ELEVATED STORAGE TANK - OCEAN VIEW DISTRICT

TIDEWATER UTILITIES, INC.

PRELIMINARY SITE PLAN
LITTLE ASSAWOMAN BAY WATERSHED,
TOWN OF MILLVILLE, BALTIMORE HUNDRED,
SUSSEX COUNTY, DELAWARE
TAX MAP #134-15.00-116.01
OCTOBER 2020 TUI01-02

SITE DATA

APPLICANT:
TIDEWATER UTILITIES, INC
GREG COURY
1100 SOUTH LITTLE CREEK ROAD
DOVER, DELAWARE 19901
PHONE: 302-747-1306

OWNER:
ASF MBTS, LLC
C/O THE ARDENT COMPANIES, LLC
2100 POWERS FERRY ROAD, SUITE 350
ATLANTA, GEORGIA 30339
PHONE: 770-319-7408

CONSULTANT:
BEACON ENGINEERING, LLC
23318 CEDAR LANE
GEORGETOWN, DELAWARE 19947
PHONE: 302-864-8825
RPALMER@BEACONENGINEERINGLLC.COM

PROPERTY & ZONING DATA:

TAX MAP:	134-15.00-116.01
SITE ADDRESS:	32967 ROXANA ROAD, MILLVILLE, DE
LATITUDE:	38.526081° N
LONGITUDE:	-75.143785° W
CURRENT ZONING:	MPC MASTER PLANNED COMMUNITY DISTRICT
PROPOSED ZONING:	MPC MASTER PLANNED COMMUNITY DISTRICT
EXISTING CONDITION:	SINGLE FAMILY HOME
EXISTING SITE AREA:	3.54 AC
PROPOSED SITE AREA:	3.44 AC
PROPOSED CONDITION:	PUBLIC UTILITY (ELEVATED STORAGE TANK)
WATER:	TIDEWATER UTILITIES
SEWER:	SUSSEX COUNTY
NUMBER OF EXISTING LOTS:	1
NUMBER OF PROPOSED LOTS:	1
NET DEVELOPMENT AREA:	1.87 AC (AC WITHIN SETBACKS)
PROPOSED DISTURBED:	0.72 AC (WITHIN LOD)
SITE ACCESS:	SR #17 ROXANA ROAD, MILLVILLE, DE
VERTICAL DATUM:	NAVD 88 (FEET)
HORIZONTAL DATUM:	DELAWARE STATE PLANE NAD 83 (FEET)
DEED REFERENCE:	2994/11
EXISTING BUILDING AREA:	2,116 SF
PROPOSED BUILDING AREA:	962 SF BASED ON BOTTOM CONE DIAMETER
PROPOSED BUILDING HEIGHT:	139.50 FT (TO TOP OF CAPACITY LEVEL)
STATE STRATEGIES INVESTMENT LEVEL:	2 & 3 (2020)
POSTED SPEED LIMIT:	50 MPH ROXANA ROAD
NEAREST TOWN:	MILLVILLE, DE
SURVEYOR:	JOHN B. ROACH ENGINEERING, LLC
DATE OF SURVEY:	APRIL 20, 2020

NO PORTION OF THIS PROPERTY IS WITHIN THE 100 YR FLOOD PLAIN PER FEMA MAP NUMBERED 10005C0495K DATED MARCH 16, 2015.

WETLAND DELINEATION WAS PROVIDED BY CIVIL ENGINEERING ASSOCIATES, LLC ON A BOUNDARY SURVEY, DATED APRIL 9, 2020. ALL IMPROVEMENTS ARE PROPOSED IN UPLAND AREAS.

THIS PROJECT WILL BE CONSTRUCTED IN 1 PHASE.

HEIGHT, AREA, & BULK REQUIREMENTS

FRONT YARD SETBACK:	50 FT *
SIDE YARD SETBACK:	50 FT*
REAR YARD SETBACK:	50 FT*
MAXIMUM BUILDING HEIGHT:	42 FT (4 STORIES)**
MINIMUM LOT AREA:	40 AC (LESS IF CONTIGUOUS TO MPC ZONING)
MINIMUM GREEN SPACE	25% OF COMMERCIAL AREA

* MAY BE LESS IF APPROVED BY TOWN COUNCIL
** MAY BE WAIVED IF APPROVED BY TOWN COUNCIL

OWNER'S CERTIFICATION

I, THE UNDERSIGNED, CERTIFY THAT ALL LAND CLEARING, CONSTRUCTION AND DEVELOPMENT SHALL BE DONE PURSUANT TO THE APPROVED PLAN AND THAT RESPONSIBLE PERSONNEL (I.E., BLUE CARD HOLDER) INVOLVED IN THE LAND DISTURBANCE WILL HAVE A CERTIFICATION OF TRAINING PRIOR TO INITIATION OF THE PROJECT, AT A DNREC SPONSORED OR APPROVED TRAINING COURSE FOR THE CONTROL OF EROSION AND SEDIMENT DURING CONSTRUCTION. IN ADDITION, I GRANT THE DNREC SEDIMENT AND STORMWATER PROGRAM AND/OR THE RELEVANT DELEGATED AGENCY THE RIGHT TO CONDUCT ON-SITE REVIEWS, AND I UNDERSTAND MY RESPONSIBILITIES UNDER THE NPDES CONSTRUCTION GENERAL PERMIT, AS REFERENCED ON THIS COVERSHEET.

IT IS HEREBY CERTIFIED THAT I AM THE OWNER OF THE PROPERTY DESCRIBED AS PARCEL #134-15.00-116.01 AND SHOWN ON THIS PLAN. THE PLAN WAS MADE AT MY DIRECTION, AND I ACKNOWLEDGE THE SAME TO BE MY ACT. IT IS MY DESIRE TO HAVE THE PLAN CONSTRUCTED AS SHOWN AND IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS.

OWNER: ASF MBTS, LLC — DATE
C/O THE ARDENT COMPANIES, LLC
2100 POWERS FERRY ROAD, SUITE 350
ATLANTA, GEORGIA 30339
PHONE: 770-319-7408

DEVELOPER'S CERTIFICATION

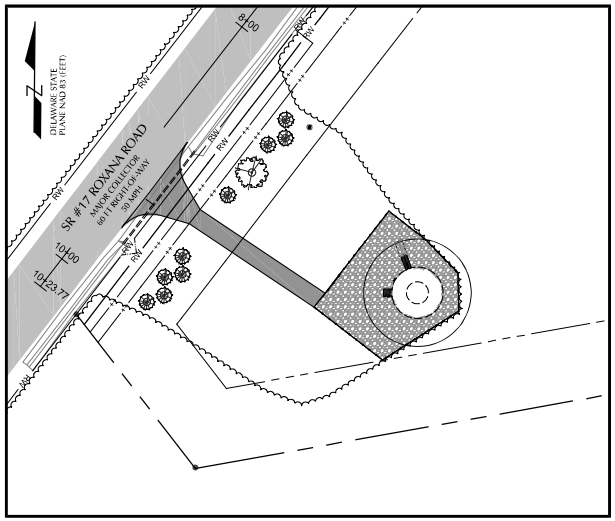
IT IS HEREBY CERTIFIED THAT I AM THE DEVELOPER OF THE PROPERTY DESCRIBED AS PARCEL #134-15.00-116.01 AND SHOWN ON THIS PLAN. THE PLAN WAS MADE AT MY DIRECTION, AND I ACKNOWLEDGE THE SAME TO BE MY ACT. IT IS MY DESIRE TO HAVE THE PLAN CONSTRUCTED AS SHOWN AND IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS.

DEVELOPER: TIDEWATER UTILITIES, INC. — DATE
1100 SOUTH LITTLE CREEK ROAD
DOVER, DELAWARE 19901

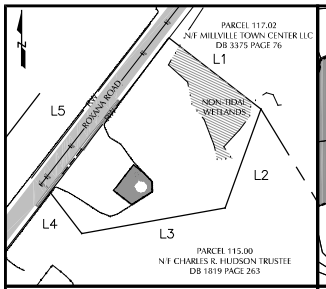
ENGINEER'S CERTIFICATION

I, ROBERT J. PALMER, HEREBY CERTIFY THAT I AM A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF DELAWARE AND THAT THIS PLAN WAS EITHER PREPARED BY ME OR UNDER MY DIRECTION, TO THE BEST OF MY KNOWLEDGE AND BELIEF, THIS PLAN COMPLIES WITH THE APPLICABLE STATE AND LOCAL REGULATIONS AND ORDINANCES. MY LICENSE NUMBER IS 11563 AND EXPIRES ON JUNE 30, 2022.

05/14/2021
ENGINEER: ROBERT J. PALMER, P.E. — DATE

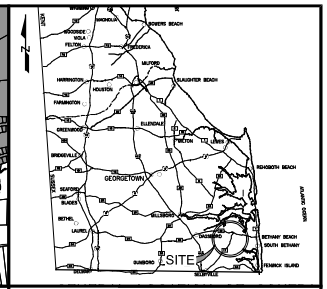


LINE	BEARING	DISTANCE
L1	S 52°26'46" E	298.78'
L2	S 19°52'29" W	269.26'
L3	S 79°52'05" W	372.08'
L4	N 37°40'27" W	132.91'
L5	N 37°36'30" E	497.79'



BOUNDARY SURVEY — 1" = 150 FEET

ZONING/LOCATION MAP — 1" = 1000 FEET



VICINITY MAP — 1" = 10 MILES

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Seal: ROBERT J. PALMER — LICENSED — No. 11563 — DELAWARE — PROFESSIONAL ENGINEER — 05/14/2021

BEACON
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No.	Revisions	By:	Date:
1	TOWN OF MILLVILLE COMMENTS	SKM	11/25/20
2	TOWN OF MILLVILLE COMMENTS	SKM	05/13/21

ELEVATED STORAGE TANK
TIDEWATER UTILITIES - OCEAN VIEW DISTRICT
LITTLE ASSAWOMAN BAY WATERSHED,
TOWN OF MILLVILLE, BALTIMORE HUNDRED,
SUSSEX COUNTY, DELAWARE
TAX MAP #134-15.00-116.01
COVER SHEET

Date:	APR 29, 2021
Scale:	AS SHOWN
Dwn.By:	SKM
Proj.No.:	TUI01-02

Dwg: T1.1

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PROJECT GENERAL NOTES

1. TOPOGRAPHIC SURVEY WAS PERFORMED BY JOHN B. ROACH ENGINEERING, LLC. APRIL 28, 2020. HORIZONTAL DATUM IS NAD 83, DELAWARE SPC. VERTICAL DATUM IS REPORTED IN NAVD88. ALL UNITS ARE IN FEET.
2. THE CONTRACTOR SHALL PROVIDE ALL STAKEOUT WORK NECESSARY FOR PROJECT CONSTRUCTION BY A SURVEYOR LICENSED IN THE STATE OF DELAWARE.
3. CONTRACTOR SHALL NOTIFY "MISS UTILITY OF DELMARVA" AT (1-800-282-8555) AT LEAST 48 HOURS PRIOR TO EXCAVATION, TO HAVE EXISTING UNDERGROUND UTILITIES LOCATED AND MARKED.
4. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS, AND THE CONTRACT SPECIFICATIONS.
5. ALL PAVING, FENCING, SIGNS, OBJECTS, ETC. DAMAGED BY THE WORK SHALL BE RESTORED TO ORIGINAL CONDITION. COST FOR RESTORATION SHALL BE INCLUDED IN THE UNIT PRICE BID FOR UTILITY INSTALLATION.
6. ONLY SUITABLE AND APPROVED GRANULAR MATERIAL SHALL BE USED FOR BACKFILL.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF TRAFFIC IN ALL WORK AREAS.
8. DRAWINGS & SPECIFICATIONS DO NOT INCLUDE THE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY. ALL CONSTRUCTION MUST BE PERFORMED IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, AS AMENDED AND ALL APPLICABLE RULES AND REGULATIONS.
9. THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY FOR ANY DEVIATION FROM THESE PLANS UNLESS WRITTEN APPROVAL HAS BEEN PROVIDED BY THE ENGINEER.
10. STATE AND FEDERAL WETLANDS DO NOT EXIST WITHIN THE PROPOSED LIMIT OF DISTURBANCE.
11. DELAWARE REGULATIONS PROHIBIT THE BURIAL OF CONSTRUCTION DEMOLITION DEBRIS, INCLUDING TREES AND STUMPS ON CONSTRUCTION SITES. ANY SOLID WASTE FOUND DURING THE EXCAVATION FOR STRUCTURES AND UTILITY LINES ON AND OFF SITE MUST BE REMOVED AND PROPERLY DISCARDED. ANY REMEDIAL ACTION REQUIRED IS THE RESPONSIBILITY OF THE OWNER.

