SITE PLAN FOR
PROPOSED MULTIFAMILY DEVELOPMENT
51-53-55 SUMMER STREET
WALPOLE, MA.

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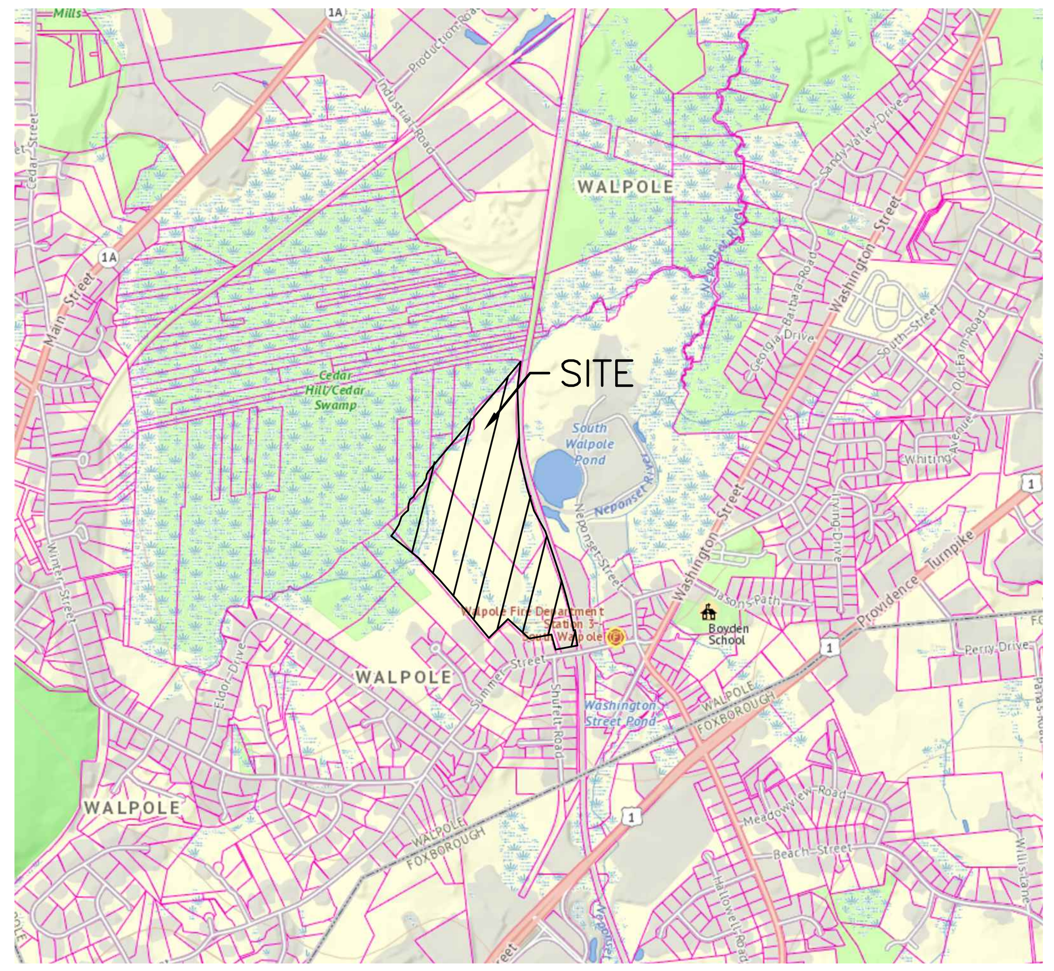
GENERAL NOTES:

1. EXISTING PROPERTY LINE AND UTILITY INFORMATION SHOWN IS BASED ON AN EXISTING SURVEY CONDUCTED BY LEGACY ENGINEERING REVISED THROUGH 12–05–19.
2. THE ACCURACY AND COMPLETENESS OF THE UNDERGROUND UTILITIES AS SHOWN ON THE PLANS ARE NOT GUARANTEED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT LOCATION, SIZE, TYPE, ETC. OF ALL UNDERGROUND UTILITIES THAT MAY BE AFFECTED BY THE WORK. AT LEAST 72 HOURS BEFORE EXCAVATION, THE CONTRACTOR SHALL BE REQUIRED TO CONTACT DIGSAFE AT 1–888–344–7233.
3. THE CONTRACTOR SHALL FIELD VERIFY CONDITIONS AND DIMENSIONS PRIOR TO CONSTRUCTION AND REPORT ANY DISCREPANCIES TO THE ENGINEER.
4. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION, AND SIZE OF THE UTILITY SHALL BE APPROPRIATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION.
5. ALL UTILITY COMPANIES, PUBLIC AND PRIVATE, MUST BE NOTIFIED, INCLUDING THOSE IN CONTROL OF UTILITIES NOT SHOWN ON THIS PLAN, PRIOR TO EXCAVATING, BLASTING, INSTALLING, BACKFILLING, GRADING, PAVEMENT RESTORATION OR REPAVING.
6. THE CONTRACTOR SHALL MAINTAIN ALL EXISTING UTILITIES EXCEPT THOSE NOTED TO BE ABANDONED, REMOVED AND DISPOSED.
7. THE CONTRACTOR SHALL DISPOSE OF ALL WASTE MATERIAL IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REQUIREMENTS AT HIS/HER OWN EXPENSE, OUTSIDE OF THE PROJECT LIMITS.

LEGEND

- LSA LANDSCAPE AREA
- EOP EDGE OF PAVEMENT
- CCB CAPE COD BERM
- LSA LANDSCAPED AREA
- FFE FINISHED FLOOR ELEVATION
- BOH BUILDING OVERHANG
- SRW STONE RETAINING WALL
- CRW CONCRETE RETAINING WALL
- INV. INVERT
- RCP REINFORCED CONCRETE PIPE
- PVC POLYVINYL CHLORIDE
- (R) RECORD INFORMATION
- UTO UNABLE TO OBSERVE
- CCB CAPE COD BERM
- EXISTNG WATER VALVE
- EXISTNG HYDRANT
- EXISTING UTILITY POLE
- POST
- DECIDUOUS TREE
- CONIFEROUS TREE
- CONTROL POINT
- SBDH STONE BOUND WITH DRILLHOLE FOUND
- CBDH CONCRETE BOUND WITH DRILLHOLE FOUND
- IRS IRON ROD TO BE SET IN 2012
- SIGN (SINGLE POSTED)
- TEST PIT
- CATCH BASIN
- EXISTING SEWER MANHOLE
- WETLAND RESOURCE AREA

- 198 PROPOSED MINOR CONTOUR
- 200 PROPOSED MAJOR CONTOUR
- PROPERTY LINE
- SETBACK LINE
- RIPARIAN SETBACK LINE
- D D PROPOSED DRAIN LINE
- OHW EXISTING OVERHEAD WIRES
- S EXISTING SANITARY LINE
- G EXISTING GAS LINE
- W EXISTING WATER LINE
- 270 EXISTING INDEX CONTOURS
- 268 EXISTING INTERMEDIATE CONTOURS
- EXISTING TREELINE
- FEMA FLOOD PLAIN DELINEATION
- MEAN ANNUAL HIGH WATER LINE
- PROPOSED TREELINE
- PROPOSED FENCE
- PROPOSED HYDRANT
- PROPOSED HANDICAP PARKING
- PROPOSED PAVEMENT STRIPING
- PROPOSED CONCRETE SURFACE
- PROPOSED DRAINAGE MANHOLE
- PROPOSED CATCH BASIN
- FHPT FALLING HEAD PERMEABILITY TEST
- HSG HYDROLOGIC SOIL GROUP DETERMINATION PIT



LOCUS MAP
1"=1500'

PROJECT TEAM:

OWNER/DEVELOPER/APPLICANT
55 BH, LLC
6 LYBERTY WAY, SUITE 203
WESTFORD, MA 01886

CIVIL ENGINEER
HOWARD STEIN HUDSON
114 TURNPIKE ROAD
SUITE 2C
CHELMSFORD, MA 01824

SURVEYOR
LEGACY ENGINEERING, LLC
730 MAIN STREET, SUITE 2C
MILLIS, MA 02054

LANDSCAPE ARCHITECT
JAMES K. EMMANUEL ASSOCIATES
22 CARLTON ROAD
MARBLEHEAD, MA 01945

SEWER DESIGN
ONSITE ENGINEERING INC.
279 EAST CENTRAL STREET
FRANKLIN, MA 02038

LIGHTING CONSULTANT
PROGRESS LIGHTING
701 MILLENIUM BLVD
GREENVILLE, SC 29607

WETLAND SCIENCE
OXBOW ASSOCIATES, INC.
P.O. BOX 971
ACTON, MA 01720

ARCHITECT
MAUGEL ARCHITECTS
200 AYER ROAD SUITE 200
HARVARD, MA 01451

ARCHITECT
HPA DESIGN, INC.
35 MAIN STREET
MILFORD, MA 01757

TRAFFIC ENGINEERING
BAYSIDE ENGINEERING
600 UNICORN PARK DRIVE
WOBURN, MA 01801

OWNER

55 BH LLC	55 SS LLC
6 LYBERTY WAY	6 LYBERTY WAY
WESTFORD, MA 01886	WESTFORD, MA 01886

ASSESSORS INFORMATION

PROPERTY 307–52–59
PROPERTY 307–52–60
PORTION OF PROPERTY 307–52–78

REFERENCES

1. EXISTING CONDITIONS SURVEY PREPARED FOR 55 BH LLC, CONDUCTED BY LEGACY ENGINEERING REVISED THROUGH 12–05–19.
2. TOWN OF WALPOLE GEOGRAPHIC INFORMATION SYSTEM.
3. A.N.R.A.D. PLAN BY LEGACY ENGINEERING DATED 12–10–2019 AND APPROVED BY THE WALPOLE CONSERVATION COMMISSION.
4. A.N.R.A.D. PLAN BY LEGACY ENGINEERING DATED 8–14–2019 AND APPROVED BY THE WALPOLE CONSERVATION COMMISSION.

ZONING REQUIREMENTS

LM – LIMITED MANUFACTURING
DIMENSIONAL REQUIREMENTS

	REQUIREMENT	LOT 1	LOT 2
MINIMUM LOT AREA	40,000	1,185,710 (27.22 AC)	1,198,549 (27.51 AC)
MINIMUM LOT FRONTAGE	200 FT	86 FT±*	134 FT±*
MAXIMUM BUILDING COVERAGE	35%	8%±	9%±
MAX. BLDG & IMP. COVERAGE	70%	24%±	20%±
MINIMUM OPEN SPACE	N/A	75%±	80%±
MINIMUM FRONT YARD	50 FT	681 FT±	59 FT±
MINIMUM SIDE YARD	40 FT	10 FT±*	10 FT±*
MINIMUM REAR YARD	25 FT	296 FT±	210 FT±
MAXIMUM BUILDING HEIGHT	40 FT	65 FT±*	30 FT±

* SEE REQUESTED SPECIAL PERMIT AND WAIVER LISTS FOR LOT 1 AND LOT 2

DEVELOPMENT SUMMARY

LOT 1

TOWNHOUSES: 52
REQUIRED: 2 PARKING SPACES/UNIT X 52 UNITS = 104 SPACES
PROPOSED: 52 GARAGE SPACES + 52 DRIVEWAY SPACES + 45 VISITOR SPACES = 149 SPACES
APARTMENTS: 192
REQUIRED: 2 PARKING SPACES/UNIT X 192 UNITS = 384 SPACES
PROPOSED: 14 CLUBHOUSE SPACES + 95 GARAGE UNDER SPACES + 202 SURFACE SPACES
TOTAL PROPOSED SPACES: 311**

LOT 2

SINGLE FAMILY HOUSES: 56
REQUIRED: 2 PARKING SPACES/UNIT X 56 UNITS = 112 SPACES
PROPOSED: 112 GARAGE SPACES + 112 DRIVEWAY SPACES + 9 SURFACE SPACES = 233 SPACES TOTAL

OVERALL PARKING SUMMARY:

LOT 1 TOTAL: 460 SPACES – 1.89 SPACES PER RENTAL UNIT
LOT 2 TOTAL: 233 SPACES – 4.16 SPACES PER OWNERSHIP UNIT
SITE TOTAL: 693 SPACES
** SEE WAIVER 9 UNDER REQUESTED SPECIAL PERMITS AND VARIANCES – LOT 1

SEE SHEET 2 FOR REQUESTED SPECIAL PERMITS AND WAIVERS

HOWARD STEIN HUDSON
114 Turnpike Road, Suite 2C
Chelmsford, MA 01824
www.hshassoc.com

PREPARED FOR:
55 BH LLC
6 LYBERTY WAY, SUITE 203
WESTFORD, MA 01886

PROPOSED MULTIFAMILY DEVELOPMENT
SUMMER STREET
WALPOLE, MA

REVISIONS:

NO	BY	DATE	DESCRIPTION
5	PB	12/16/20	EMERGENCY ACCESS
6	PB	1/4/21	REV. FIRE TURNING
7	PB	1/5/21	FIRE ACCESS/ STAGING
8	PB	1/8/21	ADDED VISITOR PARKING
9	PB	1/22/21	REV. DRAINAGE DESIGN
10	PB	1/27/21	REV. SITE PLAN
11	PB	3/12/21	REV. DRIVEWAY B
12	PB	4/13/21	REV. SITE PLAN

COMMONWEALTH OF MASSACHUSETTS KATIE L. ENRIGHT CIVIL No. 46111 REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:22-04'00'

SITE PLAN

COVER SHEET

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.1

4/15/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - COVER-CPS.dwg
Matthew Baker

EROSION CONTROL PLAN NOTES:

1. REMOVAL OF EXISTING STRUCTURES SHALL INCLUDE ALL EXISTING PAVEMENT, FOOTINGS, AND UTILITY CONNECTIONS.
2. IT IS THE RESPONSIBILITY OF THE CHOSEN CONTRACTOR TO ENSURE ALL STORMWATER INLETS DOWNSTREAM OF CONSTRUCTION ARE FITTED WITH TEMPORARY INLET PROTECTION.
3. ALL PROPOSED CATCH BASINS AND MANHOLES SHALL BE FITTED WITH INLET PROTECTIONS DURING CONSTRUCTION AS TO MINIMIZE EROSION AND SEDIMENTATION WITHIN THE PROPOSED STORMWATER MANAGEMENT SYSTEM.
4. ALL EXISTING SITE FEATURES NOT PROPOSED TO BE REMOVED SHALL BE PROTECTED DURING CONSTRUCTION TO THE MAXIMUM EXTENT FEASIBLE. ANY DAMAGE SHALL BE REPAIRED TO THE EXISTING CONDITION.
5. EROSION AND SEDIMENT CONTROL MEASURES MUST BE INSTALLED PRIOR TO THE START OF CONSTRUCTION AND MAINTAINED AND UPGRADED AS NECESSARY DURING CONSTRUCTION BY THE CONTRACTOR. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSPECT AND INSTALL ADDITIONAL CONTROL MEASURES AS NEEDED DURING CONSTRUCTION.
6. STABILIZATION OF ALL RE-GRADED AND SOIL STOCKPILE AREAS MUST BE MAINTAINED DURING ALL PHASES OF CONSTRUCTION.
7. SEDIMENT REMOVED FROM EROSION AND SEDIMENT CONTROL DEVICES MUST BE PROPERLY REMOVED AND DISPOSED. ALL DAMAGED CONTROLS MUST BE REMOVED AND REPLACED.
8. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING THE EROSION AND SEDIMENT CONTROL PLAN. THIS INCLUDES THE INSTALLATION AND MAINTENANCE OF CONTROL MEASURES, INFORMING ALL PARTIES ENGAGED ON THE CONSTRUCTION SITE OF THE REQUIREMENTS AND OBJECTIVES OF THE PLAN, AND NOTIFYING THE PROPER TOWN AGENCY OF ANY TRANSFER OF THIS RESPONSIBILITY.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROLLING WIND EROSION AND DUST THROUGHOUT THE LIFE OF HIS CONTRACT. DUST CONTROL MAY INCLUDE, BUT IS NOT LIMITED TO, SPRINKLING OF WATER ON EXPOSED SOILS AND STREET SWEEPING WITHIN ADJACENT ROADWAYS.
10. IF FINAL GRADING IS TO BE DELAYED FOR MORE THAN 21 DAYS AFTER LAND DISTURBANCE ACTIVITIES CEASE, TEMPORARY VEGETATION OR MULCH SHALL BE USED TO STABILIZE SOILS WITHIN 14 DAYS OF THE LAST DISTURBANCE.
11. IF A DISTURBED AREA WILL BE EXPOSED FOR GREATER THAN ONE YEAR, PERMANENT GRASSES OR OTHER APPROVED COVER MUST BE INSTALLED.
12. THE CONTRACTOR MUST KEEP ON-SITE AT ALL TIMES ADDITIONAL COMPOST SOCK FOR THE INSTALLATION AT THE DIRECTION OF THE ENGINEER, OR THE TOWN, TO MITIGATE ANY EMERGENCY CONDITION.
13. THE CONSTRUCTION FENCING AND EROSION AND SEDIMENT CONTROLS AS SHOWN MAY NOT BE PRACTICAL DURING ALL STAGES OF CONSTRUCTION. EARTHWORK ACTIVITY ON-SITE MUST BE DONE IN A MANNER SUCH THAT RUNOFF IS DIRECTED TO A SEDIMENT CONTROL DEVICE OR INFILTRATED TO THE GROUND.
14. DEMOLITION AND CONSTRUCTION DEBRIS MUST BE PROPERLY CONTAINED AND DISPOSED OF.
15. DISPOSAL OF ALL DEMOLISHED MATERIALS IS THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE HAULED OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL REQUIREMENTS.
16. NON-ORGANIC FERTILIZERS AND CHEMICAL PESTICIDES IN OUTSIDE AREAS WITHIN 100-FEET OF WETLAND PROTECTED AREAS ARE PROHIBITED FROM USE.
17. AN INVASIVE SPECIES PLAN IS TO BE PUT IN PLACE DURING CONSTRUCTION TO ADDRESS THE REMOVAL OF INVASIVE SPECIES AND INVASIVE SPECIES DISTURBED DURING CONSTRUCTION ARE TO BE DISPOSED OF APPROPRIATELY.

SITE NOTES:

1. THE INTENT OF THIS PLAN IS TO CONSTRUCT A MULTIFAMILY HOUSING DEVELOPMENT CONSISTING OF APARTMENT BUILDINGS AND TOWNHOUSES FOR RENT AND SINGLE FAMILY HOMES WHICH WILL BE INDIVIDUALLY OWNED. THIS PROJECT IS TO BE SERVICED BY MUNICIPAL UTILITIES.
2. ALL CONSTRUCTION SHALL CONFORM TO ALL APPLICABLE TOWN AND STATE STANDARDS AND REGULATIONS.
3. THIS PROPERTY IS PARTIALLY WITHIN FLOOD ZONE A. REFER TO COMMUNITY PANEL NUMBER 25021C0332E, DATED JULY 17, 2012.
4. ALL CONSTRUCTION ACTIVITIES SHALL BE PERFORMED IN ACCORDANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN (S.W.P.P.P.). THIS DOCUMENT IS TO BE KEPT ONSITE AT ALL TIMES AND UPDATED AS REQUIRED.
5. PRIOR TO THE COMMENCEMENT OF CONSTRUCTION, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER, ARCHITECT, AND/OR OWNER, IN ORDER TO OBTAIN AND/OR PAY ALL THE NECESSARY LOCAL PERMITS, FEES, AND BONDS.
6. ALL PROPOSED SIGNAGE SHALL CONFORM WITH THE TOWN ZONING REGULATIONS, UNLESS APPROVED AS PART OF THIS APPLICATION.
7. ALL SIGNAGE AND PAVEMARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.) AND MASSDOT STANDARDS AND SPECIFICATIONS, UNLESS OTHERWISE NOTED.
8. ALL PARKING STALLS SHALL BE SEPARATED USING 4" WIDE SOLID STRIPES. STRIPING SHALL HAVE TWO COATS OF PAINT, ALKYD BASED SYNTHETIC RESIN, FEDERAL SPECIFICATION TTP-115 TYPE 1 IN A COLOR OF WHITE (OR APPROVED EQUAL).
9. ALL NEW CURBING TO BE INSTALLED BY RADIUS AND MATERIALS AS NOTED ON THE LAYOUT AND MATERIALS SHEETS 12 – 16 ON THE SITE PLAN.
10. ALL BUILDING DIMENSIONS SHALL BE VERIFIED WITH THE ARCHITECTURAL AND STRUCTURAL PLANS PROVIDED BY THE OWNER. ANY DISCREPANCIES SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER AND OWNER PRIOR TO THE START OF CONSTRUCTION. BUILDING DIMENSIONS ARE MEASURED TO THE OUTSIDE OF THE FOUNDATION UNLESS OTHERWISE NOTED.
11. SNOW TO BE STORED AT EDGE OF PAVEMENT, UNLESS OTHERWISE DESIGNATED. ALL SNOW IN EXCESS OF THESE DESIGNATIONS SHALL BE TRUCKED OFF SITE TO AN APPROVED SNOW DUMPING LOCATION.
12. SNOW STORAGE IS NOT LIMITED TO THE AREAS DENOTED IN THE LAYOUT AND MATERIALS PLANS. ALL SNOW STORAGE SHALL BE A MINIMUM OF 50' FROM ANY WETLAND.
13. ALL CONSTRUCTION ACTIVITIES SHALL CONFORM TO LABOR OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) RULES AND REGULATIONS.
14. ALL ACCESSIBLE RAMPS SHALL HAVE A SLOPE OF 1:12 OR LESS, BE FITTED WITH A DETECTABLE WARNING PANEL, AND HAVE VERTICAL TO FLUSH TRANSITION CURB ON BOTH SIDES OF THE LEVEL LANDING EXITING THE SIDEWALK.
15. ALL PROPOSED RETAINING WALLS ARE SHOWN FOR LOCATION AND GRADING PURPOSES ONLY. EACH RETAINING WALL IS TO BE DESIGNED BY A STRUCTURAL ENGINEER AS PART OF THE CONSTRUCTION DOCUMENTS.
16. ALL WETLAND CROSSINGS SHALL MEET MASSACHUSETTS DEP STREAM CROSSING STANDARDS.

GRADING AND DRAINAGE NOTES:

1. UNDERGROUND FACILITIES, UTILITIES AND STRUCTURES HAVE BEEN PLOTTED FROM FIELD OBSERVATION AND THEIR LOCATION MUST BE CONSIDERED APPROXIMATE ONLY. NEITHER HOWARD STEIN HUDSON, NOR ANY OTHER EMPLOYEES TAKE RESPONSIBILITY FOR THE LOCATION OF ANY UNDERGROUND STRUCTURES AND/OR UTILITIES NOT SHOWN THAT MAY EXIST. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE ALL UNDERGROUND STRUCTURES AND/OR UTILITIES LOCATED PRIOR TO EXCAVATION WORK BY CALLING 888-DIG-SAFE
2. ALL BENCHMARKS AND TOPOGRAPHY SHOULD BE FIELD VERIFIED BY THE CONTRACTOR.
3. SITE GRADING SHALL NOT PROCEED UNTIL EROSION CONTROL MEASURES HAVE BEEN INSTALLED. REFER TO THE CONSTRUCTION SEQUENCE.
4. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR IS REQUIRED TO HAVE THE PROJECTS LAND SURVEYOR STAKE OR FLAG CLEARING LIMITS AND PROPERTY LINES. A MINIMUM OF 72 HOURS NOTICE IS REQUIRED.
5. ALL SWALES AND INFILTRATION PONDS ARE TO BE STABILIZED PRIOR TO ACCEPTING RUNOFF.
6. PROPOSED RIM ELEVATIONS OF DRAINAGE STRUCTURES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH WITH FINISH GRADES.
7. ALL SWALES AND ANY SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH NORTH AMERICAN GREEN EROSION CONTROL S75 EROSION CONTROL BLANKETS (OR AN EQUIVALENT APPROVED IN WRITING BY THE ENGINEER), UNLESS OTHER SPECIFIED.
8. ALL DRAINAGE AND SANITARY STRUCTURES INTERIOR DIAMETERS (4' MIN) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS. CATCH BASINS SHALL HAVE 4' DEEP SUMPS WITH GREASE HOODS, UNLESS OTHER NOTED.
9. ALL DRAINAGE STRUCTURES SHALL BE PRECAST, UNLESS OTHERWISE SPECIFIED. SEE DETAIL SHEETS FOR DRAINAGE DETAILS.
10. IN AREAS WHERE CONSTRUCTION IS PROPOSED ADJACENT TO ABUTTING PROPERTIES, THE CONTRACTOR SHALL INSTALL ORANGE CONSTRUCTION FENCING ALONG PROPERTY LINES IN ALL AREAS WHERE EROSION CONTROL IS NOT REQUIRED.
11. LAND DISTURBING ACTIVITIES SHALL NOT COMMENCE UNTIL APPROVAL TO DO SO HAS BEEN RECEIVED BY ALL GOVERNING AUTHORITIES. THE GENERAL CONTRACTOR SHALL STRICTLY ADHERE TO THE EPA SWPPP DURING CONSTRUCTION OPERATIONS.
12. ALL EXPOSED AREAS SHALL BE SEEDED AS SPECIFIED WITHIN 3 DAYS OF FINAL GRADING.
13. SHOULD CONSTRUCTION STOP FOR LONGER THAN 14 DAYS, THE SITE SHALL BE SEEDED AS SPECIFIED.
14. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE, AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SEDIMENT FROM LEAVING THE SITE.
15. CONSTRUCTION VEHICLES SHALL UTILIZE THE STABILIZED CONSTRUCTION ENTRANCE TO THE EXTENT POSSIBLE THROUGHOUT CONSTRUCTION. IF THE INSTALLATION OF STORM DRAINAGE SYSTEM SHOULD BE INTERRUPTED BY WEATHER OR NIGHTFALL, THE PIPE ENDS SHALL BE COVERED WITH FILTER FABRIC.
16. SEDIMENT SHALL BE REMOVED FROM ALL SEDIMENT BASINS BEFORE THEY ARE 25% FULL.
17. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED, IF DEEDED NECESSARY BY ON-SITE INSPECTION BY ENGINEER AND/OR REGULATORY OFFICIALS.
18. MONITORING WELLS ARE TO BE PROVIDED AT EACH INFILTRATION BASIN PER THE REQUIREMENT OF THE MASSACHUSETTS STORM WATER HANDBOOK.
19. EACH INFILTRATION BASIN/SYSTEM TO BE OBSERVED DURING EXCAVATION BY A TOWN AGENT PRIOR TO THE INSTALLATION OF LOAM AND SEED.

UTILITY NOTES:

1. THE CONTRACTOR SHALL PROVIDE A MINIMUM NOTICE OF FOURTEEN (14) DAYS TO ALL CORPORATIONS, COMPANIES, AND/OR LOCAL AUTHORITIES OWNING OR HAVING A JURISDICTION OVER UTILITIES RUNNING TO, THROUGH OR ACROSS PROJECT AREAS PRIOR TO DEMOLITION AND/OR CONSTRUCTION ACTIVITIES.
2. THE LOCATION, SIZE, DEPTH, AND SPECIFICATIONS FOR CONSTRUCTION OF PROPOSED UTILITY SERVICES SHALL BE TO THE STANDARDS AND REQUIREMENTS OF THE RESPECTIVE UTILITY COMPANY (ELECTRIC, TELEPHONE, CABLE TELEVISION, WATER, GAS AND SEWER).
3. A PRECONSTRUCTION MEETING SHALL BE HELD WITH THE OWNER, ENGINEER, ARCHITECT, CONTRACTOR, LOCAL OFFICIALS, AND ALL PROJECT-RELATED UTILITY COMPANIES (PUBLIC AND PRIVATE) PRIOR TO START OF CONSTRUCTION.
4. BUILDING TO BE SERVICED BY UNDERGROUND UTILITIES UNLESS OTHERWISE NOTED.
5. THE CONTRACTOR IS TO VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION AND DISCONNECT ALL EXISTING SERVICE CONNECTIONS AT THEIR RESPECTIVE MAINS IN ACCORDANCE WITH THE RESPECTIVE UTILITY COMPANY'S STANDARDS AND SPECIFICATIONS. ENGINEER TO BE NOTIFIED.
6. AS-BUILT PLANS SHALL BE SUBMITTED TO THE ALL MUNICIPAL DEPARTMENTS SPECIFIED BY CONDITIONS OF APPROVAL.
7. CONTRACTOR SHALL PLACE 2" WIDE METAL WIRE IMPREGNATED RED PLASTIC WARNING TAPE OVER ENTIRE LENGTH OF ALL GRAVITY SEWERS, SERVICES, AND FORCE MAINS.
8. ALL SANITARY STRUCTURE INTERIOR DIAMETERS (4' MIN) SHALL BE DETERMINED BY THE MANUFACTURER BASED ON THE PIPE CONFIGURATIONS SHOWN ON THESE PLANS.
9. PROPOSED RIM ELEVATIONS OF DRAINAGE AND SANITARY MANHOLES ARE APPROXIMATE. FINAL ELEVATIONS ARE TO BE SET FLUSH WITH FINISH GRADES. ADJUST ALL OTHER RIM ELEVATIONS OF MANHOLES, WATER GATES, AND OTHER UTILITIES TO FINISH GRADE AS SHOWN ON THE GRADING AND DRAINAGE PLAN.
10. WATER MAINS SHALL BE HYDROSTATICALLY PRESSURE TESTED FOR LEAKAGE PRIOR TO ACCEPTANCE.
11. THRUST BLOCKS SHALL BE INSTALLED AT ALL BENDS, TEES, MECHANICAL JOINTS, AND FIRE HYDRANTS.
12. DIMENSIONS ARE SHOWN TO CENTERLINE OF PIPE OR FITTING.
13. CONTRACTOR TO FURNISH SHOP DRAWINGS FOR UTILITY RELATED ITEMS TO ENSURE CONFORMANCE WITH THE PLANS AND SPECIFICATIONS. SHOP DRAWINGS SHOULD BE SENT IN TRIPLICATE TO THE DESIGN ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
14. EXISTING UTILITIES SHALL BE DIGSAFED AND PRIVATE UTILITY LOCATOR SERVICES SHOULD BE UTILIZED PRIOR TO CONSTRUCTION.
15. ALL FIRE SUPPRESSION WATER LINES SHALL HAVE TESTABLE BACKFLOW PREVENTERS AT THE ENTRANCE TO EACH BUILDING.
16. THE CONTRACTOR SHALL MINIMIZE THE DISRUPTIONS TO THE EXISTING SEWER FLOWS AND THOSE INTERRUPTIONS SHALL BE LIMITED TO LOCAL SEWER DEPARTMENT REGULATIONS.
17. ALL TRENCHING, PIPE LAYING, AND BACKFILLING SHALL BE IN ACCORDANCE WITH FEDERAL OSHA REGULATIONS.
18. ALL FIRE HYDRANTS SHALL BE PROVIDED WITH AN APPROVED GATE VALVE.
19. THE CONTRACTOR SHALL MAINTAIN WATER SERVICE TO USERS AT ALL TIMES. REQUIREMENTS BY THE TOWN WATER DEPARTMENT REGARDING NOTIFICATION FOR INTERRUPTION OF SERVICE SHOULD BE INCLUDED (TYPICALLY 24 HOURS) AND ALLOWABLE INTERRUPTION DURATION. WATER TESTING AND DISINFECTION REQUIREMENTS SHALL BE PERFORMED IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.
20. TRIPLE WATER GATE ASSEMBLIES SHALL BE INSTALLED AT ALL INTERSECTING WAYS INCLUDING THE CONNECTION WITHIN SUMMER STREET. THE TRIPLE VALVE ASSEMBLY IN SUMMER STREET SHALL BE CONNECTED TO EXISTING MAIN WITH LONG BODY SOLID SLEEVES. ALL OTHER TRIPLE GATE INTERSECTION SHALL BE A TEE, NIPPLE WITH MEGA-LUGS AND THE (OPEN LEFT) WATER GATE INSTALLED AS AN ASSEMBLY
21. ALL WATER AND SEWER INSTALLATION SHALL BE COORDINATED WITH THE TOWN OF WALPOLE, MA

REQUESTED SPECIAL PERMITS AND WAIVERS – LOT 1

1. BUILDING DEPARTMENT BUILDING PERMIT FEES: $18.00 PER $1,000.00 OF ESTIMATED COST OF CONSTRUCTION OR FRACTION THEREOF;
2. WALPOLE WETLANDS PROTECTION BYLAWS REGULATIONS 1.4.1: NO ALTERATION ZONE: THE COMMISSION SHALL REQUIRE THE APPLICANT TO MAINTAIN A 25 FOOT WIDE CONTIGUOUS, UNDISTURBED, VEGETATIVE BUFFER MEASURED FROM, AND PARALLEL TO, THE WETLAND RESOURCE BOUNDARY, AS A MINIMUM;
3. WALPOLE WETLANDS PROTECTION BYLAWS REGULATIONS 1.5.2: REPLICATION REQUIREMENTS;
4. WALPOLE WETLANDS PROTECTION BYLAWS REGULATIONS 2.3: PLANS AND SUPPORTING DOCUMENTS;
5. WALPOLE ZONING BYLAWS TABLE 5-B.1.3.D; USE PROHIBITED IN LIMITED MANUFACTURING ZONE;
6. WALPOLE ZONING BYLAWS TABLE 5-B.1.3.D.iii; IF THERE IS TO BE MORE THAN ONE PRINCIPLE BUILDING ON A LOT, THERE SHALL BE A MINIMUM OF 10,000 S.F. OF LATE AREA PER DWELLING UNIT;
7. WALPOLE ZONING BYLAWS SECTION 6-B-1: IN ALL DISTRICTS NO BUILDING SHALL BE CONSTRUCTED ON ANY PART OF A LOT WHICH DOES NOT HAVE AN AREA IN WHICH A CIRCLE, THE DIAMETER OF WHICH IS NOT LESS THAN 80% OF THE MINIMUM REQUIRED LOT FRONTAGE, TANGENT TO THE EXTREIOR STREET LINE FROM WHICH THE REQUIRED FRONTAGE AND MINIMUM SETBACK ARE DERIVED AND WITHIN ALL OTHER LOT LINES, MAY BE LOCATED;
8. WALPOLE ZONING BYLAWS SECTION 6-B-1.A: IN ALL DISTRICTS NO BUILDING SHALL BE CONSTRUCTED ON A LOT HAVING LESS THAN THE REQUIRED FRONTAGE;
9. WALPOLE ZONING BYLAWS SECTION 6-B-1.C: IN ALL DISTRICTS NO BUILDING SHALL BE CONSTRUCTED SO AS TO BE NEARER TO THE SIDE LINES OF ITS LOT THAN THE REQUIRED SIDE YARD WIDTH;
10. WALPOLE ZONING BYLAWS TABLE 6-B.1 AND 6-C.3.A: REQUIRED LOT FRONTAGE FOR A LOT IN THE LIMITED MANUFACTURING ZONE;
11. WALPOLE ZONING BYLAWS TABLE 6-B.1: REQUIRED MINIMUM SIDE YARD SETBACK FOR A LOT IN THE LIMITED MANUFACTURING ZONE;
12. WALPOLE ZONING BYLAWS TABLE 6-B.1: REQUIRED MAXIMUM BUILDING HEIGHT FOR A LOT IN THE LIMITED MANUFACTURING ZONE;
13. WALPOLE ZONING BYLAWS SECTION 6-C-11: PROJECTIONS;
14. WALPOLE ZONING BYLAWS SECTION 8.3.1: TOWNHOUSES & APARTMENTS ARE CLASSIFIED AS PARKING CODE 1 PER TABLE 6-B.1;
15. WALPOLE ZONING BYLAWS SECTION 8.8.B-3 PARKING AISLES: THE ENDS OF PARKING AISLES THAT ARE MORE THAN 15 SPACES IN LENGTH SHALL INCORPORATE LANDSCAPE ISLANDS AT EITHER END OF THE ROW. WHERE THE LENGTH OF A PARKING AISLE EXCEEDS 25 SPACES, ADDITIONAL LANDSCAPED ISLANDS SHALL BE INSTALLED AT REGULAR INTERVALS. THIS INTERVAL SHALL NOT BE MORE THAN EVERY 13 SPACES. THE WIDTH OF LANDSCAPED ISLANDS PERPENDICULAR TO ADJACENT SPACES SHALL BE NO LESS THAN 8 FEET AT THEIR WIDEST POINT;
16. WALPOLE ZONING BYLAWS SECTION 12.3.A.2.D: RESIDENTIAL DEVELOPMENT OF SINGLE FAMILY DWELLINGS ARE PERMITTED BY RIGHT IF NO MORE THAN 15% OR 2,500 S.F., WHICHEVER IS GREATER, OF THE BUILDING LOT IS RENDERED IMPERVIOUS;
17. WALPOLE ZONING BYLAW SECTIONS 12.3.B.1.F, 12.3.C.6 AND 12.4.D.5: STORAGE, USE, AND REPORTING OF HAZARDOUS MATERIAL;
18. WALPOLE ZONING BYLAWS SECTION 12.3.C.3: IN AREAS 3 & 4, ANY USES IN WRPOD OTHER THAN A SINGLE-FAMILY DWELLING WITH A SEWAGE FLOW EXCEEDING 110 GPD PER 10,000 S.F. OF LOT AREA OR EXCEEDING 15,000 GPD TOTAL REQUIRES A SPECIAL PERMIT;
19. WALPOLE ZONING BYLAWS SECTION 12.3.C.5: ANY RESIDENTIAL USE IN WRPOD THAT WILL RENDER IMPERVIOUS MORE THAN 15% OR 2,500 S.F. OF ANY LOT REQUIRES A SPECIAL PERMIT;
20. WALPOLE ZONING BYLAWS SECTION 13: SITE PLAN REVIEW;
21. SIGNS SECTION 7.5.4.C: ONE(1) DOUBLE FACED FREE STANDING SIGN;
22. WATER AND SEWER DEPARTMENT WATER ENTRANCE FEE: SYSTEM DEVELOPMENT CHARGE OF $2,440 PER RESIDENTIAL HOUSING UNIT;
23. WATER AND SEWER DEPARTMENT NON-ASSESSED SEWER ENTRANCE FEE-RESIDENTIAL: SYSTEM DEVELOPMENT CHARGE OF $1,670 PER RESIDENTIAL HOUSING UNIT;
24. ZBA SECTION 3.2.15 – STATEMENT OF IMPACT ON MUNICIPAL FACILITIES AND SERVICES;
25. ZBA SECTION 3.2.16: COMPLIANCE WITH MASTER AND OPEN SPACE PLANS;
26. ZBA SECTION 3.2.17: ROSTER OF DEVELOPMENT TEAM AND LIST OF PRIOR DEVELOPMENTS FOR PAST 10 YEARS;
27. ZBA SECTION 3.2.18: TWENTY (20) PAPER COPIES OF SAID APPLICATION WITH ATTACHMENTS AND EXHIBITS;
28. ZBA SECTION 3.2.19: PAYMENT OF FILING FEE. 1. FOR LIMITED DIVIDEND ORGANIZATIONS: $5,000 BASE FEE PLUS, IF THE TOTAL PROJECT CONTAINS MORE THAN 6 MARKET RATE UNITS, $200.00 PER MARKET RATE IS PROPOSED;
29. ZBA SECTION 3.2.5.4: SAID PLAN SHALL INCLUDE THE FOLLOWING INFORMATION: EXISTING SIGNIFICANT ENVIRONMENTAL FEATURES SUCH AS LEDGE OUTCROPS, SCENIC VIEWS AND LARGE TREES (I.E. GREATER THAN 24" DBH);
30. ZBA SECTION 5.5: ANY PROFESSIONAL EXPERT OR OTHER WITNESS THAT PARTICIPATED IN THE DRAFTING OF THE PROPOSED PROJECT PLANS OR OTHER ELEMENTS SHALL BE PRESENT AT EACH PUBLIC HEARING;
31. ZBA SECTION 5.6: BOARD MAY IN ITS DISCRETION COLLECT APPROPRIATE FEES FOR NOTARY PUBLIC OR STENOGRAPHER.

REQUESTED SPECIAL PERMITS AND WAIVERS – LOT 2

1. BUILDING DEPARTMENT BUILDING PERMIT FEES: $11.00 PER $1,000.00 OF ESTIMATED COST OF CONSTRUCTION OR FRACTION THEREOF;
2. WALPOLE WETLANDS PROTECTION BYLAWS REGULATIONS 1.4.1: NO ALTERATION ZONE: THE COMMISSION SHALL REQUIRE THE APPLICANT TO MAINTAIN A 25 FOOT WIDE CONTIGUOUS, UNDISTURBED, VEGETATIVE BUFFER MEASURED FROM, AND PARALLEL TO, THE WETLAND RESOURCE BOUNDARY, AS A MINIMUM;
3. WALPOLE WETLANDS PROTECTION BYLAWS REGULATIONS 1.5.2: REPLICATION REQUIREMENTS;
4. WALPOLE WETLANDS PROTECTION BYLAWS REGULATIONS 2.3: PLANS AND SUPPORTING DOCUMENTS;
5. WALPOLE ZONING BYLAWS TABLE 5-B.1.3.A; USE PROHIBITED IN LIMITED MANUFACTURING ZONE;
6. WALPOLE ZONING BYLAWS SECTION 6-B-1: IN ALL DISTRICTS NO BUILDING SHALL BE CONSTRUCTED ON ANY PART OF A LOT WHICH DOES NOT HAVE AN AREA IN WHICH A CIRCLE, THE DIAMETER OF WHICH IS NOT LESS THAN 80% OF THE MINIMUM REQUIRED LOT FRONTAGE, TANGENT TO THE EXTERIOR STREET LINE FROM WHICH THE REQUIRED FRONTAGE AND MINIMUM SETBACK ARE DERIVED AND WITHIN ALL OTHER LOT LINES, MAY BE LOCATED;
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16. SIGNS SECTION 7.6.C.4; SIGNS SHALL BE A MINIMUM OF 8 FEET FROM THE GROUND;
17. WATER AND SEWER DEPARTMENT WATER ENTRANCE FEE: SYSTEM DEVELOPMENT CHARGE OF $2,440 PER RESIDENTIAL HOUSING UNIT;
18. WATER AND SEWER DEPARTMENT NON-ASSESSED SEWER ENTRANCE FEE-RESIDENTIAL: SYSTEM DEVELOPMENT CHARGE OF $1,670 PER RESIDENTIAL HOUSING UNIT;
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PREPARED FOR:

55 BH LLC
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WESTFORD, MA 01886

PROPOSED MULTIFAMILY DEVELOPMENT
SUMMER STREET
WALPOLE, MA

REVISIONS:

NO	BY	DATE	DESCRIPTION
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10	PB	1/27/21	REV. SITE PLAN
11	PB	3/12/21	REV. DRIVEWAY B
12	PB	4/13/21	REV. SITE PLAN

COMMONWEALTH OF MASSACHUSETTS
KATIE L. ENRIGHT
CIVIL
No. 48111
REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:23-04'00'

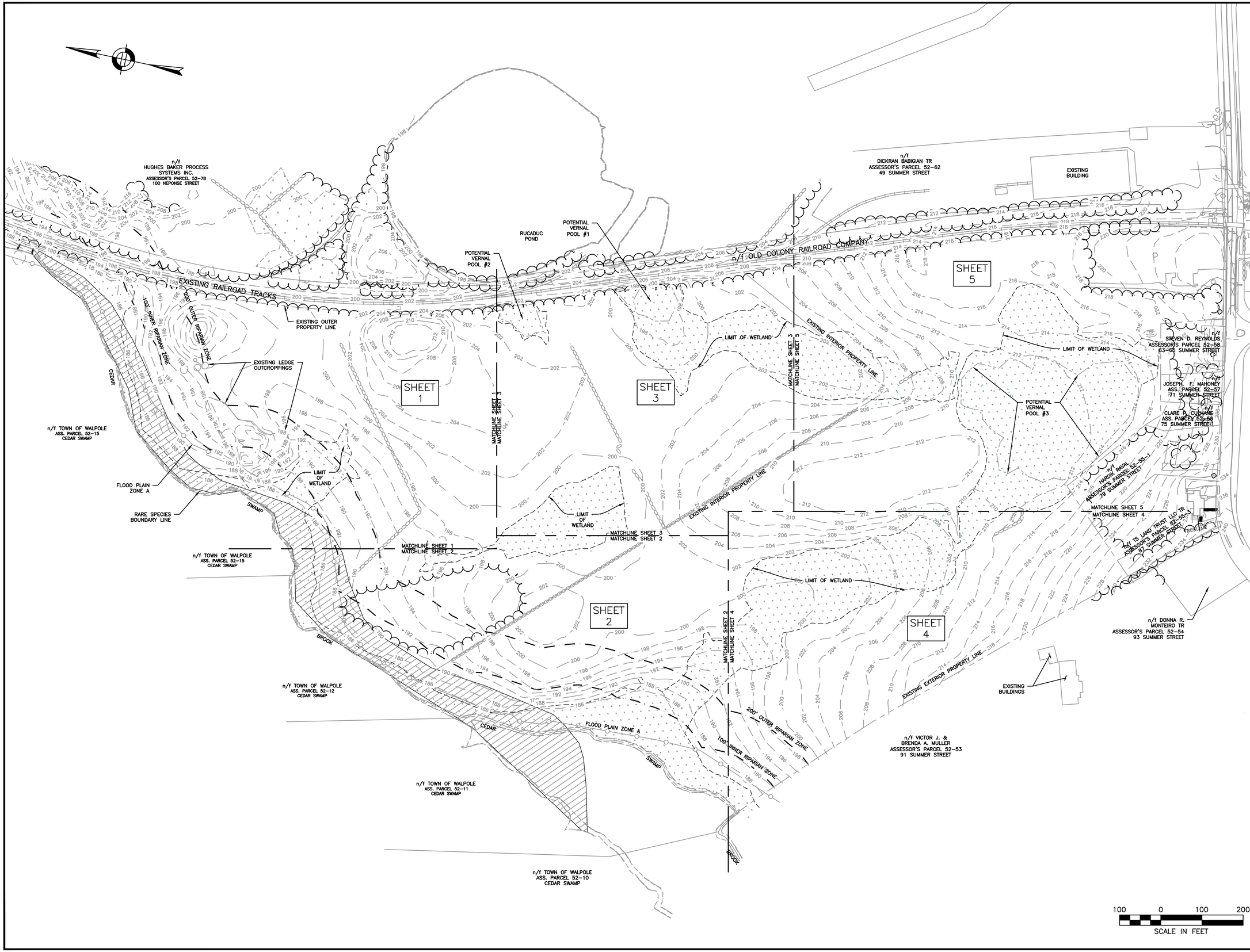
SITE PLAN

SITE PLAN NOTES

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.2

4/15/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - COVER-CPS.dwg
Matthew Baker



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SITE PLAN

LOCUS PLAN

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
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CHECKED BY:	KE

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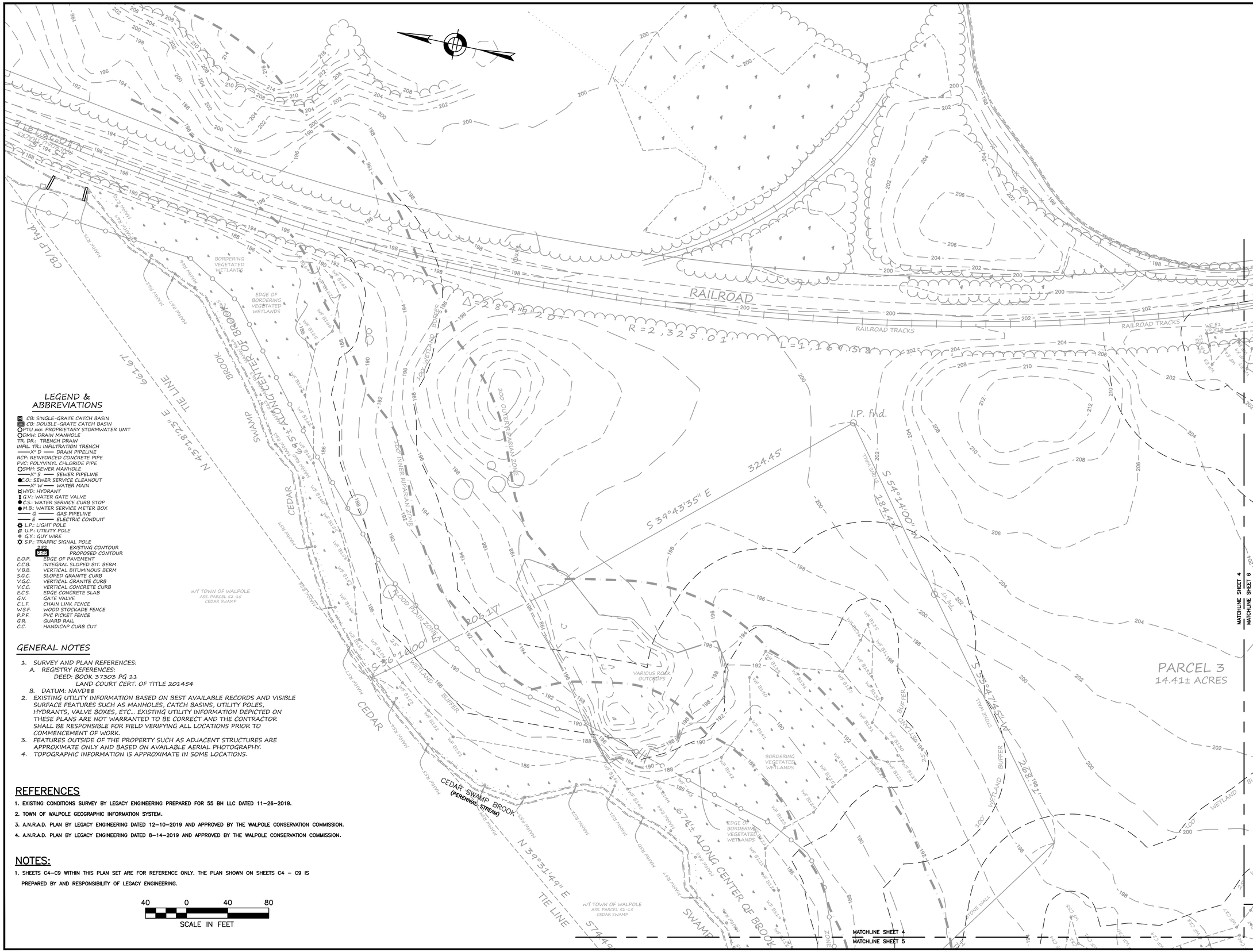
Matthew Baker



LEGEND & ABBREVIATIONS

- CB: SINGLE-GRATE CATCH BASIN
- CB: DOUBLE-GRATE CATCH BASIN
- PTU xxx: PROPRIETARY STORMWATER UNIT
- DMH: DRAIN MANHOLE
- TR. DR.: TRENCH DRAIN
- INFIL. TR.: INFILTRATION TRENCH
- X" D DRAIN PIPELINE
- RCP: REINFORCED CONCRETE PIPE
- PVC: POLYVINYL CHLORIDE PIPE
- SMH: SEWER MANHOLE
- X" S SEWER PIPELINE
- C.O.: SEWER SERVICE CLEANOUT
- X" W WATER MAIN
- HYD: HYDRANT
- G.V.: WATER GATE VALVE
- C.S.: WATER SERVICE CURB STOP
- M.B.: WATER SERVICE METER BOX
- G GAS PIPELINE
- E ELECTRIC CONDUIT
- L.P.: LIGHT POLE
- U.P.: UTILITY POLE
- G.Y.: GUY WIRE
- S.P.: TRAFFIC SIGNAL POLE
- 222 EXISTING CONTOUR
- 222 PROPOSED CONTOUR
- E.O.P. EDGE OF PAVEMENT
- C.C.B. INTEGRAL SLOPED BIT. BERM
- V.B.B. VERTICAL BITUMINOUS BERM
- S.G.C. SLOPED GRANITE CURB
- V.G.C. VERTICAL GRANITE CURB
- V.C.C. VERTICAL CONCRETE CURB
- E.C.S. EDGE CONCRETE SLAB
- G.V. GATE VALVE
- C.L.F. CHAIN LINK FENCE
- W.S.F. WOOD STOCKADE FENCE
- P.P.F. PVC PICKET FENCE
- G.R. GUARD RAIL
- C.C. HANDICAP CURB CUT

GENERAL NOTES

1. SURVEY AND PLAN REFERENCES:
   A. REGISTRY REFERENCES:
      DEED: BOOK 37303 PG 11
      LAND COURT CERT. OF TITLE 201454
   B. DATUM: NAVD88
2. EXISTING UTILITY INFORMATION BASED ON BEST AVAILABLE RECORDS AND VISIBLE SURFACE FEATURES SUCH AS MANHOLES, CATCH BASINS, UTILITY POLES, HYDRANTS, VALVE BOXES, ETC... EXISTING UTILITY INFORMATION DEPICTED ON THESE PLANS ARE NOT WARRANTED TO BE CORRECT AND THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING ALL LOCATIONS PRIOR TO COMMENCEMENT OF WORK.
3. FEATURES OUTSIDE OF THE PROPERTY SUCH AS ADJACENT STRUCTURES ARE APPROXIMATE ONLY AND BASED ON AVAILABLE AERIAL PHOTOGRAPHY.
4. TOPOGRAPHIC INFORMATION IS APPROXIMATE IN SOME LOCATIONS.

