

PRELIMINARY CIVIL ENGINEERING PLAN SET

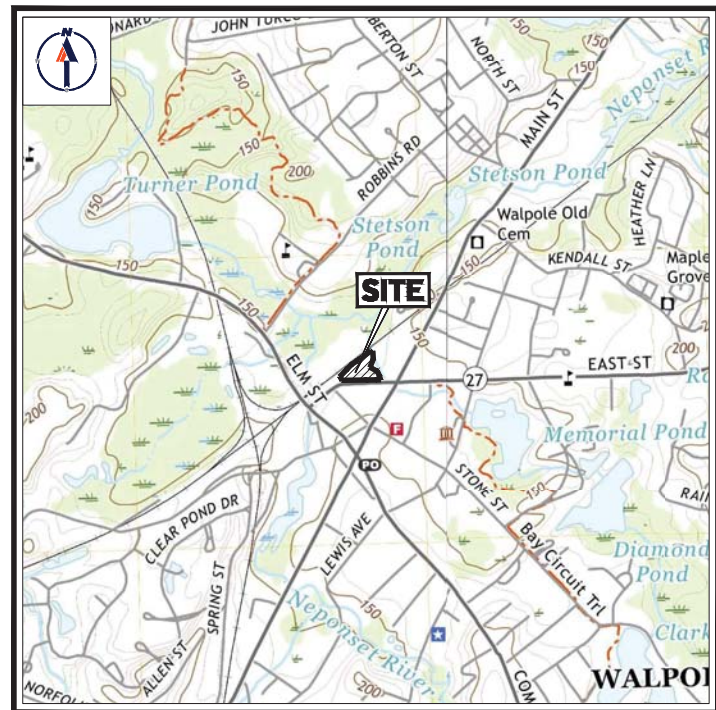
FOR



PROPOSED MULTI-FAMILY DEVELOPMENT

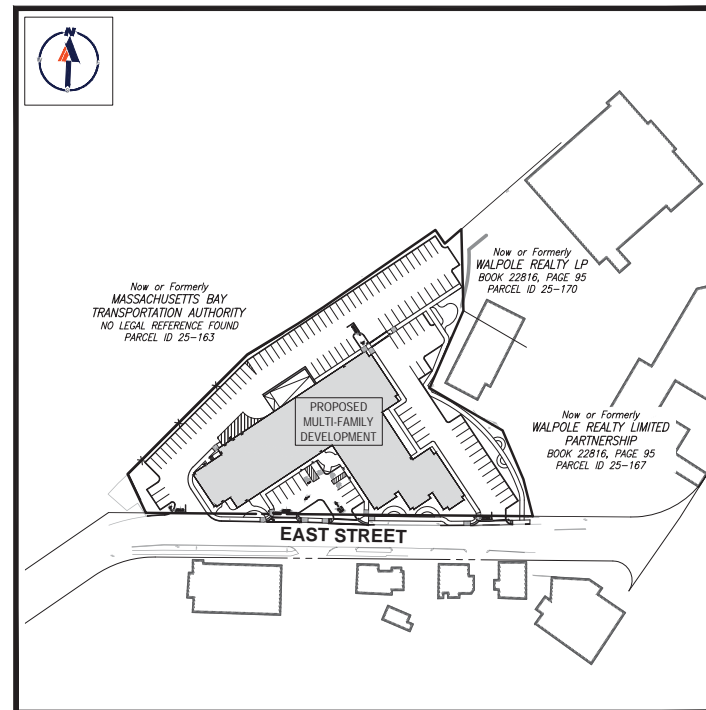
LOCATION OF SITE:

981, 989, & 1015 EAST STREET, TOWN OF WALPOLE,
NORFOLK COUNTY, MASSACHUSETTS



USGS MAP

SCALE: 1" = 1,000'
SOURCE: MEDFIELD AND NORWOOD MASSACHUSETTS USGS QUADRANGLE



SITE MAP

SCALE: 1" = 100'

DRAWING SHEET INDEX

SHEET TITLE	SHEET NUMBER
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DETAIL SHEET	C-901
DETAIL SHEET	C-902
DETAIL SHEET	C-903
DETAIL SHEET	C-904
EXISTING CONDITIONS PLAN (BY OTHERS)	1 SHEET



REVISIONS

REV	DATE	COMMENT	DRAWN BY	CHECKED BY



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PROJECT No.: W211263
DRAWN BY: CM/C/LC
CHECKED BY: ED/JAK
DATE: 05/31/2023
CAD ID.: W211263-SPFD-2A.DWG

PRELIMINARY CIVIL ENGINEERING PLAN SET

FOR

KIG SILVERSTRAND WALPOLE, LLC

PROPOSED MULTI-FAMILY DEVELOPMENT

MAP 25, BLOCK 164, 165 & 166
981, 989 & 1015 EAST STREET
TOWN OF WALPOLE,
NORFOLK COUNTY,
MASSACHUSETTS



352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
Phone: (508) 480-9900

www.BohlerEngineering.com



SHEET TITLE:

COVER
SHEET

SHEET NUMBER:

C-101

ORG. DATE - 05/31/2023

PREPARED BY

GENERAL NOTES

1. THESE PLANS ARE SOLELY BASED ON INFORMATION THE OWNER AND OTHERS PROVIDED TO BOHLER ENGINEERING M.A. LLC (HEREIN "BOHLER") PRIOR TO THE DATE ON WHICH THE CONTRACTOR HAS BEEN AWARDED THE CONTRACT. THE CONTRACTOR MUST FULLY VERIFY ALL EXISTING CONDITIONS AND UNCONDITIONALLY NOTIFY BOHLER OF ANY ACTUAL CONDITIONS WHICH DIFFER FROM THOSE SHOWN ON THESE PLANS, OR IF THE PROPOSED WORK CONFLICTS WITH ANY SUCH FEATURES.

GENERAL DEMOLITION NOTES

1. THE GENERAL NOTES MUST BE INCLUDED AS PART OF THIS ENTIRE DOCUMENT PACKAGE AND ARE PART OF THE CONTRACT DOCUMENTS. THE GENERAL NOTES ARE REFERENCED HEREIN, AND THE CONTRACTOR MUST REFER TO THEM AND FULLY COMPLY WITH THESE NOTES, IN THEIR ENTIRETY. THE CONTRACTOR MUST BE FAMILIAR WITH AND ACKNOWLEDGE FAMILIARITY WITH ALL OF THE GENERAL NOTES AND ALL OF THE PLANS' SPECIFIC NOTES.

GENERAL GRADING NOTES

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ADA INSTRUCTIONS TO CONTRACTOR

1. ALL ACCESSIBLE (A.K.A. ADA) COMPONENTS AND ACCESSIBLE ROUTES MUST BE CONSTRUCTED TO MEET, AT A MINIMUM, THE MORE STRINGENT OF (A) THE REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT (ADA) (42 U.S.C. 11911 ET SEQ. AND 42 CFR 1191.1 ET SEQ.) AND (B) ANY APPLICABLE LOCAL AND STATE GUIDELINES, AND ANY AMENDMENTS TO BOTH. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL APPLICABLE LOCAL AND STATE GUIDELINES, AND ANY AMENDMENTS TO BOTH.

REVISIONS table with columns: REV, DATE, COMMENT, DRAWN BY, CHECKED BY. Includes a logo for Bohler Engineering and a list of services: SITE CIVIL AND CONSULTING ENGINEERING, LAND SURVEYING, etc.

GENERAL SITE NOTES

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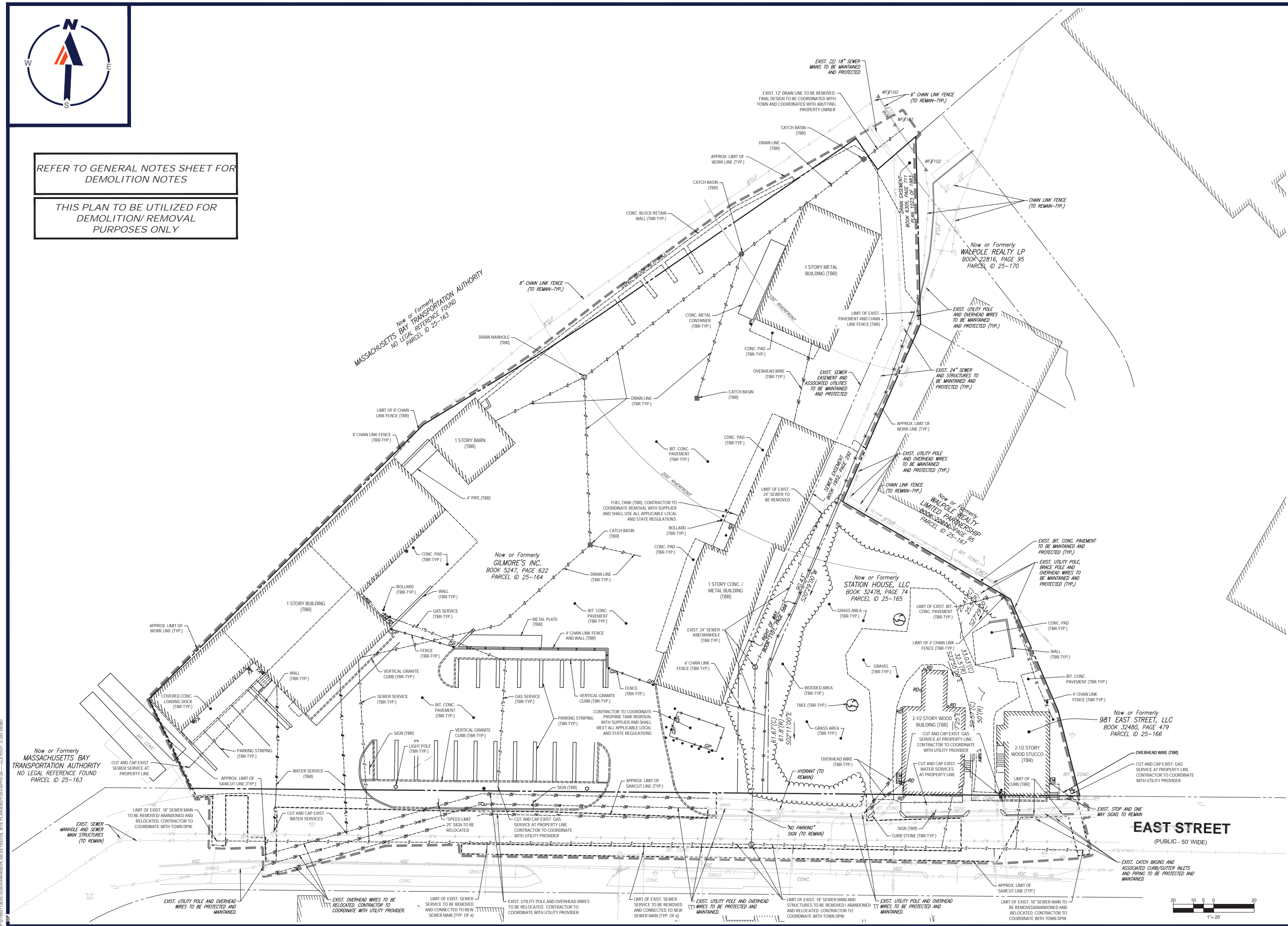
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FOR ENTITLEMENT PURPOSES ONLY. PRELIMINARY CIVIL ENGINEERING PLAN SET. KIG SILVERSTRAND WALPOLE, LLC. PROPOSED MULTI-FAMILY DEVELOPMENT. MAP 25, BLOCK 164, 165 & 166 981, 989 & 1015 EAST STREET, TOWN OF WALPOLE, NORFOLK COUNTY, MASSACHUSETTS. BOHLER ENGINEERING logo and contact information.



REFER TO GENERAL NOTES SHEET FOR
DEMOLITION NOTES

THIS PLAN TO BE UTILIZED FOR
DEMOLITION/ REMOVAL
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BOHLER
SITE CIVIL AND CONSULTING ENGINEERING
LAND SURVEYING
PROGRAM MANAGEMENT
LAND ACQUISITION
LAND DEVELOPMENT
PERMITTING SERVICES
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ENGINEERING
PLAN SET

FOR

KIG SILVERSTRAND
WALPOLE, LLC

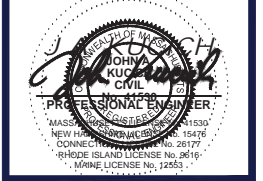
PROPOSED
MULTI-FAMILY DEVELOPMENT

MAP 25, BLOCK 164, 165 & 166
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MASSACHUSETTS

BOHLER

352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
Phone: (508) 480-9800

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SHEET TITLE:

DEMOLITION
PLAN

SHEET NUMBER:
C-201

ORG. DATE - 05/31/2023



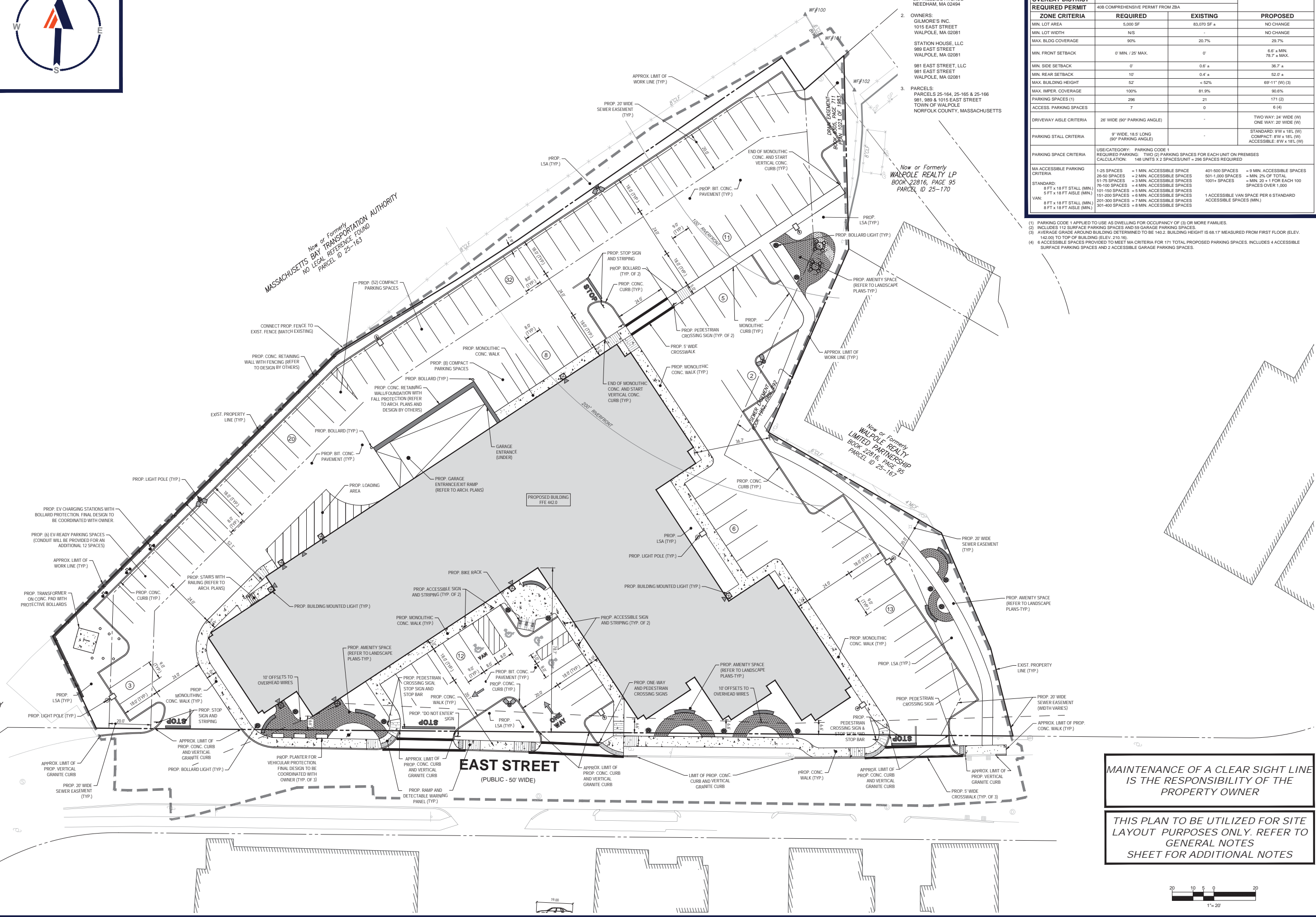
SITE INFORMATION

1. APPLICANT:
KIG SILVERSTRAND WALPOLE, LLC
257 HILLSIDE AVENUE
NEEDHAM, MA 02494
2. OWNERS:
GILMORE'S INC.
1015 EAST STREET
WALPOLE, MA 02081
STATION HOUSE, LLC
989 EAST STREET
WALPOLE, MA 02081
981 EAST STREET, LLC
981 EAST STREET
WALPOLE, MA 02081
3. PARCELS:
PARCELS 25-164, 25-165 & 25-166
981, 989 & 1015 EAST STREET
TOWN OF WALPOLE
NORFOLK COUNTY, MASSACHUSETTS

