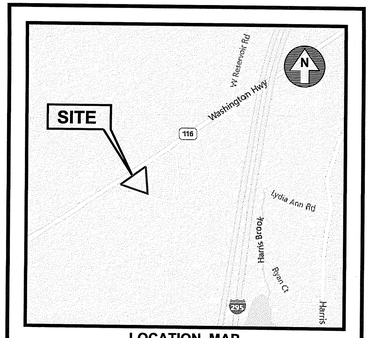
PERMITTING PLAN SET

FOR

PROPOSED SMITHFIELD FIRE STATION

PLAT MAP 48, LOT 51
ZONING DISTRICT: L1
LIGHT INDUSTRIAL DISTRICT

321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RHODE ISLAND



LOCATION MAP
NOT TO SCALE

STEVEN M. CABRAL
No. 4847
REGISTERED PROFESSIONAL ENGINEER
4-24-21

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REFERENCE PLAN

FP	FLOODPLAIN COMPENSATION PLAN

REVISIONS

No.	DESCRIPTION	DATE
1	REVISED LAYOUT	08/27/21
2	REVISED LOD	09/10/21
3	R.I.D.E.M. COMMENTS	09/25/21

OWNER

SMILE LLC
C/O ATWILL - CONROY DENTAL
1 THURBER BOULEVARD
SMITHFIELD, RHODE ISLAND 02917

APPLICANT

SMITHFIELD FIRE DEPARTMENT
607 PUTNAM PIKE
GREENVILLE, RHODE ISLAND 02908

ENGINEERS

- Civil
- Transportation
- Environmental
- Site Planning
- Surveying
- Permitting
- Landscape Architecture

CROSSMAN ENGINEERING

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151 Centerville Road
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Massachusetts
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Phone: (508) 695-1700

Email: cei@crossmaneng.com

MAY 2021
SHEET 1 of 15

ARCHITECT

AHARONIAN & ASSOCIATES, INC.
Architects
401·232·5010
www.arch-eng.com

310 GEORGE WASHINGTON HIGHWAY- SUITE 100
SMITHFIELD, RHODE ISLAND 02917

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED OCT 19 2021 FILE # 21-0169
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE
Nancy L. Freeman

Environmental Management
SEP 24 2021
Office of Water Resources

GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL EXISTING DRAINAGE AND UTILITIES, BOTH UNDERGROUND AND OVERHEAD, BEFORE EXCAVATION BEGINS IN ACCORDANCE WITH "DIG SAFE PROGRAM LAW" ENACTED BY THE R.I. LEGISLATURE AND BY CONTACTING THE INDIVIDUAL UTILITY COMPANIES. EXCAVATION SHALL BE IN ACCORDANCE WITH ALL STATUTES, ORDINANCES, RULES AND REGULATIONS OF ANY MUNICIPALITY, STATE OR FEDERAL AGENCY THAT MAY APPLY. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

2. SPECIFICATIONS TO GOVERN THIS PROJECT ARE R.I.D.O.T. STANDARD SPECIFICATIONS AND DETAILS. FOR ALL EXCAVATION, PLACEMENT OF FILL, PIPE BITUMINOUS PAVEMENT, CUTTING INTO CATCHBASIN/MANHOLES, CONCRETE AND SAWCUTTING, THE CONTRACTOR SHALL PERFORM THE WORK IN FULL COMPLIANCE WITH THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, MARCH 2018 EDITION, WITH LATEST REVISIONS UNLESS OTHERWISE SHOWN ON PLANS. THE "METHOD OF MEASUREMENT" AND "BASIS OF PAYMENT" ARE NOT APPLICABLE. THESE SPECIFICATIONS CAN BE OBTAINED ON-LINE AT:

   http://www.dot.ri.gov/business/bluebook.php

3. UNLESS SPECIFICALLY REFERENCED ON THE PLANS, ALL WORK ON SITE SHALL USE THE RHODE ISLAND STANDARD DETAILS, JUNE 21, 2019 WITH ALL REVISIONS AS PREPARED BY THE DEPARTMENT OF TRANSPORTATION.

4. THE CONTRACTOR MUST VERIFY PRIOR TO CONSTRUCTION THAT ALL REQUIRED AUTHORIZATION TO PERFORM WORK HAS BEEN OBTAINED. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION OPERATIONS INCLUDING ALL ACTIONS OR OMISSIONS OF ANY SUBCONTRACTORS, AGENTS OR EMPLOYEES. THE CONTRACTOR MUST ENSURE THAT THE CONDITIONS OF ALL PERMITS, SPECIFICATIONS AND FEDERAL, STATE AND LOCAL REGULATIONS ARE STRICTLY ENFORCED. THE CONTRACTOR IS ALSO RESPONSIBLE FOR ASPECTS OF ON-SITE SAFETY INCLUDING ANY DAMAGE TO EXISTING STRUCTURES.

5. WORK SHOWN ON THE PLANS FOR WHICH THERE ARE NO PARTICULAR DETAILS OR SPECIFICATIONS DOES NOT RELIEVE THE CONTRACTOR FROM FURNISHING AND INSTALLING THE WORK. THE CONTRACTOR SHALL THOROUGHLY EXAMINE THE CONTRACT DOCUMENTS AND PLANS AND INSPECT THE SITE, AND THE BID PRICE SHALL INCLUDE ALL SERVICES AND MATERIALS NECESSARY TO COMPLETE THE PROJECT. ANY CHANGES TO THE PROJECT OR THE INSTALLATION OF AN ITEM FOR WHICH NO PARTICULAR DETAIL OR SPECIFICATION WAS PROVIDED MUST BE REVIEWED BY AND MUST BE ACCEPTABLE TO THE ENGINEER.

6. CONTRACTOR IS RESPONSIBLE TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO ANY WORK. THE CONTRACTOR SHALL PERFORM TEST PITS TO LOCATE EXISTING UTILITY STUBS AT CONNECTION POINTS.

7. ALL DISTURBED AREAS SHALL BE REPLACED IN KIND UNLESS OTHERWISE SHOWN.

8. "APPROVED EQUAL" PRODUCTS MAY BE USED BY THE CONTRACTOR ONLY UPON APPROVAL BY THE DESIGN ENGINEER. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE SUBMITTALS TO THE DESIGN ENGINEER FOR REVIEW.

9. THIS PROPOSED USE DOES NOT MEET THE RIDEM DEFINITION OF A LAND USE WITH HIGHER POTENTIAL POLLUTANT LOAD.

10. THE DETECTABLE WARNING DEVICE FOR ADA RAMPS SHALL NOT BE USED FOR WHEELCHAIR RAMP AREAS

LAYOUT NOTE

THE LAYOUT SHOWN REPRESENTS A GRAPHICAL DESIGN, AND PRIOR TO THE CONSTRUCTION, THE CONTRACTOR SHALL ENGAGE A PROFESSIONAL LAND SURVEYOR (PLS) REGISTERED IN THE STATE OF RHODE ISLAND TO SET AND VERIFY ALL LINES AND GRADES. ALL EXISTING UTILITY LOCATIONS AND ELEVATIONS ARE TO BE CONFIRMED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ANY ITEM FOUND WHICH DOES NOT MATCH THE PLANS MUST BE BROUGHT TO THE ENGINEER'S ATTENTION PRIOR TO CONSTRUCTION FOR REVIEW. NO WORK SHALL PROCEED UNTIL AUTHORIZED BY THE ENGINEER.

MAINTENANCE AND PROTECTION OF TRAFFIC NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MAINTENANCE AND PROTECTION OF PEDESTRIAN AND VEHICULAR TRAFFIC INCLUDING POLICE PROTECTION. ALL TEMPORARY CONSTRUCTION SIGNS, BARRICADES AND LANE CLOSURES SHALL BE IN CONFORMANCE WITH THE LATEST REVISIONS OF MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.)

2. TEMPORARY CONSTRUCTION SIGNS AND ALL APPLICABLE TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF WORK IN ANY AREA OPEN TO TRAFFIC.

3. ALL MAINTENANCE AND PROTECTION OF TRAFFIC CONTROL SETUPS, SIGNS, CHANNELING DEVICES, ETC., SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 EDITION, LATEST REVISIONS.

4. SIGN MOUNTINGS SHALL BE IN ACCORDANCE WITH THE STATE D.O.T. SPECIFICATIONS FOR TEMPORARY CONSTRUCTION SIGNS.

CONSTRUCTION NOTES

1. THE CONTRACTOR IS REQUIRED TO OBTAIN AND REVIEW ALL ENGINEERING AND PERMIT DOCUMENTS COMPLETED FOR FINAL DESIGN.

2. THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO INSTALLATION OF UTILITIES ON SITE. THE COORDINATION IS NECESSARY FOR THE ENGINEER TO SCHEDULE SITE INSPECTIONS AS REQUIRED.

3. THE CONTRACTOR IS REQUIRED TO MAINTAIN DETAILED AS-BUILT INFORMATION FOR ALL UTILITY INSTALLATION. AS-BUILT INFORMATION INCLUDES MATERIAL LIST, PIPE DEPTH NOTATIONS AND SWING TIE LOCATIONS (2 MINIMUM) FROM NEW PIPE TO PERMANENT STRUCTURES. ALL PIPE BEND/ELBOW LOCATIONS SHALL BE DIMENSIONED.

FLOOD ZONE NOTE

THE SITE IS WITHIN FLOOD ZONE X, AREAS TO BE OUTSIDE THE 0.2% CHANCE FLOODPLAIN, AND FLOOD ZONE A, AREAS SUBJECT TO FLOODING BY THE 1% CHANCE ANNUAL FLOOD ACCORDING TO FLOOD INSURANCE RATE MAP, PROVIDENCE COUNTY, RHODE ISLAND, PANEL 167 OF 451, MAP NUMBER 44007C0167H, EFFECTIVE DATE OCTOBER 2, 2015.

DESIGN FLOOD ELEVATION OF 371.1 IS USED BASED UPON EXISTING OVERFLOW GRADE OF 371.1 ONTO GEORGE WASHINGTON HIGHWAY.

PERMITTING NOTES

1. A RIDEM WETLAND PERMIT IS REQUIRED.

2. LYDIA ANN ROAD IS NOT A RIDOT MAINTAINED ROADWAY. A RIDOT PAP IS NOT REQUIRED.

3. THE PROPOSED IMPROVEMENTS WILL RESULT IN MORE THAN 1 ACRE OF SOIL DISTURBANCE. A RIDEM RIPDES PERMIT IS REQUIRED.

4. A RIDEM PERMIT FOR THE PROPOSED UNDERGROUND STORMWATER INFILTRATION SYSTEM IS REQUIRED (GROUNDWATER DISCHARGE SYSTEM APPROVAL).

5. THE SITE IS NOT WITHIN A RIDEM NATURAL HERITAGE AREA.

6. A SEPERATE UTILITY PERMIT APPLICATION WILL BE REQUIRED FROM THE TOWN OF SMITHFIELD FOR PROPOSED WATER, SEWER AND ROAD OPENING PERMITS.

7. THE CONTRACTOR WILL BE RESPONSIBLE TO CONTACT AND COORDINATE WITH THE GAS, ELECTRIC, TELEPHONE/COMMUNICATIONS COMPANIES FOR THE NEW INSTALLATION AND SERVICE TO THE BUILDINGS.

PROPOSED PAVEMENT STRUCTURE

1 1/2" BITUMINOUS CONCRETE SURFACE COURSE, CLASS 12.5 HMA
2 1/2" BITUMINOUS CONCRETE BASE COURSE, CLASS 19.5 HMA
12" GRAVEL BORROW SUBBASE

NOTE: THE PAVEMENT THICKNESS WITHIN THE LYDIA ANN ROAD RIGHT OF WAY SHALL MATCH THE CURRENT PAVEMENT THICKNESS OF LYDIA ANN ROAD

STORMWATER MANAGEMENT SYSTEM - MAINTENANCE OPERATION

UPON PROJECT COMPLETION, THE SITE OWNER SHALL ADHERE TO THE FOLLOWING MAINTENANCE RECOMMENDATIONS.

1. CATCHBASINS, MANHOLES, AND CLEAN-OUTS:

   INSPECTION SHALL OCCUR ON AN ANNUAL BASIS BY QUALIFIED PERSONNEL TO ENSURE PROPER OPERATION. THE INSPECTION SHOULD, AS A MINIMUM, CONCENTRATE ON THE FOLLOWING:

   - DAMAGE TO GRATE/COVER
   - EVIDENCE OF STANDING WATER
   - DEBRIS REMOVAL
   - STRUCTURAL ALIGNMENT/INTEGRITY

2. WATER QUALITY CHAMBER:

   REGULAR INSPECTIONS AND MAINTENANCE OF THE STORMCEPTOR DEVICE IS REQUIRED TO MINIMIZE STORMWATER POLLUTION AND FLOODING. FOLLOWING CONSTRUCTION, INSPECTIONS FOR THE FIRST YEAR OF OPERATION SHALL OCCUR AFTER EVERY STORM EVENT WITH GREATER THAN ONE INCH OF RAINFALL, IMMEDIATELY AFTER OIL, FUEL OR OTHER CHEMICAL SPILLS, AND QUARTERLY (FOUR TIMES PER YEAR). INSPECTIONS SHALL OCCUR A MINIMUM OF TWO TIMES PER YEAR FOR THE FOLLOWING YEARS. THE STORMCEPTOR DEVICE IS REQUIRED TO BE CLEANED ANNUALLY AND WHENEVER SEDIMENT DEPTHS REACH 15% OF THE UNIT'S TOTAL STORAGE CAPACITY

3. SEDIMENT REMOVAL:

   FOLLOWING CONSTRUCTION, SEDIMENT REMOVAL SHALL BE CONDUCTED AS DEEMED NECESSARY BY THE SYSTEM INSPECTIONS. ALL REMOVED SEDIMENT IS TO BE TESTED TO DETERMINE POLLUTANT CONTENT. THE SEDIMENT IS TO BEPROPERLY DISPOSED IN UPLAND AREAS BASED UPON THE TEST RESULTS AND LOCAL, STATE, AND FEDERAL REGULATIONS.

4. UNDERGROUND INFILTRATION/DETENTION SYSTEMS:

   THE UNDERGROUND INFILTRATION/DETENTION SYSTEMS SHALL BE INSPECTED ANNUALLY AND AFTER STORMS EQUAL TO OR GREATER THAN THE 1-YEAR, 24 HOUR TYPE III STORM EVENT (2.7 INCHES IN 24 HOURS). INSPECT THE INLET PIPES AND OUTLET PIPES FOR CLOGGING. REMOVE ACCUMULATED SEDIMENT, TRASH AND DEBRIS. INSPECT SYSTEM AND OUTLET STRUCTURE FOR STRUCTURAL INTEGRITY AND STANDING WATER. INSPECT PAVEMENT AREA OVER SYSTEM FOR SETTLEMENT.

5. ANNUAL SWEEPING:

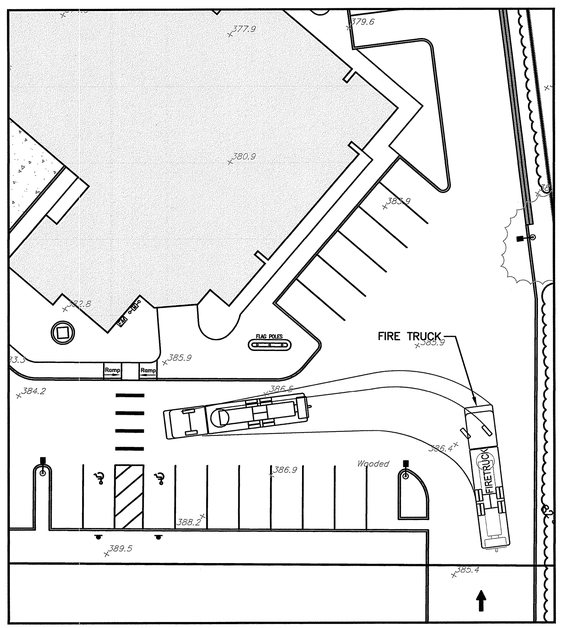
   ANNUAL PARKING LOT AND DRIVEWAY SWEEPING SHALL BE CONDUCTED DURING THE SPRING OF EVERY YEAR.

SOIL REMOVAL NOTE

THE SOIL HORIZONS A AND B SHALL BE REMOVED WITHIN THE AREAS OF THE PROPOSED BUILDING, PAVEMENT AND UNDERGROUND INFILTRATION SYSTEM AREA. IF ADDITIONAL SOIL IS NEEDED UNDER THE PROPOSED PAVEMENT/GRAVEL BORROW SUBASE TO MATCH GRADES, USE GRAVEL BORROW OR APPROVED SOIL BACKFILL.

LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
	CURB	
NO.	UTILITY POLE	NO.
LP	LIGHT POLE	
(Size) D	DRAIN LINE	(SIZE) D
(Size) S	SANITARY SEWER	(SIZE) S
	SANITARY FORCE MAIN	(SIZE) FM
(Size) G	GAS LINE	(SIZE) G
6"W	DOMESTIC WATER LINE	(SIZE) W
	UNDERGROUND ELECTRIC/CABLE/TELEPHONE	UEC
OHW	OVERHEAD WIRE	
DMH	DRAINAGE MANHOLE	DMH
CB	CATCH BASIN	CB
SMH	SEWER MANHOLE	SMH
Hyd.	HYDRANT	
WG	WATER GATE	WG
GG	GAS GATE	GG
CO	CLEAN-OUT TO GRADE	CO
	SIGN	
	SAWCUT PAVEMENT	
XXX	CONTOURS	ELEV.
X ELEV.	SPOT GRADES	00x0
	CHAIN LINK FENCE	
(Size)	TREE	
TP 1	TEST PIT	
Bollard	BOLLARDS	BOLLARD
	LIMIT OF DISTURBANCE	
	FILTER SOXX	
	SILT FENCE	
Existing S.H.L.	STATE HIGHWAY LINE	
WLF A7	WETLAND FLAG	
	50' PERIMETER WETLAND	
	FLOOD PLAIN	



FIRE TRUCK TURNING DETAIL
SCALE: 1"=20'

SOIL EVALUATION DATA

SOIL EVALUATIONS WERE CONDUCTED BY CROSSMAN ENGINEERING ON DECEMBER 9, 2020.

TEST PIT 1
GR.=386.5

0"	Forest Litter	Oe
2"	Dark Brown Sandy Loam	A (Friable)
5"	Dark Yellowish Brown Stony Sandy Loam	Bw1 (Friable)
16"	Yellowish Brown Stony Sandy Loam	Bw2 (Friable)
24"	Light Yellowish Brown Stony, Cobbly Gravelly Fine Sand/Loamy Sand	C1 (Friable)
66"	Light Yellowish Brown Stony, Cobbly Gravelly Loamy Sand	C2 (Friable)
79"		

79" REFUSAL
NO WATER SEEPAGE
NO REDOX FEATURES
ESHWT=72"
DESIGN GWT=380.5

TEST PIT 2
GR.=387.25

0"	Forest Litter	Oe
2"	Dark Brown Sandy Loam	A (Friable)
4"	Dark Yellowish Brown Stony Sandy Loam	Bw1 (Friable)
15"	Yellowish Brown Stony Sandy Loam	Bw2 (Friable)
26"	Light Yellowish Brown Stony, Cobbly Gravelly Loamy Sand	C1 (Friable)
72"	Light Yellowish Brown Stony, Cobbly Gravelly Loamy Sand	C2 (Friable)
88"		

88" REFUSAL
NO WATER SEEPAGE
SOME REDOX FEATURES (<2%)
ESHWT=72"
DESIGN GWT=381.25

TEST PIT 3
GR.=378.25

0"	Forest Litter	Oe
3"	Dark Brown Sandy Loam	A (Friable)
5"	Dark Yellowish Brown Stony Sandy Loam	Bw1 (Friable)
16"	Light Yellowish Brown Stony Sand	Bw2 (Friable)
36"	Light Yellowish Brown Stony, Cobbly Gravelly Fine Sand/Loamy Sand	C1 (Friable)
66"	Light Yellowish Brown Stony, Cobbly Gravelly Loamy Sand	C2 (Friable)
114"		

NO REFUSAL
NO WATER SEEPAGE
NO REDOX FEATURES
ESHWT=72"
DESIGN GWT=372.25

TEST PIT 4
GR.=384.75

0"	Forest Litter	Oe
2"	Dark Brown Sandy Loam	A (Friable)
7"	Dark Yellowish Brown Stony Sandy Loam	Bw1 (Friable)
14"	Yellowish Brown Stony Sandy Loam	Bw2 (Friable)
33"	Light Yellowish Brown Stony, Cobbly Gravelly Fine Sand/Loamy Sand	C1 (Friable)
56"	Light Yellowish Brown Stony, Cobbly Gravelly Fine Sand	C2 (Friable)
93"		

93" REFUSAL
NO WATER SEEPAGE
56" REDOX FEATURES
ESHWT=56"
DESIGN GWT=380.1

TEST PIT 5
GR.=383.50

0"	Forest Litter	Oe
2"	Dark Brown Sandy Loam	A (Friable)
5"	Dark Yellowish Brown Bouldery Sandy Loam	Bw1 (Friable)
17"	Yellowish Brown Stony Sandy Loam With Boulders	Bw2 (Friable)
36"	Stony Sandy Loam With Boulders And Interlocking Stones	C1
40"		

36"-40" REFUSAL
NO WATER SEEPAGE
NO REDOX FEATURES

TEST PIT 6
GR.=371.50

0"	Forest Litter	Oe
2"	Dark Brown Sandy Loam	A (Friable)
5"	Dark Yellowish Brown Stony Sandy Loam	Bw1 (Friable)
18"	Yellowish Brown Stony Sandy Loam	Bw2 (Friable)
30"	Light Yellowish Brown Stony, Cobbly Gravelly Fine Sand/Loamy Sand	C1 (Friable)
50"	Light Yellowish Brown Stony, Cobbly Gravelly Loamy Sand	C2 (Friable)
104"		

NO REFUSAL
80" WATER SEEPAGE
50" REDOX FEATURES
ESHWT=50"
DESIGN GWT=367.33

TEST PIT 7
GR.=381.80

0"	Forest Litter	Oe
1"	Dark Brown Sandy Loam	A (Friable)
3"	Dark Yellowish Brown Stony Sandy Loam	Bw1 (Friable)
8"	Yellowish Brown Stony Sandy Loam	Bw2 (Friable)
26"	Light Yellowish Brown Stony, Cobbly Gravelly Fine Sand/Loamy Sand	C1 (Friable)
54"	Light Yellowish Brown Stony, Cobbly Gravelly Loamy Sand	C2 (Friable)
72"		

72" REFUSAL
NO WATER SEEPAGE
NO REDOX FEATURES
ESHWT=72"
DESIGN GWT=375.8

TEST PIT 8
GR.=370.50

0"	Forest Litter	Oe
3"	Dark Brown Sandy Loam	A (Friable)
7"	Dark Yellowish Brown Stony Sandy Loam	Bw1 (Friable)
20"	Yellowish Brown Stony Sandy Loam	Bw2 (Friable)
33"	Light Yellowish Brown Stony, Cobbly Gravelly Fine Sand/Loamy Sand	C1 (Friable)
60"	Light Yellowish Brown Stony, Cobbly Gravelly Loamy Sand	C2 (Friable)
108"		

NO REFUSAL
94" WATER SEEPAGE
NO REDOX FEATURES
ESHWT=60"
DESIGN GWT=365.50

TEST PIT 9
GR.=377.75

0"	Forest Litter	Oe
2"	Dark Brown Sandy Loam	A (Friable)
5"	Dark Yellowish Brown Stony Sandy Loam	Bw1 (Friable)
11"	Yellowish Brown Stony Sandy Loam	Bw2 (Friable)
24"	Light Yellowish Brown Stony, Cobbly Gravelly Fine Sand/Loamy Sand	C1 (Friable)
64"	Light Yellowish Brown Stony, Cobbly Gravelly Loamy Sand	C2 (Friable)
106"		

NO REFUSAL
NO WATER SEEPAGE
NO REDOX FEATURES
ESHWT=72"
DESIGN GWT=371.75

Environmental Management
SEP 24 2021
Office of Water Resources

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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STEVEN M. CABRAL
No. 4947
REGISTERED PROFESSIONAL ENGINEER
9-24-21

KEY PLAN

PROJECT TITLE:

SMITHFIELD FIRE STATION
PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

AHARONIAN & ASSOCIATES, INC.
Architects
310 George Washington Hwy
Suite 100
Smithfield, Rhode Island
0 2 9 1 7
401-232-5010
www.arch-eng.com

DRAWING TITLE:

GENERAL NOTES and LEGEND

DATE:	SCALE:
MAY 2021	AS SHOWN

DWG. NAME: 2495-C01-NOTE-R3.dwg

REVISIONS

NUMBER	REMARKS	DATE
1	REVISED LAYOUT	08/27/21
2	REVISED LOD	09/10/21
3	R.I.D.E.M. COMMENTS	09/25/21

DRAWING NUMBER

C1

SHEET: 2 OF: 15

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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REGISTERED PROFESSIONAL ENGINEER
9-24-21

KEY PLAN

Environmental Management
SEP 24 2021
Office of Water Resources

PROJECT TITLE:

SMITHFIELD FIRE STATION
PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

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Architects
310 George Washington Hwy
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Smithfield, Rhode Island
0 2 9 1 7
401·232·5010
www.arch-eng.com

DRAWING TITLE:

AERIAL MAP

DATE:	*SCALE:*
MAY 2021	1"=40'

DWG. NAME: 2495-C02-AERIAL-R3.dwg

REVISIONS

NUMBER	*REMARKS*	*DATE*
1	REVISED LAYOUT	08/27/21
2	REVISED LOD	09/10/21
3	R.I.D.E.M. COMMENTS	09/25/21

DRAWING NUMBER

C2

SHEET: 3 *OF:* 15

LOCATION MAP
NOT TO SCALE

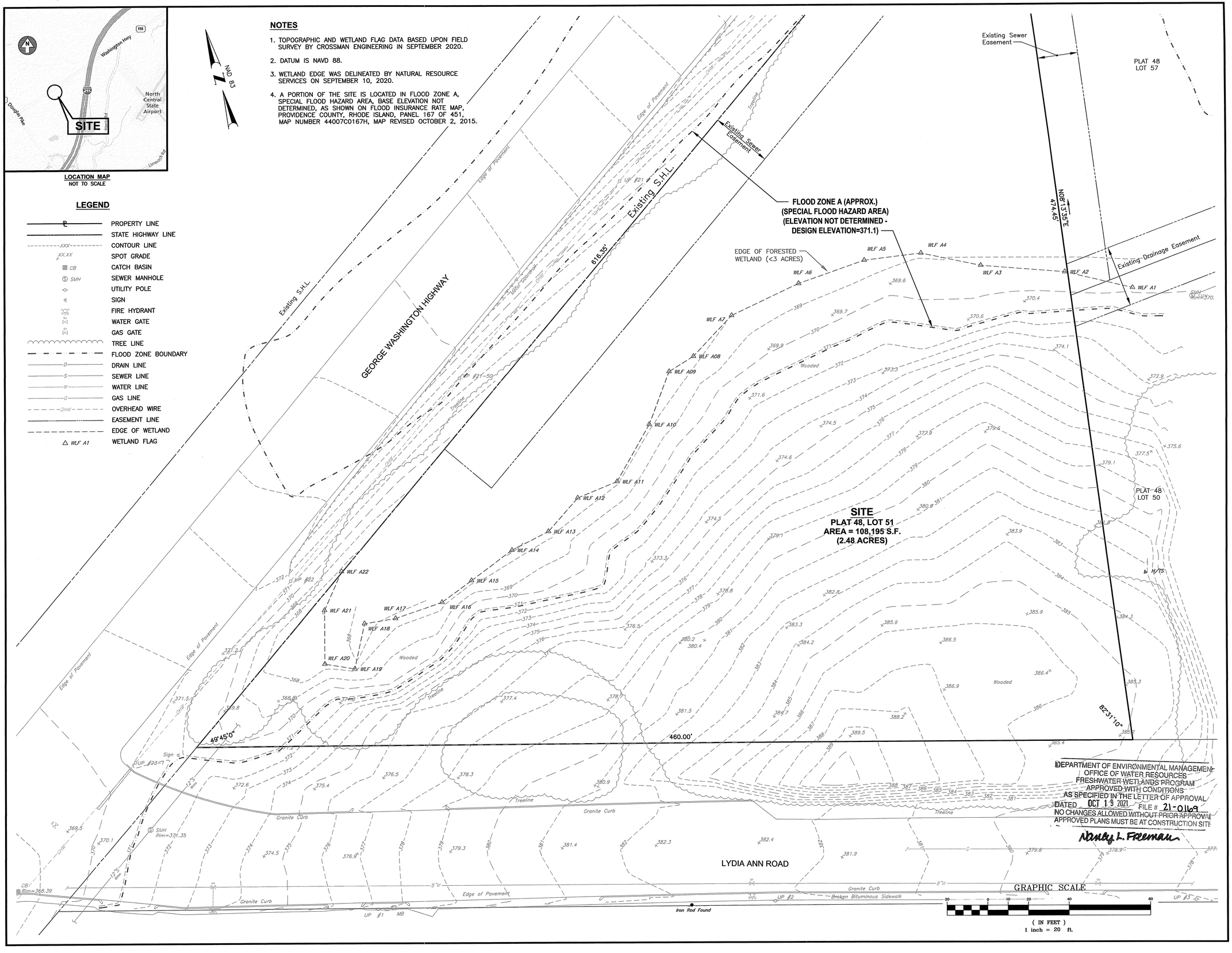
LEGEND

- PROPERTY LINE
- STATE HIGHWAY LINE
- CONTOUR LINE
- SPOT GRADE
- CB — CATCH BASIN
- SMH — SEWER MANHOLE
- UTILITY POLE
- SIGN
- FIRE HYDRANT
- WATER GATE
- GAS GATE
- TREE LINE
- FLOOD ZONE BOUNDARY
- D — DRAIN LINE
- S — SEWER LINE
- W — WATER LINE
- G — GAS LINE
- OHW — OVERHEAD WIRE
- EASEMENT LINE
- EDGE OF WETLAND
- △ WLF A1 — WETLAND FLAG

NAD 83

NOTES

1. TOPOGRAPHIC AND WETLAND FLAG DATA BASED UPON FIELD SURVEY BY CROSSMAN ENGINEERING IN SEPTEMBER 2020.
2. DATUM IS NAVD 88.
3. WETLAND EDGE WAS DELINEATED BY NATURAL RESOURCE SERVICES ON SEPTEMBER 10, 2020.
4. A PORTION OF THE SITE IS LOCATED IN FLOOD ZONE A, SPECIAL FLOOD HAZARD AREA, BASE ELEVATION NOT DETERMINED, AS SHOWN ON FLOOD INSURANCE RATE MAP, PROVIDENCE COUNTY, RHODE ISLAND, PANEL 167 OF 451, MAP NUMBER 44007C0167H, MAP REVISED OCTOBER 2, 2015.



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• Site Planning
• Surveying
• Permitting
• Landscape Architecture

CROSSMAN ENGINEERING

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STEVEN M. CABRAL
No. 4947
REGISTERED PROFESSIONAL ENGINEER
9/24/21

KEY PLAN

Environmental Management
SEP 24 2021
Office of Water Resources

PROJECT TITLE:

SMITHFIELD FIRE STATION

PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

AHARONIAN & ASSOCIATES, INC.
Architects
310 George Washington Hwy
Suite 100
Smithfield, Rhode Island
0 2 9 1 7
401·232·5010
www.arch-eng.com

DRAWING TITLE:

EXISTING CONDITIONS PLAN

DATE:	SCALE:
MAY 2021	1"=20'

DWG. NAME: 2495-C03-EXCN-R3.dwg

REVISIONS

NUMBER	REMARKS	DATE
1	REVISED LAYOUT	08/27/21
2	REVISED LOD	09/10/21
3	R.I.D.E.M. COMMENTS	09/25/21

DRAWING NUMBER

C3

SHEET: 4 *OF:* 15

DIMENSIONAL REGULATIONS
ZONING DISTRICT: LI LIGHT INDUSTRIAL DISTRICT (LI)
OVERLAY DISTRICT: ECONOMIC GROWTH OVERLAY DISTRICT (EGOD)
USE = MUNICIPAL FIRE STATION

	REQUIRED (LI)	PROVIDED
MINIMUM LOT AREA:	100,000 S.F.	108,195± S.F.
MINIMUM FRONTAGE:	300'	460' (Lydia Ann) 610' (Rte 116)
MINIMUM LOT WIDTH:	300'	189' (Lydia Ann) 255' (Rte 116)
MINIMUM FRONT YARD SETBACK	100'	63' (Lydia Ann) 94' (Rte 116)
MINIMUM SIDE YARD SETBACK:	40'	63'
MINIMUM REAR YARD SETBACK:	50'	63'
MAXIMUM STRUCTURE HEIGHT:	48'	<48'
MAXIMUM FLOOR AREA RATIO:	0.5	0.14
MAXIMUM BUILDING COVERAGE:	50%	10%

PARKING REQUIREMENTS

4,950 S.F. ADMINISTRATIVE OFFICE/CONFERENCE = (4 SPACES/1,000 SF)
4,950 S.F./1,000 S.F. x 4 = 20 SPACES REQUIRED
5,100 S.F. GARAGE/APPARTUS BAYS = (NO PARKING REQUIREMENT)
NO PARKING SPACES REQUIRED
5,190 S.F. FIRE STATION LIVING QUARTERS (10 BEDS) = (USE 1 SPACE/ROOM-UNIT)
10 BEDS x 1 SPACE/ROOM-UNIT = 10 SPACES REQUIRED

	REQUIRED	PROVIDED
MINIMUM PARKING SPACE :	30 SPACES	31 SPACES
\MINIMUM PARKING SPACE WIDTH:	9'	9'
MINIMUM PARKING SPACE LENGTH:	18'	18'
MINIMUM AISLE WIDTH (2-WAY TRAFFIC):	24'	20'
MINIMUM ADA PARKING SPACES:	2	2

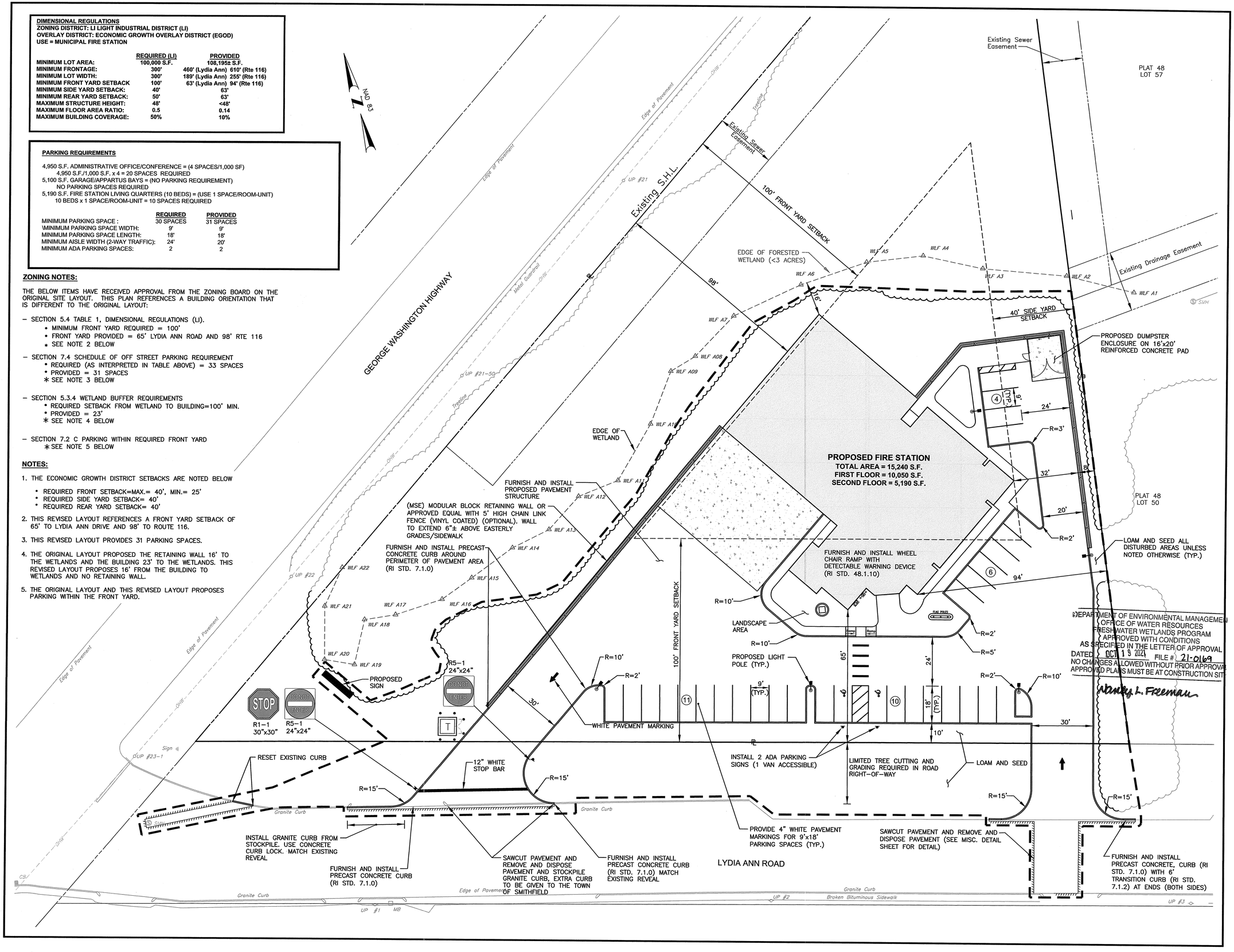
ZONING NOTES:

THE BELOW ITEMS HAVE RECEIVED APPROVAL FROM THE ZONING BOARD ON THE ORIGINAL SITE LAYOUT. THIS PLAN REFERENCES A BUILDING ORIENTATION THAT IS DIFFERENT TO THE ORIGINAL LAYOUT:

- SECTION 5.4 TABLE 1, DIMENSIONAL REGULATIONS (LI).
  - MINIMUM FRONT YARD REQUIRED = 100'
  - FRONT YARD PROVIDED = 65' LYDIA ANN ROAD AND 98' RTE 116
  - * SEE NOTE 2 BELOW
- SECTION 7.4 SCHEDULE OF OFF STREET PARKING REQUIREMENT
  - REQUIRED (AS INTERPRETED IN TABLE ABOVE) = 33 SPACES
  - PROVIDED = 31 SPACES
  - * SEE NOTE 3 BELOW
- SECTION 5.3.4 WETLAND BUFFER REQUIREMENTS
  - REQUIRED SETBACK FROM WETLAND TO BUILDING=100' MIN.
  - PROVIDED = 23'
  - * SEE NOTE 4 BELOW
- SECTION 7.2 C PARKING WITHIN REQUIRED FRONT YARD
  - * SEE NOTE 5 BELOW

NOTES:

1. THE ECONOMIC GROWTH DISTRICT SETBACKS ARE NOTED BELOW
   - REQUIRED FRONT SETBACK=MAX.= 40', MIN.= 25'
   - REQUIRED SIDE YARD SETBACK= 40'
   - REQUIRED REAR YARD SETBACK= 40'
2. THIS REVISED LAYOUT REFERENCES A FRONT YARD SETBACK OF 65' TO LYDIA ANN DRIVE AND 98' TO ROUTE 116.
3. THIS REVISED LAYOUT PROVIDES 31 PARKING SPACES.
4. THE ORIGINAL LAYOUT PROPOSED THE RETAINING WALL 16' TO THE WETLANDS AND THE BUILDING 23' TO THE WETLANDS. THIS REVISED LAYOUT PROPOSES 16' FROM THE BUILDING TO WETLANDS AND NO RETAINING WALL.
5. THE ORIGINAL LAYOUT AND THIS REVISED LAYOUT PROPOSES PARKING WITHIN THE FRONT YARD.



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6-24-21

KEY PLAN

Environmental Management
SEP 24 2021
Office of Water Resources

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PLAT MAP 48, LOT 51
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LIGHT INDUSTRIAL DISTRICT
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DRAWING TITLE:

SITE LAYOUT PLAN

DATE:	SCALE:
MAY 2021	1"=20'

DWG. NAME: 2495-C04-SITE-R3.dwg

REVISIONS

NUMBER	REMARKS	DATE
1	REVISED LAYOUT	08/27/21
2	REVISED LOD	09/10/21
3	R.I.D.E.M. COMMENTS	09/25/21

DRAWING NUMBER

C4

SHEET: 5 OF: 15

DRAINAGE STRUCTURE TABLE

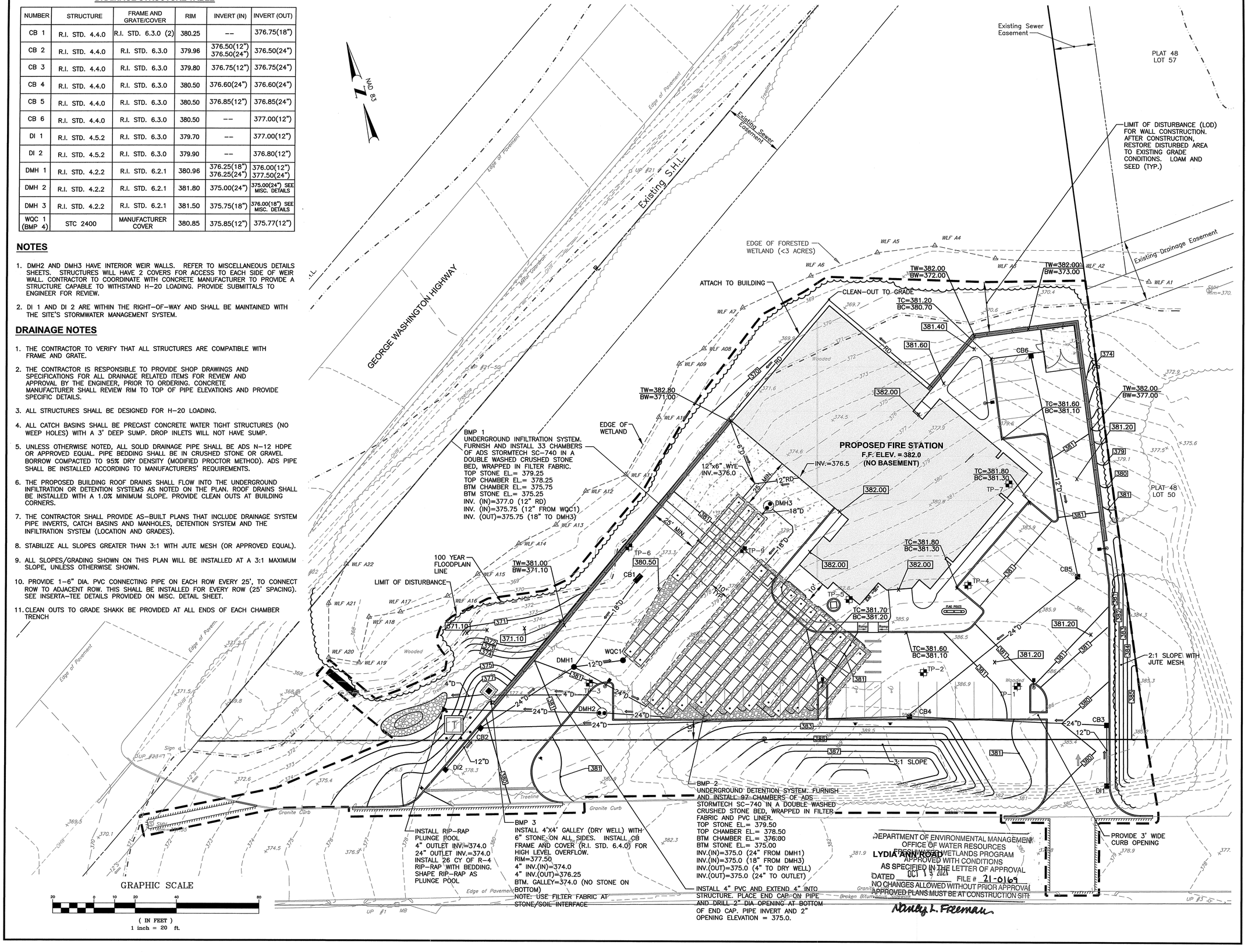
NUMBER	STRUCTURE	FRAME AND GRATE/COVER	RIM	INVERT (IN)	INVERT (OUT)
CB 1	R.I. STD. 4.4.0	R.I. STD. 6.3.0 (2)	380.25	--	376.75(18")
CB 2	R.I. STD. 4.4.0	R.I. STD. 6.3.0	379.96	376.50(12") 376.50(24")	376.50(24")
CB 3	R.I. STD. 4.4.0	R.I. STD. 6.3.0	379.80	376.75(12")	376.75(24")
CB 4	R.I. STD. 4.4.0	R.I. STD. 6.3.0	380.50	376.60(24")	376.60(24")
CB 5	R.I. STD. 4.4.0	R.I. STD. 6.3.0	380.50	376.85(12")	376.85(24")
CB 6	R.I. STD. 4.4.0	R.I. STD. 6.3.0	380.50	--	377.00(12")
DI 1	R.I. STD. 4.5.2	R.I. STD. 6.3.0	379.70	--	377.00(12")
DI 2	R.I. STD. 4.5.2	R.I. STD. 6.3.0	379.90	--	376.80(12")
DMH 1	R.I. STD. 4.2.2	R.I. STD. 6.2.1	380.96	376.25(18") 376.25(24")	376.00(12") 377.50(24")
DMH 2	R.I. STD. 4.2.2	R.I. STD. 6.2.1	381.80	375.00(24")	375.00(24") SEE MISC. DETAILS
DMH 3	R.I. STD. 4.2.2	R.I. STD. 6.2.1	381.50	375.75(18")	376.00(18") SEE MISC. DETAILS
WQC 1 (BMP 4)	STC 2400	MANUFACTURER COVER	380.85	375.85(12")	375.77(12")

NOTES

1. DMH2 AND DMH3 HAVE INTERIOR WEIR WALLS. REFER TO MISCELLANEOUS DETAILS SHEETS. STRUCTURES WILL HAVE 2 COVERS FOR ACCESS TO EACH SIDE OF WEIR WALL. CONTRACTOR TO COORDINATE WITH CONCRETE MANUFACTURER TO PROVIDE A STRUCTURE CAPABLE TO WITHSTAND H-20 LOADING. PROVIDE SUBMITTALS TO ENGINEER FOR REVIEW.
2. DI 1 AND DI 2 ARE WITHIN THE RIGHT-OF-WAY AND SHALL BE MAINTAINED WITH THE SITE'S STORMWATER MANAGEMENT SYSTEM.