REFERENCES

1. EXISTING CONDITIONS SURVEY BY LEGACY ENGINEERING PREPARED FOR 55 BH LLC DATED 11–26–2019.
2. TOWN OF WALPOLE GEOGRAPHIC INFORMATION SYSTEM.
3. A.N.R.A.D. PLAN BY LEGACY ENGINEERING DATED 12–10–2019 AND APPROVED BY THE WALPOLE CONSERVATION COMMISSION.
4. A.N.R.A.D. PLAN BY LEGACY ENGINEERING DATED 8–14–2019 AND APPROVED BY THE WALPOLE CONSERVATION COMMISSION.

NOTES:

1. SHEETS C4–C9 WITHIN THIS PLAN SET ARE FOR REFERENCE ONLY. THE PLAN SHOWN ON SHEETS C4 – C9 IS PREPARED BY AND RESPONSIBILITY OF LEGACY ENGINEERING.

40 0 40 80
SCALE IN FEET

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10	PB	1/27/21	REV. SITE PLAN
11	PB	3/12/21	REV. DRIVEWAY B
12	PB	4/13/21	REV. SITE PLAN

SITE PLAN

EXISTING CONDITIONS PLAN 1 OF 5

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/KF
CHECKED BY:	KE

C.4

4/15/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - Existing Conditions-CPS.dwg
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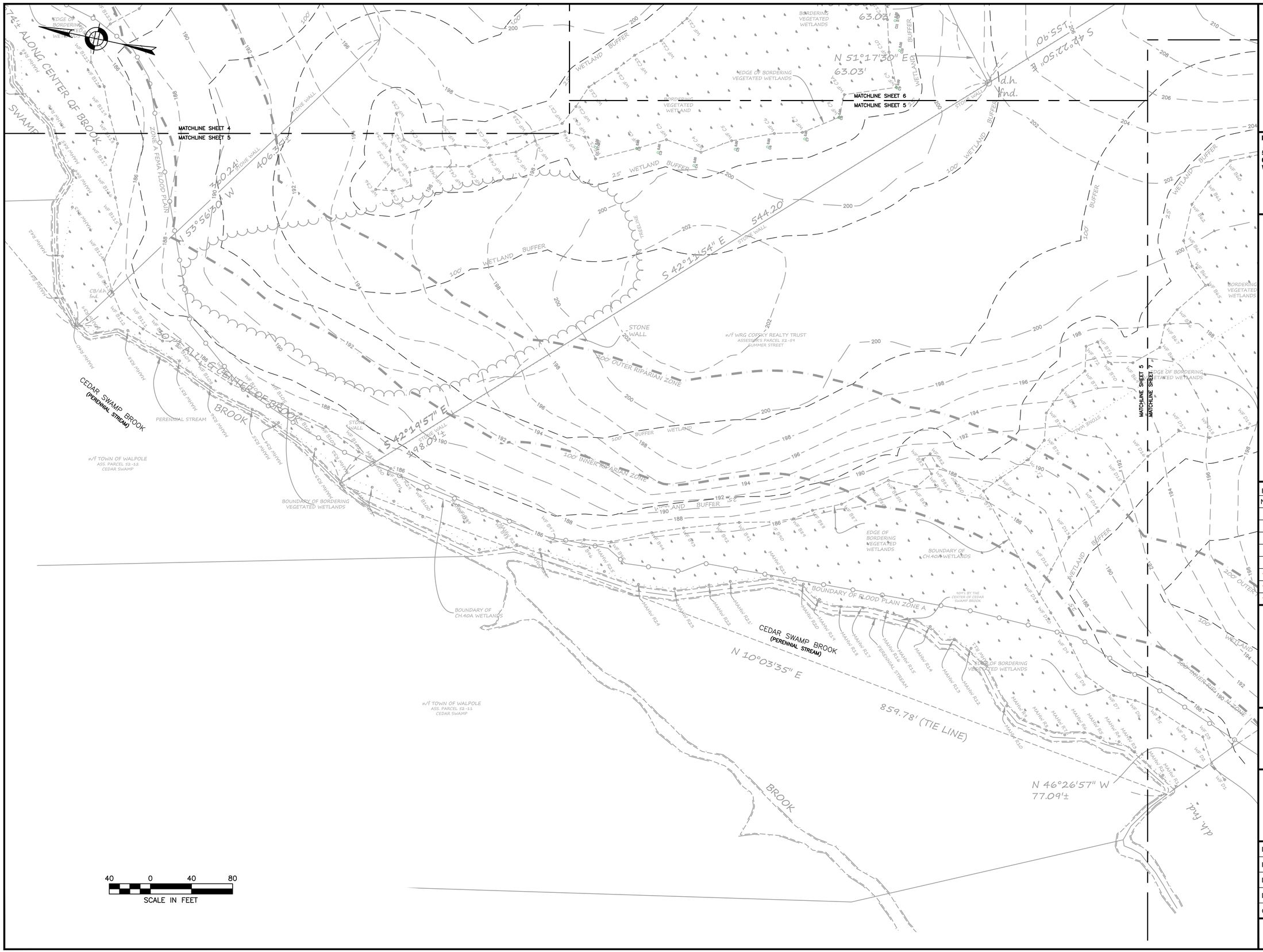

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EXISTING CONDITIONS PLAN 2 OF 5

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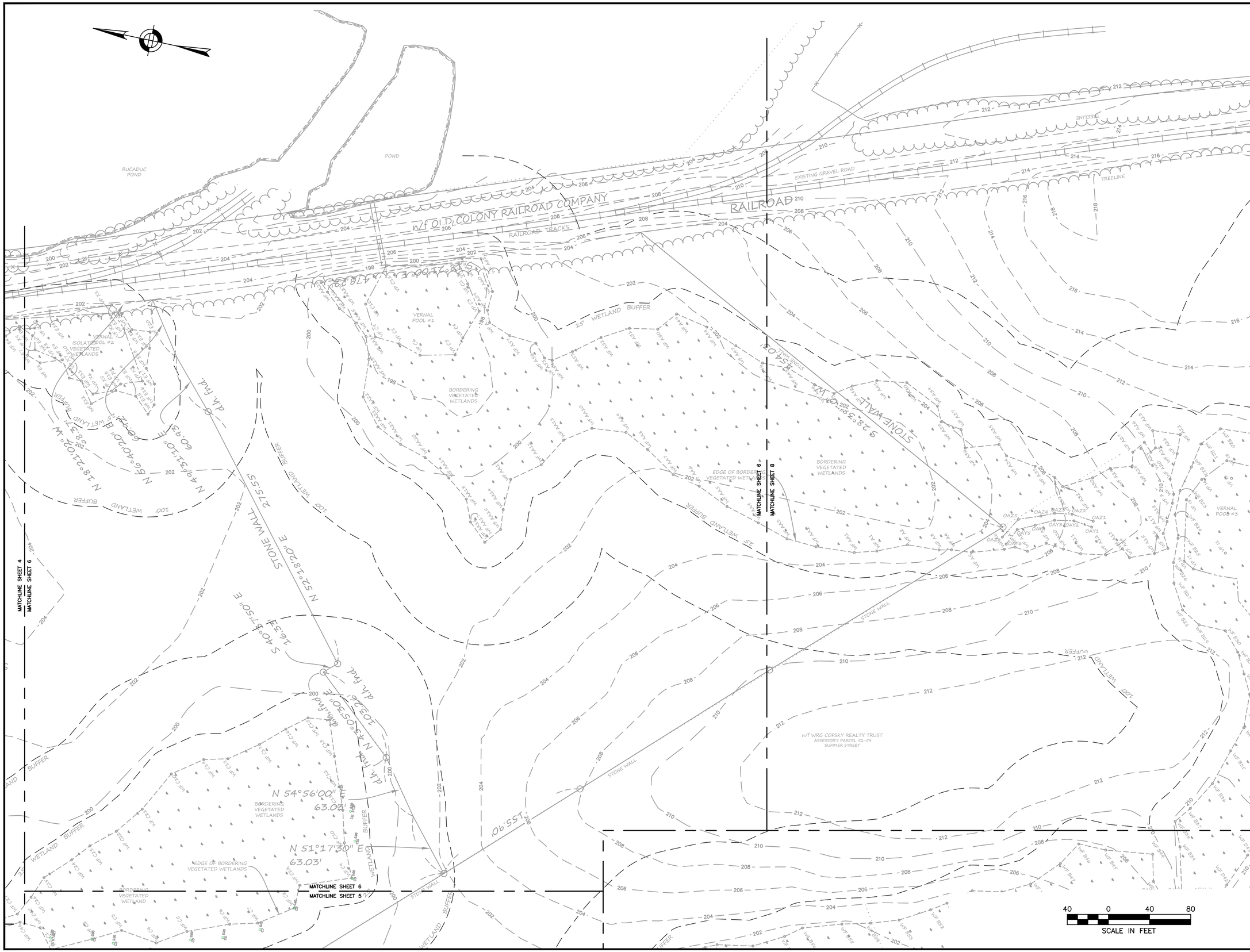
C.5

SHEET 5 OF 56



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SITE PLAN

EXISTING CONDITIONS PLAN 3 OF 5

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C.6

SHEET 6 OF 56

4/15/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - Existing Conditions-CPS.dwg
Matthew Blake

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12	PB	4/13/21	REV. SITE PLAN

SITE PLAN

EXISTING CONDITIONS PLAN 4 OF 5

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C.7

SHEET 7 OF 56

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12	PB	4/13/21	REV. SITE PLAN

SITE PLAN

EXISTING CONDITIONS PLAN 5 OF 5

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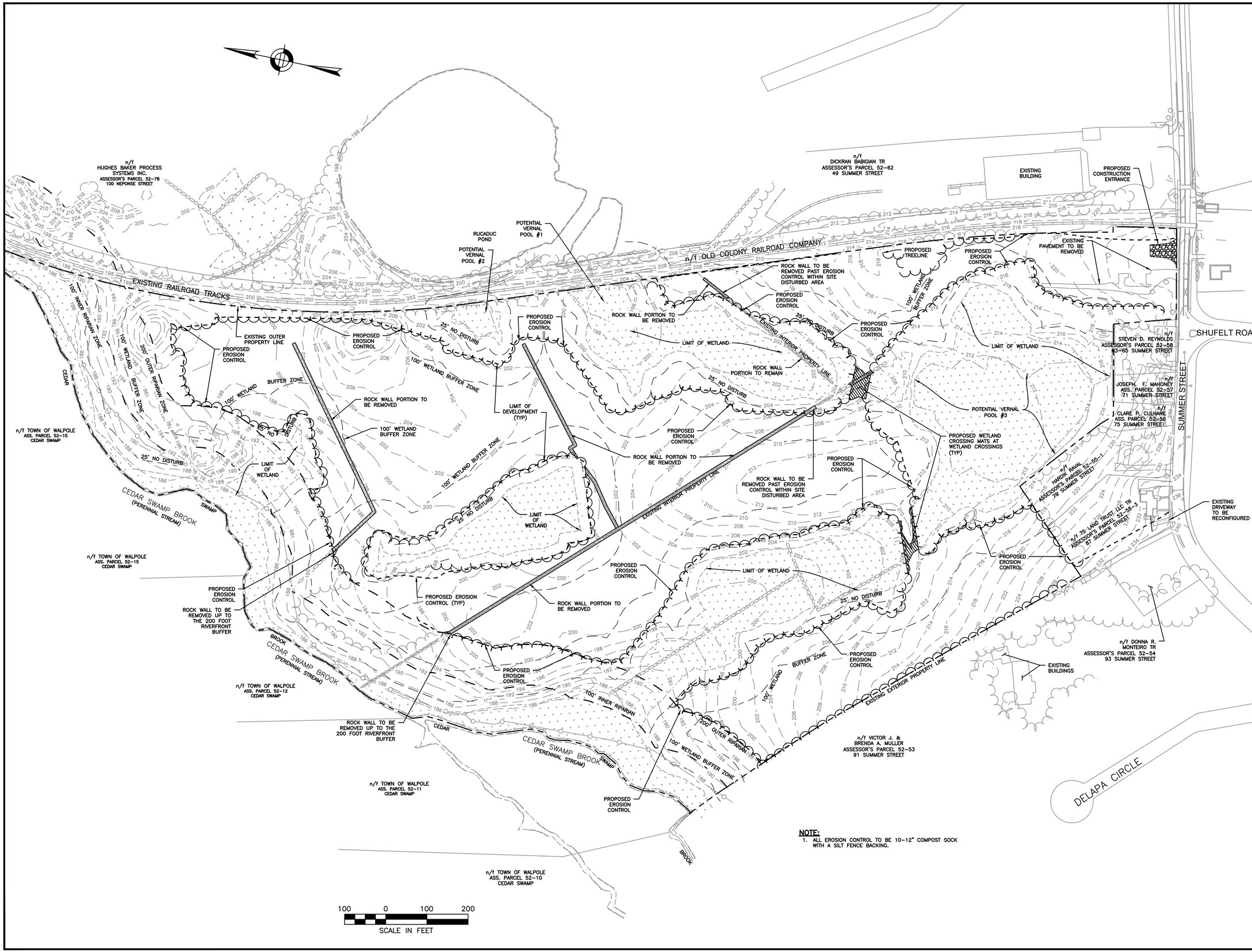
DRAWN BY:	PB/KF
CHECKED BY:	KE

C.8

SHEET 8 OF 56

4/15/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - Existing Conditions-CPS.dwg
Matthew Baker



NOTE:

1. ALL EROSION CONTROL TO BE 10-12" COMPOST SOCK WITH A SILT FENCE BACKING.

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COMMONWEALTH OF MASSACHUSETTS KATIE L. ENRIGHT CIVIL No. 46111 REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:24-04'00'

SITE PLAN

EROSION CONTROL AND DEMOLITION PLAN

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
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DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

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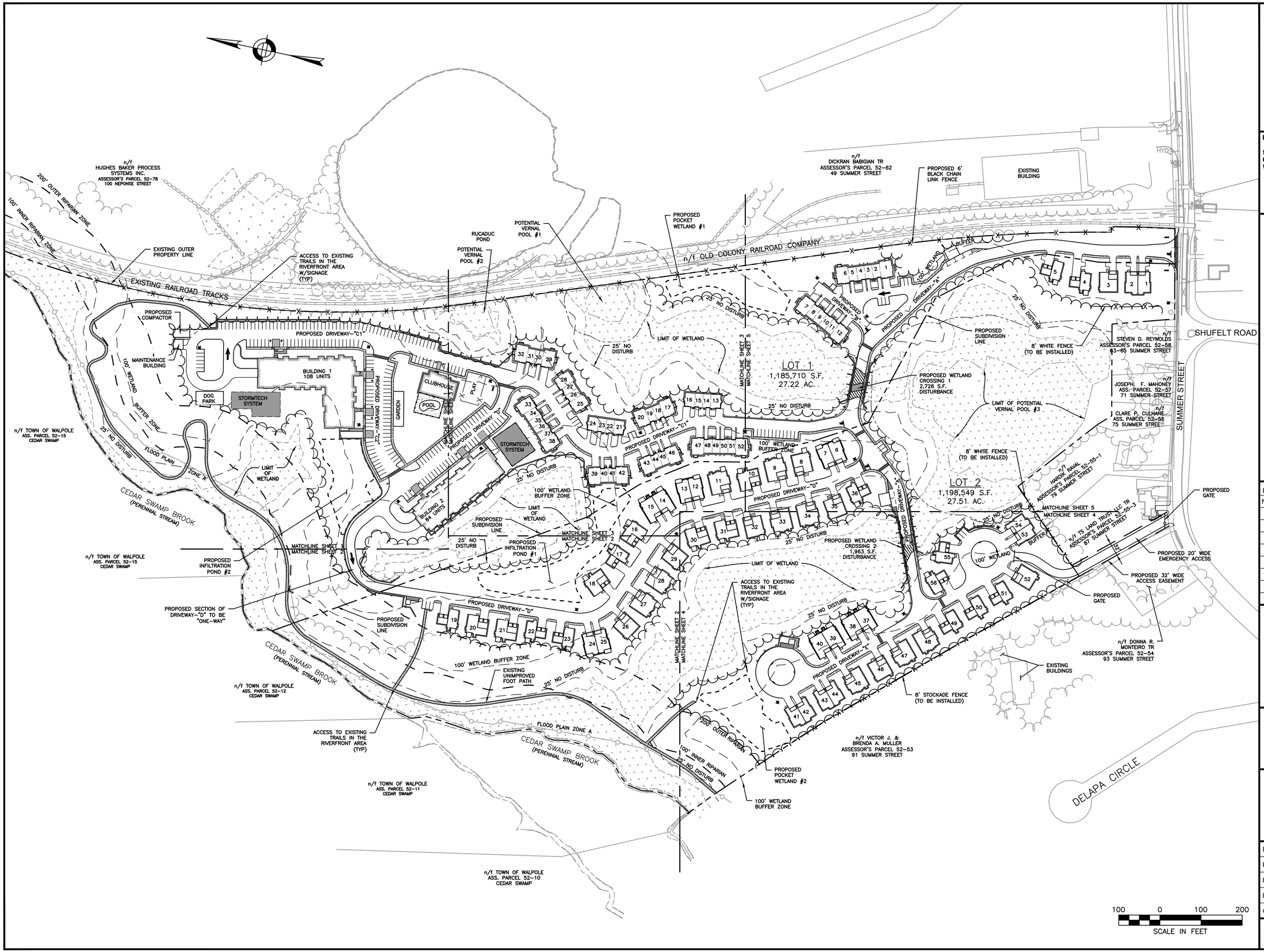
4/15/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - site prep-overall-openspace-CPS.dwg
Matthew Blair



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PREPARED FOR:

55 BH LLC
6 LYBERTY WAY, SUITE 203
WESTFORD, MA 01886

PROPOSED MULTIFAMILY DEVELOPMENT
SUMMER STREET
WALPOLE, MA

REVISIONS:

NO	BY	DATE	DESCRIPTION
5	PB	12/16/20	EMERGENCY ACCESS
6	PB	1/4/21	REV. FIRE TURNING
7	PB	1/5/21	FIRE ACCESS / STAGING
8	PB	1/8/21	ADDED VISITOR PARKING
9	PB	1/22/21	REV. DRAINAGE DESIGN
10	PB	1/27/21	REV. SITE PLAN
11	PB	3/12/21	REV. DRIVEWAY B
12	PB	4/13/21	REV. SITE PLAN

COMMONWEALTH OF MASSACHUSETTS KATIE L. ENRIGHT CIVIL No. 48111 REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:25-04'00'

SITE PLAN

PROPOSED SUBDIVISION / OVERALL PLAN

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.10

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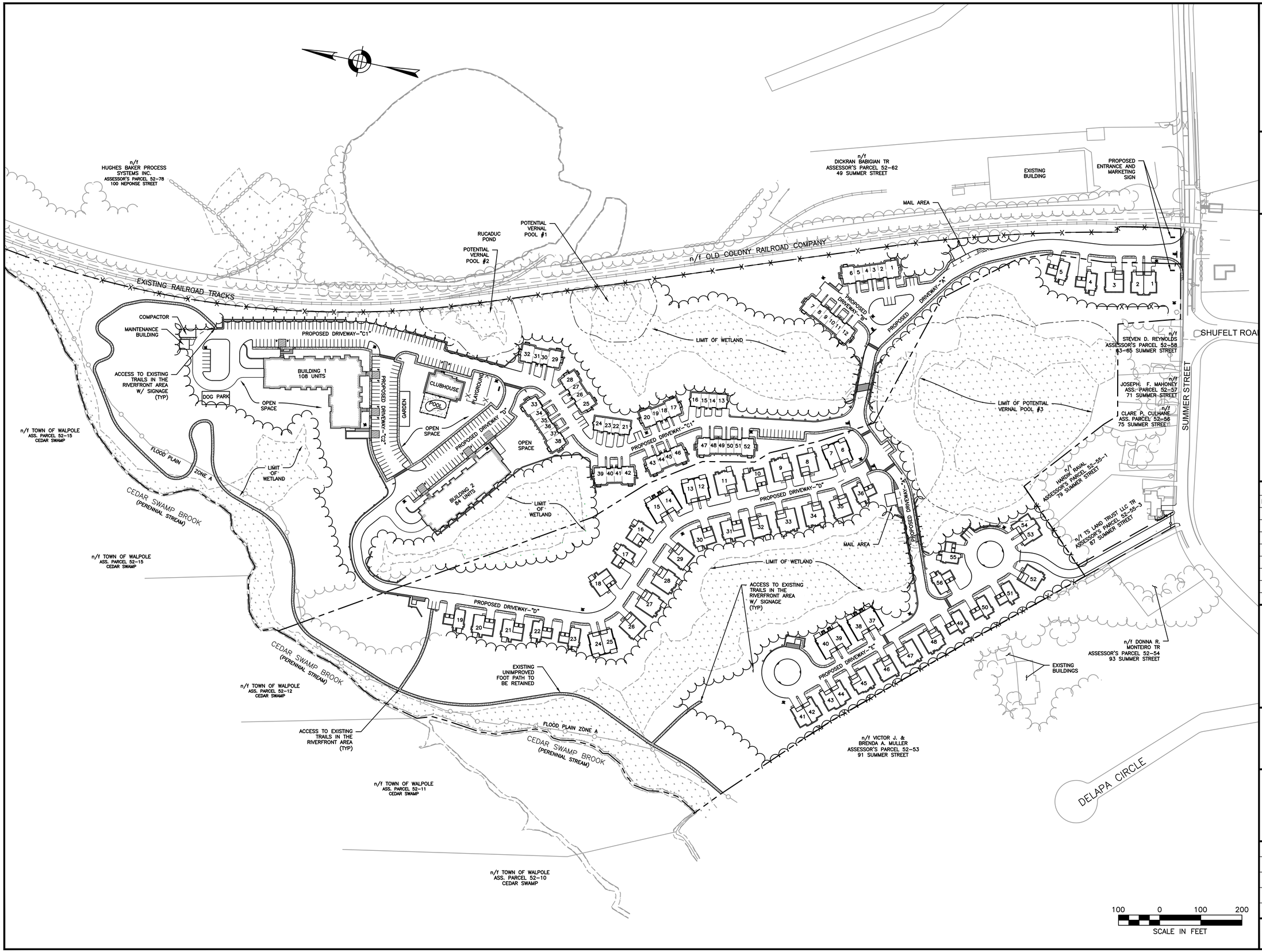
Matthew Baker



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SUMMER STREET
WALPOLE, MA

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12	PB	4/13/21	REV. SITE PLAN

COMMONWEALTH OF MASSACHUSETTS KATIE L. ENRIGHT CIVIL No. 48111 REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:25-04'00'

SITE PLAN

OPEN SPACE AND RECREATION PLAN

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.11

SHEET 11 OF 56

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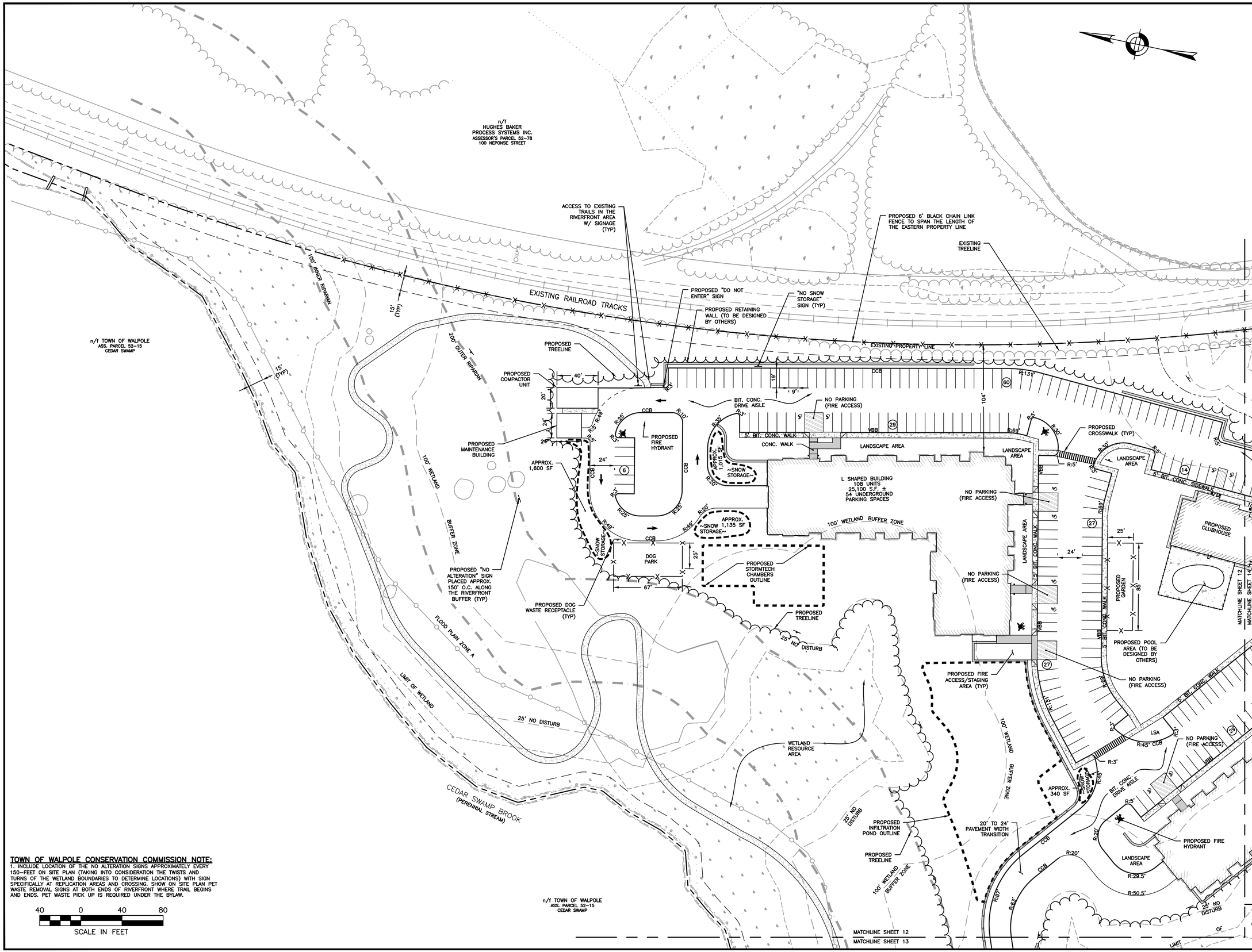
Matthew Blaier



TOWN OF WALPOLE CONSERVATION COMMISSION NOTE:

1. INCLUDE LOCATION OF THE NO ALTERATION SIGNS APPROXIMATELY EVERY 150-FEET ON SITE PLAN (TAKING INTO CONSIDERATION THE TWISTS AND TURNS OF THE WETLAND BOUNDARIES TO DETERMINE LOCATIONS) WITH SIGN SPECIFICALLY AT REPLICATION AREAS AND CROSSING. SHOW ON SITE PLAN PET WASTE REMOVAL SIGNS AT BOTH ENDS OF RIVERFRONT WHERE TRAIL BEGINS AND ENDS. PET WASTE PICK UP IS REQUIRED UNDER THE BYLAW.

40 0 40 80
SCALE IN FEET

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Matthew Baker

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COMMONWEALTH OF MASSACHUSETTS
KATIE L. ENRIGHT
CIVIL
No. 46111
REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:26-04'00'

SITE PLAN

LAYOUT AND MATERIALS PLAN
1 OF 5

DATE:	JANUARY 10, 2020
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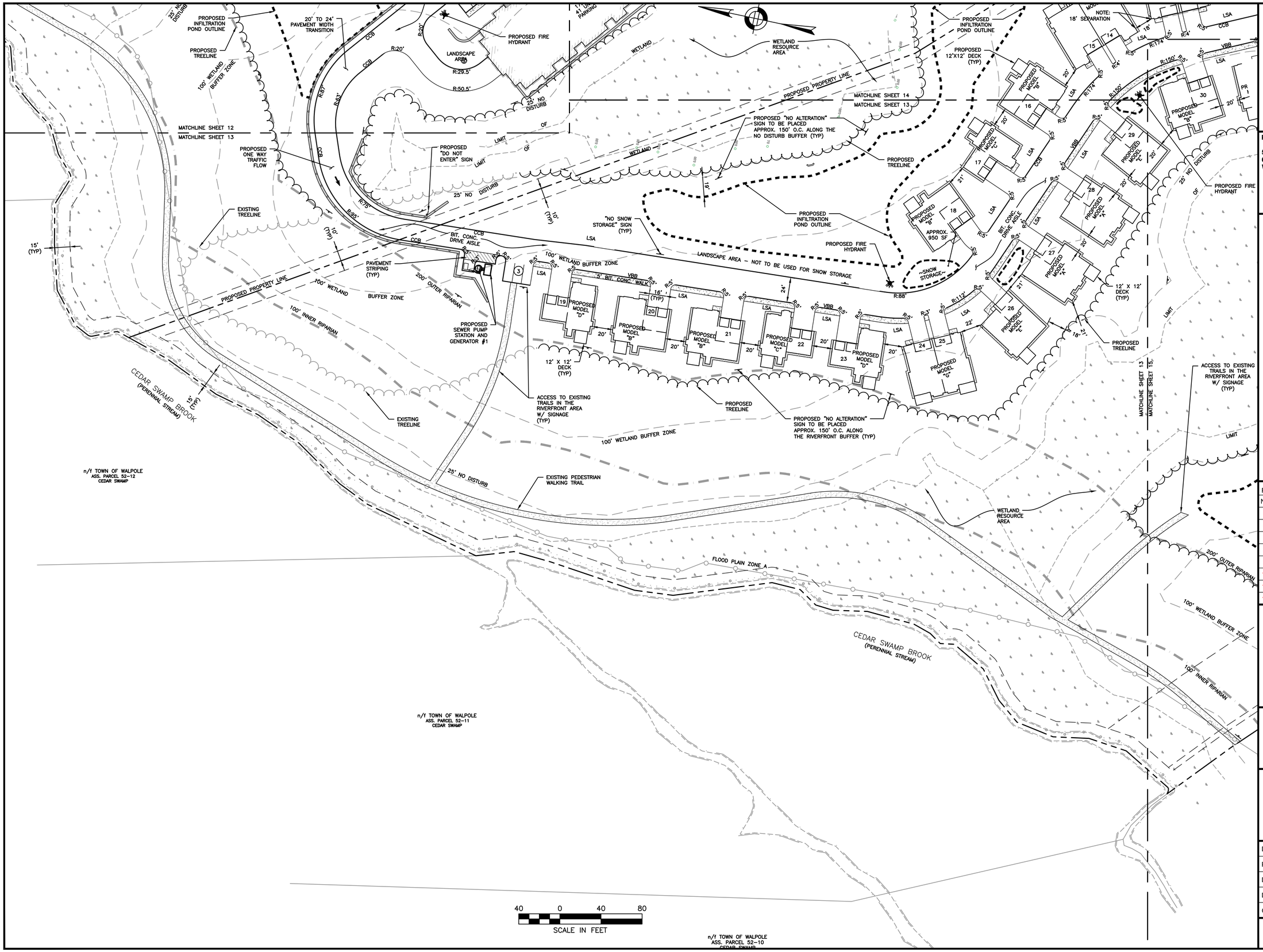
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.12



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CIVIL
No. 46111
REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:27-04'00'

SITE PLAN

LAYOUT AND MATERIALS PLAN
2 OF 5

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.13

SHEET 13 OF 56

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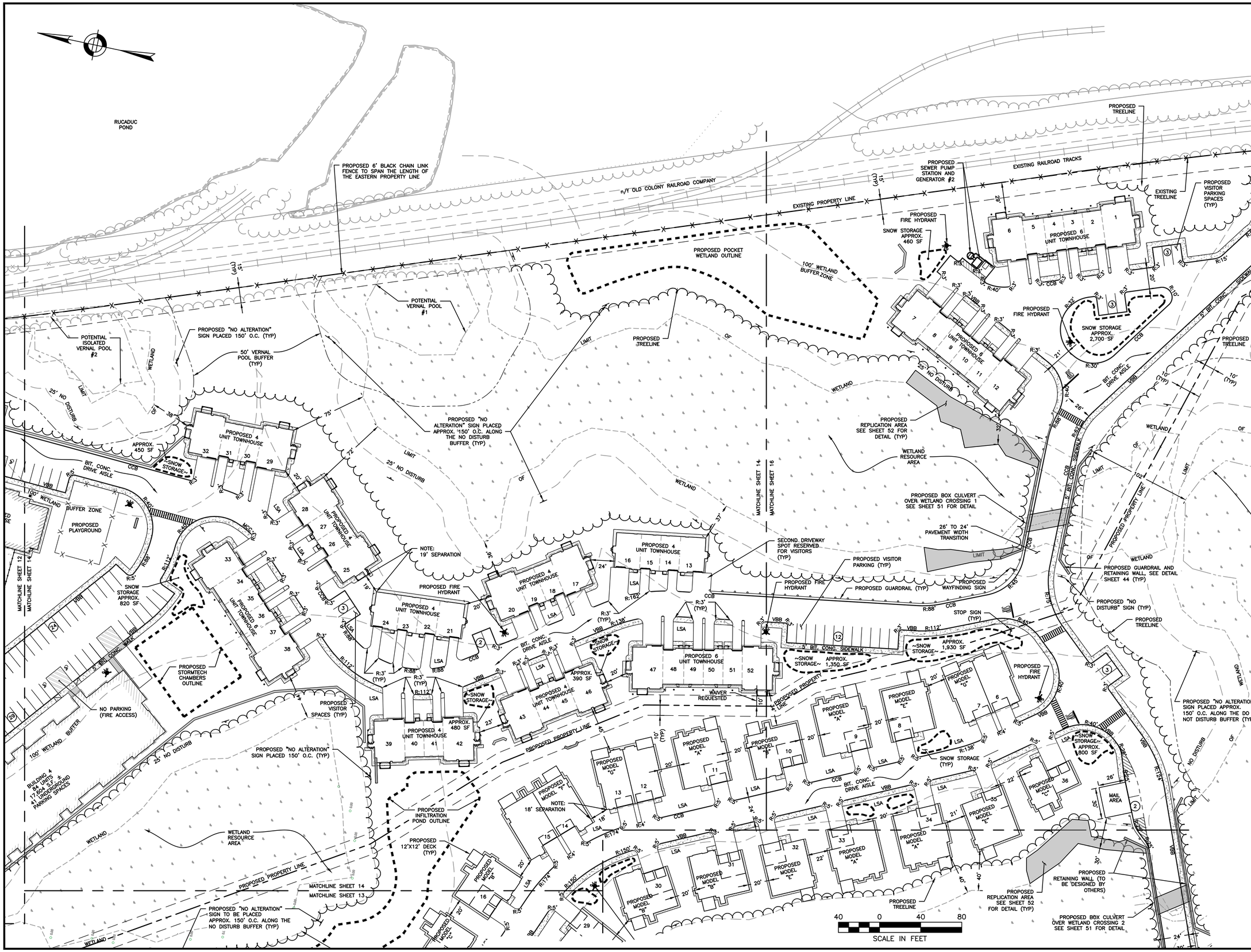
Matthew Baker



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SITE PLAN

LAYOUT AND MATERIALS PLAN 3 OF 5

DATE:	JANUARY 10, 2020
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DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.14

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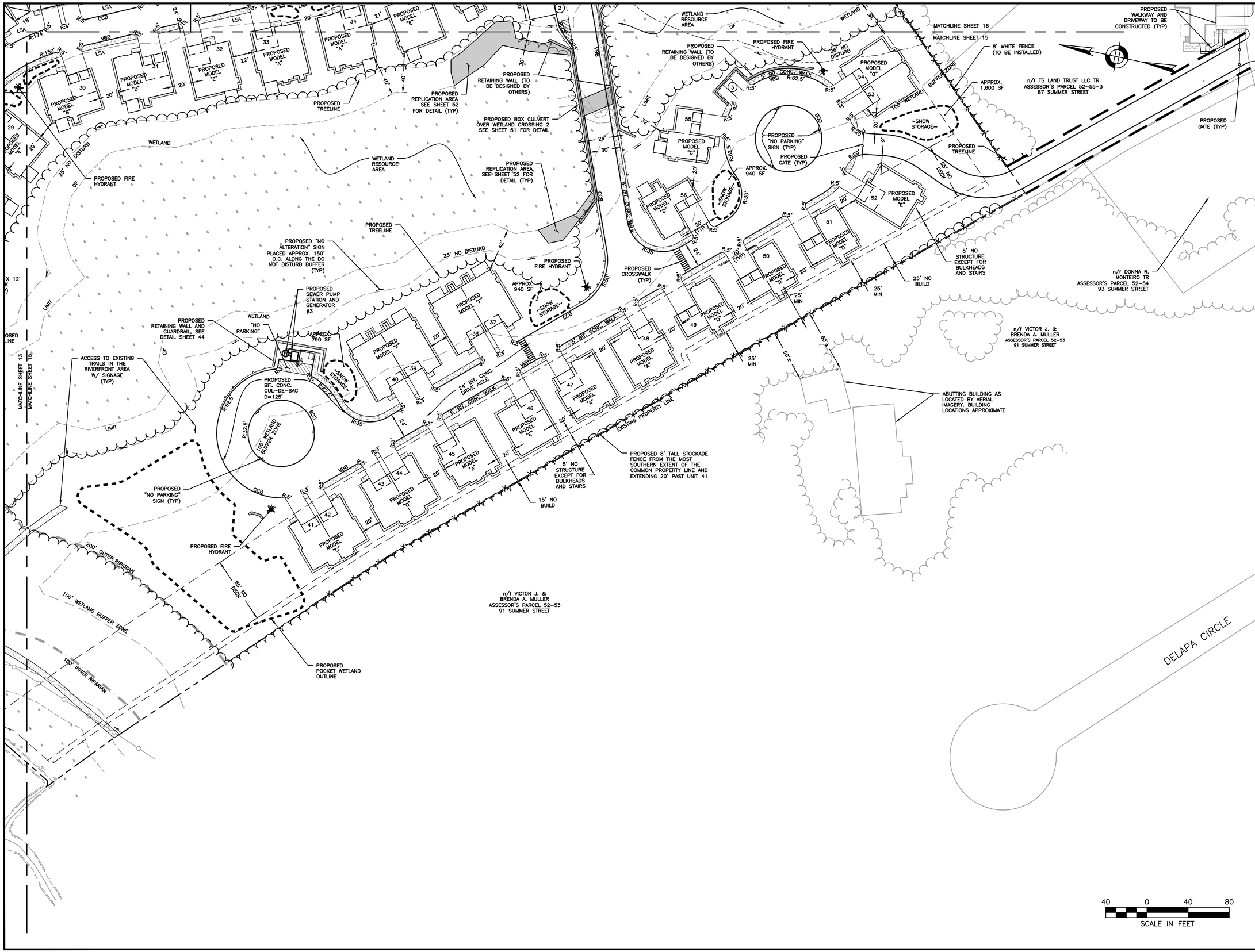
Matthew Baker



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SITE PLAN

LAYOUT AND MATERIALS PLAN
4 OF 5

DATE:	JANUARY 10, 2020
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DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.15

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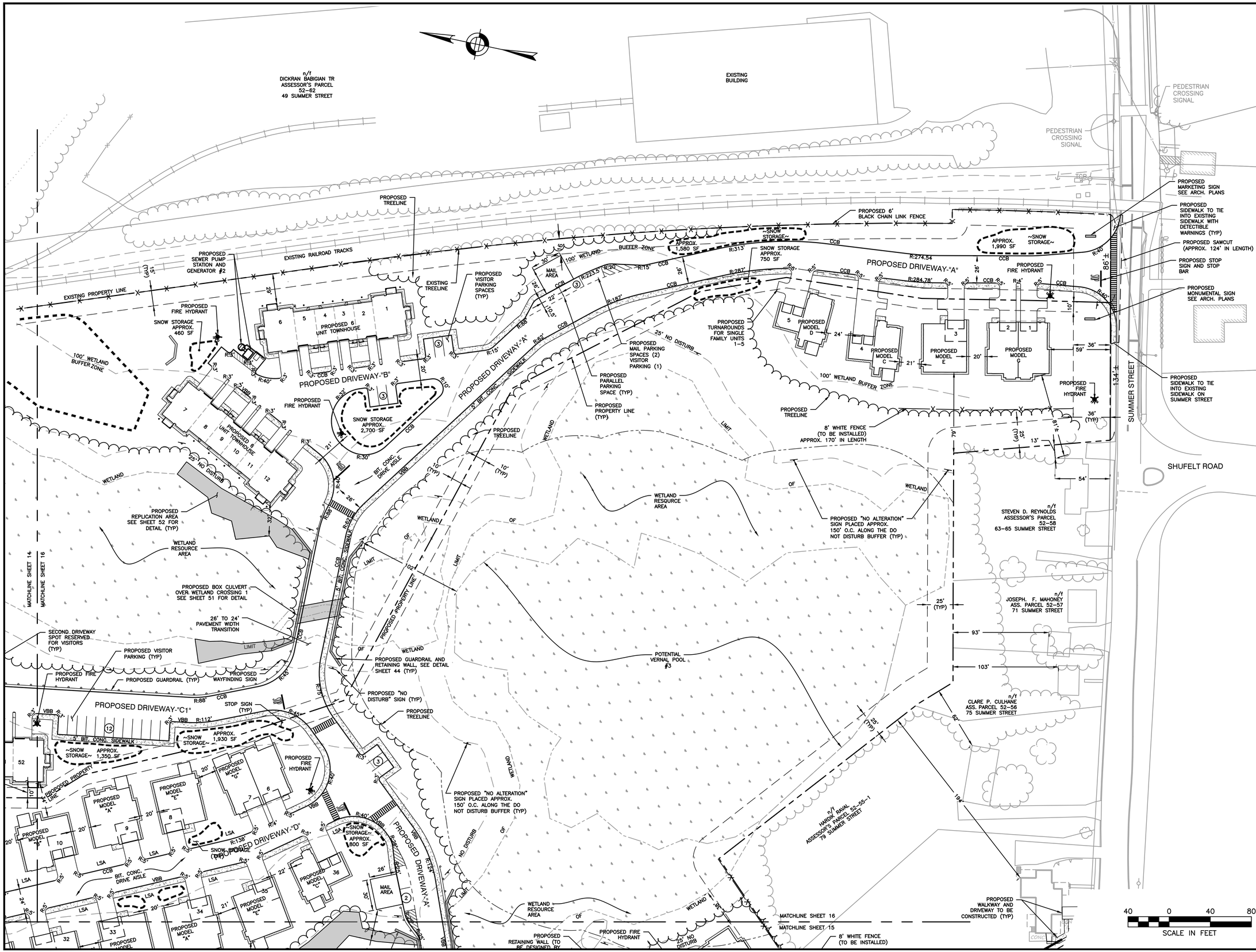
Matthew Baker



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CIVIL
No. 46111
REGISTERED PROFESSIONAL ENGINEER

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Date: 2021.04.20 13:36:28-04'00'

SITE PLAN

LAYOUT AND MATERIALS PLAN
5 OF 5

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
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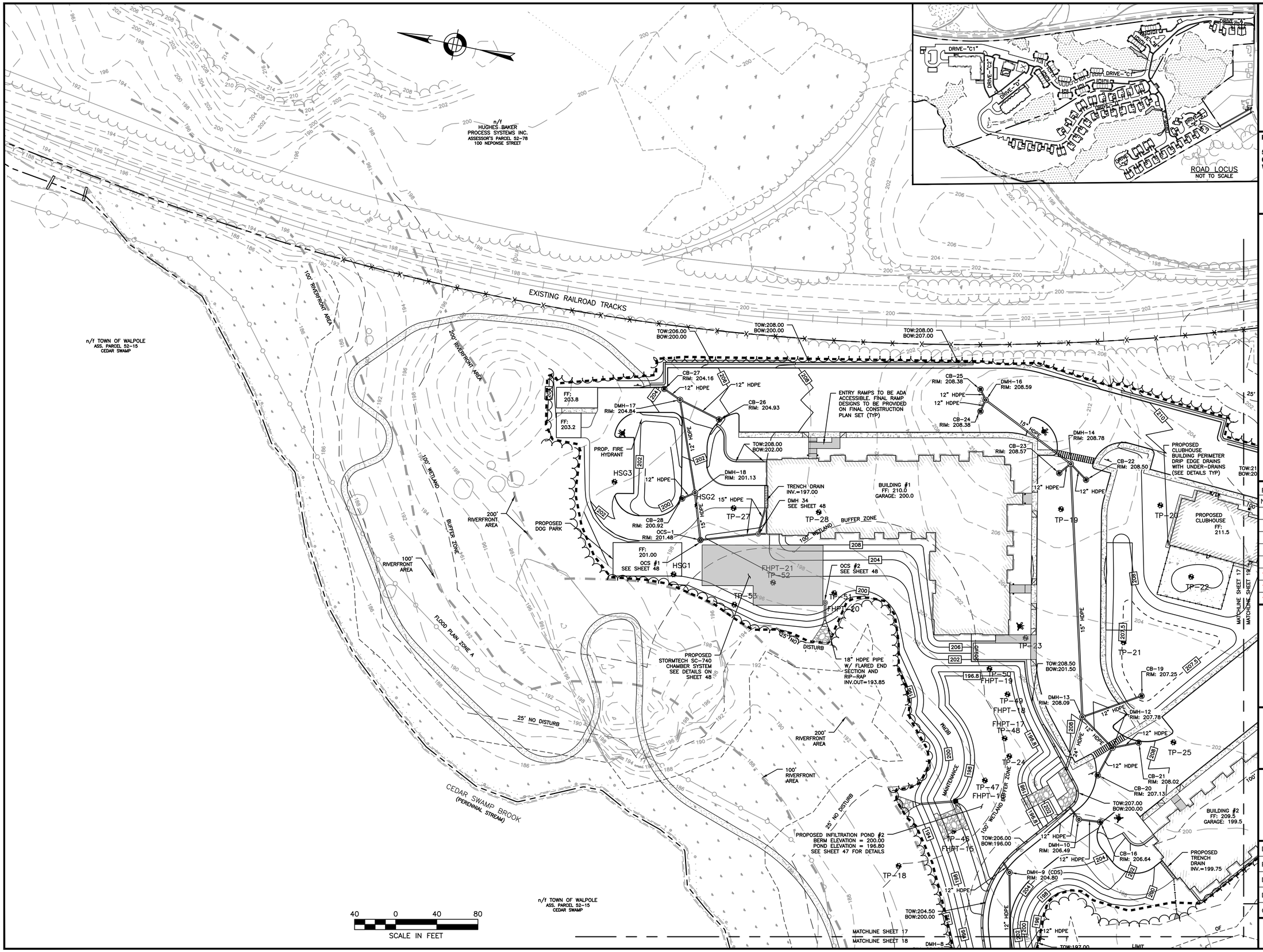
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.16

SHEET 16 OF 56

4/15/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - layout and materials-CPS.dwg
Matthew Baker



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SUMMER STREET
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COMMONWEALTH OF MASSACHUSETTS
KATIE L. ENRIGHT
CIVIL
No. 46111
REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:29-04'00'

SITE PLAN

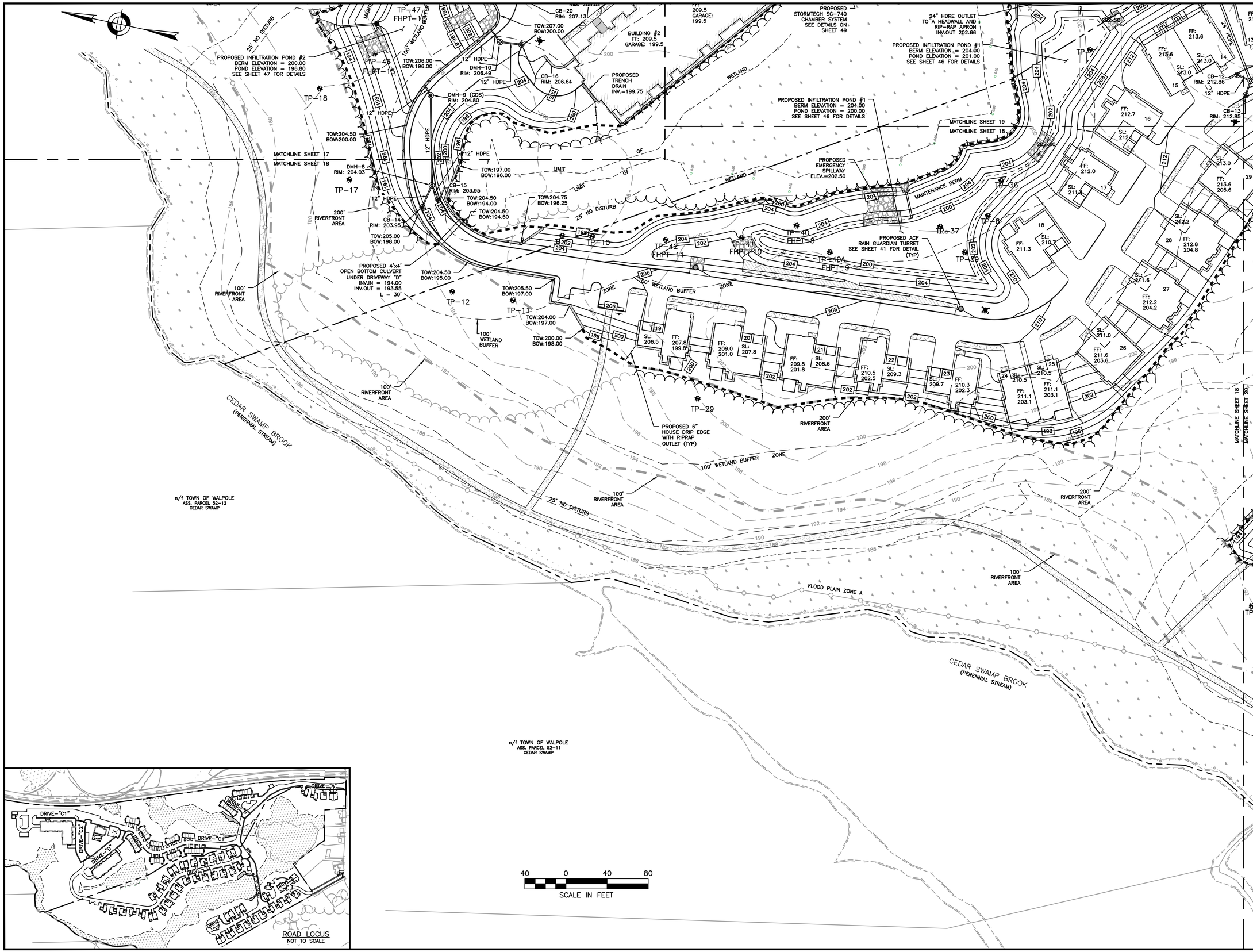
GRADING AND DRAINAGE PLAN 1 OF 5

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.17

SHEET 17 OF 56

4/15/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - Grading Plan-CPS.dwg
Matthew Bilder