ZONING ANALYSIS TABLE

ZONING DISTRICT	REQUIRED PERMIT	REQUIRED	EXISTING	PROPOSED
CENTRAL BUSINESS DISTRICT	N/A			
OVERLAY DISTRICT	40B COMPREHENSIVE PERMIT FROM ZBA			
MIN. LOT AREA	5,000 SF	83,070 SF ±		NO CHANGE
MIN. LOT WIDTH	N/S	-		NO CHANGE
MAX. BLDG. COVERAGE	90%	20.7%		29.7%
MIN. FRONT SETBACK	0' MIN. / 25' MAX.	0'		6.6' ± MIN. 78.7' ± MAX.
MIN. SIDE SETBACK	0'	0.6' ±		36.7' ±
MIN. REAR SETBACK	10'	0.4' ±		52.0' ±
MAX. BUILDING HEIGHT	52'	< 52%		69'-11" (W) (3)
MAX. IMPER. COVERAGE	100%	81.9%		90.6%
PARKING SPACES (1)	296	21		171 (2)
ACCESS. PARKING SPACES	7	0		6 (4)
DRIVEWAY AISLE CRITERIA	26' WIDE (90° PARKING ANGLE)	-		TWO WAY: 24' WIDE (W) ONE WAY: 20' WIDE (W)
PARKING STALL CRITERIA	9' WIDE, 18.5' LONG (90° PARKING ANGLE)	-		STANDARD: 9'W x 18'L (W) COMPACT: 8'W x 18'L (W) ACCESSIBLE: 8'W x 18'L (W)
PARKING SPACE CRITERIA	USE/CATEGORY: PARKING CODE 1 REQUIRED PARKING: TWO (2) PARKING SPACES FOR EACH UNIT ON PREMISES CALCULATION: 148 UNITS X 2 SPACES/UNIT = 296 SPACES REQUIRED			
MA ACCESSIBLE PARKING CRITERIA	1-25 SPACES = 1 MIN. ACCESSIBLE SPACE 26-50 SPACES = 2 MIN. ACCESSIBLE SPACES 51-75 SPACES = 3 MIN. ACCESSIBLE SPACES 76-100 SPACES = 4 MIN. ACCESSIBLE SPACES 101-150 SPACES = 5 MIN. ACCESSIBLE SPACES 151-200 SPACES = 6 MIN. ACCESSIBLE SPACES 201-300 SPACES = 7 MIN. ACCESSIBLE SPACES 301-400 SPACES = 8 MIN. ACCESSIBLE SPACES	401-500 SPACES = 9 MIN. ACCESSIBLE SPACES 501-1,000 SPACES = MIN. 2% OF TOTAL 1001+ SPACES = MIN. 2% + 1 FOR EACH 100 SPACES OVER 1,000		
MA ACCESSIBLE PARKING CRITERIA				1 ACCESSIBLE VAN SPACE PER 6 STANDARD ACCESSIBLE SPACES (MIN.)

- (1) PARKING CODE 1 APPLIED TO USE AS DWELLING FOR OCCUPANCY OF (3) OR MORE FAMILIES.
- (2) INCLUDES 112 SURFACE PARKING SPACES AND 59 GARAGE PARKING SPACES.
- (3) AVERAGE GRADE AROUND BUILDING DETERMINED TO BE 140.2. BUILDING HEIGHT IS 68.17' MEASURED FROM FIRST FLOOR (ELEV. 142.00) TO TOP OF BUILDING (ELEV. 210.16).
- (4) 6 ACCESSIBLE SPACES PROVIDED TO MEET MA CRITERIA FOR 171 TOTAL PROPOSED PARKING SPACES. INCLUDES 4 ACCESSIBLE SURFACE PARKING SPACES AND 2 ACCESSIBLE GARAGE PARKING SPACES.



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PRELIMINARY CIVIL ENGINEERING PLAN SET
FOR
KIG SILVERSTRAND WALPOLE, LLC
PROPOSED MULTI-FAMILY DEVELOPMENT
MAP 25, BLOCK 164, 165 & 166
981, 989 & 1015 EAST STREET
TOWN OF WALPOLE
NORFOLK COUNTY,
MASSACHUSETTS

BOHLER
352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
Phone: (508) 480-8900
www.BohlerEngineering.com

PROFESSIONAL ENGINEER
JOHN KUPCHAK
MASS. REG. NO. 15478
NEW HAMPSHIRE REG. NO. 28177
RHODE ISLAND LICENSE NO. 2616
- ENGINE LICENSE NO. 12253 -

MAINTENANCE OF A CLEAR SIGHT LINE IS THE RESPONSIBILITY OF THE PROPERTY OWNER

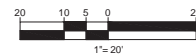
THIS PLAN TO BE UTILIZED FOR SITE LAYOUT PURPOSES ONLY. REFER TO GENERAL NOTES SHEET FOR ADDITIONAL NOTES

SHEET TITLE:
SITE LAYOUT PLAN
SHEET NUMBER:
C-301
ORG. DATE - 05/31/2023

P:\21\W211263-SPFD-2A\W211263-SPFD-2A-PLANSET\W211263-SPFD-2A-PLANSET.dwg - LA-YOUT - CSM-SITE



THIS PLAN TO BE UTILIZED FOR SITE GRADING PURPOSES ONLY. REFER TO GENERAL NOTES SHEET FOR ADDITIONAL GRADING & UTILITY NOTES



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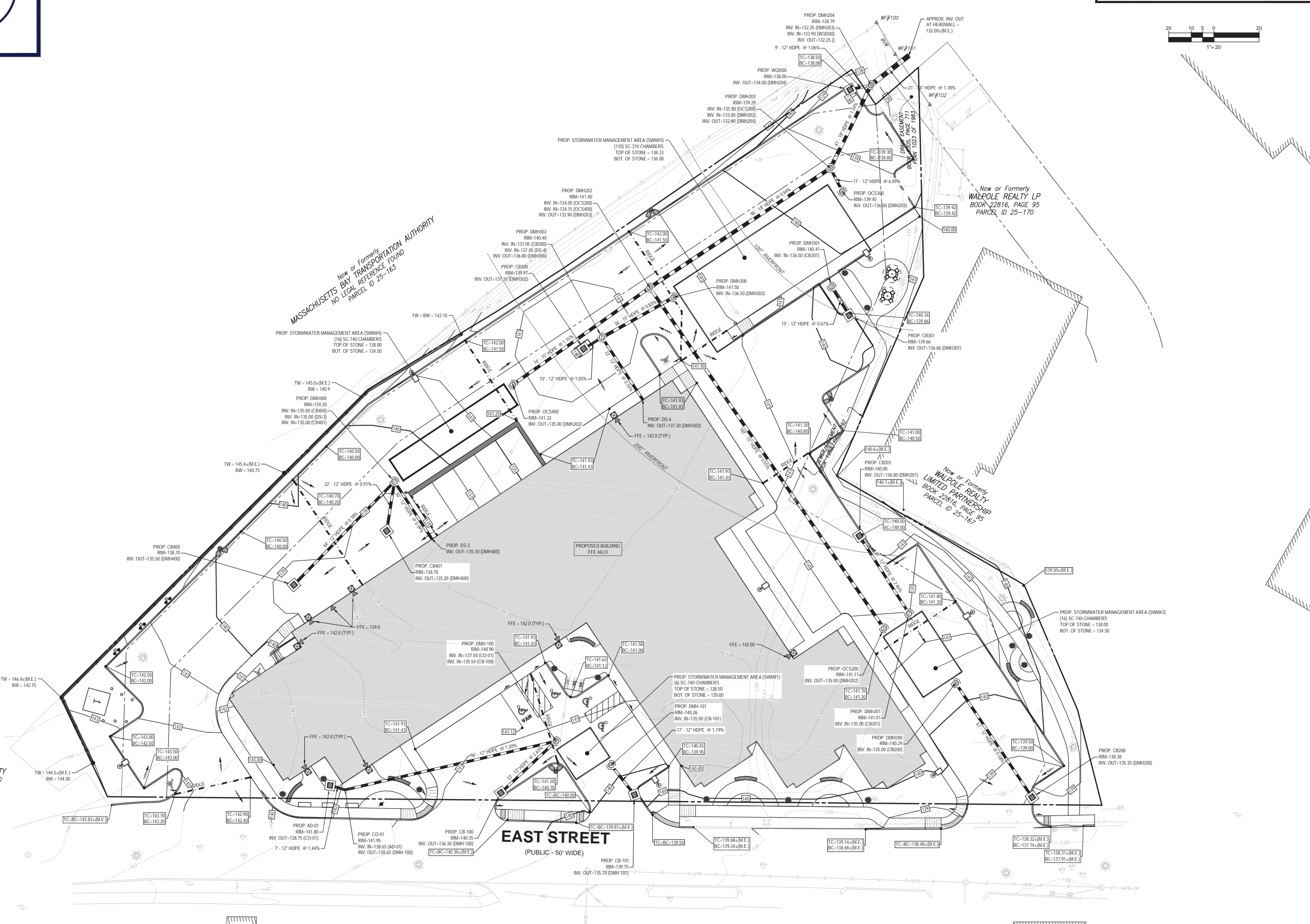
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 MASSACHUSETTS REG. NO. 15476
 NEW HAMPSHIRE REG. NO. 15476
 CONNECTICUT REG. NO. 28177
 RHODE ISLAND LICENSE NO. 3616
 ILLINOIS LICENSE NO. 12553

SHEET TITLE:
GRADING & DRAINAGE PLAN
 SHEET NUMBER:
C-401
 ORG. DATE - 05/31/2023

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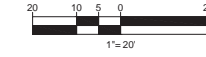
Now or Formerly MASSACHUSETTS BAY TRANSPORTATION AUTHORITY NO LEGAL REFERENCE FOUND PARCEL ID 25-163



EAST STREET
 (PUBLIC - 50 WIDE)



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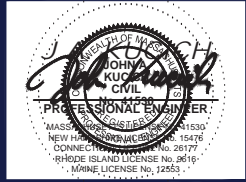
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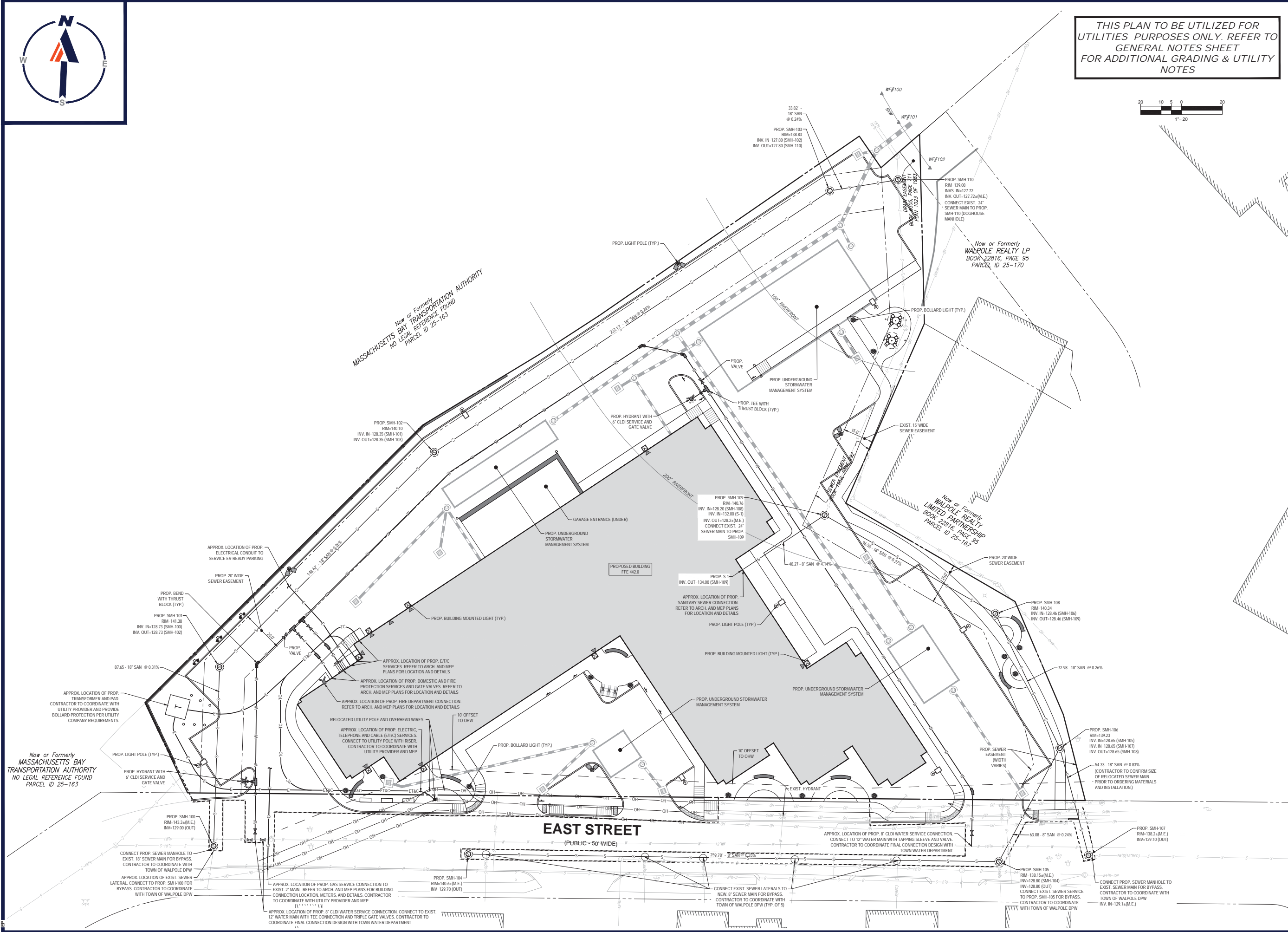
SHEET TITLE:

UTILITY PLAN

SHEET NUMBER:
C-501

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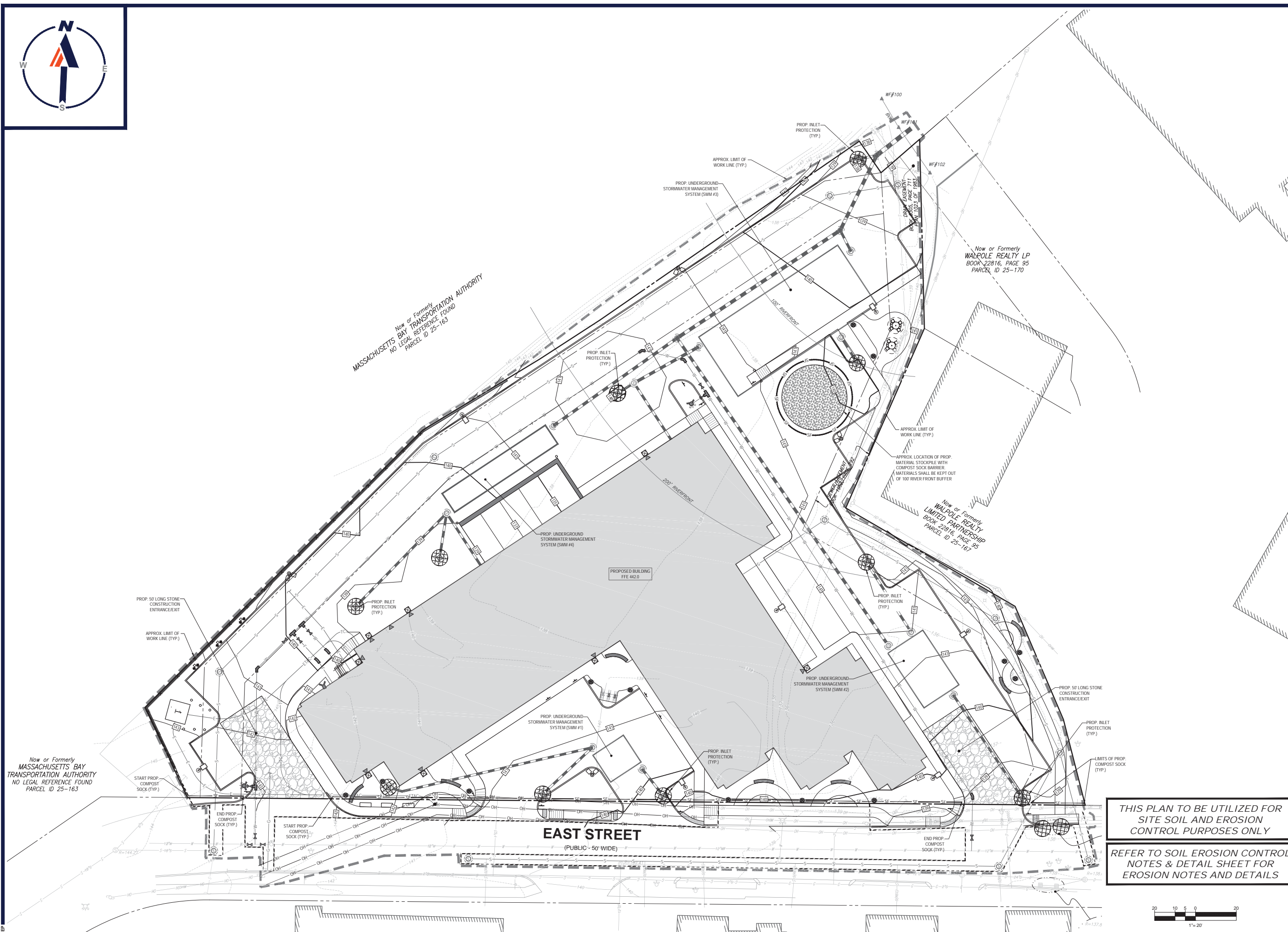


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Now or Formerly WALPOLE REALTY LP BOOK 22816, PAGE 95 PARCEL ID 25-170

Now or Formerly LIMITED PARTNERSHIP WALPOLE REALTY BOOK 22816, PAGE 95 PARCEL ID 25-167



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TRANSPORTATION AUTHORITY
NO LEGAL REFERENCE FOUND
PARCEL ID 25-163

Now or Formerly
WALPOLE REALTY LP
BOOK 22816, PAGE 95
PARCEL ID 25-170

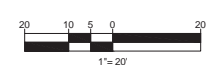
Now or Formerly
WALPOLE REALTY
LIMITED PARTNERSHIP
BOOK 22816, PAGE 95
PARCEL ID 25-167

Now or Formerly
MASSACHUSETTS BAY
TRANSPORTATION AUTHORITY
NO LEGAL REFERENCE FOUND
PARCEL ID 25-163

EAST STREET
(PUBLIC - 50' WIDE)

**THIS PLAN TO BE UTILIZED FOR
SITE SOIL AND EROSION
CONTROL PURPOSES ONLY**

**REFER TO SOIL EROSION CONTROL
NOTES & DETAIL SHEET FOR
EROSION NOTES AND DETAILS**



BOHLER
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Professional Engineer
JOHN KUPCHAK
MASSACHUSETTS REG. NO. 154530
NEW HAMPSHIRE REG. NO. 154578
CONNECTICUT REG. NO. 28177
RHODE ISLAND LICENSE NO. 3616-1
-SIGNED LICENSE NO. 12953-

SHEET TITLE:
**SOIL EROSION &
SEDIMENT
CONTROL PLAN**

SHEET NUMBER:
C-601

ORG. DATE - 05/31/2023

P:\21\W211263\2A\DWG\W211263-SPPD-2A.dwg (REVISED) DATE: 05/31/2023 10:45:00 AM USER: CM/C/LC



PLANT SCHEDULE					
CANOPY TREES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
GD	3	GLEDTZIA TRIACANTHOS INERMIS 'DRAVES'	STREET KEEPER® HONEY LOCUST	2.5" CAL.	B&B
OP	3	QUERCUS PALUSTRIS	PIN OAK	3" CAL.	B&B
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
AB2	11	ARONIA MELANOCARPA 'UCONNAM16'	LOW SCAPE HEDGER® BLACK CHOKEBERRY	18-24"	CONTAINER
CS2	39	CLETHRA ALNIFOLIA 'SIXTEEN CANDLES'	SIXTEEN CANDLES SUMMERSWEET	24-30"	CONTAINER
HME	11	HYDRANGEA MACROPHYLLA 'ENDLESS SUMMER'	ENDLESS SUMMER HYDRANGEA	24-30"	CONTAINER
IG	19	ILEX GLABRA	INKBERRY HOLLY	30-36"	CONTAINER
IGC	45	ILEX GLABRA 'COMPACTA'	COMPACT INKBERRY	24-30"	CONTAINER
KE2	24	KALMIA LATIFOLIA 'ELF'	ELF DWARF MOUNTAIN LAUREL	18-24" HT.	CONTAINER
PXOL	10	PRUNUS LAUROCEASUS 'OTTO LUYKEN'	OTTO LUYKEN CHERRY LAUREL	24-30"	CONTAINER
GRASSES	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
PAH	39	PENNISETUM ALOPECUROIDES 'HAMELN'	HAMELN FOUNTAIN GRASS	1 GAL.	CONTAINER
PVS	90	PANICUM VIRGATUM 'SHELANDOAH'	SHELANDOAH SWITCH GRASS	1 GAL.	CONTAINER
GROUND COVERS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
HB2	9	HOSTA X 'BLUEBERRY MUFFIN'	BLUEBERRY MUFFIN HOSTA	1 GAL.	CONTAINER
PERENNIALS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER
LMB	39	LIRIOPE MUSCARI 'BIG BLUE'	BIG BLUE LILYTURF	1 GAL.	CONTAINER
NW	45	NEPETA X 'WALKER'S LOW'	WALKER'S LOW CATMINT	1 GAL.	CONTAINER
RF	100	RUDIBECKIA FULGIDA	CONEFLOWER	1 GAL.	CONTAINER
SSAJ	111	SEDUM SPECTABILE 'AUTUMN JOY'	AUTUMN JOY STONECROP	1 GAL.	CONTAINER

TOWN OF WALPOLE, MA
LANDSCAPE REQUIREMENTS

SECTION	REQUIREMENTS	CALCULATIONS/PROPOSED
7.	LOCATION OF SPACES C. GROUND LEVEL PARKING FACING STREETS OR OPEN SPACES SHALL BE SCREENED FROM THE SIDEWALK AND THE OPEN SPACE. SCREENING MAY INCLUDE BUILDINGS AND/OR LANDSCAPING.	PROVIDED
8.	PARKING LOT DESIGN B. LANDSCAPING REQUIREMENTS (1) AMOUNT. DEVELOPMENTS WITH PROPOSED PARKING AREAS OF SIX (6) SPACES OR MORE SHALL PROVIDE A MINIMUM OF TEN PERCENT (10%) OF LANDSCAPED OPEN SPACE WITHIN THE AREA DESIGNATED FOR PARKING INCLUSIVE OF ANY LANDSCAPED BORDERS SURROUNDING THE PARKING LOT. (2) PARKING LOT ENTRANCES. PARKING LOT ENTRANCES SHALL BE LANDSCAPED WITH A COMBINATION OF TREES, SHRUBS, WALLS AND OTHER LANDSCAPE FEATURES. NO TREES, SHRUBS, FENCES, WALLS OR OTHER LANDSCAPE FEATURE SHALL BE PLANTED IN A MANNER TO OBSTRUCT SIGHT LINES OF MOTORISTS. (3) PARKING AISLES. THE ENDS OF PARKING AISLES THAT ARE MORE THAN FIFTEEN (15) SPACES IN LENGTH SHALL INCORPORATE LANDSCAPE ISLANDS AT EITHER END OF THE ROW. WHERE THE LENGTH OF A PARKING AISLE EXCEEDS TWENTY FIVE (25) SPACES, ADDITIONAL LANDSCAPED ISLANDS SHALL BE INSTALLED AT REGULAR INTERVALS. THIS INTERVAL SHALL NOT BE MORE THAN EVERY THIRTEEN (13) SPACES. THE WIDTH OF LANDSCAPED ISLANDS PERPENDICULAR TO ADJACENT SPACES SHALL BE NO LESS THAN EIGHT (8) FEET AT THEIR WIDEST POINT. (4) PLANT SELECTION. NO TREE, SHRUB OR PLANT SHALL BE PROPOSED FOR USE WITHIN A PARKING AREA THAT HAS BEEN IDENTIFIED AS AN INVASIVE SPECIES BY THE MASSACHUSETTS PLANT ADVISORY GROUP IN THE LATEST VERSION OF THE EVALUATION OF NON-NATIVE PLANT SPECIES FOR INVASIVENESS IN MASSACHUSETTS (WITH ANNOTATED LIST). HAS BEEN IDENTIFIED AS INVASIVE OR BANNED ON THE MASSACHUSETTS PROHIBITED PLANT LIST AS PERIODICALLY UPDATED BY THE MASSACHUSETTS DEPARTMENT OF AGRICULTURAL RESOURCES, OR IN ANY OTHER REPUTABLE SCIENTIFIC PUBLICATION THAT MAY BE ACCEPTABLE TO THE BOARD. ALL SIZE AND LOCATION DESIGN ELEMENTS SHALL COMPLY WITH THE FOLLOWING SPECIFICATIONS: (A) SHADE OR CANOPY TREES SHALL HAVE AT LEAST ONE AND A HALF (1.5) INCH CALIPER WITH A MATURE HEIGHT OF NOT LESS THAN TWELVE (12) FEET ABOVE GRADE. (B) SMALL OR MIRROR SHADE TREES SHALL HAVE A CALIPER OF AT LEAST ONE AND A HALF (1.5) INCHES WITH A MATURE HEIGHT OF NOT LESS THAN NINE (9) FEET ABOVE GRADE. (C) ORNAMENTAL OR FLOWERING FRUIT TREES SHALL HAVE A CALIPER OF AT LEAST ONE AND A HALF (1.5) INCHES WITH A MATURE HEIGHT OF NOT LESS THAN SEVEN (7) FEET ABOVE GRADE. (D) EVERGREEN TREES USED FOR SCREENING SHALL BE NOT LESS THAN SIX (6) FEET IN HEIGHT ABOVE GRADE AT MATURITY. FENCING MAY BE USED IN CONJUNCTION WITH VEGETATED SCREENING BUT CHAIN LINK, VINYL OR OTHER FENCE MATERIAL THAT IS INCONGRUENT WITH TRADITIONAL NEW ENGLAND ARCHITECTURE SHALL NOT BE ALLOWED IN THE CENTRAL BUSINESS DISTRICT. (E) SHRUBS SHALL BE NOT LESS THAN ONE AND ONE-HALF (1.5) FEET IN HEIGHT ABOVE GRADE. AND (F) GRASS TURF MAY BE USED BUT SHALL NOT BE INSTALLED IN STRIPS LESS THAN SIX (6) FEET IN WIDTH	REQUIRED: 35,060 SF X 10% = 3,506 SF LANDSCAPE AREA PROVIDED
SECTION 8:	PARKING REGULATIONS	

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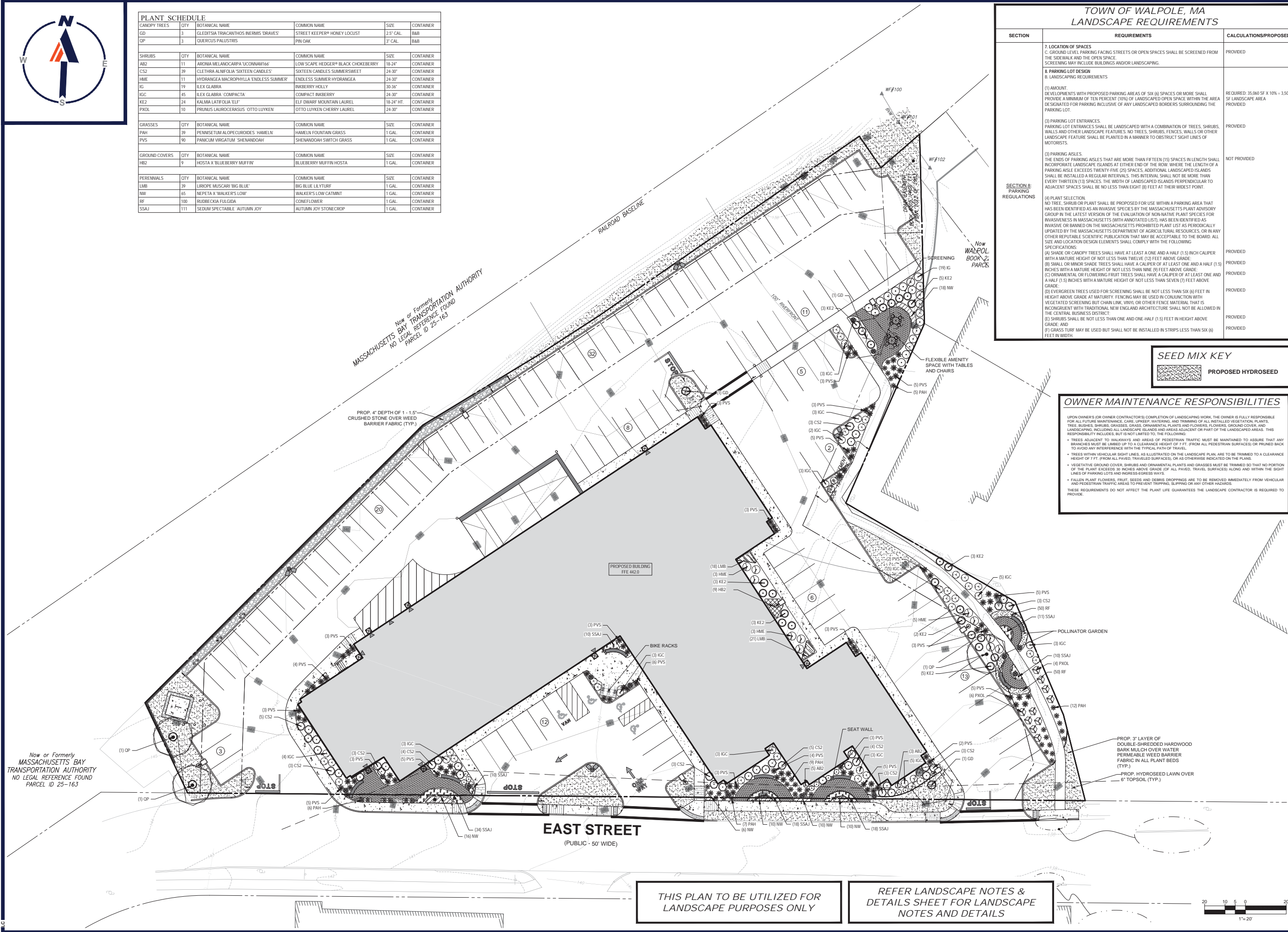
PROJECT NO.: W211263
DRAWN BY: CM/LC
CHECKED BY: ED/JAK
DATE: 05/31/2023
CAD ID.: W211263-LSCP-2A.DWG