DRAINAGE NOTES

1. THE CONTRACTOR TO VERIFY THAT ALL STRUCTURES ARE COMPATIBLE WITH FRAME AND GRATE.
2. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE SHOP DRAWINGS AND SPECIFICATIONS FOR ALL DRAINAGE RELATED ITEMS FOR REVIEW AND APPROVAL BY THE ENGINEER, PRIOR TO ORDERING. CONCRETE MANUFACTURER SHALL REVIEW RIM TO TOP OF PIPE ELEVATIONS AND PROVIDE SPECIFIC DETAILS.
3. ALL STRUCTURES SHALL BE DESIGNED FOR H-20 LOADING.
4. ALL CATCH BASINS SHALL BE PRECAST CONCRETE WATER TIGHT STRUCTURES (NO WEEP HOLES) WITH A 3' DEEP SUMP. DROP INLETS WILL NOT HAVE SUMP.
5. UNLESS OTHERWISE NOTED, ALL SOLID DRAINAGE PIPE SHALL BE ADS N-12 HDPE OR APPROVED EQUAL. PIPE BEDDING SHALL BE IN CRUSHED STONE OR GRAVEL BORROW COMPACTED TO 95% DRY DENSITY (MODIFIED PROCTOR METHOD). ADS PIPE SHALL BE INSTALLED ACCORDING TO MANUFACTURERS' REQUIREMENTS.
6. THE PROPOSED BUILDING ROOF DRAINS SHALL FLOW INTO THE UNDERGROUND INFILTRATION OR DETENTION SYSTEMS AS NOTED ON THE PLAN. ROOF DRAINS SHALL BE INSTALLED WITH A 1.0% MINIMUM SLOPE. PROVIDE CLEAN OUTS AT BUILDING CORNERS.
7. THE CONTRACTOR SHALL PROVIDE AS-BUILT PLANS THAT INCLUDE DRAINAGE SYSTEM PIPE INVERTS, CATCH BASINS AND MANHOLES, DETENTION SYSTEM AND THE INFILTRATION SYSTEM (LOCATION AND GRADES).
8. STABILIZE ALL SLOPES GREATER THAN 3:1 WITH JUTE MESH (OR APPROVED EQUAL).
9. ALL SLOPES/GRADING SHOWN ON THIS PLAN WILL BE INSTALLED AT A 3:1 MAXIMUM SLOPE, UNLESS OTHERWISE SHOWN.
10. PROVIDE 1-6" DIA. PVC CONNECTING PIPE ON EACH ROW EVERY 25', TO CONNECT ROW TO ADJACENT ROW. THIS SHALL BE INSTALLED FOR EVERY ROW (25' SPACING). SEE INSERTA-TEE DETAILS PROVIDED ON MISC. DETAIL SHEET.
11. CLEAN OUTS TO GRADE SHAKK BE PROVIDED AT ALL ENDS OF EACH CHAMBER TRENCH



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED OCT 19 2021 FILE # 21-0169
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE
LYDIA ANN ROAD
Nancy L. Freeman

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9-24-21

KEY PLAN

Environmental Management
SEP 24 2021
Office of Water Resources

PROJECT TITLE:

SMITHFIELD FIRE STATION
PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
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PREPARED FOR:

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Architects
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DRAWING TITLE:

GRADING and DRAINAGE PLAN

DATE:	SCALE:
MAY 2021	1"=20'

DWG. NAME: 2495-C05-GRADE-R3.dwg

REVISIONS

NUMBER	REMARKS	DATE
1	REVISED LAYOUT	08/27/21
2	REVISED LOD	09/10/21
3	R.I.D.E.M. COMMENTS	09/25/21

DRAWING NUMBER

C5

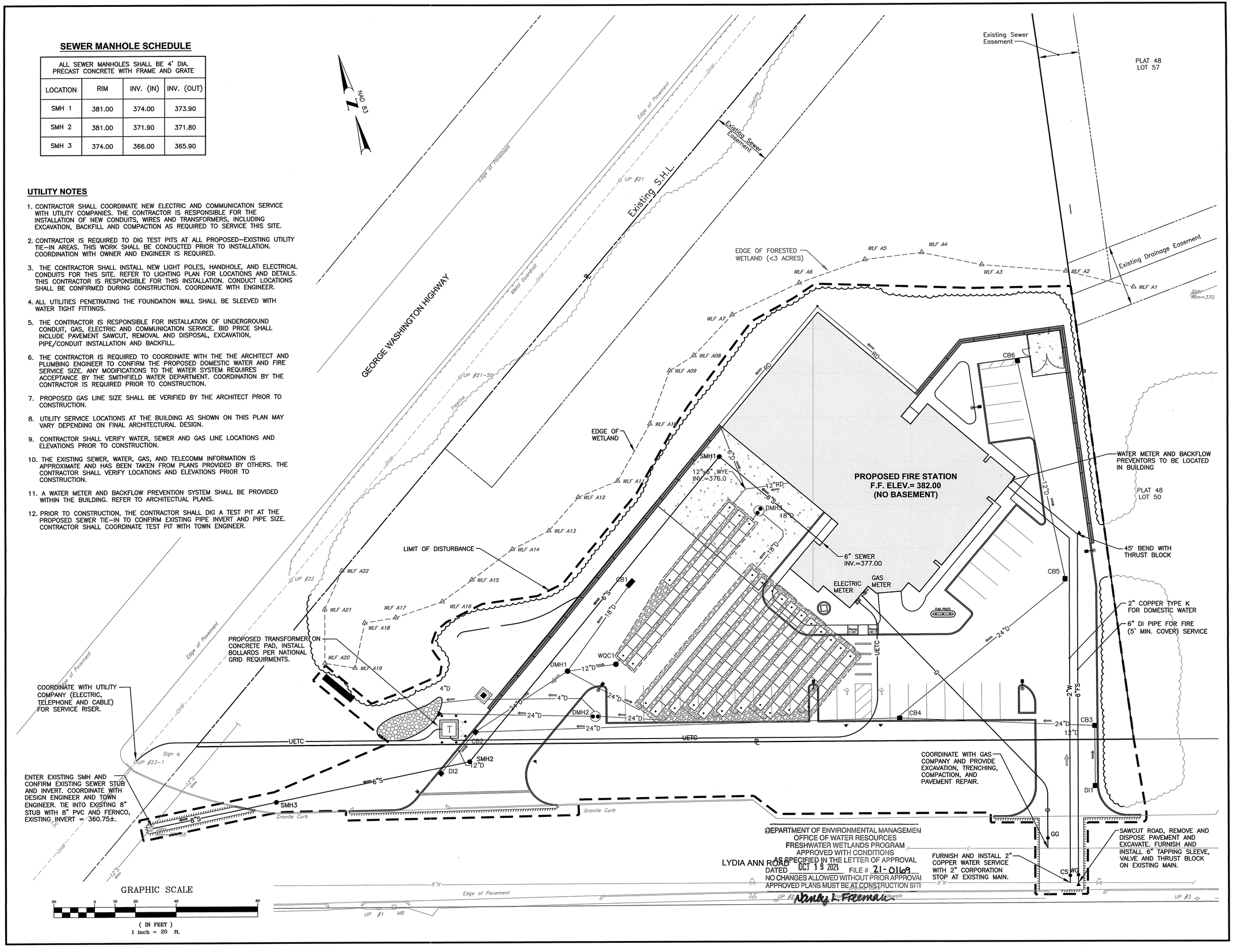
SHEET: 6 OF: 15

SEWER MANHOLE SCHEDULE

ALL SEWER MANHOLES SHALL BE 4' DIA. PRECAST CONCRETE WITH FRAME AND GRATE			
LOCATION	RIM	INV. (IN)	INV. (OUT)
SMH 1	381.00	374.00	373.90
SMH 2	381.00	371.90	371.80
SMH 3	374.00	366.00	365.90

UTILITY NOTES

1. CONTRACTOR SHALL COORDINATE NEW ELECTRIC AND COMMUNICATION SERVICE WITH UTILITY COMPANIES. THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF NEW CONDUITS, WIRES AND TRANSFORMERS, INCLUDING EXCAVATION, BACKFILL AND COMPACTION AS REQUIRED TO SERVICE THIS SITE.
2. CONTRACTOR IS REQUIRED TO DIG TEST PITS AT ALL PROPOSED–EXISTING UTILITY TIE–IN AREAS. THIS WORK SHALL BE CONDUCTED PRIOR TO INSTALLATION. COORDINATION WITH OWNER AND ENGINEER IS REQUIRED.
3. THE CONTRACTOR SHALL INSTALL NEW LIGHT POLES, HANDHOLE, AND ELECTRICAL CONDUITS FOR THIS SITE. REFER TO LIGHTING PLAN FOR LOCATIONS AND DETAILS. THIS CONTRACTOR IS RESPONSIBLE FOR THIS INSTALLATION. CONDUCT LOCATIONS SHALL BE CONFIRMED DURING CONSTRUCTION. COORDINATE WITH ENGINEER.
4. ALL UTILITIES PENETRATING THE FOUNDATION WALL SHALL BE SLEEVED WITH WATER TIGHT FITTINGS.
5. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF UNDERGROUND CONDUIT, GAS, ELECTRIC AND COMMUNICATION SERVICE. BID PRICE SHALL INCLUDE PAVEMENT SAWCUT, REMOVAL AND DISPOSAL, EXCAVATION, PIPE/CONDUIT INSTALLATION AND BACKFILL.
6. THE CONTRACTOR IS REQUIRED TO COORDINATE WITH THE THE ARCHITECT AND PLUMBING ENGINEER TO CONFIRM THE PROPOSED DOMESTIC WATER AND FIRE SERVICE SIZE. ANY MODIFICATIONS TO THE WATER SYSTEM REQUIRES ACCEPTANCE BY THE SMITHFIELD WATER DEPARTMENT. COORDINATION BY THE CONTRACTOR IS REQUIRED PRIOR TO CONSTRUCTION.
7. PROPOSED GAS LINE SIZE SHALL BE VERIFIED BY THE ARCHITECT PRIOR TO CONSTRUCTION.
8. UTILITY SERVICE LOCATIONS AT THE BUILDING AS SHOWN ON THIS PLAN MAY VARY DEPENDING ON FINAL ARCHITECTURAL DESIGN.
9. CONTRACTOR SHALL VERIFY WATER, SEWER AND GAS LINE LOCATIONS AND ELEVATIONS PRIOR TO CONSTRUCTION.
10. THE EXISTING SEWER, WATER, GAS, AND TELECOMM INFORMATION IS APPROXIMATE AND HAS BEEN TAKEN FROM PLANS PROVIDED BY OTHERS. THE CONTRACTOR SHALL VERIFY LOCATIONS AND ELEVATIONS PRIOR TO CONSTRUCTION.
11. A WATER METER AND BACKFLOW PREVENTION SYSTEM SHALL BE PROVIDED WITHIN THE BUILDING. REFER TO ARCHITECTUAL PLANS.
12. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL DIG A TEST PIT AT THE PROPOSED SEWER TIE–IN TO CONFIRM EXISTING PIPE INVERT AND PIPE SIZE. CONTRACTOR SHALL COORDINATE TEST PIT WITH TOWN ENGINEER.



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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DRAWING TITLE:

UTILITY PLAN

DATE:	SCALE:
MAY 2021	1"=20'

DWG. NAME: 2495–C06–UTILITY–R3.dwg

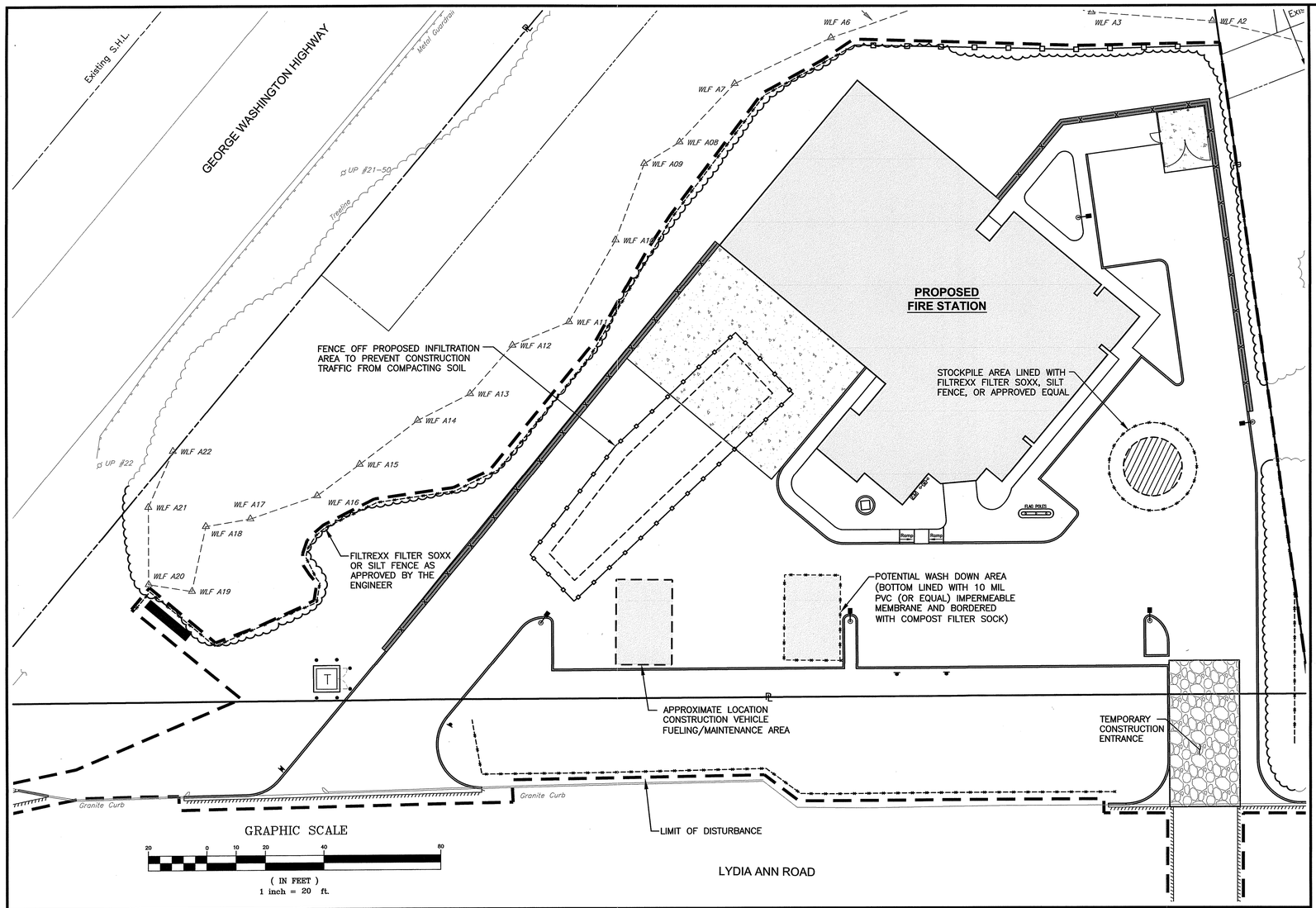
REVISIONS

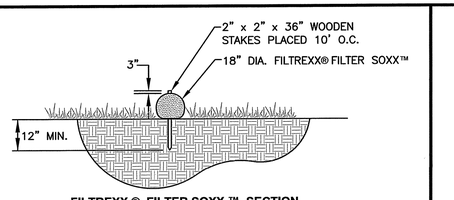
NUMBER	REMARKS	DATE
1	REVISED LAYOUT	08/27/21
2	REVISED LOD	09/10/21
3	R.I.D.E.M. COMMENTS	09/25/21

DRAWING NUMBER

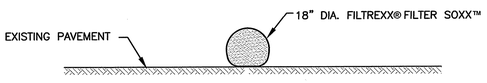
C6

SHEET: 7 OF: 15





FILTREXX ® FILTER SOXX ™ SECTION



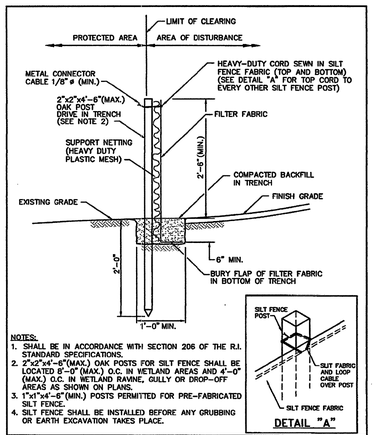
FILTREXX ® FILTER SOXX ™ PAVEMENT OPTION

NOTE

1. FILTREXX FILTER SOXX MAY BE USED IN LIEU OF SILT FENCE.
2. CONTRACTOR IS RESPONSIBLE TO BECOME FAMILIAR WITH THE FILTREXX PRODUCTS AND COORDINATE INSTALLATION SCHEDULES AND METHODS WITH THE ENGINEER PRIOR TO PLACEMENT.
3. ALL MATERIAL SHALL MEET FILTREXX SPECIFICATIONS.
4. COMPOST MATERIAL TO BE DISPERSED ON SITE AS DETERMINED BY ENGINEER.

FILTREXX ® FILTER SOXX ™ DETAIL

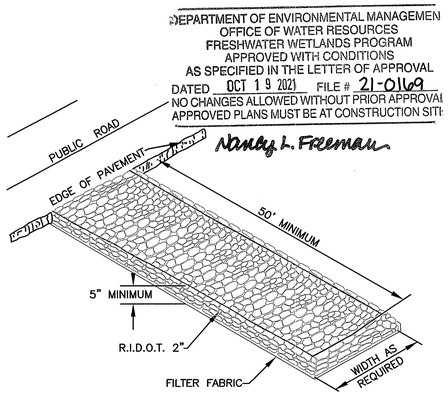
NOT TO SCALE



NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 206 OF THE R.I. STANDARD SPECIFICATIONS.
2. 2"x2"x4'-6"(MAX.) OAK POSTS FOR SILT FENCE SHALL BE LOCATED 8'-0" (MAX.) O.C. IN WETLAND AREAS AND 4'-0" (MAX.) O.C. IN WETLAND RAVINE, GULLY OR DROP-OFF AREAS AS SHOWN ON PLANS.
3. 1"x1"x4'-6"(MIN.) POSTS PERMITTED FOR PRE-FABRICATED SILT FENCE.
4. SILT FENCE SHALL BE INSTALLED BEFORE ANY GRUBBING OR EARTH EXCAVATION TAKES PLACE.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS NO.	BY	DATE	SILT FENCE DETAIL	R.I. STANDARD 9.2.0
			JUNE 15, 1998	



CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE

DUST CONTROL NOTES

ON AN AS-NEEDED BASIS OR AS DIRECTED BY THE TOWN, RIDEM OR OWNER, THE CONTRACTOR SHALL UTILIZE ONE OF THE FOLLOWING METHODS TO CONTROL DUST:

A. THE EXPOSED SOIL SURFACE SHOULD BE MOISTENED PERIODICALLY WITH ADEQUATE WATER TO CONTROL DUST.

B. CALCIUM CHLORIDE SHOULD BE EITHER LOOSE DRY GRANULES OR FLAKE FINE ENOUGH TO FEED THROUGH A SPREADER AT A RATE THAT WILL KEEP SURFACE MOIST BUT NOT CAUSE POLLUTION OR PLANT DAMAGE.

THE METHODS SHOULD BE REPEATED AS NEEDED, AND SPECIAL ATTENTION MUST BE GIVEN TO THE ACCESS DRIVES.

INSPECTION/MAINTENANCE NOTES

1. PRIOR TO COMMENCING GRUBBING OPERATIONS AND EARTHWORK, FILTERSOXX SHALL BE PLACED INSIDE SAWCUT EDGE AND ALONG THE DOWNGRADIENT LIMIT OF DISTURBANCE TO PREVENT SEDIMENT FROM ENTERING EXISTING ROADWAY DRAINAGE SYSTEM, AND ABUTTING PROPERTIES AND THE CONTRACTOR SHALL INSTALL DRIPLINE TREE PROTECTION DEVICES ALONG THE PROPOSED TREELINE/EXISTING TREES TO REMAIN.
2. EXTREME CARE SHALL BE EXERCISED SO AS TO PREVENT ANY UNSUITABLE MATERIAL FROM ENTERING THE DRAINAGE SYSTEM.
3. ALL DISTURBED AREAS WHICH BECOME SUBJECT TO EROSIVE TENDENCIES WHETHER THEY BE NEWLY FILLED OR EXCAVATED SHALL RECEIVE SLOPE PROTECTION – SUCH AS RIP-RAP.
4. DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING DRAINAGE AND RUNOFF FLOW DURING PERIODS OF RAINFALL.
5. DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EROSION CONTROL MAINTENANCE AND SHALL INSPECT / REPLACE DAILY DURING CONSTRUCTION, FOLLOWING RAINFALL AND WEEKLY DURING NON CONSTRUCTION PERIODS.
6. ADDITIONAL FILTERSOXX OR SANDBAGS SHALL BE LOCATED AS CONDITIONS WARRANT OR AS DIRECTED BY THE ENGINEER.
7. THE LATEST VERSION OF THE "RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK" PREPARED BY THE R.I. STATE CONSERVATION COMMITTEE, MUST BE UTILIZED BY THE CONTRACTOR AS A GUIDE.
8. THE CONTRACTOR IS RESPONSIBLE FOR ALL DUST CONTROL AND FOR THE ENTIRE PROJECT DURATION, INCLUDING TEMPORARY SHUT-DOWN PERIODS, MUST MONITOR AND REPAIR, AS NEEDED, ALL SLOPES TO ENSURE A STABLE PRODUCT.

GENERAL PROJECT WIDE NOTES

1. CONTRACTOR SHALL OBTAIN A SOIL EROSION AND SEDIMENT CONTROL PERMIT FROM THE DEPARTMENT OF PUBLIC WORKS PRIOR TO THE COMMENCEMENT OF ANY WORK ONSITE; SOIL EROSION AND SEDIMENT CONTROL MEASURES MUST BE PROPERLY MAINTAINED THROUGHOUT CONSTRUCTION.
2. CONTRACTOR SHALL INSTALL TEMPORARY MEASURES SUCH AS; FIBER MATTING, CRUSHED STONE, HAY OR STRAW IN AREAS WHERE SLOPES OR STABILIZATION HAS FAILED.
3. IF SEDIMENT IS TRACKED OR ERODED INTO THE ROADWAY, THE CONTRACTOR WILL BE REQUIRED TO SWEEP DAILY AND TO INSTALL SILT SACK OR APPROVED EQUAL UNDER ADJACENT EXISTING CATCH BASIN GRATES. REMOVE AFTER CONSTRUCTION.
4. FILTER SOXX (OR SILT FENCE OR STAKED HAYBALES) SHALL BE INSTALLED AROUND THE PERIMETER OF THE AREA TO BE DISTURBED BY CONSTRUCTION. ADDITIONAL APPLICATIONS OF THESE CONTROLS MEASURES MAY BE REQUIRED DURING THE CONSTRUCTION PROCESS. THE CONTRACTOR SHALL INSPECT THE SITE AT A MINIMUM OF ONCE PER WEEK OR WITHIN 24 HOURS AFTER A STORM EVENT.
5. IF EROSION OR EROSIVE TENDENCIES ARE APPARENT ON THE SITE, THE CONTRACTOR IS RESPONSIBLE TO INSTALL ADDITIONAL CONSTRUCTION BMP'S SUCH AS SAND BAGS AS DIRECTED BY THE TOWN OR ENGINEER DURING CONSTRUCTION.
6. IF SEDIMENT OR DEBRIS IS TRACKED ONTO EXISTING PAVED AREAS ADJACENT TO THE CONSTRUCTION AREA, THE CONTRACTOR IS REQUIRED TO SWEEP THE PAVEMENT ON A DAILY BASIS. THE AREA SHALL BE INSPECTED DAILY.
7. THE CONTRACTOR IS RESPONSIBLE TO KEEP THE SITE CLEAN OF TRASH. RECOMMENDED DAILY PATROL OF THE CONSTRUCTION SHOULD BE CONDUCTED TO PICK-UP TRASH. THE OPERATOR SHALL REQUIRE THE CONTRACTOR TO HAVE PORTABLE SANITARY FACILITIES ON SITE. ROUTINE CLEANING AND WASTE DISPOSAL OF THESE PORTABLE SANITARY FACILITIES IS REQUIRED.

FILTREXX SOXX NOTE

CONTRACTOR IS RESPONSIBLE TO BECOME FAMILIAR WITH THE FILTREXX PRODUCTS AND COORDINATE INSTALLATION SCHEDULES AND METHODS WITH THE ENGINEER PRIOR TO PLACEMENT.

EROSION CONTROL AND SOIL STABILIZATION PROGRAM

1. EXTREME CARE SHALL BE EXERCISED SO AS TO PREVENT ANY UNSUITABLE MATERIAL FROM ENTERING THE DRAINAGE SYSTEM, ADJACENT PROPERTY, AND ROADWAYS.
2. TEMPORARY TREATMENTS SHALL CONSIST OF A HAY, STRAW, OR FIBER MULCH PROTECTIVE COVERS, SUCH AS A MAT OR FIBER LINING (BURLAP, JUTE, FIBERGLASS NETTING, EXCELSIOR BLANKETS). THEY SHALL BE INCORPORATED INTO THE WORK AS WARRANTED OR AS ORDERED BY THE OWNER.
3. HAY OR STRAW APPLICATIONS SHALL BE IN THE AMOUNT OF 3,000-4,000 LBS/ACRE.
4. STOCKPILES SHALL HAVE NO SLOPE STEEPER THAN 2:1 AND SHALL BE SURROUNDED BY FILTER SOXX, STAKED HAY BALES OR SILT FENCING.
5. STOCKPILES EXPOSED FOR EXCESSIVE PERIODS SHALL RECEIVE TEMPORARY TREATMENT CONSISTING OF HAY, STRAW OR FIBER MATTING.
6. DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EROSION CONTROL MAINTENANCE AND SHALL INSPECT/REPLACE AS NEEDED.
7. ADDITIONAL HAY BALES OR SANDBAGS SHALL BE LOCATED AS CONDITIONS WARRANT OR AS DIRECTED BY THE ENGINEER, OWNER, MUNICIPAL REPRESENTATIVES OR LOCAL D.O.T.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING DUST CONTROL AT NO ADDITIONAL COST TO THE OWNER.
9. ALL CATCH BASINS ADJACENT TO THE CONSTRUCTION AREA SHALL BE PROTECTED BY SILT SACKS.
10. ALL PROPOSED CATCH BASINS SHALL BE PROTECTED BY STAKED HAY BALES, SILT FENCING OR SILT SACKS.
11. THE FILTREXX FILTER SOXX MAY BE INSTALLED ON THE EXISTING PAVEMENT /IMPERVIOUS AREAS WITH OUT STAKES. CONTRACTOR SHALL INSPECT DAILY, IF SOIL EROSION OR SEDIMENT IS OBSERVED IN THESE AREAS, THE CONTRACTOR SHALL RELOCATE OR INSTALL ADDITIONAL FILTREXX FILTER SOXX IN LOCATIONS THAT CAN BE STAKED. THIS WORK IS INCLUDED IN THE PROJECT SCOPE.
12. SILT FENCE OR STAKED HAYBALES MAY BE USED IN LIEU OF FILTREXX FILTER SOXX.
13. AN ALTERNATE COMPOST SOCK OR STRAW WATTLE PRODUCT MAY BE USED IN LIEU OF FILTREXX FILTER SOCK UPON APPROVAL OF THE ENGINEER.

• Civil
• Transportation
• Environmental
• Site Planning
• Surveying
• Permitting
• Landscape Architecture

CROSSMAN ENGINEERING

Rhode Island
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Warwick, RI 02886
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Email: cel@crossmaneng.com

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STEVEN M. CABRAL
No. 4847
REGISTERED PROFESSIONAL ENGINEER
4-24-21

KEY PLAN

Environmental Management
SEP 24 2021
Office of Water Resources

PROJECT TITLE:

SMITHFIELD FIRE STATION
PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

AHARONIAN & ASSOCIATES, INC.
Architects
310 George Washington Hwy
Suite 100
Smithfield, Rhode Island
02917
401-232-5010
www.arch-eng.com

DRAWING TITLE:

SOIL EROSION and SEDIMENT CONTROL PLAN

DATE:	SCALE:
MAY 2021	1"=20'

DWG. NAME: 2495-C07-SOIL-R3.dwg

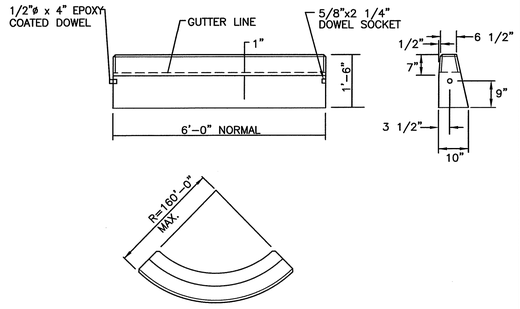
REVISIONS

NUMBER	REMARKS	DATE
1	REVISED LAYOUT	08/27/21
2	REVISED LOD	09/10/21
3	R.I.D.E.M. COMMENTS	09/25/21

DRAWING NUMBER

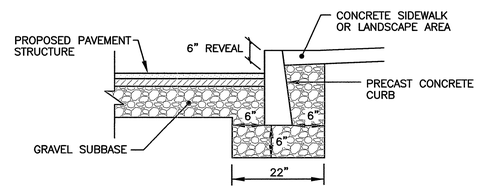
C7

SHEET: 8 OF: 15

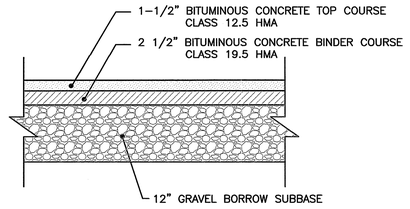


CIRCULAR CURB

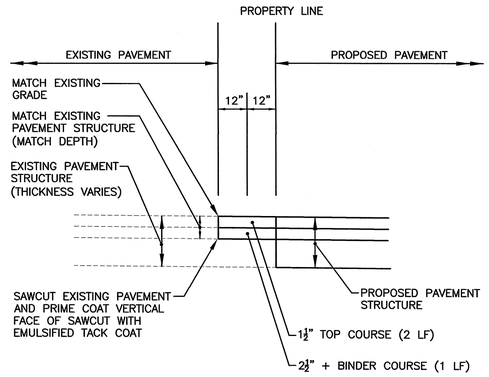
PRECAST CONCRETE CURB DETAIL
NOT TO SCALE



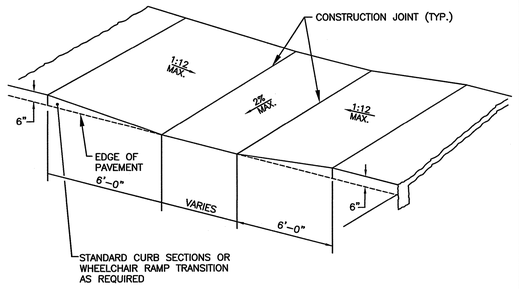
TYPICAL PRECAST CONCRETE CURB INSTALLATION WITHIN PARKING AREAS
NOT TO SCALE



TYPICAL PAVEMENT STRUCTURE DETAIL
NOT TO SCALE



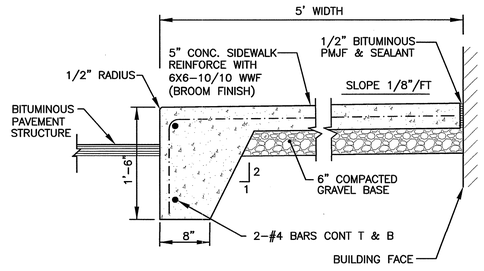
PROPOSED PAVEMENT MATCH AT EXISTING PAVEMENT
NOT TO SCALE



ISOMETRIC VIEW

NOTE
ALL WHEELCHAIR RAMPS SHALL BE IN ACCORDANCE WITH LOCAL STANDARDS, STATE BUILDING CODE AND ADA REQUIREMENTS.

WHEELCHAIR RAMP DETAIL
NOT TO SCALE



TYPICAL CONCRETE WALK AT PAVEMENT DETAIL
NOT TO SCALE

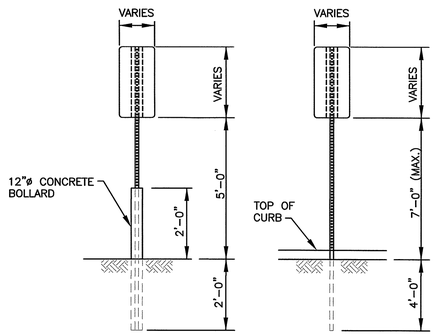
NOTE:

1. ALL LETTERS ARE 1" SERIES "C" PER THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.),
2. SIGN SHALL BE REFLECTORIZED (ENGINEERING GRADE) BLUE BACKGROUND WITH WHITE REFLECTORIZED LEGEND AND BORDER.
3. CONTRACTOR SHALL VERIFY THE POSTED "FINE" AMOUNT WITH THE BUILDING OFFICIAL PRIOR TO INSTALLATION.
4. ONE (1) SIGN REQUIRED FOR EACH PARKING SPACE.
5. INSTALLED HEIGHT OF SIGN SHALL BE IN ACCORDANCE WITH SECTION 24-23 OF THE M.U.T.C.D.
6. SIGN MAY BE MOUNTED ON BUILDING/WALL, AT PROPER HEIGHT, ALIGNED WITHIN 12" OF CENTER OF THE PARKING SPACE.
7. ALL HANDICAP PARKING AND SIGNAGE SHALL BE IN ACCORDANCE WITH THE LOCAL AND STATE BUILDING CODE.

SIGN NOTES:

1. SIGN POSTS SHALL BE GALVINIZED STEEL U-CHANNEL (3 1/2" WIDE-MIN.) AND INSTALLED IN CONFORMANCE WITH MUTCD AND LOCAL STANDARDS AND SPECIFICATIONS.
2. POSTS SHALL BE DRIVEN TO A DEPTH OF 4 FEET (MIN.)
3. THE EDGE OF THE SIGN SHALL BE 18" FROM THE FACE OF THE CURB.
4. WITHIN SIDEWALK LOCATIONS THE SIGN POST WILL BE INSTALLED WITHIN A 8"x8"x6" SQUARE BOX FORM.

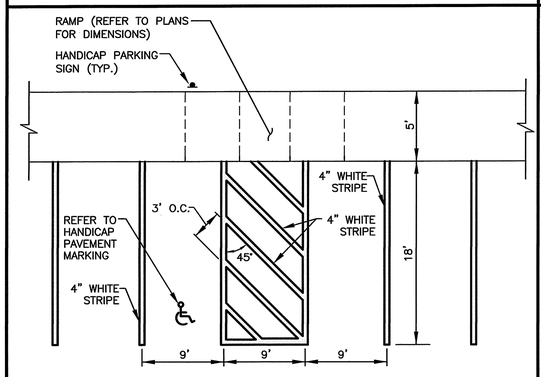
PROPOSED HANDICAPPED PARKING SIGNS
NOT TO SCALE



(MOUNTING DETAIL FOR SIGNS WITH NO SIDEWALK)

(MOUNTING DETAIL FOR SIGNS BEHIND SIDEWALK)

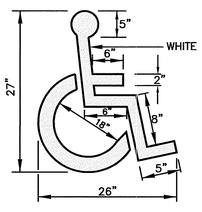
SIGN MOUNTING DETAIL
NOT TO SCALE



NOTE:

1. ALL HANDICAP PARKING SPACES SHALL BE IN ACCORDANCE WITH THE LOCAL AND STATE BUILDING CODE AND ADA REQUIREMENTS.

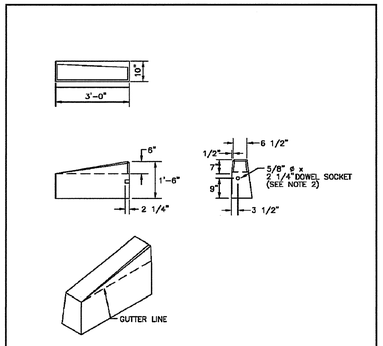
HANDICAP PARKING STALLS
NOT TO SCALE



NOTE:

1. ALL HANDICAP PARKING SPACES SHALL BE IN ACCORDANCE WITH THE LOCAL AND STATE BUILDING CODE AND ADA REQUIREMENTS.

HANDICAP PAVEMENT MARKING
NOT TO SCALE



NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 906 OF THE R.I. STANDARD SPECIFICATIONS.
2. DRAWING SHOWS TRANSITION CURB FOR ONE DIRECTION, FOR OTHER DIRECTION USE OPPOSITE HAND AND INCLUDE A 1/2" ø x 4" EPOXY COATED DOWEL.
3. EXPOSED SURFACES TO HAVE A SPONGE FLOAT FINISH.
4. EXPOSED EDGES TO HAVE A 3/4"CHAMFER.
5. LEFT AND RIGHT SECTIONS SHALL BE INSTALLED AS REQUIRED.

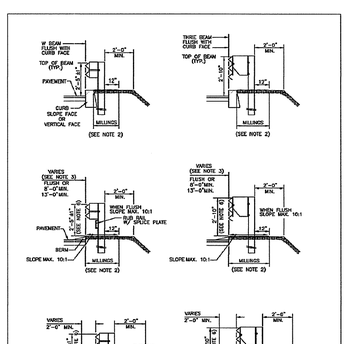
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS		
NO.	BY	DATE
1	MJP	Nov '05
2	MJP	09/01/10

3'-0" PRECAST CONCRETE TRANSITION CURB

CHIEF ENGINEER TRANSPORTATION — CHIEF DESIGN ENGINEER TRANSPORTATION — JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 7.1.1



NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTIONS 601, 602 OF THE RI STANDARD SPECIFICATIONS.
2. SHALL BE IN ACCORDANCE WITH SECTION 113.3 OF THE RI STANDARD SPECIFICATIONS.
3. SETBACK FROM CURB FACE OR BERM AS SPECIFIED ON PLANS, 4' LESS THAN 40 MPH; 13' LESS THAN 50 MPH.
4. W-BEAM POSTS NEED STANDARD 72 INCHES OR AS SPECIFIED ON PLANS.
5. THRIE BEAM POSTS NEED STANDARD 78 INCHES OR AS SPECIFIED ON PLANS.
6. TOP OF RAIL HEIGHT MEASURED FROM TOP SURFACE.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS		
NO.	BY	DATE
1	MJP	Nov '05
2	MJP	09/01/10

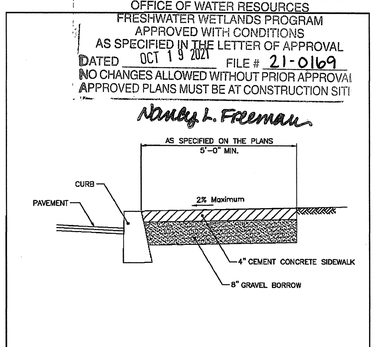
ROADSIDE GUARDRAIL INSTALLATION

CHIEF ENGINEER TRANSPORTATION — CHIEF DESIGN ENGINEER TRANSPORTATION — JUNE 15, 1998 ISSUE DATE

R.I. STANDARD M.14.1.0

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED OCT 19 2021 FILE # 21-0169
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Nancy L. Freeman



NOTES
1. SHALL BE IN ACCORDANCE WITH SECTION 905 OF THE R.I. STANDARD SPECIFICATIONS.
2. FOR CURB SETTING DETAIL REFERENCE STD. 7.6.0.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS		
NO.	BY	DATE
1	MJP	3/1/05
2	MJP	09/01/10

CEMENT CONCRETE SIDEWALK

CHIEF ENGINEER TRANSPORTATION — CHIEF DESIGN ENGINEER TRANSPORTATION — JUNE 15, 1998 ISSUE DATE

R.I. STANDARD M.13.1.0

• Civil
• Transportation
• Environmental
• Site Planning
• Surveying
• Permitting
• Landscape Architecture

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STEVEN M. CABRAL
No. 4847
REGISTERED PROFESSIONAL ENGINEER
9-24-21

KEY PLAN

Environmental Management
SEP 24 2021
Office of Water Resources

PROJECT TITLE:

SMITHFIELD FIRE STATION
PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

AHARONIAN & ASSOCIATES, INC.
Architects
310 George Washington Hwy
Suite 100
Smithfield, Rhode Island
02917
401-232-5010
www.arch-eng.com

DRAWING TITLE:

MISCELLANEOUS DETAIL PLAN No. 1

DATE: MAY 2021
SCALE: AS SHOWN

DWG. NAME: 2495-C08-DETAIL1-R3.dwg

REVISIONS

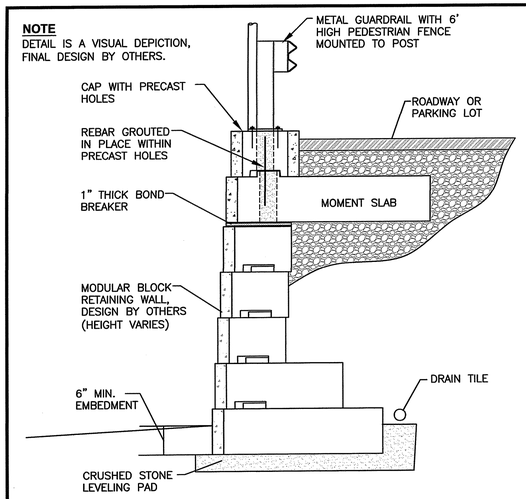
NUMBER	REMARKS	DATE
1	REVISED LAYOUT	08/27/21
2	REVISED LOD	09/10/21
3	R.I.D.E.M. COMMENTS	09/25/21

DRAWING NUMBER

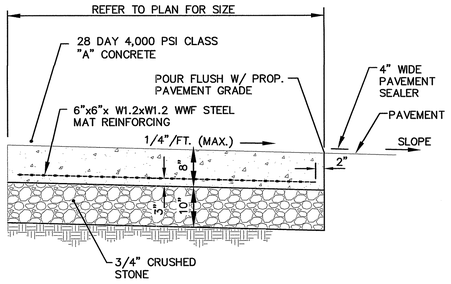
C8

SHEET: 9 *OF:* 15

NOTE
DETAIL IS A VISUAL DEPICTION, FINAL DESIGN BY OTHERS.

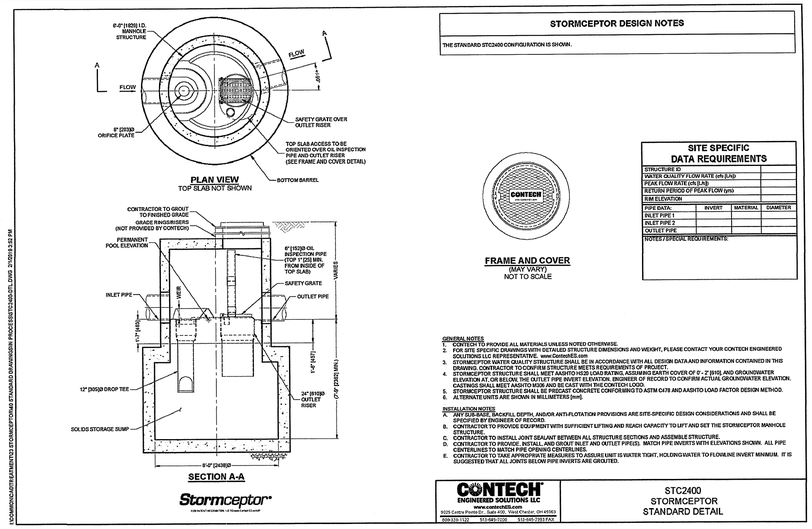


MODULAR BLOCK RETAINING WALL DETAIL
NOT TO SCALE



SECTION VIEW

DUMPSTER ENCLOSURE PAD DETAIL
NOT TO SCALE



STORMCEPTOR DESIGN NOTES

THE STANDARD STC2400 CONFIGURATION IS SHOWN.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID			
WATER QUALITY FLOW RATE (cfs [L/s])			
PEAK FLOW RATE (cfs [L/s])			
RETURN PERIOD OF PEAK FLOW (yrs)			
RIM ELEVATION			
PIPE DATA:	INVERT	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
NOTES / SPECIAL REQUIREMENTS:			

CONTECH

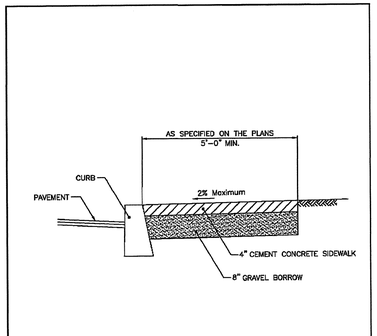
FRAME AND COVER
(MAY VARY)
NOT TO SCALE

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS, ADDITIONAL STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE OR VISIT 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 H20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2' (0-610) AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
5. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
6. PRECAST CONCRETE STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C478 AND AASHTO LOAD FACTOR DESIGN METHOD.
7. 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 SECTIONS.
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.

CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800.338.1122 513.645.7000 513.645.7993 FAX

STC2400
STORMCEPTOR
STANDARD DETAIL



NOTES
1. SHALL BE IN ACCORDANCE WITH SECTION 905 OF THE R.I. STANDARD SPECIFICATIONS.
2. FOR CURB SETTING DETAIL REFERENCE STD. 7.6.0.

