) 10 (25) 63 (300) 15 (375) 18 (450)
4. MINIMUM COVER: MINIMUM RECOMMENDED DEPTHS OF COVER FOR VARIOUS LIVE LOADING CONDITIONS ARE SUMMARIZED IN THE FOLLOWING TABLE.
LOADING CONDITION MINIMUM RECOMMENDED COVER, IN (mm)
H25 (FLEXIBLE PAVEMENT) 12 (300)
H25 (RIGID PAVEMENT) E80 24 (610)
RAILWAY HEAVY CONSTRUCTION 48 (1220)
* TOP OF PIPE TO BOTTOM OF BITUMINOUS PAVEMENT THE MINIMUM COVER FOR A HDPE PIPE IS 1'-0" FOR H-20 TRAFFIC LOADS IF INSTALLED IN ACCORDANCE WITH AASHTO SECTION 20. THIS IS BASED ON EMPIRICAL CALCULATION OF LOAD RESPONSE, MANUFACTURER'S TESTING AND FIELD EXPERIENCE WITH THE PIPE.
* BOTH AASHTO AND ASTM AS WELL AS MOST MANUFACTURERS, REQUIRE ADDITIONAL TEMPORARY COVER, MOUND OVER THE PIPE AND REMOVED FOR FINAL GRADING AND PAVING, IS SUFFICIENT FOR LARGE CONSTRUCTION VEHICLE LOADS.

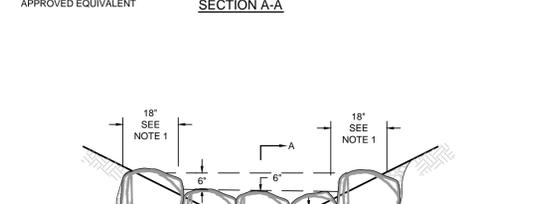
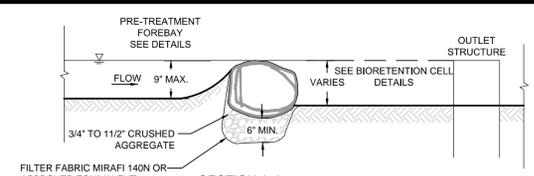
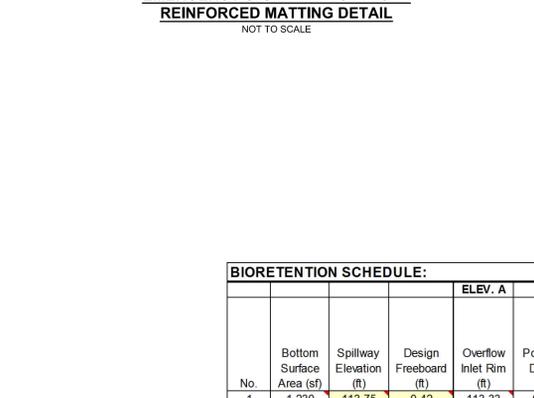
TYPICAL DRAINAGE PIPE TRENCH DETAIL



OVERFLOW OUTLET DETAIL



EMERGENCY SPILLWAY WITH TURF REINFORCED MATTING DETAIL



- NOTES:
1. KEY STONE INTO THE BIORETENTION BANKS AND EXTEND INTO THE ABUTMENTS A MINIMUM OF 18" TO PREVENT FLOW FROM DIVERTING THE CHECK DAM.
2. THE CHECK DAM SHALL BE CONSTRUCTED OF 18"-24" STONE. THE STONE SHALL BE PLACED SO THAT IT COMPLETELY COVERS THE WIDTH OF THE BIORETENTION AND KEYS IN THE BIORETENTION BANKS.
3. THE TOP OF THE CHECK DAM SHALL BE CONSTRUCTED SO THE CENTER IS APPROXIMATELY 6" LOWER THAN THE OUTER EDGES, FORMING A WEIR THAT WATER CAN FLOW ACROSS.
4. THE MAXIMUM HEIGHT OF THE CHECK DAM AT THE CENTER SHALL NOT EXCEED 6".

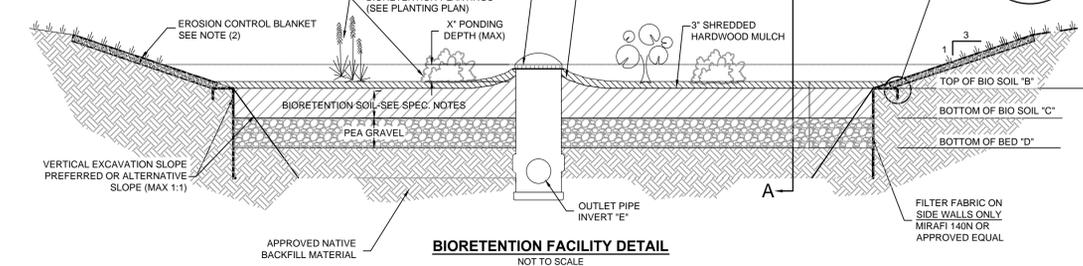
SPILLWAY SCHEDULE

Table with 6 columns: #, A, B, X, Y, Z. Row 1: 1, 123.25, 122.75, 8.00, 5.00, 0.50. Row 2: 2, 114.25, 113.75, 11.00, 8.00, 0.50.

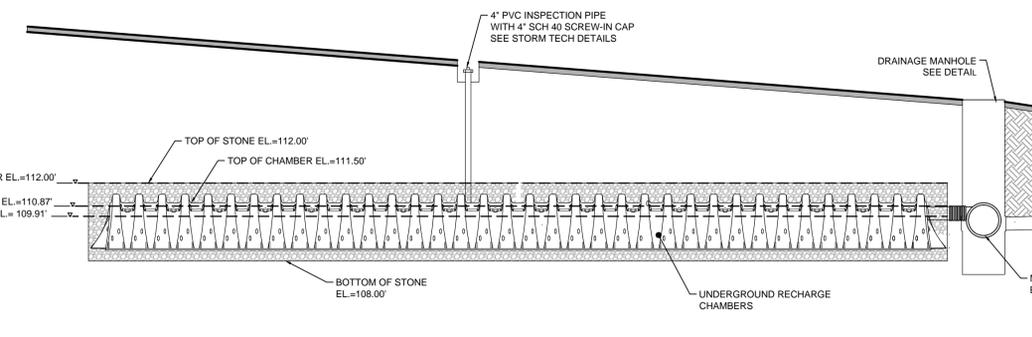
BIORETENTION SCHEDULE:

Table with 10 columns: Bottom Surface Area, Spillway Elevation, Design Freeboard, Overflow Inlet Rim, Ponding Depth, Bottom of Bio Area, Depth of Top of Bio, Bio Soil Depth, Bottom Bio Soil, Depth Pea Gravel, Bottom of Bed, Outlet Invert. Values are provided for each parameter.