TIDEWATER UTILITIES INC. UTILITY NOTES

1. PRESSURE PIPE FOR WATER MAINS 4" AND GREATER SHALL BE IN ACCORDANCE WITH AWWA C900 DR18 FOR PVC PIPE OR AWWA C909 CLASS 235 FOR PVCO PIPE.

2. FITTINGS FOR WATER MAINS OF 4" AND GREATER SHALL BE MECHANICAL JOINT DUCTILE IRON PROVIDED BY TYLER UNION OR APPROVED EQUAL. MECHANICAL JOINT RESTRAINT SHALL BE MEGALUG® SERIES 2000PV PRODUCED BY EBAA IRON INC. OR APPROVED EQUAL.

3. DUCTILE IRON PIPE SHALL BE CLASS 150 IN ACCORDANCE WITH AWWA C151; AWWA C111 WITH CEMENT LINING AND BITUMINOUS COATING.

4. WATER VALVES FOR MAINS 4" AND GREATER SHALL BE RESILIENT WEDGE GATE VALVES CONFORMING TO AWWA C509. BURIED VALVES TO BE FITTED WITH A 2" OPERATING NUT WITH A NON-RISING STEM. VALVES SHALL BE AMERICAN FLOW CONTROL, SERIES 500 OR APPROVED EQUAL.

5. VALVE BOXES SHALL BE CAST IRON 2 PIECE SCREW TYPE ADJUSTABLE WITH "WATER" CAST IN THE COVER PROVIDED BY TYLER UNION MODEL 564-5 OR APPROVED EQUAL.

6. ALL WATER MAIN SHALL BE INSTALLED WITH TRACER WIRE FOR LOCATION EQUIPMENT CONNECTION. TRACER WIRE SHALL BE #12 SOLID COPPER CORE, BLUE COLOR, WITH THHN OR EQUAL INSULATION. TRACER WIRE TO BE RAN CONTINUOUSLY ALONG AND DIRECTLY ADHERED TO WATER MAIN ON TOP OF WATER MAIN UTILIZING INDUSTRIAL ADHESIVE DUCT TAPE. TRACER WIRE TO BE ADHERED TO PIPE WITH A MINIMUM OF 3 LOCATIONS ON ANY LENGTH OF PIPE TO INSURE ACCURATE WATER MAIN LOCATION. LOCATION WIRE TO BE PULLED UP THROUGH ALL VALVE BOXES FOR LOCATION EQUIPMENT CONNECTION.

7. BURIAL DEPTH OF WATER MAINS TO BE A MINIMUM OF 48".

8. ALL WATER MAINS TO HAVE METAL CONDUCTOR TYPE DETECTOR TAPE INSTALLED 2' DIRECTLY ABOVE AND CONTINUOUSLY ALONG WATER MAIN. DETECTOR TAPE SHALL BE TERRA-TAPE BY ALLEN SYSTEMS OR APPROVED EQUAL.

9. FIRE HYDRANTS SHALL BE AMERICAN DARLING B-62-B. SEE LOCAL HYDRANT SPECIFICATIONS FOR PUMPER NOZZLE AND HOSE NOZZLE INFORMATION.

10. BACKFLOW PREVENTERS, WHERE REQUIRED, SHALL MEET ALL REQUIREMENTS OF ASSE STANDARD 1013 AND AWWA C506, LATEST REVISION. BACKFLOW PREVENTERS SHALL BE WATTS SERIES 909 HW, CONBRACO SERIES 40-200 OR APPROVED EQUAL.

11. NEWLY INSTALLED WATER MAIN SHALL BE DISINFECTED IN ACCORDANCE WITH AWWA C651 STANDARDS, LATEST REVISION BEFORE ACCEPTANCE CAN BE GRANTED.

12. WATER MAINS SHALL HAVE A MINIMUM 10' HORIZONTAL AND 18" VERTICAL SEPARATION FROM SANITARY SEWER COMPONENTS.

* - "APPROVED EQUAL" DEFINED AS APPROVED BY TIDEWATER UTILITIES, INC.

Seal:

ROBERT J. PALMER LICENSE No. 17963 DELAWARE PROFESSIONAL ENGINEER

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Revisions	By:	Date:
1 TOWN OF MILLVILLE COMMENTS	SKM	11/25/20

ELEVATED STORAGE TANK
TIDEWATER UTILITIES - OCEAN VIEW DISTRICT
LITTLE ASSAWOMAN BAY WATERSHED,
TOWN OF MILLVILLE, BALTIMORE HUNDRED,
SUSSEX COUNTY, DELAWARE
TAX MAP# 134-15.00-116.01
GENERAL NOTES

Date:	OCT 20, 2020
Scale:	NO SCALE
Dwn.By:	SKM
Proj.No.:	TUI01-02

Dwg:
T1.2

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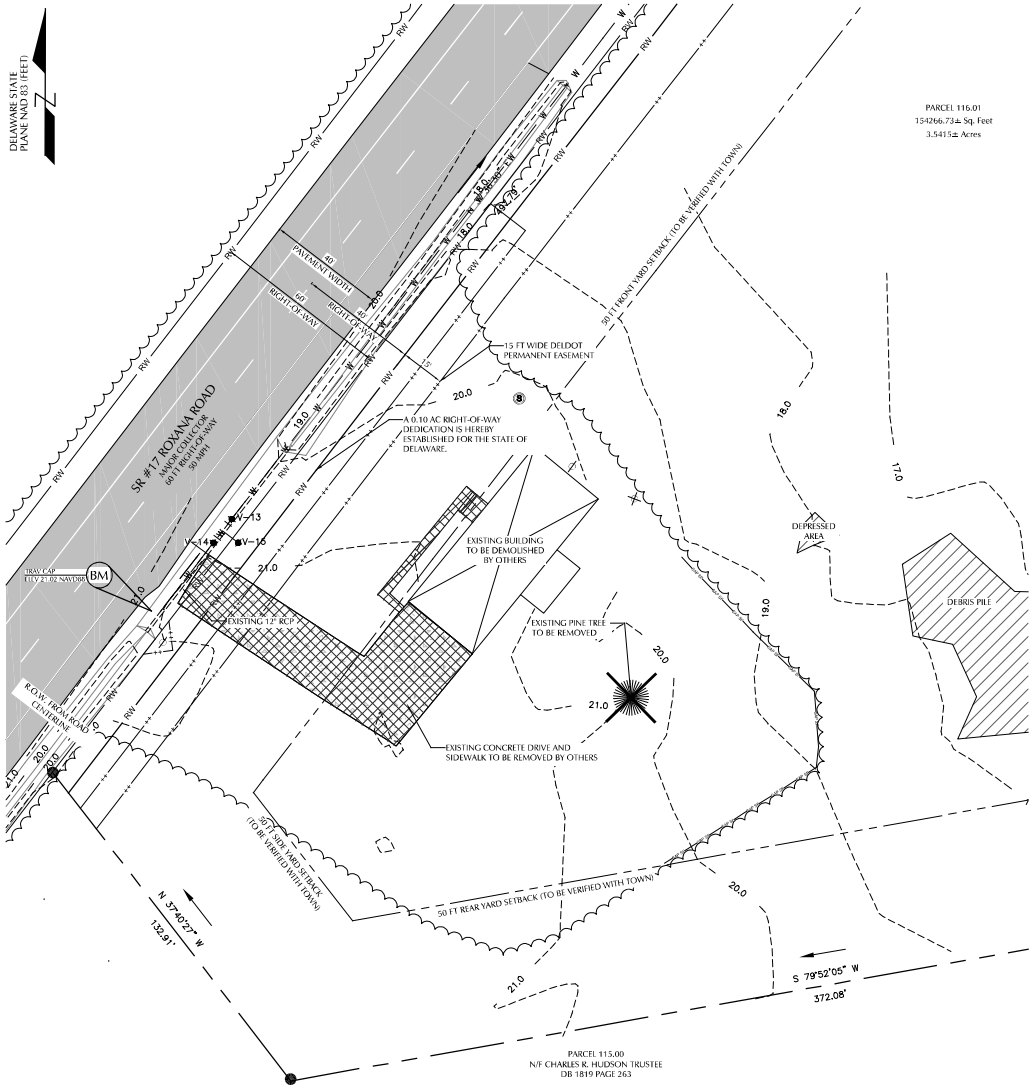
EXISTING LEGEND

	PROPERTY LINE
RW	RIGHT OF WAY
	EASEMENT
	YARD SETBACKS
	TREELINE
44	CONTOURS
	PROPERTY CORNER
	IRON PIPE AND CAP FOUND
	TV SATELLITE POLE AND DISK
	UTILITY POLE
	SEWER PIPE
V-1	VALVE
	FIRE HYDRANT ASSEMBLY
W W	WATER MAIN
	STORM PIPE
	BUILDING
	PAVING
	CONCRETE



EXISTING CONDITIONS PLAN

1" = 20'

0 20 40 60 FEET

Seal:

ROBERT J. PALMER LICENSE No. 11863 DELAWARE PROFESSIONAL ENGINEER

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Revision:	By:	Date:
1 TOWN OF MILLVILLE COMMENTS	SKM	11/25/20

ELEVATED STORAGE TANK
TIDEWATER UTILITIES - OCEAN VIEW DISTRICT
LITTLE ASSAWOMAN BAY WATERSHED,
TOWN OF MILLVILLE, BALTIMORE HUNDRED,
SUSSEX COUNTY, DELAWARE
TAX MAP #134-15.00-116.01
EXISTING CONDITIONS & DEMOLITION PLAN

Date:	OCT 20, 2020
Scale:	1"=20'
Dwn.By:	SKM
Proj.No.:	TUI01-02

Dwg:

EX1.1

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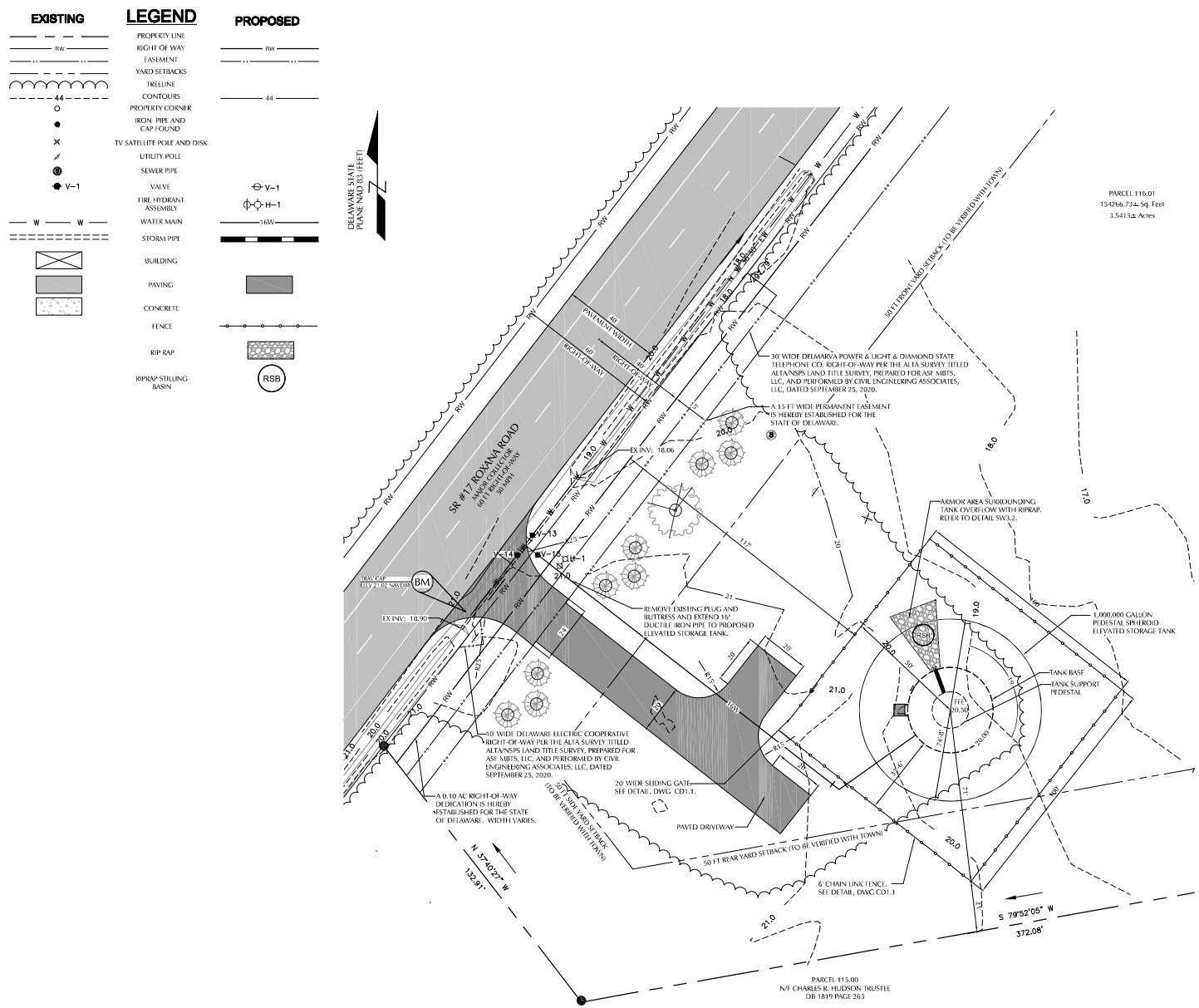