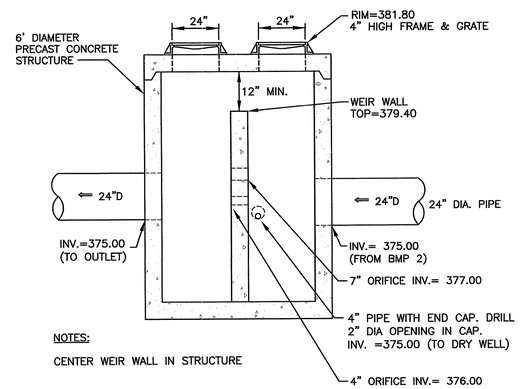
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS		
NO.	BY	DATE
1	MLP	3/1/99
2	MLP	08/01/10

CEMENT CONCRETE SIDEWALK

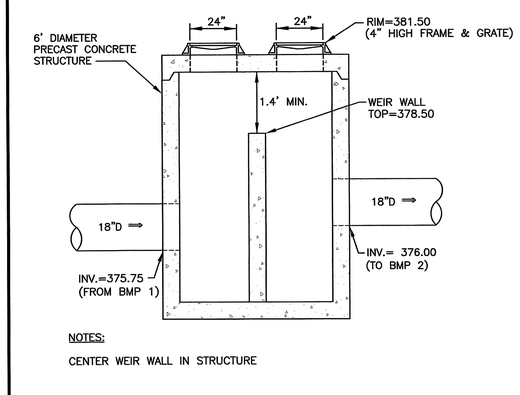
JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 43.1.0



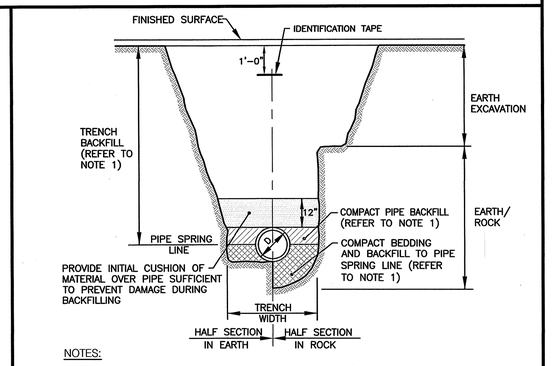
NOTES:
CENTER WEIR WALL IN STRUCTURE

DMH 2 DETAIL
NOT TO SCALE



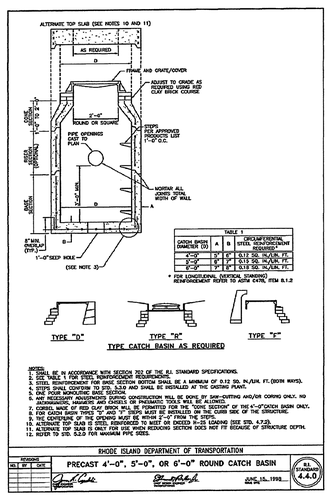
NOTES:
CENTER WEIR WALL IN STRUCTURE

DMH 3 DETAIL
NOT TO SCALE



NOTES:
1. PIPE BEDDING AND BACKFILL TO SPRING LINE SHALL CONSIST OF CRUSHED STONE–3/4" MINUS. PIPE BACKFILL SHALL CONSIST OF CRUSHED STONE (WRAPPED IN FILTER FABRIC) OR GRAVEL (3" MINUS, WITH SIEVE ANALYSIS APPROVED BY ENGINEER), OR OTHER APPROVED MATERIAL. TRENCH BACKFILL SHALL CONSIST OF SUITABLE EXCAVATED MATERIAL OR OTHER APPROVED MATERIAL. ALL BEDDING/BACKFILL TO BE COMPACTED TO 95% DRY DENSITY, MODIFIED PROCTOR METHOD.
2. ALL TRENCH EXCAVATION AND ANY SHEETING AND SHORING SHALL BE DONE IN ACCORDANCE WITH ALL STATE AND LOCAL CODES AND OSHA REGULATIONS.
3. MINIMUM TRENCH WIDTH SHALL BE OUTSIDE DIAMETER OF PIPE AT BELL PLUS 12". MAXIMUM TRENCH WIDTH SHALL BE OUTSIDE DIAMETER OF PIPE AT BELL PLUS 24".

TRENCH DETAIL
NOT TO SCALE



NOTES
1. SHALL BE IN ACCORDANCE WITH SECTION 202 OF THE R.I. STANDARD SPECIFICATIONS.
2. STEEL TO BE 1 FOOT STEEL REINFORCEMENT RECOMMENDED.
3. STEEL REINFORCEMENT FOR SINGLE ECCENTRIC BOTTOM SHALL BE A MINIMUM OF 0.12 SQ. IN./LIN. FT. (0.00176 M²/M).
4. STEPS SHALL CONFORM TO STD. 8.3.0 AND SHALL BE INSTALLED AT THE CASTING PLANT.
5. GAS TIGHT MONOLITHIC BASE SECTION.
6. ALL CUTTING OF REINFORCING FOR FIELD CONSTRUCTION WILL BE DONE BY SAW-CUTTING AND/OR CORING ONLY. NO JACKHAMMERS, HAMMERS AND CHISELS OR PNEUMATIC TOOLS WILL BE ALLOWED.
7. CORED MADE OF RED CLAY BRICK WILL BE PERMITTED FOR THE "DONE SECTION" OF THE 4'-0" CATCH BASIN ONLY.
8. THE CASTING SHALL BE SET IN FULL MORTAR BED WITH WEEP HOLES ON THE OUTSIDE SIDE OF THE STRUCTURE.
9. THE CENTERLINE OF PIPE OPENING MUST BE WITHIN 3'-0" FROM THE SIDE.
10. ALTERNATE TOP SLAB IS STEEL REINFORCED TO MEET OR EXCEED H-25 LOADING (SEE STD. 8.7.2).
11. ALTERNATE TOP SLAB IS ONLY FOR USE WHEN REDUCING SECTION DOES NOT FIT BECAUSE OF STRUCTURE DEPTH.
12. REFER TO STD. 8.3.0 FOR MAXIMUM PIPE SIZES.

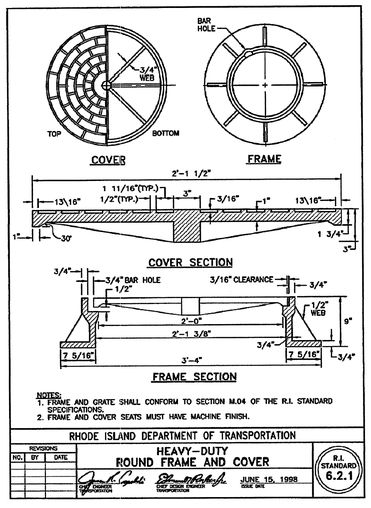
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS		
NO.	BY	DATE

PRECAST 4'-0", 5'-0", OR 6'-0" ROUND CATCH BASIN

JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 4.4.0



NOTES:
1. FRAME AND GRATE SHALL CONFORM TO SECTION M.04 OF THE R.I. STANDARD SPECIFICATIONS.
2. FRAME AND COVER SEATS MUST HAVE MACHINE FINISH.

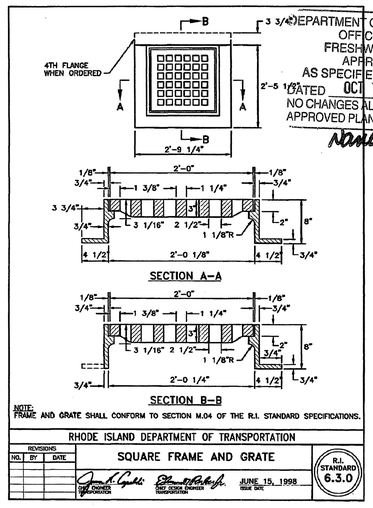
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS		
NO.	BY	DATE

HEAVY–DUTY ROUND FRAME AND COVER

JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 6.2.1



DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED OCT 19 2021
FILE # 21-0169
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE
Nancy L. Freeman

NOTE:
FRAME AND GRATE SHALL CONFORM TO SECTION M.04 OF THE R.I. STANDARD SPECIFICATIONS.

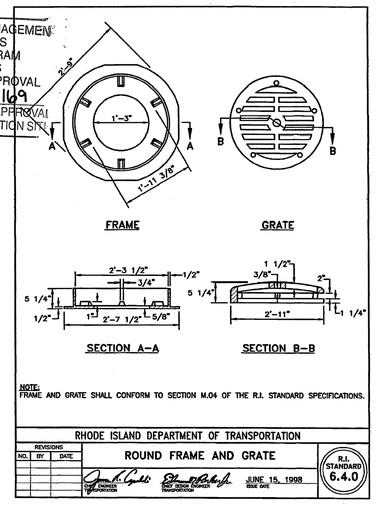
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS		
NO.	BY	DATE

SQUARE FRAME AND GRATE

JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 6.3.0



NOTE:
FRAME AND GRATE SHALL CONFORM TO SECTION M.04 OF THE R.I. STANDARD SPECIFICATIONS.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS		
NO.	BY	DATE

ROUND FRAME AND GRATE

JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 6.4.0

• Civil
• Transportation
• Environmental
• Site Planning
• Surveying
• Permitting
• Landscape Architecture

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STEVEN M. CABRAL
No. 4847
REGISTERED PROFESSIONAL ENGINEER
9-24-21

KEY PLAN

Environmental Management
SEP 24 2021
Office of Water Resources

PROJECT TITLE:

SMITHFIELD FIRE STATION
PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

AHARONIAN & ASSOCIATES, INC.
Architects
310 George Washington Hwy
Suite 100
Smithfield, Rhode Island
0 2 9 1 7
401·232·5010
www.arch-eng.com

DRAWING TITLE:

MISCELLANEOUS DETAIL PLAN No. 2

DATE:	*SCALE:*
MAY 2021	AS SHOWN

DWG. NAME: 2495–C09–DETAIL2–R3.dwg

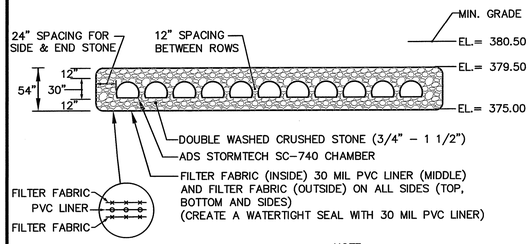
REVISIONS

NUMBER	*REMARKS*	*DATE*
1	REVISED LAYOUT	08/27/21
2	REVISED LOD	09/10/21
3	R.I.D.E.M. COMMENTS	09/25/21

DRAWING NUMBER

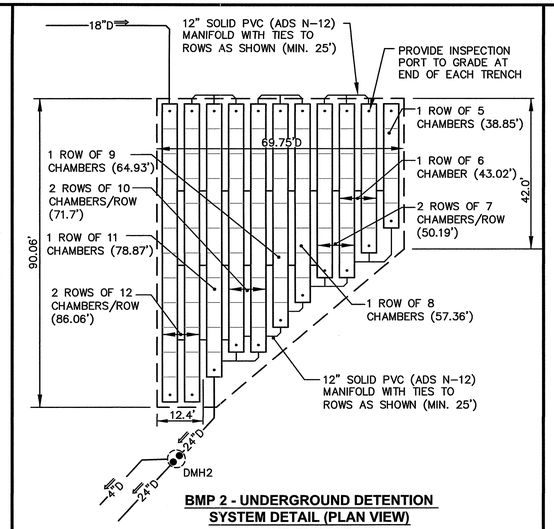
C9

SHEET: 10 *OF:* 15

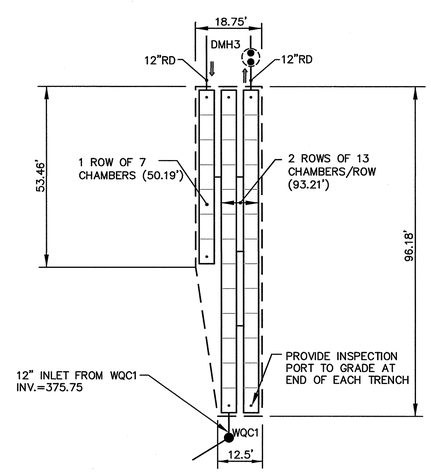


NOTE
PROVIDE 6" PVC CONNECTING PIPE EVERY 25' ON ALL ROWS, TO CONNECT EACH ROW.

BMP 2 - UNDERGROUND DETENTION SYSTEM DETAIL (SECTION)
NOT TO SCALE



BMP 2 - UNDERGROUND DETENTION SYSTEM DETAIL (PLAN VIEW)
NOT TO SCALE



BMP 1 - UNDERGROUND INFILTRATION SYSTEM DETAIL (PLAN VIEW)
NOT TO SCALE

DEPARTMENT OF ENVIRONMENTAL MANAGEMEN
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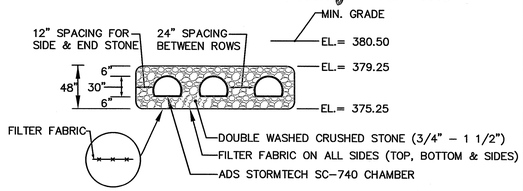


NOTE
PROVIDE 6" PVC CONNECTING PIPE EVERY 25' ON ALL ROWS, TO CONNECT EACH ROW.

BMP 1 - UNDERGROUND INFILTRATION SYSTEM DETAIL (SECTION)
NOT TO SCALE

SiteASSIST by StormTech
FOR STORMTECH INSTRUCTIONS, DOWNLOAD THE INSTALLATION APP

SC-310/SC-740/DC-780

StormTech Construction Guide

StormTech
An ADS company

REQUIRED MATERIALS AND EQUIPMENT LIST
- Acceptable fill materials per Table 1
- Woven and non-woven geotextiles
- StormTech solid end caps and pre-cored end caps
- StormTech chambers
- StormTech manifolds and fittings

IMPORTANT NOTES:

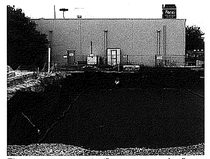
A. This installation guide provides the minimum requirements for proper installation of chambers. Non-adherence to this guide may result in damage to chambers during installation. Replacement of damaged chambers during or after backfilling is costly and very time consuming. It is recommended that all installers are familiar with this guide, and that the contractor inspects the chambers for distortion, damage and joint integrity as work progresses.

B. Use of a dozer to push embedment stone between the rows of chambers may cause damage to chambers and is not an acceptable backfill method. Any chambers damaged by using the "dump and push" method are not covered under the StormTech standard warranty.

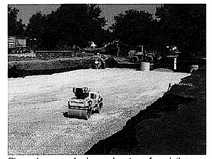
C. Care should be taken in the handling of chambers and end caps. Avoid dropping, prying or excessive force on chambers during removal from pallet and initial placement.

Requirements for System Installation

Excavate bed and prepare subgrade per engineer's plans.



Place non-woven geotextile over prepared soils and up excavation walls. Install underdrains if required.



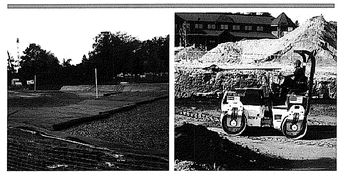
Place clean, crushed, angular stone foundation material (AASHTO M43 designation #3, #357, #4, #467, #5, #56 or #57) in 6" (150 mm) min. layers. Compact to achieve a flat surface.

Backfill - Embedment Stone & Cover Stone

Continue evenly backfilling between rows and around perimeter until embedment stone reaches tops of chambers. Perimeter stone must extend horizontally to the excavation wall for both straight or sloped sidewalls. **Only after chambers have been backfilled to top of chamber and with a minimum 6" (150 mm) of cover stone on top of chambers can small dozers be used over the chambers for backfilling remaining cover stone.**

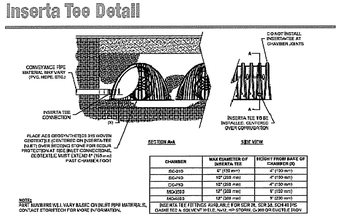
Small dozers and skid loaders may be used to finish grading stone backfill in accordance with ground pressure limits in Table 2. They must push material parallel to rows only. Never push perpendicular to rows. StormTech recommends that the contractor inspect chambers before placing final backfill. Any chambers damaged by construction shall be removed and replaced.

Final Backfill of Chambers – Fill Material



Install non-woven geotextile over stone. Geotextile must overlap 24" (600 mm) min. where edges meet. Compact each lift of backfill as specified in the site design engineer's drawings. Roller travel parallel with rows.

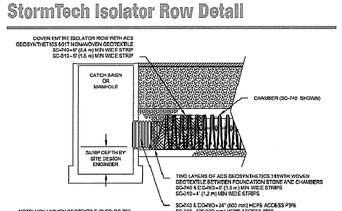
Inserta Tee Detail



CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	8" (200 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	10" (250 mm)	9" (225 mm)
MC-4500	10" (250 mm)	9" (225 mm)

NOTES
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.
INSERTA TEE FITTINGS AVAILABLE FOR EDR-16, SCH 35, SCH 40 PVC AND DUCTILE IRON PIPE WITH OUTSIDE DIAMETERS THAT CLOSELY MATCH STANDARD PVC AND DUCTILE IRON OUTSIDE DIAMETERS. INSERTA TEE FITTINGS ARE NOT AVAILABLE FOR EDR-26, SCH 80, SCH 40 PVC, RADIUS PIPE, SIDEWALL PERFORATED PIPE, OR STORMX. CONTACT STORMTECH FOR MORE INFORMATION.

StormTech Isolator Row Detail



NOTE: NONWOVEN GEOTEXTILE OVER DC-780 ISOLATION ROW CHAMBERS IS NOT REQUIRED.

Manifold, Scour Fabric and Chamber Assembly

Install manifolds and lay out woven scour geotextile at inlet rows. [min. 12.5 ft (3.8 m)] at each inlet end cap. Place a continuous piece (no seams, double layer) along entire length of Isolator® Row(s).

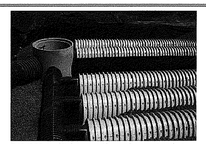
Align the first chamber and end cap of each row with inlet pipes. Contractor may choose to postpone stone placement around end chambers and leave ends of rows open for easy inspection of chambers during the backfill process.

Continue installing chambers by overlapping chamber end corrugations. Chamber joints are labeled "Lower Joint – Overlap Here" and "Build this direction — Upper Joint". Be sure that the chamber placement does not exceed the reach of the construction equipment used to place the stone. Maintain minimum 6" (150 mm) spacing between rows.

Attaching the End Caps

Lift the end of the chamber a few inches off the ground. With the curved face of the end cap facing outward, place the end cap into the chamber's end corrugation.

Prefabricated End Caps

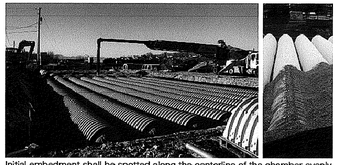


24" (600 mm) inlets are the maximum size that can fit into a SC-740/DC-780 end cap and must be prefabricated with a 24" (600 mm) pipe stub. SC-310 chambers with a 12" (300 mm) inlet pipe must use a prefabricated end cap with a 12" (300 mm) pipe stub.

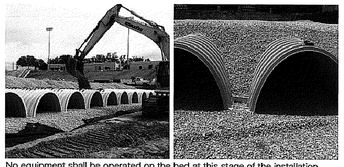
Isolator Row

Place two continuous layers of ADS Woven fabric between the foundation stone and the isolator row chambers, making sure the fabric lays flat and extends the entire width of the chamber feet. Drape a strip of ADS non-woven geotextile over the row of chambers (not required over DC-780). This is the same type of non-woven geotextile used as a separation layer around the angular stone of the StormTech system.

Initial Anchoring of Chambers – Embedment Stone

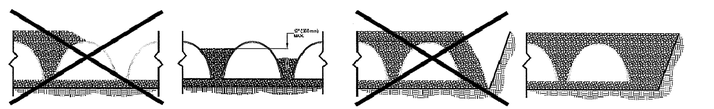


Initial embedment shall be spotted along the centerline of the chamber evenly anchoring the lower portion of the chamber. This is best accomplished with a stone conveyor or excavator reaching along the row.



No equipment shall be operated on the bed at this stage of the installation. Excavators must be located off the bed. Dump trucks shall not dump stone directly on to the bed. Dozers or loaders are not allowed on the bed at this time.

Backfill of Chambers – Embedment Stone



Backfill chambers evenly. Stone column height should never differ by more than 12" (300 mm) between adjacent chamber rows or between chamber rows and perimeter.

Perimeter stone must be brought up evenly with chamber rows. Perimeter must be fully backfilled, with stone extended horizontally to the excavation wall.

Table 1 - Acceptable Fill Materials

Material Location	Description	AASHTO M43 Designation[1]	Compaction/Density Requirement
⑤ 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 the 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.
④ 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 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 M45 A-1, A-2-4, A-3 OR AASHTO M431 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	Begin compaction after min. 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).
③ Embedment Stone: Embedment Stone surrounding chambers from the foundation to the "C" layer.	Clean, crushed, angular stone	AASHTO M43[2] 3, 357, 4, 467, 5, 56, 57	No compaction required.
② Foundation Stone: Foundation Stone below the chambers from the subgrade up to the first bottom of the chamber.	Clean, crushed, angular stone,	AASHTO M43[2] 3, 357, 4, 467, 5, 56, 57	Place and compact in 6" (150 mm) lifts using two full coverages with a vibratory compactor.[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 comprised by compaction, for standard installations and 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.*

Figure 1 - Inspection Port Detail

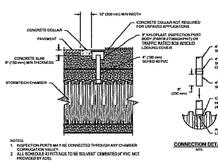
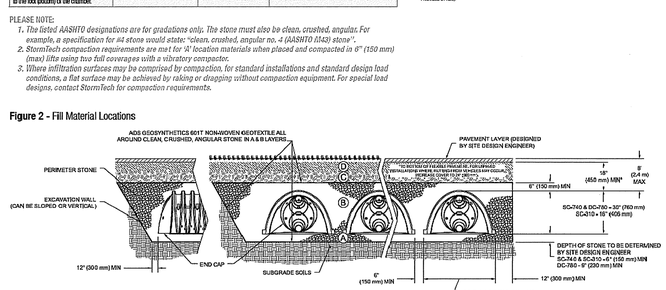


Figure 2 - Fill Material Locations



NOTES:
1. *36" (900 mm) of stabilized cover materials over the chambers is required for full dump truck travel and dumping.*
2. *During paving operations, dump truck axle loads on 16" (450 mm) of cover may be necessary. Precautions should be taken to avoid rutting of the road base layer, to ensure that compaction requirements have been met, and that a minimum of 16" (450 mm) of cover exists over the chambers. Contact StormTech for additional guidance on allowable axle loads during paving.*
3. *Ground pressure for track dozers is the vehicle operating weight divided by total ground contact area for both tracks. Excavators will exert higher ground pressures based on loaded bucket weight and boom extension.*
4. *Mini-excavators (< 8,000lbs/3,628 kg) can be used with at least 12" (300 mm) of stone over the chambers and are limited by the maximum ground pressures in Table 2 based on a full bucket at maximum boom extension.*
5. *Storage of materials such as construction materials, equipment, spoils, etc. should not be located over the StormTech system. The use of equipment over the StormTech system not covered in Table 2 (ex. soil mixing equipment, cranes, etc) is limited. Please contact StormTech for more information.*
6. *Allowable track loads based on vehicle travel only. Excavators shall not operate on chamber beds until the total backfill reaches 3 feet (900 mm) over the entire bed.*

Table 2 - Maximum Allowable Construction Vehicle Loads[6]

Material Location	Fill Depth over Chambers in. [mm]	Maximum Allowable Wheel Loads: Max Axle Load for Trucks lbs [kN]	Max Wheel Load for Loaders lbs [kN]	Maximum Allowable Track Loads*: Track Width in. [mm]	Max Ground Pressure psi [kPa]	Maximum Allowable Roller Loads: Max Drum Weight or Dynamic Force lbs [kN]
⑤ Final Fill Material	36" [900] Compacted	32,000 [142]	16,000 [71]	12" [305]	3420 [164]	38,000 [169]
				18" [457]	2550 [123]	
				24" [610]	1930 [93]	
				30" [762]	1510 [72]	
				36" [914]	1310 [63]	
④ Initial Fill Material	24" [600] Compacted	32,000 [142]	16,000 [71]	12" [305]	3480 [166]	20,000 [89]
				18" [457]	1770 [85]	
				24" [610]	1430 [68]	
				30" [762]	1210 [58]	
				36" [914]	1010 [48]	
	24" [600] Loose Dumped	32,000 [142]	16,000 [71]	12" [305]	2245 [107]	20,000 [89] Roller gross vehicle weight not to exceed 12,000 lbs. [53 kN]
				18" [457]	1625 [78]	
				24" [610]	1275 [61]	
				30" [762]	1135 [54]	
				36" [914]	1010 [48]	
	18" [450]	32,000 [142]	16,000 [71]	12" [305]	2910 [139]	20,000 [89] Roller gross vehicle weight not to exceed 12,000 lbs. [53 kN]
				18" [457]	1440 [71]	
				24" [610]	1255 [60]	
				30" [762]	1060 [51]	
				36" [914]	950 [45]	
③ Embedment Stone	12" [300]	16,000 [71]	NOT ALLOWED	12" [305]	1540 [74]	20,000 [89] Roller gross vehicle weight not to exceed 12,000 lbs. [53 kN]
				18" [457]	1190 [57]	
				24" [610]	1010 [48]	
				30" [762]	910 [43]	
				36" [914]	840 [40]	
	6" [150]	8,000 [35]	NOT ALLOWED	12" [305]	1070 [51]	NOT ALLOWED
				18" [457]	900 [43]	
				24" [610]	830 [39]	
				30" [762]	760 [36]	
				36" [914]	720 [34]	

Table 3 - Placement Methods and Descriptions

Material Location	Placement Methods/ Restrictions	Wheel Load Restrictions: See Table 2 for Maximum Construction Loads	Track Load Restrictions: See Table 2 for Maximum Construction Loads	Roller Load Restrictions: See Table 2 for Maximum Construction Loads
⑤ Final Fill Material	A variety of placement methods may be used. All construction loads must not exceed the maximum limits in Table 2.	36" (900 mm) minimum cover required for dump trucks to dump over chambers.	Dozers to push parallel to rows until 36" (900mm) compacted cover is reached.[4]	Roller travel parallel to rows only until 36" (900 mm) compacted cover is reached.
④ Initial Fill Material	Excavator positioned off bed recommended. Small excavator allowed over chambers. Small dozer allowed.	Asphalt can be dumped into paver when compacted pavement subbase reaches 18" (450 mm) above top of chambers.	Small LGP track dozers & skid loaders allowed to grade cover stone with at least 6" (150 mm) stone under tracks at all times. Equipment must push parallel to rows at all times.	Use dynamic force of roller only after compacted fill depth reaches 12" (300 mm) over chambers. Roller travel parallel to chamber rows only.
③ Embedment Stone	No equipment allowed on bare chambers. Use excavator or stone conveyor positioned off bed or on foundation stone to evenly fill around all chambers to at least the top of chambers.	No wheel loads allowed. Material must be placed outside the limits of the chamber bed.	No tracked equipment is allowed on chambers until a min. 6" (150 mm) cover stone is in place.	No rollers allowed.
② Foundation Stone	No StormTech restrictions. Contractor responsible for any conditions or requirements by others relative to subgrade bearing capacity, dewatering or protection of subgrade.			

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• Civil
• Transportation
• Environmental
• Site Planning
• Surveying
• Permitting
• Landscape Architecture

CROSSMAN ENGINEERING

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STEVEN M. CABRAL
No. 4847
REGISTERED PROFESSIONAL ENGINEER
9-24-21

KEY PLAN

Environmental Management
SEP 24 2021
Office of Water Resources

PROJECT TITLE:

SMITHFIELD FIRE STATION
PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

AHARONIAN & ASSOCIATES, INC.
Architects
310 George Washington Hwy
Suite 100
Smithfield, Rhode Island
02917
401-232-5010
www.arch-eng.com

DRAWING TITLE:

MISCELLANEOUS DETAILS PLAN No. 3

DATE: MAY 2021
SCALE: AS SHOWN
DWG. NAME: 2495-C10-DETAIL3-R3.dwg

REVISIONS

NUMBER	REMARKS	DATE
1	REVISED LAYOUT	08/27/21
2	REVISED LOD	09/10/21
3	R.I.D.E.M. COMMENTS	09/25/21

DRAWING NUMBER

C10

SHEET: 11 *OF:* 15

GENERAL SEWER NOTES

1. INSTALLATION OF THE SEWERAGE FACILITIES SHALL BE IN ACCORDANCE WITH THE SMITHFIELD SEWER DEPARTMENT SPECIFICATIONS AND REQUIREMENTS.
2. PRIOR TO RECEIVING AUTHORIZATION TO CONSTRUCT, ALL MATERIALS SHALL MEET THE STANDARDS AND RECEIVE THE WRITTEN APPROVAL, BASED ON MANUFACTURER'S DRAWINGS AND OTHER DATA, OF THE SMITHFIELD SEWER DEPARTMENT.
3. ALL SEWERAGE FACILITIES SHALL MEET TESTING AND CLEANING REQUIREMENTS PRIOR TO ACCEPTANCE.
4. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE AS–BUILT LOCATIONS PRIOR TO PIPE BACKFILL. AS–BUILT DRAWINGS SHALL BE FURNISHED AS A CONDITION FOR ACCEPTANCE OF THE NEW SEWERAGE FACILITIES. PLANS SHALL INCLUDE LOCATION OF WYES.
5. NO FLOW WILL BE ACCEPTED UNTIL ALL ABOVE STEPS ARE COMPLETED AND COMPLETION CERTIFICATE IS ISSUED.
6. AFTER THE CONTRACTOR HAS "STAKED OUT" THE FACILITIES TO BE CONSTRUCTED AND HAS THE APPROVED MATERIALS ON THE JOB, THE SMITHFIELD SEWER DEPARTMENT SHALL BE NOTIFIED IN ADVANCE OF CONSTRUCTION IN ORDER FOR THEM TO ARRANGE FOR THEIR INSPECTOR. THE NOTIFICATION MUST MEET THE SMITHFIELD SEWER DEPARTMENT REQUIREMENTS.
7. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE APPROVED PLANS AND MATERIALS, STANDARDS AND SPECIAL DETAILS, AND STANDARD SPECIFICATIONS, ANY WORK NOT MEETING THE APPROVED STANDARDS SHALL BE IMMEDIATELY REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.
8. THE CONTRACTOR SHALL CONFINE HIS OPERATIONS AND ACTIVITIES FOR CONSTRUCTION WITHIN THE LIMITS OF WORK AS SHOWN ON THE DRAWINGS.
9. ALL AREAS DISTURBED BY THE CONTRACTOR SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT NO EXTRA COST TO THE OWNER. ALL GRASSED AREAS DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE LOAMED AND SEEDED.
10. LOCATION AND DEPTHS OF EXISTING UTILITIES ARE APPROXIMATE AND HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL EXISTING UTILITIES AND NOTIFY THE APPROPRIATE UTILITY AUTHORITIES INCLUDING "DIG–SAFE" PRIOR TO STARTING WORK. ANY DAMAGE TO UTILITIES CAUSED BY THE CONTRACTOR'S OPERATIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND THE COST OF REPAIRS SHALL BE BORNE BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
11. RELATION TO WATER LINES:
    A. HORIZONTAL SEPARATION: WHENEVER POSSIBLE, SEWERS SHOULD BE LAID AT A MINIMUM OF 10 FEET (3.0 m), HORIZONTALLY, FROM ANY EXISTING OR PROPOSED WATER LINE. SHOULD LOCAL CONDITIONS PREVENT A LATERAL SEPARATION OF 10 FEET, A SEWER MAY BE LAID CLOSER THAN 10 FEET TO A WATER LINE IF:
        1. IT IS LAID IN A SEPARATE TRENCH, OR IF
        2. IT IS LAID IN THE SAME TRENCH WITH THE WATER LINE LOCATED AT ONE SIDE ON A BENCH OF UNDISTURBED EARTH, AND IF
        3. IN EITHER CASE THE ELEVATION OF THE TOP (CROWN) OF THE SEWER IS AT LEAST 18 INCHES (46 cm) BELOW THE BOTTOM (INVERT) OF THE WATER LINE.
    B. VERTICAL SEPARATION: WHENEVER A SEWER MUST CROSS UNDER WATER LINES, THE SEWER SHALL BE LAID AT SUCH AN ELEVATION THAT THE TOP OF THE SEWER IS AT LEAST 18 INCHES (46 cm) BELOW THE BOTTOM OF THE WATER LINE. WHEN THE ELEVATION OF THE SEWER CANNOT BE VARIED TO MEET THE ABOVE REQUIREMENTS, THE WATER LINE SHALL BE RELOCATED TO PROVIDE THIS SEPARATION OR RECONSTRUCTED WITH MECHANICAL–JOINT PIPE FOR A DISTANCE OF 10 FEET (3.0 m) ON EACH SIDE OF THE SEWER. ONE FULL LENGTH OF WATER LINE SHOULD BE CENTERED OVER THE SEWER SO THAT BOTH JOINTS WILL BE AS FAR FROM THE SEWER AS POSSIBLE.
    C. WHEN IT IS IMPOSSIBLE TO OBTAIN HORIZONTAL AND/OR VERTICAL SEPARATION AS STIPULATED ABOVE, BOTH THE WATER LINE AND SEWER SHALL BE CONSTRUCTED OF MECHANICAL–JOINT CEMENT LINED DUCTILE IRON PIPE OR OTHER EQUIVALENT BASED ON WATER TIGHTNESS AND STRUCTURAL SOUNDNESS. BOTH PIPES SHALL BE PRESSURE TESTED BY AN APPROVED METHOD TO ASSURE WATER TIGHTNESS.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DEWATERING REQUIRED IN THE SEWER INSTALLATION.
13. THE CONTRACTOR IS RESPONSIBLE TO VERIFY THE LOCATION AND ELEVATION OF EXISTING SEWER LINE PRIOR TO INSTALLATION. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL DIG TEST HOLES AND COORDINATE ALL INFORMATION WITH THE ENGINEER.
14. PRIOR TO BACKFILL, THE CONTRACTOR SHALL CONTACT THE SMITHFIELD SEWER DEPARTMENT TO COORDINATE INSPECTIONS.

SEWER TRENCH NOTES

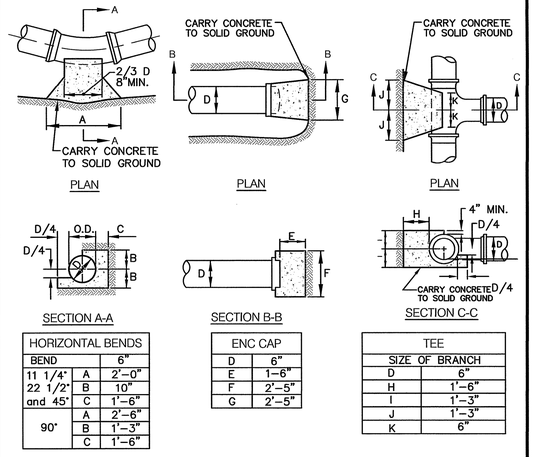
1. MINIMUM WIDTH (W) OF TRENCH IS EQUAL TO THE INSIDE DIAMETER OF THE PIPE PLUS 12" EACH SIDE.
2. SOIL UNDER CRUSHED STONE FOUNDATION SHALL BE UNDISTURBED AND COMPACTED MATERIAL WITH SEVERAL PASSES OF A VIBRATORY PLATE COMPACTOR TO ATTAIN 95% MAX. DENSITY (MOD. METHOD).
3. CRUSHED STONE FOUNDATION 3/4" MAXIMUM SIZE, SHALL BE PLACED 6" UNDER THE PIPE AND UP TO THE PIPE LAID THEREON, CRUSHED STONE PULLED AGAINST THE PIPE SIDES TO FIRMLY HOLD THE PIPE IN PLACE.
4. CRUSHED STONE HAUNCHING 3/4" MAXIMUM SIZE SHALL BE BROUGHT LEVEL TO THE TOP OF THE PIPE AND OUT TO THE TRENCH WALL AT THIS ELEVATION FOR ALL PIPE.
5. PIPE SHALL BE 6" DIA. SCHEDULE 40 PVC OR APPROVED EQUAL.

THRUST BLOCK NOTES

1. ALL CONCRETE TO BE CLASS B.
2. BUTTRESS DIMENSIONS SHOWN ARE MINIMUM. DIMENSIONS ARE BASED UPON SOIL BEARING PRESSURE OF 1500 P.S.F. LATERAL AND STATIC WATER PRESSURE OF 150 P.S.I. WHERE PRESSURE EXCEEDS 150 P.S.I. OR WHERE SOIL BEARING PRESSURE IS LESS THAN 1500 P.S.F. LATERAL; OR SOIL CONDITIONS OR EXCAVATION LIMITS ENCOUNTERED DURING CONSTRUCTION MAKE IT UNFEASIBLE TO PLACE THRUST BLOCKS AGAINST UNDISTURBED EARTH OF THE PROPER BEARING CAPACITY, THE CONTRACTOR SHALL DESIGN, GET APPROVAL OF, AND PLACE SPECIAL REACTION BLOCKS OF SUFFICIENT WEIGHT TO RESIST THE FULL THRUST OF THE LINE UNDER TEST AND OPERATING PRESSURES. THE DESIGN OF SUCH BLOCKS SHALL BE SUBJECT TO THE APPROVAL OF THE WARWICK WATER DEPARTMENT AND THE ENGINEERS AND SHALL BE SUBMITTED TO THE WATER DEPARTMENT BEFORE ACTUAL INSTALLATION TAKES PLACE.
3. ALL THRUST BLOCKS SHALL BE CONCRETE 3,000 P.S.I. @ 28 DAYS AND BEARING AGAINST UNDISTURBED EARTH.

WATER NOTES

1. ALL INSTALLATION, JOINTS, CONSTRUCTION METHODS AND MATERIALS SHALL BE ACCORDING TO THE SMITHFIELD WATER DEPARTMENT REQUIREMENTS, AWWA STANDARDS AND GOVERNMENTAL REQUIREMENTS.
2. ALL FITTINGS SHALL BE DUCTILE IRON MECHANICAL JOINT CLASS 350 CEMENT MORTAR LINED COMPACT STYLE (BY AMERICAN MANUFACTURER ONLY). FITTINGS SHALL MEET THE REQUIREMENTS OF ANSI/AWWA C153/A21.53. MECHANICAL JOINTS SHALL MEET THE REQUIREMENTS OF ANSI/AWWA C111/A21.11.
3. WATER PIPE SHALL BE DOUBLE CEMENT MORTAR LINED DUCTILE IRON PIPE CL52 AND SHALL MEET THE REQUIREMENTS OF ANSI/AWWA C151/A21.51.
4. CONSTRUCTION SHALL INCLUDE ALL PIPE, JOINTS, BENDS, TEES, FITTINGS, "MEGA–LUG" RESTRAINED MECHANICAL JOINTS, SERVICE CONNECTIONS AND ALL MISCELLANEOUS ITEMS REQUIRED TO CONSTRUCT THE PROPOSED SYSTEM.
5. "MEGA–LUG" RESTRAINED MECHANICAL JOINTS SHALL BE INSTALLED IN LOCATIONS INDICATED AND AT ALL BENDS, FITTINGS, PLUGS, ETC.
6. PRESSURE AND LEAKAGE TESTS AND DISINFECTING PIPES SHALL BE PERFORMED BY THE CONTRACTOR IN CONFORMANCE TO AMERICAN WATER WORKS ASSOCIATION (AWWA) RECOMMENDATIONS, SMITHFIELD WATER DEPARTMENT REQUIREMENTS, AND GOVERNMENTAL AGENCIES HAVING JURISDICTION.
7. ALL FITTINGS, PIPE, JOINTS, ETC. SHALL BE DESIGNED FOR 1.5 TIMES WORKING PRESSURE BUT NOT LESS THAN 150 PSI.
8. WATER PIPE SHALL TYPICALLY BE LOCATED AT LEAST TEN (10) FEET HORIZONTALLY FROM SEWER PIPE, AND AT A MINIMUM DEPTH OF COVER EQUAL TO 5'. WHERE A NEW WATER MAIN IS LESS THAN 18 INCHES CLEAR DISTANCE ABOVE A SEWER OR WHERE A WATER MAIN PASSES BENEATH A SEWER OR STORM DRAIN, ENCASE THE SEWER OR WATER IN 6" OF CONCRETE FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE CROSSING WATER MAIN. THE USE OF DUCTILE IRON TIGHT JOINT SEWER PIPE IN LIEU OF CONCRETE ENCASEMENT WILL BE CONSIDERED UPON CONTRACTORS SUBMITTAL OF SPECIFICATIONS TO ENGINEERS FOR APPROVAL.
9. ALL SYSTEM COMPONENTS AND CONSTRUCTION METHODS, SUCH AS PIPE, RESTRAINED MECHANICAL JOINTS, FITTINGS, CASTINGS, ETC. SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PURCHASE AND INSTALLATION. THIS SUBMISSION SHALL INCLUDE MANUFACTURER'S LITERATURE, SHOP DRAWINGS, PROPOSED CONSTRUCTION METHODS, ETC.
10. WATER LINE TRENCH TO BE AWWA TYPE 5. A METALIZED DETECTABLE IDENTIFICATION TAPE 2" IN WIDTH, BLUE IN COLOR AND PRINTED WITH "CAUTION WATERLINE BURIED BELOW" SHALL BE UTILIZED OVER ALL MAINS. TAPE SHALL BE SET AT APPROXIMATELY 1'–0" BELOW FINISHED GRADE.
11. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL COMPLETE AND SUBMIT THE "CONTRACTOR'S MATERIAL AND TEST CERTIFICATE" FOR UNDERGROUND PIPING TO THE SMITHFIELD WATER DEPARTMENT AND ENGINEER. IN ADDITION, THE CONTRACTOR IS REQUIRED TO SUBMIT THE FOLLOWING ITEMS TO THE ENGINEER FOR THEIR REVIEW AND APPROVAL:
    - TYPE AND MANUFACTURER OF SERVICE BOXES
    - TYPE AND MANUFACTURER OF CORPORATIONS AND CURB STOPS
    - TYPE AND MANUFACTURER OF VALVE BOXES (OPEN RIGHT)
    - TYPE AND MANUFACTURER OF D.I. MECHANICAL JOINTS AND FITTINGS
    - TYPE AND MANUFACTURER OF TAPPING SLEEVES
    - TYPE AND MANUFACTURER OF DI PIPING
    - TYPE AND MANUFACTURER OF RESILIENT SEALED GATE VALVES (OPEN RIGHT)
    - TYPE AND MANUFACTURER OF COPPER SERVICE LINE
12. WHEN THIS PROJECT IS COMPLETE, THE CONTRACTOR IS RESPONSIBLE TO PROVIDE THE WATER DEPARTMENT AND ENGINEER TWO SETS OF AS BUILT PLANS CERTIFIED BY A RHODE ISLAND PROFESSIONAL ENGINEER OR SURVEYOR. THE PLAN SHALL INCLUDE:
    a. ALL CURB STOPS WITH APPROPRIATE LOCATING MEASUREMENTS – MAIN–TO–CURB AND MEASUREMENTS FROM PERMANENT STRUCTURES.
    b. A SCHEDULE OF MATERIALS WHICH INDICATES: AND MEASUREMENTS FROM PERMANENT STRUCTURES.
        1. ITEM QUANTITY
        2. MANUFACTURER
        3. DESCRIPTION & PIPE MATERIAL
13. THE CONTRACTOR SHALL VERIFY THE SERVICE PIPE SIZE REQUIREMENT WITH THE BUILDING ARCHITECT AND PLUMBING CONTRACTOR PRIOR TO ORDERING PIPE, METERS AND BACKFLOW PREVENTORS. COORDINATION WITH THE SMITHFIELD WATER DEPARTMENT IS REQUIRED TO DETERMINE THE EXISTING WATER PRESSURE AVAILABLE.
14. ALL VALVES TO BE RESILIENT WEDGE GATE VALVES.
15. ALL FITTINGS TO BE RESTRAINED WITH MECHANICAL JOINTS. RESTRAINTS TO BE MEGA–LUG OR EQUAL.
16. RESTRAIN ALL PUSH–ON BELL JOINTS WITHIN 20 FEET OF MECHANICAL JOINTS. RESTRAINTS TO BE SERIES 800 COVER–ALL BY EBAA IRON OR EQUAL.
17. DOMESTIC WATER SERVICE LINES SHALL BE DUCTILE IRON OR COPPER.
18. PRIOR TO BACKFILL, THE CONTRACTOR SHALL COORDINATE WITH THE WARWICK WATER DEPARTMENT FOR INSPECTIONS.

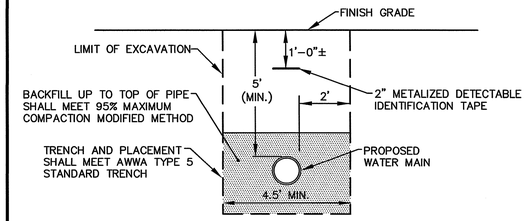


HORIZONTAL BENDS		
BEND		6"
11 1/4°, 22 1/2° and 45°	A	2'–0"
	B	10"
	C	1'–6"
90°	A	2'–6"
	B	1'–3"
	C	1'–6"

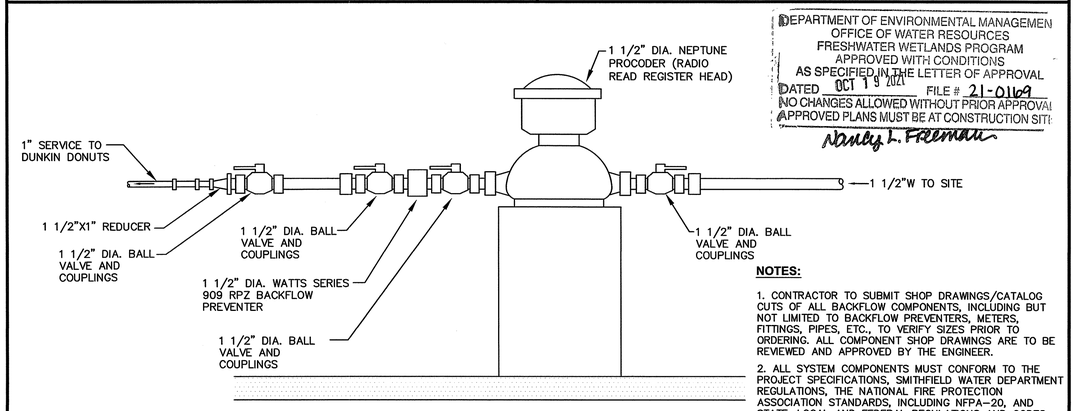
ENC CAP	
D	6"
E	1–6"
F	2'–5"
G	2'–5"

TEE	
SIZE OF BRANCH	
D	6"
H	1'–6"
I	1'–3"
J	1'–3"
K	6"

CONCRETE THRUST BLOCKS FOR CAPS, TEES AND HORIZONTAL BENDS
NOT TO SCALE



TYPICAL WATER LINE TRENCH DETAIL
NOT TO SCALE

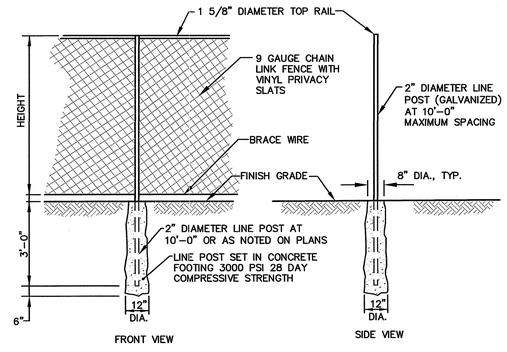


NOTES:

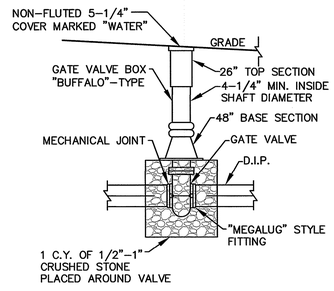
1. CONTRACTOR TO SUBMIT SHOP DRAWINGS/CATALOG CUTS OF ALL BACKFLOW COMPONENTS, INCLUDING BUT NOT LIMITED TO BACKFLOW PREVENTERS, METERS, FITTINGS, PIPES, ETC., TO VERIFY SIZES PRIOR TO ORDERING. ALL COMPONENT SHOP DRAWINGS ARE TO BE REVIEWED AND APPROVED BY THE ENGINEER.
2. ALL SYSTEM COMPONENTS MUST CONFORM TO THE PROJECT SPECIFICATIONS, SMITHFIELD WATER DEPARTMENT REGULATIONS, THE NATIONAL FIRE PROTECTION ASSOCIATION STANDARDS, INCLUDING NFPA–20, AND STATE, LOCAL AND FEDERAL REGULATIONS AND CODES.
3. A MINIMUM CLEARANCE OF 12" SHALL BE MAINTAINED AROUND BACKFLOW PREVENTER

DOMESTIC WATER BACKFLOW AND METERING SYSTEM
(INSIDE BUILDING)

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED OCT 13 2021 FILE # 21-0169
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE
Nancy L. Freeman

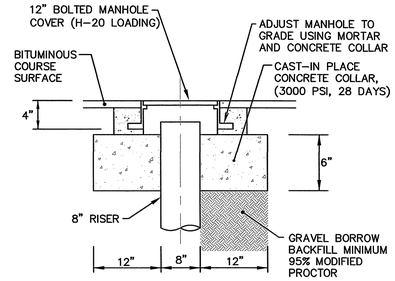


CHAIN LINK FENCE DETAIL
NOT TO SCALE



NOTE:
WRAP CRUSHED STONE WITH 4 oz. NON–WOVEN GEOTEXTILE FABRIC BEFORE FILLING EXCAVATION.