- NOTES:
1. CONTRACTOR RESPONSIBLE FOR SLOPE STABILIZATION AND SAFETY MEASURES DURING CONSTRUCTION.
2. LOAM AND SEED SIDE SLOPES PER SPECIFICATIONS.
3. TAPER BIORETENTION SOIL AND MULCH FROM OUTLET STRUCTURE.
4. BIODEGRADABLE EROSION CONTROL BLANKET OR APPROVED EQUIVALENT TO STABILIZE ALL SIDE SLOPES.
5. REMAINING DISTURBED AREA SHALL BE LOAM & SEED OR LANDSCAPED PER PLANTING PLAN.



TYPICAL PROFILE THROUGH BIORETENTION AREA & RECHARGE CHAMBERS



Revisions table with columns: No., Date, By, Appr., Description. Includes entries for 3/31/16 and 6/17/16.

Project information including company name (Horsley Witten Group, Inc.), project name (Atlantic Subaru Improvements), location (Bourne, Massachusetts), and contact information.

Project title: ATLANTIC SUBARU IMPROVEMENTS BOURNE, MASSACHUSETTS. Includes a vertical title and 'CONSTRUCTION DETAILS (1)'.

Prepared for: Atlantic Subaru, 124 Warehouse Road, Bourne, MA. Contact information: Phone: (508) 759-5000, Fax: (508) 759-4595.

Survey Provided By: Horsley Witten Group, Inc., 90 Route 6A, Sandwich, MA 02563. Contact information: Phone: (508) 833-6600, Fax: (508) 833-3150, Dated: APRIL 9, 2015.

Registration information, project number (14028A), sheet number (8 of 12), and sheet title (C-8).



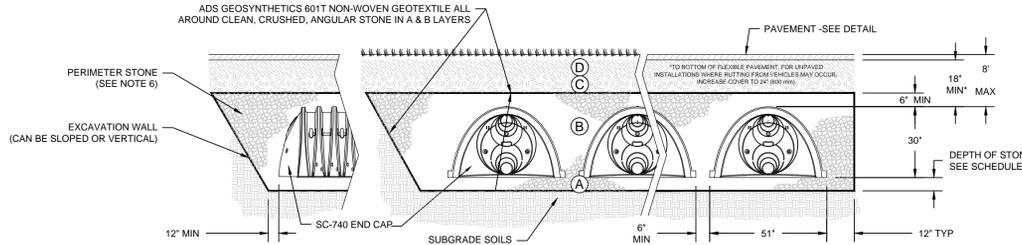
STORMTECH GENERAL NOTES

- STORMTECH LLC ("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 SERVICE 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 INCHES NOT INCLUDING PAVEMENT; MAXIMUM COVER IS 96 INCHES INCLUDING PAVEMENT. FOR INSTALLATIONS THAT DO NOT INCLUDE PAVEMENT, WHERE RUTTING FROM VEHICLES MAY OCCUR, MINIMUM REQUIRED COVER IS 24 INCHES, MAXIMUM COVER IS 96 INCHES.
- 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 STORMTECH 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 STORMTECH 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.

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE (B LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	AASHTO M145* A-1, A-2.4, A-3 OR AASHTO M43* 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. 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: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE (A LAYER) TO THE 'C' LAYER ABOVE.	AASHTO M43* 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	AASHTO M43* 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE **

- 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 M40) STONE".
 - STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) MAX LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
 - WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



NOTES:

- SC-740 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- THE INSTALLED CHAMBER SYSTEM TO PROVIDE THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 12.12 FOR EARTH AND LIVE LOADS, WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCE.
- "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
- PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- ONCE LAYER 'C' IS PLACED, ANY SOIL MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
- FOR INFORMATION, CONTACT STORMTECH AT 1-888-892-2694.

STORMTECH SC-740 CHAMBER TYPICAL CROSS SECTION

NOT TO SCALE

RECHARGE AREA #	COVER TYPE	NUMBER OF UNITS	CHAMBER TYPE/ MODEL	CHAMBER HEIGHT (IN.)	STONE TOP OF CHAMBER (IN.)	BOTTOM OF CHAMBER TO INVERT IN (IN.)	STONE UNDER CHAMBER (IN.)	DIAMETER HEADER MANIFOLD (IN.)	DIAMETER CHAMBER INLET STUB (IN.)	# OF MANIFOLD INLETS STUBS	ELEV. A INVERT HEADER MANIFOLD (FT)	ELEV. B MANIFOLD STUB INVERT (FT)	ELEV. C BOTTOM OF CHAMBERS (FT)	ELEV. D BOTTOM OF STONE (FT)	ELEV. E TOP OF CHAMBER (FT)	ELEV. F TOP OF STONE (FT)
URC-1	PAVEMENT	36	STORMTECH SC-740	30.00	6	16.50	12	24	8	3	109.04	110.37	109.00	108.00	111.50	112.00

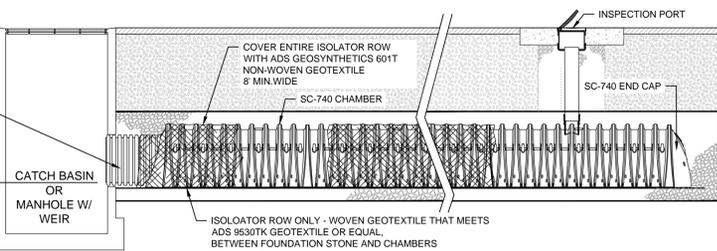
INSPECTION & MAINTENANCE

- STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
- REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
 - REMOVE AND CLEAN FLEXISTORM FILTER IF INSTALLED
 - USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
 - LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
 - IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3
- B. ALL ISOLATOR ROWS
- REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
 - USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
 - MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
 - FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
 - IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3
- STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED
- STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.
- STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

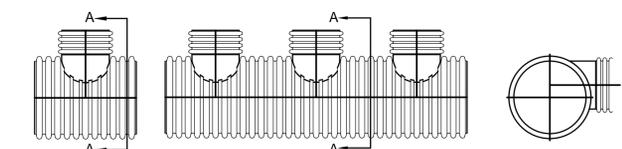
- INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
- CONDUCT JETTING AND VACUUMING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

STORMTECH ISOLATOR ROW DETAIL



FOR STORMTECH INFORMATION CALL 1-888-892-2694

NOT TO SCALE



STUB SIZE	HEADER PIPE SIZES											
	48"	42"	36"	30"	24"	18"	15"	12"	10"	8"	6"	
12"	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-	-	-
10"	-	-	-	-	AVAIL	-						
8"	-	-	-	-	-	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-
6"	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL

AVAIL - STANDARD HEADERS AVAILABLE

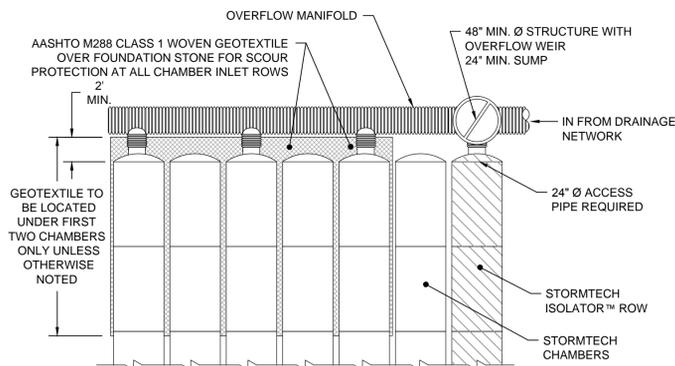
MANIFOLDS ARE DESIGNED TO BE COUPLED TO STORMTECH PREFABRICATED END CAPS. WHEN USING STANDARD END CAPS, CORRUGATED PIPE UP TO 10 INCHES CAN BE INSERTED DIRECTLY INTO THE END CAP. FOR 12" INLET PIPES, A CORRUGATED TO SMOOTH PIPE ADAPTER IS REQUIRED.