SITE PLAN

1" = 20'

0 20 40 60 FEET

Seal:

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Revision:	By:	Date:
1 TOWN OF MILLVILLE COMMENTS	SKM	11/25/20

ELEVATED STORAGE TANK

TIDEWATER UTILITIES - OCEAN VIEW DISTRICT

LITTLE ASSAWOMAN BAY WATERSHED,
TOWN OF MILLVILLE, BALTIMORE HUNDRED,
SUSSEX COUNTY, DELAWARE
TAX MAP #134-15.00-116.01

SITE PLAN

Date:	OCT 20, 2020
Scale:	AS SHOWN
Dwn.By:	SKM
Proj.No.:	TUI01-02

Dwg:

SP1.1

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LEGEND

EXISTING		PROPOSED
	PROPERTY LINE	
RW	RIGHT OF WAY	RW
	EASEMENT	
	YARD SETBACKS	
	TREELINE	
44	CONTOURS	44
	STORM PIPE	
	BUILDING	
	PAVING	
	CHAIN LINK FENCE	
	DECIDUOUS TREE	
	EVERGREEN TREE	

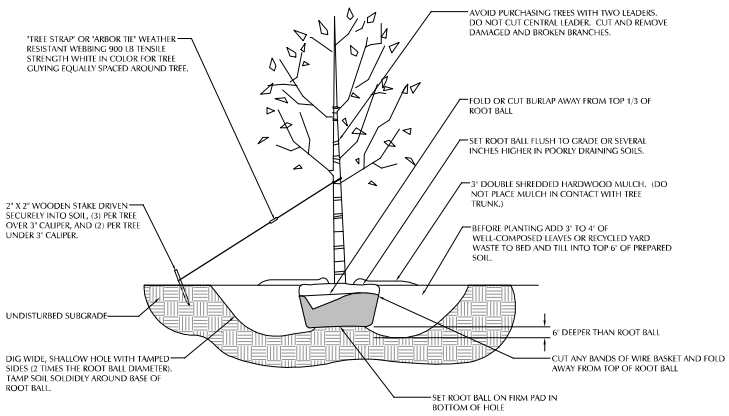
PLANT LIST

KEY	BOTANICAL NAME	COMMON NAME	QTY	SIZE	REMARKS
JV	Juniperus virginiana 'Sentinel'	Sentinel Eastern Red Cedar	9	5' - 6' ht.	B&B, Full, Heavy, Vigorous
QC	Quercus coccinea	Scarlet Oak	1	2" - 2 1/2" cal.	B&B, Full, Heavy, Vigorous
		Double-shredded Hardwood Mulch	2	CY	3" Depth, 5' DIA. Mulch rings.

NOTE: In the event that there is a discrepancy between the quantity of plant material on the Plan Drawing and the quantity in the Plant Drawing and the quantity in the Plant List, the quantity of the plant material on the plan drawing shall govern.

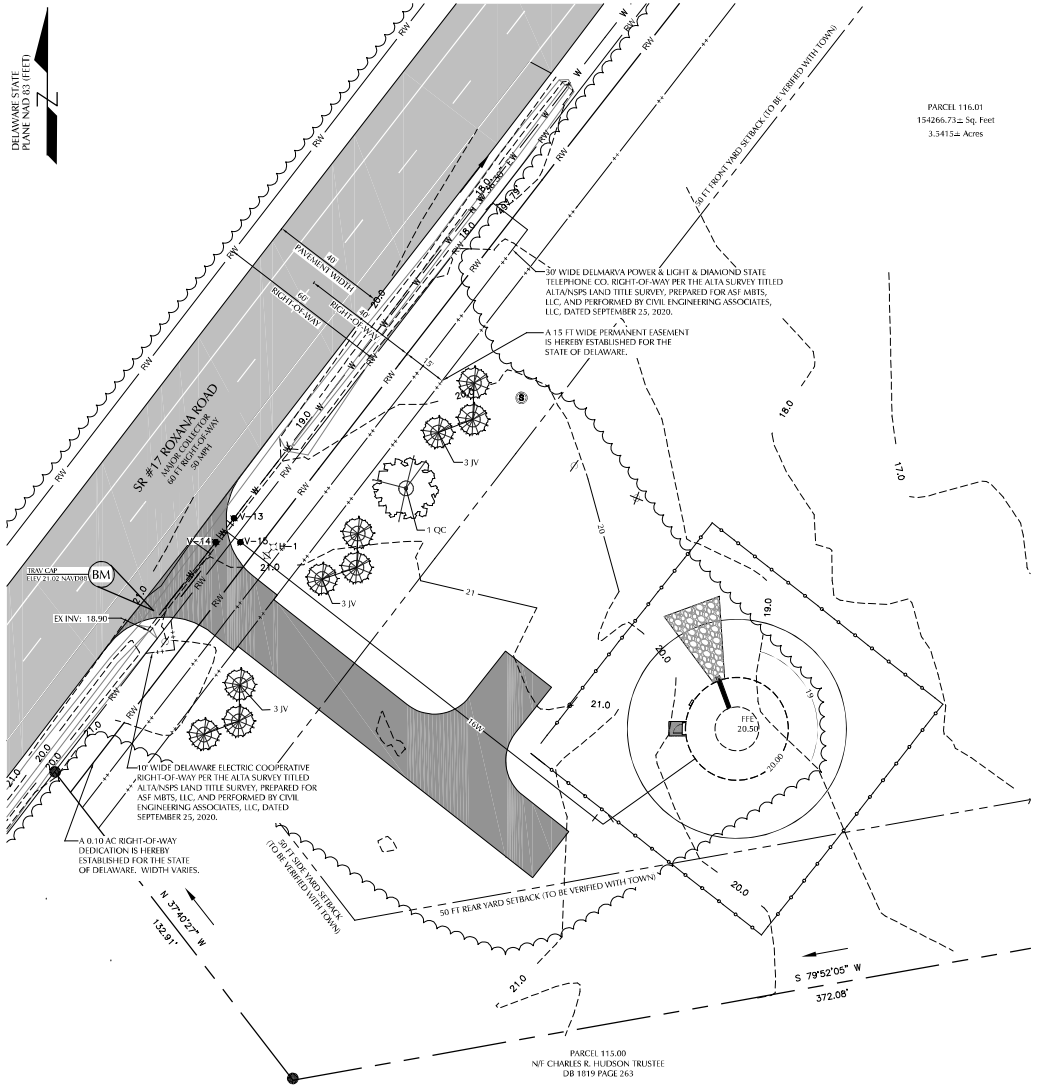
GENERAL PLANTING NOTES

1. ALL PLANTINGS SHALL BE GUARANTEED FOR 1 YEAR SURVIVAL WITH A FULL PRICE LABOR AND MATERIALS WARRANTY.
2. NO SOIL OR MULCH SHALL BE PLACED AGAINST ROOT COLLAR OF PLANT.
3. PLANTING DEPTH SHALL BE THE SAME AS GROWN IN THE NURSERY, EXCEPT WHEN NOTED OTHERWISE.
4. AFTER THE INITIAL THOROUGH WATERING BY THE CONTRACTOR, THE OWNER SHALL BE RESPONSIBLE FOR PROVIDING 1 INCH OF WATER PER WEEK WHEN NATURAL RAINFALL IS LESS THAN 1 INCH PER WEEK BETWEEN MAY 1 AND NOVEMBER 30.
5. ALL STAKES AND 'ARBOR TAPE' GUYING SHALL BE REMOVED FROM THE TREES AND THE SITE 1 YEAR AFTER PLANTING.



TREE PLANTING DETAIL

NTS



Seal: ROBERT J. PALMER LICENSE No. 17365 DELAWARE PROFESSIONAL ENGINEER

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	Revisions	By:	Date:
1	TOWN OF MILLVILLE COMMENTS	SKM	11/25/20

ELEVATED STORAGE TANK
TIDEWATER UTILITIES - OCEAN VIEW DISTRICT

LITTLE ASSAWOMAN BAY WATERSHED,
TOWN OF MILLVILLE, BALTIMORE HUNDRED,
SUSSEX COUNTY, DELAWARE
TAX MAP #13-15.00-116.01

LANDSCAPE/PLANTING PLAN

Date:	OCT 20, 2020
Scale:	AS SHOWN
Dwn.By:	SKM
Proj.No.:	TU101-02

Dwg: LP1.1

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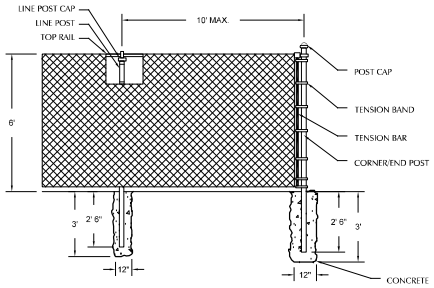
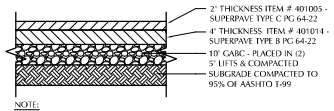
20 FT WIDE DOUBLE SLIDING GATE

NTS



CHAIN LINK FENCE ENCLOSURE

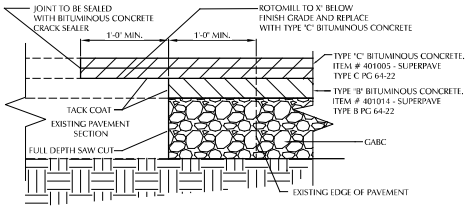
NTS



NOTE:
PROVIDE 'WARM MIX' PG 64-22 160GYR
STRUCTURAL NUMBER = 2(0.4)+4(0.4)+10(0.14)=3.80 (3.62 REQUIRED)

DELDOT CLASS II PAVEMENT SECTION

NTS

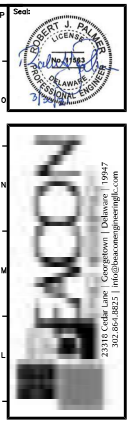


X = 2" DEPTH OF TYPE "C" BITUMINOUS CONCRETE

TYPICAL PAVEMENT TIE-IN DETAIL

NTS

Seal:



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ELEVATED STORAGE TANK
TIDEWATER UTILITIES - OCEAN VIEW DISTRICT
LITTLE ASSAWOMAN BAY WATERSHED,
TOWN OF MILLVILLE, BALTIMORE HUNDRED,
SUSSEX COUNTY, DELAWARE
TAX MAP #134-15.00-116.01