PROJECT:
PRELIMINARY CIVIL ENGINEERING PLAN SET
FOR
KIG SILVERSTRAND WALPOLE, LLC
PROPOSED MULTI-FAMILY DEVELOPMENT
MAP 25, BLOCK 164, 165 & 166
981, 989 & 1015 EAST STREET
TOWN OF WALPOLE
NORFOLK COUNTY,
MASSACHUSETTS

BOHLER
352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
Phone: (508) 480-8900
www.BohlerEngineering.com

REGISTERED LANDSCAPE ARCHITECT
M. O. M.
MASSACHUSETTS

SHEET TITLE:
LANDSCAPE PLAN
SHEET NUMBER:
C-701
ORG. DATE - 05/31/2023

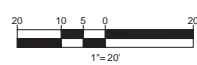


SEED MIX KEY
PROPOSED HYDROSEED

OWNER MAINTENANCE RESPONSIBILITIES
UPON OWNER'S (OR OWNER CONTRACTOR'S) COMPLETION OF LANDSCAPING WORK, THE OWNER IS FULLY RESPONSIBLE FOR ALL FUTURE MAINTENANCE, CARE, UPKEEP, WATERING, AND TRIMMING OF ALL INSTALLED VEGETATION, PLANTS, TREES, SHRUBS, GRASSES, GRASS, ORNAMENTAL PLANTS AND FLOWERS, FLOWERS, GROUND COVER, AND LANDSCAPING, INCLUDING ALL LANDSCAPE ISLANDS AND AREAS ADJACENT OR PART OF THE LANDSCAPED AREAS. THIS RESPONSIBILITY INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING:
• TREES ADJACENT TO WALKWAYS AND AREAS OF PEDESTRIAN TRAFFIC MUST BE MAINTAINED TO ASSURE THAT ANY BRANCHES MUST BE LIMBED UP TO A CLEARANCE HEIGHT OF 7 FT. FROM ALL PEDESTRIAN SURFACES OR PRUNED BACK TO AVOID ANY INTERFERENCE WITH THE TYPICAL PATH OF TRAVEL.
• TREES WITHIN VEHICULAR SIGHT LINES, AS ILLUSTRATED ON THE LANDSCAPE PLAN, ARE TO BE TRIMMED TO A CLEARANCE HEIGHT OF 7 FT. (FROM ALL PAVED, TRAVEL SURFACES), OR AS OTHERWISE INDICATED ON THE PLAN.
• VEGETATED GROUND COVER, SHRUBS AND ORNAMENTAL PLANTS AND GRASSES MUST BE TRIMMED SO THAT NO PORTION OF THE PLANT EXCEEDS 30 INCHES ABOVE GRADE (OF ALL PAVED, TRAVEL SURFACES) ALONG AND WITHIN THE SIGHT LINES OF PARKING LOTS AND INGRESS/EGRESS WAYS.
• FALLEN PLANT FLOWERS, FRUIT, SEEDS AND DEBRIS DROPPINGS ARE TO BE REMOVED IMMEDIATELY FROM VEHICULAR AND PEDESTRIAN TRAFFIC AREAS TO PREVENT TRIPPING, SLIPPING OR ANY OTHER HAZARDS.
THESE REQUIREMENTS DO NOT AFFECT THE PLANT LIFE GUARANTEE. THE LANDSCAPE CONTRACTOR IS REQUIRED TO PROVIDE.

THIS PLAN TO BE UTILIZED FOR LANDSCAPE PURPOSES ONLY

REFER LANDSCAPE NOTES & DETAILS SHEET FOR LANDSCAPE NOTES AND DETAILS



P:\DWG\1263\000\1\W211263-LSCP-2A.dwg - LAYOUT - C701.LAND



Mirada Bollard (MRB)

Outdoor LED Area Light

QUICK LINKS: Features & Specifications, Applications, Performance, Maintenance

FEATURES & SPECIFICATIONS

Construction: Alluminum die cast housing, stainless steel mounting arm, stainless steel mounting bracket, stainless steel mounting plate, stainless steel mounting base, stainless steel mounting post.

Availability: 10' Pole, 15' Pole, 20' Pole, 25' Pole, 30' Pole.

Lighting: 100W LED, 150W LED, 200W LED, 250W LED, 300W LED.

Mirada Medium (MRM)

Outdoor LED Area Light

QUICK LINKS: Features & Specifications, Applications, Performance, Maintenance

FEATURES & SPECIFICATIONS

Construction: Alluminum die cast housing, stainless steel mounting arm, stainless steel mounting bracket, stainless steel mounting plate, stainless steel mounting base, stainless steel mounting post.

Availability: 10' Pole, 15' Pole, 20' Pole, 25' Pole, 30' Pole.

Lighting: 100W LED, 150W LED, 200W LED, 250W LED, 300W LED.

Mirada Small Wall Sconce Silicone (XWS SIL)

Outdoor LED Wall Light

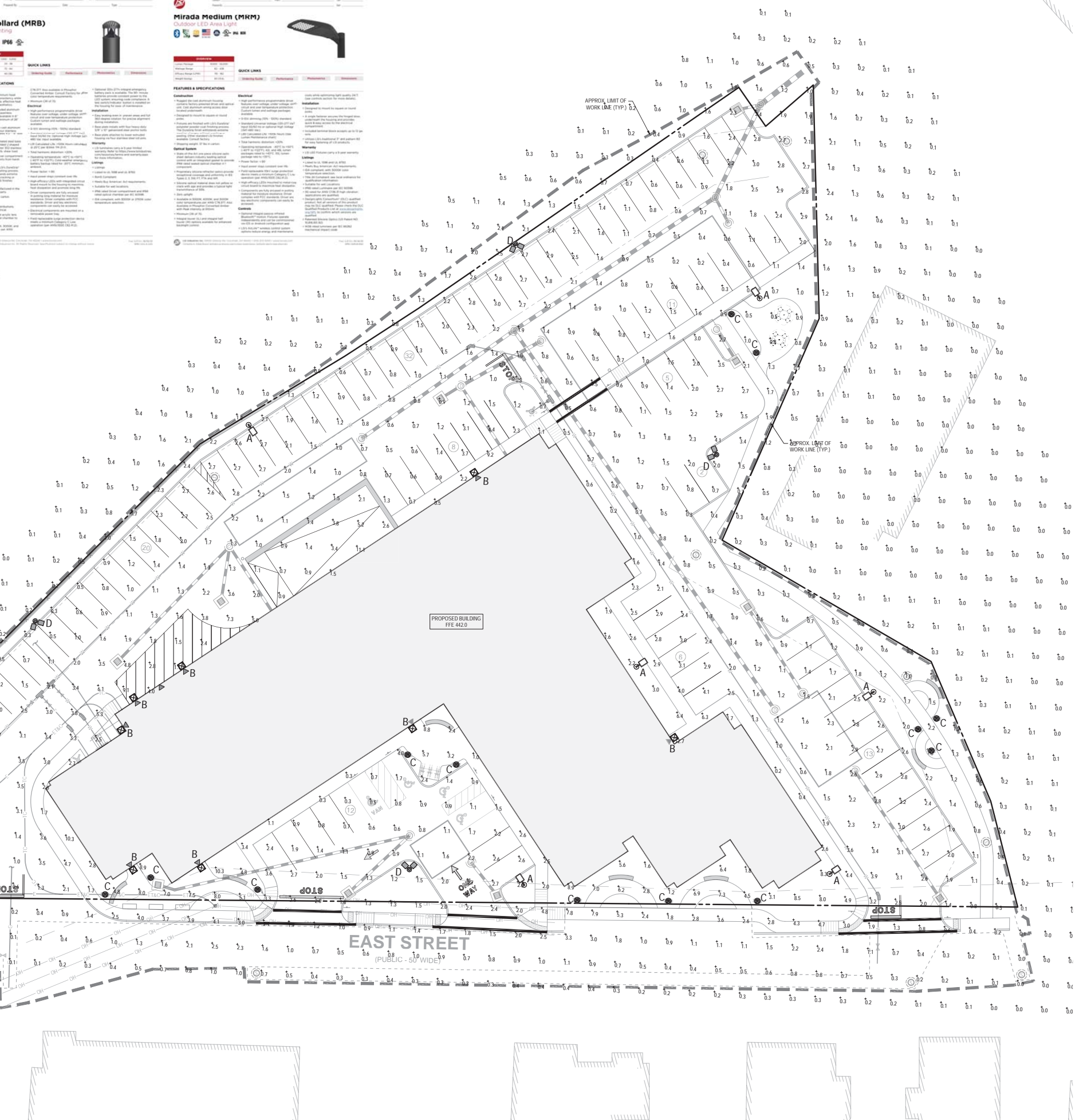
QUICK LINKS: Features & Specifications, Applications, Performance, Maintenance

FEATURES & SPECIFICATIONS

Construction: Alluminum die cast housing, stainless steel mounting arm, stainless steel mounting bracket, stainless steel mounting plate, stainless steel mounting base, stainless steel mounting post.

Availability: 10' Pole, 15' Pole, 20' Pole, 25' Pole, 30' Pole.

Lighting: 100W LED, 150W LED, 200W LED, 250W LED, 300W LED.



LIGHTING NOTES

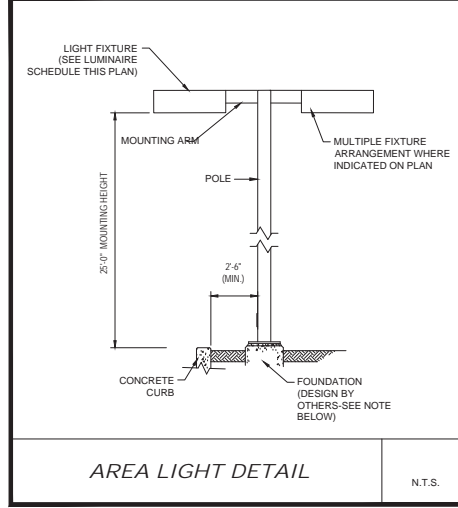
- THIS LIGHTING PLAN DEPICTS PROPOSED SUSTAINED ILLUMINATION LEVELS CALCULATED USING DATA PROVIDED BY THE NOTED MANUFACTURERS. ACTUAL SUSTAINED ILLUMINATION LEVELS AND PERFORMANCE OF LUMINAIRES MAY VARY DUE TO VARIATIONS IN WEATHER, ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, THE SERVICE LIFE OF EQUIPMENT AND LUMINAIRES AND OTHER RELATED VARIABLE FIELD CONDITIONS.
- THE LIGHT LOSS FACTORS USED IN THESE LIGHTING CALCULATIONS ARE 0.90 FOR ALL LED LUMINAIRES, 0.80 FOR ALL HIGH PRESSURE SODIUM LUMINAIRES OR 0.72 FOR ALL METAL HALIDE LUMINAIRES UNLESS OTHERWISE SPECIFIED. THESE FACTORS ARE INDICATIVE OF TYPICAL LIGHTING INDUSTRY MODELING STANDARDS.
- THE LIGHTING VALUES AND CALCULATION POINTS DEPICTED ON THIS PLAN ARE ALL ANALYZED ON A HORIZONTAL GEOMETRIC PLANE AT ELEVATION ZERO (GROUND LEVEL) UNLESS OTHERWISE NOTED. THE VALUES DEPICTED ON THIS PLAN ARE IN FOOTCANDLES.
- THE LUMINAIRES, LAMPS AND LENSES MUST BE REGULARLY INSPECTED/MAINTAINED TO ENSURE THAT THEY FUNCTION PROPERLY. THIS WORK SHOULD INCLUDE, BUT NOT BE LIMITED TO, FREQUENT VISUAL INSPECTIONS, CLEANING OF LENSES, AND RELAMPING (IF NECESSARY) AT LEAST ONCE EVERY SIX (6) MONTHS. FAILURE TO FOLLOW THE ABOVE STEPS COULD CAUSE THE LUMINAIRES, LAMPS AND LENSES TO FAIL PROPERLY TO FUNCTION.
- WHERE APPLICABLE, THE EXISTING CONDITION LIGHT LEVELS ILLUSTRATED ARE REPRESENTATIVE OF AN APPROXIMATION UTILING LABORATORY DATA FOR SIMILAR FIXTURES. UNLESS ACTUAL FIELD MEASUREMENTS ARE TAKEN WITH A LIGHT METER AND ARE, CONSEQUENTLY, APPROXIMATIONS ONLY. DUE TO FACTORS SUCH AS FIXTURE MAINTENANCE, EQUIPMENT TOLERANCES, WEATHER CONDITIONS, ETC., ACTUAL LIGHT LEVELS MAY DIFFER. EXISTING LIGHT LEVELS DEPICTED ON THIS PLAN SHOULD BE CONSIDERED APPROXIMATE.
- THIS LIGHTING PLAN IS INTENDED TO SHOW THE LOCATIONS AND TYPE OF LUMINAIRES ONLY. POWER SYSTEM, CONDUITS, WIRING, VOLTAGES AND OTHER ELECTRICAL COMPONENTS ARE THE RESPONSIBILITY OF THE ARCHITECT, MEP AND/OR LIGHTING CONTRACTOR, AS INDICATED IN THE CONSTRUCTION CONTRACT DOCUMENTS. THESE ITEMS MUST BE AS REQUIRED BY STATE AND LOCAL REGULATIONS. LIGHT POLE BASES ARE THE RESPONSIBILITY OF THE STRUCTURAL ENGINEER, AS INDICATED IN THE CONSTRUCTION CONTRACT DOCUMENTS. CONTRACTOR IS RESPONSIBLE FOR INSTALLING LIGHTING FIXTURES AND APPURTENANCES IN ACCORDANCE WITH ALL APPLICABLE BUILDING AND ELECTRICAL CODES AND ALL OTHER APPLICABLE RULES, REGULATIONS, LAWS AND STATUTES.
- CONTRACTOR MUST BRING TO DESIGNERS ATTENTION PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ANY LIGHT LOCATIONS THAT CONFLICT WITH DRAINAGE, UTILITIES, OR OTHER STRUCTURES.
- IT IS THE LIGHTING CONTRACTORS RESPONSIBILITY TO COORDINATE WITH THE PROJECT ARCHITECT OR OWNER REGARDING THE POWER SOURCES) FROM WITHIN THE BUILDING, AND TIEING DEVICES NECESSARY TO MEET THE DESIGN INTENT.
- THE LIGHTING CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CONTRACTOR REQUIREMENTS INDICATED IN THE SITE PLAN, INCLUDING BUT NOT LIMITED TO, GENERAL NOTES, GRADING AND UTILITY NOTES, SITE SAFETY, AND ALL GOVERNMENTAL RULES, LAWS, ORDINANCES, REGULATIONS AND THE LIKE.
- THE CONTRACTOR MUST VERIFY THAT INSTALLATION OF LIGHTING FIXTURES COMPLIES WITH THE REQUIREMENTS FOR SEPARATION FROM OVERHEAD ELECTRICAL WIRES PER STATE REGULATIONS.
- WHEN A BANK ATM IS INCLUDED IN THE PLAN, THE LIGHTING DESIGN REPRESENTS BOHLER'S UNDERSTANDING AND INTERPRETATION OF THE REGULATORY LIGHTING LEVELS INTENDED BY PUBLISHED STANDARDS.
- UPON OWNER'S ACCEPTANCE OF THE COMPLETED PROJECT, THE OWNER SHALL BE RESPONSIBLE FOR ALL MAINTENANCE, SERVICING, REPAIR AND INSPECTION OF THE LIGHTING SYSTEM AND ALL OF ITS COMPONENTS AND RELATED SYSTEMS, TO ENSURE ADEQUATE LIGHTING LEVELS ARE PRESENT AND FUNCTIONING AT ALL TIMES.

