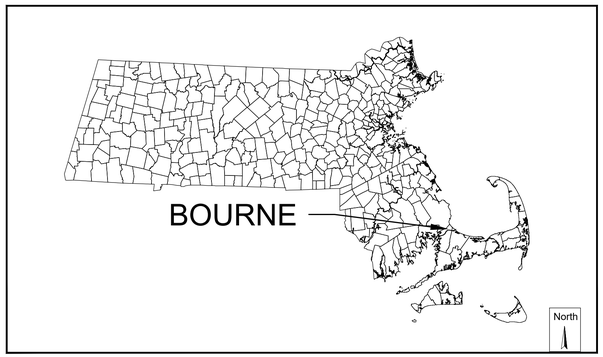
CAPE VIEW WAY
PERMITTING PLANS
BOURNE, MASSACHUSETTS
SEPTEMBER 2021



MASSACHUSETTS
Graphic Scale
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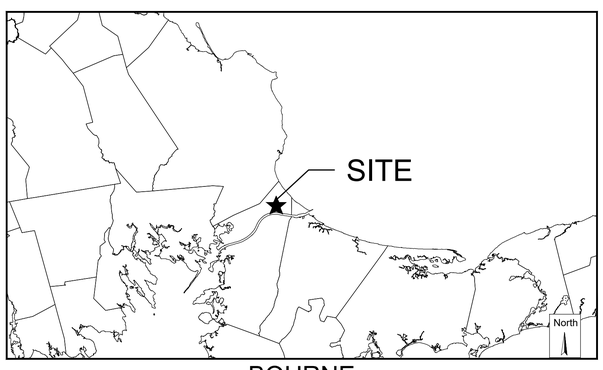
SCALE IN FEET
1:150000



BOURNE
Graphic Scale
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SCALE IN FEET
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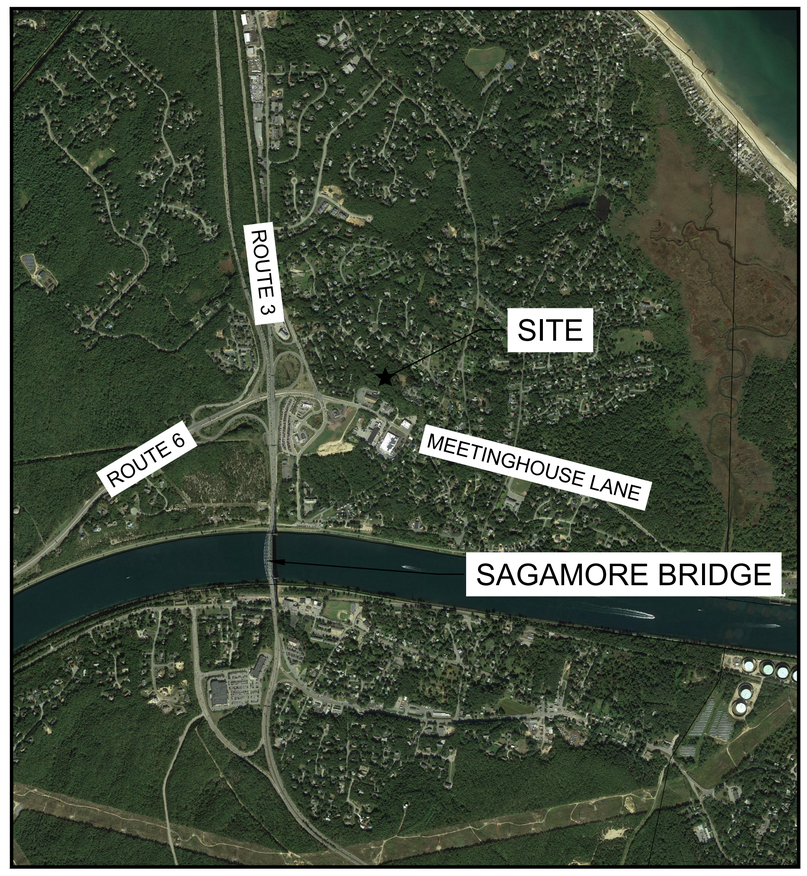

VICINITY MAP
Graphic Scale
1-inch = 1000-feet

PERMITTING SET ONLY
NOT FOR CONSTRUCTION

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GENERAL NOTES:
1. THIS PLAN SET IS FOR PERMITTING ONLY AND NOT FOR CONSTRUCTION.
2. SITE INFORMATION:
   ADDRESS: CAPE VIEW WAY
   ZONING DISTRICT: R40
3. THE PROPERTY IS LOCATED WITHIN F.I.R.M. ZONE X AS SHOWN ON COMMUNITY PANEL NO. 25001C0316J, DATED JULY 16, 2014.
4. THE WETLAND DELINEATION SHOWN HEREON WAS CONDUCTED BY HORSLEY WITTEN GROUP. SEE EXISTING CONDITIONS PLAN FOR DATES AND LOCATIONS OF WETALND SURVEY.

Plan Set:
CAPE VIEW WAY
PERMITTING PLANS
BOURNE, MASSACHUSETTS

Prepared For:
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Registration:
COMMONWEALTH OF MASSACHUSETTS
RICHARD A. CLAYTOR
CIVIL
NO. 45116
REGISTERED PROFESSIONAL ENGINEER
9-13-2021

Revisions

Rev.	Date	By	Appr.	Description
1				
2				
3				
4				
5				
6				
7				

Project Number: 19038
Sheet Number: 1 of 23
Drawing Number: C - 1

last modified: 09/13/21 printed: 09/13/21 by bk K:\Projects\2019\19038 Cape View Way\Drawings\19038 CV.dwg

GENERAL CONSTRUCTION NOTES:

1. ALL SITE WORK TO COMPLETE THIS PROJECT AS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
2. IMMEDIATELY CONTACT AND COORDINATE WITH THE ENGINEER AND OWNER IF ANY DEVIATION OR ALTERATION OF THE WORK PROPOSED ON THESE DRAWINGS IS REQUIRED.
3. 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.
4. 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.
5. ALL EXISTING CONDITIONS SHOWN ARE APPROXIMATE AND ARE BASED ON THE BEST INFORMATION AVAILABLE. PRIOR TO THE START 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.
6. 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 OF BOURNE, AND "DIGSAFE" (1-888-344-7233) AT LEAST THREE BUSINESS DAYS PRIOR TO ANY EXCAVATION WORK IN PREVIOUSLY UNALTERED AREAS TO REQUEST EXACT FIELD LOCATION OF UTILITIES. THE CONTRACTOR MUST RESOLVE CONFLICTS 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.
7. COORDINATE AND MAKE ALL CONNECTION ARRANGEMENTS WITH UTILITY COMPANIES, AS REQUIRED.
8. 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.
9. 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.
10. 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.
11. 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 .
12. 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.
13. 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.
14. 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.
15. 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 COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGES 2020 EDITION).
16. PROVIDE ALL CONSTRUCTION SERVICE IN ACCORDANCE WITH APPLICABLE LAWS AND REGULATIONS REGARDING NOISE, VIBRATION, DUST, SEDIMENTATION CONTAINMENT, AND TRENCH WORK.
17. COLLECT SOLID WASTES AND STORE IN A SECURED DUMPSTER. THE DUMPSTER MUST MEET ALL LOCAL AND STATE SOLID WASTE MANAGEMENT REGULATIONS.
18. 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.
19. 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.
20. ALL TRUCKS LEAVING THE SITE MUST BE COVERED.
21. DO NOT WASH ANY CONCRETE TRUCKS ONSITE. REMOVE BY HAND ANY CEMENT OR CONCRETE DEBRIS LEFT IN THE DISTURBED AREA.
22. BURIAL OF ANY STUMPS, SOLID DEBRIS, AND/OR STONES/BOULDERS ONSITE IS PROHIBITED. DO NOT USE ROAD SALT OR OTHER DE-ICING CHEMICALS ON THE ACCESS ROADWAY.
23. AT THE END OF CONSTRUCTION, REMOVE ALL CONSTRUCTION DEBRIS AND SURPLUS MATERIALS FROM THE SITE [AS INDICATED IN THE SPECIFICATIONS]. PERFORM A THOROUGH INSPECTION OF THE WORK PERIMETER. COLLECT AND REMOVE ALL MATERIALS AND BLOWN OR WATER CARRIED DEBRIS FROM THE SITE.

BASIC CONSTRUCTION SEQUENCE:

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

1. SURVEY AND STAKE THE PROPOSED LIMIT OF DISTURBANCE AND LIMIT OF SEDIMENTATION BARRIERS.
2. IDENTIFY AND MARK INVASIVE SPECIES. PLANT IDENTIFICATION SHALL BE PERFORMED BY QUALIFIED PERSONNEL ONLY, AS INDICATED IN THE SPECIFICATIONS.
3. PLACE SEDIMENTATION BARRIERS AND INLET PROTECTION 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 LOCAL CONSERVATION COMMISSION AND DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP). PROTECT ALL SUBSURFACE INFILTRATION STRUCTURES FROM FLOW UNTIL SITE IS STABILIZED.
4. INSTALL TEMPORARY CONSTRUCTION ENTRANCES IN LOCATIONS INDICATED ON DRAWINGS. NO OTHER ENTRANCES ARE TO BE USED TO GAIN ACCESS TO THE SITE BY ANY CONSTRUCTION OR DELIVERY VEHICLES.
5. BEGIN CLEARING THE SITE AS REQUIRED. SEE SPECIFICATIONS FOR INVASIVE SPECIES MANAGEMENT.
6. SURVEY AND STAKE CENTERLINE OF THE PROPOSED ROADS, STORMWATER MANAGEMENT AREAS, AND DRAINAGE LINES.
7. EXCAVATE AND ROUGH GRADE THE PROPOSED STORMWATER MANAGEMENT AREAS AND ANY ADDITIONAL TEMPORARY BASINS NECESSARY TO CONTROL SITE RUNOFF AND SEDIMENT. TEMPORARILY STABILIZE/SEED PERMANENT STORMWATER MANAGEMENT AREAS AS NECESSARY TO REDUCE SIDE SLOPE EROSION AND SEDIMENT ACCUMULATION.
8. BEGIN CLEARING AND GRUBBING THE AREAS OF ROADWAYS AND STORMWATER MANAGEMENT AREAS. TOPSOIL IS TO BE STRIPPED FROM THE AREA OF THE PROPOSED ROADWAYS AND STORMWATER MANAGEMENT AREAS AND STOCKPILED IN APPROVED LOCATIONS. TOPSOIL STOCKPILES MUST BE PROTECTED BY A SEDIMENT BARRIER.
9. INSTALL TEMPORARY CONVEYANCE DEVICES (SWALES, CHECK DAMS, PIPES, ETC.) AS NECESSARY TO CONVEY RUNOFF TO TREATMENT AREAS.
10. BEGIN ROUGH GRADING AREAS FOR ROADS, PARKING AND BUILDINGS. BRING ROUGH GRADING TO PROPER ELEVATIONS AS SOON AS PRACTICABLE. COORDINATE WORK TO MINIMIZE TIME SOILS ARE UN-STABILIZED.
11. 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. ⚠1
12. INSTALL DRAINAGE PIPES, DRAINAGE MANHOLES, CATCH BASINS, AND UNDERGROUND DRAINAGE STRUCTURES. BEGIN WORK AT THE STORMWATER MANAGEMENT AREAS AND PROGRESS UP-GRADIENT. PROTECT DISCHARGE OUTLETS WITH RIP-RAP APRONS. THE STORMWATER MANAGEMENT AREA(S) AND DRAINAGE NETWORK ARE TO BE PROTECTED FROM SEDIMENTATION 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 STRUCTURES FROM SEDIMENT.
13. PERMANENTLY SEED ALL DISTURBED AREAS OUTSIDE OF THE AREA TO BE PAVED.
14. 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.
15. BEGIN ROAD AND 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.
16. FINISH PERMANENT STABILIZATION. COMPLETE PERMANENT STORMWATER MANAGEMENT AREA 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.
17. COMPLETE ALL REMAINING PLANTING AND SEEDING.

16\. 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 STORMWATER MANAGEMENT AREAS. CONTRACTOR MUST INSPECT THE DRAINAGE NETWORK AND REPAIR ANY DAMAGE IMMEDIATELY.

17\. 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.

EROSION & SEDIMENT CONTROL NOTES:

1. PRIOR TO THE START OF CONSTRUCTION A NOTICE OF INTENT (NOI) MUST BE FILED WITH NPDES. REFER TO THE STORMWATER AND POLLUTION PREVENTION PLAN (SWPPP) REGARDING ALL EROSION CONTROL MATTERS. MAINTAIN A WORKING COPY OF THE SWPPP ONSITE AT ALL TIMES. FOLLOW THE SWPPP PROTOCOL FOR SITE MAINTENANCE, INSPECTIONS AND PROPER DOCUMENTATION UNTIL THE SITE HAS BEEN ACCEPTED BY THE OWNER. AT THE COMPLETION OF THE PROJECT THE CONTRACTOR OR OWNER MUST FILE A NOTICE OF TERMINATION WITH NPDES. IN ACCORDANCE WITH NPDES REGULATIONS, THE COMPLETED SWPPP MUST INCLUDE ALL OF THE SITE EROSION CONTROL DOCUMENTATION, WEEKLY EROSION INSPECTION REPORTS COMPLETED BY THE DESIGNATED SITE PERSONNEL, AND ANY OTHER PERTINENT SITE DOCUMENTATION MUST BE RETAINED FOR A MINIMUM OF 3 YEARS FROM THE DATE OF TERMINATION.
2. 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.
3. INSTALL ALL EROSION AND SEDIMENT CONTROL (ESC) MEASURES AS INDICATED ON DRAWINGS IN CONSULTATION WITH THE CONSERVATION AGENT, AND 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.
4. MAINTAIN A MINIMUM SURPLUS OF 100 FEET OF EROSION CONTROL BARRIER (SILT FENCE, STRAWBALE, &/OR SILT SOCK) ONSITE AT ALL TIMES.
5. PROTECT THE ADJACENT RESOURCE AREA FROM SEDIMENTATION DURING PROJECT CONSTRUCTION UNTIL ACCEPTANCE BY THE OWNER & IN CONFORMANCE WITH THE ORDER OF CONDITIONS.
6. 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.
7. 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.
8. 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.
9. 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.
10. SURROUND THE PERIMETER OF SOIL STOCKPILES WITH SILT SOCK, SILT FENCE, STRAWBALES, OR A COMBINATION OF SILT FENCE WITH STRAWBALE, AS DETERMINED NECESSARY.
11. 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 4:1 WITH EROSION BLANKETS OR APPROVED EQUAL UNTIL THE SITE IS PROPERLY STABILIZED. TEMPORARY SWALES MAY ALSO BE REQUIRED IF DETERMINED NECESSARY IN THE FIELD BY THE ENGINEER.
12. 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 EMPTY AS NEEDED FOR THE DURATION OF THE CONSTRUCTION PERIOD.
13. 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.
14. CONTAIN ALL SEDIMENT ONSITE. SWEEP ALL EXITS FROM THE SITE AS NECESSARY INCLUDING ANY SEDIMENT TRACKING. SWEEP PAVED AREAS AS NEEDED TO REMOVE SEDIMENT AND POTENTIAL POLLUTANTS ACCUMULATED DURING SITE CONSTRUCTION.
15. REMOVE ACCUMULATED SEDIMENT FROM ALL TEMPORARY PRACTICES AND DISPOSE OF IN A PRE-APPROVED LOCATION.
16. INSTALL PERMANENT SILT SOCKS IN ALL CATCH BASINS. ⚠1
17. 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
18. 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.
19. CONTROL DUST BY WATERING OR OTHER APPROVED METHODS AS NECESSARY, OR AS DIRECTED BY THE ENGINEER.
20. 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.

STORMWATER FACILITY OPERATION & MAINTENANCE:

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

1. INSPECT AND RESTORE/CLEAN ALL FACILITIES (INLETS, MANHOLES, INFILTRATION BASINS, STORMWATER MANAGEMENT AREAS AS DESCRIBED BELOW OF SEDIMENT AND DEBRIS PRIOR TO THE OWNER'S ACCEPTANCE.
2. REMOVE AND DISPOSE ALL SEDIMENT AND DEBRIS TO A PRE-APPROVED LOCATION.
3. 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.
4. AT A MINIMUM INSPECT MONTHLY AND AFTER STORM EVENTS GREATER THAN OR EQUAL TO 1" OF RAINFALL AS NECESSARY FOR THE ENTIRE DURATION OF THE CONSTRUCTION PROJECT AND THE FIRST 3 MONTHS AFTER CONSTRUCTION TO ENSURE PROPER STABILIZATION.
5. SPECIFIC MAINTENANCE REQUIRED DURING CONSTRUCTION:
   A. DRAINAGE STRUCTURES (INLETS, MANHOLES, CATCHBASINS): MONITOR AND REGULARLY INSPECT ALL EXISTING AND PROPOSED DRAINAGE STRUCTURES FOR PROPER OPERATION, COLLECTION OF LITTER OR TRASH, AND STRUCTURAL DETERIORATION. CLEAN AND REMOVE SEDIMENT FRO THE STRUCTURES (INCLUDING SUMPS) AS NECESSARY, AND REPAIR WHEN REQUIRED.
   B. SEDIMENT FOREBAY: REGULARLY INSPECT TO ENSURE PROPER FUNCTION. REMOVE SEDIMENT BUILD-UP ON THE FLOOR OF THE FOREBAY AND PROPERLY DISPOSE , AS NECESSARY, TO LIMIT CLOGGING. CLEAN SEDIMENT FOREBAYS PRIOR TO COMPLETION OF CONSTRUCTION.
   C. BIORETENTION SYSTEMS: REGULARLY INSPECT TO ENSURE PROPER FUNCTION. MONITOR AND INSPECT STRUCTURAL COMPONENTS, INCLUDING WEIR WALLS, DRAINAGE INLETS, OUTLET STRUCTURES AND SPILLWAYS, FOR PROPER FUNCTION. CLEAN AND REPAIR ANY CLOGGED STRUCTURES DURING INSPECTIONS. PRIOR TO THE COMPLETION OF CONSTRUCTION, REMOVE AND REPLACE ILL-ESTABLISHED, DEAD OR SEVERELY DISEASED PLANTS, REMOVE SEDIMENT BUILD-UP AS NEEDED, AND REPLACE SOIL WHEN NECESSARY. IF SEDIMENT OR ORGANIC DEBRIS BUILD-UP LIMITS THE INFILTRATION CAPABILITIES, REMOVE THE TOP 6" OR GREATER AND SURFACE ROTO-TILLED TO A DEPTH OF 12".
   D. ROUTINE MAINTENANCE: OTHER ROUTINE MAINTENANCE INCLUDES THE REMOVAL OF TRASH AND LITTER FROM PAVED AND PERIMETER AREAS, AND STREET AND PARKING LOT SWEEPING UPON COMPLETION OF CONSTRUCTION TO AVOID EXCESSIVE ACCUMULATION OF SEDIMENT IN THE DRAINAGE SYSTEM. INSPECT THE PIPES AND STRUCTURES FOR SEDIMENT ACCUMULATION AND PROPER FLOW.

WATER & SEWER INSTALLATION NOTES

1. INSTALL SEWER AND WATER MAINS ACCORDING TO THE FOLLOWING GUIDELINES TO PREVENT FREEZING OF THE MAIN OR SEWER:

UTILITY TYPE	MIN. COVER OVER TOP OF PIPE	MIN. HORIZONTAL DISTANCE TO DRAIN STRUCTURE
SANITARY FORCEMAIN	5'	3'
GRAVITY FORCEMAIN	4'	2'
WATER MAIN	5'	2'

2. INSULATE SANITARY FORCE MAINS, WATER MAINS, HYDRANT PIPING AND DEAD END WATER LINES S WHERE SOIL COVER OR HORIZONTAL SEPARATION TO PRECAST STRUCTURES IS LESS THAN THE DISTANCE SPECIFIED ABOVE AND/OR WHERE SHOWN ON PLANS.
3. INSULATION: 2" THICK POLYURETHANE INSULATION WITH PVC JACKET PLACED AROUND PIPE OR DESIGNER APPROVED EQUAL.
4. WATER AND SEWER SEPARATION IS TYPICALLY 10-FEET MINIMUM HORIZONTAL AND 18-INCHES VERTICAL WITH SEWER MAINS BELOW THE WATER MAINS (SEE DETAIL). IF SITE CONDITIONS REQUIRE LESS, THEN INSTALL UTILITIES AS INDICATED ON DETAILS.

WATER SYSTEM INSTALLATION NOTES:

1. CONSTRUCT THE WATER MAIN AND ITS APPURTENANCE IN ACCORDANCE WITH THE LOCAL WATER DEPARTMENT'S STANDARDS AND SPECIFICATIONS AND PAY FOR ALL ASSOCIATED FEES AS REQUIRED BY THE WATER DEPARTMENT.
2. ALL PROPOSED WATER MAIN 4-INCHES AND GREATER IN DIAMETER ARE DUCTILE IRON CLASS 52. ONLY USE HDPE 3408 OR AS INDICATED ON DRAWINGS OR AS APPROVED BY THE ENGINEER.
3. SUPPLY TWO COPIES OF SWORN CERTIFICATES TO PROVE THAT ALL PIPES AND FITTINGS ARE INSPECTED AND TESTED AS REQUIRED BY THE STANDARD SPECIFICATIONS TO WHICH THE MATERIAL IS MANUFACTURED.
4. GATE VALVES: MUELLER (A 2360 SERIES), CLOW (AWWA STANDARD C509 SERIES), AMERICAN DARLING (RESILIENT WEDGE) OR APPROVED EQUAL.
5. PROVIDE GATE VALVES ON ALL HYDRANT BRANCHES AND WATER MAIN. THE GATE VALVE TO TURN TO THE RIGHT TO OPEN (CLOCKWISE). ALL BOLTS AND NUTS MUST BE RUST PROOF STEEL.
6. CLEAR ALL NEWLY INSTALLED WATER SYSTEM COMPONENTS OF ALL FOREIGN MATERIALS SUCH AS DIRT AND MISCELLANEOUS DEBRIS PRIOR TO SYSTEM TESTING . NO TESTING IS ALLOWED WITHOUT REMOVAL OF ALL FOREIGN MATERIALS.
7. CONTRACTOR IS RESPONSIBLE FOR CONDUCTING A PRESSURE TEST AND DISINFECTION TEST OF ALL WATER MAINS. THE TESTS MUST WITNESSED BY THE APPROVED INSPECTOR OR THE ENGINEER. THE CONTRACTOR MUST PROVIDE A MINIMUM OF 48-HOUR ADVANCE NOTICE TO THE LOCAL WATER DEPARTMENT PRIOR TO THE PRESSURE AND DISINFECTION TESTS. THE CONTRACTOR MUST PROVIDE ALL NECESSARY EQUIPMENT AND CHEMICALS TO PROPERLY CONDUCT THE TESTS.
8. INSTALL AND REMOVE ALL NECESSARY BLOWOFFS REQUIRED FOR THIS PROJECT AT NO EXTRA COST TO THE OWNER.
9. COLLECT ALL BACTERIOLOGICAL SAMPLES AND PAY FOR ALL RELATED LABORATORY FEES.
10. MAINTAIN UP-TO-DATE AS-BUILT DRAWINGS AND NOTES INDICATING THE HORIZONTAL AND VERTICAL LOCATION WITH TWO TIES OF ALL SYSTEM COMPONENTS INSTALLED. AS-BUILT DRAWINGS AND NOTES WILL BE UTILIZED BY THE ENGINEER FOR THE PREPARATION OF RECORD PLANS.

SEWER SYSTEM OPERATION & MAINTENANCE:

1. CLEAN ALL NEWLY INSTALLED FACILITIES, INCLUDING SEWER COLLECTION SYSTEM OF ALL FOREIGN MATERIALS SUCH AS DIRT AND MISCELLANEOUS DEBRIS PRIOR TO SYSTEM TESTING. TESTING MUST BE WITNESSED AND INSPECTED BY THE ENGINEER. NO TESTING IS ALLOWED WITHOUT REMOVAL OF ALL FOREIGN MATERIALS.
2. CONDUCT A LEAKAGE TEST OF ALL SEWER MAINS. TEST MUST BE WITNESSED BY THE ENGINEER. THE CONTRACTOR MUST PROVIDE THE ENGINEER WITH A MINIMUM OF 48-HOURS ADVANCE NOTICE TO THE TIME OF THE PRESSURE TEST.
3. TEST SEWER PIPES FOR LEAKAGE WITH THE FOLLOWING PROCEDURE.
   INTRODUCE LOW PRESSURE AIR INTO THE SEAL LINE (WITH PNEUMATIC PLUGS) UNTIL THE INTERNAL AIR PRESSURE REACHES 4 psi GREATER THAN THE AVERAGE BACK PRESSURE OF ANY GROUNDWATER THAT MAY BE OVER THE PIPE.
   ALLOW AT LEAST 2 MINUTES FOR AIR PRESSURE TO STABILIZE.
   AFTER THE STABILIZATION PERIOD (3.5 psi MINIMUM PRESSURE IN THE PIPE), THE PORTION OF PIPE TESTED IS ACCEPTABLE IF THE TIME REQUIRED IN MINUTES FOR THE PRESSURE TO DECREASE FROM 3.5 TO 3 psi IS NOT LESS THAN 1.90 TIMES THE LENGTH OF PIPE BEING TESTED.
4. VACUUM TEST ALL SEWER MANHOLES. TESTS MUST BE WITNESSED BY THE ENGINEER UNLESS THE SEASONAL GROUNDWATER LEVEL IS MORE THAN 10 FEET FROM THE BOTTOM OF THE MANHOLE.
5. MANDREL TEST ALL SEWER MAINS AFTER 30 DAYS. TESTS MUST BE WITNESSED BY A TOWN REPRESENTATIVE OR THE ENGINEER.

LEGEND:

GENERAL	SYMBOLS
BUILDING	BENCHMARK
CENTERLINE	CB BOUNDARY
CONTOUR - MINOR (44)	CONTROL POINT
CONTOUR - MAJOR (50)	SPOT GRADE (EL:95.00)
CURB	SEWER MANHOLE
CURB CUT	DRAIN MANHOLE
EDGE OF PAVEMENT	CATCHBASIN
FENCE - CHAIN LINK	INLET PROTECTION
FENCE - WIRE	WV WATER VALVE
LIMIT OF WORK	SV SEWER VALVE
PATHWAY	CS CURB STOP
SIDEWALK	CO CLEAN OUT
STORMWATER AREA	PIPE STUB
TREE LINE	THRUST BLOCK
WALL - RETAINING	UTILITY BOX
WALL - STONE	HYDRANT
CONCRETE	LIGHT POST
CROSSWALK/PAVEMENT STRIPING	TP TEST PIT
PROPERTY INFORMATION	WF WETLAND FLAG
ABUTTING LOT	ROCK
EASEMENT LINE	SIGN
PROPERTY, LOT, OR ROW	HANDICAP SYMBOL
UTILITIES	TRAFFIC DIRECTION
DRAIN PIPE	
SANITARY SEWER (S)	
UNDERGROUND ELEC. (UGE)	
WATER LINE (W)	
EROSION & SEDIMENT CONTROL	
SILT FENCE (SF)	
SILT SOCK (SS)	
ENVIRONMENTAL	
WETLAND BOUNDARY	
WETLAND 50 BUFFER	
WETLAND 100 BUFFER	

PERMITTING SET ONLY
NOT FOR CONSTRUCTION

Revisions

Rev.	Date	By	Appr.	Description
1	9/10/21	EWH	BRK	PEER REVIEW COMMENTS
2				
3				
4				
5				
6				
7				

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Date: SEPTEMBER 2021 | Designed By: EWH | Drawn By: EWH | Checked By: BRK

Plan Set: CAPE VIEW WAY PERMITTING PLANS BOURNE, MASSACHUSETTS

Plan Title: CONSTRUCTION NOTES

Prepared For:
PRESERVATION OF AFFORDABLE HOUSING
2 OLIVER STREET, SUITE 500
BOSTON, MA 02109
Phone: (617) 261-9898
Fax: ----

Survey Provided By:
Horsley Witten Group, Inc.
90 Route 6A
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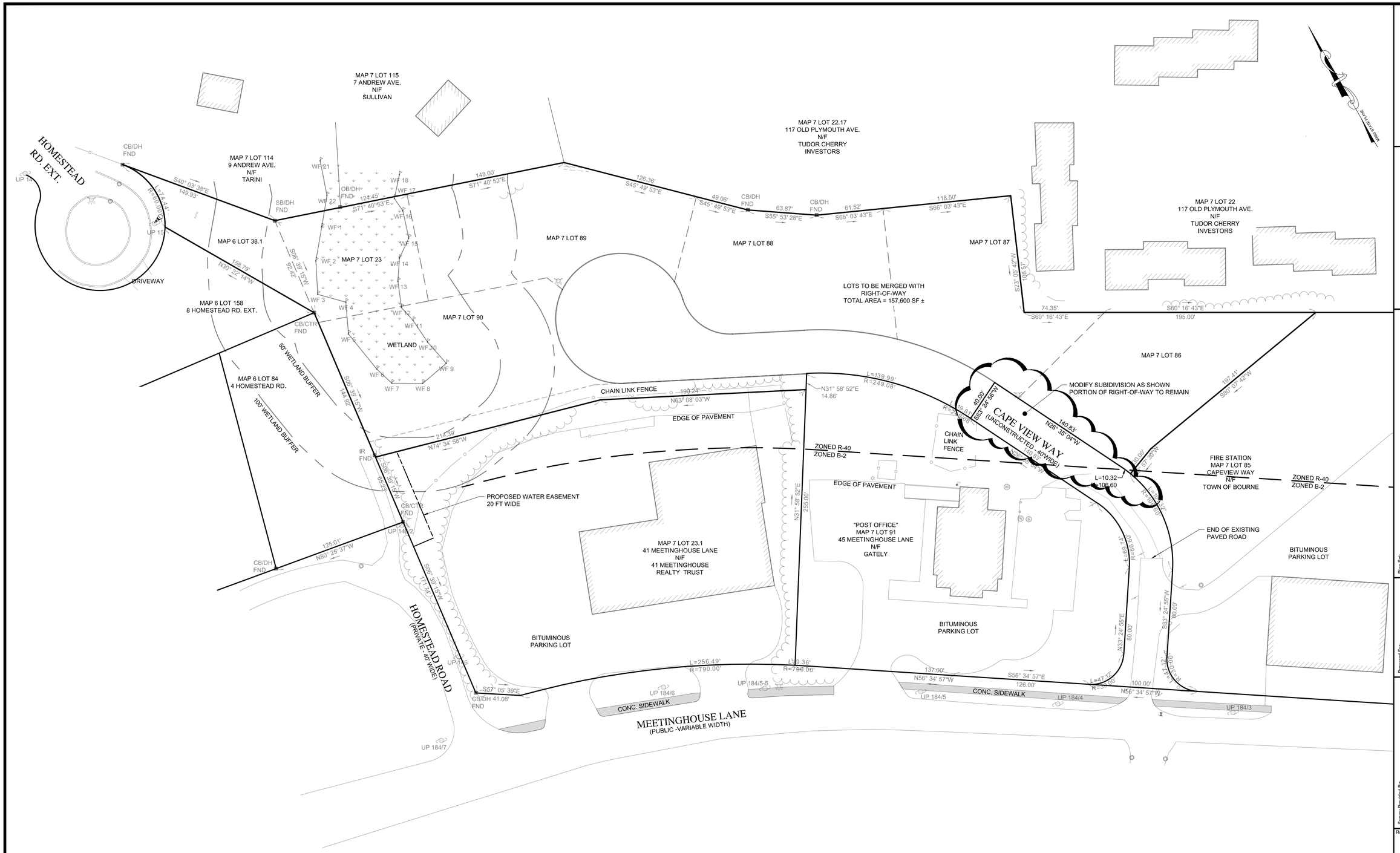
Phone: (508) 833-6600
Fax: (508) 833-3150
Dated: JUNE 2019

Registration:
COMMONWEALTH OF MASSACHUSETTS
RICHARD A. CLAYTOR
CIVIL
NO. 45116
REGISTERED PROFESSIONAL ENGINEER
9-13-2021

Project Number: 19038 | Sheet: 2 of 23

Sheet Number: C - 2

last modified: 09/13/21 printed: 09/13/21 by bk K:\Projects\2019\19038 Cape View Way\Drawings\19038 DE.dwg



PERMITTING SET ONLY
NOT FOR CONSTRUCTION

GRAPHIC SCALE

40 0 20 40 80 160

(in feet)
1 INCH = 40 FEET

Revisions

Rev.	Date	By	Appr.	Description
1	9/10/21	EWH	BRK	SUBDIVISION RIGHT OF WAY

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Date: DECEMBER 2020 | Designed By: | Drawn By: EWH | Checked By: DM

Plan Set:

CAPE VIEW WAY
BOURNE, MASSACHUSETTS

Plan Title:

PROPOSED SUBDIVISION PLAN

Prepared For:
PRESERVATION OF AFFORDABLE HOUSING
2 OLIVER STREET, SUITE 500
BOSTON, MA 02109
Phone: (617) 261-9898
Fax: ----

Survey Provided By:
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Dated: JUNE 2019

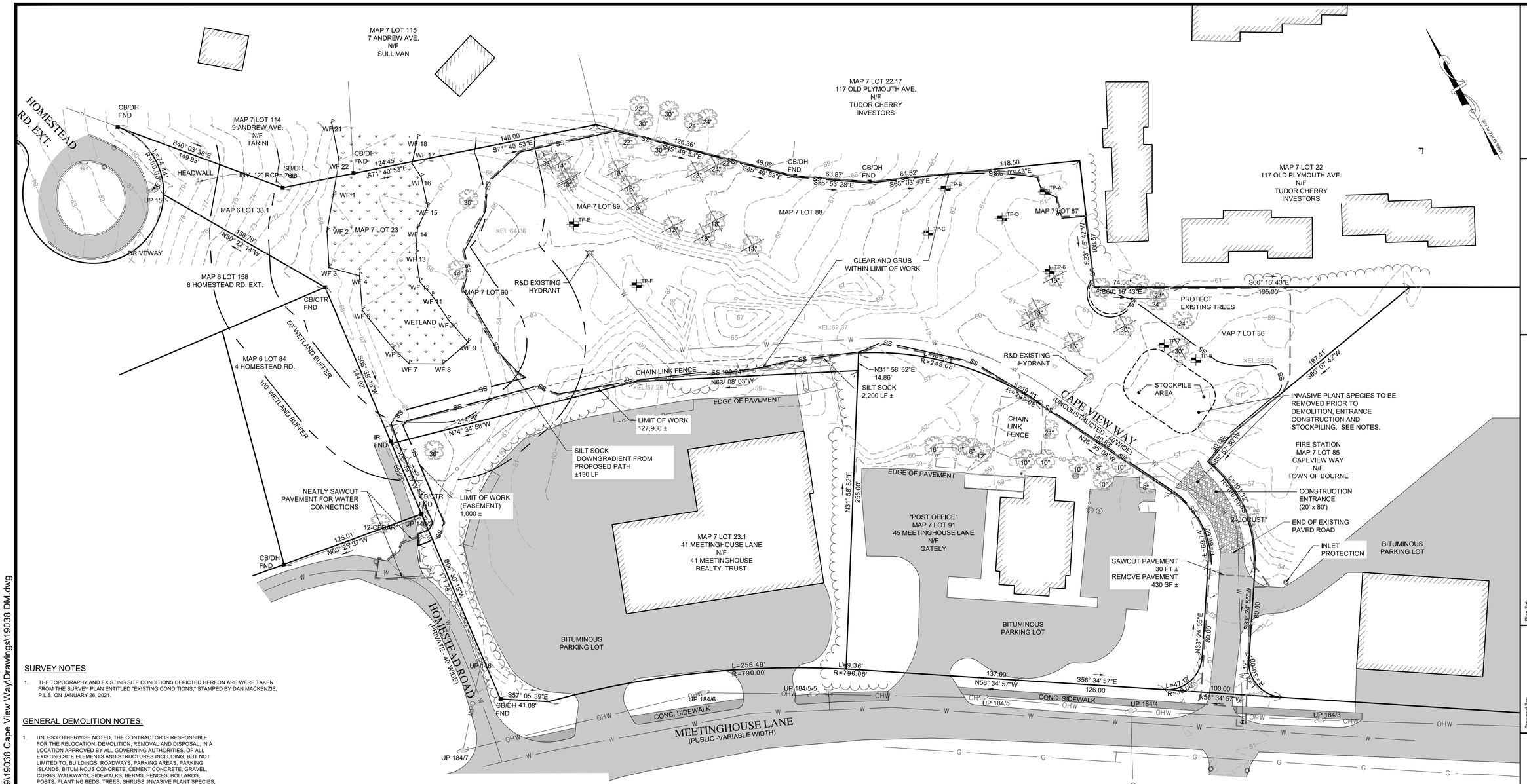
Registration:

COMMONWEALTH OF MASSACHUSETTS
RICHARD A. CLAYTOR
CIVIL
NO. 45116
REGISTERED PROFESSIONAL ENGINEER

9-13-2021

Project Number:	Sheet :
19038	3 of 23

Sheet Number:
C - 3



SURVEY NOTES

1. THE TOPOGRAPHY AND EXISTING SITE CONDITIONS DEPICTED HEREON ARE WERE TAKEN FROM THE SURVEY PLAN ENTITLED "EXISTING CONDITIONS," STAMPED BY DAN MACKENZIE, P.L.S. ON JANUARY 26, 2021.