CONSTRUCTION DETAILS

Date:	OCT 20, 2020
Scale:	NO SCALE
Dwn.By:	SKM
Proj.No.:	TUI01-02

Dwg:
CD1.1

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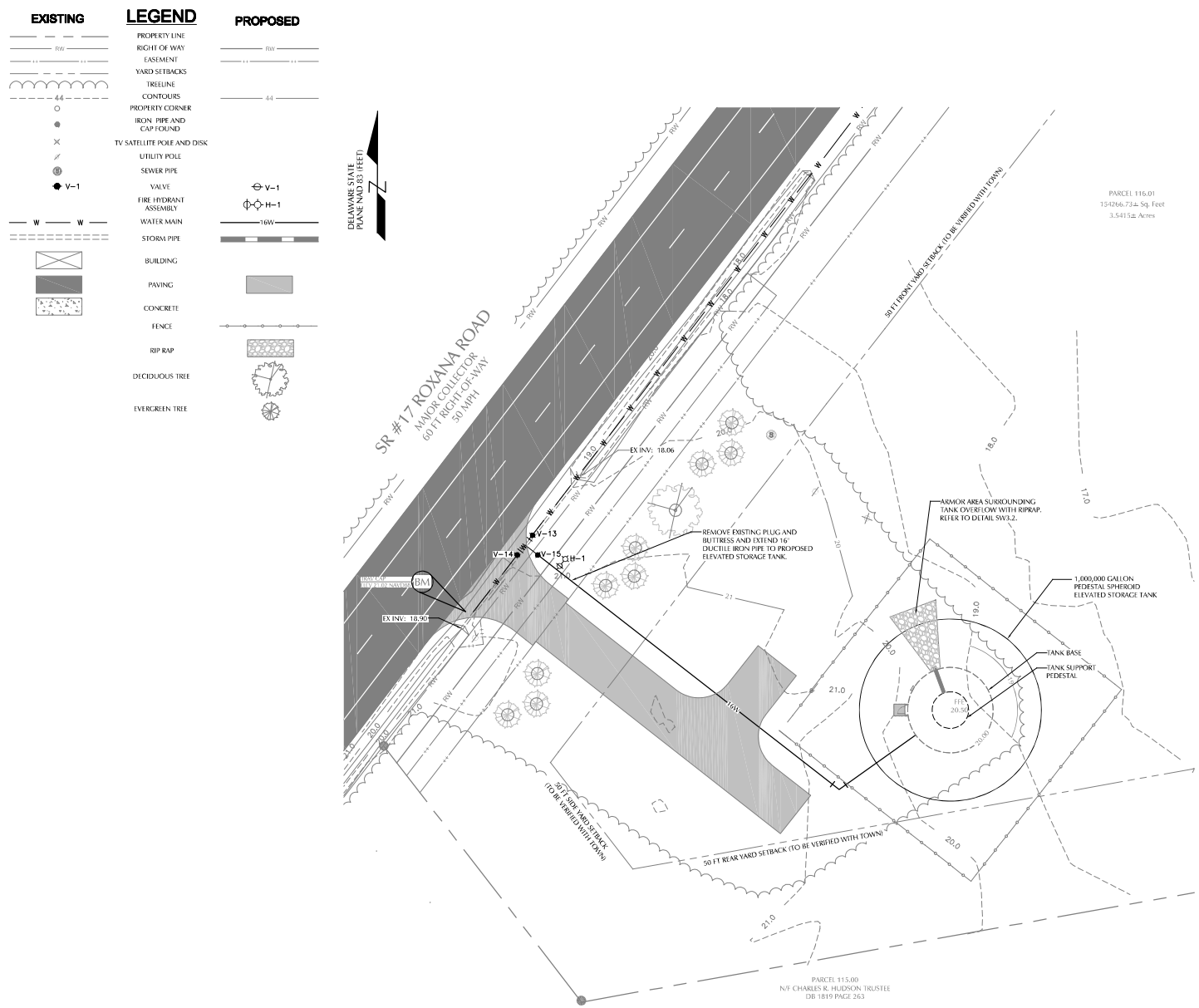

WATER MAIN CONNECTION PLAN

1" = 20'

Seal:

ROBERT J. PALMER
LICENSED
No. 11863
DELAWARE
PROFESSIONAL ENGINEER

BEACON
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	Revision:	By:	Date:
1	TOWN OF MILLVILLE COMMENTS	SKM	11/25/20

ELEVATED STORAGE TANK
TIDEWATER UTILITIES - OCEAN VIEW DISTRICT
LITTLE ASSAWOMAN BAY WATERSHED,
TOWN OF MILLVILLE, BALTIMORE HUNDRED,
SUSSEX COUNTY, DELAWARE
TAX MAP #134-15.00-116.01
WATER MAIN CONNECTION PLAN

Date:	OCT 20, 2020
Scale:	AS SHOWN
Dwn.By:	SKM
Proj.No.:	TUI01-02

Dwg:
UT1.1

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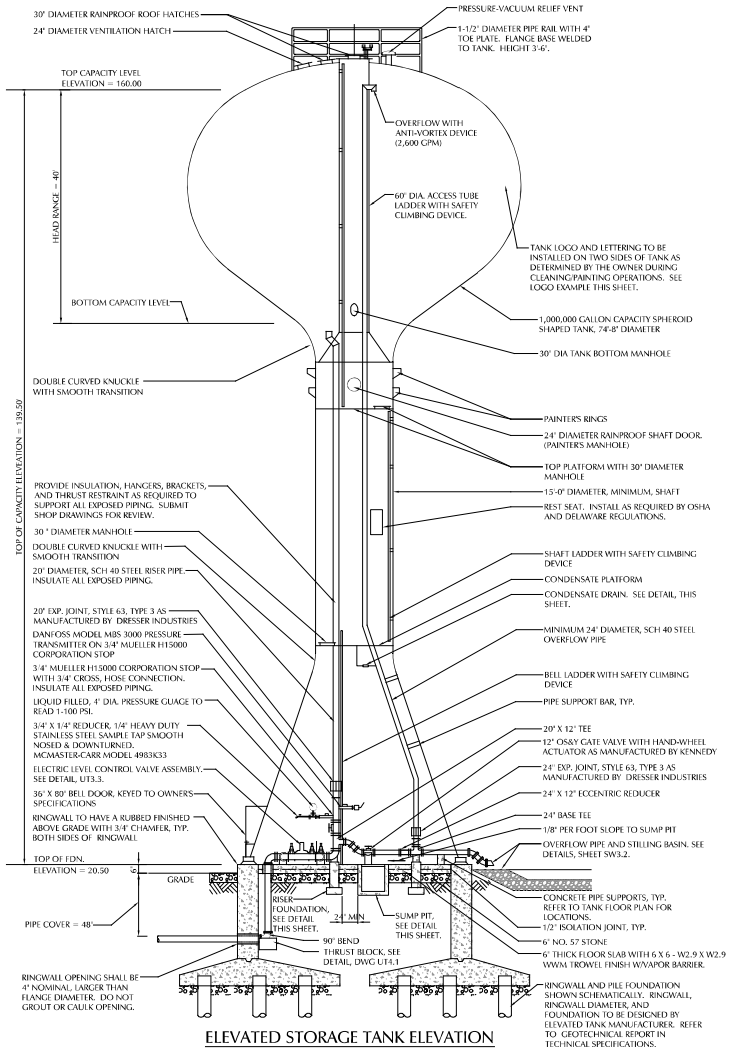


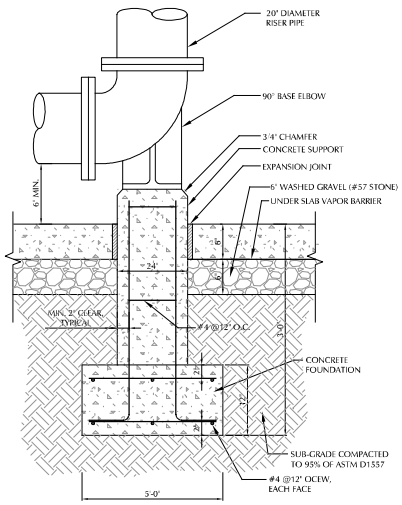
ELEVATED STORAGE TANK ELEVATION

GENERAL NOTES:

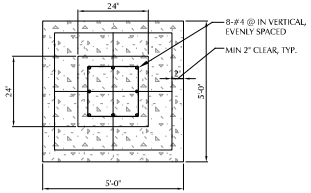
1. TANK APPURTENANCES ROTATED FOR CLARITY.
2. LADDER AND SAFETY DEVICES SHALL MEET OSHA AND DELAWARE REGULATIONS.
3. TANK SHALL BE PAINTED WHITE OR SKY NEUTRAL. OWNER SHALL MAKE COLOR CHOICE.
4. TANK SHALL BE LETTERED WITH THE TIDEWATER LOGO.
5. INSTALL RISER FOUNDATION DIRECTLY BELOW RISER BASE ELBOW AND OVERFLOW BASE TEE AS SHOWN AND PROVIDE MINIMUM 2' CLEARANCE BETWEEN OUTSIDE OF SUMP PIT AND RISER FOUNDATION. SLOPE CONCRETE FLOOR TO SUMP PIT AS NECESSARY.
6. ALL GATE VALVES SHALL BE KENNEDY C-509.
7. SEE SPECIFICATIONS FOR OPTIONAL ACCESSORIES AND ALTERNATE ITEMS.

ELEVATED WATER STORAGE TANK - PEDESTAL SPHEROID 1,000,000 GALLON CAPACITY

NTS



SECTION VIEW



PLAN VIEW

RISER PIPE CONCRETE FOUNDATION DETAIL

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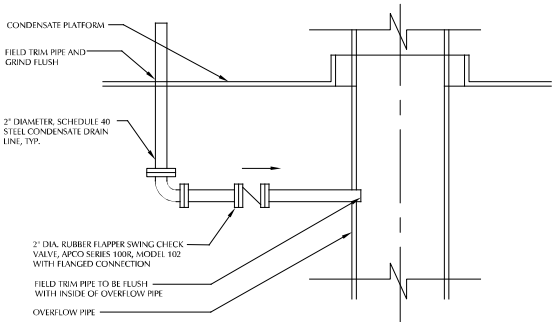
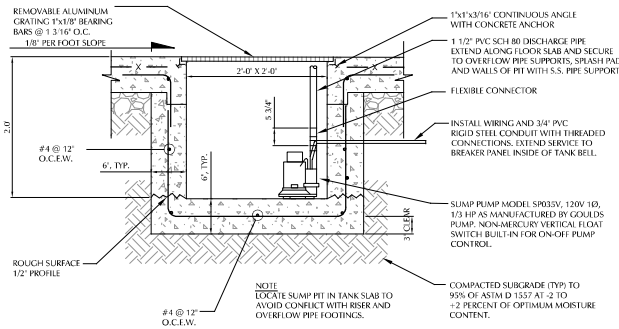


CONDENSATE DRAIN LINE DETAIL

NTS



SUMP PUMP DETAIL

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TIDEWATER LOGO EXAMPLE

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Seal: ROBERT J. PALMER LICENSE No. 17883 DELAWARE PROFESSIONAL ENGINEER 3/30/21

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LITTLE ASSAWOMAN BAY WATERSHED,
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SUSSEX COUNTY, DELAWARE
TAX MAP #134-15.00-116.01

ELEVATED STORAGE TANK DETAILS

Date:	OCT 20, 2020
Scale:	NO SCALE
Dwn.By:	SKM
Proj.No.:	TU101-02

Dwg: UT3.1

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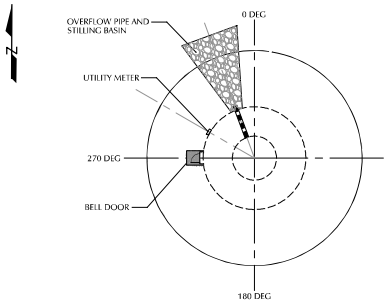

ORIENTATION PLAN

1' = 20'

0 20 40 60

TBD

INTERIOR PIPING DETAILS

NTS

Seal:

ROBERT J. PALMER
LICENSE
No. 11563
DELAWARE
PROFESSIONAL ENGINEER

BEACON

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UT3.2

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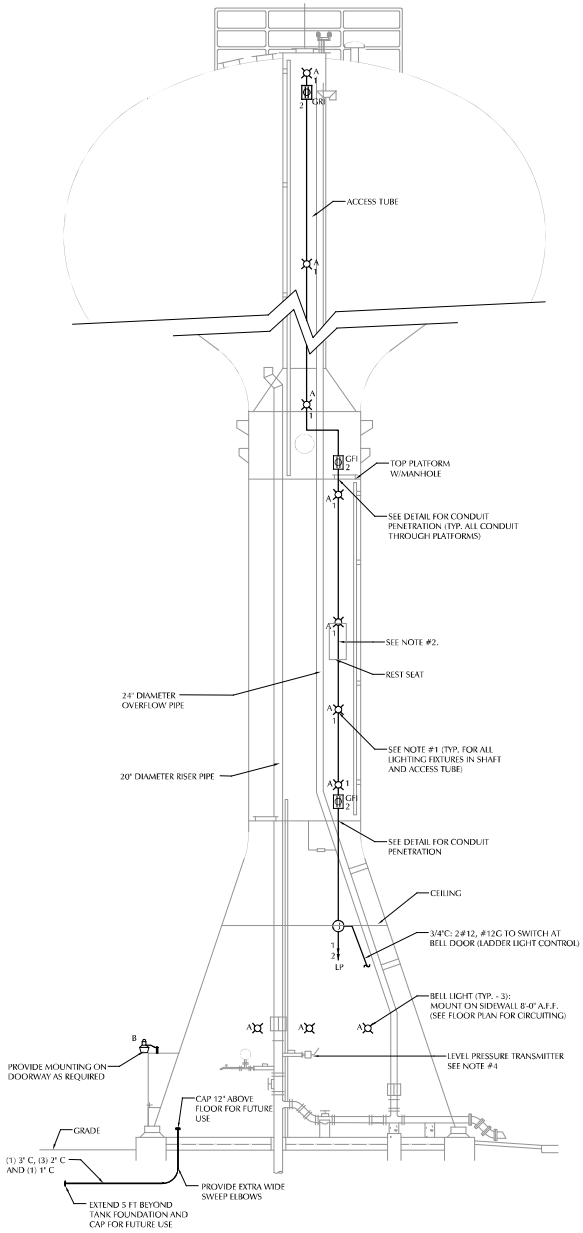

ELEVATION (TANK APPURTENANCES ROTATED FOR CLARITY)