NUMERIC SUMMARY

LABEL	CALC TYPE	UNITS	AVG	MAX	MIN	AVG MIN	MAX MIN
ALL POINTS	ILLUMINANCE	FC	1.26	12.7	0.0	N.A.	N.A.
LEFT PARKING LOT	ILLUMINANCE	FC	1.74	12.7	0.2	8.70	63.50
RIGHT PARKING LOT	ILLUMINANCE	FC	1.83	11.1	0.2	9.15	55.50
FRONT OF BUILDING	ILLUMINANCE	FC	3.23	10.3	0.3	10.77	34.33

LUMINAIRE SCHEDULE

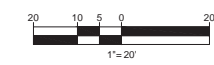
SYMBOL	QTY	MOUNTING HEIGHTS	ARRANGEMENT	LUMENS	LLF	DESCRIPTION
A	6	25'-0" AFG	SINGLE	13135	0.90	MRM-LED-12L-SIL-2-30-70CRI
B	8	12'-0" AFG	WALL MOUNTED	3063	0.90	XWS-LED-05L-FTW-40-80CRI
C	13	3'-6" AFG	BOLLARD	5454	0.90	MRB-LED-30L-ACR-S-40
D	4	25'-0" AFG	DOUBLE	26270	0.90	MRM-LED-12L-SIL-2-30-70CRI



NOTE: THIS DETAIL IS FOR BID AND BUDGETARY PURPOSES ONLY. CONTRACTOR SHALL BE RESPONSIBLE FOR HAVING A FOUNDATION DESIGN PREPARED BY A QUALIFIED STRUCTURAL ENGINEER CONSIDERING LIGHTING MANUFACTURER REQUIREMENTS, LOCAL WIND LOADS AND SITE SPECIFIC SOIL PARAMETERS.

- SOME SITE CONDITIONS AND/OR LOCATIONS MAY REQUIRE VIBRATION DAMPENING MEASURES AS DETERMINED BY A STRUCTURAL ENGINEER.
- THE STRUCTURAL ENGINEER SHALL BE NOTIFIED OF THE INTENT TO MOUNT ANYTHING TO THE POLE, ASIDE FROM THE LIGHT FIXTURES, INCLUDING BUT NOT LIMITED TO CAMERAS, BANNERS, FLAGS, SIGNAGE, ETC. AS IT WILL IMPACT THE POLE AND FOUNDATION DESIGN.

THIS PLAN TO BE UTILIZED FOR LIGHTING PURPOSES ONLY



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DATE: 05/31/2023
CAD ID.: W211263-LIGHT-2A.DWG

PRELIMINARY CIVIL ENGINEERING PLAN SET

FOR

KIG SILVERSTRAND WALPOLE, LLC

PROPOSED MULTI-FAMILY DEVELOPMENT

MAP 25, BLOCK 164, 165 & 166
981, 989 & 1015 EAST STREET
TOWN OF WALPOLE
NORFOLK COUNTY, MASSACHUSETTS

BOHLER

352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
Phone: (508) 480-9900

www.BohlerEngineering.com

Registered Professional Engineer
Massachusetts License # 015024

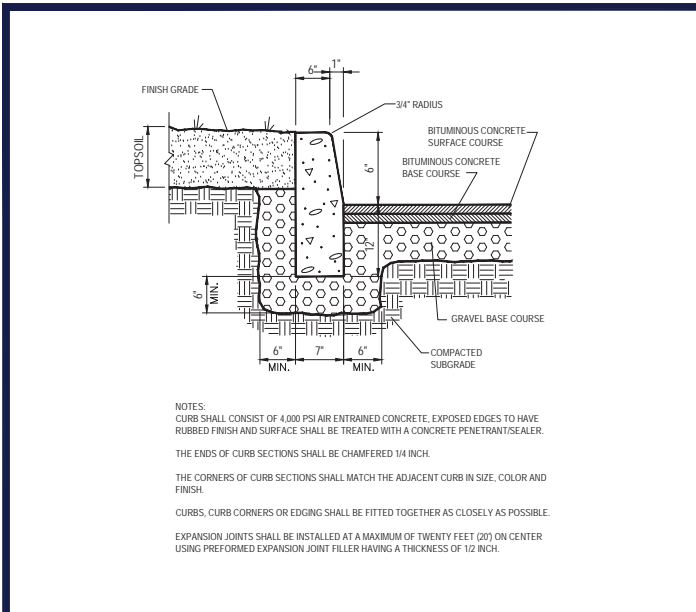
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LIGHTING PLAN

SHEET NUMBER:

C-703

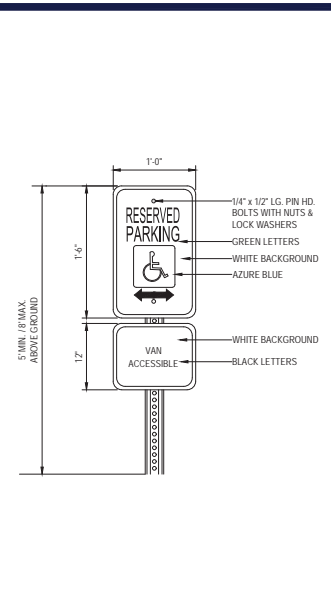
ORG. DATE - 05/31/2023



NOTES:
CURB SHALL CONSIST OF 4000 PSI AIR ENTRAINED CONCRETE. EXPOSED EDGES TO HAVE RUBBED FINISH AND SURFACE SHALL BE TREATED WITH A CONCRETE PENETRANT SEALER.
THE ENDS OF CURB SECTIONS SHALL BE CHAMFERED 1/4 INCH.
THE CORNERS OF CURB SECTIONS SHALL MATCH THE ADJACENT CURB IN SIZE, COLOR AND FINISH.
CURBS, CURB CORNERS OR EDGING SHALL BE FITTED TOGETHER AS CLOSELY AS POSSIBLE.
EXPANSION JOINTS SHALL BE INSTALLED AT A MAXIMUM OF TWENTY FEET (20') ON CENTER USING PREFORMED EXPANSION JOINT FILLER HAVING A THICKNESS OF 1/2 INCH.

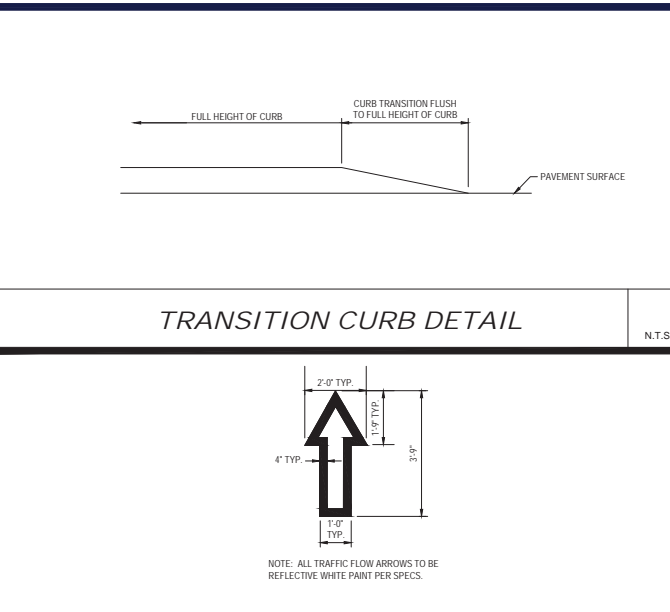
PRECAST CONCRETE CURB DETAIL

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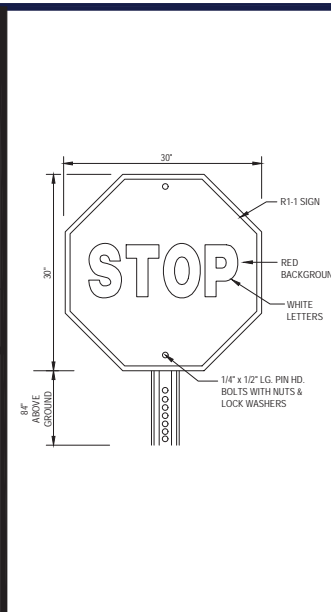
ACCESSIBLE PARKING SIGN DETAIL

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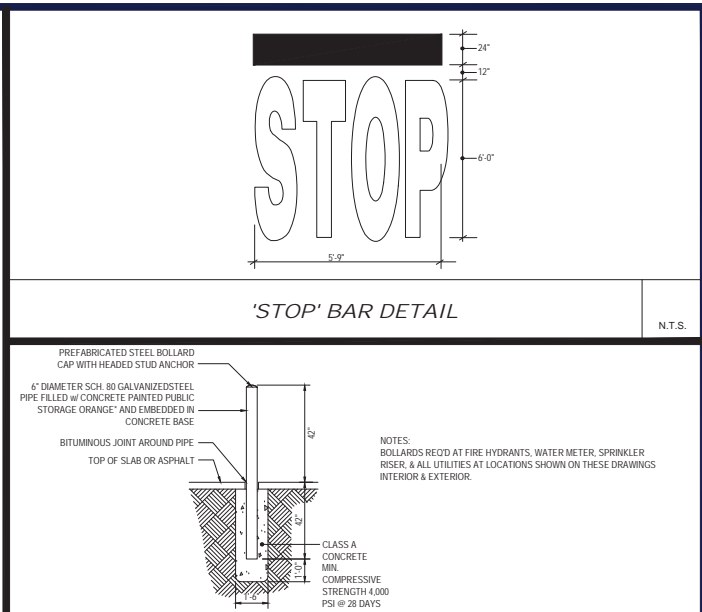
TRANSITION CURB DETAIL

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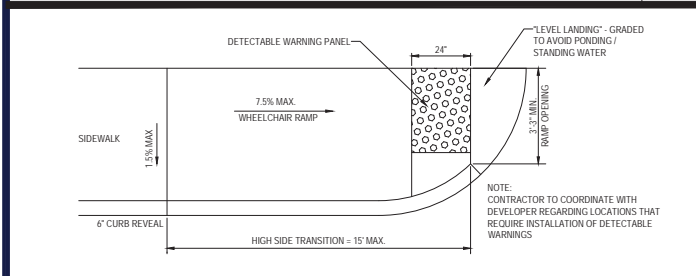
'STOP' SIGN

N.T.S.



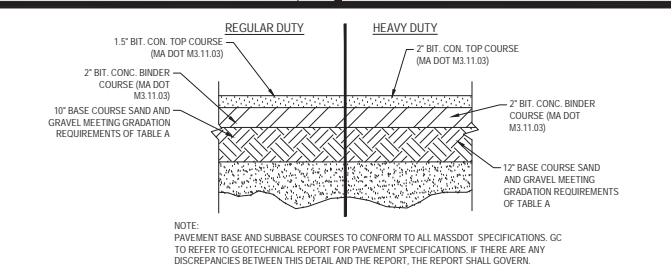
BOLLARD DETAIL

N.T.S.



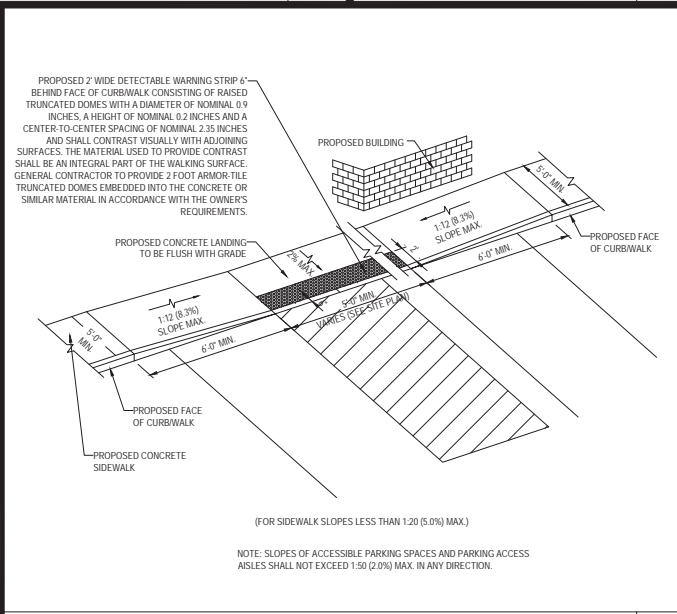
TYPICAL WHEELCHAIR RAMP

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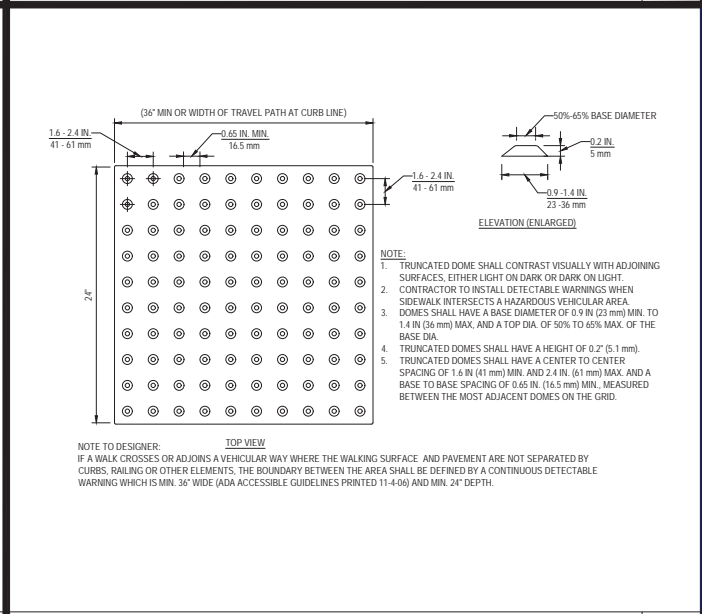
TYPICAL PAVEMENT SECTION

N.T.S.



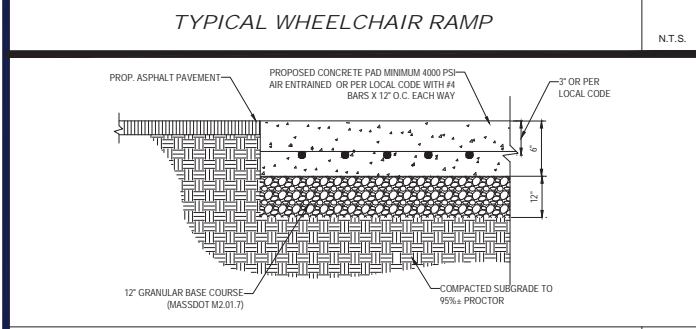
SLOPED WALK DETAIL

N.T.S.