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COMMONWEALTH OF MASSACHUSETTS
KATIE L. ENRIGHT
CIVIL
No. 46111
REGISTERED PROFESSIONAL ENGINEER

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Date: 2021.04.20 13:36:29-04'00'

SITE PLAN

GRADING AND DRAINAGE PLAN
2 OF 5

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.18

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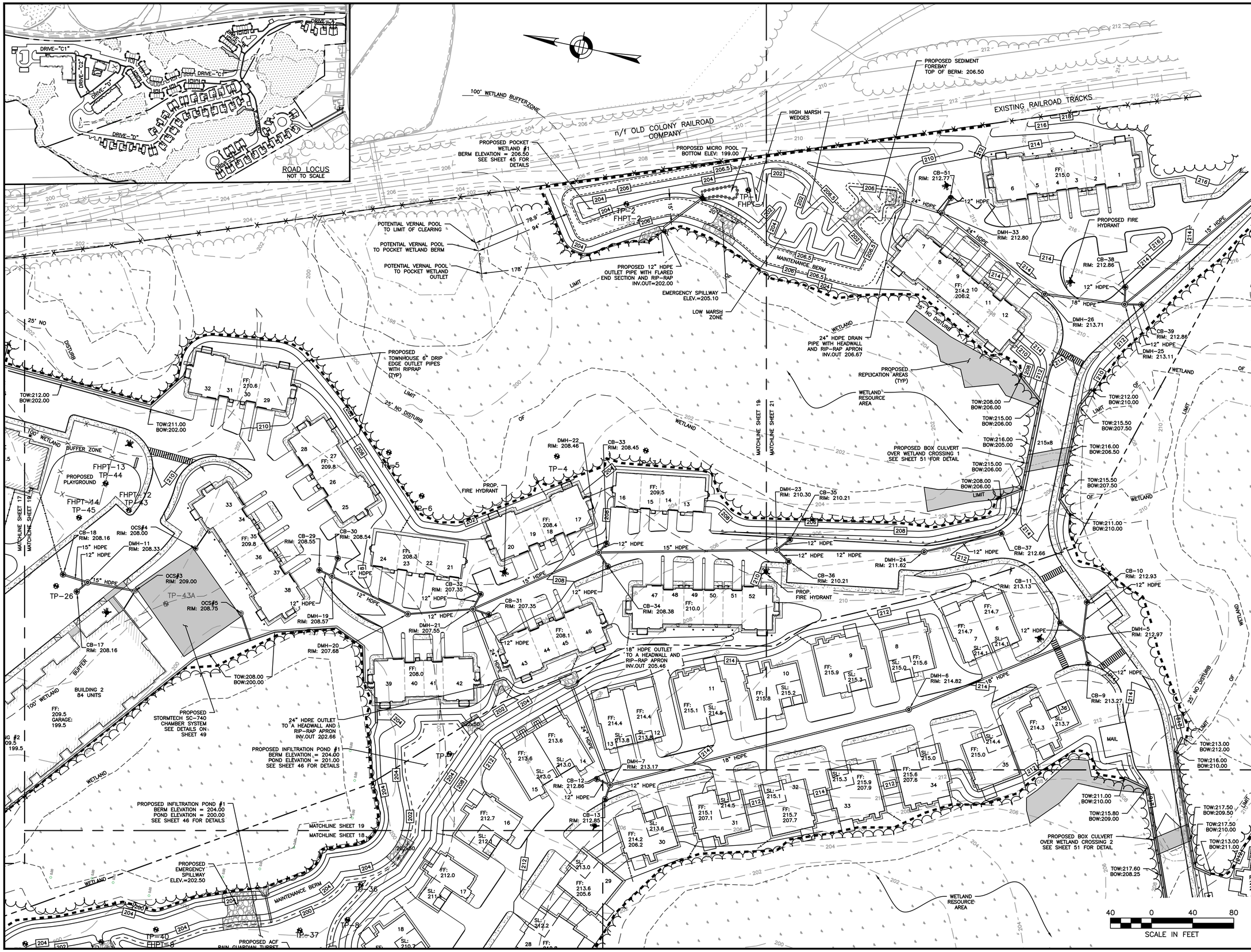
Matthew Blake



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COMMONWEALTH OF MASSACHUSETTS
KATIE L. ENRIGHT
CIVIL
No. 46111
REGISTERED PROFESSIONAL ENGINEER

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Date: 2021.04.20 13:36:30-04'00'

SITE PLAN

GRADING AND DRAINAGE PLAN
3 OF 5

DATE:	JANUARY 10, 2020
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DRAWN BY:	PB/MB/KF/KL
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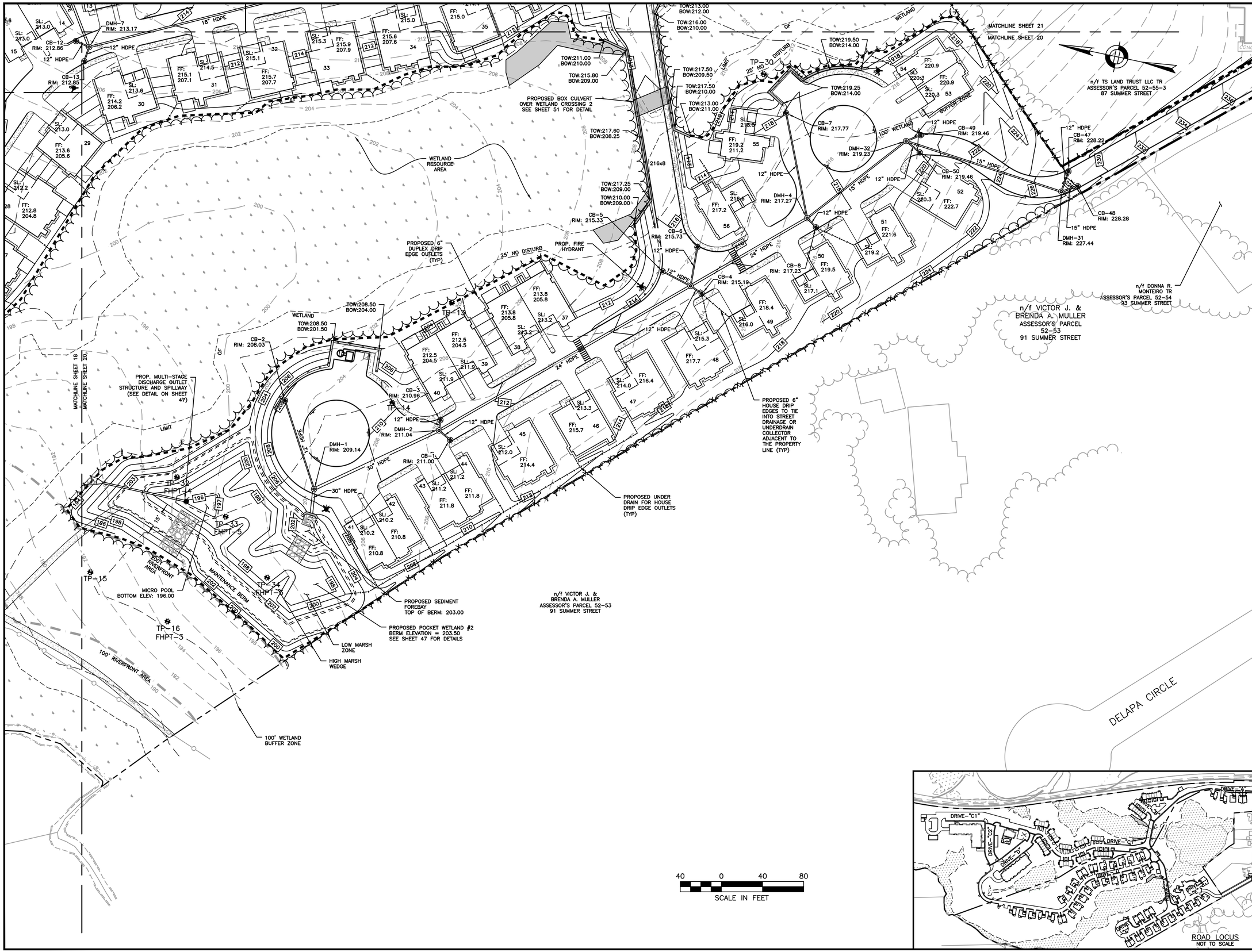
C.19

4/15/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - Grading Plan-CPS.dwg
Matthew Butler



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SITE PLAN

GRADING AND DRAINAGE PLAN
4 OF 5

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C.20

SHEET 20 OF 56

4/15/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - Grading Plan-CPS.dwg
Matthew Blair

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KATIE L. ENRIGHT
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No. 49111
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Digitally signed by Katie Enright
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SITE PLAN

GRADING AND DRAINAGE PLAN
5 OF 5

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CHECKED BY:	KE

C.21

SHEET 21 OF 56

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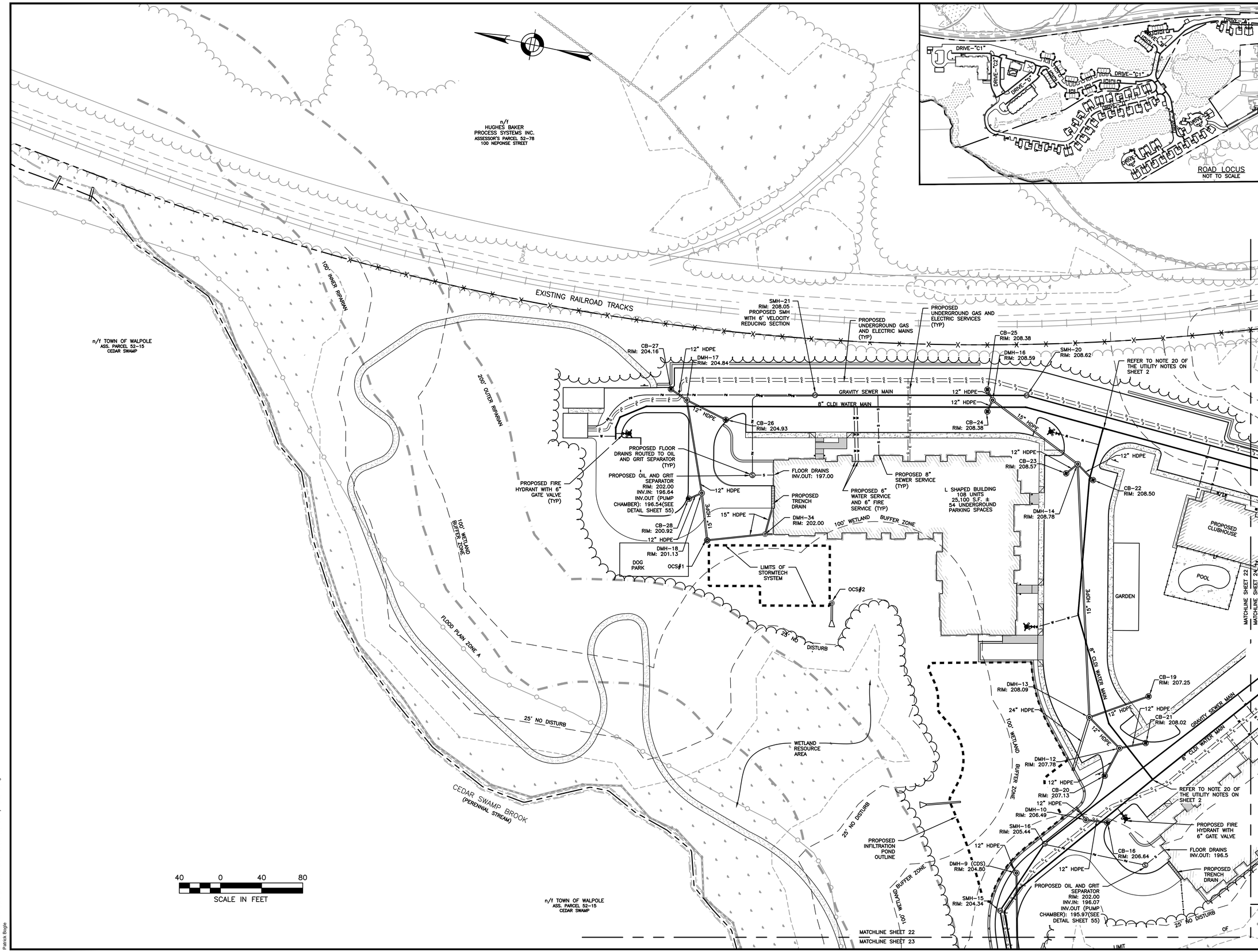
Matthew Baker



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COMMONWEALTH OF MASSACHUSETTS
KATIE L. ENRIGHT
CIVIL
No. 48151
REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:32-04'00'

SITE PLAN

UTILITIES PLAN
1 OF 5

DATE:	JANUARY 10, 2020
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DRAWN BY:	PB/MB/KF/KL
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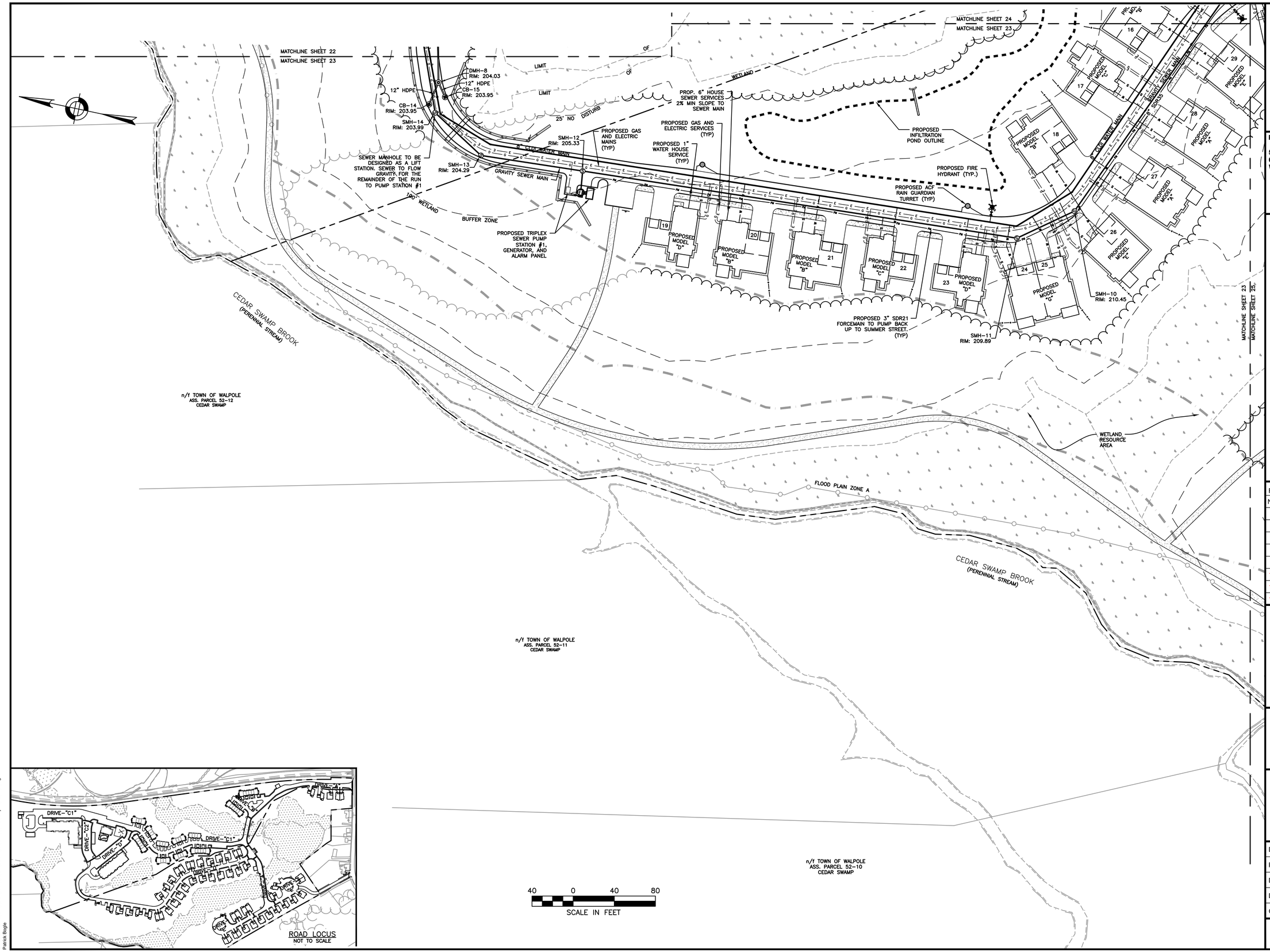
C.22

SHEET 22 OF 56

4/15/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - Utility Plan-CPS.dwg
Patrick Bigda



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PROPOSED MULTIFAMILY DEVELOPMENT
SUMMER STREET
WALPOLE, MA

REVISIONS:

NO	BY	DATE	DESCRIPTION
5	PB	12/16/20	EMERGENCY ACCESS
6	PB	1/4/21	REV. FIRE TURNING
7	PB	1/5/21	FIRE ACCESS/ STAGING
8	PB	1/8/21	ADDED VISITOR PARKING
9	PB	1/22/21	REV. DRAINAGE DESIGN
10	PB	1/27/21	REV. SITE PLAN
11	PB	3/12/21	REV. DRIVEWAY B
12	PB	4/13/21	REV. SITE PLAN

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:32-04'00'

SITE PLAN

UTILITIES PLAN
2 OF 5

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.23

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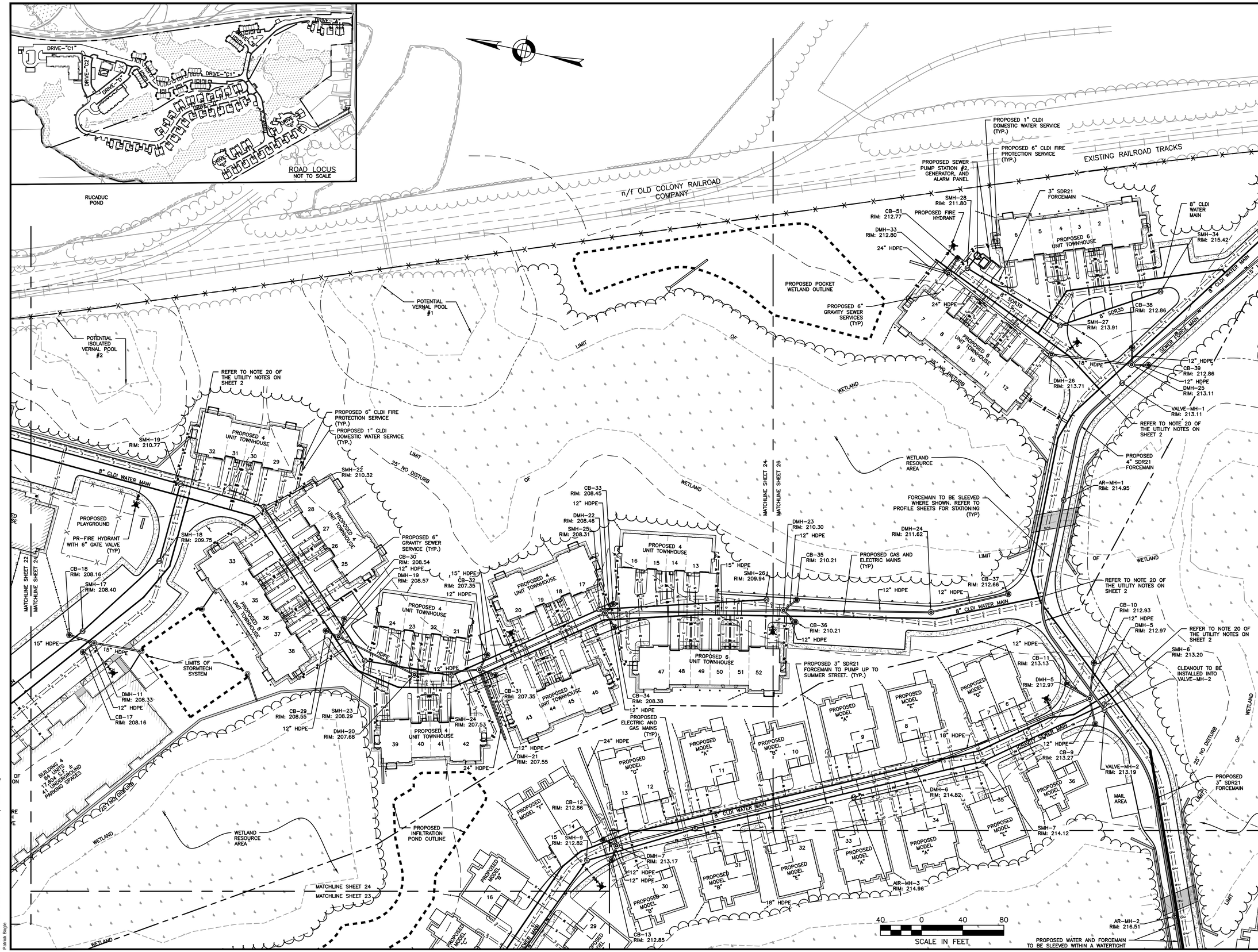
Patrick Bogle



HOWARD STEIN HUDSON
114 Turnpike Road, Suite 2C
Chelmsford, MA 01824
www.hshassoc.com

PREPARED FOR:

55 BH LLC
6 LYBERTY WAY, SUITE 203
WESTFORD, MA 01886

PROPOSED MULTIFAMILY DEVELOPMENT

SUMMER STREET
WALPOLE, MA

REVISIONS:

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12	PB	4/13/21	REV. SITE PLAN

COMMONWEALTH OF MASSACHUSETTS
KATIE L. ENRIGHT
CIVIL
No. 49111
REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:33-04'00'

SITE PLAN

UTILITIES PLAN
3 OF 5

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.24

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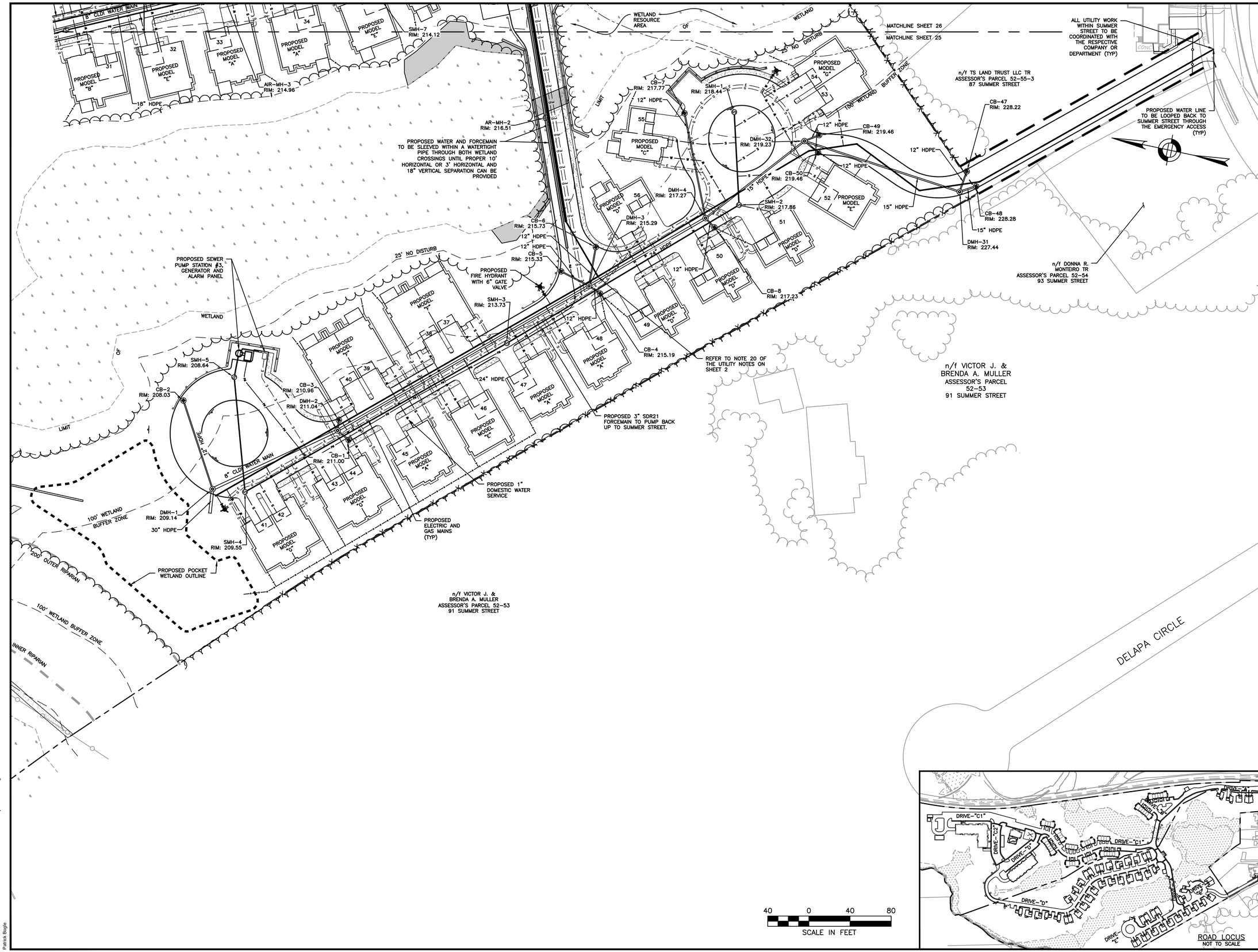
Patrick Beiger



40 0 40 80
SCALE IN FEET

ROAD LOCUS
NOT TO SCALE

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SUMMER STREET
WALPOLE, MA

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COMMONWEALTH OF MASSACHUSETTS
KATIE L. ENRIGHT
CIVIL
No. 46111
REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:34-04'00'

SITE PLAN

UTILITIES PLAN
4 OF 5

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
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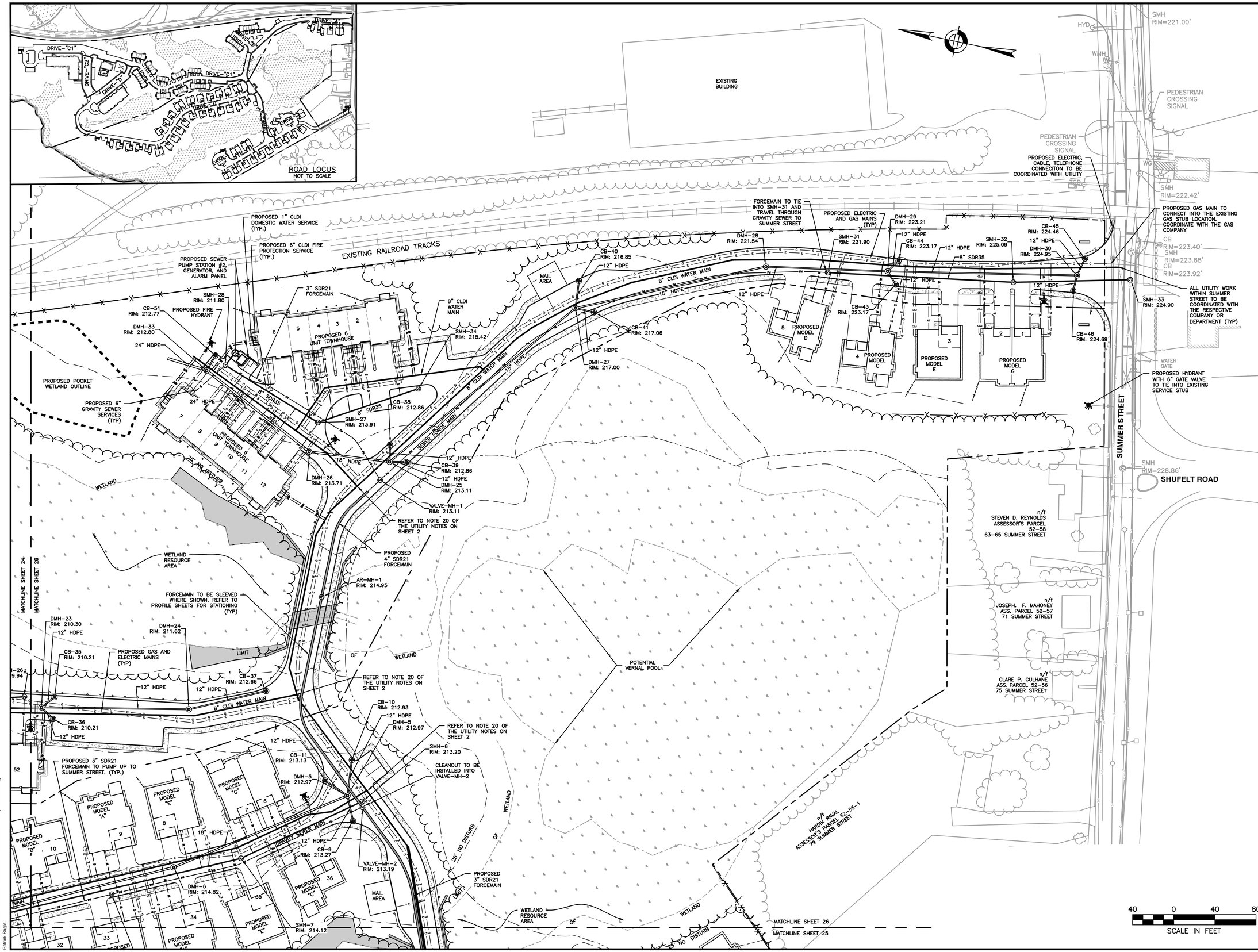
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.25

4/15/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - Utility Plan-CPS.dwg
Patrick Engle



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SUMMER STREET
WALPOLE, MA

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COMMONWEALTH OF MASSACHUSETTS KATIE L. ENRIGHT CIVIL No. 46111 REGISTERED PROFESSIONAL ENGINEER

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Date: 2021.04.20 13:36:34-04'00'

SITE PLAN

UTILITIES PLAN
5 OF 5

DATE:	JANUARY 10, 2020
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DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.26

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Patrick Sligo

LANDSCAPE LEGEND

- PROPOSED DECIDUOUS TREE
- PROPOSED ORNAMENTAL TREE
- PROPOSED EVERGREEN
- PROPOSED SHRUBS

GENERAL LANDSCAPE NOTES:

1. AREAS NOT OTHERWISE DEVELOPED SHALL RECEIVE MINIMUM 6" COMPACTED DEPTH SCREENED LOAM.
2. EXISTING LOAM TO BE STOCKPILED FOR REUSE.
3. FINISH COVER OVER PLANTING BED SHALL INCLUDE 3" MINIMUM DEPTH PINE MULCH.
4. FINISH SURFACE SHALL BE GRADED FROM A HIGH POINT AT CENTER OF ISLAND OUT TO THE BACK OF CURB. SEE GRADING, DRAINAGE AND PAVING PLAN FOR FINISH GRADES.
5. AT A MINIMUM, TREES AND SHRUBS SHALL BE WATERED BY FLOODING AS FOLLOWS: MONTH 0–3: ONCE PER WEEK MONTH 3–6: TWICE PER MONTH MONTH 6–12: ONCE PER MONTH INCREASE WATERING FREQUENCY TO ACCOUNT FOR DROUGHT CONDITIONS AS REQUIRED.
6. TURF AREAS TO BE WATERED AND MOWED UNTIL ACCEPTED.
7. CONSERVATION SEED MIX AREA TO BE WATERED IF NECESSARY FOR ESTABLISHMENT

james k. emmanuel | associates
LANDSCAPE ARCHITECTS

22 Carlton Rd.
Marblehead, MA 01945
tel. (781) 622-7487

james@jamesemmanuel.com
www.jamesemmanuel.com

PLANTING NOTES

1. THE NUMBER OF EACH INDIVIDUAL PLANT TYPE AND SIZE IS PROVIDED IN THE PLANT LIST FOR CONTRACTORS CONVENIENCE ONLY. IF A DISCREPANCY EXISTS BETWEEN THE NUMBER OF PLANTS ON THE LIST AND THE NUMBER SHOWN ON THE DRAWING, THE GREATER NUMBER SHALL APPLY.
2. ALL PLANT MATERIAL SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT OR THE OWNER'S REPRESENTATIVE PRIOR TO ARRIVAL ON SITE.
3. PLANT MATERIAL SHALL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE AS TO THE ORIGINAL PLANTING GRADE.
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5. NO SUBSTITUTION OF PLANT MATERIALS WILL BE ALLOWED WITHOUT THE PRIOR WRITTEN APPROVAL OF THE LANDSCAPE ARCHITECT.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL PLANTS AGAINST DAMAGE FROM ON–GOING CONSTRUCTION. PROTECTION SHALL BEGIN AT THE TIME THE PLANT IS INSTALLED AND CONTINUE UNTIL FORMAL ACCEPTANCE OF ALL PLANTING.
7. ALL DISTURBED AREAS NOT OTHERWISE DEVELOPED SHALL BE LOAMED 6" AND SEEDED.

STREET TREE PLANTINGS

Plant Schedule

	Botanical Name	Common Name	Size
DECIDUOUS TREE OPTIONS:			
	Acer rubrum 'Red Sunset'	Red Sunset Maple	2"cal
	Acer saccharum 'Green Mountain'	Sugar Maple	2"cal
**	Carpinus caroliniana	American Hornbeam	2"cal
	Carya ovata	Shagbark Hickory	2"cal
	Ostrya virginiana	Hophornbeam	2"cal
**	Platanus x acerifolia	London Planetree	2"cal
**	Quercus coccinea	Scarlet Oak	2"cal
**	Quercus palustris	Pin Oak	2"cal
**	Tilia americana	Basswood	2"cal
**	Tilia cordata 'Greenspire'	Greenspire Linden	2"cal
**	Zelkova serrata	Japanese Zelkova	2"cal

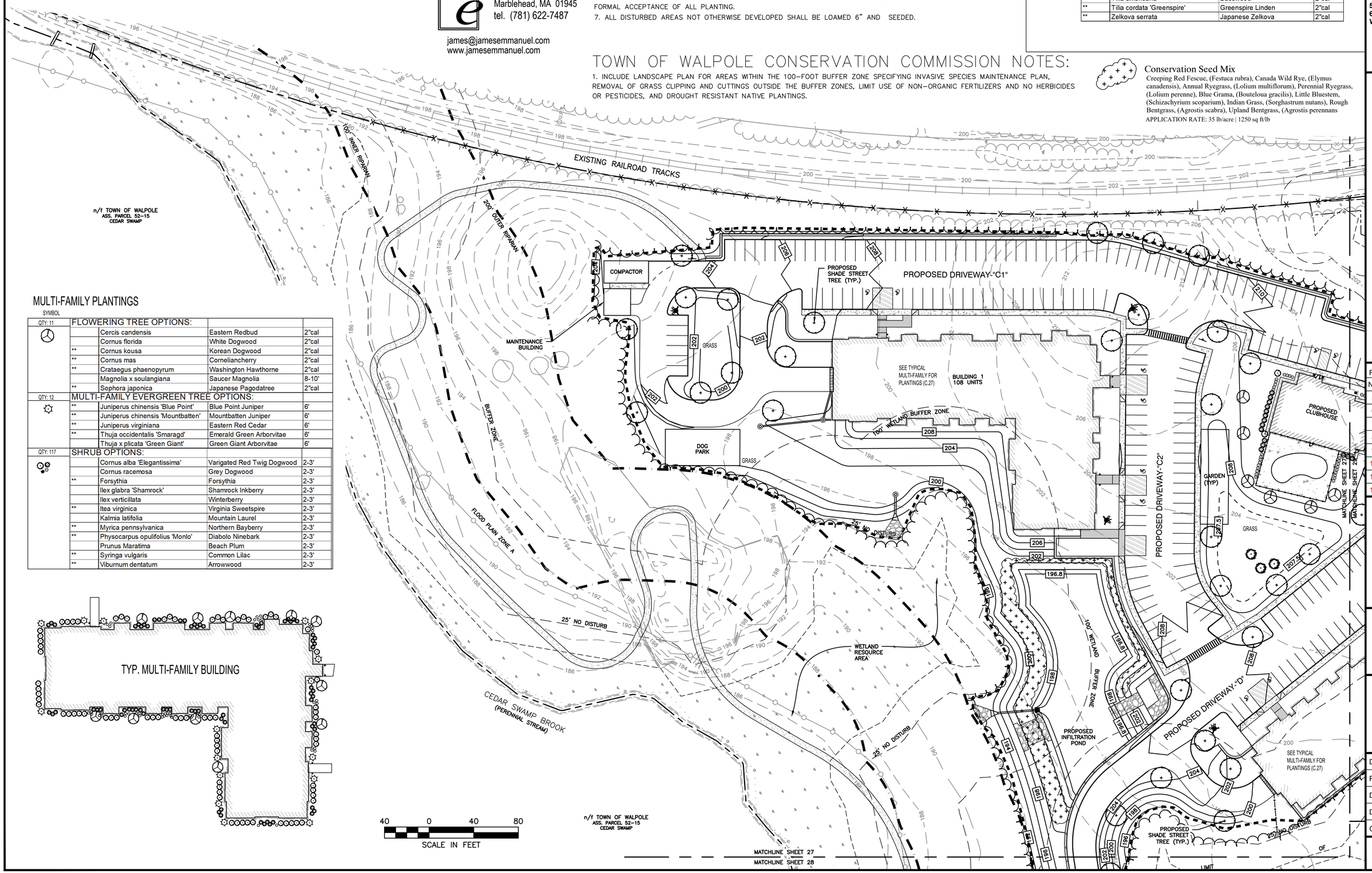
TOWN OF WALPOLE CONSERVATION COMMISSION NOTES:

1. INCLUDE LANDSCAPE PLAN FOR AREAS WITHIN THE 100–FOOT BUFFER ZONE SPECIFYING INVASIVE SPECIES MAINTENANCE PLAN, REMOVAL OF GRASS CLIPPING AND CUTTINGS OUTSIDE THE BUFFER ZONES, LIMIT USE OF NON–ORGANIC FERTILIZERS AND NO HERBICIDES OR PESTICIDES, AND DROUGHT RESISTANT NATIVE PLANTINGS.

Conservation Seed Mix

Creeping Red Fescue, (Festuca rubra), Canada Wild Rye, (Elymus canadensis), Annual Ryegrass, (Lolium multiflorum), Perennial Ryegrass, (Lolium perenne), Blue Grama, (Bouteloua gracilis), Little Bluestem, (Schizachyrium scoparium), Indian Grass, (Sorghastrum nutans), Rough Bentgrass, (Agrostis scabra), Upland Bentgrass, (Agrostis perennans

APPLICATION RATE: 35 lb/acre | 1250 sq ft/lb



MULTI-FAMILY PLANTINGS

SYMBOL				
QTY: 11	FLOWERING TREE OPTIONS:			
		Cercis candensis	Eastern Redbud	2"cal
		Cornus florida	White Dogwood	2"cal
	**	Cornus kousa	Korean Dogwood	2"cal
	**	Cornus mas	Corneliancherry	2"cal
	**	Crataegus phaenopyrum	Washington Hawthorne	2"cal
		Magnolia x soulangiana	Saucer Magnolia	8-10'
	**	Sophora japonica	Japanese Pagodatree	2"cal
QTY: 12	MULTI-FAMILY EVERGREEN TREE OPTIONS:			
	**	Juniperus chinensis 'Blue Point'	Blue Point Juniper	6'
	**	Juniperus chinensis 'Mountbatten'	Mountbatten Juniper	6'
	**	Juniperus virginiana	Eastern Red Cedar	6'
	**	Thuja occidentalis 'Smaragd'	Emerald Green Arborvitae	6'
		Thuja x plicata 'Green Giant'	Green Giant Arborvitae	6'
QTY: 117	SHRUB OPTIONS:			
		Cornus alba 'Elegantissima'	Varigated Red Twig Dogwood	2-3'
		Cornus racemosa	Grey Dogwood	2-3'
	**	Forsythia	Forsythia	2-3'
		Ilex glabra 'Shamrock'	Shamrock Inkberry	2-3'
		Ilex verticillata	Winterberry	2-3'
	**	Itea virginica	Virginia Sweetspire	2-3'
		Kalmia latifolia	Mountain Laurel	2-3'
	**	Myrica pennsylvanica	Northern Bayberry	2-3'
	**	Physocarpus opulifolius 'Monlo'	Diabolo Ninebark	2-3'
		Prunus Maratima	Beach Plum	2-3'
	**	Syringa vulgaris	Common Lilac	2-3'
	**	Viburnum dentatum	Arrowwood	2-3'

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PROPOSED MULTIFAMILY DEVELOPMENT
SUMMER STREET
WALPOLE, MA

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11	PB	3/12/21	REV. DRIVEWAY B
12	PB	4/13/21	REV. SITE PLANS

SITE PLAN

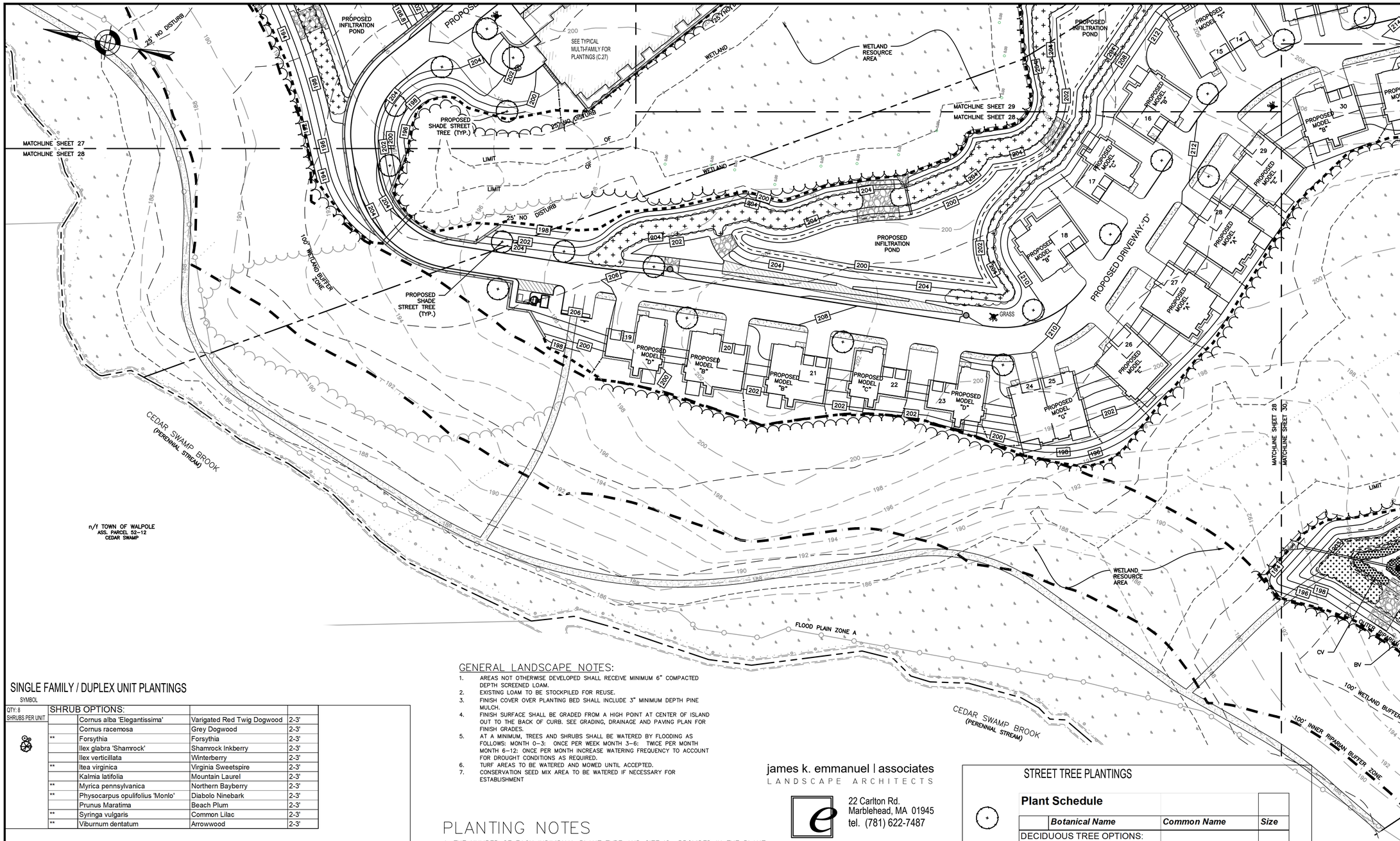
LANDSCAPING PLAN 1 OF 5

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.27

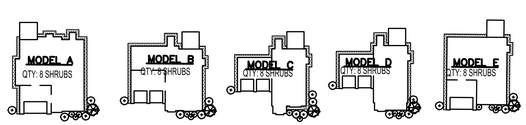
SHEET 27 OF 56

4/15/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - Landscape Plan-CPS.dwg
Matthew Baker

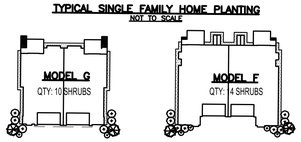


SINGLE FAMILY / DUPLEX UNIT PLANTINGS

SYMBOL				
QTY: 8 SHRUBS PER UNIT.	SHRUB OPTIONS:			
		Cornus alba 'Elegantissima'	Varigated Red Twig Dogwood	2-3'
		Cornus racemosa	Grey Dogwood	2-3'
	**	Forsythia	Forsythia	2-3'
		Ilex glabra 'Shamrock'	Shamrock Inkberry	2-3'
		Ilex verticillata	Winterberry	2-3'
	**	Itea virginica	Virginia Sweetspire	2-3'
		Kalmia latifolia	Mountain Laurel	2-3'
	**	Myrica pennsylvanica	Northern Bayberry	2-3'
	**	Physocarpus opulifolius 'Monlo'	Diabolo Ninebark	2-3'
		Prunus Maratima	Beach Plum	2-3'
	**	Syringa vulgaris	Common Lilac	2-3'
	**	Viburnum dentatum	Arrowwood	2-3'



TYPICAL SINGLE FAMILY HOME PLANTING
NOT TO SCALE



TYPICAL DUPLEX PLANTING
NOT TO SCALE

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3. FINISH COVER OVER PLANTING BED SHALL INCLUDE 3" MINIMUM DEPTH PINE MULCH.
4. FINISH SURFACE SHALL BE GRADED FROM A HIGH POINT AT CENTER OF ISLAND OUT TO THE BACK OF CURB. SEE GRADING, DRAINAGE AND PAVING PLAN FOR FINISH GRADES.
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40 0 40 80
SCALE IN FEET

james k. emmanuel | associates
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22 Carlton Rd.
Marblehead, MA 01945
tel. (781) 622-7487
james@jamesemmanuel.com
www.jamesemmanuel.com

LANDSCAPE LEGEND

PROPOSED DECIDUOUS TREE

PROPOSED SHRUBS

STREET TREE PLANTINGS

Plant Schedule

	Botanical Name	Common Name	Size
DECIDUOUS TREE OPTIONS:			
	Acer rubrum 'Red Sunset'	Red Sunset Maple	2"cal
	Acer saccharum 'Green Mountain'	Sugar Maple	2"cal
**	Carpinus caroliniana	American Hornbeam	2"cal
	Carya ovata	Shagbark Hickory	2"cal
	Ostrya virginiana	Hophornbeam	2"cal
**	Platanus x acerifolia	London Planetree	2"cal
**	Quercus coccinea	Scarlet Oak	2"cal
**	Quercus palustris	Pin Oak	2"cal
**	Tilia americana	Basswood	2"cal
**	Tilia cordata 'Greenspire'	Greenspire Linden	2"cal
**	Zelkova serrata	Japanese Zelkova	2"cal

Conservation Seed Mix
Creeping Red Fescue, (Festuca rubra), Canada Wild Rye, (Elymus canadensis), Annual Ryegrass, (Lolium multiflorum), Perennial Ryegrass, (Lolium perenne), Blue Grama, (Bouteloua gracilis), Little Bluestem, (Schizachyrium scoparium), Indian Grass, (Sorghastrum nutans), Rough Bentgrass, (Agrostis scabra), Upland Bentgrass, (Agrostis perennans
APPLICATION RATE: 35 lb/acre | 1250 sq ft/lb

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12	PB	4/13/21	REV. SITE PLANS

SITE PLAN

LANDSCAPING PLAN 2 OF 5

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.28

SHEET 28 OF 56

4/15/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - Landscape Plan-CPS.dwg
Matthew Baker

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STREET TREE PLANTINGS

Plant Schedule

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	Acer saccharum 'Green Mountain'	Sugar Maple	2"cal
**	Carpinus caroliniana	American Hornbeam	2"cal
	Carya ovata	Shagbark Hickory	2"cal
	Ostrya virginiana	Hophornbeam	2"cal
**	Platanus x acerifolia	London Planetree	2"cal
**	Quercus coccinea	Scarlet Oak	2"cal
**	Quercus palustris	Pin Oak	2"cal
**	Tilia americana	Basswood	2"cal
**	Tilia cordata 'Greenspire'	Greenspire Linden	2"cal
**	Zelkova serrata	Japanese Zelkova	2"cal
EVERGREEN TREE OPTIONS:			
**	Abies concolor	White Fir	6'
**	Picea abies	Norway Spruce	6'
**	Picea glauca	White Spruce	6'
**	Picea omorika	Serbian Spruce	6'
**	Picea pungens 'Glauca'	Colorado Blue Spruce	6'

CLUBHOUSE AREA PLANTINGS

SYMBOL				
QTY: 2	FLOWERING TREE OPTIONS:			
		Cercis candensis	Eastern Redbud	2"cal
		Cornus florida	White Dogwood	2"cal
	**	Cornus kousa	Korean Dogwood	2"cal
	**	Cornus mas	Corneliancherry	2"cal
	**	Crataegus phaenopyrum	Washington Hawthorne	2"cal
		Magnolia x soulangiana	Saucer Magnolia	8-10'
	**	Sophora japonica	Japanese Pagodatree	2"cal
QTY: 117	SHRUB OPTIONS:			
		Cornus alba 'Elegantissima'	Varigated Red Twig Dogwood	2-3'
		Cornus racemosa	Grey Dogwood	2-3'
	**	Forsythia	Forsythia	2-3'
		Ilex glabra 'Shamrock'	Shamrock Inkberry	2-3'
		Ilex verticillata	Winterberry	2-3'
	**	Itea virginica	Virginia Sweetspire	2-3'
		Kalmia latifolia	Mountain Laurel	2-3'
	**	Myrica pennsylvanica	Northern Bayberry	2-3'
	**	Physocarpus opulifolius 'Monlo'	Diabolo Ninebark	2-3'
		Prunus Maratima	Beach Plum	2-3'
	**	Syringa vulgaris	Common Lilac	2-3'
	**	Viburnum dentatum	Arrowwood	2-3'

LANDSCAPE LEGEND

- PROPOSED DECIDUOUS TREE
- PROPOSED ORNAMENTAL TREE
- PROPOSED EVERGREEN
- PROPOSED SHRUBS

HIGH MARSH ZONE:

- 4400 CX – CAREX STRICTA – TUSSOCK SEDGE (3,800 SF±) 2" PLUG
- 3700 CV – CAREX VULPINOIDEA – FOX SEDGE (3,200 SF±) 2" PLUG
- 800 BV – VERBENA HASTATA – BLUE VERVAIN (720 SF±) 2" PLUG

NOTES:
1. POCKET WETLAND PLANTINGS TO CONFORM TO THE ABOVE PLANTING SCHEDULE OR ECOLOGICALLY SIMILAR SEDGE OR RUSH SPECIES.