GENERAL DEMOLITION NOTES:

1. 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, INVASIVE PLANT SPECIES, 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.
2. REMOVE ALL DEBRIS FROM THE SITE AND DISPOSE OF THE DEBRIS IN A PROPER AND LEGAL MANNER.
3. OBTAIN ALL PERMITS REQUIRED FOR DEMOLITION AND DISPOSAL.
4. 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.
5. REFER TO MECHANICAL AND UTILITY PLANS AND SPECIFICATIONS FOR ALL WORK WHICH REQUIRES UTILITIES TO BE REMOVED, RELOCATE OR ABANDONED AND LEFT IN PLACE.
6. 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.
7. MAINTAIN CONTINUOUS ACCESS AND OPERATION FOR SURROUNDING FACILITIES, AS DEEMED BY THE OWNER, AT ALL TIMES DURING DEMOLITION OF THE EXISTING FACILITIES.
8. PRIOR TO DEMOLITION OCCURRING, ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED.
9. WASH ALL TOOLS, BUCKETS, WHEELS AND MACHINERY THAT COME INTO CONTACT WITH INVASIVE PLANT SPECIES AND THE SOIL THEY ARE GROWING IN. ALL WASHING SHALL OCCUR IN A LOCATION THAT DOES NOT DISCHARGE TOWARD THE PROJECT OR RESOURCE AREA. SEE SPECIFICATIONS FOR INVASIVE SPECIES MANAGEMENT AND PROPER DISPOSAL.

SOIL TEST PIT DATA

PERFORMED BY: M. LEHMAN
HORSLEY WITTEN GROUP, INC
DATE: OCTOBER 24, 2019

TP–E

0"	A 10 YR 3/2 VERY FINE SANDY LOAM	66.2
4"	Bw 10 YR 5/2 VERY FINE SANDY LOAM	65.9
14"	C1 10 YR 5/2 VERY FINE LOAMY SAND	65.0
66"	C2 GLEY 1 2.5/N & GLEY 5/10Y SILT LOAM	60.7
116"	C3 10 YR 6/3 VERY FINE SANDY LOAM	56.5
122"	C4 10 YR 7/3 FINE SAND	56.0
168"		52.2

REDOX OBSERVED AT 66"
SEEPAGE AT 116"
NO REDOX OBSERVED
BELOW RESTRICTIVE LAYER

SOIL TEST PIT DATA

PERFORMED BY: M. LEHMAN
HORSLEY WITTEN GROUP, INC
DATE: OCTOBER 24, 2019

TP–F

0"	A 10 YR 3/2 FINE LOAMY SAND	63.8
6"	Bw 10 YR 5/2 FINE LOAMY SAND	63.5
18"	C1 10 YR 5/2 FINE LOAMY SAND	62.3
60"	C2 GLEY 1 2.5/N & GLEY 5/10Y SILT LOAM	58.8
78"	C3 10 YR 6/3 MEDIUM SAND	57.3
126"		53.3

NO GROUNDWATER OBSERVED
REDOX OBSERVED AT 48"
NO REDOX OBSERVED BELOW
RESTRICTIVE LAYER

SOIL TEST PIT DATA

PERFORMED BY: M. LEHMAN
HORSLEY WITTEN GROUP, INC
DATE: OCTOBER 24, 2019

TP–C

0"	A 10 YR 4/2 SANDY LOAM	62.9
5"	Bw 10 YR 5/8 SANDY LOAM	62.5
45"	C1 10 YR 6/4 MEDIUM SAND	59.2
68"	C2 10 YR 6/4 GRAVELLY FINE SAND	57.2
80"	C3 10 YR 6/4 FINE SAND	56.2
120"		52.9

NO GROUNDWATER
OR REDOXIMORPHIC
FEATURES OBSERVED

SOIL TEST PIT DATA

PERFORMED BY: M. LEHMAN
HORSLEY WITTEN GROUP, INC
DATE: OCTOBER 24, 2019

TP–B

0"	A 10 YR 4/2 SANDY LOAM	63.1
6"	Bw 10 YR 5/8 SANDY LOAM	62.6
36"	C1 10 YR 6/4 MEDIUM SAND	60.1
66"	C2 10 YR 6/4 GRAVELLY FINE SAND	57.6
84"	C3 10 YR 6/4 FINE SAND	56.1
120"		53.1

NO GROUNDWATER
OR REDOXIMORPHIC
FEATURES OBSERVED

SOIL TEST PIT DATA

PERFORMED BY: M. LEHMAN
HORSLEY WITTEN GROUP, INC
DATE: OCTOBER 24, 2019

TP–D

0"	A 10 YR 4/2 SANDY LOAM	61.0
8"	Bw 10 YR 5/8 SANDY LOAM	60.3
40"	C1 10 YR 6/4 MEDIUM SAND	57.7
62"	C2 10 YR 6/4 GRAVELLY FINE SAND	55.8
74"	C3 10 YR 6/4 FINE SAND	54.8
120"		51.0

NO GROUNDWATER
OR REDOXIMORPHIC
FEATURES OBSERVED

SOIL TEST PIT DATA

PERFORMED BY: M. LEHMAN
HORSLEY WITTEN GROUP, INC
DATE: OCTOBER 24, 2019

TP–A

0"	A 10 YR 4/2 SANDY LOAM	60.8
10"	Bw 10 YR 4/6 SANDY LOAM	60.0
38"	C1 10 YR 6/3 FINE SAND	57.6
50"	C2 10 YR 6/3 GRAVELLY FINE SAND	56.6
68"	C3 10 YR 6/3 FINE SAND	55.1
120"		50.8

NO GROUNDWATER
OR REDOXIMORPHIC
FEATURES OBSERVED

SOIL TEST PIT DATA

PERFORMED BY: M. LEHMAN
HORSLEY WITTEN GROUP, INC
DATE: OCTOBER 24, 2019

TP–6

0"	A 10 YR 4/2 FINE SANDY LOAM	61.4
12"	Bw 10 YR 4/6 SANDY LOAM	60.4
36"	C1 10 YR 6/3 GRAVELLY FINE SAND	58.4
48"	C2 10 YR 6/3 MEDIUM SAND	57.4
120"		51.4

NO GROUNDWATER
OR REDOXIMORPHIC
FEATURES OBSERVED

SOIL TEST PIT DATA

PERFORMED BY: M. LEHMAN
HORSLEY WITTEN GROUP, INC
DATE: OCTOBER 23, 2019

TP–7

0"	HTM 10 YR 3/4 FINE SANDY LOAM	59.6
22"	Ab 10 YR 4/6 FINE SANDY LOAM	57.8
24"	Bw 10 YR 6/6 FINE SANDY LOAM	57.6
32"	C1 10 YR 6/3 GRAVELLLY FINE SAND	56.9
38"	C2 10 YR 6/3 MEDIUM SAND	56.4
60"		54.6

NO GROUNDWATER
OR REDOXIMORPHIC
FEATURES OBSERVED

SOIL TEST PIT DATA

PERFORMED BY: M. LEHMAN
HORSLEY WITTEN GROUP, INC
DATE: OCTOBER 23, 2019

TP–8

0"	A 10 YR 3/4 FINE SANDY LOAM	58.7
6"	B 10 YR 4/6 FINE SANDY LOAM	58.2
21"	C1 10 YR 6/6 GRAVELLY FINE SAND	57.0
45"	C2 10 YR 6/3 MEDIUM SAND	55.0
84"		51.7

NO GROUNDWATER
OR REDOXIMORPHIC
FEATURES OBSERVED

PERMITTING SET ONLY
NOT FOR CONSTRUCTION

GRAPHIC SCALE

40 0 20 40 80 160

(in feet)
1 INCH = 40 FEET

Revisions

Rev.	Date	By	Appr.	Description

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Checked By: BRK
Drawn By: EYH
Designed By: EYH
Date: SEPTEMBER 2021

Plan Set:

Plan Title: SITE PREP AND DEMO PLAN

CAPE VIEW WAY
PERMITTING PLANS
BOURNE, MASSACHUSETTS

Prepared For:
PRESERVATION OF AFFORDABLE HOUSING
2 OLIVER STREET, SUITE 500
BOSTON, MA 02109
Phone: (617) 261-9898
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Survey Provided By:
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Fax: (508) 833-3150
Dated: JUNE 2019

Registration:

COMMONWEALTH OF MASSACHUSETTS
RICHARD A. CLAYTOR
CIVIL
NO. 45116
REGISTERED PROFESSIONAL ENGINEER

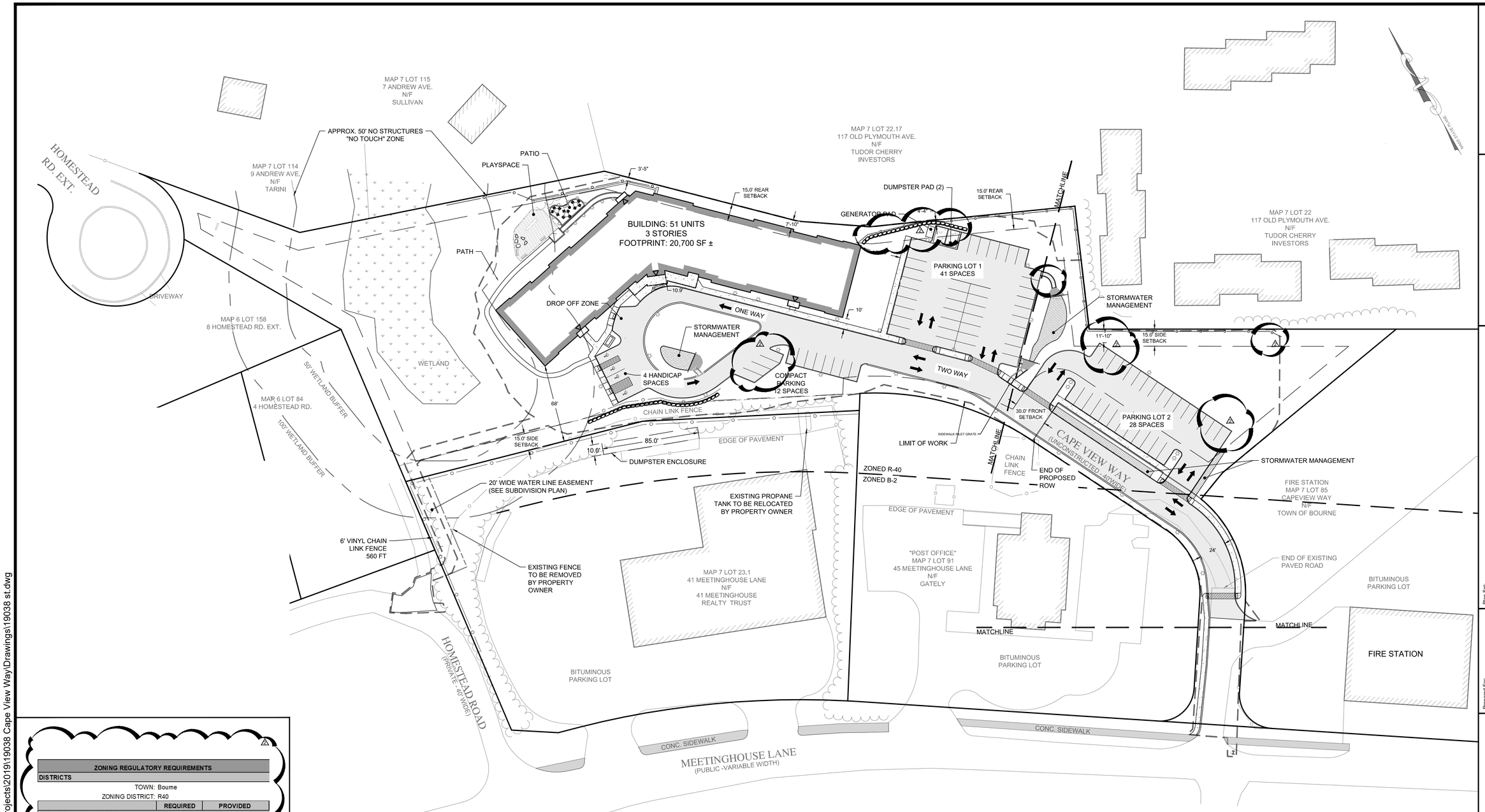
9-13-2021

Project Number: 19038

Sheet : 4 of 23

Sheet Number: C - 4

last modified: 09/13/21 printed: 09/13/21 by bk K:\Projects\2019\19038 Cape View Way\Drawings\19038 DM.dwg



ZONING REGULATORY REQUIREMENTS		
DISTRICTS		
TOWN: Boume		
ZONING DISTRICT: R40		
	REQUIRED	**PROVIDED**
LOT SIZE AND COVERAGE		
MINIMUM LOT SIZE (sf):	40,000	157,598
% BUILDING COVERAGE		13%
MAXIMUM % LOT COVERAGE:	20%	39%
MINIMUM % USEABLE OPEN SPACE	20%	61%
DIMENSIONAL		
MINIMUM LOT FRONTAGE (feet):	125	191
FRONT YARD SETBACK (feet):	30	30
REAR YARD SETBACK (feet):	15	7.8
SIDE YARD SETBACK (feet):	15	>15
BUILDING HEIGHT (feet):	35	38.75
PARKING		
PARKING SPACES:	2 spaces per dwelling	
TOTAL PARKING SPACES (ON-SITE)	102	85
TOTAL PARKING SPACES (OFF-SITE)		
TOTAL PARKING SPACES:	102	85
HANDICAP SPACE:	4	4
MINIMUM PARKING DIMENSIONS	15'-6"x8'-8"	15'-6"x8'-8" (reg) 15'-6"x8'-0" (compact)

PERMITTING SET ONLY
NOT FOR CONSTRUCTION

GRAPHIC SCALE
40 0 20 40 80 160
(in feet)
1 INCH = 40 FEET

Revisions

Rev.	Date	By	Appr.	Description
1	5/10/21	EWH	BRK	ADDITION OF DROP OFF ZONE
2	9/10/21	EWH	BRK	PEER REVIEW COMMENTS
3				
4				
5				
6				

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Checked By: BRK
Drawn By: EWH
Designed By: EWH
Date: SEPTEMBER 2021

Plan Set:

CAPE VIEW WAY
PERMITTING PLANS
BOURNE, MASSACHUSETTS

Plan Title:

OVERALL SITE PLAN

Prepared For:
PRESERVATION OF AFFORDABLE HOUSING
2 OLIVER STREET, SUITE 500
BOSTON, MA 02109
Phone: (617) 261-9898
Fax: ----

Survey Provided By:
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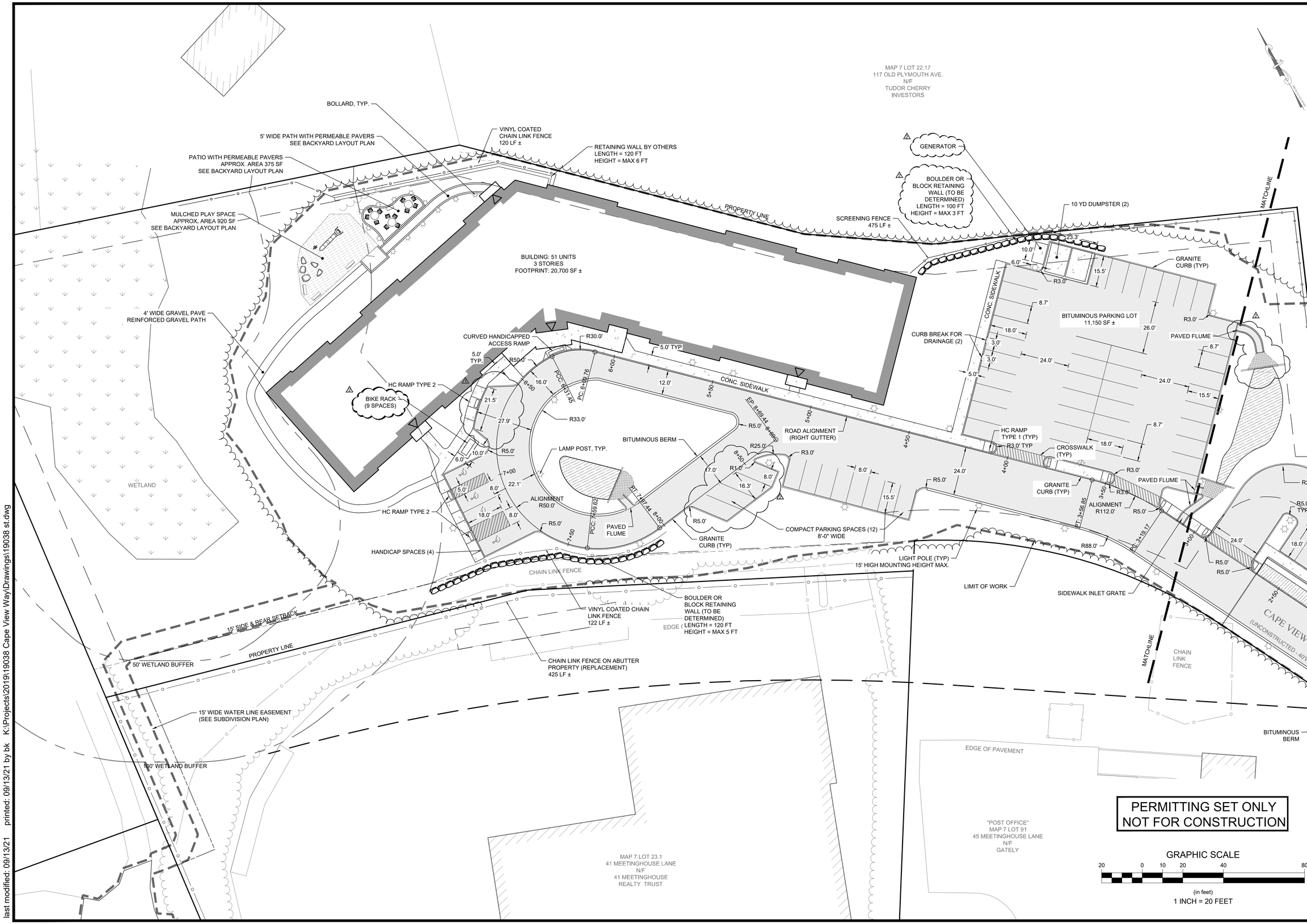
Fax: (508) 833-3150
Dated: JUNE 2019

Registration:
COMMONWEALTH OF MASSACHUSETTS
RICHARD A. CLAYTOR
CIVIL
NO. 45116
REGISTERED PROFESSIONAL ENGINEER
9-13-2021

Project Number: 19038
Sheet : 5 of 23
Sheet Number: C - 5

last modified: 09/13/21 printed: 09/13/21 by bk K:\Projects\2019\19038 Cape View Way\Drawings\19038 st.dwg



Revisions

Rev.	Date	By	Appr.	Description
1	5/10/21	EWH	BRK	ADDITION OF DROP OFF ZONE
2	9/10/21	EWH	BRK	PEER REVIEW COMMENTS

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Drawn By: EWH | Checked By: BRK | Designed By: EWH | Date: SEPTEMBER 2021

Plan Set: CAPE VIEW WAY
PERMITTING PLANS
BOURNE, MASSACHUSETTS

Plan Title: SITE LAYOUT PLAN (1)

Prepared For:
PRESERVATION OF
AFFORDABLE HOUSING
2 OLIVER STREET, SUITE 500
BOSTON, MA 02109
Phone: (617) 261-9898
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Survey Provided By:
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Dated: JUNE 2019

Registration:
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RICHARD A. CLAYTOR
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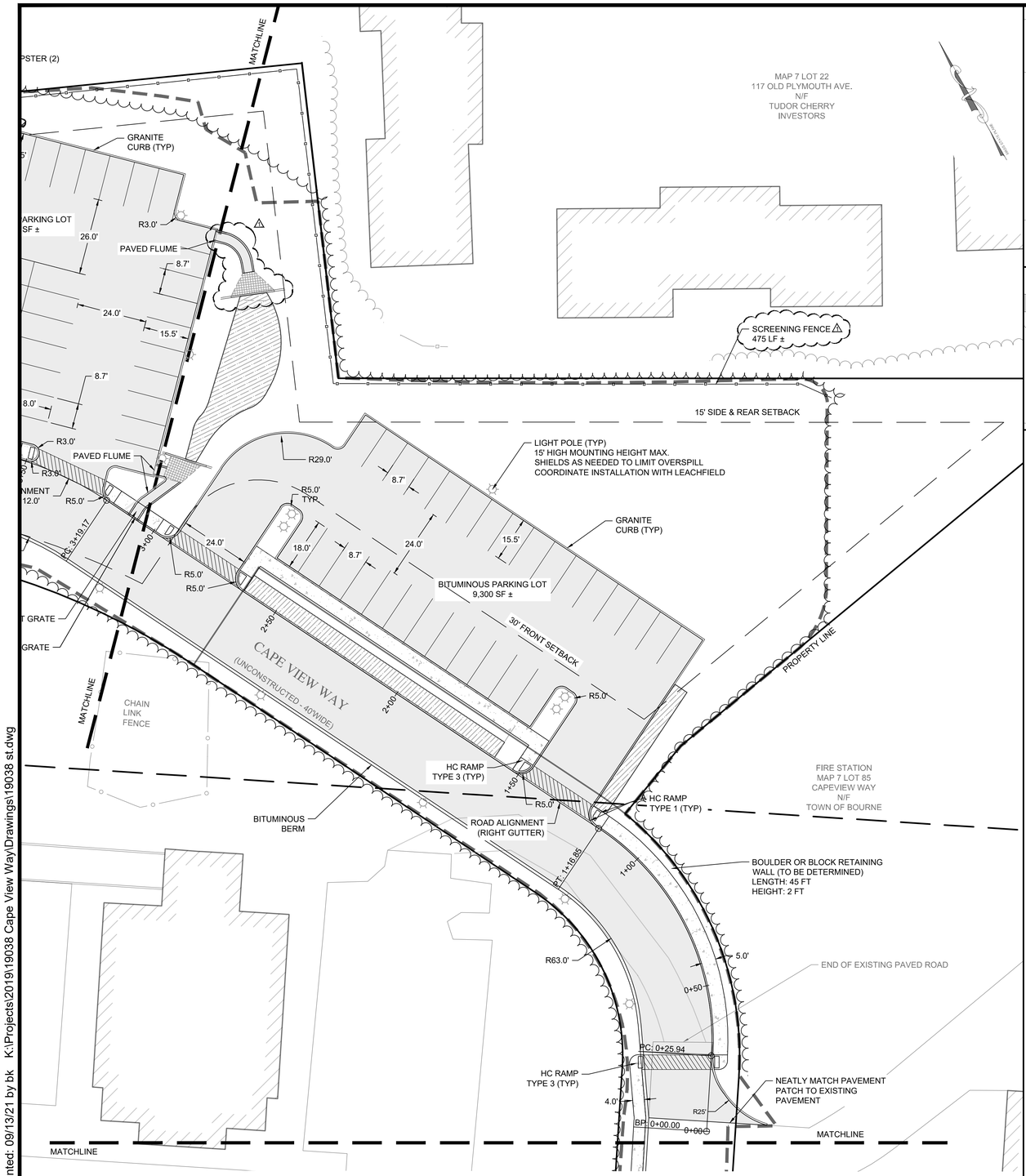
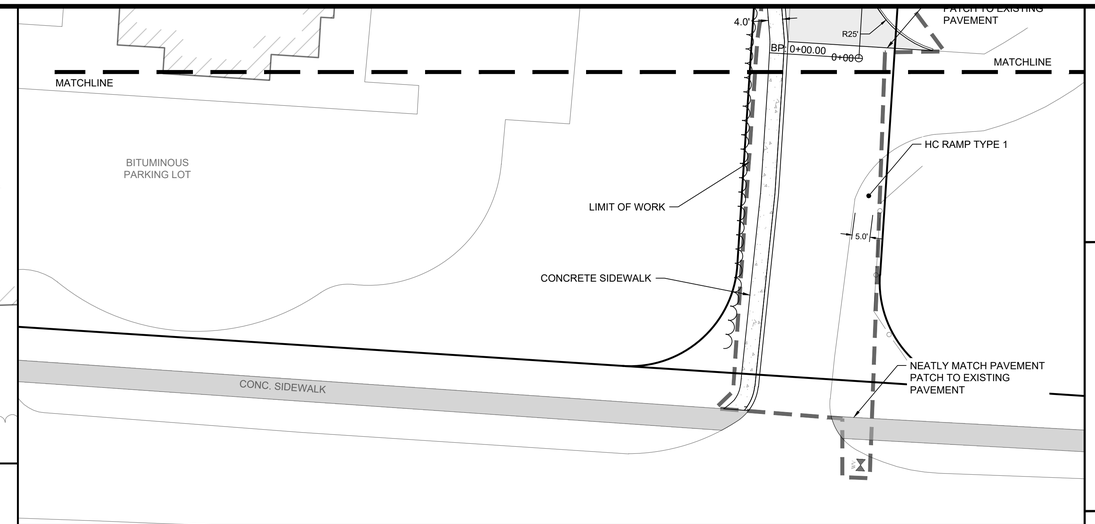
NO. 45116
REGISTERED PROFESSIONAL ENGINEER
9-13-2021

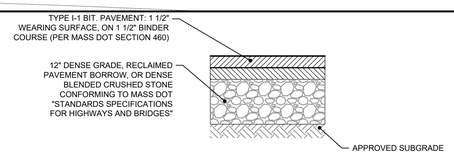
Project Number: 19038
Sheet: 6 of 23
Sheet Number: C - 6

last modified: 09/13/21 printed: 09/13/21 by bk K:\Projects\2019\19038 Cape View Way\Drawings\19038 st.dwg



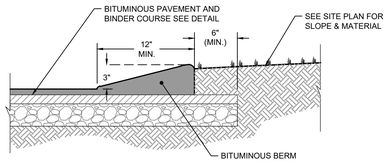
NOTE: ROAD ALIGNMENT IS PROVIDED ALONG NORTHEAST GUTTERLINE.





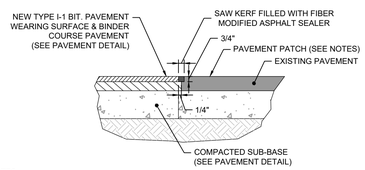
GENERAL NOTES:
1. SUB-GRADE (EXISTING MATERIAL) SHALL CONSIST OF INERT MATERIAL THAT IS HARD, DURABLE STONE AND/OR COARSE SAND, FREE FROM LOAM AND CLAY TO A DEPTH NOT LESS THAN 4-FT BELOW THE FINISH PAVEMENT SURFACE. EXCAVATE SANDY-LOAM AND/OR LOAMY-SAND TOPSOIL MATERIAL FROM ALL PAVED AREAS PRIOR TO SUB-BASE INSTALLATION.
2. PLACE SUB-BASE IN MAXIMUM 8" LIFTS (COMPACTED TO 95%).
3. COMPACT SUB-GRADE FILL TO 95% COMPACTION.
4. SEE SITE LAYOUT PLAN FOR PAVEMENT WIDTH AND LOCATION.
5. SEE GRADING PLANS FOR PAVEMENT SLOPE AND CROSS SLOPE.
6. 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



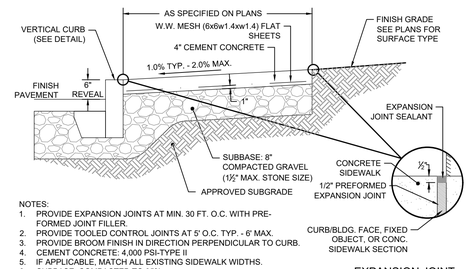
NOTES:
1. BERM TO BE CONSTRUCTED OF BITUMINOUS WEARING SURFACE COURSE AS SHOWN.
2. BERM TO BE CONSTRUCTED INTEGRAL WITH BITUMINOUS WEARING SURFACE.
3. WHEN BERM IS TO BE CONSTRUCTED ON A FRESH LAID BITUMINOUS SURFACE, THAT SURFACE MUST FIRST BE CLEANED.
4. BERM TO BE FOUNDED ENTIRELY ON THE BASE COURSE.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

BITUMINOUS BERM
NOT TO SCALE



NOTES:
1. 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.
2. PRIOR TO INSTALLING THE WEARING COURSE THE EXISTING VERTICAL PAVEMENT SURFACE SHALL BE SWEPT COMPLETELY CLEAN.
3. AFTER PROPER COMPACTION (SEE PAVEMENT DETAIL) SAW CUT NEW PAVEMENT ABUTMENT 3/4" DEEP AND FILL WITH FIBER MODIFIED ASPHALT SEALER AS SHOWN.

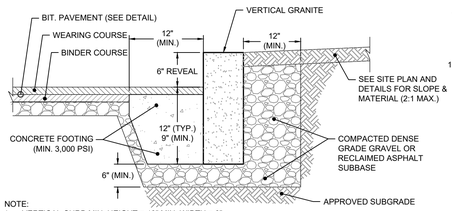
PAVEMENT PATCH
NOT TO SCALE



NOTES:
1. PROVIDE EXPANSION JOINTS AT MIN. 30 FT. O.C. WITH PRE-FORMED JOINT FILLER.
2. PROVIDE TOOLED CONTROL JOINTS AT 5' O.C. TYP. - 6' MAX.
3. PROVIDE BROOM FINISH IN DIRECTION PERPENDICULAR TO CURB.
4. CEMENT CONCRETE: 4,000 PSI-TYPE II
5. IF APPLICABLE, MATCH ALL EXISTING SIDEWALK WIDTHS.
6. SUBBASE: COMPACTED TO 95%.

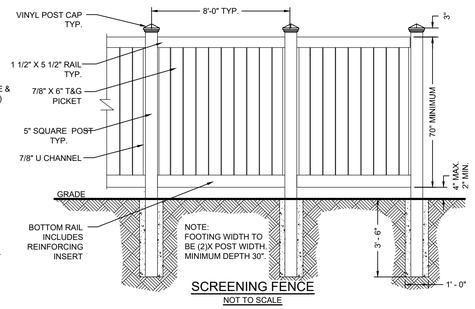
CONCRETE SIDEWALK
NOT TO SCALE

EXPANSION JOINT DETAIL



NOTE:
1. VERTICAL CURB MIN. HEIGHT = 18" MIN. WIDTH = 6"
2. VERTICAL CURBING TO BE INSTALLED AS SHOWN ON THE SITE PLAN.
3. PROVIDE CURB EXPANSION JOINTS AT 5'-0" TO 6'-0" O.C.
4. CURB REPLACEMENT IN EXISTING PAVEMENT - SAWCUT EDGE MIN. 12" FROM CURB.
5. CONCRETE CURB - PROVIDE 1" CHAMFER OF EDGE ALONG PAVEMENT SIDE FACE FOR CONCRETE CURB.
6. CONCRETE CURB - TO HAVE A MINIMUM CONCRETE STRENGTH OF 4,000 PSI
7. CEMENT MORTAR JOINTS & INSTALL PREFORMED (1/2") EXPANSION JOINT WHERE REQUIRED.