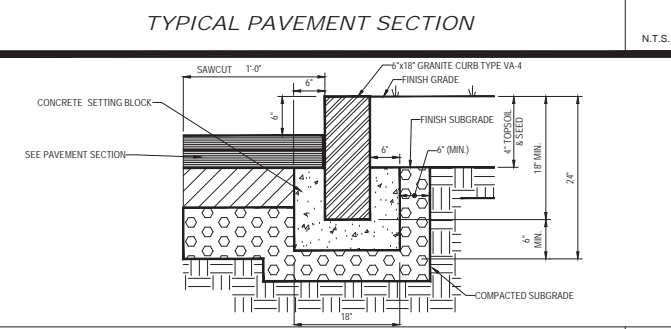
TRUNCATED DOME PATTERN

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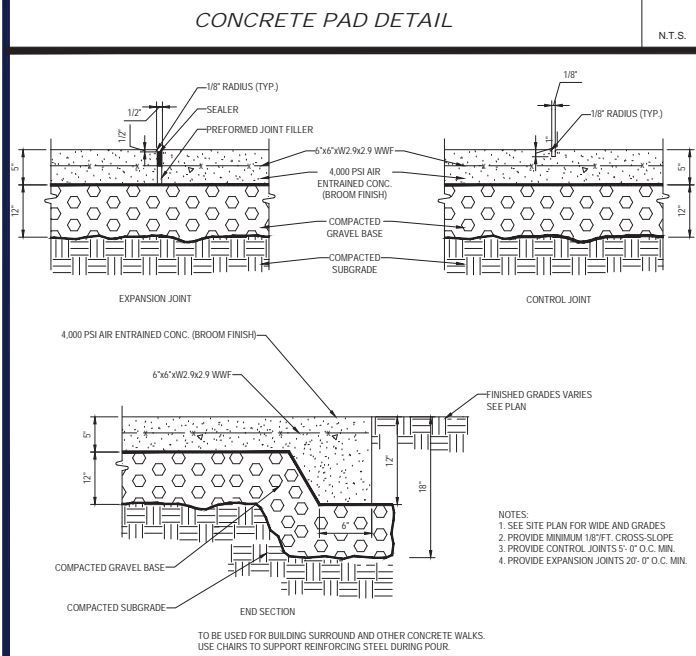
CONCRETE PAD DETAIL

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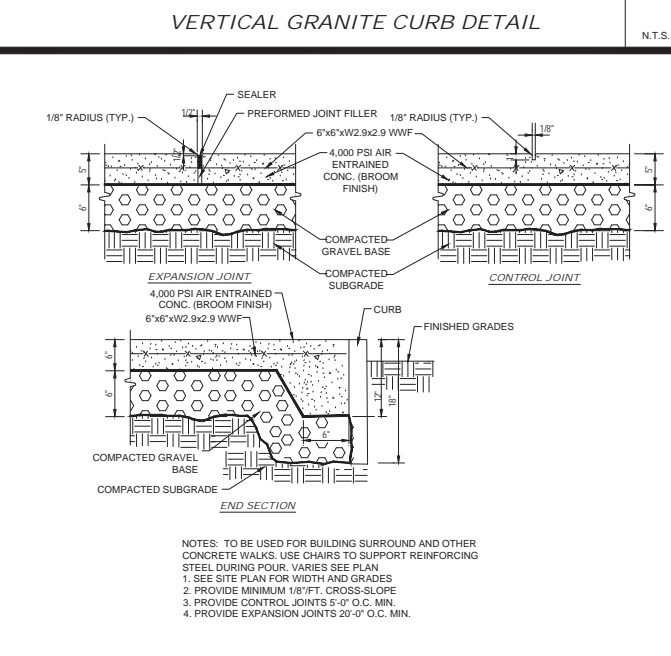
VERTICAL GRANITE CURB DETAIL

N.T.S.



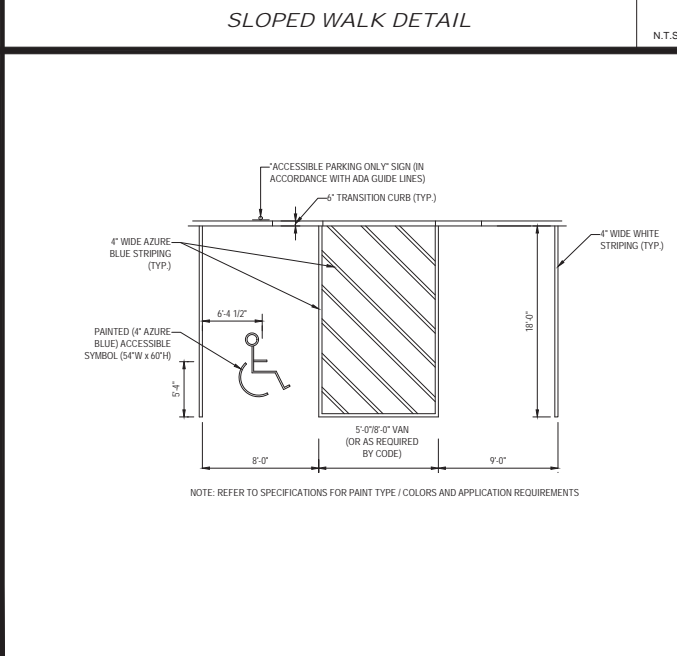
MONOLITHIC CONC. SIDEWALK DETAILS

N.T.S.



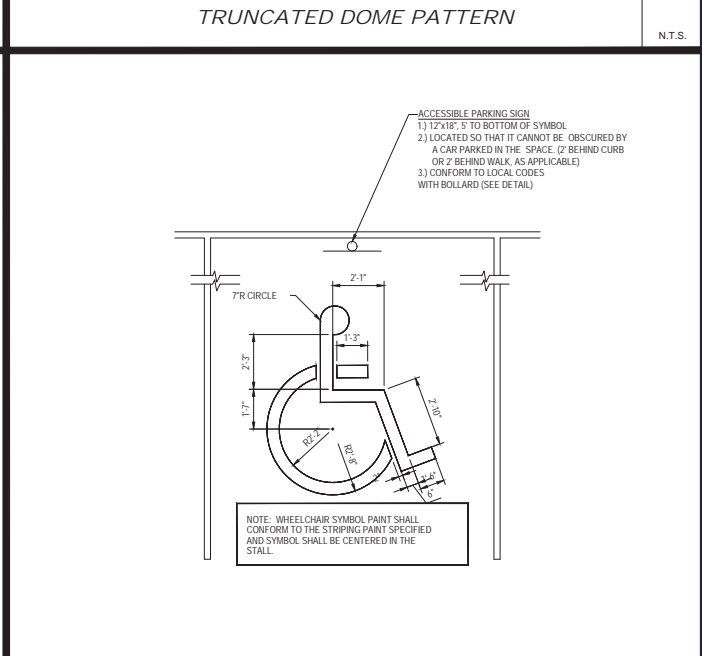
CONCRETE SIDEWALK

N.T.S.



ACCESSIBLE STALL MARKINGS & PARKING LOT STRIPING DETAIL

N.T.S.



ACCESSIBLE PARKING STALL PAINTING DETAIL

N.T.S.

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LAND SURVEYING
PROGRAM MANAGEMENT
LAND ACQUISITION
SUBSTANTIAL DESIGN
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DRAWN BY:	CM/LC
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DATE:	05/31/2023
CAD ID.:	W211263-SPD-2A-DWG

PRELIMINARY CIVIL ENGINEERING PLAN SET
FOR
KIG SILVERSTRAND WALPOLE, LLC

PROPOSED MULTI-FAMILY DEVELOPMENT
MAP 25, BLOCK 164, 165 & 166
981, 989 & 1015 EAST STREET
TOWN OF WALPOLE
NORFOLK COUNTY,
MASSACHUSETTS

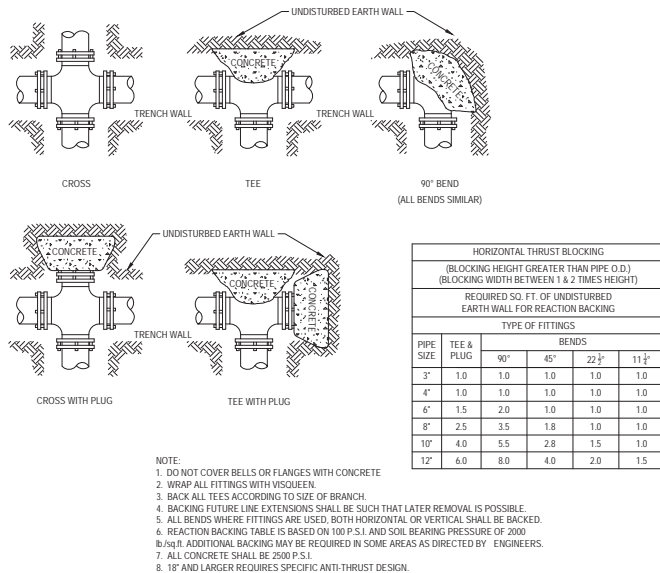
BOHLER
352 TURNPIKE ROAD
SOUTHBOROUGH, MA 01772
Phone: (508) 480-8900
www.BohlerEngineering.com

JOHN KUCERA
PROFESSIONAL ENGINEER
MASSACHUSETTS REG. NO. 15478
NEW HAMPSHIRE REG. NO. 28177
CONNECTICUT REG. NO. 28177
RHODE ISLAND LICENSE NO. 9616-1
-L- (ENGINE LICENSE NO. 12253)

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DETAIL SHEET

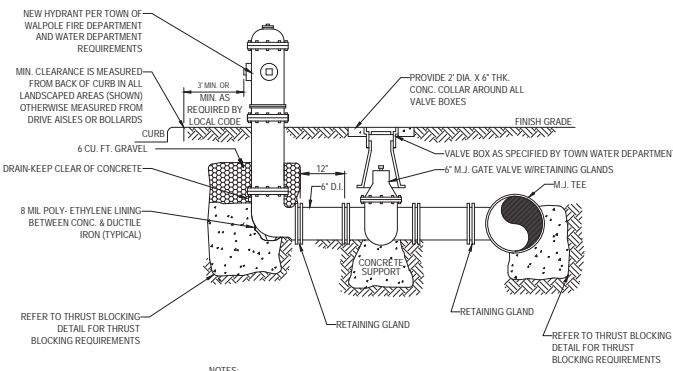
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C-901

ORG. DATE - 05/31/2023



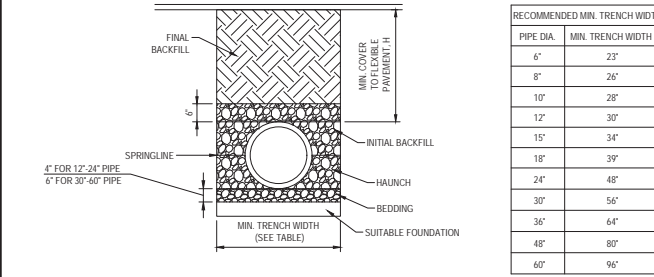
HORIZONTAL THRUST BLOCKING DETAIL

N.T.S.



TYPICAL HYDRANT & VALVE INSTALLATION

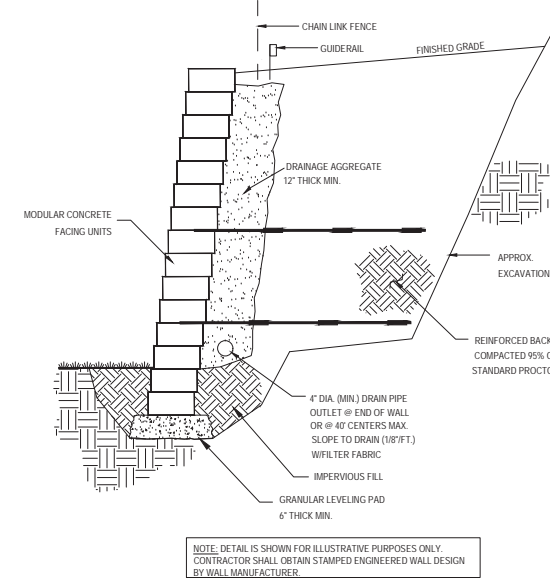
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- NOTES:
1. ALL PIPE SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321 "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS". LATEST EDITION.
 2. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
 3. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.
 4. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II OR III. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4" 24" (100mm-600mm); 6" (150mm) FOR 30" 48" (750mm-900mm).
 5. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II OR III IN THE PIPE ZONE. EXZONING NOT LESS THAN 6" ABOVE CROWN OF PIPE. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.
 6. MINIMUM COVER: MINIMUM COVER, H, IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 12" FROM THE TOP OF PIPE TO GROUND SURFACE. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLUTATION FOR TRAFFIC APPLICATIONS. MINIMUM COVER, H, IS 12" UP TO 48" DIAMETER PIPE AND 24" OF COVER FOR 54-60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

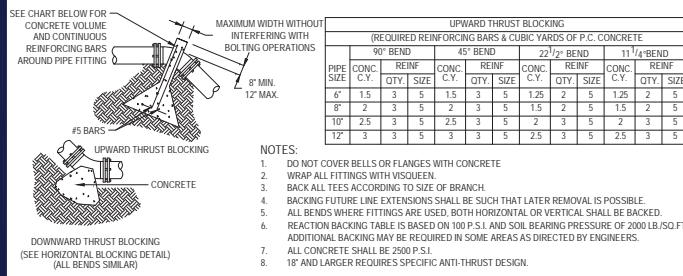
HDPE STORM DRAINAGE TRENCH

N.T.S.



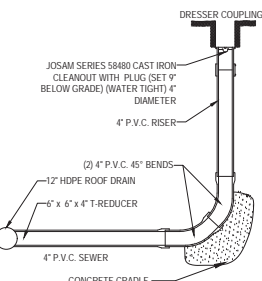
TYPICAL SECTION REINFORCED RETAINING WALL

N.T.S.



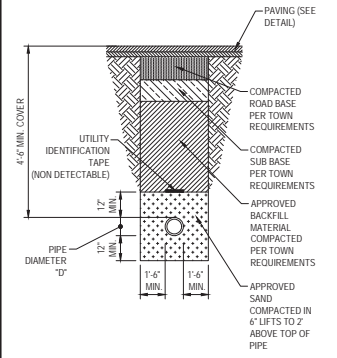
VERTICAL THRUST BLOCKING DETAIL

N.T.S.



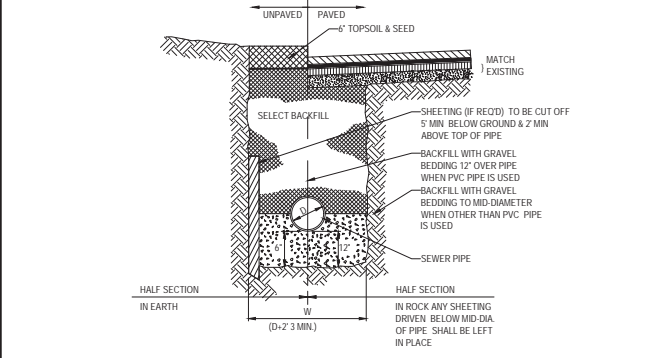
CLEANOUT DETAIL

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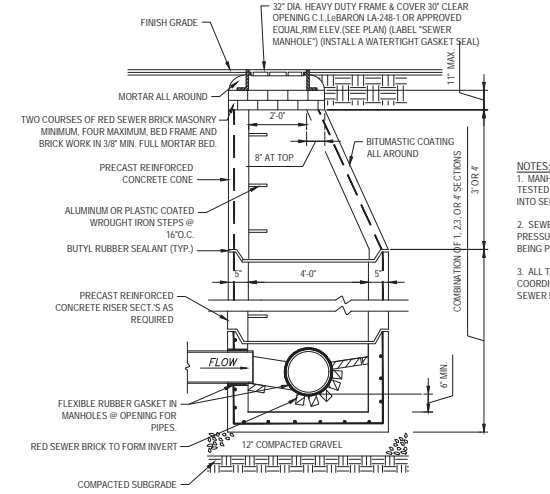
TYPICAL WATER TRENCH

N.T.S.