TYPICAL WATER GATE BOX INSTALLATION
NOT TO SCALE



NOTE:
CONCRETE COLLAR IS NOT REQUIRED IN LANDSCAPE AREAS.

DRAINAGE SYSTEM CLEAN-OUT DETAIL
NOT TO SCALE

• Civil
• Transportation
• Environmental
• Site Planning
• Surveying
• Permitting
• Landscape Architecture

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STEVEN M. CABRAL
No. 4847
REGISTERED PROFESSIONAL ENGINEER
10-14-21

KEY PLAN

Environmental Management
SEP 24 2021
Office of Water Resources

PROJECT TITLE:

SMITHFIELD FIRE STATION
PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

AHARONIAN & ASSOCIATES, INC.
Architects
310 George Washington Hwy
Suite 100
Smithfield, Rhode Island
0 2 9 1 7
401·232·5010
www.arch-eng.com

DRAWING TITLE:

MISCELLANEOUS DETAIL PLAN No. 4

DATE:	SCALE:
MAY 2021	AS SHOWN

DWG. NAME: 2495–C11–DETAIL4–R3.dwg

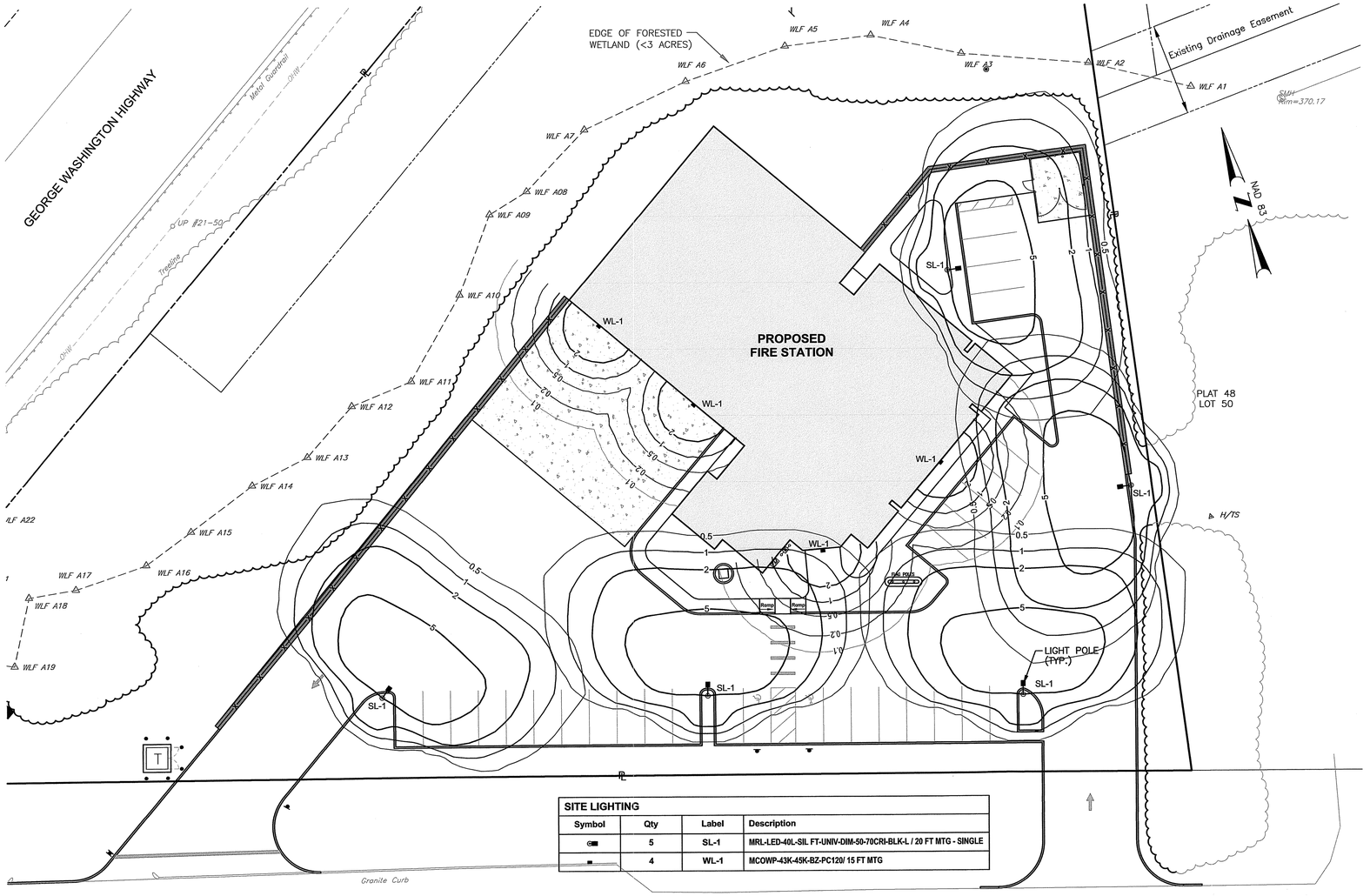
REVISIONS

NUMBER	REMARKS	DATE
1	REVISED LAYOUT	08/27/21
2	REVISED LOD	09/10/21
3	R.I.D.E.M. COMMENTS	09/25/21

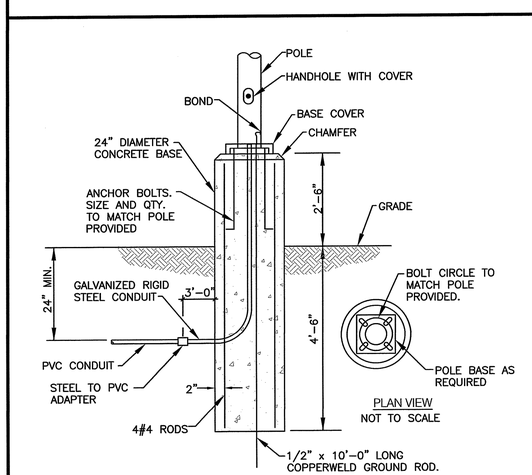
DRAWING NUMBER

C11

SHEET: 12 OF: 15



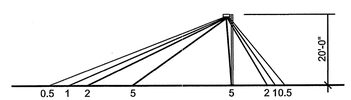
SITE LIGHTING			
Symbol	Qty	Label	Description
	5	SL-1	MRL-LED-40L-SIL FT-UNIV-DIM-50-70CRI-BLK-L / 20 FT MTG - SINGLE
	4	WL-1	MCOWP-43K-45K-BZ-PC120/ 15 FT MTG



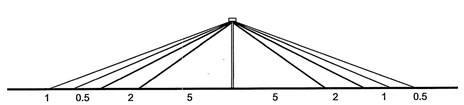
NOTE: CONTRACTOR IS RESPONSIBLE FOR CONDUIT AND HH LOCATIONS.

TYPICAL POLE BASE DETAIL

NOT TO SCALE



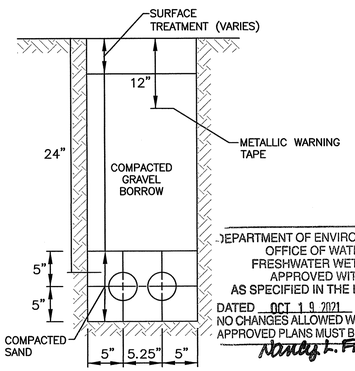
SIDE ELEVATION



FRONT ELEVATION

SL-1 DETAIL

SCALE: 1"=20'



NOTE:

CONTRACTOR TO EXCAVATE TRENCH, INSTALL 2–4" CONDUIT, BACKFILL, COMPACT TRENCH, AND PROVIDE SURFACE TREATMENT.

TYPICAL LIGHTING CONDUIT DETAIL

NOT TO SCALE

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
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Nancy L. Freeman

Mirada Large Outdoor LED Area Light

Type: _____

ORDERING GUIDE

TYPICAL ORDER EXAMPLE: MRL LED 40L SIL FT UNV DIM 50 70CRI BLK L

Prefix	Lens	Lumen Package	Lens	Distribution	Orientation*	Voltage
MRL - Mirada Large	LED	40L - 4,000 lms 50L - 5,000 lms 60L - 6,000 lms 70L - 7,000 lms Custom Lumen Packages*	SIL - Silicone	2 - Type 2 3 - Type 3 5W - Type 5 Wide FT - Forward Throw FTA - Forward Throw Automotive AM - Automotive Rectangular	(blank) - Standard L - Option added at 45°/* R - Option added at 90°/*	UNV - Universal Voltage (120-277V) HV - High Voltage (347-480V)

Driver	Color Temperature	Color Rendering	Controls	Finish	Options
DIM - 0-10V Dimming (10-100%)	5K - 5,000 CCT 4K - 4,000 CCT 3K - 3,000 CCT	70CRI - 70 CRI	(blank) - None Wireless Controls Options AUDC - SiteCore Wireless Control System AUDCR - Add-on Bluetooth Control System with PIR Sensor AUDCRH - Add-on Bluetooth Control System with PIR Sensor for Mounting Heights Greater than 20' AUDCSR - SiteCore Bluetooth Control System with PIR Sensor AUDCRH - SiteCore Bluetooth Control System with PIR Sensor for Mounting Heights Greater than 20' AUDCH - Add-on Blue Wireless Motion & Photo Sensor Controller (8-24' mounting height) AUDCS - Add-on Blue Wireless Motion & Photo Sensor Controller (25-40' mounting height) Hard Wire Controls EDT - 0-10V dimming leads extended to housing exterior CSDIM - Dim Control Trailing Wire (ANSI C136.41)* WDSTD - Integral Standard **Motion and Photocell Sensor (8-24' MH)* WDSTD - Integral Premium **Motion and Photocell Sensor (25-40' MH)* Building Type Protocols PCSTD - NTCIP PCSTD-ATT - ZHC DTTH PCSAT - DMX	BLK - Black BRZ - Dark Bronze GRN - Dark Forest Green GRY - Graphite WHT - Textured Silver PLP - Platinum Plus SVG - Satin Verde Green WHI - White	(Blank) - None BK - Integral Breakaway Device* IL - Integral Lumen Dump Control Light Switch*

Accessory Ordering Information*

Controls Accessories	
Description	Order Number
Twist-Lock Photocell (120V) 5 Year with NEMA*	53252
Twist-Lock Photocell (208-277V) 5Yr with NEMA*	52815
Twist-Lock Photocell (347V) 5 Year with NEMA*	52745
Twist-Lock Photocell (480V) 5 Year with NEMA*	52751-ED
Adjustable Time Twist-Lock Control*	48449
Adjustable Time Twist-Lock Control*	48450
Hi-res Motion Sensor Replacement Lens*	49029A28
Shorting Cap (Included with CSDIM)	44025

Mounting Accessories*	
Description	Order Number
Shorter Slip Fitter Bracket	09A0YLCA
Adjustable Slip Fitter (3" - 3.25" Tenon)	09A1XLCA
Quick Mount Arm Bracket (Drilling Pattern A)	09A0DLCA
Quick Mount Arm Bracket (Drilling Pattern B)	09A0ELCA
90 Mount Arm (Drilling Pattern B, Order with Quick Mount Arm)	09A0KLCA
90 Mount Arm (Drilling Pattern A, Order with Quick Mount Arm)	09A0HLCA
Wall Mount Bracket	09A1XXLCA
Round Pole Universal Mount Arm Bracket Kit	09A1WLCA

Fusing Options*	
Description	Order Number
Single Fusing (120V)	See Electrical Accessories Guide
Single Fusing (277V)	
Double Fusing (120V, 240V)	
Double Fusing (277V)	
Double Fusing (347V)	

Shielding & Miscellaneous Accessories	
Description	Order Number
House Side Shield	09A1WLCA
Internal Back Light Control	49A4S
Photocell Receptacle	09A0S
90° Linear Drill Spec Kit (1" to Linear Cable Entry)	09A0Z

FOOTNOTES:
1. Custom Tenons and wattage packages are available; starts a factory quote; consult with an Area Lighting Specialist.
2. Consult Factory for Trim Layout.
3. Not shown in stock.
4. Can be ordered separately via the ILH app that can be downloaded from your smartphone's native app store.
5. Control sensor or shorting cap must be ordered separately. See Accessory Ordering Information.
6. Accessories are shipped separately and field installed.
7. Not available with Emergency Battery Backup Options.
8. "CSA" Available Mark. See Electrical.
9. Only available with ALED3LED1 emitter options.
10. Fusing should be located in hand hole of pole. See Fusing Guidelines for compatibility.

ALUMINUM SQUARE POLES (SOFT CORNER)

POLE ORDERING INFORMATION

TYPICAL ORDER EXAMPLE: 5SQB5 A188 25 S BRZ

4SQB3 A125 14 S BLK

Pole Series	Material (height*)	Mounting Configuration	Pole Finish	Options
Bolt-On Mount - See selection guide for tenon and Tenon Mount - See selection guide for tenon and tenon mounted numbers 4SQB3 - 3" Tapered Direct Burial 4SQB4 - 4" Tapered Direct Burial 5SQB5 - 5" Tapered Direct Burial< 6SQB6 - 6" Tapered Direct Burial Internal Slip-Fitter* No mounting holes or pole caps - Use with EMA-48IF, EMA-60IF, EMA-84IF & SMA-5020 4SQI 5SQI 6SQI	A125 - 12ft Aluminum A188 - 18ft Aluminum A250 - 25ft Aluminum	8 - Single Arm 10 - Double Arm 12 - Triple Arm 14 - Quad T5 - Tenon Mount Consult Pole Selection Chart on opposite page	BRZ - Bronze BLK - Black WHI - White SVG - Satin Verde Green MED - Metallic Silver	HF - Tenon or Slip Fitter Hand Hole EHH - Extra Hand Hole BPG - Tenon or Slip Fitter Hand Hole With Grounding Provision UHH - Low Anchor Bolts

FOOTNOTES:
1 - See Area Lighting Brochure - Bolt-on and SMA/EMA Area Lighting Brochure pages for round Slip-fitter brackets.
2 - Fits Acuity AERIS™ or 2" Tenon
3 - Fits inside factory installed outdoor damper
4 - TYCO/Pentair mounting option not available
5 - Specify location on bolt-on base plate and access provision. Minimum height 15'-0" up from ground on flat site.

ACCESSORY ORDERING INFORMATION (Accessories are field installed)

Description	Order Number
4SQB3 - 3" Square Cast 2-Piece Base Cover	5SQB3CS
4SQB4 - 4" Square Cast 2-Piece Base Cover	5SQB4CS
5SQB5 - 5" Square Cast 2-Piece Base Cover	5SQB5CS
6SQB6 - 6" Square Cast 2-Piece Base Cover	5SQB6CS

BOLT CIRCLE

4" Ø Direct Square 9"x9"x3/16"thick Square Base Plate	5" Ø Direct Square 11-1/2"x3/16"thick Square Base Plate	6" Ø Direct Square 13-1/2"x3/16"thick Square Base Plate
4" Ø Direct Slip Fit Hole 4"x3" (Tenon)	5" Ø Direct Slip Fit Hole 4"x3" (Tenon)	6" Ø Direct Slip Fit Hole 4"x3" (Tenon)
Anchor Bolts	3/4" x 18" (19mm x 457mm)	3/4" x 18" (19mm x 457mm)	1" x 33" (25.4mm x 838mm)
Approximate Size	3/4" dia. x 12" + 3" hook (19mm x 422mm + 76 mm)	3/4" dia. x 12" + 3" hook (19mm x 422mm + 76 mm)	1" dia. x 36" + 4" hook (25mm x 914mm + 102mm)
Anchor Bolt Protection	BASE COVER	BASE COVER	BASE COVER
Base Plate Dimensions	9-15/16" sq. x 3/4" thk (252mm x 19mm)	11-15/16" sq. x 3/4" thk (303mm x 19mm)	13-3/4" sq. x 1-1/4" thk (349mm x 31.8mm)

Note: See pole chart for pole depth. May change as wind conditions. Shorter cuts for spacing and/or bolts. Consult factory for other base plate templates.

EPA INFORMATION

All poles are published to meet the EPA requirements to bid. Area specifications do not responsible for pole size. Always EPA rating that is required and is only to achieve the pole as it be specified.

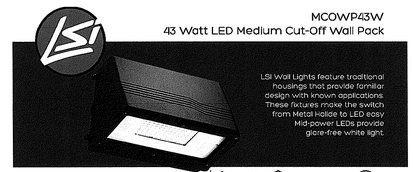
CAUTION: This pole has been designed to comply with the wind loads for the site conditions as used for a specific city. Changing the luminaire, pole, or mounting arm could result in failure. Do not change any of these components without first consulting with the factory and obtaining written approval. Failure to do so may void the warranty.

NOTE: With respect to the use of load factors and the resulting wind velocity. Example: poles designed to withstand 90 MPH gusts are rated at 120 MPH 3 Sec. Gust (EPA) as the Establishment Wind Velocity. Refer to AASHTO Publication for Structural Supports for Highway Signs, Luminaires and Traffic Signals, Section 3.8 for the explanation of the Gust Factor. For specific wind speeds in your area and for applicable requirements, other than commercial criteria, consult factory.

Project Name _____ Fixture Type _____ 1/9/2018
Catalog # _____ LSI P/N: LSI5815-WC

MCOWP43W

43 Watt LED Medium Cut-Off Wall Pack



LSI Wall Lights feature traditional housings that provide familiar design with known applications. These fixtures make the switch from Metal Halide to LED easy. Mid-power LEDs provide glare-free white light.

Features & Specifications

Performance

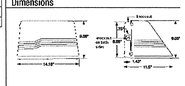
4500K		
Delivered Lumens	Efficacy	Wattage
5,566	130.2	41.20

Optical System
- Lens assembly is designed to provide high efficiency and to target the light where needed to satisfy outdoor lighting requirements.
- Positioning of the LEDs result in the light being directed to desired locations eliminating glare and offensive light.
- 4500K color temperature.
- Minimum CRI of 80

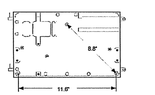
Electrical
- High-performance driver features over-voltage, under voltage, short-circuit and over temperature protection.
- 0-10 volt dimming (10% - 100%) standard.
- Standard Universal Voltage (120-277 Vac) Input 50/60 Hz
- L70 Calculated Life: >100k Hours
- Total harmonic distortion: <20%
- Power factor: >.9
- Color temperature is constant over life.
- Driver: Off-State Power: 0 watts.
- Components are fully encased in potting material for moisture resistance. Driver complies with FCC standards. Driver and key electronic components can easily be accessed.
- Minimum 4kV surge rating

Construction
- Rugged traditional aluminum die cast housing provides proven environmental protection for LED modules.
- Traditional fixture designs provide a familiar look and standard installation procedure.
- Retaining this look allows the ability to upgrade fixtures gradually, while retaining the same overall fixture appearance throughout a facility.
- The smooth housing prevents debris build up and maximizes airflow over housing.

Dimensions



Mounting Detail



Luminaire Ordering Guide

TYPICAL ORDER EXAMPLE: MCOWP 43W 45K BZ PC120

Family	Wattage	Color Temp	Finishes	Options / Controls
MCOWP	43W	45K - 4,500K	BZ - Bronze	PC120 - 120V Button Photocontrol PC208-277 - 208-277V Photocontrol

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED OCT 19 2021 FILE # 21-0169
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE
Nancy L. Freeman

• Civil
• Transportation
• Environmental
• Site Planning
• Surveying
• Permitting
• Landscape Architecture

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STEVEN M. CABRAL
No. 4347
REGISTERED PROFESSIONAL ENGINEER
7-29-21

KEY PLAN

Environmental Management
SEP 24 2021
Office of Water Resources

PROJECT TITLE:

SMITHFIELD FIRE STATION

PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

AHARONIAN & ASSOCIATES, INC.
Architects
310 George Washington Hwy
Suite 100
Smithfield, Rhode Island
0 2 9 1 7
401-232-5010
www.arch-eng.com

DRAWING TITLE:

LIGHTING PLAN

DATE:	SCALE:
MAY 2021	1"=20'

DWG. NAME: 2495–E01–LIGHT–R3.dwg

REVISIONS

NUMBER	REMARKS	DATE
1	REVISED LAYOUT	08/27/21
2	REVISED LOD	09/10/21
3	R.I.D.E.M. COMMENTS	09/25/21

DRAWING NUMBER

E1

SHEET: 13 OF: 15

PLANTING SCHEDULE

TREES

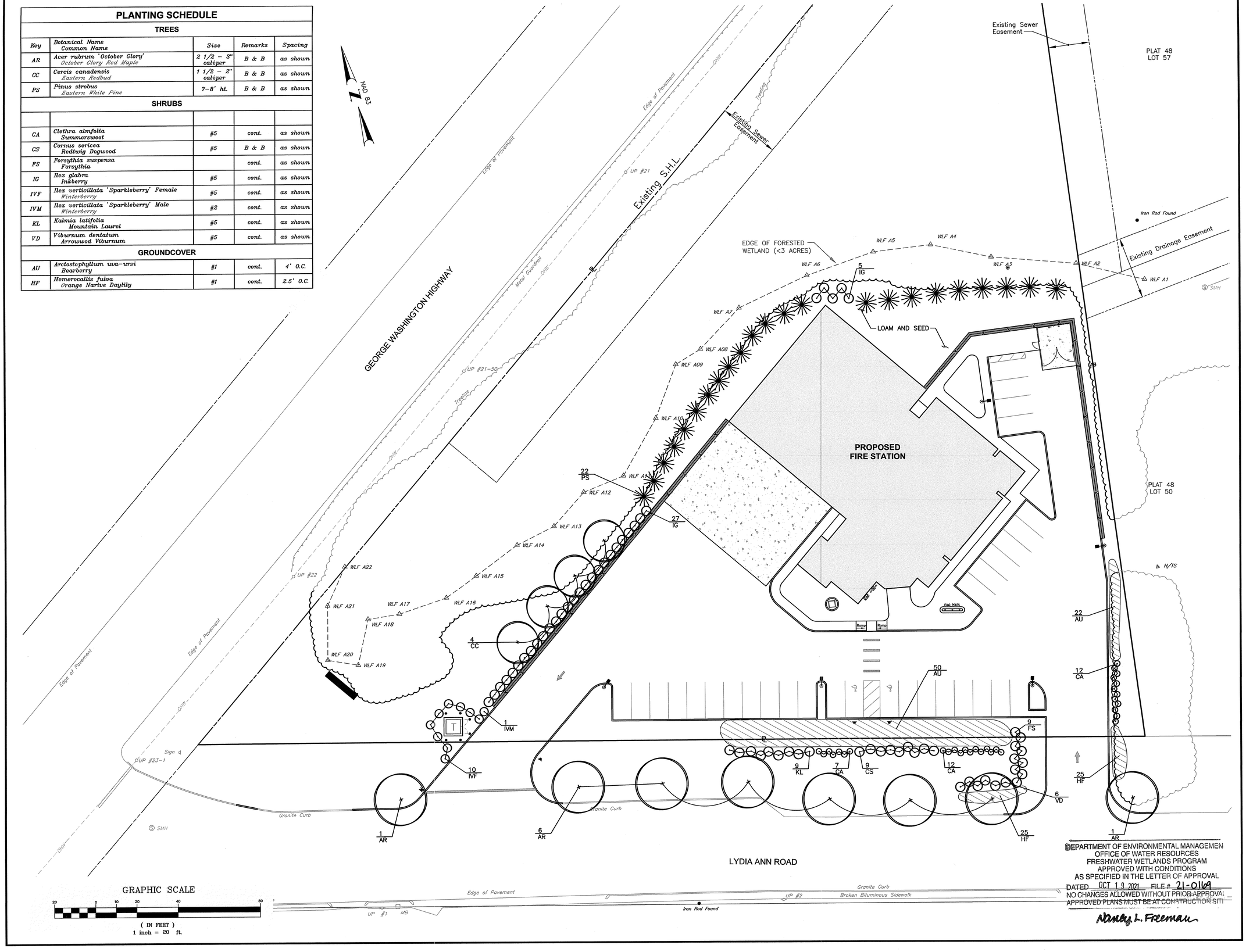
Key	Botanical Name / Common Name	Size	Remarks	Spacing
AR	*Acer rubrum 'October Glory'* / *October Glory Red Maple*	2 1/2 – 3" caliper	B & B	as shown
CC	*Cercis canadensis* / *Eastern Redbud*	1 1/2 – 2" caliper	B & B	as shown
PS	*Pinus strobus* / *Eastern White Pine*	7–8' ht.	B & B	as shown

SHRUBS

CA	*Clethra alnifolia* / *Summersweet*	#5	cont.	as shown
CS	*Cornus sericea* / *Redtwig Dogwood*	#5	B & B	as shown
FS	*Forsythia suspensa* / *Forsythia*		cont.	as shown
IG	*Ilex glabra* / *Inkberry*	#5	cont.	as shown
IVF	*Ilex verticillata 'Sparkleberry' Female* / *Winterberry*	#5	cont.	as shown
IVM	*Ilex verticillata 'Sparkleberry' Male* / *Winterberry*	#2	cont.	as shown
KL	*Kalmia latifolia* / *Mountain Laurel*	#5	cont.	as shown
VD	*Viburnum dentatum* / *Arrowwood Viburnum*	#5	cont.	as shown

GROUNDCOVER

AU	*Arctostophyllum uva–ursi* / *Bearberry*	#1	cont.	4' O.C.
HF	*Hemerocallis fulva* / *Orange Native Daylily*	#1	cont.	2.5' O.C.



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

DEPARTMENT OF ENVIRONMENTAL MANAGEMEN
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
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DATED OCT 19 2021 FILE # 21-0109
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITI

Nancy L. Freeman

• Civil
• Transportation
• Environmental
• Site Planning
• Surveying
• Permitting
• Landscape Architecture

CROSSMAN ENGINEERING

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STEVEN M. CABRAL
No. 4047
REGISTERED PROFESSIONAL ENGINEER
9-24-21

KEY PLAN

Environmental Management
SEP 24 2021
Office of Water Resources

PROJECT TITLE:

SMITHFIELD FIRE STATION
PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

AHARONIAN & ASSOCIATES, INC.
Architects
310 George Washington Hwy
Suite 100
Smithfield, Rhode Island
0 2 9 1 7
401·232·5010
www.arch-eng.com

DRAWING TITLE:

LANDSCAPE PLAN

DATE:	SCALE:
MAY 2021	1"=20'

DWG. NAME: 2495–L01–LAND–R3.dwg

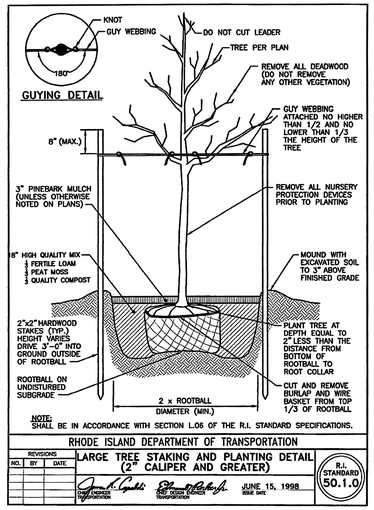
REVISIONS

NUMBER	REMARKS	DATE
1	REVISED LAYOUT	08/27/21
2	REVISED LOD	09/10/21
3	R.I.D.E.M. COMMENTS	09/25/21

DRAWING NUMBER

L1

SHEET: 14 OF: 15



NOTE:
SHALL BE IN ACCORDANCE WITH SECTION L.06 OF THE R.I. STANDARD SPECIFICATIONS.

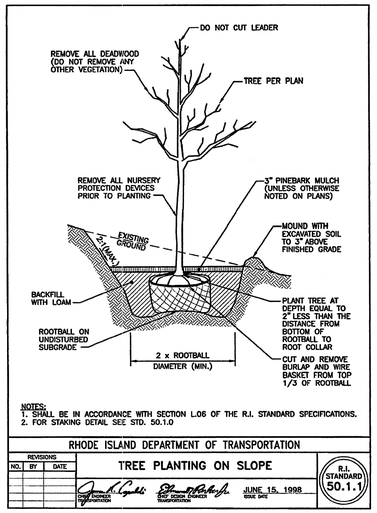
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS NO.	BY	DATE

LARGE TREE STAKING AND PLANTING DETAIL (2" CALIPER AND GREATER)

JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 50.1.0



NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION L.06 OF THE R.I. STANDARD SPECIFICATIONS.
2. FOR STAKING DETAIL SEE STD. 50.1.0

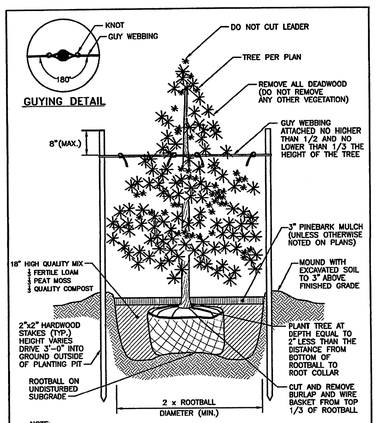
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS NO.	BY	DATE

TREE PLANTING ON SLOPE

JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 50.1.1



NOTE:
SHALL BE IN ACCORDANCE WITH SECTION L.06 OF THE R.I. STANDARD SPECIFICATIONS.

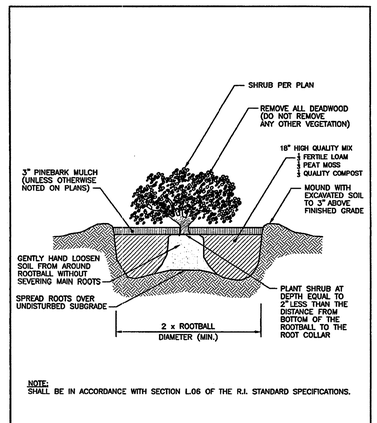
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS NO.	BY	DATE

EVERGREEN TREE PLANTING DETAIL (4'-0" HIGH AND GREATER)

JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 50.2.0



NOTE:
SHALL BE IN ACCORDANCE WITH SECTION L.06 OF THE R.I. STANDARD SPECIFICATIONS.

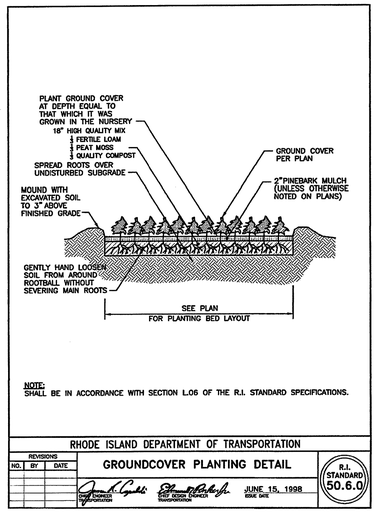
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS NO.	BY	DATE

CONTAINER GROWN SHRUB PLANTING DETAIL

JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 50.3.1



NOTE:
SHALL BE IN ACCORDANCE WITH SECTION L.06 OF THE R.I. STANDARD SPECIFICATIONS.

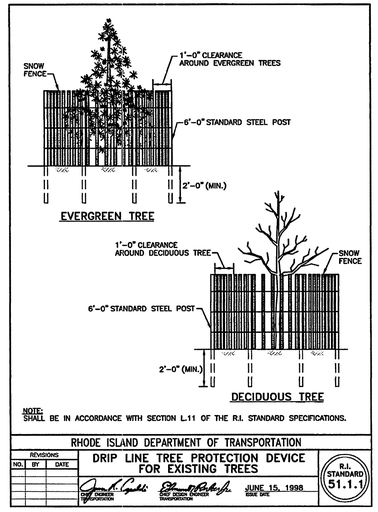
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS NO.	BY	DATE

GROUNDCOVER PLANTING DETAIL

JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 50.6.0



NOTE:
SHALL BE IN ACCORDANCE WITH SECTION L.11 OF THE R.I. STANDARD SPECIFICATIONS.

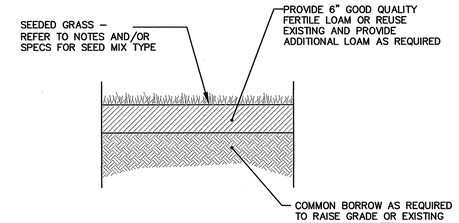
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS NO.	BY	DATE

DRIP LINE TREE PROTECTION DEVICE FOR EXISTING TREES

JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 51.1.1

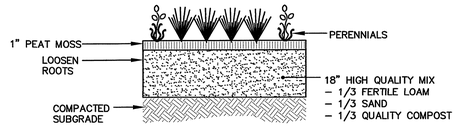


NOTE:

THE CONTRACTOR WILL BE RESPONSIBLE FOR WATERING LAWN DURING THE COURSE OF THE GROWING SEASON FOR A PERIOD OF ONE (1) YEAR.

LOAM-SEED DETAIL

NOT TO SCALE



PERENNIAL DETAIL

NOT TO SCALE

SEEDING NOTES

1. LOAM SHALL BE SPREAD TO A MINIMUM DEPTH OF 4" OVER ALL AREAS DESIGNATED ON PLANS.
2. SHAPE AND SMOOTH THE SURFACE TO THE LINES AND GRADES AS SHOWN ON PLANS.
3. FERTILIZE WITH 10–10–10 OR EQUIVALENT ANALYSIS. AT LEAST 40% OF THE FERTILIZER NITROGEN SHALL BE IN A SLOW RELEASE FORM. INCORPORATE THE FERTILIZER INTO THE TOP 3 TO 4 INCHES OF THE PLANTING SOIL. APPLY AT THE RATE OF 8 POUNDS PER 1,000 SQUARE FEET AT SEEDING.
4. LIME: SPREAD EVENLY AND WORK INTO THE SOIL DURING PREPARATION OF SEED BED AT THE RATE OF ONE TON PER ACRE. INCORPORATE INTO THE SOIL BY DICING OR OTHER APPROVED METHOD. DISTRIBUTE LIME UNIFORMLY AND WORK INTO TOP 4 INCHES OF TOP SOIL (MINIMUM) AND UNIFORMLY BLEND BY DICING OR ROTOTILLING.
5. APPLICATION OF SEED:
   A. RATE OF APPLICATION OF SEED SHALL BE 8 POUNDS PER 1,000 SQUARE FEET OR AS INDICATED ON PLANS.
   B. SEEDING SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND INSTRUCTIONS, AND ONLY DURING THE FOLLOWING DATES:
      SPRING SEEDING: MARCH 15 TO MAY 31
      FALL SEEDING: AUGUST 15 TO OCTOBER 15
   C. THE CONTRACTOR SHALL KEEP ALL SEEDED AREAS WATERED AND IN GOOD CONDITION, RESEEDING IF AND WHEN NECESSARY FOR AN 8 WEEK PERIOD OR UNTIL A GOOD, HEALTHY, UNIFORM GROWTH IS ESTABLISHED OVER THE ENTIRE AREA. THE CONTRACTOR SHALL ALSO MAINTAIN THESE AREAS IN AN APPROVED CONDITION UNTIL PROVISIONAL ACCEPTANCE.
   D. DURING THIS PERIOD, WATER TURF AS NECESSARY TO MAINTAIN AN ADEQUATE SUPPLY OF MOISTURE WITHIN THE ROOT ZONE. AN ADEQUATE SUPPLY OF MOISTURE IS EQUIVALENT OF ONE INCH OF ABSORBED WATER PER WEEK THAT IS DELIVERED AT WEEKLY INTERVALS IN THE FORM OF NATURAL RAIN OR IS AUGMENTED AS REQUIRED BY PERIODIC WATERING.
   E. OVERSEED WHEN NECESSARY TO PROMOTE GRASS GROWTH.
   F. REPLANT AREAS VOID OF TURF ONE SQUARE FOOT OR LARGER.
   G. SEED:
      a. SEED ALL AREAS DESIGNATED ON PLAN AS WELL AS ALL DISTURBED EXISTING AREAS WITH THE FOLLOWING SEED MIX:

SEED MIX No. 1

(MOWED AREAS)

TYPE	% BY WEIGHT
NASSAU KENT BLUE	60%
JAMESTOWN CHEWINGS FESCUE	20%
PALMER PERENNIAL RYE GRASS	20%

APPLICATION RATE = 200 lbs. / ACRE

SEED MIX No. 2

(CONSERVATION MIX)

TYPE	% BY WEIGHT
PERENNIAL RYEGRASS	25%
CREEPING RED FESCUE	25%
ANNUAL RYEGRASS	25%
TURF TYPE TALL FESCUE	17%
KENTUCKY BLUEGRASS	5%
COLONIAL BENTGRASS	1%
RED TOP	1%
WHITE CLOVER	1%

APPLICATION RATE = 4–7 LBS. / 1,000 S.F.

LANDSCAPE CONSTRUCTION NOTES

1. FURNISH AND INSTALL ALL PLANTS SHOWN ON THE DRAWINGS SPECIFIED HEREIN, AND IN THE QUANTITIES LISTED ON THE PLANT LIST. NO SUBSTITUTIONS WILL BE PERMITTED, UNLESS APPROVED BY THE LANDSCAPE ARCHITECT.
2. LOAM TO BE SCREENED, GOOD QUALITY, FERTILE, FREE OF WEEDS, STICKS, STONES OVER 3/4", AND ROOTS. SPREAD TO A MINIMUM OF 6" OVER ALL PLANTED AREAS.
3. BIO–DETENTION AREAS–PLANTING SOIL AND MULCH: LOAMY SAND TO A SANDY LOAM–80% SAND <20% SILT, <2% CLAY. WELL AGED GRADED COMPOST (25% OF SOIL MIX). WELL AGED, AERATED DARK BROWN HARD–WOOD MULCH (AGED 6 MONTHS).
4. NURSERY STOCK SHALL MEET THE STANDARDS OF THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION AS TO GRADING AND QUALITY.
5. ONLY NURSERY–GROWN PLANTS, GROWN IN ACCORDANCE WITH ACCEPTED HORTICULTURAL PRACTICES, AND GROWN UNDER CLIMATIC CONDITIONS SIMILAR TO TO THOSE IN THE LOCALITY OF THE PROJECT FOR AT LEAST TWO (2) YEARS, WILL BE ACCEPTED.
6. CALIPER MEASURMENTS FOR ALL NEW PLANT STOCK SHALL BE TAKEN SIX (6) INCHES ABOVE GRADE FOR TREES UNDER FOUR (4) INCHES AND TWELVE (12) INCHES ABOVE GRADE FOR TREES OVER FOUR (4) INCHES.
7. ALL TREES SHALL BE A MINIMUM OF SEVEN (7) FEET ABOVE FINISHED GRADE WHEN TREES ARE LOCATED WITHIN VEHICULAR AND PEDESTRIAN TRAVEL WAYS.
8. SET PLANTS PLUMB AND AT A LEVEL THAT AFTER SETTLEMENT THEY BEAR THE SAME RELATION TO THE SURROUNDING GROUND AS THEY BORE TO THE GROUND FROM WHICH THEY WERE DUG. SETTLE BACKFILL MATERIAL FOR PLANTS, THOROUGHLY AND PROPERLY BY FIRMING OR TAMPING. FORM SAUCERS, CAPABLE OF HOLDING WATER ABOUT INDIVIDUAL PLANTS, BY PLACING RIDGES OF PLANTING SOIL AROUND EACH.
9. STAKE ALL TREES OVER 5 FEET AS SHOWN ON PLANS. REMOVE STAKES AT THE END OF THE GUARANTEE PERIOD.
10. WATERING: WATER ALL PLANTS WITHIN 48 HOURS AFTER PLANTING. IF CONDITIONS WARRANT, AND AS MANY TIMES THEREAFTER TO SUSTAIN HEALTHY CONDITIONS UNTIL LANDSCAPE INSTALLATION IS COMPLETED. SATURATE THE SOIL AROUND EACH PLANT THOROUGHLY AT EACH WATERING.
11. PRUNING: PRUNE PLANTS, AS DIRECTED BY OWNER, AT THE PROJECT SITE BEFORE OR IMMEDIATELY AFTER PLANTING IN ACCORDANCE WITH THE BEST HORTICULTURAL PRACTICE. CUT BROKEN, DEAD OR INJURED BRANCHES IMMEDIATELY ABOVE THE STEM COLLAR ON THE TRUNK OR LIMB. PRUNE ALL BROKEN ROOTS ON THE PLANT SIDE OF THE BREAK. PAINT CUTS OVER 3/4" IN DIAMETER WITH TREE WOUND PAINT. PRUNING SHALL NOT DEFORM OR OTHERWISE DESTROY THE TYPICAL SHAPE OR SYMMETRY OF THE PLANT, AND SHALL NOT REDUCE THE HEIGHT BY MORE THAN ONE–THIRD. DO NOT CUT BACK THE LEADER OF THE PLANT UNLESS DIRECTED BY THE LANDSCAPE ARCHITECT.
12. FERTILIZING: FERTILIZE SHRUB BEDS WITH 10–10–10 FERTILIZER BROADCAST PER MANUFACTURER'S RATE. APPLY THE FERTILIZER UNIFORMLY TO THE SURFACE BEDS AND WORK INTO THE UPPER TWO INCHES OF SOIL. FERTILIZE INDIVIDUAL TREES AS PER MANUFACTURER'S INSTRUCTIONS. APPLY A SECOND APPLICATION OF FERTILIZER TO ALL PLANT ITEMS AT THE SAME SPECIFIED RATES OVER THE MULCH AT THE END OF A SIX (6) WEEK PERIOD (WITH AVERAGE RAINFALL).
13. LIMING: ADD POWDERED LIME EVERY SIX MONTHS – OR SLOW RELEASE GRANULAR LIME–AS PER MANUFACTURER'S INSTRUCTION.
14. MULCHING: WITHIN A 72 HOUR PERIOD AFTER PLANTING, COVER ALL PLANTED AREAS WITH TREFLAN HERBICIDE OR EQUIVILENT GRANULAR PRE–EMERGENT HERBICIDE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS . COVER WITH 3" DEPTH OF NATURAL BROWN SHREDDED BARK MULCH. NO RED OR DYED MULCH IS TO BE USED. MULCH SHOULD BE PULLED ONE INCH AWAY FROM PLANT TRUNK OR STEM, AND NOT ALLOWED TO REST DIRECTLY AGAINST THE TRUNK OR STEM.
15. GUARANTEE: ALL PLANTS FURNISHED BY THE CONTRACTOR SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER PRELIMINARY INSPECTION AND SHALL BE ALIVE AND IN SATISFACTORY GROWTH AT THE END OF THE GUARANTEE PERIOD. ALL DEAD OR DYING PLANT MATERIAL SHALL BE REPLACED AT ONCE BY THE CONTRACTOR, AT NO ADDITIONAL COST TO THE OWNER.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED OCT 19 2021 FILE # 21-0169
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE
Nancy L. Freeman

• Civil
• Transportation
• Environmental
• Site Planning
• Surveying
• Permitting
• Landscape Architecture

CROSSMAN ENGINEERING

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STEVEN M. CABRAL
No. 4347
REGISTERED PROFESSIONAL ENGINEER
9-21-21

KEY PLAN

Environmental Management
SEP 24 2021
Office of Water Resources

PROJECT TITLE:

SMITHFIELD FIRE STATION
PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

AHARONIAN & ASSOCIATES, INC.
Architects
310 George Washington Hwy
Suite 100
Smithfield, Rhode Island
0 2 9 1 7
401·232·5010
www.arch-eng.com

DRAWING TITLE:

LANDSCAPE DETAIL PLAN

DATE:	SCALE:
MAY 2021	NOT TO SCALE

DWG. NAME: 2495–L02–LNDET–R3.dwg

REVISIONS

NUMBER	REMARKS	DATE
1	REVISED LAYOUT	08/27/21
2	REVISED LOD	09/10/21
3	R.I.D.E.M. COMMENTS	09/25/21

DRAWING NUMBER

L2

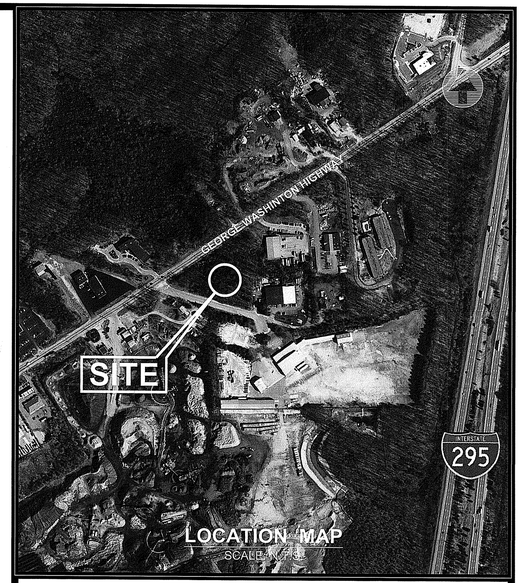
SHEET: 15 *OF:* 15

PERMITTING PLAN SET
FOR

PROPOSED SMITHFIELD FIRE STATION

PLAT MAP 48, LOT 51
ZONING DISTRICT L1
LIGHT INDUSTRIAL DISTRICT

321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RHODE ISLAND



INDEX OF DRAWINGS

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C6	UTILITY PLAN
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E1	LIGHTING PLAN
L1	LANDSCAPE PLAN
L2	LANDSCAPE DETAIL PLAN

REFERENCE PLAN

FP	FLOODPLAIN COMPENSATION PLAN

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
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Stanley L. Freeman

Environmental Management
JUN 10 2021
Office of Water Resources

STEVEN M. CABRAL
No. 4847
REGISTERED PROFESSIONAL ENGINEER
6-9-21

REVISIONS:

No.:	DATE:	DESCRIPTION:

OWNER

SMILE LLC
C/O ATWILL - CONROY DENTAL
1 THURBER BOULEVARD
SMITHFIELD, RHODE ISLAND 02917

APPLICANT

SMITHFIELD FIRE DEPARTMENT
607 PUTNAM PIKE
GREENVILLE, RHODE ISLAND 02908

ENGINEERS and LAND SURVEYORS

- Civil
- Transportation
- Environmental
- Site Planning
- Surveying
- Permitting
- Landscape Architecture

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ARCHITECT

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310 GEORGE WASHINGTON HIGHWAY- SUITE 100
SMITHFIELD, RHODE ISLAND 02917

MAY 2021
SHEET 1 of 15

GENERAL NOTES

1. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL EXISTING DRAINAGE AND UTILITIES, BOTH UNDERGROUND AND OVERHEAD, BEFORE EXCAVATION BEGINS IN ACCORDANCE WITH "DIG SAFE PROGRAM LAW" ENACTED BY THE R.I. LEGISLATURE AND BY CONTACTING THE INDIVIDUAL UTILITY COMPANIES. EXCAVATION SHALL BE IN ACCORDANCE WITH ALL STATUTES, ORDINANCES, RULES AND REGULATIONS OF ANY MUNICIPALITY, STATE OR FEDERAL AGENCY THAT MAY APPLY. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

2. SPECIFICATIONS TO GOVERN THIS PROJECT ARE R.I.D.O.T. STANDARD SPECIFICATIONS AND DETAILS. FOR ALL EXCAVATION, PLACEMENT OF FILL, PIPE BITUMINOUS PAVEMENT, CUTTING INTO CATCHBASIN/MANHOLES, CONCRETE AND SAWCUTTING, THE CONTRACTOR SHALL PERFORM THE WORK IN FULL COMPLIANCE WITH THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, MARCH 2018 EDITION, WITH LATEST REVISIONS UNLESS OTHERWISE SHOWN ON PLANS. THE "METHOD OF MEASUREMENT" AND "BASIS OF PAYMENT" ARE NOT APPLICABLE. THESE SPECIFICATIONS CAN BE OBTAINED ON-LINE AT:

   http://www.dot.ri.gov/business/bluebook.php

3. UNLESS SPECIFICALLY REFERENCED ON THE PLANS, ALL WORK ON SITE SHALL USE THE RHODE ISLAND STANDARD DETAILS, JUNE 21, 2019 WITH ALL REVISIONS AS PREPARED BY THE DEPARTMENT OF TRANSPORTATION.