VERTICAL GRANITE CURB
NOT TO SCALE



SCREENING FENCE
NOT TO SCALE

GRAPHIC SCALE
20 0 10 20 40 80
(in feet)
1 INCH = 20 FEET

PERMITTING SET ONLY
NOT FOR CONSTRUCTION

Revisions

Rev.	Date	By	Appr.	Description
1	9/10/21	EWH	BRK	PEER REVIEW COMMENTS

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

Date: SEPTEMBER 2021 | Designed By: EWH | Drawn By: EWH | Checked By: BRK

Plan Set: CAPE VIEW WAY PERMITTING PLANS BOURNE, MASSACHUSETTS

Plan Title: SITE LAYOUT PLAN (2)

Prepared For:
PRESERVATION OF AFFORDABLE HOUSING
2 OLIVER STREET, SUITE 500
BOSTON, MA 02109
Phone: (617) 261-9898
Fax: ----

Survey Provided By:
Horsley Witten Group, Inc.
90 Route 6A
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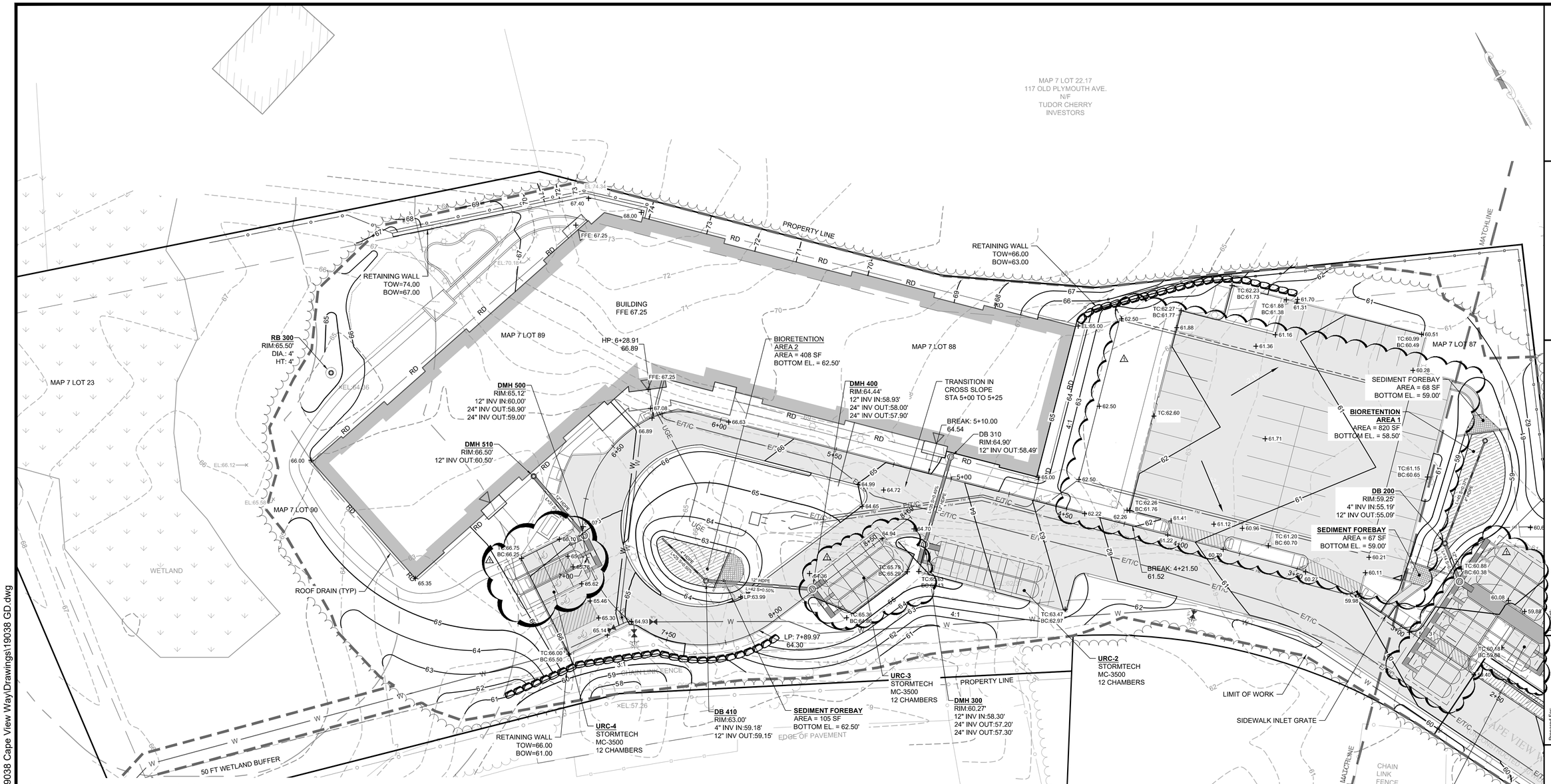
Phone: (508) 833-6600
Fax: (508) 833-3150
Dated: JUNE 2019

Registration:
COMMONWEALTH OF MASSACHUSETTS
RICHARD A. CLAYTOR
CIVIL
NO. 45116
REGISTERED PROFESSIONAL ENGINEER
9-13-2021

Project Number: 19038
Sheet : 7 of 23
Sheet Number: C - 7

last modified: 09/13/21 printed: 09/13/21 by bk K:\Projects\2019\19038 Cape View Way\Drawings\19038 st.dwg



PERMITTING SET ONLY
NOT FOR CONSTRUCTION

GRAPHIC SCALE

20 0 10 20 40 80

(in feet)
1 INCH = 20 FEET

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. UNLESS INDICATED OTHERWISE ON THE DRAWINGS OR DETAIL, A MINIMUM CONCRETE FOUNDATION REVEAL OF 8" TO BE PROVIDED AT ALL BUILDING CORNERS. NOTIFY THE ENGINEER AND ARCHITECT IF ANY DEVIATION OR ALTERATION OF FOUNDATION REVEAL IS REQUIRED.
7. REFER TO ARCHITECTURAL PLAN AND SPECIFICATIONS FOR EARTHWORK AND COMPACTION REQUIREMENTS FOR ALL SLABS AND BUILDING FOUNDATIONS.
8. PROPOSED ELEVATIONS ARE SHOWN TO FINISH PAVEMENT OR GRADE UNLESS NOTED OTHERWISE.
9. 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.
10. 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.
11. ALL CATCH BASINS TO BE FITTED WITH INLET PROTECTION THROUGHOUT THE REMAINDER OF CONSTRUCTION.
12. ON SITE SOIL TEXTURE CLASSIFICATION BY A MASSACHUSETTS SOIL EVALUATOR AT EACH OF THE 6 SUBSURFACE STRUCTURES WILL BE CONDUCTED DURING CONSTRUCTION AND TO REQUIRE DESIGN REVISIONS IF LOCATION SPECIFIC SOIL DATA IS NOT CONSISTENT WITH THE SUBMITTED DESIGN.

DEWATERING:

1. A HIGH WATER TABLE IS NOT ANTICIPATED. HOWEVER, IF DEWATERING IS REQUIRED DURING EXCAVATION, TEMPORARILY LOWER THE WATER TABLE PER SPECIFICATIONS. INSTALL A DEWATERING BASIN AS INDICATED IN THE DEWATERING BASIN DETAIL AND PROVIDE A DEWATERING PLAN DEPICTING PROPOSED DEWATERING LOCATION FOR REVIEW AND APPROVAL. DIRECT THE PUMP DISCHARGE TO BASIN TO PREVENT SEDIMENTS FROM LEAVING THE CONSTRUCTION AREA. INSTALL ADDITIONAL BASINS IF REQUIRED. INSTALL THE BASIN AS INDICATED ON DRAWINGS IF SO NOTED, OTHERWISE INSTALL THE BASIN(S) WITHIN THE LIMIT OF DISTURBANCE INDICATED BY THE SILT FENCE OR STRAWBALES.
2. PRIOR TO ANY DEWATERING, THE DEWATERING PLAN MUST BE APPROVED BY THE ENGINEER.
3. IF DEWATERING IS NECESSARY DURING CONSTRUCTION, IMPLEMENT THE PROPER ESC MEASURES ON SITE TO PREVENT EROSION OR SEDIMENT RUNOFF. THESE MEASURES CAN INCLUDE DEWATERING BAGS, TEMPORARY STRAWBALES, SILT FENCES, SILT SOCKS AND/OR OTHER APPROVED DEVICES AS INDICATED IN THE DETAILS.

Revisions

Rev.	Date	By	Appr.	Description
1	9/10/21	EWH	BRK	PEER REVIEW COMMENTS

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

Date: SEPTEMBER 2021 | Designed By: EWH | Drawn By: EWH | Checked By: BRK

Plan Title: GRADING & DRAINAGE PLAN (1)

Project: CAPE VIEW WAY
PERMITTING PLANS
BOURNE, MASSACHUSETTS

Prepared For:
PRESERVATION OF AFFORDABLE HOUSING
2 OLIVER STREET, SUITE 500
BOSTON, MA 02109
Phone: (617) 261-9898
Fax: ----

Survey Provided By:
Horsley Witten Group, Inc.
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Fax: (508) 833-3150
Dated: JUNE 2019

Registration:
COMMONWEALTH OF MASSACHUSETTS
RICHARD A. CLAYTOR
CIVIL
NO. 45116
REGISTERED PROFESSIONAL ENGINEER
9-13-2021

Project Number: 19038
Sheet: 8 of 23
Sheet Number: C - 8

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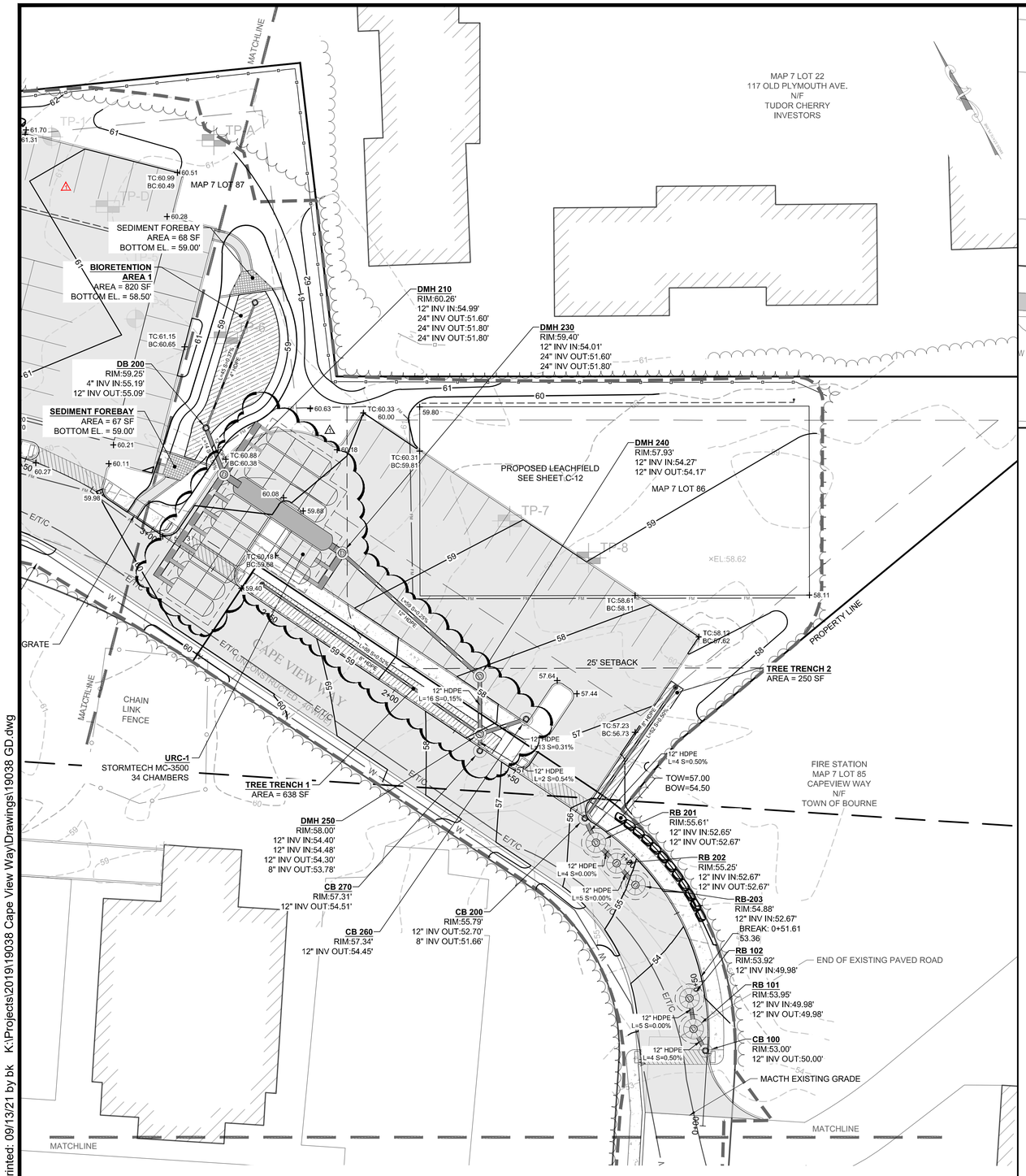

PERMITTING SET ONLY
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GRAPHIC SCALE

20 0 10 20 40 80

(in feet)
1 INCH = 20 FEET

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Checked By: BRK
Drawn By: EWH
Designed By: EWH
Date: SEPTEMBER 2021

Plan Set:

CAPE VIEW WAY
PERMITTING PLANS
BOURNE, MASSACHUSETTS

Plan Title:

GRADING & DRAINAGE PLAN (2)

Prepared For:
PRESERVATION OF
AFFORDABLE HOUSING
2 OLIVER STREET, SUITE 500
BOSTON, MA 02109
Phone: (617) 261-9898
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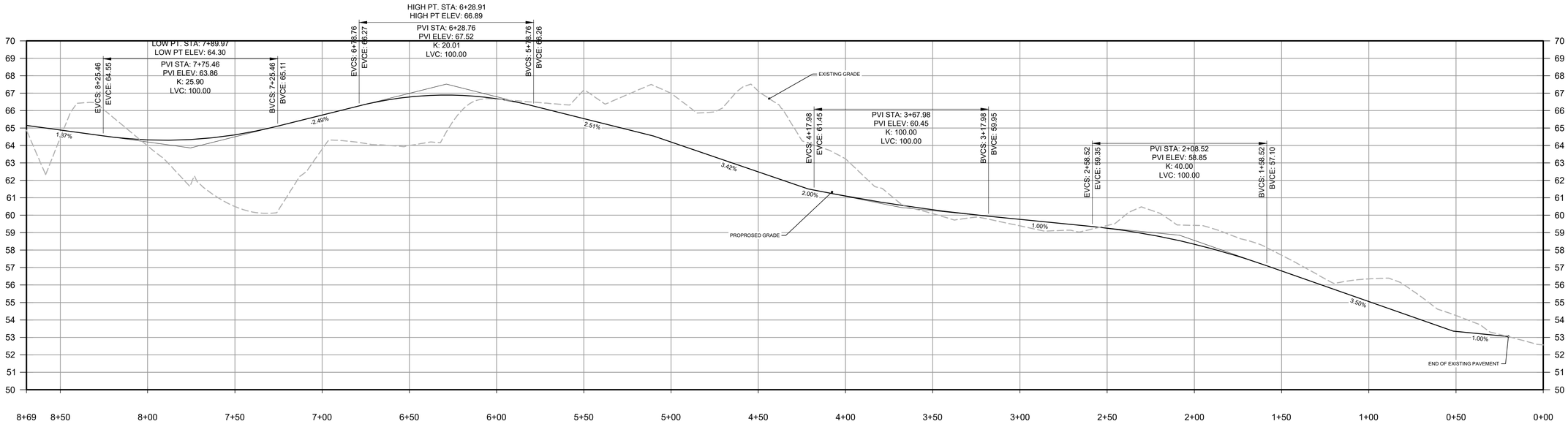
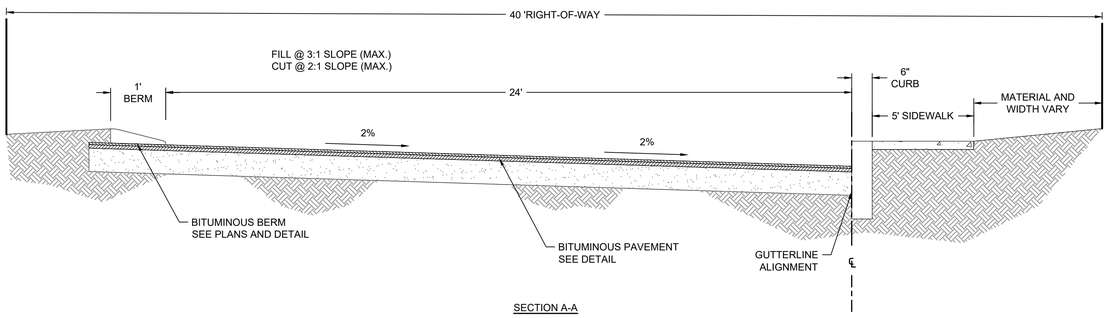
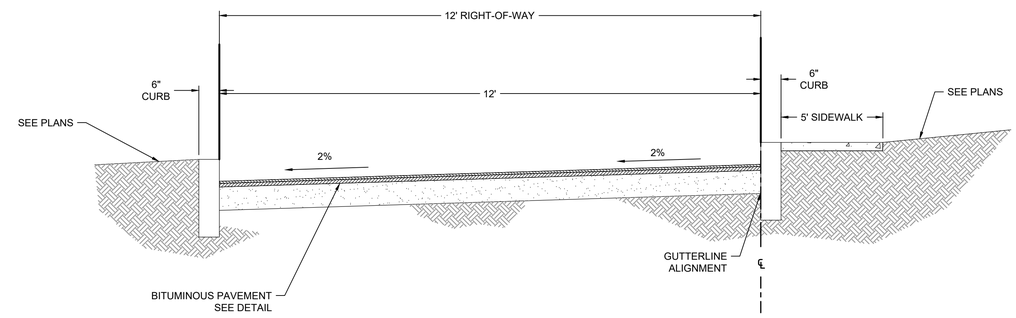


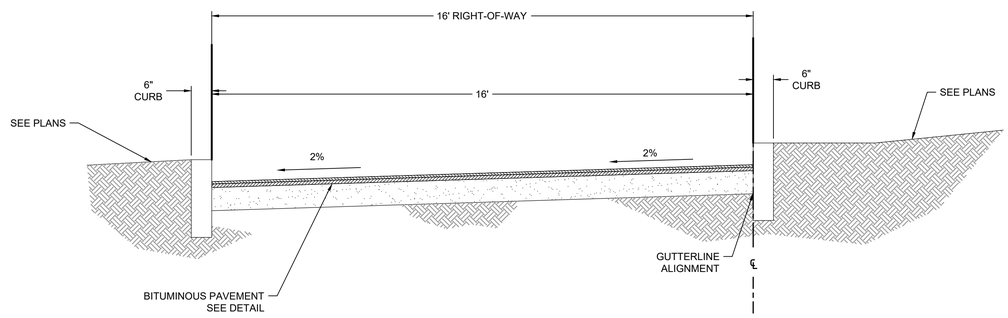
DRIVEWAY PROFILE
HORIZONTAL SCALE: 1" = 30'
VERTICAL EXAGGERATION: 10:1



SUPER ELEVATED 2-LANE ROADWAY (CAPE VIEW WAY)
NOT TO SCALE



12 FT WIDE 1-LANE ROADWAY
NOT TO SCALE



16 FT WIDE 1-LANE ROADWAY
NOT TO SCALE

PERMITTING SET ONLY
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Checked By: BRK
Drawn By: EVH
Designed By: EVH
Date: SEPTEMBER 2021

CAPE VIEW WAY
PERMITTING PLANS
BOURNE, MASSACHUSETTS

Plan Title: DRIVEWAY PROFILE

PRESERVATION OF AFFORDABLE HOUSING
2 OLIVER STREET, SUITE 500
BOSTON, MA 02109
Phone: (617) 261-6898
Fax: ----

Survey Provided By:
Horsley Witten Group, Inc.
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Fax: (508) 833-3150
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Sheet : 10 of 23
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DESIGN FLOW CALCULATION
(BASED ON 310 CMR 15.203)

Development Description	BDRM 1	BDRM 2	BDRM 3	Total Bedrooms	Flow Per Bedroom (GPD)	Total Flow (GPD)
1 Bedroom Units	17			17	110	1,870
2 Bedroom Units		29		58	110	6,380
3 Bedroom Units			5	15	110	1,650
						9,900

TREATMENT SYSTEM DESIGN CRITERIA

FLOW FOR 9900 GALLON PER DAY DEVELOPMENT		
DESIGN FLOW	9,900	GPD
SEPTIC TANKS		
200% OF TOTAL DAILY FLOW:		
2 X 9900 GPD:	19,800	GPD
TOTAL TANK CAPACITY:	29,700	GPD
USE 1-30,000 GALLON SEPTIC TANK		

LEACHING FIELD 1- SYSTEM DESIGN CRITERIA

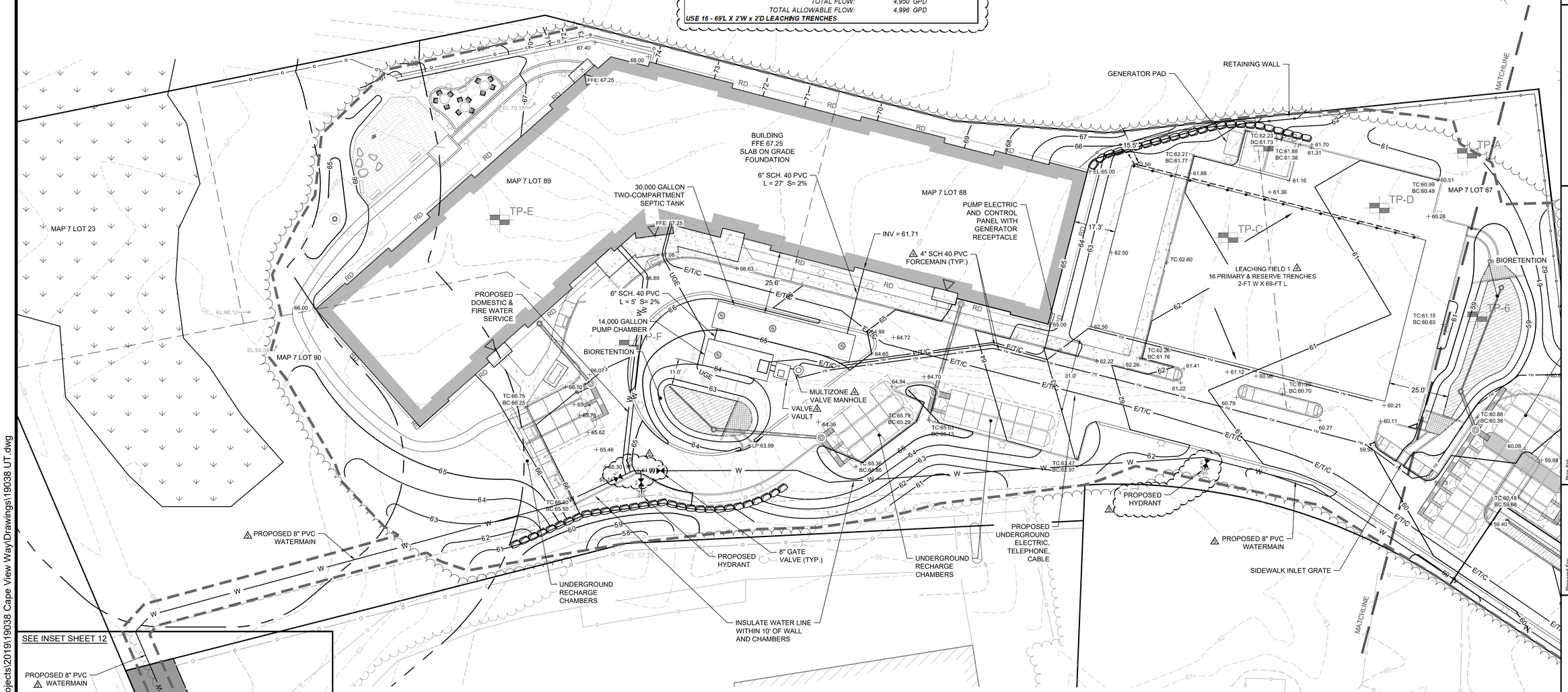
SOIL ABSORPTION SYSTEM

LEACHING SYSTEM USED:	STONE TRENCHES
DESIGN PERCOLATION RATE:	2 MIN./IN.
SOIL CLASS:	I
LONG TERM ACCEPTANCE RATE (LTAR):	0.74 GPD/S.F.
TOTAL AREA REQUIRED - TITLE 5:	13,379 S.F.

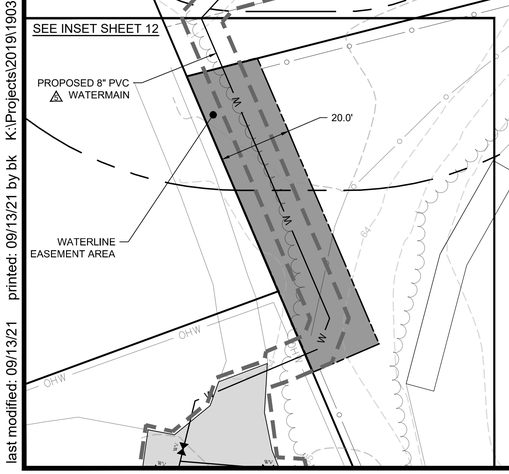
TOTAL AREA PROPOSED:

A(sidewall): (69' + 2' + 69' + 69') x 2' x 16:	4,544 S.F.
A(bottom): 69' x 2' x 16:	2,208 S.F.
TOTAL AREA:	6,752 S.F.
TOTAL FLOW:	4,950 GPD
TOTAL ALLOWABLE FLOW:	4,996 GPD

USE 16 - 69'L X 2'W x 2'D LEACHING TRENCHES



SEE INSET SHEET 12



SOIL TEST PIT DATA

PERFORMED BY: M. LEHMAN
HORSLEY WITTEN GROUP, INC
DATE: OCTOBER 24, 2019

TP–C

0"	A 10 YR 4/2 SANDY LOAM	62.9
5"	Bw 10 YR 5/8 SANDY LOAM	62.5
45"	C1 10 YR 6/4 MEDIUM SAND	59.2
68"	C2 10 YR 6/4 GRAVELLY FINE SAND	57.2
80"	C3 10 YR 6/4 FINE SAND	56.2
120"		52.9

NO GROUNDWATER
OR REDOXIMORPHIC
FEATURES OBSERVED

SOIL TEST PIT DATA

PERFORMED BY: M. LEHMAN
HORSLEY WITTEN GROUP, INC
DATE: OCTOBER 24, 2019

TP–B

0"	A 10 YR 4/2 SANDY LOAM	63.1
6"	Bw 10 YR 5/8 SANDY LOAM	62.6
36"	C1 10 YR 6/4 MEDIUM SAND PERC @ 59 " 3 MPI	60.1
66"	C2 10 YR 6/4 GRAVELLY FINE SAND	57.6
84"	C3 10 YR 6/4 FINE SAND	56.1
120"		53.1

NO GROUNDWATER
OR REDOXIMORPHIC
FEATURES OBSERVED

SOIL TEST PIT DATA

PERFORMED BY: M. LEHMAN
HORSLEY WITTEN GROUP, INC
DATE: OCTOBER 24, 2019

TP–D

0"	A 10 YR 4/2 SANDY LOAM	61.0
8"	Bw 10 YR 5/8 SANDY LOAM	60.3
40"	C1 10 YR 6/4 MEDIUM SAND	57.7
62"	C2 10 YR 6/4 GRAVELLY FINE SAND	55.8
74"	C3 10 YR 6/4 FINE SAND	54.8
120"		51.0

NO GROUNDWATER
OR REDOXIMORPHIC
FEATURES OBSERVED

SOIL TEST PIT DATA

PERFORMED BY: M. LEHMAN
HORSLEY WITTEN GROUP, INC
DATE: OCTOBER 24, 2019

TP–6

0"	A 10 YR 4/2 FINE SANDY LOAM	61.4
12"	Bw 10 YR 4/6 SANDY LOAM	60.4
36"	C1 10 YR 6/3 GRAVELLY FINE SAND	58.4
48"	C2 10 YR 6/3 MEDIUM SAND PERC @ 75" <2MPI	57.4
120"		51.4

NO GROUNDWATER
OR REDOXIMORPHIC
FEATURES OBSERVED

SOIL TEST PIT DATA

PERFORMED BY: M. LEHMAN
HORSLEY WITTEN GROUP, INC
DATE: OCTOBER 23, 2019

TP–7

0"	HTM 10 YR 3/4 FINE SANDY LOAM	59.6
22"	Ab 10 YR 4/6 FINE SANDY LOAM	57.8
24"	Bw 10 YR 6/6 FINE SANDY LOAM	57.6
32"	C1 10 YR 6/3 GRAVELLLY FINE SAND	56.9
38"	C2 10 YR 6/3 MEDIUM SAND	56.4
60"		54.6

NO GROUNDWATER
OR REDOXIMORPHIC
FEATURES OBSERVED

SOIL TEST PIT DATA

PERFORMED BY: M. LEHMAN
HORSLEY WITTEN GROUP, INC
DATE: OCTOBER 23, 2019

TP–8

0"	A 10 YR 3/4 FINE SANDY LOAM	58.7
6"	B 10 YR 4/6 FINE SANDY LOAM	58.2
21"	C1 10 YR 6/6 GRAVELLY FINE SAND	57.0
45"	C2 10 YR 6/3 MEDIUM SAND	55.0
84"		51.7

NO GROUNDWATER
OR REDOXIMORPHIC
FEATURES OBSERVED

PERMITTING SET ONLY
NOT FOR CONSTRUCTION

GRAPHIC SCALE
20 0 10 20 40 80
(in feet)
1 INCH = 20 FEET

Revisions

Rev.	Date	By	Appr.	Description
1	04/01/21	BRK	BRK	ADDED LIMIT OF WORK LINE
2	04/14/21	JEH	JEH	REVISED PER BOH COMMENTS
3	7/7/2021	JEH	JEH	REMOVE VARIANCE REQUEST
4	9/13/21	JEH	JEH	REVISED LEACHING FIELD DESIGN
5	9/13/21	JEH	JEH	REVISED WATER SYSTEM LAYOUT
6				

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508-833-6600 voice
508-833-3150 fax

Checked By: BRK
Drawn By: EYH
Designed By: EYH
Date: SEPTEMBER 2021

CAPE VIEW WAY
PERMITTING PLANS
BOURNE, MASSACHUSETTS

Plan Set:

Plan Title: UTILITY PLAN (1)

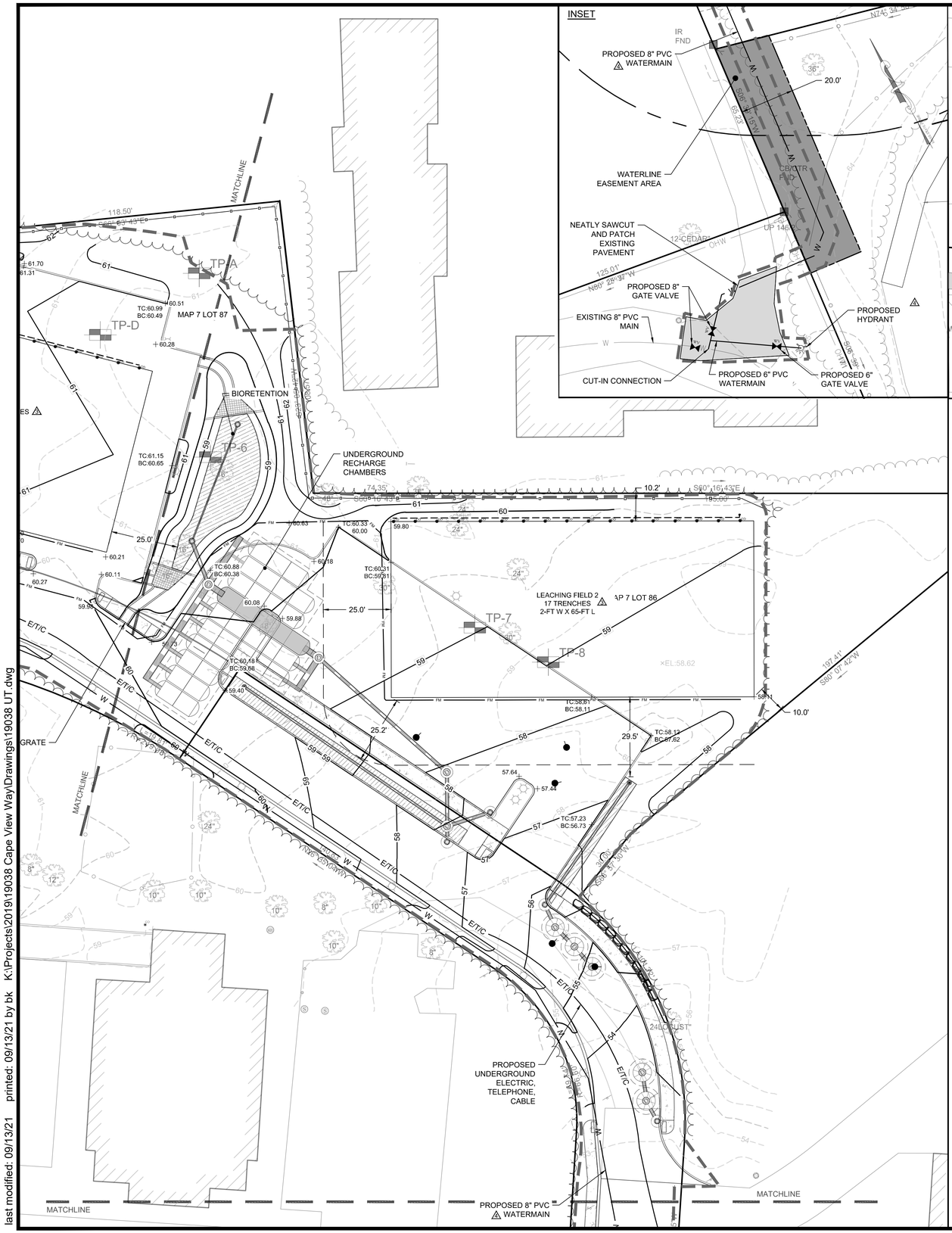
Prepared For:
PRESERVATION OF AFFORDABLE HOUSING
2 OLIVER STREET, SUITE 500
BOSTON, MA 02109
Phone: (617) 261-8688
Fax: ----

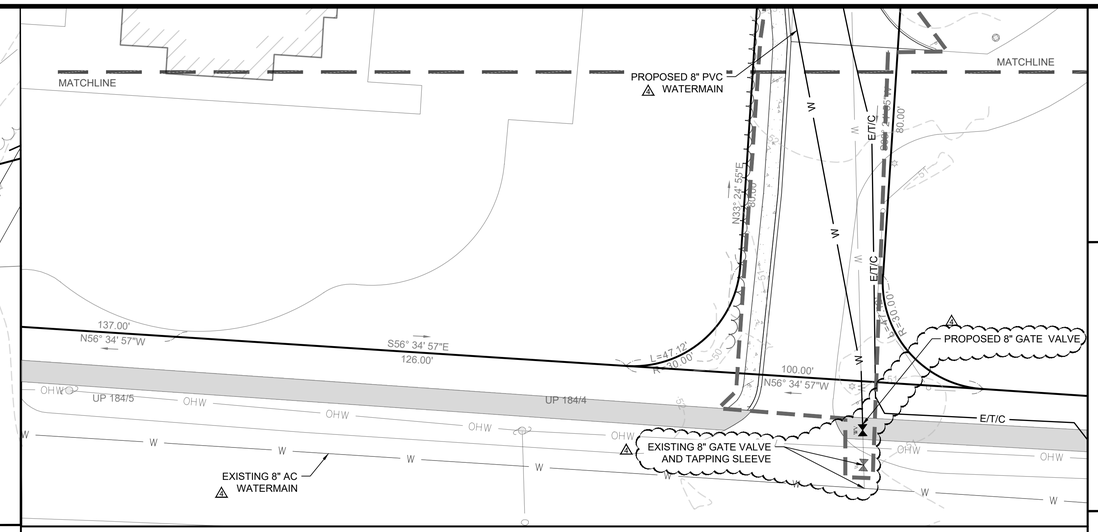
Survey Provided By:
Horsley Witten Group, Inc.
90 Route 6A
Sandwich, MA 02563
Phone: (508) 833-6600
Fax: (508) 833-3150
Dated: JUNE 2019

Registration:
COMMONWEALTH OF MASSACHUSETTS
RICHARD A. CLAYTOR
CIVIL
NO. 45116
REGISTERED PROFESSIONAL ENGINEER
9-13-2021

Project Number: 19038
Sheet : 11 of 23
Sheet Number: C - 11

last modified: 09/13/21 printed: 09/13/21 by bk K:\Projects\2019\19038 Cape View Way\Drawings\19038 UT.dwg





LEACHING FIELD 2 - SYSTEM DESIGN CRITERIA

SOIL ABSORPTION SYSTEM

LEACHING SYSTEM USED:	STONE TRENCHES
DESIGN PERCOLATION RATE:	2 MIN./IN.
SOIL CLASS:	I
LONG TERM ACCEPTANCE RATE (LTAR):	0.74 GPD/S.F.
TOTAL AREA REQUIRED - TITLE 5:	13,379 S.F.