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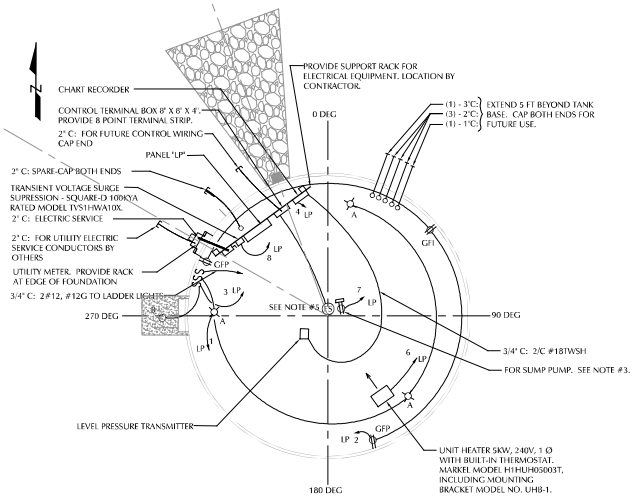
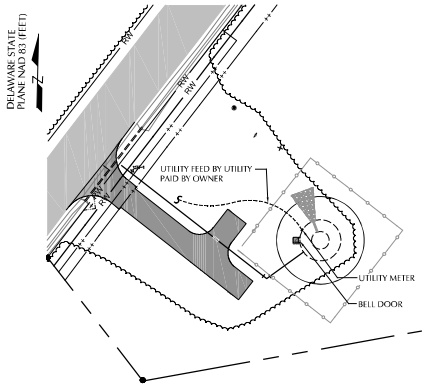


FLOOR PLAN AT BASE

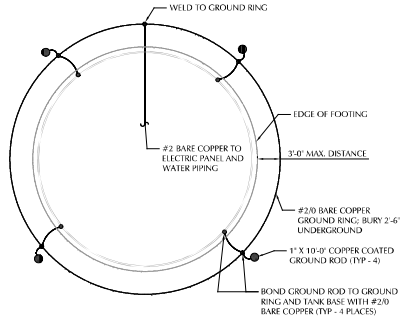
NTS



ELECTRICAL SITE PLAN

1" = 50'

0 50 100 150



GROUNDING GRID DETAIL

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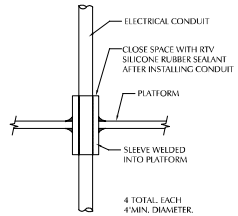

DETAIL CONDUIT PENETRATION

NTS

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER MODEL NUMBER	EQUAL MFGRS	LAMP	MOUNTING	DESCRIPTION
A	HUBBELL VL15P1G	1 2	(1) 15W PL-C	SURFACE	NEMA 4X RATED ENCLOSED & GASKETED COMPACT LED INDUSTRIAL FIXTURE, 30% GLASS-FILLED THERMOPLASTIC POLYESTER BODY, HEAT-RESISTANT GLASS GLOBE & GUARD; PROVIDE COLD WEATHER ELECTRONIC BALLAST & ALL HARDWARE & ACCESSORIES REQUIRED FOR COMPLETE INSTALLATION.
B	HUBBELL AL-D/24L-53/5K7/6X6/ UNV/PCU/SWP/FL/SF3/LCS	1 2	(1) LED (COATED)	2 3/8" OD TENON (BY OTHERS)	OUTDOOR LED SECURITY LIGHT, DIE-CAST ALUMINUM HOUSING, LATCH-ON TYPE V REFRACTOR, INTEGRAL PHOTO CONTROL, 24" ALUMINUM MOUNTING BRACKET; PROVIDE ALL REQUIRED HARDWARE FOR MOUNTING FIXTURE TO TANK SUPPORT STRUCTURE.

NOTES: 1 LITHONIA 2 COOPER

PANEL "LP"

100A SQUARE-D TYPE QOB MCB 12-POLE — 120/240V, 1 Ø, 3W

CIR. No.	DESIGNATION	CONN. LOAD (KVA)	CIRC. BKR.	BRANCH CIRCUIT	REMARKS
1	BELL/SHAFT/ACCESS TUBE LIGHTING	0.2	20/1	3/4"C: 2#12, #12G	
2	BELL/SHAFT/ACCESS TUBE RECEPTACLES	1.1	20/1	3/4"C: 2#12, #12G	
3	BELL DOOR SECURITY LIGHT	0.4	20/1	3/4"C: 2#12, #12G	
4	CHART RECORDER	0.1	20/1	3/4"C: 2#12, #12G	
5	SPARE	——	20/1	——	
6	UNIT HEATER	5.0	30/2	3/4"C: 2#10, #10G	
7	SUMP PUMP	0.3	20/1	3/4"C: 2#12, #12G	
8	TVSS		30/1	3/4"C: 2#10, #10G	
9-10	SPARE BREAKERS	——	20/1	——	
11-12	BLANK SPACES	——	—/1	——	

NOTES:

1. CONTRACTOR SHALL PROVIDE ONE TYPE 'A' FIXTURE PER EACH 20'-0" LENGTH OF SHAFT AND ACCESS TUBE. ADJUST INDICATED FIXTURE COUNT AS REQUIRED.
2. CONTRACTORS SHALL PROVIDE CONDUCTOR/CABLE SUPPORT IN VERTICAL CONDUITS PER NEC REQUIREMENTS. CONTRACTOR SHALL COORDINATE CONDULIT LOCATION WITH PIPING TO PROVIDE MAXIMUM SHAFT AND ACCESS TUBE CLEARANCE. LIGHTNIG FIXTURES, SHALL BE ACCESSIBLE FROM LADDER.
3. PROVIDE SUPPORT AND MOUNT RECEPTACLE 1'-0" ABOVE FLOOR NEAR SUMP PUMP DRAIN LINE AT EDGE OF SUMP.
4. TRANSDUCER TO BE INSTALED ON RISER PIPE ONLY. WIRING CONNECTIONS TO BE MADE IN FUTURE.
5. MOUNT HI LEVEL FLOAT SWITCH ON SIDE OF SUMP TO OPERATE AT 3 INCHES BELOW FLOOR LEVEL. PROVIDE 3/4" C: 2#12, #12G TO CONTROL TERMINAL BOX FOR FUTURE CONNECTION.

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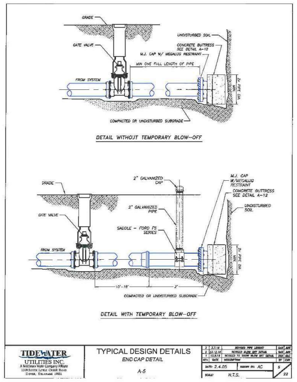
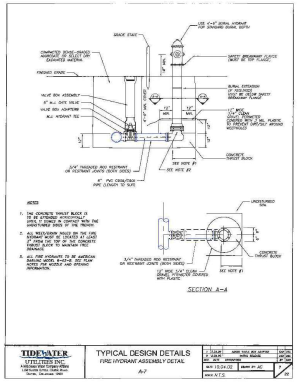
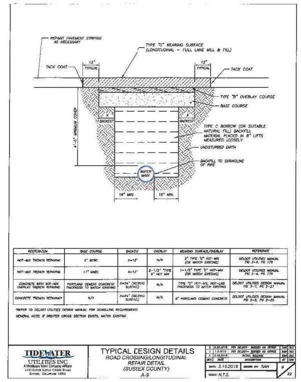
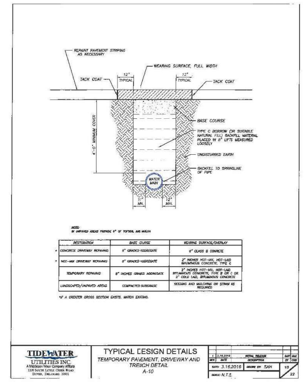
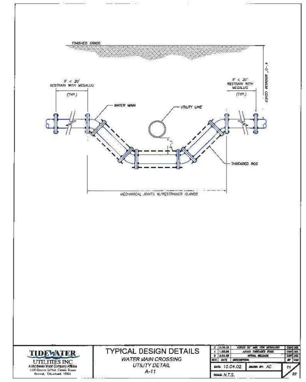
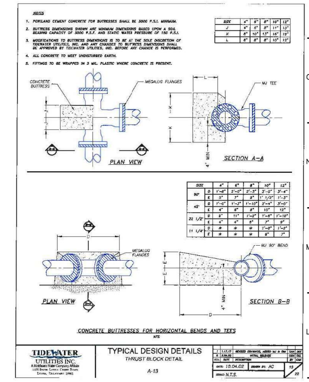
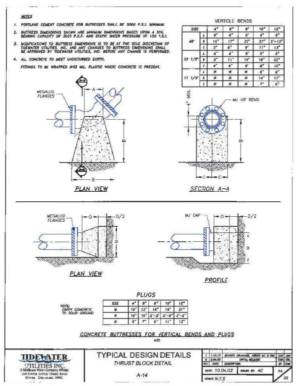
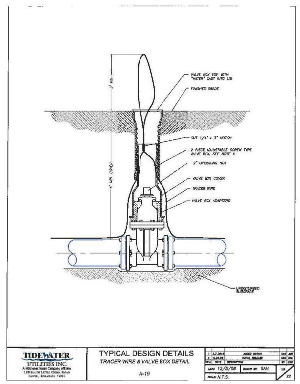
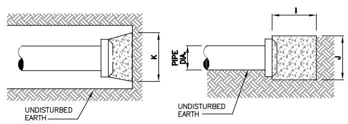











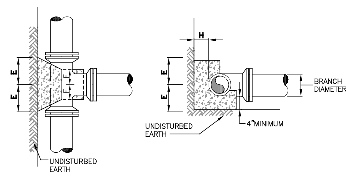
PLAN   PROFILE

PIPE DIA.	4"	6"	8"	10"	12"	16"	18"	20"	24"
I	6"	6"	8"	8"	10"	1'-0"	1'-4"	1'-6"	1'-8"
J	1'-0"	1'-0"	1'-4"	1'-8"	2'-0"	2'-8"	4'-0"	4'-6"	5'-0"
K	1'-5"	1'-5"	1'-11"	2'-5"	2'-10"	3'-9"	4'-0"	4'-6"	5'-0"

DIMENSION SCHEDULE

* USE OF BAGGED CONCRETE MIX IS PROHIBITED.

PLUG THRUST BLOCK DETAIL
NTS



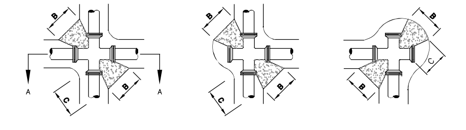
PLAN   PROFILE

BRANCH DIA.	4"	6"	8"	10"	12"	16"	18"	20"	24"
E	8"	8"	10"	1'-0"	1'-3"	1'-8"	2'-0"	2'-6"	2'-9"
F	6"	6"	8"	8"	8"	10"	1'-0"	1'-0"	1'-2"
G	7"	7"	9"	1'-0"	1'-2"	1'-6"	2'-0"	2'-6"	2'-9"
H	8"	8"	9"	10"	1'-0"	1'-2"	1'-4"	1'-5"	1'-6"

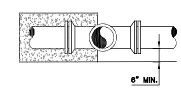
DIMENSION SCHEDULE

* USE OF BAGGED CONCRETE PROHIBITED.

TEE THRUST BLOCK DETAIL
NTS



PLAN VIEW



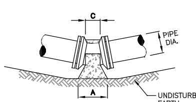
SECTION A

LARGEST BRANCH DIA.	4"	6"	8"	10"	12"	16"	20"	24"
A	1'-9"	1'-9"	2'-6"	3'-0"	3'-3"	3'-9"		4'-6"
B	1'-2"	1'-2"	1'-4"	2'-0"	2'-2"	2'-6"		3'-6"
C	2'-6" MIN. TO UNDISTURBED SOIL.							

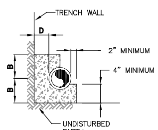
DIMENSION SCHEDULE

* USE OF BAGGED CONCRETE IS PROHIBITED.