4. THE CONTRACTOR MUST VERIFY PRIOR TO CONSTRUCTION THAT ALL REQUIRED AUTHORIZATION TO PERFORM WORK HAS BEEN OBTAINED. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR CONSTRUCTION OPERATIONS INCLUDING ALL ACTIONS OR OMISSIONS OF ANY SUBCONTRACTORS, AGENTS OR EMPLOYEES. THE CONTRACTOR MUST ENSURE THAT THE CONDITIONS OF ALL PERMITS, SPECIFICATIONS AND FEDERAL, STATE AND LOCAL REGULATIONS ARE STRICTLY ENFORCED. THE CONTRACTOR IS ALSO RESPONSIBLE FOR ASPECTS OF ON-SITE SAFETY INCLUDING ANY DAMAGE TO EXISTING STRUCTURES.

5. WORK SHOWN ON THE PLANS FOR WHICH THERE ARE NO PARTICULAR DETAILS OR SPECIFICATIONS DOES NOT RELIEVE THE CONTRACTOR FROM FURNISHING AND INSTALLING THE WORK. THE CONTRACTOR SHALL THOROUGHLY EXAMINE THE CONTRACT DOCUMENTS AND PLANS AND INSPECT THE SITE, AND THE BID PRICE SHALL INCLUDE ALL SERVICES AND MATERIALS NECESSARY TO COMPLETE THE PROJECT. ANY CHANGES TO THE PROJECT OR THE INSTALLATION OF AN ITEM FOR WHICH NO PARTICULAR DETAIL OR SPECIFICATION WAS PROVIDED MUST BE REVIEWED BY AND MUST BE ACCEPTABLE TO THE ENGINEER.

6. CONTRACTOR IS RESPONSIBLE TO VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO ANY WORK. THE CONTRACTOR SHALL PERFORM TEST PITS TO LOCATE EXISTING UTILITY STUBS AT CONNECTION POINTS.

7. ALL DISTURBED AREAS SHALL BE REPLACED IN KIND UNLESS OTHERWISE SHOWN.

8. "APPROVED EQUAL" PRODUCTS MAY BE USED BY THE CONTRACTOR ONLY UPON APPROVAL BY THE DESIGN ENGINEER. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE SUBMITTALS TO THE DESIGN ENGINEER FOR REVIEW.

9. THIS PROPOSED USE DOES NOT MEET THE RIDEM DEFINITION OF A LAND USE WITH HIGHER POTENTIAL POLLUTANT LOAD.

10. THE DETECTABLE WARNING DEVICE FOR ADA RAMPS SHALL NOT BE USED FOR WHEELCHAIR RAMP AREAS

LAYOUT NOTE

THE LAYOUT SHOWN REPRESENTS A GRAPHICAL DESIGN, AND PRIOR TO THE CONSTRUCTION, THE CONTRACTOR SHALL ENGAGE A PROFESSIONAL LAND SURVEYOR (PLS) REGISTERED IN THE STATE OF RHODE ISLAND TO SET AND VERIFY ALL LINES AND GRADES. ALL EXISTING UTILITY LOCATIONS AND ELEVATIONS ARE TO BE CONFIRMED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ANY ITEM FOUND WHICH DOES NOT MATCH THE PLANS MUST BE BROUGHT TO THE ENGINEER'S ATTENTION PRIOR TO CONSTRUCTION FOR REVIEW. NO WORK SHALL PROCEED UNTIL AUTHORIZED BY THE ENGINEER.

MAINTENANCE AND PROTECTION OF TRAFFIC NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MAINTENANCE AND PROTECTION OF PEDESTRIAN AND VEHICULAR TRAFFIC INCLUDING POLICE PROTECTION. ALL TEMPORARY CONSTRUCTION SIGNS, BARRICADES AND LANE CLOSURES SHALL BE IN CONFORMANCE WITH THE LATEST REVISIONS OF MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.)

2. TEMPORARY CONSTRUCTION SIGNS AND ALL APPLICABLE TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF WORK IN ANY AREA OPEN TO TRAFFIC.

3. ALL MAINTENANCE AND PROTECTION OF TRAFFIC CONTROL SETUPS, SIGNS, CHANNELING DEVICES, ETC., SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 EDITION, LATEST REVISIONS.

4. SIGN MOUNTINGS SHALL BE IN ACCORDANCE WITH THE STATE D.O.T. SPECIFICATIONS FOR TEMPORARY CONSTRUCTION SIGNS.

CONSTRUCTION NOTES

1. THE CONTRACTOR IS REQUIRED TO OBTAIN AND REVIEW ALL ENGINEERING AND PERMIT DOCUMENTS COMPLETED FOR FINAL DESIGN.

2. THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO INSTALLATION OF UTILITIES ON SITE. THE COORDINATION IS NECESSARY FOR THE ENGINEER TO SCHEDULE SITE INSPECTIONS AS REQUIRED.

3. THE CONTRACTOR IS REQUIRED TO MAINTAIN DETAILED AS-BUILT INFORMATION FOR ALL UTILITY INSTALLATION. AS-BUILT INFORMATION INCLUDES MATERIAL LIST, PIPE DEPTH NOTATIONS AND SWING TIE LOCATIONS (2 MINIMUM) FROM NEW PIPE TO PERMANENT STRUCTURES. ALL PIPE BEND/ELBOW LOCATIONS SHALL BE DIMENSIONED.

FLOOD ZONE NOTE

THE SITE IS WITHIN FLOOD ZONE X, AREAS TO BE OUTSIDE THE 0.2% CHANCE FLOODPLAIN, AND FLOOD ZONE A, AREAS SUBJECT TO FLOODING BY THE 1% CHANCE ANNUAL FLOOD ACCORDING TO FLOOD INSURANCE RATE MAP, PROVIDENCE COUNTY, RHODE ISLAND, PANEL 167 OF 451, MAP NUMBER 44007C0167H, EFFECTIVE DATE OCTOBER 2, 2015.

DESIGN FLOOD ELEVATION OF 371.1 IS USED BASED UPON EXISTING OVERFLOW GRADE OF 371.1 ONTO GEORGE WASHINGTON HIGHWAY.

PERMITTING NOTES

1. A RIDEM WETLAND PERMIT IS REQUIRED.

2. LYDIA ANN ROAD IS NOT A RIDOT MAINTAINED ROADWAY. A RIDOT PAP IS NOT REQUIRED.

3. THE PROPOSED IMPROVEMENTS WILL RESULT IN MORE THAN 1 ACRE OF SOIL DISTURBANCE. A RIDEM RIPDES PERMIT IS REQUIRED.

4. A RIDEM PERMIT FOR THE PROPOSED UNDERGROUND STORMWATER INFILTRATION SYSTEM IS REQUIRED (GROUNDWATER DISCHARGE SYSTEM APPROVAL).

5. THE SITE IS NOT WITHIN A RIDEM NATURAL HERITAGE AREA.

6. A SEPERATE UTILITY PERMIT APPLICATION WILL BE REQUIRED FROM THE TOWN OF SMITHFIELD FOR PROPOSED WATER, SEWER AND ROAD OPENING PERMITS.

7. THE CONTRACTOR WILL BE RESPONSIBLE TO CONTACT AND COORDINATE WITH THE GAS, ELECTRIC, TELEPHONE/COMMUNICATIONS COMPANIES FOR THE NEW INSTALLATION AND SERVICE TO THE BUILDINGS.

PROPOSED PAVEMENT STRUCTURE

1 1/2" BITUMINOUS CONCRETE SURFACE COURSE, CLASS 12.5 HMA
2 1/2" BITUMINOUS CONCRETE BASE COURSE, CLASS 19.5 HMA
12" GRAVEL BORROW SUBBASE

NOTE: THE PAVEMENT THICKNESS WITHIN THE LYDIA ANN ROAD RIGHT OF WAY SHALL MATCH THE CURRENT PAVEMENT THICKNESS OF LYDIA ANN ROAD

STORMWATER MANAGEMENT SYSTEM - MAINTENANCE OPERATION

UPON PROJECT COMPLETION, THE SITE OWNER SHALL ADHERE TO THE FOLLOWING MAINTENANCE RECOMMENDATIONS.

1. CATCHBASINS, MANHOLES, AND CLEAN-OUTS:

   INSPECTION SHALL OCCUR ON AN ANNUAL BASIS BY QUALIFIED PERSONNEL TO ENSURE PROPER OPERATION. THE INSPECTION SHOULD, AS A MINIMUM, CONCENTRATE ON THE FOLLOWING:

   - DAMAGE TO GRATE/COVER
   - EVIDENCE OF STANDING WATER
   - DEBRIS REMOVAL
   - STRUCTURAL ALIGNMENT/INTEGRITY

2. WATER QUALITY CHAMBER:

   REGULAR INSPECTIONS AND MAINTENANCE OF THE STORMCEPTOR DEVICE IS REQUIRED TO MINIMIZE STORMWATER POLLUTION AND FLOODING. FOLLOWING CONSTRUCTION, INSPECTIONS FOR THE FIRST YEAR OF OPERATION SHALL OCCUR AFTER EVERY STORM EVENT WITH GREATER THAN ONE INCH OF RAINFALL, IMMEDIATELY AFTER OIL, FUEL OR OTHER CHEMICAL SPILLS, AND QUARTERLY (FOUR TIMES PER YEAR). INSPECTIONS SHALL OCCUR A MINIMUM OF TWO TIMES PER YEAR FOR THE FOLLOWING YEARS. THE STORMCEPTOR DEVICE IS REQUIRED TO BE CLEANED ANNUALLY AND WHENEVER SEDIMENT DEPTHS REACH 15% OF THE UNIT'S TOTAL STORAGE CAPACITY

3. SEDIMENT REMOVAL:

   FOLLOWING CONSTRUCTION, SEDIMENT REMOVAL SHALL BE CONDUCTED AS DEEMED NECESSARY BY THE SYSTEM INSPECTIONS. ALL REMOVED SEDIMENT IS TO BE TESTED TO DETERMINE POLLUTANT CONTENT. THE SEDIMENT IS TO BEPROPERLY DISPOSED IN UPLAND AREAS BASED UPON THE TEST RESULTS AND LOCAL, STATE, AND FEDERAL REGULATIONS.

4. UNDERGROUND INFILTRATION/DETENTION SYSTEMS:

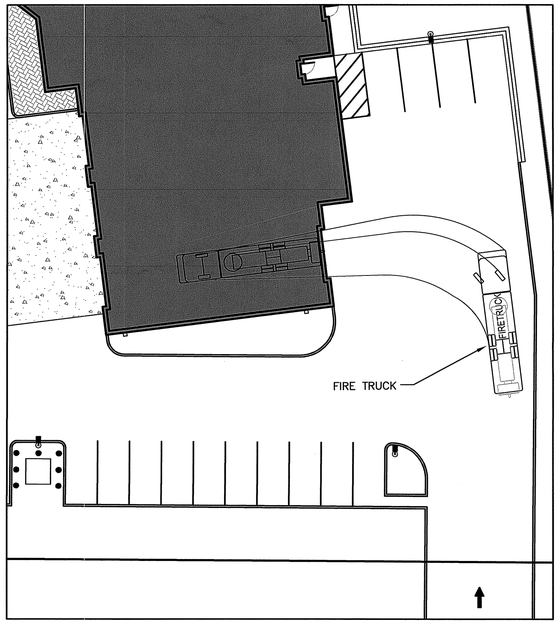
   THE UNDERGROUND INFILTRATION/DETENTION SYSTEMS SHALL BE INSPECTED ANNUALLY AND AFTER STORMS EQUAL TO OR GREATER THAN THE 1-YEAR, 24 HOUR TYPE III STORM EVENT (2.7 INCHES IN 24 HOURS). INSPECT THE INLET PIPES AND OUTLET PIPES FOR CLOGGING. REMOVE ACCUMULATED SEDIMENT, TRASH AND DEBRIS. INSPECT SYSTEM AND OUTLET STRUCTURE FOR STRUCTURAL INTEGRITY AND STANDING WATER. INSPECT PAVEMENT AREA OVER SYSTEM FOR SETTLEMENT.

5. ANNUAL SWEEPING:

   ANNUAL PARKING LOT AND DRIVEWAY SWEEPING SHALL BE CONDUCTED DURING THE SPRING OF EVERY YEAR.

SOIL REMOVAL NOTE

THE SOIL HORIZONS A AND B SHALL BE REMOVED WITHIN THE AREAS OF THE PROPOSED BUILDING, PAVEMENT AND UNDERGROUND INFILTRATION SYSTEM AREA. IF ADDITIONAL SOIL IS NEEDED UNDER THE PROPOSED PAVEMENT/GRAVEL BORROW SUBASE TO MATCH GRADES, USE GRAVEL BORROW OR APPROVED SOIL BACKFILL.



FIRE TRUCK TURNING DETAIL
SCALE: 1"=20'

LEGEND

EXISTING		PROPOSED
℄	PROPERTY LINE	
	CURB	
-O- NO.	UTILITY POLE	-●- NO.
LP	LIGHT POLE	
-(Size) D-	DRAIN LINE	(SIZE) D
-(Size) S-	SANITARY SEWER	(SIZE) S
	SANITARY FORCE MAIN	(SIZE) FM
-(Size) G-	GAS LINE	(SIZE) G
-6"W-	DOMESTIC WATER LINE	(SIZE) W
-OHW-	UNDERGROUND ELECTRIC/CABLE/TELEPHONE	UEC
	OVERHEAD WIRE	
Ⓓ DMH	DRAINAGE MANHOLE	● DMH
CB	CATCH BASIN	■ CB
Ⓢ SMH	SEWER MANHOLE	● SMH
Hyd.	HYDRANT	
WG	WATER GATE	●WG
GG	GAS GATE	●GG
CO	CLEAN-OUT TO GRADE	●CO
	SIGN	
	SAWCUT PAVEMENT	
-XXX-	CONTOURS	ELEV.
X ELEV.	SPOT GRADES	00x0
	CHAIN LINK FENCE	
(Size)	TREE	
TP 1	TEST PIT	
Bollard	BOLLARDS	●BOLLARD
	LIMIT OF DISTURBANCE	
	FILTER SOXX	
	SILT FENCE	
Existing S.H.L.	STATE HIGHWAY LINE	
WLF A7 △	WETLAND FLAG	
	50' PERIMETER WETLAND	
	FLOOD PLAIN	

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SOIL EVALUATION DATA

SOIL EVALUATIONS WERE CONDUCTED BY CROSSMAN ENGINEERING ON DECEMBER 9, 2020.

TEST PIT 1 — GR.=386.5

0"	Forest Litter	Oe
2"	Dark Brown Sandy Loam	A (Friable)
5"	Dark Yellowish Brown Stony Sandy Loam	Bw1 (Friable)
16"	Yellowish Brown Stony Sandy Loam	Bw2 (Friable)
24"	Light Yellowish Brown Stony, Cobbly Gravelly Fine Sand/Loamy Sand	C1 (Friable)
66"	Light Yellowish Brown Stony, Cobbly Gravelly Loamy Sand	C2 (Friable)
79"		

79" REFUSAL
NO WATER SEEPAGE
NO REDOX FEATURES
ESHWT=72"
DESIGN GWT=380.5

TEST PIT 2 — GR.=387.25

0"	Forest Litter	Oe
2"	Dark Brown Sandy Loam	A (Friable)
4"	Dark Yellowish Brown Stony Sandy Loam	Bw1 (Friable)
15"	Yellowish Brown Stony Sandy Loam	Bw2 (Friable)
26"	Light Yellowish Brown Stony, Cobbly Gravelly Loamy Sand	C1 (Friable)
72"	Light Yellowish Brown Stony, Cobbly Gravelly Loamy Sand	C2 (Friable)
88"		

88" REFUSAL
NO WATER SEEPAGE
SOME REDOX FEATURES (<2%)
ESHWT=72"
DESIGN GWT=381.25

TEST PIT 3 — GR.=378.25

0"	Forest Litter	Oe
3"	Dark Brown Sandy Loam	A (Friable)
5"	Dark Yellowish Brown Stony Sandy Loam	Bw1 (Friable)
16"	Light Yellowish Brown Stony Sand	Bw2 (Friable)
36"	Light Yellowish Brown Stony, Cobbly Gravelly Fine Sand/Loamy Sand	C1 (Friable)
66"	Light Yellowish Brown Stony, Cobbly Gravelly Loamy Sand	C2 (Friable)
114"		

NO REFUSAL
NO WATER SEEPAGE
NO REDOX FEATURES
ESHWT=72"
DESIGN GWT=372.25

TEST PIT 4 — GR.=384.75

0"	Forest Litter	Oe
2"	Dark Brown Sandy Loam	A (Friable)
7"	Dark Yellowish Brown Stony Sandy Loam	Bw1 (Friable)
14"	Yellowish Brown Stony Sandy Loam	Bw2 (Friable)
33"	Light Yellowish Brown Stony, Cobbly Gravelly Fine Sand/Loamy Sand	C1 (Friable)
56"	Light Yellowish Brown Stony, Cobbly Gravelly Loamy Sand	C2 (Friable)
93"		

93" REFUSAL
NO WATER SEEPAGE
56" REDOX FEATURES
ESHWT=56"
DESIGN GWT=380.1

TEST PIT 5 — GR.=383.50

0"	Forest Litter	Oe
2"	Dark Brown Sandy Loam	A (Friable)
5"	Dark Yellowish Brown Bouldery Sandy Loam	Bw1 (Friable)
17"	Yellowish Brown Stony Sandy Loam With Boulders	Bw2 (Friable)
36"	Stony Sandy Loam With Boulders And Interlocking Stones	C1
40"		

36"-40" REFUSAL
NO WATER SEEPAGE
NO REDOX FEATURES

TEST PIT 6 — GR.=371.50

0"	Forest Litter	Oe
2"	Dark Brown Sandy Loam	A (Friable)
5"	Dark Yellowish Brown Stony Sandy Loam	Bw1 (Friable)
18"	Yellowish Brown Stony Sandy Loam	Bw2 (Friable)
30"	Light Yellowish Brown Stony, Cobbly Gravelly Fine Sand/Loamy Sand	C1 (Friable)
50"	Light Yellowish Brown Stony, Cobbly Gravelly Loamy Sand	C2 (Friable)
104"		

NO REFUSAL
80" WATER SEEPAGE
50" REDOX FEATURES
ESHWT=50"
DESIGN GWT=367.33

TEST PIT 7 — GR.=381.80

0"	Forest Litter	Oe
1"	Dark Brown Sandy Loam	A (Friable)
3"	Dark Yellowish Brown Stony Sandy Loam	Bw1 (Friable)
8"	Yellowish Brown Stony Sandy Loam	Bw2 (Friable)
26"	Light Yellowish Brown Stony, Cobbly Gravelly Fine Sand/Loamy Sand	C1 (Friable)
54"	Light Yellowish Brown Stony, Cobbly Gravelly Loamy Sand	C2 (Friable)
72"		

72" REFUSAL
NO WATER SEEPAGE
NO REDOX FEATURES
ESHWT=72"
DESIGN GWT=375.8

TEST PIT 8 — GR.=370.50

0"	Forest Litter	Oe
3"	Dark Brown Sandy Loam	A (Friable)
7"	Dark Yellowish Brown Stony Sandy Loam	Bw1 (Friable)
20"	Yellowish Brown Stony Sandy Loam	Bw2 (Friable)
33"	Light Yellowish Brown Stony, Cobbly Gravelly Fine Sand/Loamy Sand	C1 (Friable)
60"	Light Yellowish Brown Stony, Cobbly Gravelly Loamy Sand	C2 (Friable)
108"		

NO REFUSAL
84" WATER SEEPAGE
NO REDOX FEATURES
ESHWT=60"
DESIGN GWT=365.50

TEST PIT 9 — GR.=377.75

0"	Forest Litter	Oe
2"	Dark Brown Sandy Loam	A (Friable)
5"	Dark Yellowish Brown Stony Sandy Loam	Bw1 (Friable)
11"	Yellowish Brown Stony Sandy Loam	Bw2 (Friable)
24"	Light Yellowish Brown Stony, Cobbly Gravelly Fine Sand/Loamy Sand	C1 (Friable)
64"	Light Yellowish Brown Stony, Cobbly Gravelly Loamy Sand	C2 (Friable)
106"		

NO REFUSAL
NO WATER SEEPAGE
NO REDOX FEATURES
ESHWT=72"
DESIGN GWT=371.75

Environmental Management
JUN 10 2021
Office of Water Resources

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• Landscape Architecture

CROSSMAN ENGINEERING

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STEVEN M. CABRAL
No. 4847
REGISTERED PROFESSIONAL ENGINEER
5/27/21

KEY PLAN

PROJECT TITLE:

SMITHFIELD FIRE STATION
PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

AHARONIAN & ASSOCIATES, INC.
Architects
310 George Washington Hwy
Suite 100
Smithfield, Rhode Island
0 2 9 1 7
401-232-5010
www.arch-eng.com

DRAWING TITLE:

GENERAL NOTES and LEGEND

DATE:	SCALE:
MAY 2021	AS SHOWN

DWG. NAME: 2495-C01-NOTE.dwg

REVISIONS

NUMBER	REMARKS	DATE
--		

DRAWING NUMBER

C1

SHEET: 2 OF: 15

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STEVEN M. CABRAL
No. 4847
REGISTERED PROFESSIONAL ENGINEER
6-9-21

KEY PLAN

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED JUL - 1 2021 FILE # 21-0169
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE
Wendy L. Freeman

PROJECT TITLE:

SMITHFIELD FIRE STATION
PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

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Architects
310 George Washington Hwy
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Smithfield, Rhode Island
0 2 9 1 7
401·232·5010
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DRAWING TITLE:

AERIAL MAP

DATE:	*SCALE:*
MAY 2021	1"=40'

DWG. NAME: 2495-C02-AERIAL.dwg

REVISIONS

NUMBER	*REMARKS*	*DATE*
--		

DRAWING NUMBER

C2

SHEET: 3 *OF:* 15

LOCATION MAP
NOT TO SCALE

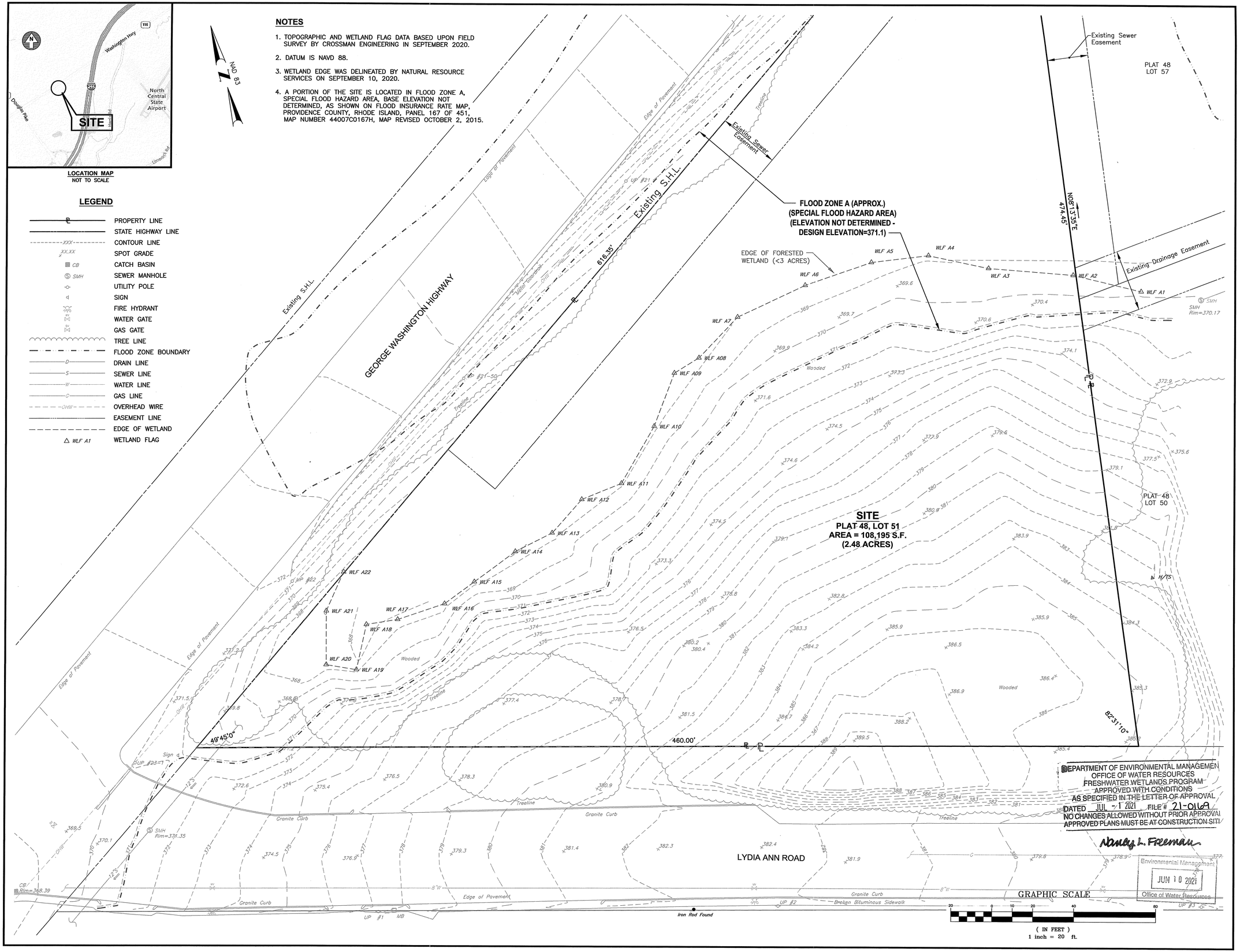
LEGEND

- PROPERTY LINE
- STATE HIGHWAY LINE
- XXX CONTOUR LINE
- XX.XX SPOT GRADE
- CB CATCH BASIN
- SMH SEWER MANHOLE
- UTILITY POLE
- SIGN
- FIRE HYDRANT
- WATER GATE
- GAS GATE
- TREE LINE
- FLOOD ZONE BOUNDARY
- D DRAIN LINE
- S SEWER LINE
- W WATER LINE
- G GAS LINE
- OHW OVERHEAD WIRE
- EASEMENT LINE
- EDGE OF WETLAND
- WLF A1 WETLAND FLAG

NAD 83

NOTES

1. TOPOGRAPHIC AND WETLAND FLAG DATA BASED UPON FIELD SURVEY BY CROSSMAN ENGINEERING IN SEPTEMBER 2020.
2. DATUM IS NAVD 88.
3. WETLAND EDGE WAS DELINEATED BY NATURAL RESOURCE SERVICES ON SEPTEMBER 10, 2020.
4. A PORTION OF THE SITE IS LOCATED IN FLOOD ZONE A, SPECIAL FLOOD HAZARD AREA, BASE ELEVATION NOT DETERMINED, AS SHOWN ON FLOOD INSURANCE RATE MAP, PROVIDENCE COUNTY, RHODE ISLAND, PANEL 167 OF 451, MAP NUMBER 44007C0167H, MAP REVISED OCTOBER 2, 2015.



DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
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Nancy L. Freeman

Environmental Management
JUN 10 2021
Office of Water Resources

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

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STEVEN M. CABRAL
No. 4847
REGISTERED PROFESSIONAL ENGINEER

KEY PLAN

PROJECT TITLE:

SMITHFIELD FIRE STATION
PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
OVERLAY DISTRICT EGOD
ECONOMIC GROWTH OVERLAY
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

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www.arch-eng.com

DRAWING TITLE:

EXISTING CONDITIONS PLAN

DATE:	SCALE:
MAY 2021	1"=20'

DWG. NAME: 2495-C03-EXCN.dwg

REVISIONS

NUMBER	REMARKS	DATE
--	--	--

DRAWING NUMBER

C3

SHEET: 4 OF: 15

DIMENSIONAL REGULATIONS
ZONING DISTRICT: LI LIGHT INDUSTRIAL DISTRICT (LI)
OVERLAY DISTRICT: ECONOMIC GROWTH OVERLAY DISTRICT (EGOD)
USE = MUNICIPAL FIRE STATION

	REQUIRED (LI)	PROVIDED
MINIMUM LOT AREA:	100,000 S.F.	108,195± S.F.
MINIMUM FRONTAGE:	300'	460' (Lydia Ann) 610' (Rte 116)
MINIMUM LOT WIDTH:	300'	189' (Lydia Ann) 255' (Rte 116)
MINIMUM FRONT YARD SETBACK	100'	63' (Lydia Ann) 98' (Rte 116)
MINIMUM SIDE YARD SETBACK:	40'	63'
MINIMUM REAR YARD SETBACK:	50'	63'
MAXIMUM STRUCTURE HEIGHT:	48'	<48'
MAXIMUM FLOOR AREA RATIO:	0.5	0.14
MAXIMUM BUILDING COVERAGE:	50%	10%

PARKING REQUIREMENTS

5,214 SF ADMINISTRATIVE OFFICE/CONFERENCE = (4 SPACES/1,000 SF)
5,214 SF/1,000 SF x 4 = 21 SPACES REQUIRED
4,834 SF GARAGE/APPARTUS BAYS = (NO PARKING REQUIREMENT)
NO PARKING SPACES REQUIRED
5,028 SF FIRE STATION LIVING QUARTERS (10 BEDS) = (USE 1 SPACE/ROOM-UNIT)
10 BEDS x 1 SPACE/ROOM-UNIT = 10 SPACES REQUIRED

	REQUIRED	PROVIDED
MINIMUM PARKING SPACE :	31 SPACES	27 SPACES
MINIMUM PARKING SPACE WIDTH:	9'	9'
MINIMUM PARKING SPACE LENGTH:	18'	18'
MINIMUM AISLE WIDTH (2-WAY TRAFFIC):	24'	24'
MINIMUM ADA PARKING SPACES:	2	2

ZONING NOTES:

THE BELOW ITEMS HAVE RECEIVED APPROVAL FROM THE SMITHFIELD ZONING BOARD:

– SECTION 5.4 TABLE 1, DIMENSIONAL REGULATIONS (LI).
- MINIMUM FRONT YARD REQUIRED = 100'
- FRONT YARD PROVIDED = 63' LYDIA ANN ROAD AND 98' RTE 116

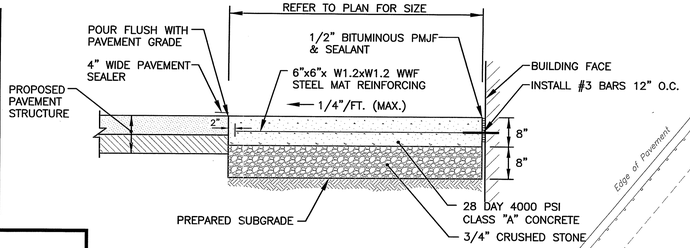
– SECTION 7.4 SCHEDULE OF OFF STREET PARKING REQUIREMENT
- REQUIRED (AS INTERPRETED IN TABLE ABOVE) = 31 SPACES
- PROVIDED = 27 SPACES

– SECTION 5.3.4 WETLAND BUFFER REQUIREMENTS
- REQUIRED SETBACK FROM WETLAND TO BUILDING=100' MIN.
- PROVIDED = 23'

– SECTION 7.2 C PARKING WITHIN REQUIRED FRONT YARD

NOTE:

THE ECONOMIC GROWTH DISTRICT SETBACKS ARE NOTED BELOW:
- REQUIRED FRONT SETBACK=MAX.= 40', MIN.= 25'
- REQUIRED SIDE YARD SETBACK= 40'
- REQUIRED REAR YARD SETBACK= 40'



NOTE: CONSTRUCTION AND EXPANSION JOINTS ARE REQUIRED. CONTRACTOR SHALL COORDINATE WITH ENGINEER PRIOR TO PLACEMENT.

REINFORCED CONCRETE PAD DETAIL
NOT TO SCALE

GEORGE WASHINGTON HIGHWAY
Existing S.H.L.
Existing Sewer Easement
100' FRONT YARD SETBACK
LIMIT OF DISTURBANCE
EDGE OF FORESTED WETLAND (<3 ACRES)
WLF A1 WLF A2 WLF A3 WLF A4 WLF A5 WLF A6
Existing Drainage Easement
Existing Sewer Easement
PLAT 48 LOT 57
NAD 83
100'
86'
98'
16'
48'
40' SIDE YARD SETBACK
FURNISH AND INSTALL WHEEL CHAIR RAMP WITH DETECTABLE WARNING DEVICE (RI STD. 48.1.10)
WLF A7
INSTALL 2 ADA PARKING SIGNS (1 VAN ACCESSIBLE)
WLF A08 WLF A09
PROVIDE 4" WHITE PAVEMENT MARKINGS FOR 9'X18' PARKING SPACES (TYP)
WLF A10
EDGE OF WETLAND
PROPOSED LIGHT POLE (TYP)
WLF A11
FURNISH AND INSTALL PROPOSED PAVEMENT STRUCTURE
WLF A12
(MSE) MODULAR BLOCK RETAINING WALL OR APPROVED EQUAL WITH 5' HIGH CHAIN LINK FENCE (VINYL COATED) (OPTIONAL). WALL TO EXTEND 6"± ABOVE EASTERLY GRADES/SIDEWALK
WLF A13
FURNISH & INSTALL PRECAST CONCRETE CURB AROUND PERIMETER OF PAVEMENT AREA (RI STD. 7.1.0)
WLF A14 WLF A15 WLF A16 WLF A17 WLF A18 WLF A19 WLF A20 WLF A21 WLF A22
8" THICK REINFORCED CONCRETE PAD
R.I. STD. 34.1.0 ROADSIDE GUARDRAIL INSTALLATION
PROPOSED SIGN
STOP R1–1 30"x30"
DO NOT ENTER R5–1 24"x24"
30'
WHITE PAINTED ARROW
12" WHITE PAVEMENT MARKINGS
DO NOT ENTER R5–1 24"x24"
R=25'
R=15'
INSTALL GRANITE CURB FROM STOCKPILE. USE CONCRETE CURB LOCK. MATCH EXISTING REVEAL
FURNISH AND INSTALL PRECAST CONCRETE CURB (RI STD. 7.1.0)
SAWCUT PAVEMENT AND REMOVE & DISPOSE PAVEMENT AND STOCKPILE GRANITE CURB, EXTRA CURB TO BE GIVEN TO THE TOWN OF SMITHFIELD
FURNISH AND INSTALL PRECAST CONCRETE CURB (RI STD. 7.1.0) MATCH EXISTING REVEAL
LIMIT OF DISTURBANCE
LIMITED TREE CUTTING AND GRADING REQUIRED IN ROAD RIGHT–OF–WAY
LOAM & SEED
TRANSFORMER
LANDSCAPE AREA
R=10'
R=2'
R=5'
PRECAST CONCRETE CURB (TYP.)
100' FRONT YARD SETBACK
9' (TYP.)
16'
63'
24'
18' (TYP.)
15'
30'
9
10
PATIO
FIRE STATION
TOTAL AREA = 15,076 S.F.
FIRST FLOOR = 10,460 S.F.
SECOND FLOOR = 4,616 S.F.
18'
9' 9' 8' (TYP.)
8'
EM
GM
4
PLAT 48 LOT 50
57'
65'
8'
LOAM & SEED ALL DISTURBED AREAS UNLESS NOTED OTHERWISE (TYP)
R=15'
LYDIA ANN ROAD
SAWCUT PAVEMENT AND REMOVE AND DISPOSE PAVEMENT (SEE MISC. DETAIL SHEET FOR DETAIL)
FURNISH AND INSTALL PRECAST CONCRETE, CURB (RI STD 7.1.0) WITH 3' TRANSITION CURB (RI STD 7.1.1) AT ENDS (BOTH SIDES)
Edge of Pavement
Metal Guardrail
Granite Curb
Broken Bituminous Sidewalk
Sign
UP #1 UP #2 UP #3 UP #21 UP #21–50 UP #22 UP #23–1 MB
DHW

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
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Nancy L. Freeman

Environmental Management
JUN 10 2021
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STEVEN M. CABRAL
No. 4847
REGISTERED PROFESSIONAL ENGINEER
6-9-21

KEY PLAN

PROJECT TITLE:

SMITHFIELD FIRE STATION
PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
OVERLAY DISTRICT EGOD
ECONOMIC GROWTH OVERLAY
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

AHARONIAN & ASSOCIATES, INC.
Architects
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401·232·5010
www.arch-eng.com

DRAWING TITLE:

SITE LAYOUT PLAN

DATE:	SCALE:
MAY 2021	1"=20'

DWG. NAME: 2495–C04–SITE.dwg

REVISIONS

NUMBER	REMARKS	DATE
--	--	--

DRAWING NUMBER

C4

SHEET: 5 OF: 15

DRAINAGE STRUCTURE SCHEDULE

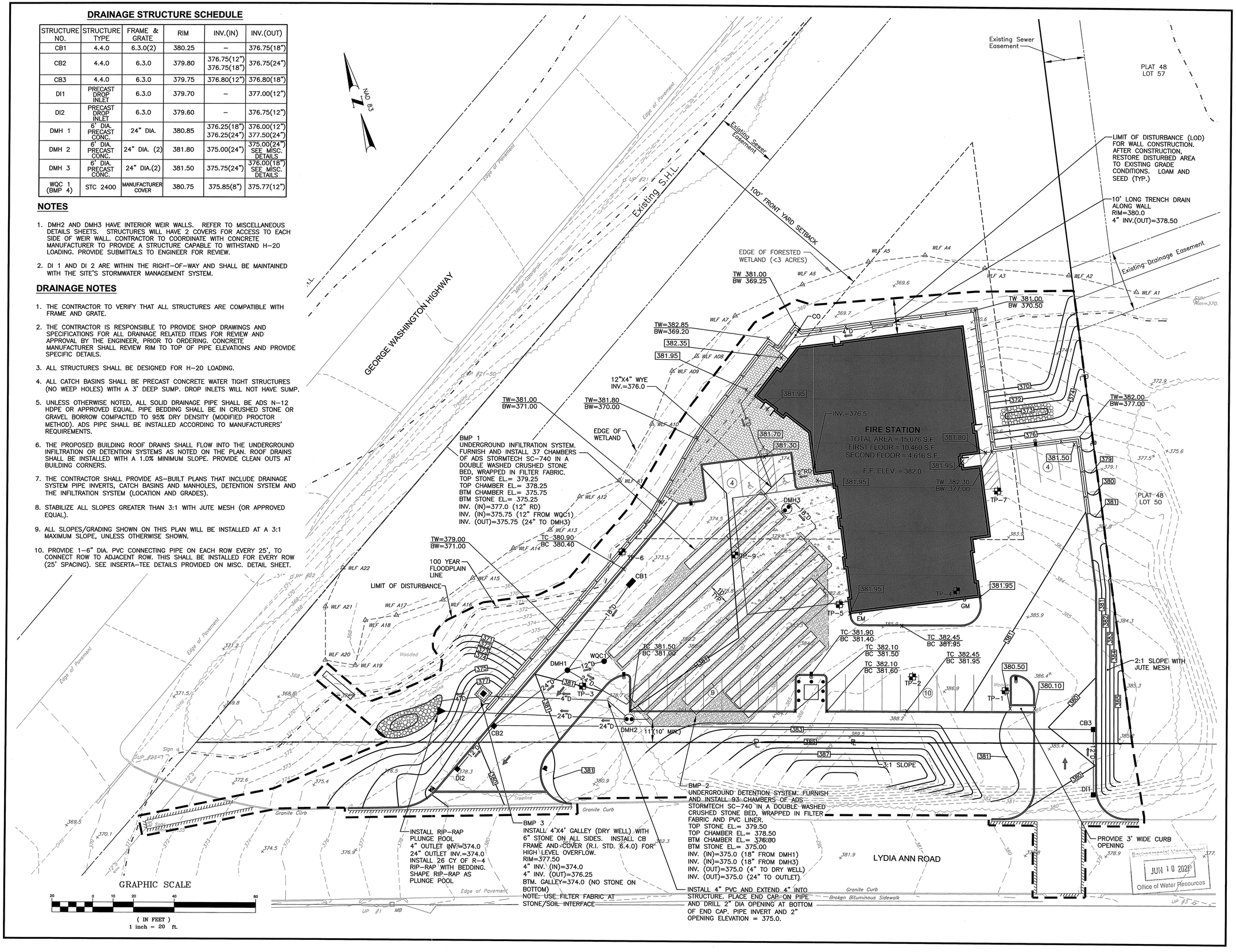
STRUCTURE NO.	STRUCTURE TYPE	FRAME & GRATE	RIM	INV.(IN)	INV.(OUT)
CB1	4.4.0	6.3.0(2)	380.25	–	376.75(18")
CB2	4.4.0	6.3.0	379.80	376.75(12") 376.75(18")	376.75(24")
CB3	4.4.0	6.3.0	379.75	376.80(12")	376.80(18")
DI1	PRECAST DROP INLET	6.3.0	379.70	–	377.00(12")
DI2	PRECAST DROP INLET	6.3.0	379.60	–	376.75(12")
DMH 1	6' DIA. PRECAST CONC.	24" DIA.	380.85	376.25(18") 376.25(24")	376.00(12") 377.50(24")
DMH 2	6' DIA. PRECAST CONC.	24" DIA. (2)	381.80	375.00(24")	375.00(24") SEE MISC. DETAILS
DMH 3	6' DIA. PRECAST CONC.	24" DIA.(2)	381.50	375.75(24")	376.00(18") SEE MISC. DETAILS
WQC 1 (BMP 4)	STC 2400	MANUFACTURER COVER	380.75	375.85(8")	375.77(12")

NOTES

1. DMH2 AND DMH3 HAVE INTERIOR WEIR WALLS. REFER TO MISCELLANEOUS DETAILS SHEETS. STRUCTURES WILL HAVE 2 COVERS FOR ACCESS TO EACH SIDE OF WEIR WALL. CONTRACTOR TO COORDINATE WITH CONCRETE MANUFACTURER TO PROVIDE A STRUCTURE CAPABLE TO WITHSTAND H–20 LOADING. PROVIDE SUBMITTALS TO ENGINEER FOR REVIEW.
2. DI 1 AND DI 2 ARE WITHIN THE RIGHT–OF–WAY AND SHALL BE MAINTAINED WITH THE SITE'S STORMWATER MANAGEMENT SYSTEM.

DRAINAGE NOTES

1. THE CONTRACTOR TO VERIFY THAT ALL STRUCTURES ARE COMPATIBLE WITH FRAME AND GRATE.
2. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE SHOP DRAWINGS AND SPECIFICATIONS FOR ALL DRAINAGE RELATED ITEMS FOR REVIEW AND APPROVAL BY THE ENGINEER, PRIOR TO ORDERING. CONCRETE MANUFACTURER SHALL REVIEW RIM TO TOP OF PIPE ELEVATIONS AND PROVIDE SPECIFIC DETAILS.
3. ALL STRUCTURES SHALL BE DESIGNED FOR H–20 LOADING.
4. ALL CATCH BASINS SHALL BE PRECAST CONCRETE WATER TIGHT STRUCTURES (NO WEEP HOLES) WITH A 3' DEEP SUMP. DROP INLETS WILL NOT HAVE SUMP.
5. UNLESS OTHERWISE NOTED, ALL SOLID DRAINAGE PIPE SHALL BE ADS N–12 HDPE OR APPROVED EQUAL. PIPE BEDDING SHALL BE IN CRUSHED STONE OR GRAVEL BORROW COMPACTED TO 95% DRY DENSITY (MODIFIED PROCTOR METHOD). ADS PIPE SHALL BE INSTALLED ACCORDING TO MANUFACTURERS' REQUIREMENTS.
6. THE PROPOSED BUILDING ROOF DRAINS SHALL FLOW INTO THE UNDERGROUND INFILTRATION OR DETENTION SYSTEMS AS NOTED ON THE PLAN. ROOF DRAINS SHALL BE INSTALLED WITH A 1.0% MINIMUM SLOPE. PROVIDE CLEAN OUTS AT BUILDING CORNERS.
7. THE CONTRACTOR SHALL PROVIDE AS–BUILT PLANS THAT INCLUDE DRAINAGE SYSTEM PIPE INVERTS, CATCH BASINS AND MANHOLES, DETENTION SYSTEM AND THE INFILTRATION SYSTEM (LOCATION AND GRADES).
8. STABILIZE ALL SLOPES GREATER THAN 3:1 WITH JUTE MESH (OR APPROVED EQUAL).
9. ALL SLOPES/GRADING SHOWN ON THIS PLAN WILL BE INSTALLED AT A 3:1 MAXIMUM SLOPE, UNLESS OTHERWISE SHOWN.
10. PROVIDE 1–6" DIA. PVC CONNECTING PIPE ON EACH ROW EVERY 25', TO CONNECT ROW TO ADJACENT ROW. THIS SHALL BE INSTALLED FOR EVERY ROW (25' SPACING). SEE INSERTA–TEE DETAILS PROVIDED ON MISC. DETAIL SHEET.