LOW MARSH ZONE:

- 1250 BL – SCHOENOPLECTUS AMERICANUS – THREE SQUARE BULRUSH (4,300 SF±) 2" PLUG
- 800 SS – SCHOENOPLECTUS TABERNAEMONTANI – SOFT STEM BULRUSH (4,300 SF±) 2" PLUG

james k. emmanuel | associates
LANDSCAPE ARCHITECTS
22 Carlton Rd.
Marblehead, MA 01945
tel. (781) 622-7487
james@jamesemmanuel.com
www.jamesemmanuel.com

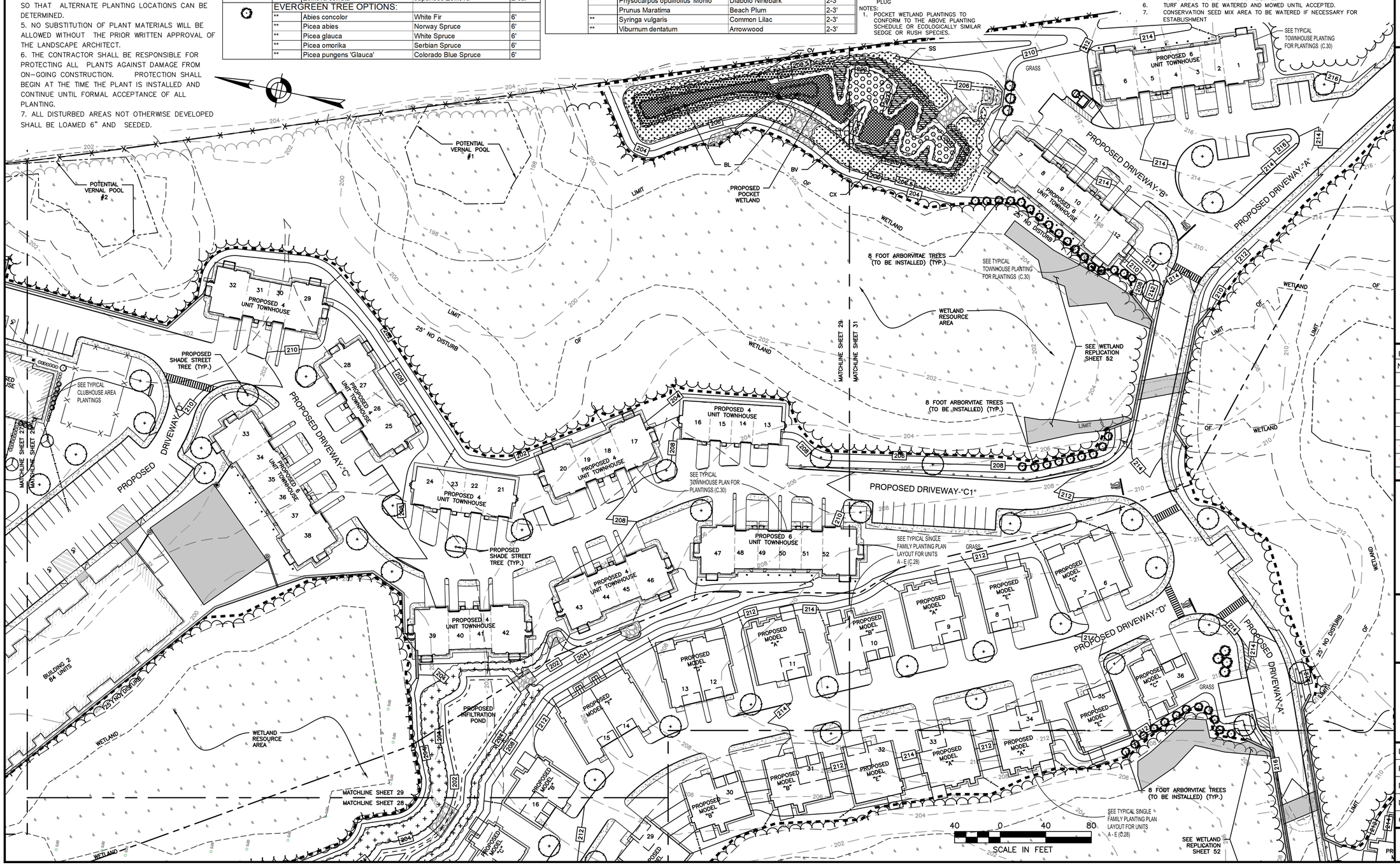
Conservation Seed Mix

Creeping Red Fescue, (Festuca rubra), Canada Wild Rye, (Elymus canadensis), Annual Ryegrass, (Lolium multiflorum), Perennial Ryegrass, (Lolium perenne), Blue Grama, (Bouteloua gracilis), Little Bluestem, (Schizachyrium scoparium), Indian Grass, (Sorghastrum nutans), Rough Bentgrass, (Agrostis scabra), Upland Bentgrass, (Agrostis perennans

APPLICATION RATE: 35 lb/acre | 1250 sq ft/lb

GENERAL LANDSCAPE NOTES:

1. AREAS NOT OTHERWISE DEVELOPED SHALL RECEIVE MINIMUM 6" COMPACTED DEPTH SCREENED LOAM.
2. EXISTING LOAM TO BE STOCKPILED FOR REUSE.
3. FINISH COVER OVER PLANTING BED SHALL INCLUDE 3" MINIMUM DEPTH PINE MULCH.
4. FINISH SURFACE SHALL BE GRADED FROM A HIGH POINT AT CENTER OF ISLAND OUT TO THE BACK OF CURB. SEE GRADING, DRAINAGE AND PAVING PLAN FOR FINISH GRADES.
5. AT A MINIMUM, TREES AND SHRUBS SHALL BE WATERED BY FLOODING AS FOLLOWS: MONTH 0–3: ONCE PER WEEK MONTH 3–6: TWICE PER MONTH MONTH 6–12: ONCE PER MONTH INCREASE WATERING FREQUENCY TO ACCOUNT FOR DROUGHT CONDITIONS AS REQUIRED.
6. TURF AREAS TO BE WATERED AND MOWED UNTIL ACCEPTED.
7. CONSERVATION SEED MIX AREA TO BE WATERED IF NECESSARY FOR ESTABLISHMENT



HOWARD STEIN HUDSON
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www.hshassoc.com

PREPARED FOR:

55 BH LLC
6 LYBERTY WAY, SUITE 203
WESTFORD, MA 01886

PROPOSED MULTIFAMILY DEVELOPMENT
SUMMER STREET
WALPOLE, MA

REVISIONS:

NO	BY	DATE	DESCRIPTION
5	PB	12/16/20	EMERGENCY ACCESS
6	PB	1/4/21	REV. FIRE TURNING
7	PB	1/5/21	FIRE ACCESS/ STAGING
8	PB	1/8/21	ADDED VISITOR PARKING
9	PB	1/22/21	REV. DRAINAGE DESIGN
10	PB	1/27/21	REV. SITE PLAN
11	PB	3/12/21	REV. DRIVEWAY B
12	PB	4/13/21	REV. SITE PLANS

SITE PLAN

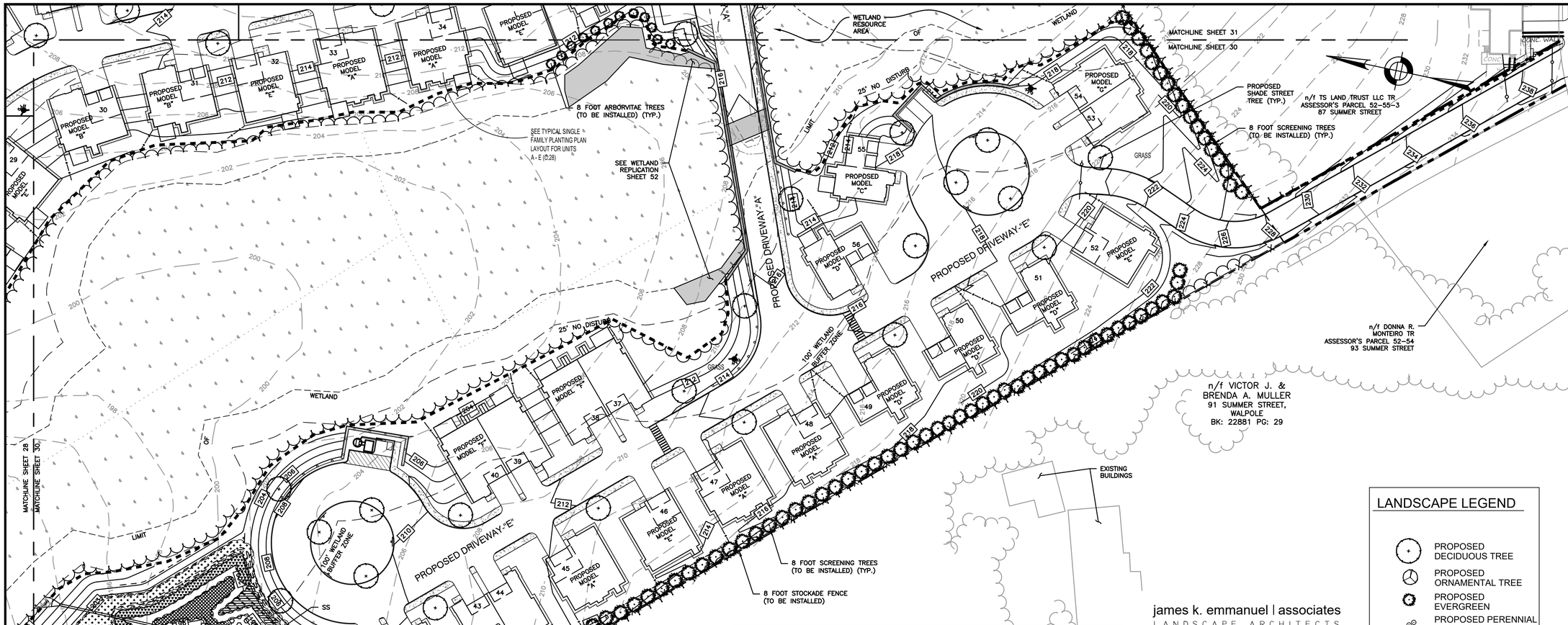
LANDSCAPING PLAN 3 OF 5

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.29

SHEET 29 OF 56

4/15/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - Landscape Plan-CPS.dwg
Matthew Baker



POCKET WETLAND PLANTING SCHEDULE

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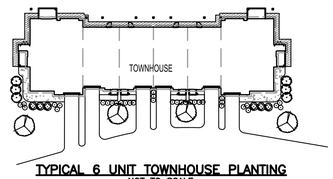
NOTES:
1. POCKET WETLAND PLANTINGS TO CONFORM TO THE ABOVE PLANTING SCHEDULE OR ECOLOGICALLY SIMILAR SEDGE OR RUSH SPECIES.

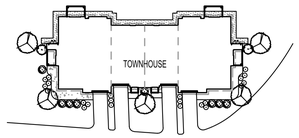
STREET TREE PLANTINGS

Plant Schedule

	Botanical Name	Common Name	Size
DECIDUOUS TREE OPTIONS:			
	Acer rubrum 'Red Sunset'	Red Sunset Maple	2"cal
	Acer saccharum 'Green Mountain'	Sugar Maple	2"cal
**	Carpinus caroliniana	American Hornbeam	2"cal
	Carya ovata	Shagbark Hickory	2"cal
	Ostrya virginiana	Hophornbeam	2"cal
**	Platanus x acerifolia	London Planetree	2"cal
**	Quercus coccinea	Scarlet Oak	2"cal
**	Quercus palustris	Pin Oak	2"cal
**	Tilia americana	Basswood	2"cal
**	Tilia cordata 'Greenspire'	Greenspire Linden	2"cal
**	Zelkova serrata	Japanese Zelkova	2"cal



TYPICAL 6 UNIT TOWNHOUSE PLANTING
NOT TO SCALE



TYPICAL 4 UNIT TOWNHOUSE PLANTING
NOT TO SCALE

TOWNHOUSE PLANTINGS

SYMBOL				
QTY: 5	FLOWERING TREE OPTIONS:			
		Cercis candensis	Eastern Redbud	2"cal
		Cornus florida	White Dogwood	2"cal
	**	Cornus kousa	Korean Dogwood	2"cal
	**	Cornus mas	Corneliancherry	2"cal
	**	Crataegus phaenopyrum	Washington Hawthorne	2"cal
		Magnolia x soulangiana	Saucer Magnolia	8-10'
	**	Sophora japonica	Japanese Pagodatree	2"cal
QTY: 117	SHRUB OPTIONS:			
		Cornus alba 'Elegantissima'	Varigated Red Twig Dogwood	2-3'
		Cornus racemosa	Grey Dogwood	2-3'
	**	Forsythia	Forsythia	2-3'
		Ilex glabra 'Shamrock'	Shamrock Inkberry	2-3'
		Ilex verticillata	Winterberry	2-3'
	**	Itea virginica	Virginia Sweetspire	2-3'
		Kalmia latifolia	Mountain Laurel	2-3'
	**	Myrica pennsylvanica	Northern Bayberry	2-3'
	**	Physocarpus opulifolius 'Monlo'	Diabolo Ninebark	2-3'
		Prunus Maratima	Beach Plum	2-3'
	**	Syringa vulgaris	Common Lilac	2-3'
	**	Viburnum dentatum	Arrowwood	2-3'

Conservation Seed Mix

Creeping Red Fescue, (Festuca rubra), Canada Wild Rye, (Elymus canadensis), Annual Ryegrass, (Lolium multiflorum), Perennial Ryegrass, (Lolium perenne), Blue Grama, (Bouteloua gracilis), Little Bluestem, (Schizachyrium scoparium), Indian Grass, (Sorghastrum nutans), Rough Bentgrass, (Agrostis scabra), Upland Bentgrass, (Agrostis perennans

APPLICATION RATE: 35 lb/acre | 1250 sq ft/lb

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LANDSCAPE LEGEND

- PROPOSED DECIDUOUS TREE
- PROPOSED ORNAMENTAL TREE
- PROPOSED EVERGREEN
- PROPOSED PERENNIAL FLOWER/GRASS

40 0 40 80
SCALE IN FEET

PLANTING NOTES

1. THE NUMBER OF EACH INDIVIDUAL PLANT TYPE AND SIZE IS PROVIDED IN THE PLANT LIST FOR CONTRACTORS CONVENIENCE ONLY. IF A DISCREPANCY EXISTS BETWEEN THE NUMBER OF PLANTS ON THE LIST AND THE NUMBER SHOWN ON THE DRAWING, THE GREATER NUMBER SHALL APPLY.
2. ALL PLANT MATERIAL SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT OR THE OWNER'S REPRESENTATIVE PRIOR TO ARRIVAL ON SITE.
3. PLANT MATERIAL SHALL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE AS TO THE ORIGINAL PLANTING GRADE.
4. THE CONTRACTOR SHALL LOCATE AND MARK ALL UTILITIES PRIOR TO PLANTING. ANY CONFLICTS BETWEEN PLANTING AND UTILITIES SHALL BE IMMEDIATELY REPORTED TO THE LANDSCAPE ARCHITECT SO THAT ALTERNATE PLANTING LOCATIONS CAN BE DETERMINED.
5. NO SUBSTITUTION OF PLANT MATERIALS WILL BE ALLOWED WITHOUT THE PRIOR WRITTEN APPROVAL OF THE LANDSCAPE ARCHITECT.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL PLANTS AGAINST DAMAGE FROM ON-GOING CONSTRUCTION. PROTECTION SHALL BEGIN AT THE TIME THE PLANT IS INSTALLED AND CONTINUE UNTIL FORMAL ACCEPTANCE OF ALL PLANTING.
7. ALL DISTURBED AREAS NOT OTHERWISE DEVELOPED SHALL BE LOAMED 6" AND SEEDED.

GENERAL LANDSCAPE NOTES:

1. AREAS NOT OTHERWISE DEVELOPED SHALL RECEIVE MINIMUM 6" COMPACTED DEPTH SCREENED LOAM.
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PROPOSED MULTIFAMILY DEVELOPMENT
SUMMER STREET
WALPOLE, MA

REVISIONS:

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SITE PLAN

LANDSCAPING PLAN 4 OF 5

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.30

SHEET 30 OF 56

4/15/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - Landscape Plan-CPS.dwg
Matthew Baker

Plant Schedule

	Botanical Name	Common Name	Size
DECIDUOUS TREE OPTIONS:			
	Acer rubrum 'Red Sunset'	Red Sunset Maple	2"cal
	Acer saccharum 'Green Mountain'	Sugar Maple	2"cal
**	Carpinus caroliniana	American Hornbeam	2"cal
	Carya ovata	Shagbark Hickory	2"cal
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**	Quercus palustris	Pin Oak	2"cal
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**	Tilia cordata 'Greenspire'	Greenspire Linden	2"cal
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**	Cornus mas	Corneliancherry	2"cal
**	Crataegus phaenopyrum	Washington Hawthorne	2"cal
	Magnolia x soulangiana	Saucer Magnolia	8-10'
**	Sophora japonica	Japanese Pagodatree	2"cal

EVERGREEN TREE OPTIONS:			
**	Abies concolor	White Fir	6'
**	Picea abies	Norway Spruce	6'
**	Picea glauca	White Spruce	6'
**	Picea omorika	Serbian Spruce	6'
**	Picea pungens 'Glauca'	Colorado Blue Spruce	6'
**	Pinus thunbergii	Japanese Black Pine	6'
	Tsuga canadensis	Hemlock	6'
**	Juniperus chinensis 'Blue Point'	Blue Point Juniper	6'
**	Juniperus chinensis 'Mountbatten'	Mountbatten Juniper	6'
**	Juniperus virginiana	Eastern Red Cedar	6'
**	Pinus resinosa	Red Pine	6'
**	Pinus strobus	White Pine	6'
**	Thuja occidentalis 'Smaragd'	Emerald Green Arborvitae	6'
	Thuja x plicata 'Green Giant'	Green Giant Arborvitae	6'

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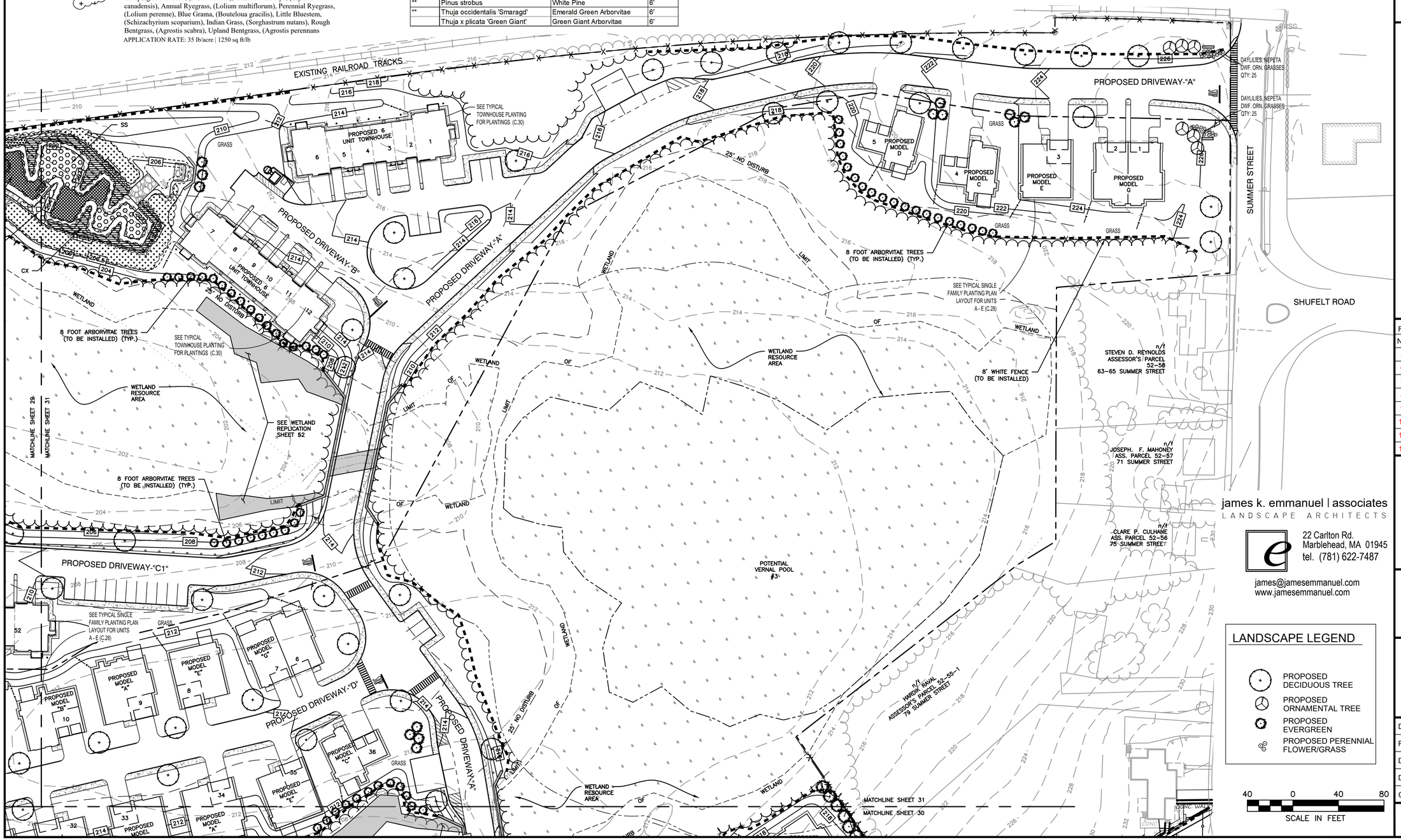
APPLICATION RATE: 35 lb/acre | 1250 sq ft/lb



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Chelmsford, MA 01824
www.hshassoc.com

PREPARED FOR:

55 BH LLC
6 LYBERTY WAY, SUITE 203
WESTFORD, MA 01886

PROPOSED MULTIFAMILY DEVELOPMENT
SUMMER STREET
WALPOLE, MA

REVISIONS:

NO	BY	DATE	DESCRIPTION
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8	PB	1/8/21	ADDED VISITOR PARKING
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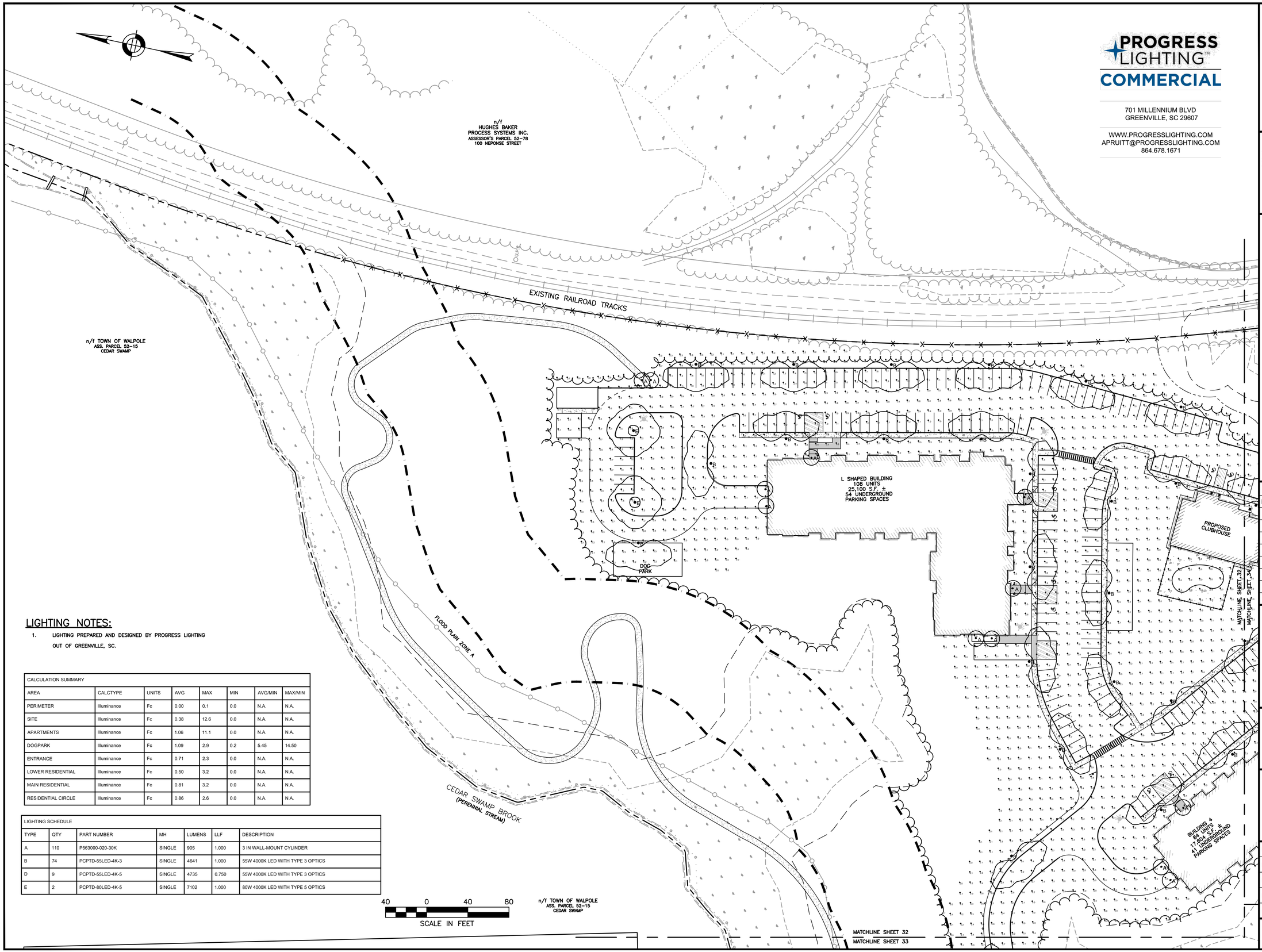
SITE PLAN

LANDSCAPING PLAN 5 OF 5

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.31

4/15/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - Landscape Plan-CPS.dwg
Matthew Baker



PROGRESS LIGHTING™
COMMERCIAL

701 MILLENNIUM BLVD
GREENVILLE, SC 29607

WWW.PROGRESSLIGHTING.COM
APRUITT@PROGRESSLIGHTING.COM
864.678.1671

LIGHTING NOTES:

1. LIGHTING PREPARED AND DESIGNED BY PROGRESS LIGHTING OUT OF GREENVILLE, SC.

CALCULATION SUMMARY							
AREA	CALCTYPE	UNITS	AVG	MAX	MIN	AVG/MIN	MAX/MIN
PERIMETER	Illuminance	Fc	0.00	0.1	0.0	N.A.	N.A.
SITE	Illuminance	Fc	0.38	12.6	0.0	N.A.	N.A.
APARTMENTS	Illuminance	Fc	1.06	11.1	0.0	N.A.	N.A.
DOGPARK	Illuminance	Fc	1.09	2.9	0.2	5.45	14.50
ENTRANCE	Illuminance	Fc	0.71	2.3	0.0	N.A.	N.A.
LOWER RESIDENTIAL	Illuminance	Fc	0.50	3.2	0.0	N.A.	N.A.
MAIN RESIDENTIAL	Illuminance	Fc	0.81	3.2	0.0	N.A.	N.A.
RESIDENTIAL CIRCLE	Illuminance	Fc	0.86	2.6	0.0	N.A.	N.A.

LIGHTING SCHEDULE						
TYPE	QTY	PART NUMBER	MH	LUMENS	LLF	DESCRIPTION
A	110	P563000-020-30K	SINGLE	905	1.000	3 IN WALL-MOUNT CYLINDER
B	74	PCPTD-55LED-4K-3	SINGLE	4641	1.000	55W 4000K LED WITH TYPE 3 OPTICS
D	9	PCPTD-55LED-4K-5	SINGLE	4735	0.750	55W 4000K LED WITH TYPE 3 OPTICS
E	2	PCPTD-80LED-4K-5	SINGLE	7102	1.000	80W 4000K LED WITH TYPE 5 OPTICS

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12	PB	4/13/21	REV. SITE PLAN

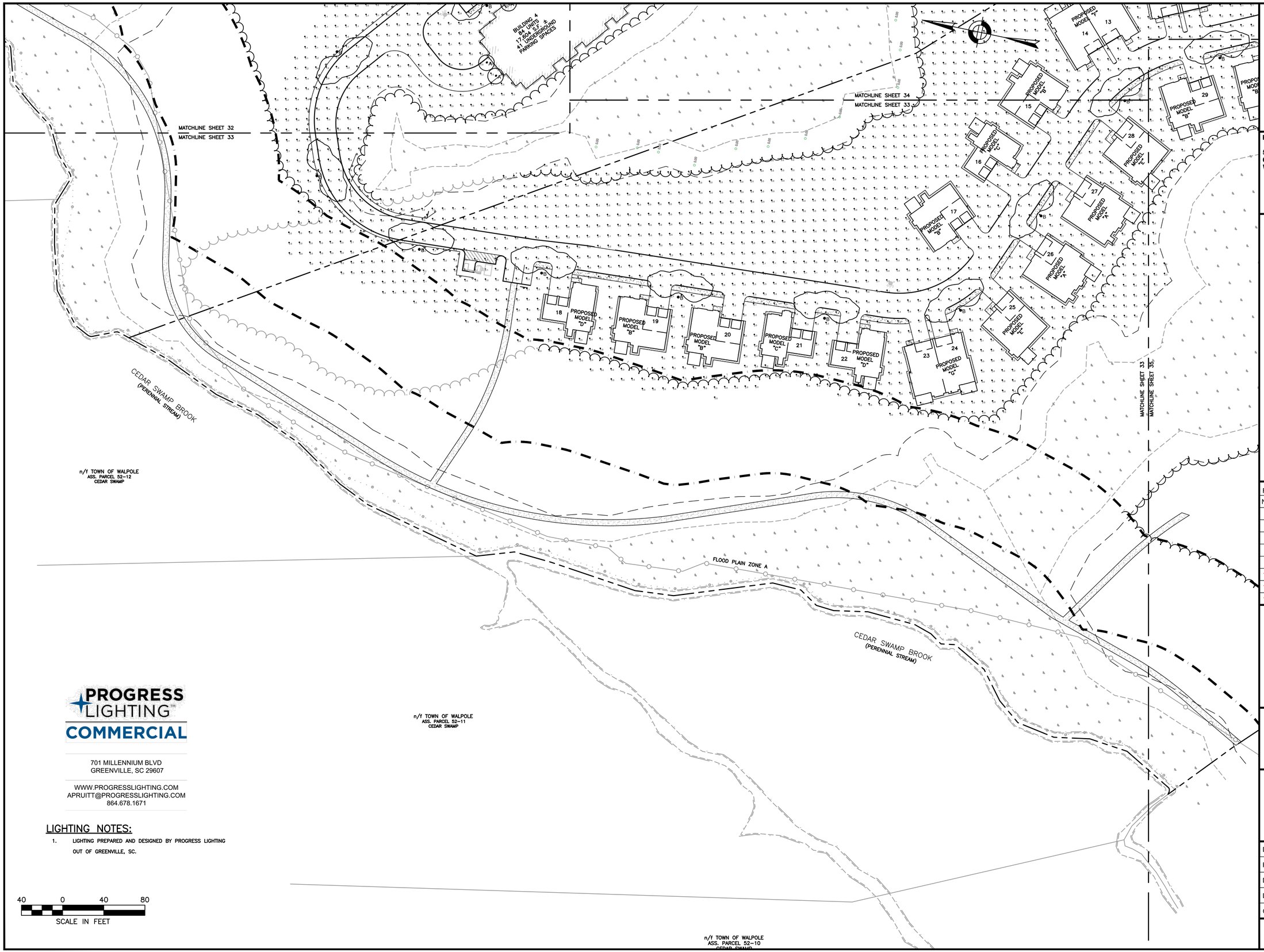
SITE PLAN

LIGHTING PLAN 1 OF 5

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.32

4/15/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - Lighting Plan-CPS.dwg
Matthew Slater



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864.678.1671

LIGHTING NOTES:

1. LIGHTING PREPARED AND DESIGNED BY PROGRESS LIGHTING OUT OF GREENVILLE, SC.

40 0 40 80
SCALE IN FEET

4/15/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - Lighting Plan-CPS.dwg
Matthew Baker

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SITE PLAN

LIGHTING PLAN 2 OF 5

DATE:	JANUARY 10, 2020
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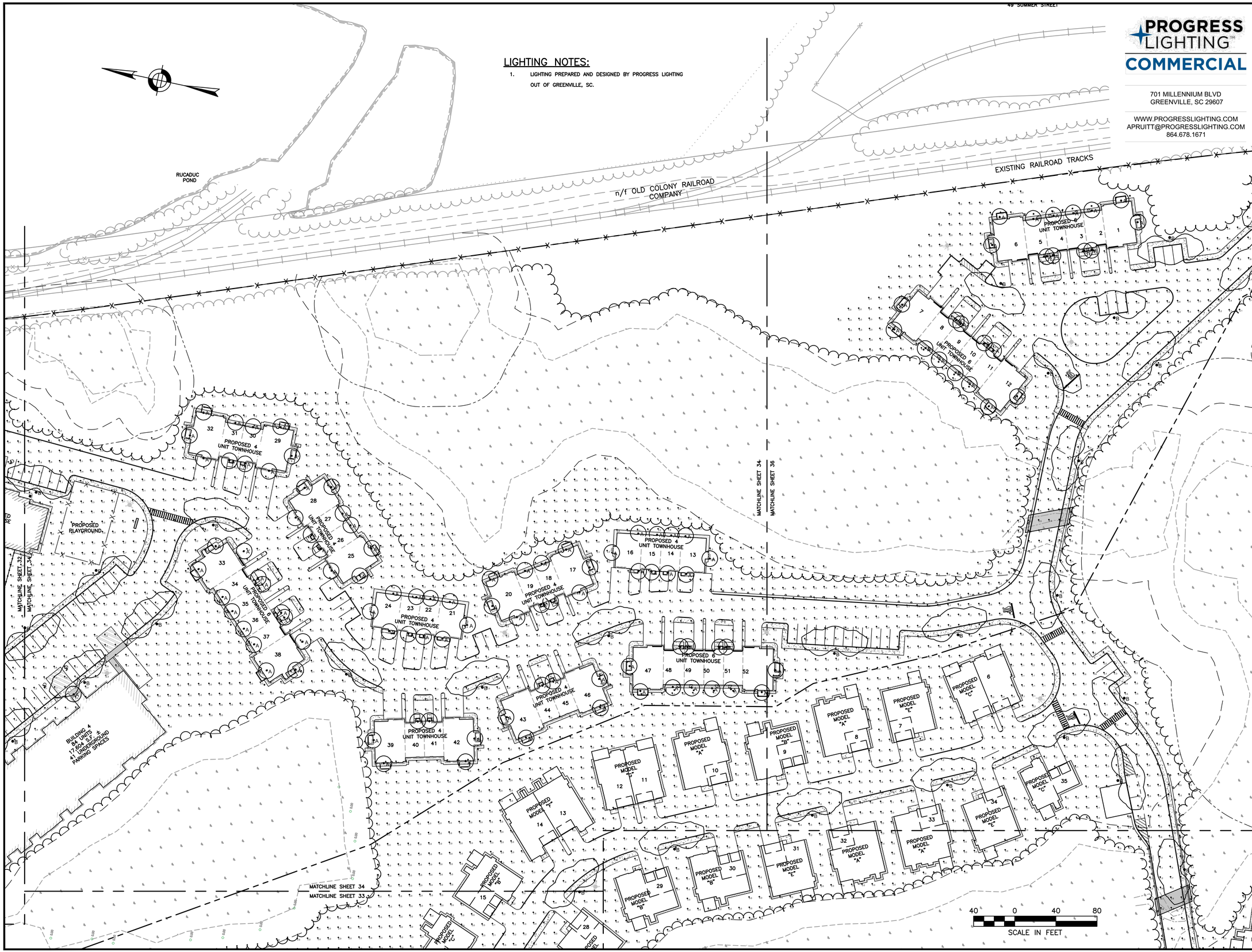
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.33



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PROPOSED MULTIFAMILY DEVELOPMENT
SUMMER STREET
WALPOLE, MA

REVISIONS:

NO	BY	DATE	DESCRIPTION
5	PB	12/16/20	EMERGENCY ACCESS
6	PB	1/4/21	REV. FIRE TURNING
7	PB	1/5/21	FIRE ACCESS/ STAGING
8	PB	1/8/21	ADDED VISITOR PARKING
9	PB	1/22/21	REV. DRAINAGE DESIGN
10	PB	1/27/21	REV. SITE PLAN
11	PB	3/12/21	REV. DRIVEWAY B
12	PB	4/13/21	REV. SITE PLAN

SITE PLAN

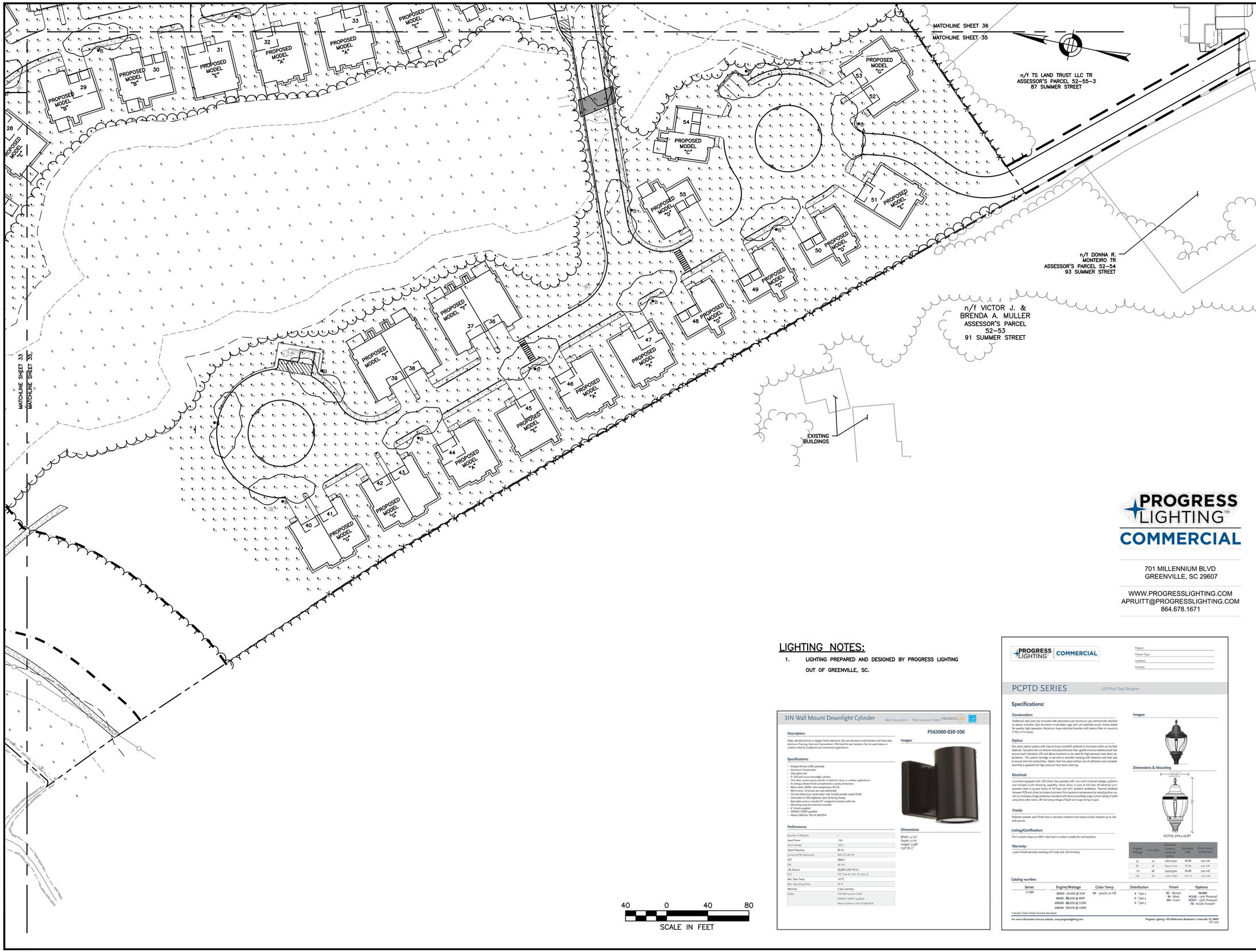
LIGHTING PLAN 3 OF 5

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.34

SHEET 34 OF 56

4/15/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - Lighting Plan-CPS.dwg
Matthew Baker



40 0 40 80
SCALE IN FEET

LIGHTING NOTES:

1. LIGHTING PREPARED AND DESIGNED BY PROGRESS LIGHTING OUT OF GREENVILLE, SC.

3IN Wall Mount Downlight Cylinder

Wall mounted • Wet location listed

P563000-020-30K

Description:

Sleek, cylindrical forms in elegant finish selections. One-cast aluminum wall brackets and heavy-duty aluminum framing. Fade and chip-resistant. CSA listed for wet locations. Can be used indoor or outdoor. Ideal for residential and commercial applications.

Specifications:

- Antique Bronze (VZB): (painted)
- Aluminum construction
- Clear glass lens
- 3" LED wall mount downlight cylinder
- This sleek, contemporary cylinder is ideal for indoor or outdoor applications
- An Antique Bronze finish complements a variety of exteriors
- Warm white, 3000K, color temperature, 90 CRI
- 905 lumens, 75 lumens per watt (delivered)
- Die-cast aluminum construction with durable powder coated finish.
- Up to 50% brighter than the competition (by drawing footer)
- Back plate covers a standard 4" octagonal recessed outlet box
- Mounting strap for outlet box included
- 6" of wire supplied
- ENERGY STAR® qualified
- Meets California Title 24 JA8-2016

Performance:

Number of Modules	1
Input Power	12w
Input Voltage	120 V
Input Frequency	60 Hz
Lumens/LPW (Delivered)	905/75 (LM-79)
CCT	3000 K
CRI	90 CRI
Life (hours)	50,000 (L70/TM-21)
FCC	FCC Title 47, Part 15, Class B
Min. Start Temp	-10 °C
Max. Operating Temp	40 °C
Warranty	5-year warranty
Labels	CSA Wet location listed ENERGY STAR® qualified Meets California Title 24 JA8-2016

Images:

Dimensions:

Width: 4-1/2"
Depth: 5-1/4"
Height: 5-5/8"
H/CTR: 3"

PROGRESS LIGHTING COMMERCIAL

Project:
Fixture Type:
Location:
Contact:

PCPTD SERIES — LED Post Top Designer

Specifications:

Construction:

Traditional style post top luminaire with decorative cast aluminum cap mechanically attached to optical chamber. Cast aluminum multi-sided cage with UV stabilized acrylic lenses sealed for weather tight operation. Aluminum lower electrical chamber with bottom filter to mount to 3"OD x 3"H tenon.

Optics:

One piece optical system with internal brass standoffs soldered to the board which can be field replaced. Two-piece die cut silicone and polycarbonate foam gasket ensures weather-proof seal around each individual LED and allows luminaire to be rated for high-pressure hose down applications. The optical cartridge is secured to extruded housing with fasteners and heat pad to ensure thermal conductivity. Optics held into place without use of adhesives and complete assembly is gasketed for high pressure hose down cleaning.

Electrical:

Luminaire equipped with LED driver that operates with 120-277V universal voltage, 50/60Hz and includes 0-10V dimming capability. Power factor is 0.92 at full load. All electrical components rated at 50,000 hours at full load and 25°C ambient conditions. Thermal feedback between PCB and driver to protect luminaire from excessive temperature by reducing drive current as necessary. Surge protection standard with device providing surge current rating of 10KA using 8/20 pSec wave, L3P clamping voltage of 850V and surge rating of 3400.

Finish:

Polyester powder paint finish that is corrosion resistant and resists surface impacts up to 160-inch-pound.

Listing/Certification:

The Luminaire bears an NRTL label and is marked suitable for wet locations.

Warranty:

5 year limited warranty covering LED array and LED driver(s).