ADS MANIFOLD DETAIL

NOT TO SCALE

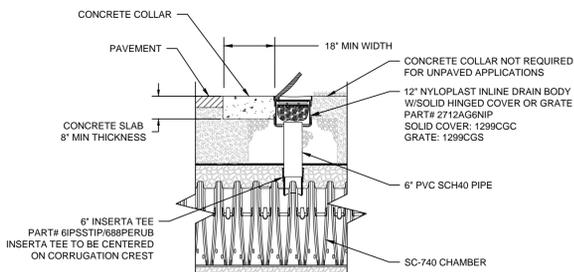
FOR INFORMATION CALL 1-888-892-2694

STORMTECH ISOLATOR ROW MANIFOLD DETAIL

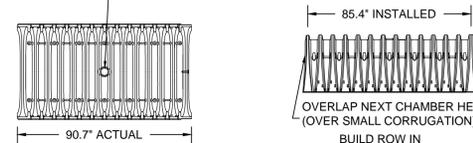
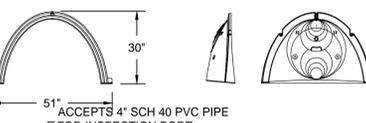


NOT TO SCALE

INSPECTION PORT DETAIL



NOT TO SCALE



NOMINAL CHAMBER SPECIFICATIONS
 SIZE (W x H x INSTALLED LENGTH)
 CHAMBER STORAGE
 MINIMUM INSTALLED STORAGE
 WEIGHT

51.0" x 30.0" x 85.4"
 45.9 CUBIC FEET
 74.9 CUBIC FEET
 75 lbs.

STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH 'B'
 STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH 'T'

PART#	STUB	A	B	C
SC740EP08T	8" (203 mm)	10.90" (277 mm)	18.50" (470 mm)	N/A
SC740EP08B	8" (203 mm)	10.90" (277 mm)	N/A	0.50" (13 mm)
SC740EP08T	8" (203 mm)	12.20" (310 mm)	16.50" (419 mm)	N/A
SC740EP08B	8" (203 mm)	12.20" (310 mm)	N/A	0.60" (15 mm)
SC740EP10T	10" (250 mm)	13.40" (340 mm)	14.50" (368 mm)	N/A
SC740EP10B	10" (250 mm)	13.40" (340 mm)	N/A	0.70" (18 mm)
SC740EP12T	12" (300 mm)	14.70" (373 mm)	12.50" (318 mm)	N/A
SC740EP12B	12" (300 mm)	14.70" (373 mm)	N/A	1.20" (30 mm)
SC740EP15T	15" (375 mm)	18.40" (467 mm)	9.00" (229 mm)	N/A
SC740EP15B	15" (375 mm)	18.40" (467 mm)	N/A	1.30" (33 mm)
SC740EP18T	18" (450 mm)	19.70" (500 mm)	9.00" (229 mm)	N/A
SC740EP18B	18" (450 mm)	19.70" (500 mm)	N/A	1.60" (41 mm)
SC740EP24B	24" (600 mm)	18.50" (470 mm)	N/A	0.10" (3 mm)

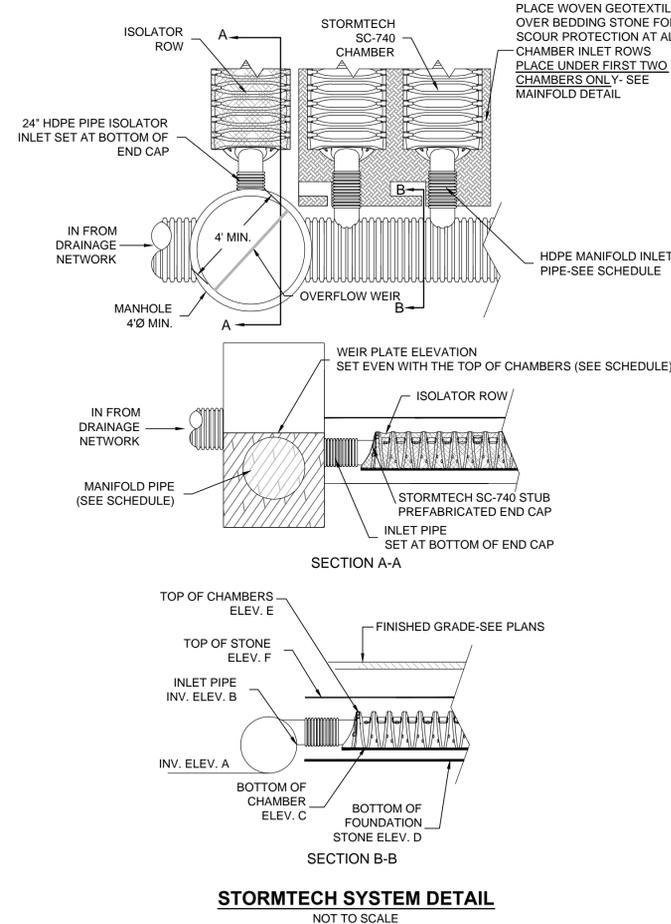
NOTE: ALL DIMENSIONS ARE NOMINAL

ALL STUBS, EXCEPT FOR THE SC740EP24B 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.

*FOR THE SC740EP24B THE 24" STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75". BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

STORMTECH TECHNICAL DETAILS

NOT TO SCALE



STORMTECH SYSTEM DETAIL

NOT TO SCALE

Revisions

Rev	Date	By	Appr	Description
1	3/31/16	BAL BRK	Revision to LIC Schedule	
2	6/17/16	BAL BRK	Update schedule and details	

Horsley Witten Group, Inc.
 Sustainable Environmental Solutions
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 Sandwich, MA 02563
 508-833-6600 voice
 508-833-3150 fax

Checked By: BAL
 Drawn By: BRK
 Design By: BRK
 Date: JUNE 2016

ATLANTIC SUBARU IMPROVEMENTS
 PERMITTING PLANS
 BOURNE, MASSACHUSETTS

CONSTRUCTION DETAILS (2)

Prepared For:
Atlantic Subaru
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 Bourne, MA
 Phone: (508) 759-5000
 Fax: (508) 759-4595

Survey Provided By:
Horsley Witten Group, Inc.
 90 Route 6A
 Sandwich, MA 02563
 Phone: (508) 833-6600
 Fax: (508) 833-3150
 Dated: APRIL 9, 2015