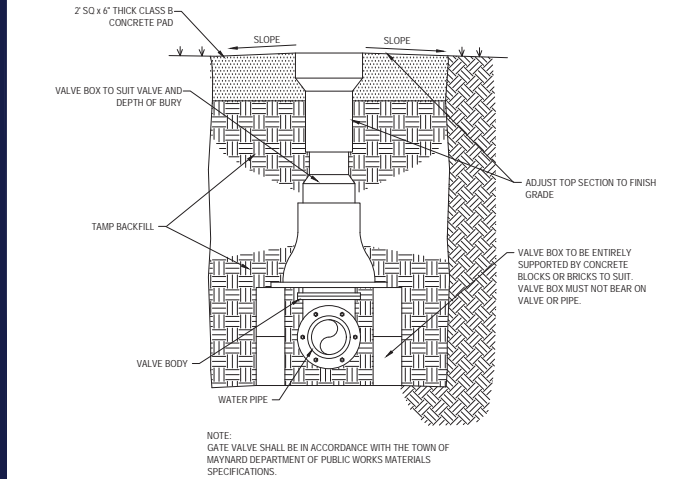
TYPICAL UTILITY TRENCH

N.T.S.



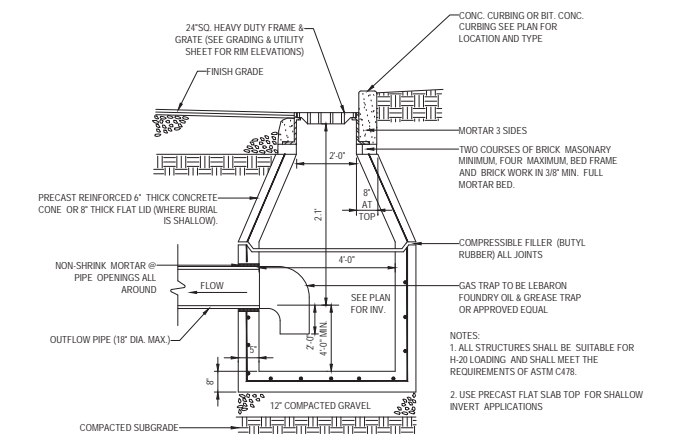
TYP. PRECAST CONCRETE SANITARY MANHOLE

N.T.S.



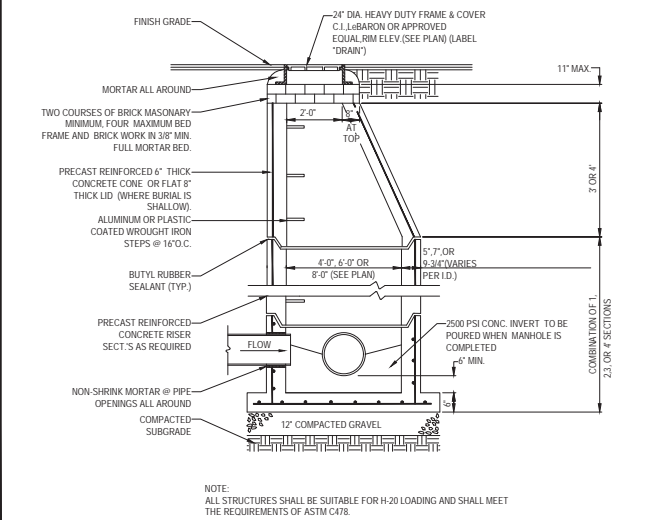
GATE VALVE

N.T.S.



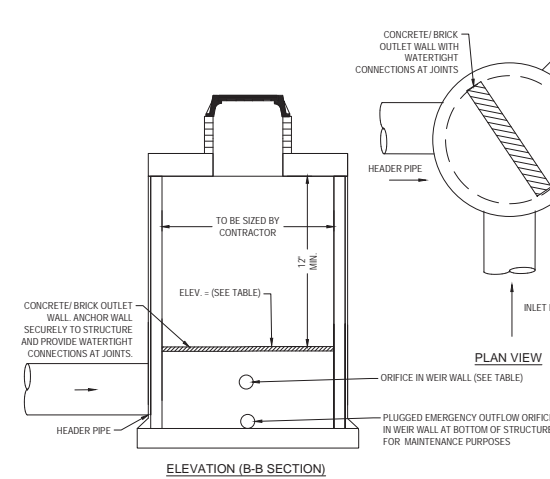
PRECAST CONCRETE DEEP SUMP CATCH BASIN DETAIL

N.T.S.



TYP. PRECAST CONCRETE MANHOLE STORM DRAIN

N.T.S.



SUBSURFACE SYSTEM OUTLET CONTROL STRUCTURE DETAIL

N.T.S.

BOHLER
 SITE CIVIL AND CONSULTING ENGINEERING
 LAND SURVEYING
 PROGRAM MANAGEMENT
 CONSTRUCTION MANAGEMENT
 SUSTAINABLE DESIGN
 PERMITTING SERVICES
 TRANSPORTATION SERVICES

REVISIONS

REV	DATE	COMMENT	DRAWN BY	CHECKED BY

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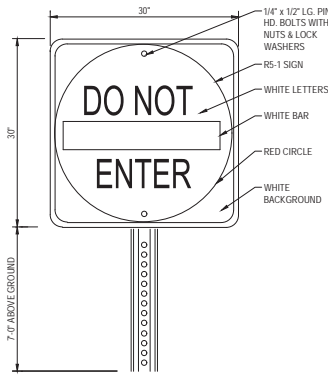
PROJECT:
PRELIMINARY CIVIL ENGINEERING PLAN SET
 FOR

KIG SILVERSTRAND WALPOLE, LLC
 PROPOSED MULTI-FAMILY DEVELOPMENT
 MAP 25, BLOCK 164, 165 & 166
 981, 989 & 1015 EAST STREET
 TOWN OF WALPOLE, NORFOLK COUNTY, MASSACHUSETTS

BOHLER
 352 TURNPIKE ROAD
 SOUTHBOROUGH, MA 01772
 Phone: (508) 480-8900
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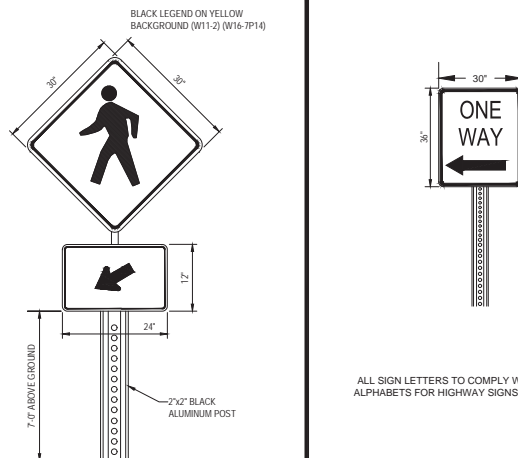
JOHN KUPCHAK
 PROFESSIONAL ENGINEER
 MASS. REG. NO. 15130
 NEW ENGLAND REG. NO. 151476
 CONNECTICUT REG. NO. 28177
 RHODE ISLAND LICENSE NO. 2616
 -OR- EXPIRES LICENSE NO. 12553

SHEET TITLE:
DETAIL SHEET
 SHEET NUMBER:
C-902
 ORG. DATE - 05/31/2023



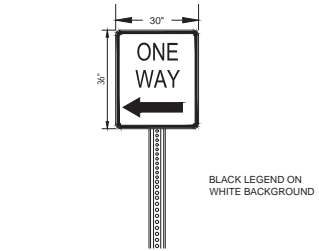
'DO NOT ENTER' SIGN DETAIL

N.T.S.



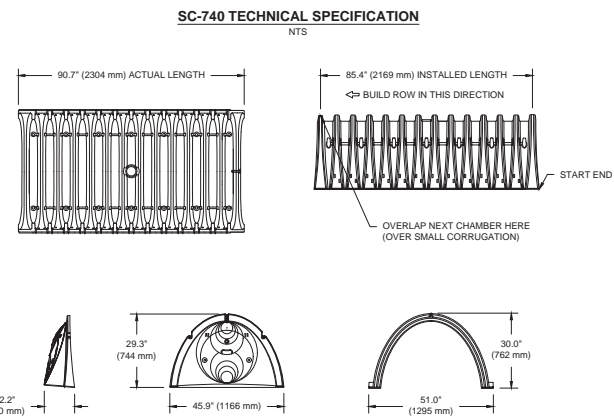
PEDESTRIAN CROSSING SIGN DETAIL

N.T.S.



ONE WAY ONLY SIGN DETAIL

N.T.S.



NOMINAL CHAMBER SPECIFICATIONS table with columns for Part #, Stub, A, B, and C. It lists various part numbers and their corresponding dimensions in feet and millimeters.

Table with 5 columns: PART #, STUB, A, B, C. It lists part numbers and their dimensions for different chamber sizes and stub lengths.

ALL STUBS, EXCEPT FOR THE SC740EP24B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP.

*FOR THE SC740EP24B 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.

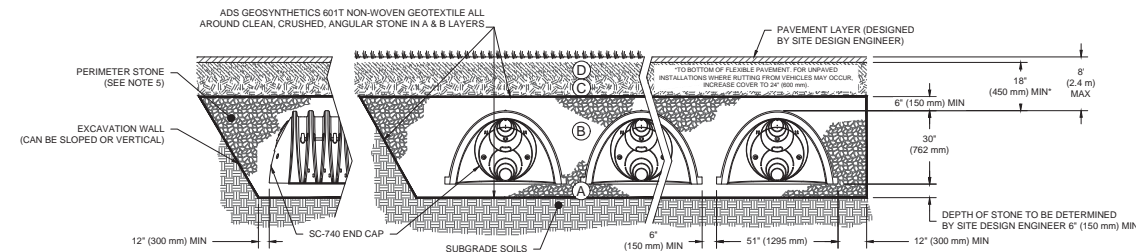
STORMTECH SC-740 TECHNICAL SPECIFICATION

N.T.S.

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

Table with 4 columns: MATERIAL LOCATION, DESCRIPTION, AASHTO MATERIAL CLASSIFICATIONS, and COMPACTION / DENSITY REQUIREMENT. It details fill materials for different layers (D, C, B, A) and their compaction requirements.

- 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".



NOTES:

- 1. SC-740 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".

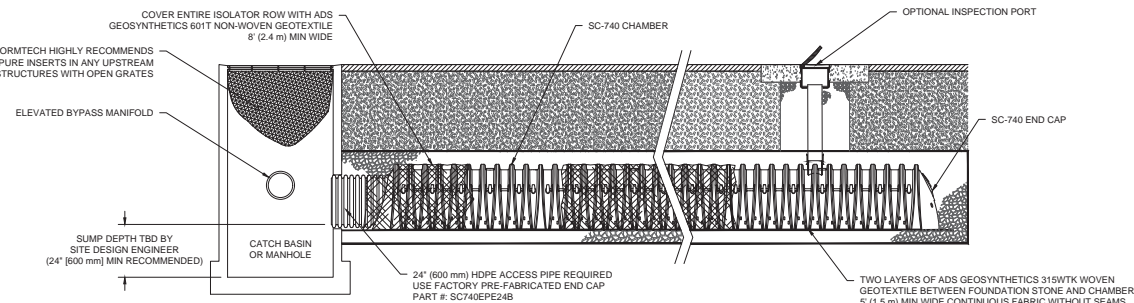
STORMTECH SC-740 STANDARD CROSS SECTION

N.T.S.

INSPECTION & MAINTENANCE

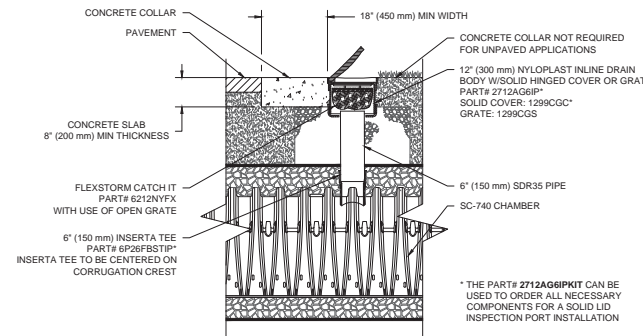
- STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
A. INSPECTION PORTS (IF PRESENT)
A.1. REMOVE OPEN LID ON NYLOPLAST IN-LINE DRAIN
A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG

- 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.



STORMTECH SC-740 ISOLATOR ROW DETAIL

N.T.S.



STORMTECH SC-740 INSPECTION PORT DETAIL

N.T.S.



REVISIONS

REVISIONS table with columns: REV, DATE, COMMENT, and DRAWN BY / CHECKED BY.



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PROJECT NO.: W211263
DRAWN BY: CM/CLC
CHECKED BY: ED/JAK
DATE: 05/31/2023
CAD ID.: W211263-SPFD-2A.DWG

PROJECT: PRELIMINARY CIVIL ENGINEERING PLAN SET FOR

KIG SILVERSTRAND WALPOLE, LLC

PROPOSED MULTI-FAMILY DEVELOPMENT
MAP 25, BLOCK 164, 165 & 166
981, 989 & 1015 EAST STREET
TOWN OF WALPOLE
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352 TURNPIKE ROAD
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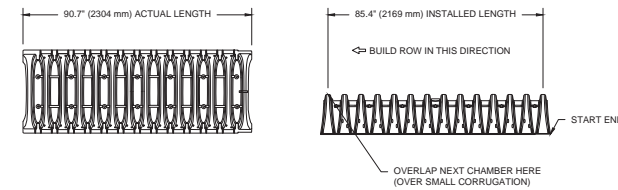
SHEET TITLE:

DETAIL SHEET

SHEET NUMBER: C-903

ORG. DATE - 05/31/2023

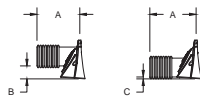
SC-310 TECHNICAL SPECIFICATION



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	34.0" X 18.0" X 85.4"	(864 mm X 457 mm X 2169 mm)
CHAMBER STORAGE	14.7 CUBIC FEET	(0.42 m ³)
MINIMUM INSTALLED STORAGE*	31.0 CUBIC FEET	(0.88 m ³)
WEIGHT	35.0 lbs.	(16.8 kg)

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



PRE-FAB STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
 PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
 PRE-CORED END CAPS END WITH "PC"

PART #	STUB	A	B	C
SC310EPE06T / SC310EPE06TPC	6" (150 mm)	9.8" (244 mm)	5.8" (147 mm)	---
SC310EPE06B / SC310EPE06BPC	---	---	---	0.5" (13 mm)
SC310EPE08T / SC310EPE08TPC	8" (200 mm)	11.9" (302 mm)	3.5" (89 mm)	---
SC310EPE08B / SC310EPE08BPC	---	---	---	0.6" (15 mm)
SC310EPE10T / SC310EPE10TPC	10" (250 mm)	12.7" (323 mm)	1.4" (36 mm)	---
SC310EPE10B / SC310EPE10BPC	---	---	---	0.7" (18 mm)
SC310EPE12B	12" (300 mm)	13.5" (343 mm)	---	0.9" (23 mm)

ALL STUBS, EXCEPT FOR THE SC310EPE12B 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 SC310EPE12B THE 12" (300 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 0.25" (6 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

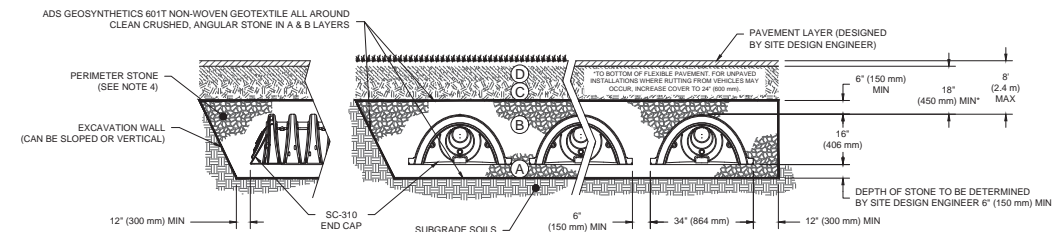
STORMTECH SC-310 TECHNICAL SPECIFICATION

ACCEPTABLE FILL MATERIALS: STORMTECH SC-310 CHAMBER SYSTEMS

MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	AASHTO M145 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.	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.	AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. ^{1,2}

PLEASE NOTE:

- THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
- STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) MAX LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
- WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
- 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:

- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2922 (POLETHYLENE) OR ASTM F2418 (POLYPROPYLENE), "STANDARD SPECIFICATION FOR CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- SC-310 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
- PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- 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 F2922 SHALL BE GREATER THAN OR EQUAL TO 400 LBSP/LIN. 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.