Images:

Dimensions & Mounting

W: 7.50"
H: 21.50"

PCPTD: EPA 0.16 ft²

Engine/ Wattage	# of LEDS	Delivered Lumens (varies by	Delivered LPW	Drive Current (milliamps)
35	24	4600-4750	86-88	300 mA
80	36	6900-7100	82-89	700 mA
110	48	9150-9500	86-88	700 mA
138	60	11500-11850	102-110	700 mA

Catalog number:

Series	Engine/Wattage	Color Temp	Distribution	Finish	Options
T/LED	SBLED - 24LEDS @ 35W BBLED - 36LEDS @ 80W 3BLED - 48LEDS @ 110W 5BLED - 60LEDS @ 138W	8K - 5000K, 70 CRI	3 - Type 3 4 - Type 4 5 - Type 5	BZ - Bronze BL - Black GN - Green	BLANK PC120 - 120V Photocell PC277 - 277V Photocell FG - Acrylic Frosted[1]

[1] Acrylic Clear Globe Comes Standard

For more information visit our website: www.progresslighting.com

Progress Lighting • 701 Millennium Boulevard • Greenville, SC 29607
864-678-1671

HOWARD STEIN HUDSON
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PREPARED FOR:

55 BH LLC
6 LYBERTY WAY, SUITE 203
WESTFORD, MA 01886

PROPOSED MULTIFAMILY DEVELOPMENT
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WALPOLE, MA

PROGRESS LIGHTING™ COMMERCIAL

701 MILLENNIUM BLVD
GREENVILLE, SC 29607

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APRUITT@PROGRESSLIGHTING.COM
864.678.1671

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12	PB	4/13/21	REV. SITE PLAN

SITE PLAN

LIGHTING PLAN 4 OF 5

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.35

SHEET 35 OF 56

4/15/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - Lighting Plan-CPS.dwg
Matthew Blake

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COMMERCIAL

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GREENVILLE, SC 29607

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APRUITT@PROGRESSLIGHTING.COM
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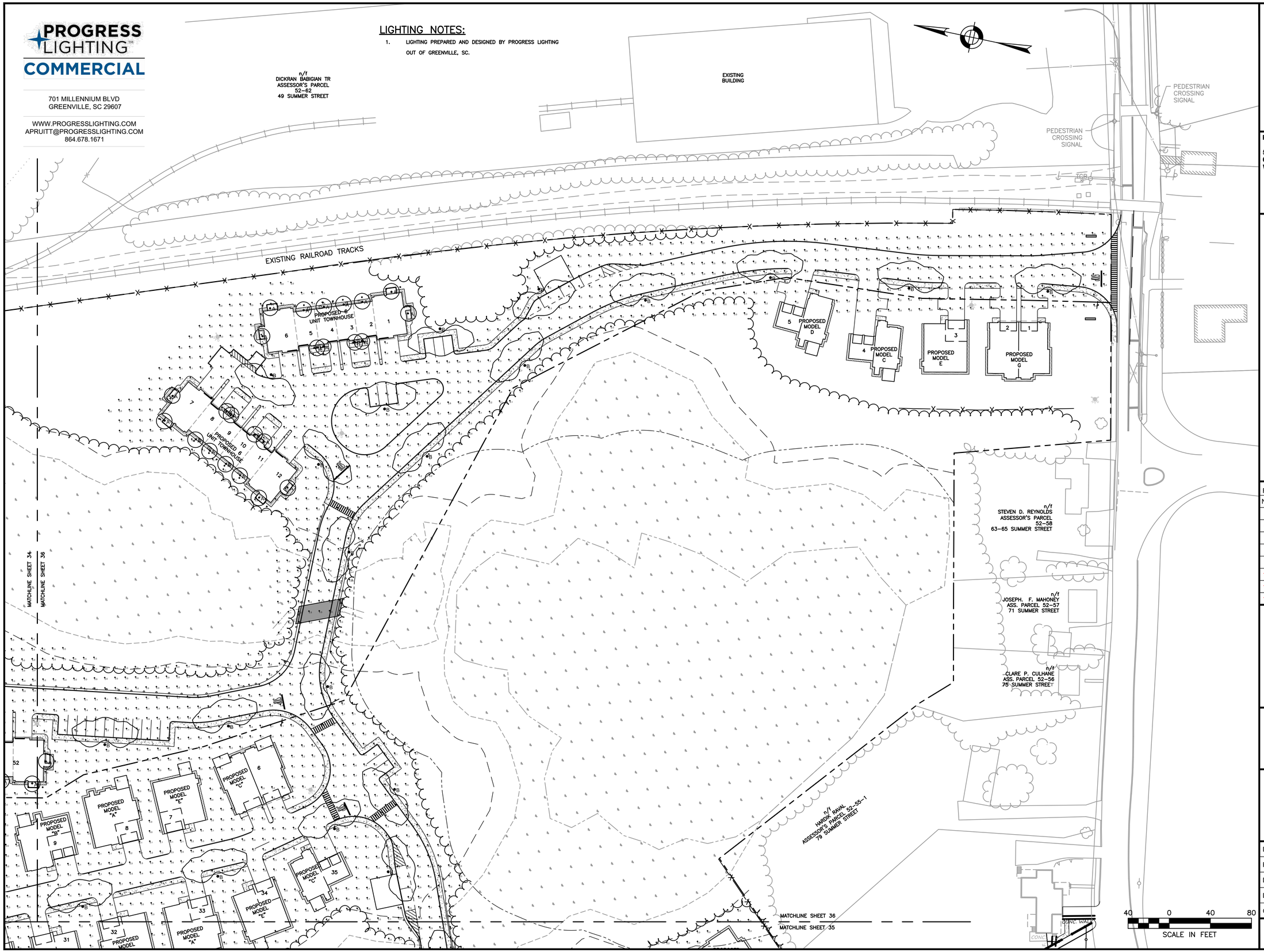
LIGHTING NOTES:

1. LIGHTING PREPARED AND DESIGNED BY PROGRESS LIGHTING OUT OF GREENVILLE, SC.



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PROPOSED MULTIFAMILY DEVELOPMENT
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SITE PLAN

LIGHTING PLAN 5 OF 5

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.36

SHEET 36 OF 56

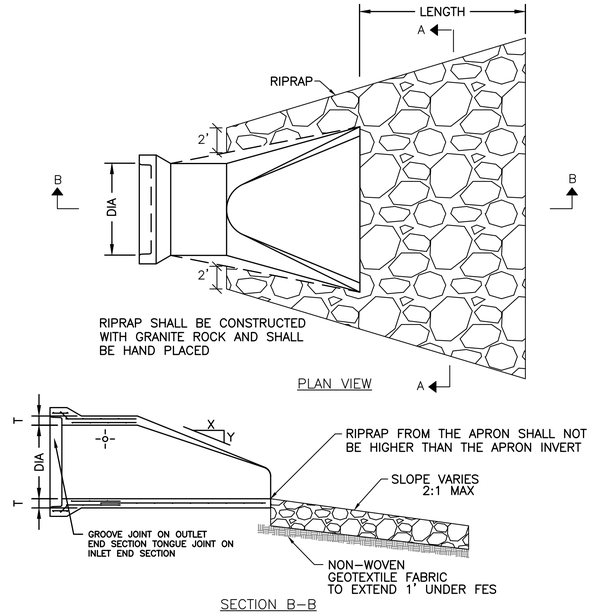
4/15/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - Lighting Plan-CPS.dwg
Matthew Blake

EROSION AND SEDIMENT CONTROL NOTES

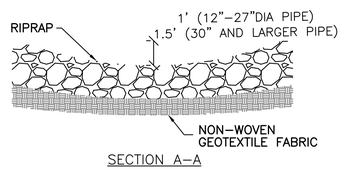
1. EROSION AND SEDIMENT CONTROL MEASURES MUST BE INSTALLED PRIOR TO THE START OF CONSTRUCTION AND MAINTAINED AND UPGRADED AS NECESSARY DURING CONSTRUCTION BY THE CONTRACTOR. IT IS THE CONTRACTOR'S RESPONSIBILITY TO INSPECT AND INSTALL ADDITIONAL CONTROL MEASURES AS NEEDED DURING CONSTRUCTION.
2. ALL CATCH BASINS RECEIVING DRAINAGE FROM THE PROJECT SITE MUST BE PROVIDED WITH A CATCH BASIN FILTER.
3. STABILIZATION OF ALL RE-GRADED AND SOIL STOCKPILE AREAS MUST BE MAINTAINED DURING ALL PHASES OF CONSTRUCTION.
4. SEDIMENT REMOVED FROM EROSION AND SEDIMENT CONTROL DEVICES MUST BE PROPERLY REMOVED AND DISPOSED. ALL DAMAGED CONTROLS MUST BE REMOVED AND REPLACED.
5. THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING THE EROSION AND SEDIMENT CONTROL PLAN. THIS INCLUDES THE INSTALLATION AND MAINTENANCE OF CONTROL MEASURES, INFORMING ALL PARTIES ENGAGED ON THE CONSTRUCTION SITE OF THE REQUIREMENTS AND OBJECTIVES OF THE PLAN, AND NOTIFYING THE PROPER TOWN AGENCY OF ANY TRANSFER OF THIS RESPONSIBILITY.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTROLLING WIND EROSION AND DUST THROUGHOUT THE LIFE OF HIS CONTRACT. DUST CONTROL MAY INCLUDE, BUT IS NOT LIMITED TO, SPRINKLING OF WATER ON EXPOSED SOILS AND STREET SWEEPING ADJACENT ROADWAYS.
7. IF FINAL GRADING IS TO BE DELAYED FOR MORE THAN 21 DAYS AFTER LAND DISTURBANCE ACTIVITIES CEASE, TEMPORARY VEGETATION OR MULCH SHALL BE USED TO STABILIZED SOILS WITHIN 14 DAYS OF THE LAST DISTURBANCE.
8. IF A DISTURBED AREA WILL BE EXPOSED FOR GREATER THAN ONE YEAR, PERMANENT GRASSES OR OTHER APPROVED COVER MUST BE INSTALLED.
9. THE CONTRACTOR MUST KEEP ON-SITE AT ALL TIMES ADDITIONAL SILT FENCE, STRAW WATTLE, AND HAY BALES FOR THE INSTALLATION AT THE DIRECTION OF THE ENGINEER OR THE TOWN TO MITIGATE ANY EMERGENCY CONDITION.
10. THE CONSTRUCTION FENCING AND EROSION AND SEDIMENT CONTROLS AS SHOWN MAY NOT BE PRACTICAL DURING ALL STAGES OF CONSTRUCTION. EARTHWORK ACTIVITY ON-SITE MUST BE DONE IN A MANNER SUCH THAT RUNOFF IS DIRECTED TO A SEDIMENT CONTROL DEVICE OR INFILTRATED TO THE GROUND.
11. DEMOLITION AND CONSTRUCTION DEBRIS MUST BE PROPERLY CONTAINED AND DISPOSED OF.
12. DISPOSAL OF ALL DEMOLISHED MATERIALS IS THE RESPONSIBILITY OF THE CONTRACTOR AND MUST BE HAULED OFF-SITE IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL REQUIREMENTS.

GENERAL CONSTRUCTION SEQUENCE

1. INSTALL EROSION AND SEDIMENT CONTROLS PRIOR TO STARTING ANY EARTHWORKS ACTIVITY.
2. INSTALL CONSTRUCTION ENTRANCE.
3. BEGIN CLEARING AND GRUBBING.
4. CONSTRUCT STORMWATER MANAGEMENT SYSTEM.
5. INSTALL SITE FURNISHINGS.
6. INSTALL PAVEMENT AND CURBS.
7. INSTALL LANDSCAPING.
8. EROSION AND SEDIMENT CONTROLS SHALL BE MAINTAINED UNTIL PERMANENT COVER IS ESTABLISHED.

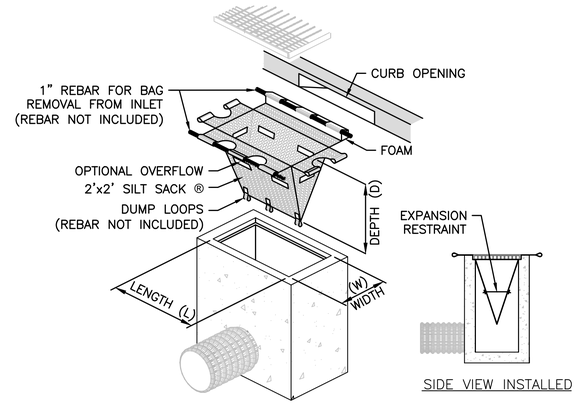


NOTE: ONE CUBIC YARD IS APPROXIMATELY 1.4 TONS.

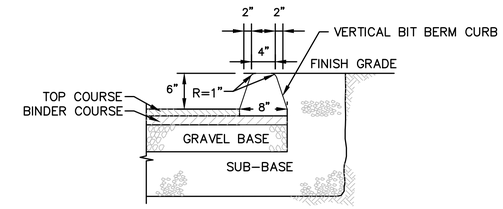


MINIMUM RIPRAP REQUIRED			
PIPE DIA (IN.)	LENGTH (FT.)	QUANTITY (C.Y.)	CLASS
12"	8'	5	III
15"	8'	5	III
18"	10'	6	III
24"	12'	8	III
30"	14'	12	III
36"	16'	14	III
42"	18'	22	IV
48"	20'	26	IV
>48"	22'-28'	30-40	IV

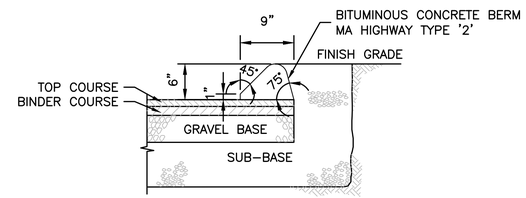
RIPRAP FOR FLARED END SECTION
NOT TO SCALE



TEMPORARY INLET PROTECTION
NOT TO SCALE

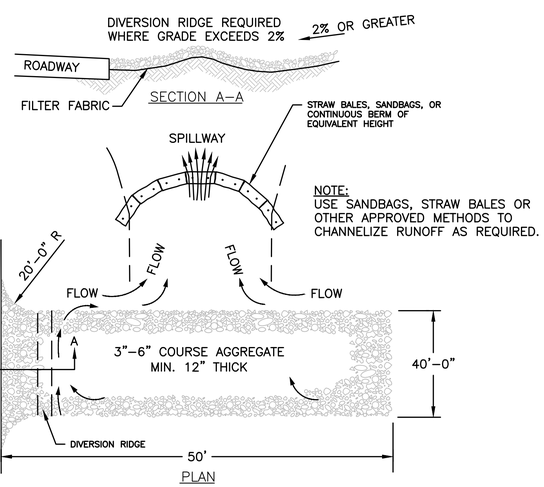


VERTICAL BIT BERM CURB
NOT TO SCALE



CAPE COD BERM/CURB
NOT TO SCALE

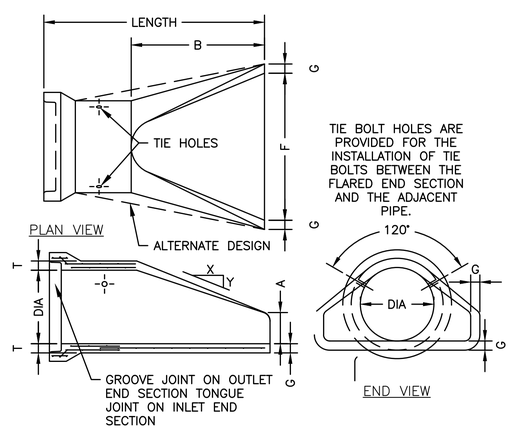
NOTE:
DETAIL DEVELOPED FROM MA HIGHWAY CONSTRUCTION STANDARDS DRAWING NUMBER 106.2.0 "BITUMINOUS CONCRETE BERM – TYPE '2'



NOTES:

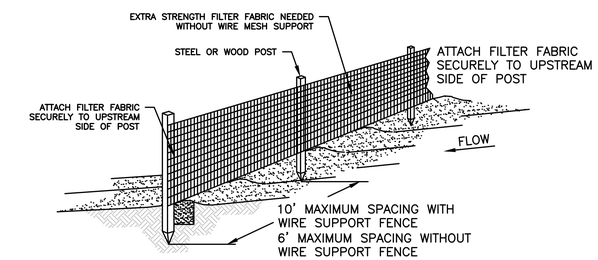
1. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.
3. TEMPORARY CONSTRUCTION ENTRANCE SHALL BE APPLIED WHERE NECESSARY TO KEEP PUBLIC WAYS FREE OF SEDIMENT INCLUDING STAGING AREAS

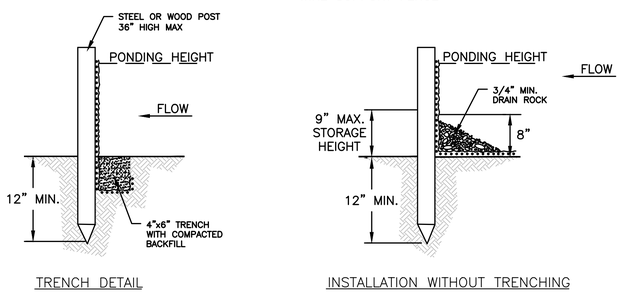
STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



PIPE DIA	LENGTH		SLOPE (X TO Y)	T	A	B	F	G	WEIGHT/ SECTION (LBS)
	OUTLET	INLET							
12"	6'-0"	6'-0"	2.4 TO 1	2"	4"	24"	24"	2"	530
15"	6'-0"	6'-0"	2.4 TO 1	2¼"	6"	27"	30"	2¼"	740
18"	6'-0"	6'-0"	2.3 TO 1	2½"	9"	27"	36"	2½"	990
21"	6'-0"	6'-0"	2.4 TO 1	2¾"	9"	36"	42"	2¾"	1280
24"	6'-0"	6'-0"	2.5 TO 1	3"	9½"	43½"	48"	3"	1520

FLARED END OUTLET
NOT TO SCALE





NOTES:

1. EROSION CONTROL BARRIER (HAY BALES, SILT FENCE OR EROSION STOCK) SHALL BE PLACED AROUND ALL MATERIAL STOCKPILE AREAS AND MAINTAINED AT STAGING AREAS TO ASSURE NO SILTATION ONTO PUBLIC OR PRIVATE WAYS OR PROPERTY.

EROSION CONTROL BARRIER
NOT TO SCALE

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COMMONWEALTH OF MASSACHUSETTS KATIE L. ENRIGHT CIVIL No. 46111 REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:35-04'00'

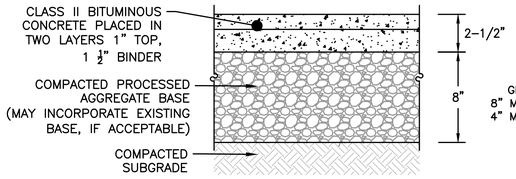
SITE PLAN

DETAIL SHEET
1 OF 20

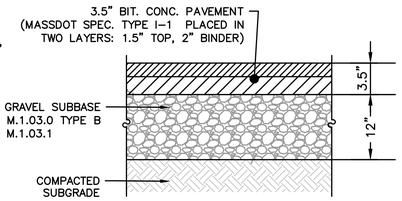
DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.37

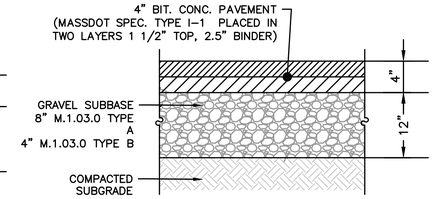
4/19/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - Details-CPS.dwg
Patrick Bagge



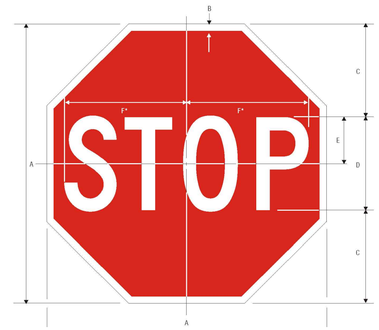
BIT CONC SIDEWALK SECTION DETAIL
NOT TO SCALE



FULL DEPTH ROADWAY PAVEMENT SECTION
NOT TO SCALE



FULL DEPTH PARKING LOT SECTION DETAIL
NOT TO SCALE

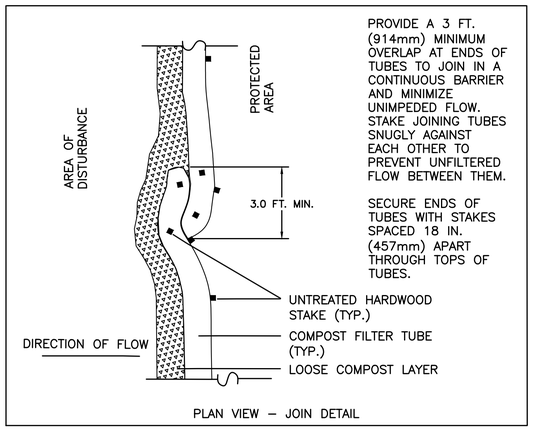


STOP SIGN DETAIL
NOT TO SCALE

HANDICAP & VAN ACCESSIBLE SIGNS DETAIL
NOT TO SCALE

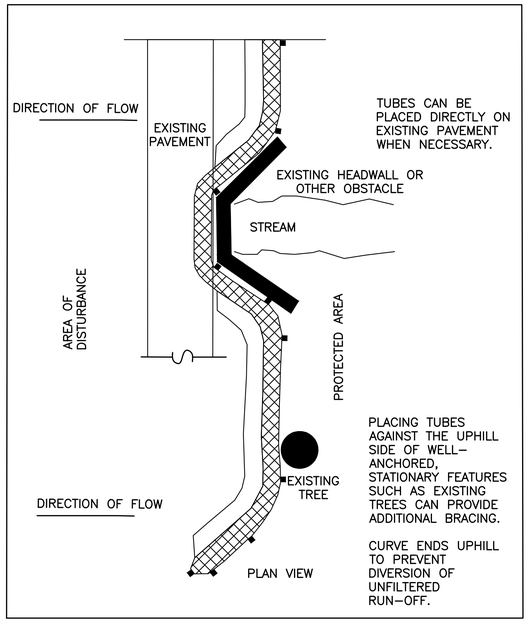
GENERAL NOTES:

1. PROVIDE A MINIMUM TUBE DIAMETER OF 12 INCHES (300mm) FOR SLOPES UP TO 50 FEET (15.24m) IN LENGTH WITH A SLOPE RATIO OF 3H:1V OR STEEPER. LONGER SLOPES OF 3H:1V MAY REQUIRE LARGER TUBE DIAMETER OR ADDITIONAL COURSING OF FILTER TUBES TO CREATE A FILTER BERM. REFER TO MANUFACTURER'S RECOMMENDATIONS FOR SITUATIONS WITH LONGER OR STEEPER SLOPES.
2. INSTALL TUBES ALONG CONTOURS AND PERPENDICULAR TO SHEET OR CONCENTRATED FLOW.
3. DO NOT INSTALL IN PERENNIAL, EPHEMERAL OR INTERMITTENT STREAMS.
4. CONFIGURE TUBES AROUND EXISTING SITE FEATURES TO MINIMIZE SITE DISTURBANCE AND MAXIMIZE CAPTURE AREA OF STORMWATER RUN-OFF.



PROVIDE A 3 FT. (914mm) MINIMUM OVERLAP AT ENDS OF TUBES TO JOIN IN A CONTINUOUS BARRIER AND MINIMIZE UNIMPEDED FLOW. STAKE JOINING TUBES SNUGLY AGAINST EACH OTHER TO PREVENT UNFILTERED FLOW BETWEEN THEM.

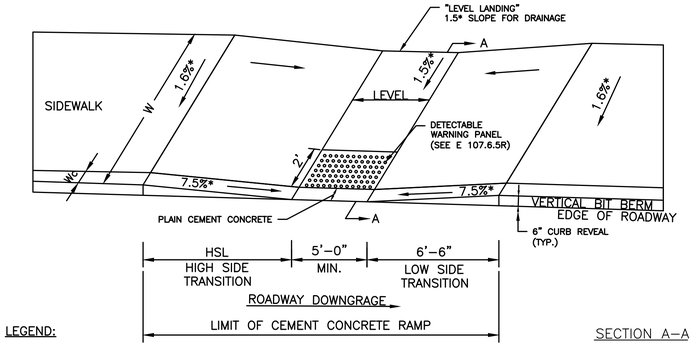
SECURE ENDS OF TUBES WITH STAKES SPACED 18 IN. (457mm) APART THROUGH TOPS OF TUBES.



TUBES CAN BE PLACED DIRECTLY ON EXISTING PAVEMENT WHEN NECESSARY.

PLACING TUBES AGAINST THE UPHILL SIDE OF WELL-ANCHORED, STATIONARY FEATURES SUCH AS EXISTING TREES CAN PROVIDE ADDITIONAL BRACING.

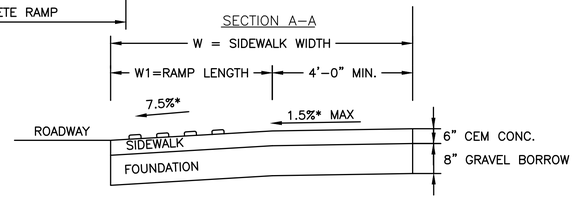
CURVE ENDS UPHILL TO PREVENT DIVERSION OF UNFILTERED RUN-OFF.



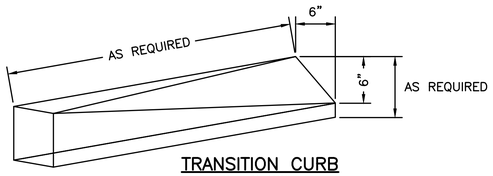
LEGEND:

HSL = HIGH SIDE TRANSITION (SEE E 107.9.0R)
W = SIDEWALK WIDTH
Wc = CURB WIDTH
W1 = PERPENDICULAR RAMP LENGTH
CC = CEMENT CONCRETE
* = TOLERANCE FOR CONSTRUCTION ±0.5%

USEABLE SIDEWALK WIDTH PER AAB = W–WC
RAMP LENGTH = W1 = W – 4"–0" MIN



WHEELCHAIR RAMPS ON NARROW SIDEWALK WITH DETECTABLE WARNING PANEL (E107.2.1R)
NOT TO SCALE



TRANSITION CURB
NOT TO SCALE

NO EVENT PARKING SIGN DETAIL
NOT TO SCALE

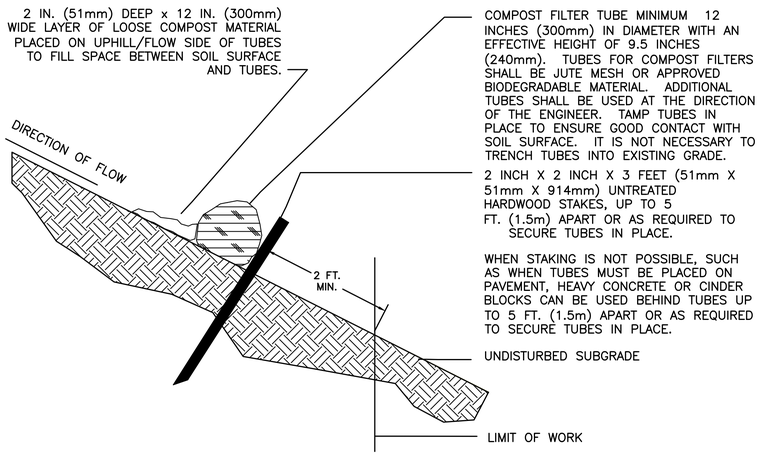
TRAIL ACCESS
UNIMPROVED TRAIL— FOOTING MAY BE UNEVEN
PASS AT OWN RISK

TRAIL RULES

- TRAIL OPEN 30 MINUTES BEFORE SUNRISE UNTIL 30 MINUTES AFTER SUNSET
- MOTORIZED VEHICLES PROHIBITED
- STAY ON TRAIL
- PETS MUST BE LEASHED
- REMOVE PET WASTE AND TRASH FROM TRAIL

THANK YOU

TRAIL SIGN DETAIL
NOT TO SCALE



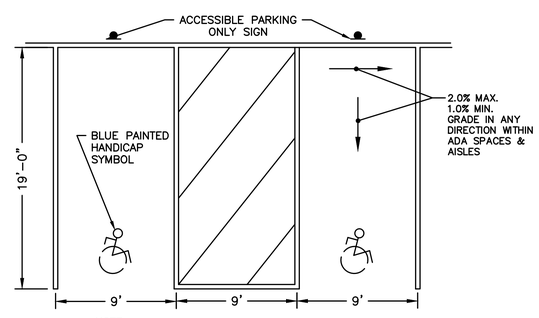
COMPOST FILTER TUBE MINIMUM 12 INCHES (300mm) IN DIAMETER WITH AN EFFECTIVE HEIGHT OF 9.5 INCHES (240mm). TUBES FOR COMPOST FILTERS SHALL BE JUTE MESH OR APPROVED BIODEGRADABLE MATERIAL. ADDITIONAL TUBES SHALL BE USED AT THE DIRECTION OF THE ENGINEER. TAMP TUBES IN PLACE TO ENSURE GOOD CONTACT WITH SOIL SURFACE. IT IS NOT NECESSARY TO TRENCH TUBES INTO EXISTING GRADE.

2 INCH X 2 INCH X 3 FEET (51mm X 51mm X 914mm) UNTREATED HARDWOOD STAKES, UP TO 5 FT. (1.5m) APART OR AS REQUIRED TO SECURE TUBES IN PLACE.

WHEN STAKING IS NOT POSSIBLE, SUCH AS WHEN TUBES MUST BE PLACED ON PAVEMENT, HEAVY CONCRETE OR CINDER BLOCKS CAN BE USED BEHIND TUBES UP TO 5 FT. (1.5m) APART OR AS REQUIRED TO SECURE TUBES IN PLACE.

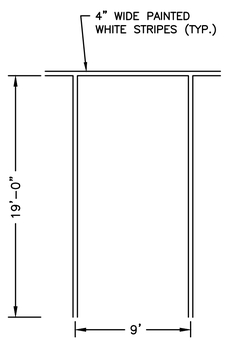
UNDISTURBED SUBGRADE

SINGLE COMPOST FILTER TUBE DETAIL
NOT TO SCALE



NOTE:
* GRADING WITHIN THE HANDICAP PARKING SPACE SHALL NOT EXCEED 2.0% IN ANY DIRECTION.

TYPICAL HANDICAP PARKING SPACE
NOT TO SCALE



TYPICAL PARKING SPACE
NOT TO SCALE

HOWARD STEIN HUDSON
114 Turnpike Road, Suite 2C
Chelmsford, MA 01824
www.hshassoc.com

PREPARED FOR:

55 BH LLC
6 LYBERTY WAY, SUITE 203
WESTFORD, MA 01886

PROPOSED MULTIFAMILY DEVELOPMENT
SUMMER STREET
WALPOLE, MA

REVISIONS:

NO	BY	DATE	DESCRIPTION
5	PB	12/16/20	EMERGENCY ACCESS
6	PB	1/4/21	REV. FIRE TURNING
7	PB	1/5/21	FIRE ACCESS/ STAGING
8	PB	1/8/21	ADDED VISITOR PARKING
9	PB	1/22/21	REV. DRAINAGE DESIGN
10	PB	1/27/21	REV. SITE PLAN
11	PB	3/12/21	REV. DRIVEWAY B
12	PB	4/13/21	REV. SITE PLAN

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:35-04'00'

SITE PLAN

DETAIL SHEET 2 OF 20

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.38

4/19/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - Details-CPS.dwg
Patrick Bagle

INLET	D	A	B
4"	3'-6"#	3'-0"	2'-6"
5"	3'-6"# 3'-6"x3'-6" 4'-0"# 4'-0"x4'-0" 4'-6"#	5'-0" 4'-0" 3'-6" 3'-0" 3'-0"	4'-0" 3'-0" 3'-0" 2'-6" 2'-6"
6"	4'-0"# 4'-0"x4'-0" 4'-6"# 4'-6"x4'-6" 5'-0"# 5'-0"x5'-0"	5'-0" 4'-0" 4'-0" 3'-6" 3'-6" 3'-0"	4'-6" 3'-6" 3'-6" 3'-0" 3'-0" 2'-6"
8"	5'-0"# 5'-6"x5'-6" 6'-0"# 6'-0"x6'-0" 6'-6"# 6'-6"x6'-6"	6'-0" 4'-6" 4'-0" 3'-0" 3'-6" 3'-0"	5'-0" 4'-0" 3'-6" 2'-6" 3'-0" 2'-6"

The Commonwealth of Massachusetts
Board of Examiners of Plumbers and Gasfitters
Gasoline, Oil and Sand Separator Design

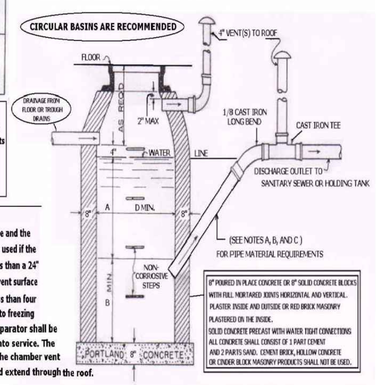
- In open parking garages or open parking area(s) ONLY the inlet pipe may extend below the water line a maximum distance of 6"-inches.

Piping Material Notes:

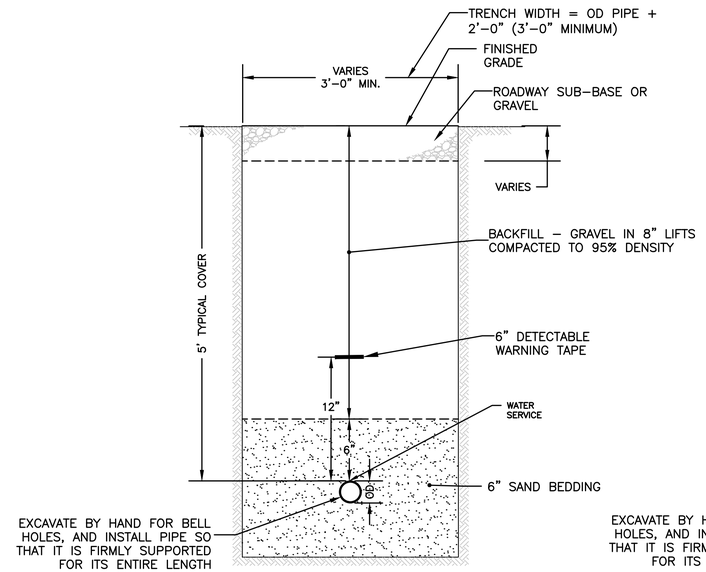
A. No-Hub Cast Iron with Product-Approved Stainless Steel Clamps
B. Service Weight Cast Iron with Product-Approved Resilient Gaskets or Lead and Oakum Joints.
C. Extra Heavy Cast Iron with Product-Approved Resilient Gaskets or Lead and Oakum Joints

General Construction Notes:

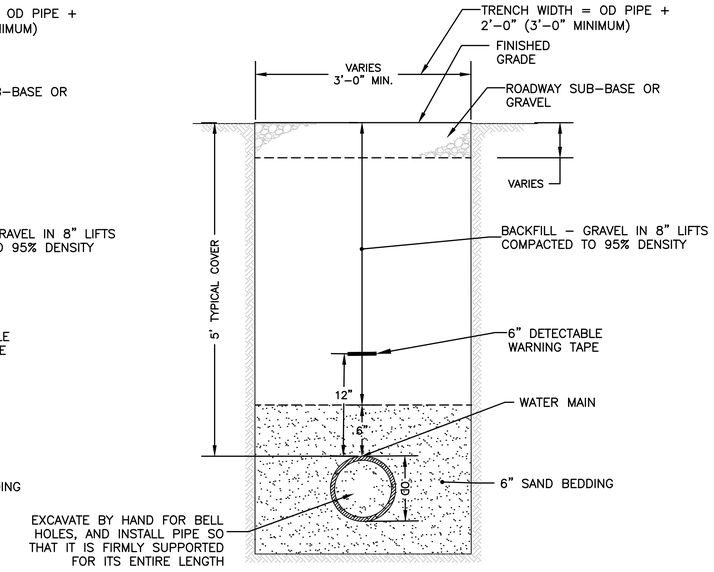
The separator is to be located outside of a building where possible and the cover is to incorporate a center-hole. A sealed tight cover is to be used if the separator is located inside of a building. The cover shall be no less than a 24" diameter. The separator shall be located and constructed to prevent surface or sub-surface water from entering. The inlet pipe shall be no less than four inches above the water line level. When the separator is subject to freezing it shall be set a minimum of three feet below grade. The separator shall be filled with water and leak tested before being introduced into service. The non-corrosive steps shall be spaced at 18"-inches apart. The chamber vent and outlet vent shall return to the inside of the building and extend through the roof.



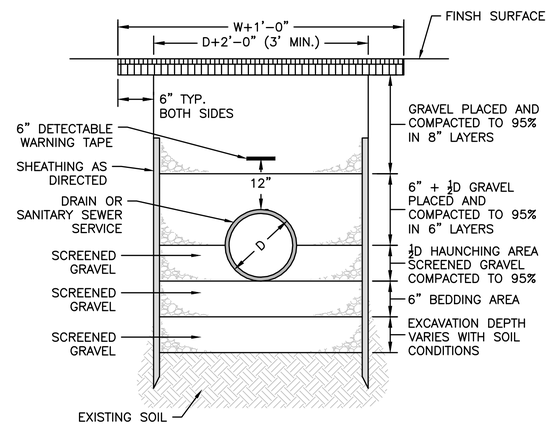
GAS, OIL, AND SAND SEPARATOR DETAIL
NOT TO SCALE



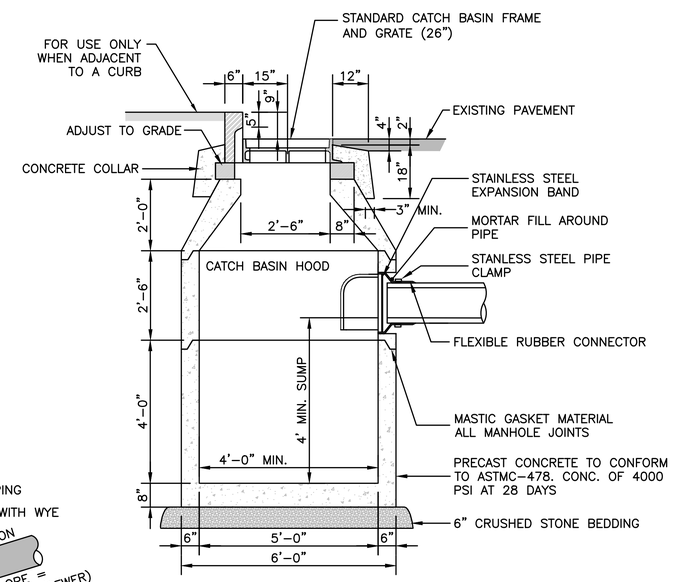
TRENCH DETAIL – WATER SERVICE
NOT TO SCALE



TRENCH DETAIL – WATER MAIN
NOT TO SCALE

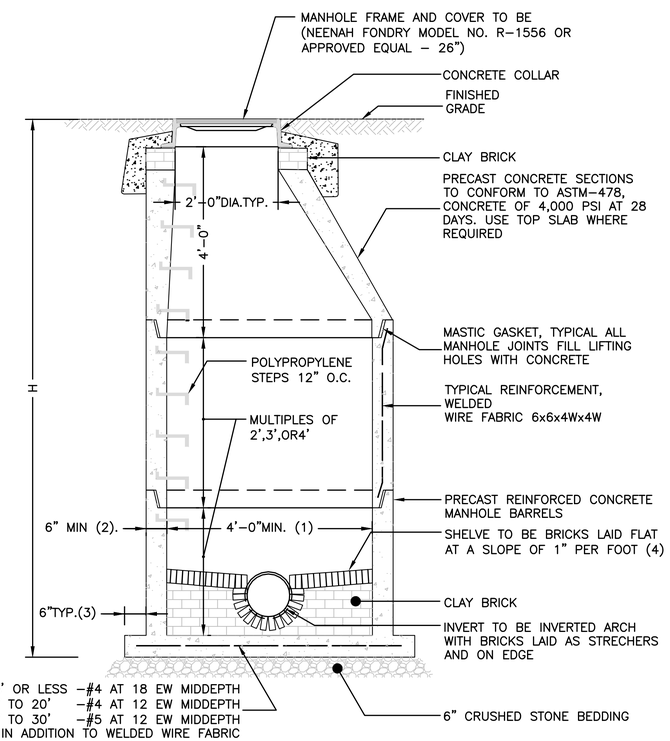


TRENCH DETAIL – DRAINAGE OR SANITARY SEWER SERVICE
NOT TO SCALE



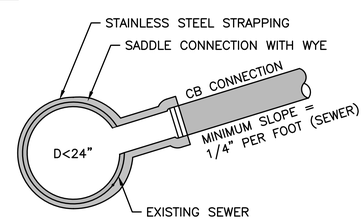
NOTES:
1. ADEQUATE FOR H-20 MINIMUM LOADING.

CATCH BASIN
NOT TO SCALE



NOTES:
1. 5'-0" DIAMETER FOR ALL MANHOLE DEPTHS GREATER THAN 20 FEET OR WHEN ORDERED BY THE ENGINEER.
2. 6 INCH MIN. WALL THICKNESS AND 7 INCH MIN. BASE THICKNESS WITH 5'-0" DIAMETER MANHOLES.
3. 6 INCH LIP OPTIONAL UNLESS OTHERWISE NOTED. CONCRETE INVERT AND SHELF MAY BE SUBSTITUTED IN STORM DRAIN MANHOLES AS DIRECTED BY THE ENGINEER.

PRECAST CONCRETE MANHOLE
NOT TO SCALE



NOTES:
1. FULL PVC OR IRON SADDLE MAY BE USED TO CONNECT TO EXISTING PVC, CLAY, CONCRETE, OR IRON PIPE.
2. SADDLES MUST HAVE RUBBER GASKETS AND SHALL BE TIGHTENED WITH STRAPS. SADDLES WILL NOT BE CEMENTED ONTO THE PIPE.
3. FULL WYE CONNECTION FITTINGS MAY BE USED.
4. PIPE SHALL BE CUT TO CONFORM TO THE OPENING IN THE SADDLE.
5. CONNECTIONS DIRECTLY INTO THE EXISTING PIPE WITHOUT A SADDLE OR A FULL WYE FITTING ARE NOT ALLOWED.

TYPICAL SADDLE CONNECTION TO SEWER
NOT TO SCALE

HOWARD STEIN HUDSON
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Chelmsford, MA 01824
www.hshassoc.com

PREPARED FOR:
55 BH LLC
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PROPOSED MULTIFAMILY DEVELOPMENT
SUMMER STREET
WALPOLE, MA

REVISIONS:

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11	PB	3/12/21	REV. DRIVEWAY B
12	PB	4/13/21	REV. SITE PLAN

COMMONWEALTH OF MASSACHUSETTS KATIE L. ENRIGHT CIVIL No. 49111 REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:36-04'00'

SITE PLAN

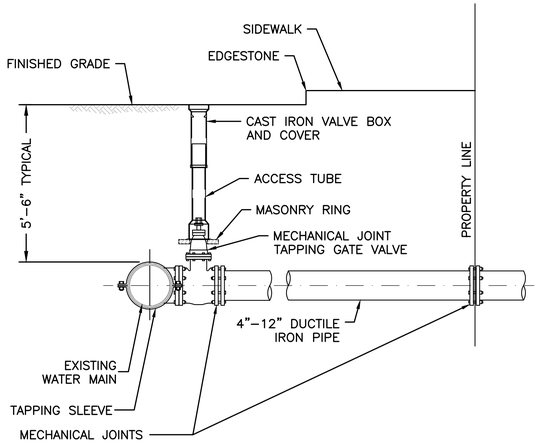
DETAIL SHEET
3 OF 20

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.39

SHEET 39 OF 56

4/19/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - Details-CPS.dwg
Petsal Bigle

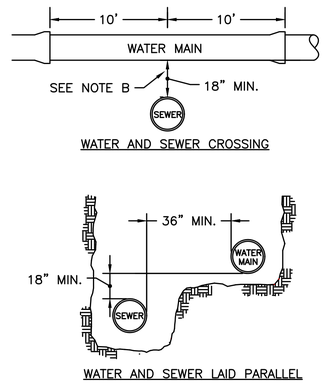


NOTES:

1. CONCRETE THRUST BLOCK TO BE USED ONLY WHERE IT WILL BEAR ON UNDISTURBED EARTH.
2. USE RESTRAINED JOINT FITTINGS OR TIE RODS WHERE CONCRETE THRUST BLOCK IS UNACCEPTABLE.
3. SIZE OF BLOCK OR MEGALUG TO BE DESIGNED FOR SPECIFIC CONDITIONS.

TAPPING SLEEVE & VALVE

NOT TO SCALE



WATER AND SEWER CROSSING

WATER AND SEWER LAID PARALLEL

NOTES:
THE SEPARATION OF WATER MAINS AND SEWERS SHALL COMPLY WITH THE FOLLOWING GENERAL REQUIREMENTS.

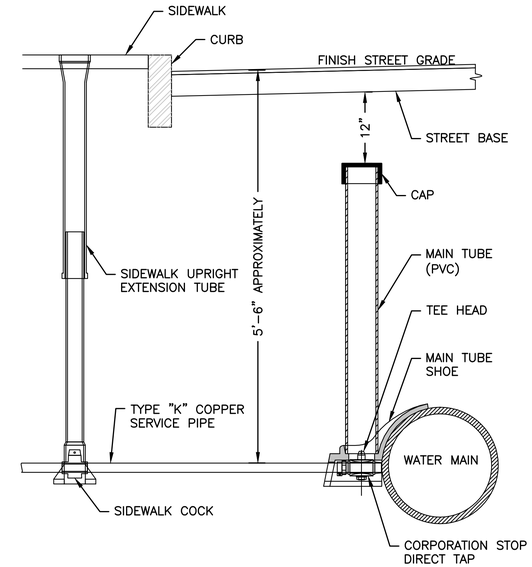
A. PARALLEL INSTALLATION:
- NORMAL CONDITIONS: THE INSIDE EDGE OF A WATER MAIN SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM THE INSIDE EDGE OF ANY SANITARY SEWER, STORM SEWER OR SEWER MANHOLE.
- WHEN LOCAL CONDITIONS PREVENT A HORIZONTAL SEPARATION OF 10 FEET, ONE OF TWO METHODS MAY BE EMPLOYED. IN BOTH CASES THE INVERT OF THE WATER LINE MUST BE AT LEAST 18" ABOVE THE CROWN OF THE SEWER LINE.

1. LAY WATER AND SEWER IN SEPARATE TRENCHES
2. LAY THE WATER AND SEWER IN THE SAME TRENCH WITH THE WATER MAIN AT ONE SIDE ON A BENCH OF UNDISTURBED EARTH WITH A MINIMUM HORIZONTAL SEPARATION FROM INSIDE PIPE TO INSIDE PIPE OF 36"

B. CROSSINGS:
- WHEN SEWERS MUST CROSS UNDER WATER MAINS, THE SEWER LAID SUCH THAT THE INVERT OF THE WATER LINE IS AT LEAST 18 INCHES ABOVE THE CROWN OF THE SEWER LINE.
- WHEN THE SEWER ELEVATION CANNOT BE VARIED TO MEET THE REQUIREMENT, THE WATER LINE MUST BE RELOCATED OR RECONSTRUCTED WITH MECHANICAL JOINT CEMENT LINED DUCTILE IRON PIPE FOR A DISTANCE OF 10 ft ON EACH SIDE OF THE SEWER.
- WHEN IT IS IMPOSSIBLE TO OBTAIN EITHER OR BOTH OF THE ABOVE REQUIREMENTS, BOTH THE WATER AND SEWER LINES SHALL BE CONSTRUCTED OF MECHANICAL JOINT CEMENT LINED DUCTILE IRON PIPE OR OTHER EQUIVALENT MATERIAL. BOTH PIPES SHALL BE PRESSURE TESTED BY AN APPROVED METHOD TO ASSURE WATER TIGHTNESS OR BOTH PIPES SHALL BE ENCASED IN CONCRETE.

SEWER/WATER SEPARATION & CROSSING DETAIL

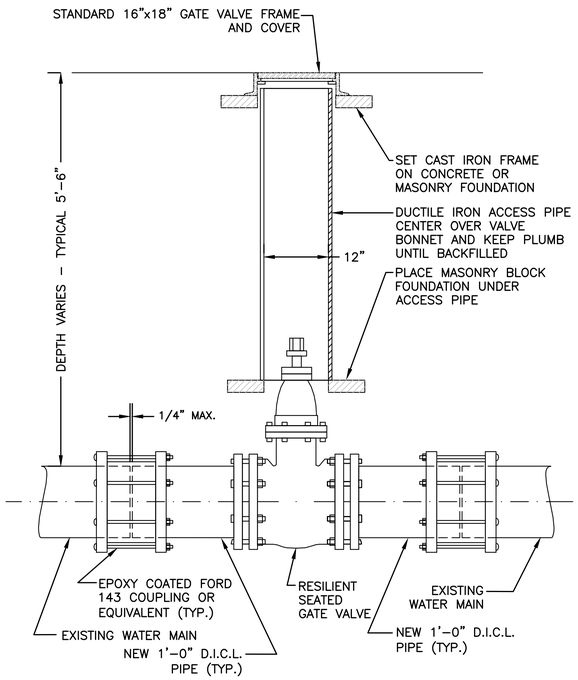
NOT TO SCALE



TYPICAL WATER CONNECTION 1" SERVICE PIPE

NOT TO SCALE

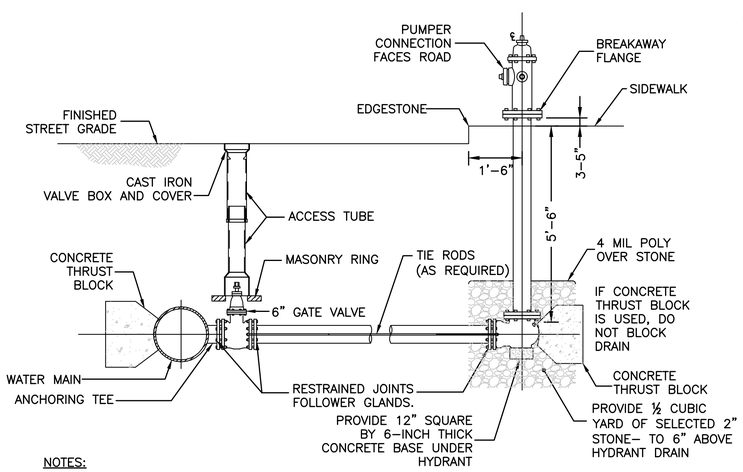
NOTE: IF A SIDEWALK IS NOT PRESENT, PROVIDE A BUFFALO STYLE BOX AT A SIMILAR DISTANCE OFF THE BACK OF THE CURB (6'-7')



NOTE:
1. ALL EXCAVATION AND BACKFILLING AND PAVING SHALL BE IN ACCORDANCE WITH THE CITY OF BOSTON REQUIREMENTS.

TYPICAL GATE VALVE INSTALLATION

NOT TO SCALE

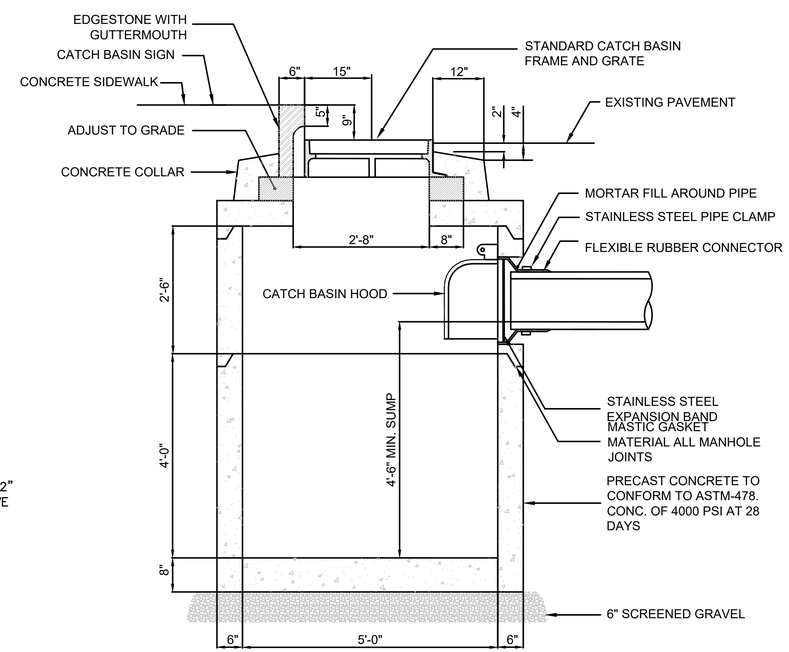


NOTES:

- CONCRETE THRUST BLOCK TO BE USED ONLY WHERE IT WILL BEAR ON UNDISTURBED EARTH.
- USE RESTRAINED JOINT FOLLOWER GLANDS, OR TIE RODS. WHERE CONCRETE THRUST BLOCK IS UNACCEPTABLE.
- SIZE OF BLOCK OR FITTING TO BE DESIGNED FOR SPECIFIC CONDITIONS, OR ANY NECESSARY BENDS.