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STEVEN M. CABRAL
No. 4847
REGISTERED PROFESSIONAL ENGINEER
7-9-21

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
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DATED JUL 1, 2021 FILE # 21-0169
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Nancy L. Freeman

PROJECT TITLE:

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PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

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401-232-5010
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DRAWING TITLE:

GRADING & DRAINAGE PLAN

DATE:	SCALE:
MAY 2021	1"=20'

DWG. NAME:

REVISIONS

NUMBER	REMARKS	DATE
--	--	--

Environmental Management
JUN 10 2021
Office of Water Resources

DRAWING NUMBER

C5

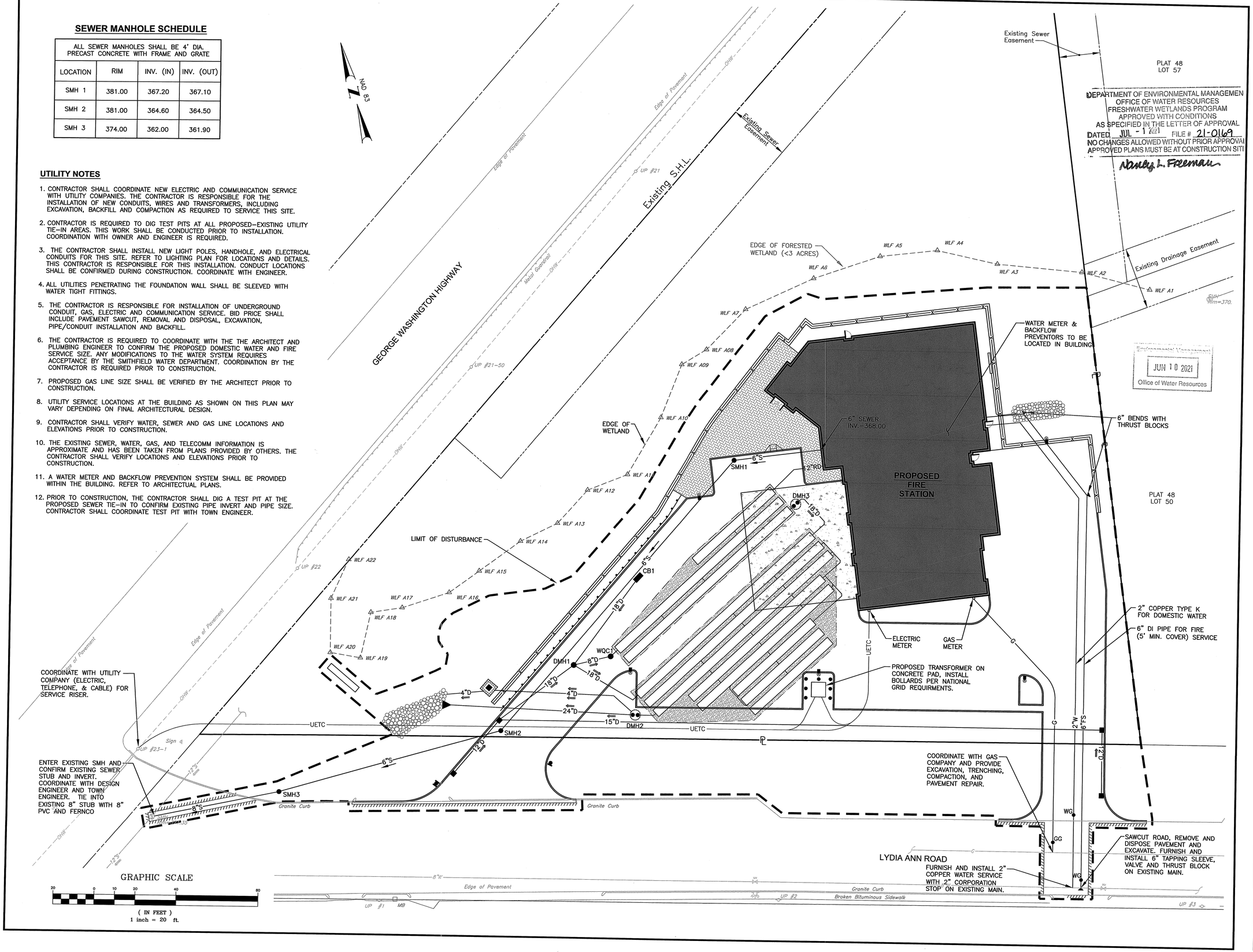
SHEET: 6 *OF:* 15

SEWER MANHOLE SCHEDULE

ALL SEWER MANHOLES SHALL BE 4' DIA. PRECAST CONCRETE WITH FRAME AND GRATE			
LOCATION	RIM	INV. (IN)	INV. (OUT)
SMH 1	381.00	367.20	367.10
SMH 2	381.00	364.60	364.50
SMH 3	374.00	362.00	361.90

UTILITY NOTES

1. CONTRACTOR SHALL COORDINATE NEW ELECTRIC AND COMMUNICATION SERVICE WITH UTILITY COMPANIES. THE CONTRACTOR IS RESPONSIBLE FOR THE INSTALLATION OF NEW CONDUITS, WIRES AND TRANSFORMERS, INCLUDING EXCAVATION, BACKFILL AND COMPACTION AS REQUIRED TO SERVICE THIS SITE.
2. CONTRACTOR IS REQUIRED TO DIG TEST PITS AT ALL PROPOSED–EXISTING UTILITY TIE–IN AREAS. THIS WORK SHALL BE CONDUCTED PRIOR TO INSTALLATION. COORDINATION WITH OWNER AND ENGINEER IS REQUIRED.
3. THE CONTRACTOR SHALL INSTALL NEW LIGHT POLES, HANDHOLE, AND ELECTRICAL CONDUITS FOR THIS SITE. REFER TO LIGHTING PLAN FOR LOCATIONS AND DETAILS. THIS CONTRACTOR IS RESPONSIBLE FOR THIS INSTALLATION. CONDUCT LOCATIONS SHALL BE CONFIRMED DURING CONSTRUCTION. COORDINATE WITH ENGINEER.
4. ALL UTILITIES PENETRATING THE FOUNDATION WALL SHALL BE SLEEVED WITH WATER TIGHT FITTINGS.
5. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF UNDERGROUND CONDUIT, GAS, ELECTRIC AND COMMUNICATION SERVICE. BID PRICE SHALL INCLUDE PAVEMENT SAWCUT, REMOVAL AND DISPOSAL, EXCAVATION, PIPE/CONDUIT INSTALLATION AND BACKFILL.
6. THE CONTRACTOR IS REQUIRED TO COORDINATE WITH THE THE ARCHITECT AND PLUMBING ENGINEER TO CONFIRM THE PROPOSED DOMESTIC WATER AND FIRE SERVICE SIZE. ANY MODIFICATIONS TO THE WATER SYSTEM REQUIRES ACCEPTANCE BY THE SMITHFIELD WATER DEPARTMENT. COORDINATION BY THE CONTRACTOR IS REQUIRED PRIOR TO CONSTRUCTION.
7. PROPOSED GAS LINE SIZE SHALL BE VERIFIED BY THE ARCHITECT PRIOR TO CONSTRUCTION.
8. UTILITY SERVICE LOCATIONS AT THE BUILDING AS SHOWN ON THIS PLAN MAY VARY DEPENDING ON FINAL ARCHITECTURAL DESIGN.
9. CONTRACTOR SHALL VERIFY WATER, SEWER AND GAS LINE LOCATIONS AND ELEVATIONS PRIOR TO CONSTRUCTION.
10. THE EXISTING SEWER, WATER, GAS, AND TELECOMM INFORMATION IS APPROXIMATE AND HAS BEEN TAKEN FROM PLANS PROVIDED BY OTHERS. THE CONTRACTOR SHALL VERIFY LOCATIONS AND ELEVATIONS PRIOR TO CONSTRUCTION.
11. A WATER METER AND BACKFLOW PREVENTION SYSTEM SHALL BE PROVIDED WITHIN THE BUILDING. REFER TO ARCHITECTUAL PLANS.
12. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL DIG A TEST PIT AT THE PROPOSED SEWER TIE–IN TO CONFIRM EXISTING PIPE INVERT AND PIPE SIZE. CONTRACTOR SHALL COORDINATE TEST PIT WITH TOWN ENGINEER.



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

• Civil
• Transportation
• Environmental
• Site Planning
• Surveying
• Permitting
• Landscape Architecture

CROSSMAN ENGINEERING

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151 Centerville Road
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STEVEN M. CABRAL
No. 4847
REGISTERED PROFESSIONAL ENGINEER

PROJECT TITLE:

SMITHFIELD FIRE STATION
PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

AHARONIAN & ASSOCIATES, INC.
Architects
310 George Washington Hwy
Suite 100
Smithfield, Rhode Island
0 2 9 1 7
401·232·5010
www.arch-eng.com

DRAWING TITLE:

UTILITY PLAN

DATE:	*SCALE:*
MAY 2021	1"=20'

DWG. NAME: 2495–C06–UTIL.dwg

REVISIONS

NUMBER	*REMARKS*	*DATE*
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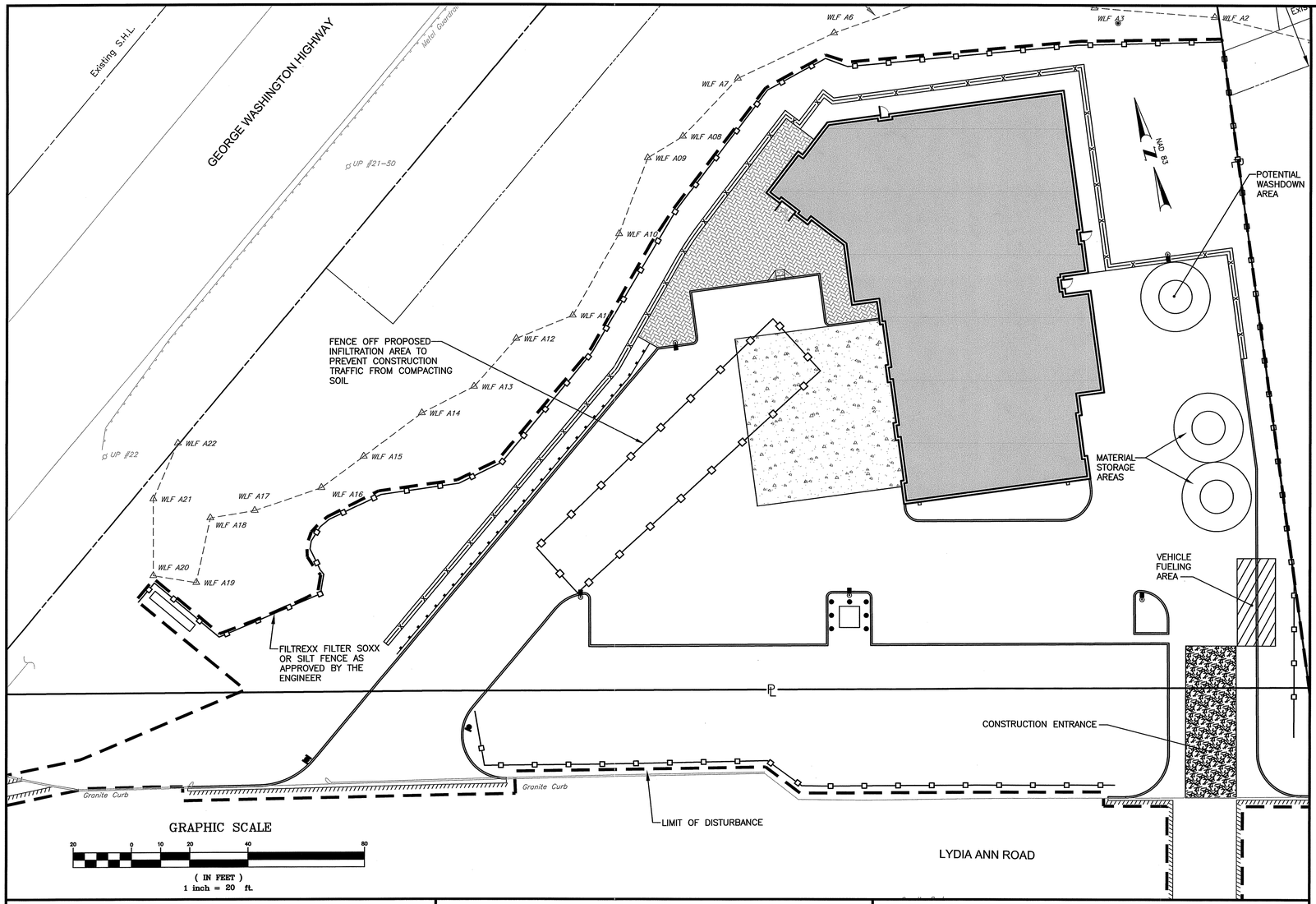
DRAWING NUMBER

C6

SHEET: 7 *OF:* 15



GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

DUST CONTROL NOTES

ON AN AS–NEEDED BASIS OR AS DIRECTED BY THE TOWN, RIDEM OR OWNER, THE CONTRACTOR SHALL UTILIZE ONE OF THE FOLLOWING METHODS TO CONTROL DUST:

A. THE EXPOSED SOIL SURFACE SHOULD BE MOISTENED PERIODICALLY WITH ADEQUATE WATER TO CONTROL DUST.

B. CALCIUM CHLORIDE SHOULD BE EITHER LOOSE DRY GRANULES OR FLAKE FINE ENOUGH TO FEED THROUGH A SPREADER AT A RATE THAT WILL KEEP SURFACE MOIST BUT NOT CAUSE POLLUTION OR PLANT DAMAGE.

THE METHODS SHOULD BE REPEATED AS NEEDED, AND SPECIAL ATTENTION MUST BE GIVEN TO THE ACCESS DRIVES.

INSPECTION/MAINTENANCE NOTES

1. PRIOR TO COMMENCING GRUBBING OPERATIONS AND EARTHWORK, FILTERSOXX SHALL BE PLACED INSIDE SAWCUT EDGE AND ALONG THE DOWNGRADIENT LIMIT OF DISTURBANCE TO PREVENT SEDIMENT FROM ENTERING EXISTING ROADWAY DRAINAGE SYSTEM, AND ABUTTING PROPERTIES AND THE CONTRACTOR SHALL INSTALL DRIPLINE TREE PROTECTION DEVICES ALONG THE PROPOSED TREELINE/EXISTING TREES TO REMAIN.
2. EXTREME CARE SHALL BE EXERCISED SO AS TO PREVENT ANY UNSUITABLE MATERIAL FROM ENTERING THE DRAINAGE SYSTEM.
3. ALL DISTURBED AREAS WHICH BECOME SUBJECT TO EROSIVE TENDENCIES WHETHER THEY BE NEWLY FILLED OR EXCAVATED SHALL RECEIVE SLOPE PROTECTION – SUCH AS RIP–RAP.
4. DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING DRAINAGE AND RUNOFF FLOW DURING PERIODS OF RAINFALL.
5. DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EROSION CONTROL MAINTENANCE AND SHALL INSPECT / REPLACE DAILY DURING CONSTRUCTION, FOLLOWING RAINFALL AND WEEKLY DURING NON CONSTRUCTION PERIODS.
6. ADDITIONAL FILTERSOXX OR SANDBAGS SHALL BE LOCATED AS CONDITIONS WARRANT OR AS DIRECTED BY THE ENGINEER.
7. THE LATEST VERSION OF THE "RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK" PREPARED BY THE R.I. STATE CONSERVATION COMMITTEE, MUST BE UTILIZED BY THE CONTRACTOR AS A GUIDE.
8. THE CONTRACTOR IS RESPONSIBLE FOR ALL DUST CONTROL AND FOR THE ENTIRE PROJECT DURATION, INCLUDING TEMPORARY SHUT–DOWN PERIODS, MUST MONITOR AND REPAIR, AS NEEDED, ALL SLOPES TO ENSURE A STABLE PRODUCT.

GENERAL PROJECT WIDE NOTES

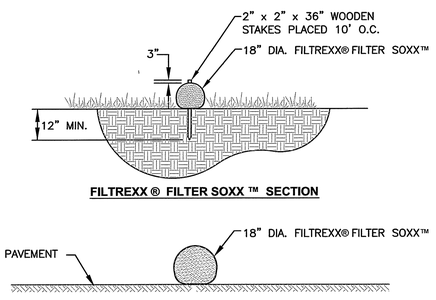
1. CONTRACTOR SHALL OBTAIN A SOIL EROSION AND SEDIMENT CONTROL PERMIT FROM THE DEPARTMENT OF PUBLIC WORKS PRIOR TO THE COMMENCEMENT OF ANY WORK ONSITE; SOIL EROSION AND SEDIMENT CONTROL MEASURES MUST BE PROPERLY MAINTAINED THROUGHOUT CONSTRUCTION.
2. CONTRACTOR SHALL INSTALL TEMPORARY MEASURES SUCH AS; FIBER MATTING, CRUSHED STONE, HAY OR STRAW IN AREAS WHERE SLOPES OR STABILIZATION HAS FAILED.
3. IF SEDIMENT IS TRACKED OR ERODED INTO THE ROADWAY, THE CONTRACTOR WILL BE REQUIRED TO SWEEP DAILY AND TO INSTALL SILT SACK OR APPROVED EQUAL UNDER ADJACENT EXISTING CATCH BASIN GRATES. REMOVE AFTER CONSTRUCTION.
4. FILTER SOXX (OR SILT FENCE OR STAKED HAYBALES) SHALL BE INSTALLED AROUND THE PERIMETER OF THE AREA TO BE DISTURBED BY CONSTRUCTION. ADDITIONAL APPLICATIONS OF THESE CONTROLS MEASURES MAY BE REQUIRED DURING THE CONSTRUCTION PROCESS. THE CONTRACTOR SHALL INSPECT THE SITE AT A MINIMUM OF ONCE PER WEEK OR WITHIN 24 HOURS AFTER A STORM EVENT.
5. IF EROSION OR EROSIVE TENDENCIES ARE APPARENT ON THE SITE, THE CONTRACTOR IS RESPONSIBLE TO INSTALL ADDITIONAL CONSTRUCTION BMP'S SUCH AS SAND BAGS AS DIRECTED BY THE TOWN OR ENGINEER DURING CONSTRUCTION.
6. IF SEDIMENT OR DEBRIS IS TRACKED ONTO EXISTING PAVED AREAS ADJACENT TO THE CONSTRUCTION AREA, THE CONTRACTOR IS REQUIRED TO SWEEP THE PAVEMENT ON A DAILY BASIS. THE AREA SHALL BE INSPECTED DAILY.
7. THE CONTRACTOR IS RESPONSIBLE TO KEEP THE SITE CLEAN OF TRASH. RECOMMENDED DAILY PATROL OF THE CONSTRUCTION SHOULD BE CONDUCTED TO PICK–UP TRASH. THE OPERATOR SHALL REQUIRE THE CONTRACTOR TO HAVE PORTABLE SANITARY FACILITIES ON SITE. ROUTINE CLEANING AND WASTE DISPOSAL OF THESE PORTABLE SANITARY FACILITIES IS REQUIRED.

FILTREXX SOXX NOTE

CONTRACTOR IS RESPONSIBLE TO BECOME FAMILIAR WITH THE FILTREXX PRODUCTS AND COORDINATE INSTALLATION SCHEDULES AND METHODS WITH THE ENGINEER PRIOR TO PLACEMENT.

EROSION CONTROL AND SOIL STABILIZATION PROGRAM

1. EXTREME CARE SHALL BE EXERCISED SO AS TO PREVENT ANY UNSUITABLE MATERIAL FROM ENTERING THE DRAINAGE SYSTEM, ADJACENT PROPERTY, AND ROADWAYS.
2. TEMPORARY TREATMENTS SHALL CONSIST OF A HAY, STRAW, OR FIBER MULCH PROTECTIVE COVERS, SUCH AS A MAT OR FIBER LINING (BURLAP, JUTE, FIBERGLASS NETTING, EXCELSIOR BLANKETS). THEY SHALL BE INCORPORATED INTO THE WORK AS WARRANTED OR AS ORDERED BY THE OWNER.
3. HAY OR STRAW APPLICATIONS SHALL BE IN THE AMOUNT OF 3,000–4,000 LBS/ACRE.
4. STOCKPILES SHALL HAVE NO SLOPE STEEPER THAN 2:1 AND SHALL BE SURROUNDED BY FILTER SOXX, STAKED HAY BALES OR SILT FENCING.
5. STOCKPILES EXPOSED FOR EXCESSIVE PERIODS SHALL RECEIVE TEMPORARY TREATMENT CONSISTING OF HAY, STRAW OR FIBER MATTING.
6. DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EROSION CONTROL MAINTENANCE AND SHALL INSPECT/REPLACE AS NEEDED.
7. ADDITIONAL HAY BALES OR SANDBAGS SHALL BE LOCATED AS CONDITIONS WARRANT OR AS DIRECTED BY THE ENGINEER, OWNER, MUNICIPAL REPRESENTATIVES OR LOCAL D.O.T.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING DUST CONTROL AT NO ADDITIONAL COST TO THE OWNER.
9. ALL CATCH BASINS ADJACENT TO THE CONSTRUCTION AREA SHALL BE PROTECTED BY SILT SACKS.
10. ALL PROPOSED CATCH BASINS SHALL BE PROTECTED BY STAKED HAY BALES, SILT FENCING OR SILT SACKS.
11. THE FILTREXX FILTER SOXX MAY BE INSTALLED ON THE EXISTING PAVEMENT /IMPERVIOUS AREAS WITH OUT STAKES. CONTRACTOR SHALL INSPECT DAILY, IF SOIL EROSION OR SEDIMENT IS OBSERVED IN THESE AREAS, THE CONTRACTOR SHALL RELOCATE OR INSTALL ADDITIONAL FILTREXX FILTER SOXX IN LOCATIONS THAT CAN BE STAKED. THIS WORK IS INCLUDED IN THE PROJECT SCOPE.
12. SILT FENCE OR STAKED HAYBALES MAY BE USED IN LIEU OF FILTREXX FILTER SOXX.
13. AN ALTERNATE COMPOST SOCK OR STRAW WATTLE PRODUCT MAY BE USED IN LIEU OF FILTREXX FILTER SOCK UPON APPROVAL OF THE ENGINEER.



FILTREXX ® FILTER SOXX ™ SECTION

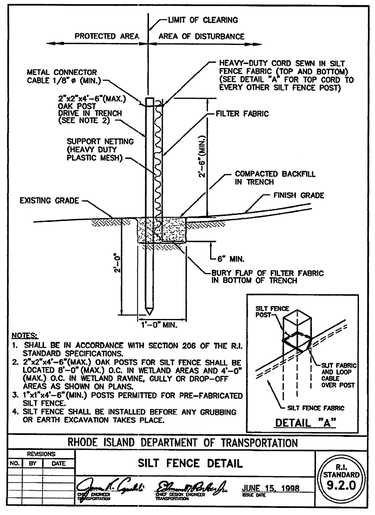
FILTREXX ® FILTER SOXX ™ PAVEMENT OPTION

NOTE

1. FILTREXX FILTER SOXX MAY BE USED IN LIEU OF SILT FENCE.
2. CONTRACTOR IS RESPONSIBLE TO BECOME FAMILIAR WITH THE FILTREXX PRODUCTS AND COORDINATE INSTALLATION SCHEDULES AND METHODS WITH THE ENGINEER PRIOR TO PLACEMENT.
3. ALL MATERIAL SHALL MEET FILTREXX SPECIFICATIONS.
4. COMPOST MATERIAL TO BE DISPERSED ON SITE AS DETERMINED BY ENGINEER.

FILTREXX ® FILTER SOXX ™ DETAIL

NOT TO SCALE



NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 206 OF THE R.I. STANDARD SPECIFICATIONS.
2. 2"x2"x4'–6"(MAX.) OAK POSTS FOR SILT FENCE SHALL BE LOCATED 8'–0" (MAX) O.C. IN WETLAND AREAS AND 4'–0" (MAX.) O.C. IN WETLAND RAVINE, GULLY OR DROP–OFF AREAS AS SHOWN ON PLANS.
3. 1"x1"x4'–6"(MIN.) POSTS PERMITTED FOR PRE–FABRICATED SILT FENCE.
4. SILT FENCE SHALL BE INSTALLED BEFORE ANY GRUBBING OR EARTH EXCAVATION TAKES PLACE.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS NO.	BY	DATE

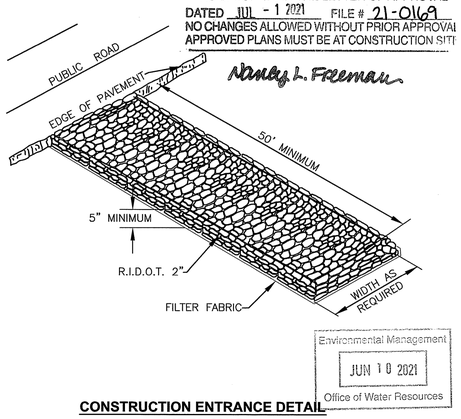
SILT FENCE DETAIL

JUNE 15, 1998

R.I. STANDARD 9.2.0

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED JUL - 1 2021 FILE # 21-0169
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Nancy L. Freeman



Environmental Management
JUN 10 2021
Office of Water Resources

CONSTRUCTION ENTRANCE DETAIL

NOT TO SCALE

• Civil
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• Environmental
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• Surveying
• Permitting
• Landscape Architecture

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STEVEN M. CABRAL
No. 4847
REGISTERED PROFESSIONAL ENGINEER
6-9-21

PROJECT TITLE:

SMITHFIELD FIRE STATION
PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

AHARONIAN & ASSOCIATES, INC.
Architects
310 George Washington Hwy
Suite 100
Smithfield, Rhode Island
0 2 9 1 7
401-232-5010
www.arch-eng.com

DRAWING TITLE:

SOIL EROSION AND SEDIMENT CONTROL PLAN

DATE:	*SCALE:*
MAY 2021	1"=20'

DWG. NAME: 2495–C07–SOIL.dwg

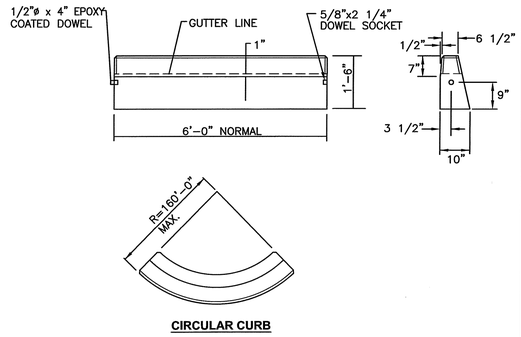
REVISIONS

NUMBER	*REMARKS*	*DATE*
--		

DRAWING NUMBER

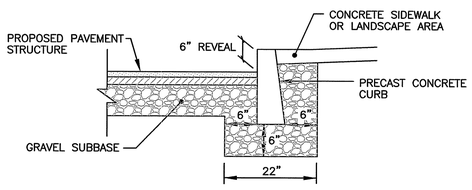
C7

SHEET: 8 *OF:* 15

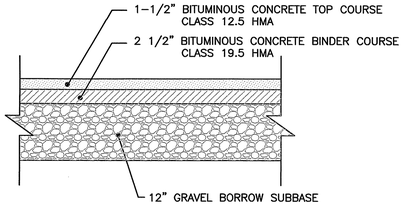


CIRCULAR CURB

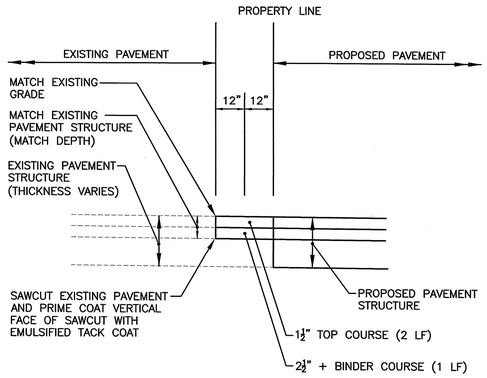
PRECAST CONCRETE CURB DETAIL
NOT TO SCALE



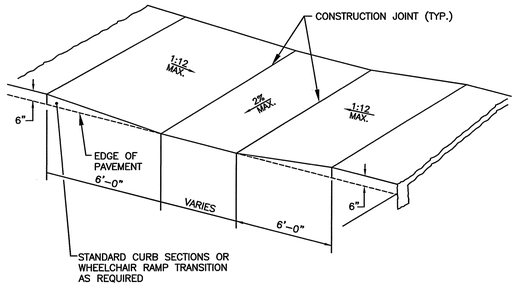
TYPICAL PRECAST CONCRETE CURB INSTALLATION WITHIN PARKING AREAS
NOT TO SCALE



TYPICAL PAVEMENT STRUCTURE DETAIL
NOT TO SCALE



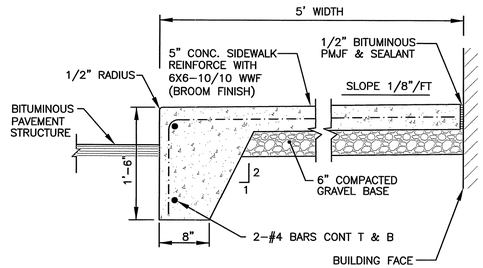
PROPOSED PAVEMENT MATCH AT EXISTING PAVEMENT
NOT TO SCALE



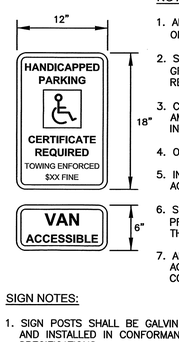
ISOMETRIC VIEW

NOTE
ALL WHEELCHAIR RAMPS SHALL BE IN ACCORDANCE WITH LOCAL STANDARDS, STATE BUILDING CODE AND ADA REQUIREMENTS.

WHEELCHAIR RAMP DETAIL
NOT TO SCALE



TYPICAL CONCRETE WALK AT PAVEMENT DETAIL
NOT TO SCALE



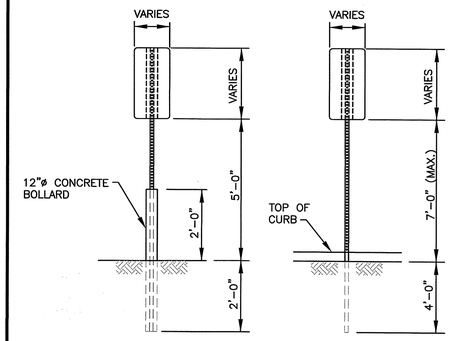
NOTE:

1. ALL LETTERS ARE 1" SERIES "C" PER THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (M.U.T.C.D.),
2. SIGN SHALL BE REFLECTORIZED (ENGINEERING GRADE) BLUE BACKGROUND WITH WHITE REFLECTORIZED LEGEND AND BORDER.
3. CONTRACTOR SHALL VERIFY THE POSTED "FINE" AMOUNT WITH THE BUILDING OFFICIAL PRIOR TO INSTALLATION.
4. ONE (1) SIGN REQUIRED FOR EACH PARKING SPACE.
5. INSTALLED HEIGHT OF SIGN SHALL BE IN ACCORDANCE WITH SECTION 24-23 OF THE M.U.T.C.D.
6. SIGN MAY BE MOUNTED ON BUILDING/WALL, AT PROPER HEIGHT, ALIGNED WITHIN 12" OF CENTER OF THE PARKING SPACE.
7. ALL HANDICAP PARKING AND SIGNAGE SHALL BE IN ACCORDANCE WITH THE LOCAL AND STATE BUILDING CODE.

SIGN NOTES:

1. SIGN POSTS SHALL BE GALVINIZED STEEL U-CHANNEL (3 1/2" WIDE-MIN.) AND INSTALLED IN CONFORMANCE WITH MUTCD AND LOCAL STANDARDS AND SPECIFICATIONS.
2. POSTS SHALL BE DRIVEN TO A DEPTH OF 4 FEET (MIN.)
3. THE EDGE OF THE SIGN SHALL BE 18" FROM THE FACE OF THE CURB.
4. WITHIN SIDEWALK LOCATIONS THE SIGN POST WILL BE INSTALLED WITHIN A 8"x8"x6" SQUARE BOX FORM.

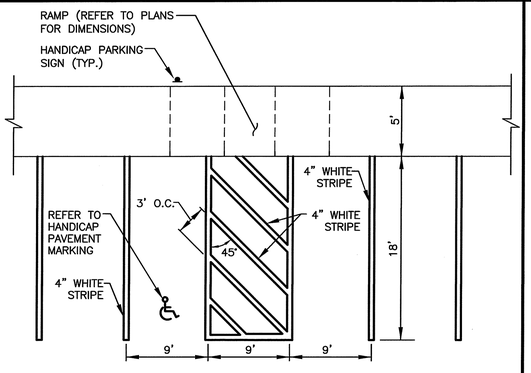
PROPOSED HANDICAPPED PARKING SIGNS
NOT TO SCALE



(MOUNTING DETAIL FOR SIGNS WITH NO SIDEWALK)

(MOUNTING DETAIL FOR SIGNS BEHIND SIDEWALK)

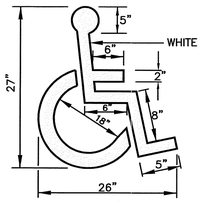
SIGN MOUNTING DETAIL
NOT TO SCALE



NOTE:

1. ALL HANDICAP PARKING SPACES SHALL BE IN ACCORDANCE WITH THE LOCAL AND STATE BUILDING CODE AND ADA REQUIREMENTS.

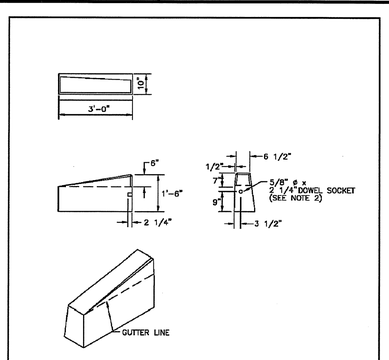
HANDICAP PARKING STALLS
NOT TO SCALE



NOTE:

1. ALL HANDICAP PARKING SPACES SHALL BE IN ACCORDANCE WITH THE LOCAL AND STATE BUILDING CODE AND ADA REQUIREMENTS.

HANDICAP PAVEMENT MARKING
NOT TO SCALE



NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 906 OF THE R.I. STANDARD SPECIFICATIONS.
2. DRAWING SHOWS TRANSITION CURB FOR ONE DIRECTION, FOR OTHER DIRECTION USE OPPOSITE HAND AND INCLUDE A 1/2" ø x 4" EPOXY COATED DOWEL.
3. EXPOSED SURFACES TO HAVE A SPONGE FLOAT FINISH.
4. EXPOSED EDGES TO HAVE A 3/4" CHAMFER.
5. LEFT AND RIGHT SECTIONS SHALL BE INSTALLED AS REQUIRED.

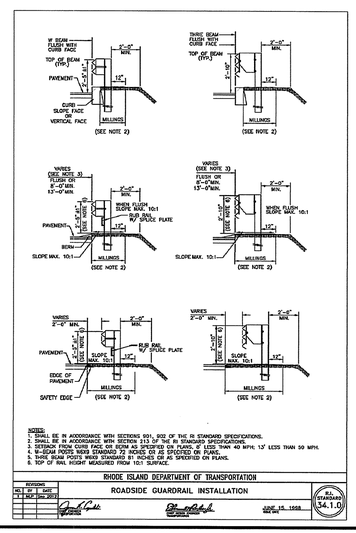
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS		
NO.	BY	DATE
1	MLP	Mar 08
2	MLP	06/01/10

3'-0" PRECAST CONCRETE TRANSITION CURB

CHIEF ENGINEER TRANSPORTATION — CHIEF, DESIGN ENGINEER TRANSPORTATION — JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 7.1.1



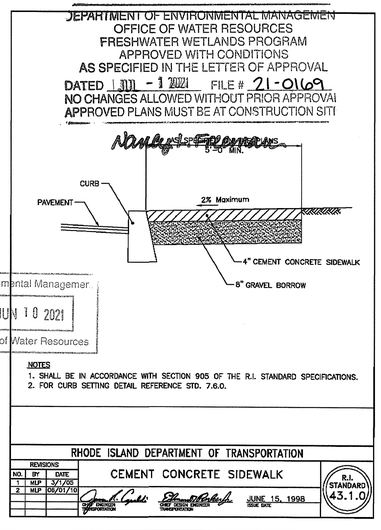
NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTIONS 601, 602 OF THE R.I. STANDARD SPECIFICATIONS.
2. SHALL BE IN ACCORDANCE WITH SECTION 213 OF THE R.I. STANDARD SPECIFICATIONS.
3. DISTANCE FROM CURB FACE OR BERM AS SPECIFIED ON PLANS, 2' LESS THAN 40 MPH, 13' LESS THAN 50 MPH.
4. W-BEAM POSTS MEET STANDARD 72 INCHES OR AS SPECIFIED ON PLANS.
5. THRIE BEAM POSTS MEET STANDARD 78 INCHES OR AS SPECIFIED ON PLANS.
6. TOP OF RAIL HEIGHT MEASURED FROM 10:1 SURFACE.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS		
NO.	BY	DATE
1	MLP	06/01/10

ROADSIDE GUARDRAIL INSTALLATION

R.I. STANDARD M 34.1.0 — JUNE 15, 1998 ISSUE DATE



Environmental Management
JUN 18 2021
Office of Water Resources

NOTES
1. SHALL BE IN ACCORDANCE WITH SECTION 905 OF THE R.I. STANDARD SPECIFICATIONS.
2. FOR CURB SETTING DETAIL REFERENCE STD. 7.6.0.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS		
NO.	BY	DATE
1	MLP	3/1/05
2	MLP	06/01/10

CEMENT CONCRETE SIDEWALK

CHIEF ENGINEER TRANSPORTATION — CHIEF DESIGN ENGINEER TRANSPORTATION — JUNE 15, 1998 ISSUE DATE

R.I. STANDARD M 43.1.0

• Civil
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• Environmental
• Site Planning
• Surveying
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• Landscape Architecture

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Phone: (508) 695-1700

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STEVEN M. CABRAL
No. 4847
REGISTERED PROFESSIONAL ENGINEER
5-5-21

KEY PLAN

PROJECT TITLE:

SMITHFIELD FIRE STATION
PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

AHARONIAN & ASSOCIATES, INC.
Architects
310 George Washington Hwy
Suite 100
Smithfield, Rhode Island
0 2 9 1 7
401.232.5010
www.arch-eng.com

DRAWING TITLE:

MISCELLANEOUS DETAIL PLAN No. 1

DATE: MAY 2021
SCALE: AS SHOWN
DWG. NAME: 2495-C8.1-DETAIL1.dwg

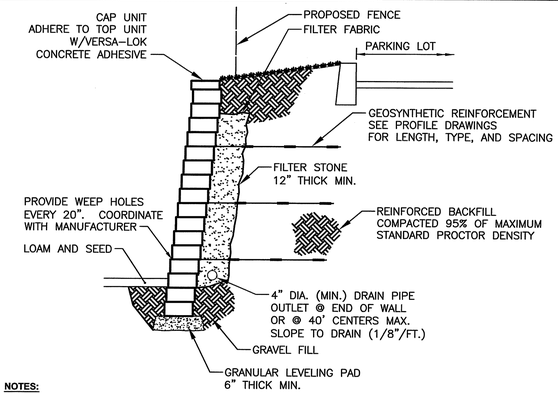
REVISIONS

NUMBER	REMARKS	DATE

DRAWING NUMBER

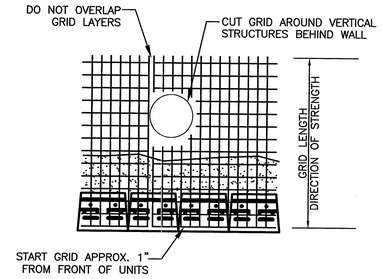
C8.1

SHEET: 9 *OF:* 15



NOTES:

1. THE CONTRACTOR SHALL RETAIN THE SERVICES OF A WALL SUPPLIER AND/OR A LICENSED RHODE ISLAND STRUCTURAL ENGINEER FOR THE FINAL WALL DESIGN. DESIGN SHALL BE SUBMITTED TO OWNER AND ENGINEER FOR APPROVAL OF MATERIALS. THE CONTRACTOR SHALL INCLUDE THE COST FOR THIS SERVICE IN THE PROJECT BID PRICE.
2. RETAINING WALL SHALL BE VERSA-LOK STANDARD MODULAR CONCRETE UNITS OR APPROVED EQUAL.
3. UPON APPROVAL BY THE OWNER, THE CONTRACTOR MAY SUBMIT ALTERNATE WALL DESIGNS BY A RHODE ISLAND PROFESSIONAL ENGINEER FOR USE ON THE SITE.
4. THE WALL SECTION SHOWN IS CONCEPTUAL AND DOES NOT REPRESENT A FINAL DESIGN.
5. CONTRACTOR SHALL REMOVE ALL ORGANIC SOIL AND COMPACT SUBGRADE AREAS BELOW RETAINING WALL.



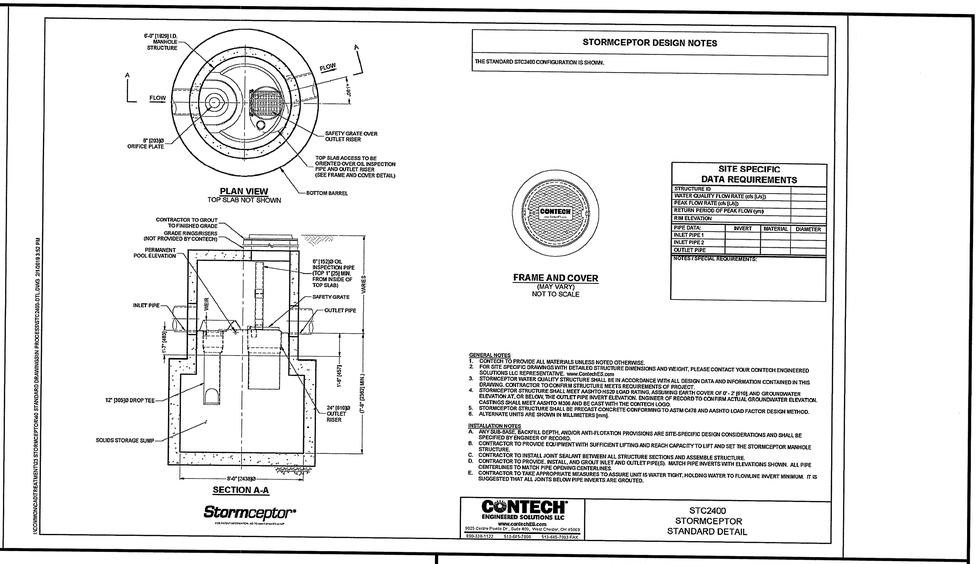
NOTE:
- FOLLOW GEOSYNTHETIC GRID MANUFACTURER'S INSTALLATION INSTRUCTIONS AND SPECIFICATIONS
- GEOGRID LENGTH AND ELEVATION PLACEMENT SHALL BE DETERMINED BY WALL DESIGN ENGINEER

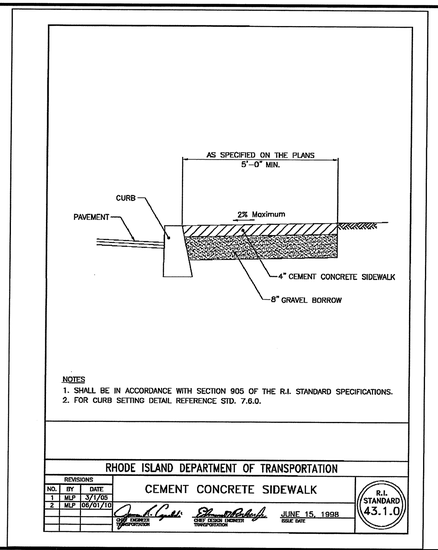
GEOSYNTHETIC AT STRUCTURES BEHIND WALL

NOTE: FENCE INSTALLATION AT TOP OF THE WALL IS REQUIRED. COORDINATE WITH WALL MANUFACTURER FOR FENCE INSTALLATION THRU GEOSYNTHETIC REINFORCEMENT.

RETAINING WALL TYPICAL DETAIL

NOT TO SCALE


6'-0" [1829] I.D. MANHOLE STRUCTURE
FLOW
A
A
FLOW
8" [203] ORIFICE PLATE
SAFETY GRATE OVER OUTLET RISER
TOP SLAB ACCESS TO BE ORIENTED OVER OIL DEFLECTION PIPE AND OUTLET RISER (SEE FRAME AND COVER DETAIL)
BOTTOM BARREL
PLAN VIEW
TOP SLAB NOT SHOWN
CONTRACTOR TO GROUT TO FINISHED GRADE
GRADE RINGS/RISERS (NOT PROVIDED BY CONTECH)
PERMANENT POOL ELEVATION
INLET PIPE
6" [152] MIN.
SWEEP
6" [152]Ø OIL INSPECTION PIPE (TOP 1" [25] MIN. FROM INSIDE OF TOP SLAB)
SAFETY GRATE
OUTLET PIPE
SEE NOTES
12" [305]Ø DROP TEE
SOLIDS STORAGE SUMP
24" [610]Ø OUTLET RISER
8'-0" [2438] (TYP.)
9'-4" [2438]
SECTION A-A
Stormceptor
STORMCEPTOR DESIGN NOTES
THE STANDARD STC2400 CONFIGURATION IS SHOWN.
CONTECH
FRAME AND COVER
(MAY VARY)
NOT TO SCALE
SITE SPECIFIC DATA REQUIREMENTS
STRUCTURE ID
WATER QUALITY FLOW RATE (cfs [L/s])
PEAK FLOW RATE (cfs [L/s])
RETURN PERIOD OF PEAK FLOW (yrs)
RIM ELEVATION
PIPE DATA: INVERT MATERIAL DIAMETER
INLET PIPE 1
INLET PIPE 2
OUTLET PIPE
NOTES / SPECIAL REQUIREMENTS:
GENERAL NOTES
1. ALL DIMENSIONS 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.
5. STORMCEPTOR SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
6. STORMCEPTOR STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C478 AND AASHTO LOAD FACTOR DESIGN METHOD.
7. 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 DETERMINED 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.
CONTECH ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr. Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX
STC2400
STORMCEPTOR
STANDARD DETAIL
I:\COMMON\CAD\TREATMENT\STORMCEPTOR\STANDARD DRAWINGS\IN PROCESS\STC2400.DTL.DWG 3/5/2018 3:53 PM



NOTES
1. SHALL BE IN ACCORDANCE WITH SECTION 905 OF THE R.I. STANDARD SPECIFICATIONS.
2. FOR CURB SETTING DETAIL REFERENCE STD. 7.6.0.