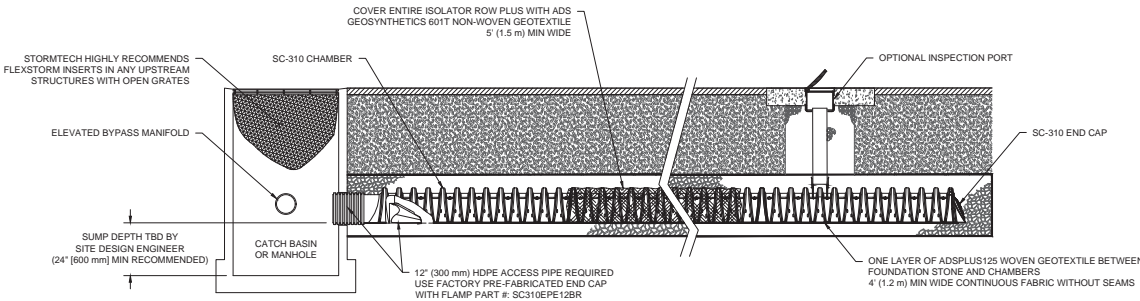
STORMTECH SC-310 STANDARD CROSS SECTION

INSPECTION & MAINTENANCE

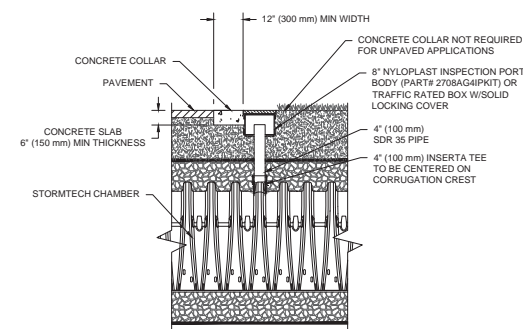
- STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- INSPECTION PORTS (IF PRESENT)
 - REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
 - REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
 - USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
 - LOWER A CAMERA INTO ISOLATOR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

NOTES

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



STORMTECH SC-310 ISOLATOR ROW DETAIL



NOTE: INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION CREST.

**STORMTECH SC--310
4" INSPECTION PORT DETAIL**



REVISIONS

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PROJECT NO.:	W211263
DRAWN BY:	CM/LC
CHECKED BY:	ED/JAK
DATE:	05/31/2023
CAD ID.:	W211263-PPFD-2A.DWG

PROJECT:
**PRELIMINARY CIVIL
 ENGINEERING
 PLAN SET**
 FOR

**KIG SILVERSTRAND
 WALPOLE, LLC**

PROPOSED
 MULTI-FAMILY DEVELOPMENT
 MAP 25, BLOCK 164, 165 & 166
 981, 989 & 1015 EAST STREET
 TOWN OF WALPOLE
 NORFOLK COUNTY,
 MASSACHUSETTS



352 TURNPIKE ROAD
 SOUTHBOROUGH, MA 01772
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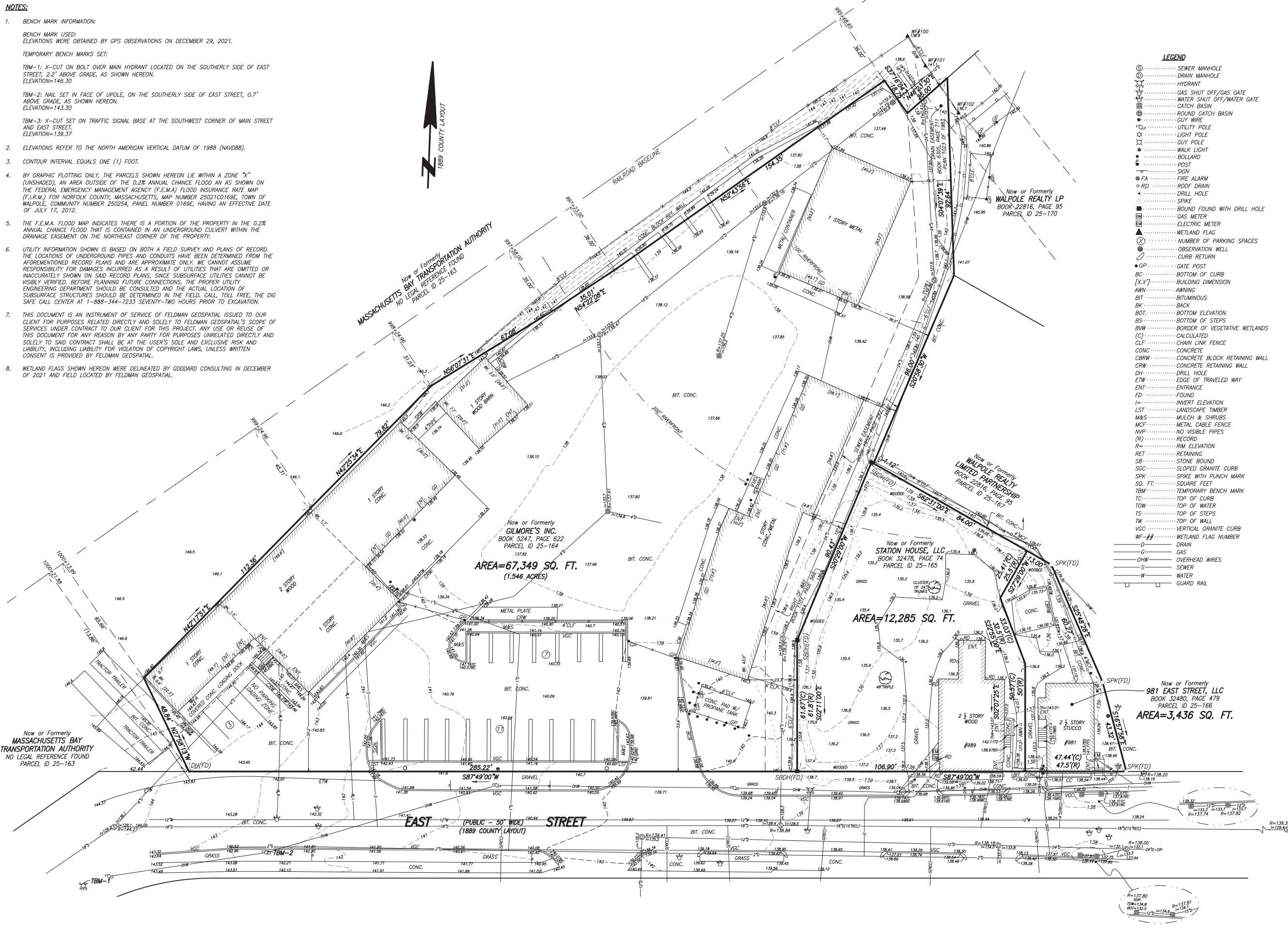
**DETAIL
 SHEET**

SHEET NUMBER:
C-904

ORG. DATE - 05/31/2023

NOTES:

- BENCH MARK INFORMATION:
 BENCH MARK USED:
 ELEVATIONS WERE OBTAINED BY GPS OBSERVATIONS ON DECEMBER 29, 2021.
 TEMPORARY BENCH MARKS SET:
 TBM-1: X-CUT ON BOLT OVER MAIN HYDRANT LOCATED ON THE SOUTHERLY SIDE OF EAST STREET, 2.2' ABOVE GRADE, AS SHOWN HEREON.
 ELEVATION=146.30
 TBM-2: NAIL SET IN FACE OF UPOLE, ON THE SOUTHERLY SIDE OF EAST STREET, 0.7' ABOVE GRADE, AS SHOWN HEREON.
 ELEVATION=143.30
 TBM-3: X-CUT SET ON TRAFFIC SIGNAL BASE AT THE SOUTHWEST CORNER OF MAIN STREET AND EAST STREET.
 ELEVATION=139.37
- ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
- CONTOUR INTERVAL EQUALS ONE (1) FOOT.
- BY GRAPHIC PLOTTING ONLY, THE PARCELS SHOWN HEREON LIE WITHIN A ZONE "X" (UNSHADED), AN AREA OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOOD AS SHOWN ON THE FEDERAL EMERGENCY MANAGEMENT AGENCY (F.E.M.A) FLOOD INSURANCE RATE MAP (F.I.R.M.) FOR NORFOLK COUNTY, MASSACHUSETTS, MAP NUMBER 25021C0169E, TOWN OF WALPOLE, COMMUNITY NUMBER 250294, PANEL NUMBER 0169E, HAVING AN EFFECTIVE DATE OF JULY 17, 2012.
- THE F.E.M.A. FLOOD MAP INDICATES THERE IS A PORTION OF THE PROPERTY IN THE 0.2% ANNUAL CHANCE FLOOD THAT IS CONTAINED IN AN UNDERGROUND CULVERT WITHIN THE DRAINAGE EASEMENT ON THE NORTHEAST CORNER OF THE PROPERTY.
- UTILITY INFORMATION SHOWN IS BASED ON BOTH A FIELD SURVEY AND PLANS OF RECORD. THE LOCATIONS OF UNDERGROUND PIPES AND CONDUITS HAVE BEEN DETERMINED FROM THE AFOREMENTIONED RECORD PLANS AND ARE APPROXIMATE ONLY. WE CANNOT ASSUME RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES THAT ARE OMITTED OR INACCURATELY SHOWN ON SAID RECORD PLANS, SINCE SUBSURFACE UTILITIES CANNOT BE VISIBLY VERIFIED. BEFORE PLANNING FUTURE CONNECTIONS, THE PROPER UTILITY ENGINEERING DEPARTMENT SHOULD BE CONSULTED AND THE ACTUAL LOCATION OF SUBSURFACE STRUCTURES SHOULD BE DETERMINED IN THE FIELD. CALL TOLL FREE, THE DIG SAFE CALL CENTER AT 1-888-344-7233 SEVENTY-TWO HOURS PRIOR TO EXCAVATION.
- THIS DOCUMENT IS AN INSTRUMENT OF SERVICE OF FELDMAN GEOSPATIAL ISSUED TO OUR CLIENT FOR PURPOSES RELATED DIRECTLY AND SOLELY TO FELDMAN GEOSPATIAL'S SCOPE OF SERVICES UNDER CONTRACT TO OUR CLIENT FOR THIS PROJECT. ANY USE OR REUSE OF THIS DOCUMENT FOR ANY REASON BY ANY PARTY FOR PURPOSES UNRELATED DIRECTLY AND SOLELY TO SAID CONTRACT SHALL BE AT THE USER'S SOLE AND EXCLUSIVE RISK AND LIABILITY, INCLUDING LIABILITY FOR VIOLATION OF COPYRIGHT LAWS, UNLESS WRITTEN CONSENT IS PROVIDED BY FELDMAN GEOSPATIAL.
- WETLAND FLAGS SHOWN HEREON WERE DELINEATED BY GODDARD CONSULTING IN DECEMBER OF 2021 AND FIELD LOCATED BY FELDMAN GEOSPATIAL.

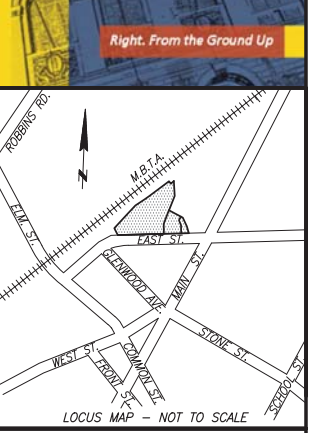


- LEGEND**
- ⊙ SEWER MANHOLE
 - ⊕ DRAIN MANHOLE
 - ⊕ HYDRANT
 - ⊕ GAS SHUT OFF/GAS GATE
 - ⊕ WATER SHUT OFF/WATER GATE
 - ⊕ CATCH BASIN
 - ⊕ ROUND CATCH BASIN
 - ⊕ GUY WIRE
 - ⊕ UTILITY POLE
 - ⊕ LIGHT POLE
 - ⊕ GUY POLE
 - ⊕ WALK LIGHT
 - ⊕ BOLLARD
 - ⊕ POST
 - ⊕ SIGN
 - ⊕ FA FIRE ALARM
 - ⊕ RD ROOF DRAIN
 - ⊕ DRILL HOLE
 - ⊕ SPIKE
 - ⊕ BOUND FOUND WITH DRILL HOLE
 - ⊕ GAS METER
 - ⊕ ELECTRIC METER
 - ⊕ WETLAND FLAG
 - ⊕ NUMBER OF PARKING SPACES
 - ⊕ OBSERVATION WELL
 - ⊕ CURB RETURN
 - ⊕ GP GATE POST
 - BC BOTTOM OF CURB
 - [X.X] BUILDING DIMENSION
 - AWN AWNING
 - BIT BITUMINOUS
 - BK BACK
 - BOT BOTTOM ELEVATION
 - BS BOTTOM OF STEPS
 - BVW BORDER OF VEGETATIVE WETLANDS
 - (C) CALCULATED
 - CLF CHAIN LINK FENCE
 - CONC CONCRETE
 - CBRW CONCRETE BLOCK RETAINING WALL
 - CRW CONCRETE RETAINING WALL
 - DH DRILL HOLE
 - ETW EDGE OF TRAVELED WAY
 - ENT ENTRANCE
 - FD FOUND
 - I= INVERT ELEVATION
 - LST LANDSCAPE TIMBER
 - M&S MULCH & SHRUBS
 - MCF METAL CABLE FENCE
 - NVP NO VISIBLE PIPES
 - (R) RECORD
 - R= RIM ELEVATION
 - RET RETAINING
 - SB STONE BOUND
 - SGC SLOPED GRANITE CURB
 - SPK SPIKE WITH PUNCH MARK
 - SQ. FT. SQUARE FEET
 - TBM TEMPORARY BENCH MARK
 - TC TOP OF CURB
 - TOW TOP OF WATER
 - TS TOP OF STEPS
 - TW TOP OF WALL
 - VGC VERTICAL GRANITE CURB
 - WF-# WETLAND FLAG NUMBER
 - D DRAIN
 - C GAS
 - OHW OVERHEAD WIRES
 - S SEWER
 - W WATER
 - GR GUARD RAIL

BOSTON HEADQUARTERS
 152 HAMPDEN STREET
 BOSTON, MA 02119

WORCESTER OFFICE
 27 MECHANIC STREET
 WORCESTER, MA 01608

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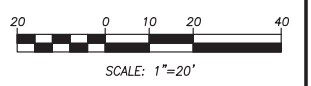
I CERTIFY THAT THIS PLAN IS BASED ON AN ACTUAL FIELD SURVEY AND THE LATEST PLANS AND DEEDS OF RECORD.

Timothy R. Agurkis
 TIMOTHY R. AGURKIS, PLS
 (MA# 52782)
 TACURKIS@FELDMANGEO.COM

1/10/2023
 DATE

DRAWING NAME:
EXISTING CONDITIONS PLAN OF LAND
 981-1015 EAST STREET
 WALPOLE, MASS.

DATE:	DECEMBER 28, 2022
REVISIONS:	
12/01/22	981-989 EAST STREET ADDED
FILENAME:	2201402-EC.dwg
RESEARCH:	TRA FIELD CHIEF: CL2
PROJ MGR:	TRA APPROVED:
CALC:	TRA CADD: TRA/MJB
FIELD CHK:	CRD FILE: 2201402



FILENAME: S:\PROJECTS\2022\2201402-DWG\2201402-EC.dwg