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last modified: 07/25/16 printed: 07/25/16 by bk H:\Projects\2014\14028 Atlantic Subaru Survey\Drawings - 14028\14028-LA.dwg

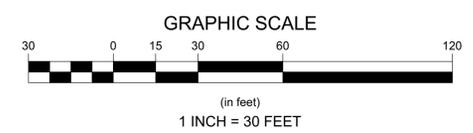
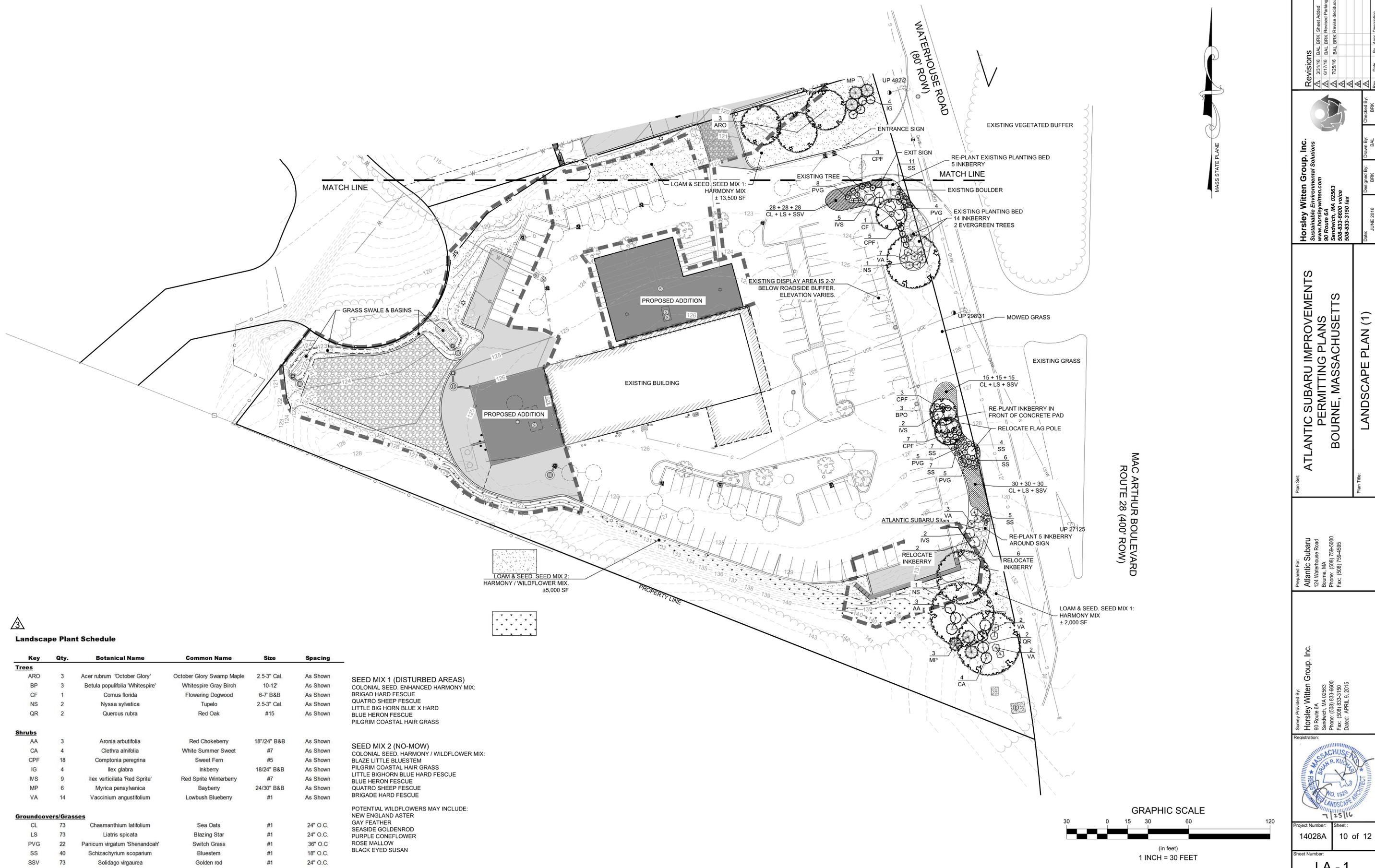
Landscape Plant Schedule

Key	Qty.	Botanical Name	Common Name	Size	Spacing
Trees					
ARO	3	Acer rubrum 'October Glory'	October Glory Swamp Maple	2.5-3" Cal.	As Shown
BP	3	Betula populifolia 'Whitespire'	Whitespire Gray Birch	10-12'	As Shown
CF	1	Cornus florida	Flowering Dogwood	6-7' B&B	As Shown
NS	2	Nyssa sylvatica	Tupelo	2.5-3" Cal.	As Shown
QR	2	Quercus rubra	Red Oak	#15	As Shown
Shrubs					
AA	3	Aronia arbutifolia	Red Chokeberry	18"/24" B&B	As Shown
CA	4	Clethra alnifolia	White Summer Sweet	#7	As Shown
CPF	18	Comptonia peregrina	Sweet Fern	#5	As Shown
IG	4	Ilex glabra	Inkberry	18"/24" B&B	As Shown
IVS	9	Ilex verticillata 'Red Sprite'	Red Sprite Winterberry	#7	As Shown
MP	6	Myrica pensylvanica	Bayberry	24"/30" B&B	As Shown
VA	14	Vaccinium angustifolium	Lowbush Blueberry	#1	As Shown
Groundcovers/Grasses					
CL	73	Chasmanthium latifolium	Sea Oats	#1	24" O.C.
LS	73	Liatris spicata	Blazing Star	#1	24" O.C.
PVG	22	Panicum virgatum 'Shenandoah'	Switch Grass	#1	36" O.C.
SS	40	Schizachyrium scoparium	Bluestem	#1	18" O.C.
SSV	73	Solidago virgaurea	Golden rod	#1	24" O.C.