CROSS THRUST BLOCK DETAIL
NTS



PLAN



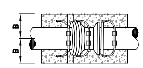
PROFILE

DIMENSION SCHEDULE

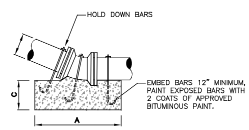
BEND	11¼°									22½°								
PIPE DIA.	4"	6"	8"	10"	12"	16"	18"	20"	24"	4"	6"	8"	10"	12"	16"	18"	20"	24"
A	6"	6"	6"	10"	1'-0"	1'-4"	2'-0"	2'-2"	2'-6"	9"	9"	1'-0"	1'-6"	1'-9"	2'-3"	2'-3"	2'-8"	3'-0"
B	7"	7"	8"	9"	10"	1'-0"	1'-6"	1'-6"	1'-8"	7"	7"	8"	9"	10"	1'-0"	1'-0"	1'-6"	1'-6"
C	4"	4"	6"	6"	10"	1'-0"	1'-6"	1'-6"	1'-8"	4"	4"	6"	8"	10"	1'-0"	1'-0"	1'-2"	1'-6"
D	7"	7"	7"	8"	8"	9"	1'-0"	1'-2"	1'-6"	8"	8"	9"	10"	11"	1'-2"	1'-2"	1'-4"	1'-8"
BEND	45°									90°								
PIPE DIA.	4"	6"	8"	10"	12"	16"	18"	20"	24"	4"	6"	8"	10"	12"	16"	18"	20"	24"
A	1'-3"	1'-3"	1'-8"	2'-1"	2'-6"	3'-4"	4'-0"	4'-0"	5'-0"	2'-0"	2'-0"	2'-6"	3'-0"	3'-6"	5'-0"	5'-0"	6'-0"	5'-6"
B	7"	7"	8"	9"	1'-1"	1'-3"	2'-0"	2'-6"	3'-0"	6"	6"	9"	1'-0"	1'-3"	1'-6"	1'-6"	3'-0"	2'-0"
C	4"	4"	6"	8"	10"	1'-0"	1'-6"	1'-6"	2'-0"	4"	4"	6"	8"	10"	1'-0"	1'-0"	1'-6"	1'-6"
D	8"	8"	9"	10"	11"	1'-2"	1'-4"	1'-6"	1'-10"	1'-5"	1'-5"	1'-7"	1'-8"	1'-9"	1'-10"	1'-10"	2'-0"	2'-4"

* USE OF BAGGED CONCRETE PROHIBITED.

HORIZONTAL BEND THRUST BLOCK DETAIL
NTS



PLAN



PROFILE

DIMENSION SCHEDULE

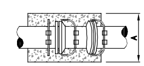
BEND		PIPE DIAMETER 4"	6"	8"	10"	12"	16"	18"	20"	24"
11¼°	A	1'-6"	1'-6"	1'-6"	2'-5"	3'-0"	3'-6"	3'-9"	4'-0"	4'-0"
	B	1'-3"	1'-3"	1'-9"	1'-9"	2'-0"	2'-4"	2'-6"	2'-10"	3'-0"
	C	2'-0"	2'-0"	2'-6"	2'-9"	3'-0"	3'-6"	3'-9"	4'-0'	4'-0"
22½°	A	2'-0"	2'-0"	3'-4"	3'-8"	4'-0"	4'-4"	4'-8"	5'-0'	5'-0'
	B	1'-9"	1'-9"	2'-3"	2'-6"	2'-6"	3'-0"	3'-2"	3'-4"	3'-6"
	C	2'-6"	2'-6"	2'-8"	3'-10"	4'-0"	5'-6"	5'-8"	6'-0"	6'-0"
45°	A	2'-6"	2'-6"	3'-0"	4'-0"	4'-6"	5'-2"	5'-6"	5'-8"	5'-8"
	B	2'-6"	2'-6"	2'-9"	3'-0"	3'-6"	3'-9"	3'-9"	4'-6"	5'-0"
	C	3'-0"	3'-0"	4'-0"	4'-6"	4'-9"	5'-0"	5'-4"	5'-6"	5'-8"

* USE OF BAGGED CONCRETE PROHIBITED.

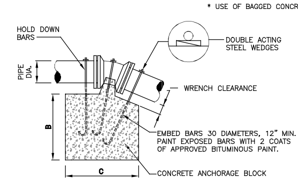
BAR SCHEDULE

SIZE	REINFORCING BARS 11¼°	22½°	45°
4"	3 #5	3 #5	3 #5
6"	3 #6	3 #6	3 #6
8"	3 #6	3 #6	3 #6
10"	3 #6	3 #6	3 #6
12"	3 #6	3 #6	3 #6
16"	3 #6	3 #6	3 #6
18"	3 #8	3 #8	3 #8
20"	3 #8	3 #8	3 #8
24"	3 #8	3 #8	3 #8

VERTICAL UPWARD BEND THRUST BLOCK DETAIL
NTS



PLAN



PROFILE

DIMENSION SCHEDULE

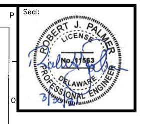
BEND		PIPE DIAMETER 4"	6"	8"	10"	12"	16"	18"	20"	24"
11¼°	A	1'-6"	1'-6"	1'-6"	2'-5"	3'-0"	3'-4"	3'-6"	3'-9"	4'-0"
	B	1'-3"	1'-3"	1'-9"	1'-9"	2'-0"	2'-4"	2'-9"	2'-9"	3'-0"
	C	2'-0"	2'-0"	2'-6"	2'-9"	3'-0"	3'-4"	3'-6"	3'-9"	4'-0"
22½°	A	2'-0"	2'-0"	3'-4"	3'-8"	4'-0"	4'-4"	4'-6"	4'-9"	5'-0"
	B	1'-9"	1'-9"	2'-3"	2'-6"	2'-6"	3'-0"	3'-2"	3'-4"	3'-6"
	C	2'-6"	2'-6"	2'-8"	3'-10"	4'-0"	5'-4"	5'-6"	5'-9"	6'-0"
45°	A	2'-6"	2'-6"	3'-0"	4'-0"	4'-6"	5'-2"	5'-4"	5'-6"	5'-8"
	B	2'-6"	2'-6"	2'-9"	3'-0"	3'-6"	4'-4"	4'-6"	4'-9"	5'-0"
	C	3'-0"	3'-0"	4'-0"	4'-6"	4'-9"	5'-0"	5'-3"	5'-6"	5'-8"

* USE OF BAGGED CONCRETE PROHIBITED.

BAR SCHEDULE

SIZE	REINFORCING BARS 11¼°	22½°	45°
4"	3 #6	3 #6	3 #6
6"	3 #6	3 #6	3 #6
8"	3 #6	3 #6	3 #6
10"	3 #6	3 #6	3 #6
12"	3 #6	3 #6	3 #6
16"	3 #6	3 #6	3 #6
18"	3 #8	3 #8	3 #8
20"	3 #8	3 #8	3 #8
24"	3 #8	3 #8	3 #8

VERTICAL DOWNWARD BEND THRUST BLOCK DETAIL
NTS



Seal:

Revision: TOWN OF MILLVILLE COMMENTS | By: SKM | Date: 11/25/20

23318 Cedar Lane | Georgetown | Delaware | 19947
302.864.8825 | info@beaconengineeringllc.com

ELEVATED STORAGE TANK
TIDEWATER UTILITIES - OCEAN VIEW DISTRICT
LITTLE ASSAWOMAN BAY WATERSHED,
TOWN OF MILLVILLE, BALTIMORE HUNDRED,
SUSSEX COUNTY, DELAWARE
TAX MAP #134-15.00-116.01

WATER MAIN CONNECTION DETAILS

Date: OCT 20, 2020
Scale: AS SHOWN
Dwn.By: SKM
Proj.No.: TUI01-02

Dwg: UT4.1

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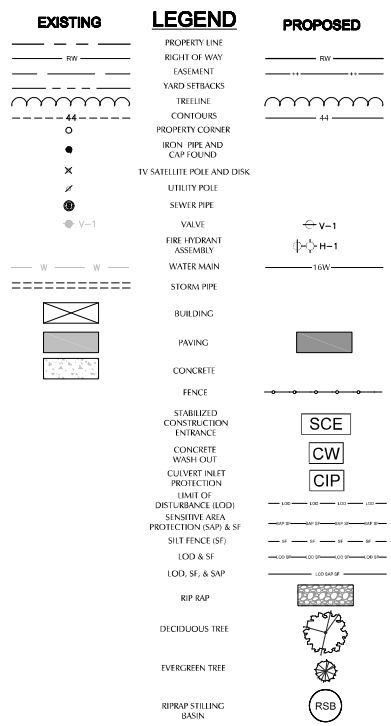

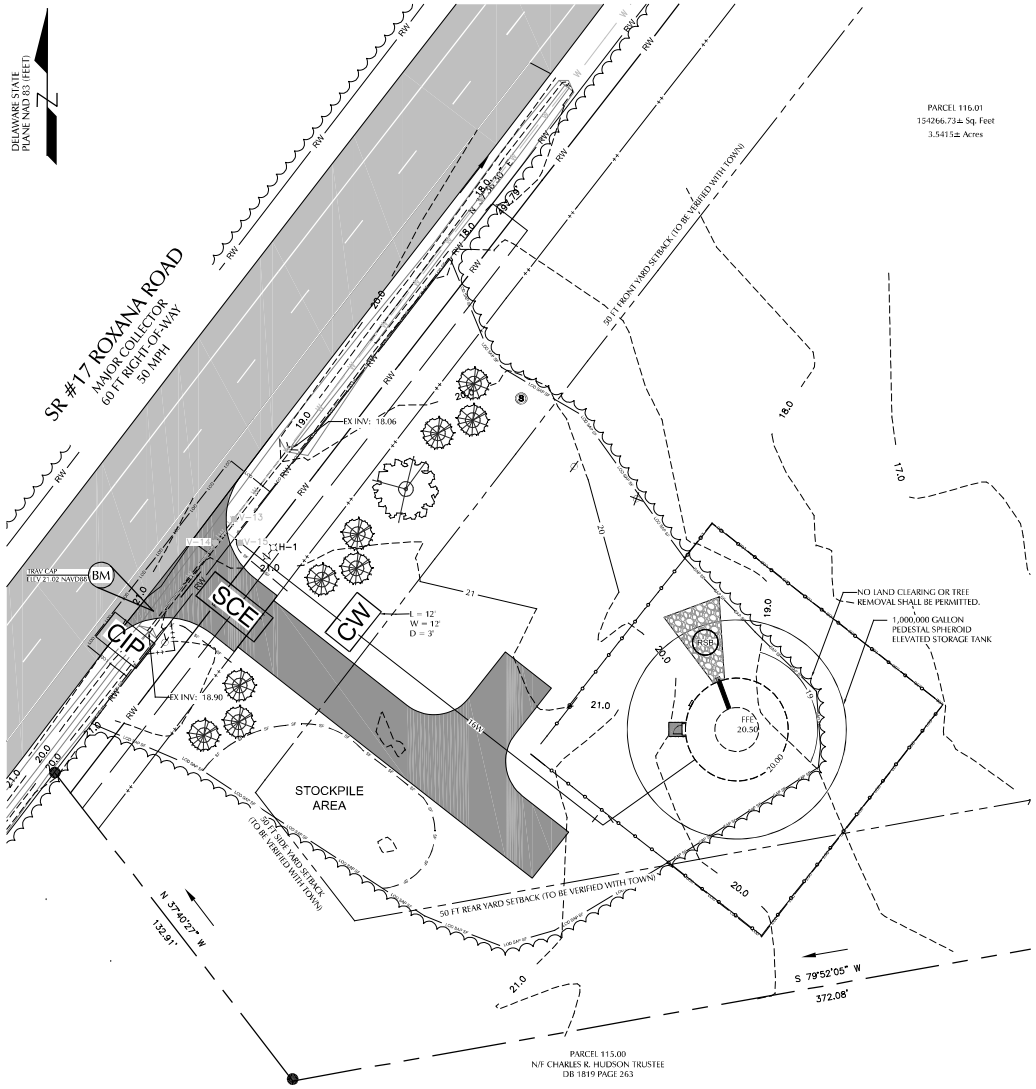

EROSION & SEDMIENT CONTROL PLAN

1" = 20'

0 20 40 60 FEET

Seal:

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Revision:	By:	Date:
1 TOWN OF MILLVILLE COMMENTS	SKM	11/25/20

ELEVATED STORAGE TANK
TIDEWATER UTILITIES - OCEAN VIEW DISTRICT
LITTLE ASSAWOMAN BAY WATERSHED,
TOWN OF MILLVILLE, BALTIMORE HUNDRED,
SUSSEX COUNTY, DELAWARE
TAX MAP #134-15.00-116.01

EROSION AND SEDIMENT CONTROL PLAN

Date:	OCT 20, 2020
Scale:	AS SHOWN
Dwn.By:	SKM
Proj.No.:	TUI01-02

Dwg:

SW1.1

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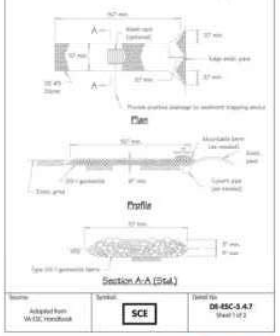
M:\Projects\TUI01-02 - Elevated Storage Tanks Project\Construction Docs\DWGs\Construction DWG\TUI01-02 MBTS E&S PLAN.dwg Mar 30 , 2021 - 1:23pm, (Sarah)

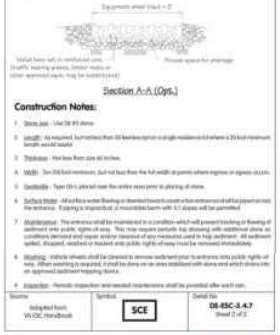
Standard Detail & Specifications
Stabilized Construct. Entrance



Source	Symbol	Detail No.
Adopted from VA ESC Handbook	SCE	DE-ESC-3.4.7 Sheet 1 of 2

Effective February 2019

Standard Detail & Specifications
Stabilized Construct. Entrance



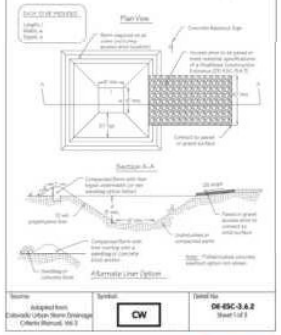
Construction Notes:

1. Stone size - Use 2ß #1 stone.
2. Length - As required, but not less than 30 feet except on a single residence lot where a 20 foot minimum length would suffice.
3. Thickness - Not less than one (1) foot.
4. Width - Ten (10) feet minimum, but not less than the full width at points where ingress or egress occurs.
5. Geotextile - Type IIA is placed over the entire area prior to placing of stone.
6. Surface Water - All surface water flowing or diverted toward construction entrance shall be piped across the entrance. If piping is impractical, a mountable berm with 5:1 slopes will be permitted.
7. Maintenance - The entrance shall be maintained in a condition which will prevent tracking or flowing of sediment onto public rights-of-way. This may require periodic top dressing with additional stone as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed or tracked onto public rights-of-way must be removed immediately.
8. Washing - Vehicle wheels shall be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with stone and which drains into an approved sediment trapping device.
9. Inspection - Periodic inspection and needed maintenance shall be provided after each rain.