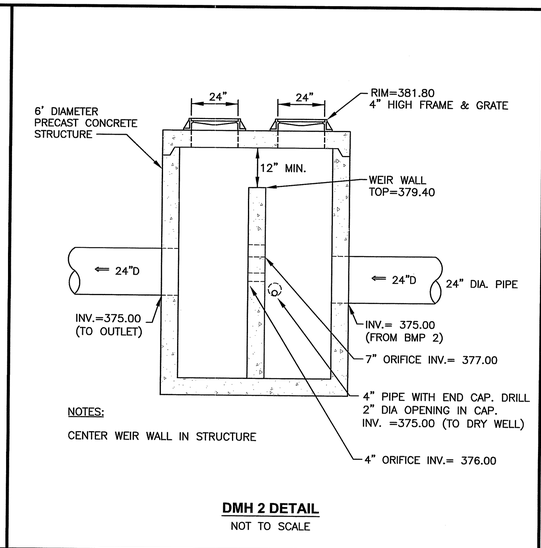
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS NO.	BY	DATE
1	MJF	3/7/05
2	MJF	08/07/18

CEMENT CONCRETE SIDEWALK

Jeffrey A. Cyphers, CHIEF ENGINEER, DEPUTY DIRECTOR — Stephen K. Patenaude Jr., CHIEF DESIGN ENGINEER, TRANSPORTATION — JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 4.1.0

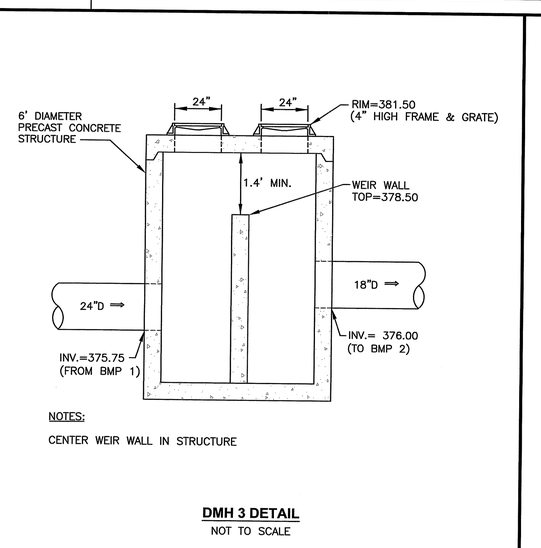


NOTES:

CENTER WEIR WALL IN STRUCTURE

DMH 2 DETAIL

NOT TO SCALE

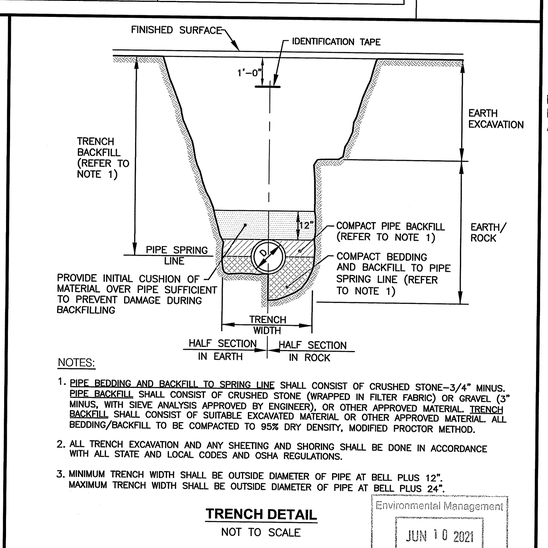


NOTES:

CENTER WEIR WALL IN STRUCTURE

DMH 3 DETAIL

NOT TO SCALE



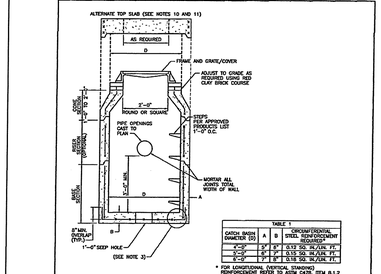
NOTES:

1. PIPE BEDDING AND BACKFILL TO SPRING LINE SHALL CONSIST OF CRUSHED STONE-3/4" MINUS. PIPE BACKFILL SHALL CONSIST OF CRUSHED STONE (WRAPPED IN FILTER FABRIC) OR GRAVEL (3" MINUS, WITH SIEVE ANALYSIS APPROVED BY ENGINEER), OR OTHER APPROVED MATERIAL. TRENCH BACKFILL SHALL CONSIST OF SUITABLE EXCAVATED MATERIAL OR OTHER APPROVED MATERIAL. ALL BEDDING/BACKFILL TO BE COMPACTED TO 95% DRY DENSITY, MODIFIED PROCTOR METHOD.
2. ALL TRENCH EXCAVATION AND ANY SHEETING AND SHORING SHALL BE DONE IN ACCORDANCE WITH ALL STATE AND LOCAL CODES AND OSHA REGULATIONS.
3. MINIMUM TRENCH WIDTH SHALL BE OUTSIDE DIAMETER OF PIPE AT BELL PLUS 12". MAXIMUM TRENCH WIDTH SHALL BE OUTSIDE DIAMETER OF PIPE AT BELL PLUS 24".

TRENCH DETAIL

NOT TO SCALE

Environmental Management
JUN 10 2021
Office of Water Resources



NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION 703 OF THE R.I. STANDARD SPECIFICATIONS.
2. STEEL REINFORCEMENT FOR STEPS, IF USED, SHALL BE A MINIMUM OF 0.12 SQ. IN./LIN. FT. (BOTH WAYS).
3. STEPS SHALL CONFORM TO STD. 8.3.0 AND SHALL BE INSTALLED AT THE CASTING PLANT.
4. USE PEGS IN MONOLITHIC BASE SECTION.
5. ANY NECESSARY ADJUSTMENTS DURING CONSTRUCTION WILL BE DONE BY SAW-CUTTING AND/OR CORING ONLY. NO HAMMERING OR BREAKING WILL BE PERMITTED. ALL CUTS SHALL BE NEAT AND SQUARE.
6. CORBEL MADE OF RED CLAY BRICK WILL BE PERMITTED FOR THE "CONE SECTION" OF THE 4'-0" CATCH BASIN ONLY.
7. FOR CATCH BASIN TYPES "D" AND "F" STEPS MUST BE INSTALLED ON THE CURB SIDE OF THE STRUCTURE.
8. FOR CATCH BASIN TYPE "E" STEPS MUST BE INSTALLED ON THE GRATE SIDE.
9. ALTERNATE TOP SLAB IS STEEL REINFORCED TO MEET OR EXCEED H-20 LOADING (SEE STD. 4.2.2).
10. ALTERNATE TOP SLAB IS ONLY FOR USE MADE REDUCING SECTION DOES NOT FIT BECAUSE OF STRUCTURE DEPTH.
11. REFER TO STD. 5.2.0 FOR MAXIMUM PIPE SIZES.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS NO.	BY	DATE

PRECAST 4'-0", 5'-0", OR 6'-0" ROUND CATCH BASIN

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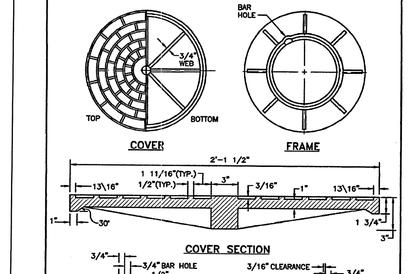
R.I. STANDARD 4.4.0



NOTES:
1. FRAME AND GRATE SHALL CONFORM TO SECTION M.04 OF THE R.I. STANDARD SPECIFICATIONS.
2. FRAME AND COVER SEATS MUST HAVE MACHINE FINISH.

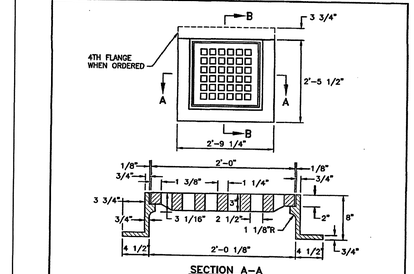
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS NO.	BY	DATE

HEAVY-DUTY
ROUND FRAME AND COVER

Jeffrey A. Cyphers, CHIEF ENGINEER — Stephen K. Patenaude Jr., CHIEF DESIGN ENGINEER, TRANSPORTATION — JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 6.2.1



NOTE:
FRAME AND GRATE SHALL CONFORM TO SECTION M.04 OF THE R.I. STANDARD SPECIFICATIONS.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS NO.	BY	DATE

SQUARE FRAME AND GRATE

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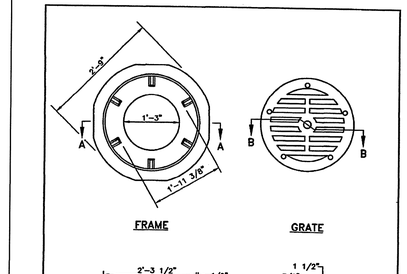
R.I. STANDARD 6.3.0



NOTE:
FRAME AND GRATE SHALL CONFORM TO SECTION M.04 OF THE R.I. STANDARD SPECIFICATIONS.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS NO.	BY	DATE

ROUND FRAME AND GRATE

Jeffrey A. Cyphers, CHIEF ENGINEER — Stephen K. Patenaude Jr., CHIEF DESIGN ENGINEER, TRANSPORTATION — JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 6.4.0

• Civil
• Transportation
• Environmental
• Site Planning
• Surveying
• Permitting
• Landscape Architecture

CROSSMAN ENGINEERING

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STEVEN M. CABRAL
No. 4847
REGISTERED PROFESSIONAL ENGINEER

KEY PLAN

DEPARTMENT OF ENVIRONMENTAL MANAGEMEN
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED JUL - 1 2021 FILE # 21-0169
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Nancy L. Freeman

PROJECT TITLE:

SMITHFIELD FIRE STATION
PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

AHARONIAN & ASSOCIATES, INC.
Architects
310 George Washington Hwy
Suite 100
Smithfield, Rhode Island
0 2 9 1 7
401-232-5010
www.arch-eng.com

DRAWING TITLE:

MISCELLANEOUS DETAIL PLAN No. 2

DATE:	*SCALE:*
MAY 2021	AS SHOWN

DWG. NAME:

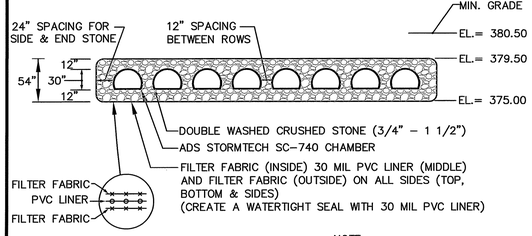
REVISIONS

NUMBER	REMARKS	DATE

DRAWING NUMBER

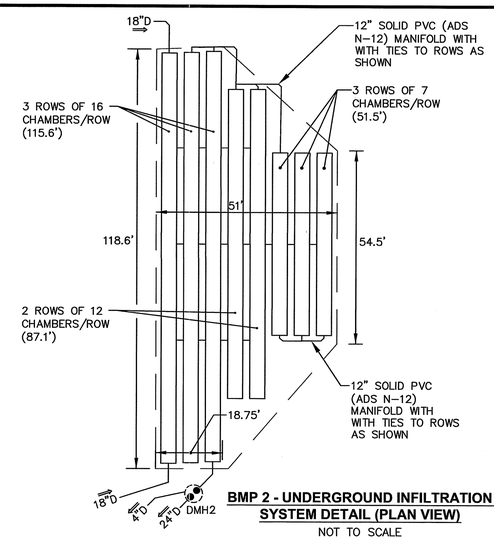
C8.2

SHEET: 10 *OF:* 15

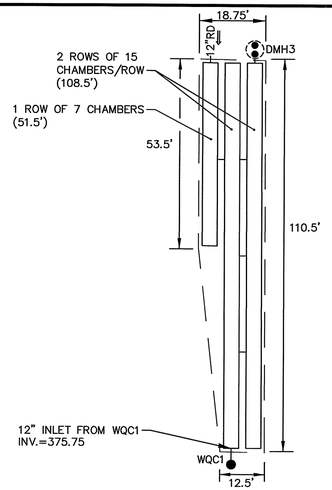


NOTE
PROVIDE 6" PVC CONNECTING PIPE EVERY 25' ON ALL ROWS, TO CONNECT EACH ROW.

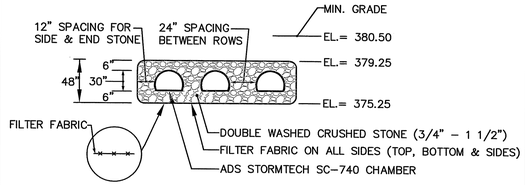
BMP 2 - UNDERGROUND DETENTION SYSTEM DETAIL (SECTION)
NOT TO SCALE



BMP 2 - UNDERGROUND INFILTRATION SYSTEM DETAIL (PLAN VIEW)
NOT TO SCALE



BMP 1 - UNDERGROUND INFILTRATION SYSTEM DETAIL (PLAN VIEW)
NOT TO SCALE



NOTE
PROVIDE 6" PVC CONNECTING PIPE EVERY 25' ON ALL ROWS, TO CONNECT EACH ROW.

Environmental Management
JUN 10 2021
Office of Water Resources

BMP 1 - UNDERGROUND INFILTRATION SYSTEM DETAIL (SECTION)
NOT TO SCALE

SiteASSIST - StormTech
FOR STORMTECH INSTRUCTIONS, DOWNLOAD THE INSTALLATION APP

SC-310/SC-740/DC-780

StormTech
An ADS company

StormTech Construction Guide

REQUIRED MATERIALS AND EQUIPMENT LIST
- Acceptable fill materials per Table 1
- Woven and non-woven geotextiles
- StormTech solid end caps and pre-cored end caps
- StormTech chambers
- StormTech manifolds and fittings

IMPORTANT NOTES:

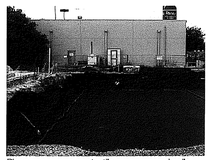
A. This installation guide provides the minimum requirements for proper installation of chambers. Non-adherence to this guide may result in damage to chambers during installation. Replacement of damaged chambers during or after backfilling is costly and very time consuming. It is recommended that all installers are familiar with this guide, and that the contractor inspects the chambers for distortion, damage and joint integrity as work progresses.

B. Use of a dozer to push embedment stone between the rows of chambers may cause damage to chambers and is not an acceptable backfill method. Any chambers damaged by using the "dump and push" method are not covered under the StormTech standard warranty.

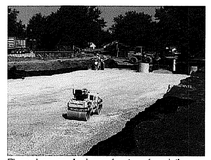
C. Care should be taken in the handling of chambers and end caps. Avoid dropping, prying or excessive force on chambers during removal from pallet and initial placement.

Requirements for System Installation

Excavate bed and prepare subgrade per engineer's plans.



Place non-woven geotextile over prepared soils and up excavation walls. Install underdrains if required.



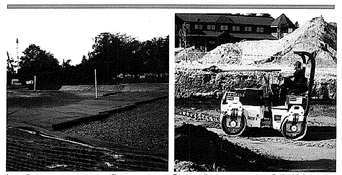
Place clean, crushed, angular stone foundation 6" (150 mm) min. Compact to achieve a flat surface.

Backfill - Embedment Stone & Cover Stone

Continue evenly backfilling between rows and around perimeter until embedment stone reaches tops of chambers. Perimeter stone must extend horizontally to the excavation wall for both straight or sloped sidewalls. **Only after chambers have been backfilled to top of chamber and with a minimum 6" (150 mm) of cover stone on top of chambers can small dozers be used over the chambers for backfilling remaining cover stone.**

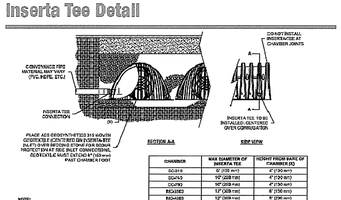
Small dozers and skid loaders may be used to finish grading stone backfill in accordance with ground pressure limits in Table 2. They must push material parallel to rows only. Never push perpendicular to rows. StormTech recommends that the contractor inspect chambers before placing final backfill. Any chambers damaged by construction shall be removed and replaced.

Final Backfill of Chambers – Fill Material



Install non-woven geotextile over stone. Geotextile must overlap 24" (600 mm) min. where edges meet. Compact each lift of backfill as specified in the site design engineer's drawings. Roller travel parallel with rows.

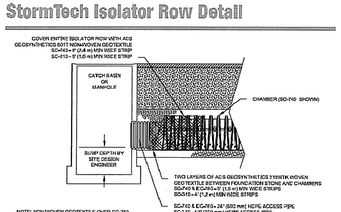
Inserta Tee Detail



CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (H)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
REQUIRED	12" (300 mm)	4" (100 mm)
RECHUTE	12" (300 mm)	6" (150 mm)

NOTES
FIELD MANUFACTURED WYE, VARY BASED ON INLET PIPE MATERIAL & CONTACT STORMTECH FOR MORE INFORMATION.
INSERTA TEE FITTINGS AVAILABLE FOR SEWER, DUCTILE IRON PIPE DIAMETERS & ASSEMBLY WHERE PVC, PLUS HP STORM, CARS OR DUCTILE IRON.

StormTech Isolator Row Detail



NOTE: NONWOVEN GEOTEXTILE OVER DC-780 ISOLATOR ROW CHAMBERS IS NOT REQUIRED.

Manifold, Scour Fabric and Chamber Assembly

Install manifolds and lay out woven scour geotextile at inlet rows (min. 12.5 ft (3.8 m)) at each inlet end cap. Place a continuous piece (no seams, double layer) along entire length of Isolator® Row(s).

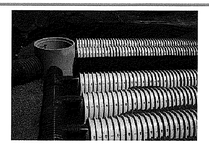
Align the first chamber and end cap of each row with inlet pipes. Contractor may choose to postpone stone placement around end chambers and leave ends of rows open for easy inspection of chambers during the backfill process.

Continue installing chambers by overlapping chamber end corrugations. Chamber joints are labeled "Lower Joint – Overlap Here" and "Build this direction – Upper Joint" Be sure that the chamber placement does not exceed the reach of the construction equipment used to place the stone. Maintain minimum 6" (150 mm) spacing between rows.

Attaching the End Caps

Lift the end of the chamber a few inches off the ground. With the curved face of the end cap facing outward, place the end cap into the chamber's end corrugation.

Prefabricated End Caps



24" (600 mm) inlets are the maximum size that can fit into a SC-740/DC-780 end cap and must be prefabricated with a 24" (600 mm) pipe stub. SC-310 chambers with a 12" (300 mm) inlet pipe must use a prefabricated end cap with a 12" (300 mm) pipe stub.

Isolator Row

Place two continuous layers of ADS Woven fabric between the foundation stone and the isolator row chambers, making sure the fabric lays flat and extends the entire width of the chamber feet. Drape a strip of ADS non-woven geotextile over the row of chambers (not required over DC-780). This is the same type of non-woven geotextile used as a separation layer around the angular stone of the StormTech system.

Table 1 - Acceptable Fill Materials

Material Location	Description	AASHTO M43 Designation[1]	Compaction/Density Requirement
ⓓ **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 the 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.
ⓒ **Initial Fill:** Fill Material for layer 'C' starts from the top of the embedment stone (9" (225 mm) to 18" (450 mm)) above the top of the chamber. Note that pavement subbase may be 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 M45 A-1, A-2-4, A-3 or AASHTO M431 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	Begin compaction after min. 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).
ⓑ **Embedment Stone:** Embedment Stone surrounding chambers from the foundation stone to the 'C' layer above.	Clean, crushed, angular stone	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	No compaction required.
Ⓐ **Foundation Stone:** Foundation Stone below the chambers from the subgrade up to the first bottoms of the chamber.	Clean, crushed, angular stone,	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	Place and compact in 6" (150 mm) lifts using two full coverages with a vibratory compactor.[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 comprised by compaction, for standard installations and 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.*

Figure 1 - Inspection Port Detail

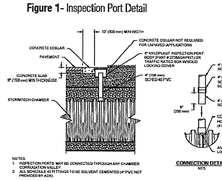
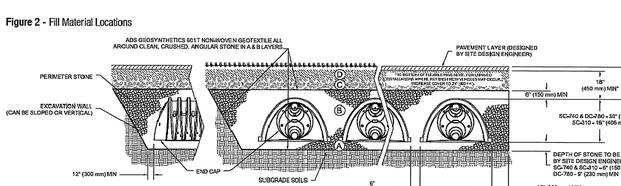
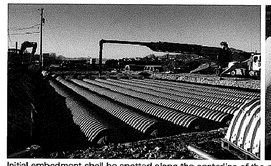


Figure 2 - Fill Material Locations



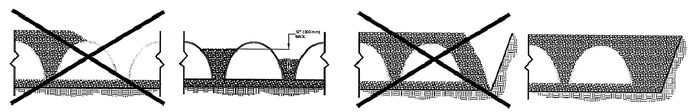
Initial Anchoring of Chambers – Embedment Stone



Initial embedment shall be spotted along the centerline of the chamber evenly anchoring the lower portion of the chamber. This is best accomplished with a stone conveyor or excavator reaching along the row.

No equipment shall be operated on the bed at this stage of the installation. Excavators must be located off the bed. Dump trucks shall not dump stone directly on to the bed. Dozers or loaders are not allowed on the bed at this time.

Backfill of Chambers – Embedment Stone



Backfill chambers evenly. Stone column height should never differ by more than 12" (300 mm) between adjacent chamber rows or between chamber rows and perimeter.

Perimeter stone must be brought up evenly with chamber rows. Perimeter must be fully backfilled, with stone extended horizontally to the excavation wall.

NOTES:
1. *36" (900 mm) of stabilized cover materials over the chambers is required for full dump truck travel and dumping.*
2. *During paving operations, dump truck axle loads on 18" (450 mm) of cover may be necessary. Precautions should be taken to avoid rutting of the road base layer, to ensure that compaction requirements have been met, and that a minimum of 18" (450 mm) of cover exists over the chambers. Contact StormTech for additional guidance on allowable axle loads during paving.*
3. *Ground pressure for track dozers is the vehicle operating weight divided by total ground contact area for both tracks. Excavators will exert higher ground pressures based on loaded bucket weight and boom extension.*
4. *Mini-excavators (<8,000lbs/3,629 kg) can be used with at least 12" (300 mm) of stone over the chambers and are limited by the maximum ground pressures in Table 2 based on a full bucket at maximum boom extension.*
5. *Storage of materials such as construction materials, equipment, spoils, etc. should not be located over the StormTech system. The use of equipment over the StormTech system not covered in Table 2 (ex. soil mixing equipment, cranes, etc) is limited. Please contact StormTech for more information.*
6. *Allowable track loads based on vehicle travel only. Excavators shall not operate on chamber beds until the total backfill reaches 3 feet (900 mm) over the entire bed.*

Table 2 - Maximum Allowable Construction Vehicle Loads[5]

Material Location	Fill Depth over Chambers in. (mm)	Maximum Allowable Wheel Loads		Maximum Allowable Track Loads[6]		Maximum Allowable Roller Loads
		Max Axle Load for Trucks lbs (kN)	Max Wheel Load for Loaders lbs (kN)	Track Width in. (mm)	Max Ground Pressure psi (kPa)	Max Gross Weight or Dynamic Force lbs (kN)
ⓓ **Final Fill Material**	36" [900] Compacted	32,000 [142]	16,000 [71]	12" [305]	3439 [164]	38,000 [169]
				15" [381]	2550 [113]	
				18" [457]	1850 [88]	
				24" [610]	1550 [73]	
				36" [914]	1310 [63]	
ⓒ **Initial Fill Material**	24" [600] Compacted	32,000 [142]	16,000 [71]	12" [305]	2480 [119]	20,000 [89]
				15" [381]	1710 [82]	
				18" [457]	1430 [68]	
				24" [610]	1210 [58]	
				36" [914]	1070 [51]	
	24" [600] Loose/Dumped	32,000 [142]	16,000 [71]	12" [305]	2245 [107]	20,000 [89] Roller gross vehicle weight not to exceed 12,000 lbs. [53 kN]
				15" [381]	1675 [79]	
				18" [457]	1325 [63]	
				24" [610]	1135 [54]	
				36" [914]	1010 [48]	
	18" [450]	32,000 [142]	16,000 [71]	12" [305]	2010 [96]	20,000 [89] Roller gross vehicle weight not to exceed 12,000 lbs. [53 kN]
				15" [457]	1460 [71]	
				18" [610]	1220 [58]	
				24" [762]	1060 [51]	
				36" [914]	950 [45]	
ⓑ **Embedment Stone**	12" [300]	16,000 [71]	NOT ALLOWED	12" [305]	1540 [74]	20,000 [89] Roller gross vehicle weight not to exceed 12,000 lbs. [53 kN]
				15" [381]	1190 [57]	
				18" [457]	1010 [48]	
				24" [610]	910 [43]	
				36" [914]	850 [40]	
	6" [150]	8,000 [35]	NOT ALLOWED	12" [305]	1070 [51]	NOT ALLOWED
				15" [457]	900 [43]	
				18" [610]	800 [38]	
				24" [762]	780 [38]	
				36" [914]	730 [34]	

Table 3 - Placement Methods and Descriptions

Material Location	Placement Methods/ Restrictions	Wheel Load Restrictions	Track Load Restrictions	Roller Load Restrictions
		See Table 2 for Maximum Construction Loads		
ⓓ **Final Fill Material**	A variety of placement methods may be used. All construction loads must not exceed the maximum limits in Table 2.	36" (900 mm) minimum cover required for dump trucks to dump over chambers.	Dozers to push parallel to rows until 36" (900mm) compacted cover is reached.[4]	Roller travel parallel to rows only until 36" (900 mm) compacted cover is reached.
ⓒ **Initial Fill Material**	Excavator positioned off bed recommended. Small excavator allowed over chambers. Small dozer allowed.	Asphalt can be dumped into stone when compacted pavement subbase reaches 18" (450 mm) above top of chambers.	Small LGP track dozers & skid loaders allowed to grade cover stone with at least 6" (150 mm) stone under tracks at all times. Equipment must push parallel to rows at all times.	Use dynamic force of roller only after compacted fill depth reaches 12" (300 mm) over chambers. Roller travel parallel to chamber rows only.
ⓑ **Embedment Stone**	No equipment allowed on bare chambers. Use excavator or stone conveyor positioned off bed or on foundation stone to evenly fill around all chambers to at least the top of chambers.	No wheel loads allowed. Material must be placed outside the limits of the chamber bed.	No tracked equipment is allowed on chambers until a min. 6" (150 mm) cover stone is in place.	No rollers allowed.
Ⓐ **Foundation Stone**	No StormTech restrictions. Contractor responsible for any conditions or requirements by others relative to subgrade bearing			

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• Civil
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REGISTERED PROFESSIONAL ENGINEER

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED JUN - 1 2021 FILE # 21-0169
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE
Nancy L. Freeman

PROJECT TITLE:

SMITHFIELD FIRE STATION
PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

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DRAWING TITLE:

MISCELLANEOUS DETAILS PLAN No. 3

DATE: MAY 2021
SCALE: AS SHOWN
DWG. NAME:

REVISIONS

NUMBER	REMARKS	DATE

DRAWING NUMBER

C8.3

SHEET: 11 *OF:* 15

GENERAL SEWER NOTES

1. INSTALLATION OF THE SEWERAGE FACILITIES SHALL BE IN ACCORDANCE WITH THE SMITHFIELD SEWER DEPARTMENT SPECIFICATIONS AND REQUIREMENTS.
2. PRIOR TO RECEIVING AUTHORIZATION TO CONSTRUCT, ALL MATERIALS SHALL MEET THE STANDARDS AND RECEIVE THE WRITTEN APPROVAL, BASED ON MANUFACTURER'S DRAWINGS AND OTHER DATA, OF THE SMITHFIELD SEWER DEPARTMENT.
3. ALL SEWERAGE FACILITIES SHALL MEET TESTING AND CLEANING REQUIREMENTS PRIOR TO ACCEPTANCE.
4. THE CONTRACTOR IS RESPONSIBLE TO COORDINATE AS-BUILT LOCATIONS PRIOR TO PIPE BACKFILL. AS-BUILT DRAWINGS SHALL BE FURNISHED AS A CONDITION FOR ACCEPTANCE OF THE NEW SEWERAGE FACILITIES. PLANS SHALL INCLUDE LOCATION OF WYES.
5. NO FLOW WILL BE ACCEPTED UNTIL ALL ABOVE STEPS ARE COMPLETED AND COMPLETION CERTIFICATE IS ISSUED.
6. AFTER THE CONTRACTOR HAS "STAKED OUT" THE FACILITIES TO BE CONSTRUCTED AND HAS THE APPROVED MATERIALS ON THE JOB, THE SMITHFIELD SEWER DEPARTMENT SHALL BE NOTIFIED IN ADVANCE OF CONSTRUCTION IN ORDER FOR THEM TO ARRANGE FOR THEIR INSPECTOR. THE NOTIFICATION MUST MEET THE SMITHFIELD SEWER DEPARTMENT REQUIREMENTS.
7. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE APPROVED PLANS AND MATERIALS, STANDARDS AND SPECIAL DETAILS, AND STANDARD SPECIFICATIONS, ANY WORK NOT MEETING THE APPROVED STANDARDS SHALL BE IMMEDIATELY REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.
8. THE CONTRACTOR SHALL CONFINE HIS OPERATIONS AND ACTIVITIES FOR CONSTRUCTION WITHIN THE LIMITS OF WORK AS SHOWN ON THE DRAWINGS.
9. ALL AREAS DISTURBED BY THE CONTRACTOR SHALL BE RESTORED TO THEIR ORIGINAL CONDITION AT NO EXTRA COST TO THE OWNER. ALL GRASSED AREAS DISTURBED BY THE CONTRACTOR'S OPERATIONS SHALL BE LOAMED AND SEEDED.
10. LOCATION AND DEPTHS OF EXISTING UTILITIES ARE APPROXIMATE AND HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL VERIFY LOCATIONS OF ALL EXISTING UTILITIES AND NOTIFY THE APPROPRIATE UTILITY AUTHORITIES INCLUDING "DIG-SAFE" PRIOR TO STARTING WORK. ANY DAMAGE TO UTILITIES CAUSED BY THE CONTRACTOR'S OPERATIONS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND THE COST OF REPAIRS SHALL BE BORNE BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
11. RELATION TO WATER LINES:
    A. HORIZONTAL SEPARATION: WHENEVER POSSIBLE, SEWERS SHOULD BE LAID AT A MINIMUM OF 10 FEET (3.0 m), HORIZONTALLY, FROM ANY EXISTING OR PROPOSED WATER LINE. SHOULD LOCAL CONDITIONS PREVENT A LATERAL SEPARATION OF 10 FEET, A SEWER MAY BE LAID CLOSER THAN 10 FEET TO A WATER LINE IF:
        1. IT IS LAID IN A SEPARATE TRENCH, OR IF
        2. IT IS LAID IN THE SAME TRENCH WITH THE WATER LINE LOCATED AT ONE SIDE ON A BENCH OF UNDISTURBED EARTH, AND IF
        3. IN EITHER CASE THE ELEVATION OF THE TOP (CROWN) OF THE SEWER IS AT LEAST 18 INCHES (46 cm) BELOW THE BOTTOM (INVERT) OF THE WATER LINE.
    B. VERTICAL SEPARATION: WHENEVER A SEWER MUST CROSS UNDER WATER LINES, THE SEWER SHALL BE LAID AT SUCH AN ELEVATION THAT THE TOP OF THE SEWER IS AT LEAST 18 INCHES (46 cm) BELOW THE BOTTOM OF THE WATER LINE. WHEN THE ELEVATION OF THE SEWER CANNOT BE VARIED TO MEET THE ABOVE REQUIREMENTS, THE WATER LINE SHALL BE RELOCATED TO PROVIDE THIS SEPARATION OR RECONSTRUCTED WITH MECHANICAL-JOINT PIPE FOR A DISTANCE OF 10 FEET (3.0 m) ON EACH SIDE OF THE SEWER. ONE FULL LENGTH OF WATER LINE SHOULD BE CENTERED OVER THE SEWER SO THAT BOTH JOINTS WILL BE AS FAR FROM THE SEWER AS POSSIBLE.
    C. WHEN IT IS IMPOSSIBLE TO OBTAIN HORIZONTAL AND/OR VERTICAL SEPARATION AS STIPULATED ABOVE, BOTH THE WATER LINE AND SEWER SHALL BE CONSTRUCTED OF MECHANICAL-JOINT CEMENT LINED DUCTILE IRON PIPE OR OTHER EQUIVALENT BASED ON WATER TIGHTNESS AND STRUCTURAL SOUNDNESS. BOTH PIPES SHALL BE PRESSURE TESTED BY AN APPROVED METHOD TO ASSURE WATER TIGHTNESS.
12. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DEWATERING REQUIRED IN THE SEWER INSTALLATION.
13. THE CONTRACTOR IS RESPONSIBLE TO VERIFY THE LOCATION AND ELEVATION OF EXISTING SEWER LINE PRIOR TO INSTALLATION. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL DIG TEST HOLES AND COORDINATE ALL INFORMATION WITH THE ENGINEER.
14. PRIOR TO BACKFILL, THE CONTRACTOR SHALL CONTACT THE SMITHFIELD SEWER DEPARTMENT TO COORDINATE INSPECTIONS.

SEWER TRENCH NOTES

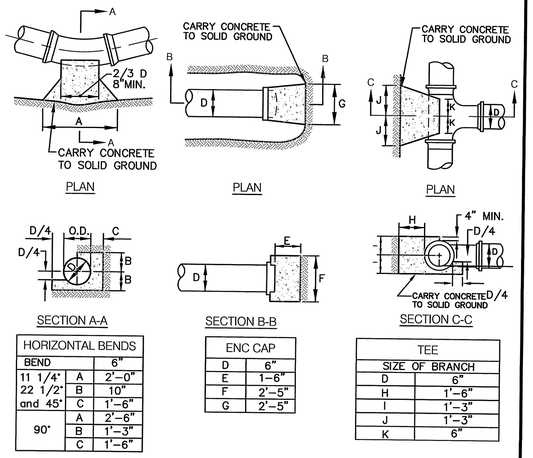
1. MINIMUM WIDTH (W) OF TRENCH IS EQUAL TO THE INSIDE DIAMETER OF THE PIPE PLUS 12" EACH SIDE.
2. SOIL UNDER CRUSHED STONE FOUNDATION SHALL BE UNDISTURBED AND COMPACTED MATERIAL WITH SEVERAL PASSES OF A VIBRATORY PLATE COMPACTOR TO ATTAIN 95% MAX. DENSITY (MOD. METHOD).
3. CRUSHED STONE FOUNDATION 3/4" MAXIMUM SIZE, SHALL BE PLACED 6" UNDER THE PIPE AND UP TO THE PIPE LAID THEREON, CRUSHED STONE PULLED AGAINST THE PIPE SIDES TO FIRMLY HOLD THE PIPE IN PLACE.
4. CRUSHED STONE HAUNCHING 3/4" MAXIMUM SIZE SHALL BE BROUGHT LEVEL TO THE TOP OF THE PIPE AND OUT TO THE TRENCH WALL AT THIS ELEVATION FOR ALL PIPE.
5. PIPE SHALL BE 6" DIA. SCHEDULE 40 PVC OR APPROVED EQUAL.

THRUST BLOCK NOTES

1. ALL CONCRETE TO BE CLASS B.
2. BUTTRESS DIMENSIONS SHOWN ARE MINIMUM. DIMENSIONS ARE BASED UPON SOIL BEARING PRESSURE OF 1500 P.S.F. LATERAL AND STATIC WATER PRESSURE OF 150 P.S.I. WHERE PRESSURE EXCEEDS 150 P.S.I. OR WHERE SOIL BEARING PRESSURE IS LESS THAN 1500 P.S.F. LATERAL; OR SOIL CONDITIONS OR EXCAVATION LIMITS ENCOUNTERED DURING CONSTRUCTION MAKE IT UNFEASIBLE TO PLACE THRUST BLOCKS AGAINST UNDISTURBED EARTH OF THE PROPER BEARING CAPACITY. THE CONTRACTOR SHALL DESIGN, GET APPROVAL OF, AND PLACE SPECIAL REACTION BLOCKS OF SUFFICIENT WEIGHT TO RESIST THE FULL THRUST OF THE LINE UNDER TEST AND OPERATING PRESSURES. THE DESIGN OF SUCH BLOCKS SHALL BE SUBJECT TO THE APPROVAL OF THE WARWICK WATER DEPARTMENT AND THE ENGINEERS AND SHALL BE SUBMITTED TO THE WATER DEPARTMENT BEFORE ACTUAL INSTALLATION TAKES PLACE.
3. ALL THRUST BLOCKS SHALL BE CONCRETE 3,000 P.S.I. @ 28 DAYS AND BEARING AGAINST UNDISTURBED EARTH.

WATER NOTES

1. ALL INSTALLATION, JOINTS, CONSTRUCTION METHODS AND MATERIALS SHALL BE ACCORDING TO THE SMITHFIELD WATER DEPARTMENT REQUIREMENTS, AWWA STANDARDS AND GOVERNMENTAL REQUIREMENTS.
2. ALL FITTINGS SHALL BE DUCTILE IRON MECHANICAL JOINT CLASS 350 CEMENT MORTAR LINED COMPACT STYLE (BY AMERICAN MANUFACTURER ONLY). FITTINGS SHALL MEET THE REQUIREMENTS OF ANSI/AWWA C153/A21.53. MECHANICAL JOINTS SHALL MEET THE REQUIREMENTS OF ANSI/AWWA C111/A21.11.
3. WATER PIPE SHALL BE DOUBLE CEMENT MORTAR LINED DUCTILE IRON PIPE CL52 AND SHALL MEET THE REQUIREMENTS OF ANSI/AWWA C151/A21.51.
4. CONSTRUCTION SHALL INCLUDE ALL PIPE, JOINTS, BENDS, TEES, FITTINGS, "MEGA-LUG" RESTRAINED MECHANICAL JOINTS, SERVICE CONNECTIONS AND ALL MISCELLANEOUS ITEMS REQUIRED TO CONSTRUCT THE PROPOSED SYSTEM.
5. "MEGA-LUG" RESTRAINED MECHANICAL JOINTS SHALL BE INSTALLED IN LOCATIONS INDICATED AND AT ALL BENDS, FITTINGS, PLUGS, ETC.
6. PRESSURE AND LEAKAGE TESTS AND DISINFECTING PIPES SHALL BE PERFORMED BY THE CONTRACTOR IN CONFORMANCE TO AMERICAN WATER WORKS ASSOCIATION (AWWA) RECOMMENDATIONS, SMITHFIELD WATER DEPARTMENT REQUIREMENTS, AND GOVERNMENTAL AGENCIES HAVING JURISDICTION.
7. ALL FITTINGS, PIPE, JOINTS, ETC. SHALL BE DESIGNED FOR 1.5 TIMES WORKING PRESSURE BUT NOT LESS THAN 150 PSI.
8. WATER PIPE SHALL TYPICALLY BE LOCATED AT LEAST TEN (10) FEET HORIZONTALLY FROM SEWER PIPE, AND AT A MINIMUM DEPTH OF COVER EQUAL TO 5'. WHERE A NEW WATER MAIN IS LESS THAN 18 INCHES CLEAR DISTANCE ABOVE A SEWER OR WHERE A WATER MAIN PASSES BENEATH A SEWER OR STORM DRAIN, ENCASE THE SEWER OR WATER IN 6" OF CONCRETE FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE CROSSING WATER MAIN. THE USE OF DUCTILE IRON TIGHT JOINT SEWER PIPE IN LIEU OF CONCRETE ENCASEMENT WILL BE CONSIDERED UPON CONTRACTORS SUBMITTAL OF SPECIFICATIONS TO ENGINEERS FOR APPROVAL.
9. ALL SYSTEM COMPONENTS AND CONSTRUCTION METHODS, SUCH AS PIPE, RESTRAINED MECHANICAL JOINTS, FITTINGS, CASTINGS, ETC. SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO PURCHASE AND INSTALLATION. THIS SUBMISSION SHALL INCLUDE MANUFACTURER'S LITERATURE, SHOP DRAWINGS, PROPOSED CONSTRUCTION METHODS, ETC.
10. WATER LINE TRENCH TO BE AWWA TYPE 5. A METALIZED DETECTABLE IDENTIFICATION TAPE 2" IN WIDTH, BLUE IN COLOR AND PRINTED WITH "CAUTION WATERLINE BURIED BELOW" SHALL BE UTILIZED OVER ALL MAINS. TAPE SHALL BE SET AT APPROXIMATELY 1'-0" BELOW FINISHED GRADE.
11. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL COMPLETE AND SUBMIT THE "CONTRACTOR'S MATERIAL AND TEST CERTIFICATE" FOR UNDERGROUND PIPING TO THE SMITHFIELD WATER DEPARTMENT AND ENGINEER. IN ADDITION, THE CONTRACTOR IS REQUIRED TO SUBMIT THE FOLLOWING ITEMS TO THE ENGINEER FOR THEIR REVIEW AND APPROVAL:
    - TYPE AND MANUFACTURER OF SERVICE BOXES
    - TYPE AND MANUFACTURER OF CORPORATIONS AND CURB STOPS
    - TYPE AND MANUFACTURER OF VALVE BOXES (OPEN RIGHT)
    - TYPE AND MANUFACTURER OF D.I. MECHANICAL JOINTS AND FITTINGS
    - TYPE AND MANUFACTURER OF TAPPING SLEEVES
    - TYPE AND MANUFACTURER OF DI PIPING
    - TYPE AND MANUFACTURER OF RESILIENT SEALED GATE VALVES (OPEN RIGHT)
    - TYPE AND MANUFACTURER OF COPPER SERVICE LINE
12. WHEN THIS PROJECT IS COMPLETE, THE CONTRACTOR IS RESPONSIBLE TO PROVIDE THE WATER DEPARTMENT AND ENGINEER TWO SETS OF AS BUILT PLANS CERTIFIED BY A RHODE ISLAND PROFESSIONAL ENGINEER OR SURVEYOR. THE PLAN SHALL INCLUDE:
    a. ALL CURB STOPS WITH APPROPRIATE LOCATING MEASUREMENTS – MAIN-TO-CURB AND MEASUREMENTS FROM PERMANENT STRUCTURES.
    b. A SCHEDULE OF MATERIALS WHICH INDICATES: AND MEASUREMENTS FROM PERMANENT STRUCTURES.
        1. ITEM QUANTITY
        2. MANUFACTURER
        3. DESCRIPTION & PIPE MATERIAL
13. THE CONTRACTOR SHALL VERIFY THE SERVICE PIPE SIZE REQUIREMENT WITH THE BUILDING ARCHITECT AND PLUMBING CONTRACTOR PRIOR TO ORDERING PIPE, METERS AND BACKFLOW PREVENTORS. COORDINATION WITH THE SMITHFIELD WATER DEPARTMENT IS REQUIRED TO DETERMINE THE EXISTING WATER PRESSURE AVAILABLE.
14. ALL VALVES TO BE RESILIENT WEDGE GATE VALVES.
15. ALL FITTINGS TO BE RESTRAINED WITH MECHANICAL JOINTS. RESTRAINTS TO BE MEGA-LUG OR EQUAL.
16. RESTRAIN ALL PUSH-ON BELL JOINTS WITHIN 20 FEET OF MECHANICAL JOINTS. RESTRAINTS TO BE SERIES 800 COVER-ALL BY EBAA IRON OR EQUAL.
17. DOMESTIC WATER SERVICE LINES SHALL BE DUCTILE IRON OR COPPER.
18. PRIOR TO BACKFILL, THE CONTRACTOR SHALL COORDINATE WITH THE WARWICK WATER DEPARTMENT FOR INSPECTIONS.

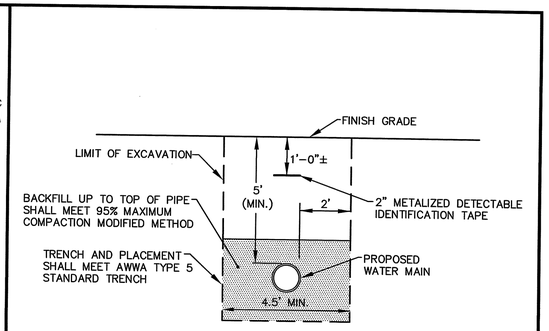


HORIZONTAL BENDS		
BEND		6"
11 1/4° and 22 1/2° and 45°	A	2'-0"
	B	10"
	C	1'-6"
90°	A	2'-6"
	B	1'-3"
	C	1'-6"

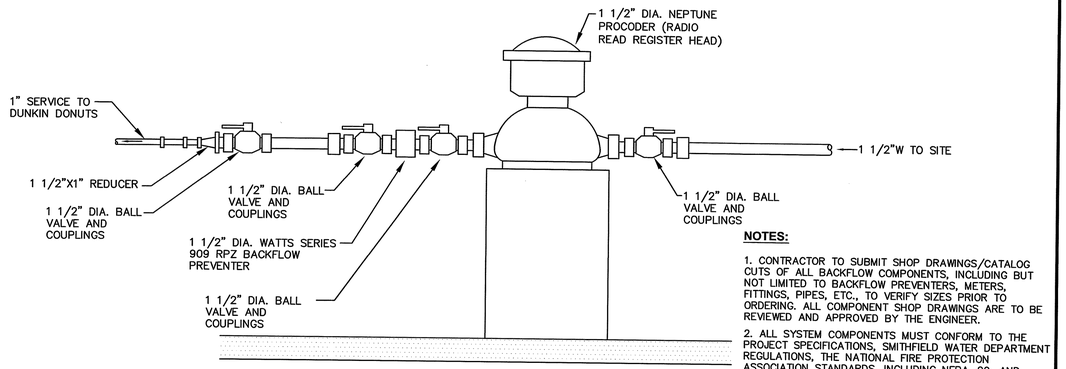
ENC CAP	
D	6"
E	1'-6"
F	2'-5"
G	2'-5"

TEE	
SIZE OF BRANCH	6"
D	6"
H	1'-6"
I	1'-3"
J	1'-3"
K	6"

CONCRETE THRUST BLOCKS FOR CAPS, TEES AND HORIZONTAL BENDS
NOT TO SCALE



TYPICAL WATER LINE TRENCH DETAIL
NOT TO SCALE

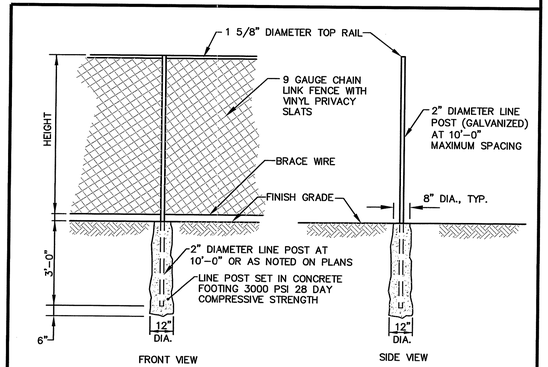


NOTES:

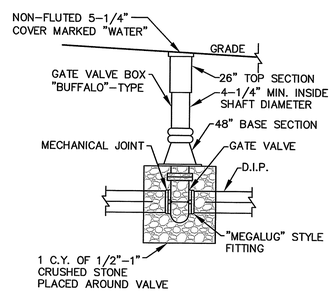
1. CONTRACTOR TO SUBMIT SHOP DRAWINGS/CATALOG CUTS OF ALL BACKFLOW COMPONENTS, INCLUDING BUT NOT LIMITED TO BACKFLOW PREVENTERS, METERS, FITTINGS, PIPES, ETC., TO VERIFY SIZES PRIOR TO ORDERING. ALL COMPONENT SHOP DRAWINGS ARE TO BE REVIEWED AND APPROVED BY THE ENGINEER.
2. ALL SYSTEM COMPONENTS MUST CONFORM TO THE PROJECT SPECIFICATIONS, SMITHFIELD WATER DEPARTMENT REGULATIONS, THE NATIONAL FIRE PROTECTION ASSOCIATION STANDARDS, INCLUDING NFPA-20, AND STATE, LOCAL AND FEDERAL REGULATIONS AND CODES.
3. A MINIMUM CLEARANCE OF 12" SHALL BE MAINTAINED AROUND BACKFLOW PREVENTER

Environmental Management
JUN 10 2021
Office of Water Resources

DOMESTIC WATER BACKFLOW AND METERING SYSTEM
(INSIDE BUILDING)

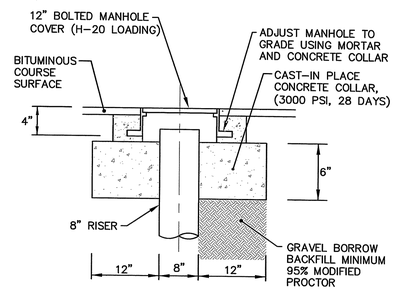


CHAIN LINK FENCE DETAIL
NOT TO SCALE



NOTE:
WRAP CRUSHED STONE WITH 4 oz. NON-WOVEN GEOTEXTILE FABRIC BEFORE FILLING EXCAVATION.