SEED MIX 1 (DISTURBED AREAS)
 COLONIAL SEED, ENHANCED HARMONY MIX:
 BRIGAD HARD FESCUE
 QUATRO SHEEP FESCUE
 LITTLE BIG HORN BLUE X HARD
 BLUE HERON FESCUE
 PILGRIM COASTAL HAIR GRASS

SEED MIX 2 (NO-MOW)
 COLONIAL SEED, HARMONY / WILDFLOWER MIX:
 BLAZE LITTLE BLUESTEM
 PILGRIM COASTAL HAIR GRASS
 LITTLE BIGHORN BLUE HARD FESCUE
 BLUE HERON FESCUE
 QUATRO SHEEP FESCUE
 BRIGADE HARD FESCUE

POTENTIAL WILDFLOWERS MAY INCLUDE:
 NEW ENGLAND ASTER
 GAY FEATHER
 SEASIDE GOLDENROD
 PURPLE CONEFLOWER
 ROSE MALLOW
 BLACK EYED SUSAN



<p>Revisions</p> <table border="1"> <tr> <th>Rev</th> <th>Date</th> <th>By</th> <th>Appr</th> <th>Description</th> </tr> <tr> <td>1</td> <td>3/31/16</td> <td>BAL</td> <td>BRK</td> <td>Sheet Added</td> </tr> <tr> <td>2</td> <td>6/17/16</td> <td>BAL</td> <td>BRK</td> <td>Revised Parking Lot Layout</td> </tr> <tr> <td>3</td> <td>7/25/16</td> <td>BAL</td> <td>BRK</td> <td>Revised deciduous tree callout size</td> </tr> </table>		Rev	Date	By	Appr	Description	1	3/31/16	BAL	BRK	Sheet Added	2	6/17/16	BAL	BRK	Revised Parking Lot Layout	3	7/25/16	BAL	BRK	Revised deciduous tree callout size
Rev	Date	By	Appr	Description																	
1	3/31/16	BAL	BRK	Sheet Added																	
2	6/17/16	BAL	BRK	Revised Parking Lot Layout																	
3	7/25/16	BAL	BRK	Revised deciduous tree callout size																	
<p>Horsley Witten Group, Inc. Sustainable Environmental Solutions 90 Route 6A Sandwich, MA 02563 508-833-6600 voice 508-833-3150 fax</p>																					
<p>Project Number: 14028A Sheet: 10 of 12</p>																					
<p>LA - 1</p>																					

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Plant Schedule

Key	Qty.	Botanical Name	Common Name	Size	Spacing
Trees					
NS	3	Nyssa sylvatica	Tupelo	2.5-3" Cal.	30' O.C.
Evergreens					
IO	6	Ilex opaca	American Holly	8-10' H	12' O.C.
PS	5	Pinus strobus	Eastern White Pine	8-10' h	12' O.C.
Shrubs					
AA	3	Aronia arbutifolia	Red Chokeberry	18"/24" B&B	8' O.C.
KL	8	Kalmia latifolia	Mountain Laurel	24"/30" B&B	8' O.C.
MP	7	Myrica pensylvanica	Bayberry	24"/30" B&B	6' O.C.

Bioretention Plant Schedule

Key	Botanical Name	Common Name	Size	Spacing
Shrubs				
MP	Myrica pensylvanica	Northern Bayberry	#3	As Shown
VD	Viburnum dentatum	Arrowwood Viburnum	#3	As Shown
Ground Cover/Grasses/Perennials				
CL	Chasmanthium latifolium	Sea Oats	#1	36" O.C.
BA	Baptisia australis	Blue False Indigo	#1	36" O.C.
EMA	Eupatorium maculatum	Joe-Pye Weed	#1	24" O.C.
IVE	Iris versicolor	Blue Flag	#1	18" O.C.
PVG	Panicum virgatum	Switch Grass	#1	36" O.C.
SSA	Sedum spectabile 'Autumn Joy'	Autumn Joy Sedum	#2	18" O.C.

SEED MIX 3 (DISTURBED AREAS)
NEW ENGLAND WETLAND PLANTS INC.
ROADSIDE MATRIX UPLAND SEED MIX:

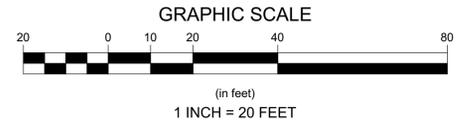
CANADA WILD RYE
LITTLE BLUESTEM
CREEPING RED FESCUE
BIG BLUESTEM
INDIAN GRASS
SWITCHGRASS

PARTRIDGE PEA
COMMON MILKWEED
GOLDEN ALEXANDER
SHOWY TICK TREFOIL
BUSH CLOVER
OX EYE SUNFLOWER
WILD BERGAMOT
BLACK EYED SUSAN
SMOOTH BLUE ASTER
FLATO-TOP GOLDENTOP
EARLY GOLDENROD
PURPLE JOE PYE WEED

SEEDING NOTE:
ALL DISTURBED AREAS NOT CALLED OUT TO BE PLANTED ARE TO BE LOAM & SEEDED.

BIORETENTION PLANTING NOTE:
AREAS CALLED OUT WITH MORE THAN ONE PLANT SPECIES MUST BE PLANTED IN GROUPS OF THE SAME PLANT IN BLOCKS OF 3 TO 5.

BUFFER NOTE:
SELECTIVE THINNING AND PRUNING IS PROPOSED WITHIN THE BUFFER TO REMOVE EXISTING DEADWOOD AND UNHEALTHY/DAMAGED TREES. THE SELECTED TREES WILL BE FLAGGED AND ASSESSED IN THE FIELD BY A CERTIFIED ARBORIST. THE ARBORIST REPORT WILL BE PROVIDED PRIOR TO ANY TREE REMOVAL.



Revisions

Rev	Date	By	Appr	Description
1	3/31/16	BAI	BRK	Revision to Landscaping
2	6/17/16	BAI	BRK	Revised Parking Lot Layout
3	6/24/16	BAI	BRK	Revised Parking Lot Layout
4	7/25/16	BAI	BRK	Revised deciduous tree caliper size

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Checked By: BRK
Drawn By: BAL
Designed By: BAL
Date: JUNE 2016

Plan Set:
ATLANTIC SUBARU IMPROVEMENTS PERMITTING PLANS
BOURNE, MASSACHUSETTS
LANDSCAPE PLAN (2)

Prepared For:
Atlantic Subaru
124 Waterhouse Road
Bourne, MA
Phone: (508) 759-5000
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Survey Provided By:
Horsley Witten Group, Inc.
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Sandwich, MA 02563
Phone: (508) 833-6600
Fax: (508) 833-3150
Date: APRIL 9, 2015



Project Number: 14028A
Sheet: 11 of 12
Sheet Number: LA - 2

GENERAL PLANTING NOTES:

- THE FOLLOWING NOTES ARE PROVIDED AS GENERAL PLANTING GUIDELINES ONLY. THOROUGHLY REVIEW THE PROJECT SPECIFICATIONS FOR ALL LANDSCAPE REQUIREMENTS PRIOR TO THE COMMENCEMENT OF ANY LANDSCAPE WORK. SUBMIT IN WRITING TO THE LANDSCAPE ARCHITECT ANY QUESTIONS OR CLARIFICATIONS REQUIRED AT A MINIMUM OF 30 DAYS PRIOR TO ORDERING ANY MATERIALS OR BEGINNING ANY LANDSCAPE CONSTRUCTION.
- SUBMIT TO THE LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL ALL REQUIRED LANDSCAPE SUBMITTALS AS DESCRIBED IN THE SPECIFICATIONS INCLUDING A PLANT LIST WITH PLANT SIZE AND QUANTITIES TO BE ORDERED PRIOR TO DELIVERY TO THE PROJECT SITE.
- FURNISH AND INSTALL ALL PLANTS AS SHOWN ON THE DRAWINGS AND IN THE SIZE AND QUANTITIES SPECIFIED ON THE PLANTING SCHEDULE. PLANT SUBSTITUTION SELECTION MUST BE APPROVED BY BIOLOGIST OR LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
- ALL PLANTS TO COMPLY WITH APPLICABLE REQUIREMENTS OF ANSI Z60.1 "AMERICAN STANDARD FOR NURSERY STOCK," LATEST EDITION, PUBLISHED BY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION INC.
- PLANTS TO BE GROWN UNDER CLIMATIC CONDITIONS SIMILAR TO THOSE IN THE LOCALITY OF THE PROJECT FOR AT LEAST TWO (2) YEARS. USE HEALTHY NURSERY GROWN PLANTS, FREE OF DISEASE, INSECTS, AND PESTS. EGGS OR LARVAE, AND HAVE A WELL DEVELOPED ROOT SYSTEM.
- INSTALL PLANTS WITHIN ONE (1) WEEK OF PURCHASE. IF PLANTS ARE TO BE STORED AT THE SITE PRIOR TO PLANTING, IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THEY ARE PROPERLY MAINTAINED, WATERED, AND REMAIN HEALTHY.
- PROCEED WITH PLANTING ONLY WHEN EXISTING AND FORECASTED WEATHER CONDITIONS PERMIT. SUBMIT TO THE LANDSCAPE ARCHITECT IN WRITING THE PROPOSED PLANTING SCHEDULE. OBTAIN APPROVAL OF PLANTING SCHEDULE FROM THE LANDSCAPE ARCHITECT PRIOR TO PERFORMING ANY WORK.
- SEASONS FOR PLANTING:

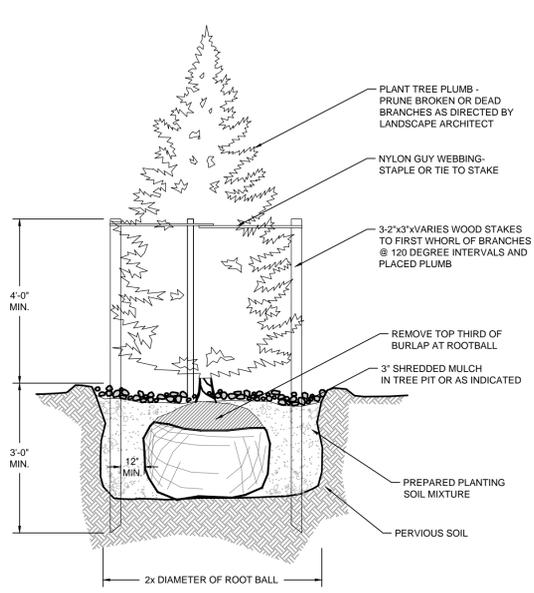
SPRING:	DECIDUOUS:	APRIL 1 TO JUNE 15
	EVERGREEN:	APRIL 1 TO JUNE 15
	PERENNIALS:	APRIL 15 TO JUNE 1
	GROUNDCOVERS:	APRIL 15 TO JUNE 1
FALL:	DECIDUOUS:	SEPTEMBER 15 TO NOVEMBER 15
	EVERGREEN:	SEPTEMBER 15 TO NOVEMBER 15
	PERENNIALS:	SEPTEMBER 15 TO NOVEMBER 15
	GROUNDCOVERS:	SEPTEMBER 15 TO NOVEMBER 15
- LIVE STAKES: PLANTS WHILE DORMANT FROM DECEMBER 1ST THROUGH MARCH 31ST
- PLANTING UNDER FROZEN CONDITIONS IN EITHER THE SPRING OR FALL WILL NOT BE PERMITTED. PLANTING BEFORE OR AFTER THE ABOVE REFERENCED PLANTING DATES WILL INCREASE THE LIKELIHOOD OF PLANT OR GRASS SEED ESTABLISHMENT FAILURE. ANY DEVIATION FROM THE ABOVE REFERENCED PLANTING DATES IS UNDERTAKEN AT SOLE RISK OF THE CONTRACTOR AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ANY ADDITIONAL MAINTENANCE AND WATERING WHICH MAY BE REQUIRED TO ENSURE SATISFACTORY PLANT AND SEED ESTABLISHMENT.
- FURNISH ONE YEAR MANUFACTURER WARRANTY FOR TREES, PLANTS, AND GROUND COVER AGAINST DEFECTS INCLUDING DEATH AND UNSATISFACTORY GROWTH. EXCEPT FOR DEFECTS RESULTING FROM LACK OF ADEQUATE MAINTENANCE, NEGLIGENCE, OR ABUSE BY OWNER, OR ABNORMAL WEATHER CONDITIONS UNUSUAL FOR WARRANTY PERIOD. THE DATE OF FINAL ACCEPTANCE OF ALL COMPLETED PLANTING WORK ESTABLISHES THE END OF INSTALLATION AND INITIAL MAINTENANCE PERIOD AND THE COMMENCEMENT OF THE GUARANTEE PERIOD.
- ALL TREES WITHIN 5'-0" OF WALKWAYS AND SIDEWALKS TO HAVE A 6'-8" STANDARD BRANCHING HEIGHT.
- INSPECT ALL AREAS TO BE PLANTED OR SEEDED PRIOR TO STARTING ANY LANDSCAPE WORK. REPORT ANY DEFECTS SUCH AS INCORRECT GRADING, INCORRECT SUBGRADE ELEVATIONS OR DRAINAGE PROBLEMS, ETC. TO THE LANDSCAPE ARCHITECT AND ENGINEER PRIOR TO BEGINNING WORK. COMMENCEMENT OF WORK INDICATES ACCEPTANCE OF SUBGRADE AREAS TO BE PLANTED, AND THE LANDSCAPE CONTRACTOR ASSUMES RESPONSIBILITY FOR ALL LANDSCAPE WORK.
- PROVIDE PROPER PREPARATION OF ALL PROPOSED PLANTED AND SEEDED AREAS PER THE NOTES AND SPECIFICATIONS.
- ALL PLANT LAYOUT AND ACTUAL PLANTING LOCATIONS ARE TO BE FIELD VERIFIED BY LANDSCAPE ARCHITECT PRIOR TO PLANTING. NOTIFY THE LANDSCAPE ARCHITECT AT A MINIMUM OF 48 HOURS IN ADVANCE PRIOR TO SCHEDULING ANY FIELD INSPECTIONS.
- BALL AND BURLAP: REMOVE BURLAP AND WIRE BASKETS FROM TOPS OF BALLS AND FROM TOP HALF OF ROOTBALL AS INDICATED ON DRAWINGS. REMOVE PALLETS, IF ANY, BEFORE SETTING.
- POTTED PLANTS: REMOVE THE PLANT FROM THE POT AND LOOSEN OR SCORE THE ROOTS BEFORE PLANTING TO PROMOTE OUTWARDS ROOT GROWTH INTO THE SOIL.
- PLUGS: PLANT UPRIGHT AND NOT AT AN ANGLE. DIG PLANTING HOLES LARGE ENOUGH AND DEEP ENOUGH TO ACCOMMODATE THE ENTIRE ROOT MASS. PLANT PLUGS WITH NO TWISTED OR BALLED ROOTS AND WITH NO ROOTS EXPOSED ABOVE THE GRADE LINE. HAND PACK THE SOIL AROUND THE ENTIRE PLUG ROOT MASS.
- DIG THE THE PLANTING HOLE TO THE SAME DEPTH AS THE ROOT BALL AND TWO TO THREE TIMES WIDER. SCORE ALL SIDES OF THE HOLE. PLACE THE PLANT IN THE HOLE SO THE TOP OF ROOT BALL IS EVEN WITH SOIL SURFACE. FILL THE HOLE HALFWAY AND THEN ADD WATER ALLOWING IT TO SEEP INTO BACK FILLED MATERIAL. BE SURE TO REMOVE ALL AIR POCKETS FROM BACK FILLED SOIL. DO NOT SPREAD SOIL ON TOP OF THE ROOTBALL. IF SOIL IS EXTREMELY POOR, REPLACE BACK FILL WITH GOOD QUALITY TOP SOIL. AMEND THE SOIL, AS NECESSARY.
- CREATE A 2" TO 4" BERM AROUND THE EDGE OF PLANTING HOLE WITH REMAINING SOIL TO RETAIN WATER.
- REMOVE ALL PLANT TAGS AND FLAGS FROM THE PLANTS.
- MULCH ALL PLANTING BEDS AS INDICATED ON DRAWINGS. UNLESS NOTED OTHERWISE, ALL PLANTS TO RECEIVE 2-3 INCHES OF MULCH. DO NOT PILE OR MOUND MULCH AROUND THE PLANT STEMS OR TRUNK.
- TRIM BROKEN AND DEAD BRANCHES FROM TREES AND SHRUBS AFTER PLANTING. NEVER CUT A LEADER.