TOTAL AREA PROPOSED:

A(sidewall): (65' + 2' + 65' + 65') x 2' x 17:	4,556 S.F.
A(bottom): 65' x 2' x 17:	2,210 S.F.
TOTAL AREA:	6,766 S.F.
TOTAL FLOW:	4,950 GPD
TOTAL ALLOWABLE FLOW:	5,006 GPD

USE 17 - 65'L X 2'W x 2'D LEACHING TRENCHES

PERMITTING SET ONLY
NOT FOR CONSTRUCTION

GRAPHIC SCALE

20 0 10 20 40 80

(in feet)
1 INCH = 20 FEET

Revisions

Rev.	Date	By	Appr.	Description
1	04/14/21	JEH		JEH REVISED PER BOH COMMENTS
2	7/7/2021	JEH		JEH REMOVE VARIANCE REQUEST
3	9/13/21	JEH		JEH REVISED LEACHING FIELD DESIGN
4	9/13/21	JEH		JEH REVISED WATER SYSTEM LAYOUT
5				
6				

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

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Drawn By: EYH
Designed By: EYH
Date: SEPTEMBER 2021

Plan Set:

CAPE VIEW WAY
PERMITTING PLANS
BOURNE, MASSACHUSETTS

Plan Title:

UTILITY PLAN (2)

Prepared For:
PRESERVATION OF AFFORDABLE HOUSING
2 OLIVER STREET, SUITE 500
BOSTON, MA 02109
Phone: (617) 261-6898
Fax: ----

Survey Provided By:
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Project Number: 19038

Sheet: 12 of 23

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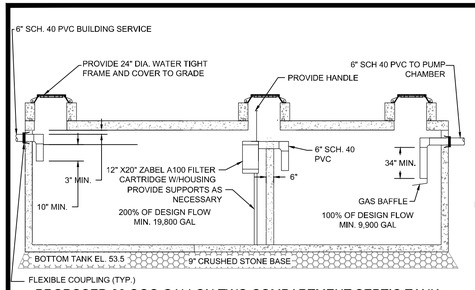
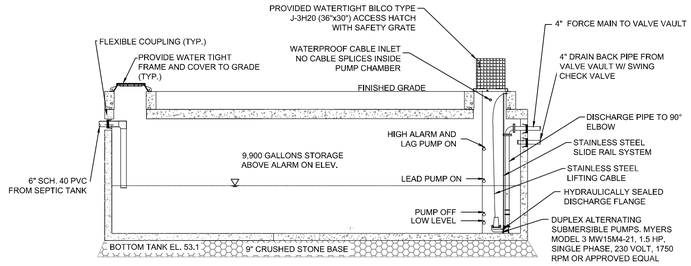
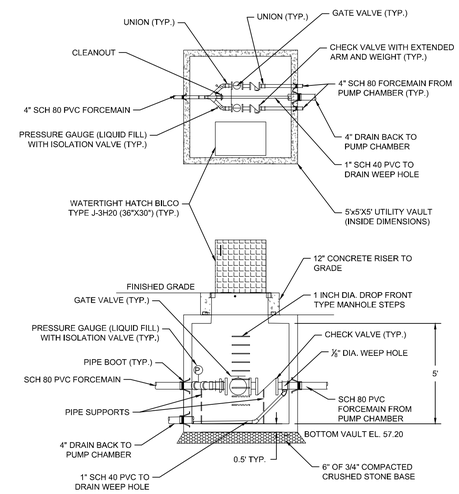


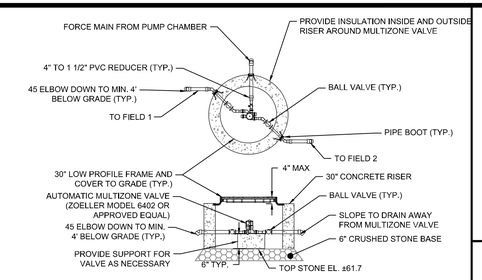
PROPOSED 30,OOO GALLON TWO COMPARTMENT SEPTIC TANK ⚠
NOT TO SCALE



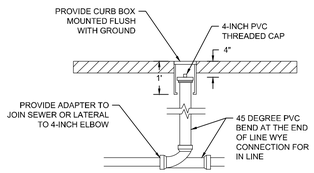
14,000 GALLON PUMP CHAMBER ⚠
NOT TO SCALE



VALVE VAULT ⚠
NOT TO SCALE



MULTIZONE VALVE MANHOLE DETAIL ⚠
NOT TO SCALE



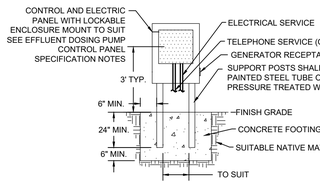
TYPICAL CLEANOUT DETAIL ⚠
NOT TO SCALE

⚠ **WASTEWATER SYSTEM SCHEDULE OF ELEVATIONS**

	INV. EL.
BLDG INVERT	*61.71*
SEPTIC TANK - INLET	61.38
SEPTIC TANK - OUTLET	61.13
PUMP CHAMBER - INLET	61.03
PUMP CHAMBER - OUTLET	60.78
VALVE VAULT - INLET	61.00
VALVE VAULT - OUTLET	61.00
MULTIZONE VALVE MANHOLE - INLET	62.17
MULTIZONE VALVE MANHOLE - OUTLET	62.17

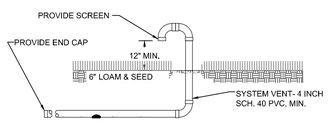
⚠ **PUMP FLOAT ELEVATIONS**

STORAGE (GAL.)	FLOAT SEPARATION (FT)	DESCRIPTION	ELEVATION (FT)
9,900	4.99	EMERGENCY STORAGE	60.69
496	0.25	LAG PUMP ON/HIGH ALARM	55.69
1,799	0.91	LEAD PUMP ON	55.44
496	0.25	PUMP OFF	54.53
991	0.50	LOW LEVEL	54.28
0	0.00	BOTTOM OF TANK	53.78
13,681	6.90		



NOTES:
1. A CLEAR WORK AREA OF 3-FT IS REQUIRED IN ALL DIRECTIONS OF THE PEDESTAL.
2. ALL ELECTRICAL PER MA. ELECTRICAL CODE.
3. SERVICE DISCONNECT SHALL BE INSTALLED IF REQUIRED.
4. TELEPHONE SERVICE IS OPTIONAL AND MAY BE REQUIRED DEPENDING ON THE REMOTE ALARM MONITORING SYSTEM SELECTED.

CONTROL PANEL MOUNTING DETAIL ⚠
NOT SCALE



TYPICAL SYSTEM VENT DETAIL ⚠
NOT TO SCALE

WASTEWATER NOTES ⚠

1. UNLESS OTHERWISE NOTED, ALL SYSTEM COMPONENTS AND CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH THE STATE ENVIRONMENTAL CODE AND THE RULES AND REGULATIONS OF THE LOCAL BOARD OF HEALTH.
2. ANY CHANGES TO THIS PLAN MUST BE APPROVED BY THE ENGINEER AND/OR THE LOCAL BOARD OF HEALTH (BOH) STAFF.
3. FAILING TO PROPERLY INSPECT OR PUMP THE SEPTIC TANKS AND TREATMENT SYSTEM OR CHANGES TO EFFLUENT FLOW, GRADING, OR LANDSCAPING, EITHER ON-SITE OR ADJACENT TO THE SITE, MAY RESULT IN IMPROPER FUNCTIONING OF THE SEPTIC AND LEACHING SYSTEM(S).
4. THIS ON-SITE WASTEWATER TREATMENT SYSTEM IS NOT DESIGNED FOR USE WITH GARBAGE GRINDERS.
5. THE OWNER SHALL INSPECT AND HAVE THE SEPTIC TANK PUMPED EVERY 2 YEARS.
6. PROVIDE WATERTIGHT SEALS BY USE OF NON-SHRINK GROUT AT ALL POINTS WHERE PIPES ENTER OR LEAVE ANY CONCRETE STRUCTURES.
7. USE SCH. 40 PVC PIPING WITH WATERTIGHT JOINTS UNLESS OTHERWISE NOTED ON PLAN. ALL PIPE SHALL BE PLACED ON A COMPACTED FIRM BASE.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONDUCTING A HYDROSTATIC PRESSURE TEST ON THE NEW SEWER FORCE MAIN. THE TEST SHALL CONSIST OF HOLDING A PRESSURE OF 50 PSI IN THE FORCE MAIN FOR A PERIOD OF 1 HOUR. THE TEST SHALL BE WITNESSED BY THE ENGINEER.
9. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING OPERATIONS AND MAINTENANCE INFORMATION FOR THE SEPTIC SYSTEM TO THE ENGINEER.
10. THE CONTRACTOR SHALL PROVIDE A DEWATERING PROTOCOL PRIOR TO CONSTRUCTION IF GROUNDWATER IS ANTICIPATED DURING CONSTRUCTION.
11. AREAS UNDER THE LEACHING FIELD FOUND TO HAVE UNSUITABLE SOIL MUST BE REPLACED WITH TITLE 5 SAND AS SPECIFIED IN 310 CMR 15.255(3). ANY AREAS THAT ARE FOUND TO HAVE UNSUITABLE MATERIAL SHALL BE REPORTED TO THE ENGINEER.
12. ALL SEPTIC COMPONENTS SHALL BE INSTALLED WITH MAGNETIC WARNING TAPE.
13. ALL SEPTIC TANKS SHALL BE APPLIED WITH 2 COATS OF DAMP PROOFING OR BITUMINOUS MATERIAL ON THE OUTSIDE OF THE TANKS.
14. THE CONTRACTOR SHALL PROVIDE OPERATOR TRAINING FOR EACH OF THE EQUIPMENT PROVIDED INCLUDING ALARM NOTIFICATION.

EFFLUENT DOSING PUMP CONTROL PANEL SPECIFICATION ⚠

1. USE DUPLEX ALTERNATING PUMPS CAPABLE OF 80 GPM AT 33-FEET OF TDH.
2. THE CONTRACTOR IS RESPONSIBLE FOR SETTING UP THE PUMPS, CONTROL PANEL, FLOAT SWITCH ELEVATIONS, AND ALL ELECTRICAL WIRING WITHIN THE PUMP CHAMBER. THE CONTRACTOR SHALL THEN CONDUCT A STARTUP TEST TO DEMONSTRATE THE PUMP CHAMBER IS FUNCTIONING AS DESIGNED PRIOR TO REQUESTING FOR A CLEAN WATER TEST, WHICH SHALL BE WITNESSED BY THE ENGINEER AND/OR THE LOCAL BOH.
3. THE PUMP ALARM PANEL SHALL BE INSTALLED ON A SEPARATE CIRCUIT FROM THE DOSING PUMPS.
6. THE CONTRACTOR SHALL INCLUDE AN ALLOWANCE FOR COORDINATING, INSTALLING AND PAYING FOR A MISSION MODEL 112 (NEMA 4) RTU REMOTE ALARM UNIT OR APPROVED EQUAL INCLUDING THE FIRST YEAR MONITORING FEE. A 110V OUTLET SHALL BE INSTALLED IN CLOSE PROXIMITY TO THE REMOTE ALARM FINAL LOCATION OF THE UNIT SHALL BE FIELD DETERMINED. MONITORING UNIT. THE FOLLOWING ALARMS SHALL BE MONITORED:
   - 6.1. PUMP 1 AND PUMP 2 FAIL
   - 6.2. LOW LEVEL ALARM
   - 6.3. HIGH LEVEL ALARM
   - 6.4. POWER FAIL ALARM
7. DUPLEX PUMP CONTROL PANEL SHALL CONSIST OF THE FOLLOWING:
   - 7.1. NEMA 4X LOCKABLE ENCLOSURE
   - 7.2. HAND-OFF-AUTO SWITCH
   - 7.3. ALARM TEST SWITCH
   - 7.4. PUMP RUN LIGHT
   - 7.5. ALARM LIGHT AND HORN WITH SILENCE SWITCH
   - 7.6. CONDENSATION HEATER
   - 7.7. LOW LEVEL CUT-OFF AND ALARM
   - 7.8. GENERATOR RECEPTACLE
8. PANEL SHALL BE SHIPPED LOOSE FOR REMOTE MOUNTING

WASTEWATER INSTALLATION INSPECTION NOTES ⚠

1. THE CONTRACTOR SHALL PROVIDE A MINIMUM OF 24 HOURS ADVANCE NOTICE TO THE ENGINEER, DEP AND LOCAL BOARD OF HEALTH FOR ANY INSPECTION.
2. ALL WASTEWATER SYSTEMS, INCLUDING THE LEACHING SYSTEM, SHALL BE INSPECTED BY THE ENGINEER AND A THE LOCAL BOH REPRESENTATIVE PRIOR TO BACKFILLING. AT A MINIMUM THE FOLLOWING ITEMS SHALL BE INSPECTED:
   - 2.1. EXCAVATION OF LEACHING FIELD PRIOR TO PLACING SYSTEM STONE/COMPONETS
   - 2.2. LEACHING FIELD COMPLETE INSTALLATION PRIOR TO BACKFILL
   - 2.3. ALL SYSTEM COMPONENTS BASE AND INSTALLATION PRIOR TO BACKFILL
   - 2.4. START UP TEST OF SYSTEM WITH ALL COMPONENTS INSTALLED AND FUNCTIONING AS DESIGNED
   - 2.5. FINAL INSPECTION OF BACKFILLED SYSTEM
3. THE CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN UP-TO-DATE RED LINED DRAWINGS AND NOTES INDICATING THE HORIZONTAL AND VERTICAL LOCATION WITH TWO TIES OF ALL SYSTEM COMPONENTS INSTALLED. THESE AS-BUILT DRAWINGS AND NOTES WILL BE UTILIZED BY THE ENGINEER FOR THE PREPARATION OF RECORD PLANS.

CLEAR WATER TEST PROTOCOL ⚠

1. VERIFY ALL FLOATS ARE SET AT THE DESIGN ELEVATION.
2. VERIFY ALL ALARM CONDITIONS ARE FUNCTIONING AS DESIGNED.
3. VERIFY ALL REMOTE ALARMS ARE NOTIFYING THE OPERATOR ACCORDINGLY.
4. VERIFY PUMPS ARE ALTERNATING AS DESIGNED AND DISTAL HEAD REQUIREMENTS ARE MET.

NOTE:

NOTIFY THE ENGINEER 72 HOURS IN ADVANCE OF THE CLEAR WATER TEST. THE SCHEDULE MAY HAVE TO BE ADJUSTED DUE TO AVAILABILITY OF BOH STAFF.

PERMITTING SET ONLY
NOT FOR CONSTRUCTION

Revisions

Rev.	Date	By	Appr.	Description
1	9/13/21	JEH	JEH	REVISED LEACHING FIELD DESIGN

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Checked By: BRK
Drawn By: EYH
Designed By: EYH
Date: SEPTEMBER 2021

Plan Set:

CAPE VIEW WAY
PERMITTING PLANS
BOURNE, MASSACHUSETTS

Plan Title:

WASTEWATER DETAILS

Prepared For:
PRESERVATION OF AFFORDABLE HOUSING
2 OLIVER STREET, SUITE 500
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REGISTERED PROFESSIONAL ENGINEER

9-13-2021

Project Number: 19038
Sheet : 13 of 23
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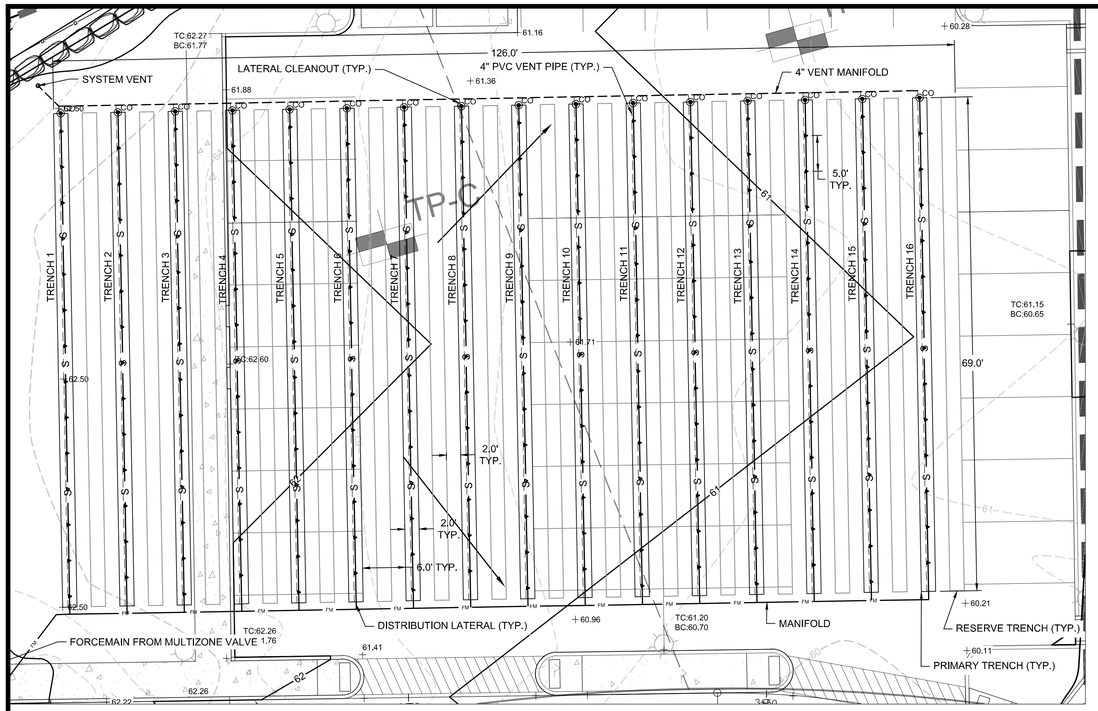
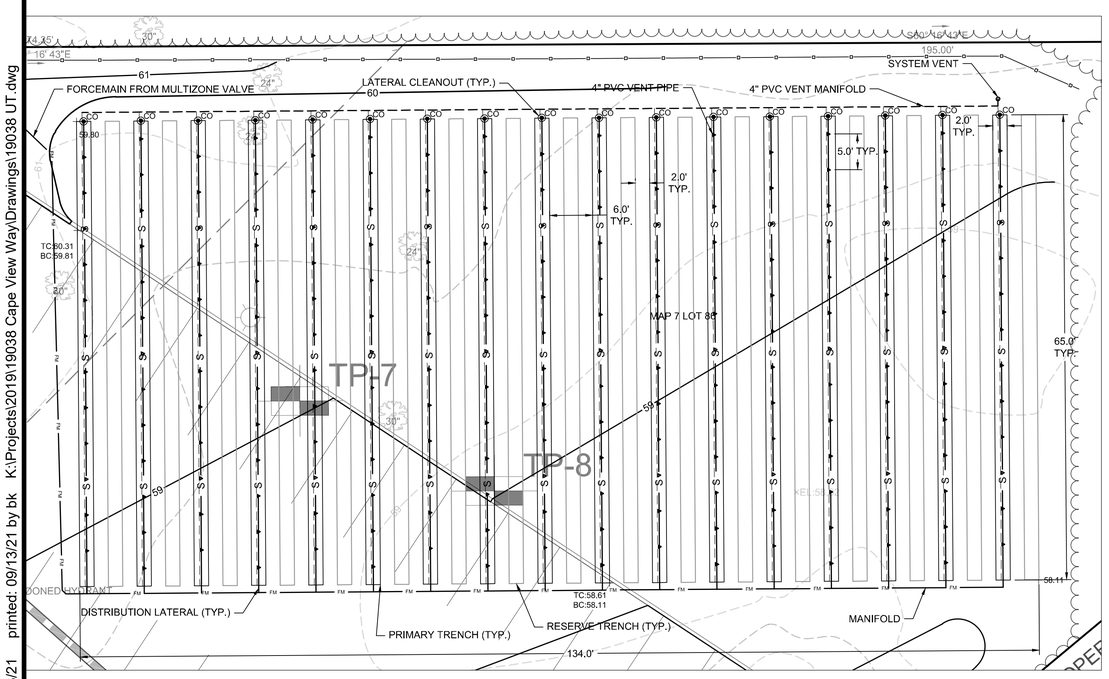


LEACHING FIELD 1 PLAN

SCALE: 1"=10'



LEACHING FIELD 2 PLAN

SCALE: 1"=10'

FIELD 1 - PRESSURE DISTRIBUTION CALCULATIONS

TITLE 5 DESIGN FLOW	4,950	GPD
PERFORATIONS		
PERFORATION DIAMETER, Dp =	1/8	IN.
DISTAL IN-LINE PRESSURE, Hd =	3	FT. (2.5 FT. MIN.)
NUMBER OF PERFORATIONS/LATERAL, N =	14.00	
PERFORATION SPACING, S =	5	FT.
LATERALS		
LATERAL SPACING, Ls =	8	FT.
LATERAL DIAMETER, Ld =	2	IN.
LENGTH OF LATERALS, L =	69	FT.
HAZEN-WILLIAMS COEFFICIENT, Ch =	140	
NUMBER OF LATERALS, Ln =	16	
FORCE MAIN AND MANIFOLD		
FORCE MAIN DIAMETER, Dfm =	4	IN.
LENGTH OF FORCE MAIN, Lfm =	148	FT.
MANIFOLD DIAMETER, Dm =	4	IN.
MANIFOLD LENGTH, Lm =	128	FT.
DISCHARGE RATES		
PERFORATION DISCHARGE RATE, q = 11.79 x (Dp)2 x (Hd)1/2 =	0.32	GPM
LATERAL DISCHARGE RATE, Ql, q x N =	4.48	GPM
SYSTEM DISCHARGE RATE, Q, Ql x Ln =	72	GPM
DOSING CALCULATIONS		
PIPING SYSTEM VOLUME, Vs =	361	GAL.
DOSE VOLUME, (5.0 x Vs) =	1,809	GAL.
DOSE VOLUME 4950 GPD/4 DOSES/DAY =	1,238	GAL.
USE:	1,599	GALLON DOSE VOLUME
HEAD LOSSES		
FRICTION LOSS IN FORCE MAIN, fl =	0.5	FT.
FRICTION LOSS IN MANIFOLD, fl =	0.5	FT.
FRICTION LOSS IN FITTINGS AND VALVES, fl =	0.3	FT.
NETWORK LOSSES, nl =	3.9	FT.
HEAD LOSS THROUGH DISTRIBUTION VALVE=	17.0	FT.
STATIC HEAD =	10.0	FT.
TOTAL HEAD =	32.3	FT.
PUMP PARAMETERS		
FLOW, Q =	80	GPM
TOTAL DYNAMIC HEAD =	33.0	FT.
USE PUMPS CAPABLE OF 80 GPM AT 33 FT HEAD		

FIELD 2 - PRESSURE DISTRIBUTION CALCULATIONS

TITLE 5 DESIGN FLOW	4,950	GPD
PERFORATIONS		
PERFORATION DIAMETER, Dp =	1/8	IN.
DISTAL IN-LINE PRESSURE, Hd =	2.5	FT. (2.5 FT. MIN.)
NUMBER OF PERFORATIONS/LATERAL, N =	13.00	
PERFORATION SPACING, S =	5	FT.
LATERALS		
LATERAL SPACING, Ls =	8	FT.
LATERAL DIAMETER, Ld =	2	IN.
LENGTH OF LATERALS, L =	65	FT.
HAZEN-WILLIAMS COEFFICIENT, Ch =	140	
NUMBER OF LATERALS, Ln =	17	
FORCE MAIN AND MANIFOLD		
FORCE MAIN DIAMETER, Dfm =	4	IN.
LENGTH OF FORCE MAIN, Lfm =	455	FT.
MANIFOLD DIAMETER, Dm =	4	IN.
MANIFOLD LENGTH, Lm =	128	FT.
DISCHARGE RATES		
PERFORATION DISCHARGE RATE, q = 11.79 x (Dp)2 x (Hd)1/2 =	0.3	GPM
LATERAL DISCHARGE RATE, Ql, q x N =	3.90	GPM
SYSTEM DISCHARGE RATE, Q, Ql x Ln =	67	GPM
DOSING CALCULATIONS		
PIPING SYSTEM VOLUME, Vs =	561	GAL.
DOSE VOLUME, (5.0 x Vs) =	2,809	GAL.
DOSE VOLUME 4950 GPD/4 DOSES/DAY =	1,238	GAL.
USE:	1,799	GALLON DOSE VOLUME
HEAD LOSSES		
FRICTION LOSS IN FORCE MAIN, fl =	1.4	FT.
FRICTION LOSS IN MANIFOLD, fl =	0.4	FT.
FRICTION LOSS IN FITTINGS AND VALVES, fl =	0.4	FT.
NETWORK LOSSES, nl =	3.3	FT.
HEAD LOSS THROUGH DISTRIBUTION VALVE=	14.0	FT.
STATIC HEAD =	10.0	FT.
TOTAL HEAD =	29.5	FT.
PUMP PARAMETERS		
FLOW, Q =	70	GPM
TOTAL DYNAMIC HEAD =	30.0	FT.
USE PUMPS CAPABLE OF 80 GPM AT 33 FT HEAD		

LEACHING FIELD 1

Water Table Mounding Estimate Beneath Center of Entire Drain Field (L*W)

Meters and Days	Length of Drain Field Subunit	Width of Drain Field Subunit		Separation between Drain Field Subunits	Fraction of Drain Field Subunit that is Trench Area	Horizontal Hydraulic Conductivity	Specific Yield use 0.001 to approximate steady state at 10 years	time use 10 years to approximate steady state
	l_s	w_s		Sp	f	Kh	Sy	time
	ft	ft		ft		ft/days	none	days
	126	69		0	0.25	9	0.001	3650
Number of subunits, n	L	W	q effective in subunit ls x ws	q in trenches	q' effective on LxW	Q	Zmax 12 iterations (Estimated Mound)	Initial Saturated Thickness
	ft	ft	ft/day	ft/day	ft/day	gallons/day	ft	ft
1	126	69	0.1167	0.4669	0.1167	7590	1.387	100

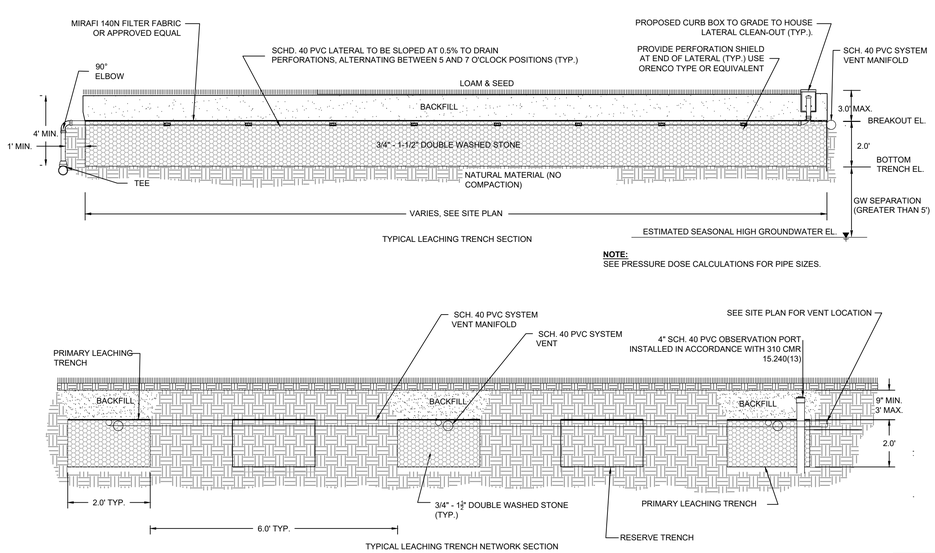
NOTE: Saturated thickness of Aquifer estimated based on available water table contour and bedrock maps.
Horizonal Hydraulic Conductivity is based on conversion of observed percolation rate.

LEACHING FIELD 2

Water Table Mounding Estimate Beneath Center of Entire Drain Field (L*W)

Meters and Days	Length of Drain Field Subunit	Width of Drain Field Subunit		Separation between Drain Field Subunits	Fraction of Drain Field Subunit that is Trench Area	Horizontal Hydraulic Conductivity	Specific Yield use 0.001 to approximate steady state at 10 years	time use 10 years to approximate steady state
	l_s	w_s		Sp	f	Kh	Sy	time
	ft	ft		ft		ft/days	none	days
	134	65		0	0.25	9	0.001	3650
Number of subunits, n	L	W	q effective in subunit ls x ws	q in trenches	q' effective on LxW	Q	Zmax 12 iterations (Estimated Mound)	Initial Saturated Thickness
	ft	ft	ft/day	ft/day	ft/day	gallons/day	ft	ft
1	134	65	0.1165	0.4660	0.1165	7590	1.384	100

NOTE: Saturated thickness of Aquifer estimated based on available water table contour and bedrock maps.
Horizonal Hydraulic Conductivity is based on conversion of observed percolation rate.



LEACHING TRENCH DETAIL

NOT TO SCALE

LEACHING FIELD 1 - SCHEDULE OF ELEVATIONS

LEACHING FIELD 1 (TRENCHS 1-7)

TRENCH INVERT IN	60.08
BREAKOUT	60.25
LATERAL DISTAL INVERT	59.74
BOTTOM OF SYSTEM	58.25
ESHGW (BASED ON REGIONAL GW DATA)	10.00
MOUNDING (HANTUSH METHOD)	1.39
GW SEPARATION	46.86

LEACHING FIELD 1 - SCHEDULE OF ELEVATIONS

LEACHING FIELD 1 (TRENCHS 8-16)

TRENCH INVERT IN	58.88
BREAKOUT	59.05
LATERAL DISTAL INVERT	58.54
BOTTOM OF SYSTEM	57.05
ESHGW (BASED ON REGIONAL GW DATA)	10.00
MOUNDING (HANTUSH METHOD)	1.39
GW SEPARATION	45.66

LEACHING FIELD 2 - SCHEDULE OF ELEVATIONS

TRENCH INVERT IN	56.69
BREAKOUT	56.86
LATERAL DISTAL INVERT	56.37
BOTTOM OF SYSTEM	54.86
ESHGW (BASED ON REGIONAL GW DATA)	10.00
MOUNDING (HANTUSH METHOD)	1.38
GW SEPARATION	43.48

PERMITTING SET ONLY
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Revisions

Rev.	Date	By	Appr.	Description

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Sustainable Environmental Solutions
www.horsleywitten.com
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Sandwich, MA 02563
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508-833-3150 fax

Checked By: BRK
Drawn By: EYH
Designed By: EYH
Date: SEPTEMBER 2021

Plan Set:
Plan Title: WASTEWATER LEACHFIELD DETAILS

CAPE VIEW WAY
PERMITTING PLANS
BOURNE, MASSACHUSETTS

Prepared For:
PRESERVATION OF AFFORDABLE HOUSING
2 OLIVER STREET, SUITE 500
BOSTON, MA 02109
Phone: (617) 261-9898
Fax: ----

Survey Provided By:
Horsley Witten Group, Inc.
90 Route 6A
Sandwich, MA 02563
Phone: (508) 833-6600
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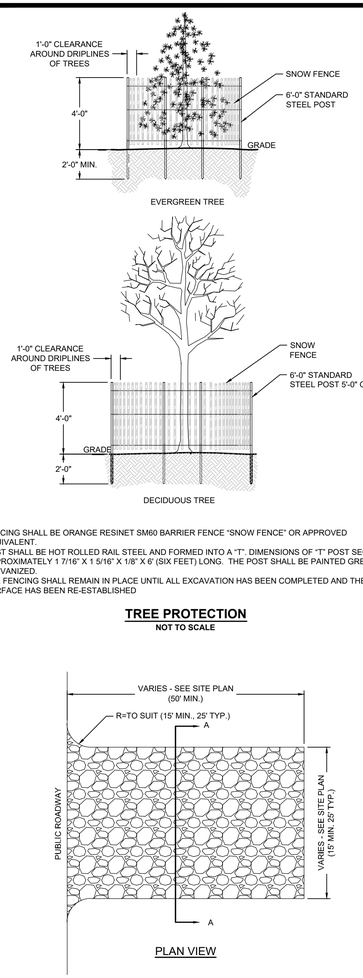
Dated: JUNE 2019

Registration:
COMMONWEALTH OF MASSACHUSETTS
RICHARD A. CLAYTOR
CIVIL
NO. 45196
REGISTERED PROFESSIONAL ENGINEER
9-13-2021

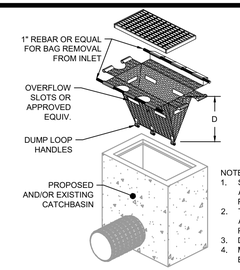
Project Number: 19038
Sheet: 14 of 23
Sheet Number: C - 14

last modified: 09/13/21 printed: 09/13/21 by bk K:\Projects\2019\19038 Cape View Way\Drawings\19038 UT.dwg

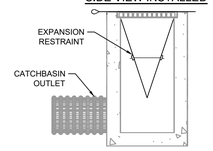


NOTES:
1. FENCING SHALL BE ORANGE RESINET SM60 BARRIER FENCE "SNOW FENCE" OR APPROVED EQUIVALENT.
2. POST SHALL BE HOT ROLLED RAIL STEEL AND FORMED INTO A "T". DIMENSIONS OF "T" POST SECTION, APPROXIMATELY 1 7/16" X 1 5/16" X 1/8" X 6' (SIX FEET) LONG. THE POST SHALL BE PAINTED GREEN OR GALVANIZED.
3. THE FENCING SHALL REMAIN IN PLACE UNTIL ALL EXCAVATION HAS BEEN COMPLETED AND THE SURFACE HAS BEEN RE-ESTABLISHED

TREE PROTECTION
NOT TO SCALE



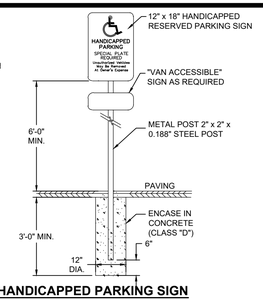
SIDE VIEW INSTALLED



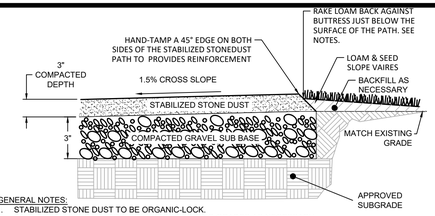
NOTES:
1. SEDIMENT CONTROL INSERTS TO BE INSTALLED OVER ALL CATCHBASINS/INLETS THAT WILL RECEIVE RUNOFF FROM THE PROJECT SITE.
2. TEMPORARY INLET PROTECTION TO BE REMOVED AFTER CONTRIBUTING DRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED.
3. DEPTH (D) TO BE A MINIMUM OF 16-INCHES.
4. MANUFACTURER TO BE SILT SACK OR APPROVED EQUIVALENT.