Source	Symbol	Detail No.
Adopted from VA ESC Handbook	SCE	DE-ESC-3.4.7 Sheet 2 of 2

Effective February 2019

Standard Detail & Specifications
Concrete Washout



Source	Symbol	Detail No.
Adopted from Colorado Urban Storm Drainage Criteria Manual, Vol 3	CW	DE-ESC-3.6.2 Sheet 1 of 3

Effective February 2019

Standard Detail & Specifications
Concrete Washout

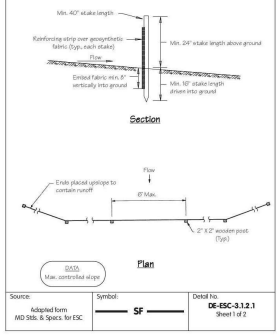
Construction Notes:

1. Locate washout area a minimum of 50 feet from open channels, stormdrain inlets, wetlands or waterbodies.
2. Locate washout area so that it is accessible to concrete equipment trucks with a minimum 16 foot wide gravel accessway, but so it is not in a highly active construction area causing accidental damage.
3. Minimum dimensions for prefabricated units are 4 feet by 4 feet by 1 foot deep with a minimum 4-mil polyethylene plastic liner. Minimum dimensions for constructed concrete washout areas are 8 feet by 8 feet by 4 feet deep, with a minimum 30-mil polyethylene liner, 2:1 side slopes, and a 1 foot high by 1 foot wide compacted fill berm.
4. The liner must be free of tears or holes and placed over smooth surfaces to prevent puncturing. For excavated washouts, anchor the liner underneath the berm or overlap with sandbags or concrete blocks to hold in place.
5. Provide a sign designating the washout area, and for large construction sites, provide signs throughout directing traffic to its location.
6. Allow washed out concrete residue to harden through evaporation of the wastewater. Once the facility has reached 75 percent of its capacity, remove the hardened concrete by reusing the broken aggregate onsite, recycling, or disposing of offsite. The hardened material can be buried on site with minimum of 1 foot of clean, compacted fill.
7. Apply a new liner before reusing the station for additional washouts after maintenance has occurred.

Source	Symbol	Detail No.
Adopted from Colorado Urban Storm Drainage Criteria Manual, Vol 3	CW	DE-ESC-3.6.2 Sheet 2 of 3

Effective February 2019

Standard Detail & Specifications
Silt Fence



Source	Symbol	Detail No.
Adopted form MD Std. & Specs. for ESC	SF	DE-ESC-3.1.2.1 Sheet 1 of 2

Effective February 2019

Standard Detail & Specifications
Silt Fence

Construction Notes:

1. Geosynthetic fabric to be fastened securely to fence posts with wire ties or staples.
2. When two sections of filter cloth adjoin each other they shall be overlapped by six inches and folded.
3. Maintenance shall be performed as needed and material removed when "bulges" develop in the silt fence.

Materials:

1. Stakes: Steel lathes 1 or 1.5 or 2" x 2" hardwood.
2. Geosynthetic fabric: Type GD-1
3. Reinforcing strip: Wooden lath or plastic strip.

Source	Symbol	Detail No.
Adopted from MD Std. & Specs. for ESC	SF	DE-ESC-3.1.2.1 Sheet 2 of 2

Effective February 2019

Standard Detail & Specifications
Dust Control

Temporary Methods:

1. Mulches - See DE-ESC-3.4.3, Standard Detail and Specifications for Mulching.
2. Vegetative cover - See DE-ESC-3.4.3, Std. Detail and Specifications for Vegetative Stabilization.
3. Adhesives - Use on mineral soils only (not effective on muck soils). Keep traffic off these areas. The following table may be used for general guidance:

Type of Emulsion	Water Dilution	Type of Nozzle	Apply Gal/Sq.
Latex emulsion	12.5:1	Fine spray	235
Resin in water emulsion	4:1	Fine spray	300
Acrylic emulsion (non-traffic)	7:1	Coarse spray	450
Acrylic emulsion (traffic)	3.5:1	Coarse spray	350

4. Tillage - For emergency temporary treatment, scarify the soil surface to prevent or reduce the amount of blowing dust until a more appropriate solution can be implemented. Begin the tillage operation on the windward side of the site using a chisel-type plow for best results.
5. Sprinkling - Sprinkle site with water until the surface is moist. Repeat as needed.
6. Calcium Chloride - Apply as flakes or granular material with a spreader at a rate that will keep the soil surface moist. Re-apply as necessary.
7. Barriers - Place barriers such as solid board fences, snow fences, hay bales, etc. at right angles to the prevailing air currents at intervals of approx. 10X their height.

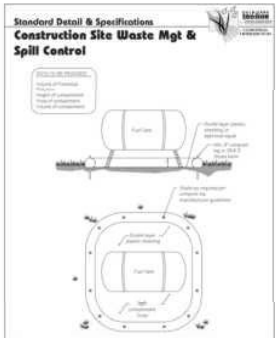
Permanent Methods:

1. Vegetative cover - See DE-ESC-3.4.3, Std. Detail and Specifications for Vegetative Stabilization.
2. Stone - Apply layer of crushed stone or coarse gravel to protect soil surface.

Source	Symbol	Detail No.
Adopted from VA ESC Handbook		DE-ESC-3.4.8 Sheet 1 of 1

Effective February 2019

Standard Detail & Specifications
Construction Site Waste Mgt & Spill Control



Source	Symbol	Detail No.
Delaware ESC Handbook		DE-ESC-3.6.1 Sheet 1 of 3

Effective February 2019

Standard Detail & Specifications
Construction Site Waste Mgt & Spill Control

Pollution Prevention - Spill Prevention

1. Fueling should only take place in signed designated areas, away from downstream drainage facilities and waterbodies.
2. Fueling must be with nozzles equipped with automatic shut-off to control drips. Do not top off.
3. Protect the areas where equipment or vehicles are being repaired, maintained, fueled or parked from storm water run-on and runoff.
4. Use berms such as berms to prevent storm water run-on and runoff, and to contain spills.
5. Place a "Fueling Area" sign next to each fueling area.
6. Store hazardous materials such as fuel, solvents, oil and chemicals in secondary containment.
7. Inspect vehicles and equipment for leaks on each day of use. Repair fluid and oil leaks immediately.
8. Absorbent spill clean-up materials and spill kits must be available in fueling areas and on fuel trucks.
9. If fueling is to take place at night, make sure the fueling area is sufficiently illuminated.
10. Properly dispose of used oil, fluids, lubricants and spill clean-up materials.

CLEAN UP SPILLS

1. If it is safe to do so, immediately contain and clean up any chemical and/or hazardous material spills.
2. Properly dispose of used oil, fluids, lubricants and spill clean-up materials.
3. Do not hose spills or wash them down with water.

LEAKS AND DRIPS

1. Use drip pans or absorbent pads at all times. Place under and around leaky equipment.
2. Do not allow oil, grease, fuel or chemicals to drip onto the ground.
3. Have spill kits and clean up material on site.
4. Repair leaky equipment promptly or remove problem vehicles and equipment from the site. Clean up contaminated soil immediately.
5. Store contaminated waste in sealed containers constructed of suitable material. Label these containers properly.
6. Clean up all spills and leaks. Promptly dispose of waste and spent clean up materials.

Source	Symbol	Detail No.
Delaware ESC Handbook		DE-ESC-3.6.1 Sheet 2 of 3

Effective February 2019

Standard Detail & Specifications
Construction Site Waste Mgt & Spill Control

Notes:

The Construction Site Pollution Prevention Plan should include the following elements:

1. Material Inventory

Document the storage and use of the following materials:

a. Concrete
b. Detergents
c. Paints (enamel and latex)
d. Cleaning solvents
e. Pesticides
f. Wood scraps
g. Fertilizers
h. Petroleum based products

2. Good housekeeping practices

a. Store only enough product required to do the job.
b. All materials shall be stored in a neat, orderly manner in their original labeled containers and covered.
c. Substances shall not be mixed.
d. When possible, all of a product shall be used up prior to disposal of the container.
e. Manufacturers' instructions for disposal shall be strictly adhered to.
f. The site foreman shall designate someone to inspect all BMPs daily.

3. Waste management practices

a. All waste materials shall be collected and stored in securely lidded dumpsters in location that does not allow it to be blown away.
b. Waste materials shall be salvaged and/or recycled whenever possible.
c. The dumpsters shall be emptied a minimum of twice per week, or more if necessary. The licensed trash hauler is responsible for cleaning out dumpsters.

Source	Symbol	Detail No.
Adopted from USEPA Pub. 840-B-92-002		DE-ESC-3.6.1 Sheet 3 of 3

Effective February 2019

Standard Detail & Specifications
Construction Site Waste Mgt & Spill Control

Notes (cont.)

d. Trash shall be disposed of in accordance with all applicable Delaware laws.
e. Trash carts shall be placed on hard surfaces and filtering is strictly prohibited. Recycle bins shall be placed near the construction trailer.
f. Fertilizer bags can not be stored in a weather-proof location; they shall be kept in a pallet and covered with plastic sheeting which is overlapped and anchored.

4. Equipment maintenance practices

a. If possible, equipment should be taken to off-site commercial facilities for washing and maintenance.
b. If performed on site, vehicles shall be washed with high-pressure water spray without detergents in an area contained by an impervious berm.
c. Drip pans shall be used for all equipment maintenance.
d. Equipment shall be inspected for leaks on a daily basis.
e. Washout from concrete trucks shall be disposed of in a temporary pit for hardening and proper disposal.
f. Fuel nozzles shall be equipped with automatic shut-off valves.
g. All used products such as oil, antifreeze, solvents and tires shall be disposed of in accordance with manufacturers' recommendations and local, state and federal laws and regulations.

5. Spill prevention practices

a. Potential spill areas shall be identified and contained in covered areas with no connection to the storm drain system.
b. Warning signs shall be posted in hazardous material storage areas.
c. Preventive maintenance shall be performed on all tanks, valves, pumps, pipes and other equipment as necessary.
d. Low or non-toxic substances shall be prioritized for use.

Source	Symbol	Detail No.
Adopted from USEPA Pub. 840-B-92-002		DE-ESC-3.6.1 Sheet 4 of 3

Effective February 2019

Standard Detail & Specifications
Construction Site Waste Mgt & Spill Control

Notes (cont.)

e. Contact information for reporting spills through the DNREC 24-Hour Toll Free Number shall be prominently posted.

6. Education

a. Best management practices for construction site pollution control shall be a part of regular progress meetings.
b. Information regarding waste management, equipment maintenance and spill prevention shall be prominently posted in the construction trailer.