GENERAL SEEDING NOTES:

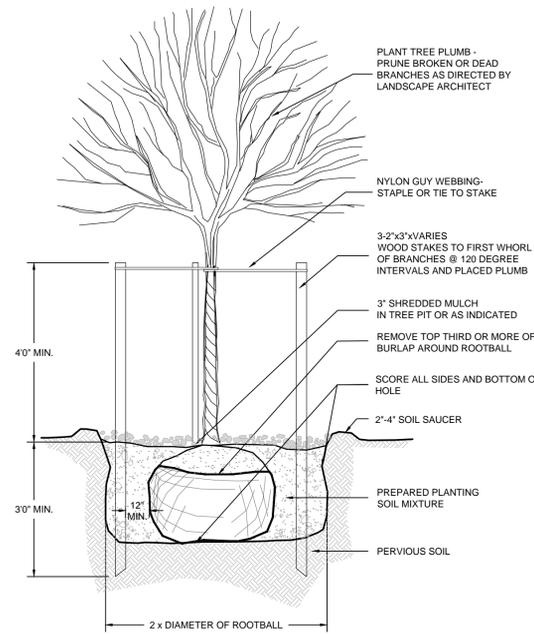
- SEND A REPRESENTATIVE SAMPLE OF THE TOPSOIL TO A TESTING LABORATORY FOR STANDARD SOIL ANALYSIS AS DESCRIBED IN THE SPECIFICATIONS. SUBMIT TO THE LANDSCAPE ARCHITECT AND ENGINEER TEST RESULTS WITH RECOMMENDED SOIL TREATMENTS TO PROMOTE PLANT AND GRASS GROWTH. CORRECT DEFICIENCIES IN THE LOAM AND STOCKPILED TOPSOIL AS DIRECTED BY THE TESTING AGENCY.
- ALL AREAS THAT ARE DISTURBED AND/OR GRADED DURING CONSTRUCTION ARE TO BE BROUGHT TO FINISHED GRADE WITH AT LEAST 4" MINIMUM DEPTH OF GOOD QUALITY LOAM AND SEEDED WITH A QUICK GERMINATING GRASS SEED SUCH AS NEW ENGLAND EROSION CONTROL RESTORATION MIX OR AS SPECIFIED ON THE PLANS.
- PRIOR TO THE PLACEMENT OF TOP SOIL, LOOSEN THE SUBGRADE OF ALL PROPOSED SEEDED AREAS TO A DEPTH OF 6" AND RAKE TO REMOVE STONES LARGER THAN 1 INCH, STICKS, ROOTS, RUBBISH AND OTHER EXTRANEIOUS MATTER AND LEGALLY DISPOSE TO AN OFF SITE LOCATION.
- DO NOT SPREAD TOPSOIL IF THE SUBGRADE IS FROZEN, EXCESSIVELY WET, COMPACTED OR NOT PROPERLY PREPARED PER THE NOTES AND SPECIFICATIONS.

WATERING NOTES:

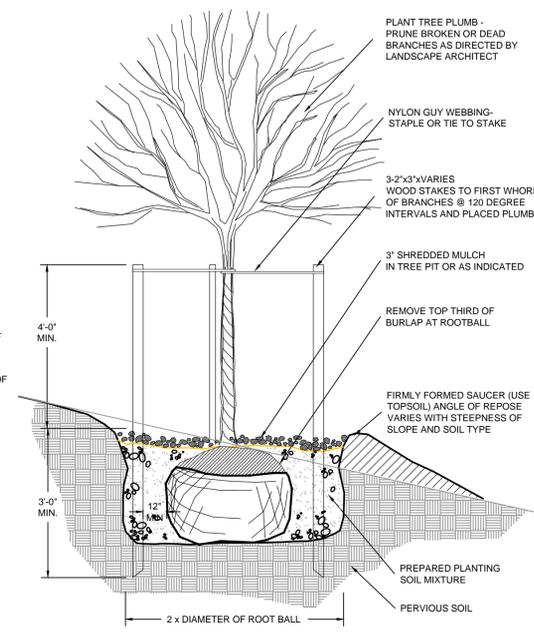
- PROVIDE PROPER PLANT CARE, MAINTENANCE AND WATERING ON SITE UNTIL SUCH TIME AS THE LANDSCAPING IS ACCEPTED BY THE PROPERTY OWNER AS SATISFACTORY PER THE SPECIFICATIONS OR AS DETERMINED BY ANY WRITTEN AGREEMENTS BETWEEN THE CONTRACTOR AND PROPERTY OWNER.
- ESTABLISH AN APPROPRIATE WATERING SCHEDULE FOR ALL PLANT MATERIAL BASED UPON PLANT SPECIES REQUIREMENTS AND PROVIDE IN WRITING TO THE LANDSCAPE ARCHITECT AND OWNER FOR REVIEW AND APPROVAL. ADHERE TO THE APPROVED SCHEDULE UNTIL PLANTS ARE FULLY ESTABLISHED.
- AT A MINIMUM THE NEWLY SEEDED AND/OR HYDROSEEDED LAWNS SHOULD BE WATERED DAILY. SPECIAL CARE SHOULD BE TAKEN TO ENSURE THAT THE LAWN IS NOT SATURATED DURING WATERING. IF AN IRRIGATION SYSTEM IS NOT PROVIDED, A TEMPORARY IRRIGATION SYSTEM OR HANDHELD GARDEN HOSE SHALL BE USED FOR WATERING SEEDED AREAS. THE AREA MUST BE MAINTAINED CONSISTENTLY MOIST FOR THE BEST GERMINATION RESULTS. ADDITIONAL WATERING WILL BE REQUIRED IF PLANTING AND SEEDING OCCUR OUTSIDE OF THE RECOMMENDED PLANTING SEASONS.