INLET PROTECTION
NOT TO SCALE

NOTES:
1. SIGN LAYOUT, COLORS, SYMBOL AND LETTERING SHALL BE AASHTO STANDARD.
2. TO BE LOCATED ON SITE AT ALL HANDICAP SPACES AS SHOWN ON PLAN.
3. METAL POST TO BE DELIVERED WITH MANUFACTURER PAINTED EXTERIOR BLACK ENAMEL OR APPROVED EQUAL.

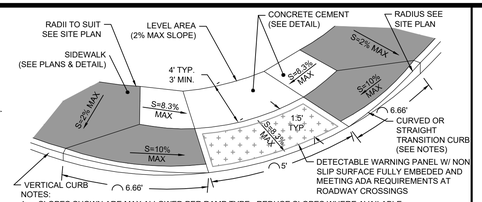


HANDICAPPED PARKING SIGN
NOT TO SCALE



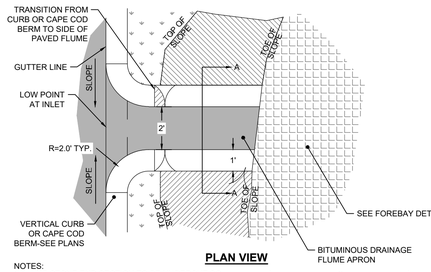
GENERAL NOTES:
1. STABILIZED STONE DUST TO BE ORGANIC-LOCK.
2. BACKFILL ALONG PATH EDGE TO MATCH EXISTING GRADES AS NECESSARY.
3. TAMP BACKFILLED MATERIAL ALONG EDGE OF PATH TO ENSURE POSITIVE DRAINAGE OFF STONE DUST PATH. CLEAN EDGE SHOULD NOT PROTRUDE ABOVE THE PATH AS THIS WILL PREVENT PATH FROM SHEDDING RUNOFF.
4. SEE PLANS FOR PATH WIDTH.

STONE DUST PATH
NOT TO SCALE



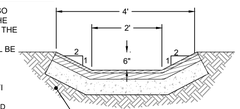
NOTES:
1. SLOPES SHOWN ARE MAX ALLOWED PER RAMP TYPE. REDUCE SLOPES WHERE AVAILABLE.
2. BROOM FINISH CONCRETE PERPENDICULAR TO SLOPE
3. FORM GROOVES 1/4" X 1/4" 6" O.C. AT 45 DEGREES TO CURB ON CONCRETE SLOPES.
4. ALL CONCRETE SHALL BE 4000 PSI TYPE II & HAVE A MIN. DEPTH OF 6" WITH W.W. MESH (6x6w1.4xw1.4) FLAT SHEETS INSTALLED 2" FROM THE BOTTOM OF THE CONCRETE LAYER.
5. SUB-BASE MATERIAL SHALL BE MIN. 6" OR DENSE GRADE OR RECLAIMED ASPHALT.
6. PROVIDE TOOLED CONTROL JOINTS AT MIN. 6' O.C.& AT ALL SLOPE TRANSITIONS
7. TRANSITION CURB BOTH SIDES OF RAMP (SEE DETAIL).

CURVED HANDICAPPED ACCESS RAMP
NOT TO SCALE

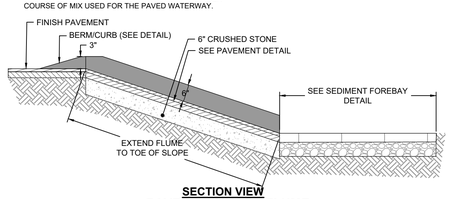


PLAN VIEW

NOTES:
1. THE STONE END SECTION TO BE UNDERCUT SO THAT THE INVERT OF THE APRON TO BE AT THE SAME GRADE (FLUSH) WITH THE SURFACE OF THE RECEIVING CHANNEL.
2. THE WIDTH OF THE END OF THE APRON SHALL BE EQUAL TO THE BOTTOM WIDTH OF THE RECEIVING CHANNEL. MAXIMUM TAPER TO RECEIVING CHANNEL 5:1.
3. THE GEOTEXTILE FILTER FABRIC TO BE MIRAFI 140N OR EQUIVALENT
4. RIP RAP STONE SHOULD EXTEND FROM THE PAVED WATERWAY TO THE BOTTOM OF THE BASIN TO PREVENT SCOURING. STONE SHOULD LAY ON TOP OF FILTER FABRIC. FABRIC SHOULD WRAP STONE AND SHOULD BE TACKED TO THE SURFACE OF THE BINDER COURSE OF MIX USED FOR THE PAVED WATERWAY.

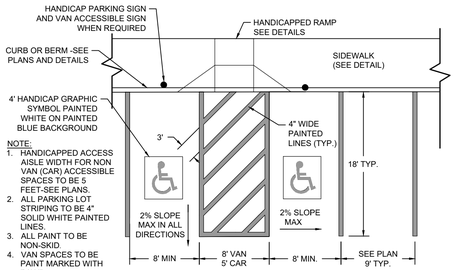


CHANNEL SECTION



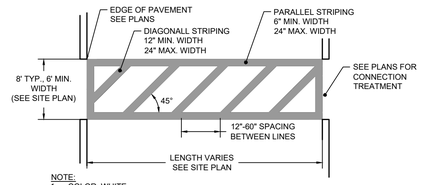
SECTION VIEW

PAVED DRAINAGE FLUME
NOT TO SCALE



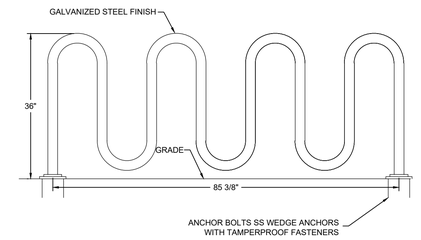
NOTE:
1. HANDICAPPED ACCESS AISLE WIDTH FOR NON VAN (CAR) ACCESSIBLE SPACES TO BE 5 FEET-SEE PLANS.
2. ALL PARKING LOT STRIPING TO BE 4" SOLID WHITE PAINTED LINES.
3. ALL PAINT TO BE NON-SKID.
4. VAN SPACES TO BE PAINT MARKED WITH "VAN".

HANDICAPPED & STANDARD PARKING SPACES DETAIL
NOT TO SCALE



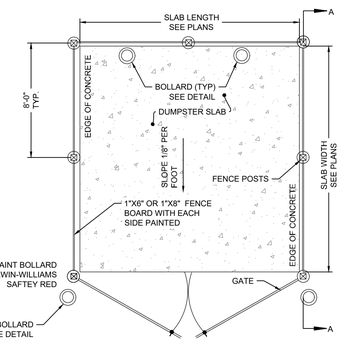
NOTE:
1. COLOR: WHITE
2. ALL PAINT SHALL BE NON-SKID.
3. CROSSWALK STRIPING SHOULD BE SPACED SO THAT LINES ARE NOT IN WHEEL PATHS.
4. SPACING SHOULD NOT EXCEED 2.5 TIMES THE WIDTH OF THE LINE.
5. ALL OTHER ROAD OR PARKING STRIPING TO BE 6" SOLID WHITE PAINTED LINES, UNLESS NOTED OTHERWISE

TYPICAL PAINTED CROSSWALK STRIPING
NOT TO SCALE

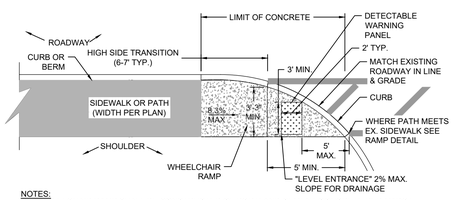


BIKE RACK
NOT TO SCALE

PLAN VIEW

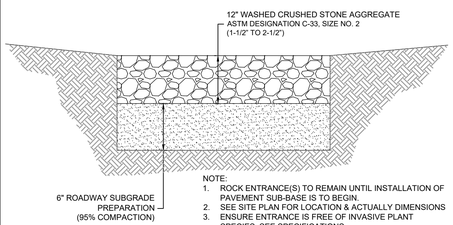


PLAN VIEW



NOTES:
1. WHEELCHAIR RAMP SHALL BE CONSTRUCTED OF PORTLAND CEMENT CONCRETE PER MADOT & ADA SPECIFICATIONS.
2. CONTRACTOR SHALL REPLACE/RESET EX. CURB/BERM AS NECESSARY.
3. CURB END SECTIONS SHALL BE INSTALLED AT ALL RAMPS WHEN APPLICABLE.
4. DETECTABLE WARNING PANEL SHALL BE NON SLIP SURFACE FULLY EMBEDDED AND MEETING ADA REQUIREMENTS INSTALLED AT ALL ROADWAY CROSSING. PANEL SHALL BE 3' MIN. IN WIDTH IN DIRECTION OF TRAVEL AND 5' MAX. FROM FACE OF CURB.

HANDICAP RAMP TYPE 1
NOT TO SCALE

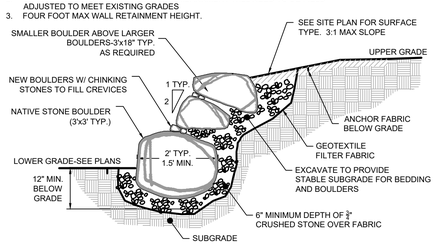


NOTE:
1. ROCK ENTRANCE(S) TO REMAIN UNTIL INSTALLATION OF PAVEMENT SUB-BASE IS TO BEGIN.
2. SEE SITE PLAN FOR LOCATION & ACTUALLY DIMENSIONS
3. ENSURE ENTRANCE IS FREE OF INVASIVE PLANT SPECIES, SEE SPECIFICATIONS.

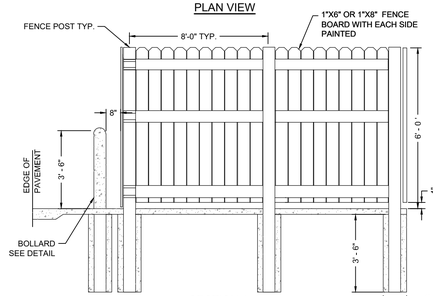
SECTION A-A

CONSTRUCTION ENTRANCE
NOT TO SCALE

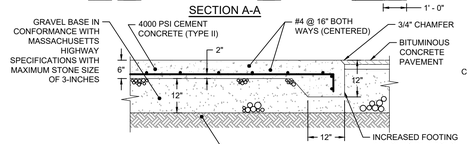
NOTES:
1. ADJUST DEPTH OF WALL TO AVOID DISTURBING MAJOR TREE ROOTS
2. EXACT PROFILE OF RE-ESTABLISHED EMBANKMENT WILL NEED TO BE FIELD ADJUSTED TO MEET EXISTING GRADES
3. FOUR FOOT MAX WALL RETAINMENT HEIGHT.



BOULDER RETAINING WALL
NOT TO SCALE

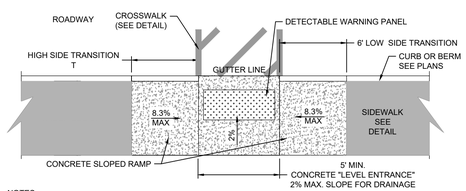


SECTION A-A



NOTES:
1. SIZE OF DUMPSTER PAD TO BE AS INDICATED ON PLANS. CONSTRUCTION JOINTS TO BE SET AT INTERVALS OF 1/3 OF LENGTH. DUMPSTER PAD TO BE SIZED TO SUIT.
2. ENCLOSURE SPECIFICATIONS:
   - THE FENCING TO BE AN OPAQUE TYPE MATERIAL OF EITHER CEDAR OR VINYL.
   - THE FENCE HEIGHT TO FULLY ENCLOSE THE DUMPSTER ANDTO 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 INCHES (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. TWO OTHER BOLLARDS TO BE INSTALLED IN SIDE THE FENCE, OPPOSITE OF GATE.

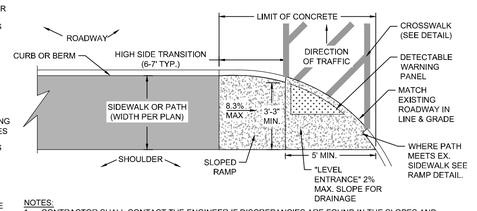
DUMPSTER PAD & ENCLOSURE
NOT TO SCALE



NOTES:
1. CONTRACTOR TO CONTACT THE ENGINEER IF DISCREPANCIES ARE FOUND IN THE SLOPES AND GRADES SHOWN PRIOR TO POURING THE CONCRETE.
2. RAMP SHALL BE CONSTRUCTED OF PORTLAND CEMENT CONCRETE PER MADOT & ADA REQUIREMENTS.
3. IF APPLICABLE, CONTRACTOR TO REPLACE/RESET EX. CURB/BERM AS NECESSARY.
4. DETECTABLE WARNING PANEL TO BE NON SLIP SURFACE FULLY EMBEDED AND MEETING ADA REQUIREMENTS INSTALLED AT ALL ROADWAY CROSSING AND INLINE WITH CROSSWALK.

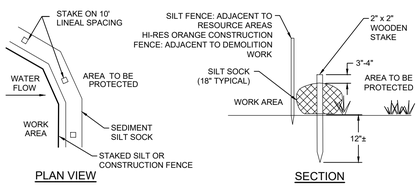
ROADWAY PROFILE GRADE	T (FT.)
0.00	6.0
0.01	7.0
0.02	8.0
0.03	9.5
0.04	11.5
0.05	15.0

HANDICAP RAMP TYPE 2
NOT TO SCALE



NOTES:
1. CONTRACTOR SHALL CONTACT THE ENGINEER IF DISCREPANCIES ARE FOUND IN THE SLOPES AND GRADES SHOWN PRIOR TO POURING THE CONCRETE.
2. RAMP SHALL BE CONSTRUCTED OF PORTLAND CEMENT CONCRETE PER MADOT & ADA REQUIREMENTS.
3. CONTRACTOR SHALL REPLACE/RESET EX. CURB/BERM AS NECESSARY.
4. CURB END SECTIONS SHALL BE INSTALLED AT ALL RAMPS WHEN APPLICABLE.
5. DETECTABLE WARNING PANEL SHALL BE NON SLIP SURFACE FULLY EMBEDED AND MEETING ADA REQUIREMENTS INSTALLED AT ALL ROADWAY CROSSING AND INLINE WITH CROSSWALK.

HANDICAP RAMP TYPE 3
NOT TO SCALE



PLAN VIEW SECTION

NOTES:
1. SILT SOCK MANUFACTURER TO BE SILT SOXX OR ENGINEER APPROVED EQUAL.
2. ALL MATERIAL TO MEET MANUFACTURER'S SPECIFICATIONS.
3. SEDIMENT SILT SOCK TO BE FILLED WITH LEAF COMPOST AND/OR WOODY MULCH PER MANUFACTURER'S REQUIREMENTS.
4. FOLLOWING CONSTRUCTION AND SITE STABILIZATION, COMPOST MATERIAL TO BE REMOVED OR DISPERSED ON SITE, AS APPROVED BY THE ENGINEER.

SILT SOCK
NOT TO SCALE

PERMITTING SET ONLY
NOT FOR CONSTRUCTION

Revisions

Rev.	Date	By	Appr.	Description

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Sustainable Environmental Solutions
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Date: SEPTEMBER 2021 | Designed By: EYH1 | Drawn By: EYH1 | Checked By: BRK

Plan Set:
CAPE VIEW WAY
PERMITTING PLANS
BOURNE, MASSACHUSETTS

Plan Title:
CONSTRUCTION DETAILS (1)

Prepared For:
PRESERVATION OF AFFORDABLE HOUSING
2 OLIVER STREET, SUITE 500
BOSTON, MA 02109
Phone: (617) 261-9898
Fax: ----

Survey Provided By:
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Dated: JUNE 2019

Registration:
COMMONWEALTH OF MASSACHUSETTS
RICHARD A. CLAYTOR
CIVIL
NO. 45116
REGISTERED PROFESSIONAL ENGINEER
9-13-2021

Project Number: 19038
Sheet: 15 of 23
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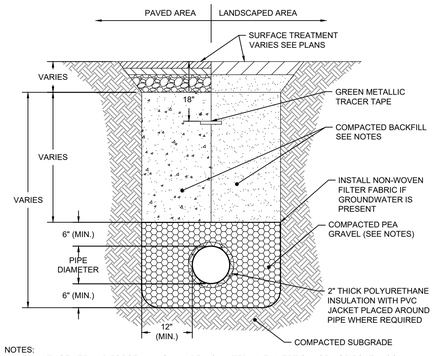
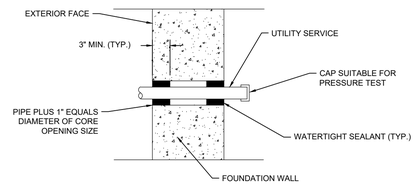


NOTES:
1. GRAVITY SEWER AND FORCE MAIN SHALL BE INSULATED WHEN VERTICAL OR HORIZONTAL SOIL COVER IS LESS THAN 4 FEET AND WHERE SHOWN ON PLANS.
2. TRACER TAPE FOR NON-FERROUS PIPE SHALL BE CONSTRUCTED OF A METALLIC CORE BONDED TO PLASTIC LAYERS. THE METALLIC TRACER TAPE SHALL BE A MINIMUM 5mm THICK AND MUST BE LOCATABLE AT A DEPTH OF 18 INCHES WITH ORDINARY PIPE LOCATORS.
3. TRENCH BACKFILL:
   BENEATH PAVEMENT: BACKFILL SHALL BE ROADBASE AND COMPACTED TO PAVEMENT SUBBASE REQUIREMENTS-SEE DETAIL.
   OUTSIDE PAVEMENT: GRAVEL BORROW TYPE B (3" MINUS) COMPACTED IN MAXIMUM 8 INCH LIFTS TO TO 95% COMPACTION.
4. BACKFILL PLACED IN UTILITY TRENCHES INCLUDING DISTURBED AREAS SURROUNDING UTILITY TRENCHES SHALL BE PLACED AND COMPACTED IN 8" (MAX.) VERTICAL LIFTS.
5. CONTRACTOR SHALL ACHIEVE 95% COMPACTION FOR THE BEDDING.
6. PEA GRAVEL SHALL CONSIST OF CLEAN, HARD, ROUND PARTICLES OF GRAVEL MEETING THE FOLLOWING:

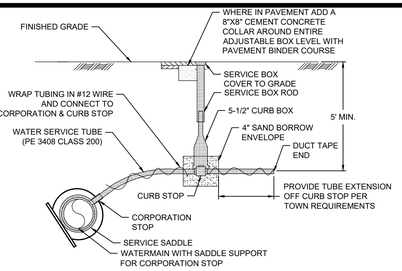
SIEVE SIZE	PERCENT PASSING
3/8"	85-95
NO. 4	5-15
NO. 8	0-2

7. UTILITY SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE UTILITY COMPANY STANDARDS THAT MAY BE MORE STRINGENT THAN THIS DETAIL.

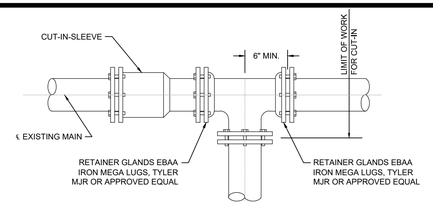
SEWER TRENCH DETAIL
NOT TO SCALE



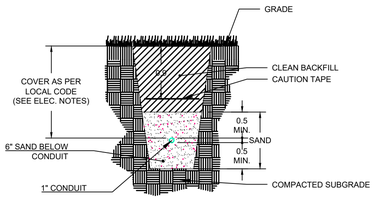
FOUNDATION WALL PENETRATION DETAIL
NOT TO SCALE



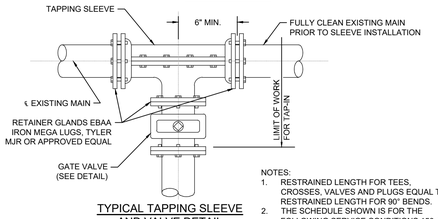
WATER CONNECTION DETAIL
NOT TO SCALE



TYPICAL CUT - IN SLEEVE AND FITTING DETAIL

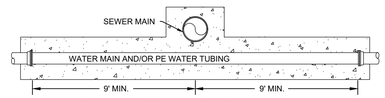


ELECTRIC CONDUIT TRENCH (SEE E-1)
NOT TO SCALE

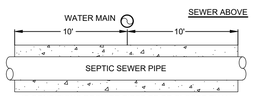


TYPICAL TAPPING SLEEVE AND VALVE DETAIL

NOTES:
1. RESTRAINED LENGTH FOR TEES, CROSSES, VALVES AND PLUGS EQUAL TO RESTRAINED LENGTH FOR 90° BENDS.
2. THE SCHEDULE SHOWN IS FOR THE FOLLOWING SERVICE CONDITIONS 150 psig INTERNAL PRESSURE; SOIL TYPE: SAND-SILT.
3. RESTRAINED LENGTHS SHOWN IN TABLE ARE MINIMUM LENGTHS (IN FEET) AND ARE REQUIRED IN EACH DIRECTION FROM FITTINGS OR VALVES.

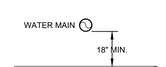


IF SEWER LINES MUST CROSS WATER SUPPLY LINES, BOTH PIPES SHALL BE CONSTRUCTED OF CLASS 150 PRESSURE PIPE OR BETTER AND SHALL BE PRESSURE TESTED TO ASSURE WATER TIGHTNESS. IF CROSSING IS WITHIN 18" MINIMUM, BOTH MAINS MUST BE ENCASED IN CONCRETE 10' EITHER SIDE OF CROSSING



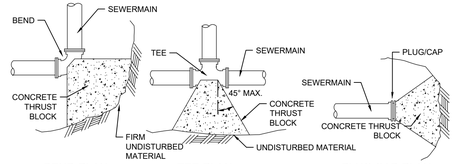
IF CONDITIONS REQUIRE PIPES TO BE CLOSER THAN 18", ENCASE SEWER 10' EACH SIDE OF CROSSING OR USE D.I. FOR SEWER

SEWER BELOW < 18" SEPARATION



SEWER BELOW >/= 18" SEPARATION

WATER SERVICE / SEWER CROSSING DETAIL
NOT TO SCALE



BEND-PLAN TEE-PLAN PLUG/CAP-PLAN

NOTES:
1. CONCRETE FOR THRUST BLOCKS SHALL HAVE MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI AT 28 DAYS.
2. THRUST BLOCK BEARING AREAS TO BE IN ACCORDANCE WITH TABLE, UNLESS DETERMINED OTHERWISE BY THE ENGINEER BECAUSE OF SOIL CONDITIONS.
3. THRUST BLOCK SIDES SHALL BE FORMED WITH PLYWOOD.

TABLE OF BEARING AREAS (S.F.)

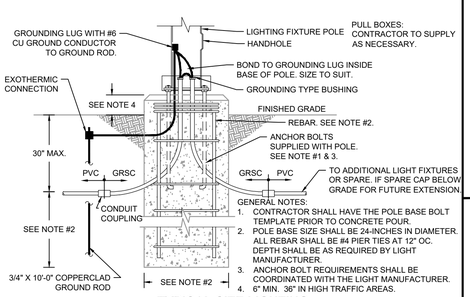
SIZE OF MAIN (IN.)	BEND (90)	BENDS (45 & <)	TEES,CAPS OR PLUGS
8 & <	6	3	4
10 & 12	12	7	9
16 & >	18	10	14

THRUST BLOCK
NOT TO SCALE

RESTRAINED JOINT SCHEDULE

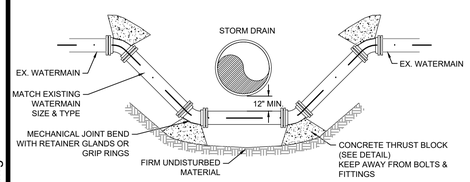
PIPE SIZE	90°	45°	22 1/2°	11 1/4°
	D. I.	D. I.	D. I.	D. I.
12"	92'	38'	18'	9'
10"	78'	32'	16'	8'
8"	66'	27'	13'	7'
6"	51'	21'	10'	5'
4"	38'	16'	8'	4'

WATERMAIN CONNECTIONS
NOT TO SCALE

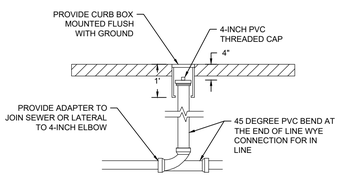


GENERAL NOTES:
1. CONTRACTOR SHALL HAVE THE POLE BASE BOLT TEMPLATE PRIOR TO CONCRETE POUR.
2. POLE BASE SIZE SHALL BE 24-INCHES IN DIAMETER. ALL REBAR SHALL BE #4 PIER TIES AT 12" OC. DEPTH SHALL BE AS REQUIRED BY LIGHT MANUFACTURER.
3. ANCHOR BOLT REQUIREMENTS SHALL BE COORDINATED WITH THE LIGHT MANUFACTURER.
4. 6" MIN. 36" IN HIGH TRAFFIC AREAS.

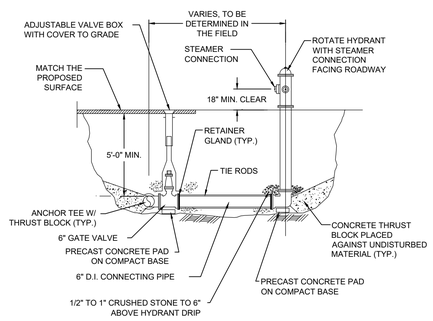
TYPICAL SITE LIGHTING POLE BASE DETAIL
NOT TO SCALE



DRAINAGE-WATERMAIN CROSSING DETAIL
NOT TO SCALE

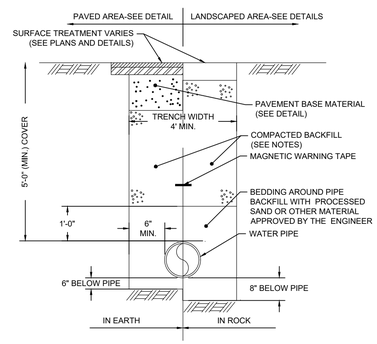


TYPICAL CLEANOUT DETAIL
NOT TO SCALE



NOTES:
1. DEPTH OF HYDRANT BURY TO SUIT INSTALLED DEPTH OF COVER OVER WATERMAIN.
2. THRUST BLOCKS SHALL BE A MINIMUM OF 3-CFT IN VOLUME.
3. LARGE FLAT ROCKS MAY REPLACE CONCRETE PADS.
4. ROOFING FELT SHALL BE INSTALLED BETWEEN THE CONCRETE PAD AND THE WATERMAIN FITTINGS WHERE NECESSARY.
5. SEE TABLE FOR CONCRETE THRUST BLOCK REQUIREMENTS.

HYDRANT ASSEMBLY DETAIL
NOT TO SCALE

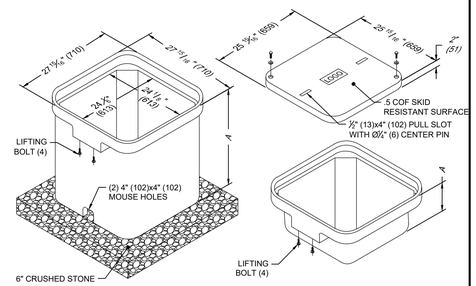


NOTES:
1. TRENCH BACKFILL:
   BENEATH PAVEMENT: ROADBASE AND COMPACTED TO PAVEMENT SUBGRADE REQUIREMENTS (SEE DETAIL).
   OUTSIDE PAVEMENT: GRAVEL BORROW TYPE B (3" MINUS) COMPACTED IN MAXIMUM 8 INCH LIFTS TO TO 95% COMPACTION.
2. TRACER TAPE FOR NON-FERROUS PIPE SHALL BE CONSTRUCTED OF A METALLIC CORE BONDED TO PLASTIC LAYERS. A MINIMUM 5mm THICK METALLIC TRACER TAPE MUST BE LOCATABLE AT A DEPTH OF 18 INCHES WITH ORDINARY PIPE LOCATORS.
3. ACHIEVE 95% COMPACTION FOR THE BEDDING.
4. PEA GRAVEL CONSISTS OF CLEAN, HARD, ROUND PARTICLES OF GRAVEL MEETING THE FOLLOWING:

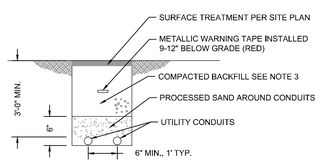
SIEVE SIZE	PERCENT PASSING
3/8"	85-95
NO. 4	5-15
NO. 8	0-2

5. INSTALL UTILITY IN ACCORDANCE WITH ALL APPLICABLE UTILITY COMPANY STANDARDS THAT MAY BE MORE STRINGENT THAN THIS DETAIL.

WATER TRENCH DETAIL
NOT TO SCALE



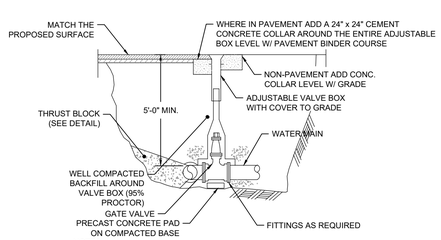
SITE LIGHTING HANDHOLE DETAIL
NOT TO SCALE



NOTE:
DETAIL IS FOR SECONDARY ELECTRICAL SERVICE. PRIMARY SERVICE SHALL BE INSTALLED PER ELECTRICAL COMPANY STANDARDS.

NOTES:
1. SITE WORK SUBCONTRACTOR SHALL PERFORM EXCAVATION, AND BACKFILL FOR ALL CONDUIT INSTALLATIONS. ELECTRICAL CONTRACTOR SHALL FURNISH AND INSTALL ALL CONDUITS, PULLWIRES, HANDHOLES, AND WARNING TAPE AS REQUIRED FOR ELECTRICAL WORK.
2. UTILITY CONDUITS SHALL INCLUDE A COMBINATION OF ONE, TWO, OR ALL OF (1) FOR TELEPHONE, (1) FOR ELECTRICAL, AND (1) FOR CABLE TELEVISION, (1) COMMUNICATION, (1) FOR OTHER AS SHOWN IN THE SITE PLAN.
3. TRENCH COMPACTED BACKFILL:
   BENEATH PAVEMENT: BACKFILL SHALL BE ROADBASE AND COMPACTED TO PAVEMENT SUBBASE REQUIREMENTS-SEE DETAIL.
   OUTSIDE PAVEMENT: GRAVEL BORROW TYPE B (3" MINUS) COMPACTED IN MAXIMUM 8 INCH LIFTS TO TO 95% COMPACTION.
4. UTILITY SHALL BE INSTALLED IN ACCORDANCE WITH ALL APPLICABLE UTILITY COMPANY STANDARDS THAT MAY BE MORE STRINGENT THAN THIS DETAIL.

TYPICAL UTILITY TRENCH DETAIL
NOT TO SCALE



NOTES:
1. THRUST BLOCKS MINIMUM OF 3-CFT IN VOLUME.
2. INSTALL ROOFING FELT BETWEEN THE CONCRETE PAD AND THE WATERMAIN FITTINGS WHERE NECESSARY.

GATE VALVE INSTALLATION DETAIL
NOT TO SCALE

PERMITTING SET ONLY
NOT FOR CONSTRUCTION

Revisions

Rev.	Date	By	Appr.	Description

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Checked By: BRK
Drawn By: EYH
Designed By: EYH
Date: SEPTEMBER 2021

Plan Set: CAPE VIEW WAY PERMITTING PLANS BOURNE, MASSACHUSETTS

Plan Title: CONSTRUCTION DETAILS (2)

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Dated: JUNE 2019

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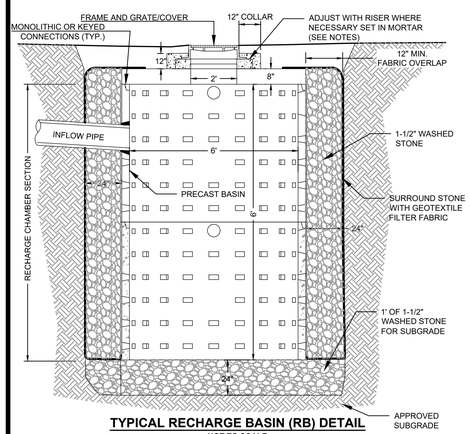
COMMONWEALTH OF MASSACHUSETTS
RICHARD A. CLAYTOR
CIVIL
NO. 45116
REGISTERED PROFESSIONAL ENGINEER
9-13-2021

Project Number: 19038
Sheet: 16 of 23
Sheet Number: C - 16

last modified: 09/13/21 printed: 09/13/21 by bk K:\Projects\2019\19038 Cape View Way\Drawings\19038 DE.dwg

NOTES:
1. ALL SECTIONS DESIGNED FOR H20 LOADING IF LOCATED WITH PAVED SURFACES AND/OR TRAFFIC AREAS.
2. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS INSIDE AND OUT.
3. SET RECHARGE BASIN FRAME AND GRATE IN FULL MORTAR BED. ADJUST TO GRADE WITH PRECAST CONCRETE RISER.
4. FRAME AND COVER SHALL CONFORM TO MASSACHUSETTS STANDARDS HEAVY DUTY (EAST JORDAN, NEENAH, OR APPR. EQUIV.)
5. GEOTEXTILE FILTER FABRIC: MIRAFI 140N OR EQUIVALENT.
6. AVOID PLACING THE CASTINGS CLOSE TO THE TOP OF THE STRUCTURE SHOULD BE TO PROVIDE SUFFICIENT SPACE BETWEEN THE TOP OF PIPE AND THE KEY WHERE THE TOP JOINS THE STRUCTURE SIDES.
7. FRAME AND GRATE TO BE SET IN FULL 12" WIDE AND 12" DEPTH BED OF CEMENT CONCRETE. ADJUST TO GRADE WITH PRECAST CONCRETE RISER OR BRICK. CONCRETE TO BE LEVEL WITH THE TOP OF ASPHALT BINDER IF WITHIN PAVED AREAS.