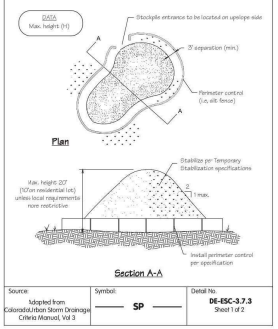
CONTACT INFORMATION

DNREC 24-Hour Toll Free Number	800-662-8802
DNREC Solid & Hazardous Waste Management Section	302-739-9403

Source	Symbol	Detail No.
Adopted from USEPA Pub. 840-B-92-002		DE-ESC-3.6.1 Sheet 5 of 3

Effective February 2019

Standard Detail & Specifications
Soil Stockpile



Source	Symbol	Detail No.
Adopted from Colorado Urban Storm Drainage Criteria Manual, Vol 3	SP	DE-ESC-3.7.3 Sheet 1 of 2

Effective February 2019

Standard Detail & Specifications
Soil Stockpile

Construction Notes:

1. Locate stockpiles so that they are 50 feet from any storm drain inlet, open channel, wetland or waterbody. Redirect any concentrated flow around the stockpile using an approved erosion and sediment control measure.
2. Secure the perimeter of the stockpile with an approved erosion and sediment control perimeter device.
3. If stockpile is to remain inactive for more than 14 calendar days, the stockpile must be vegetated. Follow the temporary stabilization specifications. The vegetation chosen shall last the duration of the stockpile, the stockpile shall be revegetated if the temporary vegetation dies or erosion results.

Source	Symbol	Detail No.
Adopted from Colorado Urban Storm Drainage Criteria Manual, Vol 3	SP	DE-ESC-3.7.3 Sheet 2 of 2

Effective February 2019

Standard Detail & Specifications
Vegetative Stabilization

Source	Symbol	Detail No.
Delaware ESC Handbook		DE-ESC-3.4.3 Sheet 1 of 4

Effective February 2019

Standard Detail & Specifications
Vegetative Stabilization

Source	Symbol	Detail No.
Delaware ESC Handbook		DE-ESC-3.4.3 Sheet 2 of 4

Effective February 2019

Standard Detail & Specifications
Vegetative Stabilization

Source	Symbol	Detail No.
Delaware ESC Handbook		DE-ESC-3.4.3 Sheet 3 of 4

Effective February 2019

Standard Detail & Specifications
Vegetative Stabilization

Construction Notes:

1. Site Preparation

a. Prior to seeding, install needed erosion and sediment control practices such as diversions, grade stabilization structures, berms, dikes, grassed waterways, and sediment basins.
b. Final grading and shaping is not necessary for temporary seedings.

2. Seedbed Preparation

It is important to prepare a good seedbed to insure the success of establishing vegetation. The seedbed should be well prepared, loose, uniform, and free of large clods, rocks, and other objectionable material. The soil surface should not be compacted or crusted.

3. Soil Amendments

a. Lime - Apply liming materials based on the recommendations of a **soil test** in accordance with the approved nutrient management plan. If a nutrient management plan is not required, apply dolomitic limestone at the rate of 1 to 2 tons per acre. Apply limestone uniformly and incorporate into the top 4 to 6 inches of soil.
b. Fertilizer - Apply fertilizer based on the recommendations of a **soil test** in accordance with the approved nutrient management plan. If a nutrient management plan is not required, apply a formulation of 10-10-10 at the rate of 600 pounds per acre. Apply fertilizer uniformly and incorporate into the top 4 to 6 inches of soil.

4. Seeding

a. For **temporary stabilization**, select a mixture from **Sheet 1**. For a **permanent stabilization**, select a mixture from **Sheet 2** or **Sheet 3** depending on the conditions. Alternative seed mixes may be used with prior approval from the Department or Delegated Agency.
b. Apply seed uniformly with a broadcast seeder, drill, cultipacker seeder or hydroseeder. All seed will be applied at the recommended rate and planting depth.
c. Seed that has been broadcast should be covered by raking or dragging and then lightly tamped into place using a roller or cultipacker. If hydroseeding is used and the seed and fertilizer is mixed, then will be mixed on site and the seeding shall be done immediately and without interruption.

5. Mulching

All mulching shall be done in accordance with detail DE-ESC-3.4.3.

Source	Symbol	Detail No.
Delaware ESC Handbook		DE-ESC-3.4.3 Sheet 4 of 4

Effective February 2019

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No.	Revisions	By:	Date
1	TOWN OF MILLVILLE COMMENTS	SKM	11/25/20

ELEVATED STORAGE TANK
TIDEWATER UTILITIES - OCEAN VIEW DISTRICT
LITTLE ASSAWOMAN BAY WATERSHED,
TOWN OF MILLVILLE, BALTIMORE HUNDRED,
SUSSEX COUNTY, DELAWARE
TAX MAP #134-15.00-116.01

EROSION & SEDIMENT CONTROL DETAILS

Date:	OCT 20, 2020
Scale:	NONE
Dwn.By:	SKM
Proj.No.:	TU101-02

Dwg: SW3.1

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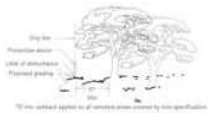
Standard Detail & Specifications
Sensitive Area Protection



Location of Sensitive Area Protection

Methods of Sensitive Area Protection

Source:	Symbol:	Detail No.
Adopted from VA ESC Handbook	SAP	DE-ESC-3.7.2 Sheet 1 of 3

Effective February 2019

Standard Detail & Specifications
Sensitive Area Protection

Construction Notes:

Fencing shall be installed on the extents of all sensitive areas. For trees, the fencing shall be installed outside the dripline (trees, canopy) and at no time, within 2 feet of the trunk. Equipment must be instructed to honor protective devices. The devices described are suggested only, and are not intended to exclude the use of other devices which will protect the trees to be retained. If silt fence is to be used for demarcation purposes, appropriate signage shall be provided a minimum of every 20 feet denoting the area as a sensitive area protection zone.

Materials:

1. Snow Fence – Standard 40-inch high snow fence shall be placed at the limits of clearing or construction on standard steel posts set 8 feet apart.
2. Board Fence – Board fencing consisting of 4-inch square posts set securely in the ground and promoting or wear a test across the ground shall be placed at the limits of clearing with a minimum of two horizontal boards between posts. For tree protection, if it is not practical to erect a fence at the drip line, construct a triangular fence nearer the trunk. The limits of clearing will still be located at the drip line, since the root zone within the drip line will still require protection.
3. Plastic Fencing – 45 inch high "international orange" plastic (polyethylene) web fencing secured to conventional metal T" or "U" posts driven to a minimum depth of 18 inches on 6-foot minimum centers shall be installed at the limits of clearing. The fence should have the following minimum physical qualities:
   a. Tensile yield; Average 2,000 lbs. per 4-foot width (ASTM D638)
   b. Ultimate tensile yield: Average 2,900 lbs. per 4-foot width (ASTM D638)
   c. Elongation at break (%): Greater than 1000% (ASTM D638)
   d. Chemical resistance: Inert to most chemicals and acids

Source:	Symbol:	Detail No.
Adopted from VA ESC Handbook	SAP	DE-ESC-3.7.2 Sheet 2 of 3

Effective February 2019

Standard Detail & Specifications
Sensitive Area Protection

4. Cord Fence – Posts with a minimum size of 2 inches square or 2 inches in diameter set securely in the ground and protruding at least 4 feet above the ground shall be placed at the limits of clearing or construction or standard steel posts set 8 feet apart. Strings of colored surveyor's flagging tied securely to the string at intervals no greater than 3 feet.
5. Earth Berms – Temporary earth berms shall be constructed according to specifications for a Temporary Earth Dike with the base of the berm on the sensitive area side to protect along the limits of clearing. Earth berms may not be used for this purpose if their presence will conflict with drainage patterns.
6. Trunk Armoring (Tree Protection Only) – As a last resort, a tree trunk can be armored with burlap wrapping and 2-inch studs wired vertically no more than 2 inches apart to a height of 5 feet encircling the trunk. If this alternative is used, the root zone within the drip line will still require protection. Nothing should ever be nailed to a tree.

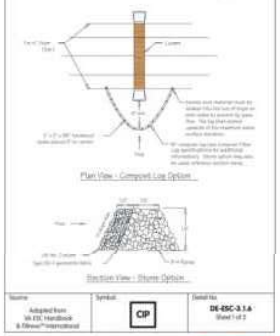
Maintenance:

Fencing and armoring devices shall be in place before any excavation or grading is begun, shall be kept in good repair for the duration of construction activities, and shall be the last items removed during the final cleanup after the completion of the project.

Source:	Symbol:	Detail No.
Adopted from VA ESC Handbook	SAP	DE-ESC-3.7.2 Sheet 3 of 3

Effective February 2019

Standard Detail & Specifications
Culvert Inlet Protection



Plan View - Compost Log Option

Section View - Stone Option

Source:	Symbol:	Detail No.
Adopted from VA ESC Handbook & Fifteen™ International	CIP	DE-ESC-3.1.6 Sheet 1 of 2

Effective February 2019

Standard Detail & Specifications
Culvert Inlet Protection

Construction Notes

1. Compost logs shall be installed and installed in accordance with the Standard Detail and Specifications for Compost Logs (DE-ESC-3.1.7).
2. If compost logs can not be installed properly or flow conditions exceed the design capabilities of the compost logs, the stone option shall be employed. Additional filtration may be provided by using a Type GO-1 geotextile incorporated into the design as an option.
3. Placement of the compost log or stone barrier should be in a "horseshoe" shape and provide a minimum of 4 feet of clearance from the culvert inlet.

Materials

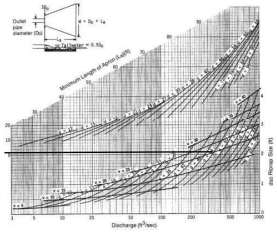
1. Stakes: 2" x 2" x 36" hardwood.
2. Compost media: See requirements in Standard Detail and Specifications for Compost Logs (DE-ESC-3.1.7).
3. Filter sock: See requirements in Standard Detail and Specifications for Compost Logs (DE-ESC-3.1.7).
4. Geotextile: Type GO-1 for stone/riprap option.
5. Stone: US No. 3 for stone/riprap option.
6. Riprap: R-4 for stone/riprap option.

Source:	Symbol:	Detail No.
Adopted from VA ESC Handbook & Fifteen™ International	CIP	DE-ESC-3.1.6 Sheet 2 of 2

Effective February 2019

STILLING BASIN RIPRAP

(Tw < 0.5 Dia.)



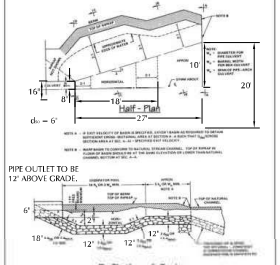
NOTE: Curves should not be extrapolated, min. d50 = 6"

Figure 3.3.10a Design of outlet protection from a round pipe flowing full, minimum tailwater condition
Source: USDA-NRCS

3.3.10 - 5

Effective February 2019

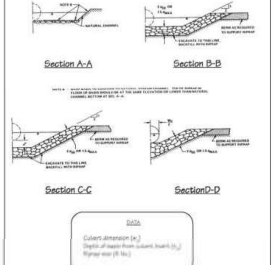
Standard Detail & Specifications
Riprap Stilling Basin



Source:	Symbol:	Detail No.
Adopted from FHWA HEC-14	RSB	DE-ESC-3.3.11 Sheet 1 of 3

Effective February 2019

Standard Detail & Specifications
Riprap Stilling Basin



Source:	Symbol:	Detail No.
Adopted from FHWA HEC-14	RSB	DE-ESC-3.3.11 Sheet 2 of 3

Effective February 2019

Standard Detail & Specifications
Riprap Stilling Basin

Construction Notes:

1. The subgrade for the riprap shall be prepared to the required lines and grades as shown on the plan. Any fill required in the subgrade shall be compacted to a density of approximately that of the surrounding undisturbed material.
2. The riprap shall conform to the grading limits as shown on the plan.
3. Geotextile shall be a Type GS-1. Fabric shall be protected from punching, cutting or tearing. Any damage other than an occasional small hole shall be repaired by placing another piece of cloth over the damaged area. All connecting joints should overlap a minimum of 1 ft. If the damage is extensive, replace the entire section.
4. Stone for the riprap or gabion outlets may be placed by equipment. Riprap shall be placed in a manner to prevent damage to the geotextile fabric. Hand placement will be required to the extent necessary to prevent damage to the conduits, structures, etc.

Source:	Symbol:	Detail No.
Adopted from FHWA HEC-14	RSB	DE-ESC-3.3.11 Sheet 3 of 3

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Seal: ROBERT J. PALMER LICENSE No. 19947 DELAWARE PROFESSIONAL ENGINEER 3/30/21

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No.	Revisions	By:	Date
1	TOWN OF MILLVILLE COMMENTS	SKM	11/25/20

ELEVATED STORAGE TANK
TIDEWATER UTILITIES - OCEAN VIEW DISTRICT
LITTLE ASSAWOMAN BAY WATERSHED,
TOWN OF MILLVILLE, BALTIMORE HUNDRED,
SUSSEX COUNTY, DELAWARE
TAX MAP# 134-15.00-116.01
EROSION & SEDIMENT CONTROL DETAILS

Date:	OCT 20, 2020
Scale:	NONE
Dwn.By:	SKM
Proj.No.:	TUI01-02

Dwg: SW3.2

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