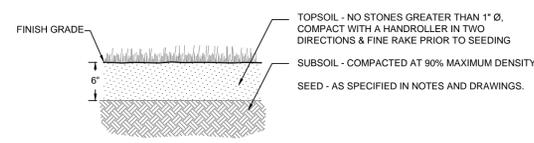
EVERGREEN TREE PLANTING DETAIL
NOT TO SCALE



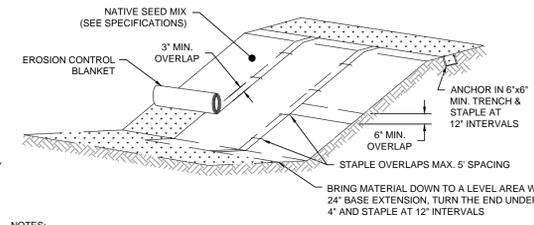
TREE PLANTING DETAIL
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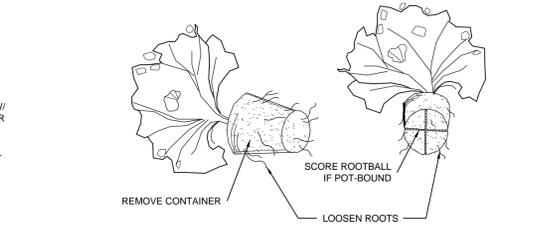
TREE PLANTING ON SLOPE DETAIL
NOT TO SCALE



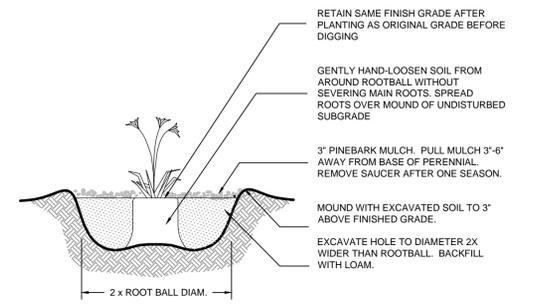
LOAM AND SEED DETAIL
NOT TO SCALE



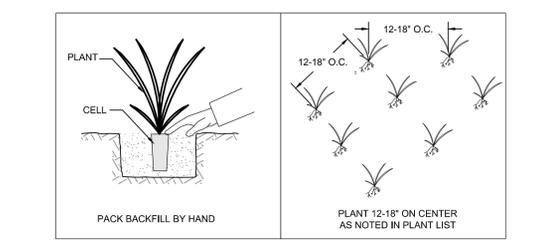
EROSION CONTROL BLANKET DETAIL
NOT TO SCALE



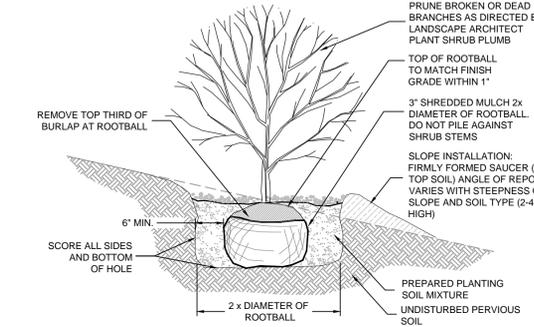
CONTAINER PLANT ROOTBALL TREATMENT
NOT TO SCALE



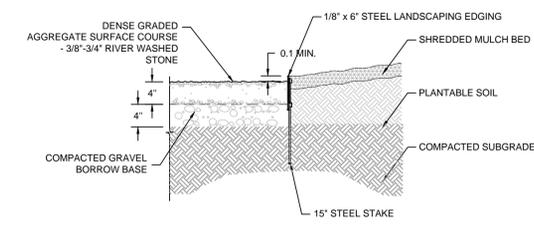
PERENNIAL PLANTING DETAIL
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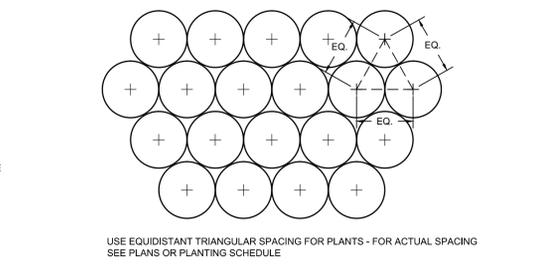
PLUG PLANTING DETAIL
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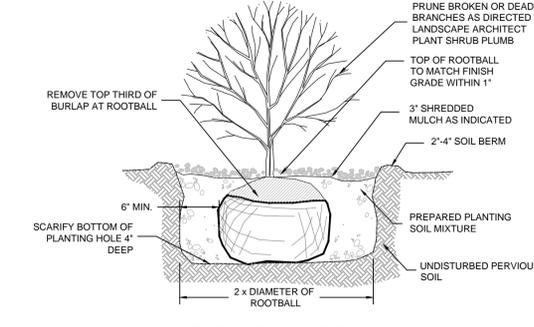
SHRUB PLANTING DETAIL
NOT TO SCALE



LANDSCAPE EDGING DETAIL
NOT TO SCALE



PLANTING SPACING DETAIL
NOT TO SCALE



SHRUB PLANTING DETAIL
NOT TO SCALE

<p>Revisions</p> <table border="1"> <tr> <th>No.</th> <th>Date</th> <th>By</th> <th>Description</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>	No.	Date	By	Description																	<p>10/17/16 BAL BRK Sheet Addit</p>
No.	Date	By	Description																		
<p>Horsley Witten Group, Inc. Sustainable Environmental Solutions www.horsleywitten.com Sandwich, MA 02563 508-833-6600 voice 508-833-3150 fax</p>	<p>Drawn By: BAL Checked By: BRK Date: JUNE 2016</p>																				
<p>ATLANTIC SUBARU IMPROVEMENTS PERMITTING PLANS BOURNE, MASSACHUSETTS</p>	<p>Plan Title: LANDSCAPE DETAILS</p>																				
<p>Prepared For: Atlantic Subaru 124 Waterhouse Road Bourne, MA Phone: (508) 759-5000 Fax: (508) 759-4995</p>	<p>Survey Provided By: Horsley Witten Group, Inc. 90 Route 6A Sandwich, MA 02563 Phone: (508) 833-6600 Fax: (508) 833-3150 Dated: APRIL 9, 2015</p>																				
<p>Project Number: 14028A</p>	<p>Sheet: 12 of 12</p>																				
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last modified: 06/17/16 printed: 06/21/16 by bl H:\Projects\2014114028 Atlantic Subaru SurveyDrawings - 1402814028-LA.dwg