TYPICAL RECHARGE BASIN (RB) DETAIL
NOT TO SCALE

NOTES:
1. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR TO EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH A FOUNDATION OF CLASS I OR II MATERIAL AS DEFINED IN ASTM D2321, "STANDARD PRACTICE FOR INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY-FLOW APPLICATIONS," LATEST EDITION; AS AN ALTERNATIVE AND AT THE DISCRETION OF THE ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A WOVEN GEOTEXTILE FABRIC.
2. BEDDING, HAUNCHING AND INITIAL BACKFILL: SUITABLE MATERIAL TO 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

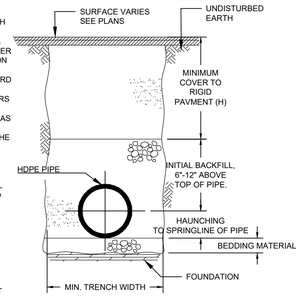
MATERIAL TO BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

MINIMUM BEDDING THICKNESS TO BE 4" (100mm) FOR 4"-24" (100-600mm) AND 42"-48"(1050-1200mm) CORRUGATED POLYETHYLENE PIPE (CPEP); 6" (150mm) FOR 30"-36" (750-900mm) CPEP.

3. MINIMUM TRENCH WIDTHS TO BE AS FOLLOWS:

NOMINAL Ø in (mm)	MIN. RECOMMENDED TRENCH WIDTH, in (mm)
8 (200)	25 (630)
10 (250)	28 (710)
12 (300)	31 (790)
15 (375)	34 (860)
18 (450)	39 (990)

4. MINIMUM COVER: MINIMUM RECOMMENDED DEPTHS OF COVER FOR VARIOUS LIVE LOADING CONDITIONS ARE SUMMARIZED IN THE FOLLOWING TABLE. UNLESS OTHERWISE NOTED, ALL DIMENSIONS ARE TAKEN FROM THE TOP OF PIPE TO THE GROUND SURFACE.



DETAIL PROVIDED BY ADVANCED DRAINAGE SYSTEMS, INC.

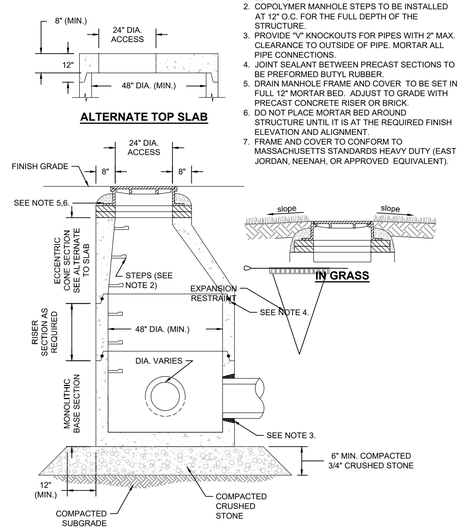
SURFACE LIVE LOADING CONDITION	MINIMUM RECOMMENDED * COVER, in (mm)
H25 (FLEXIBLE PAVEMENT)	12 (300)
H25 (RIGID PAVEMENT) E80	12 (300)
RAILWAY HEAVY CONSTRUCTION	24 (610)
	48 (1220)

* 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 30. THIS IS BASED ON EMPIRICAL CALCULATION OF LOAD RESPONSE, MANUFACTURER'S TESTING AND FIELD EXPERIENCE WITH THE PIPE. AASHTO SPECIFICATIONS SECTION 18.4.1.5 DEFINES THE MINIMUM COVER AS "D/8 BUT NOT LESS THAN 12 INCHES". THIS COVER IS MEASURED FROM THE PIPE OD TO THE TOP OF A RIGID (CONCRETE) PAVEMENT OR THE BOTTOM OF A FLEXIBLE (BITUMINOUS) PAVEMENT. BOTH AASHTO AND ASTM, AS WELL AS MOST MANUFACTURERS, REQUIRE ADDITIONAL (TEMPORARY COVER, MOUNDED OVER THE PIPE AND REMOVED FOR FINAL GRADING AND PAVING, IS SUFFICIENT FOR LARGE CONSTRUCTION VEHICLE LOADS.

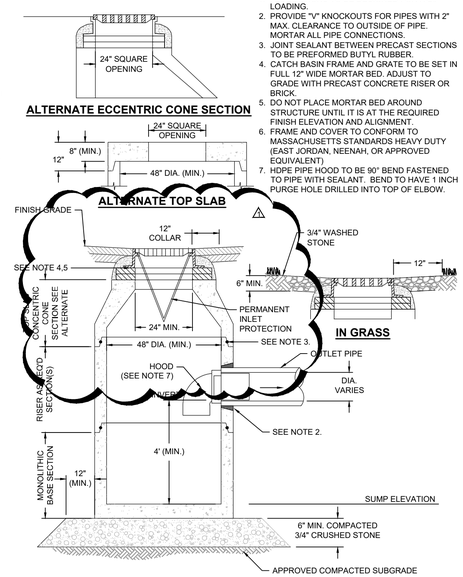
HDPE DRAINAGE PIPE TRENCH
NOT TO SCALE

NOTES:
1. ALL SECTIONS TO BE DESIGNED FOR H-20 LOADING.
2. COPOLYMER MANHOLE STEPS TO BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.
3. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
4. JOINT SEALANT BETWEEN PRECAST SECTIONS TO BE PREFORMED BUTYL RUBBER.
5. DRAIN MANHOLE FRAME AND COVER TO BE SET IN FULL 12" MORTAR BED. ADJUST TO GRADE WITH PRECAST CONCRETE RISER OR BRICK.
6. DO NOT PLACE MORTAR BED AROUND STRUCTURE UNTIL IT IS AT THE REQUIRED FINISH ELEVATION AND ALIGNMENT.
7. FRAME AND COVER TO CONFORM TO MASSACHUSETTS STANDARDS HEAVY DUTY (EAST JORDAN, NEENAH, OR APPROVED EQUIVALENT).

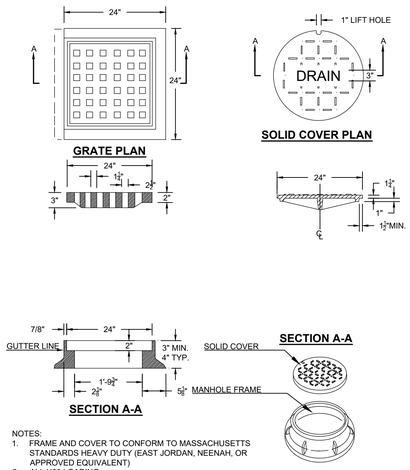


PRECAST DRAIN MANHOLE (DMH)
NOT TO SCALE

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 12" 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.

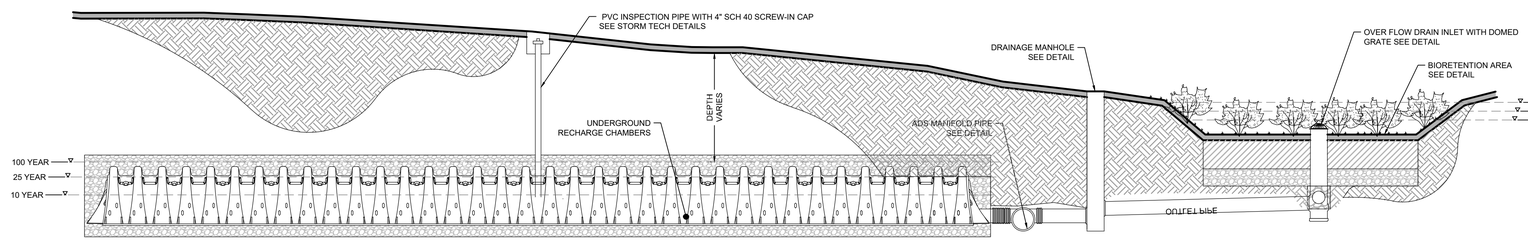


PRECAST CONCRETE CATCH BASIN (CB) WITH HOOD
NOT TO SCALE



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 295 LBS
   3" FLANGE 265 LBS
4. MATERIAL-CAST IRON
5. MIN. GRATE WEIGHT: 200LBS.
6. SEE CATCHBASIN AND MANHOLE DETAILS FOR INSTALLATION.

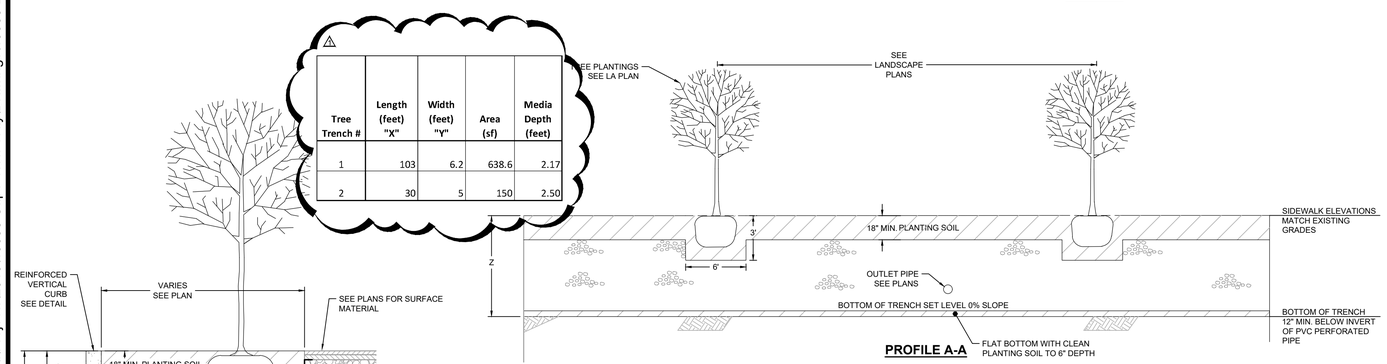
DRAINAGE STRUCTURE FRAME AND COVER/GRATE
NOT TO SCALE



TYPICAL PROFILE THROUGH BIORETENTION AREA & RECHARGE CHAMBERS
NOT TO SCALE

	BIORETENTION DESIGN STORM ELEVATIONS		
No.	WQv El.[3] (ft.)	25-yr El.[3] (ft)	100-yr El.[3] (ft)
1	58.99	59.50	59.58
2	62.92	63.15	63.20

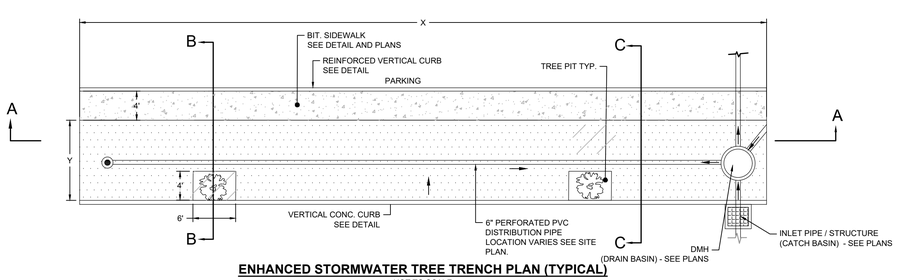
Tree Trench #	Length (feet) "X"	Width (feet) "Y"	Area (sf)	Media Depth (feet)
1	103	6.2	638.6	2.17
2	30	5	150	2.50



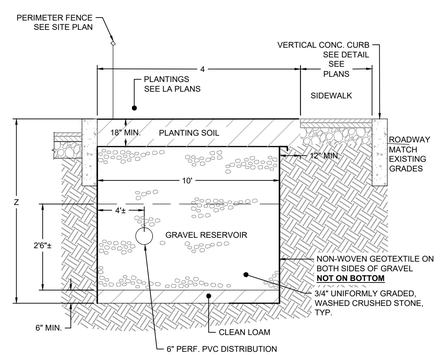
PROFILE A-A

SECTION B-B

PERFORATED PIPE NOTES:
1. RIGID SCHEDULE 40 PVC PIPE, WITH 3/8" PERFORATIONS @ 6" O.C. MEETING ASTMD 1785 OR AASHTO M-278 AND ARRANGED IN ROWS PARALLEL TO THE AXIS OF THE PIPE.
2. ON BOTH THE INSIDE AND OUTSIDE OF THE PIPE, PERFORATIONS SHALL BE FREE OF CUTTINGS OR FRAYED EDGES AND OF ANY MATERIAL THAT WOULD REDUCE THE EFFECTIVE OPENING.
3. ROWS SHALL BE ARRANGED IN TWO EQUAL GROUPS AT EQUAL DISTANCE FROM THE BOTTOM ON EACH SIDE OF THE VERTICAL CENTERLINE OF THE PIPE. THE LOWERMOST ROWS OF PERFORATIONS SHALL BE SEPARATED BY AN ARC OF NOT LESS THAN 60 DEGREES OR MORE THAN 125 DEGREES. THE UPPERMOST ROWS OF PERFORATIONS SHALL BE SEPARATED BY AN ARC NOT TO EXCEED 166 DEGREES. THE SPACING OF ROWS BETWEEN THESE LIMITS SHALL BE UNIFORM
4. T'S AND Y'S FITTINGS AS REQUIRED FOR THE UNDERDRAIN CONFIGURATION INDICATED ON DRAWING.



ENHANCED STORMWATER TREE TRENCH PLAN (TYPICAL)
NOT TO SCALE



NOTES:
1. 3' GRAVEL DEPTH VARIES BASED UPON INLET PIPE INVERT, PIPE SLOPE AND PIPE COVER REQUIREMENTS.

SECTION C-C

PERMITTING SET ONLY
NOT FOR CONSTRUCTION

Revisions

Rev.	Date	By	Appr.	Description
1	9/10/21	EWH	BRK	REVISIONS DUE TO PEER REVIEW COMMENTS

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Checked By: BRK
Drawn By: EWH
Designed By: EWH
Date: SEPTEMBER 2021

Plan Set:

CAPE VIEW WAY
PERMITTING PLANS
BOURNE, MASSACHUSETTS

Plan Title: CONSTRUCTION DETAILS (3)

Prepared For:
PRESERVATION OF AFFORDABLE HOUSING
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Dated: JUNE 2019

Registration:
COMMONWEALTH OF MASSACHUSETTS
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CIVIL
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REGISTERED PROFESSIONAL ENGINEER
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Project Number: 19038
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BIORETENTION 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.

1. CONDUCT A PRE-CONSTRUCTION MEETING.
2. CHECK FOR EXISTING UTILITIES PRIOR TO ANY EXCAVATION.
3. CLEAR AND GRUB THE PROPOSED BIORETENTION AREA
4. ROUGH GRADE THE BIORETENTION AREA DURING GENERAL CONSTRUCTION.
5. EXCAVATE PETREATMENT CELLS AND/OR SEDIMENT FOREBAYS PRIOR TO BIORETENTION CONSTRUCTION.
6. DO NOT CONSTRUCT THE BIORETENTION AREA UNTIL ALL DISTURBED AREAS WITHIN THE CONTRIBUTING DRAINAGE AREAS HAVE BEEN GRADED AND STABILIZED.
7. INSTALL TEMPORARY EROSION AND SEDIMENT CONTROLS TO DIVERT STORMWATER AWAY FROM THE BIORETENTION AREA.
8. EXCAVATE THE BIORETENTION FACILITY TO THE BOTTOM INVERT OF THE SUBDRAIN SYSTEM. IF USED FOR TEMPORY STORMWATER MANAGEMENT DURING CONSTRUCTION PROVIDE A SURFACE ELEVATION AT A MINIMUM 1-FOOT ABOVE THE BOTTOM OF UNDERDRAIN ELEVATION AS SHOWN IN THE BIORETENTION SCHEDULE. THIS ALLOWS FOR AN OVER-DIG OF THE ACCUMULATED SEDIMENT FROM WITHIN THE BIORETENTION AREA PRIOR TO MEDIA/FABRIC INSTALLATION
9. 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.
10.
11. INSTALL THE FILTER FABRIC ALONG THE EXCAVATION SIDE WALLS. ENGINEER FIELD VISIT AND REPORT REQUIRED SEE NOTE (3) BELOW.
12. RIP THE BOTTOM SOILS TO A DEPTH OF SIX INCHES TO PROMOTE GREATER INFILTRATION.
13. INSTALL THE OVERFLOW OUTLET STRUCTURE AS SPECIFIED IN THE DRAWINGS.
14. INSTALL UNDERDRAIN AS INDICATED ON DRAWINGS. ENGINEER FIELD VISIT AND REPORT REQUIRED PRIOR TO COVERING THE UNDERDRAIN. SEE NOTE (3) BELOW.
15. INSTALL PEA GRAVEL LAYER AS INDICATED ON DRAWINGS.
16. DELIVER APPROVED BIORETENTION SOIL AND STORE ON ADJACENT IMPERVIOUS AREA OR PLASTIC SHEETING.
17. BACKFILL WITH APPROVED BIORETENTION SOIL TO THE DESIGN GRADE (UN-COMPACTED) AS INDICATED ON DRAWINGS. THE CONTRACTOR MUST SUBMIT A SOIL SAMPLE (2 LBS) TO THE ENGINEER PRIOR TO SOIL DELIVERY TO THE SITE.
18. STABILIZE ALL REMAINING DISTURBED AREAS AND SIDE SLOPES WITH SEEDING, HYDROSEEDING, AND/OR EROSION CONTROL BLANKETS AS INDICATED ON DRAWINGS. ENGINEER FIELD VISIT AND REPORT REQUIRED SEE NOTE (3) BELOW.
19. INSTALL BIORETENTION PLANTINGS AS INDICATED ON DRAWINGS. DO NOT PLANT BEFORE THE REMAINING DISTURBED AREAS SURROUNDING THE FACILITY ARE STABILIZED.
20. INSTALL MULCH LAYER AS INDICATED ON DRAWINGS. THE CONTRACTOR MUST SUBMIT A MULCH SAMPLE (1 GALLON) TO THE ENGINEER PRIOR TO DELIVERY TO THE SITE.
21. CONDUCT FINAL CONSTRUCTION INSPECTION WITH ENGINEER. ENGINEER FIELD VISIT AND REPORT REQUIRED SEE NOTE (3) BELOW.
22. REMOVE REMAINING EROSION AND SEDIMENT CONTROLS ONLY AFTER SURROUNDING DISTURBED AREAS HAVE BEEN PROPERLY STABILIZED.

NOTES:
(1.) SEE GENERAL CONSTRUCTION NOTES FOR OVERALL CONSTRUCTION SEQUENCE.
(2.) SEE GENERAL NOTES/SPECIFICATIONS/CONSTRUCTION DETAILS FOR DETAILED CONSTRUCTION REQUIREMENTS.
(3.) MANDATORY NOTIFICATION/APPROVAL OF THE PROJECT ENGINEER IS REQUIRED PRIOR TO PROCEEDING WITH NEXT STAGE. CALL THE ENGINEER (HORSLEY WITTEN GROUP, INC.) AT 508-833-6600 PRIOR TO 12:00 NOON THE PROCEEDING DAY TO ARRANGE FOR ANY REQUESTED FIELD VISITS.

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-DIG-SAFE (1-888-344-7233) NOT LESS THAN **THREE** BUSINESS 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. USE EXCAVATING EQUIPMENT WITH ADEQUATE REACH SO THEY DO NOT WORK IN THE FOOTPRINT OF THE BIORETENTION AREA. 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.

C. EXCAVATE AND SEAL ANY PRETREATMENT CELLS AND/OR SEDIMENT FOREBAYS FIRST AND SEALED TO TRAP SEDIMENTS PER THE DRAWINGS.

D. ROUGH GRADE THE BIORETENTION AREA DURING GENERAL CONSTRUCTION. EXCAVATE THE BIORETENTION FACILITIES TO WITHIN 1 FOOT OF UNDERDRAIN BOTTOM.

E. 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. COMPACTION WILL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE.

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 TYPE TIRES. USE OF EQUIPMENT WITH NARROW TRACKS OR NARROW TIRES, RUBBER TIRES WITH LARGE LUGS, OR HIGH PRESSURE TIRES CAUSE EXCESSIVE COMPACTION RESULTING IN REDUCED INFILTRATION RATES AND STORAGE VOLUMES AND IS NOT ACCEPTABLE.

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. THESE TILLING OPERATIONS ARE PERFORMED TO REFRACTURE THE SOIL PROFILE THROUGH THE 12-IN COMPACTION ZONE. SUBSTITUTE METHODS MUST BE APPROVED BY THE ENGINEER. ROTOILLERS TYPICALLY DO NOT TILL DEEP ENOUGH TO REDUCE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.

E. DO NOT COMPACT BIORETENTION SOIL WITH MECHANICAL EQUIPMENT.

5. EMBANKMENT/BERM FILL

A. CONSTRUCT EMBANKMENT/BERM IN ACCORDANCE WITH SPECIFICATIONS AND AS INDICATED ON DRAWINGS.

6. INSTALLATION

A. DO NOT CONSTRUCT THE BIORETENTION AREA UNTIL ALL DISTURBED AREAS WITHIN THE CONTRIBUTING DRAINAGE AREAS HAVE BEEN GRADED AND STABILIZED.

B. REMOVE SEDIMENT ACCUMULATED ALONG THE EXCAVATION FLOOR DURING SITE CONSTRUCTION PRIOR TO CONTINUING WITH THE BIORETENTION FACILITY CONSTRUCTION.

C. FORM BOTTOM OF EXCAVATION TO CORRECT ELEVATION.

D. IF INFILTRATION IS PROMOTED, THEN RIP THE BOTTOM SOILS TO A DEPTH OF SIX INCHES TO PROMOTE GREATER INFILTRATION.

E. INSTALL THE FILTER FABRIC ALONG THE EXCAVATION SIDE WALLS AS SPECIFIED IN THE DRAWINGS. IF FILTER FABRIC IS TO BE INSTALLED PLACE THE FILTER FABRIC ON THE SIDES OF THE BIORETENTION AREA WITH A MINIMUM SIX INCH OVERLAP AT ALL JOINTS.

F. INSTALL ANY TEMPORARY EROSION AND SEDIMENT CONTROLS TO DIVERT STORMWATER AWAY FROM THE BIORETENTION AREA DURING FINAL CONSTRUCTION AND UNTIL IT IS COMPLETED. SPECIAL PROTECTION MEASURES SUCH AS EROSION CONTROL FABRICS MAY BE NEEDED TO PROTECT VULNERABLE SIDE SLOPES FROM EROSION DURING THE CONSTRUCTION PROCESS.

G. ESTABLISH ELEVATIONS AND PIPE INVERTS FOR INLETS AND OUTLETS AS INDICATED ON DRAWINGS

H. INSTALL THE OVERFLOW OUTLET STRUCTURE AS INDICATED ON DRAWINGS.

I. INSTALL UNDERDRAIN, INCLUDING 4 INCH PERFORATED PIPE, GRAVEL AND FILTER FABRIC ON TOP OF THE UNDERDRAIN GRAVEL AS INDICATED ON DRAWINGS. PLACE GRAVEL AROUND THE UNDERDRAIN PIPE AS INDICATED IN THE DETAILS. OBSERVATION WELLS AND/OR CLEAN-OUT PIPES MUST BE PROVIDED (SEE PLANS FOR LOCATION).

J. INSTALL PEA GRAVEL LAYER AS INDICTED ON DRAWINGS.

K. 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. DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION BASIN. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOILS AND SAND. WAIT 3 DAYS TO CHECK FOR SETTLEMENT, AND ADD ADDITIONAL MEDIA AS NEEDED

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. DO NOT ADD FERTILIZERS OR OTHER SOIL AMENDMENTS TO THE BIORETENTION SOILS UNLESS INSTRUCTED BY THE ENGINEER. THE PLANTING SOIL SPECIFICATIONS PROVIDE ENOUGH ORGANIC MATERIAL TO ADEQUATELY SUPPLY NUTRIENTS FROM NATURAL CYCLING.

C. INSTALL BIORETENTION PLANTINGS AS INDICATED ON DRAWINGS. WATER DURING WEEKS OF NO RAIN FOR THE FIRST TWO MONTHS.

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. MIX APPROXIMATELY HALF OF THE SPECIFIED MULCH LAYER INTO THE BIORETENTION SOIL TO A DEPTH OF APPROXIMATELY 4 INCHES TO HELP FOSTER A HIGHLY ORGANIC SURFACE LAYER.

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. REPAIR PROMPTLY ANY IDENTIFIED DEFICIENCIES AND LEAVE THE PROJECT SITE IN A CLEAN AND SATISFACTORY CONDITION.

MATERIAL SPECIFICATIONS

1. BIORETENTION SOIL

SUBMIT SOIL SAMPLE (2LBS) AND TESTING ANALYSIS RESULTS BY A QUALIFIED SOIL TESTING LABORATORY INDICATING AND INTERPRETING TEST RESULTS FOR COMPLIANCE WITH THE FOLLOWING PARAMETER:

A. UNIFORM SOIL MIX, FREE OF NOXIOUS WEEDS AND STONES, STUMPS, ROOTS OR OTHER SIMILAR OBJECTS LARGER THAN 1 INCH.

B. PROVIDE USDA UNIFIED SOIL CLASSIFICATION: LOAMY SAND

C. PROVIDE A TEXTURAL ANALYSIS INCLUDING THE GRADATION AND PERCENTAGES OF SAND, SILT, AND CLAY CONTENT
85-88% SAND (< 10% COARSE SAND)
8-12% SILT AND CLAY (< 2% CLAY)

D. ORGANIC MATTER: 3%
WELL AGED (6-12 MONTHS), WELL AERATED, LEAF COMPOST OR APPROVED EQUIVALENT

E. 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. ALL TESTING SHOULD BE PERFORMED BY THE SAME TESTING FACILITY TO MAINTAIN CONSISTENT RESULTS. SUBMIT THE SOIL SAMPLE RESULTS TO THE ENGINEER REVIEW AND APPROVAL PRIOR TO DELIVERY TO THE PROJECT SITE.

F. VOLUME OF FILTER MEDIA BASED ON 110% OF PLAN VOLUME TO ACCOUNT FOR SETTLING OR COMPACTION.

G. DO NOT MIX, DUMP OR STORE ANY OTHER MATERIALS OR SUBSTANCES THAT MAY B E HARMFUL TO PLANT GROWTH OR PROVE A HINDRANCE TO THE PLANTING MAINTENANCE OR OPERATIONS WITHIN THE BIORETENTION AREA.

2. FILTER FABRIC

B. NON-WOVEN GEOTEXTILE FABRIC WITH FLOW RATE OF > 110 GALLON/MINUTES/SQUARE FOOT.

C. CLASS "C" APPARENT OPENING SIZE (ASTM-D-4751).

D. GRAB TENSILE STRENGTH (ATSM-D-4632) BURST STRENGTH (ASTM-D-4833).

3. 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 ASTMD 1785 OR AASHTO M-278.
T'S AND Y'S FITTINGS AS REQUIRED FOR THE UNDERDRAIN CONFIGURATION INDICATED ON DRAWING.

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.
BIONET S150BN OR APPROVED EQUIVALENT.

8. PLANTS

A. AS INDICATED ON DRAWINGS.

9. SEED (SIDE SLOPES ONLY)

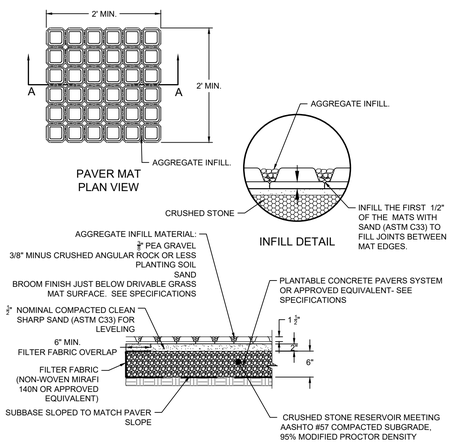
A. NEW ENGLAND CONSERVATION/WILDLIFE/MIX OR APPROVED EQUIVALENT.

B. APPLICATION RATE 25 LBS/ ACRES OR PER SEED MANUFACTURER'S REQUIREMENTS.

10. OUTLET STRUCTURE

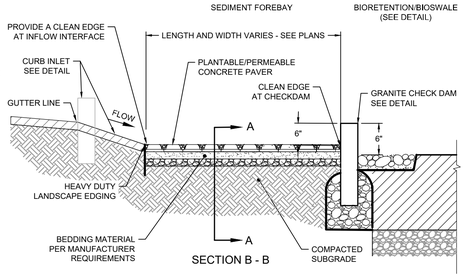
A. SIZE AS INDICATED ON DRAWINGS.

B. FIBERGLASS REINFORCED PLASTIC MANHOLES OF SIZE INDICATED ON DRAWINGS.

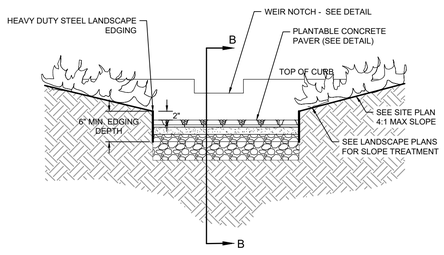


PLANTABLE CONCRETE PAVER NOTES:
1. REFER TO MANUFACTURERS REQUIREMENTS FOR ADDITIONAL INSTALLATION REQUIREMENTS
2. FILTER FABRIC AROUND PERIMETER AND BOTTOM OF STONE BASE. KEY IN MINIMUM 6".

PLANTABLE CONCRETE PAVER



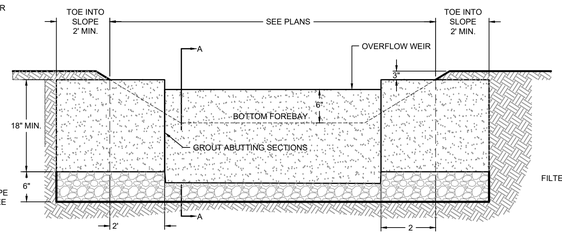
SECTION B - B



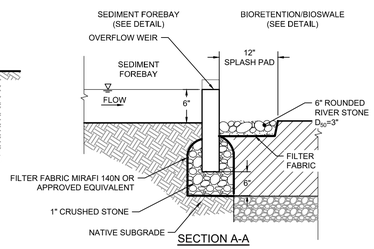
SECTION A - A

NOTES:
1. SEE SPECIFICATIONS FOR PLANTABLE/PERMEABLE PAVER REQUIREMENTS.
2. INSTALL PLANTABLE/PERMEABLE PAVER SYSTEM PER MANUFACTURERS REQUIREMENTS.
3. SHAPE FOREBAY AS REQUIRED WITH MIN. 6" SIDE SLOPE DEPTH.
4. LANDSCAPE EDGING: HEAVY DUTY STEEL LANDSCAPE EDGING (¼" THICKNESS) WITH NATURAL FINISH
5. SEE PLANS FOR DIMENSIONS GRADING AND ELEVATIONS FOR SEDIMENT FOREBAY

SEDIMENT FOREBAY
NOT TO SCALE



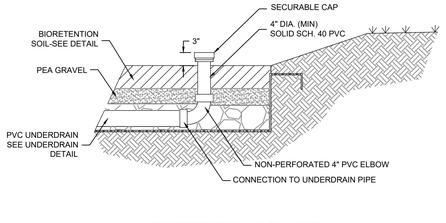
PROFILE



SECTION A-A

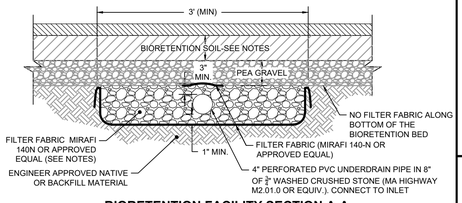
NOTE:
1. KEY GRANITE CURBING INTO THE FOREBAY SIDE SLOPES AND EXTEND A MINIMUM OF 2' TO PREVENT FLOW FROM DIVERTING THE CHECK DAM.
2. GROUT ABUTTING SECTIONS OF GRANITE CURBING.

SEDIMENT FOREBAY CHECKDAM
NOT TO SCALE



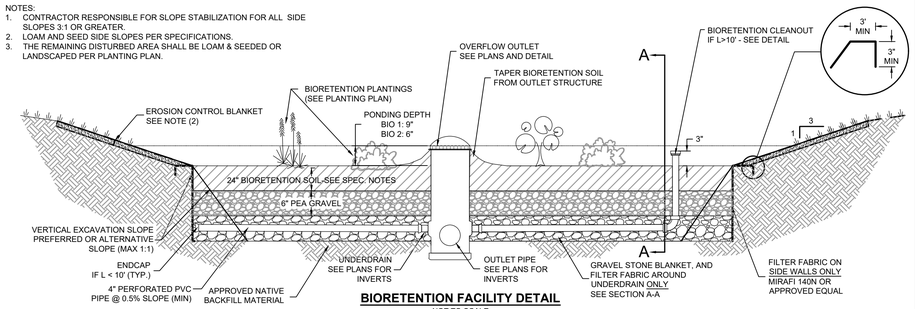
BIORETENTION CLEANOUT
NOT TO SCALE

NOTES:
1. FILTER FABRIC AT BOTTOM OF UNDERDRAIN ONLY.
2. FILTER FABRIC ABOVE UNDERDRAIN SHALL EXTEND VERTICALLY 1-INCH± INTO THE PEA GRAVEL LAYER & HORIZONTALLY 1-FOOT OFF THE CENTER OF THE UNDERDRAIN PIPE.

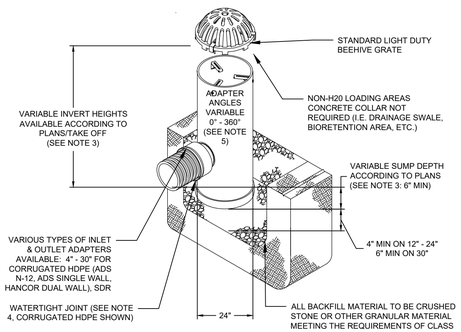


BIORETENTION FACILITY SECTION A-A
NOT TO SCALE

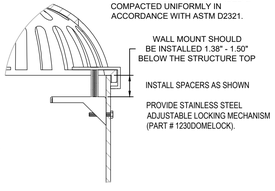
NOTES:
1. CONTRACTOR RESPONSIBLE FOR SLOPE STABILIZATION FOR ALL SIDE SLOPES 3:1 OR GREATER.
2. LOAM AND SEED SIDE SLOPES PER SPECIFICATIONS.
3. THE REMAINING DISTURBED AREA SHALL BE LOAM & SEEDED OR LANDSCAPED PER PLANTING PLAN.