TYPICAL WATER GATE BOX INSTALLATION
NOT TO SCALE



NOTE:
CONCRETE COLLAR IS NOT REQUIRED IN LANDSCAPE AREAS.

DRAINAGE SYSTEM CLEAN-OUT DETAIL
NOT TO SCALE

• Civil
• Transportation
• Environmental
• Site Planning
• Surveying
• Permitting
• Landscape Architecture

CROSSMAN ENGINEERING

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151 Centerville Road
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Email: cei@crossmaneng.com

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STEVEN M. CABRAL
No. 4847
REGISTERED PROFESSIONAL ENGINEER
6-9-21

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED JUL - 1 2021 FILE # 21-0169
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE
Nancy L. Freeman

PROJECT TITLE:

SMITHFIELD FIRE STATION
PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

AHARONIAN & ASSOCIATES, INC.
Architects
310 George Washington Hwy
Suite 100
Smithfield, Rhode Island
0 2 9 1 7
401-232-5010
www.arch-eng.com

DRAWING TITLE:

MISCELLANEOUS DETAIL PLAN No. 4

DATE:	SCALE:
MAY 2021	AS SHOWN

DWG. NAME: 2495-C8.4-DETAIL4.dwg

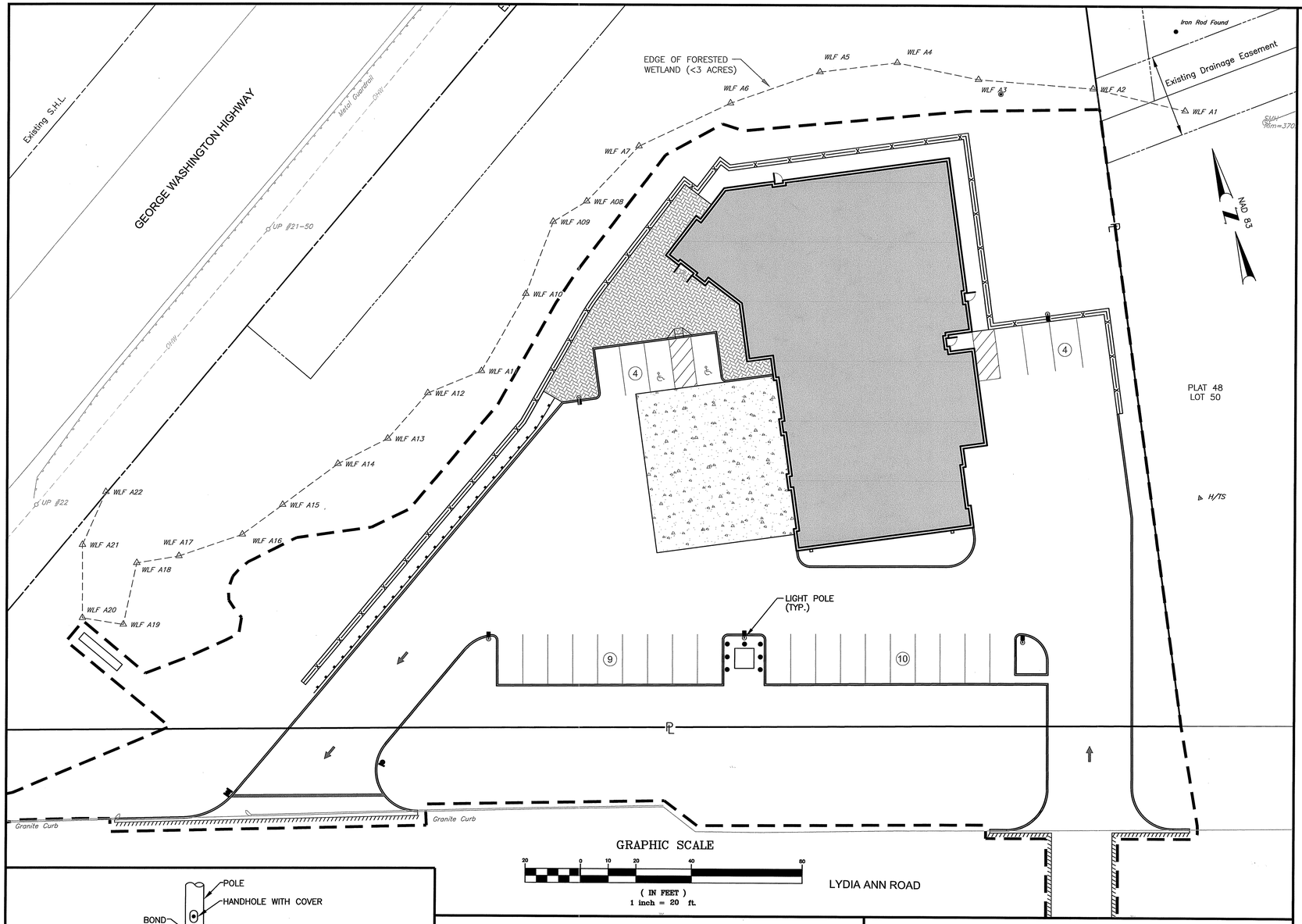
REVISIONS

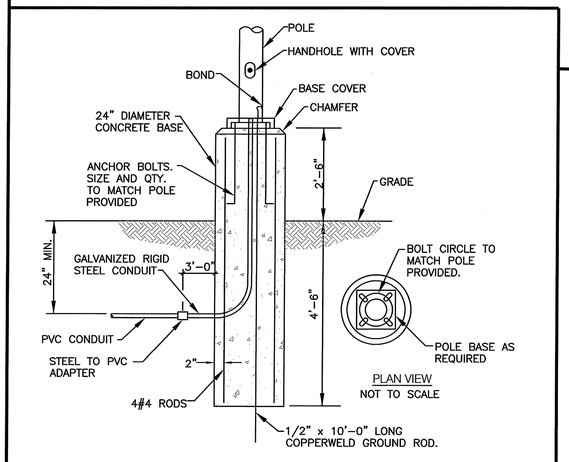
NUMBER	REMARKS	DATE

DRAWING NUMBER

C8.4

SHEET: 12 OF: 15

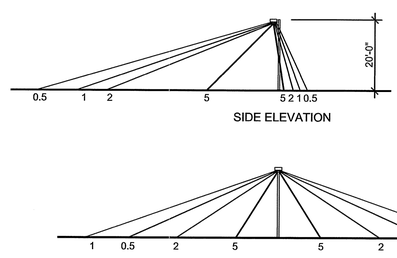




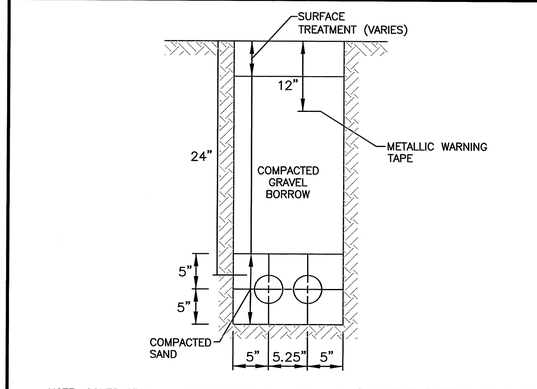
NOTE: CONTRACTOR IS RESPONSIBLE FOR CONDUIT AND HH LOCATIONS.

TYPICAL POLE BASE DETAIL

NOT TO SCALE



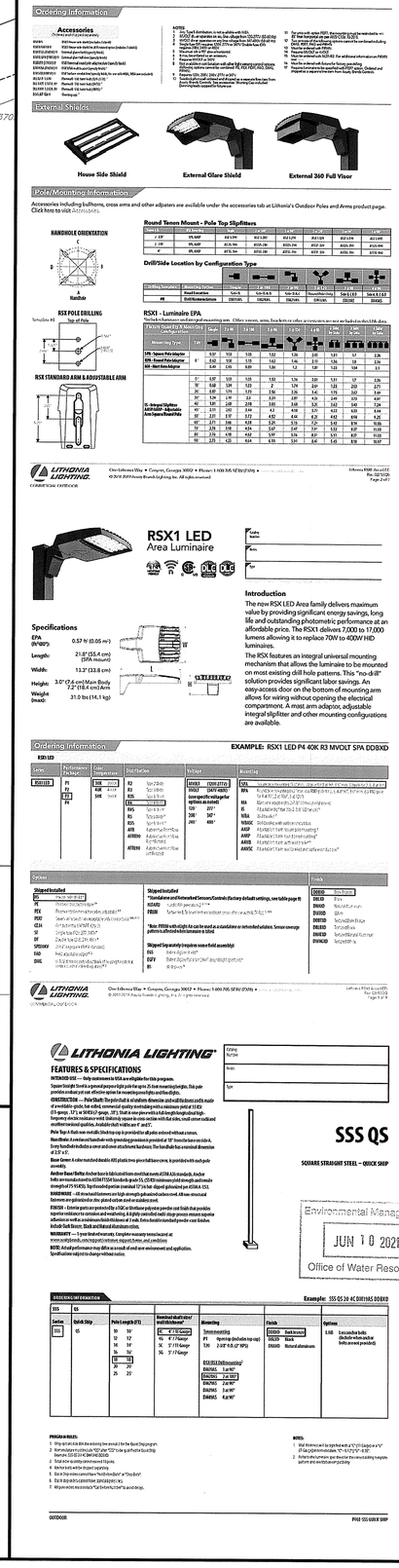
TYPE "CC"



NOTE: CONTRACTOR TO EXCAVATE TRENCH, INSTALL 2-4" CONDUIT, BACKFILL, COMPACT TRENCH, AND PROVIDE SURFACE TREATMENT.

TYPICAL LIGHTING CONDUIT DETAIL

NOT TO SCALE



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CROSSMAN ENGINEERING

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STEVEN M. CABRAL
No. 4847
REGISTERED PROFESSIONAL ENGINEER
6-4-21

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
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DATED JUL - 1 2021 FILE # 21-0169
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Nancy L. Freeman

PROJECT TITLE:

SMITHFIELD FIRE STATION

PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

AHARONIAN & ASSOCIATES, INC.
Architects
310 George Washington Hwy
Suite 100
Smithfield, Rhode Island
0 2 9 1 7
401·232·5010
www.arch-eng.com

DRAWING TITLE:

LIGHTING PLAN

DATE:	*SCALE:*
MAY 2021	1"=20'

DWG. NAME: 2495-E1-LIGHT1.dwg

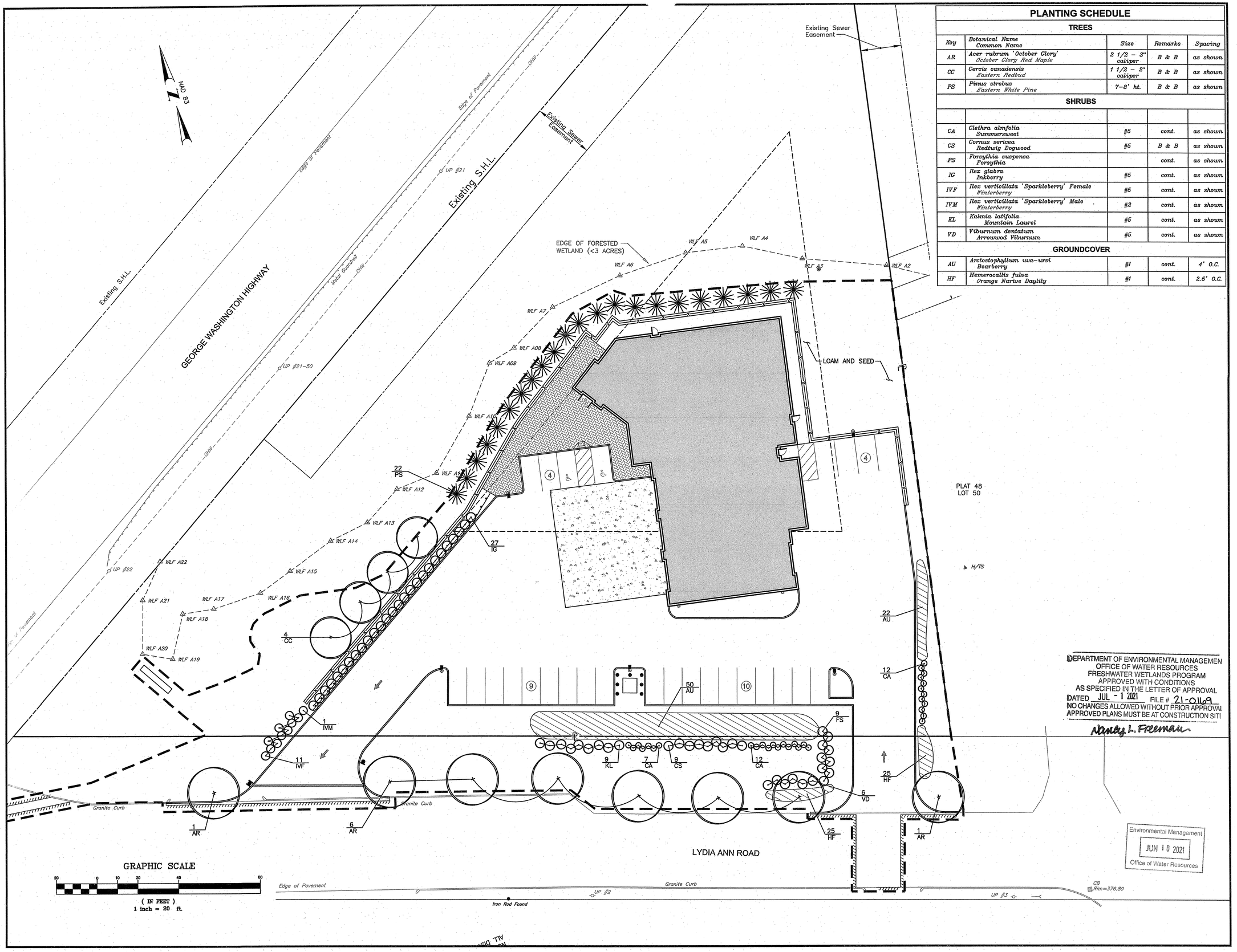
REVISIONS

NUMBER	*REMARKS*	*DATE*

DRAWING NUMBER

E1

SHEET: 13 *OF:* 15



PLANTING SCHEDULE

TREES

Key	Botanical Name / Common Name	Size	Remarks	Spacing
AR	*Acer rubrum 'October Glory'* / *October Glory Red Maple*	2 1/2 – 3" caliper	B & B	as shown
CC	*Cercis canadensis* / *Eastern Redbud*	1 1/2 – 2" caliper	B & B	as shown
PS	*Pinus strobus* / *Eastern White Pine*	7–8' ht.	B & B	as shown

SHRUBS

CA	*Clethra almfolia* / *Summersweet*	#5	cont.	as shown
CS	*Cornus sericea* / *Redtwig Dogwood*	#5	B & B	as shown
FS	*Forsythia suspensa* / *Forsythia*		cont.	as shown
IG	*Ilex glabra* / *Inkberry*	#5	cont.	as shown
IVF	*Ilex verticillata 'Sparkleberry' Female* / *Winterberry*	#5	cont.	as shown
IVM	*Ilex verticillata 'Sparkleberry' Male* / *Winterberry*	#2	cont.	as shown
KL	*Kalmia latifolia* / *Mountain Laurel*	#5	cont.	as shown
VD	*Viburnum dentatum* / *Arrowwod Viburnum*	#5	cont.	as shown

GROUNDCOVER

AU	*Arctostaphyllum uva-ursi* / *Bearberry*	#1	cont.	4' O.C.
HF	*Hemerocallis fulva* / *Orange Nariwe Daylily*	#1	cont.	2.5' O.C.

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Environmental Management
JUN 10 2021
Office of Water Resources

• Civil
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• Landscape Architecture

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LYDIA D. ROGERS NO. 365 REGISTERED LANDSCAPE ARCHITECT

PROJECT TITLE:

SMITHFIELD FIRE STATION
PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

AHARONIAN & ASSOCIATES, INC.
Architects
310 George Washington Hwy
Suite 100
Smithfield, Rhode Island
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DRAWING TITLE:

LANDSCAPE PLAN

DATE:	SCALE:
MAY 2021	1"=20'

DWG. NAME: 2495-L1-LAND1.dwg

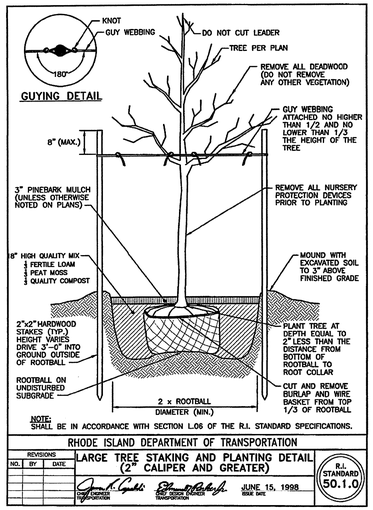
REVISIONS

NUMBER	REMARKS	DATE

DRAWING NUMBER

L1

SHEET: 14 *OF:* 15



NOTE:
SHALL BE IN ACCORDANCE WITH SECTION L.06 OF THE R.I. STANDARD SPECIFICATIONS.

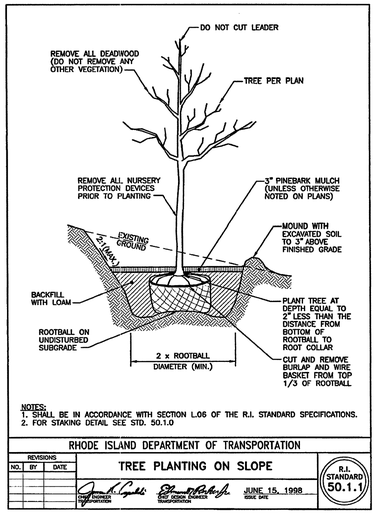
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS NO.	BY	DATE

LARGE TREE STAKING AND PLANTING DETAIL (2" CALIPER AND GREATER)

JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 50.1.0



NOTES:
1. SHALL BE IN ACCORDANCE WITH SECTION L.06 OF THE R.I. STANDARD SPECIFICATIONS.
2. FOR STAKING DETAIL SEE STD. 50.1.0

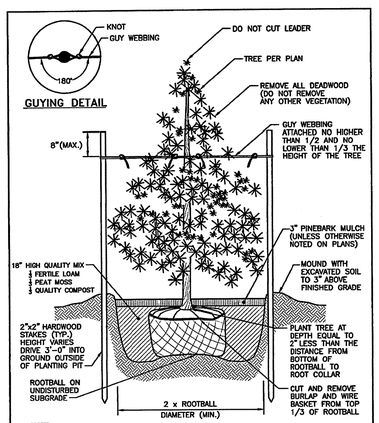
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS NO.	BY	DATE

TREE PLANTING ON SLOPE

JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 50.1.1



NOTE:
SHALL BE IN ACCORDANCE WITH SECTION L.06 OF THE R.I. STANDARD SPECIFICATIONS.

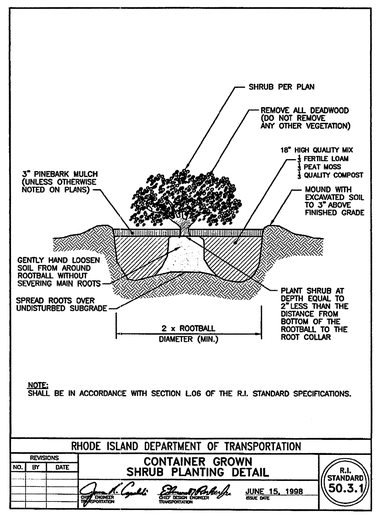
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS NO.	BY	DATE

EVERGREEN TREE PLANTING DETAIL (4'-0" HIGH AND GREATER)

JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 50.2.0



NOTE:
SHALL BE IN ACCORDANCE WITH SECTION L.06 OF THE R.I. STANDARD SPECIFICATIONS.

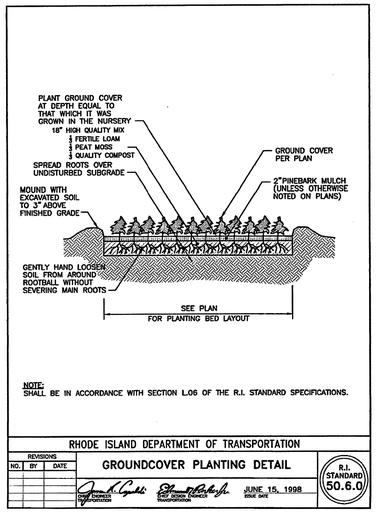
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS NO.	BY	DATE

CONTAINER GROWN SHRUB PLANTING DETAIL

JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 50.3.1



NOTE:
SHALL BE IN ACCORDANCE WITH SECTION L.06 OF THE R.I. STANDARD SPECIFICATIONS.

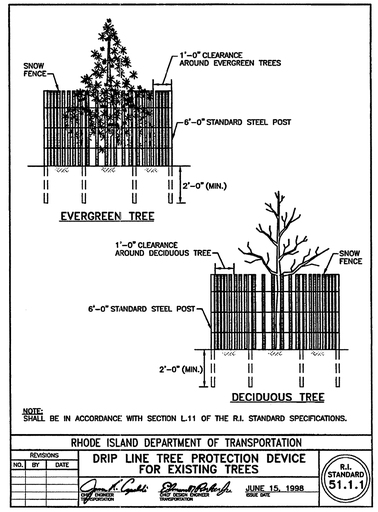
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS NO.	BY	DATE

GROUNDCOVER PLANTING DETAIL

JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 50.6.0



NOTE:
SHALL BE IN ACCORDANCE WITH SECTION L.11 OF THE R.I. STANDARD SPECIFICATIONS.

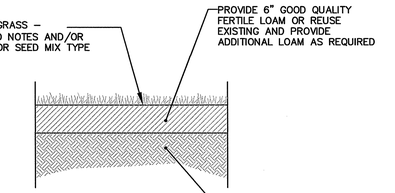
RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REVISIONS NO.	BY	DATE

DRIP LINE TREE PROTECTION DEVICE FOR EXISTING TREES

JUNE 15, 1998 ISSUE DATE

R.I. STANDARD 51.1.1

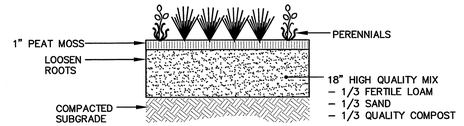


NOTE:

THE CONTRACTOR WILL BE RESPONSIBLE FOR WATERING LAWN DURING THE COURSE OF THE GROWING SEASON FOR A PERIOD OF ONE (1) YEAR.

LOAM-SEED DETAIL

NOT TO SCALE



PERENNIAL DETAIL

NOT TO SCALE

SEEDING NOTES

1. LOAM SHALL BE SPREAD TO A MINIMUM DEPTH OF 4" OVER ALL AREAS DESIGNATED ON PLANS.
2. SHAPE AND SMOOTH THE SURFACE TO THE LINES AND GRADES AS SHOWN ON PLANS.
3. FERTILIZE WITH 10–10–10 OR EQUIVALENT ANALYSIS. AT LEAST 40% OF THE FERTILIZER NITROGEN SHALL BE IN A SLOW RELEASE FORM. INCORPORATE THE FERTILIZER INTO THE TOP 3 TO 4 INCHES OF THE PLANTING SOIL. APPLY AT THE RATE OF 8 POUNDS PER 1,000 SQUARE FEET AT SEEDING.
4. LIME: SPREAD EVENLY AND WORK INTO THE SOIL DURING PREPARATION OF SEED BED AT THE RATE OF ONE TON PER ACRE. INCORPORATE INTO THE SOIL BY DICING OR OTHER APPROVED METHOD. DISTRIBUTE LIME UNIFORMLY AND WORK INTO TOP 4 INCHES OF TOP SOIL (MINIMUM) AND UNIFORMLY BLEND BY DICING OR ROTOTILLING.
5. APPLICATION OF SEED:
   A. RATE OF APPLICATION OF SEED SHALL BE 8 POUNDS PER 1,000 SQUARE FEET OR AS INDICATED ON PLANS.
   B. SEEDING SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND INSTRUCTIONS, AND ONLY DURING THE FOLLOWING DATES:
      SPRING SEEDING: MARCH 15 TO MAY 31
      FALL SEEDING: AUGUST 15 TO OCTOBER 15
   C. THE CONTRACTOR SHALL KEEP ALL SEEDED AREAS WATERED AND IN GOOD CONDITION, RESEEDING IF AND WHEN NECESSARY FOR AN 8 WEEK PERIOD OR UNTIL A GOOD, HEALTHY, UNIFORM GROWTH IS ESTABLISHED OVER THE ENTIRE AREA. THE CONTRACTOR SHALL ALSO MAINTAIN THESE AREAS IN AN APPROVED CONDITION UNTIL PROVISIONAL ACCEPTANCE.
   D. DURING THIS PERIOD, WATER TURF AS NECESSARY TO MAINTAIN AN ADEQUATE SUPPLY OF MOISTURE WITHIN THE ROOT ZONE. AN ADEQUATE SUPPLY OF MOISTURE IS EQUIVALENT OF ONE INCH OF ABSORBED WATER PER WEEK THAT IS DELIVERED AT WEEKLY INTERVALS IN THE FORM OF NATURAL RAIN OR IS AUGMENTED AS REQUIRED BY PERIODIC WATERING.
   E. OVERSEED WHEN NECESSARY TO PROMOTE GRASS GROWTH.
   F. REPLANT AREAS VOID OF TURF ONE SQUARE FOOT OR LARGER.
   G. SEED:
      a. SEED ALL AREAS DESIGNATED ON PLAN AS WELL AS ALL DISTURBED EXISTING AREAS WITH THE FOLLOWING SEED MIX:

SEED MIX No. 1

(MOWED AREAS)

TYPE	% BY WEIGHT
NASSAU KENT BLUE	60%
JAMESTOWN CHEWINGS FESCUE	20%
PALMER PERENNIAL RYE GRASS	20%

APPLICATION RATE = 200 lbs. / ACRE

SEED MIX No. 2

(CONSERVATION MIX)

TYPE	% BY WEIGHT
PERENNIAL RYEGRASS	25%
CREEPING RED FESCUE	25%
ANNUAL RYEGRASS	25%
TURF TYPE TALL FESCUE	17%
KENTUCKY BLUEGRASS	5%
COLONIAL BENTGRASS	1%
RED TOP	1%
WHITE CLOVER	1%

APPLICATION RATE = 4–7 LBS. / 1,000 S.F.

LANDSCAPE CONSTRUCTION NOTES

1. FURNISH AND INSTALL ALL PLANTS SHOWN ON THE DRAWINGS SPECIFIED HEREIN, AND IN THE QUANTITIES LISTED ON THE PLANT LIST. NO SUBSTITUTIONS WILL BE PERMITTED, UNLESS APPROVED BY THE LANDSCAPE ARCHITECT.
2. LOAM TO BE SCREENED, GOOD QUALITY, FERTILE, FREE OF WEEDS, STICKS, STONES OVER 3/4", AND ROOTS. SPREAD TO A MINIMUM OF 6" OVER ALL PLANTED AREAS.
3. BIO–DETENTION AREAS–PLANTING SOIL AND MULCH:
   LOAMY SAND TO A SANDY LOAM–80% SAND <20% SILT, <2% CLAY. WELL AGED GRADED COMPOST (25% OF SOIL MIX). WELL AGED, AERATED DARK BROWN HARD–WOOD MULCH (AGED 6 MONTHS).
4. NURSERY STOCK SHALL MEET THE STANDARDS OF THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION AS TO GRADING AND QUALITY.
5. ONLY NURSERY–GROWN PLANTS, GROWN IN ACCORDANCE WITH ACCEPTED HORTICULTURAL PRACTICES, AND GROWN UNDER CLIMATIC CONDITIONS SIMILAR TO TO THOSE IN THE LOCALITY OF THE PROJECT FOR AT LEAST TWO (2) YEARS, WILL BE ACCEPTED.
6. CALIPER MEASURMENTS FOR ALL NEW PLANT STOCK SHALL BE TAKEN SIX (6) INCHES ABOVE GRADE FOR TREES UNDER FOUR (4) INCHES AND TWELVE (12) INCHES ABOVE GRADE FOR TREES OVER FOUR (4) INCHES.
7. ALL TREES SHALL BE A MINIMUM OF SEVEN (7) FEET ABOVE FINISHED GRADE WHEN TREES ARE LOCATED WITHIN VEHICULAR AND PEDESTRIAN TRAVEL WAYS.
8. SET PLANTS PLUMB AND AT A LEVEL THAT AFTER SETTLEMENT THEY BEAR THE SAME RELATION TO THE SURROUNDING GROUND AS THEY BORE TO THE GROUND FROM WHICH THEY WERE DUG. SETTLE BACKFILL MATERIAL FOR PLANTS, THOROUGHLY AND PROPERLY BY FIRMING OR TAMPING. FORM SAUCERS, CAPABLE OF HOLDING WATER ABOUT INDIVIDUAL PLANTS, BY PLACING RIDGES OF PLANTING SOIL AROUND EACH.
9. STAKE ALL TREES OVER 5 FEET AS SHOWN ON PLANS. REMOVE STAKES AT THE END OF THE GUARANTEE PERIOD.
10. WATERING: WATER ALL PLANTS WITHIN 48 HOURS AFTER PLANTING. IF CONDITIONS WARRANT, AND AS MANY TIMES THEREAFTER TO SUSTAIN HEALTHY CONDITIONS UNTIL LANDSCAPE INSTALLATION IS COMPLETED. SATURATE THE SOIL AROUND EACH PLANT THOROUGHLY AT EACH WATERING.
11. PRUNING: PRUNE PLANTS, AS DIRECTED BY OWNER, AT THE PROJECT SITE BEFORE OR IMMEDIATELY AFTER PLANTING IN ACCORDANCE WITH THE BEST HORTICULTURAL PRACTICE. CUT BROKEN, DEAD OR INJURED BRANCHES IMMEDIATELY ABOVE THE STEM COLLAR ON THE TRUNK OR LIMB. PRUNE ALL BROKEN ROOTS ON THE PLANT SIDE OF THE BREAK. PAINT CUTS OVER 3/4" IN DIAMETER WITH TREE WOUND PAINT. PRUNING SHALL NOT DEFORM OR OTHERWISE DESTROY THE TYPICAL SHAPE OR SYMMETRY OF THE PLANT, AND SHALL NOT REDUCE THE HEIGHT BY MORE THAN ONE–THIRD. DO NOT CUT BACK THE LEADER OF THE PLANT UNLESS DIRECTED BY THE LANDSCAPE ARCHITECT.
12. FERTILIZING: FERTILIZE SHRUB BEDS WITH 10–10–10 FERTILIZER BROADCAST PER MANUFACTURER'S RATE. APPLY THE FERTILIZER UNIFORMLY TO THE SURFACE BEDS AND WORK INTO THE UPPER TWO INCHES OF SOIL. FERTILIZE INDIVIDUAL TREES AS PER MANUFACTURER'S INSTRUCTIONS. APPLY A SECOND APPLICATION OF FERTILIZER TO ALL PLANT ITEMS AT THE SAME SPECIFIED RATES OVER THE MULCH AT THE END OF A SIX (6) WEEK PERIOD (WITH AVERAGE RAINFALL).
13. LIMING: ADD POWDERED LIME EVERY SIX MONTHS – OR SLOW RELEASE GRANULAR LIME–AS PER MANUFACTURER'S INSTRUCTION.
14. MULCHING: WITHIN A 72 HOUR PERIOD AFTER PLANTING, COVER ALL PLANTED AREAS WITH TREFLAN HERBICIDE OR EQUIVILENT GRANULAR PRE–EMERGENT HERBICIDE IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS . COVER WITH 3" DEPTH OF NATURAL BROWN SHREDDED BARK MULCH. NO RED OR DYED MULCH IS TO BE USED. MULCH SHOULD BE PULLED ONE INCH AWAY FROM PLANT TRUNK OR STEM, AND NOT ALLOWED TO REST DIRECTLY AGAINST THE TRUNK OR STEM.
15. GUARANTEE: ALL PLANTS FURNISHED BY THE CONTRACTOR SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR AFTER PRELIMINARY INSPECTION AND SHALL BE ALIVE AND IN SATISFACTORY GROWTH AT THE END OF THE GUARANTEE PERIOD. ALL DEAD OR DYING PLANT MATERIAL SHALL BE REPLACED AT ONCE BY THE CONTRACTOR, AT NO ADDITIONAL COST TO THE OWNER.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
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Environmental Management
JUN 10 2021
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STEVEN M. CABRAL
No. 4847
REGISTERED PROFESSIONAL ENGINEER
6-9-21

PROJECT TITLE:

SMITHFIELD FIRE STATION
PLAT MAP 48, LOT 51
ZONING DISTRICT LI
LIGHT INDUSTRIAL DISTRICT
321 GEORGE WASHINGTON HIGHWAY
SMITHFIELD, RI

PREPARED FOR:

AHARONIAN & ASSOCIATES, INC.
Architects
310 George Washington Hwy
Suite 100
Smithfield, Rhode Island
0 2 9 1 7
401·232·5010
www.arch-eng.com

DRAWING TITLE:

LANDSCAPE DETAIL PLAN

DATE:	*SCALE:*
MAY 2021	NTS

DWG. NAME: 2495–L2–LAND–DET.dwg

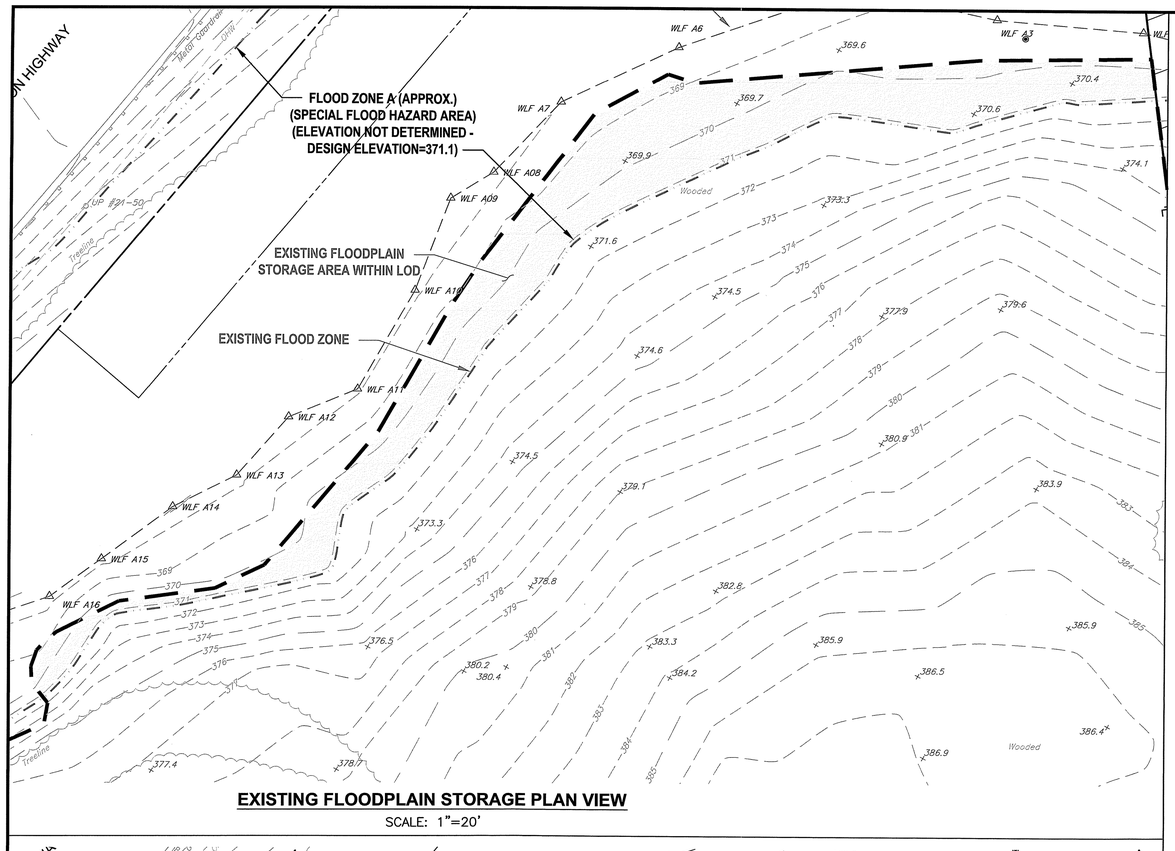
REVISIONS

NUMBER	*REMARKS*	*DATE*

DRAWING NUMBER

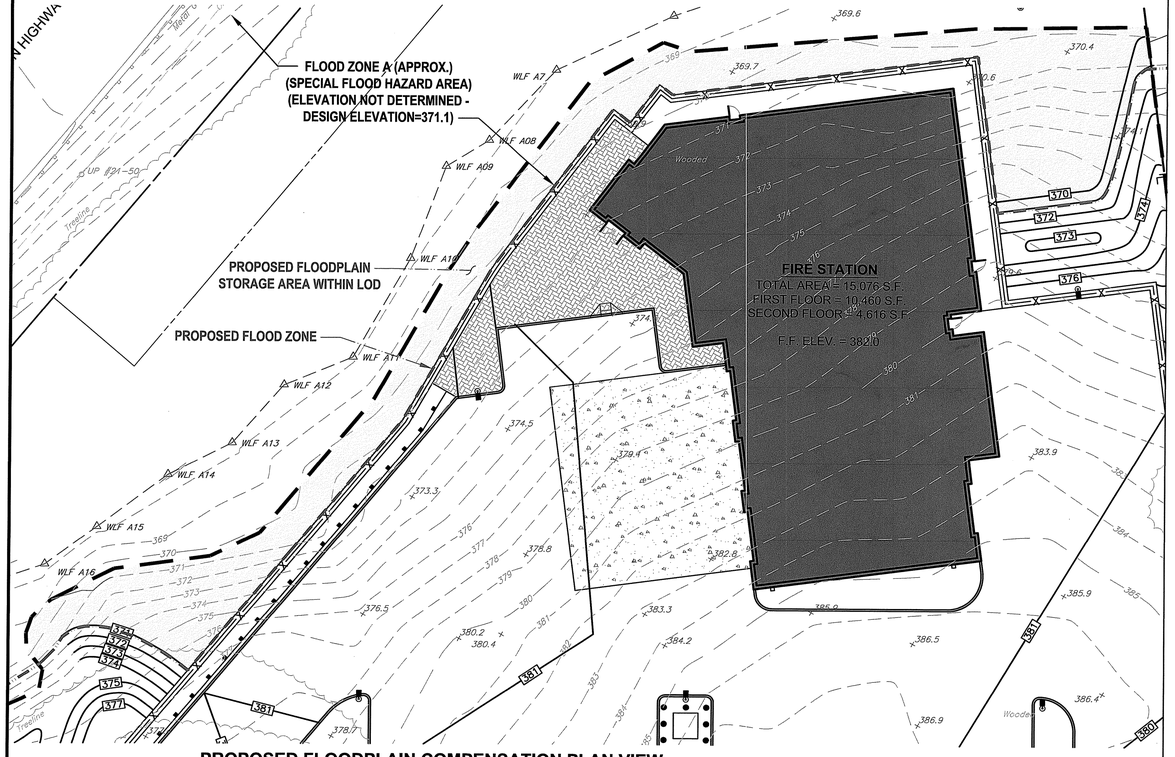
L2

SHEET: 15 *OF:* 15



EXISTING FLOODPLAIN STORAGE PLAN VIEW

SCALE: 1"=20'

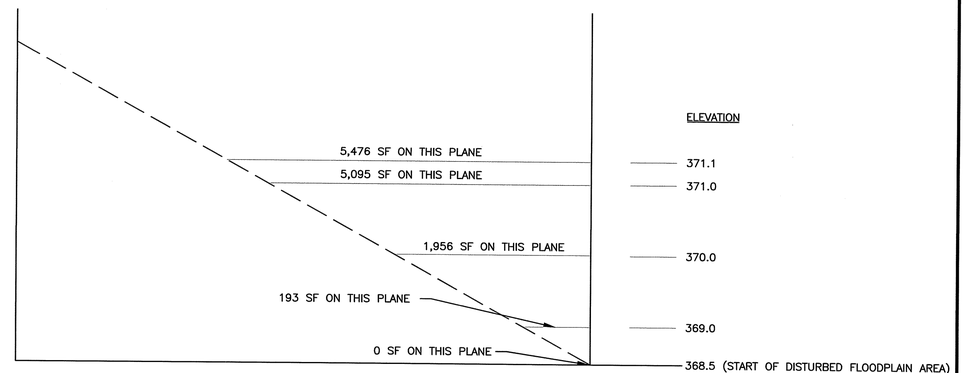


PROPOSED FLOODPLAIN COMPENSATION PLAN VIEW

SCALE: 1"=20'

FLOODPLAIN VOLUME METHODOLOGY NOTE

THE AVERAGE END AREA METHOD HAS BEEN UTILIZED TO CALCULATE FLOODPLAIN STORAGE VOLUMES. AREAS HAVE BEEN OBTAINED WITHIN EACH ELEVATION INTERVAL FROM THE PLAN VIEW HORIZONTAL PLANES AND THE FLOODPLAIN VOLUME HAS BEEN CALCULATED FOR EACH INTERVAL FOR EXISTING AND PROPOSED CONDITIONS WITHIN THE LIMIT OF DISTURBANCE. FULL COMPENSATORY STORAGE VOLUME AND AREA COMPENSATION IS PROVIDED FOR THE CONSTRUCTION ACTIVITIES REQUIRING FILL WITHIN THE 100 YEAR FLOODPLAIN AREA. COMPENSATORY STORAGE IS CALCULATED INCREMENTALLY AT EACH ELEVATION. REFER TO THE CALCULATIONS BELOW.



EXISTING FLOODPLAIN STORAGE SECTION VIEW

NOT TO SCALE

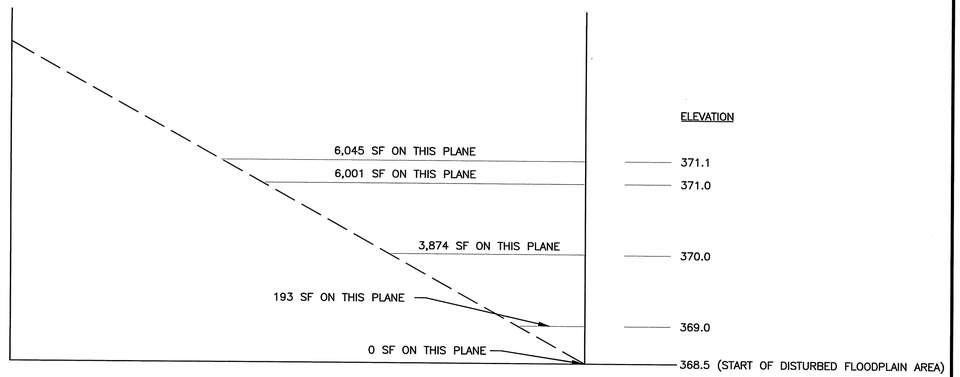
EXISTING FLOODPLAIN VOLUME WITHIN LOD

ELEVATION 368.5–369.0: ((0 + 193 SF)/2) X 0.5' = 48.25 CF

ELEVATION 369.0–370.0: ((193 SF + 1,956 SF)/2) X 1' = 1,074.5 CF

ELEVATION 370.0–371.0: ((1,956 SF + 5,095 SF)/2) X 1' = 3,525.5 CF

ELEVATION 371.0–371.1: ((5,095 SF + 5,476 SF)/2) X 0.1' = 528.55 CF



PROPOSED FLOODPLAIN STORAGE SECTION VIEW

NOT TO SCALE

PROPOSED FLOODPLAIN VOLUME WITHIN LOD

ELEVATION 368.5–369.0: ((0 + 193 SF)/2) X 0.5' = 48.25 CF

ELEVATION 369.0–370.0: ((193 SF + 3,874 SF)/2) X 1' = 2,033.5 CF

ELEVATION 370.0–371.0: ((3,874 SF + 6,001 SF)/2) X 1' = 4,937.5 CF

ELEVATION 371.0–371.1: ((6,001 SF + 6,045 SF)/2) X 0.1' = 602.3 CF

Environmental Management
JUN 10 2021
Office of Water Resources

DEPARTMENT OF ENVIRONMENTAL MANAGEMEN
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS
AS SPECIFIED IN THE LETTER OF APPROVAL
DATED JUN - 1 2021 FILE #
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Nancy L. Freeman

• Civil
• Transportation
• Environmental
• Site Planning
• Surveying
• Permitting
• Landscape Architecture

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KEY PLAN

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DRAWING TITLE:

FLOODPLAIN COMPENSATION PLAN

DATE:	SCALE:
MAY 2021	AS NOTED

DWG. NAME: 2495-FP-FLOODPLAIN.dwg

REVISIONS

NUMBER	REMARKS	DATE
--	--	--

DRAWING NUMBER

FP

SHEET: 1 OF: 1