TYPICAL FIRE HYDRANT CONNECTION FOR HIGH OR LOW SERVICE LINE

NOT TO SCALE



SHALLOW CATCH BASIN (B-01d)
NOT TO SCALE

HOWARD STEIN HUDSON
114 Turnpike Road, Suite 2C
Chelmsford, MA 01824
www.hshassoc.com

PREPARED FOR:

55 BH LLC
6 LYBERTY WAY, SUITE 203
WESTFORD, MA 01886

PROPOSED MULTIFAMILY DEVELOPMENT
SUMMER STREET
WALPOLE, MA

REVISIONS:

NO	BY	DATE	DESCRIPTION
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8	PB	1/8/21	ADDED VISITOR PARKING
9	PB	1/22/21	REV. DRAINAGE DESIGN
10	PB	1/27/21	REV. SITE PLAN
11	PB	3/12/21	REV. DRIVEWAY B
12	PB	4/13/21	REV. SITE PLAN

COMMONWEALTH OF MASSACHUSETTS KATIE L. ENRIGHT CIVIL No. 48111 REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:36-04'00'

SITE PLAN

DETAIL SHEET
4 OF 20

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.40

4/19/2021 L:\19097\CURRENT\Conservation Plan Set\19097 - Details-CPS.dwg
Patrick Bigle

DEEP HOLE TESTING
12-4-2019 THROUGH 10-21-2020
SOIL EVALUATOR: KASEY FERREIRA
WITNESSED BY: CHRIS JOHNSON
PERMEABILITY TESTING BY: DANIEL J. MERRIKIN, P.E.; KASEY FERREIRA

TP1
0"–13" A L/O
13"–23" B SL
23"–120" C LS
ESHW: 24"
HSG: C
FHPT: DESIGN K = 0.11 IN/HR

TP2
0"–10" A L/O
10"–118" C LS
ESHW: 33"
HSG: B

TP2A
0"–14" A SL
14"–28" B SL
28"–72" C SL
ESHW: 25"
HSG: C
FHPT: DESIGN K = 0.21 IN/HR

TP3
0"–12" A L
12"–20" B SL
20"–98" C LS
ESHW: 31"
HSG: C

TP4
0"–11" A L/O
11"–96" C LS
ESHW: 49"
HSG: A

TP5
0"–12" A L/O
12"–109" C LS
ESHW: 41"
HSG: A

TP6
0"–11" A L/O
11"–20" B SL
20"–99" C LS
ESHW: 26"
HSG: C

TP7
0"–7" A L
7"–122" C LS
ESHW: 40"
HSG: B

TP8
0"–7" A L
7"–18" B SL
18"–139" C LS
ESHW: 44"
HSG: B

TP9
0"–40" FILL
40"–117" C MED. S
ESHW: 40"
HSG: A

TP10
0"–9" A L
9"–23" B SL
23"–96" C CS
ESHW: 34"
HSG: C

TP11
0"–8" A L
8"–17" B LS
17"–122" C MED. S
ESHW: 30"
HSG: B

TP12
0"–9" A L
9"–18" B LS
18"–120" C MED. S
ESHW: 29"
HSG: B

TP13
0"–13" A L
13"–28" B SL
28"–135" C LS
ESHW: 43"
HSG: B

TP14
0"–7" A L
7"–13" B LFS
13"–95" C1 CS
95"–120" C2 G
ESHW: 95"
HSG: A

TP15
0"–5" A L
5"–22" B SL
22"–120" C LS
ESHW: 30"
HSG: C

TP16
0"–5" A L
5"–20" B SL
20"–120" C LS
ESHW: 36"
HSG: C
FHPT: DESIGN K = 0.23 IN/HR

TP17
0"–9" A L/O
9"–108" C LS
ESHW: 18"
HSG: A/D

TP18
0"–8" A L
8"–17" B SL
17"–120" C LS
ESHW: 26"
HSG: C

TP19
0"–8" A L
8"–20" B LS
20"–120" C S
ESHW: 50"
HSG: A

TP20
0"–7" A L
7"–24" B SL
24"–103" C LS
ESHW: 48"
HSG: B

TP21
0"–9" A L
9"–24" B LS
24"–102" C S
ESHW: 43"
HSG: A

TP22
0"–6" A L
6"–23" B SL
23"–66" C LS
ESHW: 32"
HSG: C

TP23
0"–12" A L
12"–24" B LS
24"–118" C S
ESHW: 36"
HSG: B

TP24
0"–11" A L
11"–24" B LS
24"–102" C S
ESHW: 39" REFUSAL @ 102"
HSG: B

TP25
0"–10" A L
10"–20" B LS
20"–69" C S
ESHW: 41" REFUSAL @ 69"
HSG: A

TP25A
0"–8" A L
8"–15" B SL
15"–108" C LS
ESHW: 32"
HSG: C

TP26
0"–10" A L
10"–18" B SL
18"–75" C LS
ESHW: 49" REFUSAL @ 75"
HSG: B

TP27
0"–8" A L
8"–25" B SL
25"–48" C1 LS
48"–110" C2 LS
ESHW: 30"
HSG: C

TP28
0"–6" A L
6"–24" B SL
24"–99" C LS
ESHW: 32"
HSG: C

TP29
0"–13" A L
13"–18" B SL
18"–132" C LS
ESHW: 43"
HSG: B

TP30
0"–12" A L/O
12"–30" B L
30"–128" C LS
ESHW: 36"
HSG: C

TP31
0"–32" FILL
32"–96" C GLS
ESHW: 42"
HSG: A

TP32
0"–14" A SL
14"–20" B SL
20"–88" C SL
ESHW: 30"
HSG: C
FHPT: DESIGN K = 0.89 IN/HR

TP33
0"–12" A SL
12"–30" B SL
30"–87" C LS
ESHW: 30"
HSG: C
FHPT: DESIGN K = 0.09 IN/HR

TP34
0"–10" A SL
10"–24" B SL
24"–72" C LS
ESHW: 37"
HSG: C
FHPT: DESIGN K = 0.30 IN/HR

TP36
0"–10" A SL
10"–22" B SL
22"–62" C SL
ESHW: 21"
HSG: C

TP37
0"–11" A SL
11"–28" B SL
28"–52" C SL
ESHW: 28"
HSG: C

TP38
0"–12" A SL
12"–28" B SL
28"–72" C S
ESHW: 42"
HSG: B
FHPT: DESIGN K = 10.41 IN/HR

TP39
0"–14" A SL
14"–37" B SL
37"–66" C LS
ESHW: 36"
HSG: C

TP40
0"–14" A SL
14"–30" B SL
30"–59" C1 S
59"–98" C2 LS
ESHW: 28"
HSG: C
FHPT: DESIGN K = 5.13 IN/HR

TP40A
0"–14" A SL
14"–23" B SL
23"–80" C S
ESHW: 40"
HSG: C
FHPT: DESIGN K = 6.58 IN/HR

TP41
0"–9" A SL
9"–20" B SL
20"–88" C S
ESHW: 45"
HSG: B
FHPT: DESIGN K = 8.28 IN/HR

TP42
0"–10" A SL
10"–28" B SL
28"–86" C S
ESHW: 48"
HSG: B
FHPT (IN C1): DESIGN K = 3.27 IN/HR
FHPT (IN C2): DESIGN K = 10.74 IN/HR

TP43
0"–10" A SL
10"–26" B SL
26"–64" C1 SL
64"–100" C2 LS
ESHW: 26"
HSG: C
FHPT (IN C2): DESIGN K = 0.66 IN/HR

TP43A
0"–10" A SL
10"–19" B SL
19"–89" C SL
ESHW: 16"
HSG: B/D

TP44
0"–10" A SL
10"–35" B SL
35"–52" C1 SL
52"–76" C2 LS
ESHW: 35"
HSG: C
FHPT (IN C2): DESIGN K = 8.95 IN/HR

TP45
0"–12" A SL
12"–27" B SL
27"–56" C1 SL
56"–91" C2 LS
ESHW: N/A
HSG: N/A
FHPT (IN C2): DESIGN K = 0.35 IN/HR

TP46
0"–12" A SL
12"–27" B SL
27"–52" C1 SL
52"–100" C2 LS
ESHW: 18"
HSG: B/D
FHPT (IN C2): DESIGN K = 0.59 IN/HR

TP47
0"–12" A SL
12"–34" B SL
34"–48" C1 SL
48"–102" C2 LS
ESHW: 30"
HSG: C
FHPT (IN C2): DESIGN K = 3.69 IN/HR

TP48
0"–12" A SL
12"–29" B SL
29"–80" C LS
ESHW: 36"
HSG: C
FHPT: DESIGN K = 6.32 IN/HR

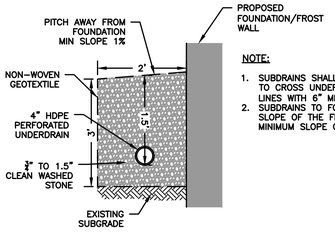
TP49
0"–10" A SL
10"–24" B SL
24"–60" C LS
REFUSAL: 60"
HSG: B
FHPT: DESIGN K = 2.91 IN/HR

TP50
0"–12" A SL
12"–25" B SL
25"–67" C LS
ESHW: NONE
HSG: B
FHPT: DESIGN K = 0.59 IN/HR

TP51
0"–12" A SL
12"–34" B SL
34"–65" C LS
ESHW: 21"
HSG: B/D
FHPT (IN C2): DESIGN K = 1.40 IN/HR

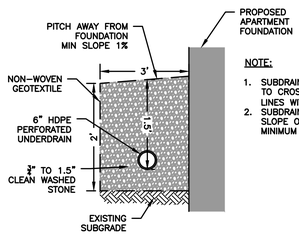
TP52
0"–10" A SL
10"–28" B SL
28"–72" C LS
ESHW: 53"
HSG: B
FHPT: DESIGN K = 3.50 IN/HR

TP53
0"–10" A SL
10"–32" B SL
32"–78" C SL
ESHW: 32"
HSG: C



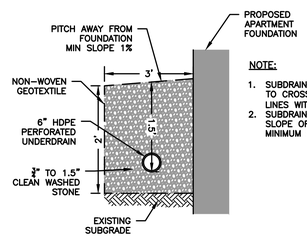
NOTE:
1. SUBDRAINS SHALL BE INSTALLED TO CROSS UNDER THE IRRIGATION LINES WITH 6" MIN. CLEARANCE.
2. SUBDRAINS TO FOLLOW THE SLOPE OF THE FIELD WITH A MINIMUM SLOPE OF 0.5%.

HOUSE/CLUBHOUSE DRIP EDGE SYSTEM
NOT TO SCALE



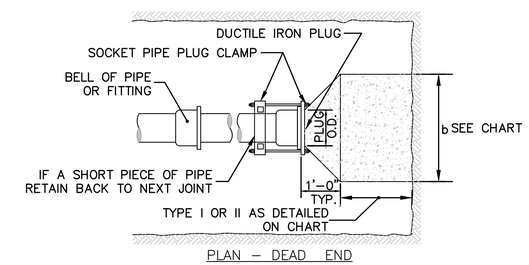
NOTE:
1. SUBDRAINS SHALL BE INSTALLED TO CROSS UNDER THE IRRIGATION LINES WITH 6" MIN. CLEARANCE.
2. SUBDRAINS TO FOLLOW THE SLOPE OF THE FIELD WITH A MINIMUM SLOPE OF 0.5%.

4 UNIT TOWNHOUSE DRIP EDGE SYSTEM
NOT TO SCALE

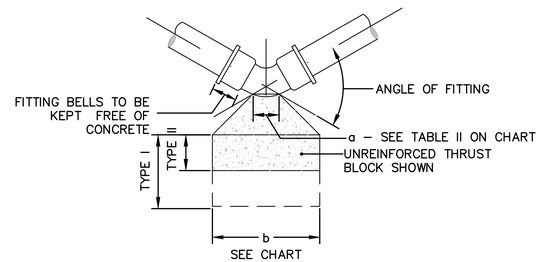


NOTE:
1. SUBDRAINS SHALL BE INSTALLED TO CROSS UNDER THE IRRIGATION LINES WITH 6" MIN. CLEARANCE.
2. SUBDRAINS TO FOLLOW THE SLOPE OF THE FIELD WITH A MINIMUM SLOPE OF 0.5%.

6 UNIT TOWNHOUSE DRIP EDGE SYSTEM
NOT TO SCALE



PLAN – DEAD END



PLAN – BEND

THRUST BLOCK
NOT TO SCALE

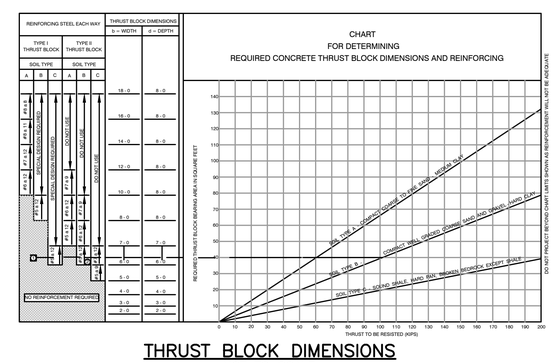
TABLE II - "a" DIMENSION - FEET

PIPE DIAMETER - INCHES	90° FITTING	OTHERS
6, 8, 10 & 12	1'-6	1'-0
16 & 20	2'-0	1'-6
24", 30"	3'-0	2'-0

TABLE I - THRUST - KIPS (WATER PRESSURE = 200 P.S.I.)

PIPE DIAMETER - INCHES	6	8	10	12	16	20	24	30	36	42
DEAD ENDS AND TEES	5.6	10	15.8	22.8	40.2	62.8	90.4	141.0	203.6	277.0
ANGLE FITTINGS: 90°	7.9	14.2	22.4	32.0	56.8	88.8	127.7	199.0	288.0	392.0
ANGLE FITTINGS: 67 1/2°	-	11.1	17.6	25.1	44.7	70.0	100.2	157.0	226.0	308.0
ANGLE FITTINGS: 56 1/4°	-	-	14.9	21.2	37.9	59.2	85.1	133.0	192.0	261.0
ANGLE FITTINGS: 45°	-	-	-	17.3	30.8	48.1	69.0	108.0	156.0	212.0
ANGLE FITTINGS: 33 3/4°	-	-	-	13.1	23.3	36.5	52.5	82.0	118.0	161.0
ANGLE FITTINGS: 22 1/2°	-	-	-	8.8	15.7	24.5	35.2	55.0	79.5	108.0

DESIGN THRUST BLOCKS OR OTHER SUITABLE ANCHORAGE TO SUIT ACTUAL CONDITIONS



THRUST BLOCK DIMENSIONS
NOT TO SCALE

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WESTFORD, MA 01886

PROPOSED MULTIFAMILY DEVELOPMENT
SUMMER STREET
WALPOLE, MA

REVISIONS:

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11	PB	3/12/21	REV. DRIVEWAY B
12	PB	4/13/21	REV. SITE PLAN

COMMONWEALTH OF MASSACHUSETTS
KATIE L. ENRIGHT
CIVIL
No. 46511
REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:37-04'00'

SITE PLAN

DETAIL SHEET
5 OF 20

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.41

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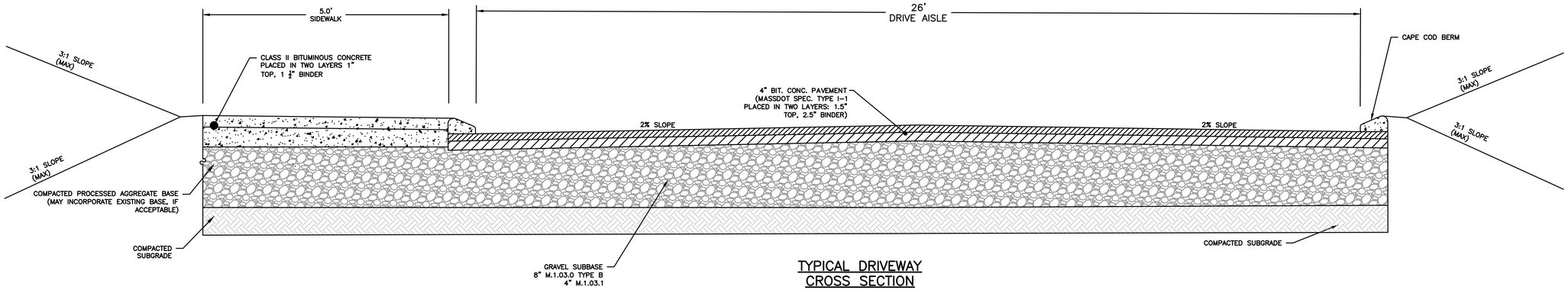
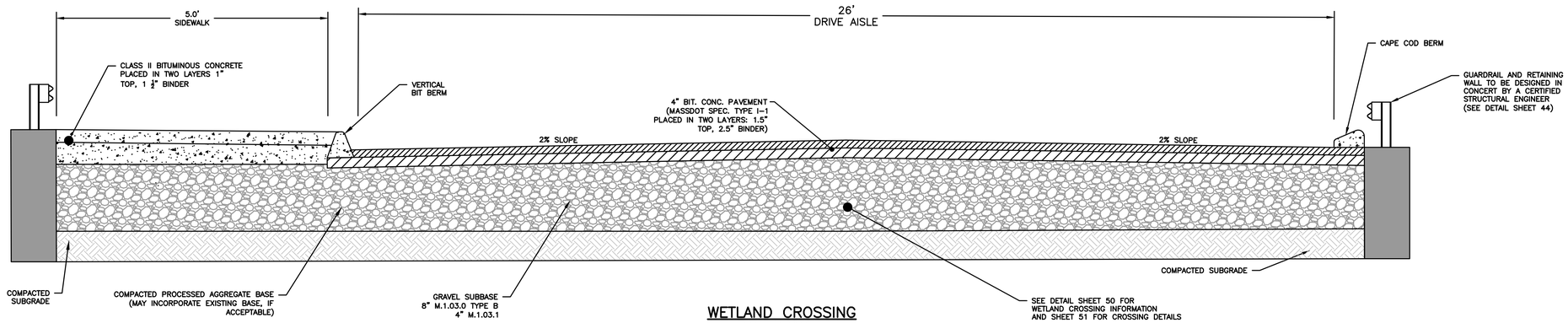
Patrick Bogle



TYPICAL DRIVEWAY CROSS SECTION

NOT TO SCALE

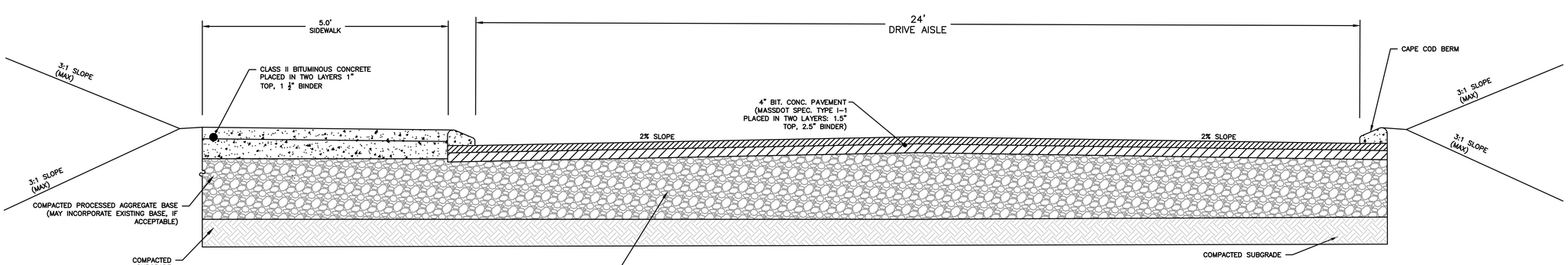
NOTE: SIDEWALK SHALL HAVE A CROSS SLOPE OF 1.6% WITH A MAX OF 2.0%



WETLAND CROSSING

NOT TO SCALE

NOTE: SIDEWALK SHALL HAVE A CROSS SLOPE OF 1.6% WITH A MAX OF 2.0%



TYPICAL DRIVEWAY CROSS SECTION

NOT TO SCALE

NOTE: SIDEWALK SHALL HAVE A CROSS SLOPE OF 1.6% WITH A MAX OF 2.0%

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PROPOSED MULTIFAMILY DEVELOPMENT

SUMMER STREET
WALPOLE, MA

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10	PB	1/27/21	REV. SITE PLAN
11	PB	3/12/21	REV. DRIVEWAY B
12	PB	4/13/21	REV. SITE PLAN

COMMONWEALTH OF MASSACHUSETTS
KATIE L. ENRIGHT
CIVIL
No. 49111
REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:38-04'00'

SITE PLAN

DETAIL SHEET 6 OF 20

DATE:	JANUARY 10, 2020
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DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.42

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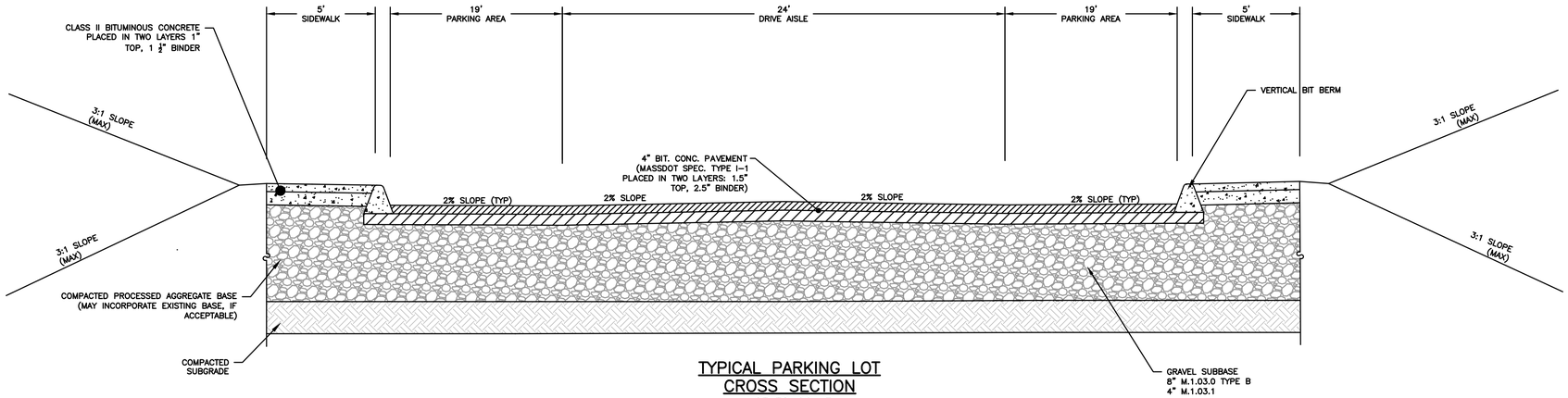
Petra Begin



TYPICAL PARKING LOT CROSS SECTION

NOT TO SCALE

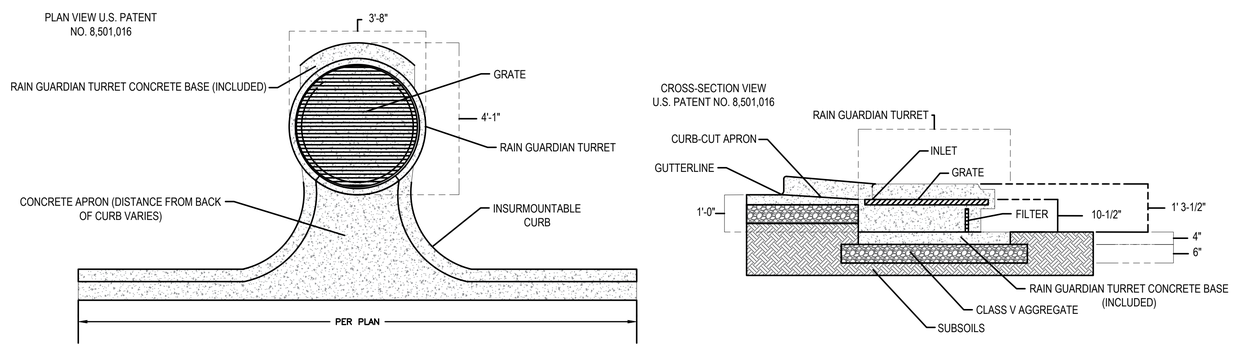
NOTE: SIDEWALK SHALL HAVE A CROSS SLOPE OF 1.6% WITH A MAX OF 2.0%

GENERAL NOTES

1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. STORMCEPTOR WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STORMCEPTOR STRUCTURE SHALL MEET AASHTO **HS20** LOAD RATING, ASSUMING EARTH COVER OF 0' – 2' [610], AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO **M306** AND BE CAST WITH THE CONTECH LOGO.
5. STORMCEPTOR STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C478 AND AASHTO LOAD FACTOR DESIGN METHOD.
6. ALTERNATE UNITS ARE SHOWN IN MILLIMETERS [mm].

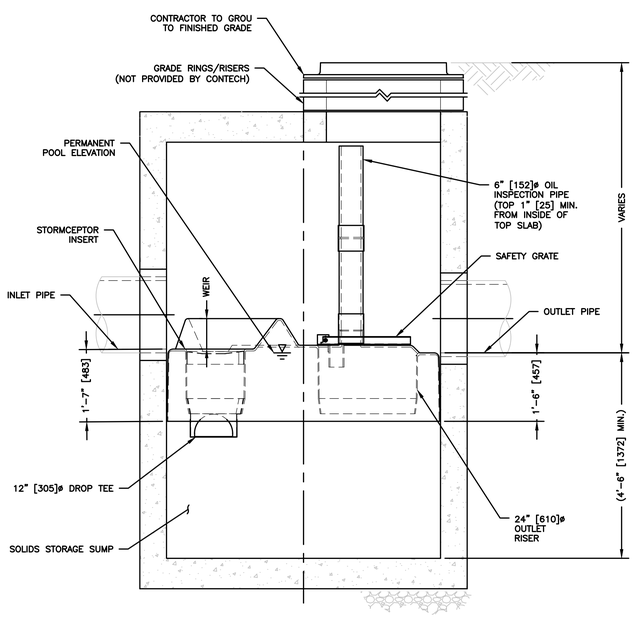
INSTALLATION NOTES

A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMCEPTOR MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

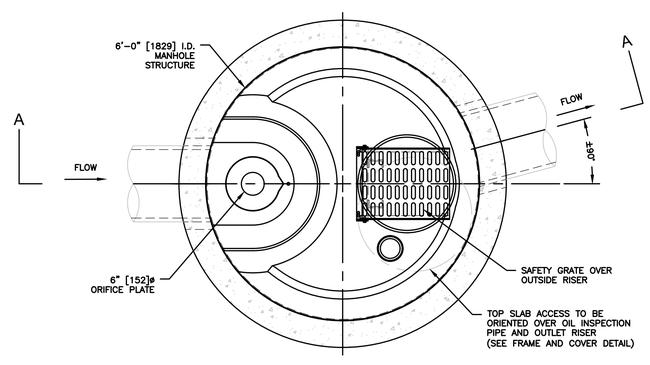


ACF RAIN GUARDIAN TURRET DETAIL

SCALE=NTS

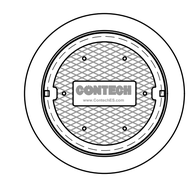


SECTION A-A



PLAN VIEW

TOP SLAB NOT SHOWN



FRAME AND COVER

(MAY VARY)
NOT TO SCALE

WATER QUALITY UNIT – STC 900

SCALE=NTS

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11	PB	3/12/21	REV. DRIVEWAY B
12	PB	4/13/21	REV. SITE PLAN

COMMONWEALTH OF MASSACHUSETTS KATIE L. ENRIGHT CIVIL No. 49111 REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:38-04'00'

SITE PLAN

DETAIL SHEET
7 OF 20

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CHECKED BY:	KE

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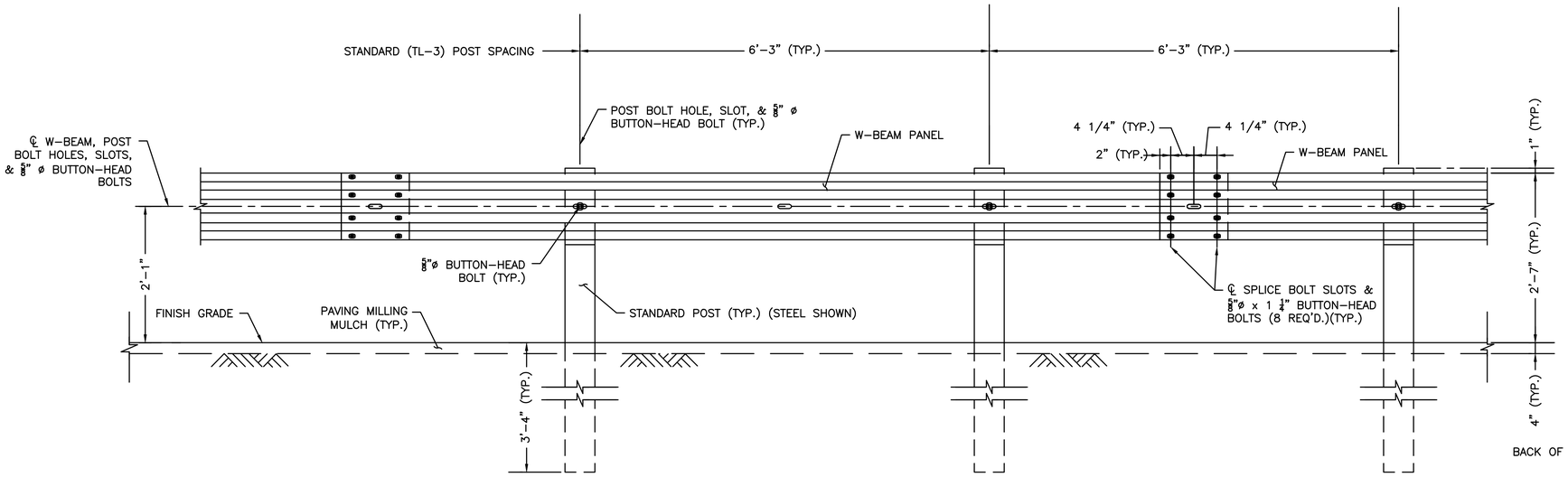
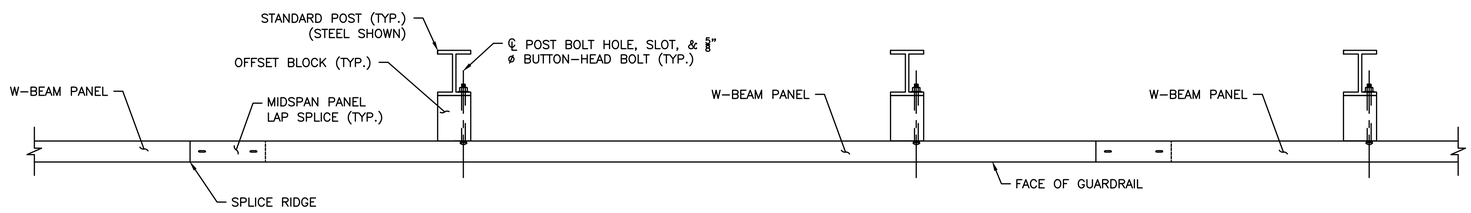
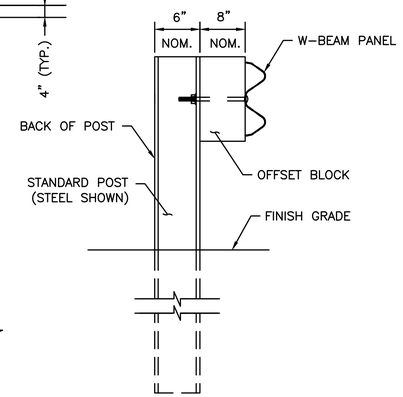
Petra Bogle



FRONT ELEVATION



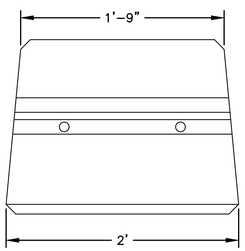
CROSS SECTION

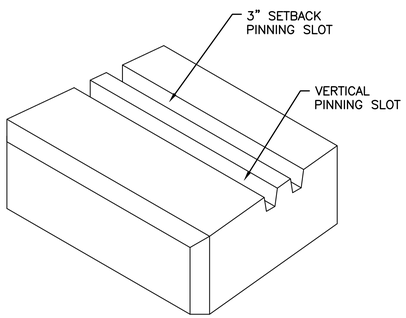


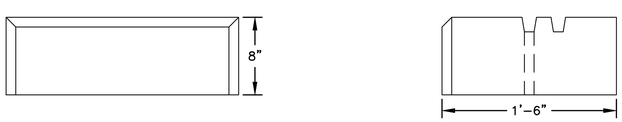
POST DETAIL

DIRECTION OF TRAFFIC

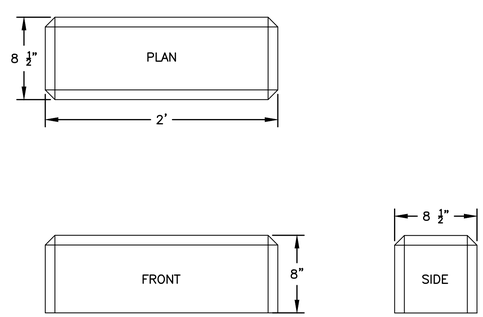
STEEL GUARDRAIL DETAIL
NOT TO SCALE



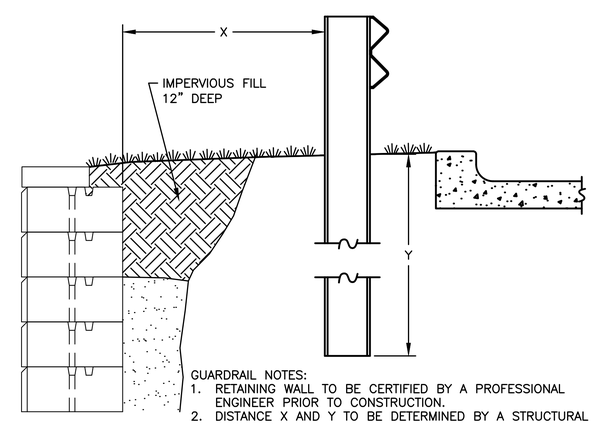




VERSA-LOK BRUTE UNIT
NOT TO SCALE



VERSA-LOK BRUTE HALF UNIT
NOT TO SCALE



GUARDRAIL NOTES:
1. RETAINING WALL TO BE CERTIFIED BY A PROFESSIONAL ENGINEER PRIOR TO CONSTRUCTION.
2. DISTANCE X AND Y TO BE DETERMINED BY A STRUCTURAL ENGINEER.
3. GUARDRAIL TO BE SPECIFICALLY SELECTED FOR ENGINEERED RETAINING WALL.
4. ALL RETAINING WALLS GREATER THAN 4 FEET IN HEIGHT WILL BE CONSTRUCTED WITH A 4 FOOT TALL FENCE.

NOT FOR CONSTRUCTION

RETAINING WALL AND GUARDRAIL CUT SECTION DETAIL
NOT TO SCALE

NOTES:
1. ALL LOCATIONS, DIMENSIONS, MATERIALS OF RETAINING WALL AND GUARDRAIL TO BE DESIGNED AND DETERMINED BY A STRUCTURAL ENGINEER BASED ON THE CRITERIA LISTED WITHIN THE GRADING AND DRAINAGE AND LAYOUT AND MATERIAL PLANS.
2. RETAINING WALL AND GUARDRAIL TO BE DESIGNED IN CONCERT.
3. RETAINING WALL TO BE DESIGNED AND SIGNED OFF ON BY A LICENSED STRUCTURAL ENGINEER.

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COMMONWEALTH OF MASSACHUSETTS KATIE L. ENRIGHT CIVIL No. 49111 REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:39-04'00'

SITE PLAN

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8 OF 20

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CHECKED BY:	KE

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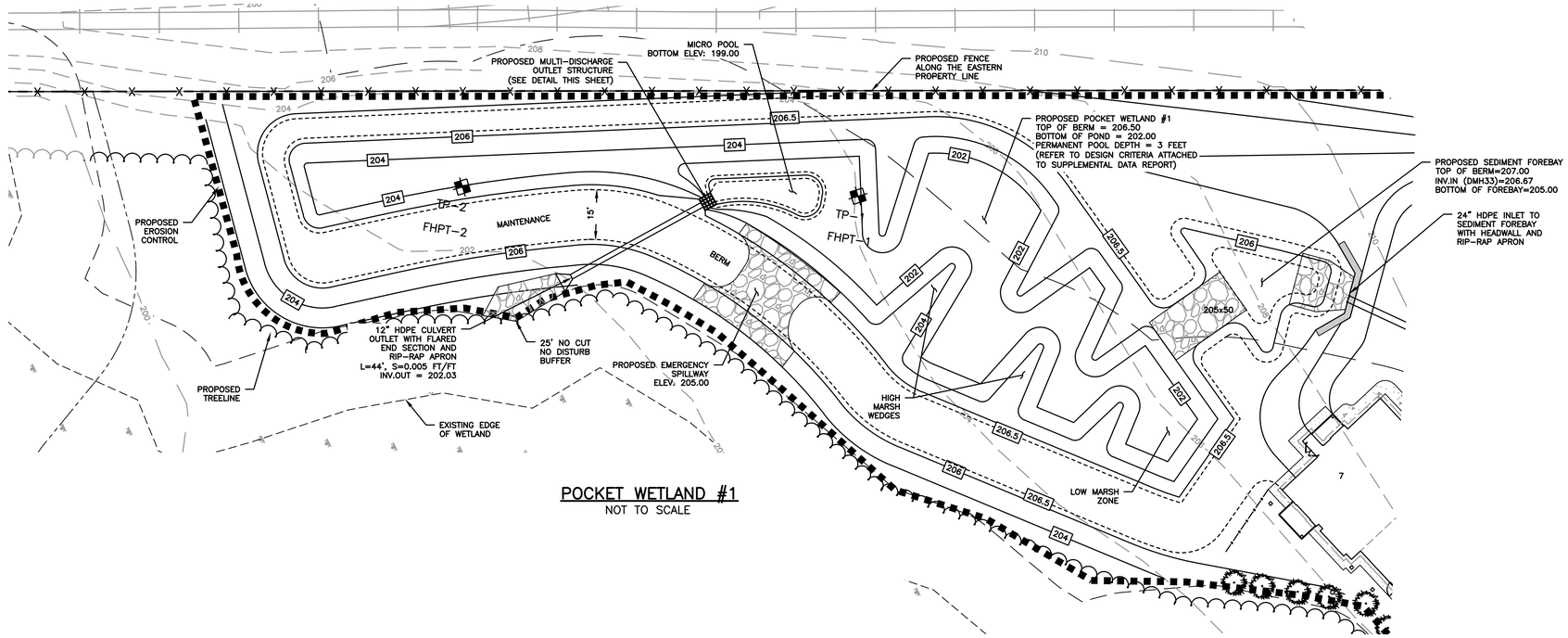
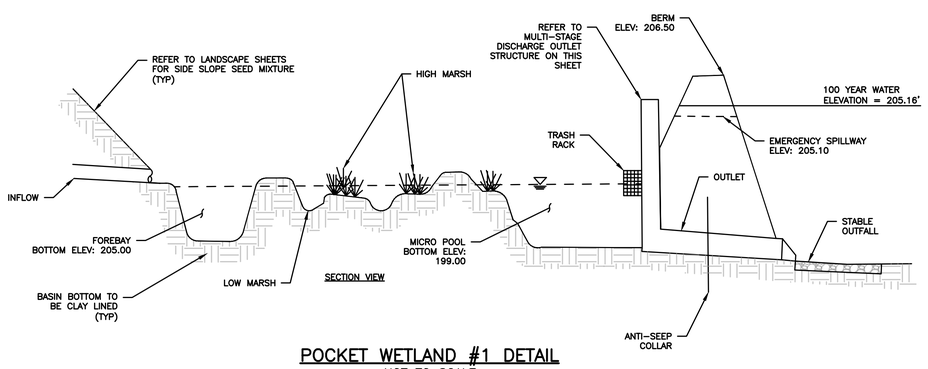
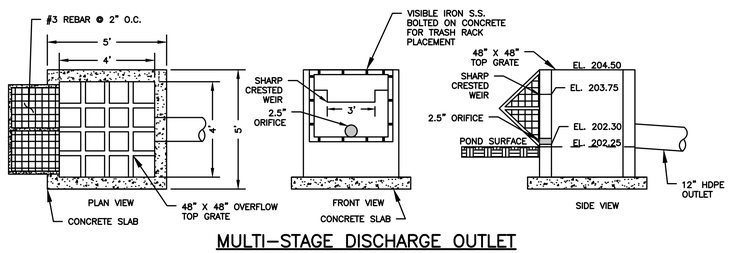
Patrick Bigle



POCKET WETLAND #1
NOT TO SCALE



POCKET WETLAND #1 DETAIL
NOT TO SCALE



MULTI-STAGE DISCHARGE OUTLET
STRUCTURE DETAIL
NOT TO SCALE

CONSTRUCTION

A SEVEN-STEP PROCESS TO PREPARE A WETLAND BE PRIOR TO PLANTING (SHUELER 1992):

1. PREPARE FINAL POND-SCAPING AND GRADING PLANS FOR THE CONSTRUCTED STORMWATER WETLAND. AT THE SAME TIME, ORDER WETLAND PLANT STOCKS FROM AQUATIC NURSERIES.
2. ONCE THE CONSTRUCTED STORMWATER WETLAND WETLAND VOLUME HAS BEEN EXCAVATED, GRADE THE WETLAND TO CREATE THE MAJOR INTERNAL FEATURES (POOL, AQUATIC BENCH, DEEP WATER CHANNELS, ETC.).
3. BECAUSE DEEP SUBSOILS OFTEN LACK THE NUTRIENTS AND ORGANIC MATTER NEEDED TO SUPPORT VIGOROUS PLANT GROWTH, ADD TOPSOIL AND/OR WETLAND MULCH TO THE WETLAND EXCAVATION. IF AVAILABLE, WETLAND MULCH IS PREFERABLE TO TOPSOIL.
4. AFTER THE MULCH OR TOPSOIL HAS BEEN ADDED, GRADE THE CONSTRUCTED STORMWATER WETLAND TO ITS FINAL ELEVATIONS. TEMPORARILY STABILIZE ALL WETLAND FEATURES ABOVE THE NORMAL POOL. AFTER FINAL GRADING, CLOSE THE POOL DRAIN TO ALLOW THE POOL TO FILL. MASSDEP RECOMMENDS EVALUATING THE WETLAND ELEVATIONS DURING A STANDING PERIOD OF APPROXIMATELY SIX MONTHS TO ASSESS HOW THE CONSTRUCTED STORMWATER WETLAND RESPONDS TO STORM FLOWS AND INUNDATION, WHERE THE POND-SCAPING ZONES ARE LOCATED, AND WHETHER THE FINAL GRADE AND MICRO-TOPOGRAPHY WILL PERSIST OVER TIME.
5. BEFORE PLANTING, MEASURE THE CONSTRUCTED STORMWATER WETLAND DEPTH. IF NECESSARY, MODIFY THE POND-SCAPE PLAN AT THIS TIME TO REFLECT ALTERED DEPTHS OR AVAILABILITY OF PLANT STOCK.
6. AGGRESSIVELY APPLY EROSION CONTROLS DURING THE STANDING AND PLANTING PERIODS. STABILIZE THE VEGETATION IN ALL AREAS ABOVE THE NORMAL POOL ELEVATION DURING THE STANDING PERIOD (TYPICALLY BY HYDROSEEDING).
7. DEWATER THE CONSTRUCTED STORMWATER WETLAND AT LEAST THREE DAYS BEFORE PLANTING, BECAUSE A DRY WETLAND IS EASIER TO PLANT THAN A WET ONE.

HOWARD STEIN HUDSON
114 Turnpike Road, Suite 2C
Chelmsford, MA 01824
www.hshassoc.com

PREPARED FOR:

55 BH LLC
6 LYBERTY WAY, SUITE 203
WESTFORD, MA 01886

PROPOSED MULTIFAMILY DEVELOPMENT
SUMMER STREET
WALPOLE, MA

REVISIONS:

NO	BY	DATE	DESCRIPTION
5	PB	12/16/20	EMERGENCY ACCESS
6	PB	1/4/21	REV. FIRE TURNING
7	PB	1/5/21	FIRE ACCESS/ STAGING
8	PB	1/8/21	ADDED VISITOR PARKING
9	PB	1/22/21	REV. DRAINAGE DESIGN
10	PB	1/27/21	REV. SITE PLAN
11	PB	3/12/21	REV. DRIVEWAY B
12	PB	4/13/21	REV. SITE PLAN

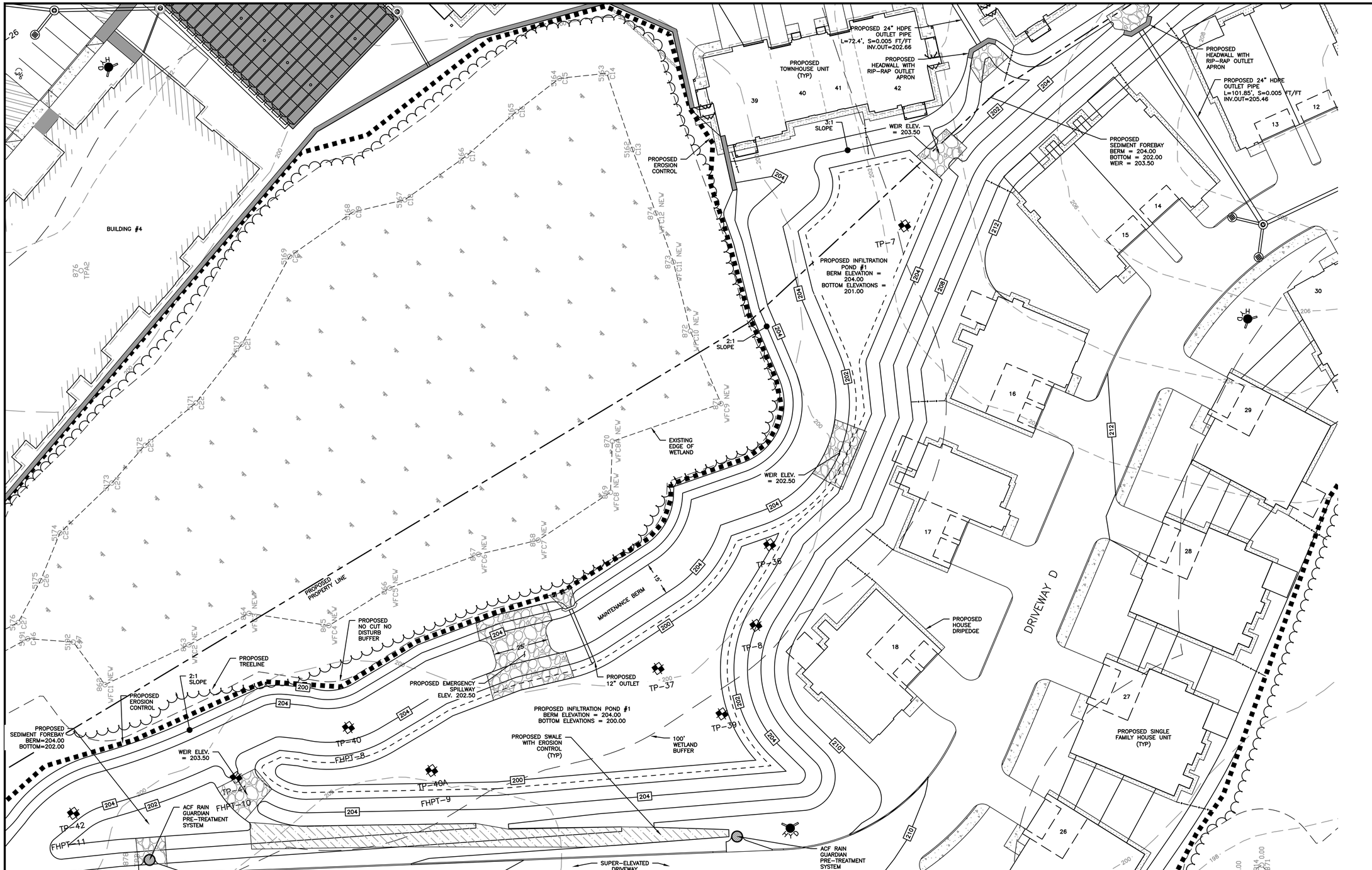
COMMONWEALTH OF MASSACHUSETTS
KATIE L. ENRIGHT
CIVIL
No. 46111
REGISTERED PROFESSIONAL ENGINEER

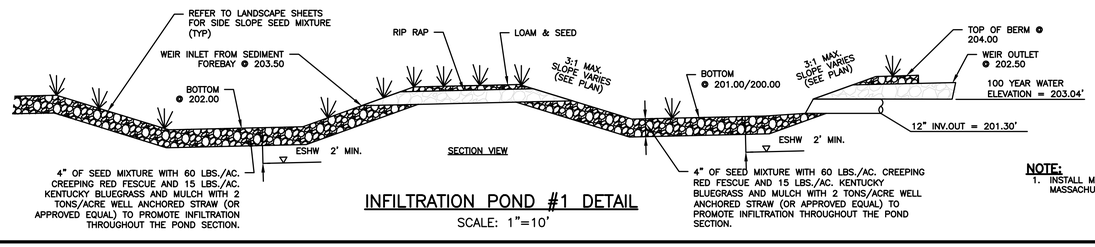
Digitally signed by Katie Enright
Date: 2021.04.20 13:36:39-04'00'

SITE PLAN

DETAIL SHEET
9 OF 20

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE





INFILTRATION POND #1 DETAIL

SCALE: 1"=10'

NOTE:

1. INSTALL MONITORING WELLS PER MASSACHUSETTS STORMWATER HANDBOOK.

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WESTFORD, MA 01886

PROPOSED MULTIFAMILY DEVELOPMENT

SUMMER STREET
WALPOLE, MA

REVISIONS:

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11	PB	3/12/21	REV. DRIVEWAY B
12	PB	4/13/21	REV. SITE PLAN

COMMONWEALTH OF MASSACHUSETTS KATIE L. ENRIGHT CIVIL No. 49111 REGISTERED PROFESSIONAL ENGINEER

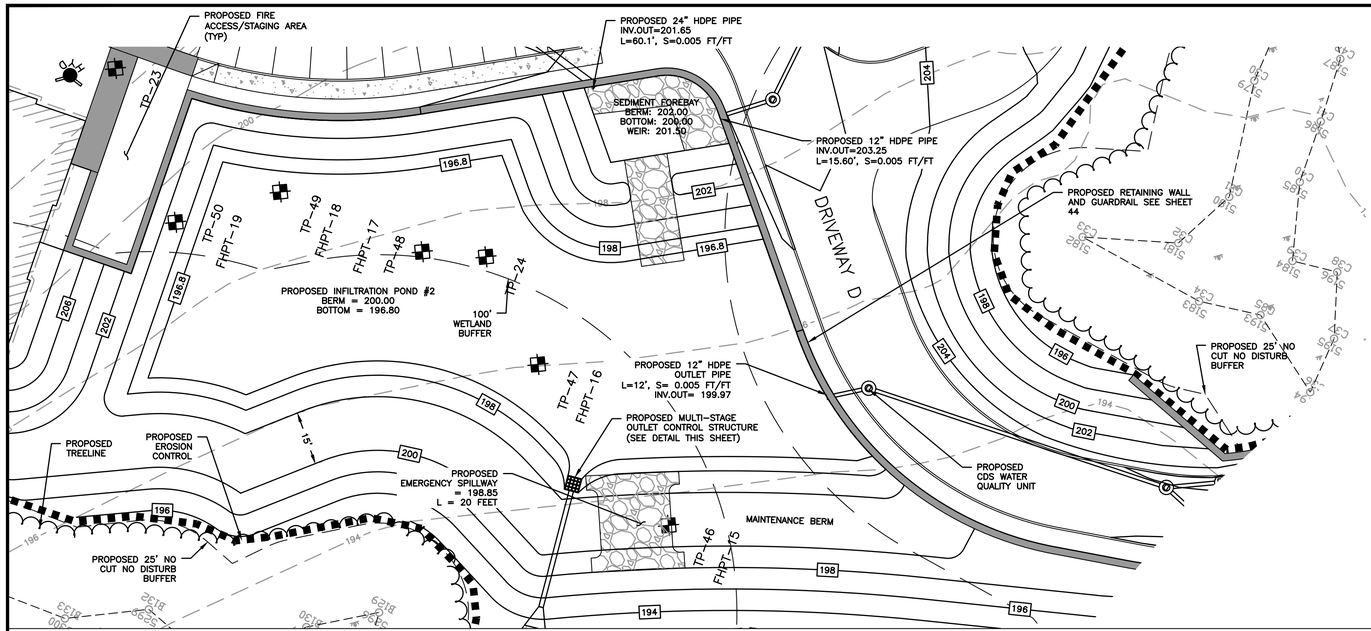
Digitally signed by Katie Enright
Date: 2021.04.20 13:36:40-04'00'

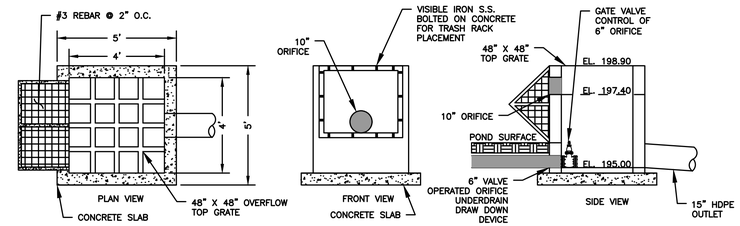
SITE PLAN

DETAIL SHEET 10 OF 20

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

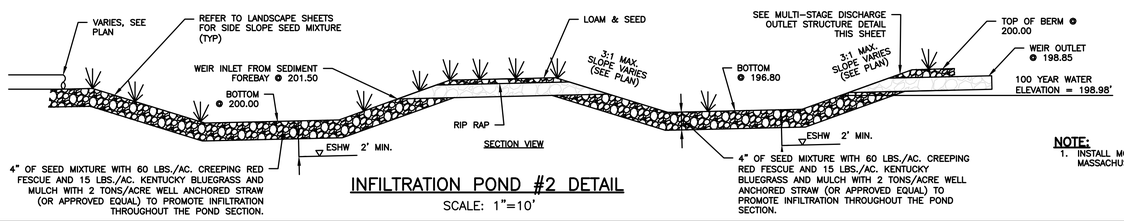
C.46





MULTI-STAGE DISCHARGE OUTLET STRUCTURE DETAIL

NOT TO SCALE

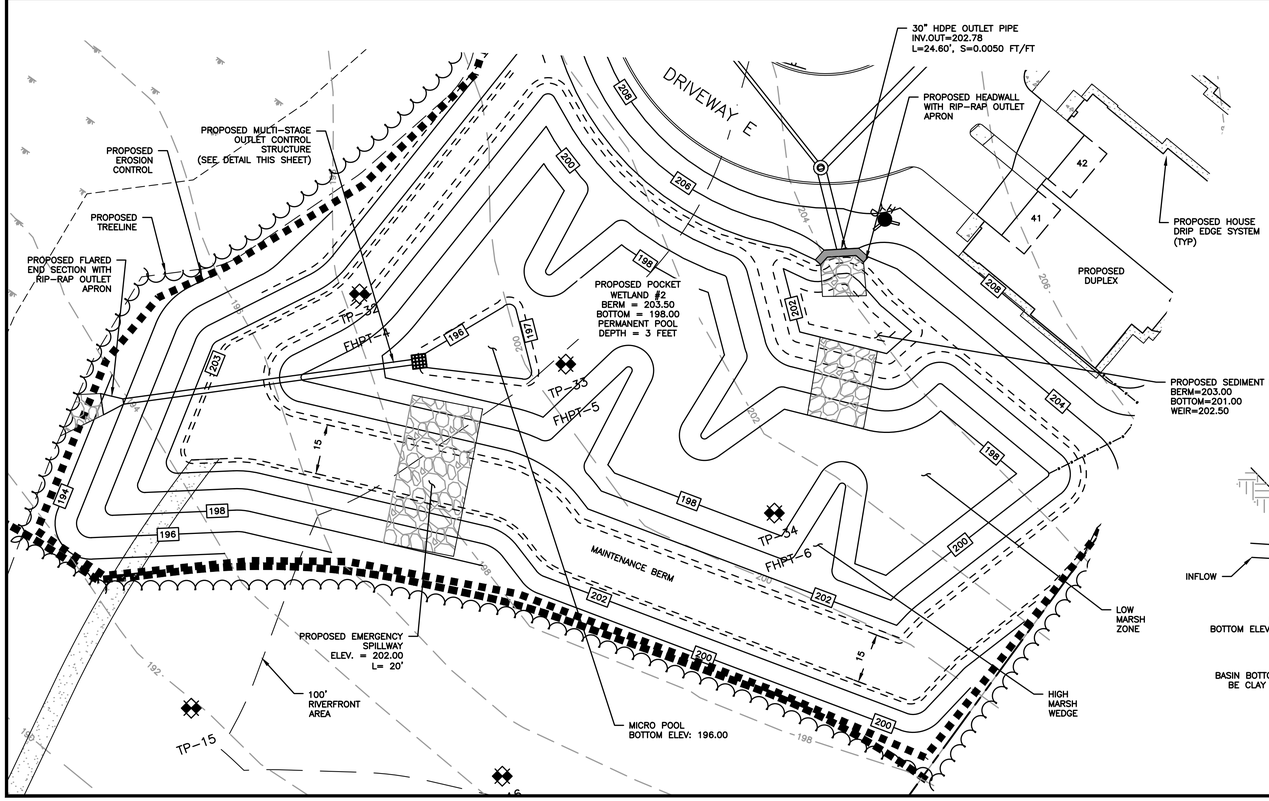


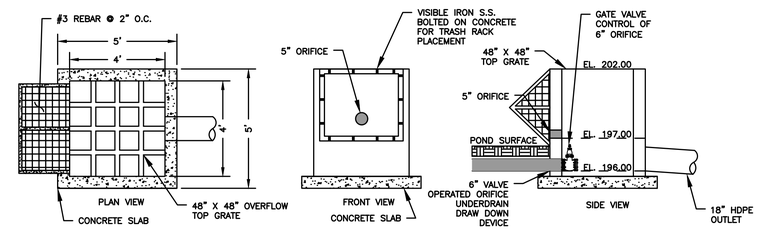
INFILTRATION POND #2 DETAIL

SCALE: 1"=10'

NOTE:

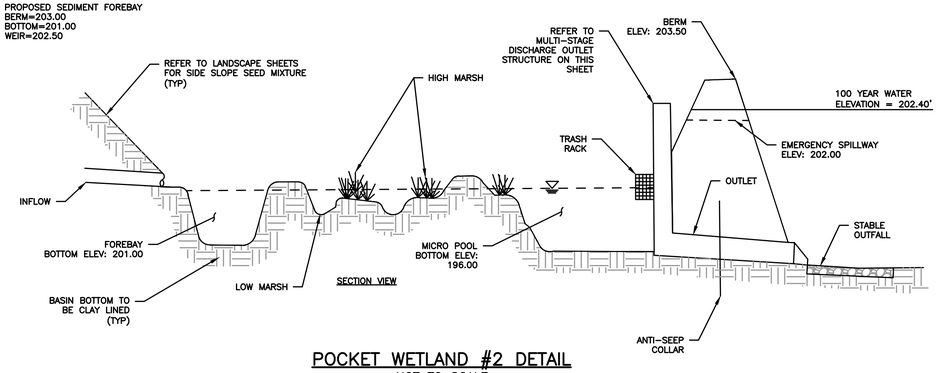
1. INSTALL MONITORING WELLS PER MASSACHUSETTS STORMWATER HANDBOOK.