BIORETENTION FACILITY DETAIL
NOT TO SCALE



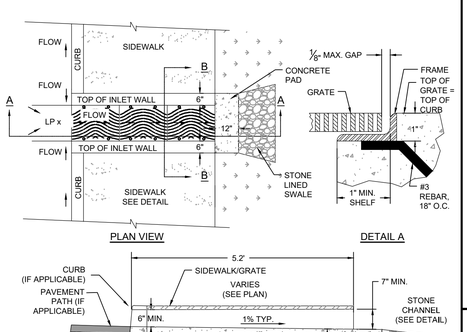
NOTES:
1. GRATES/SOLID COVER TO BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05,
2. FRAMES TO BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS SEE DRAWING NO. 7001-110-065
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS TO CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
5. ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012, 7001-110-013, & 7001-110-014

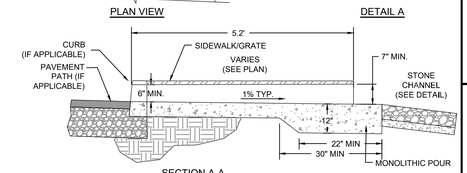


CUTOUT DETAIL

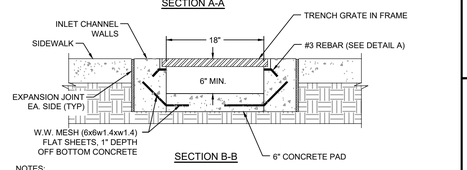
DRAIN BASIN
NOT TO SCALE

BY "NYLOPLAST" OR APPROVED EQUIVALENT





SECTION A-A



SECTION B-B

NOTES:
1. TRENCH GRATE TO BE TITLE WAVE MODEL BY URBAN ACCESSORIES OR APPROVED EQUIVALENT. LOCAL DISTRIBUTOR IS FOX ASSOCIATES OF HOPE, MAINE (207-763-4410).
2. TRENCH GRATE SHALL BE INSTALLED PER MANUFACTURERS SPECIFICATIONS.
3. ALL TRENCH GRATES SHALL BE H-20 LOAD RATED.

SIDEWALK INLET GRATE
NOT TO SCALE

PERMITTING SET ONLY
NOT FOR CONSTRUCTION

Revisions

Rev.	Date	By	Appr.	Description

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

Date: SEPTEMBER 2021 | Designed By: EYH1 | Drawn By: EYH1 | Checked By: BRK

Plan Set:

Plan Title: CONSTRUCTION DETAILS (4)

CAPE VIEW WAY
PERMITTING PLANS
BOURNE, MASSACHUSETTS

Prepared For:
PRESERVATION OF AFFORDABLE HOUSING
2 OLIVER STREET, SUITE 500
BOSTON, MA 02109
Phone: (617) 261-9898
Fax: ----

Survey Provided By:
Horsley Witten Group, Inc.
90 Route 6A
Sandwich, MA 02563
Phone: (508) 833-6600
Fax: (508) 833-3150
Dated: JUNE 2019

Registration:

COMMONWEALTH OF MASSACHUSETTS
RICHARD A. CLAYTOR
CIVIL
NO. 45116
REGISTERED PROFESSIONAL ENGINEER

9-13-2021

Project Number: 19038

Sheet : 18 of 23

Sheet Number: C - 18

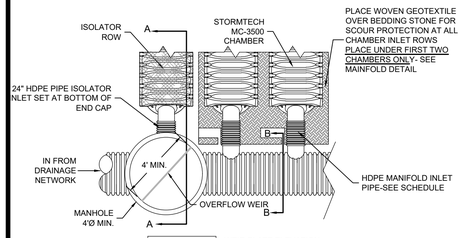
last modified: 09/13/21 printed: 09/13/21 by bk K:\Projects\2019\19038 Cape View Way\Drawings\19038 DE.dwg

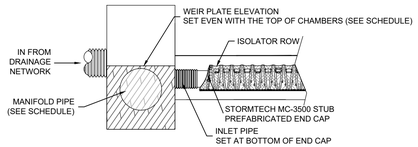
StormTech®

Detention • Retention • Recharge

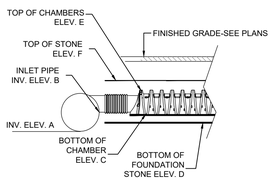
Subsurface Stormwater Management℠

1. ALL DESIGN SPECIFICATIONS FOR STORMTECH MC-3500 CHAMBERS SHALL BE IN ACCORDANCE WITH THE STORMTECH MC-3500 DESIGN MANUAL
2. THE INSTALLATION OF STORMTECH MC-3500 CHAMBERS SHALL BE IN ACCORDANCE WITH THE LATEST STORMTECH MC-3500 INSTALLATION INSTRUCTIONS
3. THE CONTRACTOR IS ADVISED TO REVIEW AND UNDERSTAND THE INSTALLATION INSTRUCTIONS PRIOR TO BEGINNING SYSTEM INSTALLATION. CALL **1-888-892-2694** OR VISIT **WWW.STORMTECH.COM** TO RECIEVE A COPY OF THE LATEST STORMTECH MC-3500 INSTALLATION INSTRUCTIONS
4. CHAMBERS SHALL MEET THE DESIGN REQUIREMENTS AND LOAD FACTORS SPECIFIED IN SECTION 12.12 OF THE LATEST EDITION OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS





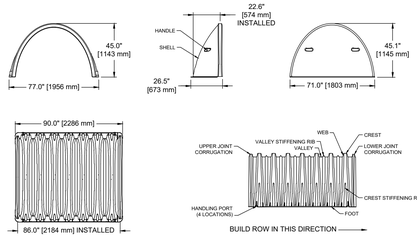
SECTION A-A



SECTION B-B

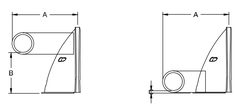
STORMTECH SYSTEM DETAIL

NOT TO SCALE



NOMINAL MC-3500 CHAMBER SPECIFICATIONS
SIZE (L x W x H) 90" x 77" x 45" [2286 mm x 1956 mm x 1143 mm]
CHAMBER STORAGE 113.0 ft³ [3.20 m³]
MINIMUM INSTALLED STORAGE 176.8 ft³ [5.01 m³]
WEIGHT 124 lbs. [56.2 kg]

NOMINAL MC-3500 END CAP SPECIFICATIONS
SIZE (L x W x H) 26.5" x 71" x 45" [673 mm x 1803 mm x 1143 mm]
ENDCAP STORAGE 15.6 ft³ [0.44 m³]
MINIMUM INSTALLED STORAGE 45.6 ft³ [1.29 m³]
WEIGHT 43 lbs. [19.5 kg]



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

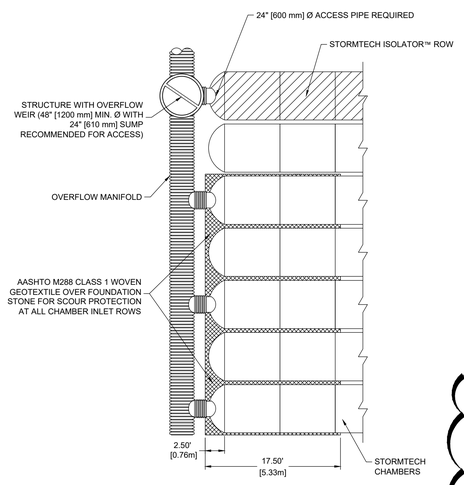
PART#	STUB	A	B	C
MC3500TEPE12T	12" [300 mm]	47.62" [1.21 m]	26.36" [670 mm]	N/A
MC3500TEPE12B	12" [300 mm]	49.33" [1.25 m]	N/A	1.35" [34 mm]
MC3500TEPE15T	15" [375 mm]	55.25" [1.40 m]	23.39" [594 mm]	N/A
MC3500TEPE15B	15" [375 mm]	53.56" [1.36 m]	N/A	1.50" [38 mm]
MC3500TEPE18T	18" [450 mm]	61.39" [1.56 m]	20.03" [509 mm]	N/A
MC3500TEPE18B	18" [450 mm]	56.77" [1.44 m]	N/A	1.77" [45 mm]
	24" TOP STUB CORED ENDCAP NOT AVAILABLE			
MC3500TEPE24B	24" [600 mm]		N/A	2.06" [52 mm]

NOTE: ALL DIMENSIONS ARE NOMINAL

STORMTECH INVENTORIED MANIFOLDS AND PRECORED END CAPS INCLUDE 24" [600 mm] BOTTOM (MC3500TEPE24B), 18" [450 mm] BOTTOM (MC3500TEPE18B) AND 15" [375 mm] TOP (MC3500TEPE15T).
OTHER PIPE SIZES AND PRECORED END CAPS ARE AVAILABLE UPON SPECIAL ORDER.

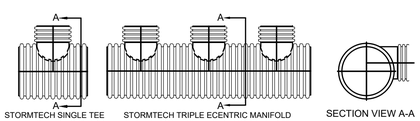
CHAMBER

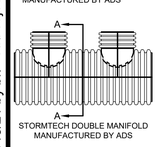
NOT TO SCALE



MANIFOLD

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	-	-	-
10"	-	-	-	-	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-	-
8"	-	-	-	-	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	AVAIL	-
6"	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, CORRUGATE DPIPE UP TO 10 INCHES CAN BE INSERTED DIRECTLY INTO THE END CAP. FOR 12" INLET PIPES, A CORRUGATED TO SMOOTH PIPE ADAPTER IS REQUIRED.

FOR INFORMATION CALL 1-888-892-2694

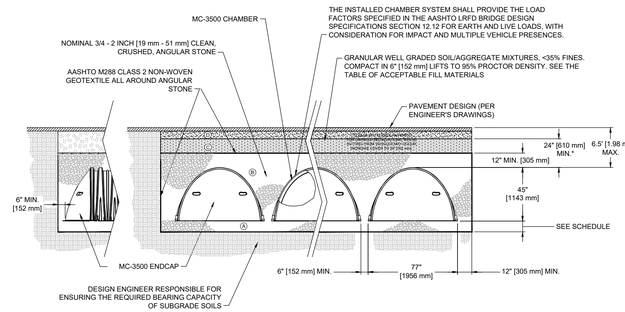
ADS MANIFOLD DETAIL

NOT TO SCALE

ACCEPTABLE FILL MATERIALS: STORMTECH MC-3500 CHAMBER SYSTEMS

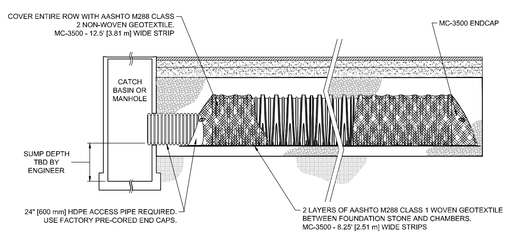
MATERIAL LOCATION	DESCRIPTION	AASHTO M43 DESIGNATION[1]	COMPACTION/DENSITY REQUIREMENT
D FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, 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 24" [610 mm] ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THIS LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, < 35% FINES. MOST PAVEMENT SUBBASE 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 24" [610 mm] OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" [152 mm] LIFTS TO A MIN. 95% STANDARD PROCTOR DENSITY.
B EMBEDMENT STONE SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE 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:
1. 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".
2. 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.



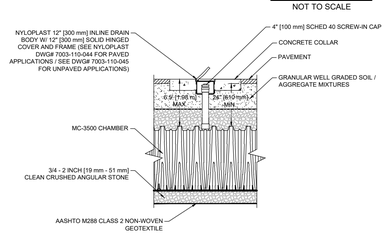
STANDARD CHAMBER CROSS SECTION

NOT TO SCALE

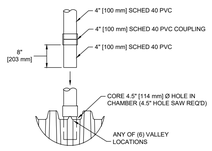


ISOLATOR ROW

NOT TO SCALE



NOTES:
1. INSPECTION PORTS MAY BE CONNECTED THROUGH ANY OF (6) CHAMBER CORRUGATION VALLEYS
2. ALL PVC FITTINGS ARE TO BE SOLVENT CEMENTED



INSPECTION PORT

NOT TO SCALE

△1

NUMBER	COVER TYPE	NUMBER OF UNITS	CHAMBER TYPE/ MODEL	ELEVATIONS ELEV. A INVERT HEADER MANIFOLD (FT)	ELEV. B MANIFOLD STUB INVERT (FT)	ELEV. C BOTTOM OF CHAMBER S (FT)	ELEV. D BOTTOM OF STONE (FT)	ELEV. E TOP OF CHAMBER (FT)	ELEV. F TOP OF STONE (FT)	DESIGN STORM ELEVATIONS WQv El. (ft)	10-yr El. (ft)	25-yr El. (ft)	100-yr El. (ft)
URC-1	Pavement	34	STORMTECH SC-3500d	51.80	52.80	50.60	48.60	54.35	55.85	48.61	51.29	52.17	55.67
URC-2	Pavement	12	STORMTECH SC-3500d	57.30	58.30	56.10	54.10	59.85	60.85	54.35	57.20	58.00	60.70
URC-3	Pavement	12	STORMTECH SC-3500d	58.00	59.00	56.80	54.80	60.55	61.55	54.82	57.60	58.33	60.79
URC-4	Pavement	12	STORMTECH SC-3500d	59.00	60.00	57.80	56.30	61.55	62.55	56.56	59.04	59.82	62.44

PERMITTING SET ONLY
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Revisions

Rev.	Date	By	Appr.	Description
1	9/10/21	EWH	BRK	REVISIONS DUE TO PEER REVIEW COMMENTS

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

Checked By: BRK | Drawn By: EWH | Designed By: EWH | Date: SEPTEMBER 2021

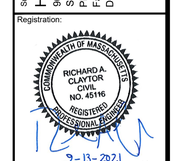
CAPE VIEW WAY
PERMITTING PLANS
BOURNE, MASSACHUSETTS

Plan Title: CONSTRUCTION DETAILS (5)

Prepared For:
PRESERVATION OF AFFORDABLE HOUSING
2 OLIVER STREET, SUITE 500
BOSTON, MA 02109
Phone: (617) 261-9898
Fax: ----

Survey Provided By:
Horsley Witten Group, Inc.
90 Route 6A
Sandwich, MA 02563
Phone: (508) 833-6600
Fax: (508) 833-3150
Dated: JUNE 2019

Registration:



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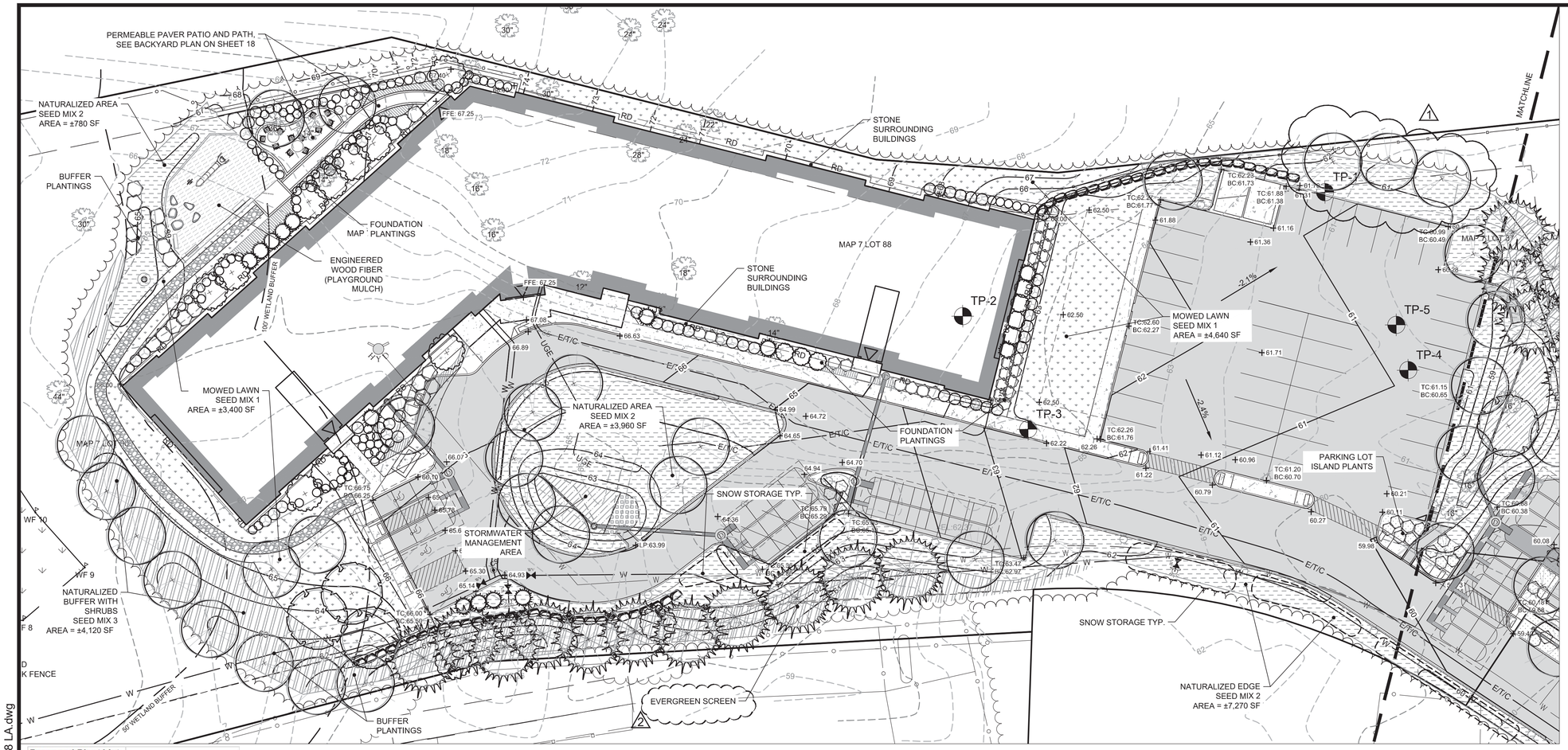

Proposed Plant List

Trees	
Street/Large Deciduous	
Acer rubrum	Red Maple
Nyssa sylvatica	Tupelo
Quercus alba	White Oak
Quercus coccinea	Scarlet Oak
Quercus rubra	Red Oak
Ulmus americana	American Elm
Ornamental	
Amelanchier sp.	Serviceberry
Betula papyrifera	Paper Birch
Betula populifolia	Gray Birch
Evergreen	
Juniperus virginiana	Eastern Red Cedar
Pinus strobus	White Pine
Foundation Plants	
Shrubs	
Aronia sp.	Chokeberry
Clethra alnifolia	Summersweet Clethra
Comptonia peregrina	Sweetfern
Cornus sericea	Red Twig Dogwood
Ilex glabra	Inkberry
Hydrangea quercifolia	Oakleaf Hydrangea
Hypericum kalmianum	Kalm St. Johnswort
Morella pensylvanica	Bayberry
Physocarpus opulifolius	Ninebark
Rhus aromatica 'Gro Low'	Fragrant Sumac
Vaccinium sp.	Blueberry
Viburnum dentatum	Arrowwood
Perennials/Grasses/Groundcovers	
Geum fragarioides	Appalachian Barren Strawberry
Geranium maculatum	Wild Geranium
Heuchera macrorhiza	Coral Bells
Oenothera fruticosa	Evening Primrose
Osmunda cinnamomea	Cinnamon Fern
Pycanthemum sp.	Mountain Mint
Schizachyrium scoparium	Little Bluestem
Sporobolus heterolepsis	Prairie Dropseed

Buffer Plants	
Trees	
Acer rubrum	Red Maple
Amelanchier sp.	Serviceberry
Nyssa sylvatica	Tupelo
Prunus serotina	Black Cherry
Quercus alba	White Oak
Quercus bicolor	Swamp White Oak
Shrubs	
Clethra alnifolia	Summersweet Clethra
Viburnum dentatum	Arrowwood Viburnum
Perennials/Grasses/Groundcovers	
Carex sp.	Sedge sp.
Osmunda cinnamomea	Cinnamon Fern
Parking Lot Islands	
Shrubs	
Comptonia peregrina	Sweetfern
Hypericum sp.	St. Johnswort
Rhus aromatica 'Gro Low'	Fragrant Sumac
Perennials/Grasses/Groundcovers	
Coreopsis sp.	Coreopsis
Baptisia tinctoria	Yellow Wild Indigo
Eupatorium hyssopifolium	Hyssop Leaved Boneset
Geum fragarioides	Appalachian Barren Strawberry
Oenothera fruticosa	Sundrops
Sporobolus heterolepsis	Prairie Dropseed
Stormwater Management Areas	
Trees	
Betula sp.	Birch
Nyssa sylvatica	Tupelo
Shrubs	
Clethra alnifolia	Summersweet Clethra
Cornus sericea	Red Twig Dogwood
Perennials/Grasses/Groundcovers	
Asclepias sp.	Milkweed sp.
Carex sp.	Sedge sp.
Eragrostis spectabilis	Purple Lovegrass
Eupatorium hyssopifolium	Hyssop Leaved Boneset
Juncus sp.	Rushes
Panicum virgatum	Switchgrass
Penstemon digitalis	Beardtongue
Pycanthemum sp.	Mountain Mint
Schizachyrium scoparium	Little Bluestem
Solidago sp.	Goldenrod

PROPOSED SEED MIXES

SEED MIX 1: MOWED LAWN
(MOW EVERY OTHER WEEK OR AS NEEDED)
COLONIAL SEED HARMONY MIX

WAVY HAIR GRASS
SHEEP FESCUE
BLUE FESCUE
HARD FESCUE

SEED MIX 2: NATURALIZED AREAS (MOW ANNUALLY)
COLONIAL SEED - STABILIZER MIX

WAVY HAIR GRASS
LITTLE BLUESTEM
BIG BLUESTEM
UPLAND BENT GRASS
HARD FESCUES
CANADA WILD RYE
SWAN SEDGE
GOLDENROD
BUTTERFLY MILKWEED
LANCE LEAVED COREOPSIS
PARTRIDGE PEA
TICK-TREFOIL

SEED MIX 3: NATURALIZED BUFFER WITH SHRUBS (NO MOW)
NEW ENGLAND WETLAND PLANTS ROADSIDE MATRIX UPLAND SEED MIX

VIRGINIA WILD RYE
LITTLE BLUESTEM
RED FESCUE
BIG BLUESTEM
INDIAN GRASS
SWITCH GRASS
WILDFLOWERS
PARTRIDGE PEA
BUTTERFLY MILKWEED
PANICLEDLEAF TICK TREFOIL
BEARD TONGUE
BLACK EYED SUSAN
HOLLOW-STEM JOE PYE WEED

SHRUBS
GREY DOGWOOD SILKY DOGWOOD STAGHORN SUMAC

NOTES:

1. ANY DISTURBED AREAS AROUND THE BUILDING TO BE SEEDED WITH SEED MIX #1. AREAS OF DISTURBANCE CLOSER TO EXISTING WOODLAND VEGETATION TO BE SEEDED WITH SEED MIX #2.
2. TREES AND PLANTS AROUND PARKING LOTS AND BUILDING TO BE A MINIMUM OF 3" CALIPER AND 24" HIGH, RESPECTIVELY.

PERMITTING SET ONLY
NOT FOR CONSTRUCTION

GRAPHIC SCALE
20 0 10 20 40 80
(in feet)
1 INCH = 20 FEET

Revisions

Rev.	Date	By	Appr.	Description
1	7/13/21	BRK	BRK	One tree added
2	8/13/21	BRK	BRK	Replaced decid. trees with evergreen

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

Date: SEPTEMBER 2021 | Designed By: HLC | Drawn By: HLC | Checked By: BRK

Plan Set:

CAPE VIEW WAY
PERMITTING PLANS
BOURNE, MASSACHUSETTS

Plan Title:

LANDSCAPE PLAN (1)

Prepared For:
PRESERVATION OF AFFORDABLE HOUSING
2 OLIVER STREET, SUITE 500
BOSTON, MA 02109
Phone: (617) 261-6898
Fax: ----

Survey Provided By:
Horsley Witten Group, Inc.
90 Route 6A
Sandwich, MA 02563
Phone: (508) 833-6600
Fax: (508) 833-3150
Dated: JUNE 2019

Registration:
MASSACHUSETTS BRIAN R. KUSIS No. 1628 REGISTERED LANDSCAPE ARCHITECT
8/13/21

Project Number: 19038
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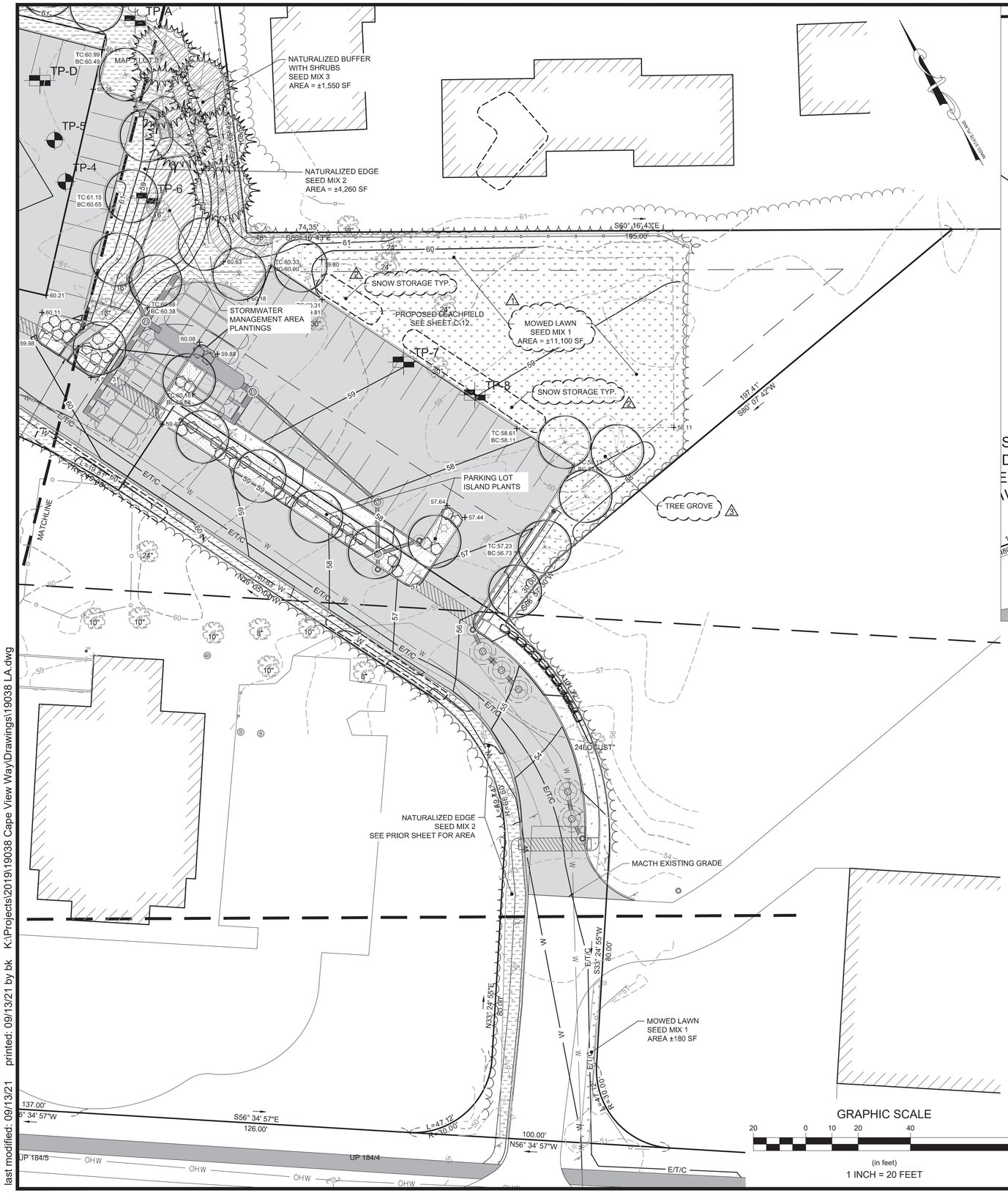
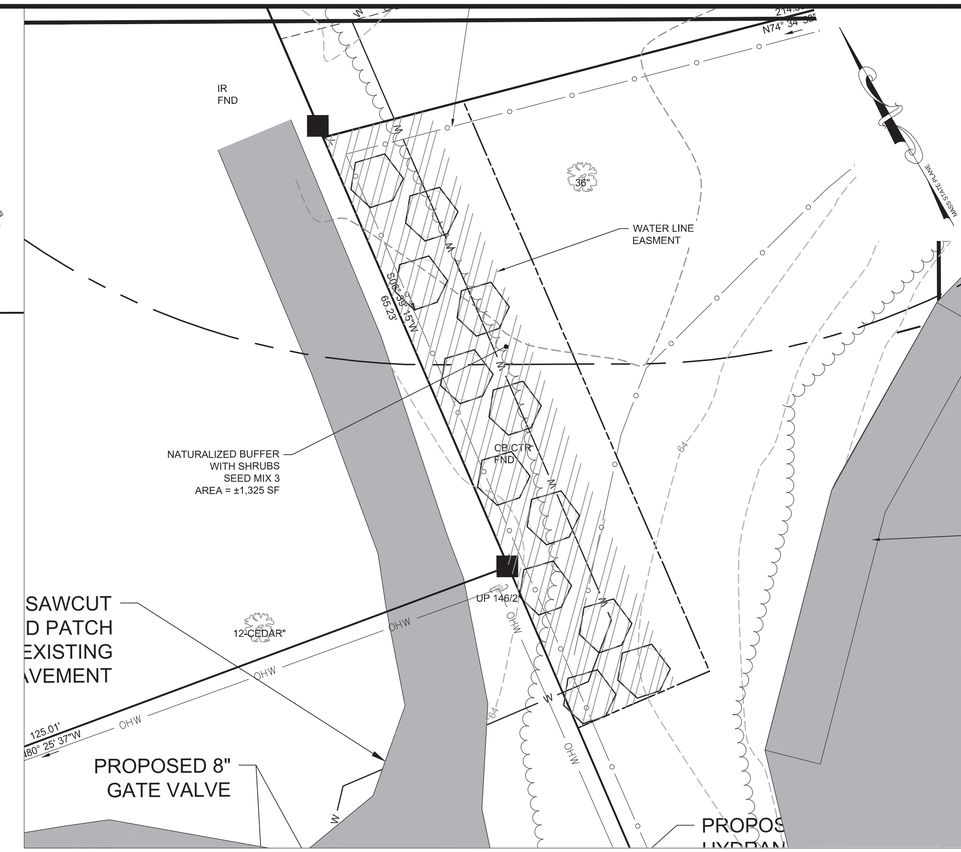


GRAPHIC SCALE

20 0 10 20 40 80

(in feet)

1 INCH = 20 FEET



WATER LINE EASEMENT PLANTING PLAN

Proposed Plant List	
Water Line Easement	
Shrubs	
Aronia sp.	Chokeberry
Ilex glabra	Inkberry
Morella pensylvanica	Bayberry

GRAPHIC SCALE

10 0 5 10 20 40

(in feet)

1 INCH = 10 FEET

PERMITTING SET ONLY
NOT FOR CONSTRUCTION

Revisions

Rev.	Date	By	Appr.	Description
1	7/13/21	BRK	BRK	Revised ww leachfield area
2	7/13/21	BRK	BRK	Revised snow storage area
3	7/13/21	BRK	BRK	Relocated trees (3)
4	---	---	---	---
5	---	---	---	---
6	---	---	---	---
7	---	---	---	---

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Date: SEPTEMBER 2021 | Designed By: HLC | Drawn By: HLC | Checked By: BRK

Plan Set:

CAPE VIEW WAY
PERMITTING PLANS
BOURNE, MASSACHUSETTS

Plan Title:

LANDSCAPE PLAN (2)

Prepared For:
PRESERVATION OF AFFORDABLE HOUSING
2 OLIVER STREET, SUITE 500
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90 Route 6A
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Phone: (508) 833-6600
Fax: (508) 833-3150
Dated: JUNE 2019

Registration:

MASSACHUSETTS BRIAN R. KUBLAK NO. 1529 REGISTERED LANDSCAPE ARCHITECT 9/13/21

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Sheet Number: C - 21

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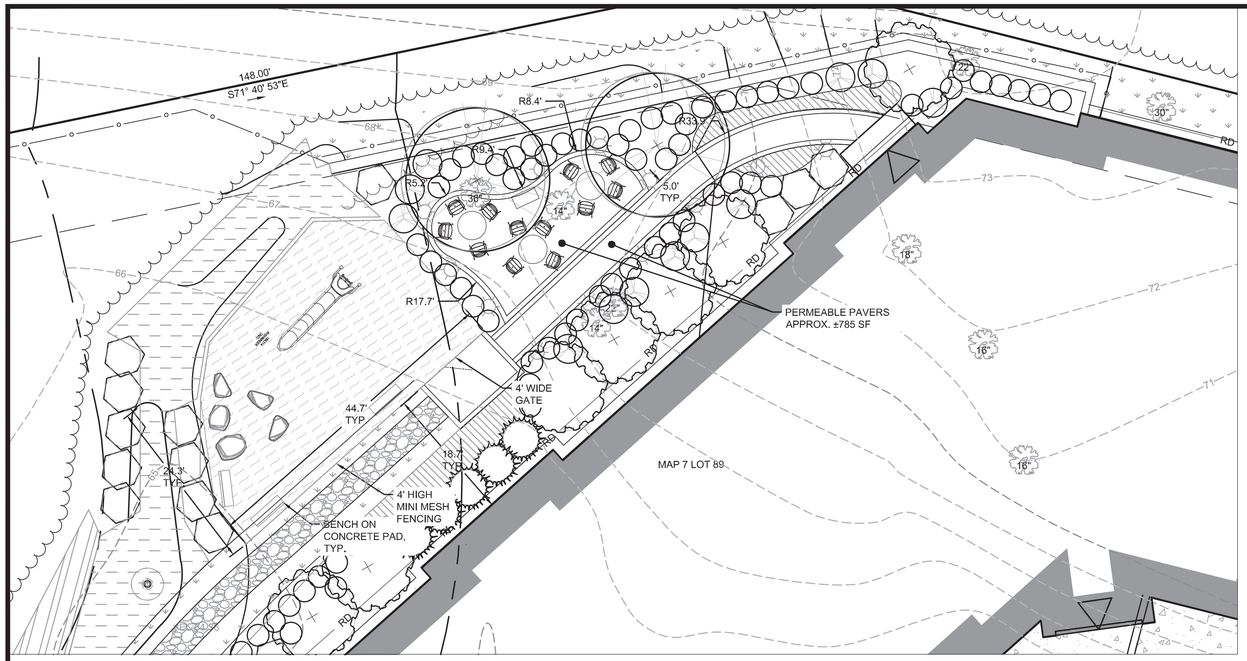
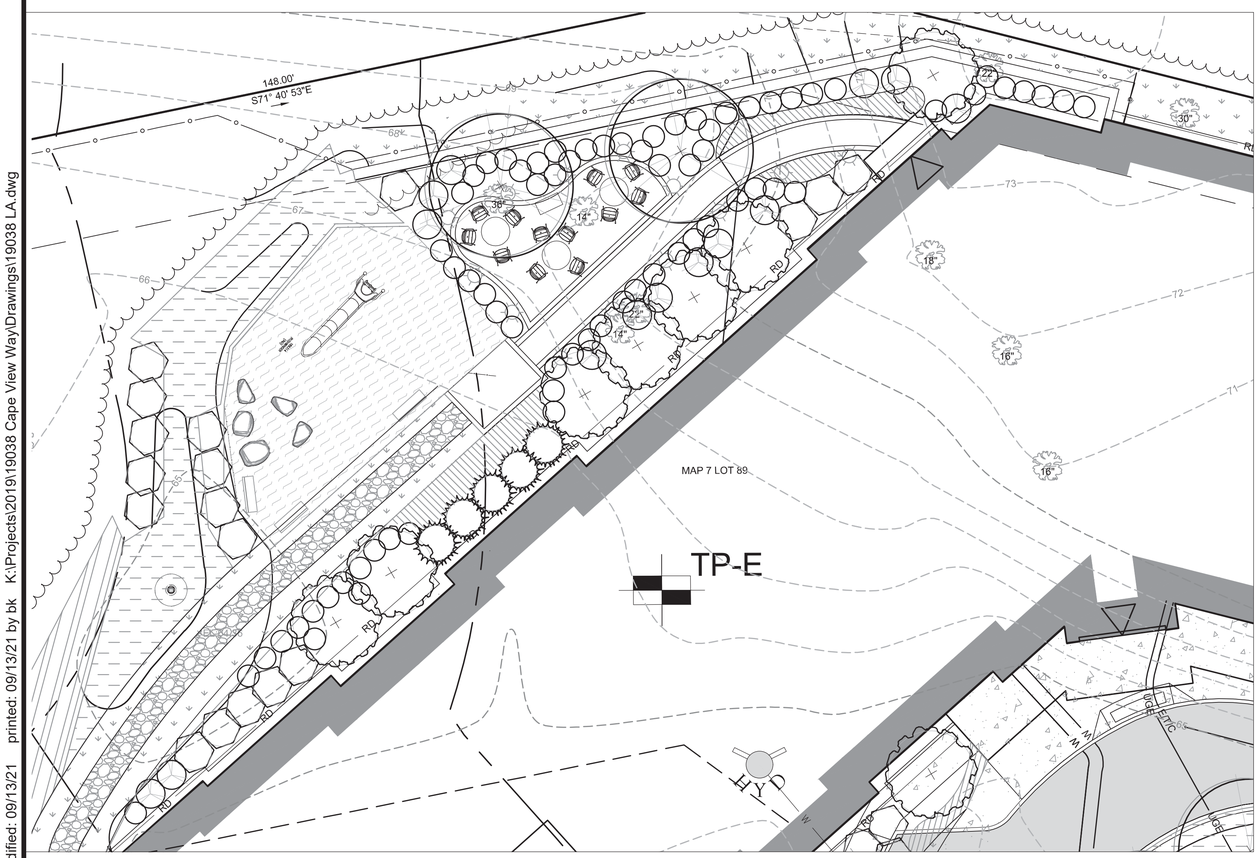
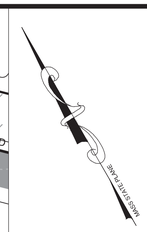
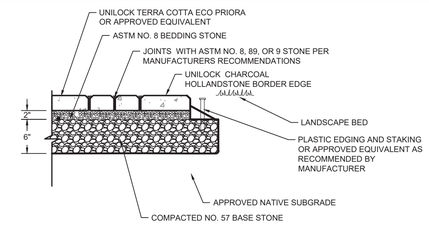


BACKYARD LAYOUT PLAN

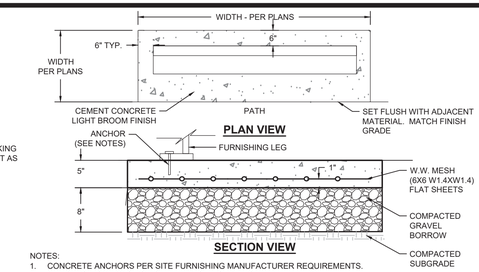


BACKYARD PLANTING PLAN



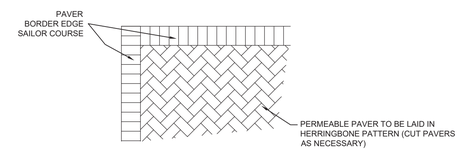


SECTION



NOTES:
1. CONCRETE ANCHORS PER SITE FURNISHING MANUFACTURER REQUIREMENTS.
2. SEE SPECIFICATIONS FOR SITE FURNISHING TYPE/STYLE.