MULTI-STAGE DISCHARGE OUTLET STRUCTURE DETAIL

NOT TO SCALE



POCKET WETLAND #2 DETAIL

NOT TO SCALE

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6 LYBERTY WAY, SUITE 203
WESTFORD, MA 01886

PROPOSED MULTIFAMILY DEVELOPMENT

SUMMER STREET
WALPOLE, MA

REVISIONS:

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12	PB	4/13/21	REV. SITE PLAN

COMMONWEALTH OF MASSACHUSETTS KATIE L. ENRIGHT CIVIL No. 48151 REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:41-04'00'

SITE PLAN

DETAIL SHEET
11 OF 20

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
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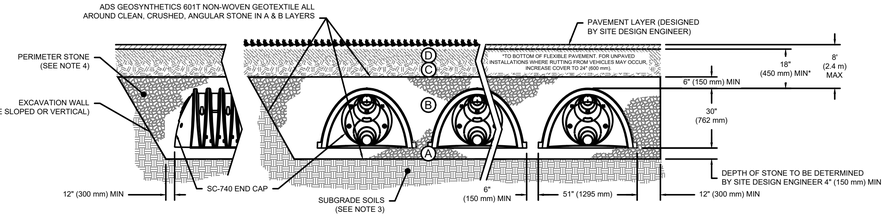
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.47

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

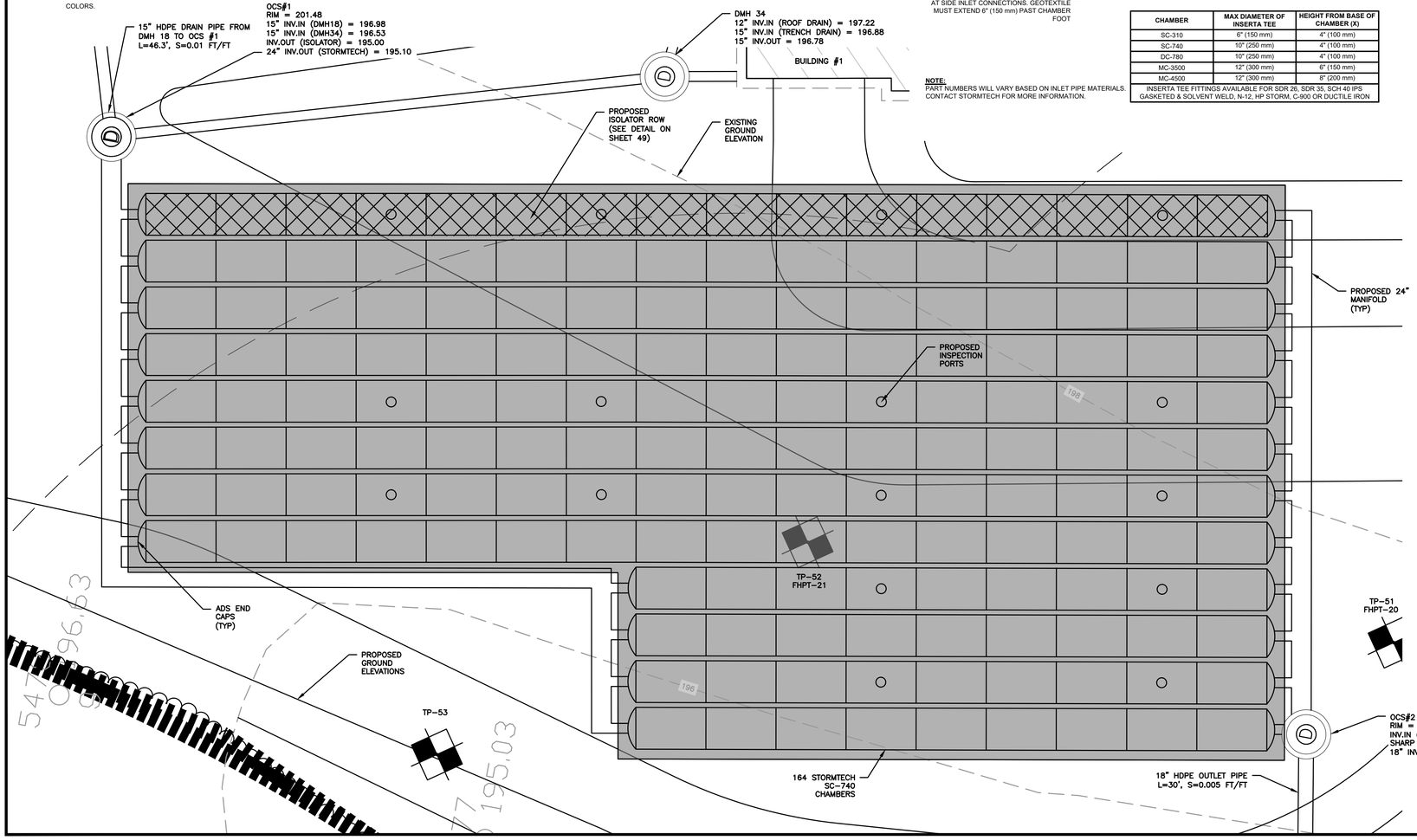
MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE[2,3]

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. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



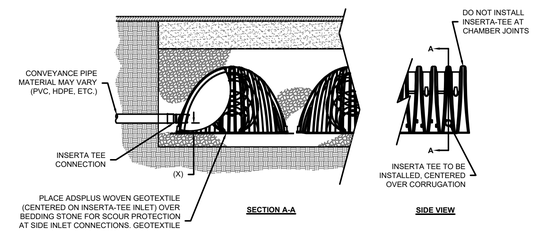
NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.



SC-740 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH SC-740.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.



CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	12" (300 mm)	6" (150 mm)
MC-4500	12" (300 mm)	8" (200 mm)
INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON		

NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-740 SYSTEM

1. STORMTECH SC-740 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4-2" (20-50 mm).
8. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
9. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

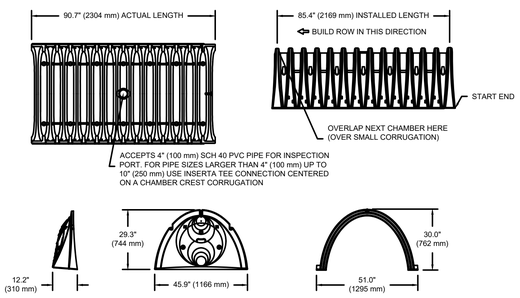
1. STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
2. THE USE OF CONSTRUCTION EQUIPMENT OVER SC-740 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

SC-740 TECHNICAL SPECIFICATION

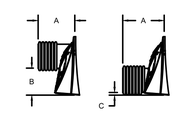
NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51.0" X 30.0" X 85.4"	(1295 mm X 762 mm X 2169 mm)
CHAMBER STORAGE	45.9 CUBIC FEET	(1.30 m³)
MINIMUM INSTALLED STORAGE*	74.9 CUBIC FEET	(2.12 m³)
WEIGHT	75.0 lbs.	(33.6 kg)

*ASSUMES 6" (152 mm) STONE ABOVE, BELOW, AND BETWEEN CHAMBERS



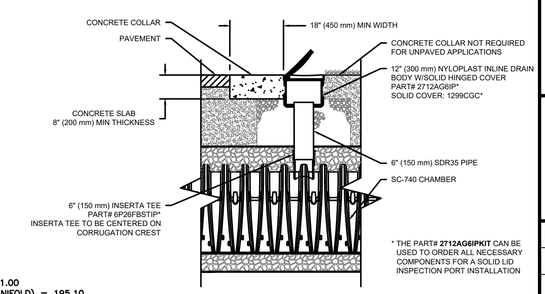
STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"

PART #	STUB	A	B	C
SC740EPE06T / SC740EPE06TPC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	---
SC740EPE06B / SC740EPE06BPC			---	0.5" (13 mm)
SC740EPE08T /SC740EPE08TPC	8" (200 mm)	12.2" (310 mm)	16.5" (419 mm)	---
SC740EPE08B / SC740EPE08BPC			---	0.6" (15 mm)
SC740EPE10T / SC740EPE10TPC	10" (250 mm)	13.4" (340 mm)	14.5" (368 mm)	---
SC740EPE10B / SC740EPE10BPC			---	0.7" (18 mm)
SC740EPE12T / SC740EPE12TPC	12" (300 mm)	14.7" (373 mm)	12.5" (318 mm)	---
SC740EPE12B / SC740EPE12BPC			---	1.2" (30 mm)
SC740EPE15T / SC740EPE15TPC	15" (375 mm)	18.4" (467 mm)	9.0" (229 mm)	---
SC740EPE15B / SC740EPE15BPC			---	1.3" (33 mm)
SC740EPE18T / SC740EPE18TPC	18" (450 mm)	19.7" (500 mm)	5.0" (127 mm)	---
SC740EPE18B / SC740EPE18BPC			---	1.6" (41 mm)
SC740EPE24B*	24" (600 mm)	18.5" (470 mm)	---	0.1" (3 mm)

ALL STUBS, EXCEPT FOR THE SC740EPE24B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

* FOR THE SC740EPE24B THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL



SC-740 6" (150 mm) INSPECTION PORT DETAIL

NTS

HOWARD STEIN HUDSON
114 Turnpike Road, Suite 2C
Chelmsford, MA 01824
www.hshassoc.com

PREPARED FOR:

55 BH LLC
6 LYBERTY WAY, SUITE 203
WESTFORD, MA 01886

PROPOSED MULTIFAMILY DEVELOPMENT
SUMMER STREET
WALPOLE, MA

REVISIONS:

NO	BY	DATE	DESCRIPTION
5	PB	12/16/20	EMERGENCY ACCESS
6	PB	1/4/21	REV. FIRE TURNING
7	PB	1/5/21	FIRE ACCESS/ STAGING
8	PB	1/8/21	ADDED VISITOR PARKING
9	PB	1/22/21	REV. DRAINAGE DESIGN
10	PB	1/27/21	REV. SITE PLAN
11	PB	3/12/21	REV. DRIVEWAY B
12	PB	4/13/21	REV. SITE PLAN

COMMONWEALTH OF MASSACHUSETTS
KATIE L. ENRIGHT
CIVIL
No. 46111
REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:41-04'00'

SITE PLAN

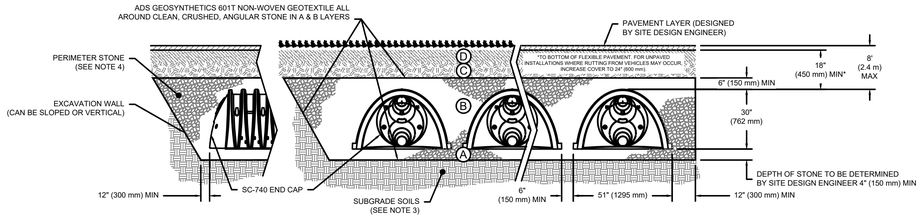
DETAIL SHEET
12 OF 20

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

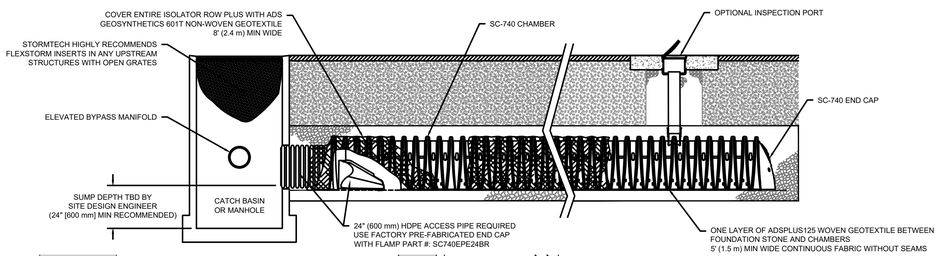
MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

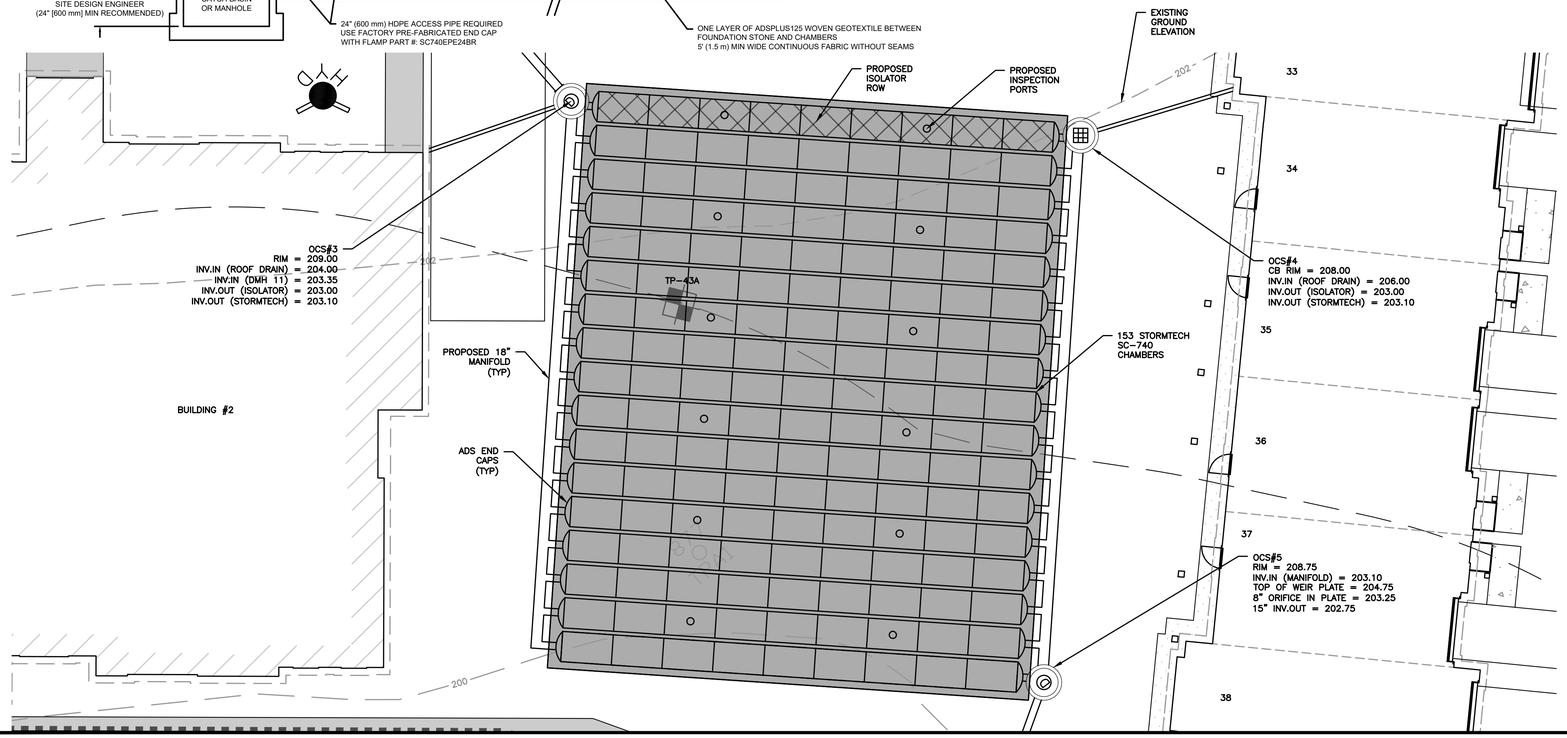
PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.





SC-740 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH SC-740.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-740 SYSTEM

1. STORMTECH SC-740 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4-2" (20-50 mm).
8. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
9. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

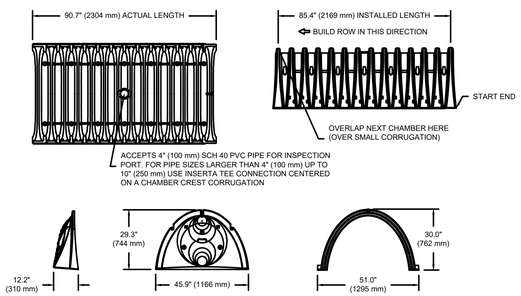
1. STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
2. THE USE OF CONSTRUCTION EQUIPMENT OVER SC-740 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

SC-740 TECHNICAL SPECIFICATION

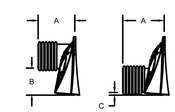
NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51.0" X 30.0" X 85.4"	(1295 mm X 762 mm X 2169 mm)
CHAMBER STORAGE	45.9 CUBIC FEET	(1.30 m³)
MINIMUM INSTALLED STORAGE*	74.9 CUBIC FEET	(2.12 m³)
WEIGHT	75.0 lbs.	(33.6 kg)

*ASSUMES 6" (152 mm) STONE ABOVE, BELOW, AND BETWEEN CHAMBERS



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

PART #	STUB	A	B	C
SC740EPE06T / SC740EPE06TPC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	---
SC740EPE06B / SC740EPE06BPC			---	0.5" (13 mm)
SC740EPE08T /SC740EPE08TPC	8" (200 mm)	12.2" (310 mm)	16.5" (419 mm)	---
SC740EPE08B / SC740EPE08BPC			---	0.6" (15 mm)
SC740EPE10T / SC740EPE10TPC	10" (250 mm)	13.4" (340 mm)	14.5" (368 mm)	---
SC740EPE10B / SC740EPE10BPC			---	0.7" (18 mm)
SC740EPE12T / SC740EPE12TPC	12" (300 mm)	14.7" (373 mm)	12.5" (318 mm)	---
SC740EPE12B / SC740EPE12BPC			---	1.2" (30 mm)
SC740EPE15T / SC740EPE15TPC	15" (375 mm)	18.4" (467 mm)	9.0" (229 mm)	---
SC740EPE15B / SC740EPE15BPC			---	1.3" (33 mm)
SC740EPE18T / SC740EPE18TPC	18" (450 mm)	19.7" (500 mm)	5.0" (127 mm)	---
SC740EPE18B / SC740EPE18BPC			---	1.6" (41 mm)
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NOTE: ALL DIMENSIONS ARE NOMINAL

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

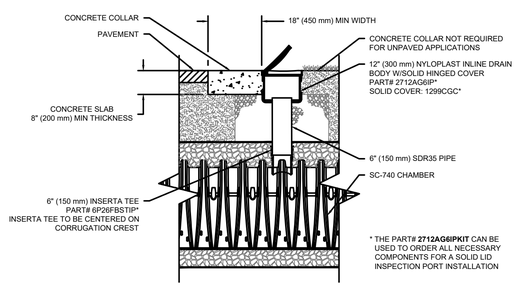
STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

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



SC-740 6" (150 mm) INSPECTION PORT DETAIL

NTS

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114 Turnpike Road, Suite 2C
Chelmsford, MA 01824
www.hshassoc.com

PREPARED FOR:

55 BH LLC
6 LYBERTY WAY, SUITE 203
WESTFORD, MA 01886

PROPOSED MULTIFAMILY DEVELOPMENT
SUMMER STREET
WALPOLE, MA

REVISIONS:

NO	BY	DATE	DESCRIPTION
5	PB	12/16/20	EMERGENCY ACCESS
6	PB	1/4/21	REV. FIRE TURNING
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9	PB	1/22/21	REV. DRAINAGE DESIGN
10	PB	1/27/21	REV. SITE PLAN
11	PB	3/12/21	REV. DRIVEWAY B
12	PB	4/13/21	REV. SITE PLAN

COMMONWEALTH OF MASSACHUSETTS KATIE L. ENRIGHT CIVIL No. 46111 REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:42-04'00'

SITE PLAN

DETAIL SHEET
13 OF 20

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

NOTE:

1. THESE CULVERT DESIGNS HAVE BEEN PREPARED IN ACCORDANCE WITH THE MASSACHUSETTS STREAM CROSSING STANDARDS HANDBOOK BY THE DIVISION OF ECOLOGICAL RESTORATION 2ND ADDITION DATED JUNE 2012.

GENERAL CONSTRUCTION SEQUENCE

1. ESTABLISH DOWNSTREAM EROSION CONTROLS
2. PERFORM APPROXIMATE GRADING FOR APPROACH ON BOTH SIDES OF CULVERT.
3. STOCK PILE FILL MATERIALS WITHIN THE UPLAND AREA ADJACENT TO EITHER CULVERT INSTALLATION. INSTALL EROSION CONTROLS AROUND THE BASE OF THE PILE.
4. ESTABLISH STREAM BED WITH GRAVEL AND RIP RAP IN A NATURALISTIC PATTERN.
5. PLACE EROSION CONTROLS BETWEEN THE LOCATION OF THE FOOTINGS AND THE STREAM EDGE ON BOTH THE NORTH AND SOUTH SIDES.
6. EXCAVATE THE AREA FOR CONSTRUCTION OF THE FOOTINGS AND ESTABLISH DEWATERING PROTOCOLS,
7. FORM, POUR, CURE AND BACKFILL FOOTINGS AND WING WALL FOOTINGS.
8. CONSTRUCT CULVERT PER RECOMMENDATION OF CULVERT MANUFACTURER.
9. BACKFILL CULVERT TO TIE IN WITH APPROACHES PREVIOUSLY GRADED ON BOTH SIDES.
10. LOAM AND SEED AFFECTED AREAS WITH AN APPROPRIATE WETLAND SEED MIX.

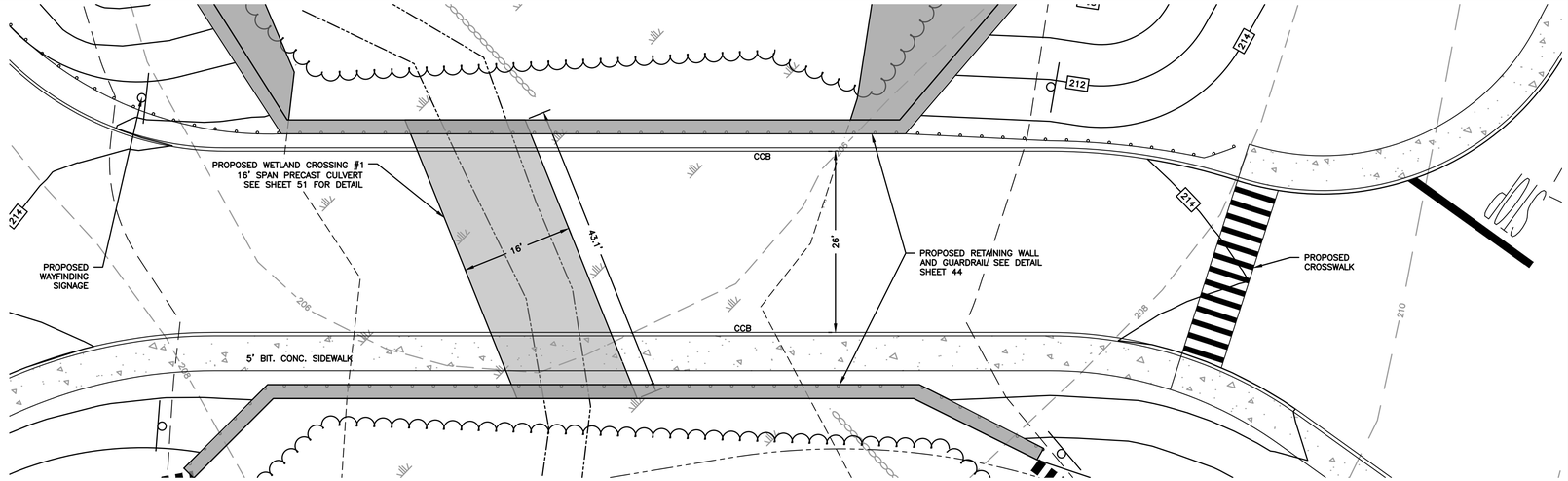
DEWATERING CONTROLS

DEWATERING ACTIVITIES MUST BE PROVIDED IN AN APPROPRIATE MANNER TO AVOID SOIL EROSION DURING CONSTRUCTION.

IF GROUNDWATER IS PRESENT WHEN EXCAVATING FOR THE PROPOSED FOOTINGS A WATER PUMP DRAINING THROUGH A DEWATERING BAG, MADE OF GEOTEXTILE FABRIC, WILL BE USED TO REMOVE SEDIMENTS AND ALLOW THE FLOW TO DISCHARGE OVER A LARGER AREA ON THE LAWN AREA UPHILL FROM THE PROPOSED CONSTRUCTION.

PRECAUTIONS:

1. WATER SHOULD NOT BE PUMPED DIRECTLY ONTO SLOPES
2. DEWATERING ACTIVITIES SHOULD BE DIRECTED TO VEGETATED AREAS
3. REVIEW AREA FOR EROSION AND INSTABILITY
4. NEVER DISCHARGE WATER THAT HAS BEEN CONTAMINATED WITH OIL, GREASE, OR CHEMICAL PRODUCTS.

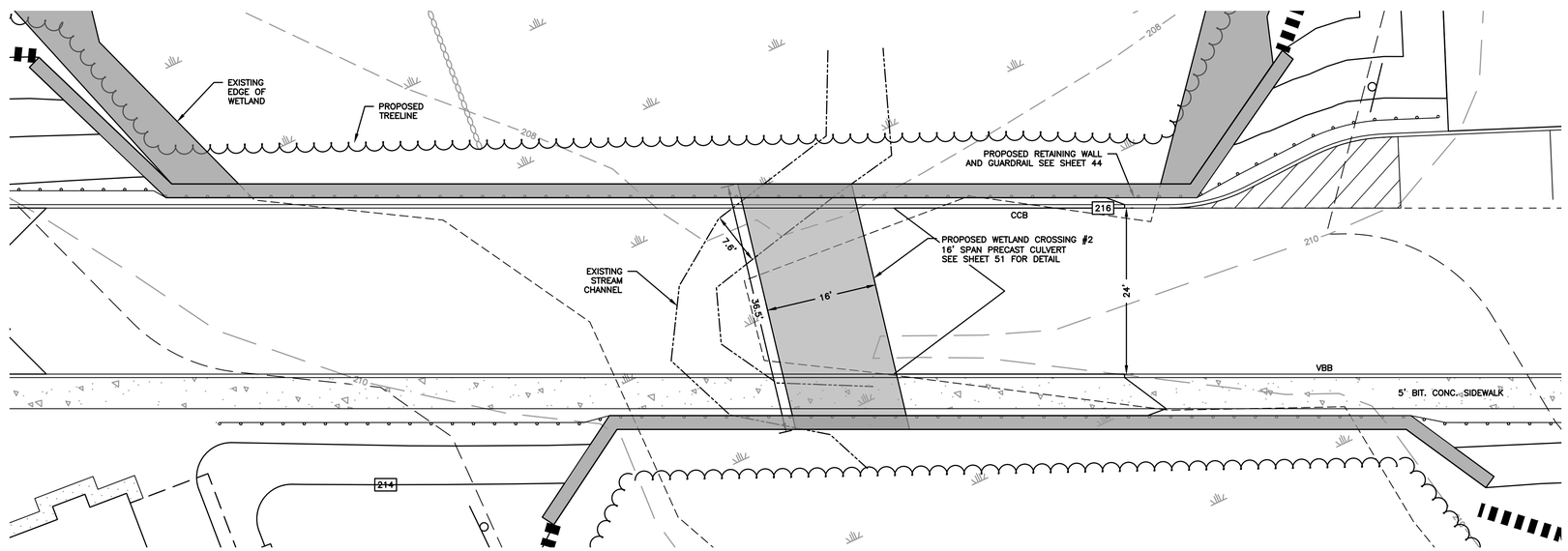


WETLAND CROSSING 1 DETAIL

SCALE: 1"=10'

DESIGN NOTES:

1. CULVERT DESIGN REQUIREMENTS PER NOTE 4
2. TYPE OF CROSSING – MUST BE 3 SIDED BOX CULVERT, OPEN BOTTOM CULVERT OR ARCH
3. EMBEDMENT – ALL CULVERTS MUST BE EMBEDDED A MINIMUM OF 2 FT AND ROUND PIPES AND CULVERTS AT LEAST 25%
4. CROSSING SPAN – A MINIMUM OF 1.2 TIMES THE BANK FULL WIDTH OF STREAM. AT WEST SIDE OF CULVERT STREAM WIDTH IS 8.6 FEET THEREFORE MINIMUM WIDTH IS 10.3 FT ~ 12 FT. 16' IS PROPOSED.
5. OPENNESS RATIO – RATIO OF CROSS SECTIONAL AREA TO CROSSING LENGTH MUST BE AT LEAST 0.82 FT. EXISTING LENGTH IS 43.5 FEET THEREFORE THE MINIMUM CROSS SECTIONAL AREA IS 35.7 FT^2 ~ 36 FT^2. THEREFORE MINIMUM INTERNAL OPEN HEIGHT SHALL BE AT LEAST 3 FT. 5 FT HEIGHT PROVIDED



WETLAND CROSSING 2 DETAIL

SCALE: 1"=10'

DESIGN NOTES:

1. CULVERT DESIGN REQUIREMENTS PER NOTE 4
2. TYPE OF CROSSING – MUST BE 3 SIDED BOX CULVERT, OPEN BOTTOM CULVERT OR ARCH
3. EMBEDMENT – ALL CULVERTS MUST BE EMBEDDED A MINIMUM OF 2 FT AND ROUND PIPES AND CULVERTS AT LEAST 25%
4. CROSSING SPAN – A MINIMUM OF 1.2 TIMES THE BANK FULL WIDTH OF STREAM. AT WEST SIDE OF CULVERT STREAM WIDTH IS 7.6 FEET THEREFORE MINIMUM WIDTH IS 9.1 FEET ~ 10 FT. 16' IS PROPOSED.
5. OPENNESS RATIO – RATIO OF CROSS SECTIONAL AREA TO CROSSING LENGTH MUST BE AT LEAST 0.82 FT. EXISTING LENGTH IS 36.5 FEET THEREFORE THE MINIMUM CROSS SECTIONAL AREA IS 29.9 FT^2 ~ 30 FT^2. THEREFORE MINIMUM INTERNAL OPEN HEIGHT SHALL BE 2.5 FT. 5 FT HEIGHT PROVIDED

HOWARD STEIN HUDSON
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PREPARED FOR:

55 BH LLC
6 LYBERTY WAY, SUITE 203
WESTFORD, MA 01886

PROPOSED MULTIFAMILY DEVELOPMENT
SUMMER STREET
WALPOLE, MA

REVISIONS:

NO	BY	DATE	DESCRIPTION
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6	PB	1/4/21	REV. FIRE TURNING
7	PB	1/5/21	FIRE ACCESS/ STAGING
8	PB	1/8/21	ADDED VISITOR PARKING
9	PB	1/22/21	REV. DRAINAGE DESIGN
10	PB	1/27/21	REV. SITE PLAN
11	PB	3/12/21	REV. DRIVEWAY B
12	PB	4/13/21	REV. SITE PLAN

COMMONWEALTH OF MASSACHUSETTS
KATIE L. ENRIGHT
CIVIL
No. 46111
REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:42-04'00'

SITE PLAN

DETAIL SHEET
14 OF 20

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

C.50

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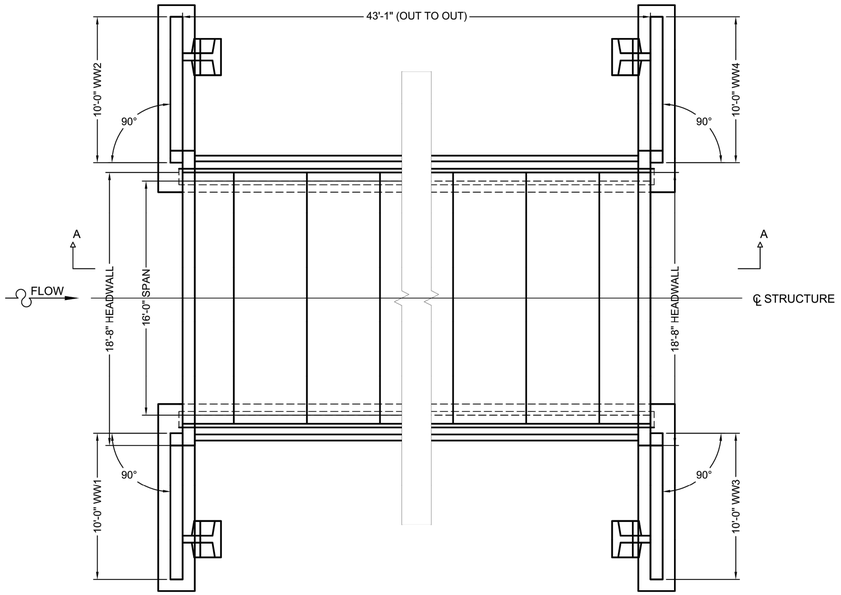
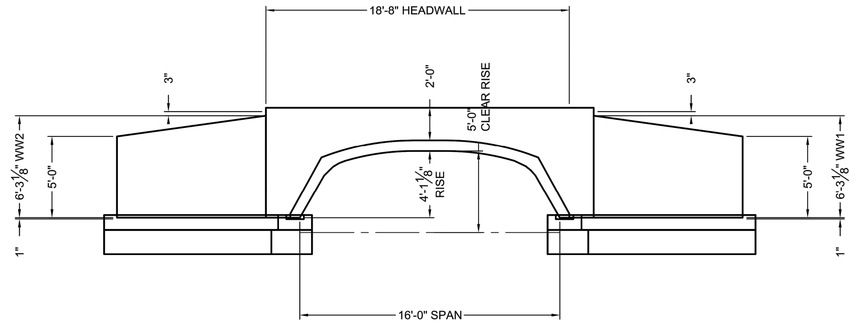
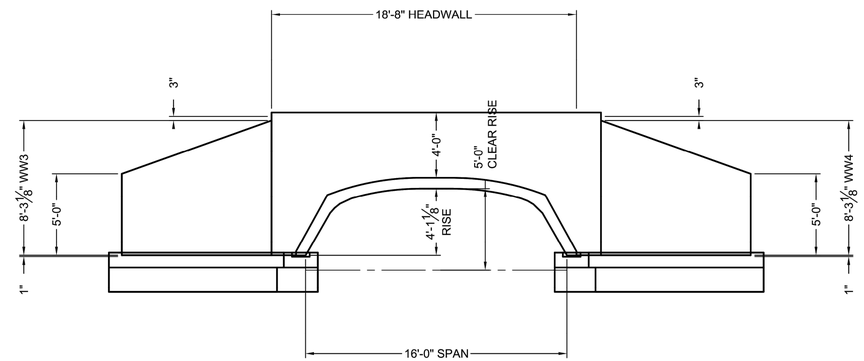
Patrick Bagle



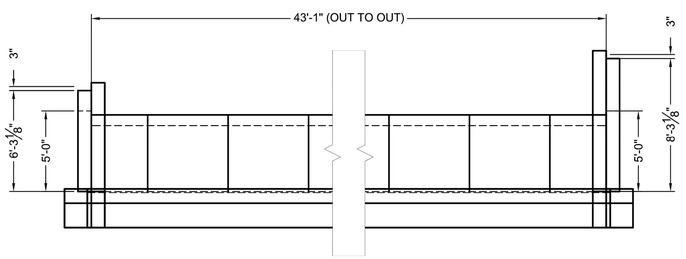
BRIDGE PLAN



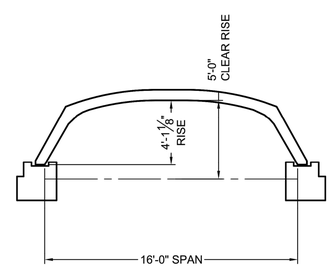
UPSTREAM END ELEVATION



DOWNSTREAM END ELEVATION



SECTION A-A



CROSS SECTION

NOTES:
1. DETAILS PROVIDED THROUGH CONTECH DESIGN YOUR OWN BRIDGE TOOL. DETAILS ARE PRELIMINARY IN NATURE AND NOT INTENDED FOR CONSTRUCTION. REFER TO CONTECH STANDARD BRIDGE SPECS FOR DESIGN/INSTALLATION NOTES.

WETLAND CROSSING 1 AND 2
CONSPAN O-SERIES 16' SPAN CULVERT DETAILS
NOT TO SCALE
**OR APPROVED EQUAL

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COMMONWEALTH OF MASSACHUSETTS
KATIE L. ENRIGHT
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Digitally signed by Katie Enright
Date: 2021.04.20 13:36:43-04'00'

SITE PLAN

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15 OF 20

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CHECKED BY:	KE

C.51

CEDAR RIDGE WETLAND REPLICATION PLAN

1. THE CONSTRUCTION OF COMPENSATORY WETLAND FOR ALTERATION OF BORDERING VEGETATED WETLAND (BVW) IS PROPOSED IN 4 LOCATIONS. THE LOCATIONS CHOSEN AND THE METHODOLOGY EMPLOYED FOR THE REPLICATION EFFORT ARE COMPLIANT WITH THE APPLICABLE STANDARDS AT 310 CMR 10.55 (4) (B):

1.1. THE SURFACE OF THE REPLACEMENT AREA TO BE CREATED ("THE REPLACEMENT AREA") SHALL BE EQUAL TO THAT OF THE AREA THAT WILL BE LOST ("THE LOST AREA");

2. THE AGGREGATE ALTERED AREA EQUALS LESS THAN 4,689 SQUARE FEET WITH THE REDUCTION OF THE CROSSING 1 FOOTPRINT. THE PROPOSED 7,106 SQ. FT. REPLICATION EXCEEDS AN IMPACT TO REPLICATION RATION OF 1:1.51.

2.1. THE GROUND WATER AND SURFACE ELEVATION OF THE REPLACEMENT AREA SHALL BE APPROXIMATELY EQUAL TO THAT OF THE LOST AREA;

3. THE LOCATIONS (4) WERE CHOSEN BOTH FOR ADJACENCY AND CONSISTENCY WITH THE SAME SUBDRAINAGE, AS WELL AS TO APPROXIMATE THE IMPACTED ELEVATIONS AND AMBIENT GROUNDWATER CONDITIONS. THE ALTERATION AT CROSSING 1 IS AT +/– 206 ELEVATION, AS ARE THE PROPOSED REPLICATION AREAS. SIMILARLY, CROSSING 2 IS AT +/– 208 ELEVATION AND FINAL GRADES ARE ANTICIPATED TO BE BETWEEN 206 AND 208.

3.1. THE OVERALL HORIZONTAL CONFIGURATION AND LOCATION OF THE REPLACEMENT AREA WITH RESPECT TO THE BANK SHALL BE SIMILAR TO THAT OF THE LOST AREA;

4. THE LOCATIONS WERE ADAPTED SO AS TO BE ADJACENT AND PARALLEL TO THE IMPACTED SYSTEMS (SEE SHEET C.87, REV. 9/14/20).

4.1. THE REPLACEMENT AREA SHALL HAVE AN UNRESTRICTED HYDRAULIC CONNECTION TO THE SAME WATER BODY OR WATERWAY ASSOCIATED WITH THE LOST AREA;

5. THE LOCALITIES CHOSEN FOR THE COMPENSATORY REPLICATION WERE IDENTIFIED BASED UPON THEIR ADHERENCE TO THIS CRITERIA. THEY ARE WITHIN FEET OF THE IMPACT AND ANNECTANT OR CONFLUENT WITH THE PARENT RESOURCE AREA(S).

5.1. THE REPLACEMENT AREA SHALL BE LOCATED WITHIN THE SAME GENERAL AREA OF THE WATER BODY OR REACH OF THE WATERWAY AS THE LOST AREA;

6. THE LOCATION OF THE 4 REPLICATION POLYGONS IS IMMEDIATELY ADJACENT TO THE IMPACTED AREAS AND THEREFORE MEETS THIS STANDARD.

6.1. AT LEAST 75% OF THE SURFACE OF THE REPLACEMENT AREA SHALL BE REESTABLISHED WITH INDIGENOUS WETLAND PLANT SPECIES WITHIN TWO GROWING SEASONS, AND PRIOR TO SAID VEGETATIVE REESTABLISHMENT ANY EXPOSED SOIL IN THE REPLACEMENT AREA SHALL BE TEMPORARILY STABILIZED TO PREVENT EROSION IN ACCORDANCE WITH STANDARD U.S. SOIL CONSERVATION SERVICE METHODS;

7. THE PROPOSED REPLICATION PLANS, QUANTIFIED IN THE ACCOMPANYING TABLES WILL MEET THE 75% THRESHOLD, OR, IF NECESSARY WILL BE SUPPLANTED DURING THE TWO–SEASON MONITORING PERIOD. THE SPECIES COMPOSITION AND PREFERRED GROUND TREATMENT (USE OF NATIVE LITTER IF POSSIBLE) ARE IN KEEPING WITH SPECIES NATIVE TO THE AREA AND THE SITE.

7.1. THE REPLACEMENT AREA SHALL BE PROVIDED IN A MANNER WHICH IS CONSISTENT WITH ALL OTHER GENERAL PERFORMANCE STANDARDS FOR EACH RESOURCE AREA IN PART III OF 310 CMR 10.00. THE REPLACEMENT AREA MEETS OR EXCEEDS THE APPLICABLE STANDARDS.

SITE PREPARATION AND PLANTING

TOPOGRAPHY IN EACH REPLICATION SITE (4) IS VARIABLE. THE ADJACENT FACES (TO WETLAND) ARE CONTIGUOUS WITH EXISTING BVW AND THE ADJACENT CONSTRUCTION OF THE AREAS WILL PROVIDE A "BORDERING" CONDITION IN KEEPING WITH THE REPLICATION STANDARDS.

EACH REPLICATION SITE HAS BEEN EXAMINED FOR PRACTICALITY OF IMPLEMENTATION; SPECIFICALLY, THAT NO RADICAL CUTS, ROCK OUTCROPS OR OTHER OBSTACLES TO THE REQUIRED GRADING ARE PRESENT. EACH SITE WILL BE ISOLATED, AT THE BVW BOUNDARY WITH STAKED SILTATION FENCE AND STRAW WATTLES TO FORM A LIMIT OF WORK AND EROSION BARRIER. TREES AND VEGETATION WILL BE CUT AND STUMPS REMOVED AS NEEDED. LEAF LITTER WILL BE GATHERED AND STOCKPILED IF SEASONALLY PRACTICAL.

SOIL WILL BE REMOVED FROM EACH AREA TO A POINT AT LEAST 12 INCHES BELOW SEASONAL HIGH GROUNDWATER. EXAMINATION OF SOILS CHARACTERISTICS BY A WETLAND SCIENTIST WILL SET THE FINAL, OVER–EXCAVATED ELEVATION, ASSURING RELIABLE INTERCEPTION OF LOCAL SEASONAL GROUNDWATER. SOIL FROM THE IMPACT AREAS WILL NOT BE UTILIZED IN THE REPLACEMENT AREAS OWING TO THE PRESENCE OF INVASIVE PROPAGULES AND THE RELATIVELY LOW ORGANIC CONTENT OF THE IMPACT AREA SOILS. CLEAN, WEED–FREE LOAM WITH UP TO 40% HOT–COMPOSTED MATERIAL WILL BE SPREAD AT A DEPTH OF APPROXIMATELY 6' THROUGHOUT THE REPLICATION AREAS AND LIGHTLY COMPACTED.

DURING A SUITABLE SEASONAL PERIOD (AVOIDING MID–WINTER AND LATE SUMMER) TREE AND SHRUB PLANTINGS WILL BE INSTALLED. SPECIES WILL BE DRAWN FROM THE LIST IN TABLE 2, WITH NOT LESS THAN THREE SPECIES IN EACH CATEGORY. PLANTINGS WILL BE WATERED AND/OR STAKED AS NECESSARY. AT THE COMPLETION OF PLANTING ONE OF TWO FINISH TREATMENTS WILL BE APPLIED. IF SUFFICIENT LEAF–LITTER FROM UPLAND SITE AREAS EXHIBITING LOW INVASIVES (BUCKTHORN, BARBERRY, HONEYSUCKLE) CAN BE GATHERED AND STOCKPILED WITHOUT BEING LOST TO COMPOSTING ACTION, THIS WILL BE THE PREFERRED GROUND COVER. TREES AND SHRUBS WILL BE PLANTED PRIOR TO GROUND COVER; HERBACEOUS PLUGS WILL BE INSTALLED THROUGH THE LEAF LITTER.

IF RETENTION OF SUITABLE LEAF LITTER MATERIAL IS IMPRACTICAL DUE TO SEASONAL SCHEDULING, OR IF IT CAN ONLY BE SOURCED ON SITE WHERE INVASIVE SPECIES MAY BE PROBLEMATIC, THE SOIL SURFACE WILL BE RAKED, AND SEEDED AT TWO TIMES THE RECOMMENDED RATE WITH A NATIVE NEW ENGLAND WETLAND SEED MIX (NE WETLAND PLANTS OR APPROVED EQUIVALENT). PLUG PLANTINGS WILL FOLLOW THIS TREATMENT. SEEDLESS STRAW MAY BE UTILIZED TO RETAIN SOIL MOISTURE AND DISCOURAGE SEED LOSS, PARTICULARLY IF SEEDING IS LATE IN THE SEASON.

MONITORING

ALL GROWTH WILL BE MONITORED TWICE PER YEAR FOR TWO COMPLETE GROWING SEASONS FOLLOWING INSTALLATIONS. IN THE EVENT THAT LESS THAN 80% OF PLANTINGS SURVIVE, REPLACEMENTS WILL BE INSTALLED TO ASSURE A MINIMUM OF 75% HYDROPHYTIC COVERAGE.

PLANTING DENSITIES PROPOSED ANTICIPATE MATURITY OF TREE AND SHRUB SPECIMENS, DELIBERATELY AVOIDING OVERSHADING OF UNDERSTORY PLANTINGS UNTIL THEY HAVE HAD MULTIPLE SEASONS OF GROWTH WITH ADEQUATE INSOLATION TO BECOME ESTABLISHED.

Table 1. Planting densities for the respective replication areas (see plan set).