SITE FURNISHING CONCRETE PAD
NOT TO SCALE

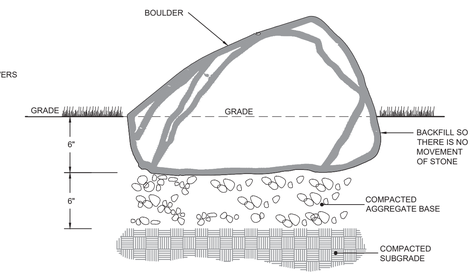


HERRINGBONE PATTERN 45

PLAN VIEW

NOTES:
1. PEDESTRIAN AND RESIDENTIAL USE ONLY.
2. MATERIALS AND CONSTRUCTION GUIDELINES TO FOLLOW ICPI GUIDE SPECIFICATIONS.
3. EXCAVATE ANY UNSUITABLE, UNSTABLE OR UNCONSOLIDATED MATERIAL FROM SUBGRADE.
4. COMPACT BASE AS NECESSARY
5. SOIL SUBGRADE MAX. SLOPE: 1/2%. SLOPE AWAY FROM BUILDING.
6. PAVER, DRAINAGE AGGREGATE, AND JOINTING COMPOUND COLOR TO BE DETERMINED BY THE OWNER.

PERMEABLE PAVERS DETAIL
NOT TO SCALE



BOULDER SET IN GRADE
NOT TO SCALE

GRAPHIC SCALE
10 0 5 10 20 40
(in feet)
1 INCH = 10 FEET

PERMITTING SET ONLY
NOT FOR CONSTRUCTION

Revisions

Rev.	Date	By	App.	Description
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Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
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Sandwich, MA 02563
508-833-6600 voice
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Checked By: BRK
Drawn By: HLC
Designed By: HLC
Date: SEPTEMBER 2021

Plan Set:
CAPE VIEW WAY
PERMITTING PLANS
BOURNE, MASSACHUSETTS

Plan Title:
BACKYARD PLAN & DETAILS

Prepared For:
PRESERVATION OF
AFFORDABLE HOUSING
2 OLIVER STREET, SUITE 500
BOSTON, MA 02109
Phone: (617) 261-9898
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Survey Provided By:
Horsley Witten Group, Inc.
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Fax: (508) 833-3150
Dated: JUNE 2019

Registration:
MASSACHUSETTS REGISTERED LANDSCAPE ARCHITECT
BRIAN R. KUPCUS
No. 1620
9/13/21

Project Number: 19038
Sheet : 22 of 23
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GENERAL PLANTING NOTES:

1. 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.
2. 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.
3. 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.
4. 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.
5. 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 THAT HAVE A WELL DEVELOPED ROOT SYSTEM. PLANTS MUST BE FREE OF DISEASE, INSECTS, EGGS OR LARVAE.
6. 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.
7. 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.
8. 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

9. 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.
10. FURNISH ONE YEAR MANUFACTURER WARRANTY FOR TREES, PLANTS, AND GROUND COVER AGAINST DEFECTS INCLUDING DEATH AND UNSATISFACTORY GROWTH. EXCEPTIONS ARE DEFECTS RESULTING FROM LACK OF ADEQUATE MAINTENANCE, NEGLECT 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.
11. ALL TREES WITHIN 5'-0" OF WALKWAYS AND SIDEWALKS TO HAVE A 6'-8" STANDARD BRANCHING HEIGHT.
12. 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.
13. PROVIDE PROPER PREPARATION OF ALL PROPOSED PLANTED AND SEEDED AREAS PER THE NOTES AND SPECIFICATIONS.
14. 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.
15. 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.
16. POTTED PLANTS: REMOVE THE PLANT FROM THE POT AND LOOSEN OR SCORE THE ROOTS BEFORE PLANTING TO PROMOTE OUTWARDS ROOT GROWTH INTO THE SOIL.
17. 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.
18. 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.
19. CREATE A 2" TO 4" BERM AROUND THE EDGE OF PLANTING HOLE WITH REMAINING SOIL TO RETAIN WATER.
20. REMOVE ALL PLANT TAGS AND FLAGS FROM THE PLANTS.
21. 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.
22. TRIM BROKEN AND DEAD BRANCHES FROM TREES AND SHRUBS AFTER PLANTING. NEVER CUT A LEADER.

GENERAL SEEDING NOTES:

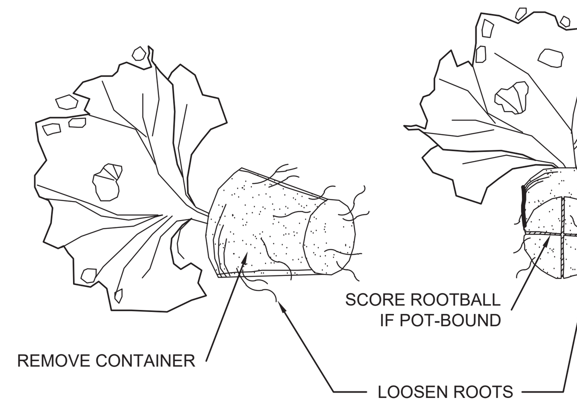
1. SEND A REPRESENTATIVE SAMPLE OF THE TOPSOIL TO A TESTING LABORATORY FOR STANDARD SOIL ANALYSIS AS DESCRIBED IN THE SPECIFICATIONS. SUBMIT TO THE LANDSCAPE ARCHITECT AND ENGINEER TEST RESULTS WITH RECOMMENDED SOIL TREATMENTS TO PROMOTE PLANT AND GRASS GROWTH. CORRECT DEFICIENCIES IN THE LOAM AND STOCKPILED TOPSOIL AS DIRECTED BY THE TESTING AGENCY.
2. ALL AREAS THAT ARE DISTURBED AND/OR GRADED DURING CONSTRUCTION ARE TO BE BROUGHT TO FINISHED GRADE WITH AT LEAST 6" MINIMUM DEPTH OF GOOD QUALITY LOAM AND SEEDED WITH A QUICK GERMINATING GRASS SEED AS SPECIFIED ON THE PLANS.
3. 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 EXTRANEOUS MATTER AND LEGALLY DISPOSE TO AN OFF SITE LOCATION.
4. DO NOT SPREAD TOPSOIL IF THE SUBGRADE IS FROZEN, EXCESSIVELY WET, COMPACTED OR NOT PROPERLY PREPARED PER THE NOTES AND SPECIFICATIONS.
5. SEE SPECIFICATIONS FOR SEASONAL REQUIREMENTS FOR SEEDING.

WATERING NOTES:

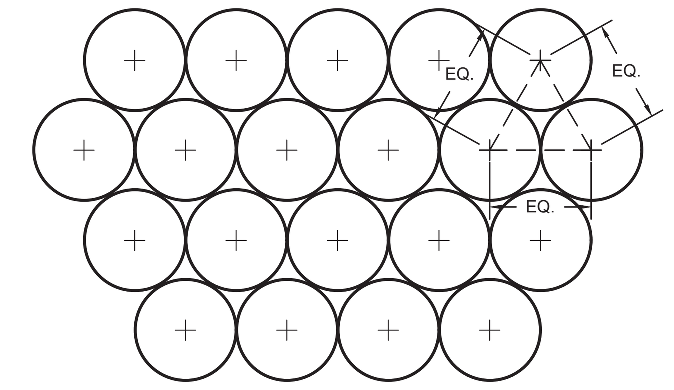
1. PROVIDE PROPER PLANT CARE, MAINTENANCE AND WATERING ON SITE UNTIL SUCH TIME AS THE LANDSCAPING IS ACCEPTED BY THE PROPERTY OWNER AS SATISFACTORY PER THE SPECIFICATIONS OR AS DETERMINED BY ANY WRITTEN AGREEMENTS BETWEEN THE CONTRACTOR AND PROPERTY OWNER.
2. ESTABLISH AN APPROPRIATE WATERING SCHEDULE 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.
3. 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.

PLANTING LAYOUT NOTES

1. HATCHED AREAS - DO NOT PLANT LARGE AREAS OF THE SAME SPECIES. RANDOMLY PLANT AS INDICATED ON THE PLANTING PLANS INTO SMALL GROUPINGS OF THE SAME SPECIES TO CREATE A MORE NATURALISTIC APPEARANCE. PLANT THE SAME PLANT SPECIES IN GROUPS OF 3-7 AND NOT LARGER THAN 7, DEPENDING ON THE OVERALL NUMBER OF PLANTINGS.

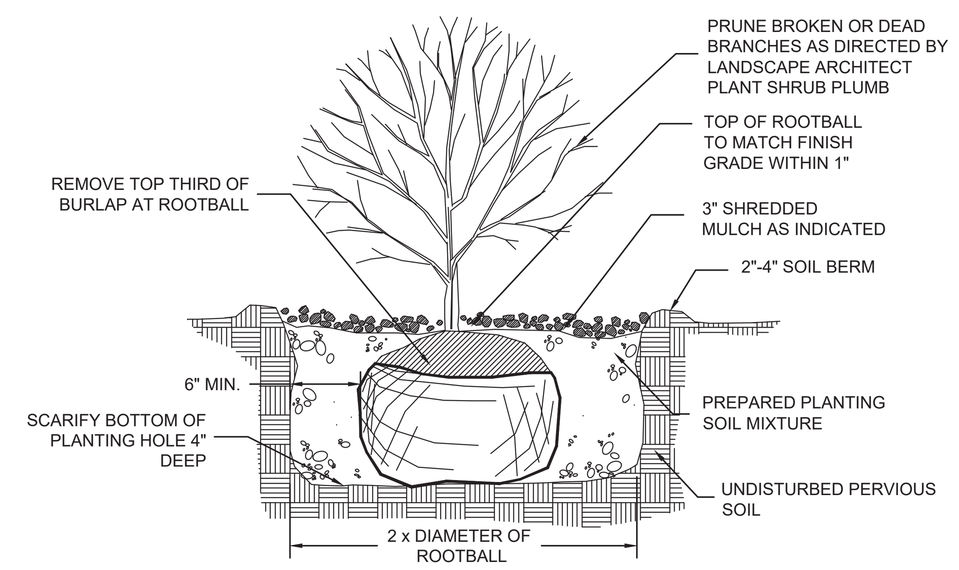


CONTAINER PLANT ROOTBALL TREATMENT
NOT TO SCALE

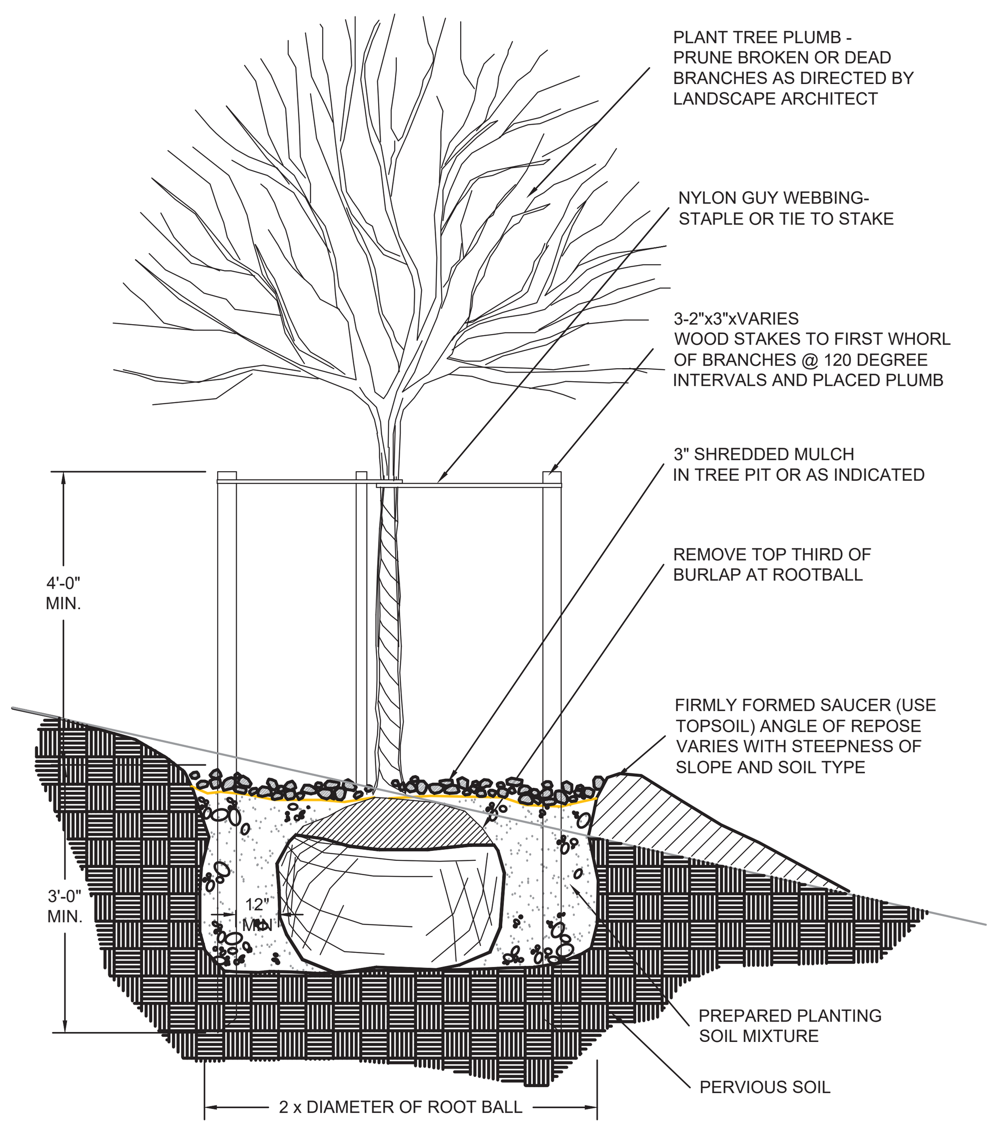


USE EQUIDISTANT TRIANGULAR SPACING FOR PLANTS - FOR ACTUAL SPACING SEE PLANS OR PLANTING SCHEDULE

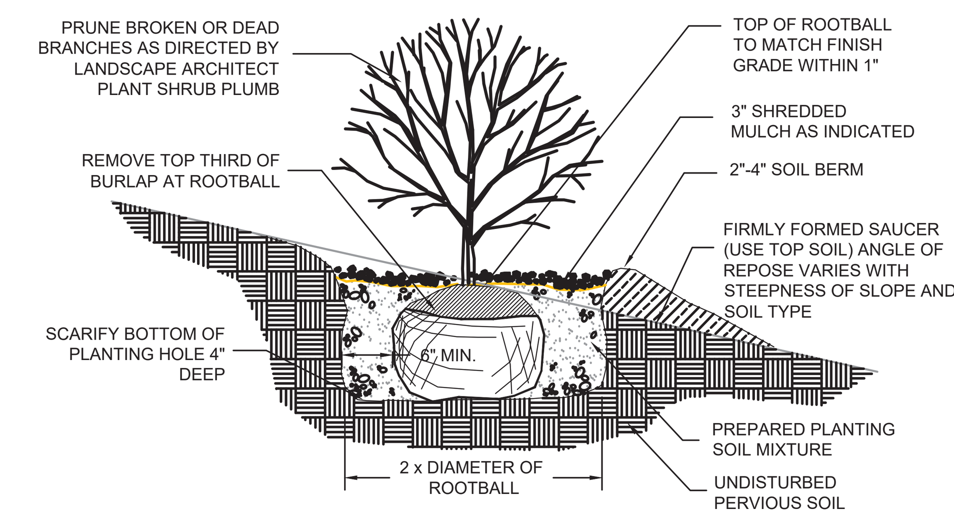
PLANTING SPACING DETAIL
NOT TO SCALE



SHRUB PLANTING DETAIL
NOT TO SCALE

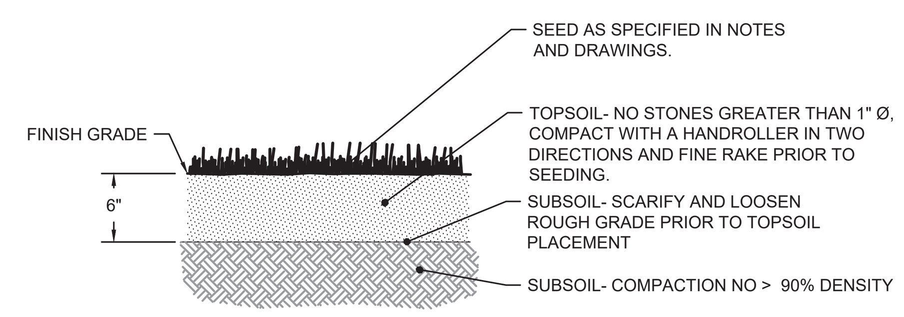


TREE PLANTING ON SLOPE DETAIL
NOT TO SCALE



NOTES:
1. PLANTING BACKFILL: 1/3 LOAM, 1/3 SAND, 1/3 PEAT, BY VOLUME.
2. WHEN PLANTING ON SLOPE-MODIFY SLOPE AS SHOWN.

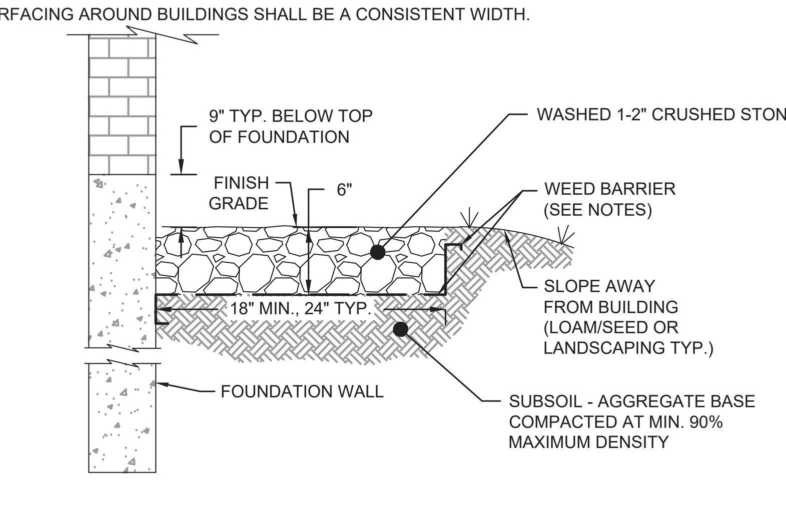
SHRUB PLANTING ON SLOPE DETAIL
NOT TO SCALE



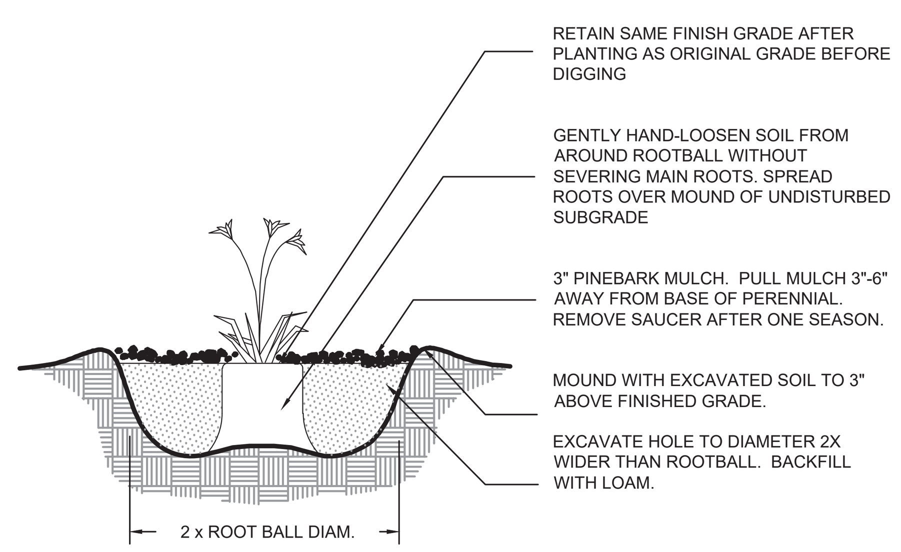
NOTES:
1. SEE LANDSCAPE GRADING SPECIFICATIONS FOR TOPSOIL REQUIREMENTS.
2. CONFIRM SUBGRADES ARE CORRECT AND POSITIVE DRAINAGE IS MAINTAINED PRIOR TO PLACEMENT OF TOPSOIL.
3. NOTIFY ENGINEER/LANDSCAPE ARCHITECT FOR REVIEW OF SUBGRADE PRIOR TO PLACEMENT OF THE TOPSOIL.

LOAM AND SEED DETAIL
NOT TO SCALE

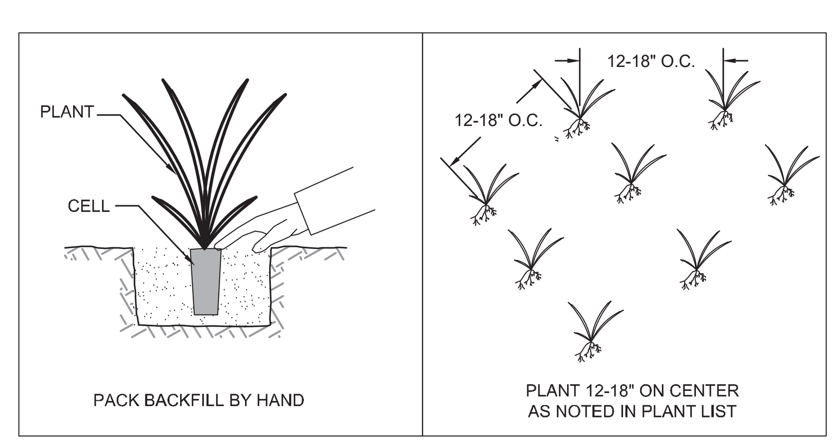
NOTES:
1. WEED BARRIER SHALL BE TENCATE NICOLON GROUNDCOVER FABRIC OR EQUAL.
2. ANCHOR FABRIC MN. 6" INTO SOIL. NO EXPOSED FABRIC.
3. STONE SURFACING AROUND BUILDINGS SHALL BE A CONSISTENT WIDTH.



STONE SURROUNDING BUILDINGS
NOT TO SCALE



PERENNIAL PLANTING DETAIL
NOT TO SCALE



PLUG PLANTING DETAIL
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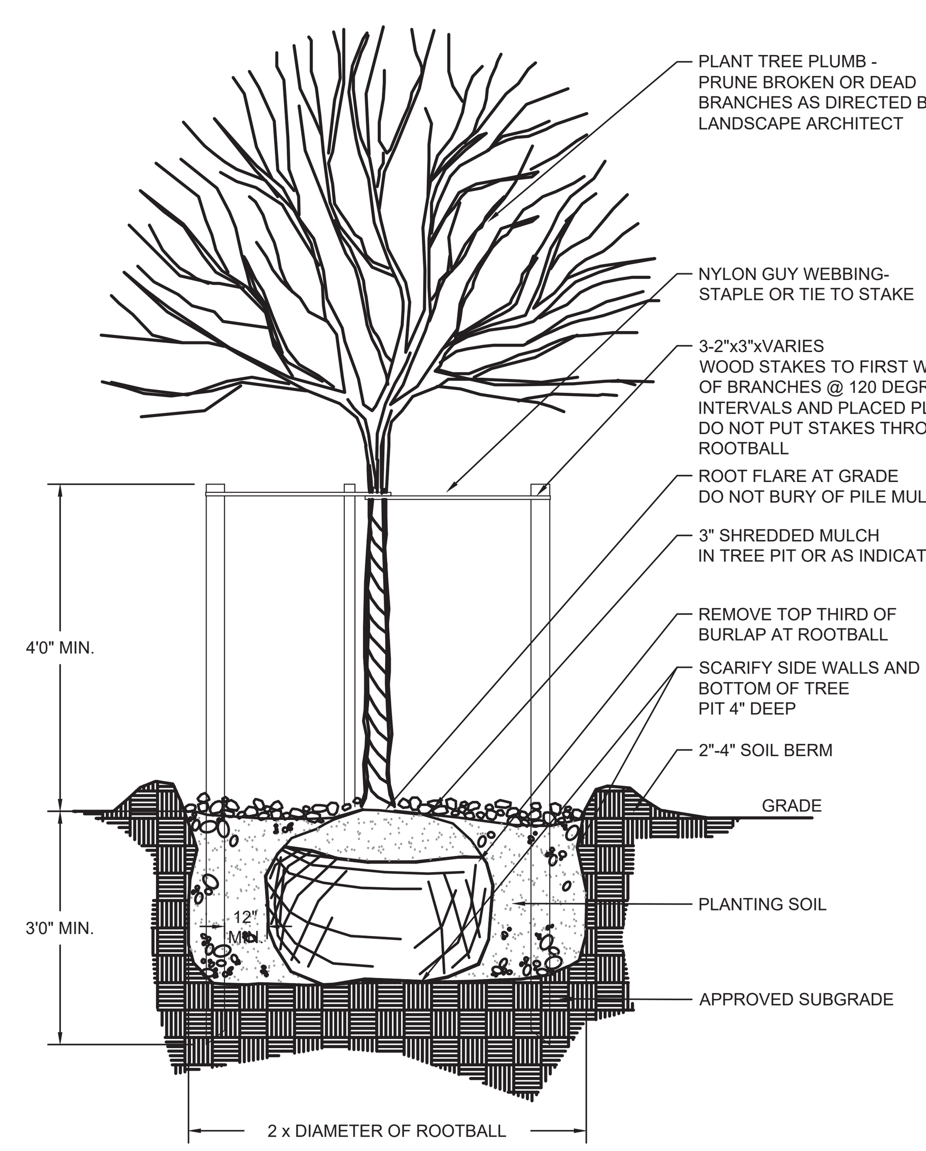
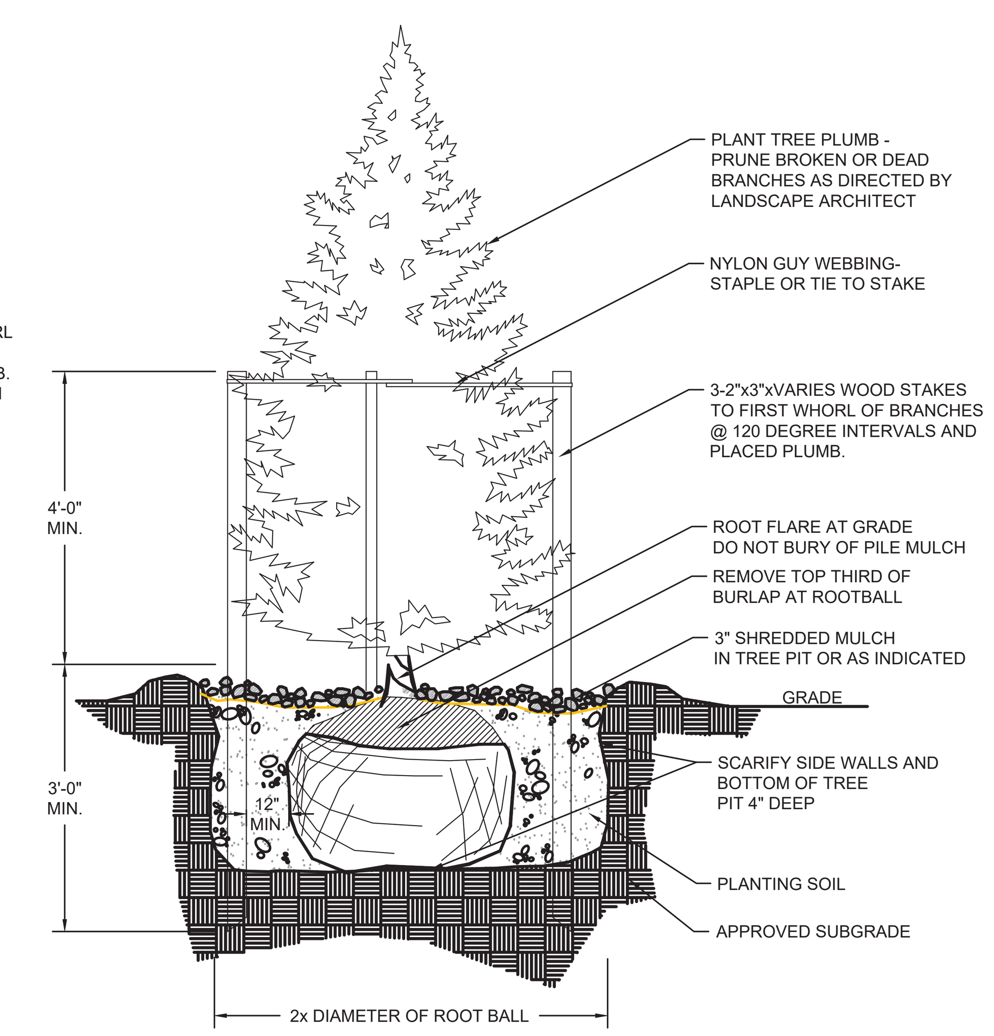


TREE PLANTING DETAIL
NOT TO SCALE



EVERGREEN TREE PLANTING DETAIL
NOT TO SCALE

PERMITTING SET ONLY
NOT FOR CONSTRUCTION

Revisions

Rev.	Date	By	Appr.	Description
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2	---	---	---	---
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Date: SEPTEMBER 2021 | Designed By: HLC | Drawn By: HLC | Checked By: BRK

Plan Set:
CAPE VIEW WAY
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Plan Title:
PLANTING DETAILS

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Phone: (508) 833-6600
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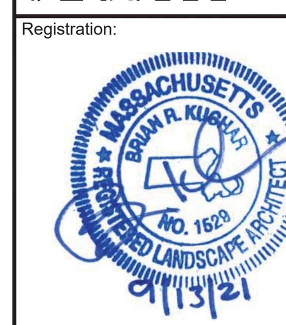
Dated: JUNE 2019

Registration:



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