Planting Category	Repl. Area 1E	Repl. Area 1W	Repl. Area 2E	Repl. Area 2W
• Trees	25	10	16	8
• Shrub	170	60	125	40
• Herbaceous Plugs	320	130	250	80
Native Wet Mix*	2x recommended	2x recommended	2x recommended	2x recommended

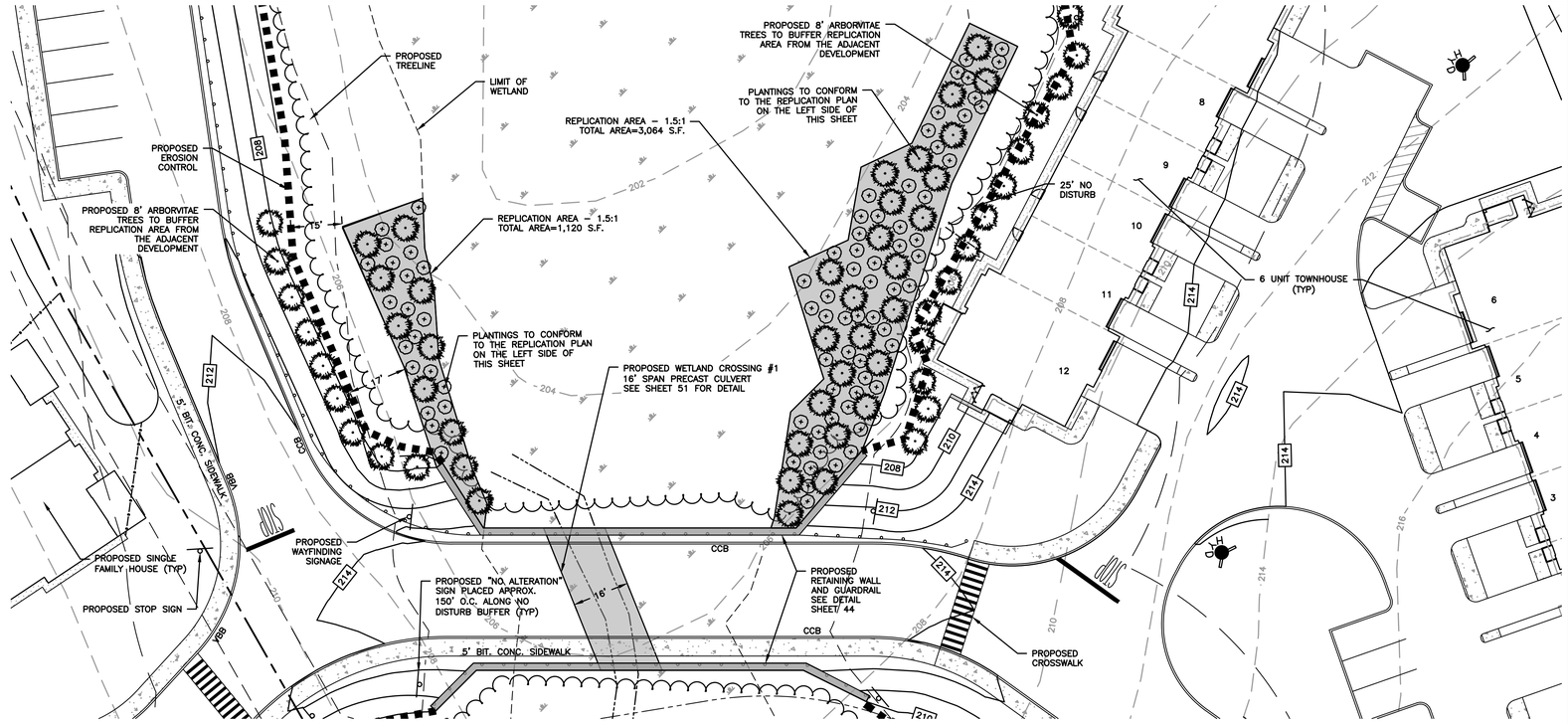
Table 2. Species List of acceptable plantings – at least 3 of tree and shrub species to be planted.

Category	Species	Common Name	Notes
Tree	*Acer rubrum*	Red Maple	Only specimens >8'
Tree	*Fraxinus pennsylvanicum*	Green Ash	
Tree	*Quercus bicolor*	Swamp White Oak	
Tree	*Quercus palustris*	Pin Oak	
Tree	*Ulmus americana**	American Elm*	*Resistant hybrid only
Shrub	*Lindera benzoin*	Spicebush	
Shrub	*Ilex verticillata*	Winterberry Holly	Plant in groups of 2-4.
Shrub	*Viburnum recognitum*	Northern Arrowwood	Plant in groups of 2-4.
Shrub	*Vaccinum corymbosum*	Highbush blueberry	Plant in groups of 2-4.
Shrub	*Viburnum trilobum*	Highbush cranberry	Plant in groups of 2-4.
Herb. Plugs	*Onoclea sensibilis*	Sensitive fern	
Herb. Plugs	*Osmundnastrum cinnamomeum*	Cinnamon fern	
Herb. Plugs	*Osmunda regalis*	Royal fern	
Herb. Plugs	*Carex stricta*	Tussock sedge	
Seed Mix	New England Native Wet Mix	NE Wetland Plants	Or approved mix.
Alt. Ground Cover	Salvaged native leaf mulch*		*Subs for seed mix if possible.

*NOTE: PLANTINGS MAY BE BUMPED UP BY 10% TO INCREASE DENSITY IF DESIRED

TOWN OF WALPOLE CONSERVATION COMMISSION NOTES:

1. INCLUDE LOCATION OF THE NO ALTERATION SIGNS APPROXIMATELY EVERY 150–FEET ON SITE PLAN (TAKING INTO CONSIDERATION THE TWISTS AND TURNS OF THE WETLAND BOUNDARIES TO DETERMINE LOCATIONS) WITH SIGN SPECIFICALLY AT REPLICATION AREAS AND CROSSING. SHOW ON SITE PLAN PET WASTE REMOVAL SIGNS AT BOTH ENDS OF RIVERFRONT WHERE TRAIL BEGINS AND ENDS. PET WASTE PICK UP IS REQUIRED UNDER THE BYLAW.
2. INCLUDE LANDSCAPE PLAN FOR AREAS WITHIN THE 100–FOOT BUFFER ZONE SPECIFYING INVASIVE SPECIES MAINTENANCE PLAN, REMOVAL OF GRASS CLIPPING AND CUTTINGS OUTSIDE THE BUFFER ZONES, LIMIT USE OF NON–ORGANIC FERTILIZERS AND NO HERBICIDES OR PESTICIDES, AND DROUGHT RESISTANT NATIVE PLANTINGS.

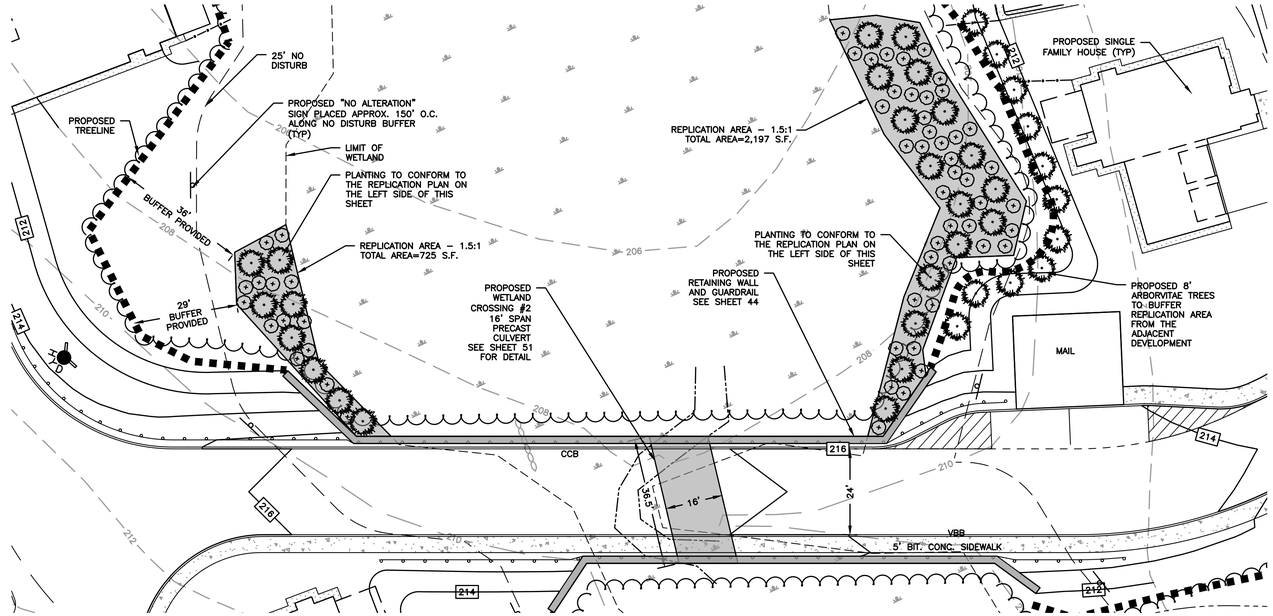


NOTE:

1. WETLAND REPLICATION AREA – 1.5:1. TOTAL REPLICATION AREA = 7,106 S.F.

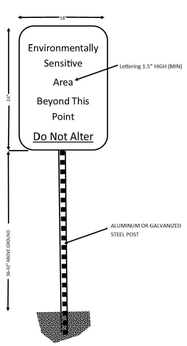
WETLAND REPLICATION AREA 1 DETAIL

SCALE: 1"=20'



WETLAND REPLICATION AREA 2 DETAIL

SCALE: 1"=20'



NO ALTERATION SIGN DETAIL

NOT TO SCALE

HOWARD STEIN HUDSON
114 Turnpike Road, Suite 2C
Chelmsford, MA 01824
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COMMONWEALTH OF MASSACHUSETTS KATIE L. ENRIGHT CIVIL No. 49111 REGISTERED PROFESSIONAL ENGINEER

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Date: 2021.04.20 13:36:44-04'00'

SITE PLAN

DETAIL SHEET 16 OF 20

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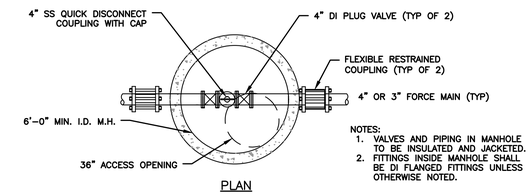
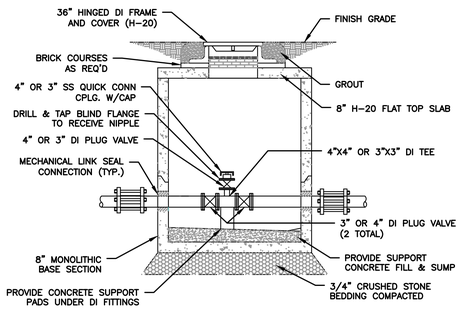
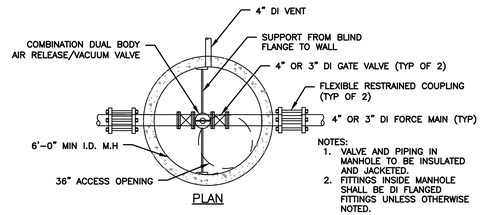


NOTES:
1. VALVES AND PIPING IN MANHOLE TO BE INSULATED AND JACKETED.
2. FITTINGS INSIDE MANHOLE SHALL BE DI FLANGED FITTINGS UNLESS OTHERWISE NOTED.



CLEANOUT VALVE MANHOLE

NOT TO SCALE



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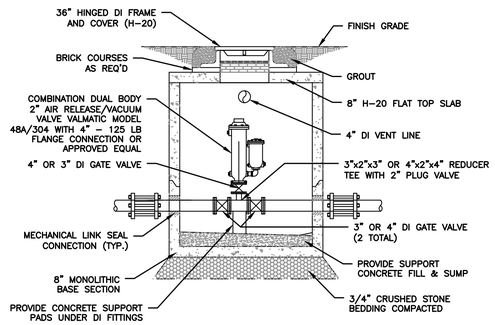
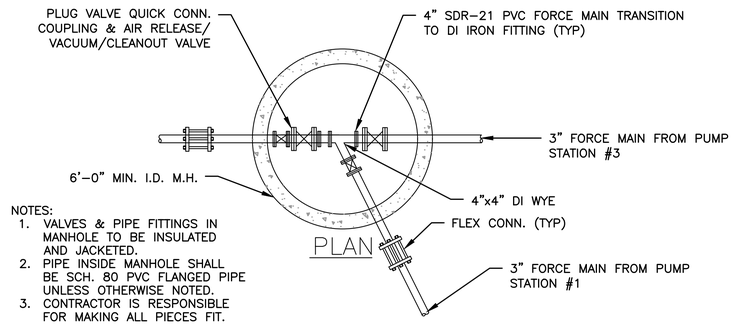


AIR RELIEF/VACUUM VALVE MANHOLE

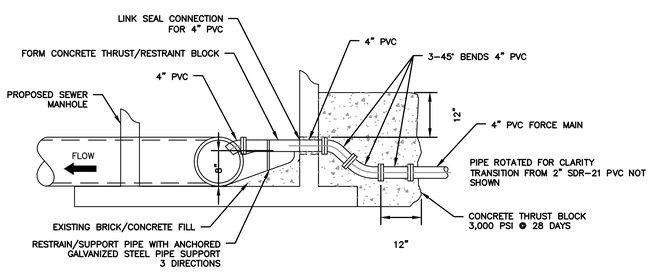
NOT TO SCALE



NOTES:
1. VALVES & PIPE FITTINGS IN MANHOLE TO BE INSULATED AND JACKETED.
2. PIPE INSIDE MANHOLE SHALL BE SCH. 80 PVC FLANGED PIPE UNLESS OTHERWISE NOTED.
3. CONTRACTOR IS RESPONSIBLE FOR MAKING ALL PIECES FIT.

AIR RELEASE VALVE MANHOLE

NOT TO SCALE



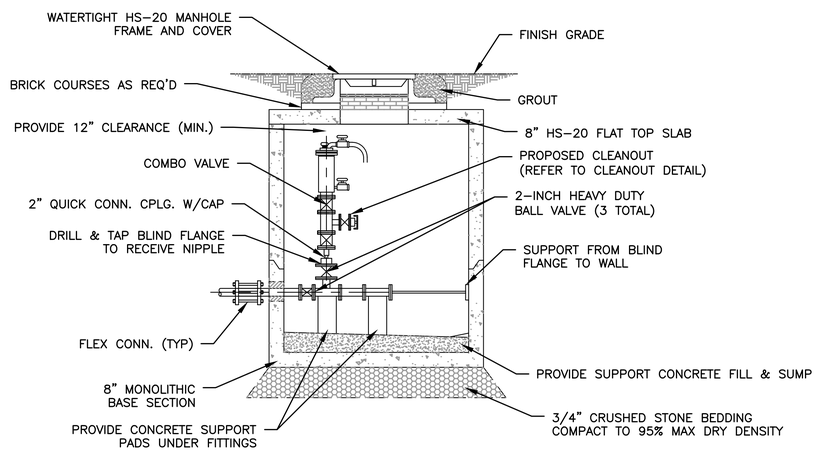
MANHOLE CONNECTION DETAIL

PROFILE

NOT TO SCALE

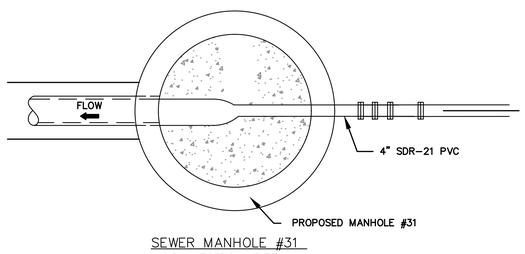
N TRANSITION

NOTE:
1. CROWN OF FORCE MAIN TO MATCH CROWN OF 8" PIPE.



AIR RELEASE VALVE MANHOLE

NOT TO SCALE



SEWER MANHOLE #31 CONNECTION DETAIL

PLAN

NOT TO SCALE

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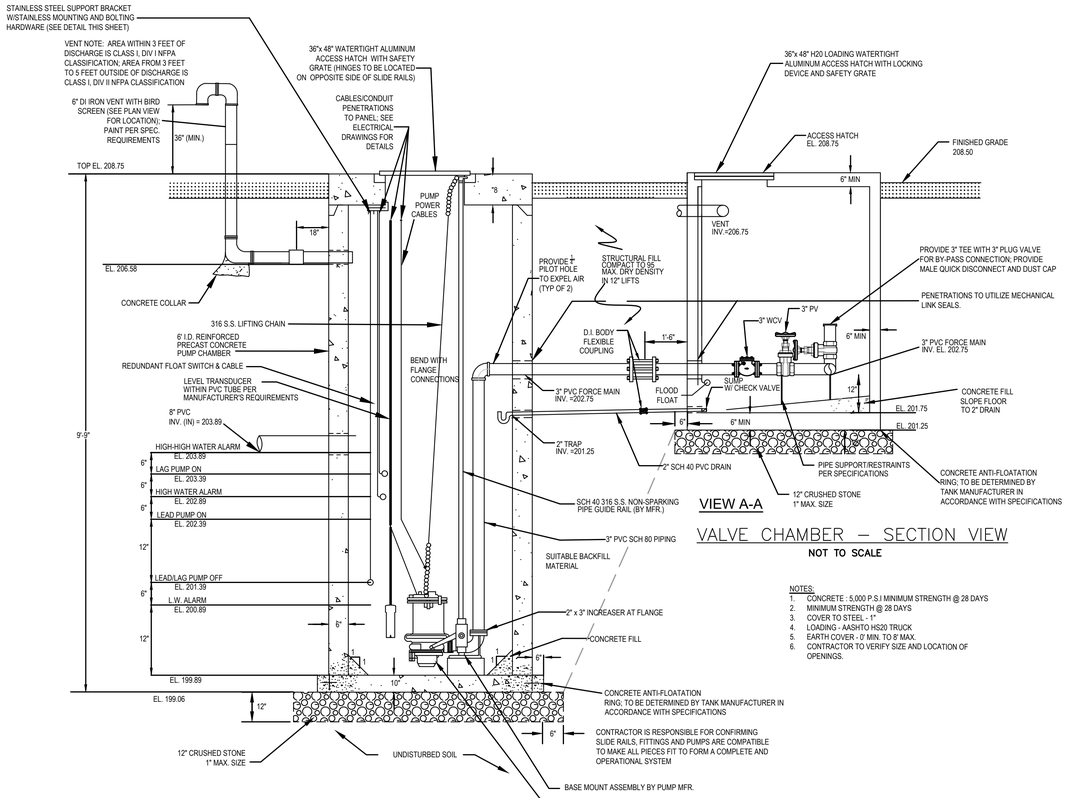


VIEW A-A

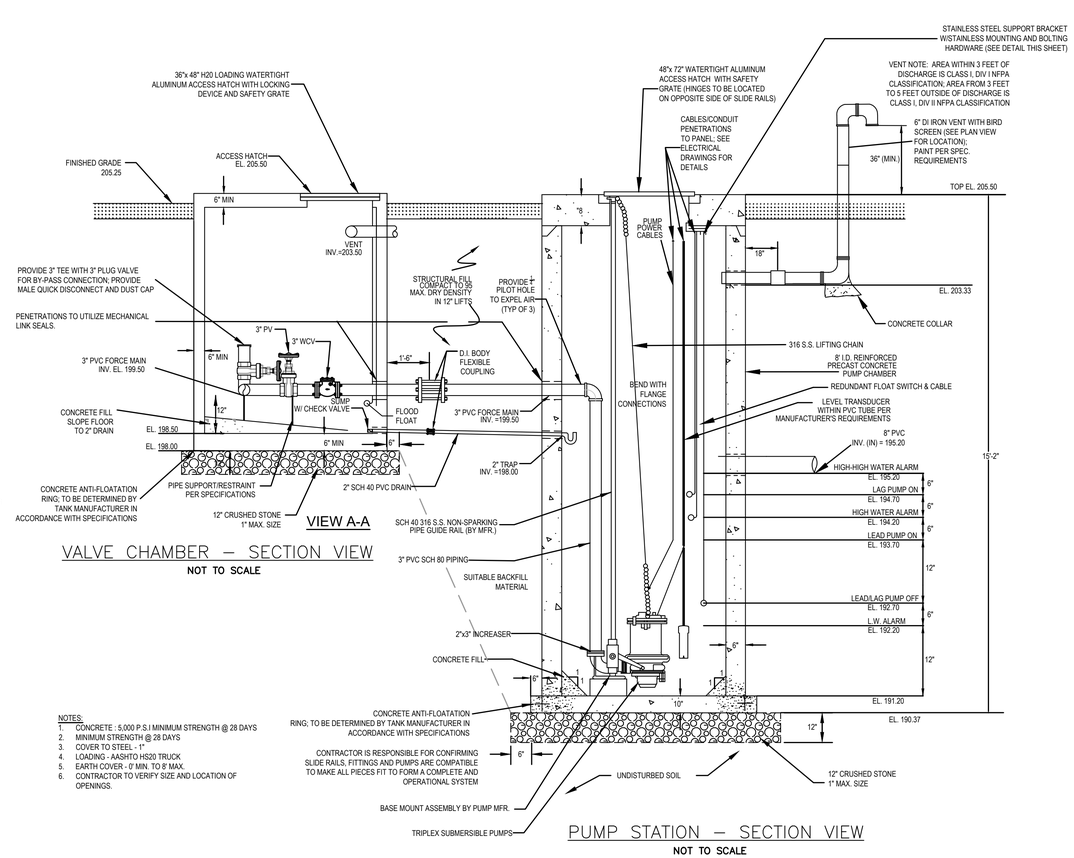
VALVE CHAMBER – SECTION VIEW

NOT TO SCALE

NOTES:
1. CONCRETE : 5,000 P.S.I MINIMUM STRENGTH @ 28 DAYS
2. MINIMUM STRENGTH @ 28 DAYS
3. COVER TO STEEL - 1"
4. LOADING - AASHTO HS20 TRUCK
5. EARTH COVER - 0' MIN. TO 8' MAX.
6. CONTRACTOR TO VERIFY SIZE AND LOCATION OF OPENINGS.

PUMP STATION – SECTION VIEW

NOT TO SCALE



VALVE CHAMBER – SECTION VIEW

NOT TO SCALE

NOTES:
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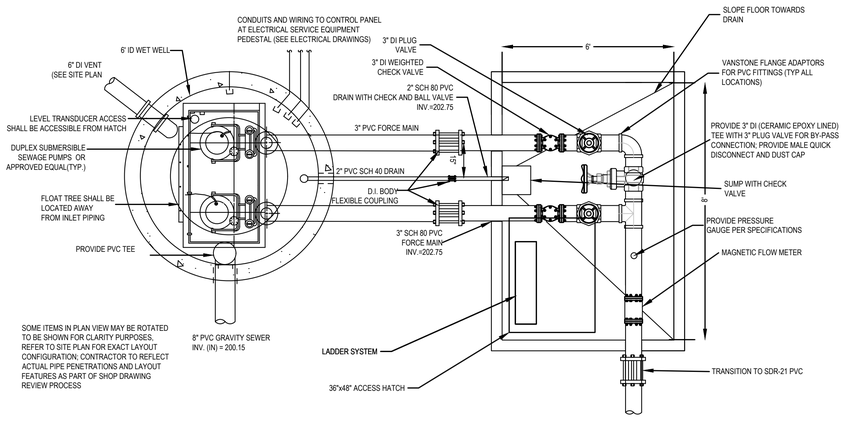
PUMP STATION – SECTION VIEW

NOT TO SCALE



PUMP STATION - PLAN VIEW

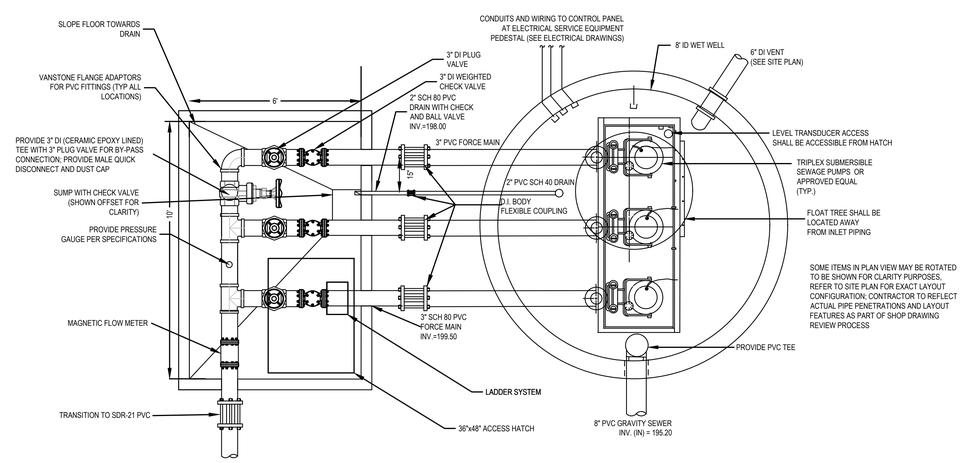
NOT TO SCALE

VALVE CHAMBER - PLAN VIEW

NOT TO SCALE

PUMP STATION #3

NOT TO SCALE



VALVE CHAMBER - PLAN VIEW

NOT TO SCALE

PUMP STATION - PLAN VIEW

NOT TO SCALE

PUMP STATION #1

NOT TO SCALE

HOWARD STEIN HUDSON
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Chelmsford, MA 01824
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PREPARED FOR:

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6 LYBERTY WAY, SUITE 203
WESTFORD, MA 01886

PROPOSED MULTIFAMILY DEVELOPMENT
SUMMER STREET
WALPOLE, MA

REVISIONS:

NO	BY	DATE	DESCRIPTION
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10	PB	1/27/21	REV. SITE PLAN
11	PB	3/12/21	REV. DRIVEWAY B
12	PB	4/13/21	REV. SITE PLAN

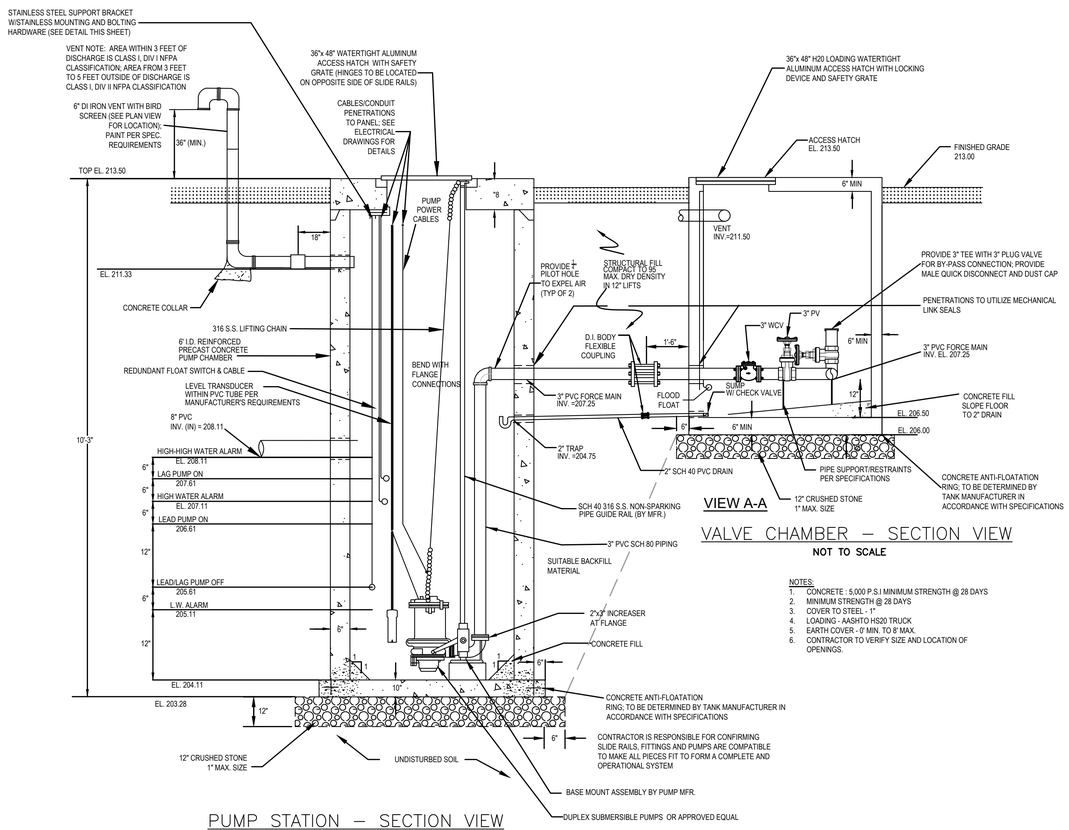
COMMONWEALTH OF MASSACHUSETTS KATIE L. ENRIGHT Civil No. 48111 REGISTERED PROFESSIONAL ENGINEER

Digitally signed by Katie Enright
Date: 2021.04.20 13:36:45-04'00'

SITE PLAN

DETAIL SHEET
18 OF 20

DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE



PUMP STATION – SECTION VIEW

NOT TO SCALE

VIEW A-A

VALVE CHAMBER – SECTION VIEW

NOT TO SCALE

NOTES:
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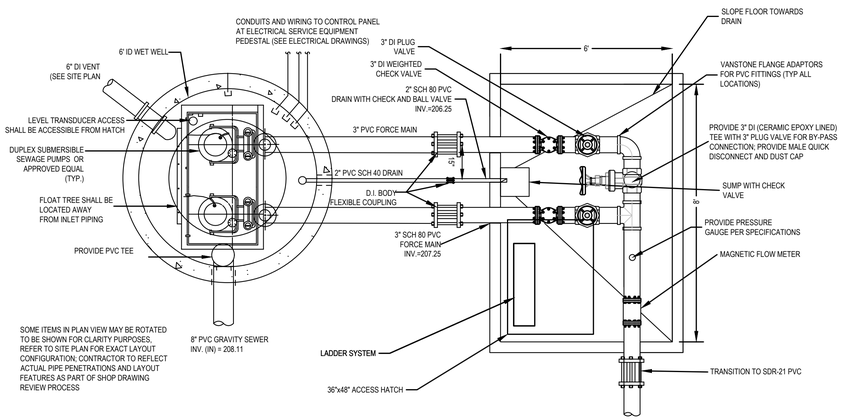


PUMP STATION - PLAN VIEW

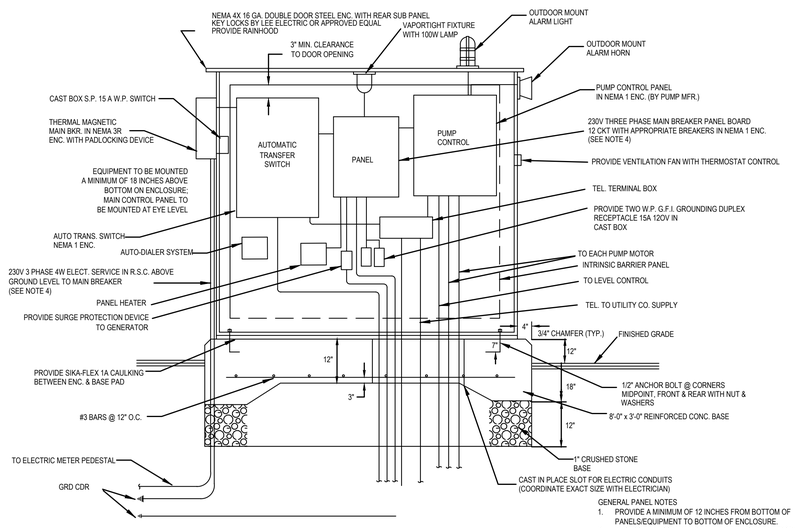
NOT TO SCALE

VALVE CHAMBER - PLAN VIEW

NOT TO SCALE

PUMP STATION #2

NOT TO SCALE



SCHEMATIC ELECTRICAL EQUIPMENT ENCLOSURE

NOT TO SCALE

GENERAL PANEL NOTES
1. PROVIDE A MINIMUM OF 12 INCHES FROM BOTTOM OF PANELS/EQUIPMENT TO BOTTOM OF ENCLOSURE.
2. ENCLOSURE ASSEMBLY SHALL BE U.L. LISTED (UL508A).
3. ALL 120 VOLT CONDUCTORS IN ENCLOSURE SHALL BE ENCLOSED IN METALLIC FLEXIBLE CONDUIT. NO CONDUCTORS SHALL BE INSTALLED WITHOUT PROTECTIVE COVERING.
4. CONTRACTOR TO PROVIDE EQUIPMENT BASED ON AVAILABLE ELECTRIC SERVICE AND TO CONFIRM PRIOR TO ORDERING ANY EQUIPMENT IF ELECTRIC NOT VERIFIED PRIOR TO CONSTRUCTION

GENERAL REQUIREMENTS

SEWAGE PUMPS AND VALVES (PUMP STATIONS #2 AND #3)

1.) PUMP STATIONS #2 AND #3 SHALL BE ALTERNATING DUPLEX SUBMERSIBLE EXPLOSION PROOF CENTRIFUGAL GRINDER PUMPS CAPABLE OF DELIVERING THE TARGET FLOW OF 70 GPM @ 55 FT T.D.H. (TRIMMING OF IMPELLER MAY BE NECESSARY). PUMP MOTORS SHALL BE 3.0 H.P., 3,450 R.P.M., CONNECTED FOR OPERATION ON A 230 VOLT, 60 HZ, SINGLE PHASE SERVICE. MYERS MODEL VSX30 WITH 4 INCH IMPELLER, OR APPROVED EQUAL. (CONTRACTOR TO PROVIDE EQUIPMENT BASED ON AVAILABLE ELECTRIC SERVICE AND TO CONFIRM PRIOR TO ORDERING ANY EQUIPMENT IF ELECTRIC NOT VERIFIED PRIOR TO CONSTRUCTION).

2.) DISCHARGE PORT SHALL BE DIRECTLY CONNECTED TO THE HYDRAULIC SEALING FLANGE ON THE BASE MOUNT TO ALLOW FOR REMOVAL OF THE PUMPS WITHOUT LIFTING THE VERTICAL DISCHARGE PIPING.

3.) THE PUMP MANUFACTURER SHALL SUPPLY DUPLEX CONTROL PANEL, 2 PUMPS WITH GUIDE RAILS, LEVEL TRANSDUCER, REDUNTANT FLOAT SWITCHES, LIFTING CHAINS, AND ALL NECESSARY MOUNTING HARDWARE FOR COMPLETE INSTALLATION INSIDE THE WET WELL.

4.) INSTALLATION OF THE PUMPS AND CONTROL WIRING SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS.

5.) PLUG VALVES SHALL BE 3 INCH, DUCTILE IRON BODY, NON-RISING STEM WITH HANDWHEEL, DOUBLE DISC, PARALLEL SEAT DESIGN RATED AT 200 P.S.I. WORKING PRESSURE, WITH ANSI B 16.5 FLANGED ENDS.

6.) CHECK VALVES SHALL BE 3 INCH, DUCTILE IRON BODY, SWING TYPE WITH LEVER AND WEIGHT, RUBBER FACED BRONZE DISC RING, RATED AT 200 P.S.I. WORKING PRESSURE, WITH ANSI B 16.5 FLANGED ENDS. CHECK VALVES SHALL BE CONSTRUCTED TO PERMIT TOP ENTRY FOR COMPLETE REMOVAL OF INTERNAL COMPONENTS WITHOUT REMOVING THE VALVE FROM THE LINE.

GENERAL NOTES

1.) THE CONTRACTOR SHALL MAKE APPLICATION FOR AND PAY ALL FEES FOR PERMITS REQUIRED TO CONSTRUCT THE PUMP STATIONS.

2.) AFTER THE CONTRACTOR HAS STAKED OUT THE FACILITIES TO BE CONSTRUCTED AND HAS THE APPROVED MATERIALS ON THE JOB, THE ENGINEER SHALL BE NOTIFIED AT LEAST TWO WORKING DAYS IN ADVANCE OF CONSTRUCTION TO ARRANGE FOR ITS INSPECTION.

3.) THE COMPLETED PUMPING STATION SHALL BE FIELD TESTED IN THE PRESENCE OF THE ENGINEER WITH ACTUAL PUMP RATES VERIFIED. ANY MODIFICATIONS REQUIRED WILL BE MADE AT NO EXPENSE TO THE OWNER.

4.) THE INSTALLED PUMP STATION SHALL MEET ALL TESTING AND CLEANING REQUIREMENTS OF THE CONTRACT SPECIFICATIONS PRIOR TO ACCEPTANCE BY THE OWNER.

5.) AS-BUILT DRAWINGS OF ALL INSTALLED PUMP STATIONS SHALL BE FURNISHED TO THE ENGINEER AS A CONDITION FOR ACCEPTANCE.

6.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SITE PREPARATION, UTILITY CONNECTIONS, AND RELATED WORK INCLUDING BUT NOT LIMITED TO ALL NECESSARY SHORING, BRACING AND TRENCH DEWATERING FOR THE INSTALLATION OF ALL PUMPING STATION COMPONENTS DURING CONSTRUCTION.

7.) THE PRECAST CONCRETE WET WELL AND VALVE CHAMBER MAY REQUIRE ANTI-FLOATATION COLLARS TO COUNTERACT SEASONAL HIGH GROUNDWATER CONDITIONS. THE CONTRACTOR SHALL COORDINATE WITH THE TANK MANUFACTURER TO VERIFY ANTI-FLOATATION COLLARS REQUIREMENTS AND PROVIDE ENGINEER WITH DOCUMENTATION THAT SUFFICIENT BALLAST HAS BEEN PROVIDED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

CONTROL PANEL REQUIREMENTS

1.) DUPLEX/TRIPLEX PUMP CONTROL PANEL SHALL BE AS MANUFACTURED BY MYERS OR APPROVED EQUAL WITH STANDARD MANUFACTURER'S OPTIONS MOUNTED IN A NEMA 4X ENCLOSURE FOR INSTALLATION AT THE OUTSIDE OF THE BUILDING OR AS OTHERWISE DETERMINED BY THE OWNER. THE CONTRACTOR SHALL COORDINATE THE LOCATION OF THE PANEL WITH THE OWNER AND ENGINEER. THE FOLLOWING OPTIONAL COMPONENTS SHALL ALSO BE PROVIDED:

A.) PUMP RUN INDICATORS AND RUNNING TIME METERS FOR EACH PUMP.

B.) 60 WATT GLOBE TYPE PANEL MOUNTED ALARM LIGHT & HORN WITH PUSH BUTTON HORN SILENCER.

C.) THERMAL MAGNETIC CIRCUIT BREAKER/THERMAL OVERLOAD RELAY FOR EACH PUMP.

D.) PUMP FAILURE INDICATOR PILOT LIGHT FOR EACH PUMP.

E.) SEAL LEAK INDICATOR LIGHT FOR EACH PUMP.

F.) EXTRA LEVEL ALARM SET AT "LAG PUMP ON" LEVEL TO INDICATE LEAD PUMP FAILURE WIRED TO ALARM LIGHT & HORN.

G.) ALTERNATOR TEST AND OVERRIDE WITH THREE POSITION MANUAL ALTERNATING SWITCH.

H.) POWER MONITOR/PUMP MOTOR LOCKOUT UPON LOSS OF ONE OR MORE PHASES OF POWER SUPPLY VOLTAGE, AS APPLICABLE.

2) ALL CONTROL PANEL EQUIPMENT AND OPTIONS SHALL BE APPROVED BY THE ENGINEER PRIOR TO FABRICATION AND SHIPMENT.

3.) ALARM CIRCUIT SHALL BE INDEPENDENT OF THE PUMP POWER CIRCUIT AND SHALL BE ACTIVATED IN EACH OF THE FOLLOWING CASES:

A.) LEAD AND LAG PUMP FAILURE
B.) HIGH WATER LEVEL IN WET WELL
C.) LOSS OF ONE OR MORE PHASES OF POWER SUPPLY VOLTAGE

GENERAL NOTES

1.) THE CONTRACTOR SHALL MAKE APPLICATION FOR AND PAY ALL FEES FOR PERMITS REQUIRED TO CONSTRUCT THE PUMP STATIONS.

2.) AFTER THE CONTRACTOR HAS STAKED OUT THE FACILITIES TO BE CONSTRUCTED AND HAS THE APPROVED MATERIALS ON THE JOB, THE ENGINEER SHALL BE NOTIFIED AT LEAST TWO WORKING DAYS IN ADVANCE OF CONSTRUCTION TO ARRANGE FOR ITS INSPECTION.

3.) THE COMPLETED PUMPING STATION SHALL BE FIELD TESTED IN THE PRESENCE OF THE ENGINEER WITH ACTUAL PUMP RATES VERIFIED. ANY MODIFICATIONS REQUIRED WILL BE MADE AT NO EXPENSE TO THE OWNER.

4.) THE INSTALLED PUMP STATION SHALL MEET ALL TESTING AND CLEANING REQUIREMENTS OF THE CONTRACT SPECIFICATIONS PRIOR TO ACCEPTANCE BY THE OWNER.

5.) AS-BUILT DRAWINGS OF ALL INSTALLED PUMP STATIONS SHALL BE FURNISHED TO THE ENGINEER AS A CONDITION FOR ACCEPTANCE.

6.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SITE PREPARATION, UTILITY CONNECTIONS, AND RELATED WORK INCLUDING BUT NOT LIMITED TO ALL NECESSARY SHORING, BRACING AND TRENCH DEWATERING FOR THE INSTALLATION OF ALL PUMPING STATION COMPONENTS DURING CONSTRUCTION.

7.) THE PRECAST CONCRETE WET WELL AND VALVE CHAMBER MAY REQUIRE ANTI-FLOATATION COLLARS TO COUNTERACT SEASONAL HIGH GROUNDWATER CONDITIONS. THE CONTRACTOR SHALL COORDINATE WITH THE TANK MANUFACTURER TO VERIFY ANTI-FLOATATION COLLARS REQUIREMENTS AND PROVIDE ENGINEER WITH DOCUMENTATION THAT SUFFICIENT BALLAST HAS BEEN PROVIDED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

GENERAL REQUIREMENTS

SEWAGE PUMPS AND VALVES (PUMP STATION #1)

1.) PUMPS SHALL BE ALTERNATING TRIPLEX SUBMERSIBLE EXPLOSION PROOF CENTRIFUGAL GRINDER PUMPS CAPABLE OF DELIVERING THE TARGET FLOW OF 90 GPM @ 80 FT T.D.H. (TRIMMING OF IMPELLER MAY BE NECESSARY). PUMP MOTORS SHALL BE 5.0 H.P., 3,450 R.P.M., CONNECTED FOR OPERATION ON A 230 VOLT, 60 HZ, THREE PHASE SERVICE. MYERS MODEL VS5X50 WITH 5 INCH IMPELLER, OR APPROVED EQUAL. (CONTRACTOR TO PROVIDE EQUIPMENT BASED ON AVAILABLE ELECTRIC SERVICE AND TO CONFIRM PRIOR TO ORDERING ANY EQUIPMENT IF ELECTRIC NOT VERIFIED PRIOR TO CONSTRUCTION).

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3.) THE PUMP MANUFACTURER SHALL SUPPLY TRIPLEX CONTROL PANEL, 3 PUMPS WITH GUIDE RAILS, LEVEL TRANSDUCER, REDUNTANT FLOAT SWITCHES, LIFTING CHAINS, AND ALL NECESSARY MOUNTING HARDWARE FOR COMPLETE INSTALLATION INSIDE THE WET WELL.

4.) INSTALLATION OF THE PUMPS AND CONTROL WIRING SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS SPECIFICATIONS.

5.) PLUG VALVES SHALL BE 4 INCH, DUCTILE IRON BODY, RATED AT 175 P.S.I. WORKING PRESSURE, WITH ANSI B 16.5 (CLASS 150) FLANGED ENDS.

6.) CHECK VALVES SHALL BE 4 INCH, DUCTILE IRON BODY, SWING TYPE WITH LEVER AND WEIGHT, RUBBER FACED BRONZE DISC RING, RATED AT 200 P.S.I. WORKING PRESSURE, WITH ANSI B 16.5 FLANGED ENDS. CHECK VALVES SHALL BE CONSTRUCTED TO PERMIT TOP ENTRY FOR COMPLETE REMOVAL OF INTERNAL COMPONENTS WITHOUT REMOVING THE VALVE FROM THE LINE.

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www.hshassoc.com

PREPARED FOR:

55 BH LLC
6 LYBERTY WAY, SUITE 203
WESTFORD, MA 01886

PROPOSED MULTIFAMILY DEVELOPMENT
SUMMER STREET
WALPOLE, MA

REVISIONS:

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COMMONWEALTH OF MASSACHUSETTS KATIE L. ENRIGHT CIVIL No. 48121 REGISTERED PROFESSIONAL ENGINEER

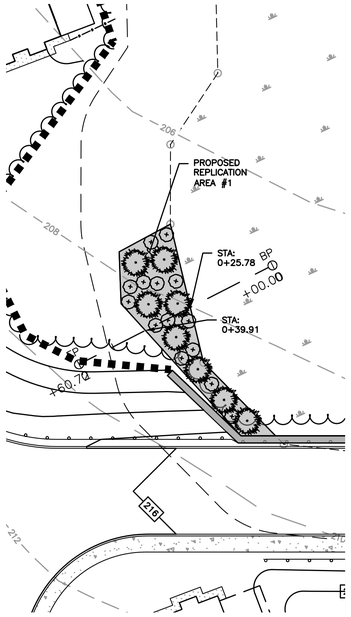
Digitally signed by Katie Enright
Date: 2021.04.20 13:36:46-04'00'

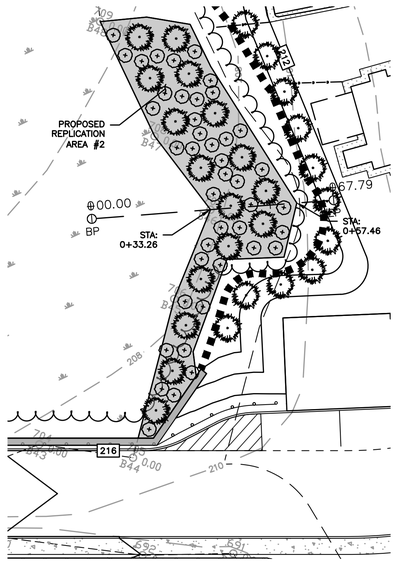
SITE PLAN

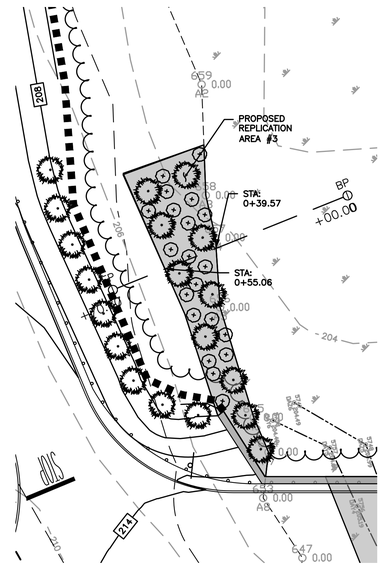
DETAIL SHEET 19 OF 20

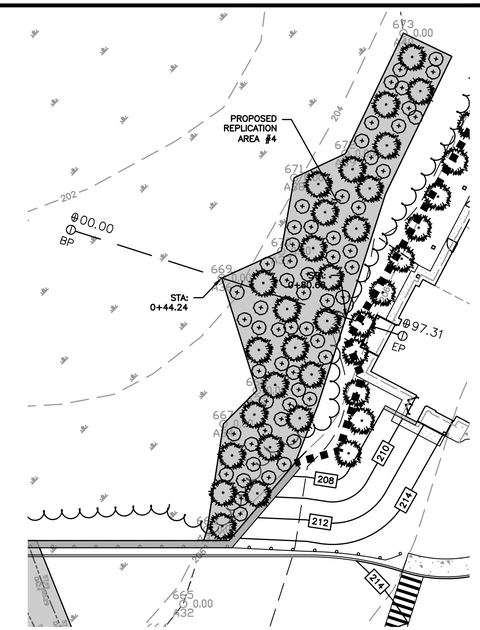
DATE:	JANUARY 10, 2020
PROJECT NUMBER:	19097
DESIGNED BY:	PB/KE/KF
DRAWN BY:	PB/MB/KF/KL
CHECKED BY:	KE

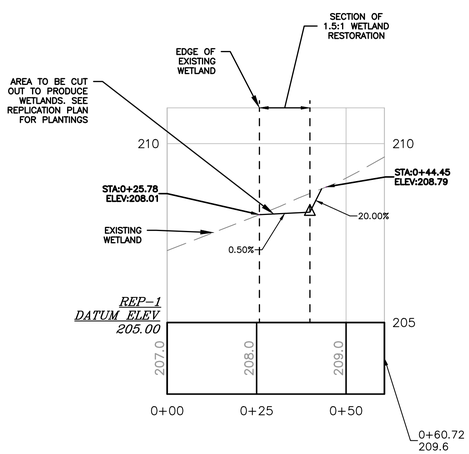
C.55

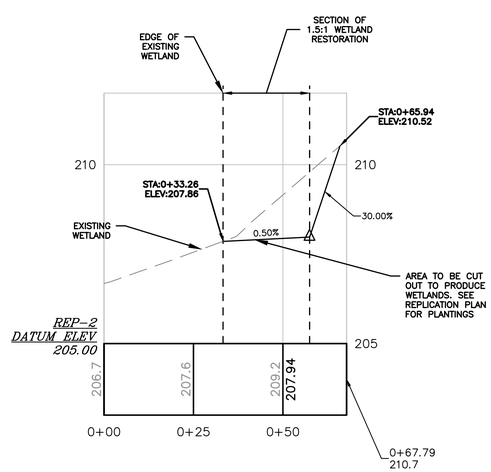


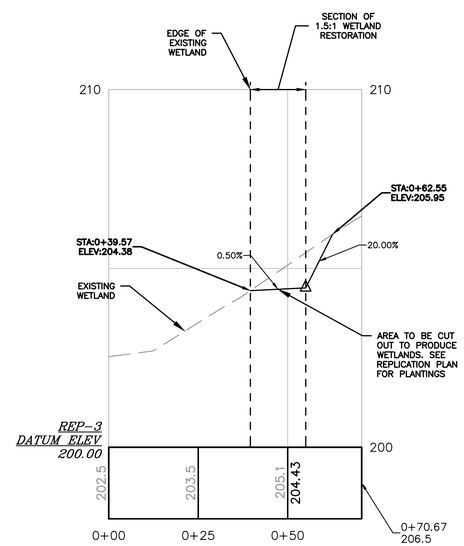


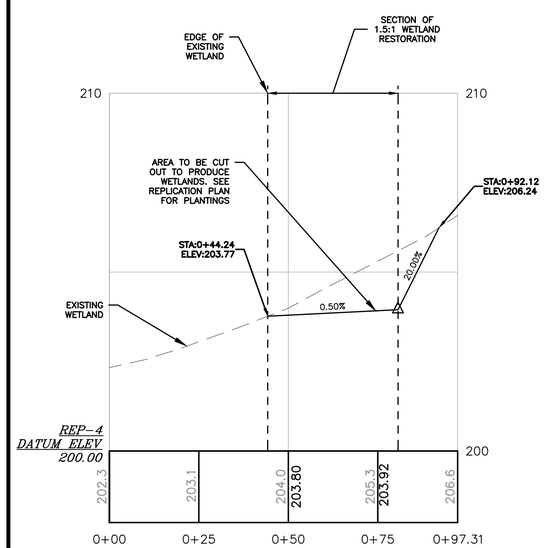












HOR. SCALE IN FEET
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VER. SCALE IN FEET

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C.56